



OTHER SYMBOLS:

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At our premises in Wrocław, we have a fully equipped servicing facility. Here we perform all the repair works and test each later sold unit. Our trained employees, equipped with a wide variety of tools and having several testing stands at their disposal, are a guarantee of the highest quality service.



VTWIN Hardware Manual

ESA elettronica S.P.A. reserves the right to change the information contained in this document without notice. The information represents no obligation on the part of the company.

All products referred to are covered by the appropriate trademark and/or copyright legislation.

Quality Assurance

ESA elettronica's quality control system has been certified by the CSQ, EQNet and ITQS (certification N° 9115.ESAE) as complying with UNI EN ISO 9001:2000 standards.

These represent the most comprehensive set of standards within the international framework of ISO and cover every aspect of the life-cycle of the product (planning, development, production, installation and customer care).

CE

All the products described in this manual comply with the following standards:

electromagnetic compatibility (EMC):

- emissions EN 61000-6-4 (2001)
- immunity EN 61000-6-2 (2001)

and thus are in line with:

Council Directives 89/336/EEC 92/31/EEC 93/68/EEC

Products bearing the mark cULus have been certified in compliance with UL 508 and CSA C22.2 N°14-M95 safety standards.

Video terminals VT50 and VT60 have also obtained:

RINA Approval Registro Navale Italiano No. ELE/797/1

DNV certification Det Norske Veritas Certificate No. A-9044

Table 0.1: Tests carried out for CE-mark	k.
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Immunity	Disturbance characteristics	Standard
N°	Electrostatic discharge:	EN61000-4-2
	Contact	4kV
	Air	8kV 🔬
To disturbances	Badia Fraguenay	ENV50140/ENV50141
	Radio-Frequency	10 V/m
	Rapid transitories:	EN61000-4-4
	Power supply	2 kV
	I/O serial	1 kV
	Impulsive transitories Common and Differential mode	EN61000-4-5
To radio disturbances	Emission	EN55011 Level of radio disturbance B

Tests carried out for RINA approval

- Publication IEC 68-2-6 (1982) Fc. test (Vibration)
- Publication IEC 68-2-30 (1980) Db. test (Hot wet cycle)
- Publication IEC 68-2-1/IEC 68-2-1A (1976) + A1 (1983) Ad-Amendment n°1 test (1983) (Cold)

Any modification made to the product in its original form as sold by ESA or any installation not envisaged in this manual automatically implies a cancellation of the product's marks of approval. ESA declines all responsibility in relation to its products where these have undergone modification or been installed in ways not envisaged in this manual.

The simple application of an adhesive on any part of the terminal is considered to be a "variation of the original product" and thus implies the annulment of the marks of approval.

General Safety Precautions

System Design

- The System should be designed to prevent equipment malfunction due to communication faults between the VT and its host controller. This will assure the protection of both personnel and equipment.
- Do not use the VT as a warning device for critical alarms that can cause operator injury, production stoppage or machine damage. Every critical alarm indicator or control, must be designed using appropriate stand alone hardware devices.
- Redundant failsafe system design should be used in order to ensure proper safety when the VT is used in special applications such as safety equipment, non-life support medical devices, disaster prevention devices, transportation vehicles, etc.
- The VT is not suitable for applications such as medical life support equipment, hazardous areas or any potentially explosive environments, aerospace equipment, nuclear power control devices or aircraft control devices. These kinds of applications require a higher level of safety and reliability.

Installation and wiring

- Strictly follow the wiring diagram and grounding recommendations contained in this document, in order to prevent any damaged to the VT or to the connected devices.
- Do not use any voltage beyond the VT's specified range in order to prevent damage or electrical shock.
- Make sure power to the unit is off before opening the VT for the calibration procedure described in this document.
- Do not modify the VT for any reason. Doing this may result in electrical shock or fire, in addition to loss of Certifications like CE or UL.
- Use the proper torque shown on the label to tighten the terminal screws. Excess tightening may cause short circuit, fire or device malfunction.
- Do not install the VT in an ambient temperature exceeding the allowed range. This may result in malfunction or shortened life of the unit.
- Do not limit the VT's rear-face ventilation, in order to avoid component overheating.

Usage

- Do not strike the touch panel with a hard or pointed object, or press on the touch screen with excessive force. The actuating force is 50 grams (1.8 oz.).
- Do not allow liquids to enter the VT case. This can cause malfunction or electrical shock.
- Do not use the VT in excessively dirty or dusty environmental conditions, and do not place it under direct sunlight.
- Do not use the VT where strong jolting or excessive vibration can occur.
- Do not use the VT where abrasive chemicals can evaporate or are present in the air.
- Use only allowed chemical substances to clean the VT (see User's Manual chapter on cleaning).
- Ensure that no metal debris falls into the VT. This can cause fire, malfunction or incorrect device operation.
- After turning the VT OFF, please wait at least 5 seconds before turning it ON again, otherwise it may not start up correctly.
- Be sure to perform regular back-ups of the VT's data to avoid loss due to unexpected accidents to your system.

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Data exchange area

## Communication protocols

Free terminal protocol

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Resistance to chemica substances

**Technical support** 

#### Foreword

PLC

Device

[]

 $\Box$ 

The hardware installation manual is valid for all types of Video Terminal.

**The manual** The installation manual contains information on securing and connecting both VTs and optional accessories, on the functions offered by the terminals as well as on the cables connecting them to a device.

**Its purpose** The manual contains all the notions, concepts and examples necessary to be able to install quickly and easily.

**Conventions** Below are listed the symbols and styles found in the manual together with their respective meanings:

Programmable logic control or other intelligent device equipped with a serial connection.

Intelligent device or PLC equipped with a serial connection.

The contents of the bracket appears on the screen.

Identifies a key or touch button.

Indicates that the VT specified lacks this key.

Indicates an important point that requires attention.

There is a danger that the equipment will be damaged.



#### Introduction

What is a Video Terminal A VIDEO TERMINAL (VT) is a device that allows the user to control or simply monitor a productive process. It can send commands using DD configured by the user; it can send data determining the process on hand and can display information deriving from the productive process. The information can be in the form of an Alarm, an Information (Info-) Message or in binary data format.

The VTs can be divided into two groups: those with a keyboard and those without but equipped with a Touch Screen.

All VTs can be supplemented with accessories to boost and broaden their performance.

VTs are connected to the device by means of a serial connection.

For the VT to function a project must be created and loaded into it. See Software Manual.

For detailed information on individual VTs see the relevant chapters below.



#### Essential information

The VT is a device composed of a series of components which, given their structure MUST be used in a particular way; in addition, these very structural characteristics may cause the VT to behave in ways that could be interpreted as a malfunctioning of product and/or evidence of a constructional defect.

#### **The VT in such cases is NOT to be considered faulty and so nei**ther repair nor substitution are appropriate.

The component that generally creates this impression is the display. The displays used on the VTs are of two distinct types, one with a passive matrix called STN (Super Twist Nematic) and the other with an active matrix called TFT (Thin Film Transistor). Some of their working features are the same, others depend on the different constructional technology.

One component that requires particular care when being used is the Touch Screen.

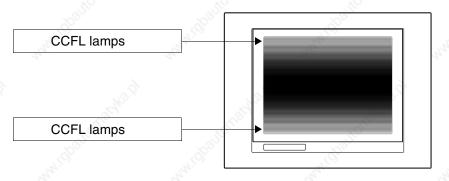
Below we set out a series of points relating to possible behaviors and the correct use of the VT.

Failure to put some of these notions into practice may damage the VT.

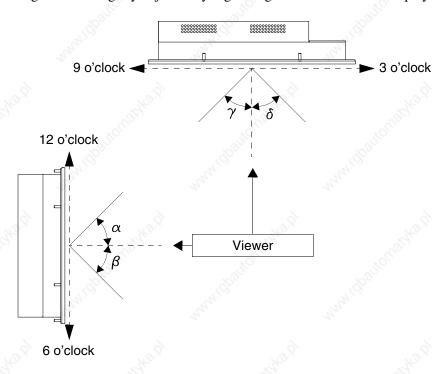
#### Graphic terminals

The category graphic terminals covers both touch screen and keyboard terminals and includes both those with STN display and those with TFT display.

• With CCFL backlit displays the brightness may be slightly uneven, the areas where the CCFL lamps are may be lighter.



• All displays posses a certain viewing angle within which the images can be seen properly. If the viewer is outside the specified angle the images may be seen with their colors inverted or with different tones from the original ones, or it may be that no colors are seen, etc. The viewing angle can be slightly adjusted by regulating the contrast on the display.



The figure above shows the direction of the angles in relation to the viewing point. The table gives the value of the viewing angles depending on the type of display.

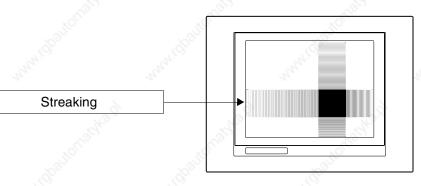
Type of display	Direction (Hour)			
	<b>12 -</b> α	<b>6</b> - β	9-γ	3 -
STN	30 degrees	60 degrees	60 degrees	60 degrees
TFT	80 degrees	80 degrees	70 degrees	70 degrees

This feature means a difference in viewing (albeit with the same contrast and temperature levels) when:

- The viewer is taller than the person setting the contrast.
- Viewers find themselves at different distances from the VT.
- Two identical displays may have slightly different brightness levels and color tones.

STN

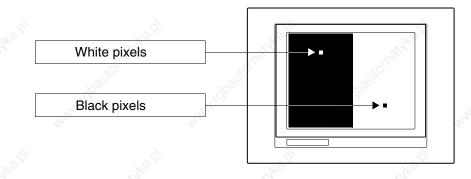
- Temperature influences the contrast of the display. At higher temperatures the display is lighter while at lower temperatures it is darker, consequently a few minutes are required after switching on before the display offers normal viewing. This effect may be more or less marked depending on the ambient temperature. For terminals with temperature probes the contrast is automatically regulated so the effect is almost imperceptible .
- It is possible for images having a strong chromatic contrast with the background to create color streaks. This effect can be slightly corrected using the display's contrast control.



• Brightness may present a slight tremble or irregularity leading to a slight darkening which extends over the entire display.

#### Graphic terminals -TFT

• In some cases the display may have some pixels that are white (always ON) or black (always OFF). This phenomenon may be visible or invisible to the user on account of the color showing on the display. This phenomenon is considered normal.



Graphic terminals Touch Screen

- The touch screen is activated by applying pressure equal to 200g which may be done using a pen or a finger.
- The touch screen also has a peripheral area that should never be subjected to stress above all using pointed objects (pens, etc.). On account

Useable area Peripheral area

of how the glass is put together this area is very sensitive to pressure and is fragile.

The peripheral area is about 2mm on each side and is outside the touch sensitive area.

Subject this area to stress may damage the VT.

Chapter 1

# General information on electromagnetic compatibility (EMC)

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Laying cables	4 ² 1	1-2
Shielding of cables	à d	1-2
Earthing of shielding an	d electronic circuits	1-2
Switching of capacitive	loads	1-2
Switching off inductive	oads	1-2
Disturbance suppressio	n circuit - RC and DIODE	1-3
This chapter consists of 4 page	ges.	~

Electronic devices are being increasingly used in automated systems. programmable controllers (like the PLC) belong to this category, as do Man-machine-interface systems (e.g. the Video Terminal), control systems (e.g. diagnostic terminals), interface elements (e.g. interface boards) and AC-DC drives. Together with this type of electronic apparatus, you find installed classical electro-mechanical devices like contactors, electro-valves, motors etc.

Electrical disturbances caused by the operation of these devices can compromise the smooth functioning and the length of the working life of the electronic devices present on the same switchboard or the same plant. To get the best out of both the electrical and the electronic devices it is necessary to reduce electrical disturbance.

Laying cables

Remember to lay measurement, monitoring and communication cables so that they are kept apart from power cables. Power cables laid close and parallel to communication cables can cause coupling voltages that are strong enough to disturb or destroy electronic components.

Shielding of cables It is essential to use suitably shielded cables for communication signal connections (total shielding is recommended). The shielding must be connected to the zero potential.

Earthing of shielding and electronic circuits With many devices the "0V" is connected to the earth. The signal ground must be earthed but it is best to separate the ground of the shields and circuits from that of the power circuits. Note that the earth can only perform its function if the "Resistance of the earth circuit" is within the max. limits prescribed.

Switching of capacitive loads

Switching off inductive loads The current peaks which occur when capacitive loads are switched on can damage or destroy control devices. Furthermore, the high-frequency component of the current peak can cause serious disturbance in electronic circuits as a result of inductive coupling between the connection cables.

When an inductive load is switched off, the magnetic energy stored tends to oppose this, discharging a voltage peak down the line which can damage or destroy the control device. Furthermore, the high-frequency component of the voltage peak can cause disturbance caused by capacitive coupling between the connection cables.

The physical structure and characteristics of an inductive load make it impossible to carry out switching without disturbance unless suitable measures are taken. The disturbance can be at least partially suppressed by fitting a suitable disturbance-suppression module in parallel with the inductive load. The disturbance-suppression module must not constitute an additional load during the work phase. Electrical disturbance is propagated both through the connection cables and electromagnetic transmission. If the disturbance is propagated by cable or electromagnetic transmission, it is much more difficult to suppress at the inputs to the units in the danger zone than it is to suppress the disturbance at its source. If the disturbance is created by connection cables or by electronic transmission, it is much more difficult to suppress it at the inputs of the devices in dangerous areas than at source,

In the following tables there are the specifications of the disturbance sup-

If possible, disturbance should be suppressed at source.

#### Disturbance suppression circuit - RC and DIODE

pression filter ciruits.

Table

Circuit	Advantages	Disadvantages
30		Sport -
	The residual component has a very low harmonic wave form component.	The best results are obtained by sizin the R/C suitably.
	The residual overvoltage can be limited to the very low values by optimizing the sizing.	Volume directly proportional to th inductance and power of the load.
	Switch-off time delay very low.	Optimal suppression is obtained as direct consequence of a significar de-energizing delay.
■. 吉	C The effectiveness of the disturbance suppression is not affected by the volt- age value. No switch-on delay.	The presence of the capacitor causes high load current peak when switchin on (and can cause pasting of the cor tact if undersized).
		ST.
	Suitable for both AC and DC; no prob- lem with reversed polarity.	The RC circuit constitutes an additional load when used with AC.
	100	1000
	ALC: NO	
	No arc (low energy) on switching con- tact.	

#### Table 1.2: Disturbance suppression circuit DIODE

Circuit	Advantages	Disadvantages	
ALAN BOL	Very compact.	High switch-off delay time.	
K	No residual voltage (total damping of disturbance impulse).	For direct current (DC) applications only.	
	Easy to size.	Polarity must be respected.	
	- John Charles	Switch-off delay can lead to the forma- tion of a strong electric arc.	
		Sensitive to disturbance voltage pulses in power supply circuit.	



#### Chapter 2 Power Supply

	Contents	offar alt	Page
Connection pins	and a second	ALCONT.	2-2
Wiring	4	4	2-2
Connections to b	e avoided	6	2-2
Recommended c	onnection	all the second s	2-3
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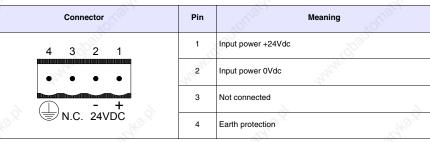
And and the

Connection

pins

Use a 24VDC (18..32Vdc) power supply unit to power the VT.





Check all connections before switching on.

Wiring

The power supply connector will take conductors with a cross-section of between 0.05 and 2.5mm² (30-12AWG) for rigid conductors or from 0.05 to 1.5mm² (30-12AWG) in the case of flexible conductors. The length of the stripped wire must be between 6 and 7.5mm (0.24-0.30in). The recommended screw grip pressure is 0.79Nm (7 lb in).

These values represent the maximum values certificated. The screw grip pressure is related to the norms applicable to the product and to the type of use.

#### Connections to be avoided

The connections illustrated below **must not** be made as they may cause the VT to be damaged.

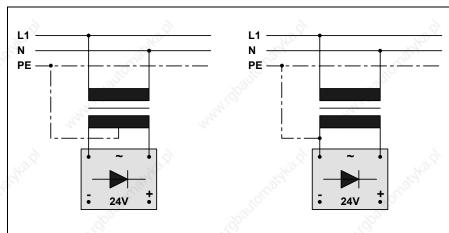


Table 2.2: Connections to be avoided

The above configurations will seriously damage certain components of the VT.

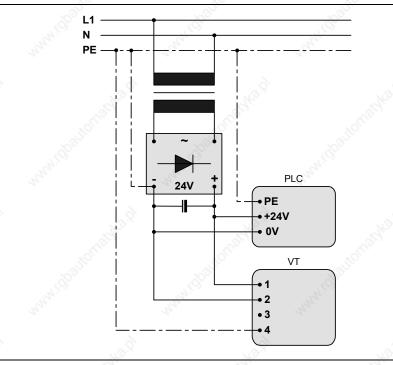
## Beware of appliances with the POSITIVE connected to PE.

It is vital that the earth of the devices connected to the serial and/or parallel communication ports have the same voltage as the 0V supply of the VT. The circulation of current between the 0V supply and the earth of the communication ports could damage certain components of the VT or of the devices connected it.

# Recommended connection

We recommend a wiring scheme as set out below in the interests of avoiding damaging the VT.

Table 2.3: Power supply with 0Vdc connected to PE

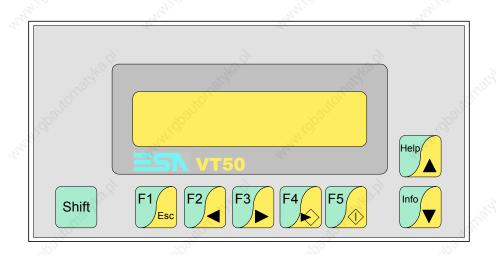


Correct earthing is essential.



# Video terminal VT50

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**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal	20	
VT050 00000	S		
VT050 000CN	- Colline Colline		
Display	je standard s	•	
Туре	LCD	•	
Representational format	Text	•	•
Rows by characters	2 x 20	•	
Display area size [mm]	73,5 x 11,5	۲	•
Character matrix in text mode [pixels]	5 x 7	ð.	•
Character size [mm]	3,2 x 5,5	•	•
Contrast adjustment	Trimmer	•	•
Contrast aujustment	Automatic compensation with temperature		T
Character sets	Ascii, Katakana	•	•
Backlighting			T
Туре	LED	•	•
туре	CCFL lamp		R
Minimum lamp-life at 25°C [hours]	25 25	28	
Keyboard	7o. 7o. 7o.		
Non-customizable function keys	5	•	•
Customizable function keys			
Function key LEDs			
Alphanumeric keys	**		
Operational keys	8	•	
Operational key LEDs			8
Diagnostic LEDs	25 25	19%	
User memory	78. TAS. TAS.		
Project [Bytes]	256K	٠	•
Data memory [Bytes]			1
Memory for Windows ® -based fonts [Byte]	- 2 2		1
Memory Card for backup	- 8		1
Memory Card for expansion	、		

Code of terminal	Characteristics of the terminal	
VT050 00000	Characteristics of the terminal	
VT050 00000		
Interfaces		
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	•
ASP (Auxiliary serial port)	RS232/RS485	
ASP-15L (Auxiliary serial port)	RS232/RS485	
ASP-8 (Auxiliary serial port)	RS232	•
ASP-9 (Auxiliary serial port)	RS232	
LPT parallel port	Centronics	
Auxiliary port	Connection for accessory devices	6
Accessories	Nº Nº	12°
Connectable accessories	See table "Chapter 33"	•
Clock		
Clock		
Networks		
18 - A	Profibus-DP	
Integrated	CAN Open (Optoisolated interface)	•
	Ethernet 10/100Mbit RJ45	6
Universal Bus Connector	P	20
Optional	See table "Chapter 33"	) <b>•</b>
Proprietary networks		
ESA-Net	Network server	
ESA-INEL	Network client	•
Fechnical data	14	
Power supply	24Vdc (1832Vdc)	
Power absorbed at 24Vdc	5W	~
Protection fuse	Ø5x20mm - 315mA Quick Blow F	J.
Protection level	IP65 (front-end)	3
Operating temperature	050°C	
Storage and transportation temperature	-20+60°C	
Humidity (non-condensing)	<85%	
Weight	500gr	
Dimensions		
External W x H x D [mm]	166 x 86 x 41	
Cut-out W x H [mm]	157 x 77	Sec.
Certification	1	<u> </u>

10Hand

# Functions

The following table lists in alphabetical order all the functions of the VT in question.

Table 3.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal	S.Com.	
VT050 ****		
Objects/Functions	Quantity	
Alarm field	27.	
Alarm help		
Alarm history buffer		~
Alarm statistics	N	ð,
Alarms (Total/active simultaneously)	100 A.	
Arc	30	
Automatic operations	20	•
Backup/Restore	22.3	•
Bar data		
Bit-wise password	8bits	
Buttons	19	2
Circles	A. C. C.	
Command: Change language	30	•
Command: Clear trend buffer	1800	
Command: Delete recipe	27.	
Command: Hardcopy		
Command: Load recipe from data memory		2
Command: Modify password	N2	2
Command: Next page	100	
Command: Page help	30	
Command: Password login	8	
Command: Password logout	14.	
Command: Previous page		
Command: Print alarm history		5
Command: Printer form feed	N2	
Command: Quit project	Sec.	•
Command: Report	30	
Command: Restarts reading time-sampled trend	. S ²	
Command: Run pipeline	14.)	
Command: Save alarms history and trend buffers in flash		
Command: Save recipe in data memory		5
Command: Save recipe received from device in buffer	NS	0
Command: Save recipe received from device in data memory	S. S.	+
Command: Send recipe from video buffer to device	36	+
Command: Send recipe to device	.8 ²	
Command: Service page	£	+

Table 3.1: Functions and objects realizable with this VT (Part 2 of 4)

Code of terminal	
VT050 ****	
Objects/Functions Command: Show alarms history	Quantity
	- 30
Command: Show page directory Command: Show project information	
	5
Command: Show recipe directory Command: Show sequence directory	
Command: Shows driver status page	
Command: Shows page help	
Command: Shows page with function: PG	
Command: Stops reading time sampled trend	2 ²
Command: Trend reading saved in device	~
Command: Zero number of general pages	
Date field	
Day-of-the-week field	
Dynamic texts: Bit-group-structured dynamic texts	1024*
Dynamic texts: Single-bit dynamic texts	1024
Dynamic texts: Value-structured dynamic texts	Star
E-keys	->
Equations	32
-keys	
Free terminal	<u>_</u>
Function: Disables key	35
Function: Go to page	- 6
Function: Internal command	Store and the store of the stor
Function: Invert bit value	~
Function: Macro	
Function: None	
Function: Reset bit permanently	<u>_</u>
Function: Reset real-time bit	100
Function: Sequences	5
Function: Sets bit permanently	5 ⁰
Function: Sets real-time bit	~
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	San
Headers and footers (Total/Number of fields per H-F)	55
nfo-messages (Total/active simultaneously)	128/128
nternal registers	512bytes
Labels	0
EDs assigned to sequence	

Table 3.1: Functions and objects realizable with this VT (Part 3 of 4)

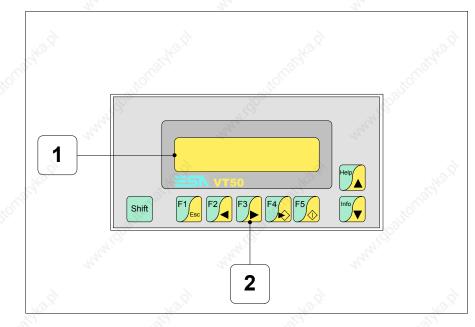
VT050 ***** Objects/Functions	Quantity
Lines	audinity (
Lists of bitmap images	100
Lists of texts	
Local configuration of E-keys	8
Local configuration of F-keys	
Macro field	4 x pages
Macros (Total/Commands x macro)	i x pugoo
Massage field	100
Message help	128
Multilanguage texts	4 Langs.
Object - Indicator	Lango.
Object - Potentiometer knob	
Object - Selector knob	
Object - Selector Knob Object - Sliding potentiometer	
Object - Sliding selector	
	127
Page	127
Page help Password	127
Pipelines (Number/Tot bytes)	
Print	
Print page (Total/Number of fields per page)	100
Programmable fonts	- 5
Project images	10 ²⁰
Public variables of ESANET network (Number/Total bytes)	2 ²
Recipe field for recipe structure	
Recipes (Number of variables per recipe)	
Rectangles	
Redefinable characters	7
Reports	
Sequences - Random	64
Sequences - Start/stop	4. ⁵
Static bitmaps	
Symbolic field: Bit-group-structured dynamic bitmaps	
Symbolic field: Single-bit-structured dynamic bitmaps	
Symbolic field: Value-structured dynamic bitmaps	200
System messages	10,0
System variables assigned to recipe structure	1020
Time long field	100

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Table 3.1: Functions and objects realizable with this VT (Part 4 of 4)

	Code of terminal	
VT050 ****	6	
Objects/F	Functions	Quantity
Timer	-50	20
Touch Area	No.	.S ^C
Trend buffers	S. S	>
Trends (Trends x page/Channels	x trend)	
Trends sampled automatically (M	lemory/Trends/Readings)	
Trends sampled on command (M	lemory/Trends/Readings)	6
Value direct command: ADD	No.	Non
Value direct command: AND	-Charles	S.C.
Value direct command: OR	and the second s	350
Value direct command: SET	Ø, Š	2
Value direct command: SUBTRA	СТ	
Value direct command: XOR		
Variables: Limit values and linear	scaling variables	6
Variables: Movement variable (M	obile symbolic field)	No.
Variables: Threshold variables		10
Variables: Floating Point numeric	al variables	12 x pages
Variables: Numerical variables (D	DEC, HEX, BIN, BCD)	÷
Variables: String variables (ASCI	I)	
Unless otherwise stated, there is no limit to the nu	umber of includable elements, only the size of pr	oiect memory sets a l

# Front face



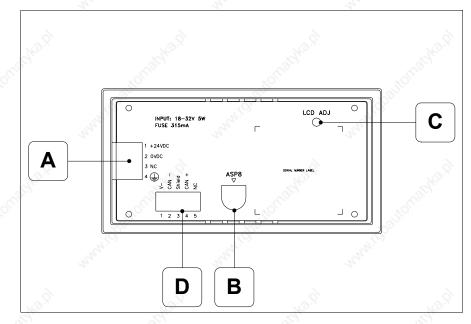
Кеу	Function
1	Display
Shift + 2	F-keys
F5	Confirms setting
Help	Next page
	Previous page
F4	Start in-putting
F3	Moving cursor between fields
F2	Moving cursor between fields
F1 _{Esc}	Quits: setting of data, info-messages, directory of sequences, communication driver
Shift + Info	Displays information messages
Shift + Help	Displays according to context: info-message help or page help

405.1200.037.2 - Rel.: 2.20 of 26/03/2007

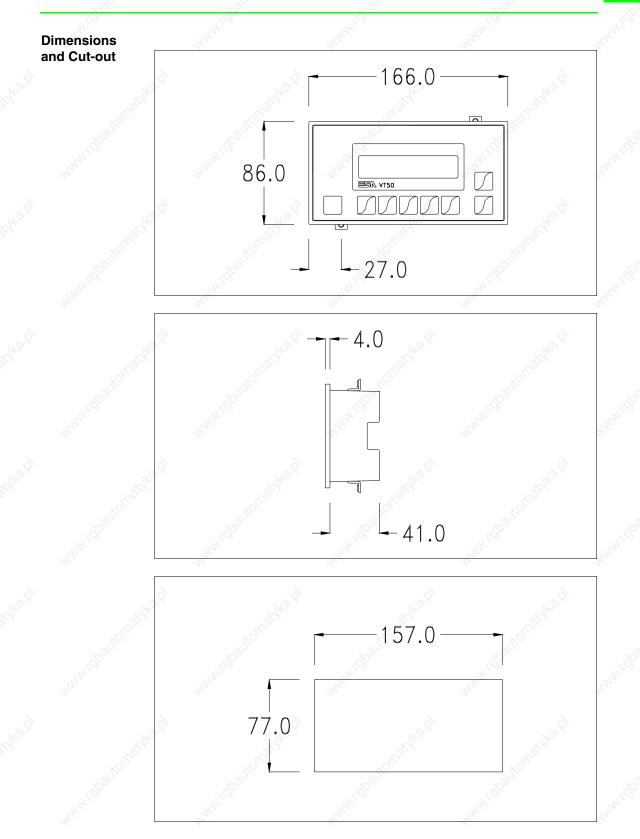
# Standard series rear view

Position	Function	
A	Power supply connector	and the second
В	MSP serial port	d.
С	Trimmer for adjusting display contrast	

# CAN series rear view



Position	Function	autorn's
A	Power supply connector	and the second s
В	ASP-8 serial port	
С	Trimmer for adjusting display contrast	NOT REAL
D	CAN serial port	and the second



To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".



Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

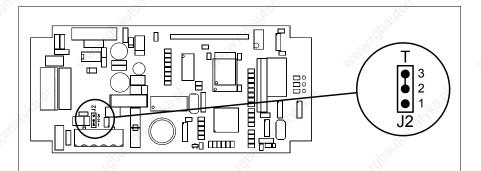
### Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

## Termination of CAN line

This paragraph applies only to the CAN series. The VT in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J2.



• Position the jumper between pins 2 and 3 (line terminated).

- Replace the back cover.
- Reconnect the power supply.

### Transfer PC -> VT

For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity)

or:

• Free terminal protocol

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT with 56 held down and wait a moment

#### VT terminal with no Modem function:

• The following mask appears. The VT is now ready to receive (refer to Software Manual for transfer procedure)

VT50 Service page

#### VT terminal with Modem function:

• The following mask appears

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; press the corresponding function

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

F1=FAST - F2=SLOW

The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), press the corresponding function  $\square$ . The VT is now ready to receive (see Software Manual for the transfer).

Information relating to driver After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press Shift twice; you will see

Driver: xxxxxxxxxxx Ver. : xxxxxxxxxxx Ver. : xxxxxxxxxxxx

The possible error messages are:

#### PROT ERROR

Problem->	Errors have been detected in the data exchange between
	the VT and the Device.
Solution->	Check the cable; there may be disturbance.

• COM BROK

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

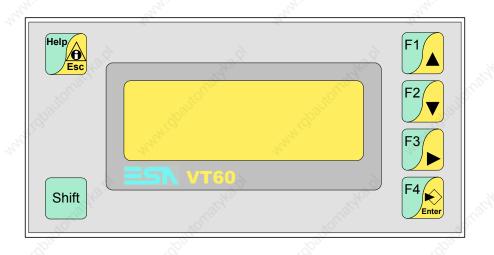
An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROK*

Adjusting the contrast on the display To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by rotating the trimmer (C) at the back of the VT (see Page 3-9 or Page 3-10); turn it (using a small screwdriver or a trimmer tool) in one direction and, if the display quality worsens, turn it the other way.

# Video terminal VT60

Contents		Page
Technical characteristics	MIGDO.	4-4
Functions	A ^{ch}	4-4
Front view	a de	4-8
Standard series rear view	able	4-9
CAN series rear view		4-10
Dimensions and Cut-out	CALCO .	4-11
Accessories	R.	4-12
Termination of CAN line	and the second s	4-12
Transfer PC -> VT	Clarge C	4-12
Preparation for reception		4-13
Information relating to driver	Olyn,	4-14
Adjusting the contrast on the display	2	4-15
This chapter consists of 16 pages.	6	8



**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal		
VT060 00000	S		_
VT060 000CN	- alle alle		
Display	je. je	<b>\</b>	
Туре	LCD	•	
Representational format	Text	•	•
Rows by characters	4 x 20	•	
Display area size [mm]	70,4 x 20,8	•	
Character matrix in text mode [pixels]	5 x 7	ð.	
Character size [mm]	2,95 x 4,75	•	
Contract adjustment	Trimmer	•	
Contrast adjustment	Automatic compensation with temperature		T
Character sets	Ascii, Katakana	•	
Backlighting	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		-
	LED	•	
Туре	CCFL lamp	0	R
Minimum lamp-life at 25°C [hours]	18,	28	T
Keyboard	7a. 7a. 7a.		T
Non-customizable function keys	4	•	
Customizable function keys			
Function key LEDs			T
Alphanumeric keys	4, 4,		T
Operational keys	6	•	
Operational key LEDs		?	R
Diagnostic LEDs	28	33	T
User memory			
Project [Bytes]	256K	•	
Data memory [Bytes]			
Memory for Windows ® -based fonts [Byte]			
Memory Card for backup	11		
Memory Card for expansion			t

Code of terminal	Characteristics of the terminal	
VT060 00000		
VT060 000CN		~
Interfaces		
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	
ASP (Auxiliary serial port)	RS232/RS485	•
ASP-15L (Auxiliary serial port)	RS232/RS485	
ASP-152 (Auxiliary serial port)	RS232	•
ASP-9 (Auxiliary serial port)	RS232	•
LPT parallel port	Centronics	
Auxiliary port		
Auxiliary port	Connection for accessory devices	20
Connectable accessories	Cas table "Chapter 22"	
Connectable accessories	See table "Chapter 33"	•
N N	J. J	
Clock	<u></u>	
Networks		
4 4	Profibus-DP	
Integrated	CAN Open (Optoisolated interface)	•
8	Ethernet 10/100Mbit RJ45	0
Universal Bus Connector	-Ho.	40
Optional	See table "Chapter 33"	•
Proprietary networks	J ^o	
ESA-Net	Network server	
	Network client	•
Technical data		
Power supply	24Vdc (1832Vdc)	
Power absorbed at 24Vdc	5W	6
Protection fuse	Ø5x20mm - 315mA Quick Blow F	to.,
Protection level	IP65 (front-end)	5
Operating temperature	050°C	
Storage and transportation temperature	-20+60°C	
Humidity (non-condensing)	<85%	
Weight	500gr	
Dimensions		
External W x H x D [mm]	166 x 86 x 41	~
Cut-out W x H [mm]	157 x 77	10.8
Certification	6 <u>, </u> 76 <u>,</u> 76 <u>,</u>	1

10Han

robautor

# Functions

The following table lists in alphabetical order all the functions of the VT in question.

Table 4.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal	Se .		
VT060 ****			
Objects/Functions	Quantity	V	
Alarm field			
Alarm help			
Alarm history buffer			
Alarm statistics	1	8	
Alarms (Total/active simultaneously)	and and		
Arc	30		
Automatic operations	20	•	
Backup/Restore	3	•	
Bar data			
Bit-wise password	8bits		
Buttons	12	X	
Circles	J.S.		
Command: Change language	30	•	
Command: Clear trend buffer	80		
Command: Delete recipe			
Command: Hardcopy			
Command: Load recipe from data memory		5	
Command: Modify password	N2	X	
Command: Next page	J.		
Command: Page help	30		
Command: Password login	.S ⁰		
Command: Password logout			
Command: Previous page			
Command: Print alarm history		2	
Command: Printer form feed	14	2	
Command: Quit project	J.	•	
Command: Report			
Command: Restarts reading time-sampled trend	.S ²		
Command: Run pipeline			
Command: Save alarms history and trend buffers in flash			
Command: Save recipe in data memory		~	
Command: Save recipe received from device in buffer	12	12.	
Command: Save recipe received from device in data memory	Ser .	-	
Command: Send recipe from video buffer to device	30	+	
Command: Send recipe to device	33 ⁰	+	
Command: Service page	3	-	

Table 4.1: Functions and objects realizable with this VT (Part 2 of 4)

Code of terminal VT060 *****	
Objects/Functions	Quantity
Command: Show alarms history	1. A.
Command: Show page directory	
Command: Show project information	8 ⁰
Command: Show recipe directory	
Command: Show sequence directory	
Command: Shows driver status page	6
Command: Shows page help	No.
Command: Shows page with function: PG	- Carl
Command: Stops reading time sampled trend	250
Command: Trend reading saved in device	80
Command: Zero number of general pages	
Date field	
Day-of-the-week field	6
Dynamic texts: Bit-group-structured dynamic texts	No.
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	- 35°
E-keys	Š ²
Equations	32
F-keys	
Free terminal	6
Function: Disables key	Nº.
Function: Go to page	all
Function: Internal command	
Function: Invert bit value	32
Function: Macro	
Function: None	
Function: Reset bit permanently	6
Function: Reset real-time bit	No.
Function: Sequences	aller .
Function: Sets bit permanently	_3 ⁵
Function: Sets real-time bit	Ś.
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	6
Headers and footers (Total/Number of fields per H-F)	A.
nfo-messages (Total/active simultaneously)	128/128
nternal registers	512bytes
Labels	Š.
LEDs assigned to sequence	

Table 4.1: Functions and objects realizable with this VT (Part 3 of 4)

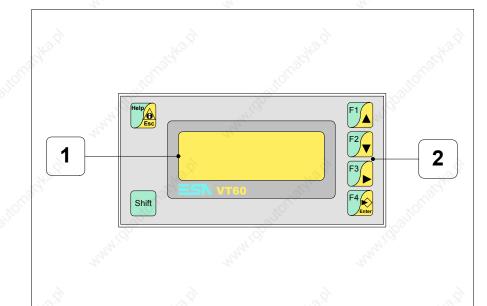
VT060 *****	Quantity	5
Objects/Functions	Quantity	
Lines	- 202	
Lists of bitmap images	153 ²³²	
Lists of texts	501	
Local configuration of E-keys		
Local configuration of F-keys		_
Macro field	4 x pages	Ċ
Macros (Total/Commands x macro)	and the	
Message field	-550	
Message help	128	
Multilanguage texts	4 Langs.	
Object - Indicator		
Object - Potentiometer knob		
Object - Selector knob		ç
Object - Sliding potentiometer	X2	
Object - Sliding selector	al a	
Page	127	
Page help	127	
Password		
Pipelines (Number/Tot bytes)		
Print		e
Print page (Total/Number of fields per page)	Nº.	
Programmable fonts		
Project images	3 ⁵⁰	
Public variables of ESANET network (Number/Total bytes)	S.	
Recipe field for recipe structure	2.º	╞
Recipes (Number of variables per recipe)		-
Rectangles		
Redefinable characters	7	
Reports		
Sequences - Random	50	
Sequences - Start/stop	64	
Static bitmaps	12 T	-
Symbolic field: Bit-group-structured dynamic bitmaps		
Symbolic field: Single-bit-structured dynamic bitmaps	2	
Symbolic field: Value-structured dynamic bitmaps		
System messages	30	Ļ
System variables assigned to recipe structure	Sou	L
Time long field	19 M	L

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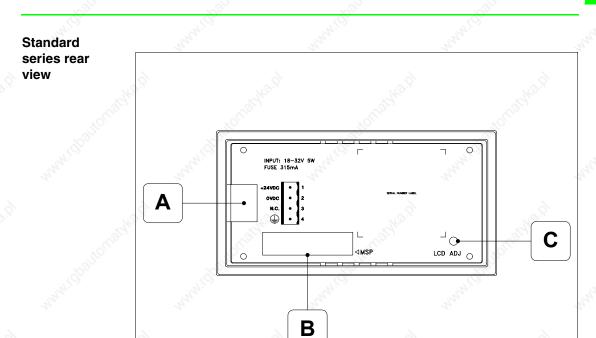
Table 4.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of terminal				
VT060 ****		6		
Objects/Functions		Quantity		
Timer		20	•	
Touch Area	6	50		
Trend buffers	.8			
Trends (Trends x page/Channels x trend)	44			
Trends sampled automatically (Memory/Trends/Readings)				
Trends sampled on command (Memory/Trends/Readings)		6		
Value direct command: ADD		Nº.		
Value direct command: AND		S. Contraction		
Value direct command: OR	2	50		
Value direct command: SET	S.		•	
Value direct command: SUBTRACT	asa .			
Value direct command: XOR				
Variables: Limit values and linear scaling variables		10		
Variables: Movement variable (Mobile symbolic field)		Nº.		
Variables: Threshold variables		10 v no no		
Variables: Floating Point numerical variables		12 x pages	•	
Variables: Numerical variables (DEC, HEX, BIN, BCD)	10		•	
Variables: String variables (ASCII)	Land Carlow		•	
Unless otherwise stated, there is no limit to the number of includable elements, only the	size of proje	ect memory sets a	lim	

## Front view

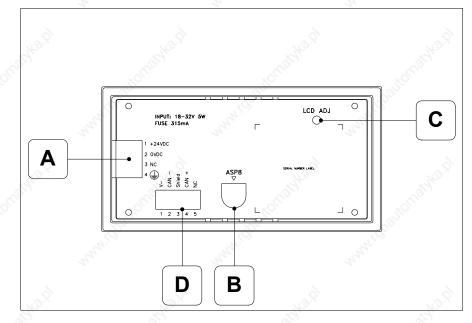


Кеу	and the second s	Function	and the second
1 and C	Display	ALC .	NYNNI CD
Shift + 2	F-keys	, en	
F4	Opens and confirms	setting	a Charles
F1	Page up	ALCONT.	and Space
F2	Page down		
F3	Move cursor between	n fields	Carly
	Quits: setting of data, tory, communication of	, information messages driver	s, sequence direc-
Help	Displays information	messages	
Shift + Help	Displays according to	o context: info-message	e help or page help



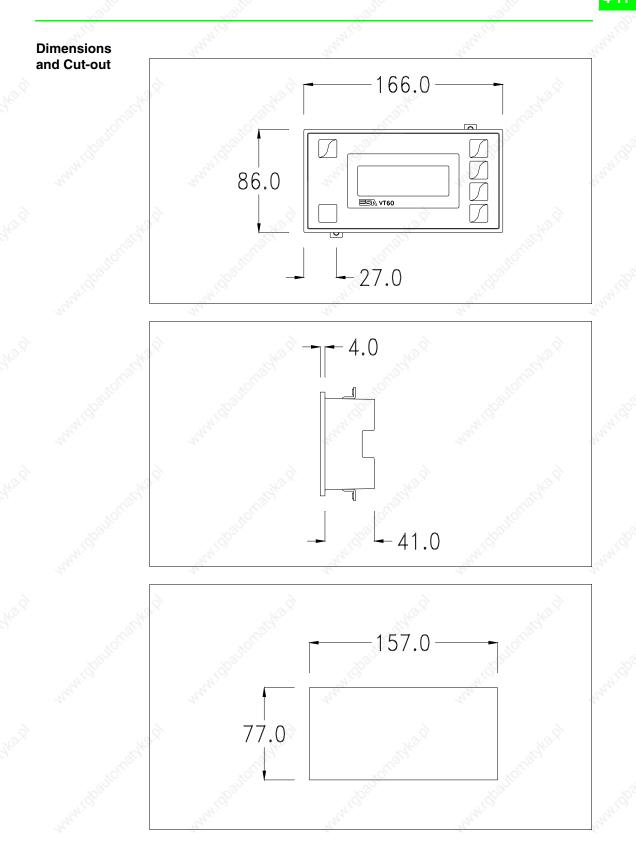
Position	Function	
A	Power supply connector	
В	MSP serial port	L.
С	Trimmer for adjusting display contrast	

# CAN series rear view



0		
Position	Function	
А	Power supply connector	and the second second
В	ASP-8 serial port	
с	Trimmer for adjusting display contrast	10mast
D	CAN serial port	well Spar





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".



Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

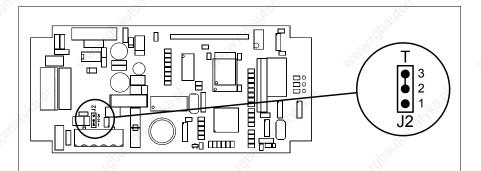
### Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

## Termination of CAN line

This paragraph applies only to the CAN series. The VT in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J2.



• Position the jumper between pins 2 and 3 (line terminated).

- Replace the back cover.
- Reconnect the power supply.

### Transfer PC -> VT

For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

• Free terminal protocol

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

# Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT with the pressed down and wait a moment

#### VT terminal with no Modem function:

• The following mask appears. The VT is now ready to receive (refer to Software Manual for transfer procedure)

## VT60 Service page

#### VT terminal with Modem function:

• The following mask appears

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; press the corresponding function

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

F1=FAST - F2=SLOW

The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), press the corresponding function  $\square$ . The VT is now ready to receive (see Software Manual for the transfer).

Information relating to driver After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press shift twice; you now see

The possible error messages are:

• PROT ERROR

Problem->	Errors have been detected in the data exchange between
	the VT and the Device.
Solution->	Check the cable; there may be disturbance.

• COM BROK

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable. An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROK*

Adjusting the contrast on the display

To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by rotating the trimmer (C) at the back of the VT (see Page 4-9 or Page 4-10); turn it (using a small screwdriver or a trimmer tool) in one direction and, if the display quality worsens, turn it the other way.



# Video terminal VT150W

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Technical characteristics

The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal				
VT150W 00000		~			~
VT150W 000DP	a second and a second	8.		20	X
VT150W A00CN	1915 AN		ő	3	
Display	201 201	3		▼	V
Туре	LCD	501	٠	٠	•
Representational format	Text		•	٠	•
Rows by characters	4 x 20	San	•	٠	•
Display area size [mm]	70,4 x 20,8		•	٠	•
Character matrix in text mode [pixels]	5 x 7	2	•	•	۲
Character size [mm]	2,95 x 4,75	X	•	۲	•
Contract a divisiting and	Trimmer		•	•	•
Contrast adjustment	Automatic compensation with temperature		0		1
Character sets	Ascii, Katakana		•	•	•
Backlighting		10			
Tures and the second	LED	200	٠	٠	•
Туре	CCFL lamp				1
Minimum lamp-life at 25°C [hours]		2			
Keyboard	10 ²	8		0	R
Non-customizable function keys	25		ă	3	
Customizable function keys	5		ð	•	•
Function key LEDs	5		•	•	•
Alphanumeric keys	11	- Si	•	•	•
Operational keys	9	and and a second s	•	•	•
Operational key LEDs	2	69	•	•	•
Diagnostic LEDs					

1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 -	1 ⁴⁴			
Code of terminal	Characteristics of the terminal			
VT150W 00000				
VT150W 000DP	2 A		- 2	ן ו
VT150W A00CN	No. No.	-	4	
Jser memory	Per Court	8	• •	
Project [Bytes]	256K	30	•	•
Data memory [Bytes]		50		
Memory for Windows ® -based fonts [Byte]				
Memory Card for backup	- 4 4			
Memory Card for expansion				
nterfaces	6 6		6	
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA		Re .	•
ASP (Auxiliary serial port)	RS232/RS485	- S		
ASP-15L (Auxiliary serial port)	RS232/RS485	30		
ASP-8 (Auxiliary serial port)	RS232	\$°`	•	
ASP-9 (Auxiliary serial port)	RS232			
PT parallel port	Centronics			
Auxiliary port	Connection for accessory devices		(	•
Accessories	à à		8	
Connectable accessories	See table "Chapter 33"		P	• •
Clock	8°, (10°, 10°, 10°, 10°, 10°, 10°, 10°, 10°,	a de la comercia de l	2	
Clock	HO'	201		
letworks	x X	30-		
and the second se	Profibus-DP		(	
ntegrated	CAN Open (Optoisolated interface)		•	
	Ethernet 10/100Mbit RJ45			
Iniversal Bus Connector	2		0	
Dptional	See table "Chapter 33"		P	•
roprietary networks	87 A.S.	- A	1	
ESA-Net	Network server	201		
100 I I I I I I I I I I I I I I I I I I	Network client	<i>3</i> °	(	• •
Technical data	94 <u>6</u> 974			
Power supply	24Vdc (1832Vdc)			
Power absorbed at 24Vdc	15W			
Protection fuse	Ø5x20mm - 800mA Quick Blow F		0	
Protection level	IP65 (front-end)		PX	
Operating temperature	050°C	de la compañía de la comp	7	
Storage and transportation temperature	-20+60°C	3		
Humidity (non-condensing)	<85%	3		
Veight	700gr			
Dimensions	and and and			
External W x H x D [mm]	148 x 188 x 41			
Cut-out W x H [mm]	123 x 175		2	
Certification				

## Functions

The following table lists in alphabetical order all the functions of the VT in question.

Table 5.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal				
VT150W ****				
Objects/Functions	Quantity			
Alarm field	14.			
Alarm help				
Alarm history buffer		~		
Alarm statistics	24	×.		
Alarms (Total/active simultaneously)	1			
Arc	50			
Automatic operations	32	•		
Backup/Restore	24.7	•		
Bar data				
Bit-wise password	8bits			
Buttons	*13	1		
Circles	1			
Command: Change language	.50	•		
Command: Clear trend buffer	180			
Command: Delete recipe	24.			
Command: Hardcopy				
Command: Load recipe from data memory				
Command: Modify password	13	•		
Command: Next page	A.			
Command: Page help	30			
Command: Password login	18	•		
Command: Password logout	24.	•		
Command: Previous page				
Command: Print alarm history				
Command: Printer form feed	N2	2		
Command: Quit project	and the second se	•		
Command: Report	30			
Command: Restarts reading time-sampled trend	S.			
Command: Run pipeline	24			
Command: Save alarms history and trend buffers in flash				
Command: Save recipe in data memory		~		
Command: Save recipe received from device in buffer	×12	0		
Command: Save recipe received from device in data memory	and the	+		
Command: Send recipe from video buffer to device	- 10	+		
Command: Send recipe to device	100			
Command: Service page	2			
Command. Control page				

Table 5.1: Functions and objects realizable with this VT (Part 2 of 4)

VT150W *****	6
Objects/Functions	Quantity
Command: Show alarms history	S. S.
Command: Show page directory	250
Command: Show project information	8
Command: Show recipe directory	
Command: Show sequence directory	
Command: Shows driver status page	6
Command: Shows page help	No.
Command: Shows page with function: PG	Star.
Command: Stops reading time sampled trend	100
Command: Trend reading saved in device	S.
Command: Zero number of general pages	
Date field	
Day-of-the-week field	6
Dynamic texts: Bit-group-structured dynamic texts	Nº.
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	~350
E-keys	S.
Equations	32
F-keys	
Free terminal	0
Function: Disables key	N.
Function: Go to page	100 C
Function: Internal command	~35
Function: Invert bit value	<u>8</u>
Function: Macro	
Function: None	
Function: Reset bit permanently	0
Function: Reset real-time bit	- S ^{er}
Function: Sequences	5
Function: Sets bit permanently	~32
Function: Sets real-time bit	Š,
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	2
Headers and footers (Total/Number of fields per H-F)	- Nor
Info-messages (Total/active simultaneously)	1024/128
Internal registers	2048bytes
Labels	ST

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project

Table 5.1: Functions and objects realizable with this VT (Part 3 of 4)

Objects/Functions	Quantity
Lines	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 19
Lists of bitmap images	
Lists of texts	S
Local configuration of E-keys	1
Local configuration of F-keys	
Macro field	8 x pages
Macros (Total/Commands x macro)	1024/16
Message field	200
Message help	1024
Multilanguage texts	6 Langs.
Object - Indicator	<u>}</u>
Object - Potentiometer knob	
Object - Selector knob	
Object - Sliding potentiometer	
Object - Sliding selector	600
Page	1024
Page help	1024
Password	10
Pipelines (Number/Tot bytes)	
Print	
Print page (Total/Number of fields per page)	Nº.
Programmable fonts	
Project images	100
Public variables of ESANET network (Number/Total bytes)	128/1024
Recipe field for recipe structure	ch.
Recipes (Number of variables per recipe)	
Rectangles	
Redefinable characters	7
Reports	
Sequences - Random	250
Sequences - Start/stop	64
Static bitmaps	6.
Symbolic field: Bit-group-structured dynamic bitmaps	
Symbolic field: Single-bit-structured dynamic bitmaps	
Symbolic field: Value-structured dynamic bitmaps	X
System messages	and the second s
System variables assigned to recipe structure	100
Time long field	SST.
Time short field	C*

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project

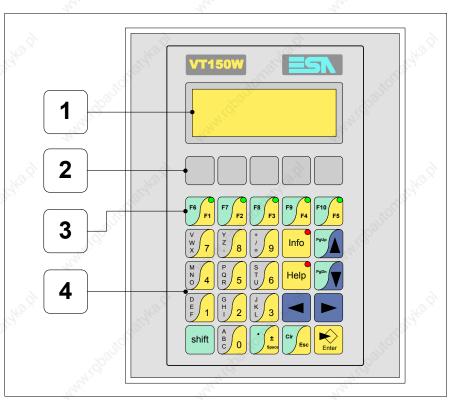
5-7

Table 5.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of	terminal		
VT150W ****	6	~ ~	_
Objects/Function	ns	Quantity	
Timer	S. C.	32	T
Touch Area	J.C.	, S ^C	Ī
Trend buffers	S		T
Trends (Trends x page/Channels x trend	)		
Trends sampled automatically (Memory/	Trends/Readings)		T
Trends sampled on command (Memory/	Frends/Readings)	6	
Value direct command: ADD	No	No.	
Value direct command: AND	all and a second	S	
Value direct command: OR	J.	Sec. 1	
Value direct command: SET	S.		T
Value direct command: SUBTRACT	1.4°		
Value direct command: XOR			T
Variables: Limit values and linear scaling	variables	6	T
Variables: Movement variable (Mobile symbolic field)		Nº.	Ì
Variables: Threshold variables			
Variables: Floating Point numerical varia	bles	– 32 x pages	Ī
Variables: Numerical variables (DEC, HE	X, BIN, BCD)	1	Ī
Variables: String variables (ASCII)		1	Ì
Unless otherwise stated, there is no limit to the number of inc	ludable elements only the size of pro	niect memory sets a	li

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project

# Front view



Key	, and the second s	Function	, al
1	Display	10/13/94	tomatyle
2	F-key customizing label	, where the second s	500
3	F-keys	9 2	8
4	Alphanumeric and operativ	re keys	another.
Enter	Opens and confirms input		Saute
PgUp	Page up When in setting phase, edi	ts dynamic text	
PgDn	Page down When in setting phase, edi	ts dynamic	all
	Moves the cursor between When in setting phase, mo	3	the field
	Moves the cursor between When in setting phase, mo		f the field

. 4 ¹ .07	. and 10"		. an Ch
s ^a	Key	Function	e st
A.	Cir	Quits: setting of data, info-messages, sequence directory, com- munication driver	
balloman	Info	Displays info-messages	20
and C	Help	Displays according to context: information message help or page help	and in the
	Shift + Cir	In setting phase restores the initial value of the field	

automaty

automatyr

automaty

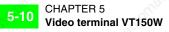
toka.a

25142.P

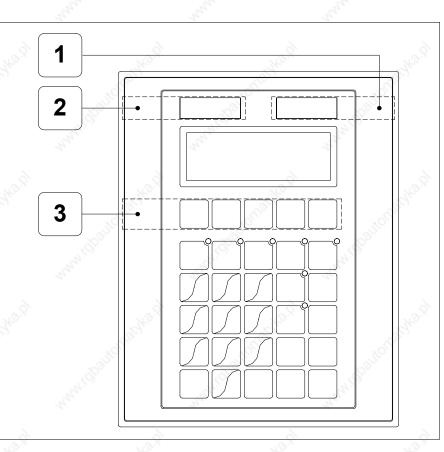
rabautor

25140.P

religitor



# Customizing label



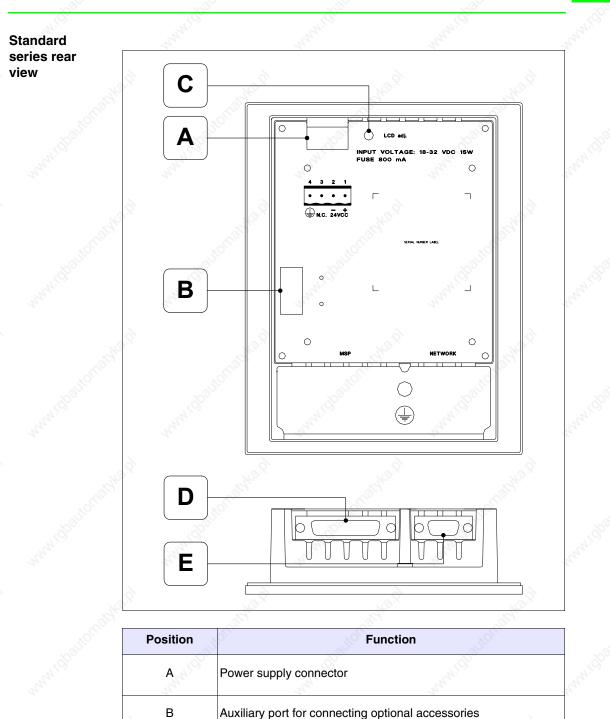
Position	Function - Dimensions	L x H (mm)
1	ESA Logo - 65 x 12	WI BRUC
2	VT Model - 65 x 12	
4 ²⁰ 3	F-key customization F - 116 x 16	-08 ¹⁰ 10.91



The total thickness of the label must not exceed  $125\mu m$  (micrometers). Do not use either stiff materials or glues.



Before starting to insert the customized label, see "Chapter 28 -> Inserting customized labels".



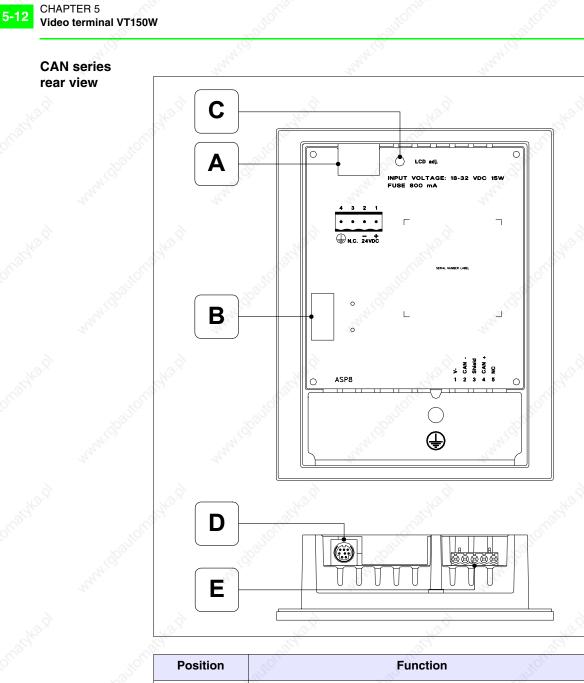
	Sec.		Sec. 1	and the second s
	E	NETWORK seria	al port for network comm	nunication (Option)
8		6	6	6
			abler	
1 C C C C C C C C C C C C C C C C C C C		1 C C C C C C C C C C C C C C C C C C C	S.	<u> </u>

MSP serial port

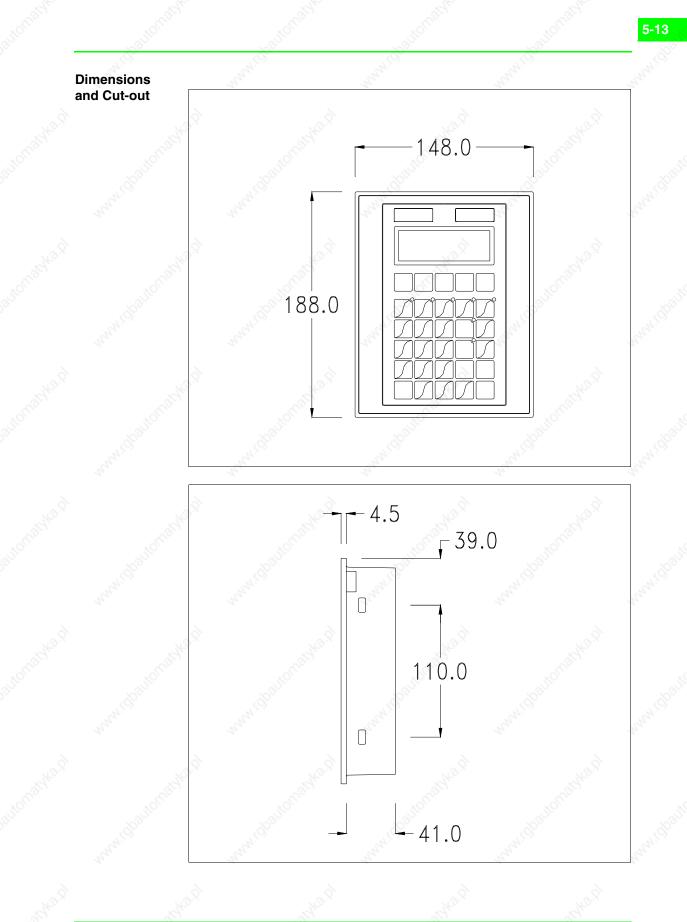
Trimmer for adjusting contrast of the display

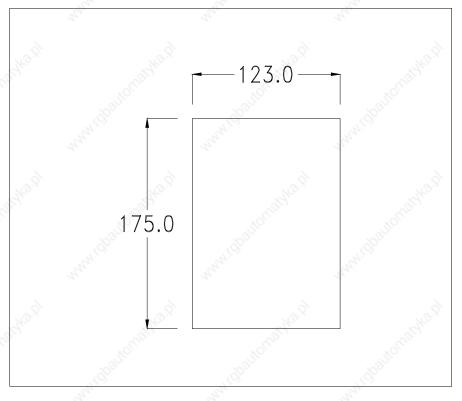
С

D



Position	Function
A	Power supply connector
В	Auxiliary port for connecting optional accessories
С	Trimmer for adjusting contrast of the display
D	ASP-8 serial port
E	CAN serial port
- 0.X	- X.a X.a X.a.





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

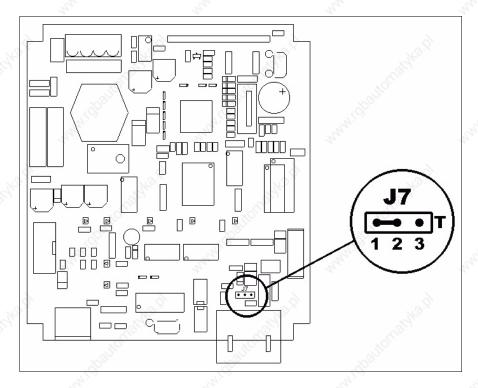
#### Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

#### Termination of CAN line

This paragraph applies only to the CAN series. The VT in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J7.



- Position the jumper between pins 2 and 3 (line terminated).
- Replace the back cover.
- Reconnect the power supply.

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

Preparation for reception

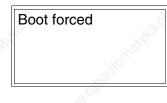
The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT

• Switch on the VT with pressed down or with the VT on press together shift + in either case wait a moment

# VT terminal with no Modem function:

• The following mask appears. The VT is now ready to receive (refer to Software Manual for transfer procedure)



### VT terminal with Modem function:

• The following mask appears

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; press the corresponding function

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear



The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), press the corresponding function  $\square$ . The VT is now ready to receive (see Software Manual for the transfer).

#### Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press twice; you will see

VT150W Serial: xxxxxxxxxxxxxx Driver: xxxxxxxxxxxxx Ver. : xxxxxxxxxxxxx

• Press or to display

Addr. : xxxxxxxxxxxxxxx Error : xxxxxxxxxxxxxxx Up/Down: next page

Possible error messages are:

• PROT ERROR

Problem-> Errors have been detected in the data exchange between the VT and the Device.

Solution-> Check the cable; there may be disturbance.

#### COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

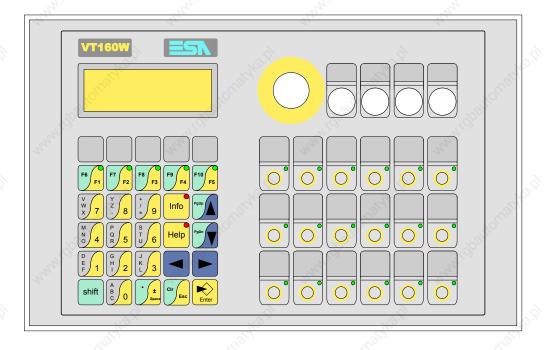
An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

Adjusting the contrast on the display To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by rotating the trimmer (C) at the back of the VT (see Page 5-11 or Page 5-12); turn it (using a small screwdriver or a trimmer tool) in one direction and, if the display quality worsens, turn it the other way.

# Video terminal VT160W

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Technical characteristics	6-2
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Rear view	6-11
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Transfer PC -> VT	6-13
Preparation for reception	6-14
Information relating to driver	6-15
Adjusting the contrast on the display	6-16



Technical characteristics

The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal		
VT160W 00000	ò		
VT160W 000DP		A.	N.C.
Display	-C ²	1974 - 1974 - 1974 - 1974 - 1974 - 1974 - 1974 - 1974 - 1974 - 1974 - 1974 - 1974 - 1974 - 1974 - 1974 - 1974 -	<b>▼</b> '
Туре	LCD	in the second se	•
Representational format	Text	.S.	•
Rows by characters	4 x 20	. 4 ⁴²	•
Display area size [mm]	70,4 x 20,8	12	•
Character matrix in text mode [pixels]	5 x 7		•
Character size [mm]	2,95 x 4,75	2 2	
Contract adjustment	Trimmer	×	
Contrast adjustment	Automatic compensation with temperature		
Character sets	Ascii, Katakana	5°	•
Backlighting			
Tupo	LED	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	•
Туре	CCFL lamp	24	
Minimum lamp-life at 25°C [hours]			
Keyboard	S.	a di	-0
Non-customizable function keys	- X	X	Nrº
Customizable function keys	23	3x ¹⁹ 3x	
Function key LEDs	23	92	•
Alphanumeric keys	11 🖉		•
Operational keys	9		•
Operational key LEDs	2	And And	•
Diagnostic LEDs			
2		~	

			6-3
and the second s	- N.O.	.N. ⁶	- "jõ
Code of terminal	Characteristics of the	terminal	125
VT160W 00000			
VT160W 000DP	<u> </u>	6	
User memory	No.	V V	
Project [Bytes]	256K	<u></u> • •	
Data memory [Bytes]		10	
Memory for Windows ® -based fonts [Byte	] x ²	100	2
Memory Card for backup		3 ¹ .	35
Memory Card for expansion	31 3	C22	520
Interfaces			-
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	• •	-
ASP (Auxiliary serial port)	RS232/RS485	NC (	-
ASP-15L (Auxiliary serial port)	RS232/RS485	18 C	1
ASP-8 (Auxiliary serial port)	RS232	20	1
ASP-9 (Auxiliary serial port)	RS232	100	
LPT parallel port	Centronics	19. CO.	1.5
Auxiliary port	Connection for accessory devices	19 ¹	5350
Accessories			
Connectable accessories	See table "Chapter 33"		-
Clock			-
Clock	A. A.	and the second s	-
Networks			-
	Profibus-DP	•	-
Integrated	CAN Open (Optoisolated interface)		0
	Ethernet 10/100Mbit RJ45	2 ²	2500
Universal Bus Connector		<u></u>	-52
Optional	See table "Chapter 33"		-
Proprietary			-
Tophetary	Network server		_
ESA-Net	Network client		-
Technical data	Network client		-
Power supply	24Vdc (1832Vdc)		
Power absorbed at 24Vdc	15W	A. C.	- Star
Protection fuse	Ø5x20mm - 800mA Quick Blow F	Na -	- 22-
Protection level	IP65 (front-end)		-
Operating temperature	050°C		-
Storage and transportation temperature	-20+60°C	Nº.	-
Humidity (non-condensing)	<85%	and the second sec	-
Weight		<u>S</u> O	-
Dimensions	880gr		- là
	206 x 199 x 42	1941 States	Star 1
External W x H x D [mm]	296 x 188 x 42	C	S.S.
Cut-out W x H [mm]	See diagram		_
Certification			-
Certifications and approvals	CE, cULus, NEMA12	NG.	

# Functions

The following table lists in alphabetical order all the functions of the VT in question.

Table 6.1: Functions and objects realizable with this VT (Part 1 of 4)

VT16OW *****  Objects/Functions  Alarm field  Alarm help  Alarm history buffer  Alarm statistics  Alarms (Total/active simultaneously)  Arc  Automatic operations Backup/Restore  Bar data	43-40 ⁻⁰⁰	Quantity 32	
Alarm field Alarm help Alarm history buffer Alarm statistics Alarms (Total/active simultaneously) Arc Automatic operations Backup/Restore	and and a second s		
Alarm help Alarm history buffer Alarm statistics Alarms (Total/active simultaneously) Arc Automatic operations Backup/Restore	Andrew Contraction of the second seco	32	
Alarm history buffer Alarm statistics Alarms (Total/active simultaneously) Arc Automatic operations Backup/Restore	17 10 10 10 10 10 10 10 10 10 10 10 10 10	32	
Alarm statistics Alarms (Total/active simultaneously) Arc Automatic operations Backup/Restore	17-16-74	32	
Alarms (Total/active simultaneously) Arc Automatic operations Backup/Restore	in and a second	32	
Arc Automatic operations Backup/Restore	in the second	32	
Automatic operations Backup/Restore		32	
Backup/Restore	and a li	32	
	And And		•
	24		1
Bar data			
Bit-wise password		8bits	5
Buttons		12	
Circles		and the	
Command: Change language		30	
Command: Clear trend buffer		So.	
Command: Delete recipe	Jan .		
Command: Hardcopy	20		
Command: Load recipe from data memory			2
Command: Modify password		12	
Command: Next page		200	
Command: Page help		30	
Command: Password login	e e	S	•
Command: Password logout	AN.		
Command: Previous page	19		
Command: Print alarm history			2
Command: Printer form feed		24	2
Command: Quit project		Sec.	
Command: Report		30	
Command: Restarts reading time-sampled trend	e e	S	
Command: Run pipeline	Add		T
Command: Save alarms history and trend buffers in flash	4		T
Command: Save recipe in data memory			2
Command: Save recipe received from device in buffer		24	2
Command: Save recipe received from device in data memor	y	and a second	+
Command: Send recipe from video buffer to device			+
Command: Send recipe to device	2	5°°-	+
Command: Service page	- Nation		+

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) not present with VT160I/O driver

-	<b>•••</b>

Table 6.1: Functions and objects realizable with this VT (Part 2 of 4)

<b>Objects/Functions</b>	Quantity
Command: Show alarms history	500
Command: Show page directory	,S ^C
Command: Show project information	
Command: Show recipe directory	
Command: Show sequence directory	
Command: Shows driver status page	6
Command: Shows page help	Non
Command: Shows page with function: PG	S.
Command: Stops reading time sampled trend	S
Command: Trend reading saved in device	
Command: Zero number of general pages	
Date field	
Day-of-the-week field	6
Dynamic texts: Bit-group-structured dynamic texts	No.
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	18 C
E-keys	-
Equations	32
F-keys	
Free terminal	0
Function: Disables key	Nº.
Function: Go to page	S.C.
Function: Internal command	35
Function: Invert bit value	
Function: Macro	
Function: None	
Function: Reset bit permanently	9
Function: Reset real-time bit	- Stor
Function: Sequences	SC
Function: Sets bit permanently	85
Function: Sets real-time bit	
Function: Value-structure direct command	
Global configuration of E-keys	**
Global configuration of F-keys	2
Headers and footers (Total/Number of fields per H-F)	Stor.
nfo-messages (Total/active simultaneously)	1024/128
nternal registers	2048bytes
Labels	
LEDs assigned to sequence	

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) not present with VT160I/O driver

Table 6.1: Functions and objects realizable with this VT (Part 3 of 4)

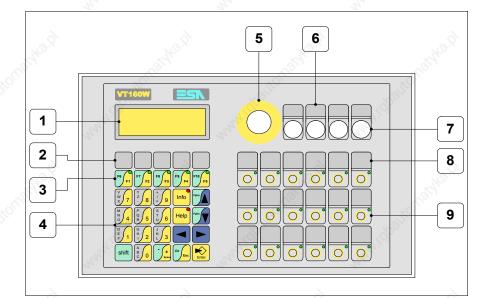
VT160W ***** Objects/Functions	Quantity
Lines	Quantity
Lists of bitmap images	- 10
Lists of texts	No. No.
Local configuration of E-keys	**
Local configuration of F-keys	
Macro field	
Macros (Total/Commands x macro)	1024/16
Macros (Total/Commands x macro)	1024/10
Message help	1024
	6 Langs.
Multilanguage texts	O Lanys.
Object - Indicator	
Object - Potentiometer knob	
Object - Selector knob	
Object - Sliding potentiometer	S.
Object - Sliding selector	1004
Page	1024
Page help	3 1024
Password	10
Pipelines (Number/Tot bytes)	
Print	
Print page (Total/Number of fields per page)	See.
Programmable fonts	. 500
Project images	Salar -
Public variables of ESANET network (Number/Total bytes)	128/1024
Recipe field for recipe structure	
Recipes (Number of variables per recipe)	
Rectangles	
Redefinable characters	7
Reports	. 5
Sequences - Random	64
Sequences - Start/stop	04
Static bitmaps	
Symbolic field: Bit-group-structured dynamic bitmaps	
Symbolic field: Single-bit-structured dynamic bitmaps	~
Symbolic field: Value-structured dynamic bitmaps	See.
System messages	- S
System variables assigned to recipe structure	~3 ⁵
Time long field	Š
Time short field	

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) not present with VT160I/O driver Table 6.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of terminal			
VT160W ****		6	
Objects/Functions		Quantity	
Timer		32	•
Touch Area	à	50	
Trend buffers	S.		
Trends (Trends x page/Channels x trend)	24		
Trends sampled automatically (Memory/Trends/Readings)			
Trends sampled on command (Memory/Trends/Readings)		6	
Value direct command: ADD		Non	•
Value direct command: AND		S. Carl	
Value direct command: OR	à	50	
Value direct command: SET	S		
Value direct command: SUBTRACT	<i>V.</i> ,		
Value direct command: XOR			
Variables: Limit values and linear scaling variables		6	
Variables: Movement variable (Mobile symbolic field)			
Variables: Threshold variables		00	
Variables: Floating Point numerical variables		32 x pages	
Variables: Numerical variables (DEC, HEX, BIN, BCD)	S		
Variables: String variables (ASCII)			
I laless otherwise stated there is no limit to the number of includable elements, only the size	of proje	et memory sets a	limi

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) not present with VT160I/O driver

# Front view



NO.X	NO ^N	NOX	NO.X
Key	anals.	Function	S. Cart
1	Display	RUTE	AL GRANCE
2	F-key customizing label		
3 Star	F-keys	1013H2.0	AND R
4	Alphanumeric and operati	ive keys	
5	22mm diameter pre-cut fo	or mounting emergence	cy stop button
6	Customizing label for com	nmand and/or signal e	lements
7	16mm diameter pre-cuts f elements	for mounting comman	d and/or signal
8	E-key customizing label	4 ^{ch}	4 ^{1.0}
9	E-keys	Le ^Q	e.g
Enter	Opens and confirms input	utomats"	automaty.
PgUp	Page up When in setting phase, ec	dits dynamic text	41.0 ¹⁰

	Key	Function	625
	PgDn	Page down When in setting phase, edits dynamic	-
nautomats		Moves the cursor between settable fields When in setting phase, moves cursor to the left of the field	
AN CON		Moves the cursor between settable fields When in setting phase, moves cursor to the right of the field	and the
100	Cir	Quits: setting of data, info-messages, sequence directory, com- munication driver	
autornator.	Info	Displays info-messages	
N. ISO'S	Help	Displays according to context: information message help or page help	and
	Shift + Cr	In setting phase restores the initial value of the field	

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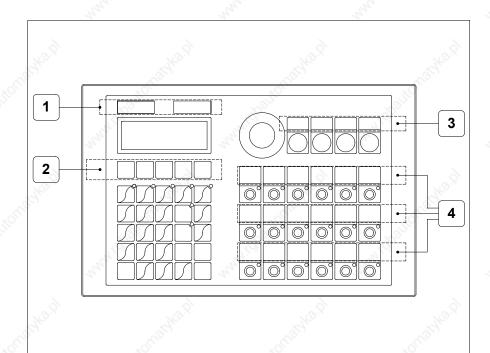
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# Customizing label



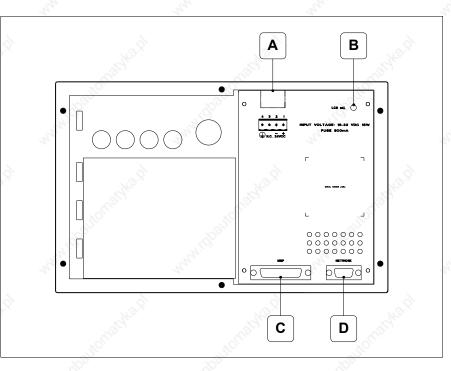
Position	Function - Dimensions L x H (mm)
1	ESA Logo, VT Model - 101 x 13
2	F-key customization F - 118 x 18
3	Customizing label for command and/or signal elements - 112 x 8
4	F-key customization E - 149 x 16

The total thickness of the label must not exceed  $125 \mu m$  (micrometers). Do not use either stiff materials or glues.

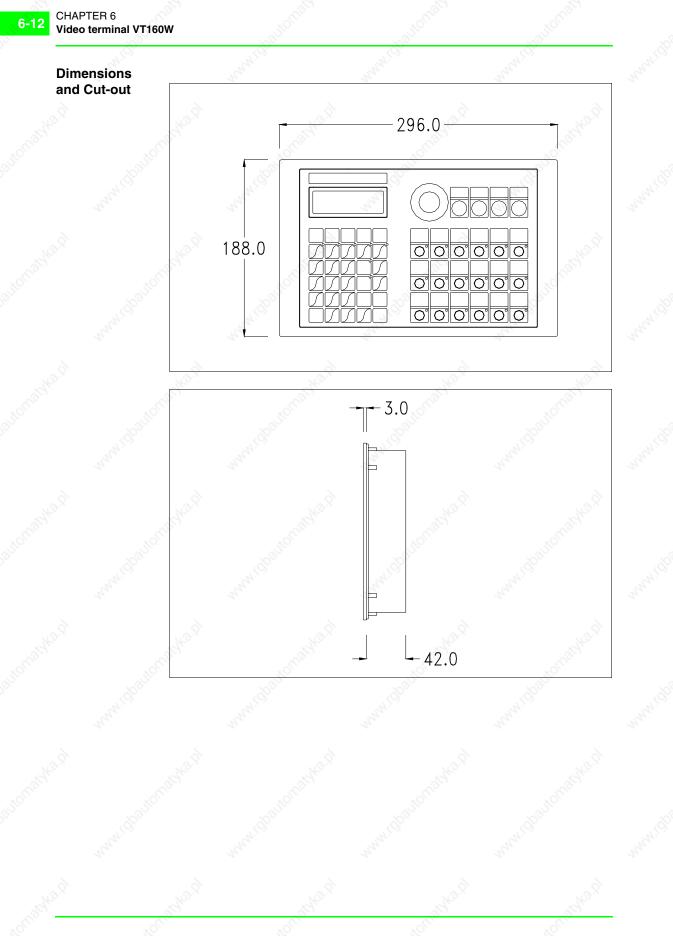


Before starting to insert the customized label, see "Chapter 28 -> Inserting customized labels".

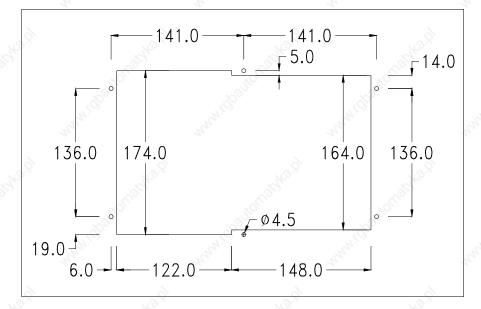
**Rear view** 



Position	Function
A	Power supply connector
В	Trimmer for adjusting contrast of the display
C	MSP serial port
D	NETWORK serial port for network communication (Optional)



405.1200.037.2 - Rel.: 2.20 of 26/03/2007



To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

#### Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

#### Transfer PC -> VT

For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is, it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

Preparation for<br/>receptionThe program VTWIN (see Software Manual) must be used for the transfer,<br/>but the terminal must be set up to receive. This means carrying out the fol-<br/>lowing steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT with respectively pressed down or with the VT on press together shift + respectively; in either case wait a moment

### VT terminal with no Modem function:

• The following mask appears. The VT is now ready to receive (refer to Software Manual for transfer procedure)

# VT terminal with Modem function:

• The following mask appears



• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; press the corresponding function

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear



#### Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press shift twice; you will see

VT160W Serial: xxxxxxxxxxxxxxx Driver: xxxxxxxxxxxxxx Ver. : xxxxxxxxxxxxxx

• Press or to display

Addr.: xxxxxxxxxxxxxx Error: xxxxxxxxxxxxxxx Up/Down: next page

Possible error messages are:

#### • PR ERROR

- Problem-> Errors have been detected in the data exchange between the VT and the Device.Solution-> Check the cable; there may be disturbance.
- COM BROKEN

Problem->Communication between VT and Device interrupted.Solution->Check the serial connection cable.

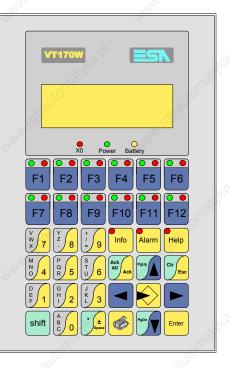
An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

Adjusting the contrast on the display To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by rotating the trimmer (C) at the back of the VT (see Page 6-11); turn it (using a small screwdriver or a trimmer tool) in one direction and, if the display quality worsens, turn it the other way.

# Video terminal VT170W

Contents	Page
Technical characteristics	7-2
Functions	7-4
Front view	7-8
Customizing label	7-10
Rear view	7-11
Dimensions and Cut-out	7-13
Accessories	7-14
Transfer PC -> VT	7-14
Preparation for reception	7-15
Information relating to driver	7-16
Adjusting the contrast on the display	7-17



**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristic	cs of the terminal	
VT170W A0000			_
Display			
Туре	LCD	200	•
Representational format	Text	S. Market S	•
Rows by characters	4 x 20	55	•
Display area size [mm]	70,4 x 20,8		•
Character matrix in text mode [pixels]	5 x 7	8	
Character size [mm]	2,95 x 4,75	Le Xe	•
Contract a divertment	Trimmer		•
Contrast adjustment	Automatic compensation with	n temperature	T
Character sets	Ascii, Katakana	SP	•
Backlighting	and the second se	1. S	t
Tuno	LED	24	•
Туре	CCFL lamp		
Minimum lamp-life at 25°C [hours]	>>	~	
Keyboard	NO.	1 ² 12	
Non-customizable function keys		S. S.	
Customizable function keys	12	70,	•
Function key LEDs	24	Sec.	•
Alphanumeric keys	11		•
Operational keys	13	1. 18 T	•
Operational key LEDs	3	-12	•
Diagnostic LEDs	3		

Code of terminal	Characteristics of the terminal	
VT170W A0000		
User memory		
Project [Bytes]	320K	•
Data memory [Bytes]	32K (With back-up battery)	•
Memory for Windows ® -based fonts [Byte]		
Memory Card for backup	300 300	
Memory Card for expansion		
Interfaces		
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	•
ASP (Auxiliary serial port)	RS232/RS485	
ASP-15L (Auxiliary serial port)	RS232/RS485	
ASP-8 (Auxiliary serial port)	RS232	
ASP-9 (Auxiliary serial port)	RS232	•
LPT parallel port	Centronics	
Auxiliary port	Connection for accessory devices	
Accessories	A ^{de} A ^{de}	
Connectable accessories	See table "Chapter 33"	•
Clock		
Clock	Hardware (With back-up battery)	•
Networks		
20. 20.	Profibus-DP	
Integrated	CAN Open (Optoisolated interface)	
	Ethernet 10/100Mbit RJ45	
Universal Bus Connector	22 22	
Optional	See table "Chapter 33"	•
Proprietary networks		
ESA-Net	Network server	•
ESA-Nel	Network client	•
Technical data	1 ₀₁	1
Power supply	24Vdc (1832Vdc)	
Power absorbed at 24Vdc	9W	
Protection fuse	Ø5x20mm - 500mA Quick Blow F	
Protection level	IP65 (front-end)	
Operating temperature	050°C	
Storage and transportation temperature	-20+60°C	
Humidity (non-condensing)	<85%	
Weight	900gr	
Dimensions		
External W x H x D [mm]	126 x 196 x 60	
Cut-out W x H [mm]	107 x 178	
Certification		
Certifications and approvals	CE, cULus, NEMA12	

inter?

# Functions

The following table lists in alphabetical order all the functions of the VT in question.

Table 7.1: Functions and objects realizable with this VT (Part 1 of 4)

VT17OW **** Objects/Functions Alarm field Alarm help Alarm history buffer Alarm statistics Alarms (Total/active simultaneously) Arc	and the second	Quantity 1024 256	
Alarm field Alarm help Alarm history buffer Alarm statistics Alarms (Total/active simultaneously)	and the second	1024	
Alarm help Alarm history buffer Alarm statistics Alarms (Total/active simultaneously)		-	
Alarm history buffer Alarm statistics Alarms (Total/active simultaneously)		-	+
Alarm statistics Alarms (Total/active simultaneously)		256	•
Alarms (Total/active simultaneously)		м3	
			5
Arc		1024/128	1
		30	
Automatic operations		50	
Backup/Restore	and a		
Bar data	2		
Bit-wise password		8bits	2
Buttons		NB	þ
Circles		S.	
Command: Change language		30	
Command: Clear trend buffer	J.S.		
Command: Delete recipe	Jan .		
Command: Hardcopy	54 - C		
Command: Load recipe from data memory			1
Command: Modify password		NB	5
Command: Next page		S.	
Command: Page help		30	
Command: Password login	.S	50	
Command: Password logout	day.		
Command: Previous page	(°		
Command: Print alarm history			
Command: Printer form feed		×2	2
Command: Quit project		S.	
Command: Report		.3 ⁰	
Command: Restarts reading time-sampled trend		50	
Command: Run pipeline	and and		
Command: Save alarms history and trend buffers in flash			
Command: Save recipe in data memory			
Command: Save recipe received from device in buffer		×2	
Command: Save recipe received from device in data memory		S.	$\dagger$
Command: Send recipe from video buffer to device		3 ⁰	
Command: Send recipe to device	3	50	1

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project

Code of terminal		
VT170W *****		_
Objects/Functions	Quantity	▼
Command: Show alarms history	S.C.	
Command: Show page directory	57	
Command: Show project information		•
Command: Show recipe directory		•
Command: Show sequence directory		•
Command: Shows driver status page	6	
Command: Shows page help	Nº.	
Command: Shows page with function: PG	allan.	
Command: Stops reading time sampled trend	50	
Command: Trend reading saved in device		
Command: Zero number of general pages		•
Date field		•
Day-of-the-week field	6	•
Dynamic texts: Bit-group-structured dynamic texts	No.	•
Dynamic texts: Single-bit dynamic texts	1024*	•
Dynamic texts: Value-structured dynamic texts	\$°°.	•
E-keys		
Equations		+
F-keys		•
Free terminal	6	
Function: Disables key	No.	•
Function: Go to page	S.C.	
Function: Internal command	50	•
Function: Invert bit value		•
Function: Macro		•
Function: None		•
Function: Reset bit permanently	6	•
Function: Reset real-time bit	No.	•
Function: Sequences	S.	•
Function: Sets bit permanently	50.	•
Function: Sets real-time bit		•
Function: Value-structure direct command		•
Global configuration of E-keys		-
Global configuration of F-keys	6	•
Headers and footers (Total/Number of fields per H-F)	128/128	•
Info-messages (Total/active simultaneously)	1024/128	•
Internal registers	0	+
Labels		•
LEDs assigned to sequence		•
		1 -

Table 7.1: Functions and objects realizable with this VT (Part 2 of 4)

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project Table 7.1: Functions and objects realizable with this VT (Part 3 of 4)

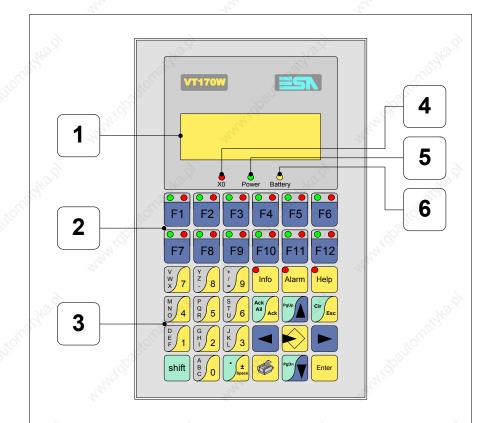
VT170W ****		ŝ
Objects/Functions	Quantity	
Lines	S. S. S.	
Lists of bitmap images	- BEC	
Lists of texts	387	
Local configuration of E-keys	2.	
Local configuration of F-keys		
Macro field		2
Macros (Total/Commands x macro)	1024/16	0
Message field	Ser	
Message help	1024	
Multilanguage texts	8 Langs.	
Object - Indicator	2	+
Object - Potentiometer knob		+
Object - Selector knob		
Object - Sliding potentiometer	N.	
Object - Sliding selector	100 M	
Page	1024	
Page help	1024	
Password	10	
Pipelines (Number/Tot bytes)		
Print		2
Print page (Total/Number of fields per page)	1024/64	2
Programmable fonts		
Project images	-35 ⁰	
Public variables of ESANET network (Number/Total bytes)	128/1024	
Recipe field for recipe structure	<u></u>	
Recipes (Number of variables per recipe)	1024/256	
Rectangles	102 1/200	2
Redefinable characters	7	
Reports	128	+
Sequences - Random	120	
Sequences - Start/stop	128	
Static bitmaps	24.5 ×	
Symbolic field: Bit-group-structured dynamic bitmaps		
		-
Symbolic field: Single-bit-structured dynamic bitmaps	20	
Symbolic field: Value-structured dynamic bitmaps	and and	
System messages	30	
System variables assigned to recipe structure	Sor	
Time long field	14	1

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project

Table 7.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of terminal	
VT170W ****	
Objects/Functions	Quantity
Timer	-5 ⁶
Touch Area	150
Trend buffers	
Trends (Trends x page/Channels x trend)	
Trends sampled automatically (Memory/Trends/Readings)	
Trends sampled on command (Memory/Trends/Readings)	6
Value direct command: ADD	N
Value direct command: AND	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -
Value direct command: OR	15°
Value direct command: SET	5
Value direct command: SUBTRACT	
Value direct command: XOR	
Variables: Limit values and linear scaling variables	6
Variables: Movement variable (Mobile symbolic field)	Nº.
Variables: Threshold variables	16 x 20000
Variables: Floating Point numerical variables	16 x pages
Variables: Numerical variables (DEC, HEX, BIN, BCD)	
Variables: String variables (ASCII)	
Unless otherwise stated, there is no limit to the number of includable elements, only the size of n	rojoct momony cote a lin

### Front view



200	200	, all	20
Key	Classific .	Function	South State
1	Display	. cjosuto.	. chanto.
2	F-keys	and and	2°.
3 North	Alphanumeric and c	perative keys	134°.?
4	X0 LED. Blinks whe	n communication error is d	etected
5	Power LED. Lights	up when power in ON	4 ¹⁰
6 X0	Battery LED. Lights	up when the battery has n	early run out
	Start input	automats	- altornal
Enter	Confirms setting of	data	N.C.

	144.10T	W.O.	AND CONTRACT OF CONTRACT.	See.
	Key	Function	2	-65
340	PgUp	Page up When in setting phase, edits dynamic tex	t _{Akan} h	
automat."	PgDn	Page down When in setting phase, edits dynamic	walton for	
		Moves the cursor between settable fields When in setting phase, moves cursor to t		A. C. C.
, and		Moves the cursor between settable fields When in setting phase, moves cursor to t	he right of the field	
Moreadyr	Cir	Quits: setting of data, info-messages, sec munication driver	uence directory, com-	
	Info	Displays info-messages	and Bo	. and
ò	Alarm	Displays ISA alarms	ò	- C.
. or able	Help	Displays according to context: information help or page help	n message help, alarm	
90°	Ack All Ack	Acknowledgment of ISA alarms on displa	y Charles	
		Print the entire display area	2° 	42
and a	shift + Cir	In setting phase restores the initial value	of the field	
	shift + Ack	Acknowledges all ISA alarms	Charles.	
	den -		Le.	- day

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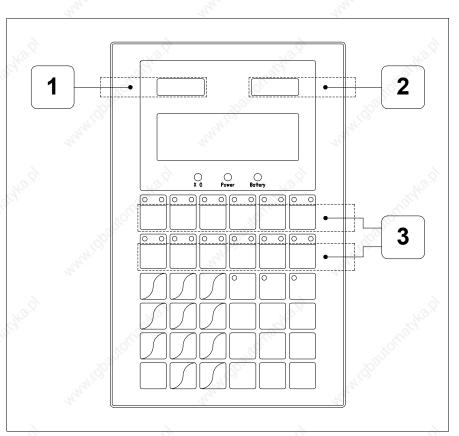
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www.c

### Customizing label



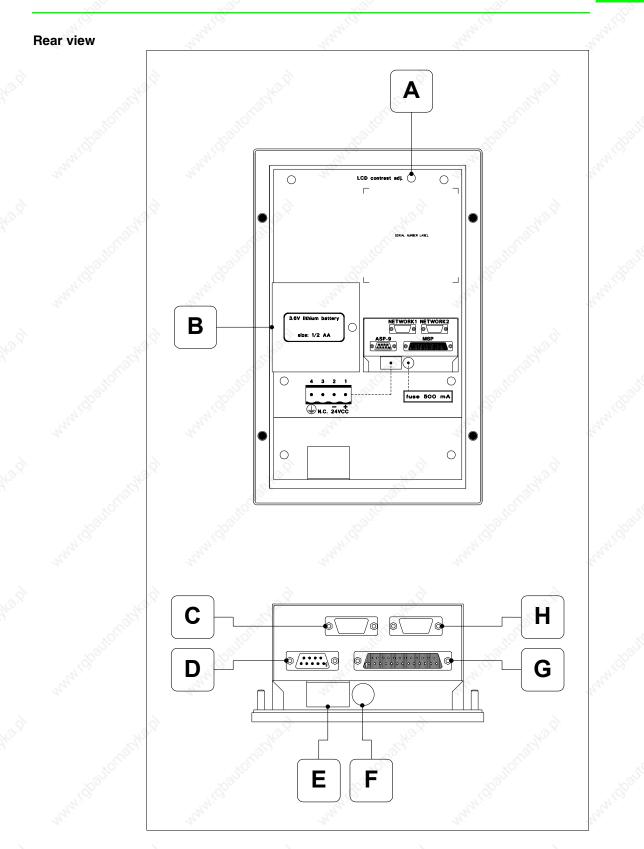
Position	Function - Dimensio	ons L x H (mm)	Carls.
1	ESA Logo - 57 x 10	N.S	8000
2	VT Model - 57 x 10	44	
3	F-key customization F - 116 x 14	2	astro. P

**X** 

The total thickness of the label must not exceed 125µm (micrometers). Do not use either stiff materials or glues.



Before starting to insert the customized label, see "Chapter 28 -> Inserting customized labels".



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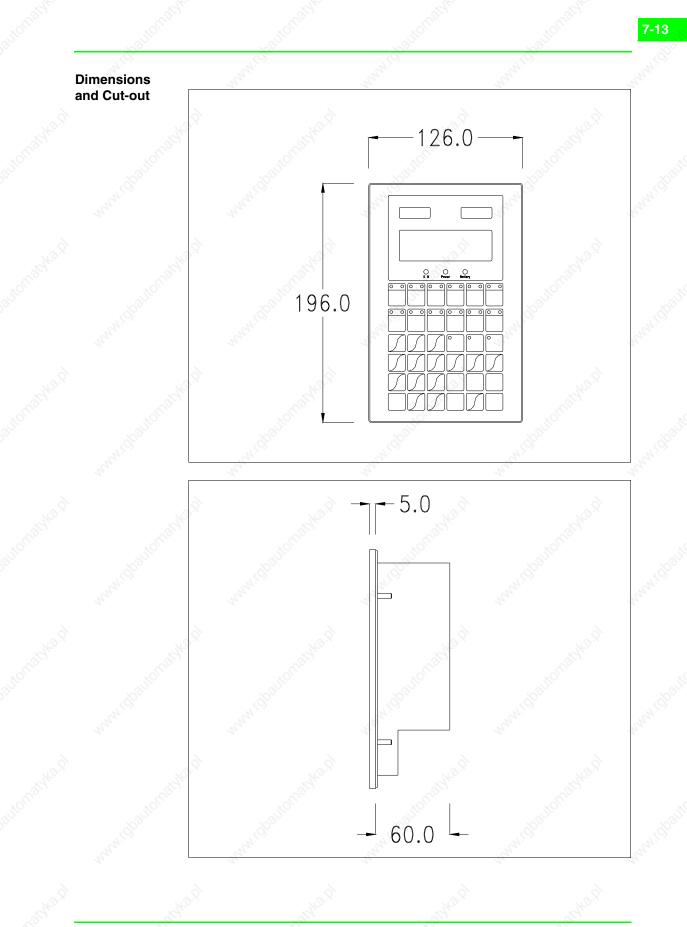
	Position	Function
- Card	A	Trimmer for adjusting display contrast
MIGDOULC	В	Battery compartment
Ar Alle	C and	NETWORK1 serial port for network communication (Optional)
3	D	ASP-9 serial port for communicating with PC or other devices
douton	E	Power supply connector
avaran'i -	Far	Fuse holder
	G G	MSP serial port for communicating with PLC/PC
-autorna.	Н	NETWORK2 serial port for network communication (Optional)

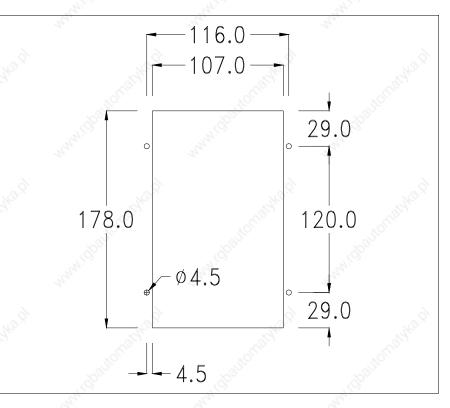
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robauto

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rebautor





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

# Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT with pressed down or with the VT on press together shift + Enter; in either case wait a moment

### VT terminal with no Modem function:

• The following mask appears.Press the function D corresponding to the port to be used. The VT is now ready to receive (refer to Software Manual for transfer procedure)

Boot sequence forced F1=ASP down/up load F2=MSP down/up load ENTER=run project

### VT terminal with Modem function:

• Proceed from the preceding mask; the following mask appears

Boot sequence forced F1=MODEM dn/up load F2=PC dn/up load ENTER= run project

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; press the corresponding function

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

Boot sequence forced F1=SLOW dn/up load F2=FAST dn/up load The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), press the corresponding function  $\square$ . The VT is now ready to receive (see Software Manual for the transfer).

#### Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press shift twice; you will see

VT170W Serial: xxxxxxxxxxxxxx Driver: xxxxxxxxxxxxx Ver. : xxxxxxxxxxxxx

• Press or will see

Addr. : xxxxxxxxxxxxxxx Error : xxxxxxxxxxxxxxx Up/Down = next page Enter = set clock

While displaying this page, press to access the clock setting page

For the clock to be used properly, a special battery has to be inserted in the terminal (see "Chapter 33 -> Video terminal accessories").

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Time Date hh:mm:ss dd/mm/yy Lf/Rt/Up/Dw = change Esc=Prj Enter=Memo

Lf is the equivalent of , Rt is the equivalent of , Up of , Dw of ; using you quit the display, while with the settings are confirmed and you return to the project page.

Possible error messages that can be displayed on the appropriate line are:

#### • PR ERR

Problem->	Errors have been detected in the data exchange between
	the VT and the Device.
Solution->	Check the cable; there may be disturbance.

### COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

By pressing you pass back to the project page.

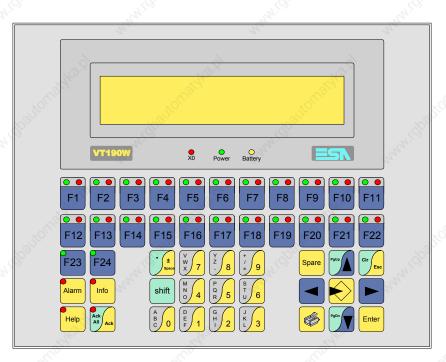
### Adjusting the contrast on the display

To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by rotating the trimmer (C) at the back of the VT (see Page 7-11); turn it (using a small screwdriver or a trimmer tool) in one direction and, if the display quality worsens, turn it the other way.



# Video terminal VT190W

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## Technical characteristics

The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal			
VT190W A0000				
VT190W AP000		87 - 38	9	
Display	770 x 770 x	xoff.	V	
Туре	LCD	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	•	
Representational format	Text		•	
Rows by characters	4 x 40	24	•	
Display area size [mm]	140,5 x 23,2		•	
Character matrix in text mode [pixels]	5 x 7	2	•	
Character size [mm]	2,8 x 4,9	NO.X	۲	
Construct o diverture out	Software	S	•	
Contrast adjustment	Automatic compensation with	n temperature		
Character sets	Ascii, Katakana	~3 ¹	•	
Backlighting	S.	S.S.		
Turna	LED	And and a second	•	
Туре	CCFL lamp	1		
Minimum lamp-life at 25°C [hours]	>	2		
Keyboard	192	1. B.S.	50	
Non-customizable function keys	2	S 3	•	
Customizable function keys	22	70,	•	
Function key LEDs	46	~3 ⁵	•	
Alphanumeric keys	11	. S ^o	•	
Operational keys	14	, ANN	•	
Operational key LEDs	4	24	•	
Diagnostic LEDs	3		•	

Code of terminal	Characteristics of the	terminal	
VT190W A0000			
VT190W AP000			Ò.
User memory	Nº Nº	×	<b>▼</b> ▼
Project [Bytes]	256K	S. S.	• •
Data memory [Bytes]	105K (With back-up battery)	.30	• •
Memory for Windows ® -based fonts [Byte]			
Memory Card for backup		AN.	
Memory Card for expansion	- 44 44	22	
Interfaces			
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA		•
ASP (Auxiliary serial port)	RS232/RS485	N	0
ASP-15L (Auxiliary serial port)	RS232/RS485	S.	
ASP-8 (Auxiliary serial port)	RS232	10	
ASP-9 (Auxiliary serial port)	RS232		• •
LPT parallel port	Centronics	N.S.	•
Auxiliary port	Connection for accessory devices	24	
Accessories			
Connectable accessories	See table "Chapter 33"		
Clock	NON NON	×	
Clock	Hardware (With back-up battery)	S.	• •
Networks	10x	20	
10x 10x	Profibus-DP	1000	
Integrated	CAN Open (Optoisolated interface)	. A. P.	
	Ethernet 10/100Mbit RJ45	2	
Universal Bus Connector			
Optional	See table "Chapter 33"		
Proprietary networks	NON NON	K	
ESA-Net	Network server	S.	• •
=SA-Net	Network client	S	• •
Technical data	100 m	Sec. 1	
Power supply	24Vdc (1832Vdc)	15	
Power absorbed at 24Vdc	9W	22	
Protection fuse	Ø5x20mm - 800mA Quick Blow F		
Protection level	IP65 (front-end)		2
Operating temperature	050°C	5.0	88
Storage and transportation temperature	-20+60°C	20	
Humidity (non-condensing)	<85%	.0	
Weight	1500gr	~35	
Dimensions	L CO	C)	
External W x H x D [mm]	252 x 196 x 60	1/2	
Cut-out W x H [mm]	232 x 178		
Certification			1
Certifications and approvals	CE, cULus, NEMA12		24

### **Functions**

The following table lists in alphabetical order all the functions of the VT in question.

Table 8.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal			
VT190W *****		3 ⁰	
Objects/Functions	S	Quantity	
Alarm field	2.5h.		
Alarm help		1024	
Alarm history buffer		256	1
Alarm statistics			
Alarms (Total/active simultaneously)		024/128	
Arc		30	
Automatic operations	S	o.	
Backup/Restore	S.S.S.		
Bar data			
Bit-wise password		8bits	
Buttons		NE	
Circles		S.	
Command: Change language		30	
Command: Clear trend buffer	S.		
Command: Delete recipe	Ser.		
Command: Hardcopy			
Command: Load recipe from data memory			2
Command: Modify password		N2	
Command: Next page		200	
Command: Page help		30	
Command: Password login	.8	0	
Command: Password logout	Ser.		
Command: Previous page			
Command: Print alarm history			
Command: Printer form feed		N ²	
Command: Quit project		200	
Command: Report		.3 ⁰	
Command: Restarts reading time-sampled trend	.8	0	
Command: Run pipeline	Lan .		t
Command: Save alarms history and trend buffers in flash			t
Command: Save recipe in data memory			
Command: Save recipe received from device in buffer		. Ke	T
Command: Save recipe received from device in data memory		a the second sec	t
Command: Send recipe from video buffer to device		30	t
Command: Send recipe to device	.8	e .	+
Command: Service page	22th		╈

•	
	1
<u> </u>	· · · ·

Table 8.1: Functions and objects realizable with this VT (Part 2 of 4)

Objects/Functions	Quantity
Command: Show alarms history	CO.
Command: Show page directory	350
Command: Show project information	20
Command: Show recipe directory	
Command: Show sequence directory	
Command: Shows driver status page	8
Command: Shows page help	No
Command: Shows page with function: PG	1
Command: Stops reading time sampled trend	3 ⁵⁰
Command: Trend reading saved in device	8
Command: Zero number of general pages	
Date field	
Day-of-the-week field	6
Dynamic texts: Bit-group-structured dynamic texts	Nº
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	-3 ⁵⁰
E-keys	35.
Equations	
F-keys	
Free terminal	6
Function: Disables key	Nº.
Function: Go to page	S. C.
Function: Internal command	
Function: Invert bit value	5
Function: Macro	
Function: None	
Function: Reset bit permanently	6
Function: Reset real-time bit	Nº 1
Function: Sequences	Street
Function: Sets bit permanently	_3 ⁵⁷
Function: Sets real-time bit	S.
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	, Q
Headers and footers (Total/Number of fields per H-F)	128/128
Info-messages (Total/active simultaneously)	1024/128
Internal registers	NOT THE
Labels	9 ⁷
LEDs assigned to sequence	

Table 8.1: Functions and objects realizable with this VT (Part 3 of 4)

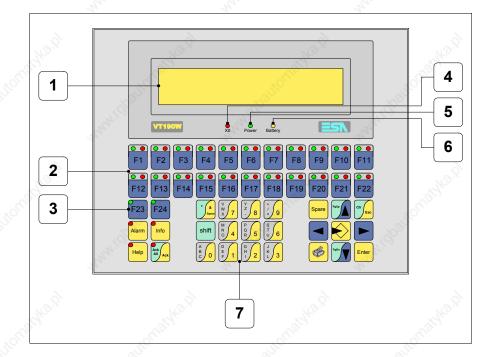
Objects/Functions	Quantity	1
ines	600	
Lists of bitmap images	150	
ists of texts	S	
_ocal configuration of E-keys		
_ocal configuration of F-keys		
Macro field		2
Macros (Total/Commands x macro)	1024/16	0
Message field	500	
Message help	1024	
Multilanguage texts	8 Langs.	
Dbject - Indicator		-
Dbject - Potentiometer knob		+
Dbject - Selector knob		2
Dbject - Sliding potentiometer	N.	2
Dbject - Sliding selector	600	-
Page	1024	
Page help	1024	-
Password	10	
Pipelines (Number/Tot bytes)	64/512	
Print 6		2
Print page (Total/Number of fields per page)	1024/128	
Programmable fonts	- C	-
Project images		-
Public variables of ESANET network (Number/Total bytes)	128/1024	
Recipe field for recipe structure		-
Recipes (Number of variables per recipe)	1024/256	
Rectangles		e
Redefinable characters	7	
Reports	128	-
Sequences - Random		+
Sequences - Start/stop	128	
Static bitmaps		-
Symbolic field: Bit-group-structured dynamic bitmaps		+
Symbolic field: Single-bit-structured dynamic bitmaps		t
Symbolic field: Value-structured dynamic bitmaps	and the second s	
System messages	- allar	
System variables assigned to recipe structure	135	+
Fime long field	\$	

8-7

Table 8.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of terminal			
VT190W ****		6	_
Objects/Functions		Quantity	1
Timer		San	
Touch Area	ó	50	T
Trend buffers	.8		
Trends (Trends x page/Channels x trend)	2 ²		
Trends sampled automatically (Memory/Trends/Readings)			
Trends sampled on command (Memory/Trends/Readings)		6	1
Value direct command: ADD		No.	I
Value direct command: AND		S. Carl	T
Value direct command: OR	.0	50	T
Value direct command: SET	.0		
Value direct command: SUBTRACT	les.		T
Value direct command: XOR			T
Variables: Limit values and linear scaling variables		6	T
Variables: Movement variable (Mobile symbolic field)		No.	
Variables: Threshold variables		00	
Variables: Floating Point numerical variables		32 x pages	-
Variables: Numerical variables (DEC, HEX, BIN, BCD)	J.C.	1	-
Variables: String variables (ASCII)	les.	1	-
Unless otherwise stated, there is no limit to the number of includable elements, only the s	ize of proi	I ect memory sets a	li

### Front view



Key	Function	8.
1	Display	
2 Alax 2	F-keys with two LEDs	Capto.S
3	F-keys with one LED	pauto
4	X0 LED. Blinks when communication error is dete	ected
4 ²⁰ 5	Power LED. Lights up when power in ON	ad to a
6	Battery LED. Lights up when the battery has near	ly run out
7	Alphanumeric keys	0
	Starts input	He.g.
Enter	Confirms setting of data	automati
PgUp	Page up When in setting phase, edits dynamic text	8.

Key	Function
PgDn	Page down When in setting phase, edits dynamic text
	Moves the cursor between settable fields When in setting phase, moves cursor to the left of the field
	Moves the cursor between settable fields When in setting phase, moves cursor to the right of the field
Cir	Quits: setting of data, info-messages, sequence directory, com- munication driver
Info	Displays info-messages
Alarm	Displays ISA alarms
Help	Displays according to context: information message help, alarm help or page help
Ack	Acknowledgment of ISA alarms on display
	Print the entire display area
Spare	No predefined function
shift +	In setting phase restores the initial value of the field
shift +	Acknowledges all ISA alarms
54 ⁵⁴	and a standard stan

toka.a

10140.A

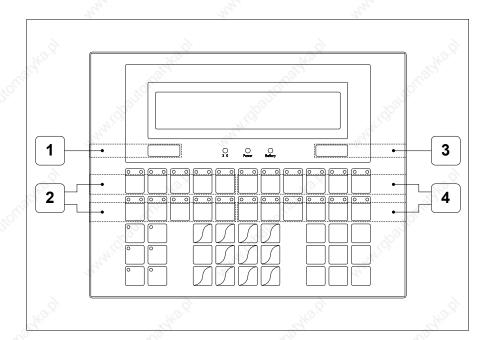
rdbautor

20140.P

rabauton

WWW.C

### Customizing label

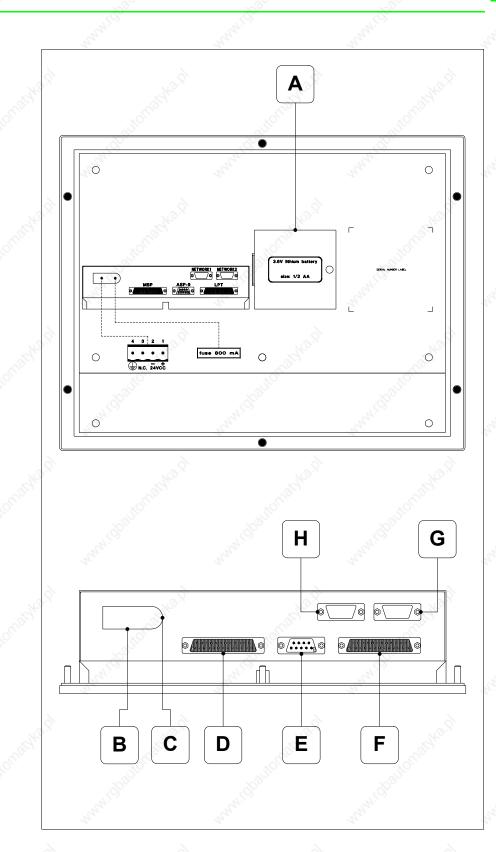


Position	Function - Dimensions L x H (mm)
1 annous	ESA Logo - 73 x 10
2	F-key customization F1 F5, F12 F16 - 116 x 15
3	VT Model - 73 x 10
4	F-key customization F6 F11, F17 F22 - 134 x 15

The total thickness of the label must not exceed 125 $\mu$ m (micrometers). Do not use either stiff materials or glues.

Before starting to insert the customized label, see "Chapter 28 -> Inserting customized labels".





automatyka.pl

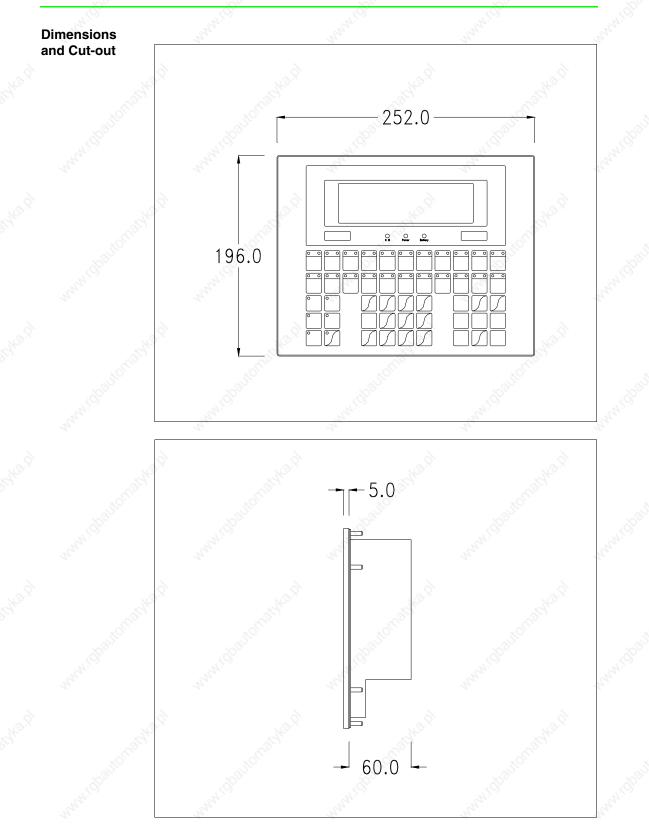
	Position	Function
C. S.	A	Battery compartment
Michaute	В	Power supply connector
Server -	C and	Fuse holder
	p D	MSP serial port for communicating with PLC/PC
dpauton	E	ASP-9 serial port for communicating with PC or other devices
Marah .	Farth	LPT port for connecting printer (Optional)
1	G G	NETWORK2 serial port for network communication (Optional)
Dautorna	Н	NETWORK1 serial port for network communication (Optional)

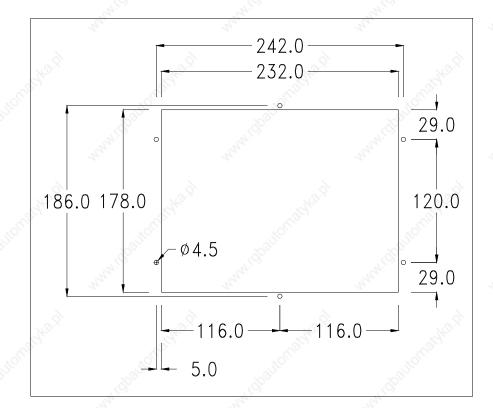
atoka A

robauto

2542.Q

rebautor





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

## Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT with pressed down or with the VT on press together shift + Enter; in either case wait a moment

### VT terminal with no Modem function:

• The following mask appears.Press the function 🗆 corresponding to the port to be used. The VT is now ready to receive (refer to Software Manual for transfer procedure)

Boot sequence forced F1= ASP down/up load F2= MSP down/up load ENTER=run project

### VT terminal with Modem function:

• Proceed from the preceding mask; the following mask appears

Boot s	equence forced	
F1=	MODEM dn/up load	
F2=	PC dn/up load	
ENTE	R=run project	

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; press the corresponding function

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

Boot sequence forced F1= SLOW dn/up load F2= FAST dn/up load

The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), press the corresponding function  $\square$ . The VT is now ready to receive (see Software Manual for the transfer).

Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

• Be situated in any page of the project

• Press Shift twice; you will see

VT190W Serial: xxxxxxxxxxxxx Driver: xxxxxxxxxxxxx Ver. : xxxxxxxxxxxxx

• Press or ; you will see

Addr.: xxxxxxxxxxxxx Error: xxxxxxxxxxxxxxxx Up/Down = next page Enter = settings page

If while displaying this page you press you will access the page for setting the clock and the contrast **For the clock to be used properly, a special battery has to be inserted in the terminal (see** "Chapter 33 -> Video terminal accessories").

CONTRAST:±#### TIME: hh:mm:ss DATE: dd:mm:yy Left/Right = select. Up/Down = change ESC = project ENTER = memo

Left/Right is equivalent to , Up/Down to ; using you

quit display, while with the settings are confirmed and you pass back to the project page.

Possible error messages are:

• PR ERR

Problem->	Errors have been detected in the data exchange between
	the VT and the Device.
Solution->	Check the cable; there may be disturbance.

COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

By pressing you pass back to the project page.

Adjusting the contrast on the display To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 8-11) and changing the value (from +31 to -32) in evidence at that moment. Increase the value to darken the display; to lighten it decrease the value.



# Video terminal VT300W

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	1	2					4				
<i>Q</i> ,				S.	58	<u>,</u> ?				6 ⁶³	5.4°.?
	VT30	ow	29 ³⁾	xo	Power	O Battery		E	SN		
• • F1	• • F2	•• F3	• • F4	• • F5	<b>F</b> 6	• • F7	• • F8	• • F9	• • F10	• • F11	
• • F12	• • F13	• • F14	• • F15	• • F16	• • F17	• • F18	• • F19	• • F20	• • F21	• • F22	8
F23	F24		shift		YZ8	+ - 9 S T U 6		Spare	Pala A		ed a c
Help	Ack Ack		A B C					ø	Padin	Enter	

**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal	2		
VT300W A0000				
VT300W AP000				
VT300W 000CN				
Display			V	
	LCD monochromatic STN	•		T e
Туре	LCD 16 Colors STN	8	53	
- Ster	LCD 16 Colors TFT	-000		+
Representational format	Graphic	§ •	•	•
Resolution [pixels]	240 x 64	•	•	•
Rows by characters	8 x 40 / 4 x 20 / 2 x 10	•	•	•
Display area size [mm]	132 x 39	•	•	•
Character matrix in text mode [pixels]	6 x 8 / 12 x 16 / 24 x 32	•	•	
Character size [mm] x 1 / x 2 / x 4	3,2 x 4,2 / 6,5 x 8,5 / 12,7 x 17	•	۲	
Contrast adjustment	Software	•	•	•
Contrast aujustment	Automatic compensation with temperature	100		
Character sets	Programmable fonts/TTF Windows ®	9	•	•
Backlighting				
Туре	LED	•	٠	•
Туре	CCFL lamp			
Minimum lamp-life at 25°C [hours]				1
Keyboard	10 ^{.2}		3	$\geq$
Non-customizable function keys	2	•	٠	•
Customizable function keys	22		•	•
Function key LEDs	46	<u> </u>	•	•
Alphanumeric keys	11	•	•	•
Operational keys	14	•	•	•
Operational key LEDs	4	•	•	•
Diagnostic LEDs	3	•	•	

Code of terminal	Characteristics of the	terminal			- 55
VT300W A0000				_	
VT300W AP000	<u>}</u>			5	
VT300W 000CN	NO.		No	<	
User memory	State of the second sec	e e e e e e e e e e e e e e e e e e e	-	• •	▼
Project [Bytes]	192K + 384K (Text+ Graphics)	10		• (	•
Data memory [Bytes]	128K (With back-up battery)	100	•	• (	•
Memory for Windows ® -based fonts [Byte]		All A	•	•	• 25
Memory Card for backup	4Mb	Re. C.	•	•	• 5
Memory Card for expansion			+ +		1
Interfaces	6			2	$\neg$
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA		۲		•
ASP (Auxiliary serial port)	RS232/RS485	S	5	• (	•
ASP-15L (Auxiliary serial port)	RS232/RS485	10	+	• (	•
ASP-8 (Auxiliary serial port)	RS232	100	+ +		$\neg$
ASP-9 (Auxiliary serial port)	RS232	.N. ⁶ .	+ +		- 25
LPT parallel port	Centronics	12	+ +	•	
Auxiliary port	Connection for accessory devices		•	•	•
Accessories	à			2	$\neg$
Connectable accessories	See table "Chapter 33"			•	•
Clock	St. St.	a a			$\neg$
Clock	Hardware (With back-up battery)	25	•	•	•
Networks	·	1000			$\neg$
1.0°	Profibus-DP	1.0			1.5
Integrated	CAN Open (Optoisolated interface)	AN CONTRACT	•		350
3	Ethernet 10/100Mbit RJ45	<u>4</u>	+		-
Universal Bus Connector			+		$\neg$
Optional	See table "Chapter 33"			•	•
Proprietary networks		2	1		$\neg$
	Network server	101		•	•
ESA-Net	Network client	10 ²	•	• •	•
Technical data		S.			1 8
Power supply	24Vdc (1832Vdc)	AN CONTRACT			15 ⁵⁵
Power absorbed at 24Vdc	11W	<u>.</u>			
Protection fuse	Ø5x20mm - 800mA Quick Blow F				$\neg$
Protection level	IP65 (front-end)		10	<u>È</u>	$\neg$
Operating temperature	050°C	đ	de la		$\neg$
Storage and transportation temperature	-20+60°C		<u>F</u>		$\neg$
Humidity (non-condensing)	<85%				$\neg$
Weight	1500gr	- <u>8</u>			- 3
Dimensions		and the second s			and and and
External W x H x D [mm]	252 x 196 x 60	<u></u>			- C
Cut-out W x H [mm]	232 x 178				$\neg$
Certification				<u>R</u>	
Certifications and approvals	CE, cULus, NEMA12		A.		-

### **Functions**

The following table lists in alphabetical order all the functions of the VT in question.

Table 9.1: Functions and objects realizable with this VT (Part 1 of 4)

	Code of terminal			
VT300W ****	- Store			
Objects/Functions	Quantity			
Alarm field				
Alarm help	1024			
Alarm history buffer	256			
Alarm statistics	19			
Alarms (Total/active simultaneously)	1024/256			
Arc	30			
Automatic operations	32			
Backup/Restore	and in			
Bar data				
Bit-wise password	8bits			
Buttons	12			
Circles	199			
Command: Change language	30			
Command: Clear trend buffer	18°			
Command: Delete recipe	2 ⁴²			
Command: Hardcopy				
Command: Load recipe from data memory	2			
Command: Modify password	N20			
Command: Next page	1			
Command: Page help	30			
Command: Password login	8			
Command: Password logout	Sty.			
Command: Previous page				
Command: Print alarm history	2			
Command: Printer form feed	N2			
Command: Quit project	Sec.			
Command: Report	30			
Command: Restarts reading time-sampled trend				
Command: Run pipeline	a ^{dd}			
Command: Save alarms history and trend buffers in flash				
Command: Save recipe in data memory	2			
Command: Save recipe received from device in buffer				
Command: Save recipe received from device in data memory	and the second sec			
Command: Send recipe from video buffer to device	38			
Command: Send recipe to device				

Table 9.1: Functions and objects realizable with this VT (Part 2 of 4)

Code of terminal		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Objects/Functions		Quantity
Command: Show alarms history		S.
Command: Show page directory		<u>Ser</u>
Command: Show project information	S	
Command: Show recipe directory	ala anna anna anna anna anna anna anna	
Command: Show sequence directory		
Command: Shows driver status page		8
Command: Shows page help		Nº.
Command: Shows page with function: PG		500
Command: Stops reading time sampled trend	2	S.
Command: Trend reading saved in device	.8	
Command: Zero number of general pages	2000	
Date field		
Day-of-the-week field		6
Dynamic texts: Bit-group-structured dynamic texts		Non
Dynamic texts: Single-bit dynamic texts		1024*
Dynamic texts: Value-structured dynamic texts		
E-keys	S.	
Equations	250	32
F-keys		
Free terminal		6
Function: Disables key		No.
Function: Go to page		Stor's
Function: Internal command		Ş0.
Function: Invert bit value	10	
Function: Macro	200	
Function: None		
Function: Reset bit permanently		6
Function: Reset real-time bit		No.
Function: Sequences		S.C.
Function: Sets bit permanently		<u> </u>
Function: Sets real-time bit	10	
Function: Value-structure direct command	22	
Global configuration of E-keys		
Global configuration of F-keys		8
Headers and footers (Total/Number of fields per H-F)		128/128
Info-messages (Total/active simultaneously)		1024/256
Internal registers	1	4096bytes
Labels	N.C.	-
LEDs assigned to sequence	200	

Table 9.1: Functions and objects realizable with this VT (Part 3 of 4)

Objects/Functions	Quantity
Lines	100 M
Lists of bitmap images	30
Lists of texts	S
Local configuration of E-keys	
Local configuration of F-keys	
Macro field	16 x pages
Macros (Total/Commands x macro)	1024/16
Message field	Sec.
Message help	1024
Multilanguage texts	8 Langs.
Object - Indicator	
Object - Potentiometer knob	
Object - Selector knob	
Object - Sliding potentiometer	.X2
Object - Sliding selector	S. S.
Page	1024
Page help	1024
Password	10
Pipelines (Numero/Tot bytes)	64/512
Print	
Print page (Total/Number of fields per page)	1024/128
Programmable fonts	See.
Project images	-3 ⁵⁰
Public variables of ESANET network (Number/Tolat bytes)	256/1024
Recipe field for recipe structure	
Recipes (Number of variables per recipe)	1024/256
Rectangles	
Redefinable characters	N.
Reports	128
Sequences - Random	400
Sequences - Start/stop	128
Static bitmaps	
Symbolic field: Bit-group-structured dynamic bitmaps	
Symbolic field: Single-bit-structured dynamic bitmaps	1024*
Symbolic field: Value-structured dynamic bitmaps	S.
System messages	
System variables assigned to recipe structure	133 C
Time long field	
Time short field	

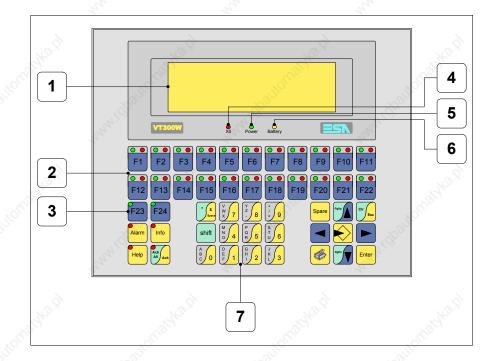
9-7

Table 9.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of terminal		
VT300W ****		
Objects/Functions	Quantity	•
Timer	16	•
Touch Area	50	
Trend buffers	128	•
Trends (Trends x page/Channels x trend)	2/2	•
Trends sampled automatically (Memory/Trends/Readings)	512bytes	•
Trends sampled on command (Memory/Trends/Readings)	/**/240	•
Value direct command: ADD	Nº.	•
Value direct command: AND	1 Carl	•
Value direct command: OR	50	•
Value direct command: SET		•
Value direct command: SUBTRACT		•
Value direct command: XOR		•
Variables: Limit values and linear scaling variables	6	•
Variables: Movement variable (Mobile symbolic field)	00	•
Variables: Threshold variables		•
Variables: Floating Point numerical variables	– 80 x pages	
Variables: Numerical variables (DEC, HEX, BIN, BCD)		
Variables: String variables (ASCII)	1	
I have otherwise stated, there is no limit to the number of includable elements, only the size of proj		Line

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

### Front view



Кеу	Function	
1	Display	<u>_</u>
2	F-keys with two LEDs	Callyon
3	F-keys with one LED	douto.
4	X0 LED. Blinks when communication error is de	tected
Star 5	Power LED. Lights up when power in ON	aster?
6	Battery LED. Lights up when the battery has nea	arly run out
7	Alphanumeric keys	0
	Starts input	140.0
Enter	Confirms setting of data	- allonals
PgUp	Page up When in setting phase, edits dynamic text	6

Key	Function
PgDn	Page down When in setting phase, edits dynamic text
	Moves the cursor between settable fields When in setting phase, moves cursor to the left of the field
	Moves the cursor between settable fields When in setting phase, moves cursor to the right of the field
Cir	Quits: setting of data, info-messages, sequence directory, com- munication driver
Info	Displays info-messages
Alarm	Displays ISA alarms
Help	Displays according to context: information message help, alarm help or page help
Ack	Acknowledgment of ISA alarms on display
	Print the entire display area
Spare	No predefined function
shift +	In setting phase restores the initial value of the field
shift +	Acknowledges all ISA alarms
54 ⁵⁴	and a standard stan

10140.A

rdbautor

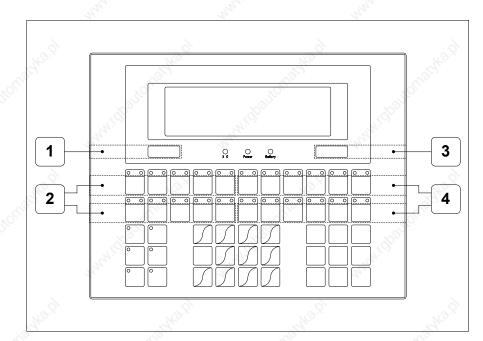
toka.p

20140.P

rabauton

WWW.C

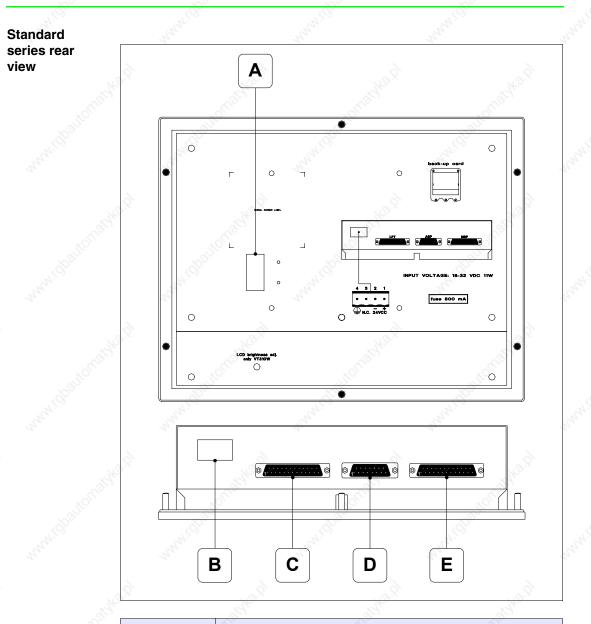
### Customizing label



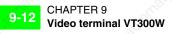
Position	Function - Dimensions L x H (mm)	
1 March	ESA Logo - 73 x 10	
2	F-key customization F1 F5, F12 F16 - 116 x 15	
3	VT Model - 73 x 10	
4	F-key customization F6 F11, F17 F22 - 134 x 15	

The total thickness of the label must not exceed 125 $\mu$ m (micrometers). Do not use either stiff materials or glues.

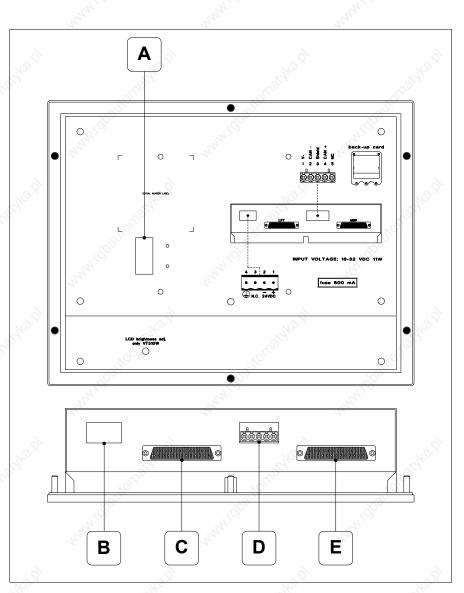
Before starting to insert the customized label, see "Chapter 28 -> Inserting customized labels".



Position	Function
A	Auxiliary port for connecting optional accessories
В	Power supply connector
С	LPT port for connecting printer (Optional)
D	ASP serial port for communicating with PC or other devices
E	MSP serial port for communicating with PLC/PC

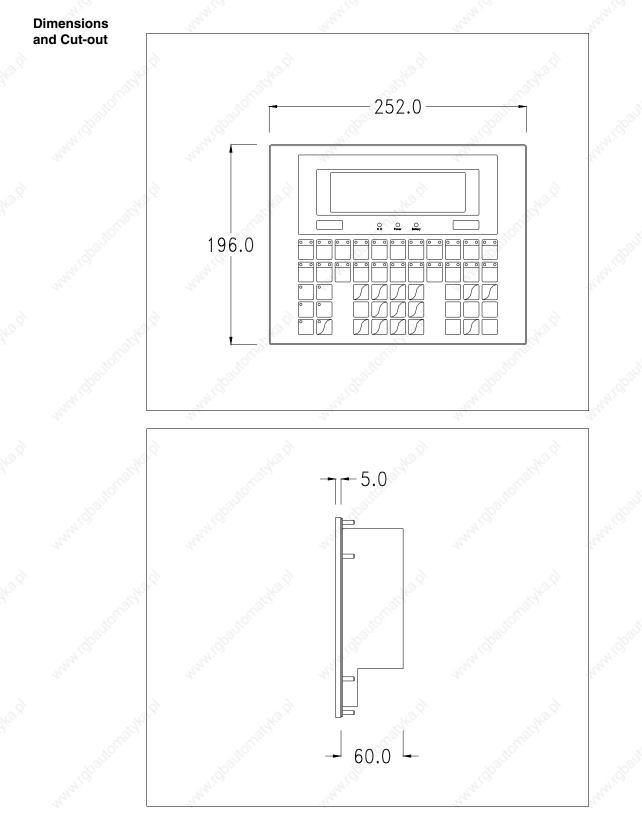


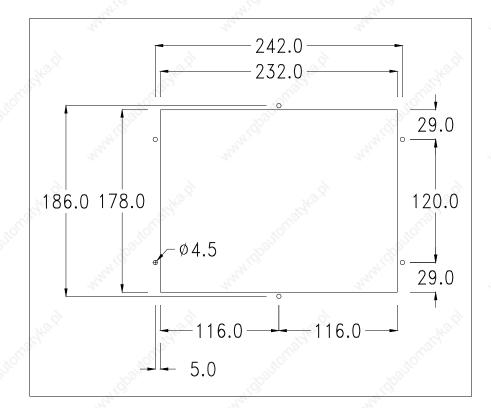




Position	Function	John
А	Auxiliary port for connecting optional accessories	50
В	Power supply connector	
С	LPT port for connecting printer (Optional)	
D	CAN serial port	Southe
E Stat	MSP serial port for communicating with PLC/PC	







To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

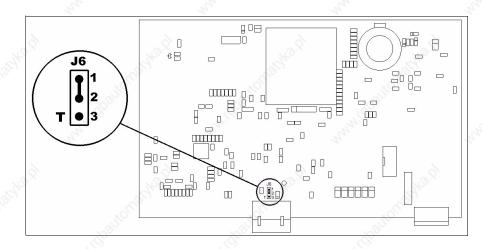
#### Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

### Termination of CAN line

This paragraph applies only to the CAN series. The VT in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J6.



- Position the jumper between pins 2 and 3 (line terminated).
- Replace the back cover.
- Reconnect the power supply.

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT with pressed down or with the VT on press

together  $\stackrel{\text{shift}}{=} + \stackrel{\text{ener}}{=}$ ; in either case wait a moment

### VT terminal with no Modem function:

• The following mask appears. D F3=MemoCARD is only enabled when a

Memory Card has been inserted in the VT terminal (see Page 9-18). The function  $\Box$  to press depends on which port you intend to use (MSP or ASP). The VT is now ready to receive (refer to Software Manual for transfer procedure)

VT300 TRANSFER PAGE

Graphic controller BOOT check : OK Graphic controller RAM check : OK

F1=ASP F2=MSP F3=MemoCARD ENTER=Prj

### VT terminal with Modem function:

• Proceed from the preceding mask; the following mask appears

VT300 TRANSFER PAGE

Graphic controller BOOT check : OK Graphic controller RAM check : OK

F1=MODEM F2=PC ENTER=Prj

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; press the corresponding function

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

VT300 TRANSFER PAGE

Graphic controller BOOT check : OK Graphic controller RAM check : OK

F1=SLOW F2=FAST

The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), press the corresponding function  $\square$ . The VT is now ready to receive (see Software Manual for the transfer).

### Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press ^{shift} twice; you will see

Port xxxxxxxxxxxxxxxxxxx Driver ***** Ver ***** Addr VT ***** Error ***** Enter=settings page Right=next page

There is one of these pages for each communication port; you can move

between the various pages by pressing

If you press while displaying this page you can access the page for setting the clock and the contrast.

se se	T CONTRAST : ±##	
Joantomatur .	SET CLOCK : ddd,dd/mm/yy hh:mm:ss	
Right=next page	Enter=set	and O'

In order to access the contrast setting, use or to select the SET

CONTRAST option that is displayed in reverse colors and press it following mask will appear:

CC	NTRAST : ±##	
		. dow
Up/Down=change	Enter=memo	St.

Use and/or to effect any variation and for the confirmation.

To be able to set the clock use or to select the SET CLOCK option

that is displayed in reverse colors and press ^[Enter]; the following mask will appear:

**For the clock to be used properly, a special battery has to be inserted in the terminal (see** "Chapter 33 -> Video terminal accessories").

hh:mm:ss dd/mm/yy

Lf/Rt=select Up/Dw=change Enter=memo

Use and/or to select the field and and/or to effect any variation; use to confirm.

To use the Memory Card either switch on the VT with held down or, if

the VT is already on, press shift + together; in both cases it will be necessary to wait a moment before the following mask appears on the VT:

VT300 TRANSFER PAGE
---------------------

Graphic controller BOOT check : OK Graphic controller RAM check : OK

F1=ASP F2=MSP F3=MemoCARD ENTER=Prj

Press  $\square$  F3=MemoCARD (if the key is not on screen, see Page 9-15) and the following mask will appear:

<u></u>		
14 ^{- 01}	MEMORY	CARD MENU
	F1= BACKUP	F2= RESTORE
	F3= ERASE	F4= EXIT
B	Ø	

For the meaning and function of the keys see "Chapter 33 -> Memory card".

Possible error messages are:

• PR ERR

Problem->	Errors have been detected in the data exchange between
	the VT and the Device.
Solution->	Check the cable; there may be disturbance.

COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

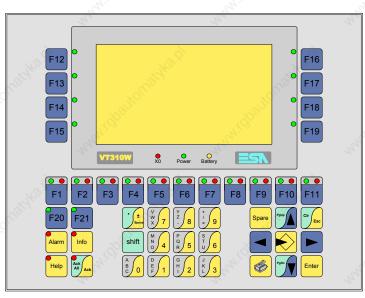
### Adjusting the contrast on the display

To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 9-17) and changing the value (from +31 to -32) in evidence at that moment. Increase the value to darken the display; to lighten it decrease the value.

### Chapter 10

# Video terminal VT310W

Contents	Page
Technical characteristics	10-2
Functions	10-4
Front view	10-8
Customizing label	10-10
Rear view	10-11
Dimensions and Cut-out	10-13
Accessories	10-14
Transfer PC -> VT	10-14
Preparation for reception	10-15
Information relating to driver	10-16
Adjusting the contrast on the display	10-20



**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal Characteristics of the terminal				
VT310W A0000				_
VT310W AP000	¥* ¥			
Display			<b>\</b>	
×.	LCD monochromatic STN		۲	•
Туре	LCD 16 Colors STN	2	53	
	LCD 16 Colors TFT	70,	-	
Representational format	Graphic	S. S. S.	•	•
Resolution [pixels]	240 x 128 (5,5")	1.0	•	•
Rows by characters	16 x 40 / 8 x 20 / 4 x 10	22	•	•
Display area size [mm]	123 x 68	-	•	•
Character matrix in text mode [pixels]	6 x 8 / 12 x 16 / 24 x 32		•	
Character size [mm] x 1 / x 2 / x 4	3 x 4 / 6 x 8 / 12 x 16		۲	•
Contract adjustment	Software	đ	•	•
Contrast adjustment	Automatic compensation with temperatur	e S		-
Character sets	Programmable fonts/TTF Windows ®	~3 ⁵	•	•
Backlighting	je se	S. St.		
Tuno	LED	32		
Туре	CCFL lamp	<u>.</u>	•	•
Minimum lamp-life at 25°C [hours]	10000		•	٠
Keyboard	2.4.C			8
Non-customizable function keys	10	đ		•
Customizable function keys	11	-S.	•	•
Function key LEDs	32		•	•
Alphanumeric keys	11	S.	•	•
Operational keys	14	Share -	•	•
Operational key LEDs	4	-	•	•
Diagnostic LEDs	3		•	•

Code of terminal	Characteristics of the terminal		
VT310W A0000			
VT310W AP000		ò.	
User memory	N° N°	<b>V</b>	▼
Project [Bytes]	192K + 384K (Text + Graphics)	•	•
Data memory [Bytes]	128K (With back-up battery)	•	•
Memory for Windows ® -based fonts [Byte]	64K	•	•
Memory Card for backup	4Mb	•	•
Memory Card for expansion	500 500		
Interfaces			l
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA		•
ASP (Auxiliary serial port)	RS232/RS485	Se o	•
ASP-15L (Auxiliary serial port)	RS232/RS485	2	
ASP-8 (Auxiliary serial port)	RS232		
ASP-9 (Auxiliary serial port)	RS232		$\left  \right $
LPT parallel port	Centronics	•	$\left  \right $
Auxiliary port	Connection for accessories	•	•
Accessories			
Connectable accessories	See table "Chapter 33"		•
Clock		2 P	
Clock	Hardware (With back-up battery)		•
Networks			
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Profibus-DP		+
Integrated	CAN Open (Optoisolated interface)		
	Ethernet 10/100Mbit RJ45		+
Universal Bus Connector			
Optional	See table "Chapter 33"		•
Proprietary networks		102	\vdash
N.	Network server	5	•
ESA-Net	Network client	•	•
Technical data			-
Power supply	24Vdc (1832Vdc)		
Power absorbed at 24Vdc	11W		
Protection fuse	Ø5x20mm - 800mA Quick Blow F		
Protection level	IP65 (front-end)		
Operating temperature	050°C		
Storage and transportation temperature	-20+60°C	N. Contraction	
Humidity (non-condensing)	<85%		
Weight	1500gr		
Dimensions			_
External W x H x D [mm]	252 x 196 x 60		
Cut-out W x H [mm]	232 x 178		
Certification			
Certifications and approvals	CE, cULus, NEMA12	28	
	UE, COLUS, INLIVIA 12	10	

Functions

The following table lists in alphabetical order all the functions of the VT in question.

Table 10.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal		
VT310W ***** Objects/Functions	Quantity	1
Alarm field	Quantity	
Alarm help	1024	+
Alarm history buffer	256	+
Alarm statistics	200	+
Alarms (Total/active simultaneously)	1024/256	-
Arc	1024/200	+
Automatic operations	32	+
Backup/Restore		+
Bar data		+
	8bits	+
Bit-wise password Buttons	ODIG	+
Circles	Nº S	_
	and a second	+
Command: Change language Command: Clear trend buffer	200	+
	\$°	_
Command: Delete recipe		_
Command: Hardcopy		_
Command: Load recipe from data memory		_
Command: Modify password	Nº AN	2
Command: Next page	and the second s	_
Command: Page help	La Strange	
Command: Password login	S.	
Command: Password logout		
Command: Previous page		
Command: Print alarm history		
Command: Printer form feed	.X2	2
Command: Quit project	Ser.	
Command: Report	all ¹⁰	
Command: Restarts reading time-sampled trend	8	
Command: Run pipeline		
Command: Save alarms history and trend buffers in flash		
Command: Save recipe in data memory		
Command: Save recipe received from device in buffer	J.	2
Command: Save recipe received from device in data memory	S. S.	
Command: Send recipe from video buffer to device	all'	
Command: Send recipe to device	8	
Command: Service page		

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 10.1: Functions and objects realizable with this VT (Part 2 of 4)

Command: Show alarms history Command: Show page directory Command: Show project information Command: Show recipe directory Command: Show sequence directory Command: Shows sequence directory Command: Shows driver status page Command: Shows page help Command: Shows page help Command: Shows page with function: PG Command: Stops reading time sampled trend Command: Trend reading saved in device Command: Zero number of general pages Date field Day-of-the-week field Dynamic texts: Bit-group-structured dynamic texts Dynamic texts: Value-structured dynamic texts E-keys Equations		
Command: Show project information Command: Show recipe directory Command: Show sequence directory Command: Shows driver status page Command: Shows page help Command: Shows page with function: PG Command: Stops reading time sampled trend Command: Trend reading saved in device Command: Trend reading saved in device Command: Zero number of general pages Date field Day-of-the-week field Day-of-the-week field Dynamic texts: Bit-group-structured dynamic texts Dynamic texts: Single-bit dynamic texts Dynamic texts: Value-structured dynamic texts E-keys		9 9 9 9 9 9 1 1 9 1 1 1 1 1 1 1 1 1 1 1
Command: Show recipe directory Command: Show sequence directory Command: Shows driver status page Command: Shows page help Command: Shows page with function: PG Command: Stops reading time sampled trend Command: Trend reading saved in device Command: Trend reading saved in device Command: Zero number of general pages Date field Day-of-the-week field Dynamic texts: Bit-group-structured dynamic texts Dynamic texts: Single-bit dynamic texts Dynamic texts: Value-structured dynamic texts E-keys		2 ⁽¹⁰⁾
Command: Show sequence directory Command: Shows driver status page Command: Shows page help Command: Shows page with function: PG Command: Stops reading time sampled trend Command: Trend reading saved in device Command: Zero number of general pages Date field Day-of-the-week field Dynamic texts: Bit-group-structured dynamic texts Dynamic texts: Single-bit dynamic texts Dynamic texts: Value-structured dynamic texts E-keys		
Command: Shows driver status page Command: Shows page help Command: Shows page with function: PG Command: Stops reading time sampled trend Command: Trend reading saved in device Command: Zero number of general pages Date field Day-of-the-week field Day-of-the-week field Dynamic texts: Bit-group-structured dynamic texts Dynamic texts: Single-bit dynamic texts Dynamic texts: Value-structured dynamic texts E-keys		9.03 ⁹⁴⁰
Command: Shows page help Command: Shows page with function: PG Command: Stops reading time sampled trend Command: Trend reading saved in device Command: Zero number of general pages Date field Day-of-the-week field Dynamic texts: Bit-group-structured dynamic texts Dynamic texts: Single-bit dynamic texts Dynamic texts: Value-structured dynamic texts E-keys	Contraction of the second seco	entre alle
Command: Shows page with function: PG Command: Stops reading time sampled trend Command: Trend reading saved in device Command: Zero number of general pages Date field Day-of-the-week field Dynamic texts: Bit-group-structured dynamic texts Dynamic texts: Single-bit dynamic texts Dynamic texts: Value-structured dynamic texts E-keys		56 ¹⁰
Command: Stops reading time sampled trend Command: Trend reading saved in device Command: Zero number of general pages Date field Day-of-the-week field Dynamic texts: Bit-group-structured dynamic texts Dynamic texts: Single-bit dynamic texts Dynamic texts: Value-structured dynamic texts E-keys		orro di
Command: Trend reading saved in device Command: Zero number of general pages Date field Day-of-the-week field Dynamic texts: Bit-group-structured dynamic texts Dynamic texts: Single-bit dynamic texts Dynamic texts: Value-structured dynamic texts E-keys		
Command: Zero number of general pages Date field Day-of-the-week field Dynamic texts: Bit-group-structured dynamic texts Dynamic texts: Single-bit dynamic texts Dynamic texts: Value-structured dynamic texts E-keys		
Date field Day-of-the-week field Dynamic texts: Bit-group-structured dynamic texts Dynamic texts: Single-bit dynamic texts Dynamic texts: Value-structured dynamic texts E-keys		d'
Day-of-the-week field Dynamic texts: Bit-group-structured dynamic texts Dynamic texts: Single-bit dynamic texts Dynamic texts: Value-structured dynamic texts E-keys		ò
Dynamic texts: Bit-group-structured dynamic texts Dynamic texts: Single-bit dynamic texts Dynamic texts: Value-structured dynamic texts E-keys		Ś
Dynamic texts: Single-bit dynamic texts Dynamic texts: Value-structured dynamic texts E-keys		- CA2
Dynamic texts: Value-structured dynamic texts E-keys		
-keys		1024*
	~3 ⁵	
Equations	10	
	5350	32
-keys		
Free terminal		j.
Function: Disables key		Nº.
Function: Go to page		S.C.S.
Function: Internal command	~35	~
Function: Invert bit value	1.0	
Function: Macro	Sal.	
Function: None		
Function: Reset bit permanently		Ś
Function: Reset real-time bit		Sto.
Function: Sequences		500
Function: Sets bit permanently	~35	7
Function: Sets real-time bit	1.0	
Function: Value-structure direct command	Sec. 1	
Global configuration of E-keys		
Global configuration of F-keys		2
Headers and footers (Total/Number of fields per H-F)		128/128
nfo-messages (Total/active simultaneously)		1024/256
nternal registers	200	4096bytes
abels	N.C.	

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 10.1: Functions and objects realizable with this VT (Part 3 of 4)

VT310W ***** Objects/Functions	Quantity	7
Lines	Quantity	_
Lists of bitmap images	10	_
Lists of texts	R ^a	_
Local configuration of E-keys		_
Local configuration of F-keys		_
Macro field		_
Macros (Total/Commands x macro)	1024/16	0
Masios (Total Commando x masio)		-
Message help	1024	_
Multilanguage texts	8 Langs.	_
Object - Indicator	e Lange.	_
Object - Potentiometer knob		+
Object - Selector knob		+
Object - Selector Kilob Object - Sliding potentiometer	N3	2
Object - Sliding potentionneter	and the second s	+
Page	1024	_
Page help	1024	_
Password	1024	_
	64/512	_
Pipelines (Numero/Tot bytes) Print	04/312	_
	1024/128	2
Print page (Total/Number of fields per page)	1024/120	_
Programmable fonts	- 105	_
Project images	050/4004	_
Public variables of ESANET network (Number/Tolat bytes)	256/1024	_
Recipe field for recipe structure	1001/050	
Recipes (Number of variables per recipe)	1024/256	
Rectangles		~
Redefinable characters	and the second	
Reports	128	
Sequences - Random	128	-
Sequences - Start/stop		
Static bitmaps		4
Symbolic field: Bit-group-structured dynamic bitmaps		-
Symbolic field: Single-bit-structured dynamic bitmaps	1024*	8
Symbolic field: Value-structured dynamic bitmaps	24	4
System messages	10	
System variables assigned to recipe structure	Sol	
Time long field	S	

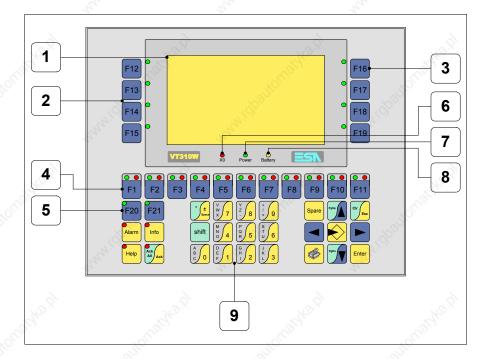
Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 10.1: Functions and objects realizable with this VT (Part 4 of 4)

Co	ode of terminal	
VT310W *****	6	
Objects/Fu	Quantity	
Timer	-Corr	16
Touch Area	alle.	250
Trend buffers	S	128
Trends (Trends x page/Channels >	x trend)	4/4
Trends sampled automatically (Me	emory/Trends/Readings)	512bytes
Trends sampled on command (Me	/**/240	
Value direct command: ADD	Non	Nº.
Value direct command: AND	Stor.	S.C.
Value direct command: OR	all Contraction of the Contracti	
Value direct command: SET	S. S.	8
Value direct command: SUBTRAC	т сб	
Value direct command: XOR		
Variables: Limit values and linear s	scaling variables	6
Variables: Movement variable (Mo	bile symbolic field)	. 24° '
Variables: Threshold variables	all'or	06 x pages
Variables: Floating Point numerica	96 x pages	
Variables: Numerical variables (DB	8	
Variables: String variables (ASCII)	No. Mar	
Inless otherwise stated there is no limit to the num	abox of includeble elemente, enluthe size of	nucleat manage acts a li

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Front view



Key	Function
1	Display
2	F-keys with one LED
3	F-keys with one LED
4	F-keys with two LEDs
5	F-keys with one LED
6	X0 LED. Blinks when communication error is detected
7	Power LED. Lights up when power in ON
8	Battery LED. Lights up when the battery has nearly run out
9	Alphanumeric keys
	Starts input

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and the second second	and the second s	-scallor
Key	Function	61
Enter	Confirms setting of data	
PgUp	Page up When in setting phase, edits dynamic text	
PgDn	Page down When in setting phase, edits dynamic text	and C
	Moves the cursor between settable fields When in setting phase, moves cursor to the left of the field	
	Moves the cursor between settable fields When in setting phase, moves cursor to the right of the field	
Cir	Quits: setting of data, info-messages, sequence directory, com- munication driver	anni (C
Info	Displays info-messages	-
Alarm	Displays ISA alarms	
Help	Displays according to context: information message help, alarm help or page help	and S
Ack All Ack	Acknowledgment of ISA alarms on display	al a l
	Print the entire display area	
Spare	No predefined function	8
shift + Cir	In setting phase restores the initial value of the field	a a ann
shift + Ack	Acknowledges all ISA alarms	

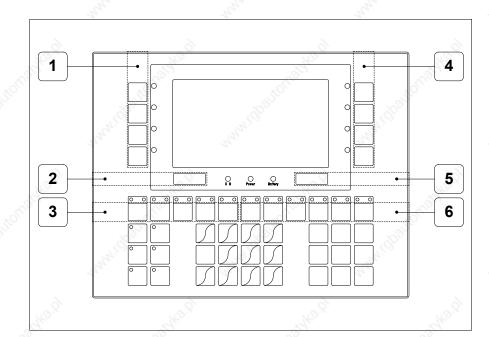
<u>10</u>140.0

Elka A

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ARAPAL.C.

Customizing label



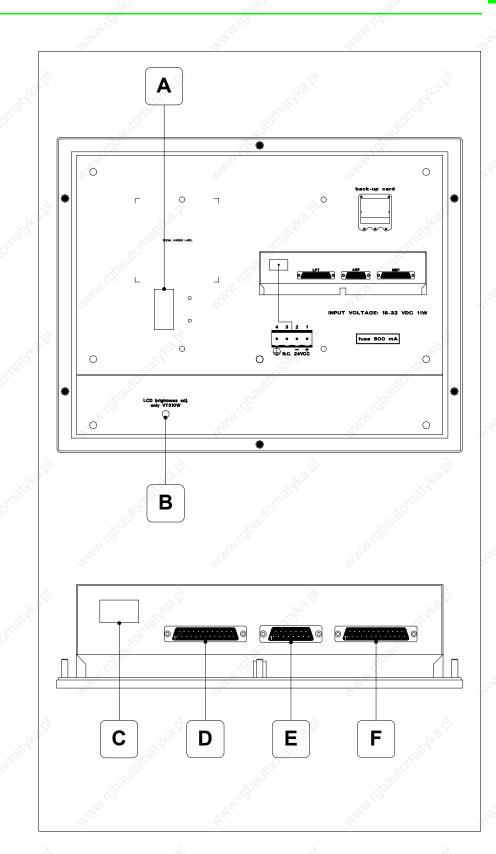
Position	Function - Dimensions L x H (mm)
1	F-key customization F - 16 x 92
2	ESA Logo - 91 x 10
3	F-key customization F1 F5 - 116 x 15
4	F-key customization F - 16 x 92
5	VT Model - 91 x 10
6	F-key customization F6 F11 - 134 x 15



The total thickness of the label must not exceed $125\mu m$ (micrometers). Do not use either stiff materials or glues.

Before starting to insert the customized label, see "Chapter 28 -> Inserting customized labels".





mathan

		Star Star
	Position	Function
Ì	A	Auxiliary port for connecting optional accessories
	В	Trimmer for brightness control
	C strain	Power supply connector
	Had D	LPT port for connecting printer (Optional)
	E	ASP serial port for communicating with PC or other devices
	F school	MSP serial port for communicating with PLC/PC

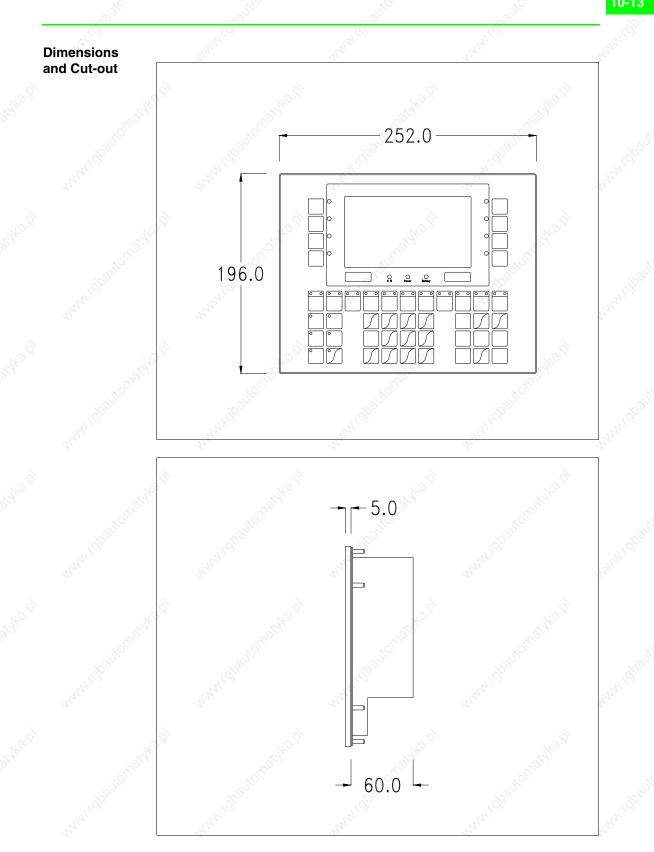
10Han

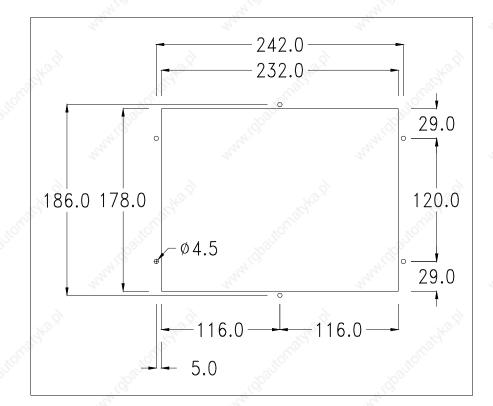
rabauto

zeka.p

robauto







To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT with pressed down or with the VT on press together shift + Enter; in either case wait a moment

VT terminal with no Modem function:

• The following mask appears. F3=MemoCARD is only enabled when a Memory Card has been inserted in the VT terminal (see Page 10-18). The function to press depends on which port you intend to use (MSP or ASP). The VT is now ready to receive (refer to Software Manual for transfer procedure)

VT310 TRANSFER PAGE

Graphic controller BOOT check : OK Graphic controller RAM check : OK

Graphic controller synchronization : OK

Main FIRMWARE check : NOT PRESENT Graphic controller FIRMWARE : ERROR

F1=ASP F2=MSP F3=MemoCARD ENTER=Prj

VT terminal with Modem function:

• Proceed from the preceding mask; the following mask appears

VT310 TRANSFER PAGE

Graphic controller BOOT check : OK Graphic controller RAM check : OK

Graphic controller synchronization : OK

Main FIRMWARE check : NOT PRESENT Graphic controller FIRMWARE : ERROR

F1=MODEM F2=PC ENTER=Prj

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; press the corresponding function

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

VT310 TRANSFER PAGE

Graphic controller BOOT check : OK Graphic controller RAM check : OK

Graphic controller synchronization : OK

Main FIRMWARE check : NOT PRESENT Graphic controller FIRMWARE : ERROR

F1=SLOW F2=FAST

The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), press the corresponding function \square . The VT is now ready to receive (see Software Manual for the transfer).

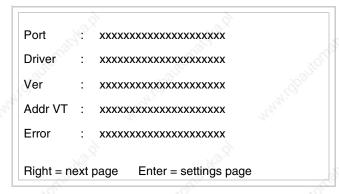
Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

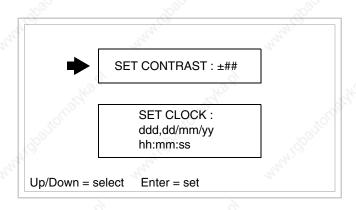
- Be situated in any page of the project
- Press shift twice; you will see



There is one of these pages for each communication port; you can move

between the various pages by pressing

If you press the page for setting the clock and the contrast.



In order to access the contrast setting, use or or to select the SET

CONTRAST option that is displayed in reverse colors and press is the following mask will appear:

tonashard	.tonatka.e	
CONTRA	ST : ±##	Manni Ghor
Up/Down = change	Enter = memo	

Use and/or to effect any variation and to for the confirmation. To be able to set the clock use or to select the SET CLOCK option that is displayed in reverse colors and press enter; the following mask will appear:

For the clock to be used properly, a special battery has to be inserted in the terminal (see "Chapter 33 -> Video terminal accessories").

States States

hh:mm:ss dd/mm/yy

Lf/Rt=select Up/Down=change Enter=memo

Use and/or to select the field and and/or to effect any variation; use to confirm.

To use the Memory Card either switch on the VT with $\frac{\text{Enter}}{\text{held down or, if}}$ the VT is already on, press $\frac{\text{shift}}{\text{here}} + \frac{\text{Enter}}{\text{together; in both cases it will be}}$

necessary to wait a moment before the following mask appears on the VT:

VT310 TRANSFER PAGE

Graphic controller BOOT check : OK Graphic controller RAM check : OK

Graphic controller synchronization : OK

Main FIRMWARE check : NOT PRESENT Graphic controller FIRMWARE : ERROR

F1=ASP F2=MSP F3=MemoCARD ENTER=Prj

Press \square F3=MemoCARD (if the key is not on the screen, see Page 10-15) and the following mask will appear:

	A.	A. C.	
Balton	MEMORY C	ARD MENU	500
	F1= BACKUP	F2= RESTORE	
autorn	F3= ERASE	F4= EXIT	
<u></u>	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		<u>de</u>

For the meaning and function of the keys see "Chapter 33 -> Memory card".

Possible error messages are:

• PR ERR

Problem->	Errors have been detected in the data exchange between
	the VT and the Device.
Solution->	Check the cable; there may be disturbance.

• COM BROKEN

Problem->	Communication between VT and Device interrupted.
Solution->	Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

Adjusting the contrast on the display

To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 10-17) and changing the value (from +31 to -32) in evidence at that moment. Increase the value to darken the display; to lighten it decrease the value.

Chapter 11

Video terminal VT320W

Contents	Page
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Customizing label	11-10
Rear view	11-11
Dimensions and Cut-out	11-12
Accessories	11-13
Transfer PC -> VT	11-13
Preparation for reception	11-14
Information relating to driver	
Improving display color quality	
Adjusting the contrast on the display	11-20
This chapter consists of 20 pages.	6 6



Technical The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal			
VT320W A0000				
VT320W AP000		20		
Display			\	
X XQX	LCD monochromatic STN		10	T
Туре	LCD 16 Colors STN	2	•	
	LCD 16 Colors TFT	· · · · · · · · · · · · · · · · · · ·	-	1
Representational format	Graphic	~3 ³	•	
Resolution [pixels]	320 x 240 (5,7")	. S	•	
Rows by characters	16 x 40 / 8 x 20 / 4 x 10	AN AN	•	
Display area size [mm]	115,6 x 87	-17	•	
Character matrix in text mode [pixels]	8 x15 / 16 x 30 / 32 x 60		•	
Character size [mm] x 1 / x 2 / x 4	2,8 x 5,2 / 5,6 x 10,4 / 11,2 x 20,8		۲	R
Contract a divertment	Software	d	•	
Contrast adjustment	Automatic compensation with temperate	ure	•	
Character sets	Programmable fonts/TTF Windows ®		•	
Backlighting		S.S.		Ť
Tuno	LED	. 89		
Туре	CCFL lamp	-27	•	•
Minimum lamp-life at 25°C [hours]	15000		•	
Keyboard	2.4.2			R
Non-customizable function keys	10	đ		
Customizable function keys	18	- S ^C	•	•
Function key LEDs	46		•	
Alphanumeric keys	11	, Ö	•	
Operational keys	13	al al	•	
Operational key LEDs	4	47	•	
Diagnostic LEDs	3		•	

Code of terminal	Characteristics of the terminal	
VT320W A0000		
VT320W AP000		5
User memory	No. No. No.	• •
Project [Bytes]	192K + 832K (Text+ Graphics)	• •
Data memory [Bytes]	256K (With back-up battery)	• •
Memory for Windows ® -based fonts [Byte]	128K	• •
Memory Card for backup	4Mb	• •
Memory Card for expansion	34 34	
Interfaces		
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	• •
ASP (Auxiliary serial port)	RS232/RS485	• •
ASP-15L (Auxiliary serial port)	RS232/RS485	• •
ASP-8 (Auxiliary serial port)	RS232	
ASP-9 (Auxiliary serial port)	RS232	
LPT parallel port	Centronics	•
Auxiliary port	Connection of accessories	• •
Accessories		
Connectable accessories	See table "Chapter 33"	• •
Clock		5
Clock	Hardware (With back-up battery)	• •
Networks		
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Profibus-DP	
Integrated	CAN Open (Optoisolated interface)	
	Ethernet 10/100Mbit RJ45	
Universal Bus Connector		
Optional	See table "Chapter 33"	• •
Proprietary networks		2
20 J	Network server	• •
ESA-Net	Network client	• •
Technical data		•
Power supply	24Vdc (1832Vdc)	
Power absorbed at 24Vdc	15W	
Protection fuse	Ø5x20mm - 800mA Quick Blow F	
Protection level	IP65 (front-end)	
Operating temperature	050°C	2
Storage and transportation temperature	-20+60°C	
Humidity (non-condensing)	-20+60 C <85%	
Weight	<05% 2000gr	
Dimensions	2000gi	
External W x H x D [mm]	305 x 196 x 60	
Cut-out W x H [mm]	275 x 176	
Certification Certifications and approvals	CE, cULus, NEMA12	S
Contituatione and approvale		

# Functions

11

The following table lists in alphabetical order all the functions of the VT in question.

Table 11.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal		
VT320W ****	Quantity	-
Objects/Functions	Quantity	_
Alarm help	1024	
•	256	
Alarm history buffer	200	
Alarm statistics	- A	2
Alarms (Total/active simultaneously)	and the second s	_
Arc	00	_
Automatic operations	32	_
Backup/Restore	e.,	
Bar data		
Bit-wise password	8bits	
Buttons	. St	2
Circles	S.	
Command: Change language	30	
Command: Clear trend buffer	S°	
Command: Delete recipe	21	
Command: Hardcopy		
Command: Load recipe from data memory		
Command: Modify password		9
Command: Next page	S. S. S.	
Command: Page help	350	Τ
Command: Password login	80	T
Command: Password logout	<i>b</i> .	T
Command: Previous page		T
Command: Print alarm history		T
Command: Printer form feed	N	2
Command: Quit project	18 A.	1
Command: Report	.30	1
Command: Restarts reading time-sampled trend	S.	+
Command: Run pipeline	43	+
Command: Save alarms history and trend buffers in flash		+
Command: Save recipe in data memory		t
Command: Save recipe received from device in buffer	N	0
Command: Save recipe received from device in data memory	18 A.	+
Command: Send recipe from video buffer to device	38	╉
Command: Send recipe to device	S	+
Command: Service page	2	+

Table 11.1: Functions and objects realizable with this VT (Part 2 of 4)

Objects/Functions           Command: Show alarms history           Command: Show page directory           Command: Show project information           Command: Show recipe directory           Command: Show sequence directory           Command: Show sequence directory           Command: Show sequence directory           Command: Show sequence directory           Command: Shows driver status page	and the second second	Quantity
Command: Show project information Command: Show recipe directory Command: Show sequence directory	* Charles Contract	5
Command: Show project information Command: Show recipe directory Command: Show sequence directory	And C	~
Command: Show recipe directory Command: Show sequence directory	and the second	
Command: Show sequence directory	E.	
		~
Command: Shows page help		Nº.
Command: Shows page with function: PG		1 and
Command: Stops reading time sampled trend	à	50
Command: Trend reading saved in device	S.	
Command: Zero number of general pages	- dealer	
Date field	-24	
Day-of-the-week field		8
Dynamic texts: Bit-group-structured dynamic texts		No.
Dynamic texts: Single-bit dynamic texts		1024*
Dynamic texts: Value-structured dynamic texts	ò	50
E-keys	. Š	
Equations	State .	32
Free terminal		6
Function: Disables key		No.
Function: Go to page		S. Contraction
Function: Internal command		50.
Function: Invert bit value	S	
Function: Macro	S. S	
Function: None		
Function: Reset bit permanently		6
Function: Reset real-time bit		No.
Function: Sequences		S.C.
Function: Sets bit permanently	~1 1	50
Function: Sets real-time bit	7.00	
Function: Value-structure direct command	Selfer State	
Global configuration of E-keys		
Global configuration of F-keys		Q.
Headers and footers (Total/Number of fields per H-F)		128/128
nfo-messages (Total/active simultaneously)		1024/256
nternal registers	~3	4096bytes
abels	7.0	-

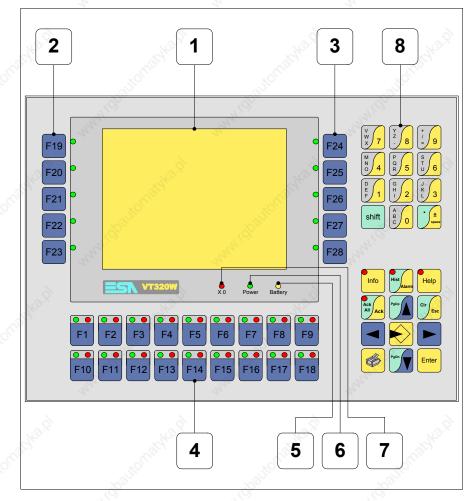
Table 11.1: Functions and objects realizable with this VT (Part 3 of 4)

VT320W ****		3
Objects/Functions	Quantity	
Lines	S	_
Lists of bitmap images	- Charles	
Lists of texts	8	
Local configuration of E-keys		
Local configuration of F-keys		
Macro field		
Macros (Total/Commands x macro)	1024/16	2
Message field	See.	
Message help	1024	
Multilanguage texts	8 Langs.	Ī
Object - Indicator		T
Object - Potentiometer knob		t
Object - Selector knob		ţ
Object - Sliding potentiometer	1	t
Object - Sliding selector	S.C.	t
Page	1024	t
Page help	1024	1
Password	10	1
Pipelines (Number/Tot bytes)	64/512	1
Print		2
Print page (Total/Number of fields per page)	1024/128	
Programmable fonts	- C.	
Project images	13 ²⁰	
Public variables of ESANET network (Number/Total bytes)	256/1024	-
Recipe field for recipe structure		-
Recipes (Number of variables per recipe)	2048/512	-
Rectangles		
Redefinable characters	N.	
Reports	128	-
Sequences - Random	- 18 ⁻	-
Sequences - Start/stop	128	-
Static bitmaps		-
Symbolic field: Bit-group-structured dynamic bitmaps		+
Symbolic field: Single-bit-structured dynamic bitmaps	1024*	
Symbolic field: Value-structured dynamic bitmaps	Nº	ł
System messages	and the second	+
System variables assigned to recipe structure	1.35°	+
Time long field	S	+
Time short field		+

Table 11.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of terminal	
VT320W ****	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Objects/Functions	Quantity
Timer	16
Touch Area	50
Trend buffers	128
Trends (Trends x page/Channels x trend)	4/4
Trends sampled automatically (Memory/Trends/Readings)	4096bytes
Trends sampled on command (Memory/Trends/Readings)	/**/320
Value direct command: ADD	No.
Value direct command: AND	-5 ⁰⁰
Value direct command: OR	,S ⁶⁷
Value direct command: SET	
Value direct command: SUBTRACT	
Value direct command: XOR	
Variables: Limit values and linear scaling variables	6
Variables: Movement variable (Mobile symbolic field)	No.
Variables: Threshold variables	110 100000
Variables: Floating Point numerical variables	112xpages
Variables: Numerical variables (DEC, HEX, BIN, BCD)	
Variables: String variables (ASCII)	
Inless otherwise stated, there is no limit to the number of includeable elements, only the size of pro-	ia at mamany anto a li

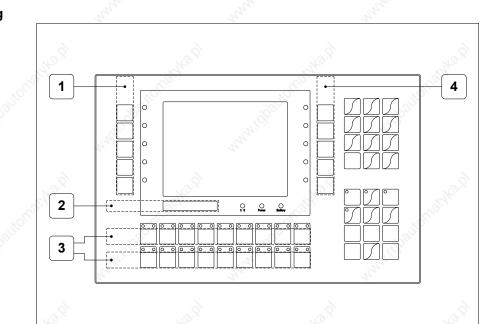
### Front view



Key	Function	
140.P 1	Display	No.3
2	F-keys with one LED	automan
3	F-keys with one LED	2
4	F-keys with two LEDs	. San
5	X0 LED. Blinks when communication error is detec	ted
6	Power LED. Lights up when power in ON	ġ.
7	Battery LED. Lights up when the battery has nearly	run out

	State of the second	All and a second se
	Key	Function
9	8	Alphanumeric keys
		Starts input
	Enter	Confirms setting of data
<u>ò</u>	PgUp	Page up When in setting phase, edits dynamic text
	PgDn	Page down When in setting phase, edits dynamic text
		Moves the cursor between settable fields When in setting phase, moves cursor to the left of the field
8		Moves the cursor between settable fields When in setting phase, moves cursor to the right of the field
, ²	Cir	Quits: setting of data, info-messages, sequence directory, com- munication driver
	Info	Displays info-messages
	Alarm	Displays ISA alarms
2	Help	Displays according to context: information message help, alarm help or page help
	Ack All Ack	Acknowledgment of ISA alarms on display
		Print the entire display area
2	Spare	No predefined function
shift	+ Cir Esc	In setting phase restores the initial value of the field
shift	+ Ack Ack	Acknowledges all ISA alarms

# Customizing label

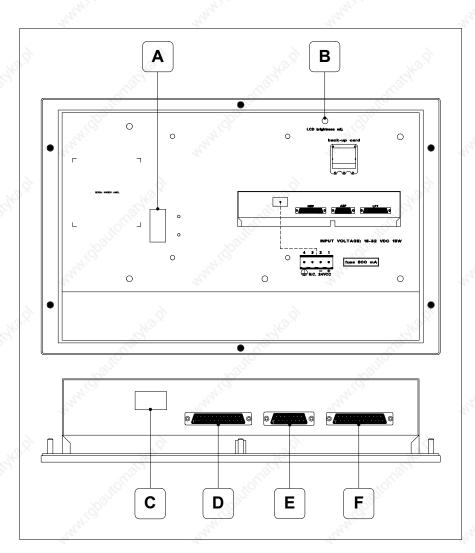


Position	Function - Dimensions L x H (mm)		
1 March	F-key customization F - 16 x 111		
100 2	ESA Logo, VT Model - 115 x 10		
3	F-key customization F - 191 x 15		
4	F-key customization F - 16 x 111		

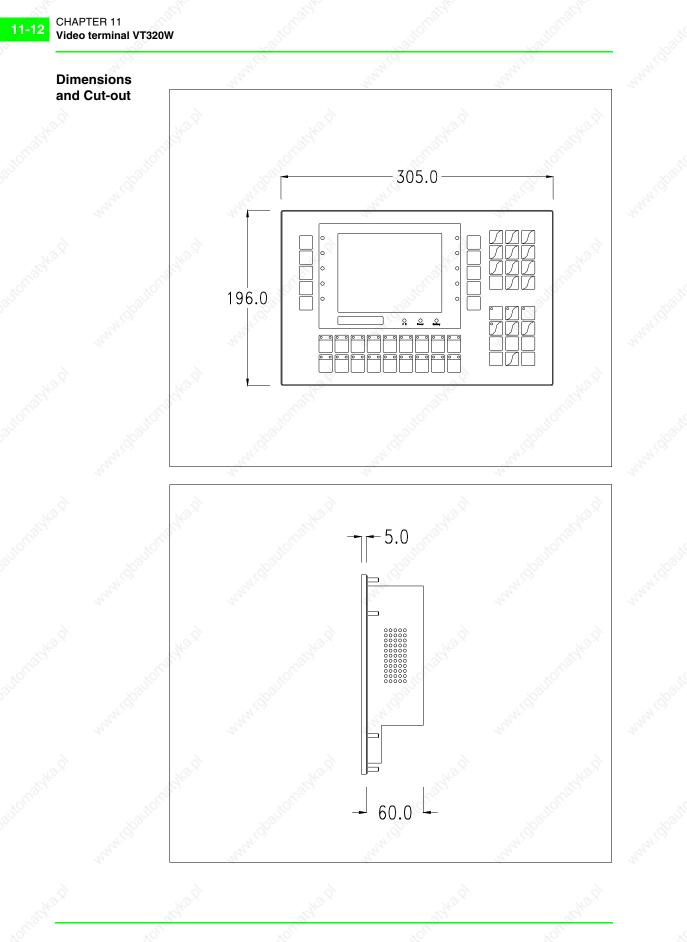
The total thickness of the label must not exceed 125 $\mu$ m (micrometers). Do not use either stiff materials or glues.

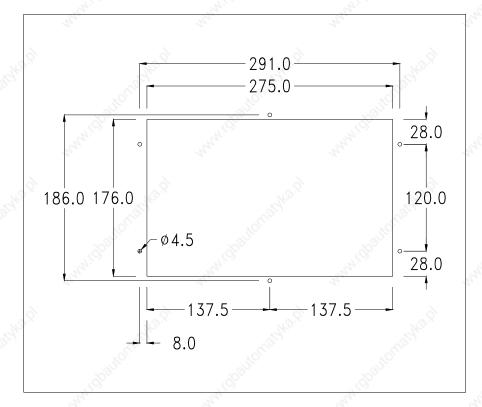
Before starting to insert the customized label, see "Chapter 28 -> Inserting customized labels".





ģ	Position	Function
	А	Auxiliary port for connecting optional accessories
	Builde	Trimmer for brightness control
2	С	Power supply connector
X	D	MSP serial port for communicating with PLC/PC
	E	ASP serial port for communicating with PC or other devices
	F	LPT port for connecting printer (Optional)





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

# Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT; when the message [WAIT FOR BOOT FORCED] is

displayed, press  $\begin{bmatrix} Enter \\ or with the VT on press together \\ \end{bmatrix}$  +  $\begin{bmatrix} Shift \\ + \end{bmatrix}$ ; in either case wait a moment

# VT terminal with no Modem function:

• The following mask appears. F3=MemoCARD is only enabled when a Memory Card has been inserted in the VT terminal (see Page 11-18). The function to press depends on which port you intend to use (MSP or ASP). The VT is now ready to receive (refer to Software Manual for transfer procedure)

VT320 TRANSFER PAGE

Graphic controller BOOT check : OK Graphic controller RAM check : OK

Graphic controller synchronization : OK

Main FIRMWARE check : NOT PRESENT Graphic controller FIRMWARE : ERROR

F1=ASP F2=MSP F3=MemoCARD ENTER=Prj

### VT terminal with Modem function:

• Proceed from the preceding mask; the following mask appears

#### VT320 TRANSFER PAGE

Graphic controller BOOT check : OK Graphic controller RAM check : OK

Graphic controller synchronization : OK

Main FIRMWARE check : NOT PRESENT Graphic controller FIRMWARE : ERROR

F1=MODEM F2=PC ENTER=Prj

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; press the corresponding function

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

#### VT320 TRANSFER PAGE

Graphic controller BOOT check : OK Graphic controller RAM check : OK

Graphic controller synchronization : OK

Main FIRMWARE check : NOT PRESENT Graphic controller FIRMWARE : ERROR

F1=SLOW F2=FAST

The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), press the corresponding function  $\square$ . The VT is now ready to receive (see Software Manual for the transfer).

# Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

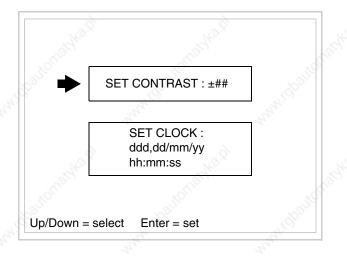
- Be situated in any page of the project
- Press shift twice; you will see

	Port	S.	****	
	Driver	:	****	
3	Ver	:	****	
ľ	Addr VT	:	****	
	Error	:	xxxxxxxxxxxxxxxxxxxx	
	Right = n	ext	page Enter = settings page	age

There is one of these pages for each communication port; you can move

between the various pages by pressing

If you press while displaying this page you can access the page for setting the clock and the contrast.



In order to access the contrast setting, use or to select the SET CON-

TRAST option that is displayed in reverse colors and press ^[nter]; the following mask will appear:

CONTRAST : ±## Up/Down = change Enter = memo

Use and/or to effect any variation and for the confirmation.

To be able to set the clock use or to select the SET CLOCK option

that is displayed in reverse colors and press ^[enter]; the following mask will appear:

For the clock to be used properly, a special battery has to be inserted in the terminal (see "Chapter 33 -> Video terminal accessories").

hh:mm:ss dd/mr	n/yy	Mary COS	
mathen		14 ² .9	
NNI-GOULC		ANNON: CO	
Lf/Rt=select Up	/Down=change Ent	er=memo	

variation; use to confirm.

To use the Memory Card either switch on the VT with the VT is already on, press shift + together; in both cases it will be necessary to wait a moment before the following mask appears on the VT:

VT320 TRANSFER PAGE

Graphic controller BOOT check : OK Graphic controller RAM check : OK

Graphic controller synchronization : OK

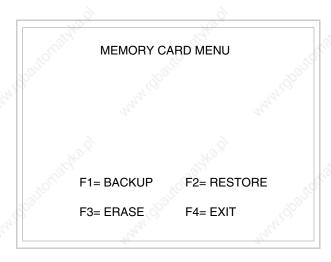
Main FIRMWARE check : NOT PRESENT Graphic controller FIRMWARE : ERROR

F1=ASP F2=MSP F3=MemoCARD ENTER=Prj

Press I F3=MemoCARD (if the key is not on screen, see Page 11-14); and

any

the following mask will appear:



For the meaning and function of the keys see "Chapter 33 -> Memory card".

Possible error messages are:

• PR ERR

Problem-> Errors have been detected in the data exchange between the VT and the Device.Solution-> Check the cable; there may be disturbance.

#### COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

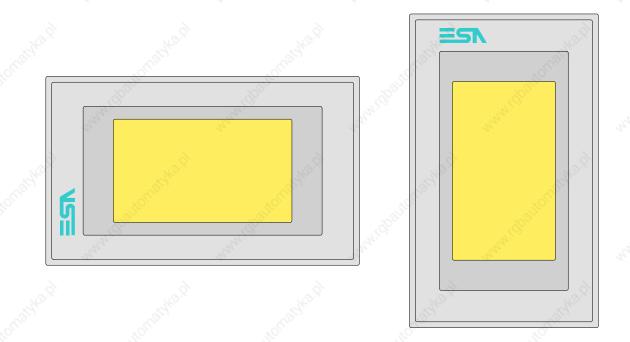
Improving display color quality To improve the color quality, adjust the contrast of the display: if the colors are too dark increase the contrast; if, on the other hand, the colors are too light, decrease the contrast.

Adjusting the contrast on the display To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 11-17) and changing the value (from +63 to -64) in evidence at that moment. Increase the value to darken the display; to lighten it decrease the value.

We advise this to be done at typical room temperature and with the terminal at operating temperature (about 30 minutes after switching on and with the screen saver disabled - see Software Manual).

# Chapter 12 Video terminal VT155W

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	Andrew Contraction	



# **Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal				
VT155W 00000			- 26	0	
VT155W 000DP	x 61		50		
VT155W 000CN	e a cara a c	es.	_		
VT155W 000ET					
Display	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	V	▼	▼	
	LCD 4 tones of grey STN	٠	•	•	
Туре	LCD 16 Colors STN				
	LCD 16 Colors TFT			10	
Touch screen	Matrix 20 x 8 (Cell:12x16 pixels)	•	•	•	T
Representational format	Graphic	•	۰	•	T
Resolution [pixels]	240 x 128 (4")		٠	•	
Rows x characters	16 x 40 / 8 x 20 / 4 x 10 - 21 x 30* / 10 x 15* / 5 x 7*		٠	•	1
Display area size [mm]	94,5 x 54,5	٠	٠	•	T
Character matrix in text mode [pixels]	6 x 8 / 12 x 16 / 24 x 32	•	٠	•	1
Character size [mm] x 1 / x 2 / x 4	2,3 x 5,2 / 4,6 x 5,8 / 9,1 x 11,7	•	٠	•	T
Contract adjustment	Software	•	٠	۲	5
Contrast adjustment	Automatic compensation with temperature	•	•	•	Ť
Character sets	Programmable fonts/TTF Windows ®	•	•	•	Ť
Backlighting	No.	8		t	t
Tupo	LED	٠	•	•	1
Туре	CCFL lamp			-	1
Minimum lamp-life at 25°C [hours]				<u> </u>	Ť

Code of terminal	Characteristics of the termina	I			
VT155W 00000					
VT155W 000DP				à	
VT155W 000CN			3P		
VT155W 000ET		- Al	2		
Jser memory		V	▼	▼	V
Project [Bytes]	640K (Text + Graphics)	٠	•	٠	•
Data memory [Bytes]	16K (Flash EPROM)	•	•	٠	٠
Memory for Windows ® -based fonts [Byte]	32 32				
Memory Card for backup					
Memory Card for expansion	6 6			5	
nterfaces	K. K.		P		
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	2	1		٠
ASP (Auxiliary serial port)	RS232/RS485	9			
ASP-15L (Auxiliary serial port)	RS232/RS485				
ASP-8 (Auxiliary serial port)	RS232	•	٠	•	•
ASP-9 (Auxiliary serial port)	RS232				
PT parallel port	Centronics				
Auxiliary port	Connections for accessories			~	
Accessories	NO NO		20	1	
Connectable accessories	See table "Chapter 33"	۲	•	•	•
Clock	100 X	0			
Clock	Hardware (with Supercapacitor - Min.72h	•	•	•	•
letworks					
2 ⁴⁷	Profibus-DP		+	•	
ntegrated	CAN Open (Optoisolated interface)		•		
2	Ethernet 10/100Mbit RJ45	•	+		
Iniversal Bus Connector	10 ⁻ 2, 10 ⁻ 2,		30	3.	
Detional	See table "Chapter 33"	•	•	•	•
Proprietary networks		6	+		
	Network server		+		
ESA-Net	Network client	•	•	•	•
Fechnical data	AT AT	-			-
Power supply	24Vdc (1832Vdc)				
Power absorbed at 24Vdc	10W			5	
Protection fuse	Ø5x20mm - 800mA Quick Blow F		50	2	
Protection level	IP65 (front-end)	ð	de.		
Dperating temperature	050°C	5			
Storage and transportation temperature	-20+60°C	2			
Humidity (non-condensing)	<85%				
Veight	500gr				
Dimensions					
External W x H x D [mm]	166 x 100 x 39,6				
Cut-out W x H [mm]	157 x 91			2-	
Certification		X	d'e		

# **Functions**

The following table lists in alphabetical order all the functions of the VT in question.

Table 12.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal			
VT155W ***** Objects/Functions	Quantity		
Alarm field	Quantity		
Alarm help	256		
Alarm history buffer	220		
Alarm statistics			
Alarms (Total/active simultaneously)	256/256		
Arc			
Automatic operations	32		
Backup/Restore	9		
Bar data			
Bit-wise password	8bits		
Buttons	160 x page		
Circles			
Command: Change language	10 m		
Command: Clear trend buffer	1000		
Command: Delete recipe	<u></u>		
Command: Hardcopy			
Command: Load recipe from data memory			
Command: Modify password	0		
Command: Next page	100		
Command: Page help	30		
Command: Password login	201		
Command: Password logout			
Command: Previous page			
Command: Print alarm history			
Command: Printer form feed	×e.		
Command: Quit project	100		
Command: Report	13 ¹⁰		
Command: Restarts reading time-sampled trend	30°		
Command: Run pipeline			
Command: Save alarms history and trend buffers in flash			
Command: Save recipe in data memory			
Command: Save recipe received from device in buffer	Nº.		
Command: Save recipe received from device in data memory	S.C.		
Command: Send recipe from video buffer to device	- alle		
Command: Send recipe to device	Ś.		
Command: Service page			

Table 12.1: Functions and objects realizable with this VT (Part 2 of 4)

VT155W ****	
Objects/Functions	Quantity
Command: Show alarms history	S
Command: Show page directory	30
Command: Show project information	
Command: Show recipe directory	
Command: Show sequence directory	
Command: Shows driver status page	6
Command: Shows page help	24°
Command: Shows page with function: PG	Sou
Command: Stops reading time sampled trend	3 1
Command: Trend reading saved in device	
Command: Zero number of general pages	
Date field	
Day-of-the-week field	6
Dynamic texts: Bit-group-structured dynamic texts	No.
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	3
E-keys	
Equations	32
⁼ -keys	
Free terminal	e e
Function: Disables key	Stor.
Function: Go to page	S.C.C.
Function: Internal command	3
Function: Invert bit value	
Function: Macro	
Function: None	
Function: Reset bit permanently	S.
Function: Reset real-time bit	No.
Function: Sequences	5
Function: Sets bit permanently	8
Function: Sets real-time bit	
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	2
Headers and footers (Total/Number of fields per H-F)	32/128
nfo-messages (Total/active simultaneously)	256/256
nternal registers	4096bytes
_abels	

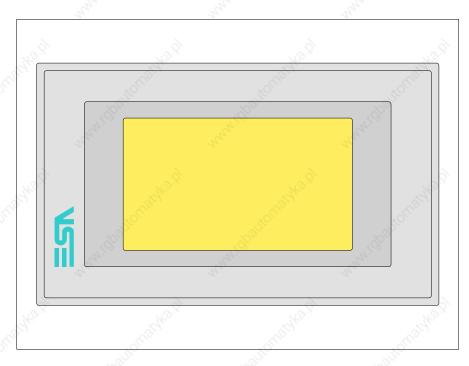
Table 12.1: Functions and objects realizable with this VT (Part 3 of 4)

Objects/Functions	Quantit	y
Lines	600	-
Lists of bitmap images		
Lists of texts	S	
Local configuration of E-keys	Alah .	
Local configuration of F-keys	2) ·	
Macro field		
Macros (Total/Commands x macro)	1024/1	6
Message field	25	
Message help	256	
Multilanguage texts	4 Langs	S.
Object - Indicator	, and the	
Object - Potentiometer knob	24	$\neg$
Object - Selector knob		
Object - Sliding potentiometer	3	P
Object - Sliding selector	10 A	
Page	64	
Page help	64	
Password	10	
Pipelines (Number/Tot bytes)	2.	
Print		6
Print page (Total/Number of fields per page)	64/128	6
Programmable fonts	-Co	
Project images	- A ³⁵ C	
Public variables of ESANET network (Number/Total bytes)		
Recipe field for recipe structure	1999 - Carlos	
Recipes (Number of variables per recipe)	128/25	6
Rectangles		-6
Redefinable characters	2	P
Reports	32	
Sequences - Random	- AL	
Sequences - Start/stop		
Static bitmaps	stat.	
Symbolic field: Bit-group-structured dynamic bitmaps		
Symbolic field: Single-bit-structured dynamic bitmaps	1024*	_0
Symbolic field: Value-structured dynamic bitmaps	2 A	Ke l
System messages	- of 18"	
System variables assigned to recipe structure	_35 ⁵	$\rightarrow$
Time long field	<u>_</u>	$\rightarrow$

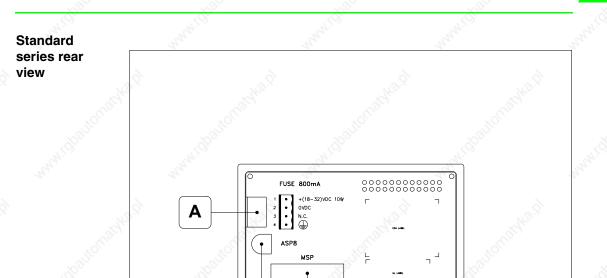
Table 12.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of terminal		
VT155W ****		
Objects/Functions	Quantity	]
Timer	32	
Touch Area	24	
Trend buffers		
Trends (Trends x page/Channels x trend)		
Trends sampled automatically (Memory/Trends/Readings)		
Trends sampled on command (Memory/Trends/Readings)	6	
Value direct command: ADD	Nº.	T
Value direct command: AND	S. Carl	
Value direct command: OR	30	
Value direct command: SET		
Value direct command: SUBTRACT		
Value direct command: XOR		
Variables: Limit values and linear scaling variables	6	
Variables: Movement variable (Mobile symbolic field)	No.	
Variables: Threshold variables	00	
Variables: Floating Point numerical variables	32 x pages	
Variables: Numerical variables (DEC, HEX, BIN, BCD)	1	
Variables: String variables (ASCII)		
Inless otherwise stated, there is no limit to the number of includable elements, only the size of pro-	iant momony anto a l	lim

## Front view



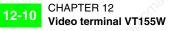
All buttons and signals are defined using the programming software (see Software Manual).



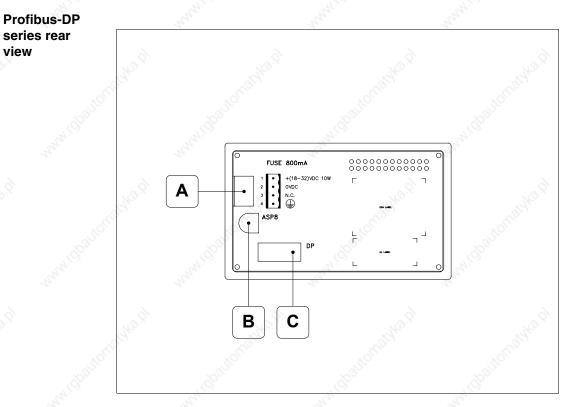
С

В

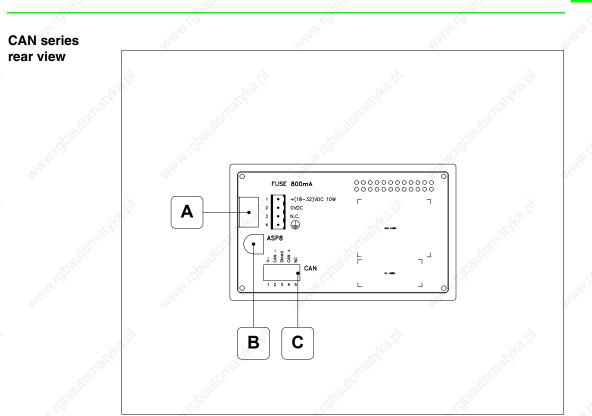
Position	Function
А	Power supply connector
В	ASP serial port for communicating with PC or other devices
С	MSP serial port for communicating with PLC/PC



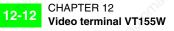
view



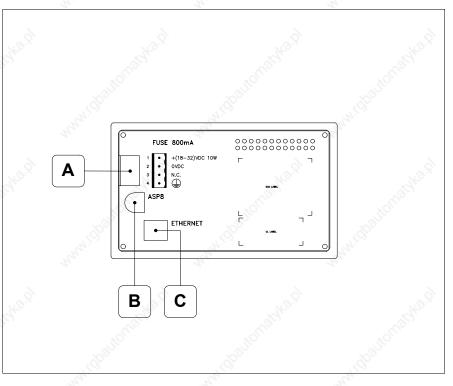
Position	Function
A	Power supply connector
В	ASP serial port for communicating with PC or other devices
C	Serial port for network communication



Position	Function			
A	Power supply connector			
В	ASP serial port for communicating with PC or other devices			
С	CAN serial port			

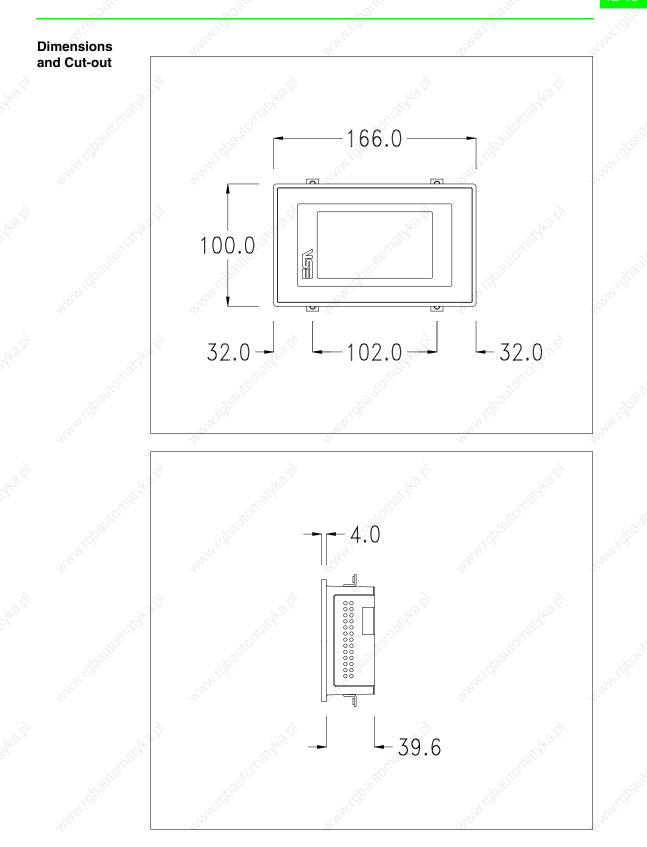


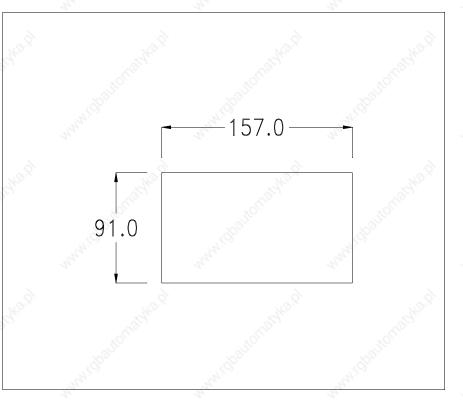
# Ethernet series rear view



Position	Function
No. A	Power supply connector
В	ASP serial port for communicating with PC or other devices
C and	Ethernet network 10/100Mbit RJ45 (For the diagnostic mode of the LEDs see "Chapter 30 -> Ethernet port")







To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

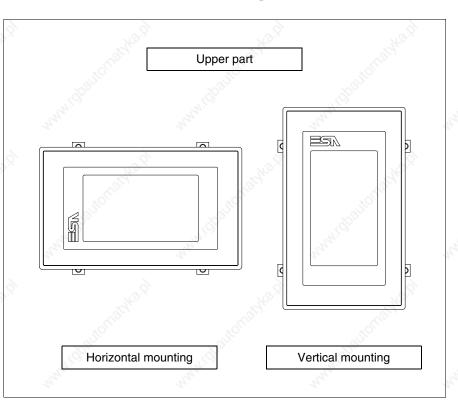
Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

Methods of mounting

There are two ways of mounting the VT155 on the container, horizontally or vertically. Once you have chosen the direction that means you can see the project properly and you are in the project creation phase, choose the terminal with the same orientation (see Software Manual "Chapter 5 -> New...").

Once the orientation has been defined, you are recommended not to change it, as the project created could then become unusable.

To orientate the terminal correctly use the logo on the front fascia as a reference.



Below are listed the terminals with their respective correct orientations.

## Calibration of Touch Screen

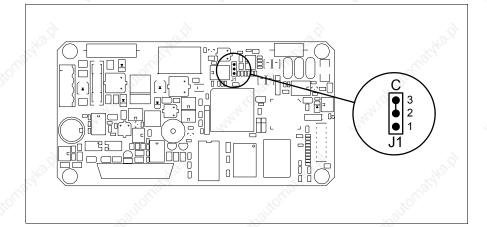
The screen of VT155W is made of resistive, sensitive glass; for this type of glass to work properly it requires a calibration procedure (**the terminal is already calibrated when supplied**), that is, the resistive area of the glass has to be adjusted to the visible are of the display.

Should it be thought necessary to repeat the calibration procedure this can be done by following the instructions set out below.

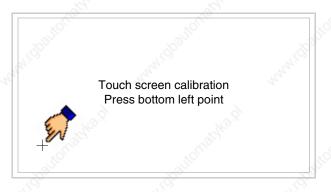
The procedure must be carried out with great care as the precision of the keys area depends on the calibration.

How to perform the calibration procedure:

- Make sure the VT is not connected to the power supply
- Remove the back cover
- Identify jumper J1

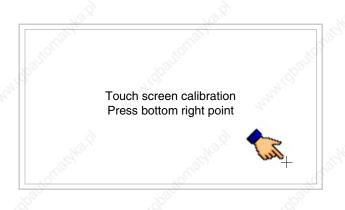


- Position J1 on pins 2-3 (C)
- Reconnect the power supply and switch on the terminal; the following mask appears



• Touch the corner indicated in the figure; then the following page appears on screen

Touch screen calibration Press top right point • Touch the corner indicated in the figure to complete the calibration procedure; the following page now appears



• Wait a few moments until the VT displays either the following mask or the project page (the page may be slightly different in its wording depending on which series the terminal belongs to)

VT155W TRANSFER PA	GE		350
Main BOOT and RAM ch			<u> </u>
Main FIRMWARE check	: 0	K	
SELECT: MSP	ASP	ک EXIT	
SELECT: MSP	ASP	EXIT	
JION .	300		.39

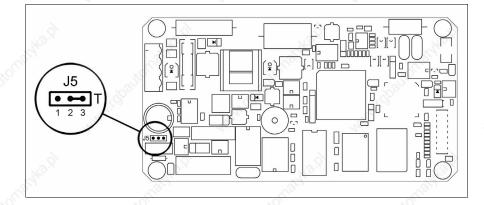
- Switch off the terminal
- Reposition J1 on pins 1-2
- Replace the back cover
- Switch on the terminal again

The calibration procedure has finished; if the calibration has be carried out wrongly or imprecisely, repeat the procedure.

# Termination of CAN line

This paragraph applies only to the CAN series. The VT in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J5.



- Position the jumper between pins 2 and 3 (line terminated).
- Replace the back cover.
- Reconnect the power supply.

# Introducing the MAC address

This paragraph relates only to the Ethernet series. The Media Access Control (MAC) address unambiguously identifies each terminal connected in the Ethernet network. The terminal is acquired with the address already programmed and is shown on the display of the terminal in the transfer page.

VT155W ETH	ERNET TRA	ANSFER PA	GE
Main BOOT a Main FIRMW		eck : OK : OK	
SELECT:	MSP	ASP	EXIT
		MAC add	- 25
		00.0E.0E.	xx.xx.xx

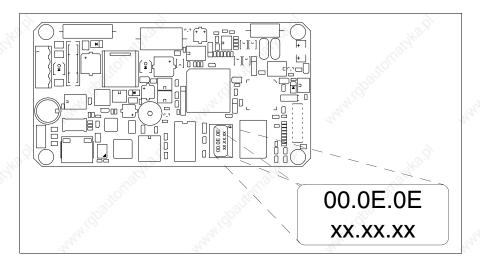
The MAC address is permanently memorized in the terminal, but should it be necessary to execute an "aided" BOOT update (see Software Manual "Chapter 14 -> BOOT update") the address is lost.

This operation must be carried out only with the advice of the ESA Customer Care Department.

Terminals with no valid MAC address when switched present a mask for its insertion. If no MAC address belonging to the terminal is available, proceed as follows:

- Check that the VT is not connected to the power supply.
- Remove the back cover

• Locate the label carrying the MAC address

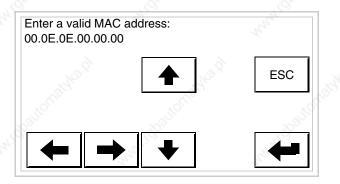


• Make a note of the number on the label (e.g. 00.0E.0E.00.00.01)

00.0E.0E -> fixe xx.xx.xx -> vari

-> fixed part that identifying as an ESA product -> variable part different for each terminal

- Reconnect the power supply to the terminal and, if necessary, calibrate the touch screen (see Page 12-15)
- Replace the back cover
- Switch on the terminal again
- The following mask appears; introduce the address previously noted down (e.g. 00.0E.0E.00.00.01)



• Use the arrow 💷 to make the setting. Once the address has been confirmed the following page is displayed

ISFER PAG	Ē
< : OK : OK	
ASP	EXIT
MAC addr: 00.0E.0E.00	0.00.01
	: OK ASP MAC addr:

The procedure is now terminated.



Should a wrong MAC address have been inserted contact the ESA Customer Care Department.

A wrong address could give rise to an error of conflict between VT terminals in the Ethernet network.

Transfer PC -> VT

For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT and wait for the following mask to appear
- Press one after the other the diagonally opposite corners free of settable objects or buttons (at least one corner needs to be free)



and wait a moment, or, using the appropriate button (see Page 12-24), till the VT displays the following mask

VT155W TRANSFER P	AGE	
Main BOOT and RAM c Main FIRMWARE check		19
SELECT: MSP	ASP	EXIT
	NO CO	

• Choose the port you intend to use for the transfer (MSP or ASP); touch the relevant 💷 on the display. The following mask will appear

	VT155W TRANSFER PAGE		
	Main BOOT and RAM check : OK Main FIRMWARE check : OK	ş	
ĉ	SELECT: REMOTE LOCAL EXIT		

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant  $\square$  on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following

12-22	CHAPTER 12 Video terminal VT	155W
		Š.
		mask will appear

VT155W TRANSFER PAGE		
Main BOOT and RAM check	: OK	
Main FIRMWARE check	: OK	S. C.
		3434
SELECT: SLOW	FAST	

The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant II on the display. The VT is now ready to receive (see Software Manual for the transfer).

#### Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects or buttons (at least one angle must be free)



and you will see

12-23

Port Driver Ver Addr VT Error 

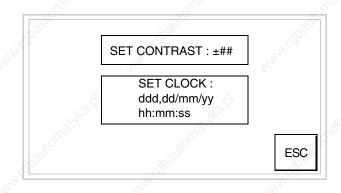
There is one of these pages for each communication port; movement between the various pages is effected by pressing  $\blacktriangleright$ .

From this page you can:

- Set the clock and the contrast
- Prepare the VT to receive the program

Setting the clock and the contrast:

To set the clock and the contrast, while displaying the above illustrated page, press PROG; the following mask appears

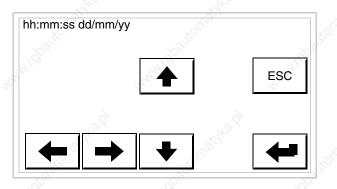


To set the contrast touch the words SET CONTRAST on the display; you will see the following mask



Use the arrow DD for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

To set the clock touch the words SET CLOCK on the display; the following mask appears



Use the arrow III for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

Prepare the VT to receive the program:

To prepare the VT to receive the program, while displaying the driver information page (see Page 12-22), press  $\frac{TRAN}{PAGE}$ , and you will

see the following mask

12-25

VT155W TRANSFER PAGE		
Main BOOT and RAM check Main FIRMWARE check	: OK : OK	and the second
SELECT: MSP	ASP	EXIT
, st	, add	

To proceed see Page 12-20.

Possible error messages that may be encountered in the driver information page are:

#### • PR ERR

Problem->	Errors have been detected in the data exchange between
	the VT and the Device.
Solution->	Check the cable; there may be disturbance.

#### COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

When  $\bigsqcup$  is pressed you quit the display of information regarding the driver.

#### Adjusting the contrast on the display

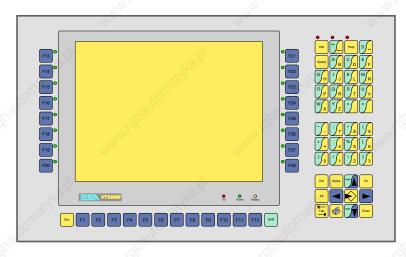
To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 12-23) and changing the value (from +31 to -32) in evidence at that moment. Increase the value to darken the display; to lighten it, decrease the value.

We advise this to be done at typical room temperature and with the terminal at operating temperature (about 30 minutes after switching on).



## Chapter 13 Video terminal VT330W

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Rear view	13-11
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Accessories	13-13
Transfer PC -> VT	13-13
Preparation for reception	13-14
Information relating to driver	13-16
Improving display color quality	13-20
Adjusting the contrast on the display	13-20
This chapter consists of a total of 20 pages.	6 6



**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal	à	2	
VT330W APM00		- x6		
VT330W APS00		3 ² 2	_	
VT330W APT00	í je stala se	·		
Display	di di di	▼	▼	
·····	LCD Monochromatic STN			
Туре	LCD 256 Colors STN		•	
	LCD 256 Colors TFT	٠	10	2
Representational format	Graphic	•	٠	
Resolution [pixels]	640 x 480 (10,4")		•	•
Rows by characters	30 x 80 / 15 x 40 / 7 x 20	8 •	•	
S), Si	196 x 148			
Display area size [mm]	211,2 x 158		•	
	211,2 x 158,4	٠		
Character matrix in text mode [pixels]	8 x16 / 16 x 32 / 32 x 64	٠	•	
Character size [mm] x 1 / x 2 / x 4	2,7 x 5,4 / 5,4 x 10,7 / 10,7 x 21,4	٠	•	
Contrast adjustment	Software	•	•	
Contrast aujustment	Automatic compensation with temperature	- de	٠	
Character sets	Programmable fonts/TTF Windows ®	8 ⁵ •	•	
Backlighting	Ó, Ó			
Туре	Led			
Туре	Lamp CCFL	•	•	•
Minimum lamp-life at 25°C [hours]	15000	•	•	
Keyboard	19 ²		.0	2
Non-customizable function keys	12	•	•	
Customizable function keys	16		•	•
Function key LEDs	16	8 ⁵ •	•	•
Alphanumeric keys	27	•	•	
Operational keys	19	•	•	
Operational key LEDs	3	•	•	•
Diagnostic LEDs	3	•	٠	

Code of terminal	Characteristics of the termi	nal		
VT330W APM00		i i di		
VT330W APS00	- <u></u>		~	
/T330W APT00	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		$\mathcal{P}^{\times}$	
ser memory	and the second sec	al.	• •	′ ▼
Project [Bytes]	640K + 1792K (Text + Graphics)	S.	• •	•
ata memory [Bytes]	256K (With back-up battery)	S 1	• •	•
Memory for Windows ® -based fonts [Byte]	512K		• •	•
Memory Card for backup	8Mb		• •	•
Nemory Card for expansion	4Mb (Only for Graphics)		• •	•
nterfaces	6		1	
ISP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	2	• •	•
ASP (Auxiliary serial port)	RS232/RS485	201	• •	•
SP-15L (Auxiliary serial port)	RS232/RS485	10		
ASP-8 (Auxiliary serial port)	RS232	e la		
SP-9 (Auxiliary serial port)	RS232			
PT parallel port	Centronics		• •	•
Auxiliary port	Connection of accessories			
Accessories	6 6		1	
Connectable accessories	See table "Chapter 33"	1	• •	•
lock	20 20	200		
Clock	Hardware (With back-up battery)	20	• •	•
letworks	x Sa	300		
14. P. 14.	Profibus-DP			
ntegrated	CAN Open (Optoisolated interface)			
	Ethernet 10/100Mbit RJ45			
Iniversal Bus Connector	- 6 6		6	
Optional 🖉	See table "Chapter 33"	2	•	•
roprietary networks		20		
SA-Net	Network server	201	• •	•
100 March 100 Ma	Network client	8° .	• •	•
echnical data	9 ₄₆ 9 ₄₆			
Power supply	24Vdc (1832Vdc)			
ower absorbed at 24Vdc	15W			
Protection fuse	Ø5x20mm - 1,25A Quick Blow F		8	
Protection level	IP65 (front-end)	8	Q.X.	
Operating temperature	050°C	200		
torage and transportation temperature	-20+60°C	0		
lumidity (non-condensing)	<85%	30		
Veight	4000gr			
Dimensions				
xternal W x H x D [mm]	435 x 260 x 74			
Cut-out W x H [mm]	403 x 240			

#### **Functions**

The following table lists in alphabetical order all the functions of the VT in question.

Table 13.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal	S	
VT330W ****	- 3 ⁰	_
Objects/Functions	Quantity	
Alarm field	2.	
Alarm help	1024	
Alarm history buffer	256	
Alarm statistics	N.	ð
Alarms (Total/active simultaneously)	1024/256	
Arc	30	
Automatic operations	32	
Backup/Restore	15	
Bar data		
Bit-wise password	8bits	t
Buttons	s.C	2
Circles	200	ľ
Command: Change language	10	t
Command: Clear trend buffer	S	t
Command: Delete recipe	12	t
Command: Hardcopy		
Command: Load recipe from data memory		
Command: Modify password	SI.	6
Command: Next page	1	
Command: Page help	30	
Command: Password login	S	
Command: Password logout	4.	
Command: Previous page		
Command: Print alarm history		
Command: Printer form feed	N	ð
Command: Quit project	J. J. S.	
Command: Report	30	
Command: Restarts reading time-sampled trend	. S ²	
Command: Run pipeline	2	╉
Command: Save alarms history and trend buffers in flash		+
Command: Save recipe in data memory		╉
Command: Save recipe received from device in buffer	N	2
Command: Save recipe received from device in data memory	and the second second	╉
Command: Send recipe from video buffer to device	30	╡
Command: Send recipe to device	187	+
Command: Service page	2	+

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

13-

Table 13.1: Functions and objects realizable with this VT (Part 2 of 4)

		Quantity
Objects/Functions Command: Show alarms history		200 A
Command: Show page directory		(c)
Command: Show project information		
Command: Show recipe directory	AN AN	
Command: Show sequence directory	20	
Command: Shows driver status page		~
Command: Shows page help		NO
Command: Shows page with function: PG		1 and a start of the start of t
Command: Stops reading time sampled trend	2	<u></u>
Command: Trend reading saved in device	S°	
Command: Zero number of general pages	- a ^{shi}	
Date field	-24	
Day-of-the-week field		6
Dynamic texts: Bit-group-structured dynamic texts		Nº N
Dynamic texts: Single-bit dynamic texts		1024*
Dynamic texts: Value-structured dynamic texts	à	
E-keys	Š,	
Equations	S. S. S.	32
-keys		
Free terminal		6
Function: Disables key		No.
Function: Go to page		S.C.
Function: Internal command		,
Function: Invert bit value	<u>_</u>	
Function: Macro	San San	
Function: None		
Function: Reset bit permanently		6
Function: Reset real-time bit		Nº.
Function: Sequences		aller.
Function: Sets bit permanently	~3	2
Function: Sets real-time bit	7.62	
Function: Value-structure direct command	A RANGE	
Global configuration of E-keys		
Global configuration of F-keys		Q.
Headers and footers (Total/Number of fields per H-F)		128/128
nfo-messages (Total/active simultaneously)		1024/256
nternal registers	~3	4096bytes
_abels	1.0	

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available Table 13.1: Functions and objects realizable with this VT (Part 3 of 4)

Objects/Functions	Quantity
Lines	100 C
Lists of bitmap images	30
Lists of texts	S
Local configuration of E-keys	
Local configuration of F-keys	
Macro field	
Macros (Total/Commands x macro)	1024/16
Message field	2
Message help	1024
Multilanguage texts	8 Langs.
Object - Indicator	256
Object - Potentiometer knob	256
Object - Selector knob	256
Object - Sliding potentiometer	256
Object - Sliding selector	256
Page	1024
Page help	1024
Password	10
Pipelines (Number/Tot bytes)	64/512
Print	
Print page (Total/Number of fields per page)	1024/128
Programmable fonts	- C
Project images	13°
Public variables of ESANET network (Number/Total bytes)	256/1024
Recipe field for recipe structure	7.
Recipes (Number of variables per recipe)	1024/512
Rectangles	
Redefinable characters	Nº Nº
Reports	128
Sequences - Random	- 20
Sequences - Start/stop	128
Static bitmaps	
Symbolic field: Bit-group-structured dynamic bitmaps	
Symbolic field: Single-bit-structured dynamic bitmaps	1024*
Symbolic field: Value-structured dynamic bitmaps	Nº Nº
System messages	and and and
System variables assigned to recipe structure	~3 ⁵⁰
Time long field	3
Time short field	-

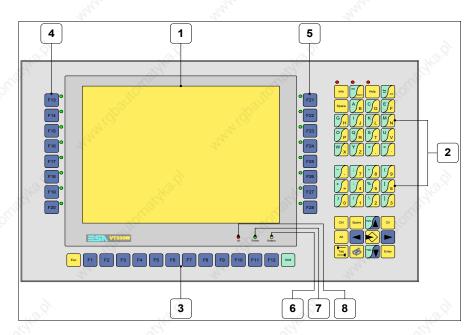
Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 13.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of	terminal	
VT330W ****	0	
Objects/Function	Quantity	
Timer	-Clar	32
Touch Area	3 ¹⁰	50
Trend buffers	. S	128
Trends (Trends x page/Channels x trend	)	8/8
Trends sampled automatically (Memory/	Trends/Readings)	8192bytes
Trends sampled on command (Memory/	Trends/Readings)	/**/640
Value direct command: ADD	Non	Nº.
Value direct command: AND	S.	
Value direct command: OR	S	50
Value direct command: SET	, S	
Value direct command: SUBTRACT	14 ²⁴	
Value direct command: XOR		
Variables: Limit values and linear scaling	variables	6
Variables: Movement variable (Mobile sy	mbolic field)	- No."
Variables: Threshold variables	a filo	304 x
Variables: Floating Point numerical varia	bles	pages
Variables: Numerical variables (DEC, HE	EX, BIN, BCD)	-
Variables: String variables (ASCII)		
Inless otherwise stated there is no limit to the number of inc	udable elemente entritte eize of ave	in et mennem ( e etc. e i

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

#### Front view



Key	Function	
1 march	Display	
2	Alphanumeric + operative keys	
3	F-keys with no LED	onable
4	F-keys with one LED	
5	F-keys with one LED	
6	X0 LED. Blinks when communication error is detected	Conton Conton
7	Power LED. Lights up when power in ON	b.
8	Battery LED. Lights up when the battery has nearly ru	n out
	Starts input	and and
Enter	Confirms setting of data	orr
PgUp	Page up When in setting phase, edits dynamic text	

			13-9
	and I Char		- And So
	Key	Function	5
	PgDn	Page down When in setting phase, edits dynamic text	
		Moves the cursor between settable fields When in setting phase, moves cursor to the left of the field	20
		Moves the cursor between settable fields When in setting phase, moves cursor to the right of the field	and the second sec
	Esc	Quits: setting of data, info-messages, sequence directory, com- munication driver	_
	Info	Displays info-messages	
	Hist	Displays ISA alarms	and in
	Help	Displays according to context: information message help, alarm help or page help	- CA
	Ack	Acknowledgment of ISA alarms on display	
		Print the entire display area	San 1.50
	Spare	No predefined function	1
	Ctrl	No predefined function	
	Tab	No predefined function	
	Alt	No predefined function	4 and
	Cir	In setting phase restores the initial value of the field	
shift	+ Ack Ack	Acknowledges all ISA alarms	20
shift	+ Hist	Displays the contents of the alarm buffer	and i.

toka.p

10.01 (A. 10)

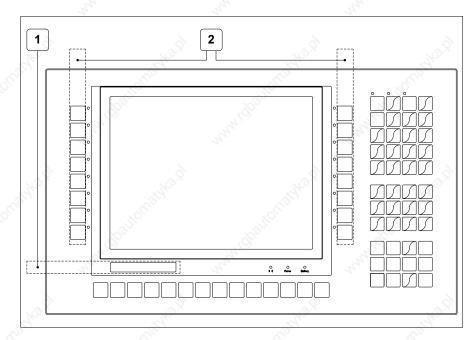
robauto

<u>10</u>142.01

rabautor

www.c

## Customizing label

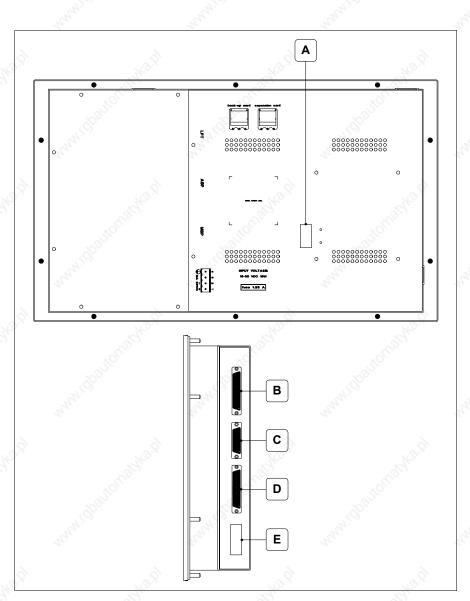


Position	Function - Dimensions L x H (mm)
1 www.	ESA Logo, VT Model - 162 x 13
12 Mar 2	F-key customization F - 17 x 207

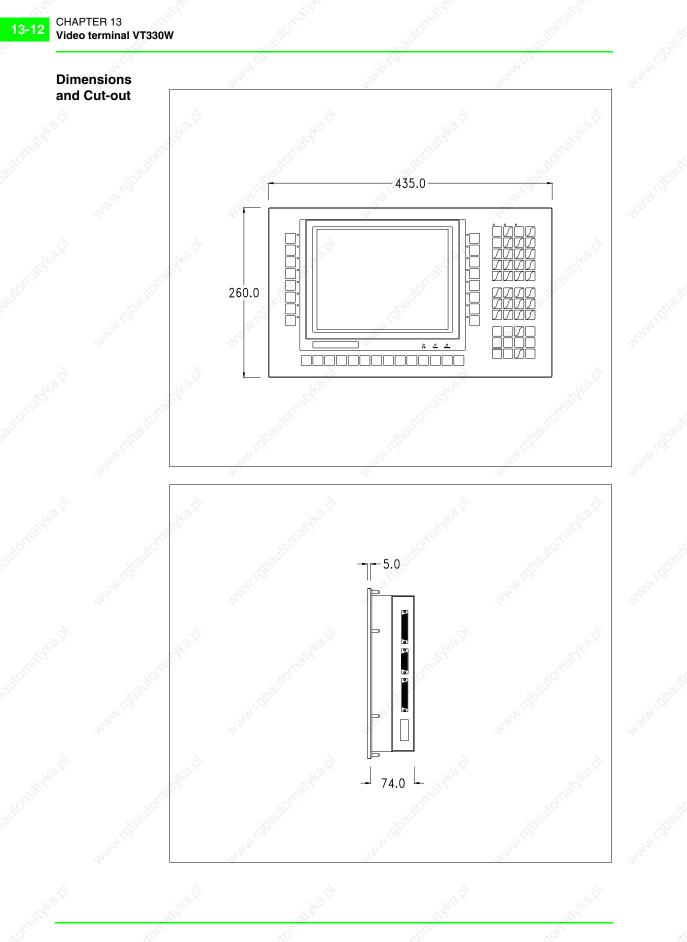
The total thickness of the label must not exceed  $125\mu m$  (micrometers). Do not use either stiff materials or glues.

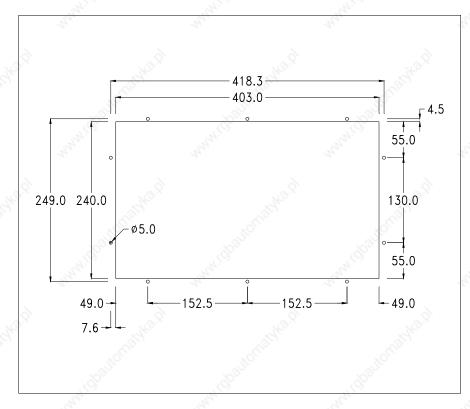
Before starting to insert the customized label, see "Chapter 28 -> Inserting customized labels".





Position	Function
A	Auxiliary port for connecting optional accessories
В	LPT port for connecting printer
С	ASP serial port for communicating with PC or other devices
D	MSP serial port for communicating with PLC/PC
E	Power supply connector





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

#### Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

# Preparation for<br/>receptionThe program VTWIN (see Software Manual) must be used for the transfer,<br/>but the terminal must be set up to receive. This means carrying out the fol-<br/>lowing steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT; when the message [WAIT FOR BOOT FORCED] is

displayed, press [t], or with the VT on press together [t] + [t]; in either case wait a moment

#### VT terminal with no Modem function:

• The following mask appears. F3=MemoCARD is only enabled when a Memory Card has been inserted in the VT terminal (see Page 13-18). The function to press depends on which port you intend to use (MSP or ASP). The VT is now ready to receive (refer to Software Manual for transfer procedure)

	VT330W TRANSFER PAGE		district of
	Graphic controller BOOT check :	ОК	and its
	Graphic controller RAM check :	ОК	25
	Main BOOT and RAM check :	OK	
	Graphic controller synchronization	i : OK	
3	Main FIRMWARE check :	NOT PRESENT	S.S.
	Graphic controller FIRMWARE :	ERROR	x office
	and a second		
	F1=MSP F2=ASP F3=MemoCAF	RD ENTER=Prj	34 ¹ .01
	34		15 ⁴
	Sa. Sa		
d,	and the second se		and the
~ L	and the second sec		S. S.

#### VT terminal with Modem function:

Proceed from the preceding mask; the following mask appears

#### VT330W TRANSFER PAGE

Graphic controller BOOT check :OKGraphic controller RAM check :OKMain BOOT and RAM check :OKGraphic controller synchronization :OKMain FIRMWARE check :NOT PRESENTGraphic controller FIRMWARE :ERROR

F1=MODEM F2=PC ENTER=Prj

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; press the corresponding function

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

ОК	
ок	
ОК	
: OK	
NOT PRESENT	
ERROR	
	OK OK : OK NOT PRESENT

The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), press the corresponding function  $\square$ . The VT is now ready to receive (see Software Manual for the transfer).

#### Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press Init twice; you will see

Port	:	*****	
Driver	:	****	
Ver	:	****	
Addr VT	:	****	
Error	:	****	

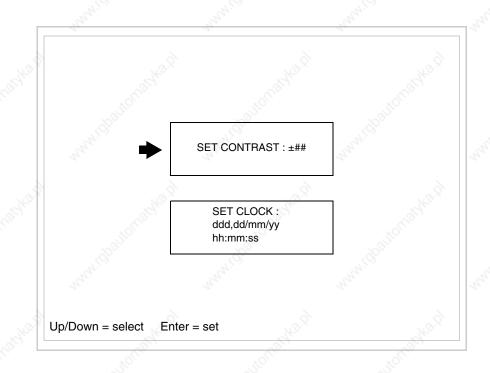
Right = next page Enter = settings page

There is one of these pages for each communication port; you can move

between the various pages by pressing

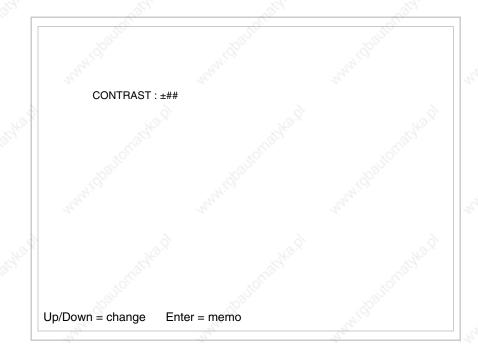
If you press ^{ther} while displaying this page you can access the page for setting the clock and the contrast.

13-17



In order to access the contrast setting, use or or to select the SET

CONTRAST option that is displayed in reverse colors and press [Enter]; the following mask will appear:



Use and/or to effect any variation; use for the confirmation.

To be able to set the clock use or to select the SET CLOCK option that is displayed in reverse colors and press enter; the following mask will appear:

For the clock to be used properly, a special battery has to be inserted in the terminal (see "Chapter 33 -> Video terminal accesso-ries").

hh:mm:ss dd/mm/yy		
March P		March.CO
Na.P		and automation
W. W		MANNIGES
stonal -automatyk		and successfully and
Left/Right = select Up/D	own = change Enter = m	nemo

Use and/or to select the field and and/or to effect any variation; use to confirm.

To use the Memory Card either switch on the VT with the beld down or, if the VT is already on, press shift + together; in both cases it will be necessary to wait a moment before the following mask appears on the VT:

#### VT330W TRANSFER PAGE

Graphic controller BOOT check :OKGraphic controller RAM check :OKMain BOOT and RAM check :OKGraphic controller synchronization :OKMain FIRMWARE check :NOT PRESENTGraphic controller FIRMWARE :ERROR

F1=MSP F2=ASP F3=MemoCARD ENTER=Prj

Press  $\square$  F3=MemoCARD (if the key is not on screen, see Page 13-14); the following mask will appear:

MEMORY CARD MENU F1= Backup ALL F5= Restore ALL F2= Backup FW/PRJ F6= Restore FW/PRJ F3= Backup RECIPES F7= Restore RECIPE F4= Backup ALARMS F8= Restore ALARMS F9= EXIT

For the meaning and function of the keys see "Chapter 33 -> Memory card".

Possible error messages are:

• PR ERR

Problem-> Errors have been detected in the data exchange between the VT and the Device.

Solution-> Check the cable; there may be disturbance.

#### COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

#### Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

Improving display color quality To improve the color quality, adjust the contrast of the display: if the colors are too dark increase the contrast; if, on the other hand, the colors are too light, decrease the contrast.

Adjusting the contrast on the display To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 13-17) and changing the value (from +63 to -64) in evidence at that moment. Increase the value to darken the display; to lighten it decrease the value.

We advise this to be done at typical room temperature and with the terminal at operating temperature (about 30 minutes after switching on and with the screen saver disabled - see Software Manual).

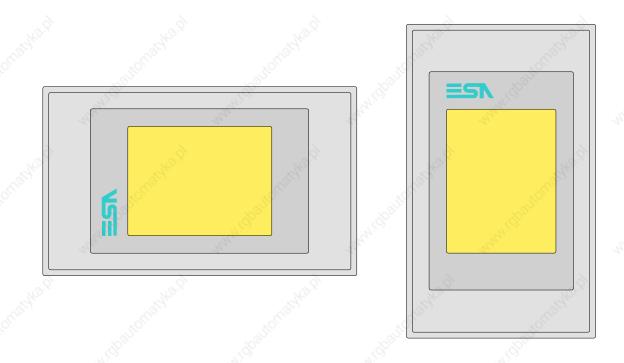
This parameter has no effect when a TFT display is used. This kind of technology does not need adjustment.

### Chapter 14

# Video terminal VT185W

Contents	Page
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Calibration of Touch Screen	14-13
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Information relating to driver	14-19
This chapter consists of 22 pages	Store Store

This chapter consists of 22 pages.



**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal		
VT185W 00000	2 ¹ 2 ²		
VT185W 000ET			
Display	and and a	<b>•</b>	
	LCD 4 tones of grey STN		
Туре	LCD 16 Colors STN		5
	LCD 16 Colors TFT		•
Touch screen	Matrix 20 x 16 (Cell:16 x15 pixels)	8	•
Representational format	Graphic	•	•
Resolution [pixels]	320 x 240 (3,6")	•	•
Rows x characters	16 x 40 / 8 x 20 / 4 x 10 - 21 x 30* / 10 x 15* / 5 x 7*		•
Display area size [mm]	75,5 x 57,3	•	•
Character matrix in text mode [pixels]	8 x 15 / 16 x 30 / 32 x 60	•	•
Character size [mm] x 1 / x 2 / x 4	1,82 x 3,42 / 3,65 x 6,84 / 7,30 x 13,68		•
Contract adjustment	Software	20	1
Contrast adjustment	Automatic compensation with temperature	800	
Character sets	Programmable fonts/TTF Windows ®	•	•
Backlighting	1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 - 1901 -		
Turpa	LED	•	•
Туре	CCFL lamp		
Minimum lamp-life at 25°C [hours]			
*) vertical mounting		2	

Code of terminal	Characteristics of the terminal		
VT185W 00000			7
VT185W 000ET		ò.	
User memory	Nº Nº		▼
Project [Bytes]	960K (Text + Graphics)	•	•
Data memory [Bytes]	16K (Flash EPROM)	•	•
Memory for Windows ® -based fonts [Byte	] 256K	•	٠
Memory Card for backup	and and		
Memory Card for expansion	42 44		
Interfaces			
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	6	٠
ASP (Auxiliary serial port)	RS232/RS485	9	
ASP-15L (Auxiliary serial port)	RS232/RS485		
ASP-8 (Auxiliary serial port)	RS232	•	•
ASP-9 (Auxiliary serial port)	RS232		
LPT parallel port	Centronics		
Auxiliary port	Connections for accessories		
Accessories			
Connectable accessories	See table "Chapter 33"		•
Clock	KON KON K	0	
Clock	Hardware (with Supercapacitor - Min.72h Typically130h)	•	•
Networks			
Non Non	Profibus-DP		
Integrated	CAN Open (Optoisolated interface)		
	Ethernet 10/100Mbit RJ45	•	
Universal Bus Connector			
Optional	See table "Chapter 33"		٠
Proprietary networks	NON NON	25	
	Network server		
ESA-Net	Network client	•	٠
Technical data	1921 - 1921 - 1921 - 1921 - 1921 - 1921 - 1921 - 1921 - 1921 - 1921 - 1921 - 1921 - 1921 - 1921 - 1921 - 1921 -		
Power supply	24Vdc (1832Vdc)		
Power absorbed at 24Vdc	10W		
Protection fuse	Self-resetting		
Protection level	IP65 (front-end)	2	
Operating temperature	050°C	28	
Storage and transportation temperature	-20+60°C		
Humidity (non-condensing)	<85%		
Weight	500gr		
Dimensions	S. Standard		
External W x H x D [mm]	166 x 100 x 39,6		_
Cut-out W x H [mm]	157 x 91		
Certification		N	
	CE, cULus	2	
Certifications and approvals ) vertical mounting	CE, cULus	2.8	

#### Functions

The following table lists in alphabetical order all the functions of the VT in question.

Table 14.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal	
VT185W ****	 
Objects/Functions	Quantity
Alarm field	1°
Alarm help	256
Alarm history buffer	256
Alarm statistics	10
Alarms (Total/active simultaneously)	256/256
Arc	30
Automatic operations	32
Backup/Restore	12
Bar data	
Bit-wise password	8bits
Buttons	320 x page
Circles	200
Command: Change language	30
Command: Clear trend buffer	do la
Command: Delete recipe	8
Command: Hardcopy	
Command: Load recipe from data memory	
Command: Modify password	1
Command: Next page	100 M
Command: Page help	100
Command: Password login	100
Command: Password logout	1
Command: Previous page	
Command: Print alarm history	
Command: Printer form feed	1
Command: Quit project	100 M
Command: Report	30
Command: Restarts reading time-sampled trend	18 ⁰
Command: Run pipeline	
Command: Save alarms history and trend buffers in flash	
Command: Save recipe in data memory	
Command: Save recipe received from device in buffer	N.C.
Command: Save recipe received from device in data memory	1 and
Command: Send recipe from video buffer to device	38
Command: Send recipe to device	don -
Command: Service page	

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available Table 14.1: Functions and objects realizable with this VT (Part 2 of 4)

Code of terminal VT185W *****					
Objects/Functions	Quantity				
Command: Show alarms history	1. Cont				
Command: Show page directory	30				
Command: Show project information	Š				
Command: Show recipe directory	A				
Command: Show sequence directory					
Command: Shows driver status page	6				
Command: Shows page help	.No.				
Command: Shows page with function: PG	_C102				
Command: Stops reading time sampled trend	20				
Command: Trend reading saved in device	J.S.				
Command: Zero number of general pages	AN INCOMENT				
Date field					
Day-of-the-week field	6				
Dynamic texts: Bit-group-structured dynamic texts	. Ke				
Dynamic texts: Single-bit dynamic texts					
Dynamic texts: Value-structured dynamic texts					
E-keys	S.S.				
Equations	32				
F-keys					
Free terminal	6				
Function: Disables key	Nº.				
Function: Go to page	1. C.				
Function: Internal command					
Function: Invert bit value					
Function: Macro	S. S. S.				
Function: None					
Function: Reset bit permanently	6				
Function: Reset real-time bit	A.				
Function: Sequences	S.C.B.				
Function: Sets bit permanently					
Function: Sets real-time bit	10				
Function: Value-structure direct command	State -				
Global configuration of E-keys	-				
Global configuration of F-keys	2				
Headers and footers (Total/Number of fields per H-F)					
Info-messages (Total/active simultaneously)					
Internal registers					
Labels	4096bytes				
LEDs assigned to sequence	plant -				

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 14.1: Functions and objects realizable with this VT (Part 3 of 4)

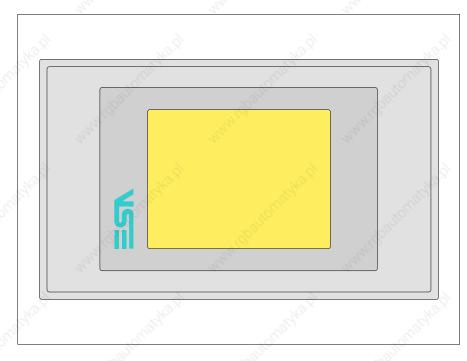
Objects/Functions	Quantity	Ť
Lines	100 C	
Lists of bitmap images	.3°	T
Lists of texts	S	T
Local configuration of E-keys		T
Local configuration of F-keys		T
Macro field		k
Macros (Total/Commands x macro)	1024/16	T
Message field	200	1
Message help	256	1
Multilanguage texts	6 Langs.	1
Dbject - Indicator	256	t
Dbject - Potentiometer knob	256	t
Dbject - Selector knob	256	t
Dbject - Sliding potentiometer	256	t
Object - Sliding selector	256	+
Page	150	t
Page help	150	t
Password	10	t
Pipelines (Number/Tot bytes)		Ť
Print		8
Print page (Total/Number of fields per page)	64/128	Ť
Programmable fonts	a construction of the second s	t
Project images	-350	Ť
Public variables of ESANET network (Number/Total bytes)	3	t
Recipe field for recipe structure		t
Recipes (Number of variables per recipe)		t
Rectangles		ð
Redefinable characters	No.	Ť
Reports	32	Ť
Sequences - Random	135	t
Sequences - Start/stop	5	1
Static bitmaps	-	t
Symbolic field: Bit-group-structured dynamic bitmaps		t
Symbolic field: Single-bit-structured dynamic bitmaps	1024*	\$
Symbolic field: Value-structured dynamic bitmaps	. Sto	ŀ
System messages		t
System variables assigned to recipe structure	600	t
Time long field	S)	t

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available Table 14.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of terminal			
VT185W ****			
Objects/Functions	Quantity	<i>'</i> '	
Timer	32	1	
Touch Area	24	1	
Trend buffers	128	1	
Trends (Trends x page/Channels x trend)		1	
Trends sampled automatically (Memory/Trends/Readings)	6144bytes	1	
Trends sampled on command (Memory/Trends/Readings)	/**/320	1	
Value direct command: ADD	Nor	,	
Value direct command: AND	S.C.	1	
Value direct command: OR	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 19	1	
Value direct command: SET		,	
Value direct command: SUBTRACT		,	
Value direct command: XOR		,	
Variables: Limit values and linear scaling variables	6	,	
Variables: Movement variable (Mobile symbolic field)	No.	1	
Variables: Threshold variables	10	1	
Variables: Floating Point numerical variables	48 x pages	1	
Variables: Numerical variables (DEC, HEX, BIN, BCD)	~	,	
Variables: String variables (ASCII)	_		
Inless otherwise stated there is no limit to the number of includable elements, only the size of pro	iaat mamany aata a li	-	

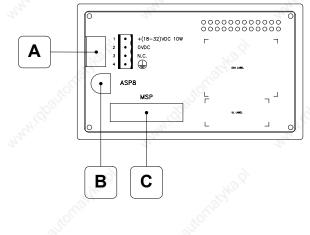
Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

#### Front view

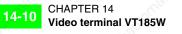


All buttons and signals are defined using the programming software (see Software Manual).

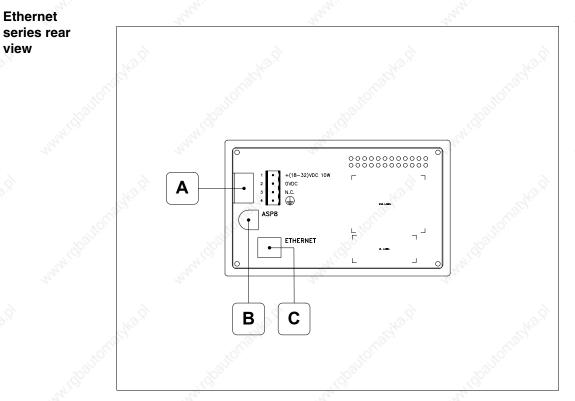
# Standard series rear view



Position Function		
A	Power supply connector	
В	ASP serial port for communicating with PC or other devices	
С	MSP serial port for communicating with PLC/PC	

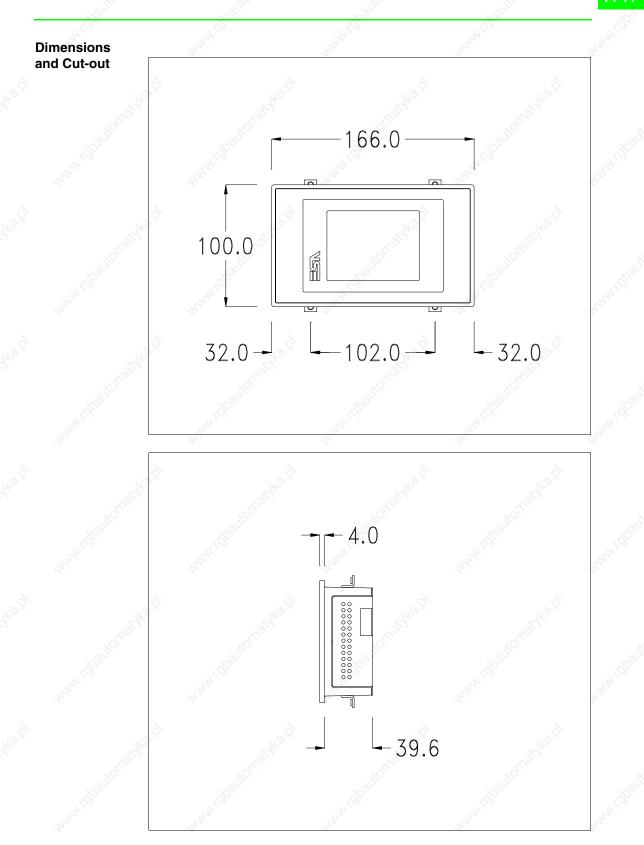


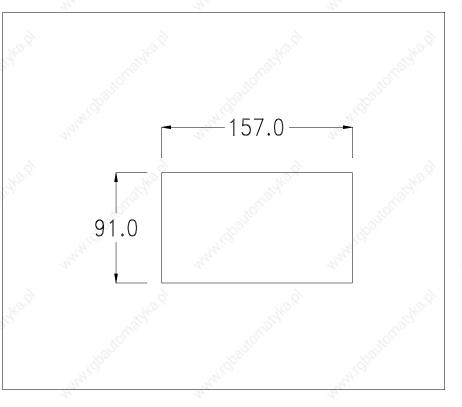
view



Position	Function	
A	Power supply connector	
В	ASP serial port for communicating with PC or other devices	
C and	Ethernet network 10/100Mbit RJ45 (For the diagnostic mode of the LEDs see "Chapter 30 -> Ethernet port")	







To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

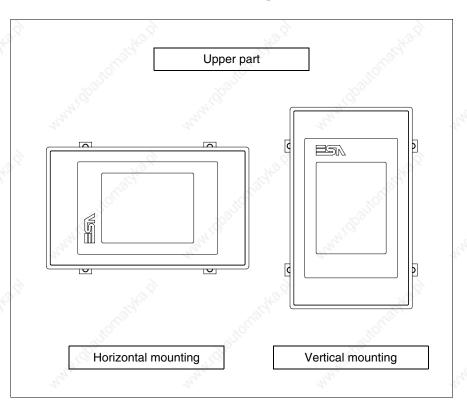
Methods of mounting

There are two ways of mounting the VT185W on the container, horizontally or vertically. Once you have chosen the direction that means you can see the project properly and you are in the project creation phase, choose the terminal with the same orientation (see Software Manual "Chapter 5 -> New...").

A

Once the orientation has been defined, you are recommended not to change it, as the project created could then become unusable.

To orientate the terminal correctly use the logo on the front fascia as a reference.



Below are listed the terminals with their respective correct orientations.

# Calibration of Touch Screen

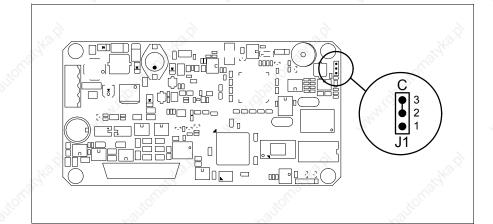
The screen of VT185W is made of resistive, sensitive glass; for this type of glass to work properly it requires a calibration procedure (**the terminal is already calibrated when supplied**), that is, the resistive area of the glass has to be adjusted to the visible are of the display.

Should it be thought necessary to repeat the calibration procedure this can be done by following the instructions set out below.

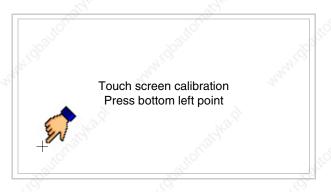
The procedure must be carried out with great care as the precision of the keys area depends on the calibration.

How to perform the calibration procedure:

- Make sure the VT is not connected to the power supply
- Remove the back cover
- Identify jumper J1

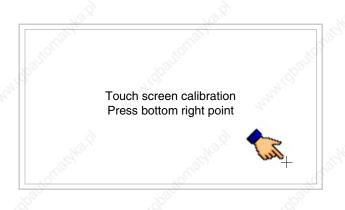


- Position J1 on pins 2-3 (C)
- Reconnect the power supply and switch on the terminal; the following mask appears



• Touch the corner indicated in the figure; then the following page appears on screen

Touch screen calibration Press top right point • Touch the corner indicated in the figure to complete the calibration procedure; the following page now appears



• Wait a few moments until the VT displays either the following mask or the project page (the page may be slightly different in its wording depending on which series the terminal belongs to)

VT185W TRANSFER PAG	GE	
Main BOOT and RAM che Main FIRMWARE check	eck : OK : OK	www.bbc
SELECT: MSP	ASP	EXIT
Monor	Jtoffer.	.50

- Switch off the terminal
- Reposition J1 on pins 1-2
- Replace the back cover
- Switch on the terminal again

The calibration procedure has finished; if the calibration has be carried out wrongly or imprecisely, repeat the procedure.

Introducing the MAC address This paragraph relates only to the Ethernet series. The Media Access Control (MAC) address unambiguously identifies each terminal connected in the Ethernet network. The terminal is acquired with the address already programmed and is shown on the display of the terminal in the transfer page.

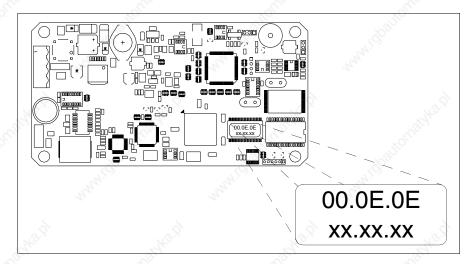
VT185W ET	THERNET TR	ANSFER PA	GE
Main BOOT	and RAM ch	eck : OK	
Main FIRM	NARE check	: OK	
SELECT:	MSP	ASP	EXIT
		MAC add	:
		00.0E.0E.	xx.xx.xx

The MAC address is permanently memorized in the terminal, but should it be necessary to execute an "aided" BOOT update (see Software Manual "Chapter 14 -> BOOT update") the address is lost.

This operation must be carried out only with the advice of the ESA Customer Care Department.

Terminals with no valid MAC address when switched present a mask for its insertion. If no MAC address belonging to the terminal is available, proceed as follows:

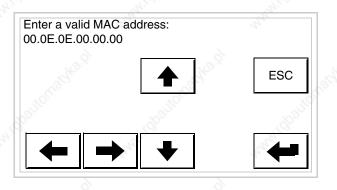
- Check that the VT is not connected to the power supply.
- Remove the back cover
- Locate the label carrying the MAC address



• Make a note of the number on the label (e.g. 00.0E.0E.00.00.01)

00.0E.0E-> fixed part that identifying as an ESA productxx.xx.xx-> variable part different for each terminal

- Reconnect the power supply to the terminal and, if necessary, calibrate the touch screen (see Page 14-13)
- Replace the back cover
- Switch on the terminal again
- The following mask appears; introduce the address previously noted down (e.g. 00.0E.0E.00.00.01)



• Use the arrow 💷 to make the setting. Once the address has been confirmed the following page is displayed

VT185W ET	HERNET TRA	NSFER PAC	GE ward
Main BOOT Main FIRMV	and RAM cheo VARE check	ck : OK : OK	
SELECT:	MSP	ASP	EXIT
2	ANNON COL	MAC addr 00.0E.0E.0	

The procedure is now terminated.

Should a wrong MAC address have been inserted contact the ESA Customer Care Department.

A wrong address could give rise to an error of conflict between VT terminals in the Ethernet network.

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

# Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT and wait for the following mask to appear
- Press one after the other the diagonally opposite corners free of settable objects or buttons (at least one corner needs to be free)



and wait a moment, or, using the appropriate button (see Page 14-21), till the VT displays the following mask

VT185W TRANSFER PAGE		sa, Cr
Main BOOT and RAM check Main FIRMWARE check	: OK : OK	
SELECT: MSP	ASP EXIT	-
N.C. MARCH		2 ²⁴ .07

• Choose the port you intend to use for the transfer (MSP or ASP); touch the relevant 💷 on the display. The following mask will appear

les and the second s	23	
VT185W TRANSFER PAGE		.30
Main BOOT and RAM check Main FIRMWARE check	: OK : OK	and the state
SELECT: REMOTE	OCAL	EXIT
	OUAL	

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant II on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

VT185W TRANSFER PAGE	
Main BOOT and RAM check : C Main FIRMWARE check : C	
	. Sparte
SELECT: SLOW FAST	Maran.
	~

The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant II on the display. The VT is now ready to receive (see Software Manual for the transfer).

Information relating to driver After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

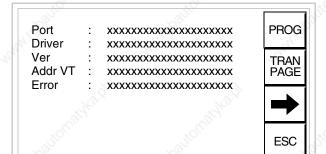
- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects or buttons (at least one angle must be free)



and you will see



There is one of these pages for each communication port; movement between the various pages is effected by pressing  $\blacktriangleright$ .

From this page you can:

- Set the clock
- Prepare the VT to receive the program

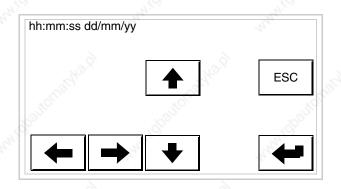
Setting the clock:

To set the clock, while displaying the above illustrated page, press PROG; the following mask appears

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To set the clock touch the words SET CLOCK on the display; the following mask appears



Use the arrow DD for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

Prepare the VT to receive the program:

To prepare the VT to receive the program, while displaying the driver information page (see Page 14-19), press  $\frac{TRAN}{PAGE}$ , and you will see the following mask

: OK : OK	
adhan	
ASP	EXIT

To proceed see Page 14-18.

Possible error messages that may be encountered in the driver information page are:

- PR ERR
  - Problem-> Errors have been detected in the data exchange between the VT and the Device.

Solution-> Check the cable; there may be disturbance.

# • COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

# Example: COM BROKEN*

When  $\stackrel{\text{ESC}}{\longrightarrow}$  is pressed you quit the display of information regarding the driver.

# Chapter 15

# Video terminal VT505H

Page
15-2
15-5
15-9
15-10
15-11
15-12
15-12
15-12
15-12
15-15
15-15
15-17
15-22



Technical The following table lists the principal technical characteristics of the prodcharacteristics uct in question.

Code of terminal	Characteristics of the terminal			
VT505H 00000				
VT505H 000CN	<u> </u>			
Display	And	• •		
4. 4.	LCD 4 tones of blue STN	•		
Туре	LCD 16 Colors STN			
	LCD 16 Colors TFT	385		
Touch screen	Matrix 20 x 16 (Cell:16x15 pixels)			
Representational format	Graphic	<ul> <li>•</li> </ul>		
Resolution [pixels]	320 x 240 (5,7")	•		
Rows x characters	16 x 40 / 8 x 20 / 4 x 10	•		
Display area size [mm]	115,2 x 86,4	•		
Character matrix in text mode [pixels]	8 x15 / 16 x 30 / 32 x 60	•		
Character size [mm] x 1 / x 2 / x 4	2,8 x 5,2 / 5,6 x 10,4 / 11,2 x 20,8	•		
Contract adjustment	Software	•		
Contrast adjustment	Automatic compensation with temperature			
Character sets	Programmable fonts/TTF Windows ®	<u> </u>		
Backlighting	all all all			
T	LED			
Туре	CCFL lamp	•		
Minimum lamp-life at 25°C [hours]	15000	•		
1 – Using the VTHCB card (see "Chapter 33 -> Page 9")	1	1 1		

Code of terminal	Characteristics of the terminal		
VT505H 00000			_
VT505H 000CN	<u>}</u>	6	
Keyboard	Key Key	V	V
Non-customizable function keys	10	٠	
User memory	le ^c		
Project [Bytes]	640K	•	•
Data memory [Bytes]	16K (Flash EPROM)	•	•
Memory for Windows ® -based fonts [Byte]	32K	•	•
Memory Card for backup			
Memory Card for expansion	& &	1	
Interfaces	Ke Ke Ke	1	
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	● ²	•
ASP (Auxiliary serial port)	RS232/RS485		
ASP-15L (Auxiliary serial port)	RS232/RS485		
ASP-8 (Auxiliary serial port)	RS232		
ASP-9 (Auxiliary serial port)	RS232		
LPT parallel port	Centronics		
Auxiliary port	Connections for accessories	1	
Accessories	Le Le Le	1	
Connectable accessories	See table "Chapter 33"	٠	•
Clock			
Clock	Software (no back-up battery)	٠	•
Networks	94. Page 14.		
19 - 19 - 19 - 19 - 19 - 19 - 19 - 19 -	Profibus-DP		
Integrated	CAN Open (Optoisolated interface)	•	
	Ethernet 10/100Mbit RJ45	2	
Universal Bus Connector	-10 ² 10 ²	1	
Optional	See table "Chapter 33"	•	C
Proprietary networks	703 - 703		
ESA-Net	Network server		
	Network client		C

1 – Using the VTHCB card (see "Chapter 33 -> Page 9") 2 - RS232 only

Wrapping	Sau Sau
Туре	Antiflame PC/ABS halogen-free (UL94 5VA at 2.5mm)
Drop test	1 m.
Connection cable	and the second sec
Туре	Antiflame shielded cable halogen and silicone-free
Radius of curve (moving/fixed)	120mm/60mm
Conductors (number/section)	25x0,25mmq (AWG24)
System shut-down button	
Positions	2 (Normal - Pushed)
Contacts	1 NC + 1 NC (NC1/NC2 + NC3/NC4)
Maximum tension	30Vdc
Maximum/minimum current	500mA/5mA
Conforms to the following standard(s)	EN 60947-5-1, UL-508, CSA 22.2. No. 14)
Enabling button	AND AND
Positions	3 (Normal - Pushed - Panic)
Contacts	1 NC/NO + 1 NC/NO (NC1/NO1/C1 + NC2/NO2/C2)

15-4

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			an ^{lO}	
Maximum tension	30Vdc	39	250	
Maximum/minimum current	500mA/5m	A		
Conforms to the following standard	d(s) IEC 60947-5-	-1, EN 60947-5-1, JIS	C8201-5-1, UL-508, C	SA 22.2. No.
Approval(s)		EN292, IEC60204 prEN11161, ISO1		SI/RIA R15.0
Technical data	10	£0°		10
Power supply	24Vdc (18.	32Vdc)	X	30
Power absorbed at 24Vdc	10W	14 C	. A. C.	
Protection fuse	Self-resetti	ng	35	
Protection level (Certificated)	IP65			
Operating temperature	050°C		6	
Storage and transportation temper	rature -20+60°C	;	Non	Nº.
Humidity (non-condensing)	<85%	2	5	S.
Weight (with cable length 10m)	3000gr	. 10		10
Dimensions	200	200	×	Se l
External W x H x D [mm]	See on Pa	ge 33-8	24	
Cut-out W x H [mm]		34	35	
Certification				
Certifications and approvals	CE		6	2
n Ker	N.C.		NOT	N.

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# Functions

The following table lists in alphabetical order all the functions of the VT in question.

Table 15.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal	- All and a second seco	
VT505H ****	Quantity	,
Objects/Functions	Quantity	_
Alarm help		
Alarm history buffer Alarm statistics	8	
	1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 1911 - 19	
Alarms (Total/active simultaneously)	and the second s	
Arc	00	_
Automatic operations	32	_
Backup/Restore		_
Bar data	01.11	_
Bit-wise password	8bits	_
Buttons	320 x page	_
Circles	and the second s	_
Command: Change language	- S ^O	_
Command: Clear trend buffer	P	
Command: Delete recipe		(
Command: Hardcopy		
Command: Load recipe from data memory	8	_
Command: Modify password	Nor	_
Command: Next page	S.	(
Command: Page help	350	(
Command: Password login	P	(
Command: Password logout		(
Command: Previous page		(
Command: Print alarm history	8	
Command: Printer form feed	Non	
Command: Quit project	- Charles	(
Command: Report		
Command: Restarts reading time-sampled trend	^C	
Command: Run pipeline		
Command: Save alarms history and trend buffers in flash		
Command: Save recipe in data memory	6	(
Command: Save recipe received from device in buffer	No.	(
Command: Save recipe received from device in data memory	S. C.	(
Command: Send recipe from video buffer to device	Sec. 1	(
Command: Send recipe to device		(
Command: Service page		(

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available Table 15.1: Functions and objects realizable with this VT (Part 2 of 4)

Code of terminal		
Objects/Functions		Quantity
Command: Show alarms history		Culturity
Command: Show page directory		
Command: Show project information		S
Command: Show recipe directory		
Command: Show sequence directory	2	
Command: Shows driver status page		
Command: Shows page help		1. A
Command: Shows page with function: PG		600
Command: Stops reading time sampled trend		30
Command: Trend reading saved in device		S°
Command: Zero number of general pages	ast .	
Date field	14	
Day-of-the-week field		
Dynamic texts: Bit-group-structured dynamic texts		
Dynamic texts: Single-bit dynamic texts		1024*
Dynamic texts: Value-structured dynamic texts		
E-keys		Š
Equations	. 454	32
F-keys	20	
Free terminal		
Function: Disables key		.X
Function: Go to page		
Function: Internal command		
Function: Invert bit value		(S ^r
Function: Macro		
Function: None	- A -	
Function: Reset bit permanently		
Function: Reset real-time bit		N. St
Function: Sequences		See.
Function: Sets bit permanently		13 ⁵⁵
Function: Sets real-time bit	5	3
Function: Value-structure direct command	3544	
Global configuration of E-keys	~	
Global configuration of F-keys		
Headers and footers (Total/Number of fields per H-F)		1
nfo-messages (Total/active simultaneously)		256/256
Internal registers		4096bytes
Labels	2	ð i
LEDs assigned to sequence	. 44	

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available Table 15.1: Functions and objects realizable with this VT (Part 3 of 4)

Objects/Functions	Quantity
Lines	S. C.
Lists of bitmap images	50
Lists of texts	
Local configuration of E-keys	
Local configuration of F-keys	
Macro field	6
Macros (Total/Commands x macro)	1024/16
Message field	S.
Message help	256
Multilanguage texts	4 Langs.
Object - Indicator	
Object - Potentiometer knob	
Object - Selector knob	6
Object - Sliding potentiometer	No.
Object - Sliding selector	S. Con
Page	128
Page help	128
Password	10
Pipelines (Number/Tot bytes)	
Print	6
Print page (Total/Number of fields per page)	Non
Programmable fonts	- Carl
Project images	\$°°°
Public variables of ESANET network (Number/Total bytes)	
Recipe field for recipe structure	
Recipes (Number of variables per recipe)	128/256
Rectangles	6
Redefinable characters	No.
Reports	Ser.
Sequences - Random	\$°0.
Sequences - Start/stop	
Static bitmaps	
Symbolic field: Bit-group-structured dynamic bitmaps	
Symbolic field: Single-bit-structured dynamic bitmaps	1024*
Symbolic field: Value-structured dynamic bitmaps	No.
System messages	S. Carrie
System variables assigned to recipe structure	<u>80</u>
Time long field	
Time short field	

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available Table 15.1: Functions and objects realizable with this VT (Part 4 of 4)

	Code	e of terminal			
VT505H ***	**	6			<
No.	Objects/Func	tions		Quantity	
Timer	S.C.	500		32	
Touch Area	30	190 A.		24	
Trend buffers	F	S.		85	
Trends (Trends x p	page/Channels x tre	end)	- And		
Trends sampled a	utomatically (Memo	ory/Trends/Readings)			
Trends sampled o	n command (Memo	ory/Trends/Readings)			
Value direct comm	and: ADD	No.		Nº.	
Value direct comm	and: AND	1000 C		S. S.	
Value direct comm	and: OR	and the second s		250	
Value direct comm	and: SET	. S		80	
Value direct comm	and: SUBTRACT	12 ²	5350		
Value direct comm	and: XOR				
Variables: Limit va	lues and linear sca	aling variables 👌			
Variables: Movem	ent variable (Mobile	e symbolic field)		34	ľ
Variables: Threshold variables				- 34 x pages	
Variables: Floating Point numerical variables					
Variables: Numerio	cal variables (DEC,	, HEX, BIN, BCD)		80	ľ
Variables: String v	ariables (ASCII)	and the second s	192 C	1	ľ
Unless otherwise stated, the	ere is no limit to the number	of includable elements, only the s	ize of proj	ect memory sets a	li

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a *) indicative value determined by the dimensions of the project, **) depends on memory available

# Front view

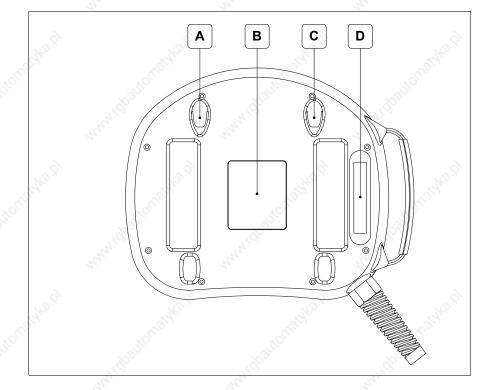


Key	Function
1	Command and/or signal unit
2	System shut-down button (Conforms to the following stan- dard(s): EN 60947-5-1, UL-508, CSA 22.2. No. 14)
3	Command and/or signal unit
4	F-keys
5	F-keys
6	Adjustable gripper belt

Other buttons and signals are defined using the programming software (see Software Manual).

**A** The system shut-down button and the enabling button do NOT guarantee the operatr's complete personal safety. Be sure to design your system so that is ensures the operator's complete personal safety.

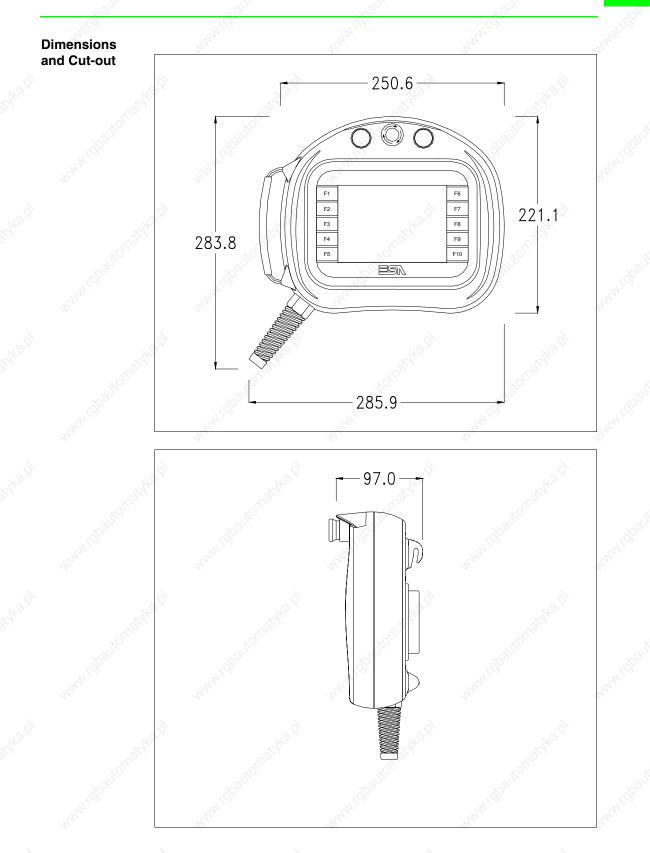
### **Rear view**



Positic	on	Function
A		Housing for wall-fixing hook
В		Identification label
С	and and i	Housing for wall-fixing hook
Herd D		Enabling button (Conforms to the following standard(s): IEC 60947-5-1, EN 60947-5-1, JIS C8201-5-1, UL-508, CSA 22.2. No. 14) (Approval(s): ISO12100/EN292, IEC60204-1/EN60204-1, ISO11161/prEN11161, ISO10218/EN775, ANSI/RIA R15.06)

The system shut-down button and the enabling button do NOT guarantee the operatr's complete personal safety. Be sure to design your system so that is ensures the operator's complete personal safety.





For VT mounting instructions see "Chapter 29 -> Mounting the terminal within the container".



Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

Connection cable

The terminal is provided with a 10m long (AWG24) 25x0.25mmq shielded cable already attached (see "Chapter 32 -> Connection cable for H Series terminals").

# Adjusting holding strap for grip

The strap can be altered to adjust the grip for different hand sizes. To alter strap:

- Open the leather cover
- Detach the strap ends
- Adjust the holding strap length
- Secure strap ends again
- Close leather cover

# Calibration of Touch Screen

The screen of VT505H is made of resistive, sensitive glass; for this type of glass to work properly it requires a calibration procedure (**the terminal is already calibrated when supplied**), that is, the resistive area of the glass has to be adjusted to the visible are of the display.

Should it be thought necessary to repeat the calibration procedure this can be done by following the instructions set out below.

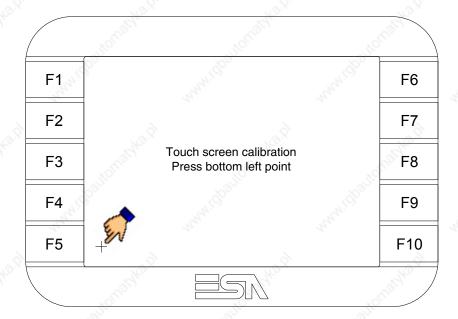


The procedure must be carried out with great care as the precision of the keys area depends on the calibration. How to perform the calibration procedure:

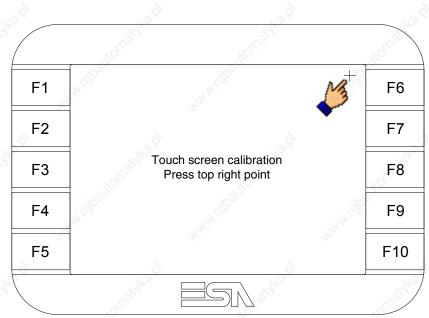
• Switch on the terminal; the following mask appears

	pattern. doattern.	- aballon'
F1	VT5xx HANDHELD TRANSFER PAGE	F6
F2	tokent tokent	F7
F3	*** WAITING FOR BOOT FORCED ***	F8
F4	C. Alexandre C. Al	F9
F5	-thank -thank	F10

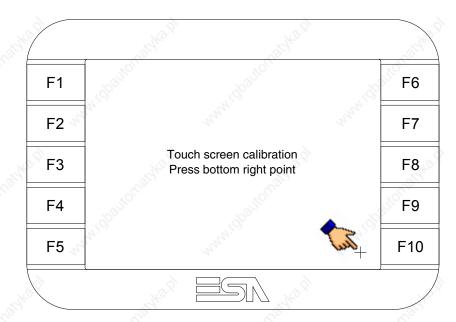
• To access the calibration page, touch the message ***WAITING FOR BOOT FORCED*** three to six times in quick succession



• Touch the corner indicated in the figure; then the following page appears on screen



• Touch the corner indicated in the figure to complete the calibration procedure; the following page now appears



• Wait a few moments until the VT displays either the following mask or the project page (the page may be slightly different in its wording depending on which series the terminal belongs to)

	pattorn doalte	S	
F1	VT5xx HANDHELD TRANSF	ER PAGE	F6
F2	Main BOOT and RAM check Main FIRMWARE check	: OK : OK	F7
F3	*** WAIT FOR BOO	T FORCED ***	F8
F4	and the second		F9
F5			F10
		A	

• Wait for the start-up of the VT to be completed

The calibration procedure has finished; if the calibration has be carried out wrongly or imprecisely, repeat the procedure.

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

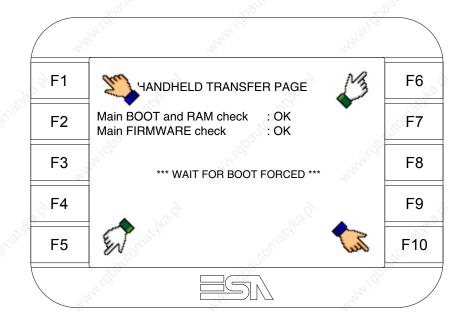
(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

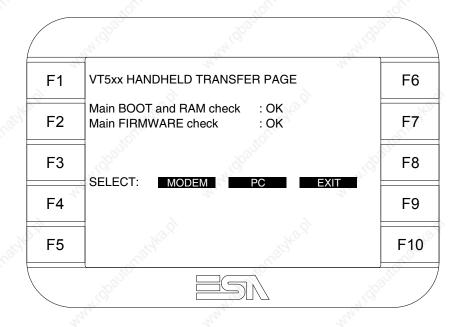
Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT and wait for the following mask to appear
- Press one after the other the diagonally opposite corners free of settable objects or buttons (at least one corner needs to be free)

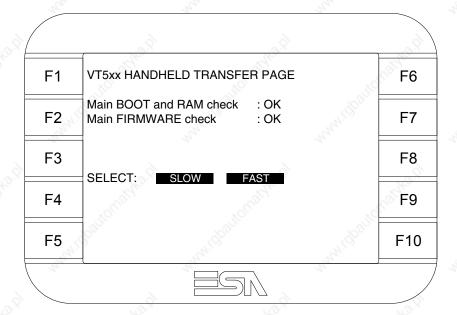


and wait a moment, or, using the appropriate button (see Page 15-20), till the VT displays the following mask



• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant  $\square$  on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear



The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant  $\square$  on the display. The VT is now ready to receive (see Software Manual for the transfer).

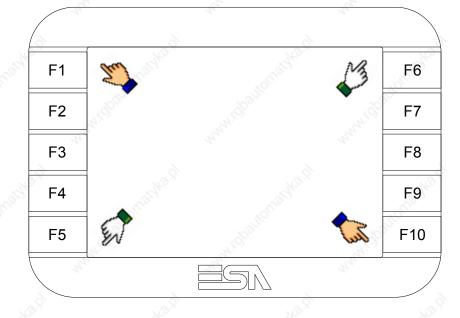
Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects or buttons (at least one angle must be free)



and you will see

	and Contraction	March 19	and the second second	
F1	Port	: xxxxxxxxxxxxxxxxx	PROG	F6
F2	Driver Ver	: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	TRAN PAGE	F7
F3	Addr VT Error	: xxxxxxxxxxxxxxxxxxxxxxxx : xxxxxxxxxx	PAGE	F8
F4	-			F9
F5			ESC	F10
	and Charles		and Obo	

There is one of these pages for each communication port; movement between the various pages is effected by pressing .

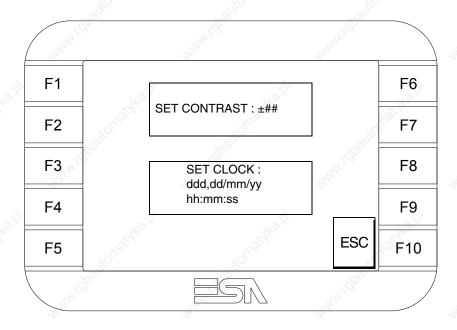
From this page you can:

- Set the clock and the contrast
- Prepare the VT to receive the program

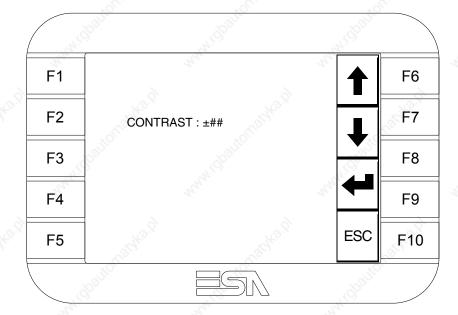
Setting the clock and the contrast:

To set the clock and the contrast, while displaying the above illus-

trated page, press, the following mask appears



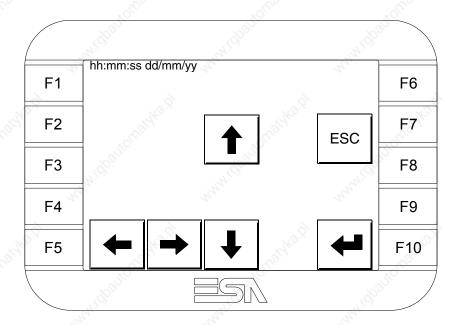
To set the contrast touch the words SET CONTRAST on the display; you will see the following mask



Use the arrow DD for any variation (see "Chapter 36 -> Operation of

terminal with touch screen").

To set the clock touch the words SET CLOCK on the display; the following mask appears

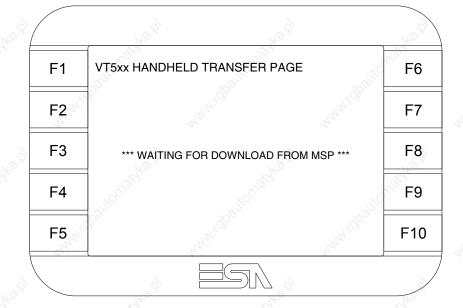


Use the arrow D for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

Prepare the VT to receive the program:

To prepare the VT to receive the program, while displaying the driver information page (see Page 15-17), press  $\frac{TRAN}{PAGE}$ , and you will see the following mask

15-21



The VT terminal is now ready to receive (consult Software Manual for information on the transmission procedure).

Possible error messages that may be encountered in the driver information page are:

#### • PR ERR

Problem->	Errors have been detected in the data exchange between
	the VT and the Device.
Solution->	Check the cable; there may be disturbance.

### COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

Adjusting the contrast on the display To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 15-19) and changing the value (from +31 to -32) in evidence at that moment. Increase the value to darken the display; to lighten it, decrease the value.

We advise this to be done at typical room temperature and with the terminal at operating temperature (about 30 minutes after switching on and with the screen saver disabled - see Software Manual).

### Chapter 16

# Video terminal VT505W

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**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal			The way	
VT505W 00000	a de la companya de		20		
VT505W 000DP		- 8	2		
VT505W 000CN		30			
VT505W 000ET					
Display	An An	<b>\</b>	▼	V	
• •	LCD 4 tones of blue STN	٠	•	•	
Туре	LCD 16 Colors STN				0
	LCD 16 Colors TFT			K.	T
Touch screen	Matrix 20 x 16 (Cell:16x15 pixels)	•	۲	•	•
Representational format	Graphic		•	•	
Resolution [pixels]	320 x 240 (5,7")	•	٠	•	
Rows x characters	16 x 40 / 8 x 20 / 4 x 10	•	٠	•	
Display area size [mm]	115,2 x 86,4	•	٠	•	
Character matrix in text mode [pixels]	8 x15 / 16 x 30 / 32 x 60	•	٠	•	
Character size [mm] x 1 / x 2 / x 4	2,8 x 5,2 / 5,6 x 10,4 / 11,2 x 20,8	•	٠	•	
Contract adjustment	Software	•	•	•	
Contrast adjustment	Automatic compensation with temperature	•	۲	٠	
Character sets	Programmable fonts/TTF Windows ®		٠	•	
Backlighting	6. S	8			-
Type	LED			1	T
Туре	CCFL lamp	•	٠	•	•
Minimum lamp-life at 25°C [hours]	15000	•	•	•	•

Code of terminal	Characteristics of the terminal					
VT505W 00000						
VT505W 000DP					6	
VT505W 000CN				38		
VT505W 000ET	<u> </u>		a d	5		
User memory	10 ⁻¹	4	V	▼	▼	▼
Project [Bytes]	640K	200	٠	•	٠	•
Data memory [Bytes]	16K (Flash EPROM)	Nº S	•	•	•	٠
Memory for Windows ® -based fonts [Byte]		20	•	•	•	٠
Memory Card for backup						
Memory Card for expansion	0					
Interfaces	R. R.			P	ř.	
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA		Ň	•	٠	•
ASP (Auxiliary serial port)	RS232/RS485	8				
ASP-15L (Auxiliary serial port)	RS232/RS485	202				
ASP-8 (Auxiliary serial port)	RS232	. N. ⁶	•			
ASP-9 (Auxiliary serial port)	RS232	5				
LPT parallel port	Centronics					
Auxiliary port	Connections for accessories				2	
Accessories	Le L			P	2	
Connectable accessories	See table "Chapter 33"		•	•	•	•
Clock		x	1			
Clock	Software (no back-up battery)	100 m	•	•	•	•
Networks		19				
	Profibus-DP	500			•	
Integrated	CAN Open (Optoisolated interface)			•		
<u> </u>	Ethernet 10/100Mbit RJ45		•		5	
Universal Bus Connector	-10 ²			0	S.	
Optional	See table "Chapter 33"		•	•	•	•
Proprietary networks	*0	×	5			
	Network server	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
ESA-Net	Network client	10				•
Technical data	Ser. S	25	I			
Power supply	24Vdc (1832Vdc)					
Power absorbed at 24Vdc	10W					
Protection fuse	Ø5x20mm - 800mA Quick Blow F					
Protection level	IP65 (front-end)	24				
Operating temperature	050°C	. 5				
Storage and transportation temperature	-20+60°C	- 35				
Humidity (non-condensing)	<85%	10				
Weight	1400gr	Ref.				
Dimensions						
External W x H x D [mm]	210 x 158 x 54					
Cut-out W x H [mm]	198 x 148				2	
Certification	25		å	à		
Certifications and approvals	CE, cULus, NEMA12		100			

16-3

#### **Functions**

The following table lists in alphabetical order all the functions of the VT in question.

Table 16.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal		
VT505W *****		
Objects/Functions	Quantity	
Alarm field		
Alarm help		
Alarm history buffer		5
Alarm statistics	NE	X
Alarms (Total/active simultaneously)	and	
Arc	30	•
Automatic operations	32	•
Backup/Restore		
Bar data		•
Bit-wise password	8bits	_
Buttons	320 x page	
Circles	200	
Command: Change language	30	
Command: Clear trend buffer	.8°	
Command: Delete recipe		
Command: Hardcopy		
Command: Load recipe from data memory		
Command: Modify password	N2	
Command: Next page	200	•
Command: Page help	30	•
Command: Password login	8	•
Command: Password logout		•
Command: Previous page		•
Command: Print alarm history		_
Command: Printer form feed	NB	3
Command: Quit project	See.	•
Command: Report	30	
Command: Restarts reading time-sampled trend	S20	
Command: Run pipeline		┢
Command: Save alarms history and trend buffers in flash		-
Command: Save recipe in data memory		
Command: Save recipe received from device in buffer	N2	•
Command: Save recipe received from device in data memory	1	•
Command: Send recipe from video buffer to device	30	•
Command: Send recipe to device	.8 ²	•
- · · · · · · · · · · · · · · · · · · ·	N 2	

Table 16.1: Functions and objects realizable with this VT (Part 2 of 4)

Code of terminal	
Objects/Functions	Quantity
Command: Show alarms history	500
Command: Show page directory	
Command: Show project information	S.
Command: Show recipe directory	
Command: Show sequence directory	
Command: Shows driver status page	6
Command: Shows page help	Nº.
Command: Shows page with function: PG	-Car
Command: Stops reading time sampled trend	250
Command: Trend reading saved in device	Š
Command: Zero number of general pages	
Date field	
Day-of-the-week field	6
Dynamic texts: Bit-group-structured dynamic texts	Nº.
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	- 18 ⁰
E-keys	Ś.
Equations	32
F-keys	
Free terminal	6
Function: Disables key	Nº.
Function: Go to page	S.C.
Function: Internal command	
Function: Invert bit value	Ś.
Function: Macro	
Function: None	
Function: Reset bit permanently	6
Function: Reset real-time bit	N.
Function: Sequences	all
Function: Sets bit permanently	
Function: Sets real-time bit	Ś.
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	6
Headers and footers (Total/Number of fields per H-F)	No.
Info-messages (Total/active simultaneously)	256/256
Internal registers	4096bytes
Labels	di la constante di la constant

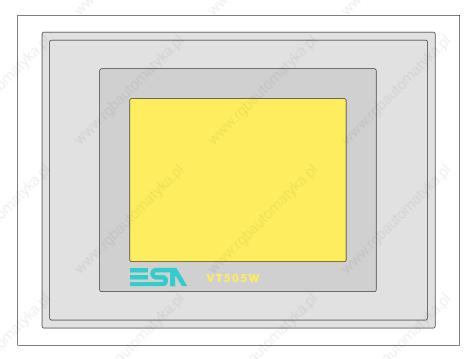
Table 16.1: Functions and objects realizable with this VT (Part 3 of 4)

Lines Lists of bitmap images Lists of texts Local configuration of E-keys Local configuration of F-keys Macro field Macros (Total/Commands x macro) Message field Message help Multilanguage texts Object - Indicator Object - Potentiometer knob Object - Selector knob Object - Selector knob Object - Sliding potentiometer Object - Sliding selector Page Page help Page help Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles Redefinable characters	1024/16 256 4 Langs 128 128 128 10	
Lists of texts Local configuration of E-keys Local configuration of F-keys Macro field Macros (Total/Commands x macro) Message field Message help Multilanguage texts Object - Indicator Object - Potentiometer knob Object - Selector knob Object - Selector knob Object - Selector knob Object - Selector knob Object - Silding potentiometer Object - Sliding selector Page Page help Page help Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	256 4 Langs	
Local configuration of E-keys Local configuration of F-keys Macro field Macros (Total/Commands x macro) Message field Message help Multilanguage texts Object - Indicator Object - Potentiometer knob Object - Selector knob Object - Selector knob Object - Sliding potentiometer Object - Sliding selector Page Page help Page help Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	256 4 Langs	
Local configuration of F-keys Macro field Macros (Total/Commands x macro) Message field Message help Multilanguage texts Object - Indicator Object - Potentiometer knob Object - Selector knob Object - Selector knob Object - Sliding potentiometer Object - Sliding selector Page Page help Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	256 4 Langs	
Macro field Macros (Total/Commands x macro) Message field Message help Multilanguage texts Object - Indicator Object - Potentiometer knob Object - Selector knob Object - Selector knob Object - Sliding potentiometer Object - Sliding potentiometer Object - Sliding selector Page Page help Page help Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	256 4 Langs	
Macros (Total/Commands x macro) Message field Message help Multilanguage texts Object - Indicator Object - Potentiometer knob Object - Selector knob Object - Selector knob Object - Sliding potentiometer Object - Sliding selector Page Page help Page help Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	256 4 Langs	
Message field Message help Multilanguage texts Object - Indicator Object - Potentiometer knob Object - Selector knob Object - Selector knob Object - Sliding potentiometer Object - Sliding selector Page Page help Page help Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	256 4 Langs	
Message help Multilanguage texts Object - Indicator Object - Potentiometer knob Object - Selector knob Object - Sliding potentiometer Object - Sliding selector Page Page help Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	4 Langs	5.
Multilanguage texts Object - Indicator Object - Potentiometer knob Object - Selector knob Object - Sliding potentiometer Object - Sliding selector Page Page help Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	4 Langs	5.
Object - Indicator         Object - Potentiometer knob         Object - Selector knob         Object - Sliding potentiometer         Object - Sliding selector         Page         Page help         Password         Pipelines (Number/Tot bytes)         Print         Programmable fonts         Project images         Public variables of ESANET network (Number/Total bytes)         Recipes (Number of variables per recipe)         Rectangles	128 128	<u>.</u>
Object - Potentiometer knob         Object - Selector knob         Object - Sliding potentiometer         Object - Sliding selector         Page         Page help         Password         Pipelines (Number/Tot bytes)         Print         Programmable fonts         Project images         Public variables of ESANET network (Number/Total bytes)         Recipe field for recipe structure         Recipes (Number of variables per recipe)         Rectangles	128	N. N
Object - Potentiometer knob Object - Selector knob Object - Sliding potentiometer Object - Sliding selector Page Page help Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	128	N°
Object - Sliding potentiometer Object - Sliding selector Page Page help Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	128	24°
Object - Sliding potentiometer Object - Sliding selector Page Page help Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	128	
Page Page help Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	128	
Page help Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	128	
Password Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles		
Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	10	
Print Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles		
Print page (Total/Number of fields per page) Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles		
Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	8	0
Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles		Yr.,
Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	Sec.	2
Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	- 1 ²	
Recipe field for recipe structure Recipes (Number of variables per recipe) Rectangles	. S	
Recipes (Number of variables per recipe) Rectangles	22 ¹¹	
Rectangles	128/256	6
		Ś
	8	K.
Reports		
Sequences - Random	~3 ⁵	
Sequences - Start/stop	S	
Static bitmaps	1992	
Symbolic field: Bit-group-structured dynamic bitmaps		
Symbolic field: Single-bit-structured dynamic bitmaps	1024*	
Symbolic field: Value-structured dynamic bitmaps	2.	×°.
System messages	- 55	
System variables assigned to recipe structure	~3 ⁵	$\rightarrow$
Time long field	~	

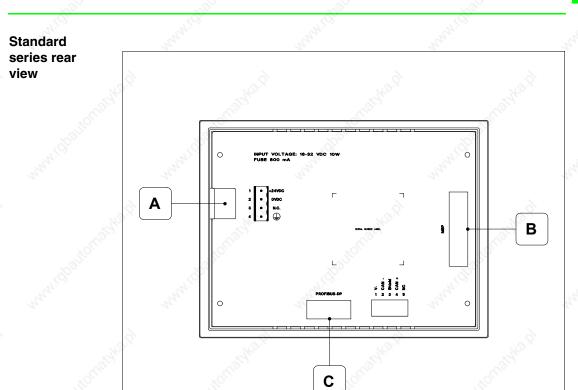
Table 16.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of terminal		
VT505W ****	6	
Objects/Functions	Quantity	] ▼
Timer	32	•
Touch Area	24	•
Trend buffers		
Trends (Trends x page/Channels x trend)		
Trends sampled automatically (Memory/Trends/Readings)		
Trends sampled on command (Memory/Trends/Readings)	6	
Value direct command: ADD	Non	•
Value direct command: AND	6	•
Value direct command: OR	50	•
Value direct command: SET		•
Value direct command: SUBTRACT		•
Value direct command: XOR		•
Variables: Limit values and linear scaling variables	6	•
Variables: Movement variable (Mobile symbolic field)	No.	•
Variables: Threshold variables	04	•
Variables: Floating Point numerical variables	34 x pages	•
Variables: Numerical variables (DEC, HEX, BIN, BCD)		•
Variables: String variables (ASCII)	1	•
I laless otherwise stated there is no limit to the number of includable elements, only the size of pro	viact momony sate a	limit

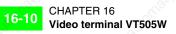
#### Front view



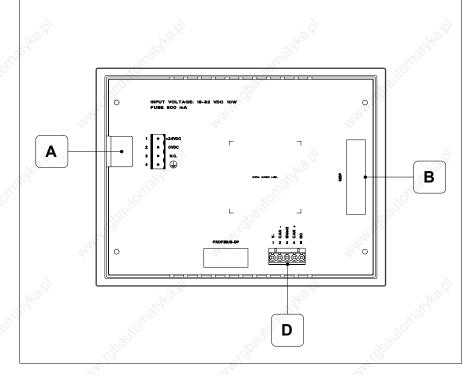
All buttons and signals are defined using the programming software (see Software Manual).



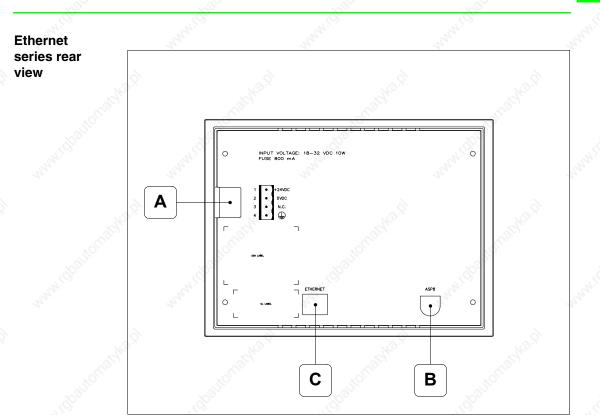
Position	Function
A	Power supply connector
В	MSP serial port for communicating with PLC/PC
С	PROFIBUS-DP serial port for network communication (Option)



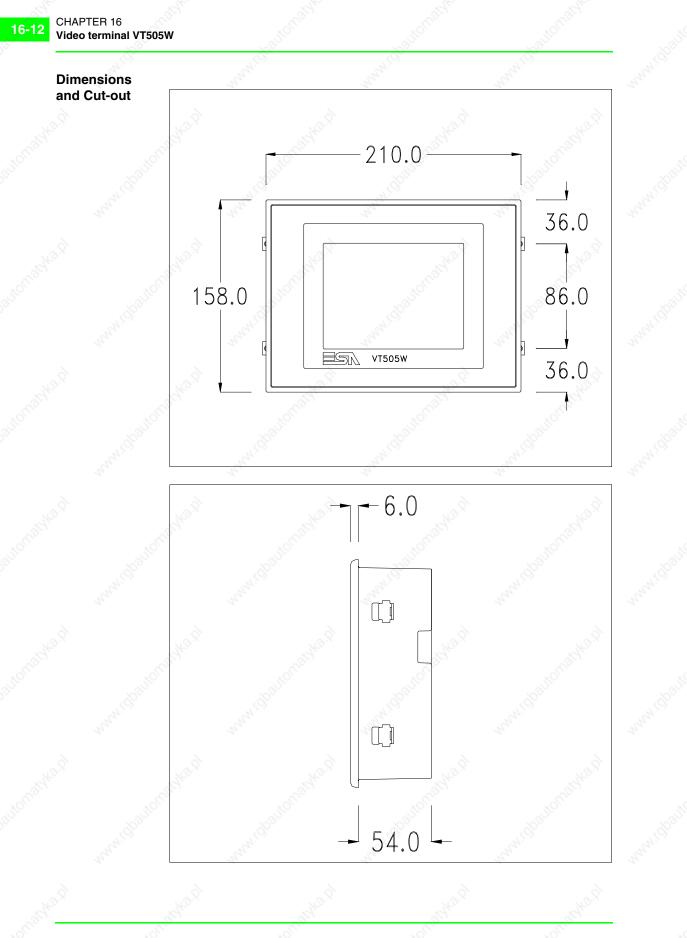
## CAN series rear view

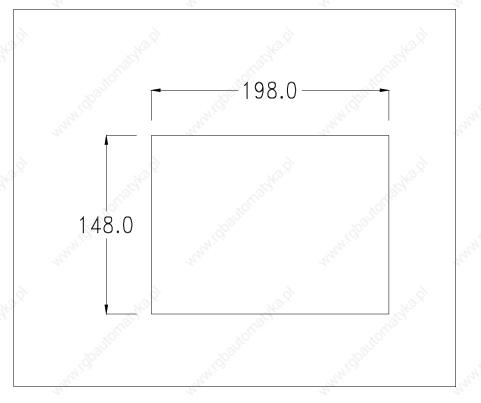


Position	Function
A	Power supply connector
В	MSP serial port for communicating with PLC/PC
D	CAN serial port



Position	Function
A	Power supply connector
В	ASP serial port for communicating with PC or other devices
С	Ethernet network 10/100Mbit RJ45 (For the diagnostic mode of the LEDs see "Chapter 30 -> Ethernet port")





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

#### Calibration of Touch Screen

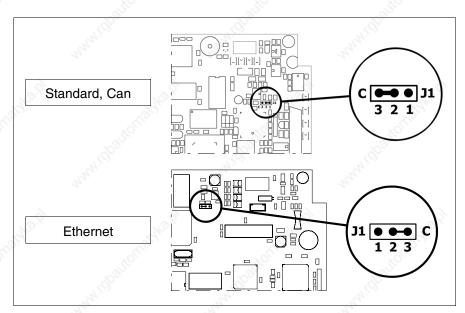
The screen of VT505W is made of resistive, sensitive glass; for this type of glass to work properly it requires a calibration procedure (**the terminal is already calibrated when supplied**), that is, the resistive area of the glass has to be adjusted to the visible are of the display.

Should it be thought necessary to repeat the calibration procedure this can be done (terminal Rev. 2 or above) by following the instructions set out below.



The procedure must be carried out with great care as the precision of the keys area depends on the calibration. How to perform the calibration procedure:

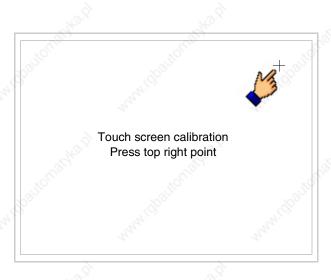
- Make sure the VT is not connected to the power supply
- Remove the back cover
- Identify jumper J1



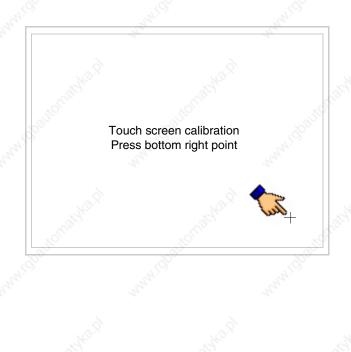
- Position J1 on pins 2-3 (C)
- Reconnect the power supply and switch on the terminal; the following mask appears



• Touch the corner indicated in the figure; then the following page appears on screen



• Touch the corner indicated in the figure to complete the calibration procedure; the following page now appears



• Wait a few moments until the VT displays either the following mask or the project page (the page may be slightly different in its wording depending on which series the terminal belongs to)

VT505 TRANSFER PAGE

Main BOOT and RAM check : OK Main FIRMWARE check : OK

*** WAIT FOR BOOT FORCED ***

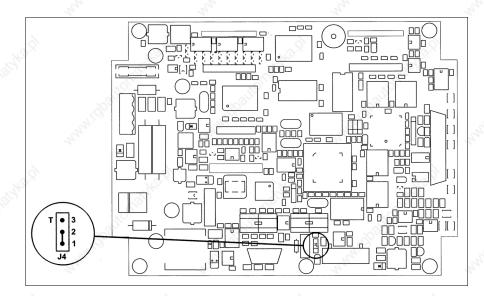
- Switch off the terminal
- Reposition J1 on pins 1-2
- Replace the back cover
- Switch on the terminal again

The calibration procedure has finished; if the calibration has be carried out wrongly or imprecisely, repeat the procedure.

#### Termination of CAN line

This paragraph applies only to the CAN series. The VT in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J4.



- Position the jumper between pins 2 and 3 (line terminated).
- Replace the back cover.
- Reconnect the power supply.

Introducing the MAC address This paragraph relates only to the Ethernet series. The Media Access Control (MAC) address unambiguously identifies each terminal connected in the Ethernet network. The terminal is acquired with the address already programmed and is shown on the display of the terminal in the transfer page.

- M	· · · · · · · · · · · · · · · · · · ·	
VT505W ETHERNET TRAN	ISFER PAGE	
Main BOOT and RAM check	< : ОК	
Main FIRMWARE check	: OK	
SELECT: MODEM		
SELECT: MODEM	PC E	XIT
par		
44	4	
	MAC addr:	
3	00.0E.0E.xx.xx.	KX
	NLY-	

The MAC address is permanently memorized in the terminal, but should it be necessary to execute an "aided" BOOT update (see Software Manual "Chapter 14 -> BOOT update") the address is lost.

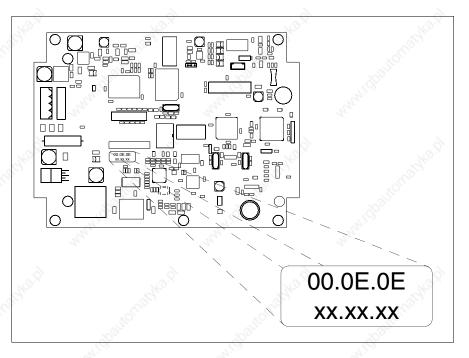


This operation must be carried out only with the advice of the

#### ESA Customer Care Department.

Terminals with no valid MAC address when switched present a mask for its insertion. If no MAC address belonging to the terminal is available, proceed as follows:

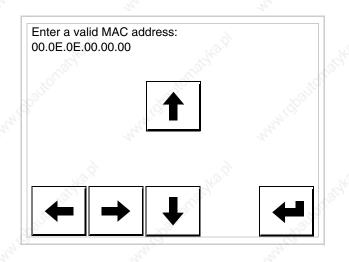
- Check that the VT is not connected to the power supply.
- Remove the back cover
- Locate the label carrying the MAC address



• Make a note of the number on the label (e.g. 00.0E.0E.00.00.01)

00.0E.0E-> fixed part that identifying as an ESA productxx.xx.xx-> variable part different for each terminal

- Reconnect the power supply to the terminal and, if necessary, calibrate the touch screen (see Page 16-13)
- Replace the back cover
- Switch on the terminal again
- The following mask appears; introduce the address previously noted down (e.g. 00.0E.0E.00.00.01)



• Use the arrow 💷 to make the setting. Once the address has been confirmed the following page is displayed

FER PAGE	
: OK	
: OK	
BC	EVIT
10 I	
IAC addr:	
0.0E.0E.00.	00.01
	-

The procedure is now terminated.

Should a wrong MAC address have been inserted contact the ESA Customer Care Department.

A wrong address could give rise to an error of conflict between VT terminals in the Ethernet network. Transfer PC ->For everything to function properly, the first time the VT operator terminal<br/>is switched on it needs to be correctly loaded, that is it needs to have trans-<br/>ferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

### Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT and wait for the following mask to appear
- Press one after the other the diagonally opposite corners free of settable objects or buttons (at least one corner needs to be free)

	E.	AD CONTRACT	M
	VT505 TRANSFER PAGE		
k	Main BOOT and RAM check	: OK	and the second
ì	Main FIRMWARE check	: OK	24
	*** WAIT FOR BOOT	FORCED ***	
			200
	A		
1	W S		Tent
L			

and wait a moment, or, using the appropriate button (see Page 16-24), till the VT displays the following mask

#### VT terminal with no Modem function:

The VT is now ready to receive (see Software Manual for information on the transmission procedure)

VT505 TRANSFER PAGE

Main BOOT and RAM check : OK Main FIRMWARE check : OK

*** WAITING FOR DOWNLOAD FROM MSP ***

#### VT terminal with Modem function:

Л			
	14 A.		
	VT505 TRANSFER PAGE		
	Main BOOT and RAM check Main FIRMWARE check	: OK : OK	
	allo. allo		
4	SELECT: MODEM	PC	EXIT
	-33 ^{42.01}		
		S	

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant  $\square$  on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

8	-20		-23
	VT505 TRANSFER PAGE		
	Main BOOT and RAM check Main FIRMWARE check	: OK : OK	~
1	SELECT: SLOW F	AST`	ALACAL CL
	- ABARTAN - ABAR	Jtornon,	

The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant  $\square$  on the display. The VT is now ready to receive (see Software Manual for the transfer).

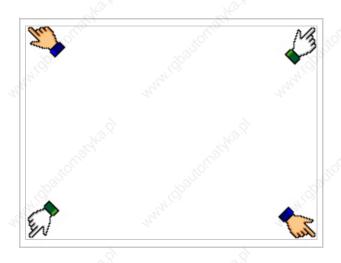
#### Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

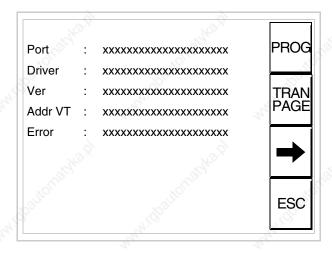
- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects or buttons (at least one angle must be free)



and you will see



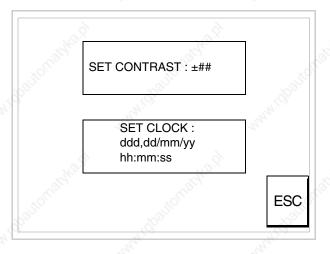
There is one of these pages for each communication port; movement between the various pages is effected by pressing .

From this page you can:

- Set the clock and the contrast
- Prepare the VT to receive the program

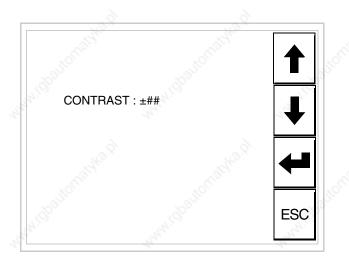
Setting the clock and the contrast:

To set the clock and the contrast, while displaying the above illustrated page, press  $\stackrel{\mathsf{PROG}}{=}$ ; the following mask appears



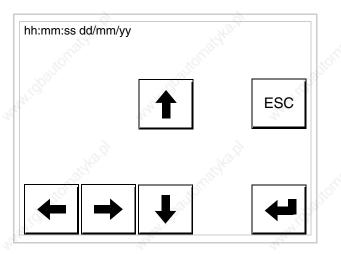
To set the contrast touch the words SET CONTRAST on the display;

#### you will see the following mask



Use the arrow  $\Box$  for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

To set the clock touch the words SET CLOCK on the display; the following mask appears



Use the arrow  $\Box\Box$  for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

Prepare the VT to receive the program:

To prepare the VT to receive the program, while displaying the driver information page (see Page 16-22), press  $\frac{TRAN}{PAGE}$ , and you will

see the following mask

	2 R
SFER PAGE	
	. 10
NG FOR DOWNLOAD	FROM MSP ***
	SFER PAGE

The VT terminal is now ready to receive (consult Software Manual for information on the transmission procedure).

Possible error messages that may be encountered in the driver information page are:

• PR ERR

Problem->	Errors have been detected in the data excl	hange between
	the VT and the Device.	

Solution-> Check the cable; there may be disturbance.

COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

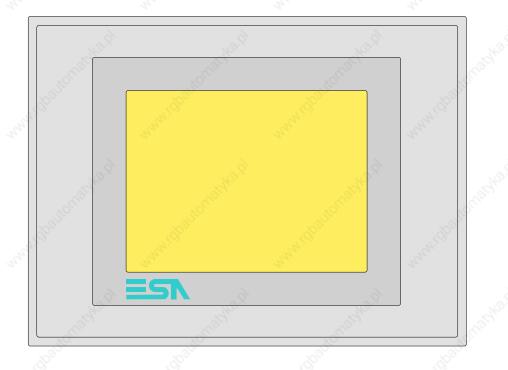
Example: COM BROKEN*

Adjusting the contrast on the display

To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 16-23) and changing the value (from +31 to -32) in evidence at that moment. Increase the value to darken the display; to lighten it, decrease the value. We advise this to be done at typical room temperature and with the terminal at operating temperature (about 30 minutes after switching on and with the screen saver disabled - see Software Manual).

# Chapter 17 Video terminal VT515W

Contents		Page
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Standard series rear view		17-9
CAN series rear view	110	17-10
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Dimensions and Cut-out	24	17-12
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Calibration of Touch Screen	~	17-13
Termination of CAN line	Control of the second s	17-16
Introducing the MAC address	. MARINE	17-17
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Preparation for reception	2	17-20
Information relating to driver	2	17-22
Adjusting the contrast on the display	109110	17-25
This chapter consists of 26 pages.	24,5	



**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the termina	I		The.	
VT515W 00000			20		
VT515W 000DP		- 8	2		
VT515W 000CN	20 ²⁰ 20 ²⁰ 2	St.			
VT515W 000ET		2			
Display	Here Here	▼	▼	▼	
. ,	LCD 4 tones of blue STN	•	•	•	•
Туре	LCD 16 Colors STN				0
T515W 00000 T515W 000DP T515W 000CN T515W 000ET splay pe pe pe pe pe pe pe pe pe pe pe pe pe	LCD 16 Colors TFT			K	
Touch screen	Matrix 20 x 16 (Cell:16x15 pixels)	•	•	•	
Representational format	Graphic	•	٠	•	
Resolution [pixels]	320 x 240 (5,7")	•	•	•	
Rows x characters	16 x 40 / 8 x 20 / 4 x 10	•	•	•	
Display area size [mm]	115,2 x 86,4	•	•	•	
Character matrix in text mode [pixels]	8 x15 / 16 x 30 / 32 x 60	•	•	•	
Character size [mm] x 1 / x 2 / x 4	2,8 x 5,2 / 5,6 x 10,4 / 11,2 x 20,8	•	•	•	
Constructs a divestment	Software	•	•	•	•
Contrast adjustment	Automatic compensation with temperature	•	۲	•	
Character sets	Programmable fonts/TTF Windows ®	•	•	•	
Backlighting	2 ⁰ x2 ⁰ x	S			
Turpa	LED			$\square$	
i yhe	CCFL lamp	•	•	•	•
LCD 16 Colors TFT         ouch screen       Matrix 20 x 16 (Cell:16x15 pixels)         epresentational format       Graphic         esolution [pixels]       320 x 240 (5,7")         ows x characters       16 x 40 / 8 x 20 / 4 x 10         isplay area size [mm]       115,2 x 86,4         haracter matrix in text mode [pixels]       8 x15 / 16 x 30 / 32 x 60         haracter size [mm] x 1 / x 2 / x 4       2,8 x 5,2 / 5,6 x 10,4 / 11,2 x 20,8         ontrast adjustment       Software         haracter sets       Programmable fonts/TTF Windows ®         acklighting       LED	•	•	•	•	

Code of terminal	Characteristics of the terminal	-			
VT515W 00000					_
VT515W 000DP				2	
VT515W 000CN	1,0 [×]		19	~	
VT515W 000ET	<u>9</u>	ž	2		
Jser memory	10 I I I I I I I I I I I I I I I I I I I		V	▼	▼
Project [Bytes]	640K	•		•	•
Data memory [Bytes]	16K (Flash EPROM)	•	•	•	•
Memory for Windows ® -based fonts [Byte]	32K	•	•	•	•
Memory Card for backup					
Memory Card for expansion	>			~	
nterfaces	NOT NOT		12	ř	
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	Ĩ	•	•	•
ASP (Auxiliary serial port)	RS232/RS485	2			
ASP-15L (Auxiliary serial port)	RS232/RS485	<u> </u>			
ASP-8 (Auxiliary serial port)	RS232	•			
ASP-9 (Auxiliary serial port)	RS232				
.PT parallel port	Centronics				
Auxiliary port	Connections for accessories			_	
Accessories	10° 10°		10	8.	
Connectable accessories	See table "Chapter 33"	•	•	•	•
Clock		1 and 1			
Clock	Hardware (with Supercapacitor - Min.72h Typically130h)	•	•	•	•
Networks					
	Profibus-DP			•	
ntegrated	CAN Open (Optoisolated interface)		•		
	Ethernet 10/100Mbit RJ45	•			
Jniversal Bus Connector			.0	2	
Detional	See table "Chapter 33"	•	•	•	•
Proprietary networks		R.			
	Network server	-			
ESA-Net	Network client				•
Fechnical data	AN AN	-			!
Power supply	24Vdc (1832Vdc)				
Power absorbed at 24Vdc	10W			<	
Protection fuse	Ø5x20mm - 800mA Quick Blow F	-	10	2	
Protection level	IP65 (front-end)	å	2		
Dperating temperature	050°C	S.			
Storage and transportation temperature	-20+60°C				
Humidity (non-condensing)	<85%				
Veight	1400gr				
Dimensions					
External W x H x D [mm]	210 x 158 x 54				
Cut-out W x H [mm]	198 x 148			2-	
	130 x 140				

17-3

#### **Functions**

The following table lists in alphabetical order all the functions of the VT in question.

Table 17.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal	130	
VT515W *****	Quantity	1
Objects/Functions	Quantity	
Alarm help	256	
Alarm history buffer	230	
Alarm statistics	220	0
	256/256	
Alarms (Total/active simultaneously)	230/230	
	200	
Automatic operations	32	
Backup/Restore	· ·	
Bar data	01-11-	
Bit-wise password	8bits	2
Buttons	320 x page	
Circles	S. S.	•
Command: Change language	20	•
Command: Clear trend buffer	S	
Command: Delete recipe	7.	•
Command: Hardcopy		
Command: Load recipe from data memory		2
Command: Modify password	Nº	
Command: Next page	S. S.	•
Command: Page help	350	•
Command: Password login	No.	•
Command: Password logout	<i>A</i> -	•
Command: Previous page		•
Command: Print alarm history		2
Command: Printer form feed	.Ke	ľ
Command: Quit project	Sec.	(
Command: Report	150°	
Command: Restarts reading time-sampled trend	800	
Command: Run pipeline		
Command: Save alarms history and trend buffers in flash		
Command: Save recipe in data memory		2
Command: Save recipe received from device in buffer	Nº	N
Command: Save recipe received from device in data memory	and the second s	
Command: Send recipe from video buffer to device		
Command: Send recipe to device	.8°	
Command: Service page		

Table 17.1: Functions and objects realizable with this VT (Part 2 of 4)

Code of terminal VT515W *****	
Objects/Functions	Quantity
Command: Show alarms history	1. C. C. C.
Command: Show page directory	10
Command: Show project information	S°
Command: Show recipe directory	<u> </u>
Command: Show sequence directory	
Command: Shows driver status page	6
Command: Shows page help	
Command: Shows page with function: PG	- Carl
Command: Stops reading time sampled trend	
Command: Trend reading saved in device	S.
Command: Zero number of general pages	
Date field	
Day-of-the-week field	6
Dynamic texts: Bit-group-structured dynamic texts	. No.
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	100
E-keys	8
Equations	32
F-keys	
Free terminal	6
Function: Disables key	N.
Function: Go to page	a Carl
Function: Internal command	~3 ⁵
Function: Invert bit value	S.
Function: Macro	
Function: None	
Function: Reset bit permanently	Q.
Function: Reset real-time bit	34
Function: Sequences	- SC
Function: Sets bit permanently	~35
Function: Sets real-time bit	S.
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	2
Headers and footers (Total/Number of fields per H-F)	and the
Info-messages (Total/active simultaneously)	256/256
Internal registers	4096bytes
Labels	N I
LEDs assigned to sequence	

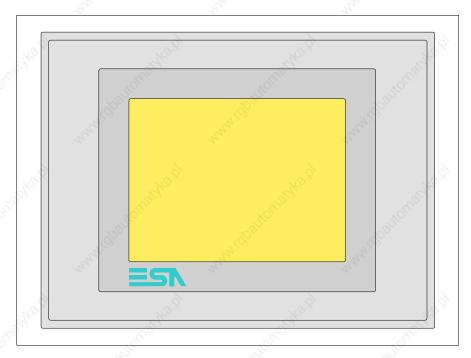
Table 17.1: Functions and objects realizable with this VT (Part 3 of 4)

VT515W ***** Objects/Functions	Quantity
Lines	Guantity
Lists of bitmap images	30
Lists of texts	182
Local configuration of E-keys	22
Local configuration of F-keys	
Macro field	
Macros (Total/Commands x macro)	1024/16
Message field	1
Message help	256
Multilanguage texts	4 Langs.
Object - Indicator	
Object - Potentiometer knob	
Object - Selector knob	
Object - Sliding potentiometer	H ²
Object - Sliding selector	6
Page	128
Page help	128
Password	10
Pipelines (Number/Tot bytes)	
Print	
Print page (Total/Number of fields per page)	N.
Programmable fonts	
Project images	2 ³⁵⁰
Public variables of ESANET network (Number/Total bytes)	3
Recipe field for recipe structure	27.
Recipes (Number of variables per recipe)	128/256
Rectangles	
Redefinable characters	N.
Reports	
Sequences - Random	- 350
Sequences - Start/stop	19- 
Static bitmaps	
Symbolic field: Bit-group-structured dynamic bitmaps	
Symbolic field: Single-bit-structured dynamic bitmaps	1024*
Symbolic field: Value-structured dynamic bitmaps	- Nº
System messages	- Star
System variables assigned to recipe structure	~3 ⁵
Time long field	N.S.
Time short field	

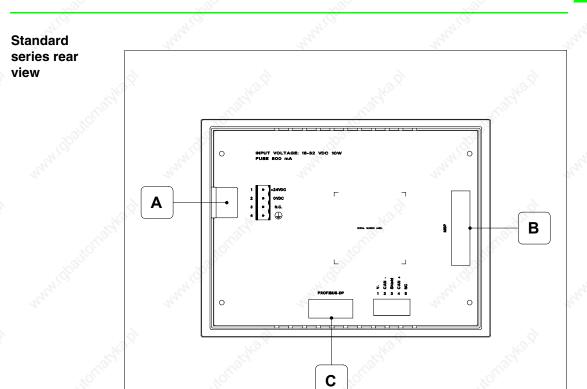
Table 17.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of terminal		
VT515W *****		_
Objects/Functions	Quantity	]
Timer	32	
Touch Area	24	T
Trend buffers		
Trends (Trends x page/Channels x trend)		
Trends sampled automatically (Memory/Trends/Readings)		
Trends sampled on command (Memory/Trends/Readings)	6	
Value direct command: ADD	Non	Ī
Value direct command: AND	S.	
Value direct command: OR	50	
Value direct command: SET		Ī
Value direct command: SUBTRACT		
Value direct command: XOR		
Variables: Limit values and linear scaling variables	6	T
Variables: Movement variable (Mobile symbolic field)	No.	
Variables: Threshold variables	24 x pogoo	ľ
Variables: Floating Point numerical variables	34 x pages	ľ
Variables: Numerical variables (DEC, HEX, BIN, BCD)	1	t
Variables: String variables (ASCII)	1	t
Inless otherwise stated, there is no limit to the number of includable elements, only the size of pro	iant momony sate a	liz

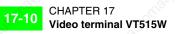
#### Front view



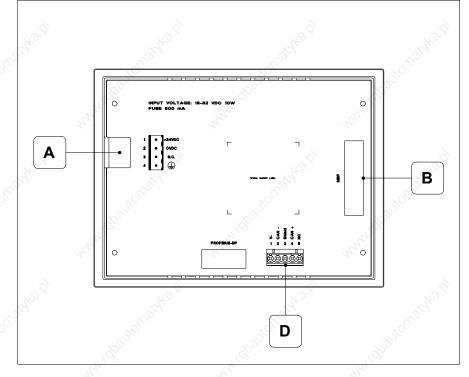
All buttons and signals are defined using the programming software (see Software Manual).



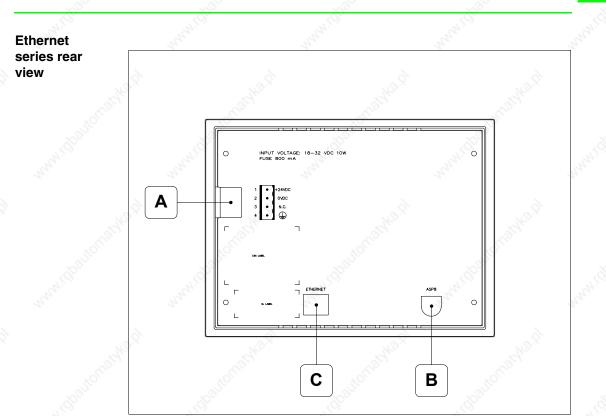
Position	Function
A	Power supply connector
В	MSP serial port for communicating with PLC/PC
С	PROFIBUS-DP serial port for network communication (Option)



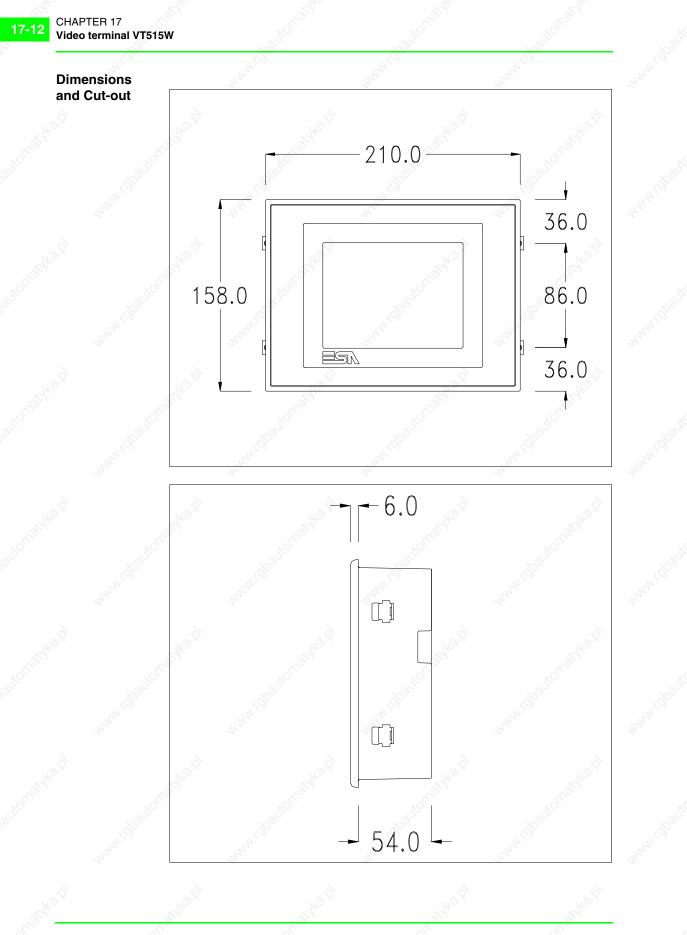
## CAN series rear view

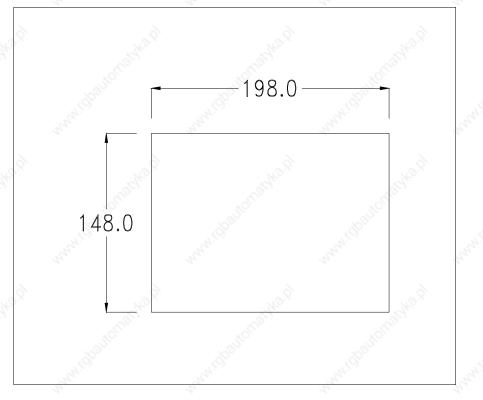


Position	Function
A	Power supply connector
В	MSP serial port for communicating with PLC/PC
D	CAN serial port



Position	Function	
A	Power supply connector	
В	ASP serial port for communicating with PC or other devices	
С	Ethernet network 10/100Mbit RJ45 (For the diagnostic mode of the LEDs see "Chapter 30 -> Ethernet port")	





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

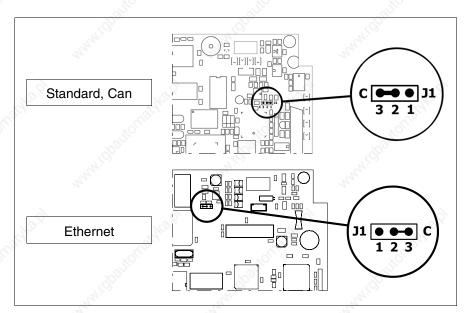
## Calibration of Touch Screen

The screen of VT515W is made of resistive, sensitive glass; for this type of glass to work properly it requires a calibration procedure (**the terminal is already calibrated when supplied**), that is, the resistive area of the glass has to be adjusted to the visible are of the display.

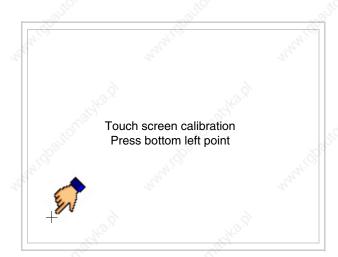
Should it be thought necessary to repeat the calibration procedure this can be done by following the instructions set out below.

The procedure must be carried out with great care as the precision of the keys area depends on the calibration. How to perform the calibration procedure:

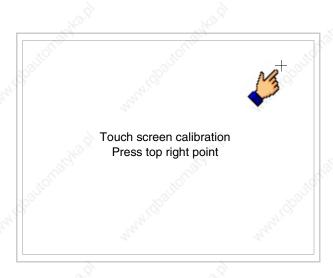
- Make sure the VT is not connected to the power supply
- Remove the back cover
- Identify jumper J1



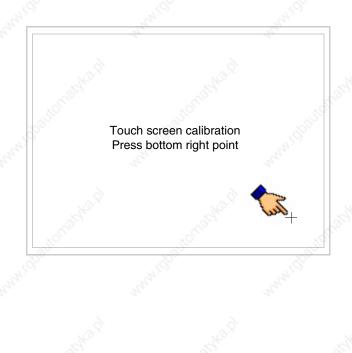
- Position J1 on pins 2-3 (C)
- Reconnect the power supply and switch on the terminal; the following mask appears



• Touch the corner indicated in the figure; then the following page appears on screen



• Touch the corner indicated in the figure to complete the calibration procedure; the following page now appears



• Wait a few moments until the VT displays either the following mask or the project page (the page may be slightly different in its wording depending on which series the terminal belongs to)

VT515 TRANSFER PAGE

Main BOOT and RAM check : OK Main FIRMWARE check : OK

*** WAIT FOR BOOT FORCED ***

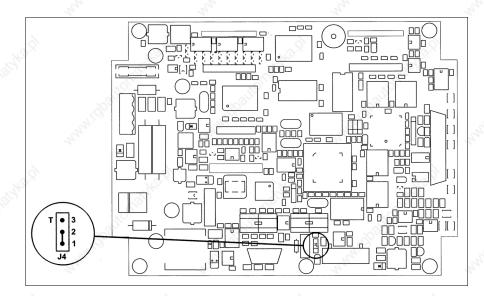
- Switch off the terminal
- Reposition J1 on pins 1-2
- Replace the back cover
- Switch on the terminal again

The calibration procedure has finished; if the calibration has be carried out wrongly or imprecisely, repeat the procedure.

# Termination of CAN line

This paragraph applies only to the CAN series. The VT in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J4.



- Position the jumper between pins 2 and 3 (line terminated).
- Replace the back cover.
- Reconnect the power supply.

Introducing the MAC address This paragraph relates only to the Ethernet series. The Media Access Control (MAC) address unambiguously identifies each terminal connected in the Ethernet network. The terminal is acquired with the address already programmed and is shown on the display of the terminal in the transfer page.

VT515W ETHERNET TRANS	FER PAGE
Main BOOT and RAM check	: OK
Main FIRMWARE check	: OK
	No.
SELECT: MODEM	PC EXIT
2 ²⁰	
1 ²	/AC addr:
	0.0E.0E.xx.xx.xx
N.	- X

The MAC address is permanently memorized in the terminal, but should it be necessary to execute an "aided" BOOT update (see Software Manual "Chapter 14 -> BOOT update") the address is lost.

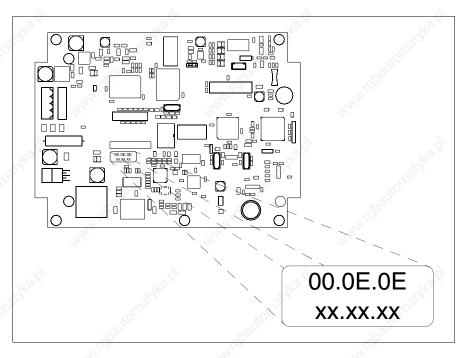


This operation must be carried out only with the advice of the

# ESA Customer Care Department.

Terminals with no valid MAC address when switched present a mask for its insertion. If no MAC address belonging to the terminal is available, proceed as follows:

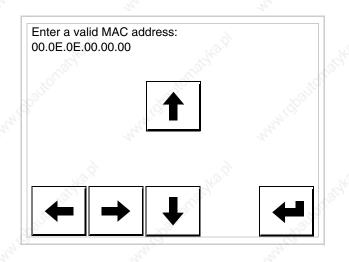
- Check that the VT is not connected to the power supply.
- Remove the back cover
- Locate the label carrying the MAC address



• Make a note of the number on the label (e.g. 00.0E.0E.00.00.01)

00.0E.0E-> fixed part that identifying as an ESA productxx.xx.xx-> variable part different for each terminal

- Reconnect the power supply to the terminal and, if necessary, calibrate the touch screen (see Page 17-13)
- Replace the back cover
- Switch on the terminal again
- The following mask appears; introduce the address previously noted down (e.g. 00.0E.0E.00.00.01)



• Use the arrow 💷 to make the setting. Once the address has been confirmed the following page is displayed

VT515W ETHERNET TRAN	SFER PAGE
Main BOOT and RAM check	: OK
Main FIRMWARE check	: OK
SELECT: MODEM	PC EXIT
	MAC addr:
	00.0E.0E.00.00.01

The procedure is now terminated.

Should a wrong MAC address have been inserted contact the ESA Customer Care Department.

A wrong address could give rise to an error of conflict between VT terminals in the Ethernet network. Transfer PC ->For everything to function properly, the first time the VT operator terminal<br/>is switched on it needs to be correctly loaded, that is it needs to have trans-<br/>ferred to it:

- Firmware
- Communication driver
- Project

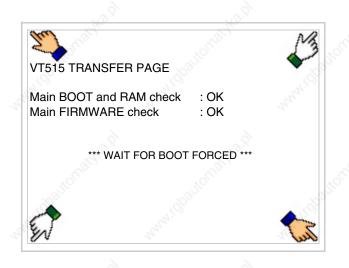
(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

# Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT and wait for the following mask to appear
- Press one after the other the diagonally opposite corners free of settable objects or buttons (at least one corner needs to be free)



and wait a moment, or, using the appropriate button (see Page 17-24), till the VT displays the following mask

# VT terminal with no Modem function:

The VT is now ready to receive (see Software Manual for information on the transmission procedure)

VT515 TRANSFER PAGE

Main BOOT and RAM check : OK Main FIRMWARE check : OK

*** WAITING FOR DOWNLOAD FROM MSP ***

# VT terminal with Modem function:

-1			
	14		
	VT515 TRANSFER PAGE		
	Main BOOT and RAM check	: OK	
	Main FIRMWARE check	: OK	
	San San		
9	SELECT: MODEM P	С	EXIT
	Th.		
	, d		
	and the		
		~	

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant  $\square$  on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

	24		-6
VT515 TR	ANSFER PAGE		
	T and RAM check IWARE check	: OK : OK	, sé
SELECT:	SLOW F	AST`	
and the			
L		5°	

The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant  $\square$  on the display. The VT is now ready to receive (see Software Manual for the transfer).

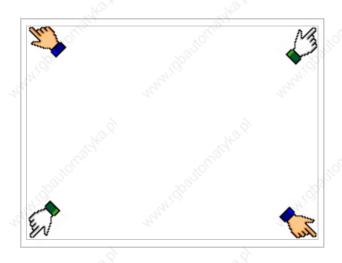
# Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

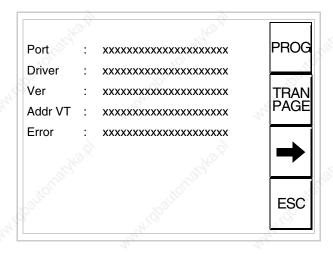
To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects or buttons (at least one angle must be free)



17-23

and you will see



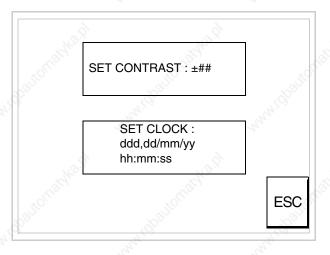
There is one of these pages for each communication port; movement between the various pages is effected by pressing .

From this page you can:

- Set the clock and the contrast
- Prepare the VT to receive the program

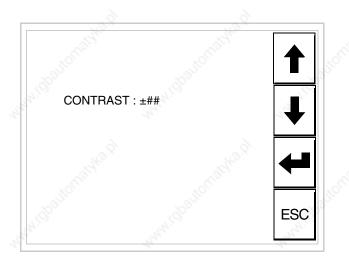
Setting the clock and the contrast:

To set the clock and the contrast, while displaying the above illustrated page, press PROG; the following mask appears



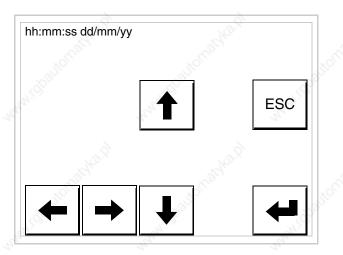
To set the contrast touch the words SET CONTRAST on the display;

# you will see the following mask



Use the arrow  $\Box$  for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

To set the clock touch the words SET CLOCK on the display; the following mask appears



Use the arrow D for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

Prepare the VT to receive the program:

To prepare the VT to receive the program, while displaying the driver information page (see Page 17-22), press  $\frac{TRAN}{PAGE}$ , and you will

see the following mask



The VT terminal is now ready to receive (consult Software Manual for information on the transmission procedure).

Possible error messages that may be encountered in the driver information page are:

• PR ERR

Problem->	Errors have been detected in the data excl	hange between
	the VT and the Device.	

Solution-> Check the cable; there may be disturbance.

• COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

Adjusting the contrast on the display

To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 17-23) and changing the value (from +31 to -32) in evidence at that moment. Increase the value to darken the display; to lighten it, decrease the value. We advise this to be done at typical room temperature and with the terminal at operating temperature (about 30 minutes after switching on and with the screen saver disabled - see Software Manual).

# Chapter 18

# Video terminal VT525H

Contents	Page
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Connection cable	18-1
Adjusting holding strap for grip	18-1:
Calibration of Touch Screen	18-1
Transfer PC -> VT	18-1
Preparation for reception	18-1
Information relating to driver	18-1
Improving display color quality	18-2
Adjusting the contrast on the display	18-2



Technical The following table lists the principal technical characteristics of the prodcharacteristics uct in question.

		2011		
Code of terminal	Characteristics of the terminal			
VT525H 00000	19			
VT525H 000CN	<u> </u>			
Display	All All	•		
4	LCD 4 tones of blue STN			
Туре	LCD 16 Colors STN	•		
	LCD 16 Colors TFT	1.02		
Touch screen	Matrix 20 x 16 (Cell:16x15 pixels)	1 C		
Representational format	Graphic	S • •		
Resolution [pixels]	320 x 240 (5,7")	•		
Rows x characters	16 x 40 / 8 x 20 / 4 x 10	•		
Display area size [mm]	115,2 x 86,4	•		
Character matrix in text mode [pixels]	8 x15 / 16 x 30 / 32 x 60	•		
Character size [mm] x 1 / x 2 / x 4	2,9 x 5,4 / 5,8 x 10,8 / 11,6 x 21,6	•		
Contract adjustment	Software	•		
Contrast adjustment	Automatic compensation with temperature			
Character sets	Programmable fonts/TTF Windows ®	5 • •		
Backlighting	and a second sec			
Turpa	LED			
Туре	CCFL lamp	•		
Minimum lamp-life at 25°C [hours]	15000	•		
1 – Using the VTHCB card (see "Chapter 33 -> Page 9")				

Code of terminal	Characteristics of the terminal		
VT525H 00000			_
VT525H 000CN	- <u>}</u>	à	
Keyboard	Her Her He		V
Non-customizable function keys	10	٠	•
User memory	NO. NO.		
Project [Bytes]	960K	•	•
Data memory [Bytes]	32K (Flash EPROM)	•	•
Memory for Windows ® -based fonts [Byte]	256K	•	•
Memory Card for backup			
Memory Card for expansion	- 2 2	1	
Interfaces	Le La	ř	
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	<b>●</b> ²	•
ASP (Auxiliary serial port)	RS232/RS485		
ASP-15L (Auxiliary serial port)	RS232/RS485		•1
ASP-8 (Auxiliary serial port)	RS232		
ASP-9 (Auxiliary serial port)	RS232		
LPT parallel port	Centronics		
Auxiliary port	Connections for accessories	4	
Accessories	NO. NO. NO.	1	
Connectable accessories	See table "Chapter 33"	٠	•
Clock			
Clock	Hardware (with Supercapacitor - Min.72h Typically130h)	٠	•
Networks	94.		
38	Profibus-DP		
Integrated	CAN Open (Optoisolated interface)	•	
	Ethernet 10/100Mbit RJ45	2	
Universal Bus Connector	24 ⁵ 24-	1	
Optional	See table "Chapter 33"	•	•
Proprietary networks	10x 110x		
ESA-Net	Network server		
LOA-INCI	Network client	1	•

1 – Using the VTHCB card (see "Chapter 33 -> Page 9") 2 - RS232 only

Wrapping	2
Туре	Antiflame PC/ABS halogen-free (UL94 5VA at 2.5mm)
Drop test	1 m.
Connection cable	and and a second s
Туре	Antiflame shielded cable halogen and silicone-free
Radius of curve (moving/fixed)	120mm/60mm
Conductors (number/section)	25x0,25mmq (AWG24)
System shut-down button	
Positions	2 (Normal - Pushed)
Contacts	1 NC + 1 NC (NC1/NC2 + NC3/NC4)
Maximum tension	30Vdc
Maximum/minimum current	500mA/5mA
Conforms to the following standard(s)	EN 60947-5-1, UL-508, CSA 22.2. No. 14)
Enabling button	AND AND
Positions	3 (Normal - Pushed - Panic)
Contacts	1 NC/NO + 1 NC/NO (NC1/NO1/C1 + NC2/NO2/C2)

18-4

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14. P. 19.	St. N.S.	N.C
Maximum tension	30Vdc	S. C.
Maximum/minimum current	500mA/5mA	
Conforms to the following standard(s)	IEC 60947-5-1, EN 60947-5-1, JIS C	8201-5-1, UL-508, CSA 22.2. No. 1
Approval(s)	ISO12100/EN292, IEC60204- ISO11161/prEN11161, ISO10	
Technical data		. KO'
Power supply	24Vdc (1832Vdc)	200
Power absorbed at 24Vdc	10W	
Protection fuse	Self-resetting	2 ²
Protection level (Certificated)	IP65	
Operating temperature	050°C	8
Storage and transportation temperatu	re -20+60°C	Ke. Ke.
Humidity (non-condensing)	<85%	
Weight (with cable length 10m)	3000gr	10
Dimensions	200 200	2027
External W x H x D [mm]	See on Page 33-8	14. V
Cut-out W x H [mm]	33	18 ¹⁰
Certification		
Certifications and approvals	CE	8
	Nº.	Ke.

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# Functions

The following table lists in alphabetical order all the functions of the VT in question.

Table 18.1: Functions and objects realizable	with this VT	(Part 1 of 4)
----------------------------------------------	--------------	---------------

Code of terminal VT525H *****	10
Objects/Functions	Quantity
Alarm field	
Alarm help	256
Alarm history buffer	256
Alarm statistics	
Alarms (Total/active simultaneously)	256/256
Arc	10
Automatic operations	32
Backup/Restore	
Bar data	
Bit-wise password	8bits
Buttons	320 x page
Circles	100
Command: Change language	30
Command: Clear trend buffer	0
Command: Delete recipe	
Command: Hardcopy	
Command: Load recipe from data memory	~ ~
Command: Modify password	12.8
Command: Next page	Sach
Command: Page help	30
Command: Password login	0
Command: Password logout	
Command: Previous page	
Command: Print alarm history	~
Command: Printer form feed	12.8
Command: Quit project	See.
Command: Report	30
Command: Restarts reading time-sampled trend	0
Command: Run pipeline	
Command: Save alarms history and trend buffers in flash	
Command: Save recipe in data memory	~
Command: Save recipe received from device in buffer	
Command: Save recipe received from device in data memory	S.S.
Command: Send recipe from video buffer to device	30
Command: Send recipe to device	<i>u</i>
Command: Service page	

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Code of terminal	
VT525H ****	
Objects/Functions	Quantity
Command: Show alarms history	
Command: Show page directory	- B ^{NN}
Command: Show project information	and the second s
Command: Show recipe directory	and a second sec
Command: Show sequence directory	
Command: Shows driver status page	
Command: Shows page help	at the
Command: Shows page with function: PG	all and
Command: Stops reading time sampled trend	alle .
Command: Trend reading saved in device	J.Co
Command: Zero number of general pages	See.
Date field	
Day-of-the-week field	
Dynamic texts: Bit-group-structured dynamic texts	X
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	13 ¹⁰
E-keys	
Equations	32
-keys	
Free terminal	
Function: Disables key	L.
Function: Go to page	aller.
Function: Internal command	. 3 ⁵¹
Function: Invert bit value	
Function: Macro	Sale -
Function: None	
Function: Reset bit permanently	
Function: Reset real-time bit	Nº.
Function: Sequences	S.C.
Function: Sets bit permanently	350
Function: Sets real-time bit	
Function: Value-structure direct command	State -
Global configuration of E-keys	
Global configuration of F-keys	
Headers and footers (Total/Number of fields per H-F)	32/128
nfo-messages (Total/active simultaneously)	256/256
nternal registers	4096bytes
abels	

Table 18.1: Functions and objects realizable with this VT (Part 2 of 4)

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available Table 18.1: Functions and objects realizable with this VT (Part 3 of 4)

Multilanguage texts6 Langs.Dbject - IndicatorDbject - Potentiometer knobDbject - Selector knobDbject - Sliding potentiometerDbject - Sliding selectorPage150Page help150Password10Pipelines (Number/Tot bytes)PrintPrint page (Total/Number of fields per page)64/128Programmable fontsProject imagesPublic variables of ESANET network (Number/Total bytes)Recipe field for recipe structureRecipes (Number of variables per recipe)128/256Rectangles32Sequences - RandomSequences - Start/stopStatic bitmapsSymbolic field: Single-bit-structured dynamic bitmaps1024*System messages	Objects/Functions	Quantity
Lists of textsImage: constraint of the text of text o	ines	500
Local configuration of E-keysImage: Configuration of F-keysMacro fieldMacros (Total/Commands x macro)1024/16Macros (Total/Commands x macro)1024/16Message fieldMessage fieldMessage field6 Langs.Diject - IndicatorDiject - Potentiometer knobDiject - Selector knobDiject - Selector knobDiject - Selector knob100Diject - Sliding potentiometer250Diject - Sliding selector200Page150Page (Total/Number/Tot bytes)10Pipelines (Number/Tot bytes)200Print page (Total/Number of fields per page)64/128Project images200Public variables of ESANET network (Number/Total bytes)200Recipe field for recipe structure200Recipes (Number of variables per recipe)128/256Rectangles32Sequences - Start/stop32Symbolic field: Bit-group-structured dynamic bitmaps1024*Symbolic field: Value-structured dynamic bitmaps1024*	ists of bitmap images	0
Local configuration of F-keysImage: configuration of F-keysMacro field1024/16Macros (Total/Commands x macro)1024/16Message field256Multilanguage texts6 Langs.Object - Indicator0Object - Potentiometer knob0Object - Selector knob0Object - Silding potentiometer0Object - Silding selector100Page150Page help150Page help150Password10Pipelines (Number/Tot bytes)0Print0Print page (Total/Number of fields per page)64/128Programmable fonts0Project images128/256Recipes (Number of variables per recipe)128/256Rectangles32Sequences - Random32Sequences - Start/stop32Symbolic field: Bit-group-structured dynamic bitmaps1024*Symbolic field: Value-structured dynamic bitmaps1024*Symbolic field: Value-structured dynamic bitmaps1024*	ists of texts	
Macro field Macros (Total/Commands x macro) 1024/16 Message field Message field Message help 256 Multilanguage texts 6 Langs. Dbject - Indicator Dbject - Potentiometer knob Dbject - Selector knob Dbject - Silding potentiometer Dbject - Silding selector Page 150 Page help 150 Page help 150 Page help 150 Password 10 Pipelines (Number/Tot bytes) Print Print page (Total/Number of fields per page) 64/128 Programmable fonts Project images Public variables of ESANET network (Number/Total bytes) Recipe field for recipe structure Recipes (Number of variables per recipe) 128/256 Rectangles Redefinable characters Reports 32 Sequences - Random Sequences - Start/stop Static bitmaps Symbolic field: Bit-group-structured dynamic bitmaps Symbolic field: Single-bit-structured dynamic bitmaps System messages	ocal configuration of E-keys	
Macros (Total/Commands x macro)1024/16Message field256Multilanguage texts6 Langs.Dbject - Indicator2Dbject - Potentiometer knob2Dbject - Selector knob2Dbject - Sliding potentiometer2Dbject - Sliding selector2Page150Page help150Password10Pipelines (Number/Tot bytes)10Print page (Total/Number of fields per page)64/128Programmable fonts2Project images2Public variables of ESANET network (Number/Total bytes)128/256Recipes (Number of variables per recipe)128/256Rectangles32Sequences - Random32Sequences - Start/stop32Symbolic field: Bit-group-structured dynamic bitmaps1024*Symbolic field: Value-structured dynamic bitmaps1024*System messages5	ocal configuration of F-keys	
National (Field Softmatics / History)112 MillionWessage field256Multilanguage texts6 Langs.Dbject - Indicator256Dbject - Potentiometer knob256Dbject - Sliding potentiometer256Dbject - Sliding selector256Page150Page help150Page help150Password10Pipelines (Number/Tot bytes)256Print256Programmable fonts256Programmable fonts256Public variables of ESANET network (Number/Total bytes)Recipe field for recipe structure256Rectangles32Requences - Random32Sequences - Random32Sequences - Start/stop32Symbolic field: Bit-group-structured dynamic bitmaps1024*Symbolic field: Value-structured dynamic bitmaps1024*	Acro field	6
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System messages	symbolic field: Single-bit-structured dynamic bitmaps	1024*
	symbolic field: Value-structured dynamic bitmaps	Nº 1
	System messages	5
Time long field		

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available Table 18.1: Functions and objects realizable with this VT (Part 4 of 4)

	Code of	terminal			
VT525H ***	** 👌	0			è
K.	<b>Objects/Function</b>	ns 💦 🖉		Quantity	
Timer	S. C. C.	-6 ²		32	
Touch Area	13 ¹⁰	250		24	
Frend buffers		80		S	
Trends (Trends x p	bage/Channels x trend)		- And		
Trends sampled a	utomatically (Memory/T	rends/Readings)	1		
Trends sampled or	n command (Memory/T	rends/Readings)			
Value direct comm	and: ADD	ALO.		Nº.	Ī
Value direct comm	and: AND	-Clar		Ser.	
Value direct comm	and: OR	and the second second		250	Ī
Value direct comm	and: SET	5		8	
Value direct comm	and: SUBTRACT		- Shar		
Value direct comm	and: XOR				
Variables: Limit va	lues and linear scaling	variables 👌			
Variables: Movement variable (Mobile symbolic field)				Nº.	
Variables: Thresho		48 x pages			
Variables: Floating	Variables: Floating Point numerical variables				
Variables: Numerio	cal variables (DEC, HE	X, BIN, BCD)	5	8	ľ
Variables: String v	ariables (ASCII)		Ser.	=	ľ
Jnless otherwise stated, the	ere is no limit to the number of inclu	udable elements, only the s	ize of proje	ct memory sets a l	in

*) indicative value determined by the dimensions of the project, **) depends on memory available

# Front view

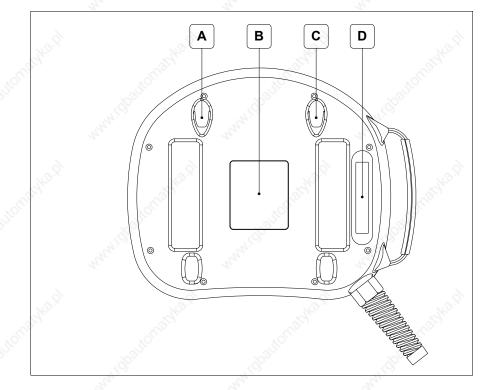


Key	Function
1	Command and/or signal unit
2	System shut-down button (Conforms to the following stan- dard(s): EN 60947-5-1, UL-508, CSA 22.2. No. 14)
3	Command and/or signal unit
4	F-keys
5	F-keys
6	Adjustable gripper belt

Other buttons and signals are defined using the programming software (see Software Manual).

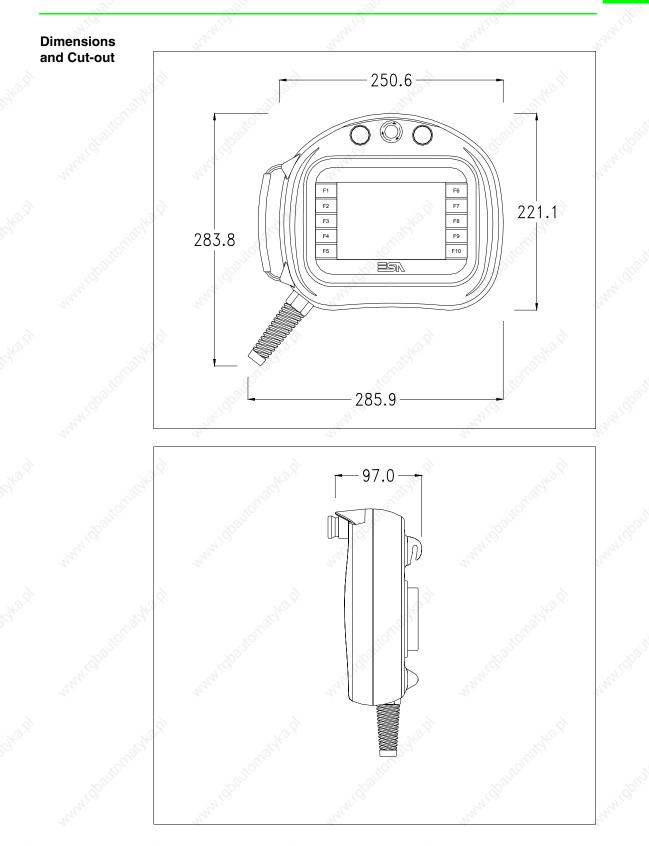
**A** The system shut-down button and the enabling button do NOT guarantee the operatr's complete personal safety. Be sure to design your system so that is ensures the operator's complete personal safety.

## **Rear view**



Pos	ition	Function		
Star 1	A	Housing for wall-fixing hook		
E	3	Identification label		
(		Housing for wall-fixing hook		
ate a l	D	Enabling button (Conforms to the following standard(s): IEC 60947-5-1, EN 60947-5-1, JIS C8201-5-1, UL-508, CSA 22.2. No. 14) (Approval(s): ISO12100/EN292, IEC60204-1/EN60204-1, ISO11161/prEN11161, ISO10218/EN775, ANSI/RIA R15.06)		

The system shut-down button and the enabling button do NOT guarantee the operatr's complete personal safety. Be sure to design your system so that is ensures the operator's complete personal safety.



For VT mounting instructions see "Chapter 29 -> Mounting the terminal within the container".



Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

Connection cable

The terminal is provided with a 10m long (AWG24) 25x0.25mmq shielded cable already attached (see "Chapter 32 -> Connection cable for H Series terminals").

## Adjusting holding strap for grip

The strap can be altered to adjust the grip for different hand sizes. To alter strap:

- Open the leather cover
- Detach the strap ends
- Adjust the holding strap length
- Secure strap ends again
- Close leather cover

#### Calibration of Touch Screen

The screen of VT525H is made of resistive, sensitive glass; for this type of glass to work properly it requires a calibration procedure (**the terminal is already calibrated when supplied**), that is, the resistive area of the glass has to be adjusted to the visible are of the display.

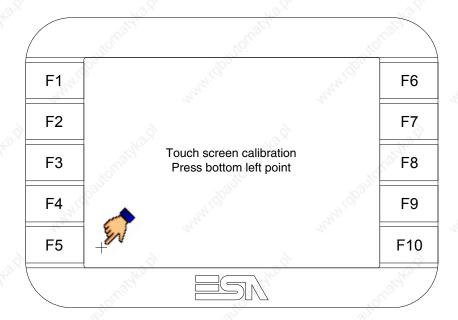
Should it be thought necessary to repeat the calibration procedure this can be done by following the instructions set out below.

The procedure must be carried out with great care as the precision of the keys area depends on the calibration. How to perform the calibration procedure:

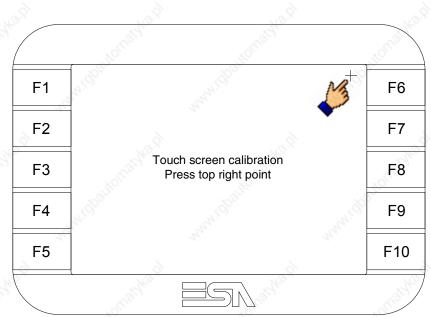
• Switch on the terminal; the following mask appears

	patton.	
F1	VT5xx HANDHELD TRANSFER PAGE	F6
F2	ater ater	F7
F3	*** WAITING FOR BOOT FORCED ***	F8
F4	2 4 ⁰⁰¹¹	F9
F5	-143.0 ¹	F10

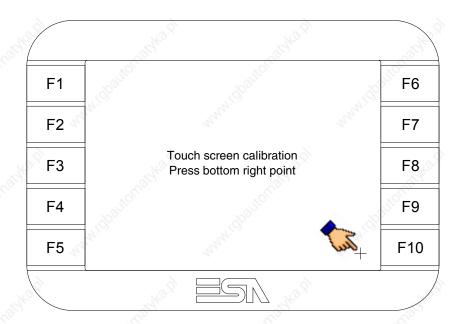
• To access the calibration page, touch the message ***WAITING FOR BOOT FORCED*** three to six times in quick succession



• Touch the corner indicated in the figure; then the following page appears on screen



• Touch the corner indicated in the figure to complete the calibration procedure; the following page now appears



• Wait a few moments until the VT displays either the following mask or the project page (the page may be slightly different in its wording depending on which series the terminal belongs to)

	pautoff doalte	al and a second a se	
F1	VT5xx HANDHELD TRANSFI	ER PAGE	F6
F2	Main BOOT and RAM check Main FIRMWARE check	: OK : OK	F7
F3	*** WAIT FOR BOO	T FORCED ***	F8
F4	C. Margaret	ANNOULS	F9
F5	Mart	attend	F10
		R	

• Wait for the start-up of the VT to be completed

The calibration procedure has finished; if the calibration has be carried out wrongly or imprecisely, repeat the procedure.

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

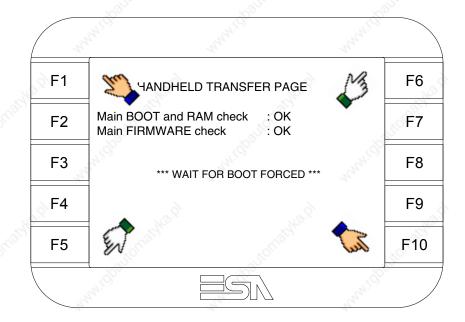
(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

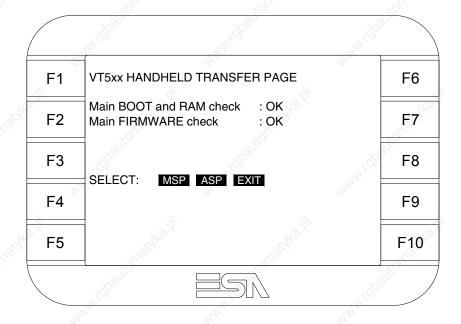
Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT and wait for the following mask to appear
- Press one after the other the diagonally opposite corners free of settable objects or buttons (at least one corner needs to be free)



and wait a moment, or, using the appropriate button (see Page 18-21), till the VT displays the following mask

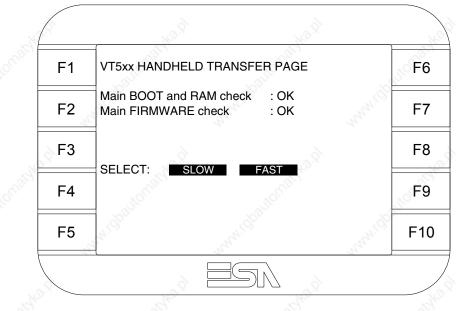


• Choose the port you intend to use for the transfer (MSP or ASP); touch the relevant 🖾 on the display. The VT is now ready to receive (refer to Software Manual for transfer procedure).

	pattorn dataton	e all all all all all all all all all al	
F1	VT5xx HANDHELD TRANSFE	R PAGE	F6
F2	Main BOOT and RAM check Main FIRMWARE check	: OK : OK	F7
F3	SELECT: MODEM		F8
F4	SELECT: MODEM	PC EXIT	F9
F5	Mag		F10

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant a on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear



The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant  $\square$  on the display. The VT is now ready to receive (see Software Manual for the transfer).

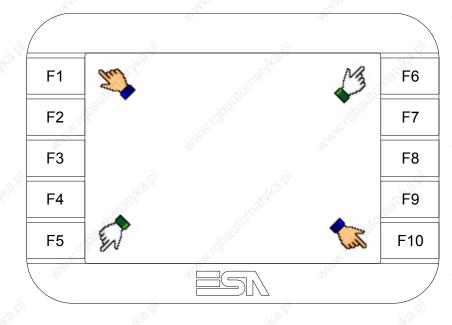
Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects or buttons (at least one angle must be free)



and you will see

	8°		alarah CD	and the second s	
F1	Port	2	****	PROG	F6
F2	Driver Ver	:	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	TRAN PAGE	F7
F3	Addr VT	:	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	PAGE	F8
F4					F9
F5	, onath			ESC	F10
	Spann			June Indiana	

There is one of these pages for each communication port; movement between the various pages is effected by pressing [-].

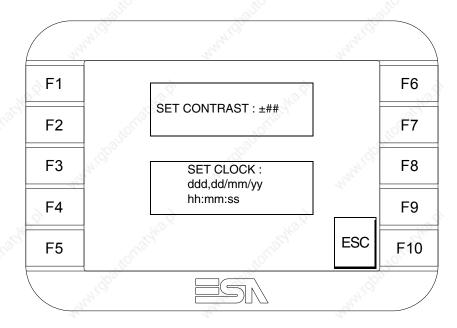
From this page you can:

- Set the clock and the contrast
- Prepare the VT to receive the program

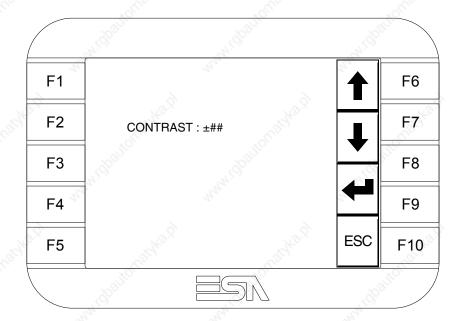
Setting the clock and the contrast:

To set the clock and the contrast, while displaying the above illus-

trated page, press  $\stackrel{\text{PROG}}{\longrightarrow}$ ; the following mask appears



To set the contrast touch the words SET CONTRAST on the display; you will see the following mask

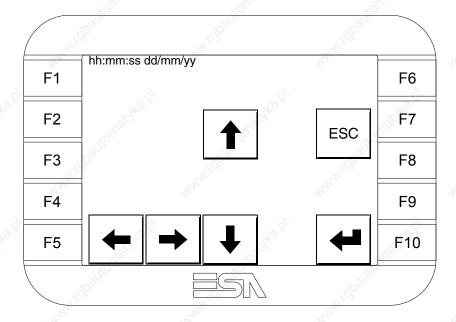


Use the arrow DD for any variation (see "Chapter 36 -> Operation of

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terminal with touch screen").

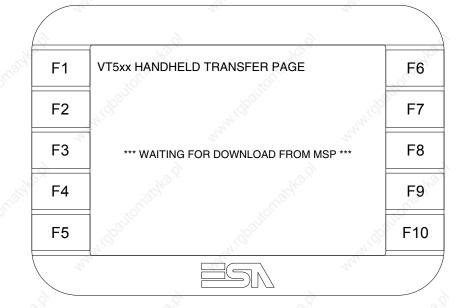
To set the clock touch the words SET CLOCK on the display; the following mask appears



Use the arrow D for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

Prepare the VT to receive the program:

To prepare the VT to receive the program, while displaying the driver information page (see Page 18-18), press  $\frac{TRAN}{PAGE}$ , and you will see the following mask



The on-screen to press depends on the port you intend to use (MSP or ASP). The VT terminal is now ready to receive (consult Software Manual for information on the transmission procedure).

The VT terminal is now ready to receive (consult Software Manual for information on the transmission procedure).

Possible error messages that may be encountered in the driver information page are:

#### • PR ERR

Problem->	Errors have been detected in the data exchange between
	the VT and the Device.
Solution->	Check the cable; there may be disturbance.

#### COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

#### Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

Improving display color quality To improve the color quality, adjust the contrast of the display: if the colors are too dark increase the contrast; if, on the other hand, the colors are too light, decrease the contrast.

# Adjusting the contrast on the display

To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 18-20) and changing the value (from +31 to -32) in evidence at that moment. Increase the value to darken the display; to lighten it, decrease the value.

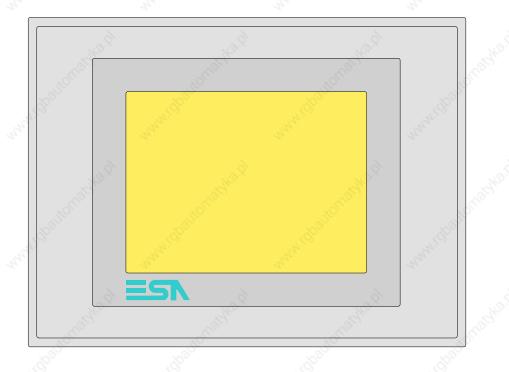
We advise this to be done at typical room temperature and with the terminal at operating temperature (about 30 minutes after switching on and with the screen saver disabled - see Software Manual).



### Chapter 19

## Video terminal VT525W

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This chapter consists of 28 pages.		S.



**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal			N.	
VT525W 00000			20		
VT525W 000DP		- 8	2		
VT525W 000CN		50-			
VT525W 000ET					
Display	Aug Aug	<b>\</b>	▼	▼	
• •	LCD 4 tones of blue STN				Τ
Туре	LCD 16 Colors STN	٠	٠	•	
	LCD 16 Colors TFT			K.	
Touch screen	Matrix 20 x 16 (Cell:16x15 pixels)	٠	۲	•	
Representational format	Graphic	•	•	•	
Resolution [pixels]	320 x 240 (5,7")	•	٠	•	
Rows x characters	16 x 40 / 8 x 20 / 4 x 10	•	٠	•	
Display area size [mm]	115,2 x 86,4	•	٠	•	
Character matrix in text mode [pixels]	8 x15 / 16 x 30 / 32 x 60	•	٠	•	
Character size [mm] x 1 / x 2 / x 4	2,9 x 5,4 / 5,8 x 10,8 / 11,6 x 21,6	•	٠	•	0
Contract adjustment	Software	•	•	•	
Contrast adjustment	Automatic compensation with temperature	•	۲	•	
Character sets	Programmable fonts/TTF Windows ®	•	•	•	
Backlighting	х. Х.	0			-
Tupo	LED				t
Туре	CCFL lamp	•	٠	•	•
Minimum lamp-life at 25°C [hours]	15000	•	٠	•	•

Code of terminal	Characteristics of the termina	al		
VT525W 00000				
VT525W 000DP			-	5
VT525W 000CN	All		Nº.	<u> </u>
VT525W 000ET		- 20	2	
User memory		•	▼	•
Project [Bytes]	960K	•	•	•
Data memory [Bytes]	32K (Flash EPROM)	٠	•	•
Memory for Windows ® -based fonts [Byte]	256K	•	•	•
Memory Card for backup				
Memory Card for expansion	& &			~
Interfaces	Le ^x		P	~
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	Š		
ASP (Auxiliary serial port)	RS232/RS485	0		
ASP-15L (Auxiliary serial port)	RS232/RS485			
ASP-8 (Auxiliary serial port)	RS232	•	•	•
ASP-9 (Auxiliary serial port)	RS232			
LPT parallel port	Centronics			
Auxiliary port	Connections for accessories			2
Accessories	LON LON		10	8
Connectable accessories	See table "Chapter 33"	•	•	•
Clock	, O	0		
Clock	Hardware (with Supercapacitor - Min.72h	•	•	•
Networks				
	Profibus-DP			•
ntegrated	CAN Open (Optoisolated interface)		•	
5	Ethernet 10/100Mbit RJ45	•		<u></u>
Jniversal Bus Connector	-102		.0	2
Optional	See table "Chapter 33"	•	•	•
Proprietary networks		.0		
	Network server			
ESA-Net	Network client			
Technical data	A A A A A A A A A A A A A A A A A A A			
Power supply	24Vdc (1832Vdc)			
Power absorbed at 24Vdc	10W			
Protection fuse	Ø5x20mm - 800mA Quick Blow F			2
Protection level	IP65 (front-end)	å	de.	
Operating temperature	050°C	S.		
Storage and transportation temperature	-20+60°C	<u>-</u>		
Humidity (non-condensing)	<85%			
Weight	1400gr			
Dimensions				
External W x H x D [mm]	210 x 158 x 54			
Cut-out W x H [mm]	198 x 148			2-
Certification			y'a	

#### **Functions**

The following table lists in alphabetical order all the functions of the VT in question.

Table 19.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal VT525W *****	
Objects/Functions	Quantity
Alarm field	
Alarm help	256
Alarm history buffer	256
Alarm statistics	
Alarms (Total/active simultaneously)	256/256
Arc	10
Automatic operations	32
Backup/Restore	S.
Bar data	
Bit-wise password	8bits
Buttons	320 x page
Circles	25
Command: Change language	30
Command: Clear trend buffer	. 18 ⁰
Command: Delete recipe	20
Command: Hardcopy	
Command: Load recipe from data memory	
Command: Modify password	NO.
Command: Next page	A. C.
Command: Page help	30
Command: Password login	Ś
Command: Password logout	e)
Command: Previous page	
Command: Print alarm history	
Command: Printer form feed	Nº.
Command: Quit project	S. C.
Command: Report	and the second
Command: Restarts reading time-sampled trend	S
Command: Run pipeline	r.
Command: Save alarms history and trend buffers in flash	
Command: Save recipe in data memory	4
Command: Save recipe received from device in buffer	Nº.
Command: Save recipe received from device in data memory	S. C.
Command: Send recipe from video buffer to device	all'
Command: Send recipe to device	8
Command: Service page	

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 19.1: Functions and objects realizable with this VT (Part 2 of 4)

VT525W ****	· · ·
Objects/Functions	Quantity
Command: Show alarms history	Sal
Command: Show page directory	3
Command: Show project information	
Command: Show recipe directory	
Command: Show sequence directory	
Command: Shows driver status page	6
Command: Shows page help	Stor.
Command: Shows page with function: PG	allan.
Command: Stops reading time sampled trend	3
Command: Trend reading saved in device	
Command: Zero number of general pages	
Date field	
Day-of-the-week field	d.
Dynamic texts: Bit-group-structured dynamic texts	Nº.
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	S
E-keys	
Equations	32
^z -keys	
Free terminal	S.
Function: Disables key	St.
Function: Go to page	500
Function: Internal command	32
Function: Invert bit value	
Function: Macro	
Function: None	
Function: Reset bit permanently	S.
Function: Reset real-time bit	St.
Function: Sequences	.5
Function: Sets bit permanently	3
Function: Sets real-time bit	
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	2ª
Headers and footers (Total/Number of fields per H-F)	32/128
nfo-messages (Total/active simultaneously)	256/256
nternal registers	4096bytes
_abels	

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 19.1: Functions and objects realizable with this VT (Part 3 of 4)

Objects/Functions	Quantity	Ť
Lines	100 M	
Lists of bitmap images	30	-
Lists of texts	800	
Local configuration of E-keys		
Local configuration of F-keys		t
Macro field		
Macros (Total/Commands x macro)	1024/16	
Message field	and the second s	-
Message help	256	
Multilanguage texts	6 Langs.	
Object - Indicator		-
Object - Potentiometer knob		╀
Object - Selector knob		k
Object - Sliding potentiometer	Nº	T
Object - Sliding selector	a de la companya de l	+
Page	150	-
Page help	150	t
Password	10	+
Pipelines (Number/Tot bytes)		+
Print		A
Print page (Total/Number of fields per page)	64/128	
Programmable fonts	100 M	+
Project images	20	+
Public variables of ESANET network (Number/Total bytes)	de l'	+
Recipe field for recipe structure		+
Recipes (Number of variables per recipe)	128/256	+
Rectangles		8
Redefinable characters	N.	T
Reports	32	-
Sequences - Random	20°	+
Sequences - Start/stop	9°"	+
Static bitmaps		╈
Symbolic field: Bit-group-structured dynamic bitmaps		-
Symbolic field: Single-bit-structured dynamic bitmaps	1024*	0
Symbolic field: Value-structured dynamic bitmaps	Nº	F
System messages	and the second s	+
System variables assigned to recipe structure		+
Time long field	9	+
Time short field		_

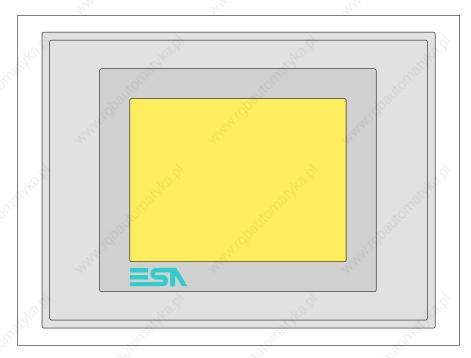
Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 19.1: Functions and objects realizable with this VT (Part 4 of 4)

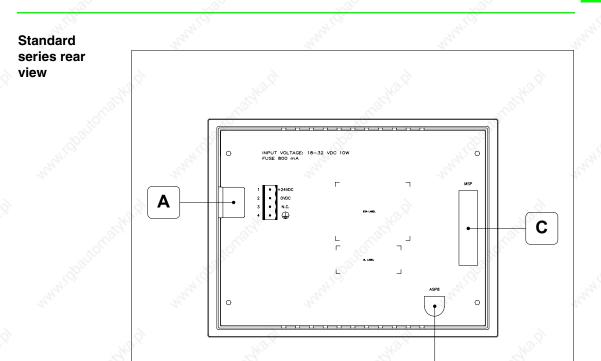
Code of terminal	
VT525W ****	
Objects/Functions	Quantity
Timer	32
Touch Area	24
Trend buffers	
Trends (Trends x page/Channels x trend)	
Trends sampled automatically (Memory/Trends/Readings)	
Trends sampled on command (Memory/Trends/Readings)	6
Value direct command: ADD	No.
Value direct command: AND	S.
Value direct command: OR	3 ⁰
Value direct command: SET	
Value direct command: SUBTRACT	
Value direct command: XOR	
Variables: Limit values and linear scaling variables	6
Variables: Movement variable (Mobile symbolic field)	No.
Variables: Threshold variables	10
/ariables: Floating Point numerical variables	48 x pages
Variables: Numerical variables (DEC, HEX, BIN, BCD)	-
Variables: String variables (ASCII)	-
Inless otherwise stated, there is no limit to the number of includable elements, only the size of pro	iect memory sets a li

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

#### Front view



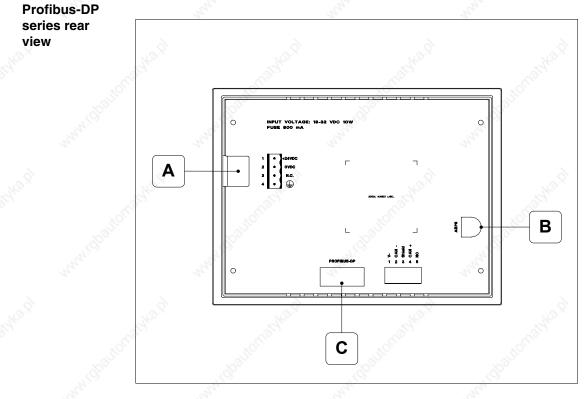
All buttons and signals are defined using the programming software (see Software Manual).



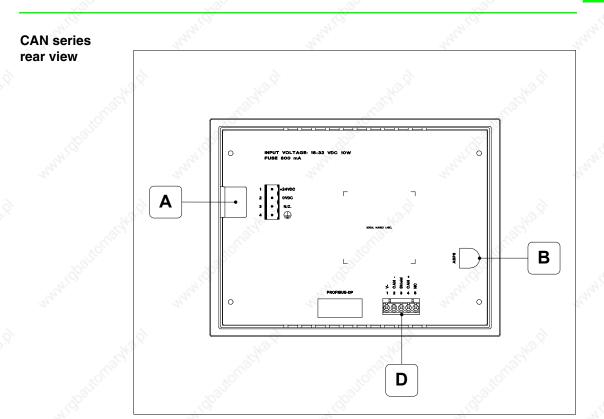
Position	Function
А	Power supply connector
В	ASP serial port for communicating with PC or other devices
С	MSP serial port for communicating with PLC/PC

В

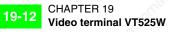


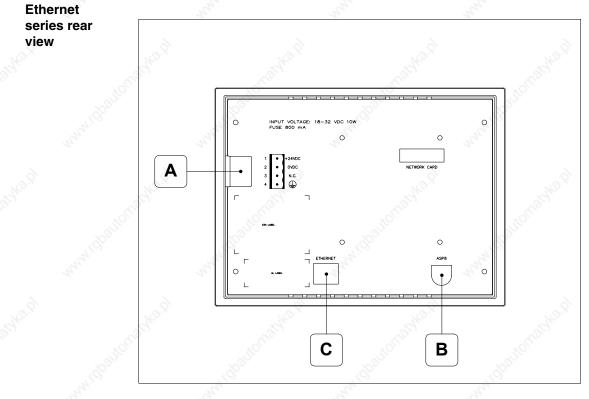


Position	Function
A	Power supply connector
В	ASP serial port for communicating with PC or other devices
C and	Serial port for network communication



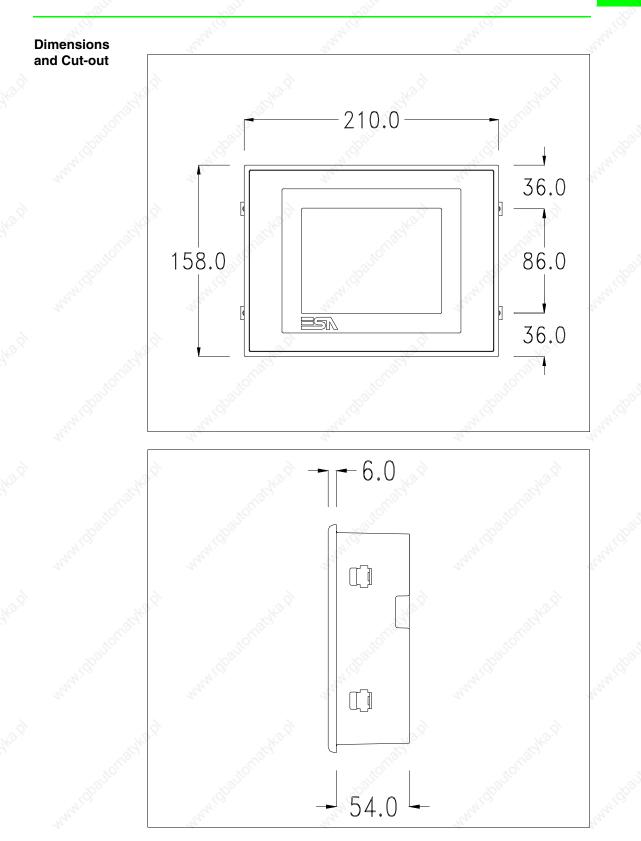
Position	Function
А	Power supply connector
В	ASP serial port for communicating with PC or other devices
D	CAN serial port

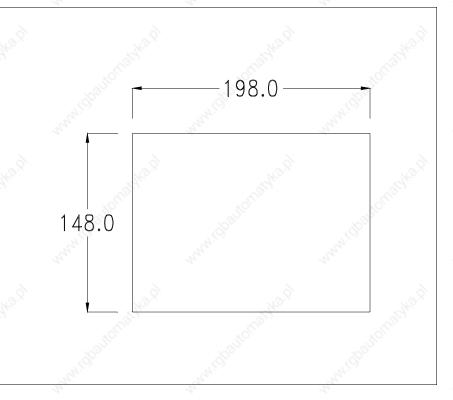




Position	Function
A	Power supply connector
В	ASP serial port for communicating with PC or other devices
C and	Ethernet network 10/100Mbit RJ45 (For the diagnostic mode of the LEDs see "Chapter 30 -> Ethernet port")







To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

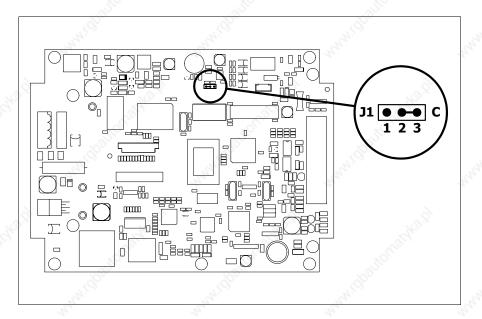
Calibration of Touch Screen The screen of VT525W is made of resistive, sensitive glass; for this type of glass to work properly it requires a calibration procedure (**the terminal is already calibrated when supplied**), that is, the resistive area of the glass has to be adjusted to the visible are of the display.

Should it be thought necessary to repeat the calibration procedure this can be done by following the instructions set out below.



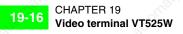
The procedure must be carried out with great care as the precision of the keys area depends on the calibration. How to perform the calibration procedure:

- Make sure the VT is not connected to the power supply
- Remove the back cover
- Identify jumper J1

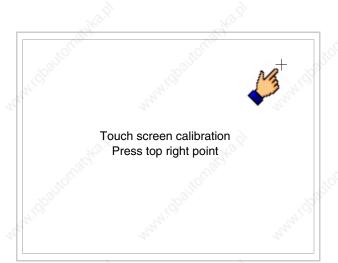


- Position J1 on pins 2-3 (C)
- Reconnect the power supply and switch on the terminal; the following mask appears

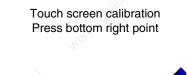




• Touch the corner indicated in the figure; then the following page appears on screen



• Touch the corner indicated in the figure to complete the calibration procedure; the following page now appears



• Wait a few moments until the VT displays either the following mask or the project page (the page may be slightly different in its wording depending on which series the terminal belongs to)

VT525W T	RANSFER PAGE		
	T and RAM check IWARE check	: OK : OK	
SELECT:	MSP ASP EX	J	and the second sec

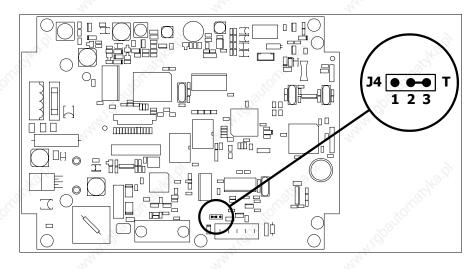
- Switch off the terminal
- Reposition J1 on pins 1-2
- Replace the back cover
- Switch on the terminal again

The calibration procedure has finished; if the calibration has be carried out wrongly or imprecisely, repeat the procedure.

#### Termination of CAN line

This paragraph applies only to the CAN series. The VT in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J4.



- Position the jumper between pins 2 and 3 (line terminated).
- Replace the back cover.
- Reconnect the power supply.

Introducing the MAC address This paragraph relates only to the Ethernet series. The Media Access Control (MAC) address unambiguously identifies each terminal connected in the Ethernet network. The terminal is acquired with the address already programmed and is shown on the display of the terminal in the transfer page.

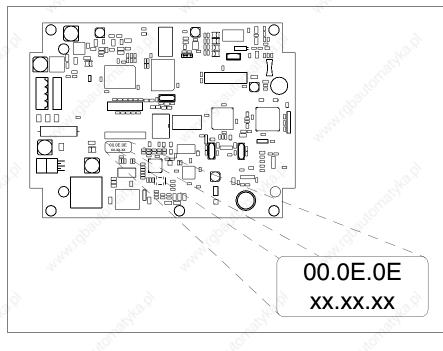
VT525W ETHERNET TRAN	SFER PAGE
Main BOOT and RAM check	
Main FIRMWARE check	: OK
SELECT: MSP ASP E	хіт
and the second sec	Call Call
	MAC addr:
55	00.0E.0E.xx.xx.xx

The MAC address is permanently memorized in the terminal, but should it be necessary to execute an "aided" BOOT update (see Software Manual "Chapter 14 -> BOOT update") the address is lost.

This operation must be carried out only with the advice of the ESA Customer Care Department.

Terminals with no valid MAC address when switched present a mask for its insertion. If no MAC address belonging to the terminal is available, proceed as follows:

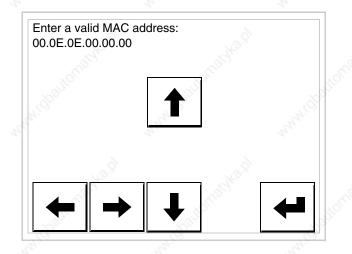
- Check that the VT is not connected to the power supply.
- Remove the back cover
- Locate the label carrying the MAC address



• Make a note of the number on the label (e.g. 00.0E.0E.00.00.01)

00.0E.0E xx.xx.xx -> fixed part that identifying as an ESA product -> variable part different for each terminal

- Reconnect the power supply to the terminal and, if necessary, calibrate the touch screen (see Page 19-14)
- Replace the back cover
- Switch on the terminal again
- The following mask appears; introduce the address previously noted down (e.g. 00.0E.0E.00.00.01)



• Use the arrow 💷 to make the setting. Once the address has been confirmed the following page is displayed

v	/T525W E	THERNET TRAN	SFER PAGE	
		Γ and RAM check WARE check	: OK : OK	
S	SELECT:	MSP ASP E		
e da a			MAC addr: 00.0E.0E.00.	00.01

The procedure is now terminated.



Should a wrong MAC address have been inserted contact the ESA Customer Care Department.

A wrong address could give rise to an error of conflict between VT terminals in the Ethernet network.

#### Transfer PC -> VT

For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

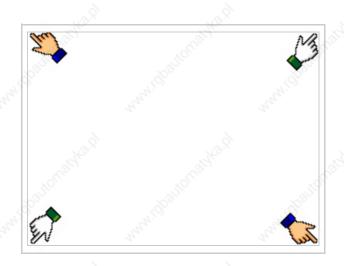
(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

## Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT and wait for the following mask to appear
- Press one after the other the diagonally opposite corners free of settable objects or buttons (at least one corner needs to be free)



and wait a moment, or, using the appropriate button (see Page 19-25), till the VT displays the following mask

10.00	CHAPTER 19
19-22	Video terminal VT525W

VT525W TF	ANSFER PAGE		
1		: OK : OK	
SELECT:	MSP ASP EX	Т	
tomat			
- Coart	- S	<u>8</u> .	
	Main BOOT Main FIRMV	VT525W TRANSFER PAGE Main BOOT and RAM check Main FIRMWARE check SELECT: MSP ASP EX	Main BOOT and RAM check : OK Main FIRMWARE check : OK

• Choose the port you intend to use for the transfer (MSP or ASP); touch the relevant 🖾 on the display. The VT is now ready to receive (refer to Software Manual for transfer procedure).

VT525W TRAN	SFER PAGE		58
Main BOOT and Main FIRMWAF		: OK : OK	March .
SELECT: MO	DDEM F	PC YOR	EXIT
			.8
			ANANA.
	<u>}</u>		

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant  $\square$  on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

VT525W TRANSFER PAGE	
Main BOOT and RAM check : OK Main FIRMWARE check : OK	
SELECT: SLOW FAST	
asyland asyland	
anton''	3

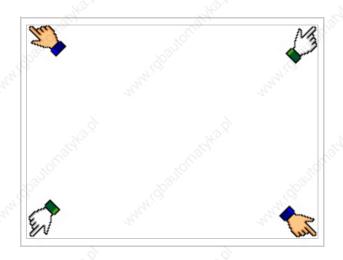
The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant  $\square$  on the display. The VT is now ready to receive (see Software Manual for the transfer).

Information relating to driver After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects or buttons (at least one angle must be free)



Port	3	****	PR
Drive	er :	*****	
Ver	:	xxxxxxxxxxxxxxxxxxx	TF
Addr	VT :	****	PA
Error	· :	*****	
			E

There is one of these pages for each communication port; movement between the various pages is effected by pressing  $\blacktriangleright$ .

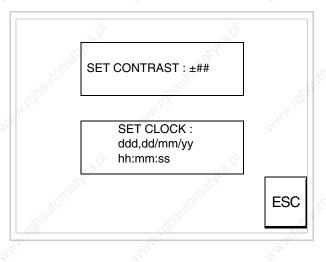
From this page you can:

and

- Set the clock and the contrast
- Prepare the VT to receive the program

Setting the clock and the contrast:

To set the clock and the contrast, while displaying the above illustrated page, press  $\stackrel{PROG}{=}$ ; the following mask appears

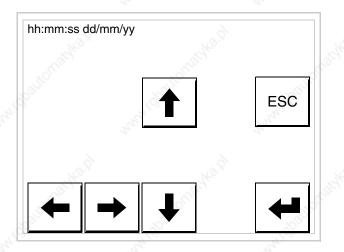


CONTRAST : ±## ↓ ESC

To set the contrast touch the words SET CONTRAST on the display; you will see the following mask

Use the arrow DD for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

To set the clock touch the words SET CLOCK on the display; the following mask appears



Use the arrow DD for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

Prepare the VT to receive the program:

To prepare the VT to receive the program, while displaying the

driver information page (see Page 19-23), press TRAN PAGE, and you will see the following mask

	VT525W TRANSFER PAGE	
	Main BOOT and RAM check : OK Main FIRMWARE check : OK	
5	SELECT: MSP ASP EXIT	and in the
	dka.d	
	daugna.	
J.		- 37

The on-screen to press depends on the port you intend to use (MSP or ASP). The VT terminal is now ready to receive (consult Software Manual for information on the transmission procedure).

The VT terminal is now ready to receive (consult Software Manual for information on the transmission procedure).

Possible error messages that may be encountered in the driver information page are:

#### • PR ERR

Problem->	Errors have been detected in the data exchange between
	the VT and the Device.
Solution->	Check the cable; there may be disturbance.

COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

#### Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

Improving display color quality To improve the color quality, adjust the contrast of the display: if the colors are too dark increase the contrast; if, on the other hand, the colors are too light, decrease the contrast.

# Adjusting the contrast on the display

To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 19-25) and changing the value (from +31 to -32) in evidence at that moment. Increase the value to darken the display; to lighten it, decrease the value.

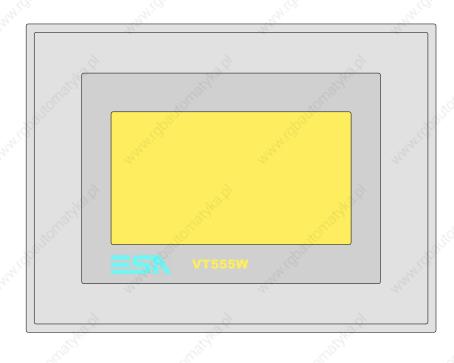
We advise this to be done at typical room temperature and with the terminal at operating temperature (about 30 minutes after switching on and with the screen saver disabled - see Software Manual).



### Chapter 20

## Video terminal VT555W

Contents	Page
Technical characteristics	20-2
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Standard series rear view	20-9
CAN series rear view	20-10
Dimensions and Cut-out	20-11
Accessories	20-12
Termination of CAN line	20-12
Transfer PC -> VT	20-13
Preparation for reception	20-13
Information relating to driver	20-16
Adjusting the contrast on the display	20-19
This chapter consists of 20 pages.	6 6



**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of tern	nina	al				
VT555W 00000							
VT555W A0000						-	
VT555W AP000					ő	3	
VT555W A00DP	3 Str			_	5		
VT555W AP0DP	<u>*</u>		-	S.			
VT555W 000CN		_	S				
Display		▼	•	▼	▼	▼	
	LCD Monochromatic STN	٠	•	•	•	•	
Туре	LCD 16 Colors STN						
	LCD 16 Colors TFT					0	
Touch screen	Matrix 20 x 8 (Cell:12x16 pixels)	•	•	•	•	•	
Representational format	Graphic	•	•	•	•	•	
Resolution [pixels]	240 x 128	•	•	۲	٠	•	
Rows by characters	16 x 40 / 8 x 20 / 4 x 10	•	۲	•	•	•	
Display area size [mm]	123 x 68 (5,5")	•	٠	•	•	•	
Character matrix in text mode [pixels]	6 x 8 / 12 x 16 / 24 x 32	٠	•	•	•	•	
Character size [mm] x 1 / x 2 / x 4	3 x 4 / 6 x 8 / 12 x 16	•	•	•	•	•	
Contract adjustment	Software	•	•	•	•	۲	
Contrast adjustment	Automatic compensation with temperature				ð	3	-
Character sets *	Programmable fonts/TTF Windows ®	•	٠	•	•	٠	
Backlighting	S. C. S.		~	8			
Tupo	LED		S				
Туре	CCFL lamp	•	٠	•	٠	٠	
Minimum lamp-life at 25°C [hours]	15000	•	•	•	•	٠	

Code of terminal	Characteristics of te	rmina	al				
VT555W 00000							
VT555W A0000	6					6	
VT555W AP000	NO. NO.				12	2	
VT555W A00DP	S A			_ð	3		
VT555W AP0DP	20		-3	5			
VT555W 000CN	Salar -	10	S.				
User memory	- A101		▼	▼	V	•	▼
	256K + 384K (Text + Graphics)						•
Project [Bytes]	192K + 384K (Text + Graphics)	•	•	•	•	•	
Data memory [Bytes]	32K (With back-up battery)					~	•
	128K (With back-up battery)	•	•	•	•	•	
Memory for Windows ® -based fonts [Byte]	64K			10	6		
Memory Card for backup	*0			1			
Memory Card for expansion		~	2				
Interfaces		S.					
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	•	•	•	•	•	•
ASP (Auxiliary serial port)	RS232/RS485	-	•	•	•	•	-
ASP-15L (Auxiliary serial port)	RS232/RS485		-	-	-	<u> </u>	
ASP-8 (Auxiliary serial port)	RS232				10	5	
ASP-9 (Auxiliary serial port)	RS232			6	Ser		
LPT parallel port	Centronics		•	100	•		
Auxiliary port	Connections for accessories	-	20		•		
Accessories		Ś					
Connectable accessories	See table "Chapter 33"			•	•	•	
Clock	See table Shapter 35		•	-	•	-	-
Clock	Hardware (With back-up battery)	•		•			
Networks	Hardware (With back-up battery)	-	•	-		2	-
Telworks	Profibus-DP		•		S.		
ntegrated	CAN Open (Optoisolated interface)	•	-	0			
integrated	Ethernet 10/100Mbit RJ45	-	3				
Universal Bus Connector		3	× .				
Optional	See table "Chapter 33"				•	•	
Proprietary networks	See table Chapter 35		•	•	•	-	•
Tophetaly networks	Network server						
ESA-Net	Network client		•	•			
Technical data	Network client		•				-
Power supply	24Vdc (1832Vdc)		-	20			
Power absorbed at 24Vdc	15W	-	3				
Protection fuse	Ø5x20mm - 800mA Quick Blow F	8	0				
Protection level	IP65 (front-end)	A. Car					
	050°C	V.,					
Operating temperature Storage and transportation temperature	-20+60°C						
<b>e</b>	-20+60°C <85%					è-	
Humidity (non-condensing)					Nº.		
Weight Dimensions	1400gr			2	9		
JUDEUSIONS	010 × 150 × 54		39	2			
External W x H x D [mm]	210 x 158 x 54		-				
	198 x 148	1.0°					

#### **Functions**

The following table lists in alphabetical order all the functions of the VT in question.

Table 20.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal VT555W *****			
Objects/Functions	Quantity		
Alarm field	5 ⁹		
Alarm help	1024		
Alarm history buffer	256		
Alarm statistics			
Alarms (Total/active simultaneously)	1024/256		
Arc	20		
Automatic operations	32		
Backup/Restore	2 ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° °		
Bar data			
Bit-wise password	8bits		
Buttons	160 x page		
Circles	100		
Command: Change language	10		
Command: Clear trend buffer	18 ⁰		
Command: Delete recipe			
Command: Hardcopy			
Command: Load recipe from data memory			
Command: Modify password	ND		
Command: Next page	200		
Command: Page help	_320		
Command: Password login	.S°		
Command: Password logout			
Command: Previous page			
Command: Print alarm history			
Command: Printer form feed	K ²		
Command: Quit project	S.		
Command: Report			
Command: Restarts reading time-sampled trend	80		
Command: Run pipeline	A.		
Command: Save alarms history and trend buffers in flash			
Command: Save recipe in data memory			
Command: Save recipe received from device in buffer	Nº		
Command: Save recipe received from device in data memory	S. S. S.		
Command: Send recipe from video buffer to device	all ^o		
Command: Send recipe to device	S		
Command: Service page	2		

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 20.1: Functions and objects realizable with this VT (Part 2 of 4)

Code of terminal	
Objects/Functions	Quantity
Command: Show alarms history	100 M
Command: Show page directory	30
Command: Show project information	8
Command: Show recipe directory	-
Command: Show sequence directory	
Command: Shows driver status page	~
Command: Shows page help	No
Command: Shows page with function: PG	200
Command: Stops reading time sampled trend	- 18 C
Command: Trend reading saved in device	\$°
Command: Zero number of general pages	
Date field	
Day-of-the-week field	8
Dynamic texts: Bit-group-structured dynamic texts	Nº N
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	- 19 C
E-keys	8
Equations	32
F-keys	
Free terminal	6
Function: Disables key	Nº.
Function: Go to page	S.C.C.
Function: Internal command	-25°
Function: Invert bit value	8.
Function: Macro	
Function: None	
Function: Reset bit permanently	6
Function: Reset real-time bit	No.
Function: Sequences	Ser.
Function: Sets bit permanently	
Function: Sets real-time bit	8
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	0
Headers and footers (Total/Number of fields per H-F)	128/128
Info-messages (Total/active simultaneously)	1024/256
Internal registers	4096bytes
Labels	8

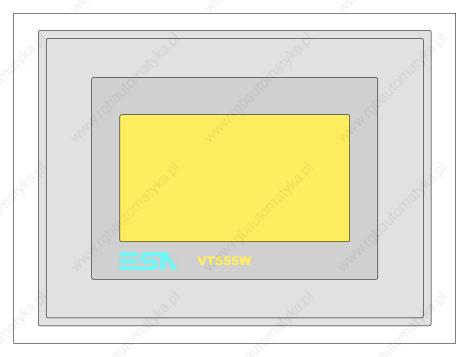
Table 20.1: Functions and objects realizable with this VT (Part 3 of 4)

Objects/Functions	Quantity
Lines	S. S.
Lists of bitmap images	15°
Lists of texts	S
Local configuration of E-keys	
Local configuration of F-keys	
Macro field	24 x pages
Macros (Total/Commands x macro)	1024/16
Message field	E.
Message help	1024
Multilanguage texts	8 Langs.
Object - Indicator	
Object - Potentiometer knob	
Object - Selector knob	
Object - Sliding potentiometer	Nº
Object - Sliding selector	S.
Page	1024
Page help	1024
Password	10
Pipelines (Number/Tot bytes)	64/512
Print	
Print page (Total/Number of fields per page)	1024/128
Programmable fonts	and the second s
Project images	-3 ¹⁵⁰
Public variables of ESANET network (Number/Total bytes)	256/1024
Recipe field for recipe structure	
Recipes (Number of variables per recipe)	1024/256
Rectangles	
Redefinable characters	Nº St
Reports	128
Sequences - Random	~35
Sequences - Start/stop	S.
Static bitmaps	
Symbolic field: Bit-group-structured dynamic bitmaps	
Symbolic field: Single-bit-structured dynamic bitmaps	1024*
Symbolic field: Value-structured dynamic bitmaps	and the
System messages	- of 10-
System variables assigned to recipe structure	200 C
Time long field	Š
Time short field	-

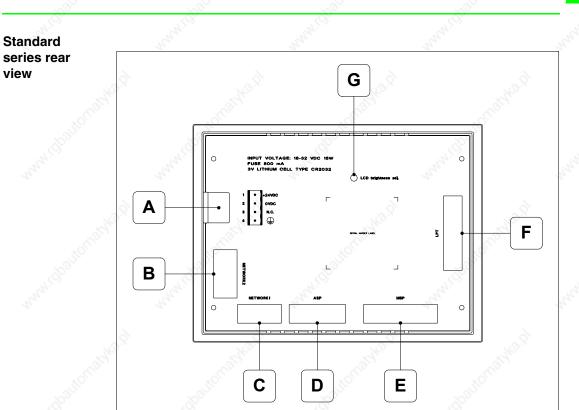
Table 20.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of terminal	
VT555W *****	6
Objects/Functions	Quantity
Timer	32
Touch Area	48
Trend buffers	128
Trends (Trends x page/Channels x trend)	4/4
Trends sampled automatically (Memory/Trends/Readings)	512bytes
Trends sampled on command (Memory/Trends/Readings)	/**/240
Value direct command: ADD	No.
Value direct command: AND	S
Value direct command: OR	50
Value direct command: SET	
Value direct command: SUBTRACT	
Value direct command: XOR	
Variables: Limit values and linear scaling variables	6
Variables: Movement variable (Mobile symbolic field)	No.
Variables: Threshold variables	06 x pages
Variables: Floating Point numerical variables	96 x pages
Variables: Numerical variables (DEC, HEX, BIN, BCD)	
Variables: String variables (ASCII)	
Inless otherwise stated there is no limit to the number of includable elements, only the size of proj	

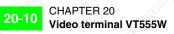
#### Front view



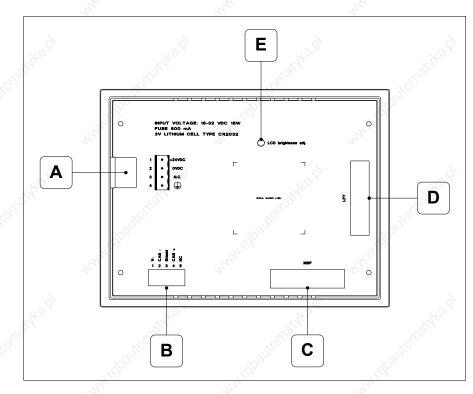
All buttons and signals are defined using the programming software (see Software Manual).



Position	Function
A	Power supply connector
В	NETWORK2 serial port for network communication (Option)
С	NETWORK1 serial port for network communication (Option)
D	ASP serial port for communicating with PC or other devices (Option)
E	MSP serial port for communicating with PLC/PC
Farli	LPT port for connecting printer (Option)
G	Trimmer for brightness control

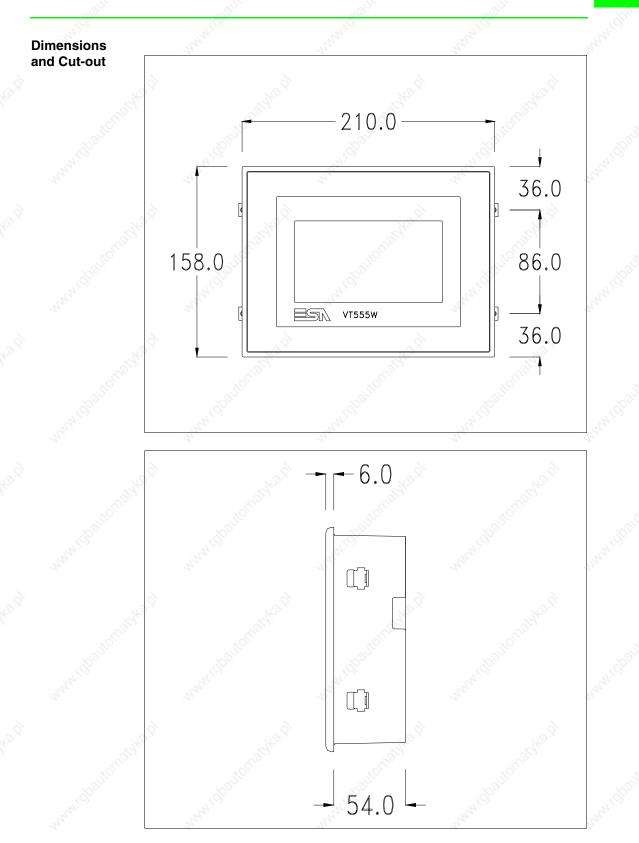


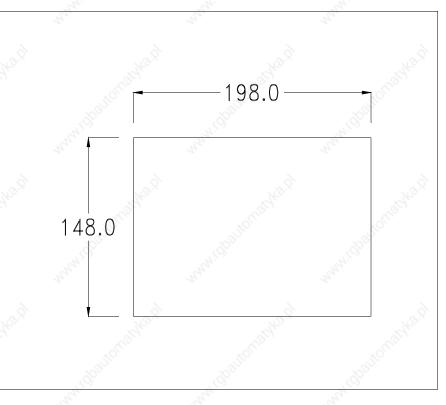
## CAN series rear view



Position	Function	
A	Power supply connector	-314K2.9
В	CAN serial port	,10 ⁰¹⁰⁰
C and	MSP serial port for communicating with PLC/F	°C
Hed D	LPT port for connecting printer (Option)	AR.D
E	Trimmer for brightness control	waltomot







To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

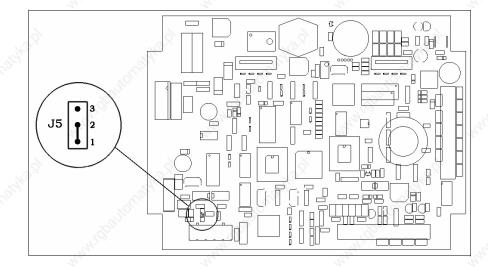
Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

#### Termination of CAN line

This paragraph applies only to the CAN series. The VT in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J5.



- Position the jumper between pins 2 and 3 (line terminated).
- Replace the back cover.
- Reconnect the power supply.

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

## Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT by pressing simultaneously on two diagonally opposed angles of the screen



and wait a moment, or, using the appropriate button (see Page 20-18), till the VT displays the following mask

#### VT terminal with no Modem function:

• Choose the port you intend to use for the transfer (MSP or ASP); touch the relevant 🖾 on the display. The VT is now ready to receive (refer to Software Manual for transfer procedure)

	BOOT check : OK
Graphic controller	
Graphic controller	synchronization : OK
	check : NOT PRESENT FIRMWARE : ERROR
SELECT:	MSP ASP EXIT

#### VT terminal with Modem function:

• Proceed from the preceding mask; the following mask appears

VT555 TRA	NSFER PAGE	alto.	10 ⁰¹⁵⁰
	ntroller BOOT ntroller RAM cl		ANNIA.C.
Graphic cor	ntroller synchro	onization : OK	
	WARE check : htroller FIRMW		
	MODEM		

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant  $\square$  on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

_			100	
Γ	VT555 TRAN	NSFER PAGE	- Call	
		troller BOOT o troller RAM ch		undpauto.
ľ	Graphic cont	troller synchro	onization : OK	Alar .
			NOT PRESEN ARE : ERROR	
	SELECT:	SLOW	FAST	a la construction de la construc
	Walley.		ALL CONTRACTOR	AND CO.
_	30.	30.		

The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant  $\square$  on the display. The VT is now ready to receive (see Software Manual for the transfer).

#### Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects or buttons (at least one angle must be free)



and there appears the following mask

-			Sec.	Sec.
	Port	:	****	PROG
	Driver	je s	*****	TRAN
	Ver	:	*****	PAGE
	Addr VT	:	*****	
	Error	:	*****	
				ESC

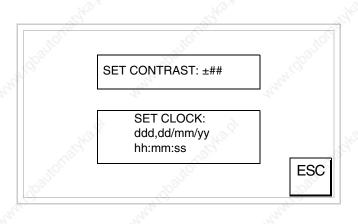
There is one of these pages for each communication port; movement between the various pages is effected by pressing  $\blacktriangleright$ .

From this page you can:

- Set the clock and the contrast
- Prepare the VT to receive the program

Setting the clock and the contrast:

To set the clock and the contrast, while displaying the above illustrated page, press PROG; the following mask appears



To set the contrast touch the words SET CONTRAST on the display; you will see the following mask

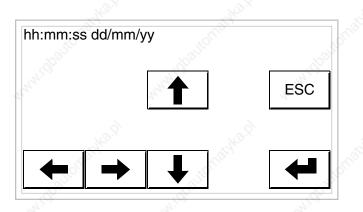


Use the arrow  $\Box$  for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

To set the clock touch the words SET CLOCK on the display; the following mask appears

For the clock to be used properly, a special battery has to be

**inserted in the terminal (see** "Chapter 33 -> Video terminal accessories").



Use the arrow III for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

Prepare the VT to receive the program:

To prepare the VT to receive the program, while displaying the driver information page (see Page 20-16), press  $\frac{TRAN}{PAGE}$ , and you will see the following mask

VT555 TRANSFER PAGE	the Contraction of the Contracti
Graphic controller BOOT che Graphic controller RAM check	
No.0	Ales a
SELECT: M	SP ASP EXIT
60,000	<u> </u>
See See	

Which on-screen 🗉 you touch depends on the port you intend using.

The VT is now ready to receive (refer to Software Manual for information on the transfer procedure). Once you enter this mask, you can quit without transferring only by switching off and switching on the VT again or by pressing the EXIT  $\square$ . Possible error messages that may be encountered in the driver information page are:

• PR ERR

Problem-> Errors have been detected in the data exchange between the VT and the Device.

Solution-> Check the cable; there may be disturbance.

#### • COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

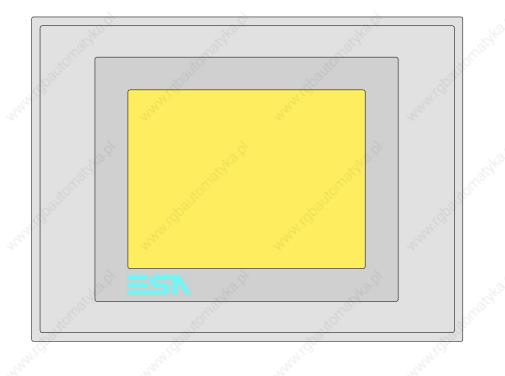
Adjusting the contrast on the display To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 20-17) and changing the value (from +31 to -32) in evidence at that moment. Increase the value to darken the display; to lighten it, decrease the value.



## Chapter 21

## Video terminal VT560W

Contents	Page
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Rear view	21-9
Dimensions and Cut-out	21-10
Accessories	21-11
Transfer PC -> VT	21-11
Preparation for reception	21-12
Information relating to driver	21-13
Improving display color quality	21-18
Adjusting the contrast on the display	21-18



**Technical** The following table lists the principal technical characteristics of the product in question.

Characteristics of the terminal			
		_	
All All	<b>•</b>	▼	
LCD 8 tones of blue STN	•		
LCD 16 Colors STN	- 6	•	
LCD 16 Colors TFT	18		
Matrix 20 x 16 (Cell:16x15 pixels)	0.	•	
Graphic	•	•	
320 x 240 (5,7")	•	•	
16 x 40 / 8 x 20 / 4 x 10	•	•	
115,6 x 87	•	•	
8 x15 / 16 x 30 / 32 x 60	•	•	
2,8 x 5,2 / 5,6 x 10,4 / 11,2 x 20,8	•	•	
Software		•	
Automatic compensation with temperature	<u></u>	•	
Programmable fonts/TTF Windows ®	•	•	
N N N			
LED			
CCFL lamp	•	•	
15000	•	•	
	LCD 8 tones of blue STN         LCD 16 Colors STN         LCD 16 Colors TFT         Matrix 20 x 16 (Cell:16x15 pixels)         Graphic         320 x 240 (5,7")         16 x 40 / 8 x 20 / 4 x 10         115,6 x 87         8 x15 / 16 x 30 / 32 x 60         2,8 x 5,2 / 5,6 x 10,4 / 11,2 x 20,8         Software         Automatic compensation with temperature         Programmable fonts/TTF Windows ®         LED         CCFL lamp	LCD 8 tones of blue STNLCD 16 Colors STNLCD 16 Colors TFTMatrix 20 x 16 (Cell:16x15 pixels)Graphic $320 \times 240 (5,7")$ $16 \times 40 / 8 \times 20 / 4 \times 10$ $115,6 \times 87$ $8 \times 15 / 16 \times 30 / 32 \times 60$ $2,8 \times 5,2 / 5,6 \times 10,4 / 11,2 \times 20,8$ SoftwareAutomatic compensation with temperatureProgrammable fonts/TTF Windows ®LEDCCFL lamp $\bullet$	

Code of terminal	Characteristics of the termin	nal	
VT560W A0000			
VT560W A0M00		-	5
User memory	N°	No	• •
Project [Bytes]	192K + 832K (Text + Graphics)	18 M	• •
Data memory [Bytes]	128K (With back-up battery)	10	• •
Memory for Windows ® -based fonts [Byte]	128K	8	• •
Memory Card for backup	4Mb		• •
Memory Card for expansion	31 31		
Interfaces			
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA		• •
ASP (Auxiliary serial port)	RS232/RS485	N2	• •
ASP-15L (Auxiliary serial port)	RS232/RS485	18 C	
ASP-8 (Auxiliary serial port)	RS232	20	
ASP-9 (Auxiliary serial port)	RS232	8	
LPT parallel port	Centronics		
Auxiliary port	Connections for accessories		
Accessories			
Connectable accessories	See table "Chapter 33"		• •
Clock	10° 10°	N.	
Clock	Hardware (With back-up battery)	2	• •
Networks	, , , , , , , , , , , , , , , , , , , ,	xO	
Integrated	Profibus-DP CAN Open (Optoisolated interface)	82	
	Ethernet 10/100Mbit RJ45		
Jniversal Bus Connector			
Optional	See table "Chapter 33"		• •
Proprietary networks	LON LON	10	5.
	Network server	200	• •
ESA-Net	Network client	×05	• •
Technical data		8	
Power supply	24Vdc (1832Vdc)		
Power absorbed at 24Vdc	15W		
Protection fuse	Ø5x20mm - 800mA Quick Blow F		
Protection level	IP65 (front-end)		
Operating temperature	050°C	10	<u> </u>
Storage and transportation temperature	-20+60°C	Page 1	
Humidity (non-condensing)	<85%	.5	
Weight	1400gr	8	
Dimensions	<u> </u>		
External W x H x D [mm]	210 x 158 x 54		
Cut-out W x H [mm]	198 x 148		
Certification			
Certifications and approvals	CE, cULus, NEMA12		2

#### Functions

The following table lists in alphabetical order all the functions of the VT in question.

Table 21.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal	Sec.
VT560W *****	0
Objects/Functions	Quantity
Alarm field	4004
Alarm help	1024
Alarm history buffer	256
Alarm statistics	19
Alarms (Total/active simultaneously)	1024/256
Arc	30
Automatic operations	32
Backup/Restore	2
Bar data	
Bit-wise password	8bits
Buttons	320 x page
Circles	and
Command: Change language	30
Command: Clear trend buffer	300
Command: Delete recipe	
Command: Hardcopy	
Command: Load recipe from data memory	
Command: Modify password	L.
Command: Next page	1
Command: Page help	30
Command: Password login	300
Command: Password logout	2
Command: Previous page	
Command: Print alarm history	
Command: Printer form feed	L.
Command: Quit project	A. C.
Command: Report	
Command: Restarts reading time-sampled trend	300
Command: Run pipeline	
Command: Save alarms history and trend buffers in flash	
Command: Save recipe in data memory	
Command: Save recipe received from device in buffer	12
Command: Save recipe received from device in data memory	and and
Command: Send recipe from video buffer to device	30
Command: Send recipe to device	de la companya de la
Command: Service page	

Table 21.1: Functions and objects realizable with this VT (Part 2 of 4)

VT560W ****	6.
Objects/Functions	Quantity
Command: Show alarms history	S. C.
Command: Show page directory	30
Command: Show project information	
Command: Show recipe directory	
Command: Show sequence directory	
Command: Shows driver status page	6
Command: Shows page help	No.
Command: Shows page with function: PG	al and
Command: Stops reading time sampled trend	
Command: Trend reading saved in device	
Command: Zero number of general pages	
Date field	
Day-of-the-week field	à
Dynamic texts: Bit-group-structured dynamic texts	d'all
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	3
E-keys	
Equations	32
F-keys	
Free terminal	S.
Function: Disables key	Sto.
Function: Go to page	Sto
Function: Internal command	\$~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Function: Invert bit value	
Function: Macro	
Function: None	
Function: Reset bit permanently	S.
Function: Reset real-time bit	Sec.
Function: Sequences	550
Function: Sets bit permanently	5
Function: Sets real-time bit	
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	2
Headers and footers (Total/Number of fields per H-F)	128/128
Info-messages (Total/active simultaneously)	1024/256
Internal registers	4096bytes

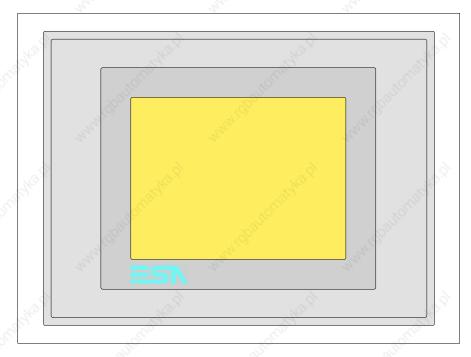
Table 21.1: Functions and objects realizable with this VT (Part 3 of 4)

VT560W ****		
Objects/Functions		Quantity
Lines		S
Lists of bitmap images		- Chille
Lists of texts	- 5	5
Local configuration of E-keys	AN CONTRACT	
Local configuration of F-keys		
Macro field		
Macros (Total/Commands x macro)		1024/16
Message field		and and a second
Message help		1024
Multilanguage texts	- 5	8 Langs.
Object - Indicator	23 ²	64
Object - Potentiometer knob		64
Object - Selector knob		64
Object - Sliding potentiometer		64
Object - Sliding selector		64
Page		1024
Page help		1024
Password	Jan .	10
Pipelines (Number/Tot bytes)	2°	64/512
Print		
Print page (Total/Number of fields per page)		1024/128
Programmable fonts		
Project images		20.
Public variables of ESANET network (Number/Total bytes)	- È	256/1024
Recipe field for recipe structure	San San	
Recipes (Number of variables per recipe)	2.	1024/512
Rectangles		
Redefinable characters		Nº.
Reports		128
Sequences - Random		-350.
Sequences - Start/stop	- 3	5
Static bitmaps	San .	
Symbolic field: Bit-group-structured dynamic bitmaps	4."	
Symbolic field: Single-bit-structured dynamic bitmaps		1024*
Symbolic field: Value-structured dynamic bitmaps		Nº.
System messages		- Carl
System variables assigned to recipe structure		250.
Time long field	- 3	S
Time short field	AN'	

Table 21.1: Functions and objects realizable with this VT (Part 4 of 4)

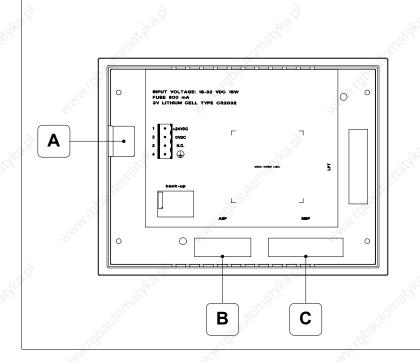
Code of terminal				
VT560W ****				
Objects/Functions	Quantity			
Timer	32			
Touch Area	64			
Trend buffers	128			
Trends (Trends x page/Channels x trend)	4/4			
Trends sampled automatically (Memory/Trends/Readings)	4096bytes			
Trends sampled on command (Memory/Trends/Readings)	/**/320			
Value direct command: ADD	Nº"			
Value direct command: AND	100 C			
Value direct command: OR	381			
Value direct command: SET				
Value direct command: SUBTRACT				
Value direct command: XOR				
Variables: Limit values and linear scaling variables	6			
Variables: Movement variable (Mobile symbolic field)	Nº"			
Variables: Threshold variables	110 1000000			
Variables: Floating Point numerical variables	112xpages			
Variables: Numerical variables (DEC, HEX, BIN, BCD)				
Variables: String variables (ASCII)				
Inless otherwise stated, there is no limit to the number of includable elements, only the size of pro-	viont momony sots a lim			

#### Front view

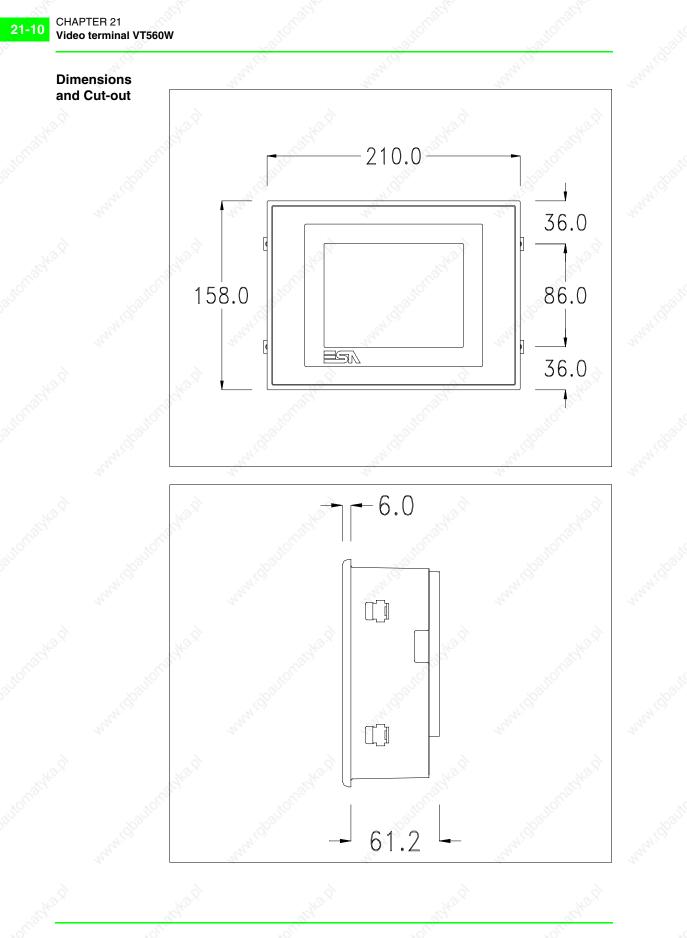


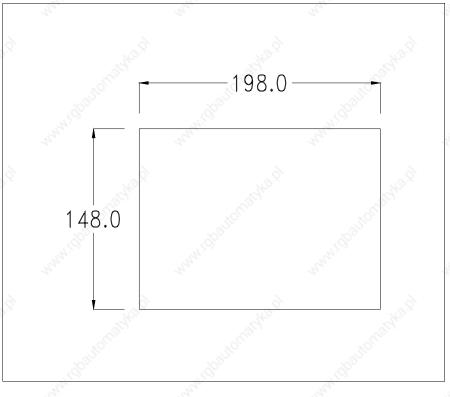
All buttons and signals are defined using the programming software (see Software Manual).

#### Rear view



Position	Function
А	Power supply connector
В	ASP serial port for communicating with PC or other devices
C	MSP serial port for communicating with PLC/PC





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

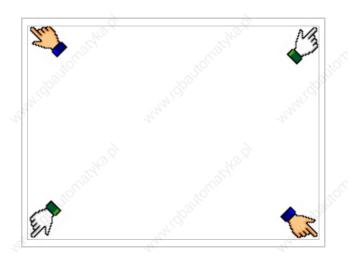
(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

# Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT by pressing simultaneously on two diagonally opposed angles of the screen



and wait a moment, or, using the appropriate button (see Page 21-16), till the VT displays the following mask

- <u> </u>		20	
VT560 TRA	NSFER PAGE	S. Ardi	2 ² 2 ¹ 2 ¹ 2
Graphic cor	ntroller BOOT ch ntroller RAM che and RAM checl	eck : OK	
AL GOOLDON			
SELECT:	MODEM	PC EXIT	
	14 ^{0.9}	340.9	
		- Re	

Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant  $\square$  on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

VT560 TRANSFER PAG	E	
Graphic controller BOOT Graphic controller RAM c		
Main BOOT and RAM ch		
SELECT: SLOW	FAST	

The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant  $\square$  on the display. The VT is now ready to receive (see Software Manual for the transfer).

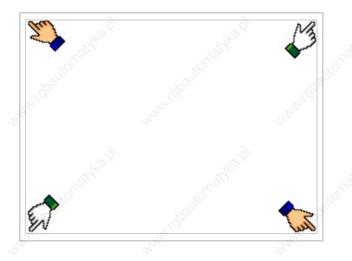
# Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

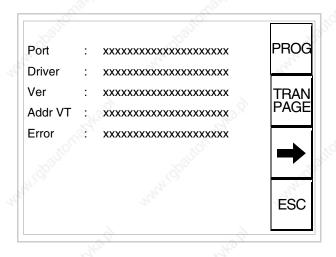
- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects or buttons (at least one angle must be free)



and you will see



There is one of these pages for each communication port; movement between the various pages is effected by pressing  $\blacktriangleright$ .

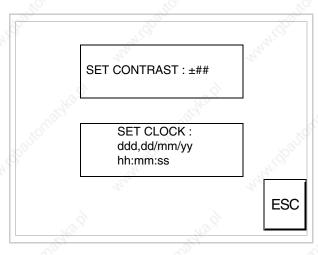
From this page you can:

- Set the clock and the contrast
- Prepare the VT to receive the program
- Use the Memory Card

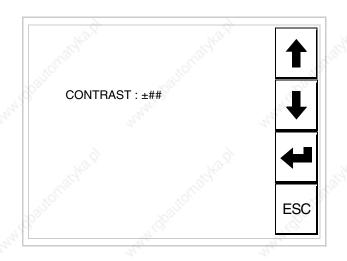
Setting the clock and the contrast:

To set the clock and the contrast, while displaying the above illus-

trated page, press PROG; the following mask appears



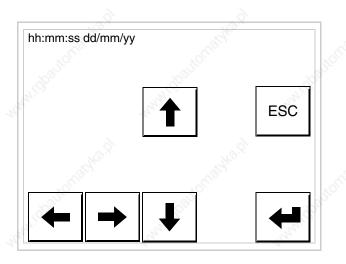
To set the contrast touch the words SET CONTRAST on the display; you will see the following mask



Use the arrow  $\Box\Box$  for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

To set the clock touch the words SET CLOCK on the display; the following mask appears

For the clock to be used properly, a special battery has to be inserted in the terminal (see "Chapter 33 -> Video terminal accessories").



Use the arrow DD for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

Prepare the VT to receive the program:

To prepare the VT to receive the program, while displaying the driver information page (see Page 21-13), press  $\frac{TRAN}{PAGE}$ , and you will see the following mask

VT560 TR/	ANSFER PAGE		
Graphic co	ntroller BOOT ntroller RAM c T and RAM che	heck : OK	
SELECT:	MSP ASP	MemoCARD	EXIT
	dka.pl	N.	,à

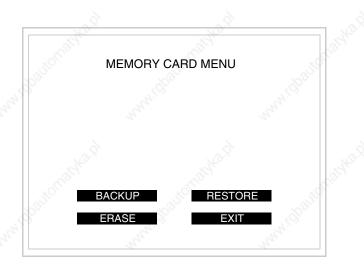
The on-screen  $\Box$  to press depends on the port you intend to use (MSP or ASP). The VT terminal is now ready to receive (consult Software Manual for information on the transmission procedure).

#### Using the Memory Card:

While displaying the driver information page, press TRAN PAGE and the following mask will appear:

<u> </u>		
VT560 TR	ANSFER PAGE	Martin
Graphic co	ontroller BOOT check ontroller RAM check T and RAM check	: OK
8000 C		MARCH STORE
SELECT:	MSP ASP Mem	INCARD EXIT
		she

Touch the  $\square$  MemoCARD on the screen (if the key is not on screen, see Page 21-12) and the following mask will appear:



For the meaning and the functions of the keys see "Chapter 33 -> Memory card".

Possible error messages that may be encountered in the driver information page are:

- PR ERR
  - Problem-> Errors have been detected in the data exchange between the VT and the Device.

Solution-> Check the cable; there may be disturbance.

#### COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

#### Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

Improving display color quality To improve the color quality, adjust the contrast of the display: if the colors are too dark increase the contrast; if, on the other hand, the colors are too light, decrease the contrast.

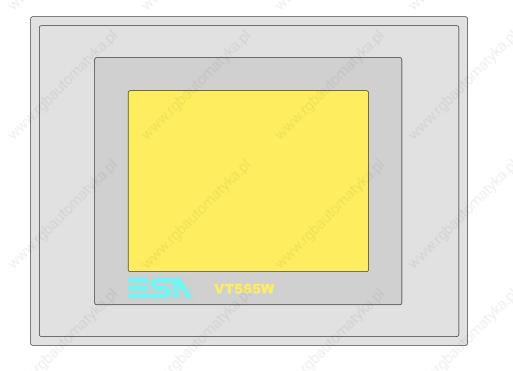
Adjusting the contrast on the display To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 21-15) and changing the value (from +63 to -64) in evidence at that moment. Increase the value to darken the display; to lighten it, decrease the value.

We advise this to be done at typical room temperature and with the terminal at operating temperature (about 30 minutes after switching on and with the screen saver disabled - see Software Manual).

## Chapter 22

## Video terminal VT565W

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**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal			Y.	
VT565W A0000					
VT565W AP000	<u>3</u> 2°8°`		2		
VT565W A0M00		50			
VT565W APM00	14. · · · · · · · · · · · · · · · · · · ·				
Display	Ng Ng	V	▼	▼	
Туре	LCD 8 tones of grey STN	٠	٠		Τ
	LCD 256 Colors STN			•	
	LCD 256 Colors TFT			K.	
Touch screen	Matrix 20 x 16 (Cell:16x15 pixels)	•	٠	•	
Representational format	Graphic	•	•	•	
Resolution [pixels]	320 x 240 (5,7")	•	٠	•	
Rows x characters	16 x 40 / 8 x 20 / 4 x 10	•	٠	•	
Display area size [mm]	115,6 x 87	•	٠	•	
Character matrix in text mode [pixels]	8 x15 / 16 x 30 / 32 x 60	•	٠	•	
Character size [mm] x 1 / x 2 / x 4	2,8 x 5,2 / 5,6 x 10,4 / 11,2 x 20,8	•	٠	•	
	Software	•	•	•	
Contrast adjustment	Automatic compensation with temperature	•	۲	•	
Character sets	Programmable fonts/TTF Windows ®	•	•	•	
Backlighting		1			t
Tupo	LED A				1
Туре	CCFL lamp	•	•	•	•
Minimum lamp-life at 25°C [hours]	15000	•	٠	•	•

Code of terminal	Characteristics of the terminal				
VT565W A0000					
VT565W AP000					n
VT565W A0M00				100	
VT565W APM00	<u></u>		A P	0	
User memory	NO.	1	•	•	• •
Project [Bytes]	192K + 832K (Text + Graphics)	N°	•	•	•
Data memory [Bytes]	128K (With back-up battery)	AL.	•	•	• •
Memory for Windows ® -based fonts [Byte]	128K	54	•	•	• •
Memory Card for backup	4Mb		•	•	• •
Memory Card for expansion	& &				
Interfaces	Let Let			P	
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA		۲	•	• •
ASP (Auxiliary serial port)	RS232/RS485	8	•	•	• •
ASP-15L (Auxiliary serial port)	RS232/RS485	100			
ASP-8 (Auxiliary serial port)	RS232	N.C.			
ASP-9 (Auxiliary serial port)	RS232	58			
LPT parallel port	Centronics		•		•
Auxiliary port	Connections for accessories			5	
Accessories	10°			20	
Connectable accessories	See table "Chapter 33"		•	•	• •
Clock		x			
Clock	Hardware (With back-up battery)	100 m	•	•	• •
Networks		19			
£	Profibus-DP	and the second s			
ntegrated	CAN Open (Optoisolated interface)				
ç	Ethernet 10/100Mbit RJ45			5	
Universal Bus Connector	-18 ²			102	
Optional	See table "Chapter 33"		•	•	• •
Proprietary networks		x	5		
	Network server	~00	•	•	• •
ESA-Net	Network client		•	•	• •
Technical data		1200		-	_
Power supply	24Vdc (1832Vdc)				
Power absorbed at 24Vdc	15W				
Protection fuse	Ø5x20mm - 800mA Quick Blow F			108	
Protection level	IP65 (front-end)		25	3	
Operating temperature	050°C	. (	5		
Storage and transportation temperature	-20+60°C				
Humidity (non-condensing)	<85%	the second se			
Weight	1400gr	and the second			
Dimensions					
External W x H x D [mm]	210 x 158 x 54				
Cut-out W x H [mm]	198 x 148			. al	
Certification			X	3	

### **Functions**

The following table lists in alphabetical order all the functions of the VT in question.

Table 22.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal VT565W *****	
Objects/Functions	Quantity
Alarm field	
Alarm help	1024
Alarm history buffer	256
Alarm statistics	
Alarms (Total/active simultaneously)	1024/256
Arc	201
Automatic operations	32
Backup/Restore	50
Bar data	
Bit-wise password	8bits
Buttons	320 x page
Circles	25
Command: Change language	30
Command: Clear trend buffer	.8°
Command: Delete recipe	
Command: Hardcopy	
Command: Load recipe from data memory	
Command: Modify password	×2°
Command: Next page	S. S.
Command: Page help	30
Command: Password login	200
Command: Password logout	
Command: Previous page	
Command: Print alarm history	
Command: Printer form feed	N.
Command: Quit project	See.
Command: Report	1 ¹⁰
Command: Restarts reading time-sampled trend	300
Command: Run pipeline	
Command: Save alarms history and trend buffers in flash	
Command: Save recipe in data memory	
Command: Save recipe received from device in buffer	Nº.
Command: Save recipe received from device in data memory	S. C. C.
Command: Send recipe from video buffer to device	J. Sto
Command: Send recipe to device	S.
Command: Service page	

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 22.1: Functions and objects realizable with this VT (Part 2 of 4)

Code of terminal	
Objects/Functions	Quantity
Command: Show alarms history	500
Command: Show page directory	30
Command: Show project information	8
Command: Show recipe directory	
Command: Show sequence directory	
Command: Shows driver status page	6
Command: Shows page help	
Command: Shows page with function: PG	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -
Command: Stops reading time sampled trend	20
Command: Trend reading saved in device	8
Command: Zero number of general pages	
Date field	
Day-of-the-week field	6
Dynamic texts: Bit-group-structured dynamic texts	.No.
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	
E-keys	8
Equations	32
F-keys	
Free terminal	6
Function: Disables key	Nº Y
Function: Go to page	aller's
Function: Internal command	- 20
Function: Invert bit value	8
Function: Macro	
Function: None	
Function: Reset bit permanently	6
Function: Reset real-time bit	No.
Function: Sequences	all ^{er}
Function: Sets bit permanently	1
Function: Sets real-time bit	8.
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	6
Headers and footers (Total/Number of fields per H-F)	128/128
Info-messages (Total/active simultaneously)	1024/256
Internal registers	4096bytes
Labels	S

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 22.1: Functions and objects realizable with this VT (Part 3 of 4)

Objects/Functions	Quanti	tv
Lines		-,
Lists of bitmap images		
Lists of texts	- AS	
Local configuration of E-keys	Cap.	
Local configuration of F-keys		
Macro field		
Macros (Total/Commands x macro)	1024/1	6
Message field	e de la compañía de	-
Message help	1024	
Multilanguage texts	8 Lang	s.
Object - Indicator	64	-
Dbject - Potentiometer knob	64	
Dbject - Selector knob	64	-
Dbject - Sliding potentiometer	64	P
Object - Sliding selector	64	
Page	1024	-
Page help	1024	
Password	10	-
Pipelines (Number/Tot bytes)	64/512	2
Print		6
Print page (Total/Number of fields per page)	1024/12	28
Programmable fonts	S.C.	
Project images	-3 ⁵	
Public variables of ESANET network (Number/Total bytes)	256/102	24
Recipe field for recipe structure	22	
Recipes (Number of variables per recipe)	1024/5	12
Rectangles		
Redefinable characters	25	R.
Reports	128	
Sequences - Random	135	
Sequences - Start/stop	762	
Static bitmaps	<u>a</u>	
Symbolic field: Bit-group-structured dynamic bitmaps		
Symbolic field: Single-bit-structured dynamic bitmaps	1024*	· _ \$
Symbolic field: Value-structured dynamic bitmaps		K°
System messages	- A C	$\neg$
System variables assigned to recipe structure	SP3	-
Time long field	250	

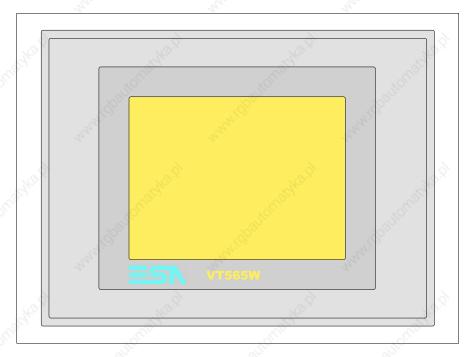
Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 22.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of terminal	
VT565W *****	
Objects/Functions	Quantity
Timer	32
Touch Area	64
Trend buffers	128
Trends (Trends x page/Channels x trend)	4/4
Trends sampled automatically (Memory/Trends/Readings)	4096bytes
Trends sampled on command (Memory/Trends/Readings)	/**/320
Value direct command: ADD	N.
Value direct command: AND	S.C.
Value direct command: OR	20
Value direct command: SET	5
Value direct command: SUBTRACT	
Value direct command: XOR	
Variables: Limit values and linear scaling variables	6
Variables: Movement variable (Mobile symbolic field)	No.
Variables: Threshold variables	110,000,000
Variables: Floating Point numerical variables	112xpages
Variables: Numerical variables (DEC, HEX, BIN, BCD)	Š
Variables: String variables (ASCII)	
Inless otherwise stated there is no limit to the number of includable elements, only the size of n	voie et memory cete e line

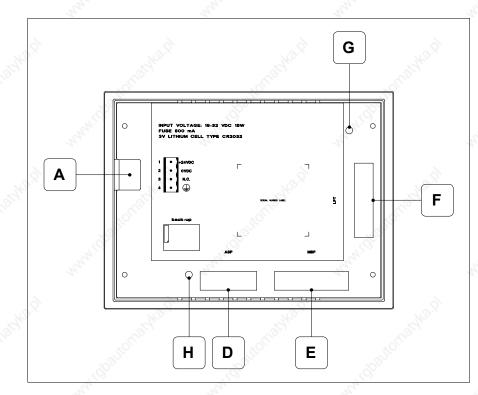
Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

### Front view

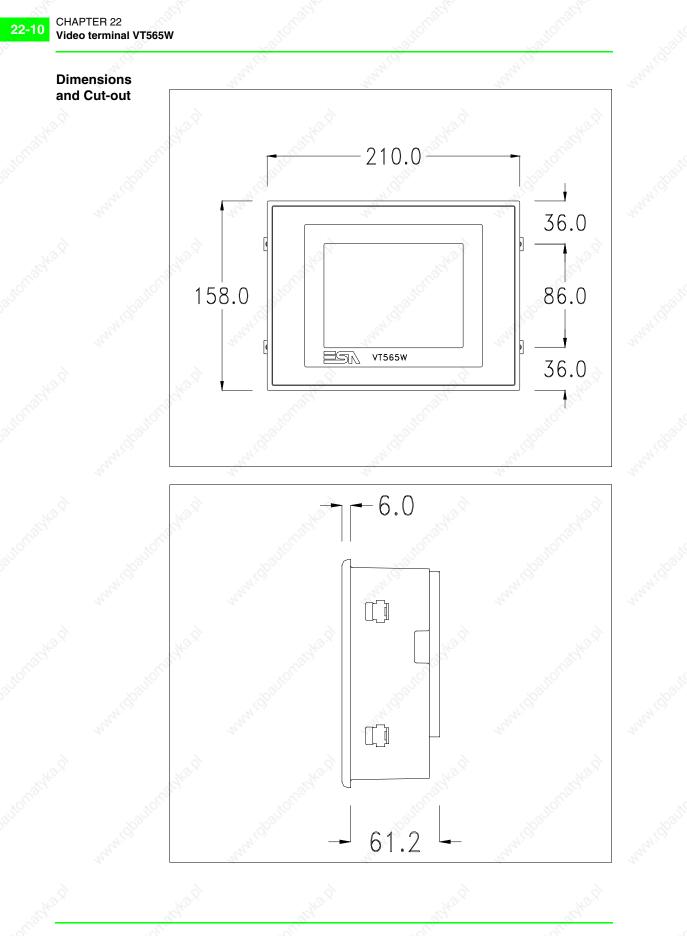


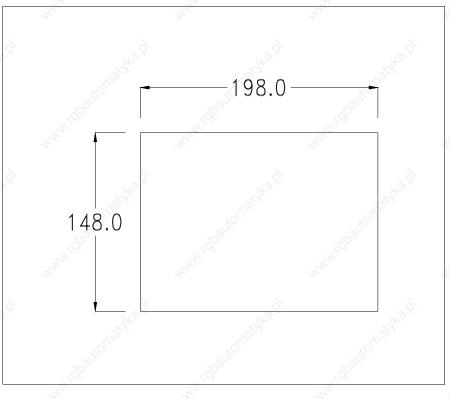
All buttons and signals are defined using the programming software (see Software Manual).

**Rear view** 



Position	Function		
A	Power supply connector		
D	ASP serial port for communicating with PC or other devices		
Ecul	MSP serial port for communicating with PLC/PC		
F	LPT port for connecting printer (Optional)		
G	Trimmer for brightness control (B&W)		
Hand	Trimmer for brightness control (Color)		





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

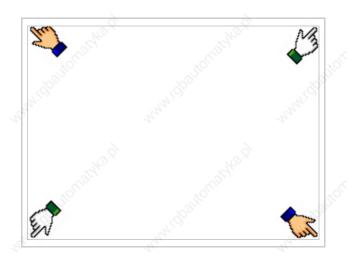
(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

# Preparation for reception

The program VTWIN (see Software Manual) must be used for the transfer, but the terminal must be set up to receive. This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT by pressing simultaneously on two diagonally opposed angles of the screen



and wait a moment, or, using the appropriate button (see Page 22-17), till the VT displays the following mask

### VT terminal with no Modem function:

• Choose the port you intend to use for the transfer (MSP or ASP); touch the relevant 🖾 on the display. The VT is now ready to receive (refer to Software Manual for transfer procedure). The 🖾 MemoCARD appears if the Memory Card has been inserted in the VT (see Page 22-18)

VT565	RANSFER PAGE	ANA R
Graphic	controller BOOT check controller RAM check DOT and RAM check	: OK
SELEC	Г: MSP ASP Mer	noCARD EXIT
6021tonu	antichattor	

### VT terminal with Modem function:

• Proceed from the preceding mask; the following mask appears

З		200
	VT565 TRANSFER PAGE	
	Graphic controller BOOT check : OK Graphic controller RAM check : OK Main BOOT and RAM check : WAIT	
3	South	
	SELECT: MODEM PC	EXIT
	ashari ashari	
		8

• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant  $\square$  on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

VT565 TRANS	SFER PAGE		
Graphic contro	oller BOOT check	: OK	
Graphic contro	oller RAM check	: OK	
Main BOOT a	nd RAM check	: WAIT	
SELECT:	SLOW FA	ST War	
		- C ¹⁰	

CHAPTER 22

Video terminal VT565W

22-14

The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant  $\square$  on the display. The VT is now ready to receive (see Software Manual for the transfer).

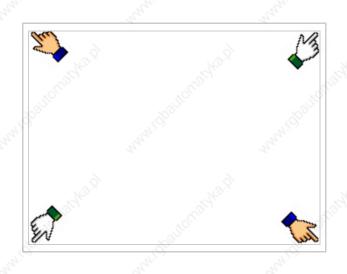
### Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

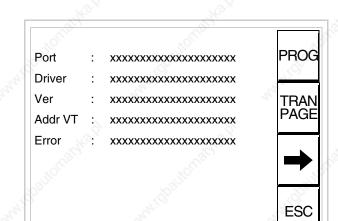
- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects or buttons (at least one angle must be free)



and you will see



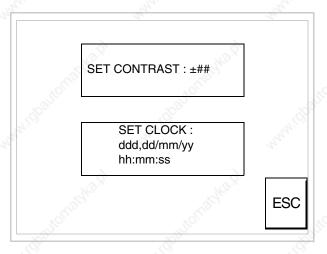
There is one of these pages for each communication port; movement between the various pages is effected by pressing .

From this page you can:

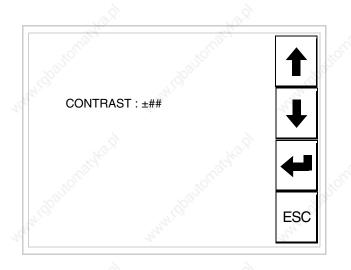
- Set the clock and the contrast
- Prepare the VT to receive the program
- Use the Memory Card

Setting the clock and the contrast:

To set the clock and the contrast, while displaying the above illustrated page, press PROG; the following mask appears



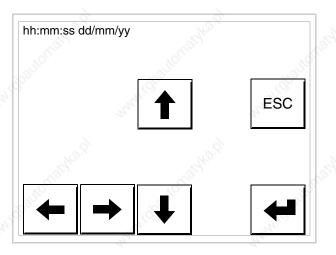
To set the contrast touch the words SET CONTRAST on the display; you will see the following mask



Use the arrow DD for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

To set the clock touch the words SET CLOCK on the display; the following mask appears

For the clock to be used properly, a special battery has to be inserted in the terminal (see "Chapter 33 -> Video terminal accessories").



Use the arrow  $\Box$  for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

Prepare the VT to receive the program:

see the following mask

To prepare the VT to receive the program, while displaying the driver information page (see Page 22-15), press  $\frac{TRAN}{PAGE}$ , and you will

		- 25	2
VT565 TRA	NSFER PAGE		COLORS STREET
Graphic co	ntroller BOOT che ntroller RAM check Γ and RAM check	(:OK	wanter
SELECT:	MSP ASP M	emoCARD	EXIT
			ANNA!

The on-screen  $\square$  to press depends on the port you intend to use (MSP or ASP). The VT terminal is now ready to receive (consult Software Manual for information on the transmission procedure).

Using the Memory Card:

While displaying the driver information page, press Than and the following mask will appear:

l	6	d'	20	
	VT565 TR/	ANSFER PAGE	automic	
2	Graphic co	ntroller BOOT c ntroller RAM ch T and RAM che	ieck : OK	
	SELECT:	MSP ASP	MemoCARD E	XIT
1	ANICON	and the second	, Sr	AN AND AND AND AND AND AND AND AND AND A

Touch the  $\square$  MemoCARD on the screen (if the key is not on screen, see Page 22-12) and the following mask will appear:

		8	S.
1	44		354
	MEMORY	CARD MENU	
, sé			
1 Bar			S
and a second			Alara.
	BACKUP	RESTORE	
	ERASE	EXIT	I
	5 ⁶⁰ .	- Char	
		ST	

For the meaning and the functions of the keys see "Chapter 33 -> Memory card".

Possible error messages that may be encountered in the driver information page are:

• PR ERR

Problem-> Errors have been detected in the data exchange between the VT and the Device.

Solution-> Check the cable; there may be disturbance.

### • COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

Improving display color quality

Adjusting the contrast on the display are too dark increase the contrast; if, on the other hand, the colors are too light, decrease the contrast.

To improve the color quality, adjust the contrast of the display: if the colors

To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 22-16) and changing the value (from +63 to -64) in evidence at that moment. Increase the value to darken the display; to lighten it, decrease the value.

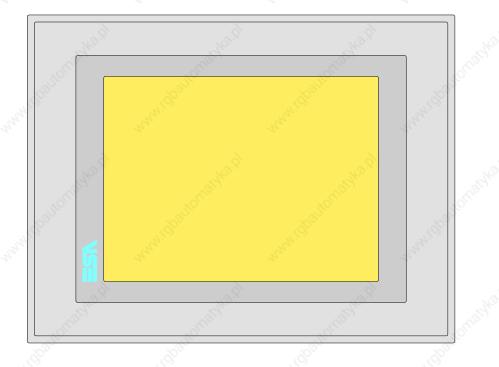
We advise this to be done at typical room temperature and with the terminal at operating temperature (about 30 minutes after switching on and with the screen saver disabled - see Software Manual).



### Chapter 23

## Video terminal VT575W

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Technical characteristics	23-2
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Accessories	23-14
Calibration of Touch Screen	23-14
Termination of CAN line	23-17
Introducing the MAC address	23-18
Transfer PC -> VT	23-21
Preparation for reception	23-21
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This chapter consists of 30 pages.	Š.



# **Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal				
VT575W APS00			S.		_
VT575W 0PSDP		S			
VT575W 0PSCN	·	2			
VT575W 0PSET					
Display		•	▼	▼	
	LCD Monochromatic STN				
Туре	LCD 256 Colors STN	•	•	•	
	LCD 256 Colors TFT		å	3	
Touch screen [cells]	Matrix 40x30 (Cell:16x16 pixels)	•	•	•	
Representational format	Graphic	•	•	•	
Resolution [pixels]	640 x 480 (7,5")	•	•	•	
Rows per character	30 x 80 / 15 x 40 / 7 x 20	•	•	•	
Dimension of visible area [mm]	158 x 118	•	•	•	
Character matrix in text mode [pixels]	8 x16 / 16 x 32 / 32 x 64	•	•	•	
Character size [mm] x1 / x2 / x4	1,89 x 3,79 / 3,79 x 7,58 / 7,58 x 15,16	•	•	•	
	Software	•	•	•	
Contrast adjustment	Automatic compensation with temperature	•	•	•	
Character set	Programmable fonts/TTF Windows ®	•	•	•	
Backlighting	je statistica de la companya de la c				
Tuna	LED				1
Туре	CCFL lamp	•	•	•	
Minimum lamp-life at 25°C [hours]	15000	•	•	•	•

Code of terminal	Characteristics of the terminal		
VT575W APS00			
VT575W 0PSDP			à
VT575W 0PSCN	NO. NO.	10	10
VT575W 0PSET	12	3	
User memory	. 10 ⁰ . 10	<b>•</b> •	•
Project [Bytes]	960K + 6M (Text + Graphic)	• •	•
Data memory [Bytes]	128K (Flash EPROM)	• •	•
Memory for Windows ® -based fonts [Byte]		• •	•
Memory Card for backup	8Mb	• •	•
Memory Card for expansion	4Mb (Only for graphic type)		4
Interfaces		12	Č –
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	• •	•
ASP (Auxiliary serial port)	RS232/RS485	5	•
ASP-15L (Auxiliary serial port)	RS232/RS485		
ASP-8 (Auxiliary serial port)	RS232		
ASP-9 (Auxiliary serial port)	RS232		
LPT parallel port	Centronics	• •	•
Auxiliary port	Connection for accessory devices		
Accessories		10	2
Connectable accessories	See table "Chapter 33"	• •	•
Clock	x0 x0	5	
Clock	Hardware (with Supercapacitor - Min. 72h Typically 130h)	• •	•
Networks	······································		
	Profibus-DP		•
Integrated	CAN Open (Optoisolated interface)	•	
	Ethernet 10/100Mbit RJ45	•	
Jniversal Bus Connector			8
Optional	See table "Chapter 33"		•
Proprietary networks		5	
	Network server	• •	•
ESA-Net	Network client	• •	•
Technical data		II	
Power supply	24Vdc (1832Vdc)		
Power absorbed at 24Vdc	15W		<
Protection fuse	Ø5x20mm - 1,25A Quick Blow F	?	2
Protection level	IP65 (front-end)	S.	
Operating temperature	050°C	Sec.	
Storage and transportation temperature	-20+60°C		
Humidity (non-condensing)	<85%		
Weight	1500gr		
Dimensions			
External W x H x D [mm]	245,9 x 188,6 x 37,6		
Cut-out W x H [mm]	233 x 176	0	ŝ-
Certification	E. E.	10	

### **Functions**

23

The following table lists in alphabetical order all the functions of the VT in question.

Table 23.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal		
VT575W ****	Quentitus	
Objects/Functions	Quantity	
Alarm help	1024	-
Alarm history buffer	256	-
Alarm statistics	200	2
Alarms (Total/active simultaneously)	1024/256	_
Arc	1024/230	
Automatic operations	32	
Backup/Restore	02	•
Bardata		
	8bits	
Bit-wise password		ð
Buttons Circles	1200xpage	-
	and a second	-
Command: Change language Command: Clear trend buffer	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	-
	<u>_</u>	•
Command: Delete recipe		•
Command: Hardcopy		-
Command: Load recipe from data memory		è
Command: Modify password	Nº Nº	-
Command: Next page	-550	-
Command: Page help	1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 -	•
Command: Password login	<u>_</u>	•
Command: Password logout		-
Command: Previous page		-
Command: Print alarm history		ş
Command: Printer form feed	Nº C	•
Command: Quit project		-
Command: Report	Carlow Contraction	-
Command: Restarts reading time-sampled trend	<u></u>	•
Command: Run pipeline	·	•
Command: Save alarms history and trend buffers in flash		•
Command: Save recipe in data memory		<u>_</u>
Command: Save recipe received from device in buffer	all a	•
Command: Save recipe received from device in data memory	. S. C.	•
Command: Send recipe from video buffer to device	Sall'	•
Command: Send recipe to device	S.	•
Command: Service page		•

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 23.1: Functions and objects realizable with this VT (Part 2 of 4)

VT575W ****	6
Objects/Functions	Quantity
Command: Show alarms history	S. S.
Command: Show page directory	-3 ⁵⁰
Command: Show project information	S ^V
Command: Show recipe directory	
Command: Show sequence directory	
Command: Shows driver status page	6
Command: Shows page help	Nº.
Command: Shows page with function: PG	S.Con
Command: Stops reading time sampled trend	350
Command: Trend reading saved in device	S.
Command: Zero number of general pages	
Date field	
Day-of-the-week field	6
Dynamic texts: Bit-group-structured dynamic texts	3to
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	~350
E-keys	S.
Equations	32
⁼ -keys	
Free terminal	3
Function: Disables key	St.
Function: Go to page	office
Function: Internal command	~3 ⁵
Function: Invert bit value	S.
Function: Macro	
Function: None	
Function: Reset bit permanently	, Š
Function: Reset real-time bit	and the
Function: Sequences	.50
Function: Sets bit permanently	~3 ⁵
Function: Sets real-time bit	S.
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	2
Headers and footers (Total/Number of fields per H-F)	128/128
nfo-messages (Total/active simultaneously)	1024/256
nternal registers	4096bytes
_abels	S.

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 23.1: Functions and objects realizable with this VT (Part 3 of 4)

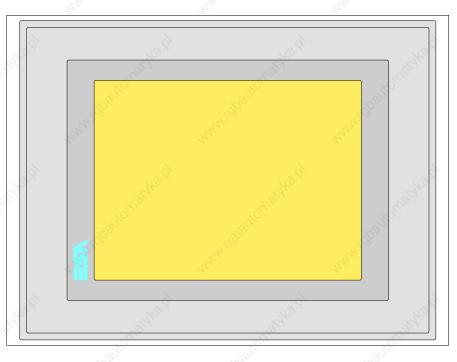
Objects/Functions	Quantity
Lines	1. A.
Lists of bitmap images	10
Lists of texts	S°
Local configuration of E-keys	34
Local configuration of F-keys	
Macro field	
Macros (Total/Commands x macro)	1024/16
Message field	600
Message help	1024
Multilanguage texts	8 Langs.
Object - Indicator	128
Object - Potentiometer knob	128
Object - Selector knob	128
Object - Sliding potentiometer	128
Object - Sliding selector	128
Page	1024
Page help	1024
Password	10
Pipelines (Number/Tot bytes)	64/512
Print	
Print page (Total/Number of fields per page)	1024/128
Programmable fonts	all
Project images	-350
Public variables of ESANET network (Number/Total bytes)	512/1024
Recipe field for recipe structure	12 C
Recipes (Number of variables per recipe)	1024/512
Rectangles	
Redefinable characters	N. C.
Reports	128
Sequences - Random	~350
Sequences - Start/stop	<u></u>
Static bitmaps	12
Symbolic field: Bit-group-structured dynamic bitmaps	
Symbolic field: Single-bit-structured dynamic bitmaps	1024*
Symbolic field: Value-structured dynamic bitmaps	- Al
System messages	
System variables assigned to recipe structure	10 ⁰
Time long field	S.

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available Table 23.1: Functions and objects realizable with this VT (Part 4 of 4)

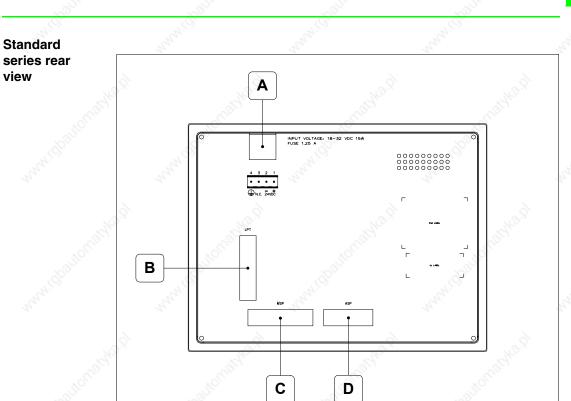
Code of terminal		
VT575W ****	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	_
Objects/Functions	Quantity	] ▼
Timer	32	•
Touch Area	256	٠
Trend buffers	128	٠
Trends (Trends x page/Channels x trend)	8/8	•
Trends sampled automatically (Memory/Trends/Readings)	6144bytes	٠
Trends sampled on command (Memory/Trends/Readings)	/**/480	٠
Value direct command: ADD	Nº.	٠
Value direct command: AND	S. Carl	•
Value direct command: OR	3 ⁵⁰	•
Value direct command: SET		٠
Value direct command: SUBTRACT		•
Value direct command: XOR		•
Variables: Limit values and linear scaling variables	6	•
Variables: Movement variable (Mobile symbolic field)	No.	•
Variables: Threshold variables	256 x	•
Variables: Floating Point numerical variables	pages	•
Variables: Numerical variables (DEC, HEX, BIN, BCD)		•
Variables: String variables (ASCII)		•
Unless otherwise stated there is no limit to the number of includeble elements, only the size of projection	iant momon ( anto a	limit

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

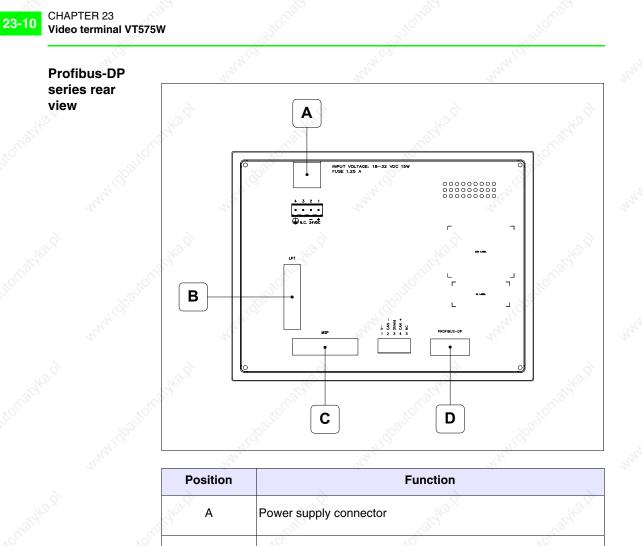
### Front view



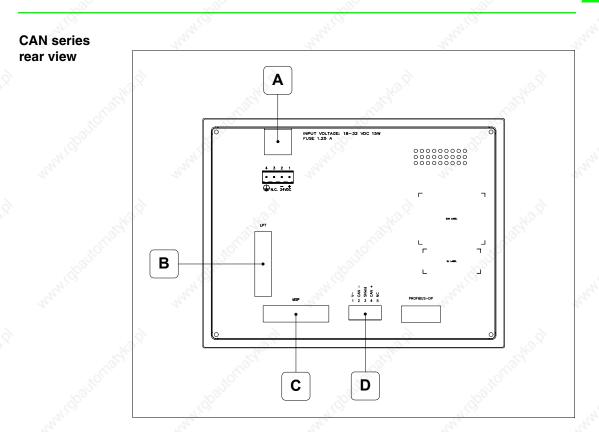
All buttons and signals are defined via the programming software (see Software Manual).



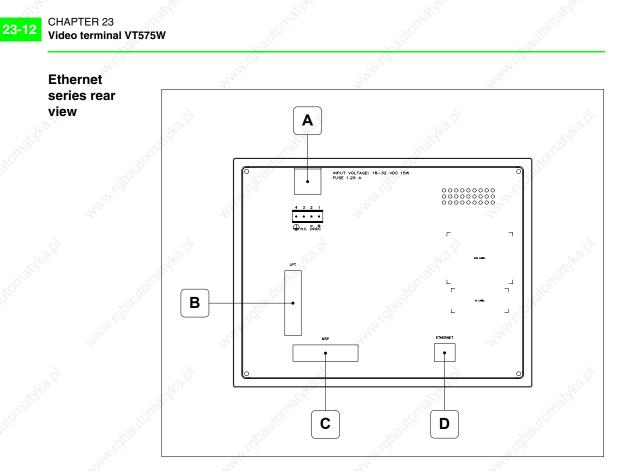
Position	Function	
А	Power supply connector	
В	LPT port for connecting printer	
С	MSP serial port for communicating with PLC/PC	
D	ASP serial port for communicating with PC or other devices	



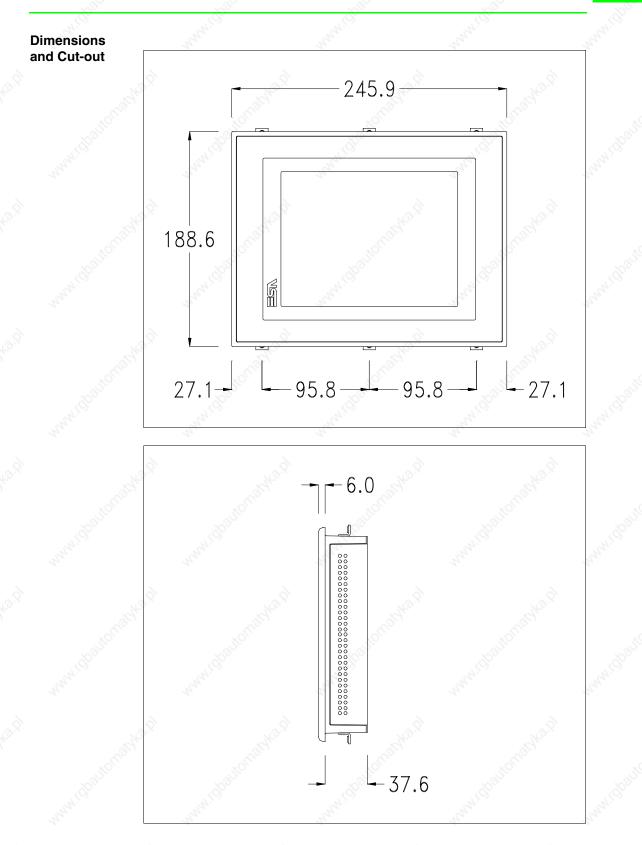
	В	LPT port for connecting printer	,O
	C	MSP serial port for communicating with PLC/PC	
342.9	D	Serial port for network communication	-Her?

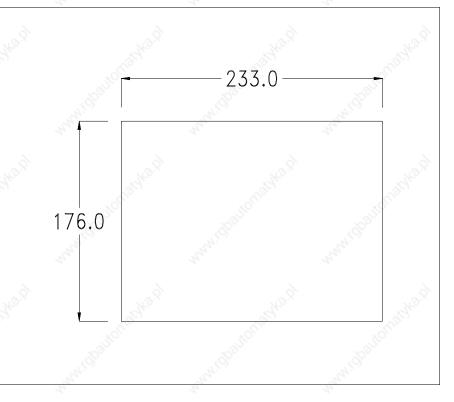


Position	Function	
A	Power supply connector	
В	LPT port for connecting printer	
С	MSP serial port for communicating with PLC/PC	
D	CAN serial port	



Position	Function
A	Power supply connector
В	LPT port for connecting printer
C And	MSP serial port for communicating with PLC/PC
draid D	Ethernet network 10/100Mbit RJ45 (For the diagnostic mode of the LEDs see "Chapter 30 -> Ethernet port")





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

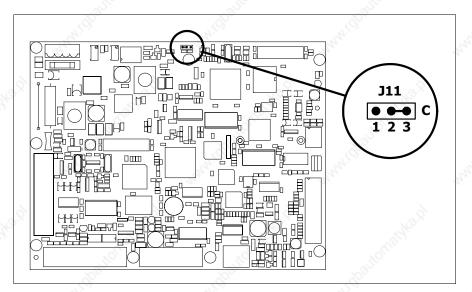
Calibration of Touch Screen The screen of VT575W is made of resistive, sensitive glass; for this type of glass to work properly it requires a calibration procedure (**the terminal is already calibrated when supplied**), that is, the resistive area of the glass has to be adjusted to the visible are of the display.

Should it be thought necessary to repeat the calibration procedure this can be done by following the instructions set out below.



The procedure must be carried out with great care as the precision of the keys area depends on the calibration. How to perform the calibration procedure:

- Make sure the VT is not connected to the power supply
- Remove the back cover
- Identify jumper J11



- Position J11 on pins 2-3 (C)
- Reconnect the power supply and switch on the terminal; the following mask appears



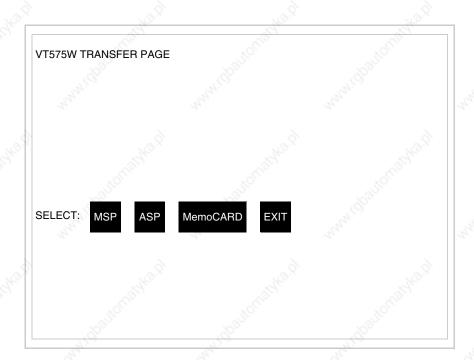
• Touch the corner indicated in the figure; then the following page appears on screen



• Touch the corner indicated in the figure to complete the Calibrazione procedure; the following page now appears



• Wait a few moments until the VT displays either the following mask or the project page



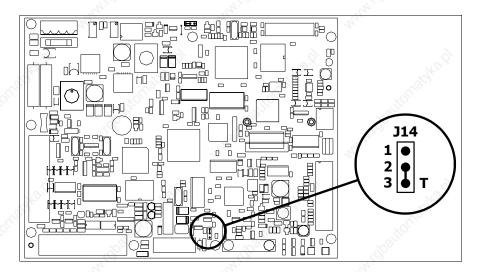
- Switch off the terminal
- Reposition J11 on pins 1-2
- Replace the back cover
- Switch on the terminal again

The calibration procedure has finished; if the calibration has be carried out wrongly or imprecisely, repeat the procedure.

### Termination of CAN line

This paragraph applies only to the CAN series. The VT in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J14.



- Position the jumper between pins 2 and 3 (line terminated).
- Replace the back cover.
- Reconnect the power supply.

### Introducing the MAC address

This paragraph relates only to the Ethernet series. The Media Access Control (MAC) address unambiguously identifies each terminal connected in the Ethernet network. The terminal is acquired with the address already programmed and is shown on the display of the terminal in the transfer page.

	SELECT: MSP MemoCARD	EXIT	
1	Graphic controller FIRMWARE :	ERROR	
1	Main FIRMWARE check :	NOT PRESENT	
	Main BOOT and RAM check : Graphic controller synchronization		
	Graphic controller RAM check :	OK	
	Graphic controller BOOT check :	ОК	
	VT575W ETHERNET TRANSFER Touch screen BOOT check :	OK	

The MAC address is permanently memorized in the terminal, but should it

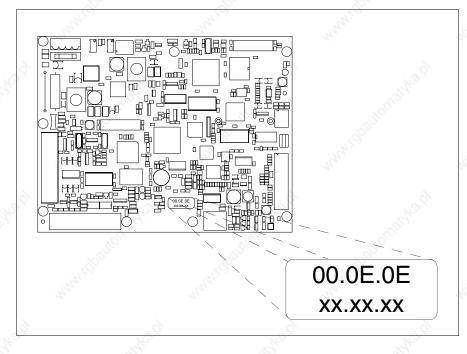
be necessary to execute an "aided" BOOT update (see Software Manual "Chapter 14 -> BOOT update") the address is lost.



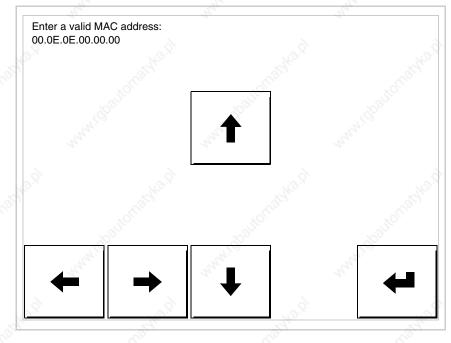
This operation must be carried out only with the advice of the ESA Customer Care Department.

Terminals with no valid MAC address when switched present a mask for its insertion. If no MAC address belonging to the terminal is available, proceed as follows:

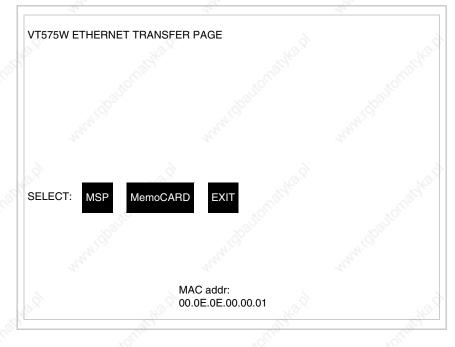
- Check that the VT is not connected to the power supply.
- Remove the back cover
- Locate the label carrying the MAC address



- Make a note of the number on the label (e.g. 00.0E.0E.00.00.01)
  - 00.0E.0E-> fixed part that identifying as an ESA productxx.xx.xx-> variable part different for each terminal
- Reconnect the power supply to the terminal and, if necessary, calibrate the touch screen (see Page 23-14)
- Replace the back cover
- Switch on the terminal again
- The following mask appears; introduce the address previously noted down (e.g. 00.0E.0E.00.00.01)



• Use the arrow 💷 to make the setting. Once the address has been confirmed the following page is displayed



The procedure is now terminated.

Should a wrong MAC address have been inserted contact the ESA Customer Care Department.

# A wrong address could give rise to an error of conflict between VT terminals in the Ethernet network.

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

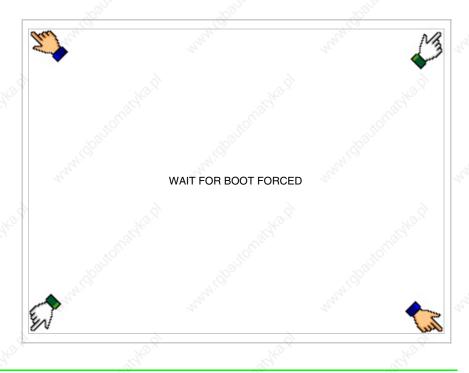
For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

### Preparation for reception

The programme VTWIN must be used for the transfer (see Software Manual), but the terminal must be prepared for reception.

This means carrying out the following steps:

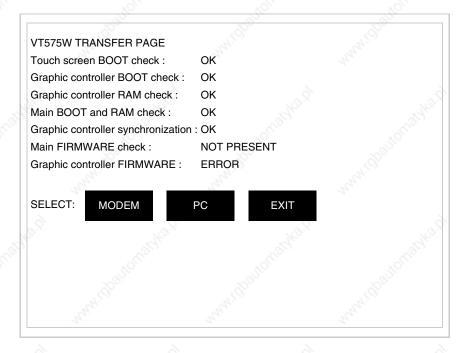
- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT and wait for the following mask to appear
- Press one after the other two diagonally opposite corners free of settable objects or buttons (at least one corner needs to be free)



and wait a few moments, alternatively use the button provided (see Page 23-21), until the VT displays the following mask

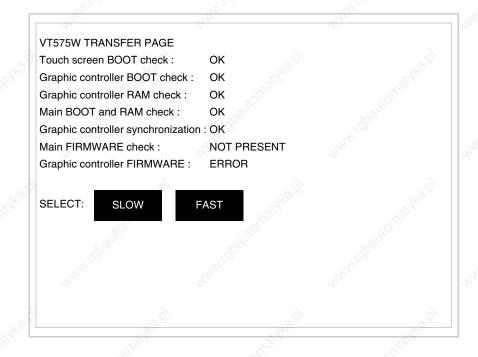
VT575W TRANSFER PAGE		
Touch screen BOOT check :	ОК	
Graphic controller BOOT check :	ок	
Graphic controller RAM check :	ОК	
Main BOOT and RAM check :	ОК	
Graphic controller synchronization	: OK	
Main FIRMWARE check :	NOT PRESENT	
Graphic controller FIRMWARE :	ERROR	
SELECT: MSP ASP Me	moCARD	

• Choose the port you intend to use for the transfer (MSP or ASP); touch the relevant 🖾 on the display. The VT is now ready to receive (refer to Software Manual for transfer procedure). The 🖾 MemoCARD appears if the Memory Card has been inserted in the VT (see Page 23-27)



• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant 🖾 on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear



The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant  $\square$  on the display. The VT is now ready to receive (see Software Manual for the transfer).

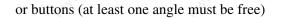
Information relating to driver

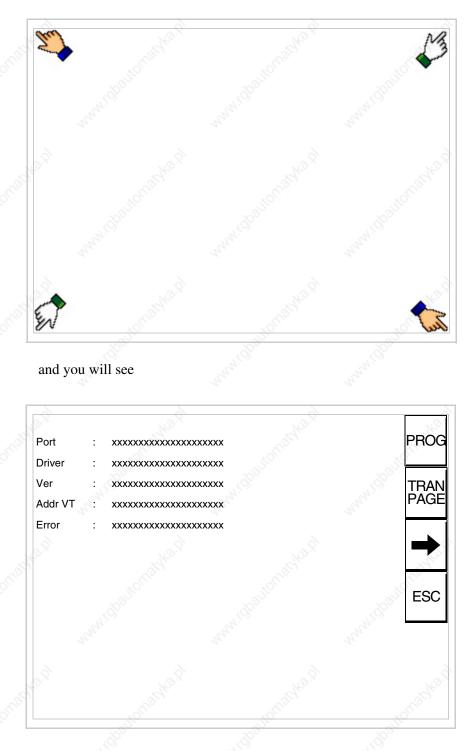
After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects





There is one of these pages for each communication port; movement between the various pages is effected by pressing  $\blacktriangleright$ .

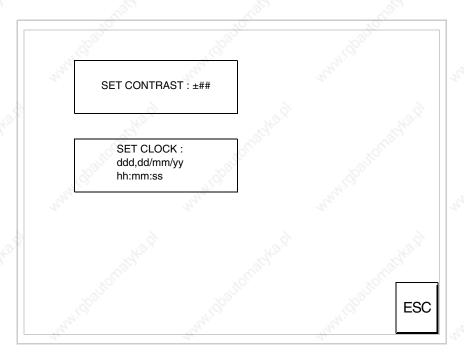
From this page you can:

- Set the clock and the contrast
- Prepare the VT to receive the program
- Use the Memory Card

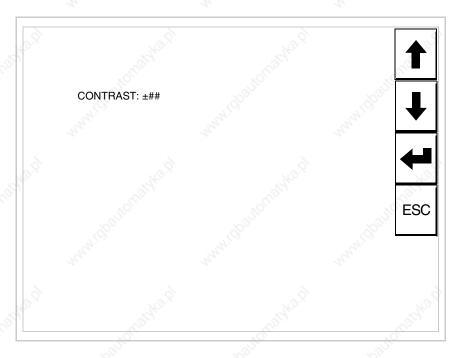
Setting the clock and the contrast:

To set the clock and the contrast, while displaying the above illus-

trated page, press ; the following mask appears

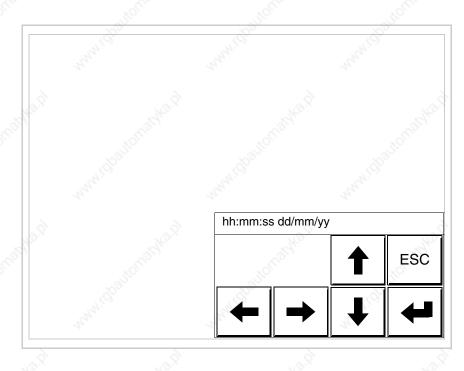


To set the contrast touch the words SET CONTRAST on the display; you will see the following mask



Use the arrow  $\Box$  for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

To set the clock touch the words SET CLOCK on the display; the following mask appears



Use the arrow DD for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

Prepare the VT to receive the program:

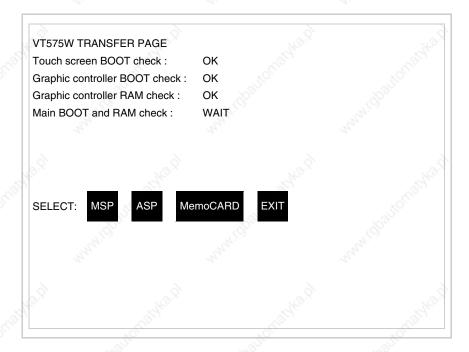
To prepare the VT to receive the program, while displaying the driver information page (see Page 23-23), press  $\frac{TRAN}{PAGE}$ , and you will see the following mask

10. C	101	10 P
VT575W TRANSFER PAGE		
Touch screen BOOT check :	ок	
Graphic controller BOOT check :	OK	
Graphic controller RAM check :	ОК	
Main BOOT and RAM check :	WAIT	
SELECT: MSP ASP Me	emoCARD EXIT	
		X) ²⁷

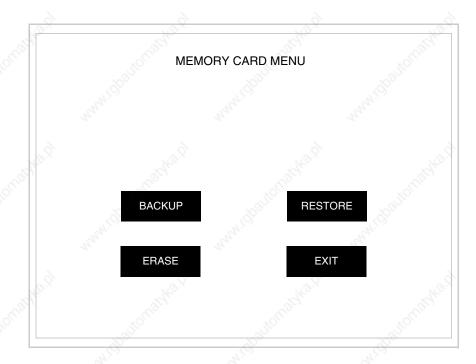
The on-screen  $\Box$  to press depends on the port you intend to use (MSP or ASP). The VT terminal is now ready to receive (consult Software Manual for information on the transmission procedure).

Using the Memory Card:

While displaying the driver information page, press TAGE and the following mask will appear:



Touch the  $\square$  MemoCARD on the screen (if the key is not on screen, see Page 23-21) and the following mask will appear:



For the meaning and the functions of the keys see "Chapter 33 -> Memory card".

Possible error messages that may be encountered in the driver information page are:

• PR ERR

Problem-> Errors have been detected in the data exchange between the VT and the Device.

Solution-> Check the cable; there may be disturbance.

#### • COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

Improving display color quality

Adjusting the contrast on the display are too dark increase the contrast; if, on the other hand, the colors are too light, decrease the contrast.

To improve the color quality, adjust the contrast of the display: if the colors

To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 23-25) and changing the value (from +63 to -64) in evidence at that moment. Increase the value to darken the display; to lighten it decrease the value.

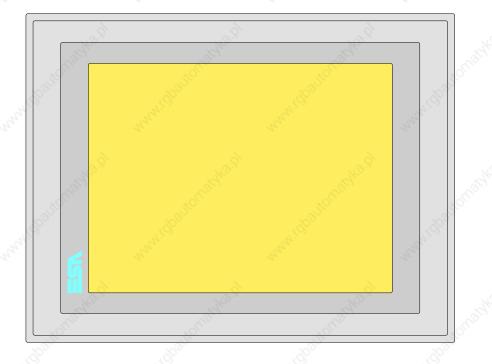
We advise this to be done at typical room temperature and with the terminal at operating temperature (about 30 minutes after switching on and with the screen saver disabled - see Software Manual).



### Chapter 24

# Video terminal VT580W

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Adjusting the contrast on the display	24-29
This chapter consists of 30 pages.	Q Q



**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal		à	d	
VT580W APS00			100 C		
VT580W 0PSDP					
VT580W 0PSCN	<u>, 8</u>	20			
VT580W OPSET					
Display		▼			
	LCD Monochromatic STN				
Туре	LCD 256 Colors STN			10	, <
	LCD 256 Colors TFT	•	•	٠	
Touch screen [cells]	Matrix 50x40 (Cell:16x15 pixels)	•	•	•	
Representational format	Graphic	•	٠	•	
Resolution [pixels]	800 x 600 (8,4")	•	٠	•	
Rows per character	40 x 100 / 20 x 50 / 10 x 25	•	٠	•	
Dimension of visible area [mm]	174,8 x 131,2	•	٠	•	
Character matrix in text mode [pixels]	8 x15 / 16 x 30 / 32 x 60	•	٠	•	
Character size [mm] x1 / x2 / x4	1,7 x 3,2 / 3,4 x 6,4 / 6,8 x 12,8	•	٠	•	
Contract adjustment	Software	•	•	•	
Contrast adjustment	Automatic compensation with temperature	•	۲	•	
Character set	Programmable fonts/TTF Windows ®	•	٠	•	
Backlighting	9.				1
Tupo	LED			1	
Туре	CCFL lamp	•	٠	•	
Minimum lamp-life at 25°C [hours]	50000	•	•	•	•

Code of terminal	Characteristics of the termin	al		
VT580W APS00				
VT580W 0PSDP				5
VT580W 0PSCN	10 ⁻¹		Nº.	
VT580W OPSET		- dě	5	
User memory	le ^o	<u>s</u>	▼	• •
Project [Bytes]	960K + 6M (Text + Graphic)	•	•	• •
Data memory [Bytes]	128K (Flash EPROM)	•	•	• •
Memory for Windows ® -based fonts [Byte]		•	•	• •
Memory Card for backup	8Mb	•	•	• •
Memory Card for expansion	4Mb (Only for graphic type)			
Interfaces	NOT NOT		10	-
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	۲	•	• •
ASP (Auxiliary serial port)	RS232/RS485	20		•
ASP-15L (Auxiliary serial port)	RS232/RS485	2		
ASP-8 (Auxiliary serial port)	RS232			
ASP-9 (Auxiliary serial port)	RS232			
LPT parallel port	Centronics	•	•	• •
Auxiliary port	Connection for accessory devices		2	
Accessories			10	<u>.</u>
Connectable accessories	See table "Chapter 33"	•	•	• •
Clock	1	10		
Clock	Hardware (with Supercapacitor - Min.72h Typically130	)h) •	•	• •
Networks		,		
	Profibus-DP			•
ntegrated	CAN Open (Optoisolated interface)		•	
3	Ethernet 10/100Mbit RJ45	•		
Universal Bus Connector				-
Optional	See table "Chapter 33"	•	•	• •
Proprietary networks		.0		
	Network server	•	•	• •
ESA-Net	Network client	•	•	• •
Technical data				
Power supply	24Vdc (1832Vdc)			
Power absorbed at 24Vdc	15W			
Protection fuse	Ø5x20mm - 1,25A Quick Blow F			2
Protection level	IP65 (front-end)	å	3	
Operating temperature	050°C	. 8		
Storage and transportation temperature	-20+60°C	ş~		
Humidity (non-condensing)	<85%			
Weight	1500gr			
Dimensions	<u>_</u>			
External W x H x D [mm]	245,9 x 188,6 x 37,6			
Cut-out W x H [mm]	233 x 176		- 25	2
Certification	200 x 110	*	No	
ertification				

#### Functions

The following table lists in alphabetical order all the functions of the VT in question.

Table 24.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal		
VT580W ***** Objects/Functions	Quantity	
Alarm field	Quantity	-
Alarm help	1024	
Alarm history buffer	256	
Alarm statistics	200	Ş.
Alarms (Total/active simultaneously)	1024/256	•
Arc	.0	•
Automatic operations	32	•
Backup/Restore	205°	•
Bar data		•
Bit-wise password	8bits	
Buttons	1200xpage	2
Circles		•
Command: Change language	20	•
Command: Clear trend buffer	100	
Command: Delete recipe		
Command: Hardcopy		•
Command: Load recipe from data memory		
Command: Modify password	Nº	•
Command: Next page	S.	•
Command: Page help	30	•
Command: Password login	8	•
Command: Password logout	7.	•
Command: Previous page		•
Command: Print alarm history		~
Command: Printer form feed	Nº	
Command: Quit project	S. S.	•
Command: Report	a Stor	•
Command: Restarts reading time-sampled trend	S.	•
Command: Run pipeline		•
Command: Save alarms history and trend buffers in flash		•
Command: Save recipe in data memory		8
Command: Save recipe received from device in buffer	3º	•
Command: Save recipe received from device in data memory	S. F.	•
Command: Send recipe from video buffer to device	and the second second	•
Command: Send recipe to device	3	•
Command: Service page		

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available Table 24.1: Functions and objects realizable with this VT (Part 2 of 4)

Code of terminal VT580W *****	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Objects/Functions	Quantity
Command: Show alarms history	C.a.
Command: Show page directory	
Command: Show project information	. 80
Command: Show recipe directory	2°.
Command: Show sequence directory	
Command: Shows driver status page	6
Command: Shows page help	No.
Command: Shows page with function: PG	- Corr
Command: Stops reading time sampled trend	250
Command: Trend reading saved in device	S.
Command: Zero number of general pages	27.
Date field	
Day-of-the-week field	6
Dynamic texts: Bit-group-structured dynamic texts	
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	
E-keys	<u>_</u> \$
Equations	32
F-keys	
Free terminal	6
Function: Disables key	N.
Function: Go to page	all'all
Function: Internal command	
Function: Invert bit value	<u>_</u> 0°
Function: Macro	64.
Function: None	
Function: Reset bit permanently	0
Function: Reset real-time bit	No.
Function: Sequences	S. C.
Function: Sets bit permanently	
Function: Sets real-time bit	. ( ⁵ )
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	9
Headers and footers (Total/Number of fields per H-F)	128/128
Info-messages (Total/active simultaneously)	1024/256
Internal registers	4096bytes
	~

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 24.1: Functions and objects realizable with this VT (Part 3 of 4)

VT580W *****	
Objects/Functions	Quantity
Lines	- S
Lists of bitmap images	- 6 ¹⁵⁰
Lists of texts	58
Local configuration of E-keys	
Local configuration of F-keys	
Macro field	
Macros (Total/Commands x macro)	1024/16
Message field	all an
Message help	1024
Multilanguage texts	8 Langs.
Object - Indicator	128
Object - Potentiometer knob	128
Object - Selector knob	128
Object - Sliding potentiometer	128
Object - Sliding selector	128
Page	1024
Page help	1024
Password	10
Pipelines (Number/Tot bytes)	64/512
Print	
Print page (Total/Number of fields per page)	1024/128
Programmable fonts	S.C.C.
Project images	
Public variables of ESANET network (Number/Total bytes)	512/1024
Recipe field for recipe structure	
Recipes (Number of variables per recipe)	1024/512
Rectangles	
Redefinable characters	Nº Nº
Reports	128
Sequences - Random	1 AND
Sequences - Start/stop	<u>_</u>
Static bitmaps	
Symbolic field: Bit-group-structured dynamic bitmaps	
Symbolic field: Single-bit-structured dynamic bitmaps	1024*
Symbolic field: Value-structured dynamic bitmaps	Nº Nº
System messages	all and a second
System variables assigned to recipe structure	
Time long field	Jor
Time short field	9. ·

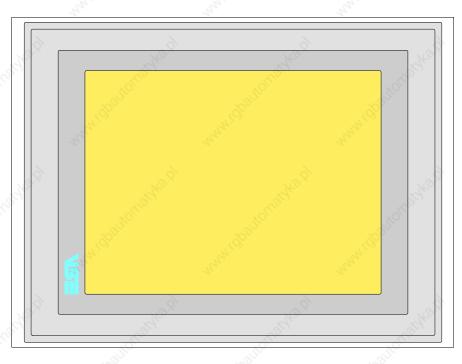
Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 24.1: Functions and objects realizable with this VT (Part 4 of 4)

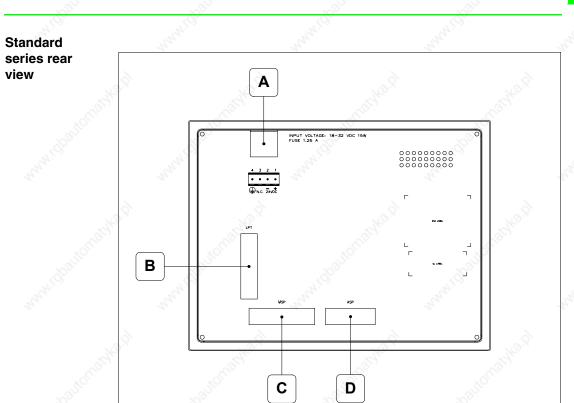
Code of terminal		
VT580W ****	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
Objects/Functions	Quantity	V
Timer	32	٠
Touch Area	256	٠
Trend buffers	128	•
Trends (Trends x page/Channels x trend)	8/8	•
Trends sampled automatically (Memory/Trends/Readings)	6144bytes	•
Trends sampled on command (Memory/Trends/Readings)	/**/480	•
Value direct command: ADD	Nº.	•
Value direct command: AND	S. Carl	•
Value direct command: OR	5°	•
Value direct command: SET		•
Value direct command: SUBTRACT		•
Value direct command: XOR		•
Variables: Limit values and linear scaling variables	6	•
Variables: Movement variable (Mobile symbolic field)	No.	•
Variables: Threshold variables	256 x	•
Variables: Floating Point numerical variables	pages	•
Variables: Numerical variables (DEC, HEX, BIN, BCD)		•
Variables: String variables (ASCII)	1	•
Unloss otherwise stated, there is no limit to the number of includeble elements, only the size of pro-		I.

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

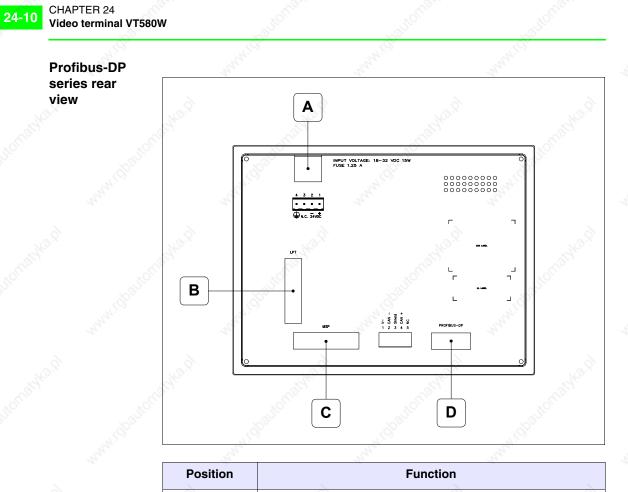
#### Front view



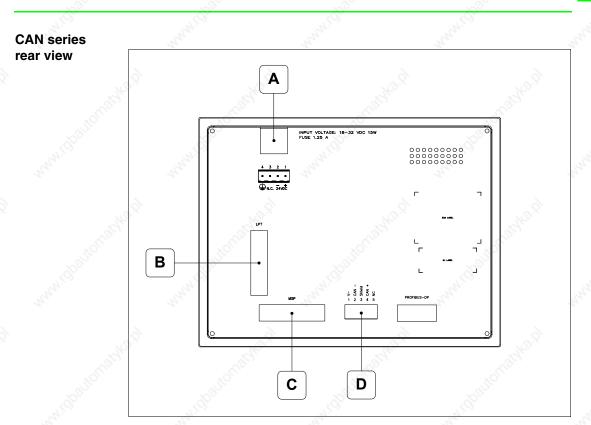
All buttons and signals are defined via the programming software (see Software Manual).



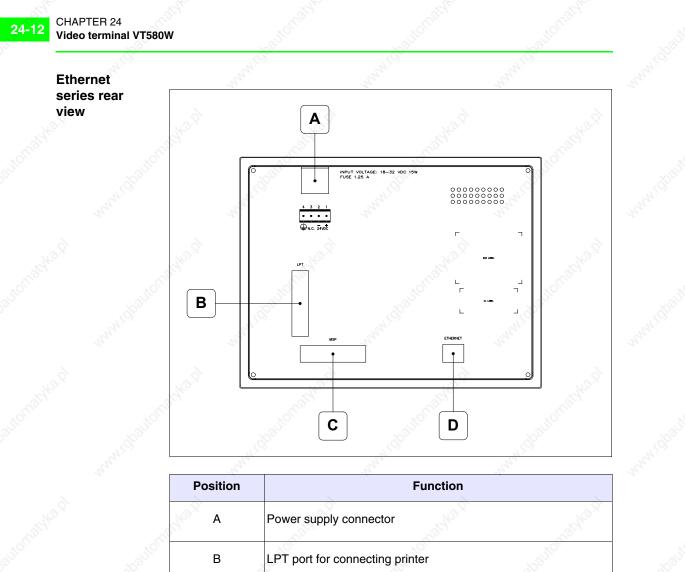
Position	Function
А	Power supply connector
В	LPT port for connecting printer
с	MSP serial port for communicating with PLC/PC
D	ASP serial port for communicating with PC or other devices



Position Function		Function
a Hais	А	Power supply connector
	В	LPT port for connecting printer
	С	MSP serial port for communicating with PLC/PC
Jrail	D	Serial port for network communication



Position	Function	
A	Power supply connector	
В	LPT port for connecting printer	
С	MSP serial port for communicating with PLC/PC	
D	CAN serial port	



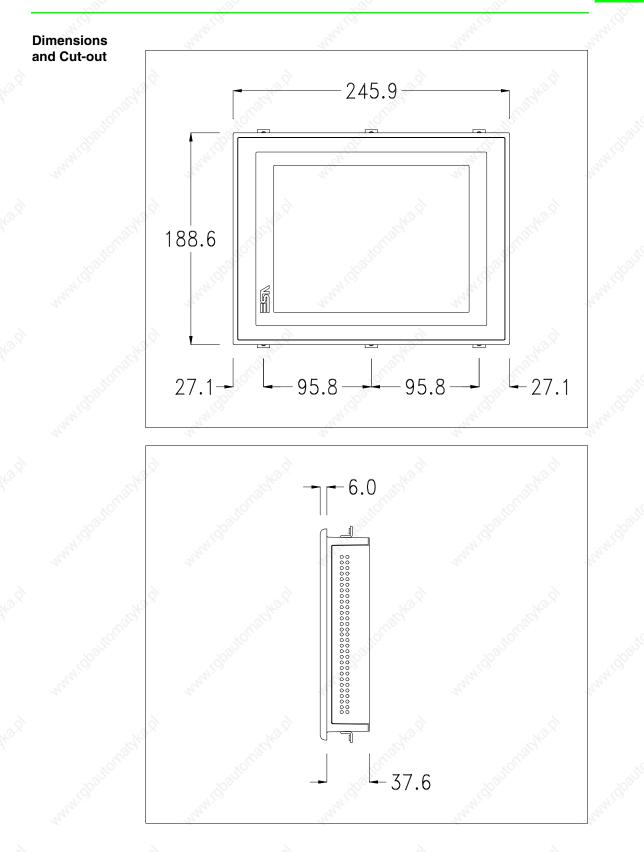
MSP serial port for communicating with PLC/PC

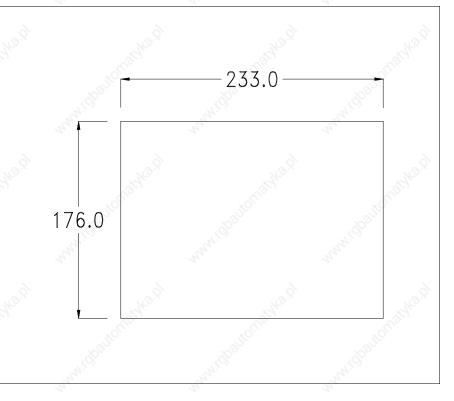
the LEDs see "Chapter 30 -> Ethernet port")

Ethernet network 10/100Mbit RJ45 (For the diagnostic mode of

С

D





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

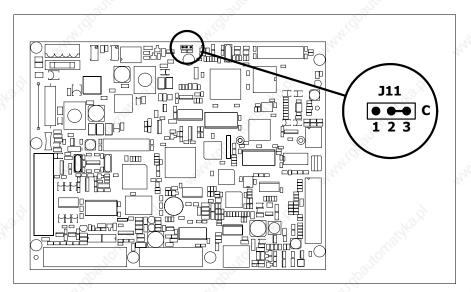
Calibration of Touch Screen The screen of VT580W is made of resistive, sensitive glass; for this type of glass to work properly it requires a calibration procedure (**the terminal is already calibrated when supplied**), that is, the resistive area of the glass has to be adjusted to the visible are of the display.

Should it be thought necessary to repeat the calibration procedure this can be done by following the instructions set out below.



The procedure must be carried out with great care as the precision of the keys area depends on the calibration. How to perform the calibration procedure:

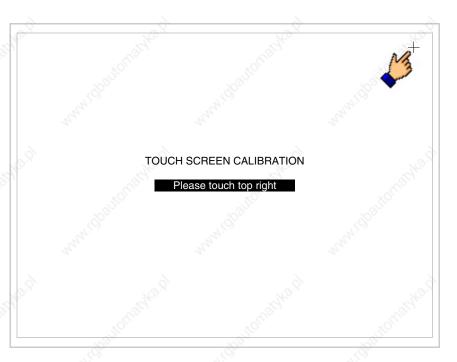
- Make sure the VT is not connected to the power supply
- Remove the back cover
- Identify jumper J11



- Position J11 on pins 2-3 (C)
- Reconnect the power supply and switch on the terminal; the following mask appears



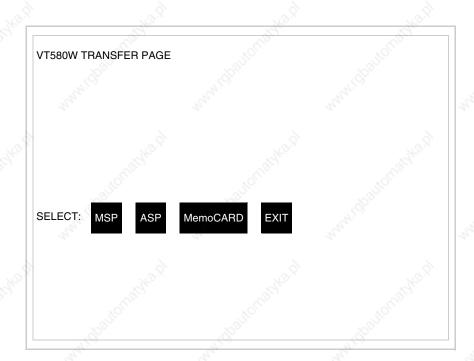
• Touch the corner indicated in the figure; then the following page appears on screen



• Touch the corner indicated in the figure to complete the Calibrazione procedure; the following page now appears



• Wait a few moments until the VT displays either the following mask or the project page



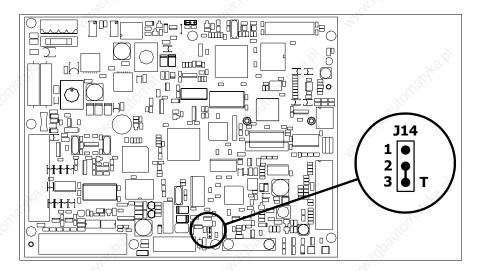
- Switch off the terminal
- Reposition J11 on pins 1-2
- Replace the back cover
- Switch on the terminal again

The calibration procedure has finished; if the calibration has be carried out wrongly or imprecisely, repeat the procedure.

#### Termination of CAN line

This paragraph applies only to the CAN series. The VT in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J14.



- Position the jumper between pins 2 and 3 (line terminated).
- Replace the back cover.
- Reconnect the power supply.

#### Introducing the MAC address

This paragraph relates only to the Ethernet series. The Media Access Control (MAC) address unambiguously identifies each terminal connected in the Ethernet network. The terminal is acquired with the address already programmed and is shown on the display of the terminal in the transfer page.

LECT: MSP MemoCAR	DEXIT	
aphic controller FIRMWARE :	ERROR	
in FIRMWARE check :	NOT PRESENT	
aphic controller synchronization	n : OK 👌	
in BOOT and RAM check :	ОК	
aphic controller RAM check :	ОК	
aphic controller BOOT check :	OK	
uch screen BOOT check :	OK	
580W ETHERNET TRANSFE	R PAGE	
	uch screen BOOT check : aphic controller BOOT check : aphic controller RAM check : in BOOT and RAM check : aphic controller synchronizatio in FIRMWARE check : aphic controller FIRMWARE : LECT: MSP MemoCAR	aphic controller BOOT check : OK aphic controller RAM check : OK in BOOT and RAM check : OK aphic controller synchronization : OK in FIRMWARE check : NOT PRESENT aphic controller FIRMWARE : ERROR

The MAC address is permanently memorized in the terminal, but should it

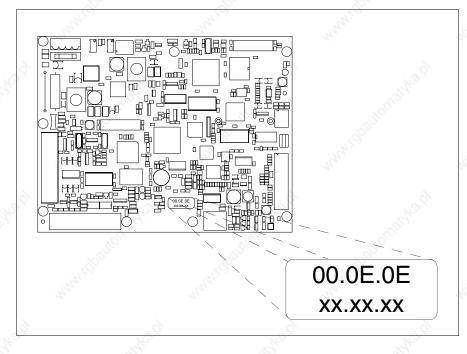
be necessary to execute an "aided" BOOT update (see Software Manual "Chapter 14 -> BOOT update") the address is lost.



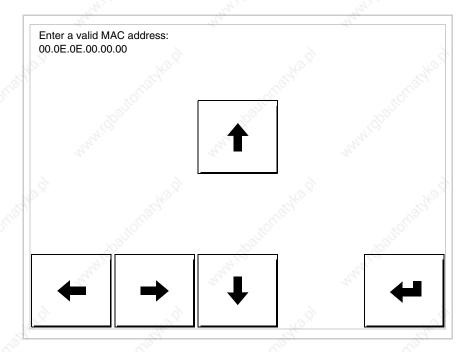
This operation must be carried out only with the advice of the ESA Customer Care Department.

Terminals with no valid MAC address when switched present a mask for its insertion. If no MAC address belonging to the terminal is available, proceed as follows:

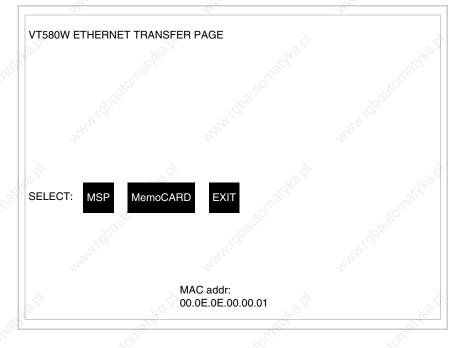
- Check that the VT is not connected to the power supply.
- Remove the back cover
- Locate the label carrying the MAC address



- Make a note of the number on the label (e.g. 00.0E.0E.00.00.01)
  - 00.0E.0E-> fixed part that identifying as an ESA productxx.xx.xx-> variable part different for each terminal
- Reconnect the power supply to the terminal and, if necessary, calibrate the touch screen (see Page 24-14)
- Replace the back cover
- Switch on the terminal again
- The following mask appears; introduce the address previously noted down (e.g. 00.0E.0E.00.00.01)



• Use the arrow 💷 to make the setting. Once the address has been confirmed the following page is displayed



The procedure is now terminated.

Should a wrong MAC address have been inserted contact the ESA Customer Care Department.

# A wrong address could give rise to an error of conflict between VT terminals in the Ethernet network.

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

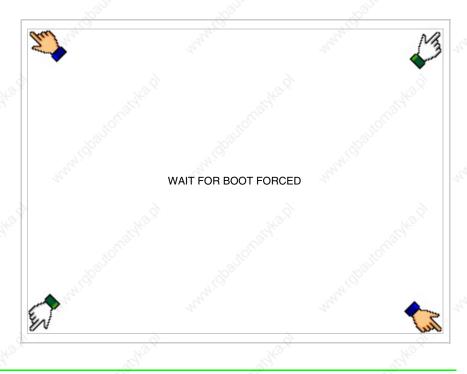
For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

### Preparation for reception

The programme VTWIN must be used for the transfer (see Software Manual), but the terminal must be prepared for reception.

This means carrying out the following steps:

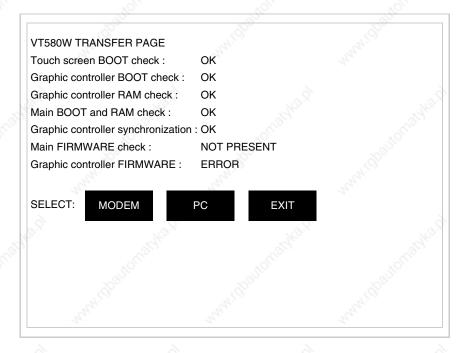
- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT and wait for the following mask to appear
- Press one after the other two diagonally opposite corners free of settable objects or buttons (at least one corner needs to be free)



and wait a few moments, alternatively use the button provided (see Page 24-21), until the VT displays the following mask

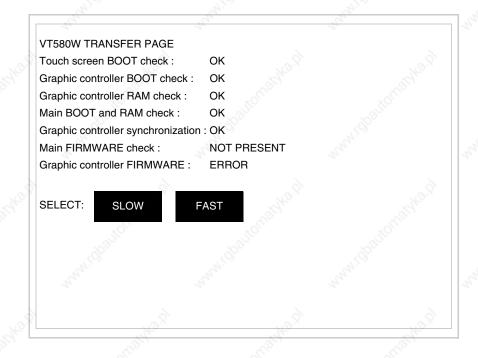
911 XL911	N.C.	
VT580W TRANSFER PAGE	- Martin	a Carol
Touch screen BOOT check :	ОК	
Graphic controller BOOT check :	ОК	
Graphic controller RAM check :	ОК	
Main BOOT and RAM check :	ОК	
Graphic controller synchronization	: OK	
Main FIRMWARE check :	NOT PRESENT	
Graphic controller FIRMWARE :	ERROR	
SELECT: MSP ASP Me	moCARD	
nautornic	1081 tonic	ice tonic

• Choose the port you intend to use for the transfer (MSP or ASP); touch the relevant 🖾 on the display. The VT is now ready to receive (refer to Software Manual for transfer procedure). The 🖾 MemoCARD appears if the Memory Card has been inserted in the VT (see Page 24-27)



• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant 🖾 on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear



The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant  $\square$  on the display. The VT is now ready to receive (see Software Manual for the transfer).

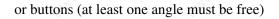
Information relating to driver

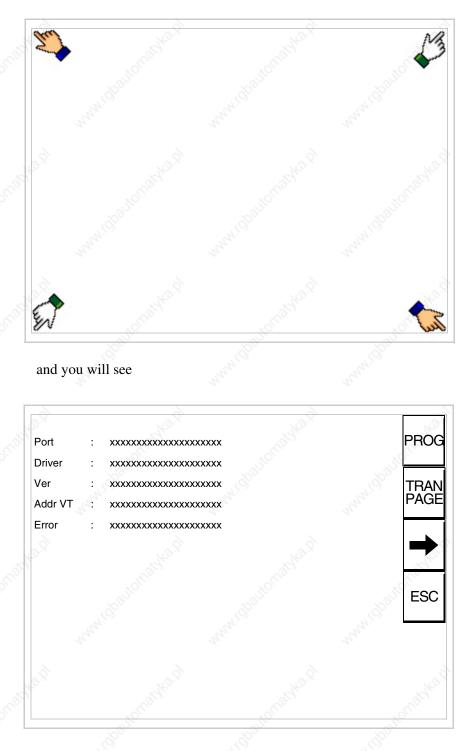
After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects





There is one of these pages for each communication port; movement between the various pages is effected by pressing  $\blacktriangleright$ .

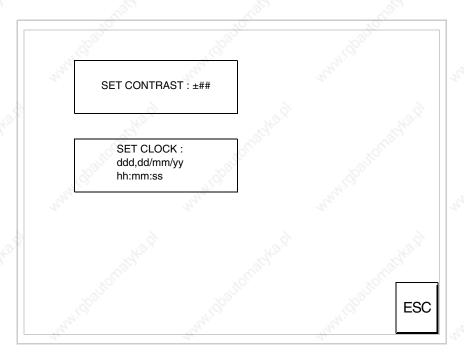
From this page you can:

- Set the clock and the contrast
- Prepare the VT to receive the program
- Use the Memory Card

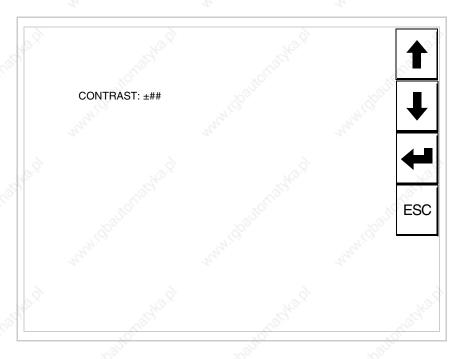
Setting the clock and the contrast:

To set the clock and the contrast, while displaying the above illus-

trated page, press ; the following mask appears

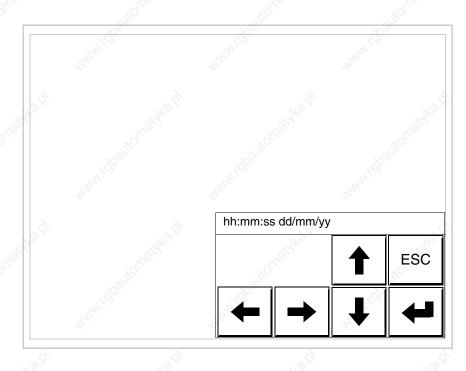


To set the contrast touch the words SET CONTRAST on the display; you will see the following mask



Use the arrow  $\Box$  for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

To set the clock touch the words SET CLOCK on the display; the following mask appears



Use the arrow DD for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

Prepare the VT to receive the program:

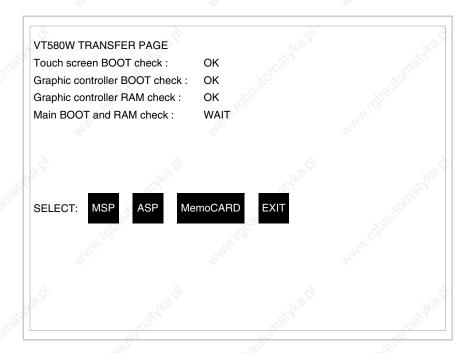
To prepare the VT to receive the program, while displaying the driver information page (see Page 24-23), press  $\frac{TRAN}{PAGE}$ , and you will see the following mask

	10 °	
VT580W TRANSFER PAGE		
Touch screen BOOT check :	ОК	
Graphic controller BOOT check :	OK	
Graphic controller RAM check :	ОК	
Main BOOT and RAM check :	WAIT	
SELECT: MSP ASP Mer	moCARD EXIT	
?	automathe.pl	automatika.el
	- 8	S

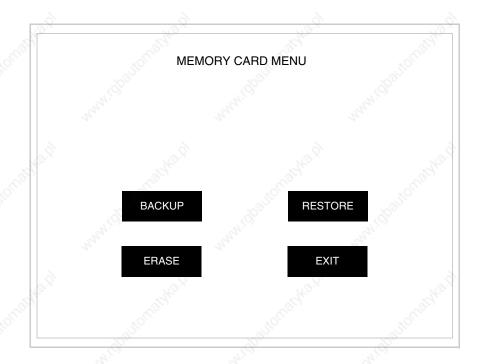
The on-screen  $\Box$  to press depends on the port you intend to use (MSP or ASP). The VT terminal is now ready to receive (consult Software Manual for information on the transmission procedure).

Using the Memory Card:

While displaying the driver information page, press TAGE and the following mask will appear:



Touch the  $\square$  MemoCARD on the screen (if the key is not on screen, see Page 24-21) and the following mask will appear:



For the meaning and the functions of the keys see "Chapter 33 -> Memory card".

Possible error messages that may be encountered in the driver information page are:

• PR ERR

Problem-> Errors have been detected in the data exchange between the VT and the Device.

Solution-> Check the cable; there may be disturbance.

#### • COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

To improve the color quality, adjust the contrast of the display: if the colors are too dark increase the contrast; if, on the other hand, the colors are too light, decrease the contrast.

Adjusting the contrast on the display

Improving display color

quality

To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 24-25) and changing the value (from +63 to -64) in evidence at that moment. Increase the value to darken the display; to lighten it decrease the value.

We advise this to be done at typical room temperature and with the terminal at operating temperature (about 30 minutes after switching on and with the screen saver disabled - see Software Manual).

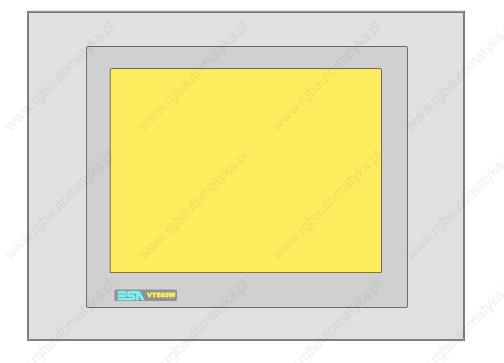
This parameter has no effect when a TFT display is used. This kind of technology does not need adjustment.



### Chapter 25

## Video terminal VT585W

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Information relating to driver	25-2
Improving display color quality	25-2
Adjusting the contrast on the display	25-2
This chapter consists of 28 pages.	A.S.



**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal				
VT585W APS00	Characteristics of the terminal				
	<u></u>	9			
VT585W APT00					
VT585W 0PSCN					
Display	Star Star	▼	▼		
	LCD Monochromatic STN				
Туре	LCD 256 Colors STN	•			
	LCD 256 Colors TFT		۰		
Touch screen [cells]	Matrix 40x30 (Cell:16x16 pixels)	•	٠	Ť	
Representational format	Graphic	•	٠	Ť	
Resolution [pixels]	640 x 480 (10,4")	•	٠	Ť	
Rows per character	30 x 80 / 15 x 40 / 7 x 20	•	٠	Ť	
Dimension of visible area [mm]	211,2 x 158		٠	T	
Dimension of visible area [mm]	211,2 x 158,4	•		Ť	
Character matrix in text mode [pixels]	8 x16 / 16 x 32 / 32 x 64	•	٠	Ť	
Character size [mm] x1 / x2 / x4	2,7 x 5,4 / 5,4 x 10,7 / 10,7 x 21,4	•	•	Ī	
Construct o diverture out	Software	•	٠	-	
Contrast adjustment	Automatic compensation with temperature	•		-	
Character set	Programmable fonts/TTF Windows ®	•	٠	Ť	
Backlighting	je j			†	
Turpa	LED			1	
Туре	CCFL lamp	•	•	1	
Minimum lamp-life at 25°C [hours]	15000	•	•	t	

Code of terminal	Characteristics of the terminal				
VT585W APS00					_
VT585W APT00			_	6	
VT585W 0PSCN		-	10	<u> </u>	
User memory	and the second sec	S.		▼	V
Project [Bytes]	640K + 1792K (Text + Graphic)	30	•	•	•
Data memory [Bytes]	128K (With back-up battery)	50	•	•	•
Memory for Windows ® -based fonts [Byte]	512K		•	•	•
Memory Card for backup	8Mb		•	•	•
Memory Card for expansion	4Mb (Only for graphic type)		•	•	•
nterfaces	à à				
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA		۲	Ĭ•	•
ASP (Auxiliary serial port)	RS232/RS485	1 and a start	2	•	•
ASP-15L (Auxiliary serial port)	RS232/RS485	20			
ASP-8 (Auxiliary serial port)	RS232	6			<b>—</b>
ASP-9 (Auxiliary serial port)	RS232				
LPT parallel port	Centronics		•	•	•
Auxiliary port	Connection for accessory devices		•	•	•
Accessories	,,,,,		-		$\vdash$
Connectable accessories	See table "Chapter 33"		•	•	•
Clock		-0	2		$\vdash$
Hardware clock	With back-up battery	-0	•	•	•
Networks		SS I	_		$\vdash$
1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 1971 - 19	Profibus-DP	2			⊢
ntegrated	CAN Open (Optoisolated interface)		•		⊢
	Ethernet 10/100Mbit RJ45		_		⊢
Universal Bus Connector					⊢
Optional	See table "Chapter 33"		۲	2	•
Proprietary networks		à	3	-	-
	Network server	-0	•	•	•
ESA-Net	Network client	and the second s	•	•	•
Technical data		<u> </u>	_	<u> </u>	È
Power supply	24Vdc (1832Vdc)				
Power absorbed at 24Vdc	15W				
Protection fuse	Ø5x20mm - 1,25A Quick Blow F			_	
Protection level	IP65 (front-end)			2-	
Operating temperature	050°C	8	3		
Storage and transportation temperature	-20+60°C	Sec.			
Humidity (non-condensing)	<85%	200			
Weight	4000gr	50			
Dimensions	400091				
External W x H x D [mm]	346 x 260 x 74				
Cut-out W x H [mm]	314 x 240				
Certification	514 % 2+0		- 0	2	
Certifications and approvals	CE, cULus, NEMA12		10		

#### **Functions**

The following table lists in alphabetical order all the functions of the VT in question.

Table 25.1: Functions and objects realizable with this VT (Part 1 of 4)

VT585W ****	Quantita	1
Objects/Functions	Quantity	
	1024	-
Alarm help	-	
Alarm history buffer	256	2
Alarm statistics	1004/050	2
Alarms (Total/active simultaneously)	1024/256	•
Arc		•
Automatic operations	32	•
Backup/Restore	27.	•
Bar data		•
Bit-wise password	8bits	_
Buttons	1200xpage	•
Circles	and the second sec	•
Command: Change language		•
Command: Clear trend buffer	181	•
Command: Delete recipe	27.	•
Command: Hardcopy		•
Command: Load recipe from data memory		
Command: Modify password	Nº	
Command: Next page	S. C.	•
Command: Page help	3 ⁰	•
Command: Password login	3	•
Command: Password logout	4	•
Command: Previous page		•
Command: Print alarm history		
Command: Printer form feed	Nº.	•
Command: Quit project	L.	•
Command: Report	1 ⁵⁰	•
Command: Restarts reading time-sampled trend	38	•
Command: Run pipeline	27.	•
Command: Save alarms history and trend buffers in flash		
Command: Save recipe in data memory		
Command: Save recipe received from device in buffer	Nº.	•
Command: Save recipe received from device in data memory	L. B.	•
Command: Send recipe from video buffer to device	15°	•
Command: Send recipe to device	. 8	•
Command: Service page	14	

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 25.1: Functions and objects realizable with this VT (Part 2 of 4)

Code of terminal VT585W *****	
Objects/Functions	Quantity
Command: Show alarms history	100
Command: Show page directory	50
Command: Show project information	0
Command: Show recipe directory	
Command: Show sequence directory	
Command: Shows driver status page	~
Command: Shows page help	No
Command: Shows page with function: PG	Sec.
Command: Stops reading time sampled trend	50
Command: Trend reading saved in device	0
Command: Zero number of general pages	
Date field	
Day-of-the-week field	6
Dynamic texts: Bit-group-structured dynamic texts	No.
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	Sec. 1
E-keys	
Equations	32
F-keys	
Free terminal	6
Function: Disables key	Nº
Function: Go to page	Rev
Function: Internal command	350
Function: Invert bit value	
Function: Macro	
Function: None	
Function: Reset bit permanently	6
Function: Reset real-time bit	Nº.
Function: Sequences	S.C.
Function: Sets bit permanently	350
Function: Sets real-time bit	
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	S.
Headers and footers (Total/Number of fields per H-F)	128/128
Info-messages (Total/active simultaneously)	256/256
Internal registers	4096bytes
	-
Labels	

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available Table 25.1: Functions and objects realizable with this VT (Part 3 of 4)

Objects/Functions	Quantity
Lines	600
Lists of bitmap images	30
Lists of texts	S
Local configuration of E-keys	
Local configuration of F-keys	
Macro field	
Macros (Total/Commands x macro)	1024/16
Message field	E.
Message help	256
Multilanguage texts	8 Langs.
Object - Indicator	256
Object - Potentiometer knob	256
Object - Selector knob	256
Object - Sliding potentiometer	256
Object - Sliding selector	256
Page	1024
Page help	1024
Password	10
Pipelines (Number/Tot bytes)	64/512
Print	
Print page (Total/Number of fields per page)	1024/128
Programmable fonts	and and a second s
Project images	- 3 ⁵⁰
Public variables of ESANET network (Number/Total bytes)	512/1024
Recipe field for recipe structure	
Recipes (Number of variables per recipe)	1024/512
Rectangles	
Redefinable characters	Nº Nº
Reports	128
Sequences - Random	~3 ⁵
Sequences - Start/stop	S.
Static bitmaps	
Symbolic field: Bit-group-structured dynamic bitmaps	
Symbolic field: Single-bit-structured dynamic bitmaps	1024*
Symbolic field: Value-structured dynamic bitmaps	all a
System messages	
System variables assigned to recipe structure	Salar -
Time long field	S.
Time short field	

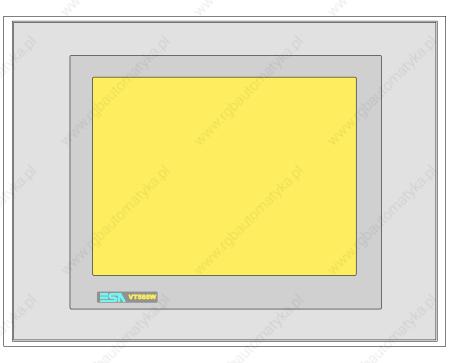
Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit *) indicative value determined by the dimensions of the project, **) depends on memory available

Table 25.1: Functions and objects realizable with this VT (Part 4 of 4)

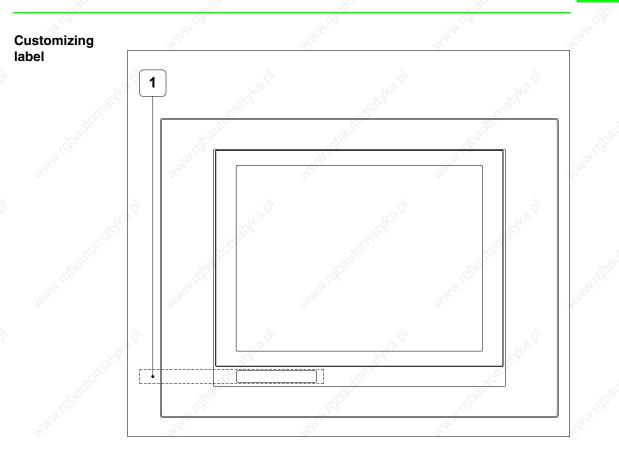
Code of terminal		
VT585W ****	6	_
Objects/Functions	Quantity	▼
Timer	32	٠
Touch Area	256	٠
Trend buffers	128	•
Trends (Trends x page/Channels x trend)	8/8	•
Trends sampled automatically (Memory/Trends/Readings)	8192bytes	•
Trends sampled on command (Memory/Trends/Readings)	/**/640	•
Value direct command: ADD	Nº.	•
Value direct command: AND	S. C.	•
Value direct command: OR	50	•
Value direct command: SET		•
Value direct command: SUBTRACT		•
Value direct command: XOR		•
Variables: Limit values and linear scaling variables	6	•
Variables: Movement variable (Mobile symbolic field)	No.	•
Variables: Threshold variables	304 x	•
Variables: Floating Point numerical variables	pages	•
Variables: Numerical variables (DEC, HEX, BIN, BCD)	1	•
Variables: String variables (ASCII)	-	•
Unless otherwise stated, there is no limit to the number of includable elements, only the size of pro-	ia at maman ( a ata a	limit

Unless otherwise stated, there is no limit to the number of includable elements, only the size of project memory sets a limit. *) indicative value determined by the dimensions of the project, **) depends on memory available

#### Front view



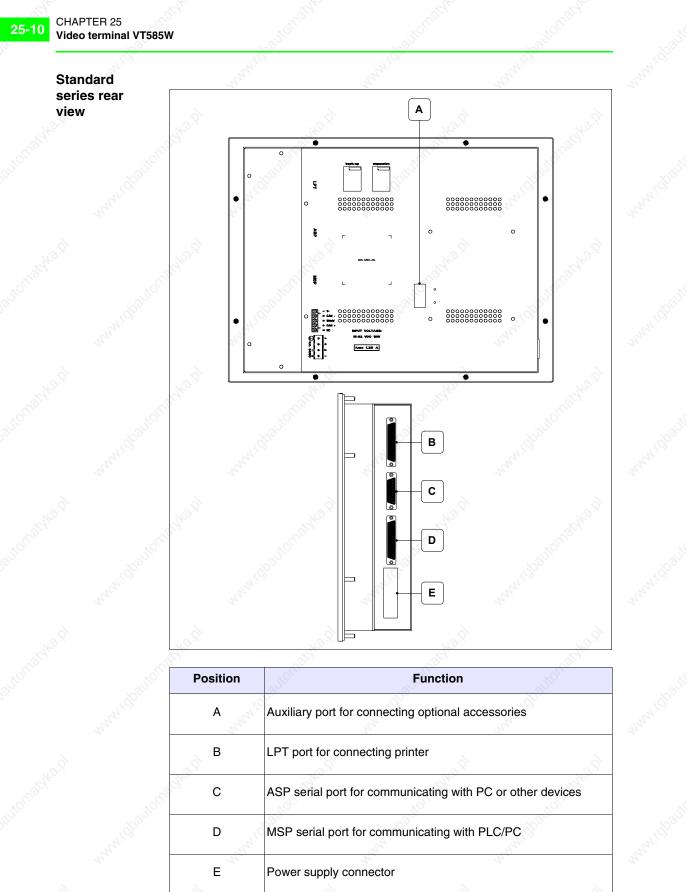
All buttons and signals are defined via the programming software (see Software Manual).



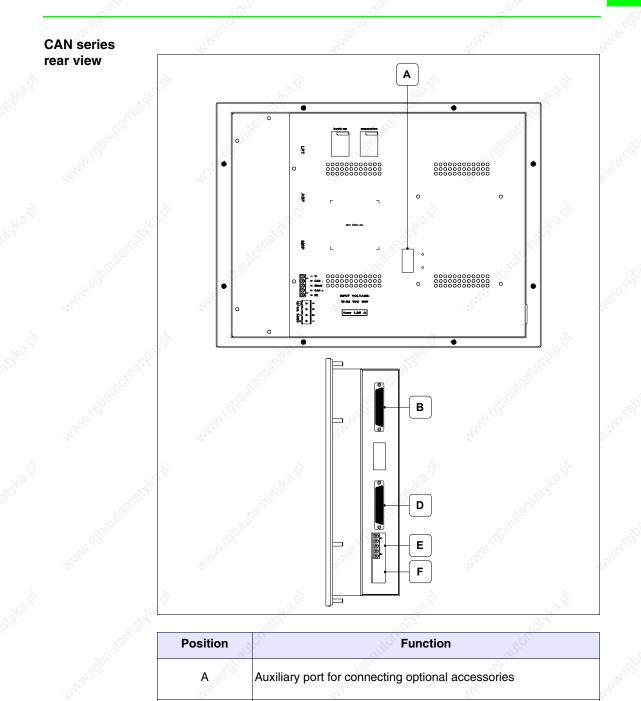
Position	Function - Dimensions L x H (mm)
1	ESA Logo, VT Model - 160 x 12

The total thickness of the label must not exceed 125µm (micrometers). Do not use either stiff materials or glues.

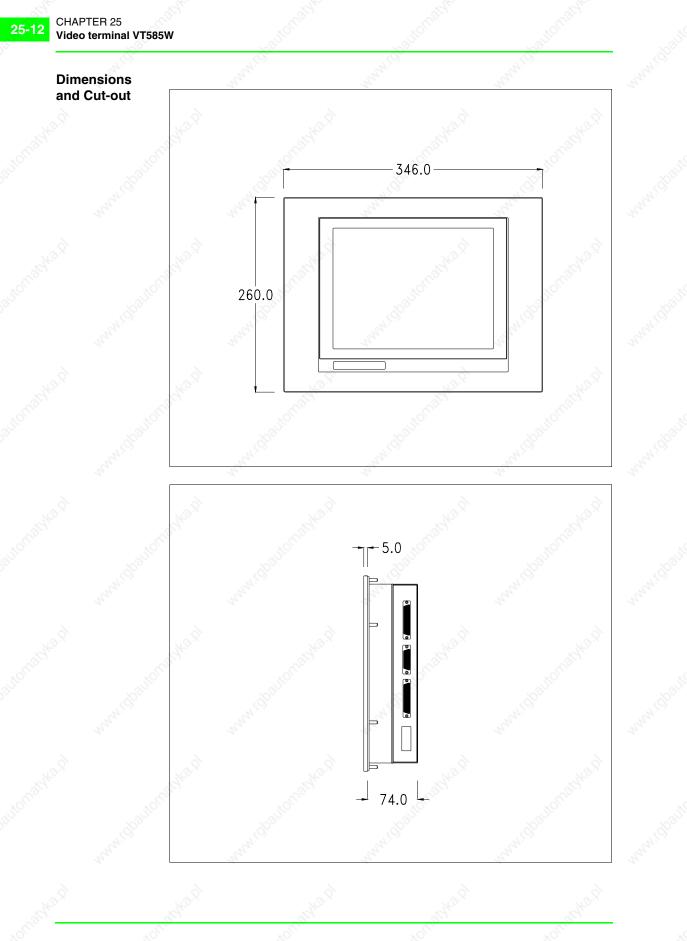
Before starting to insert the customized label, see "Chapter 28 -> Inserting customized labels".

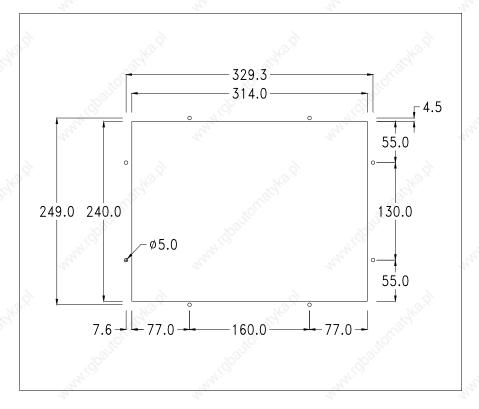


405.1200.037.2 - Rel.: 2.20 of 26/03/2007



AAuxiliary port for connecting optional accessoriesBLPT port for connecting printerDMSP serial port for communicating with PLC/PCECAN serial portFPower supply connector		
D     MSP serial port for communicating with PLC/PC       E     CAN serial port	A	Auxiliary port for connecting optional accessories
E CAN serial port	В	LPT port for connecting printer
and	D	MSP serial port for communicating with PLC/PC
F Power supply connector	E	CAN serial port
	F	Power supply connector





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

#### Calibration of Touch Screen

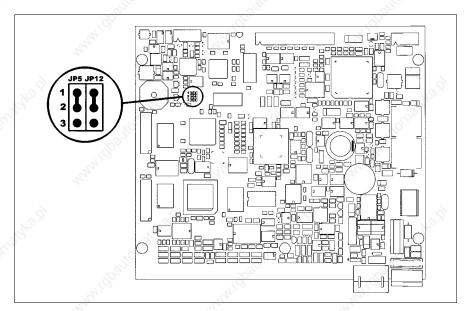
The screen of VT585W is made of resistive, sensitive glass; for this type of glass to work properly it requires a calibration procedure (**the terminal is already calibrated when supplied**), that is, the resistive area of the glass has to be adjusted to the visible are of the display.

Should it be thought necessary to repeat the calibration procedure this can be done (terminal Rev. 5 or above) by following the instructions set out below.



The procedure must be carried out with great care as the precision of the keys area depends on the calibration. How to perform the calibration procedure:

- Make sure the VT is not connected to the power supply
- Remove the back cover
- Identify jumpers JP5 and JP12



- Position JP5 and JP12 on pins 2-3
- Reconnect the power supply and switch on the terminal; the following mask appears (the number and type of mask depend on the release version of the terminal)

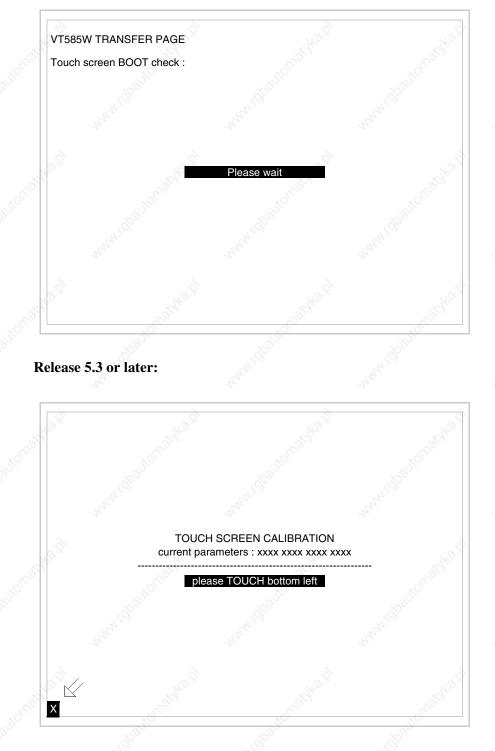
#### **Release 5.0 to 5.2:**

È	2	2
VT585W TRANSFER PAG	GE AND	
Touch screen BOOT chec	k:	
Margaret C		
\$ 	à.	t stat
torrio	Please touch bottom let	ft torrior
WWW.GDOC		
E .		
100 NO	100 No.	100 m

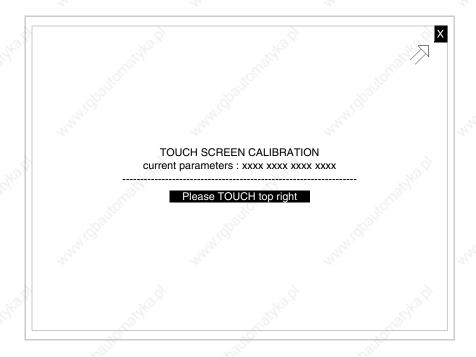
• Touch the corner indicated in the figure; then the following page appears on screen

1		10.1	
	VT585W TRANSFER PAGE		MA
	Touch screen BOOT check :		Sould Sand
	and the second s		
ş	148.D		
	ornato	Please touch top right	
	distant.		
	AND N. S.		
Ş	and the second		
	autornu		
l			

• Touch the corner indicated in the figure to complete the Calibrazione procedure; the following page now appears



• Touch the corner indicated in the figure; then the following page appears on screen

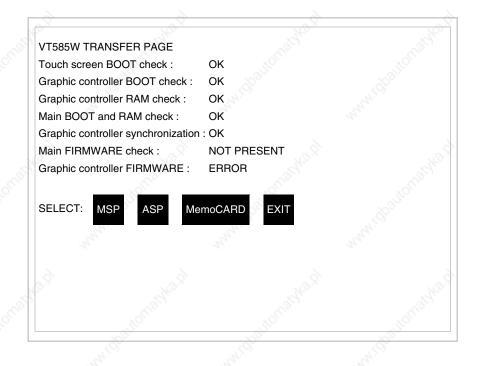


• Touch the corner indicated in the figure; then the following page appears on screen

TOUCH SCREEN CALIBRATION current parameter . xxxx xxxx xxxx xxxx bottom right Х

• Touch the corner indicated in the figure to complete the calibration procedure. Wait a few moments until the VT displays either the following

#### mask or the project page



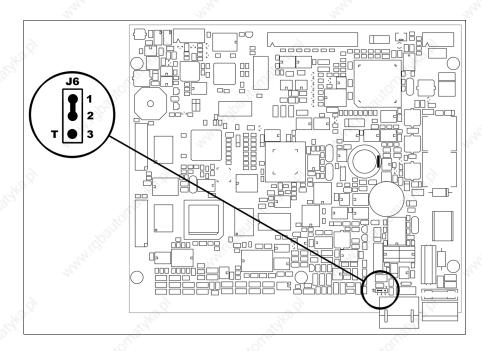
- Switch off the terminal
- Reposition JP5 and JP12 on pins 1-2
- Replace the back cover
- Switch on the terminal again

The calibration procedure has finished; if the calibration has be carried out wrongly or imprecisely, repeat the procedure.

#### Termination of CAN line

This paragraph applies only to the CAN series. The VT in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J6.



- Position the jumper between pins 2 and 3 (line terminated).
- Replace the back cover.
- Reconnect the power supply.

#### Transfer PC -> VT

For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

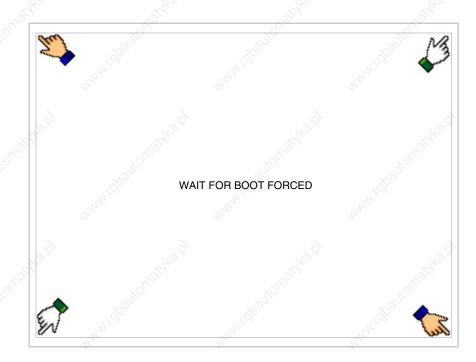
Preparation for reception

The programme VTWIN must be used for the transfer (see Software Manual), but the terminal must be prepared for reception.

This means carrying out the following steps:

- Check that the VT is off
- Check that there is a serial connection between the PC and the VT

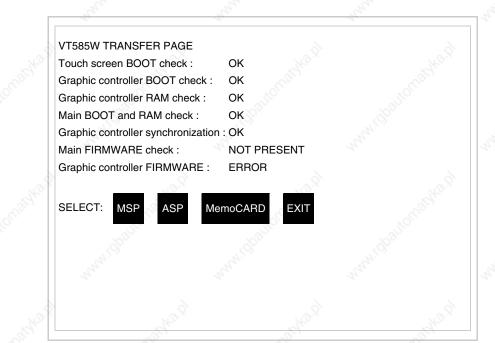
- Switch on the VT and wait for the following mask to appear
- Press one after the other two diagonally opposite corners free of settable objects or buttons (at least one corner needs to be free)



and wait a few moments, alternatively use the button provided (see Page 25-19), until the VT displays the following mask

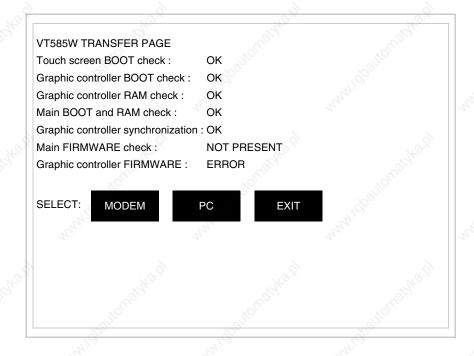
#### VT terminal with no Modem function:

• Choose the port you intend to use for the transfer (MSP or ASP); touch the relevant 🖾 on the display. The VT is now ready to receive (refer to Software Manual for transfer procedure). The 🖾 MemoCARD appears if the Memory Card has been inserted in the VT (see Page 25-26)



#### VT terminal with Modem function:

• Proceed from the preceding mask; the following mask appears



• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant 🖾 on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear

VT585W TRANSFER PAGE		
Touch screen BOOT check :	ОК	
Graphic controller BOOT check :	ОК	
Graphic controller RAM check :	ОК	
Main BOOT and RAM check :	ок	
Graphic controller synchronization	: OK	
Main FIRMWARE check :	NOT PRESENT	
Graphic controller FIRMWARE :	ERROR	
SELECT: SLOW F	AST	
- All -	and the second s	and the second s
_N '	1) ·	- 19

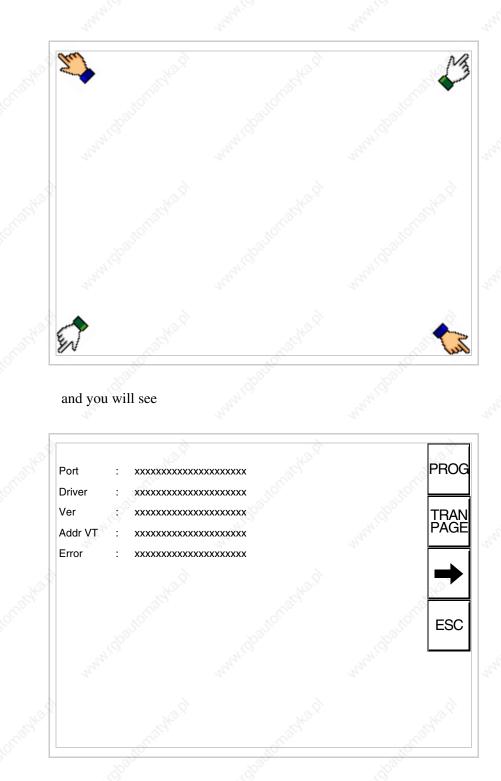
The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant  $\square$  on the display. The VT is now ready to receive (see Software Manual for the transfer).

Information relating to driver After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects or buttons (at least one angle must be free)



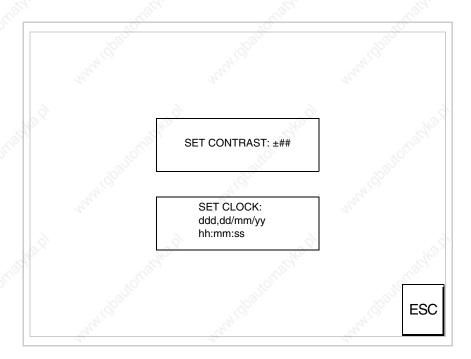
There is one of these pages for each communication port; movement between the various pages is effected by pressing  $\blacktriangleright$ .

From this page you can:

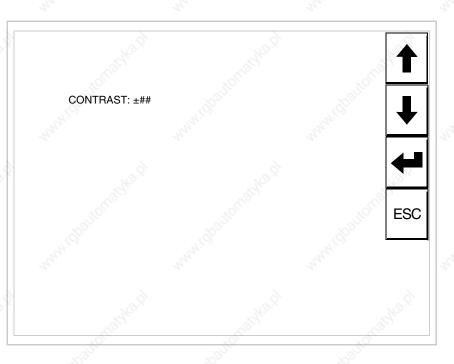
- Set the clock and the contrast
- Prepare the VT to receive the program
- Use the Memory Card

Setting the clock and the contrast:

To set the clock and the contrast, while displaying the above illustrated page, press PROG; the following mask appears

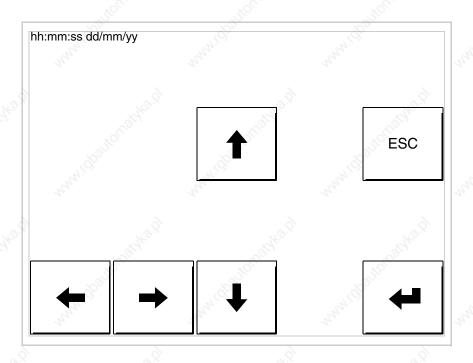


To set the contrast touch the words SET CONTRAST on the display; you will see the following mask



Use the arrow  $\Box$  for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

To set the clock touch the words SET CLOCK on the display; the following mask appears

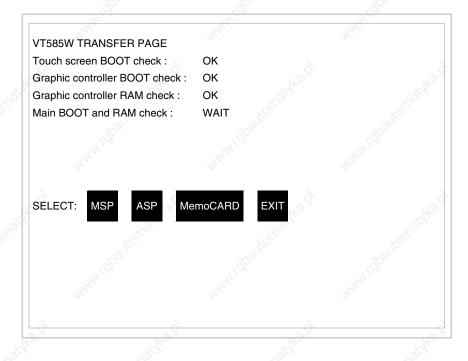


Use the arrow DD for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

For the clock to be used properly, a special battery has to be inserted in the terminal (see "Chapter 33 -> Video terminal accessories").

Prepare the VT to receive the program:

To prepare the VT to receive the program, while displaying the driver information page (see Page 25-22), press  $\frac{TRAN}{PAGE}$ , and you will see the following mask



The on-screen  $\square$  to press depends on the port you intend to use (MSP or ASP). The VT terminal is now ready to receive (consult Software Manual for information on the transmission procedure).

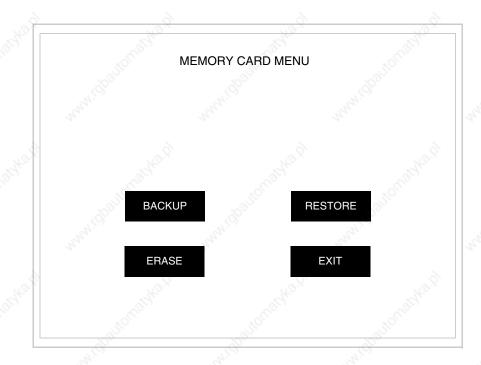
Using the Memory Card:

While displaying the driver information page, press Add and the following mask will appear:

25-27

		~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
VT585W TRANSFER PAGE			
Touch screen BOOT check :	OK		
Graphic controller BOOT check :	ОК		
Graphic controller RAM check :	OK		
Main BOOT and RAM check :	WAIT		
SELECT: MSP ASP Me	emoCARD	EXIT	
100	J.S.		
and and a second s			
6			
aller			

Touch the  $\square$  MemoCARD on the screen (if the key is not on screen, see Page 25-19) and the following mask will appear:



For the meaning and the functions of the keys see "Chapter 33 -> Memory card".

Possible error messages that may be encountered in the driver information page are:

- PR ERR
  - Problem-> Errors have been detected in the data exchange between the VT and the Device.

Solution-> Check the cable; there may be disturbance.

#### COM BROKEN

Problem->Communication between VT and Device interrupted.Solution->Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

#### Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

Improving display color quality To improve the color quality, adjust the contrast of the display: if the colors are too dark increase the contrast; if, on the other hand, the colors are too light, decrease the contrast.

Adjusting the contrast on the display To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 25-24) and changing the value (from +63 to -64) in evidence at that moment. Increase the value to darken the display; to lighten it decrease the value.

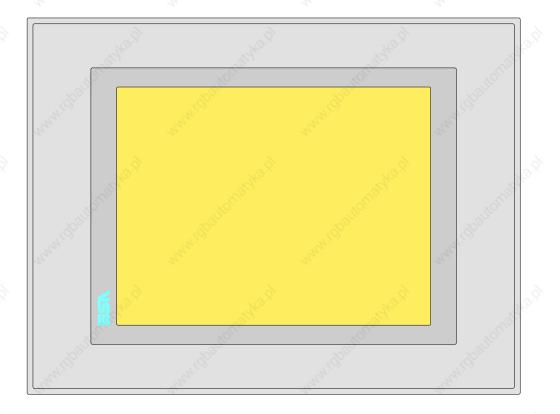
We advise this to be done at typical room temperature and with the terminal at operating temperature (about 30 minutes after switching on and with the screen saver disabled - see Software Manual).

This parameter has no effect when a TFT display is used. This kind of technology does not need adjustment.

Chapter 26

# Video terminal VT585WB

Page
26-2
26-4
26-8
26-9
26-10
26-11
26-12
26-13
26-14
26-14
26-17
26-18
26-21
26-21
26-23
26-29
26-29



**Technical** The following table lists the principal technical characteristics of the product in question.

Code of terminal	Characteristics of the terminal				
VT585W BPT00					_
VT585W BPTDP					$\sim$
VT585W BPTCN					
VT585W BPTET					
Display	70x 70x		•	▼	▼
2 ⁶⁰	LCD Monochromatic STN	32			Τ
Туре	LCD 256 Colors STN				1
	LCD 256 Colors TFT	٠	٠	٠	•
Touch screen [cells]	Matrix 40x30 (Cell:16x16 pixels)	٠	٠	٠	•
Representational format	Graphic	٠	٠	٠	•
Resolution [pixels]	640 x 480 (10,4")	٠	٠	۲	٠
Rows per character	30 x 80 / 15 x 40 / 7 x 20	٠	•	٠	•
Dimension of visible area [mm]	211,2 x 158	•	•	٠	•
Character matrix in text mode [pixels]	8 x16 / 16 x 32 / 32 x 64	•	٠	٠	•
Character size [mm] x1 / x2 / x4	2,7 x 5,4 / 5,4 x 10,7 / 10,7 x 21,4	٠	٠	٠	•
Contrast adjustment	Software	•	٠	٠	•
	Automatic compensation with temperature				1
Character set	Programmable fonts/TTF Windows ®	•	•	•	٠

Characteristics of the terminal				
<u> </u>		-	Ì	
X°°		10		
	20	2		
	▼	▼	▼	▼
· · · · · · · · · · · · · · · · · · ·				
	•	•	٠	•
30000	•	•	٠	•
	•	•		•
	•	•	•	•
512K	6	٠	٠	•
8Mb	•	•	٠	•
4Mb (Only for graphic type)				
all all				
RS232/RS422/RS485/TTY-20mA	٠	•	٠	•
RS232/RS485				•
RS232/RS485			0	
RS232		P		
RS232	20	0		
Centronics	•	٠	٠	•
Connection for accessory devices				
1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 -				
See table "Chapter 33"	٠	•	٠	•
Hardware (with Supercapacitor - Min.72h Typically130h)	٠	•	٠	•
10 ² 10 ²		0	2	
Profibus-DP		3	•	
CAN Open (Optoisolated interface)	5	•		
Ethernet 10/100Mbit RJ45	•			
See table "Chapter 33"	•	•	•	•
Network server	•	•	٠	•
Network client	•	۲	•	•
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	å	3		1
24Vdc (1832Vdc)	5			
15W				
Ø5x20mm - 1,25A Quick Blow F				
19 ·				
			Ś-	
NHT NHT	2	3 ^r		
	S.			
336.3 x 256 x 44				
	LED CCFL lamp 30000 960K + 6M (Text + Graphic) 128K (Flash EPROM) 512K 8Mb 4Mb (Only for graphic type) RS232/RS422/RS485/TTY-20mA RS232/RS485 RS232 RS232 RS232 Centronics Connection for accessory devices See table "Chapter 33" Hardware (with Supercapacitor - Min.72h Typically130h) Profibus-DP CAN Open (Optoisolated interface) Ethernet 10/100Mbit RJ45  See table "Chapter 33" Network server Network server Network server Network client 24Vdc (1832Vdc) 15W	LED           CCFL lamp           30000           960K + 6M (Text + Graphic)           128K (Flash EPROM)           512K           8Mb           4Mb (Only for graphic type)           RS232/RS422/RS485/TTY-20mA           RS232/RS485           RS232/RS485           RS232           RS232           Centronics           Connection for accessory devices           See table "Chapter 33"           Hardware (with Supercapacitor - Min. 72h Typically130h)           Profibus-DP           CAN Open (Optoisolated interface)           Ethernet 10/100Mbit RJ45              See table "Chapter 33"           Network server           Network server           Network client           24Vdc (1832Vdc)           15W           Ø5x20mm - 1,25A Quick Blow F           IP65 (front-end)           050°C           -20+60°C           <85%	LED       □         CCFL lamp       ●         30000       ●         960K + 6M (Text + Graphic)       ●         128K (Flash EPROM)       ●         512K       ●         8Mb       ●         4Mb (Only for graphic type)       □         RS232/RS422/RS485/TTY-20mA       ●         RS232/RS485       □         RS232/RS485       □         RS232       □         RS232/RS485       □         RS232/RS485       □         RS232       □         Centronics       ●         Connection for accessory devices       □         See table "Chapter 33"       ●         Hardware (with Supercapacitor - Min.72h Typically130h)       ●         Profibus-DP       □         CAN Open (Optoisolated interface)       ●         Ethernet 10/100Mbit RJ45       ●         □       □         See table "Chapter 33"       ●         ■       ■         24Vdc (1832Vdc)       □         15W       ∅         Ø5x20mm - 1,25A Quick Blow F       ■         IP65 (front-end)       □         050°C       □ <t< td=""><td>LED       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •</td></t<>	LED       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •       •

26-3

### **Functions**

The following table lists in alphabetical order all the functions of the VT in question.

Table 26.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal		
VT585W B****		7
Objects/Functions	Quantity	<b>•</b>
Alarm field	1004	-
Alarm help	1024	•
Alarm history buffer	256	
Alarm statistics	13	<
Alarms (Total/active simultaneously)	1024/256	•
Arc	30	•
Automatic operations	32	•
Backup/Restore	Þ.	•
Bar data		•
Bit-wise password	8bits	•
Buttons	1200xpage	•
Circles	100	•
Command: Change language	10	•
Command: Clear trend buffer	80	•
Command: Delete recipe	2 C	•
Command: Hardcopy		•
Command: Load recipe from data memory		•
Command: Modify password	13	•
Command: Next page	A.	•
Command: Page help		•
Command: Password login	N°	•
Command: Password logout	<i>b</i> .	•
Command: Previous page		•
Command: Print alarm history		•
Command: Printer form feed	13	•
Command: Quit project	100	•
Command: Report	100	•
Command: Restarts reading time-sampled trend	No.	•
Command: Run pipeline	200	•
Command: Save alarms history and trend buffers in flash		•
Command: Save recipe in data memory		•
Command: Save recipe received from device in buffer	10	-
Command: Save recipe received from device in data memory		•
Command: Send recipe from video buffer to device		
Command: Send recipe to device	Nor I	•
Command: Service page	200	-
Commande Corvico pago		_

Table 26.1: Functions and objects realizable with this VT (Part 2 of 4)

Code of terminal	
Objects/Functions	Quantity
Command: Show alarms history	100
Command: Show page directory	50
Command: Show project information	
Command: Show recipe directory	
Command: Show sequence directory	
Command: Shows driver status page	~
Command: Shows page help	Nº T
Command: Shows page with function: PG	See.
Command: Stops reading time sampled trend	S ²
Command: Trend reading saved in device	
Command: Zero number of general pages	
Date field	
Day-of-the-week field	6
Dynamic texts: Bit-group-structured dynamic texts	No.
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	Se0.
E-keys	
Equations	32
F-keys	
Free terminal	6
Function: Disables key	No.
Function: Go to page	all and a second
Function: Internal command	350
Function: Invert bit value	
Function: Macro	
Function: None	
Function: Reset bit permanently	S.
Function: Reset real-time bit	Sto.
Function: Sequences	.500
Function: Sets bit permanently	357
Function: Sets real-time bit	
Function: Value-structure direct command	
Global configuration of E-keys	
Global configuration of F-keys	8
Headers and footers (Total/Number of fields per H-F)	128/128
Info-messages (Total/active simultaneously)	1024/256
Internal registers	4096bytes
	1
Labels	

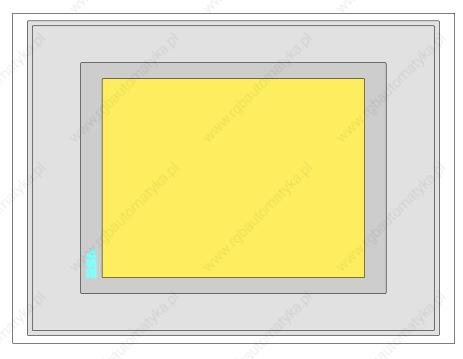
Table 26.1: Functions and objects realizable with this VT (Part 3 of 4)

VT585W B**** Objects/Functions	Quantity
Lines	Quantity
Lists of bitmap images	100
Lists of bitmap images	Ser Contraction
Local configuration of E-keys	9
Local configuration of F-keys	
Macro field	
	1024/16
Macros (Total/Commands x macro)	1024/10
Message field	1024
Message help	
Multilanguage texts	8 Langs.
Object - Indicator	256
Object - Potentiometer knob	256
Object - Selector knob	256
Object - Sliding potentiometer	256
Object - Sliding selector	256
Page	1024
Page help	1024
Password	10
Pipelines (Number/Tot bytes)	64/512
Print	
Print page (Total/Number of fields per page)	1024/128
Programmable fonts	. She
Project images	Bann
Public variables of ESANET network (Number/Total bytes)	512/1024
Recipe field for recipe structure	
Recipes (Number of variables per recipe)	1024/512
Rectangles	
Redefinable characters	S.
Reports	128
Sequences - Random	Same -
Sequences - Start/stop	S.
Static bitmaps	
Symbolic field: Bit-group-structured dynamic bitmaps	
Symbolic field: Single-bit-structured dynamic bitmaps	1024*
Symbolic field: Value-structured dynamic bitmaps	de la
System messages	- Star
System variables assigned to recipe structure	~3 ⁵
Time long field	, P
Time short field	-

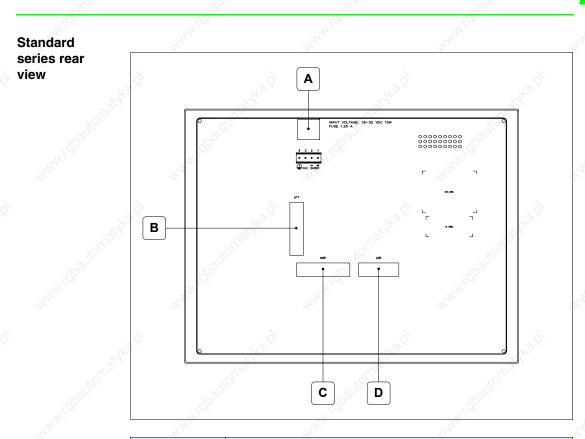
Table 26.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of terminal		
VT585W B****	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	_
Objects/Functions	Quantity	▼
Timer	32	٠
Touch Area	256	٠
Trend buffers	128	•
Trends (Trends x page/Channels x trend)	8/8	•
Trends sampled automatically (Memory/Trends/Readings)	8192bytes	•
Trends sampled on command (Memory/Trends/Readings)	/**/640	•
Value direct command: ADD	Nº.	•
Value direct command: AND	S. C.	•
Value direct command: OR	5°	•
Value direct command: SET		•
Value direct command: SUBTRACT		•
Value direct command: XOR		•
Variables: Limit values and linear scaling variables	6	•
Variables: Movement variable (Mobile symbolic field)	. No."	•
Variables: Threshold variables	320 x	•
Variables: Floating Point numerical variables	pages	•
Variables: Numerical variables (DEC, HEX, BIN, BCD)	1	•
Variables: String variables (ASCII)	-	•
Unless otherwise stated, there is no limit to the number of includable elements, only the size of pro-		lineit

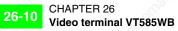
### Front view



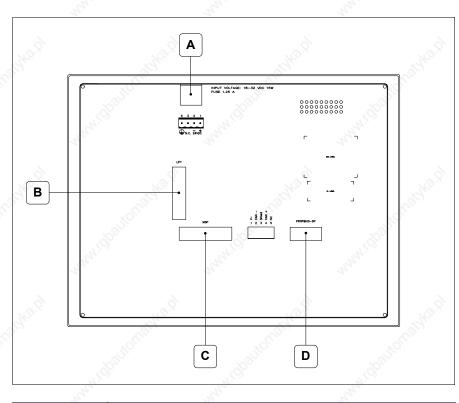
All buttons and signals are defined via the programming software (see Software Manual).



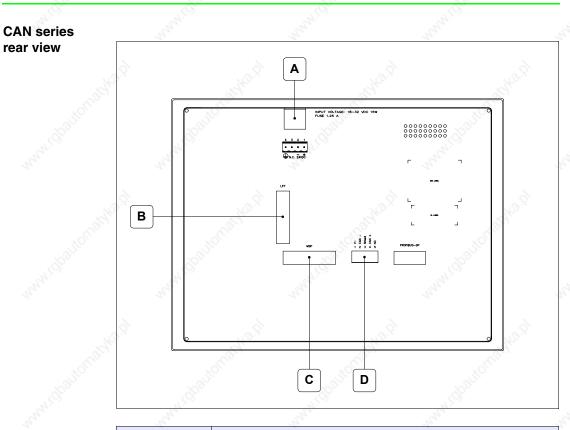
Position	Function
A	Power supply connector
В	LPT port for connecting printer
С	MSP serial port for communicating with PLC/PC
D	ASP serial port for communicating with PC or other devices



#### Profibus-DP series rear view



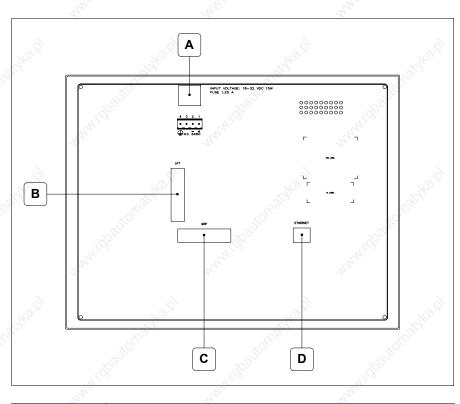
Position	Function	
A	Power supply connector	P.S.
В	LPT port for connecting printer	
C And	MSP serial port for communicating with PLC/PC	
Had D	Serial port for network communication	12.Q



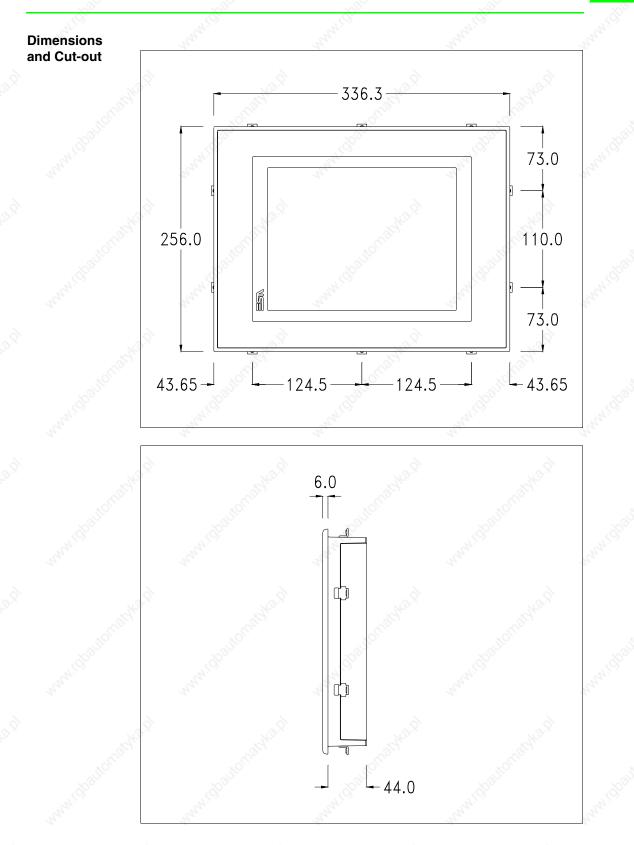
Position	Function
Α	Power supply connector
в	LPT port for connecting printer
С	MSP serial port for communicating with PLC/PC
D	CAN serial port

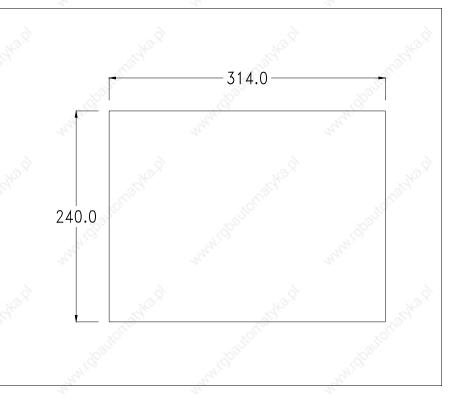


### Ethernet series rear view



Position Function	
A	Power supply connector
В	LPT port for connecting printer
C and	MSP serial port for communicating with PLC/PC
Jan D	Ethernet network 10/100Mbit RJ45 (For the diagnostic mode of the LEDs see "Chapter 30 -> Ethernet port")





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

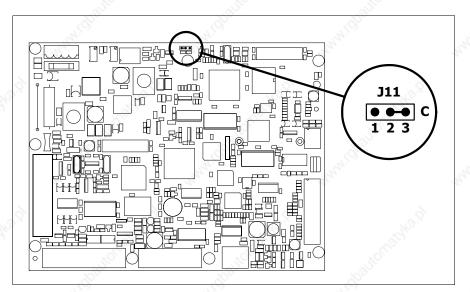
Calibration of Touch Screen The screen of VT585WB is made of resistive, sensitive glass; for this type of glass to work properly it requires a calibration procedure (**the terminal is already calibrated when supplied**), that is, the resistive area of the glass has to be adjusted to the visible are of the display.

Should it be thought necessary to repeat the calibration procedure this can be done by following the instructions set out below.



The procedure must be carried out with great care as the precision of the keys area depends on the calibration. How to perform the calibration procedure:

- Make sure the VT is not connected to the power supply
- Remove the back cover
- Identify jumper J11



- Position J11 on pins 2-3 (C)
- Reconnect the power supply and switch on the terminal; the following mask appears



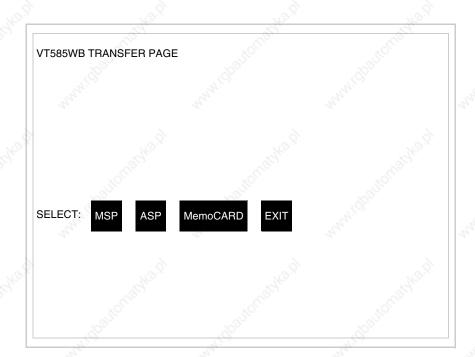
• Touch the corner indicated in the figure; then the following page appears on screen



• Touch the corner indicated in the figure to complete the Calibrazione procedure; the following page now appears



• Wait a few moments until the VT displays either the following mask or the project page



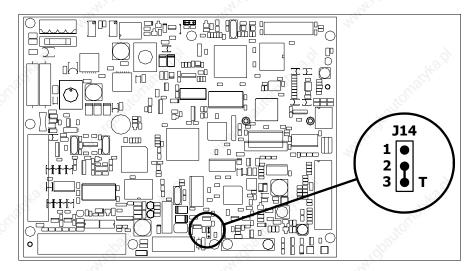
- Switch off the terminal
- Reposition J11 on pins 1-2
- Replace the back cover
- Switch on the terminal again

The calibration procedure has finished; if the calibration has be carried out wrongly or imprecisely, repeat the procedure.

### Termination of CAN line

This paragraph applies only to the CAN series. The VT in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J14.



- Position the jumper between pins 2 and 3 (line terminated).
- Replace the back cover.
- Reconnect the power supply.

Introducing the MAC address This paragraph relates only to the Ethernet series. The Media Access Control (MAC) address unambiguously identifies each terminal connected in the Ethernet network. The terminal is acquired with the address already programmed and is shown on the display of the terminal in the transfer page.

VT5	85WB ETHERNET TRANSFE	R PAGE	
Tou	ch screen BOOT check :	ОК	
Gra	phic controller BOOT check :	ОК	
Gra	phic controller RAM check :	ОК	
Mai	n BOOT and RAM check :	ОК	
Gra	phic controller synchronization	: OK	6. 6
Mai	n FIRMWARE check :	NOT PRESENT	
Gra	phic controller FIRMWARE :	ERROR	
SEL	ECT: MSP MemoCARE	EXIT	
10.9			à thuộ
20		AC addr:	
	00 ⁰¹¹ 00	0.0E.0E.xx.xx.xx	

The MAC address is permanently memorized in the terminal, but should it

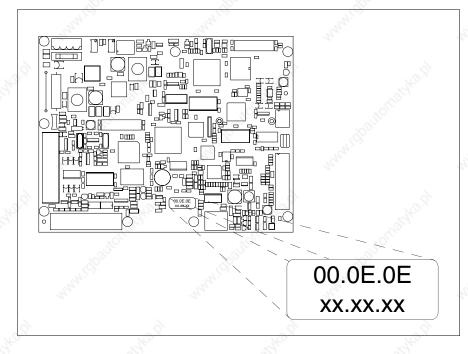
be necessary to execute an "aided" BOOT update (see Software Manual "Chapter 14 -> BOOT update") the address is lost.



This operation must be carried out only with the advice of the ESA Customer Care Department.

Terminals with no valid MAC address when switched present a mask for its insertion. If no MAC address belonging to the terminal is available, proceed as follows:

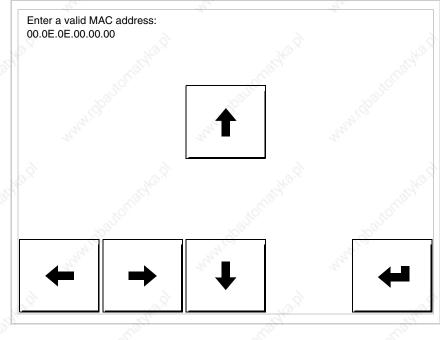
- Check that the VT is not connected to the power supply.
- Remove the back cover
- Locate the label carrying the MAC address



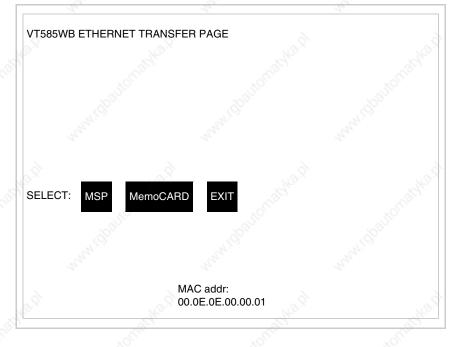
• Make a note of the number on the label (e.g. 00.0E.0E.00.00.01)

00.0E.0E	-> fixed part that identifying as an ESA product
XX.XX.XX	-> variable part different for each terminal

- Reconnect the power supply to the terminal and, if necessary, calibrate the touch screen (see Page 26-14)
- Replace the back cover
- Switch on the terminal again
- The following mask appears; introduce the address previously noted down (e.g. 00.0E.0E.00.00.01)



• Use the arrow 💷 to make the setting. Once the address has been confirmed the following page is displayed



The procedure is now terminated.

Should a wrong MAC address have been inserted contact the ESA Customer Care Department.

# A wrong address could give rise to an error of conflict between VT terminals in the Ethernet network.

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

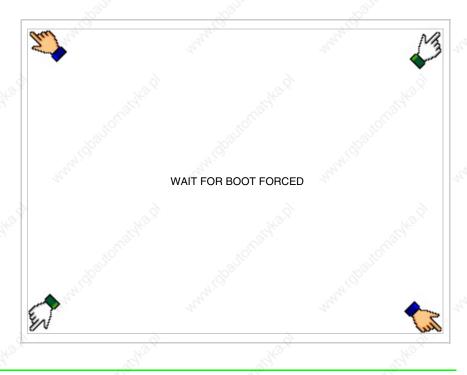
For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

## Preparation for reception

The programme VTWIN must be used for the transfer (see Software Manual), but the terminal must be prepared for reception.

This means carrying out the following steps:

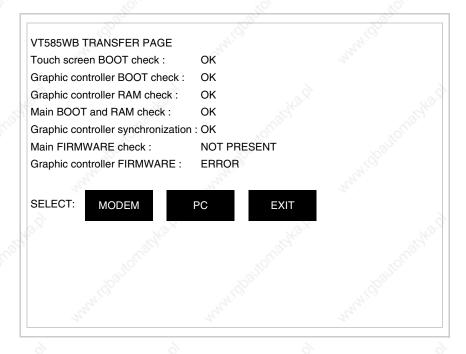
- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT and wait for the following mask to appear
- Press one after the other two diagonally opposite corners free of settable objects or buttons (at least one corner needs to be free)



and wait a few moments, alternatively use the button provided (see Page 26-21), until the VT displays the following mask

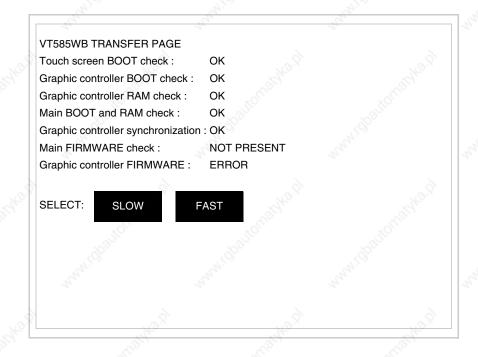
0°°		<u>्</u> र
	194	
VT585WB TRANSFER PAGE		
Touch screen BOOT check :	OK	
Graphic controller BOOT check :	ок	
Graphic controller RAM check :	ОК	
Main BOOT and RAM check :	ОК	
Graphic controller synchronization	: OK	
Main FIRMWARE check :	NOT PRESENT	
Graphic controller FIRMWARE :	ERROR	
SELECT: MSP ASP Me	moCARD	
SELECT. MSP ASP Me		
	18 ²	and the second sec

• Choose the port you intend to use for the transfer (MSP or ASP); touch the relevant 🖾 on the display. The VT is now ready to receive (refer to Software Manual for transfer procedure). The 🖾 MemoCARD appears if the Memory Card has been inserted in the VT (see Page 26-27)



• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant 🖾 on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear



The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant  $\square$  on the display. The VT is now ready to receive (see Software Manual for the transfer).

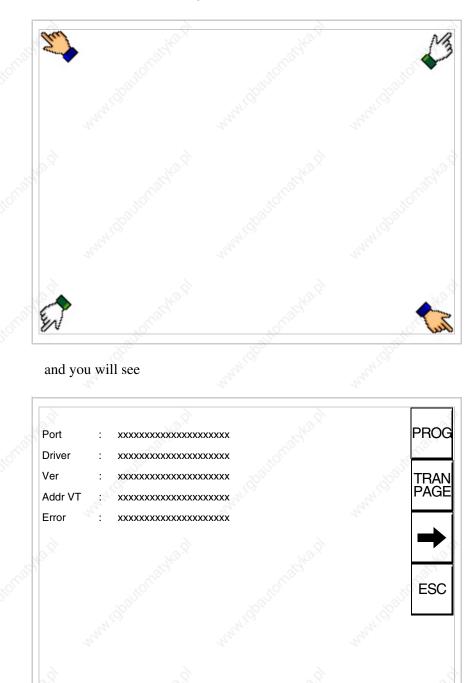
Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects



or buttons (at least one angle must be free)

There is one of these pages for each communication port; movement between the various pages is effected by pressing .

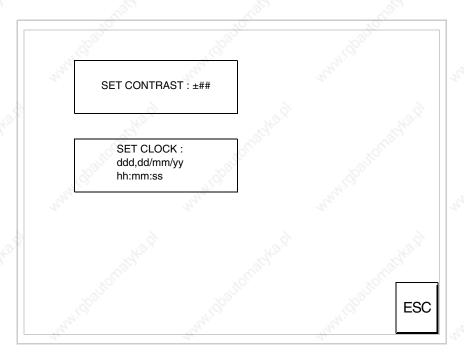
From this page you can:

- Set the clock and the contrast
- Prepare the VT to receive the program
- Use the Memory Card

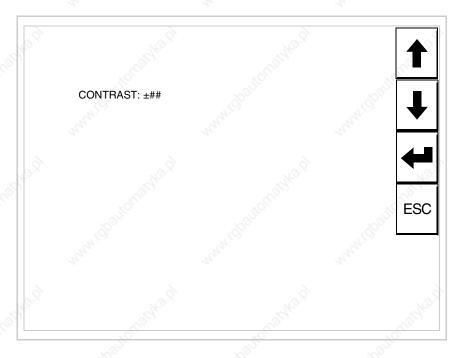
Setting the clock and the contrast:

To set the clock and the contrast, while displaying the above illus-

trated page, press ; the following mask appears

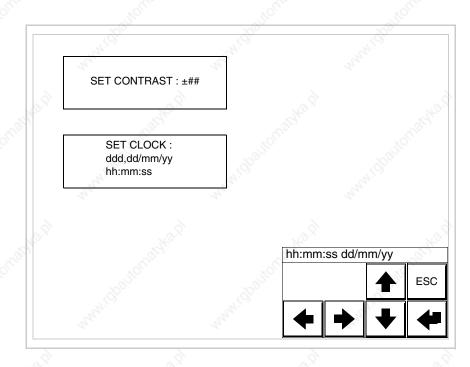


To set the contrast touch the words SET CONTRAST on the display; you will see the following mask



Use the arrow  $\Box$  for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

To set the clock touch the words SET CLOCK on the display; the following mask appears



Use the arrow DD for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

Prepare the VT to receive the program:

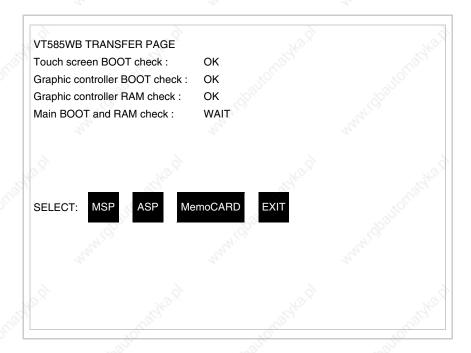
To prepare the VT to receive the program, while displaying the driver information page (see Page 26-23), press  $\frac{TRAN}{PAGE}$ , and you will see the following mask

١.	10 °	101	
	VT585WB TRANSFER PAGE		
	Touch screen BOOT check :	ОК	
	Graphic controller BOOT check :	OK	
	Graphic controller RAM check :	ОК	
	Main BOOT and RAM check :	WAIT	
2	SELECT: MSP ASP Mer	moCARD	
1			

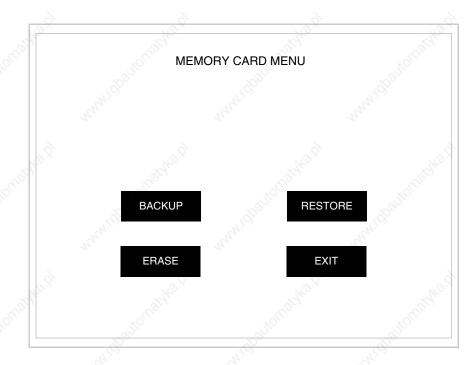
The on-screen  $\Box$  to press depends on the port you intend to use (MSP or ASP). The VT terminal is now ready to receive (consult Software Manual for information on the transmission procedure).

Using the Memory Card:

While displaying the driver information page, press TAGE and the following mask will appear:



Touch the  $\square$  MemoCARD on the screen (if the key is not on screen, see Page 26-21) and the following mask will appear:



For the meaning and the functions of the keys see "Chapter 33 -> Memory card".

Possible error messages that may be encountered in the driver information page are:

• PR ERR

Problem-> Errors have been detected in the data exchange between the VT and the Device.

Solution-> Check the cable; there may be disturbance.

### • COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

Improving display color quality

are too dark increase the contrast; if, on the other hand, the colors are too light, decrease the contrast.

To improve the color quality, adjust the contrast of the display: if the colors

Adjusting the contrast on the display To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 26-25) and changing the value (from +63 to -64) in evidence at that moment. Increase the value to darken the display; to lighten it decrease the value.

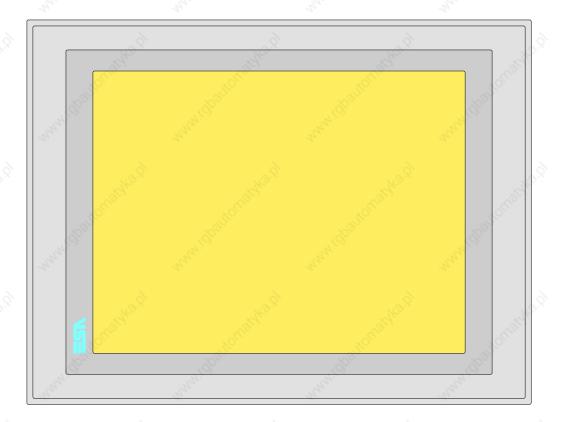
This parameter has no effect when a TFT display is used. This kind of technology does not need adjustment.



### Chapter 27

# Video terminal VT595W

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This chapter consists of 30 pages.	Ś. Ś



**Technical** The following table lists the principal technical characteristics of the product in question.

and the second s					
Code of terminal	Characteristics of the terminal				
VT595W APT00					_
VT595W 0PTDP	~ ~ ~	-		_	2
VT595W 0PTCN	X^2 XX^2 X_X^2			NO	2
VT595W OPTET		_	. ð	3	
Display	70x 70x		\$₹	▼	▼
1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 19	LCD Monochromatic STN	8			
Туре	LCD 256 Colors STN	1			
and the second second	LCD 256 Colors TFT	•	٠	•	•
Touch screen [cells]	Matrix 50x40 (Cell:16x15 pixels)	•	٠	•	•
Representational format	Graphic	٠	٠	•	
Resolution [pixels]	800 x 600 (12,1")	٠	٠	۲	•
Rows per character	40 x 100 / 20 x 50 / 10 x 25	٠	•	٠	•
Dimension of visible area [mm]	246 x 185	•	•	•	•
Character matrix in text mode [pixels]	8 x15 / 16 x 30 / 32 x 60	۲	٠	•	•
Character size [mm] x1 / x2 / x4	2,5 x 4,6 / 5 x 9,2 / 10 x 18,4	•	٠	•	•
Contract adjustment	Software	•	•	•	•
Contrast adjustment	Automatic compensation with temperature	1			
Character set	Programmable fonts/TTF Windows ®	•	•	•	•

Code of terminal	Characteristics of the terminal				
VT595W APT00					
VT595W 0PTDP	]			रे	
VT595W 0PTCN	1.4°°	~	3		
VT595W OPTET	5°	R.	2		
Backlighting		×.	▼	▼	V
Туре	LED				
all	CCFL lamp	•	•	•	•
Vinimum lamp-life at 25°C [hours]	50000	٠	•	٠	•
User memory					
Project [Bytes]	960K + 6M (Text + Graphic)	•	•	•	•
Data memory [Bytes]	128K (Flash EPROM)	•	۲	•	•
Memory for Windows ® -based fonts [Byte]	512K	۲	•	٠	•
Memory Card for backup	8Mb	•	•	٠	•
Memory Card for expansion	4Mb (Only for graphic type)				
Interfaces	ALC ALC				
MSP (Multi-serial port)	RS232/RS422/RS485/TTY-20mA	•	•	٠	•
ASP (Auxiliary serial port)	RS232/RS485				•
ASP-15L (Auxiliary serial port)	RS232/RS485			8	
ASP-8 (Auxiliary serial port)	RS232		P	1	
ASP-9 (Auxiliary serial port)	RS232	S.			
LPT parallel port	Centronics	•	•	٠	•
Auxiliary port	Connection for accessory devices				
Accessories	9 ₁₆				
Connectable accessories	See table "Chapter 33"	٠	•	٠	•
Clock					
Clock	Hardware (with Supercapacitor - Min.72h Typically130h)	٠	•	۲	•
Networks	No. No.		P	× .	
18 N N N N N N N N N N N N N N N N N N N	Profibus-DP	2ª	0	٠	
Integrated	CAN Open (Optoisolated interface)	5	•		
	Ethernet 10/100Mbit RJ45	٠			
Universal Bus Connector					
Optional	See table "Chapter 33"	٠	•	٠	•
Proprietary networks					
ESA-Net	Network server	٠	•	•	•
LOA-Net	Network client	٠	۲	ו	•
Technical data	22	20	3	1	
Power supply	24Vdc (1832Vdc)	5			
Power absorbed at 24Vdc	15W				
Protection fuse	Ø5x20mm - 1,25A Quick Blow F				
Protection level	IP65 (front-end)				
Operating temperature	050°C				
Storage and transportation temperature	-20+60°C			2	
Humidity (non-condensing)	<85%		50	8	
Weight	2100gr	ă	d.		
Dimensions		5			
External W x H x D [mm]	336,3 x 256 x 44				
Cut-out W x H [mm]	314 x 240				
Certification					
Certifications and approvals	CE, cULus, NEMA12	-			

### **Functions**

The following table lists in alphabetical order all the functions of the VT in question.

Table 27.1: Functions and objects realizable with this VT (Part 1 of 4)

Code of terminal		
VT595W ***** Objects/Functions	Quantity	
Alarm field	Quantity	•
Alarm help	1024	•
Alarm history buffer	256	•
Alarm statistics	200	à
Alarms (Total/active simultaneously)	1024/256	4
Arc	102 1/200	•
Automatic operations	32	•
Backup/Restore		•
Bar data		•
Bit-wise password	8bits	•
Buttons	1200xpage	ò
Circles	Loonpage	
Command: Change language	- 50	
Command: Clear trend buffer	160 ST	
Command: Delete recipe	S	
Command: Hardcopy		
Command: Load recipe from data memory		
Command: Modify password		Ì
Command: Next page	S.	
Command: Page help	200	
Command: Password login	10000	
Command: Password logout		
Command: Previous page		
Command: Print alarm history		
Command: Printer form feed		Ì
Command: Quit project	and the second s	
Command: Report		
Command: Restarts reading time-sampled trend	10 ²⁰¹	
Command: Run pipeline	0	
Command: Save alarms history and trend buffers in flash		
Command: Save recipe in data memory		
Command: Save recipe in data memory Command: Save recipe received from device in buffer	.0	୍
Command: Save recipe received from device in banen	199	
Command: Send recipe from video buffer to device	100	
Command: Send recipe to device	N ^{PN}	•
Command: Service page	500	
Commandi Controo pago		

Table 27.1: Functions and objects realizable with this VT (Part 2 of 4)

Code of terminal VT595W *****	
Objects/Functions	Quantity
Command: Show alarms history	Quantity
Command: Show page directory	
Command: Show project information	
Command: Show recipe directory	AND
Command: Show sequence directory	2
Command: Shows driver status page	
Command: Shows page help	100 C
Command: Shows page with function: PG	S.
Command: Stops reading time sampled trend	100 C
Command: Trend reading saved in device	- 22
Command: Zero number of general pages	and the second s
Date field	
Day-of-the-week field	2
Dynamic texts: Bit-group-structured dynamic texts	10 N
Dynamic texts: Single-bit dynamic texts	1024*
Dynamic texts: Value-structured dynamic texts	
E-keys	
Equations	32
F-keys	02
Free terminal	~
Function: Disables key	X ² X.
Function: Go to page	
Function: Internal command	35 ⁰
Function: Invert bit value	- S
Function: Macro	AN CONTRACTOR
Function: None	<i>V</i>
Function: Reset bit permanently	~
Function: Reset real-time bit	and the second sec
Function: Sequences	10 A A A A A A A A A A A A A A A A A A A
Function: Sets bit permanently	350°
Function: Sets real-time bit	
Function: Value-structure direct command	In
Global configuration of E-keys	
Global configuration of F-keys	6
Headers and footers (Total/Number of fields per H-F)	128/128
Info-messages (Total/active simultaneously)	1024/256
Internal registers	4096bytes
Labels	rooobytes
LEDs assigned to sequence	S

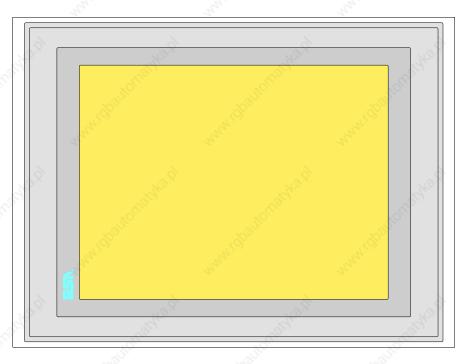
Table 27.1: Functions and objects realizable with this VT (Part 3 of 4)

VT595W *****	
Objects/Functions	Quantity
Lines	. S. C.
Lists of bitmap images	-3 ⁵⁵
Lists of texts	S.
Local configuration of E-keys	
Local configuration of F-keys	
Macro field	
Macros (Total/Commands x macro)	1024/16
Message field	S.Co.
Message help	1024
Multilanguage texts	8 Langs.
Object - Indicator	256
Object - Potentiometer knob	256
Object - Selector knob	256
Object - Sliding potentiometer	256
Object - Sliding selector	256
Page	1024
Page help	1024
Password	10
Pipelines (Number/Tot bytes)	64/512
Print	
Print page (Total/Number of fields per page)	1024/128
Programmable fonts	S.C.S.
Project images	13 ¹⁰
Public variables of ESANET network (Number/Total bytes)	1024/1024
Recipe field for recipe structure	
Recipes (Number of variables per recipe)	1024/512
Rectangles	
Redefinable characters	×
Reports	128
Sequences - Random	- 132
Sequences - Start/stop	S.
Static bitmaps	
Symbolic field: Bit-group-structured dynamic bitmaps	
Symbolic field: Single-bit-structured dynamic bitmaps	1024*
Symbolic field: Value-structured dynamic bitmaps	
System messages	and the second s
System variables assigned to recipe structure	- 200
Time long field	3 ⁰
Time short field	

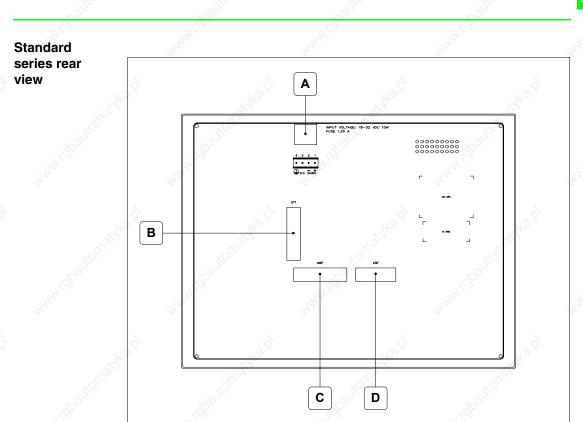
Table 27.1: Functions and objects realizable with this VT (Part 4 of 4)

Code of terminal		
VT595W ****	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	_
Objects/Functions	Quantity	▼
Timer	32	•
Touch Area	256	٠
Trend buffers	128	•
Trends (Trends x page/Channels x trend)	8/8	•
Trends sampled automatically (Memory/Trends/Readings)	32       •         256       •         128       •         8/8       •         adings)       8192bytes         adings)       /**/640       •         adings)       /**/640       •         0       •       •         0       •       •         1       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •       •         0       •	
Trends sampled on command (Memory/Trends/Readings)	/**/640	•
Value direct command: ADD	Nº.	•
Value direct command: AND	S. Carl	•
Value direct command: OR	3 ⁵⁰	٠
Value direct command: SET		•
Value direct command: SUBTRACT		•
Value direct command: XOR		•
Variables: Limit values and linear scaling variables	6	•
Variables: Movement variable (Mobile symbolic field)	No.	•
Variables: Threshold variables	400 x	•
Variables: Floating Point numerical variables	pages	•
Variables: Numerical variables (DEC, HEX, BIN, BCD)		•
Variables: String variables (ASCII)		•
I laless otherwise stated, there is no limit to the number of includable elements, only the size of pro-	inat mamony acts a	limit

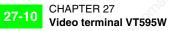
### Front view



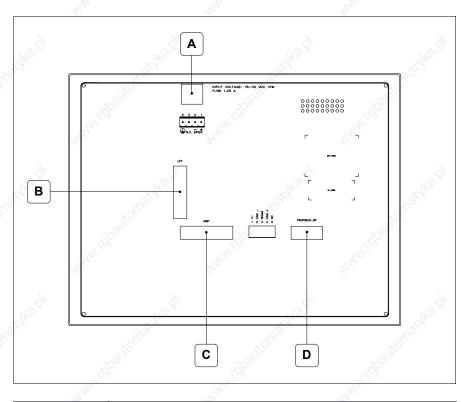
All buttons and signals are defined via the programming software (see Software Manual).



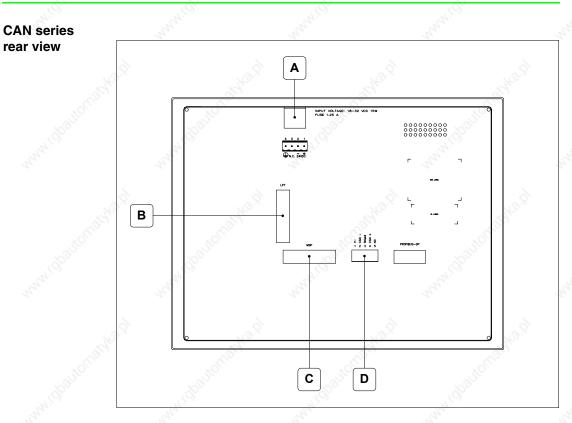
Function		
Power supply connector	A BAR R. R.	
LPT port for connecting printer	, chouto.	
MSP serial port for communicating with	PLC/PC	
ASP serial port for communicating with F	PC or other devices	
	Power supply connector LPT port for connecting printer MSP serial port for communicating with	



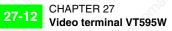
### Profibus-DP series rear view



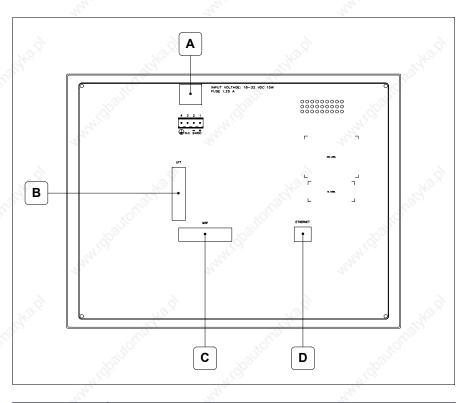
Position Function		
A	Power supply connector	54°.?
В	LPT port for connecting printer	
C 🖑	MSP serial port for communicating with PLC/PC	
Han D	Serial port for network communication	140.R



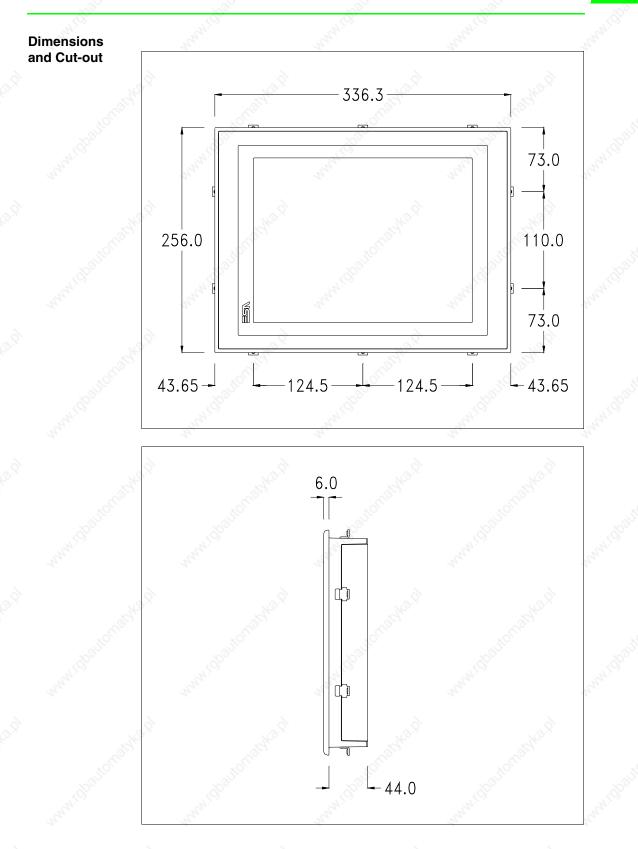
Position	Function		
А	Power supply connector		
В	LPT port for connecting printer		
С	MSP serial port for communicating with PLC/PC		
D	CAN serial port		

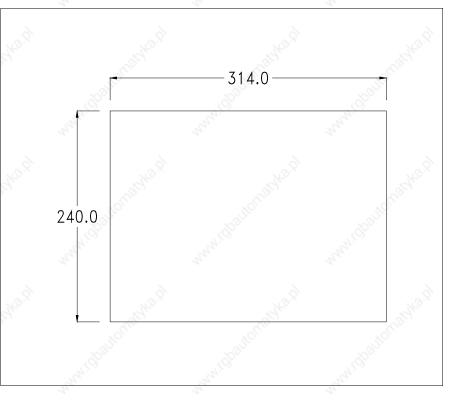


### Ethernet series rear view



Po	sition	ion Function	
Sto.S	A	Power supply connector	
	В	LPT port for connecting printer	
	C	MSP serial port for communicating with PLC/PC	
840.Q	D	Ethernet network 10/100Mbit RJ45 (For the diagnostic mode of the LEDs see "Chapter 30 -> Ethernet port")	





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

Where accessories need to be fixed in or onto the VT terminal, you are advised to do this before securing the VT to its container.

Accessories

Any accessories should be mounted in accordance with the instructions in the relevant chapter (see "Chapter 33 -> Video terminal accessories").

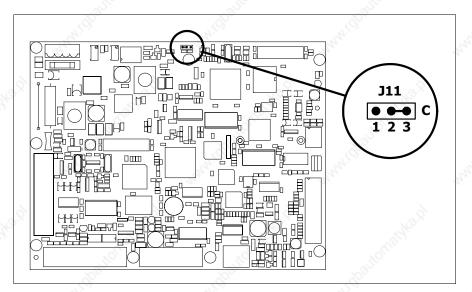
Calibration of Touch Screen The screen of VT595W is made of resistive, sensitive glass; for this type of glass to work properly it requires a calibration procedure (**the terminal is already calibrated when supplied**), that is, the resistive area of the glass has to be adjusted to the visible are of the display.

Should it be thought necessary to repeat the calibration procedure this can be done by following the instructions set out below.



The procedure must be carried out with great care as the precision of the keys area depends on the calibration. How to perform the calibration procedure:

- Make sure the VT is not connected to the power supply
- Remove the back cover
- Identify jumper J11



- Position J11 on pins 2-3 (C)
- Reconnect the power supply and switch on the terminal; the following mask appears



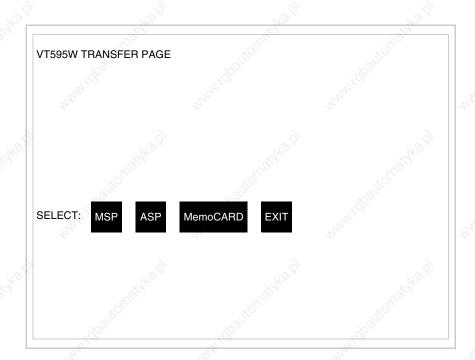
• Touch the corner indicated in the figure; then the following page appears on screen



• Touch the corner indicated in the figure to complete the Calibrazione procedure; the following page now appears



• Wait a few moments until the VT displays either the following mask or the project page



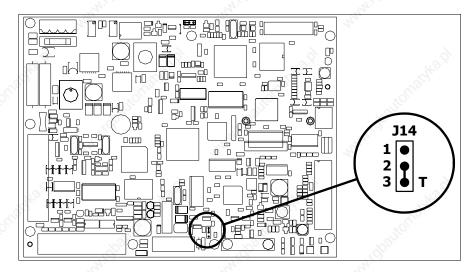
- Switch off the terminal
- Reposition J11 on pins 1-2
- Replace the back cover
- Switch on the terminal again

The calibration procedure has finished; if the calibration has be carried out wrongly or imprecisely, repeat the procedure.

### Termination of CAN line

This paragraph applies only to the CAN series. The VT in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J14.



- Position the jumper between pins 2 and 3 (line terminated).
- Replace the back cover.
- Reconnect the power supply.

### Introducing the MAC address

This paragraph relates only to the Ethernet series. The Media Access Control (MAC) address unambiguously identifies each terminal connected in the Ethernet network. The terminal is acquired with the address already programmed and is shown on the display of the terminal in the transfer page.

VT595W ETHERN	ET TRANSFEF	R PAGE	
Touch screen BOC	T check :	ОК	
Graphic controller I	BOOT check :	OK	
Graphic controller I	RAM check :	ОК	
Main BOOT and R	AM check :	ОК	
Graphic controller	synchronization	i : OK 🔬	
Main FIRMWARE	check :	NOT PRESENT	
Graphic controller I	FIRMWARE :	ERROR	
SELECT: MSP	MemoCARE	EXIT	
		AC addr:	
	00	0.0E.0E.xx.xx.xx	
AV		A	

The MAC address is permanently memorized in the terminal, but should it

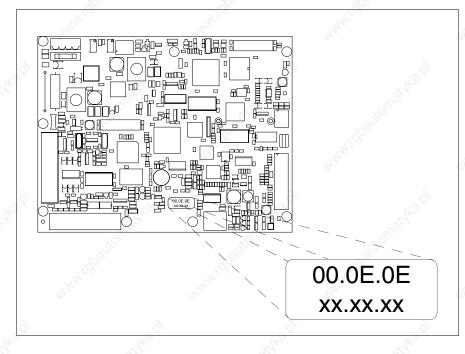
be necessary to execute an "aided" BOOT update (see Software Manual "Chapter 14 -> BOOT update") the address is lost.



This operation must be carried out only with the advice of the ESA Customer Care Department.

Terminals with no valid MAC address when switched present a mask for its insertion. If no MAC address belonging to the terminal is available, proceed as follows:

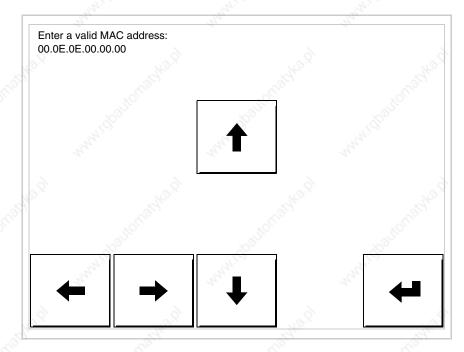
- Check that the VT is not connected to the power supply.
- Remove the back cover
- Locate the label carrying the MAC address



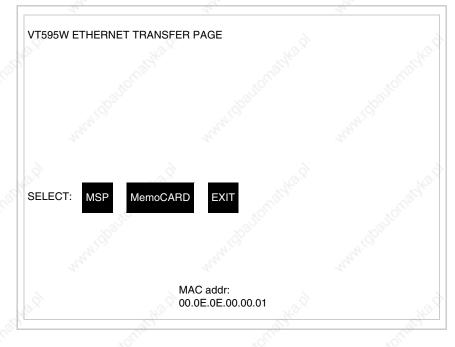
• Make a note of the number on the label (e.g. 00.0E.0E.00.00.01)

00.0E.0E	-> fixed part that identifying as an ESA product
XX.XX.XX	-> variable part different for each terminal

- Reconnect the power supply to the terminal and, if necessary, calibrate the touch screen (see Page 27-14)
- Replace the back cover
- Switch on the terminal again
- The following mask appears; introduce the address previously noted down (e.g. 00.0E.0E.00.00.01)



• Use the arrow 💷 to make the setting. Once the address has been confirmed the following page is displayed



The procedure is now terminated.

Should a wrong MAC address have been inserted contact the ESA Customer Care Department.

# A wrong address could give rise to an error of conflict between VT terminals in the Ethernet network.

Transfer PC -> VT For everything to function properly, the first time the VT operator terminal is switched on it needs to be correctly loaded, that is it needs to have transferred to it:

- Firmware
- Communication driver
- Project

(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as "Project transfer" for the sake of simplicity.)

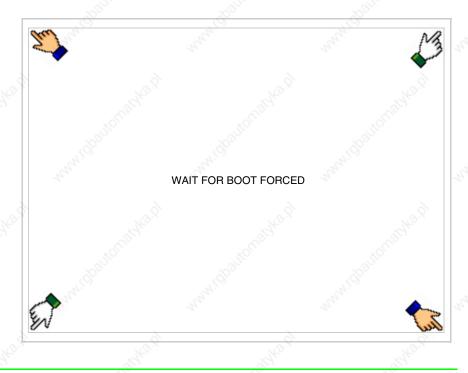
For this it is essential that the VT be prepared to receive the transfer. (See also "Chapter 37 -> Command area").

## Preparation for reception

The programme VTWIN must be used for the transfer (see Software Manual), but the terminal must be prepared for reception.

This means carrying out the following steps:

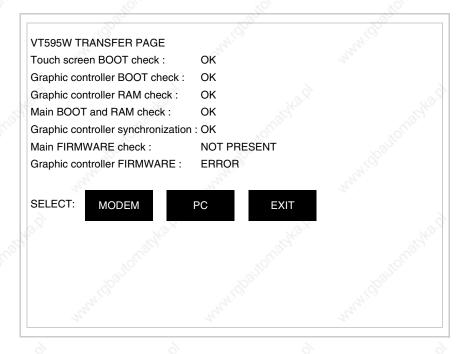
- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT and wait for the following mask to appear
- Press one after the other two diagonally opposite corners free of settable objects or buttons (at least one corner needs to be free)



and wait a few moments, alternatively use the button provided (see Page 27-21), until the VT displays the following mask

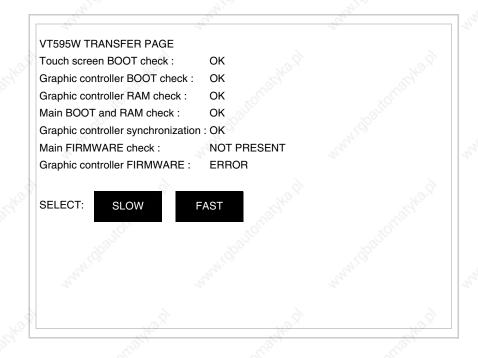
5	X20.1	12
VT595W TRANSFER PAGE	all all	and the
Touch screen BOOT check :	ОК	
Graphic controller BOOT check :	ОК	
Graphic controller RAM check :	ОК	
Main BOOT and RAM check :	ОК	
Graphic controller synchronization	: OK	
Main FIRMWARE check :	NOT PRESENT	
Graphic controller FIRMWARE :	ERROR	
SELECT: MSP ASP Me	moCARD EXIT	
neutonia	108 thomas	isautoma.

• Choose the port you intend to use for the transfer (MSP or ASP); touch the relevant 🖾 on the display. The VT is now ready to receive (refer to Software Manual for transfer procedure). The 🖾 MemoCARD appears if the Memory Card has been inserted in the VT (see Page 27-27)



• Choose the required transfer mode: MODEM if you intend to use a modem or PC if you intend to use a serial port; touch the relevant 🖾 on the display

If the choose made is PC, the VT is ready to receive (see Software Manual for transfer), if, on the other hand, you choose MODEM, the following mask will appear



The choice should be according to the speed you intend to use for the transfer (Slow=9600bit/sec or Fast=38400bit/sec), touch the relevant  $\square$  on the display. The VT is now ready to receive (see Software Manual for the transfer).

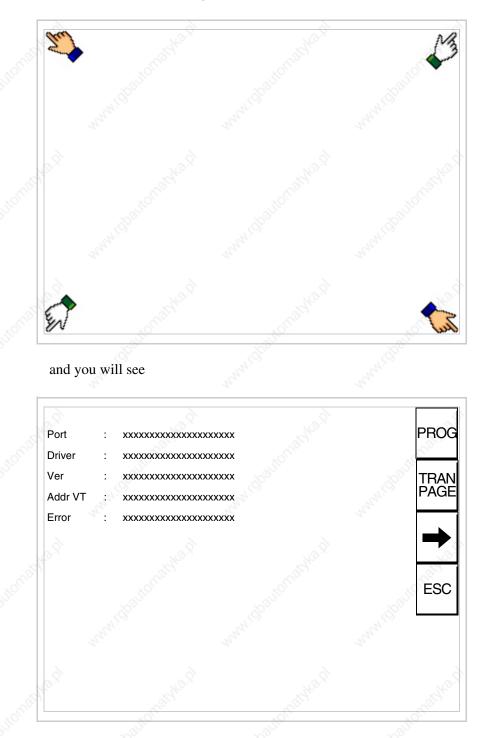
Information relating to driver

After the project has been transferred, the VT can make available information relating to what has been loaded. The information regards:

- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

To acquire this information carry out the following operations:

- Be situated in any page of the project
- Press two diagonally opposed angles that are free of any settable objects



or buttons (at least one angle must be free)

There is one of these pages for each communication port; movement between the various pages is effected by pressing .

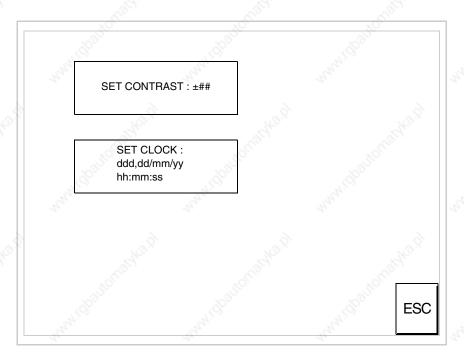
From this page you can:

- Set the clock and the contrast
- Prepare the VT to receive the program
- Use the Memory Card

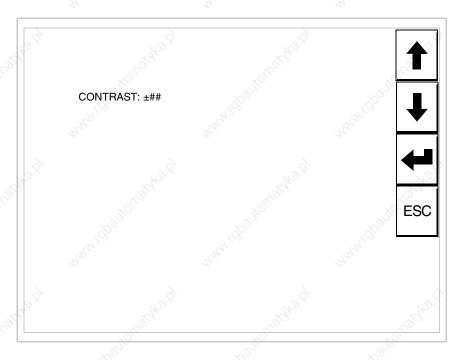
Setting the clock and the contrast:

To set the clock and the contrast, while displaying the above illus-

trated page, press ref; the following mask appears

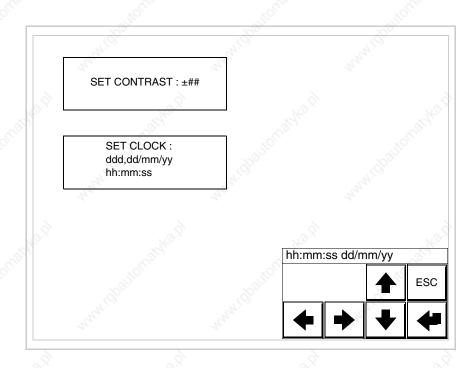


To set the contrast touch the words SET CONTRAST on the display; you will see the following mask



Use the arrow  $\Box$  for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

To set the clock touch the words SET CLOCK on the display; the following mask appears



Use the arrow DD for any variation (see "Chapter 36 -> Operation of terminal with touch screen").

Prepare the VT to receive the program:

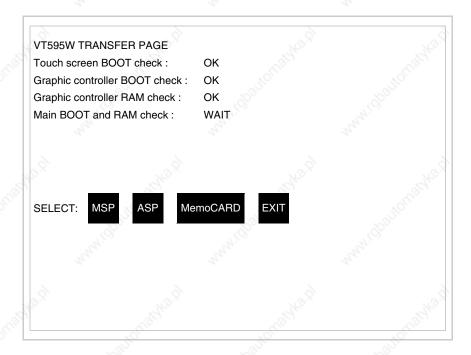
To prepare the VT to receive the program, while displaying the driver information page (see Page 27-23), press  $\frac{TRAN}{PAGE}$ , and you will see the following mask

VT595W TRANSFER PAGE		
Touch screen BOOT check :	ОК	
Graphic controller BOOT check :	OK	
Graphic controller RAM check :	OK	
Main BOOT and RAM check :	WAIT	
SELECT: MSP ASP Me	moCARD EXIT	
asonablant		

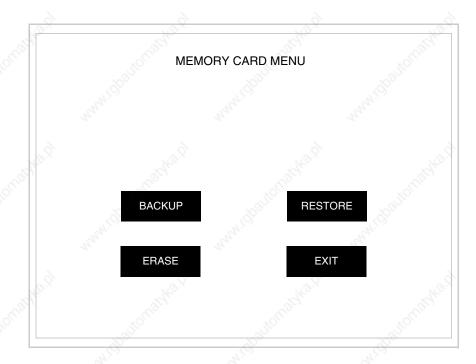
The on-screen  $\Box$  to press depends on the port you intend to use (MSP or ASP). The VT terminal is now ready to receive (consult Software Manual for information on the transmission procedure).

Using the Memory Card:

While displaying the driver information page, press TAGE and the following mask will appear:



Touch the  $\square$  MemoCARD on the screen (if the key is not on screen, see Page 27-21) and the following mask will appear:



For the meaning and the functions of the keys see "Chapter 33 -> Memory card".

Possible error messages that may be encountered in the driver information page are:

• PR ERR

Problem-> Errors have been detected in the data exchange between the VT and the Device.

Solution-> Check the cable; there may be disturbance.

### • COM BROKEN

Problem-> Communication between VT and Device interrupted. Solution-> Check the serial connection cable.

An error message followed by [*] indicates that the error is not currently present but was and has since disappeared.

Example: COM BROKEN*

When is pressed you quit the display of information regarding the driver.

Improving display color quality To improve the color quality, adjust the contrast of the display: if the colors are too dark increase the contrast; if, on the other hand, the colors are too light, decrease the contrast.

Adjusting the contrast on the display To improve the quality of the representation on the display it may be necessary to adjust its contrast. This can be done by going to the page proposed (see Page 27-25) and changing the value (from +63 to -64) in evidence at that moment. Increase the value to darken the display; to lighten it decrease the value.

This parameter has no effect when a TFT display is used. This kind of technology does not need adjustment.



### Chapter 28

## Inserting customized labels

ే	Contents	LOC CONTRACTOR OF CONTRACTOR O	Page
Label		N. C.	28-2
Warnings	A.M.	1920	28-2
Notes	8	6	28-4

VT terminals are supplied with labels already set in the appropriate spaces.

If it is necessary to customize keys, the logo or the model the labels can be replaced with the neutral ones supplied in kit with the terminal (only for F-keys) or by inserting labels of other materials provided they conform with the points set out below.

Failure to follow the following indications may cause damage to the terminal.

Label

The label must be of a material that is flexible and does not exceed  $125\mu m$  (micrometers).



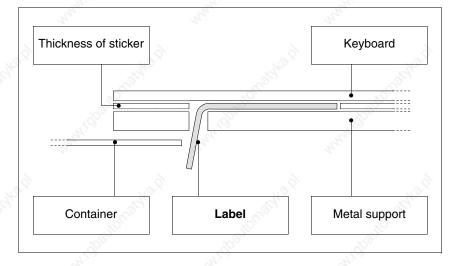
Use neither stiff materials nor glues.

#### Warnings

Before starting to insert the customized label the following points MUST BE observed:

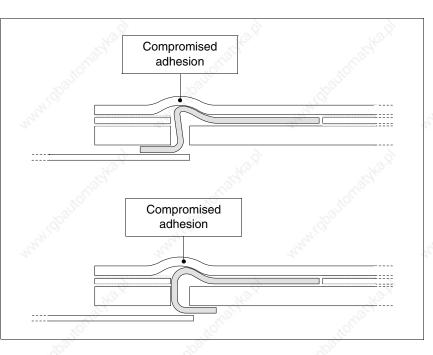
- Remove the label already inserted.
- Follow the indications set out in the paragraph Label.
- Do not use compressed air to help insert the label.
- Do not use rigid or other instruments to insert the label.
- Do not fold the label between the terminal and the casing. The following figures illustrate the correct and the incorrect positions for the label.

### **Correct insertion:**



The label illustrated is free and creates no tension on the keyboard.

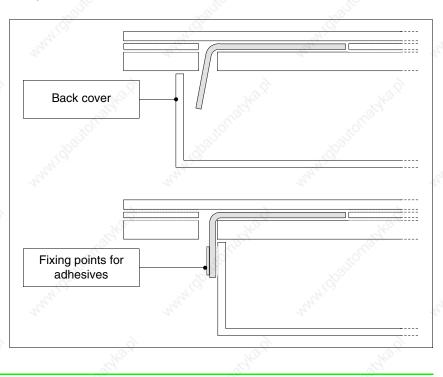
405.1200.037.2 - Rel.: 2.20 of 26/03/2007



### **INCORRECT** insertion which could cause compromised adhesion:

The labels illustrated generate pressure that over time could cause the keyboard to scollare.

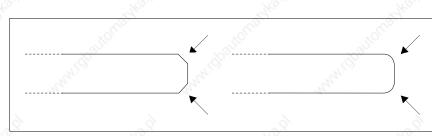
• The oversize part of the label must go under the back cover or in the appropriate fixing points (the choice is determined by the type of VT being used).



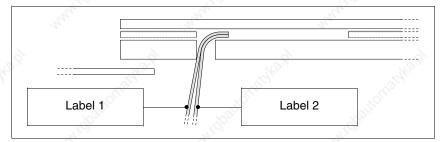
Notes

Here are some tips to make it easier to insert the label:

• Round off the corners.

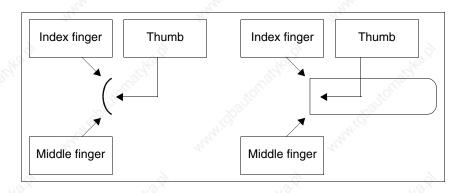


- If there seems to be some resistance pull the label out and reinsert it.
- If more than one label is used, insert them all at the same time.



Take care not to exceed the total thickness permitted (see Page 28-2 -> Label).

- Do not bend the label at right angles and/or do not bend them so sharply that they might be damaged.
- Slightly bend the label lengthwise to make it stiffer.



### Chapter 29

## 29 Mounting the terminal within the container

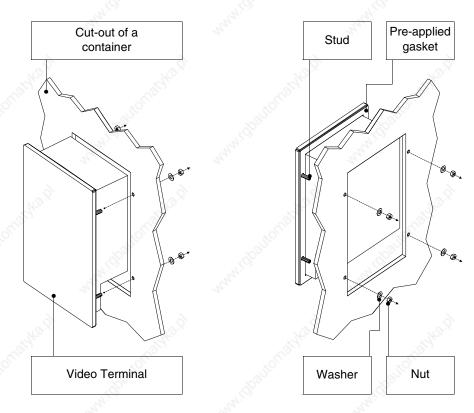
autorn	Contents		Page
Using nuts	AN CO	ALCON.	29-2
Using hooks	44	44	29-3
Fixing using external support			29-6
Tightening the fixing screws			29-3
This chapter consists of 10	pages.	Q	

The VT comes supplied with the elements necessary for mounting it within the host container and fixing the sealing gasket giving the declared level of IP protection.

There are three kinds of terminal: those with the gasket already in place and the mounting within the container being secured by means of nuts, and those where the gasket is to be fitted in the installation phase and the means of securing are hooks and those with seal already attached which are fixed to the container using external support.

#### Using nuts

The figure below shows the front and back views of a VT inserted in a container. Under the figure is to be found the sequence of operations to be carried out to ensure that the fixing is correct.

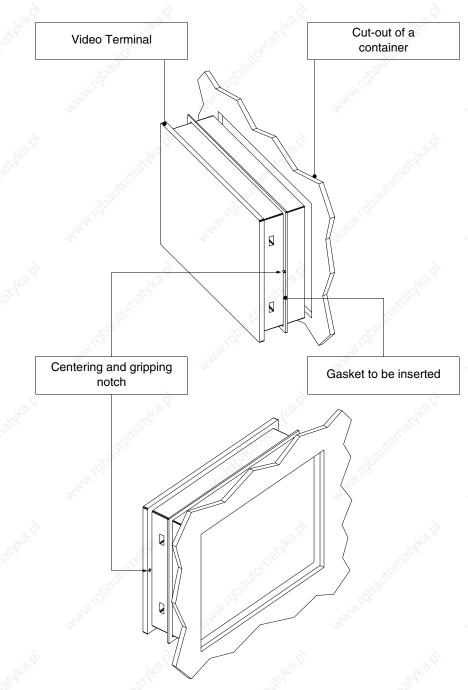


After preparing the container that will host the VT:

- Insert the VT in the cut-out
- Hold the VT against the wall
- Insert first the washer then the nut into the fastener
- Tighten the nuts till the gasket has a firm grip (see also Page 29-10)

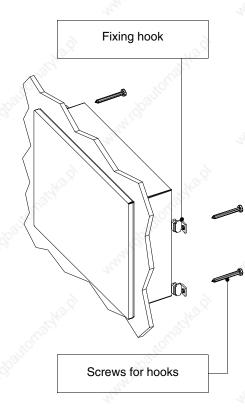
Using hooks

The illustrations appearing below show in front and rear views the sequence of actions for mounting a VT within a container.

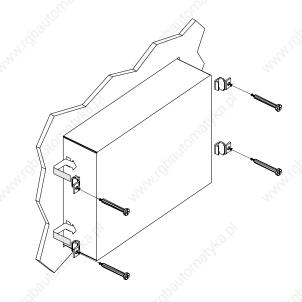


After preparing the container that will host the VT:

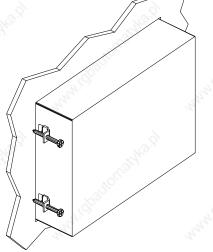
• Insert the gasket in the VT the right way round as indicated by the centering notches



- Prepare the fixing hooks
- Thread the screws into the hook by about 10mm

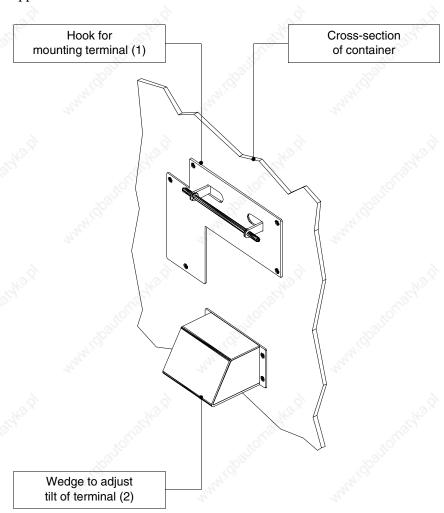


- Insert the VT and hold it pressed against the container
- Insert the hooks into the slots following the direction indicated by the arrow and tighten the screws as far as they go (see also Page 29-10)



View of terminal with correct fixing.

The number and position of the hooks do not influence the fixing procedure. The illustrations are to show the way the hooks work. Fixing using external support The figure below shows the hook to use to mount those VTs requiring a support external to the container.

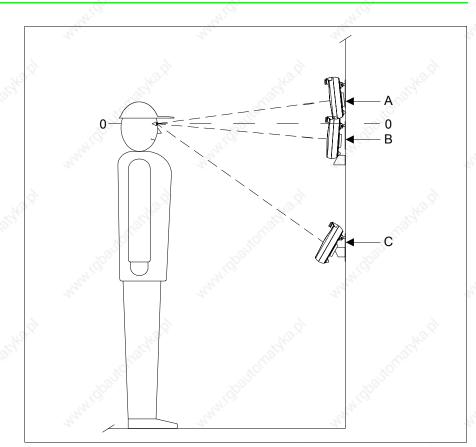


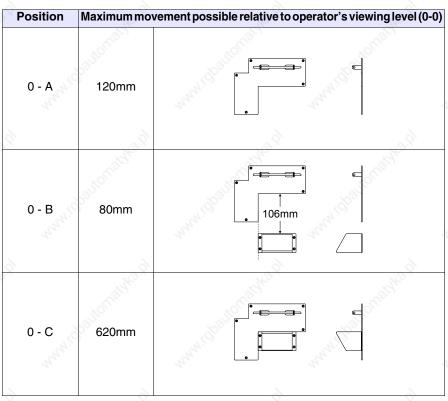
Before proceeding with the explanation of the steps required to mount the terminal it needs to be said that the hook allows the terminal to be positioned at various heights and angles, so the exact position must be defined.

To help do this, the following figure shows the maximum movement possible from the operator's view point, depending on how the tilt adjustment wedge is positioned (intermediate positions for intermediate tilt angles).

Do not use or position other than as indicated.

Do not alter the original form of the mounting hook or the tilt adjustment wedge.

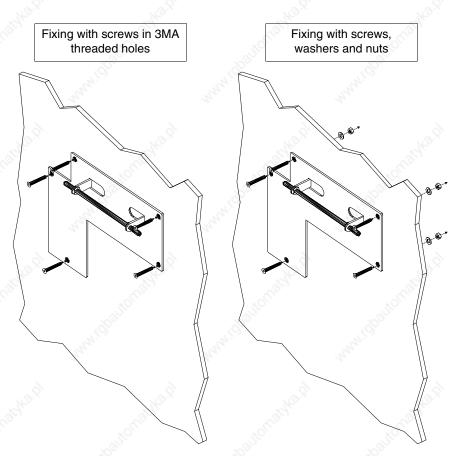




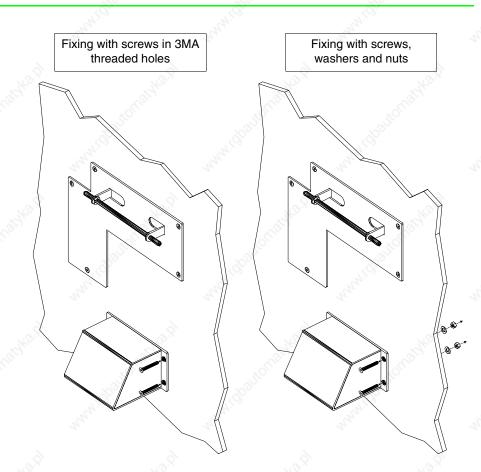
The hook is for fixing to a plastic or metal surface or container. Should the terminal be fixed to a wall or suchlike, the user will be resposable for supplying the correct screws for the type of material in question.

After defining the position of the support hook:

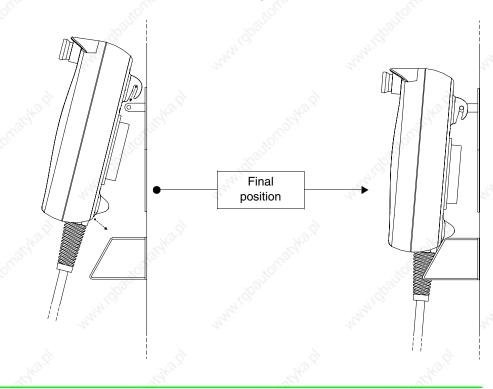
• Position the hook (preferably on a smooth surface) and secure using the screws supplied. If a 3MA threaded hole is made, just use the screws, otherwise use the washer and nut.



• The tilt adjustment wedge must be positioned (position 0-A, 0-B or intermediate) using the same criterion as with the previous point



The VT can now be inserted following the direction of the arrows.



Tightening the fixing screws

For the best possibile grip of the basket to the container, you are advised:

- Using nuts • 3 • 3 2 2 **.** 10 ŝ 8 Ř • 1 4 •1 4. • 3 2• • 3 2 Using hooks **1** 4 **₫**3 20 回 10 ____ 6 <u>0</u> 4 🔯 自3 20
- To respect the screwing sequenze illustrated.

• Initially tighten the fixing screws with moderate pressure so as to ensure that contact is even at all points; once all the screws have been inserted, repeat the sequence with a final tightening.

Chapter 30

# Communication ports

Contents	Pa	ge
General notes	30	-2
Necessary steps	30	-2
MSP serial port	30	-3
ASP serial port	30	-4
ASP-15L serial port	30	-5
ASP-9 serial port	30	-6
ASP-8 serial port	30	-6
LPT parallel port	30	-7
Ethernet port	30	-8
Interbus-S port	30	-9
Profibus-DP port	30	-10
CAN port	30	-10
RS485 serial port	30	जे1
PC/VT serial port	30	-11
PC <-> VT connection	30	-12
This chapter consists of 14 pages.		

All VTs communicate with other devices by means of serial and/or parallel communication ports. We list on the following page the individual ports with the respective type of communication and the function of the connection pins.

#### **General notes**

Serial communication is particularly prone to disturbances. To limit the influence of these disturbances it is necessary to use good quality shielded cables.

The table immediately below lists the characteristics of the cable we recommend for serial connection.

Specification	s of serial connection cable
Direct current resistance	Max. 151 Ohm/Km
Capacity coupling	Max. 29pF/m
Shielding	> 80% or total

Particular care should be taken in the choice and lay-out of cables, specially with regard to the VT <-> Device connection serial cable.

- Always:
- Find the shortest route
- Lay disturbed cables separately

Disconnect the power supply before connecting or disconnecting the communication cables so as to avoid possible damage to the VT and/or the connected device.

#### Necessary steps

To have the communication ports (MSP, ASP, ASP-9 or ASP-8) functioning properly, certain pins on the VT side need to be jump-connected. The ASP-15L port requires no jumpers.Which pins need to be connected depends on which communication standard is to be used (RS232, RS422, RS485 or C.L.TTY-20mA).

Table 30.1: Jumpers to be effected inside the communication cable.

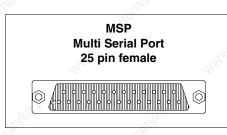
Signal	.80	Pin number			Communication standa				Idard					
Signal	MSP	ASP-8	ASP-9	ASP	RS	232	RS	422	RS	485	C.I	a	C.I	L.p
RTS OUT 📣	4	4	7 4	10	•	2	•	2	•	2	•	2	•	2
CTS IN	5	5	8	11	٠	2	٠	2	٠	2	٠	2	٠	2
IKR OUT (C.L.)	15		2		•	4	•	4	•	4				Q`
RX+ IN (C.L.)	18	No			•	3	•	1	•				160	
Signal GND	7	0			•	S.	•		•		•	8		
RX- IN (C.L.)	25					1	•	1	•	1	٩Š	9i		
TX- OUT (C.L.)	211			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	2			İ			6			

Notes: 1 - Jumpers always to be effected.

2 - Jumpers to be effected only if the corresponding signals are not handled by the device connected to the VT.

C.L.a - Current Loop (Activ VT), C.L.p - Current Loop (Passive VT)

The MSP (Multi Serial Port) is present on all VTs and is used to connect other devices including the PC used to transfer the project. It consists of a connector (D-Sub 25 pin female) and can communicate using RS232, RS422, RS485 and C.L. (TTY-20mA).



Pin	Signal	Notes		
1	N.C.	Not connected		
2	Tx OUT	RS232		
3 🖾	Rx IN RS232			
4	RTS OUT	RS232		
<u> </u>	CTS IN	RS232		
6	N.C.	Not connected		
7	Signal GND	Internal reference 0Volt		
8	N.C.	Not connected		
9	Tx +OUT	C.L. (TTY-20mA) Current loop		
10	Tx/Rx -IN/OUT	RS485		
11 🔬	Tx -OUT	C.L. (TTY-20mA) Current loop		
12	Tx -OUT	RS422		
े 13	Rx +IN 👌	RS422		
14	IKT OUT	C.L. (TTY-20mA) Current loop		
15	IKR OUT	C.L. (TTY-20mA) Current loop		
16	+5Vdc (150mA Max.)	Reserved for Esa		
17	N.C.	Not connected		
18	Rx +IN	C.L. (TTY-20mA) Current loop		
19 🚽	N.C.	Not connected		
20	N.C.	Not connected		
21	N.C.	Not connected		
22	Tx/Rx +IN/OUT	RS485		
23	Tx +OUT	RS422		
24	Rx -IN	RS422		
25	Rx -IN	C.L. (TTY-20mA) Current loop		

Pin 16 does not provide for commuting any kind of load (coils etc.); an input disturbance at Pin 16 can cause the VT and therefore also the industrial process itself to malfunction.

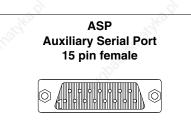
Strong input disturbances at Pin 16 could damage the VT.

Before connecting in RS422/485, check the polarities. With some devices the Tx+/Rx+ and Tx-/Rx- signals or the polarities are inverted.

ASP serial port

30-

The ASP (Auxiliary Serial Port) consists of a D-Sub 15 pin female connector and can communicate using RS232 and RS485.



Pin	Signal	Notes	2 to
1	DCD IN	RS232	Ron
2	RX IN	RS232	1900 - Contraction of the second seco
3	TX OUT	RS232	8
4	DTR OUT	RS232	
5	Signal GND	Internal reference 0Volt	
6	N.C.	Not connected	2
7	Signal GND	Internal reference 0Volt	10 ⁸
8	Tx/Rx +IN/OUT	RS485	200
9	DSR IN	RS232	10
10	RTS OUT	RS232	2000
11	CTS IN	RS232	9
12	REIN	RS232	
13	+5Vdc (150mA Max.)	Reserved for Esa	
14	N.C.	Not connected	Ś
15	Tx/Rx -IN/OUT	RS485	A.

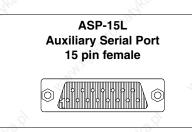
Pin 13 does not provide for commuting any kind of load (coils etc.); an input disturbance at Pin 13 can cause the VT and therefore also the industrial process itself to malfunction.

Strong input disturbances at Pin 13 could damage the VT.

Before connecting in RS422/485, check the polarities. With some devices the Tx+/Rx+ and Tx-/Rx- signals or the polarities are inverted.

### ASP-15L serial port

The ASP (Auxiliary Serial Port) consists of a D-Sub 15 pin female connector and can communicate using RS232 and RS485. Unlike the ASP it does not carry all signals.



Pin	Signal	Notes			
1	N.C.	Not connected			
2	RX IN	RS232			
3	TX OUT	RS232			
4	N.C.	Not connected			
5	Signal GND	Internal reference 0Volt	2		
6	N.C.	Not connected	2		
7	N.C.	Not connected			
8	Tx/Rx +IN/OUT	RS485			
9	N.C.	Not connected			
10	N.C.	Not connected			
11 🖉	N.C.	Not connected			
12	N.C.	Not connected			
े 13	13 N.C. Not connected		S.		
14	N.C.	Not connected			
15	Tx/Rx -IN/OUT	RS485			

Before connecting in RS485, check the polarities. With some devices the Tx+/Rx+ and Tx-/Rx- signals or the polarities are inverted.

ASP-9 serial port

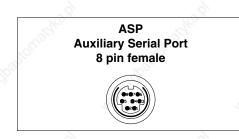
The ASP-9 serial port (Auxiliary Serial Port) consists of a D-Sub 9 pin male connector and can communicate using RS232.



Pin	Signal	Notes	Ale
1	DCD IN		Stor
2	RX IN		alle.
3	TX OUT	8	S.
4	DTR OUT	45	12
5	Signal GND	Internal reference 0Volt	
6	DSR IN		2
7	RTS OUT	10%	108
8	CTS IN	250	S.
9	RI IN 🔬	*0	205

ASP-8 serial port

The ASP-8 (Auxiliary Serial Port) consists of a Minidin 8 pin female connector and can communicate using RS232.



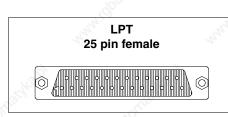
Pin	Signal	Notes
1	RX IN	500
2	TX OUT	
3	N.C.	Not connected
4	RTS OUT	- 32
5	CTS IN	
6	N.C.	Not connected
7	Signal GND	Internal reference 0Volt
8	+5Vdc (150mA Max.)	Reserved for Esa

**Pin 8** does not provide for commuting any kind of load (coils etc.); an input disturbance at Pin 8 can cause the VT and therefore also the industrial process itself to malfunction.

## Strong input disturbances at Pin 8 could damage the VT.

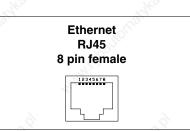
LPT parallel port

The LPT parallel port consists of a D-Sub 25 pin female connector. It is used to connect directly with the printer.



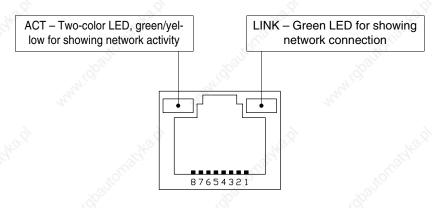
Pin	Signal	Notes
1	Strobe	
2	PRN Data 0	
3	PRN Data 1	
8 4	PRN Data 2	28.
5	PRN Data 3	25 25
6	PRN Data 4	
7	PRN Data 5	
8	PRN Data 6	
9	PRN Data 7	
10	N.C.	Not connected
ò 11	PRN Busy	- 6 6
12	N.C.	Not connected
13	N.C.	Not connected
14	N.C.	Not connected
15	N.C.	Not connected
16	N.C.	Not connected
17	N.C.	Not connected
18	Signal GND	Internal reference 0Volt
3 19	Signal GND	Internal reference 0Volt
20	Signal GND	Internal reference 0Volt
21	Signal GND	Internal reference 0Volt
22	Signal GND	Internal reference 0Volt
23	Signal GND	Internal reference 0Volt
24	Signal GND	Internal reference 0Volt
25	Signal GND	Internal reference 0Volt

# **Ethernet port** The Ethernet port comprises an RJ45 8 pin female connector and is dedicated to creating network links with other terminals, with PCs and any other device that supports this standard.



	Notes
TX+	
TX-	- 8 8
RX+	324
<u> 1</u>	Reclosing with pin 5 and 75 ohm termination
	Reclosing with pin 4 and 75 ohm termination
RX-	
30	Reclosing with pin 8 and 75 ohm termination
0	Reclosing with pin 7 and 75 ohm termination
	TX- RX+   RX-

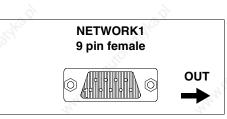
The Ethernet connector has two diagnostic LEDs on the communication and on the network connection. The following table gives the respective meanings.



Le	d	Meaning
ACT	LINK	Meaning
Off	Off	Cable disconnected, interrupted or participants off
Do not care	On	Network connection
Yellow	On	Data exchange at 10Mbit
Green	On	Data exchange at 100Mbit

Interbus-S The port conn

The NETWORK1 communication port consists of a 9-pin female D-Sub connector.

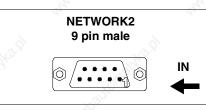


👌 Pin	Signal	Notes			
1	DO2	- K			
2	DI2				
3	GND	Internal reference 0Volt			
4	N.C.	Not connected			
5	+5V	Reserved for Esa			
6	/DO2				
7	/DI2				
8	N.C.	Not connected			
9	RBST				

**Pin 5 does not provide for commuting any kind of load (coils etc.);** an input disturbance at Pin 5 can cause the VT and therefore also the industrial process itself to malfunction.

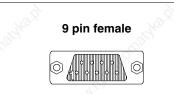
Strong input disturbances at Pin 5 could damage the VT.

The NETWORK2 communication port consists of a 9-pin male D-Sub connector.



Pin	Signal	Notes
1 1	DO1	di.
2	DI1	
3	GND	Internal reference 0Volt
4	N.C.	Not connected
5	N.C.	Not connected
6	/DO1	2021 2021
7	/DI1	and the second s
8	N.C.	Not connected
9	N.C.	Not connected

**Profibus-DP** The communication port consists of a 9-pin female D-Sub connector. **port** 



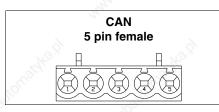
Pin	Signal	Notes
ð	Shield	6 6
2	N.C.	Not connected
3	TxRx485+ Data B	
4	Repeater-Control-signal RTS	
5	Signal GND	Internal reference 0Volt
6	P5V Reserved for Esa	
7	7 N.C. Not connected	
8	TxRx485- Data A	,
9	N.C.	Not connected

Pin 6 does not provide for commuting any kind of load (coils etc.); an input disturbance at Pin 6 can cause the VT and therefore also the industrial process itself to malfunction.

Strong input disturbances at Pin 6 could damage the VT.

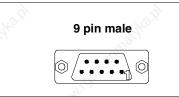
### CAN port

The communication port consists of a 5 pin female terminal block (optoisolated interface).



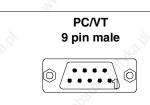
Pin	Signal	Notes
1	V-	2 2
2	CAN -	
3	Shield	
4	CAN +	, , , , , , , , , , , , , , , , , ,
5	N.C.	Not connected

**RS485 serial** The communication port consists of a 9-pin male D-Sub connector. **port** 



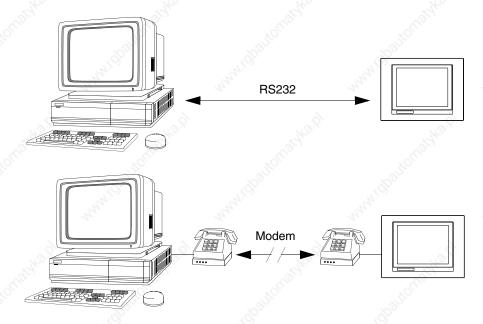
N.C.	
	Not connected
N.C.	Not connected
Tx/Rx +IN/OUT	RS485
N.C.	Not connected
Signal GND	Internal reference 0Volt
N.C.	Not connected
N.C.	Not connected
Tx/Rx -IN/OUT	RS485
N.C.	Not connected
	Tx/Rx +IN/OUT N.C. Signal GND N.C. N.C. Tx/Rx -IN/OUT

PC/VT serial port The communication port consists of a 9-pin male D-Sub connector for connecting a PC or VT in RS232.

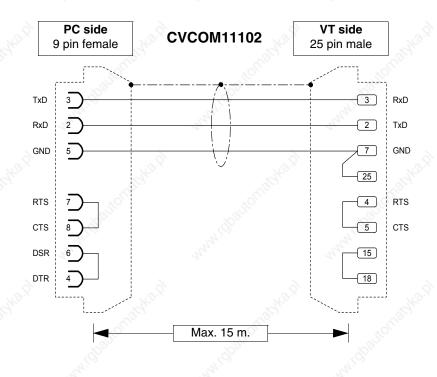


Pin	Signal	Notes
1	N.C.	Not connected
2	RX IN	- 6 6
3	TX OUT	
4	DTR OUT	Ko, Ko,
5	Signal GND	Internal reference 0Volt
6	N.C.	Not connected
7	RTS OUT	1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 -
8 🛸	N.C.	Not connected
9	N.C.	Not connected

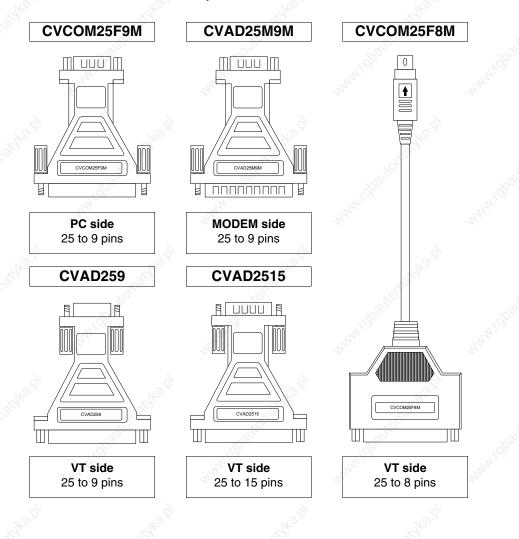
PC <-> VT connection To transfer the communication firmware, the communication driver and the project the VT must be connected to the PC (see Software Manual) and can be done using either Serial or Modem.



The cable required to make the connection is illustrated below.



The cable in the above figure, together with the relevant adapters, can be used for all serial port connections of the VT. Below we list the adapters and the combinations necessary for the various connections.



The table shows how to combine adaptors and cables connection to the various ports.

	Serial	S. Car	Cable		S	Adaptor	6	S.
MODEM	PC	VT	CVCOM 11102	CVCOM 25M9M	CVCOM 25F9M	CVCOM 25F8M	CVAD 259	CVAD 2515
	9 pins	MSP	•	32 <u>1-</u>			³	
	9 pins	ASP	•			22.		•
	9 pins	ASP-15L	•					•
<del>R</del>	9 pins	ASP-9	<u>,</u> ? •				•	
d	9 pins	ASP-8	•		200	•		201-
	25 pins	MSP	•					°
	25 pins	ASP	•		•			•
	25 pins	ASP-15L	•	<u>_</u> 9	•		<u></u>	•
	25 pins	ASP-9	•	12 ²	•	52	•	
	25 pins	ASP-8	•		•	•		
25 pins		MSP	<b>~</b> •	•	2			
25 pins		ASP	0  •	•				
25 pins		ASP-15L			2ª		- 2	\$~
25 pins		ASP-9	•	• 3	ਾ		- <u>8</u> 80	
25 pins	8	ASP-8					.8 <u>2</u>	

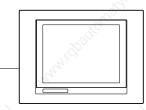
Table 30.2: Combination of serial transfer + adapters

# Chapter 31 Settings for the Modem

, et al. and the et al.			
Co	ontents		Page
AT commands to be sent	N.Co	La	31-2
Sending commands	34	344	31-3
This chapter consists of 6 pages.			

Before proceeding to transfer via Modem it has to be set up for reception, that is, such that on receiving the call the Modem automatically responds and goes into data reception mode.

Telephone line



# AT commands to be sent

Modems need a series of commands, some of which can be used to set the Modem. The table below lists the commands (supported by the majority of modems) necessary for setting the Modem as the VTs require. The command also comprises the parameter required.

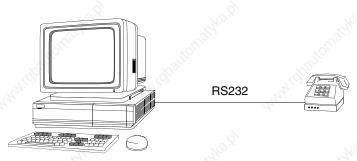
Table 31.1: AT commands

Command	and the second	Effect	
AT&D0	The modem ignores the activated.	DTR signal and consi	ders it always
AT&H0 or AT&K0	Disables the RTS/CTS	flow check.	, d
AT&R1	The modem ignores the	e RTS and considers it	always active.
ATS0=3	Let it ring 3 times before	e responding.	
ATLn	Set the volume of the m 1 to 3 (1=Min - 3=Max).		re a value from
AT&W0	Save the modem config	juration.	paule
AT&F	Reload the factory-mad	e settings (default).	

Should the commands not be accepted by the modem being used for the transfer, consult the producer's manual for a complete list of valid commands.

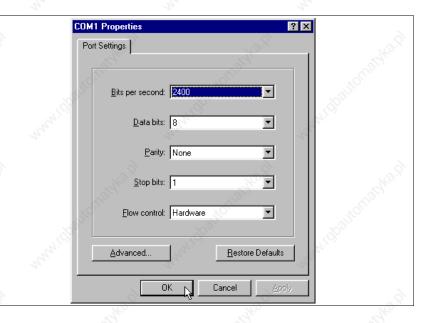
# Sending commands

To send the commands connect the modem to the serial port of the PC using a standard serial cable.



Once the connection and access are established the modem runs the Hyper-Terminal program (supplied with the PC's operating system) by clicking on *Start > Programs > Accessories > Communications > HyperTerminal* 

	2	Connection Description	? ×	2
	×.	New Connection	A charter	3.
	, doaute	Enter a name and choose an icon for the con- Name:	nection:	
	AL ACAR.	New Connection		44
Insert the name to be given to the	,d			2
connection. Click on the 💷 OK.	10811C		Cancel	
	ann ¹⁰	Phone Number	? ×	
	<i>3</i> ,	New Connection	.A	12
	M.Goule	Country code:	∠ solation	
Set the COM where the Modem is connected (e.g.	422	Phone number:		1
COM1). Click on the OK.	×	ОК	Cancel	×.
and the second		-18 ¹	- Alle	I



#### Set as in fig.

Click on the OK.

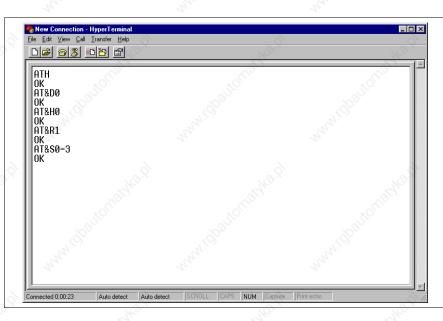
The main mask appears.



Check that there is a connection between PC and Modem.

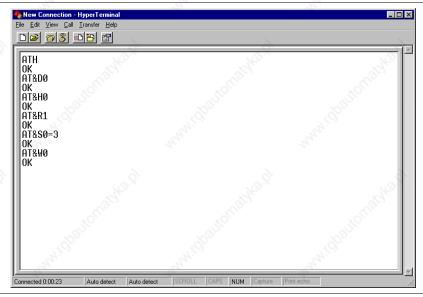
Digit the ATH command and confirm with the Enter key of the PC.

If the message OK appears it means the connection is active.



Using the same criterion, digit all the commands necessary for setting the modem (see Page 31-2 -> AT commands to be sent).

> If the modem is switched off the settings are lost. If they need to be kept, the settings can be saved using the appropriate command.



digit AT&WO and confirm using the PC's Enter key.

If required, you can

The modem is ready to be connected to the VT.



# 2 Connection cable for H Series terminals

de la construcción de la	- B
Contents	Page
Standard series connection cable	32-2
Standard series connections without VTHCB	32-3
Standard series connections with VTHCB	32-6
CAN series connection cable	32-7
CAN series connections	32-7
Lay-out of button functions	32-8
This chapter consists of 10 pages.	

Standard

series connection

cable

Terminals belonging to H Series (Hand Held) are supplied with a 10-meter protected cable of 25x0.25 mm2 (AWG24), already cabled.



Under no circumstances should you modify the length of the connection cable, as this could lead to malfunctioning.

Below are the connections.

Command and/or sig-**Cable from VT** Signals nal unit Yellow-Green (<u>1</u>) Red +24VDC Power supply 0VDC Black Pink TX RS232 OUT - MSP White RX RS232 IN - MSP Blue RTS RS232 OUT - MSP CTS RS232 IN - MSP Green Serial communication Yellow Signal GND line White-Grey TX/RX RS485 -IN/OUT - MSP Yellow-White TX/RX RS485 +IN/OUT - MSP Blue-Brown TX RS232 OUT - ASP RX RS232 IN - ASP White-Red White-Black NC1 Brown-Pink NC2 System shut-down but-White-Blue NC3 ton Brown-Grey NC4 Brown-Red C1 Yellow-Brown NC1 Enabling button Violet C2 NO2 Green-Brown Green-White NO Black button White-Pink С Red-Blue NO Luminous green button Grey-Pink С Brown -Bulb Grey +

In order to simplify the connection with the other devices you should use the VTHCB board (optional). This interface transforms the signals from the terminal serial line into the ESA standard (MSP, ASP-15L), allowing to use standard connection cables (see "Chapter 40 -> Connessione del Terminale ai Dispositivi").

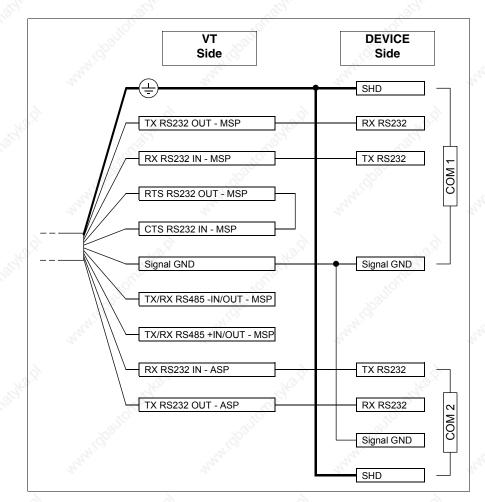
To see what button does what, see Page 32-8.

Standard series connections without VTHCB Connection to the DEVICE is possible in the modalities described below.

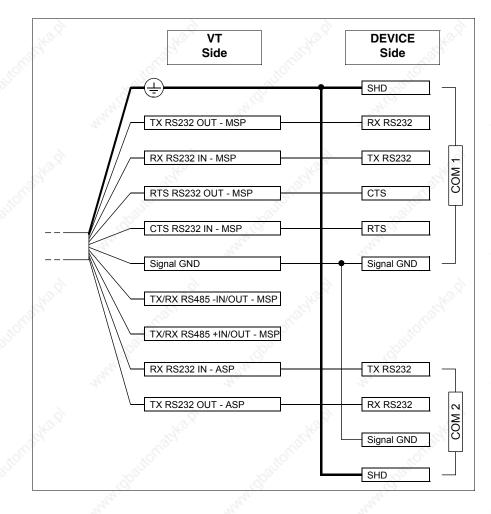
**For practical reasons, the diagrams below represent both connec**tions, although these are independent from each other. It is possible to perform the connections of the only serial you intend to use.

**The serial line used directly on the cable DOES NOT allow the use of ESA standard connection cables** (see "Chapter 40 -> Connessione del Terminale ai Dispositivi").

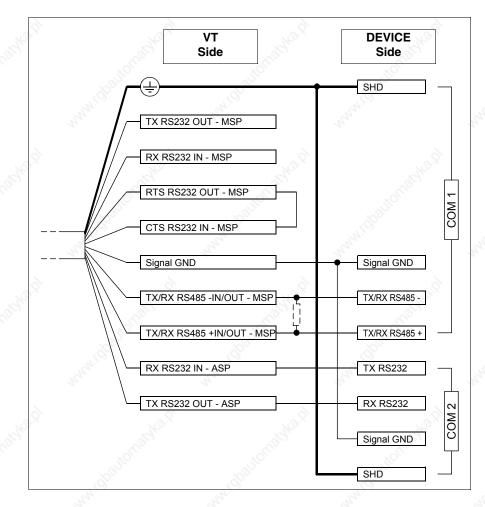
RS232 without RTS/CTS management:



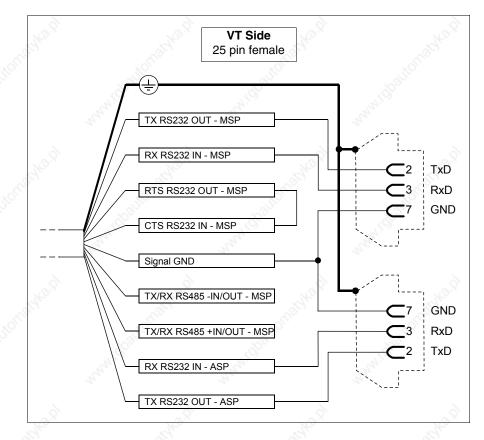
### RS232 connection with RTS/CTS management:



### RS485 connection:



Always insert a 220 Ohm 1/4W resistance when the connection between VT and the device is point-to-point, or when the VT is inserted as the first or the last component in a network (see also "Chapter 34 -> Collegamento in rete").



It is possible to connect with the PC to transfer the project, as follows.

The use of a female 25-pole connector allows to use a standard CVCOM11102 cable for the transfer (see also "Chapter 30 -> Collegamento PC <-> VT").

Standard series connections with VTHCB For the connection of board VTHCB, please refer to its respective chapter (see "Chapter 33 -> Accessori per terminali video").

Below are the connections.

Cable from VT	Signals	Command and/or sig- nal unit	
Yellow-Green		1997 - C	
Red	+24VDC	Power supply	
Black	0VDC		
Pink	TX RS232 OUT	Carial communication	
White	RX RS232 IN	— Serial communication — line	
Yellow	Signal GND		
Blue	CAN-	6	
Green	V-	CAN communication	
White-Grey	Shield	line	
Yellow-White	CAN+		
White-Black	NC1		
Brown-Pink	NC2	System shut-down but-	
White-Blue	NC3	ton	
Brown-Grey	NC4		
Brown-Red	C1		
Yellow-Brown	NC1	Enchling button	
Violet	C2	Enabling button	
Green-Brown	NO2	10	
Green-White	NO	Black button	
White-Pink	C	Black bullon	
Red-Blue	NO	Luminous groon button	
Grey-Pink	С	Luminous green button	
Brown	- >	Bulb	
Grey	+0.7		

The CAN series integrates the serial line termination resistances (typical 120 Ohm). The terminal is always supplied with a terminated CAN line.

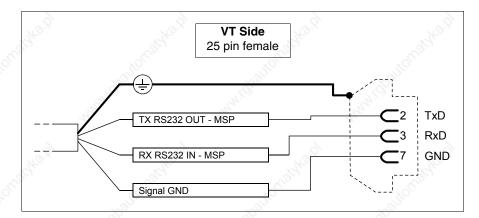
To see which button does what, see Page 32-8.

# CAN series connections

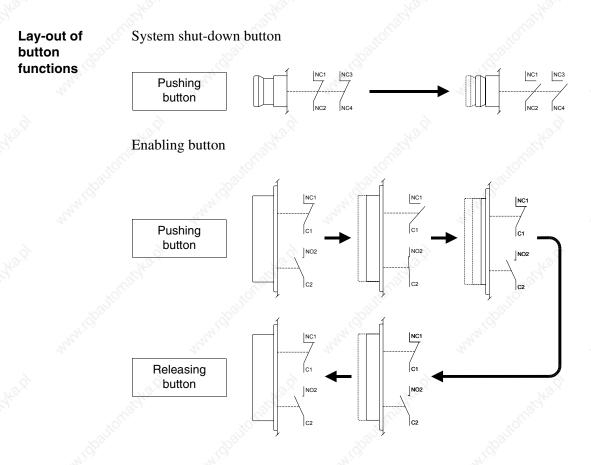
The CAN terminal is not expected to be used with the accessory board VTHCB, which is why connections must be carried out directly on the cable.

For the connection diagram, see "Chapter 34 -> CAN Collegamento".

It is possible to connect with the PC to transfer the project, as follows.



The use of a female 25-pole connector allows to use a standard CVCOM11102 cable for the transfer (see also "Chapter 30 -> Collegamento PC <-> VT").



The system shut-down button and the enabling button do NOT guarantee the operatr's complete personal safety. Be sure to





Chapter 33

# Video terminal accessories

	and the second s
Contents	Page
1/2AA Battery	33-4
Cell battery	33-4
Flash module	33-5
Fixing hook for Hand Held	33-8
Interface for connecting Hand Held with MSP/ASP-15L	33-9
Memory card	33-13
Memory module	33-18
Integrated Interbus-S module	33-19
Integrated Profibus-DP module	33-21
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RS485 Serial module	33-21
Interbus-S and Profibus-DP card	33-27
Connection card for PC-NET	33-34
Adapter for external CAN network	33-37
20 key serial keyboard	33-42
Blank keyboard	33-46
This chapter consists of 50 pages	l

This chapter consists of 50 pages.

The video terminals are made to take a series of accessories that increase their capacity and/or functionality. This chapter shows how these accessories relate to the various products. The table below shows which terminals will take which accessories.

Table 33.1: Accessories connectable to VT terminals (Part 1 of 2)

ACCESSORIES	TERMINALS SUPPORTING THE ACCESSORY	S	
Lithium battery 3,6V 1/2AA	VT170W, VT190W		
Lithium button cell battery 3V CR2032	VT300W, VT310W, VT320W, VT330W, VT555W, VT56xW, VT585W	6	
Flash module 04	VT300W ² , VT310W ² , VT320W ² , VT330W ^{3-D} , VT56xW ^{2-C} , VT585W ^{3-D}	all a contraction of the contrac	
Flash module 08	VT330W ^{2-D} , VT575W ² , VT580W ² , VT585W ^{2-D} , VT585WB ² , VT595W ²		
Fixing hook for Hand Held	VT505H, VT525H	4 ¹ .0	
Interface for connecting Hand Held with MSP/ASP-15L	VT505H, VT525H		
Memory Card 4 Mbytes	VT300W ² , VT310W ² , VT320W ² , VT330W ^{3-B} , VT56xW ^{2-A} , VT585W ^{3-B}		
Memory Card 8 Mbytes	VT330W ^{2-B} , VT575W ² , VT580W ² , VT585W ^{2-B} , VT585WB ² , VT595W ²	Lefter.	
Memory module 512Kbytes	VT170W ¹ , VT190W ¹	1 Contraction of the second se	
Integrated Interbus-S module	VT170W, VT190W	1°.	
Integrated Profibus-DP module	VT170W, VT190W	Ś	
RS485 serial module	VT170W, VT190W	Card No.	
Protfilm4	VT155W, VT185W	10 ^{3/10}	
Protfilm6	VT505W, VT515W, VT525W, VT555W, VT56xW, VT575W, VT580W	14 ¹ 0	
Protfilm6H	VT505H, VT525H		
Protfilm10	VT585W, VT585WB	NKO.P	
Protfilm12	VT585W	10 Mon	
Interbus-S module	VT50 ⁵ , VT60, VT150W ⁵ , VT160W, VT170W, VT190W, VT300W ⁴⁻⁵ , VT310W ⁴ , VT320W ⁴ , VT330W ⁴ , VT155W ⁵ , VT185W ⁵ , VT505W ⁵ , VT515W ⁵ , VT525W ⁵ , VT555W ⁵ , VT56xW, VT575W, VT580W, VT585W ⁴ , VT585BW ⁵ , VT595W		
Profibus-DP module	VT50 ⁵ , VT60, VT150W ⁵ , VT160W, VT170W, VT190W, VT300W ⁴⁻⁵ , VT310W ⁴ , VT320W ⁴ , VT330W ⁴ , VT155W ⁵ , VT185W ⁵ , VT505W ⁵ , VT515W ⁵ , VT555W ⁵ , VT565W ⁵ , VT575W, VT580W, VT585W ⁴ , VT585WB, VT595W		
Connection card for PC-NET	VT50 ⁵ , VT60, VT150W ⁵ , VT160W, VT170W, VT190W, VT300W ⁵ , VT310W, VT320W, VT330W, VT155W ⁵ , VT185W ⁵ , VT505W ⁵ , VT555W ⁵ , VT555W ⁵ , VT555W ⁵ , VT56xW, VT575W, VT580W, VT585W, VT585WB, VT595W		
Adapter for external CAN network	VT50 ⁵ , VT60, VT150W ⁵ , VT160W, VT170W, VT190W, VT300W ⁴⁻⁵ , VT310W ⁴ , VT320W ⁴ , VT330W ⁴ , VT155W ⁵ , VT185W ⁵ , VT505W ⁵ , VT525W ⁵ , VT515W ⁵ , VT555W ⁵ , VT56xW, VT575W, VT5880W, VT585W ⁴ , VT585WB, VT595W		
Notes:		50	
<ol> <li>Already present on purchase</li> <li>To be used as backup</li> <li>To be used as expansion</li> <li>Can be fixed to back cover</li> <li>Not anplicable in the case of CAN series term</li> </ol>	A - For terminals up to Rev. 3 B - For terminals up to Rev. 4 C - For terminals from Rev. 4 D - For terminals from Rev. 5		

- Can be fixed to back cover
- 5 Not applicable in the case of CAN series terminals

not connectable

#### Table 33.1: Accessories connectable to VT terminals (Part 2 of 2)

Blank keyboard	VT150W, VT300W, VT310W, VT320W		C. C.
Serial keyboard with 20 keys + LEDs	VT150W, VT300W, VT310W, VT320W	S. S	a nalth
Notes: 1 - Already present on purchase 2 - To be used as backup 3 - To be used as expansion 4 - Can be fixed to back cover 5 - Not applicable in the case of CAN series term	inals	A - For terminals up to Rev. 3 B - For terminals up to Rev. 4 C - For terminals from Rev. 4 D - For terminals from Rev. 5	81 ²⁰
- : not connectable	Χ	× .	<u> </u>
405.1200.037.2 - Rel.: 2.20 of 26/03/2	2007	autorno	BUTOMO

**1/2AA Battery** The function of the battery is both to maintain the contents of the RAM (work recipes) and to keep the internal clock going when there is no power supply.

Battery to be used
Lithium 3.6V 1/2AA

### The battery should be replaced about every 12 months.

- The battery needs to be changed either when the Battery LED (on the VT keyboard) comes on or when indicated by the "Chapter 37 -> Status area for the terminal". Failure to change the battery will lead to the contents of the data memory being lost.
- The battery must be substituted with the VT power off. At this point a high capacity condenser will momentarily preserve the RAM memory information (information is typically retained for 24 hours).



### Discarded batteries should be placed in appropriate containers.

Procedure for inserting or substituting the battery:

- Check that the power supply is not connected.
- Take off the hatch covering the battery compartment of the VT (see "Chapter 7 -> Rear view" and/or "Chapter 8 -> Rear view").
- Pull off the black plastic safety-cover that snaps over the battery compartment.
- Insert the new battery checking that the polarities are correct.
- Push the safety-cover back on till it snaps into place.
- Replace the hatch covering the battery compartment of the VT (see "Chapter 7 -> Rear view" and/or "Chapter 8 -> Rear view").
- Reconnect the power supply.

### **Cell battery**

The function of the battery is both to maintain the contents of the RAM (work recipes) and to keep the internal clock going when there is no power supply.

Battery to be used Lithium 3V cell battery CR2032

The battery should be replaced about every 12 months.

• The battery needs to be changed either when the Battery LED (on the VT keyboard) comes on or when indicated by the "Chapter 37 -> Status area for the terminal". Failure to change the battery will lead to the contents of the data memory being lost.

In the case of products with a Touch Screen, the running down and/or absence of the battery is not indicated on the screen.

• The battery must be substituted with the VT power off. At this point a high capacity condenser will momentarily preserve the RAM memory information (information is typically retained for 24 hours).

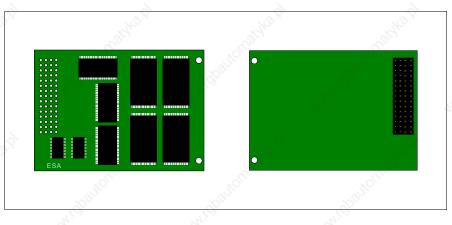
Δ

Discarded batteries should be placed in appropriate containers.

Procedure for inserting or substituting the battery:

- Check that the power supply is not connected.
- Take off the hatch covering the battery compartment of the VT.
- Insert the new battery checking that the polarities are correct.
- Replace the hatch covering the battery compartment of the VT.
- Reconnect the power supply.

#### Flash module

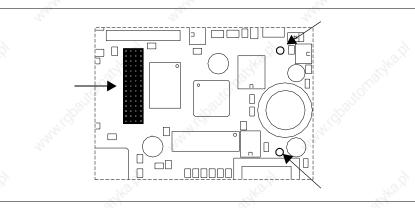


For more information regarding functions and technical details see Page 33-13 -> "Memory card".

#### **Inserting the flash module into the VT:**

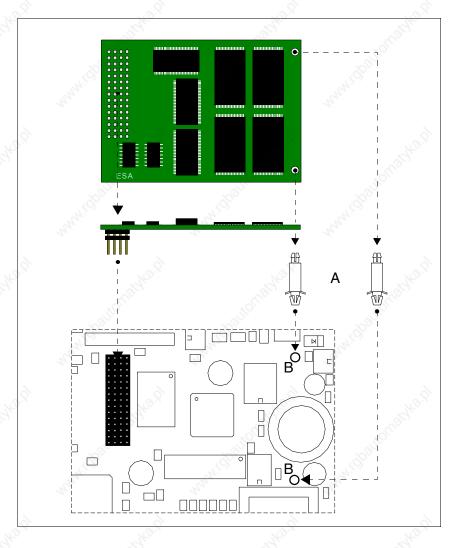
Procedure for inserting the card:

- Check that the VT is not connected to the power supply.
- Remove the back cover.
- Locate the following element.



The position and direction on the printed circuit board may be different depending on which VT model is used.

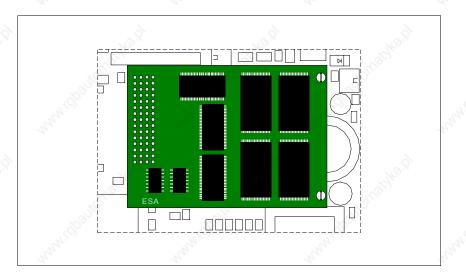
• Insert the spacers (A) in the holes (B) taking care which way round they are put; then insert the "flash module" into the terminal.



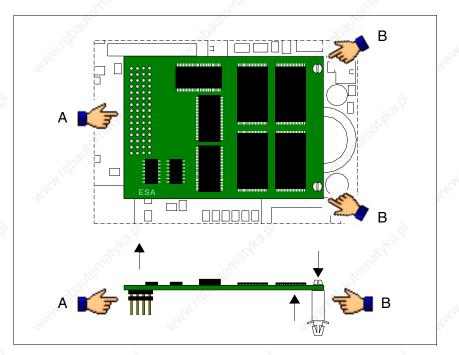
- Replace the back cover of the VT
- Reconnect the VT to the power supply.

#### Procedure for removing the flash module:

- Check that the VT power supply is disconnected.
- Remove the back cover.
- Locate the following element.



• To extract the connector (A), pull lightly, then pull on the corners, one by one, and at the same time press down on type head of the spacer (B).

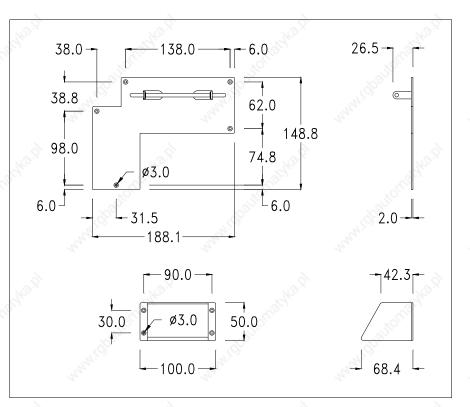


- Replace the back cover of the VT
- Reconnect the VT to the power supply.

#### Use of Flash module:

For information regarding the operation of the card, see Page 33-16 -> "Using the Memory Card:".

# Fixing hook for Hand Held



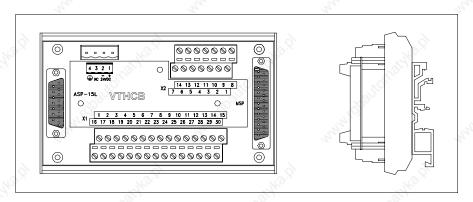
This is an accessory for fixing VTs that can't be embedded.

Do not alter the original form of the mounting hook or the tilt adjustment wedge.

#### Fixing the device:

Various ways of fixing the device are possible. For details see "Chapter 29 -> Fixing using external support".

Interface for connecting Hand Held with MSP/ASP-15L



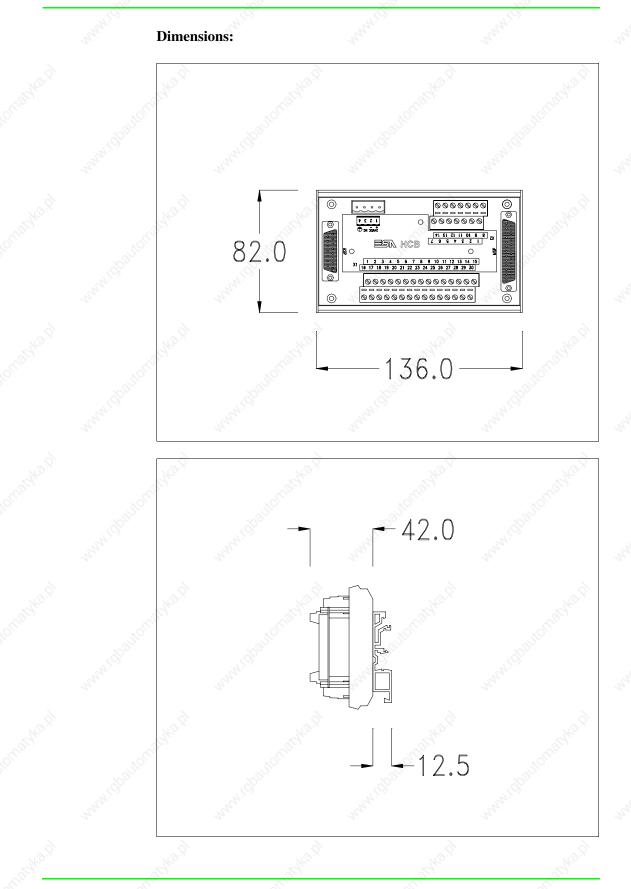
The table below lists the principal technical characteristics of the product under discussion.

Connector block	73
Number of connection points (X1/X2)	30/14
Section of connectable wire	0,05-1,5 mmq (30-16AWG)
Stripped length of connectable wire	5-6 mm
Technical data	70, 70
Power supply	24Vdc (1832Vcc)
Power absorbed at 24Vdc	0,5W
Protection level	
Operating temperature	050°C
Storage and transportation temperature	-20+60°C
Humidity (non-condensing)	85%
Weight	250gr
Dimensions	e - Je
External W x H x D [mm]	136 x 82 x 54,5
Cut-out W x H [mm]	

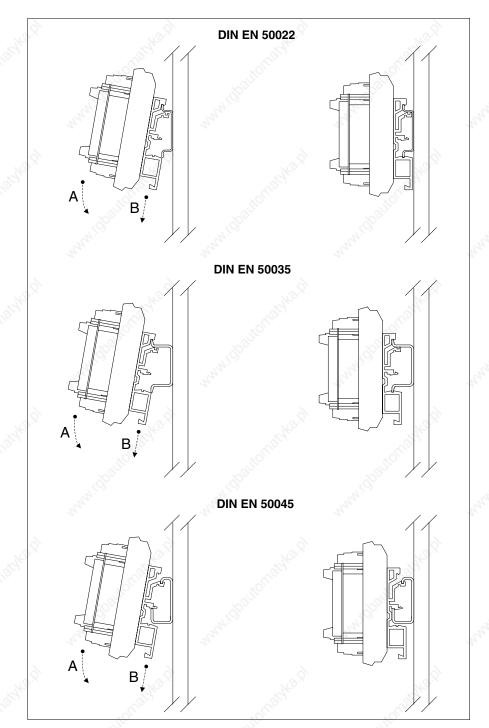
The above-mentioned board enables a VTxxxH to be connected to other devices using standard ESA cables (see "Chapter 40 -> Connection cables"). The board has a 25-pin female D-Sub MSP connector (for details see "Chapter 30 -> MSP serial port") and a 15-pin female D-Sub ASP-15L connector (for details see "Chapter 30 -> ASP-15L serial port").

The ASP-15L port does not work when connected to a VT505H and is limited to RS232 when connected to a VT525H.

See "Chapter 2 -> Power Supply" for connecting the power supply.



#### Securing the DIN rail mounting plate:



- Hook the upper part of the plate onto the DIN rail.
- Press the device in the direction indicated. (Arrow A)
- To make it easier to hook on, pull the spring-clip in the direction indicated. (Arrow B)

#### **Connection cable :**

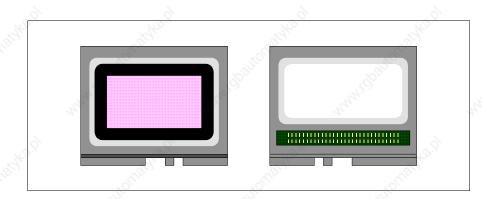
The terminal is provided with a 25x0.25mmq (AWG24) shielded cable already attached to be connected to terminal block X1 (strip back cable 5-6mm).

Connection VT <-> VTHCB			ANNI CO		onnection > Electrical panel
Command and/or s	ignal unit	Cable from VT	Connector block X1	Connector block X2	Internal switchboard
Ś.		Yellow-Green	19	200	200
		Red	1	and the second	St.
Sec.			16	no atomi	Sec. Sec.
			13 🔊		all'
Other signals relating	g to opera-	White	28	and Color	8
tion of boar	d	Blue	29		AN A A A A A A A A A A A A A A A A A A
		Green	30		5
		Yellow	17		
		White-Grey	14	2	2
			15	- Store	Stor Stor
VTEOELL on		Blue-Brown	5	S.C.	Stor.
VT525H only	White-Red	20		all Contraction	
8	NC1	White-Black	6	7	See electrical
System shut-down	NC2	Brown-Pink	21	14	lay-out for end user
button	NC3	White-Blue	22	13	5
	NC4	Brown-Grey	7	6	
2	C1	Brown-Red	23	12	<u>Ś</u>
Enabling button	NC1	Yellow-Brown	8	5	30
	C2	Violet	24	S 11	a contraction of the second se
all ¹⁰	NO2	Green-Brown	9	4	all ^C
Black button NO	NO	Green-White	110	2	180°
	С	White-Pink	10	3	Star Star
Luminous green	NO	Red-Blue	26	9	24
button	С	Grey-Pink	25	10	
Bulb		Brown	27	8	, à
Duib	× +	Grey	12	1 Nº 1	. Ho

Never alter the length of the connection cable as this may cause malfunctioning.

# Internal swirtchboard circuit

#### Example of implementation of VTHCB board.



This is a removable device in which you can store the information contained in the VT terminal.

The Memory Card (Flash EPROM type) can be used:

- as a backup for the project and firmware
- to load one or more terminals without using a PC
- to send the end-user updates (without VTWIN)

Memory card

The types of information that can be stored on the Memory Card are:

- Firmware
- Project
- Recipes
- Alarm history buffer
- Start-up language
- Password

The following table lists the principal technical characteristics of the product in question.

Technical data	10 ¹	10
Memory	4Mb or 8Mb	1000

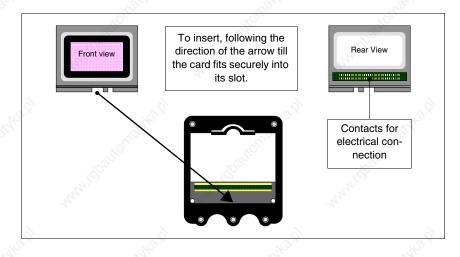
#### Inserting the memory card into the VT:

Procedure for inserting the card:

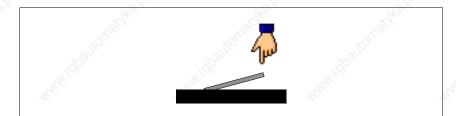
- Check that the VT is not connected to the power supply.
- Remove the back cover.
- Locate the following element.



• Insert the memory card in its housing, checking that it is the right way round.



• Once the memory card fits in the groove, press lightly as shown in the figure till you feel it click into place.



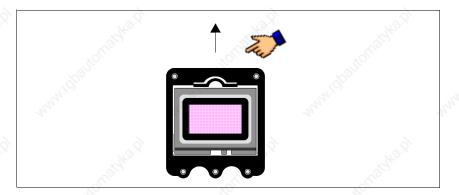
- Replace the back cover of the VT
- Reconnect the VT to the power supply.

Procedure for removing the memory card:

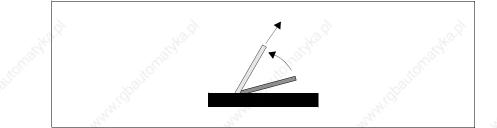
- Check that the VT power supply is disconnected.
- Remove the back cover.
- Locate the following element.



• Press lightly on the fixing tab of the memory card (see figure below) in the direction of the arrow.



• Once the memory card is unhooked (see figure) remove it following the direction of the arrow.



- Replace the back cover on the VT
- Reconnect the power supply to the VT

#### Using the Memory Card:

To operate the memory card you need to be in an appropriate page containing the menu with the corresponding commands (for how to enter the menu page see the chapter for the product concerned).

The graphic form of the page, the contents of the menus and their meaning depend on the type of terminal being used.

The functions listed below do NOT require confirmation; press the key and the function will be executed (also in the case of Erase).

The following are the functions available with VT300W, VT310W, VT320W, VT56xW, VT585W:

- Erase
- Restore
- Backup
- Exit

#### Erase:

Makes it possible to erase the Memory Card completely with permanent loss of data on it.

#### Restore:

Makes it possible to transfer the contents of the Memory Card to the VT terminal.

#### Backup:

Makes it possible to transfer data from the memory of the VT terminal to the Memory Card.

Exit:

Makes it possible to quit the menu page and return to the previous page.

**It is not possible to partially cancel or write the Memory** Card; consequently single items of information (only firmware, only recipes, etc.) can neither be added or deleted.

The following are the functions available with VT330W, VT575W, VT580W, VT585WB and VT595W:

- Backup ALL
- Backup FW/PRJ
- Backup RECIPES
- Backup ALARMS
- Restore ALL
- Restore FW/PRJ
- Restore RECIPES
- Restore ALARMS
- Exit

#### Backup ALL:

This function allows you to clear the memory card of its data, all its contents being definitively lost, and then to transfer to it all the data contained in VT memory.

#### Backup FW/PRJ:

This function allows you to clear the relevant section of the memory card of its data, all its contents being definitively lost, and then to transfer to it the project (Start-up language and Password included) and the firmware contained in VT memory.

#### Backup RECIPES:

This function allows you to clear the relevant section of the memory card of its data, all its contents being definitively lost, and then to transfer to it the recipes contained in VT memory.

#### Backup ALARMS:

This function allows you to clear the relevant section of the memory card of its data, all its contents being definitively lost, and then to transfer to it the alarm buffer contained in VT memory.

Restore ALL:

This function allows you to transfer the complete content of the memory card to the VT.

Restore FW/PRJ:

This function allows you to transfer the project and the firmware contained in the memory card into the VT.

Restore RECIPES:

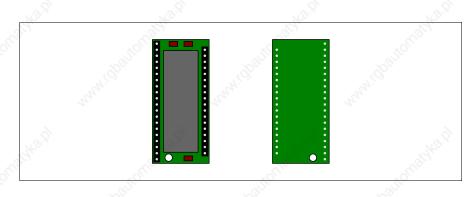
This function allows you to transfer the recipes contained in the memory card into the VT.

Restore ALARMS:

This function allows you to transfer the alarm buffers contained in the memory card into the VT.

Exit:

Makes it possible to quit the menu page and return to the previous page.



This is a removable device capable of saving the VT's firmware and its project.

Although the device is removable, there must be a Memory module in the terminal for it to function.

The following table lists the principal technical characteristics of the product under discussion.

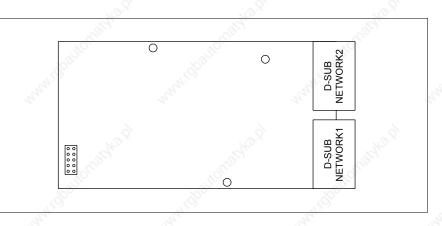
Technical data	R.	R.	
Memory		512Kbytes	

#### Memory module

#### Substituting the Memory module:

- Check that the VT power supply is not connected.
- Remove the back cover.
- Locate the already existing module.
- Remove this module with great care.
- Insert the new module.
- Replace the back cover.
- Reconnect the power supply.

Integrated Interbus-S module



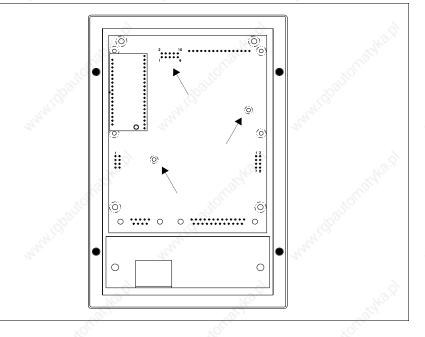
The integrated module shown above allows you to connect a number of terminals in an Interbus-S network. For more details concerning the network connection of the terminals see "Chapter 34 -> Network connection".

The NETWORK1 communication port consists of a 9-pin female D-Sub connector (see "Chapter 30 -> Interbus-S port").

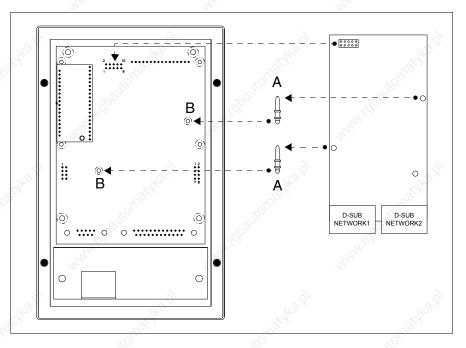
The NETWORK2 communication port consists of a 9-pin male D-Sub connector (see "Chapter 30 -> Interbus-S port").

#### **Inserting the module in the VT:**

- Check that the power supply of the VT is not connected.
- Remove the back cover.
- Locate the elements indicated by the arrow.



• Insert the spacers (A) into the holes (B), checking the they are the right way round; now insert the module into the terminal.

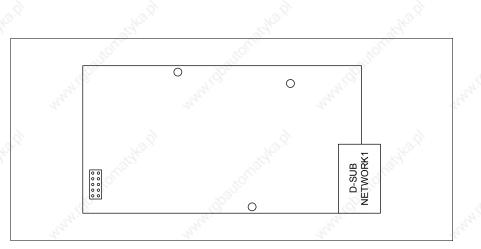


- Set the network address using the appropriate Dip-Switch (not present on this module).
- Replace the back cover.
- Reconnect the power supply of the VT.

The figures above relate to VT170W; basically the procedure for insertion is the same for all the products in which this type of module can be inserted (see Page 33-2).

The integrated module shown above enables a number of terminals to be connected in a Profibus-DP network. (For further details on how terminals are connected in the network see "Chapter 34 -> Network connection".) The NETWORK1 communication port consists of a 9-pin female D-Sub connector (see "Chapter 30 -> Profibus-DP port").

See Page 33-19 for how to insert the module in the VT.



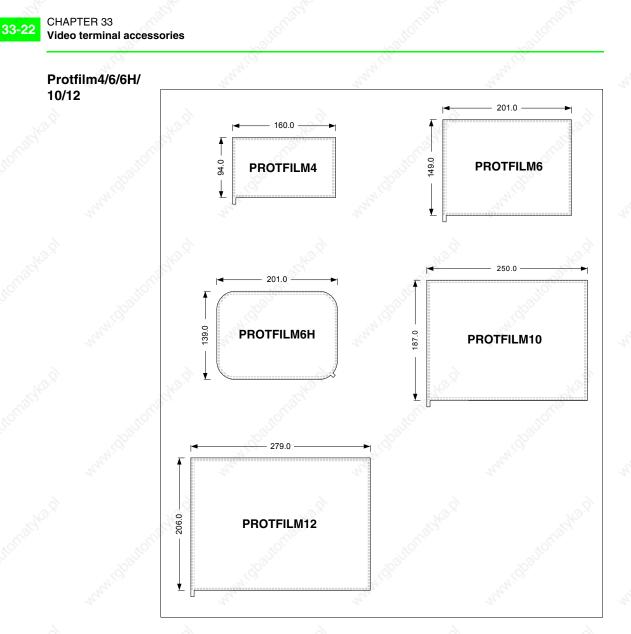
The integrated module shown above allows many terminals to be connected in an ESA-Net network. (For further details regarding the connection of terminals in the network see "Chapter 34 -> Network connection".)

The NETWORK1 communication port consists of a 9-pin male D-Sub connector (see "Chapter 30 -> RS485 serial port").

See Page 33-19 for how to insert the module into the VT.

# RS485 Serial module

Integrated Profibus-DP module

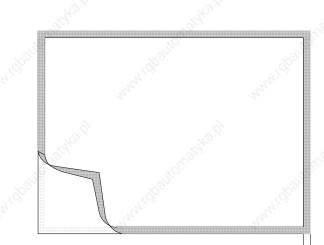


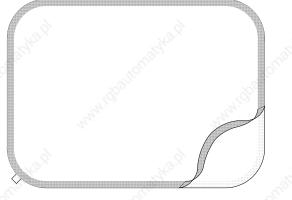
This is a transparent protective film to be applied to the front of the touch screen terminal to protect it from wear on the part of external agents (see "Chapter 41 -> Resistance to chemical substances").

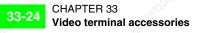
## Applying the film:

How to apply the adhesive film:

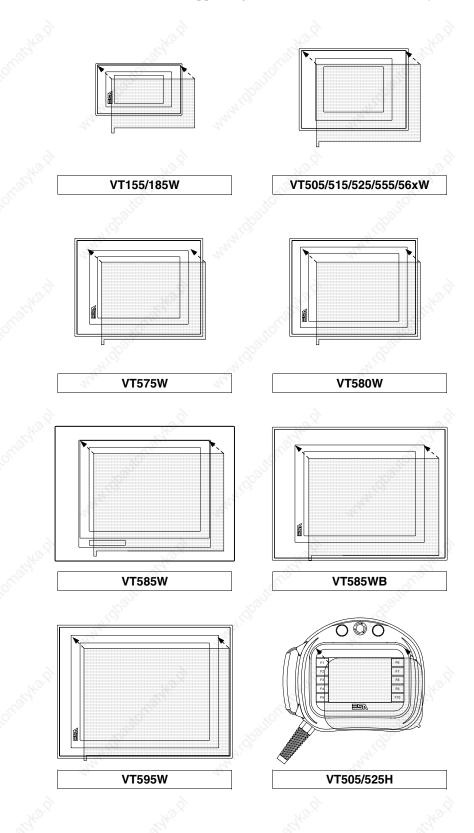
- Remove any trace of dirt or grease from the terminal using denaturized ethyl alcohol
- Dry the area thoroughly
- Locate the adhesive part of the transparent film



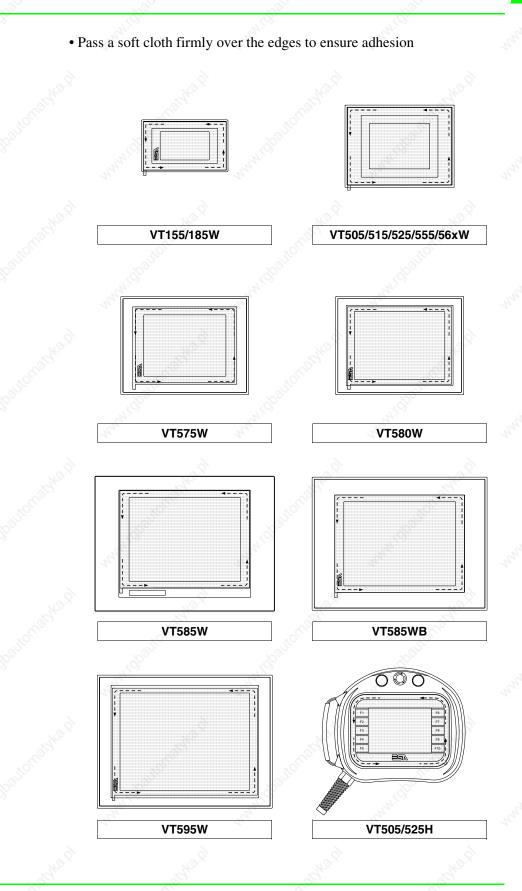




• Position the film near the upper edge and smooth it down delicately

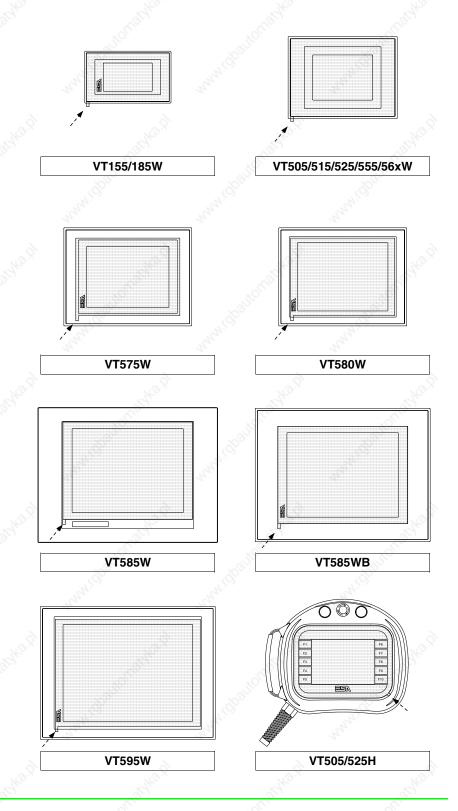


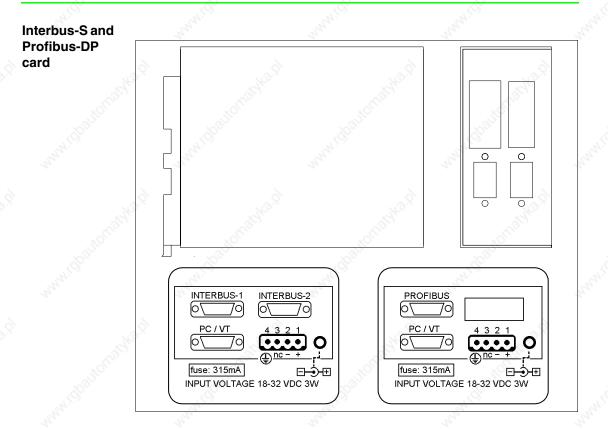




How to remove the adhesive film:

• To remove the film, pull upwards using the tab





The casing is the same both for the Interbus-S and the Profibus-DP networks; a label is attached to indicate which network is contained.

The table below lists the principal technical characteristics of the product under discussion.

24Vdc (1832Vdc)
3W
19 19 19 19 19 19 19 19 19 19 19 19 19 1
050°C
-20+60°C
85%
800gr
48,8 x 107,2 x 139,4
- 34°

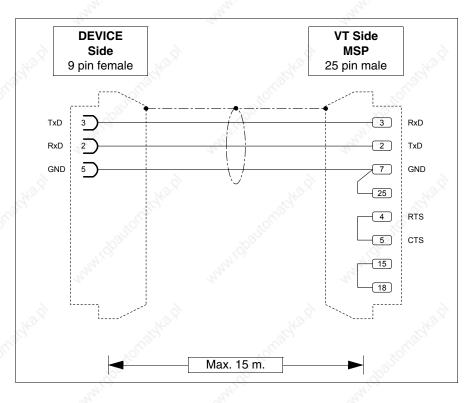
The device incorporates the Interbus-S and Profibus-DP network cards (see Page 33-19 and Page 33-21 for information); it also contains a power supply card with a communication port composed of a 9 pin male D-Sub connector for connecting a PC or VT in RS232 (see "Chapter 30 -> PC/VT serial port").

The external power supply for this card can also come via a 4-pin connector or a jack.

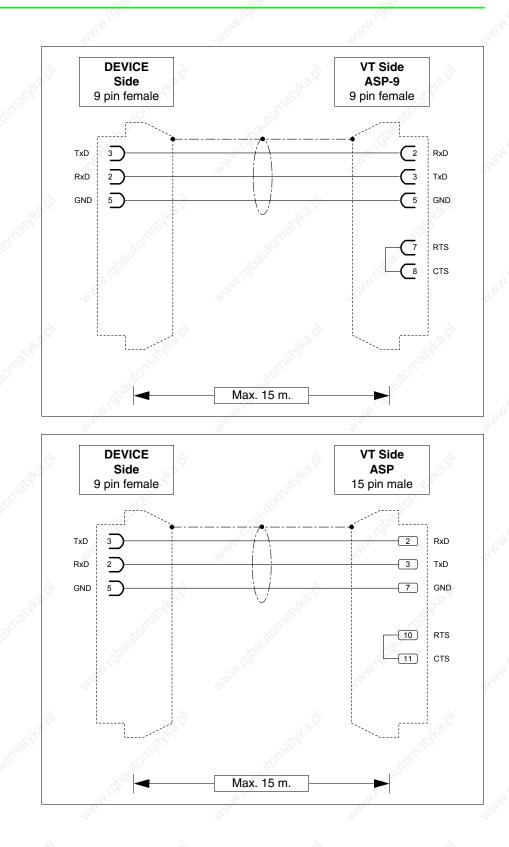


See "Chapter 2 -> Power Supply" for connecting the power supply.

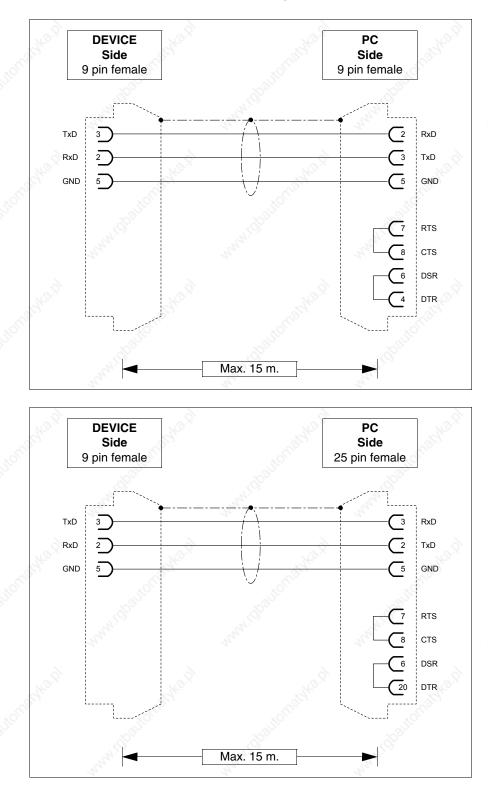
The connection to the VT uses the following cables.



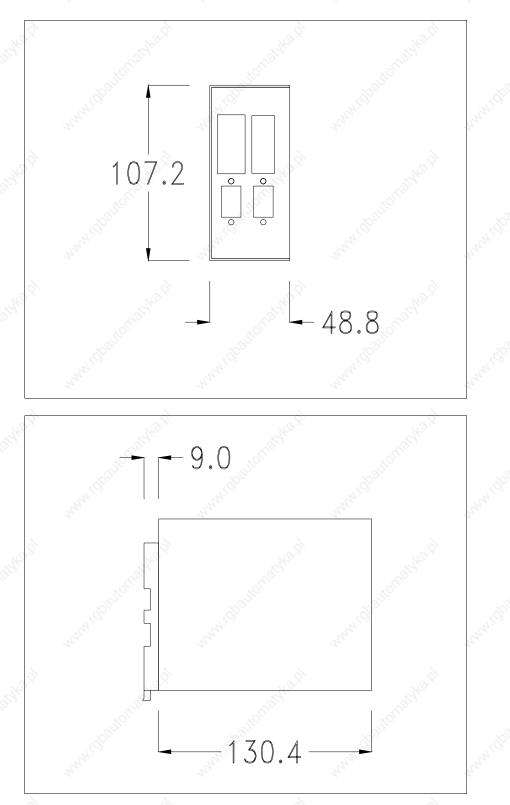
33-29



The connection to the PC uses the following cables.

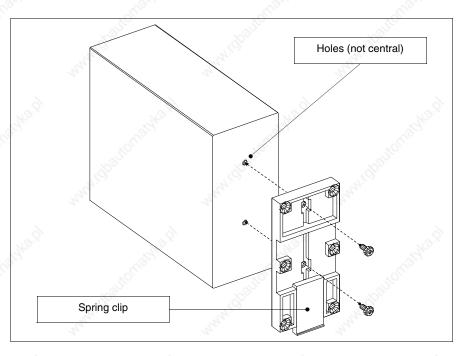


# **Dimensions:**



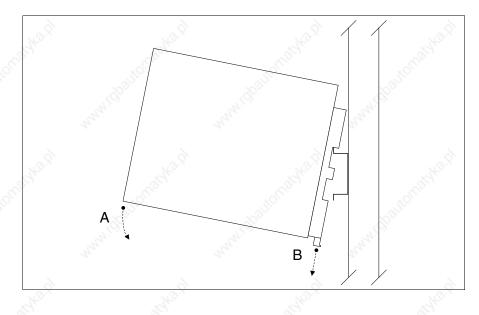
#### Securing the DIN rail mounting plate:

The device is supplied with a special molded plate for attaching to the DIN rail. The following figure shows how to fit the plate to the device.



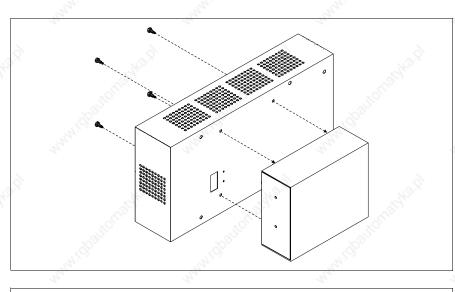
- Locate the two fixing holes.
- Position the device such that the holes are decentered towards the top
- Secure the mounting plate with the screws supplied keeping the spring-clip down.

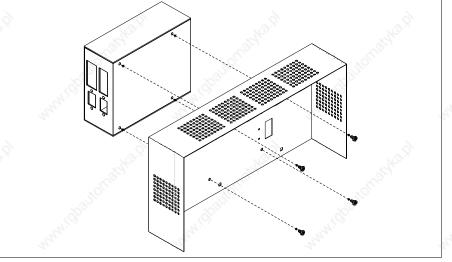
#### Attaching the device to the DIN rail:



- Once the mounting plate has been attached,
- Hook the upper part of the plate onto the DIN rail.
- Press the device in the direction indicated. (Arrow A)
- To make it easier to hook on, pull the spring-clip in the direction indicated. (Arrow B)

#### Fixing the device to the back cover:

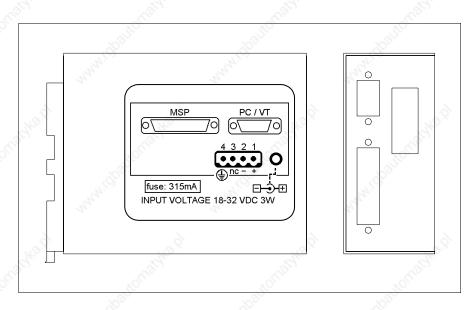




- Check that the VT power supply is not connected.
- Remove the back cover.
- Attach the device as illustrated above using the appropriate screws supplied and making sure the direction is correct.
- Replace the back cover.
- Reconnect the VT power supply.

Connection card for PC-NET

The above illustrations refer to VT320W; the procedure is basically the same for all those products that can be fixed to the back cover (see Page 33-2).



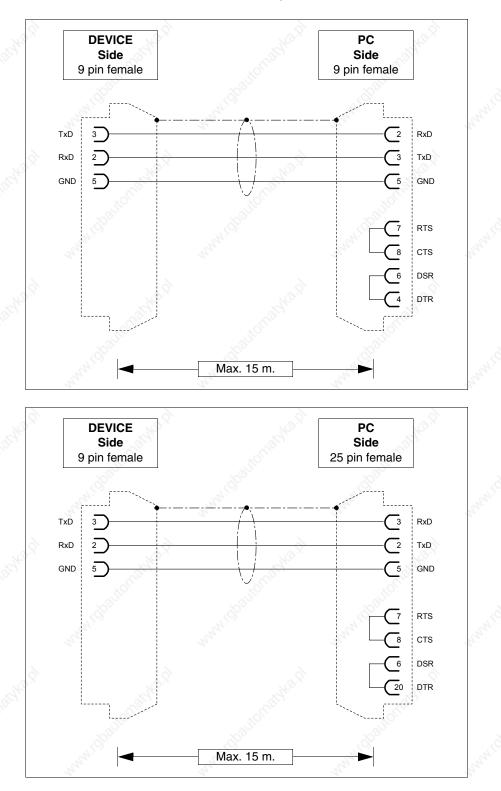
The table below lists the principal technical characteristics of the product under discussion.

Technical data	6 6	
Power supply	24Vdc (1832Vdc)	
Power absorbed at 24Vdc	3W	
Protection level	19 10 10 10 10 10 10 10 10 10 10 10 10 10	
Operating temperature	050°C	
Storage and transportation temperature	-20+60°C	
Humidity (non-condensing)	85%	
Weight	800gr	
User memory		
Project [Bytes]	16K	
Definible groups	255*	
Objects per group	255*	
Simultaneously active groups	10	
Dimensions	2007	
External W x H x D [mm]	48,8 x 107,2 x 139,4	
Cut-out W x H [mm]		

The adapter indicated above makes it possible to connect a device to a PC or several VTs to a PC using the ESANET network. The adapter is equipped with a D-Sub 25 pin female MSP connector (for details see "Chapter 30 -> MSP serial port") and a D-Sub 9 pin male PC/VT connector (for details see Page 33-27). The external power supply for this card can also come via a 4-pin connector or a jack.

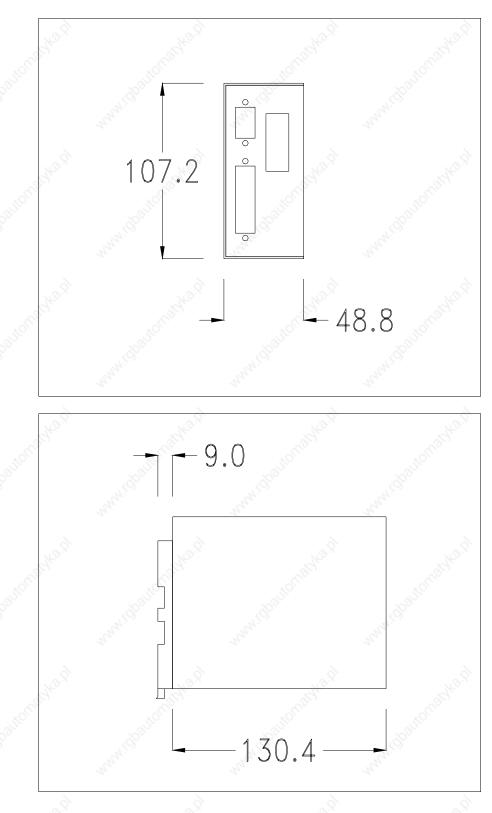


See "Chapter 2 -> Power Supply" for connecting the power supply.



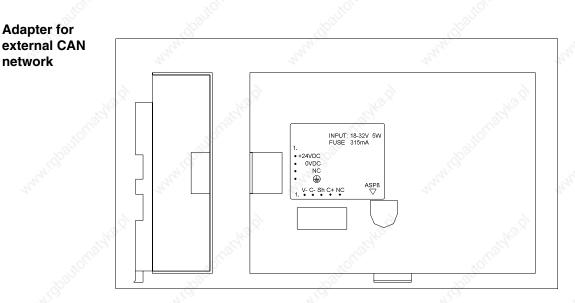
#### The connection to the PC uses the following cables.

# **Dimensions:**



#### Fixing the device:

Various ways of fixing the device are possible. For details see Page 33-32, Page 33-32 and Page 33-33.



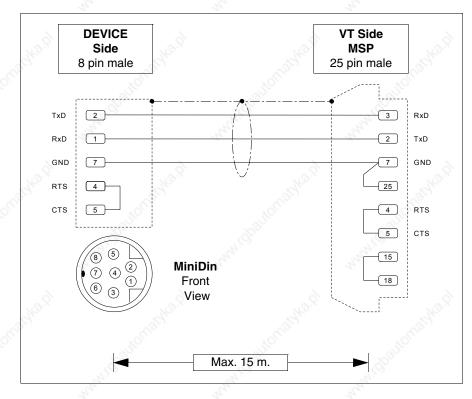
The table below lists the principal technical characteristics of the product under discussion.

Technical data	NO NO
Power supply	24Vdc (1832Vdc)
Power absorbed at 24Vdc	5W
Protection level	8
Operating temperature	050°C
Storage and transportation temperature	-20+60°C
Humidity (non-condensing)	85%
Weight	580gr
Dimensions	St. St.
External W x H x D [mm]	152,4 x 107,2 x 31,7
Cut-out W x H [mm]	57

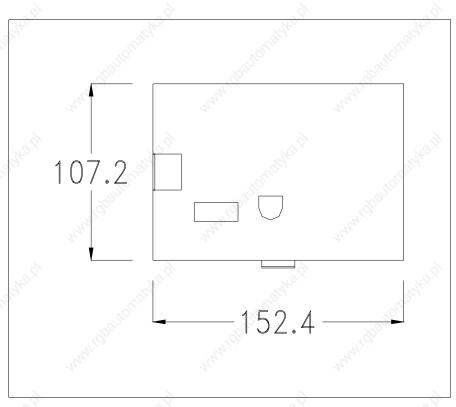
The above adapter makes it possible to connect several terminals in a CAN network. For further details regarding the connect in network of the terminals see "Chapter34->Network connection". The adapter is equipped with a Minidin 8 pin female ASP-8 connector (for details see "Chapter 30-> ASP-8 serial port") and a disconnectable 5 pin female terminal block for connecting the CAN network (optoisolated interface - see "Chapter 30 -> CAN port").

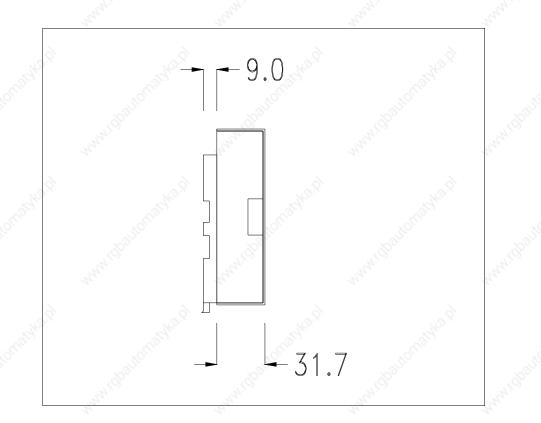
See "Chapter 2 -> Power Supply" for connecting the power supply.

The connection to the VT uses the following cables.

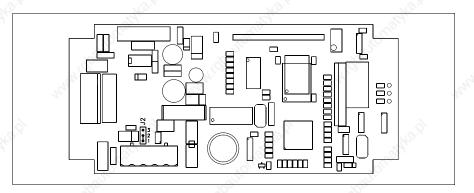


### **Dimensions:**





#### **Termination of CAN line:**

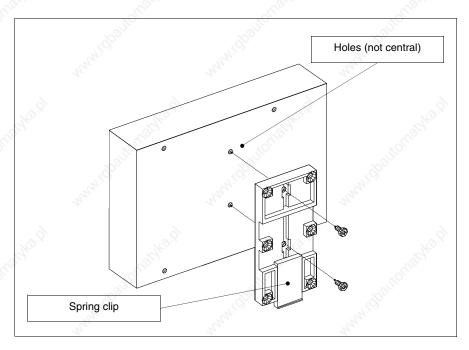


The device in question integrates the termination resistances of the serial line (typically 120 ohms) which can be inserted by means of a jumper (preset on 1-2, line not terminated). To activate the termination:

- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J2.
- Position the jumper between pins 2 and 3 (line terminated).
- Replace the back cover.
- Reconnect the power supply.

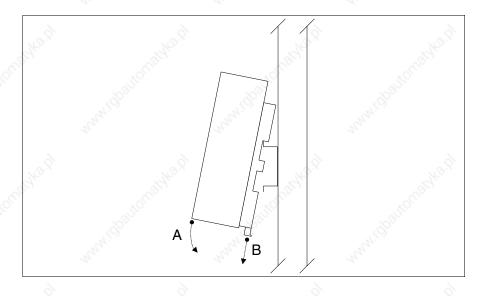
#### Securing the DIN rail mounting plate:

The device is supplied with a special molded plate for attaching to the DIN rail. The following figure shows how to fit the plate to the device.



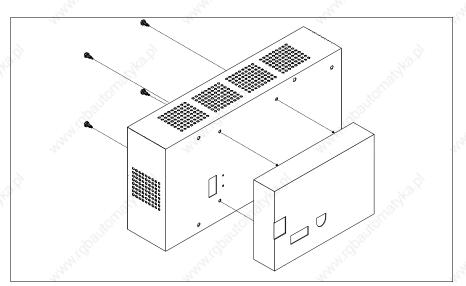
- Locate the two fixing holes.
- Position the device such that the holes are decentered towards the top
- Secure the mounting plate with the screws supplied keeping the spring-clip down.

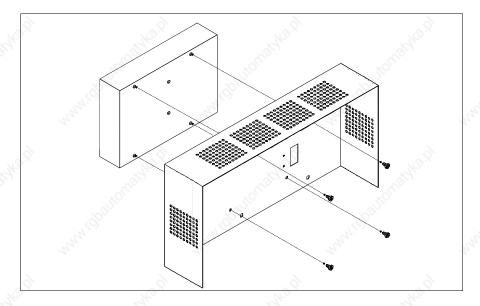
#### Attaching the device to the DIN rail:



- Once the mounting plate has been attached,
- Hook the upper part of the plate onto the DIN rail.
- Press the device in the direction indicated. (Arrow A)
- To make it easier to hook on, pull the spring-clip in the direction indicated. (Arrow B)

#### Fixing the device to the back cover:

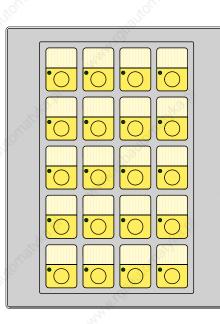




- Check that the VT power supply is not connected.
- Remove the back cover.
- Attach the device as illustrated above using the appropriate screws supplied and making sure the direction is correct.
- Replace the back cover.
- Reconnect the VT power supply.

The above illustrations refer to VT320W; the procedure is basically the same for all those products that can be fixed to the back cover (see Page 33-2).

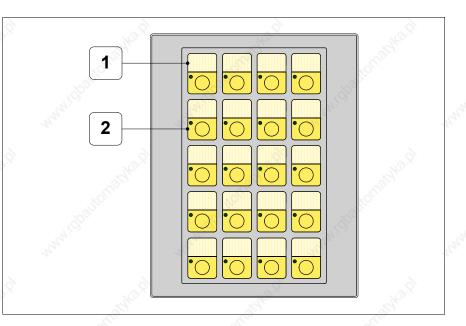
20 key serial keyboard



The following table lists the principal technical characteristics of the product in question.

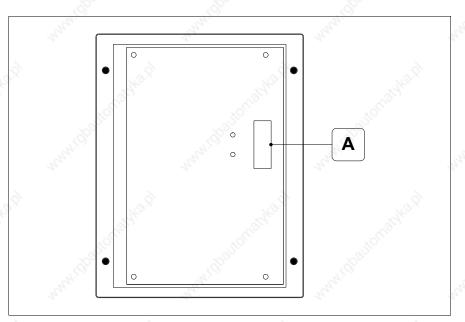
Keyheeyd		
Keyboard		
Non-customizable function keys	20 <del>11</del>	
Customizable function keys	20	
Function key LEDs	20	
Alphanumeric keys		
Operational keys	-	
Operational key LEDs	- 10 ² 10 ²	
Diagnostic LEDs	- 20	
Technical data	10 10	
Power supply	·	
Power absorbed at 24Vdc		
Protection level	IP65 (front-end)	
Operating temperature	050°C	
Storage and transportation temperature	-20+60°C	
Humidity (non-condensing)	85%	
Weight	550gr	
Dimensions	Sile and the	
External W x H x D [mm]	148 x188 x 27	
Cut-out W x H [mm]	114 x 174	

## Front view:



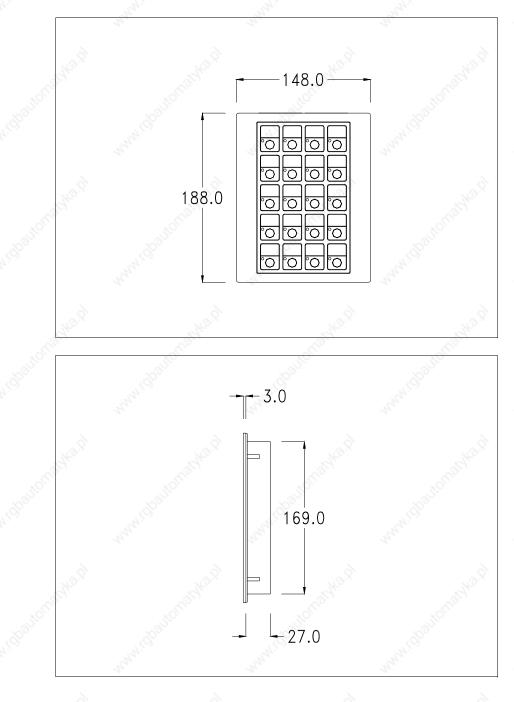
Key	AD ^{DUTE}	
1 ²⁰⁰⁰	Labels for customizing F-keys	Real and a second s
2	F-keys	.He.A

## Rear view:

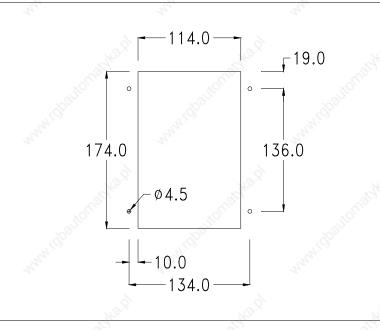


Position	Function
A	Point for connecting to VT by means of a shielded flat cable (Max. length 300mm)

## **Dimensions and Cut-out:**



33-45



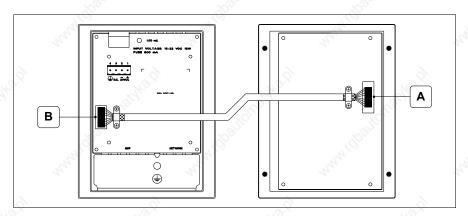
To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".

#### **Connection with cable:**

The serial keyboard accessory is connected directly to the auxiliary port (see "Chapter 5 -> Standard series rear view") of VT150W by means of a shielded flat cable, no external power being necessary. The maximum length of the cable is 300 mm.

The explanation of the connection method applies to all terminals with this accessory (See Page 33-2).

**Care must be exercised in making these connections: using the accessories provided and following the wiring instructions set out below.** 



When supplied the cable will already be fixed to the keyboard at point A, leaving point B to be connected at the other end.

Procedure for connecting to point B:

- Check that the power supply is not connected.
- Take off the back cover of the VT (see "Chapter 5 -> Standard series rear view").
- Open the pre-cut for mounting the connector on the cover by pressing in the metal plate and remove it (see "Chapter 5 -> Standard series rear view" point B).
- Replace the back cover of the VT.
- Insert the cable connector into the VT (see "Chapter 5 -> Standard series rear view" point B).
- Secure the cable to the VT by means of the collar and screws provided.

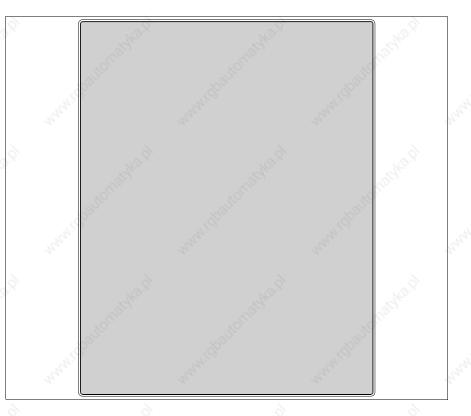
**I**t is essential that the metal collar pressing on the shield of the connecting cable make direct contact with the metal cover of the VT. If this does not happen, there could be problems due to disturbances deriving from the work environment.

• Reconnect the power supply to the VT.

Blank keyboard The following table lists the principal technical characteristics of the product in question.

S. S.	
Technical data	
Power supply	ST-
Power absorbed at 24Vdc	
Protection level	IP65 (front-end)
Operating temperature	050°C
Storage and transportation temperature	-20+60°C
Humidity (non-condensing)	85%
Weight	100gr
Dimensions	180
External W x H x D [mm]	148 x188
Cut-out W x H [mm]	114 x 174

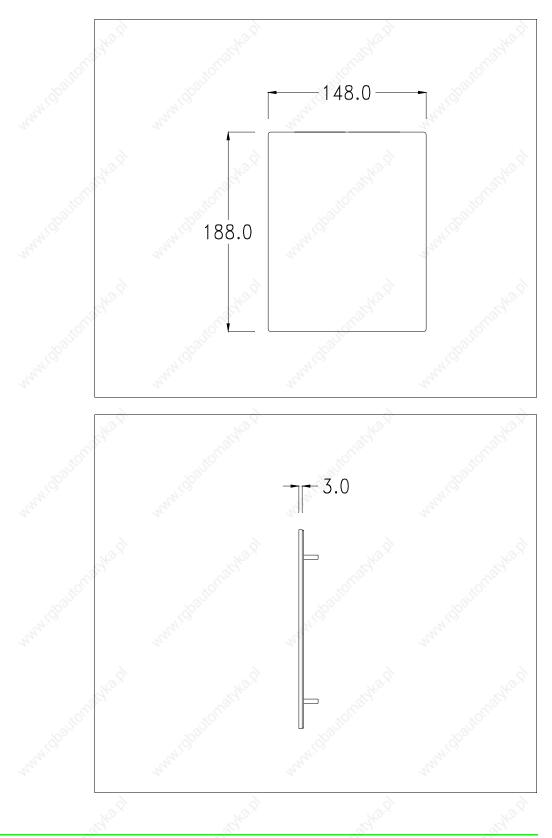
## Front view:

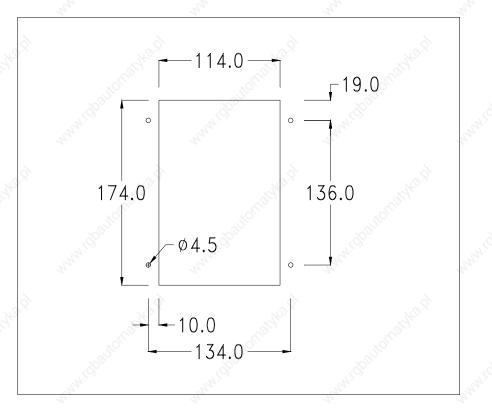


The blank keyboard has no keys.

This accessory allows the user to fit and wire buttons. Any kind of key-pad can be used.

## **Dimensions and Cut-out:**





To fix the sealing gasket and secure the VT to the container see "Chapter 29 -> Mounting the terminal within the container".



## Chapter 34

# Network connection

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Profibus-DP (ESA profile): Physical diagram	34-6
Profibus-DP (Standard): VT operation	34-6
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ETHERNET: Configuration software	34-21
ETHERNET: Connections	34-22
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CAN	34-24

This chapter consists of 28 pages.

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Contents	-3	Page
CAN: VT functioning in CAN network	(	34-24
CAN: Configuration software	ASUMO .	34-25
CAN: Connection	all ^{on}	34-25
This chapter consists of 28 pages	Service Servic	34-25

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VT terminals can be connected, using the appropriate optional cards, integrated or external, in a network with other devices. The networks available are Profibus-DP, Interbus-S, ESA-Net, Ethernet and CAN.

#### Profibus-DP

A VT equipped with a network card can be connected within a Profibus-DP network as a slave (a passive station that can only transmit data after receiving a request from an active station). The PLCs and the network configurator, on the other hand, are masters (active network stations able to transmit information without receiving a request).

VT terminals have two ways of exchanging data with the network master: one called ESA Profile and the other known as Standard Profile. In practice the difference lies in the size of the I/O area: with ESA Profile the I/O area is 32bytes + 32bytes and is handled by a FB (Function Block) (not available on all devices) that has the task of allowing the VT read and write access to all the data areas of the device; the Standard profile can use an I/O area of up to 128bytes + 128bytes, corresponding to the maximum data area dimensions visible to the VT.

A network can contain more than one master and more than one slave, while there can only be one configurator.

The slave address of the VT must coincide with the network configuration.

It can be set using VTWIN if using a VT with an integrated network card, or by means of a Dip-Switch if using a VT with a supplementary network card.

The VT can work at a maximum speed of 12 Mbaud and it automatically assumes the speed of the network as determined by the network master.

Table 34.1: Setting of VT network address.

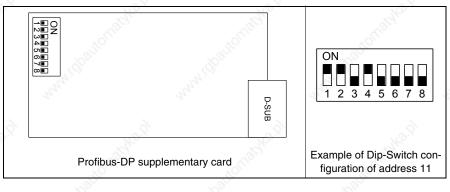


Table 34.2: Meaning of the Dip-Switches

Dip-Switch	Binary value	Dip-Switch	Binary value
1	<u> </u>	5	16
2	2	6	32
3 🔬	4	7	64
4	8	8	128

### Profibus-DP (ESA profile): VT operation

The slave VTs are seen generally as dedicated areas of memory in the PLC's I/O area, or alternatively in other data areas made accessible by the configurator of the master, which are used by the PLC and VT to exchange data. The size of the I/O area of each VT participating in the network is defined by the user with a 4 to 16 word limit (8-32byte).

Note that the greater are the dimensions of the I/O area the faster the handling of the information, though this also means a greater effort on the part of the CPU of the PLC and thus an increase in the scanning time.

#### Profibus-DP (ESA profile): Configuration software

There are 4 types of software that play a part in configuring the network:

- VTWIN
- FB
- File with extension GSD
- Configuration software for network master

These types of software require parameters that coincide.

### VTWIN:

The parameters that must be set in the VTWIN project of every terminal connected in the network are:

- Size (in words of the I/O area)
- Timeout for testing the connection between the VT and PLC.
- Address of terminal.

#### FB:

This is a program supplied by ESA to be loaded into the PLC. This program is used to check the network parameters set and the data exchange. It varies according to the type of PLC (make and model). Besides the parameters which we have just seen in VTWIN, the incoming FB requires other information related to the PLC that will be hosting it.

The necessary user information is contained on the disk "VT-PROFI-BUS Installation SW" supplied along with the Profibus-DP option. File with extension GSD (dedicated to ESA profile):

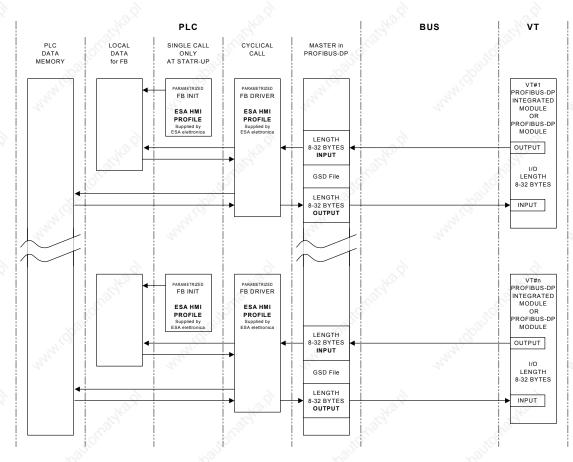
This file is supplied by ESA; it allows the configuration software of the network master to recognize the VT.

Network master configuration software:

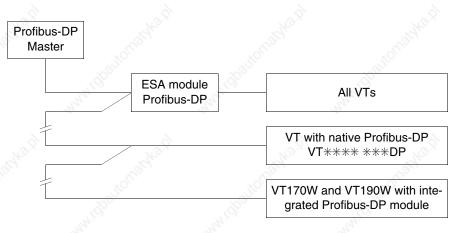
This software is supplied by the producer of the network master.

### Profibus-DP (ESA profile): Logical diagram

Below is a logical diagram of the VT <-> Profibus-DP (ESA profile) connections. The diagram indicates how and at what level the FBs supplied by ESA interact with the system. The FB INIT takes care of the initial configuration of the system (input and output areas, etc.), while the FB DRIVER takes care of the data exchange between the PLC memory and the VTs, and viceversa. The number of FB calls within the PLC must be equal to the number of VTs connected in the system.



Profibus-DP (ESA profile): Physical diagram The following figure represents the physical form of the VT <-> Profibus-DP connection.



#### Profibus-DP (Standard): VT operation

The slave VTs are seen generally as dedicated areas of memory in the PLC's I/O area, or alternatively in other data areas made accessible by the configurator of the master, which are used by the PLC and VT to exchange data. The size of the I/O area of each VT participating in the network is defined by the user with a 4 to 64 word limit (8-128byte).

Profibus-DP (Standard): Configuration software There are 3 types of software that play a part in configuring the network:

#### VTWIN

- File with extension GSD
- Configuration software for network master

These types of software require parameters that coincide.

#### VTWIN:

The parameters that must be set in the VTWIN project of every terminal connected in the network are:

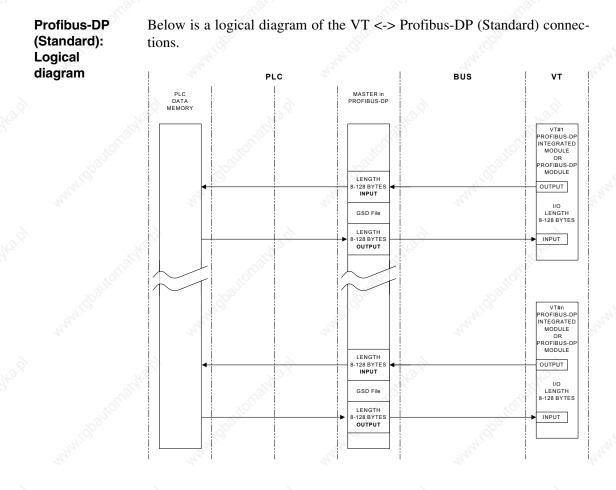
- Size (in words of the I/O area)
- Timeout for testing the connection between the VT and PLC.
- Address of terminal.

File with extension GSD (dedicated to Standard profile):

This file is supplied by ESA; it allows the configuration software of the network master to recognize the VT.

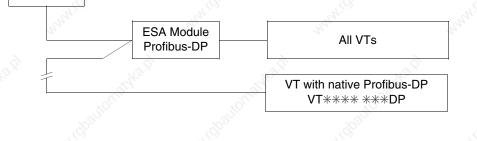
Network master configuration software:

This software is supplied by the producer of the network master.



Below is a physical diagram of the VT <-> Profibus-DP connections.

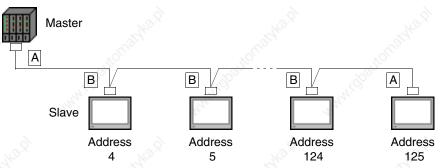
Profibus-DP (Standard): Physical diagram



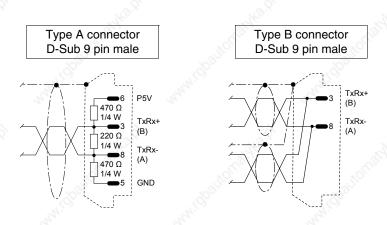
Profibus-DP

Master

# **Profibus-DP:** Below is a diagram of the connections of devices in Profibus-DP network. **Connection**



As can be seen from the above diagram the connections for devices at either end of the line (A) are different from the internally positioned ones (B). Indeed, the connectors at A have inside them the termination resistances of the line. There follow the types of connection existing within the connectors.



Use the materials listed in the table below when making connection cables.

Maker/Distributor	Туре	Web
Belden	3079A PROFIBUS Cable	www.belden.com
Siemens	Simatic Net Profibus FC6X91 830-0E11 10	www.siemens.com
distance of	1DR 22X 02R	
Intercond	1DR 22X 02P	www.intercond.com

Table 34.3: Cables

For further details contact the retailer and/orvisit the appropriate WEB site.

S.S.
Table 34.4: Connectors.

Ser and a series of the series	and the second sec	and the second sec	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	
	Table 34.4: Connectors.			
	Maker/Distributor	Туре	Web	
	Calor.	6ES7972-0BA10-0XA0	Color.	
	Sallo.	6ES7972-0BB10-0XA0	North Co.	
	Siemens	6ES7972-0BA40-0XA0	www.siemens.com	and a
	11	6ES7972-0BB40-0XA0	- 4	-52
	and the	6GK1500-0EA00	All	
		103 648	art arts	_
	AD ^{DUC}	103 658		
	March 15	103 663	and the second second	and a
		103 649		
	Erni	103 659	- <u>www.erni.com</u>	
	. official	104 329	omato	
	Som	104 577	. Banc	
	and the second sec	104 322	- March ??	and the

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reloautor

#### Interbus-S

A VT equipped with a network card can be connected within a network as a slave (a passive station that can only transmit data after receiving a request from an active station). The master communication card, generally inserted in a PLC station, transmits and recieves information from the slaves. There can be more than one slave connected to a single master in a network.

# Interbus-S: VT operation

The slave VTs are seen generally as dedicated areas of memory in the PLC's I/O area, or alternatively in other data areas made accessible by the configurator of the master, which are used by the PLC and VT to exchange data. The size of the I/O area of each VT participating in the network is 4 words (8byte).

There are 3 types of software that play a part in configuring the network:

#### Interbus-S: Configuration software

• VTWIN

- EB
- Configuration software for network master

These types of software require parameters that coincide.

### VTWIN:

The parameters that must be set in the VTWIN project of every terminal connected in the network are:

• Timeout for testing the connection between the VT and PLC.

## FB:

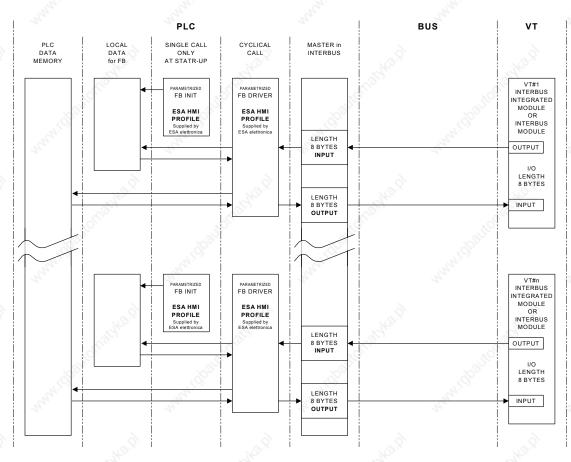
This is a program supplied by ESA to be loaded into the PLC. This program is used to check the network parameters set and the data exchange. It varies according to the type of PLC (make and model). Besides the parameters which we have just seen in VTWIN, the incoming FB requires other information related to the PLC that will be hosting it. This information is contained in a text file on the disk entitled "VT-INTERBUS Installation SW".

Network master configuration software:

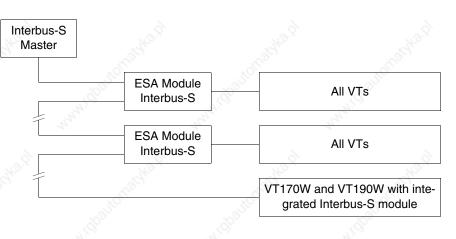
This software is supplied by the producer of the network master.

## Interbus-S: Logical diagram

Below is a logical diagram of the VT <-> Interbus-S connections. The diagram indicates how and at what level the FBs supplied by ESA interact with the system. The FB INIT takes care of the initial configuration of the system (input and output areas, keys area, etc.), while the FB DRIVER takes care of the data exchange between the PLC memory and the VTs, and viceversa. The number of FB calls within the PLC must be equal to the number of VTs connected in the system.

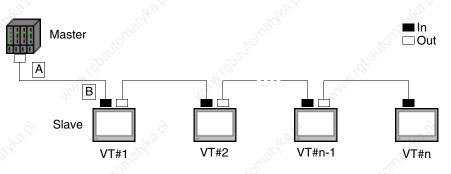


Interbus-S: Physical diagram Below is a physical diagram of the VT <-> Interbus-S connections.



#### Interbus-S: Connection

Below is a diagram of the connections between the VTs and the devices in Interbus-S network.

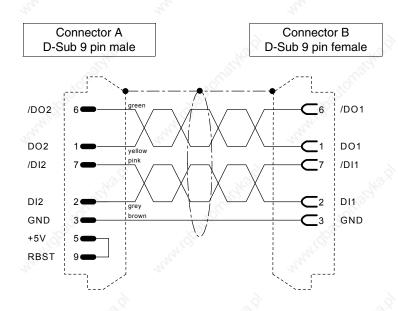


Parameter n stands for the maximum number of terminals that can be connected in the network, which depends on the size of the memory available in the master device for the input and output of process data. Each VT connected occupies 64 bits for the data input area and 64 bits for the process data output; thus

> n = <u>I/O area of master device</u> 64 bit

Below we list the connection cables required.

34-13



Use the materials listed in the table below when making connection cables.

Table 34.5: Cables

Maker/Distributor	Туре	Web		
Belden	3120A INTERBUS Cable	www.belden.com		
Phoenix	27 18 28 0	www.phoenixcontact.com		

For further details contact the retailer and/orvisit the appropriate WEB site.

#### Table 34.6: Connectors.

Maker/Distributor	Туре	Web		
	27 58 47 3			
Phoenix	27 58 48 6	www.phoenixcontact.com		
- Shine	103 650	. Strand		
dballer	103 651	dipalitie		
Erni	103 660	www.erni.com		
	103 661			
-Stor	104 319			

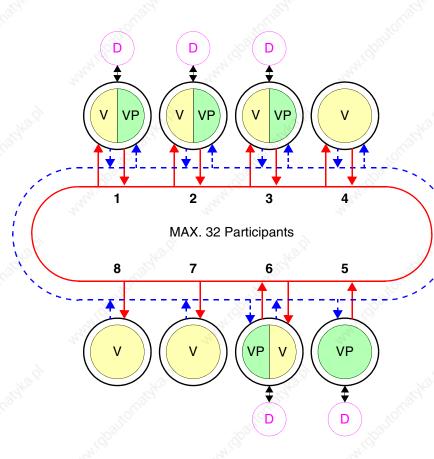
For further details contact the retailer and/orvisit the appropriate WEB site.

#### ESA-Net

All VT terminals can be connected in an ESA-Net network as *Network Clients* or as *Network Servers* (see technical characteristics of individual terminals). The network Client can only ask other terminals in the network for information (variables); while the network Server makes information (variables) available to other terminals in the network.

# ESA-Net: VT operation

To help clarify the concept of ESA-Net, we offer the data-flow diagram below showing how a terminal assumes the function of client, server and server/client.



In the ESA-Net network the server terminal is the one that makes all or some of the variables available to the other terminals; these variables are called *Public Variables*.

The maximum length of public objects is 60 Bytes; excess lengths will be truncated. To avoid this, we suggest more than one object with the appropriate lengths (with a length of 120 Bytes use two objects of 60 Bytes).

# The maximum number of public objects is 128, making a total of 1024 Bytes.

The client terminal is the one that uses the public variables made available by the server terminal. The terminal that uses public variables and, in its turn, makes others available is known as the server/client. Generally, the client terminal has no device of any kind connected.

The example in the figure shows eight terminals connected, of which:

al	->	Server/Client	<->	V/VP	->	Device
2	->	Server/Client	->	V/VP	->	Device
3	->	Server/Client	->	V/VP	->	Device
4	->	Client	->	V		
5	->	Server	->	VP	°->	Device
6	->	Server/Client	->	V/VP	->	Device
7	->	Client	->	V		
8	->	Client	->	V		

The area colored green (VP) represents the public variables, the area colored yellow (V) represents the variables; the device is indicated schematically in violet (D). The two central rings, one represented by a continuous red line indicates the VT's response to a request (the dotted lined traced in blue indicates the request for information.

A network can have more than one server, more than one client and more than one server/clients, the total being 32 terminals.

The network participants must each have a different address; the address of the terminal is configured using the VTWIN (see Software Manual).

A terminal can connected to the network either using the communication standard RS485 and the MSP and ASP (default) serial ports or, alternatively, using an RS485 serial module (optional) - (see "Chapter 33 -> Video terminal accessories").

**To avoid any problems, the device to be connected to the VT must** be connected using the MSP port; the ESA-NET network must therefore be connected over the ASP port or the field network. If the VT is to be connected only to the ESA-NET network, the MSP can also be used.

The VT can operate at a speed of from 38400 to 187500Baud; all participants in the network must be set to the same transmission speed.

#### ESA-Net: Connecting the terminals

Since serial communications are highly subject to disturbances, the following advice should be followed to reduce as much as possible such problems:

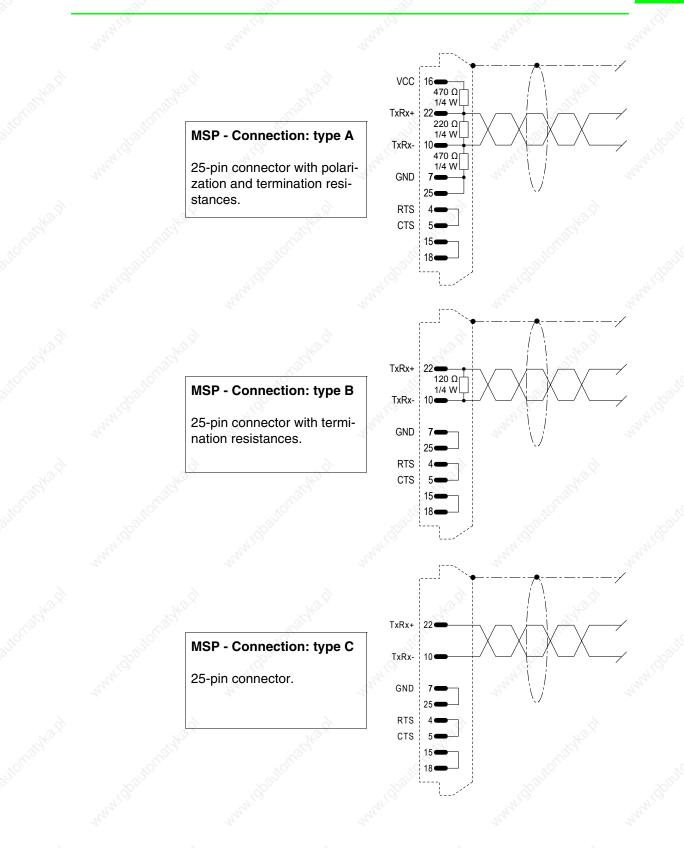
- It is absolutely necessary to use a fully shielded twisted serial cable, with a pair of conductors having a minimum section of 0.22 mm² and a characteristic impedance of 120 Ohms.
- It is absolutely necessary to use a fully shielded connector.
- The termination resistances must be placed exclusively at the physical extremes of the ESA-NET network.
- Insert the polarization resistances of the appropriate value (typically 470 Ohms).
- The shield of the cable must be soldered or mechanically connected to the metal shells of the connectors that are connected subsequently to the VTs in the network.

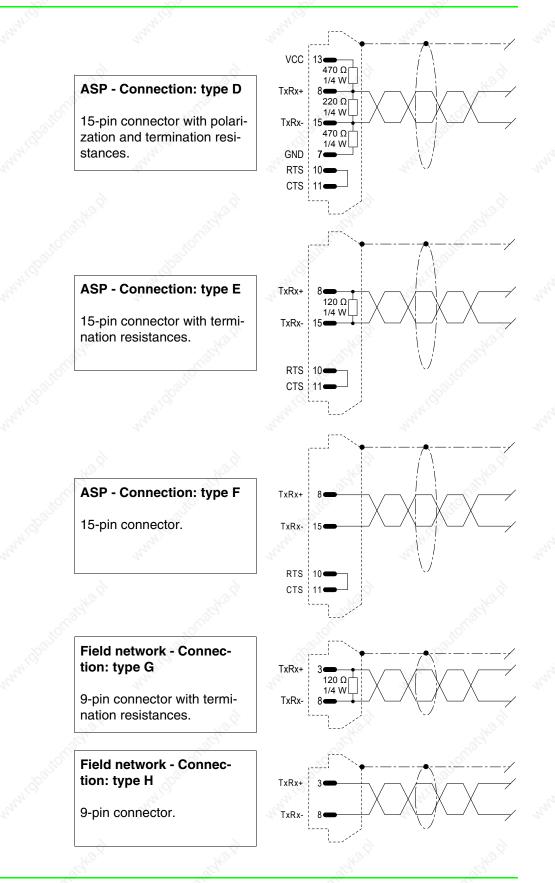
The VT serial connection cables must be laid in separate raceways from the power supply cables.

**The VT serial connection cables must be laid in separate raceways** from the power cables and from all the devices that may, in general, be sources of disturbance (servo drives, inverters, etc...).

The table below shows the three connectors that can be used (MSP - ASP - Field network) for ESA-NET network connections alongside the various types of wiring according to position held within the network.

The VT connected in the network with a connector incorporating three resistances must never be switched off while the other participants in the network are still on. Should this happen, the effect of the polarization resistances will be negated and there is a possibility that communication errors will occur.

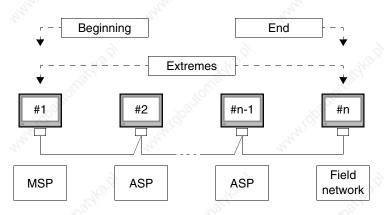




34-19

There follows a table to use when making the ESA-NET network cable. To use this table proceed as follows:

- the layout of the VTs to be connected in the network;
- define the port to be used for the network connection of each VT;
- identify which VTs are physically at the extremes of the network;
- specify which of the terminals at the extremes of the network will be first and which last.

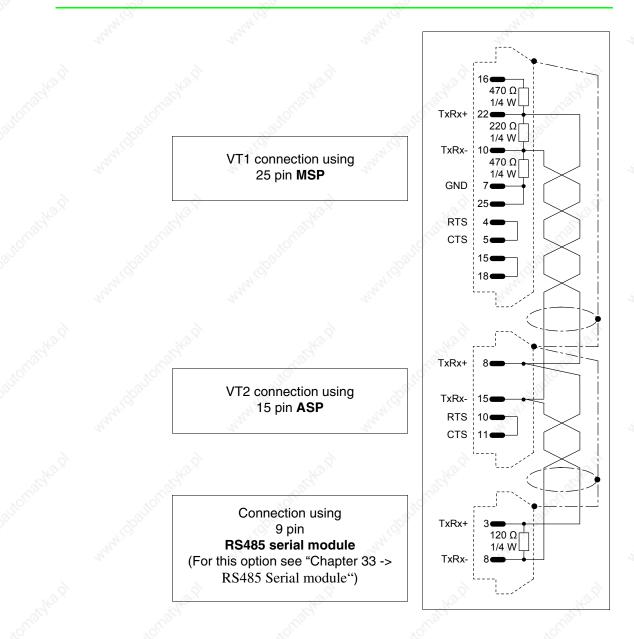


If, for any reason, the extremes are connected by a Field network connector, one of the intermediate VT connections must still be type A or D (depending on which connector is available).

Table 34.7: Construction of ESA-NET cable.

Connector	Position	Wiring							
		Α	В	С	D	Е	F	G	Н
MSP 25-pin	Initial	•	<u> 5</u>				.5		
	Final	100	•				Ş		
	Intermediate	0		٠		<u>.</u> 9			
ASP 15-pin	Initial				- 5				
	Final					•			
	Intermediate			5			٠		
Field network 9-pin	Initial			<u>97</u>				. (°	
	Final		A.				~~	•	
	Intermediate		<u>)</u>				3 <u>9</u>		٠

The following page shows the cable needed for the connection as in the figure using 3 VT terminals.



ESA-Net: Configuration software There is only 1 type of software used in configuring this network:

#### • VTWIN

This software requires that you set parameters that coincide one with the other.

VTWIN:

The parameters that need to be set in the VTWIN project of each terminal connected in the network are:

• Terminal's network address

## ETHERNET

VT terminals equipped with the right interface can be connected in a network with other devices functioning by means of Transfer Control Protocol/Internet Protocol (TCP/IP).

The advantage of the Ethernet connection lies in the high speed of data exchange it gives, (from 10Mbit/s to 100Mbit/s depending on the device connected); secondly cabling is simplified – indeed, the VT does not need to be connected directly to the device but they can be interconnected using a network concentrator; in addition, the number of possible network participants is so high as to be practically limitless.

#### ETHERNET: VT operation

The VTs communicate with the devices in a network by means of an exchange of information on the form of small packages of data that are managed by the TCP communication protocol. This splits up the information and recomposes it once it arrives at its destination and it is responsible for checking that all the information has arrived at the destination. The IP protocol, on the other hand, is responsible for directing the information sent to the right addressee. These protocols, TCP and IP, always work closely together to ensure that the exchange of information functions correctly.

#### ETHERNET: Configuration software

There are two types of software that come into play when configuring this network:

#### • VTWIN

• Software for configuring the device

These softwares require the setting of parameters that depend on the type of network to which the terminal is connected.

#### VTWIN:

The parameters that need to be set in the VTWIN project of each terminal connected in network are as follows:

- IP Address
- Subnet Mask
- Any other parameters depending on the device connected

Equal IP addresses are not valid.

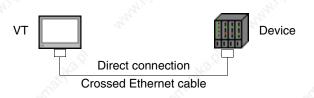
Software for configuring the device:

This software is supplied by the maker of the device.

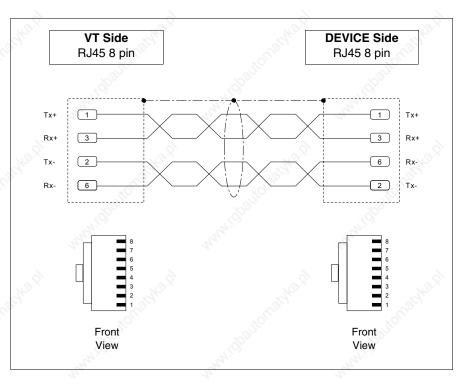
## ETHERNET: Connections

The figure below shows two examples of connections: the first example shows a connection between a VT and a device using a direct connection, while the second example shows a connection between VT and device using a company network.

Example of direct connection between VT and Device.



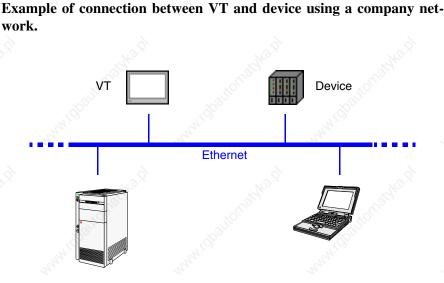
The layout in the diagram shows a crossed Ethernet network cable to be used for direct connection between the VT and the device without using a company network connection.



**NOTE:** In this example we are not in a network context with other devices so the IP address can be arbitrary.

The first three numbers of the IP address assigned must be the same as those of the device with which it is to be connected, the fourth number must be different. Example VT - 192.168.100.1, Device - 192.168.100.5

The other parameters remain those preset.



The connection to the network uses an Ethernet Standard cable.

**NOTE:** All the parameters that need to be introduced depend on the configuration of the network to which the connection is made. You are, therefore, advised to contact the network administrator.

ETHERNET: Checking the connection If considered necessary, it is possible to check that the system is working properly by running the command PING on a PC in the network.

Go to the prompt of the PC commands and type ping followed by the IP address assigned to the VT and/or the device and confirm with Enter (E.g. ping 192.168.100.5).

If the connection and the settings have been executed correctly, response strings will appear that contain the IP address requested. If, on the other hand, what appears are strings indicating failure of the request this means that there are connection problems; in this case the whole procedure including the connection cable must be checked.

#### CAN

VT terminals equipped with the appropriate interface can be connected in a network with other devices by means of a CAN (Controller Area Network) protocol.

CAN terminals correspond to CIA DS 102 Version 2.0 (CAN Physical Layer for Industrial Applications) specifications.

The CAN network differs from other types of network in its low cost, high level performance in difficult electrical conditions, exceptional ability to respond in real time and operational simplicity.

This type of network has a master/slave structure. The master device takes care of initializing and configuring the slave stations, and further with controlling the communication state of the devices in the network. The slave devices are concerned exclusively with exchange of information. To be able to communicate, the slave devices must be initialized (operational state) and parameterized by the master device.

The VT can work at a speed ranging from 10kbit/s to 1000kbit/s.

## CAN: VT functioning in CAN network

The VTs communicate with the devices using logical channels to which there correspond virtual communication lines which are independent of one another and definible using certain parameters.

Logical channels can be of one of two types:

- SDO (Service data object)
- PDO (Process data object)

SDO channels concern themselves with the exchange of parameters for setting, configuring and other information regarding the setting of the device. PDO channels, on the other hand, concern themselves exclusively with exchanging information related to the process underway.

PDO channels have priority over SDO channels.

It is possible to define the identifiers and lines of communication for all SDOs and PDOs by using the TX and RX parameters; admissible values run from 1 to 65535.

The network participants must each have a different address; the address of the terminal is configured using VTWIN (see Software Manual).

CAN: There is only one type of software that can effect the configuration of this network: software

• VTWIN

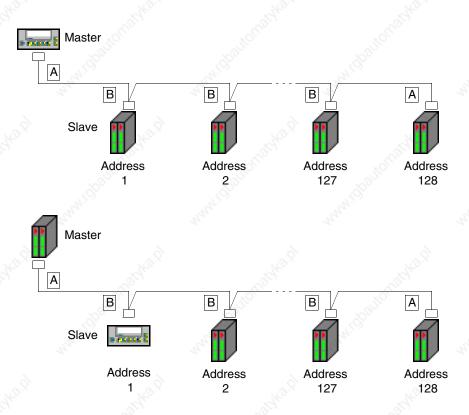
This software requires the setting of parameters that coincide with one another.

The parameters that have to be set in the VTWIN project of every terminal connected in the network are:

- Network address of the terminal.
- SDO
- PDO

#### CAN: Connection

The figure below shows the connection of VT with devices in a CAN network, in a master VT and slave formation.



Theoretically the network admits 128 devices, but the real limit depends on how many logical channels are activated. The maximum number of channels is 64 SDO and 64 PDO.

Example:

Suppose each devices possess 2 SDOs and 3 PDOs. If all are activated, the maximum number of the devices that can be connected is 21, i.e. the overall number of channels admissible divided by the number of PDO channels for each device (because the PDO channels, being more numerous, determine the limit).

Max. participants =  $\frac{\text{Max. of channels allowed}}{\text{Channels activated}} = \frac{64}{3}$ 

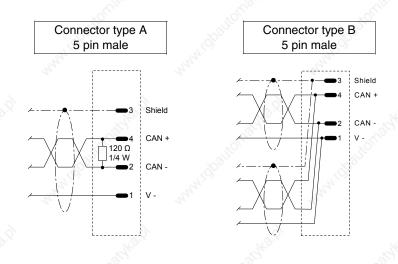
As can be seen from the figure above, the connections for the devices at the ends of the line (A) are different from the internal ones (B). Indeed, the A connectors require cabling with a termination resistance for the line.

The VT terminals are already internally equipped with a termination resistance, so in the first case (VT master) the resistance on the connector can be omitted by using an integrated resistance. (See chapter on terminal to be connected).

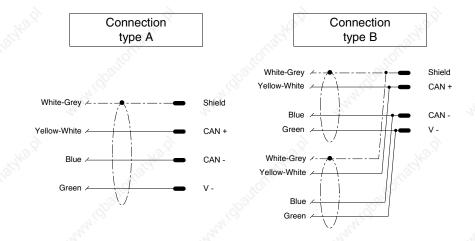


VTxxxH terminal cables always have terminations.

There follow diagrams of the types of connection.



34-27



The recommended connection applies only to VTxxxH terminals.

The connection cable is already terminated on the VT side.



# Operation of terminal with keyboard

Contents	Page
Changing value of variable field	35-2
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Partial change	35-3
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VT60 info-messages	35-9
VT150W - VT160W info-messages	35-10
VT170W info-messages	35-10
VT190W info-messages	35-11
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ISA-1A alarms	35-16
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VT300W - VT310W - VT320W alarms	35-20
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VT300W - VT310W - VT320W history buffer	35-26
VT330W history buffer	35-26
Help messages	35-29
This chapter consists of 30 pages.	

This chapter consists of 30 pages.

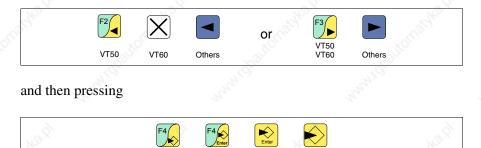
The contents of this chapter apply to all the VT terminals of the same family that have a keyboard. As the 💷 of the various models differ in certain details, the following explanations will indicate, for each 🖾, the respective model.

The way a key functions changes according to the type of field to be varied.

Throughout the present chapter, when referring to the number of rows and the number of characters that can be used in the terminal, we assume native fonts are being used; when Windows-based fonts are used (in the case of graphics ternminals only), the equivalent screen area in pixels should be considered (see Software Manual "Chapter 6 -> Project language").

Changing value of variable field

To be able to carry out a change in any editable variable field, the cursor must first be positioned over the field involved by using



VT60

VT150W

VT160W

Others

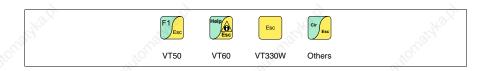
which enables the introduction of the new value.

VT50

The edit mode can be quit in two ways: either by saving after completing the input of a value and pressing



or at any given moment without saving by pressing



or automatically when the "Input timeout" (see Software Manual) elapses.

The VT offers the following ways of changing a field:

- Total change
- Partial change

### **Total change**

This is the default mode adopted by the VT when enabling a change in a field: numerical and alphanumeric fields behave differently.

Numerical fields:

The cursor flashes on the rightmost digit of the field. When the first digit is introduced the rest of the field goes to zero, while the successive introductions make the digits shift to the left.

Alphanumeric field (ASCII):

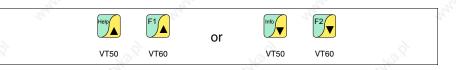
The cursor flashes on the leftmost digit of the field. When the new string is introduced sequentially the cursor moves one character to the right.

#### Partial change

With the edit mode enabled, pressing



and then inputting a digit or character or pressing



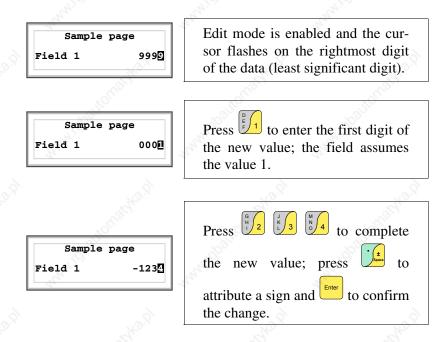
enables the change of only that digit or character pointed to by the cursor; to change the adjacent digits or characters the cursor must be positioned manually (the figure above applies only to VT50 and VT60).

# Examples of varying fields

The examples below are offered to clarify how this works. For the sake of simplicity we have chosen a single product, VT170W, but conceptually what is said applies to all VTs, irrespective of what is written on the  $\Box\Box$ .

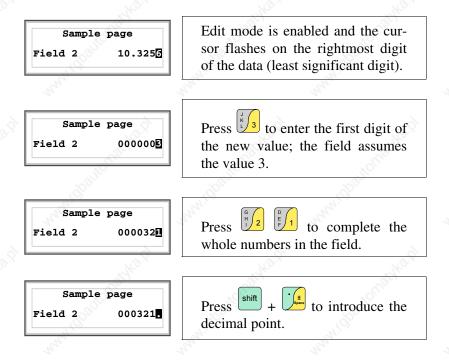
Changing the value of a decimal numerical field:

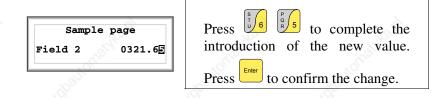
The following example demonstrates the variation (total change) of field 1 from 9999 to -1234.



Changing the value of a floating point numerical field:

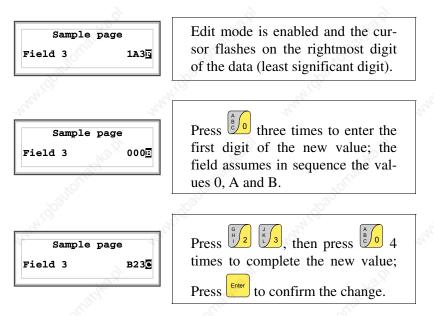
The procedure for changing a floating point numerical field is as for a decimal numerical field, except that a decimal point can be inserted anywhere in the field. The following example shows a variation (total change) in field 2 from 10.3256 to 321.65.



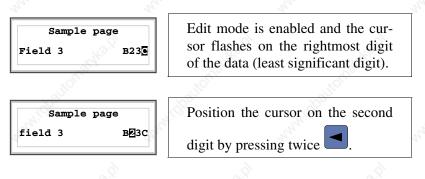


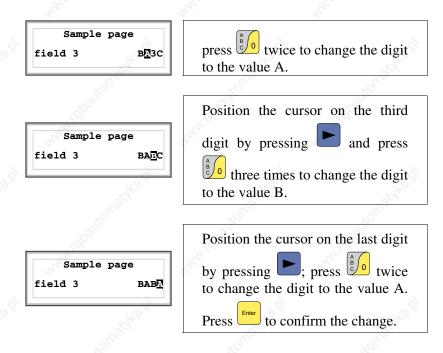
Changing the value of a hexadecimal numerical field:

A hexadecimal digit can assume not only numerical values from 0 to 9 but also the letters A-B-C-D-E-F; thus for this type of field the numerical  $\Box \Box 0$  and 1 can be used to enter the letters A-B-C and D-E-F respectively by pressing the same key  $\Box$  more than once. All the other  $\Box \Box$  from 2 to 9 have only a numerical significance. The following example illustrates the variation (total change mode) of field 3 from 1A3F to B23C.



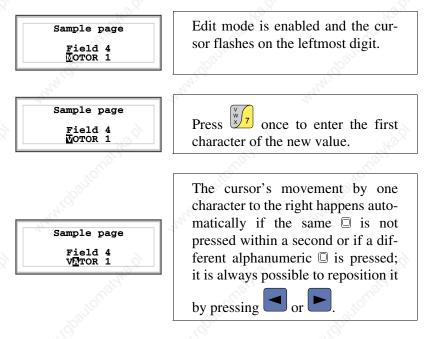
The following example illustrates the variation (partial change) of field 3 from B23C to BABA.



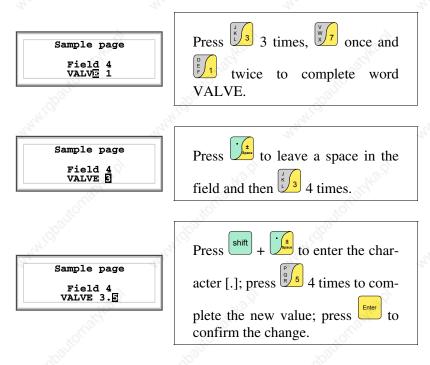


Changing the value of an alphanumeric (ASCII) numerical field:

The following example illustrates the changing of field 4 from MOTOR 1 to VALVE 3.5.



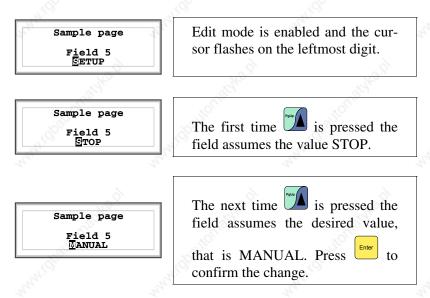
Entering [A] as the second character will cause the cursor to move automatically.



Changing the value of a dynamic text field:

The following example illustrates the variation of field 5 that can assume 4 different states to which the following 4 symbolic texts correspond: SETUP, STOP, MANUAL, AUTOMATIC.

Let us assume that SETUP is the starting value and MANUAL the final one.



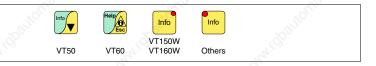
Displaying messages

The VT can display three types of message: Information messages, ISA-1A Alarms (in the case of terminals accepting them) and Help messages (HELP pages). The information and alarm messages can only be displayed if, using VTWIN, the programmer has already prepared the list of messages assigned to areas of memory in the device.

Which type of message is used is at the discretion of the programmer.

Information messages

When an event occurs which has an information message assigned to it the LEDs of the following keys start flashing:



Terminals VT50 and VT60 do not have LEDs, so there is no way of understanding when an information message is present. You are advised to define the priority of the messages with regard to the page using the Exchange area "Chapter 37 -> Command area" (see also Software Manual).

Information messages can be seen only when the event triggering them is still present. When you press



you enter display mode, indicated by a fixed LED light (where terminals have them), which is so structured as to allow one page for each message, that page have the following format (formats vary according to the type of VT).

The VT can provide an automatic sequential display of information messages on command from the device (see "Chapter 37 -> Command area").

Format: info-messages

**VT50** 

• Two rows of 20 characters for the text of the message.

Example with two messages.

Pressure exceeds safety limit

First message

When you press the next message is displayed

	vel lower k threshold
ESN	Na ^{JEO}

Second message

First message

When you press the first message is displayed again:

Pressur	re exceeds
safety	limit
=SN	10 ²¹⁰⁰

VT60 info-messages Format:

• Four rows of 20 characters for the text of the message.

Example with two messages.



First message

When you press Uv the next message is displayed:

Water level lower than work threshold
ESN (

Second message

When you press [t] the first message is displayed again.



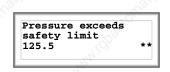
First message

## VT150W -VT160W info-messages

Format:

- Two rows of 20 characters for the text of the message.
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- The first display is indicated by two characters [**] on the far right of the third line of the display. These symbols are not present if the message appeared when the display mode for information messages was accessed on a previous occasion.

Example with two messages.



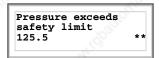
First message

When you press the next message is displayed:

Water level lower than work threshold 40 **

Second message

When you press the first message is displayed again:



First message

### VT170W info-messages

- Format:
  - Two rows of 20 characters for the text of the message.
  - One row for any data field (which in that particular situation could indicate a safety or warning limit value).
  - One row for the date and time the signal occurred.
  - The first display is indicated by two characters [**] on the far right of the third line of the display. These symbols are not present if the message appeared when the display mode for information messages was accessed on a previous occasion.

Example with two messages.

	ressur			
sa	afety	limi	t	
12	25.5			**
01	L/07/1	998	10:45	

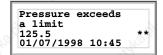
First message

When you press the next message is displayed:

Water leve	l lower
than work	threshold
40	**
01/07/1998	10:46

Second message

When you press the first message is displayed again:



First message

# VT190W info-messages

Format:

- Two rows of 40 characters for the text of the message.
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- One row for the date and time the signal occurred.
- The first display is indicated by two characters [**] on the far right of the third line of the display. These symbols are not present if the message appeared the last time the display mode for information messages was accessed.

Example with two messages.

The pressure in the tank exceeds first warning limit 125.5 01/07/1998 10:45

First message

When you press **the** next message is displayed:

The water level is lower than the threshold enabling work to proceed 40 01/07/1998 10:46

Second message

When you press the first message is displayed again:

```
The pressure in the tank exceeds
first warning limit
125.5
01/07/1998 10:45
```

First message

VT300W -VT310W -VT320W info-messages Format:

- Five rows of 30 characters with character height of X1 or two rows of 15 with character height of X2 for the text of the message (VT300W VT310W).
- Five rows of 36 characters with character height of X1 or two rows of 18 with character height of X2 for the text of the message (VT320W).
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- One row for the date and time the signal occurred.
- The first display is indicated by a closed envelope [ $\square$ ] at the top left of the display. This symbol is not present if the message appeared the last time the display mode for information messages was accessed.

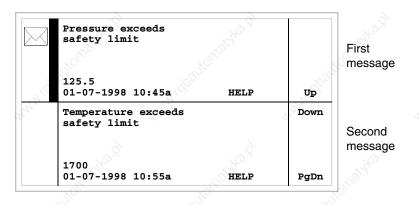
Example with two messages (VT310W).



When you press the second page containing the second message appears. NB: having already appeared before, this message is not accompanied by a closed envelope:



Example with three messages (VT310W and VT320W).



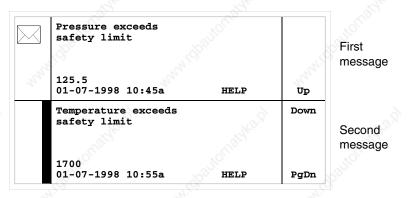
When you press you select the second message displayed as the current message (the black bar indicates message has been selected). NB: having already appeared before, this message is not accompanied by a closed envelope:

$\sim$	Pressure exceeds safety limit		ANALIDO	First message
	125.5 01-07-1998 10:45a	HELP	Up	
	Temperature exceeds safety limit	omable	Down	Second message
2	1700 01-07-1998 10:55a	HELP	PgDn	

When you press again you select the third message displayed as the current message:

	Temperature exceeds safety limit	PgUp	Second message
	1700 01-07-1998 10:55a HELP	Up	6
	Water level under minimum level	Down	Third message
and C	-10 01-07-1998 11:00a HELP	and Co	
		-32	

When you press + the previous page appears containing the first and second messages:



#### VT330W info-messages

# Format:

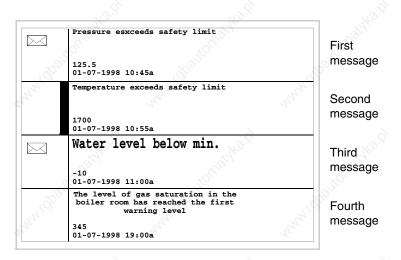
- Four rows of 70 characters x1 high or two rows of 35 characters of double height (x2) for the text of the message.
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- One row for the date and time the signal occured.
- The first display is indicated by a closed envelope [ $\square$ ] at the top left of the display. This symbol is not present if the message appeared the last time the display mode for information messages was accessed.

Example with five messages:

- C-1		
	Pressure esxceeds safety limit	First
	125.5 01-07-1998 10:45a	message
	Temperature exceeds safety limit 1700 01-07-1998 10:55a	Second message
	Water level below min.	Third message
	The level of gas saturation in the boiler room has reached the first warning level 345 01-07-1998 19:00a	Fourth message

When you press vous select the second message displayed as the current message (the black bar indicates message has been selected). NB: hav-

ing already appeared before, this message is not accompanied by a closed envelope:



When you press again you select the third message displayed as the current message:



When you press + + the next page containing the fifth message appears



	Pressure esxceeds safety limit 125.5 01-07-1998 10:45a	First message
	Temperature exceeds safety limit 1700 01-07-1998 10:55a	Second message
	Water level below min.	Third message
A. A. A.	The level of gas saturation in the boiler room has reached the first warning level 345 01-07-1998 19:00a	Fourth message

**ISA-1A alarms** When an event occurs to which an alarm has been assigned, the following LEDs begin to flash:



ISA alarms are displayed from the time when the event triggering the alarm occurs (Event in) until there is an individual acknowledgment operation using

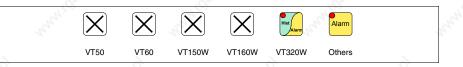
		$\left  \mathbf{X} \right $	$\mathbf{X}$	$\left[ \times \right]$	$\mathbf{X}$	Ack All Ack	Ack All Ack	
		VT50	VT60	VT150W	VT160W	VT170W	Others	
		2			2		<u></u>	N
r tha	مامهما م	aknowl	adaman	t oporati	on usin	a		
r the	global a	cknowl	edgmen	it operati	on using	g		
r the	global a	cknowl	edgmen	it operati	on using	g	Michaute	
r the	global a		edgmen	nt operati		-	NAL GOOME	
r the	global a		edgmen	nt operati	on using		Shift +	Ack Ack
r the	global a			nt operati		+ Ack	Shift +	Ack Ack

(Event acknowledged) and the triggering event is no longer present (Event out).

By "acknowledgment" we mean the confirmation on the part of the plant or machine operator of having taken note of the alarm message.

For further details on how ISA-1A Alarms work see Software Manual.

When you press



you enter display mode, signaled by the fixed light LED of that  $\Box$  coming on, where the first page has the format set out below (the format changes according to the type of VT).

When you press again you enter the second page whose format is set out below (valid only for VT170W and VT190W).

The VT can provide an automatic sequential display of information messages on command from the device (see "Chapter 37 -> Command area").

VT170W alarms The first page has the following format:

- Numerical identification of the ISA-1A alarm.
- Two rows of 20 characters for the text of the message.
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- Indication in the bottom right-hand corner of the display of:
  - Event appeared but not acknowledged; indicated by [!]
  - Event appeared, present and acknowledged; indicated by [*]
  - Event disappeared and not acknowledged; indicated by[#]

The second page has the following format:

- Numerical identification of the ISA-1A alarm.
- One row starting with the character [>] for the date and time of the appearance of the event (Event appears).
- One row starting with:
  - the character [#] for the date and time of the Event acknowledged but still present.
  - the character [<] for the date and time of the Event disappeared but not acknowledged.

Example with two alarms.

Alarm n. 420 Pressure over the maximum limit 150.0 !

First page of the first alarm

The character [!] indicates that the alarm has not yet been acknowledged.

The acknowledgment operation, pressing , changes the character signalling the status of the event to [*]:

Alarm n. 420 Pressure over the maximum limit 150.0 *

First page of the first alarm

When you press the second page appears:

Alarm n. 420 >01-07-1998 11:32a #01-07-1998 11:38a

Second page of the first alarm

When you press again or the first page is appears again; by pressing

again you quit display mode for the ISA-1A alarms.

If, while displaying the first page of the alarm, you pressing  $\bigcup$ , the next alarm message appears:

Alarm n. 470 Water level lower than stop threshold 10 #

First page of the second alarm

When you press Airm the second page appears:



Second page of the second alarm

The character [<] followed by the date and time, indicates that the event triggering the alarm disappeared before the acknowledgment operation.

# VT190W alarms

The first page has the following format:

- Numerical identification of the ISA-1A alarm.
- Two rows of 40 characters for the text of the message.
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- Indication in the bottom right-hand corner of the display of:
  - Event in but not acknowledged; indicated by [!]
  - Event in, present and acknowledged; indicated by [*]
  - Event out and not acknowledged; indicated by[#]

The second page has the following format:

- Numerical identification of the ISA-1A alarm.
- One row starting with the character [>] for the date and time of the appearance of the event (Event in).
- One row starting with:
  - the character [#] for the date and time of the Event acknowledged but still present.
  - the character [<] for the date and time of the Event out but not acknowledged.

Example with two alarms.

```
Alarm n. 420
The pressure in the tank exceeds
the maximum limit
150.0
```

First page of the first alarm

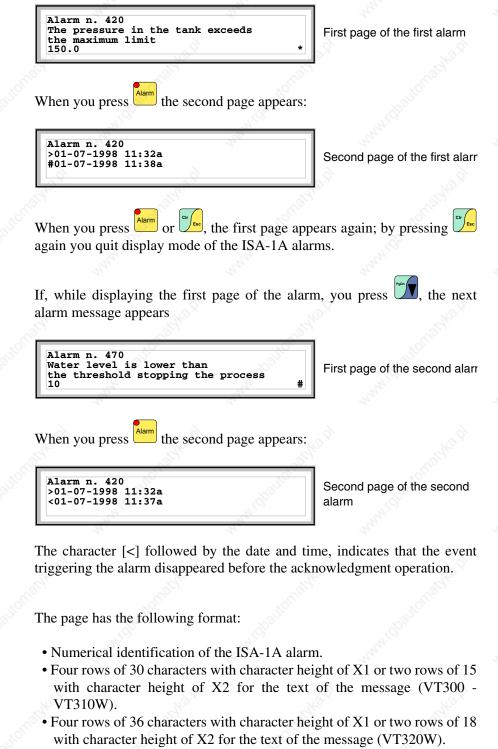
Il character [!] indicates that the alarm has not yet been acknowledged; this

is emphasized by the LED of flashing; by pressing this key, the alarm is acknowledged and the character indicating the status of the event changes to [*] and the LED goes out.

VT300W -

VT310W · VT320W

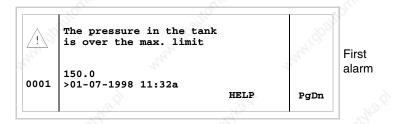
alarms



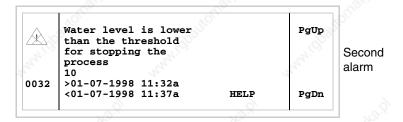
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- One row starting with the character [>] for the date and time of the appearance of the event.

- One row starting with:
  - the character [#] for the date and time of the Event acknowledged but still present.
  - the character [<] for the date and time of the Event out but not acknowledged.
- Symbols indicating status of the alarm
  - Event in but not acknowledged [ // ]
  - Event appeared, present and acknowledged [
  - Event out and not acknowledged [ ____]

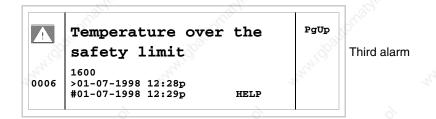
Example with three alarms (VT300W).

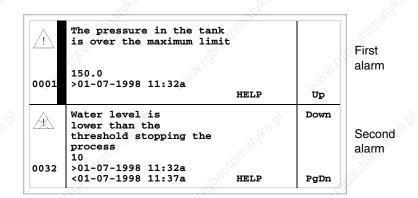


When you press + the second page appears containing the second alarm. Note that the second alarm is accompanied by the character [<] followed by the date and time, indicating that the event triggering the alarm disappeared before the acknowledgment operation. All this is also emphasized by the appropriate symbol.

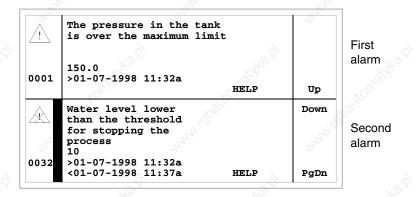


When you press  $\ddagger$  +  $\checkmark$  the next page appears containing the third alarm. Note that the second alarm is accompanied by the character [#] followed by the date and time, indicating that the event triggering the alarm is present and acknowledged. All this is also emphasized by the appropriate symbol.





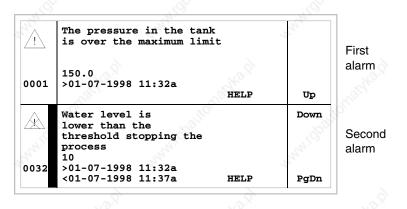
When you press vous select the second alarm as the current alarm. Note that the second alarm is accompanied by the character [<] followed by the date and time, indicating that the event triggering the alarm disappeared before the acknowledgment operation. All this is also emphasized by the appropriate symbol.



When you press again you select the third alarm as the current alarm.

À	Water level lower than the threshold for stopping the process 10		PgUp	Second alarm
0032	>01-07-1998 11:32a <01-07-1998 11:37a	HELP	υp	C. B. S.
	Temperature over	the	Down	13 JEON
	safety limit		24	Third alarm
0006	1600 >01-07-1998 12:28p		44	aiaiiii
0000	#01-07-1998 12:29p	HELP		

When you press shift + the previous page appears containing the first and second alarms. Note that the second alarm is accompanied by the character [#] followed by the date and time, indicating that the event triggering the alarm is present and acknowledged. All this is also emphasized by the appropriate symbol.



## VT330W alarms

The page has the following format:

- Numeric identification of the ISA-1A alarm.
- Four rows of 70 characters of x1 dimension or alternatively two rows of 35 double-size (x2) characters for the message text.
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- One row starting with the character [>] for the date and time of the appearance of the event (Event in).
- One row starting with:
  - the character [#] for the date and time of the Event acknowledged but still present.
  - the character [<] for the date and time of the Event out but not acknowledged.
- Graphic indication of the status of the alarm:
  - Event in and not acknowledged [ // ]
  - Event in, present and acknowledged [
  - Event out and not acknowledged. [

Example with five alarms:

0006	>01-07-1998 12:28p #01-07-1998 12:29p	-
<u>.</u>	Temperature over safety limit	Third
0032	10 >01-07-1998 11:32a <01-07-1998 11:37a	alarm
À	Water level is lower than stop threshold of the process	Secor
0001	150.0 >01-07-1998 11:32a	alarm
À	Pressure in tank is over safety limit	First

When you press vous select the second alarm as the current alarm. Note that the second alarm is accompanied by the character [<] followed by the date and time, indicating that the triggering event of the alarm disappeared before being acknowledged. The situation as a whole is highlighted by the appropriate alarm status symbol. Third alarm is accompanied by the character [#] followed by the date and time, indicating that the triggering event of the alarm is present and has been acknowledged. The situation as a whole is highlighted by the appropriate alarm status symbol.

#### ISA-1A alarm history buffer

When an event occurs to which an alarm has been assigned the terminal registers it chronologically in an area of the internal memory called the *Alarm history buffer*. If, while displaying the first page of the alarm, you

press enter, or at any point



you enter display mode, signaled by the fixed light LED of that  $\square$  coming on.

When you press again you enter the second page whose format is set out below (valid only for VT170W and VT190W).

The VT can provide an automatic sequential display of information messages on command from the device (see "Chapter 37 -> Command area").

The buffer of the *Alarm history* can be emptied (the elimination of all the messages registered) only by means of a command from the device (see

"Chapter 37 -> Command area").

Once the buffer is full, new alarms are no longer registered. You are advised to consult the chapter Status area of the VT "Chapter 37 -> Status area for the terminal" (see also Software Manual) to be able to tell when the buffer is full.

The format is similar to that of the alarms except that a character [H] is added in front of the number of the alarm (see the formats of the various products).

**VT170W** history buffer Example with two alarms.

	1
H - Alarm n. 420	
Pressure over the	
maximum limit	
150.0	

First page of history buffer of the first alarm

the second page appears: When you press

H - Alarm n. 420
>01-07-1998 11:32a
#01-07-1998 11:38a
<01-07-1998 11:52a

Second page of history buffer of the first alarm

When you press or the first page appears again; by pressing again you quit the display mode for the history buffer.

If, while displaying the first page of the history buffer, you press 💴 the next message is displayed:

H - Alarm n. 470 Water level lower than stop threshold	]
10	

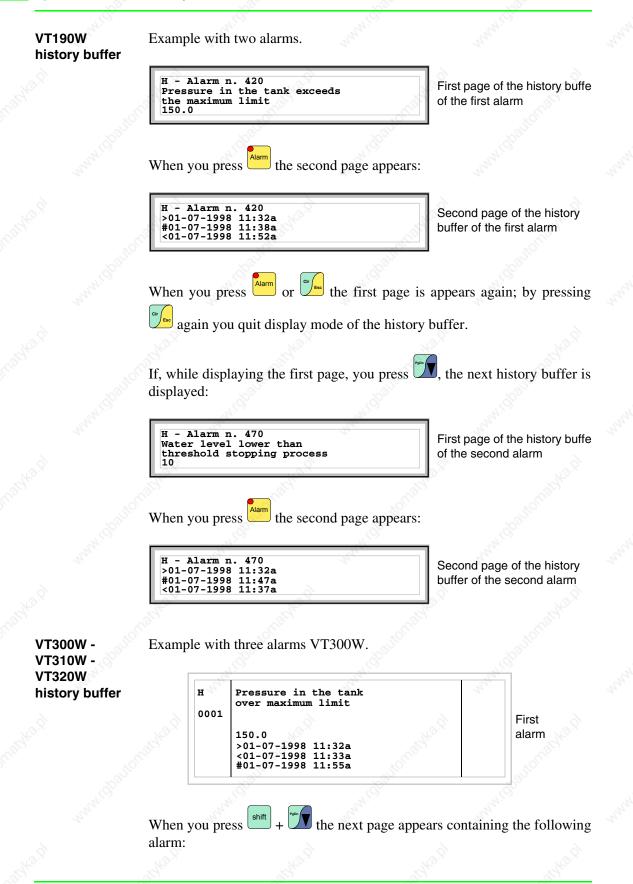
First page of history buffer of the second alarm



When you press  $\frac{\Delta a}{\Delta a}$  the second page appears:

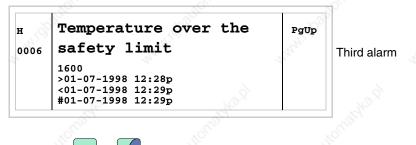
	23
H - Alarm n	. 470
>01-07-1998	11:32a
#01-07-1998	11:47a
<01-07-1998	11:37a

Second page of the second alarm





When you press white + the next page appears containing the following alarm:

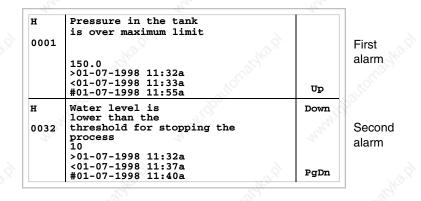


Example of three alarms VT310W and VT320W.

н	Pressure in the tank is over the maximum limit		\$ ⁰
0001	8	. S	First
	150.0	Str.	alarm
	>01-07-1998 11:32a	36	
	<01-07-1998 11:33a #01-07-1998 11:55a	Up	
н	Water level is	Down	6
	lower than the	Down	N2"
0032	threshold stopping the process		Second
	10		alarm
	>01-07-1998 11:32a		1
	<01-07-1998 11:37a	DerDer	
	#01-07-1998 11:40a	PgDn	

When you press vou select the third alarm as the current alarm:

н	Water level is lower than the	PgUp	
0032	threshold stopping the process 10		First alarm
	>01-07-1998 11:32a		2
	<01-07-1998 11:37a #01-07-1998 11:40a	Up	100
н	Temperature over the	Down	5000
0006	safety limit	325	Second
	1600	-554	alarm
	>01-07-1998 12:28p		
	<01-07-1998 12:29p		
	#01-07-1998 12:29p	PgDn	



When you press you quit display mode for the history buffer.

VT330W history buffer

Example with three alarms.

н 0001	Pressure in the tank is over the safety limit 150.0 >01-07-1998 11:32a <01-07-1998 11:33a #01-07-1998 11:35a	
H 0032	Water level below the threshold level stopping the processo 10 >01-07-1998 11:32a <01-07-1998 11:37a #01-07-1998 11:40a	10
н 0006	<b>Temperature over</b> safety limit 1600 >01-07-1998 12:28p <01-07-1998 12:29p #01-07-1998 12:29p	
1	Source all grand	

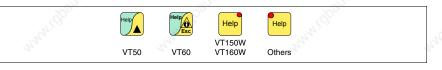
⁼irst alarm

Second alarm

Third alarm When you press you quit display mode for the history buffer.

Help
messages

When there is a help message the LED of the following keys flashes



Terminals VT50 and VT60 have no LEDs, so there is no way of knowing when a help message is present.

Help messages can be assigned to project pages, to information messages and to ISA alarms, giving additional information relevant to the operation underway. Help messages have no particular format and can be freely created by the programmer using the entire screen.

When you press



you enter display mode, indicated by the fixed light of the LED (in the case of those terminals that have it). When you press



you quit display mode for help messages and return to the previous display mode.



# Operation of terminal with touch screen

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This chapter consists of 36 pages.	No.

The contents of this chapter apply to all the VT terminals of the same family that have a touch screen.

Throughout the present chapter, when referring to the number of rows and the number of characters that can be used in the terminal, we assume native fonts are being used; when Windows-based fonts are used (in the case of graphics ternminals only), the equivalent screen area in pixels should be considered (see Software Manual "Chapter 6 -> Project language").

# Changing value of variable field

To be able to carry out a change in any editable variable field you must touch the chosen field on the display and a page appears offering the  $\Box\Box$  needed to modify the field.

The edit mode is quit by pressing the appropriate  $\Box \Box$  (see "Table 36.1, Chapter 36 -> Keys displayed used for settings .") after setting the value, or automatically when the "input timeout" (see Software Manual) elapses, whereby the variation is quit.

Table 36.1: Keys displayed used for settings (Part 1 of 2).

Keys	Function
	The function assumed depends on the type of field to be set. Increases/decreases the value, the digit, the character.
€ I	The function assumed depends on the type of field to be set. Increases/decreases the value, the digit, the character.
→	The function assumed depends on the type of field to be set. Increases/decreases the value. Allows you to move between digits or characters of the field.
+	The function assumed depends on the type of field to be set. Increases/decreases the value. Allows you to move between digits or characters of the field
	Confirms the setting of a field. (For the sake of simplicity called Enter)
ESC	Quits the setting of a field.
+/-	Changes the sign when the field permits.
•	Inserts the decimal point when the field permits.
09/a	Numerical and alphanumeric keys.

Table 36.1: Keys displayed used for settings (Part 2 of 2).

	Keys	Function
6	SHIFT	In the case of an alphanumeric key allows the letter to be inserted.

The VT offers the following ways of changing a field:

- Total change
- Partial change

#### Total change

This is the default mode adopted by the VT when enabling a change in a numerical field.

Numerical fields:

The cursor flashes on the rightmost digit of the field. When the first digit is introduced the rest of the field goes to zero, while the successive introductions make the digits shift to the left.

#### Partial change

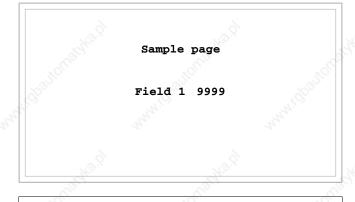
With the edit mode enabled, the change of the individual digit or character being pointed to by the cursor is enabled by pressing the arrow  $\Box \Box$  and then entering a digit, or by means of increasing the character (see "Table 36.1, Chapter 36 -> Keys displayed used for settings ."). To change the adjacent digits or characters the cursor has to be positioned manually.

## Examples of varying fields

The examples below are offered to clarify how this works. For the sake of simplicity we have chosen a single product, VT555W, but conceptually what is said applies to all the products of the same family.

Changing the value of a decimal numerical field:

The following example demonstrates the variation (total change) of field 1 from 9999 to -1234.



Touch the display field [9999]

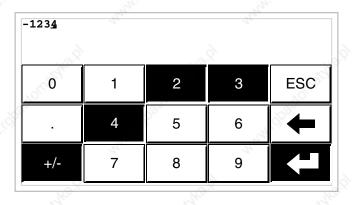
999 <u>9</u>	- 22			19-
	2		S.C.	
0	1	2	3	ESC
Soo-	4	5	6	+
+/-	7	8	9	4

Edit mode is enabled; the cursor moves to the rightmost digit of the data (least significant digit).

000 <u>1</u>	.a.P			
0	1	2	3	ESC
· ·	4	5	6	-
+/-	ু 7	8	9	

Press the  $\Box$  [1] to enter the first digit of the new value; the field assumes the value 1.

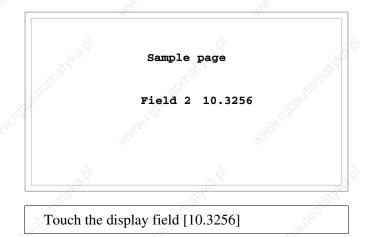
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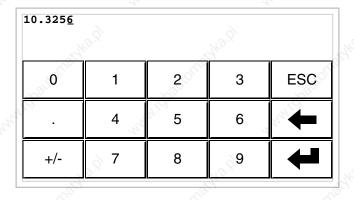


Press [2] [3] [4] to complete the entering of the new value; press [+/-] to attribute a sign and Enter to confirm.

Changing the value of a floating point numerical field:

The procedure for changing a floating point numerical field is as for a decimal numerical field, except that a decimal point can be inserted anywhere in the field. The following example shows a variation (total change) in field 2 from 10.3256 to 321.65.

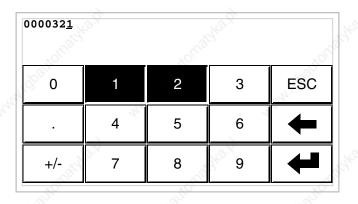




Edit mode is enabled; the cursor moves to the rightmost digit of the data (least significant digit).

000000 <u>3</u>	3.9		342.P	
0	1	2	3	ESC
· .	4	5	6	-
+/-	7	8	9	+

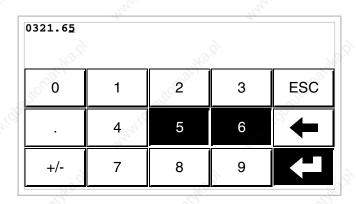
Press the  $\Box$  [3] to enter the first digit of the new value; the field assumes the value 3.



Press [2] and then [1] to complete the whole field.

000321 <u>.</u>		Ŕ	ġ.	N ²
0	1	2	3	ESC
	4	5	6	•
+/-	7	8	9	ł

Press [.] to insert the decimal point.



Press [6] and then [5] to complete the entering of the new value; press Enter to confirm the variation.

Changing the value of a hexadecimal numerical field:

A hexadecimal digit can assume not only numerical values from 0 to 9 but also the letters A-B-C-D-E-F; thus for this type of field the numerical  $\Box \Box$  0 and 1 can be used to enter the letters A-B-C and D-E-F respectively by pressing the same key  $\Box$  more than once. All the other  $\Box \Box$  from 2 to 9 have only a numerical significance. The following example illustrates the variation (total change mode) of field 3 from 1A3F to B23C.



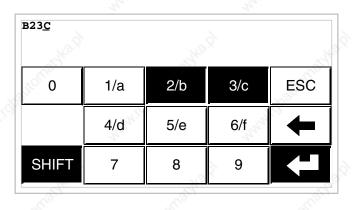
Touch the display field [1A3F]

1A3 <u>F</u>	4			2
12	2		. A	
0	1/a	2/b	3/c	ESC
3000	4/d	5/e	6/f	Ŧ
SHIFT	7	8	9	4

Edit mode is enabled; the cursor moves to the rightmost digit of the data (least significant digit).

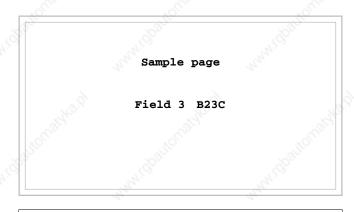
	ather?		
1/a	2/b	3/c	ESC
4/d	5/e	6/f	-
7	8	9	
	2	4/d 5/e	4/d 5/e 6/f

Press [SHIFT] + [2/b] to enter the first digit of the new value.



Press [2/b] [3/c] and [SHIFT] + [3/c] to complete the entering of the new value; press Enter to confirm.

The following example shows the variation (partial change) of Field 3 from B23C to BABA.



Touch the display field [B23C]

1/a	2/b	3/c	ESC
4/d	5/e	6/f	
7	8	9	ł
		4/d 5/e	4/d 5/e 6/f

Edit mode is enabled; the cursor moves to the rightmost digit of the data (least significant digit).

B <u>2</u> 3C	<u>,</u> ?		34 ^{0.9}	
0	1/a	2/b	3/c	ESC
	4/d	5/e	6/f	K
SHIFT	7	8	9	

Position the cursor on the second digit by pressing the  $\Box$  [<-] twice.

<u>}</u>	tonot	Y.	. Hot
1/a	2/b	3/c	ESC
4/d	5/e	6/f	+
7	8	9	←
	<u>_</u>	4/d 5/e	4/d 5/e 6/f

Press [SHIFT] + [1/a] to enter the digit of the new value.

BAB <u>C</u>		S.	ġ.	2
0	1/a	2/b	3/c	ESC
	4/d	5/e	6/f	-
SHIFT	7	8	9	₽

Press [SHIFT] + [2/b] to enter the third digit of the new value.

BABA				
о ⁰⁰ 0	1/a	2/b	3/c	ESC
	4/d	5/e	6/f	+
SHIFT	7	8	9	

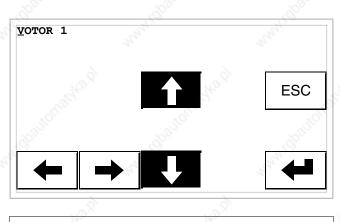
Press [SHIFT] + [1/a] to enter the last digit of the new value; press Enter to confirm the value.

Varying the value of alphanumeric (ASCII) field:

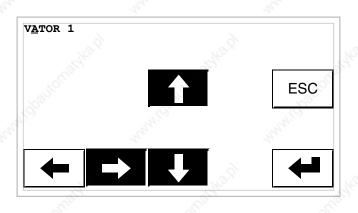
The following example shows the changing of Field 4 from MOTOR 1 to VALVE 3.5.



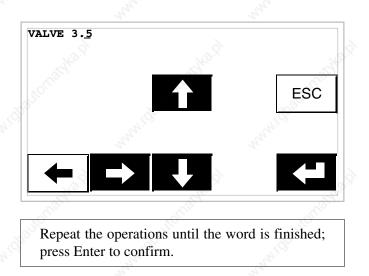
Touch the display field [MOTOR 1]



Press [A] or [V] to poll all the characters of the table of the font assigned (see Software Manual); halt at the character [V].

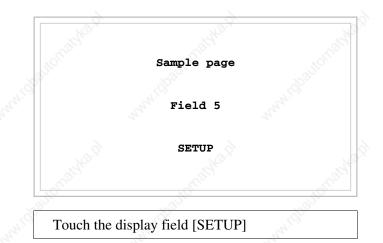


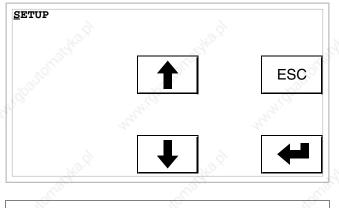
Press [->] to move to the next character, then press [ $\downarrow$ ] or [ $\downarrow$ ] to poll all the characters until reaching the character [A].



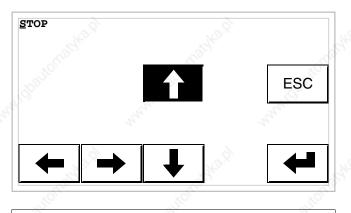
Changing the value of a dynamic text field:

The following example illustrates the variation of field 5 that can assume 4 different states to which the following 4 symbolic texts correspond: SETUP, STOP, MANUAL, AUTOMATIC. Let us assume that SETUP is the starting value and MANUAL the final one.

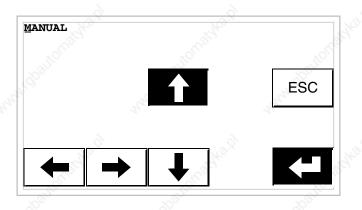




Edit mode is enabled; the cursor moves to the leftmost digit of the data.



The first time [4] is pressed the field assumes the value STOP.

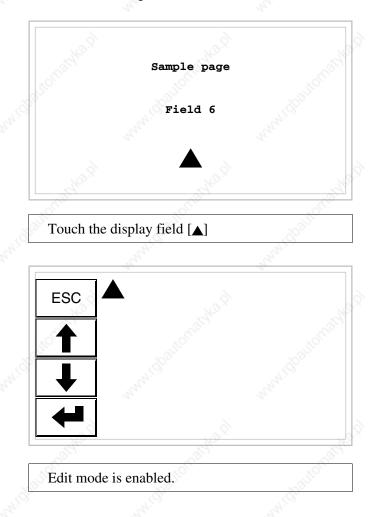


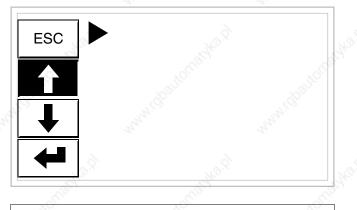
The next time [] is pressed the field assumes the value MANUAL; press Enter to confirm.

Changing the value of a symbolic field:

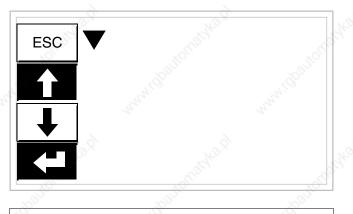
The following example shows the variation of Field 6 that can assume 4 different states to which are assigned the following 4 images:

Let us assume as a starting value  $\blacktriangle$  and as a final value  $\checkmark$ 





The first time [4] is pressed the field assumes the value  $\blacktriangleright$ .



The next time [A] is pressed the field assumes the value  $\mathbf{\nabla}$ ; press Enter to confirm.

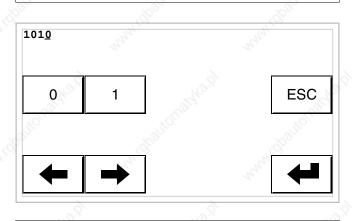
Varying the value of a binary field:

The following example illustrates the variation (total change) of Field 7 from 1010 to 1111.

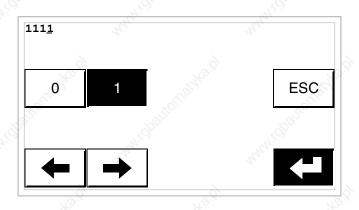
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Touch the display field [1010]



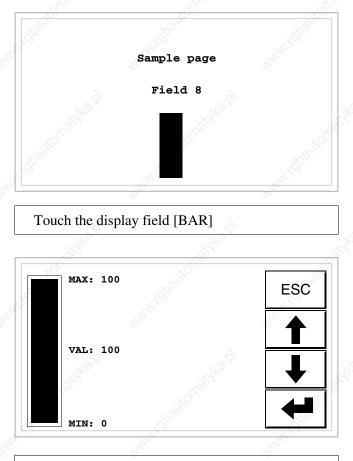
Edit mode is enabled; the cursor moves to the rightmost digit of the data (least significant digit).



Press [1] 4 times to enter the new value; press Enter to confirm.

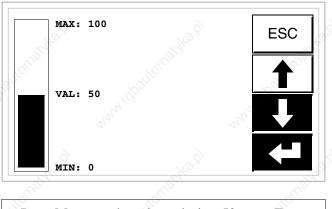
Changing the value of a bar data:

The following example illustrates the variation of Field 8 that is to be changed from a value of 100 to a value of 50.



Edit mode is enabled.

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Press  $[\dagger]$  to vary the value; take it to 50; press Enter to confirm.

# Displaying messages

The VT can display three types of message: *Information messages*, *ISA-1A Alarms* (in the case of terminals accepting them) and *Help messages* (HELP pages). The information and alarm messages can only be displayed if, using VTWIN, the programmer has already prepared the list of messages assigned to areas of memory in the device.

Which type of message is used is at the discretion of the programmer.

# Information messages

When an event occurs which has an information message assigned to it the display shows

Note that the symbol is a triangle containing the character [i].

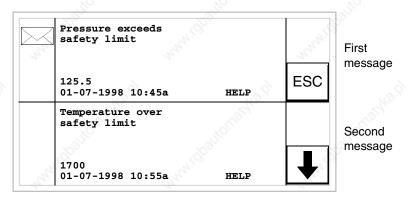
Information messages are only displayable so long as the event triggering them is present. When the above symbol is touched on the screen you enter display mode, where there is a page containing two messages with the following format (the format changes according to the VT).

#### VT5xxH -VT1x5/505/515 /525/555/56xW info-msgs

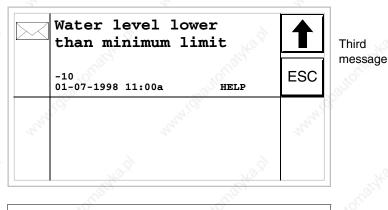
Format:

- Five rows of 30 characters with character height of X1 or two rows of 15 with character height of X2 for the text of the message.
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- One row for the date and time the signal occurred.
- The first display is indicated by a closed envelope [ $\square$ ] at the top left of the display. This symbol is not present if the message appeared the last time the display mode for information messages was accessed.

Example with three messages:



By pressing [*] the next page containing the third message appears. NB: having already appeared before, this second message is not accompanied by a closed envelope.



By pressing [4] the previous page returns containing the first and second messages. Format:

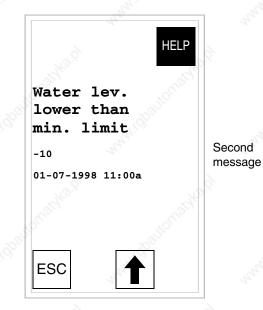
#### Vertical VT1x5W info-messages

- Five rows of 21 characters with character height of X1 or three rows of 10 with character height of X2 for the text of the message.
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- One row for the date and time the signal occurred.
- The first display is indicated by a closed envelope [ $\square$ ] at the top left of the display. This symbol is not present if the message appeared the last time the display mode for information messages was accessed.

Example with two messages:

HELP Pressure exceeds safety limit First 125.5 message 01-07-1998 10:45a ESC

By pressing  $[\dagger]$  the next page containing the second message appears. NB: having already appeared before, this second message is not accompanied by a closed envelope.

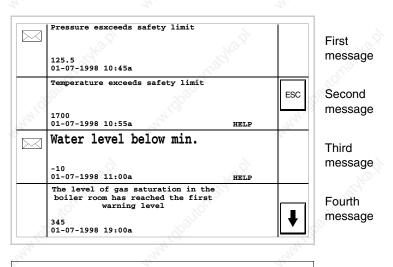


By pressing [4] the previous page returns containing the first and first messages.

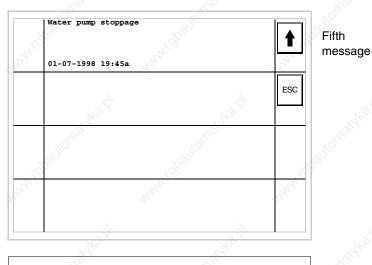
VT575W -VT580W-VT585W -VT585WB info-messages Format:

- Four rows of 70 characters x1 high or two rows of 35 characters of double height (x2) for the text of the message.
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- One row for the date and time the signal occured.
- The first display is indicated by a closed envelope [ $\square$ ] at the top left of the display. This symbol is not present if the message appeared the last time the display mode for information messages was accessed.

Example with five messages:



By pressing [****] the next page containing the fifth message appears.



By pressing [4] the previous page returns containing the first four messages.

Format:

## VT595W info-messages

- Four rows of 89 characters x1 high or two rows of 44 characters of double height (x2) for the text of the message.
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- One row for the date and time the signal occured.
- The first display is indicated by a closed envelope [ $\square$ ] at the top left of the display. This symbol is not present if the message appeared the last time the display mode for information messages was accessed.

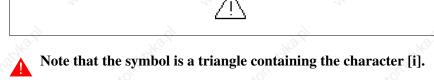
Example with five messages:

	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
	Pressure esxceeds safety limit 125.5 01-09-1998 10:45a	h.	First message
	Temperature exceeds safety limit 1700 01-07-1998 10:55a HELP	ESC	Second message
	Water level below min.		Third message
44	The level of gas saturation in the boller room has reached the first warning level 345 01-07-1998 09:00a	the second	Fourth message
	Water pump stoppage 01-07-1998 10:45a	2.2	Fifth message
	1955 (1955)		

NB: having already appeared before, the second, fourth and fifth messages are not accompanied by a closed envelope.

ISA-1A alarms

When an event occurs to which an alarm has been assigned the screen shows.



ISA alarms are displayed from the time when the event triggering the alarm occurs (Eventin) until there is an individual acknowledgment operation-touching the symbol on the screen related to the alarm to be acknowledged (Event acknowledged) - and the triggering event is no longer present (Event out).

By "acknowledgment" we mean the confirmation on the part of the plant or machine operator of having taken note of the alarm message.

For further details on how ISA-1A Alarms work see Software Manual.

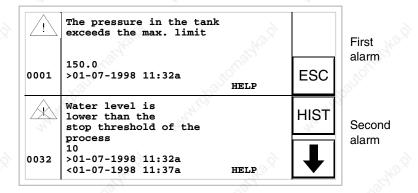
When the symbol on the screen is touched you enter display mode, where each page contains up to two alarms whose format is set out below.

The VT can provide an automatic sequential display of information messages on command from the device (see "Chapter 37 -> Command area").

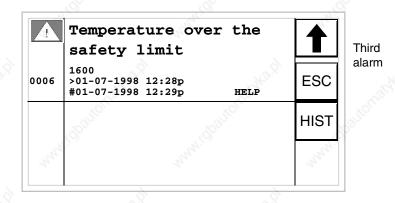
VT525H -VT1x5/515/525 /555/56xW alarms The page has the following format:

- Numerical identification of the ISA-1A alarm.
- Four rows of 30 characters with character height of X1 or two rows of 15 with character height of X2 for the text of the message.
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- One row starting with the character [>] for the date and time of the appearance of the event (Event in).
- One row starting with:
 - the character [#] for the date and time of the Event acknowledged but still present.
 - the character [<] for the date and time of the Event out but not acknowledged.
- Graphic indication of the status of the alarm:
 - Event in and not acknowledged [/介.]
 - Event in, present and acknowledged [
 - Event out and not acknowledged. [

Examples with three alarms:



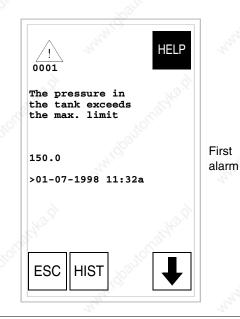
When you press $[\mathbf{v}]$ the next page appears containing the third alarm. Note that the second alarm is accompanied by the character [<] followed by the date and time, indicating that the event triggering the alarm disappeared before the acknowledgment operation. All this is also emphasized by the appropriate symbol.



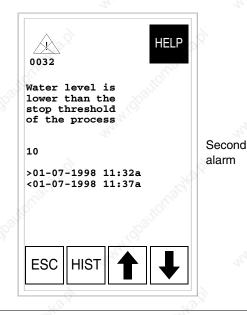
When you press [4] the first page appears. Note that the third alarm is accompanied by the character [#] followed by the date and time, indicating that the event triggering the alarm is present and acknowledged. All this is also emphasized by the appropriate symbol. Vertical VT1x5W alarms The page has the following format:

- Numerical identification of the ISA-1A alarm.
- Five rows of 21 characters with character height of X1 or three rows of 10 with character height of X2 for the text of the message.
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- One row starting with the character [>] for the date and time of the appearance of the event (Event in).
- One row starting with:
 - the character [#] for the date and time of the Event acknowledged but still present.
 - the character [<] for the date and time of the Event out but not acknowledged.
- Graphic indication of the status of the alarm:
 - Event in and not acknowledged [//]
 - Event in, present and acknowledged [
 - Event out and not acknowledged. [

Examples with three alarms:



When you press $[\mathbf{v}]$ the next page appears containing the second alarm. Note that the second alarm is accompanied by the character [<] followed by the date and time, indicating that the event triggering the alarm disappeared before the acknowledgment operation. All this is also emphasized by the appropriate symbol.



When you press $[\bullet]$ the first page appears. When you press $[\bullet]$ the next page appears containing the third alarm. Note that the second alarm is accompanied by the character [<] followed by the date and time, indicating that the event triggering the alarm disappeared before the acknowledgment operation. All this is also emphasized by the appropriate symbol.

0006	HELP	
Temperature over the safe lim.	5	Third
>01-07-1998 12:28p #01-07-1998 12:29p	1.05340.01	alarm
ESC HIST]	-2020

When you press [4] the second page appears.

VT575W -VT580W -VT585W -VT585WB alarms The page has the following format:

- Numeric identification of the ISA-1A alarm.
- Four rows of 70 characters of x1 dimension or alternatively two rows of 35 double-size (x2) characters for the message text.
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- One row starting with the character [>] for the date and time of the appearance of the event (Event in).
- One row starting with:
 - the character [#] for the date and time of the Event acknowledged but still present.
 - the character [<] for the date and time of the Event out but not acknowledged.
- Graphic indication of the status of the alarm:
 - Event in and not acknowledged [
 - Event in, present and acknowledged [
 - Event out and not acknowledged. [

Example with three alarms:

		-2°	
À	Pressure in tank is over safety limit		First
0001	150.0 >01-07-1998 11:32a HELP	,21	alarm
À	Water level is lower than stop threshold of the process	ESC	Second alarm
0032	10 >01-07-1998 11:32a <01-07-1998 11:37a HELP		alainn
<u>.</u>	Temperature over safety limit	1	Third
0006	1600 >01-07-1998 12:28p #01-07-1998 12:29p HELP	HIST	alarm
	de de		
	tomat.		

Note that the second alarm is accompanied by the character [<] followed by the date and time, indicating that the triggering event of the alarm disappeared before being acknowledged. The situation as a whole is highlighted by the appropriate alarm status symbol. Third alarm is accompanied by the character [#] followed by the date and time, indicating that the triggering event of the alarm is present and has been acknowledged. The situation as a whole is highlighted by the appropriate alarm status symbol.

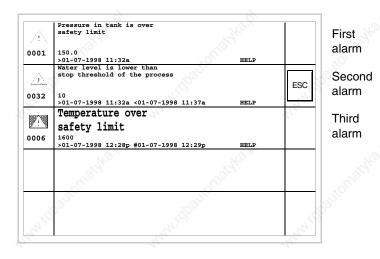
VT595W alarms

The page has the following format:

- Numeric identification of the ISA-1A alarm.
- Four rows of 89 characters of x1 dimension or alternatively two rows of 44 double-size (x2) characters for the message text.
- One row for any data field (which in that particular situation could indicate a safety or warning limit value).
- One row starting with the character [>] for the date and time of the appearance of the event (Event in).
- One row starting with:
 - the character [#] for the date and time of the Event acknowledged but still present.
 - the character [<] for the date and time of the Event out but not acknowledged.
- Graphic indication of the status of the alarm:
 - Event in and not acknowledged [//]
 - Event in, present and acknowledged [
 - Event out and not acknowledged. [

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Example with three alarms:



Note that the second alarm is accompanied by the character [<] followed by the date and time, indicating that the triggering event of the alarm disappeared before being acknowledged. The situation as a whole is highlighted by the appropriate alarm status symbol. Third alarm is accompanied by the character [#] followed by the date and time, indicating that the triggering event of the alarm is present and has been acknowledged. The situation as a whole is highlighted by the appropriate alarm status symbol.

ISA-1A alarm history buffer

When an event occurs to which an alarm has been assigned the terminal registers it chronologically in an area of the internal memory called the *Alarm history buffer*. If, while displaying the alarm page, you touch the \square HIST on the screen, you access the history buffer.

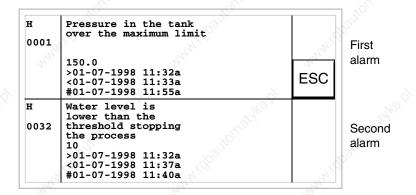
The VT can provide an automatic sequential display of information messages on command from the device (see "Chapter 37 -> Command area").

The buffer of the *Alarm history* can be emptied (the elimination of all the messages registered) only by means of a command from the device (see "Chapter 37 -> Command area").

Once the buffer is full, new alarms are no longer registered. You are advised to consult the chapter *Status area of the VT* "Chapter 37 -> Status area for the terminal" (see also Software Manual) to be able to tell when the buffer is full.

The format is similar to that of the alarms except that a character [H] is added in front of the number of the alarm (see the formats of the various products).

VT525H -VT1x5/515/525 /555/56xW history buffer Example with two alarms.



When \square ESC is pressed you return to the display mode for alarms.

Vertical VT1x5W history buffer Example with one alarm.

H 0001 The pressure in the tank exceeds the max. limit 150.0

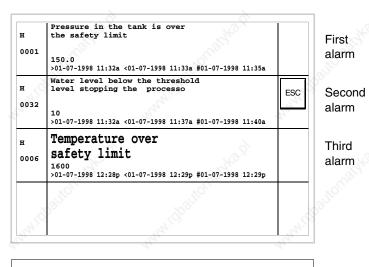
>01-07-1998 11:32a <01-07-1998 11:33a #01-07-1998 11:55a First Alarm

When DESC is pressed you return to the display mode for alarm.

ESC

36-33

VT575W -VT580W -VT585W -**VT585WB** history buffer Example with three alarms.



By pressing the ESC you return to the alarm display.

VT595W history buffer

Example with three alarms.

Pressure in tank is ove safety limit н First alarm 0001 150.0 >01-07-1998 11:32a Water level is low HELP stop threshold of the process н Second ESC alarm 0032 >01-07-1998 11:32a <01-07-1998 11:37a HELP Temperature over н Third safety limit alarm 1600 >01-07-19 0006 28p #01-07-1998 12:29

By pressing the ESC you return to the alarm display.

Help messages

Help messages can be assigned to project pages, to information messages and to ISA alarms, giving additional information relevant to the operation underway. Help messages have no particular format and can be freely created by the programmer using the entire screen.

To explain the way the help messages work, it is necessary to divide them into two categories: on the one hand messages related to alarms and to information messages, on the other hand help messages related to pages.

Help and information messages relating to alarms If, when you are in a context of displaying alarms or information messages, there is a help message present, the word HELP appears. If you touch the alarm or the message accompanying the word HELP the help message is displayed. Touching the 🗆 ESC on the screen takes you back to the previous screenful.

The length of the message can be:

• VT155W	->	up to 34 (characters) x 16 (rows)	
 VT155W Vertical 	->	up to 21 (characters) x 24 (rows)	
• VT185W	->	up to 34 (characters) x 16 (rows)	
 VT185W Vertical 	->	up to 21 (characters) x 24 (rows)	
• VT505H	-> (up to 34 (characters) x 16 (rows)	
• VT505W	->	up to 34 (characters) x 16 (rows)	
• VT515W	°->	up to 34 (characters) x 16 (rows)	
• VT525H	->	up to 34 (characters) x 16 (rows)	
• VT525W	->	up to 34 (characters) x 16 (rows)	
• VT555W	->	up to 34 (characters) x 16 (rows)	
• VT56xW	->	up to 34 (characters) x 16 (rows)	
• VT575W	->	up to 74 (characters) x 16 (rows)	
• VT580W	->>	up to 74 (characters) x 16 (rows)	
• VT585W	->	up to 74 (characters) x 16 (rows)	
• VT585WB	->	up to 74 (characters) x 16 (rows)	
• VT595W	->	up to 93 (characters) x 16 (rows)	
		9. 9.	

Help messages relating to project pages As far as project pages are concerned, it is the programmer's responsibility to insert the \Box necessary to access the help page (see Software Manual). If this is not done, there will be no way of telling if the page contains a help message.

The length of the message can be:

• VT155W	->	up to 34 (characters) x 16 (rows)
 VT155W Vertical 	->	up to 21 (characters) x 24 (rows)
• VT185W	->	up to 34 (characters) x 16 (rows)
• VT185W Vertical	->	up to 21 (characters) x 24 (rows)
• VT505H	->	up to 34 (characters) x 16 (rows)
• VT505W	->	up to 34 (characters) x 16 (rows)
• VT515W	->	up to 34 (characters) x 16 (rows)
• VT525H	->	up to 40 (characters) x 16 (rows)
• VT525W	->	up to 40 (characters) x 16 (rows)
• VT555W	->	up to 40 (characters) x 16 (rows)
• VT56xW	->	up to 40 (characters) x 16 (rows)
• VT575W	->	up to 80 (characters) x 16 (rows)
• VT580W	->	up to 80 (characters) x 16 (rows)
• VT585W	->	up to 80 (characters) x 16 (rows)
• VT585WB	->	up to 80 (characters) x 16 (rows)
• VT595W	->	up to 100 (characters) x 16 (rows)
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Chapter 37 Data exchange area

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This chapter consists of 54 pages.	100

This chapter consists of 54 pages.

By *Communication* we mean the exchange of information that occurs between the VT and the device connected to it. Information can be exchanged using *Variables* or *Exchange Areas* (see Software Manual for more detailed explanation).

The *Exchange Areas* are divided into:

- Area for Messages: Information messages Alarms
- Status Areas:

Status area for the terminal Status area for internal LEDs Status area for external LEDs Status area for recipes Status area for internal keys Status area for external keys Status area for internal keys (Real Time) Status area for external keys (Real Time) Status area for printer Trend status area Command response area

Command Areas

Command area external LEDs (fixed light) Command area external LEDs (blinking light) Command area internal red LEDs (fixed light) Command area internal red LEDs (blinking light) Command area internal green LEDs (fixed light) Command area internal green LEDs (blinking light) Area for Commands

As the *Area for Messages* does not depend on the type of VT, but is completely configurable using VTWIN, it will no longer be mentioned in this chapter.

For the detailed meaning of the various areas see Software Manual.

Status area for the terminal

- The significance of this area depends on the type of VT used:
 - With a keyboard
 - With a touch screen.

This area consists of 4 fixed words (numbered from 0 to 3).

• With a keyboard:

	NO. OF WORD	NAME OF WORD
	0	STATUS WORD
4	1 N	SEQUENCE IDENTIFIER
	2	PAGE IDENTIFIER
	3	FIELD IDENTIFIER

• With a touch screen:

	NO. OF WORD	NAME OF WORD
ť	0	STATUS WORD
	1	- office -
	2	PAGE IDENTIFIER
	3	CONTEXT IDENTIFIER
	a mark a second and a second	

--: not used

The tables appearing below refer to VTs with a keyboard.

- 37.1: Meaning of bits of Word 0 Status word
- 37.2: Meaning of value contained in the Word 1 Sequence Identifier
- 37.3: Meaning of value contained in the Word 2 Page Identifier
- 37.4: Meaning of value contained in the Word 3 Field Identifier

The tables appearing below refer to VTs with a touch screen.

- 37.5: Meaning of bits of Word 0 Status word
- 37.6: Meaning of value contained in the Word 1
- 37.7: Meaning of value contained in the Word 2 Page Identifier
- 37.8: Meaning of value contained in the Word 3 Context Identifier

Table 37.1: Meaning of bits of Word 0 - Status word

6 6		-	5					BIT	NUM	BER							0
WORD 0 MEANING OF THE BIT	VT 50	VT 60	VT 150 W	VT 160 W	VT 170 W	VT 190 W	VT 300 W	VT 310 W	VT 320 W	VT 330 W					Š	Y.	
WATCHDOG Always at Status1	0	0	0	0	0	8	0	0	0	0			ð	635			
EDIT MODE Status 1 when il terminal is in mode for changing fields	1	1	1	1.3	441	1	1	1	1	1	1	1200					
MESSAGES PRESENT Status 1 so long as there is a message to display	2	2	2	2	-			-	P	2					ă	2	0
MESSAGE PENDING Status 1 so long as there is a message "in" but not yet consulted	3	3	3	3		- 20	300	500					~	350	SC.		
ISA ALARM MESSAGES PRESENT Status 1 so long as there is an alarm message to display				- 7	2	2	2	2	2	2		14	E.				
ISA ALARM MESSAGES PENDING Status 1 so long as there is an ISA alarm "in" but not yet acknowledged		- 0	è		3	3	3	3	3	3						£.	0
COMMAND NOT VALID Status 1 when the last command sent by the device has not been carried out	4	4	4	4	4	4	4	4	4	4				35	C.	3	
ALARM HISTORY BUFFER 80% FULL Status 1 when the alarm history buffer is 80% full and therefore close to saturation					5	5	5	5	5	5		12	Ś				
ALARM HISTORY BUFFER FULL Status 1 when the alarm history buffer is full and can hold no more alarms		-	-		6	6	6	6	6	6							0
MACRO FUNCTION ACTIVE Status 1 when the VT is processing a macro function	e e e	1	7	7	7	7	7	7	7	7				89	S. S.	34	
BATTERY FLAT Status 1 when the battery is near its minimum level for maintain- ing the data in the RAM memory					8	8	8	8	8	8		.2	ð	20			

Table 37.2: Meaning of value contained in the Word 1 - Sequence Identifier

"He		K.						1	USED)					Yes.
WORD 1 MEANING OF THE VALUE	VT 50	VT 60	VT 150 W	VT 160 W	VT 170 W		VT 300 W	VT 310 W		VT 330 W			50	C.	
SEQUENCE IDENTIFIER Contains a value other than zero if in Project Page context, but contains zero if in any other context	•	•	•	•	• " "	.00	•	•	•	•	Phu.	3	0		

Table 37.3: Meaning	of value contained in the	Word 2 - Page Identifier
rubio or io. mourning	or value contained in the	rora E rago laominor

						U	ISED	/ VAL	UE C	CONT	AINE	D					
WORD 2 MEANING OF THE VALUE	VT 50	VT 60	VT 150 W	VT 160 W	VT 170 W	VT 190 W	VT 300 W	VT 310 W	VT 320 W	VT 330 W					10	0	
UMBER OF PAGE BEING DISPLAYED Project Page context contains the value of the page being dis- layed, while contains the identifying value of the context if in nother contact (Word $1 = 0$)	•	•	•	•	•	• }	•	•	•	•			1	9.C.O	0		
IFORMATION MESSAGES	0	0	0	0	0	0	0	0	0	0		,S					
	1	1	1	1	1	1	1	1	1	1						2	
AGE DIRECTORY							e de la compañía de	5					2	e co	S.		
RIVER SERVICE PAGES	2	2	2	2	2	2	2	2	2	2	14	Š	5				
ELP MESSAGES FOR PROJECT PAGES			3	3	3	3	3	3	3	3	2						
ELP MESSAGES FOR ISA ALARMS	12				4	4	4	4	4	4				°.	3		
A ALARMS					5	5	5	5	5	5		Ś	355				
CIPE DIRECTORY			_3	4	6	6	6	6	6	6	54						
ELP MESSAGES FOR INFORMATION MESSAGES	e.	2	7	7	7	7	7	7	7	7				2	340	2	
ARM HISTORY BUFFER					8	8	8	8	8	8		.8	35	5			
ROJECT INFORMATION	3	3	3	<u>4</u>	9	9											
TTING CLOCK	÷	Ş			10	10	-	<u>t</u> e	2						Nº	2	t
STEM MESSAGES ASSIGNED TO RECIPES					11	11	C.					~	N.S.	500			t
STEM MESSAGES ASSIGNED TO PASSWORDS				and and a	12	12					2 ²	, Ó					

Table 37.4: Meaning of value contained in the Word 3 - Field Identifier

S. S.							20		USED	כ				20		
WORD 3 MEANING OF THE VALUE	VT 50	VT 60	VT 150 W	VT 160 W					VT 320 W	VT 330 W		2	350	2		
POSITION OF THE CURSOR Contains a value identifying the field where the cursor is located when in Project Page context, while containing 0 if in any other context	•	•	•	4 - A	2 . •	•	•	•	•	•	"Talas	5				

Table 37.5: Meaning of bits of Word 0 - Status word

à à			5					BIT	NUM	BER							0
WORD 0 MEANING OF THE BIT	VT 155 W	VT 185 W	VT 505 H	VT 505 W	VT 515 W	VT 525 H	VT 525 W	VT 555 W	VT 56x W	VT 575 W	VT 580 W	VT 585 W	VT 585 WB	VT 595 W	Å	Y.	
WATCHDOG Always at Status1	0	0	0	0	0	8	0	0	0	0	0	0	0 00	0	5		
EDIT MODE Status 1 when il terminal is in mode for changing fields	1	1	1	1.3	51	1	1	1	1	1	1 <	51	1	1			
MESSAGES PRESENT Status 1 so long as there is a message to display		4	2					-	P	2						20	0
MESSAGE PENDING Status 1 so long as there is a message "in" but not yet consulted							3 ³⁰	<u> </u>						3 ³⁶	SC .		
SA ALARM MESSAGES PRESENT Status 1 so long as there is an alarm message to display	2	2		- 2	2	2	2	2	2	2	2	2	2	2			
SA ALARM MESSAGES PENDING Status 1 so long as there is an ISA alarm "in" but not yet acknowledged	3	3	Ş		3	3	3	3	3	3	3	3	3	3		.0	0
COMMAND NOT VALID Status 1 when the last command sent by the device has not been carried out	4	4	4	4	4	4	4	4	4	4	4	4	4	4	E.	3	
ALARM HISTORY BUFFER 80% FULL Status 1 when the alarm history buffer is 80% full and therefore close to saturation	5	5			5	5	5	5	5	5	5	5	5	5			
ALARM HISTORY BUFFER FULL Status 1 when the alarm history buffer is full and can hold no nore alarms	6	6	-		6	6	6	6	6	6	6	6	6	6			10
VACRO FUNCTION ACTIVE Status 1 when the VT is processing a macro function	7	7	7	7	7	7	7	7	7	7	7	7	7	7	e de la	34	
BATTERY FLAT Status 1 when the battery is near its minimum level for maintain- ing the data in the RAM memory						ě	<u>-</u>	8	8			8	j.	- -			

Table 37.6: Meaning of value contained in the Word 1

c.	"No		Nº.						 USED)					Nº.
	WORD 1 MEANING OF THE VALUE	VT 155 W	VT 5 185 W	VT 505 H	VT 505 W	•••			VT 56x W		VT 585 W	•••	5	S. C.	
-	AND CONTRACTOR					14	ŝ	-	 		 hr.	30	0		

--: not used

Table 37.7: Meaning of value contained in the Word 2 - Page Identifier

									USED)						
WORD 2 MEANING OF THE VALUE	VT 155 W	VT 185 W					VT 525 W		56x					12	10.	
NUMBER OF PAGE BEING DISPLAYED Contains a value other than zero if in Project Page context, but contains zero if in any other context	•	•	•	•	•	•0 20		•	•	•	•	•	 	2		

Table 37.8: Meaning of value contained in the Word 3 - Context Identifier

WORDA							SED										-
WORD 3 MEANING OF THE VALUE	VT 155 W	VT 185 W	VT 505 H	VT 505 W	VT 515 W	VT 525 H	VT 525 W	VT 555 W	VT 56x W	VT 575 W	VT 580 W	VT 585 W	VT 585 WB	VT 595 W		0	
ONTEXT IDENTIFIER iontains the identifying value of the context if the context is not roject Page (Word 2 = 0)	•	•	•	•	•	• %	Ó	•	•	•	•	•	•	¢.	3		
IFORMATION MESSAGES	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
EQUENCE DIRECTORY			-			-			-	1	-						
AGE DIRECTORY	1	1	1	1	1	1	15	1	1	1	1	1	1	18	×°		
RIVER SERVICE PAGES	2	2	2	2	2	2	2	2	2	2	2	2	2	2			
ELP MESSAGES FOR PROJECT PAGES	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
ELP MESSAGES FOR ISA ALARMS	4	4			4	4	4	4	4	4	4	4	4	4	1º	Q.	
A ALARMS	5	5			5	5	5	5	5	5	5	5	5	5			
ECIPE DIRECTORY	6	6	6	6	6	6	6	6	6	6	6	6	6	6			
ELP MESSAGES FOR INFORMATION MESSAGES	7	7	7	7	7	7	7	7	7	7	7	7	7	7	K.	10.	
ARM HISTORY BUFFER	8	8			8	8	8	8	8	8	8	8	8	8			
OJECT INFORMATION			- 7	en de	0					- 7	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	<u>i</u>					
TTING CLOCK		2						-	2							10.	
STEM MESSAGES ASSIGNED TO RECIPES	s 					100	e ^d	S'						e de la comercia de l	3		
STEM MESSAGES ASSIGNED TO PASSWORDS				,	8	-						Š	-				T

-- : not present

Status area for internal LEDs

This area consists of a maximum of 4 words (numbered from 0 to 3).

NO. OF WORD	NAME OF WORD
0	STATUS WORD for GREEN LEDS
1 vol.	STATUS WORD for GREEN LEDS
2	STATUS WORD for RED LEDS
3	STATUS WORD for RED LEDS

Table 37.9: Meaning of the Bits of the Status Word for the Green LEDs

					25.		М	EANIN	IG OF	THE E	IT						2
WORD 0 NUMBER OF THE BIT	VT 50	VT 60	VT 150 W	VT 160 W	VT 170 W	VT 190 W	VT 300 W	VT 310 W	VT 320 W	VT 330 W					2	5	
		3	F1					300	50								
ANN AN	12		F2			12	24										
			F3	-	10.					0	0						
onable.			F4	52					6	25							
. BROKE		S	F5					300	5								
A Martin	4				F6	F6 .	F6	F6	F6			4	250				
, sò					F7	F7	F7	F7	F7		0.						ŝ
.ornator			.5	<u>18</u>	F8	F8	F8	F8	F8	<u>62</u>					.6	25	
		Ì	-		F9	F9	F9	F9	F9					30	5		
Aller.	44				F10	F10	F10	F10	F10			14	25				
12 ¹² 1				- 2	F11	F11	F11	F11	F11	-	2					24	5
NOT AD			.5	3	F12	F12	F12	F12	F12	<u>6</u>					5	20	
2 MIGDOO	-	j.B	-			F13	F13	F13	F13	F13			4	600			
and and	35					F14	F14	F14	F14	F14		15	1.0				
- Marth					2	F15	F15	F15	F15	F15	2					34	S
a and a second			5	2		F16	F16	F16	F16	F16					5	6 T	T

	9				0	6		М	EANIN	IG OF	THE BIT					0	
	WORD 1 NUMBER OF THE BIT	VT 50	VT 60	VT 150 W	VT 160 W	VT 170 W	VT 190 W	VT 300 W	VT 310 W	VT 320 W	VT 330 W				37	91	
0	ADRIED.		10	-			F17	F17	F17	F17	F17		x	30			
1	AMIL A	<u>1977</u>					F18	F18	F18	F18	F18	44	2				4
2	d a la l				0		F19	F19	F19	F19	F19					à	
3	mattyle			30	-		F20	F20	F20	F20	F20			4	22	0	
4	distance	3	<u>63</u>				F21	F21	F21	F21	F21		Ś	320			
5	hai di	8 ²² .					F22	F22		F22	F22	44					
6					0		F23	F23		F23	F23					à	
7	- Official		-	000			F24	F24	-	F24	F24			. Ś	25		
8	, chaine	5	<u>65</u>					3	<u> 37.</u>	F25	F25		Ś	35			
9	and the second	e					14			F26	F26	4					
10	13.9				2					F27	F27					9	
11	30(nab)			and					.6	F28	F28			, S	30		
12	ALCORD.	<u>.</u> 58	3° <u>-</u>					130	S.				ß	5			
13 🚽	an an						4					24					
14	Ho Q				2.2					-	and a				N	2	
15	10 Mary			C.					5	<u>E</u>				S	E.		
: not	present	L.,	35					1	S.				~	S.			_

Table 37.10: Meaning of the Bits of the Status Word for Green LEDs

6 6					0		М	EANIN	IG OF	THE E	JII						0
WORD 2 NUMBER OF THE BIT	VT 50	VT 60	VT 150 W	VT 160 W	VT 170 W	VT 190 W	VT 300 W	VT 310 W	VT 320 W	VT 330 W	2				~	24	
u diation			30		F1	F1	F1	F1	F1					S.	5°°.		
Mar Martin	Pro-	- 1			F2	F2	F2	F2	F2			4	Ph.	2			
Ś.					F3	F3	F3	F3	F3		10						0
and the			-	30	F4	F4	F4	F4	F4	3ª					2	5	
. diante		3	<u>3°</u>		F5	F5	F5	F5	F5					32	50		
And and a second se	14	-			F6	F6	F6	F6	F6			4	22				
à.					F7	F7	F7	F7	F7		10.						ġ
anash.			-	25	F8	F8	F8	F8	F8	22					5	24	
. Channe		S	<u>8</u>		F9	F9	F9	F9	F9					B	5		
Ar and the second s	A. A.				F10	F10	F10	F10	F10			4	55				
0				-	E11	F11	F11	F11	F11	-	10:						0
1 onaby			.5	20	F12	F12	F12		F12	<u>85</u>					3	201	
2		, de	2			F13	F13	ġ,	F13				ζ.	e con	5		
3	ra da	-				F14	F14		F14			4	2				
4					e,	F15	F15		F15	-	19.					14	2
5			.5	E.		F16	F16		F16	<u>60</u>					6	627	

Table 37.11: Meaning of the Bits of the Status Word for Red LEDs

-- : not present

6				0	i.		М	EANIN	IG OF	THE BIT					0	
WORD 3 NUMBER OF THE BIT	VT 50	VТ 60	VT 150 W	VT 160 W	VT 170 W	VT 190 W	VT 300 W	VT 310 W	VT 320 W	VT 330 W			~	24	0-11	
dballo.		2 ⁵⁰				F17	F17	20	F17			Ś	30			
And the second s	11-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1					F18	F18		F18		414					
Ś				-0		F19	F19			2					à	
analyte.			2			F20	F20	-	E.	-			3	25		
(haule)	3	9 <u>35</u>				F21	F21	<u>}.</u>				S	300			
ANN A	4 ² -					F22	F22				44					
201				2						10.					à	
- Strade			000					-	20				. 6	25		
, door	3	<u>62</u>						<u>87</u>				Ì	55			
ANANA AN	3°					14					454					
				2					-	0.					9	
. official			and					.6	and				, S	200		
2	3	\$°					, S	87				30	5			
4000 40						44					32					
, we d				2.2						a.				14	9.	
5 Johne		-	E.						S.				.5	E.		

Table 37.12: Meaning of the Bits of the Status Word for Red LEDs

Status area for This area consists of 2 fixed words (numbered from 0 to 1). **external LEDs**

NO. OF WORD	NAME OF WORD
0	STATUS WORD
1 6	STATUS WORD

Table 37.13: Meaning of the Bits of the Status Word for External LEDs

	38	- Be		NUMBER OF THE BIT		20		
2	WORD 0 MEANING OF THE BIT	VT150W + VT100MT1000	VT160W	VT300W - VT310W - VT320W + VT100MT1000				2
E1	and Wart	0	0	0				and an
E2	ADRILON'	1	¹ 1	1,001			10015	<u>)</u>
Ξ3	ANNO STATES	2	2	2		And A	2	
E4		3	3	3	6			à
E5	native.	4	4	4				Card O.
E6	Alanto.	5	5	5			dpaut	D
27	ANN AND I	6	6	6		444		
E8	2	7	7	7	à			ŝ
E9	mable	8	8	8 1000				C. C
≣10	. Chaine	9	9	9			d Day	
E11	AND TO THE OWNER	10	10	AMA 10		4545		
E12	12ª	11	11	11	9			3
E13	, ornabyt	12	12	12				SECON
≣14	N. GDBUL	13	13	13		-	(day	
E15	A.A.	14	14	14		44		
E16	2.9.9	15	15	15	ġ.			ŝ

ACCOUNTS OF

tokan)

and the second se	10 A A A A A A A A A A A A A A A A A A A	S. S
, S	S.	. S.
Table 37.14: Meaning of t	the Bits of the Status Word fo	or External LEDs

6		6	NUMBER OF THE BIT			0	
WORD 1 MEANING OF THE BIT	VT150W + VT100MT1000	VT160W	VT300W - VT310W - VT320W + VT100MT1000		2	Stor.	
E17	0	0	0	a de la compañía de la	50		, č
E18	1 1	1	ANNAL 1	And Al.			. Shani
519	2	à	2			à	
20	3	53 ⁰ -	3		2	Str.	
:21	- And a star		all	, S	500		, č
22			Althone -	in Maria			S. C.
23		2	- 			2	
E24		50°	onable		5	ST	
E25	ALCOSOLI.		ALCHORNE.				ŝ
26				44			5.65
27		NO.	- 13.A			Jo à	
28	- 10		tomath'			S	
29	ALCO RD		MIGDON-	N.B	2		and it
:30	- h			1. 1.4			and a start
E31		Nog	- H2.9			Me R	
E32	- 10	<u>~</u>	tonac		1062	5	

Status area for This area consists of 1 word (numbered 0). **recipes**

NO. OF WORD	NAME OF WORD	ĝ.
0	STATUS WORD for RECIPES	

Table 37.15: Meaning of the Bits of the Status Word for Recipes

	Q,						ļ	NUME	BER (DF TH	IE BI	т			0				
VT 50	VT 60	VT 150 W	VT 160 W	VT 170 W	VT 190 W	VT 300 W	VT 310 W	VT 320 W	VT 330 W				1	533					
				13	13	13	13	13	13			0							2
			19. 19.	14	14	14	14	14	14	S.S.	5						No.	3	
	98.	2	-	15	15	15	15	15	15						Ś	8			
		50 60 	50 60 150 W 	50 60 150 160	50 60 150 160 170 13 13 14 14	50 60 150 160 170 190 13 13 14 14	50 60 150 W 160 W 170 W 190 W 300 W 13 13 13 14 14 14 15 15 15	VT VT<	VT VT<	VT VT<	VT VT<	VT VT<	50 60 150 160 170 190 300 310 320 330 13 13 13 13 13 13 13 14 14 14 14 14 14 15 15 15 15 15 15	VT VT <th< td=""><td>VT VT <</td><td>VT VT <th< td=""><td>VT VT <th< td=""><td>VT VT <th< td=""><td>VT VT <th< td=""></th<></td></th<></td></th<></td></th<></td></th<>	VT <	VT VT <th< td=""><td>VT VT <th< td=""><td>VT VT <th< td=""><td>VT VT <th< td=""></th<></td></th<></td></th<></td></th<>	VT VT <th< td=""><td>VT VT <th< td=""><td>VT VT <th< td=""></th<></td></th<></td></th<>	VT VT <th< td=""><td>VT VT <th< td=""></th<></td></th<>	VT VT <th< td=""></th<>

Table 37.16: Meaning of the Bits of the Status Word for Recipes

X JOX					10	× .		I	NUME	BER C	DF TH	IE BI	r						10	2
WORD 0 MEANING OF THE BIT	VT 155 W	VT 185 W	VT 505 H	VT 505 W	VT 515 W	VT 155 W	VT 185 W	VT 505 H	VT 505 W	VT 525 H	VT 525 W	VT 555 W	VT 56x W	VT 575 W	VT 580 W	VT 585 W	VT 585 WB	VT 595 W	3	
TIMEOUT FOR RECIPE TRANSFER Status 1 when the terminal does not respond in the expected time	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13		
TRANSFER OVER Status 1 when the terminal has sent all the relevant data	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14		
TRANSFER REQUEST Status 1 when the terminal wants to start to transfer	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	2	2

- : not present

Status area for internal keys

- The significance of this area depends on the type of VT used:
 - With a keyboard
 - With a touch screen.

With a keyboard: this area consists of a maximum of 6 words (numbered from 0 to 5).

NO. OF WORD	NAME OF WORD
0	OPERATIVE KEYS STATUS
o 1	OPERATIVE KEYS STATUS
2	OPERATIVE KEYS STATUS
3	OPERATIVE KEYS STATUS
4	FUNCTION KEYS STATUS
5	FUNCTION KEYS STATUS

With a touch screen: this area consists of 1 word.

NO. OF WORD	NAME OF WORD
0 6	FUNCTION KEYS STATUS

The tables appearing below refer to VTs with a keyboard.

- 37.17: Meaning of the Bits of the Status Word for Internal Keys (Word 0)
- 37.18: Meaning of the Bits of the Status Word for Internal Keys (Word 1)
- 37.19: Meaning of the Bits of the Status Word for Internal Keys (Word 2)
- 37.20: Meaning of the Bits of the Status Word for Internal Keys (Word 3)
- 37.21: Meaning of the Bits of the Status Word for Internal Keys (Word 4)
- 37.22: Meaning of the Bits of the Status Word for Internal Keys (Word 5)

The tables appearing below refer to VTs with a touch screen.

37.17: Meaning of the Bits of the Status Word for Internal Keys (Word 0)

The keys enclosed in a box with a bold border put the related bit at 1 when

pressed with

The above is valid for VT50 and VT60. In the case of other terminals the bits relating to the function keys are always the same. The bit of the SHIFT key must also be tested (Word 0 - Bit 15).

The bit relating to the shift key is set at 1 only if pressed at the same time as another key (e.g. shift + creater).

The Handshake bit is put at 1 by the VT each time one or more keys are pressed; the device can put it at 0 in order to find out when the VT is going to write.

Table 37.17: Meaning of the Bits of the Status Word for Internal Keys (Word 0)

			Sec.			- Se	wo			600			- S	3
BIT	Shift	VT50	VT60	VT150W	VT160W	VT170W	VT190W	VT300W	VT310W	VT320W	VT330W	5	3 JEO.	
0	P.P.	HAND SHAKE	HAND SHAKE	HAND SHAKE	HAND SHAKE	HAND SHAKE	HAND SHAKE	HAND SHAKE	HAND SHAKE	HAND SHAKE	HAND SHAKE	and a second		
9 ⁰ 1		F1	Help	Cir	Cir	Cir	Cir	Cir	Cir	CirEsc	Esc		Ž	12.Q
2		F2										Š	auton	
3	and a	F3	F3									e de la companya de		
4		F4	F4	Enter	Enter								Å	340.9
5		F5	F4		3	Enter	Enter	Enter	Enter	Enter	Enter	8	BISEON.	
6	1. A. A.	Info	F2	PgDn	PgDn	PgDn	PgDn	PgDn	PgDn	PgDn	PgDn	1 ²		
7		Help	F1	PgUp	PgUp	PgUp	PgUp	PgUp	PgUp	PgUp	PgUp		ð	340.Q
8		F1 Esc	F1	Help	Help	Info	Info	Info	Info	Info	Info	Š	BISTON.	
9	State of State	F2	F2	Info	Info	Help	Help	Help	Help	Help	Help	erse .		
10		F3	F3	-		Alarm	Alarm	Alarm	Alarm	Hist	Hist		Š	140.D
11		F4	F4		8	Ack All Ack	Ack All Ack	Ack All Ack	Ack All Ack	Ack All Ack	Ack All Ack	5	auton	
12	14 14	F5		t	t	• ± Space	t Space	t Space	t Space	t Space	Space	erer.		
13		Help	Help	-							ø		Š	140.Q
14		Info	Help			J.TOL		Spare	Spare	-	Cir		autor	
15 : not	1714 174			shift	shift	shift	shift	shift	shift	shift	Shift	and a state		

			0		1	<	wo		•	6		I	4	0
BIT	Shift	VT50	VT60	VT150W	VT160W	VT170W	VT190W	VT300W	VT310W	VT320W	VT330W		Control Party	
0	ANI DO	n.p.	n.p.	A B C O	A B C O	A B C O	A B C O	A B C	A B C O	A B C O	Ctrl	, CDOUT		
1		n.p.	n.p.	D E F 1	D E F 1	D E F 1	D E F 1	D E F 1	D E F	D E F 1	Alt			
2		n.p.	n.p.	G H I 2	G H I 2	G H I 2	G H I 2	G H I 2	G H I	G H I 2	Tab		Contra Co	×
3	and Contraction of the second	n.p.	n.p.	J K L 3	J K L 3	J K L 3	J K L 3	J K L 3	J K L 3	J K L 3	Spare	, door		
4		n.p.	n.p.	M N O 4	M N O 4	M N O 4	M N O 4	M N O 4	M N 4	M N O 4	ν,			
5		n.p.	n.p.	P Q R 5	P Q R 5	P Q R 5	> .		COST	×				
6	and the	n.p.	n.p.	S T U 6	S T U 6	S T U 6	S T U 6	S T U 6	S T 6	S T U 6		, BOOLE		
7	5	n.p.	n.p.	v w x 7	v w x 7	v w x 7	+ =							
8		n.p.	n.p.	Y Z - 8	YZ -	Y Z - 8			A. C. C.	2°				
9	ALCO N	n.p.	n.p.	+ / 9	+ / 9	+ / 9	+ / = 9	+ / 9	+ / 9	+ / = 9	-	L'ODOUTE		
10	14.	n.p.	n.p.	Pri-			- 3	14 -			the start			
11		n.p.	n.p.			Carly Carl			- Contraction of the second se	19. <u>2</u>			Parts .	5.
12	100	n.p.	n.p.		(SC2)1C			- 8	100 - C		-	, dDauff)	
13	14	n.p.	n.p.	4. Car			~	a			31.44 1.44			
14		n.p.	n.p.			Cartha				140.9			Contra Co	Ś.
15	, B	n.p.	n.p.		(drautic			- 8	JUC.			Charte	1	
: not	used	ļ	n.p. : not	present	1	1		1 and the second		1	444	L."	1	

Table 37.18: Meaning of the Bits of the Status Word for Internal Keys (Word 1)

2		-	<	3			wo	RD 2			2			6
віт	Shift	VT50	VT60	VT150W	VT160W	VT170W	VT190W	VT300W	VT310W	VT320W	VT330W		e e	Stor.
0	3	n.p.	n.p.	F6 F1	F6 F1	• F1	• F1	• • F 1	F 1	• F1)_0	41. 19	3 J.C.	
1	124	n.p.	n.p.	F7 F2	F7 F2	• • F2	• • F2	• • F2	• • F2	F 2	1/1	12		~
2		n.p.	n.p.	F8 F3	F8 F3	• • F3	•• F3	• • F3	• • F3	• • F3	1/2			Stor.X
3	12	n.p.	n.p.	F9 F4	F9 F4	• • F4	• • F4	• • F4	• • F4	• • F4	1_3	10. 1	BILL	
4	Les .	n.p.	n.p.	F10 F5	F10 F5	F 5	F 5	• • F5	F 5	F 5	: 4	ta.		
5		n.p.	n.p.			• • F6	• • F6	• • F6	• • F6	• • F6	% 5		S.C.	Nº.X
6	2	n.p.	n.p.		-160	• • •	• • F7	• • F7	• • •	• • •	[6	10	BUTC	
7	44	n.p.	n.p.	- 3		• • F8	• • F8	F 8	• • F8	• • F8	; 7	he.		
8		n.p.	n.p.			• • F9	• • F9	• • •	• • F9	• • F9	* 8		, c ²	84°.2
9	<i>P</i>	n.p.	n.p.		- 30	• • F10	• • •	• • F10	• • F10	• • F10	(_9	10	31200	
10	14	n.p.	n.p.	- 3	- 1	• F11	• • •	• • •	• F11	• F11	-	a.		
11		n.p.	n.p.			• • F12	• • F12	• • F12	F12	• • F12			ž	840.9
12		n.p.	n.p.		- 6	, 1° <u>-</u>	• • F13	• • F13	F13	• • F13		AL.C.	3150	
13	the second	n.p.	n.p.	- 3			• • F14	• • F14	F14	• • F14	*	4		
14		n.p.	n.p.				• • F15	• • F15	F15	• • F15			2ª	\$4°.9
15		n.p.	n.p.		- 6	, 1 ¹⁰ -	• • F16	• • F16	F16	• • F16		ß	3 ¹⁵⁰	

Table 37.19: Meaning of the Bits of the Status Word for Internal Keys (Word 2)

			6					RD 3	(vvora 3	0				2
BIT	Shift	VT50	VT60	VT150W	VT160W	VT170W	VT190W	VT300W	VT310W	VT320W	VT330W		Part C	
0	ANI DO	n.p.	n.p.	n.p.	n.p.	n.p.	• • F17	• • F17	F17	• • F17	AB	, dbaur		
1		n.p.	n.p.	n.p.	n.p.	n.p.	• • F18	• • F18	F18	• • F18	CD			10
2		n.p.	n.p.	n.p.	n.p.	n.p.	• • •	• • F19	F19	• • F19	EF		Corte	X
3	and B	n.p.	n.p.	n.p.	n.p.	n.p.	• • F20	• • F20	F20	• • F20	GH	. dbaun		
4		n.p.	n.p.	n.p.	n.p.	n.p.	• • F21	• • F21	F21	• • F21	IJ			1
5		n.p.	n.p.	n.p.	n.p.	n.p.	F22	F22	- Strat	• • F22	KL		Carles	
6	and in	n.p.	n.p.	n.p.	n.p.	n.p.	F23	F23	3 ¹⁰¹	F23	MN	, doour		
7		n.p.	n.p.	n.p.	n.p.	n.p.	F24	F24		F24	OP			1
8		n.p.	n.p.	n.p.	n.p.	n.p.				F25	QR		Carthe	X
9	an 150	n.p.	n.p.	n.p.	n.p.	n.p.			500 <u>-</u>	F26	ST	1. Baun		
10	5	n.p.	n.p.	n.p.	n.p.	n.p.	-	-		F27	VV			1
11		n.p.	n.p.	n.p.	n.p.	n.p.	-		-6 ⁻⁸	F28	Wx		Carly	X
12	AL.B	n.p.	n.p.	n.p.	n.p.	n.p.			50° <u>-</u>		Y_Z	. Chaire		
13		n.p.	n.p.	n.p.	n.p.	n.p.				-	3			~
14		n.p.	n.p.	n.p.	n.p.	n.p.			-000	12 ⁻²			Carles	×
15 : not	100	n.p.	n.p. n.p. : not	n.p.	n.p.	n.p.		10	5 ³⁶ -		-	, chain		

Table 37.20: Meaning of the Bits of the Status Word for Internal Keys (Word 3)

Ò.			<	2	1	T	wo	RD 4	T	<	5	F		- ò
ВІТ	Shift	VT50	VT60	VT150W	VT160W	VT170W	VT190W	VT300W	VT310W	VT320W	VT330W			L.
0	12	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F1	ANICS C	200	
1	ry and	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F2	£.		~
2		n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F3		S.S.	24
3	1	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F4	an CS	200	
4	in a	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F5	£°.		~
5		n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F6		S.S.	N. N.
6	3	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F7	an IS	500	
7	44	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F8	£1.		~
8		n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F9		-Ca	12. P.
9	2	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F10		Sec.	
10	14	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F11	in.		
11		n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F12		e de la constante de la consta	140.9.
12	2	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F13		110	
13	and and a second	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F14	f. ²¹		
14		n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F15		e de la constante de la consta	1° ?
15		n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F16	15	J.C.	

Table 37.21: Meaning of the Bits of the Status Word for Internal Keys (Word 4)

						<	wo	RD 5		0				0
BIT	Shift	VT50	VT60	VT150W	VT160W	VT170W	VT190W	VT300W	VT310W	VT320W	VT330W		Carles	
0	ANIE S	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F17	.100000		
1		n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F18			
2		n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F19		Control of the second	X
3	and	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F20	, Ban		
4		n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F21			
5		n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F22		Carle	8
6	and	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F23	1. Book		
7	1	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F24			
8		n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F25		Cartho	8
9	11.50	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F26	, SDOUTH		
10	14	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F27			
11		n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	F28		Conto a	8
12	100	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.		(Daute		
13	4	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	4			
14		n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.			Carly Carly	S.
15	100	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.		(Dour		

Table 37.22: Meaning of the Bits of the Status Word for Internal Keys (Word 5)

2		0		WORD 0	6		- O
віт	VT505H	VT52H	ona	X ² °	onat the		Marthon
0	HAND SHAKE	HAND SHAKE	and Spaule	1	(dpault	. MIGDO	
1	F1	F1				14	8
2	F2	F2	orna		onabko		rade a.
3	F3	F3			GD0 ¹¹¹¹	MALOCOLL.	
4	F4	F4	C.	10		14	6
5	F5	F5	-offici	K.	consolve .		March Row
6	F6	F6	while bailt	lan.	(dbaut	ANNI GOUL	
7	F7	F7		- Arri		4	
8	F8	F8		4° '	arrable (March Pari
9	F9	F9	ANI CORUL		(d)aut	San Gool	
10	F10	F10	C	ana G		N.	
11		Call Marr		See.x	and a share of the		FC BERNON
12			- MIGDOUL		(d) ^{aut}	and a second	
13	м [.]	- 4		- C-		44	6
14		Califica	1000	Ka.x			FLORD NO.Y
15	- diame		MIGDOULT		(dbaur	ALCOST	

Table 37.23: Meaning of the Bits of the Status Word for Internal Keys (Word 0)



Status area for This area consists of a maximum of 2 words (numbered from 0 to 1). **external keys**

NO. OF WORD	NAME OF WORD
0	STATUS WORD for EXTERNAL KEYS
1 1000	STATUS WORD for EXTERNAL KEYS

	38	NUMBER OF THE BIT VT150W VT300W - VT310W - VT320W													
WORD 0 MEANING OF BIT	VT150W + VT100MT1000	VT160W	VT300W - VT310W - VT320W + VT100MT1000				à								
1	0	0	0			2	No. X								
2	1001101	1	aball ¹			50									
B ANNOLICS	2	2	2	h.	44.00										
1 }	3	3	3				ò								
, age	4	4	4			2	est a								
i dipalito.	5	5	5		.8 ⁹	50									
ANN I STATE	6	6	6	h.	24.1										
a d	7	7	7				10								
anable and	8	8	8			S.	S.								
IO SOODE	9	9	9		60	55									
H John M.	10	10	M ^{MM} 10	4											
12	11	Ĥ	11				202								
3 romatol	12	12	12			.5	d.								
14	13	13	13		1.62	\$2°									
5	14	14	14	Hr.											
16	15	15	15												

5	6		6	NUMBER OF THE BIT	5				0
×	WORD 1 MEANING OF BIT	VT150W + VT100MT1000	VT160W	VT300W - VT310W - VT320W + VT100MT1000				and	£r"
E17	dbouto.	0	0	0			d Daul	01	
E18	A. A. A.	and 1	1	ANNA! 1		444			
19	Ś	2	-	2	2				à
20	at able	3	a Cable	3				Card	2
21	Starter.	- 30	<u>-</u>	d ^{ante}			doard		
22	AL ALAN	And the		and -		4 ⁴⁴			
23	32		- 2	-	2				10.
24			onad	- snath				200	
25	1 Brunn	- 30	-	10000			0000		
26	449	-14 ²⁴ -		water -		344			
27	10.01		- 20.0		Ş.				2
28	KOMADY		ona <u>b</u>	- Julie				STR.	
29	"Idogo			J.Com			6000		
30	And Contraction of the second	-1 ²⁴		war		3527			
31	12 ⁹			- 2	2			2	29
32	NOT BEN		ona <u>n</u>	- tottad			8	5CE	

Table 37.25: Meaning of the Bits of the Status Word for External Keys

Status area for internal keys (Real Time)

- The significance of this area depends on the type of VT used:
- With a keyboard
- With a touch screen.

With a keyboard: this area consists of a maximum of 6 words (numbered from 0 to 5).

WORD NUMBER	NAME OF WORD
0	OPERATIVE KEYS STATUS (Real Time)
o 1	OPERATIVE KEYS STATUS (Real Time)
2	OPERATIVE KEYS STATUS (Real Time)
3	OPERATIVE KEYS STATUS (Real Time)
4	FUNCTION KEYS STATUS (Real Time)
5	FUNCTION KEYS STATUS (Real Time)

With a touch screen: this area consists of 1 word.

3	WORD NUMBER	NAME OF WORD
	0	FUNCTION KEYS STATUS (Real Time)

The keys surrounded by a bold border set the corresponding bit at 1 when

pressed together with

The above is valid for VT50 and VT60. In the case of other terminals the bits relating to the function keys are always the same. The bit of the SHIFT key must also be tested (Word 0 - Bit 15).

The bit relating to the shift key is set at 1 only if pressed at the same time as another key (e.g. $\frac{1}{2}$).

The Handshake bit is set at 1 by the VT whenever one or more keys are pressed; it is set at 0 when no key is pressed.

For details concerning these Status words, see Page 37-15.

Status area for external keys (Real Time) This area consists of a maximum of 2 words (numbered from 0 to 1).

WORD NUMBER	NAME OF WORD
0	STATUS WORD FOR EXTERN. KEYS (Real Time)
T	STATUS WORD FOR EXTERN. KEYS (Real Time)

For details concerning these Status words, see Page 37-23.

Status area for This area consists of 2 words (numbered from 0 to 1). **printer**

NO. OF WORD	NAME OF WORD
0	STATUS WORD for ASP
1 1	STATUS WORD for LPT

Table 37.26: Meaning of the Bits of the Status Word for ASP

5					120					I	NUME	BER O	OF TH	IE BI	Т				194					
WORD 0 MEANING OF THE BIT	VT 50	VT 60	VT 150 W	VT 160 W	VT 170 W	VT 190 W	VT 300 W	VT 310 W	VT 320 W	VT 330 W	VT 155 W	VT 185 W	VT 505 H	VT 505 W	VT 515 W	VT 525 H	VT 525 W	VT 555 W	VT 56x W	VT 575 W	VT 580 W	VT 585 W	VT 585 WB	VT 595 W
STAMPANTE NOT ON LINE Status 1 when one of the bits from 3 to 8 is set at 1.	n.p.	n.p.	n.p.	n.p.	0	0	0	0	0	0	0	0	n.p.	n.p.	n.p.	0	0	0	0	0	0	0	0	0
TIMEOUT Status 1 when the printer is OFFLINE, not connected, lacks paper or when there is any communication problem follow the command to print.	n.p.	n.p.	n.p.	n.p.	1 104	9	1	1	1	1	1	-""44.	n.p.	n.p.	n.p.	1	1	1	1 200	Ð	1	1	1	1
Q.	n.p.	n.p.	n.p.	n.p.					-	2			n.p.	n.p.	n.p.	-	2							0
REPORT PRINTING IN PROGRESS Status 1 as long as the function lasts	n.p.	n.p.	n.p.	n.p.	3	3	3	3	3	3	3	3	n.p.	n.p.	n.p.	3	3	3	3	3	3	3	3	3
DIRECT PRINTING OF THE INFORMATION MESSAGE IN PROGRESS Status 1 as long as the function lasts	n.p.	n.p.	n.p.	n.p.	4	4	4	4	4	4	4	4	n.p.	n.p.	n.p.	4	4	4	4	4	4	4	4	4
DIRECT PRINTING OF THE ISA ALARME IN PROGRESS Status 1 as long as the function lasts	n.p.	n.p.	n.p.	n.p.	5	5	5	5	5	5	5	5	n.p.	n.p.	n.p.	5	5	5	5	5	5	5	5	5
PRINTING OF ALARM HISTORY BUFFER IN PROGRESS Status 1 as long as the function lasts	n.p.	n.p.	n.p.	n.p.	6	6	6	6	6	6	6	6	n.p.	n.p.	n.p.	6	6	6	6	6	6	6	6	6
HARDCOPY IN PROGRESS Status 1 as long as the function lasts	n.p.	n.p.	n.p.	n.p.	7	7	7	7	7	7	7	7	n.p.	n.p.	n.p.	7	7	7	7	7	7	7	7	7
FORM-FEED IN PROGRESS Status 1 as long as the function lasts	n.p.	n.p.	n.p.	n.p.	8	8	8	8	8	8	8	8	n.p.	n.p.	n.p.	8	8	8	8	8	8	8	8	8

-- : non used

n.p. : not present

Table 37.27: Meaning of the Bits of the Status Word for LPT

		1							0	I	NUME	BER (OF TH	IE BI	г	2							2	
WORD 1 MEANING OF THE BIT	VT 50	VT 60	VT 150 W	VT 160 W	VT 170 W	VT 190 W	VT 300 W	VT 310 W	VT 320 W	VT 330 W	VT 155 W	VT 185 W	VT 505 H	VT 505 W	VT 515 W	VT 525 H	VT 525 W	VT 555 W	VT 56x W	VT 575 W	VT 580 W	VT 585 W	VT 585 WB	VT 595 W
STAMPANTE NOT ON LINE Status 1 when one of the bits from 3 to 8 is set at 1.	n.p.	n.p.	n.p.	n.p.	0	0	0	0	0	0	n.p.	0	8	0	0	0	0	0						
TIMEOUT Status 1 when the printer is OFFLINE, not connected, lacks paper or when there is any communication problem follow the command to print.	n.p.	n.p.	n.p.	n.p.	1	1	1	1	1	1	n.p.	1	1	1	1	1	1	1						
- "ornali	n.p.	n.p.	n.p.	n.p.			e de la competencia de la comp				n.p.				e de la	<u>7</u>								
REPORT PRINTING IN PROGRESS Status 1 as long as the function lasts	n.p.	n.p.	n.p.	n.p.	3	3	3	3	3	3	n.p.	3	3	3	3	3	3	3						
DIRECT PRINTING OF THE INFORMATION MESSAGE IN PROGRESS Status 1 as long as the function lasts	n.p.	n.p.	n.p.	n.p.	4	4	4	4	4	4	n.p.	4	4	4	4	4	4	4						
DIRECT PRINTING OF THE ISA ALARME IN PROGRESS Status 1 as long as the function lasts	n.p.	n.p.	n.p.	n.p.	5	5	5	5	5	5	n.p.	5	5	5	5	5	5	5						
PRINTING OF ALARM HISTORY BUFFER IN PROGRESS Status 1 as long as the function lasts	n.p.	n.p.	n.p.	n.p.	6	6	6	6	6	6	n.p.	6	6	6	6	6	6	6						
HARDCOPY IN PROGRESS Status 1 as long as the function lasts	n.p.	n.p.	n.p.	n.p.	7	7	7	7	7	7	n.p.	7	7	7	7	7	7	7						
FORM-FEED IN PROGRESS Status 1 as long as the function lasts	n.p.	n.p.	n.p.	n.p.	8	8	8	8	8	8	n.p.	8	8	8	8	8	8	8						

-- : non used

n.p. : not present

Status area for This are trends

This area consists of 1 word.

WORD NUMBER	NAME OF WORD	Ś.
0	TREND STATUS WORD	and the

Table 37.28: Meaning of bits of Trend Status Word

North Colored						3					NUME									0				
WORD 0 MEANING OF BIT	VT 50	VT 60	VT 150 W	VT 160 W	VT 170 W	VT 190 W	VT 300 W	VT 310 W	VT 320 W	VT 330 W	VT 155 W	VT 185 W	VT 505 H	VT 505 W	VT 515 W	VT 525 H	VT 525 W	VT 555 W	VT 56x W	VT 575 W	VT 580 W	VT 585 W	VT 585 WB	VT 585 W
TREND NUMBER 1 BUFFER FULL Status 1 when the buffer is full.	n.p.	- 2	Ş				0	0	0	0		0					Ş	0	0	0	0	0	0	0
TREND NUMBER 2 BUFFER FULL Status 1 when the buffer is full.	n.p.					-	10	1	1	1		1		30	50			1	1	1	10	S ^r	1	1
TREND NUMBER 3 BUFFER FULL Status 1 when the buffer is full.	n.p.			-		Š	2	2	2	2		2	Š					2	2	2	2	2	2	2
TREND NUMBER 4 BUFFER FULL Status 1 when the buffer is full.	n.p.		-				3	3	3	3		3				-	2	3	3	3	3	3	3	3
TREND NUMBER 5 BUFFER FULL Status 1 when the buffer is full.	n.p.	-					4	4	4	4		4			Â	-		4	4	4	4	4	4	4
TREND NUMBER 6 BUFFER FULL Status 1 when the buffer is full.	n.p.				- 74	ġ	5	5	5	5		5	j, S					5	5	5	5	5	5	5
TREND NUMBER 7 BUFFER FULL Status 1 when the buffer is full.	n.p.			-			6	6	6	6		6						6	6	6	6	6	6	6
TREND NUMBER 8 BUFFER FULL Status 1 when the buffer is full.	n.p.	6					7	7	7	7		7			<u>t</u>	K.		7	7	7	7	7	7	7
TREND NUMBER 9 BUFFER FULL Status 1 when the buffer is full.	n.p.					,5º	8	8	8	8		8	ð	5 <u>-</u>				8	8	8	8	8	8	8
TREND NUMBER 10 BUFFER FULL Status 1 when the buffer is full.	n.p.						9	9	9	9		9						9	9	9	9	9	9	9
TREND NUMBER 11 BUFFER FULL Status 1when the buffer is full.	n.p.	e s					10	10	10	10		10			 	s.	2	10	10	10	10	10	10	10
TREND NUMBER 12 BUFFER FULL Status 1when the buffer is full.	n.p.						11	11	11	11		11	- 20	140 140				11	11	11	3 ¹¹	11	11	11
TREND NUMBER 13 BUFFER FULL Status 1when the buffer is full.	n.p.			-3	4		12	12	12	12	3	12						12	12	12	12	12	12	12
TREND NUMBER 14 BUFFER FULL Status 1when the buffer is full.	n.p.	J.	2				13	13	13	13		13			-	10	2	13	13	13	13	13	13	13
TREND NUMBER 15 BUFFER FULL Status 1when the buffer is full.	n.p.						14	14	14	14		14	-		<u>6</u>			14	14	14	14	14	14	14
TREND NUMBER 16 BUFFER FULL Status 1when the buffer is full.	n.p.			- 3	and a sh	ġ	15	15	15	15		15	je T					15	15	15	15	15	15	15

-- : not used

n.p. : not present

Command response area

This area consists of 4 fixed words (numbered from 0 to 3).

NO. OF WORD	NAME OF WORD
0	COMMAND
1 ,00	PARAMETER 1
2	PARAMETER 2
3	PARAMETER 3

Below are listed commands with their responses:

COMMAND 14:	Reads current time		
Word	Value/Meaning	6	Q. S.
0	14	<u> 1</u> 0	S.
1	HH -> Hours in BCD	100	MM -> Minutes in BCD
2 <	SS -> Seconds in BCD	S	Not used
3	Not used	54	-Car.

COMMAND 15:	Reads current date	
Word	Value/Meaning	0. · · · · · · · · · · · · · · · · · · ·
0	15	K.
1	GG -> Day in BCD	MMM -> Month in BCD
2	AAAA -> Year in BCD	
3	DOW -> Day of the week (0=Sunday)	Not Used

For examples of the use of this area see Software Manual.

Command area external LEDs (fixed

light)

Data exchange area

This area consists of 2 fixed words (numbered from 0 to 1).

WORD NUMBER	NAME OF WORD
0	WORD COMMANDING EXTERNAL LEDS
1 6	WORD COMMANDING EXTERNAL LEDS

Table 37.29: Meaning of Bits of Word Commanding External LEDs (fixed light)

	20	Sec.		BIT NUMBER	- Star			
	WORD 0 MEANING OF BIT	VT150W + VT100MT1000	VT160W	VT300W - VT310W - VT320W + VT100MT1000				2
E1	and the t	0	0	0			and and	2
E2	, ballon	1	<u> </u>	1,001,001,		1005	0	
E3	ANNA!	2	2	2	A. A.			
= 4	6	3	3	3	5			à
5	matthe.	4	4	4			C. C.	2
E 6	dpaulo.	5	5	5		500 ⁵	þ.	
7	ANNA!	6	6	6	A. A.			
E8	Ś	7	7	7				ŝ
E9	mable	8	8	8			E.C.	
E10	. Channe	9	9	9		doors		
E11	ANN THE SECOND	10	10	10	4545			
E12	1.0.2	11	11	11				2
E13	*OFRAM	12	12	12			5 FER	
E14	MIGDOUT	13	13	13		6000		
E15	ANN .	14	14	14	4			
E16		15	15	15	2			

6		6	BIT NUMBER		6						
WORD 1 MEANING OF BIT	VT150W + VT100MT1000	VT160W	VT300W - VT310W - VT320W + VT100MT1000								
17 Na ¹¹⁰	0	0	0		OS JIO'						
18	ANN' 1	1	man 1	A A A I							
19	2	2	2		à						
20	3	adro-	3		200						
21	don'n		draute	õ	Sec. 1						
22			partir -	A. A.							
23		, st	-		2						
24	6	201-	onable		-05030						
25	1. Construction		A David	5	S. S.						
26				12							
27		10.2	- 100								
28	"s ^c	201	KOTTBOY		19770						
29	ALCONT.		N.G.	10	5						
30	- ¹ 2 ¹²		Mar -	12							
31		No.A	- 10g		10.2						
32	- 10		10 ^{mac)}		10110						
: not present	100 m		. North		Se la						

Table 37.30: Meaning of Bits of Word Commanding External LEDs (fixed light)

Command area external LEDs (blinking light) This area consists of 2 fixed words (numbered from 0 to 1).

NO. OF WORD	NAME OF WORD
0	WORD COMMANDING EXTERNAL LEDS
1 300	WORD COMMANDING EXTERNAL LEDS

For details concerning status words, see Page 37-30.

Command area internal red LEDs (fixed light) This area consists of up to 2 words (numbered from 0 to 1).

WORD NUMBER	NAME OF WORD
0	WORD COMMANDING RED LEDS
1 100	WORD COMMANDING RED LEDS

Table 37.31: Meaning of Bits of Word Commanding internal red LEDs (fixed light)

- All	55						all'	MEAN	NING C	F BIT			Stat 1				
WORD 0 BIT NUMBER	VT 50	VT 60	VT 150 W	VT 160 W	VT 170 W	VT 190 W	VT 300 W	VT 310 W	VT 320 W	VT 330 W	8						0
0			-	3	F1	F1	F1	F1	F1	30%	2.2					S. H.	35
1 abalton		- 20	30		F2	F2	F2	F2	F2	-				200	50		
2 manual C	44	<u>1</u>			F3	F3	F3	F3	F3	-			14				
3					F4	F4	F4	F4	F4	-	10						0
4 Natho			-	and and	ر F5	F5	F5	F5	F5	7. P.S.						22	
5 apaul		.8	32		F6	F6	F6	F6	F6	-				300	50		
6 www.	14				F7	F7	F7	F7	F7	-			and and a				
e de la companya de l					F8	F8	F8	F8	F8	-	10						0
B			-	and	F9	F9	F9	F9	F9	22					5	65	
9 _B B ^{BUT}		8	2		F10	F10	F10	F10	F10	-				300	57		
10	A. C.				F11	F11	F11	F11	F11				and a				
11					F12	F12	F12		F12		19.						à
12 _{off} a ^{by}			.0	<u>6</u>		F13	F13		F13	25					.б	25	
13		<u>s</u>	8			F14	F14	ð	F14				~	600	5		
14 Ann	1 th					F15	F15		F15			1	en e				
15					à	F16	F16		F16	-	à						Ì

6				0				MEAN	VING C	F BIT					0	
WORD 1 BIT NUMBER	VT 50	VT 60	VT 150 W	VT 160 W	VT 170 W	VT 190 W	VT 300 W	VT 310 W	VT 320 W	VT 330 W			4	and the	011	
0		2 ⁵⁰				F17	F17	20	F17				350			
1 www.	1917 - 19					F18	F18		F18		4	1. C				
2				0		F19	F19			0					6	
3 (10)			and	<u> </u>		F20	F20	-	30	-			2	20%	0.1	
4		9 <u>3</u> 0				F21	F21	<u>35</u> 0				.80	300			
5	- 14					F22	F22				41.15					
6				-0						40					10	
7		-	ê					-	200	-			3	25		
8 Jun ^{ter}	-3	<u> 1975</u>					.50	20				Ś	200			
9						44					43					
10				2						de.					10:	
11 00000		-	and	-					and and				. 5	35		
12	्रह	9°					, zś	S				Ś	8			
13						32.50					45.4					
14				-2					-	2				51	2	
15			C.						E.				.5	(F)		
: not present	~	25					1	25				1	S.			

Table 37.32: Meaning of Bits of Word Commanding internal red LEDs (fixed light)

Command

This area consists of up to 2 words (numbered from 0 to 1).

area internal red LEDs (blinking light)

NO. OF WORD	NAME OF WORD
0	WORD COMMANDING RED LEDS
1,0 ³ ¹	WORD COMMANDING RED LEDS

For details concerning status words, see Pages 22-28.

Command area internal green LEDs (fixed light) This area consists of up to 2 words (numbered from 0 to 1).

NO. OF WORD	NAME OF WORD
0	WORD COMMANDING GREEN LEDS
1 5	WORD COMMANDING GREEN LEDS

Table 37.33: Meaning of Bits of Word Commanding internal green LEDs (fixed light)

	22						24	MEAN	NING C	OF BIT			- All						
WORD 0 BIT NUMBER	VT 50	VT 60	VT 150 W	VT 160 W	VT 170 W	VT 190 W	VT 300 W	VT 310 W	VT 320 W	VT 330 W	8						2		
			F1	201	5×				5	34	2								
10 ¹⁰ 501		- 20	F2						50										
- ANNIN'S	1	<u>1</u>	F3				Nr Nr	2											
à à			F4		10						0								
. All			F5	e de la	5				~	345									
. doallo			10		F6	F6	F6	F6	F6					20	\$°°.				
ANN AL	100	-			F7	F7	F7	F7	F7				nn nn						
e e e e e e e e e e e e e e e e e e e					F8	F8	F8	F8	F8		10						2		
and the			-	2	F9	F9	F9	F9	F9	25					5	200			
. BRANNE		8	5.		F10	F10	F10	F10	F10					300	52				
0	325				F11	F11	F11	F11	F11			1	n na						
1					F12	F12	F12	F12	F12	-	10.						Ì		
2 100000			.5	12		F13	F13	F13	F13	F13					.S	20			
3		6	22			F14	F14	F14	F14	F14				300	57				
4 south	42					F15	F15	F15	F15	F15		1	and and a						
5					R	F16	F16	F16	F16	F16	à						Ì		

6				0				MEAN	NING C	OF BIT					0	
WORD 1 BIT NUMBER	VT 50	VT 60	VT 150 W	VT 160 W	VT 170 W	VT 190 W	VT 300 W	VT 310 W	VT 320 W	VT 330 W				S. S.	0	
0	-	9 ³⁹				F17	F17	F17	F17	F17		Ś	30			
1 water	in the					F18	F18	F18	F18	F18	14					
2				0		F19	F19	F19	F19	F19					0	
3			di d	e		F20	F20	F20	F20	F20			, di	30	2	
4 Joanne		en ser				F21	F21	F21	F21	F21		Ś	320			
5 Andre	44					F22	F22		F22	F22	44					
6				2		F23	F23		F23	F23					à	
7 11000		-	C. C.			F24	F24	-	F24	F24			4	65		
8	0	89 <u>2</u>					3	<u>85.</u>	F25	F25		Ì	350			
9	444					1.42 1.42			F26	F26	45					
10				2					F27	F27					9	
11 100000			e de la						F28	F28			.Ś	60		
12	55	8 ² -					ġ,	S				Ì	8			
13 4444	44-					4					14					
14			,	<u>.</u> ??						e.				2	2	
15		-	C.					.5	Ĩ				5	E.		
: not present		100	1	1	1	1	1	200	1	1 1		1	6		1	

Table 37.34: Meaning of Bits of Word Commanding internal green LEDs (fixed light)

Command

This area consists of up to 2 words (numbered from 0 to 1).

area internal green LEDs (blinking light)

NO. OF WORD	NAME OF WORD
0	WORD COMMANDING GREEN LEDS
1 35	WORD COMMANDING GREEN LEDS

For details concerning status words, see Page 37-34

Command area

This area consists of 4 fixed words (numbered from 0 to 3).

NO. OF WORD	NAME OF WORD
0	COMMAND
1 00	PARAMETER 1
2	PARAMETER 2
3	PARAMETER 3

Table 37.35: List of commands available (Part 1 of 4)

сом	MAND	PA	RA	MS.	Second Street	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT
	DE	1	2	3	DESCRIPTION	50	60	150 W	160 W	170 W	190 W	300 W	310 W	320 W	330 W	155 W	185 W	505 H	505 W	515 W	525 H	525 W	555 W	56x W	575 W	580 W	585 W	585 WB	59 W
01		•	•	ŝ	Forces sequence	•	•	•	ð) ()	•	•	•	•	•	-	3	5.0						-	50	<u>50</u>			
02		200	•		Forces page	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
03		•			Forces cur- rent field	•	•	•	•	•	e	50	•	•	•			- 0	Â	1					-	5	6	9	
04		0% 14	4	-	Bit-structured protection mask	•	• 4			•	•	•	•	•	• 14	۲	•	•	•	•	•	•	•14		•	•	•	•	•
05		•			Forces sys- tem context	•	•	•	•	•	•	\$*	۲	•	•	•	•	•	•	P	0	•	•	•	•	•	•	•	2
06		•	1	3	Sets auto- scroll for mes- sages	•	•	•	8	50	-					- 1	z	50							3	30			
07		•			Sets current language	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
08		•		-	Priority of messages	•	•	•	•	50	ê	5				•	•	•0 50	Í	•	•	•			- "?	5 ⁰	100	1	
09		•	2	-	Operation of messages	•	•4		•	•	•	•	•	•	•		•	•	•	•	•	•		1. 1. 1.	<u>کې</u>	•	•	•	•
10		•			Sets auto- scroll time for information messages	•	•	•	•	•	•		0	•	•	•	•	•	•		0	•	•	•	•	•	•16		2.
11		•	1.1	8	Sets auto- scroll time for ISA alarms			14	ġ	•	•	•	•	•	•	•	۲	50		•	•	•	•	• N		•	•	•	•

COM	MAND	PA	RAI	IS.		VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT	VT
	DE	1	2	3	DESCRIPTION	50	60	150 W	160 W	170 W	190 W	300 W	310 W	320 W	330 W	155 W	185 W	505 H	505 W	515 W	525 H	525 W	555 W	56x W	575 W	580 W	585 W	585 WB	595 W
12		•	-	10	Sets maximum time after which the lamp switches off			-	102	i A	3		•	•	•	-	50		•	•	•	•	•	•	• }	20	<u>9</u> , •	•	•
13	14	S.	-	-	Sets the maxi- mum idle time for keys in edit mode	121	and and a	- 60		•	•	•	•	•74	•	•	•	•	•	•	•	•1		•	•	•	•	•	•
14	r			-	Reads current time				-		P	è	•	•	•	•	•	•	e	•	•	•	•	•	•	• 7 kg		•	•
15	r	10	à	0.	Reads current date		- 1	S.	20	•	•	•	•	•	• 5		5 ⁰	•	•	•	•	•	•2	•	•	•	•	•	•
16		•		-	Sets the clock	- 1				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•~~	•	•
17		•	-	50	Sets current date			-	100	10 •	•	•	•	•	•	•		ð	•	•	•	•	•	•		26.0	•	•	•
18	in an	14 10	-		Reads trend from device buffer	14	10	<u>.</u>				•	•	•		<u>-</u>	•					and and a	•	•	•	•	•	•	•
19					Emptying alarm history buffer				-	•×e	•	9	•	•	•	•	•		de la	•	•	•	•	•	•	- 1 C	1 A.	•	•
20	-			0, -	Synchroniza- tion of recipe transfer		- 10	ŝ	50	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•
21	-	•	•	-	Request for a recipe	-				•	•	• ?	•	•	•	•	•	•	•	•	•	•	•	•	•	•	• ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	•	•
22		•	•	10. 1	Send recipe to VT without overwriting			-	-92.	10 C.O	•	•	•	•	•	•	•	•	•	•	•	•	•	•	۲	10. O	•	•	•
23	4	•	•	-	Send recipe to VT overwriting	4	and and			●	•	•	•	•	•	•	•	•	•	•	•		•	•	•	●	•	•	•
24		•	•	- 70	Command: internal green LEDs			•	•	19 C) •	•	•	•		- . 5	10	2	2 					- .5	Alb.	2	-	
25	- 12	100	00	-	Command: flashing of internal green LEDs		-74	ê	•	•	•	•	•	• 4	•	<u>50</u> 0	-					- ⁻	200	<u>9</u> 20		-	1		-

Table 37.35: List of commands available (Part 2 of 4)

-- : not present

r : response

COMI	MAND		RAI		DESCRIPTION	VT 50	VT 60	VT 150	VT 160	VT 170	VT 190	VT 300	VT 310	VT 320	VT 330	VT 155	VT 185	VT 505	VT 505	VT 515	VT 525	VT 525	VT 555	VT 56x	VT 575	VT 580	VT 585	VT 585	V 59
co	DE	1	2	3	0			W	W	w	W	W	W	W	W	W	W	H	W	W	H	W	W	W	W	W	W	WB	V
26		•	•	-	Command: read and write pipeline					- 30	۴	5	•	•	•		-	50	¢	-			•	•	•	• 50		•	•
27		-13 -14	2	-	Deletes trend from VT buffer		4	202	00			•	•	•	•14	12	•						•2.4		•	•	•	•	•
28		•			Reads trend on command						-	S	è	•	•		•			P	2		•	•	•	•	• ² 20		2
29		•	•	3	Stop trend	1			ğ	30		•	•	•	•		S	50					•	• 2.4		•	•	•	,
30		•	•		Start trend		1					•	•	•	•		•			-	- 10		•	•	•	•	•	چ	- 10
31		•	•	-	Command: internal red LEDs	-			-	•0 50	•	•	•	•				10	de la	-					 ~?	5.05	201	-	
32		•	•	-	Command: flashing of internal red LEDs	-	14	10	-	•	•	•	•	•	14	14	-						4	1			-	-	
33		•	•		Command: external LEDs			•	•				<i>Q</i> .•	•					, The second se	Nº.	2					-	196	3	2
34		•	•	<u>8</u>	Command: flashing of external LEDs			• 24	۲			•	•	•		- na	ŝĝ							-12	<u>Ş</u> ê	-			
35		•			Report print- ing	-	-			•	•	•	.	•	•	•	•			£.	\$ \$	•	•	•	•	•	•	€×.●	2
36		•	•	%	Printing of the ISA alarms history buffer	-			- %			•	•	•	•	•	•	1. C.C.	20	-	•	•	•	•	•		10, O	•	,
37	1		- 42	-	Hardcopy		4	4		•	•				4	4							4	а ^р . -	-				
38		•			Form-feed					•	•8	ð	•	•	•	•	•	-	a de la como	<u>4</u>	•	•	•	•	•	•		9.6	2
39			di di la	<u>8</u> 2	Zeroes num- ber of print pages			- na	Š	•	•	•	•	•	•		Ś	-			•	•	•	•	S.	•	•	•	

Table 37.35: List of commands available (Part 3 of 4)

VT 525 W VT 330 W PARAMS. VT COMMAND 150 W 160 W 300 W 310 W 320 W 155 W 185 W 505 H 505 W 515 W 525 H 555 W 56x W 575 W 580 W 585 W 585 WB 595 W DESCRIPTION 50 60 170 W 190 W CODE 1 2 3 Command makes internal 40 ----. ___ ---. • • . . • . . ------1 -------------------------green LEDs light up flashing Command makes inter-41 • • nal red LEDs --• • • • . -------------------5 --------- 1 ---light up flashing Command makes exter-42 ---. . ---. • -----. • . ----------4 ---------------2. ------nal LEDs light up flashing Acknowledg-ment of all 43 --φ ___ • • • • • • • ------• • • • . ------÷ ---. . . . • . alarms together Force transfer • 44 ۲ . • • ---. . --mode Saving the alarm history 45 ---------------------1 ---------------. . -----. . • ------. . ---• . buffer and trend buffers Command for operating 46 ÷ • • ---------------÷, --------------working of touch screen Copy recipes into the rema-48 • ---. . . --nent memory ---------44 --×., ------------------------------------.... --------------------------4 ---------------_ -------------1 -----------------------

Table 37.35: List of commands available (Part 4 of 4)

- : not present r

r : response

We list below the commands in detail; unless otherwise indicated all the parameter values are expressed in binary.

COMMAND 01:	Forces sequence
Word	Value/Meaning
0	1 .5 .5
1	Sequence identifier Indicates the number of the sequence that must be displayed. If the value is zero the current sequence is restored; this serves to quit a system page and restore the project page context.
2	Page identifier Indicates the page number of the sequence that must be displayed. If the value is zero or a value that is not valid, the first page of the sequence is displayed.
3	Page control The parameter has 2 identifiers, one for each byte. The high byte (more significant) contains the CURRENT FIELD, that is, the field in the page on which the cursor must be positioned. If the value is zero or a value that is not valid, the current field is the first in the page. The low byte (less significant) contains the BIT-STRUCTURED PROTECTION MASK to be used to protect the fields.

COMMAND 02:	Forces page
Word	Value/Meaning
0	2
2 ¹	Page identifier Indicates the page number of the sequence that must be displayed. If the value is zero or a value that is not valid, the first page of the sequence is displayed.
2	Page control The parameter has 2 identifiers, one for each byte. The high byte (more significant) contains the CURRENT FIELD, that is, the field in the page on which the cursor must be positioned. If the value is zero or a value that is not valid, the current field is the firs in the page. The low byte (less significant) contains the BIT-STRUCTURED PROTECTION MASK to be used to protect the fields.
3	Not used

COMMAND 03:	Forces current field
Word	Value/Meaning
0	3
1	Page control The parameter has 2 identifiers, one for each byte. The high byte (more significant) contains the CURRENT FIELD, that is, the field in the page on which the cursor must be positioned. If the value is zero or a value that is not valid, the current field is the first in the page. The low byte (less significant) contains the BIT-STRUCTURED PROTECTION MASK to be used to protect the fields.
2	Not used
3	Not used

COMMAND 04:	Forces bit-structured protection mask	
Word	Value/Meaning	200
0	4	- 65
1	Bit-structured mask Uses the 8 bits of the low byte (least significant). logic state "1" activates the protection that stops the field being varied.	(d)and
2	Not used	A.
3 🗬	Not used	

	Word	Value/Me	aning		
<u>} </u>	0	5	anniy	~	\
	U			de la companya de la comp	19°
		Indicates	dentifier which context to set. contexts are:		
		VT50/60	à	5	N.
		0	INFORMATION MESSAGES		. A.
		1	SEQUENCE DIRECTORY		
		2	DRIVER		
		3	HELP FOR PROJECT PAGES	5	
		4	PROJECT INFORMATION		
		VT150/16	0/170/190/300/310/320/330/15	5/185/505/515//525/5	55/56x/575/580/585/585B/595
		0	INFORMATION MESSAGES	340	No
	1	1	SEQUENCE DIRECTORY (P/	AGES*)	
		2	DRIVER		
		3	HELP FOR PROJECT PAGES	S	
		4	HELP FOR ISA ALARMS		
		5	ISA ALARMS		
		6	RECIPE DIRECTORY		
		7	HELP FOR INFORMATION M	IESSASGES	
		8	ALARM HISTORY		
		9	PROJECT INFORMATION		
		10	SET CLOCK		
		11	SYSTEM MESSAGES ASSIG	NED TO RECIPES	
		12	SYSTEM MESSAGES ASSIG	NED TO PASSWORD	os 🔬
	2	Not used	200		
	3	Not used	<u>_</u>		

COMMAND 06:	Sets autoscroll for messages	
Word	Value/Meaning	Ś
0	6	N.
1	Setting autoscroll Logic state "1" or other than zero activates the function. Logic state "0" deactivates the function.	tomas
2	Not used	200
3 _ <	Not used	

COMMAND 07:	Sets current language	
Word	Value/Meaning	
0	7	2
1	Language identifier The number of the new current language depends on the way the project is	s set.
2	Not used	Sec.
3	Not used	S

COMMAND 08:	Set the priority for messages	AN'
Word	Value/Meaning	12
0	8	
2 1	Setting priority for messages Logic state "1" or other than zero activates the function. Logic state "0" deactivates the function.	10.Q
2	Not used	and the second sec
3	Not used	le la

COMMAND 09:	0 09: Operation of messages Value/Meaning	
Word		
0	Sec. Sec. Sec.	
est.	ilt command contains activation/deactivation bits of functions as described below:	
	T50/60	
	OFF/ON INFORMATION MESSAGE AUTOSCROLL	
	OFF/ON PRIORITY TO INFORMATION MESSAGES	
	T150/160	
354	- 4 4	
	OFF/ON BUZZER WHEN KEY IS PRESSED	
200	- <u> </u>	
Å 1	OFF/ON CONTINUOUS BUZZER	
S	OFF/ON INFORMATION MESSAGE AUTOSCROLL	
	OFF/ON PRIORITY TO DISPLAY OF INFORMATION MESSAGES	
	OFF/ON INTERMITTENT BUZZER IN PRESENCE OF INFORMATION MESSAGE	
	T170/190/300/310/320/330/155/185/505/515/525/555/56x/575/580/585/585B/595	
	OFF/ON ISA ALARMS AUTOSCROLL	_
-22.	OFF/ON PRIORITY TO DISPLAY OF ISA ALARMS	
	OFF/ON BUZZER WHEN KEY IS PRESSED (AT A TOUCH*)	
~	OFF/ON INTERMITTENT BUZZER IN PRESENCE OF INFORMATION MESSAGE	
10.2	OFF/ON CONTINUOUS BUZZER	
8	OFF/ON INFORMATION MESSAGE AUTOSCROLL	
2	- Alle Alle	
3	- Ju Ju	

(*) Only in the case of Touch Screen

COMMAND 10:	Set time for autoscroll of INFORMATION MESSAGES	
Word	Value/Meaning	
0	10	
10 ¹² 1	Time of autoscroll Value in secs. (1-60) indicating time to elapse before display of next INFORMATION MESSAGE page.	
2	Not used	
3	Not used	

Set time for autoscroll of alarm messages	
Value/Meaning	Sec.
11	19
Time of autoscroll Value in secs. (1-60) indicating time to elapse before display of next ALARM MESSAGE page.	
Not used	
Not used	the second se
	Value/Meaning 11 Time of autoscroll Value in secs. (1-60) indicating time to elapse before dis Not used

COMMAND 12:	Set time for after which lamp switches off	
Word	Value/Meaning	
0	12 Makes it possible to set the idle time of the terminal after which the display lamp switches off. By idle time we mean no pressing of the keys for a certain time. In the case of touch screens, it means no pressing of touch screen buttons/keys.	
21	Waiting time Value in minutes (1-30) indicating the time to pass before the display lamp goes off; the value 0 deacti- vates the function.	
2	Not used	
3	Not used	

COMMAND 13:	Set idle time-out for keys in edit mode
Word	Value/Meaning
0	13 Sets the time after which you pass automatically from edit to display mode following the last key-touch.
1	Idle time Value in minutes from 1 to 30 A value equal to zero disables this function.
2	Not used
3	Not used

alue/Meaning	
ppies time read by internal clock into response function area.	NO.S.
ot used	20
ot used	
ot used	N.
	opies time read by internal clock into response function area. ot used ot used

COMMAND 15:	Reads current date	13	24.
Word	Value/Meaning	200	
0	15		
1	Not used	2	2
2	Not used	2.02	
3	Not used	de la	Per.
	-Clo	S.C.	-Co

COMMAND 16:	Sets current time			
Word	Value/Meaning	200		
0	16 Updates terminal clock with values sent by device.			
1 32	HH -> Hours in BCD	MM -> Minutes in BCD		
2	SS -> Seconds in BCD	Not used		
3	Not used	6		
×				

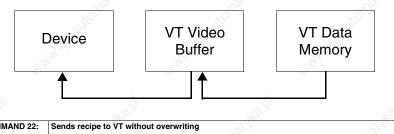
COMMAND 17:	Sets current date	18° .
Word	Value/Meaning	×00
0	17	
1 2	GG -> Day in BCD	MMM -> Month in BCD
2	AAAA -> Year in BCD	
3	DOW -> Day of the week (0=Sunday)	Not Used

COMMAND 18 :	Read trend from device buffer	8				
Word	Value/Meaning					
0	18 Acquires the samples in the buffer of the device as a block.	A.S.				
1	Number of the buffer	Q				
2	Not used	10 M				
3	Not used	. 81				
State of the second sec	Star Star	State -				

COMMAND 19:	Empty ISA alarms history buffer	
Word	Value/Meaning	
Q O	19 Makes it possible to eliminate all records of ISA alarms from history	buffer.
1	Not used	100
2	Not used	S.C.
3	Not used	.S ¹⁰

COMMA	ND 20:	Synchronization of recipe transfer						
Wor	ď	Value/Meaning						
ator o		20 Makes it possible to tell the device that a recipe transfer is to start. The device must respond to the VT before transmission can begin.	et an					
1	2	Bit commands Contains the response bits to the RECIPE STATUS AREA 13 TIMEOUT confirms to the VT timeout of transmission 14 ENDTX confirms to the VT end of transmission 15 STARTTX confirms to the VT beginning of transmission						
2	20	Not used						
3		Not used						

COMMAND 21:	Request for a recipe		
Word	Value/Meaning	1997 - 1997 -	S.
0	Logic state "0" of bit 4 of VT STAT present in the data memory of the	a recipe to its memory. -character code (name) of the recipe. -US word (in VT STATUS AREA) indicates VT, while logic state "1" indicates the abs on starts in SYNCHRONIZED or UNSYNCH	ence of the code.
1	Character 1	Character 2	
2	Character 3	Character 4	~
3	Not Used	. A	. A.Y.



COMMAND 22:	Sends recipe to VT without over	erwriting
Word	Value/Meaning	
0	code is absent. Parameters 1 and 2 contain the 4 Logic state "0" of bit 4 of VT STA present in the data memory of the	a recipe with a new code for it to be saved in the data memory only i I-character code (name) of the recipe. TUS word (in VT STATUS AREA) indicates that the code requested is a VT, while logic state "1" indicates the absence of the code. Is transmitting and then saving the data.
1	Character 1	Character 2
2	Character 3	Character 4

The recipe code in the VT must be 4 characters long

You are advised to use this command associated with command 48 (valid for VT575W, VT580W, VT585WB, VT595W) otherwise the recipes will be lost when the VT is switched off.

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COMMAND 23:	Sends recipe to the VT by overwriting				
Word	Value/Meaning				
0	23 Makes it possible to send the VT a recipe with a news code to save it in the data memory witho checking the existence of the code.Parameters 1 and 2 contain the 4-character code (name) of 1 ipe. Logic state "0" of bit 4 of VT STATUS word (in VT STATUS AREA) indicates that the comm was carried out correctly, while logic state "1" indicates an incorrect command.				
1	Character 1	Character 2			
2	Character 3	Character 4			
3	Not Used				

The recipe code in the VT must be 4 characters long

You are advised to use this command associated with command 48 (valid for VT575W, VT580W, VT585WB, VT595W) otherwise the recipes will be lost when the VT is switched off.

								1			
CON	MAND 24:		and: intern	al green	LEDS			250			
2	Word 0	24 Makes	Meaning it possible t words of par		on and off tl 1 and 2.	ne green L	EDs intern	al to the V	F and corre	esponding	to the bit
		BIT	A				YPE of V	г		de	
		вп	150	160	170	190	300	310	320	330	
		0	F1	F1	F1	F1	F1	F1	F1 🔬		
		্ল	F2	F2	F2	F2	F2	F2	F2		
		2	F3	F3	F3	F3	F3	F3	F3		
		3	F4	F4	F4	F4	F4	F4	F4		
		4	F5	F5	F5	F5	F5	F5	F5		
		5			F6	F6	F6	F6	F6		
	1	6			F7	F7	F7	F7	F7		2
	1	7	10		F8	F8	F8	F8	F8	0	~
		8	de la		F9	F9	F9	F9	F9	195	
		9	C		F10	F10	F10	F10	F10	~ ⁻	
		10			F11	SF11	F11	F11	F11		
		511			F12	F12	F12	F12	F12		
		12				F13	F13	F13	F13	F13	
		13			- 22	F14	F14	F14	F14	F14	
		14				F15	F15	F15	F15	F15	
		15				F16	F16	F16	F16	F16	
		BIT	0		• •	Ï	YPE of V	Г			Q.
		DIT .	150	160	170	190	300	310	320	330	
		0	2			F17	F17	F17	F17	F17	
		1.0				F18	F18	F18	F18	F18	
		2				F19	F19	F19	F19	F19	
		3			6	F20	F20	F20	F20	F20	
		4			St.	F21	F21	F21	F21	F21	
		5			£2°	F22	F22	The second	F22	F22	
	2	6				F23	F23		F23	F23	
	2	7				F24	F24		F24	F24	N
		8					2 1		F25	F25	8.
		9	24				1		F26	F26	
		10	20 <u>-</u>			- 78			F27	F27	
		110				19°			F28	F28	
		12				87			S.		
		13	-		- 79				0-		
		14			Sec.			- 22	·		
		15			- A			47			
	3	Not Us	ed								

--: not used

OMMAND 25:			ing intern	al green L	EDS					
Word	Value/	Meaning								
0	spondi	ng to the b	its of the w	e or deactiv ords of par ave been sy	ameters 1	and 2.	0		to VT and	corre-
	BIT	100			. 8	TYPE of V	г		10	
	BI	150	160	170	190	300	310	320	330	
	0	F1	F1	F1	CF1	F1	F1	E1		
	1	F2	F2	F2	F2	F2	F2	F2		
	2	F3	F3	F3	F3	F3	F3	F3		
	3	F4	F4	F4	F4	F4	F4	F4		
	4	F5	F5	F5	F5	F5	F5	F5		- C
	5		<u>101</u>	F6	F6	F6	F6	F6		10
	6	- 8	5	F7	F7	F7	F7	F7		3
1	7	- A		F8	F8	F8	F8	F8	- 50	
	8	S~		F9	F9	F9	F9	F9	S	
	9			F10	F10	F10	F10	F10	°	
	10			F11	F11	F11	F11	F11		
	11			F12	F12	F12	F12	F12		
	12				F13	F13	F13	F13	F13	
	13		-		F14	F14	F14	F14	F14	
	14		्रम्		F15	F15	F15	F15	F15	
	15		K		F16	F16	F16	F16	F16	Ne.
	DIT	BIT TYPE of VT								
	ы	150	160	170	190	300	310	320	330	
	0	ST			F17	F17	F17	F17	F17	
	1				F18	F18	F18	F18	F18	
	2			- 3	F19	F19	F19	F19	F19	
	3			3	F20	F20	F20	F20	F20	
	4				F21	F21	F21	F21	F21	
	5		- 5		F22	F22	-	F22	F22	1
			~¥.		F23	F23	č	F23	F23	
2	6					1 20				
2	6 7		<u></u>		F24	F24		F24	F24	2
2	-		10			0.10		F24 F25	F24 F25	8
2	7	- 5	£°		F24	F24				3
2	7	- 5	····		F24 	F24		F25	F25	8
2	7 8 9				F24 \\\	F24 		F25 F26	F25 F26	8
2	7 8 9 10				F24 	F24 		F25 F26 F27	F25 F26 F27	3
2	7 8 9 10 11			 	F24 	F24 		F25 F26 F27 F28	F25 F26 F27 F28	3
2	7 8 9 10 11 12				F24 	F24 	 	F25 F26 F27 F28 F17	F25 F26 F27 F28 	

-- : not used

COMMAND 26 :	Read and write pipeline		
Word	Value/Meaning	. C.	
0	26 Reads and writes the pipeline specified.	and the second se	
1	Number of the pipeline		
2	Not used		
3	Not used	- S	S.

9	COMMAND 27 :	Delete trend from VT buffer	S.o.
	Word	Value/Meaning	
	0	27 Deletes the readings in the VT buffer.	Se .
	1	Number of the buffer	AN
	2	Not used	44
	3	Not used	

and a

Ser. S	19 ¹ .07	and Con
	34	A.
COMMAND 28 :	Read trend on command	
Word	Value/Meaning	
0	28 With each command sent acquires a reading from the buffer of	f the device.
1	Number of the buffer	18 M 19 M
2	Not used	
3	Not used	
2	S S	S.
COMMAND OD .	Ston trand	and the second se

COMMAND 29 :	Stop trend	
Word	Value/Meaning	20
0	29 Stops the reading of the channel corresponding to the trend buf mand only applies to trends in Single Automatic Sampling mode	
1	Buffer number	A.
2	Not used	10 m
3	Not used	205
		1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -

COMMAND 30 :	Start trend	
Word	Value/Meaning	Le.
24	30	
0	Starts the reading of the channel corresponding to the trend buffer d mand only applies to trends in Single Automatic Sampling mode.	efined in parameter 1. The co
S 1	Buffer number	2
	Not used	STO.
2	Notused	

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COMMAND 3		nand: inter		.03							
Word		/Meaning	~				2			2	
Co Var	31 Makes the wo	s it possible ords of para	to switch of the to switch of the to switch of the top of top of the top of	on and off t Ind 2.	he red LE[Os internal	to the VT a	and corresp	onding to	the bits	
	DIT	8				TYPE of V	Г		. 8	S.	
	BIT	170	190	300	310	320	330		S.		
	0	F1	F1	F1	F1	F1		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	0		
	31	F2	F2	F2	F2	F2		14			
	2	F3	F3	F3	F3	F3		150			
	3	F4	F4	F4	F4	F4					
	4	F5	F5	F5	F5	F5					
	5	F6	F6	F6	F6	F6	Ş			. 0	
£0	6	F7	F7	F7	F7	F7				Nr.	
1	7	F8	F8	F8	F8	F8			, Ő		
	8	F9	F9	F9	F9 _ C	F9			-0		
	9	F10	F10	F10	F10	F10			2		
	10	F11	F11	F11	F11	F11		jõ,			
	11	F12	F12	F12	- ·	F12		Ser.			
	12		F13	F13		F13	,	1.20			
	13		F14	F14		F14					
	14		F15	F15		F15					
	15		F16	F16		F16	<u></u>			- 28	
1		TYPE of VT									
	BIT	170	190	300	310	320	330	1	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Ĩ	
	0	<u>201</u>	F17	F17	- 89	F17			201		
	1	ē	F18	F18	- A	F18		~	6		
	2		F19	F19	S.			.0			
	3		F20	F20				Sec.			
	4		F21	F21			"				
	5		F22	F22							
à.	6		- A				S			- 2	
2	7		<u>101</u>				·			10	
	8		5			195				3	
	9					ć°			2	1	
	10	<u></u>			5				S.		
	110	- 7			200			20	07		
	12				S			1.0			
	13							and the second			
	14										
	15										
े 3	Not U	eed	à	1	1	1	<u> </u>	1	1		

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Nº.	1		-	15			25			1
OMMAND 32:			ing of inte	ernal red L	EDs					
Word		Meaning				~				2
0	ing to t	he bits of the	he words o	e or deactiv of paramete ave been sv	rs 1 and 2	3			VT and co	rrespond-
	BIT				50	YPE of V	т			
	5	170	190	300	310	320	330	100		
	0	F1	F1	F1	F1	F1		9		
	1	F2	F2	F2	F2	F2	-32			
	2	F3	F3	F3	F3	F3	22			
	3	F4	F4	F4	F4	F4				
	4	F5 (F5	F5	F5	F5				0
	5	F6	F6	F6	F6	F6			Nº	
1	6	F7	F7	F7	F7	F7			2	
1	7	F8	F8	F8	F8	F8			0	
	8	F9	F9	F9	F9	F9		S		
	9	F10	F10	F10	F10	F10		. X°		
	10	F11	F11	F11	F11	F11	- 3	100		
	11	F12	F12	F12		F12	-52			
	12		F13	F13		F13				
	13		F14	F14		F14				
	14		F15	F15		F15				Ç.
	15	460	F16	F16		F16			Nº C	
	DIT	S.			- A	YPE of V	т	1	S.	
	BIT	170	190	300	310	320	330		5	
	0		F17	F17	ST	F17		- 32		
	1		F18	F18		F18		100		
	2		F19	F19			- 3			
	3		F20	F20			10			
	4		F21	F21						
	5		F22	F22						
	6		č			- 2			.0	2
2	7	-				£			de la	
	8	<u> </u>				-			Ser.	
	9				20				-	
	10				81			200		
	11			- 20				Š		
	12			12			5			
	13			- ⁻			- 200			-
	14									
	15					-				<u></u>
3	Not Us		ý.	L		- Q.	1		.0	<u>R.</u>

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Word Value/Meaning 33 Makes it possible to switch on and off the LEDs external to the VT and corresponding to the words of parameters 1 and 2. TYPE of VT BIT 150 300-310-320	he bits of the
Makes it possible to switch on and off the LEDs external to the VT and corresponding to the vords of parameters 1 and 2. TYPE of VT BIT 150 VT100MT1000 300-310-320 + VT100MT1000 - 0 E1 E1 E1 E1 0 0 1 E2 E2 E2 0	he bits of the
BIT 150 + VT100MT1000 300-310-320 + VT100MT1000 ····································	
Image: Normal State of St	
VT100MT1000 VT100MT1000 VT100MT1000 0 E1 E1 E1 E1 I	
1 E2 E2 E2 E3 E3 2 E3 E3 E3 E3 E3 E3 3 E4 E4 E4 E4 E4 E4 4 E5 E5 E5 E5 E6 E6 5 E6 E6 E6 E6 E6 E6 6 E7 E7 E7 E7 E7 E7 7 E8 E9 E10 E10 E10 E10 E10 E10 E10 E10 E11	
$1 \\ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
$1 \\ \begin{array}{c c c c c c c c c c c c c c c c c c c $	
$1 \\ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	23 ¹ 0 ²
$1 \\ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	23
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	25
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	10
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	S
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	
$ \begin{array}{ c c c c c c c } \hline 10 & E11 & E11 & E11 & & & & & & & \\ \hline 11 & E12 & E12 & E12 & & & & & & \\ \hline 12 & E13 & E13 & E13 & & & & & & \\ \hline 12 & E13 & E13 & E13 & & & & & & \\ \hline 13 & E14 & E14 & E14 & & & & & & \\ \hline 14 & E15 & E15 & E15 & & & & & & \\ \hline 15 & E16 & E16 & E16 & & & & & & \\ \hline 15 & E16 & E16 & E16 & & & & & & \\ \hline 15 & E16 & E16 & E16 & & & & & & \\ \hline 15 & E16 & E16 & E16 & & & & & & \\ \hline 15 & E16 & E16 & E16 & & & & & & \\ \hline 15 & E17 & E17 & & & & & & \\ \hline 1 & E18 & E18 & E18 & & & & & & \\ \hline 2 & E19 & & E19 & & & & & & \\ \hline 3 & E20 & & E20 & & & & & & \\ \hline \end{array} $	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	~
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	
TYPE of VT BIT 150 + VT100MT1000 300-310-320 + VT100MT1000 - - 0 E17 E17 E17 - - 1 E18 E18 E18 - - 2 E19 E19 - E19 - 3 E20 E20 - - -	23
150 + VT100MT1000 300-310-320 + VT100MT1000	20
+ 160 + + Image: VT100MT1000 I	
1 E18 E18 E18 2 E19 E19 3 E20 E20	
2 E19 E19 Image: E19	
3 E20 E20	
4	
5	A
2 6	C.
7	
8	
9	
10	
	~
15	- Chr
3 Not Used	
: not used	50"

- : not us

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Ree			12		25			
COMMAND 34:		and: flashing of ex	ternal LE	Ds				
Word		Meaning		~				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
0	words	of parameters 1 and	2.	tivate the LEDs internal			iding to	the bits
	10			TYPE of VI	1	. 3	9	
	BIT	150		300-310-320		200		
	2	+ VT100MT1000	160	+ VT100MT1000	4	9		
	0	E1	E1	E1	15			
	1	E2	E2	E2				
	2	 E3	E3	E3				
	3	E4	E4	E4				0
	4	E5	E5	E5				20-5
	4 5	E6	E5 E6	E6			- 20	£
1				(C)			der.	
•	6	E7	E7	E7			2	
	7	E8	E8	E8		0		
	8	E9	E9	E9		S.		
	9	E10	E10	E10	32			
	10	E11	E11	E11	-			
	11	E12	E12	E12				
	12	E13	E13	E13				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
	13	E14	E14	E14				10.2
	14	E15	E15	E15			- 8	S.
	15	E16	E16	E16			S.	
	1				1	9		
	BIT	150		300-310-320		100		
		+ VT100MT1000	160	VT100MT1000		9		
	0	E17	E17	E17	Care a			
	1	E18	E18	E18				
	2	E19		E19				
	3	E20		E20				- 0-
	4			-				200
	5			_35V			- 6	<u> </u>
2							200	
-	6	r <u>-</u>		<u> </u>		Š	2	
	7			÷ -		00		
	8) -		9		
	9		150		-Sar			
	10		- 42					
	11							
	12			- >				- 2
	13	10 ⁻²		@×				10×
	14	- 62		125			25	5
	15	~					8	
3	Not U	sed		SP .			9	
not used	Ser.			00		200		

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COMMAND 35:	Prints report	
Word	Value/Meaning	
@ ² 0	35 Makes it possible to print the report indicated numerically	in parameter 1.
1	Number of the report to print	18 N
2	Not used	30,
3	Not used	20

COMMAND 36:	Print ISA alarms history buffer		
Word	Value/Meaning	2, 2,	
0	36 Makes it possible to print the ISA	alarm message history buffer	2
	Not used		
2	Not used	all and a second	B.
3	Not used	- K ⁰	- S ⁰
		»(f)"	

Hardcopy	201	200
Value/Meaning	N ^N	N. 6
37 Makes it possible to reproduce the page being displayed on the printer		
Print mode		
0 TEXT MODE		
Not used	10 m	10°
Not used	10	62
	Value/Meaning 37 Makes it possible to reproduce the pa Print mode 0 TEXT MODE Not used	Value/Meaning 37 Makes it possible to reproduce the page being displayed on the printer Print mode 0 TEXT MODE Not used

COMMAND 38:	Form-Feed	- 13 ³	
Word	Value/Meaning	.8	10°
0	38 Makes it possible to send the printer	r the command feed the sheet.	and the second s
	Choice of VT port for communication with printer		
1	0 ASP		
	15 LPT		
2	Not used	N.	N-
3	Not used	180	18 M

COMMAND 39:	Reset print sheet counter to zero	8	18 C
Word	Value/Meaning		S.
0	39 Makes it possible to reset print sheet counter to zero and therefore start from sheet 1 again.		
1	Not used		
2	Not used		2
3	Not used	200	

COMMAND 40 :	Command makes internal green LEDs ligh	nt up flashing	Sec.
Word	Value/Meaning	S ^r	
0	40 Lights up internal green VT LEDs corresponding in a single command both commands 24		f parameters 1 and 2, uni
1 8	See Command 24 or 25	Ray	
2	See Command 24 or 25		
3	Not used	2	2
		. 18 S	

18.2	10 ² 10 ² 10 ²
COMMAND 41 :	Command makes internal red LEDs light up flashing
Word	Value/Meaning
0	41 Lights up red internal VT LEDs corresponding to the bits of the words of parameters 1 and 2, uniting a single command both commands 31 and 32.
1	See Command 31 o 32
2	See Command 31 o 32
3	Not used

COMMAND 42 :	Command makes internal LEDs light up flashing
Word	Value/Meaning
0	42 Lights up internal VT LEDs corresponding to the bits of the words of parameters 1 and 2, uniting single command both commands 33 and 34.
1	See Command 33 or 34
2	See Command 33 or 34
3	Not used
COMMAND 43:	Acknowledgement of all alarms together
Word	Value/Meaning
0	43 Tacita tutti gli allarmi presenti.
1	Not used
2	Not used
3	Not used

COMMAND 44 :	Force tra	ansfer mode			
Word	Value/Me	eaning	S.	S.	- S
0,44	44 In the VT activate the transfer mode of the project (project, firmware and recipes), directly selecting the source and the transmission speed.		e		
ò	Allows the	ource for transfer e selection of the source ible choices are:	e from which to receive/transmit th	e project.	
1	0	MSP			
	1	ASP			
	2	Memory Card			
				cted is MSP or ASP; this parameter	er 🔗
	is not cor	e selection of the speed nsidered with other sour ible choices are: 300 bit/sec		cted is MSP or ASP; this paramete	er
	is not con The poss	nsidered with other sour ible choices are:		cted is MSP or ASP; this paramete	er Andre I (1)
	is not con The poss 0	nsidered with other sour ible choices are: 300 bit/sec		cted is MSP or ASP; this paramete	er Andre Co
2	is not con The poss 0 1	nsidered with other sour ible choices are: 300 bit/sec 600 bit/sec		cted is MSP or ASP; this paramete	er of
. A 2	is not cor The poss 0 1 2	nsidered with other sour ible choices are: 300 bit/sec 600 bit/sec 1200 bit/sec		cted is MSP or ASP; this paramete	er (C)
.P 2	is not cor The poss 0 1 2 3	nsidered with other sour ible choices are: 300 bit/sec 600 bit/sec 1200 bit/sec 2400 bit/sec		cted is MSP or ASP; this paramete	ər Məri
9 2	is not con The poss 0 1 2 3 4	isidered with other sour ible choices are: 300 bit/sec 600 bit/sec 1200 bit/sec 2400 bit/sec 4800 bit/sec		cted is MSP or ASP; this paramete	ər Ministrationalı Ali
2 2	is not cor The poss 0 1 2 3 4 5	isidered with other sour ible choices are: 300 bit/sec 600 bit/sec 1200 bit/sec 2400 bit/sec 4800 bit/sec 9600 bit/sec		cted is MSP or ASP; this paramete	ər
9 2	is not cor The poss 0 1 2 3 4 5 6	isidered with other sour ible choices are: 300 bit/sec 600 bit/sec 1200 bit/sec 2400 bit/sec 4800 bit/sec 9600 bit/sec 19200 bit/sec		cted is MSP or ASP; this paramete	e e e e e e e e e e e e e e e e e e e
2 2	is not con The poss 0 1 2 3 4 5 6 7	sidered with other sour ible choices are: 300 bit/sec 600 bit/sec 1200 bit/sec 2400 bit/sec 4800 bit/sec 9600 bit/sec 19200 bit/sec 38400 bit/sec		cted is MSP or ASP; this paramete	

COMMAND 45 :	Saving the alarm history buffer and/or trend buffers	
Word	Value/Meaning 45 Makes it possible to save all the ISA alarm registrations from the history buffer and/or save all trend buffers permanently. Not used	
0		
1		
2	Not used	

COMMAND 46 :	Command for operating working of touch screen
Word	Value/Meaning
0	46 With this the touch screen can be activated or deactivated. When the touch screen is deactivated pr sure on the glass remains withoout effect.
	Select operation The choices possible are:
1	0 Not active (no pressure detected)
	1 Active
2	Not used
3	Not used
5	6 6 6

COMMAND 48	: Copy recipes into the remanent memory
Word	Value/Meaning
6° 0	48 This allows all the recipes in the volatile memory to be copied into the remanent memory (Flash)
1	Not used
2	Not used
3	Not used

You are advised to use this command associated with command 22 and/or 23 otherwise the recipes will be lost when the VT is switched off.

Chapter 38 Communication protocols

	Page
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	and and and and and

Our VT terminals can be connected to most devices on the market, thanks to specially designed communication protocols that act as an interface between the VT and the Device.

List of protocols A list exists showing which devices the VT can communicate with and including further technical information that may be useful to the programmer.

This list is included on the cd-rom VTWIN KIT.

Chapter 39

Free terminal protocol

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Editing parameters for VT60	39-4		
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Key codes for VT60			
Key codes for VT150/160W	39-10		
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Free terminal in Network	39-14		
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Our VT terminals can be connected with the majority of devices on the market, but, given the considerable number and variety of these devices, it may happen that one is incompatible. To meet the needs of those using an incompatible device, we have created a special driver called *Free terminal*.

Free terminal protocol

The operator terminal has a type of driver called *Free terminal* that makes it possible to communicate with any type of intelligent device not supported by the standard drivers supplied. This driver requires that the device manage the VT terminal in all its functions; this happens by sending control characters that the VT interprets and then sending characters to be displayed. When a \square is pressed, the VT sends the device the value of that \square such that the device recognizes and, if necessary, uses it.

The free terminal protocol also allows you to create a network of up to 31 terminals (01 -> 31); the connection must be made using serial RS485 (see "Chapter 34 -> Network connection").

To transfer the driver to the VT, the terminal must be set up for reception (see "Setting up for reception" of the various terminals) before proceeding to transfer (see Software Manual).

Once the transfer has been completed the VT displays the following page

VT-50 TERMINAL Vx.xx

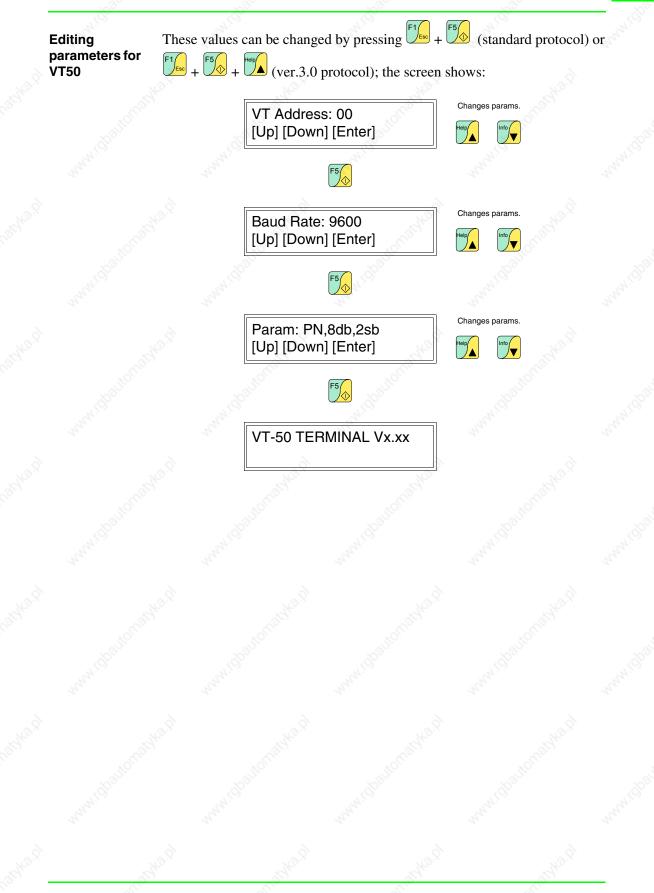
All the examples quoted in this chapter refer to VT50.

This means that the transfer has been effected properly and that the VT is ready to communicate with the device.

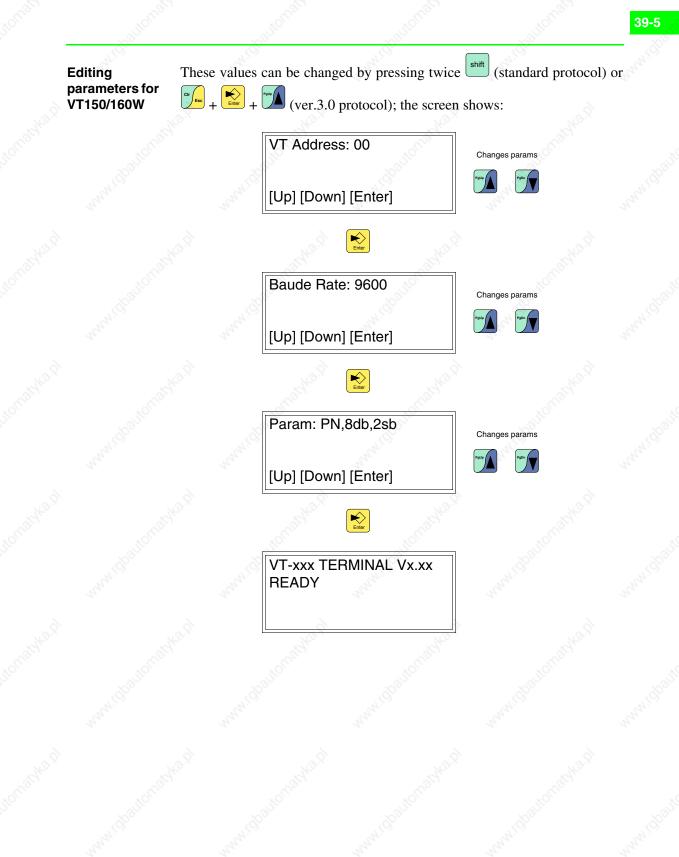
The transfer of the free terminal automatically sets the serial communication parameters with pre-established values:

VT address -> 00 Speed -> 9600 Baud Parity -> N Data bits -> 8 Stop bits -> 2

The above page remains in vision so long as the device connected does not command it to be canceled and takes over control. The connecting cable is the same as that used for the transfer (see "Chapter 30 -> PC <-> VT connection").







Free terminal control characters

The VT uses a set of characters that, sent correctly, function as a command and enable the VT to carry out certain operations.

For the *command* to be recognized as such it must be preceded by the control character <ESC> and followed by the control character <EOT>.



The maximum length of a command string is 32 characters.

The tables below list the control characters to be used and the commands.

Table 39.1: Control characters of Free Terminal

Character	Code		Mooning	Effect
Character	Decimal	Ascii	Meaning	Ellect
<bs></bs>	8	•	Back Space	Takes the cursor one space back on the same line, cancel- ing the character
<cr></cr>	13	and a second	Carriage Return	Takes the cursor to the begin- ning of the following line
<lf></lf>	10	0	Line Feed	Takes the cursor to the next line leaving it in the same position
<esc></esc>	27	+	Escape	Signals the beginning of a command
<eot></eot>	4		End Of Text	Signals the end of a command

If sent several times in succession the character <EOT> can be used to un-block the VT terminal in the event that the sending of erroneous commands has destabilized the terminal.

Table 39.2: Command characters (Part 1 of 3)

Command	Parameters	Effect
<esc>Y<eot></eot></esc>		Checks the connection between VT and device. If the connection is right the terminal replies with the string OK.
<esc>C<eot></eot></esc>		Clears display, taking the cursor to position 0,0 (top left-hand angle).
<esc>Ayyxx<eot></eot></esc>	yy = 0Rows - 1 (03) xx = 0Columns - 1 (019)	Takes the cursor to the co-ordinates yy,xx.
<esc>Bss<eot></eot></esc>	ss = 00 ->Off 01 ->Blinking (Default)	Changes the status of the cursor: off/blink- ing.

*If present on/in the terminal **Applies only to VT150W and VT160W

Table 39.2: Command characters (Part 2 of 3)

Command	Parameters	Effect
<esc>Fddxx<eot></eot></esc>	ESC>Fddxx <eot> $dd = 00 -> Up$ 01 -> Right 02 -> Down 03 -> Left xx = No. of moves $dd = 00 -> Up$ Moves the cursor relative the current position.</eot>	
<esc>Z<eot></eot></esc>	- 4	Clears display, taking the cursor to position 0,0 (top left-hand angle),switch off all LEDs* and the buzzer*.
<esc>Ess<eot></eot></esc>	ss = 00 ->Echo disabled (Default) 01 ->Echo enabled	Displays the code of the key that has been pressed (if above 20Hex)
<esc>X<eot></eot></esc>		Re-initialize the terminal (equivalent to switching off and switching on again).**
<esc>Pbbpp<eot></eot></esc>	bb = 00 -> 300 01 -> 600 02 -> 1200 03 -> 2400 04 -> 4800 05 -> 9600 (Default) 06 -> 19200 07 -> 38400 08 -> 57600 09 -> 115200 pp = 00 -> EVEN, 7, 1 01 -> EVEN, 7, 2 02 -> EVEN, 8, 1 03 -> EVEN, 8, 2 04 -> ODD, 7, 1 05 -> ODD, 7, 2 06 -> ODD, 8, 1 07 -> ODD, 8, 2 08 -> NONE, 7, 1 09 -> NONE, 7, 2 10 -> NONE, 8, 1 11 -> NONE, 8, 2 (Default)	Setting serial communication parameters. When you use the command <esc>Pbbpp<eot> to configure the serial port with parameters dif- ferent from the current ones, you must also reconfigure the device connected with the same values as the VT, other- wise it will not be possible to communi- cate. When the communication port is configured by commands rather than a keyboard, this configuration does not remain resident in the VT.</eot></esc>

*If present on/in the terminal **Applies only to VT150W and VT160W Table 39.2: Command characters (Part 3 of 3)

	Parameters	Effect
xx = 0	1->F1	100 Page 100
0:	2 -> F2	19 AN 19
0	3 -> F3	101
		10 ²⁰⁻¹
0	5 -> F5	A101 A101
0.	7 -> Help	
		6
		Alo. Alo.
1/	0 -> E3	Clor,
		and and a second s
		8
		and a state of the
		14
a 18	5 -> E8	
9 ² 1/	6 -> E9	Commands the state of the LEDs associ-
1	7 -> E10	ated with the internal and external keys.*
18	8 -> E11	104
		10 ⁰⁰
		4 ¹⁰ 4 ¹⁰
		and a second
2	2 -> E15	
2	3 -> E16	2
2	4 -> E17	No. No.
2	5 -> E18	office office
2	6 -> E19 only MT1000	and the second second
		S.S.
9	9 -> All	ar start
ss = 0	0 -> Off (Default)	4.
		8
0:	2 -> Flashing	No.×
aa = 0	0 -> Whenkeysarepressed	
0	1 -> Intermittent	Commands the state of the buzzer in the
		terminal.**
0	1 -> Enabled	and the second sec
-	O NI ' '	
mm = 0	0 -> Numeric mode (Default)	Setting of the keyboard operation mode.*
	$\begin{vmatrix} 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 1 & 1 \\ 1 $	$\begin{array}{llllllllllllllllllllllllllllllllllll$

*If present on/in the terminal **Applies only to VT150W and VT160W

Key codes for VT50

As already mentioned, when the $\Box\Box$ are pressed the VT sends a hexadecimal code to the connected device. The table below lists the association between code and \Box .

www.doute			Hexadec	Hexadecimal code	
	Кеу		Only key	Shift +	
à	F1 _{Esc}	, ed	09	14	
	F2		04	15	
and Con	F3		02	16	
8	F4	4	0B	17	
	F5	mather	0D	18	
-MIGDAU	Help	WIGDONC .	01	12	
And And		Alan.	03	10	

Key codes for VT60

As already mentioned, when the $\Box \Box$ are pressed the VT sends a hexadecimal code to the connected device. The table below lists the association between code and \Box .

Table 39.4: Association between keys and hexadecimal codes

	Hexadecimal code		
Key	Only key	Shift +	
	01	14	
F2	03	15	
F3	02	16	
F4 Fictor	0D	17	
	09	12	

Key codes for VT150/160W

As already mentioned, when the $\Box \Box$ are pressed the VT sends a hexadecimal code to the connected device. The code depends on the the mode set for the keyboard; whether Numeric or ASCII. The former sends the code related to the numbers on the keys; the second sends the code of the alphabetical characters. The default setting is Numeric, but this can be changed by sending the command K (see Page 39-6). The table below lists the association between code and \Box .

Table 39.5: Association betweer	n keys (Numeric mode)) and hexadecimal codes	(Part 1 of 2)
---------------------------------	-----------------------	-------------------------	---------------

		Hexadeo	Hexadecimal code		
N ^{orr}	Кеу	Only key	shift +		
	F6 F1	81	86		
		82	87		
340.Q	F8 F3	83	88		
	F9 F4	84	89		
	F10 F5	85	8A		
No.?	Info	OC	0C		
	Help	0B	0B		
	Pgup	01	05		
12.Q	PgDn	03	06		
31		04	04		
	ANN CONTRACTOR	02	02		
ò	L. Space	20	2E		
N°.	Cir	27	0A		
	Enter	0D	Reinitialization of V1		
	A B C O	30	30		
16 ² .2	10 ⁹ .	No.S.	NO.S		

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	Кеу	Hexadecimal code		
			Only key	shift +
. db ³⁰		3 ²⁰¹⁷	31	31
N. M. M.	G H I 2		32	32
<u>,</u> 2	K L 3	- Steel	33	33
10 ⁰⁰¹	M 4	JON10	34	34
ANNON!!	P R 5		35	35
à	S U 6	No.G	36	36
15	v v x 7	10 mats	37	37
. March 1960	Y Z 8		38	38
6	+ / 9	6	39	39

Table 39.5: Association between keys (Numeric mode) and hexadecimal codes (Part 2 of 2)

In ASCII mode the code relating to the first, second or third letter respectively is sent when the keys F1, F2, or F3 are pressed followed by the key containing the alphanumeric characters.

Example.

Pressing

 $\mathbf{F_{f_{1}}}$ + $\mathbf{S_{u}}^{s}$ sends the code relating to the letter "S".

Table 39.6: Association between keys (Ascii mode) and hexadecimal codes (Part 1 of 3)

and a set	Hexadecimal code				
Кеу	Only key	shift +	F6 F1 +	F7 F2 +	F8 F3 +
F6 F1	-Cathe	86	- Chat Hair		Cardha.r
F7 F2	doauto-	87	auto	- Chant	
F8 F3		88		in.	

Кеу	Hexadecimal code					
	Only key	shift +	F6 F1 +	F7 F2 +	F8 F3 +	
F9 F4	84	89	84	84	84	
F10 F5	85	8A	85	85	85	
Info	0C	oc v	0C	oC	0C	
Help	0B	0B	0B	0B	0B	
PgUp	01	05	01	01	01	
PgDn	03	06	03	03	03	
	04	04	04	04	04	
	02	02	02	02	02	
÷ Space	20	2E	20	20	20	
CirEsc	27	0A	27	27	27	
Enter	0D	Reinitializa- tion of VT	0D	0D	0D	
A B C O	30	30	41	42	43	
D E F 1	31	31	44	45	46	
G H I	32	32	47	48	49	
J K L	33	33	4A	4B	4C	
M A	34	34	4D	4E	4F	
P Q R 5	35	35	50	51	52	
s T U 6	36	36	53	54	55	

able 39.6: Association between keys (Ascii mode) and hexadecimal codes (Part 2 of 3)

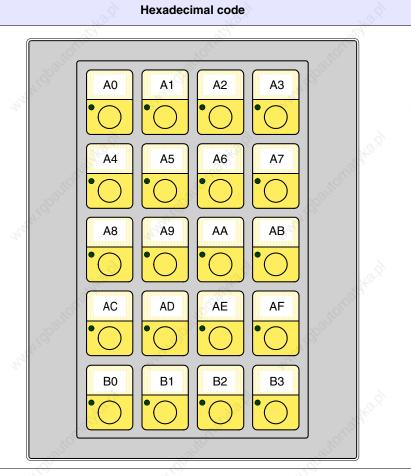
	Key	Hexadecimal code				
		Only key	shift +	F6 F1 +	F7 F2 +	F8 F3 +
	V W X 7	37	37	56	57	58
	Y - 8	38	38	59	5A	2D
	+ / 9	39	39	2B	2F	3D

Table 39.6: Association between keys (Ascii mode) and hexadecimal codes (Part 3 of 3)

The table below lists the association between code and \Box .

Code of External keys for MT1000 and VT160W





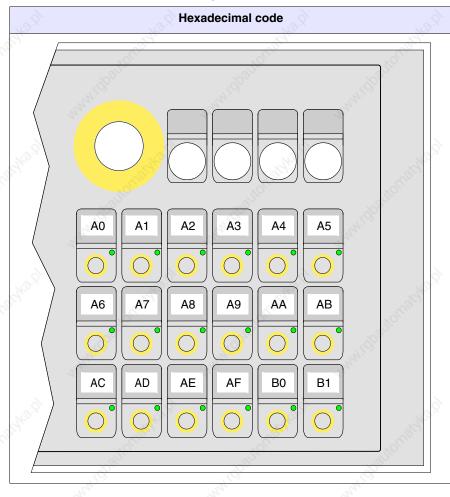


Table 39.8: Association between VT160 keys and hexadecimal codes

Free terminal in Network

Using the *Free terminal* protocol the VT can be connected in a RS485 linked network to enable a master device to show information to or request information from the various connected terminals.

Each connected terminal in this network must have been loaded with the *Free terminal* protocol and must have a different network address from any of the other addresses in the network $(01 \rightarrow 31)$. If the address is 00, the terminal is not considered to be a participant in the network.

To change the network address see Page 39-3.

Once the terminal has been connected to the network (with an address other than 00) and switched on, the VT terminal's behavior is different from that seen in the previous paragraphs. The VT will not respond to any command unless it has been addressed. Addressing a terminal means that from that moment on the master device will communicate exclusively with that ter-

minal. Let us imagine the rotating selector with 31 positions from 0 to 31, the position of the selector indicates which terminal to communicate with.

After being addressed, the terminal will respond to all commands, as if it were directly connected to the device, the other will ignore any instruction passing through the network.

Even the sending of $\square\square$ by the VT is different: when a \square is pressed, its hexadecimal code is no longer sent automatically to the device, but is stored in a buffer (Max 64 $\square\square$) that the master device must ask. These keys are then not sent altogether but one \square at a time.

For example, of the VT buffer contained $3 \square \square \square$, $\square \square$ and $\square \square$, then the VT would respond to the first request with "0301" (3 $\square \square$ in the buffer, the first having the code 01Hex). The response to the second request would be "0203" (2 $\square \square$, code 03Hex); the response to the third request would be "0102" (1 \square , code 09Hex). In order to communicate that there are no keys in its buffer, the VT will respond to any further request with "0000".

There follows a list of permissible commands.

Command	Parameters	Effect
<esc>lxx<eot></eot></esc>	xx = 0131	Addresses a terminal to communicate with
<esc>T<eot></eot></esc>	xx = Number of keys in buffer yy = Hex. code of key sent	Asks VT for keys from its internal buffer. The VT's response is xxyy in Ascii format.
<esc>Dkkmm<eot></eot></esc>	 kk = 00 ->Never sends any key (Default) 01 ->Transmits the key only when the VT is addressed or when it has the address 00 mm = 00 -> Always saves the key in the VT's internal buffer (Default) 01 ->Saves the key in the VT's internal buffer only when the VT is addressed 	Modifies the mode of saving and sending keys of a VT within the network.

Table 39.9: Command characters with terminal in network.

Example of Let us suppose we have a VT50 that has to display the text "GOOD handling

MORNING OPERATOR" centered on the display and, when is pressed is canceled and replaced by the word "READY" justified top left.

There are various ways of proceeding, each leading to the same result; what follows is just one example.

Prepare the VT50 for communication by using *Free Terminal*. To do this, transfer the appropriate driver (see Page 39-2) and set the various communication parameters (see Page 39-3). Once the settings have been completed the following page appears

VT-50 TERMINAL Vx.xx

First check that the VT communicates with the device. Send the following string.

<ESC>Y<EOT>

If communication has been correctly established, the VT responds with the following message.

<OK>

At this point the device must interpret the response and control begins.

First cancel the display. Send the following string.

<ESC>C<EOT>

The display is cleared and the cursor goes automatically to the top left corner with the 0,0 (y,x) co-ordinate.

Position the cursor at co-ordinate 0,5 (y,x). Send the following string.

<ESC>A0005<EOT>

Now the display looks like this:



Send the first part of the text to be displayed "GOOD MORNING". Send the following string.

GOOD MORNING

The display now shows

GOOD MORNING_

Position the cursor on the co-ordinate 1,5 (y,x). Send the following string.

<ESC>A0105<EOT>

The display now shows

GOOD MORNING

Send the rest of the text to be displayed: "OPERATOR". Send the following string.

OPERATOR

The display now shows

GOOD MORNING OPERATOR_

At this point the device must be set up to control the keys when pressed; when $\overbrace{}^{\text{F5}}$ is pressed the VT responds with the following character.

<CR>

The device must interpret and send the string for canceling the text. Send the following string.

<ESC>C<EOT>

The display is now cleared and the cursor positioned automatically in the top left corner with the coordinate 0,0~(y,x)



Now send the text to be displayed "READY". Send the following string.

READY

The display now shows

READY_

The above represents only a simple example of how to use the *Free Terminal*.

Chapter 40

Connection cables

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All VTs communicate with other devices using serial port communication. In this chapter you will find information on all the cables used to connect with various devices together with their order codes.

Those cables marked NOT CODED are not supplied by ESA elettronica but listed here nonetheless to make it easier for the user to make them.

General notes

Serial communications are highly susceptible to disturbances, so, in order to limit as much as possible the influence of these disturbances good quality shielded cables must be used.

The table below lists the characteristics of the cable to be used for serial connection.

Specifications of serial connection cable				
Direct current resistance	Max. 151 Ohm/Km	6		
Capacity coupling	Max. 29pF/m	No.		
Shielding	> 80% or total	S. Carl		

Particular care should be taken in the choice and lay-out of cables, specially with regard to the VT <-> Device connection serial cable.

Always:

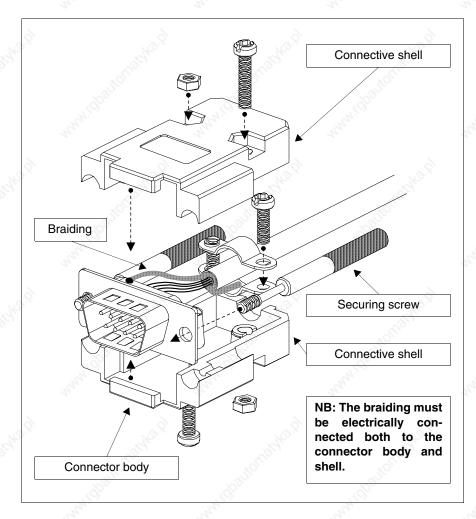
- Find the shortest route
- Lay disturbed cables separately

Disconnect the power supply before connecting or disconnecting the communication cables so as to avoid possible damage to the VT and/or the connected device.

Connecting the cable shield

It is essential for the interface cables between the VT and the Device be correctly shielded in order to ensure that serial communication occurs free from all types of external interference. For this reason all the cables listed in this manual absolutely must be shielded cables and the "D-sub" connectors both on the VT side and the Device side must have metal or conductive plastic shells.

The diagram below shows the correct way of connecting the shield.



The interface cable braiding must be electrically connected both to the shell and the body of the connector at both ends of the cable.

If the connection operation cannot be carried out at the Device side due to the particular type of serial connector, the braiding will have to be taken outside the connector and connected to the earth terminal.

This operation must also be carried out if the body of the Device's serial connector, although of a standard type, is not electrically connected to the

earth terminal of the PLC itself.

Note that in this situation the shield must still be connected both to the shell and the body of the connector.

Certain cable diagrams show the pin connections of the shield signals on the Device side: in these cases, not only does the above apply but the shield must also be connected to them.

In any event the shield must never be connected on the VT side (pin 1).

Earth potentials obtained from DIN guides, structural elements of the machines, electrical cabinet doors etc. are not admissible and it is a good idea to avoid unipotential earth bars which receive earth connections from loads such as inverters, drives, stepper motors and, generally speaking, any type of load which could be a source of strong disturbance.

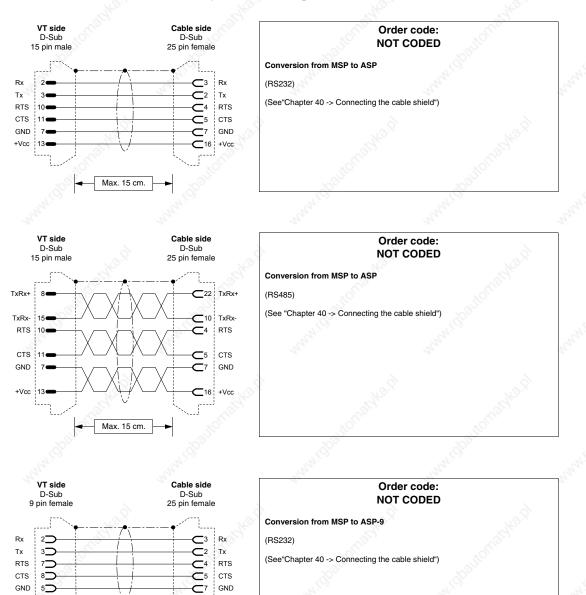
The Device-VT serial communication cable must be single piece. Terminal-type joins and PLUG+SOCKET arrangements are inadmissible. Should the installation system in question necessitate that breaks be made (although this is inadvisable) it will be ABSOLUTELY necessary to implement the following:

- Use D-SUB (Db9, Db15 o DB25) connectors with metal or conductive plastic shells.
- Connect the serial cable shield in accordance with the instructions on this page.
- Limit the number of breaks to those absolutely unavoidable.

Failure to observe these instructions could prejudice the compatibility of the VT-PLC system with the EMC standards currently in force.

MSP<->ASP conversion

The cables referred to in this chapter are designed to be connected to the MSP port of the VT terminal; if you need to use a coded on the ASP port, it will be necessary to use the adapters listed below.



Max. 15 cm.

ELECTREX NETWORK ANALYZER

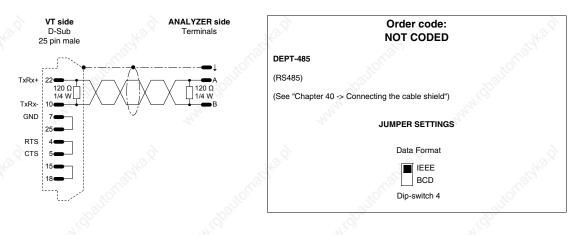
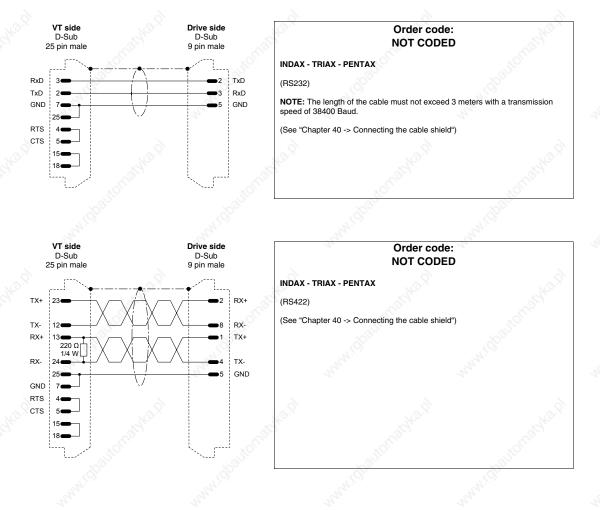
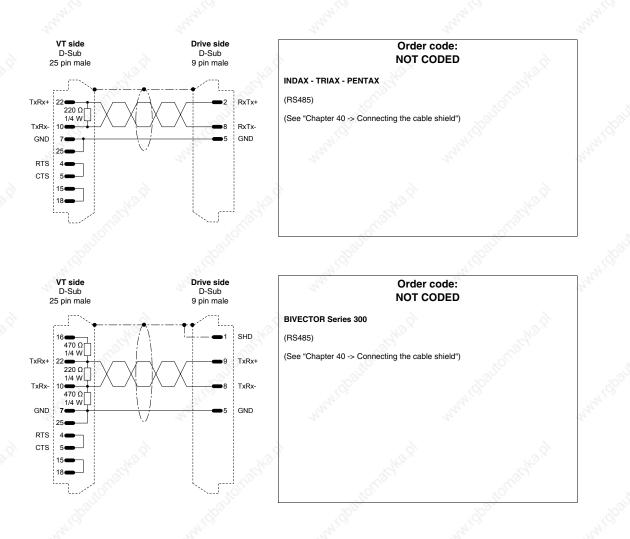


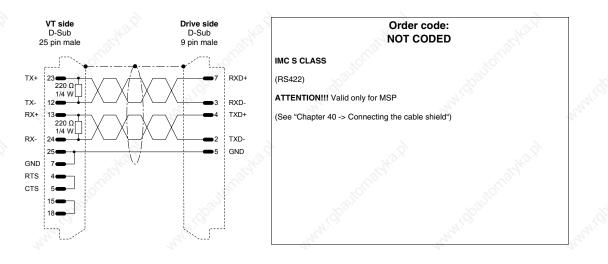
ABB DRIVE

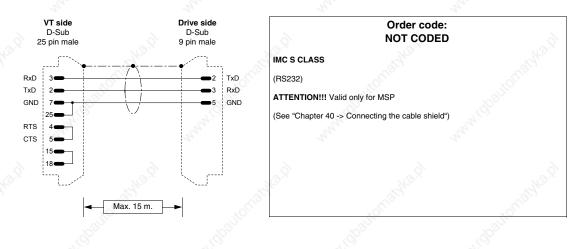


40-9

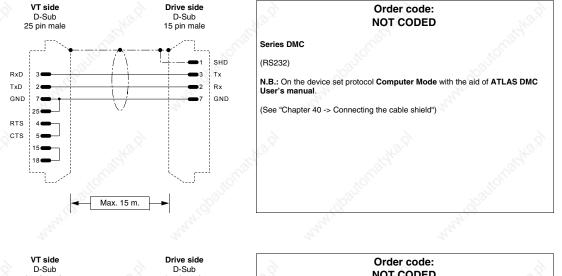


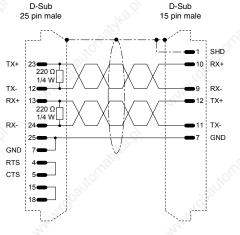
ALLEN-BRADLEY DRIVE

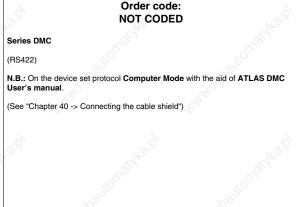




ATLAS COPCO DRIVE

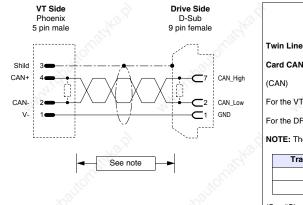






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BERGER-LAHR DRIVE



Order code: NOT CODED

Card CAN-C required

(CAN)

For the VT side cable termination see "Chapter 34 -> CAN: Connection".

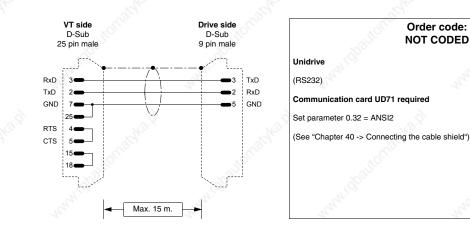
For the DRIVE side cable termination see Drive manual TLC53x.

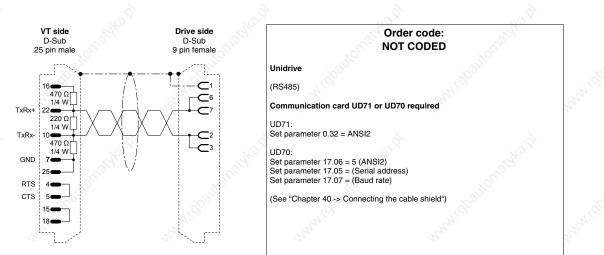
NOTE: The max. length of the cable depends on the transmission speed.

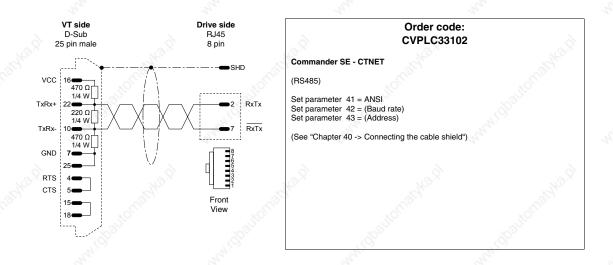
rasmission speed (kbit/s)	Length (m.)
100	500
1000	40

(See "Chapter 40 -> Connecting the cable shield")

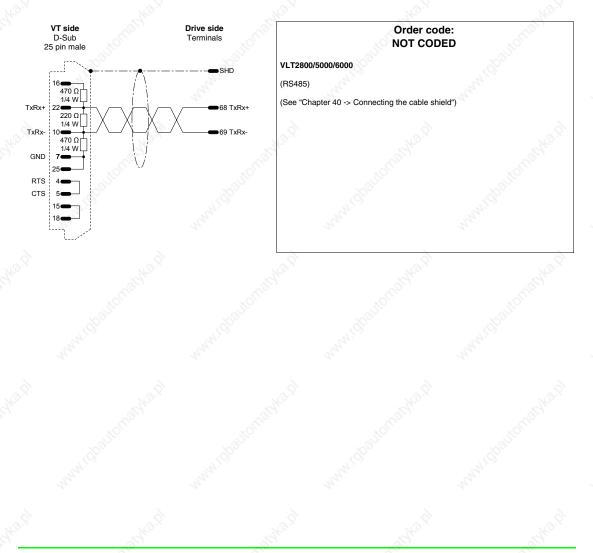
CONTROL TECHNIQUES DRIVE



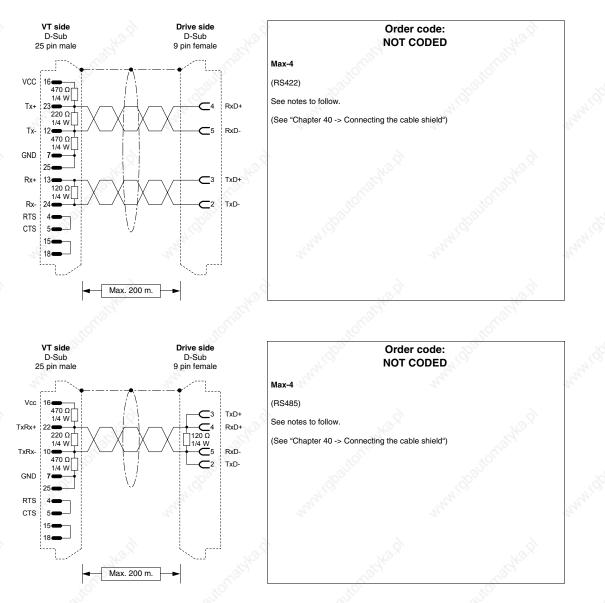




DANFOSS DRIVE



ELAU DRIVE



Communication between a VTxxxW device and ELAU Max-4 devices can be established by using the ModBus Master Slow Peripherals protocol and a communication speed between 9600 and 38400 baud.

You can use either a 4-wire RS422 or a 2-wire RS485 connection. In the latter case it is essential to use the ELAU ModBus_v001001.lib library or a later version. Using the RS485 connection allows you to connect more than one ELAU device to the same VT port.

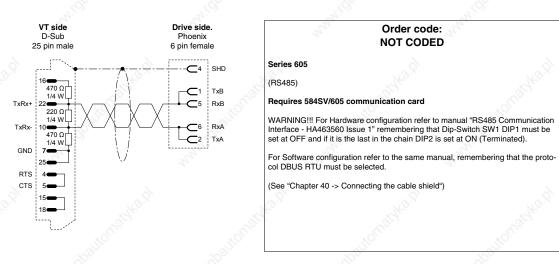
The Function-Block prepared by ELAU makes available 4 data arrays, whose length can be defined by the user, for communication with the VT .

Characteristics of the arrays:

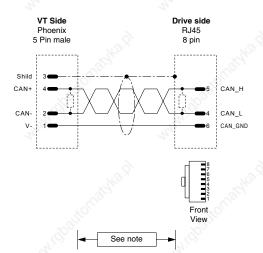
Name	Type of data	Notes	
B0000	Bit (read / write)	The VT accesses this data area in both read and write	
B0001	Bit (read only)	The VT cannot access this data area	
W3000	Word (read only)	The VT accesses this data area by selecting the option Input Register as data area of the variabile in the VT. Warning: The programmer must check that the change of the data field of the VT page does not get enabled. If the change of the data field is enabled the equivalent address in ArrayW4000 will be overwritten.	
W4000	Word (read / write)	The VT accesses this data area in both read and write b selecting the option Word as data area.	

N.B. :

- Defining the length of the arrays in the programming SW, ELAU puts the number 1 for the first element of the array; this implies the existence of an offset of 1 between the address of the array element and the address specified in the VT variable. E.g.: if, using the VT, you want to read and edit the element at single word 20 of the array ...W4000, number 19 will have to be specified as the address of the VT variable.
- To have retentive data in the ELAU device, the relevant array must be declared as VAR_RETAIN.
- Check that the ModBus address assigned in the configuration of the device in VTWIN corresponds to the value assigned to the parameter Modbus_SlaveNr of the ELAU Function Block.



EUROTHERM DRIVE



Order code: NOT CODED

631CAN - 635CAN - 637CAN

(CAN)

For the VT side cable termination see "Chapter 34 -> CAN: Connection".

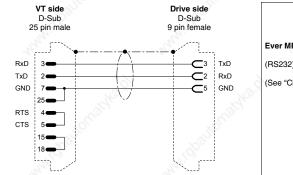
For the DRIVE side cable termination use the appropriate accessory "BUS termination plug" (see Drive manual) in connector X20/21.

NOTE: The max. length of the cable depends on the transmission speed.

Trasmission speed (kbit/s)	Length (m.)
20	800
50	600
125	500
250	250
500	100
1000	25

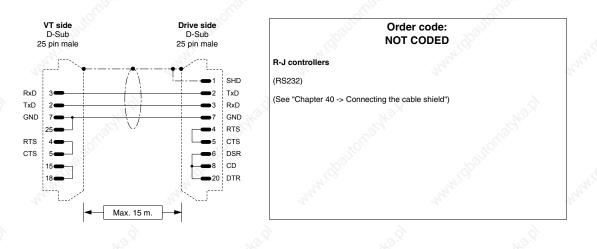
(See "Chapter 40 -> Connecting the cable shield")

EVER DRIVE

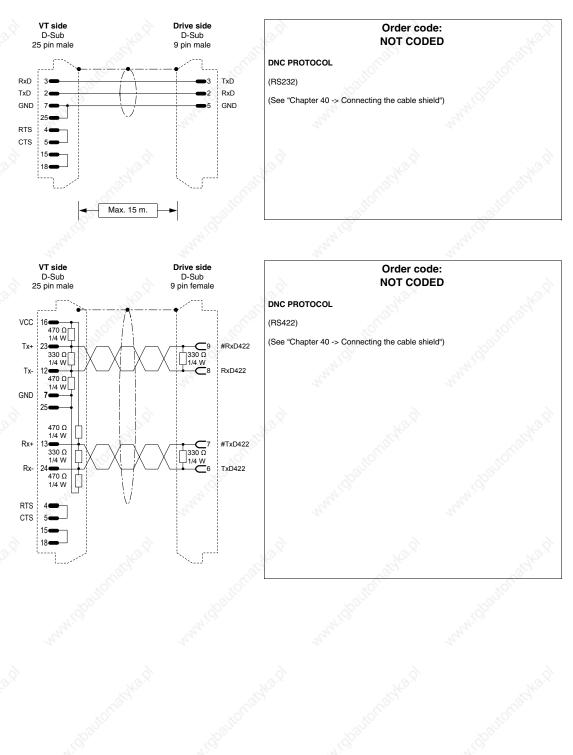


Order code: NOT CODED Ever MPP14-01 (RS232) (See "Chapter 40 -> Connecting the cable shield")

FANUC ROBOTICS DRIVE

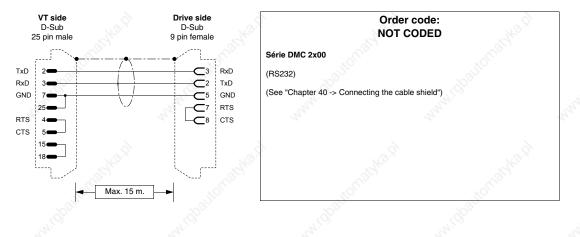


FAGOR DRIVE

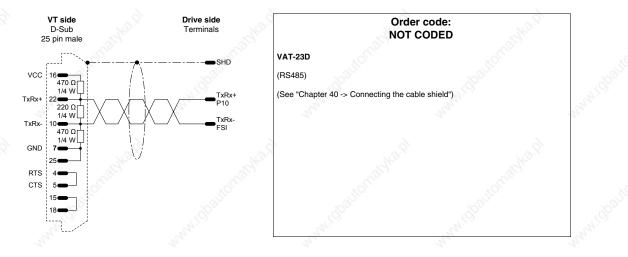


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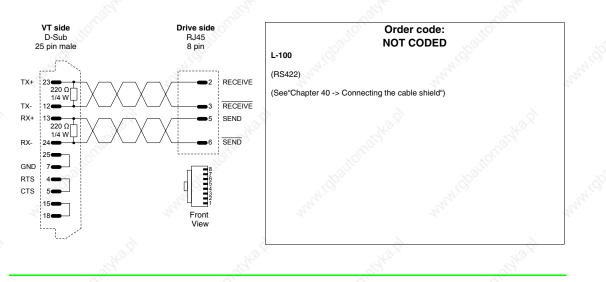
GALIL DRIVE



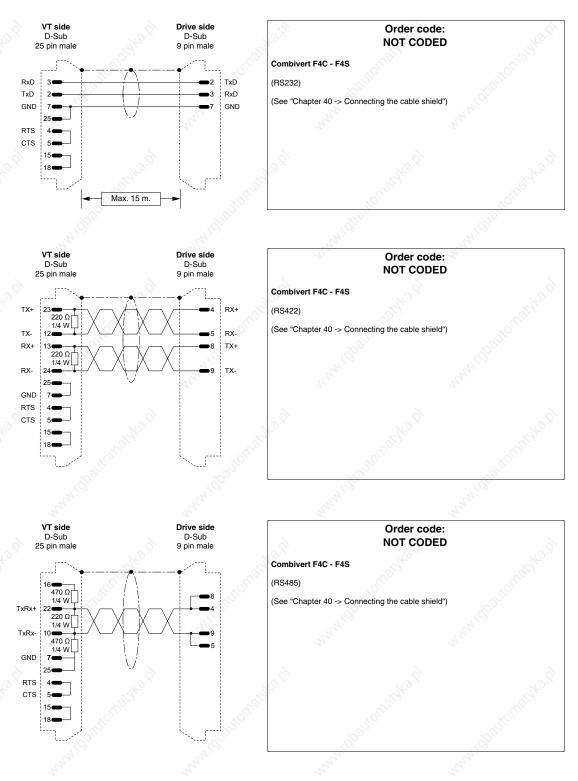
GE DRIVE



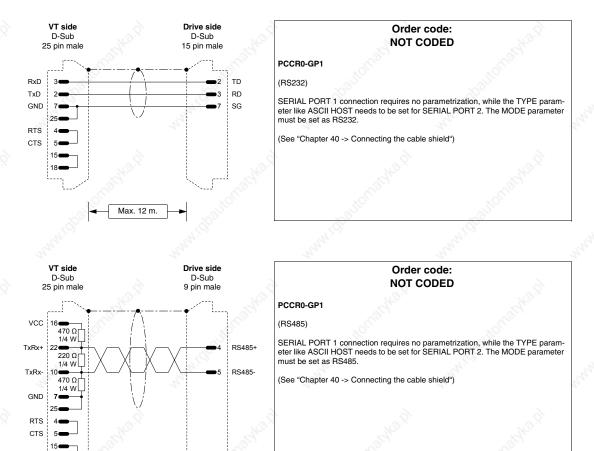
HITACHI DRIVE



KEB DRIVE

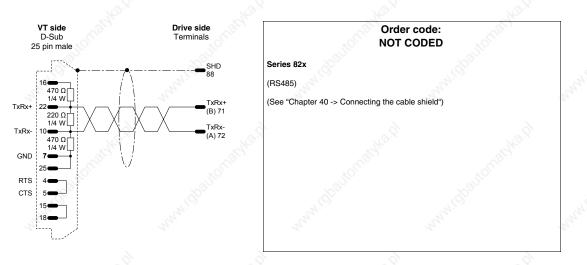


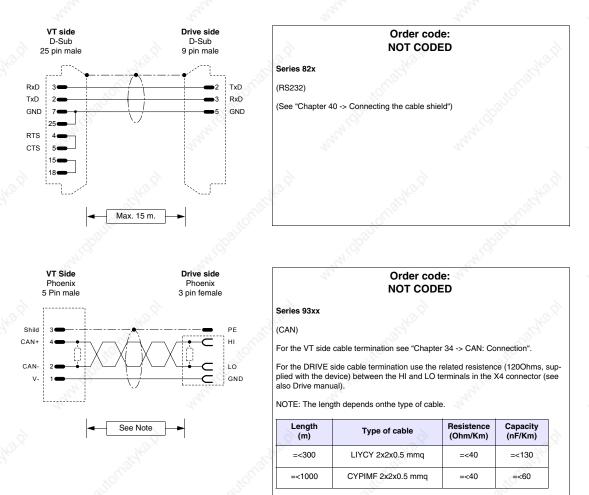
INDRAMAT DRIVE



LENZE DRIVE

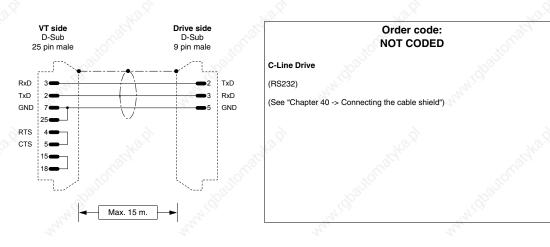
18



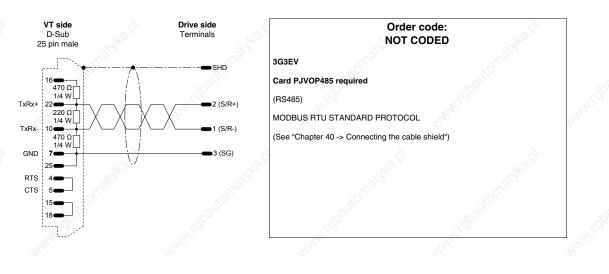


(See "Chapter 40 -> Connecting the cable shield")

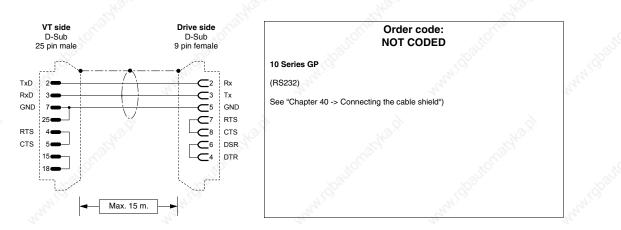
LUST DRIVE



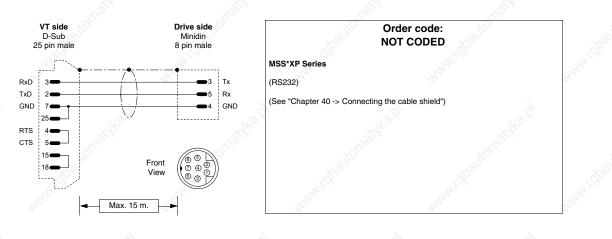
OMRON DRIVE



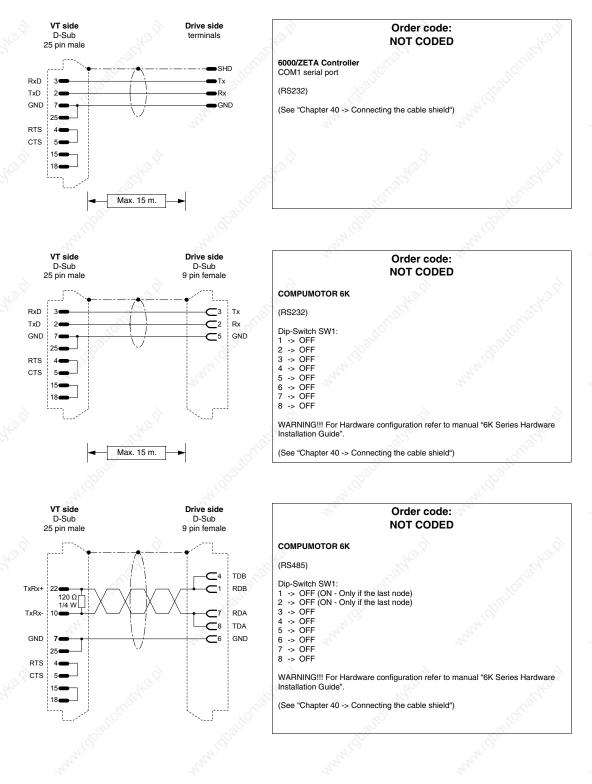
OSAI DRIVE



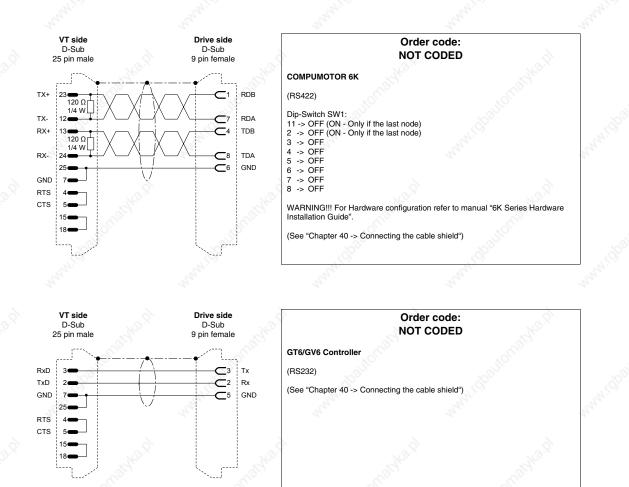
PANASONIC DRIVE



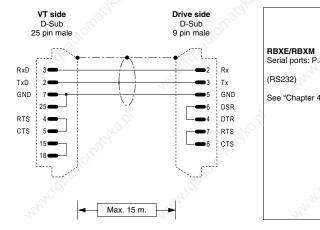
PARKER AUTOMATION DRIVE



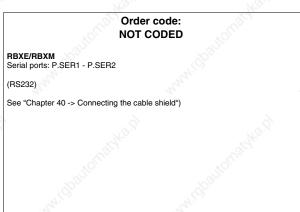
40-23

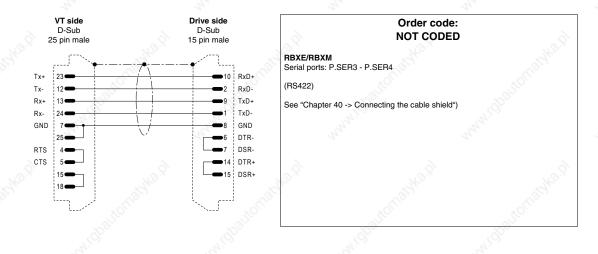


ROBOX DRIVE

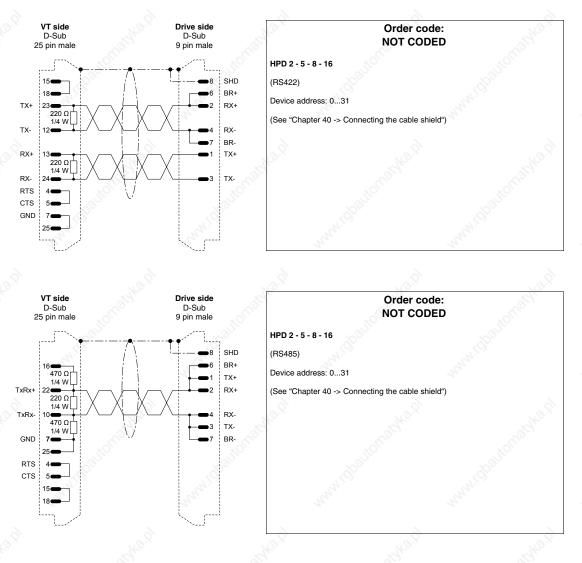


Max. 15 m.



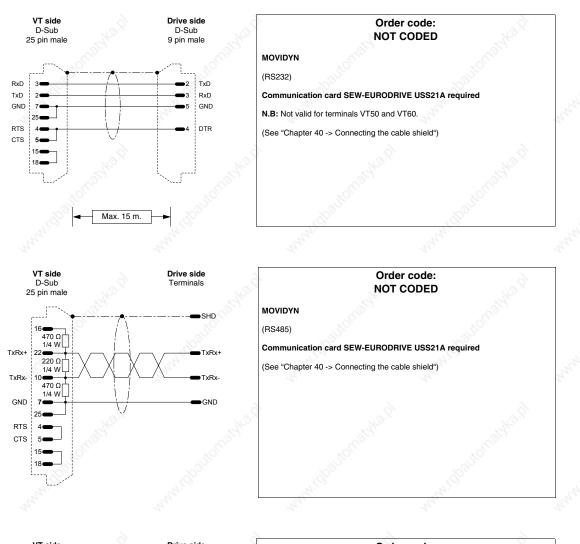


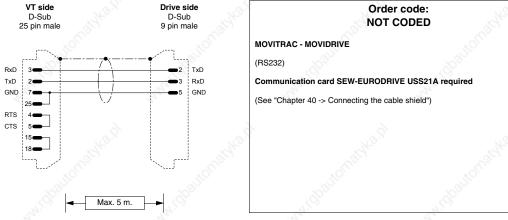
S.B.C. DRIVE

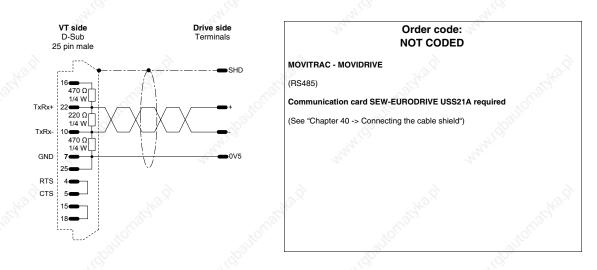


405.1200.037.2 - Rel.: 2.20 of 26/03/2007

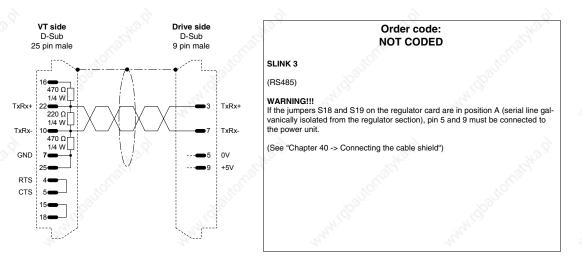
SEW-EURODRIVE DRIVE



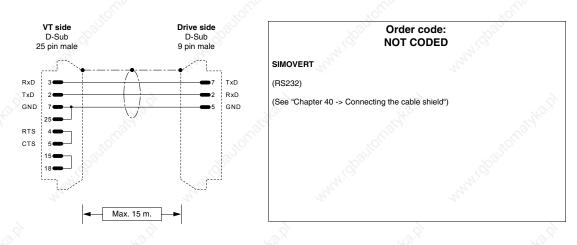




SIEI DRIVE

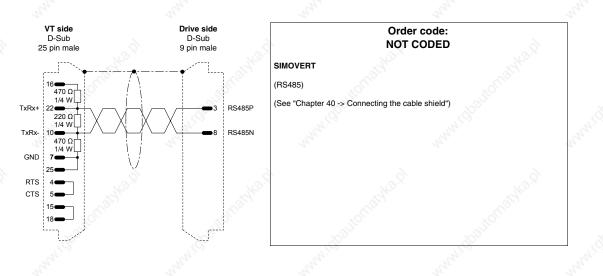


SIEMENS DRIVE

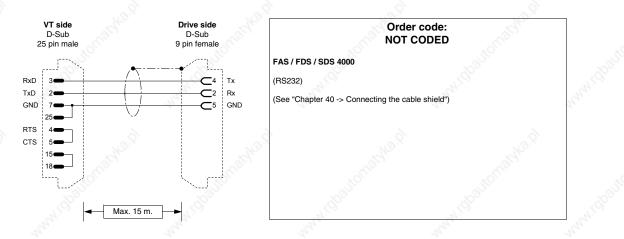


405.1200.037.2 - Rel.: 2.20 of 26/03/2007

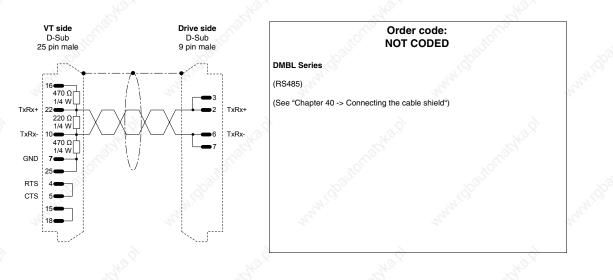
40-27



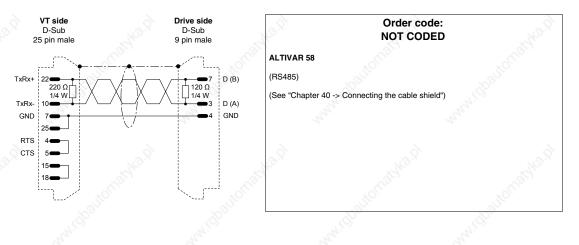
STÖBER DRIVE



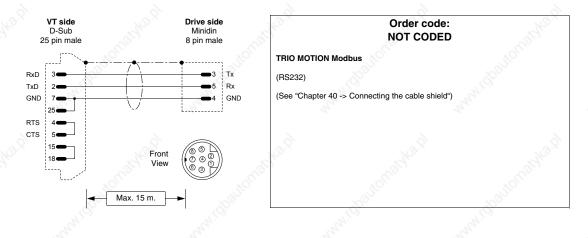
TDE MACNO DRIVE

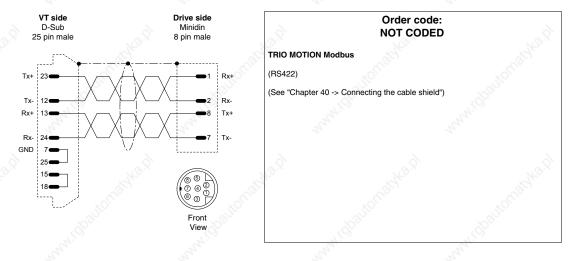


TELEMECANIQUE DRIVE

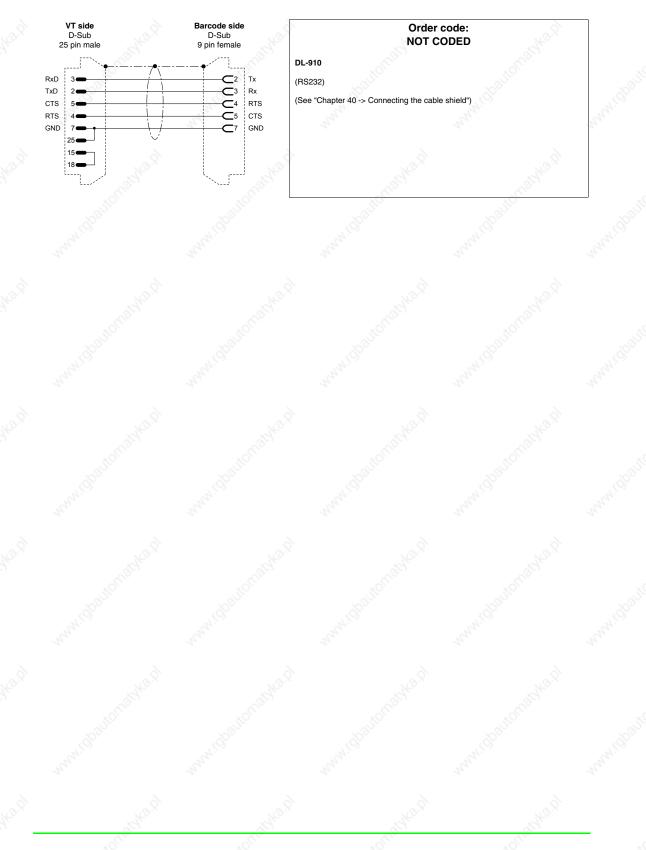


TRIO MOTION DRIVE





DATALOGIC BARCODE READER



RxD ТхD

GND

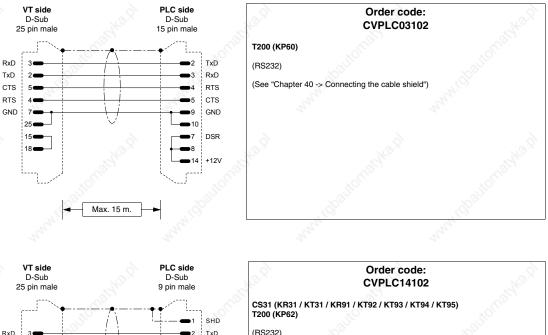
CTS 5

RTS

15

18

ABB PLC



(RS232)

RxD

GND

PRG

RTS

CTS

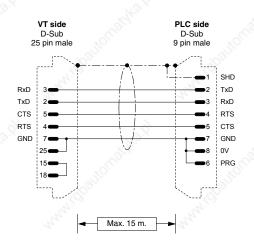
0V

This note only applies to protocol of CS31 series 90 (non direct). Once the VT has been connected to and disconnected from the CS31, the PLC remains in MONITOR mode and the programming software no longer functions properly. To get the PLC back to normal functioning, use the programming S/W to access the "PLC commun.2" menu and select the "3 terminal emulation" option and press the "CTRL" and "W" keys together. At the end the PLC responds by offering the prompt sign ">".

NOTE ON DIRECT PROTOCOL: You can select the communication speed of 19200 Baud in the PLC by connecting pins #6, #7 and #8 (see fig.). This speed is handled by CS31 only if the library module CE 19_2COM1is loaded.

NOTE: the cable supplied by ESA does not have the connection represented by the dotted line.

(See "Chapter 40 -> Connecting the cable shield")



Max. 15 m.

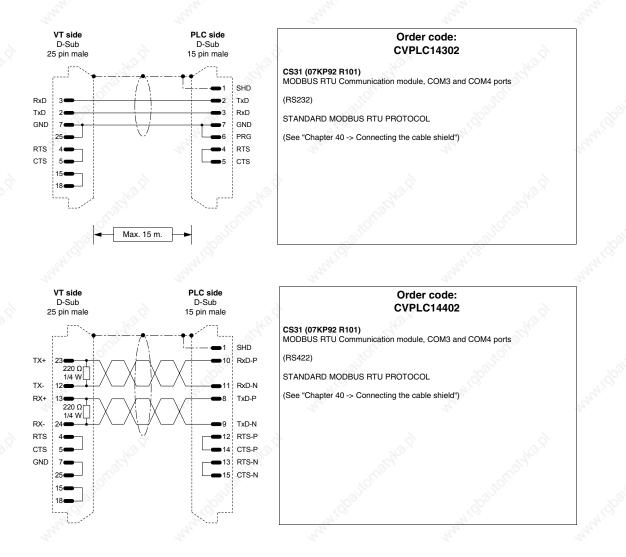
Order code: **CVPLC14202**

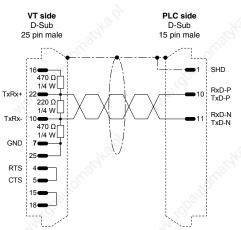
CS31 (KR31 / KT31)

(RS232)

MODBUS RTU STANDARD PROTOCOL

(See "Chapter 40 -> Connecting the cable shield")





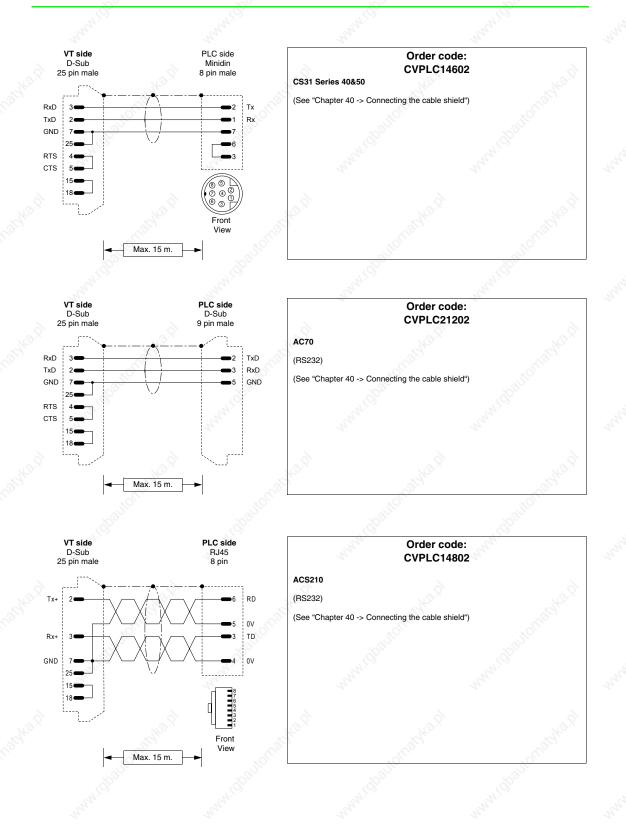
Order code:
CVPLC14502

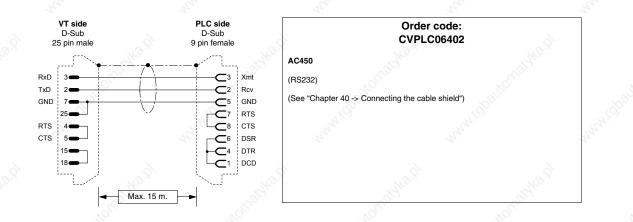
CS31 (07KP92 R101) MODBUS RTU Communication module, COM3 and COM4 ports

(RS485)

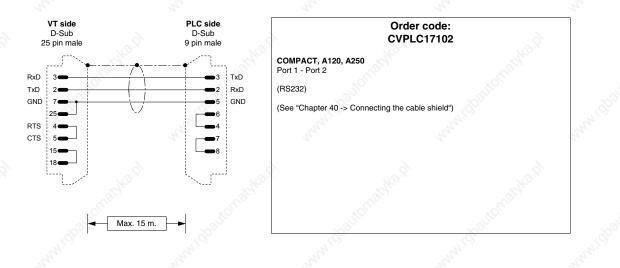
STANDARD MODBUS RTU PROTOCOL

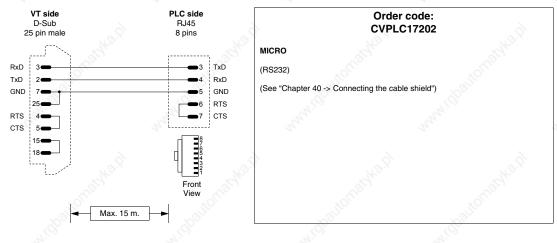
(See "Chapter 40 -> Connecting the cable shield")



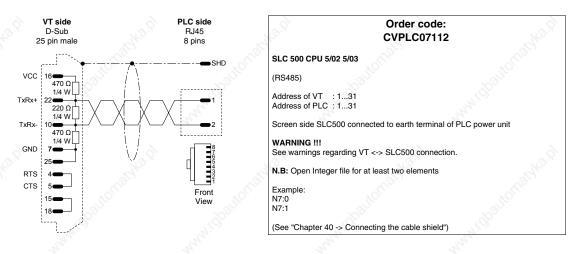


AEG MODICON PLC





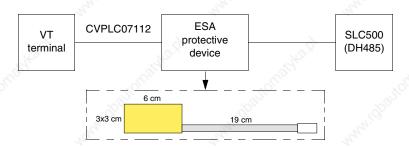
ALLEN-BRADLEY PLC



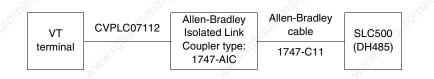
CONNECTION TO BE AVOIDED!!! Avoid connections like that shown in the figure below. The DH485 (data highway) port of CPUs 5/02 - 5/03 is not protected against peaks caused by outside disturbances; these could lead to serial port DH485 of SLC500 being damaged.

VT	CVPLC07112	SLC500	2
terminal		(DH485)	
2		<u>s</u>	

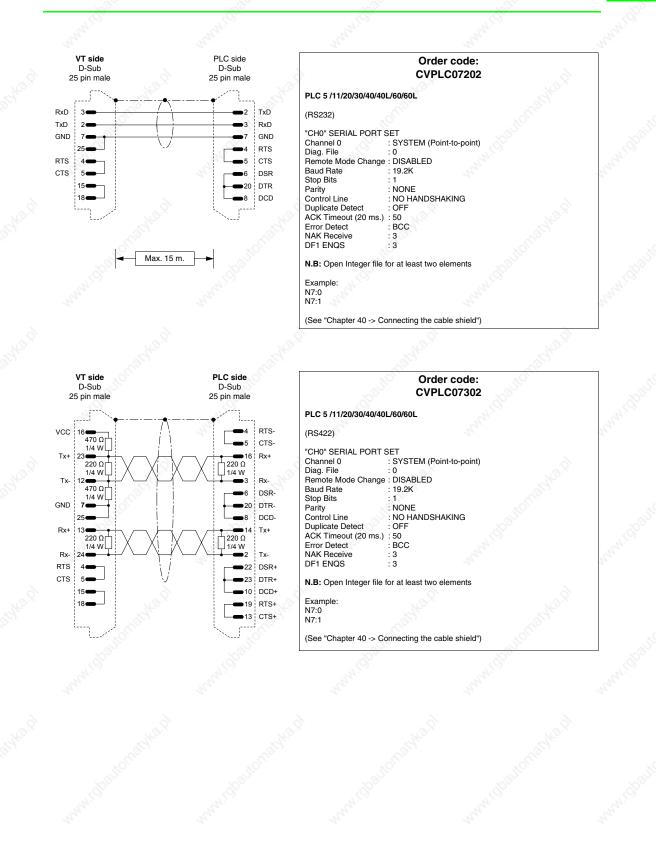
Below are listed those types of connection that are recommended.

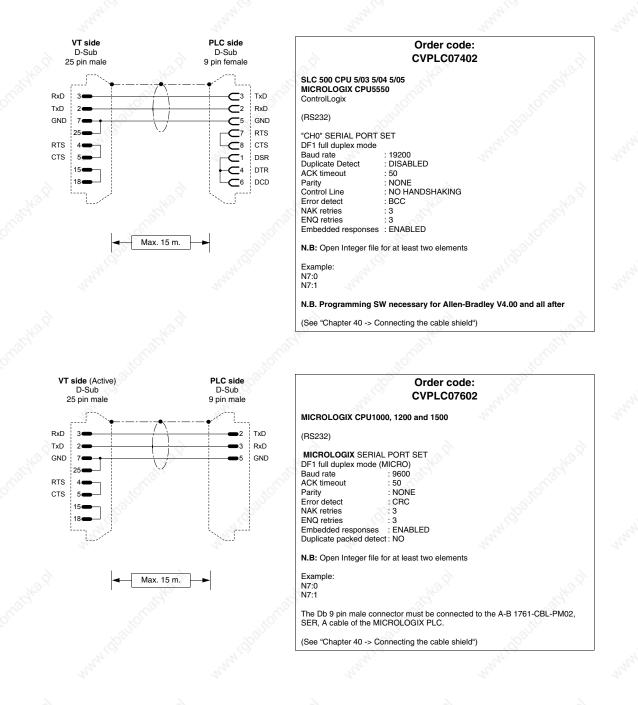


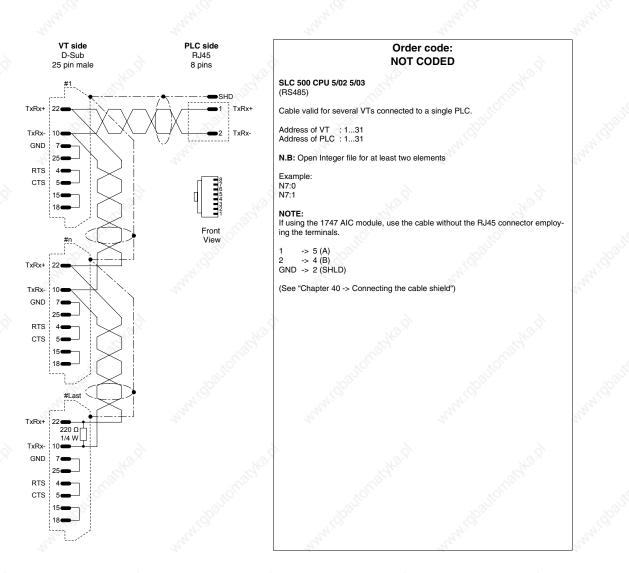
Order code for device: CVPLC07502

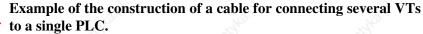


40-35

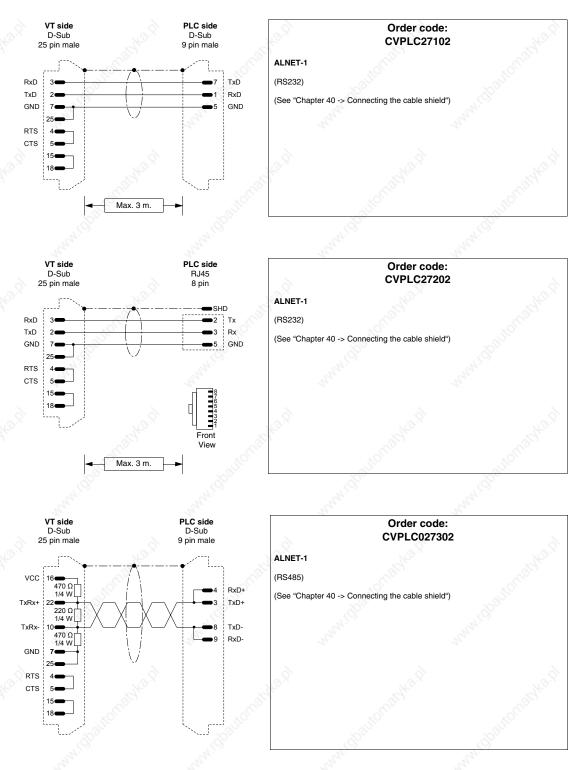






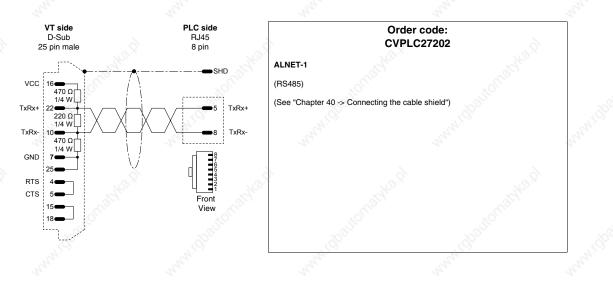


ALTUS PLC

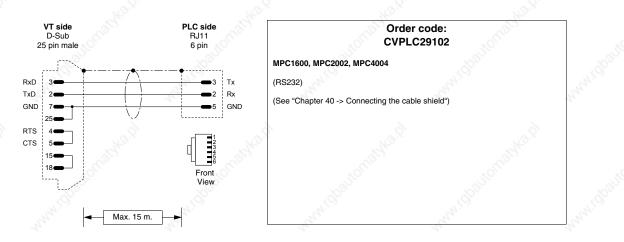


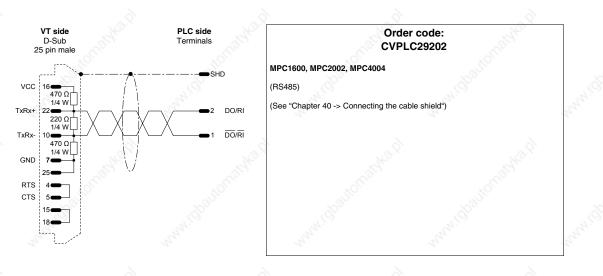
405.1200.037.2 - Rel.: 2.20 of 26/03/2007

40-39

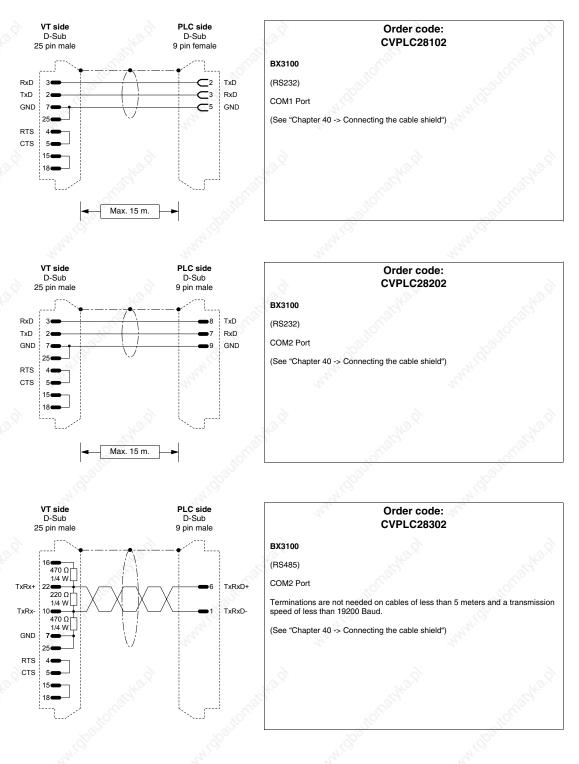


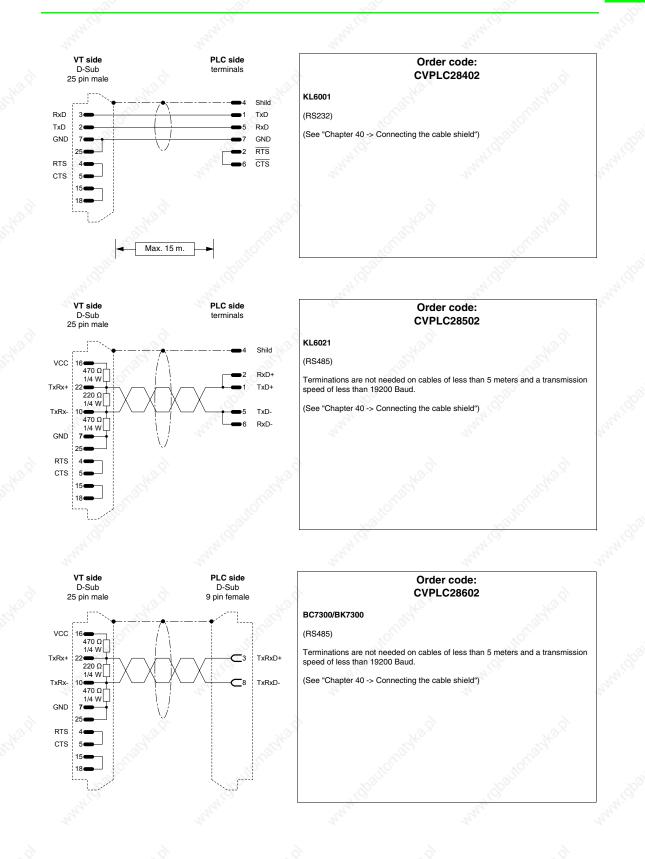
ATOS PLC



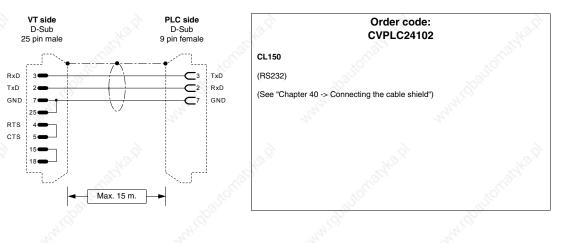


BECKHOFF PLC

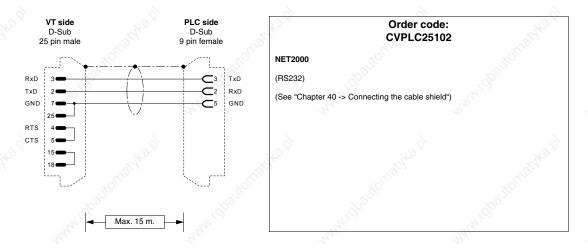




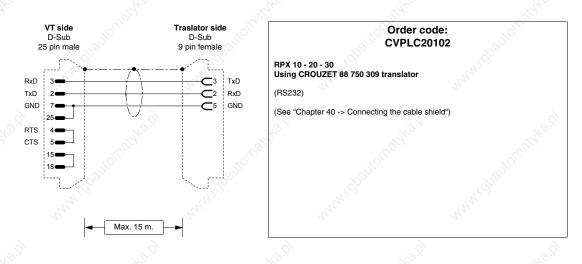
BOSCH PLC



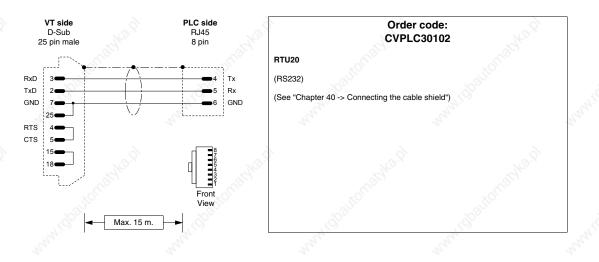
B&R AUTOMATION PLC



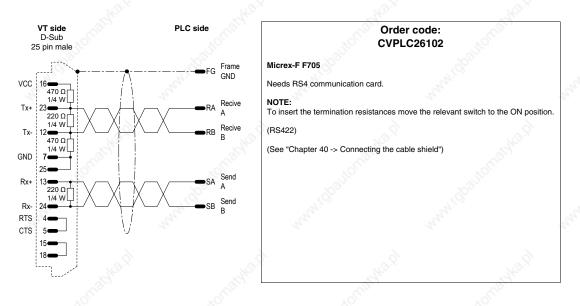
CROUZET RPX PLC



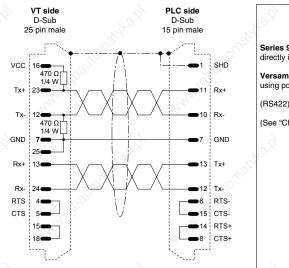
FOXBORO PLC



FUJI PLC



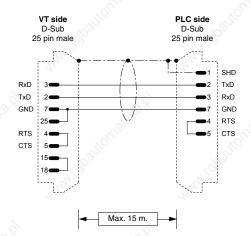
GE FANUC PLC



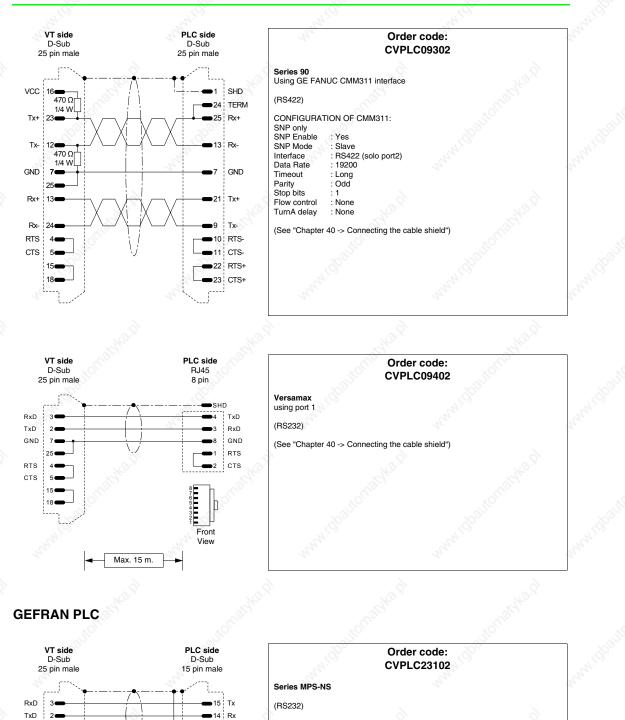
Order code: CVPLC09102 Series 90 and 90 MICRO directly in the CPU programming connector Versamax using port 2 (RS422) (See "Chapter 40 -> Connecting the cable shield")

Order code:

CVPLC09202



	Series 90 Using GE FAN	UC CMM311 interface port 1 - po	rt 2
	(RS232)		
(Jac	SNP only SNP Enable SNP Mode	: Slave : RS232 (port1 / port2) : 19200 : Long : Odd : 1 : None	
	(See "Chapter	40 -> Connecting the cable shield	")



(See "Chapter 40 -> Connecting the cable shield")

GND

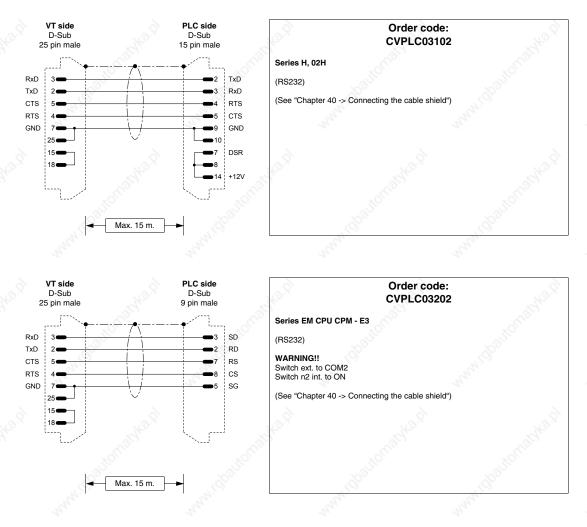
13

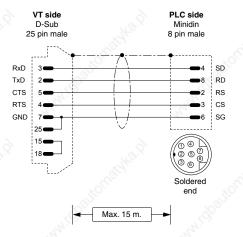
Max. 10 m.

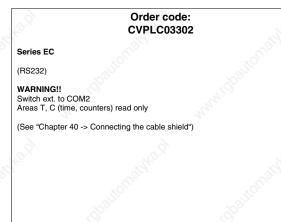
GND

7

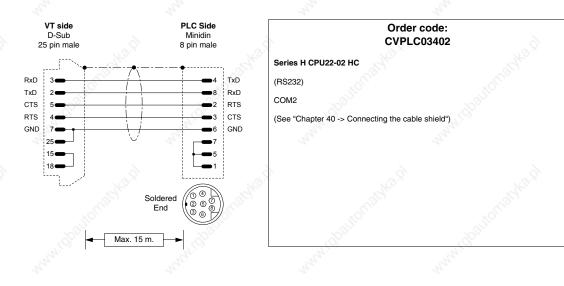
HITACHI PLC

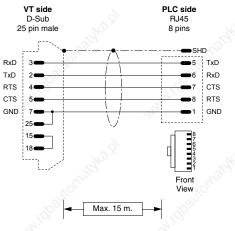






405.1200.037.2 - Rel.: 2.20 of 26/03/2007





Order code: CVPLC03502

Series EH150 (RS232)

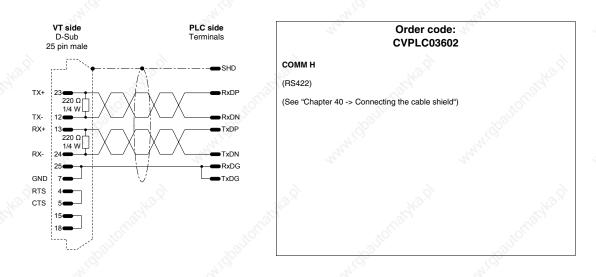
NOTE:

127 PLCs connectable in Hitachi network with 2 Links (0-63 stations per Link). LUMP:

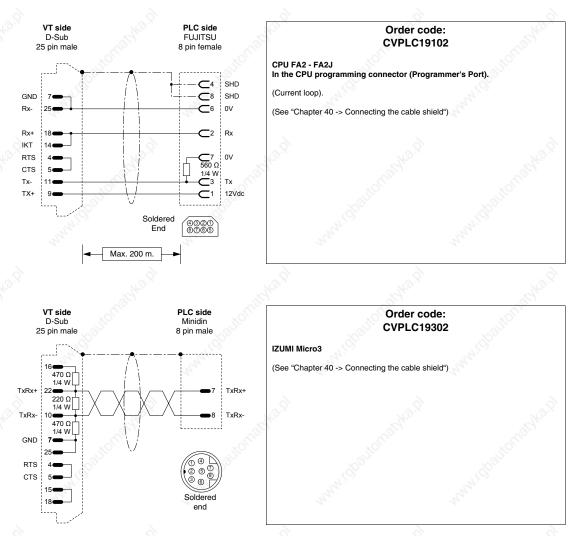
Parameter	Default	Values	Notes
L	FF	01,02 or FF	Address of Link number.
U	FF	00-63 or FF	Address of network node (as indicated by the network card rotary switches).
м	00	00-63	Address of network node with connection using COMM-H additional serial cards.
Р	00	00-63	Address of network node with connection using COMM-H additional serial cards.

TM:

Parameter	Default	Values	Notes
тм	4	4-F	Timeout for the reply to an enquiry.
		~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

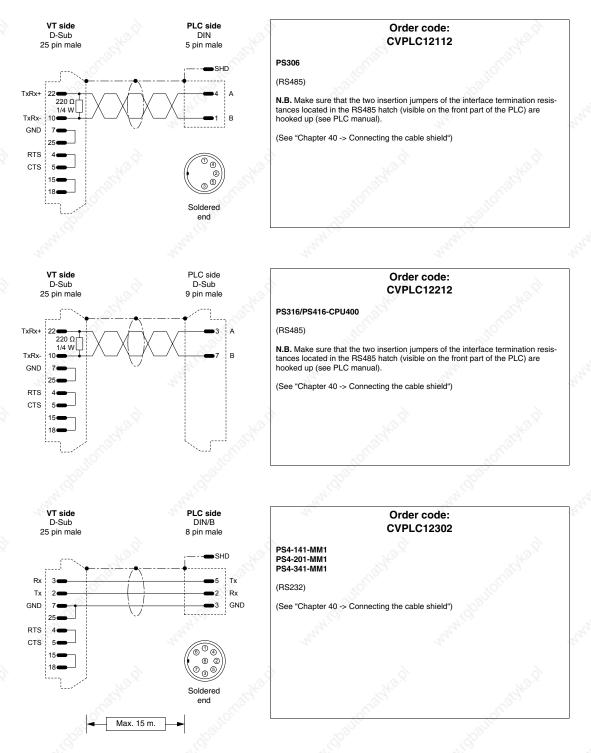


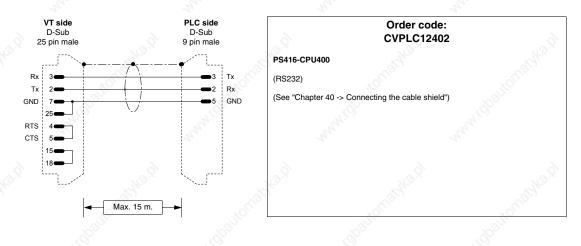
IDEC IZUMI PLC



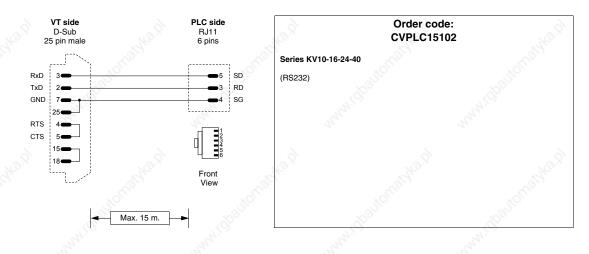
405.1200.037.2 - Rel.: 2.20 of 26/03/2007

KLÖCKNER MOELLER PLC

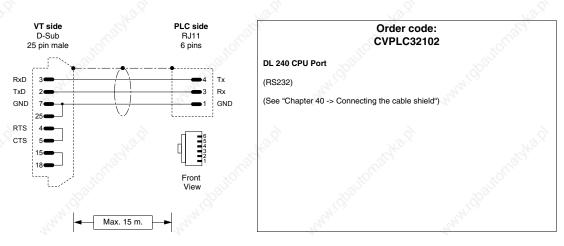


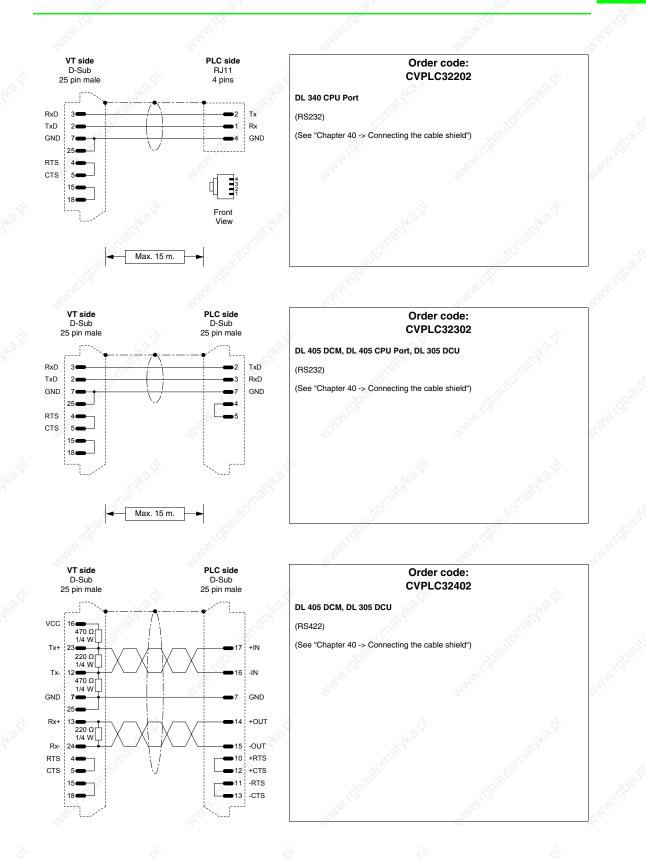


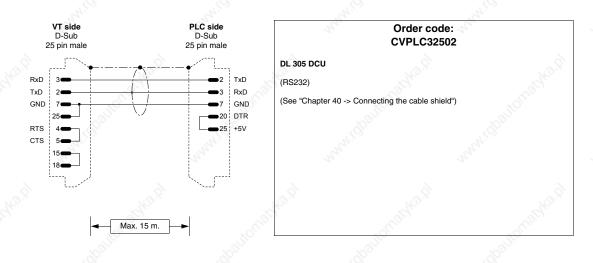
KEYENCE PLC



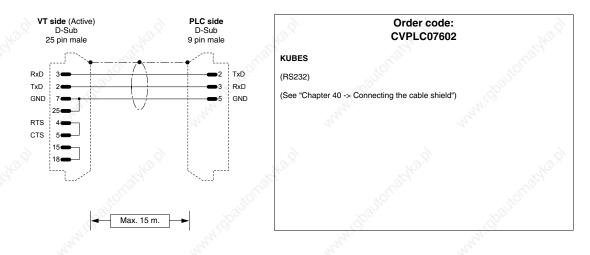
KOYO PLC



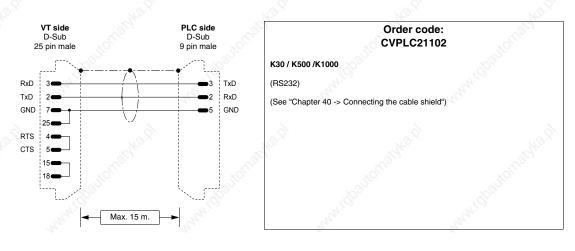


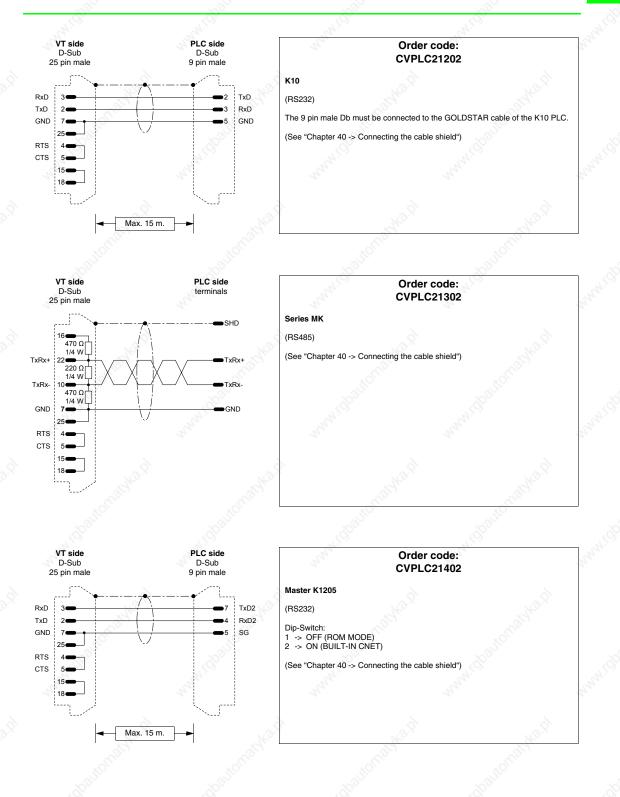


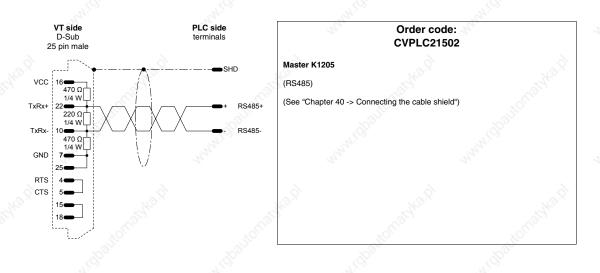
KUHNKE PLC



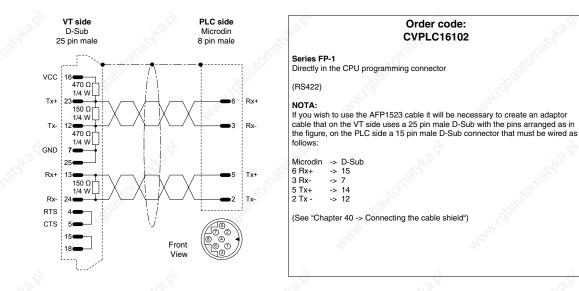
LG PLC

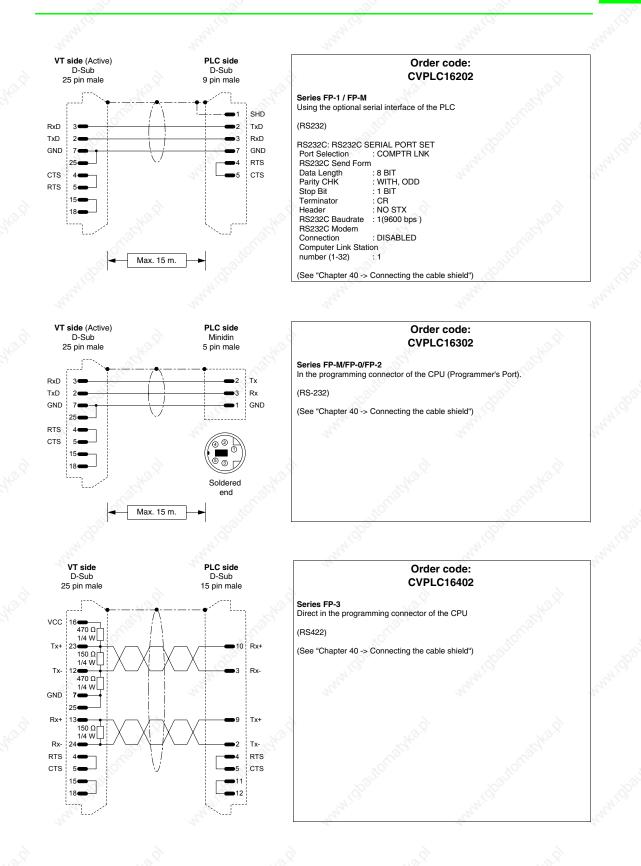




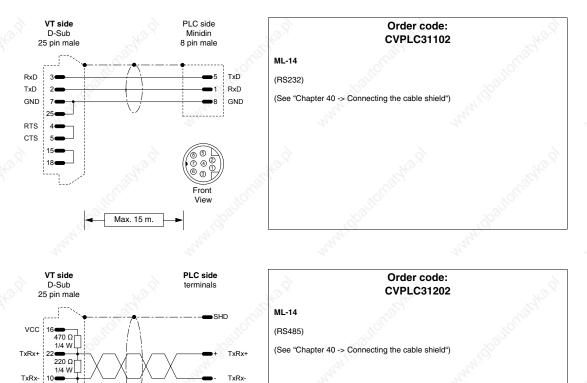


MATSUSHITA-NAIS PLC



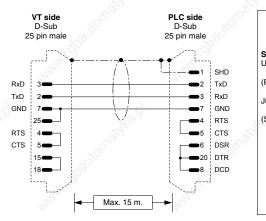


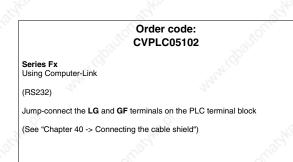
MICROLINK PLC

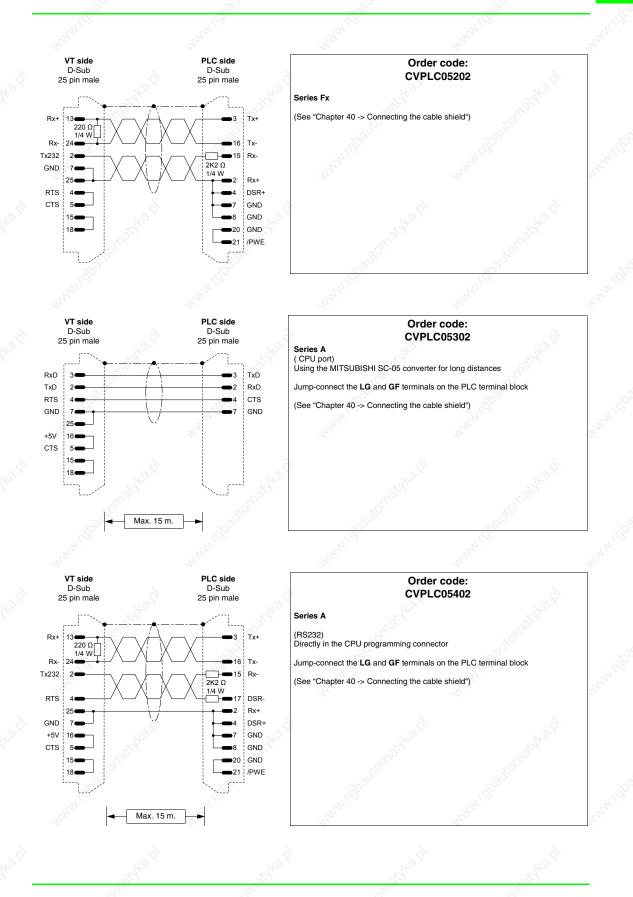


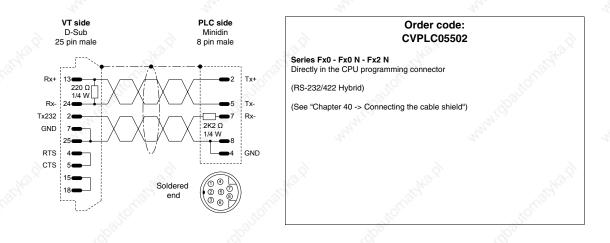
MITSUBISHI PLC

470 Ω 1/4 W

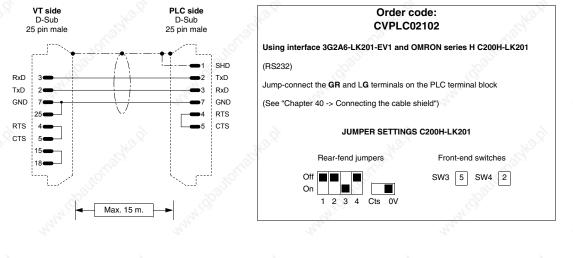


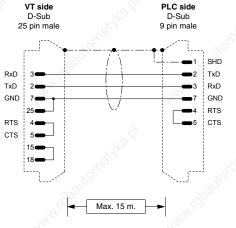






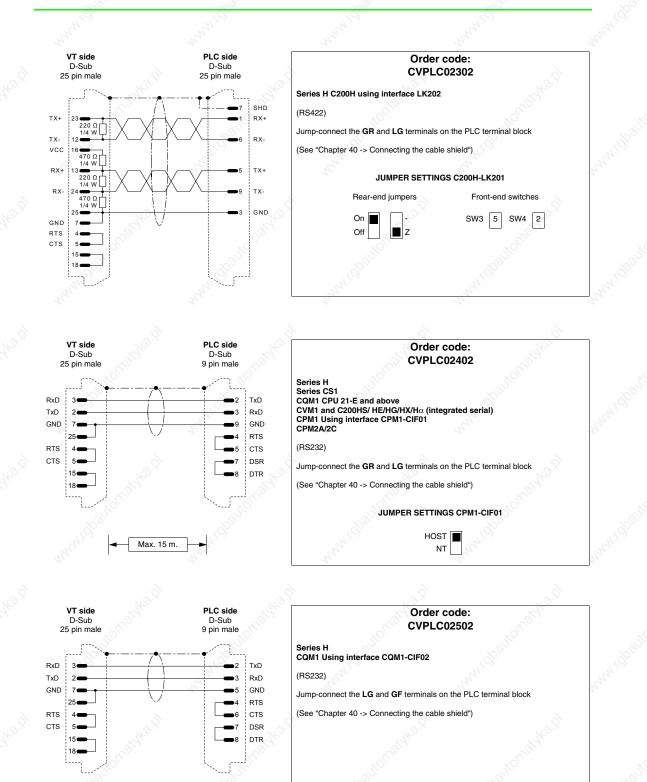
OMRON PLC



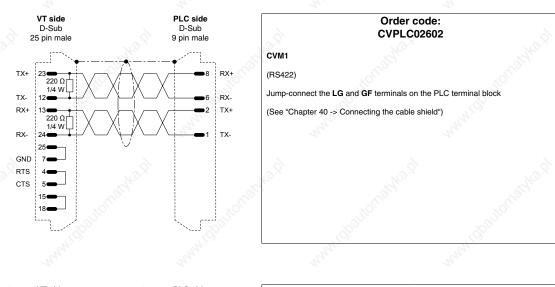


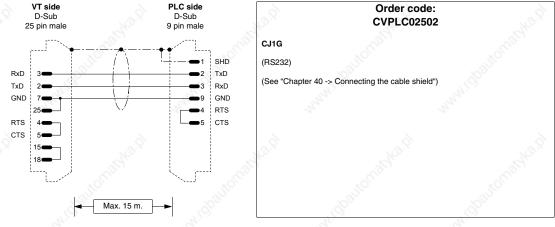
3	Order code: CVPLC02202
	Series H Compact family C20H / C28H C40H / C60H
	(RS232)
	Jump-connect the ${\bf GR}$ and ${\bf LG}$ terminals on the PLC terminal block
	(See "Chapter 40 -> Connecting the cable shield")
101	
20	

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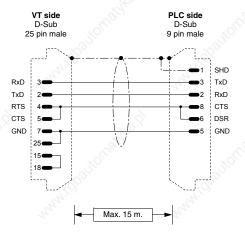


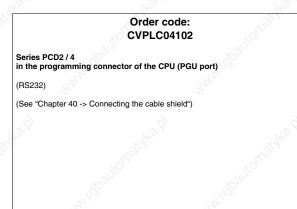
Max. 15 m.

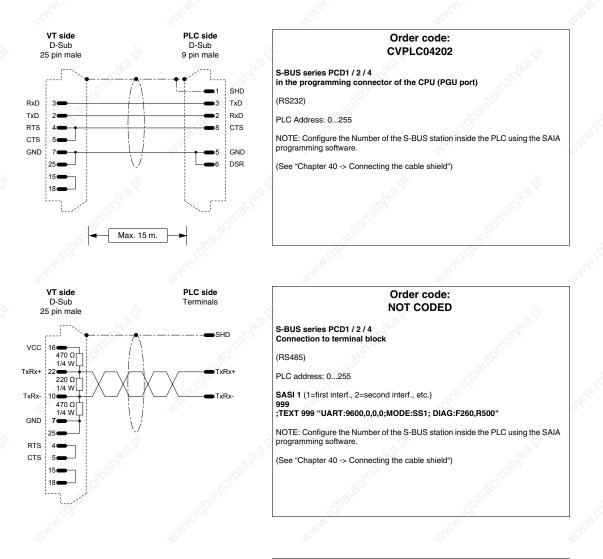


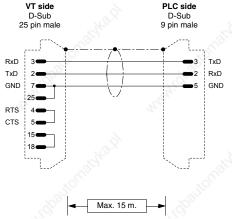


SAIA PLC









Order code: NOT CODED

PCD2 / 4 in the programming connector of the CPU (PGU port) with port initialization

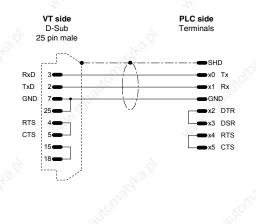
(RS232)

This connection is useful in the event that the PLC does not go in RUN with the VT terminal connected. In this case, you also need to initialize the PGU port with the instructions:

SASI 0

999 ; TEXT 999 "UART:9600,7,E,1;MODE:SD0; DIAG:F260,R500"

In this way, if you send the PLC in RUN using the SAIA utility S/W, the ERROR light switches on, but this is normal. To switch the light off, just remove the instruction "SASI 0" when the PLC is connected with the utility S/W.



Order code: NOT CODED

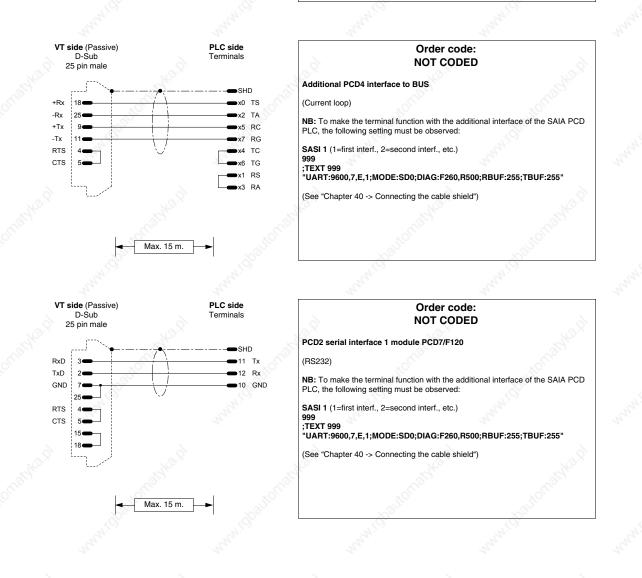
Additional PCD4 interface to BUS

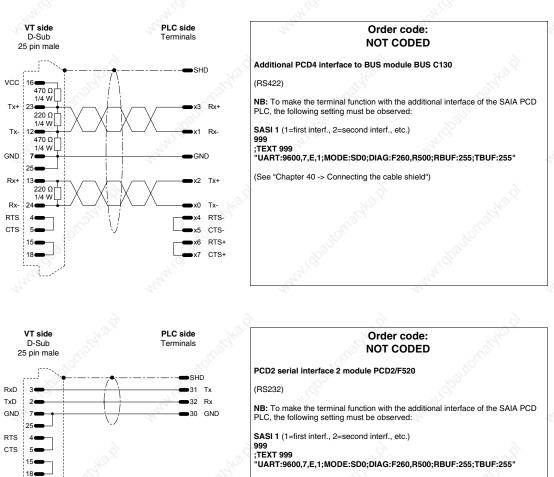
(RS232)

NB: To make the terminal function with the additional interface of the SAIA PCD PLC, the following setting must be observed:

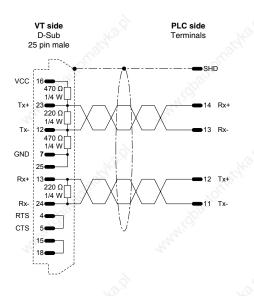
SASI 1 (1=first interf., 2=second interf., etc.) 999

;TEXT 999 "UART:9600,7,E,1;MODE:SD0;DIAG:F260,R500;RBUF:255;TBUF:255"





(See "Chapter 40 -> Connecting the cable shield")



Max. 15 m

Order code:	
NOT CODED	

PCD2 serial interface 1 module PCD7/F110

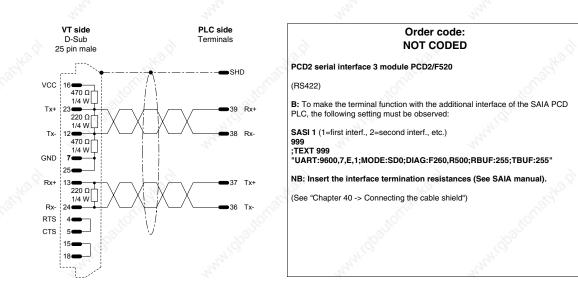
(RS422)

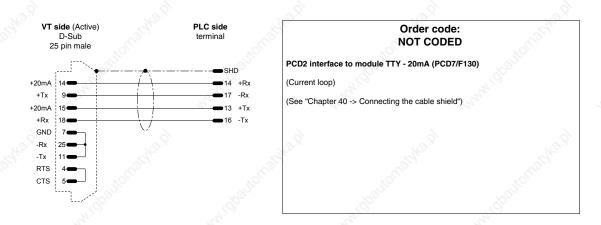
B: To make the terminal function with the additional interface of the SAIA PCD PLC, the following setting must be observed:

SASI 1 (1=first interf., 2=second interf., etc.) 999

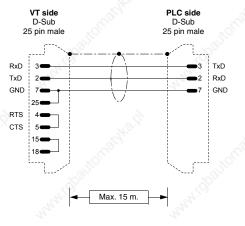
"TEXT 999 "UART:9600,7,E,1;MODE:SD0;DIAG:F260,R500;RBUF:255;TBUF:255"

NB: Insert the interface termination resistances (See SAIA manual).

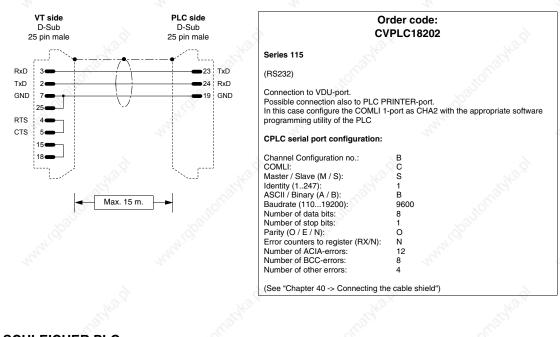




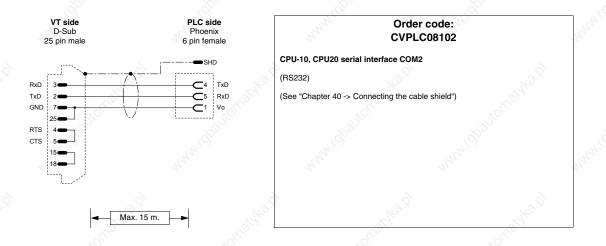
SATT CONTROL PLC

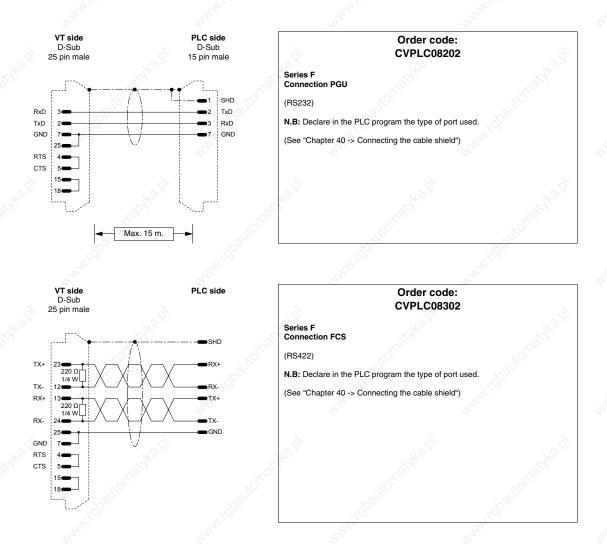


	rder code: /PLC18102
Series 31-90	
(RS232)	
PLC serial port configuration:	
Channel Configuration no.:	В
COMLI:	C
Master / Slave (M / S):	S
Identity (1247): ASCII / Binary (A / B):	B
Baudrate (11019200):	9600
Number of data bits:	8
Number of stop bits:	1
Parity (O / E / N):	0
Error counters to register (RX/N):	N O
Number of ACIA-errors:	12
Number of BCC-errors:	8
Number of other errors:	4

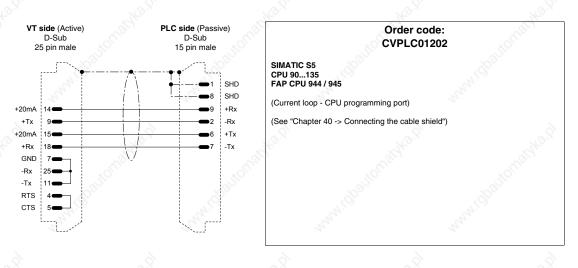


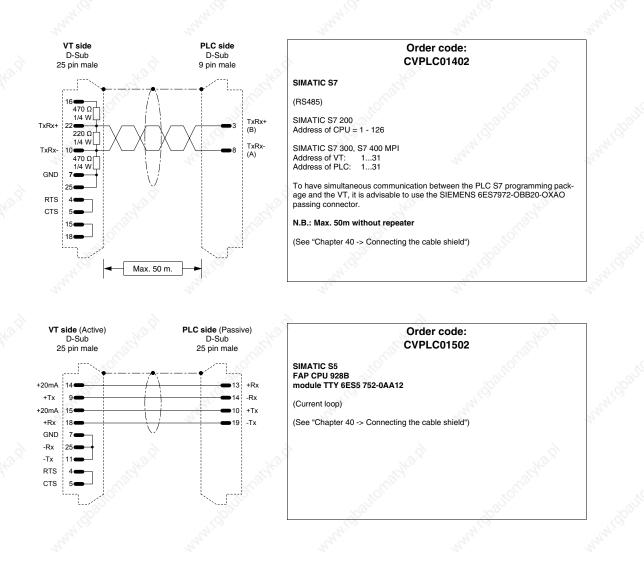
SCHLEICHER PLC

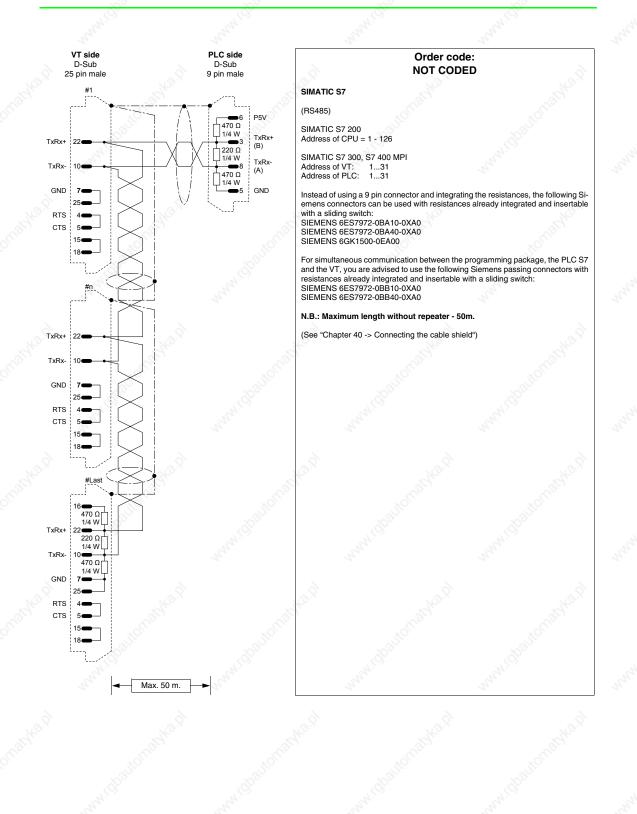




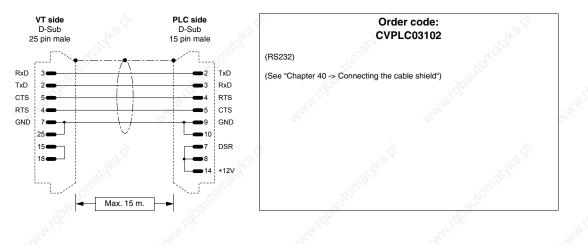
SIEMENS PLC



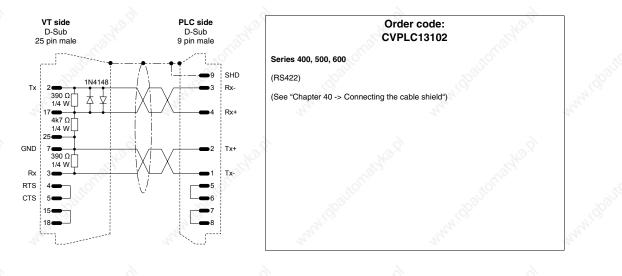


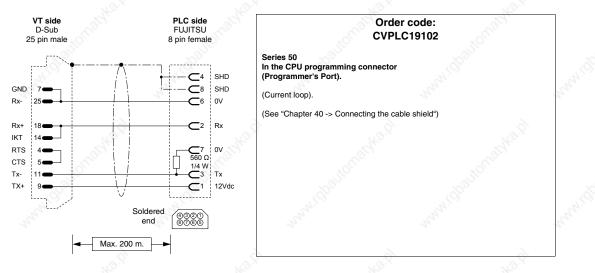


SPRECHER+SCHUH PLC

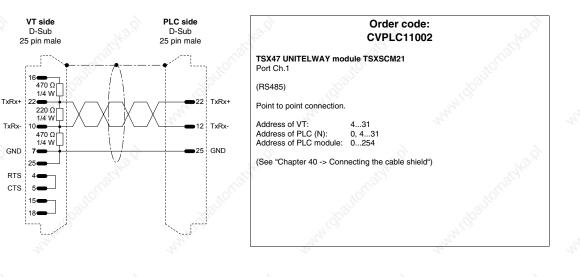


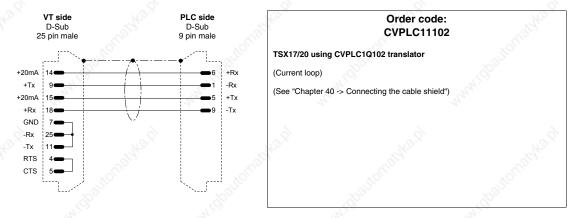
SQUARE-D PLC

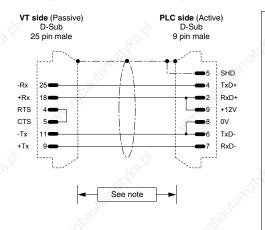




TELEMECANIQUE PLC







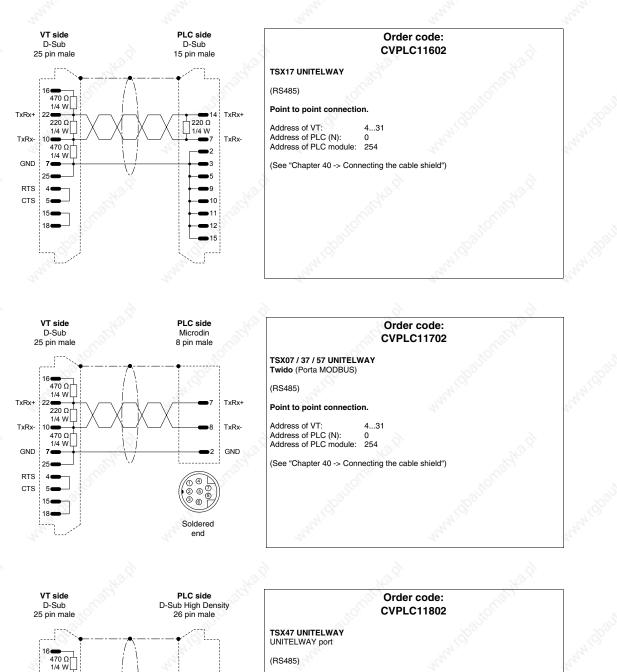
Order code: CVPLC11202

TSX47 - 67 - 87 - 107

(Current loop)

NOTE: The max length of the cable depends on which version of the Telemecanique CPU hardware is being used. With versions of hardware coded lower than V3 (E.g. CPU 47/11, 47/20) the length of the cable is limited to 3 meters given that the serial port of the CPU is not optoisolated II! In this case, whenever you need to create a cable longer than 3 meters, it is advisable the employ a Telemecanique device like XBT Z 9011 or 9012 to guarantee the galvanic isolation of the serial line. Failure to adopt such a device can cause damage to the CPU's serial port II!

If the CPU is of a hardware version coded higher than V3 (E.g.. CPU 47/411, 47/425 etc.) the max length of the cable relates to the particular characteristics of the interface in Current loop (max 1000 meters) even without employing the optiosolating device mentioned above, in so far as the CPUs have an internal circuitry created to guarantee the optiosolation of the line.



Point to point connection.

10 TxRx+

19 TxRx

9

16

17

■18 ■25 ■26 Address of VT:4...31Address of PLC (N):0Address of PLC module:254

(See "Chapter 40 -> Connecting the cable shield")

TxRx+ 22

TxRx- 10

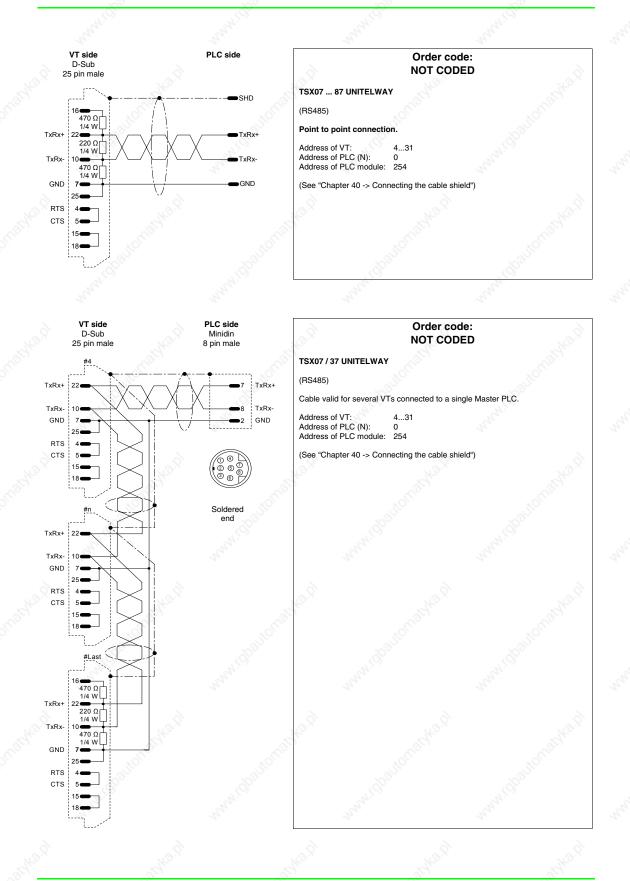
GND

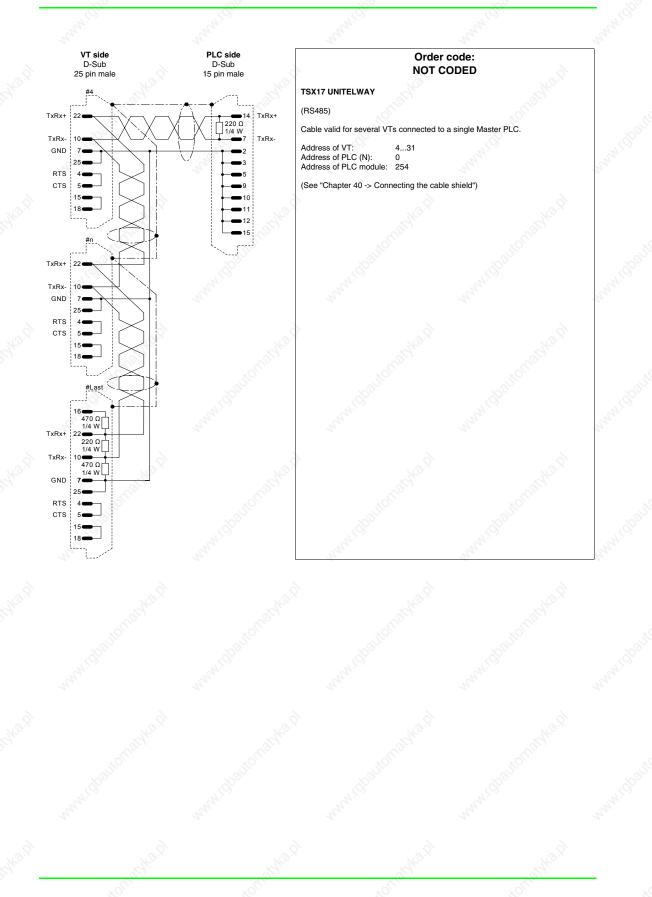
RTS

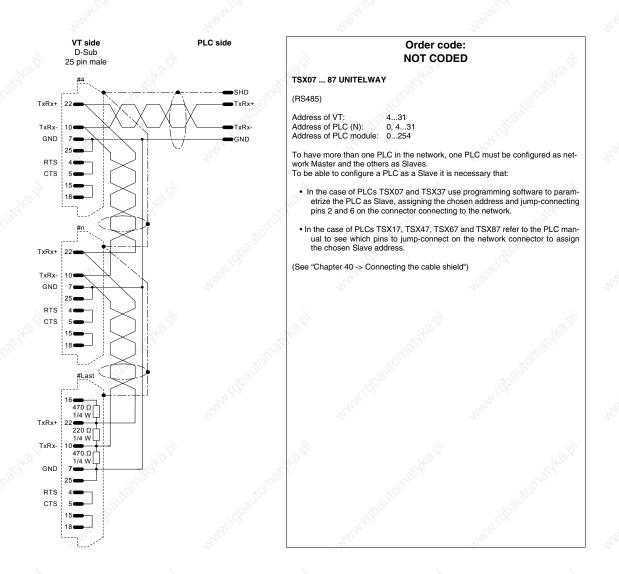
CTS

220 Ω 1/4 W

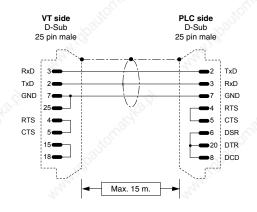
470 Ω 1/4 W







TEXAS INSTRUMENTS PLC



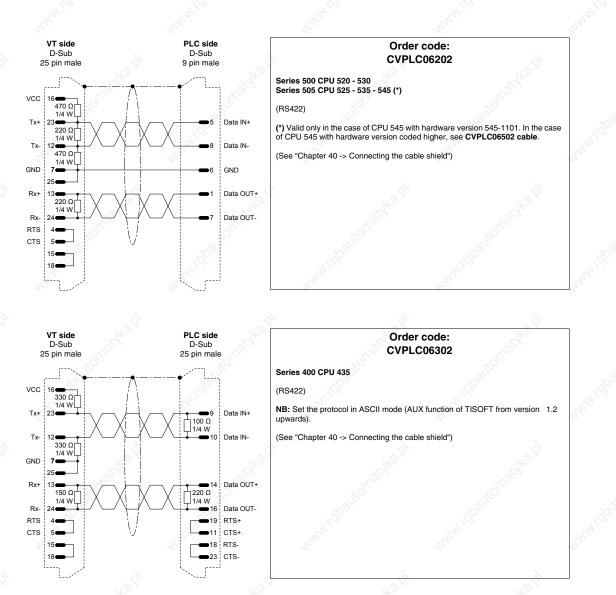
Order code: CVPLC06102

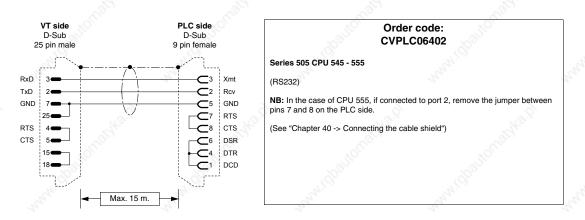
Series 400 CPU 435 Series 500 CPU 520 - 530 Series 505 CPU 525 - 535

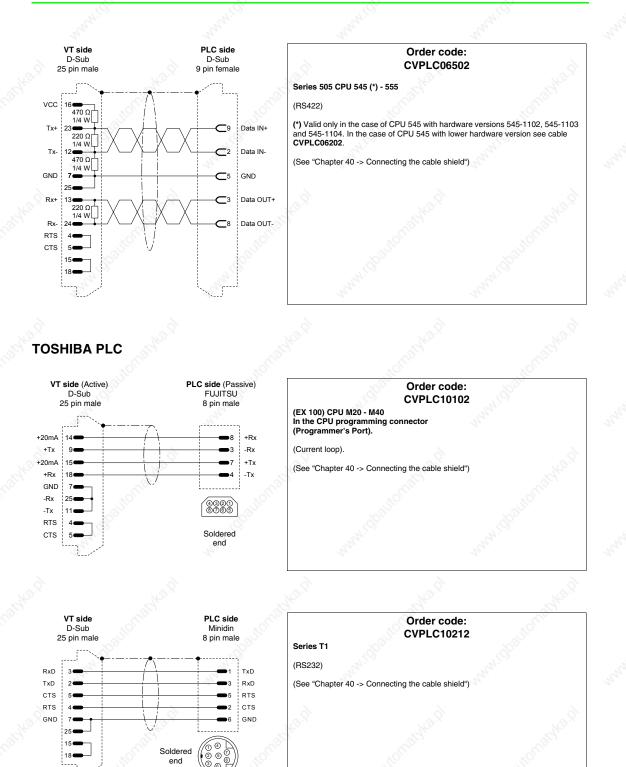
(RS232)

NB: In the case of CPU 435, set the protocol in ASCII mode (AUX function of TISOFT version 1.2 and upwards).

Connection with module DCM (405 series)



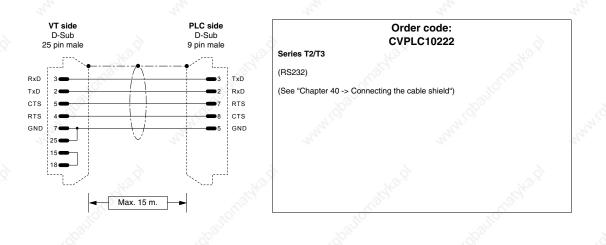




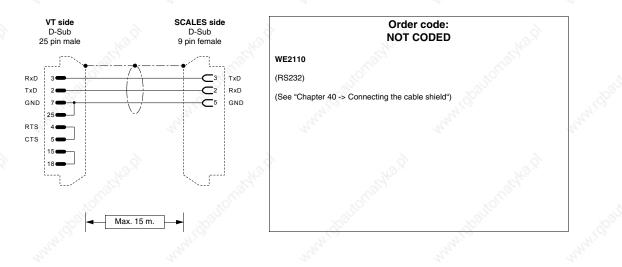
6

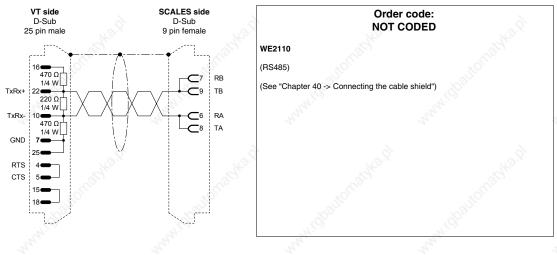
Max. 15 m.

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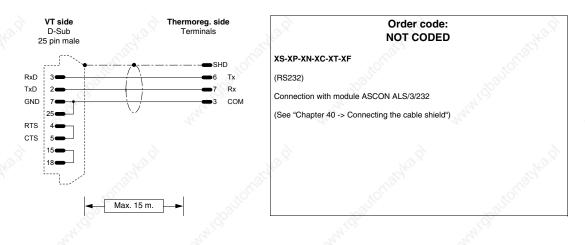


HBM BALANCE SCALES

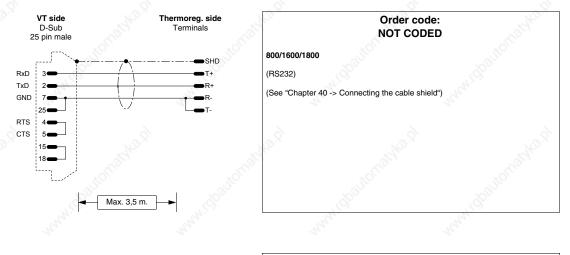


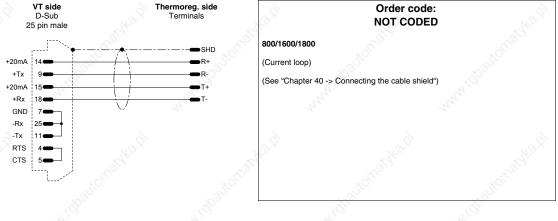


ASCON THERMOREGULATOR



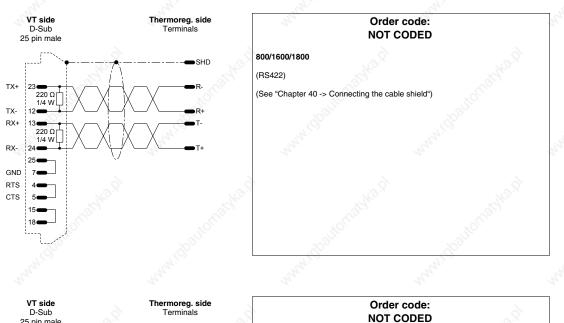
GEFRAN THERMOREGULATOR

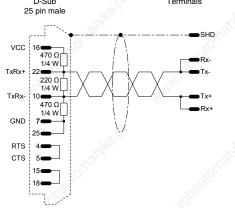




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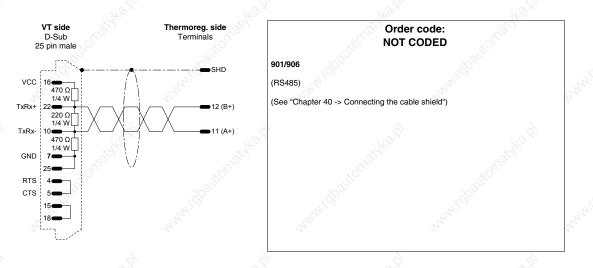
800/1600/1800

(RS485)

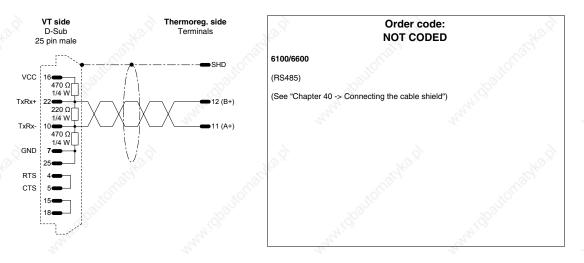
Only applies to protocol of Modbus (Ser.p = 1)

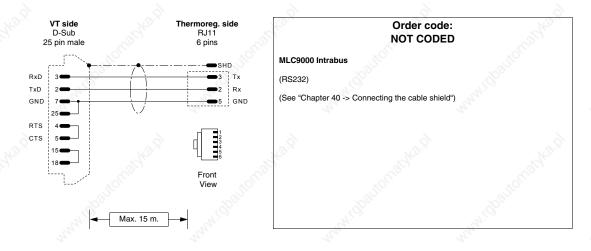
(See "Chapter 40 -> Connecting the cable shield")

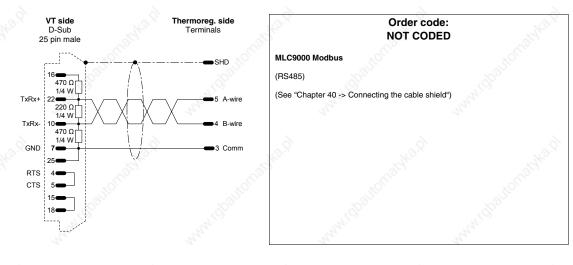
HENGSTLER THERMOREGULATOR



WEST THERMOREGULATOR







405.1200.037.2 - Rel.: 2.20 of 26/03/2007

Cable information summary

The table below lists all the cables mentioned in the chapter together with their order codes and a description of the type of device with which it can be used.

Table 40.1: Cable information	list (Part 1 of 3)
-------------------------------	--------------------

Producer	Code	Description	RS
ABB	CVPLC03102	T200 (KP60)	232
199	CVPLC14102	CS31 (KR31 / KT31/91/92/93/94/95) T200 (KP62)	232
	CVPLC14202	CS31 (KR31 / KT31) RTU MODBUS PROTOCOL	232
LO.S.	CVPLC14302	CS31 (07KP92 R101) RTU MODBUS PROTOCOL	232
192	CVPLC14402	CS31 (07KP92 R101) RTU MODBUS PROTOCOL	422
30	CVPLC14502	CS31 (07KP92 R101) RTU MODBUS PROTOCOL	485
25	CVPLC14602	CS31 (Series 40 & 50)	232
- All -	CVPLC21202	AC70	232
27	CVPLC14802	ACS210	232
6	CVPLC06402	AC450	232
AEG MODICON	CVPLC17102	COMPACT / A120 / A250	232
- Starr	CVPLC17202	1 ° 6 ° 1 ° 6 ° 1 ° 6 ° 1 ° 6 ° 1 ° 6 ° 1 ° 6 ° 1 ° 6 ° 1 ° 6 ° 1 ° 6 ° 1 ° 6 ° 1 ° 6 ° 1 ° 6 ° 1 ° 6 ° 1 ° 6 °	232
ALLEN-BRADLEY	S. S.	SLC500 CPU 5/02 5/03	485
ALC'	.01	PLC5 /11/20/30/40/40L/60/60L	232
4 ¹ ¹ ¹		PLC5 /11/20/30/40/40L/60/60L	422
		SLC500 5/03-04-05 Micrologix CPU5550 ControlLogix	232
		Protection device for DH485	485
A BE	CVPLC07602	MICROLOGIX CPU1000, 1200 and 1500	232
ALTUS	CVPLC27102	ALNET-1	232
S.	CVPLC27202	ALNET-1	232
A	CVPLC27302	ALNET-1	485
	CVPLC27402	ALNET-1	485
ATOS	CVPLC29102	MPC1600, MPC2002, MPC4004	232
X°	CVPLC29202	MPC1600, MPC2002, MPC4004	485
BECKHOFF	CVPLC28102	BX3100 COM1 Port	232
~3 ¹¹⁰	CVPLC28202	BX3100 COM2 Port	232
NIO.	CVPLC28302	BX3100 COM2 Port	485
State of the second sec	CVPLC28402	12 A A A A A A A A A A A A A A A A A A A	232
	CVPLC28502	KL6021	485
à	CVPLC28602	BC7300/BK7300	485
BOSCH	CVPLC24102	CL150	232
B&R AUTOMATION	CVPLC25102	NET2000	232
CONTROL TECHNIQUES	CVPLC33102	Commander SE - CTNET	485
CROUZET	CVPLC20102	RPX 10-20-30	232
FOXBORO	CVPLC30102	RTU20	232

C.L.: Current loop

Table 40.1: Cable information list (Part 2 of 3)

Producer	Code	Description	RS
FUJI	CVPLC26102	Micrex-F F705	422
GE FANUC	CVPLC09102	CPU 90-90 MICRO - VERSAMAX PORT 2	422
J.C	CVPLC09202	Series 90 - CMM311 PORT1	232
S.	CVPLC09302	Series 90 - CMM311 PORT2	422
Ser Street	CVPLC09402	VERSAMAX PORT1	232
GEFRAN	CVPLC23102	Series MPS-NS	232
HITACHI	CVPLC03102	Н, 02Н	232
A	CVPLC03202	EM CPU CPM - E3	232
	CVPLC03302	EC	232
1000	CVPLC03402	H, CPU22-02HC	232
	CVPLC03502	Series EH150	232
34	CVPLC03602	СОММ Н	422
IDEC IZUMI	CVPLC19102	FA2-FA2J	C.L.
2. ¹ 6	CVPLC19302	Series MICRO 3	485
KLÖCKNER MOELLER	CVPLC12112	PS306	485
J.C.	CVPLC12212	PS316 / PS416-CPU400	485
Š.	CVPLC12302	PS4-141-MM1 / PS4-201-MM1 / PS4-341-MM1	232
State of the second sec	192	PS416-CPU400	232
KEYENCE	CVPLC15102	KV10-16-24-40	232
КОҮО		DL 240 CPU Port	232
S	CVPLC32202	DL 340 CPU Port	232
. ST18	CVPLC32302	DL 405 DCM, DL 405 CPU Port, DL 305 DCU	232
1000	CVPLC32402	DL 405 DCM, DL 305 DCU	422
4 ^{1,101}	CVPLC32502	DL 305 DCU	232
KUHNKE	CVPLC07602	KUBES	232
LG	CVPLC21102	K30 - K500 - K1000	232
Ś	CVPLC21202	K10	232
and the second sec	CVPLC21302	Series MK	485
30	CVPLC21402	Master K1205	232
	CVPLC21502	Master K1205	485
MATSUSHITA-NAIS	CVPLC16102	FP-1	422
21	CVPLC16202	FP-1 / FP-M	232
<i>b</i>	CVPLC16302	FP-M / FP-0 / FP-2	232
, X	CVPLC16402	FP-3	422
MICROLINK	CVPLC31102	ML-14	232
1987 - 19	CVPLC31202	ML-14	485
MITSUBISHI	CVPLC05102	Series FX	232
- National Action of the Actio	CVPLC05202	Series FX	232

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Table 40.1: Cable information list (Part 3 of 3)

Producer	Code	Description	RS
×2.9	CVPLC05302	Series A + MITSUBISHI SC-05 adaptor	232
C.S.S.	CVPLC05402	Series A	232
10°	CVPLC05502	Series Fx0 - Fx0 N - Fx2 N	232
OMRON	CVPLC02102	C200H LK201 3G2A6 LK201 EV1	232
- 3 ⁴⁴	CVPLC02202	C20-28-40-60H	232
	CVPLC02302	C200H LK202	422
Ś	CVPLC02402	Serie H, CQM1, CVM1, Serie CS1, Serie C200H	232
all a second	CVPLC02502	CQM1CIF02	232
201	CVPLC02602	CVM1	422
1000	CVPLC02802	CJ1C	232
SAIA	CVPLC04102	CPU PCD2/4	232
20	CVPLC04202	S-BUS CPU PCD1/2/4	232
SATT CONTROL	CVPLC18102	Series 31 - 90	232
N. C.	CVPLC18202	Series 115	232
SCHLEICHER	CVPLC08102	CPU-10 / CPU-20 COM2	232
and the second sec	CVPLC08202	Series F connection PGU	232
J.C.	CVPLC08302	Series F connection FCS	422
SIEMENS	CVPLC01202	S5 AG90 135 FAP S5 944/945	C.L.
	CVPLC01402	S7 200/300/400	485
, S	CVPLC01502	FAP S5 928B	C.L.
SPRECHER+SCHUH	CVPLC03102	SPRECHER + SCHUH	232
SQUARE-D	CVPLC13102	Series 400 / 500 / 600	422
No.	CVPLC19102	Series 50	C.L.
TELEMECANIQUE	CVPLC1Q102	Adaptor PLC TSX17 RS485 - C.L. (Supplied by ESA)	C.L.
20	CVPLC11002	TSX47 UNITELWAY module TSXSCM21	485
~	CVPLC11102	CVPLC1Q102	C.L.
No.	CVPLC11202	TSX47-67-87-107	C.L.
- C ²	CVPLC11602	TSX17 UNITELWAY	485
-3 ⁵⁰	CVPLC11702	TSX07/37/57 UNITELWAY - Twido	485
 	CVPLC11802	TSX47 UNITELWAY	485
TEXAS INSTRUMENTS	CVPLC06102	Series 405-500	232
	CVPLC06202	Series 500-505	422
S.	CVPLC06302	Series 400	422
- Selfer	CVPLC06402	Series 505 CPU 545 - 555 PORT 1	232
100	CVPLC06502	Series 505 CPU 555 PORT 2	422
TOSHIBA	CVPLC10102	M20-40-EX	C.L.
and white	CVPLC10112	Series T1	232
2 Ca	CVPLC10222	Series T2/T3	232



Chapter 41 Resistance to chemical substances

Contents	Page
Chemical substances	41-2
Cleaning the VT	41-7
Case for terminals VT, H Series	41-7
This chapter consists of 8 pages.	NG XG XG XG

All our VTs are built to withstand the effects of the more common chemical substances encountered in industrial and non-industrial environments. Each element of the VT that could be exposed to these substances (epoxy coating, keyboard membrane, screen surface, touch screen and gaskets), is tested to determine its degree of resistence.

The type of test is not the same for each component but changes according to the testing authority. Below is an example of a test (carried out by Alcatel Bell).

The test procedure was as follows:

A 2 cm ball of cotton wool was immersed in the test substance and then placed on the keyboard. Two cotton wool balls with different substances were placed separately on each keyboard; this was then put in a Petri dish and kept at a temperature of 25°C for an hour; after this, the keyboard was washed in water and dried.

The keyboard was observed and the results classified as follows:

- A No visible deterioration
- B Very slight deterioration
- C Some deterioration
- D Gross damage visible

The substances not appearing in the table were not tested, so there is no information regarding their effect.

Chemical substances The table shown below lists all the substances used for the test with their various results.

The table must nevertheless be considered an approximate guide regard chemical substances: no tests have been carried out on a completely assembled terminal.

The following table DOES NOT show any test carried out on the plastic case of terminals VT, H series. For further information, see Page 41-7

Table 41.1: Chemical resistance data sheet (Part 1 of 5)

Ś.			Accessories	0					
Substance		Epoxy powder coating ³	Matt keyboard surface ²	Transpar- ent key- board surface ¹	Touch screen ²	Protective- glass	Gaskets	Protective ² film	Resis- tance
1,1,1-Trichlorethylene	NS	4	>24h		>24h			>24h	\odot
Acetaldehyde	NS	<u>e -</u>	>24h	- 32	>24h		31.0	>24h	\odot
19 ²⁴	10%	3Y		32			20 <u>-</u>		\odot
Acetic acid	20%	3Y							\odot
	<50%		>24h		>24h	10 ²		>24h	\odot
Acetone	NS	0	>24h		>24h	>8h	F	>24h	\odot
Acetyl	NS				32		Е	30	\odot
Added	LC	8°		6	S°		EØ		\odot
Acid solutions	HC			5			F		\odot
Ajax	NS		>24h ⁴		>24h ⁴				\odot
Aliphatic hydrocarbons	NS		>24h		>24h	<u>à</u>		>24h	ि
Allesline exhibitions	LC		3° <u>-</u>		- 3	S	Е	- 3	\odot
Alkaline solutions	HC				70,		F		\odot
10 ⁰⁰	NS	202			8 ⁸³		EX	S	\odot
	<2%	÷	>24h		>24h			>24h	\odot
Ammonia	5%			-12-		>24h	18°-		\odot
	10%	3Y				5			\odot
	35%	3Y	N.C.			12 ⁸		1	\odot
Ariel	NS	- 3	>24h ⁴		>24h ⁴			200	\odot
Benzene	NS	S		Α	>24h			>24h	\odot
Benzylalcohol	NS	8°	0		0		- <u>.</u> Ø	0	$\overline{\mathbf{S}}$
Bichromate	NS			- And Carlow	>24h		an <u>a</u> n.	>24h	\odot
Blown castor oil	NS				>24h				\odot
Carbon dioxide	NS		-2			<u>_</u>	Е		\odot
Castor oil	NS		>24h		>24h	5		>24h	\odot
101	<2%	- 5	>24h		>24h			>24h	\odot
Caustic soda	10%	202		- 2	0 ⁰⁷	>24h		· ```	\odot
	50%	~ <u>-</u>		В			. 1 ⁴ 1.		\odot
Caustic solution	CO		0	10	0		30	0	\odot
Chloric acid	NS		->	Α		~			\odot
Chlorine	NS		1 Carl			10 <u>2.</u>	G	8	\odot

Legend: A - No visible degradation, B - Very slight degradation, C - Slight degradation, D - Damage visible or gross, E - Unlimited use, F - Limitated use, G - Use inad-visable, S - The surface melts, X - The surface blisters, O - The surface is destroyed, CO - Concentrated, HC - High concentration, LC - Low concentration, SA - Saturated, NS - Not specified, h - Hour(s), M - Month(s), Y - Year(s), ⁽ⁱ⁾ - All the elements tested resist all the substances, ⁽ⁱ⁾ - At least one of the ele-ments tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question, ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question and ⁽ⁱ⁾ - All the elements tested may be damaged by the substances in question and

1 - According to Alcatel Bell tests, 2 - According to DIN42115 Parts 2, 3 standards - According to raw material producers, 4 - Tested at 50°C

Notes:

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Table 41.1: Chemical resistance data sheet (Part 2 of 5)

		Parts of the VT							
Substance		Epoxy powder coating ³	Matt keyboard surface ²	Transpar- ent key- board surface ¹	Touch screen ²	Protective- glass	Gaskets	Protective ² film	Resis- tance
Chromic acid	10%	6M	8°			S		S	\odot
	20%	6M			100			. 2 ⁰	\bigcirc
Citric acid	5%	3Y		-	32		5	se	\odot
Coca Cola	NS			A			-79		\odot
Cooking salt solution	NS			-		- >	Е		\odot
Copper sulphate	10%	3Y	-12	<		NO.X			\odot
Crude oil	NS	3Y	- <u>-</u>			20 <u>-</u>			\odot
Cutting oil	NS		>24h		>24h			>24h	\odot
Cyclohexanol	NS	°	>24h		>24h			>24h	\odot
Detergent	NS	1 ²⁵		A			-342		\odot
Diesel fuel	NS		>24h	А	>24h			>24h	\odot
Diethyle ether	NS		>24h	2	>24h	2		>24h	\odot
Dioxan	NS		>24h		>24h	-2 ⁹⁴		>24h	\odot
Domestos	NS		>24h ⁴		>24h ⁴	ST		<u>s</u> S	\odot
Downey	NS		>24h ⁴		>24h ⁴				\odot
Edible oil	NS	3Y			1977		- "S	se	\odot
Essence of turpentine substitute	NS	3Y		- 4			-20		\odot
Filment	NS		,	Α	>24h	>24h	Е	>24h	\odot
Ethanol	96%	3Y	-10			342			\odot
Ethanol denat.	NS	1M	<u></u>			8°-			\odot
Ethylacetate	NS		>24h		>24h			>24h	\odot
Ethylene glycol	NS	0		А	2.9 <u>4</u>			<u>_</u>	\bigcirc
Fantastic	NS	- ¹	>24h ⁴	- 4	>24h ⁴		-35		\odot
	NS			А					\odot
Formoldohudo	35Vol.	3Y		2		- . . ?			\odot
Formaldehyde	37%		>24h			200			\odot
	42%	3	>24h		6	S		- <u>-</u> 6	\odot
.89	5%	3Y						.8 ⁹²	\odot
Formic acid	10%	3Y		- 2	a ^{2.}		- 2	s	\odot
	<50%		>24h	- 2	>24h		-34	>24h	\odot
Formula 409	NS		>24h ⁴	-	>24h ⁴	- 6			\odot
Gasoline/petrol	NS	3Y	-34	А	>24h	>24h	F	>24h	\odot
Glacial acetic acid	NS		<u></u>		<1h	S ²		<1h_<	

Legend: A - No visible degradation, B - Very slight degradation, C - Slight degradation, D - Damage visible or gross, E - Unlimited use, F - Limitated use, G - Use inad-visable, S - The surface melts, X - The surface blisters, O - The surface is destroyed, CO - Concentrated, HC - High concentration, LC - Low concentration, SA - Saturated, NS - Not specified, h - Hour(s), M - Month(s), Y - Year(s), 🐵 - All the elements tested resist all the substances, 🕒 - At least one of the ele-ments tested may be damaged by the substances in question, 🐵 - All the elements tested may be damaged by the substances in question, – Not tested.

Notes:

1 - According to Alcatel Bell tests, 2 - According to DIN42115 Parts 2, 3 standards - According to raw material producers, 4 - Tested at 50°C

Table 41.1: Chemical resistance data sheet (Part 3 of 5)

		Parts of the VT							
Substance		Epoxy powder coating ³	Matt keyboard surface ²	Transpar- ent key- board surface ¹	Touch screen ²	Protective- glass	Gaskets	Protective ² film	Resis- tance
Glycerine	NS	-5	>24h		>24h		Е	>24h	\odot
Glycol	NS	202		-)	8 ³³		EX	8 ²⁰	\odot
Grape juice	NS	<u>-</u>	>24h ⁴	- 32	>24h ⁴		. 		\odot
Gumption	NS		>24h ⁴	3 <u>8</u>	>24h ⁴		20 ²		\odot
High pressure steam (at >100°C)	NS		0		0		G	0	$\overline{\mathbf{S}}$
Hydraulic fluids	NS		No.S			16 <u>2</u>	F		\odot
and the second sec	<10%	6	>24h		>24h		G	>24h	\bigcirc
Hydrochloric acid	10%	3Y			<u></u>			3°	\odot
	20%	3Y		5	ŝ		- ,0		\odot
- Salar	<25%			100	>24h		San Carlo	>24h	\odot
Hydrogen peroxide	30%			А			-		\odot
	40Vol.	6M	-2			÷.			
Isopropanol	NS	S	>24h	A	>24h	s ⁴		>24h	\odot
Jet Dry	NS		>24h ⁴		>24h ⁴			201	\odot
Lactic acid	5%	3Y		2	0 ⁰⁰		8	ð	\odot
Lemon juice	NS		B ⁴		B ⁴				\bigcirc
Lenor	NS		>24h ⁴	20	>24h ⁴		20 <u>-</u>	>24h	\odot
Linseed oil	NS	3Y	>24h		>24h	~		>24h	\odot
Liquid allum	NS		Nº C			K ²	Е	- 34	\odot
Methane	NS	- 3	<u> </u>				F	>24h	\bigcirc
Methanol	NS	100	>24h	Α	>24h		F	3 ⁵⁰	\bigcirc
Methyl ethyl ketone	NS	§ -	>24h	- 5	>24h			>24h	\odot
Methylene Chloride	NS	1M	0	3725	0		G	0	$\overline{\mathbf{S}}$
Milk	NS		>24h ⁴		>24h ⁴				\odot
Mineral acids	CO		0		0	<u>.</u>		0	$\overline{\mathbf{S}}$
Mineral oil 0-180	NS	-	SS	Α		8	Е	- 29	\odot
Mustard	NS	5	>24h ⁴		>24h ⁴			205	\odot
n-Butanol	NS	S		,2	é ^é		8	<u> </u>	\bigcirc
Nitrate of ammonia	SA	ЗY		- and					\odot
20	<10%		>24h	D	>24h		G	>24h	\bigcirc
	10%	3Y	->			~			\odot
Nitric acid	20%	3Y	No.			K°		- 34	\odot
	50%	1M 🖉	<u> </u>		8			<u>_</u>	<u></u>

Legend: A - No visible degradation, B - Very slight degradation, C - Slight degradation, D - Damage visible or gross, E - Unlimited use, F - Limitated use, G - Use inad-visable, S - The surface melts, X - The surface blisters, O - The surface is destroyed, CO - Concentrated, HC - High concentration, LC - Low concentration, SA - Saturated, NS - Not specified, h - Hour(s), M - Month(s), Y- Year(s), © - All the elements tested resist all the substances, © - At least one of the ele-ments tested may be damaged by the substances in question, © - All the elements tested may be damaged by the substances in question, -- Not tested.

Notes: 1 - According to Alcatel Bell tests, 2 - According to DIN42115 Parts 2, 3 standards - According to raw material producers, 4 - Tested at 50°C

Table 41.1: Chemical resistance data sheet (Part 4 of 5)

				Accessories					
Substance	5	Epoxy powder coating ³	Matt keyboard surface ²	Transpar- ent key- board surface ¹	Touch screen ²	Protective- glass	Gaskets	Protective ² film	Resis- tance
Nitrocellulose solvents	NS	,	5°			S	G	S	$\overline{\mathbf{O}}$
Oil	NS				200		Е	202	\odot
Oleic acid	NS	3Y			1917		- 3	s ² ⁻	\odot
Paraffin oil	NS	3Y	>24h	- 4	>24h		- Al	>24h	\odot
Perchloroethylene	NS			-	>24h	- >	G	>24h	\bigcirc
Persil	NS		>24h ⁴	÷	>24h ⁴				\odot
C. C.	10%	3Y	1. C. T. C.			2°-		<	\odot
Photosic and a star	20%	3Y	<u> </u>		- 5			-50	\odot
Phosphoric acid	50%	ЗY			<u> S</u>			Š	\odot
	<30%	1 ² -	>24h	- 33	>24h			>24h	\odot
Photographic chemicals	NS						Е		\odot
Potassium carbonate	NS		>24h	§	>24h			>24h	\odot
Potassium ferrocyanide	NS		>24h		>24h	200		>24h	\odot
	10%	3Y	5°		8	S		6	\odot
Potassium hydroxide	20%	ЗY						202	\odot
Sea water	NS	and in			A		E	s	\odot
Sebacic acid	SA	3Y		- 4			10		\odot
Silicon grease	NS			-		>	Е		\odot
Silicon oil	NS				>24h	- Her	Е	>24h	\odot
Skydrol	NS	6M	200 C			<u> </u>			
Sodium carbonate	SA	- 3	>24h						\odot
Sodium chloride	3%	3Y			3.9 <u>~</u>			<u></u>	\odot
Sodium hydroxide	20%	3Y		- 4					\odot
	NS		>24h						\odot
Sodium hypochloride	10%	6M	>24h	2					\odot
	<20%		- 1 2		>24h	200		>24h	\odot
Softner	NS	- 3	>24h		>24h	S			\odot
.S ⁶	<10%							>24h	\odot
	10%	3Y		- 2	>24h	>24h	- 2	s	\odot
Sulphuric acid	28%	3Y		А			- 20		\odot
	50%	6M		-		- 8			\odot
	CO		-14			N.	G		$\overline{\times}$
Tartaric acid	SA	3Y	<u>Ran</u>			<u>8</u>			\odot

Legend: A - No visible degradation, B - Very slight degradation, C - Slight degradation, D - Damage visible or gross, E - Unlimited use, F - Limitated use, G - Use inad-visable, S - The surface melts, X - The surface blisters, O - The surface is destroyed, CO - Concentrated, HC - High concentration, LC - Low concentration, SA - Saturated, NS - Not specified, h - Hour(s), M - Month(s), Y - Year(s), 🐵 - All the elements tested resist all the substances, 🕒 - At least one of the ele-ments tested may be damaged by the substances in question, 🐵 - All the elements tested may be damaged by the substances in question, – Not tested.

Notes:

1 - According to Alcatel Bell tests, 2 - According to DIN42115 Parts 2, 3 standards - According to raw material producers, 4 - Tested at 50°C

		Accessories							
Substance		Epoxy powder coating ³	Matt keyboard surface ²	Transpar- ent key- board surface ¹	Touch screen ²	Protective- glass	Gaskets	Protective ² film	Resis tance
Teepol	NS	3Y			G.			. . .	\odot
Toluene	NS	3Y	>24h	Α	>24h		G	>24h	\odot
Tomato juice	NS	~ <u>-</u>	B ⁴	-32	B ⁴		- 1 ⁻¹		\odot
Tomato sauce	NS		B ⁴	-52	B ⁴		19 <u>-</u>		\odot
Top Job	NS		>24h ⁴		>24h ⁴				\odot
Trichloroethylene	NS	S	N. C.		>24h	10 ²	G	>24h	
Turpentine oil	NS	- 3	>24h		- 2		F	200	\odot
Turpentine substitute	NS	30			>24h			>24h	\odot
Vaselline	NS	Š		\$	S		E.Ő		\odot
Vim	NS		>24h ⁴	A. C.	>24h ⁴		Jan .		\odot
Vinegar	NS			D					\odot
Vortex	NS		>24h ⁴		>24h ⁴	<u></u>			\odot
Washing powders	NS		>24h		>24h	S	Е	>24h	\odot
Water	NS	- <u>.</u> 6	>24h		e.		Е	20 ²	\odot
White spirit	NS	ЗY		Α	8 ²			P	\odot
Windex	NS		>24h ⁴		>24h ⁴				\odot
Wisk	NS		>24h ⁴	<u> 10</u>	>24h ⁴		2°		\odot
Wood oil	NS		->			~	F		\odot
Xilene	NS	1Y	>24h		>24h	K ²¹ -		N	\odot

Table 41.1: Chemical resistance data sheet (Part 5 of 5)

Legend

A - No visible degradation, B - Very slight degradation, C - Slight degradation, D - Damage visible or gross, E - Unlimited use, F - Limitated use, G - Use inadvisable, S - The surface melts, X - The surface blisters, O - The surface is destroyed, CO - Concentrated, HC - High concentration, LC - Low concentration, SA - Saturated, NS - Not specified, h - Hour(s), M - Month(s), Y- Year(s), ③ - All the elements tested resist all the substances, ③ - At least one of the elements tested may be damaged by the substances in question, ③ - All the elements tested may be damaged by the substances in question, -- Not tested.

Cleaning the VT For cleaning the VT we recommend Denaturalised Ethyl Alcohol. Should this be insufficient for removing the impurity making it necessary to use other products, consult the tables above.

This information DOES NOT apply for terminals VT, H series. Use water instead of alcohol, or non aggressive detergents.

Case for terminals VT, H Series

The producer of the raw materials used to manufacture the case does not supply detailed information regarding the tests performed and the concentration of substances used during the tests. The information below is the supplier's original text.

Notes: 1 - According to Alcatel Bell tests, 2 - According to DIN42115 Parts 2, 3 standards - According to raw material producers, 4 - Tested at 50°C

Chemical resistance of certain material is dependent on the environmental conditions where the material is actually used. Therefore, it should be understood that the various usage parameters involved in and actual applications, e.g., chemical exposure duration, chemical type, loading, service temperature, stress, outdoor exposure, etc., may alter the performance significantly. Another important factor affecting the chemical resistance is the type of thermoplastic resin. Amorphous polymers tend to be more susceptible to chemical attack than crystalline polymers.

Rresins are generally stable to water, weak acid and mineral oil. Mechanical properties and surface appearance, however, can be deteriorated if a molded part is exposed to hot water, strong acid, alkalis, Ketones and aromatic hydrocarbons, etc.

Chemical	Effect
Acids	Stable under common conditions of concentration and temperature.
Alcohols	Stable at low concentration. Unstable at high concentration and elevated temperature.
Alkalis	Stable at low concentration. Unstable at high concentration and elevated temperature.
Detergents and Cleaner	Stable except strong alkaline materials.
Aromatic Hydrocarbons	Solvents should not be used.
Ketons, Toluene, Xylene	Cause severe damage.
Silicon oil	Stable.

Make sure the plastic shell does not come into contact with any oils containing paraffin clorurate or active nitrogen. These substances may change the mechanical qualities of the product.

Chapter 42 Technical support

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International Product Re	eturns	44		42-2
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International Customer Care The International Customer Care service can be contacted by:

Telephone:++39-031757400

Fax:

++39-031751777

E-Mail: <u>customer.care@esahmi.com</u>

Web site: http://www.esahmi.com

International Product Returns Should it be necessary to return the VT terminal for repair:

• Contact our International Customer Care service to authorize the return.

• Fill in all parts of the form to accompany the product.

Our International Customer Care service will supply all the necessary information for returning a an item.

!!! IMPORTANT NOTE !!!

ESA elettronica S.p.A. will accept:

- goods carriage free / freight prepaid (transport at customer's cost).
- goods carriage forward / freight collect (transport paid by ESA) only with the prior authorization of the company.

ESA elettronica S.p.A. will reject:

• any returned goods carriage forward where there has been no prior authorization.

It is not necessary to send connectors, cables and accessories (unless they are thought to be linked to the problem indicated).

Thank you for your kind co-operation.



REPAIRS RETURN FORM NOTE: Please complete form in BLOCK CAPITALS.

Product:		S/N: 🗌	-00-00000
Customer details (must	be filled in)	- Halfie	Morris
30	.80	300	.8°
Compiled by:			
Company :	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~	~~
Full address :	<u></u>	P	ost Code:
Town :		County:	and the second se
Tel. 110.		Гах	
Contact person (where o	different from above)	- 34	- 34
	,		
Name :			
Tel. no. :		Fax:	
all ^{on}	15 ⁰	and the second sec	21 ⁰¹
Information regarding p	roblem (must be filled in)		S
Device connected:			
Detailed description	n of the problem and t	ne circumstances ur	nder which it occurs:
<u></u>	<u></u>	n an	<u>s</u>
<u></u>	<i></i>	4	<i>A</i> ²
			and the second se
Notes:		<u></u>	
		·····	
.01	.off	. office	, office
	S.	S.	S. C.

Customer Care worker contacted:

Date of compilation:/..... Signature:

