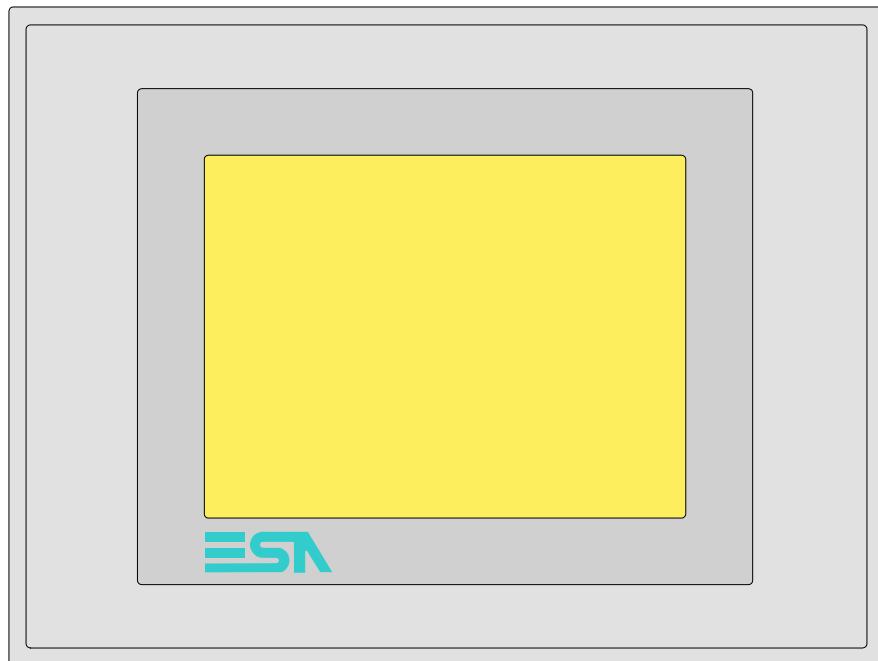


---

## Chapter 19      Video terminal VT525W

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This chapter consists of 28 pages.

**Technical characteristics**

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

<b>Code of terminal</b>	<b>Characteristics of the terminal</b>				
<b>VT525W 00000</b>					
<b>VT525W 000DP</b>					
<b>VT525W 000CN</b>					
<b>VT525W 000ET</b>					
<b>Display</b>					
Type	LCD 4 tones of blue STN				
	LCD 16 Colors STN	●	●	●	●
	LCD 16 Colors TFT				
Touch screen	Matrix 20 x 16 (Cell:16x15 pixels)	●	●	●	●
Representational format	Graphic	●	●	●	●
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	●	●	●	●
Contrast adjustment	Software	●	●	●	●
	Automatic compensation with temperature	●	●	●	●
Character sets	Programmable fonts/TTF Windows ®	●	●	●	●
<b>Backlighting</b>					
Type	LED				
	CCFL lamp	●	●	●	●
Minimum lamp-life at 25°C [hours]	15000	●	●	●	●

<b>Code of terminal</b>		<b>Characteristics of the terminal</b>			
<b>VT525W 00000</b>					
<b>VT525W 000DP</b>					
<b>VT525W 000CN</b>					
<b>VT525W 000ET</b>					
<b>User memory</b>					
Project [Bytes]	960K	●	●	●	●
Data memory [Bytes]	32K (Flash EPROM)	●	●	●	●
Memory for Windows ® -based fonts [Byte]	256K	●	●	●	●
Memory Card for backup	--				
Memory Card for expansion	--				
<b>Interfaces</b>					
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	Connections for accessories				
<b>Accessories</b>					
Connectable accessories	See table "Chapter 33"	●	●	●	●
<b>Clock</b>					
Clock	Hardware (with Supercapacitor - Min.72h)	●	●	●	●
<b>Networks</b>					
Integrated	Profibus-DP				●
	CAN Open (Optoisolated interface)			●	
	Ethernet 10/100Mbit RJ45	●			
Universal Bus Connector	--				
Optional	See table "Chapter 33"	●	●	●	●
<b>Proprietary networks</b>					
ESA-Net	Network server				
	Network client				●
<b>Technical data</b>					
Power supply	24Vdc (18..32Vdc)				
Power absorbed at 24Vdc	10W				
Protection fuse	Ø5x20mm - 800mA Quick Blow F				
Protection level	IP65 (front-end)				
Operating temperature	0..50°C				
Storage and transportation temperature	-20..+60°C				
Humidity (non-condensing)	<85%				
Weight	1400gr				
<b>Dimensions</b>					
External W x H x D [mm]	210 x 158 x 54				
Cut-out W x H [mm]	198 x 148				
<b>Certification</b>					
Certifications and approvals	CE, cULus, NEMA12				

**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		•
Automatic operations		32
Backup/Restore		•
Bar data		•
Bit-wise password		8bits
Buttons		320 x page
Circles		•
Command: Change language		•
Command: Clear trend buffer		
Command: Delete recipe		•
Command: Hardcopy		•
Command: Load recipe from data memory		•
Command: Modify password		•
Command: Next page		•
Command: Page help		•
Command: Password login		•
Command: Password logout		•
Command: Previous page		•
Command: Print alarm history		•
Command: Printer form feed		•
Command: Quit project		•
Command: Report		•
Command: Restarts reading time-sampled trend		
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		•
Command: Send recipe from video buffer to device		•
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 19.1: Functions and objects realizable with this VT (Part 2 of 4)

Code of terminal		
VT525W *****	Objects/Functions	Quantity ▼
Command: Show alarms history		●
Command: Show page directory		●
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: 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		1024*
Dynamic texts: Value-structured dynamic texts		●
E-keys		
Equations	32	●
F-keys		
Free terminal		
Function: Disables key		
Function: Go to page		●
Function: Internal command		●
Function: Invert bit value		●
Function: Macro		●
Function: None		
Function: Reset bit permanently		●
Function: Reset real-time bit		●
Function: Sequences		
Function: Sets bit permanently		●
Function: Sets real-time bit		●
Function: Value-structure direct command		●
Global configuration of E-keys		
Global configuration of F-keys		
Headers and footers (Total/Number of fields per H-F)	32/128	●
Info-messages (Total/active simultaneously)	256/256	●
Internal registers	4096bytes	●
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, \*\*) depends on memory available

Table 19.1: Functions and objects realizable with this VT (Part 3 of 4)

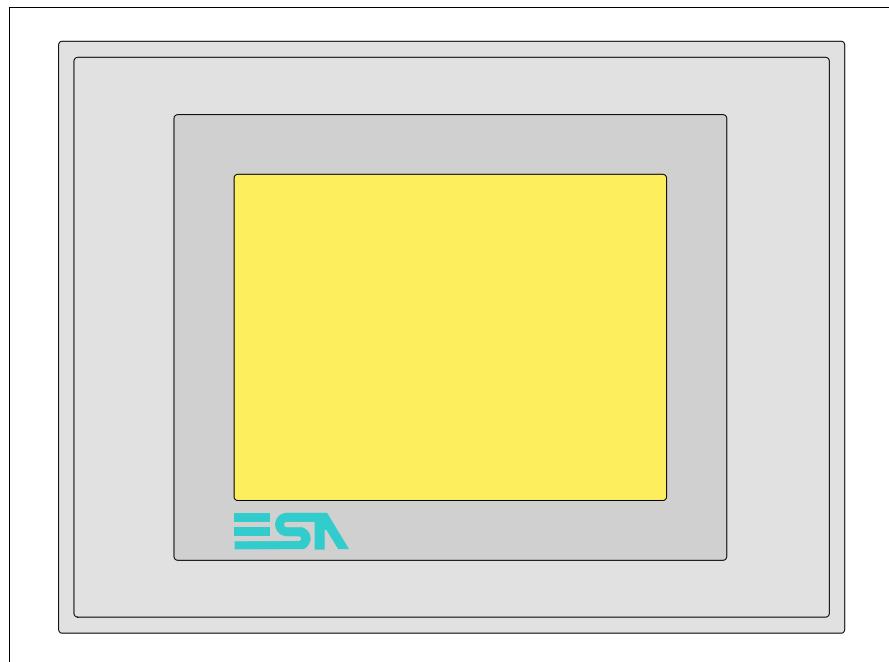
Code of terminal		
VT525W *****	Objects/Functions	Quantity
Lines		●
Lists of bitmap images		●
Lists of texts		●
Local configuration of E-keys		
Local configuration of F-keys		
Macro field		
Macros (Total/Commands x macro)	1024/16	●
Message field		●
Message help	256	●
Multilanguage texts	6 Langs.	●
Object - Indicator		
Object - Potentiometer knob		
Object - Selector knob		
Object - Sliding potentiometer		
Object - Sliding selector		
Page	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	1024*	●
Symbolic field: Value-structured dynamic bitmaps		●
System messages		●
System variables assigned to recipe structure		●
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 19.1: Functions and objects realizable with this VT (Part 4 of 4)

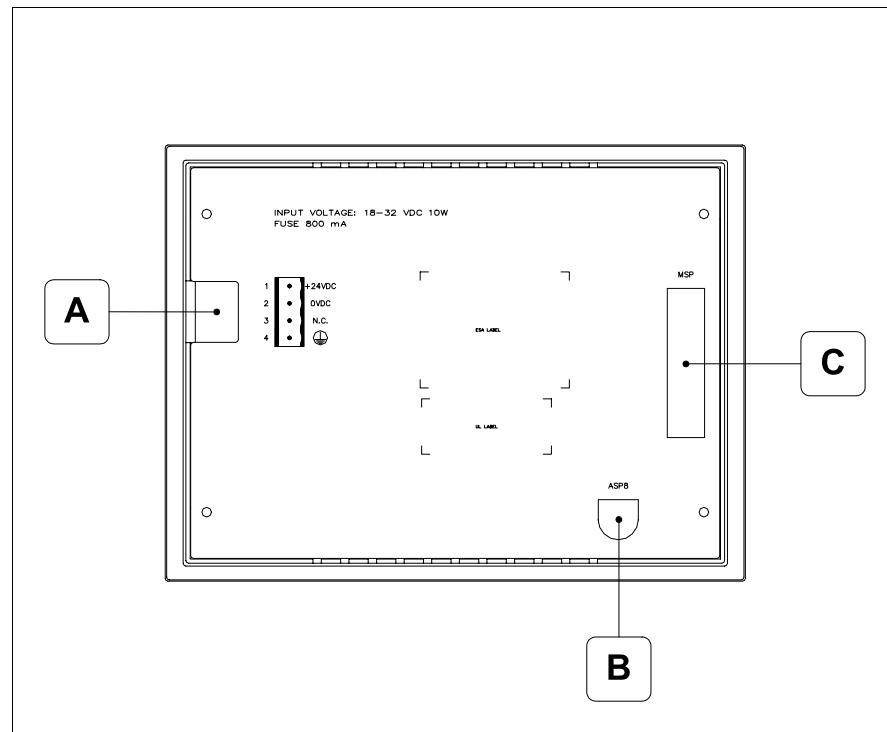
Code of terminal		
VT525W *****	Objects/Functions	Quantity ▼
Timer		32 ●
Touch Area		24 ●
Trend buffers		
Trends (Trends x page/Channels x trend)		
Trends sampled automatically (Memory/Trends/Readings)		
Trends sampled on command (Memory/Trends/Readings)		
Value direct command: ADD		●
Value direct command: AND		●
Value direct command: OR		●
Value direct command: SET		●
Value direct command: SUBTRACT		●
Value direct command: XOR		●
Variables: Limit values and linear scaling variables		●
Variables: Movement variable (Mobile symbolic field)		●
Variables: Threshold variables		●
Variables: Floating Point numerical variables		●
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 project memory sets a limit.  
 \*) indicative value determined by the dimensions of the project, \*\*) depends on memory available

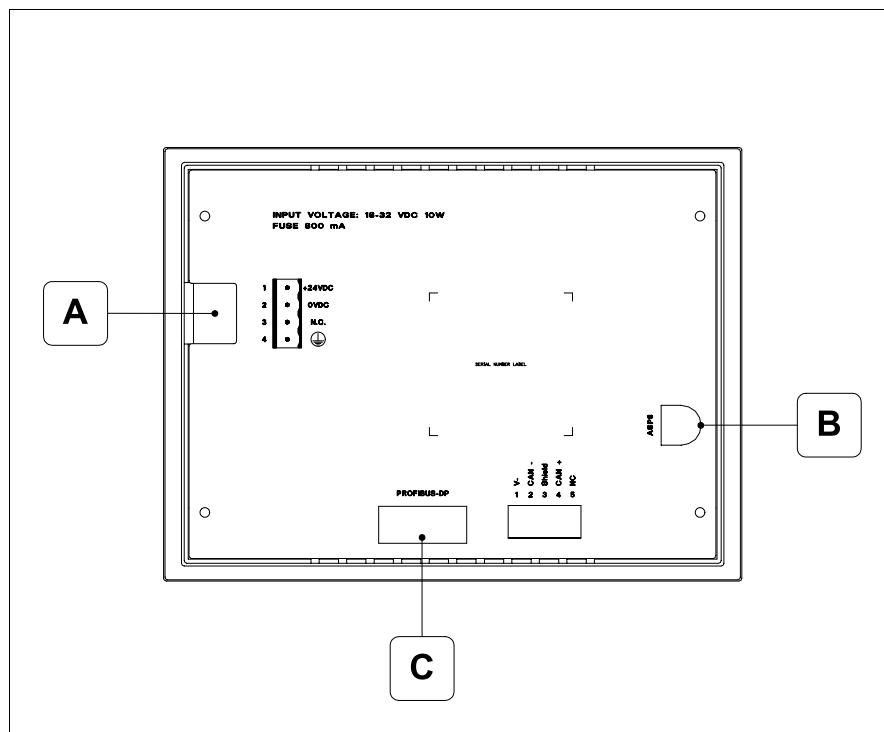
**Front view**

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

**Standard  
series rear  
view**

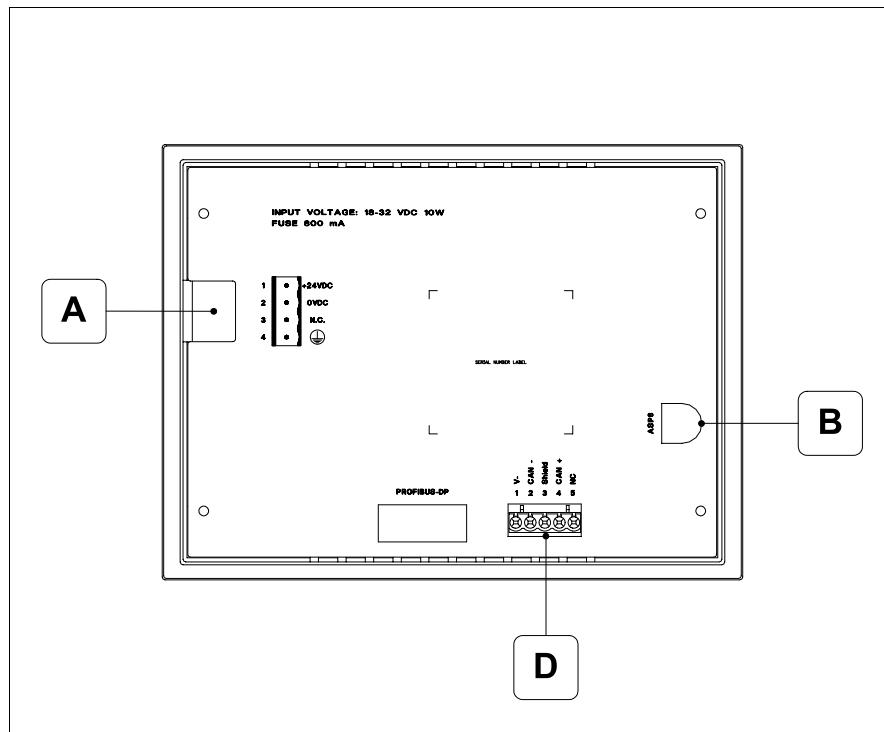


Position	Function
A	Power supply connector
B	ASP serial port for communicating with PC or other devices
C	MSP serial port for communicating with PLC/PC

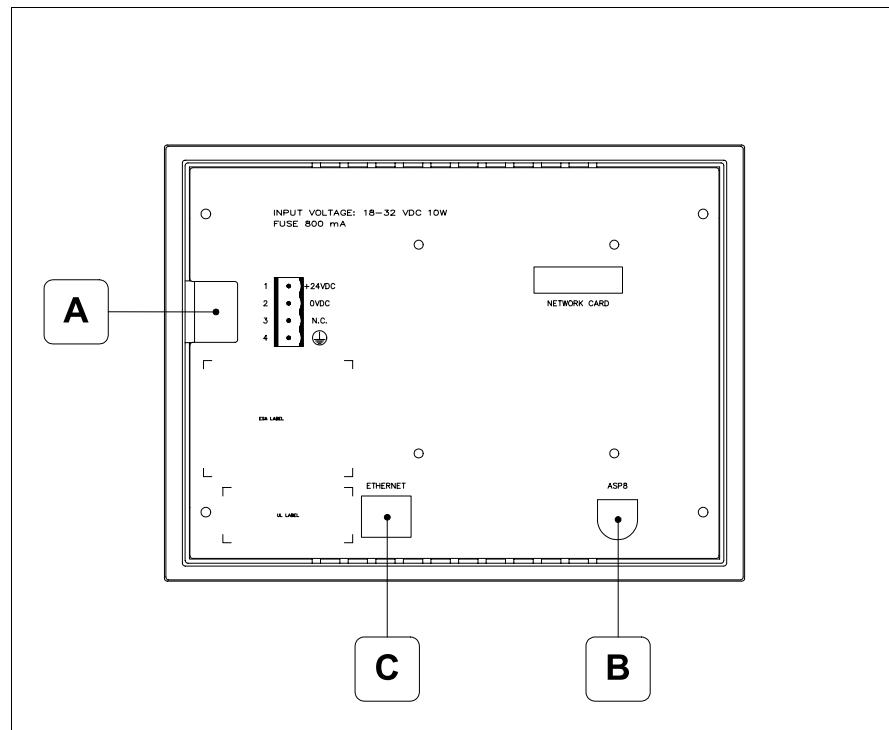
**Profibus-DP  
series rear  
view**

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

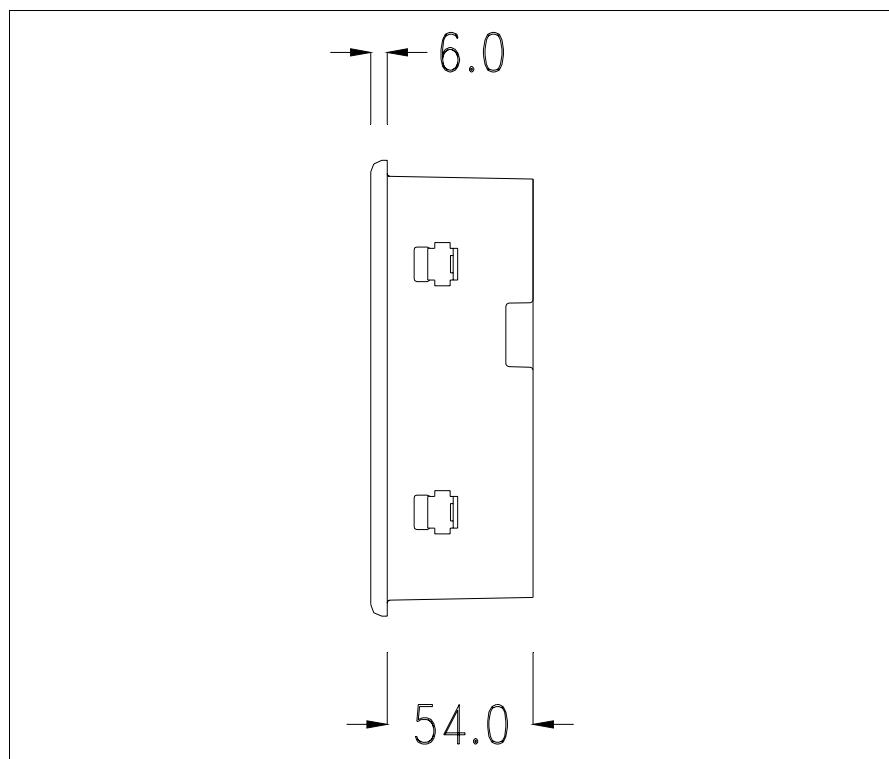
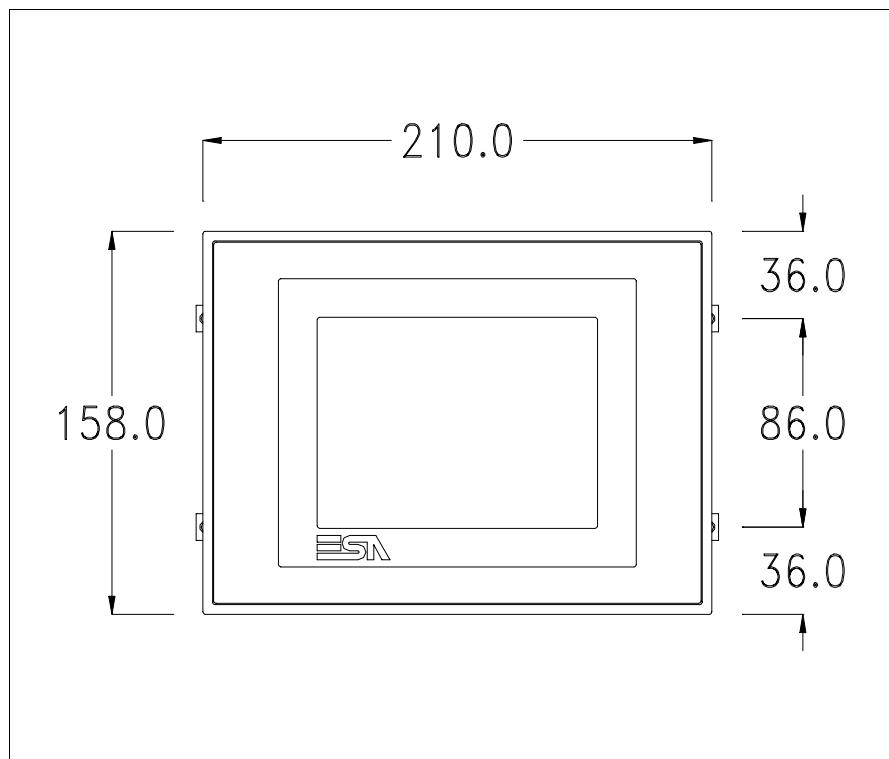
**CAN series  
rear view**

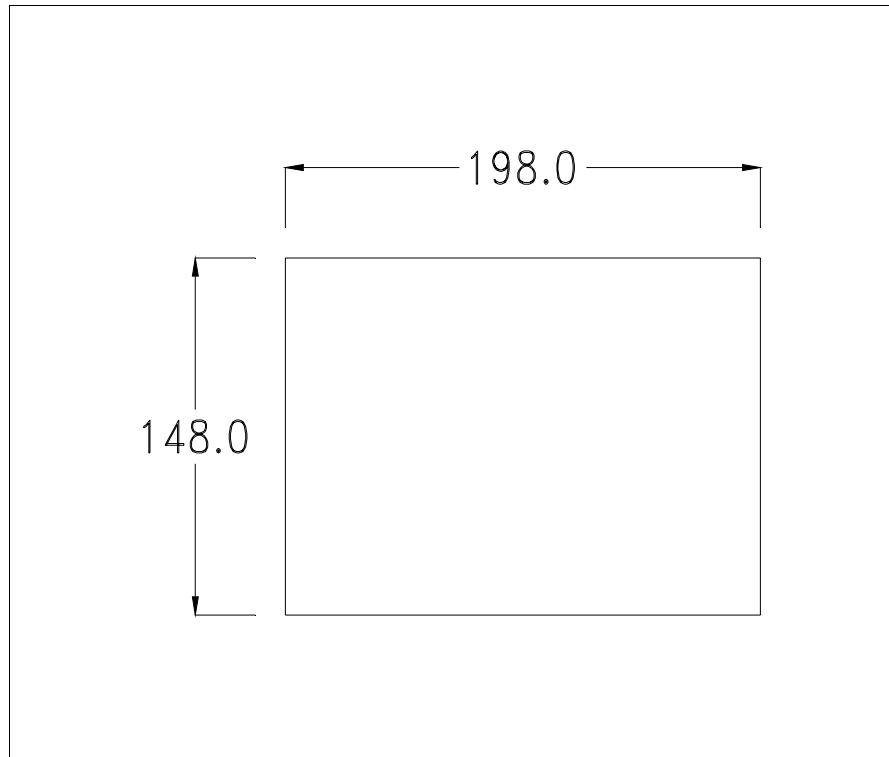


Position	Function
A	Power supply connector
B	ASP serial port for communicating with PC or other devices
D	CAN serial port

**Ethernet  
series rear  
view**

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

**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”.

**⚠ 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**

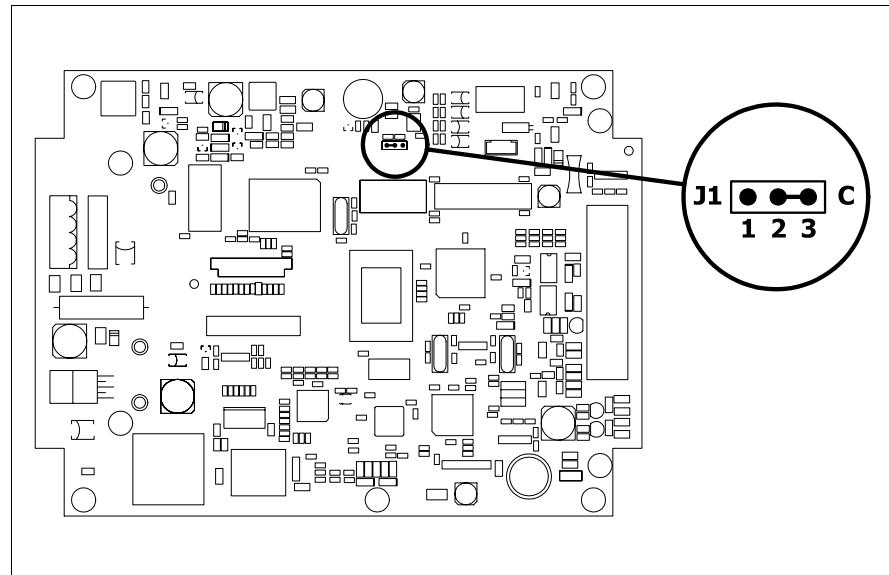
The screen of VT525W is made of resistive, sensitive glass; for this type of glass to work properly it requires a calibration procedure (**the terminal is already calibrated when supplied**), that is, the resistive area of the glass has to be adjusted to the visible area of the display.

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

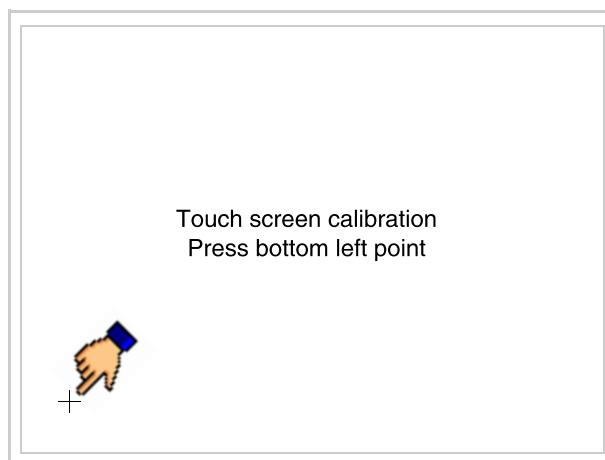
**⚠ The procedure must be carried out with great care as the precision of the keys area depends on the calibration.**

How to perform the calibration procedure:

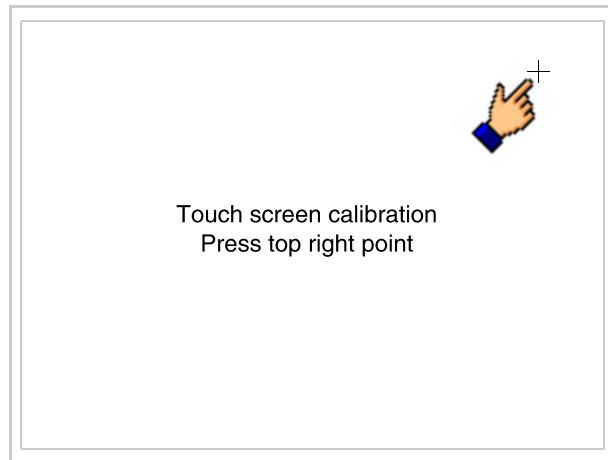
- Make sure the VT is not connected to the power supply
- Remove the back cover
- Identify jumper J1



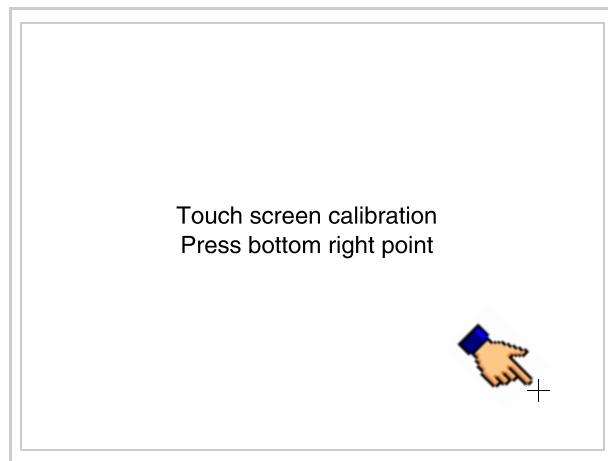
- Position J1 on pins 2-3 (C)
- Reconnect the power supply and switch on the terminal; the following mask appears



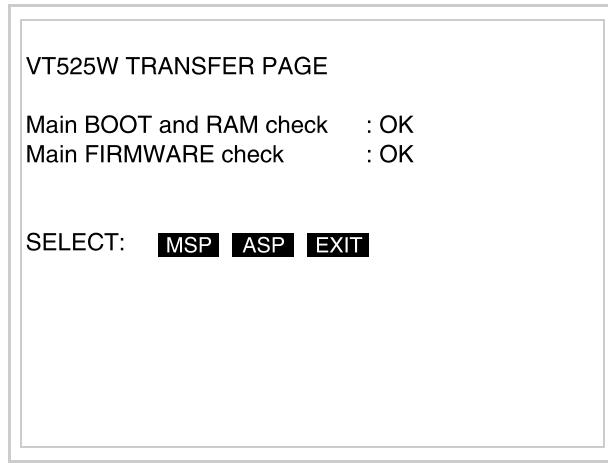
- Touch the corner indicated in the figure; then the following page appears on screen



- 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)



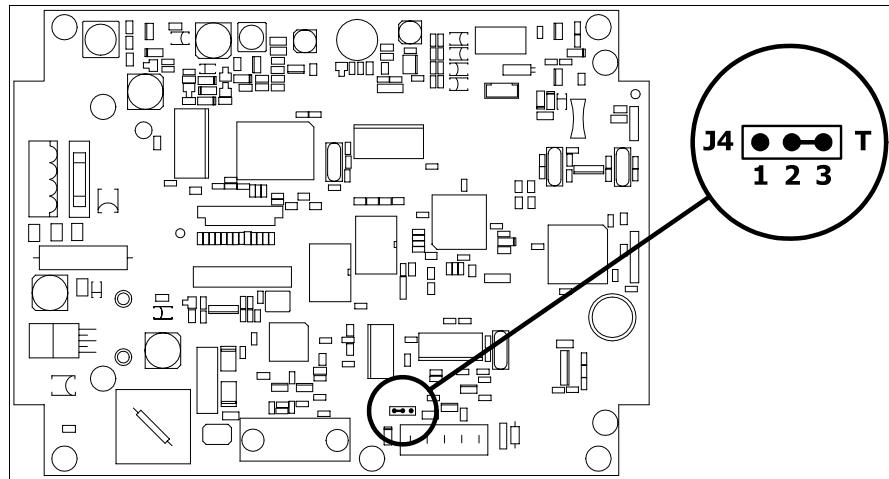
- Switch off the terminal
- Reposition J1 on pins 1-2
- Replace the back cover
- Switch on the terminal again

The calibration procedure has finished; if the calibration has been 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:

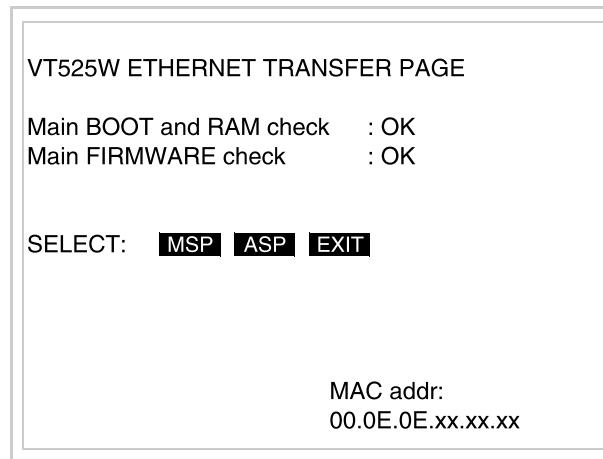
- Make sure the device is not connected to the power supply.
- Remove the cover.
- Identify the jumper unit J4.



- 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.

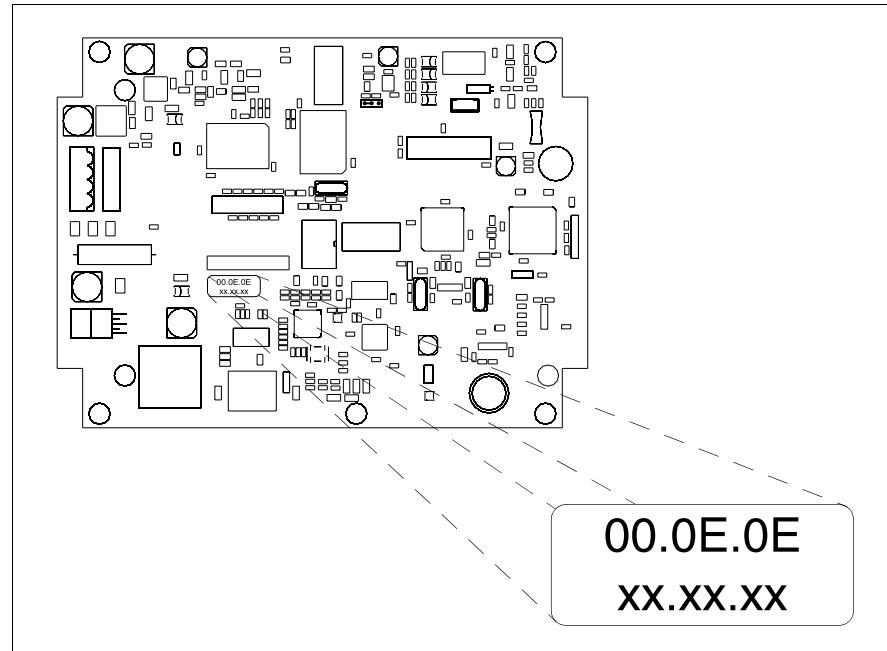


The MAC address is permanently memorized in the terminal, but should it be necessary to execute an “aided” BOOT update (see Software Manual “Chapter 14 -> BOOT update”) the address is lost.

**⚠ 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:

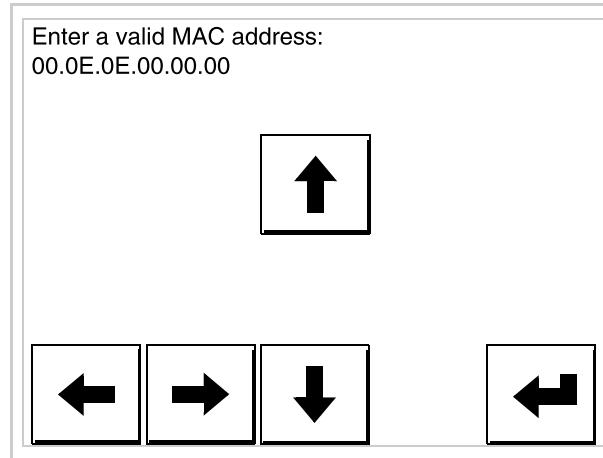
- Check that the VT is not connected to the power supply.
- Remove the back cover
- Locate the label carrying the MAC address



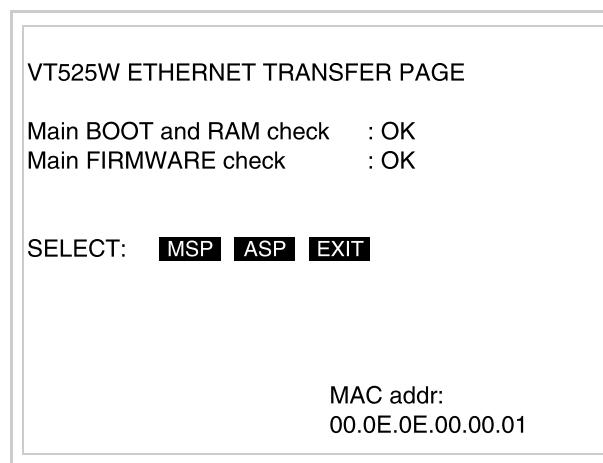
- Make a note of the number on the label (e.g. 00.0E.0E.00.00.01)

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 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



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

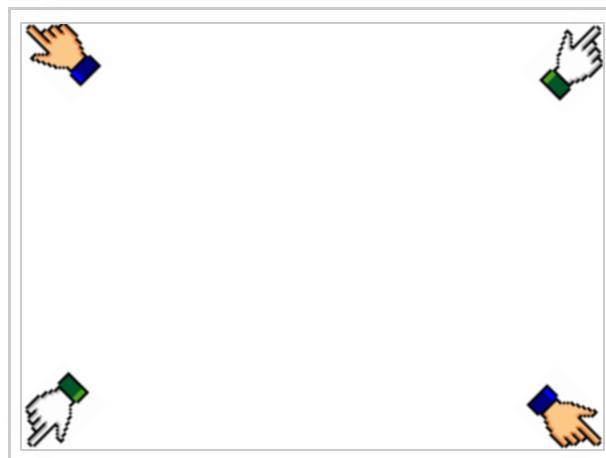
(Given that the transfer of the three files in practice occurs with a single operation, it will be defined as “Project transfer” for the sake of simplicity.)

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

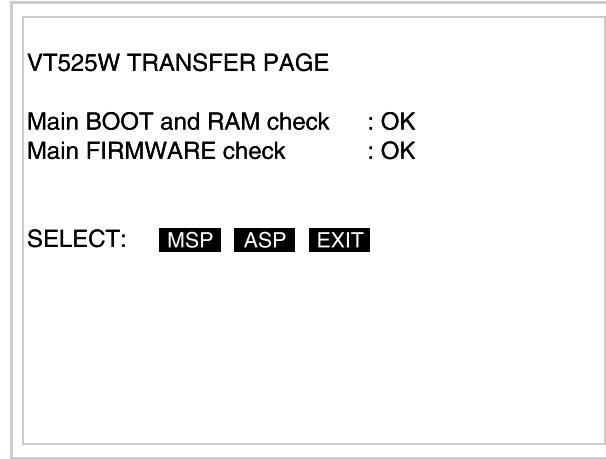
**Preparation for reception**

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:

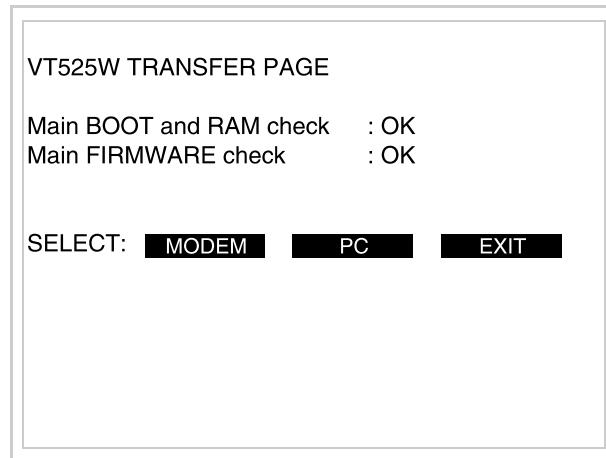
- Check that the VT is off
- Check that there is a serial connection between the PC and the VT
- Switch on the VT and wait for the following mask to appear
- Press one after the other the diagonally opposite corners free of settable objects or buttons (at least one corner needs to be free)



and wait a moment, or, using the appropriate button (see Page 19-25), till the VT displays the following mask

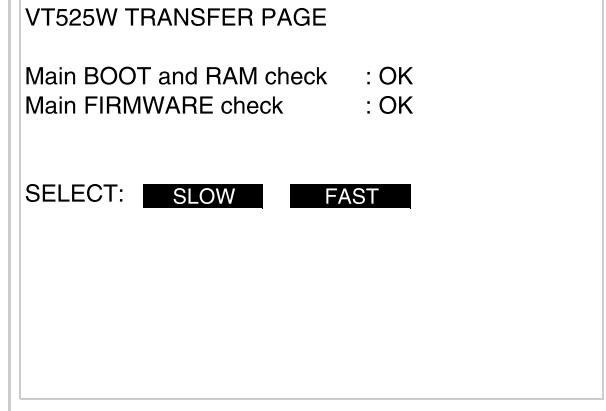


- Choose the port you intend to use for the transfer (MSP or ASP); touch the relevant  on the display. The VT is now ready to receive (refer to Software Manual for transfer procedure).



- 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 mode 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 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:

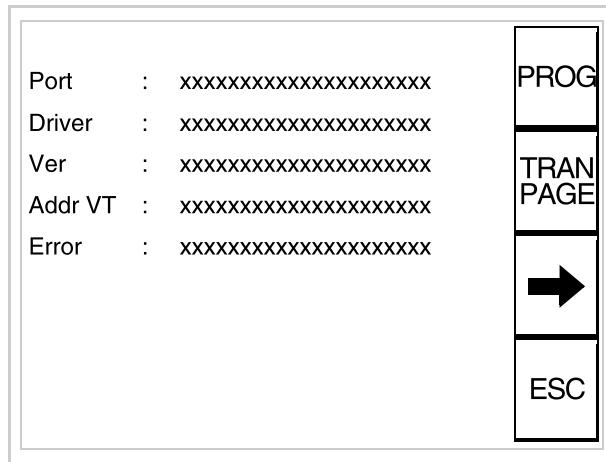
- Serial ports present
- The name of the driver loaded
- The version of the driver loaded
- Network address of the VT
- Last error to have occurred

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



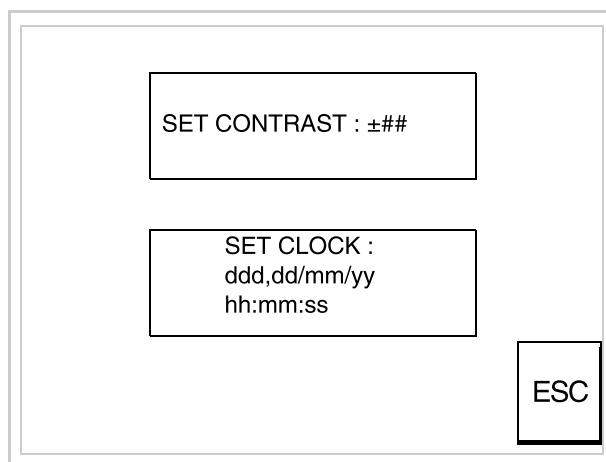
There is one of these pages for each communication port; movement between the various pages is effected by pressing .

From this page you can:

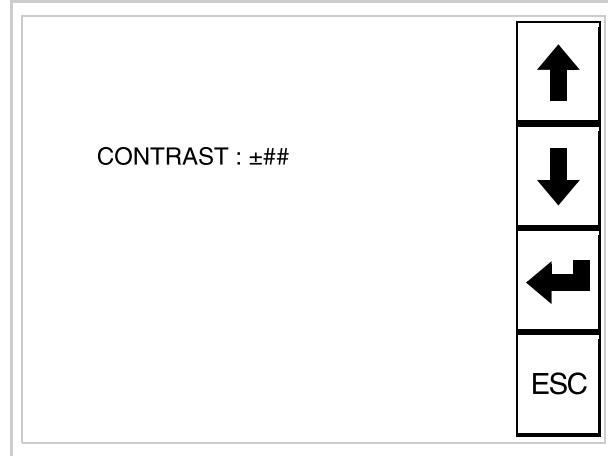
- Set the clock and the contrast
- Prepare the VT to receive the program

Setting the clock and the contrast:

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

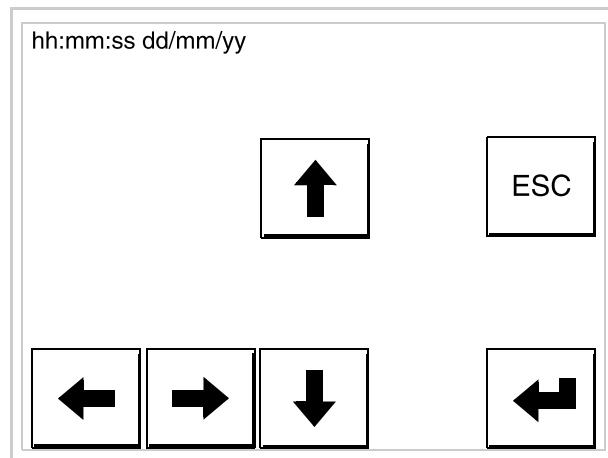


To set the contrast touch the words SET CONTRAST on the display; you will see the following mask



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

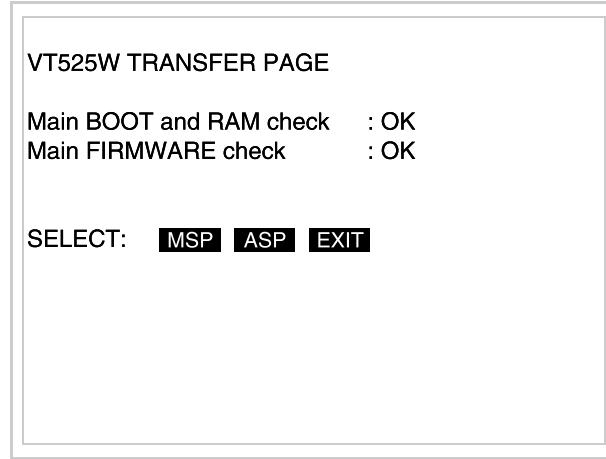
To set the clock touch the words SET CLOCK on the display; the following mask appears



Use the arrow 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 , 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 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).