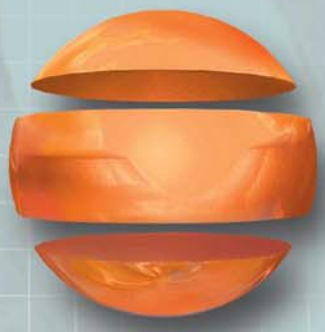


Hardware Manual

Rev. 2.1

CHAPTER'S INDEX

1. Premise

The hardware installation manual is unique for all types of Video Terminals.

The manual

The installation manual is the instrument that allows the user to obtain information regarding the type of fixing, connections, as well as optional accessories, functions available in the terminals and connection cables to the device.

What is it used for?

The manual contains all notions, concepts and examples necessary for an easy and quick installation.

Conventions

Below is a list of ways of representation and meaning found in the manual:

PLC	Controller with programmable logic or other intelligent devices with the possibility of serial connection.
Intelligent	Device equipment or PLC with the possibility of serial connection.
[ ]	The content is shown on the display.
	Identifies a key or a button.
 terminal.	Indicates there is no key for the specified
	Calls attention to essential points.
	Danger of damaging the equipment.

2. Essential information

The terminal is an appliance made up from a series of components, which due to their construction features MUST be used in a suitable way; mmoreover, due to their construction peculiarities, the terminal may behave in a way that could be interpreted as malfunctioning of the product and/or construction defects.

The terminal in these cases is NOT considered faulty, thereforerepairs and/or replacement are not envisioned.

The component that generally induces into this misunderstanding is the display. Two different types of display are used on the terminals, one is a passive matrix defined as STN (Super Twist Nematic) and the other is an active matrix defined as TFT (Thin Film Transistor). Some functioning characteristics are common, others depend on the type of construction technology.

One component that envisions certain attention when used is the Touch Screen.

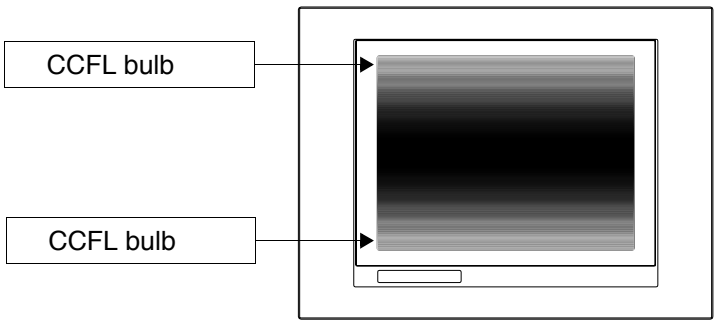
Below is a series of information regarding possible behaviour and correct use of the terminal.

If some of these notions are not put into practice, they may damage the terminal.

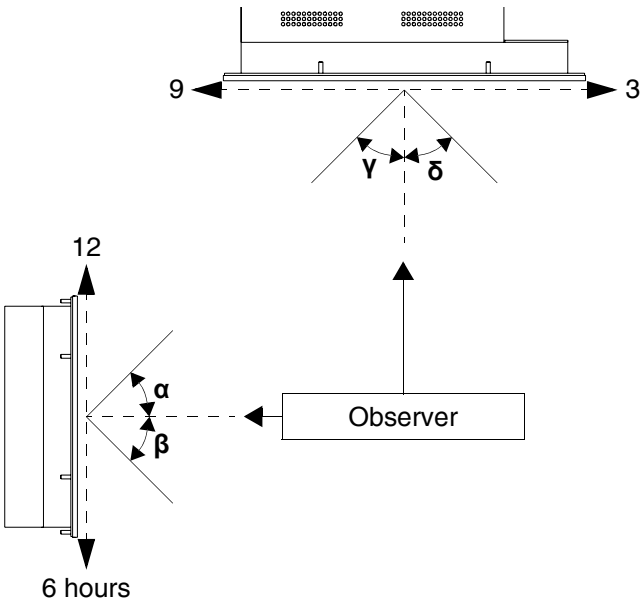
Graphical Terminals

The graphical terms category includes the touch screen terminals and those with keyboard and they include those with STN and TFT.

- In the displays with CCFL back-lighting, the brightness may be slightly uneven; it may be lighter in the area where the bulb is located.



- All displays have a certain visual angle within which to be positioned in order to have a correct view of the images. If the user is outside of the specified angle, he could see the images with colours inverted or with different tones to the original ones or not see any colour, etc. The visual angle can be slightly adjusted by acting on the display contrast.



The figure shown above shows the direction of the angles depending on the observation point. The table states the value of the display angles depending on the type of

display.

Display type	Direction (Hours)			
	12 - α	6 - β	9 - γ	3 - δ
STN	30 Degrees	60 Degrees	60 Degrees	60 Degrees
TFT	80 Degrees	80 Degrees	70 Degrees	70 Degrees

This prerogative leads to a difference in display (while maintaining the same contrast and temperature) when:

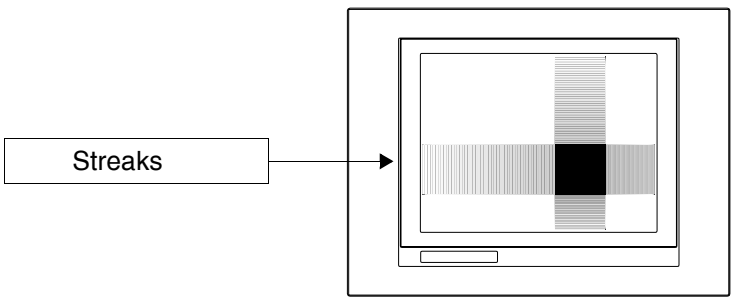
- The observer has a different height to whom has adjusted the contrast.
- The observers are at different distances with respect to the terminal.

- Two displays that are the same can have different brightness and tones to each other.

Graphical Terminals - STN

- The temperature affects the contrast of the display. At higher temperatures the display is lighter, while at lower temperatures it is darker, therefore after switch on it takes a few minutes before the display becomes normal. The effect can be more or less noticeable depending on the environmental temperature. In terminals with temperature probe, adjustment of the contrast is automatically adapted, therefore the effect can hardly be noticed.

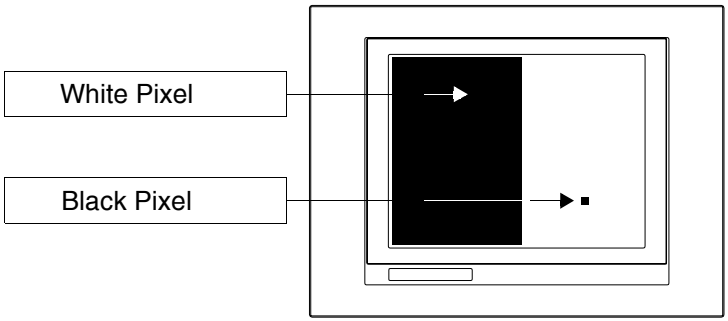
- It is possible that images with strong colour contrast with respect to the background create streaks of colour. The effect can be corrected slightly by acting on the display contrast.



- The brightness may flicker slightly and be irregular giving way to light shadows extending over the entire display.

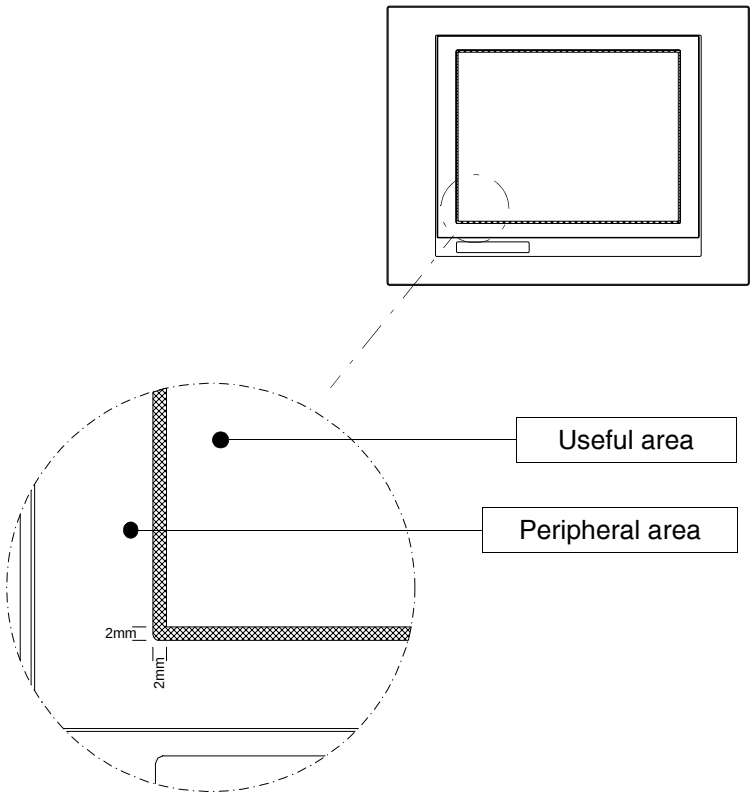
Graphical Terminals - TFT

- Note that in some cases the displays can have some white pixels (always on) or black (always off) This phenomenon can be visible or invisible to the user depending on the colour displayed. This phenomenon is considered normal.



Touch Screen Graphical Terminals

- The touch screen is activated by applying a force equal to 200g indifferently to the use of a pen or finger.
- A Peripheral Area of the touch screen exists that must never be stressed, especially with pointed objects (pens etc.). The glass in this area is very sensitive to pressing and is subject o breakage.



The peripheral area is about 2 mm per side and is outside of the sensitive area.

By stressing this area the terminal may be damaged.

3. General information regarding electromagnetic compatibility

Electronic appliances are more frequently used in the command and control systems. The programmable controllers (e.g. the PLC s), the man/machine interface systems (e.g. terminals), control systems (e.g. diagnostic terminals), interfacing elements (e.g. interfacing boards) and drives (e.g. the inverters) all belong the this category. Classic electro-mechanical appliances such as contactors, solenoid valves and motors etc. are also mounted with these types of electronic appliances.
Electric interference caused by the functioning of these appliances can jeopardise the correct functioning and the life span of the electronic appliances present in the control board or in the plant. To allow the correct functioning of the electric and electronic appliances the presence of interference must be reduced.

Laying the cables

Remember to separate the measurement, control and communication cables from the power cables. Power cables laid near to and parallel to the communication cables cause coupling voltages that interfere with or destroy the electronic components.

Cable shielding

For connection of the communication signals, it is necessary to use suitable shielded cables (total shielding is recommended). The shielding must be connected to the earth potential.

Earthing of shields and electronic circuits.

In many appliances the "0V" is connected to bulk. The bulk must be connected to earth, but it is a good idea to separate the bulk of the shields and electronic circuits from that of the power. Remember that the earth can only perform its function if the "Resistance of the earth circuit" is within the maximum limits set by the provisions.

Switch-over of the capacitive loads

The current peaks that occur on insertion of the capacitive loads can damage or destroy the control elements. Moreover, the high frequency component of the current peak can lead to serious interference of the electronic appliances, caused by inductive coupling of the connection cables.

Disconnection of the inductive loads

On disconnection of an inductive load, the stored magnetic energy, tends to object by discharging a voltage peak in the line, which could damage or destroy the command element. Moreover, the high frequency component of the voltage peak can lead to interference caused by the capacitive coupling between connection cables.
The physical structure and the features of an inductive load make switch-over impossible without electric interference, if adequate arrangements are not made. The necessity to reduce the amount of interference to a possible minimum derives from this. The suppression, at least partial, of the interference is obtained by applying an adequate anti-interference module parallel to the inductive load. The anti-interference module must not constitute an additional load during the work phase.
The electrical interference propagates through the connection cables and by electromagnetism.
If the interference propagates through the cable or by electro-magnetic transmission, its suppression at the entry to the appliances in the area of danger is much more harder with respect to the anti-interference device necessary to suppress it at the source.

It is recommended to suppress any interference at its source.

Anti-interference circuit with RC and with DIODE

Below find the tables with the features of the circuits in question.

Table 0.1: Anti-interference circuit with RC

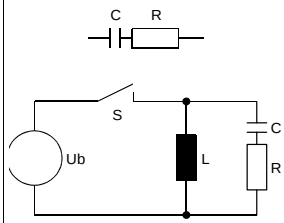
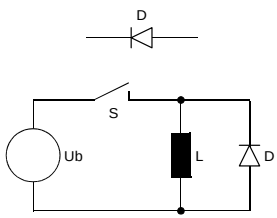
Circuit	Advantages	Disadvantages
	The residual component has a component of harmonics that is very low.	The best results are obtained by appropriately dimensioning the R/C circuit.
	By optimising the dimensioning it is possible to limit the residual over-voltage to very low values.	Volume directly proportional to the value of the inductance and the power of the load.
	Delay time at disconnection very low.	The optimal suppression as a noteworthy delay in drop-out as a direct consequence.
	Effectiveness of the anti-interference device independent from the voltage value. No delay on insertion.	The presence of the condenser leads to a high load current peak on insertion (in the case of unsuitable dimensioning
	Suitable both in AC and in DC; no polarity reversal problem.	If used in AC, the RC circuit constitutes an additional load.
	No arc (at low energy) on the switch-over contact.	--

Table 0.2: Anti-interference circuit with DIODE

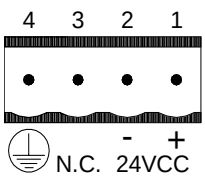
Circuit	Advantages	Disadvantages
	Very small dimensions.	Long delay time on disconnection.
	No residual voltage (total dampening of the interference impulse).	Only for applications with direct current (DC).
	Easy to dimension.	Polarity to be respected.
	--	The delay on disconnection can cause the formation of a strong electric arc.
	--	Sensitive to the presence of interference voltage impulses on the power supply circuit.

4. Power supply

Use a 24VCC (18..32Vdc) feeder to power the terminal

Connection pins

Table 0.1: 4-pole power supply connector

Connector	Pin	Meaning
	1	+24Vdc input power supply
	2	0Vdc input power supply
	3	Not connected
	4	Protection earth

Check the connections before applying voltage.

Wiring

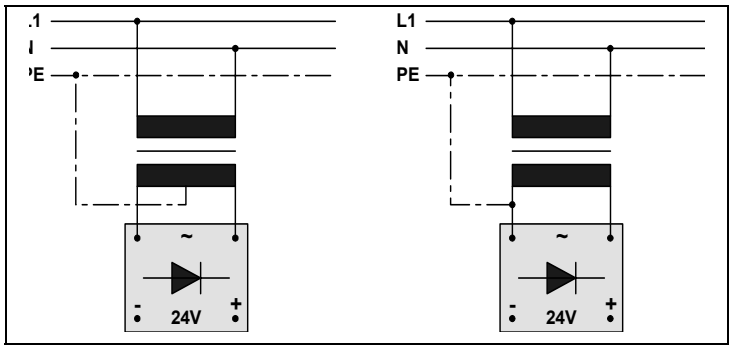
The power supply connector accepts wires with sections between 0.05 and 2.5mm² (30-12AWG) for rigid wires or sections from 0.05 to 1.5mm² (30-12AWG) for flexible wires. The flaying length must be between 6 and 7.5 mm (0.24-0.30in). The recommended coupling torque for the screws is 0.79Nm (7 lb in).

The data given refer to maximum values among those certified. The coupling torque is linked to the regulations applicable to the product and type of use.

Connection not to be made

To prevent any damage to the terminal **do not** carry out the connections represented in the figure shown below.

Table 0.2: Connections that must not be made



The configurations stated above seriously damage some components of the terminal.

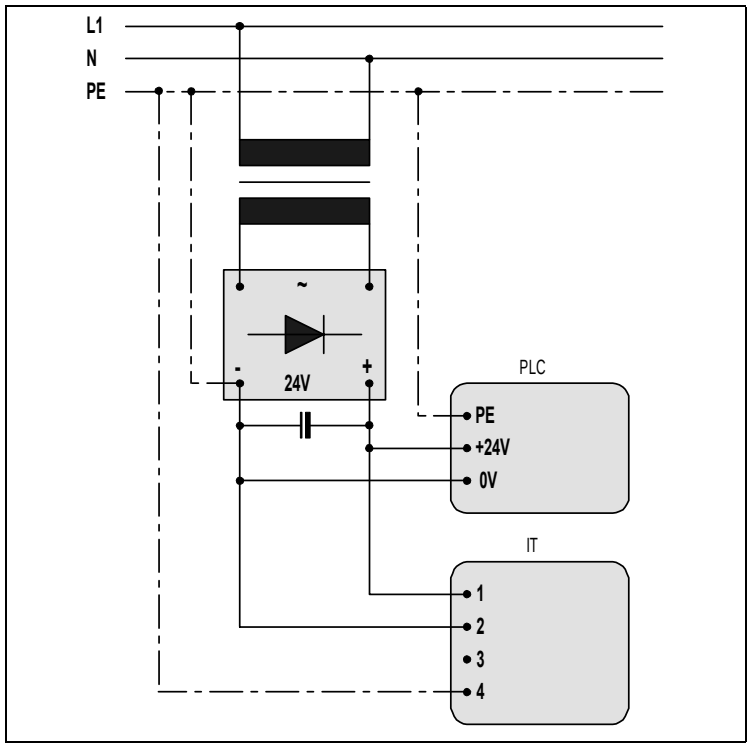
Attention to the applications that use the POSITIVE connected to an EP.

The mass of the devices connected to the serial and/or parallel communication ports must be absolutely at the same potential of the 0V power supply of the terminal. The circulation of a current between 0V power supply and the mass of the communication ports could damage some components of the terminal and the devices connected to it.

Recommended connection

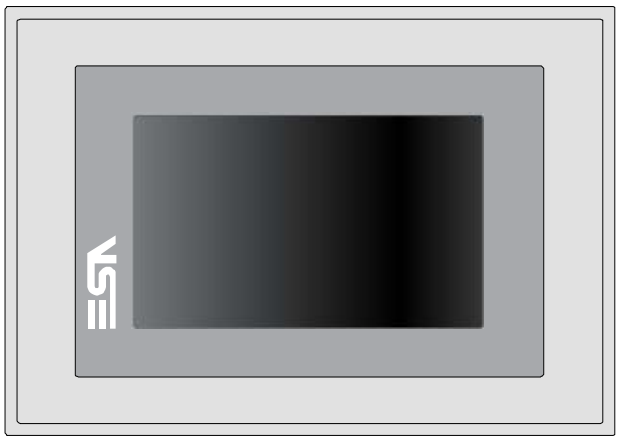
To prevent any damage to the terminal, carry out the connection as shown in the figure below.

Table 0.3: Power supply with 0Vcc connected to EP



Correct earthing is indispensable.

5. IT104 Video terminal



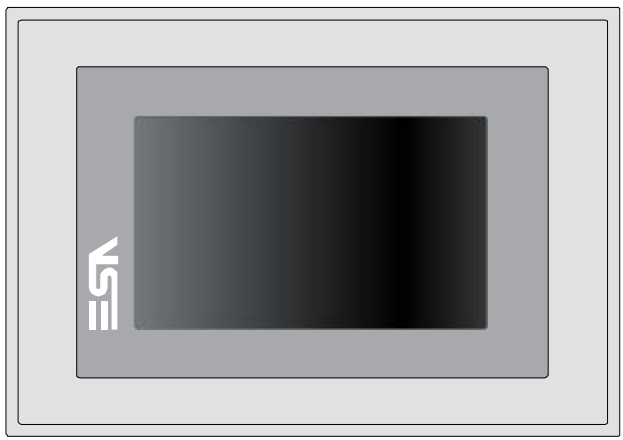
Technical characteristics The table below lists the main technical features of the product in question.

Terminal code	Terminal features					
IT104		X	0	X	X	X
Display						
Type	LCD 32 Shades of grey TFT	G				
	LCD 65k Colori TFT	T				
Format	Graphical	●	●	●	●	●
Resolution [pixels]	480 x 272 (4,3")	●	●	●	●	●
Visual area dimensions [mm]	95 x 54	●	●	●	●	●
Adjusting contrast	Software	●	●	●	●	●
	Automatic compensation	●	●	●	●	●
Set characters	TTF Windows ®	●	●	●	●	●
Backlighting						
Type	White Led	●	●	●	●	●
System memory						
Ram [Byte]	64M	●	●	●	●	●
Resident Flash Array [Byte]	32M	●	●	●	●	●

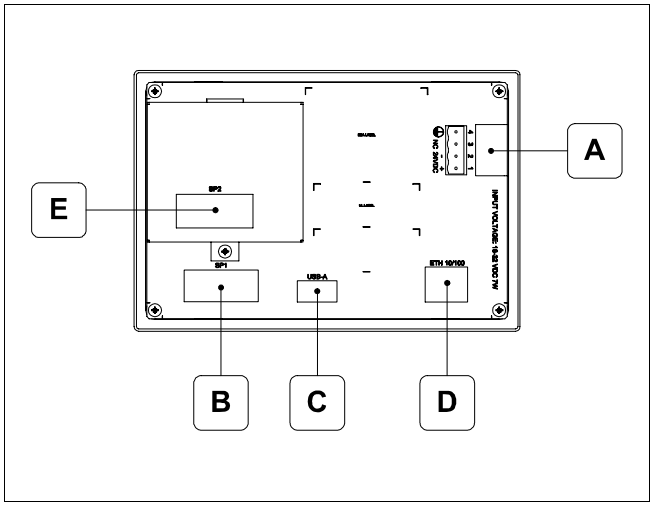
IT104 Video terminal

Terminal code	Terminal features						
IT104		X	0	X	X	X
Interfaces						
Serial Port SP1	RS232/RS485	●	●	1	●	●
Serial Port SP2	RS232/RS485	●	●	●	1	●
USB Host Port	v. 1.1	●	●	●	●	●
Orologio						
Orologio	Hardware (Supercapacitor - Min.72h)	●	●	●	●	●
Networks						
Integrated	Profibus-DP	●	●	●	3	●
	CAN	●	●	●	2	●
	Ethernet 10/100Mbit - RJ45	●	●	●	●	1
Technical data						
Power supply	24Vcc (18..32Vcc)					
Power consumption at 24Vcc	7 W					
Protective fuse	Ripristinabile Polyswitch					
Level of protection	IP65 (Front)					
Working temperature	0..+50°C					
Storage and transport temperature	-20..+60°C					
Humidity (without condensation)	<85%					
Weight	600 gr					
Dimensions						
External L x H x D [mm]	166 x 112 x 31 (50 con 2 porte seriali)					
Holes L x H [mm]	157 x 103					
Certification						
Marks and validations	CE, cULus, Atex(Gruppo II - cat.3 G/D - zona 2/22)					

Front

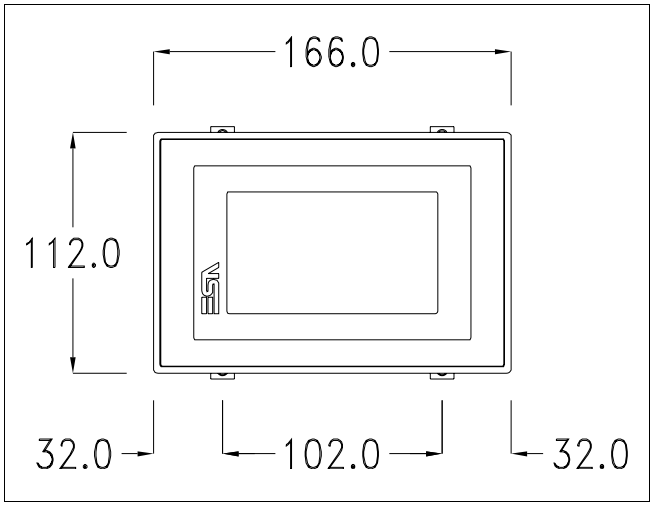


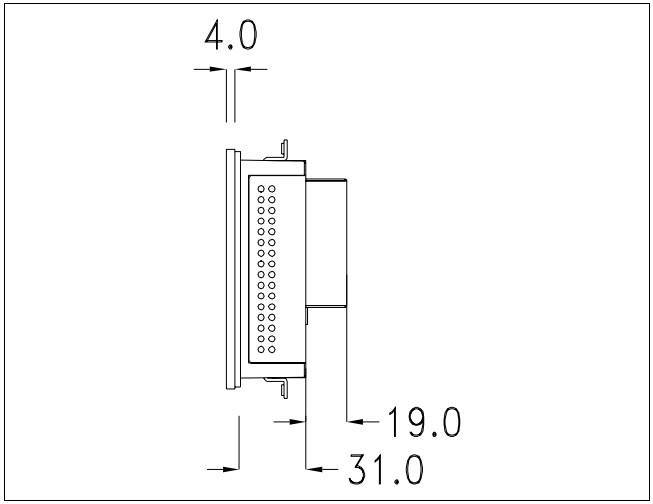
Rear

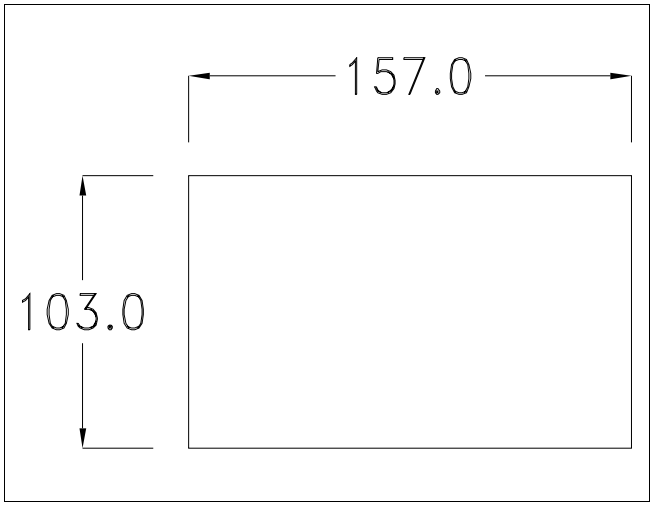


Posizione	Funzione
A	Power supply connector
B	IT104x x1xx SP1 serial port for communication with PLC/PC
C	USB-A Host Port
D	Ethernet 10/100 Base-T Port for connection to any network with standard TCP/IP protocol
E	IT104x xx1x SP2 serial port for communication with PLC/PC IT104x xx2x CAN Port IT104x xx3x Profibus-DP Port

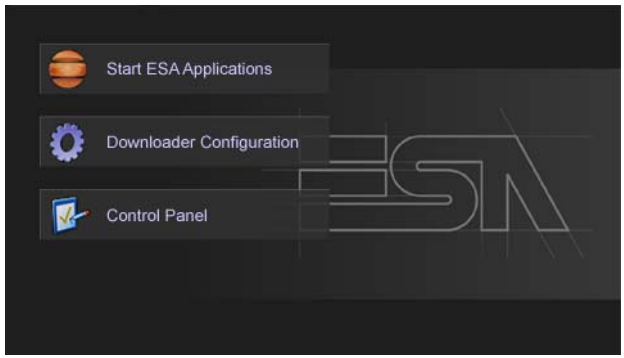
Dimensions and cutout



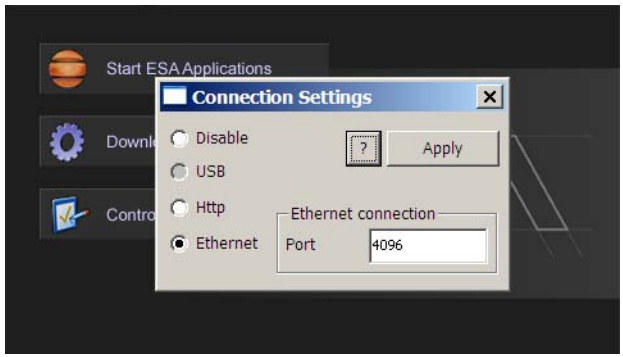



157.0
103.0

Service page

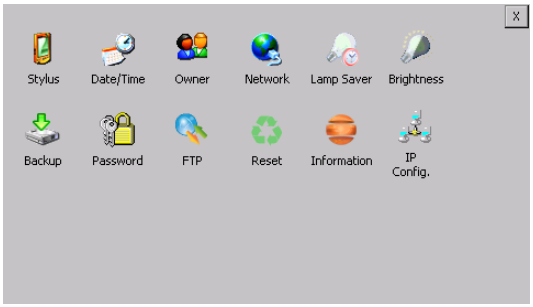


Service page which is accessed by pressing a button in the project (exit runtime).
- Start ESA Application executes the runtime of the project
- Download configuration opens the download configuration
- Control Panel opens the control panel



Clicking on downloader configurator, it is possible to configure the connection settings
- Disable disables the connection with the terminal
- Http enables ethernet connection with the terminal through an http protocol
- Eth TCP enable the ethernet connection with the terminal and allows to configure the port (slower but more precise).
- Eth UDP enable the ethernet connection with the terminal and allows to configure the port (faster but less precise).

Control panel

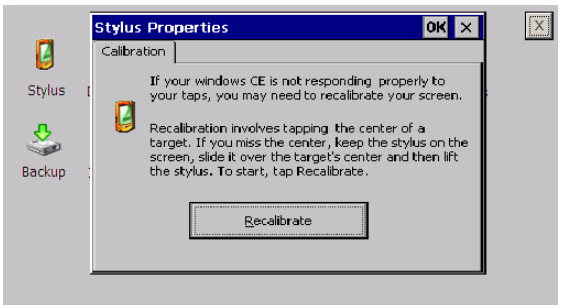


By clicking on each of these icons access is gained to the terminal configuration.

Stylus

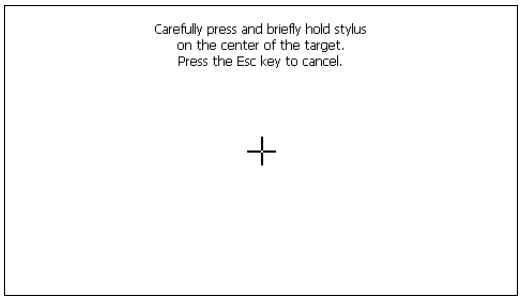
The terminal uses a resistant type sensitive glass, for this type of glass to function correctly requires a calibration procedure (the terminal is supplied already calibrated), meaning the resistant area of the glass must be suitable to the visual area of the display.
If it is necessary to repeat the calibration procedure, it is possible to do so by following the instructions below.

The procedure requires great attention because the precision of the keys' area depends from the calibration.

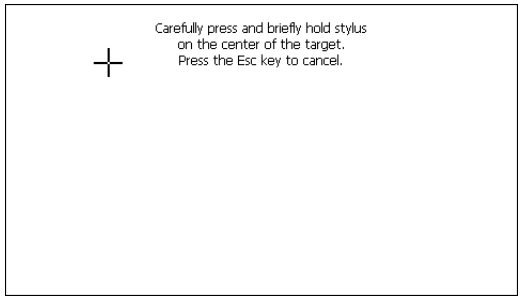


From the control panel click on the stylus icon and, subsequently, the following screens are displayed on the recalibrate key. Touch the screen near the crosses that appear on the screen.

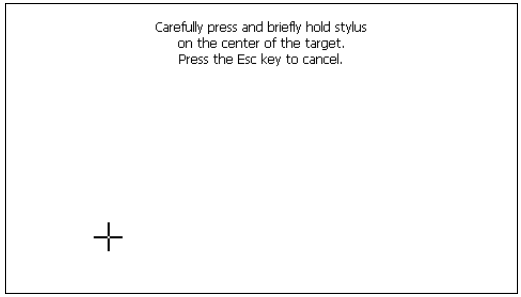
Step 1: touch the screen near the cross



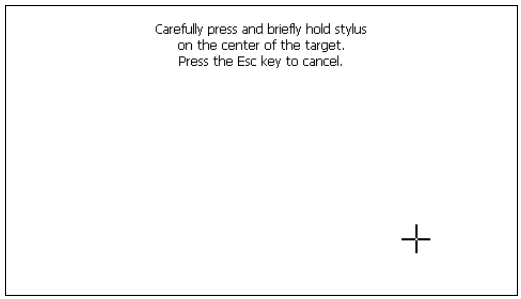
Step 2: touch the screen near the cross



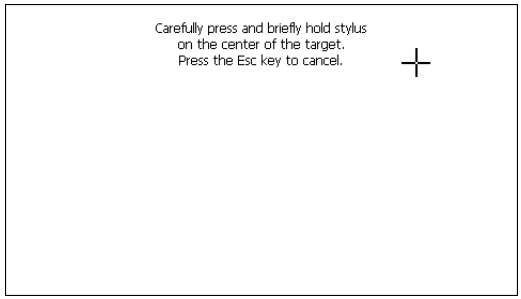
Step 3: touch the screen near the cross



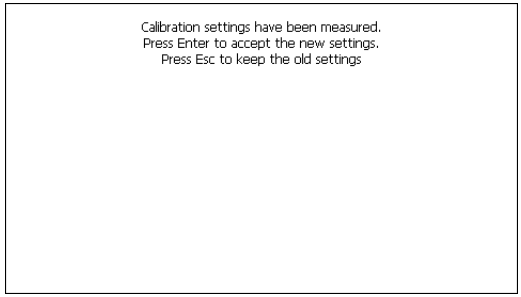
Step 4: touch the screen near the cross



Step 5: touch the screen near the cross



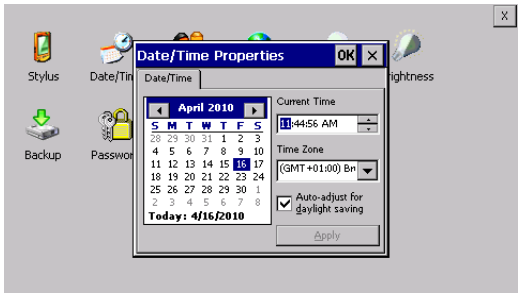
Step 6: Touch any part of the screen to end calibration.



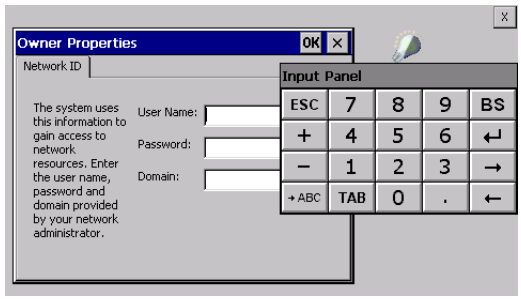
The terminal returns to the initial page. Clicking on ok confirms the calibration.

Date/Time

From here it is possible to amend: date, time and time zone. By enabling the “automatically adjust clock for daylight saving” check, the time is automatically updated at BST or GMT.



Owner

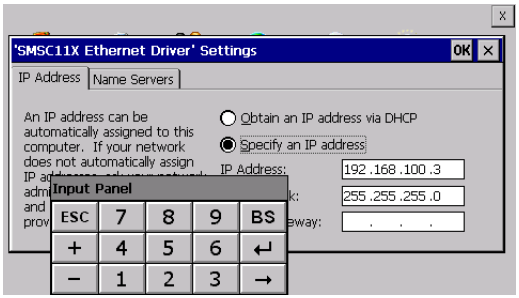


This information is used by Windows CE to access the network resources.
Username: enter the user name to access the network
Password: enter the password to access the network
Domain: enter the domain to access the network

In case the above data is unknown, contact the network administrator.

Network

IP address



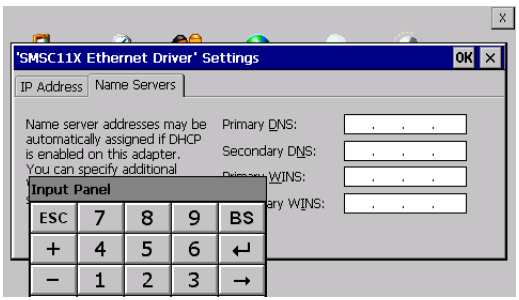
Obtain an IP address via DHCP: by selecting this option, an IP address is automatically obtained (ensure that the DHCP server is enabled on the network)
Specify an IP address: by selecting this option the parameters must be entered manually (IP Address, Subnet Mask, Default Gateway)

In case the above data is unknown, contact the network administrator.

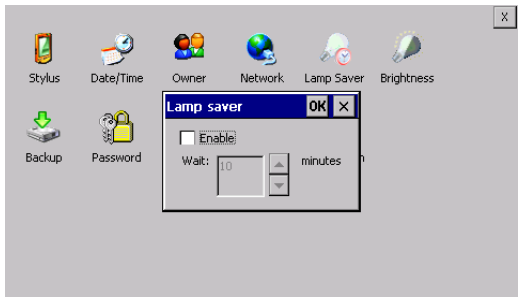
Name servers

If necessary, the parameters relating to the relative DNS or AL WINS must be entered

In case the above data is unknown, contact the network administrator.

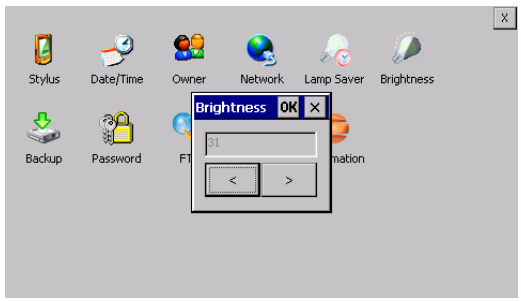


Lamp Saver



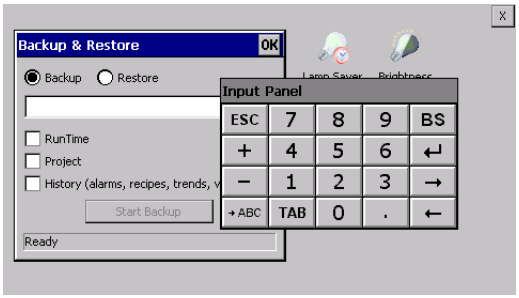
By enabling the Lamp Saver, the lamp switches off after a time set in the Wait box.

Brightness



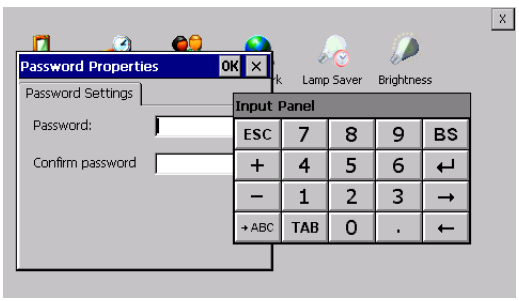
The Brightness allows regulating the brightness of the display lamp.

Backup



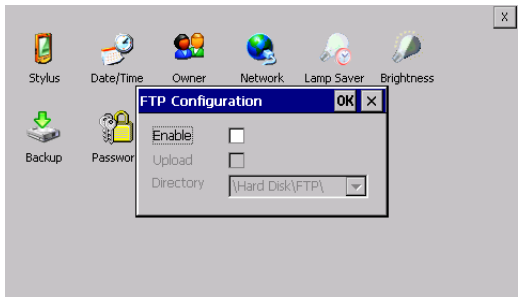
A backup copy of the components chosen through ticking can be made from here: Runtime, Project, History.
It is essential to tick at least one of the components to be exported and choose a path where to save the file.
The restore can be done for all exported components or through ticking, choose the component or components for which restore is to be carried out.

Password



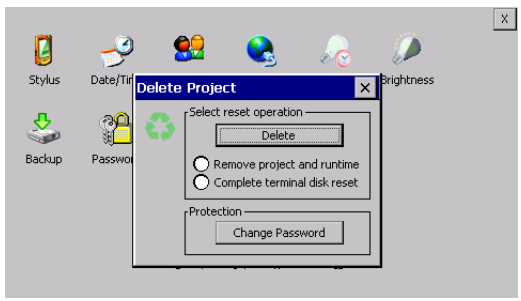
The Password option allows assigning a password to the terminal.
The password is requested (not compulsorily) during the use of the "Remote Desktop" application.

FTP



The “FTP” acronym means “Files Transfer Protocol”. It gives the user the possibility to enable and disable the “FTP Server” service of the panel from any other device (PC,XS,IT,YT) connected to the network.
This function is very useful when it is necessary to write, cancel or modify data on the terminal easily from a remote access.
Selecting the “Enable” option, the “FTP” folder sharing service in the “Hard Disk” directory is enabled :

Reset

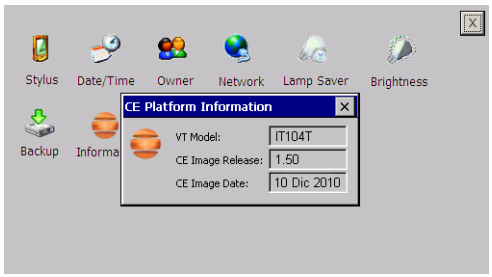


“Reset” is an application of the terminal control panel which allows to cancel all that been transferred onto the Hard Disk.
Selecting the “Enable” option, the “FTP” folder sharing service in the “Hard Disk” directory is enabled.
The user can choose from 2 options :

-“Remove project and runtime” -> choosing this option, both the project and the runtime that have been transferred from Polymath onto the terminal will be cancelled.

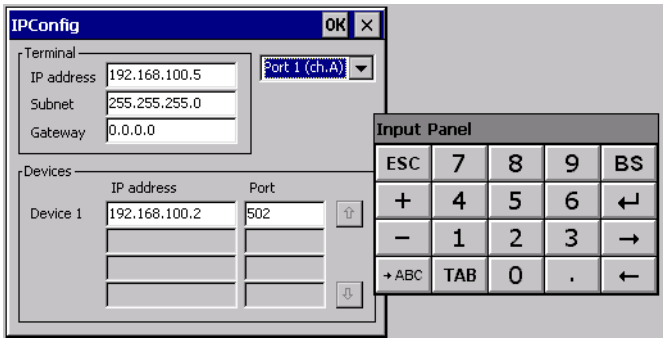
-“Complete terminal disk reset” -> choosing this option, the whole content of the “Hard Disk” folder will be cancelled, with the exception of the files that are essential for operating the terminal.

Information



The information shown regards the panel, e.g.: terminal model, revision of the Windows CE image and image data.

IP Config



By clicking on the "IP Config" icon, the mask displaying the IP Address of the terminal and IP Address (or IP Addresses) of the devices connected via Ethernet will appear.
The function “IP Config” is useful in that it is possible to change the addresses of the devices without having to use the

POLYMATH configuration software (very useful operation during the system's start-up).
By using the appropriate key "Input Panel", the user can carry out any variations to the IP addresses of the devices directly from the ESA terminal.

6. IT105 Video Terminal

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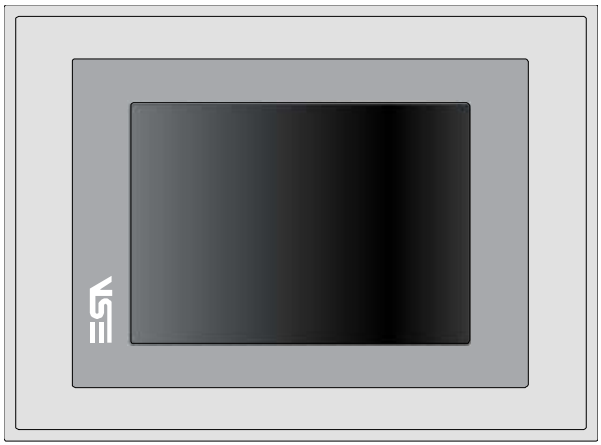
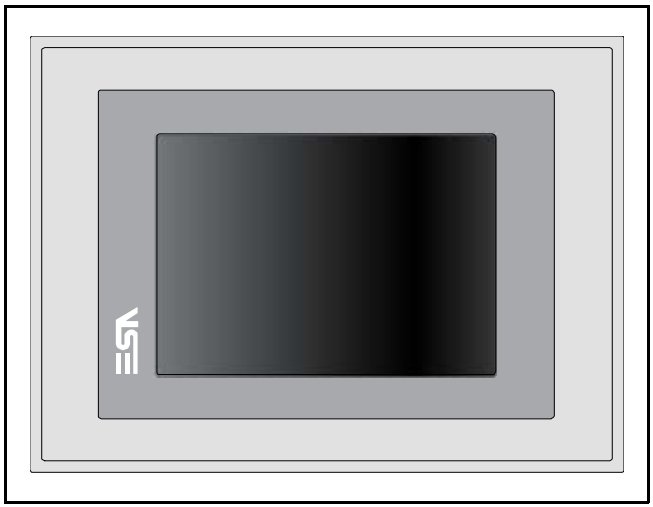


Technical characteristics The table below lists the main technical features of the product in question.

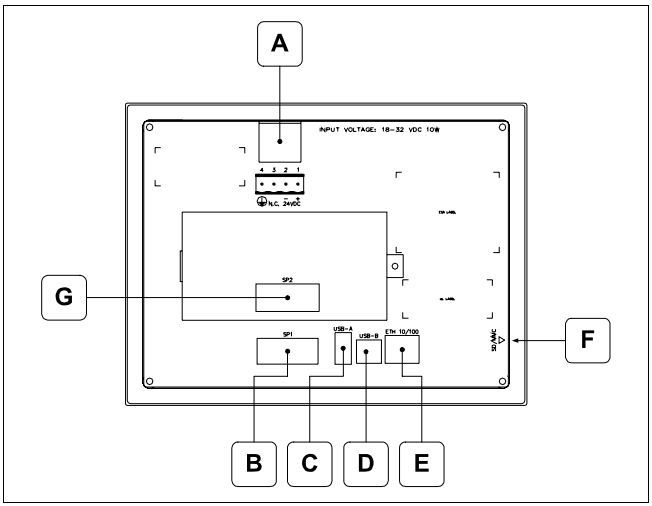
Terminal code	Terminal features					
IT105		X	0	X	X	X
Display						
Type	LCD 16 Shades of blue STN	B				
	LCD 65k Colour STN	S				
	LCD 65k Colour TFT	T				
Format	Graphical	●	●	●	●	●
Resolution [pixels]	320 x 240 (5.7”)	●	●	●	●	●
Visual area dimensions [mm]	115.2 x 86.4	●	●	●	●	●
Adjusting contrast	Software	●	●	●	●	●
	Automatic compensation	●	●	●	●	●
Set characters	TTF Windows ®	●	●	●	●	●
Backlighting						
Type	CCFL Bulb	●	●	●	●	●
Minimum duration at 25°C [hours]	40000	T	●	●	●	●
Minimum duration at 25°C [hours]	45000	B	●	●	●	●
Minimum duration at 25°C [hours]	50000	S	●	●	●	●

Terminal code	Terminal features						
IT105		X	0	X	X	X
System memory						
Ram [Byte]	64M	●	●	●	●	●
Resident Flash Array [Byte]	32M	●	●	●	●	●
Interfaces						
Serial Port SP1	RS232/RS485	●	●	1	●	●
Serial Port SP2	RS232/RS485	●	●	●	1	●
Serial Port COM0	RS232	●	●	5	●	●
USB Host Port	v. 1.1	●	●	●	●	●
USB Device Port	v. 1.1	●	●	●	●	●
Cardbus Slot	Secure Digital	●	●	●	●	●
Clock						
Clock	Hardware (Supercapacitor - Min.72h)	●	●	●	●	●
Networks						
Integrated	Profibus-DP	●	●	●	3	●
	CAN	●	●	●	2	●
	Ethernet 10/100Mbit RJ45	●	●	●	●	●
Technical data						
Power supply	24Vcc (18..32Vcc)					
Power consumption at 24Vcc	10W					
Protective fuse	Ø5x20mm - 800mA Rapido F					
Level of protection	IP65 (Frontale)					
Working temperature	0..50°C					
Storage and transport temperature	-20..+60°C					
Humidity (without condensation)	<85%					
Weight	1400gr					
Dimensions						
External L x H x D [mm]	210.9 x 158.6 x 42.8 (61.5 with 2 serial ports)					
Holes L x H [mm]	192 x 140					
Certification						
Marks and validations	CE, cULus					

Front .

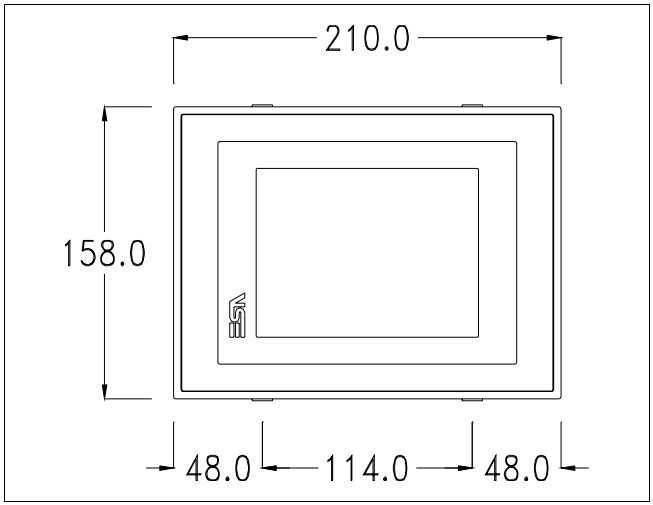


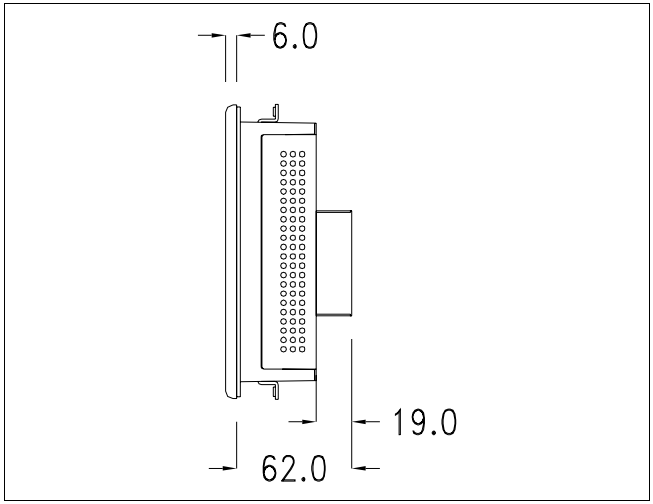
Rear

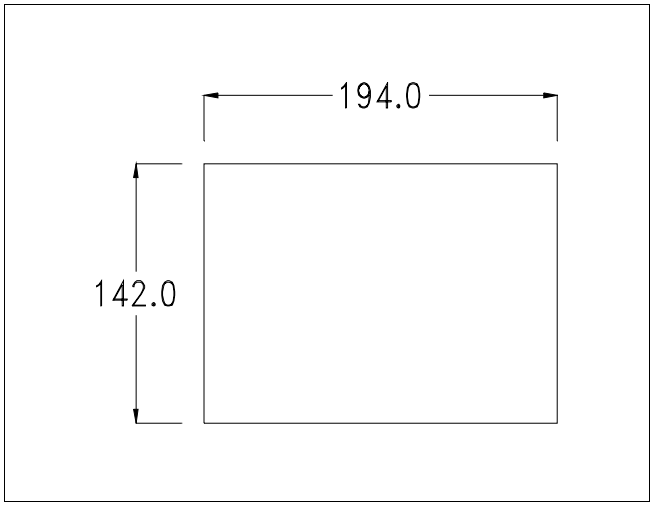


Position	Function
A	Power supply connector
B	IT105x x1xx SP1 serial port for communication with PLC/PC IT105x x5xx COM0 serial port for communication with PLC/PC
C	USB-A Host Port
D	USB-B Device Port
E	Ethernet 10/100 Base-T Port for connection to any network with standard TCP/IP protocol
F	Slot for additional secure digital memory card.
G	IT105x xx1x SP2 serial port for communication with PLC/PC IT105x xx2x CAN Port IT105x xx3x Profibus-DP Port

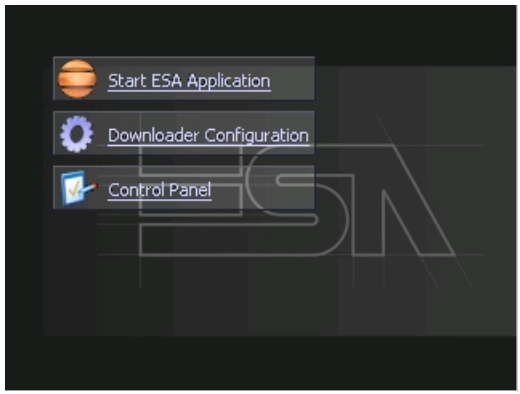
Dimensions and cutout



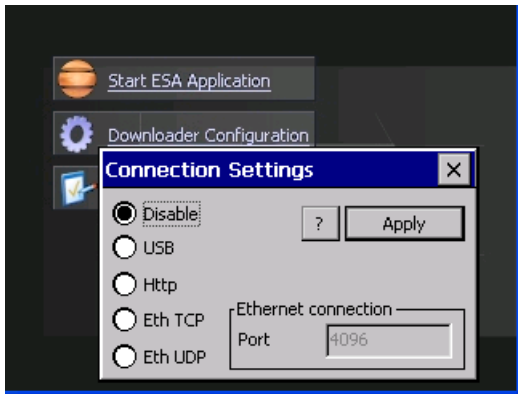



194.0
142.0

Service page



Service page to which access is gained by inserting a button in the project (exit runtime).
- Start ESA Application performs the project runtime
- Download configuration opens the download configuration
- Control Panel opens the control panel



By clicking on downloader configurator the connection settings can be configured
- Disable disables the connection with the terminal
- USB enables the USB connection with the terminal
- Http enables the ethernet connection with the terminal through an http protocol
- Eth TCP enable the ethernet connection with the terminal and allows to configure the port (slower but more precise).
- Eth UDP enable the ethernet connection with the terminal and allows to configure the port (faster but less precise).

Control panel

By clicking on each of these icons access is gained to the terminal configuration.

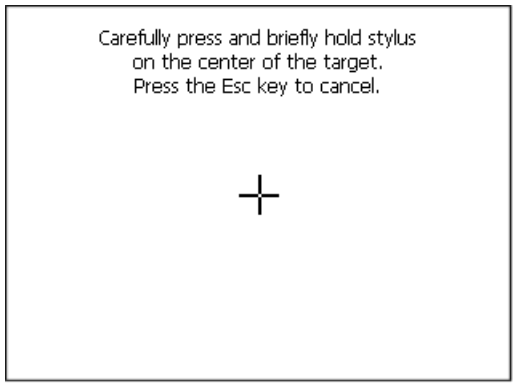
Stylus

The terminal uses a resistant type sensitive glass, for this type of glass to function correctly requires a calibration procedure (the terminal is supplied already calibrated), meaning the resistant area of the glass must be suitable to the visual area of the display.
If it is necessary to repeat the calibration procedure, it is possible to do so by following the instructions below.

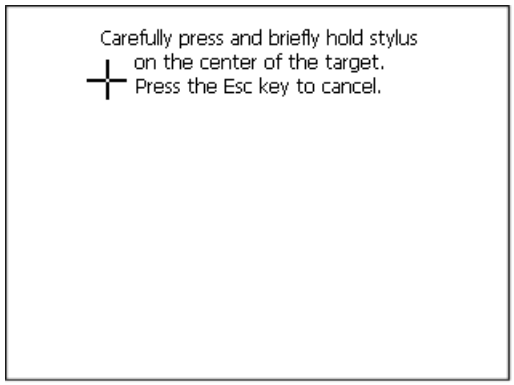
The procedure requires great attention because the precision of the keys' area depends from the calibration.

From the control panel click on the stylus icon and, subsequently, the following screens are displayed on the recalibrate key. Touch the screen near the crosses that appear on the screen.

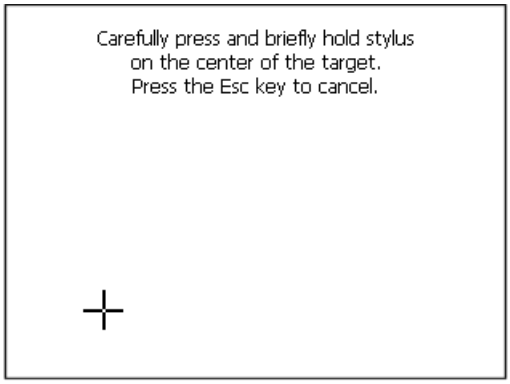
Step 1: touch the screen near the crosses



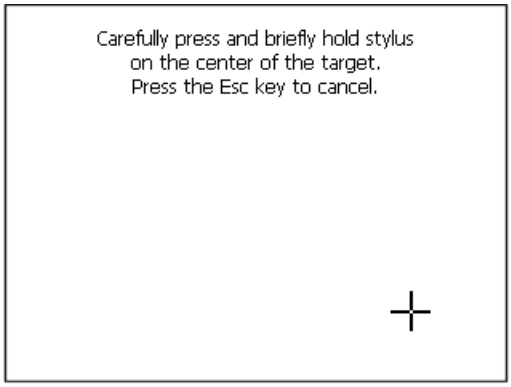
Step 2: touch the screen near the crosses



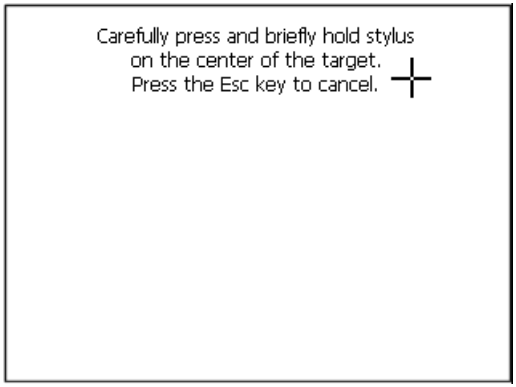
Step 3: touch the screen near the crosses



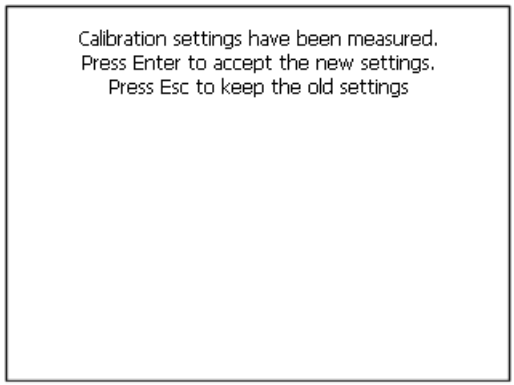
Step 4: touch the screen near the crosses



Step 5: touch the screen near the crosses



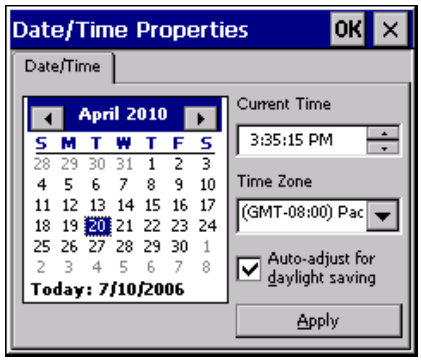
Step 6
Touch any part of the screen to end calibration.



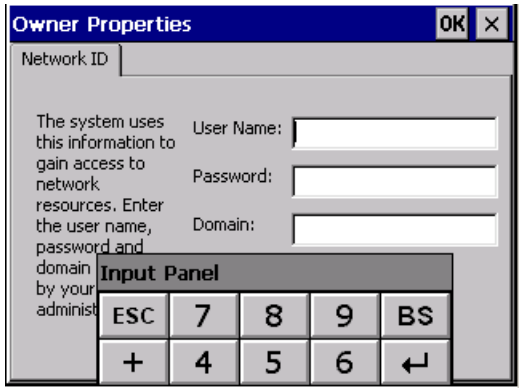
The terminal returns to the initial page. Clicking on ok confirms the calibration.

Date/Time

From here it is possible to amend: date, time and time zone. By enabling the “automatically adjust clock for daylight saving” check, the time is automatically updated at BST or GMT.



Owner

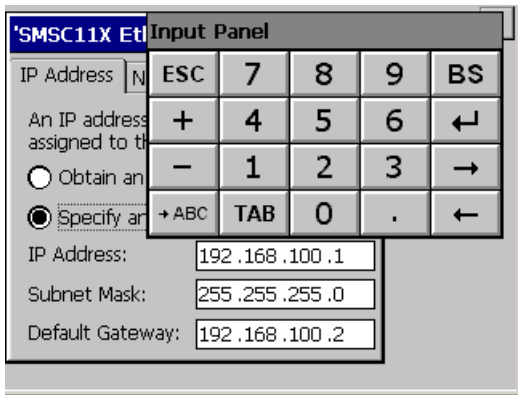


This information is used by Windows CE to access the network resources.
Username: enter the user name to access the network
Password: enter the password to access the network
Domain: enter the domain to access the network

In case the above data is unknown, contact the network administrator.

Network

IP address

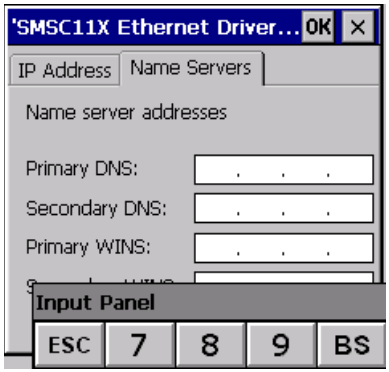


Obtain an IP address via DHCP: by selecting this option, an IP address is automatically obtained (ensure that the DHCP server is enabled on the network)

Specify an IP address: by selecting this option the parameters must be entered manually (IP Address, Subnet Mask, Default Gateway)

In case the above data is unknown, contact the network administrator.

Name servers



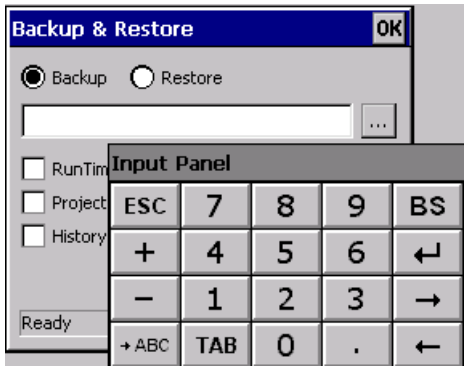
If necessary, the parameters relating to the relative DNS or AL WINS must be entered

In case the above data is unknown, contact the network administrator.

Lamp Saver

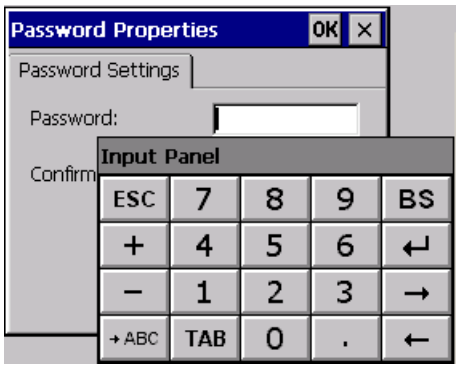
By enabling the Lamp Saver, the lamp switches off after a time set in the Wait box.

Backup



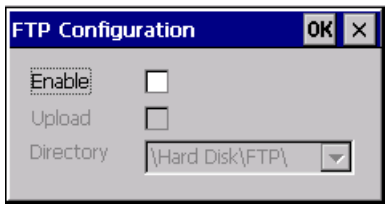
A backup copy of the components chosen through ticking can be made from here: Runtime, Project, History.
It is essential to tick at least one of the components to be exported and choose a path where to save the file.
The restore can be done for all exported components or through ticking, choose the component or components for which restore is to be carried out.

Password



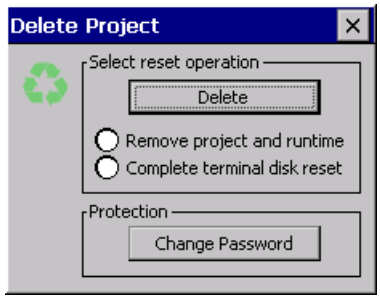
The Password option allows assigning a password to the terminal.
The password is requested (not compulsorily) during the use of the "Remote Desktop" application.

FTP



The “FTP” acronym means “Files Transfer Protocol”. It gives the user the possibility to enable and disable the “FTP Server” service of the panel from any other device (PC,XS,IT,YT) connected to the network.
This function is very useful when it is necessary to write, cancel or modify data on the terminal easily from a remote access.
Selecting the “Enable” option, the “FTP” folder sharing service in the “Hard Disk” directory is enabled :

Reset

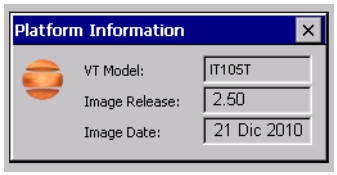


“Reset” is an application of the terminal control panel which allows to cancel all that been transferred onto the Hard Disk.
Selecting the “Enable” option, the “FTP” folder sharing service in the “Hard Disk” directory is enabled.
The user can choose from 2 options :

-“Remove project and runtime” -> choosing this option, both the project and the runtime that have been transferred from Polymath onto the terminal will be cancelled.

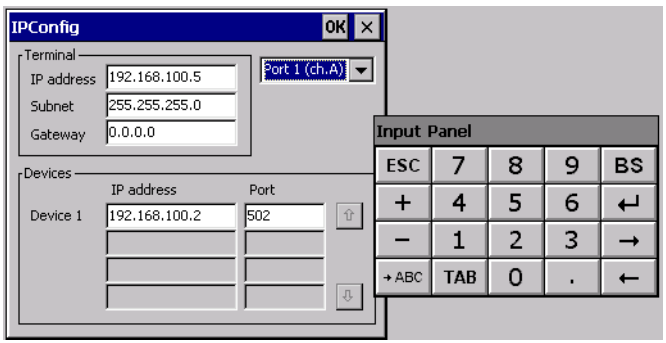
-“Complete terminal disk reset” -> choosing this option, the whole content of the “Hard Disk” folder will be cancelled, with the exception of the files that are essential for operating the terminal.

Information



Information regarding the panel is displayed, which: terminal model, revision of the Windows CE image and the image date.

IP Config



By clicking on the "IP Config" icon, the mask displaying the IP Address of the terminal and IP Address (or IP Addresses) of the devices connected via Ethernet will appear.
The function “IP Config” is useful in that it is possible to change the addresses of the devices without having to use the POLYMATH configuration software (very useful operation during the system's start-up).
By using the appropriate key "Input Panel", the user can carry out any variations to the IP addresses of the devices directly from the ESA terminal.

Contrast (only for IT105S and IT105B terminals)

This allows the user to adjust the contrast.

7. IT105K Video Terminal

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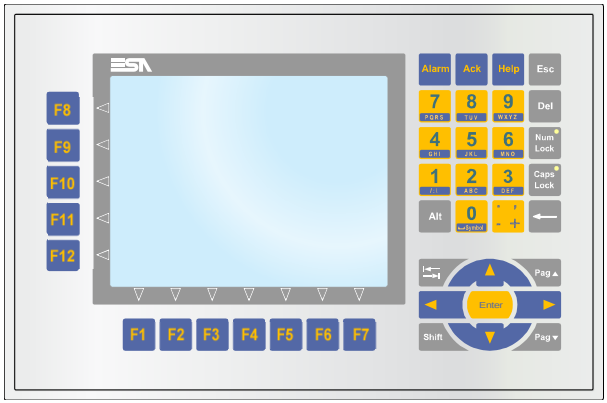
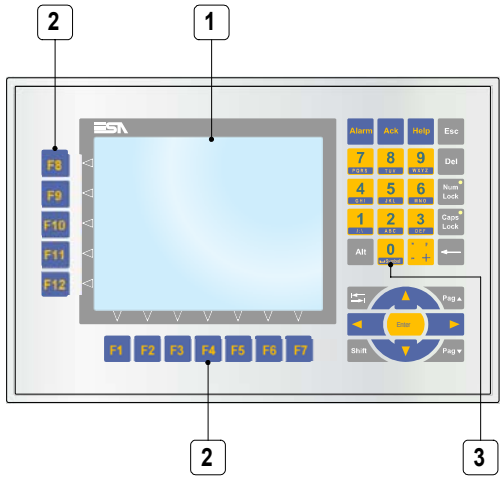


Technical characteristics The table below lists the main technical features of the product in question.

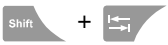
Terminal code	Terminal features					
IT105K		X	0	X	X	X
Display						
Type	LCD 16 Shades of blue STN	B				
	LCD 65k Colour TFT	T				
Format	Graphical	●	●	●	●	●
Resolution [pixels]	320 x 240 (5.7”)	●	●	●	●	●
Visual area dimensions [mm]	115.2 x 86.4	●	●	●	●	●
Adjusting contrast	Software	●	●	●	●	●
	Automatic compensation	●	●	●	●	●
Set characters	TTF Windows ®	●	●	●	●	●
Backlighting						
Type	CCFL Bulb	●	●	●	●	●
Minimum duration at 25°C [hours]	50000	T	●	●	●	●
Minimum duration at 25°C [hours]	35000	B	●	●	●	●
System memory						
Ram [Byte]	64M	●	●	●	●	●
Resident Flash Array [Byte]	32M	●	●	●	●	●

Terminal code	Terminal features						
IT105K		X	0	X	X	X
Interfaces						
Serial Port SP1	RS232/RS485	●	●	1	●	●
Serial Port SP2	RS232/RS485	●	●	●	1	●
Serial Port COM0	RS232	●	●	5	●	●
USB Host Port	v. 1.1	●	●	●	●	●
USB Device Port	v. 1.1	●	●	●	●	●
Cardbus Slot	Secure Digital	●	●	●	●	●
Clock						
Clock	Hardware (Supercapacitor - Min.72h)	●	●	●	●	●
Networks						
Integrated	Profibus-DP	●	●	●	3	●
	CAN	●	●	●	2	●
	Ethernet 10/100Mbit RJ45	●	●	●	●	●
Technical data						
Power supply	24Vcc (18..32Vcc)					
Power consumption at 24Vcc	10W					
Protective fuse	Ø5x20mm - 800mA Rapido F					
Level of protection	IP65 (Frontale)					
Working temperature	0..50°C					
Storage and transport temperature	-20..+60°C					
Humidity (without condensation)	<85%					
Weight	1500gr					
Dimensions						
External L x H x D [mm]	261.2 x 172.4 x 45.6 (64.6 with 2 serial ports)					
Holes L x H [mm]	243.5 x 147					
Certification						
Marks and validations	CE, cULus					

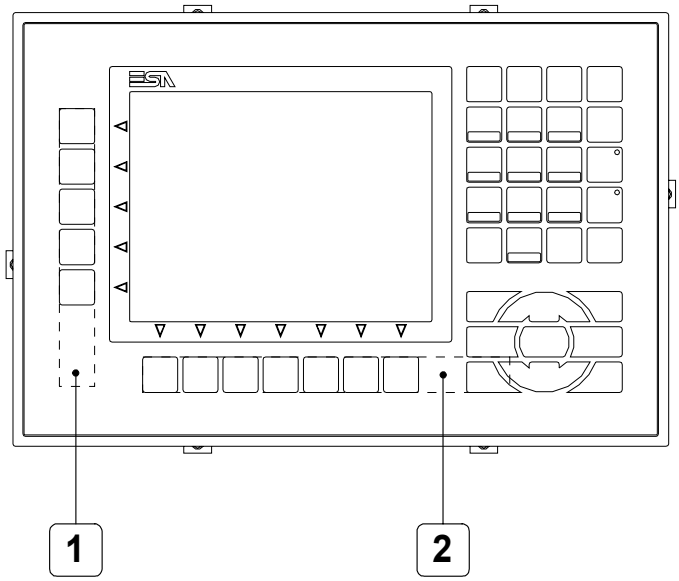
Front



Tasto	Funzione
1	Display
2	F-keys
3	Alphanumeric + operative keys
Enter	Starts input and confirms setting of data
Shift + Enter	Exit runtime
Pag▲	Page up
Pag▼	Page down
Shift + Pag▲	Select the open popup windows
Shift + Pag▼	Select the open popup windows
▲	Moves the cursor between settable fields

Tasto	Funzione
	Moves the cursor between settable fields
	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
	Moves the cursor between settable fields following the tab order
	Moves the cursor between settable fields following the inverse tab order
	No predefined function
	Displays alarm page
	Displays help page
	Acknowledgment of the select alarm on display
	Erase the first character at letf of the cursor
	Erase the first character at right of the cursor
	Quits setting of data
	Close the active popup windows
	When the Num Lock in not activated write the caps letters
	When activated write numbers when is not activated write letters.
	No predefined function
	Insert letters and nubers keys
	When the Num Lock is not activated write the caps letters

Customizing label

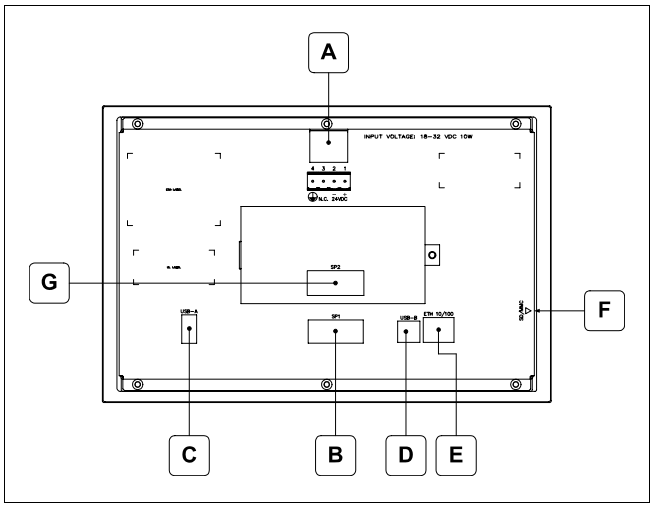


Position	Function - Dimensions L x H (mm)
1	F-key customization F - 160 x 15
2	F-key customization F - 170 x 15

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

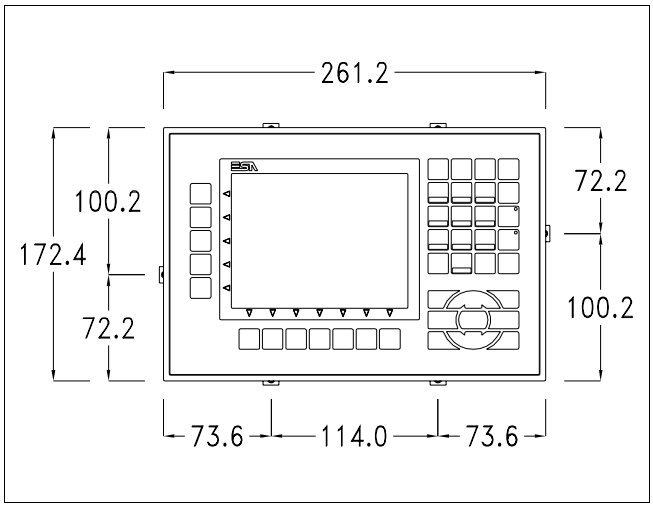
Before starting to insert the customized label, see "Chapter 28 -> Inserting customized labels".

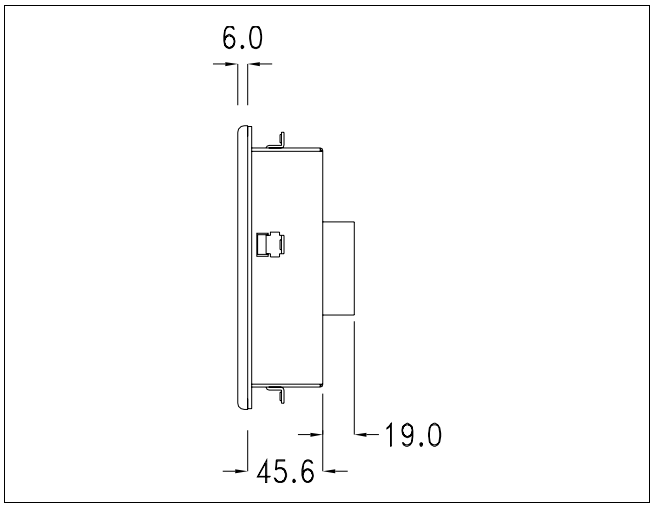
Rear

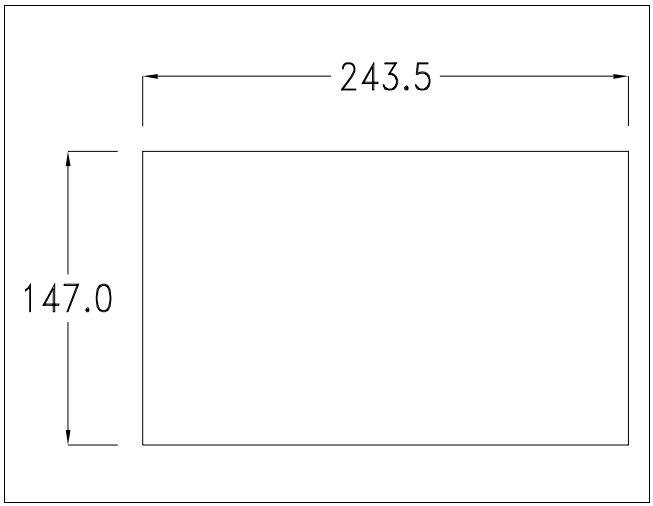


Position	Function
A	Power supply connector
B	IT105xK x1xx SP1 serial port for communication with PLC/PC
C	USB-A Host Port
D	USB-B Device Port
E	Ethernet 10/100 Base-T Port for connection to any network with standard TCP/IP protocol
F	Slot for additional secure digital memory card.
G	IT105xK xx1x SP2 serial port for communication with PLC/PC IT105xK xx2x CAN Port IT105xK xx3x Profibus-DP Port

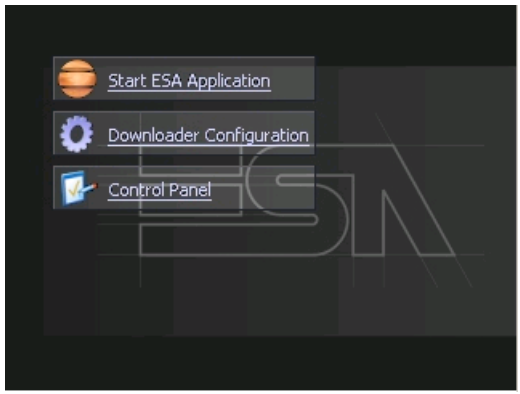
Dimensions and cutout



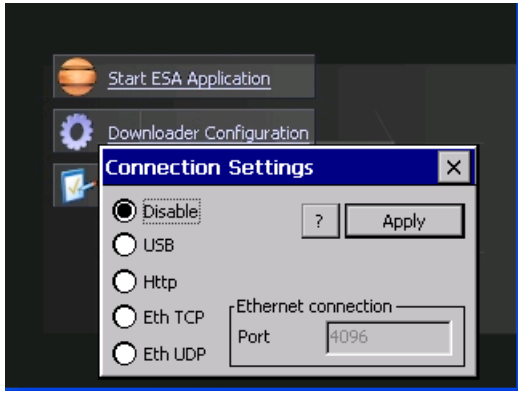



243.5
147.0

Service page



Service page which is accessed by pressing a button in the project (exit runtime).
- Start ESA Application executes the runtime of the project
- Download configuration opens the download configuration
- Control Panel opens the control panel



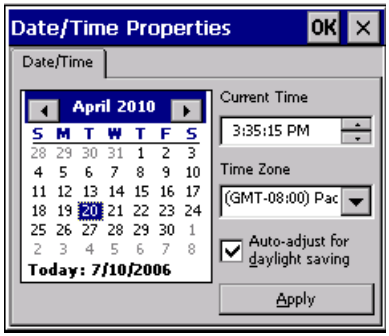
By clicking on downloader configurator the connection settings can be configured
- Disable disables the connection with the terminal
- USB enables the USB connection with the terminal
- Http enables the ethernet connection with the terminal through an http protocol
- Eth TCP enable the ethernet connection with the terminal and allows to configure the port (slower but more precise).
- Eth UDP enable the ethernet connection with the terminal and allows to configure the port (faster but less precise).

Control panel

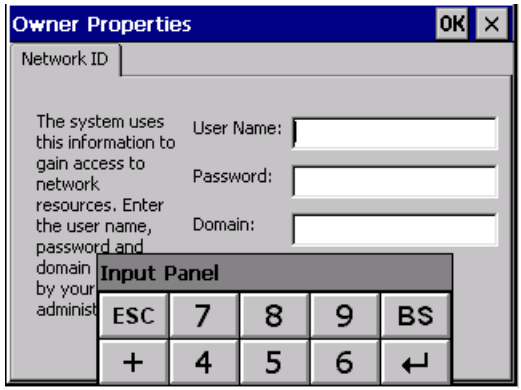
By clicking on each of these icons access is gained to the terminal configuration..

Date / Time

From here it is possible to amend: date, time and time zone. By enabling the “automatically adjust clock for daylight saving” check, the time is automatically updated at BST or GMT.



Owner

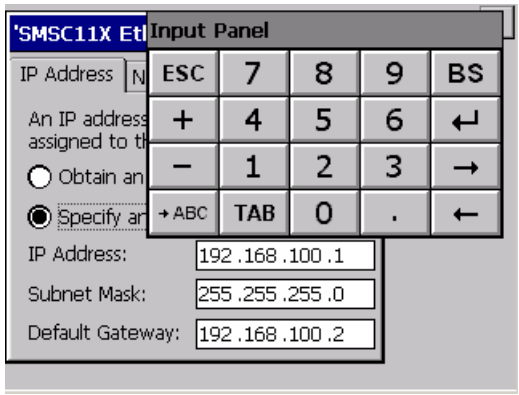


This information is used by Windows CE to access the network resources.
Username: enter the user name to access the network
Password: enter the password to access the network
Domain: enter the domain to access the network

In case the above data is unknown, contact the network administrator.

Network

IP address

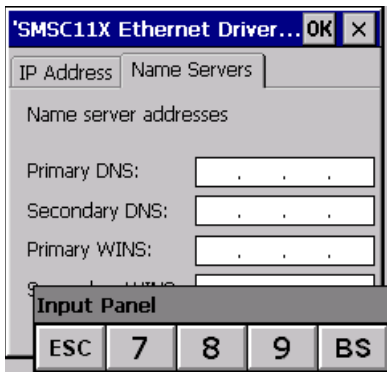


Obtain an IP address via DHCP: by selecting this option, an IP address is automatically obtained (ensure that the DHCP server is enabled on the network)

Specify an IP address: by selecting this option the parameters must be entered manually (IP Address, Subnet Mask, Default Gateway)

In case the above data is unknown, contact the network administrator.

Name servers



If necessary, the parameters relating to the relative DNS or AL WINS must be entered

In case the above data is unknown, contact the network administrator.

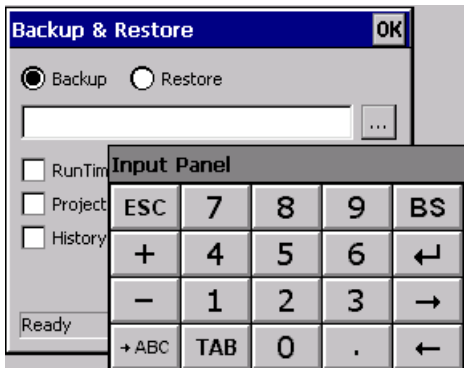
Lamp Saver

By enabling the Lamp Saver, the lamp switches off after a time set in the Wait box.

Brightness

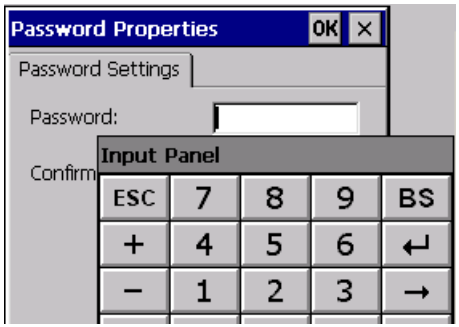
The Brightness allows regulating the brightness of the display lamp.

Backup



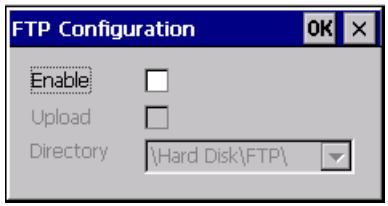
A backup copy of the components chosen through ticking can be made from here: Runtime, Project, History.
It is essential to tick at least one of the components to be exported and choose a path where to save the file.
The restore can be done for all exported components or through ticking, choose the component or components for which restore is to be carried out.

Password



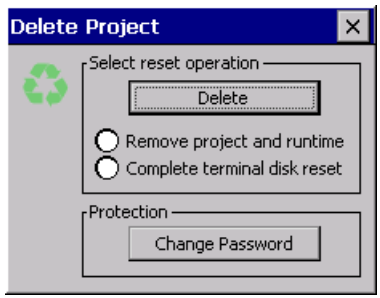
The Password option allows assigning a password to the terminal.
The password is requested (not compulsorily) during the use of the "Remote Desktop" application.

FTP



The “FTP” acronym means “Files Transfer Protocol”. It gives the user the possibility to enable and disable the “FTP Server” service of the panel from any other device (PC,XS,IT,YT) connected to the network.
This function is very useful when it is necessary to write, cancel or modify data on the terminal easily from a remote access.
Selecting the “Enable” option, the “FTP” folder sharing service in the “Hard Disk” directory is enabled :

Reset

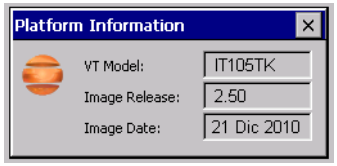


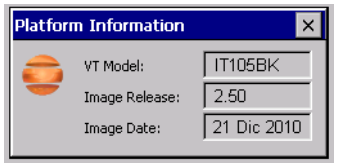
"Reset" is an application of the terminal control panel which allows to cancel all that been transferred onto the Hard Disk. Selecting the "Enable" option, the "FTP" folder sharing service in the "Hard Disk" directory is enabled.
The user can choose from 2 options :

-"Remove project and runtime" -> choosing this option, both the project and the runtime that have been transferred from Polymath onto the terminal will be cancelled.

-"Complete terminal disk reset" -> choosing this option, the whole content of the "Hard Disk" folder will be cancelled, with the exception of the files that are essential for operating the terminal.

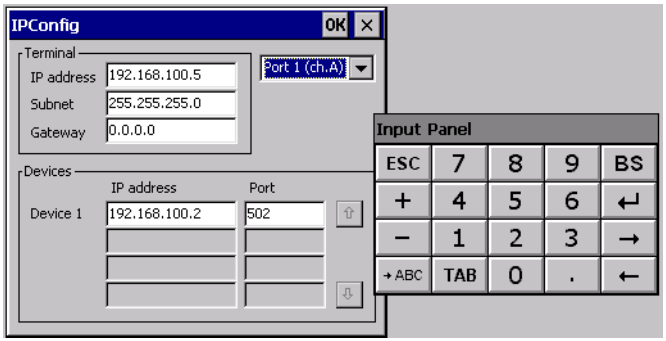
Information





Information regarding the panel is displayed, which: terminal model, revision of the Windows CE image and the image date.

IP Config



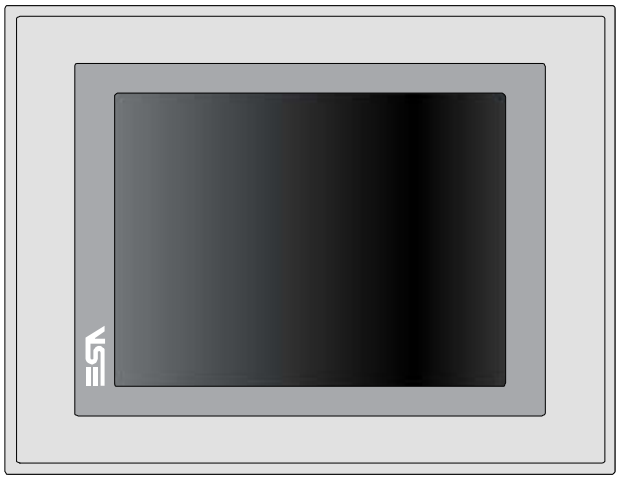
By clicking on the "IP Config" icon, the mask displaying the IP Address of the terminal and IP Address (or IP Addresses) of the devices connected via Ethernet will appear.
The function “IP Config” is useful in that it is possible to change the addresses of the devices without having to use the POLY-MATH configuration software (very useful operation during the system's start-up).
By using the appropriate key "Input Panel", the user can carry out any variations to the IP addresses of the devices directly from the ESA terminal.

Contrast (only for IT105BK terminals)

This allows the user to adjust the contrast.

8. IT107 Video Terminal

.



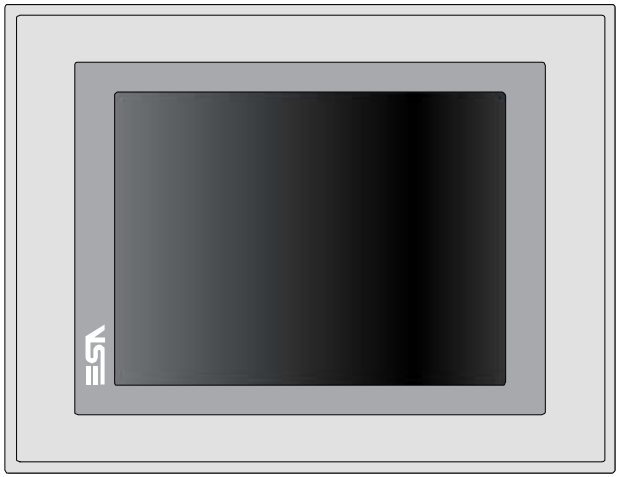
Technical characteristics

The table below lists the main technical features of the product in question.

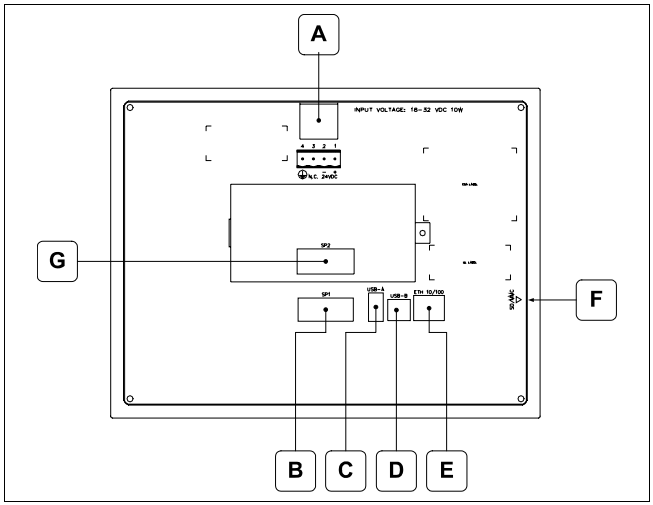
Terminal code	Terminal features					
IT107		X	0	X	X	X
Display						
Type	LCD 65k Colour TFT	T				
Format	Graphical	●	●	●	●	●
Resolution [pixels]	640 x 480 (7,5”)	●	●	●	●	●
Visual area dimensions [mm]	158 x 118	●	●	●	●	●
Adjusting contrast	Software	●	●	●	●	●
	Automatic compensation	●	●	●	●	●
Set characters	TTF Windows ®	●	●	●	●	●
Backlighting						
Type	CCFL Bulb	●	●	●	●	●
Minimum duration at 25°C [hours]	40000	T	●	●	●	●
System memory						
Ram [Byte]	64M	●	●	●	●	●
Resident Flash Array [Byte]	32M	●	●	●	●	●

Terminal code	Terminal features						
IT107		X	0	X	X	X
Interfaces						
Serial Port SP1	RS232/RS485	●	●	1	●	●
Serial Port SP2	RS232/RS485	●	●	●	1	●
Serial Port COM0	RS232	●	●	5	●	●
USB Host Port	v. 1.1	●	●	●	●	●
USB Device Port	v. 1.1	●	●	●	●	●
Cardbus Slot	Secure Digital	●	●	●	●	●
Clock						
Clock	Hardware (Supercapacitor - Min.72h)	●	●	●	●	●
Networks						
Integrated	Profibus-DP	●	●	●	3	●
	CAN	●	●	●	2	●
	Ethernet 10/100Mbit RJ45	●	●	●	●	●
Technical data						
Power supply	24Vcc (18..32Vcc)					
Power consumption at 24Vcc	10W					
Protective fuse	Resetable Polyswitch					
Level of protection	IP65 (Frontal)					
Working temperature	0..50°C					
Storage and transport temperature	-20..+60°C					
Humidity (without condensation)	<85%					
Weight	2000gr					
Dimensions						
External L x H x D [mm]	245,9 x 188,6 x 37,6 (56,6 (with 2 serials)					
Holes L x H [mm]	233 x 176					
Certification						
Marks and validations	CE, cULus					

Front

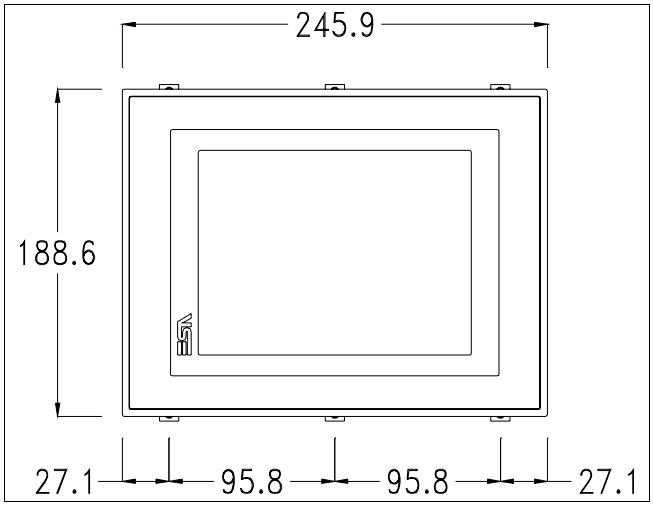


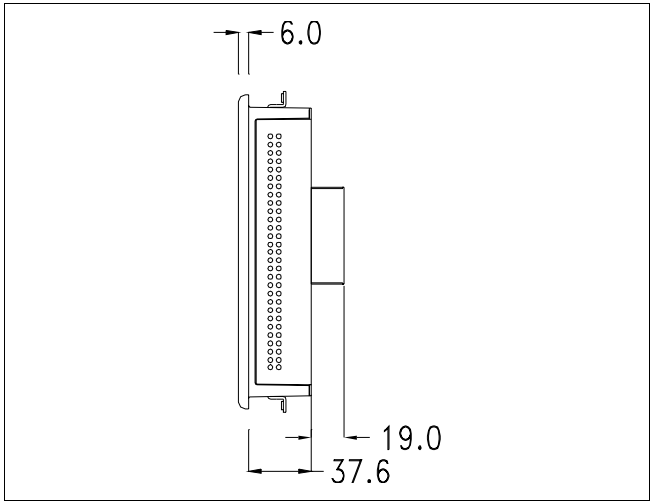
Rear

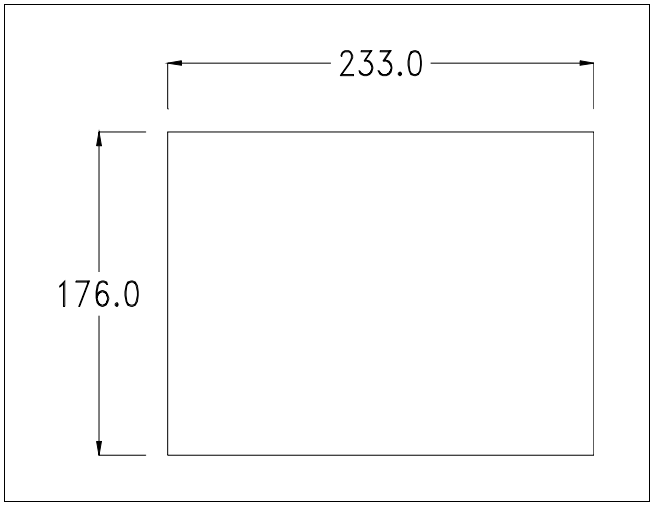


Position	Function
A	Power supply connector
B	IT107x x1xx SP1 serial port for communication with PLC/PC IT107x x5xx COM0 serial port for communication with PLC/PC
C	USB-A Host Port
D	USB-B Device Port
E	Ethernet 10/100 Base-T Port for connection to any network with standard TCP/IP protocol
F	Slot for additional secure digital memory card.
G	IT107x xx1x SP2 serial port for communication with PLC/PC IT107x xx2x CAN Port IT107x xx3x Profibus-DP Port

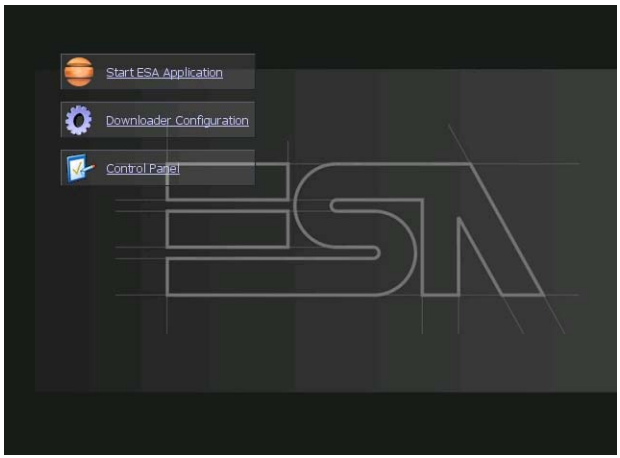
Dimensions and cutout



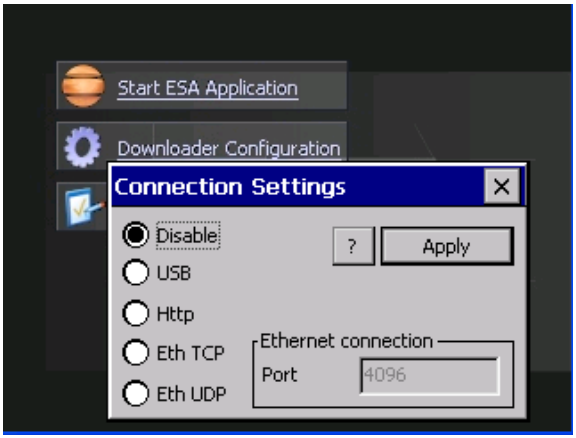



233.0
176.0

Service page



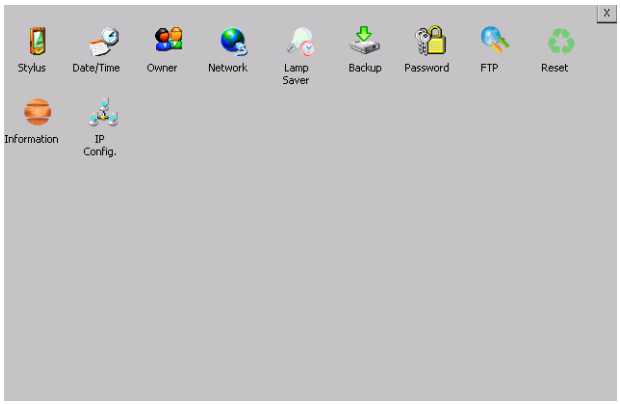
Service page to which access is gained by inserting a button in the project (exit runtime).
- Start ESA Application performs the project runtime
- Download configuration opens the download configuration
- Control Panel opens the control panel



By clicking on downloader configurator the connection settings can be configured
- Disable disables the connection with the terminal
- USB enables the USB connection with the terminal
- Http enables the ethernet connection with the terminal through an http protocol
- Eth TCP enable the ethernet connection with the terminal and allows to configure the port (slower but more precise).

- Eth UDP enable the ethernet connection with the terminal and allows to configure the port (faster but less precise).

Control panel

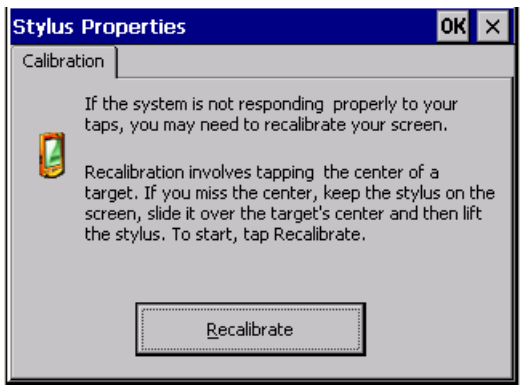


By clicking on each of these icons access is gained to the terminal configuration.

Stylus

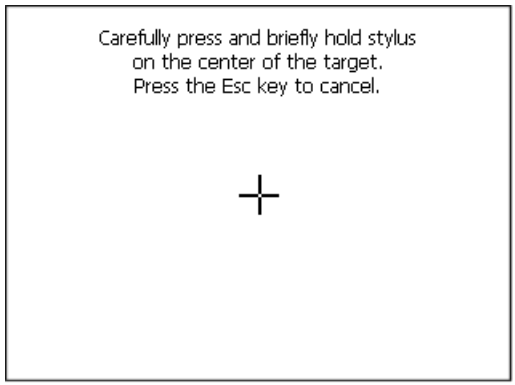
The terminal uses a resistant type sensitive glass, for this type of glass to function correctly requires a calibration procedure (the terminal is supplied already calibrated), meaning the resistant area of the glass must be suitable to the visual area of the display.
If it is necessary to repeat the calibration procedure, it is possible to do so by following the instructions below.

The procedure requires great attention because the precision of the keys' area depends from the calibration.

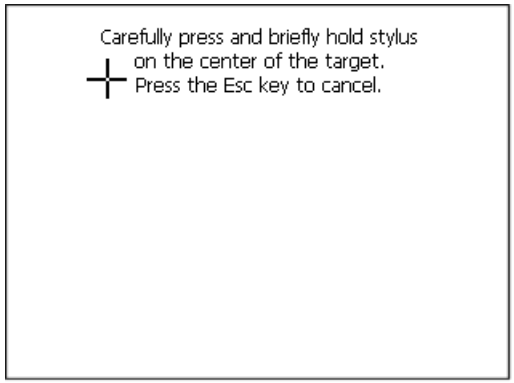


From the control panel click on the stylus icon and, subsequently, the following screens are displayed on the recalibrate key. Touch the screen near the crosses that appear on the screen..

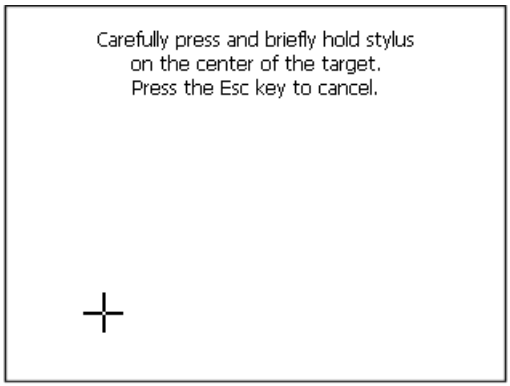
Step 1: touch the screen near the crosses



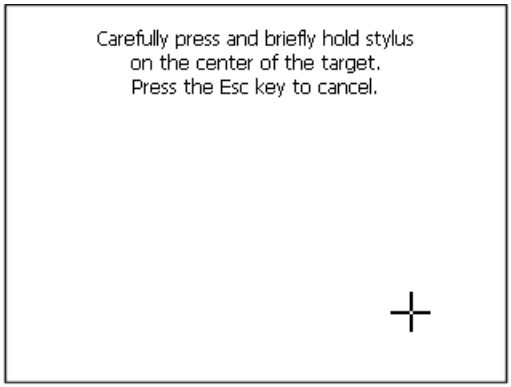
Step 2: touch the screen near the crosses



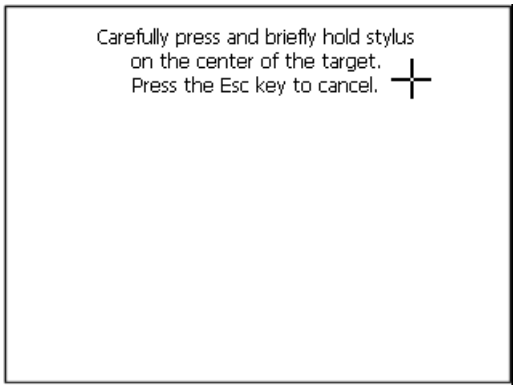
Step 3: touch the screen near the crosses



Step 4: touch the screen near the crosses



Step 5: touch the screen near the crosses

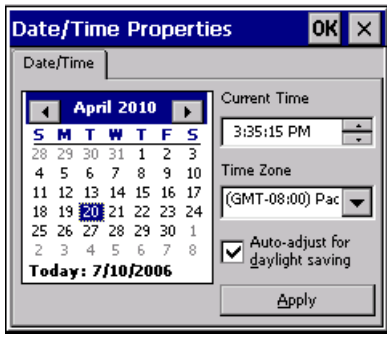


Step 6: Touch any part of the screen to end calibration.

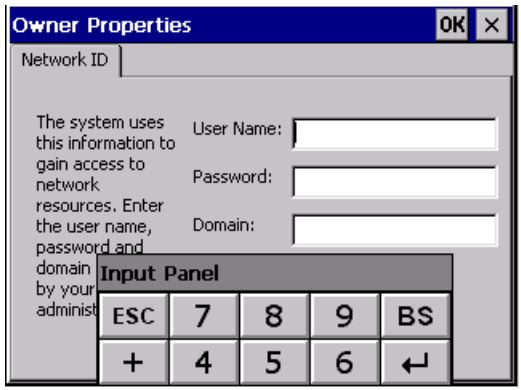
The terminal returns to the initial page, by clicking on ok calibration is confirmed.

Date/Time

From here it is possible to amend: date, time and time zone. By enabling the “automatically adjust clock for daylight saving” check, the time is automatically updated at BST or GMT.



Owner

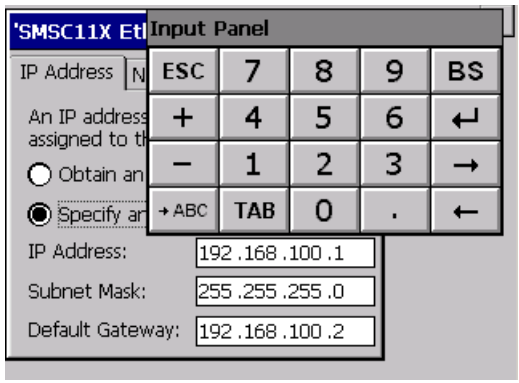


This information is used by Windows CE to access the network resources.
Username: enter the user name to access the network
Password: enter the password to access the network
Domain: enter the domain to access the network

In case the above data is unknown, contact the network administrator.

Network

IP address

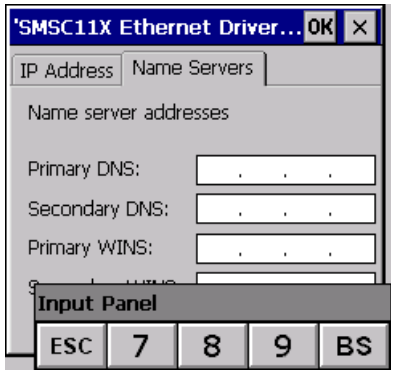


Obtain an IP address via DHCP: by selecting this option, an IP address is automatically obtained (ensure that the DHCP server is enabled on the network)

Specify an IP address: by selecting this option the parameters must be entered manually (IP Address, Subnet Mask, Default Gateway)

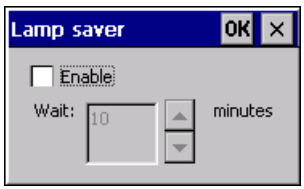
In case the above data is unknown, contact the network administrator.

Name servers



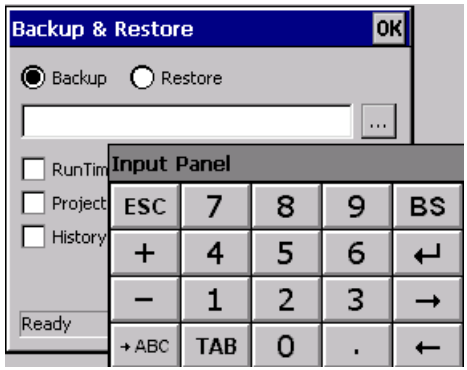
If necessary, the parameters relating to the relative DNS or AL WINS must be entered
In case the above data is unknown, contact the network administrator.

Lamp Saver



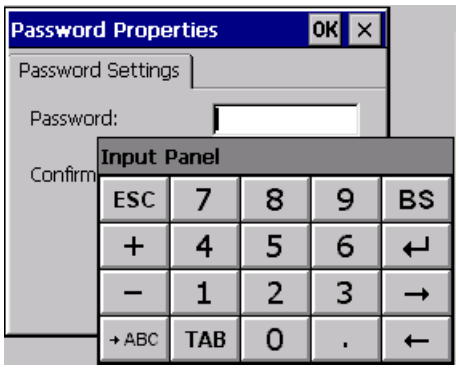
By enabling the Lamp Saver, the lamp switches off after a time set in the Wait box.

Backup



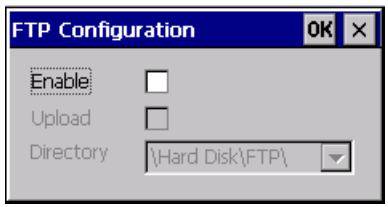
A backup copy of the components chosen through ticking can be made from here: Runtime, Project, History.
It is essential to tick at least one of the components to be exported and choose a path where to save the file.
The restore can be done for all exported components or through ticking, choose the component or components for which restore is to be carried out.

Password



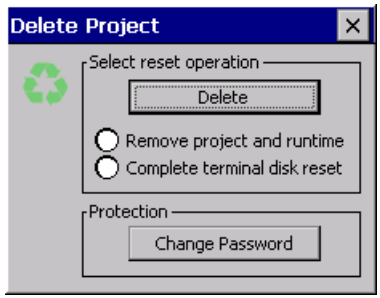
The Password option allows assigning a password to the terminal.
The password is requested (not compulsorily) during the use of the "Remote Desktop" application.

FTP



The “FTP” acronym means “Files Transfer Protocol”. It gives the user the possibility to enable and disable the “FTP Server” service of the panel from any other device (PC,XS,IT,YT) connected to the network.
This function is very useful when it is necessary to write, cancel or modify data on the terminal easily from a remote access.
Selecting the “Enable” option, the “FTP” folder sharing service in the “Hard Disk” directory is enabled :

Reset

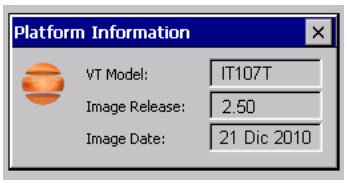


“Reset” is an application of the terminal control panel which allows to cancel all that been transferred onto the Hard Disk.
Selecting the “Enable” option, the “FTP” folder sharing service in the “Hard Disk” directory is enabled.
The user can choose from 2 options :

-“Remove project and runtime” -> choosing this option, both the project and the runtime that have been transferred from Polymath onto the terminal will be cancelled.

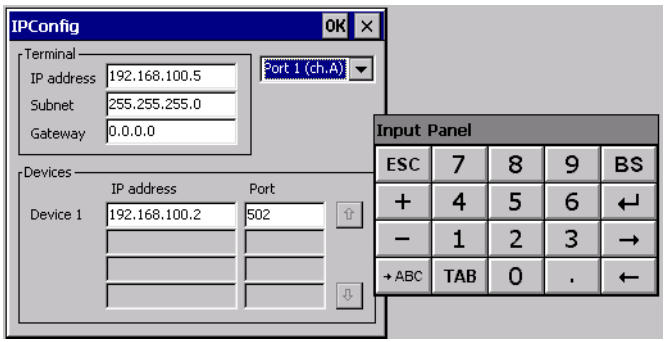
-“Complete terminal disk reset” -> choosing this option, the whole content of the “Hard Disk” folder will be cancelled, with the exception of the files that are essential for operating the terminal.

Information



Information regarding the panel is displayed, which: terminal model, revision of the Windows CE image and the image date.

IP Config



By clicking on the "IP Config" icon, the mask displaying the IP Address of the terminal and IP Address (or IP Addresses) of the devices connected via Ethernet will appear.
The function “IP Config” is useful in that it is possible to change the addresses of the devices without having to use the POLYMATH configuration software (very useful operation during the system's start-up).
By using the appropriate key "Input Panel", the user can carry out any variations to the IP addresses of the devices directly from the ESA terminal.

9. IT107 Wide Video Terminal

Technical characteristics

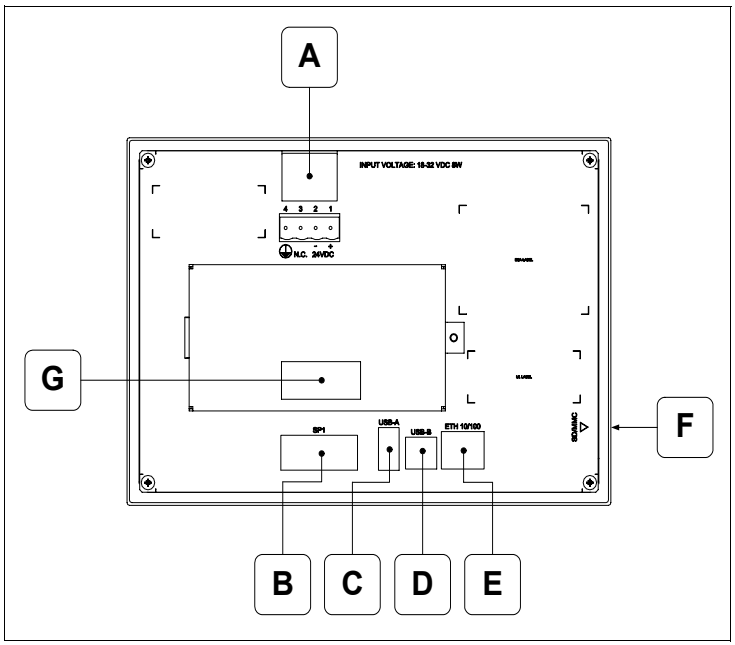
The table below lists the main technical features of the product in question.

Terminal code	Terminal features					
IT107W		X	0	X	X	X
Display						
Type	Graphic LCD 65k Colors TFT	T				
Format	Graphical	●	●	●	●	●
Resolution [pixels]	800 x 480 (7")	●	●	●	●	●
Visual area dimensions [mm]	152 x 91	●	●	●	●	●
Adjusting contrast	Software	●	●	●	●	●
	From Display	●	●	●	●	●
Set characters	TTF Windows ®	●	●	●	●	●
Backlighting						
Type	White LED backlight	●	●	●	●	●
Minimum duration at 25°C [hours]	50.000	T	●	●	●	●
System memory						
Ram [Byte]	64M	●	●	●	●	●
Resident Flash Array [Byte]	32M	●	●	●	●	●
Interfaces						
Serial Port SP1	RS232/RS485	●	●	1	●	●

Terminal code	Terminal features					
IT107W		X	0	X	X	X
Serial Port SP2	RS232/RS485	●	●	●	1	●
USB Host Port	1 x v 1.1	●	●	●	●	●
USB Device Port	1 x v 1.1	●	●	●	●	●
Cardbus Slot	Secure Digital	●	●	●	●	●
Clock						
Clock	Hardware (Supercapacitor - Min.72h)	●	●	●	●	●
Networks						
Integrated	Profibus-DP	●	●	●	3	●
	CAN	●	●	●	2	●
	Ethernet 10/100Mbit RJ45	●	●	●	●	●
Technical data						
Power supply	24Vcc (18..32Vcc)					
Power consumption at 24Vcc	~ 8 W					
Protective fuse	Resetable Polyswitch					
Level of protection	IP65 (Frontal)					
Working temperature	0..50°C					
Storage and transport temperature	-20..+60°C					
Humidity (without condensation)	<85%					
Weight (Kg)	~ 1,6					
Dimensions						
External L x H x D [mm]	202 x 142 x 39,2 (SP1) 58,2 (SP1-SP2)					
Holes L x H [mm]	194 x 134					
Certification						
Marks and validations	CE, cULus, ATEX EX II – 3 G D					

Front

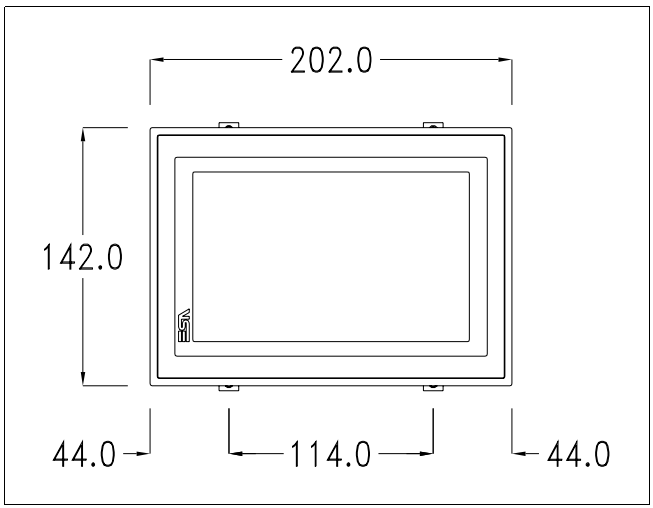
Rear

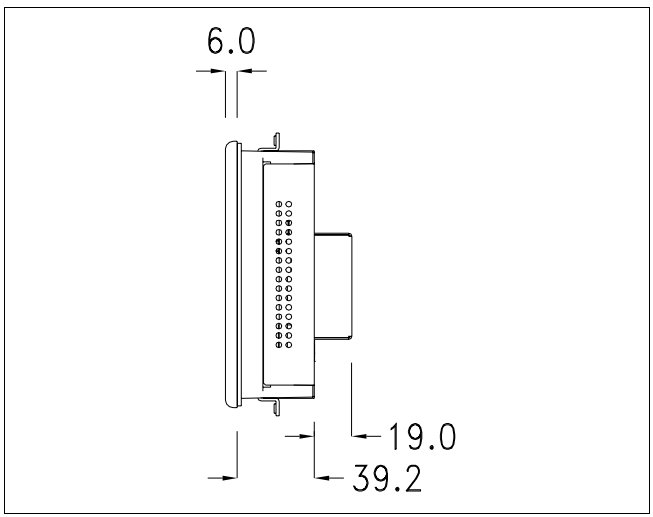


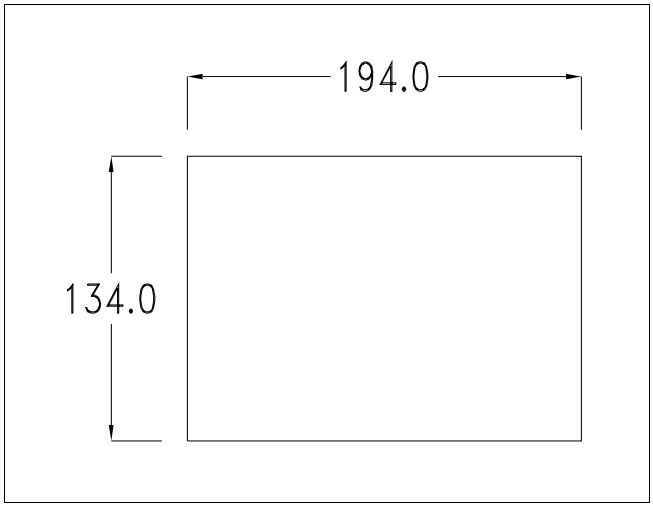
Position	Function
A	Power supply connector
B	IT107x x1xx SP1 serial port for communication with PLC/PC
C	USB-A Host Port
D	USB-B Device Port
E	Ethernet 10/100 Base-T Port for connection to any network with standard TCP/IP protocol
F	Slot for additional secure digital memory card.

Position	Function
G	IT107x xx1x SP2 serial port for communication with PLC/PC IT107x xx2x CAN Port IT107x xx3x Profibus-DP Port

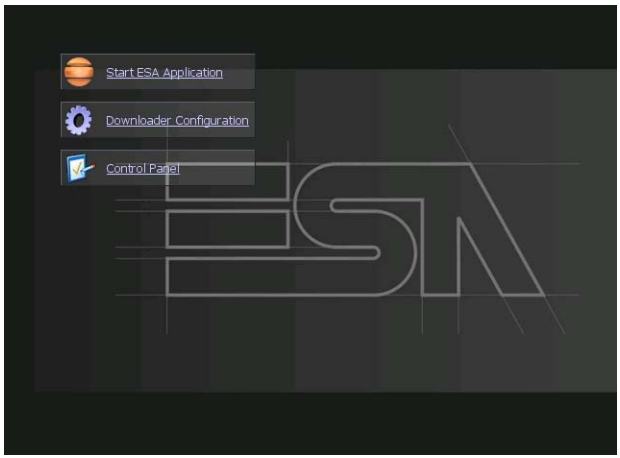
Dimensions and cutout



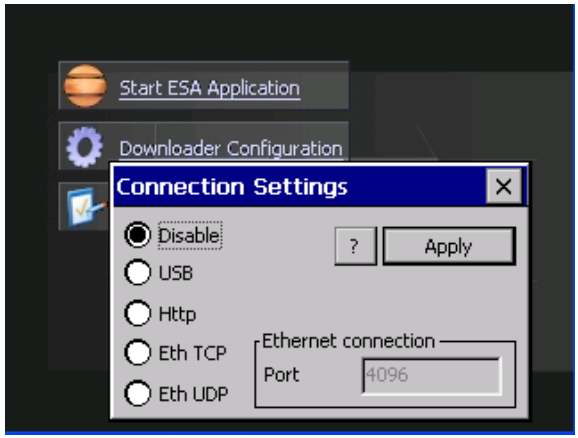



194.0
134.0

Service page



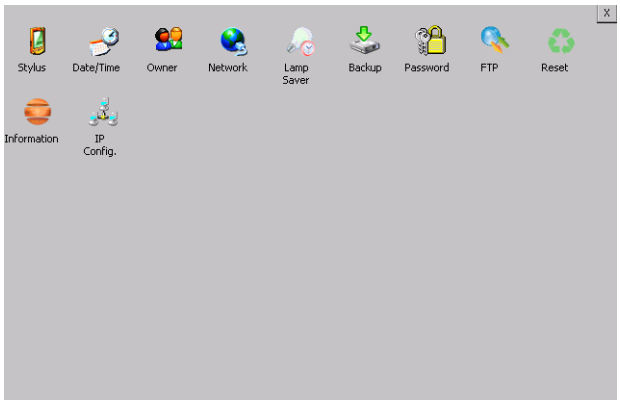
Service page to which access is gained by inserting a button in the project (exit runtime).
- Start ESA Application performs the project runtime
- Download configuration opens the download configuration
- Control Panel opens the control panel



By clicking on downloader configurator the connection settings can be configured
- Disable disables the connection with the terminal
- USB enables the USB connection with the terminal
- Http enables the ethernet connection with the terminal through an http protocol
- Eth TCP enable the ethernet connection with the terminal and allows to configure the port (slower but more precise).

- Eth UDP enable the ethernet connection with the terminal and allows to configure the port (faster but less precise).

Control panel

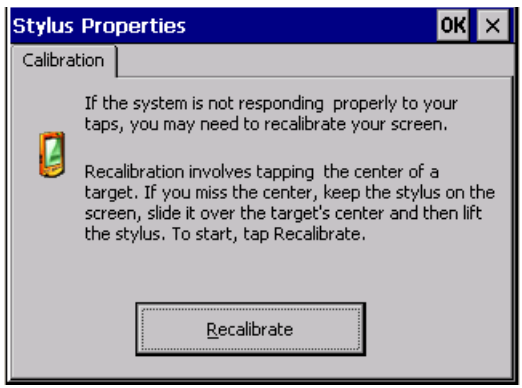


By clicking on each of these icons access is gained to the terminal configuration.

Stylus

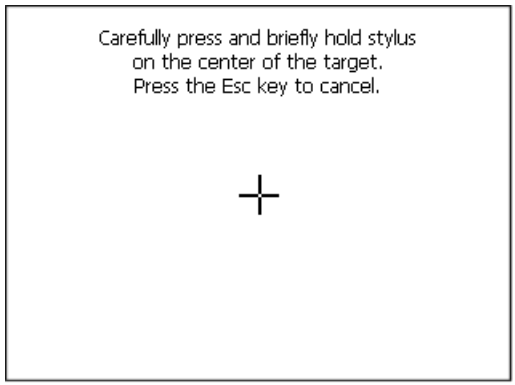
The terminal uses a resistant type sensitive glass, for this type of glass to function correctly requires a calibration procedure (the terminal is supplied already calibrated), meaning the resistant area of the glass must be suitable to the visual area of the display.
If it is necessary to repeat the calibration procedure, it is possible to do so by following the instructions below.

The procedure requires great attention because the precision of the keys' area depends from the calibration.

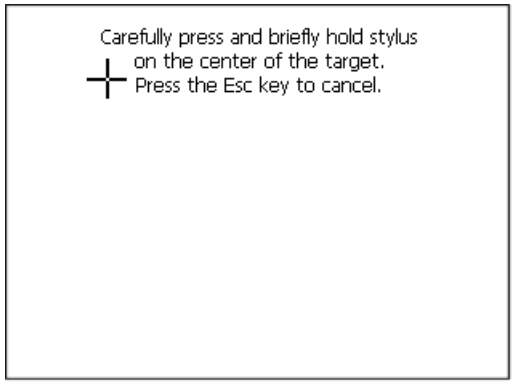


From the control panel click on the stylus icon and, subsequently, the following screens are displayed on the recalibrate key. Touch the screen near the crosses that appear on the screen..

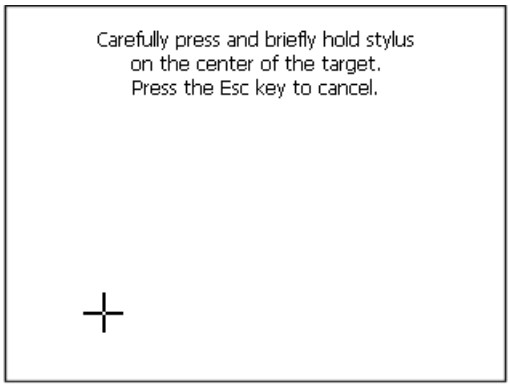
Step 1: touch the screen near the crosses



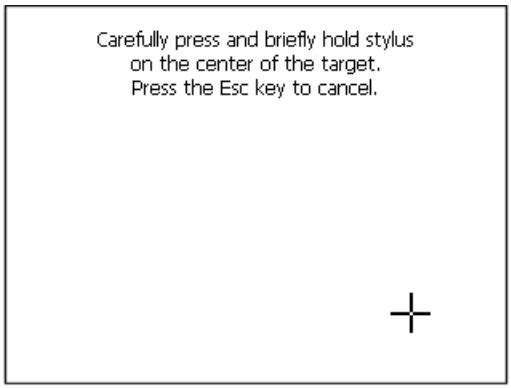
Step 2: touch the screen near the crosses



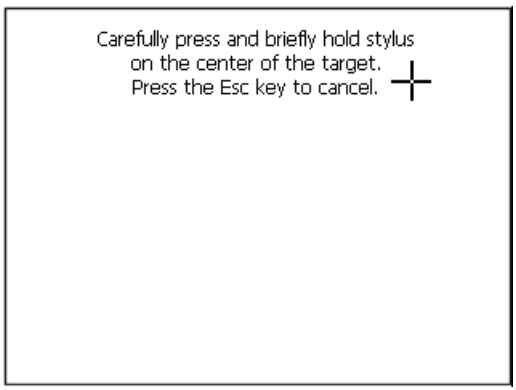
Step 3: touch the screen near the crosses



Step 4: touch the screen near the crosses



Step 5: touch the screen near the crosses



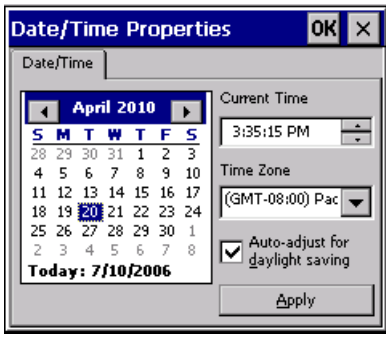
Step 6: Touch any part of the screen to end calibration.

The terminal returns to the initial page, by clicking on ok calibration is confirmed.

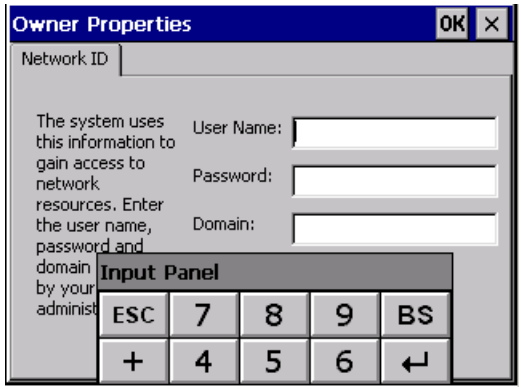
Date/Time

From here it is possible to amend: date, time and time zone. By enabling the “automatically adjust clock for daylight saving” check, the time is automatically updated at BST or GMT.

.



Owner

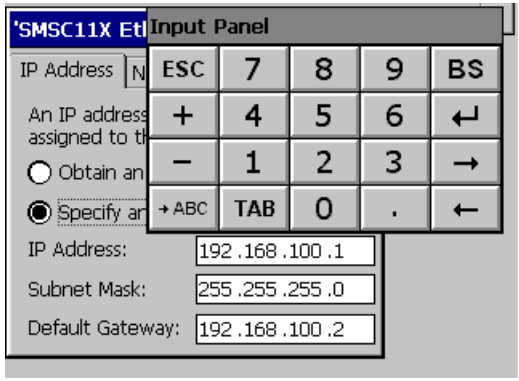


This information is used by Windows CE to access the network resources.
Username: enter the user name to access the network
Password: enter the password to access the network
Domain: enter the domain to access the network

In case the above data is unknown, contact the network administrator.

Network

IP address

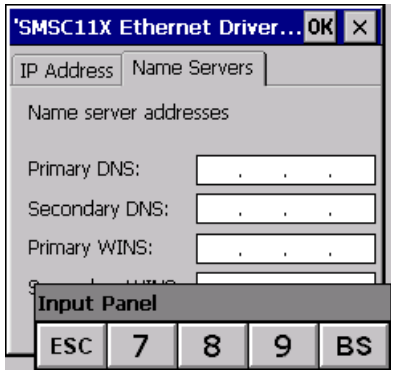


Obtain an IP address via DHCP: by selecting this option, an IP address is automatically obtained (ensure that the DHCP server is enabled on the network)

Specify an IP address: by selecting this option the parameters must be entered manually (IP Address, Subnet Mask, Default Gateway)

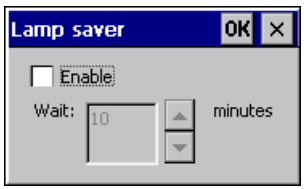
In case the above data is unknown, contact the network administrator.

Name servers



If necessary, the parameters relating to the relative DNS or AL WINS must be entered
In case the above data is unknown, contact the network administrator.

Lamp Saver

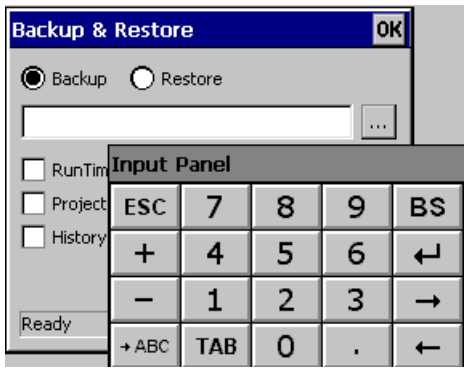


By enabling the Lamp Saver, the lamp switches off after a time set in the Wait box.

Brightness

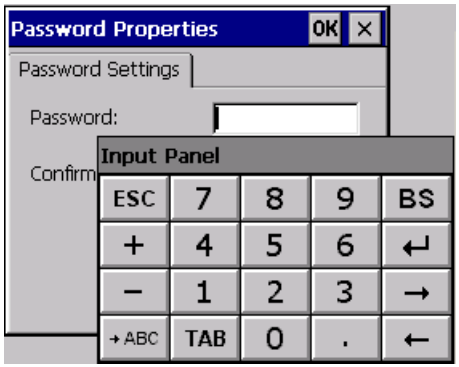
The Brightness allows regulating the brightness of the display lamp.

Backup



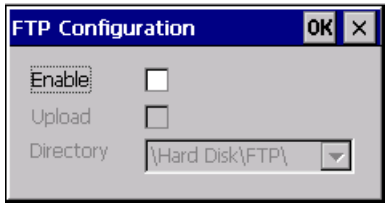
A backup copy of the components chosen through ticking can be made from here: Runtime, Project, History.
It is essential to tick at least one of the components to be exported and choose a path where to save the file.
The restore can be done for all exported components or through ticking, choose the component or components for which restore is to be carried out.

Password



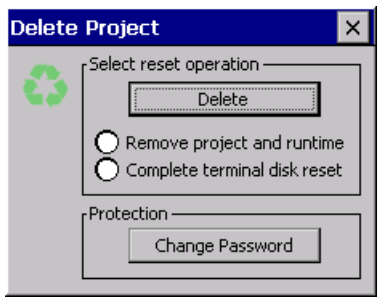
The Password option allows assigning a password to the terminal.
The password is requested (not compulsorily) during the use of the "Remote Desktop" application.

FTP



The “FTP” acronym means “Files Transfer Protocol”. It gives the user the possibility to enable and disable the “FTP Server” service of the panel from any other device (PC,XS,IT,YT) connected to the network.
This function is very useful when it is necessary to write, cancel or modify data on the terminal easily from a remote access.
Selecting the “Enable” option, the “FTP” folder sharing service in the “Hard Disk” directory is enabled :

Reset

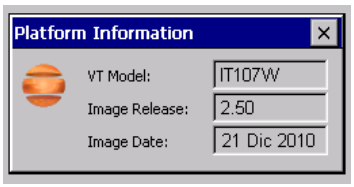


"Reset" is an application of the terminal control panel which allows to cancel all that been transferred onto the Hard Disk. Selecting the "Enable" option, the "FTP" folder sharing service in the "Hard Disk" directory is enabled.
The user can choose from 2 options :

-"Remove project and runtime" -> choosing this option, both the project and the runtime that have been transferred from Polymath onto the terminal will be cancelled.

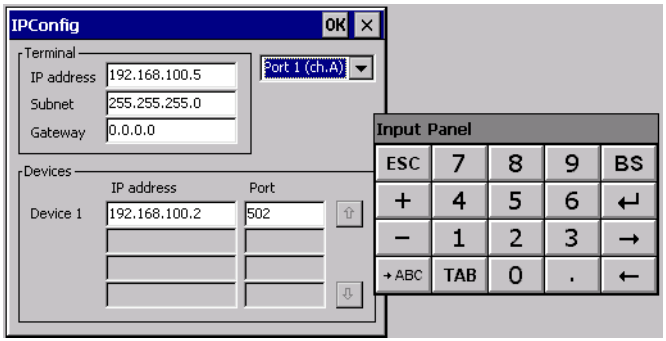
-"Complete terminal disk reset" -> choosing this option, the whole content of the "Hard Disk" folder will be cancelled, with the exception of the files that are essential for operating the terminal.

Information



Information regarding the panel is displayed, which: terminal model, revision of the Windows CE image and the image date.

IP Config



By clicking on the "IP Config" icon, the mask displaying the IP Address of the terminal and IP Address (or IP Addresses) of the devices connected via Ethernet will appear.
The function “IP Config” is useful in that it is possible to change the addresses of the devices without having to use the POLYMATH configuration software (very useful operation during the system's start-up).
By using the appropriate key "Input Panel", the user can carry out any variations to the IP addresses of the devices directly from the ESA terminal.

10. SC207A Video Terminal

Technical characteristics

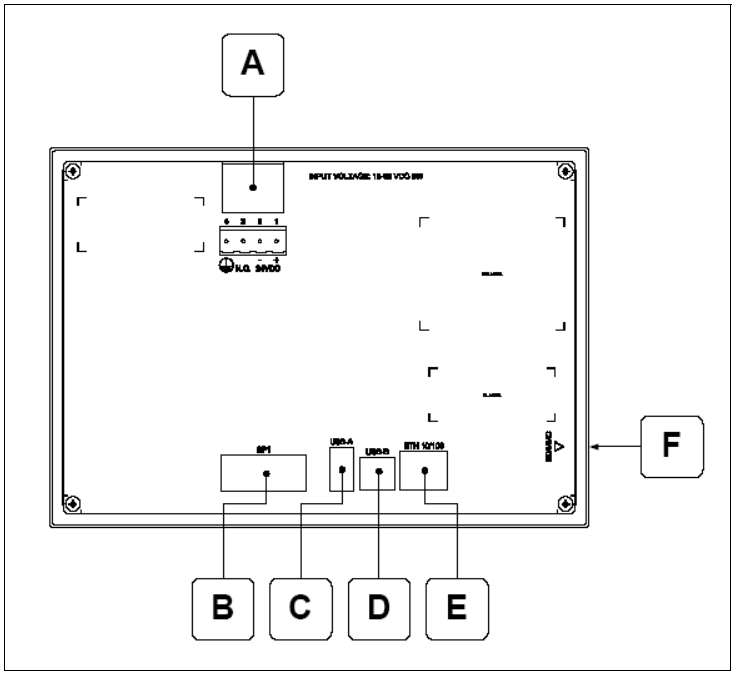
The table below lists the main technical features of the product in question.

Terminal code	Terminal features					
ST207		X	0	X	X	X
Display						
Type	Graphic LCD 65k Colors TFT	T				
Format	Graphical	●	●	●	●	●
Resolution [pixels]	800 x 480 (7")	●	●	●	●	●
Visual area dimensions [mm]	152 x 91	●	●	●	●	●
Adjusting contrast	Software	●	●	●	●	●
	From Display	●	●	●	●	●
Set characters	TTF Windows ®	●	●	●	●	●
Backlighting						
Type	White LED backlight	●	●	●	●	●
Minimum duration at 25°C [hours]	50.000	T	●	●	●	●
System memory						
Ram [Byte]	64M	●	●	●	●	●
Resident Flash Array [Byte]	32M	●	●	●	●	●
Interfaces						
Serial Port SP1	RS232/RS485	●	●	1	●	●

Terminal code	Terminal features						
ST207		X	0	X	X	X
USB Host Port	1 x v 1.1	●	●	●	●	●
USB Device Port	1 x v 1.1	●	●	●	●	●
Cardbus Slot	Secure Digital	●	●	●	●	●
Clock						
Clock	Hardware (Supercapacitor - Min.72h)	●	●	●	●	●
Networks						
Integratad	Ethernet1 10/100Mbit RJ45	●	●	●	●	●
Technical data						
Power supply	24Vcc (18..32Vcc)					
Power consumption at 24Vcc	~ 8 W					
Protective fuse	Resetable Polyswitch					
Level of protection	IP65 (Frontal)					
Working temperature	0..50°C					
Storage and transport temperature	-20..+60°C					
Humidity (without condensation)	<85%					
Weight (Kg)	~ 1,6					
Dimensions						
External L x H x D [mm]	202 x 142 x 39,2 (SP1)					
Holes L x H [mm]	194 x 134					
Certification						
Marks and validations	CE,					

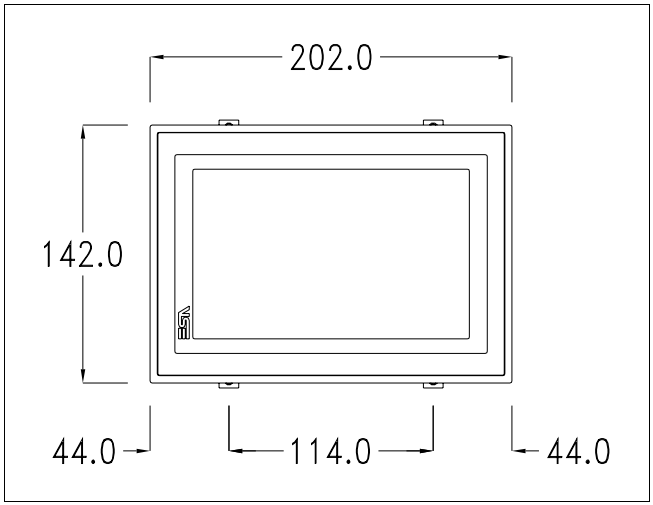
Front

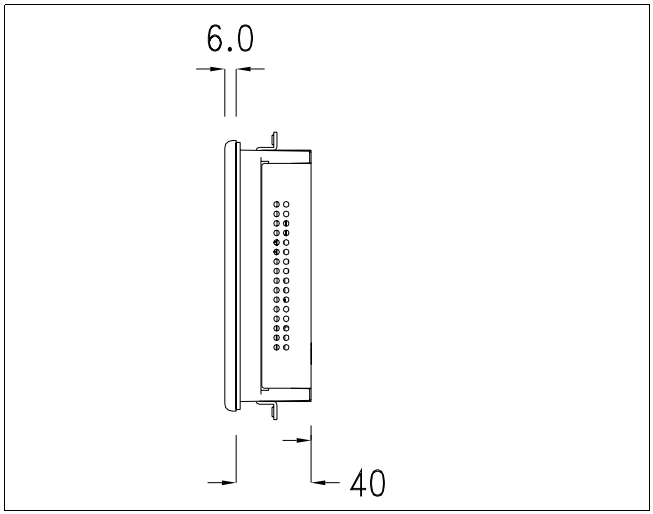
Rear

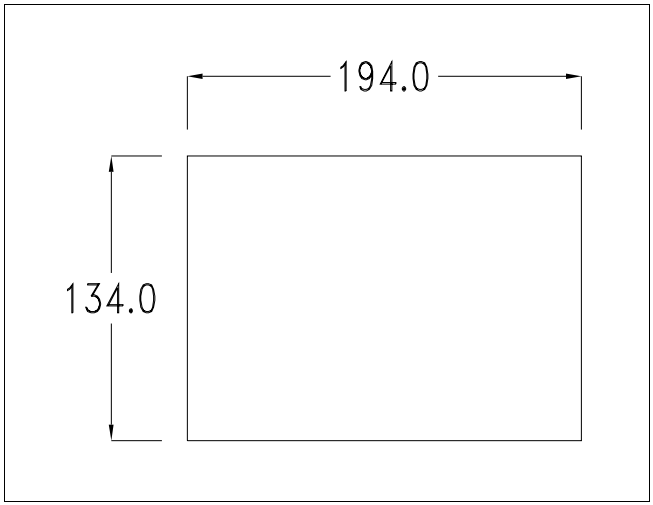


Position	Function
A	Power supply connector
B	IT107x x1xx SP1 serial port for communication with PLC/PC
C	USB-A Host Port
D	USB-B Device Port
E	Ethernet 10/100 Base-T Port for connection to any network with standard TCP/IP protocol
F	Slot for additional secure digital memory card.

Dimensions and cutout

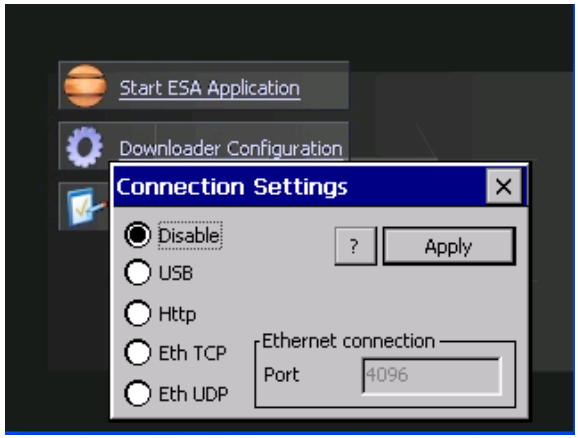





194.0
134.0

Service page

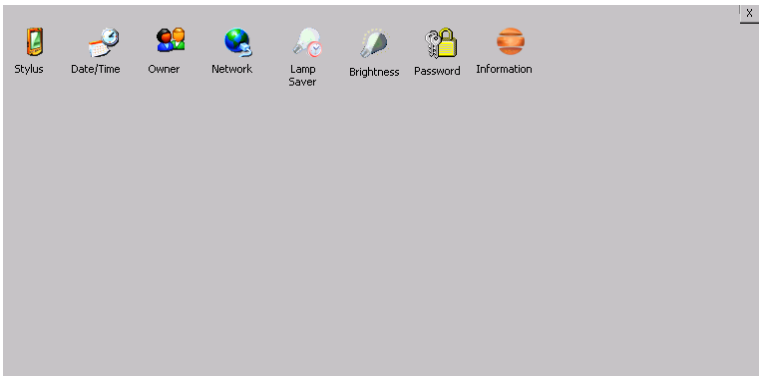
Service page to which access is gained by inserting a button in the project (exit runtime).
- Start ESA Application performs the project runtime
- Download configuration opens the download configuration
- Control Panel opens the control panel



By clicking on downloader configurator the connection settings can be configured
- Disable disables the connection with the terminal
- USB enables the USB connection with the terminal
- Http enables the ethernet connection with the terminal through an http protocol
- Eth TCP enable the ethernet connection with the terminal and allows to configure the port (slower but more precise).

- Eth UDP enable the ethernet connection with the terminal and allows to configure the port (faster but less precise).

Control panel

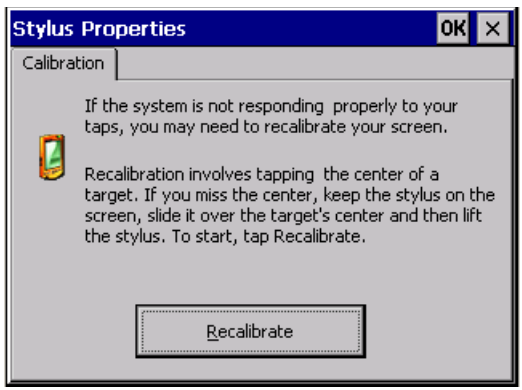


By clicking on each of these icons access is gained to the terminal configuration.

Stylus

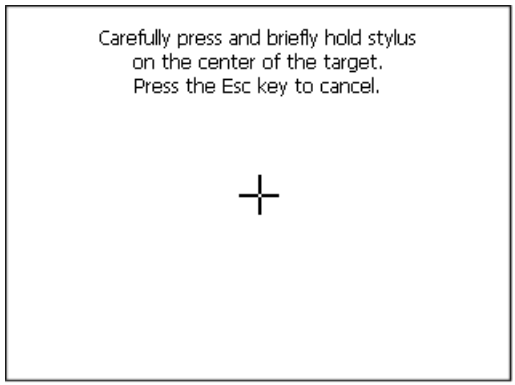
The terminal uses a resistant type sensitive glass, for this type of glass to function correctly requires a calibration procedure (the terminal is supplied already calibrated), meaning the resistant area of the glass must be suitable to the visual area of the display.
If it is necessary to repeat the calibration procedure, it is possible to do so by following the instructions below.

The procedure requires great attention because the precision of the keys' area depends from the calibration.

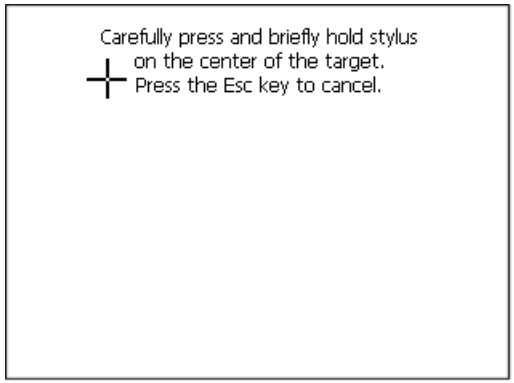


From the control panel click on the stylus icon and, subsequently, the following screens are displayed on the recalibrate key. Touch the screen near the crosses that appear on the screen..

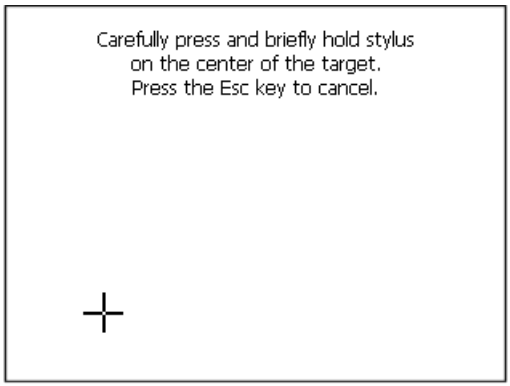
Step 1: touch the screen near the crosses



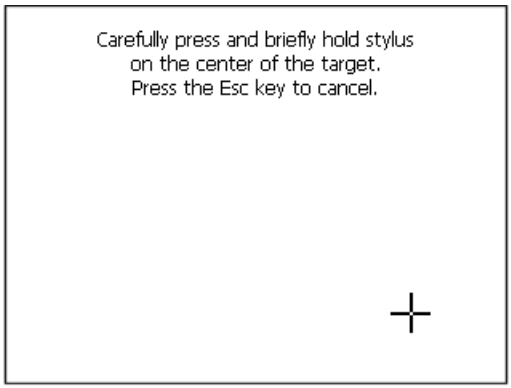
Step 2: touch the screen near the crosses



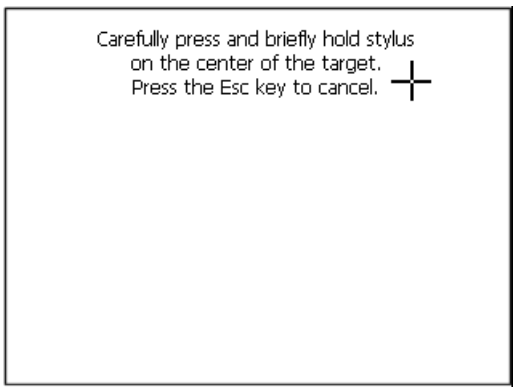
Step 3: touch the screen near the crosses



Step 4: touch the screen near the crosses



Step 5: touch the screen near the crosses



Step 6: Touch any part of the screen to end calibration.

The terminal returns to the initial page, by clicking on ok calibration is confirmed.

Date/Time

From here it is possible to amend: date, time and time zone. By enabling the “automatically adjust clock for daylight saving” check, the time is automatically updated at BST or GMT.

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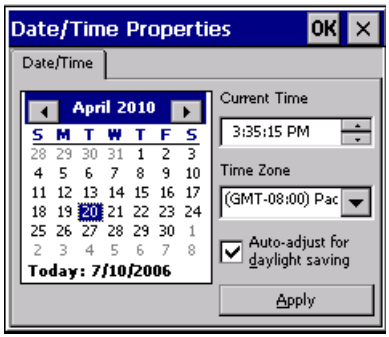
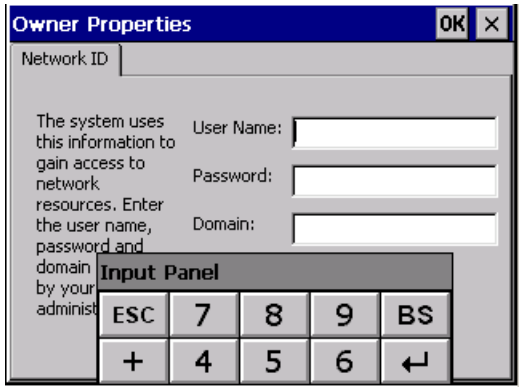


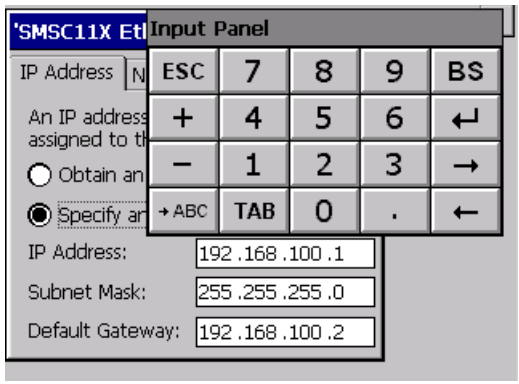
Owner



This information is used by Windows CE to access the network resources.
Username: enter the user name to access the network
Password: enter the password to access the network
Domain: enter the domain to access the network
In case the above data is unknown, contact the network administrator.

Network

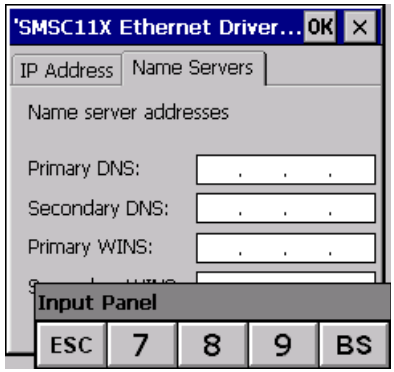
IP address



Obtain an IP address via DHCP: by selecting this option, an IP address is automatically obtained (ensure that the DHCP server is enabled on the network)
Specify an IP address: by selecting this option the parameters must be entered manually (IP Address, Subnet Mask, Default Gateway)

In case the above data is unknown, contact the network administrator.

Name servers



If necessary, the parameters relating to the relative DNS or AL WINS must be entered
In case the above data is unknown, contact the network administrator.

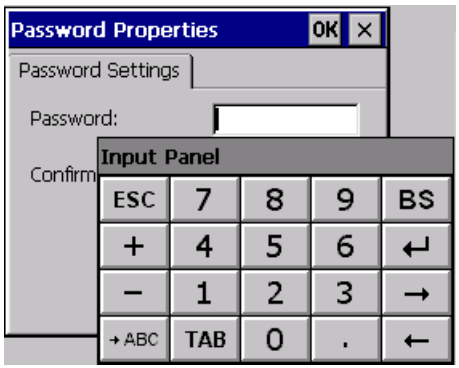
Lamp Saver

By enabling the Lamp Saver, the lamp switches off after a time set in the Wait box.

Brightness

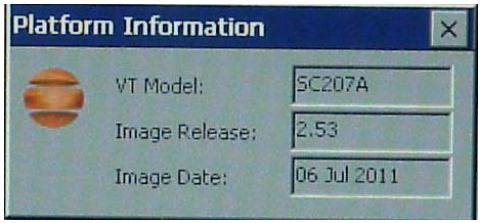
The Brightness allows regulating the brightness of the display lamp.

Password



The Password option allows assigning a password to the terminal.
The password is requested (not compulsorily) during the use of the "Remote Desktop" application.

Information



Information regarding the panel is displayed, which: terminal model, revision of the Windows CE image and the image date.

11. IT110 Video Terminal

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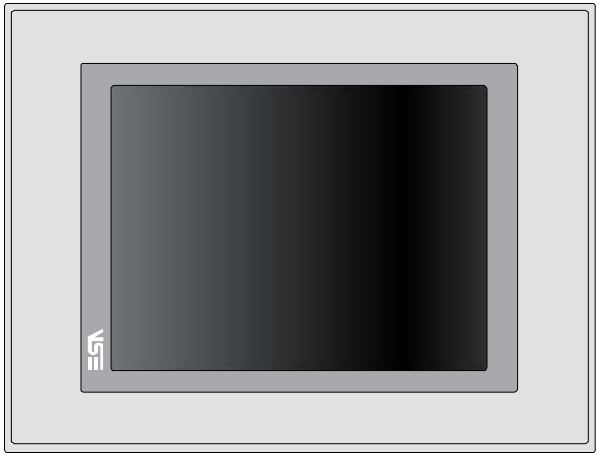


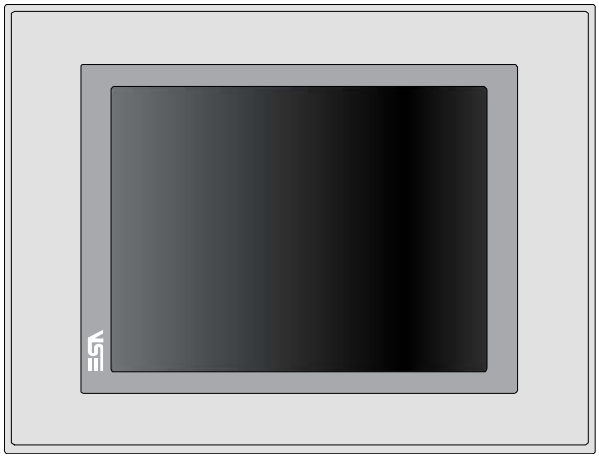
Technical characteristics

The table below lists the main technical features of the product in question.

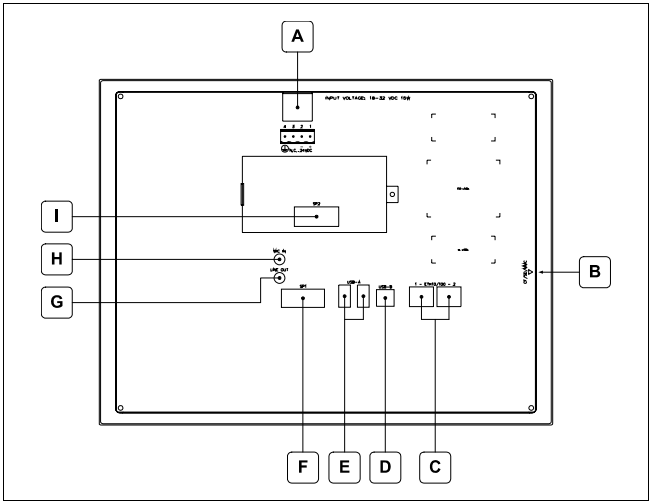
Terminal code	Terminal features					
IT110		X	0	X	X	X
Display						
Type	LCD 65k Colour TFT	T				
Format	Graphical	●	●	●	●	●
Resolution [pixels]	640 x 480 (10.4”)	●	●	●	●	●
Visual area dimensions [mm]	212.2 x 158	●	●	●	●	●
Adjusting contrast	Software	●	●	●	●	●
	Automatic compensation	●	●	●	●	●
Set characters	TTF Windows ®	●	●	●	●	●
Backlighting						
Type	CCFL Bulb	●	●	●	●	●
Minimum duration at 25°C [hours]	30000	T	●	●	●	●
System memory						
Ram [Byte]	128M	●	●	●	●	●
Resident Flash Array [Byte]	64M	●	●	●	●	●
Interfaces						

Terminal code	Terminal features						
IT110		X	0	X	X	X
Serial Port SP1	RS232/RS485	●	●	1	●	●
Serial Port SP2	RS232/RS485	●	●	●	1	●
Serial Port COM0	RS232	●	●	5	●	●
USB Host Port	v. 1.1	●	●	●	●	●
USB Device Port	v. 1.1	●	●	●	●	●
Cardbus Slot	Secure Digital	●	●	●	●	●
Audio Port	Mic-in/Line-out	●	●	●	●	●
Clock						
Clock	Hardware (Supercapacitor - Min.72h)	●	●	●	●	●
Networks						
Integrated	Profibus-DP	●	●	●	3	●
	CAN	●	●	●	2	●
	Ethernet1 10/100Mbit RJ45	●	●	●	●	●
	Ethernet2 10/100Mbit RJ45	●	●	●	●	●
Technical data						
Power supply	24Vcc (18..32Vcc)					
Power consumption at 24Vcc	15W					
Protective fuse	Resetable Polyswitch					
Level of protection	IP65 (Frontal)					
Working temperature	0..50°C					
Storage and transport temperature	-20..+60°C					
Humidity (without condensation)	<85%					
Weight	2800gr					
Dimensions						
External L x H x D [mm]	336.3 x 256 x 43.8 (69.2 with 2 serial ports)					
Holes L x H [mm]	314 x 240					
Certification						
Marks and validations	CE, cULus					

Front .

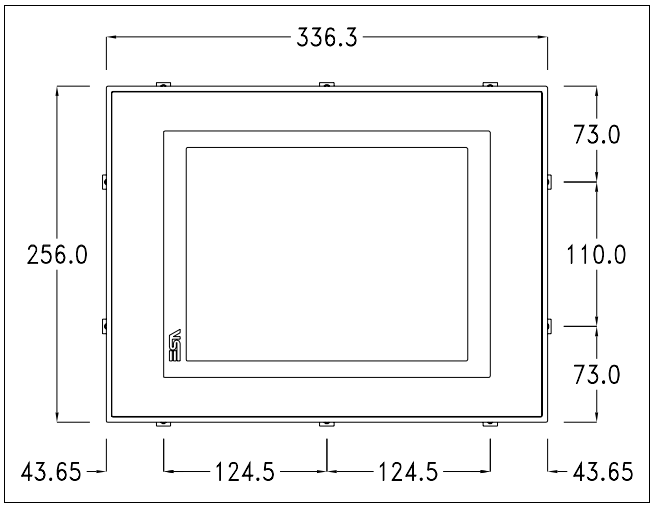


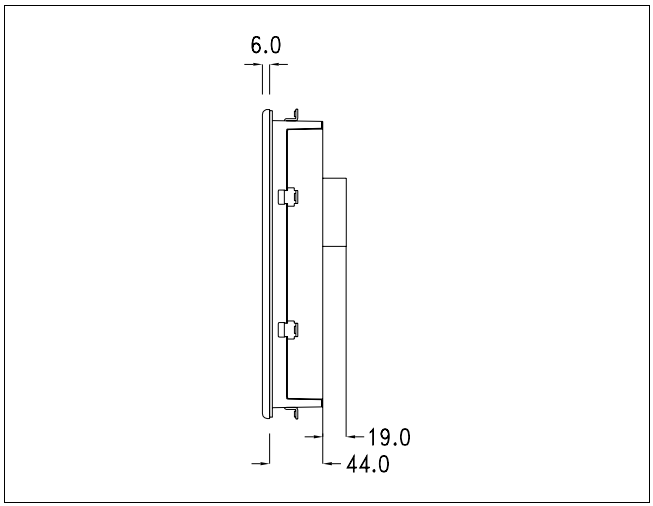
Rear

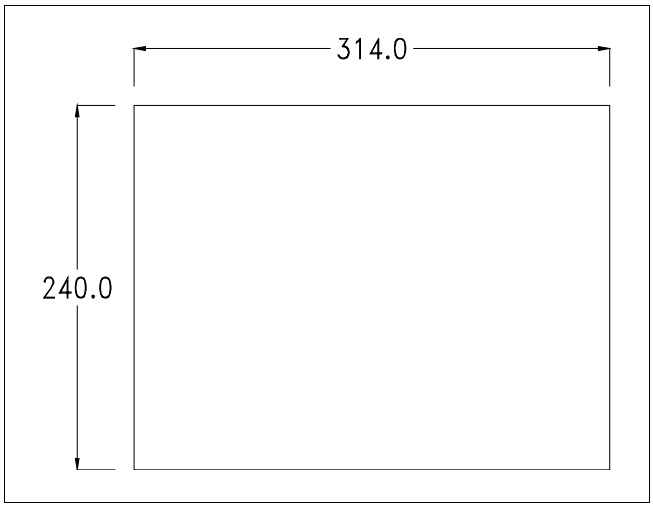


Position	Function
A	Power supply connector
B	Slot for additional secure digital memory card.
C	Ethernet 10/100 Base-T Port for connection to any network with standard TCP/IP protocol
D	USB-B Device Port
E	USB-A Host Port
F	SP1 serial port for communication with PLC/PC
G	Audio Line-out
H	Audio Line-in
I	IT110x xx1x SP2 serial port for communication with PLC/PC IT110x xx2x CAN Port IT110x xx3x Profibus-DP Port

Dimensions and cutout

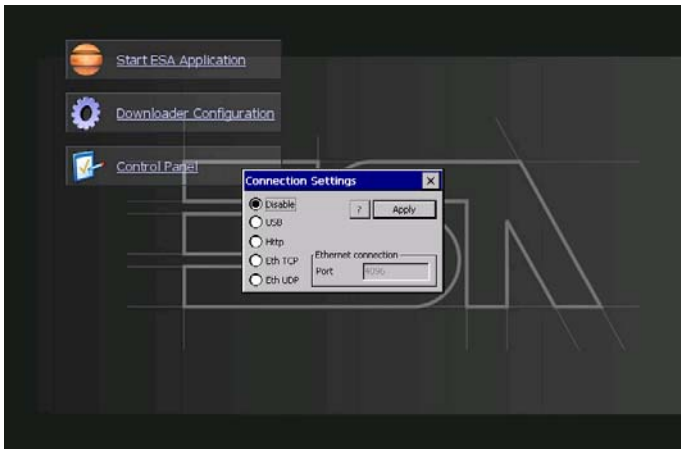





314.0
240.0

Service page

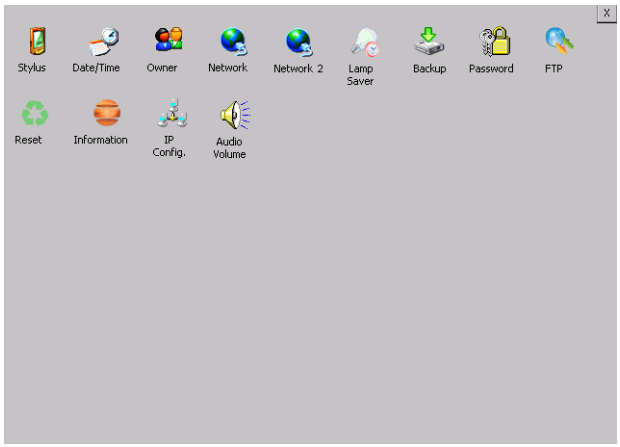
Service page to which access is gained by inserting a button in the project (exit runtime).
- Start ESA Application performs the project runtime
- Download configuration opens the download configuration
- Control Panel opens the control panel



By clicking on downloader configurator the connection settings can be configured
- Disable disables the connection with the terminal
- USB enables the USB connection with the terminal
- Http enables the ethernet connection with the terminal through an http protocol
- Eth TCP enable the ethernet connection with the terminal and allows to configure the port (slower but more precise).

- Eth UDP enable the ethernet connection with the terminal and allows to configure the port (faster but less precise).

Control panel

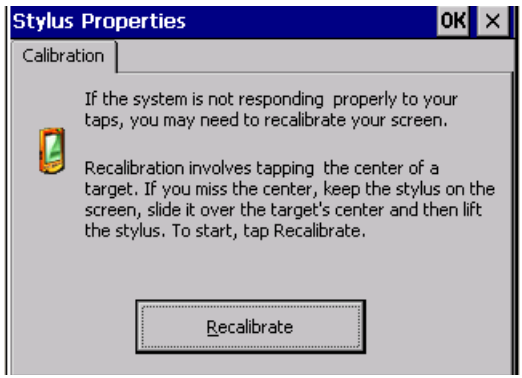


By clicking on each of these icons access is gained to the terminal configuration.

Stylus

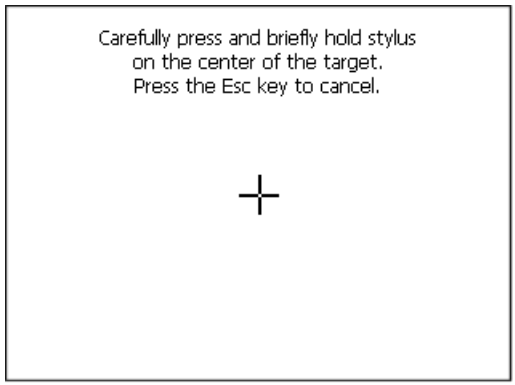
The terminal uses a resistant type sensitive glass, for this type of glass to function correctly requires a calibration procedure (the terminal is supplied already calibrated), meaning the resistant area of the glass must be suitable to the visual area of the display.
If it is necessary to repeat the calibration procedure, it is possible to do so by following the instructions below.

The procedure requires great attention because the precision of the keys' area depends from the calibration.

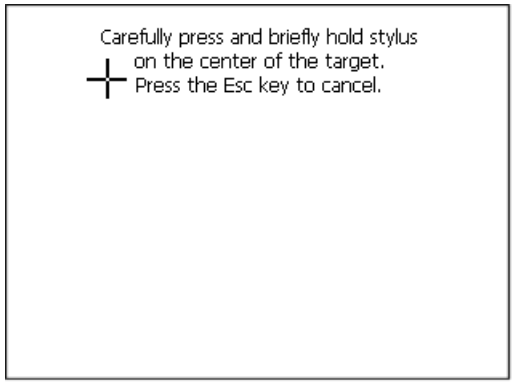


From the control panel click on the stylus icon and, subsequently, the following screens are displayed on the recalibrate key. Touch the screen near the crosses that appear on the screen.

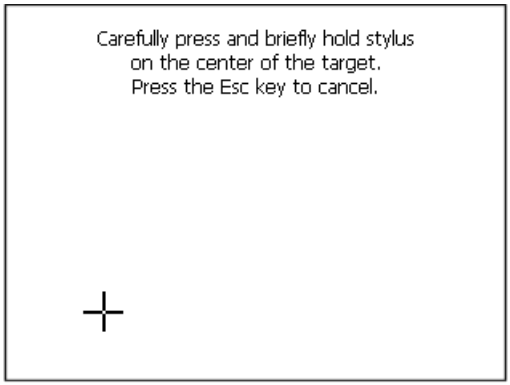
Step 1: touch the screen near the crosses



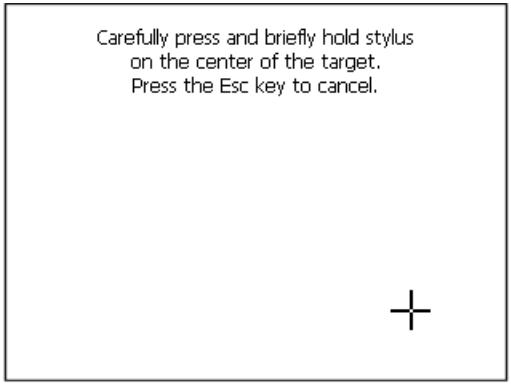
Step 2: touch the screen near the crosses



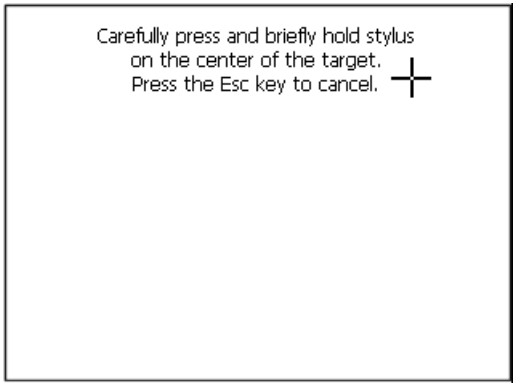
Step 3: touch the screen near the crosses



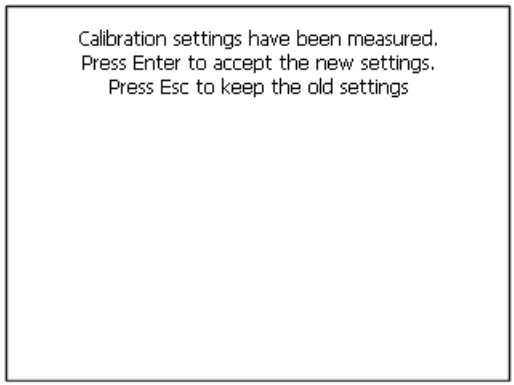
Step 4: touch the screen near the crosses



Step 5: touch the screen near the crosses



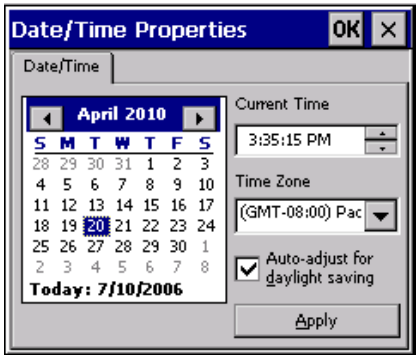
Step 6
Touch anywhere on the screen to end calibration.



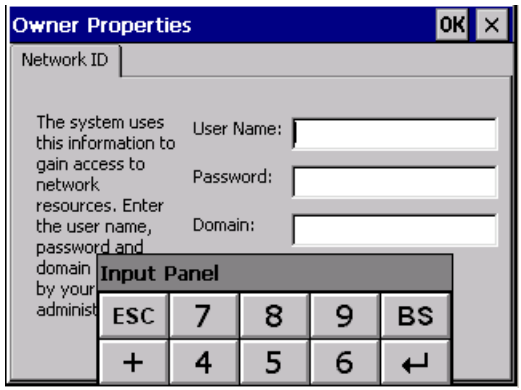
The terminal returns to the initial page, by clicking on ok calibration is confirmed.

Date/Time

From here it is possible to amend: date, time and time zone. By enabling the “automatically adjust clock for daylight saving” check, the time is automatically updated at BST or GMT.



Owner

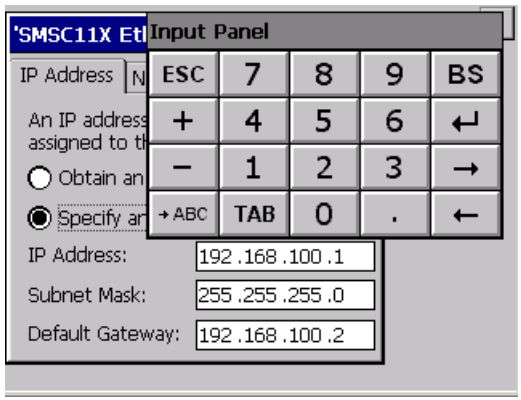


This information is used by Windows CE to access the network resources.
Username: enter the user name to access the network
Password: enter the password to access the network
Domain: enter the domain to access the network

In case the above data is unknown, contact the network administrator.

Network and Network2

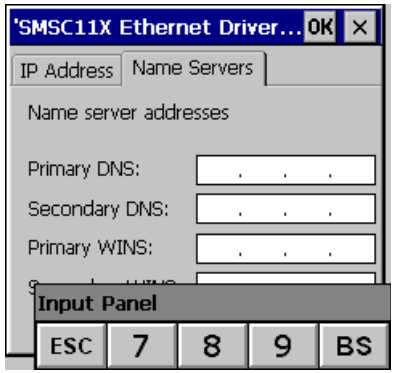
IP address



Obtain an IP address via DHCP: by selecting this option, an IP address is automatically obtained (ensure that the DHCP server is enabled on the network)
Specify an IP address: by selecting this option the parameters must be entered manually (IP Address, Subnet Mask, Default Gateway)

In case the above data is unknown, contact the network administrator.

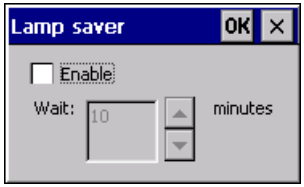
Name servers



If necessary, the parameters relating to the relative DNS or AL WINS must be entered

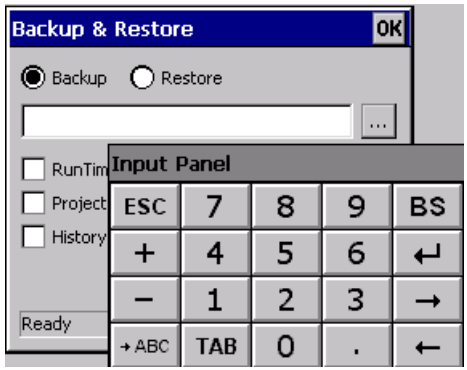
In case the above data is unknown, contact the network administrator.

Lamp Saver



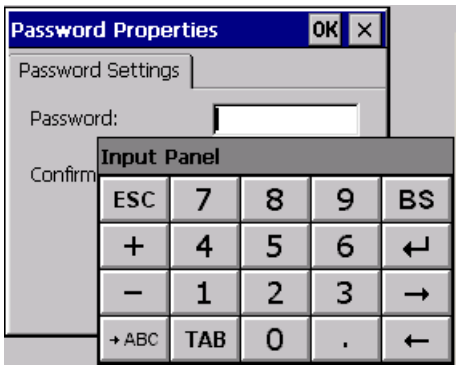
By enabling the Lamp Saver, the lamp switches off after a time set in the Wait box.

Backup



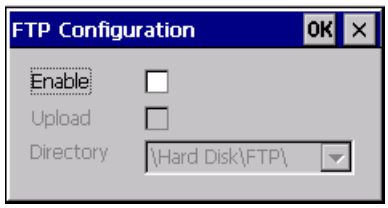
A backup copy of the components chosen through ticking can be made from here: Runtime, Project, History.
It is essential to tick at least one of the components to be exported and choose a path where to save the file.
The restore can be done for all exported components or through ticking, choose the component or components for which restore is to be carried out

Password



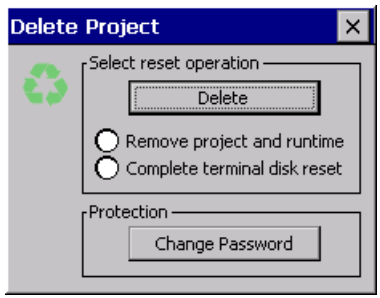
The Password option allows assigning a password to the terminal.
The password is requested (not compulsorily) during the use of the "Remote Desktop" application.

FTP



The “FTP” acronym means “Files Transfer Protocol”. It gives the user the possibility to enable and disable the “FTP Server” service of the panel from any other device (PC,XS,IT,YT) connected to the network.
This function is very useful when it is necessary to write, cancel or modify data on the terminal easily from a remote access.
Selecting the “Enable” option, the “FTP” folder sharing service in the “Hard Disk” directory is enabled :

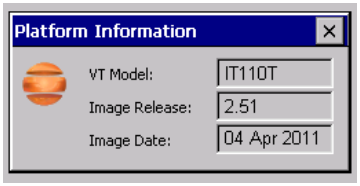
Reset



“Reset” is an application of the terminal control panel which allows to cancel all that been transferred onto the Hard Disk.
Selecting the “Enable” option, the “FTP” folder sharing service in the “Hard Disk” directory is enabled.
The user can choose from 2 options :

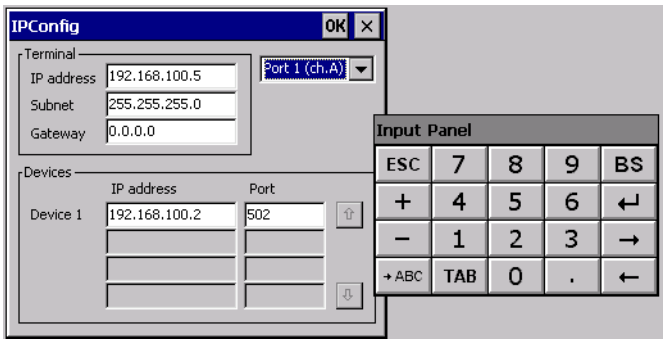
-“Remove project and runtime” -> choosing this option, both the project and the runtime that have been transferred from Polymath onto the terminal will be cancelled.
-“Complete terminal disk reset” -> choosing this option, the whole content of the “Hard Disk” folder will be cancelled, with the exception of the files that are essential for operating the terminal.

Information



Information regarding the panel is displayed, which: terminal model, revision of the Windows CE image and the image date.

IP Config



By clicking on the "IP Config" icon, the mask displaying the IP Address of the terminal and IP Address (or IP Addresses) of the devices connected via Ethernet will appear.
The function “IP Config” is useful in that it is possible to change the addresses of the devices without having to use the POLYMATH configuration software (very useful operation during the system's start-up).
By using the appropriate key "Input Panel", the user can carry out any variations to the IP addresses of the devices directly from the ESA terminal.

Audio Volume

By clicking on the icon "Audio -Volume" the above window will appear, allowing to set the volume of the MP3/WAV files.
From Polymath 2.1 is possible to associate an audio-file to an alarm of the project.
By clicking the button “Play” the user is able to test the utility running a Bitonal - Buzzer

12. IT112 Video Terminal

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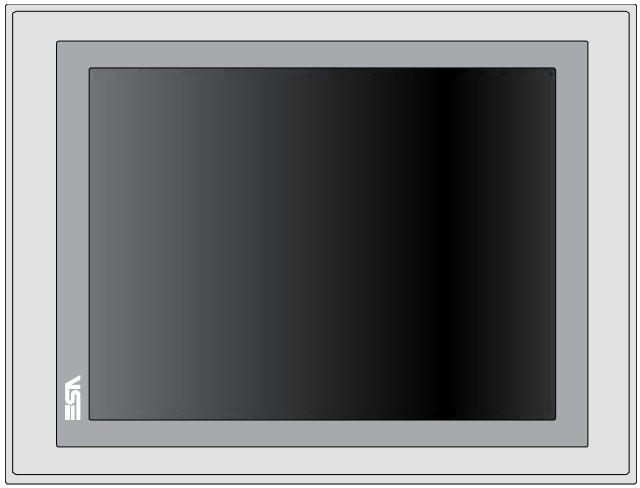
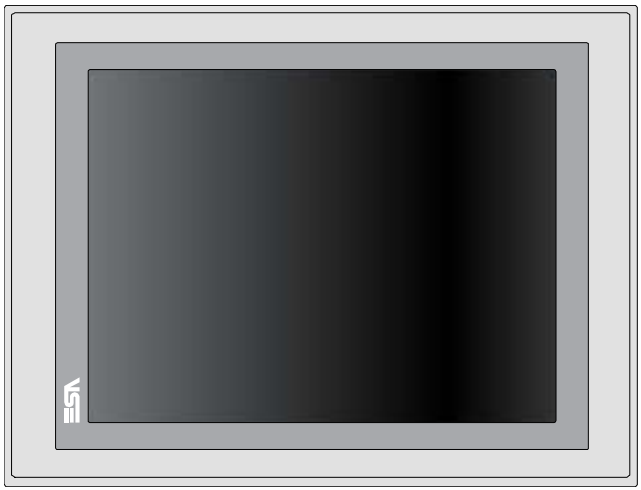


Technical characteristics The table below lists the main technical features of the product in question.

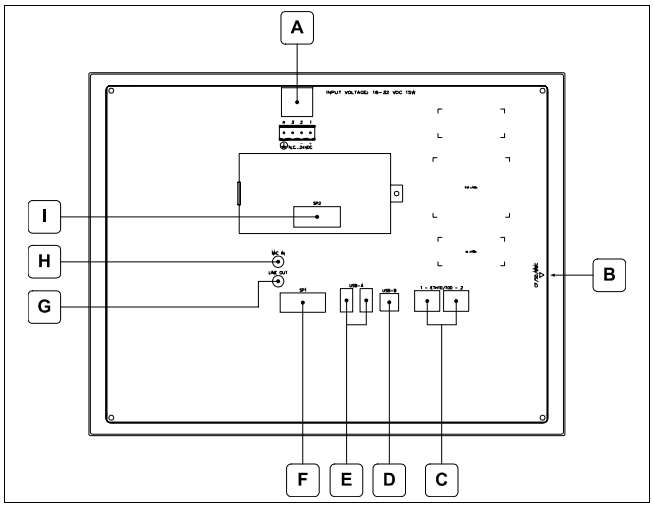
Terminal code	Terminal features					
IT112		X	0	X	X	X
Display						
Type	LCD 65k Colour TFT	T				
Format	Graphical	●	●	●	●	●
Resolution [pixels]	800 x 600 (12,1”)	●	●	●	●	●
Visual area dimensions [mm]	211,2 x 158	●	●	●	●	●
Adjusting contrast	Software	●	●	●	●	●
	Automatic compensation	●	●	●	●	●
Set characters	TTF Windows ®	●	●	●	●	●
Backlighting						
Type	CCFL Bulb	●	●	●	●	●
Minimum duration at 25°C [hours]	50000	T	●	●	●	●
System memory						
Ram [Byte]	128M	●	●	●	●	●
Resident Flash Array [Byte]	64M	●	●	●	●	●
Interfaces						

Terminal code	Terminal features						
IT112		X	0	X	X	X
Serial Port SP1	RS232/RS485	●	●	1	●	●
Serial Port SP2	RS232/RS485	●	●	●	1	●
Serial Port COM0	RS232	●	●	5	●	●
USB Host Port	v. 1.1	●	●	●	●	●
USB Device Port	v. 1.1	●	●	●	●	●
Cardbus Slot	Secure Digital	●	●	●	●	●
Audio Port	Mic-in/Line-out	●	●	●	●	●
Clock						
Clock	Hardware (Supercapacitor - Min.72h)	●	●	●	●	●
Networks						
Integrated	Profibus-DP	●	●	●	3	●
	CAN	●	●	●	2	●
	Ethernet1 10/100Mbit RJ45	●	●	●	●	●
	Ethernet2 10/100Mbit RJ45	●	●	●	●	●
Technical data						
Power supply	24Vcc (18..32Vcc)					
Power consumption at 24Vcc	15W					
Protective fuse	Resetable Polyswitch					
Level of protection	IP65 (Frontal)					
Working temperature	0..50°C					
Storage and transport temperature	-20..+60°C					
Humidity (without condensation)	<85%					
Weight	2800gr					
Dimensions						
External L x H x D [mm]	336.3 x 256 x 43.8 (69.2 with 2 serial ports)					
Holes L x H [mm]	314 x 240					
Certification						
Marks and validations	CE, cULus					

Front ..

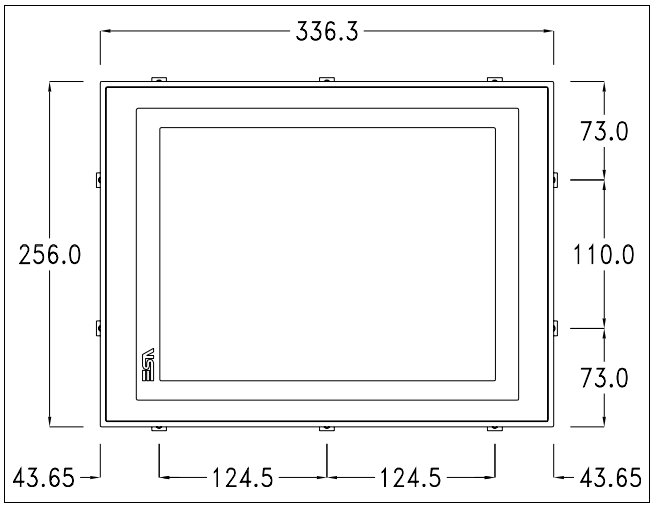


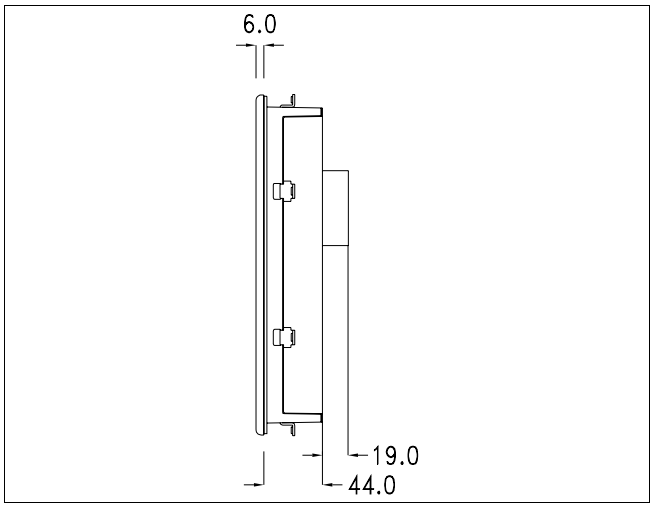
Rear

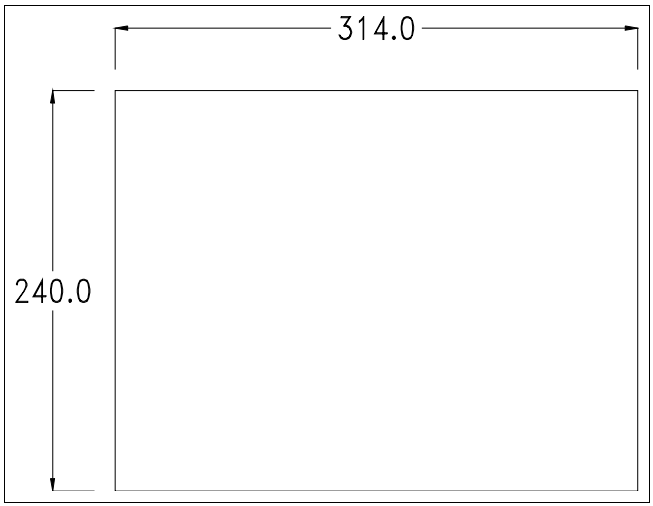


Position	Function
A	Power supply connector
B	Slot for additional secure digital memory card.
C	Ethernet 10/100 Base-T Port for connection to any network with standard TCP/IP protocol
D	USB-B Device Port
E	USB-A Host Port
F	SP1 serial port for communication with PLC/PC
G	Audio Line-out
H	Audio Line-in
I	IT112x xx1x SP2 serial port for communication with PLC/PC IT112x xx2x CAN Port IT112x xx3x Profibus-DP Port

Dimensions and cutout

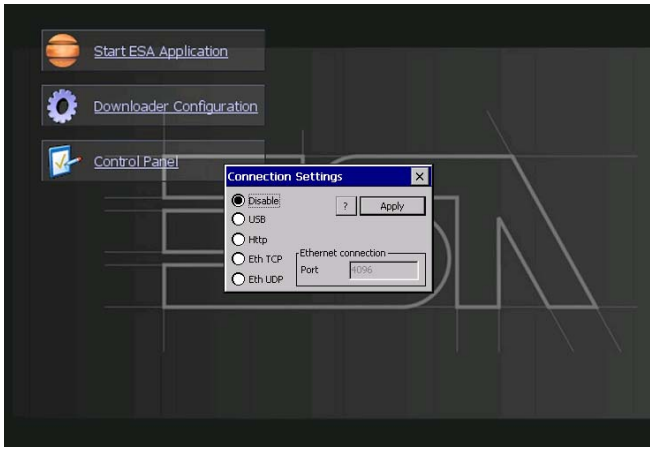





314.0
240.0

Service page

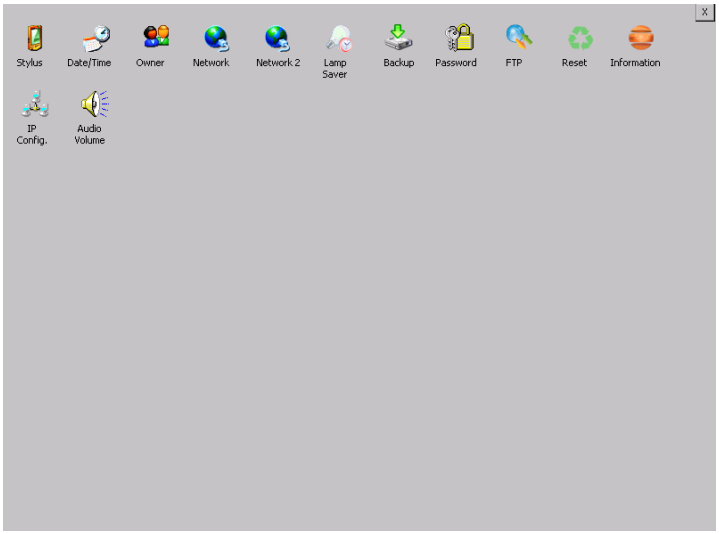
Service page which is accessed by pressing a button in the project (exit runtime).
- Start ESA Application executes the runtime of the project
- Download configuration opens the download configuration
- Control Panel opens the control panel



By clicking on downloader configurator the connection settings can be configured
- Disable disables the connection with the terminal
- USB enables the USB connection with the terminal
- Http enables the ethernet connection with the terminal through an http protocol
- Eth TCP enable the ethernet connection with the terminal and allows to configure the port (slower but more precise).

- Eth UDP enable the ethernet connection with the terminal and allows to configure the port (faster but less precise).

Control panel



By clicking on each of these icons access is gained to the terminal configuration.

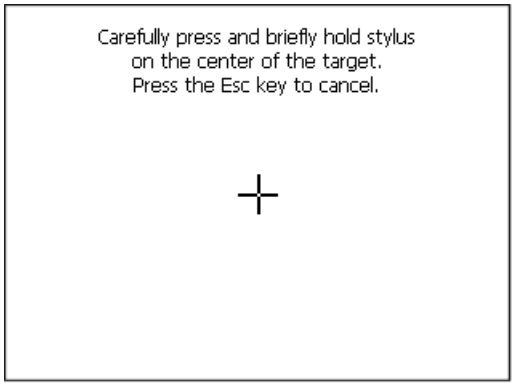
Stylus

The terminal uses a resistant type sensitive glass, for this type of glass to function correctly requires a calibration procedure (the terminal is supplied already calibrated), meaning the resistant area of the glass must be suitable to the visual area of the display.
If it is necessary to repeat the calibration procedure, it is possible to do so by following the instructions below.

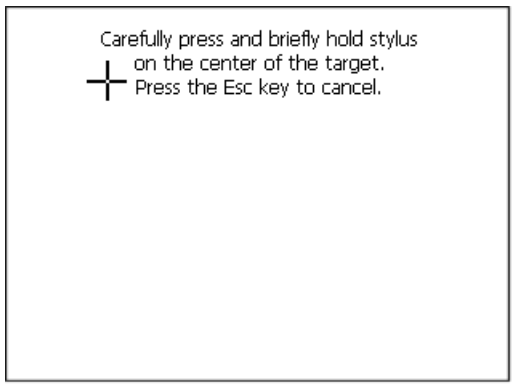
The procedure requires great attention because the precision of the keys' area depends from the calibration.

From the control panel click on the stylus icon and, subsequently, the following screens are displayed on the recalibrate key. Touch the screen near the crosses that appear on the screen.

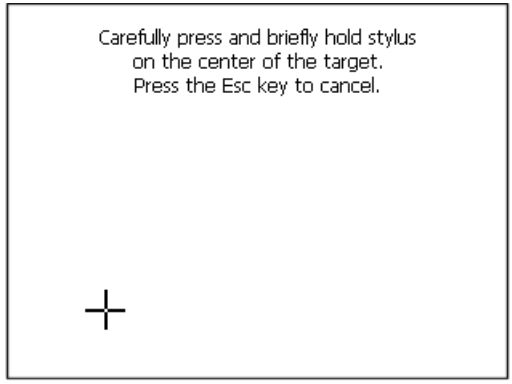
Step 1: touch the screen near the crosses



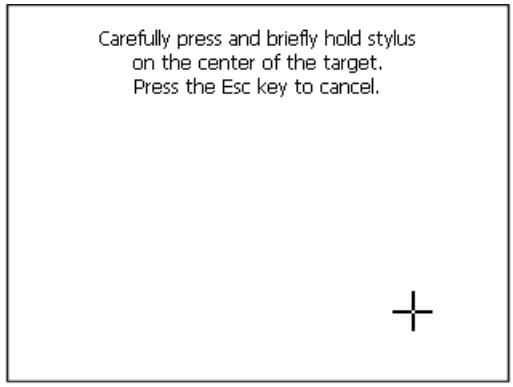
Step 2: touch the screen near the crosses



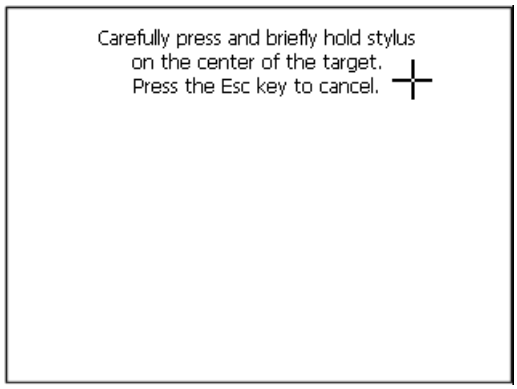
Step 3: touch the screen near the crosses



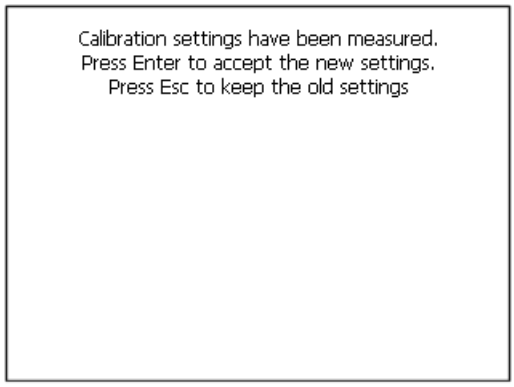
Step 4: touch the screen near the crosses



Step 5: touch the screen near the crosses



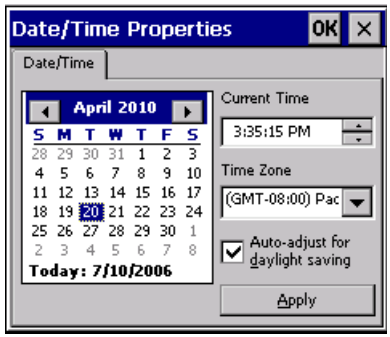
Step 6
Touch anywhere on the screen to end calibration.



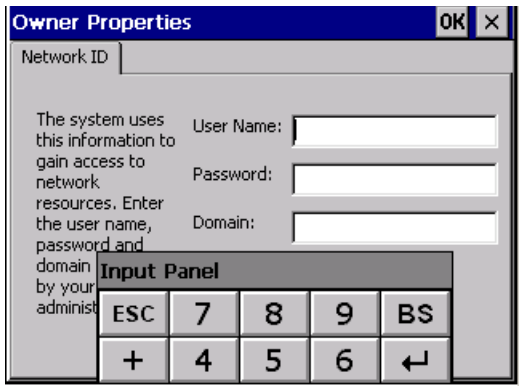
The terminal returns to the initial page, by clicking on ok calibration is confirmed.

Date/Time

From here it is possible to amend: date, time and time zone. By enabling the “automatically adjust clock for daylight saving” check, the time is automatically updated at BST or GMT.



Owner

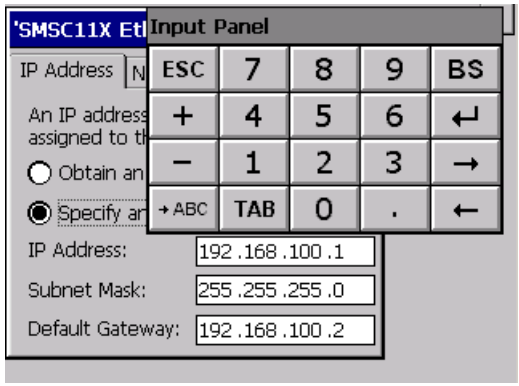


This information is used by Windows CE to access the network resources.
Username: enter the user name to access the network
Password: enter the password to access the network
Domain: enter the domain to access the network

In case the above data is unknown, contact the network administrator.

Network and Network2

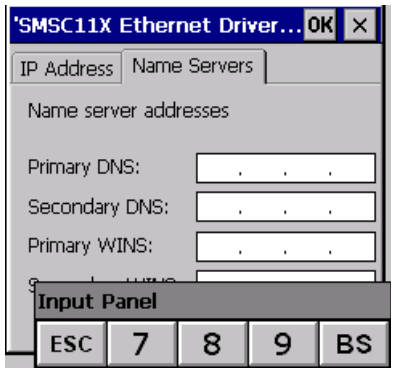
IP address



Obtain an IP address via DHCP: by selecting this option, an IP address is automatically obtained (ensure that the DHCP server is enabled on the network)
Specify an IP address: by selecting this option the parameters must be entered manually (IP Address, Subnet Mask, Default Gateway)

In case the above data is unknown, contact the network administrator.

Name servers



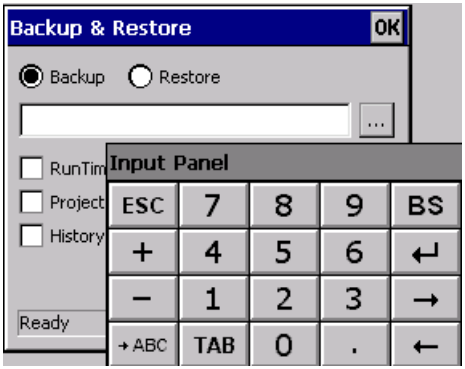
f necessary, the parameters relating to the relative DNS or AL WINS must be entered

In case the above data is unknown, contact the network administrator.

Lamp Saver

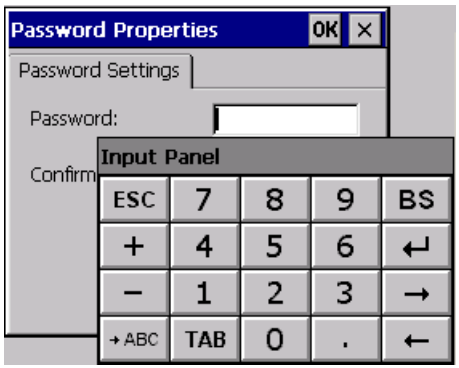
By enabling the Lamp Saver, the lamp switches off after a time set in the Wait box.

Backup



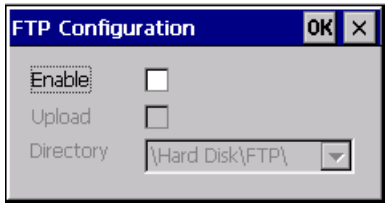
A backup copy of the components chosen through ticking can be made from here: Runtime, Project, History.
It is essential to tick at least one of the components to be exported and choose a path where to save the file.
The restore can be done for all exported components or through ticking, choose the component or components for which restore is to be carried out.

Password



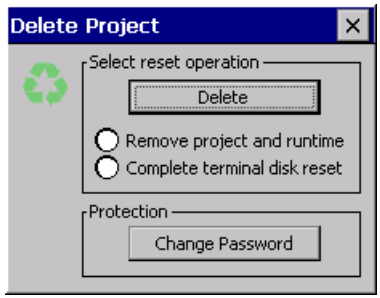
The Password option allows assigning a password to the terminal.
The password is requested (not compulsorily) during the use of the "Remote Desktop" application.

FTP



The “FTP” acronym means “Files Transfer Protocol”. It gives the user the possibility to enable and disable the “FTP Server” service of the panel from any other device (PC,XS,IT,YT) connected to the network.
This function is very useful when it is necessary to write, cancel or modify data on the terminal easily from a remote access.
Selecting the “Enable” option, the “FTP” folder sharing service in the “Hard Disk” directory is enabled :

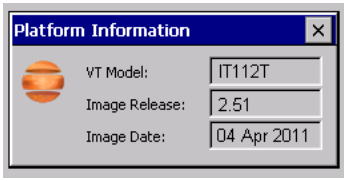
Reset



"Reset" is an application of the terminal control panel which allows to cancel all that been transferred onto the Hard Disk. Selecting the "Enable" option, the "FTP" folder sharing service in the "Hard Disk" directory is enabled.
The user can choose from 2 options :

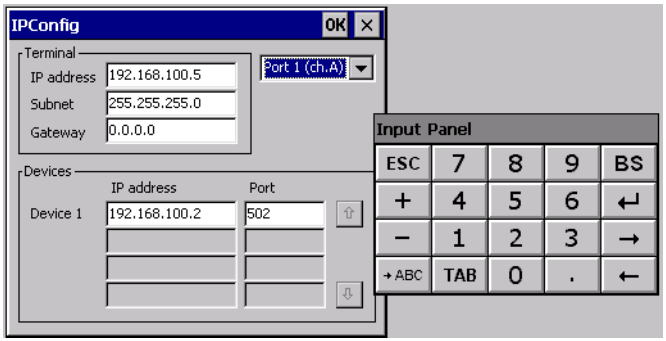
-"Remove project and runtime" -> choosing this option, both the project and the runtime that have been transferred from Polymath onto the terminal will be cancelled.
-"Complete terminal disk reset" -> choosing this option, the whole content of the "Hard Disk" folder will be cancelled, with the exception of the files that are essential for operating the terminal.

Information



Information regarding the panel is displayed, which: terminal model, revision of the Windows CE image and the image date.

IP Config



By clicking on the "IP Config" icon, the mask displaying the IP Address of the terminal and IP Address (or IP Addresses) of the devices connected via Ethernet will appear.
The function “IP Config” is useful in that it is possible to change the addresses of the devices without having to use the POLYMATH configuration software (very useful operation during the system's start-up).
By using the appropriate key "Input Panel", the user can carry out any variations to the IP addresses of the devices directly from the ESA terminal.

Audio Volume

By clicking on the icon "Audio -Volume" the above window will appear, allowing to set the volume of the MP3/WAV files.
From Polymath 2.1 is possible to associate an audio-file to an alarm of the project.
By clicking the button “Play” the user is able to test the utility running a Bitonal - Buzzer

13. IT115 Video Terminal

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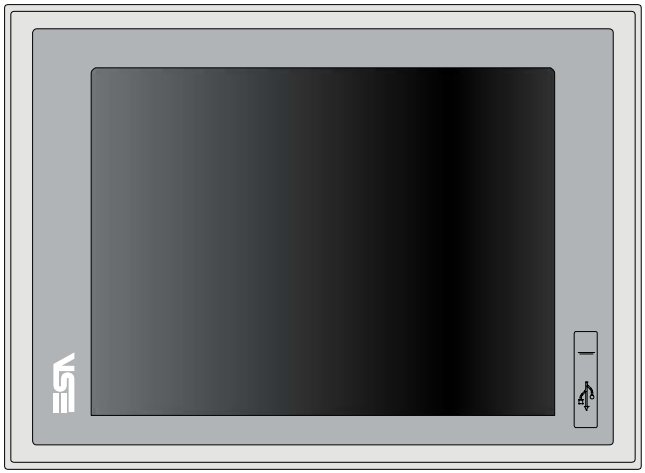


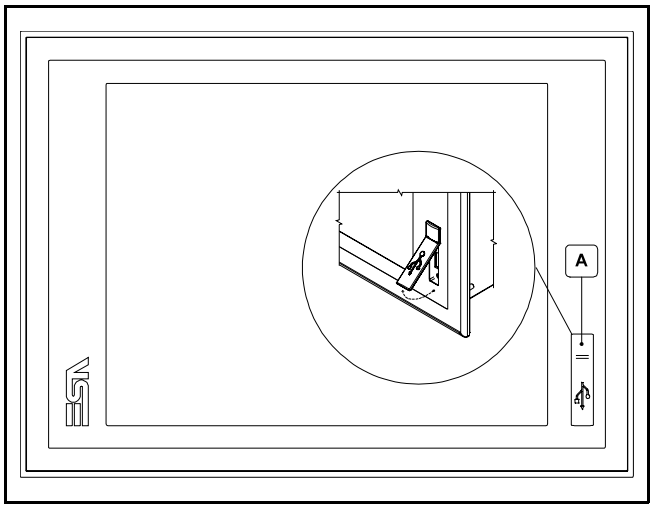
Technical characteristics

The table below lists the main technical features of the product in question.

Terminal code	Terminal features					
IT115		X	0	X	X	X
Display						
Type	LCD 65k Colour TFT	T				
Format	Graphical	●	●	●	●	●
Resolution [pixels]	1024x768 (15”)	●	●	●	●	●
Visual area dimensions [mm]		●	●	●	●	●
Adjusting contrast	Software	●	●	●	●	●
	Automatic compensation	●	●	●	●	●
Set characters	TTF Windows ®	●	●	●	●	●
Backlighting						
Type	CCFL Bulb	●	●	●	●	●
Minimum duration at 25°C [hours]	50000	T	●	●	●	●
System memory						
Ram [Byte]	128M	●	●	●	●	●
Resident Flash Array [Byte]	64M	●	●	●	●	●
Interfaces						

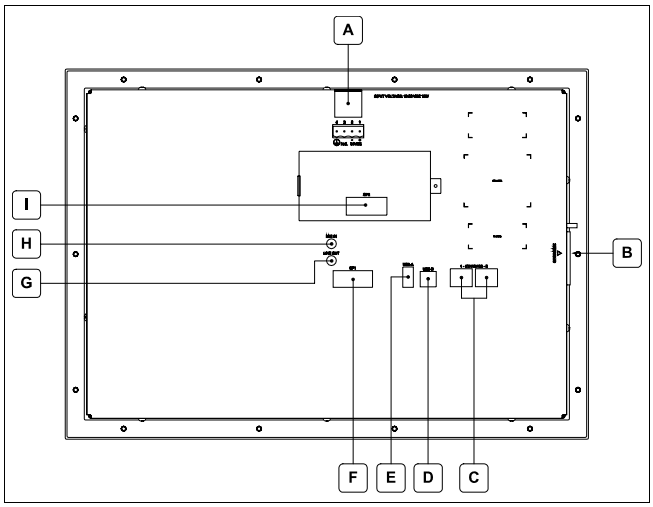
Terminal code	Terminal features						
IT115		X	0	X	X	X
Serial Port SP1	RS232/RS485	●	●	1	●	●
Serial Port SP2	RS232/RS485	●	●	●	1	●
Serial Port COM0	RS232	●	●	5	●	●
USB Host Port	v. 1.1 + 1 fornt	●	●	●	●	●
USB Device Port	v. 1.1	●	●	●	●	●
Cardbus Slot	Secure Digital	●	●	●	●	●
Audio Port	Mic-in/Line-out	●	●	●	●	●
Clock						
Clock	Hardware (Supercapacitor - Min.72h)	●	●	●	●	●
Networks						
Integrated	Profibus-DP	●	●	●	3	●
	CAN	●	●	●	2	●
	Ethernet1 10/100Mbit RJ45	●	●	●	●	●
	Ethernet2 10/100Mbit RJ45	●	●	●	●	●
Technical data						
Power supply	24Vcc (18..32Vcc)					
Power consumption at 24Vcc	20W					
Protective fuse	Resetable Polyswitch					
Level of protection	IP65 (Frontal)					
Working temperature	0..50°C					
Storage and transport temperature	-20..+65°C					
Humidity (without condensation)	<85%					
Weight	6000gr					
Dimensions						
External L x H x D [mm]	425 x 300 x 47,8 (66,8 with 2 serial ports)					
Holes L x H [mm]	399 x 274					
Certification						
Marks and validations	CE, cULus					

Front .



Position	Function
A	USB Host Port

Rear



Position	Function
A	Power supply connector
B	Slot for additional secure digital memory card.
C	Ethernet 10/100 Base-T Port for connection to any network with standard TCP/IP protocol
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G	Audio Line-out
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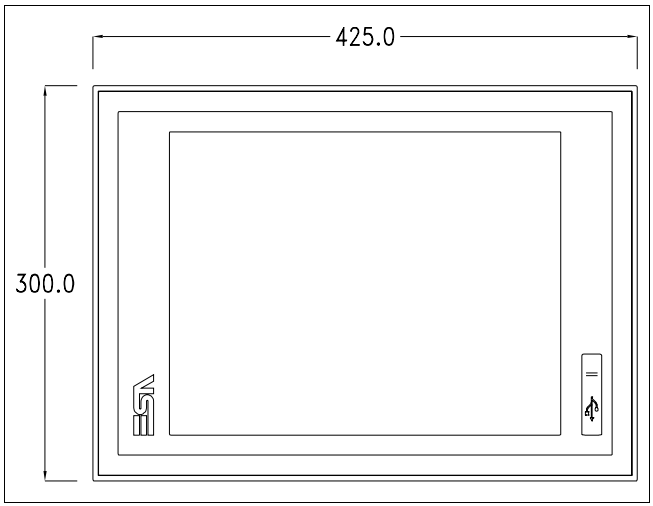
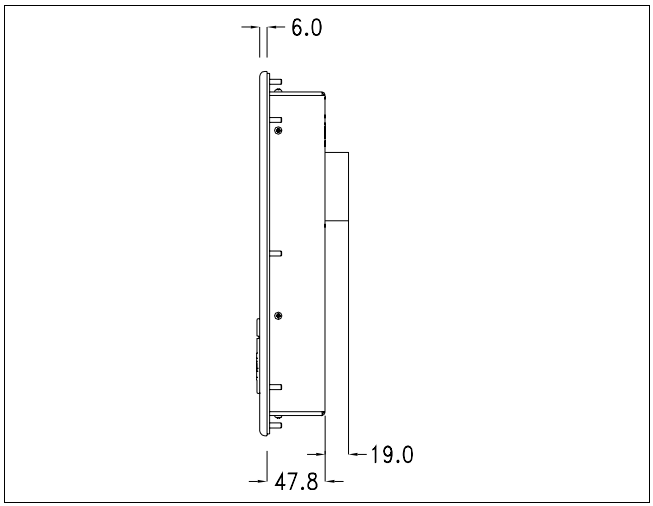
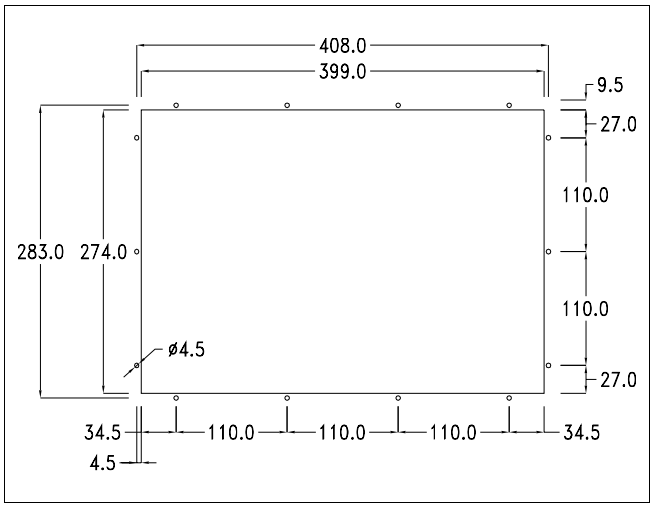
Dimensions and cutout

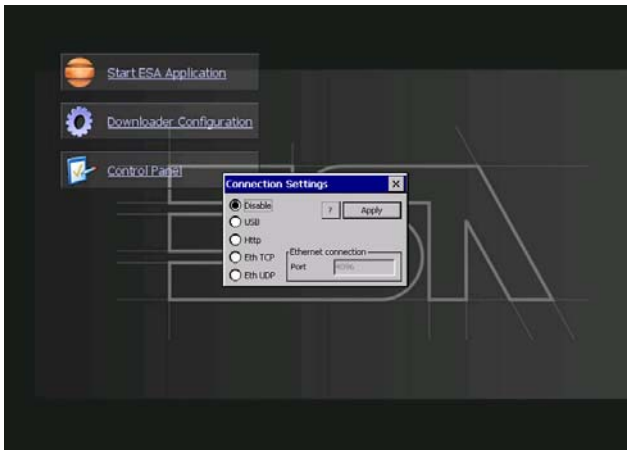





408.0
399.0
9.5
27.0
110.0
283.0
274.0
110.0
ø4.5
27.0
34.5
110.0
110.0
110.0
34.5
4.5

Service page

Service page which is accessed by pressing a button in the project (exit runtime).
- Start ESA Application executes the runtime of the project
- Download configuration opens the download configuration
- Control Panel opens the control panel



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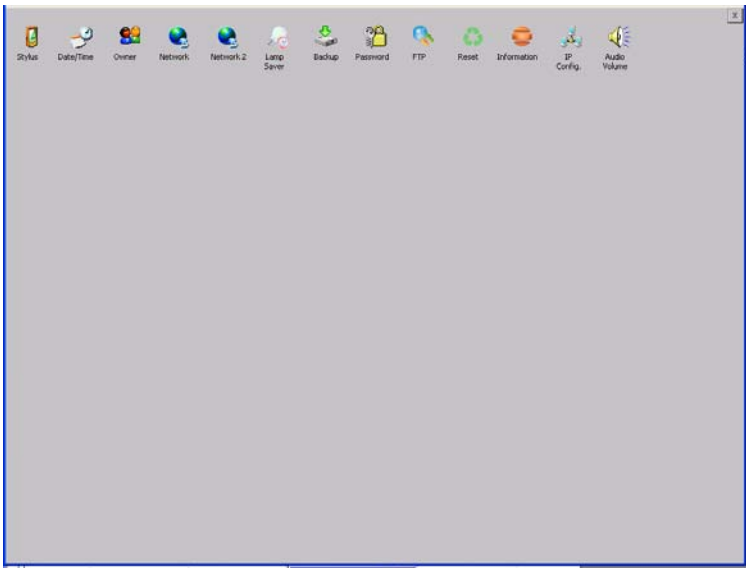
Control panel



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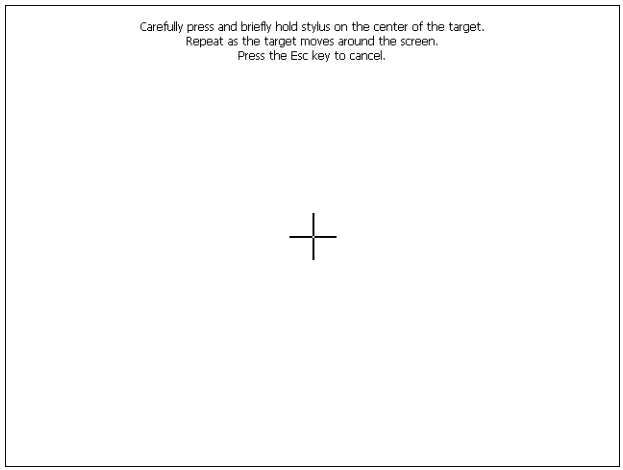
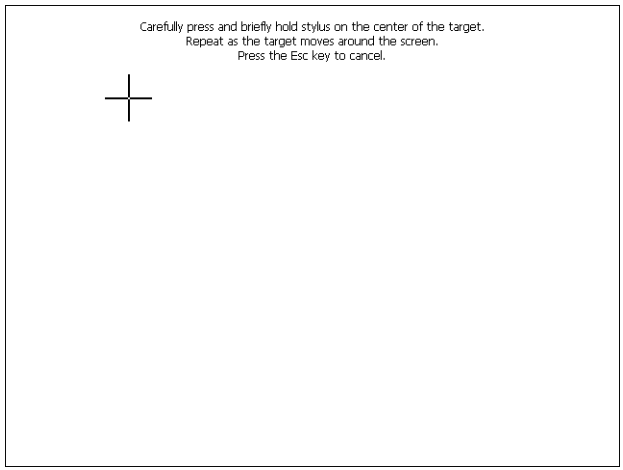
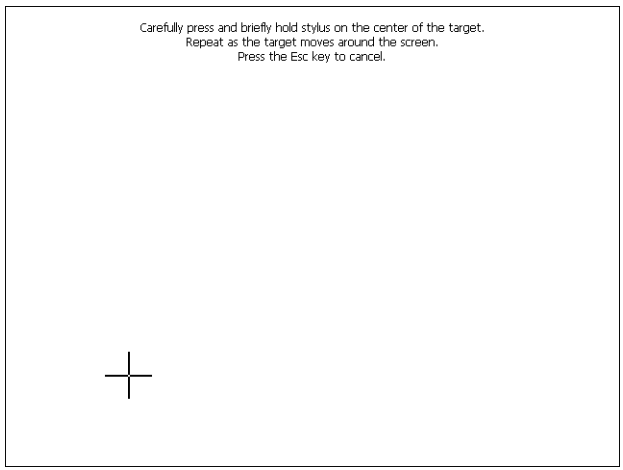


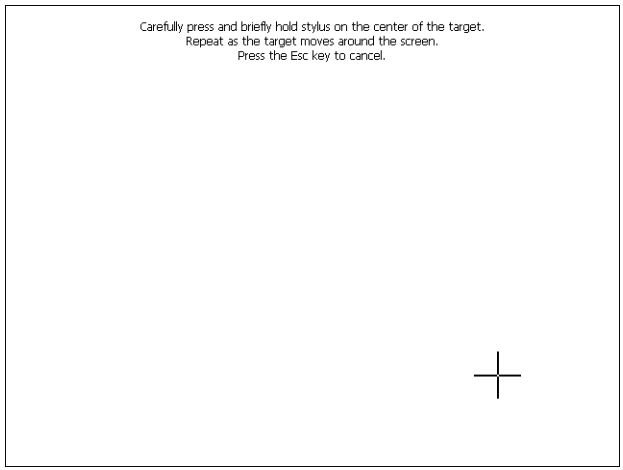
Step 2: touch the screen near the crosses



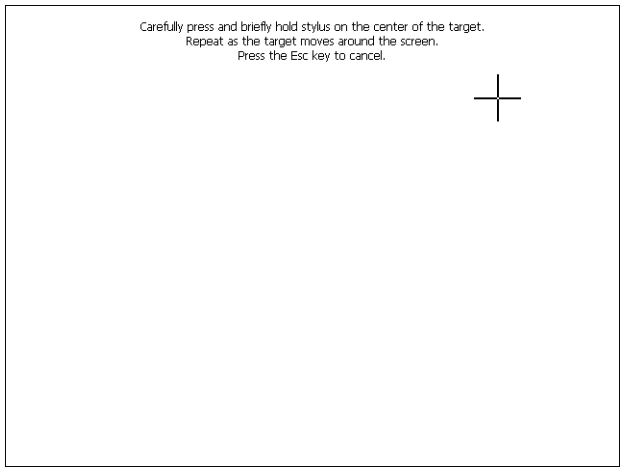
Step 3: touch the screen near the crosses



Step 4: touch the screen near the crosses



Step 5: touch the screen near the crosses.

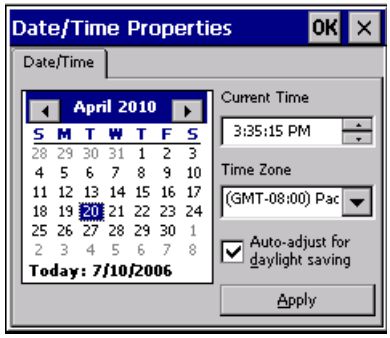


Step 6: Touch anywhere on the screen to end calibration.

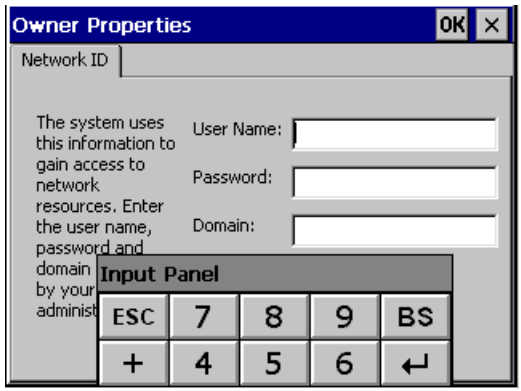
The terminal returns to the initial page, by clicking on ok calibration is confirmed.

Date/Time

From here it is possible to amend: date, time and time zone. By enabling the “automatically adjust clock for daylight saving” check, the time is automatically updated at BST or GMT.



Owner

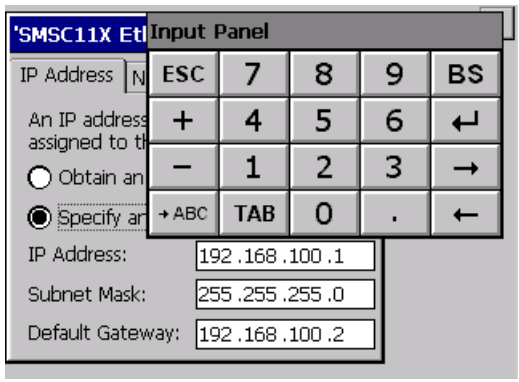


This information is used by Windows CE to access the network resources.
Username: enter the user name to access the network
Password: enter the password to access the network
Domain: enter the domain to access the network

In case the above data is unknown, contact the network administrator.

Network and Network2

IP address

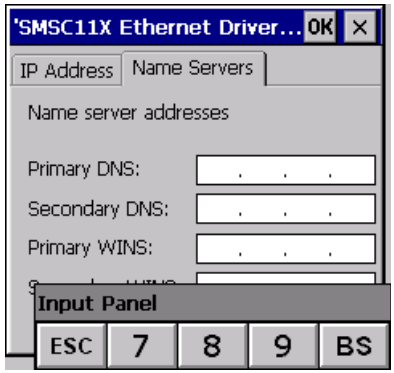


Obtain an IP address via DHCP: by selecting this option, an IP address is automatically obtained (ensure that the DHCP server is enabled on the network)

Specify an IP address: by selecting this option the parameters must be entered manually (IP Address, Subnet Mask, Default Gateway)

In case the above data is unknown, contact the network administrator.

Name servers

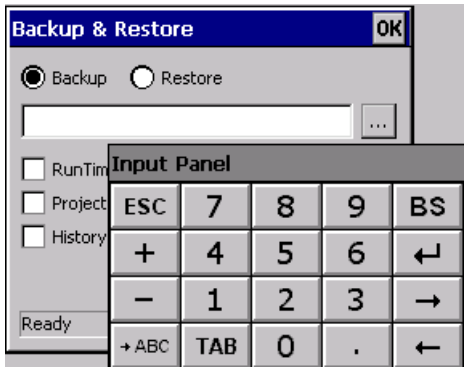


If necessary, the parameters relating to the relative DNS or AL WINS must be entered
In case the above data is unknown, contact the network administrator.

Lamp Saver

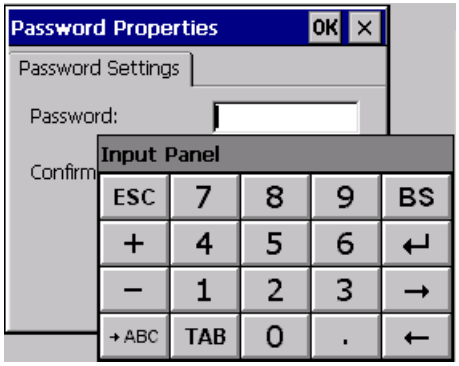
By enabling the Lamp Saver, the lamp switches off after a time set in the Wait box.

Backup



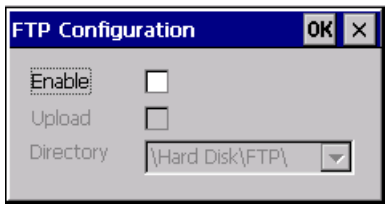
A backup copy of the components chosen through ticking can be made from here: Runtime, Project, History.
It is essential to tick at least one of the components to be exported and choose a path where to save the file.
The restore can be done for all exported components or through ticking, choose the component or components for which restore is to be carried out.

Password



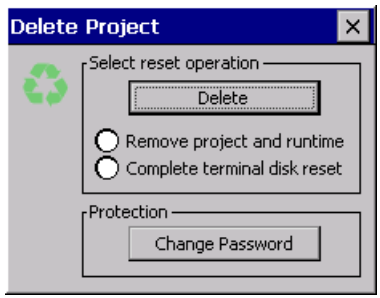
The Password option allows assigning a password to the terminal.
The password is requested (not compulsorily) during the use of the "Remote Desktop" application.

FTP



The “FTP” acronym means “Files Transfer Protocol”. It gives the user the possibility to enable and disable the “FTP Server” service of the panel from any other device (PC,XS,IT,YT) connected to the network.
This function is very useful when it is necessary to write, cancel or modify data on the terminal easily from a remote access.
Selecting the “Enable” option, the “FTP” folder sharing service in the “Hard Disk” directory is enabled :

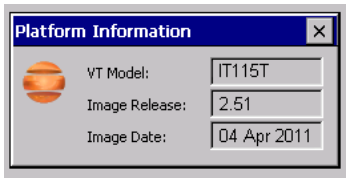
Reset



“Reset” is an application of the terminal control panel which allows to cancel all that been transferred onto the Hard Disk.
Selecting the “Enable” option, the “FTP” folder sharing service in the “Hard Disk” directory is enabled.
The user can choose from 2 options :

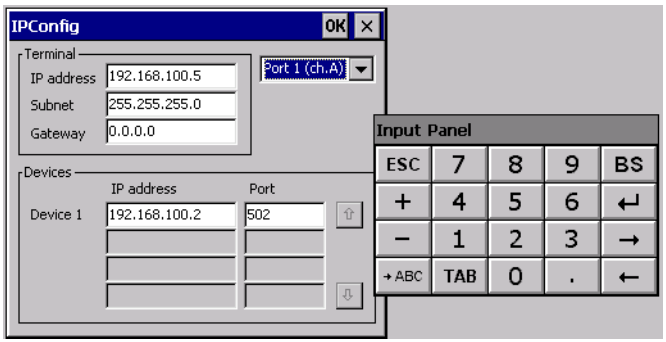
-“Remove project and runtime” -> choosing this option, both the project and the runtime that have been transferred from Polymath onto the terminal will be cancelled.
-“Complete terminal disk reset” -> choosing this option, the whole content of the “Hard Disk” folder will be cancelled, with the exception of the files that are essential for operating the terminal.

Information



Information regarding the panel is displayed, which: terminal model, revision of the Windows CE image and the image date.

IP Config



By clicking on the "IP Config" icon, the mask displaying the IP Address of the terminal and IP Address (or IP Addresses) of the devices connected via Ethernet will appear.
The function “IP Config” is useful in that it is possible to change the addresses of the devices without having to use the POLYMATH configuration software (very useful operation during the system's start-up).
By using the appropriate key "Input Panel", the user can carry out any variations to the IP addresses of the devices directly from the ESA terminal.

Audio Volume

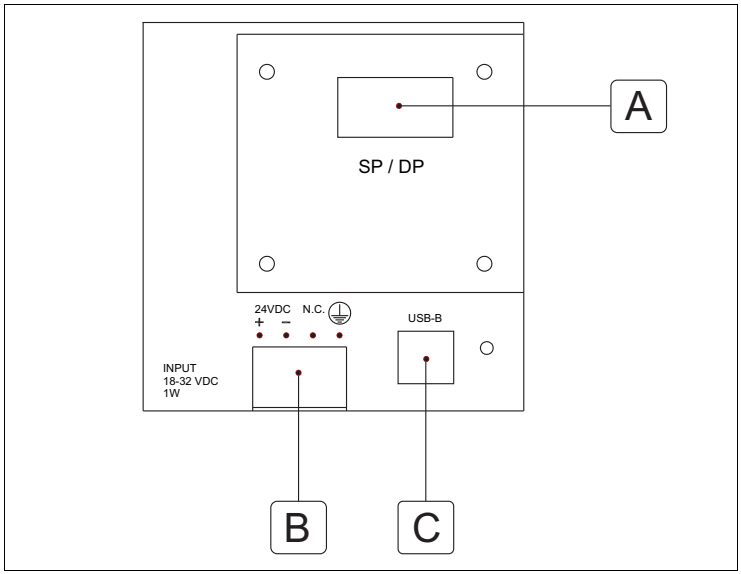
By clicking on the icon "Audio -Volume" the above window will appear, allowing to set the volume of the MP3/WAV files.
From Polymath 2.1 is possible to associate an audio-file to an alarm of the project.
By clicking the button “Play” the user is able to test the utility running a Bitonal - Buzzer .

14. PC Adapter

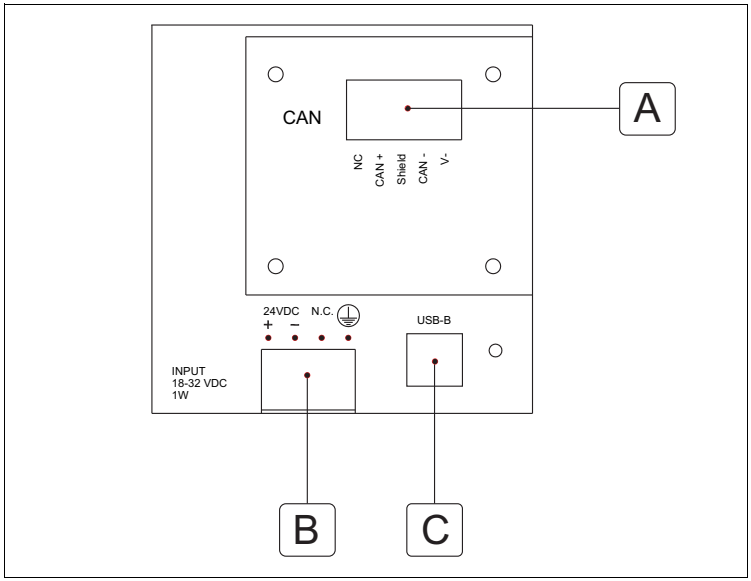
Technical specifications The table below lists the product's main technical specifications.

Terminal code	Terminal characteristics					
PC-USB		ADP	0	X	X	X
Interfaces						
USB Host port	v. 1.1	●	●	●	●	●
SP Serial Port	RS232/RS485	●	●	S	P	2
Profibus DP Port		●	●	D	P	
CAN port		●	●	C	A	N
Technical data						
Power supply	24Vcc (18 to 32Vcc)					
Power input at 24Vcc	1 W					
Fuse	Polyswitch reset fuse					
Temperature range	0 to +50°C					
Storage and transport temperature	-20 to +60°C					
Humidity (without condensation)	<85%					
Weight	280 gr					
Dimensions						
External dimensions L x A x P [mm]	90 x 90.8 x 43.9					
Certifications						
Mark of approval	CE					

Front



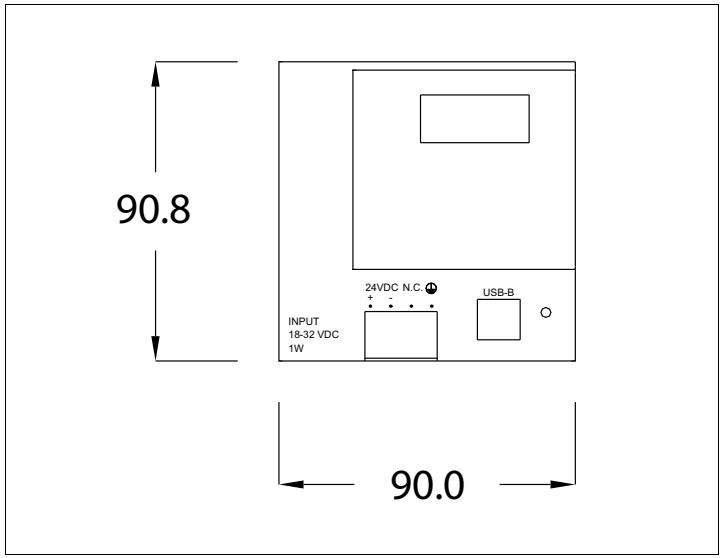
Position	Function
A	SP Serial Port / Profibus - DP port
B	Power connector
C	USB-B port



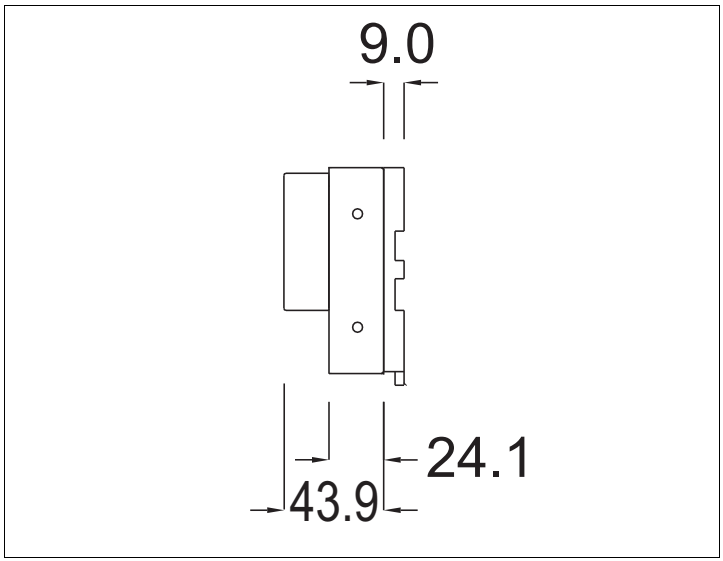
Position	Function
A	CAN port
B	Power connector
C	USB-B port

Dimensions

Dimensions at front:



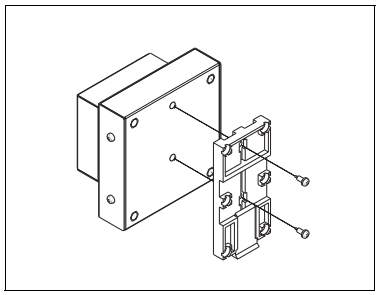
Dimensions at side:



Attachment

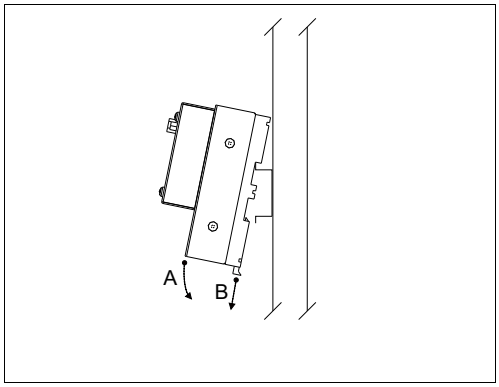
Assembly of plinth for attachment to DIN guide:

The device comes with a special plinth for assembly on DIN guide.The picture below shows you how to attach the plinth to the device.



- Locate the two holes.
- Position the device with the holes decentralized towards the top.
- Attach the plinth with the screws provided, holding the release spring downwards.

Attaching the device to the DIN guide:



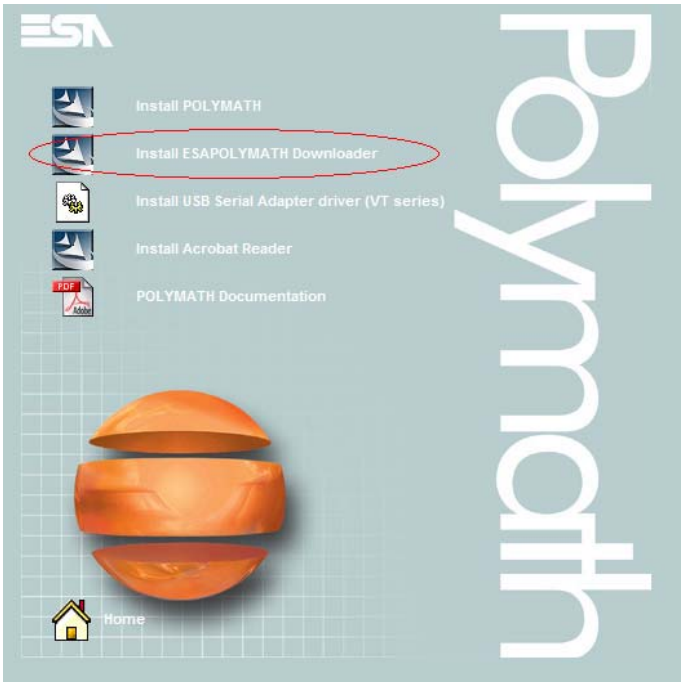
- Attach the plinth beforehand.
- Connect the top of the plinth to the DIN guide.
- Press the device in the direction indicated (Arrow A).

- To facilitate connection, pull the release spring in the direction indicated (Arrow B).

Installing the ESA Downloader Software

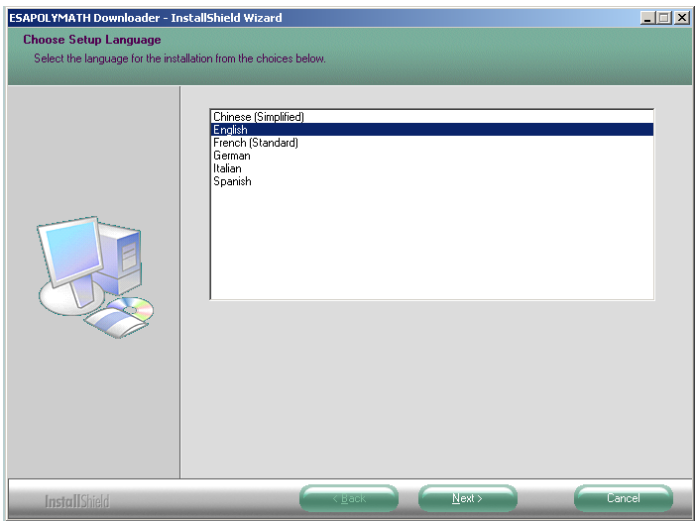
You need to install the ESA Downloader Software on the PC the PC-USB card is connected to. The software is on the Polymath PCMachineEdition CD.

When you put in the PolymathMachineEdition CD, this window appears:

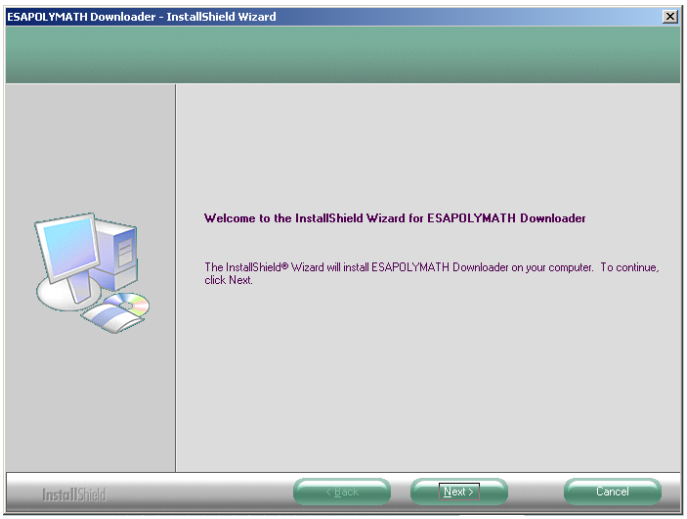


Select the option "Install ESAPolymath Downloader".

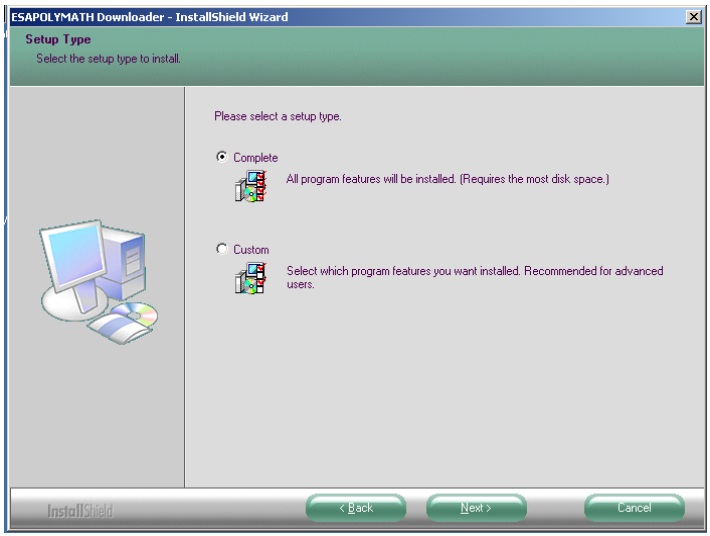
When the ESA Downloader program starts up, this window appears:



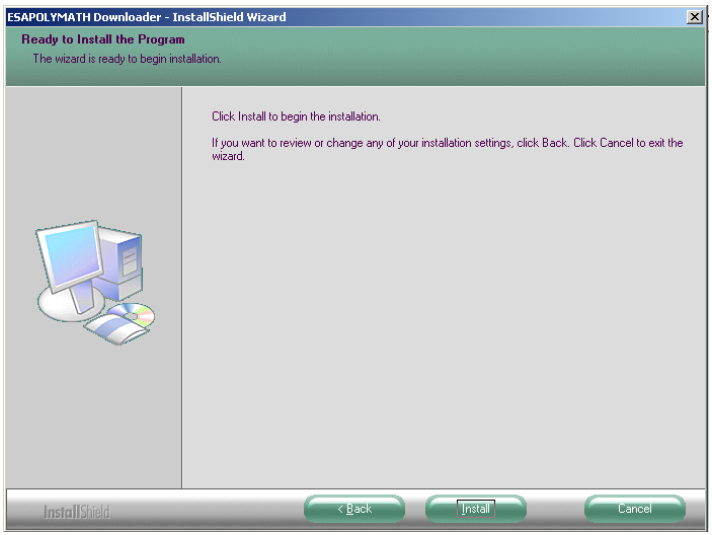
Select the required language.



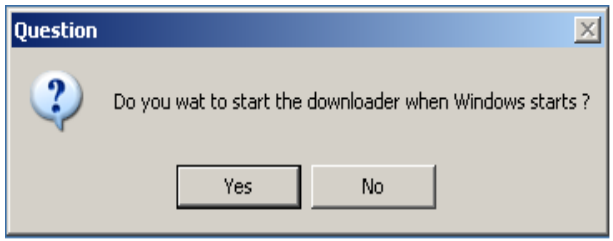
Select "Next>" to continue.



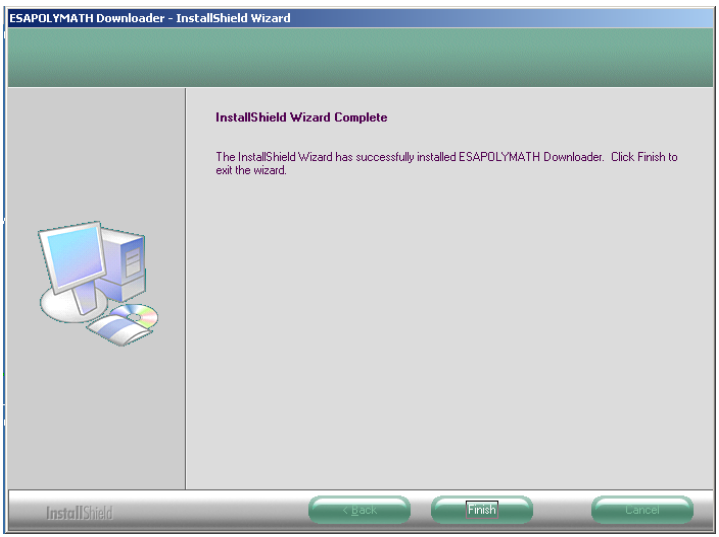
Select the required installation.



Select "Install" to continue.



Select the required option.



Select "Finish" to end the procedure.

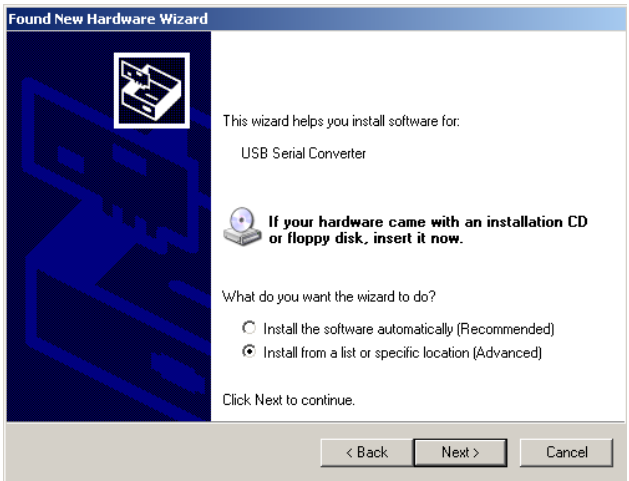
Connecting the PC Adapter

Connect the PC-USB card to a USB port on the PC with a USB-A - USB-B (host/device) cable.

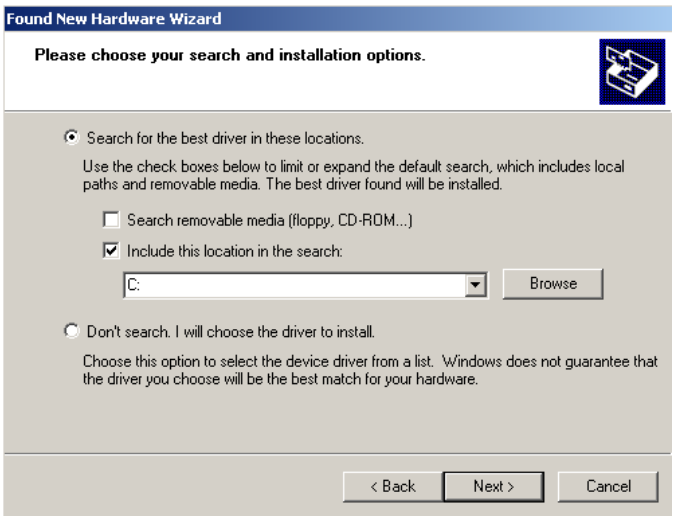
Power the PC-USB card.

The PC requires you to install the driver.

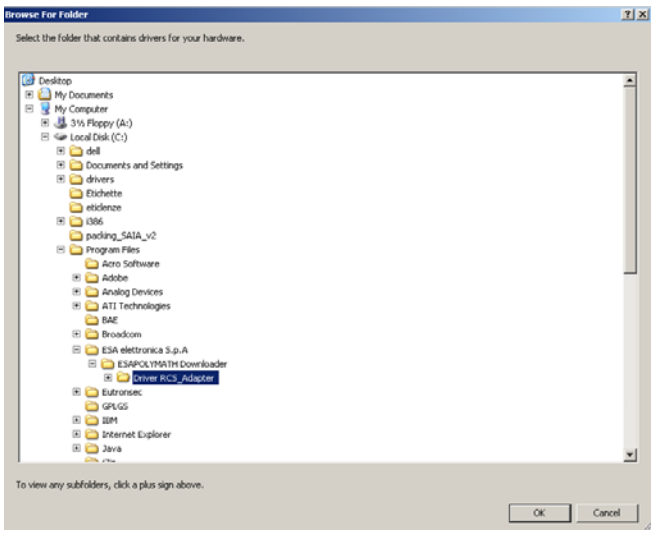
Select "No,not this time" and "Next".



Select "Install from a list or specific location (advanced)" and "Next".

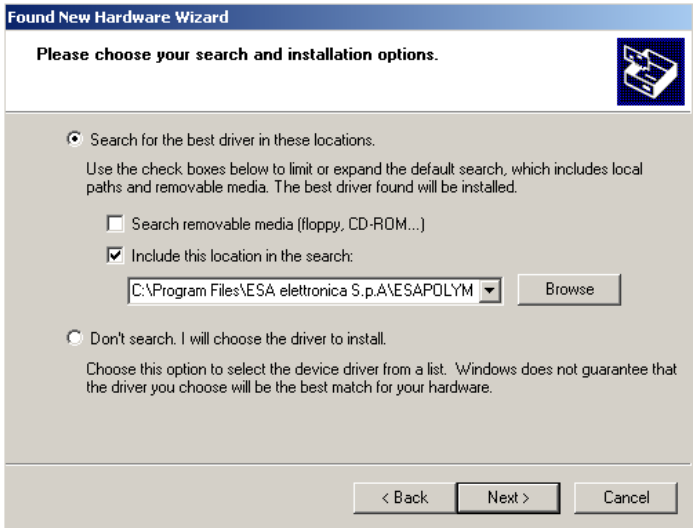


Select "Include this location in the search" and "Browse".

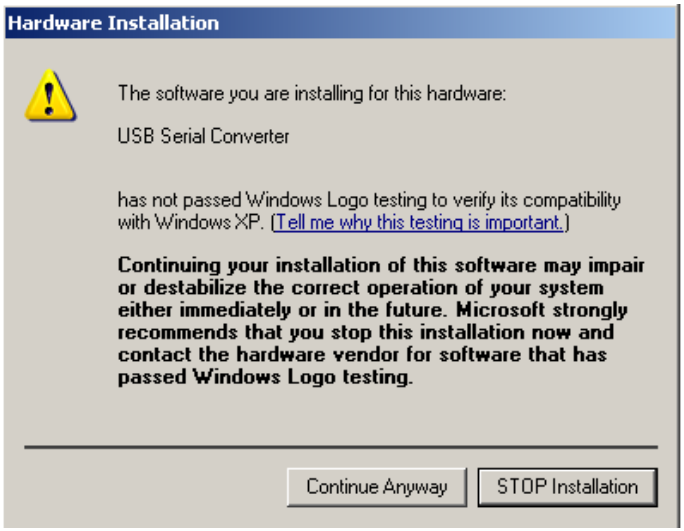


Select the installation directory for the ESA Downloader program and then that for the "Driver" (C:\Program Files\ESA

elettronica S.p.A\ESAPOLYMATH Downloader\Driver RCS_Adapter); select "OK".



Select "Next".

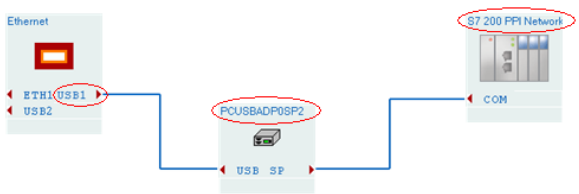


Select "Continue Anyway".

Select "Finish".

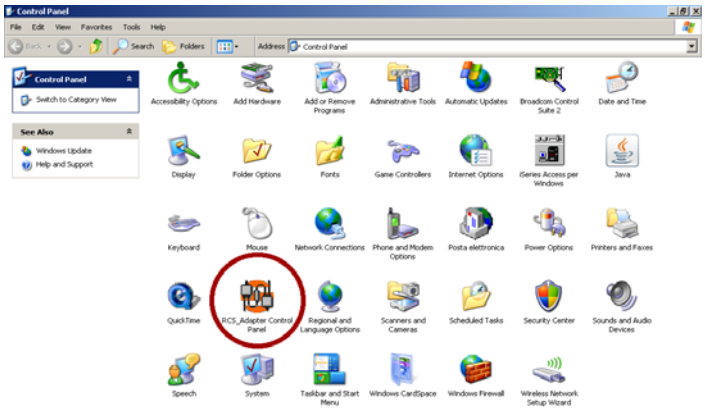
Mapping the drivers with the PC-USB card

When you create the Polymath project you need to define the USB port, the type of PC-USB adapter and the driver to be used.

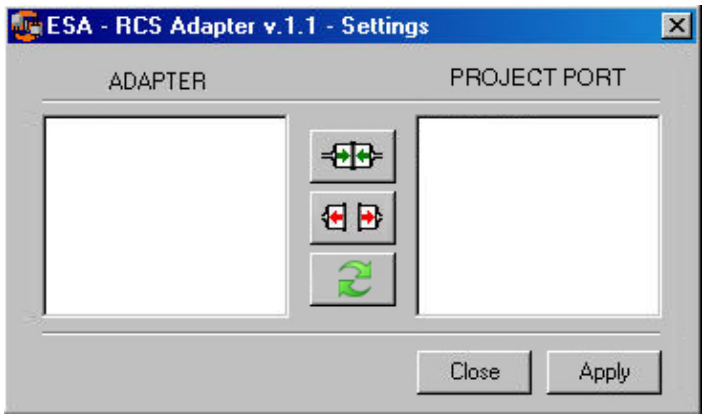


The RCS_Adapter utility in the Windows Control Panel allows you to define the relation between the adapter and driver defined in the project.

Select and run the RCS_Adapter program.

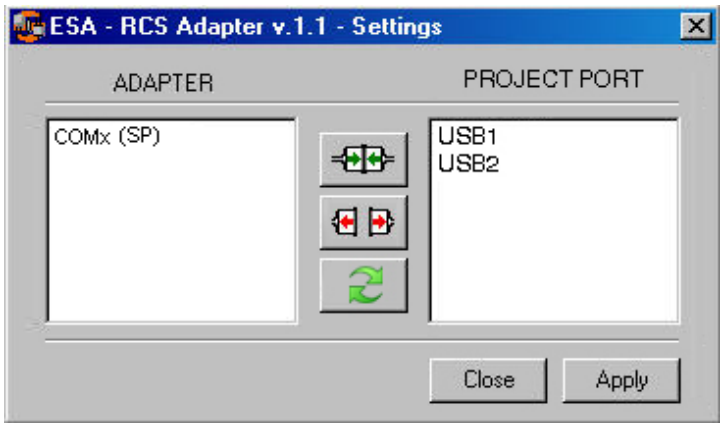


This window appears when the program starts up:

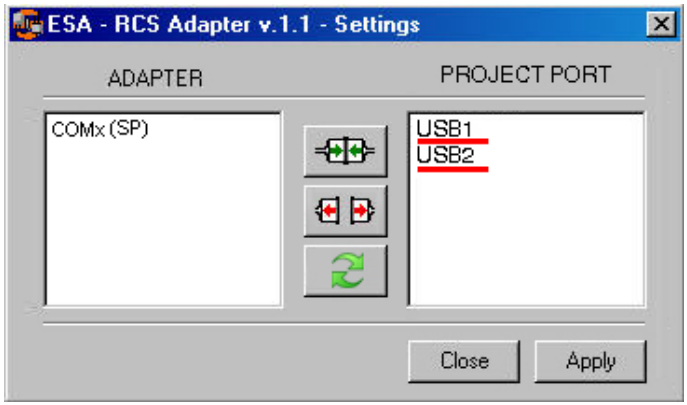


Select this button:

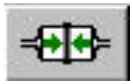
To the left of the window you will now see the COM communication port followed by the number assigned to it by the system and, in brackets, the model of the PC-USB card; on the right, instead, the two ports are listed.



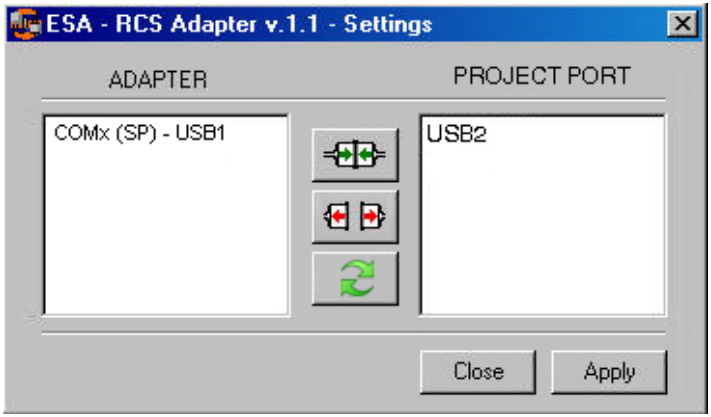
Select the port to be used on the right-hand side:



Press this button:

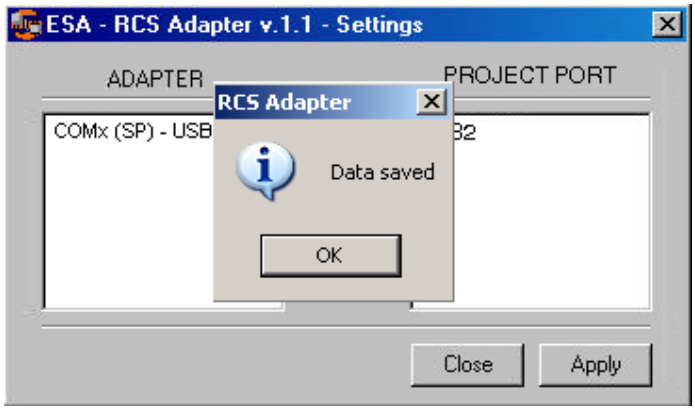


This window appears:



Select "Apply".

The next window confirms the port has been assigned to the PC-USB card.



This button cancels the allocation between the door of the project and PC-USB adapter.

15. Insertion of customisation labels

The IT terminals are supplied with the labels already housed in the appropriate spaces.

If keys, logo or model must be customised, this can be performed by replacing the labels with the neutral ones supplied with the terminal (only for F keys) or by inserting the label of another material, as long as it is in compliance with that exposed in the points listed below.

The failure to comply with the following indications can cause damage to the terminal.

Label

The label must be flexible material and total thickness must not exceed 125µm (micrometers).

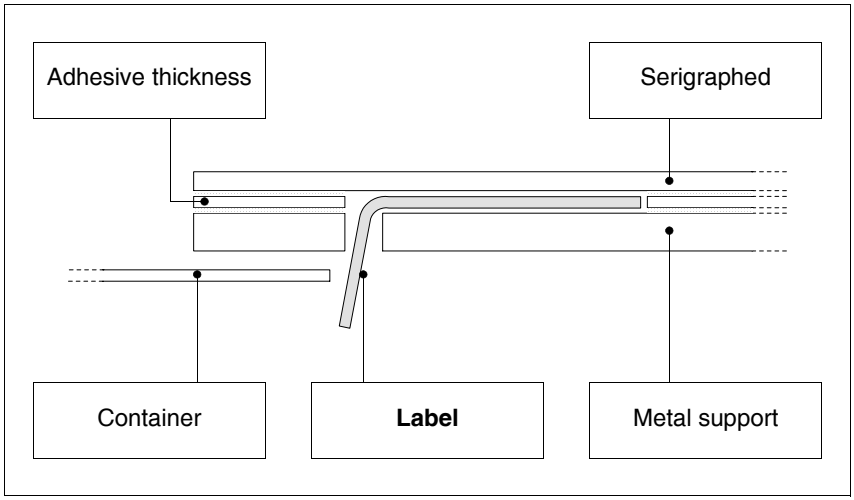
Do not use stiff materials or adhesives.

Warnings

Before inserting the labels, the following points MUST BE complied with:

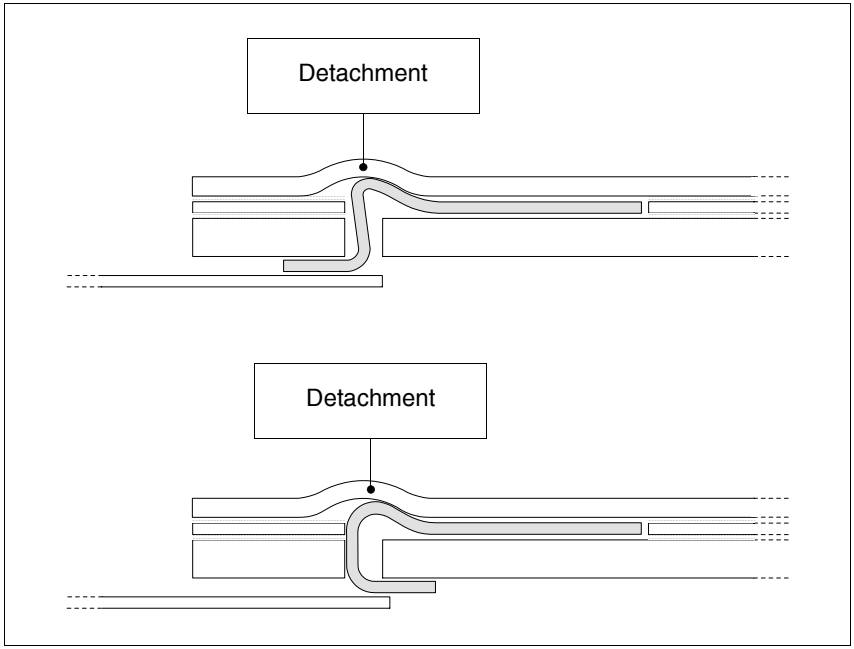
- Remove the label already inserted.
- Respect the characteristics set in the Label paragraph.
- Do not use compressed air to make insertion easier.
- Do not use rigid tools or other to make insertion easier.
- Do not fold the label between the terminal and the container. The correct and incorrect position of the label is shoen in the figure below.

Correct insertion:



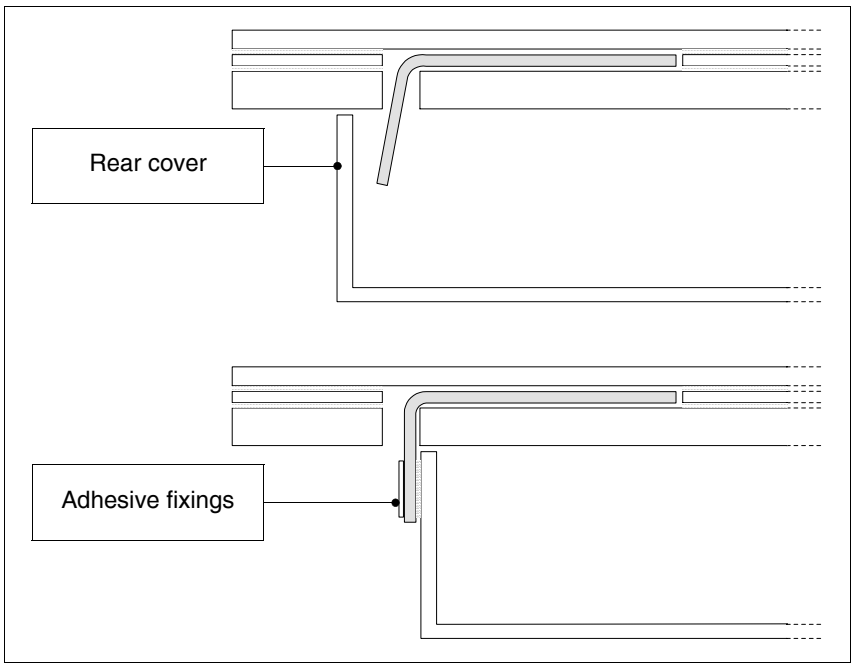
The label in the figure is free and does not cause tension on the keyboard.

INCORRECT insertion that can cause detachment:



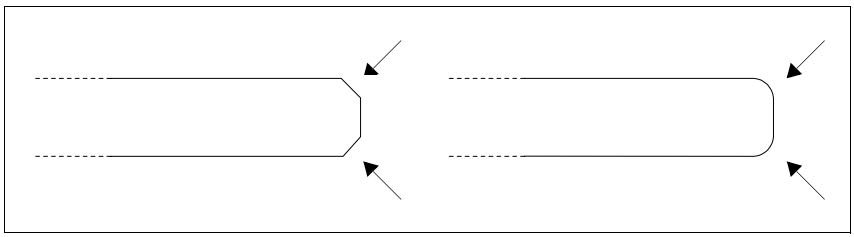
The labels in the figure generate forces, which through time, may cause detachment of the keyboard.

- Excess label must e housed under the rear cover or in the relevant fixings (the choice depends on the type of IT used).

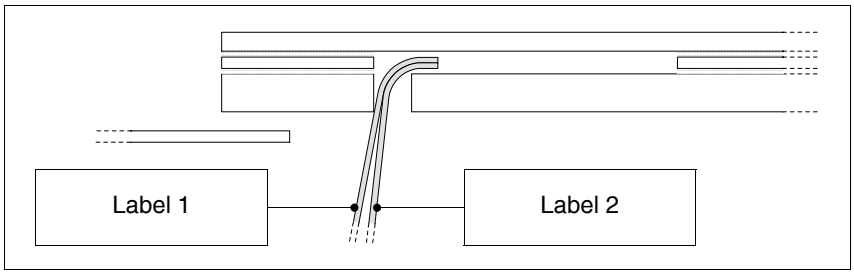


Notes: Some suggestions are given to make insertion of the labels easier:

- Remove or round off the corners.

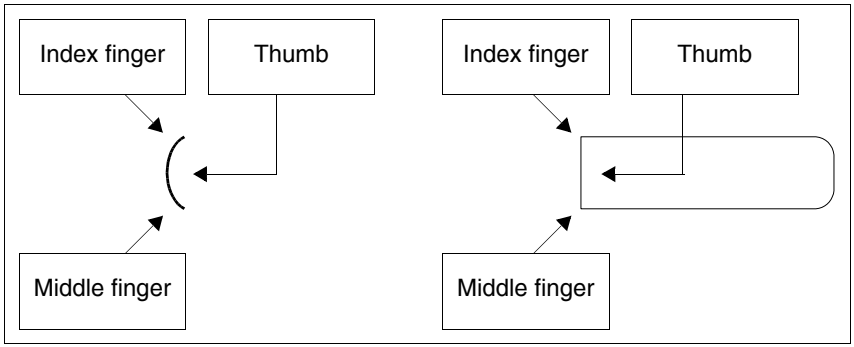


- Slide out and then re-insert if there is resistance on insertion.
- If several labels are used, insert tem at the same time.



Pay attention not to exceed the total thickness allowed (see Pag. -187 -> Label).

- Do not fold the label at a right angle and/or do not make too evident folds that may damage the label.
- Make a slight longitudinal bend to strengthen the label.

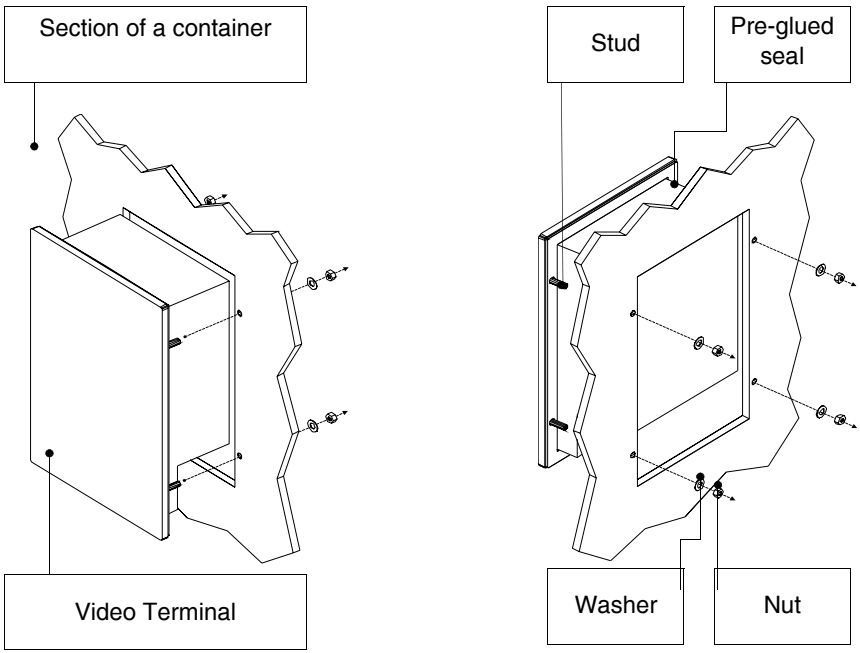


16. Fixing the terminal to the container

The terminal is equipped with the elements necessary for fixing to the container and seals to guarantee the declared IP protection level.
There are three groups of terminal, those with the seals already applied and fixing to the container using nuts, those with the seal to be applied in the installation phase and fixing using relative hooks and those with the seal already applied and fixing to the container by an external support.

Fixing using nuts

The figure below shows a front and rear view of a generic terminal inserted into a container. The figure below shows the operations to be performed for correct fixing in sequence.

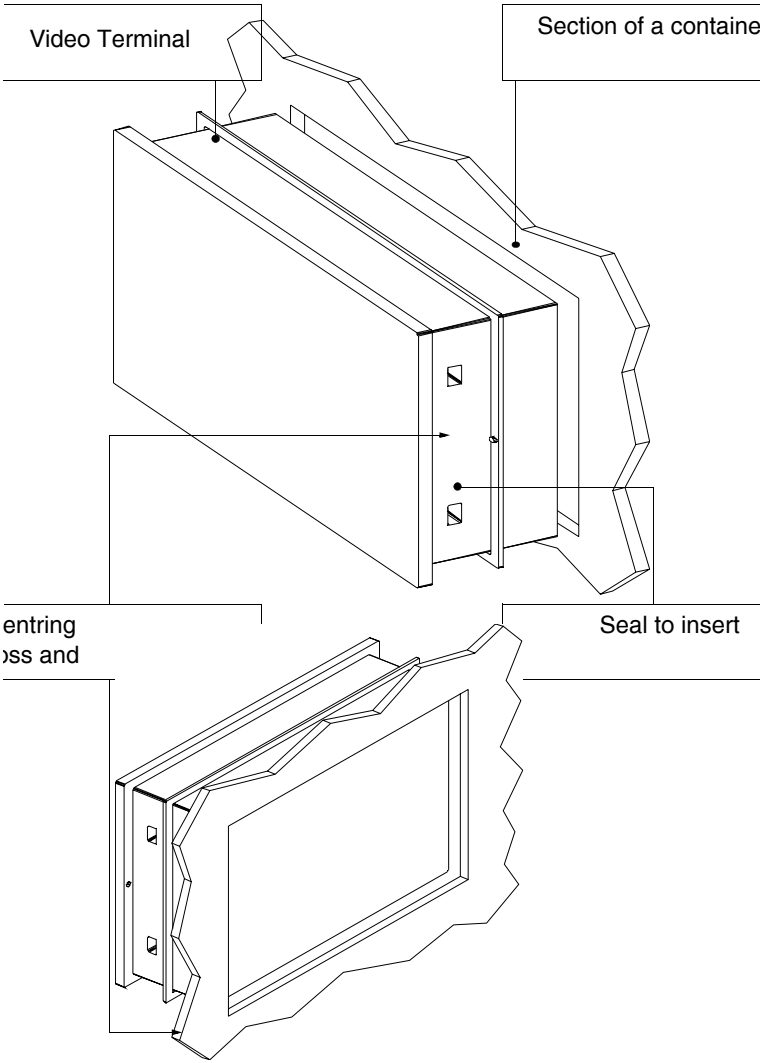


After having prepared the container that will house the terminal:
Insert the terminal into the slot
Keep the terminal against the wall
Insert the washer follwed by the nut into the studs

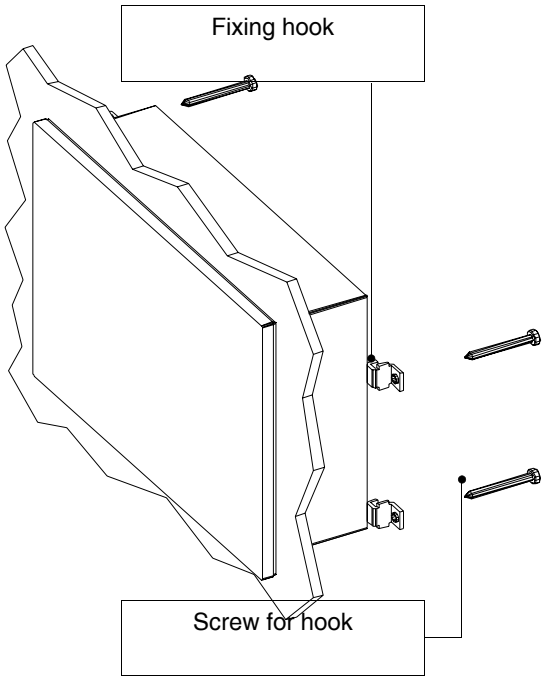
Tighten the nuts until the seals exert a good hold.

Fixing using hooks

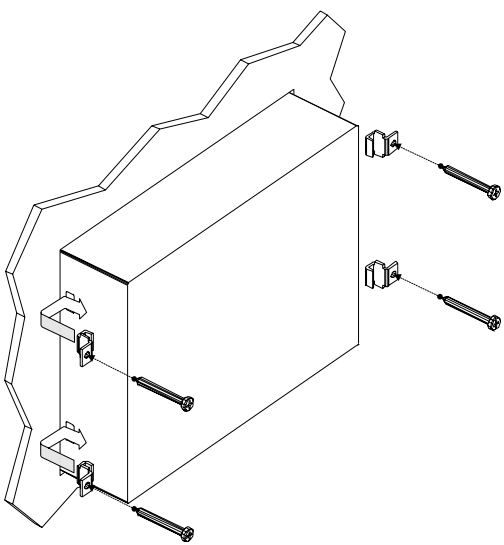
The figures below show a front and rear view of the sequence to mount a generic terminal in a container.



After having prepared the container that will house the terminal: Insert the seal in the terminal respecting the direction of insertion indicated by the centring bosses

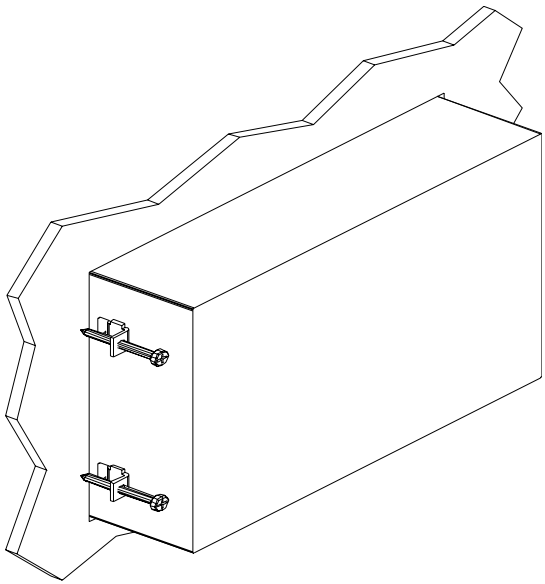


Prepare the fixing hooks
Tighten the screw for about 10mm into the hook



Fixing the terminal to the container

Insert the terminal and keep it pressed against the container
Insert the hooks into the seats following the movement indicated by the arrow and tighten the screws fully home (see also Pag. -195)
.



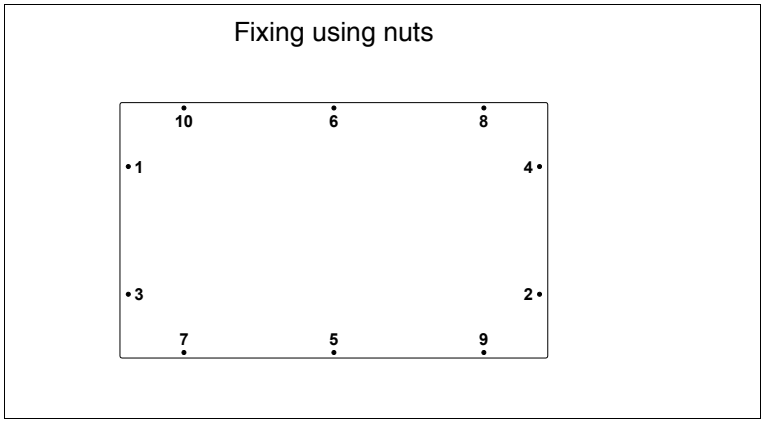
View of the terminal fixed correctly.

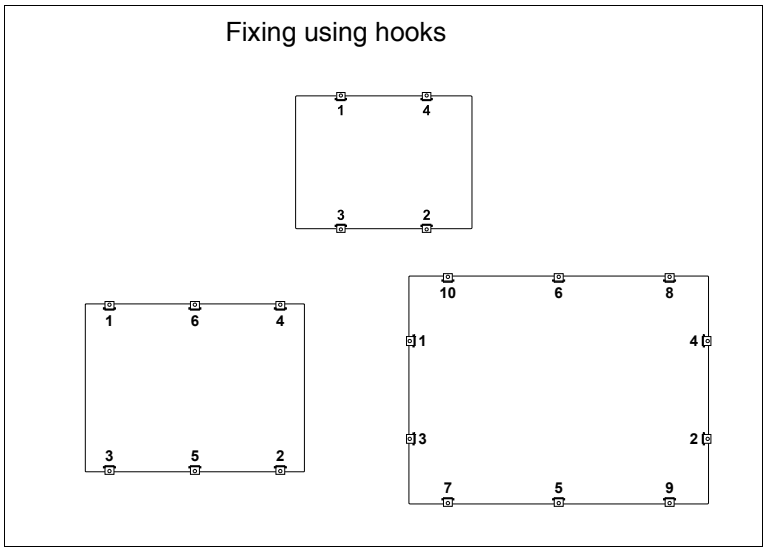
The number and position of the hooks is not relevant in the fixing operation. The figures are used to understand the functioning concept of the ficing hooks.

Fixing torques

For improved adherence of the seals to the container:

- Respect the screwing sequence shown in the figures





- Perform the initial tightening of the fixings with a moderate force in a way to allow uniform adhesion in all points, once all fixings have been tightened repeat the definitive tightening sequence.

17. Communication ports

All terminals communicate with other applainces using serial and/or parallel communication. The individual ports are stated below with the type of communication and the meaning of the connection pins.

General notes

The serial communications are greatly affected by interference. Top-quality shielded cables must be used to limit the effects of interferece to a maximum.
The table below shows the features of the cable that is recommended for use for the serial connection.

Features of the serial connection cable	
Resistance in direct current	Max. 151 Ohm/Km
Capacitive coupling	Max. 29pF/m
Shielding	> 80% or Total

Great attention must be paid in the choice and laying of the cables, especially regarding the connection cable between the terminal and Device.

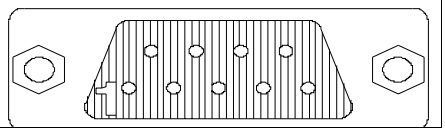
In all cases:
- Look for the shortest route
- Lay disturbed cables separately

Disconnect the power supplies before connecting or disconnecting the communication cables to prevent any damage to the terminal and/or he device connected.

SP1/SP2 serial port

The SP1(Serial Port) SP2 (present in the base of the model) is the port used for the connection with other devices. It is formed from a 9-female pole D-Sub connector and can communicate in RS232 and RS485.

SP1/SP2
Serial Port
9 female poles

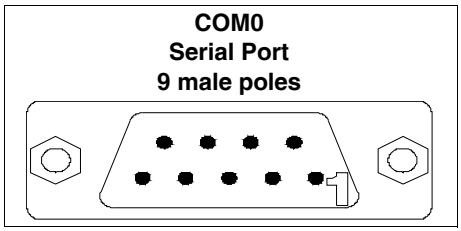


Pin	Signal	Notes:
1	TxRx 485 + IN/OUT	RS485
2	Rx IN	RS232
3	Tx OUT	RS232
4	N.C.	Not connected
5	Signal GND	Internal reference of 0Volt
6	TxRx 485 - IN/OUT	RS485
7	RTS OUT	
8	CTS IN	
9	+ 3.3 VDC (reserved)	**Reserved Esa**

Before connection in RS485 check the polarity. Some devices request that the Tx+ / Rx+ and Tx- / Rx- signals or the polarities are inverted.

COM0 serial port

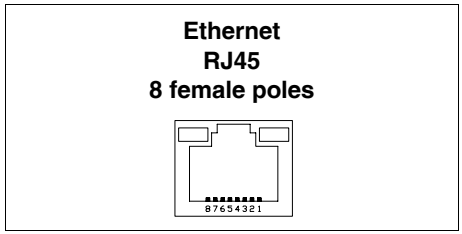
The COM0 serial port (Standard Serial Port) is made up of a 9 male pole D-Sub connector and can communicate in RS232.



Pin	Signal	Notes:
1	DCD IN	--
2	RX IN	--
3	TX OUT	--
4	DTR OUT	--
5	Signal GND	Internal reference of 0Volt
6	DSR IN	--
7	RTS OUT	--
8	CTS IN	--
9	RX IN	--

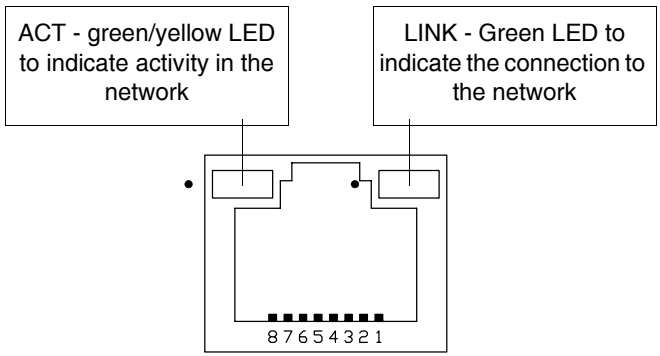
Ethernet network port

The Ethernet network port is constituted of an 8 female pole RJ45 connector and is dedicated to the connection to other terminals, with PC and any device that supports this standard.



Pin	Signal	Notes:
1	TX+	--
2	TX-	--
3	RX+	--
4	--	Re-closure with pin 5 and 75 ohm terminator
5	--	Re-closure with pin 4 and 75 ohm terminator
6	RX-	--
7	--	Re-closure with pin 8 and 75 ohm terminator
8	--	Re-closure with pin 7 and 75 ohm terminator

The Ethernet connector envisions two LEDs for the diagnostics on the communication and on the network connection. The meanings are given in the table below.



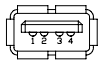
LED		Meaning
ACT	LINK	
Off	Off	Cable disconnected, interrupted or participants off

Not significant	On	Connection to network
Yellow	On	Data exchange at 10Mbit
Green	On	Data exchange at 100Mbit

USB-A port

The USB-A (Universal Serial Bus) serial port also called USB Host can communicate in RS232.

USB-A
Universal Serial Bus
4 male poles

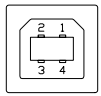


Pin	Signal	Notes:
1	USB VDC (OUT)	--
2	USBD-	--
3	USBD+	--
4	Signal GND	--

USB-B port

The USB-A (Universal Serial Bus) serial port also called USB Host can communicate in RS232.

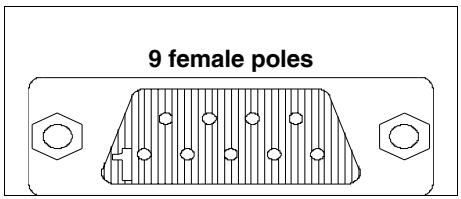
USB-B
Universal Serial Bus
4 male poles



Pin	Signal	Notes:
1	USB VDC (IN)	--
2	USBD-	--
3	USBD+	--
4	Signal GND	--

Profibus-DP network port

The communication port is made up from a 9 female pole D-Sub connector.



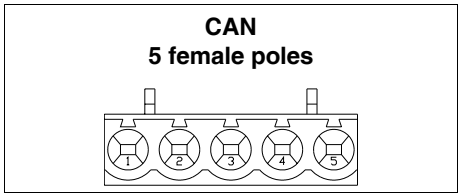
Pin	Signal	Notes:
1	Shield	--
2	N.C.	Not connected
3	TxRx485+ Data B	--
4	Repetear-Control-signal RTS	--
5	Signal GND	Internal reference of 0Volt
6	P5V	**Reserved ESA**
7	N.C.	Not connected
8	TxRx485- Data A	--
9	N.C.	Not connected

The Pin 6 is not envisioned for the switch-over of loads of any type (coils etc.); interference on entry to Pin 6 can cause malfunctioning in the terminal and consequently in the industrial process.

Strong interference at Pin 6 could damage the board.

CAN port

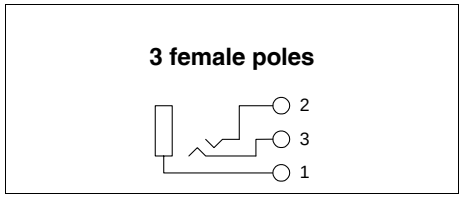
The communication port is made up of a free clamp with 5 female poles (optoisolated interface).



Pin	Signal	Notes:
1	V-	--
2	CAN -	--
3	Shield	--
4	CAN +	--
5	N.C.	Not connected

MIC IN Audio Port

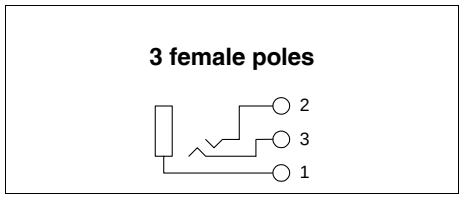
The communication port is made up from a 9 male pole D-Sub connector.



Pin	Signal	Notes:
1	Signal GND	--
2	N.C.	Not connected
3	MIC IN	--

LINE OUT Audio Port

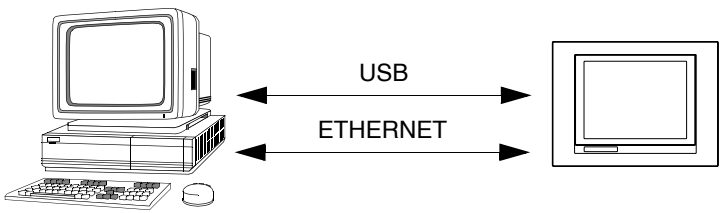
The communication port is made up from a 9 male pole D-Sub connector.



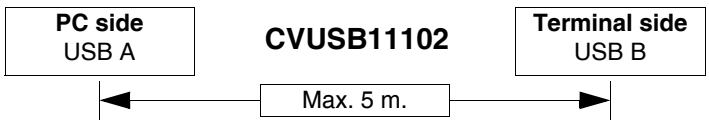
Pin	Signal	Notes:
1	Signal GND	--
2	Right (OUT)	--
3	Left (OUT)	--

PC <-> terminal connection

The connection of the terminal with the PC is indispensable for the transfer of the communication firmware, of the communication driver and of the project (see Software Manual) and can take place by means of the USB Port or Ethernet.

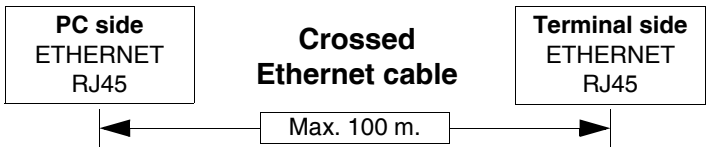


The connection cables are shown below.

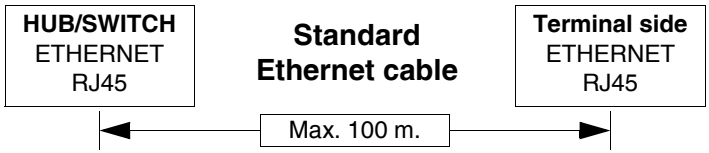


If a connection is to be made using the RJ45 Ethernet port there are two methods and two cables to use.

If the PC is directly connected to the terminal, use a crossed Ethernet cable

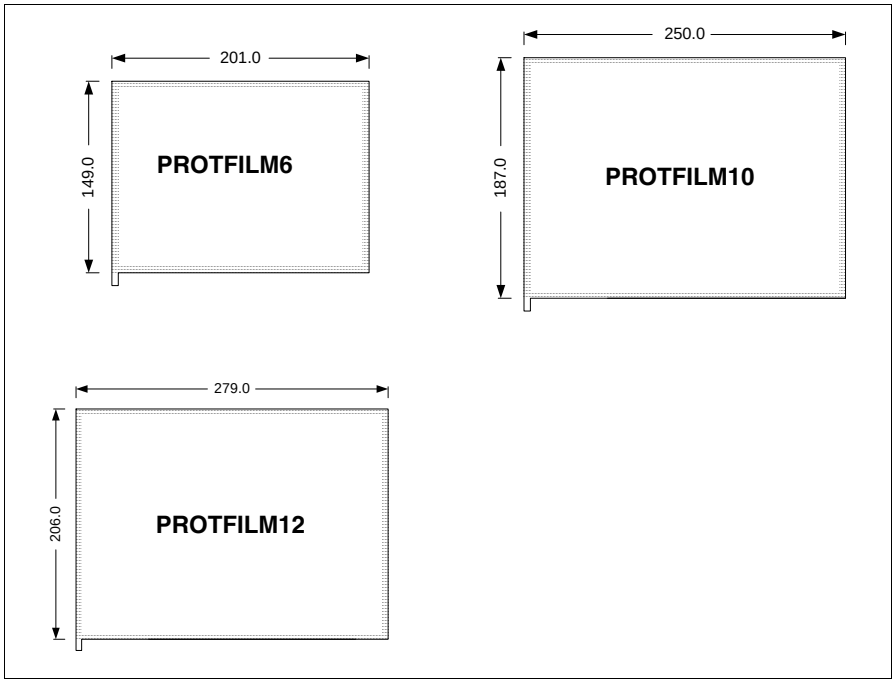


If the terminal is connected to a hub, a switch or directly to a network, use a normal Ethernet cable.



18. Accessories for terminal

Protfilm 6/10/12

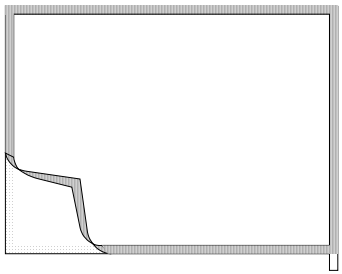


It is a transparent protection film to apply onto the front of the touch screen terminal to protect it from wear by external agents (see chap. 20, “Resistance to chemical substances” page 259).

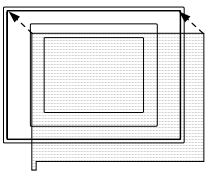
Application of the film:

Operations to carry out in order to apply the adhesive film:

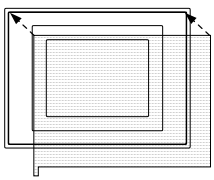
- Remove any impurities from the terminal using Denatured Ethyl Alcohol
- Dry the part well
- Uncover the adhesive part of the transparent film



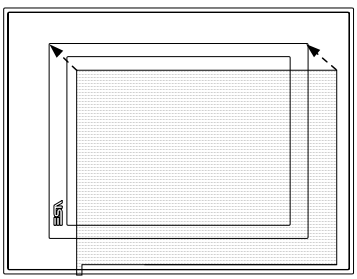
- Position the protection on the upper edge and lay it



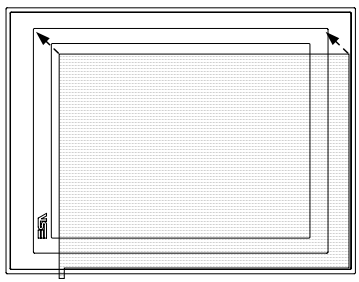
IT105x



IT107x

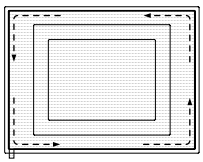


IT110x

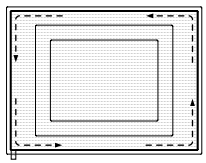


IT112x

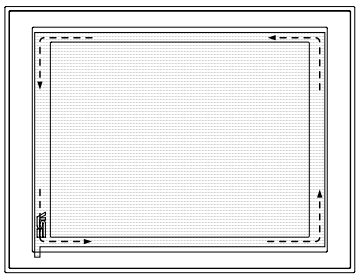
- Run a cloth along the edges to allow correct adhesion



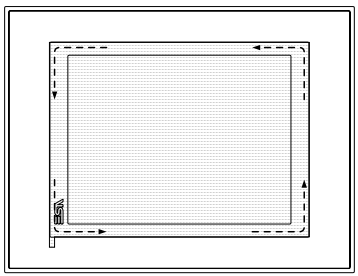
IT105x



IT107x



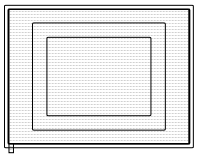
IT110x



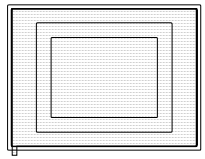
IT112x

Operations to perform for removal:

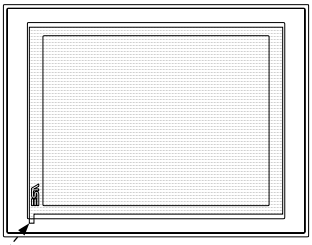
- Exert an upward force using the relevant tear-tape



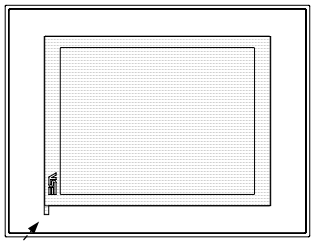
IT105x



IT107x



IT110x



IT112x

19. Connection cables

VIGOR PLC	19-257

All of the ITs communicate with the other appliances by serial communication. This chapter contains all cables and notions necessary for the connection to the various devices and order codes.

The cables that have NOT CODED as order code are not supplied by ESA elettronica, but are stated to ease construction of the cable by the user.

General notes

As serial communications are greatly affected by interference, top-quality shielded cables must be used in order to limit the influence of interference to a maximum.

The table below shows the features of the cable that is recommended for use for the serial connection.

Features of the serial connection cable	
Resistance in direct current	Max. 151 Ohm/Km
Capacitive coupling	Max. 29pF/m
Shielding	> 80% or Total

Great attention must be paid in the choice and laying of the cables, especially regarding the connection cable between IT and Device.

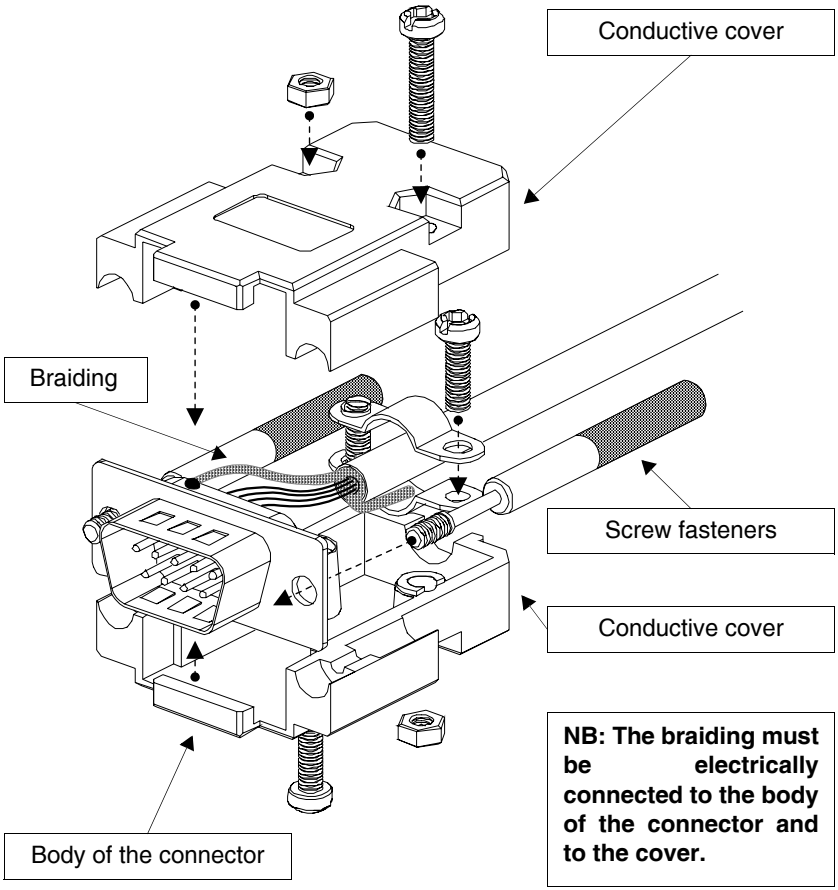
In all cases:
- **Look for the shortest route**
- **Lay disturbed cables separately**

Disconnect the power supplies before connecting or disconnecting the communication cables to prevent any damage to the IT and/or he device connected.

Connection of the cable shield

The correct shielding of the interface cables between IT and Device is indispensable in order to guarantee a serial communication without any type of external interference, therefore, all cables stated in this manual must be the shielded type and tank containers on the IT and Device side must have a metal conductive plastic case.

The correct method of connecting the shielding is shown in the lay-out below.



The interface cable shield must be electrically connected to the case and to the body of the connector itself from both sides of the cable.

If it is not possible to connect the Device side shield due to the type of particular serial connector, the shielding itself must be taken externally to the connector and connected to the earth clamp.

The same operation must also be performed if the body of the Device serial connector, even if standard, is not electrically connected to the earth clamp of the PLC itself.

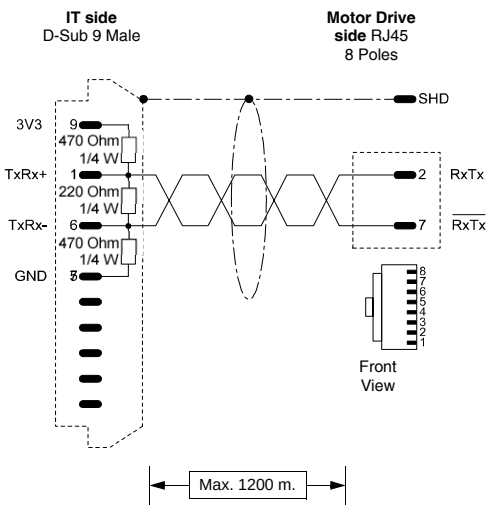
It is, however, intended that also in this condition the shield must be connected to the case and the body of the connector.

Some cable shields have the pin configuration of the Device side shielding signals: in these cases, considering the above, the shield must also be connected.
In all cases the connection of the IT side shield (pin 1) must never be carried out.

Earth potentials obtained from DIN guides, machine framework, doors of the electric control boards etc. are not allowed and it is a good ides to avoid equipotential earth bars where earths converge coming from inverter, drive, step-by-step motor type loads and all those loads that generally can be a source of great interference..

The failure to comply with these indications can jeopardise the compatibility of the IT-PLC system with EMC regulations in force.

MOTOR DRIVE CONTROL TECHNIQUES



Order code:
CVIT33102

SE - CTNET Commander

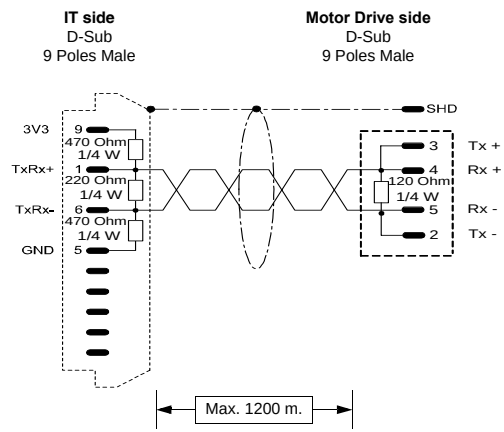
(RS485)

Set the parameter 41 = ANSI
Set the parameter 42 = (Communication speed)
Set the parameter 43 = (Address)

(See "Chapter -> Connection of the cable shield")

NOTE:
Register addressed with Menu 0 Parameter 0 cannot be accessed by the panel both in read and write mode.

MOTOR DRIVE ELAU PACDRIVE C-400



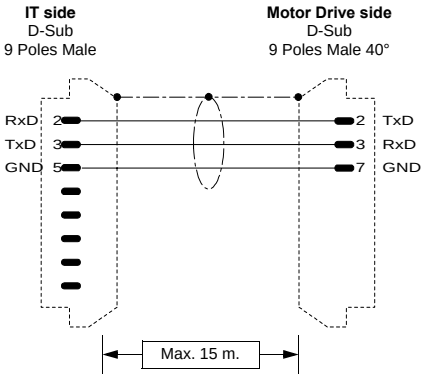
Order code:
CVIT37102

ELAU Packcrive C-400

(RS485)

(See "Chapter -> Connection of the cable shield")

MOTOR DRIVE KEB

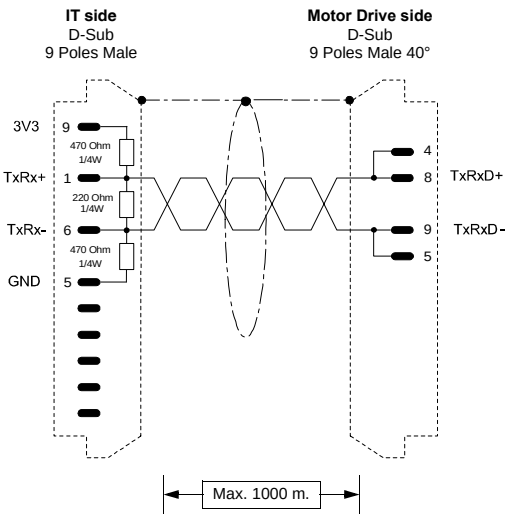


Order code:
CVIT34112

Combivert F4C - F4S - F5

(RS232)

(See "Chapter -> Connection of the cable shield")



Order code:
CVIT34212

Combivert F4C - F4S - F5

(RS485)

(See "Chapter -> Connection of the cable shield")

GENERIC RTU MODBUS

Devices supported by the IT:

- All devices that communicate in STANDARD RTU MODBUS

This type of protocol is recommended when devices for which ESA does not have a dedicated protocol must be connected to the ITs.

RTU Modbus Master

Protocol	RTU Master (fast peripherals)	
Controllers/CPU	All devices that support them	
IT Port	SP1, SP2	
Type	Network	
IT mode	Master	
Network type	Master-Slave	
Communication	Baud rate	1200 - 57600 bit/s
	Parity	None
	Date	8
	Stop	1
IT Parameters	Protocol timeout (ms)	500 - 5000
	Character nil before TX	0 - 100
	Further attempt time (sec)	1 - 60
PLC Parameters	Device address	1 - 255
Notes:	The FAST protocol Peripherals must be used with devices that dedicate an amount of resources to the serial communication such to consent high-priority management with respect to other functions; typically the PLCs.	

All values are expressed in Decimal format.

Protocol	RTU Master (slow peripherals)
Controllers/CPU	All devices that support them
IT Port	SP1, SP2
Type	Network

All values are expressed in Decimal format.

IT mode	Master	
Network type	Master-Slave	
Communication	Baud rate	1200 - 57600 bit/s
	Parity	None
	Date	8
	Stop	1
IT Parameters	Protocol timeout (ms)	500 - 5000
	Character nil before TX	0 - 100
	Further attempt time (sec)	1 - 60
PLC Parameters	Device address	1 - 255
Notes:	The SLOW protocol Peripherals must be used with devices that do not manage the serial communication at high-priority with respect to other functions; typically the Heat adjusters, Drives, Inverters, Dedicated electronics.	

All values are expressed in Decimal format.

Cable

The type of cable to use depends on the type of device connected, therefore refer to the manufacturer's manual.

Areas accessible to the IT

Table 0.1: RTU Master Protocols

Name	Type	Mode	Fields	Interval	Format
FC 01-05: read/write coil	Bit	RW	Address	0-65535 (FFFF)	Hex
FC 03-16: read/write registers	Word Dword String	RW	Address	0-65535 (FFFF)	Hex
FC 04: read input registers	Word Dword String	R	Address	0-65535 (FFFF)	Hex
FC 03-06: read/write registers	Word String	RW	Address	0-65535 (FFFF)	Hex
FC 02: read input status	Bit	R	Address	0-65535 (FFFF)	Hex

RW: reading/writing, R: reading only

Warnings

- The Baud rate defined in the device must coincide with that assigned in the POLYMATH.
- For the devices with two ports ensure that the baud rate is assigned to the door where the IT will be connected.
- The address of the device and the address of the IT must be different
- The address defined in the device must coincide with the address assigned in the POLYMATH.
- For the devices with two ports ensure that the address is assigned to the door where the IT will be connected.

IT-Device Connection

- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program paying attention to respect that mentioned in Pag. -217 -> Warnings.
- Connect the IT to the device using the relevant cable.
- Feed the IT.

The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The addresses declared in the IT program are not correct or do not exist.
- A communication protocol is being used that is not suitable for the device used.

RTU Modbus Slave

Protocol	**RTU Slave**
Controllers/CPU	All devices that support them
IT Port	SP1, SP2
Type	Network
IT mode	Slave
Network type	Master-Slave

All values are expressed in Decimal format.

Communication	Baud rate	1200 - 57600 bit/s
	Parity	None
	Date	8
	Stop	1
IT Parameters	Protocol timeout (ms)	0 - 100
	Character nil before	0 - 15
PLC Parameters	Device address	1 - 255

All values are expressed in Decimal format.

Cable

The type of cable to use depends on the type of device connected, therefore refer to the manufacturer's manual.

Areas accessible to theIT

Table 0.2: RTU Slave Protocol

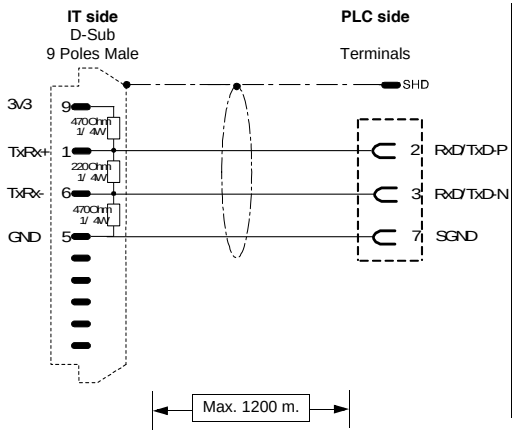
Name	Type	Mode	Fields	Interval	Format
Bit	Bit	RW	B	0-2047 (7FF)	Hex
Word	Word	RW	W	0-2047 (7FF)	Hex

RW: reading/writing, R: reading only

Notes:

Regarding the notes, see Pag. -215 -> RTU Modbus Master

ABB PLC

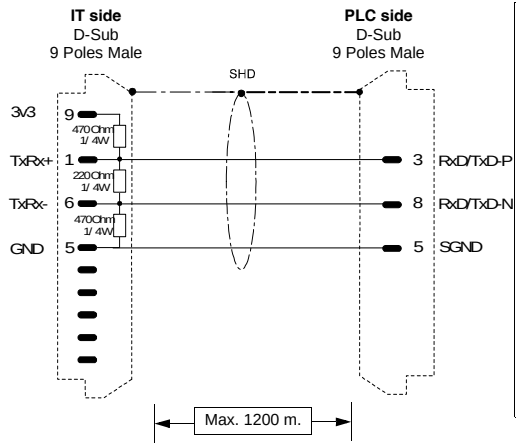


Order code:
CVIT14102

ac500-PM5xx

(RS485)

(See “Chapter -> Connection of the cable shield“)



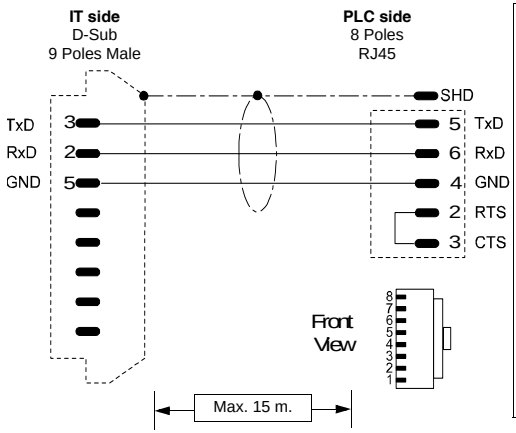
Order code:
CVIT14202

ac500-PM5xx

(RS485)

(See “Chapter -> Connection of the cable shield“)

AEG PLC



Order code:
CVIT36102

MICRO

(RS232)

(See "Chapter -> Connection of the cable shield")

ALLEN-BRADLEY PLC

Devices supported by the IT:

Series	Central controller/Unit	CPU
ControlLogix	Logix 5550	--
	Logix 5555	--
MicroLogix	MicroLogix 1000	--
	MicroLogix 1200	--
	MicroLogix 1500	--
PLC 5	ControlLogix	--
Series 5	SLC 500	5/00, /01, /02, /03, /04, /05

ControlLogix

Protocol	ControlLogix 5 series	
Controllers/CPU	5550, 5555	
IT Port	SP1, SP2	
Type	Point-to-point	
IT mode	--	
Network type	--	
Communication	Baud rate	19200 bit/s
	Parity	None
	Date	8
	Stop	1

All values are expressed in Decimal format.

Cable

Order code:
CVIT07102

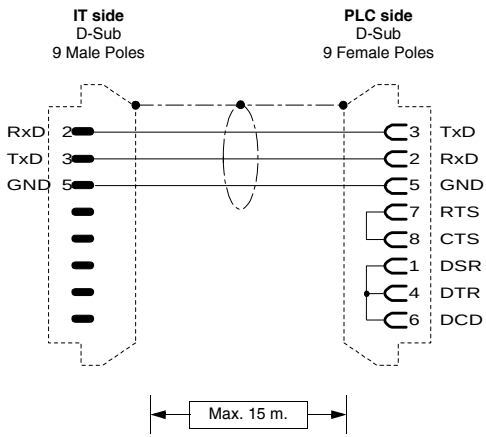
(RS232)

SET "CH0" System SERIAL PORT
DF1 mode full duplex (Point to point)

Baud rate	: 19200
ACK timeout	: 50
Stop Bits	: 1
Parity	: NONE
Control Line	: NO HANDSHAKING
Error detect	: BCC
NAK retries	: 3
ENQ retries	: 3
Embedded responses	: ENABLED
Duplicate Detect	: DISABLED

N.B. Allen-Bradley V7.00 programming SW onwards is necessary

(See “Chapter -> Connection of the cable shield“)



Areas accessible to the IT

Table 0.3: PLC5 Protocol/ControlLogix 5 series (Parte 1 di 2)

Name	Type	Mode	Fields	Interval	Format
Bit	Bit	RW	File Element	3, 10-255 0-999	Dec

RW: reading/writing, R: reading only

Table 0.3: PLC5 Protocol/ControlLogix 5 series (Parte 2 di 2)

Name	Type	Mode	Fields	Interval	Format
Counter Acc	Counter Acc	R	File Element	5, 10-255 0-999	Dec
Counter Pre	Counter Pre	R	File Element	5, 10-255 0-999	Dec
Input	Input	R	File Element	1, 10-255 0-999	Dec
Integer	Word Dword String	RW	File Element	7, 10-255 0-999	Dec
Output	Output	RW	File Element	0, 10-255 0-999	Dec
Timer Acc	Timer Acc	R	File Element	4, 10-255 0-999	Dec
Timer Pre	Timer Pre	R	File Element	4, 10-255 0-999	Dec

RW: reading/writing, R: reading only

Warnings

- Load (using the RSLogix programming pack) the correct communication driver into the device.
- File N7 must be open in the device for at least one element (E.g. N7:0), otherwise the IT does not communicate. The file must be opened independently from the type of area to be used.
- Set the parameters as stated in the connection cable figure (Pag. -221 -> CVIT07102).
- When configuring the device port (using the RSLogix programming pack) confirm using “YES” when the configuration change warning is displayed during parameter transfer.

Notes:

- The device does not have to be in RUN in order to communicate with the IT.

IT-Device Connection

- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program paying attention to respect that mentioned in Pag. -217 -> Warnings.
- Connect the IT to the device using the relevant cable.
- Feed the IT.

The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The device does not contain the V7 file open for at least one element.
- The addresses declared in the IT program are not correct or do not exist.
- The parameters or the communication driver have not been set correctly or have not been transferred into the device.
- A communication protocol is being used in the IT that is not suitable for the device used (see Pag. -220).

MicroLogix

Protocol	**MicroLogix 1000**	
Controllers/CPU	1000,1200	
IT Port	SP1, SP2	
Type	Point-to-point	
IT mode	--	
Network type	--	
Communication	Baud rate	9600 bit/s
	Parity	None
	Date	8
	Stop	1
PLC Parameters	Device address	1 - 31

All values are expressed in Decimal format.

Protocol	**MicroLogix 1500**
Controllers/CPU	1500
IT Port	SP1, SP2

All values are expressed in Decimal format.

Type	Point-to-point	
IT mode	--	
Network type	--	
Communication	Baud rate	9600-38400 bit/s
	Parity	None
	Date	8
	Stop	1
PLC Parameters	Device address	1 - 31

All values are expressed in Decimal format.

Cable

Order code:
CVIT07202

MicoLogix - All devices

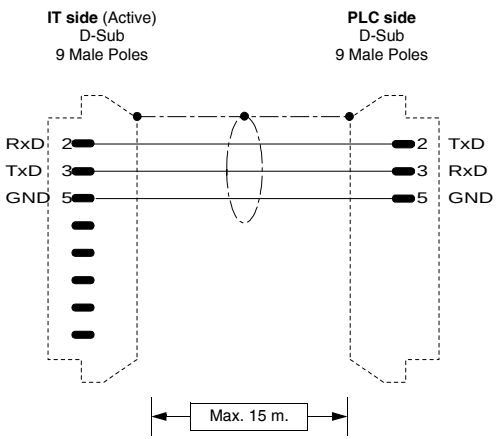
(RS232)

SET MICROLOGIX SERIAL DOOR
DF1 mode full duplex (MICRO)
Baud rate : 9600 - 38400*
ACK timeout : 50
Parity : NONE
Error detect : CRC
NAK retries : 3
ENQ retries : 3
Embedded responses : ENABLED
Duplicate packed detect : NO

(*only for CPU1500)

The Db 9 male poles connector must be connected to the A-B 1761-CBL-PM02, SER cable, A of the MICROLOGIX PLC.

(See “Chapter -> Connection of the cable shield“)



Order code:
CVIT07302

MicoLogix - All devices

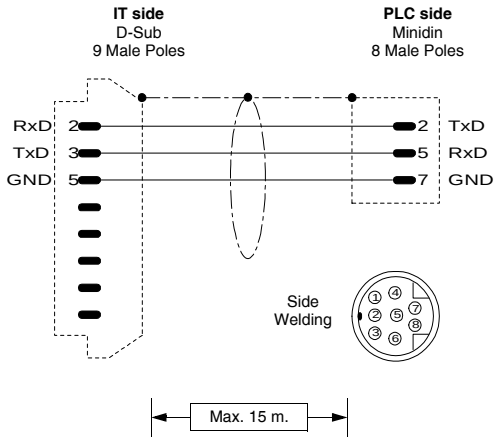
(RS232)

SET MICROLOGIX SERIAL DOOR
DF1 mode full duplex (MICRO)

Baud rate	: 9600 - 38400*
ACK timeout	: 50
Parity	: NONE
Error detect	: CRC
NAK retries	: 3
ENQ retries	: 3
Embedded responses	: ENABLED
Duplicate packed detect	: NO

(*only for CPU1500)

(See “Chapter -> Connection of the cable shield“)



Areas accessible to theIT

Table 0.4: Protocollo MicroLogix 1000

Name	Type	Mode	Fields	Interval	Format
Bit	Bit	RW	Element	0-254	Dec
Counter Acc	Counter Acc	R	Element	0-254	Dec
Counter Pre	Counter Pre	RW	Element	0-254	Dec
Input	Input	R	Element	0-254	Dec
Integer	Word Dword String	RW	Element	0-254	Dec
Output	Output	RW	Element	0-254	Dec
Timer Acc	Timer Acc	R	Element	0-254	Dec
Timer Pre	Timer Pre	RW	Element	0-254	Dec

RW: reading/writing, R: reading only

Table 0.5: MicroLogix 1500 protocol

Name	Type	Mode	Fields	Interval	Format
Bit	Bit	RW	File Element	3, 8-254 0-254	Dec
Counter Acc	Counter Acc	RW	File Element	5, 8-254 0-254	Dec
Counter Pre	Counter Pre	RW	File Element	5, 8-254 0-254	Dec
Floating	Floating point	RW	File Element	8-254 0-254	Dec
Input	Input	R	File Element	1, 8-254 0-254	Dec
Integer	Word Dword String	RW	File Element	7, 8-254 0-254	Dec
Long	Dword String	RW	File Element	9-254 0-254	Dec
Output	Output	RW	File Element	0, 8-254 0-254	Dec
Timer Acc	Timer Acc	RW	File Element	4, 8-254 0-254	Dec
Timer Pre	Timer Pre	RW	File Element	4, 8-254 0-254	Dec

RW: reading/writing, R: reading only

Warnings

- File N7 must be open in the device for at least one element (E.g. N7:0), otherwise the IT does not communicate. The file must be opened independently from the type of area to be used.
- Set the parameters as stated in the connection cable figure (Pag. -224 -> CVIT07202).
- When configuring the device port (using the RSLogix programming pack) confirm using “YES” when the configuration change warning is displayed during parameter transfer.

Notes:

- The device does not have to be in RUN in order to communicate with the IT.

IT-Device Connection

- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program paying attention to respect that mentioned in Pag. -217 -> Warnings.
- Connect the IT to the device using the relevant cable.

- Feed the IT.

The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The device does not contain the V7 file open for at least one element.
- The addresses declared in the IT program are not correct or do not exist.
- The parameters or the communication driver have not been set correctly or have not been transferred into the device.
- A communication protocol is being used in the IT that is not suitable for the device used (see Pag. -220).

PL5

Order code:
CVIT07402

ControlLogix PLC 5

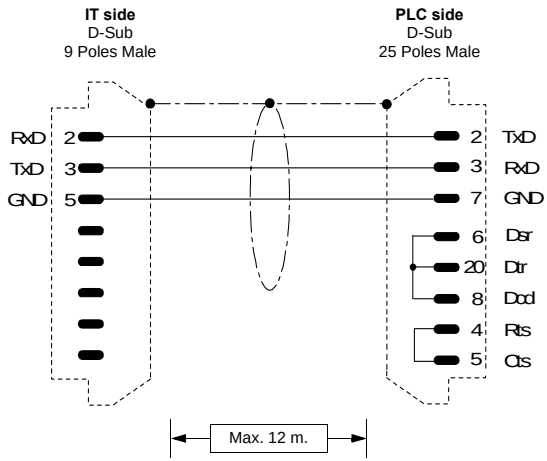
(RS232)

"CH0" SERIAL PORT SETChannel 0: SYSTEM
DF1 full duplex Mode (Point to point)

Baud rate	: 19200
ACK timeout	: 50
Stop Bits	: 1
Parity	: NONE
Control Line	: NO HANDSHAKING
Error detect	: BCC
NAK retries	: 3
ENQ retries	: 3
Embedded responses	: ENABLED
Duplicate Detect	: DISABLED

N.B. : Allen-Bradley V7.00 or higher programming software needed

(See "Chapter -> Connection of the cable shield")



Slc 500

Protocol	SLC500 5/03-5/04 DF1	
Controllers/CPU	5/03, 5/04, 5/05	
IT Port	SP1, SP2	
Type	Point-to-point	
IT mode	--	
Network type	--	
Communication	Baud rate	9600-19200 bit/s
	Parity	None
	Date	8
	Stop	1

All values are expressed in Decimal format.

Protocol	DH485	
Controllers/CPU	500, 5/01, 5/02, 5/03	
IT Port	MSP	
Type	Network	
IT mode	Master	
Network type	Master/Slave	
Communication	Baud rate	9600-19200 bit/s
	Parity	None
	Date	8
	Stop	1
IT Parameters	Terminal address	1 - 31
PLC Parameters	Device address	0 - 31

All values are expressed in Decimal format.

Cable

Use CVIT07102 cable (see Pag. -221) or

Areas accessible to theIT

Table 0.6: SLC500 5/03-5/04 DF1 Protocol(Parte 1 di 2)

Name	Type	Mode	Fields	Interval	Format
Ascii	String	RW	File Element	10-254 0-254	Dec

RW: reading/writing, R: reading only

Table 0.6: SLC500 5/03-5/04 DF1 Protocol(Parte 2 di 2)

Name	Type	Mode	Fields	Interval	Format
Bit	Bit	RW	File Element	3, 10-254 0-254	Dec
Counter Acc	Counter Acc	R	File Element	5, 10-254 0-254	Dec
Counter Pre	Counter Pre	RW	File Element	5, 10-254 0-254	Dec
Floating	Dword Floating point	RW	File Element	8, 10-254 0-254	Dec
Input	Input	R	File Element	1, 10-254 0-254	Dec
Integer	Word Dword String	RW	File Element	7, 10-254 0-254	Dec
Output	Output	RW	File Element	0, 10-254 0-254	Dec
Timer Acc	Timer Acc	R	File Element	4, 10-254 0-254	Dec
Timer Pre	Timer Pre	RW	File Element	4, 10-254 0-254	Dec

RW: reading/writing, R: reading only

Table 0.7: Protocol DH485

Name	Type	Mode	Fields	Interval	Format
Ascii	String	RW	File Element	10-254 0-254	Dec
Bit	Bit	RW	File Element	3, 10-254 0-254	Dec
Counter Acc	Counter Acc	R	File Element	5, 10-254 0-254	Dec
Counter Pre	Counter Pre	RW	File Element	5, 10-254 0-254	Dec
Floating	Dword Floating point	RW	File Element	8, 10-254 0-254	Dec
Input	Input	R	File Element	1, 10-254 0-254	Dec
Integer	Word Dword String	RW	File Element	7, 10-254 0-254	Dec
Output	Output	RW	File Element	0, 10-254 0-254	Dec

RW: reading/writing, R: reading only

Table 0.7: Protocol DH485

Name	Type	Mode	Fields	Interval	Format
Timer Acc	Timer Acc	R	File Element	4, 10-254 0-254	Dec
Timer Pre	Timer Pre	RW	File Element	4, 10-254 0-254	Dec

RW: reading/writing, R: reading only

Warnings

- Load (using the RSLogix programming pack) the correct communication driver into the device.
- File N7 must be open in the device for at least one element (E.g. N7:0), otherwise the IT does not communicate. The file must be opened independently from the type of area to be used.
- Set the parameters as stated in the connection cable figure (Pag. -217).
- When configuring the device port (using the RSLogix programming pack) confirm using “APPLY” when the configuration change warning is displayed during parameter transfer (Pay attention, the pre-setting is “DO NOT APPLY” do not confirm using the “Enter” key of the PC).Notes:
- The device does not have to be in RUN in order to communicate with the IT.IT-Device Connection
- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program paying attention to respect that mentioned in Pag. -217 -> Warnings.
- Connect the IT to the device using the relevant cable.
- Feed the IT.

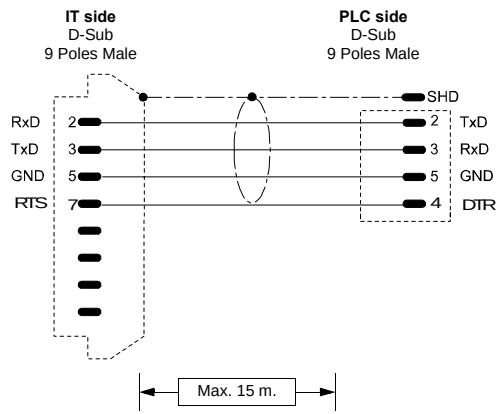
The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The device does not contain the V7 file open for at least one element.
- The addresses declared in the IT program are not correct or do not exist.
- The parameters or the communication driver have not been set correctly or have not been transferred into the device.
- A communication protocol is being used in the IT that is not suitable for the device used (see Pag. -220)

CROUZET PLC



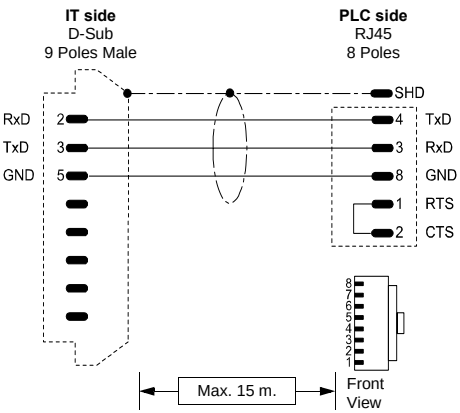
Order code:
CVIT20102

MILLENIUM 3
With Adapter Telemecanique SR2 CBL01

(RS232)

(See "Chapter -> Connection of the cable shield")

GE FANUC PLC



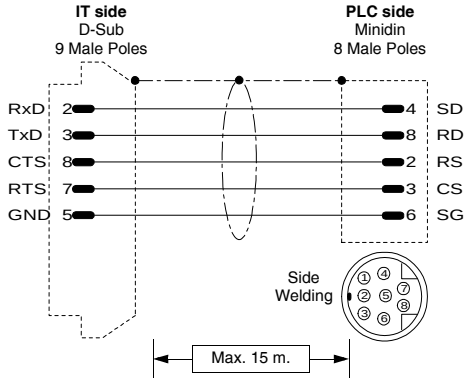
Order code:
CVIT09102

VERSAMAX
Use port 1

(RS232)

(See "Chapter -> Connection of the cable shield")

HITACHI PLC



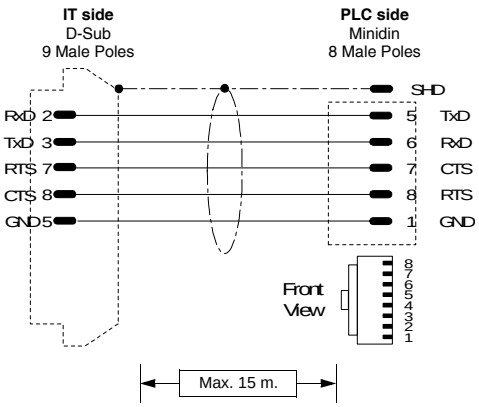
Order code:
CVIT03102

EC Series

(RS232)

ATTENTION!!
Ext. switch on COM2
Areas T, C (time, counters) reading only mode

(See "Chapter -> Connection of the cable shield")



Order code:
CVIT03202

EH150 Series

(RS232)

NOTES:
127 PLC connectable to Hitachi network with 2 Link (0-63 stations for Link).

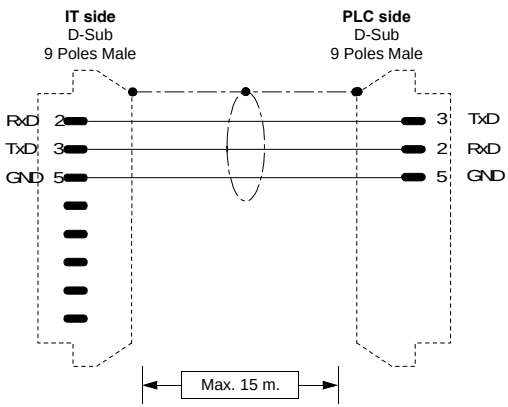
LUMP:

Parameter	Default	Values	Notes:
L	FF	01,02 or FF	Link number address.
U	FF	00-63 or FF	Network node address (as per selectors on the network board).
M	00	00-63	Address of the node in the network with connection from additional serial.
P	00	00-63	Address of the node in the network with connection from additional serial.

TM:

Parameter	Default	Values	Notes:
TM	4	4-F	Timeout for the response to an interrogation.

KERNEL system PLC

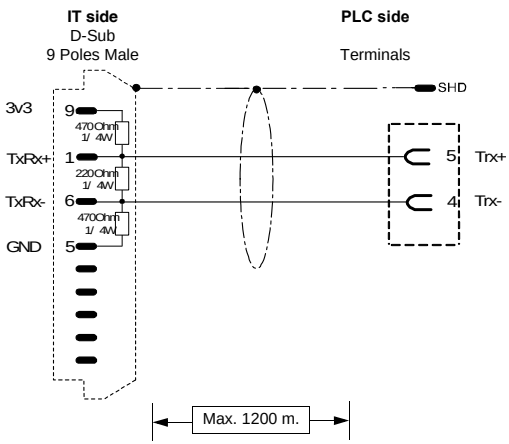


Order code:
CVIT39102

DMX 16/19/20/30/32

(RS232) --Port COM 1

(See "Chapter -> Connection of the cable shield")



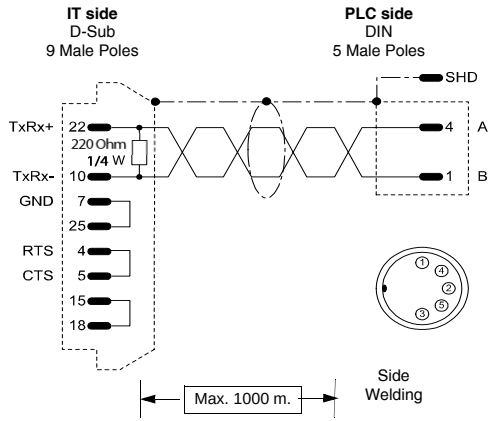
Order code:
CVIT39202

DMX 16/19/20/30/32

(RS485) - - Port COM 0

(See "Chapter -> Connection of the cable shield")

KLÖCKNER MOELLER PLC



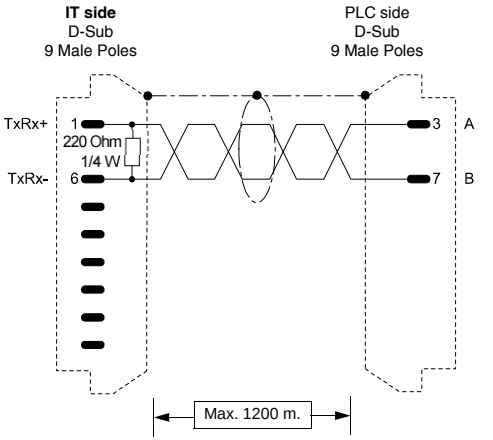
Order code:
CVIT12102

PS306

(RS485)

N.B. Ensure that the two insertion jumpers of the interface termination resistances positipned in window RS485 (visible on the front of the PLC) are attached (see PLC manual).

(See "Chapter -> Connection of the cable shield")



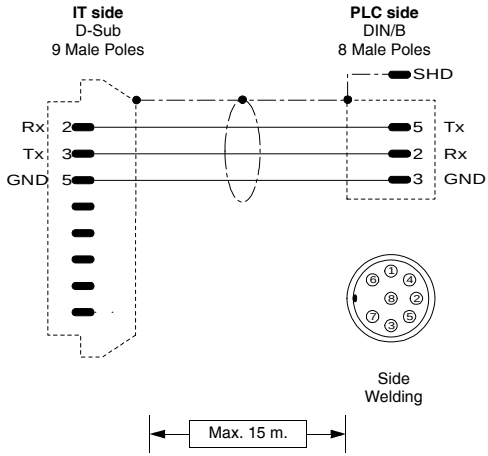
Order code:
CVIT12202

PS316/PS416-CPU400

(RS485)

N.B. Ensure that the two insertion jumpers of the interface termination resistances positioned in window RS485 (visible on the front of the PLC) are attached (see PLC manual).

(See "Chapter -> Connection of the cable shield")

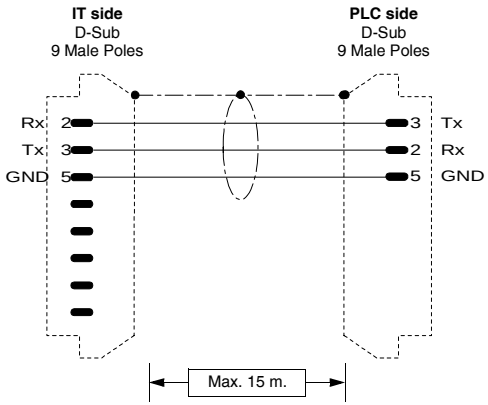


Order code:
CVIT12302

PS4-141-MM1
PS4-201-MM1
PS4-341-MM1

(RS232)

(See “Chapter -> Connection of the cable shield“)



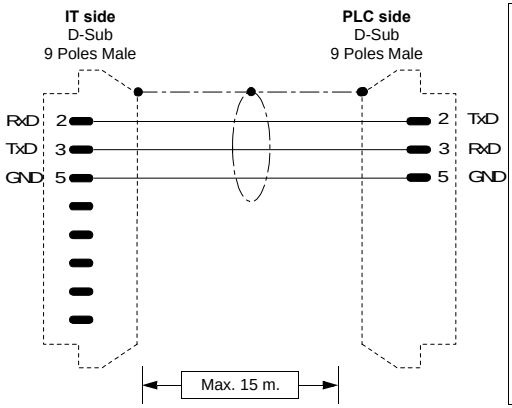
Order code:
CVIT12402

PS416-CPU400

(RS232)

(See “Chapter -> Connection of the cable shield“)

KUHNKE PLC



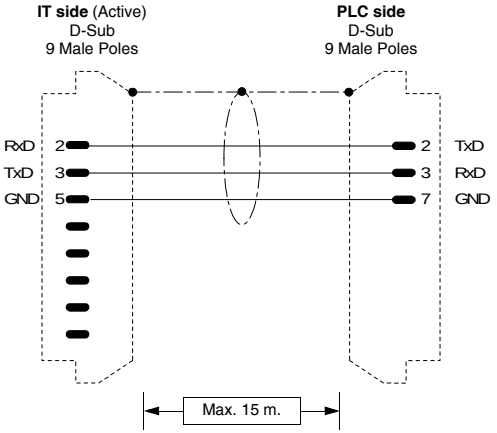
Order code:
CVIT38102

Kubes

(RS232)

(See “Chapter -> Connection of the cable shield“)

MATSUSHITA-NAIS PLC



Order code:
CVIT16102

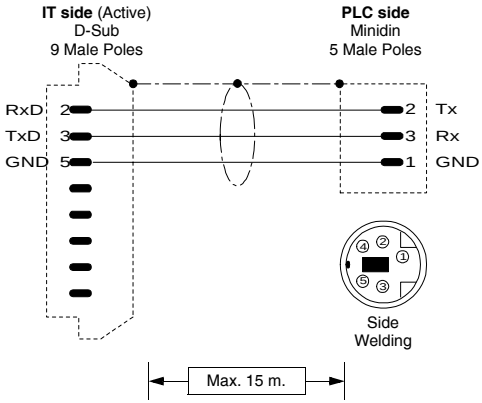
FP-1 / FP-M Series
By means of the PLC optional serial interface

(RS232)

SET RS232C SERIAL DOOR: RS232C

Port Selection	: COMPTR LNK
RS232C Send Form	
Data Length	: 8 BIT
Parity CHK	: WITH, ODD
Stop Bit	: 1 BIT
Terminator	: CR
Header	: NO STX
RS232C Baud rate	: 1(9600 bps)
RS232C Modem	
Connection	: DISABLED
Computer Link Station number (1-32)	: 1

(See “Chapter -> Connection of the cable shield“)



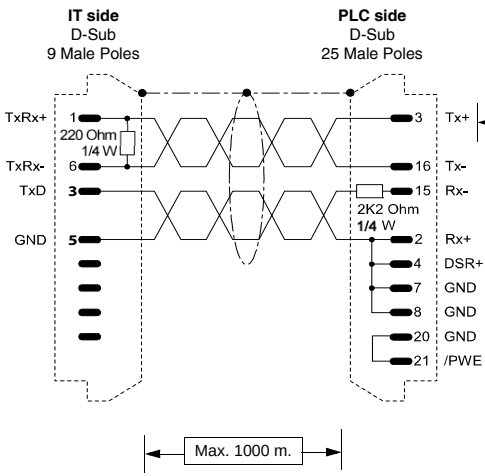
Order code:
CVIT16202

FP-M/FP-0/FP-2 Series
In the CPU programming connector (Programmer's Port).

(RS-232)

(See “Chapter -> Connection of the cable shield“)

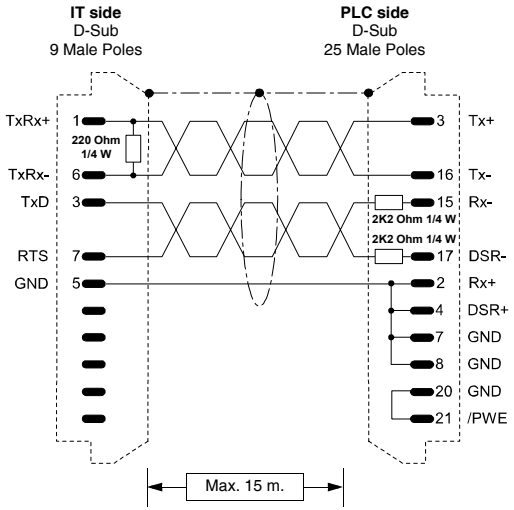
MITSUBISHI PLC



Order code:
CVIT05102

Fx Series

(See “Chapter -> Connection of the cable shield“)



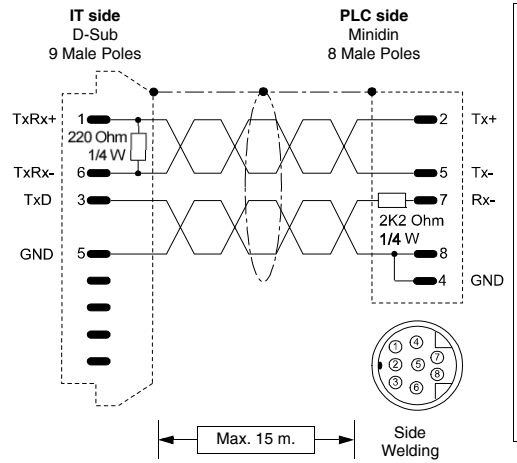
Order code:
CVIT05202

A Series

(RS232)
Directly in the CPU programming connector

Bridge the**LG** and **GF** clamps on the PLC terminal board.

(See “Chapter -> Connection of the cable shield“)



Order code:
CVIT05302

Fx0 - Fx0 N - Fx2 N Series
In the CPU programming connector (Programmer's Port).

(RS-232/422 Inbrido)

(See “Chapter -> Connection of the cable shield“)

OMRON PLC

Devices supported by the IT:

Series	Central controller/Unit	CPU
C200H	xx	xx
CJ1	xx	xx
CPM	xx	xx
CQM	xx	xx
CS1	xx	xx
CVM	xx	xx
H	xx	xx

H, C200H, CPM, CQM, CVM Series

Protocol	H series / HOST LINK	
Controllers/CPU	All	
IT Port	SP1, SP2	
Type	Network	
IT mode	Master	
Network type	Master-Slave	
Communication	Baud rate	1200 - 19200 bit/s
	Parity	Even
	Date	7
	Stop	2
PLC Parameters	Device address	0 - 31

All values are expressed in Decimal format.

Cable

Order code:
CVIT02102

H series, CS1
CQM1 CPU 21-E and above
CVM1 and C200HS/HE/HG/HX/Hα (integrated serial)
CPM1 through CPM1-CIF01 interface
CPM2A/2C

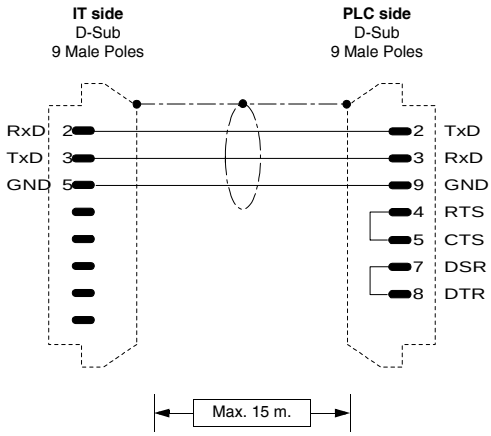
(RS232)

Bridge the**GR** and **LG** clamps on the PLC terminal board.

(See "Chapter -> Connection of the cable shield")

SETTING JUMPERS CPM1-CIF01

HOST
NT



Interfaces

Table 0.8: OMRON 3G2A6-LK201-EV1 interface parameterisation

Interface	**3G2A6-LK201-EV1**
Machine N.	0 - 31
Syn	INT
Baud Rate	300 - 19200 bit/s
Procedure	N
Command Level	1, 2 and 3 Valid
CTS	0V

Parameterisation to carry out using Dip-Switch on the interface

Table 0.9: OMRON C200H-LK201 interface parameterisation

Interface	**C200H-LK201**
Machine N.	0 - 31
Baud Rate	300 - 19200 bit/s
Procedure	N
Command Level	1, 2 and 3 Valid
5V	Not supplied
CTS	0V

Parameterisation to carry out using Dip-Switch on the interface

Table 0.10: OMRON C200H-LK202 interface parameterisation

Interface	**C200H-LK202**
Machine N.	0 - 31
Baud Rate	300 - 19200 bit/s
Procedure	N
Command Level	1, 2 and 3 Valid
Termination Resistor Connection	ON

Parameterisation to carry out using Dip-Switch on the interface

Switch the PLC off and back on again every time parameters are changed

Areas accessible to theIT

Table 0.11: Protocol H series / HOST LINK

Name	Type	Mode	Fields	Interval	Format
DM	Word Dword String	RW	DM	0-9999	Dec
Timer	Timer Timer Preset Timer TMS Preset Timer TIMW Preset Timer TMHW Preset Speed Timer Preset	RW	T	0-4095	Dec
Counter	Counter Counter Preset Rev. Counter Preset Counter CNTW Preset	RW	C	0-4095	Dec
Relay	Word	RW	R	0-511	Dec
Holding relay	Word	RW	HR	0-511	Dec
Auxiliary	Word	RW	AR	0-959	Dec
Link relay	Word	RW	LR	0-63	Dec

RW: reading/writing, R: reading only

Warnings

- Load (using the programming pack) the correct communication driver into the device.
- Set the parameters (if requested) as stated in the figure of the connection cable to be used.

Notes:

- The device does not have to be in RUN in order to communicate with the IT.

IT-Device Connection

- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program paying attention to respect that mentioned in Pag. -217 -> Warnings.
- Connect the IT to the device using the relevant cable.
- Feed the IT.

The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The addresses declared in the IT program are not correct or do not exist.
- The parameters or the communication driver have not been set correctly or have not been transferred into the device.
- A communication protocol is being used in the IT that is not suitable for the device used (see Pag. -238).

CS1, CJ1 Series

Protocol	**CS1, CJ1 series**	
Controllers/CPU	All	
IT Port	SP1, SP2	
Type	Network	
IT mode	Master	
Network type	Master-Slave	
Communication	Baud rate	9600 / 115000 bit/s
	Parity	Even
	Date	7
	Stop	2

All values are expressed in Decimal format.

PLC Parameters	Device address	0 - 31
	Network address	0 - 127
	Node number	0 - 31

All values are expressed in Decimal format.

Cable

Use CVIT02102 cable (see Pag. -240) or

Areas accessible to theIT

Table 0.12: CS1, CJ1 series protocol

Name	Type	Mode	Fields	Interval	Format
Work area word (W)	Word Dword String Floating point	RW	W	0-511	Dec
Holding area bit (H)	Bit	RW	H Bit	0-511 0-15	Dec
Holding area word	Word Dword String Floating point	RW	H	0-511	Dec
Auxiliary area bit read only (A)	Bit	R	A Bit	0-447 0-15	Dec
Core Input/Output bit (CIO)	Bit	RW	CIO Bit	0-1899, 2000-2961, 3200-6143 0-15	Dec
Auxiliary area wordreadonly (A)	Word	R	A	0-447	Dec
Core Input/Output word (CIO)	Word Dword String	RW	CIO	0-1899, 2000-2961, 3200-6143	Dec
Auxiliary area bit (A)	Bit	RW	A Bit	448-959 0-15	Dec
Work area bit (W)	Bit	RW	W Bit	0-511 0-15	Dec
Auxiliary area word (A)	Word Dword String Floating point	RW	A	448-959	Dec

RW: reading/writing, R: reading only

Table 0.12: CS1, CJ1 series protocol

Name	Type	Mode	Fields	Interval	Format
Data memory area (D)	Word Dword String Floating point	RW	D	0-32767	Dec
Timer completion flag (T)	Bit	R	T	0-4095	Dec
Timer current value (T)	Word	RW	T	0-4095	Dec
Counter completion flag (C)	Bit	R	C	0-4095	Dec
Counter current value	Word	RW	T	0-4095	Dec
Task flag area (TK)	Bit	R	TK	0-31	Dec
Index register (IR)	Dword	R	IR	0-15	Dec
Data register (DR)	Word	RW	DR	0-15	Dec

RW: reading/writing, R: reading only

Warnings

- Load (using the programming pack) the correct communication driver into the device.
- Set the parameters (if requested) as stated in the figure of the connection cable to be used.

Notes:

- The device does not have to be in RUN in order to communicate with the IT.

IT-Device Connection

- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program paying attention to respect that mentioned in Pag. -217 -> Warnings.
- Connect the IT to the device using the relevant cable.
- Feed the IT.

The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The addresses in the program are not correct or do not exist.
- The parameters or the communication driver have not been set correctly or have not been transferred into the device.
- A communication protocol is being used in the IT that is not suitable for the device used (see Pag. -238).

SAIA PLC

SAIA PCD1, PCD2, PCD4 (S-BUS RS485)

Order code:
CVIT04102

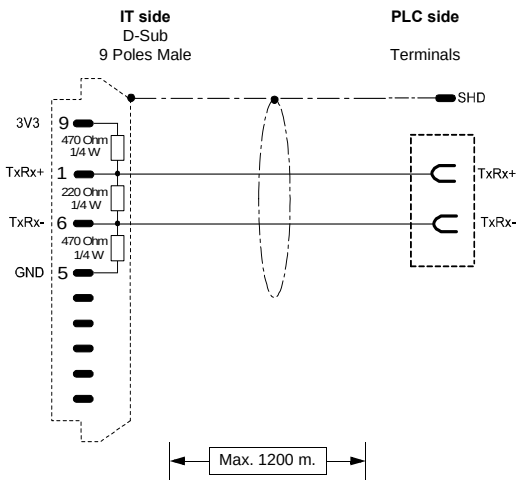
S-BUS series PCD1 / 2 / 4
Connection to terminal block

(RS-485)

IPLC Address: 0..255

(See “Chapter -> Connection of the cable shield“)

Note: configure the number of the S-BUS station inside the PLC using the SAIA programming Software



SAIA S-BUS RS232 (PGU port)

Order code:
CVIT04202

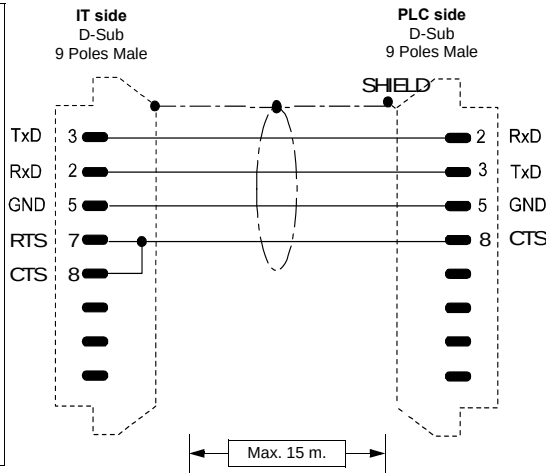
S-BUS series PCD1 / 2 / 4
In the programming connector of the CPU (PGU port)

(RS-232)

IPLC Address: 0..255

(See "Chapter -> Connection of the cable shield")

Note: configure the number of the S-BUS station inside the PLC using the SAIA programming Software



SAIA PCD2 with PCD7/F120 module

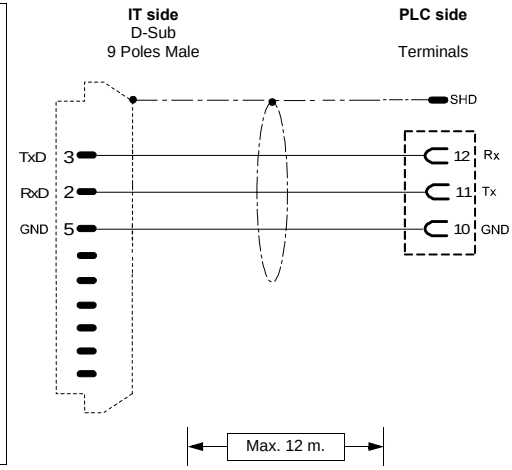
Order code:
CVIT04302

PCD 2 Serial Interface 1 module PCD7/F120

Connection to terminal block

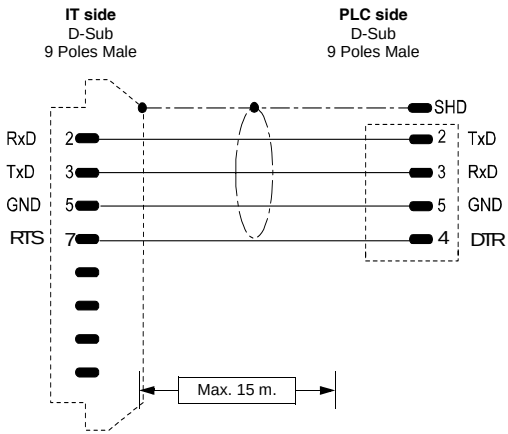
(RS-232)

NB: To make the terminal fuction with the additional interface of the PLC SAIA
PCD, the following setting must be observered.
SASI 1 (1=first interf., 2=second interf., ecc.)
999
;TEXT 999
"UART:9600,7,E,1;MODE:SD0;DIAG:F260,R500;
RBUF:255;TBUF:255"



SCHNEIDER TELEMECANIQUE PLC

Zelio



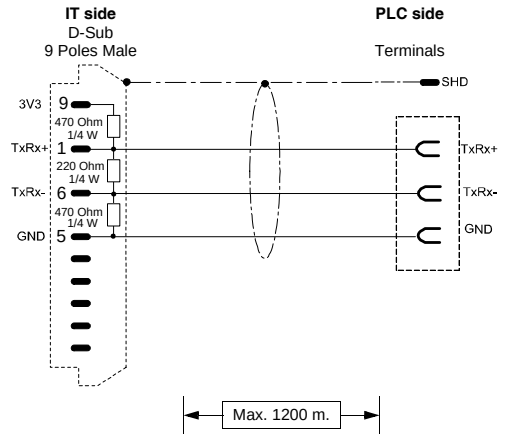
Order code:
CVIT11302

ZELIO
With Telemecanique SR2 CBL01 adapter

(RS232)

(See "Chapter -> Connection of the cable shield")

Unitelway



Order code:
CVIT11202

UNITELWAY TSX 07-87

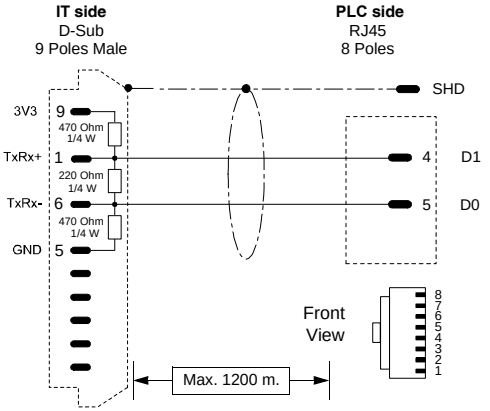
(RS485)

(See "Chapter -> Connection of the cable shield")

Note :
If the connection with the IT you are using the built-in port PLC should be used as the number of Form 254.
If you use other communication cards, the number Module is given by the position in the slot (see the manufacturer's documentation).

Connecting terminals

MODICON



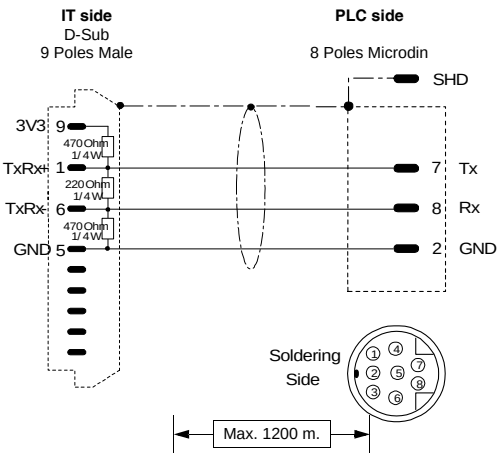
Order code:
CVIT17102

MODICON M340

(RS485)

(See “Chapter -> Connection of the cable shield“)

Twido



Order code:
CVIT11102

TELEMECANIQUE
UNITELWAY SERIE TSX 07, 17, 37, 47 TWIDO.

(RS485)

(See “Chapter -> Connection of the cable shield“)

Note
If the connection with the IT you are using the built-in port PLC should be used as the number of Form 254.
If you use other communication cards, the number Module is given by the position in the slot (see the manufacturer's documentation).

SIEMENS PLC

Devices supported by the IT:

Series	Central controller/Unit	CPU
Simatic S7	S7-200	210, 212, 214, 215, 216, 221, 222, 224, 226, 226XM
	S7-300	312, 313, 314, 315, 316, 318, 388, 614
	S7-400	412, 413, 416, 417, 488

Simatic S7-200

Protocol	**S7 200 CPU 214, 215, 216**	
Controllers/CPU	214, 215, 216	
IT Port	MSP	
Type	Network	
IT mode	Master	
Network type	Master/Slave	
Communication	Baud rate	9600 / 19200 bit/s
	Parity	Even
	Date	8
	Stop	1
IT Parameters	Terminal address	1 - 31
PLC Parameters	Device address	0 - 126
Notes:	The protocol is network, but does not support all typical functions of a network communication, therefore it is only recommended for point-to-point connections, (just one IT connected to one device).	

All values are expressed in Decimal format.

Protocol	**S7 200 PPI Network**
Controllers/CPU	210,212,214,215,216,221,222,224,226,226XM
IT Port	MSP
Type	Network

All values are expressed in Decimal format.

IT mode	Master	
Network type	Master/Slave	
Communication	Baud rate	9600 / 19200 bit/s
	Parity	Even
	Date	8
	Stop	1
IT Parameters	Terminal address	0 - 126
	Max search address	1 - 126
	Protocol timeout	500 - 10000
PLC Parameters	Device address	0 - 126
	Max number of attempts	3 - 30

All values are expressed in Decimal format.

Protocol	**S7 200 PPI Network 187500**	
Controllers/CPU	210,212,214,215,216,221, 222,224,226,226XM	
IT Port	MSP	
Type	Network	
IT mode	Master	
Network type	Token pass	
Communication	Baud rate	187500 bit/s
	Parity	Even
	Date	8
	Stop	1
IT Parameters	Terminal address	0 - 126
	Max search address	0 - 126
	Protocol timeout	500 - 10000
PLC Parameters	Device address	0 - 126
	Max number of attempts	3 - 30
Notes:	Check that the port of the device used to connect the It supports the communication speed (typically Port 1).	

All values are expressed in Decimal format.

Cable

Order code:
CVIT01102

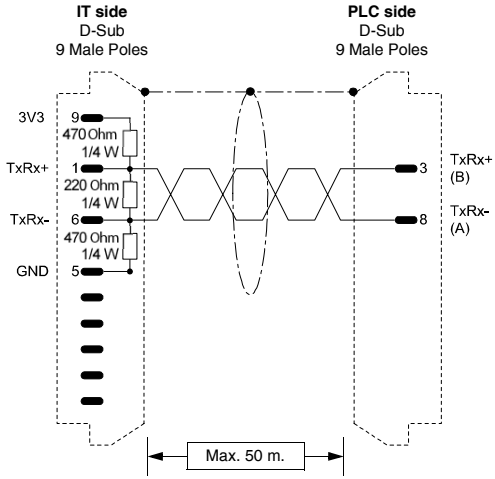
SIMATIC S7

(RS485)

For contemporary communications between programming suitcase PLC S7 and IT, it is recommended to use the SIEMENS 6ES7972-OBB20-OXAO passing connector.

N.B.: Max. length 50m without repeater

(See "Chapter -> Connection of the cable shield")



Areas accessible to theIT

Table 0.13: All Siemens S7-200 protocols

Name	Type	Mode	Fields	Interval	Format
Counter	Word	RW	C	0-255	Dec
High speed counter	Word	RW	HC	0-5	Dec
Input	Bit	R	Bit Byte	0-16 0-16	Dec
Merker	Bit	RW	Bit Byte	0-7 0-31	Dec
Output	Bit	RW	Bit Byte	0-16 0-16	Dec
Register	Byte (VB) Word (VW) Dword (VD) String (VB) Floating point (VD)	RW	VB	0-10238	Dec
Special Merker	Bit	RW	Bit Byte	0-7 0-194	Dec
Timer	Word	R	T	0-255	Dec

RW: reading/writing, R: reading only

Warnings

- The Baud rate defined in the device must coincide with that assigned in the POLYMATH.
- For the devices with two ports ensure that the baud rate is

assigned to the door where the IT will be connected.
- The address of the device and the address of the IT must be different
- The address defined in the device must coincide with the address assigned in the POLYMATH.
- For the devices with two ports ensure that the address is assigned to the door where the IT will be connected.

Notes:
- The IT can be connected indifferently onto the serial Port 0 or Port 1 of the device (as long as they support the set/desired communication speed - See device manual).
- The device does not have to be in RUN in order to communicate with the IT.

IT-Device Connection
- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program paying attention to respect that mentioned in Pag. -217 -> Warnings.
- Connect the IT to the device using he arelevant cable, paying attention to the port used (it must be that set with the correct speed parameters ans address).
- Feed the IT.

The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting
If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The network addresses and/or the communication speed is not set correctly.
- The addresses declared in the IT program, regarding the fields on the display, are not correct or do not exist.
- A communication protocol is being used that is not suitable for the device used (see Pag. -249).
- The maximum number of addresses to search for in the network is less than the address declared (see IT parameters of the relative driver).

Simatic S7-300, S7-400

Protocol	**S7 300, 400**	
Controllers/CPU	312, 313, 314, 315, 316, 318, 388, 614, 412, 413, 416, 417, 488	
IT Port	MSP	
Type	Network	
IT mode	Master	
Network type	Token pass	
Communication	Baud rate	187500 bit/s
	Parity	Even
	Date	8
	Stop	1
IT Parameters	Terminal address	0 - 31
PLC Parameters	Device address	0 - 31

All values are expressed in Decimal format.

Cable

Use CVIT01402 cable (see Pag. -251) or

Areas accessible to theIT

Table 0.14: All Siemens S7-300/400 protocols(Parte 1 di 2)

Name	Type	Mode	Fields	Interval	Format
Counter	Counter	RW	Z	0-511	Dec
DBW	Byte Word Dword String Floating point Timer 1/100 Sec. Timer 1/10 Sec. Timer 1 Sec. Timer 10 Sec.	RW	DB DW	1-65535 0-65533	Dec
Input	Byte Word Dword	R	E	0-16383	Dec
Merker	Byte Word Dword	RW	M	0-2047	Dec

RW: reading/writing, R: reading only

Table 0.14: All Siemens S7-300/400 protocols(Parte 2 di 2)

Name	Type	Mode	Fields	Interval	Format
Output	Byte Word Dword	RW	A	0-16383	Dec
Timer	Timer	R	T	0-511	Dec

RW: reading/writing, R: reading only

Warnings

- The address of the device and the address of the IT must be different.
- The address defined in the device must coincide with the address assigned in the POLYMATH.

Notes:

- The device does not have to be in RUN in order to communicate with the IT.

IT-Device Connection

- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program.
- Connect the IT to the device using the relevant cable, paying attention to the port used (it must be that set with the correct speed parameters and address).
- Feed the IT.

The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The network addresses and/or the communication speed is not set correctly.
- The addresses declared in the IT program, regarding the fields on the display, are not correct or do not exist.
- A communication protocol is being used that is not suitable for the device used (see Pag. -249).
- The accepted number of MPI connections has been exceeded (see device manual).

Cable for multiple connection with MPI

Order code:
NOT CODED

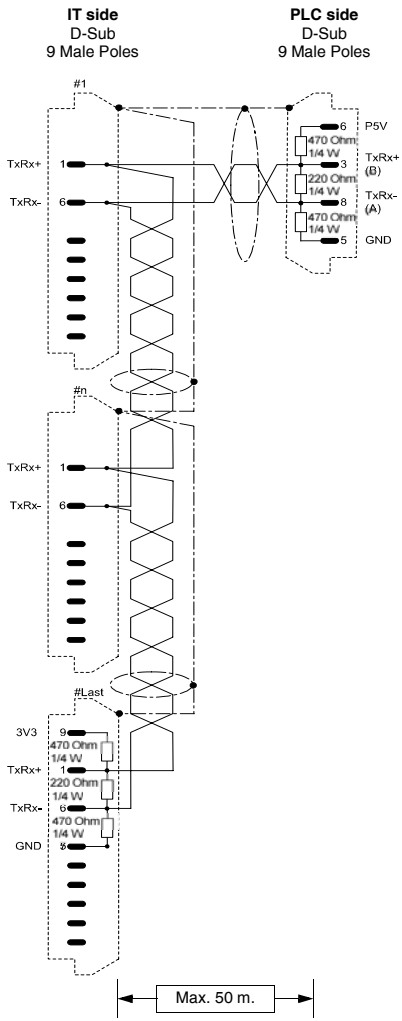
SIMATIC S7

(RS485)

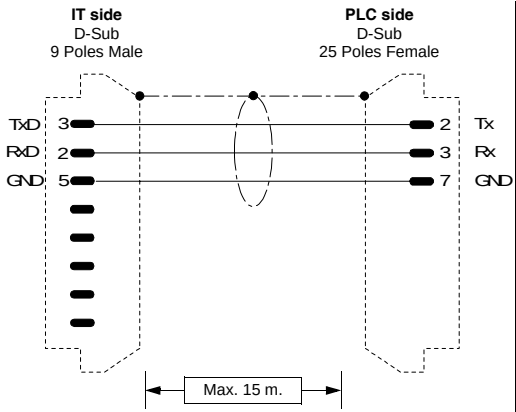
In replacement of the 9 pin connector and resistances to integrate it is possible to use the following Siemens connectors with integrated resistances that can be inserted with a running switch:
SIEMENS 6ES7972-0BA10-0XA0
SIEMENS 6ES7972-0BA40-0XA0
SIEMENS 6GK1500-0EA00

For contemporary communications between the programming suitcase, PLC S7 and IT, it is recommended to use the following Siemens passing connectors, with integrated resistances that can be inserted with a running switch:
SIEMENS 6ES7972-0BB10-0XA0
SIEMENS 6ES7972-0BB40-0XA0

N.B.: Maximum length without repeater 50m



Siemens S5



Order code:
CVIT01202

SIMATIC S5

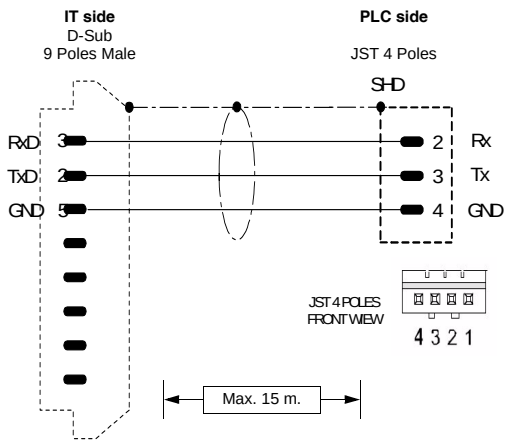
SIEMENS PLC ADAPTER S5 6ES5 734-1BD20.
MAX. CABLE LENGHT : 15 mt.

(RS232)

(See "Chapter -> Connection of the cable shield")

VIGOR PLC

M/VB 232



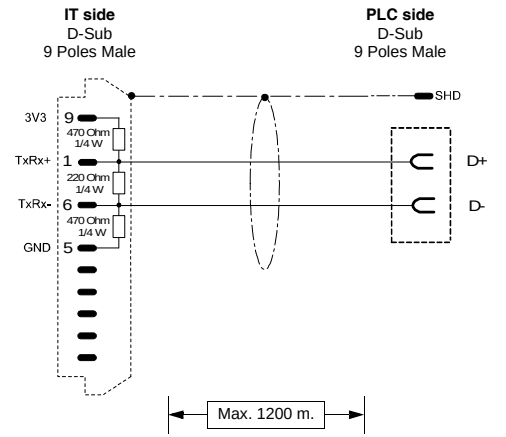
Order code:
CVIT35102

M/VB 232

(RS232)

(See "Chapter -> Connection of the cable shield")

M/VB 485



Order code:
CVIT35202

M/VB 485

(RS485)

(See "Chapter -> Connection of the cable shield")

Connecting terminals

20. Resistance to chemical substances

All terminals are built to resist the most common chemical substances that may be found in industrial and environments and elsewhere. Each element of the terminal that can be exposed to these substances (epoxy paint, keyboard membrane display glass, touch screen and seals), undergoes tests to determine the duration of resistance.

The type of test is not the same for all components, but varies on the basis of the body that tests the product. An example of a test is given below (that carried out by Alcatel Bell).

The test takes place as follows:

A cotton wool ball is used with a diameter of 2cm. It is put into the substance to test and placed on the keyboard. or each keyboard there are two cotton wool balls with different substances positioned separately. This takes place at a temperature of 25°C in a Petri dish for one hour; the keyboard is then washed with water ad then dried.

The keyboard is observed and the result is determined into the following classes:

- A - No visible deterioration
- B - Very slight deterioration
- C - Slight deterioration
- D - Great visible damage

The substances that do not appear in the table have not been tested, therefore there is no information regarding behaviour of the terminals.

Chemical substances

The table below shows a summary of all substances used for the test with the various results.

The table must however be considered an approximate guide regarding resistance to chemical substances. Tests have never been performed on an entirely assembled terminal.

Table 0.1: Resistance to chemical substances (Parte 1 di 6)

Substance		Parts of the terminal						Accessor	Resistance
		Epoxy[3] paint	Film[2] matt	Film[1] transparent	Touch [2] screen	Glass	Seals	Film[2] protective	
1,1,1-Trichloroethane	NS	--	>24h	--	>24h	--	--	>24h	☺
Acetaldehyde	NS	--	>24h	--	>24h	--	--	>24h	☺
Ethyl acetate	NS	--	>24h	--	>24h	--	--	>24h	☺
Acetyl	NS	--	--	--	--	--	E	--	😐
Vinegar	NS	--	--	D	--	--	--	--	☹
Acetone	NS	O	>24h	--	>24h	>8h	F	>24h	😐
Mineral acids	CO	--	O	--	O	--	--	O	☹
Acetic acid	10%	3Y	--	--	--	--	--	--	☺
	20%	3Y	--	--	--	--	--	--	☺
	<50%	--	>24h	--	>24h	--	--	>24h	☺
Glacial acetic acid	NS	--	--	--	<1h	--	--	<1h	😐
Citric acid	5%	3Y	--	--	--	--	--	--	☺
Chloric acid	NS	--	--	A	--	--	--	--	☺
Chromic acid	10%	6M	--	--	--	--	--	--	😐
	20%	6M	--	--	--	--	--	--	😐
Formic acid	5%	3Y	--	--	--	--	--	--	☺
	10%	3Y	--	--	--	--	--	--	☺
	<50%	--	>24h	--	>24h	--	--	>24h	☺
Phosphoric acid	10%	3Y	--	--	--	--	--	--	☺
	20%	3Y	--	--	--	--	--	--	☺
	50%	3Y	--	--	--	--	--	--	☺
	<30%	--	>24h	--	>24h	--	--	>24h	☺
Hydrochloric acid	<10%	--	>24h	--	>24h	--	G	>24h	😐
	10%	3Y	--	--	--	--	G	--	😐
	20%	3Y	--	--	--	--	G	--	😐
Lactic acid	5%	3Y	--	--	--	--	--	--	☺

Key:
A - No visible deterioration, B - Very slight deterioration, C - Slight deterioration, D - Great visible damage, E - Unlimited use, F - Limited use, G - Use not recommended, S - The film loosens, X - The film has bubbles, O - The film is destroyed, CO - Concentrated, HC - High Concentration, LC - Low concentration SA - Saturo/a, NS - Not specified, h - Hour/s, M - Month/s, Y- Year/s, ☺ - All elements tested resist the substances, 😐 - At least one of the elements tested can be deteriorated by the substance in question, ☹ - All of the elements tested are damaged by the substance in question, -- Not tested.

Notes:
1 - According to Alcatel Bell, 2 - According to DIN42115 Part 2, 3 - According to the producer of raw materials, 4 - Tested at 50°C

Table 0.1: Resistance to chemical substances (Parte 2 di 6)

Substance		Parts of the terminal						Accessor	Resistance
		Epoxy[3] paint	Film[2] matt	Film[1] transparent	Touch [2] screen	Glass	Seals	Film[2] protective	
Nitric acid	<10%	--	>24h	D	>24h	--	G	>24h	😐
	10%	3Y	--	--	--	--	--	--	☺
	20%	3Y	--	--	--	--	--	--	☺
	50%	1M	--	--	--	--	--	--	😐
Oleic acid	NS	3Y	--	--	--	--	--	--	☺
Sebacic acid	SA	3Y	--	--	--	--	--	--	☺
Sulphuric acid	<10%	--	--	--	--	--	--	>24h	☺
	10%	3Y	--	--	>24h	>24h	--	--	☺
	28%	3Y	--	A	--	--	--	--	☺
	50%	6M	--	--	--	--	--	--	😐
	CO	--	--	--	--	--	G	--	☹
Tartaric acid	SA	3Y	--	--	--	--	--	--	☺
Water	NS	--	>24h	--	--	--	E	--	☺
Salt water	NS	--	--	--	--	--	E	--	☺
White spirit	NS	3Y	--	A	--	--	--	--	☺
Ajax	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Benzylalcohol	NS	--	O	--	O	--	--	O	☹
Liquid alum	NS	--	--	--	--	--	E	--	☺
Ammonia	NS	--	--	--	--	--	E	--	☺
	<2%	--	>24h	--	>24h	--	--	>24h	☺
	5%	--	--	--	--	>24h	--	--	☺
	10%	3Y	--	--	--	--	--	--	☺
	35%	3Y	--	--	--	--	--	--	☺
Fabric softener	NS	--	>24h	--	>24h	--	--	--	☺
Carbon Dioxide	NS	--	--	--	--	--	E	--	☺
Ariel	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Benzene	NS	S	--	A	>24h	--	--	>24h	😐

Key:
A - No visible deterioration, B - Very slight deterioration, C - Slight deterioration, D - Great visible damage, E - Unlimited use, F - Limited use, G - Use not recommended, S - The film loosens, X - The film has bubbles, O - The film is destroyed, CO - Concentrated, HC - High Concentration, LC - Low concentration SA - Saturo/a, NS - Not specified, h - Hour/s, M - Month/s, Y- Year/s, ☺ - All elements tested resist the substances, 😐 - At least one of the elements tested can be deteriorated by the substance in question, ☹ - All of the elements tested are damaged by the substance in question, -- Not tested.

Notes:
1 - According to Alcatel Bell, 2 - According to DIN42115 Part 2, 3 - According to the producer of raw materials, 4 - Tested at 50°C

Table 0.1: Resistance to chemical substances (Parte 3 di 6)

Substance		Parts of the terminal						Accessor	Resistance
		Epoxy[3] paint	Film[2] matt	Film[1] transparent	Touch[2] screen	Glass	Seals	Film[2] protective	
Petrol	NS	3Y	--	A	>24h	>24h	F	>24h	😐
Dichromate	NS	--	--	--	>24h	--	--	>24h	☺
Potassium Carbonate	NS	--	>24h	--	>24h	--	--	>24h	☺
Sodium Carbonate	SA	--	>24h	--	--	--	--	--	☺
Cyclohexanol	NS	--	>24h	--	>24h	--	--	>24h	☺
Chlorine	NS	--	--	--	--	--	G	--	☹
Methylene chloride	NS	1M	O	--	O	--	G	O	☹
Sodium Chloride	3%	3Y	--	--	--	--	--	--	☺
Coca Cola	NS	--	--	A	--	--	--	--	☺
Detergent	NS	--	--	A	--	--	--	--	☺
Detersive	NS	--	>24h	--	>24h	--	E	>24h	☺
Nitrate thinner	NS	--	--	--	--	--	G	--	☹
Dioxan	NS	--	>24h	--	>24h	--	--	>24h	☺
Domestos	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Downey	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Artificial oil of turpentine	NS	3Y	--	--	--	--	--	--	☺
Ethanol	NS	--	--	A	>24h	>24h	E	>24h	☺
	96%	3Y	--	--	--	--	--	--	☺
Denatured ethanol	NS	1M	--	--	--	--	--	--	😐
Ethyl ether	NS	--	>24h	--	>24h	--	--	>24h	☺
Fantastic	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Potassium Ferrocyanide	NS	--	>24h	--	>24h	--	--	>24h	☺
Formaldehyde	NS	--	--	A	--	--	--	--	☺
	35Vol.	3Y	--	--	--	--	--	--	☺
	37%	--	>24h	--	--	--	--	--	☺
	42%	--	>24h	--	--	--	--	--	☺
Formula 409	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺

Key:
A - No visible deterioration, B - Very slight deterioration, C - Slight deterioration, D - Great visible damage, E - Unlimited use, F - Limited use, G - Use not recommended, S - The film loosens, X - The film has bubbles, O - The film is destroyed, CO - Concentrated, HC - High Concentration, LC - Low concentration SA - Saturo/a, NS - Not specified, h - Hour/s, M - Month/s, Y- Year/s, ☺ - All elements tested resist the substances, 😐 - At least one of the elements tested can be deteriorated by the substance in question, ☹ - All of the elements tested are damaged by the substance in question, -- Not tested.

Notes:
1 - According to Alcatel Bell, 2 - According to DIN42115 Part 2, 3 - According to the producer of raw materials, 4 - Tested at 50°C

Table 0.1: Resistance to chemical substances (Parte 4 di 6)

Substance		Parts of the terminal						Accessor	Resistance
		Epoxy[3] paint	Film[2] matt	Film[1] transparent	Touch [2] screen	Glass	Seals	Film[2] protective	
Diesel	NS	--	>24h	A	>24h	--	--	>24h	☺
Glycerine	NS	--	>24h	--	>24h	--	E	>24h	☺
Glycol	NS	--	--	--	--	--	E	>24h	☺
Ethylene glycol	NS	O	--	A	--	--	--	--	😐
Silicone grease	NS	--	--	--	--	--	E	--	☺
Gumption	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Aliphatic hydrocarbons	NS	--	>24h	--	>24h	--	--	>24h	☺
Potassium Hydroxide	10%	3Y	--	--	--	--	--	--	☺
	20%	3Y	--	--	--	--	--	--	☺
Sodium Hydroxide	20%	3Y	--	--	--	--	--	--	☺
Sodium Hypochlorite	NS	--	>24h	--	--	--	--	--	☺
	10%	6M	>24h	--	--	--	--	--	😐
	<20%	--	--	--	>24h	--	--	>24h	☺
Isopropanol	NS	S	>24h	A	>24h	--	--	>24h	😐
Jet Dry	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Milk	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Lenor	NS	--	>24h[4]	--	>24h[4]	--	--	>24h	☺
Hydraulic liquids	NS	--	--	--	--	--	F	--	😐
Natural gas	NS	--	--	--	--	--	F	>24h	😐
Methanol	NS	--	>24h	A	>24h	--	F	--	😐
Methylethyl ketone	NS	--	>24h	--	>24h	--	--	>24h	☺
n-Butanol	NS	S	--	--	--	--	--	--	😐
Ammonium nitrate	SA	3Y	--	--	--	--	--	--	☺
Edible oil	NS	3Y	--	--	--	--	--	--	☺
Cutting oil	NS	--	>24h	--	>24h	--	--	>24h	☺
Wood oil	NS	--	--	--	--	--	F	--	😐
Linseed oil	NS	3Y	>24h	--	>24h	--	--	>24h	☺

Key:
A - No visible deterioration, B - Very slight deterioration, C - Slight deterioration, D - Great visible damage, E - Unlimited use, F - Limited use, G - Use not recommended, S - The film loosens, X - The film has bubbles, O - The film is destroyed, CO - Concentrated, HC - High Concentration, LC - Low concentration SA - Saturo/a, NS - Not specified, h - Hour/s, M - Month/s, Y- Year/s, ☺ - All elements tested resist the substances, 😐 - At least one of the elements tested can be deteriorated by the substance in question, ☹ - All of the elements tested are damaged by the substance in question, -- Not tested.

Notes:
1 - According to Alcatel Bell, 2 - According to DIN42115 Part 2, 3 - According to the producer of raw materials, 4 - Tested at 50°C

Table 0.1: Resistance to chemical substances (Parte 5 di 6)

Substance		Parts of the terminal						Accessor	Resistance
		Epoxy[3] paint	Film[2] matt	Film[1] transparent	Touch[2] screen	Glass	Seals	Film[2] protective	
Castor oil	NS	--	>24h	--	>24h	--	--	>24h	☺
Oxidised castor oil	NS	--	--	--	>24h	--	--	--	☺
Oil of turpentine	NS	--	>24h	--	--	--	--	--	☺
Mineral oil 0-180	NS	--	--	A	--	--	E	--	☺
Silicone oil	NS	--	--	--	>24h	--	E	>24h	☺
Paraffin	NS	3Y	>24h	--	>24h	--	--	>24h	☺
Perchloroethylene	NS	--	--	--	>24h	--	G	>24h	😐
Hydrogen peroxide	<25%	--	--	--	>24h	--	--	>24h	☺
	30%	--	--	A	--	--	--	--	☺
	40Vol	6M	--	--	--	--	--	--	😐
Persil	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Oil	NS	--	--	--	--	--	E	--	☺
Crude oil	NS	3Y	--	--	--	--	--	--	☺
Chemical products used for	NS	--	--	--	--	--	E	--	☺
Tomato sauce	NS	--	B[4]	--	B[4]	--	--	--	😐
Senape	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Skydrol	NS	6M	--	--	--	--	--	--	😐
Caustic soda	<2%	--	>24h	--	>24h	--	--	>24h	☺
	10%	--	--	--	--	>24h	--	--	☺
	50%	--	--	B	--	--	--	--	😐
Copper sulphate	10%	3Y	--	--	--	--	--	--	☺
Caustic solution	CO	--	O	--	O	--	--	O	☹
Solution with cooking salt	NS	--	--	--	--	--	E	--	☺
Acid solutions	LC	--	--	--	--	--	E	--	☺
	HC	--	--	--	--	--	F	--	😐
Alkaline solutions	LC	--	--	--	--	--	E	--	☺
	HC	--	--	--	--	--	F	--	😐

Key:
A - No visible deterioration, B - Very slight deterioration, C - Slight deterioration, D - Great visible damage, E - Unlimited use, F - Limited use, G - Use not recommended, S - The film loosens, X - The film has bubbles, O - The film is destroyed, CO - Concentrated, HC - High Concentration, LC - Low concentration SA - Saturo/a, NS - Not specified, h - Hour/s, M - Month/s, Y- Year/s, ☺ - All elements tested resist the substances, 😐 - At least one of the elements tested can be deteriorated by the substance in question, ☹ - All of the elements tested are damaged by the substance in question, -- Not tested.

Notes:
1 - According to Alcatel Bell, 2 - According to DIN42115 Part 2, 3 - According to the producer of raw materials, 4 - Tested at 50°C

Table 0.1: Resistance to chemical substances (Parte 6 di 6)

Substance		Parts of the terminal						Accessor	Resistance
		Epoxy[3] paint	Film[2] matt	Film[1] transparent	Touch [2] screen	Glass	Seals	Film[2] protective	
Lemon juice	NS	--	B[4]	--	B[4]	--	--	--	😐
Tomato juice	NS	--	B[4]	--	B[4]	--	--	--	😐
Grape juice	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Teepol	NS	3Y	--	--	--	--	--	--	☺
Toluene	NS	3Y	>24h	A	>24h	--	G	>24h	😐
Top Job	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Artificial turpentine	NS	--	--	--	>24h	--	--	>24h	☺
Trichloroethylene	NS	S	--	--	>24h	--	G	>24h	😐
Steam (High pressure and	NS	--	O	--	O	--	G	O	☹
Vaseline	NS	--	--	--	--	--	F	--	😐
Vim	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Vortex	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Windex	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Wisk	NS	--	>24h[4]	--	>24h[4]	--	--	--	☺
Xylene	NS	1Y	>24h	--	>24h	--	--	>24h	☺

Key:
A - No visible deterioration, B - Very slight deterioration, C - Slight deterioration, D - Great visible damage, E - Unlimited use, F - Limited use, G - Use not recommended, S - The film loosens, X - The film has bubbles, O - The film is destroyed, CO - Concentrated, HC - High Concentration, LC - Low concentration SA - Saturo/a, NS - Not specified, h - Hour/s, M - Month/s, Y- Year/s, ☺ - All elements tested resist the substances, 😐 - At least one of the elements tested can be deteriorated by the substance in question, ☹ - All of the elements tested are damaged by the substance in question, -- Not tested.

Notes:
1 - According to Alcatel Bell, 2 - According to DIN42115 Part 2, 3 - According to the producer of raw materials, 4 - Tested at 50°C

Cleaning the terminal

The use of Denatured Ethyl Alcohol is recommended to clean the terminal. If this should not be sufficient to remove deposits and other products must be used, consult the table given above.

Prevent the plastic shell from coming into contact with oils containing paraffin chlorurates or active sulphur. These substances could alter the mechanical qualities of the product.

21. After-sales assistance

In the case of problems linked to use of the terminal, please contact out Customer Care service. The service is available on working days during office hours.

Customer Care

Customer Care can be contacted by:

Telephone: ++39-031757400
Fax: ++39-031751777
E-Mail: customer.care@esahmi.com
Web site: http://www.esahmi.com

Product return

If the terminal must be sent back for repairs:

- Contact the Customer Care service for authorisation regarding return.
- Fill in the file accompanying the product completely.

Customer Care will supply all explanations necessary for returning the piece.

!!! IMPORTANT !!!

ESA elettronica will accept:
- carriage paid goods (transport expenses paid by the customer).
- carriage forward goods (transport expenses paid by ESA) **with previous authorisation**.

ESA elettronica will not accept:
- no unauthorised carriage forward goods.

It is not necessary to send connectors, cables and accessories (unless connected to the problem indicated).

Thank you for your collaboration.