INSTALLATION AND INSTRUCTION MANUAL

CE

code: **80576A_05-2019_ENG**

ATTENTION!

This manual must always be available to operators of the devices described here.

Always make sure that you have the latest version of the manual, which is available for free download from the GEFRAN website (www.gefran.com).

Installers and/or maintenance personnel are required to read this manual and to precisely follow the instructions contained in it and in its attachments.

GEFRAN will not be liable for any damage to persons and/or property, or to the product itself, caused by failure to follow the instructions and observe the warnings given below.

REVISION DOCUMENTS

DATE	CODE	UPDATE	Number of pages in the document
04-2018	80576	First emission	40
05-2019	80576A	Added 15” model.	42

SUMMARIES AND TABLES OF CONTENTS

PREFACE

Warnings and safety

While all the information contained in this manual has been carefully checked, Gefran S.p.A. accepts no responsibility for the possible presence of errors or for damage to persons and/or property caused by the improper use of the manual. Gefran S.p.A. also reserves the right to make changes to the contents and form of this manual and to the characteristics of the devices illustrated at any time and without prior warning.

The installation of the devices illustrated in the manual must be carried out by qualified technicians in compliance with the laws and standards in force and in agreement with the instructions contained in the manual.

If the AXM view control panel is used in applications with the risk of damages to persons, machinery or materials, its use in conjunction with alarms is essential.
It is advisable to envisage the possibility of checking the intervention of the alarms during regular operation.

Before interacting with the AXM view control panel, the operator must receive full training in the procedures of operation, emergency, diagnosis and maintenance of the system.

Printing conventions used in the manual

Pay attention to the use of the following symbols

Highlights particularly important information which influences the correct operation of the product or of safety or an instruction which must absolutely be followed.

Highlights a risk condition for the safety of the installer or the user, due to the presence of dangerous levels of voltage.

Glossary

Bootloader	Program that, in the startup (boot), loads the PLC.
Checksum	Sequence of bits that is used to verify the integrity of a file
COBID	Communication OBject IDentifier, identificativo a 11-bit identifier of a CAN frame.
MD5	Algorithm used to calculate the checksum of the file
PDO	Process Data Object.
SDO	Service Data Object.
Watchdog	Supervision system hardware or software that recovers temporary and brief system malfunctions.

AXM view CONTROL PANEL

Applications:

- Plastic extrusion
- Plastic injection
- Heat treatment
- Metal

Main characteristics:

- Control Panel with integrated HMI
- One programming environment.
- 10.4”, 12.1 and 15” color display, resistive touch screen
- IP65 front panel protection level
- Wide range of communication ports and protocols

Code	According to model (see order code)
Model Number	According to model (see order code)
Brief description	Control Panel with display and resistive touch screen

Panorama of the solution and its functions

The AXM view Control Panel lets you display, set, and manage all of the machine or system automation data. The operator uses a color touch screen. Depending on the model, the screen size can be 10.4”, 12.1 or 15”. The use of an Intel ATOM low-consumption processor, plus an extremely efficient design (no fans or moving parts), eliminates all maintenance. The processor can run at either 1 GHz or 1.3 GHz.
The Control Panel has several communication ports (USB, Ethernet, RS232, RS485 and CAN) and different protocols GDNET (Master), Modbus TCP/IP (Master\Slave), CANopen (Master), Modbus RTU (Master/Slave)).
The 2 GB internal mass memory can be expanded with SD cards.
Programming is done with a single development tool: GF_ Project VX, which ensures complete and fast management of application software by means of the five standard IEC61131-3 languages and a powerful graphic editor.
In combination with I/Os, AXM view completes the management and control of process and automation. It manages sequences and work processes, and sets and displays data and connectivity.

In addition, there is a series of specific application templates, user-friendly and easily customizable, for the plastics and heat treatment industries.

Architecture

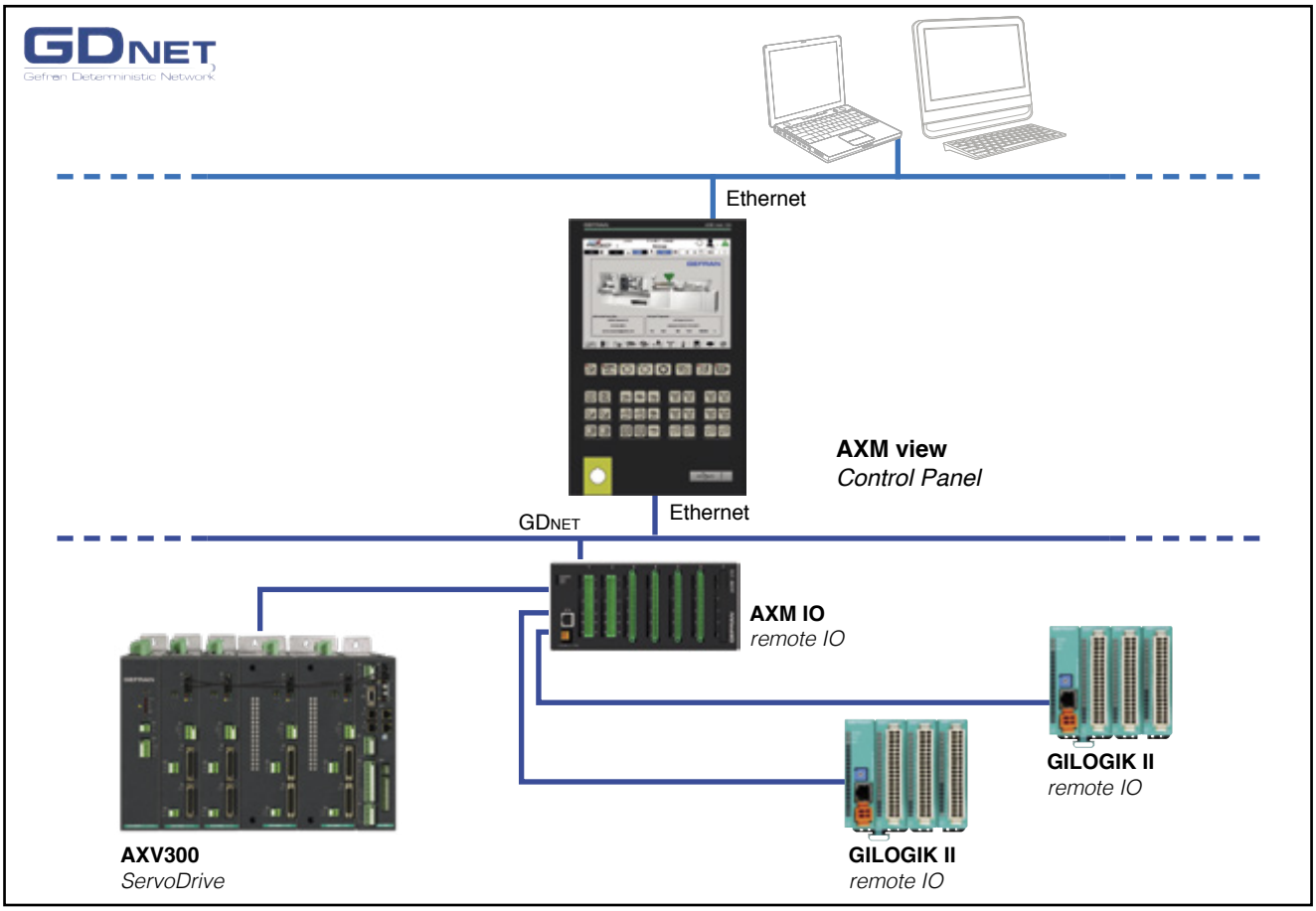


Figure 1 - Ethernet - GDNET architecture

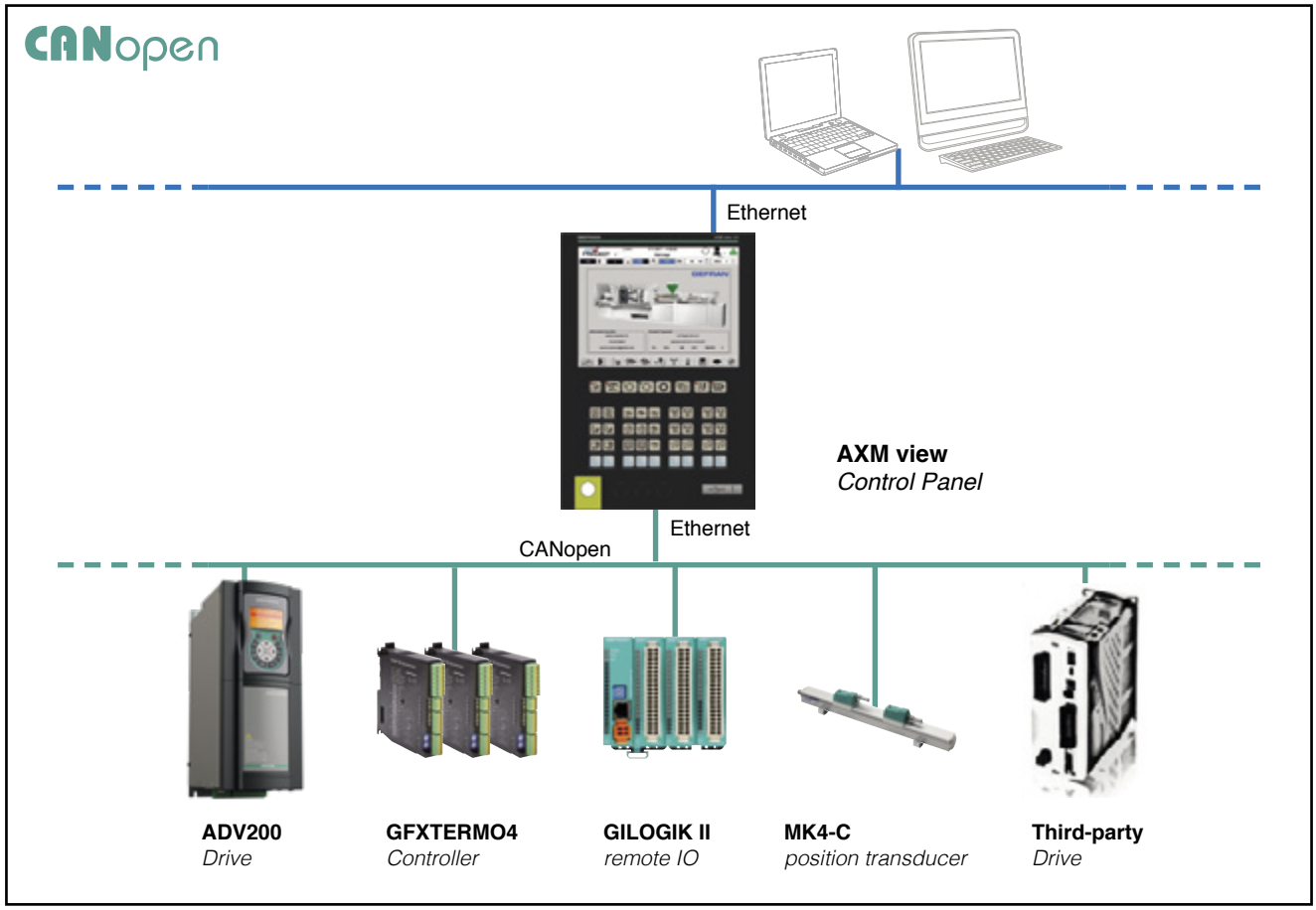


Figure 2- Ethernet - CAN (CANopen) architecture

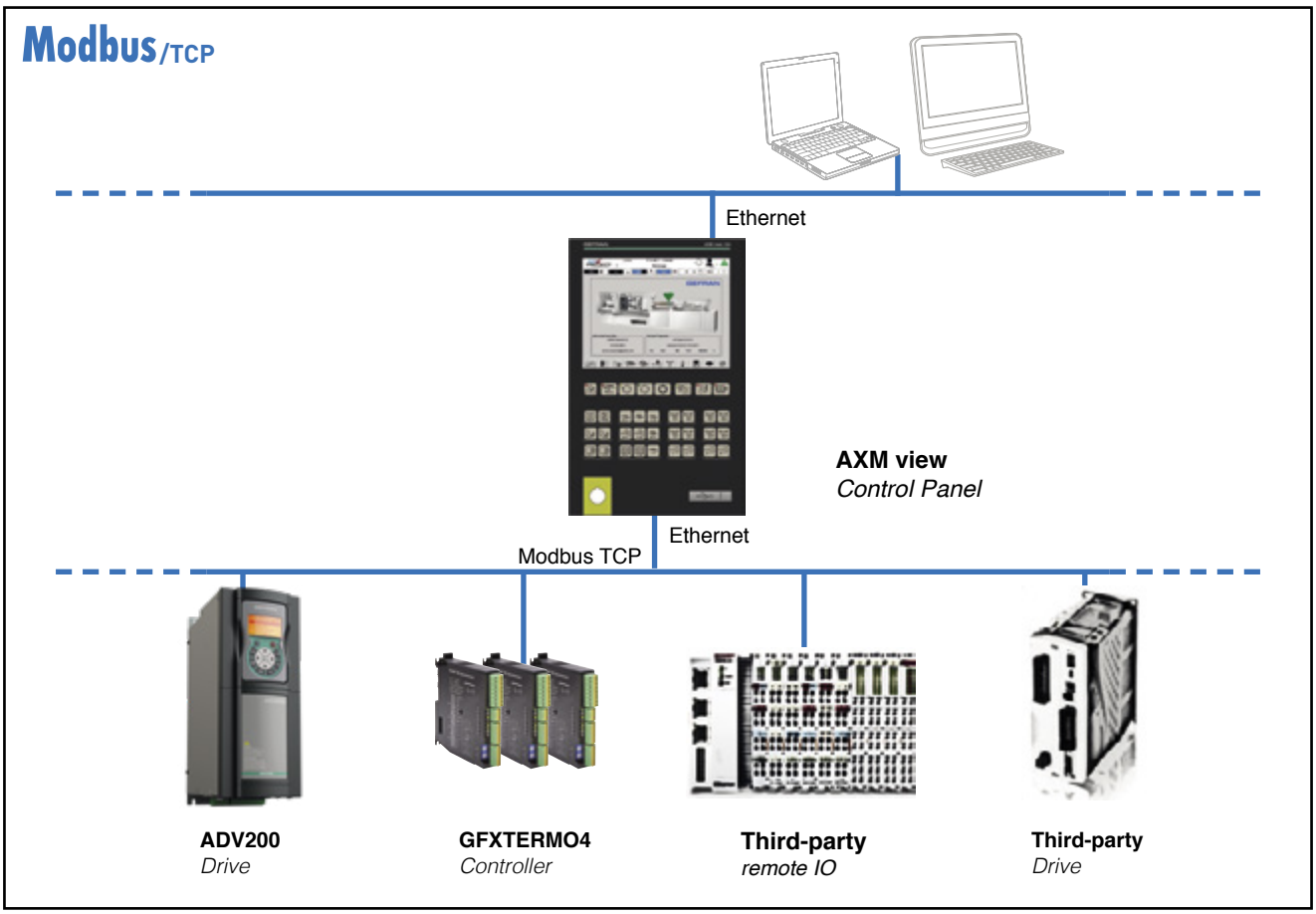


Figure 3 - Ethernet – Modbus TCP architecture

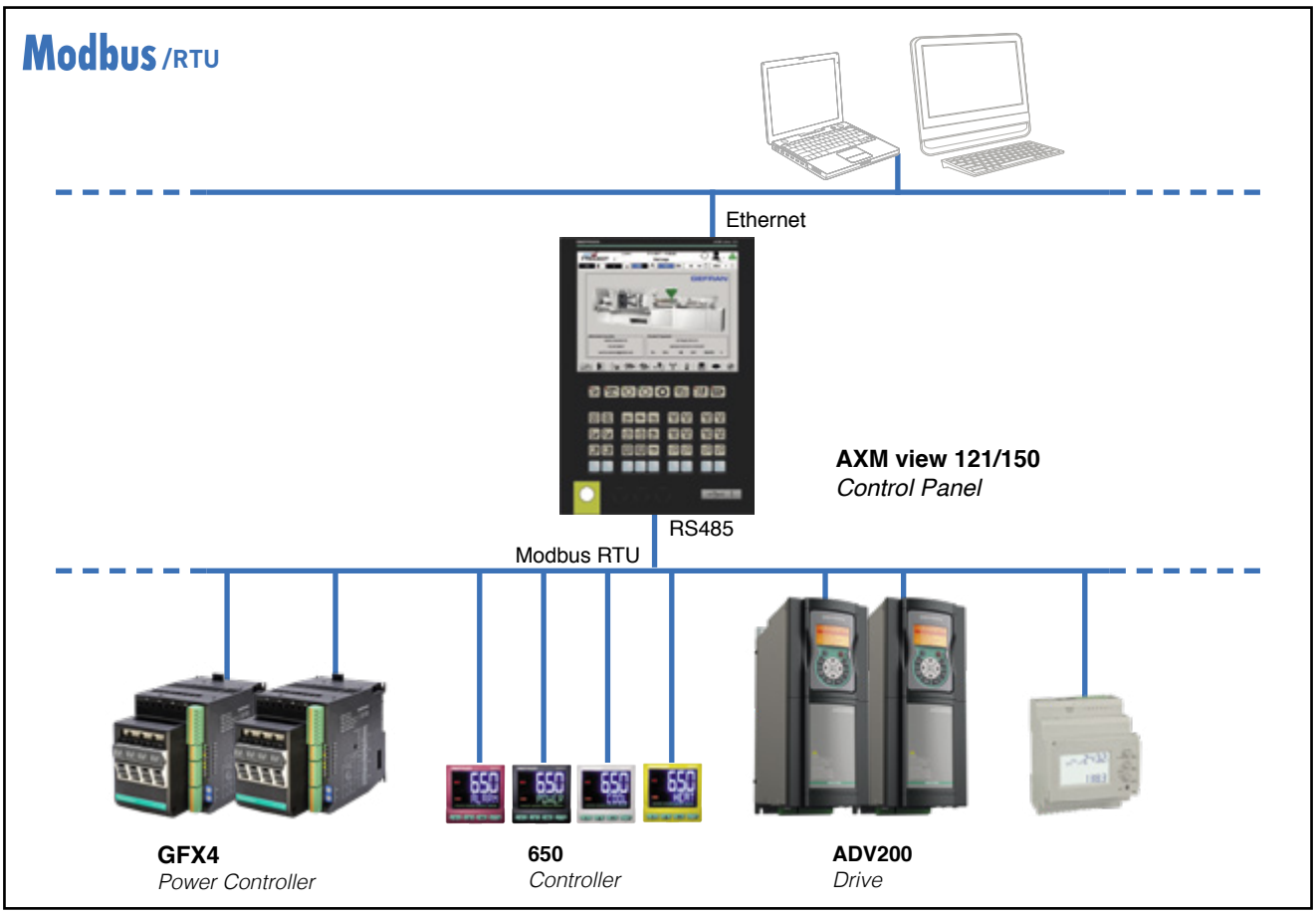


Figure 4 - Example of Ethernet - Modbus RTU (RS485) architecture

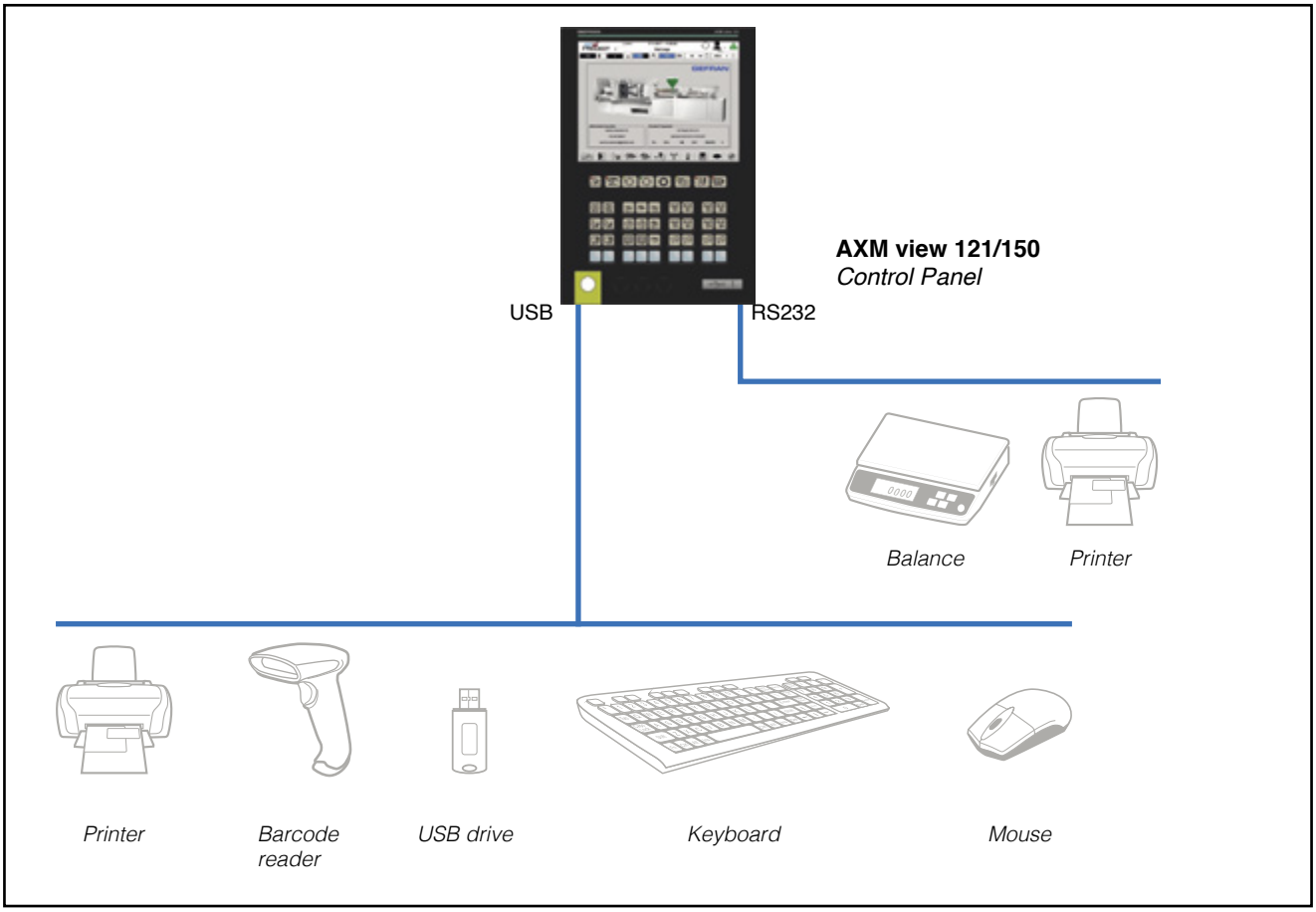


Figure 5 - Example with USB and RS232 ports

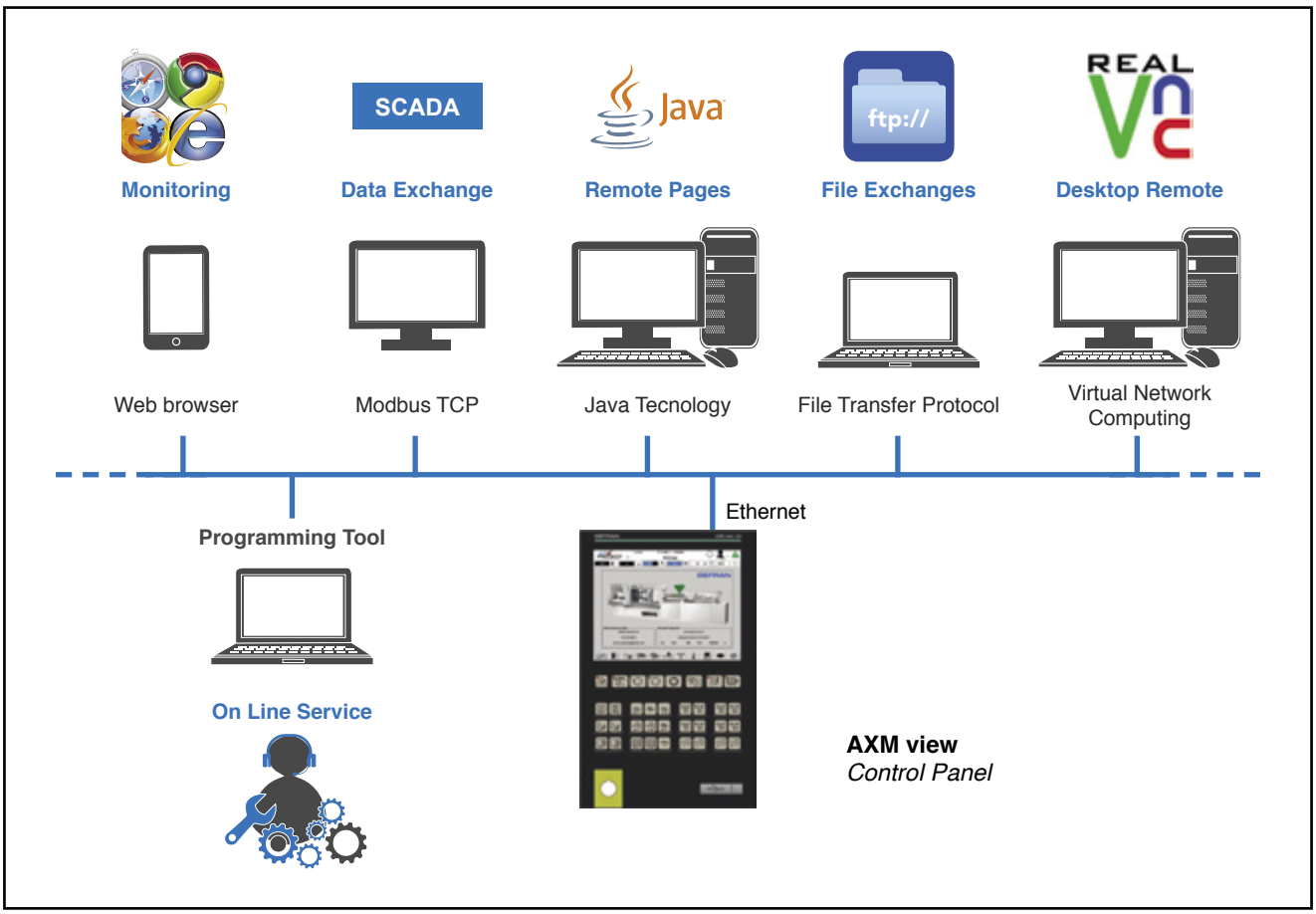


Figura 6 - Examples of remote services

Main power supply

The system is powered with ONE (1) power supply as shown in figure 7.

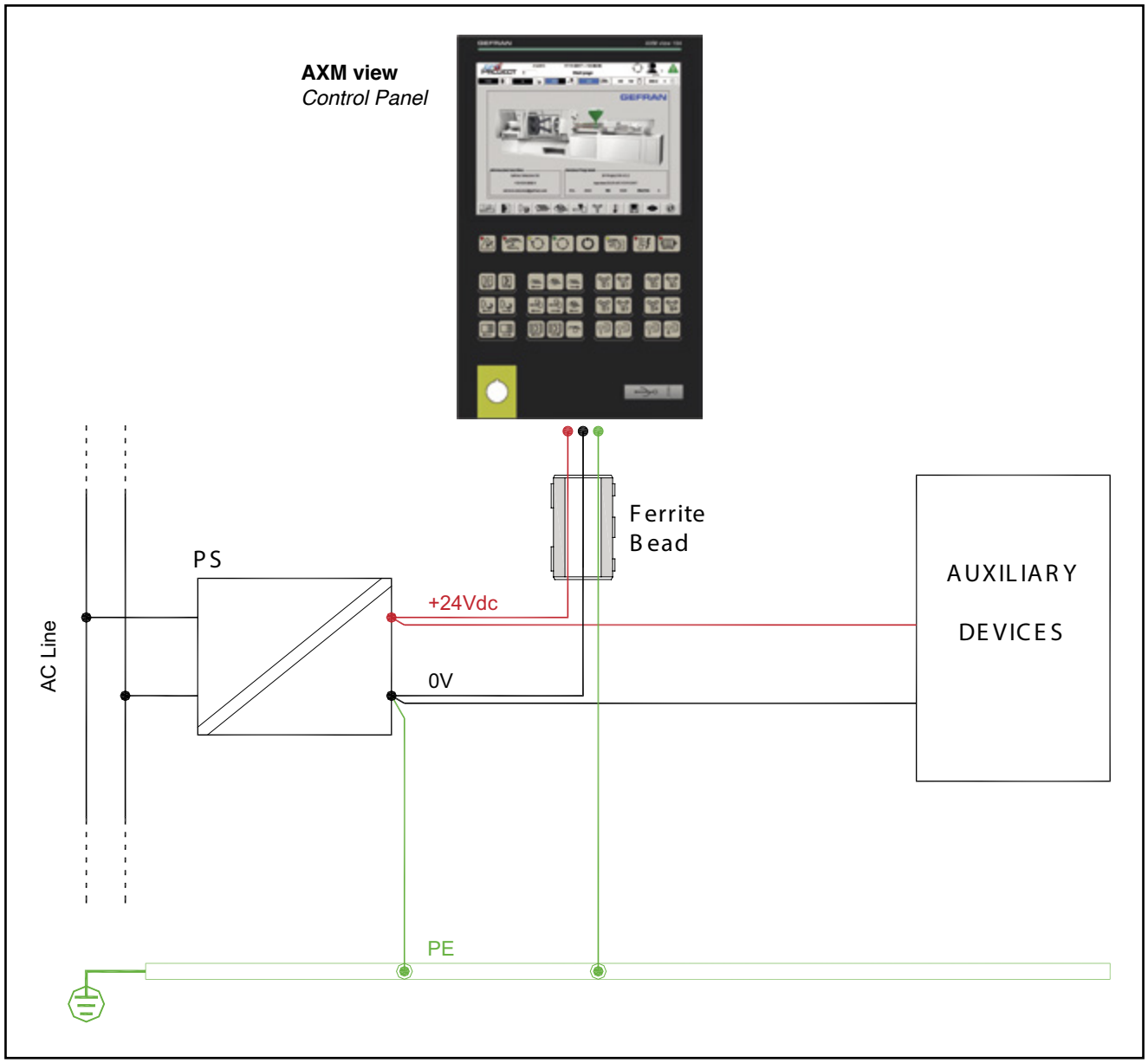


Figure 8 7 Single power supply

To power the system correctly, make sure that:

- The power supply has the power needed to run the system and any additional resources connected to it.
- Ground the power supply (GND) with a wire that is straight and as short as possible (PE).
- Ground the AXM view ground terminal and the with a wire that is straight and as short as possible (PE).
- Insert the ferrites into the power supply cables as close as possible to the AXM view Control Panel.
- The system power supply line must have a different path from the plant and machine power cables.

Programming tool

GF_PROJECT VX

Development software that allows the writing of the application program for PLC with IEC1131 languages. Also allows the construction, in graphic mode, of the various pages of the user interface necessary to the application developed.
Via GF_PROJECT LX it is possible to connect to the device that will host the application to debug the program and upload the upgrades.
See the GF_Project VX manual for operating instructions.

System requirements

	Minimum	Recommended
Operative system	Windows XP SP2 or Windows Vista	Windows 7 (64 bit) / Windows 10 (64 bit)
Processor	Intel Pentium 1 GHz	Intel Core i5 2,5 Ghz or superior
RAM	2 GB	4 GB or greater
Free space on Hard Disk	2 GB	4 GB or greater
Graphic resolution	XGA (1024 x 768 pixel)	SXGA (1280 x 1024 pixel) or superior
Browser	Microsoft Internet Explorer 8.0	Microsoft Internet Explorer 9.0
Ethernet Port	1 RJ45	1 RJ45
DVD player	Yes	Yes
USB port	1 USB 2.0	1 USB 2.0

Technical data

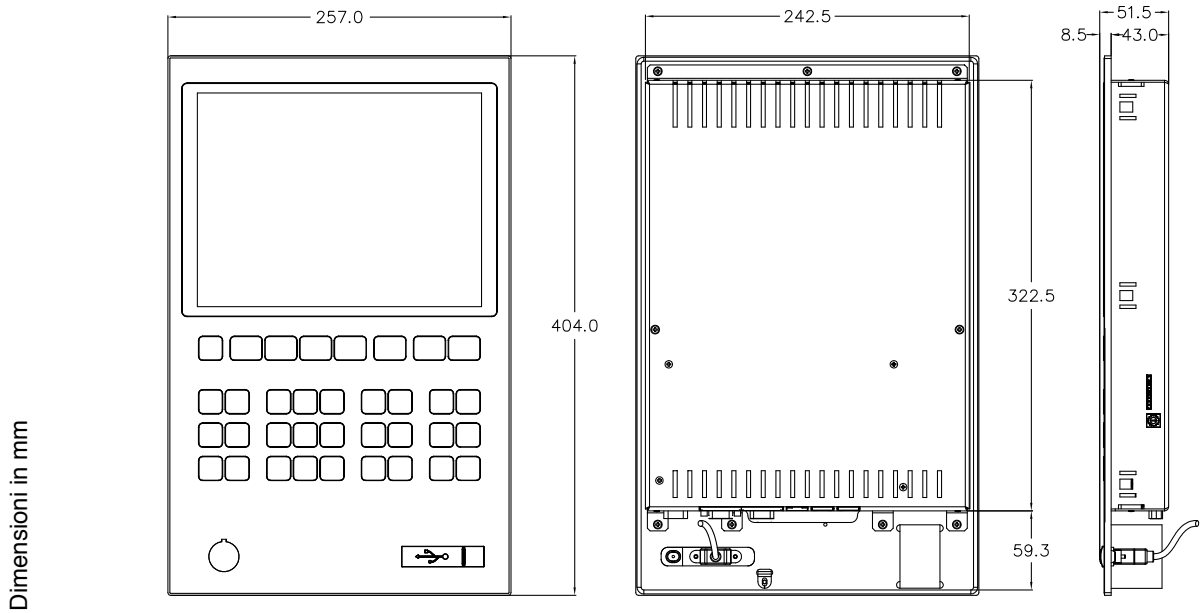
		AXM view 104	AXM view 121	AXM view 150
POWER SUPPLY	Operating voltage	24 VDC ±25%		
	Current draw (at 24 VDC)	600 mA max	900 mA max	850 mA max
	Power dissipation	15 W max	22 W max	26.5 W max
	Protections	Polarity inversion Short circuit		
	Connection	3-pin polarized removable connector Screw terminals, max cable section 2.5 mm^2		
CONNECTIONS	Ethernet port (ETH)	Number of channels: 2 max Connector: RJ45 Velocity: 10 / 100 / 1000 Mbit/s Signals: green connection LED, yellow data LED		
	KEY & LED port	Connector: RJ45 Standard: USB2.0		
	RS-232 port (AXM view 121 and AXM view 150 models only)	Connector: DB9 M Velocità: 1.2kbit/s…115kbit/s		
	RS-485 port (AXM view 121 and AXM view 150 models only)	Optically isolated Connector: DB9 M Speed: 9 kbit/s … 19 kbit/s Terminations and polarization: internal, selectable with jumper		
	CAN port (AXM view 121 and AXM view 150 models only)	Optically isolated Connector: DB9 M Speed: 20, 50, 100, 125, 250, 500, 1000 kbit/s, default 500 kbit/s Termination: internal, selectable with jumper		
	USB port	Number of ports: 2 max Connector: type A Standard: USB 2.0 Protection: 500mA overload		
COMMUNICATION PROTOCOLS	Ethernet	FTP (File Transfer Protocol) Modbus TCP/IP Master/Slave GDNET Master		
	CAN	CANopen Master		
	Modbus	Modbus RTU Master/Slave		
DISPLAY	Size (diagonal)	10.4”	12.1”	15”
	Format	4:3		
	Pixel resolution	800 × 600		1024 x 768
	Screen area (L x H)	211.2 × 158.4 mm	246.0 x 187.5 mm	304.1 x 228.1 mm
	Colors	256 K / 18 bit		
	Luminosity	400 cd/m^2	450 cd/m^2	500 cd/m^2
	Contrast	500:1	1500:1	1500:1
	Backlighting	White LEDs life 30,000 hours @ 25 °C	White LEDs life 50,000 hours @ 25 °C	White LEDs life 50,000 hours @ 25 °C
	Visual angle	Horizontal: 70° - 70° Vertical: 50° - 60°	Horizontal: 89° - 89° Vertical: 89° - 89°	Horizontal: 70° - 85° Vertical: 70° - 85°
CONFIGURATION ELEMENTS	Access to software procedures	16-position rotary switch		
	Touch screen calibration	Via software on product		
CONTROL ELEMENTS	Touch screen	4-wire resistive technology		

		AXM view 104	AXM view 121	AXM view 150
KEYBOARD	Keys	35 N.O.	44 N.O.	44 N.O.
	External keys	4 N.O.		
	Customizable keys symbols	NO	9 with external label	9 with external label
	LEDs green	1		
	LEDs yellow	2		
	LEDs red	4		
	Electromechanical buttons	NO	3 prepared holes Ø 22 mm	3 prepared holes Ø 22 mm
	Emergency button	1 Ø 22 mm (NON INCLUSO)		
VIEWING ELEMENTS	Diagnostics	PW LED (yellow): power supply on RN LED (green): PLC program state LED E1 (red): HW Watchdog state LED E2 (red): PLC program error		
MICROPROCESSOR	Type and frequency	ATOM E640 1 GHz ATOM E660, 1.3 GHz		
MEMORY	System	512 MB, DRAM type DDR II		
	Mass	2 GB Flash memory		
	Mass extension	SD Card Slot *		
AMBIENT CONDITIONS	Operating temperature	0 ... +55 °C (as per IEC 68-2-14)		
	Storage temperature	-20 ... +70 °C (as per IEC 68-2-14)		
	Relative humidity	max 95% RH non condensing (as per IEC 68-2-3)		
	Vibrations	5 to 9 Hz: sine constant 3.5 mm 10 to 150 Hz: sine acceleration 1G		
ASSEMBLY		Built-in, in control boards or panels		
PROTECTION LEVEL		IP 65 on front panel (as per IEC 68-2-3)		
WEIGHT		2.100 kg	2.700 kg	3.500 kg
CE STANDARDS	EMC (electromagnetic compatibility)	Conforms to Directive 2014/30/EU EN61131-2: Programmable controllers Part 2: Equipment requirements and tests.		

* SD card not supplied. Available as accessory

Dimensions and spaces required for installation

AXM view 104: dimensions



AXM view 121: dimensions

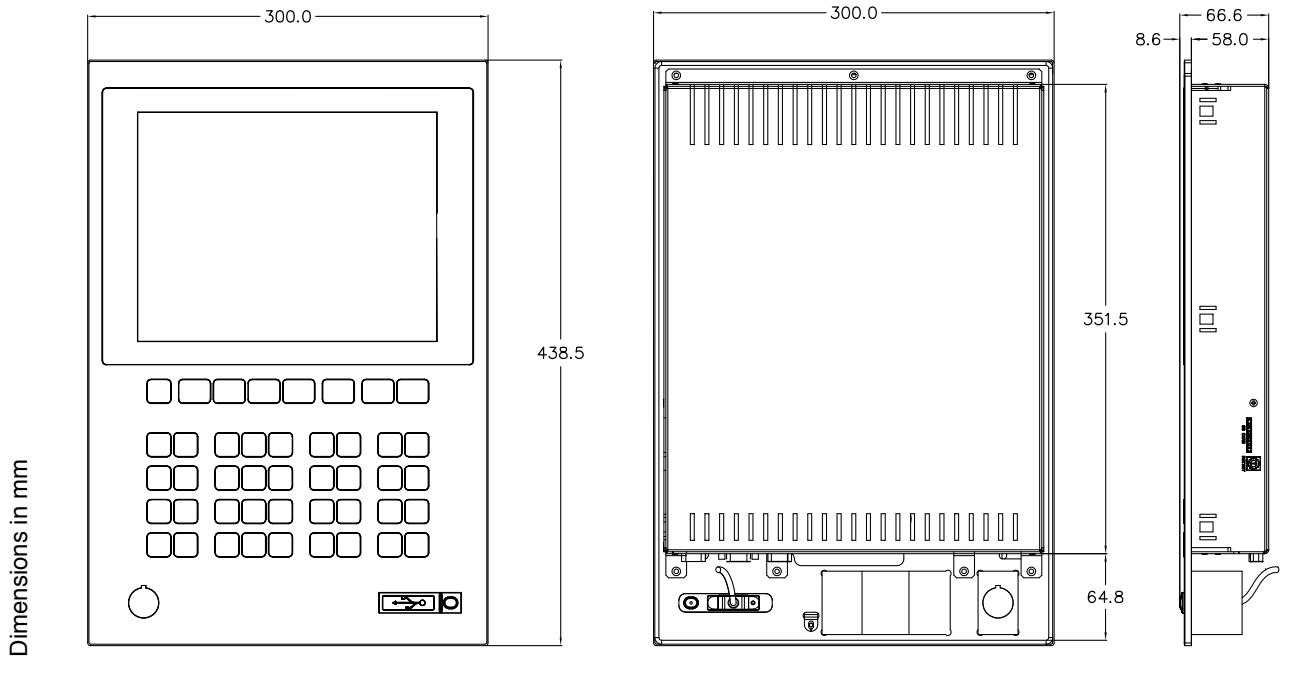


Figure 8 - Dimensions AXM view 104 / 121

AXM view 150: dimensions

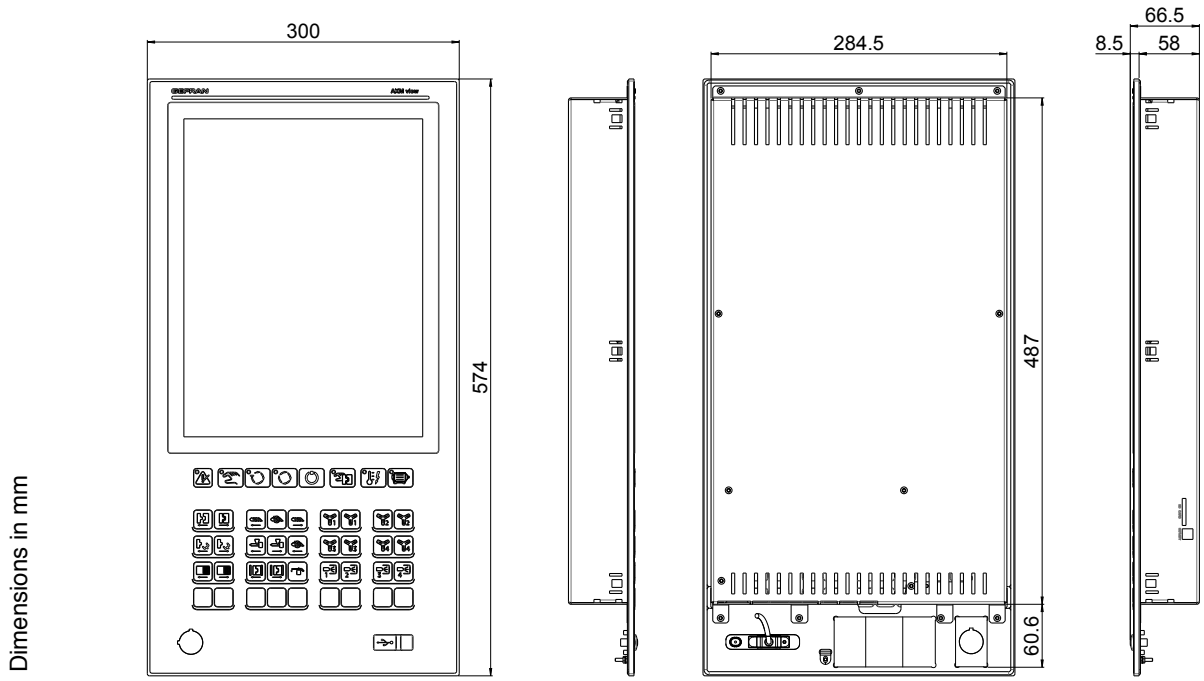


Figure 9 - Dimensions AXM view 150

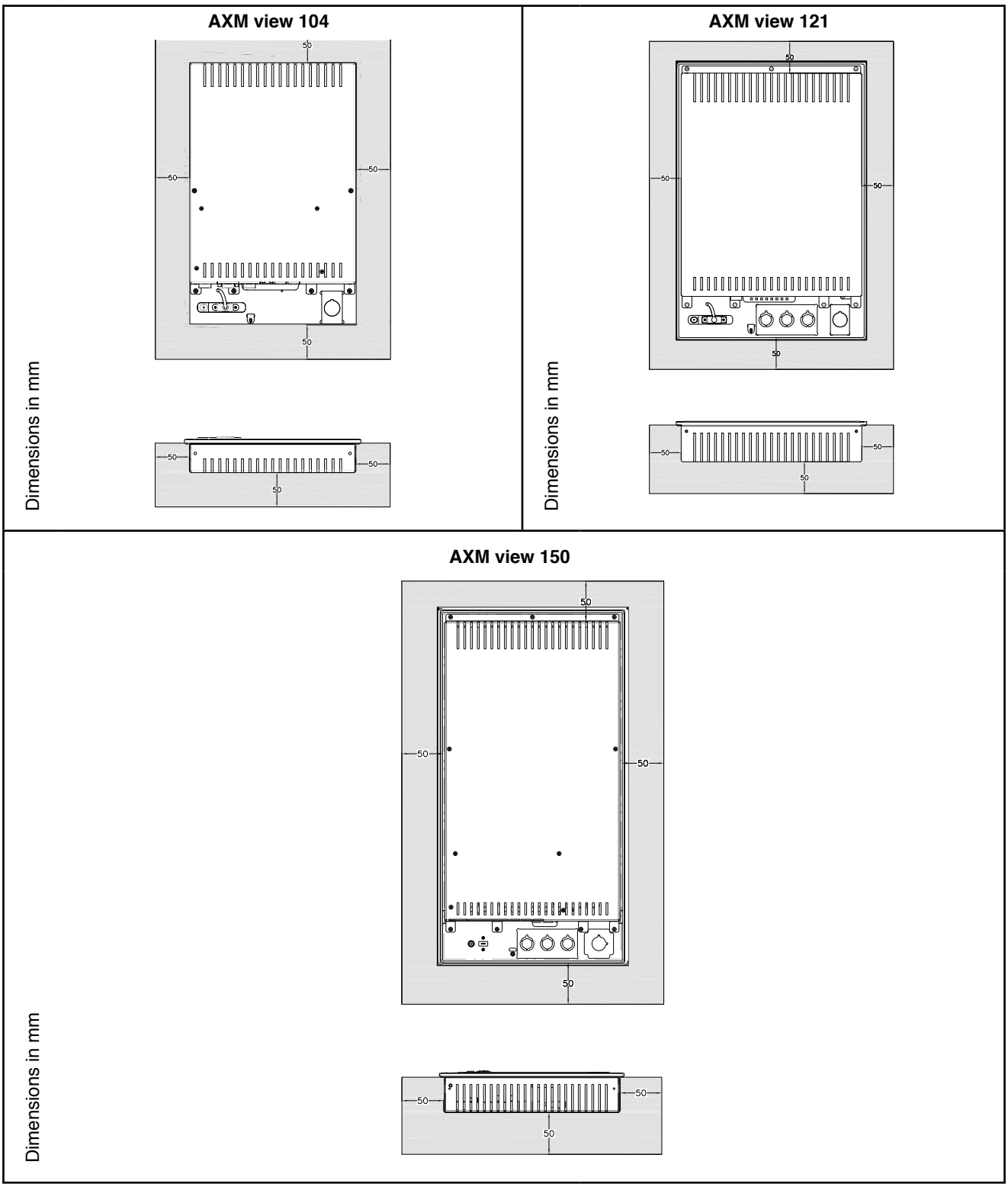


Figure 10 - Space for ventilation

Attention: the temperature in the compartment containing the Control Panel must never exceed 55°C.

The open spaces shown in gray are recommended with static ventilation. These spaces may be reduced with forced ventilation.

Order codes

AXM view 104 with integrated control panel.
10.4" color display, resistive touch screen, Atom 1 GHz, 512 MB RAM, 2 GB flash memory

Code	Model Number	Description
F071521	**AXM view 104-35-20-E1-00-00**	communication peripherals 2 x Ethernet (Modbus TCP, GDNet), 2 x USB, 1 x keyboard eKMxx

AXM view 121 with integrated control panel.
12.1" color display, resistive touch screen, Atom 1.3 GHz, 512 MB RAM, 2 GB flash memory

Code	Model Number	Description
F071425	**AXM view 121-44-30-E1-S1-C1**	communication peripherals 2 x Ethernet (Modbus TCP, GDNet), 2 x USB, 1 x keyboard eKMxx, 1 x RS232, 1 x RS485, 1 x CAN (CANopen)

AXM view 150 with integrated control panel.
15" color display, resistive touch screen, Atom 1.3 GHz, 512 MB RAM, 2 GB flash memory

Code	Model Number	Description
F074414	**AXM view 150-44-30-E1-S1-C1**	communication peripherals 2 x Ethernet (Modbus TCP, GDNet), 2 x USB, 1 x keyboard eKMxx, 1 x RS232, 1 x RS485, 1 x CAN (CANopen)

Accessories

Code	Model Number	Description
F072458	**KIT_INSTA_AXM view**	Installation kit (fastening blocks + ferrite + power supply connector)
F057777	**SD_CARD1G**	SD Card 1GB
F057679	**USB_PEN1G**	1 GB USB key
F028595	**R-CAVETHX6**	Cable ETHERNET cross L. = 6 m

Assembly Control Panel

Hole dimensions

For correct installation, observe the dimensions of the templates shown in the illustration.

Attention: the panel on which the Integrated Controller and Control Panel is mounted has to have the following characteristics:

- be sufficiently stiff and strong so that it does not bend during use;
- be between 1 and 6 mm thick, to allow the fastening of the device with the terminals supplied.

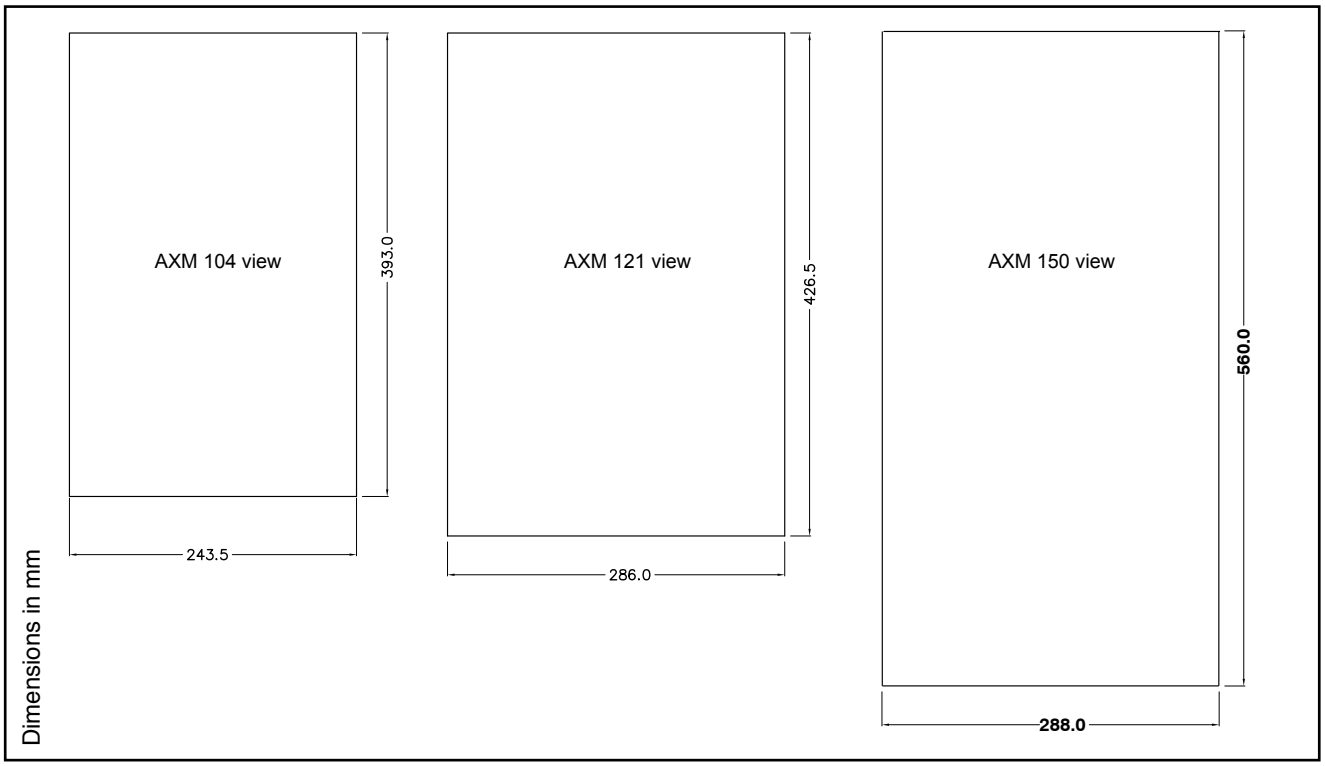


Figure 11 - Hole dimensions for installation of Control Panel

Protection against infiltrations of water

The Control Panel offers, first of all, a degree of protection of IP65. It is therefore possible to install the device in particularly dusty environments or areas subject to splashes of water without problems:

- the compartment in which the device is housed also has to be dust and waterproof;
- the panel on which the device is installed must be perfectly smooth and flat on the front;
- the hole in the panel must scrupulously respect the dimensions indicated;
- the device has to be fastened tightly to the panel, to allow the gasket fitted at the back to ensure water tightness.

Vibration

The Contrlo Panel can support vibrations:

- from 5 to 9 Hz: sinusoidal 3.5 mm constant;
- from 9 to 150 Hz: sinusoidal with acceleration equal to 1 G

Should the device be mounted on a support that exceeds these limits it is necessary to envisage a system for the suspension and mitigation of the vibrations.

Minimum spaces for ventilation

The temperature of the compartment that houses the Integrated Controller and Control Panel must not exceed 55°C.
Figure 10 free spaces for ventilation show the minimum free distances recommended in the installation of the device in a closed compartment

Positioning

The Control Panel has to be positioned in order to guarantee the following conditions:

- the screen must not be directly lit by the sun or particularly bright light sources.
- If necessary, screen direct rays, using an antiglare shutter for example;
- there must be no sudden temperature changes;
- there must be a low explosion risk: it can be connected to elements that operate in environments with a hazardous atmosphere (flammable or explosive) only through appropriate and suitable types of interface, compliant to the safety standards in force;
- low presence of magnetic fields.

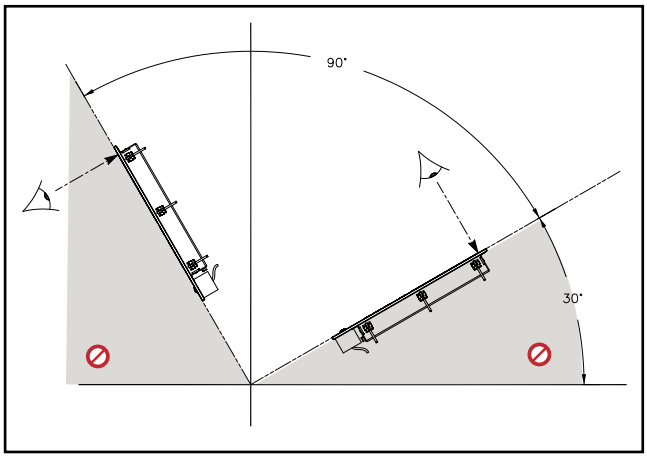


Figure 12 - Admitted angulation

The angle of the controller must be between 30° and 120°, as shown in figure 12.

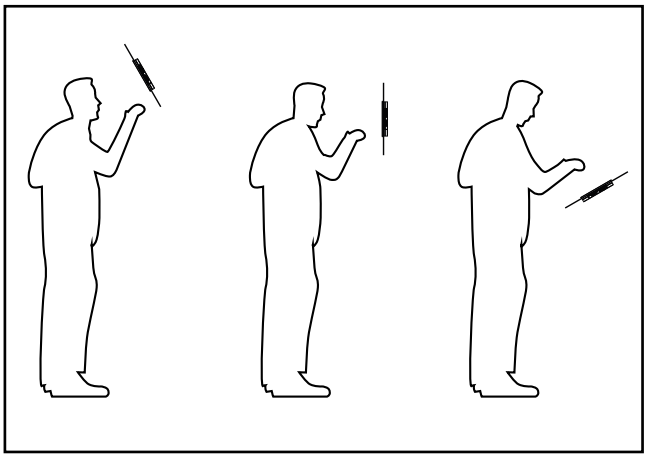


Figure 13 - Position and angulation

The angle to choose also depends on the position of the controller compared to the operator, as shown in figure 13.

Fastening to the panel

The Control Panel has O-Rings to guarantee the declared protection level.

Insert the Control Panel into the support, connect the 6 terminals supplied to the device and tighten the screw until the device is fastened tightly to the panel.

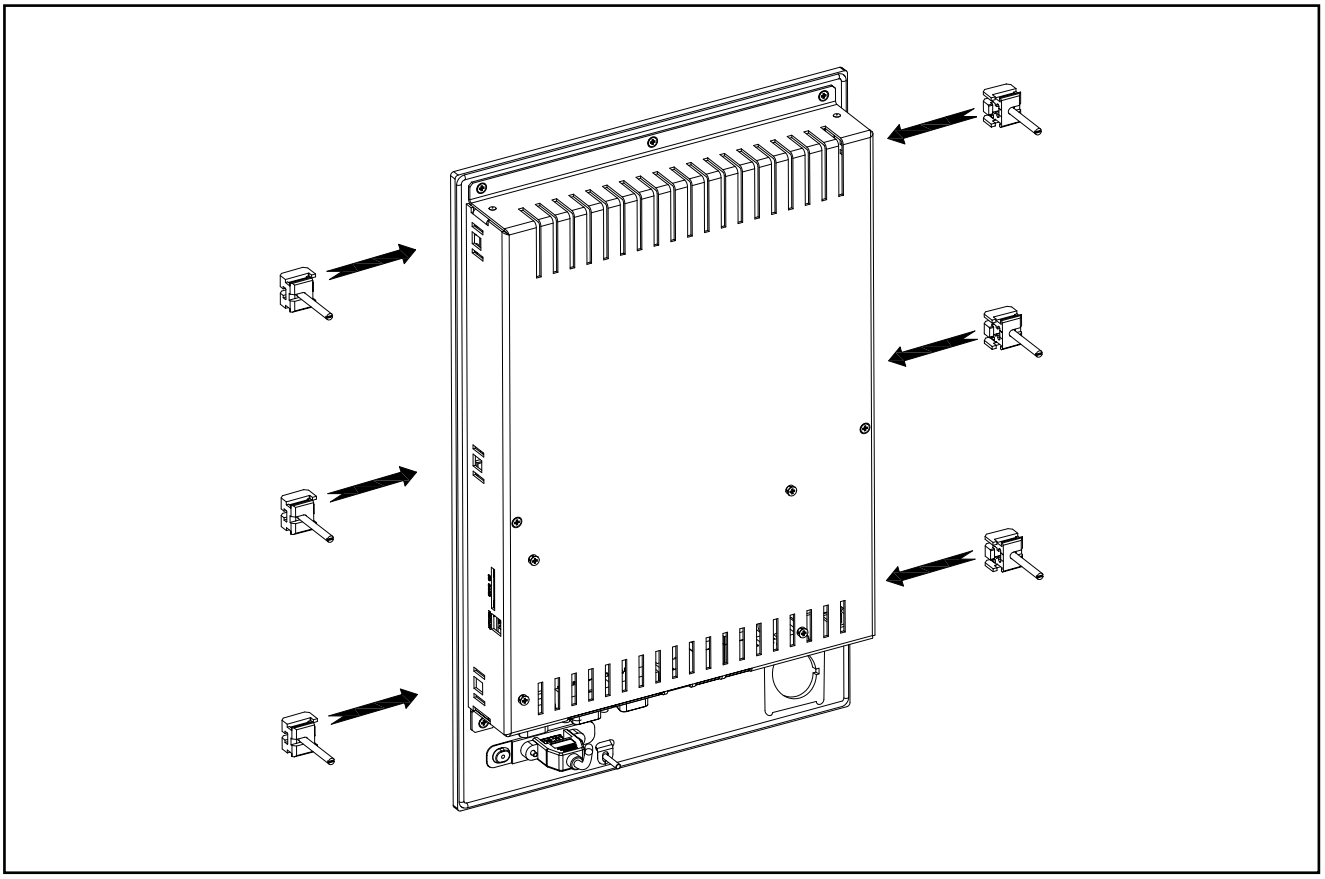


Figure 14 - Positions available for fastening terminals

Control Panel Connections

Inputs, ports and signals

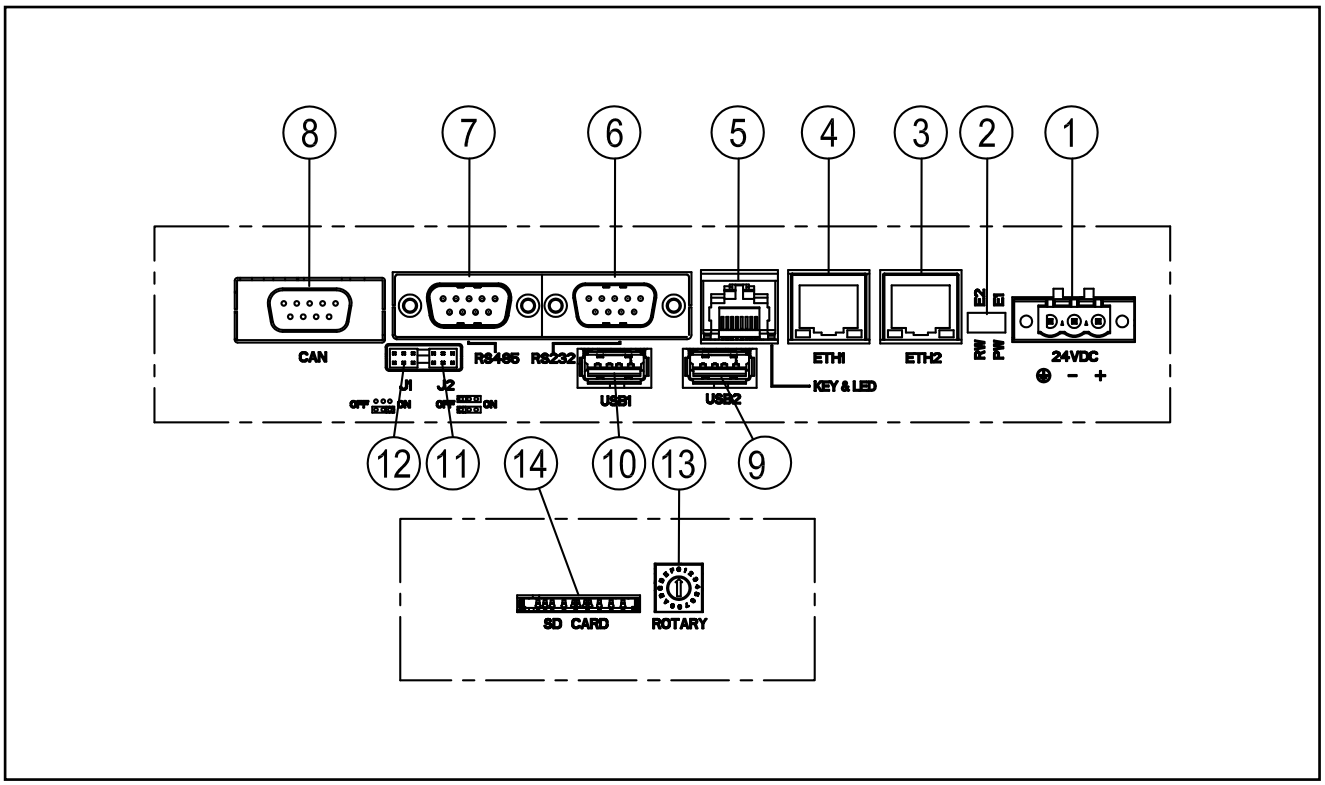


Figure 15 - Position of user connectors

No	Description	Connector / indicator	Notes
1	24 VDC ± 25% power supply input	Removable polarized terminal block	
2	LED	PW (yellow): power ON RN (green): PLC program status E1 (red): local I/O bus error E2 (red): HW Watchdog status	
3	Supplemental Ethernet port	RJ45	
4	Ethernet port	RJ45	
5	KEY & LED	RJ45	The connection is used for the management of the keyboard and LEDs on the front of the synoptic.
6	RS232	DB9 M (D-sub 9-pin male)	For AXM view 121 and 150 only
7	RS485	DB9 M (D-sub 9-pin male)	For AXM view 121 and 150 only
8	CAN	DB9 M (D-sub 9-pin male)	For AXM view 121 and 150 only
9	Porta USB	Type A	
10	Porta USB	Type A	
11	J2	Jumper	Configuration of RS485 polarization and termination
12	J1	Jumper	Configuration of CAN termination
13	Rotary	16-position Rotary	
14	SD Card Slot	Standard SD Card	

Power

The AXM view Control Panel must be connected to a 24 Vdc power supply unit..
The same 24 VDC power supply can feed other devices as well. Make sure that the current issued by the power supply is higher than the total maximum current absorbed by all the devices connected.

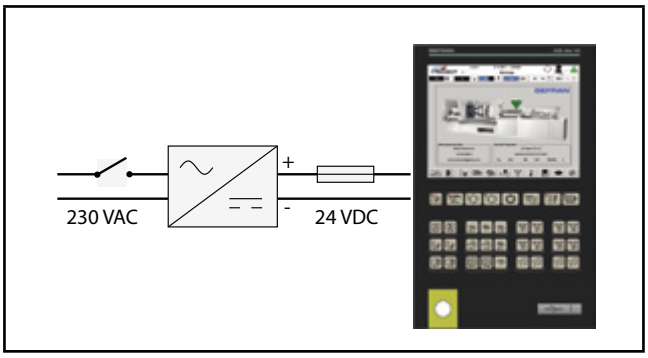


Figure 16 - AXM view power

Considering that the AXM view Control Panel has no switch, it is necessary to install one before it, with a protective fuse.
The switch has to be positioned in the immediate vicinity of the device and be easy for the operator to reach.

For the 24 Vdc power supply, use a separate line from that used for electromechanical power devices such as relays, contactors, solenoids, etc.
If there are considerable changes in the mains voltage, use a voltage stabiliser.
Near to high frequency generators or arc welders, use adequate grid filters.

Connect the power cables to the power connector.
Assemble the ferrite (supplied) as close as possible to the device to limit its susceptibility to electromagnetic noise (figure 17).

The 24 Vdc power cables must follow a separate route from the power cables of the system or the machine.

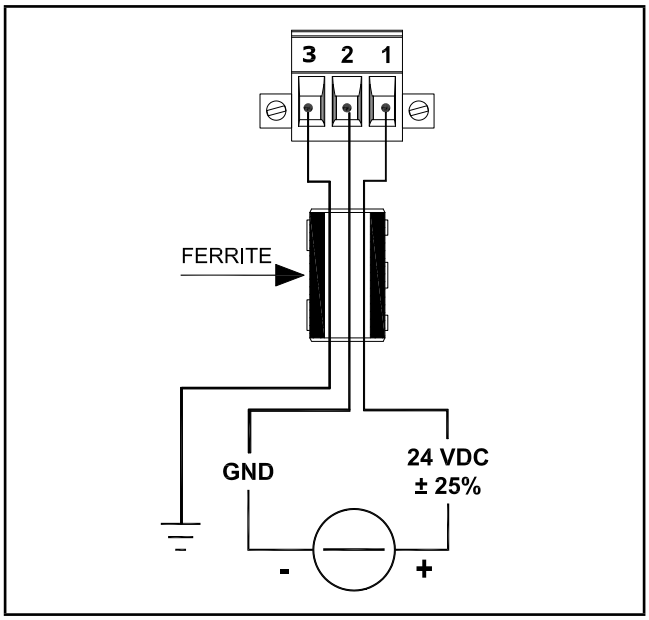


Figure 17 - AXM view power connection

Attention: make sure that the earth connection is efficient. A non-existent or inefficient earth connection can make the operation of the device unstable, due to excessive environmental disturbance.
In particular, check that:
- the voltage between ground and earth is < 1 V;
- the ohm resistance is < 6 Ω.
- the wire is as short as possible and without curls

Grounding the product

Referring to figure Fig. 18 (grounding) connect to ground the product chasses using a section electric wire≥ 1.5 mm^2. Use the pin indicated with the GROUND symbol ensuring a very good connection.
Make sure that the ground connection is really efficient.
A missing or inefficient ground connection can make unstable operation of the device, due to excessive environmental disturbances.
In particular verify that:

- the voltage between ground and earth is <1 V;
- the ohmic resistance is < 6 Ω.

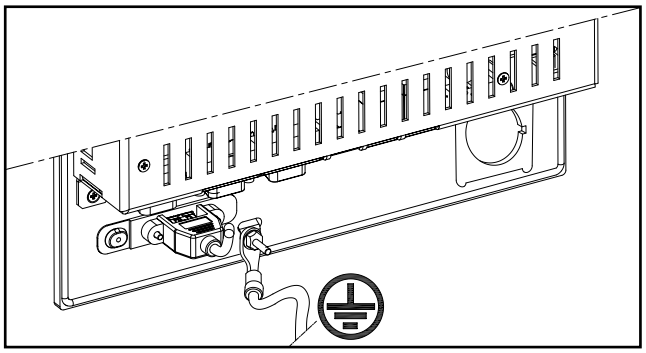


Figure 18 - Grounding

KEY & LED

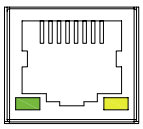
The connection is used for the management of the keyboard and LEDs on the front of the synoptic.

USB

The USB ports let you connect external devices conforming to the USB standard.
Printers cannot be connected. The connectors are Type A and the ports support the USB 2.0 standards, with speed up to 480 Mbit/s.
The ports can deliver 500 mA current at 5 VDC to power external USB devices. The USB cable can have a maximum length of 5 meters.
Use approved USB 2.0 cables.

Ethernet

The Ethernet port lets you connect the controller to a computer or a corporate LAN or, if the product has the option, to an ETHERCAT network.



Pin	Name	Description
1	TX+	Data transmission +
2	TX-	Data transmission -
3	RX+	Data receiving +
4		
5		
6	RX-	Data receiving -
7		
8		

The connection cable to use, straight or crossover, depends on the type of device that should be connected.
For example, to connect directly to a PC with a crossover cable must be used.

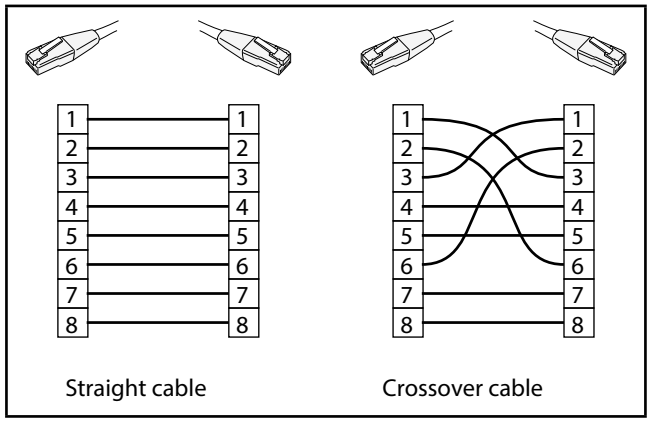
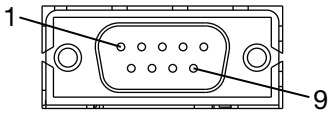


Figure 19 - Straight and crossover Ethernet cables

For the connection, use a CAT6 UTP cable or superior.
The maximum length of the Ethernet cable is 100 metres.
Do not run the Ethernet cable alongside the machine power cables, to avoid interference with data transmission.
The RJ45 socket has two LEDs. When the Ethernet connection is active, the green LED stays permanently lit; when data is being transmitted, the yellow LED flashes

RS232

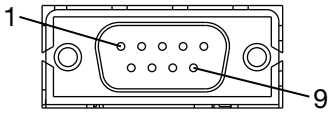
The RS232 port is available on AXM 121 and AXM view 150 models. Considering that the RS232 port is not insulated, it is necessary to disconnect the power to the Integrated Controller and Control Panel and to the device to be connected before connecting them.
The connection cable must be screened and not exceed a length of 5 metres. Tighten the cable connector to that of the controller using the special screws.



Pin	Name	Description	Signal
1			
2	RxD	Received Data	Input
3	TxD	Transmitted Data	Output
4			
5	GND	Ground	Ground
6			
7	RTS	Request To Send	Output
8	CTS	Clear To Send	Input
9			

RS485

The RS485 port is available on AXM 121 and AXM view 150 models. Considering that the RS485 is opto-isolated, it is not necessary to disconnect the power to the Integrated Controller and to the device to be connected before connecting them. Tighten the cable connector to that of the controller using the special screws



Pin	Name	Description
1		
2	TX/RX+	Data +
3		
4	TX/RX-	Data -
5	GND	Ground
6		
7		
8		
9		

Do not connect any filters other than the ones described.

The RS485 connection can be used successfully over long distances and in environments characterised by considerable disturbance.
The maximum length of the cable depends on the transmission speed, as shown in figure 22.

Warning: The RS485 port is equipped with internal termination and polarization, as shown in the figure below.

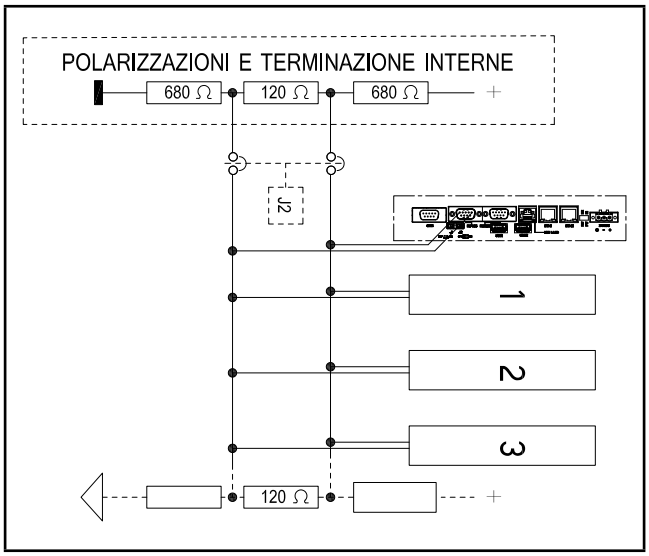


Figura 20 - Polarizations and line termination RS485

The RS485 line polarizations and termination are settable with jumper J2 as shown below.
See figure 15 to locate the jumper.

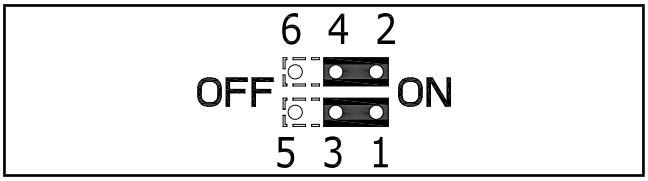


Figure 21 - RS485 Configuration, Polarizations and Termination

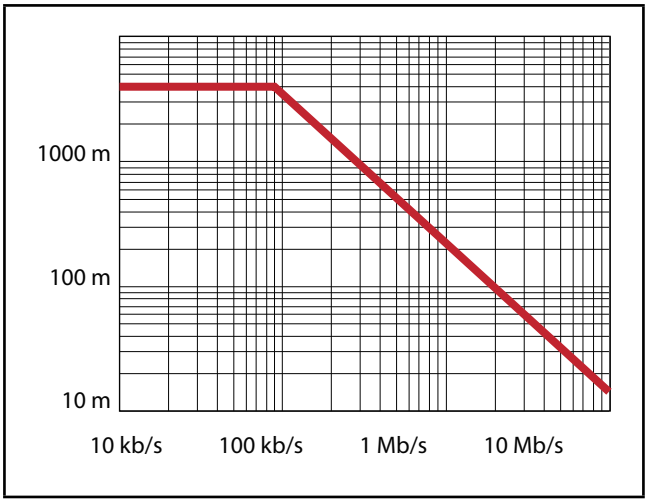
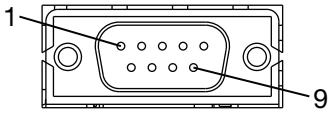


Figure 22 - RS485 max transmission speed

CAN

The CAN line is available for AXM view 121 and AXM view 150 models.
Connect the cable for the CAN field bus. The CAN bus is used to connect to the controller devices that conform to the CANopen standard.
Considering that the CAN port is opto-isolated, it is not necessary to disconnect the power to the device before connecting it.
For the wiring of the line, use an approved cable.
Fasten the cable connector to that of the controller with the appropriate screws.

Do not connect any filters other than the ones described.



Pin	Name	Description
1		
2	CAN_L	CAN-Low (CAN-)
3	GND	Ground (mass)
4		
5	EARTH	Earth
6		
7	CAN_H	CAN-High (CAN+)
8		
9		

Warning: The CAN port has a line termination. If the CPU module is the last or the first device on the CAN line, you have to insert the termination (120 Ω resistance, ¼ W, 5%) by setting jumper J1 as shown in figure 22.
Remember that the CAN bus must be terminated at both ends.

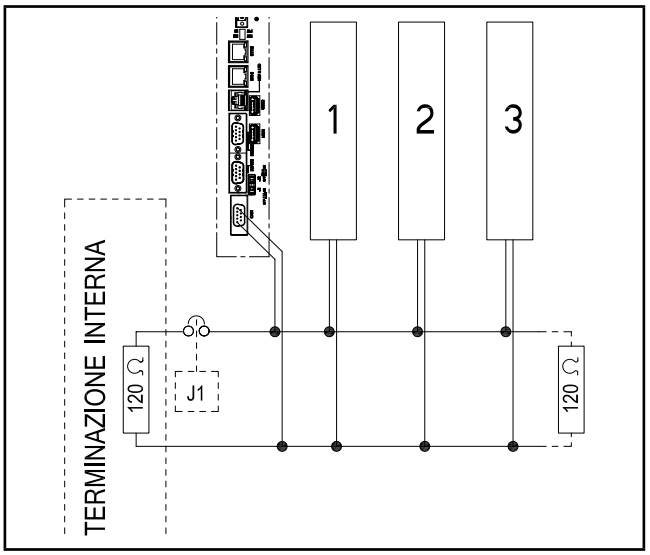


Figure 23 - CAN bus line termination

The CAN line termination is settable with jumper J1 as shown below.

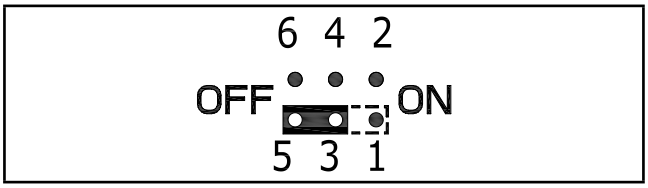


Figure 24 – Configuration of CAN termination.

Figure 25 shows the correlation between CAN bus length and maximum transmission speed.

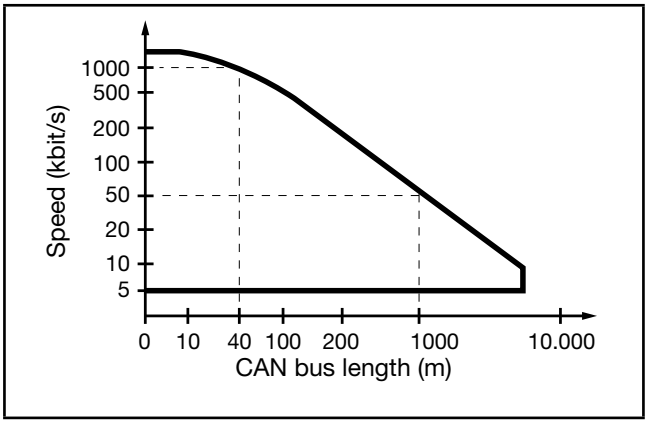


Figure 25 - Maximum CAN bus transmission speed

Figure 26 shows the guidelines for installing a CAN network with GEFRAN and/or third-party devices.

Rotary selector

The rotary selector is used to set the function of the CPU module.

Settings and functions:

- **From 0 to 9:** normal functioning. Positions 0..9 can be used for custom applications.
- **A**: power on- user application from SD-Card.
- **B**, **C:** reserved – do not use.
- **D**: runtime - diagnostics mode.
- **E**: Touch screen calibration.
- **F**: power-on - start in setup mode.

SD Card

The SD Card mass memory lets you store data and applications.

SD Card function is defined by position A of the rotary selector (use positions 0 to 9 only; unless otherwise instructed, do not use positions A to F).

SD Card function is defined by rotary selector position.

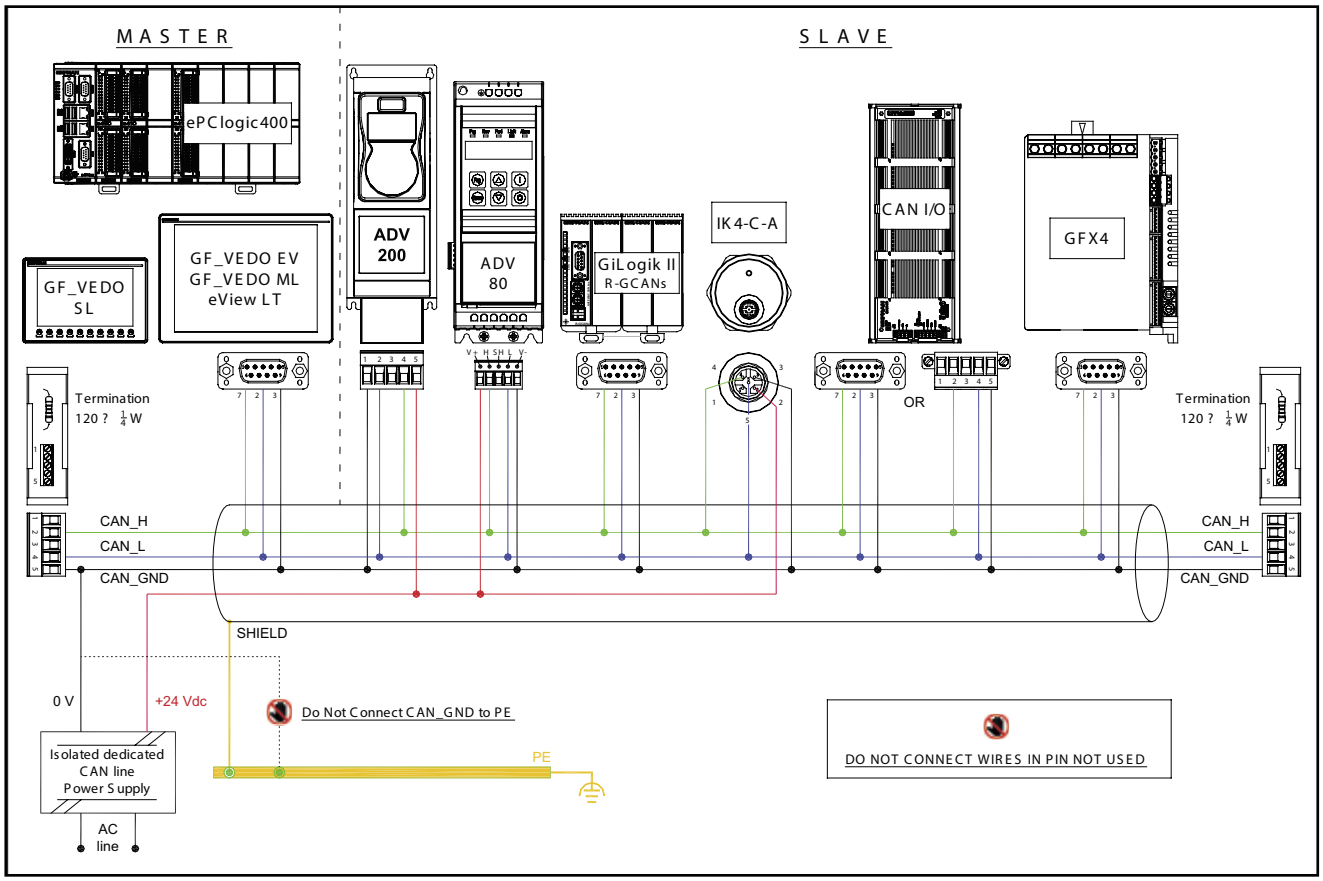


Figure 26 – CAN connection guidelines

AXM view front panel

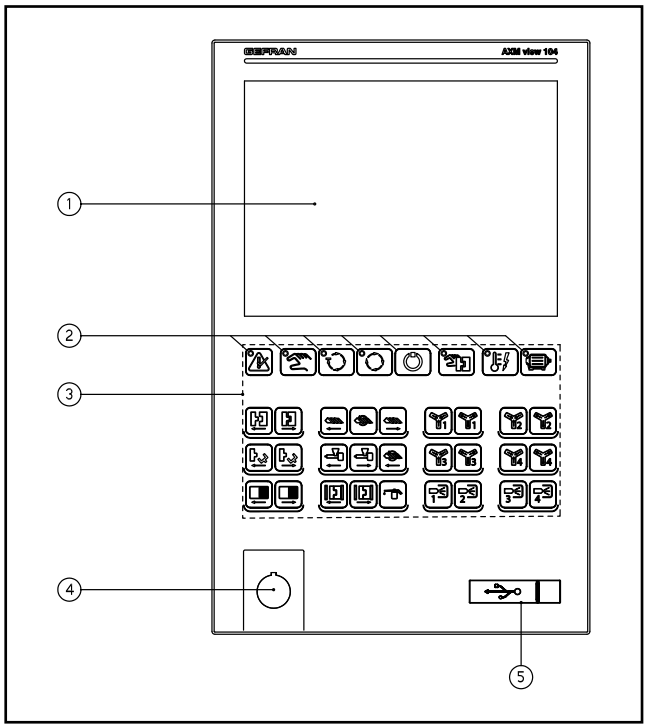


Figure 27 - AXM view 104 command and monitor layout

1	Display 10.4”
2	LED machine status
3	Commands
4	Emergency button hole (Ø 22 mm)
5	USB

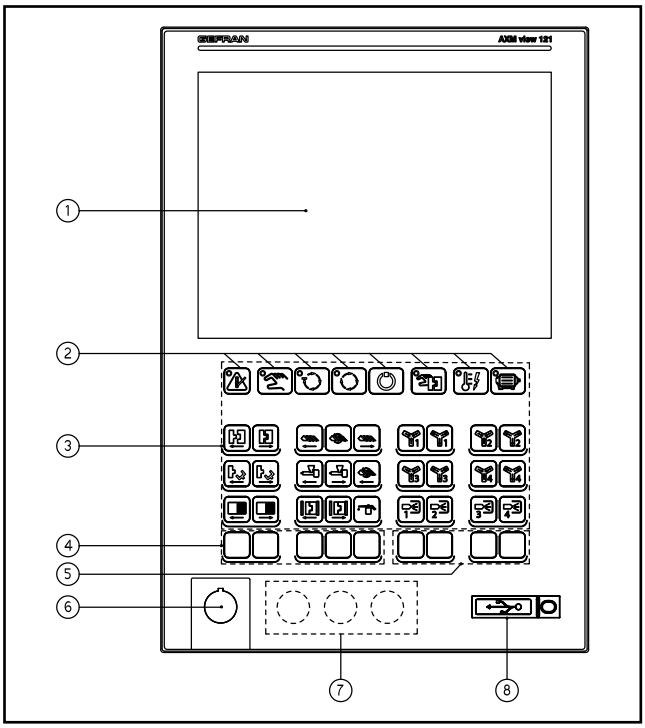


Figure 28 - AXM view 121 command and monitor layout

1	Display 12.1”
2	LED machine status
3	Commands
4	5 Configurable keys
5	4 Configurable keys
6	Emergency button hole (Ø 22 mm)
7	Holes for electromechanical keys (3, Ø 22 mm)
8	USB

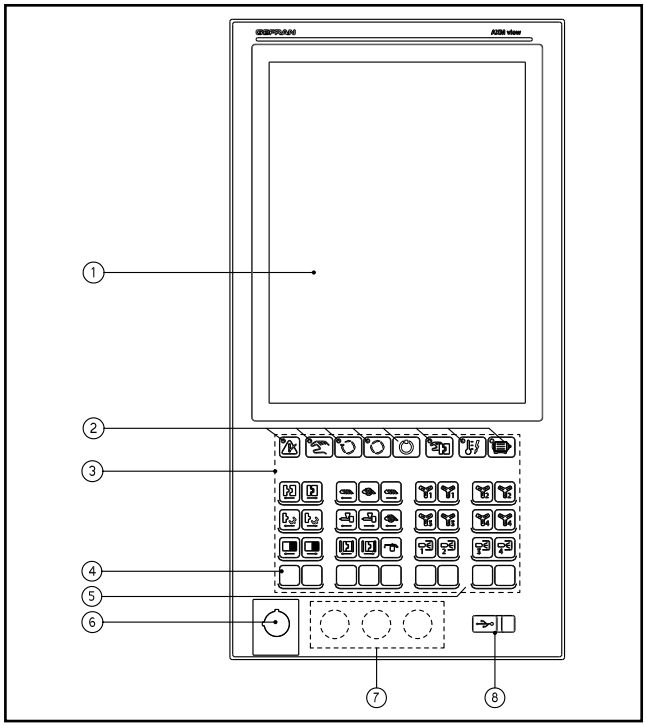


Figure 29 - AXM view 150 command and monitor layout

1	Display 15”
2	LED machine status
3	Commands
4	5 Configurable keys
5	4 Configurable keys
6	Emergency button hole (Ø 22 mm)
7	Holes for electromechanical keys (3, Ø 22 mm)
8	USB

Auxiliary contacts

The AXM view panel has 4 auxiliary contacts, identified as AUX1 ... AUX4, on the rear of the panel.
Keys, buttons, etc. can be connected to the contacts.
For the electrical connection of the auxiliary keys, see the diagram below in Fig. 30

Warning: the contact must be voltage-free.

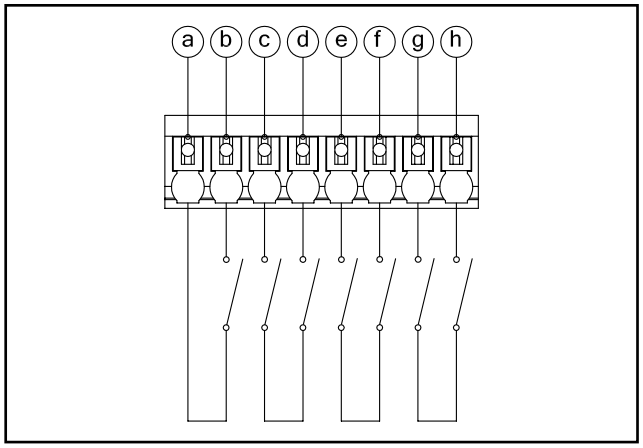


Figure 30 - Layout of auxiliary contacts

For wiring, use wire with a section of ≥ 0.75 mm².
Press the white button on the connector and insert the electric wire that can be headed with a ferrule or without heading.
To remove the thread press the white button and extract.

Inserting labels (AXM view 121 and 150)

The AXM view 121 and AXM view 150 control panels has 9 keys customizable, Fig. 33-1 A & B. Insert the printed labels on the A & B points respectively. Fig.33-3 and insert fully, Fig. 33-4.
Make sure on the front that the symbols are centered in the windows of the keys. Customization is possible by inserting two labels on the side rear of the product, Fig. 33-2 A & B.
The postcards are supplied in A4 paper including 5 sets complete: insert with 4 keys B + insert with 5 keys A, see Fig. 31.
The drawing Fig. 31 shows the dimensions to be considered for printing in just of the symbols.
The drawing Fig. 32 shows the spaces to be used to center the desired symbols in the button.
The postcards can be printed with ink-jet or laser printer on a transparent polyester.

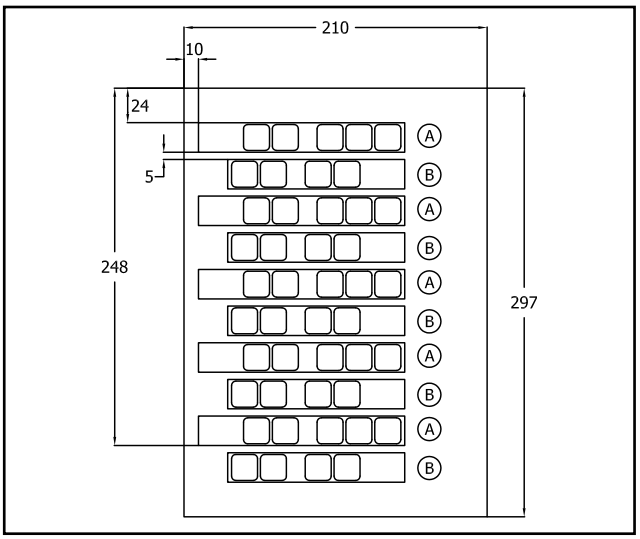


Figure 31 - Dimensions of label sheet

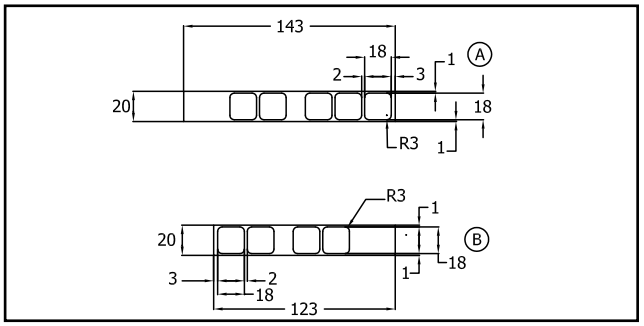


Figure 32 - Labels dimension

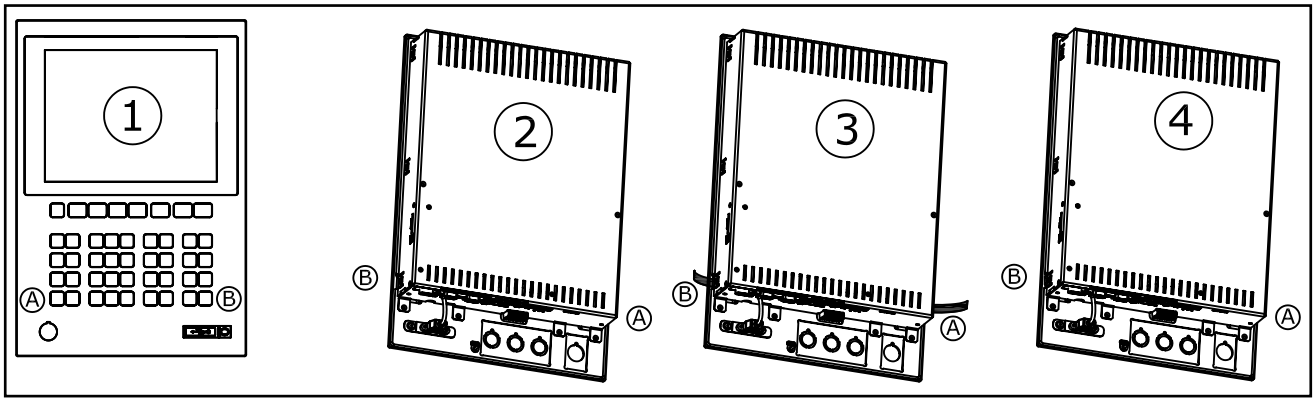


Figure 33 - Inserting labels

WARNING: some items described below may not be available on the product according to the order code and the model.

Setup program

After you have made all of the connections, switch on power to the system and proceed to setup.
The following screen is seen when the system is booted:

```
************************************************
*                                              *
*               GEFRAN SYSTEM SETUP            *
*                  ver. = 2.04                 *
*          to access system configuration      *
*                   hold [ F1 ]                *
*                      or                      *
*           touch anywhere on the screen       *
*                for a few seconds             *
*                                              *
************************************************
```

If a keyboard is present, keep the F1 key pressed; if not, press the touchscreen to access the setup program.

Authentication

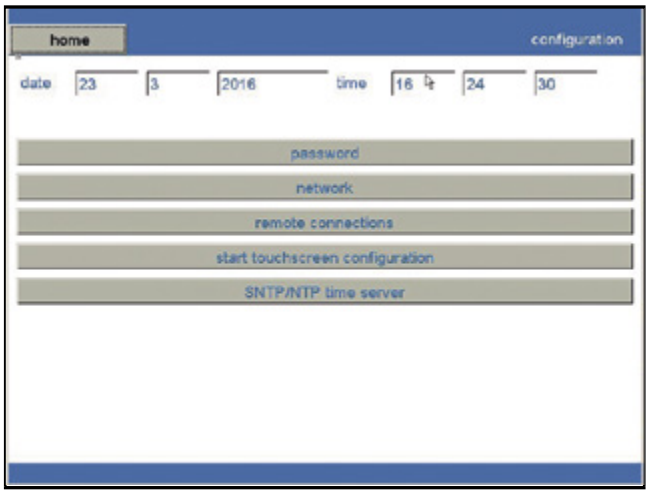
The first page requests authentication. The default password for access is *gefransetup*.
Press the *login* button to send the password.
If the password is not sent within 30 seconds, the terminal reboots. Time is shown by a colored bar at the top of the page.

After authentication, the main menu appears:

Select the item required to access the submenu. *Exit* quits the setup program and reboots the system.

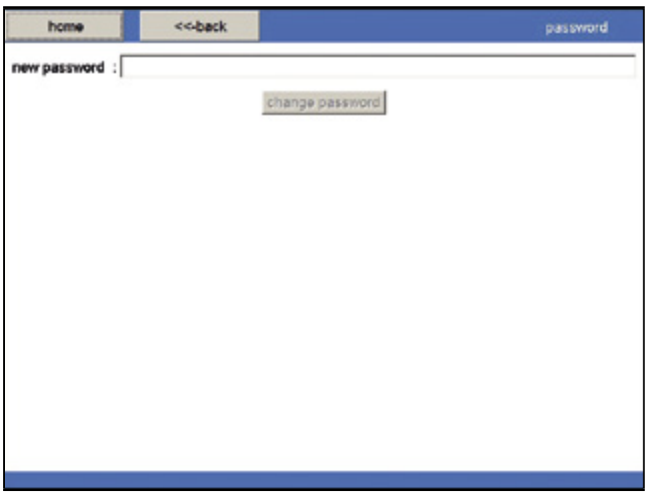
Configuration

Here you can set the date and time, change the password, set network parameters, manage remote communications, configure the touchscreen, and configure the SNTP/ NTP Server.
Press Home to return to the main menu.



Date and Time
To change a data item, touch the item in question with your finger. A number pad appears.
Enter the new item and confirm with on *OK*, or cancel the operation with *CANCEL*.

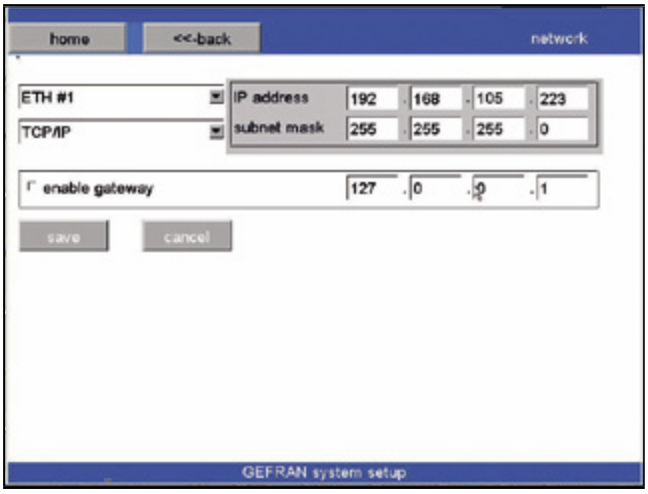
Password
To change the password for access to the setup program, press the *Password*. The following page appears:



Touch the screen on the *new password* box.
An alphameric pad appears.
The new password must be at least 5 characters in length.
You can use the characters a...z, A...Z, 0...9 for the password.
Write the new password and press the *change password*.
A pop-up window appears: write the new password again and press OK.
If the two new passwords are identical the password is changed; if not, an error message appears and you have to rewrite the password.

Press *Home* to return to the main menu, press *<<-back* to return to the previous menu.

Network
Press the *Network* button to configure the various network ports.
The following page appears:



The first pull-down menu shows the available network ports (ex.: ETH #1). The second pull-down menu shows the protocols that can be used (disabled, TCP/IP or GdNet) with that port.
If required by the protocol, the panel to configure the IP address and subnet mask also appears.
The default IP address is 192.168.0.1.

To change a data item, touch the item in question with your finger. A number pad appears.
Enter the new item and confirm with *OK*, or cancel the operation with *CANCEL*.

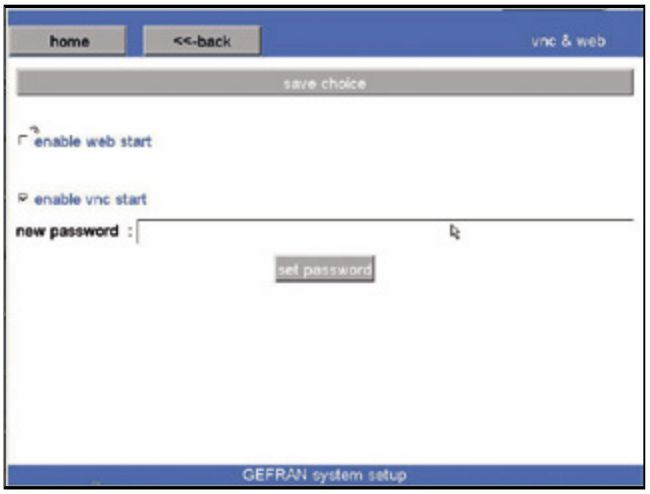
The gateway section lets the device communicate with IP addresses of different subnetworks. You have to enable and then configure the IP address of the gateway server in the subnetwork to which the device has been connected. The address to be configured must therefore match the IP subnetwork configured for ETH1.

The save and cancel buttons activate if changes are made. Changes are applied only when the application program is rebooted.

Attention: After saving, you cannot recover old data (no UNDO function).

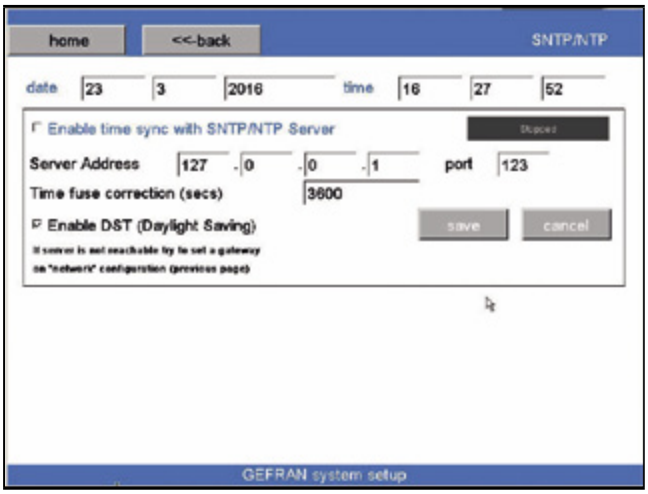
Press *Home* to return to the main menu. Press *<<-back* to return to the previous menu.

Remote Connection



The device supports web and vnc remote communication management.
Web and vnc management have to be configured in GF Project VX programming environment; see the Remote Connections paragraph in the GF Project VX manual.
These managements function correctly only if the device for access to Ethernet via TCP/IP is properly configured and connected (see Network configuration).
In this section you can enable and disable these managements on the device in use and configure parameters (which can be specific for the individual device).
Enable vnc start: Activates or deactivates vnc management; activation requires configuration of a password for access, which will have to be used by the vnc client remote connection.
To confirm changes to the configuration, click SAVE CHOICE.

SNTP/NTP time server



You can configure the device to synchronize date and time with a more precise source accessible on the TCP/IP network via SNTP/NTP.
These managements function correctly only if the device for access to Ethernet via TCP/IP is properly configured and connected (see Network configuration).

In this section you can enable and disable this management.
You have to configure the IP address and the port number of the SNTP/NTP server.
You can configure a correction value expressed in seconds to be added to the date and time supplied by the SNTP/ NTP server.
The DST selection lets you activate or deactivate the 1-hour correction due to switching to or from solar time/daylight savings time. Note: this management is not automatic. The operator has to change this selection manually every time solar time switches to daylight savings time and vice versa.
See the Remote Connections paragraph in the GF Project VX manual for information and details on SNTP/NTP management.
To confirm changes to the configuration, click SAVE.

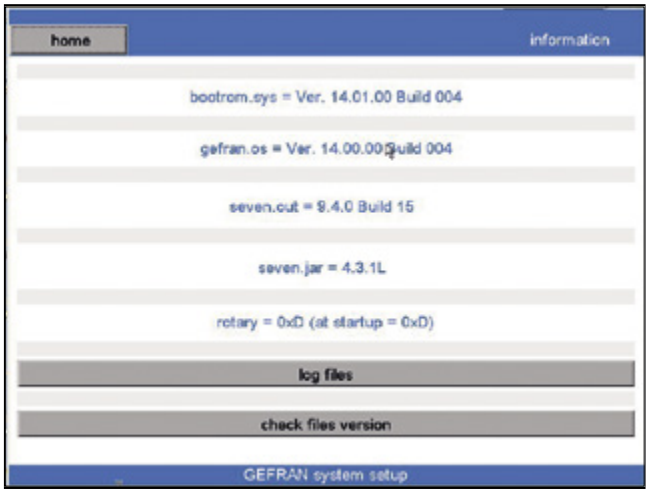
Start touch screen configuration

To configure the touch screen, press the *Start touch screen configuration*. The following page appears:

Calibration is done on a page with N targets in sequence. The targets have to be touched with a plastic tip.
After the system touches the last target, it automatically exits the calibration procedure and reboots. To re-enter the setup program, you have to repeat the procedure described above.

Information

Gives information on installed firmware versions, allows access to log files, and lets you check the installed GAB version.



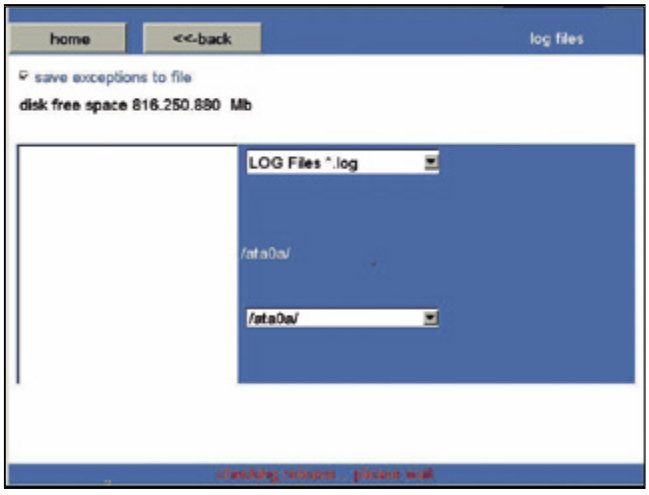
- *bootrom.sys* shows the bootrom version (system bootloader).
- *gefran.os* shows the terminal BSP version.
- *seven.out* shows the active firmware version on the terminal.
- *seven.jar* shows the active Java firmware version on the terminal
- rotary shows the current position of the 16-position rotary selector (see figure 14 N.13)
- rotary at start up shows the position of the rotary selector detected at terminal power-on.

Attention: the page shows only the informations found

Press *Home* to return to the main menu.

Log Files

Press the log files button to work on *Log files*.
The following page appears:



The pull-down menu at the top lets you activate a content display filter. The options are:
- LOG: text file containing diagnostics
- ERR: text file used to save any errors.

The list of found files is shown in the left panel

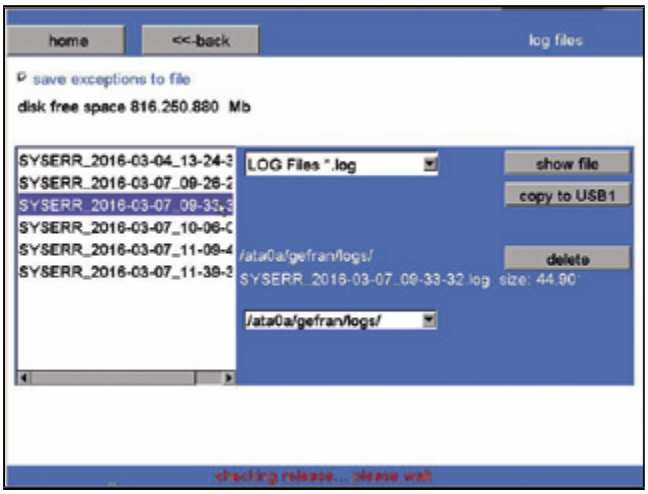
The pull-down menu at the bottom lets you select the saving device to be checked when searching files.

Disk free space shows the free space on the selected saving device

Select *Save exceptions to file* to activate the saving of any system exceptions in a diagnostics file (SYSERR_dataora.log).
The change will take effect at the next reboot

Attention: This setting is always overwritten when you load a program with GF_ProjectVX.

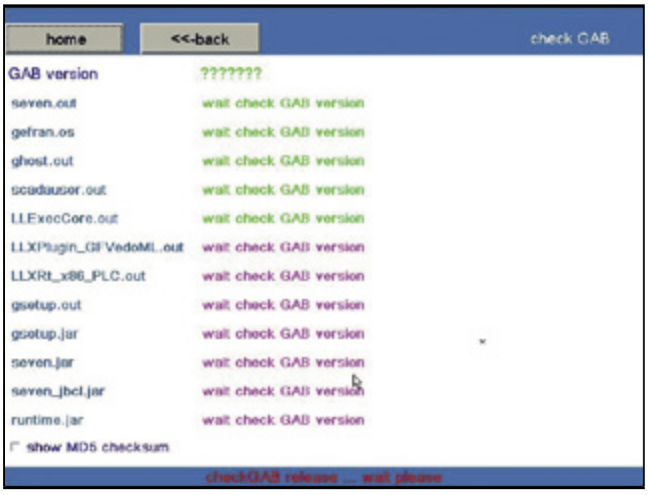
If you select a file in the left panel, keys on the right activate to let you see file contents (*Show file*) copy contents to a USB drive inserted in the control panel (*Copy to USB*) and delete the file (*Delete*).



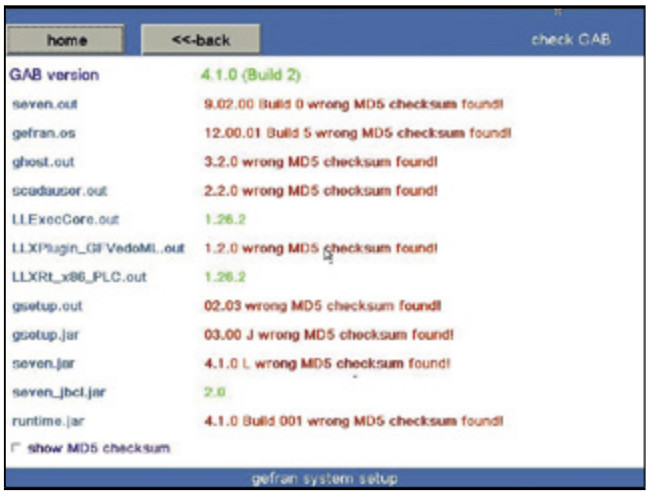
Attention: Deletion cannot be undone: the file is deleted permanently

Press *Home* to return to the main menu *<<-back* to return to the previous menu.

Check version files
Press the *Check version files* button to activate the check of the installed version and of the individual softwares/components it includes. The following page appears:



The lines change from purple to green as the checksum is checked.
If the checksum is correct, the line stays green and the file version is shown.
If the checksum is wrong, the line turns red and the message “wrong MD5 checksum found!” appears next to the version.

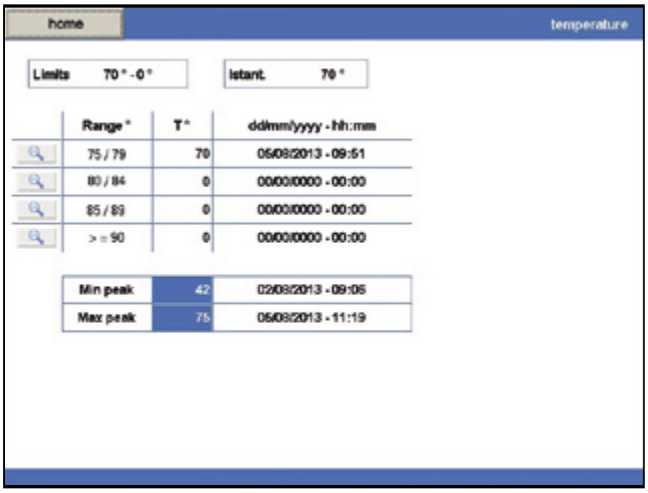


Click the *show MD5 checksum* box to see the checksum value immediately

Press *Home* to return to the main menu. Press *<<-back* to return to the previous menu.

Temperature

Gives information on the temperatures measured in the AXM view.



- *Limits* shows the temperature limits for normal operation
- *Istant.* shows the current temperature.

For every overtemperature interval, the table shows the last measured value and the date and time the overtemperature occurred.

Min peak and *Max peak* show the minimum and maximum temperature measured, with the date and time of measurement.

Press *Home* to return to the main menu.

Press the magnifying glass icon on the table to access the historical file for that temperature interval.

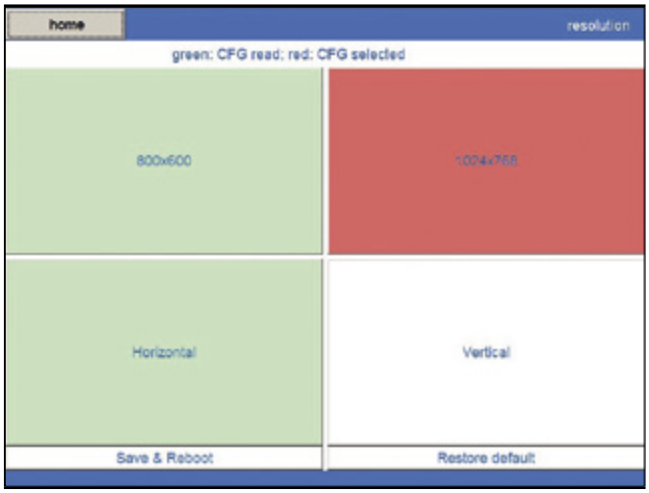
You can go from one temperature interval to another by pressing the relative tab.

Press *Home* to return to the main menu. Press *<<-back* to return to the previous page.

Resolution

This lets you change the resolution and orientation of the display so that they conform to the control panel used (AXM view leaves the factory with horizontal 800 × 600 resolution). The following page appears:

where the settings read are shown in green.
Select the resolution or orientation to be changed.
The related box turns red.



The following buttons are activated:

- *Save & Reboot*: saves the new configuration and reboots the system
- *Restore default*: restores the last setting saved

Press *Home* to return to the main menu.

MAINTENANCE AND DIAGNOSTICS

WARNING: some items described below may not be available on the product according to the order code and the model.

Maintenance

Control Panel

Use only a soft, slightly damp cloth to clean the screen. Do not use chemicals or abrasives.
Switch off the power supply before cleaning the panel.

Local diagnostics

Control Panel

In the event of any malfunctions, check the LED to determine the cause of the problem and find possible remedies.

WEEE Information

Pursuant to Article 26 of Italian Legislative Decree no. 49 of 14 March 2014 “Implementation of Directive 2012/19/EU on waste electrical and electronic equipment (WEEE)”.

The symbol showing a crossed-out wheeled bin on equipment or its packaging indicates that the product must be collected separately from other waste at the end of its useful life.
The manufacturer is responsible for organising and managing the separate collection of this piece of equipment at the end of its useful life.
Users wishing to dispose of the equipment must therefore contact the manufacturer to obtain instructions from the same on how to have the equipment collected separately at the end of its useful life.
By collecting the disused equipment separately, it can be recycled, treated or disposed of in an environmentally friendly manner, thus helping to prevent the environment and public health from being affected negatively and enabling reuse and/or recycling of the materials forming the same equipment.

LED	Meaning	Boot	Runtime
PW (yellow)	POWER	On steady	On steady
RN (green)	PLC program diagnostics	On steady	On steady: application program exists, has been loaded, and is running. Off: Error, application program not running.
E1 (red)	Software watchdog	On steady	On: SW watchdog tripped.
E2 (red)	PLC program error	On steady	On steady: PLC 1131 program not running. Off: normal running

Diagnostics program

The diagnostics program:
- provides information for diagnosing problems with CAN peripherals;
- provides information for diagnosing problems with GDNet peripherals;
- provides information for diagnosing problems with EtherCAT peripherals;
- provides information for diagnosing problems with GiLogik II devices;
- accesses ICT (Industrial Central Terminal) diagnostics;
- provides system information (firmware versions, disk memory use, RAM use).

The diagnostics program can be inserted in a work application and does not interfere with operation of the PLC.

Launch the diagnostics program as follows:
- set the AXM view rotary selector to D,
  or
- call up the Diagnostics function from your application (if present).

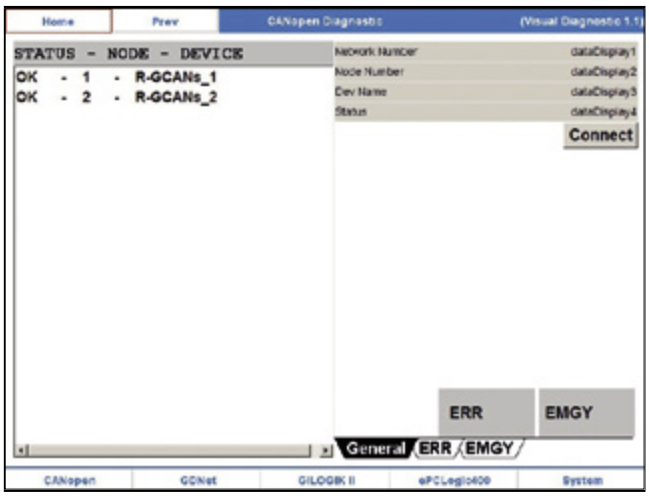
Calling up diagnostics pages requires closing the pages of your application and opening pages of the system.
PLC operation does not change.
To return to your application pages, click the *EXIT* button on the *Index* page.
The homescreen appears.

The top tool bar contains:
- the *Home*, button for returning to the starting page (*Index*);
- the *Prev*, button for returning to the previous page;
- the name of the current page;
- the version of the diagnostics program.

The bottom tool bar contains buttons for accessing pages a:
- Fieldbus (CANopen, GDNet, EtherCAT)
- Diagnostics of GiLogik II devices
- ICT (Industrial Central Terminal) diagnostics
- System information

The tool bars are identical on all program pages.

CANopen



Click the *CANopen* button on the bottom tool bar to access diagnostics of the network and of CAN devices.
The page that opens is divided into two sections: CANopen network devices are listed on the left, and details of the selected device are shown on the right.
The *Connect* button reboots the device connection procedure. In case of error, the *ERR* label turns red.
In case of error, the *EMGY* label turns yellow.
The following information is given for each *CAN* device on the list:

- Device status (STATUS), which can be:
  - OK: device connected;
  - ERR: device not connected after an error between CAN Master and Slave;
  - EMGY: device sends Master a CAN Emergency message
- Node number (NODE).
- Device name (DEVICE). The name is the one set in GF_Net.

General information

To see general information, select the device from the list on the left and the *General* tab at the bottom right.
Available information:

- *Network Number*: number of the CAN network to which the device is connected.
- *Node Number*: node number assigned to the device.
- *Dev Name*: device name as defined in GF_Net
- *Status*: device status as defined in the CANopen standard.

Error information

To see error information, select the device from the list on the left and the *ERR* tab at the bottom right.
Available information:

- *Network Number*: number of the CAN network to which the device is connected.
- *Node Number*: node number assigned to the device.
- *Dev Name*: device name as defined in GF_Net

If there is an error, the following information is also seen:

- *Type*: type of error.
- *Descr*: brief description of error.

Based on the type of error, there is a series of additional information:

- *Err connecting PDO Tx (S => M)*: occurs when the Master cannot assign a COBID to a PDO (here, in reception) because it is already reserved by another device in the network. In this case, the first PDO in Rx with a duplicated COBID will be highlighted. Search for the indicated COBID in GF_Net to find the PDO causing the problems.
- Err connecting PDO Rx (M => S): occurs when the Master cannot assign a COBID to a PDO (here, in transmission) because it is already reserved by another device in the network. In this case, the first PDO in Tx with a duplicated COBID will be highlighted. Search for the indicated COBID in GF_Net to find the PDO causing the problems.
- *Err Check Fail*: occurs when the Master cannot end the Check phase. The Master checks that the physically connected device is really the one expected by checking the value of a series of CANopen objects on a list defined in GF_Net ("SDO Check"). In this case, the CANopen device with the error will be highlighted, showing Index and SubIndex and specifying, as appropriate:
  - a possible problem due to failed reception of the SDO,
  - possible reception of an ABORT message,
  - a possible difference between the expected value (defined in the GF_Net Value column) and the one actually present on the device
- *Err Setup Fail*: occurs when the Master cannot end the Setup phase. The Master sends the physically connected device a series of CAN objects to configure the device. The list of objects is defined on a list in GF_Net ("SDO Set"). In this case, the CANopen device with the error will be highlighted, showing Index and SubIndex and specifying, as appropriate:
  - a possible problem due to failed reception of the SDO,
  - possible reception of an ABORT message.
- *Err Starting Fail*: soccurs when the Master does not see the CAN device switched to OPERATE after sending the required command. This may occur because:
  - at start the Master did not receive all of the required PDOs from the Slave (in this case, the first PDO NOT received will be highlighted),
  - at start the Master detects that the Slave is in the wrong position (in this case, the expected value and the real value of the Slave will be shown),
  - at start the Master received from the Slave at least one PDO with length (DLC) differing from the one defined in the con_net.ini file (in this case the PDO causing the error will be highlighted).

  Search for the indicated COBID in GF_Net to find the PDO causing the problems.
- *Err Node Guard*: occurs when the Node Guarding protocol between Master and Slave fails. Possible causes:
  - the Slave node does not send the reply to Node Guarding,
  - the Slave node is not in the status expected by the Master,
  - the Slave node does not toggle the bit.
- *Err SDO Input Fail*: occurs when SDO dialog between Master node and Slave fails in Read.

- The list of exchanged CANopen objects is defined on the "SDO Input" table built in GF_Net. The following will be specified:

- if the error occurred during the SDO Read phase,
- the CANopen object in which the error occurred, showing Index and SubIndex,
- as appropriate, a possible problem due to failed reception of the SDO or possible reception of an ABORT message.

- *Err SDO Output Fail*: occurs when SDO dialog between Master node and Slave fails in Write.
  The list of exchanged CANopen objects is defined on the "SDO Output" table built in GF_Net. The following will be specified:
  - if the error occurred during the SDO Write phase,
  -the CANopen object in which the error occurred, showing Index and SubIndex,
  - as appropriate, a possible problem due to failed reception of the SDO or possible reception of an ABORT message
- *Err PDO Tx (S => M) control*: control: occurs when control by the Master of PDOs in reception fails. In this case, the first PDO NOT received will be highlighted. Search for the indicated COBID in GF_Net to find the PDO causing the problems
- *Err Network Fail*: occurs when the Master detects a HW error in the network. In this case, a series of possible causes is shown for troubleshooting.
- *Err Node not Exist*: occurs when the Master does not detect the presence of the Device in the network.

Emergency information

To see information on the Emergency message sent by the Slave device, select the device from the list on the left and the *EMGY* tab at the bottom right.

Available information:

- *Network Number*: number of the CAN network to which the device is connected.
- *Node Number*: node number assigned to the device.
- *Dev Name*: device name as defined in GF_Net
- *Emgy ErrCode*: contents of Emergency message Error Code field according to CANopen standard
- *Emgy ErrReg*: contents of Emergency message Error Register field according to CANopen standard
- *Aux Code (byte 1)*: shows first data byte of Emergency message.
- *Aux Code (byte 2)*: shows second data byte of Emergency message
- *Aux Code (byte 3)*: shows third data byte of Emergency message
- *Aux Code (byte 4)*: shows fourth data byte of Emergency message.

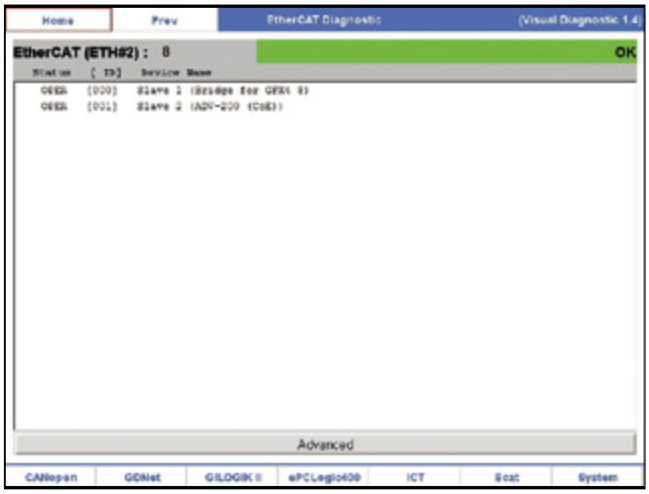
Click the Hex box to display the error codes and byte contents in hexadecimal format instead of decimal format.

If there is no error, the value of the error codes and byte contents is zero.

Attention: Although coded according to a general standard, the indication of local errors by the device is often specific to the device in use.
Therefore, it is advisable to refer to the Slave device manual.

EtherCAT

Click the EtherCAT button on the lower navigation bar to access diagnostics of the network and of EtherCAT devices.



The component is divided into 3 Zones:

- a line describing network status.
- a list of EtherCAT devices described in the system.
- a button that lets you access advanced information on the network.

The description line is divided into 2 sections:

The first part (on the left) has the following structure:

EtherCAT (ETH# 2): 8

The number in parentheses indicates the physical card (as seen by the 'ipconfig' shell command or by gsetup) on which the EtherCAT network was configured.

The number after the word cfg, indicates the EtherCAT network activation status:

- 1 INIT.
- 2 PREOPERATIONAL.
- 3 SAFE OPERATIONAL
- 8 OPERATIONAL.

+16 Error Flag in OR in above cases

The message (and its color) on the right specify the EtherCAT master diagnostics:

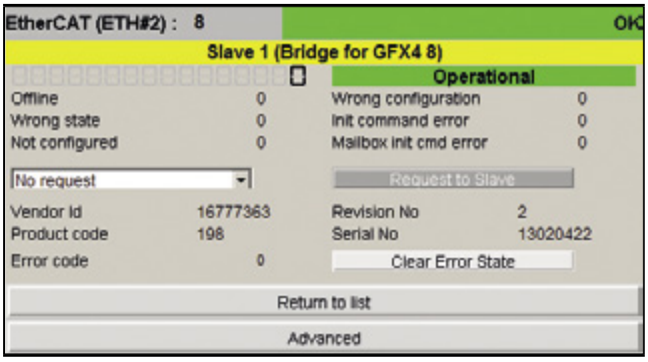
- "OK" Green - Good operating condition;
- "Cable disconnected" Red – Communication bus probably disconnected; no slave in communication;
- "Slave(s) not connected" Red - One or more slaves not connected;
- "Not OK" Orange - Master in generic error condition;
- "Slave(s) status not expected" Red - One or more slaves in unexpected status.

The main window lists the configured devices. Several columns are shown, with the following content:

- Status: operating status:
  - "----" Slave not previously communicated with;
  - "INIT" Slave in init condition;
  - "PREO" Slave in Pre Operational condition;
  - "BOOT" Slave in bootstrap condition;
  - "SAFE" Slave in Safe Operational condition;
  - "OPER" Slave in Operational condition (running);
  - "MISS" Slave 'lost;
  - "* " Error condition (in or with preceding)
  - ID: Unique device identifier (as inserted in HW configurator). Useful for pointing at device in PLC code.
  - device name: device name (as inserted in HW configurator).

Note on ID
Each device has a unique number (ID) for identification (including by PLC). This number is assigned automatically, but can be changed manually in the HW configurator.

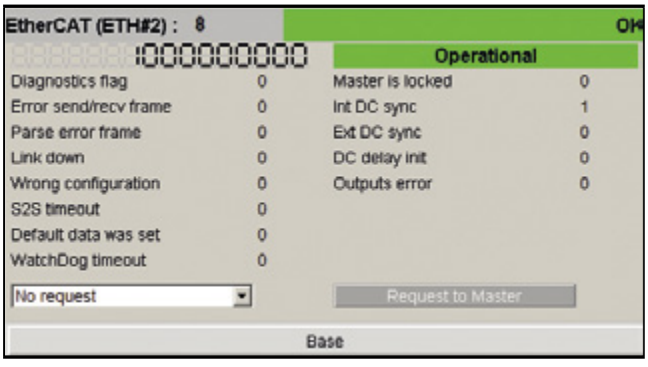
Device section
Click on one of the listed devices to access the diagnostics for that device.



The first line is the same as on the main menu
followed by:
- Name device: device name (shown in yellow);
- Diagnostic: diagnostics of slave in binary; the lower section explains the meaning of each bit;
- Status: Operating status
  - "----" Slave not previously communicated with;
  - "Init" Slave in init condition;
  - "Pre Operational" Slave in Pre Operational condition;
  - "Bootstrap" Slave in bootstrap condition;
  - "Safe Operational" Slave in Safe Operational condition;
  - "Operational" Slave in Operational condition (running);
  - "Missing" Slave 'lost';
  - "(Err)" Error condition (in or with preceding);
- Request Status to slave: interface to request new status to slave: No request, Init, Pre Operational, Bootstrap, Safe Operational, Operational;
- Slave information: generic information on slave:
  - Vendor Id;
  - Product Code
  - Revision Number
  - Serial Number
- Slave Error Code: slave error code;
- Clear Error State: button to clear slave error state;

The lower section has two buttons:
- Return to list: return to slaves list;
- Advanced: go to diagnostics of master

Advanced section
Click on the Advanced button to access diagnostics of the master.

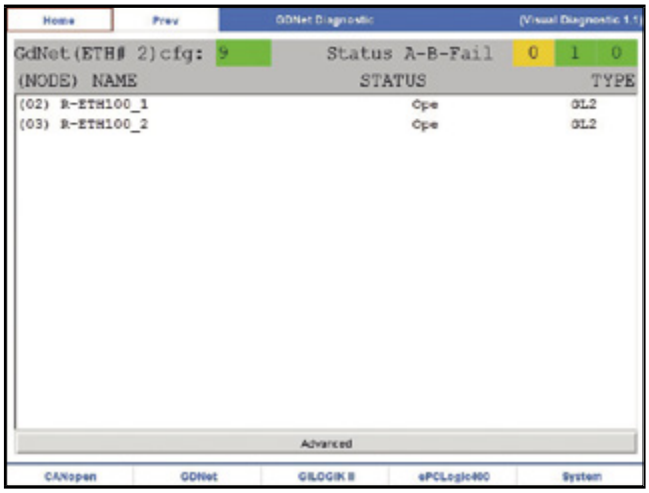


The first line is the same as on the main menu
followed by:
- Diagnostic: diagnostics of master in binary
  - The lower section explains the meaning of each bit;
- Status: Operating status:
  - "Init" Master in init condition;
  - "Pre Operational" Master in Pre Operational condition;
  - "Bootstrap" Master in bootstrap condition;
  - "Safe Operational" Master in Safe Operational condition;
  - "Operational" Master in Operational condition (running);
- Request state to master: interface to request new status to master: No request, Init, Pre Operational, Bootstrap, Safe Operational, Operational;

The lower section has one button:
- Base: to return to base interface: list of slaves or diagnostics of slave.

GDNet

Click the GDNet button on the bottom tool bar to access diagnostics of the network and of GDNet devices



The window shows:
- a top bar describing network status,
- a list of GDNet devices in the network;
- the Advanced button to access advanced information.

Network status
The top bar shows the following information:
- *GDNet (ETH# ...)*: the number in parenthesis after *ETH#* indicates which physical card was configured for the GDNet network. You can obtain the same information with the Network section of the Setup program.
- *cfg: x*: the number x, which corresponds uniquely to its background color, indicates the GDNet activation status:
  - 1 (dark gray): GDNet activation not yet launched.
  - 2 (cyan): GDNet assigned to more than one network.
  - 3 (magenta): GDNet assigned to non-supported HW.
  - 4 (yellow): GDNet I/O cfg file not found.
  - 5 (red): elaboration of I/O cfg file ended with error.
  - 6 (blue): GDNet not configured.
  - 7 (light gray): no device found in GDNet I/O cfg file.
  - 8 (dark green): GDNet activating.
  - 9: (bright green) GDNet activation ended correctly;

otherwise, unexpected error (black).

- *Status A-B-Fail*: network operation index (level one), shown by the status of 3 variables represented by 3 colored number squares. In order from left to right, the color indicates:
  - Status A: equals 1 (green) if all configured devices are correctly connected and present with all configured cards. In practice, the functional conditions are identical to the configuration. Otherwise, equals 0 (yellow), indicating that at least one device or a single card of a device is not present. Nevertheless, this is a correct and permissible functional condition.
  - Status B: equals 1 (green) if all detected devices are correctly connected, even if fewer than the configuration, and if there is no mismatch of detected cards (see GetCards). In addition, all of the valid cards found when the device was first connected must be present. Otherwise, equals 0 (red), indicating that at least one previously-connected device is not connected, or that at first connection a single card of a device is in mismatch, or that a single card found at first connection is no longer present.
  - Fail: equals 0 (green) if no card of any device has an active A or P fault. Otherwise (at least one card has an active A or P fault) equals 1 (red).

Network devices

The center window lists the configured devices. The 3 columns show the following information:

- *(NODE) NAME*: node number set with rotary selector and name entered in HW configurator.
- *STATUS*: device function status. May be as follows:
  - [empty]: Slave not configured.
  - Cfg: Configured Slave not found
  - Sw0: Slave about to go operational
  - Mis: Slave lost.
  - Prg: Slave in program.
  - Ope: Slave operative.
- *TYPE*: device type. May be as follows:
  - MC: Motion control (drive).
  - GL2: GiLogik.

Scroll the list with the touch screen and double-click to select an element from the list.

Selecting an element from the list lets you go to more detailed diagnostics (level 2 and 3 or device and card level) with display of a panel dedicated to the selected device.

Advanced section

Click the Advanced button to access 2 pages for advanced diagnostics, displaying values of a series of specific counters (useful in case of service request).

GILOGIK II

Click the GILOGIK II button on the bottom tool bar to access diagnostics of GILOGIK II devices.

The window shows:

- identification of the network node at the top left,
- a graphic representation and description of the node cards and their status,
- two arrow keys for moving among the nodes,
- detailed status of the cards of the selected node.

Node identification

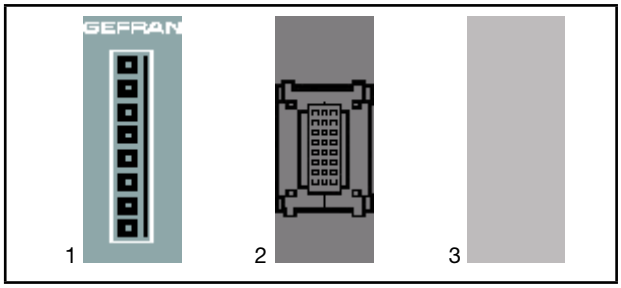
The node is identified with a generic progressive indication or with the name it was given when configured.

To select another node (if present), use the arrow keys on the left.

Connected cards

Information is shown in tabular form. Each column represents a card, for which the following information is shown:

- *Cfg*: card name at time of configuration
- *PwOn*: card name - shows which card was recognized at time of power-on.
- *Real*: card name recognized now
- *Card icon*: identifies card type. May assume the following shapes:
  1. Slot with configured card.
  2. Slot with non-configured card.
  3. Slot not managed.



Flag: shows slot status with colored code. Meanings:

- Green: Slot with card correctly configured.
- Yellow: card configured but not inserted in slot.
- Blue: card added to powered-on terminal.
- Violet: Error. At power-on, the card is in a non-configured slot or a slot configured for a different card.
- Red: card malfunctioned during operation (red with white point at center = card terminal shorted).
- Gray: slot not managed / invalid slot.

Detailed status of card

Click the icon of one of the listed cards: details of the status of its terminals are shown in the bottom box.

For example, in the figure the first device ([U16] - 1) has been clicked.

The names of the variables are listed on the left; their values are shown on the right.

These signals repeat any signals present on the card.

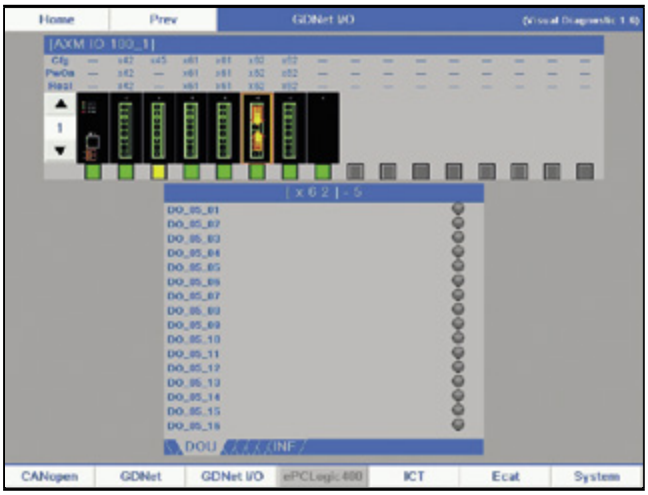
The tabs under the box have the following meaning:

- *DIN*: digital inputs.
- *DOU*: digital outputs.
- *AIN*: analog inputs.
- *AOU*: analog outputs.
- *T_C*: analog temperature inputs.
- *D_A*: physically digital inputs and outputs managed as analog by the program.
- *INF*: card information.

If a card does not have even one terminal of a defined category, its tab will be displayed without label.

AXM IO

Click the GILOGIK II button on the bottom tool bar to access diagnostics of GDNET I/O devices.



The window shows:

- identification of the network node at the top left,
- a graphic representation and description of the node cards and their status,
- two arrow keys for moving among the nodes,
- detailed status of the cards of the selected node.

Node identification

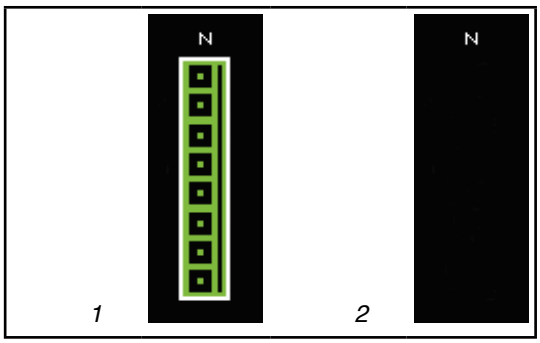
The node is identified with a generic progressive indication or with the name it was given when configured.

To select another node (if present), use the arrow keys on the left.

Connected cards

Information is shown in tabular form. Each column represents a card, for which the following information is shown:

- *Cfg*: card name at time of configuration
- *PwOn*: card name - shows which card was recognized at time of power-on.
- *Real*: card name recognized now
- *Card icon*: identifies card type. May assume the following shapes:
  1. Slot with configured card.
  2. Slot not managed.



Flag: shows slot status with colored code. Meanings:

- Green: Slot with card correctly configured.
- Yellow: card configured but not inserted in slot.
- Blue: card added to powered-on terminal.
- Violet: Error. At power-on, the card is in a non-configured slot or a slot configured for a different card.
- Red: card malfunctioned during operation (red with white point at center = card terminal shorted).
- Gray: slot not managed / invalid slot.
-

Detailed status of card

Click the icon of one of the listed cards: details of the status of its terminals are shown in the bottom box.

For example, in the figure the device in position 5 [x62-5]. has been clicked.

The names of the variables are listed on the left; their values are shown on the right.

These signals repeat any signals present on the card.

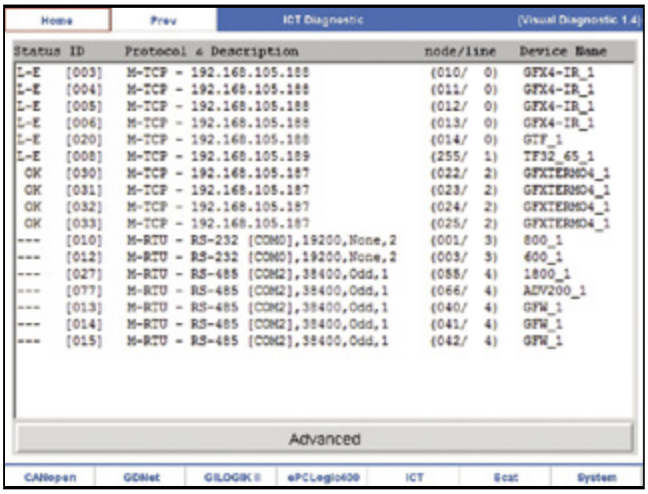
The tabs under the box have the following meaning:

- *DIN*: digital inputs.
- *DOU*: digital outputs.
- *AIN*: analog inputs.
- *AOU*: analog outputs.
- *T_C*: analog temperature inputs.
- *D_A*: physically digital inputs and outputs managed as analog by the program.
- *INF*: card information.

If a card does not have even one terminal of a defined category, its tab will be displayed without label.

ICT

Click the ICT button on the lower navigation bar to access ICT diagnostics.

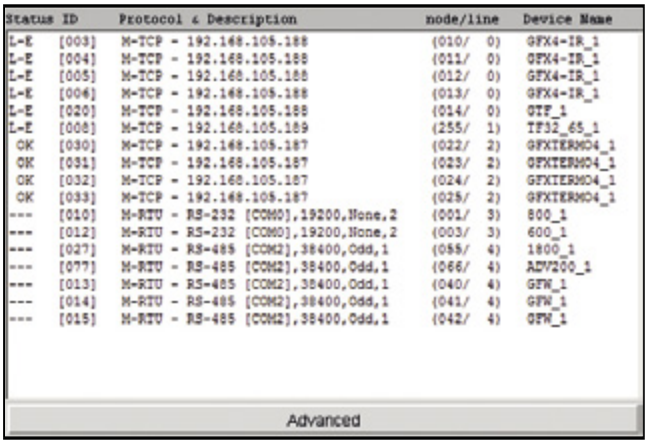


ICT (Industrial Central Terminal) means management of data exchange by the Gefran target to and from remote devices, which may be instruments and/or PLCs of other manufacturers, via dedicated protocols.
To date, the managed and diagnosed protocols are:

- Modbus TCP
- Modbus RTU

Ict Diagnostics Interface

The main interface of the Gefran Ict Diagnostics tool is:



The component is divided into 2 Zones:

- a list of ICT devices described in the system.
- a button that lets you access advanced information on the network.

The main window lists the configured devices.

Several columns are shown, with the following content:

Status (operating status):

- "---" Slave not previously communicated with;
  - "ERR" Slave with which a communication error has occurred;
  - "OK" Slave with which all (at least one) communication(s) were/was successful;
  - "L-E" Line Error. Used only for Slaves in TCP positioned on nodes not connected to the network (for example, disconnected network cable).
- ID: Unique device identifier (as inserted in HW configurator). Useful for pointing at device in PLC code.
- Protocol & Description: string describing the device.
  - Describes type of protocol:
  - "M-TCP" Modbus in TCP;
  - "M-RTU" Modbus in RTU;and additional information:
  - For TCP IP address;
  - For RTU type of serial, COM used, baudrate, parity;
- node/line: identifies line and node.
- device name: device name (as inserted in HW configurator). Information is shown in tabular form. Click the ICT button to access ICT diagnostics

Note on ID and node/line

Each device is inserted on a communication line and each line has an identification number within such line. Obviously, devices positioned on different lines can have the same node numbers. To positively identify each device (including by PLC), the ID lets you point uniquely at each slave as it was configured by GF_Net (manually or automatically).

A line is defined as a communication channel shared by multiple devices. For Modbus RTU, each port (COM) is a line. For Modbus TCP, each IP address is a line.

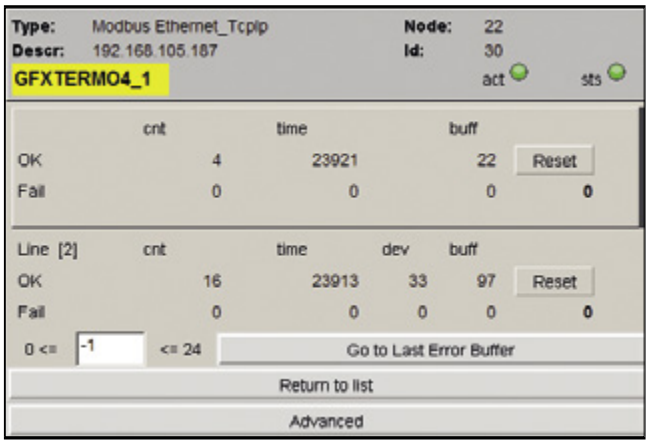
If there are errors on multiple devices and these are positioned on the same line, the errors may be caused by the line status (for example, detached cable).

Move to the list with the cursor keys and press "enter" to scroll the list with the "up" and "down" keys.

Press "enter" again to select an item on the list, or press "esc" to return to navigation on the page.

You can scroll the list by using the touch screen and then select an item on the list with a double click.

Selecting an item on the list lets you go to diagnostics for the requested device.



The panel's top section shows the same information as on the list:

- Type Type of communication.
- Descr Description.
- Node Modbus node.
- Id Unique identifier.
- Device name.
- Two status LEDs:
  - Act status of last communication made
  - Sts presence of at least one communication error
  - The center zone is divided into two parts.
    The top section is for the device being analyzed, while the bottom zone is for the line on which the device is positioned.

Device section

The section is divided into two lines:
- successful communications (OK).
- failed communications (Fail)

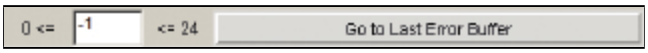
Each line shows 3 values
- cnt counter showing number of communications made.
- time tenths of a second since last communication.
- buff number of buffer of last communication.

In case of unbroken communications, the count increases and the time stays low. In case of stopped communication, the counter stops and the time increases.
In case of communication error, the sts LED goes from green to yellow and stays yellow until the user resets the error with the Reset button. The act LED shows the status of the last communication made.
The number under the reset button shows the error code of the last failed communication..

Line section

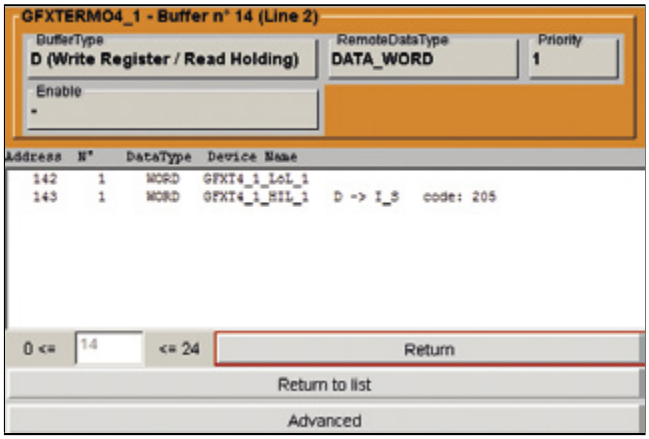
The line section is divided the same way as the device line, but its counters count all of the communications of all the devices on the same line (shown next to the word Line).
There is also an additional field:
dev Unique identifier of the device (on the line) to which the count refers (OK and/or Fail).
Here too there is a Reset button to reset the error latch on the line.

Buffer section



The bottom zone has a line for the device buffers. The buffers group the variables to be exchanged with the device.
The left zone shows the buffers for the device and a field for setting the number of the buffer to be analyzed. Setting a valid value lets you display the buffer's composition.
On the other hand, if you press the "Go to Last Error Buffer" button, you go directly to the last buffer that had an error (if and only if there is an error present). In this case, the buffer also shows which variable caused the error and its possible causes.
The top zone of the buffer shows:
- Device name – Number of Buffer (number of line).
- BufferType.
- RemoteDataType.
- Priority.
- Enable.

The bottom zone shows a list of the variables present in that buffer. The following are shown for each variable:
- Modbus Address.
- Dimension.
- DataType.
- Variable name
- Cause of error
- Error code



Push the "Return" button to return to device diagnostics

Advanced section
This button lets you access a lower level diagnostics section. This section is not yet in use.

Error codes
Alarm codes managed by Modbus protocol:
0 - no error

200 - Serial ID opening error
SERIAL_OPEN_ERROR_ERROR_MSG_MODBUS_PROTOCOL

201 - ICT buffer describer error
WRONG_ICT_BUFFER_DESCRIPTOR_ERROR_MSG_MODBUS_PROTOCOL

202 -error in length of buffer to be built
WRONG_DATA_LENGTH_ERROR_MSG_MODBUS PROTOCOL

203 - error in type of variable to be managed
WRONG_VAR_TYPE_ERROR_MSG_MODBUS_PROTOCOL

204 - no reply message from device
NO_MESSAGE_RECEIVED_FROM_DEVICE_ERROR_MSG_MODBUS_PROTOCOL

205 - FAULT message received from device
RECEIVED_FAULT_REPLY_ERROR_MSG_MODBUS_PROTOCOL

206 - no dialog with MODBUS device
NO_DATA_MESSAGE_RECEIVED_FROM_DEVICE_ERROR_MSG_MODBUS_PROTOCOL

207 - error in CRC of packet received
WRONG_CRC_VALUE_ERROR_MSG_MODBUS_PROTOCOL

208 - error in CLIENT-ADDRESS field of packet received
WRONG_CLIENT_ADDRESS_VALUE_ERROR_MSG_MODBUS_PROTOCOL

209 - error in COMMAND field of packet received
WRONG_COMMAND_VALUE_ERROR_MSG_MODBUS_PROTOCOL

210 - error in START-ADDRESS field of packet received
WRONG_START_ADDR_VALUE_ERROR_MSG_

MODBUS_PROTOCOL

211 - error in R-COUNT field of packet received
WRONG_R_COUNT_VALUE_ERROR_MSG_
MODBUS_PROTOCOL

212 - error in N-DATA field of packet received
WRONG_N_DATA_VALUE_ERROR_MSG_
MODBUS_PROTOCOL

213 - invalid CLIENT-ADDRESS requested
CLIENT_ADDRESS_VALUE_NOT_VALID_ERROR_
MSG_MODBUS_PROTOCOL

214 - invalid TRANSACTION_ID received
TRANSACTION_ID_ERROR_MSG_MODBUS_TCP_
PROTOCOL

215 - invalid PROTOCOL_ID received
PROTOCOL_ID_ERROR_MSG_MODBUS_TCP_
PROTOCOL

216 - invalid DATA_LENGTH received
DATA_LENGTH_ERROR_MSG_MODBUS_TCP_
PROTOCOL

217 - socket opening error
SOCKET_OPEN_ERROR_MSG_MODBUS_TCP_
PROTOCOL

218 - server address or name assignment error
UNKNOWN_SERVER_NAME_ERROR_MSG_
MODBUS_TCP_PROTOCOL

219 - server connection error
CONNECT_SERVER_ERROR_MSG_MODBUS_
TCP_PROTOCOL

220 - frame received has incorrect length
FRAME_LENGTH_ERROR_MSG_MODBUS_TCP_
PROTOCOL

221 - socket trasmission error
SOCKET_SEND_ERROR_MSG_MODBUS_TCP_
PROTOCOL

222 - socket receive error
SOCKET_RECV_ERROR_MSG_MODBUS_TCP_
PROTOCOL

System

Click the *System* button on the bottom tool bar to obtain system information

The following information is shown:

- *Info versions*: number of version of Gefran.os, Seven.jar and Seven.out. firmware.
- *DISK*: Flash or SD Card memory
- *MEM*: RAM memory.

For DISK and MEM memories, the maximum amount used (MAX), the amount currently used (USED), and maximum memory size (TOP) are shown.

A semicircular dial shows the currently used memory (blue arc), available memory (green arc), and memory available in an emergency but not recommended for normal use because there would be limited residual expansion capacity (red arc). The memory indicated with the red arc corresponds to about 10% of total memory (TOP).

GEFRAN

GEFRAN spa
via Sebina, 74
25050 Provaglio d'Iseo (BS) Italy
Tel. +39 0309888.1
Fax +39 0309839063
info@gefran.com
http://www.gefran.com