

## INSTALLATION AND OPERATION MANUAL



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The contents of each section are summarized immediately following the section heading

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### PREFACE

This manual provides a detailed description of the main technical data of the various versions of Gefran's GF\_VEDO HL product.

The following information is indispensable for the correct use of the GF\_VEDO HL: proper wiring, correct jumper settings and the correct connection to external devices.

## Graphic symbols

Graphic symbols are used to differentiate among the types and importance of the information in these Instructions and to facilitate the reader's understanding.



Indicates the contents of the various sections of the manual, general warnings, notes, and other important points.



Information of a general and applicative nature.



Indicates a particularly delicate situation that could affect the safety or good operation of the product, or an instruction that must absolutely be followed in order to prevent hazardous situations.



Important notes for product safety and reliability.



Indicates a risk to the user's safety due to the presence of high voltage at the specified points.



Indicates a reference to Detailed Technical Documents available on GEFFRAN's website: [www.gefran.com](http://www.gefran.com)



Indicates a suggestion (based on the experience of GEFFRAN Technical Personnel) that could be very useful under certain circumstances.



*This section contains information and warnings of a general nature which should be read before proceeding with controller installation, configuration and use.*

## General description

The GF\_VEDO HL operator terminal line is a compact and low-cost solution for machine control.

A single product integrates machine cycle control [SoftPLC] and graphic page display [SCADA], allowing quick and low-cost creation of many automation solutions.

The GF\_VEDO HL terminals create the machine/ope-

rator interface by means of LCD monitor, touch-screen, and a wide variety of peripheral I/Os.

GF\_VEDO HL terminals are applied mainly to machine control for packaging, metals, wood and plastic applications. This Installation Guide describes the main characteristics of the operator panels and refers to the following models:

<b>GF_VEDO HL 121CT</b>	Operator interface with LCD TFT da 12,1" color display
<b>GF_VEDO HL 150CT</b>	Operator interface with LCD TFT da 15" color display

## Preliminary warnings



*Read the following preliminary warnings before installing and using the GF\_VEDO HL operator terminals.*

*Doing so makes start-up quicker and lets you avoid some problems that might be mistaken for malfunctions or limitations of the terminal.*

- Immediately after unpacking the product, make a note of the order code and the other identification data given on the label affixed to the outside of the container and copy them to the table below.

These details must always be kept close at hand and referred to the personnel involved in the event of help from Gefran Customer Service Assistance.

S.N:	.....	(serial number)
CODE:	.....	(product code)
TYPE:	.....	(ordering code)
SUPPLY:	.....	(power supply)
VERS:	.....	(module version)

- Check that the terminal is in perfect condition and was not damaged during shipment. Make sure that the package also contains the fastening accessories. Any inconsistencies, omissions or evident signs of damage should be reported immediately to your Gefran sales agent.

- Check that the order code corresponds with the configuration requested for the application the terminal is needed for, referring to Section: "Technical - Commercial Information".

### Example: GF\_VEDO HL 121CT-VW2-PCS-C1-S2-G

- Model: GF\_VEDO 121CT....
- Operating system: Vx Works
- DOM128MB RAM 256MB memory
- Expansion 1: CANopen
- Expansion 2: 2 Serial channels
- Lexan: Gefran

Consult the section "Installation and Connection" before installing the terminal on the machine control panel or host system Consult the section "Sales Information" for the order code.

Users and/or system integrators who want more detailed information on serial communication between standard PCs and/or Gefran Industrial PCs and Gefran Programmable Instruments may access the various Technical Reference Documents in PDF format available on Gefran's website: [www.gefran.com](http://www.gefran.com).

In the event of presumed instrument malfunction, before contacting Gefran Technical Service Assistance, refer to the Troubleshooting Guide given in Section "Maintenance", and if necessary refer to the F.A.Q. Section (Frequently Asked Questions) on the Gefran Web Site [www.gefran.com](http://www.gefran.com)

## 2 • INSTALLATION AND CONNECTION



This section contains the instructions necessary for correct installation of the GF\_VEDO HL into the machine control panel or the host system and for correct connection of the controller power supply, inputs, outputs and interfaces.



**Before proceeding with installation read the following warnings carefully!**

**Remember that lack of observation of these warnings could lead to problems of electrical safety and electromagnetic compatibility, as well as invalidating the warranty.**

### Electrical power supply

- the GF\_VEDO ML is NOT equipped with an On/Off switch: the user must provide a two-phase disconnecting switch that conforms to the required safety standards (CE marking), to cut off the power supply upstream of the terminal.

The switch must be located in the immediate vicinity of the terminal and must be within easy reach of the operator. One switch may control more than one terminal

- if the terminal is connected to NOT isolated electrical equipment (e.g. thermocouples), the earth connection must be made with a specific conductor to prevent the connection itself from coming directly through the machine structure.

- if the GF\_VEDO ML is used in applications with risk of damage to persons, machinery or materials, it is essential to connect it up to auxiliary alarm equipment. It is advisable to make sure that alarm signals are also triggered during normal operation.

The terminal must NOT be installed in flammable or explosive environments; it may be connected to equipment operating in such atmospheres only by means of appropriate and adequate types of interface, conforming to the applicable safety standards.

### Notes Concerning Electrical Safety and Electromagnetic Compatibility:

#### CE MARKING: EMC Conformity (electromagnetic compatibility)

in accordance with EEC Directive 2004/108/CE.

GF\_VEDO ML series are mainly designed to operate in industrial environments, installed on the switch boards or control panels of productive process machines or plants. As regards electromagnetic compatibility, the strictest generic standards have been adopted, as indicated in the table below.

**BT Conformity (low voltage)** in accordance with Directive 2006/95/CE.

**EMC conformity has been tested with the following connections.**

EMC EMISSION		
Generic standards emission standard for industrial environment	EN 61000-6-4	generic norm
Emission enclosure	CISPR-11	Class A

Table 1 - EMC Emission

EMC IMMUNITY		
Programmable Controllers	EN 61131-2	Product Standard
ESD immunity	EN 61000-4-2	± 4 kV contact discharge ± 8 kV air discharge
RF interference immunity	EN 61000-4-3	10 V/m amplitude modulated 80 MHz-1 GHz 10 V/m amplitude modulated 1.4 GHz-2 GHz
Radiofrequency interference	EN 61000-4-6	3 V/m amplitude modulated 0.15 MHz-80 MHz
Burst immunity	EN 61000-4-4	± 2 kV power line ± 1 kV signal line
Pulse immunity	EN 61000-4-5	0,5 kV common mode
Magnetic fields immunity	EN 61000-4-8	100 A/m
Voltage dips, short interruptions and voltage immunity tests	EN 61000-4-11	100%U, 10ms

Table 2 - EMC Immunity

LOW VOLTAGE DIRECTIVE SAFETY		
Low voltage directive safety	EN 61010-1	Installation category II and pollution degree 2

Table 3 - LVD Safety

## Instrument power supply

- The power supply to the electronic equipment on the switchboards must always come directly from an isolation device with a fuse for the instrument part.
- The electronic instruments and electromechanical power devices such as relays, contactors, solenoid valves, etc., must always be powered by separate lines.
- When the electronic instrument power supply is strongly disturbed by voltage problems from power units or motors, an isolation transformer should be used for the controllers only, earthing the screen.
- It is essential that the plant has a good earth connection:
  - the voltage between neutral and earth must not be >1V
  - the resistance must be < 6Ω;
- If the mains voltage fluctuates strongly, use a voltage stabilizer.
- In the proximity of high frequency generators or arc welders, use adequate mains filters.
- The power supply lines must be separate from the instrument input and output ones.

## Inputs and outputs connection

- To connect the analogue inputs, strain gauge, linear, (TC, RTD) the following is necessary:
  - physically separate the input cables from those of the power supply, the outputs and the power connections.
  - use woven and screened cables, with the screen earthed in one point only.
- To connect the control outputs, alarm (contactors, solenoid valves, motors, fans, etc.), fit RC groups (resistance and condensers in series) in parallel to the inductive loads that operate in Alternating Current.  
*(Note: all the condensers must conform to VDE (class X2) standards and withstand a voltage of at least 220V AC. The resistances must be at least 2W).*
- Fit a 1N4007 diode in parallel with the coil of the inductive loads that operate in Direct Current.



**GEFRAN S.p.A. declines all responsibility for any damage to persons or property caused by tampering, neglect, improper use or any use which does not conform to the characteristics of the controller and to the indications given in these Instructions for Use.**

## Dimensions

All measurements are expressed in mm, with tolerance of  $\pm 0.5$ .

### GF\_VEDO HL 121CT dimensions

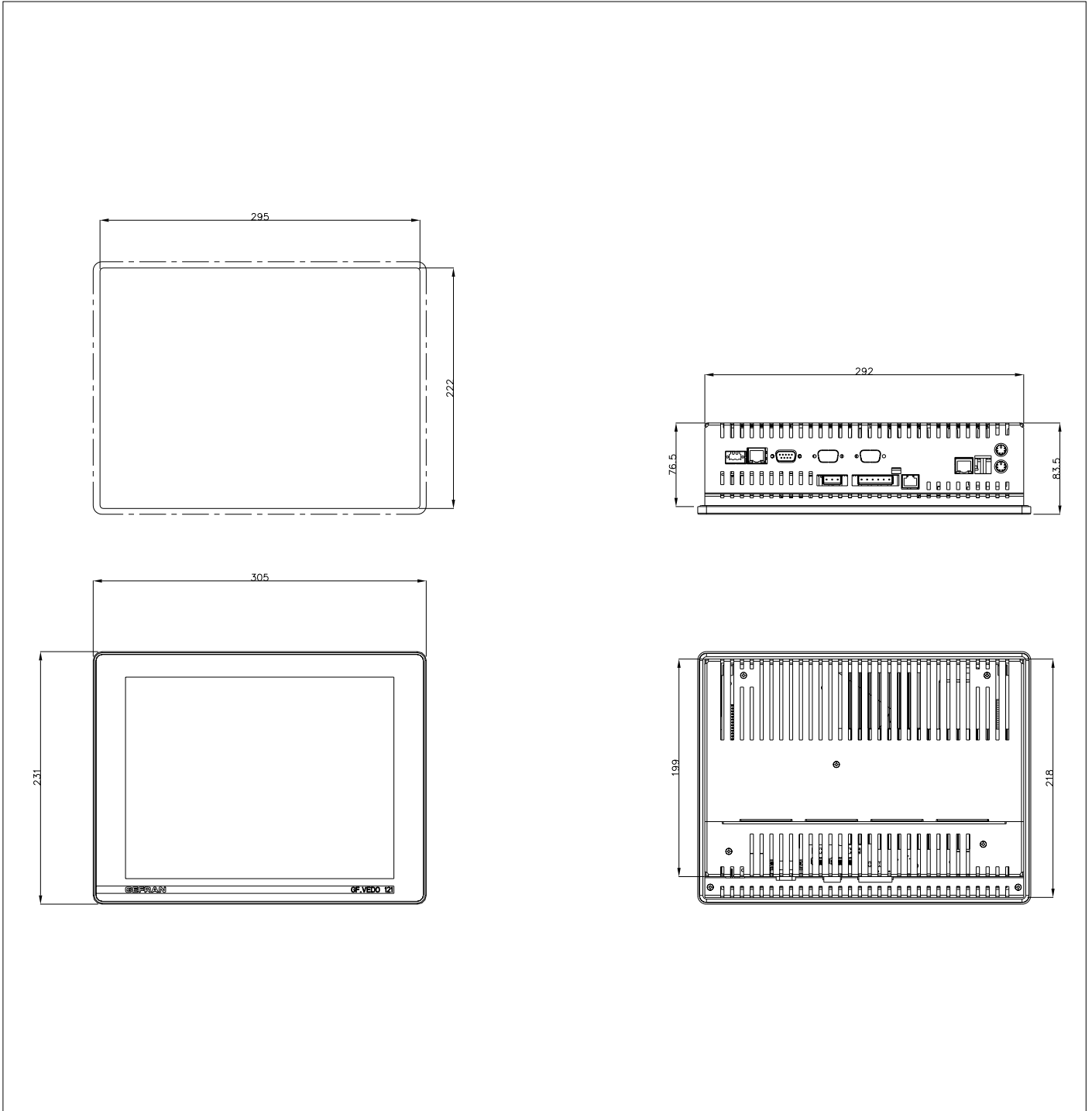


Figure 1 - Dimensions and cut-out GF\_VEDO HL 121CT

# Dimensions GF\_VEDO HL 150CT

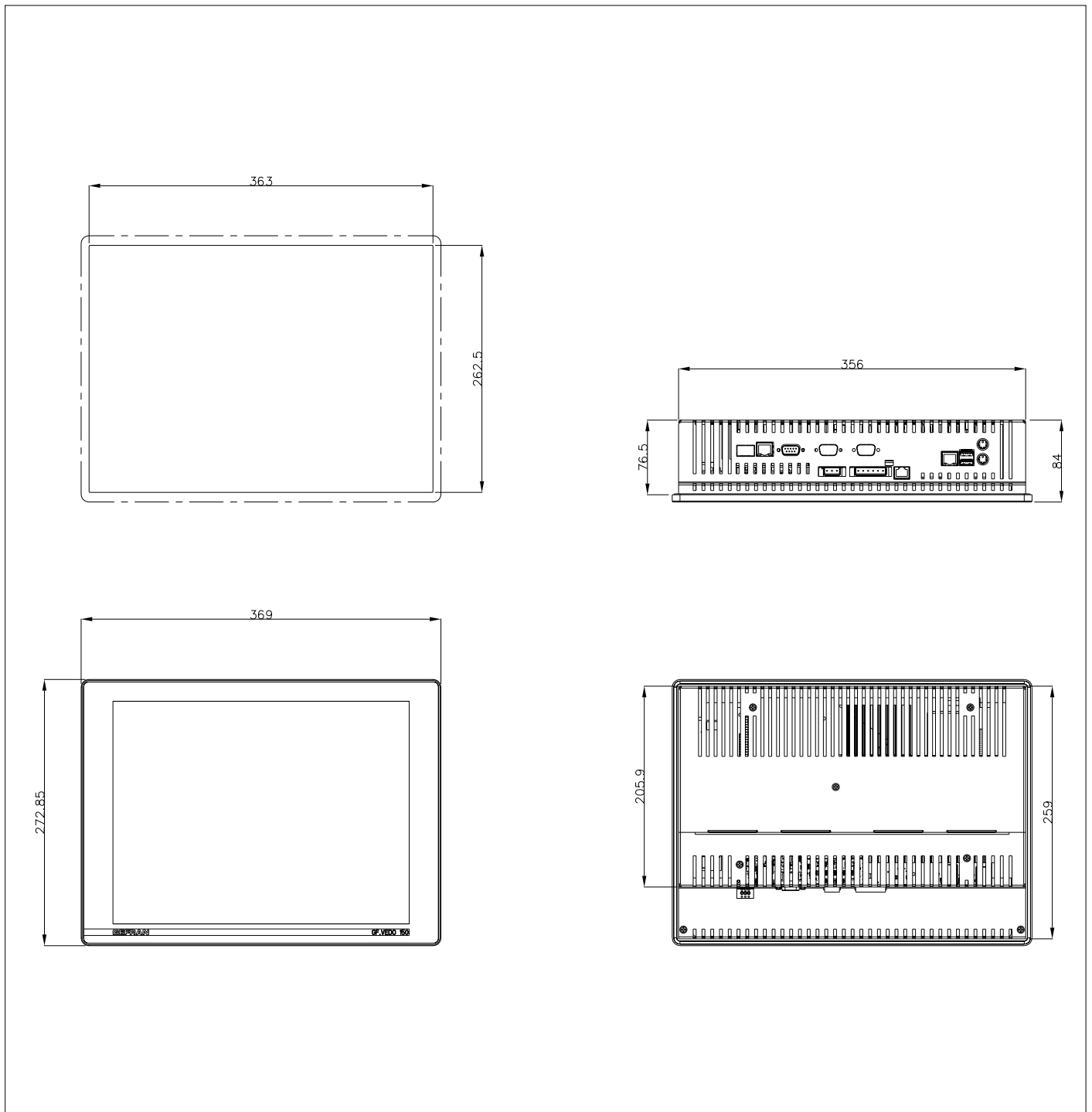


Figure 2 - Dimensions and cut-out GF\_VEDO HL 150CT

## Fixing

### Panel mounting of GF\_VEDO HL

GF\_VEDO HL panels are designed for front panel installation.

After making the opening shown on the template drawing, fasten the GF\_VEDO HL with the blocks required and supplied with the product.

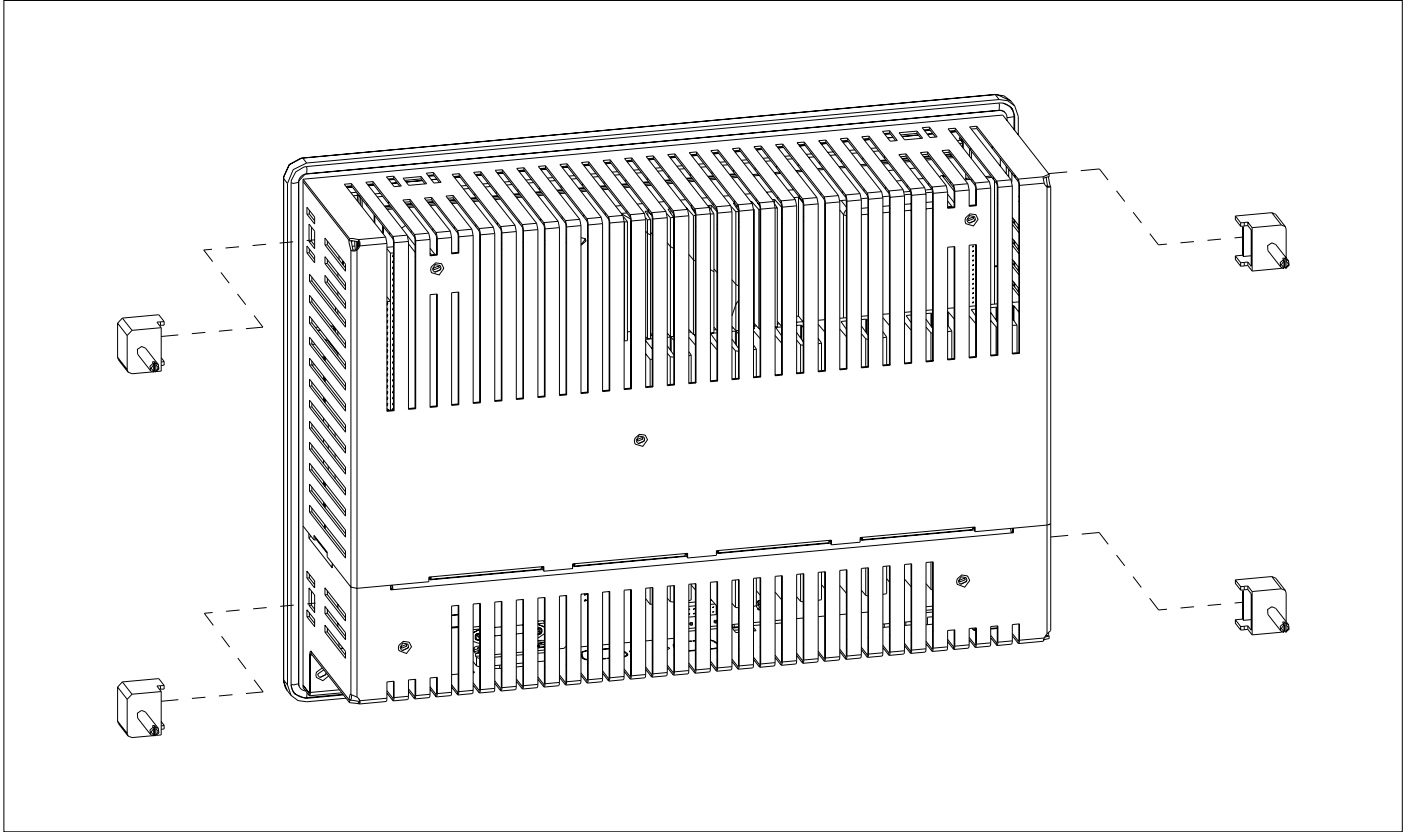


Figure 3 - Panel mounting GF\_VEDO HL 121CT

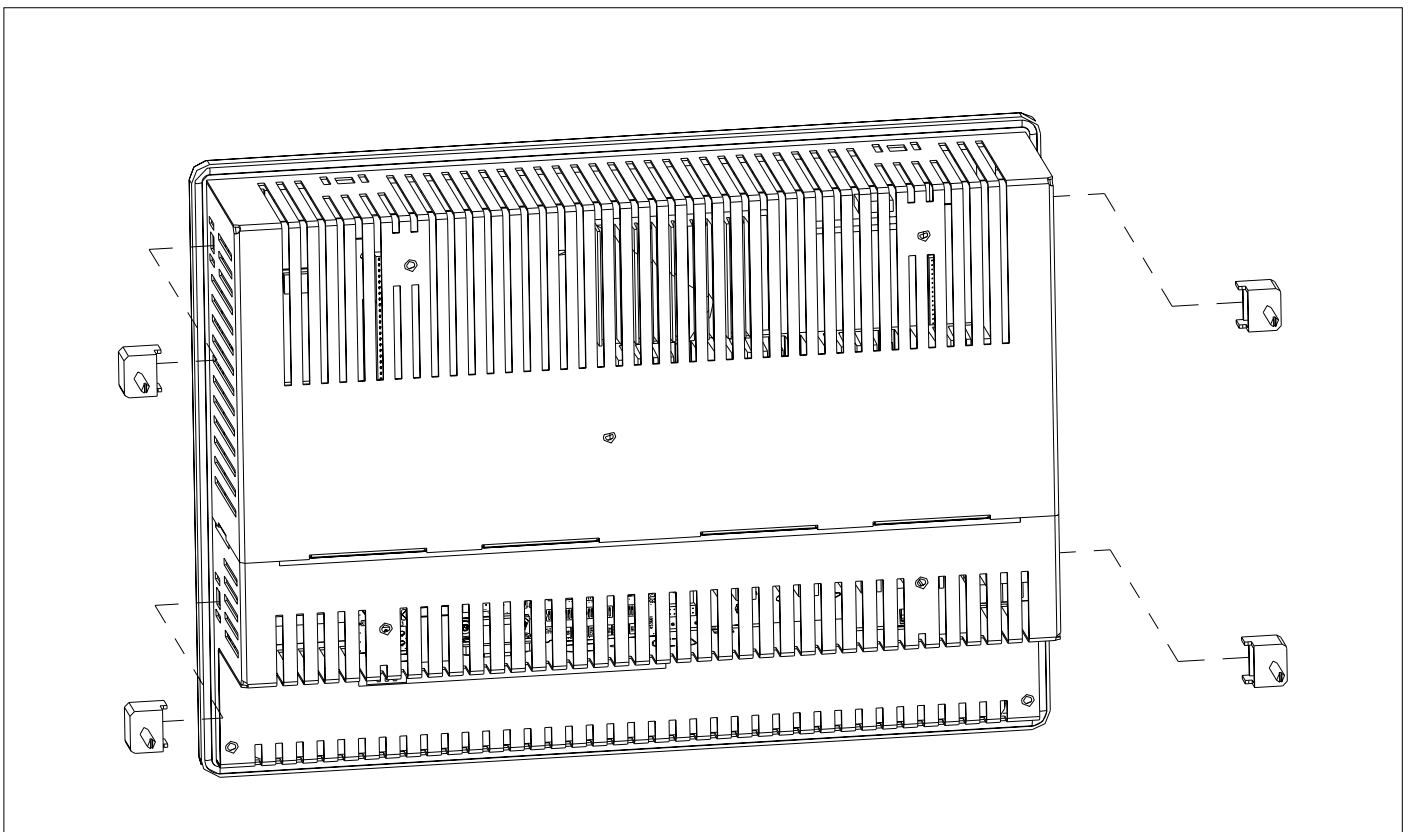


Figure 4 - Panel mounting GF\_VEDO HL 150CT



To properly dissipate the heat produced by the GF\_VEDO\_HL terminals, there should be a minimum distance (“d”) of 10 cm between the rear protective surfaces of the terminals and the panels around them.

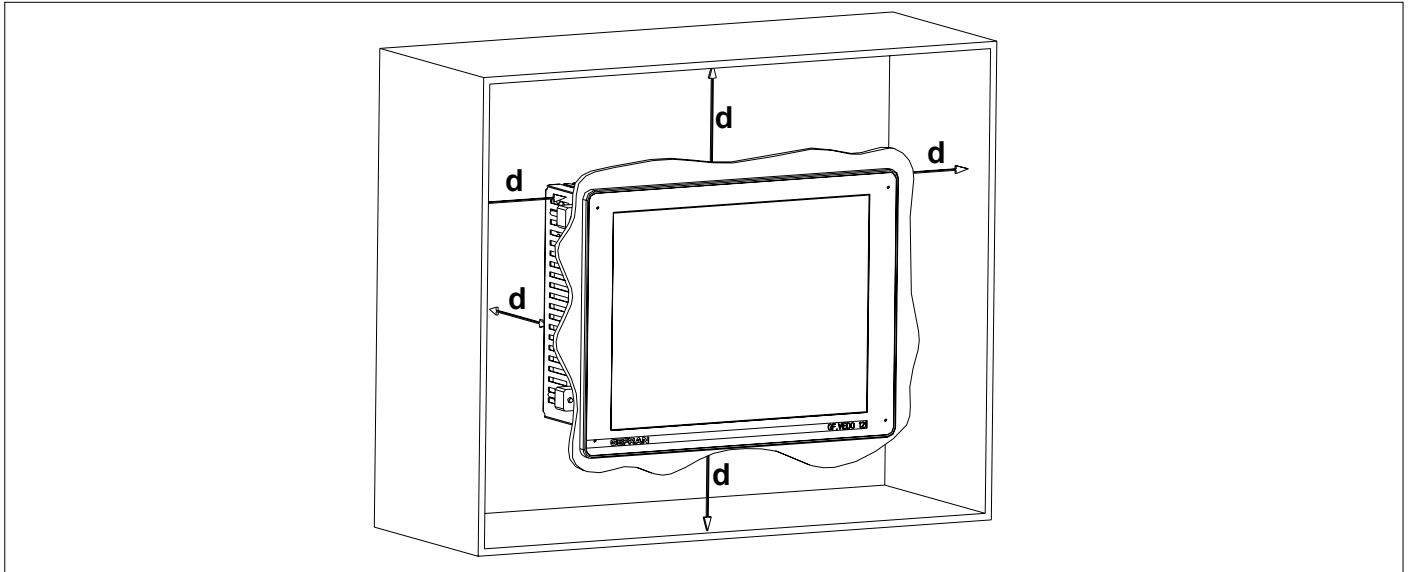


Figura 5

Instructions for panel installation:

- make the edges of the hole for the panel perfectly smooth and flat
- tighten each fastening screw (or nut) until the corner of the frame touches the panel
- the panel hole must have the dimensions specified in this manual

The GF\_VEDO HL terminals also have an O-Ring inserted at the rear of the display frames, as shown in Figure 6.

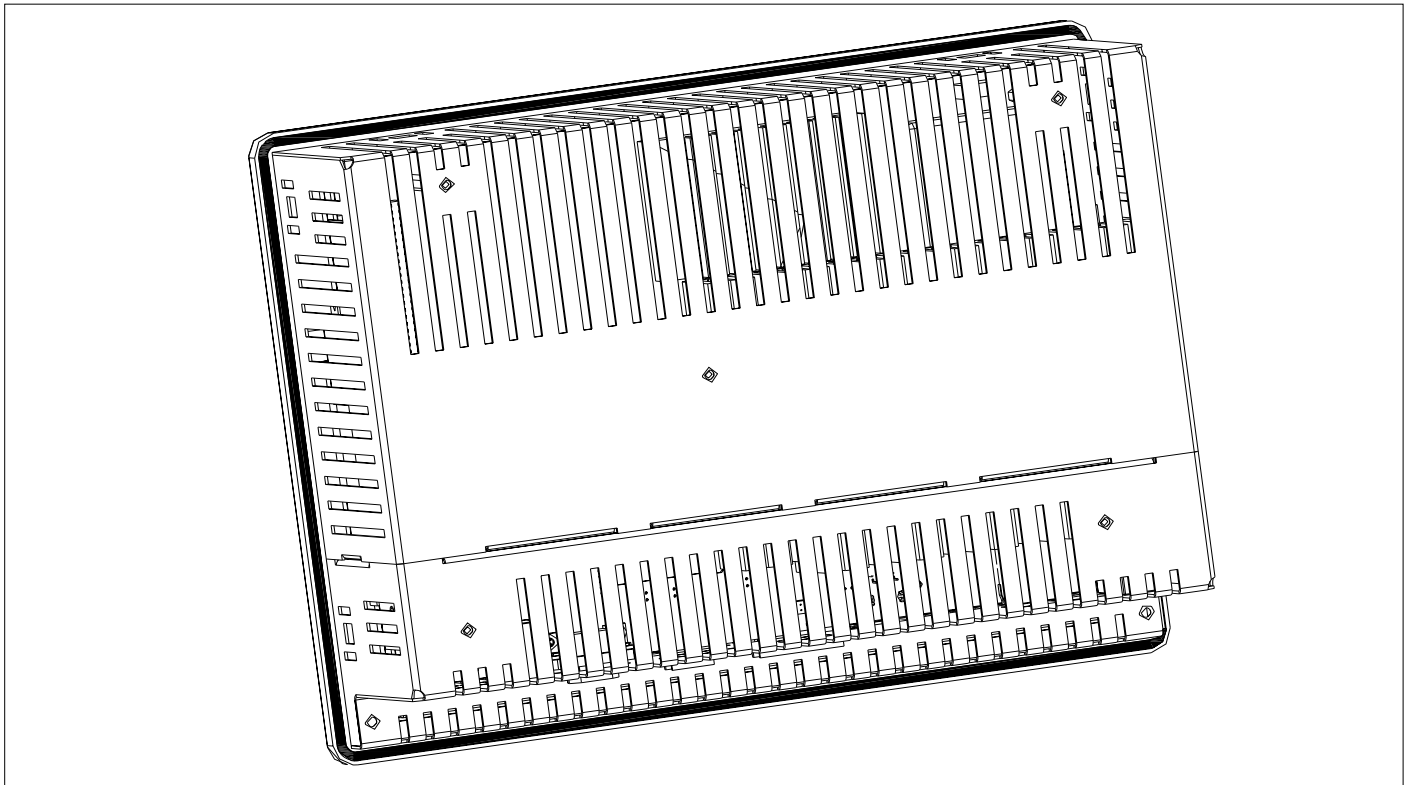


Figure 6 - O-Ring on GF\_VEDO HL terminal

### Cleaning the device

Clean the device only with a soft cloth and non-abrasive neutral soap.  
Do not use solvents.

### 3 · TECHNICAL SPECIFICATIONS

Table 14 shows the main technical characteristics of each GF\_VEDO HL version.  
In particular, it shows characteristics for displays, processors, storage devices and interfaces.

#### 3.1 Display

The various GF\_VEDO HL versions have LCD (liquid cristal display ) TFT (Thick Film Transistor) color displays measuring 12,1", 15".

All GF\_VEDO HL CT products let the operator interface the system with resistive Touch-Screens.

#### 3.2 CPU e Memorie

GF\_VEDO HL terminals are supplies with Intel processors.

The user can choose either the Intel Celeron M 600 MHz or the Intel Celeron M 1500 MHz.

The terminals have Intel 852GM chipsets @400MHz FSB, Intel Extreme Graphics 2 controller, 2Kb SRAM memory with lithium buffer battery.

DOM (Disk On Module)(128MB, 1GB, 4GB) mass memories and DRAM (128MB, 256MB, 1GB) system memories suitable for the operating system can be installed on the terminals.

#### 3.3 Supported Operating Systems

GF\_VEDO HL terminals offer the user various types of operating systems:

- **VxWorks**: a real-time operating system by Wind River System.  
Just like most real-time operating systems, VxWorks includes a multitasking kernel with optional scheduling and rapid interrupt response.
- **Windows XP Embedded**: the modular version of Microsoft Windows XP Professional.

#### 3.4 Bios

The Bios supplied for GF\_VEDO HL terminals is Phoenix Award BIOS

#### 3.5 GF\_VEDO HL user connections

The user connections specified on Table 4 are made at the bottom by means of Gefran standard and custom connectors.

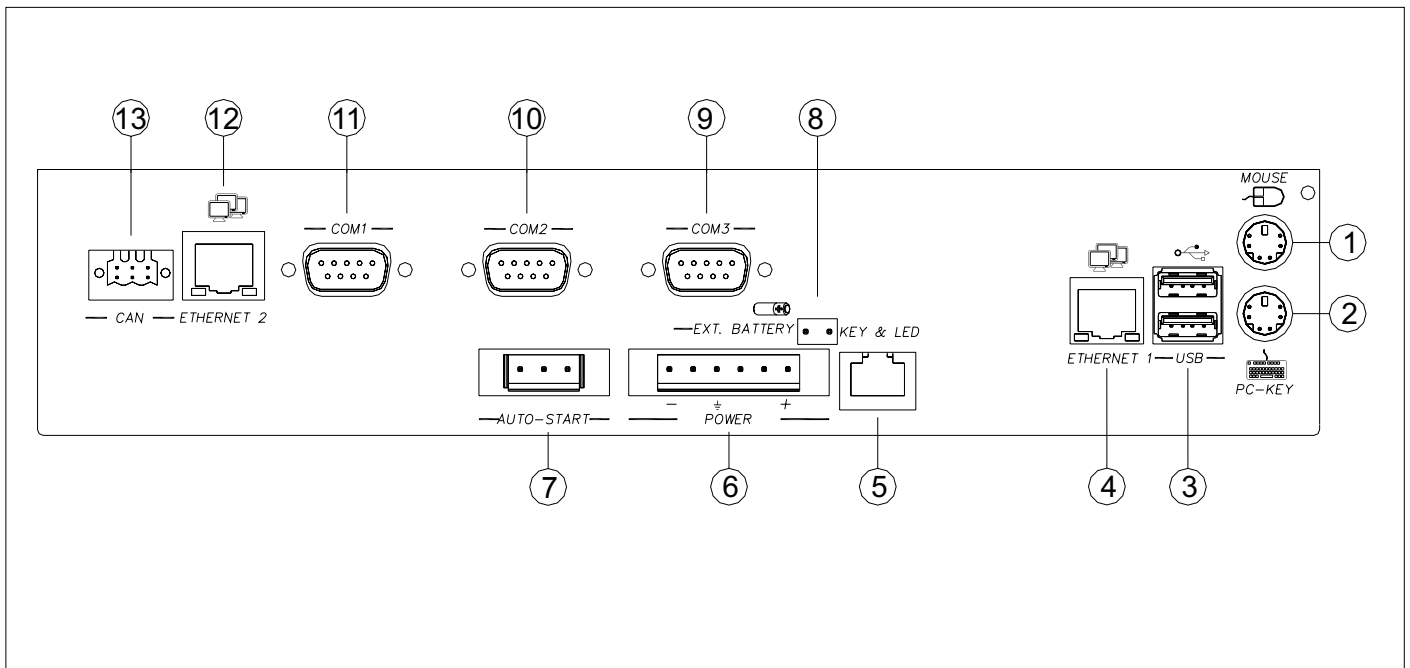


Figure 7 - GF\_VEDO ML connector

Nr	Name	Description
1	MOUSE	PS/2 Mouse (green)
2	PC-KEY	PS/2 keyboard (violet)
3	USB	USB 2.0 Host (500mA)
4	ETH1	Ethernet 10/100 Base-T
5	KEY & LED	Fieldbuses keyboard
6	POWER	Power supply
7	AUTO -START	Auto-on
8	EXT BATTERY	External battery 3,6V
9	COM3	Serial COM3 RS485 (RS422/RS232) [optional]
10	COM2	Serial COM2 RS232 [optional]
11	COM1	Serial COM1 RS485
12	ETH2	Ethernet 10/100 Base-T
13	CAN	CAN layer 2 [optional]

Table 4 - GF\_VEDO HL connector description

### 3.5.1 Power supply port

Power supply: 24VDC  $\pm$ 25%. The internal power supply is galvanically isolated and protected against polarity reverses and short circuits by a resettable fuse. The panel has a power terminal. The connector diagram is shown in Figure 8.

**Note:** check that the power supply is able to deliver the power needed for correct operation of the device.

The device must always be grounded. Grounding helps limit the effects of electromagnetic noise on the control system.

All electronic devices of the control system must be grounded.

Ground the devices in a manner conforming to applicable standards and regulations.

To limit susceptibility to noise, you have to install an electromagnetic emission suppression core as shown in Figure 8.

This component, supplied with the product, is a ferrite core coated in plastic for round section wires.

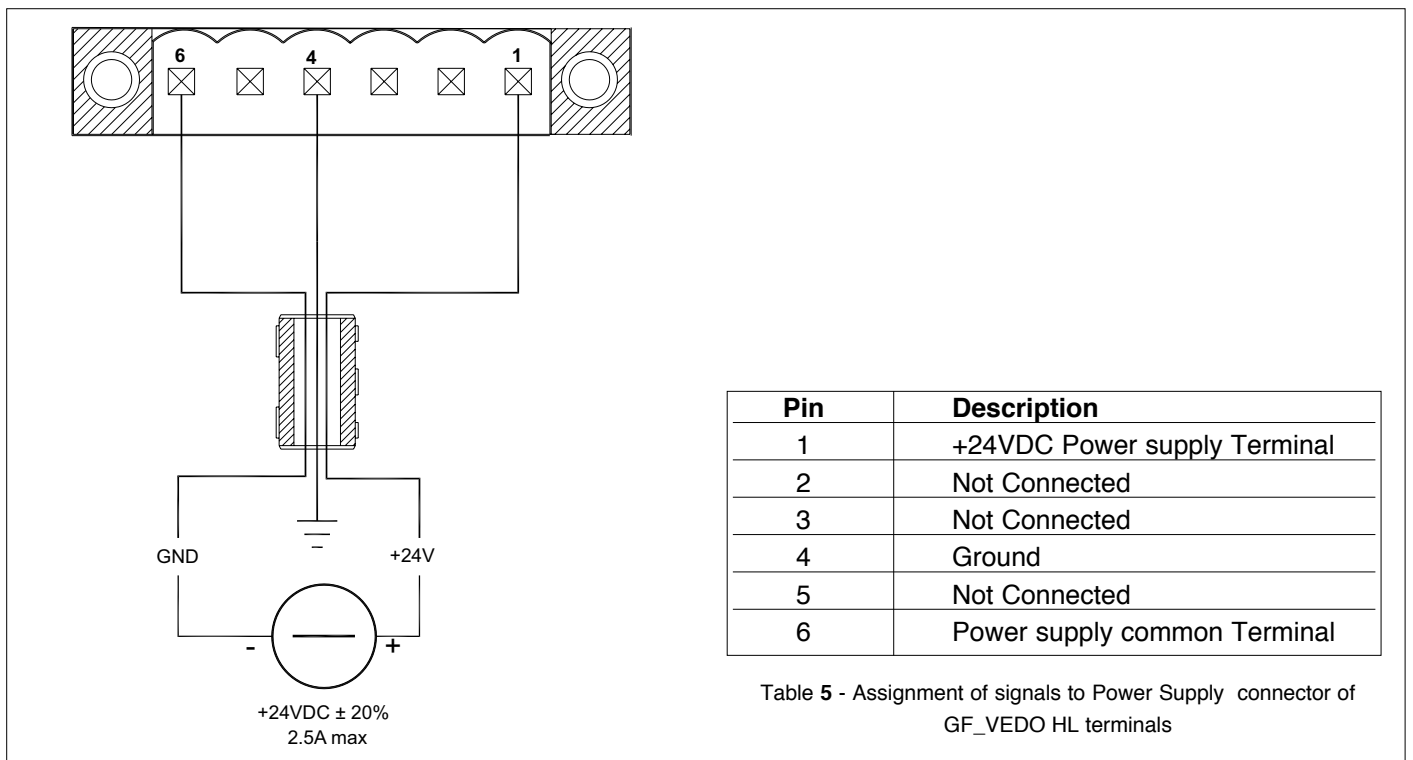


Table 5 - Assignment of signals to Power Supply connector of GF\_VEDO HL terminals

Figure 8 - GF\_VEDO HL power supply connector

### 3.5.2 Autostart Port

GF\_VEDO HL uses the optional Autostart output to activate an external relay by means of a programmable internal timer. Activation requires that only the relay be powered, and to run the external devices you have to use the free contact of the relay (activation time approx. 10 seconds).

We recommend the use of 24VDC relays with a maximum of 100mA at the coil.

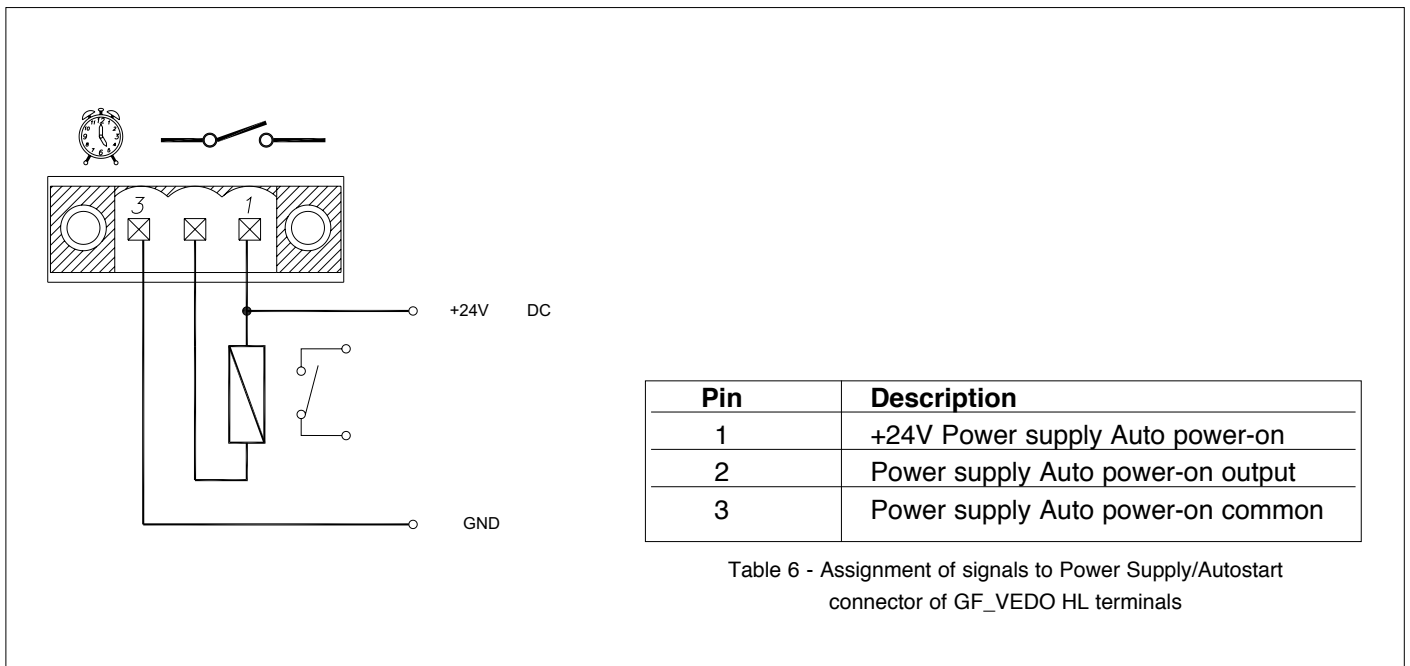


Figure 9 - GF\_VEDO HL power supply/auto power-on connector

### 3.5.3 Ethernet ports

GF\_VEDO HL uses Ethernet (ETH1 and ETH2) ports to dialog via IEEE 802.3 Ethernet protocol. Each Ethernet port can dialog at 10/100 Mbps using an 8-pin RJ45 connector with LED.

We recommend an Ethernet Base-T with braided leads (CAT. 6). The wiring scheme must conform to standard TIA/EIA-T568-A. Signal assignment is shown in Table 7.

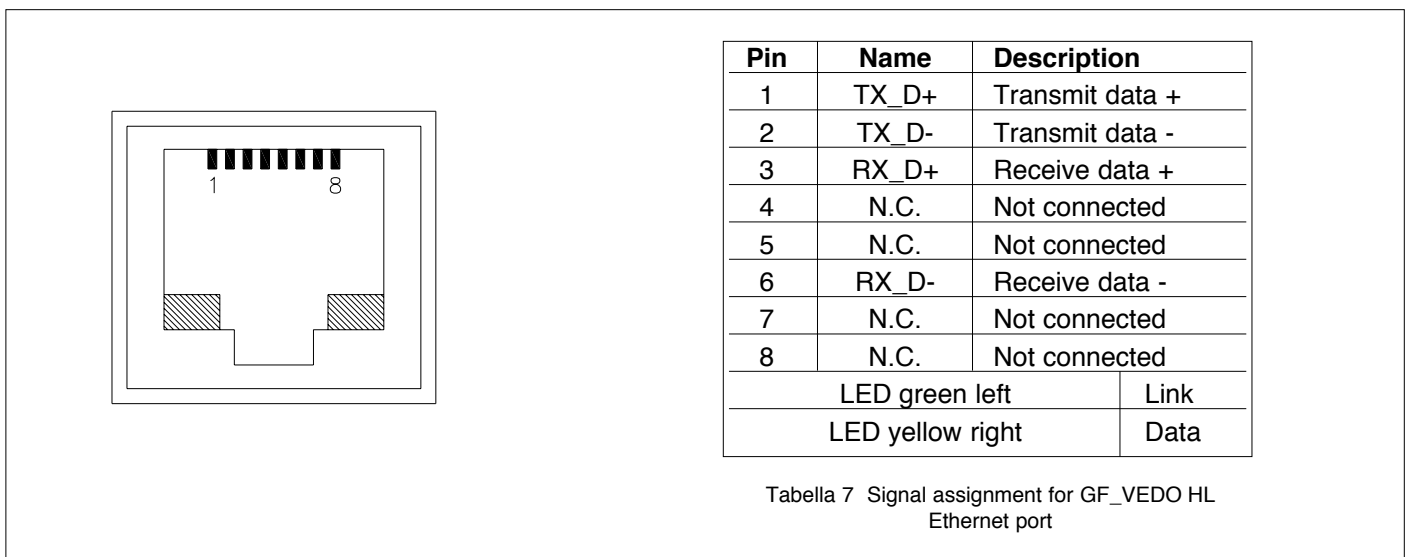


Figure 10 GF\_VEDO HL Ethernet port connector

### 3.5.4 RS-485 (COM1) port

GF\_VEDO HL uses the RS-485 port to dialog according to OSI specifications at the physical level defined by standard EIA-485.

The RS-485 port is optically isolated and allows dialog from 9.6 kBaud to 115 kBaud via an D-sub 9 pin (male). Signal assignment is shown in Table 8.

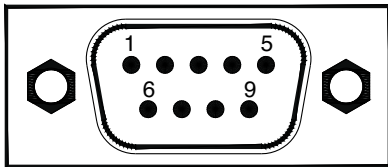


Figure 11  
RS-485 connector for GF\_VEDO HL port

Pin	In/Out	Code	Description
1			
2	I/O	RX+/TX+	Data +
3			
4	I/O	RX-/TX-	Data -
5	-	GND	GROUND
6	-	NC	N.c.
7	-	NC	N.c.
8	-	NC	N.c.
9	-	NC	N.c.

Table 8  
Signal assignment for GF\_VEDO HL RS485 port

### 3.5.5 RS-232 (COM2) port

RS-232 port lets the GF\_VEDO HL dialog with RS-232 serial transmission protocol at a baud rate from 9.6 kBaud to 115 kBaud. The COM 2 port is optional.

The RS-232 port is not optically isolated and uses a 9-pin (male) D-sub connector. Signal assignment is shown in Table 9.

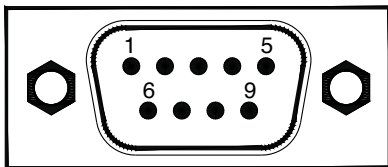


Figure 12  
GF\_VEDO HL RS-232 port connector

Pin	In/Out	Code	Description
1	I	DCD	Data Carrier Detect
2	I	RxD	Data received
3	O	TxD	Data transmitter
4	O	DTR	Data Terminal Ready
5	-	GND	GND
6	I	DSR	Data Set Ready
7	O	RTS	Request To Send
8	I	CTS	Clear To Send
9	I	RI	Ring Indicator

Table 9  
Signal assignment for GF\_VEDO ML RS-232 port

### 3.5.6 Configurable Serial Port (COM3)

The configurable serial port lets the GF\_VEDO HL communicate via one of the following protocols:

- default RS-485 (optically isolated, with baud rate from 9.6 kBaud to 115 kBaud)
- RS-232 (not optically isolated, with baud rate from 9.6 kBaud to 115 kBaud)
- RS-422 (optically isolated, with baud rate from 9.6 kBaud to 115 kBaud)

The protocol is configured by setting S3, S8, S9 and S10 show in figure 13 as expressed in Table 10 (see paragraph "Access to internal system resources").

S	PIN	RS-232	RS-422	RS-485 (default)
		ON/OFF	ON/OFF	ON/OFF
S3	1	ON	OFF	OFF
	2	OFF	ON	ON
S8	1	ON	OFF	OFF
	2	ON	OFF	OFF
	3	ON	OFF	OFF
	4	ON	OFF	OFF
	5	ON	OFF	OFF
	6	ON	OFF	OFF
	7	ON	OFF	OFF
	8	ON	OFF	OFF
S10	1	OFF	ON	ON
	2	OFF	ON	ON
	3	OFF	ON	ON
	4	OFF	ON	ON
	5	OFF	ON	ON
	6	OFF	ON	ON
	7	OFF	ON	ON
	8	OFF	ON	ON
S9	1	OFF	ON	ON
	2	OFF	OFF	ON
	3 (A)	OFF	OFF	OFF
	4 (A)	OFF	OFF	OFF
	5 (A)	OFF	OFF	OFF
	6 (A)	OFF	OFF	OFF
	7	OFF	OFF	OFF
	8	OFF	OFF	OFF
S15	-	OFF	ON	ON
S13	-	OFF	ON	ON
S12	-	OFF	ON	ON
S11	-	OFF	ON	ON
S14	-	OFF	ON	ON
S16	-	OFF	ON	ON

Tabella (A)			
S	PIN	ON/OFF	DESCRIPTION
S9	3	ON	Clear to send from RTS
	4	OFF	
	3	OFF	Auto-Clear Send and Receive
	4	ON	
	5	ON	Clear to receive from RTS (Mandatory with Auto-Clear)
	6	OFF	
	5	OFF	Always cleared to receive
	6	ON	

Table 10  
Protocol configuration on configurable serial COM3 of GF\_VEDO ML terminals

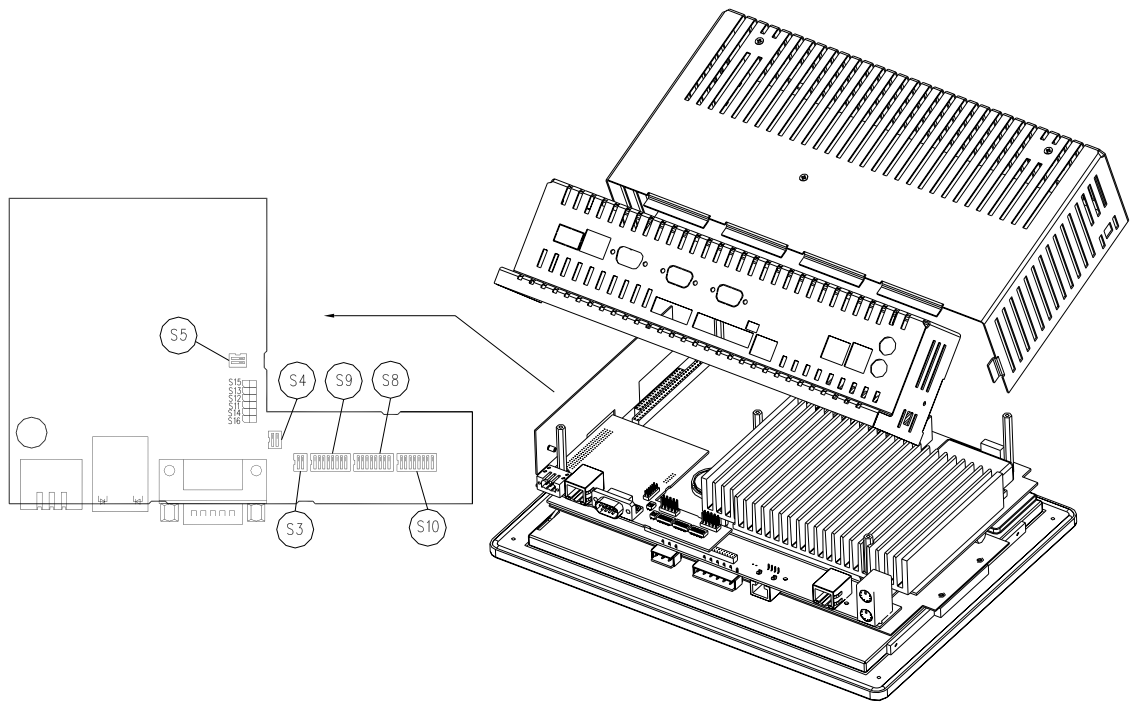


Figure 13  
Protocol configuration on configurable serial COM3 of GF\_VEDO ML terminals

A 9-pin (male) D-sub connector is used.  
Signal assignment (for the protocol) is shown in Table 11

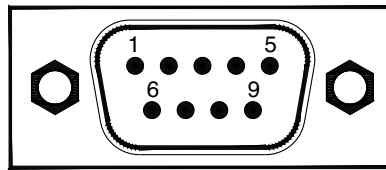


Figure 14  
Configurable serial connector for GF\_VEDO HL terminals

PIN	RS-232			RS-422			RS-485		
	I/O	Code	Description	I/O	Code	Description	I/O	Code	Description
1	I	DCD	Data Carrier Detect	I	RX-	RX line negative			
2	I	RxD	Receive data	I	RX+	RX line positive	I/O	RX+/TX+	Data +
3	O	TxD	Transmit data	O	TX+	TX line positive			
4	O	DTR	Data Terminal Ready	O	TX-	TX line negative	I/O	RX-/TX-	Data -
5	-	GND	GND	-	GND	Ground	-	GND	Ground
6	I	DSR	Data Set Ready	-	NC	Not connected	-	NC	Not connected
7	O	RTS	Request To Send	-	NC	Not connected			
8	I	CTS	Clear To Send	-	NC	Not connected	-	NC	Not connected
9	I	RI	Ring Indicator	-	NC	Not connected	-	NC	Not connected

Table 11  
Signal assignment on RS-232 connector of GF\_VEDO ML terminals

### 3.5.7 CAN port

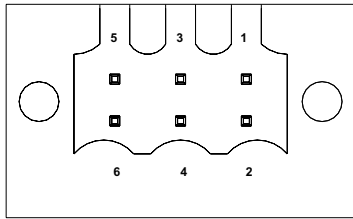
The optional CAN port lets GF\_VEDO HL dialog via the serial standard (ISO 11898-1 of 2003) for the CAN (Controller Area Network) field bus, also known as CAN-bus.

This protocol is specifically designed for excellent operation even in environments with strong electromagnetic noise, and can use a balanced potential line such as an RS-485 as means of transmission.

In particular, GF\_VEDO HL implements the CANOpen Layer 2 standard. The CAN port is optically isolated and uses a 6-pin (male) D-sub connector.

Signal assignment is shown in Table 12.

An approved CAN cable is recommended for the connection. You have to add a termination (at the ends of the CAN line) by short circuiting pins 1-2 of the connector.



— CAN —

Pin	Description
1	Termination (*)
2	Termination (*)
3	CANH
4	CANL
5	SHIELD
6	CANGND1

Figure 15  
CAN connector of GF\_VEDO HL terminals

Table 12  
Signal assignment of CAN port of  
GF\_VEDO HL terminals

### 3.5.8 External Battery Port

The external battery port lets you connect the GF\_VEDO HL terminals to a battery to save BIOS data and data stored in static RAM.

A 2-pin Modu II (AMP) connector is used.

The battery (NOT rechargeable) must be between 3V and 3.6 V.

Use the external battery only when the internal battery is not connected to the terminal.



Figure 16  
External battery connector for GF\_VEDO HL terminals

Pin	Description
1	+ Battery
2	- Battery

Table 13  
Signal assignment on external battery connector for GF\_VEDO HL terminals



### 3.5.9 USB port

### 3.6.7 USB Port

GF\_VEDO HL uses USB ports to dialog via USB (Universal Serial Bus) serial communication standard.

GF\_VEDO HL terminals support version USB 2.0 (transmission up to 480 Mbit/s).

The USB port connector is type USB-A (4 pins). Signal assignment is shown in Table 14.

Voltage for VBUS is approximately +5V with maximum current of 500mA.

Signals D+ and D- refer to the two (pseudo) differential data communication lines.

You can access USB ports of GF\_VEDO HL terminals from the panel by connecting a cable (accessory: order separately) as described in Figure 18.

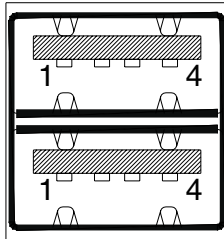


Figure 17  
Connector for USB port of GF\_VEDO HL terminals

Pin	Description
1	VBUS
2	D-
3	D+
4	GND
Shell	SHIELD

Table 14  
Signal assignment of USB port of GF\_VEDO HL terminals

**The USB cable (accessory: order separately) must be inserted in a panel with maximum thickness (d) of 2.5mm.**

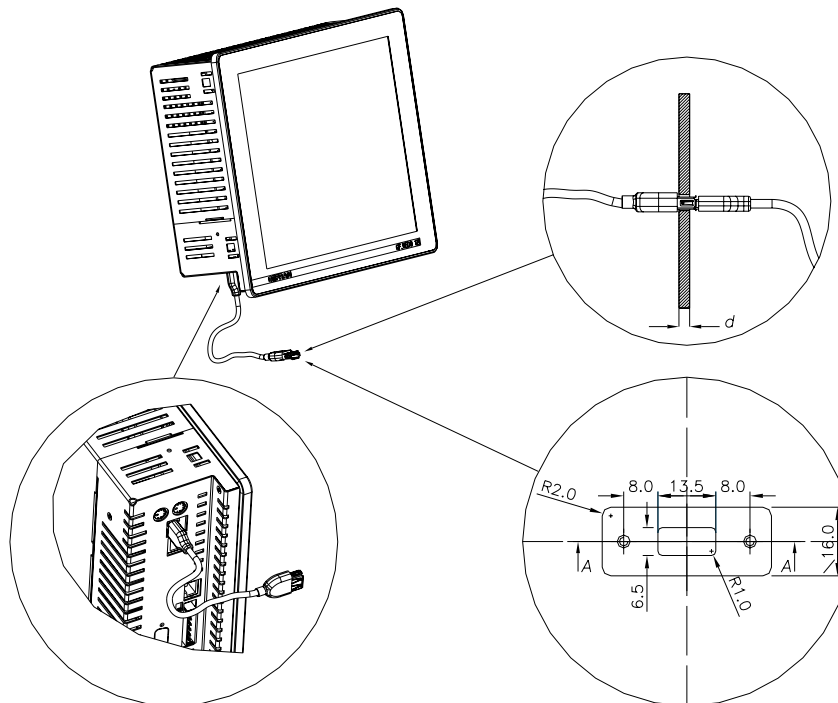


Figure 18  
USB cable for GF\_VEDO HL terminals

### 3.5.10 Matrix Keyboard port (KEY & LED)

GF\_VEDO HL uses the KEY & LED port to communicate with series TF keyboards. It uses a high-speed full-duplex synchronous serial interface (SPI) with proprietary communication protocol. This allows scanning of the key matrix and control of off/on status of LEDs on the keyboard. The connector is an 8-pin RJ45 without LED, which allows keyboard communication and power. Signal assignment is shown in Table 15. Cable length can be a maximum of 1 metre.

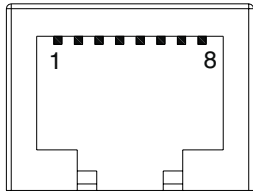


Figure 19  
GF\_VEDO HL KEY & LED port connector

Pin	Name	Description
1	KEYCLK	Keyboard clock
2	KEYOUT	Keyboard output
3	KEYIN	Keyboard input
4	IRST	Reset GT-Tast
5	POWER	+5V power supply
6	GND	0V power supply
7	GND	0V power supply
8	+12V	+12V power supply

Table 15  
Signal assignment for GF\_VEDO HL KEY & LED port

### 3.5.11 Mouse and Keyboard PS2 port

The PS2 port connects the GF\_VEDO HL to keyboards and mice conforming to PS2 standard. Two mini-DIN 6-pin female connectors are used (green: Mouse, violet: Keyboard). Signal assignment is shown in Tables 16 and Table 17.

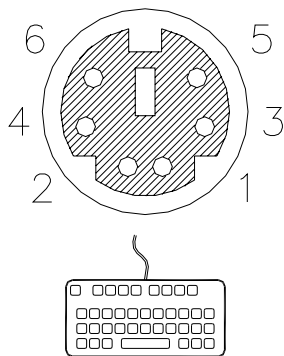
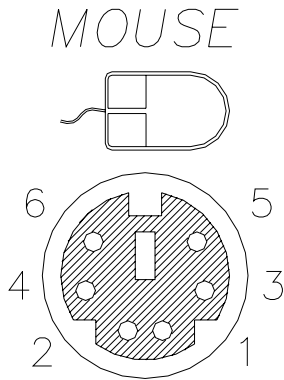


Figure 20  
GF\_VEDO HL PS2 port connector for Mouse and Keyboard

Pin	In/Out	Description
1	KBD Data	Data Keyboard
2	N.C.	Not connected
3	GND	GND
4	5 VDC	+5V
5	KBD CLK	Keyboard Clock
6	N.C.	Not connected

Table 16  
Signal assignment for GF\_VEDO HL  
PS2 Keyboard port

Pin	In/Out	Description
1	MS Data	Data Mouse
2	N.C.	Not connected
3	GND	GND
4	5 VDC	+5V
5	KBD CLK	Mouse Clock
6	N.C.	Not connected

Table 17  
Signal assignment for GF\_VEDO HL  
PS2 Mouse port

### 3.6 Access to internal system resources

You can replace the battery and configure the COM3 serial by removing the rear cover of the terminal as shown in Figure 21. TURN OFF the GF\_VEDO HL terminal before loosening the screws.

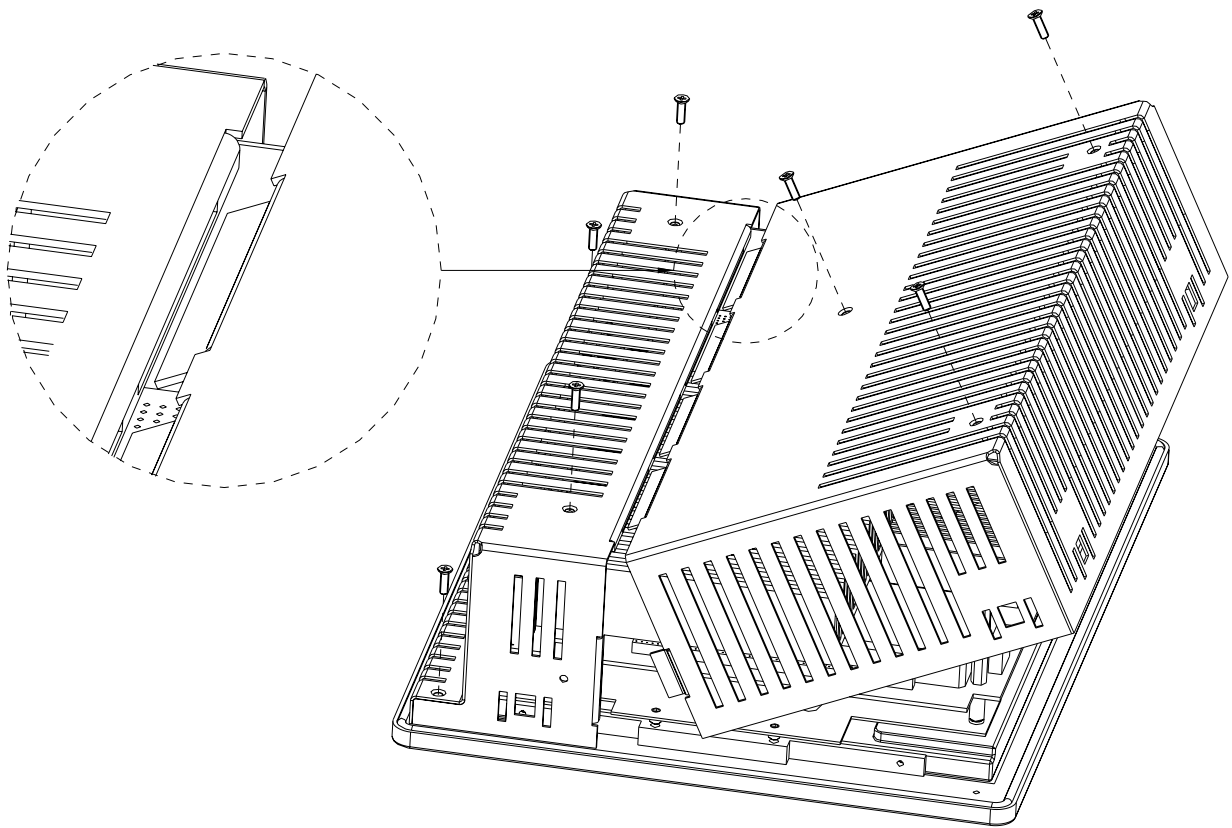


Figure 21 - Access to internal resources of GF\_VEDO HL terminals

#### 3.6.1 System memory: SODIMM

GF\_VEDO HL has a DDR1 SODIMM (Small Outline Dual In-line Memory Module) system memory, which is more compact than normal DIMM.

#### 3.6.2 Mass memory: DOM

GF\_VEDO HL terminals are equipped with mass memory that contains the operating system and user data. Each terminal has a solid state disk with Disk On Module (DOM) IDE AT compatible interface.

### 3.6.3 Internal battery

The GF\_VEDO HL panels use an internal lithium battery (non-rechargeable; replaceable).

This lets you maintain data in the static RAM memory when the GF\_VEDO HL is switched off (for a maximum of 3 years).

To replace the battery when necessary, do as follows:

- get a replacement battery: 24 mm diameter button battery, 3V lithium (CR2430)
- switch off the system by disconnecting it from the external power supply
- access the battery as shown in Figure 22
- remove the battery
- follow the rules for disposal of lithium batteries
- insert the new battery as shown in Figure 22
- switch on the system

Note: If the battery is replaced rapidly (in less than 15 minutes), there is no loss of data maintained by the buffer battery.

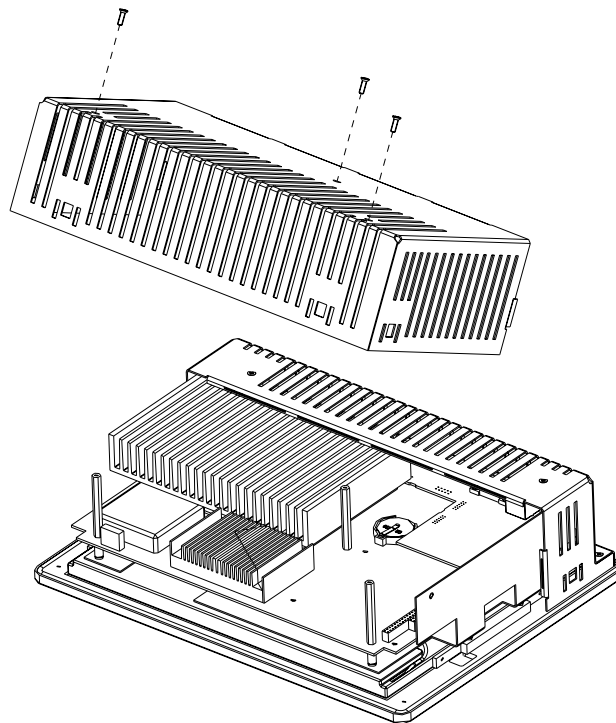
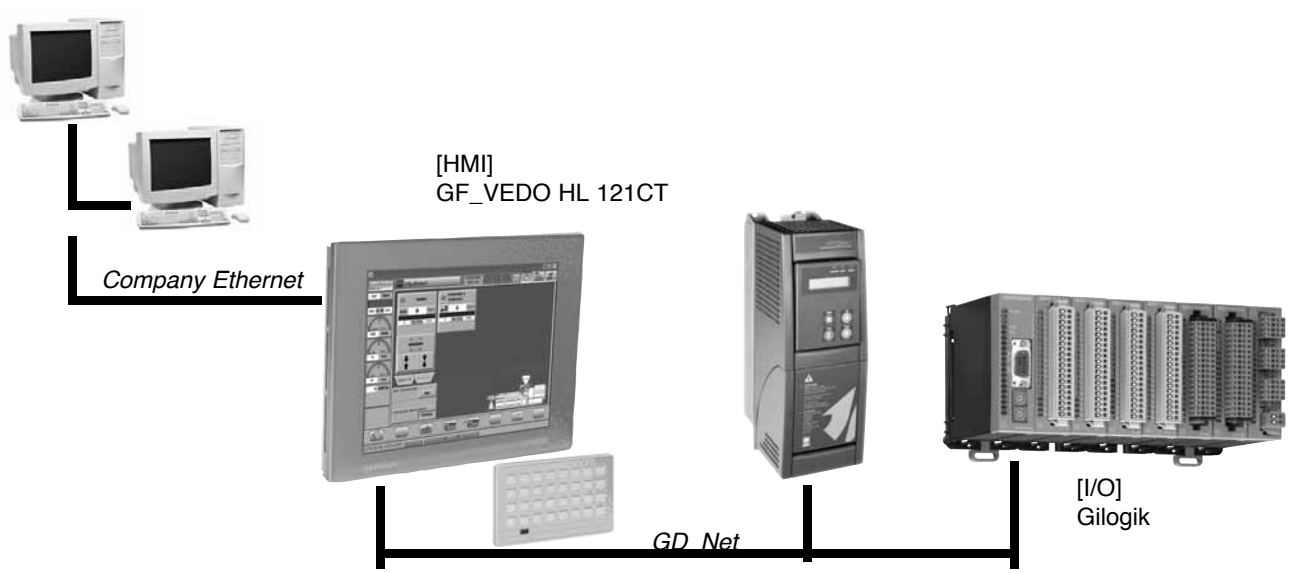
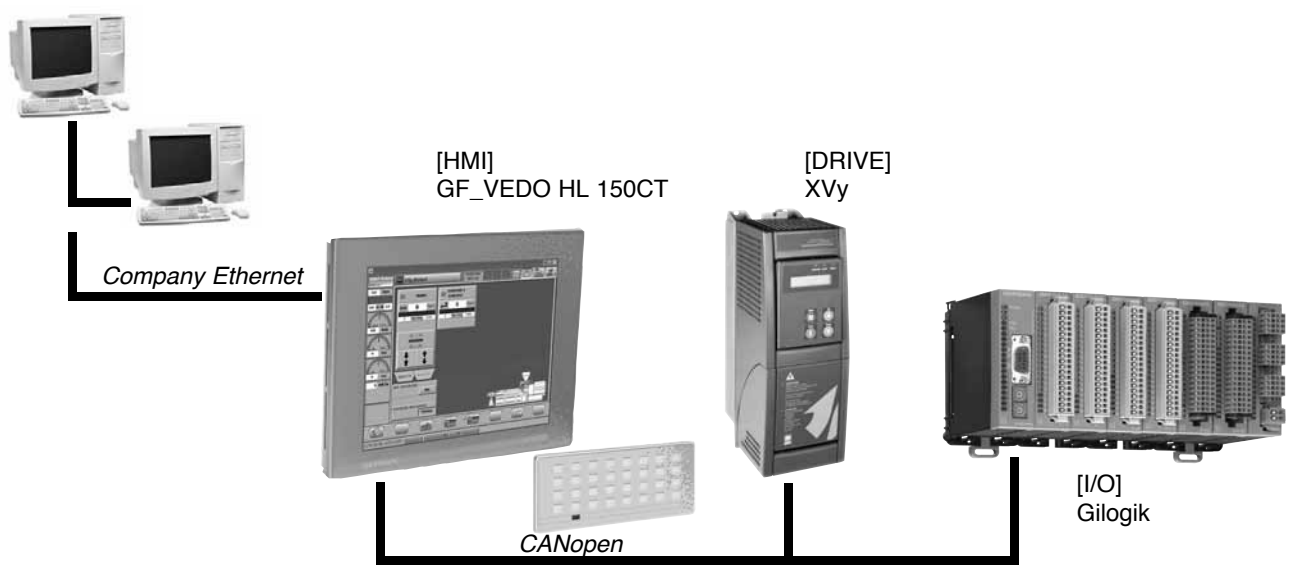
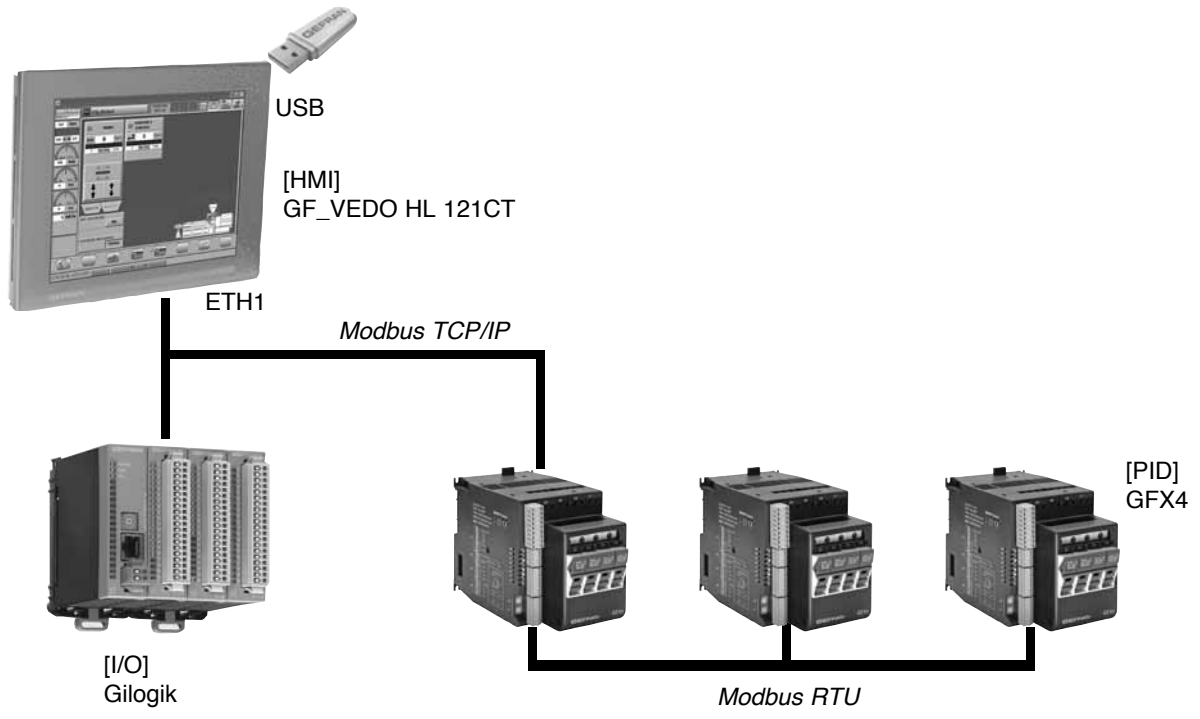


Figure 22 - Battery connection

# 4 · CONNECTION EXAMPLES



## 5 • SUMMARY OF CHARACTERISTICS

Model	GF_VEDO HL 121CT	GF_VEDO HL 150CT
<b>Display</b>	TFT Colors	
Type	262k	
No colours	262k	
Size	12.1"	15.0"
Display area (mm)	246.0x184.5	304.1x228.1
Resolution	SVGA 800x600	XVGA 1024x768
Luminosity	450 cd/m <sup>2</sup>	350 cd/m <sup>2</sup>
Contrast	1000:1	700:1
Backlighting [MTBF(h)]	CCFL/50000	
Visual angle O/V	178°/178°	140°/120°
<b>Touch Screen</b>	Resistive 4 wires	
Type	Resistive 4 wires	
Life	>1M operations	
Controller	integrated	
<b>Processor</b>	Intel Celeron™ M 600MHz Intel Celeron™ M1500MHz	
Frequency	Intel Celeron™ M 600MHz Intel Celeron™ M1500MHz	
Core	x86	
<b>Memory</b>	256MB - 1GB	
System Memory (DRAM)	256MB - 1GB	
Mass Memory (DOM)	128MB - 1GB - 4GB	
<b>I/O Peripherals</b>	6-pin miniDIN connector (green: Mouse - purple: Keyboard)	
PS2 Keyboard/Mouse	6-pin miniDIN connector (green: Mouse - purple: Keyboard)	
USB	2 x USB 2.0 Host (500mA) (4-pin type A connector)	
Ethernet ETH1 - ETH2	2 x Ethernet 10/100 Mbps (RJ45 with LED)	
KEY & LED	RJ45 connector without LED	
AUTOSTART(optional)	3-pin female connector, screw-type	
COM1	1 x RS485 optically isolated from 9.6 to 115kBaud (D-Sub 9 PM)	
COM2 (optional)	1 x RS232 not optically isolated from 9.6 to 115kBaud (D-Sub 9 PM)	
COM3 Configurable (optional)	Default RS485 (optically isolated) / RS422 (optically isolated) / RS232 (not optically isolated) da 9.6 a 115kBaud (D-Sub 9 PM)	
CAN	1 x CANopen from 9.6 to 115kBaud (D-Sub 9 PM) Terminations insertable from outside	
External Battery	3,6V external battery (2-pin connector)	
<b>Operative systems</b>	VxWorks or WindowsXP Embedded	
<b>Various</b>	24VDC ±25% (6-pin female connector)	
Power supply	24VDC ±25% (6-pin female connector)	
Max consumption at 24VDC	2,5A	2,5A
Resettable fuses	Protected against overcurrent on input circuit	
Battery	3V, 270mA/h lithium, non-rechargeable internal at terminals Model: CR2430 button	
RTC hardware clock	Clock/calendar with buffer battery	
Faceplate protection	IP65 (IEC 529)	
Certifications	CE, UL (pending)	
<b>Dimensions</b>	369x272.85	
Faceplate (mm)	305x231	369x272.85
Drilling (mm)	295x222	363x262.5
Max panel thickness (mm)	4	4
Weight (Kg)	2.9	3.2
<b>Operating/Storage condition</b>	Mod. PCE 600MHz 0 ... 45°C Mod. PCS 1500MHz 0 ... 40°C	
Operating temperature	Mod. PCE 600MHz 0 ... 45°C Mod. PCS 1500MHz 0 ... 40°C	
Storage temperature	-20° ... +70°C (IEC 68-2-14)	
Operating/storage humidity	5 ... 95% UR non condensing (IEC 68-2-3)	

## 6 • TECHNICAL/COMMERCIAL INFORMATION



This section contains information regarding the Controller order codes and the main accessories available.

As stated in the Preliminary Warnings of these Instructions for Use, correct interpretation of the Controller order code allows the hardware configuration for the controller to be identified immediately and so it is essential to quote the order code each time the Gefran Customer Care Service is contacted for assistance with any problems.

### Order code

