



PMI v507, PMI v512

PILZ
THE SPIRIT OF SAFETY

► Operator terminals

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SD means Secure Digital

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1 Introduction

1.1 Validity of the documentation

This operating manual is valid for the following products

- ▶ PMI v507
- ▶ PMI v512

This operating manual explains the function and operation, describes the installation and provides guidelines on how to connect the product.

1.1.1 Retaining the documentation

This documentation is intended for instruction and should be retained for future reference.

1.2 Definition of symbols

Information that is particularly important is identified as follows:



DANGER!

This warning must be heeded! It warns of a hazardous situation that poses an immediate threat of serious injury and death and indicates preventive measures that can be taken.



WARNING!

This warning must be heeded! It warns of a hazardous situation that could lead to serious injury and death and indicates preventive measures that can be taken.



CAUTION!

This refers to a hazard that can lead to a less serious or minor injury plus material damage, and also provides information on preventive measures that can be taken.



NOTICE

This describes a situation in which the product or devices could be damaged and also provides information on preventive measures that can be taken. It also highlights areas within the text that are of particular importance.

**INFORMATION**

This gives advice on applications and provides information on special features.

2 Overview

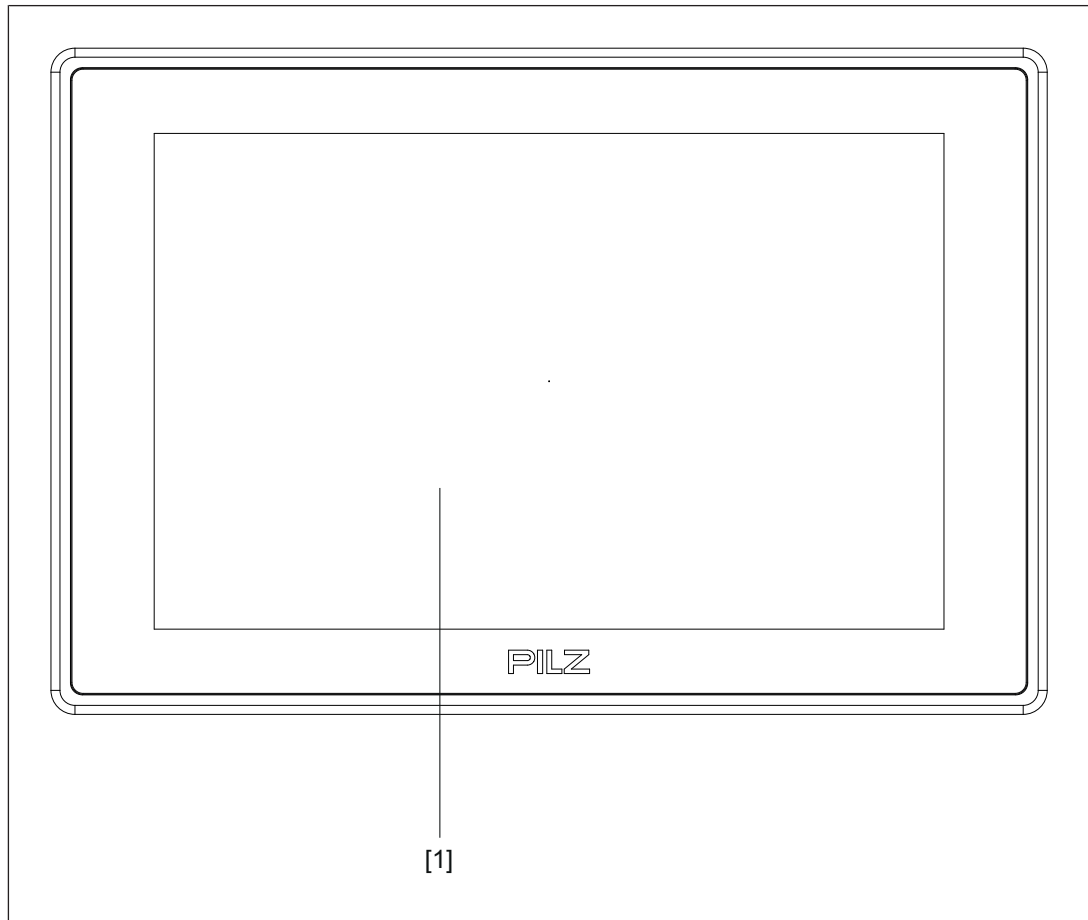
2.1 Unit structure

The PMI is an operator terminal that is used to operate and monitor technical processes.

2.1.1 Unit features

- ▶ Capacitive touchscreen
- ▶ Character set: Unicode
- ▶ Memory:
 - 256 MB DDR SDRAM
 - 512 MB Flash
- ▶ 1 serial interface
- ▶ 1 Ethernet interface
- ▶ 1 USB slave interface
- ▶ 2 USB host interfaces
- ▶ Battery-buffered real-time clock
- ▶ Pre-installed software:
 - PASvisu Server
 - PASvisu Viewer PMI
 - PSS 4000 Firmware (OPC Server)

2.2 Front view



Legend

[1] Touchscreen (see [Technical details](#)  27)

2.3 Scope of supply

PMI v507

- ▶ Operator terminal
- ▶ 6 retaining clamps
- ▶ Connector plug for power supply
- ▶ Projection stand
- ▶ SD card with PMI Assistant

PMI v512

- ▶ Operator terminal
- ▶ 8 retaining clamps
- ▶ Mounting frame for achieving protection class IP66
- ▶ Connector plug for power supply
- ▶ Projection stand
- ▶ SD card with PMI Assistant

3 Safety

3.1 Intended use

This unit is used to operate and monitor technical processes.

The following software is pre-installed for this purpose:

- ▶ PASvisu Server
- ▶ PASvisu Viewer PMI
- ▶ PSS 4000 Firmware (OPC Server)



CAUTION!

The unit is not designed for use in applications with stringent safety requirements (e.g. E-STOP).

The following is deemed improper use in particular:

- ▶ Any component, technical or electrical modification to the product
- ▶ Use of the product outside the areas described in this manual
- ▶ Use of the product outside the technical details (see [Technical details](#) [ 27]).



NOTICE

EMC-compliant electrical installation

The product is designed for use in an industrial environment. The product may cause interference if installed in other environments. If installed in other environments, measures should be taken to comply with the applicable standards and directives for the respective installation site with regard to interference.

3.2 Safety regulations

3.2.1 Use of qualified personnel

The products may only be assembled, installed, programmed, commissioned, operated, maintained and decommissioned by competent persons.

A competent person is a qualified and knowledgeable person who, because of their training, experience and current professional activity, has the specialist knowledge required. To be able to inspect, assess and operate devices, systems and machines, the person has to be informed of the state of the art and the applicable national, European and international laws, directives and standards.

It is the company's responsibility only to employ personnel who

- ▶ Are familiar with the basic regulations concerning health and safety / accident prevention,
- ▶ Have read and understood the information provided in this description under "Safety"
- ▶ Have a good knowledge of the generic and specialist standards applicable to the specific application.

3.2.2 Warranty and liability

All claims to warranty and liability will be rendered invalid if

- ▶ The product was used contrary to the purpose for which it is intended
- ▶ Damage can be attributed to not having followed the guidelines in the manual
- ▶ Operating personnel are not suitably qualified
- ▶ Any type of modification has been made (e.g. exchanging components on the PCB boards, soldering work etc.).

3.2.3 Disposal

- ▶ When decommissioning, please comply with local regulations regarding the disposal of electronic devices (e.g. Electrical and Electronic Equipment Act).

3.3 Unit-specific safety regulations

Before you install or commission the system, you should refer to any guidelines laid down by the control manufacturer or operator.

3.3.1 Installation site

- ▶ Do not position PMI close to highly flammable materials.
- ▶ When installing the unit within a control cabinet, you must ensure the ventilation slots are not obstructed, otherwise the unit could be damaged through overheating.
- ▶ Protect the unit from direct sunlight and dust.

3.3.2 Measures to protect against interference

- ▶ If necessary, use bulkhead separators to protect the unit from sources of interference.
- ▶ Inductive loads within the environment (e.g. contactor, relay and solenoid valve coils) should be wired using suppression elements (e.g. RC elements). This is particularly important if these inductive loads are fed from the same supply.
- ▶ The power cables and the data cables should be physically separated from each other in their own conduits (recommended minimum distance: 10 cm/3.94"). This will avoid inductive and capacitive interference.
- ▶ The prescribed earth point  for the functional earth guarantees compliance with noise immunity requirements.
Connect the functional earth to the central earth point in star form. A cable cross section of at least 1.5 mm² should be used for the connection. Connections should be kept as short as possible.

3.3.3 Supply voltage

- ▶ The supply voltage must be +24 V DC



CAUTION!

Safe electrical isolation must be ensured for the external power supply generating the 24 V voltage supply. Failure to do so could result in electric shock. Power supplies must conform to DIN VDE 0551/EN 60742 and EN 50178.

3.3.4 Operation

- ▶ Plan the system correctly to ensure that a communication error between the PMI and the host computer does not cause a malfunction.
- ▶ Do not operate the touchscreen interface using hard or heavy objects or apply excessive pressure.
- ▶ The maximum ambient temperature must not be exceeded when using the unit.
- ▶ Do not pour liquids over the unit or insert any objects into the unit.
- ▶ When in storage and during operation, protect the unit from vibration and shock.
- ▶ Avoid using chemicals close to the system.

3.3.5 Maintenance

- ▶ Do not use thinners or organic solvents to clean the unit and touchscreen surface.

Further information on care and maintenance of the touchscreen can be found in the chapter "Care and Maintenance".

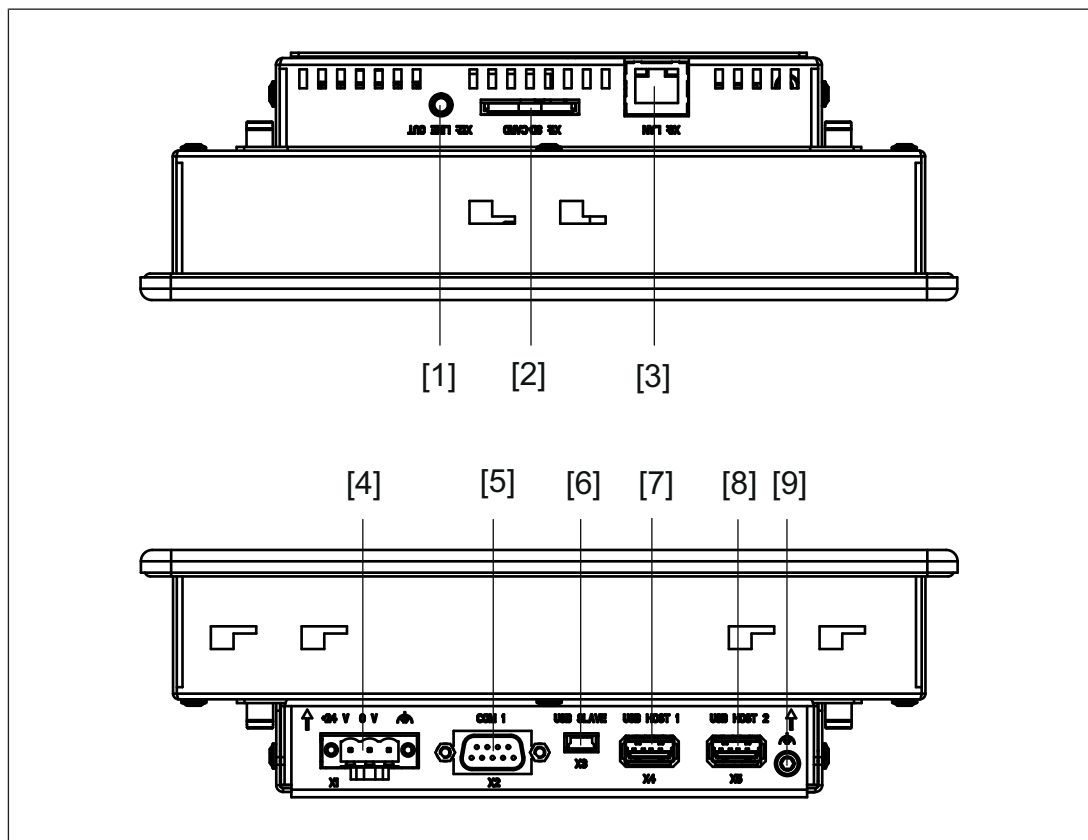
4 Function description

4.1 Features

The operator terminal has a memory, on which the software PASvisu Server, PASvisu Viewer PMI and PSS 4000 Firmware (OPC Server) is pre-installed. With the help of this software, processes can be shown on the display and directly influenced via the touch-screen. An Ethernet interface is available for the transfer of data, e.g. diagnostic data, and for communication with other subscribers.

The device is fitted with a real-time clock that is battery-buffered, so allowing it to run for 90 days without an external power supply. The battery is automatically charged during normal operation by the power supply for the device.

4.2 Side view



Legend

- [1] Audio interface LINE OUT
- [2] SD/SDHC card
- [3] Ethernet interface (100 BaseTX)
- [4] Supply voltage
- [5] Serial interface COM1 (RS232)
- [6] USB Slave
- [7] USB Host 1

[8] USB Host 2

[9] Functional earth

5 Installation

5.1 Safety



NOTICE

Damage due to electrostatic discharge!

Electrostatic discharge can damage components. Ensure against discharge before touching the product, e.g. by touching an earthed, conductive surface or by wearing an earthed armband.

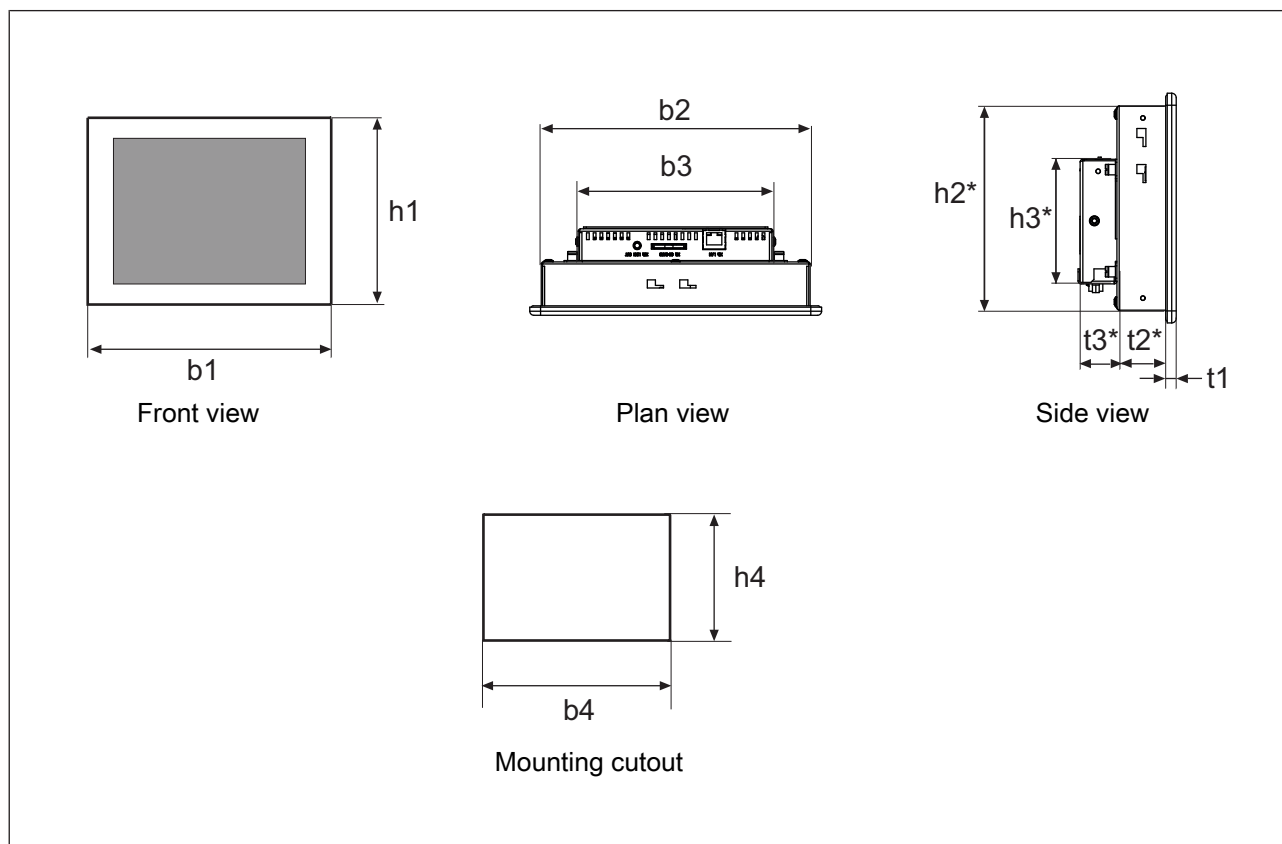
Please read the safety guidelines before assembling and installing the PMI.

Before you install or commission the system, you should refer to any guidelines laid down by the plant manufacturer or operator.

5.1.1 Installation site and unit surroundings

- ▶ Keep as large a distance as possible between the system and any electromagnetic fields, particularly when frequency converters are nearby.
- ▶ To avoid the build-up of heat, a distance of 10 cm/3.94" should be kept free all round the unit.
- ▶ Protect the system from direct sunlight and dust
- ▶ Do not use chemicals close to the system.
- ▶ Ensure the maximum ambient and operating temperatures are not exceeded.
- ▶ Ensure that neither liquids nor objects can enter the unit at any time.
- ▶ Do **not** position the system close to flammable materials.

5.2 Dimensions



	PMI v507	PMI v512
b1/mm	216 (8.504")	332 (13.071")
h1/mm	153 (6.024")	222 (8.740")
b2/mm	199 (7.835")	315 (12.402")
h2*/mm	136 (5.354")	205 (8.071")
t2*/mm	33.5 (1.319")	31.5 (1.240")
b3/mm	144.4 (5.685")	146.6 (5.772")
h3*/mm	83 (3.268")	101 (3.976")
t3*/mm	25.9 (1.020")	25.9 (1.020")
t1/mm	6 (0.236")	6 (0.236")
b4/mm	200 + 1 (7.874" + 0.039")	316 + 1 (12.441" + 0.039")
h4/mm	137 + 1 (5.394" + 0.039")	206 + 1 (8.11" + 0.039")

h^*/t^* = Dimensions without connections

Allow extra for hardware connections!

5.3 Installing the unit

When installing the unit, please note the following:

- ▶ For reasons of stability, the front panel, console or control cabinet should have a wall thickness of at least 2.5 mm.
- ▶ To avoid a build-up of heat, a distance of a 10 cm/3.94" should be maintained all round the system.
- ▶ Ensure the information given for the ambient and operating temperatures in the technical details is observed.
- ▶ Protection type IP65 (PMI v507)/IP66 (PMI v512) is only guaranteed when
 - the fixing screws are tightened as follows: min. 0.3 Nm, max. 0.5 Nm.
 - the gasket is not damaged
 - the wall thickness is at least 2.5 mm.

5.4 Installation

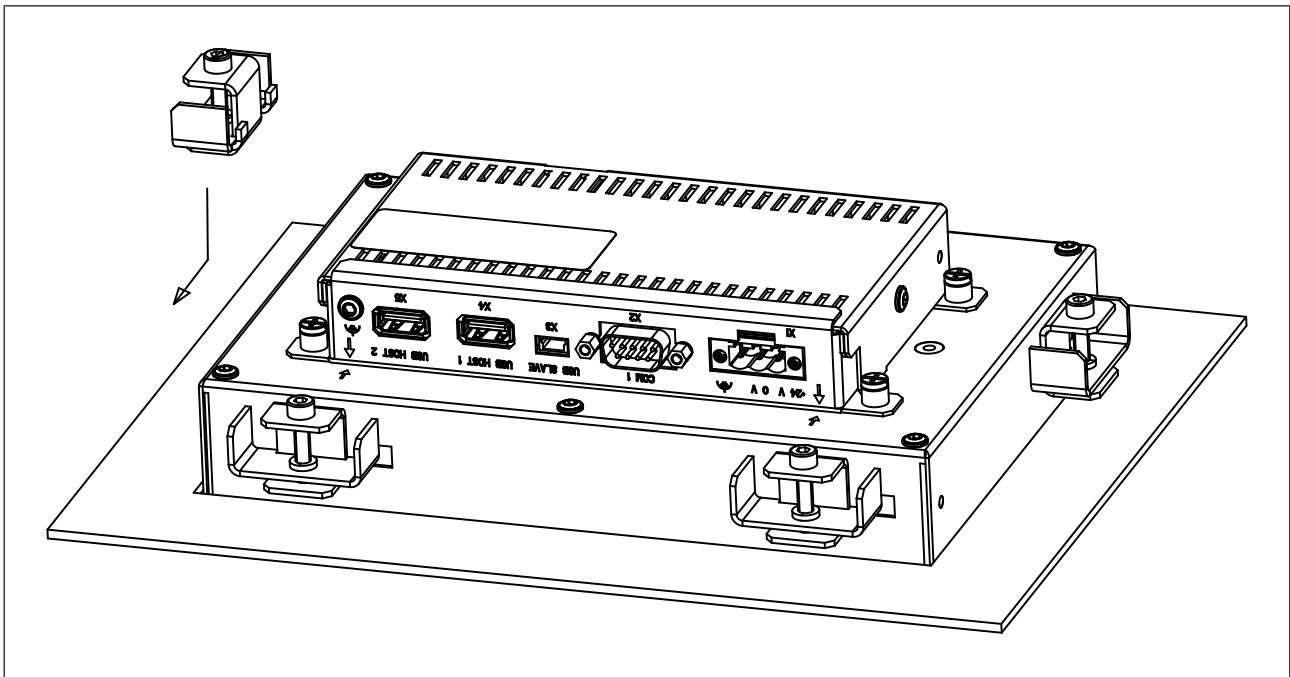


Fig.: Installing the PMI v507

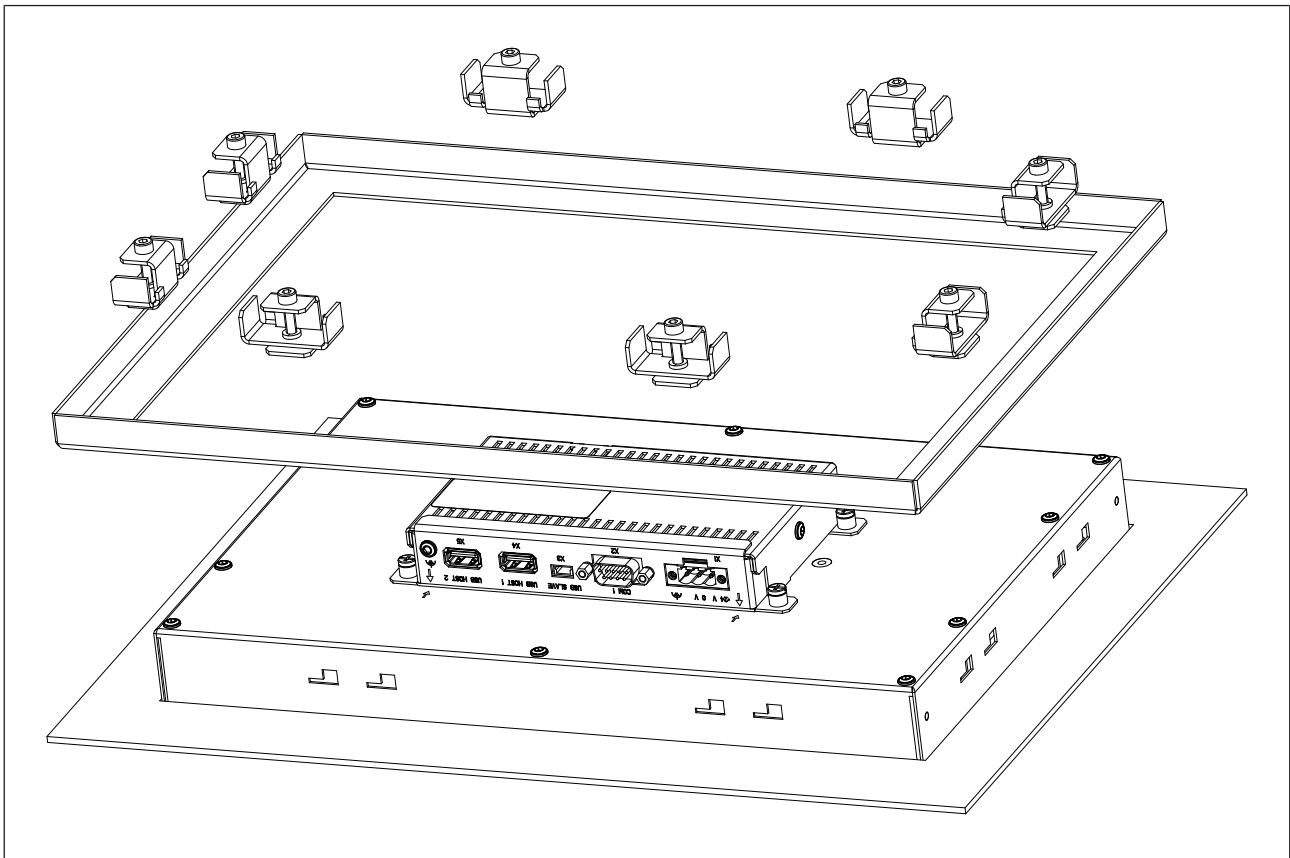


Fig.: Installing the PMI v512

6 Wiring

6.1 General wiring guidelines

- ▶ Electrical or electronic components which could cause interference (contactors, thyristors, relay coils and solenoid valve coils) should be physically separate from data lines. We recommend you use a sheet metal (MU metal) bulkhead between both areas.
- ▶ Data lines and power lines should be laid separately to avoid capacitive and inductive interference (recommended minimum distance = 10 cm/3.94").
- ▶ Screened data lines should also be laid in a different cable duct to the main power lines.
- ▶ Power lines should be as short as possible
- ▶ Power lines should be twisted pair cables.
- ▶ We recommend a max. length of 2 m for the USB cable, to guarantee reliable data transfer.
- ▶ UL requirement: only use copper wiring that will withstand 60/75°C for the supply voltage; maximum torque setting: 0.5-0.6 Nm.

6.1.1 Shielding

- ▶ Connect the power cable shield with low impedance to earth.
- ▶ Use only shielded data lines.
- ▶ For high-frequency reasons, we recommend that the shielding on the data line cable (RS 232 cable) is earthed on both sides. If you are using longer cables and there is the possibility of transient currents, we recommend one of the following methods:
 - Use equipotential bonding conductors
 - Use electrical isolation
- ▶ Connect data line shields to a bus bar.
- ▶ Make the connection of the bus bar to the control cabinet/system as short and with as low impedance as possible.
- ▶ Fasten the braided shield to the shield bar over as large a surface area as possible (e.g. with metal hose clips or PUK cable clips).

6.1.2 Measures to protect against interference voltages

- ▶ Wire-up inductive loads (e.g. contactor coils, relay coils and solenoid valve coils) using suppression elements (e.g. RC networks). This is particularly important if these inductive loads are very close to the power supply or are fed from the same supply.
- ▶ If strong magnetic fields are present, we recommend you use a bulkhead separator, i.e. metal sheet (MU-metal).

6.2 Connecting the Unit

6.2.1 Supply voltage

The connection for the 24 V DC supply is located on the side of the housing.

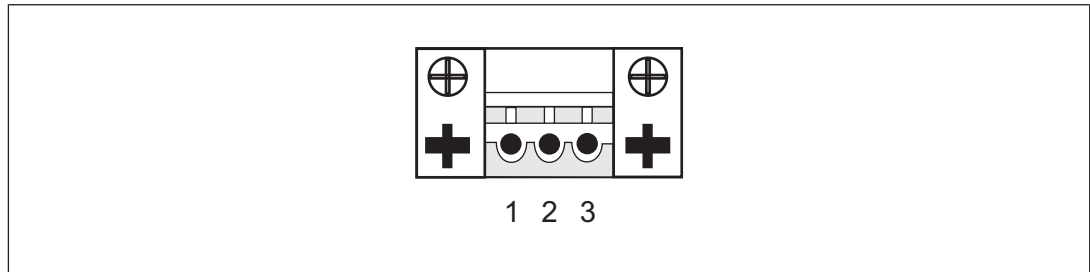


Fig.: Layout of supply voltage connector

- ▶ 1: Functional earth
- ▶ 2: 0 V
- ▶ 3: + 24 V DC

UL requirement: Use a 24 VDC power supply (isolating source). Connect a max. 5 A fuse between the power supply and PMI.

6.2.2 Connection example

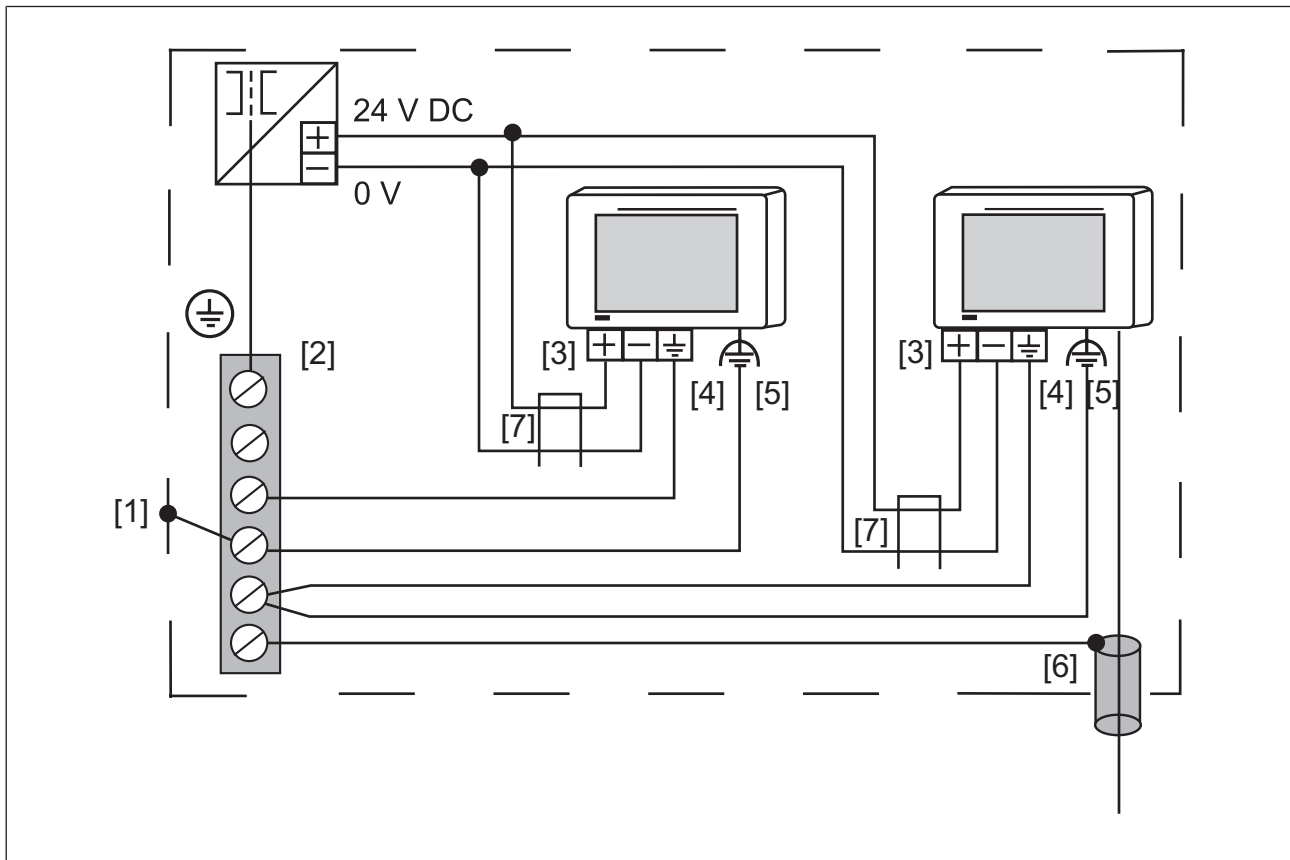


Fig.: Connection example

Legend

- [1] Earth star point of the unit or control cabinet
- [2] Earth bus bar
- [3] Supply voltage
- [4] Functional earthing terminal (electronic)
- [5] Functional earthing bolts (housing)
- [6] Data line shield
- [7] Split ferrite

0 V and  are connected internally.



INFORMATION

To reduce interference, position a split ferrite on the 24 V and GND line, at a distance of approx. 100 mm from the PMI. Loop the cable once around the ferrite core.

6.2.3 Interfaces

Pin assignment of RS232 interface (COM1)

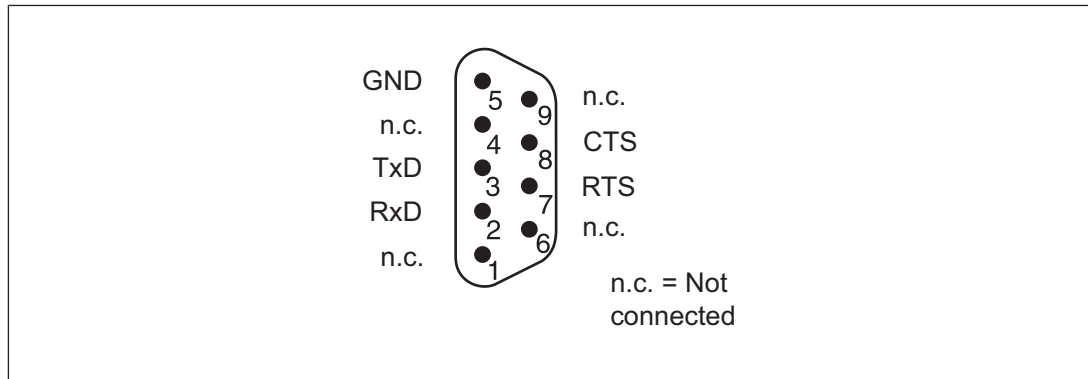


Fig.: Pin assignment of RS232 interface, Sub-D connector, 9-pin

7 Putting into Service

Behaviour after switch-on

There may be a delay of several seconds between switch-on and the unit being ready for operation.

7.1 Activating the setup

When starting the PMI, click on the **Start PMI Assistant** button or on **Setup**. The SD card supplied on which the PMI Assistant is installed must be connected to do this. When the SD card is not connected, the Control Panel is started.

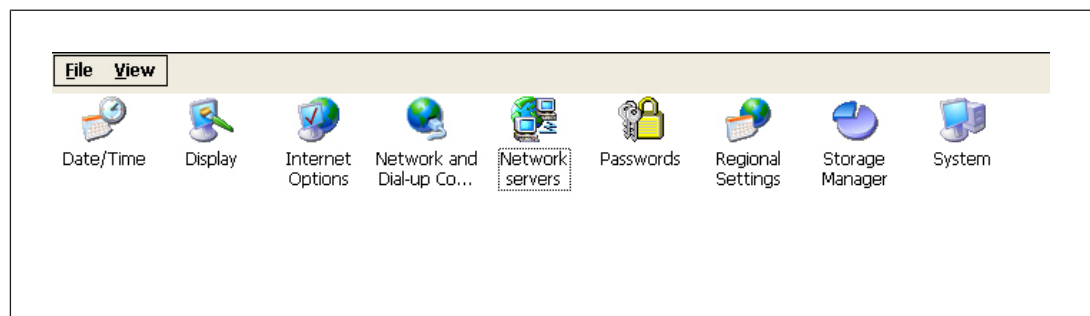
PMI Assistant is a graphic software tool. It serves to easily configure and install standard, pre-defined application packages on the PMI.

Further information on the PMI Assistant can be found in the "PMI Assistant Operating Manual".

7.2 Control Panel

All system settings can be made from the Control Panel of Windows Embedded Compact 7.

Special features and device-specific settings are described in the following!



7.2.1 Date/time



Date/Time

Setting the date, time, time zone and winter/summer time

7.2.2 Display



Display

Setting the background image and backlighting

7.2.3 Keyboard & soft keyboard



Keyboard &
Softkeyb...

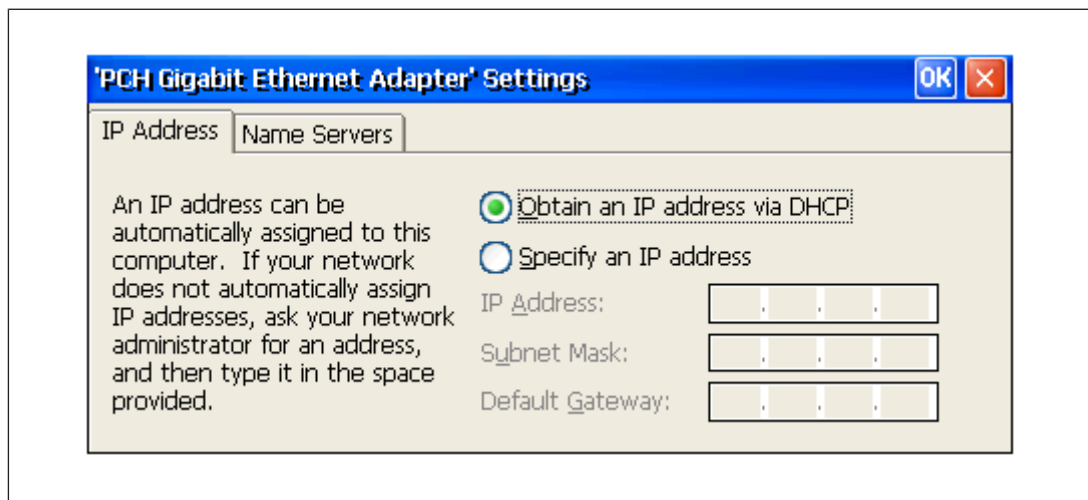
Setting the keyboard layout (German or English) and setting the soft keyboard (small, large or no keyboard)

7.2.4 Network and dial-up



Network and
Dial-up Co...

Modify existing connections (e.g. IP address) or set new connections (PPP over Ethernet)



7.2.5 Regional settings



Regional
Settings

Regional settings (number format, currency, time, date)

7.2.6 Storage Manager



Storage
Manager

Format/partition memory

7.2.7 System



System

Display/modify system properties (relationship between program memory/file management)

7.2.8 Network servers



Network
servers

Start and stop various services (Telnet, SMB, FTP, SNTP, Web Server)

8 Care and Maintenance

8.1 Cleaning the touchscreen

Clean the unit's touchscreen at regular intervals. Use a damp cloth to do this.

**NOTICE**

Make sure the unit is switched off before cleaning it. This prevents you from accidentally triggering functions when you touch the touchscreen.

Cleaning agents

Only use water and washing-up liquid or window cleaner to dampen the cloth. Never use aggressive solvents or abrasive cleaning agents.

9 Technical details

General	265507	265512
Approvals	CE, EAC (Eurasian), cULus Listed	CE, EAC (Eurasian), cULus Listed
Electrical data	265507	265512
Supply voltage		
Voltage	24 V	24 V
Kind	DC	DC
Voltage tolerance	-15 %/+20 %	-15 %/+20 %
Output of external power supply (DC)	7,2 W	15,2 W
Display	265507	265512
Display type	TFT	TFT
Display diagonal	18 cm	31 cm
Display resolution	800 x 480	1280 x 800
Display colour depth	16,2 M	16,2 M
Touchscreen	Capacitive	Capacitive
CPU	265507	265512
Processor type	RISC processor	RISC processor
Processor clock speed	1 GHz	1 GHz
Working memory (RAM)	256 MB	256 MB
Program memory (Flash)	512 MB	512 MB
Real-time clock	yes	yes
Removable data medium	265507	265512
Type	SD card	SD card
USB interface	265507	265512
Number of USB Hosts	2	2
Number of USB Slaves	1	1
Ethernet interface	265507	265512
Number	1	1
Serial interface	265507	265512
Number of RS232 interfaces	1	1
Audio interfaces	265507	265512
Number	1	1
Environmental data	265507	265512
Ambient temperature		
Temperature range	0 - 50 °C	0 - 50 °C
Storage temperature		
In accordance with the standard	EN 60068-2-1/-2	EN 60068-2-1/-2
Temperature range	-25 - 60 °C	-25 - 60 °C
Climatic suitability		
In accordance with the standard	EN 60068-2-78	EN 60068-2-78
Humidity	90 % r. h. at 40 °C	90 % r. h. at 40 °C

Environmental data	265507	265512
Condensation during operation	Not permitted	Not permitted
EMC	EN 61000-6-2, EN 61000-6-4	EN 61000-6-2, EN 61000-6-4
Vibration		
In accordance with the standard	EN 60068-2-6	EN 60068-2-6
Frequency	10 - 150 Hz	10 - 150 Hz
Acceleration	1g	1g
Shock stress		
In accordance with the standard	EN 60068-2-27	EN 60068-2-27
Acceleration	15g	15g
Duration	11 ms	11 ms
Protection type		
In accordance with the standard	EN 60529	EN 60529
Housing	IP20	IP20
In accordance with UL	1,2,5,4/4X indoor use only	1,2,5,4/4X indoor use only
Front	IP65	IP66
Mechanical data	265507	265512
Dimensions		
Height	153 mm	222 mm
Width	216 mm	332 mm
Depth	65,4 mm	63,4 mm
Weight	1.390 g	2.450 g

Where standards are undated, the 2010-12 latest editions shall apply.

10 Order reference

10.1 Product

Product type	Features	Order No.
PMI v507	Operator terminal, 800 x 480 pixel resolution, capacitive touchscreen	265 507
PMI v512	Operator terminal, 1280 x 800 pixel resolution, capacitive touchscreen	265 512

► Support

Technical support is available from Pilz round the clock.

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