

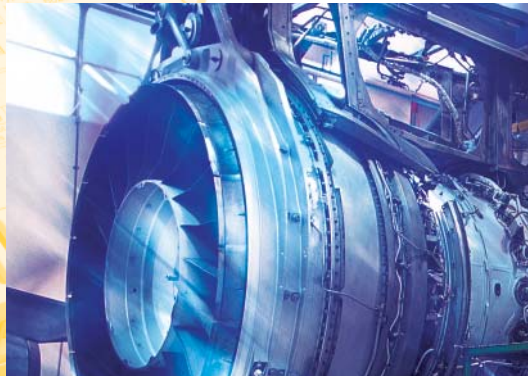
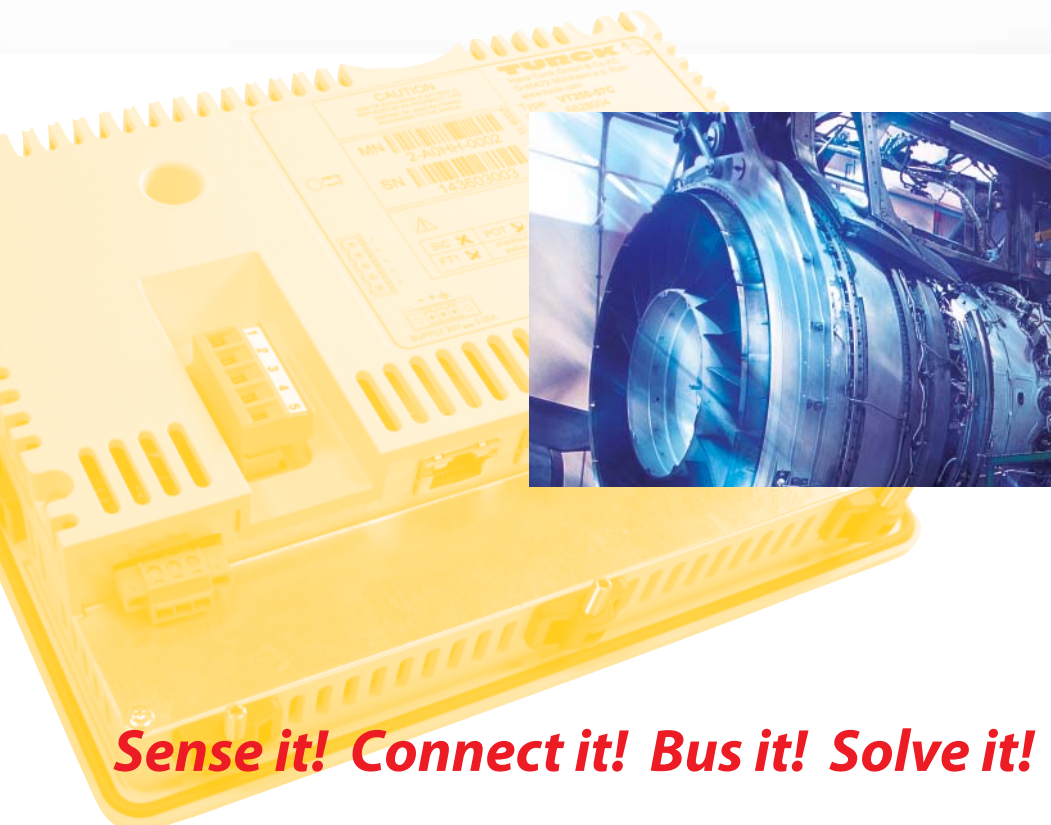
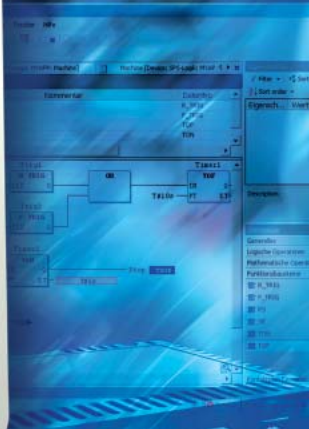


TURCK

**Industrial
Automation**

USER MANUAL

**VT250-57x -
Hardware
Description**



Sense it! Connect it! Bus it! Solve it!

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Edition 06/2010

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General safety instructions!

Before starting the installation of automation components:

- Verify that the device is disconnected from the power supply.
- Ensure that devices cannot be accidentally restarted.
- Verify isolation from the supply.
- Earth and short circuit the device.
- Cover or enclose neighboring units that are live.
- Follow the engineering instructions of the device concerned.
- Only suitably qualified personnel in accordance with EN 50 110-1/-2 (VDE 0 105 Part 100) may work on this device/system.
- Before installation and before touching the device ensure that you are free of electrostatic charge.
- The functional earth (FE) must be connected to the protective earth (PE) or to the potential equalization. The system installer is responsible for implementing this connection.
- Connecting cables and signal lines should be installed so that inductive or capacitive interference do not impair the automation functions.
- Install automation devices and related operating elements in such a way that they are well protected against unintentional operation.
- Suitable safety hardware and software measures should be implemented for the I/O interface so that a line or wire breakage on the signal side does not result in undefined states in the automation devices.
- Ensure a reliable electrical isolation of the low voltage for the 24 volt supply. Only use power supply units complying with IEC 60 364-4-41 (VDE 0 100 Part 410) or HD 384.4.41 S2.
- Deviations of the power source from the nominal value must not exceed the tolerance limits given in the specifications, otherwise this may cause malfunction and dangerous operation.
- Emergency stop devices complying with IEC/EN 60 204-1 must be effective in all operating modes of the automation devices. Unlatching the emergency-stop devices must not cause restart.
- Devices that are designed for mounting in housings or control cabinets must only be operated and controlled after they have been installed with the housing closed. Desktop or portable units must only be operated and controlled in enclosed housings.
- Measures should be taken to ensure the proper restart of programs interrupted after a voltage dip or failure. This should not cause dangerous operating states even for a short time. If necessary, emergency-stop devices should be implemented.
- Wherever faults in the automation system may cause damage to persons or property, external measures must be implemented to ensure a safe operating state in the event of a fault or malfunction (for example, by means of separate limit switches, mechanical interlocks etc.).
- The electrical installation must be carried out in accordance with the relevant regulations (e. g. with regard to cable cross sections, fuses, PE).
- All work relating to transport, installation, commissioning and maintenance must only be carried out by qualified personnel. (IEC 60 364 and HD 384 and national work safety regulations).
- All shrouds and doors must be kept closed during operation.

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About this manual

Documentation concept

This manual contains the hardware description for the TURCK HMI product family.
The operating system and the application software are not part of the description.

The manual is part of the device and the instructions contained in this manual have always to be considered.

Additional documentation

- [D301189](#) "Getting Started - VT250-57P HMI PLC with PROFIBUS-DP"
- [D301195](#) "Getting Started - VT250-57P HMI PLC with CANopen"
- [D301218](#) "Getting Started - VT250-57x - Visualization of Step7®-projects"

Description of symbols used



Warning

This sign can be found next to all notes that indicate a source of hazards. This can refer to danger to personnel or damage to the system (hardware and software) and to the facility.

This sign means for the operator: work with extreme caution.



Attention

This sign can be found next to all notes that indicate a potential source of hazards.

This can refer to possible danger to personnel and damages to the system (hardware and software) and to the facility.



Note

This sign can be found next to all general notes that supply important information about one or more operating steps. These specific notes are intended to make operation easier and avoid unnecessary work due to incorrect operation.

Overview



Attention

Please read this section carefully. Safety aspects cannot be left to chance when dealing with electrical equipment.

This manual includes all information necessary for the prescribed use of TURCK HMIs. It has been specially conceived for personnel with the necessary qualifications.

Prescribed use



Warning

The devices described in this manual must be used only in applications prescribed in this manual or in the respective technical descriptions, and only with certified components and devices from third party manufacturers.

Appropriate transport, storage, deployment and mounting as well as careful operating and thorough maintenance guarantee the trouble-free and safe operation of these devices.

Notes concerning planning /installation of this product



Warning

All respective safety measures and accident protection guidelines must be considered carefully and without exception.

1 Safety Instructions

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Safety Instructions

General

Please read this section carefully and observe the instructions for your own safety and correct use of the device.



Note

This chapter contains safety instructions that are *additional* to the general safety instructions at the beginning of this manual (see [General safety instructions!](#)) as well as information on approval and interference suppression of your device.

Observe the warnings and instructions on the device and in the manual.

The VT250 has been built and tested in accordance to IEC/EN/UL/CSA 60950 and left the company in a perfectly safe condition. In order to maintain this condition and ensure safe operation, the user must observe the instructions and warnings contained in this manual.

Electrical installation**1**

- The device must be used in accordance with the instructions for use.
- The electrical installations in the room must correspond to the requirements of the local (country-specific) regulations.
- Take care that there are no cables, particularly power cables, in areas where persons can trip over them.
- Do not use a power cable in sockets shared by a number of other power consumers. Do not use an extension cable.
- Don't use injured or damaged power cords.
- Hints for DC power connection:
 - The DC power source should be able to be switched off and on via an isolating switch.
 - The VT250 is only completely disconnected from the DC main power source, when the DC power cord is disconnected either from the power source or the unit. Therefore, the DC power cord and its connectors must always remain easily accessible.
- Only devices and components which fulfill the requirements of an SELV circuit (safety extra low voltage) in accordance with EN60 950 may be connected to the interfaces of the system. The DC-input must fulfill SELV requirements of EN 60 950-1 standard.

Mounting



Note

Please read also [chapter 4: Mounting instructions](#).



Attention

The device is designed for indoor use only.

- Do not place the device in direct sunlight, near heat sources or in a damp place. Make sure the device has adequate ventilation.
- All plugs on the connection cables must be screwed or locked to the housing.
- The VT250 is designed to be used only in vertical position with the interfaces downwards.
- The device generates heat during operation. Make sure it is adequately ventilated. Do not cover the air intake and exhaust openings of the device.

Repairs and maintenance

- Repairs may only be carried out by qualified specialist personnel authorized by Hans Turck GmbH & Co. KG.
- Maintenance or repair on the open device may only be carried out by qualified personnel authorized by Hans Turck GmbH & Co. KG which is aware of with the associated dangers.
- Only approved original accessories (optional parts) approved by Hans Turck GmbH & Co. KG may be used.
- It must be assumed that safe operation is no longer possible,
 - if the device has visible damage or
 - if the device no longer functions.

In these cases the device must be shut down and secured against unintentional operation.

Safety Instructions

Electrostatic discharge (ESD)

A sudden discharge of electrostatic electricity can destroy static-sensitive devices or micro-circuitry. Proper packaging and grounding techniques are necessary prerequisites for avoiding damage. Always take the following precautions:

- 1** Transport printed circuit boards in static-safe containers such as boxes or bags.
- 2** Keep electrostatic sensitive parts in their containers until they arrive at a static-free station.
- 3** Always be properly grounded when touching a sensitive PCB, component, or assembly.
- 4** Store electrostatic-sensitive PCB's in protective packaging or on conductive foam.

Grounding methods

Guard against electrostatic damage of the device by taking the following preventative steps:

- 1** Cover workstations with approved anti-static material. Provide a wrist strap connected to a work surface and properly grounded tools and equipment.
- 2** Use anti-static mats, heel straps, or air ionizers for added protection.
- 3** Handle electrostatic-sensitive components, PCB's, and assemblies by the case or the edge of the board.
- 4** Avoid contact with pins, leads, or circuitry.
- 5** Turn off power and input signals before inserting and removing connectors or test equipment.
- 6** Keep the work area free of non-conductive materials such as ordinary plastic assembly aids and Styrofoam.
- 7** Use field service tools, such as cutters, screwdrivers, and vacuum cleaners that are conductive.
- 8** Always lay drives and PCB's with the component-side down on the foam.

Instructions for the Lithium battery

The ETX baseboard is equipped with a Lithium battery (CMOS battery). For replacing the Lithium battery, please observe the instructions described in [Replacing the Lithium battery, page 3-22](#).



Warning

Danger of explosion when replaced with wrong type of battery.
Replace the battery only with UL listed Lithium battery that has the same or equivalent type recommended by TURCK.



Do not dispose of used CMOS batteries in domestic waste. Dispose of the battery according to the local regulations dealing with the disposal of these special materials (e. G. to the collecting points for disposal of batteries).

Safety Instructions

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

(English): This Class A digital apparatus complies with the Canadian ICES-003.

(French): Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Electromagnetic Compatibility

This product is intended only for use in industrial areas. The most recent version of the EMC guidelines (EMC Directive 2004/108/EC) applies. If the user modifies and/or adds to the equipment (e.g. installation of add-on cards) the prerequisites for the CE conformity declaration may no longer apply.



Warning

This is a class A product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Safety Instructions

2 Scope of delivery

Delivered parts	2
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Type label and product identification	4

Scope of delivery

Delivered parts

Table 1:
Delivered parts



Phoenix Power Plug Terminal



CAN-connector (only with VT250-57C-xxx)



8 × mounting clamp with threaded pins
(hexagon socket)



Battery holder with Lithium battery 3.0 V for
RTC, type: CR2032

Optional parts/ accessory

TURCK

Industrial
Automation

Optional parts/ accessory

This accessory can be ordered from Hans Turck GmbH & Co. KG

- SD/MMC-card (2 GB)
- [fieldbus accessories](#) ((repeaters, etc..), see www.turck.com)
- [connection accessories](#) (fieldbus cables, voltage cables etc.) , see www.turck.com

2

Scope of delivery

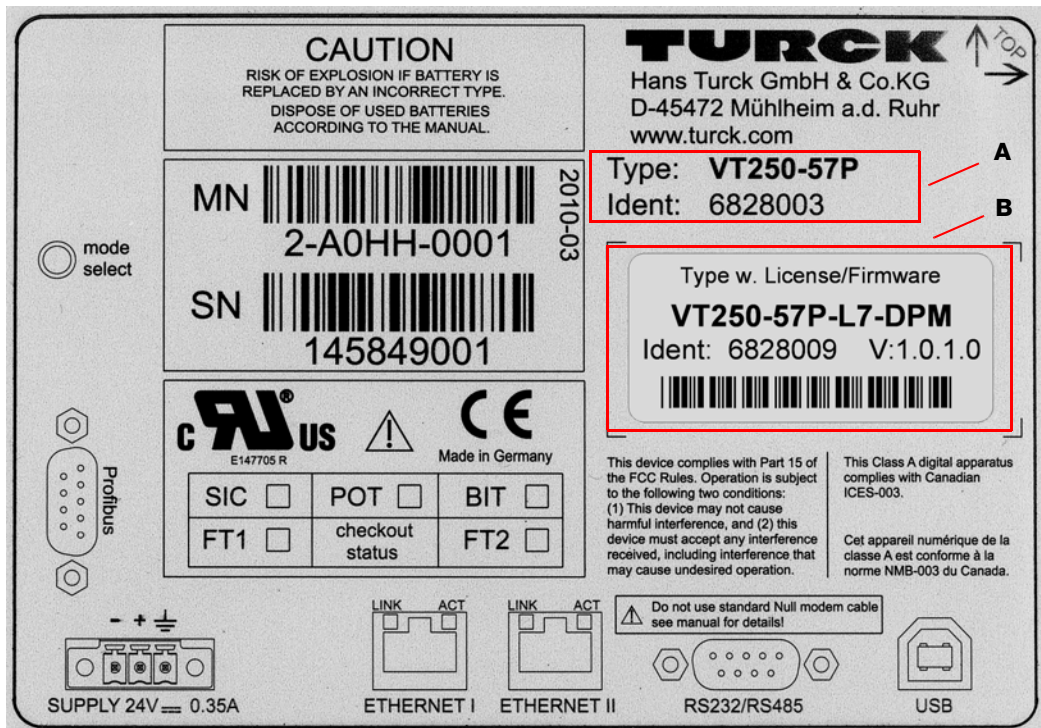
Type label and product identification

Table 2:8 Type label and product identification	Product Designation	System configuration	Serial number
	VT250-57P- xxx	VT250-57P-L1-QVIS	HMI with QVIS visualization 6828008
		VT250-57P-L7-DPM	HMI panel with QVIS and optional PLC – PROFIBUS-DP master – Modbus TCP master/slave 6828009
	VT250-57C-xxx	VT250-57C-L7-COM	HMI panel with QVIS and optional PLC – CANopen master – Modbus TCP master/slave 6828005
		VT250-57C-L7-DNM	HMI panel with QVIS and optional PLC – DeviceNet™ master – Modbus TCP master/slave 6828006

The type label (product designation, serial number) and the configuration label (ordered system configuration) are located on the rear side of the device.

Figure 1:
Type label
(example)

- A** Type label:
designation
base device
VT250-57P or
VT250-57C
- B** configuration
label Device
designation
incl. licenses
and firmware



3 Product description

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– USB Device male connector (bottom side, both types of VT250).....	20
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General

The VT250 is a Human-Machine-Interface (HMI) system designed for demanding industrial applications. VT250 is a workstation system with integrated touch screen display designed for:

- Installation in an instrument panel or other cabinets
- Installation by VESA 75/100 compliant mounting system



Note

All versions are suitable for installation in an instrument panel or other cabinet. VT250s will be mounted in an instrument panel or other cabinets using the included mounting clamps.

Product description

Product properties

The rugged design with an excellent mechanical stability marks the superior qualities of a computer suitable for the operation in harsh industrial environment.

Display/Touch

- The VT250 system is equipped with a 5.7" display.
- In front of the display there is installed a touch screen, that also protects the display surface from dirt and scratches.

Memory

The VT250 accommodates a single computer board and an external accessible slot for SD/MMC-cards.

Table 3:
Memory

ROM	16 MB Flash
RAM	32 MB SDRAM
Permanent memory	16 kB SDRAM (battery buffered)
Additional memory	1 x SD/MMC memory card, max. 2 GB

Service-button

- The service-button is located on the rear side of the VT250.

Interfaces

- 1 × PROFIBUS-DP SUB-D connector (VT250-57**P**-xxx), see [page 3-15](#)
- 1 × CAN-connector (VT250-57**C**-xxx), see [page 3-16](#)
- 2 × Ethernet (10/100 Mbps) 1 × serial COM (RS232/RS485), see [page 3-17](#)
- 1 × USB Device male connector (service interface only, see [page 3-20](#))

Power supply

→ see also [Power supply, page 3-13](#)

- The VT250 is designed to be connected to a +24VDC power supply using the DC power terminal. Use the included DC-power supply terminal.
- In order to connect the system to an AC power supply can be ordered the optional external AC/DC adapter.

Protection class



Note

The VT250s only comply with IP65 protection class at the front side, if the panel is fully mounted (see also [Mounting instructions, page 4-5](#)).

Cooling

- The VT250 is a fanless system.
 - The air openings, located on the sides of the device provide air circulation for the system interior cooling, in order to prevent overheating.
-



Note

When powering on the VT250, make sure that the air intake and exhaust openings are not obstructed.

Product description

Hardware VT250-57x

Figure 2:
Product view
VT250-57C-xxx

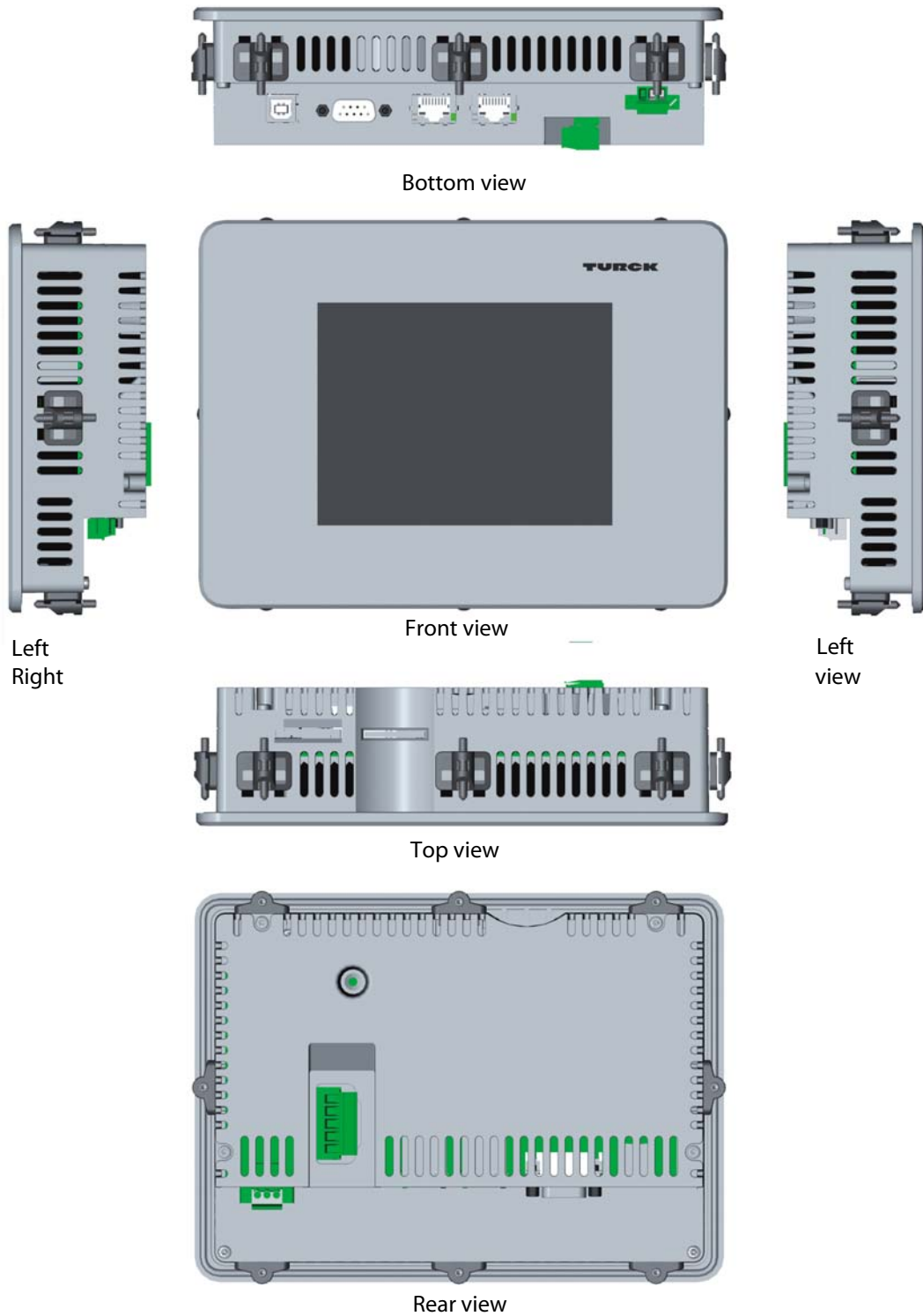
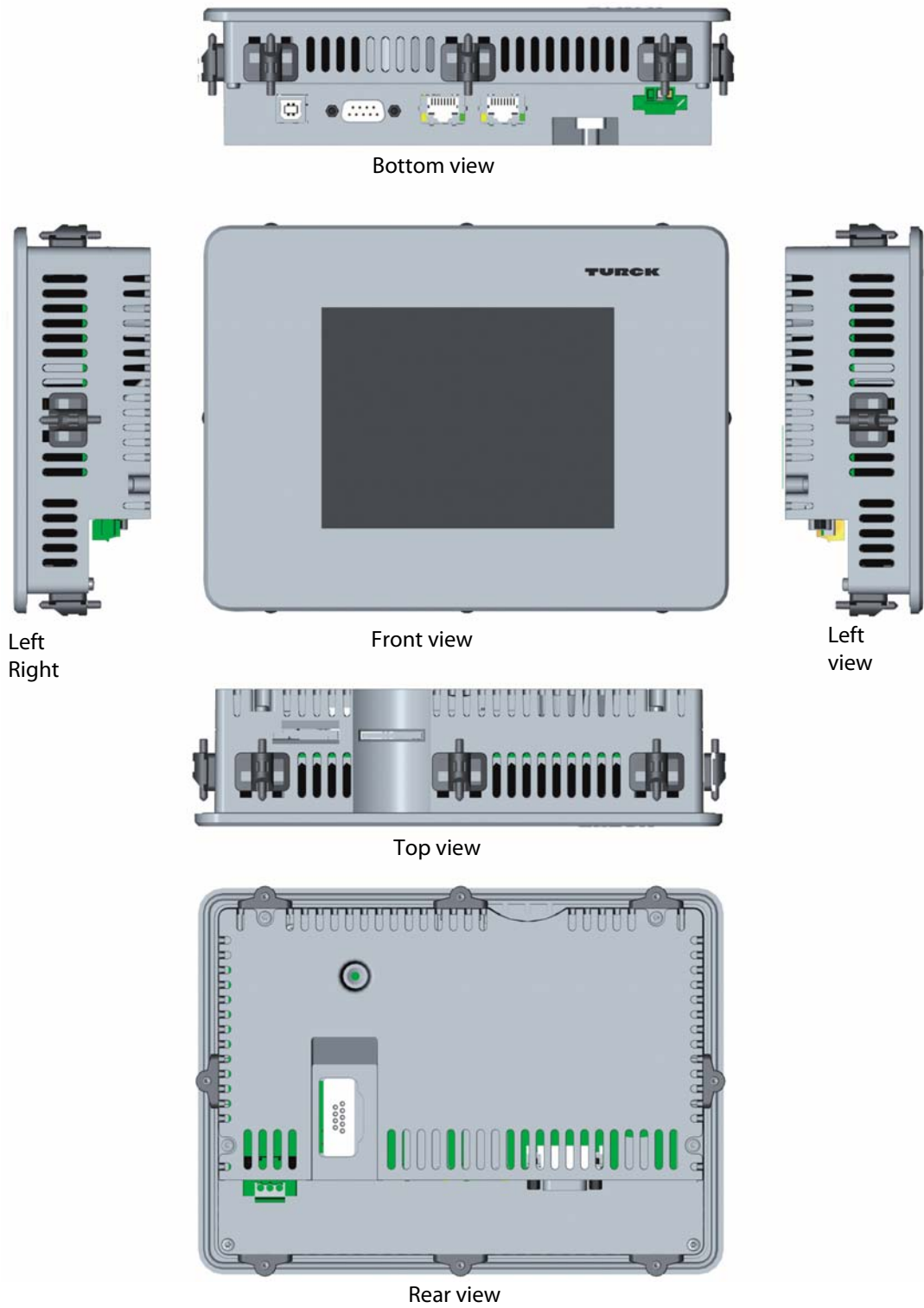


Figure 3:
Product view
VT250-57P-xxx

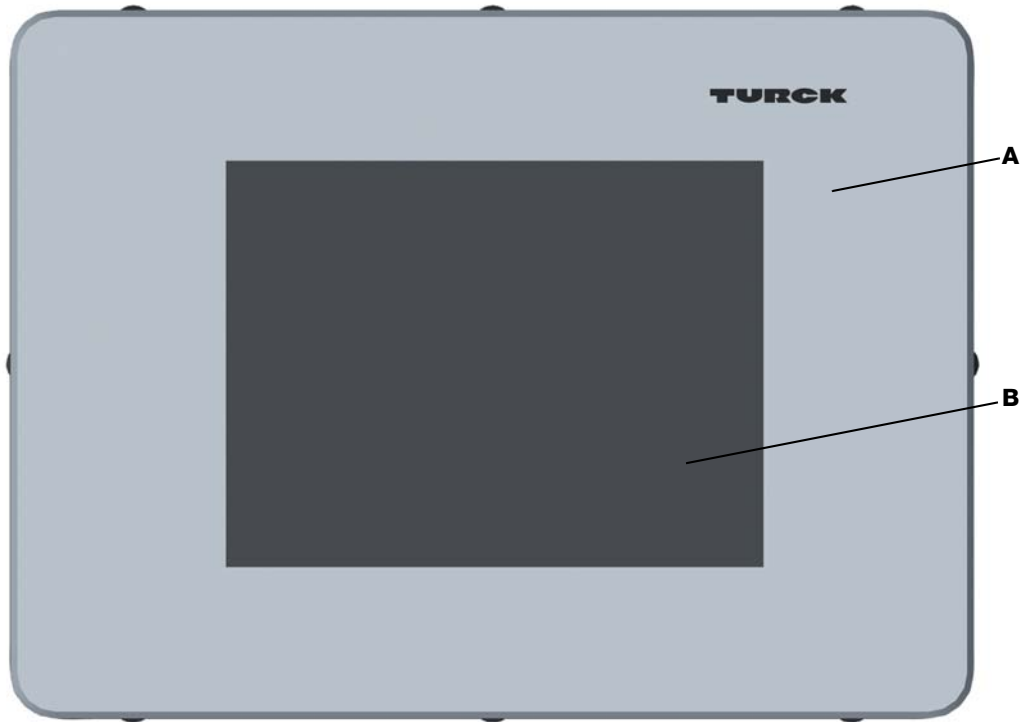


Product description

Front view

Figure 4:
Front view

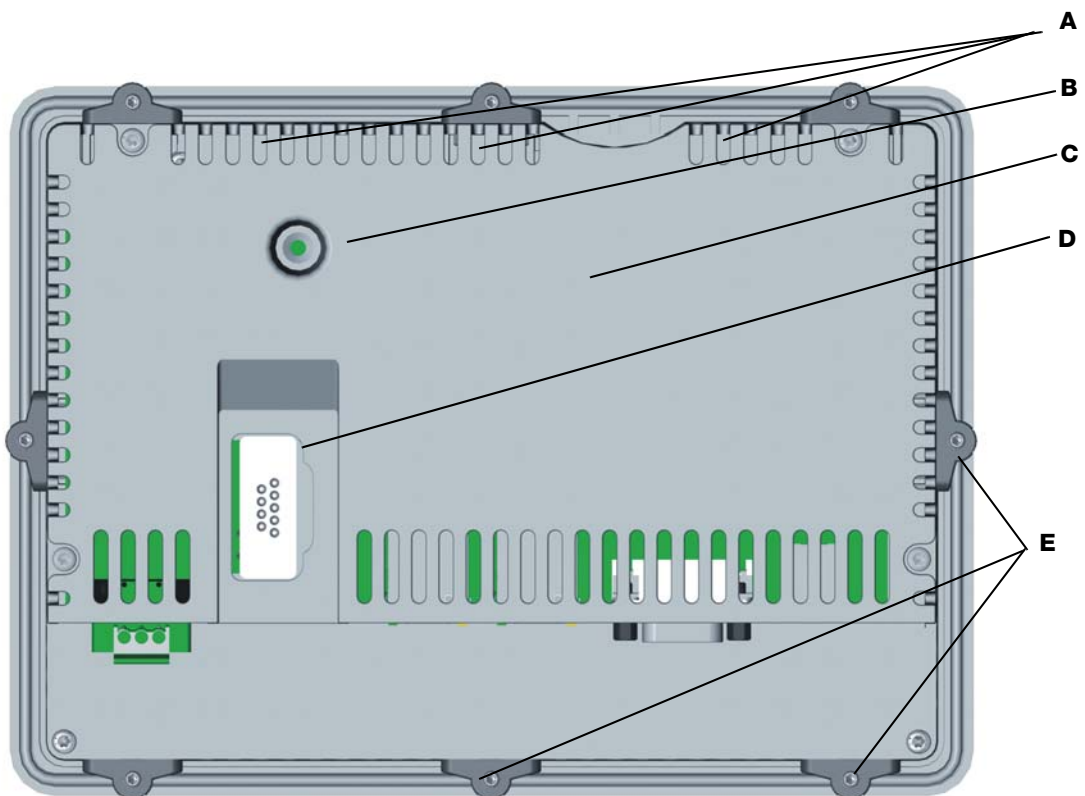
- A** Front plate
- B** 5.7" TFT LCD (color)



Rear view VT250-57P

Figure 5:
Rear view
VT250-57P

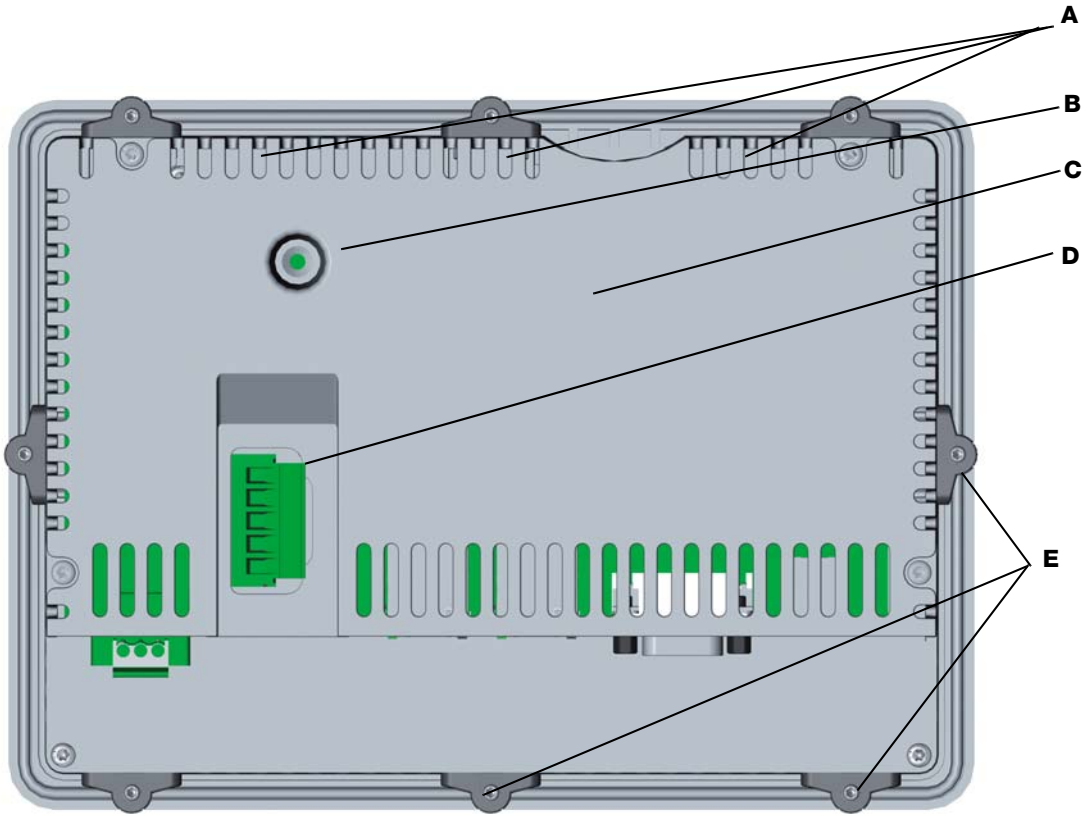
- A** air exhaust openings
- B** Service-button, [page 3-21](#)
- C** label
- D** SUB-D for PROFIBUS, [page 3-15](#)
- E** mounting clamps, [page 4-3](#)



VT250-57C

Figure 6:
Rear view
VT250-57C

- A** air exhaust openings
- B** Service-button, [page 3-21](#)
- C** label
- D** CAN female connector, [page 3-16](#)
- E** mounting clamps, [page 4-3](#)

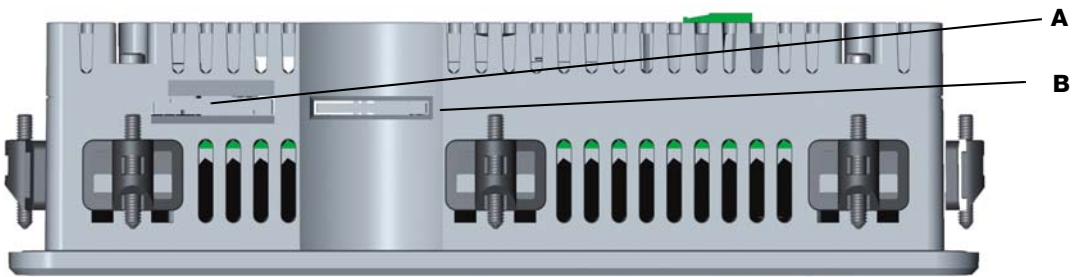


3

Top view
VT250-57x

Figure 7:
Top view
VT250-57x

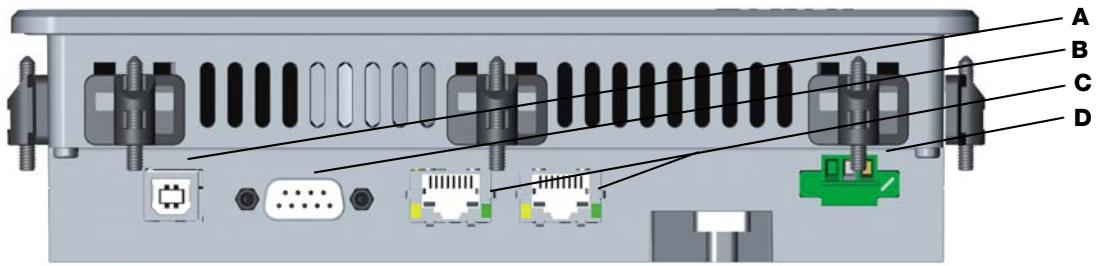
- A** SD/MMC card slot [page 3-23](#)
- B** battery slot, [page 3-22](#)



Bottom view
VT250-57P

Figure 8:
Top view
VT250-57P

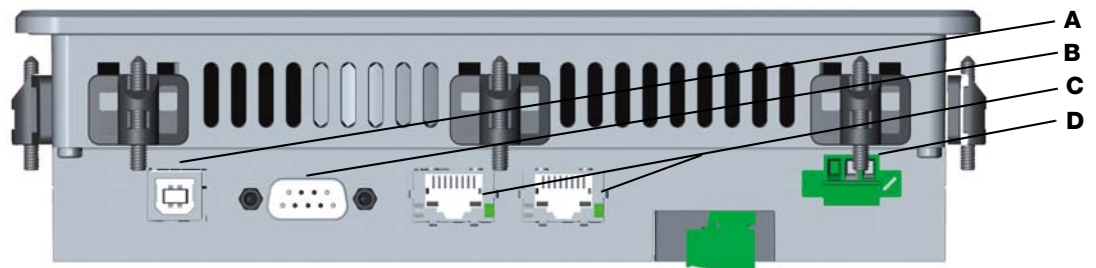
- A** USB Device male connector, [page 3-20](#)
- B** COM interface, [page 3-18](#)
- C** Ethernet I/ Ethernet II, [page 3-17](#)
- D** 24 VDC power supply, [page 3-15](#)



VT250-57C

Figure 9:
Top view
VT250-57C

- A** USB Device male connector, [page 3-20](#)
- B** COM interface, [page 3-18](#)
- C** Ethernet I/ Ethernet II, [page 3-17](#)
- D** 24 VDC power-supply, [page 3-15](#)



TFT LCD display

The VT250 provides a 5.7"-size TFT display with corresponding resistive touch screen (glass-glass technology) The touch screen is USB connected. For technical specification of the built-in display refer to the section [Technical data, page 3-24](#).

The display is equipped with a resistive touch screen.

The surface of the display is also mechanically protected through the touch screen.

The touch screen registers contacts of a finger or a pen and allows moving the mouse pointer. Use a stylus (not included) for best results.

These functions can only be used under integration of the necessary software. You get the corresponding touch screen driver for your operating system, installed on your VT250

**Attention**

Do not use a hard or a pointed object (like screw drivers) to operate the touch screen, since it can damage the touch screen surface.

The front panel and the touch screen are covered by a plastic overlay and care should be taken when cleaning it (see [Care and cleaning, page 3-11](#)).

(Re-)calibration of the touch screen

The touch screen is calibrated, when the device is delivered.

If a re-calibration should be necessary, due to malfunction of the touch screen for example, please observe the following steps:

- 1** Touch the touch screen when powering the device.
→The device is automatically changing into the calibration-mode.
- 2** Now, touch the shown crosses one after the other exactly in their middle.
Use a touch screen pen for example.

**Note**

The front panel and the touch screen are covered by a plastic overlay Do not use any pointed or sharp tools for operating it!

- 3** After the calibration, the devices changes back to the operation mode.

**Note**

In order to exit the calibration mode prematurely, execute a power reset at the device without touching the screen during the reset.
The former calibration will be kept.

Care and cleaning**Note**

The front panel and the touch screen are covered by a plastic overlay and care should be taken when cleaning it.

Mild detergent and water is recommended for cleaning. Use of strong solvents, which could attack paint or plastic, should be avoided.

Product description

The plastic overlay or the touch screen surface is subject to burning and scaring from direct heat sources such as cigarettes. The display front is sealed against dust, liquids, etc.

The front surface of the touch screen is a flexible plastic foil, so care should be used to avoid using sharp objects such as knife, pen or pencil tips. Sharp objects can permanently damage the functionality of the touch screen.

Power supply

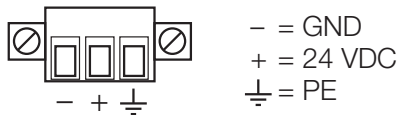
The VT250 is delivered with the DC power plug terminal (3-pin, Phoenix Contact). For the DC connection prepare the connecting wires using the supplied Phoenix Contact plug terminal..

Figure 10:
3-Pin Phoenix
Contact-
connector

**Note**

The length of the DC connecting wires may not exceed 10 m.

Figure 11:
Phoenix Contact
connector (view
from the wiring
side)

**Note**

The DC power source should be able to be switched off and on via an isolating switch. The VT250 is only completely disconnected from the DC main power source, when the DC power cord is disconnected either from the power source or the unit. Therefore, the DC power cord and its connectors must always remain easily accessible.

Cable preparation and connection to power

- 1 Cut two isolated wires of the required length [AWG18 (Ø up to 1 mm²)]
- 2 Strip each end 5 to 7 mm.
- 3 Ensure that the DC power source is switched off via an isolating switch, in order to ensure that no power is flowing from the external power source during the connection procedure.
- 4 Loosen the three slotted pan head screws (that correspond to the marked location "+", "-" and "PE" of the DC plug terminal) far enough so that you can insert the end of the prepared wires.

**Note**

Connect the PE if necessary for your grounding system.

- 5 Insert the wires into the corresponding clamp of the Phoenix plug terminal. Make sure that you have the right polarity of the connection (refer to [Figure 10: 3-Pin Phoenix Contact- connector](#)).

Product description

- 6 Fasten the screws to secure the wires into the clamps of the plug terminal.



Note

The second end of each wire will be prepared as required for the connection to the DC power supply.

- 7 Connect the other end of the DC power cable to the terminals of the 24V DC power source. Ensure that the power connections maintain the proper polarity.
- 8 Switch on the isolating switch in order to the apply voltage.

Interfaces

Field bus connection

PROFIBUS-DP (back side, VT250-57P-xxx)

The PROFIBUS-DP-connector is designed as a standard 9-pole SUB-D female connector:

3

Figure 12:
PROFIBUS-DP-
SUB-D female
connector

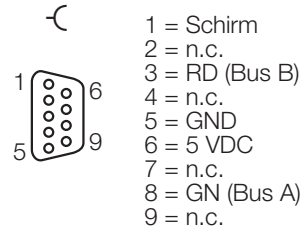


Table 4:
Pin assignment
of the SUB-D
female
connector

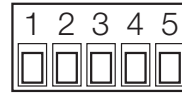
Pin-no.	Signal		Color
1	Shield	shielding braid	
2	not connected	not connected	-
3	Bus B	DP-signal B	RD red
4	not connected	not connected	-
5	GND	Data reference potential	
6	5 VDC	+ 5 V DC for external bus termination	
7	not connected	not connected	-
8	Bus A	DP-signal A	GN green
9	not connected	not connected	-

Product description

CAN (back side, VT250-57C-xxx)

The device provides a mounted CAN male connector. The additional female Open Style Connector is also delivered with the device:

Figure 13:
CAN-male
connector



- 1 = BK (V -)
- 2 = BU (CAN L)
- 3 = Schirm
- 4 = WH (CAN H)
- 5 = RD (V +)

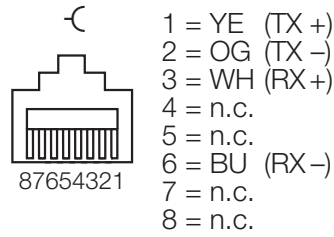
Table 5:
CAN-
connector, pin
assignment

Pin-no.	Signal		Color	
1	V-	Ground reference (only used for DeviceNet node-supply)	BK	black
2	CAN_L	Inverted data signal	BU	blue
3	Shield	Shielding braid, not insulated		
4	CAN_H	Non-inverted data signal	WH	white
5	V+	Supply voltage, 24 V DC (only used for DeviceNet node-supply)	RD	red

Ethernet I and Ethernet II (bottom side, both types of VT250)

These interface connectors (see also [Figure 5: Rear view VT250-57P](#) and [Figure 6: Rear view VT250-57C](#)) are provided as auto-crossing RJ45-sockets with integrated LEDs

Figure 14:
Ethernet I and
Ethernet II



3

Table 6:
RJ45, pin
assignment

Pin-no.	Signal		Color	
1	TX+	Transmit data +	YE	yellow
2	TX-	Transmit data -	OG	orange
3	RX+	Receive data +	WH	white
4	not connected		-	-
5	not connected		-	-
6	RX-	Receive data -	BU	blue
7	not connected		-	-
8	not connected		-	-

Ethernet Port properties:

- Integrated switch
- Auto-crossing
- Data transfer rate: 10/100 Mbps
- Protocols: PROFINET, EtherNet/IP™, Modbus TCP

Ethernet LED-states

Table 7:
Ethernet LED-
states

Left LED	Link	Right LED	Activity
off	no link	off	no data exchange
green	Link active	yellow	data exchange

RS232/RS485 (COM) interface (bottom side, both types of VT250)

The VT250 COM (RS232/RS485) interface is a serial interface with a **special** pin assignment.

Figure 15:
COM interface

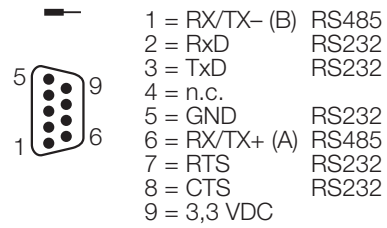


Table 8:
COM interface
at the VT250

Pin- no.	Assignment at the VT250	can be used for		standard assignment for RS232 (for reference)
		RS232 [COM1]	RS485 [COM2]	
1	RX/TX- (B)		X	DCD
2	RxD	X		RxD
3	TxD	X		TxD
4	not connected			DTR
5	GND	X		GND
6	RX/TX+ (A)		X	DRS
7	RTS	X		RTS
8	CTS	X		CTS
9	3.3 VDC			RI



Attention

Please do **not** use a standard null modem cable for the connection to the RS232/485 interface and observe the following special pinning instructions!

Wiring for RS232 and RS485

Table 9:
COM-interface,
pin assignment

RS232-connection		
VT250		DTE
Pin-no.	Signal	Signal
5	GND	GND
2	RxD	RxD
3	TxD	TxD
7	RTS	RTS
8	CTS	CTS
4		DTR
6	Reserved for RS485- operation, not to be used in RS232-operation	DSR
1		DCD
9		RI
Do not connect!		

RS485-connection		
Pin-no.	Signal	Signal
5		
2		
3	Do not connect in RS485-operation!	
7		
8		
4		
6	RX/TX+ (A)	RX/TX+ (A)
1	RX/TX- (B)	RX/TX- (B)
9	Do not connect in RS485-operation!	

Bus termination for RS485

For all standard applications use a 120 Ω bus termination between A and B at both ends of the RS485-communication line.

Product description

USB Device male connector (bottom side, both types of VT250)

The system is equipped with one USB-Device connector, type B (see also [Figure 5: Rear view VT250-57P](#) and [Figure 6: Rear view VT250-57C](#)).

Figure 16:
USB Device
female connector
Type B



1 = RD (Vcc) +5 V
2 = WH (D -)
3 = GN (D +)
4 = BK (GND)



Note

This interface is only used as a service interface (no for customers).

Service-button

TURCK

Industrial
Automation

Service-button

The service-button is only used during the device start-up to switch the device to the bootloader mode. This mode is only important for service cases.

Replacing the Lithium battery

The VT250 system is equipped with a Lithium battery. This battery is located in a battery holder on the top side of the device (see [Figure 17: Battery holder](#)).

Figure 17:
Battery holder



To replace this battery, please proceed as follows:

- 1 Pull the battery holder from the case using a coin or any other flat object.
- 2 Press the battery out off the holder
- 3 The new battery has to be placed into the battery holder with the positive (+) battery terminal face-up.
- 4 Make sure that you insert the battery correctly. The plus pole must be on top, which means, the battery plus pole has to be on the same side as the "+"-marked side (see [Figure 18: Battery holder, inserting the battery](#)) of the battery holder!

Figure 18:
Battery holder,
inserting the
battery



- 5 Insert the battery holder vertically to the top side into the battery slot in the device case. The "+"-marked side of the battery holder must be directed to the rear side of the device.

The lithium battery must be replaced with an identical battery (Lithium battery 3.0 V for RTC, type: CR2032) or a battery type recommended by Hans Turck GmbH & Co. KG.



Warning

Danger of explosion when replaced with wrong type of battery.
Replace the battery only with an UL-listed Lithium battery that has the same or equivalent type recommended by Hans Turck GmbH & Co. KG.



Do not dispose of used CMOS batteries in domestic waste. Dispose of the battery according to the local regulations dealing with the disposal of these special materials (e. g. to the collecting points for disposal of batteries).

SD/MMC card slot

The VT250 is equipped with a SD/MMC card slot. This slot is located on the top side of the device (see [Top view](#)) next to the battery slot.

- The SD/MMC card is **not** delivered with the system. It can be ordered separately from TURCK.
- Only standard SD cards are supported, **no** SDHC cards.-cards!



Note

Before installing or removing the SD/MMC card, the VT250 must be powered down and disconnected from the power source.

Inserting the memory card

Insert the SD/MMC card vertically from above to the card slot until it locks into place with a click. The card contacts have to be directed to the device's front side (to the display).



Note

Inserting the card in the wrong direction could damage the device. Be sure the card is oriented correctly (card contacts directed to the display).

Removing the memory card

Push the memory card in until you hear a click, then slowly release it. The card will pop up and can be taken out.

Product description

Technical data

Display/Touch

<i>Table 10: Technical data display/ touch screen</i>	Display	TFT LCD (color-display)
	Active screen area	5,7" (approx. 118 × 89 mm)
	Resolution (pixels)	320 x 240 (240 * 320 with portrait configuration)
	Number of usable colors	65536 colors
	Touch	resistive

Controller

<i>Table 11: Technical data controller</i>	Processor	ARM9, 32 bit, 200 MHz
	ROM memory	16 MB Flash
	RAM memory	32 MB SDRAM
	Permanent memory	16 kB SDRAM (battery buffered)
	Additional memory	1 x SD/MMC Memory Card, no SDHC
	Real time clock	yes
	Operating system	rcX

Interfaces

<i>Table 12: Technical data interfaces</i>	Ethernet	10/100 Mbps, double (integrated switch)
	Protocols	PROFINET, EtherNet/IP™, Modbus TCP
	Field bus	– PROFIBUS-DP (VT250-57P-xxx) – CAN/ DeviceNet™ (VT250-57C-xxx)
	USB	Device male connector, type B
	Serial	RS232/RS485

Power supply

<i>Table 13: Technical data power supply</i>	Rated value	24 VDC reverse-polarity protected, 0.35 A maximum, according to EN 61131-2
	Admissible voltage range	20.4 ... 30 VDC
	Lithium battery	3,0 V for RTC, type: CR2032, UL-listed

General data

<i>Table 14: General technical data</i>	Operating ambient conditions	0...50 °C, 10...90 % relative humidity, non condensing
	Storage ambient conditions	-20...60 °C, 10...95 % relative humidity, non condensing
	Approvals	CE, cULus
	Protection class	IP 65 according IEC 60529 on front, IP20 on rear

3

Dimensions

<i>Table 15: Dimensions</i>	Front (W x H x D)	212 x 156 x 50 mm
	Cut-out (W x H)	198 x 142 mm
	Weight	approx. 0,7 kg

Product description

CE directives and standards

CE directives

Table 16:
CE directives

CE directives	
Low Voltage Directive (Electrical Safety)	General Product Safety Directive (GPSD) 2001/95/EC
EMC Directive	Low Voltage Directive (LVD) 2006/95/EC

Electrical Safety

Table 17:
Electrical Safety

Electrical Safety	Standards
EUROPE	Information technology equipment - Safety - Part 1: General requirements EN 60950-1: 2006 2006
USA / Canada	UL 60950-1:2006 cULus Listed
CB Scheme	CB Certification

EMC standards

Table 18:
EMC standards

EMC	Standards
EN 61000-3-2:2006	Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)
EN 61000-3-3:2006	Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 per phase and not subjected to conditional connection
EUROPE	Generic emission standard for industrial environments (Emission): EN 61000-6-4:2007 Generic standards - Immunity for industrial environments (Immunity): EN 61000-6-2:2005
USA	FCC 47 CFR Part 15, Class A
Canada	ICES-003, Class A

Firmware download via SD/MMC-card

For a firmware download from the SD/MMC card, please follow these steps:

- 1 Delete all data from the card.
- 2 Copy the files of the respective image onto the card.

Figure 19:
Example for an
image

bsl_nxhmi_vt-250-xx_pf16.bin	52 KB
bsl_nxhmi_vt-250-xx_spi.bin	52 KB
crypto_exec_netx500.bin	16 KB
flasher_netx500.bin	33 KB
NETX.ROM	52 KB
ReadMe.txt	1 KB
SERVICE.BOB	3 KB
set_flex_turck.exe	3 KB
STARTUP.INI	1 KB
VT250-57P-L7-DPM_V1040.bin	1.886 KB

- 3 Disconnect the VT250.
- 4 Insert the card into the card-slot. The card contacts have to be directed to the touch screen.
- 5 Power the VT250.
- 6 Monitor the LEDs on the rear side of the device. They are placed on the device's main board and can be seen through the air exhaust openings.

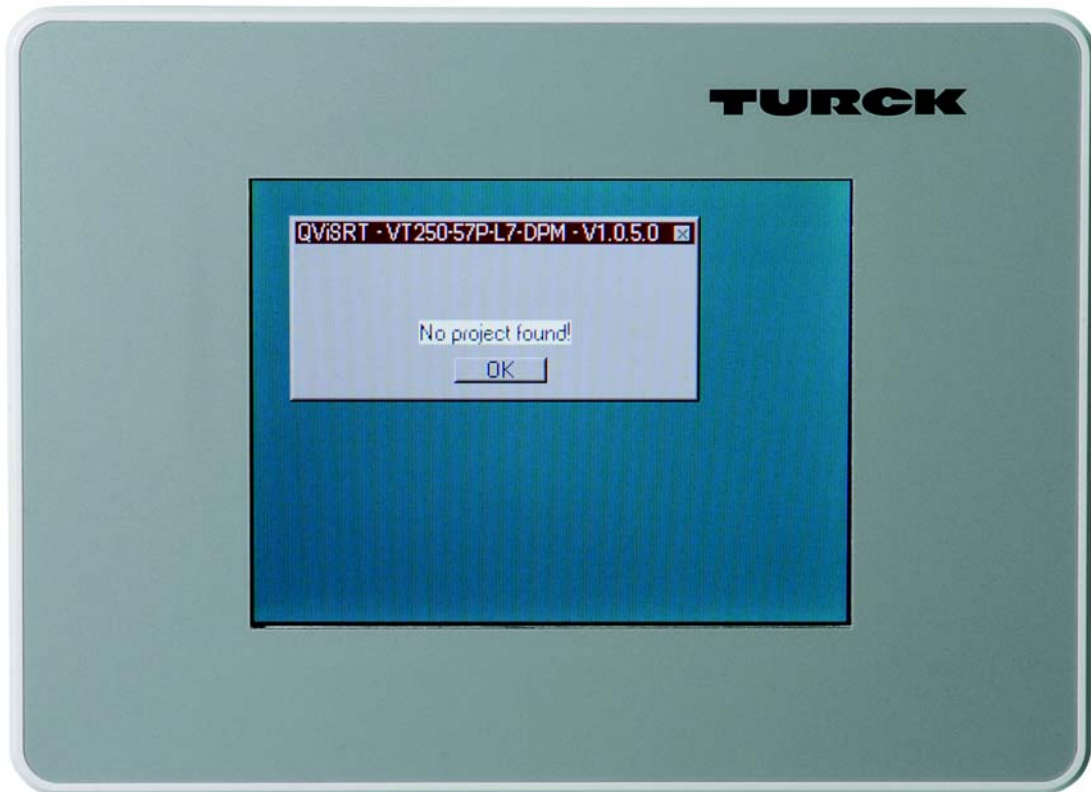
Figure 20:
LEDs



- 7 Do not disconnect the VT250.
- 8 The update procedure has been completed, when the "SYS" LED (2nd LED from the left) flashes and shows the following behavior:
ON - ON - OFF,
ON - ON - OFF, etc.
- 9 Now, disconnect the VT250 again.
- 10 Remove the card.
- 11 Again, power the VT250.
- 12 The devices starts with the new firmware.
- 13 Recalibrate the device, if necessary.

14 The firmware-version is shown in the display.

*Figure 21:
Display of the
firmware-version*



FTP-access

access data

Please set up the FTP-access as follows:

IP-address: IP-address of the VT250
(Default: 192.168.1.254)

User: netX

Password: netX

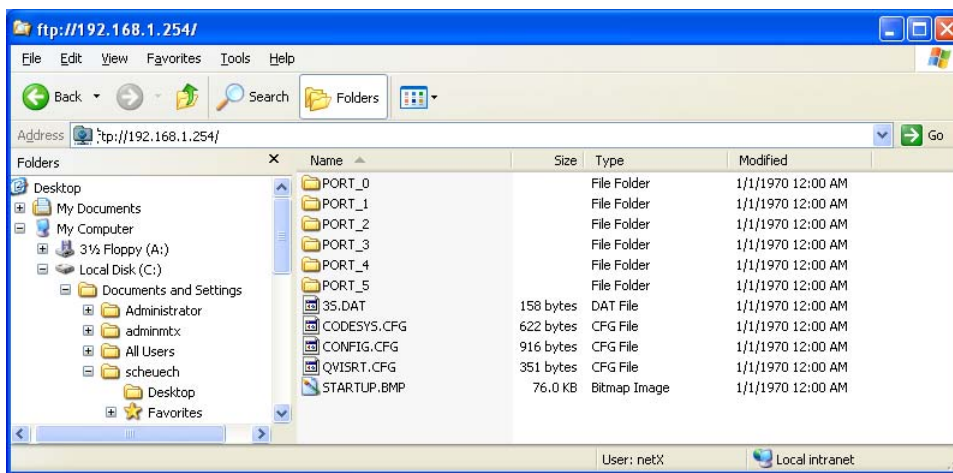
FTP-access via Windows-explorer

Copy the following line into the Windows®-Explorer address field:

ftp://netX:netX:@192.168.1.254/

and confirm it with "Enter".

Figure 22:
FTP-access via
Windows®-
explorer

**CONFIG.CFG**

The system file CONFIG.CFG contains all settings concerning the device-configuration (calibration, etc.).

One deleted, the touch screen has to be recalibrated (see also (page 3-11: [\(Re-\)calibration of the touch screen](#))).

Product description

IP-address setting

Default setting:

IP-address: 192.168.1.254

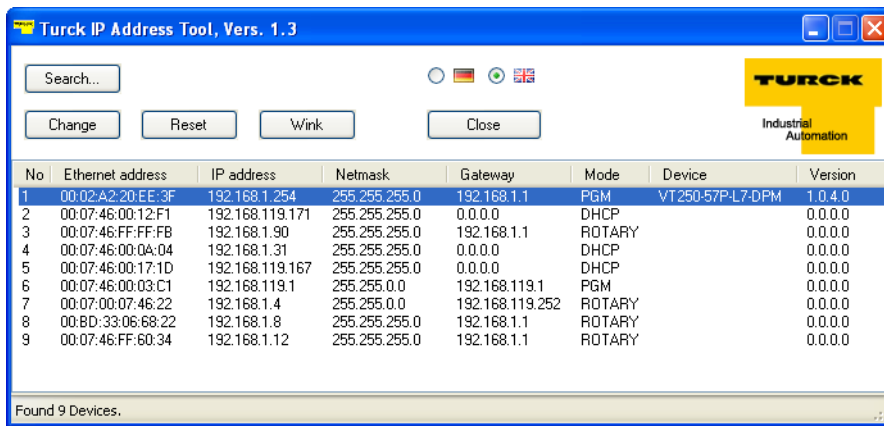
Netmask: 255.255.255.0

Gateway: 192.168.1.1

Addressing via IP Address Tool

The TURCK IP Address Tool can be used for reading out the IP settings, the device name as well as the firmware version. It also helps to adapt the IP settings to the respective application.

Figure 23:
IP Adress Tool



No.	Ethernet address	IP address	Netmask	Gateway	Mode	Device	Version
1	00:02:A2:20:EE:3F	192.168.1.254	255.255.255.0	192.168.1.1	PGM	VT250-57P-L7-DPM	1.0.4.0
2	00:07:46:00:12:F1	192.168.119.171	255.255.255.0	0.0.0.0	DHCP		0.0.0.0
3	00:07:46:FF:FF:FB	192.168.1.90	255.255.255.0	192.168.1.1	ROTARY		0.0.0.0
4	00:07:46:00:0A:04	192.168.1.31	255.255.255.0	0.0.0.0	DHCP		0.0.0.0
5	00:07:46:00:17:1D	192.168.119.167	255.255.255.0	0.0.0.0	DHCP		0.0.0.0
6	00:07:46:00:03:C1	192.168.119.1	255.255.0.0	192.168.119.1	PGM		0.0.0.0
7	00:07:00:07:46:22	192.168.1.4	255.255.0.0	192.168.119.252	ROTARY		0.0.0.0
8	00:BD:33:06:68:22	192.168.1.8	255.255.255.0	192.168.1.1	ROTARY		0.0.0.0
9	00:07:46:FF:60:34	192.168.1.12	255.255.255.0	192.168.1.1	ROTARY		0.0.0.0

Found 9 Devices.



Note

The online help in the TURCK IP Adress Tool contains more detailed information about the program's function.

4 Mounting instructions

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Mounting instructions

General



Attention

The device is designed for indoor use only.

System mounting to a sub frame or panel

Mounting clamps

The VT250 is delivered with mounting clamps and threaded pins in order to mount the system to a sub frame or panel

The mounting clamps with threaded pins (supplied), allow the easy and fast mounting of the VT250 into an instrument panel or wall panel.

Figure 24:
Mounting clamps
incl. threaded pins
delivered with the
VT250



Ensuring the protection class IP65

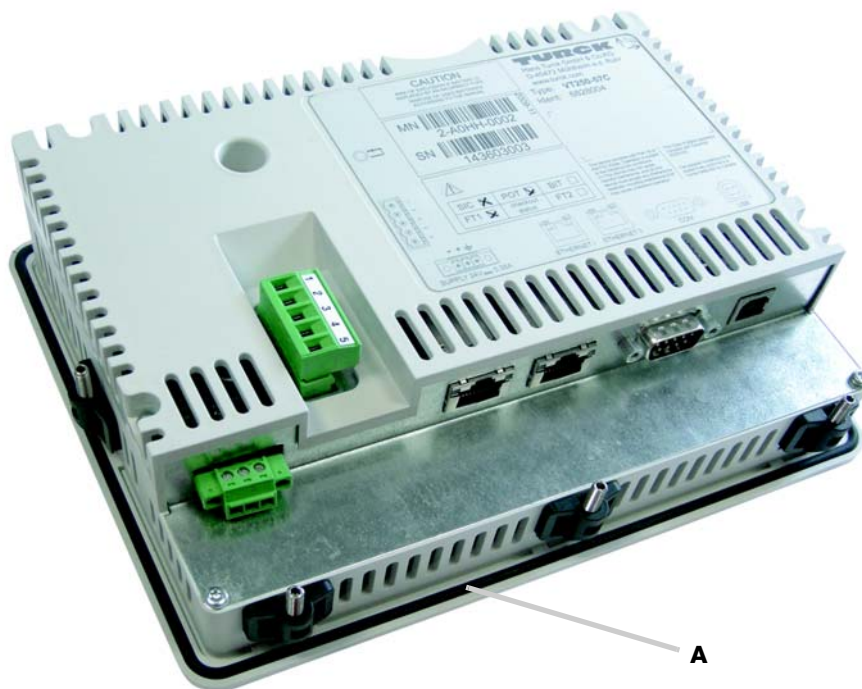


Attention

In order to ensure protection class IP65 against dust and water at the front sealing, mount the VT250 on a **non-textured** surface. Before you install the system into a panel or a sub frame for industrial cabinet, verify the perfect condition of the seal at the rear of the front plate. The seal has to be in place without injury/defects and dirt.

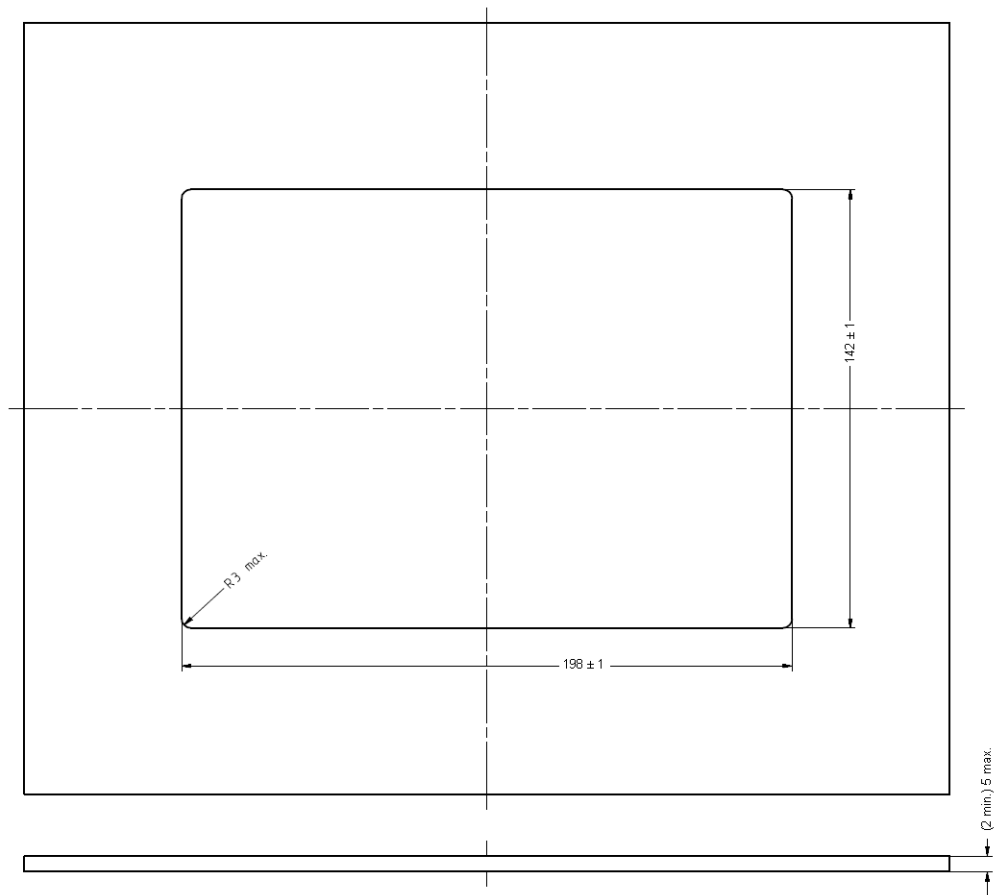
Figure 25:
VT250

A seal to
ensure IP65



Panel cut-out

Figure 26:
Panel cut-out
Dimensions of the
VT250



Note

When installing the VT250 into a panel or a sub frame for industrial cabinet, leave enough free space on the rear top side of the system in order to have access to install or remove the SD/MMC-card and/or the battery.

Mounting instructions

Table 19:
Requirements
for mounting the
VT250 into a
sub frame/panel

Dimensions for

Rear side enclosure (W × H × D)	196 × 140 × 50 [mm] 7,72 × 5,51 × 1,97 [inch]
Cut-out for mounting into a panel	198 ± 1 × 142 ± 1 [mm] 7,80 (± 0,4) × 5,60 (± 0,4) [inch]

Requirements for mounting

Metal mounting panel thickness	2 - 5 mm [mm] 0,08 - 0,20 [inch]
Used clamps with threaded pins	8
Required tool	hex key, 2 mm
Maximum torque	0,15 Nm
Mounting position	Ensure the vertical and horizontal alignment of the system

To mount the system to a sub frame or to a panel, follow these steps:

- 1** Depending on the dimension of the display enclosure of your system, cut a hole in the panel/sub frame
- 2** The panel where you intend to attach the system must be accessible from both front and rear side
- 3** The system must be turned off and disconnected from the power source and peripherals
- 4** Insert the system into the panel cut-out from the panel/sub frame front
- 5** In order to ensure the protection class IP65 on the front side in the installed condition, the contact surface with the seal must be clean and flush
- 6** Ensure the vertical and horizontal alignment of the system
- 7** Fasten the VT250 from the rear using the mounting clamps
- 8** Hook each of the 8 mounting clamps from the rear side of the panel into the corresponding recesses in the enclosure. Use one clamp on the left and right side of the device and 3 on the top as well as on the bottom side of the device.

**Note**

Please observe:

IP65 can only be guaranteed if all 8 mounting clamps are used for mounting the VT250

- 9** The VT250 must be attached firmly with the threaded pins. Tighten the pins using a 2 mm hex key with a maximum torque of **0,15 Nm**.

Mounting instructions

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