

# Instruction manual

**Terminals** 

VMT9000 series (Elkhart Lake)



Read these instructions carefully before using and store for future reference.

These instructions contain important information about the product, in particular about its intended use, safety, installation, utilisation, maintenance and disposal.

Hand over the instructions to the user following installation of the product, and pass the manual on to the new user if the product is resold.

These instructions can be downloaded from: www.ads-tec-iit.com in the Download Center.

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# 1 General information about documentation

## 1.1 General information

This instruction manual is intended to ensure safe and efficient handling of the VMT9000, referred to in the following as "device".

All of the safety instructions and handling instructions given in the manual must be obeyed in order to ensure that work is carried out safely.

All users must read this instruction manual and have access to it at all times.

The original version of this instruction manual was written in German. All non-German versions of this instruction manual are translations of the German instruction manual.

# 1.2 Explanation of safety instructions

## 1.2.1 Structure of safety instructions

The signal word classifies the hazard.

Reference to the type/consequences and source of the hazard is made underneath the signal word. Information on how to avoid the hazard is indicated by an arrow (♣).

## **DANGER**



Type and source of the hazard!

Possible consequences if the hazard is disregarded

→ Measures for avoiding the hazard



## 1.2.2 Explanation of signal words

## **DANGER**



Indicates an imminent danger. If not avoided, death or severe injury will result

## **WARNING**



Indicates a possible danger. If not avoided, death or severe injury could result.

## **CAUTION**



Indicates a possible danger. If not avoided, light or minor injuries could result.

## **ATTENTION**

Indicates a possibly damaging situation. If not avoided, the system or something in its surroundings could be damaged.



#### Recommendation for use:

Indicates terms and/or conditions that strictly need to be observed to ensure optimised and/or zero-defect operation. Tips and suggestions for the efficient use of the device and software optimisation are also provided.



## 1.3 Relevant device documentation

The following documents are decisive to device setup and operation:

• This instruction manual:

contains information for installation, commissioning and operation of the device along with technical data. This user manual applies to VMT9 models based on the 'Elkhart Lake' platform with the following processors: Intel Atom® x6413E

The device variants concerned are assigned to the following number range: **DVG-VMT9xxx 1xx** Note: The models based on '**Apollo Lake**' have their own manual.

Website:

You can download the instruction manual as well as drivers, software, user manuals, leaflets and flyers from the Download Center of our website <a href="https://www.ads-tec-iit.com">www.ads-tec-iit.com</a>.

# 1.4 Symbols

Symbol	Meaning
X	Label on batteries and on electrical and electronic devices. These may not be disposed of with household waste, but must rather be disposed of separately. They must be returned to the point of sale or a disposal system.
Symbol for the protective earth connection (PE)	
<u></u>	Symbol for the functional earth connection (FE)
	The device supports an integrable UPS ("uninterruptible power supply").  This is an additional optional battery integrated into the service slot cover.

# 1.5 Data, figures and modifications

All data, text and figures were prepared to the best of our knowledge. They do not represent any assurance for the properties themselves. Despite taking utmost care, no liability can be assumed for accuracy, completeness and actuality of the information. Subject to changes.



## 1.6 Trademarks

It is noted that any software and/or hardware trademarks and any company brand names mentioned in this documentation are all subject to the general trademark protection rights.

StoraXe®, Big-LinX® and X-Remote® are registered trademarks of ADS-TEC.

All other used third-party trademarks are hereby acknowledged.

In the case of trademark infringement, ADS-TEC reserves the right to exercise all rights.

# 1.7 Copyright

This instruction manual is protected by copyright. For the authorised user, simple usage rights are granted within the scope of the intent of the contract. Any modified use or exploitation of the provided content, particularly duplication, modification or publishing in whatever form is permitted only with the prior consent of ADS-TEC. In the case of copyright infringement, ADS-TEC reserves the right to exercise all rights.



# 2 General device information

## 2.1 Manufacturer and contact details

The manufacturer of the device is ads-tec Industrial IT GmbH. The company is referred to in the following as ADS-TEC.

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Phone: +49 7022 2522-0
Email: mailbox@ads-tec.de
Web: www.ads-tec-iit.com

## 2.2 Intended use

The device is used in **logistics** for data collection on vehicles, e.g. on forklifts or in-house conveyor vehicles.

A further application area is in the production environment where the device is used for **stationary** visualisation, control and operating/machine data collection.

The operator alone shall be responsible for ensuring that all **operator obligations** are observed and for complying with any technical or statutory amendments that may arise.

Installation, commissioning and operation may only be performed by qualified and trained personnel.

Intervention by the user is required only for performing the actions described in this document. Should any further modifications be required, it is necessary to consult either with the manufacturer directly or with service personnel authorised by the manufacturer.

The device must be **de-energised** during service work. Appropriate measures must be taken to prevent **electrostatic discharges** on components.

The device is **only** to be assembled, installed and operated **within the permissible specifications**. Use in non-specified environments is prohibited.



## 2.3 Improper use

Operation other than or beyond that described for the device shall be deemed improper use.

The device is not allowed to be used to control vehicles or for applications for which further approvals beyond the manufacturer's declaration are necessary, e.g. applications with explosion hazard, medical technology and shipping industry.

The device must not be put into operation in the case of transport damage or nonconformity with the specifications and must be taken out of operation in the case of changing conditions.

In the case of improper use, ADS-TEC shall not accept responsibility or liability for injury or damage that is directly or indirectly attributable to the handling of the device.

If the device is opened up by an unauthorised person, the user may be subject to hazards and the warranty is invalidated.

Should the device have evident signs of damages caused, e.g., by improper operation or storage conditions or due to improper use or handling, it must be shut down immediately. Ensure that it is secured against being started up accidentally.

The device can be damaged as a result of unauthorised mechanical modifications. Make sure that the device is not drilled, chiselled or perforated and its exterior shape and design is not modified in any way!



## 2.4 Environmental conditions

## **ATTENTION**

#### Damage caused by heat!

If the device is exposed to sunlight or any other light or heat source, it can overheat and suffer damage.

→ Do not expose the device to direct radiation by sunlight or any other light or heat source!

## **ATTENTION**

#### Damage caused by heat!

If the device is installed in a panel, casing or similar, heat accumulation can occur.

→ Make sure that heat can be dissipated from the device!

The device can be operated under the environmental conditions specified in the technical data. Failure to observe any one of these conditions will invalidate the warranty of the device. ADS-TEC cannot be held liable for any damages arising from improper use and handling.

#### Vibration and shock resistance

The device complies with class 5M3 as defined in EN 60721-3-5 (environmental conditions in the case of devices for ground vehicles).

Tests were conducted in accordance with the following test standards:

- EN 60068-2-6 Sinusoidal vibration (2...500 Hz, 30 m/s² peak, 2 h per axis)
- EN 60068-2-27 Shock resistance (400 m/s², 6 ms, 1000 shocks per direction and axis)



# 2.5 Conformity

The manufacturer hereby declares that the product described in this instruction manual complies with all relevant stipulations of the following European directives:

- 2011/65/EU, RoHS Directive
- 2014/30/EU, EMC Directive (devices w/o mobile radio)
- 2014/53/EU, RED Directive (devices with mobile radio)



- 2014/35/EU, Low Voltage Directive
- 2023/1542/EU, Battery regulation

The device is a class A device. Class A may cause interference when used in residential environments.

The EU conformity declaration of the device and the optional UPS batteries is available for download at: <a href="https://www.ads-tec-iit.com/en/support/eu-conformity">https://www.ads-tec-iit.com/en/support/eu-conformity</a>



#### Recommendation for use:

For full compliance with the EMC legislation, all components and cables used for device connection must also be compliant with these requirements. It is therefore necessary to employ Bus and LAN cables with shielded connectors and these must be installed as per the instructions contained in the instruction manual.



# 2.6 Warranty / repairs

During the device warranty period, any repairs must only be performed by the manufacturer or by service personnel that has been authorised by the manufacturer.

#### **ATTENTION**

Back up and delete all confidential data and reset passwords before handing over the device to the manufacturer or other persons outside your organisation for repair.

# 2.7 Limitation of liability

ADS-TEC shall not be liable for personal injury, property damage or damage caused to the device as well as consequential damage that is/was the result of non-compliance with this instruction manual, improper use of the device, repairs and other actions on the device by unqualified electricians and electricians not certified by ADS-TEC, or that is/was the result of using unapproved replacement parts. Failure to observe the maintenance intervals shall also result in exclusion from liability. Furthermore, it is strictly forbidden to make any unauthorised alterations or technical modifications to the device.



# 2.8 Treatment and disposal of lithium batteries

#### WARNING



#### Hazard due to explosion

Danger of explosion if using incorrect battery types.

→ Use the battery type recommended by the manufacturer.

## **ATTENTION**

#### Hazard due to thermal loads

The more the battery is exposed to higher temperatures, the faster it ages.

→ Operate the device within its specifications.

## **ATTENTION**

#### Damage to the battery

Incorrect handling of the battery can cause it to be damaged or destroyed.

→ Lithium batteries should not be exposed to fire, soldered, recharged, opened, short-circuited, reversed or heated above 100 °C and they should be disposed of properly as well as protected against sunlight, humidity and condensation.

This device contains a lithium battery for supplying the system clock with power as long as the supply voltage is not connected. The battery has a life cycle of 3-5 years depending on which load is applied.

The battery type to be used is:

- Lithium battery CR2032
- ADS-TEC part number: DZ-SONS-09946-1/A

The used lithium battery should be disposed of in accordance with local legal regulations.



The technical data for the optional **UPS batteries** can be found in section 12.2.



# 3 Scope of delivery

Check that the contents of the package are intact: If there are signs of damage, please contact the manufacturer immediately. The device must not be put into operation.

Check that the contents of the package are complete and match your order:

- 1 x device
- 1 x 4-pin plug for power supply in service slot
- Accessories according to order/delivery note



# 4 Safety and security

# 4.1 Security vulnerabilities

We place the highest quality demands on our products and services. Our Product Security Incident Response Team (PSIRT) continuously monitors product security.

We will inform you of any potential security vulnerabilities via our cooperation partner **CERT@VDE**: https://certvde.com/en/advisories/vendor/ads-tec-iit/

If you would like to report a security vulnerability, please contact CERT@VDE

- by email at <a href="mailto:info@cert.vde.com">info@cert.vde.com</a> or
- via the web form at <a href="https://certvde.com/helper/reportvuln/">https://certvde.com/helper/reportvuln/</a>

## 4.2 Passwords - overview

To protect your system, you should use passwords, among other things. This section provides a brief overview of various options.

## 4.2.1 UEFI BIOS: Administrator password

- If set, it must be entered when the BIOS ([Del] or [Alt] + [Del]) or the boot manager ([Esc]) is called up during system startup.
- This password is useful for protecting the BIOS and boot settings. It does not otherwise interfere with system startup.
- This password is often used in industrial applications.

# 4.2.2 UEFI BIOS: User password

- If set, it must be entered each time the device is started.
- Once entered, the user has administrator rights in the BIOS. To prevent this, a different administrator password should also be set.
- In everyday industrial use, the user password is rarely used because it requires a hardware keyboard to be connected.

# 4.2.3 Windows passwords

- Access to the operating system should be protected by a password.
- Assign such a password when you start up the device for the first time.
- Do not use an administrator account in everyday industrial use, only user accounts with restricted rights.

# 4.2.4 Quality and storage of passwords

- · Good passwords are long and complex.
- Do not store passwords in a simple file and do not write them down on a piece of paper lying on your desk.



# 4.3 UEFI BIOS – configuring settings

The UEFI BIOS (Unified Extensible Firmware Interface – Basic Input/Output System) is used in computers to initialise the hardware and start the operating system. At this level, you should pay particular attention to the aspects mentioned below.

## 4.3.1 Accessing the BIOS setup

- 1. Switch on the computer or restart it.
- 2. Immediately after switching on, repeatedly press the **[Del]** key (or **[Alt] + [Del]** to call up the advanced BIOS) until the BIOS setup appears.

## 4.3.2 Set, change or remove BIOS passwords



#### Please note:

All devices that can optionally include a wireless module (e.g. WiFi or mobile communications) will be equipped with an administrator password for accessing the UEFI-BIOS as standard ex works from 8/2025. This password can be found on a small sticker in the service slot (depending on the device model). Example:



#### Set/change:

- 1. In the BIOS setup, navigate to "Security".
- 2. Select "Administrator Password".
- 3. Enter a new password and confirm it.
- 4. Save with [F4] or switch to the "Save & Exit" tab. Confirm your selection with [Enter].

#### Remove:

 To remove a set password, leave the input field blank when prompted to enter the new password. [Enter].



## 4.3.3 Calling up the boot menu

To restore the device, adjust the boot sequence in the BIOS if necessary so that the system starts from the appropriate recovery medium (e.g. USB stick).

The BIOS boot menu allows you to select a boot medium (e.g. USB stick, network, etc.).

- 1. Restart the device.
- 2. During system startup, press the [Esc] key repeatedly until the boot menu appears.
- 3. Select the desired boot device using the arrow keys and confirm with [Enter].

#### Change boot order

- 1. Open the BIOS setup.
- 2. Switch to the "Boot" tab.
- 3. Under "Boot Option Priorities", you can adjust the order of the boot devices (e.g. USB, eMMC, network), whereby only devices that are actually connected will be offered.
- 4. Save with [F4] or switch to the "Save & Exit" tab. Confirm your selection with [Enter].

## 4.3.4 Enable/disable PXE boot

- Open the BIOS setup by repeatedly pressing [Del] (standard BIOS) or [Alt] + [Del] (advanced BIOS).
- 2. In the standard BIOS:

Navigate to the menu item "Settings > Network Stack Configuration".

In the advanced BIOS:

Navigate to the menu item "Advanced > Network Stack Configuration".

- 3. Enable or disable "Network Stack" and, if necessary, "PXE Support".
- 4. Save with [F4] or switch to the "Save & Exit" tab. Confirm your selection with [Enter].



# 4.4 Security features at the operating system level

There are a number of ways to increase security at the operating system level. The following aspects deserve special attention.

## 4.4.1 Login options

- Password: Standard method for logging in to user accounts.
- Security key ("token" / "dongle"): Login via FIDO2-compatible USB sticks.
- PIN: Alternative to password login, verified locally on the device.

#### 4.4.2 Use of antivirus software

- Windows includes Microsoft Defender Antivirus as standard, which protects the system in real time against malware, ransomware and other threats.
- The protection feature is enabled by default.
- It is possible to install third-party virus protection solutions. This may be beneficial if industryspecific requirements exist.

#### 4.4.3 Use of firewall software

- Windows includes a firewall that controls incoming and outgoing network connections. This
  firewall is enabled by default.
- Advanced settings can be configured via the Windows Security app or Group Policy.
- If necessary, a third-party firewall may be beneficial, e.g. for centralised management or special industry requirements.

## 4.4.4 Regular updating of the operating system

- Windows supports security updates that can be installed automatically via Windows Update.
- The update function can be controlled centrally via WSUS (Windows Server Update Services) or group policies.
- Recommendation: Keep the system regularly updated to avoid vulnerabilities.

# 4.4.5 Disable unnecessary interfaces

Interfaces and services are points of attack and should be disabled if they are not needed in everyday production. This applies, for example, to easily accessible USB interfaces on the front of devices.



# 4.5 Safety information on mobile communications

# **MARNING**



Radio interference could have unpredictable effects in certain environments.

- The radio card must NOT be operated in the following environments:
  - near medical and life-saving equipment,
  - in explosive atmospheres (e.g. near fuel depots or chemical plants),
  - near blasting operations.
- Switch the device OFF in these environments and secure it against accidental start-up.



## **↑** WARNING

Communication via radio connections cannot be guaranteed.

 The device must not be used for applications in which people or objects could be harmed due to a malfunction of the radio connection.

## **⚠** WARNING

Danger from lightning strikes when installing antennas in exposed locations

- Check whether lightning protection is required at the installation site (protection against direct lightning strikes and protection against induced voltages from distant lightning strikes).
- $\triangle$
- Observe the regulations and standards applicable at the installation site (e.g. the standards for antenna installation VDE 0855 and for lightning protection VDE 0185-305).



## **↑** WARNING

Electromagnetic radiation could be hazardous to health.

 Maintain a minimum distance of 20 cm between the transmitting antennas and people.



# **MARNING**

Radio interference and possible health hazards due to exceeding the permissible transmission power

When using directional antennas with high antenna gain, the maximum permissible field strength may be exceeded.



- Observe the maximum permissible signal strength (EIRP) in accordance with national or local regulations (see calculation example for EIRP).
- The transmission power and frequencies of the radio card can be found in the operating instructions for the radio card. The type of radio card installed is displayed in the Windows Device Manager in the "Network adapters" section.
- Do not replace the radio card supplied with your device with other types of radio cards without authorisation.
- The planning, installation and acceptance of antenna systems must be carried out exclusively by qualified electrical personnel.

# 4.6 Calculation example for signal strength (EIRP)

EIRP =  $P_{out}$  -  $C_{loss}$  +  $Ant_{gain}$  = 22 dBm - 8 dB + 9 dBi = 23 dBm ( $\triangleq$  200 mW)

EIRP = Equivalent Isotropically Radiated Power

Pout = Transmission power of the radio card

C<sub>loss</sub> = Losses due to attenuation in coaxial cable and connectors

Ant<sub>gain</sub> = Antenna gain



# 4.7 Mobile communications and cyber security

# **ATTENTION**

#### Security risks in unsecure networks

The mobile connection of the device via the optional integrated modem is a publicly accessible network connection and is therefore considered untrustworthy in accordance with EN 18031-1:2024.

• Please observe the following notes.

#### **Mandatory requirement**

For secure operation via mobile communications or other wide area connections (e.g. also for Internet uplink via Ethernet), the use of an additional secure communication mechanism is mandatory.

Permissible measures are:

- VPN connections
- OpenVPN or IPsec-based tunnels
- Use of mutual TLS/HTTPS for direct communication between end devices

#### Special note regarding customer data

It is the responsibility of the operator to ensure the confidentiality and integrity of transmitted data traffic (e.g. from connected machines or sensors).

Recommended measures:

- Use a private APN (Access Point Name) to disconnect the device from the public Internet.
- Provision of traffic filtering and IP whitelisting via the private APN by the mobile network provider to effectively prevent unauthorised access and denial-of-service attacks.



# 5 Mechanical installation

• Dimensional drawings of the device: see chapter *Dimensional drawings*.

# 5.1 Requirements

Requirement regarding installation location:

## **ATTENTION**

## Damage caused by heat!

If the device is exposed to sunlight or any other light or heat source, it can overheat and suffer damage.

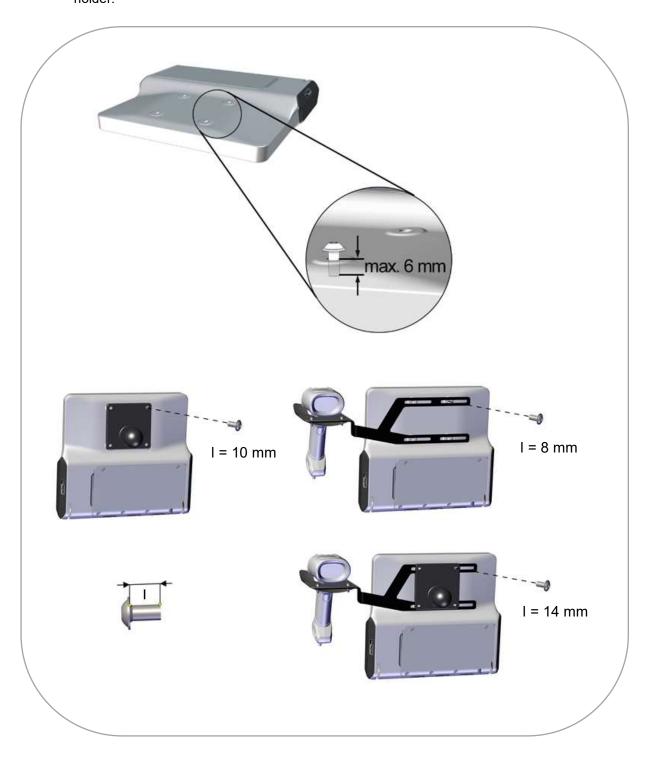
• Do not expose the device to direct radiation by sunlight or any other light or heat source!



# 5.2 Mounting the device

## 5.2.1 VESA 75 interface

- Horizontal and vertical distance between the screw holes: 75 mm
- Thread: M6, torque: 8 Nm (recommended)
- Screw-in depth in the threaded bushings: max. 6 mm
- The images show typical screw lengths when using the RAM mount and/or optional scanner holder.





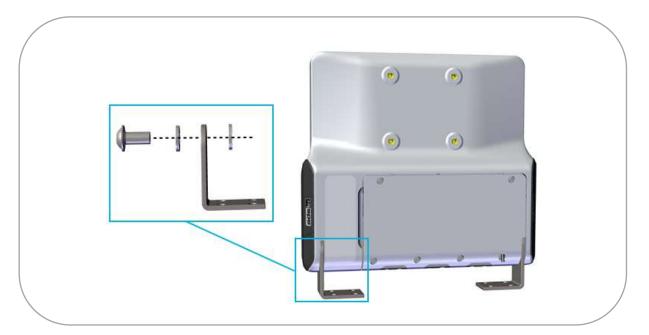
# 5.2.2 Other options



No.	Description	
1	Table/vehicle bracket	
2	Mounting bracket left/right	

## **Sequence** (each from the inside to the outside):

Nord-Lock washer ⇒ Bracket ⇒ Nord-Lock washer ⇒ Allen screw (WAF 6 mm) ⇒ Protective cover Allen screw torque: 40 Nm (recommended)



Further information and dimensional drawings can be found on our website in the section
 "Accessories" for the respective device.



# 6 Electrical connections

# 6.1 Requirements

## **ATTENTION**

#### Damage due to electrostatic discharge!

Damage to the device can be caused by electrostatic discharge.

 Always adhere to the safety measures applicable when handling components at risk of being damaged by electrostatic discharge.

## **ATTENTION**

#### Damage to the electronics!

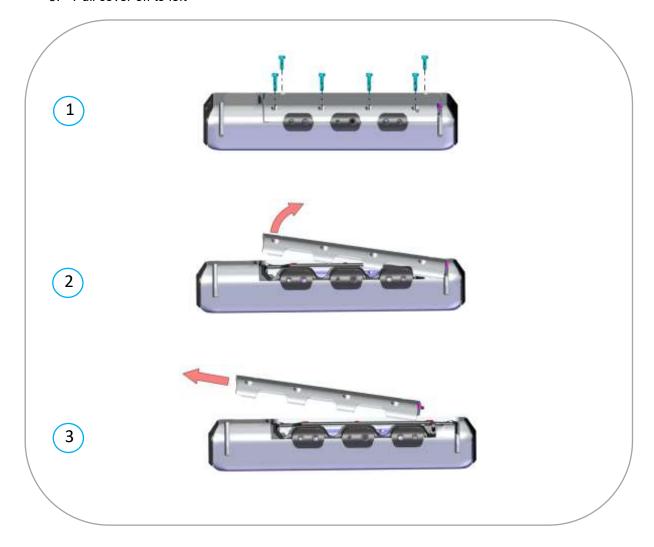
The electronics can be damaged if connectors are connected or disconnected while power is still being applied.

Make sure that no power is being applied when connecting and disconnecting connectors.



# 6.2 Opening the service slot

- 1. Loosen screws (Tx20)
- 2. Lift cover at left
- 3. Pull cover off to left





# 6.3 Compliance with the IP protection class

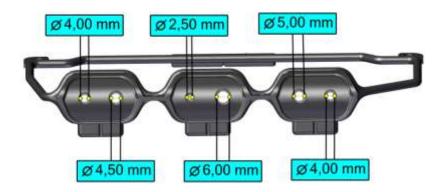
## **ATTENTION**

## To maintain the IP protection class:

- Insert a plug in all unused bushings.
- Insert seal correctly.
- After connecting the cable lines: close service slot as described in chapter 6.5.

#### Example of cable routing:







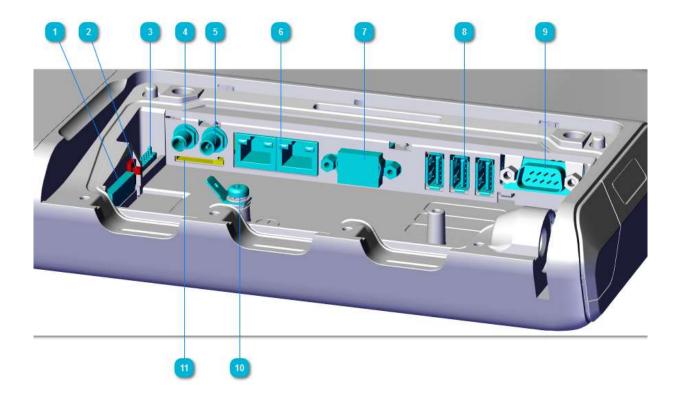
#### Recommendation for use:

On the inner side, attach cable ties for strain relief.





# 6.4 Interface overview

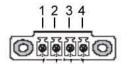


No.	Description
1	Power supply ⇒ see section 6.4.1
2	Switch for auto start ⇒ see section 6.4.4
3	Optional: Connection for UPS (uninterruptible power supply)
4	Optional: Connection socket (SMA female) for external GPS antenna
5	Optional: Connection socket (RP-SMA male) for external WLAN antenna
6	LAN (RJ45)
7	COM1 (RS232) ⇒ see section 6.4.5
8	2 x USB 3.2 Gen1 (blue) & 1 x USB 2.0 (white) *)
9	Optional: COM2 (RS232) or CAN FD ⇒ see section 8.6
10	Earthing (PE) ⇔ see section 6.4.3
11	Slot for Nano SIM card ⇒ see section 0
	*) The USB interfaces can be disabled individually in the Configuration Center.



## 6.4.1 Power supply

Pin	Signal
1	FE ⇒ see section 6.4.3
2	0 VDC
3	IGN ⇒ see section 6.4.2
4	DC+ ⇔ see technical data



(The figure shows the socket inside the device)

## 6.4.2 Ignition function

With the ignition function activated, the device starts as soon as the ignition is switched on. When the ignition is switched off, the device is disabled or shuts down. The supply voltage must remain constant.

The permissible voltage at the IGN input corresponds to the supply voltage of the device.

• This function can be activated and configured in the Configuration Center.



#### Recommendation for use:

Generally, the autostart and ignition functions should not be used together because these functions partly overlap.



# 6.4.3 Earthing concept

The earthing concept depends essentially on the conditions at the installation site and must be planned and implemented by a specialist electrical engineer.

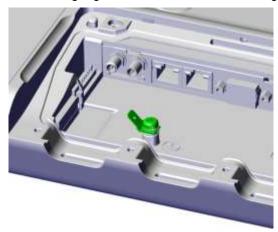
The following are provided on the device:

• FE connection in the power supply connector as reference potential for the EMC filters

## **ATTENTION**

This connection is necessary in order to comply with **EMC** requirements.

• PE earthing lug in the service slot for earthing the device housing





#### Recommendation

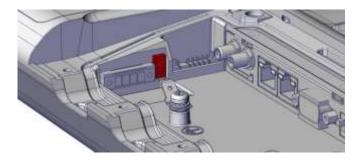
If possible, FE and PE should be connected via **separate** cables to the vehicle ground or respectively to the main earthing.



## 6.4.4 Autostart

With autostart activated, the device starts as soon as a supply voltage is applied.

The autostart function is activated using the switch (shown) in the service slot.





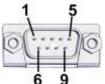
## Recommendation for use:

Generally, the autostart and ignition functions should not be used together because these functions partly overlap.



# 6.4.5 Serial interface COM1 (RS232)

Interface	IRQ	Address
COM1	5	3F8h



(The figure shows the socket inside the device)

## 5 V voltage supply

A software switch in the **Configuration Centre** can be used to provide a +5 VDC voltage on pin 9 (e.g. for powering serial barcode scanners).

⇒ See module *Serial port data forwarding*.

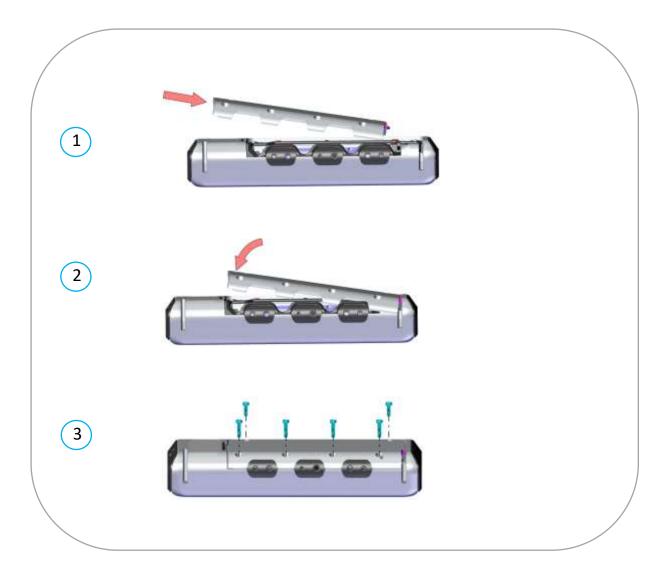
## 6.4.6 Optional: serial interface COM2 (RS232)

Interface	IRQ	Address
COM2	6	2F8h



# 6.5 Closing the service slot

- 1. Insert the cover on the right side into the groove
- 2. Press down the cover on the left side
- 3. Tighten screws crosswise with 2 Nm





See chapter 8.8.4 for mounting a cover with integrated UPS.



# 7 Commissioning

# 7.1 Requirements

## **ATTENTION**

#### Hazard due to condensation

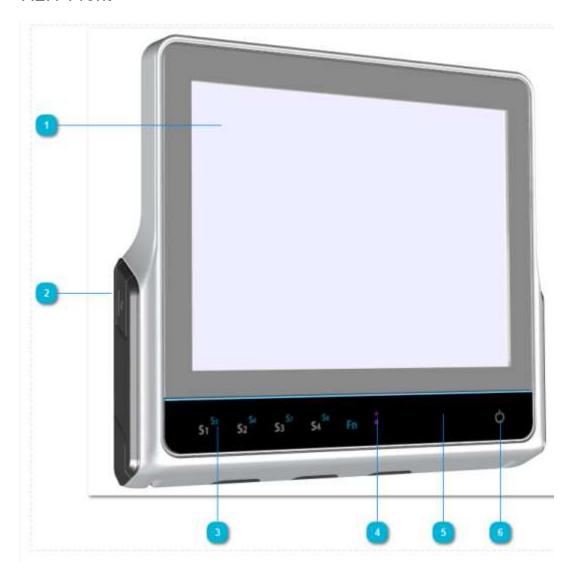
Damage to electronic components caused by condensation resulting from temperature fluctuations.

• Switch on the device only after it has acclimated to the ambient temperature!



## 7.2 User interfaces

## 7.2.1 Front

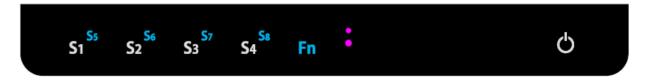


No.	Description		
1	Touch-screen: resistive (single-touch) or capacitive (multi-touch).		
2	Lateral USB interface *)		
3	Front keys **) (ex factory key assignment: see the following section)		
4	Brightness and proximity sensor		
5	Optional: RFID reader (not visible)		
6	ON/OFF pushbutton **)		
	*) The USB interfaces can be disabled individually in the Configuration Center.		
	**) Functionality can be configured in the Configuration Center.		



## 7.2.2 Functions of the front keys ex factory

The front keys can be individually configured in the Configuration Center. They have the following functions ex factory.



<b>S1</b>	Calls up the soft keyboard
<b>S2</b>	<del>-</del>
<b>S3</b>	-
<b>S4</b>	-
Fn	Shift key (SHIFT) for the second keyboard level. This key must be pressed simultaneously with the desired function key.
<b>S5</b>	Reduce brightness
<b>S6</b>	Increase brightness
<b>S7</b>	Reduce volume
<b>S8</b>	Increase volume

### 7.2.3 Rear side

Speakers are located at the shown positions.







### 7.3 Switching on and configuring device

After the power supply has been connected, the device can be started using the ON/OFF pushbutton on the front of the device.

#### 7.3.1 Secure initial configuration – step by step

These instructions describe the recommended initial configuration of an industrial PC with Windows 10/11 in accordance with EN 18031-1:2024.

#### a) Secure physical access and protect against theft

- Where possible: Install the device securely in a protected environment.
- Deactivate any interfaces that are not required or prevent access to them by means of a physical barrier (e.g. USB ports on the front of the device).
- After commissioning: Close the service compartment with screws.

#### b) UEFI BIOS: Activate security



#### Please note:

All devices that can optionally include a wireless module (e.g. WiFi or mobile communications) will be equipped with an administrator password for accessing the UEFI-BIOS as standard ex works from 8/2025. This password can be found on a small sticker in the service slot (depending on the device model). Example:



- a. Access to BIOS setup: Switch on the device and press [Del] or [Alt] + [Del] until the BIOS setup appears.
- b. Set or change administrator password (Security > Administrator Password)
- c. Enable Secure Boot (Security > Secure Boot > Enabled) to allow only signed boot loaders.
- d. Check the boot sequence (Boot tab) and disable unused interfaces (e.g. USB or PXE).
- e. Save changes with [F4] or by switching to the "Save & Exit" tab.

#### c) Secure Windows account

- a. Start the system and set up a local administrator account with a strong password
- b. Create an additional user account with restricted rights (no admin)



#### d) Activate security features

- a. Activate Microsoft Defender Antivirus and update if necessary. Activate real-time monitoring.
- b. Enable Windows Firewall
- c. Enable data encryption / BitLocker
- d. Check network connections: only leave necessary services active
- e. Check and minimise autostart programmes

#### e) Secure your network

- a. First connect the system to a secure, trusted network.
- b. For Wi-Fi connections, only use WPA2 or WPA3-encrypted networks.
- c. Segment your network architecture using subnets and/or VLANs.
- d. Disable unused network adapters (e.g. Wi-Fi for pure LAN operation) to reduce the attack surface.
- e. No open ports unless required (e.g. disable IPv6 and NetBIOS)

#### f) Updates and patch management

- Enable Windows updates unless managed centrally via WSUS (Windows Server Update Services).
- Check BIOS and firmware updates, only use signed versions

### 7.3.2 Configuration Center

In the ADS-TEC **Configuration Center**, you can make the following settings, for example, depending on the device variant:

- Assignment of functions to the front keys
- Behaviour of the ON/OFF pushbutton
- Configuration of COM interfaces
- Disabling of the USB interfaces
- Configuration of the ignition function (key switch)
- Write-protection of the mass storage or parts of it
- Soft keyboard
- Wireless devices

You can start the Configuration Center by selecting the appropriate item in the start menu or using the icon on the desktop.

### 7.4 Devices with EmteriaOS operating system (Android)

You can find extensive information and tutorials on how to work with the EmteriaOS operating system in the 'emteria Knowledge Base':

https://emteria.com/kb





## 8 Features

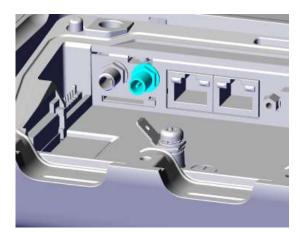
## 8.1 RFID reader (optional)

The supported transponders (RFID tags) are given in the chapter *Technical data*.

## 8.2 WLAN (optional)

This function uses the resources provided by the operating system.

An external WLAN antenna can be connected to the connection socket (RP-SMA male) in the service slot.



In the **Configuration Center**, it is possible to set whether the internal or an external WLAN antenna is to be used.

## 8.3 Bluetooth (optional)

Devices with WLAN also have Bluetooth.

This function uses the resources provided by the operating system.



## 8.4 Mobile communications (optional)

This function uses the resources provided by the operating system.

#### Initial commissioning - Inserting a nano-SIM card

Pull out the card drawer with a small screwdriver (or the like) and insert the card as shown:



#### Changing the mobile phone card

### **ATTENTION**

#### **Data loss**

If you pull the drawer with a SIM card inserted while the computer is running, data may be lost.

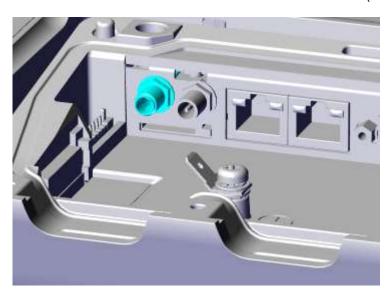
• Shut down the computer before pulling out the drawer.



### 8.5 GPS (optional)

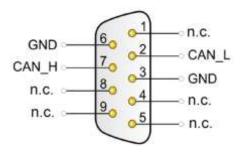
Devices with mobile communications functionality also have GPS. This function uses the resources provided by the operating system.

A GPS antenna can be connected to the connection socket (SMA female) in the service slot.



## 8.6 CAN FD (optional)

This function uses the resources provided by the operating system.



Other connectors can be provided here at the request of the customer.

## 8.7 Big-LinX®

Big-LinX is a versatile and scalable platform for different IoT applications. The secure connection of decentralised systems, the management of distributed gateways as well as comprehensive services for data collection, forwarding and monitoring make a major contribution to the implementation of complex Industry 4.0 projects.

You can obtain Big-LinX here: https://www.ads-tec-iit.com/en/reliable-remote-access/biglinx



### 8.8 UPS - Uninterruptible Power Supply (optional)

On request, the devices can be delivered with a backup battery integrated in the service slot cover.



This backup battery ensures that the system continues to operate normally in the event of brief power failures. With longer power failures, the system can be shut down automatically after the data has been saved.



Owing to its limited capacity, the UPS battery is suitable for bridging only brief power failures. It is therefore always important to keep power requirements in battery mode to a minimum.

The computer can only be restarted when the power supply unit is connected.

#### Recommendations:

- CPU-intensive operations should only be performed in mains mode.
- Peripherals with a high power requirement (e.g. external USB hard drives) should be used in mains mode only. Mouse, keyboard and USB sticks, however, do not present a significant load.

#### **ATTENTION**

#### Power failures during system updates can damage the operating system

It is strongly recommended not to install programme updates or system updates in battery mode. Even if the system shuts down at a critical battery capacity, it cannot be guaranteed that updates prior to the shutdown have been fully installed.

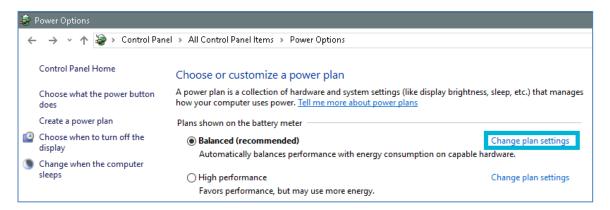
Do not start updates in battery mode!

The following sections show examples of configuration options for battery mode under Windows 10. The examples apply accordingly to other operating systems.



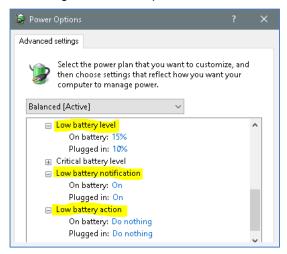
### 8.8.1 Configuring behaviour for low/critical battery level

Under "Power Options" of Windows 10, critical thresholds and associated actions can be configured for each power plan.



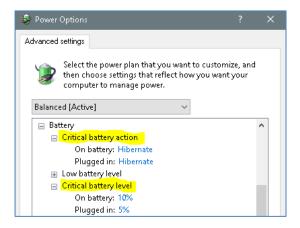
#### Recommendations:

A warning should be output at the latest when a <u>low</u> battery level of 15 % is reached.





• The system should enter "Hibernate" mode or shut down at the latest when a <u>critical</u> battery level of 10 % is reached.



The options have the following meaning:

- "Sleep" The computer interrupts all activities. The data remains in main storage (RAM). The reawakening procedure takes only a short time.
  - Attention: If no mains voltage is present and the UPS battery is empty, the data will be lost.
- "Hibernate" The data is stored on the hard disk and then the computer ends all activities. The reawakening procedure takes a longer time.

The data is retained even if there is no mains voltage and the UPS battery is empty.

Note: To reawaken the device, the power-on button must be pressed.

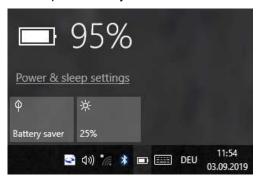


#### 8.8.2 Setting the screen brightness

The screen brightness can be set separately for mains and battery mode.

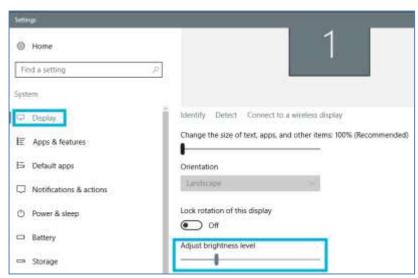
The setting can be made in the following ways:

• Click/tap the battery icon in the toolbar to open the following dialogue window:



Then click/tap the rectangle containing the sun icon and the percentage in order to change the value.

 Right-click the desktop background, then select "Display / Adjust brightness level" in the context menu:



- 1. Set the screen brightness for mains mode to the desired value, e.g. to 100 %.
- 2. Interrupt the mains power supply. The operating system detects failure of the mains power and switches to battery mode.

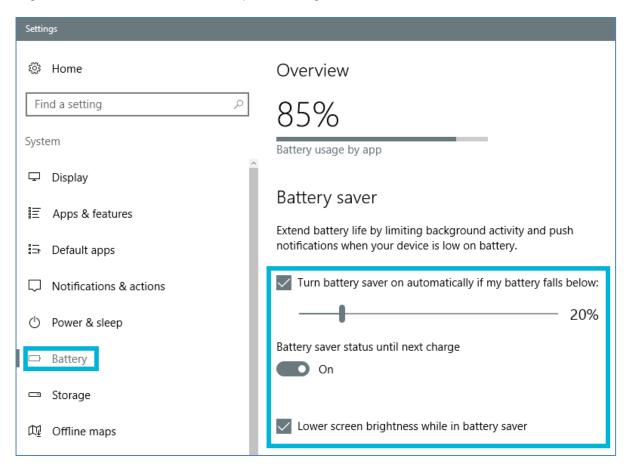
Set the screen brightness, e.g. 25 %.

3. If you now switch between mains and battery mode, the screen brightness will switch between the two set values.



### 8.8.3 Activating battery saving mode

Under "Settings" of Windows 10, the power saving mode can be activated under the item "Battery". You can also determine the battery level at which this mode is to become active and whether the screen brightness is also to be reduced when power saving mode is active.



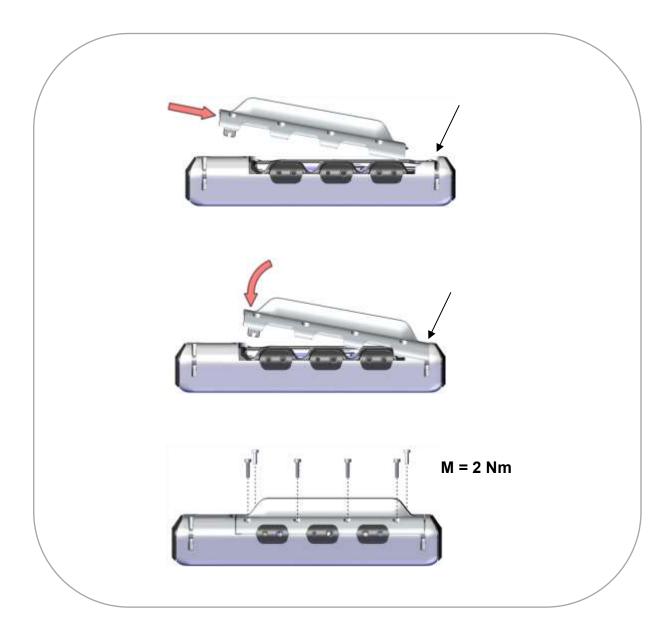


## 8.8.4 Installing or removing the UPS battery



The UPS battery is detected by the operating system only when the device is being switched on.

- Switch the device off and disconnect it from the power supply before installing or removing the UPS battery.
- 1. Remove the old cover according to section 6.2.
- 2. Observe the instructions for IP protection according to section 6.3.
- 3. Install the new cover including UPS as follows:





### 9 Software / driver installation

### 9.1 Initial installation of the operating system

The device will be delivered with a pre-installed operating system depending on what the customer wants. If the mass storage has been reformatted, the operating system can be reinstalled by using one of the existing interfaces.

#### Installing operating system via a USB interface

- 1. Connect an external USB drive and a keyboard.
- 2. Restart the device and press the ESC key to call up the boot menu.
- 3. Insert an operating system CD into the external drive.
- 4. In the boot menu, select booting from the external drive and start.
- 5. Installation of the operating system and configuration of the basic data.
- 6. With devices with touch-screens, the touch-screen driver as well as the soft keyboard should be installed in order to ensure full functionality.

#### Installing the operating system using PXE

Alternatively, the operating system can also be installed via a network using the PXE functionality (PXE = Preboot Execution Environment). To do so, the appropriate BootROM Extension must first be activated in the BIOS and then selected in the boot menu. The steps to be taken next depend on the network environment and the operating system to be installed.



The calibration data of the touch-screen is retained when the mass storage is formatted.

## 9.2 Write protection

**Important**: If the mass storage or parts of it have been write-protected in the **Configuration Center**, this write protection must be removed again <u>before</u> changes are made to the software installation. 

□ Unified Write Filter

After the software installation has been changed, the write protection must be set again and the device restarted.

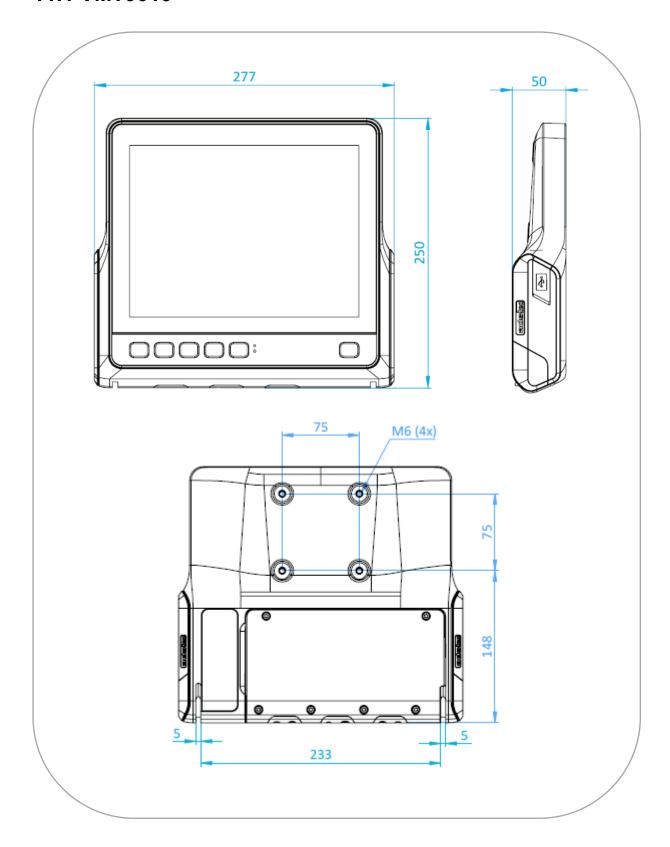
## 10 Cleaning

Clean the device using some glass cleaner on a soft cloth.



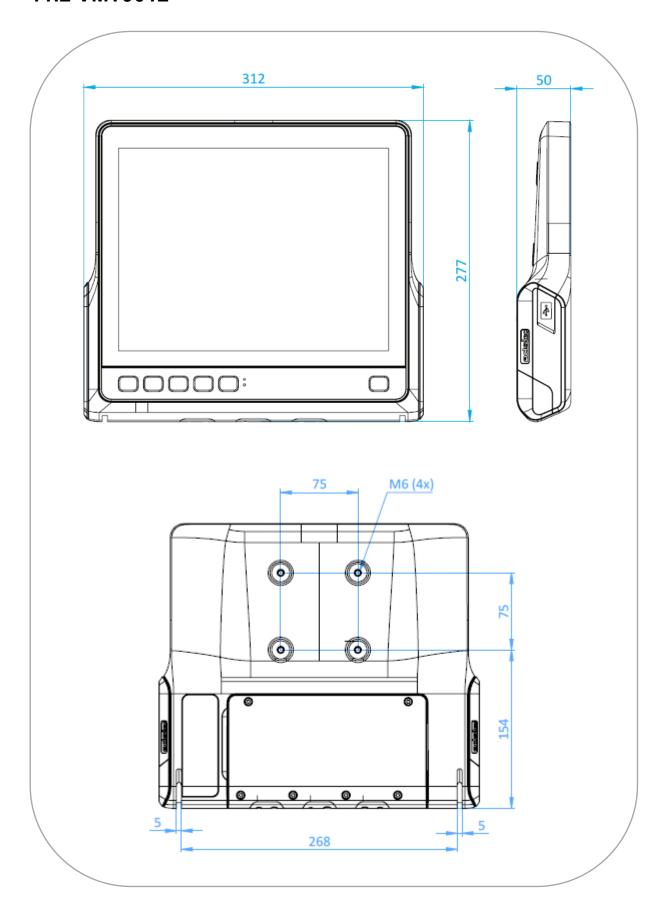
# 11 Dimensional drawings

## 11.1 VMT9010



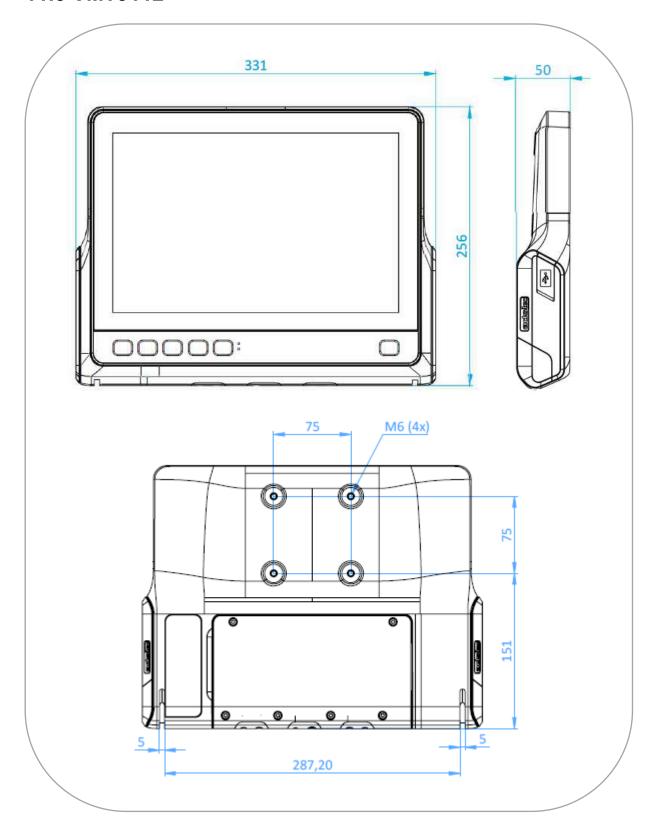


## 11.2 VMT9012



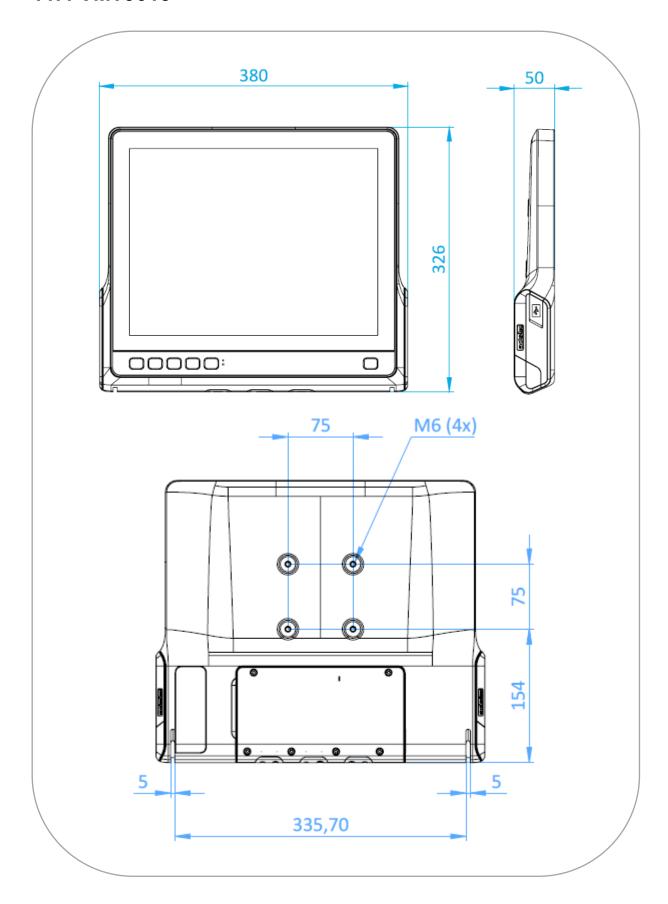


## 11.3 VMT9112





## 11.4 VMT9015





## 12 Technical data

## 12.1 Technical data VMT9

	VMT9010	VMT9012	VMT9112	VMT9015	
Housing	Fanless die-casting aluminium housing, powder-coated				
Touch screen	PCAP multi-touch or resistive touch-screen (not with VMT9112) with break- and abrasion-resistant front				
Display	10,4" TFT XGA 1024 x 768 px max. 16.2 million colours	12.1" TFT XGA 1024 x 768 px max. 16.2 million colours	12.1" TFT (widescreen) WXGA 1280 x 800 px max. 16.2 million colours	15" TFT XGA 1024 x 768 px max. 16.2 million colours	
Front keys	Four freely configurable front keys with double assignment via additional Fn key				
System version	Intel Atom® x6413E with up to 3 GHz + 8 GB LPDDR4 RAM				
Graphics processing unit	Intel® UHD Graphics for 10th Gen Intel® Processors				
Mass storage	64 GB eMMC / Optional: additional 128 GB or 256 GB 3D TLC SSD  Please note: Due to additionally implemented security functions of the SSD manufacturer, the freely available capacity of the mass storage may be slightly reduced.				
Interfaces	USB type A:     in side cover: 1 x USB 3.0 (current output up to 1 A)     in service slot: 2 x USB 3.2 Gen1 (output up to 1 A) & 1x USB 2.0 (max. 0.5 A)  Serial: COM1 (RS232, D-Sub 9pin, 5V supply can be switched in, see section 6.4.5), optional: COM2  CAN (optional): up to 4 channels (D-Sub 9pin)				
Network	2 x Ethernet 10/100/1000/2500 Mbit (RJ45)				
Wireless (optional)	WiFi: IEEE 802.11a/b/g/n/ac/ax (depending on WiFi card), incl. connection for ext. antenna WWAN: GPRS, EDGE, HSPA+, LTE (internal antenna) WPAN: Bluetooth V5.2 GPS through external antenna				
RFID (optional)	Supported transponders: LEGIC advant ATC, LEGIC card-in-card solution AFS, LEGIC prime MIM, NXP MIFARE, DESFire, NXP MIFARE plus, NXP MIFARE Smart MX, Texas Instruments Tag-It, EM Microelectronics EM4035, Infineon my-d, NFC Forum Tag 2/3/4 Typen, NXP Ultralight, NXP MIFARE Classic (UID), Sony Felica (plain text), Inside Contactless (UID), HID iClass (UID)				
Sound	Integrated stereo speakers				
Sensors	Brightness sensor for automatic brightness control				
Power adapter (internal)  12/24/48 VDC (972 VDC)  Ignition function via vehicle ignition (digital input, ≥ 9 V high)  Optional: uninterruptible power supply (UPS)					
Power consumption	Typically 25 W; maximum 50 W excluding UPS / max. 60 W including UPS				
Operating systems	Windows® 11 IoT Enterprise 2024 LTSC / Windows® 10 IoT Enterprise 2021 LTSC / Linux Ubuntu / EmteriaOS (Android)				
Installation	VESA-75 hole pattern on the rear or ads-tec mounting bracket				
Weight	Approx. 3.2 kg	Approx. 3.65 kg	Approx. 3.7 kg	Approx. 4.7 kg	
Dimensions	277 x 249 x 50 mm	312 x 277 x 50 mm	331 x 256 x 50 mm	380 x 326 x 50 mm	
Environment  IP protection: IP66 all-round protection; Impact-resistant front: IK08 acc. to EN 62262  Operating temperature: -30+60 °C*); Storage temperature: -40+85 °C*)  Humidity: 95%, non-condensing  Vibration and impact: Class 5M3 acc. to EN 60721-3-5  *) If accessories (e.g. a UPS) are used, the narrower value range applies.			62		



### 12.2 Technical data - UPS

	UPS battery		
Operating temperature	Charging: 050 °C *)		
	Discharging: 060 °C **)		
Storage temperature	-20+45 °C		
Backup power time (typical)	Depending on the load, at 40 W and 0 °C:		
	<ul> <li>Version with 6240 mAh***): 2030 min</li> </ul>		
	<ul> <li>Version with 3120 mAh****): 1015 min</li> </ul>		
Max. power	40 W **)		
Weight	Version with 6240 mAh***): 0,52 kg		
	<ul> <li>Version with 3120 mAh***): 0,42 kg</li> </ul>		

<sup>\*)</sup> The batteries cannot be charged at cell temperatures below 0 °C.

<sup>\*\*\*)</sup> Capacity: see label of the UPS battery.



The various configuration options for battery mode are described in section 8.8.

For general information on the safe **handling of lithium batteries** and the **type of CMOS battery**, see section 2.8.

The **EU** conformity declaration of the device and the optional UPS batteries is available for download at: <a href="https://www.ads-tec-iit.com/en/support/eu-conformity">https://www.ads-tec-iit.com/en/support/eu-conformity</a>



<sup>\*\*)</sup> At ambient temperatures of 60°C, it is recommended to remain below a load of 30 W where possible, otherwise accelerated ageing of the cells is to be expected.

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## 13 Service & support

ADS-TEC and its partner companies offer you comprehensive maintenance and support services, ensuring quick and competent support should you have any questions or concerns with regard to ADS-TEC products and equipment.

Because ADS-TEC products are also used by partner companies, these devices may have customised configurations. Should any questions arise with regard to these specific configurations and software installations, please contact them as ads-tec will not be able to answer such questions.

ADS-TEC does not provide support services for any device that was not purchased directly from ADS-TEC. In this case, maintenance and support is provided by the partner company.

### 13.1 ADS-TEC support

The ADS-TEC support team is available for inquiries from direct customers between 8:30am and 5:00pm, Monday to Friday.

The support team can be reached via phone, fax or e-mail:

Phone: +49 7022 2522-202

Email: support.iit@ads-tec.de

Alternatively, you can contact us by completing a support form on our website <a href="www.ads-tec-iit.com">www.ads-tec-iit.com</a>. Our Support team will then get in touch with you as soon as possible.

## 13.2 Company address

ads-tec Industrial IT GmbH

Heinrich-Hertz-Str.1

72622 Nürtingen

Germany

Phone: +49 7022 2522-0

Email: mailbox@ads-tec.de

Web: www.ads-tec-iit.com

