



Instruction manual

Industrial PCs

IPC9000 series



Industrial IT

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 area.

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Contents

| | | |
|----------|-----------------------------------------------------|-----------|
| 1 | General information about documentation..... | 5 |
| 1.1 | General information | 5 |
| 1.2 | Explanation of safety instructions | 5 |
| 1.2.1 | Structure of safety instructions | 5 |
| 1.2.2 | Explanation of signal words | 6 |
| 1.3 | Relevant device documentation | 7 |
| 1.4 | Symbols | 7 |
| 1.5 | Data, figures and modifications | 7 |
| 1.6 | Trademarks | 8 |
| 1.7 | Copyright | 8 |
| 2 | General device information | 9 |
| 2.1 | Manufacturer and contact details | 9 |
| 2.2 | Intended use | 9 |
| 2.3 | Improper use | 10 |
| 2.4 | Environmental conditions | 11 |
| 2.5 | Conformity | 12 |
| 2.6 | Warranty / repairs | 13 |
| 2.7 | Limitation of liability | 13 |
| 2.8 | Treatment and disposal of lithium batteries | 14 |
| 3 | Scope of delivery..... | 15 |
| 4 | Mechanical installation | 16 |
| 4.1 | Requirements | 16 |
| 4.2 | Attaching the wall bracket | 16 |
| 4.3 | Attaching the device to the wall bracket | 17 |
| 4.4 | Removing the device from the wall bracket | 18 |
| 5 | Electrical connections..... | 19 |
| 5.1 | Requirements | 19 |
| 5.2 | Earthing concept | 19 |
| 5.3 | Interfaces | 20 |
| 5.3.1 | Overview | 20 |
| 5.3.2 | Power supply | 21 |
| 5.3.3 | Digital input and output | 22 |
| 5.3.4 | CAN interface | 23 |
| 5.4 | Maximum cable lengths | 24 |
| 6 | Commissioning..... | 25 |
| 6.1 | Requirements | 25 |
| 6.2 | Switching on and configuring device | 25 |

| | | |
|------------------|-----------------------------------------------------|------------------|
| <u>7</u> | <u>Features (optional).....</u> | <u>26</u> |
| 7.1 | Big-LinX® | 26 |
| 7.2 | DisplayPort™ | 26 |
| 7.3 | HDBaseT™ | 27 |
| 7.4 | CAN card | 28 |
| 7.5 | Mass storage devices | 29 |
| 7.5.1 | With RAID system | 29 |
| 7.5.2 | Without RAID system | 29 |
| 7.6 | WLAN | 30 |
| 7.7 | Bluetooth™ | 30 |
| 7.8 | netJACK plug-in modules | 31 |
| 7.9 | RS232 | 32 |
| 7.10 | Wake on LAN (WoL) | 33 |
| 7.10.1 | Settings in BIOS | 33 |
| 7.10.2 | Settings in the operating system (Windows 10) | 34 |
| <u>8</u> | <u>Software / driver installation.....</u> | <u>36</u> |
| 8.1 | Initial installation of the operating system | 36 |
| 8.2 | Write protection | 36 |
| 8.3 | Installing the netJACK modules at a later stage | 36 |
| <u>9</u> | <u>Cleaning.....</u> | <u>36</u> |
| <u>10</u> | <u>Maintenance.....</u> | <u>37</u> |
| 10.1 | Opening and closing the service slot | 37 |
| 10.2 | Replacing the CMOS battery | 38 |
| 10.3 | Installing or removing SSD cards | 39 |
| 10.4 | Removing and installing the Hilscher netJACK module | 40 |
| 10.4.1 | Removal | 40 |
| 10.4.2 | Installation | 41 |
| 10.4.3 | FYI: Fixing the module to the circuit board | 42 |
| <u>11</u> | <u>Dimensional drawings</u> | <u>43</u> |
| 11.1 | Device | 43 |
| 11.2 | Wall bracket | 44 |
| <u>12</u> | <u>Technical data.....</u> | <u>45</u> |
| <u>13</u> | <u>Service & support.....</u> | <u>46</u> |
| 13.1 | ADS-TEC support | 46 |
| 13.2 | Company address | 46 |

1 General information about documentation

1.1 General information

This instruction manual is intended to ensure safe and efficient handling of the IPC9000, 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.
- Website:
You can download the instruction manual as well as drivers, software, user manuals, leaflets and flyers from the Download Center of our website www.ads-tec-iit.com.

1.4 Symbols

| Symbol | Meaning |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Label on batteries. The batteries may not be disposed of with household waste, but must rather be disposed of separately. Used batteries must be returned to the point of sale or a disposal system. |
|  | Label on electrical and electronic devices. Electrical and electronic devices must not be disposed of with household waste, but must rather be taken to a collection point for waste electrical equipment. Such a collection point is generally operated by public waste management authorities, i.e., by municipalities. |
|  | Symbol for the protective earth connection (PE) |
|  | Symbol for the functional earth connection (FE) |
|  | Symbol for hot surface |

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.

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

All other third-party trademarks used are hereby acknowledged.

In the case of infringement of trademark rights, 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.

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

2.2 Intended use

The IPC is intended for industrial use and in this case primarily for use in machine and plant construction.

In accordance with its IP protection class, it may be installed in cabinets or mounted on machines/plants indoors.

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 product does not support any safety functions of functional safety. Do not use the product to evaluate safety-relevant data in order to bring a system to a safe state.

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.

ATTENTION

Damage caused by condensation!

If the temperature of the device is different to that of the environment in which it is located, condensation can form.

- ➡ Switch on the device only after it has acclimated to the ambient temperature.

The device must 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.

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
- 2014/53/EU, RED Directive
- 2014/35/EU, Low Voltage Directive



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

The EU conformity declaration can be downloaded at <https://www.ads-tec-iit.com/en/support/eu-conformity>.



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 respective instruction manuals.

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.

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-04075-1

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

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 5-pin connector for power supply
- Wall bracket (pre-mounted on device)
- Accessories according to order/delivery note

4 Mechanical installation

The device is intended to be fastened to a screw-on wall bracket (included in the scope of delivery). The device is not intended for installation on top-hat rails.

4.1 Requirements

Make sure that the attachment surface can safely bear the weight of the device under all operating conditions. Use suitable screws, anchors or braces to securely attach the device depending on the load-bearing capacity of the surface.

4.2 Attaching the wall bracket

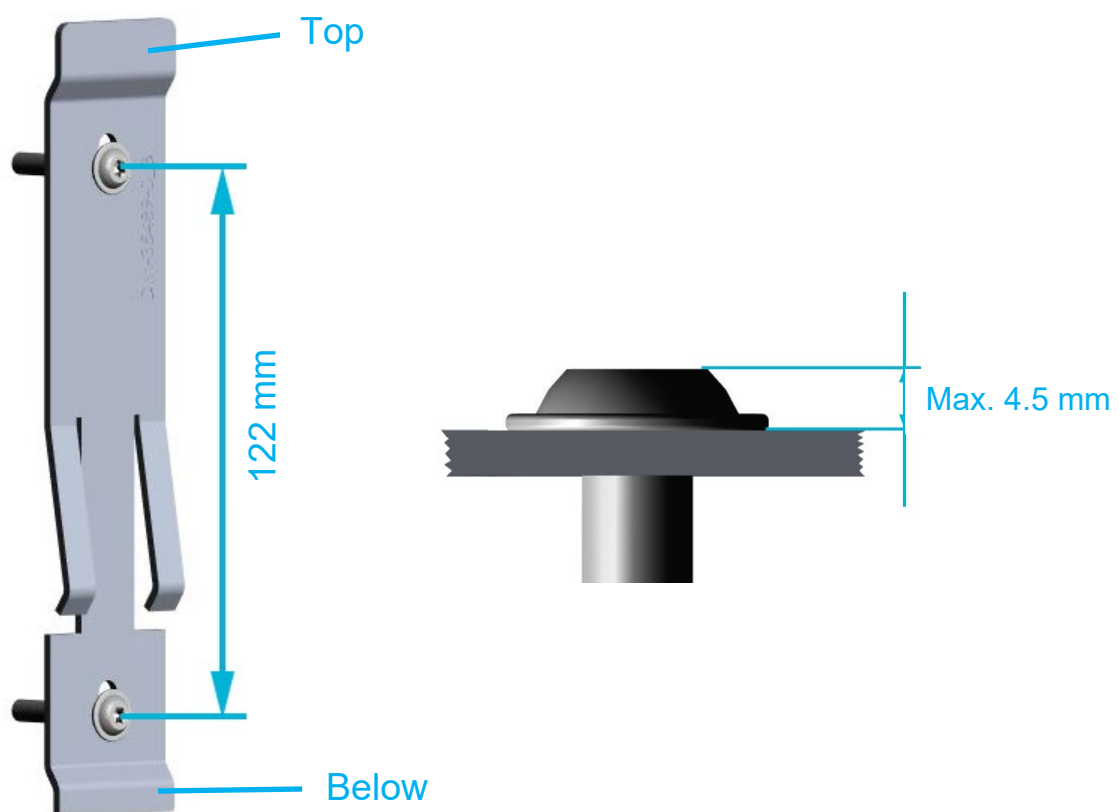
Tip: the wall bracket can also be used as a drilling template.

Use 5 mm diameter screws on washers.



Recommendation for use

The screw head with washer may protrude no more than 4.5 mm beyond the wall bracket. If necessary, use screws with low-profile screw heads (e.g. according to ISO 7380).



Dimensional drawing of wall bracket: see section 11.2.

4.3 Attaching the device to the wall bracket

1. Hang the rear side of the device on the top of the wall bracket.
2. Push the bottom of the device backwards until it locks into place.



4.4 Removing the device from the wall bracket

Note for devices at operating temperature:

CAUTION



Burns and scaring due to hot surfaces

Touching hot surfaces can cause burns. In addition, unexpected contact can lead to uncontrolled movements due to startling.

- Allow the unit to cool down before servicing.
- Wear suitable gloves if necessary.

1. Pull downwards on the pull tab on the bottom rear of the device (use fingers or screwdriver).
2. Pull the device upwards off the wall bracket.



5 Electrical connections

5.1 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.

5.2 Earthing concept

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

The following are provided on the device:

- **FE** connection in power supply connector as **EMC filter reference potential**.

ATTENTION

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

- **PE** earthing lug at lower end of **device housing**.

**Recommendation for use:**

When possible, FE and PE should be connected to the central earthing rail via **separate** cable lines.

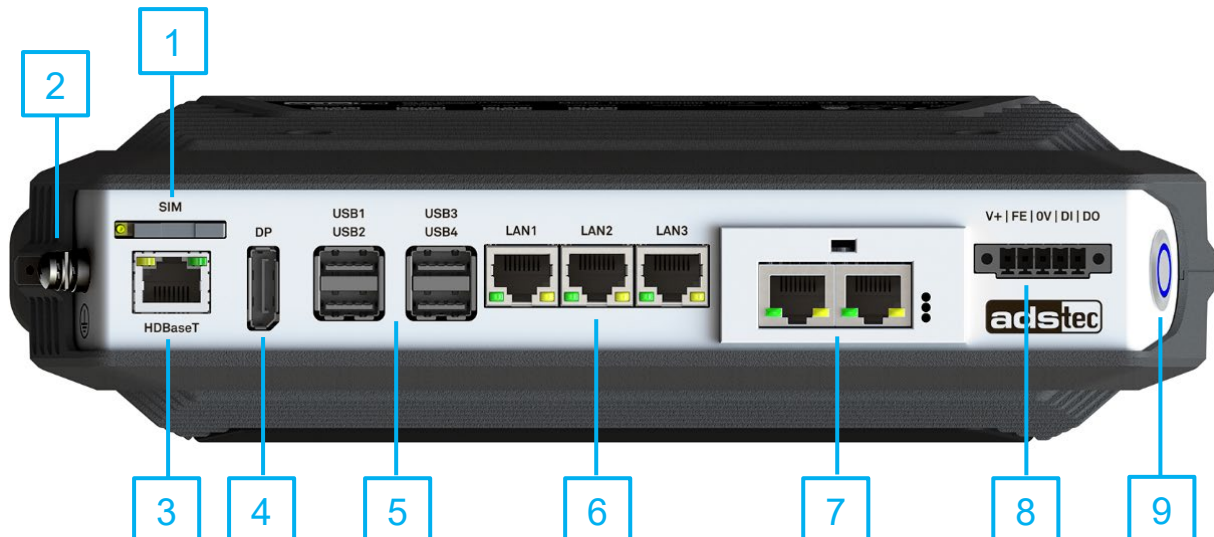
Conductor cross sections:

- **PE**: \geq AWG 16 (\triangleq 1.5 mm²), optimal: AWG 13 (\triangleq 2.5 mm²). The cable colour must be green-yellow.
- **FE**: AWG 18 (\triangleq 0.75 mm²). The cable colour must not be green-yellow.

5.3 Interfaces



5.3.1 Overview

Example illustration. Position assignments may differ depending on the version:



| No. | Description |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Slot for Big-LinX® smart card, see section 7.1 |
| 2 | Protective earth (PE) connection, see section 5.2 |
| 3 | Options at this position: <ul style="list-style-type: none"> – HDBaseT (RJ45), see section 7.3 – Second DisplayPort++™ (1.2) |
| 4 | DisplayPort++™ (1.2) |
| 5 | 4 x USB 3.1 gen. 2 |
| 6 | 3 x LAN (RJ45). Controllers used: LAN 1: i219-V / LAN2 & LAN3: i210 For "Wake on LAN": see section 7.10. |
| 7 | Options at this position: <ul style="list-style-type: none"> – 2 x CAN FD, see sections 5.3.4 and 7.4 – 2 x WLAN antenna connections (Bluetooth at EXT WLAN2), see sections 7.6 and 7.7 – Hilscher netJACK for fieldbus and real-time Ethernet systems, see 7.8. – RS232, see section 7.9 |
| 8 | Power supply and digital input/output, see section 5.3.2 |
| 9 | ON/OFF button |

5.3.2 Power supply

| | | | |
|----|-----------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| V+ | +24 VDC \pm 20 % | |  <p>(The figure shows the socket inside the device)</p> |
| FE | Functional earth |  | |
| 0V | Reference potential | | |
| DI | Digital input 24 VDC | | |
| DO | Digital output 24 VDC | | |

Conductor cross sections: V+ / FE / 0V: AWG 18 (\cong 0.75 mm²)



The permissible voltage ranges and the maximum values for the power consumption can be found in Section **12 Technical Data**.

5.3.3 Digital input and output

Digital output

Type 3 according to IEC61131 (no self-diagnostic function).

0 signal = 0 V (high impedance), 1 signal = 24 VDC, max. 30 mA.

Reverse voltage polarity protection.

Automatic restart after fault state (e.g. after short circuit at output).

Initialisation time: 150 ms from the moment the unit is switched on.

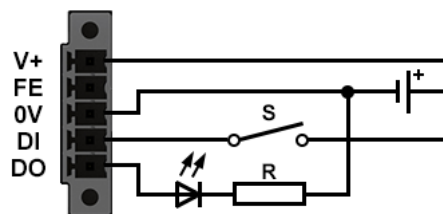
Digital input

Type 3 according to IEC61131

0 signal: < 8.7 VDC / 1 signal: > 10.95 VDC / 8.7...10.95 VDC = undefined (hysteresis)

Current: max. 2.7 mA

Schematic circuit diagram



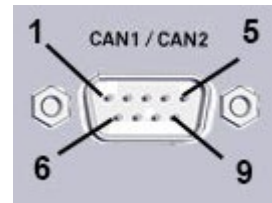
The digital input and output can be configured in the **Configuration Center** and read in or out using the program library **adsXtern.dll** (ads-tec External User Library) in order to integrate them in user programs. For this purpose, please contact the support of ADS-TEC.

5.3.4 CAN interface

The optional CAN bus card features two separate CAN buses connected together via a 9-pin Sub-D connector.

The connector on the power supply line assembled by the customer must have the following pin assignment:

| Pin | Signal |
|-----|-----------------|
| 1 | n.c. |
| 2 | CAN1-L |
| 3 | CAN1-GND |
| 4 | CAN2-L |
| 5 | n.c. |
| 6 | CAN2-GND |
| 7 | CAN1-H |
| 8 | n.c. |
| 9 | CAN2-H |



(The figure shows the socket inside the device)

**Recommendation for use:**

Each CAN bus must be terminated at both ends with a 120 Ω terminating resistor.

If the IPC9000 is on one bus end, the corresponding resistors must be integrated in the customer's connector.

5.4 Maximum cable lengths

**Recommendation for use:**

Note the maximum cable lengths for the respective application type.

The maximum length of cables which can be used to connect the monitor and computer is:

- HDMI up to max. 15 m
- DisplayPort up to max. 10 m
- USB 2.0 up to max. 15 m (with active hubs, otherwise 5 m)

For long distances between the display and the computer, you will need the HDBaseT version:

- HDBaseT™ up to max. 100 m, see also Section 7.3.

6 Commissioning

6.1 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.

6.2 Switching on and configuring device

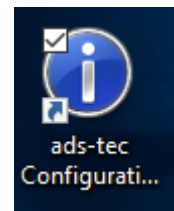
After connecting the power supply and monitor, the device can be started using the ON/OFF button on top of the device.

The button has a blue LED and indicates the following states:

- LED illuminated: device is on,
- LED flashing: device is in an energy-saving state.

After startup there is an icon on the Windows Desktop that can be used to call up the **ADS-TEC Configuration Center**.

Important: To be able to configure settings, you will need to start the Configuration Center with **administrator rights** (right-click with mouse and select "Run as administrator" from the context menu).



The **Configuration Center** from ADS-TEC can be used to make a number of settings, e.g.:

- Behaviour of the ON/OFF pushbutton
- Disabling of the USB interfaces
- Write-protection of the mass storage or parts of it
- Soft keyboard
- Wireless devices
- Many other modules are in preparation

7 Features (optional)

7.1 Big-LinX®

Big-LinX is a versatile and scalable IoT service platform which provides high-performance modular solutions 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.

- To establish a connection to the Big-LinX cloud, slide the Big-LinX smart card into the slot labelled SIM.



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

7.2 DisplayPort™

The device has a DisplayPort++™ (1.2) display port connection as standard for transmitting data to a monitor.

The optional second display port connection also meets the DisplayPort++™ (1.2) requirements.





7.3 HDBaseT™

With HDBaseT™, the connection between the computer and monitor is established using a LAN cable with RJ45 plugs. The distances that can be bridged depend on the network infrastructure used:

- with a CAT6a patch cable without sockets etc.: max. 70 m
- with a Cat. 7 or 7a LAN installation cable + sockets + two 1 m patch cables: max. 100 m



The two LEDs in the connector indicate various system states:

| | LED signal | Action |
|--------------|-----------------------------------------------------------------------------------------------------|-----------------------|
| HD CP |  Flashing red | No active encryption |
| |  Illuminates red | Encryption active |
| HDB T |  On | Connection present |
| |  Off | No connection present |

HD

CP = High-bandwidth Digital Content Protection; HDBT = HDBaseT™

7.4 CAN card

The optional CAN bus card from PEAK features two separate CAN buses connected together via a 9-pin Sub-D connector. The two buses are galvanically isolated from each other and from the device's electrical system.

Standards: the card supports CAN FD and is backwards compatible with the CAN standard 2.0 A/B.

Transmission rate: max. 1 Mbit/s per bus.

Please note that the maximum bus length depends on the set transmission rate. Typical values with correct termination:

| Transmission rate | Bus length |
|-------------------|------------|
| 1 Mbit/s | 40 m |
| 500 kbit/s | 110 m |
| 250 kbit/s | 240 m |
| 125 kbit/s | 500 m |
| 50 kbit/s | 1.3 km |
| 25 kbit/s | 2.5 km |
| 15 kbit/s | 5 km |

Devices delivered ex factory with the Windows operating system and CAN card already include the appropriate drivers pre-installed.

For other cases, and if special configuration or programming software is required for the fieldbus nodes, see <https://www.peak-system.com/>

Connector pin assignment and termination information is available in section 5.3.4.

7.5 Mass storage devices

Information on how to install or remove SSD cards is available in section 10.3.

7.5.1 With RAID system

The device supports two separate SSD mass storage devices that can be used together with the help of RAID technology (RAID = redundant array of independent disks).

To use this function, two type **M.2 2242 Key M** SSD cards with a **SATA** interface are required.

NVMe cards with a PCIe interface cannot be used.

Supported options:

- **RAID level 0 striping:** this RAID variant is recommended when a large data storage system with high data access speeds is required. Since the data are not stored redundantly, this level is only recommended if data loss will not result in serious consequences, e.g. because the data can be recovered easily if a storage medium fails.
- **RAID level 1 mirroring:** both mass storage devices redundantly store the same data in this case. If a mass storage device fails, usually no data is lost and the defective mass storage device can easily be replaced. The total storage size corresponds to the smallest of the individual storage devices used.



The desired RAID level must be specified when placing the order.

7.5.2 Without RAID system

The devices can also be ordered with two SSD mass storage devices, but without a RAID system.

By default, the operating system is then located on the mass storage device next to the CMOS battery.

The second mass storage serves as a data partition.

7.6 WLAN

This optional function uses the resources provided by the operating system.

External WLAN antennas can be connected to the connectors (RP-SMA) on the front panel. The **EXT WLAN1** connector is used to connect the first antenna (MAIN) and **EXT WLAN2** is used to connect the second antenna (AUX). The device automatically uses the connection with the better signal.

7.7 Bluetooth™

Devices with WLAN also have Bluetooth. This function uses the resources provided by the operating system.

EXT WLAN2 must be used as the connection:



7.8 netJACK plug-in modules

The netJACK plug-in modules from Hilscher make it possible to connect the device with all common fieldbus and real-time Ethernet systems, such as PROFIBUS® DP, PROFINET® IO, CANopen®, EtherCAT®, EtherNet/IP™, POWERLINK, Sercos® and many more.

Connection to the device (i.e. the host system) is provided by **PCI Express**.



Manufacturer's model number:

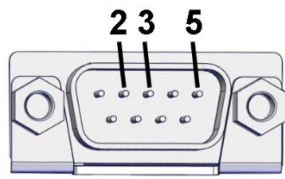
| Type | Protocols |
|-------------|----------------------------------------------------------------------------|
| NJ 100EN-DN | DeviceNet |
| NJ 100EN-CO | CANopen |
| NJ 100EN-DP | PROFIBUS |
| NJ 100EN-RE | EtherCAT, EtherNet/IP, Open Modbus/TCP, POWERLINK, PROFINET, VARAN, Sercos |



Information on **installing and removing the modules** can be found in Section 10.4.
 Information on how to **install the drivers** can be found in sec. 8.3.
 Detailed information, manuals and software for the individual modules are available at
www.hilscher.com

7.9 RS232

Hardware configuration



(figure shows socket in the device)

| | | | Seen from the IPC9: |
|-------|-----|------------------------------|---------------------|
| Pin 2 | RxD | Receive Data | Input |
| Pin 3 | TxD | Transmit Data | Output |
| Pin 5 | GND | Ground – Reference potential | |

Configuration of the driver “WhlHsUart”

The following IOCTLs are implemented in the driver for the RS232 interface as of 12/2021:

- IOCTL_UARTTESTTOOL_OPEN
- IOCTL_UARTTESTTOOL_CLOSE
- IOCTL_SERIAL_SET_BAUD_RATE
- IOCTL_SERIAL_GET_BAUD_RATE
- IOCTL_SERIAL_SET_MODEM_CONTROL
- IOCTL_SERIAL_GET_MODEM_CONTROL
- IOCTL_SERIAL_SET_LINE_CONTROL
- IOCTL_SERIAL_GET_LINE_CONTROL
- IOCTL_SERIAL_SET_CHARS
- IOCTL_SERIAL_GET_CHARS
- IOCTL_SERIAL_SET_HANDFLOW
- IOCTL_SERIAL_GET_HANDFLOW
- IOCTL_SERIAL_GET_MODEMSTATUS
- IOCTL_SERIAL_GET_DTRRTS
- IOCTL_SERIAL_GET_MODEMSTATUS
- IOCTL_SERIAL_GET_COMMSTATUS
- IOCTL_SERIAL_GET_PROPERTIES
- IOCTL_SERIAL_SET_FIFO_CONTROL
- IOCTL_SERIAL_GET_STATS
- IOCTL_SERIAL_CLEAR_STATS
- IOCTL_SERIAL_PURGE
- IOCTL_SERIAL_SET_TIMEOUTS

Since the IOCTL's *IOCTL_SERIAL_SET_WAIT_MASK* and *IOCTL_SERIAL_WAIT_MASK* are not implemented in this version, the **events** (such as RXCHAR, RXFLAG, TXEMPTY, CTS, DSR, RLSD, BREAK, ERR, RING, PERR) will not be generated by the driver.

Applications should not wait for an event. Instead, they can directly **poll** or receive the data via Read operations.

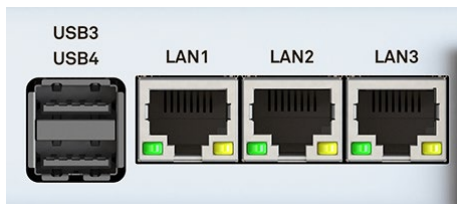


Detailed instructions for the "WhlHsUart" driver are available on request from ADS-TEC support.

7.10 Wake on LAN (WoL)

This function can be used for event-driven startup of "sleeping" computers on the local network, such as for running updates at night.

The interfaces **LAN1 ... LAN 3** are available for this purpose:



The computer must be in one of the following ACPI states^{*)} in order to wake up via WoL:

- State S5: computer is shut down, voltage is present
- State S3: energy-saving ("sleep") state
- State S4: hibernate state

^{*)} Advanced Configuration and Power Interface

7.10.1 Settings in BIOS

The following settings must be enabled in order to use WoL:

"Network Stack" must be enabled in the **standard BIOS** ([Del] key):

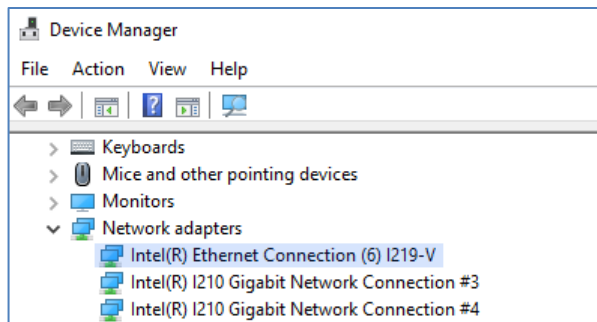
- *ADS-TEC Settings / Network Stack Configuration / Network Stack = [Enabled]*

The onboard Ethernet controller and WoL must be enabled in the **advanced BIOS** ([Alt] + [Del] keys):

- *Chipset / PCH-IO Configuration / PCH LAN Controller = [enabled]*
- *Chipset / PCH-IO Configuration / PCH LAN Controller / Wake on LAN Enable = [enabled]*

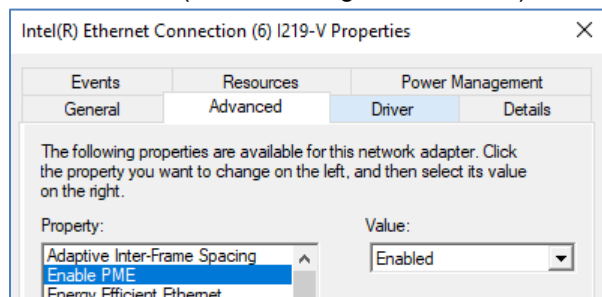
7.10.2 Settings in the operating system (Windows 10)

In **Device Manager** under "Network adapters", open the properties dialogue box of the Ethernet controller for the LAN connector being used (the example here is for LAN1):

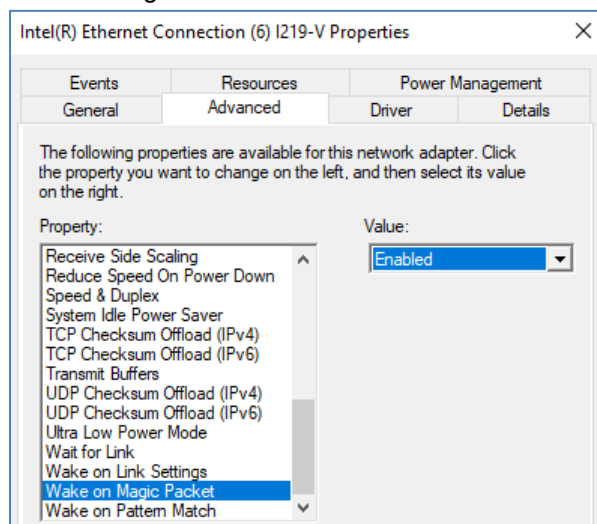


Make the following settings on the "Advanced" tab:

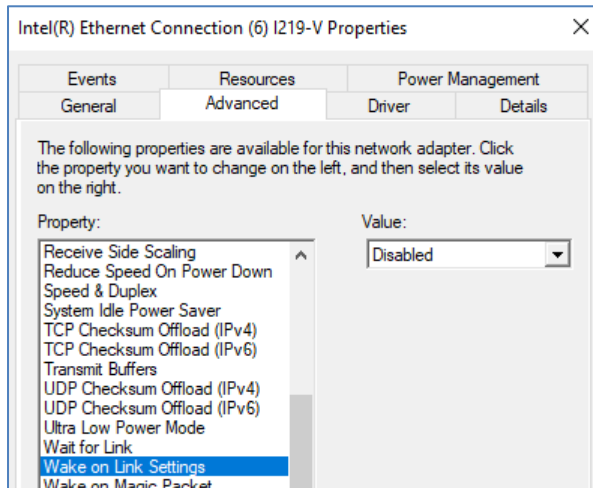
1. Enable "PME" (Power Management Events):



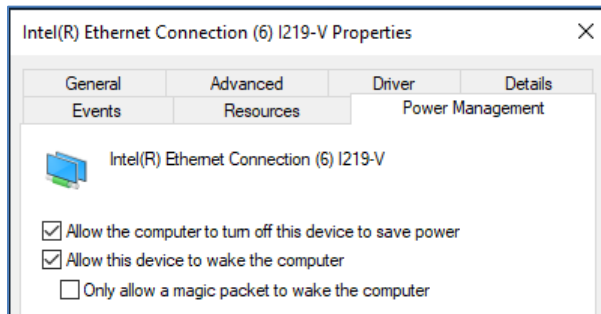
2. Enable "Magic Packet":



3. Disable "Wake on Link Settings":



4. On the *Power Management* tab: "Allow this device to wake the computer":



8 Software / driver installation

8.1 Initial installation of the operating system

The devices are delivered with a pre-installed operating system depending on the client's specifications. If the mass storage has been reformatted, the operating system can be reinstalled by using one of the existing interfaces (alternatively via USB or PXE).

The files required for this (image, driver and firmware), along with a detailed description of the procedure, can be obtained from ADS-TEC support on request.

8.2 Write protection

If the mass storage or parts of it have been write-protected in the **Configuration Center**, this write protection must be removed again before 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.

8.3 Installing the netJACK modules at a later stage

If these modules are installed later, a driver must be installed, which is located in the following directory:
C:\Drivers\Fieldbus\Hilscher

Start the **cifX Device Driver Setup**.

After successful installation, the device appears in the device manager as **cifX Communication Interface**.

9 Cleaning

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

10 Maintenance

CAUTION



Burns and scaring due to hot surfaces

Touching hot surfaces can cause burns. In addition, unexpected contact can lead to uncontrolled movements due to startling.

- Allow the unit to cool down before servicing.
- Wear suitable gloves if necessary.

10.1 Opening and closing the service slot

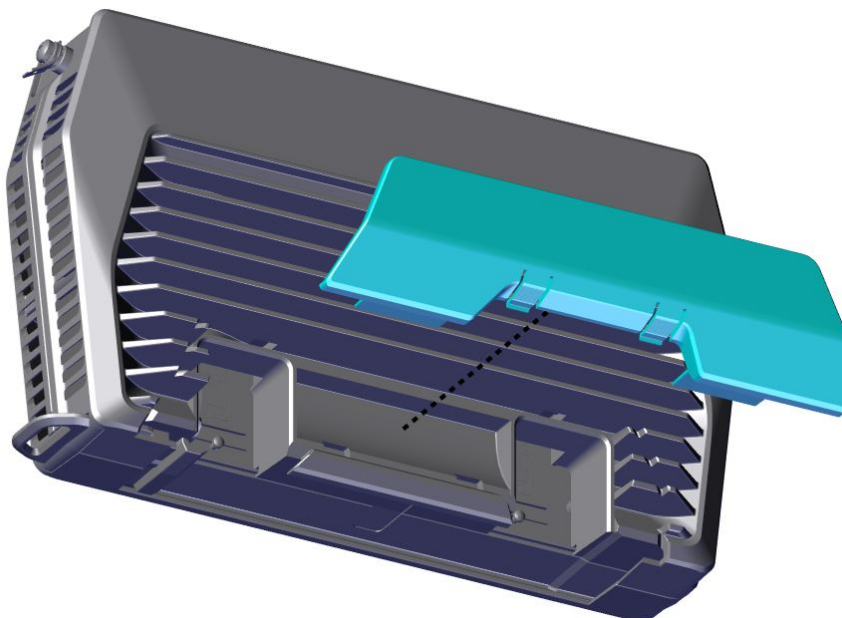
ATTENTION

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.

Simply pull off or press on the cover to open or close the service slot:



10.2 Replacing the CMOS battery

The CMOS battery (aka BIOS battery) has a life cycle of 3-5 years depending on the load applied.



Recommendation for use:

To prevent unexpected plant downtime, as a precaution, the CMOS battery should be replaced within the scope of the maintenance plan (e.g. every 3 years).

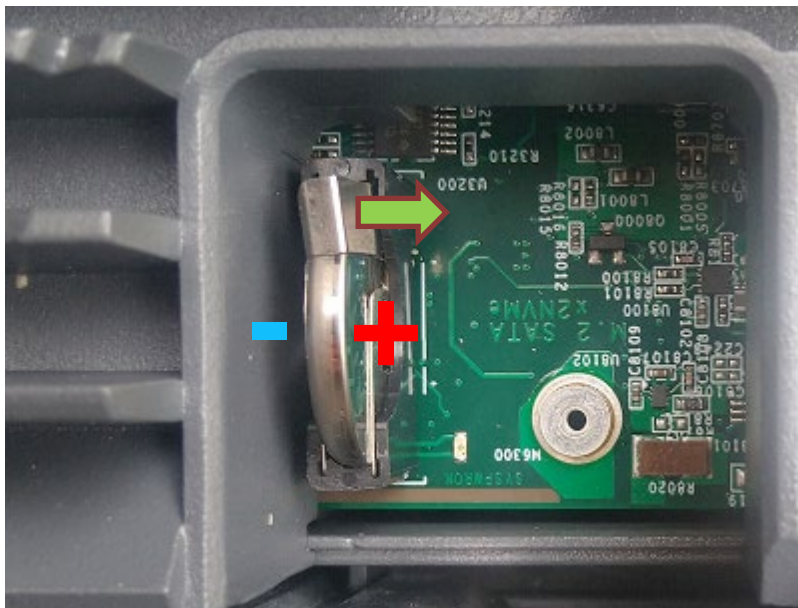
1. Pull off the service slot cover as specified in section 10.1.
2. Bend the top panel retainer clip slightly to the right (see green arrow in figure below) and pull out the battery.

CAUTION



Risk of short circuit!

Do not use **metal** pliers or tweezers to remove or insert the battery.



Re-installation is performed in the reverse order of removal. The battery type to be used is:

- Lithium battery CR2032
- ADS-TEC part number: DZ-SONS-04075-1

Pay attention to the polarity when inserting the battery.

Please also note the general information on batteries in section 2.8.

10.3 Installing or removing SSD cards

Format: SSD cards with the format **M.2 2242 Key M** can be used.

Interface: depending on the slot, **SATA** or **NVMe** cards can be used (see figure below).

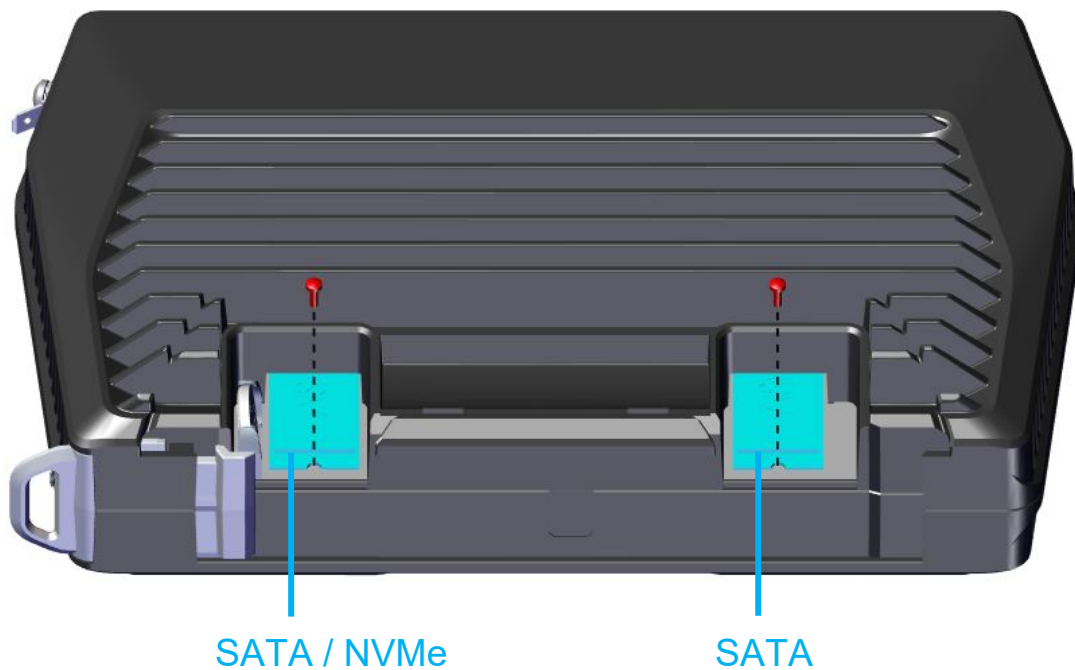
Compatible mass storage cards can be obtained from ADS-TEC if required.

Removal:

1. Pull off the service slot cover as specified in section 10.1.
2. Remove the retaining screw, lift the SSD card slightly and pull it out.

Installation:

1. Insert the new card into the slot from above at a slanting angle.
2. Press the card downwards and secure it with the existing screw (M3x6).



10.4 Removing and installing the Hilscher netJACK module

10.4.1 Removal

Fully pull the **pull tab** out.



Pull the module out approx. 5 mm.

Tilt the module up and press it down at the same time in order to lift the metal brackets out of the circuit board.

FYI: Section 10.4.3 shows how the metal brackets are inserted into the circuit board.



10.4.2 Installation

- For modules in their original packaging:
Remove the ESD protective cardboard packaging.
Never touch the contacts!



- Move the pull-out tab to a middle position.



- Insert the module so that the contacts point towards the circuit board. The labeling of the module is upside down due to the board being on top.



- Press the module down approx. 5 mm from the edge of the housing and tilt it upwards at the same time, so that **the metal brackets come to rest in the recesses in the circuit board**.

FYI: Section 10.4.3 shows how the metal brackets are inserted into the circuit board.

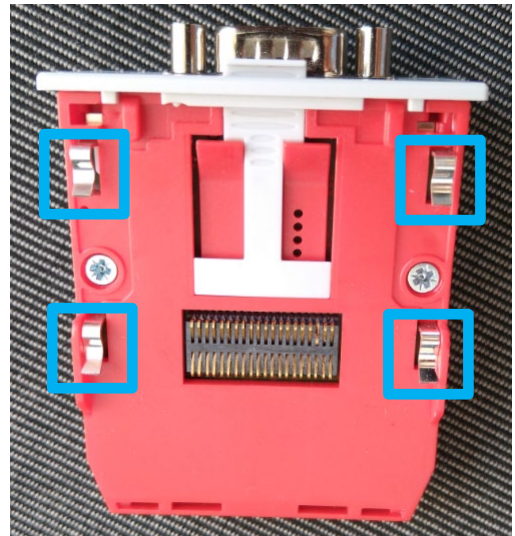


- Push the module in all the way with a slight pressure. Then push in the pull-out tab completely.

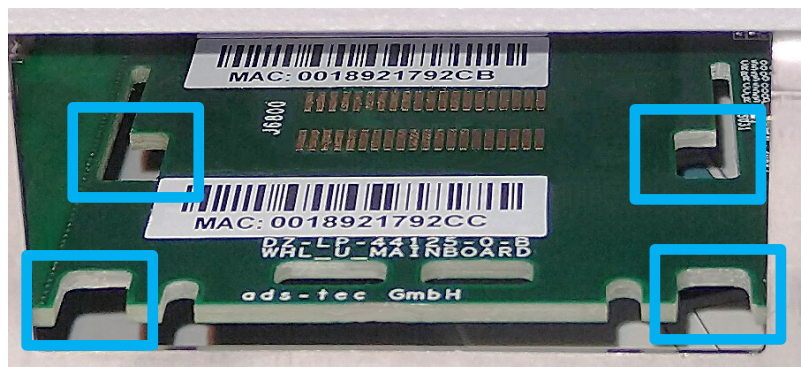


10.4.3 FYI: Fixing the module to the circuit board

The module is clamped onto the circuit board with **four metal brackets**.

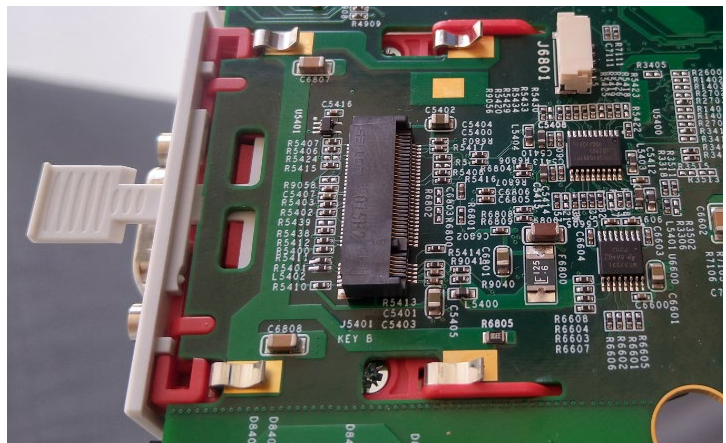


The metal brackets must be inserted into the **recesses** in the circuit board:



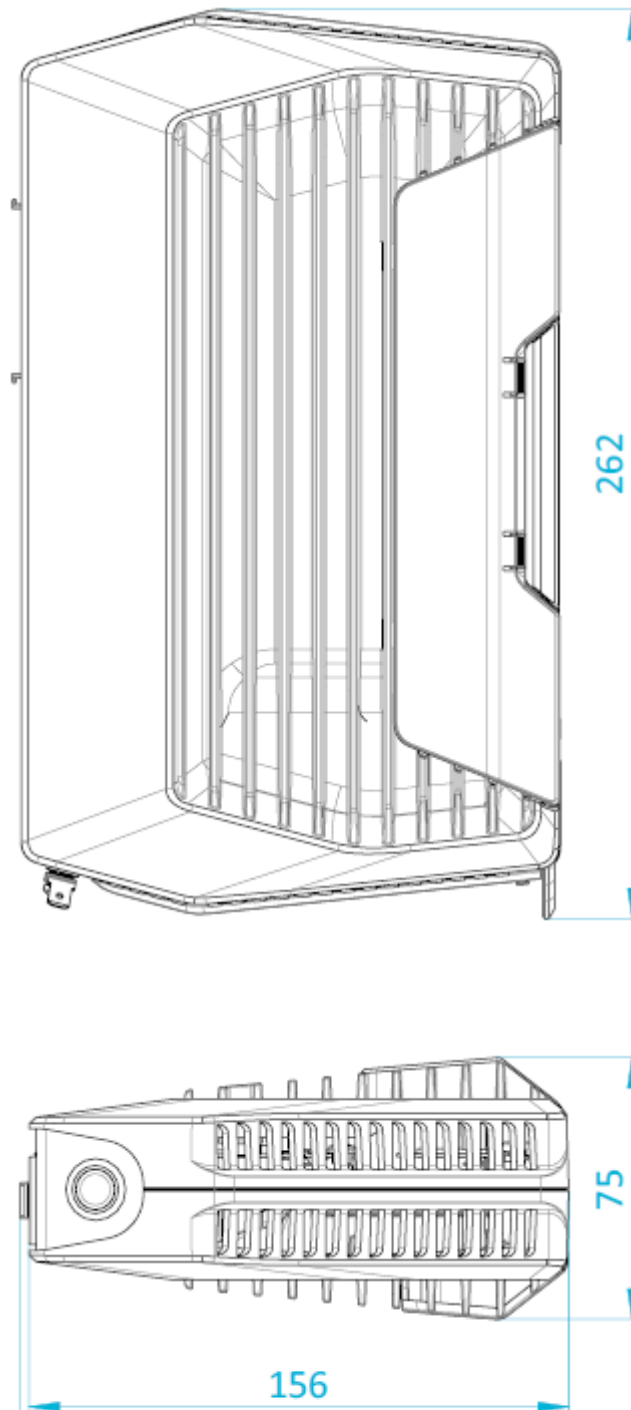
.. and finally, **pushed onto the circuit board**, where they will click into place with a slight pressure.

For the purposes of illustration, this image shows the back of the circuit board (usually not visible) with the metal brackets fully inserted:

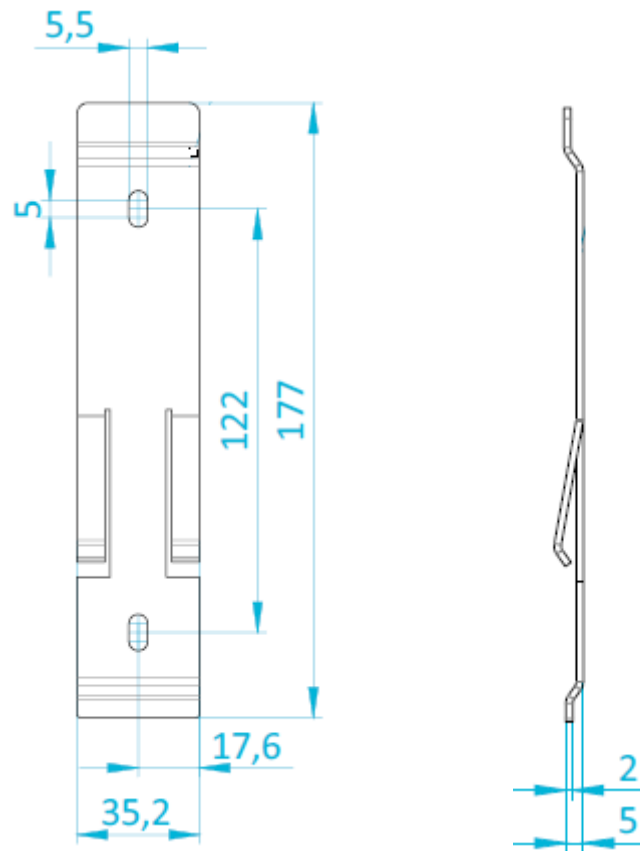


11 Dimensional drawings

11.1 Device



11.2 Wall bracket



12 Technical data

| | |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Housing | Fanless die-casting aluminium housing, powder-coated |
| Processors | Intel® Celeron® 4305UE 2.0 GHz Dual Core Intel® Core™ i5 8365UE 1.6 GHz Quad Core |
| RAM | Up to 32 GB DDR4 RAM |
| Mass storage ^{*)} | 1 x 128 GB M.2 SSD 1 x 256 GB M.2 SSD 2 x 128 GB M.2 SSD, optionally configurable as RAID 2 x 256 GB M.2 SSD, optionally configurable as RAID |
| Interfaces | 4 x USB gen. 3.1 2 (max. 1 A per connection) 3 x Ethernet (10 / 100 / 1000 Mbit/s) DisplayPort++™ (1.2) 1 x 5-pin supply connector with 2 digital I/Os (1 x IN / 1 x OUT) Smart card reader for ADS-TEC Big-LinX® |
| Optional interfaces | CAN bus card with 2 separate channels: standard CAN FD, backwards compatible with CAN 2.0 A/B, max. transmission rate of 1 Mbit/s HDBaseT™ transmitter (excludes second DisplayPort) Second DisplayPort++™ (1.2) (excludes HDBaseT) WLAN IEEE 802. 11a/b/g/n/ac (excludes netJACK) Hilscher netJACK (excludes WLAN; system connection via PCI Express) |
| Button | 1 x ON/OFF button |
| Power supply | 24 VDC ± 20 % (19.2 ... 28.8 VDC) |
| Power consumption | In idle mode (typically): 13 W (without LAN and USB consumers, one DP display) Full load without peripherals (typically): 28 W Full load with peripherals (max.): 60 W |
| Permiss. ambient temperatures | Operation 0 °C ... +55 °C (when using a netJACK module: 0...+45 °C) Storage -25 °C ... +70 °C |
| Protection | Protection class IP20 Humidity 5...95 % non-condensing |
| Vibration/shock resistance | DIN EN 60068-2-6: 10...85 Hz: 0.075 mm; 58...500 Hz: 4 G (~40 m/s²) DIN EN 60068-2-27: 30 G (~300 m/s²), 6 ms |
| EMC | Class A (industrial sector) as per EN 61000-6-2/4 |
| Dimensions | See section 11 "Dimensional drawings" |
| Operating system | Windows Enterprise 2021 LTSC or no operating system |
| Weight | Approx. 1.9 kg (incl. wall bracket) |

^{*)} Due to e.g. additionally implemented security functions of the SSD manufacturer, the freely available capacity of the mass storage may be slightly reduced.

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 www.ads-tec.com.

Our Support team will then get in touch with you as soon as possible.

13.2 Company address

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72622 Nürtingen

Germany

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Email: mailbox@ads-tec.de

Web: www.ads-tec-iit.com