Industrial PCs

Full
HD

# Instruction manual

Industrial PCs

OPC8017 OPC8024 /

OPD8017 OPD8024

ads tec

**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.de in the download area.

# Table of Contents

# 1  Device description

OPC8017/OPC8024 (**O**perating **P**anel **C**omputer) and OPD8017/OPD8024 (**O**perating **P**anel **D**isplay) are designed for the control and visualisation of production processes in the pharmaceutical, foodstuff, beverage and chemical industry. In the case of the OPC, the processing unit is integrated in the housing, making an external PC unnecessary for control. The OPD is a display which can be controlled by an external computer, e.g. from the existing industrial computer environment. Cables can be used for distances of up to 15 m between the computer and OPD. The optional extender kit has been developed to bridge greater distances of up to 100 m. Both the computer and the display option are available in the 17 and 24 inch format.
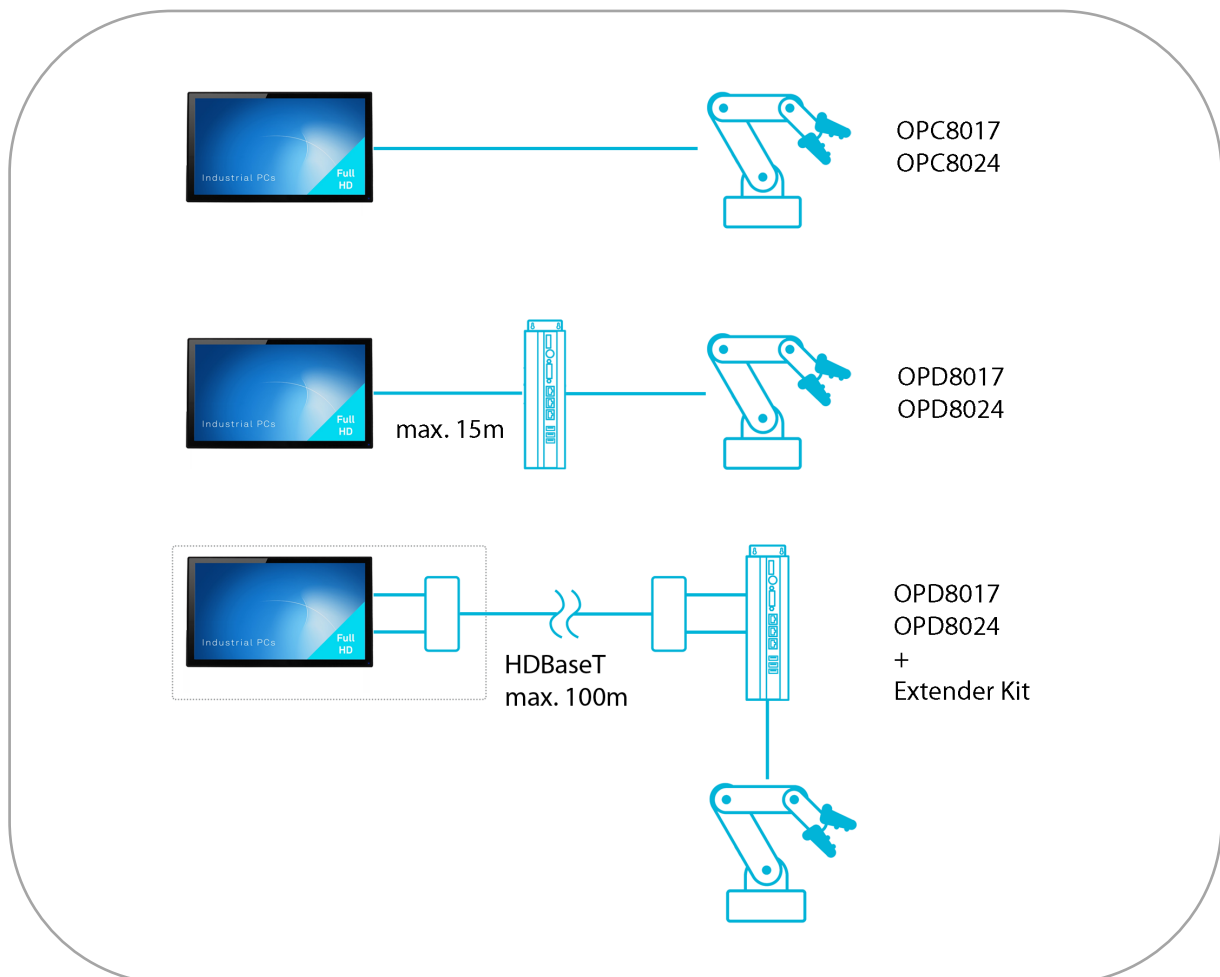


Figure 1: Use of OPC / OPD

The devices have been specially developed to fulfil strict hygiene requirements. This is achieved by the stainless steel housing of the device being completely closed at the front, having rounded edges and no external screws. This allows the device to be cleaned simply and effectively. The device has no fan, which means that the primary source of contamination is not present. Due to its robust, compact design, the device can also be operated under demanding environmental conditions.

Thanks to the very latest multi-touch technology, the display can be operated conveniently by tapping and also by means of swiping and dragging movements. Operation with gloves is also possible.
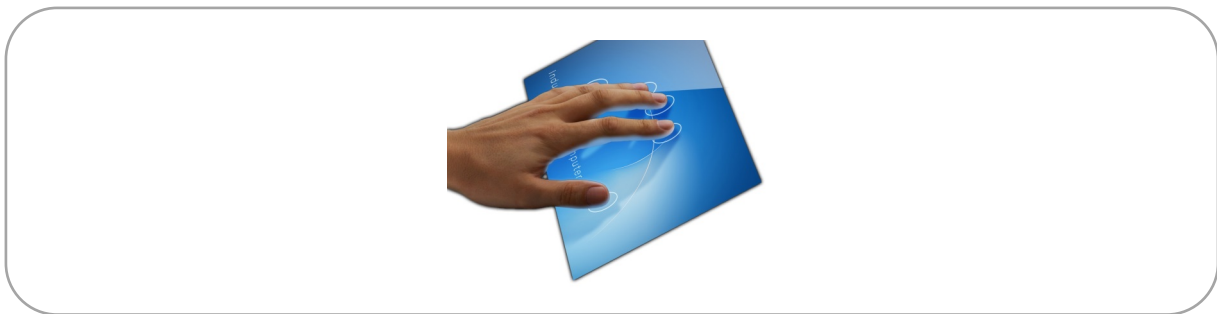


Figure 2: Touch surface

The devices are designed to be installed in a switch board or cabinet door. All of the necessary cables are routed on the rear side so that there are no exposed cables at the front.

# 2 General information

## 2.1 Information about documentation

### 2.1.1 General remark

This instruction manual is intended to ensure safe and efficient handling and operation of IT Infrastructure products.

The instruction manuals must be read carefully by personnel before commencing any type of work.

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.

Operation of the system is subject to the laws and regulations which are applicable in the respective country at national, federal, European and international level.

The generally accepted rules of technology, usually in the form of standards, directives, regulations, conditions and technical rules specified by national and federal organisations as well as trade associations and committees for the field of specialisation concerned, shall apply.

Figures used in this instruction manual are provided for basic understanding and may differ from the actual design.

The operator/operating company is independently responsible for compliance with and observance of any subsequently introduced technical innovations or new legal requirements, as well as for all usual obligations of the operator/operating company.

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.

### 2.1.2 Limitation of liability

ads-tec Industrial IT GmbH 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.

## 2.1.3 Manufacturer and contact details

The manufacturer of the product 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.de

## 2.1.4 Relevant device documentation

The following documents are decisive to device setup and operation:

Instruction manual:

Contains information for installation, commissioning and operation of the device along with technical data of the device hardware.

Website

You can download the instruction manual as well as drivers, software, user manuals, leaflets and flyers from the *Download* area of our website www.ads-tec.de.

## 2.1.5 Symbols

| Symbol | Meaning |
|---|---|
|  | Designation of batteries. 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 |
|  | Labelling of 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 functional earth connection |

## 2.1.6 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.

## 2.1.7 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® and Big-LinX® 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.

## 2.1.8 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.

## 2.1.9 Standards

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

$\mathsf{C}\,\mathsf{E}$

The product is a class A device (Industry).

Note: 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.

The EU conformity declaration can be requested on our website www.ads-tec.de and downloaded in the Download area.

Variants with the UL logo on the device label also comply with the following UL standards:

- o UL 61010-1 Programmable Controllers
- o UL 61010-2-201 UL file number E343358
- o CAN/CSA-C22.2 No. 61010-1
- o CAN/CSA-C22.2 No. 61010-2-201

## 2.2 Explanation of safety instructions

### 2.2.1 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**! <br><br> Possible consequences if the hazard is disregarded <br><br> ➡ Measures for avoiding the hazard |

## 2.2.2 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. |

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## 2.3 Safety instructions

## 2.3.1 Basic safety instructions

- All users must read this manual and have access to it at all times.
- The safety notices and the manual itself must be observed by all persons who work with this device.
- The manual contains the most important instructions on how to use this device in a safe way.
- 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 work. Appropriate measures must be taken to prevent electrostatic discharges on components.
- If the device is opened up by an unauthorised person, the user may be subject to hazards and the warranty is invalidated.
- Installation, commissioning and operation may only be performed by qualified and trained personnel.
- At the installation site the valid guidelines and regulations for accident prevention must be observed.
- Appropriate storage, proper transport, installation and commissioning, as well as careful operation are prerequisites for ensuring safe and proper operation of the device.
- The device can be cleaned using cleaning agents specified in the chapter 9.2.

## 2.3.2 Environmental conditions

> ### ATTENTION
>
> **Damage caused by condensation!**
>
> If the temperature of the device is different to that of the room in which it is located, condensation can form.

> ### 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.

> ### 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 put into operation and used under the following environmental conditions. 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.

Use of the device is only permitted

- in enclosed buildings
- in non-explosive atmospheres
- at altitudes below 3000 m
- in environments with maximum contamination grade 2 (IEC/EN 61131-2)

The device can be operated under the environmental conditions (temperature, humidity, vibration and shock) which are specified in the data sheet in chapter 10. 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.

The climatic conditions were tested according to:

IEC/EN 60068-2-1

IEC/EN 60068-2-2

IEC/EN 60068-2-14

Protection class: IP65 according to DIN EN 60529

### 2.3.3 Intended use

The control system is designed for use in the pharmaceutical, food, beverage and chemical industries. It was specially developed for the hygiene sector. The device is used for the visualisation and control of a wide range of processes on systems and machines in various application environments.

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

### 2.3.4 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, if necessary, 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.

### 2.3.5 Damage due to improper use

| ATTENTION |
|---|
| **Risk of mechanical damage!** |
| 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! |

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

## 2.3.6 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.

## 2.3.7 Treatment and disposal of lithium batteries

| **WARNING** |
| --- |
| **Hazard due to explosion**<br><br>Danger of explosion if using incorrect battery types.<br><br>➔ Use the battery type recommended by the manufacturer! |

| **ATTENTION** |
| --- |
| **Hazard due to thermal loads**<br><br>The more the battery is exposed to higher temperatures, the faster it ages.<br><br>➔ Operate the device within its specifications! |

| **ATTENTION** |
| --- |
| **Damage to the battery**<br><br>Incorrect handling of the battery can cause it to be damaged or destroyed<br><br>➔ 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, moisture and condensation! |

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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 230 mAh

ADS-TEC part number: DZ-SONS-04075-1

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

## 2.3.8 Electrostatically sensitive components

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**ATTENTION**

**Damage due to electrostatically sensitive components**

Damage to the device can be caused by electrostatically sensitive components.

➡ All installation and service work performed on the device must be performed only under safe, secure and de-energised conditions!

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**Recommendation for use:**

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

The provisions of DIN EN 61340-5-1 / DIN EN 61340-5-2 apply

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# 3  Scope of delivery

> **ATTENTION**
>
> **Damage to components containing soft parts!**
>
> If the soft material is subjected to a concentrated load, e.g., by placing it on a grating, irreversible impressions will form after some time.
>
> ➡ Make sure that a suitable surface is provided when setting down the device on its display side!

➡ Please check that all of the following components are contained in the packaging:

**OPC8017**

| Device | DVG-OPC8017 |
| --- | --- |
| 4-pin plug (power supply) | DZ-SONS-01222-3/A |
| 18 x clamping block M4 | DZ-MECH-31024-0 |
| 18 x threaded pin M4x30 | DZ-MECH33695-0/A |

**OPC8024**

| Device | DVG-OPC8017 |
| --- | --- |
| 4-pin plug (power supply) | DZ-SONS-01222-3/A |
| 26 x clamping block M4 | DZ-MECH-31024-0 |
| 26 x threaded pin M4x30 | DZ-MECH33695-0/A |

**OPD8017**

| Device | DVG-OPD8017 |
| --- | --- |
| 3-pin plug (power supply) | DZ-SONS-00994-2 |
| 18 x clamping block M4 | DZ-MECH-31024-0 |
| 18 x threaded pin M4x30 | DZ-MECH33695-0/A |

**OPD8024**

| | |
|---|---|
| Device | DVG-OPD8024 |
| 3-pin plug (power supply) | DZ-SONS-00994-2 |
| 26 x clamping block M4 | DZ-MECH-31024-0 |
| 26 x threaded pin M4x30 | DZ-MECH33695-0/A |

# 3.1 Optional scope of delivery

**Operating system** (only for OPC8017 and OPC8024)

**HDBaseT™ Extender Kit** (only for OPC8017 and OPC8024)

| | |
|---|---|
| Transmitter module | DV-MMDEXT-TX |
| Receiver module | DV-MMDEXT-RX |
| USB cable | DZ-SONS-05647-0/* |
| HDMI cable | DZ-SONS-05646-0/* |
| Cable for power supply | DZ-SONS-09796-0/* |

# 4  Installation

> **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 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 to the electronics!**
>
> If a device with data drive is not installed vertically, the electronics may suffer damage.
>
> ➔  Install devices with data drive vertically only. Deviations must be arranged with ADS-TEC.

> **ATTENTION**
>
> **Mechanical damage!**
>
> If the device is not mounted correctly, IP65 protection will not be provided.
>
> ➔  Tighten the screws to a torque of 0.5 Nm.

> **ATTENTION**
>
> **Damage caused by heat!**
>
> If an unsuitable installation housing is selected, this can result in excessive heat generation.
>
> ➔ When selecting the installation housing, the total power dissipation of the system including installed PCBs must be taken into account. The max. permissible ambient temperature must not be exceeded.

> ➔ **Recommendation for use:**
>
> Connect the power supply using a screw connection. For additional earthing to an earthing screw, use a wire with a cross section of at least 2.5 mm².

This device is designed for integration. For installation and operation reasons (connector access), the installation location must be accessible from the rear. The wall thickness of the installation location must be between 2 and 13 mm. We recommend at least 3 mm for proper installation with IP65 on the front.

# 4.1 Preparing installation location

➔ Cut an opening (as shown in the installation layout) for the device in the switch board or cabinet door in which you want to install the device.
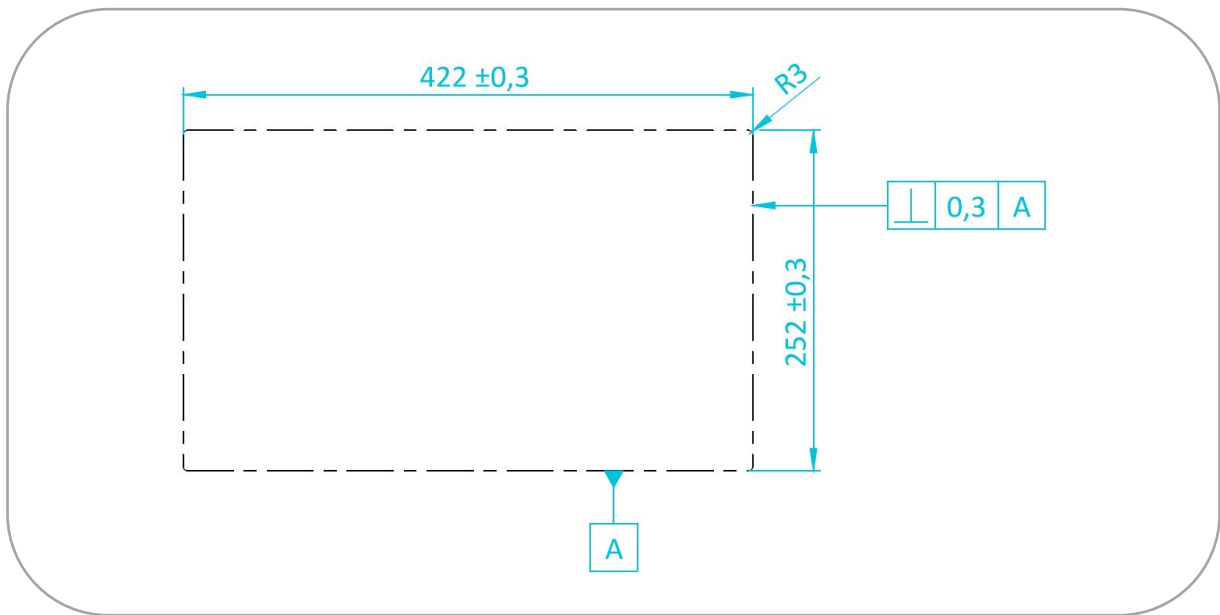
**Installation layout – OPC8017 and OPD8017**



Figure 3: Installation layout – 17 inch
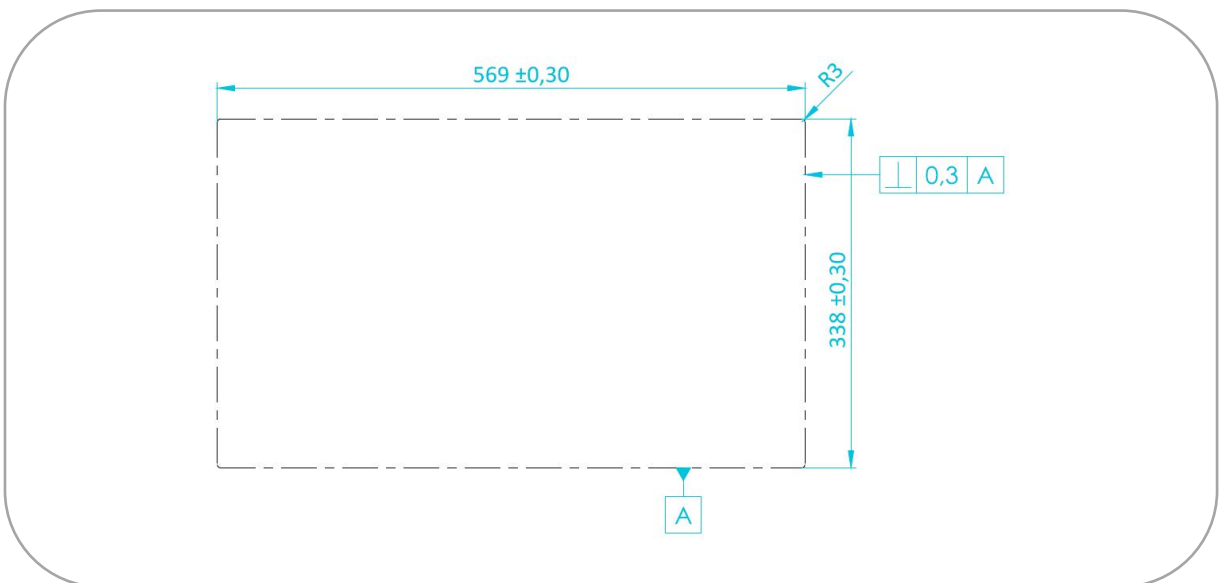
**Installation layout – OPC8024 and OPD8024**



Figure 4: Installation layout – 24 inch

## 4.2 Installing device

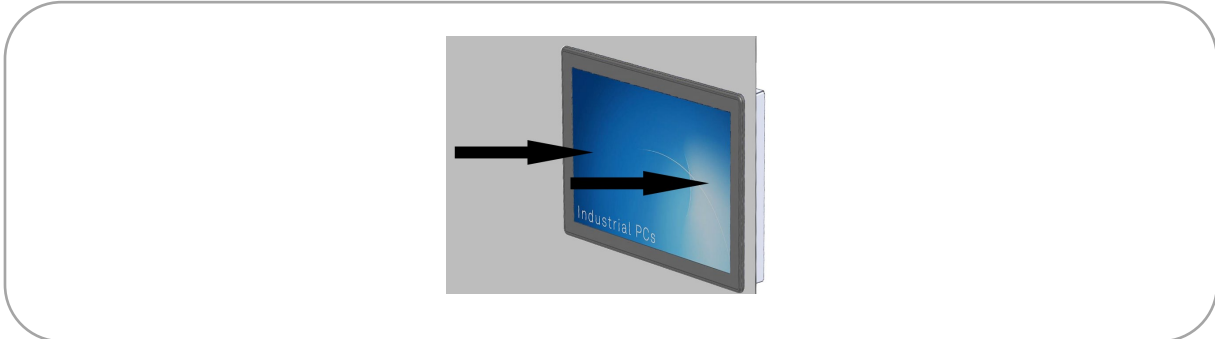➔ Carefully insert the device from the front into the installation location.



Figure 5: Inserting device into installation location

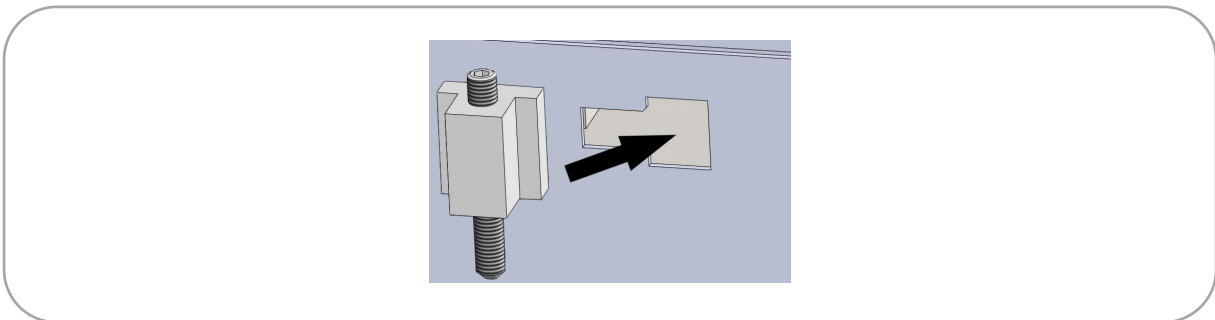➔ Insert the clamping blocks into the openings as shown in the drawing.



Figure 6: Positioning clamping blocks

➔ Slide the clamping blocks from the wide part of the opening into the narrow part.
➔ Tighten the clamping blocks using the threaded pins.
  o Tighten the threaded pins only slightly at first.
  o Always tighten clamping blocks positioned furthest apart in sequence; this will prevent mechanical tension.
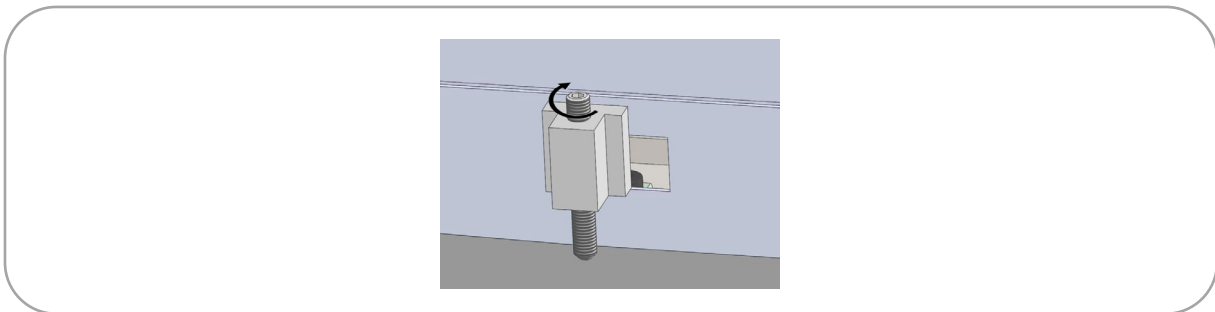


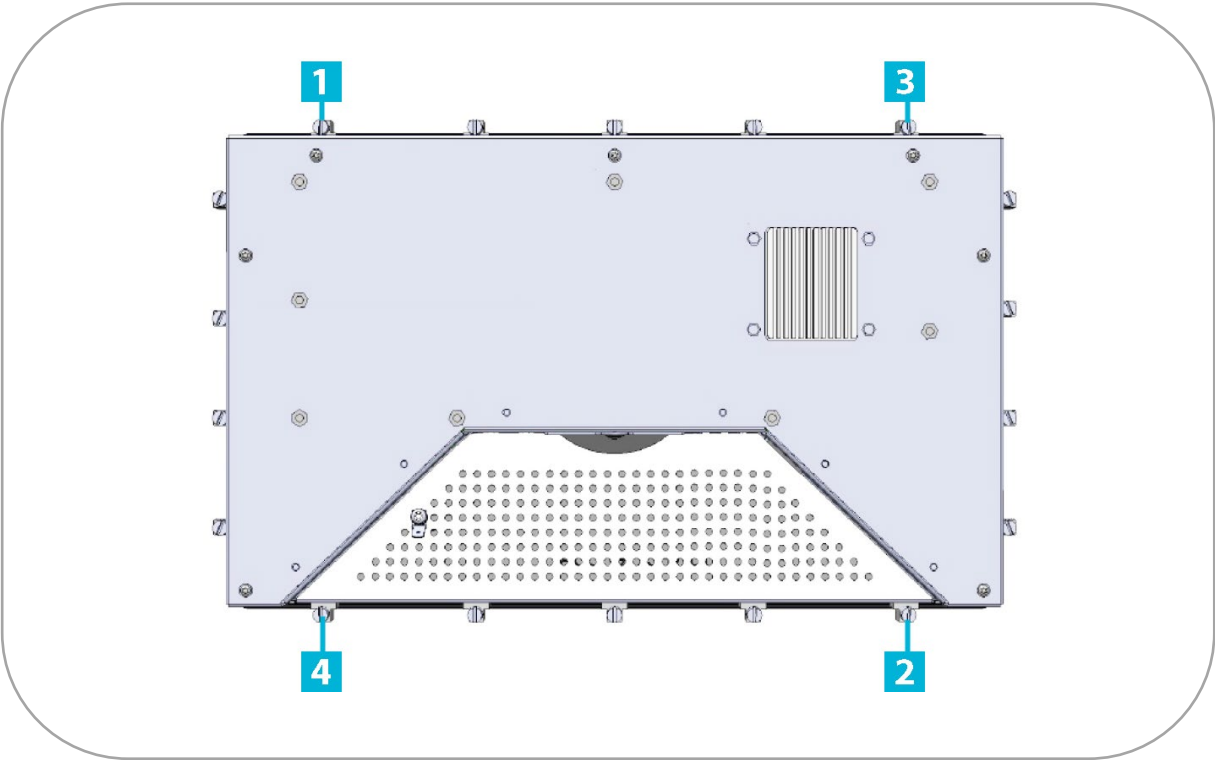Figure 7: Tightening clamping blocks

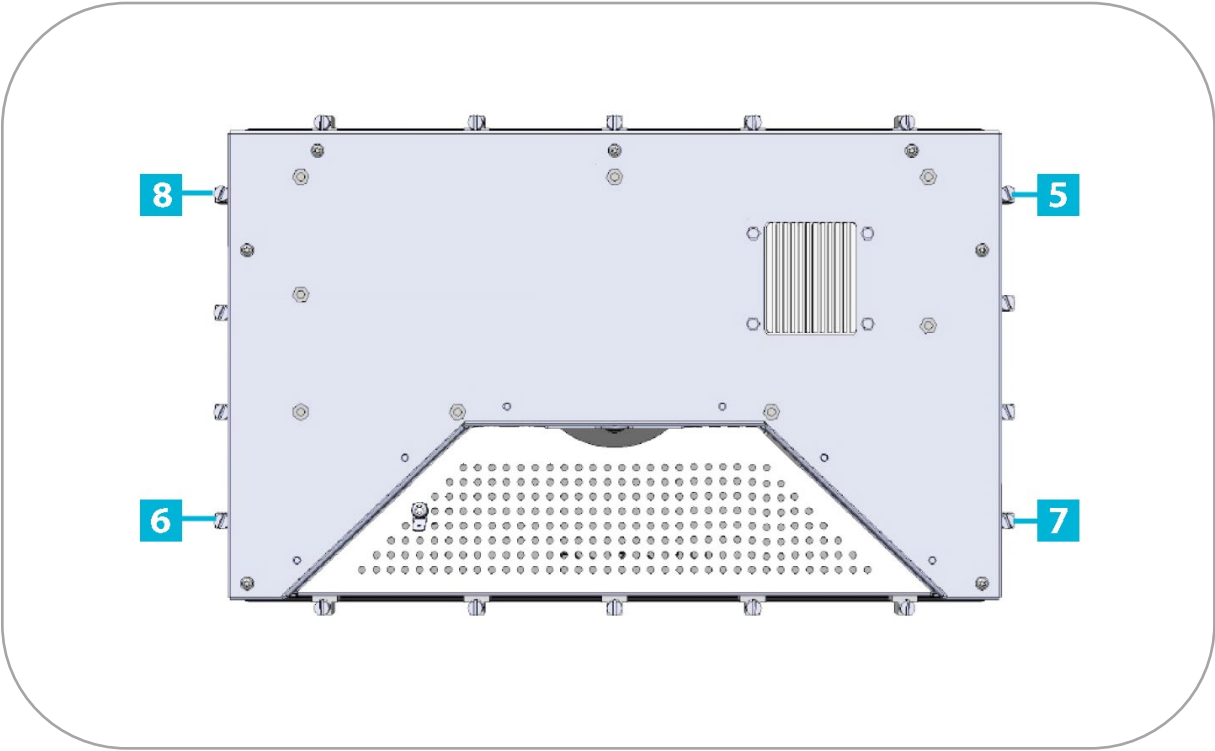Figure 8: Tightening clamping blocks, step 1



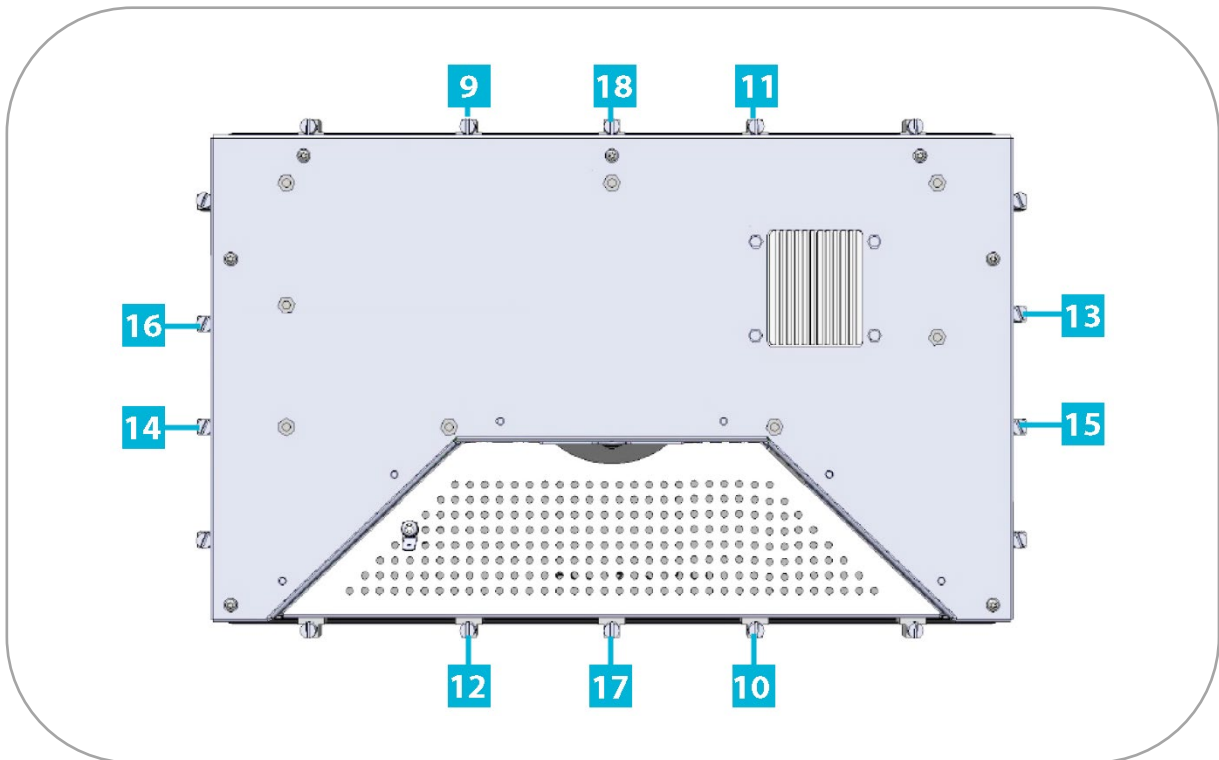Figure 9: Tightening clamping blocks, step 2

Figure 10: Tightening clamping blocks, step 3

➔ Then tighten all threaded pins to a torque of 0.5 Nm in the same sequence.

The pressure of the clamping block against the wall stabilises the OPC/OPD. Installation of the device is complete when all clamping blocks are properly clamped.

# 5 Interfaces

| WARNING |
|---|
| ⚠️ **Hazard due to excessive current!**<br><br>Excessive current can cause overloading of the electronics which could then result in injury or damage.<br><br>➔ Operate the device only with a power supply that complies with NEC Class 2! |

| ATTENTION |
|---|
| **Damage to the electronics!**<br><br>The electronics can be damaged if plug-in connections are connected or disconnected while power is still being applied.<br><br>➔ Make sure that no power is being applied while connecting and disconnecting cables! |

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## 5.1 Interfaces of OPC8017/OPC8024

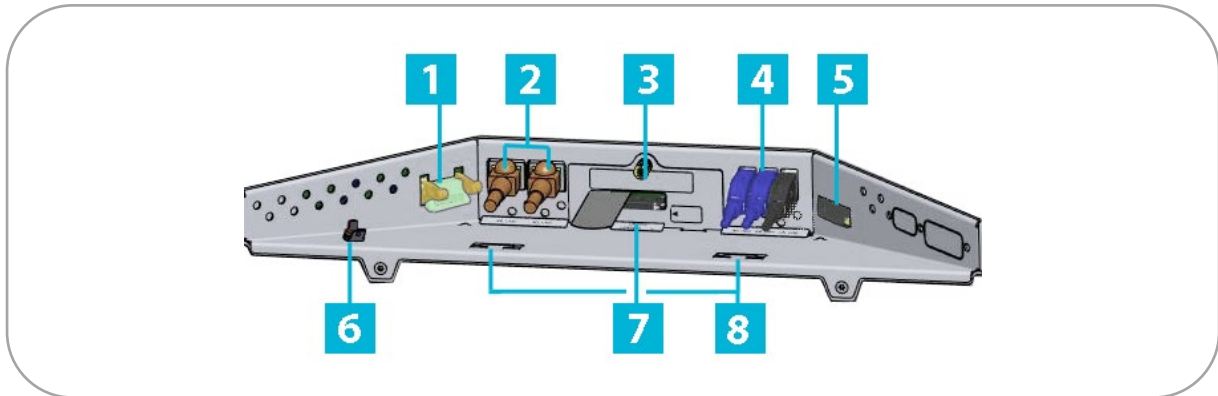All device connections are in the recessed area on the rear side of the device.



Figure 11: Interfaces of OPC8017/OPC8024

| | |
|---|---|
| 1 | Power supply |
| 2 | 2 x LAN RJ45 |
| 3 | 1 x 2.5" mass storage |
| 4 | 2 x USB 3.0<br>1 x USB 2.0 |
| 5 | 1 x SD-Card Slot |
| 6 | Earth connection (FE) |
| 7 | Battery |
| 8 | Strain relief fixture |

## Power supply

You will need a power adapter with the following technical data:

Voltage:          18…30 V ⎓ (NEC Class 2)

Current depending on the device:

| OPC… | 17" | | 24" | |
|---|---|---|---|---|
| Processor | Celeron | i5 | Celeron | i5 |
| Max. permanent current (incl. USB) | 3 A | 4 A | 3 A | 4 A |
| Max. switch-on current | 4 A | 4 A | 4 A | 4 A |
| Fuse (recommended) | 4 A slow | 6 A slow | 4 A slow | 6 A slow |

➔ For the power supply, use only the 4-pole plug connector included in the scope of delivery.

| 1 | n.c. |
|---|---|
| 2 | 0 V ⎓ |
| 3 | FE |
| 4 | 24 V ⎓ |
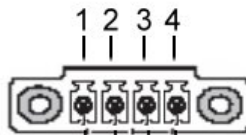
(The figure shows the socket inside the device)

## Earth connection (FE)

➔ See chapter 5.3.

## USB

The sockets comply with the USB 2.0 standard (white interface) and the USB 3.0 standard (blue interfaces). The USB 2.0 interfaces are downward compatible to USB 1.0, and the USB 3.0 interfaces are downward compatible to USB 2.0 and USB 1.0.

## LAN

You can integrate the device in an Ethernet network which supports 1 Gbit/s. For this purpose, use the 1Gbit RJ45 LAN ports. If required, the necessary drivers can be downloaded at www.ads-tec.de.  The specifications for the network topology must be observed.

## Mass storage

**Hard disk / Flash SSD**

The following storage options are available:

1. mSATA module (permanently installed)
2. 2.5" SSD mass storage with up to 500 GB via SATA (removable)

**External drives**

External storage media can be connected via USB interfaces.

---

### ATTENTION

**Risk of data loss!**

Data can be lost if an external data drive is connected or disconnected during operation.

➡ Switch off the device before connecting or disconnecting an external data drive!

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## 5.2 Interfaces of OPD8017/OPD8024

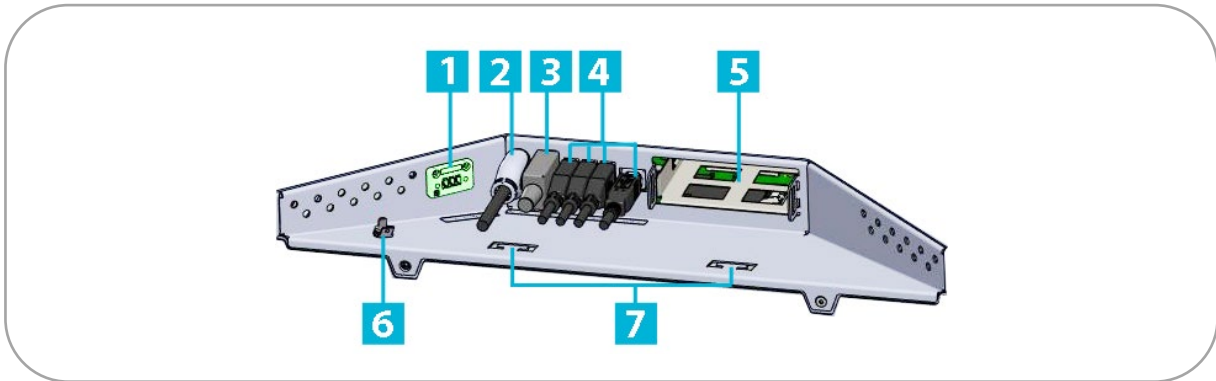All device connections are in the recessed area on the rear side of the device.



Figure 12: Interfaces of OPD8017/OPD8024

| 1 | Power supply |
|---|---|
| 2 | 1 x HDMI |
| 3 | 1 x display port |
| 4 | 4 x USB 2.0 |
| 5 | Mounting slot for extender kit |
| 6 | Earth connection |
| 7 | Strain relief fixtures |

## Power supply

You will need a power adapter with the following technical data:

Voltage:          18…30 V $=$ (NEC Class 2)

Current depending on the device:

| OPD… | 17" (without extender kit) | 24" (without extender kit) |
|---|---|---|
| Typical current | 1,2 A | 1,2 A |
| Max. permanent current | 2 A | 2 A |
| Max. switch-on current | 3 A | 3 A |
| Fuse (recommended) | 4 A slow | 4 A slow |

➔ For the power supply, use only the 3-pole plug connector included in the scope of delivery.

| 1 | 24 V $=$ |
|---|---|
| 2 | FE |
| 3 | 0 V $=$ |
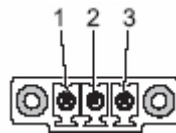
(the figure shows the socket
in the device)

## Earth connection (FE)

➔ See chapter 5.3.

## USB

These interfaces comply with the USB 2.0 standard (3 x type A and 1 x type B). They are downward compatible to USB 1.0.

## HDMI

The HDMI connection complies with version 1.4 of the HDMI standard.

## Display port

The display port complies with version 1.2a of the VESA DisplayPort* standard.

## 5.2.1 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 display and computer is:

- HDMI up to max. 15 m

- Display port up to max. 10m

- USB 2.0 up to max. 15 m

The HDBaseT™ Extender Kit (chap. 0) is required for greater distances between the display and computer. This kit can be ordered from ADS-TEC.

HDBaseT™ Extender Kit:

- HDBaseT™ up to max. 100 m

# 5.3 Functional earthing

## 5.3.1 General informations regarding functional earthing

- **Functional earth (FE)**: For compliance with EMC regulations.

- **Conductor cross sections**:

  **0V / FE / 24V**: AWG 18 ($\triangleq$ 1 mm$^2$) or AWG 16 ($\triangleq$ 1,5 mm$^2$). With cable length > 5 m, use the larger cross section.

## 5.3.2 Functional earthing OPC



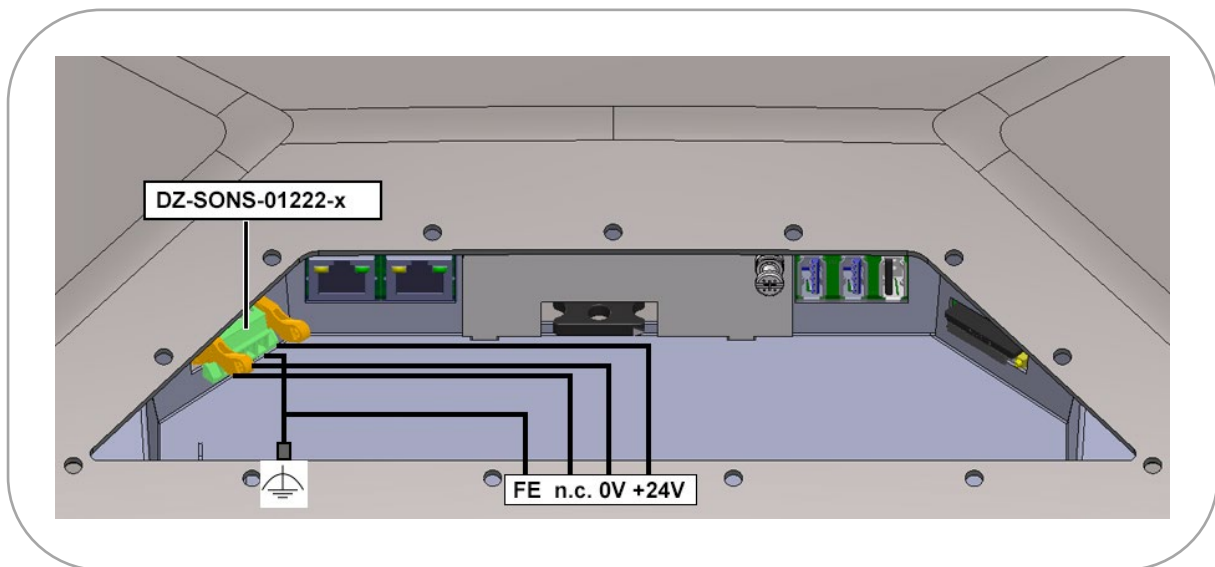**Figure 13: OPC – Functional earthing in the service slot**

### 5.3.3 Functional earthing OPD without HDBaseT<sup>TM</sup> Extender Kit
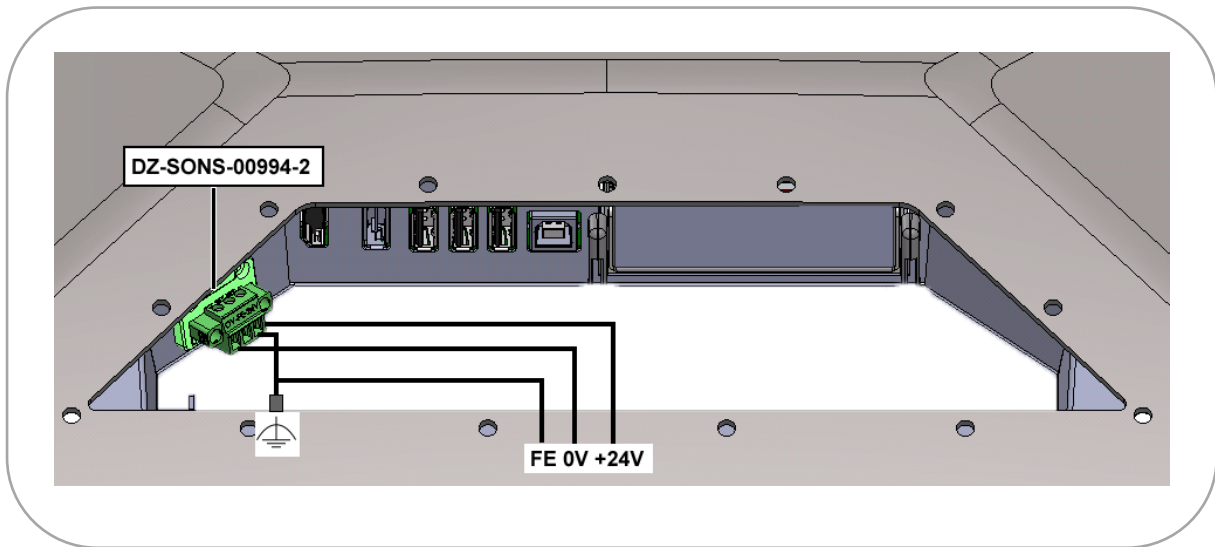


**Figure 14: OPD without HDBaseT Extender Kit – Functional earthing in the service slot**

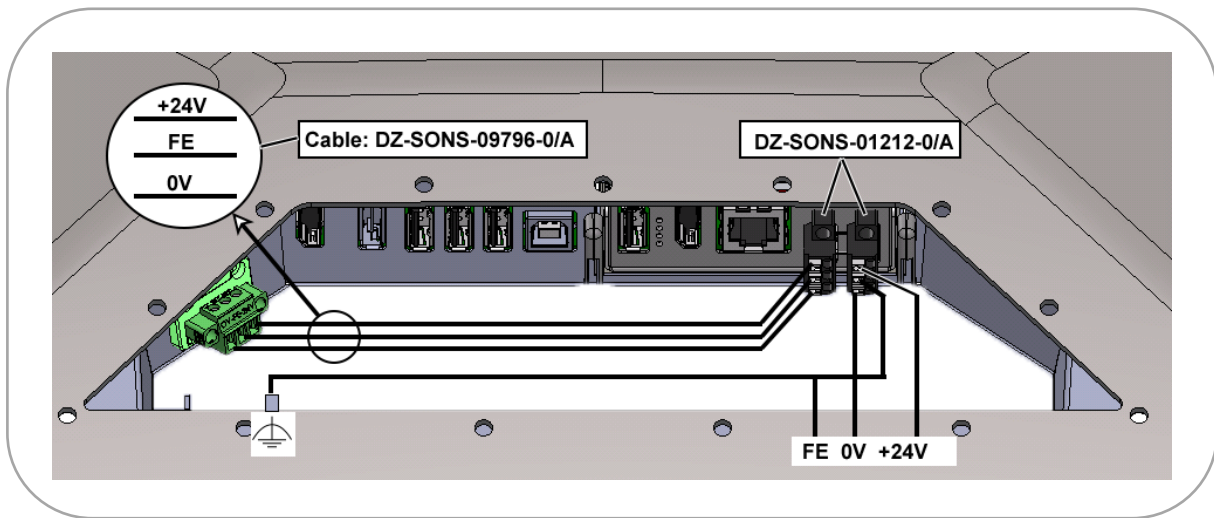### 5.3.4 Functional earthing OPD with HDBaseT<sup>TM</sup> Extender Kit



**Figure 15: OPD with HDBaseT Extender Kit – Functional earthing in the service slot**

# 6  HDBaseT™ Extender Kit

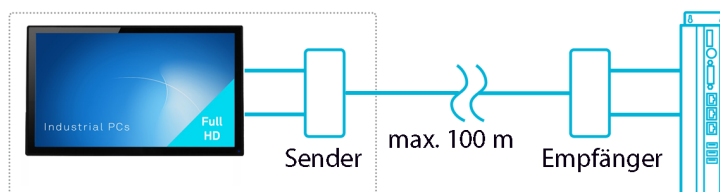| | WARNING |
|---|---|
| ⚠️ | **Hazard due to excessive current!**<br><br>Excessive current can cause overloading of the electronics which could then result in injury or damage.<br><br>➡ Operate the device only with a power supply that complies with NEC Class 2. |



Figure 16: Use of extender kit

The HDBaseT™ Extender Kit allows data transmission between the computer and OPD over distances of up to 100 m. The scope of delivery is given in chapter 3.

## 6.1  Installation of receiver module

➔  Open the service slot.

➔  Slide the receiver module into the mounting slot.

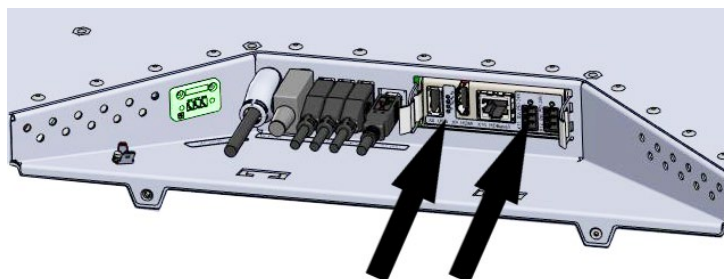    o  The catches of the two retainer tabs on the receiver module must engage in the retainer clips.



Figure 17: Installation of receiver module
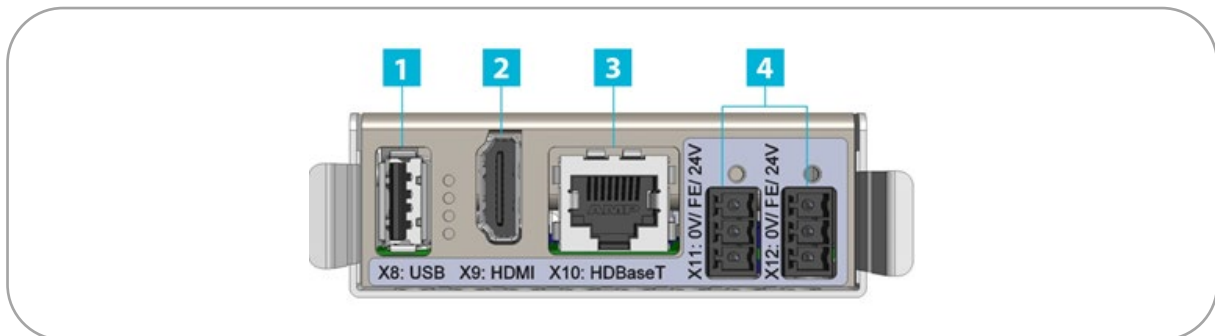
## 6.2 Interfaces of receiver module



Figure 18: Interfaces of receiver module

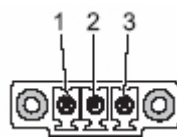| 1 | 1 x USB 2.0 |
|---|---|
| 2 | 1 x HDMI |
| 3 | 1 x HDBaseT™ 100Mbit |
| 4 | 2 x 24 V ⎓, connected in parallel |

### Power supply

You will need a power adapter with the following technical data:

Input voltage:　　　　18 to 30 V ⎓ (NEC Class 2)

Max. switch on current: 0.8 A

For the power supply, use only the supplied 3-pole plug connector (chap.3) (the figure shows the socket in the receiver module).

| 1 | 24 V ⎓ |
|---|---|
| 2 | FE |
| 3 | 0 V ⎓ |

## 6.3 Cabling

➔ When connecting and disconnecting cables, make sure that no power is being applied to the device or cables.

➔ Connect the OPD and receiver module using the supplied cables for the power supply, HDMI connection and USB connection.

## 6.4 Interfaces of transmitter module

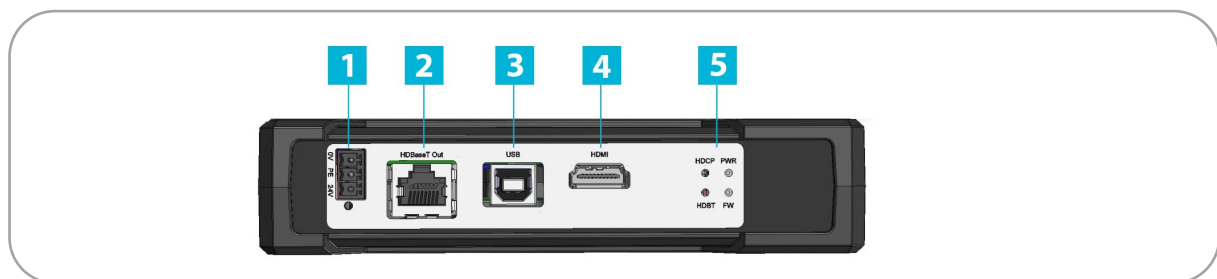The transmitter module is intended for top-hat rail mounting in the cabinet.



Figure 19: Interfaces of transmitter module

| 1 | 24 V $=\!=\!=$ |
|---|---|
| 2 | HDBaseT™ 100Mbit |
| 3 | USB 2.0 |
| 4 | HDMI |
| 5 | SYS LEDs |

➔ Connect the receiver module to the transmitter module via the HDBaseT™ connection.

> **Recommendation for use:**
>
> The following CAT cables are recommended for connecting the transmitter to the receiver module: CAT6a cable 80 m with min. 24AWG / 27AWG
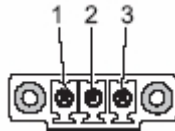
## Power supply

You will need a power adapter with the following technical data:

Input voltage: 18 to 30 V⎓ (NEC Class 2)

Max. switch on current: 0.6 A

For the power supply, use only the supplied 3-pole plug connector (chap.3)
(the figure shows the socket in the transmitter module).

| PIN | Signal |
|-----|--------|
| 1   | 24 V⎓  |
| 2   | FE     |
| 3   | 0 V⎓   |

# 6.5 Status indicators

## 6.5.1 Status indicators on transmitter module

The transmitter module has LEDs which indicate the status of the transmitter. They provide information about the graphics link (HDCP), the power supply (PWR), the firmware (FW) and the HDBaseT™ connection (HDBT).

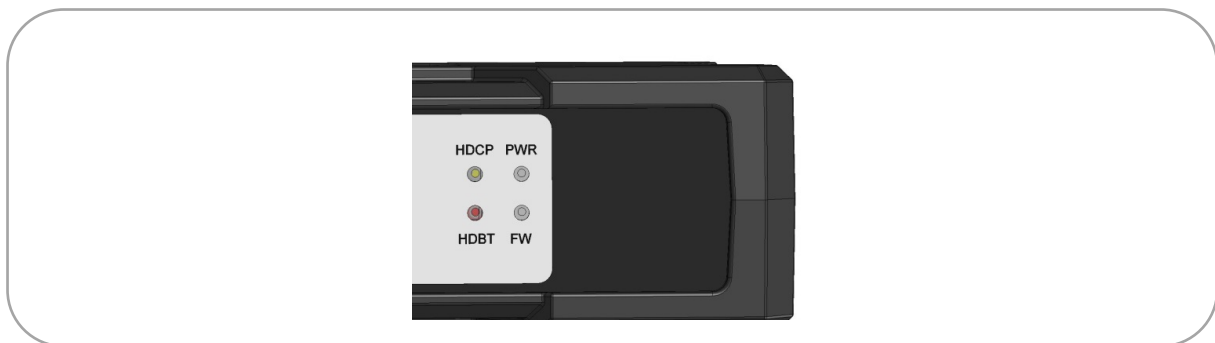The table below lists the various states.



Figure 20: Status indicators on transmitter module

| | LED signal | Action |
|---|---|---|
| **HDCP** | Flashing | Graphics link is present |
| | Off | No graphics link |
| **PWR** | On (blue) | The device is supplied with voltage via POWER and is ready for operation |
| | Off | No power supply |
| **HDBT** | On | HDBaseT™ link present |
| | Flashing slowly | Low Power Mode |
| | Flashing rapidly | Ethernet Fallback Mode |
| | Off | No link |
| **FW** | Flashing | Firmware is loaded and ready for operation |
| | Off | No firmware action |

## 6.5.2 Status indicators on receiver module

The transmitter module has LEDs which indicate the status of the transmitter. They provide information about the graphics link (HDCP), the power supply (PWR), the firmware (FW) and the HDBaseT™ connection (HDBT).

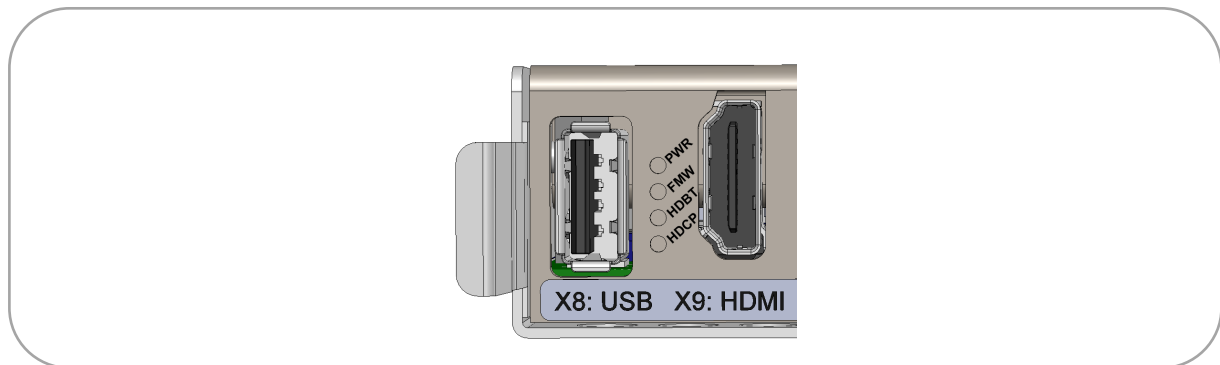The table below lists the various states.



Figure 21: Status indicators on receiver module

|  | **Signal** | **Action** |
|---|---|---|
| **PWR** | ☐ On (blue) | The device is supplied with voltage via POWER and is ready for operation |
|  | ☐ Off | No power supply |
| **FW** | ☐ Flashing | Firmware is loaded and ready for operation |
|  | ☐ Off | No firmware action |
| **HDBT** | ☐ On | HDBaseT™ link present |
|  | ☐ Flashing slowly | Low Power Mode |
|  | ☐ Flashing rapidly | Ethernet Fallback Mode |
|  | ☐ Off | No link |
| **HDCP** | ☐ Flashing | Graphics link is present |
|  | ☐ Off | No graphics link |

# 7 Commissioning

> ## WARNING
>
> ⚠️ **Hazard due to excessive current!**
>
> Excessive current could result in injury or damage.
>
> ➔ Operate the device only with a power supply that complies with NEC Class 2.

> ## ATTENTION
>
> **Damage to the electronics!**
>
> The electronics can be damaged if the permissible voltage is exceeded.
>
> ➔ Make sure to meet the permissible voltage for this device.

> ## ATTENTION
>
> **Damage to the electronics!**
>
> The electronics can be damaged if plug-in connections are connected or disconnected while power is still being applied.
>
> ➔ Make sure that no power is being applied while connecting and disconnecting cables.

> **ATTENTION**
>
> **Damage to the electronics!**
>
> Condensation can damage the device.
>
> ➔ Switch on the device only after it has acclimated to the ambient temperature.

> ➔ **Recommendation for use:**
>
> The shielding of a data cable must always be connected with the connector housing (EMC).

> ➔ **Recommendation for use:**
>
> Insofar as they are specified in the scope of delivery or in the replacement parts list, only connectors and cables offered by ADS-TEC are to be used for commissioning and during operation. All other connectors and cables which you use for commissioning and during operation must have been approved.

**Check for operational readiness**

➔ Make sure that the threaded pins of the clamping blocks are tightened to 0.5 Nm.

**Commissioning device**

➔ When connecting and disconnecting cables, make sure that no power is being applied to the device or cables.

➔ Connect the cables in any order.

➔ Connect the cables to the strain relief fixtures

➔ Make sure that the 24 V power supply complies with NEC Class 2.

➔ Switch on the device by connecting the power adapter to the external power supply.

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# 8 Operation

## 8.1 Switching on and off

> **ATTENTION**
>
> **Damage to the electronics!**
>
> The electronics can be damaged if the device is switched off and then on again too quickly.
>
> ➡ After switching off and before switching on you must wait for at least 5 seconds!

➔ Switch on the device by connecting the power adapter to the external power supply.

If an operating system (Windows or Linux) is installed, it now starts.

When the device is on, the status LED of the monitor lights up. This LED is on the front at the bottom right.

➔ Switch off the device by shutting down the operating system.

## 8.2 Multifunction touch-screen

> ➔ **Recommendation for use:**
>
> The touch calibration data is stored independent of the operating system and requires no additional calibration by the user.

> ➔ **Recommendation for use:**
>
> With older operating systems, a driver may be required for the touch-screen functionality.

➔ Operate the multifunction touch-screen using up to 10 fingers. It is not only possible to tap elements – swiping and dragging movements are also possible.

The necessary driver software is already integrated in the respective operating system.
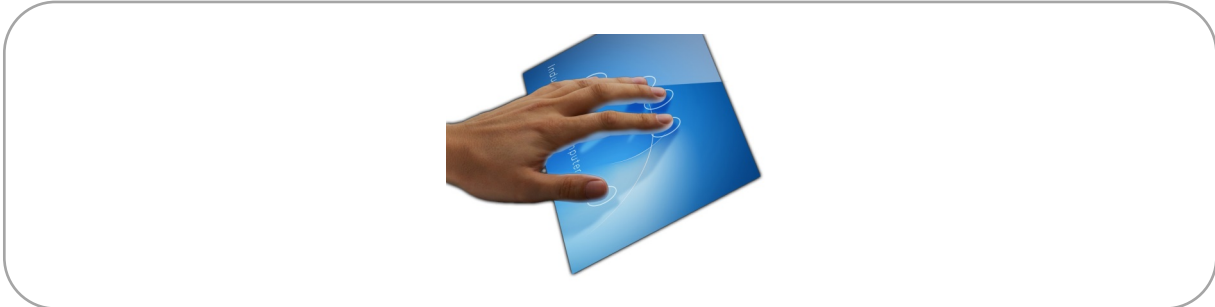
➔  If you need other drivers, you can download them at http://www.ads-tec.de in the Download area.


Figure 22: Touch surface

# 8.3 Component replacement

| ATTENTION |
|---|
| **Risk of short circuit!** |
| A short circuit can occur if components are replaced while the device is still switched on. |
| ➡ Before replacing components, disconnect the power supply from the device! |

## 8.3.1 Replacing BIOS battery (OPC8017/OPC8024)

| ATTENTION |
|---|
| **Risk of explosion!** |
| Hazard due to overheating of the battery |
| ➔  Make sure that the battery is of the correct type and that it is inserted with the correct polarity! |

| ➔ | **Recommendation for use:** |
|---|---|
| | Avoid touching both battery poles at the same time. |

The 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. It is in the service slot (chap.5.1).

The battery type to be used is:

lithium battery type CR2032 (230 mAh / 3 V)
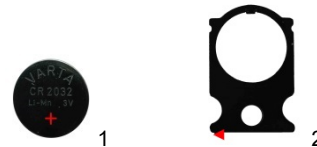
> **→**  **Recommendation for use:**
>
> Use only the battery type recommended by ADS-TEC.

## Replacing battery

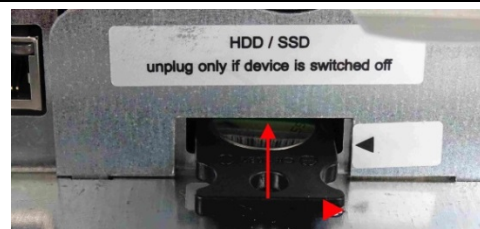1. Pull out the battery drawer (pull both sides of the battery drawer at the same time).



2. Press the battery (1) (with the positive pole facing upwards) into the drawer (2) until it engages.



3. Turn the drawer (3) over so that the negative terminal is pointing upwards.



4. Insert the drawer into its slot (4); the drawer must engage in the slot.

## 8.3.2 Replacing mass storage device

On the OPC8017/OPC8024, there may be a mass storage device in the service slot.

**Removing mass storage device**

1.  Remove the cover plate.

    To do so, undo the fastening screw (1)
    (PH1 cross-tip screwdriver).



2.  Grip the mass storage device by its removal
    aid (2) and pull it carefully and parallel
    along its guides (3) into the slot.





3.  Then remove the mass storage device at an
    angle in an upward direction (4).

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## Installing mass storage device

1. Insert the mass storage device into the slot at an angle.

2. Lower the mass storage device and push it back in all the way parallel to its guides.

   

3. Position the retainer tabs of the cover in the guide slots at an angle and close the cover.

   

4. Screw in the fastening screw finger-tight (PH1 cross-tip screwdriver)

### 8.3.3 Replacement parts list

Insofar as they are specified in the scope of delivery or in the replacement parts list, only connectors and cables offered by ADS-TEC are to be used for commissioning and during operation. All other connectors and cables which you use for commissioning and during operation must have been approved.

The following components can be ordered as replacement parts from ADS-TEC:

| Device/designation | Designation | Part number |
|---|---|---|
| **OPC** | | |
| Plug | 4-pole plug with locking lever, green | DZ-SONS-01222-3/A |
| BIOS battery | Lithium battery CR2032 230mAh | DZ-SONS-04075-1 |
| FE cable connection | 6.35 mm blade terminal with retainer tab | DZ-HAND-36102-0 |
| **OPD** | | |
| Plug | 3-pole plug, black | DZ-SONS-01212-x |
| FE cable connection | 6.35 mm blade terminal with retainer tab | DZ-HAND-36102-0 |
| Cable tie | Cable tie 98 x 2.5 mm, natural | DZ-HAND-03225-0 |
| **Transmitter Tx** | | |
| Cable | USB2.0 1 m | DZ-SONS-05642-x |
| Cable | HDMI Male-Male 1 m | DZ-SONS-05643-x |
| Cable | HDMI Male-DP Male 1 m | DZ-SONS-05644-x |
| Plug | 3-pole plug, black | DZ-SONS-01212-x |
| **Receiver Rx** | | |
| Cable | 24 V $=$ power supply | DZ-SONS-09796-x |
| Cable | USB2.0 | DZ-SONS-05647-x |
| Cable | HDMI Male-Male | DZ-SONS-05646-x |
| Plug | 3-pole plug, black | DZ-SONS-01212-x |

# 9  Maintenance, cleaning and disposal

Maintenance and cleaning must be performed by appropriately qualified personnel.

The following activities can be carried out by the operator:

## 9.1  Maintenance

The following maintenance intervals must be observed:

| Interval | Location | Activity |
|---|---|---|
| Daily | Overall device | Visually inspect for loose objects and visible damage |
| Monthly | Fixing screws | Check that they are seated securely; tighten as necessary |
| 3 years | BIOS battery | Change |
| **Optional, if installed** | | |
| Daily | Emergency stop button | Check that it functions correctly |

## 9.2  Cleaning

Clean and maintain your system regularly. How often you need to clean the system depends on your work and the operating environment. If necessary, follow the on-site cleaning plan.

**Cleaning agents and disinfectants**

We recommend cleaning the devices using commercially available glass cleaning agents.

The following cleaning agents have also been tested:

Ethanol and isopropanol based:

- Deconex Solarsept
- Bacillol
- Meliseptol

Neutral cleaning agents:

- P3-Cosa Foam 40
- P3-Cosa PUR 80

Disinfectants:

- Hydrogen peroxide < 30 %

Acidic cleaning agents:

- P3-cosa CIP 72

Quarternary ammonium compounds:

- Klerdice-CR Biocide A
- Deconex Surface AF
- P3-cosa DES

# 9.3 Disposal

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.

# 10  Nomenclature of ADS-TEC products and accessories

## 10.1 Main articles

A typical ADS-TEC article number is *DVG-MMT8017 123-AB*.

Many ADS-TEC article numbers for main products follow this logic:

- Starting letters until '-':

  DV – hardware product without software

  DVG – hardware product with software

  DVK – kit; a combination of several products. Single products are normally also sold as DV or DVG. Mainly used for customized bundles in large contracts.

- Three letters after '-': describe product category, e.g.

  MMD – Machine Mounted Display

  MMT – Machine Mounted Terminal

  OPD – Operating Panel Display

  OPC – Operating Panel Computer

- First two digits: series, e.g. series 8000 is 80.

- Following two digits: size of screen, e.g. 17 for 17 inch and 24 for 24 inch.

- Three digits after the blank: 123 or xxx is a continuous number between 001 and 999 and defines the system configuration.

- Last two letters: AB or yy are two varying letters depending on the operating system.

# 10.2 Accessory articles

## 10.2.1 Display and USB transmission

For distances **up to 100m**, a HDBaseT™ kit is available. It is named DVK-MMDEXT-KIT xxx-yy and contains two components:

- a receiver DV-MMDEXT-RX xxx-yy


- a transmitter DV-MMDEXT-TX xxx-yy


Functionality is described in detail in chapter 6 of this document.


For distances **less than 15m**, HDMI and USB cables are available as an option. Their article numbers are e.g. DV-MMXOPT-04 xxx-yy.

Analogous to this, spare parts and additional small components are all named DV-MMXOPT-zz xxx-yy.

### 10.2.2     Support arm adapter

DVG-MMD80zz xxx-yy and DVG-MMT80zz xxx-yy can be mounted using the support arm adapter DV-MMXADAPT xxx-yy. Several versions of DV-MMXADAPT xxx-yy are available, the differences are indicated by xxx-yy. Examples for this are:
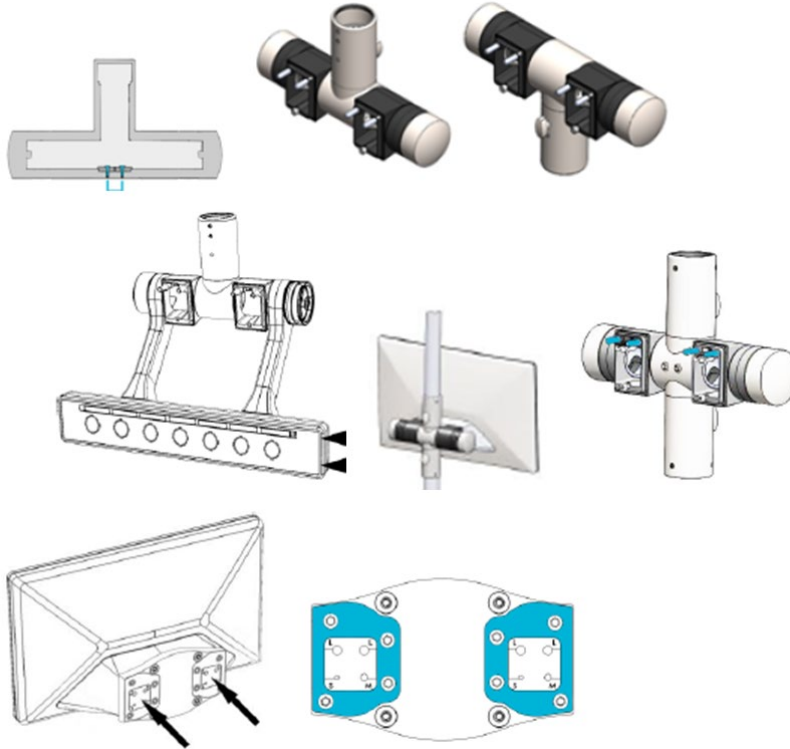


Front foils and keys can be customized, if this is done at ADS-TEC, this changes xxx-yy in the article number. Details are described in chapter 4.3.2.

### 10.2.3     Product kits

Combinations of several products are called kits and denoted by DVK in the article number. The single products are normally also sold as DV or DVG. This is mainly used for customized bundles in large contracts or for typical combinations that are useful for many customers.

Examples:

- DVK-MMDEXT-KIT xxx-yy contains
  a receiver DV-MMDEXT-RX xxx-yy and
  a transmitter DV-MMDEXT-TX xxx-yy.
- DVK-MMD8017 xxx.yy contains
  DVG-MMD8017 xxx.yy
  DV-MMDEXT-RX xxx-yy
  DV-MMDEXT-TX xxx-yy
  DV-MMXADAPT xxx-y
- Likewise, DVK-MMD8024, DVK-MMT8017, DVK-MMT8024, DVK-OPD8017 and DVK-OPD8024 are available.

# 11 Technical data

## 11.1 Technical data – OPD/OPC8000 series

### 11.1.1 Data sheet

| | OPC8017 | OPC8024 | OPD8017 | OPD8024 |
|---|---|---|---|---|
| **Housing** | Galvanised sheet-metal housing | | | |
| **Display** <br> Resolution | 17.3" LED backlight <br> 1920 x 1080 pixels | 23.8" LED backlight <br> 1920 x 1080 pixels | 17.3" LED backlight <br> 1920 x 1080 pixels | 23.8" LED backlight <br> 1920 x 1080 pixels |
| **Touch** | PCAP multi-touch / toughened glass | | | |
| **Processor** | Intel® Celeron™ <br> 1.6 GHz (2980U) <br> Intel® Core™ i5 <br> 1.9 GHz (4300U) | - | | |
| **RAM** | to 8 GB DDR3 | - | | |
| **Mass storage** | SSD to 500 GB <br> mSATA SSD to 128 GB | - | | |
| **Network** | 2 x 1 Gbit Ethernet RJ45 | - | | |
| **Interfaces** | 1 x USB 2.0 / 2x USB 3.0 | 1 x HDMI, 1 x display port <br> 3 x USB 2.0 / <br> 1 x USB 2.0 slave | | |
| **Power adapter** | 18 – 30 V === NEC Class 2 | | | |
| **Operating system** | Windows 10 IoT (64 bit) | - | | |
| **Protection class** | IP65 at front, IP20 at rear (not verified by UL, tested by ADS-TEC) | | | |
| **Operating temperature** | 0 °C to +50 °C | 0 °C to +45 °C | 0 °C to +50 °C | 0 °C to +45 °C |
| **Dimensions (W x H x D)** | 433 x 263 x 79 mm | 580 x 349 x 79 mm | 433 x 263 x 79 mm | 580 x 349 x 79 mm |
| **Weight** | Approx. 4.8 kg | Approx. 6.3 kg | Approx. 4.5 kg | Approx. 6.0 kg |
| **Vibration** | 10 m/s$^2$; 2 – 200 Hz (class 3M5 of standard IEC/EN 60721-3-3) | | | |
| **Shock resistance** | 250 m/s$^2$; t=6 ms (class 3M5 of standard IEC/EN 60721-3-3) | | | |
| **Humidity** | 10 to 85% non-condensing | | | |

## 11.1.2      External device dimensions OPC8017
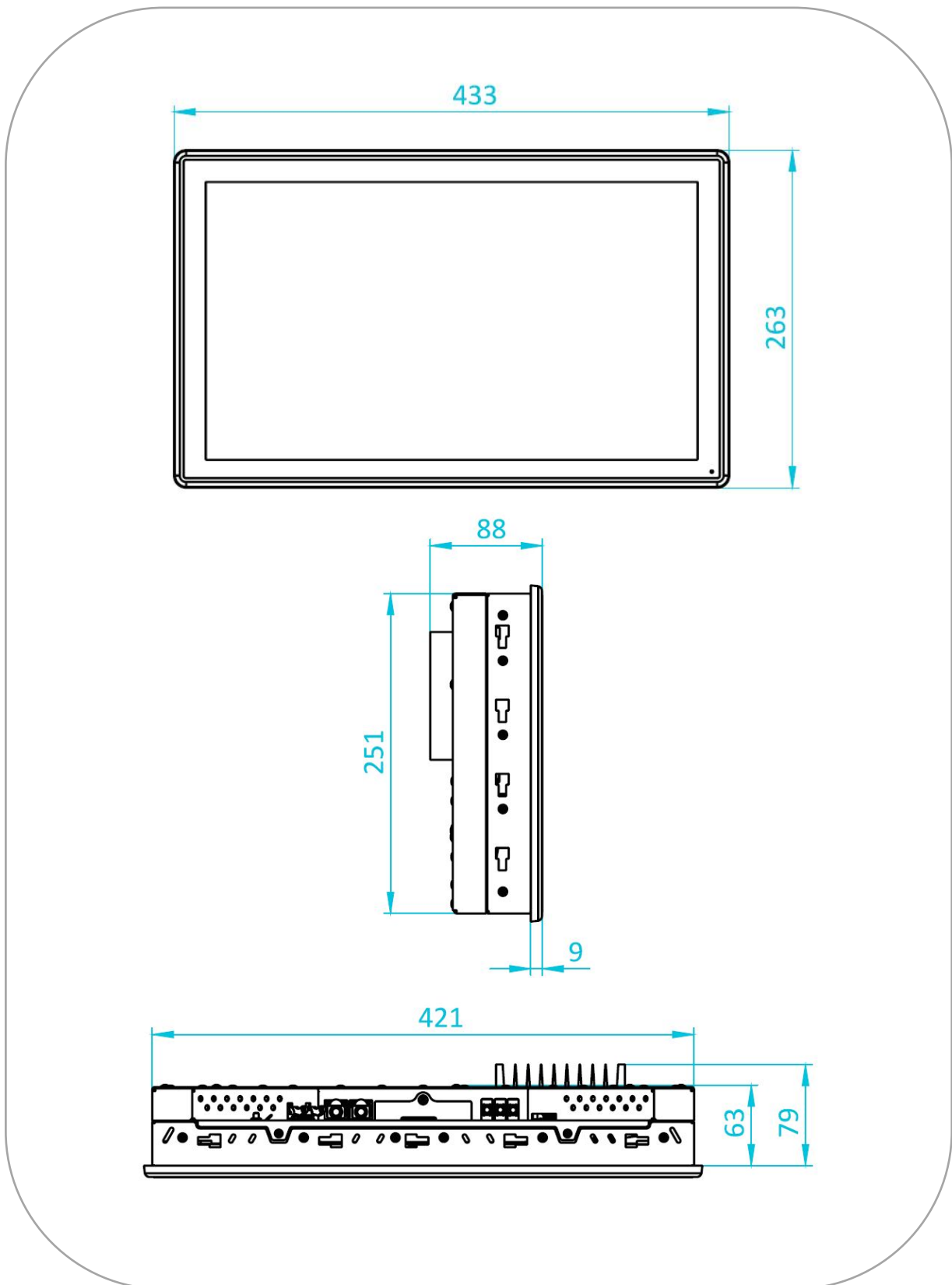


Figure 23: External device dimensions OPC8017

## 11.1.3      External device dimensions OPC8024

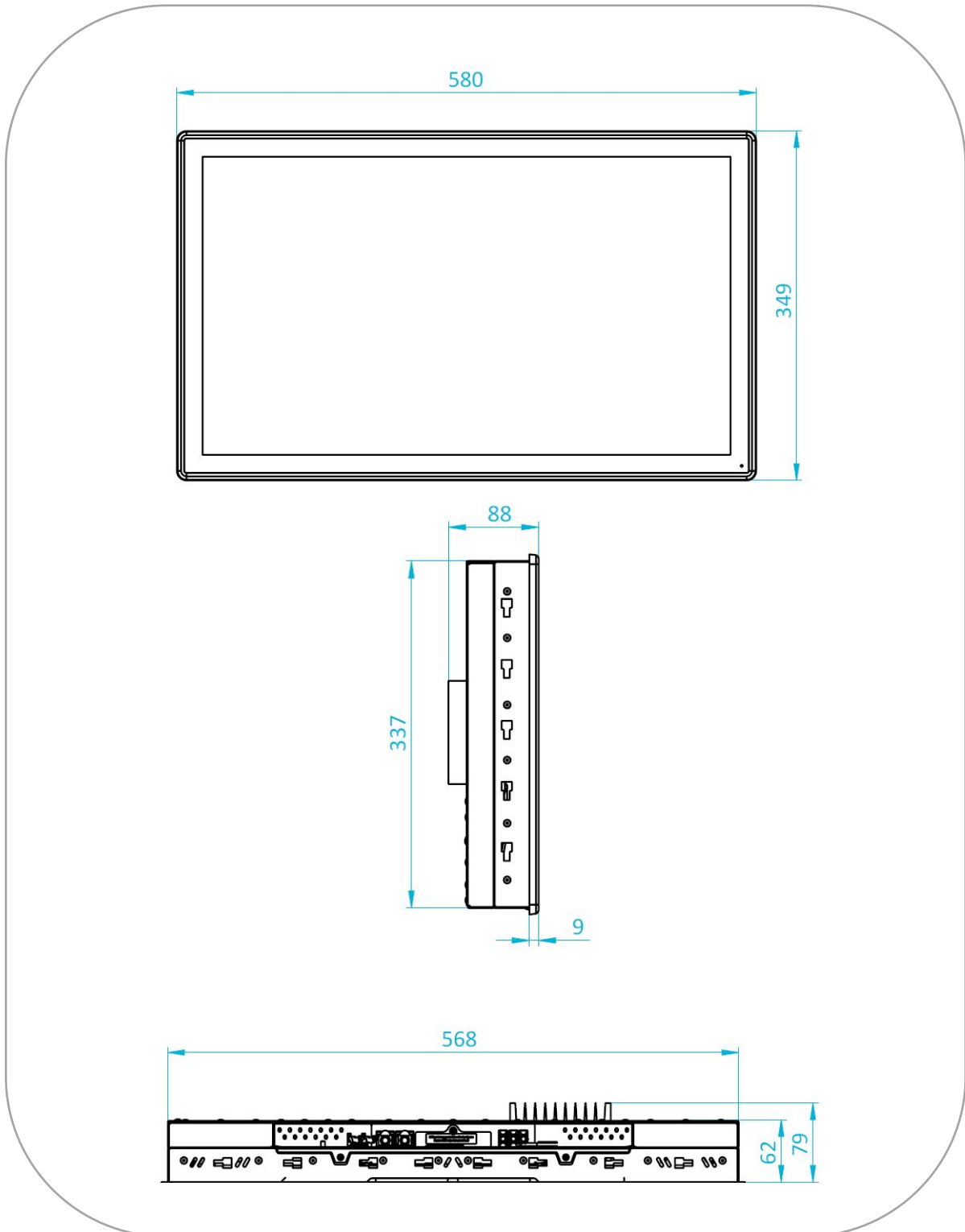Figure 24: External device dimensions OPC8024
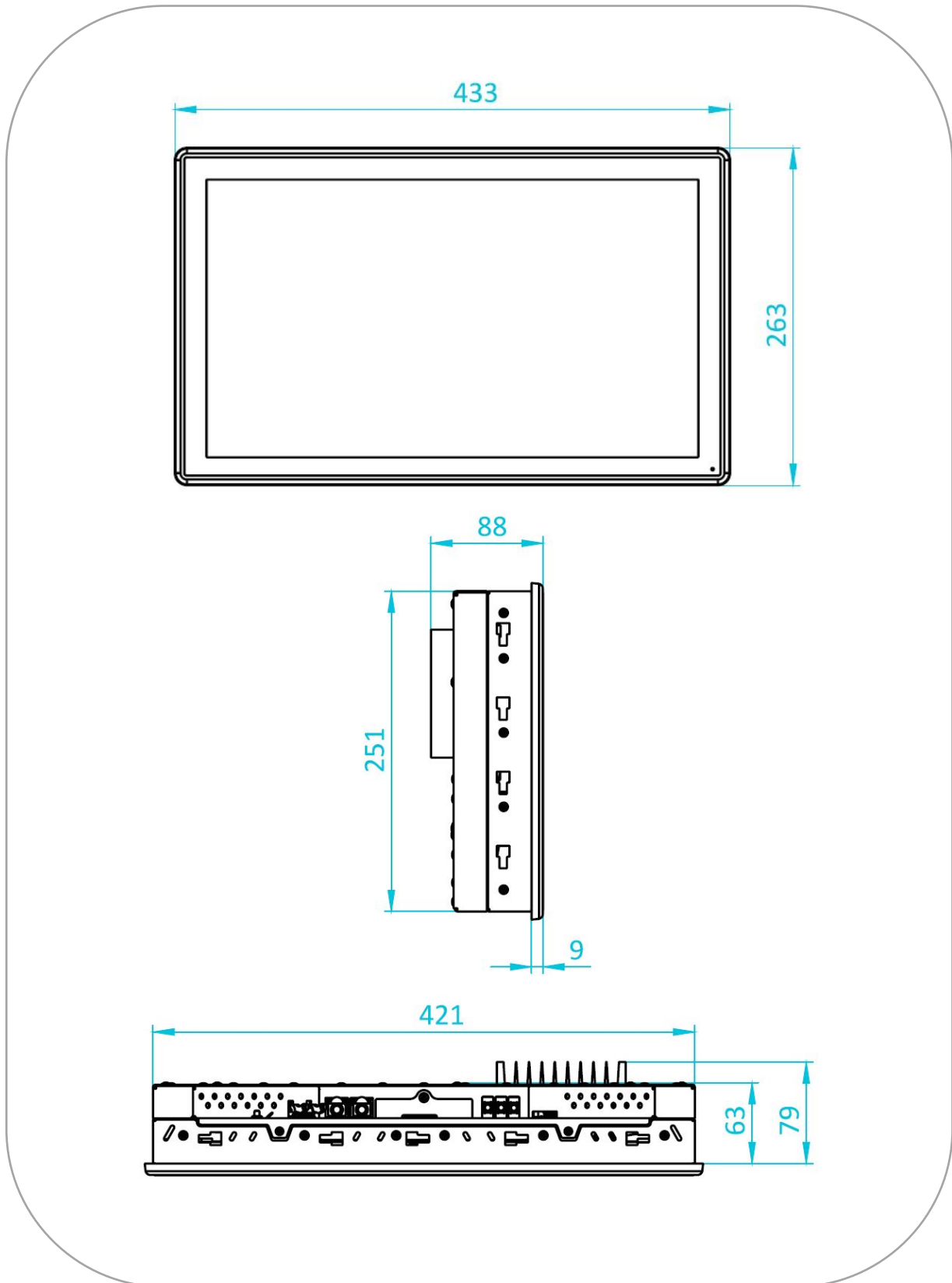
## 11.1.4   External device dimensions OPD8017



Figure 25: External device dimensions OPD8017
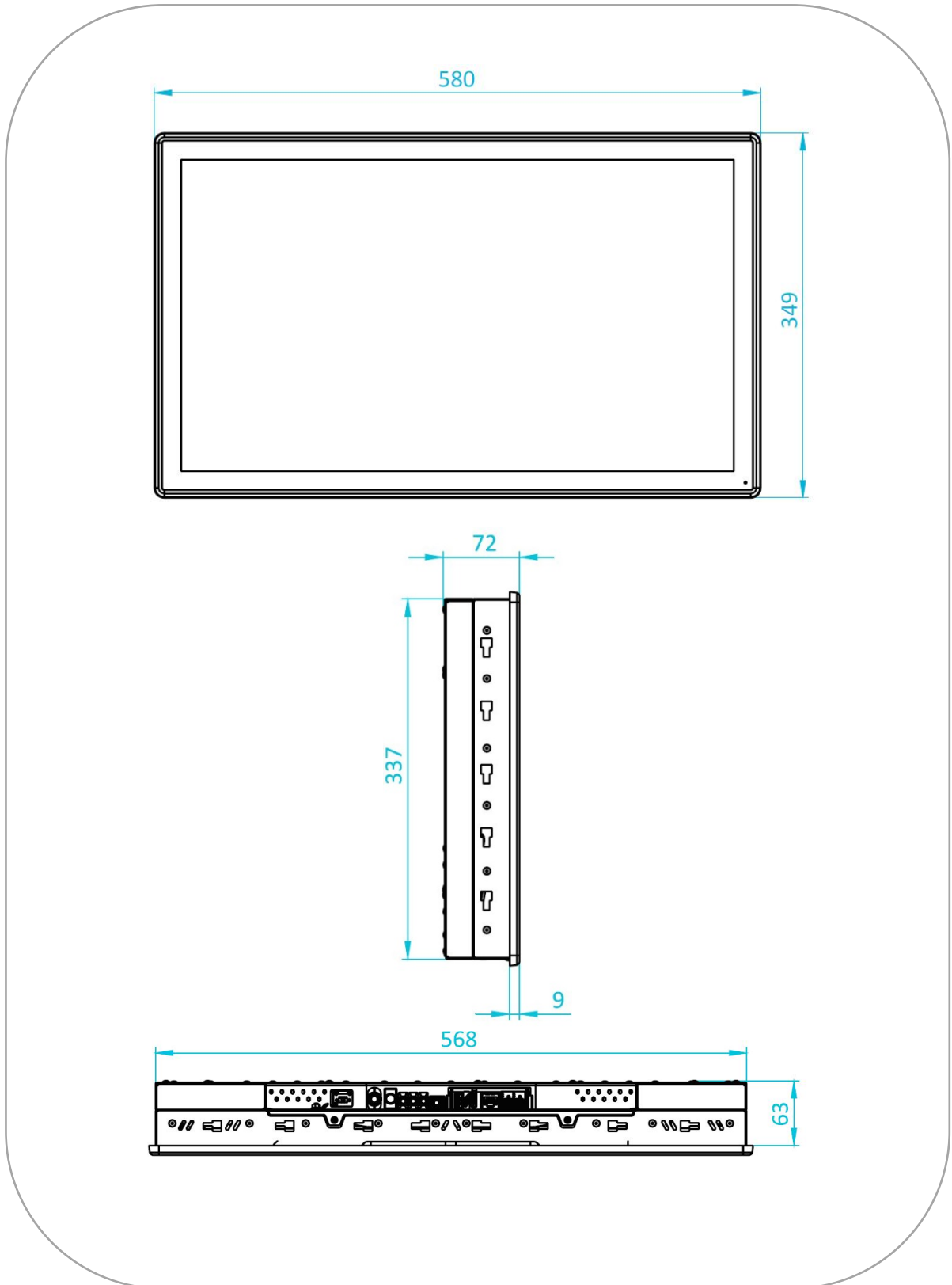
## 11.1.5       External device dimensions OPD8024



Figure 26: External device dimensions OPD8024

# 11.2 HDBaseT™ Extender Kit technical data

## 11.2.1    Data sheet

| | Transmitter Tx | Receiver Rx |
|---|---|---|
| **Housing** | Aluminium die-casting housing | - |
| **Interfaces** | 1 x USB 2.0<br>1 x HDMI<br>1 x HDBaseT™ 100Mbit | 1 x USB 2.0<br>1 x HDMI<br>1 x HDBaseT™ 100Mbit |
| **Power supply** | 18 – 30 V ⎓ | 18 – 30 V ⎓ |
| **Protection class** | IP 20 | IP 20 |
| **Operating temperature** | 0° to 55°C | 0° to 50°C |
| **Dimensions (W x H x D)** | 135 x 159 x 35 mm | 74 x 105 x 27 mm |
| **Weight** | 0.7 kg | 0.2 kg |
| **Humidity** | 10 to 85% non-condensing | |

## 11.2.2 External device dimensions – HDBaseT™ Extender Kit transmitter
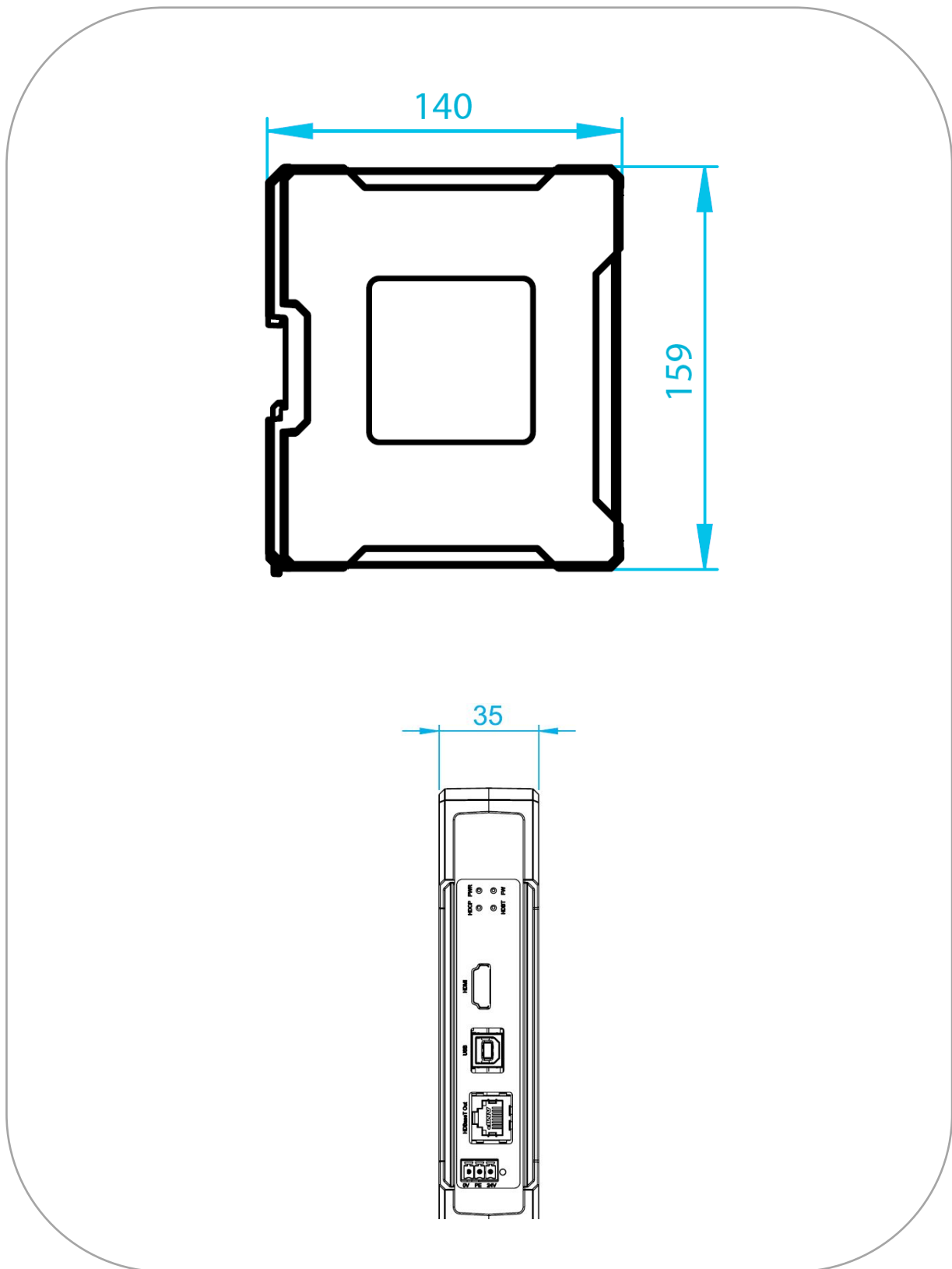


Figure 27: External device dimensions – HDBaseT™ Extender Kit transmitter

## 11.2.3 External device dimensions – HDBaseT™ Extender Kit receiver
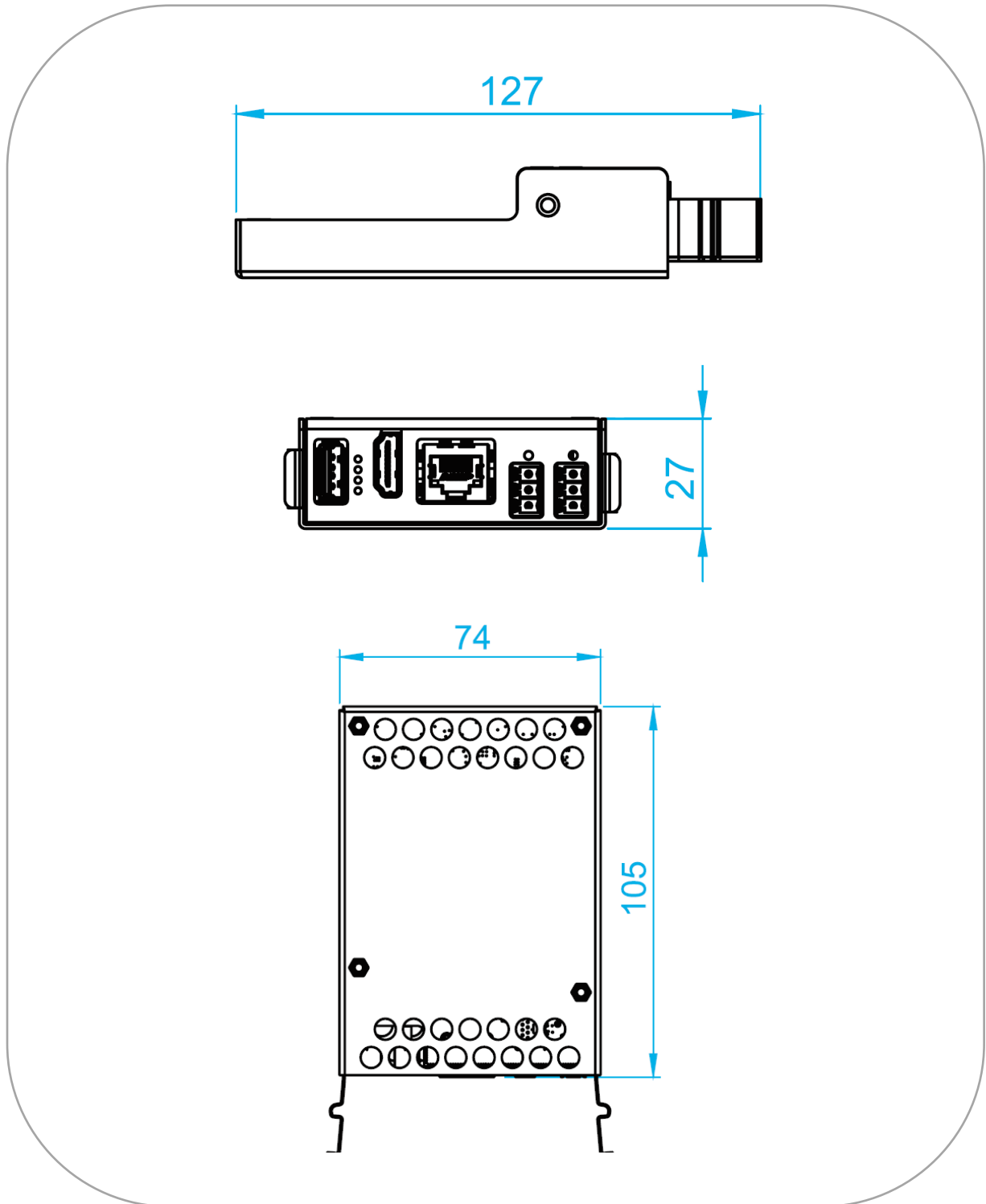


Figure 28: External device dimensions – HDBaseT™ Extender Kit receiver

# 12  List of figures

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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 such specific configurations and software installations, please contact the system supplier in question 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

and can be reached via phone, fax or e-mail:

Phone:  +49 7022 2522-202

Email:   support@ads-tec.de


Alternatively, you can contact us by completing a support form on our website www.ads-tec.de. Our Support team will then get in touch with you as soon as possible.