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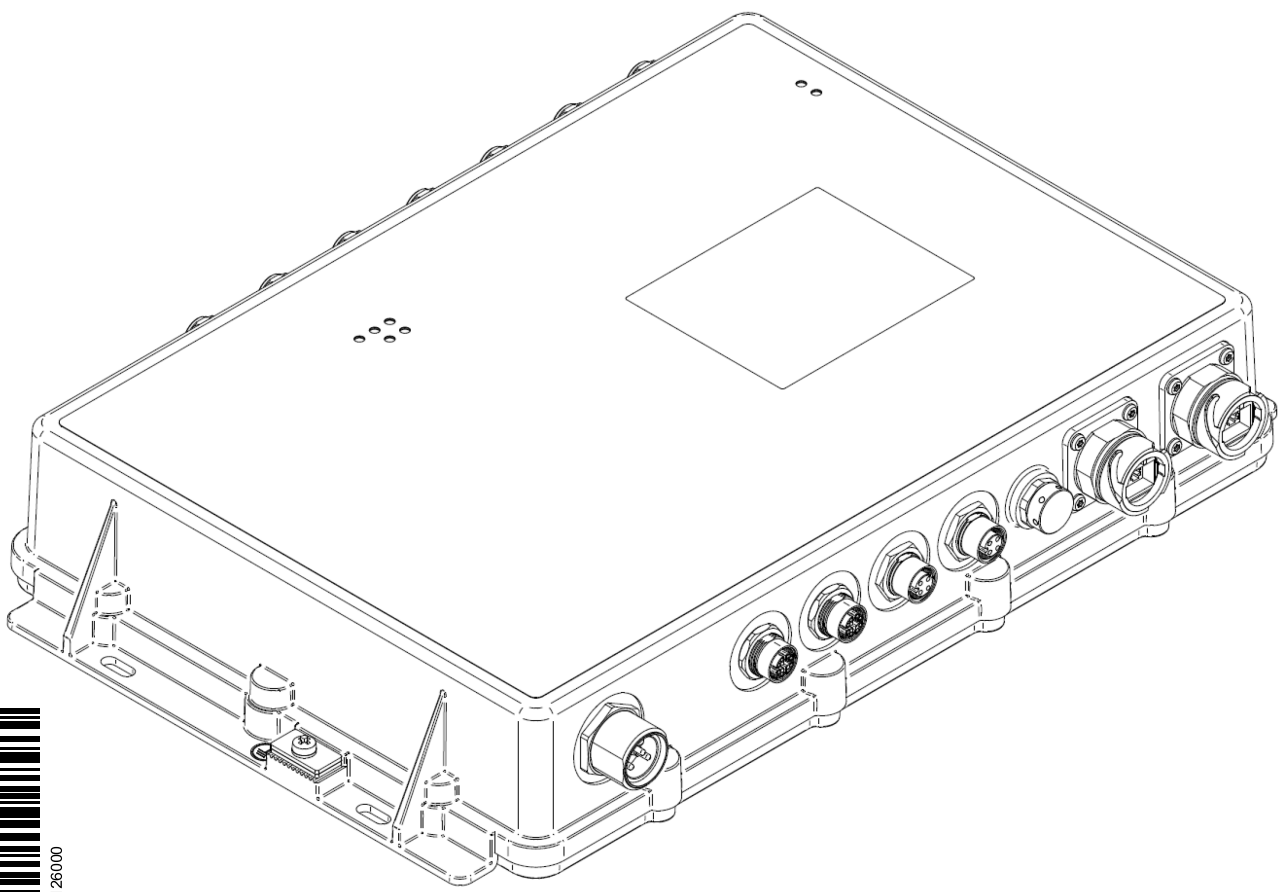
Information sheet

Outdoor safety instructions

DAP849



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Contents

Safety instructions

WARNING

UNCONTROLLED MACHINE ACTIONS

To avoid uncontrolled machine actions caused by data loss, configure all the data transmission devices individually.

Before you start any machine which is controlled via data transmission, be sure to complete the configuration of all data transmission devices.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

General safety instructions

You operate this device with electricity. Improper usage of the device entails the risk of physical injury or significant property damage. The proper and safe operation of this device depends on proper handling during transportation, proper storage and installation, and careful operation and maintenance procedures.

- ☐ Before connecting any cable, read this document, and the safety instructions and warnings.
- ☐ Operate the device with undamaged components exclusively.
- ☐ The device is free of any service components. In case of a damaged or malfunctioning device, turn off the supply voltage and return the device to Hirschmann for inspection.

Certified usage

- ☐ Use the product only for the application cases described in the Hirschmann product information, including this manual.
- ☐ Operate the product only according to the technical specifications. See “Technical data” on page 26.
- ☐ Connect to the product only components suitable for the requirements of the specific application case.

Installation site requirements

Equipment is intended for installation in **Restricted Access Area**
Restricted access location:

- The location is outside the operator access area.
- The location is accessible to the service personnel even when the device is switched on.
  - ☐ During the installation, make sure that you adhere to the regulations of the country in which you are operating the device.
  - ☐ In ambient temperature under -10 °C (+14 °F), use the wiring suitable for minimum temperatures.

Outdoor installation

Avoid exposing the power-supply area to external force during installation.

- ☐ Avoid exposing the power-supply area to external force during installation.
- ☐ The device has been approved for outdoor installation in a pollution degree 2 environment.
- ☐ Observe the mounting instructions in chapter, “Installing the antennas”. See “Installing the antennas” on page 18.

Device casing

Only technicians authorized by the manufacturer are permitted to open the casing.

- ☐ Never insert pointed objects (narrow screwdrivers, wires, etc.) into the device or into the connection terminals for electric conductors. Do not touch the connection terminals.
- ☐ At ambient air temperatures > +60 °C (+140 °F): The surfaces of the device housing may become hot. Avoid touching the device while it is operating.

Qualification requirements for personnel

Only allow qualified personnel to work on the device.
Qualified personnel have the following characteristics:

- Qualified personnel are properly trained. Training as well as practical knowledge and experience make up their qualifications. This is the prerequisite for grounding and labeling circuits, devices, and systems in accordance with current standards in safety technology.
- Qualified personnel are aware of the dangers that exist in their work.
- Qualified personnel are familiar with appropriate measures against these hazards in order to reduce the risk for themselves and others.
- Qualified personnel receive training on a regular basis.

National and international safety regulations

Verify that the electrical installation meets local or nationally applicable safety regulations.

Grounding the device

Grounding the device is by means of a separate protective ground connection on the device.

☐ Ground the device before connecting any other cables.

☐ Disconnect the grounding only after disconnecting all other cables.

Requirements for connecting electrical wires

Before connecting the electrical wires, **always** verify that the requirements listed are complied with.

The following requirements apply without restrictions:

- The electrical wires are voltage-free.
- The cables used are permitted for the temperature range of the application case.

Requirements for connecting the supply voltage

Before connecting the supply voltage, **always** verify that the requirements listed are complied with.

All of the following requirements are complied with:

The following requirements apply without restrictions:

- The supply voltage corresponds to the voltage specified on the type plate of the device.
- The power supply conforms to overvoltage category I or II.
- The power supply must be equipped with an easily accessible disconnecting device (e.g., a switch or plug). This device must be clearly marked to ensure that, in an emergency, the corresponding disconnecting device can be quickly identified for each power supply cable.
- The cross-section of the ground conductor is the same size as or bigger than the cross-section of the power supply cables.
- The power supply cable is suitable for the voltage, the current and the physical load.

Lightning protection and surge protection

Applies exclusively to devices and antennas installed outdoors:

- The installation of the device must be carried out by a lightning protection professional in accordance with valid standards (such as IEC 62305 / DIN EN 62305 (VDE 0185-305), and in accordance with the lightning protection procedures recognized and proven for the application and the environment.

☐ Refer to the information in the “WLAN Outdoor Guide” on “Lightning protection and surge protection”.

- ☐ The manual can be downloaded at: https://www.doc.hirschmann.com.
- ☐ Ensure that the lightning protection professional installs lightning protection devices (for example lightning conductors) to protect antennas installed outdoors.
- ☐ Ensure that the lightning protection professional takes appropriate lightning protection measures that mitigate the effects of lightning strikes.

RF exposure warning

- This equipment complies with FCC and CE radiation exposure limits set forth for an uncontrolled environment.
- This product may not be collocated or operated in conjunction with any other antenna or transmitter.
- Ensure that the equipment is installed and operated in accordance with the provided instructions. The antenna(s) used for this transmitter must be installed at a minimum distance of 20 cm from any person and must not be co-located with or operated in conjunction with any other antenna or transmitter.

Recycling note

The symbol of a crossed-out wheeled bin shown on the device indicates that the device MUST NOT be disposed of with household waste at the end of its service life.

After its service life, the used device must be disposed of properly as electronic waste in accordance with the locally applicable disposal regulations.

End users are responsible for deleting personal data from the used device prior to disposal.

End users are obliged to separate used batteries and accumulators that are not enclosed by the used device from the used device in a non-destructive manner before disposing of the used device. The used batteries and accumulators must be handed in for separate collection.

This does not apply if the used device is handed in for reuse.

Key

The symbols used in this manual have the following meanings:

▶	List
□	Work step
■	Subheading
Link	Cross-reference with link
Note:	A note emphasizes a significant fact or draws your attention to a dependency.

1 Description

1.1 Device name and product code

The device name corresponds to the product code. The product code consists of position-defined characters, whose values represent specific product characteristics.

Product No.	Product Code	Product Description
9AA 102 001	DAP849-RWAAZT6O6EHH	DAP800 Outdoor Wi-Fi 6 (802.11ax) Access Point (AP), 110/230 V AC, 2 × 1G Ethernet ports, 2 × 1G fiber ports, extended temperature range, with protective coating.
9AA 102 002	DAP849-RWAAZT6O8EHH	DAP800 Outdoor Wi-Fi 6 (802.11ax) Access Point (AP), 110/230 V AC, 2 × 1G Ethernet ports, 2 × 2.5G fiber ports, extended temperature range, with protective coating.

Table 1: Device name, product code and description

Product Code	Code Explanation
Device	DAP849
XX	RW
A	Access Point (AP)
A	110 V/230 V AC
Z	Compliant with EN 50121-4 and EN 45545-2
T6	100/1000 Mbit/s M12 connector
O6/O8	O6: 1000 Mbit/s SFP O8: 2500 Mbit/s SFP
E	Extended temperature range, –40 °C to +70 °C, with conformal coating
HH	Reserved

Table 2: Product code explanation

1.2 Device view

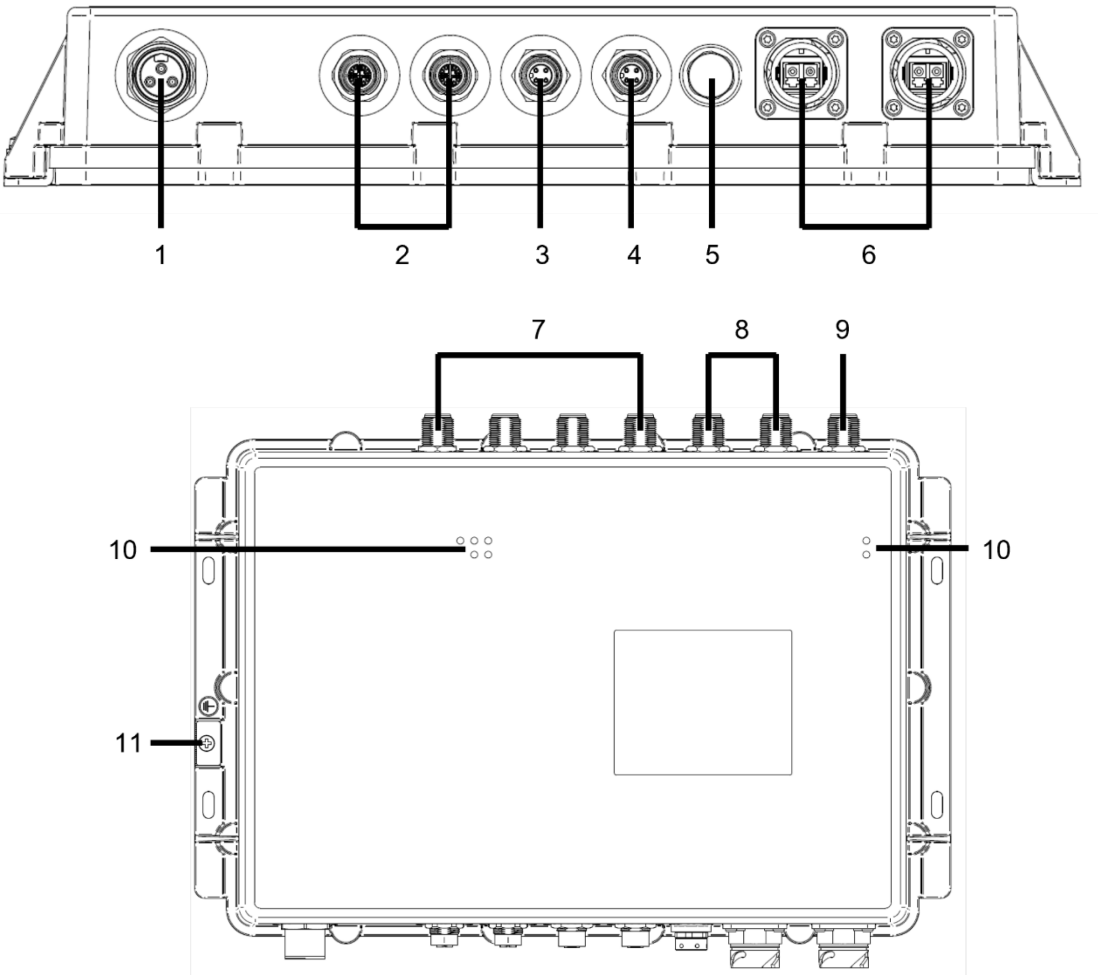


Figure 1: Device View

1	Supply voltage connection	3-pin, 7/8” socket for power supply 110 V/230 V AC, 50 Hz/60 Hz
2	Ethernet port	8-pin, X-coded M12 socket for 100/1000 Mbit/s twisted pair connections
3	V.24 (Switch)	4-pin, A-coded M12 interface for switches
4	V. 24 (WIFI)	4-pin, A-coded M12 socket for wireless networking
5	Air valve	Do not open
6	Fiber port	1G or 2.5G fiber port
7	ANT1~ANT4 port	Used to connect WiFi 5GHz antennas
8	ANT5~ANT6 port	Used to connect WiFi 2.4GHz antennas
9	ANT7 port	Used to connect scanning antenna
10	LED display element	Indicate the device status using different colors
11	Connection for protective ground	

1.3 Power supply

The device provides a 3-pin 7/8" plug for power connection. For more details, refer to “Connecting the power supply” on page 22.

1.4 Ethernet port

The Ethernet ports support connections to end devices or other network segments via twisted-pair cables or fiber.

For the pin assignments required to make patch cables, refer to Table 3.

1.4.1 100/1000 Mbit/s port

This port is an 8-pin, "X"- coded M12 socket.

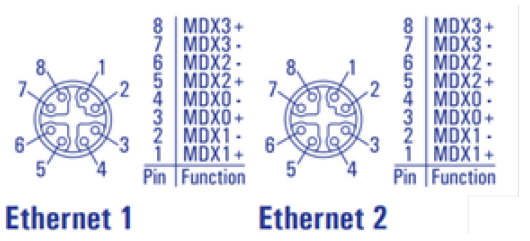
This port supports the following functions:

- Autocrossing (if auto-negotiation is activated)
- Auto-negotiation
- Auto-polarity
- 100 Mbit/s half-duplex mode, 100 Mbit/s full-duplex mode
- 1000 Mbit/s full-duplex mode
- Delivery state: Auto-negotiation activated

The socket housing is electrically connected to the device housing.

Delivery state: Auto-negotiation activated.

The following table shows the pin assignments for the 100/1000 Mbit/s port.



1	MDX1+
2	MDX1-
3	MDX0+
4	MDX0-
5	MDX2+
6	MDX2-
7	MDX3-
8	MDX3+

Table 3: Pin assignments for the 100/1000 Mbit/s port

1.4.2 FO port

The FO port enables connections to fiber network in compliance with the standard IEEE 802.3.

The port supports either 1000 Mbit/s full-duplex mode or 2500 Mbit/s full-duplex mode.

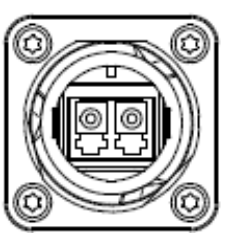


Figure 2: IP67 plug as per IEC 61076-3-106

1.5 Antenna connections

The device has connections for external antennas. These connections are N female sockets.

It is recommended to install an N-Abschl-Wdst. 50 Ohm termination resistor on unused antenna ports to prevent signal interference.

The "Antenna Guide" document provides an overview of the antennas that can be used as well as the suitable antenna accessories.

The manual is available for download on the Internet: https://catalog.belden.com

2 Installation

WARNING

ELECTRIC SHOCK

Exclusively install this device in a restricted-access area that is accessible only to maintenance personnel. Install the device in such a manner that the power-supply section is protected against mechanical force.

Failure to follow this instruction can result in death, serious injury or damage of the equipment.

The devices are developed for practical application in a harsh industrial environment. On delivery, the device is ready for operation.

To protect the exposed uninstalled contacts of the components from dirt, connect the individual system components in a dry and clean working area.

The device fulfills the protection class IP67 under the following conditions exclusively:

- ☐ All the connectors and cables connected also fulfill protection class IP67.
- ☐ All the unused connections and ports are sealed with the appropriate protection screws.
- ☐ The protection screws that are available as accessories comply with degrees of protection IP67.

To install the device, perform the following work steps:

- ▶ Checking the package contents
- ▶ Installing and grounding the device
- ▶ Installing the antennas
- ▶ Connecting the power supply
- ▶ Operating the device
- ▶ Connecting data cables

2.1 Checking the package contents

☐ According to the device variant, check whether the package contains all items listed in the scope of delivery. Also check whether the package includes all items listed under “Scope of delivery, order numbers and accessories” on page 28.

☐ Check the individual parts for transport damage.

2.2 Installing and grounding the device

2.2.1 Installing the device onto or on a flat surface

You have the option of attaching the device with suitable hardware to a vertical flat surface.
Proceed as follows:

☐ Prepare the assembly at the installation site. See “Dimension drawings” on page 27.
☐ Install the device with 4 x M5 screws (suggest screw length no less than 12 mm) on a flat surface larger than 400 mm in width and 280 mm in height.
☐ Seal all unused sockets or ports with protection screws.

Note: The cross-sectional area of the protective earthing conductor should be not less than 0.5 mm², and the AWG should be 20 or larger.

2.2.2 Grounding the device

WARNING

ELECTRIC SHOCK

Ground the device before connecting any other cables.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

Ground the device by a separate ground connection on the device. The overall shield of a connected shielded twisted-pair cable is connected to the metal housing as a conductor. The insulation of the protective earthing conductor should be green and yellow color. The device variants feature a connection for protective grounding, see Figure 3.

☐ Terminate the ground conductor between the fastening plates.
☐ Make sure the fastening plates cover the stripped part of the ground conductor completely.
☐ Tighten the grounding screw (M4 × 10 mm) with a tightening torque of 3 Nm ± 0.5 Nm.

Note: Use toothed washers to ensure good electrical conductivity for the connection.

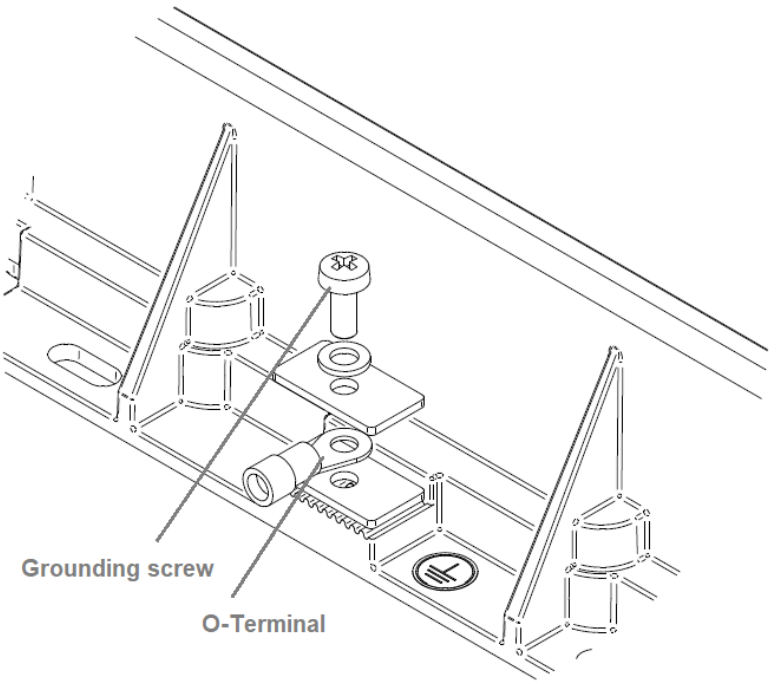


Figure 3: Connection for Protective Ground

2.3 Installing the antennas

WARNING

ELECTRIC SHOCK

Mount the antennas outdoors only with the surge protection device BAT ANT-Protector m-f.

See “Scope of delivery, order numbers and accessories” on page 28.

Failure to follow this instruction can result in death, serious injury, or damage of equipment.

WARNING

ELECTRIC SHOCK OR FALLING

Avoid mounting the antenna near power lines.

When installing an antenna from a ladder or elevating equipment, take precautions to avoid falling and ensure the equipment is securely positioned on solid ground.

Failure to follow this instruction can result in death, serious injury, or damage of equipment.

The device has connections for external antennas. These connectors are N female sockets.

On delivery, the antenna connections are sealed with protection caps. When an antenna port is not used, Hirschmann recommends using an N-Abschl-Wdst. 50 Ohm resistor to avoid suffering from signal interference.

BAT-ANT-Protector m-f connectors

BAT-ANT-Protector m-f is the surge protection device. The BAT-ANT-Protector m-f is recommended for protecting the interior electronics of the device with outdoor antennas. Despite outer surge protection measures, partial discharges can still cause surges that can damage the device. The BAT-ANT Protector m-f should be mounted as close as possible to the device.

The BAT-ANT-Protector m-f provides two connectors, one for connecting to the Access Point and the other for connecting to the antenna (see Figure 4).

Figure 4: BAT-ANT-Protector m-f connectors

1 – N socket for connection to the antenna (unprotected end)

2 – N plug for connection to the Access Point (protected end marked in red)

Prerequisites

- ☐ Only qualified personnel are permitted to install the device in accordance with the relevant national installation and safety rules. Its usage is only permitted under the conditions stated and shown in this instruction.
- ☐ The BAT-ANT-Protector m-f and the equipment connected to it can be destroyed by EM surges exceeding the given specification, for example due to a direct lightning strike.
- ☐ The operational voltage of the system/equipment to be protected must not exceed the maximum permissible operating voltage (rated voltage) of the BAT-ANT-Protector m-f.
- ☐ Disconnect or switch off inline equipment when installing or removing the BAT-ANT-Protector m-f.
- ☐ Do not open the BAT-ANT-Protector m-f. Opening the BAT-ANT Protector m-f will void the warranty and may result in the accidental destruction of electronic components.
- ☐ If exposed to extreme environmental conditions, especially icy conditions or a polluted atmosphere, the connectors should be covered with a self-vulcanizing tape or a cold shrink tube.
- ☐ If the BAT-ANT-Protector m-f is mated with connectors made of copper-alloy base material and trimetal or nickel plating, the connector area must be taped to improve long-term durability.
- ☐ All pertinent country, state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components. This equipment must only be installed and serviced by qualified personnel.

Work steps

☐ Remove the pre-mounted protection caps from the antenna connections.
☐ Mount the BAT-ANT-Protector m-f as described below.

Connecting to the Access Point

To connect the BAT-ANT-Protector m-f to the Access Point proceed as follows:

☐ Connect one end of the adapter cable supplied with the antenna to the N plug of the BAT-ANT-Protector m-f.
☐ Connect the other end of the adapter cable to the antenna output of the Access Point.

Note: Depending on the type, you can connect the BAT-ANT-Protector m-f directly to the antenna output of the Access Point. In this case you do not need an adapter cable.

Connecting to the antenna

To connect the BAT-ANT-Protector m-f to the antenna proceed as follows:

☐ Connect one end of the antenna cable to the N socket of the BATANT-Protector m-f.
☐ Connect the other end of the antenna cable to the antenna input.
☐ Seal an unused socket with a terminating resistor to avoid interferences from radio signals. The terminating resistor is available as accessory.

Note: Depending on the connector type, you may require an adapter or an adapter cable.

Grounding the BAT-ANT-Protector m-f

Ground the BAT-ANT-Protector m-f appropriately according to all national, state, and local regulations to ensure that any surges can be conducted away from the device to the building's earthing system.

Fix a cable lug with a nut as shown in Figure 5.

Note: Use a grounding cable of adequate size (minimum 16 mm² or 0.02 in² / AWG 6) and keep the grounding distance as short as possible (maximum 0.5 m or 19.69 in).

Figure 5: Grounding the BAT-ANT-Protector m-f

2.4 Connecting the power supply

WARNING

ELECTRIC SHOCK

Before connecting the electrical wires, always verify and ensure that all listed requirements are fully met.

See “Requirements for connecting electrical wires” on page 6.

See “Requirements for connecting the supply voltage” on page 6.

Failure to follow this instruction can result in death, serious injury, or damage of equipment.

The supply voltage is electrically isolated from the casing.

2.4.1 Supply voltage (110V AC / 230V AC)

One 3-pin 7/8" plug is available for the power supply to the device. The prescribed tightening torque can be found in “Technical data” section on page 26.

The supply voltage is connected to the device casing through protective elements exclusively.

Connect the electrical wires to the socket according to the pin assignment.

Type and Specification of the Supply Voltage	Connector	Pin	Function
Rated voltage range 110 V/230 V AC, 50 Hz/60 Hz		PE	Protective Earth
		L	Line
Voltage range incl. maximum tolerances 85–264 V AC, 47–63 Hz		N	Neutral

Table 4: Pin assignments of the power socket

2.5 Operating the device

⚠ WARNING

ELECTRIC SHOCK

Before connecting the electrical wires, always verify and ensure that all listed requirements are fully met.

See “Requirements for connecting electrical wires” on page 6.

See “Requirements for connecting the supply voltage” on page 6.

Failure to follow this instruction can result in death, serious injury, or damage of equipment.

By connecting the supply voltage via a connector, you start the operation of the device.
Proceed as follows:

☐ Connect the power supply cable.
☐ Enable the supply voltage.

2.6 Connecting data cables

Note the following general recommendations for data cable connections in environments with high electrical interference levels:

- Keep the length of the data cables as short as possible.
- Use optical data cables for the data transmission between the buildings.
- When using copper cables, provide a sufficient separation between the power supply cables and the data cables. Ideally, install the cables in separate cable channels.
- Verify that power supply cables and data cables do not run parallel over longer distances. To reduce inductive coupling, verify that the power supply cables, and data cables cross at a 90° angle.
- Use shielded data cables for gigabit transmission via copper cables, for example SF/UTP cables according to ISO/IEC 11801. Exclusively use shielded data cables to meet EMC requirements according to EN 50121-4 and marine applications.
- Connect the data cables according to your requirements. See “Ethernet port” on page 12.
- You can find the prescribed tightening torque of the locking screw in “General technical data” on page 26.

2.7 Disassembly

- ☐ Disconnect the data cable.
- ☐ Disable the power supply.
- ☐ Remove the antennas.
- ☐ Disconnect the grounding wire.

3 Technical data

3.1 General technical data

Dimensions W × H × D	DAP849	See “Dimension drawings” on page 27.
Weight	DAP849	4.4 kg (9.7 lb)
Supply voltage	Connection type	3-pin, 7/8’’ connector
		Tightening torque 2.5 Nm (22 lb-in)
	Rated voltage	AC Input: 110 V/230 V AC
	Maximum tolerances	AC Input: 85 V to 264 V AC, 47 Hz to 63 Hz
	Rated current	AC Input: 140 mA/290 mA
	Power loss buffer	> 10 ms at 110 V AC
	Overload current protection on the device	fuse
	Peak inrush current	< 65 A
Climatic conditions during operation	Minimum clearance around the device	Top and bottom device side: 30 cm (11.81 in) Left and right device side: 2 cm (0.79 in)
	Ambient air temperature[a]	-40°C ... +70°C (-40°F ... +158°F)
	Humidity	10 % … 95 % (non-condensing)
	Altitude	≤ 3000 m
Climatic conditions during storage	Ambient air temperature[a]	-40°C ... +85°C (-40°F ... +185°F)
	Humidity	10 % … 95 % (non-condensing)
Pollution degree		2
Wind resistance		Up to 100 MPH sustained winds Up to 165 MPH sustained gusts
Protection classes	Laser protection	Class 1 in compliance with IEC 60825-1
	Degree of protection	IP67

3.2 Dimension drawings

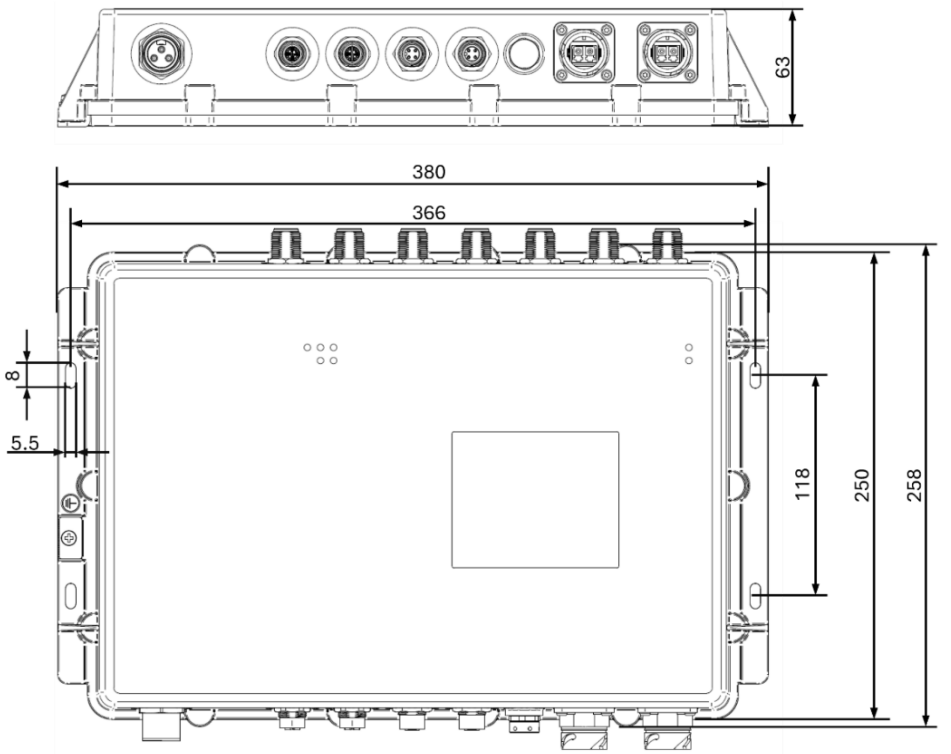


Figure 6: DAP849 dimensional measurements (unit: mm)

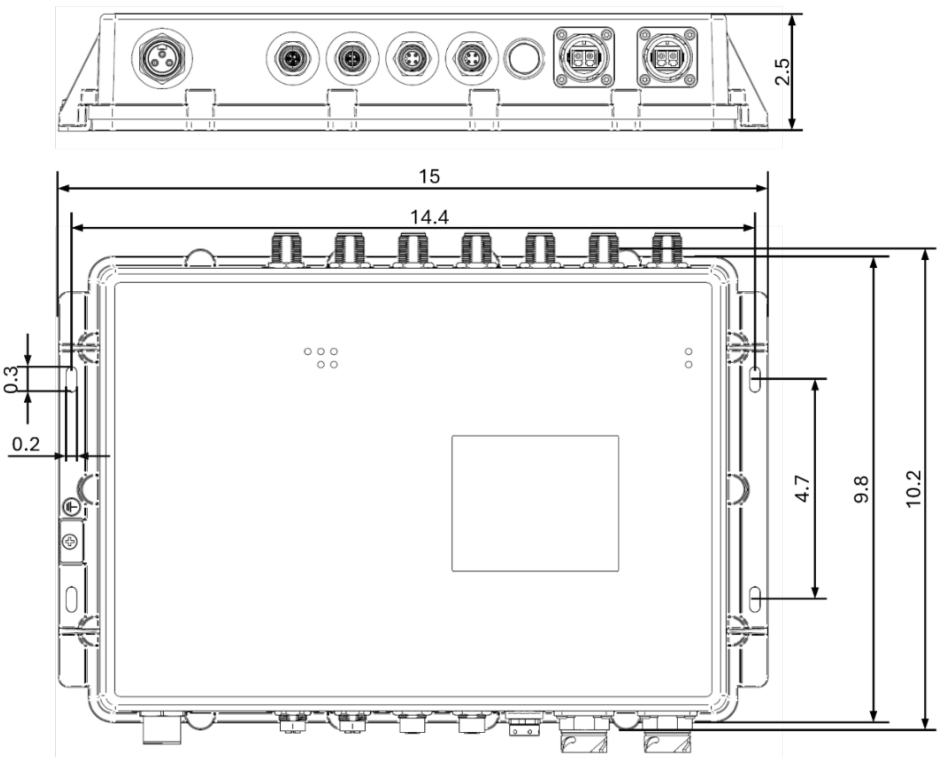


Figure 7: DAP849 dimensional measurements (unit: inch)

4 Scope of delivery, order numbers and accessories

Order numbers and scope of delivery for DAP849-RW series

Product code	Order number	Scope of delivery
DAP849-RWAAZT6O6EHH	9AA 102 001	1 × DAP 849 Device 1 × Outdoor safety instructions 1 × Safety and general information sheet 1 × RKC30/9,7/8" 3 pin connector [942 086 003] IP67 caps for all connectors
DAP849-RWAAZT6O8EHH	9AA 102 002	

Accessories to be ordered separately for DAP849-RW series

Category	Accessory description	Order number
Ethernet connector	EM12G OCTOPUS: Field attachable Gigabit Ethernet connector, M12 male, 8-pole, X-coded	942 083 001
Terminal cable	Terminal Cable, M12-4pin to DB9: Terminal cable, Side A: M12 A-coded 4-pin connector, Side B: Sub-D connector, 9-pin	943 902 001
Protector	ANT-Protector m-f	942 999 393
	BAT-ANT-Protector m-f	943 903 373
Termination resistors	N-Abschl-Wdst. 50 Ohm	942 118 001
Fiber connector	Plug casing for IP67 plug acc. to IEC 61076-3-106	Ordered at BTR NETCOM GmbH

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