

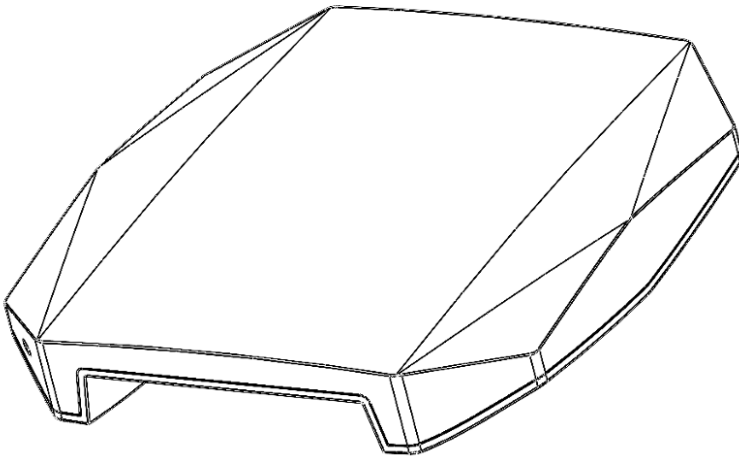


# User Manual

## Installation

### ITOT Wireless Access Point

### OAP720/740



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# Important information

**Note:** Read these instructions carefully and familiarize yourself with the device before trying to install, operate, or maintain it. The following notes may appear throughout this documentation or on the device. These notes warn of potential hazards or call attention to information that clarifies or simplifies a procedure.

## ■ Symbol explanation



This is a general warning symbol. This symbol alerts you to potential personal injury hazards. Observe all safety notes that follow this symbol to avoid possible injury or death.



If this symbol is displayed in addition to a safety instruction of the type “Danger” or “Warning”, it means that there is a danger of electric shock and failure to observe the instructions will inevitably result in injury.



This symbol indicates the danger of hot surfaces on the device. In connection with safety instructions, non-observance of the instructions will inevitably result in injury.



## **DANGER**

**DANGER** draws attention to an immediately dangerous situation, which will **inevitably** result in a serious or fatal accident if not observed.

---



## **WARNING**

**WARNING** indicates a potentially hazardous situation which, if not avoided, **could** result in death or serious injury.

---



## **CAUTION**

**CAUTION** indicates a possible danger which, if not avoided, **may** result in minor injuries.

---

## **NOTICE**

**NOTICE** provides information about procedures that do not involve the risk of injury.

# Safety instructions



## UNCONTROLLED MACHINE ACTIONS *ACTIONS DES MACHINES INCONTRÔLÉES*

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

*Pour éviter les actions des machines incontrôlées causées par la perte de données, configurez individuellement tous les dispositifs de transmission de données.*

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

*Avant de démarrer une machine qui est contrôlée via une transmission de données, assurez-vous de terminer la configuration de tous les dispositifs de transmission de données.*

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

*Le non-respect de cette instruction peut entraîner la mort, des blessures graves ou des dommages matériels.*

### ■ General safety instructions

The device operates normally with live electrical power. Improper usage of the device entails the risk of physical injury or significant property damage. The correct and safe operation of this device depends on correct handling during transportation, correct 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 Belden for inspection.

### ■ Certified usage

- ☐ Use the product only for the application cases described in the Belden product information, including this manual.
- ☐ Operate the product only according to technical specifications. [See “Technical Data” on page 46.](#)
- ☐ 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.

## ■ **Indoor installation**

Applies to the device with supply voltage (48 V DC and PoE):

- ☐ You connect the device to a power supply that complies with the requirements for a safety extra-low voltage (SELV) according to IEC 60950-1 or ES1 according to IEC/EN 62368-1.
- ☐ In case of supply via Power over Ethernet (PoE), the PoE data cable and the data cables are laid exclusively inside the building.

## ■ **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.

## ■ **Equipment usage**

Only instructed or skilled people are allowed to use the equipment (no ordinary person is allowed).

## ■ **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 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.

## ■ 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.

*Table 1: Requirements for connecting electrical wires*

## ■ Requirements for connecting the supply voltage

**The following requirements apply without restrictions:**

Only for device  
powered by 48 V DC

**All of the following requirements are complied with:**

- ▶ The supply voltage corresponds to the voltage specified on the type of plate of the device.
- ▶ The power supply conforms to overvoltage category I or II.
- ▶ The power supply has an easily accessible disconnecting device (for example a switch or a plug). This disconnecting device is clearly identified. In the case of an emergency, it is clear which disconnecting device belongs to which power supply cable.
- ▶ The power supply cable is suitable for the voltage, the current and the physical load. Belden recommends a wire diameter of 0.25 mm<sup>2</sup> (AWG24) to 0.75 mm<sup>2</sup> (AWG19).

*Table 2: Requirements for connecting the supply voltage*

**Prerequisites:**

Only for device  
powered by 48 V DC

**The following requirements apply alternatively:**

- |               |                                                                                                                                                                                                                                                                                                                                          |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alternative 1 | The power supply complies with the requirements for a limited power source (LPS) according to IEC 60950-1 or PS2 according to IEC/EN 62368-1.                                                                                                                                                                                            |
| Alternative 2 | Relevant for North America:<br>The power supply complies with the requirements according to NEC Class 2.                                                                                                                                                                                                                                 |
| Alternative 3 | <b>All</b> of the following requirements are complied with: <ul style="list-style-type: none"><li>▶ The power supply complies with the requirements for a safety extra-low voltage (SELV) according to IEC 60950-1 or ES1 according to IEC/EN 62368-1.</li><li>▶ A suitable fuse is in the plus conductor of the power supply.</li></ul> |

*Table 3: Requirements for connecting the supply voltage*

## ■ CE marking

### Note:

The CE marking applies to OAP720-RW, OAP740-RW

The labeled devices comply with the regulations contained in the following European directive(s):

► **2011/65/EU and 2015/863/EU (RoHS)**

Directive of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

► **2014/53/EU (RED)**

Directive of the European Parliament and of the Council on the harmonization of the laws of the Member States relating to the making available on the market of radio equipment.

This product may be operated in all European Union (EU) countries under the condition that it has been configured correctly.

In accordance with the above-named EU directive(s), the EU conformity declaration will be available to the relevant authorities at the following address:

Belden Deutschland GmbH  
Im Gewerbepark 2  
58579 Schalksmühle  
Germany

You find the EU conformity declaration as PDF file for downloading on the Internet at:

<https://www.doc.hirschmann.com/certificates.html>

The product can be used in industrial areas.

Notes for countries with the following country codes:



|    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|
| AT | BE | BG | CH | CY | CZ | DE | DK | EE |
| EL | ES | FI | FR | HR | HU | IE | IT | LI |
| LT | LU | LV | MT | NL | NO | PL | PT | RO |
| RS | SE | SI | SK | TR |    |    |    |    |

- The RED compliance requires compliant operation of the device in the 5 GHz band channels. For the compliant operation of the device, it is prohibited to modify the country code.

## ■ **LED or Laser Components**

LED or LASER components according to IEC 60825-1 (2014):  
CLASS 1 LED PRODUCT

## **CAUTION**

---

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

*L'utilisation des commandes ou réglages ou l'exécution des procédures autres que celles spécifiées dans les présents exigences peuvent être la cause d'une exposition à un rayonnement dangereux.*

Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3, as described in Laser Notice No. 56, dated May 8, 2019.

## ■ **FCC note**

### **Supplier's Declaration of Conformity**

47 CFR § 2.1077 Compliance Information

OAP720-US

OAP740-US

### **U.S. Contact Information**

Belden Inc.

1 N. Brentwood Blvd. 15th Floor

St. Louis, Missouri 63105, United States

Phone: 314.854.8000

This device complies with part 15 of the FCC rules.

Operation is subject to the following two conditions:

- ▶ This device may not cause harmful interference.
- ▶ This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

- FCC regulations restrict the operation of this device to indoor use only.
- The operation of this device is prohibited on oil platforms, cars, trains, boats, and aircraft, except that operation of this device is permitted in large aircraft while flying above 10,000 feet in the 5.925-6.425 GHz band.
- Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

### ■ **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.
- ▶ Confirm that this equipment is installed and operated in accordance with the provided instructions and the antenna(s) used for this transmitter is installed at a distance of at least 20 cm from every person and must not be collocated 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 device used 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 batteries used and accumulators must be handed in for separate collection.

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

## About this manual

The “Installation” user manual contains a device description, safety instructions, a description of the display, and the other information that you need to install the device.

Documentation mentioned in the “User Manual Installation” that is not supplied with your device as a printout can be found for downloading on the Internet at: <https://catalog.belden.com>

# Key

The symbols used in this manual have the following meanings:

|   |            |
|---|------------|
| ▶ | Listing    |
| □ | Work step  |
| ■ | Subheading |

# 1 Description

## 1.1 General device description

The device is a next generation enterprise level Wi-Fi7 (IEEE 802.11be) access point. There are convenient options for managing the device.

Manage your devices via:

- Web browser
- SSH

The device works without a fan.

The device complies with the degrees of protection IP40.

## 1.2 Device name and product code

The device name corresponds to the product code.

| Order number | Product code                          | Description                                                                                                                                                                                                                                      |
|--------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9AA103001    | OAP720-RW                             | Indoor enterprise Wi-Fi 7 (802.11be) Access Point (AP), 3 Wi-Fi radios & bands: 2.4GHz 2x2:2 + 5GHz 2x2:2 + 6GHz 2x2:2, aggregated data rate up to 9.3 Gbit/s, integrated BLE/Zigbee, 1 x 5GbE PoE (802.3at), built-in omni-antenna              |
| 9AA103002    | OAP720-US                             | Indoor enterprise Wi-Fi 7 (802.11be) Access Point (AP), 3 Wi-Fi radios & bands: 2.4GHz 2x2:2 + 5GHz 2x2:2 + 6GHz 2x2:2, aggregated data rate up to 9.3 Gbit/s, integrated BLE/Zigbee, 1 x 5GbE PoE (802.3at), built-in omni-antenna              |
| 9AA104001    | OAP740-RW                             | Indoor enterprise Wi-Fi 7 (802.11be) Access Point (AP), 3 Wi-Fi radios & bands: 2.4GHz 2x2:2 + 5GHz 4x4:4 + 6GHz 2x2:2, aggregated data rate up to 12.2 Gbit/s, integrated BLE/Zigbee, 1 x 10GbE PoE (802.3bt) + 1 x 1GbE, built-in omni-antenna |
| 9AA104002    | OAP740-US                             | Indoor enterprise Wi-Fi 7 (802.11be) Access Point (AP), 3 Wi-Fi radios & bands: 2.4GHz 2x2:2 + 5GHz 4x4:4 + 6GHz 2x2:2, aggregated data rate up to 12.2 Gbit/s, integrated BLE/Zigbee, 1 x 10GbE PoE (802.3bt) + 1 x 1GbE, built-in omni-antenna |
| 9AA903001    | OAP720-RW – 2 year warranty extension | 2 year warranty extension                                                                                                                                                                                                                        |

|           |                                       |                           |
|-----------|---------------------------------------|---------------------------|
| 9AA903002 | OAP720-RW – 4 year warranty extension | 4 year warranty extension |
| 9AA903003 | OAP720-US – 2 year warranty extension | 2 year warranty extension |
| 9AA903004 | OAP720-US – 4 year warranty extension | 4 year warranty extension |
| 9AA904001 | OAP740-RW – 2 year warranty extension | 2 year warranty extension |
| 9AA904002 | OAP740-RW – 4 year warranty extension | 4 year warranty extension |
| 9AA904003 | OAP740-US – 2 year warranty extension | 2 year warranty extension |
| 9AA904004 | OAP740-US – 4 year warranty extension | 4 year warranty extension |

*Table 4: Device name and product code*

### 1.3 Device view OAP720

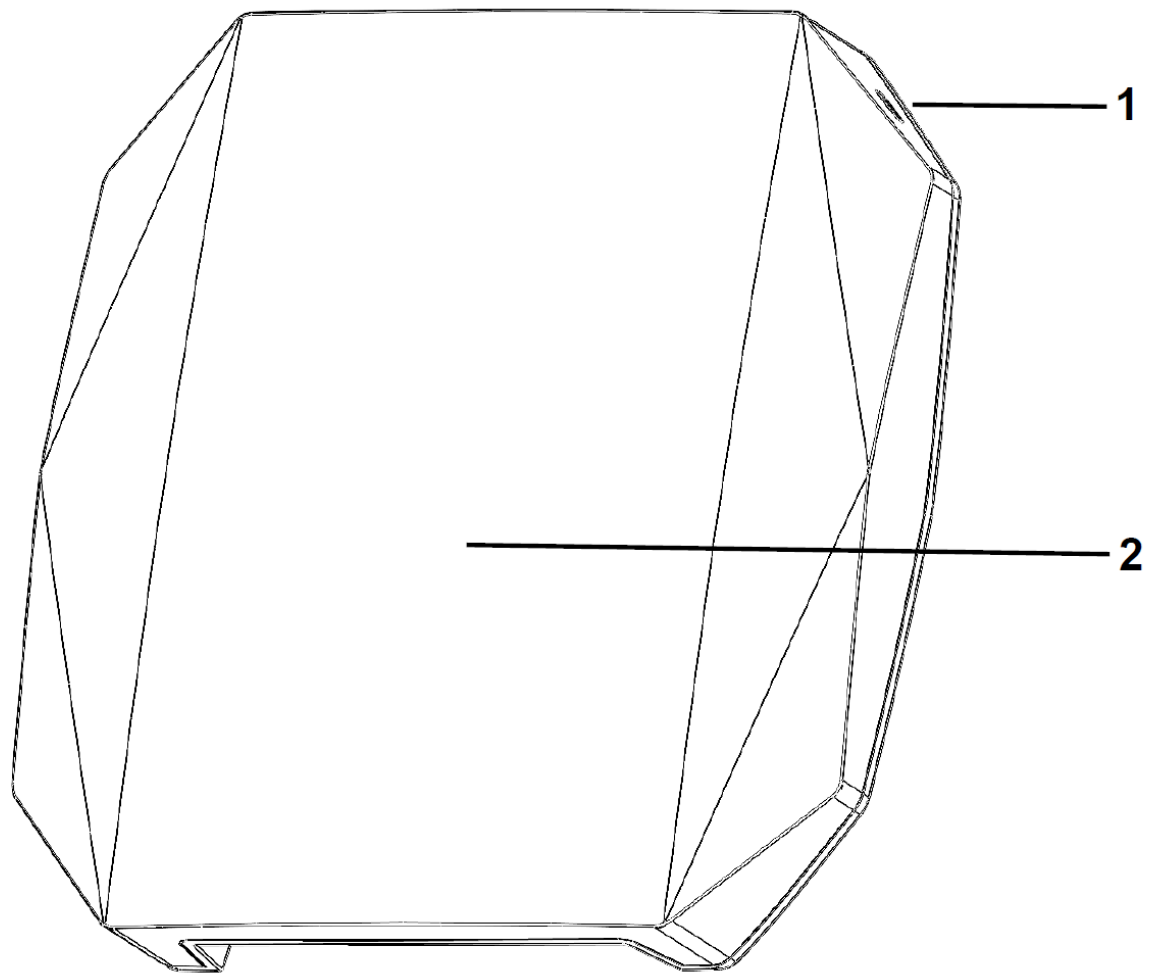


*Figure 1: Top view*

|   |                     |                                                                        |
|---|---------------------|------------------------------------------------------------------------|
| 1 | USB Interface       | <b>Type-C socket for USB 2.0 host interface, output current 0.5 A.</b> |
| 2 | LED display element | LED display that indicates different status with different colors.     |

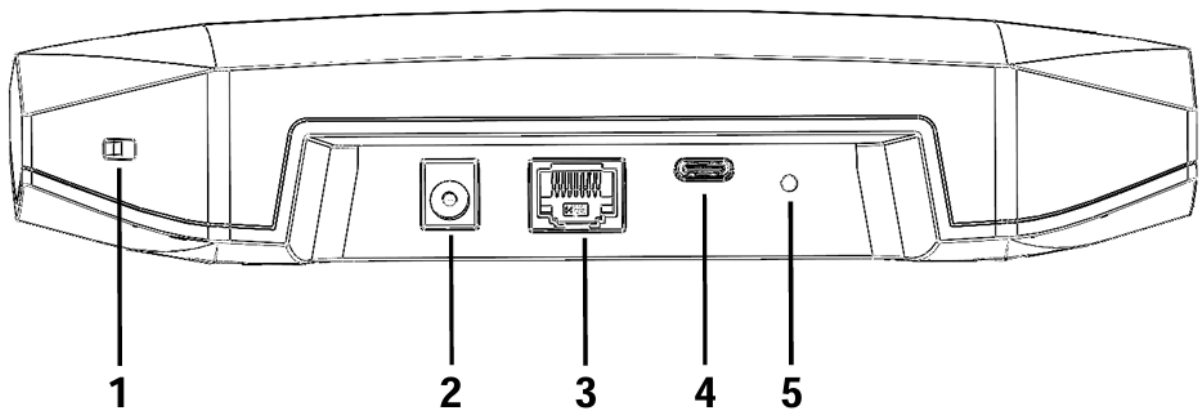


*Figure 2: Rear view*

|   |                                      |                                                                                                              |
|---|--------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1 | <b>Security lock slot</b>            | <b>The access point is equipped with a security lock slot for additional security.</b>                       |
| 2 | Supply voltage connection            | Applies to device variants featuring supply voltage of 48 V DC to support powering through an AC-DC adapter. |
| 3 | Ethernet port 2                      | RJ45 socket for 10/100/1000/2500/5000 Mbit/s twisted pair connections. This port supports PoE+.              |
| 4 | Management Console port (USB Type-C) | Type-C socket for Management Console port.                                                                   |
| 5 | Reset button                         |                                                                                                              |

## 1.4 Device view OAP740

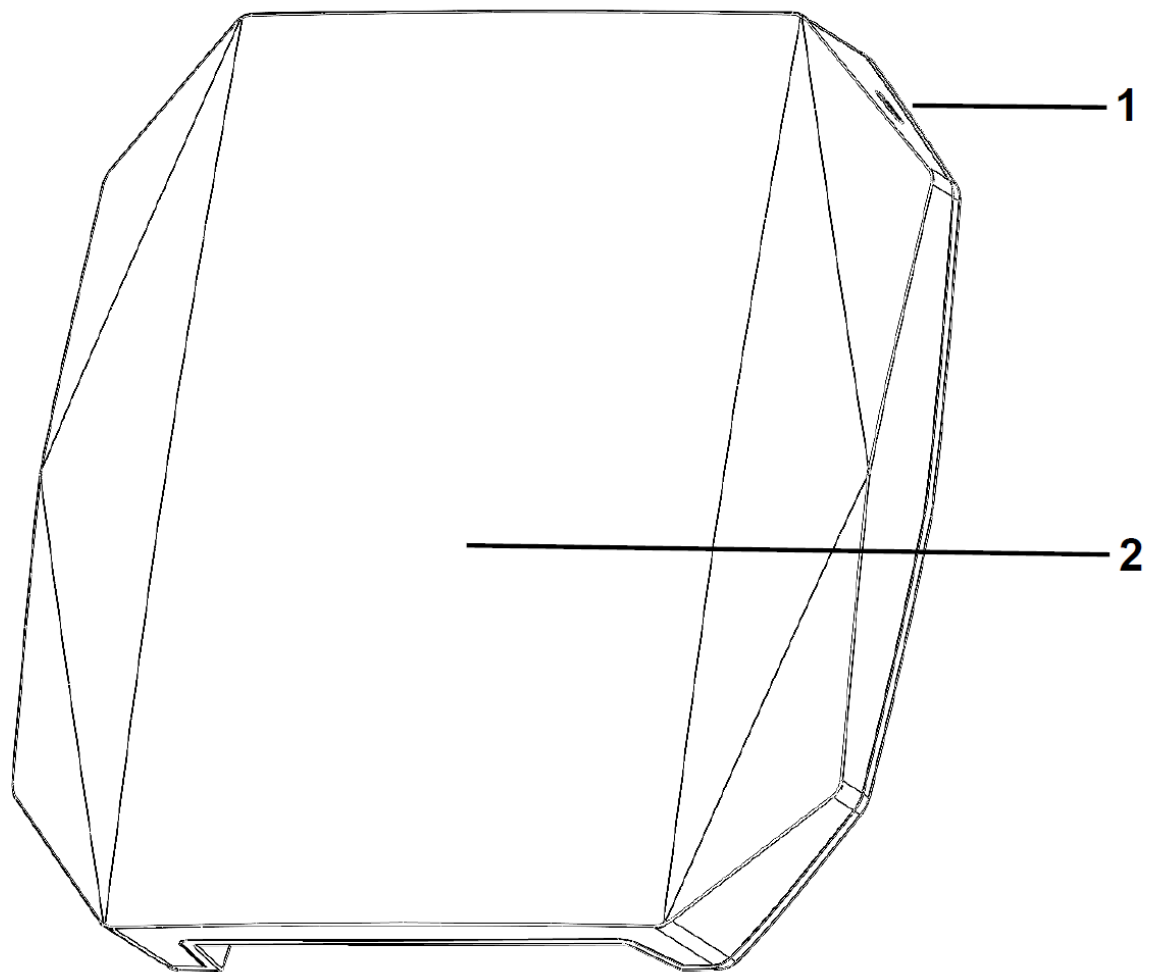


*Figure 3: Top view*

|   |                      |                                                                      |
|---|----------------------|----------------------------------------------------------------------|
| 1 | <b>USB Interface</b> | <b>Type-C socket for USB 2.0 host interface, output current 1 A.</b> |
| 2 | LED display element  | LED display that indicates different status with different colors.   |

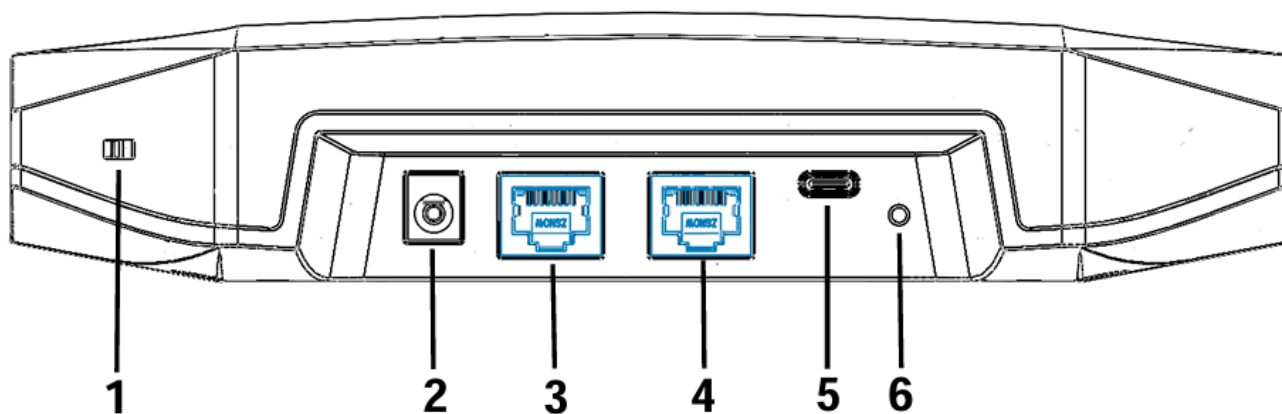


Figure 4: Rear view

|   |                                           |                                                                                                              |
|---|-------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1 | <b>Security lock slot</b>                 | <b>The access point is equipped with a security lock slot for additional security.</b>                       |
| 2 | Supply voltage connection                 | Applies to device variants featuring supply voltage of 48 V DC to support powering through an AC-DC adapter. |
| 3 | Ethernet port 1                           | RJ45 socket for 1× 10/100/1000/2500/5000/10000Mbps port, this port supports 802.3bt.                         |
| 4 | Ethernet port 2                           | RJ45 socket for 1× 10/100/1000Mbps port.                                                                     |
| 5 | Management Console interface (USB Type C) | USB Type-C socket for Management Console interface.                                                          |
| 6 | Reset button                              |                                                                                                              |

## 1.5 Power supply

The following options for power supply are available:

### 1.5.1 Power supply with 48 V DC

#### ■ Power supply via AC-DC adapter

For the power supply of the device, an AC-DC adapter is available.

#### ■ Independent DC Power supply

Power supply is available when the DC port is connected to the AC-DC adapter.

### 1.5.2 Power supply through PoE

#### ■ Power supply via RJ45 socket for PoE port

Your device is a PD (powered device). PSE (power sourcing equipment) connected via a twisted pair cable to the PoE PD port serves as the PoE power supply voltage. The PoE power supply means that no separate power supply is required for your device.

Further information:

[See “10/100/1000 Mbit/s PoE port” on page 22](#)

#### ■ When the supply voltage connection and ethernet ports are connected at the same time

- a) If the supply voltage connection is plugged in first and then the ethernet ports, the supply voltage connection is powered on. If the ethernet ports are not powered on, remove the supply voltage connection, then the device is powered off and powered on again.
- b) If the ethernet ports are plugged in first and then the supply voltage connection:
  - I. When the power supply voltage of the ethernet ports is higher than that of the supply voltage connection: The ethernet ports are powered on and the supply voltage connection remains in the hot backup mode. In this case, the device is not powered off, even if you remove any of the supply first.
  - II. When the power supply voltage of the supply voltage connection is higher than that of the ethernet ports: The supply voltage connection takes over the power supply and the ethernet ports stop supplying the power. If the power supply voltage connection is removed, then the device is powered off and powered on again.

## 1.6 Ethernet ports

You have the option to connect end devices or other segments to the ports of the device via twisted pair cables.

You will find information on the pin assignments for making patch cables here:  
[See “Pin assignments” on page 23](#)

### 1.6.1 10/100/1000/2500/5000 Mbit/s PoE port for OAP720

This port is an RJ45 socket.

The 10/100/1000/2500/5000 Mbit/s PoE port allows you to connect network components as a PoE power source according to standards IEEE 802.3 10BASE-T/100BASE-TX/1000BASE-T/2500BASE-T/5000BASE-T and IEEE 802.3at.

This port supports:

- ▶ Autocrossing (if autonegotiation is activated)
- ▶ Autonegotiation
- ▶ Autopolarity
- ▶ 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode
- ▶ 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
- ▶ 1000 Mbit/s full duplex
- ▶ 2500 Mbit/s full duplex
- ▶ 5000 Mbit/s full duplex
- ▶ Power over Ethernet

The socket housing is electrically connected with the device housing.

Delivery state: Autonegotiation activated

The PoE power is supplied via the wire pairs transmitting the signal (phantom voltage).

### 1.6.2 10/100/1000 Mbit/s twisted pair port for OAP740

This port is an RJ45 socket.

The 10/100/1000 Mbit/s twisted pair port allows you to connect network components according to the IEEE 802.3 10BASE-T/100BASE-TX/1000BASE-T.

This port supports:

- ▶ Autocrossing (if autonegotiation is activated)
- ▶ Autonegotiation
- ▶ Autopolarity
- ▶ 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode
- ▶ 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
- ▶ 1000 Mbit/s full duplex
- ▶ 10000 Mbit/s full duplex

The socket housing is electrically connected with the device housing.

Delivery state: Autonegotiation activated

### **1.6.3 10/100/1000/2500/5000/10000 Mbit/s twisted pair port for OAP740**

This port is an RJ45 socket.

The 10/100/1000/2500/5000/10000 Mbit/s PoE port allows you to connect network components as a PoE power source according to standards IEEE 802.3

10BASE-T/100BASE-TX/1000BASE-T//2500BASE-T/5000BASE-T/10000BASE-T and IEEE 802.3bt.

This port supports:

- ▶ Autocrossing (if autonegotiation is activated)
- ▶ Autonegotiation
- ▶ Autopolarity
- ▶ 10 Mbit/s half-duplex mode, 10 Mbit/s full duplex mode
- ▶ 100 Mbit/s half-duplex mode, 100 Mbit/s full duplex mode
- ▶ 1000 Mbit/s full duplex
- ▶ 2500 Mbit/s full duplex
- ▶ 5000 Mbit/s full duplex
- ▶ 10000 Mbit/s full duplex

The socket housing is electrically connected with the device housing.

Delivery state: Autonegotiation activated

The PoE power is supplied via the wire pairs transmitting the signal (phantom voltage).

## 1.6.4 OAP720 Pin assignments

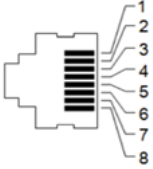
| Connector                                                                         | Pin | Singal Name | PoE  |
|-----------------------------------------------------------------------------------|-----|-------------|------|
|  | 1   | RJ45_DA+    | PoE- |
|                                                                                   | 2   | RJ45_DA-    | PoE- |
|                                                                                   | 3   | RJ45_DB+    | PoE+ |
|                                                                                   | 4   | RJ45_DC+    | PoE+ |
|                                                                                   | 5   | RJ45_DC-    | PoE+ |
|                                                                                   | 6   | RJ45_DB-    | PoE+ |
|                                                                                   | 7   | RJ45_DD+    | PoE- |
|                                                                                   | 8   | RJ45_DD-    | PoE- |

Table 5: Pin assignment of the 10/100/1000/2500/5000 Mbit/s twisted pair port

## 1.6.5 OAP740 Pin assignments

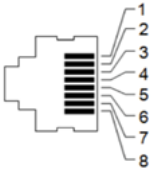
| Connector                                                                          | Pin | Singal Name | PoE |
|------------------------------------------------------------------------------------|-----|-------------|-----|
|  | 1   | RJ45_DA+    | -   |
|                                                                                    | 2   | RJ45_DA-    | -   |
|                                                                                    | 3   | RJ45_DB+    | -   |
|                                                                                    | 4   | RJ45_DC+    | -   |
|                                                                                    | 5   | RJ45_DC-    | -   |
|                                                                                    | 6   | RJ45_DB-    | -   |
|                                                                                    | 7   | RJ45_DD+    | -   |
|                                                                                    | 8   | RJ45_DD-    | -   |

Table 5: Pin assignment of the 10/100/1000 Mbit/s twisted pair port

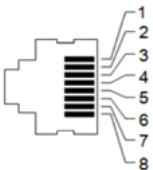
| Connector                                                                           | Pin | Singal Name | PoE  |
|-------------------------------------------------------------------------------------|-----|-------------|------|
|  | 1   | RJ45_DA+    | PoE- |
|                                                                                     | 2   | RJ45_DA-    | PoE- |
|                                                                                     | 3   | RJ45_DB+    | PoE+ |
|                                                                                     | 4   | RJ45_DC+    | PoE+ |
|                                                                                     | 5   | RJ45_DC-    | PoE+ |
|                                                                                     | 6   | RJ45_DB-    | PoE+ |
|                                                                                     | 7   | RJ45_DD+    | PoE- |
|                                                                                     | 8   | RJ45_DD-    | PoE- |

Table 5: Pin assignment of the 10/100/1000/2500/5000/10000 Mbit/s twisted pair port

## 1.7 Display elements

After the supply voltage is set up, the software starts and initializes the device. Afterwards, the device performs a self-test. During this process, red LED light up.

### 1.7.1 Device State

The access point is equipped with an LED display that indicates different status with different colors.

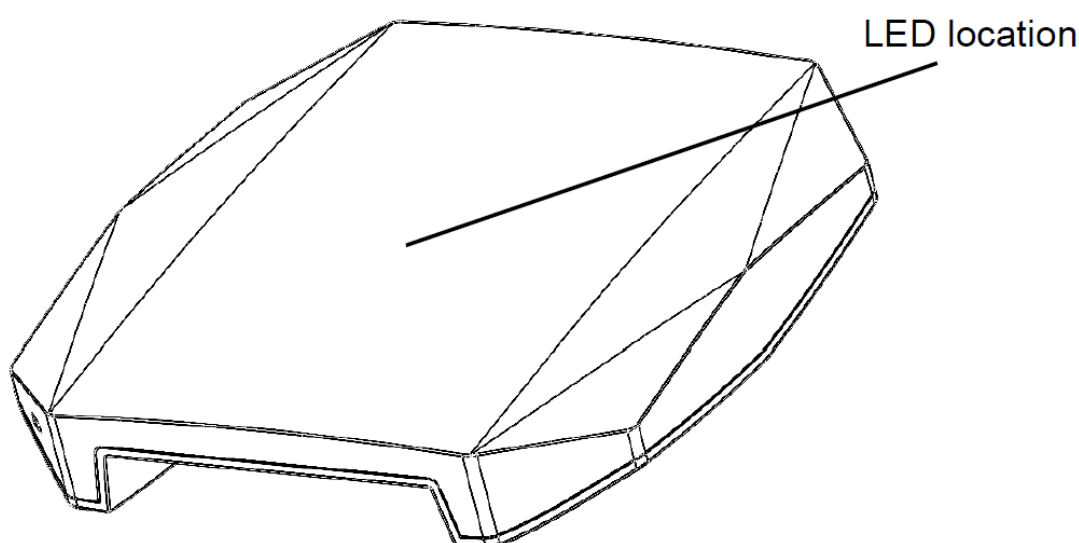


Figure 5: LED display element

| Red      | Blue     | Green    | Status                                                                |
|----------|----------|----------|-----------------------------------------------------------------------|
| ON       |          |          | Access point is powered ON.                                           |
| Flashing |          |          | Network abnormal (WAN link down).                                     |
|          |          | Flashing | Network normal, without SSID created.                                 |
|          |          | ON       | Network normal, single band working, either 2.4 GHz or 5 GHz working. |
|          | ON       |          | Network normal, 2.4 GHz and 5 GHz dual bands working.                 |
| Flashing | Flashing |          | Operating software is updating.                                       |
| Flashing | Flashing | Flashing | Used for locating access point.                                       |

## 1.8 Management interfaces

### 1.8.1 Management Console Port (external management)

This interface is a USB Type-C socket. It is serial and enables the local connection of an external management station (VT100 terminal or PC with corresponding terminal emulation). This enables you to set up a connection to the Command Line Interface CLI and to the System Monitor.

|           |              |
|-----------|--------------|
| Speed     | 115200 bit/s |
| Data      | 8 bits       |
| Stop bit  | 1 bit        |
| Handshake | Off          |
| Parity    | None         |

The serial console port assists you to connect the access point to a serial terminal or a laptop for direct local management.

### 1.8.2 Reset button

The device has a reset button.

To reset the configuration to the factory settings, press the button for at least 5 seconds. The LEDs on the device quickly flash for 3 seconds. Once you release the switch, the device reboots with the restored factory settings.

### 1.8.3 USB Interface

The USB Interface support USB2.0 host with Type-C connector, Power out current up to 0.5A in DAP720, and up to 1A in DAP740.

## 2 Installation



### **WARNING**

#### **ELECTRIC SHOCK**

Exclusively install this device in a restricted access location, to which maintenance staff have exclusive access. Install the device in such a way that it is protected against mechanical forces in the area of the power supply.

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

These devices is developed for use in commercial environments.  
At the time of delivery, the device is ready for operation.

To install the device, perform the following work steps:

- ▶ [Checking the package contents](#)
- ▶ [Installing the device](#)
- ▶ [Connecting the power supply](#)
- ▶ [Connecting data cables](#)

## 2.1 Checking the package contents

- ☐ According to the device variant, check whether the package contains every item specified in the section: [“Scope of delivery” on page 53](#)

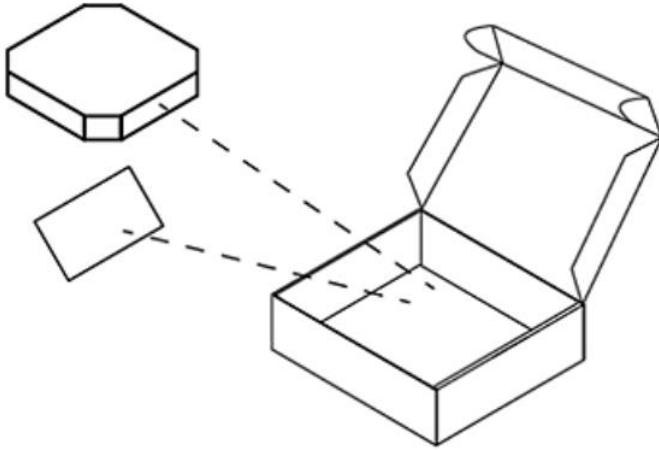


*Figure 6: Package contents*

- ☐ Check the individual parts for transport damage.

## 2.2 Installing the device

### 2.2.1 Installing the device on a ceiling or a wall

#### **WARNING**

##### **ELECTRIC SHOCK**

It is strictly prohibited to install the device around the area where water may leak, accumulate, seep, or condense. Do not install where the water may condense along the cables connecting to the access point.

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

You can install the access point on a ceiling or on a wall. You should first determine the location of the installation. The installation position is located at the center of the required coverage area and should be free from obstructions or obvious sources of interference.

- ▶ Minimize the number of obstructions (such as walls) between the access point and user terminals.
- ▶ Electronic equipment or devices (such as microwave ovens) which may produce radio frequency noise should be away from the installation position of the access point.
- ▶ It is strictly prohibited to install the device around the area where water may leak, accumulate, seep, or condense. Do not install where the water may condense along the cables connecting to the access point.

## ■ Wall Mount

Perform the following work steps:

- Center mark 2 drilling holes at a proper location on the wall. Confirm that both the holes are at the same height from the ground and the distance between the holes on the wall is equivalent to the distance between the holes on the access point.

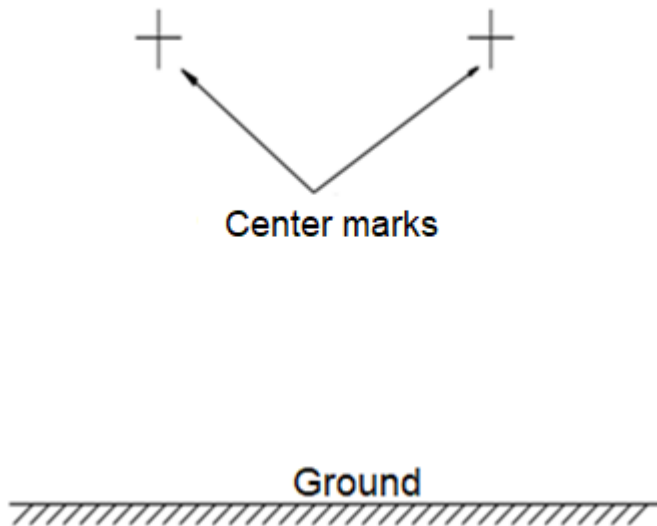


*Figure 7: Center marking for wall mounting*

- Drill 2 holes at the center marks about 6 mm in diameter and 27 mm in depth. This is approximately the same size as the wall anchors of the access point.

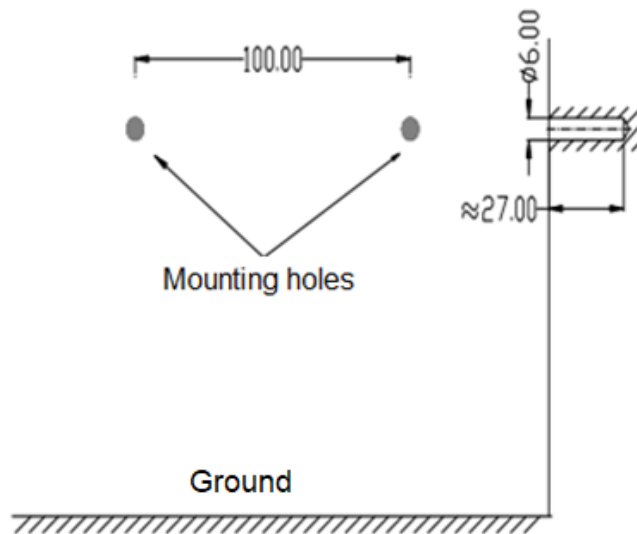


*Figure 8: Measurement for drilling the center hole*

- Insert 2 wall anchors and tap them into the holes.

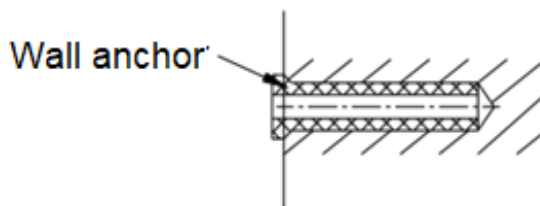


*Figure 9: Wall anchor*

- Insert 2 mounting screws into the wall anchors with 2 mm length left remaining.

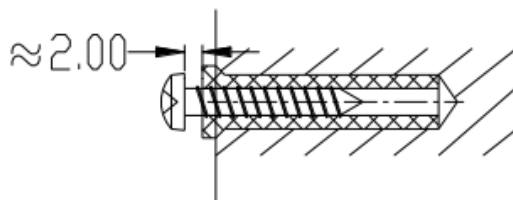


*Figure 10: Mounting screw position*

- ☐ Push the mounting bracket along the direction of the arrows until it locks in the slots behind the access point.

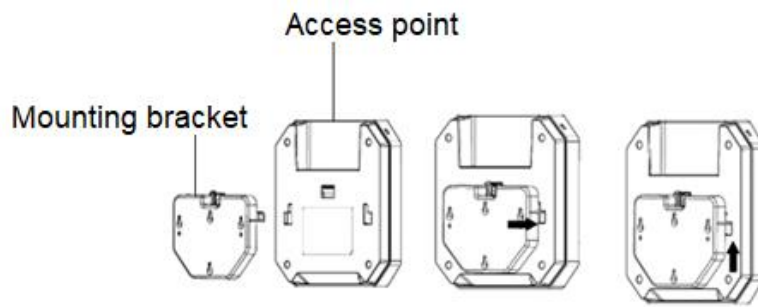


*Figure 11: Installing access point on the mounting bracket*

- ☐ Connect the cable to the port on the access point.
- ☐ Align the bottom holes of the mounting bracket with the mounting screws, then insert and push down the access point to secure at the mounting screw. The installation is complete

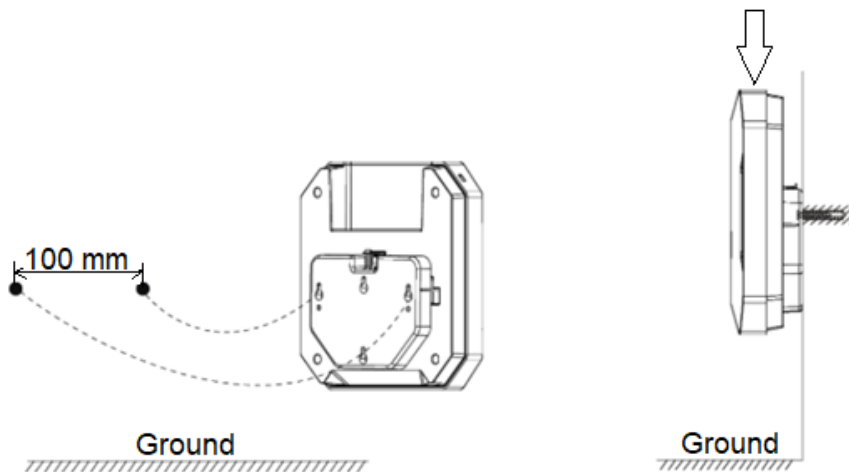


*Figure 12: Aligning mounting bracket with mounting screws*

## ■ Ceiling Mount

The devices are designed to be mounted on both the structural ceiling and the suspended ceiling.

### Note:

- ▶ Ceiling mount requires necessary personal protective equipment.
- ▶ The weight bearing capacity of the ceiling material must be greater than 4 times the total weight of both the device and the mounting bracket. It is verified by the MEDVT test (Transportation, Vibration, Shock, Seismic) performed according to standard EN 300 019-2-3: Environmental conditions and environmental tests for telecommunications equipment; Part 2-3: Specification of environmental tests; stationary use at weather protected locations.

## ■ Structural ceiling installation steps:

- ☐ Center mark 2 drilling holes at a proper distance on the structural ceiling.

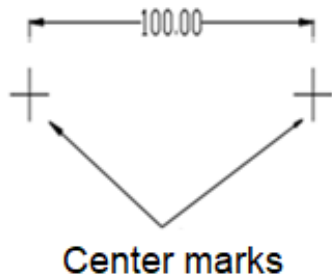


Figure 13: Measurement for drilling the center hole

- ☐ Drill 2 holes at the center marks about 6 mm in diameter and 27 mm in depth. This is approximately the same size as the wall anchors.

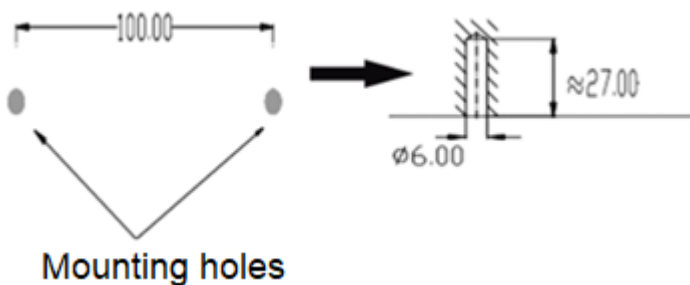


Figure 14: Measurement for drilling the center hole

- ☐ Align the bottom holes of mounting bracket with the mounting screws, use the 2 mounting screws to help secure the mounting bracket to the ceiling.

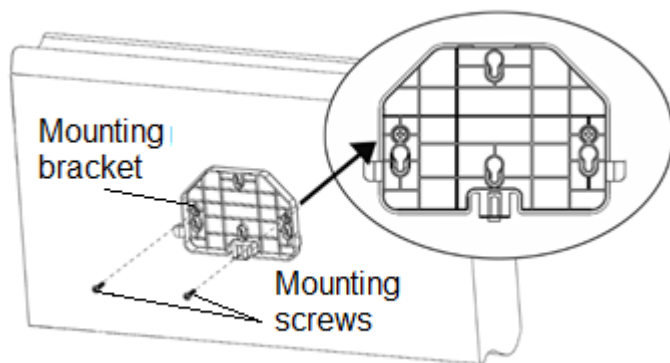


*Figure 15: Mounting screw with mounting bracket*

- ☐ Connect the cable to the port on the access point.
- ☐ Push the access point along the direction of the arrows until it locks in the slots behind it.

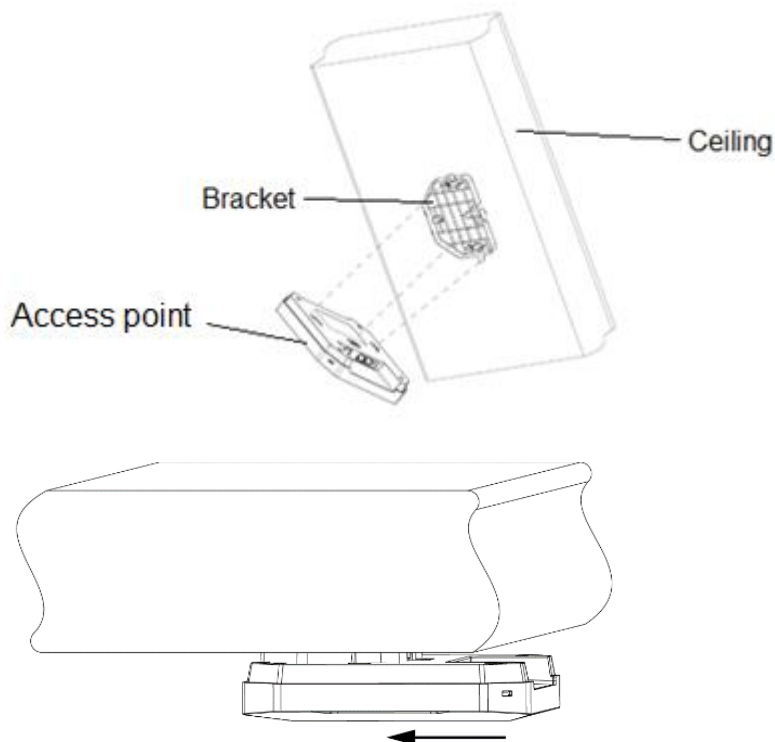


*Figure 16: Access point installation on the mounting bracket*

### ■ Suspended ceiling installation steps:

- ☐ To select the installation point, if the ceiling is accessible, the operator can enter the ceiling to select the suitable installation point. If not, it is recommended to select the installation point close to the maintenance opening.
- ☐ Drill 1 hole at the installation point, approximately the same size as the network cable.

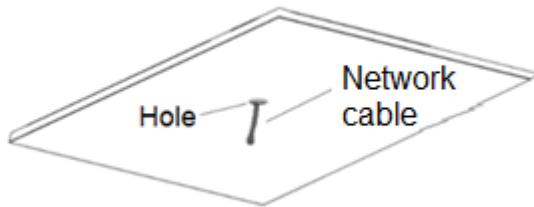


*Figure 17: Suspended ceiling installation*

- ☐ Mark the position of mounting holes, close to the network cable.

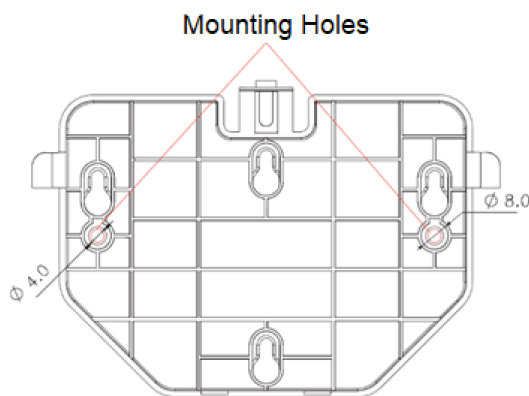


*Figure 18: Mounting holes on the bracket*

- ☐ Drill the holes and follow the anchor instruction to secure the anchor.

**Note:** Prepare the associated tools as required. The anchor should be purchased in accordance with the ceiling thickness and the installation conditions.

- ☐ Align the bottom holes of mounting bracket with the mounting screws, use the 2 mounting screws to help secure the mounting bracket to the ceiling.

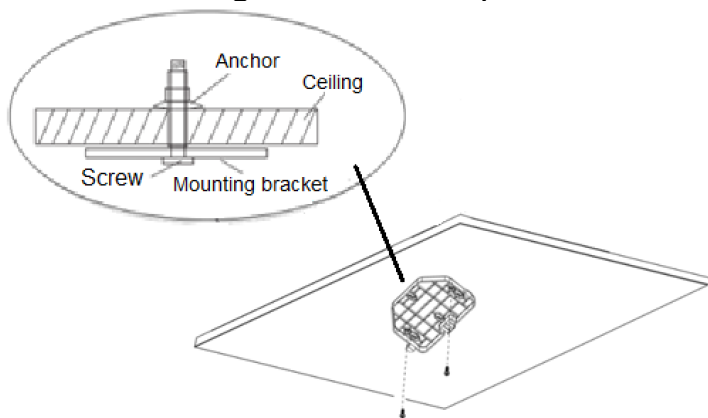


*Figure 19: Mounting bracket installation*

- ☐ Push the access point along the direction of the arrows until it locks in the slot.

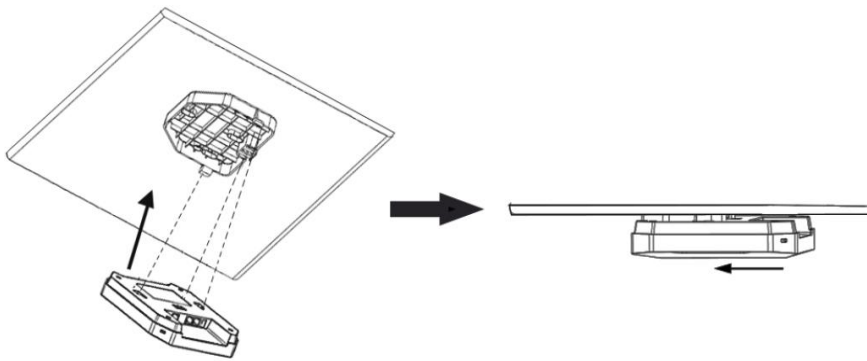


*Figure 20: Access point installation*

## 2.3 Connecting the power supply

### **WARNING**

#### **ELECTRIC SHOCK**

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

See “Requirements for connecting electrical wires” on page 9.

See “Requirements for connecting the supply voltage” on page 9.

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

### 2.3.1 Supply voltage with 48 V DC

The device is powered by the AC/DC adapter, The requirements for connectors are given below.

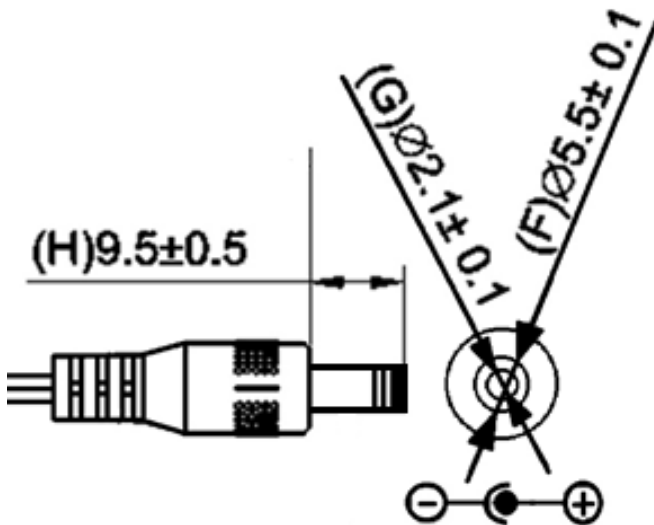


Figure 21: Connector's dimension

### 2.3.2 Supply voltage with PoE

You can start up the device by connecting the power supply via RJ45 socket for the PoE port.

- ☐ Only connect the device to a PoE network indoors.
- ☐ Only run data links indoors.

## 2.4 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.
- ☐ When using copper cables, keep 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.
- ☐ Connect the data cables according to your requirements.  
[See “Ethernet ports” on page 22](#)
- ☐ You find the prescribed tightening torque of the locking screw in chapter:  
[“General technical data” on page 46](#)

### 3 First login (Password change)

To help prevent undesired access to the device, it is imperative that you change the default password during initial setup.

#### Perform the following steps:

- ☐ By default, the device will broadcast the WLAN 'mywifi-xxxx' (xxxx = the last 2 bytes of the access point MAC address). You can connect to 'mywifi-xxxx' and browse <http://bwap.belden.com:8080> to access the access point web page.

**Note:** It is recommended to access the web page in chrome browser for the best possible user experience.

- ☐ Log on to the device by choosing "Administrator" as user and the default password "admin".

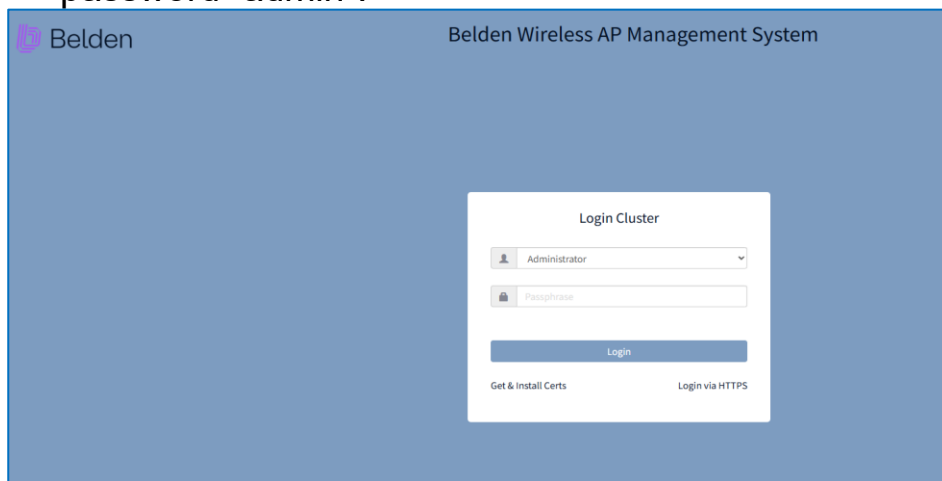


Figure 22: Administrator login page

- ☐ Select "Cluster" for cluster mode, or "BWO" for BWO mode.

Figure 23: Mode selection

- ☐ Click “Next” on the “AP Cluster Web Manager” window.

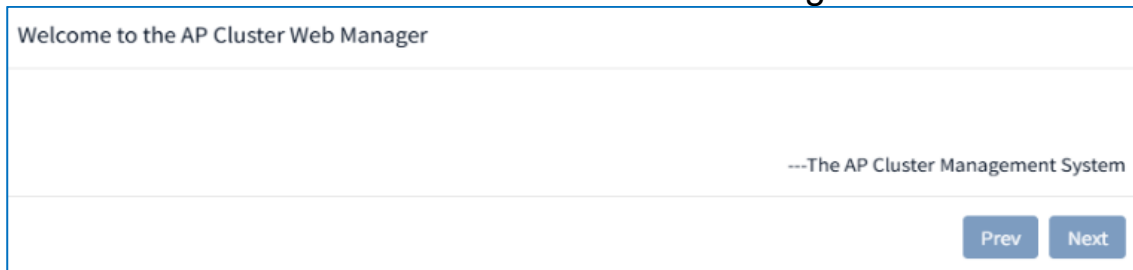
The screenshot shows a web browser window titled "Welcome to the AP Cluster Web Manager". The page has a light blue header with the title. Below the header is a large white area. In the bottom right corner, there is a blue button labeled "Prev" and a grey button labeled "Next". The text "---The AP Cluster Management System" is visible in the bottom right corner of the main content area.

*Figure 24: Access point cluster web manager*

**Note:** There are 3 pre-configured login accounts: Administrator, Viewer and Guest Manager. You can modify the account password, but the account name is not modifiable.

1. Administrator can set up and check the access point status.
2. Viewer can check the access point status ONLY.
3. Guest Manager can check the access point status and register accounts for portal authentication.

You will find more information in the “User Manual Configuration Guide”. This manual is available for download on the internet:

<https://catalog.belden.com>

The device prompts you to type in a new password.

- ☐ Type in your new password.

Choose a password that contains at least 8 characters which includes upper-case characters, lower-case characters, numerical digits and special characters.

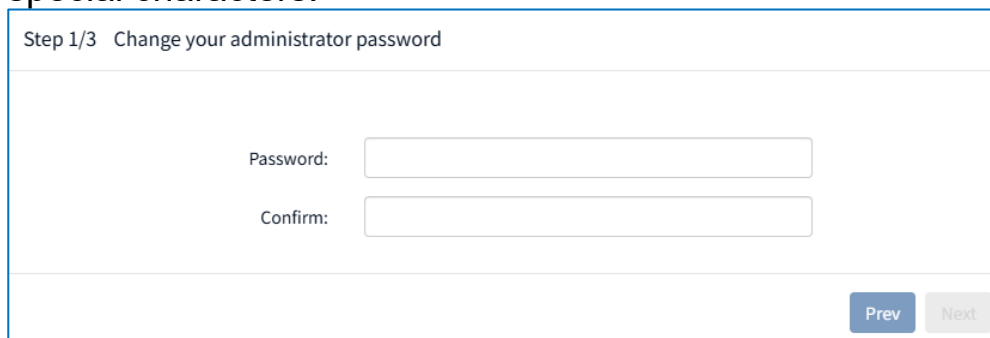
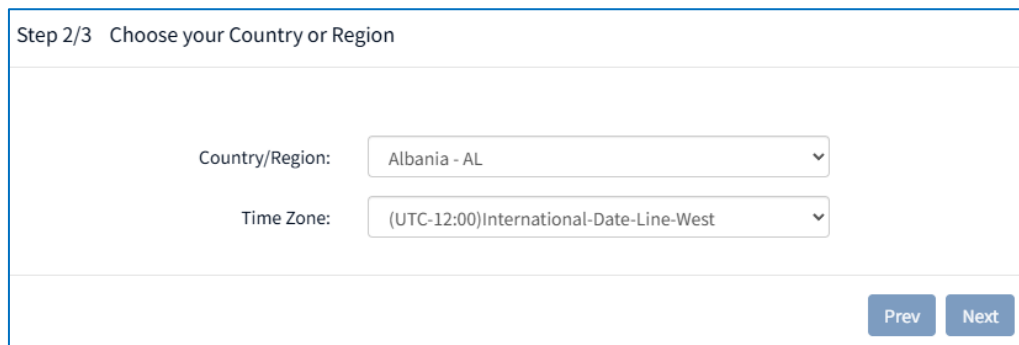
The screenshot shows a web browser window titled "Step 1/3 Change your administrator password". The page has a light blue header with the title. Below the header is a large white area. In the center, there are two input fields: "Password:" and "Confirm:". Below the input fields, there is a blue button labeled "Prev" and a grey button labeled "Next".

*Figure 25: Password change wizard*

- ☐ Confirm your new password.
- ☐ Select the country/region and the time zone.



Step 2/3 Choose your Country or Region

Country/Region: Albania - AL

Time Zone: (UTC-12:00)International-Date-Line-West

Prev Next

*Figure 26: Country or Region selection page*

## 4 Defining WLAN basic settings

You have the following options to define the WLAN basic settings:

- ▶ via the wired local network (LAN)
- ▶ via the wireless network (WLAN) if the WLAN encryption (for example WPA2) is set accordingly in a device with a wireless interface and in the configuration computer

You will find more information in the “User Manual Configuration Guide”.  
The manual is available for download on the Internet:

<https://catalog.belden.com>.

## 5 Configuring the transmit power

You can modify the transmission power and working channel for the device in the RF Configuration Window. Dynamic Radio Management (DRM) technology automatically manages the working channel and transmitting power. To set the channel and power values for an access point manually, disable the Automatic Channel Selection (ACS) and Automatic Power Control (APC). In manual mode, the access point transmitted power can be adjusted in 1 dB increments.

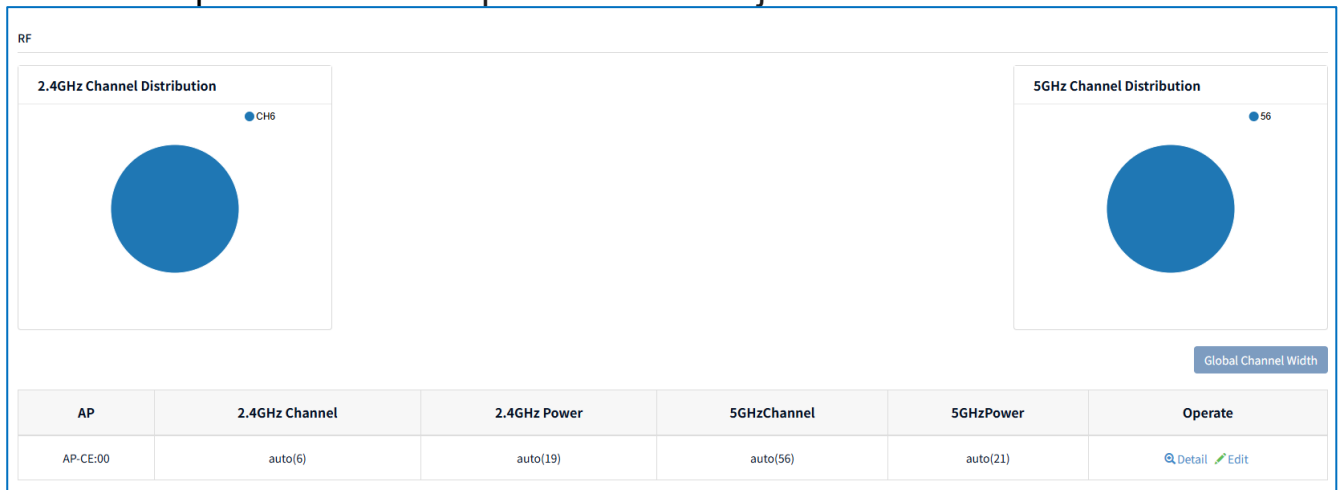


Figure 27: RF configuration window

The 2.4G Automatic channel and Power control selection window displays various configuration options:

- Channel:**
  - ACS: ☒ ON ☐ OFF
  - Client Aware: ☒
  - Channel: 6 (dropdown)
  - Channel Width: 20 (dropdown) (MHz)
- Power:**
  - APC: ☒ ON ☐ OFF
  - Power: 19 (slider) (3-40dBm)
  - Auto Power Range: Min (input) - Max (input) (3-40dBm)
- Others:**
  - Radio: ☒ Note: Before disabling radio, make sure the radio is not selected in any WLAN or Mesh with MLO bands.
  - High Efficiency: ☒
  - Extremely High Throughput: ☒ Note: Before disabling EHT, make sure the radio is not selected in any WLAN or Mesh with MLO bands.
  - Short GI: ☒

Figure 28: 2.4G Automatic channel and Power control selection window

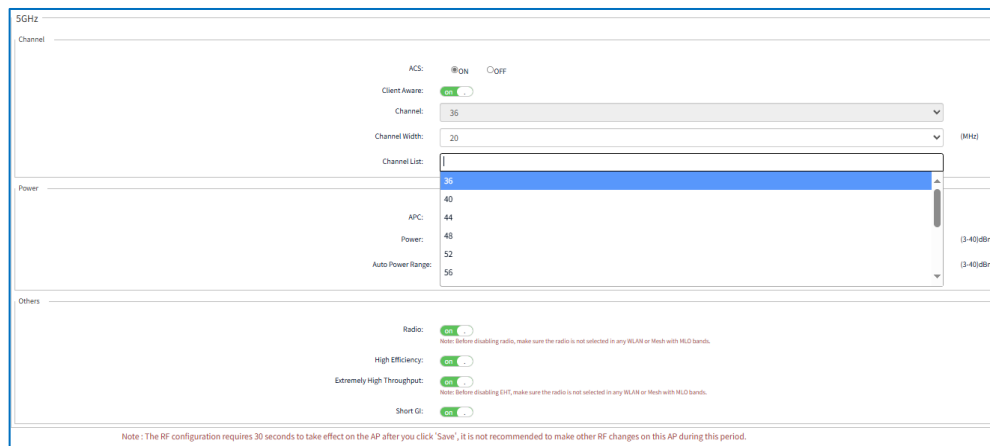


Figure 29: 5G Automatic channel and Power control selection window

You can specify the channels list or power range applicable for auto selection, which can reduce the chances of low-power transmitting or DFS channel conflict.

**Note:** DFS relies on the background scanning feature. To verify that the DFS is effective, verify that the background scanning is ON.

### Key word specification in RF Configuration Window.

| Parameter              | Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Client Aware</b>    | When enabled, Auto Channel Selection does not change channels for DAPs with connected clients, except for high-priority events such as RADAR detected. If "Client Aware" is disabled, the DAP may change to a more optimal channel, which may temporarily disrupt current client traffic.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Short GI</b>        | <p>Enable/Disable Short Guard Interval. In IEEE 802.11 OFDM-based communications, a Guard Interval is used to help ensure that distinct transmissions occur between the successive data symbols transmitted by a device. The standard symbol Guard Interval used in IEEE 802.11 OFDM is 800 nanoseconds in duration. To increase the data rates, the IEEE 802.11 standard added optional support for a 400 nanoseconds guard interval (Short Guard Interval). This would help provide approximately an 11% increase in the data rates. Using the Short Guard Interval will result in higher packet error detection rates. When the delay spread of the RF channel exceeds the Short Guard Interval, or if timing synchronization between the transmitter and receiver is not precise. By Default, Short Guard Interval is enabled on the wireless radio.</p> <p>If the multipath effect is too serious (too many metals or other reflecting materials), we recommend disabling the Short Guard Interval.</p> |
| <b>High Efficiency</b> | Enable/Disable IEEE 802.11ax high efficiency wireless functionality. When disabled, the HE (high efficiency) mode capable access point will downgrade to VHT (Very High Throughput) mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## 6 Maintenance and service

- ☐ When designing this device, Belden largely avoided using high-wear parts. The parts subject to wear and tear are dimensioned to last longer than the lifetime of the product when it is operated normally. Operate this device according to specifications.
- ☐ Belden is continually working on improving and developing their software. Check regularly whether there is an updated version of the software that provides you with additional benefits. You find information and software downloads on the Belden product pages on the Internet <https://catalog.belden.com/>
- ☐ Depending on the degree of pollution in the operating environment, check at regular intervals that ports in the device are not obstructed.

**Note:** You find information on settling complaints on the Internet at:  
[http:// www.beldensolutions.com/en/Service/Repairs/index.phtml](http://www.beldensolutions.com/en/Service/Repairs/index.phtml).

## 7 Disassembly

- ☐ Disconnect the data cables.
- ☐ Disable the supply voltage.
- ☐ Disconnect the power supply cable.

## 8 Technical data

### 8.1 General technical data

#### ■ OAP720

|                                            |                                              |                                                                                           |
|--------------------------------------------|----------------------------------------------|-------------------------------------------------------------------------------------------|
| Dimensions<br>W × H × D                    | OAP720                                       | See "Dimension drawings" on page 48                                                       |
| Weight                                     |                                              | 0.764 kg (1.685 lb)                                                                       |
| Supply voltage                             | Connection type                              | AC/DC adapter<br>PoE Input                                                                |
|                                            | Rated voltage                                | AC/DC adapter: 48 VDC<br>PoE Input: 48 V DC                                               |
|                                            | Rated current                                | AC/DC adapter: ≥ 0.6 A<br>PoE Input: ≥ 0.6 A                                              |
|                                            | Maximum tolerances                           | AC/DC adapter: 48 VDC +/- 10%<br>PoE Input: 42.5 V DC ... 57 V DC                         |
|                                            | Overload current<br>protection on the device | Non-replaceable fuse                                                                      |
| Climatic<br>conditions during<br>operation | Minimum clearance<br>around the device       | Top and bottom device side: 10 cm (3.94 in)<br>Left and right device side: 2 cm (0.79 in) |
|                                            | Ambient air<br>temperature <sup>a</sup>      | 0° C ... +50° C (+32° F ... +122° F)                                                      |
|                                            | Humidity                                     | 5 % ... 95 % (non-condensing)                                                             |
| Climatic<br>conditions during<br>storage   | Ambient air<br>temperature <sup>a</sup>      | -40° C ... +70° C (-40° F ... +158° F)                                                    |
|                                            | Humidity                                     | 5 % ... 95 % (non-condensing)                                                             |
| Pollution degree                           |                                              | Applies to device variants featuring supply<br>voltage of 48 V DC<br>2                    |
| Protection classes                         | Laser protection                             | Class 1 in compliance with IEC 60825-1                                                    |
|                                            | Degree of protection                         | IP40                                                                                      |

a. Temperature of the ambient air at a distance of 5 cm (2 in) from the device

## ■ OAP740

|                                            |                                              |                                                                                           |
|--------------------------------------------|----------------------------------------------|-------------------------------------------------------------------------------------------|
| Dimensions<br>W × H × D                    | OAP740                                       | See "Dimension drawings" on page 48                                                       |
| Weight                                     |                                              | 1.020 kg (2.249 lb)                                                                       |
| Supply voltage                             | Connection type                              | AC/DC adapter<br>PoE Input                                                                |
|                                            | Rated voltage <sup>2</sup>                   | AC/DC adapter: 48 VDC<br>PoE Input: 48 V DC                                               |
|                                            | Rated current                                | AC/DC adapter: ≥ 0.9 A<br>PoE Input: ≥ 0.9 A                                              |
|                                            | Maximum tolerances                           | AC/DC adapter: 48 VDC +/- 10%<br>PoE Input: 42.5 V DC ... 57 V DC                         |
|                                            | Overload current<br>protection on the device | Non-replaceable fuse                                                                      |
| Climatic<br>conditions during<br>operation | Minimum clearance<br>around the device       | Top and bottom device side: 10 cm (3.94 in)<br>Left and right device side: 2 cm (0.79 in) |
|                                            | Ambient air<br>temperature <sup>a</sup>      | 0° C ... +45° C (+32° F ... +113° F)                                                      |
|                                            | Humidity                                     | 5 % ... 95 % non-condensing                                                               |
| Climatic<br>conditions during<br>storage   | Ambient air<br>temperature <sup>a</sup>      | -40° C ... +70° C (-40° F ... +158° F)                                                    |
|                                            | Humidity                                     | 5 % ... 95 % non-condensing                                                               |
| Pollution degree                           |                                              | Applies to device variants featuring supply<br>voltage of 48 V DC<br>2                    |
| Protection classes                         | Laser protection                             | Class 1 in compliance with IEC 60825-1                                                    |
|                                            | Degree of protection                         | IP40                                                                                      |

a. Temperature of the ambient air at a distance of 5 cm (2 in) from the device

# 8.2 Dimension drawings

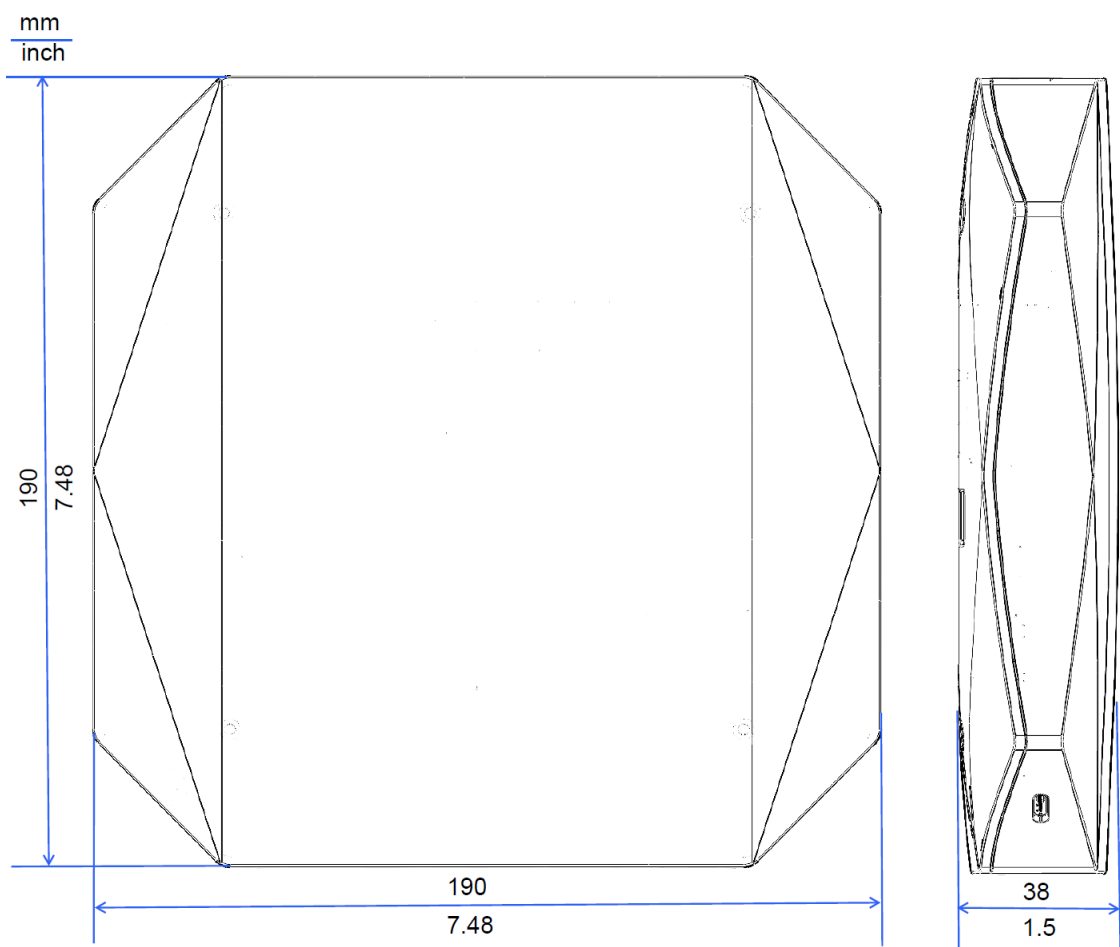


Figure 29: OAP720 Dimensional measurements

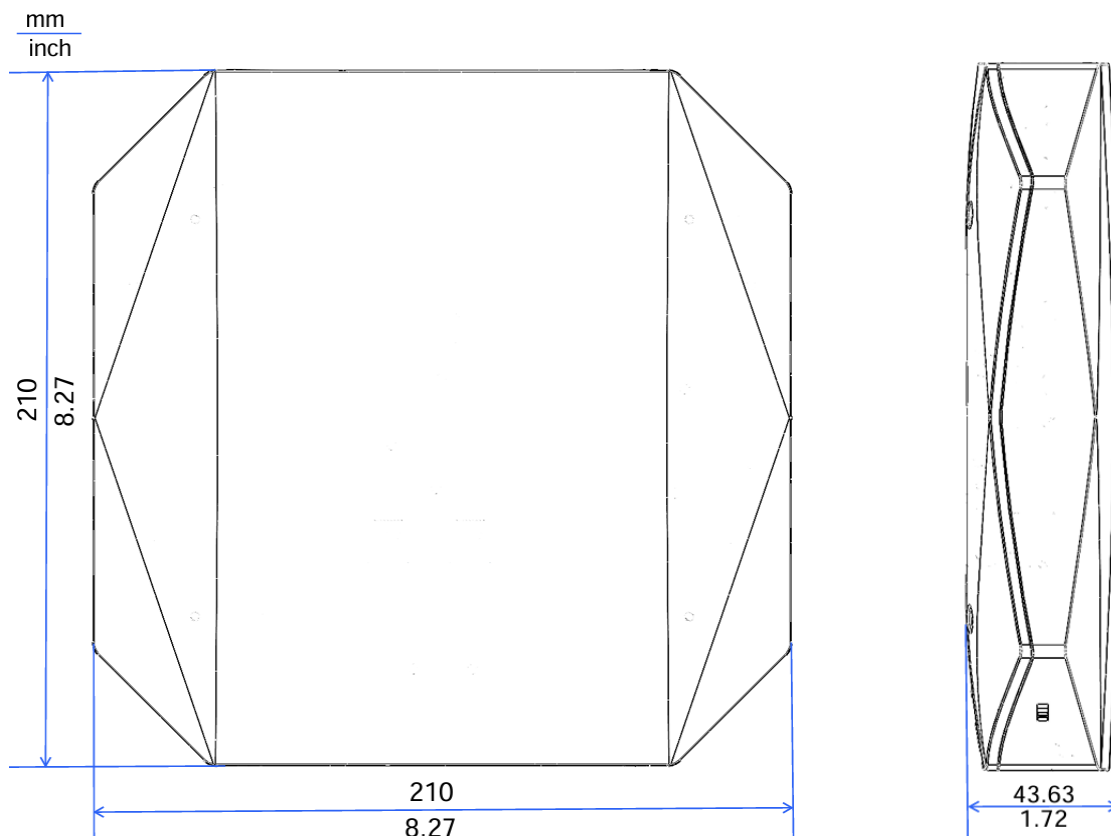


Figure 30: OAP740 Dimensional measurements

## 8.3 WLAN module specifications

### 8.3.1 Radio technology

|                       |                                                                                                                                                                                                                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Range                 | Depending on the antenna used, frequency range and data rate                                                                                                                                                                                                                                               |
| Encryption            | <ul style="list-style-type: none"> <li>▶ Static WEP</li> <li>▶ WPA3 Personal</li> <li>▶ WPA2 Personal</li> <li>▶ WPA Personal</li> <li>▶ IEEE 802.1xEAP</li> <li>▶ WPA3 Enterprise</li> <li>▶ WPA2 Enterprise</li> </ul>                                                                                   |
| Frequency range       | <ul style="list-style-type: none"> <li>▶ Support of 2.4 GHz: 2400 MHz to 2483.5 MHz</li> <li>▶ Support of 5 GHz: 5150 MHz to 5250 MHz, 5250 MHz to 5350 MHz, 5470 MHz to 5725 MHz, 5725 MHz to 5850 MHz, 5925 MHz to 6425 MHz, 6425 MHz to 6525 MHz, 6525 MHz to 6875 MHz, 6875 MHz to 7125 MHz</li> </ul> |
| Modulation technology | <ul style="list-style-type: none"> <li>▶ IEEE 802.11b: BPSK, QPSK, CCK</li> <li>▶ IEEE 802.11a/g/n/ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM</li> <li>▶ IEEE 802.11ax: BPSK, QPSK, CCK, 16-QAM,</li> </ul>                                                                                                   |

- 64-QAM, 256-QAM, 1024-QAM
- ▶ IEEE 802.11be: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM, 4096-QAM

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Radio topology

WLAN Access-Point, MESH, Bridge

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### 8.3.2 Roaming

- ▶ IEEE 802.11k (Radio Resource Measurement)
- ▶ IEEE 802.11v (Wireless Network Management)
- ▶ IEEE 802.11r (Fast Roaming)
- ▶ OKC (Opportunistic Key Caching)
- ▶ PMK Caching

### 8.3.3 Receiving sensitivity, transmit power, and data rate of the WLAN module

The values shown in the following tables are the maximum values of the WLAN module. The values are in no case to be perceived as guaranteed property of the overall product. For some country profiles, the module reduces data rate and transmits power automatically. The reason for this is national standards.

#### ■ OAP720

| Receive sensitivity | 2.4 GHz | 5 GHz | 6 GHz |
|---------------------|---------|-------|-------|
| 1 Mbps              | -99     |       |       |
| 11 Mbps             | -90     |       |       |
| 6 Mbps              | -95     | -94   |       |
| 54 Mbps             | -77     | -76   |       |
| HT20(MCS0/8)        | -94     | -95   |       |
| HT20(MCS7/15)       | -76     | -75   |       |
| HT40(MCS0/8)        | -93     | -92   |       |
| HT40(MCS7/15)       | -74     | -73   |       |
| VHT20(MCS0)         | -94     | -94   |       |
| VHT20(MCS8)         | -73     | -72   |       |
| VHT40(MCS0)         | -93     | -92   |       |
| VHT40(MCS9)         | -68     | -68   |       |
| VHT80(MCS0)         |         | -89   |       |
| VHT80(MCS9)         |         | -64   |       |
| HE20(MCS0)          | -94     | -94   | -93   |
| HE20(MCS11)         | -66     | -65   | -64   |
| HE40(MCS0)          | -91     | -91   | -89   |
| HE40(MCS11)         | -63     | -62   | -61   |
| HE80(MCS0)          |         | -89   | -87   |
| HE80(MCS11)         |         | -61   | -59   |
| HE160(MCS0)         |         | -87   | -86   |
| HE160(MCS11)        |         | -57   | -56   |
| EHT20(MCS0)         | -93     | -94   | -92   |
| EHT20(MCS13)        |         | -59   | -57   |
| EHT40(MCS0)         | -93     | -91   | -89   |
| EHT40(MCS13)        |         | -57   | -56   |
| EHT80(MCS0)         |         | -89   | -88   |
| EHT80(MCS13)        |         | -56   | -55   |
| EHT160(MCS0)        |         | -87   | -86   |
| EHT160(MCS13)       |         | -54   | -53   |
| EHT320(MCS0)        |         |       | -83   |
| EHT320(MCS13)       |         |       | -52   |

*Table 7: RF performance table Receive Sensitivity for OAP720*

| Features                           | Description   |         |        |        |
|------------------------------------|---------------|---------|--------|--------|
| Maximum transmit power (per chain) |               | 2.4 GHz | 5 GHz  | 6 GHz  |
|                                    | 1 Mbps        | 18 dBm  |        |        |
|                                    | 11 Mbps       | 18 dBm  |        |        |
|                                    | 6 Mbps        | 18 dBm  | 18 dBm |        |
|                                    | 54 Mbps       | 18 dBm  | 18 dBm |        |
|                                    | HT20(MCS0/8)  | 18 dBm  | 18 dBm |        |
|                                    | HT20(MCS7/15) | 17 dBm  | 17 dBm |        |
|                                    | HT40(MCS0/8)  | 18 dBm  | 18 dBm |        |
|                                    | HT40(MCS7/15) | 17 dBm  | 17 dBm |        |
|                                    | VHT20(MCS0)   | 18 dBm  | 18 dBm |        |
|                                    | VHT20(MCS8)   | 16 dBm  | 17 dBm |        |
|                                    | VHT40(MCS0)   | 18 dBm  | 18 dBm |        |
|                                    | VHT40(MCS9)   | 15 dBm  | 16 dBm |        |
|                                    | VHT80(MCS0)   |         | 18 dBm |        |
|                                    | VHT80(MCS9)   |         | 16 dBm |        |
|                                    | HE20(MCS0)    | 18 dBm  | 18 dBm | 18 dBm |
|                                    | HE20(MCS11)   | 13 dBm  | 16 dBm | 15 dBm |
|                                    | HE40(MCS0)    | 18 dBm  | 18 dBm | 18 dBm |
|                                    | HE40(MCS11)   | 13 dBm  | 16 dBm | 15 dBm |
|                                    | HE80(MCS0)    |         | 18 dBm | 18 dBm |
|                                    | HE80(MCS11)   |         | 16 dBm | 16 dBm |
|                                    | HE160(MCS0)   |         | 18 dBm | 18 dBm |
|                                    | HE160(MCS11)  |         | 16 dBm | 16 dBm |
|                                    | EHT20(MCS0)   | 18 dBm  | 18 dBm | 18 dBm |
|                                    | EHT20(MCS13)  | 14 dBm  | 15 dBm | 14 dBm |
|                                    | EHT40(MCS0)   | 18 dBm  | 18 dBm | 18 dBm |
|                                    | EHT40(MCS13)  | 14 dBm  | 15 dBm | 14 dBm |
|                                    | EHT80(MCS0)   |         | 18 dBm | 18 dBm |
|                                    | EHT80(MCS13)  |         | 15 dBm | 15 dBm |
|                                    | EHT160(MCS0)  |         | 18 dBm | 18 dBm |
|                                    | EHT160(MCS13) |         | 15 dBm | 15 dBm |
|                                    | EHT320(MCS0)  |         |        | 18 dBm |
|                                    | EHT320(MCS13) |         |        | 15 dBm |

• Note: Maximum transmit power is limited by local regulatory settings.

**Table 8: RF performance table Transmit Power for OAP720**

## ■ OAP740

| Receive sensitivity | 2.4 GHz | 5 GHz | 6GHz |
|---------------------|---------|-------|------|
| 1 Mbps              | -97     |       |      |
| 11 Mbps             | -88     |       |      |
| 6 Mbps              | -91     | -94   |      |
| 54 Mbps             | -75     | -76   |      |
| HT20(MCS0/8)        | -92     | -94   |      |
| HT20(MCS7/15)       | -75     | -75   |      |
| HT40(MCS0/8)        | -89     | -92   |      |
| HT40(MCS7/15)       | -72     | -73   |      |
| VHT20(MCS0)         | -92     | -94   |      |
| VHT20(MCS8)         | -70     | -72   |      |
| VHT40(MCS0)         | -89     | -92   |      |
| VHT40(MCS9)         | -66     | -68   |      |
| VHT80(MCS0)         |         | -89   |      |
| VHT80(MCS9)         |         | -64   |      |
| HE20(MCS0)          | -92     | -94   | -93  |
| HE20(MCS11)         | -63     | -65   | -64  |
| HE40(MCS0)          | -89     | -91   | -89  |
| HE40(MCS11)         | -60     | -62   | -61  |
| HE80(MCS0)          |         | -89   | -87  |
| HE80(MCS11)         |         | -61   | -59  |
| HE160(MCS0)         |         | -87   | -86  |
| HE160(MCS11)        |         | -57   | -56  |
| EHT20(MCS0)         | -93     | -94   | -92  |
| EHT20(MCS13)        |         | -59   | -57  |
| EHT40(MCS0)         | -93     | -91   | -89  |
| EHT40(MCS13)        |         | -57   | -56  |
| EHT80(MCS0)         |         | -89   | -88  |
| EHT80(MCS13)        |         | -56   | -55  |
| EHT160(MCS0)        |         | -87   | -86  |
| EHT160(MCS13)       |         | -54   | -53  |
| EHT320(MCS0)        |         |       | -83  |
| EHT320(MCS13)       |         |       | -52  |

**Table 9: RF performance table Receive Sensitivity for OAP740**

| Feature                                                               | Description   | 2.4 GHz | 5 GHz  | 6 GHz  |
|-----------------------------------------------------------------------|---------------|---------|--------|--------|
| Maximum transmit power (per chain)                                    | 1 Mbps        | 18 dBm  |        |        |
|                                                                       | 11 Mbps       | 18 dBm  |        |        |
|                                                                       | 6 Mbps        | 18 dBm  | 18 dBm |        |
|                                                                       | 54 Mbps       | 17 dBm  | 17 dBm |        |
|                                                                       | HT20(MCS0/8)  | 18 dBm  | 18 dBm |        |
|                                                                       | HT20(MCS7/15) | 16 dBm  | 17 dBm |        |
|                                                                       | HT40(MCS0/8)  | 18 dBm  | 18 dBm |        |
|                                                                       | HT40(MCS7/15) | 16 dBm  | 17 dBm |        |
|                                                                       | VHT20(MCS0)   | 18 dBm  | 18 dBm |        |
|                                                                       | VHT20(MCS8)   | 16 dBm  | 17 dBm |        |
|                                                                       | VHT40(MCS0)   | 18 dBm  | 18 dBm |        |
|                                                                       | VHT40(MCS9)   | 15 dBm  | 15 dBm |        |
|                                                                       | VHT80(MCS0)   |         | 18 dBm |        |
|                                                                       | VHT80(MCS9)   |         | 15 dBm |        |
|                                                                       | HE20(MCS0)    | 18 dBm  | 18 dBm | 18 dBm |
|                                                                       | HE20(MCS11)   | 13 dBm  | 14 dBm | 14 dBm |
|                                                                       | HE40(MCS0)    | 18 dBm  | 18 dBm | 18 dBm |
|                                                                       | HE40(MCS11)   | 13 dBm  | 14 dBm | 14 dBm |
|                                                                       | HE80(MCS0)    |         | 18 dBm | 18 dBm |
|                                                                       | HE80(MCS11)   |         | 14 dBm | 14 dBm |
|                                                                       | HE160(MCS0)   |         | 18 dbm | 18 dBm |
|                                                                       | HE160(MCS11)  |         | 14 dbm | 14 dBm |
|                                                                       | EHT20(MCS0)   | 18 dbm  | 18 dbm | 18 dbm |
|                                                                       | EHT20(MCS13)  |         | 12 dbm | 12 dbm |
|                                                                       | EHT40(MCS0)   | 18 dbm  | 18 dbm | 18 dbm |
|                                                                       | EHT40((MCS13) |         | 12 dbm | 12 dbm |
|                                                                       | EHT80(MCS0)   |         | 18 dbm | 18 dbm |
|                                                                       | EHT80(MCS13)  |         | 13 dbm | 13 dbm |
|                                                                       | EHT160(MCS0)  |         | 18 dbm | 18 dbm |
|                                                                       | EHT160(MCS13) |         | 13 dbm | 13 dbm |
|                                                                       | EHT320(MCS0)  |         |        | 18 dbm |
|                                                                       | EHT320(MCS13) |         |        | 11 dbm |
| Note: Maximum transmit power is limited by local regulatory settings. |               |         |        |        |

**Table 10: RF performance table Transmit Power for OAP740**

## 8.4 EMC

| EMC interference immunity |                                 |             |                              |
|---------------------------|---------------------------------|-------------|------------------------------|
| EN 61000-4-2              | Electrostatic discharge         |             |                              |
| EN 60601-1-2              | Contact discharge               |             | 8 kV                         |
|                           | Air discharge                   |             | 15 kV                        |
| EN 61000-4-3              | Electromagnetic field           |             |                              |
| EN 60601-1-2              | 80 MHz ... 3000 MHz             |             | 3 V/m                        |
|                           | 3000 MHz ... 6000 MHz           |             | 3 V/m                        |
| EN 61000-4-4              | Fast transients (burst)         |             |                              |
| EN 60601-1-2              | Power line                      |             | 2 kV                         |
|                           | Data line                       |             | 1 kV                         |
| EN 61000-4-5              | Voltage surges                  |             |                              |
| EN 60601-1-2              | Power line                      | line/line   | 1 kV                         |
|                           | Power line                      | line/ground | 2 kV                         |
|                           | Data line                       | line/ground | 2 kV                         |
| EN 61000-4-6              | Conducted interference voltages |             |                              |
| EN 60601-1-2              | 150 kHz ... 80 MHz              |             | 3V<br>Max 6V for<br>ISM Band |

| EMC interference emission |         |  |
|---------------------------|---------|--|
| EN 55032                  | Class B |  |
| FCC 47 CFR Part 15        | Class B |  |

## 8.5 Immunity

| Immunity  |                                                                                     |
|-----------|-------------------------------------------------------------------------------------|
| Vibration | EN300019-1-3, TABLE 5, Class 3.4&3.5                                                |
| Shock     | EN300019-2-3, TABLE 9, Test specification T3.4 and Table 9, Test specification T3.5 |

## 8.6 Network range

| 10/100/1000 twisted pair port                 |                                       |
|-----------------------------------------------|---------------------------------------|
| Length of a twisted pair segment              | max. 100 m (328 ft) (for Cat5e cable) |
| 10/100/1000/2500/5000 twisted pair port       |                                       |
| Length of a twisted pair segment              | max. 100 m (328 ft) (for Cat5e cable) |
| 10/100/1000/2500/5000/10000 twisted pair port |                                       |
| Length of a twisted pair segment              | max. 100 m (328 ft) (for Cat6a cable) |

Table 9: Network range: 10/100/1000/2500/5000/10000 Mbit/s twisted pair port.

## 8.7 Power consumption/power output

| Device | Power consumption    | Power output      |
|--------|----------------------|-------------------|
| OAP720 | 23.4W (IEEE802.3at)  | 79.85 Btu (IT)/h  |
| OAP740 | 40.2W (IEEE 802.3bt) | 137.16 Btu (IT)/h |

## 9 Scope of delivery, order number, and accessories

### ■ Scope of delivery

| Amount | Article            |
|--------|--------------------|
| 1 ×    | Device             |
| 1 ×    | Qualification card |

### ■ Accessories

| Other accessories | Order number | Description  |
|-------------------|--------------|--------------|
| AP-MNT-IN-WE2     | 9AA105001    | Mounting kit |
| AP-MNT-IN-BE      | 9AA105002    | Mounting kit |
| AP-MNT-IN-CE      | 9AA105003    | Mounting kit |

## 10 Underlying technical standards

| Standards                | Name                                                                                                                                                                                                                |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EN 300 328               | Wideband transmission systems.<br>Data transmission equipment operating in the 2,4 GHz band                                                                                                                         |
| EN 301 893               | 5 GHz RLAN;                                                                                                                                                                                                         |
| EN 303 687               | 6 GHz WAS/RLAN                                                                                                                                                                                                      |
| EN 50385                 | Product standard to demonstrate the compliance of base station equipment with radiofrequency electromagnetic field exposure limits (110 MHz - 100 GHz), when placed on the market                                   |
| EN 301 489-1             | Electromagnetic compatibility for radio equipment and services - Part 1: Common technical requirements                                                                                                              |
| EN 301 489-17            | Electromagnetic compatibility (EMC) for radio equipment and services - Specific conditions for broadband and wideband transmission systems                                                                          |
| EN 55032                 | Electromagnetic compatibility of multimedia equipment - Emission Requirements                                                                                                                                       |
| UL 62368-1               | Audio/video, information, and communication technology equipment - Part 1: Safety requirements                                                                                                                      |
| CAN/CSA 22.2 No. 62368-1 | Audio/video, information, and communication technology equipment - Part 1: Safety requirements                                                                                                                      |
| IEC/EN 62368-1           | Audio/video, information, and communication technology equipment - Part 1: Safety requirements                                                                                                                      |
| EN 18031-1               | Common security requirements for radio equipment - Part 1: Internet connected radio equipment                                                                                                                       |
| EN 18031-2               | Common security requirements for radio equipment - Part 2: radio equipment processing data, namely Internet connected radio equipment, childcare radio equipment, toys radio equipment and wearable radio equipment |
| FCC 47 CFR Part 15       | Code of Federal Regulations                                                                                                                                                                                         |
| EN 60601-1               | Medical electrical equipment - Part 1: General requirements for basic safety and essential performance                                                                                                              |
| EN 60601-1-2             | Medical electrical equipment - Part 1-2: General requirements for basic safety and essential performance – Collateral Standard: Electromagnetic disturbances – Requirements and tests                               |
| UL 2043                  | Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces                                                                                           |

The device has an approval based on a specific standard exclusively if the approval indicator appears on the device casing.

The device generally fulfills the technical standards named in their current versions.

# **A Further support**

## **Technical questions**

For technical questions, please contact any Belden dealer in your area or Belden directly.

A list of local telephone numbers and email addresses for technical support directly from Belden is available at <https://www.belden.com> and <https://www.belden.com/support/contact-us>.

This site also includes a free of charge knowledge base and a software download section.

