

HIRSCHMANN IT

A **BELDEN** BRAND

Quick Start Guide

Version: V1.0

Model: DAP645-RW

Contacting

Website: www.belden.com

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24080076

Quick Start Guide

This Quick Start Guide assists you in quickly connecting to and configuring DAP. To learn more please refer to the DAP User Manual. DAP can be also managed by DAC platform, please refer to the DAC User Manual.

Note

- To keep DAP working in Cluster mode, please ensure there is no DHCP option 43 and 138 in the network. With DHCP option 43 or 138, the DAP comes up in DAC mode.

1. Typical topology

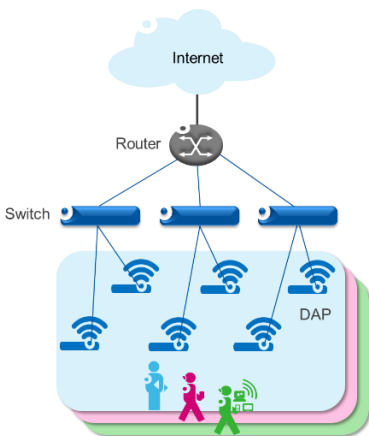


Figure 1: Wi-Fi Network Topology

1. All APs connect to a PoE switch and the PoE switch connect to a router which provides DHCP service for APs and Wi-Fi users.

2. If AP receives option 43 or option 138 from the DHCP server specifying the management IP, the AP will boot up and enter to DAC mode. Else the AP will enter Cluster mode.
3. APs in one cluster should be in the same Layer 2 network. (Tip: You can firstly config one AP then power on others to join the cluster automatically.)
4. If DAP couldn't finish initialization, please check
 - Ethernet cable status
 - POE is enabled on the switch port that AP connected.

2. AP Initialization

Step 1: How to Access AP Web Page

By default, DAP will broadcast the WLAN 'mywifi-xxxx' (xxxx = the last two bytes of the AP MAC address). You can connect to 'mywifi-xxxx' and browse <http://find.dragonflyap.com:8080> to access the AP web page.

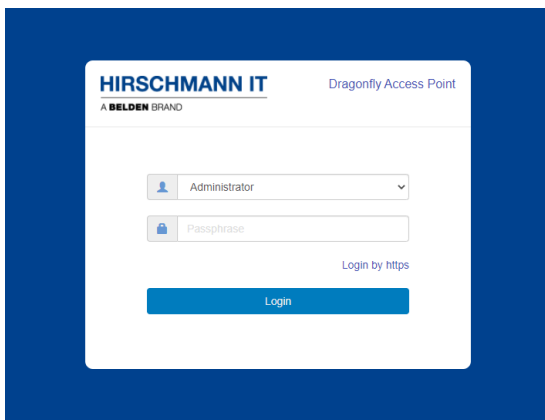


Figure 2: AP Login Page

Recommend to access AP web Page by Chrome Browser for best user experience.

Step 2: About Login Accounts

Choose Administrator and default password is admin. Login AP web page, and you can access Figure 3. Select “Cluster” to cluster mode, or you can select “DAC” to DAC mode.



Figure 3: AP Wizard - Mode Selection

There are three pre-configured login accounts: Administrator, Viewer and GuestOperator. You may modify the account password, but the account name isn't modifiable. Administrator can configure and check the AP status, Viewer can check the AP status ONLY, while GuestOperator can check the AP status and register accounts for portal authentication. By default, the password for all accounts is 'admin' and the wizard will guide you to modify the Administrator password upon AP login.

More detailed configuration guide, please refer to DAP User Manual.

Step 3: Welcome Page

When initially logging into an AP from Figure 3, a configuration wizard will pop up. The following steps show how to use the setup wizard to modify the Administrator password and create a WLAN.

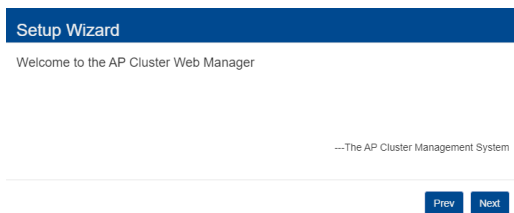
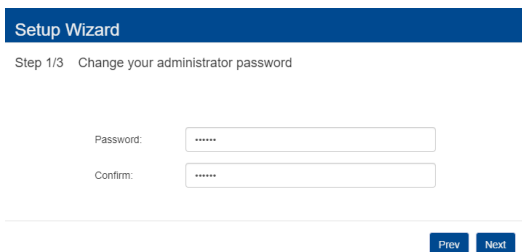


Figure 4: AP Wizard - Welcome Page

Step 4: Modify Administrator Password

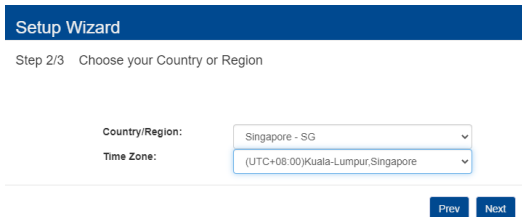
The password must be composed of numbers and capital or lower-case letters of the English alphabet and with a length of 4-16 characters.



The screenshot shows the 'Setup Wizard' interface for Step 1/3, 'Change your administrator password'. It features a blue header bar with the text 'Setup Wizard'. Below the header, the step number and description are shown. There are two input fields: 'Password:' and 'Confirm:', both containing six asterisks. At the bottom right, there are two buttons: 'Prev' and 'Next'.

Figure 5: AP Wizard - Modify Admin Password

Note: The page below will be displayed to select the country or region.



The screenshot shows the 'Setup Wizard' interface for Step 2/3, 'Choose your Country or Region'. It features a blue header bar with the text 'Setup Wizard'. Below the header, the step number and description are shown. There are two dropdown menus: 'Country/Region:' with 'Singapore - SG' selected, and 'Time Zone:' with '(UTC+08:00)Kuala-Lumpur,Singapore' selected. At the bottom right, there are two buttons: 'Prev' and 'Next'.

Figure 6: AP Wizard - County/Region Page

Step 5: Create New WLAN

For example, create a WLAN, "DAP_MGMT" for network management purpose, select 'Both (WPA&WPA2)' security method and set the password to be 'abc123!#' . By default, portal authentication is disabled when creating a WLAN. If you want to enable the portal page authentication, please refer to the User Manual for details.

Setup Wizard

Step 3/3 Create New WLAN

WLAN Name:	DAP_MGMT
Band:	☒ 2.4GHz ☒ 5GHz
Security Level:	Personal
Key Management:	Both(wpa &wpa2)
PMF:	Disabled
Password Format:	8-63 chars
Password:	*****
Confirm:	*****

Prev

Save

Figure 7: AP Wizard - Create WLAN

Step 6: Confirmation Page

After you complete AP initialization with the Wizard, the WLAN “mywifi-xxxx” will be deleted. You can then connect to the “DAP_MGMT” WLAN to continue with other configuration tasks.

Notice

The setup wizard has completed. You can create more WLANs and perform other configurations in main page.

Please connect to the WLAN **DAP_MGMT**.

and login to the main page with your new administrator password.

OK

Figure 8: AP Wizard - Notice

Installation Guide

1. Introduction

1.1 Product Packing

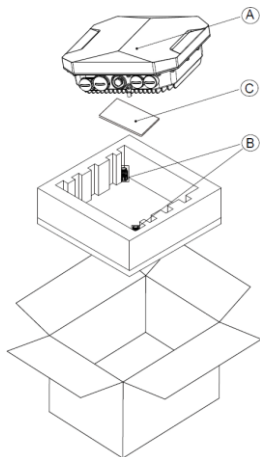


Figure1

- A. Outdoor Access Point
- B. Cable Gland * 2 pcs
- C. Quick user manual

NOTES:

- The weatherproof caps for Ethernet and SFP are connected to the AP, not loose in the package.
- Do not open or remove the Protective vents.
- Inform your supplier if there are any incorrect, missing, or damaged parts. If possible, retain the carton, including the original packing material. Use these materials to repack and return the unit to the supplier if needed.

1.2 Product Appearance

◆ Front View

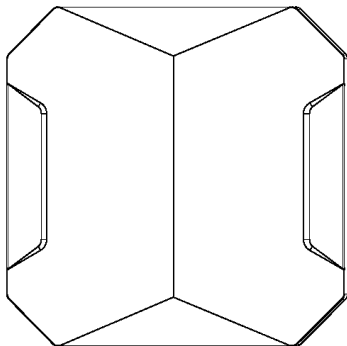
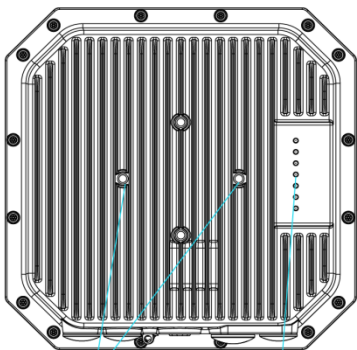


Figure 2

◆ Back View



Mounting screw holes

Status indicators

Figure 3

◆ Bottom View

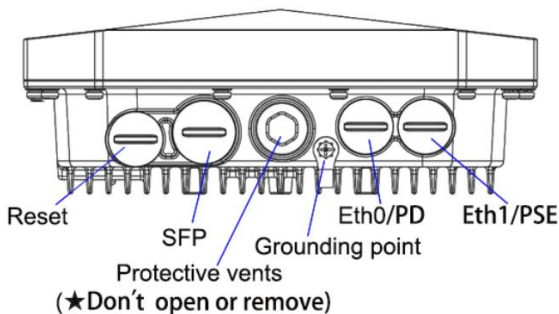


Figure 4

1.3 Pre-Installation Checklist

Before installing your DAP645, be sure that you have the materials and tools listed below:

- AP-MNT-OUT-H mounting kit (To be ordered separately. It contains some parts. Please refer to the mounting kit packing list for details).
- IEEE 802.3bt/at compliant PoE source.
If needs to support PSE function on Eth1, it requires IEEE 802.3bt POE source.
- CAT5e or better UTP cable of required length and RJ45 connector.
- Optional: SFP module and fiber-optic cable, with additional SFP cable gland (To be ordered separately) are needed in case of SFP uplink.
- Grounding wire #8AWG of required length.

● Tools:

- | | |
|--|---------------------------------------|
| ■ Ratchet | ■ Crimping Tool for RJ45 Modular Plug |
| ■ Hexagon sockets | ■ Ethernet cable tester. |
| ■ Screw driver | ■ Heat shrinkable tube |
| ■ Rotary hammer | ■ Heat gun |
| ■ Percussion bit Φ8 | ■ Fiber melt machine (Optional) |
| ■ Ratchet Crimping Plier for non-insulated termina | |

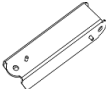
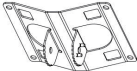
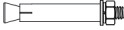
Item	Description	Graphics	Qty
D1	Mounting bracket (D1)		1
D2	Mounting bracket (D2)		1
D3	Mounting bracket (D3)		1
D4	Spacing tube		1
D5	Screw bolt M8 x 65		1
D6	Screw bolt M8 x 25		1
D7	Spring washer $\Phi 8$		3
D8	Screw nut M8		2
D9	Locknut M8		3
D10	Mounting bracket (D2)		2
D11	Mounting bracket (D3)		2
D12	Hose clamp (102-152 mm)		2
D13	Expansion bolt M6x60		4

Table 1

1.4 Deployment Process Overview

The deployment of an Access Point typically consists of the following stages:

- **WLAN Planning**—The administrator determines how many APs will be needed for their wireless network strategy and where they will be deployed.
- **AP Installation**—Each AP can be physically installed at proper location. Each location should be as close as possible to the center of the intended coverage area and should be free from obstructions or obvious sources of interference.
- **AP Configuration**—The administrator defines the operational behavior for each AP, such as RF characteristics and security features.

NOTES:

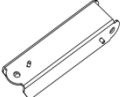
- Installing the Outdoor Access Point requires professional training. The AP must be professionally installed by a qualified engineer familiar with WLAN system.

2. Installing the AP

2.1 Using the AP-MNT-OUT-H Mounting Kits

2.1.1 Assembling Mounting bracket(D2) with bracket(D1) and bracket(D3) to get Mounting kit (E)

2.1.1.1 Materials Preparation

Item	Description	Graphics	Qty
D1	Mounting bracket (D1)		1
D2	Mounting bracket (D2)		1
D3	Mounting bracket (D3)		1
D4	Spacing tube		1

D5	Screw bolt M8 x 65		1
D6	Screw bolt M8 x 25		1
D8	Spring washer $\Phi 8$		2
D10	Screw nut M8		2
D11	Locknut M8		2

Table 2

2.1.1.2 Assembly Processes

Set-1: Insert the Mounting bracket (D2) into Bracket (D3), and align Mounting bolt hole(A) with Mounting bolt hole(B).

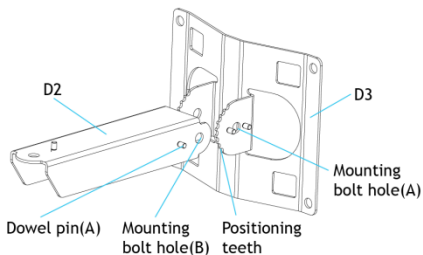


Figure 5

Set-2: To get a required installation angle of pitch, adjusting the Dowel pin(A) on Bracket(D2) to match up with the Positioning teeth of Mounting bracket(D3).

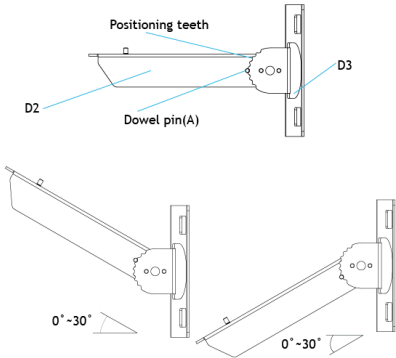


Figure 6

Set-3: Insert the Spacing tube (D4) into bracket (D2), align the hole of the tube (D4) with the Mounting bolt hole (B) of Bracket (D2).

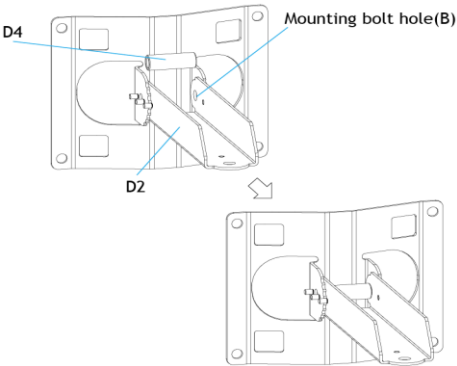


Figure 7

Set-4: From the side of Bracket (D3), where Dowel pin (B) stands, put the Screw bolt (D5) through the Mounting bolt hole(A) and stick out at the other side. Make sure the Screw bolt goes through Mounting bracket(D3), Bracket(D2) and Spacing tube(D4) in sequence. Then put a Spring washer (D8) and a Screw nut (D10) on it in sequence. Finally, tighten the Screw nut (D10) with ratchet wrench.

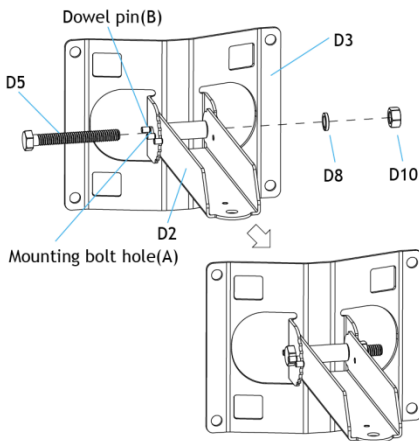


Figure 8

Set-5: To prevent the screw nut from loosening and for better reliability, put a Locknut(D11) on the end of the Screw bolt(D5). Then tighten it up with ratchet wrench.

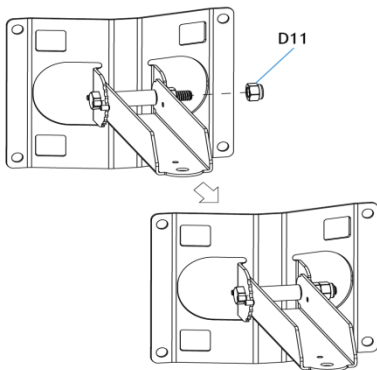


Figure 9

Note:

- Must use a proper Ratchet wrench to tighten the Screw nut(D10) and the Locknut(D11)

Set-6: Assembling Mounting bracket(D2) with Bracket(D1), align the Mounting bolt hole(C) with Mounting bolt hole(D).

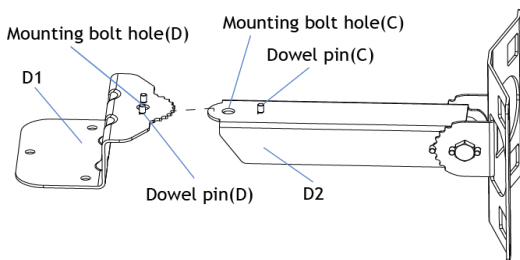


Figure 10

Set-7: To get a required horizontal angle, adjusting the Dowel pin(C) on Bracket(D2) to match up with the Positioning teeth of Bracket (D1).

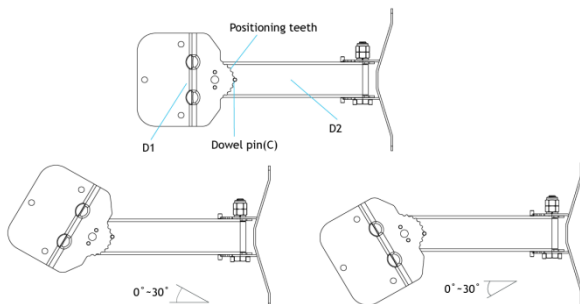


Figure 11

Set-8: From the side of Bracket (D1), where Dowel pin (D) stands, put the Screw bolt (D6) through the Mounting bolt hole(D) and stick out at the other side. Make sure the Screw bolt goes through Mounting bracket(D1) and Bracket(D2). Then put a Spring washer (D8) and a Screw nut (D10) on it in sequence. Finally, tighten the Screw nut (D10) with ratchet wrench.

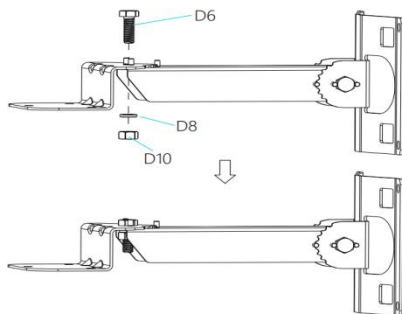


Figure 12

Set-9: To prevent the screw nut from loosening and for better reliability, put a Locknut (D11) on the end of the Screw bolt(D6). Then tighten it up with ratchet wrench.

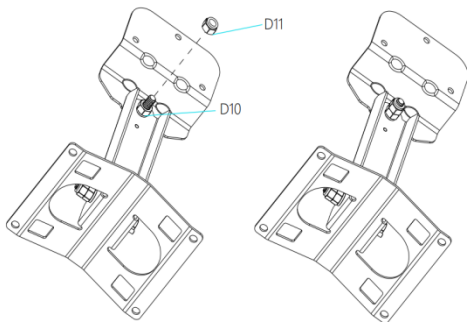


Figure 13

Note:

- Must use a proper Ratchet wrench to tighten the Screw nut(D10) and the Locknut(D11)

Set-10: Get Mounting kit (E).

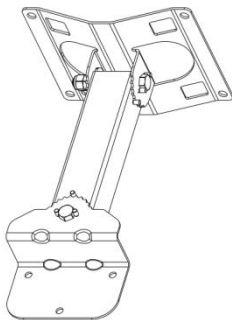


Figure 14

2.1.2 Assembling the AP(A) with Mounting kit(E),to get Final Assembly (F)

2.1.2.1 Materials Preparation

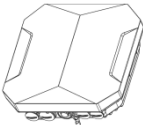
Item	Description	Graphics	Qty
A	Access Point DAP645-RW		1
E	Mounting kit(E)		1
D7	Screw bolt M6 x 12		3
D9	Spring washer $\Phi 6$		3

Table 3

2.1.2.2 Assembly Processes

Set-11: Connecting the AP(A) with Mounting kit(E).

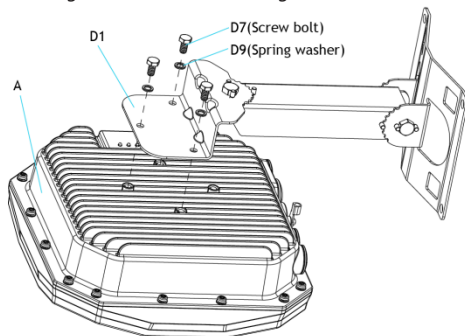


Figure 15

Set-12: Get Final Assembly (F)

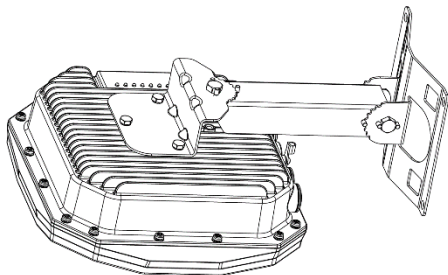


Figure 16

2.2 Mounting the AP to a Pole or a Wall

The AP is for outdoor deployment, it can be mounted to a pole or a wall by using the accessories in the mounting kit package.

2.2.1 Pole Mounting

2.2.1.1 Materials Preparation

Item	Description	Graphics	Qty
F	Final Assembly (F)		1
D12	Hose clamp		2

Table 4

2.2.1.2 Mounting Processes

Set-13: Threading the Hose clamps(D12) through the square mounting holes

in Bracket (D3) separately. Considering your handedness, the direction of the screw head on the hose clamp should be determined before you thread.

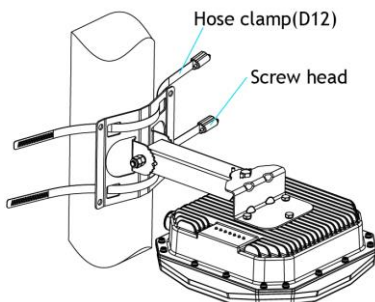


Figure 17

Set-14: Mounting to a pole

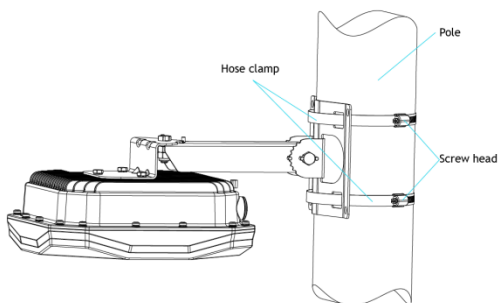


Figure 18

Caution:

- Use caution to prevent hand injury!
- For safety, the stencil area in steel belt of the Hose clamps(D12) should avoid overlapping the edge of square mounting holes on Bracket (D3).

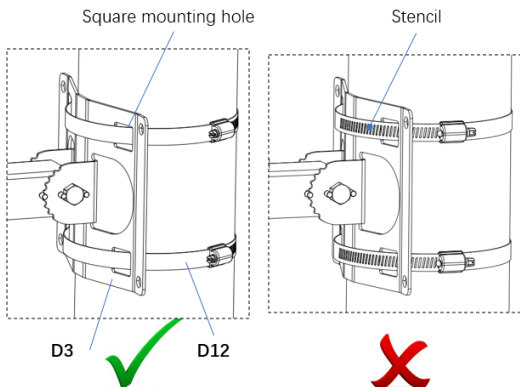


Figure 19

2.2.2 Wall Mounting

2.2.2.1 Materials Preparation

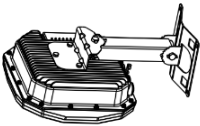
Item	Description	Graphics	Qty
F	Final Assembly (F)		1
D13	Expansion bolt M6x60		4

Table 5

2.2.2.2 Mounting Processes

Set-15: Draw four center marks on the wall where is planned to mount the outdoor AP. And then drill four $\Phi 8 \times 45$ mm holes on the wall for expansion bolts.

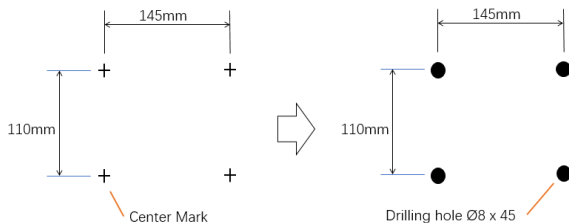


Figure 20

Set-16: Insert 4 Expansion bolts(D13) into the holes on the wall separately. Make sure that the end of the expansion tube should be coplanar to wall surface.

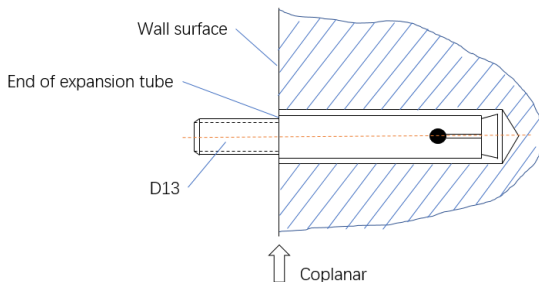


Figure 21

Set-17: Put the 4 expansion bolts through the 4 mounting holes in Bracket(D3). Then put a flat washer, a spring washer and a screw nut on each expansion bolt in sequence. Finally, tighten the 4 screw nuts with ratchet wrench.

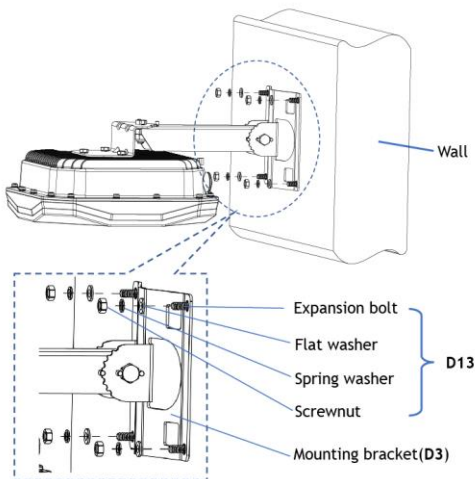


Figure 22

2.3 Grounding the AP

Never forget to protect the AP by installing grounding wire. The grounding must be completed before powering up the AP.

2.3.1 Grounding Preparation

Set-18: Screw off the O-Terminal from the AP and keep it with the Assembled bolt.

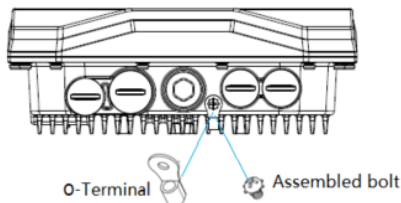


Figure 23

2.3.2 Crimping the Grounding wire

Set-19: Peel the cover of one end of the grounding wire and place the bare grounding wire into the O-Terminal, and press firmly with the crimping pliers. A heat shrinkable tube is suggested to put on.

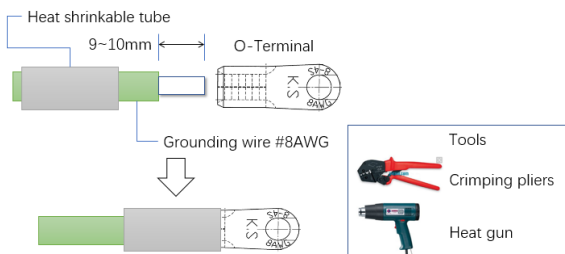


Figure 24

2.3.3 Connecting the Grounding Wire

Set-20: Fasten the O-Terminal to the grounding hole on the AP with the Assembled bolt, take pole mounting circumstances for example as shown in figure (Step-20).

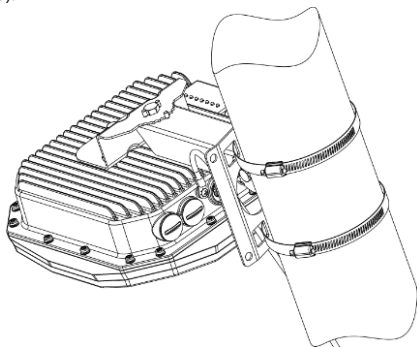


Figure 25

2.4 Connecting the Ethernet Cable or the fiber-optic cable

2.4.1 Connecting the Ethernet cable

To connect the Ethernet cable to the AP, perform the following steps using the Cable glands(B) that ships with your AP

2.4.1.1 The Cable Gland(B)

The Cable gland(B) is composed of 5 elements, which are Sealing nut(B1), Clamping ring(B2), Seals(B3), Gland body(B4) and O-ring(B5)

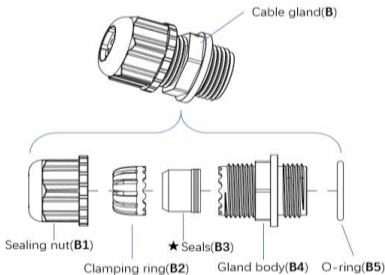


Figure 26

★The Seals(B3) inside the Cable gland(B) by factory default is applicable for cables with 4-6mm diameter. In the cable gland kit, another seals is provided for use with cable with 6-10mm diameter.

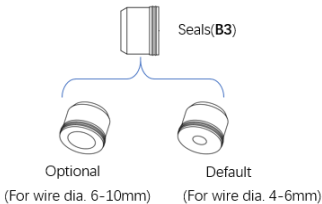


Figure 27

2.4.1.2 Crimping the Ethernet cable

Set-21: The following figure shows the process of crimping Ethernet cable.

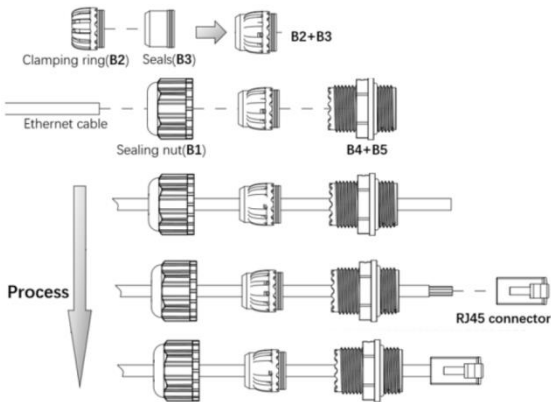


Figure 28

Caution:

- Do Not peel the cover of the Ethernet cable or attach the RJ45 connector to the cable before sliding the Cable gland(B) over the cable.
- Failure to use the included Ethernet cable glands can lead to product issues.

2.4.1.3 Remove the Weatherproof Cap

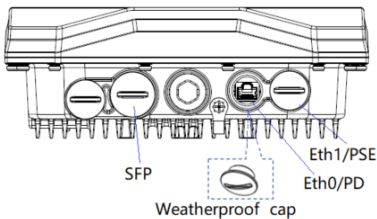


Figure 29

Note:

- Keep the weatherproof caps on the AP tightly while you don't plan to use the related ports.

2.4.1.4 Connecting the cable

Set-22: Connect the Ethernet cable, which was crimped in Step-21, to either Ethernet Port-0 or Ethernet Port-1. And then, screw the Gland body(B4+B5) onto the Ethernet port with proper wrench.

Set-23: Connect the Seals with Clamping ring(B2+B3) to the Gland body(B4), and then screw the Sealing nut(B1) onto the Gland body(B4) and tighten it firmly.

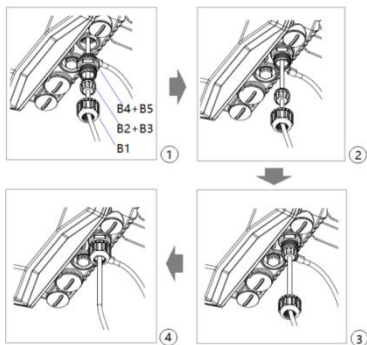


Figure 30

Caution:

- Do not screw the Sealing nut(B1) onto the Gland body(B4) before connecting the RJ45 connector to the Ethernet port.
- Must use a proper wrench to tighten the Gland body.

2.4.2 Connecting the Fiber-optic Cable

To connect the fiber-optic cable to the AP, perform the following steps.

Set-24: Remove the Weatherproof Cap from the SFP port.

Note:

Keep the weatherproof cap on the AP tightly while you don't plan to use the port.

Set-25: Insert the SFP module into the SFP port, and ensure it in place.

Set-26: Slide the Sealing nut, Seals ,Gland body and O-ring over the cable.

Note:

- The SFP gland is composed of 5 parts, as shown in Figure below. They are assembled and need to be disassembled before use.

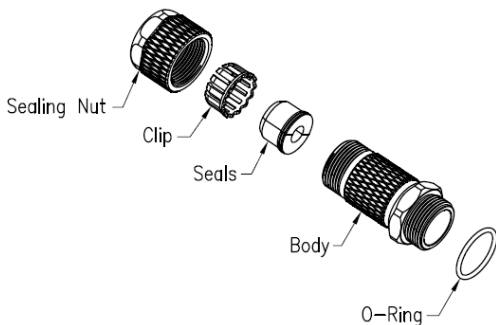


Figure 31

- The Seals in the package is divided into two specifications(Seals 1 and Seals 2),
Seals1 recommended cable diameter: $\Phi 4.5\text{mm} \sim \Phi 6.5\text{mm}$.
Seals 2 recommended cable diameter: $\Phi 6.6\text{mm} \sim \Phi 8.6\text{mm}$. See figure 32.

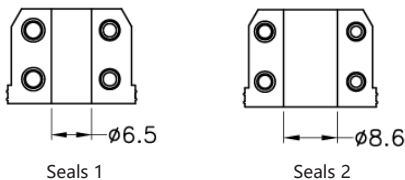


Figure 32

Set-27: Insert the Cable Through The Sealing Nut, Clip, Seals, Body And O-Ring.
See figure 33

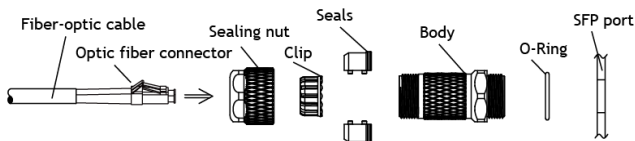


Figure 33

Set-28: The insert Seals & Clip. See figure 34

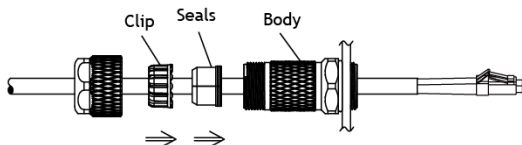


Figure 34

Set-29: The insert sealing nut the torque force: 10 12 kgf-cm. See figure 35
Assembly Finished. See figure 36.

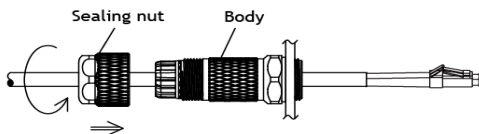


Figure 35

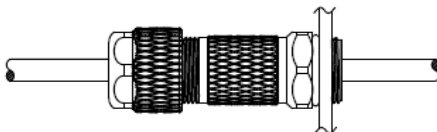


Figure 36

2.5 Powering up the AP by PoE Source

Set-30: The AP supports IEEE 802.3bt/at Compliant PoE source, accepting 48V DC(Nominal). A PoE injector as example is shown in the following figure.

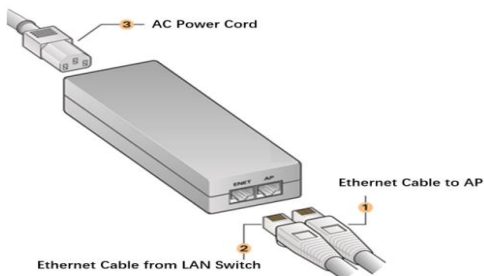


Figure 38

3. Product Specifications

3.1 Interfaces

3.1.1 Ports List

Item Name	Description
Eth0/PD	1x 10/100/1000/2500 Mbps IEEE 802.3 compliant auto-sensing (RJ-45) uplink port,Power over Ethernet (PoE) 802.3at/bt compliant. In the case of SFP linkup, Eth0/PD port will only act as PoE PD power port, not support data transceiver.
Eth1/PSE	1x 10/100/1000 Mbps IEEE 802.3 compliant auto-sensing (RJ-45) downlink port, PSE can support maximum 802.3at PoE output,depends on the power drawing from the Eth0/PD.
SFP Port	1x SFP Port
★Reset Button	Factory reset, for more information, refer to datasheet.

Table 6

★ Screw off the smaller weatherproof cap on the left side in Bottom View of AP, you can see the USB port (Only for debugging in factory) and the reset button as shown in the following figure.

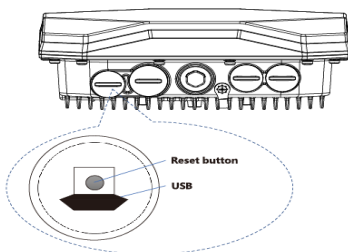


figure 39

3.1.2 Ethernet Port Pin-outs

The Ethernet Ports of AP have RJ-45 female connectors with pin-outs shown in table 7.

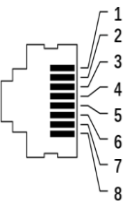
Ethernet Port / RJ45 Female	Pin	Signal Name	Function
	1	BI_DA+	Bi-directional pair +A, PoE Negative
	2	BI_DA-	Bi-directional pair -A, PoE Negative
	3	BI_DB+	Bi-directional pair +B, PoE Positive
	4	BI_DC+	Bi-directional pair +C, PoE Positive
	5	BI_DC-	Bi-directional pair -C, PoE Positive
	6	BI_DB-	Bi-directional pair -B, PoE Positive
	7	BI_DD+	Bi-directional pair +D, PoE Negative
	8	BI_DD-	Bi-directional pair -D, PoE Negative

Table 7

3.2 AP LED STATUS

LED	Status			
SYS	Power on: ON	Bootloader-OS loading: Flash	Running: ON	Upgrade: Flash
2.4G	On: 2.4GHz SSID created			
5G	On: 5GHz SSID created			
Eth0	On: Ethernet0 linkup			
Eth1	On: Ethernet1 linkup			
SFP	On: SFP linkup			
PSE	ON: PSE enabled OFF: PSE disabled			

Table 8

3.3.Dimensions/weight

- Single AP excluding packing box and accessories:
243mm (W)×243mm (D)×85mm(H) / 2.5kg.

3.4.Power

Maximum (worst case) power consumption:

- 64W (802.3bt Type4 PoE in) with Eth1 802.3at PSE enabled.
- 46W (802.3bt Type3 PoE in) with Eth1 802.3af PSE enabled.
- 24W (802.3at PoE in) with disabled Eth1 PSE.

3.5.Environmental

- Protective level of enclosure: IP67
- Operating
Temperature: -40°C to 65°C(-40°F to +149°F)
Humidity: 0% to 100% non-condensing
- Storage and transportation
Temperature: -40°C to 85°C(-40°F to +185°F)

For additional specifications on this product, please refer to the Data Sheet.

This product has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this product in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

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 RF exposure warning

This equipment complies with FCC 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

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 30 cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.

For EU

Belden Hirschmann Industries (Suzhou) Ltd. hereby declares that these models are compliant with the essential requirements and other provisions of Directive 2014/53/EU. For the complete CE DoC, please access the website below to get more information:

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

Waste Electrical and Electronic Equipment (WEEE) Statement



ALE products are subject to separate collection and treatment in the EU Member States, Norway, and Switzerland when they are at end of life, and therefore are marked with the symbol shown. The treatment applied to these products in these countries shall be compliant with the applicable national laws which are under the implementing of Directive 2012/19/EU on Waste of Electrical and Electronic Equipment (WEEE).

European Union RoHS

ALE products are compliant with the EU Restriction of Hazardous Substances Directive 2011/65/EU (RoHS). EU RoHS restricts the use of specific hazardous materials in the manufacture of electrical and electronic equipment. The restricted materials under the Directive are Lead (including Solder used in printed circuit assemblies), Cadmium, Mercury, equivalent Chromium, and Bromine.

■ CE RF health information:

RF Radiation Exposure Statement: This equipment complies with CE RF radiation exposure limits. This equipment should be installed and operated with a minimum distance of 20 cm between the equipment and a human's body for 2.4 GHz and 5 GHz operations. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.