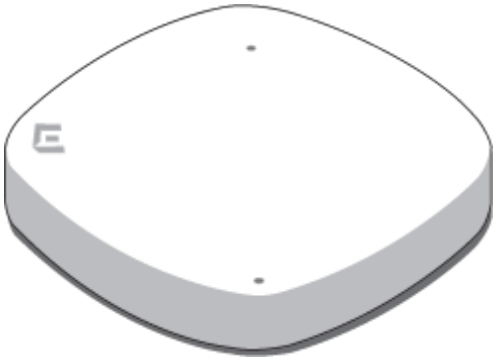
AP410C Hardware User Guide

Read about and view specifications and compliance information for the AP410C in this topic. Install the AP410C using this topic.



The AP410C is a high-performance 802.11ax 5G dual band access point designed for indoor high-density environments. This device supports IEEE 802.11ax Orthogonal Frequency-Division Multiple Access (OFDMA) multi-user access.

For regulatory and compliance information, see "Regulatory Compliance Statements".

Important! Change the Country Code

If your access point is configured for the World Regulatory Domain, it is important to set the country code to the country in which the AP will be deployed to meet regulatory requirements and for optimal wireless operation. To do this, follow these steps:

> *The country code selection is for World models only and is not available to FCC, CAN, and other country-specific models. Per FCC regulations, all Wi-Fi products marketed in the United States must be set to U.S. channels only.*

1. Power on the AP and allow it to find and connect to ExtremeCloud IQ. Once the AP is connected it appears in the table of devices on the *Manage > Devices* page.
2. Select the check box next to the AP, and then choose **Assign Country Code** from the *Actions* drop-down list. In the dialog box, select the appropriate country from the drop-down list, and then click **Save**.
3. Upload your changes to the device.

Safety Guidelines

Safety Guidelines

Install the AP

You can mount the AP410C on a flat surface or wall, or on the rails of a standard dropped ceiling grid. There is also an accessory mounting bracket that allows you to install the device in Armstrong-style dropped ceilings (ordered separately).

The following sections describe how to install your AP410C devices.

Shipping Carton Contents

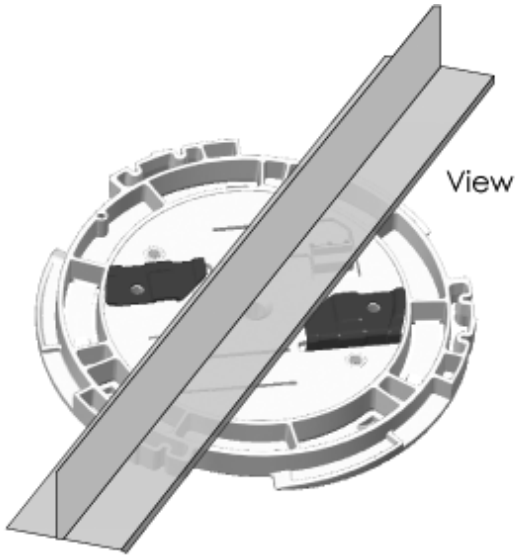
The AP410C shipping carton contains the following items:

- AP410C chassis
- Mounting bracket for Prelude T-bar ceiling installation (SKU AH-ACC-BKT-AX-TB)
- Read Me card

Install the AP on a Ceiling Track

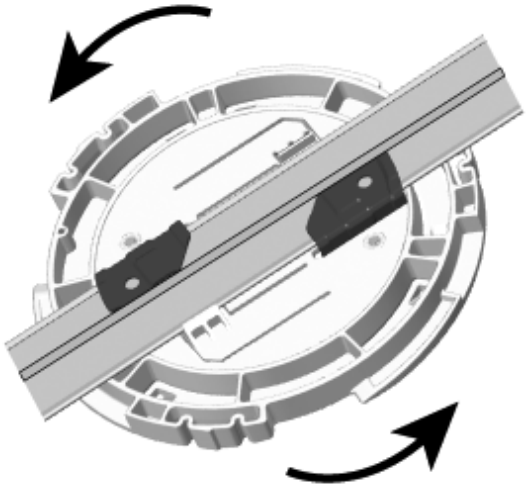
The AP410C ships with a mounting bracket that lets you easily install it on the rail of a standard dropped ceiling grid. The following illustration shows how to attach the bracket to the t-bar rail, and then install the AP on the bracket.

1 Align bracket to ceiling rail so that the mounting flanges are parallel to the sides of the rail.



View from above

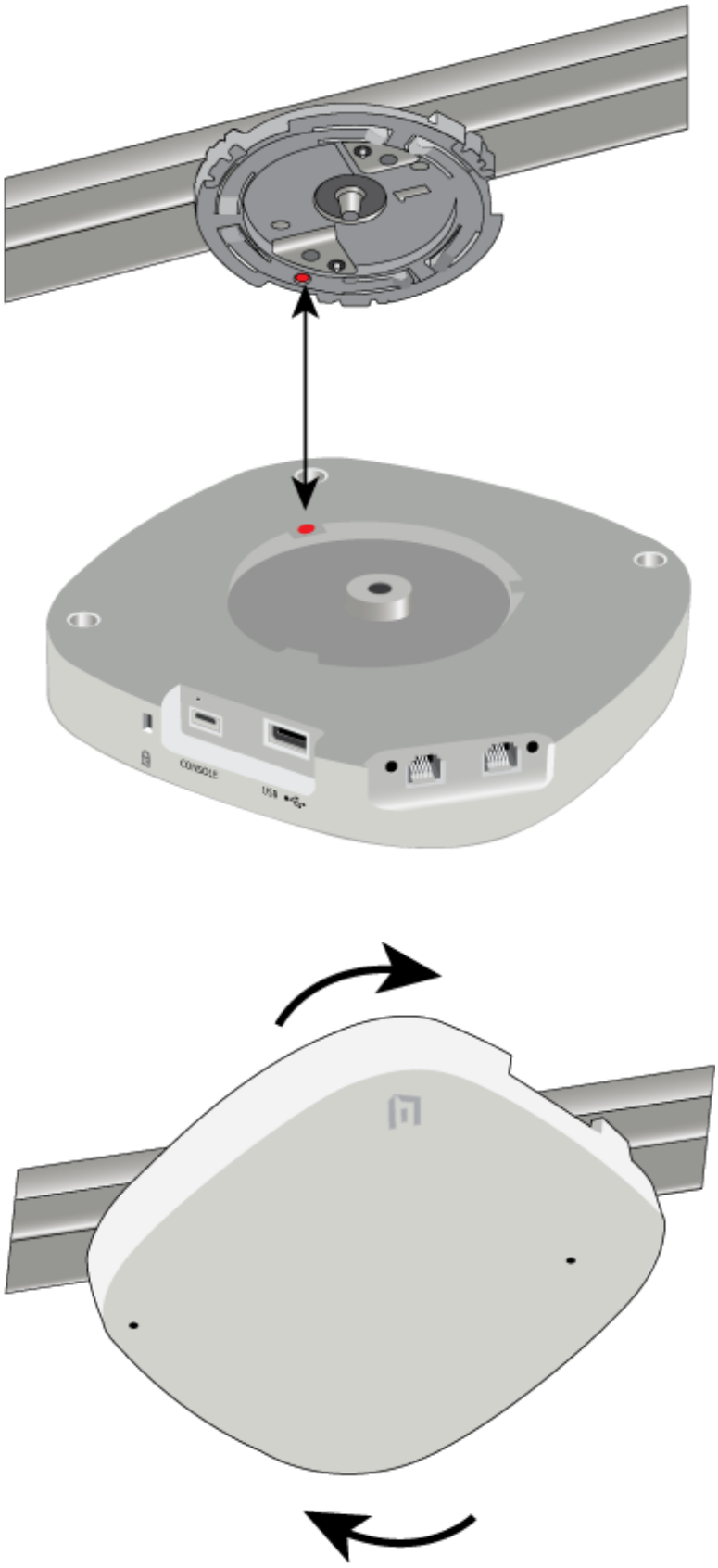
2 Rotate the bracket so that the flanges hook over the edges of the rail.



View from above

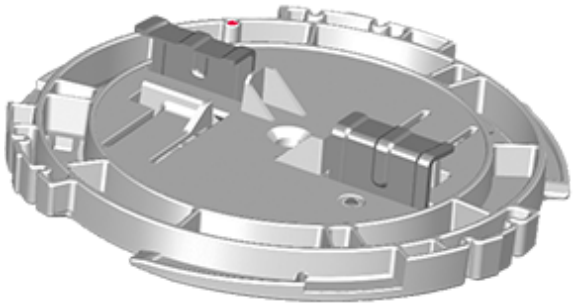
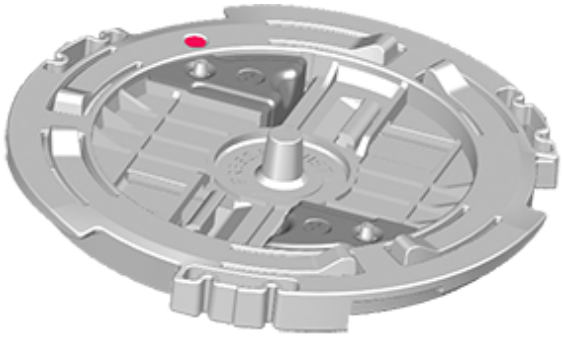
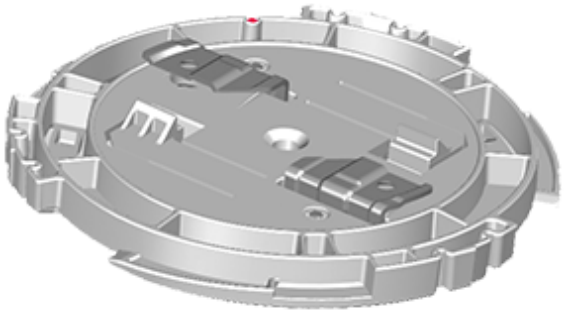
View from below

Once the bracket is secure, install the AP using the following steps shown in the illustration.



Accessory Brackets for Non-standard Ceiling and Wall Installation

Order one of the following accessory brackets to install your device on non-standard ceiling tracks, or directly onto a wall:

Marketing SKU #	Description
AH-ACC-BKT-AX-IL	Mounting bracket for Armstrong Interlude ceilings 
AH-ACC-BKT-AX-SL	Mounting bracket for Armstrong Silhouette 1/8" and Silhouette 1/4" ceilings 
AH-ACC-BKT-AX-TB	Replacement Prelude Bracket, T-Bar 

Marketing SKU #	Description
AH-ACC-BKT-AX-WL	Mounting bracket for direct-to-wall installations 

Mount the AP on a Wall

Use the holes in the accessory wall bracket (AH-ACC-BKT-AX-WL) as a template to mark the wall. Drill holes in the wall and attach the bracket to the wall using wall screws and wall anchors if necessary. Attach the AP to the bracket in the same manner as shown in the previous section.

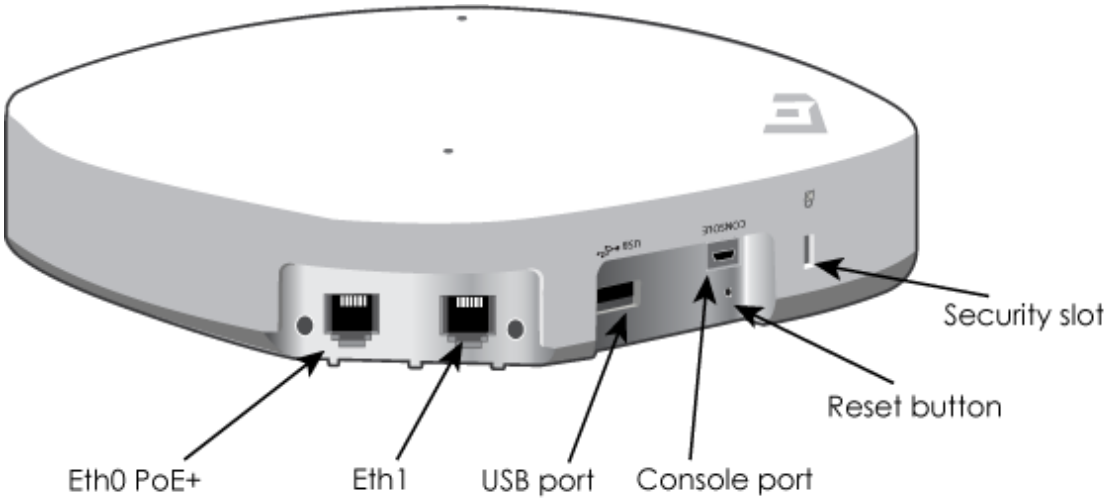
Lock the AP

You can secure the AP using a Kensington® lock in the lock slot on the device, or you can use a security bracket and a crosshead screw or a security screw. Security brackets and screws can be ordered separately from Extreme Networks (not available in Brazil).

Extreme Networks recommends a variety of Kensington locks. For more information, contact your sales representative.

Hardware Components

You can see the hardware components of the AP410C in the illustration below and read about them in the sections that follow.



Component Descriptions

Status Light

The status light conveys operational states for system power, firmware updates, Ethernet and wireless interface activity, and major alarms. The AP410C has two status lights on the top of the chassis. At setup, this light cycles through the following sequence:

- **Solid White**: The power is on and the device is operational.
- **Solid Amber**: The device is on and is booting..
- **Blinking Amber**: The device is performing a firmware upgrade.
- **Dark**: The power is off.

Light Sensor LED

The AP410C also has a light sensor on the top of the device.

Ethernet Ports

Two RJ45 Ethernet ports (Eth0 and Eth1) automatically negotiate half- and full-duplex connections with the connecting device. Eth0 is 100/1000/2500 BASE-T, and Eth1 is 10/100/1000 BASE-T. These ports are autosensing and adjust to straight-through and crossover standard Cat5 or better Ethernet cables automatically. The AP receives power through an Ethernet connection to the ETH0 port from PSE (power sourcing equipment) that is compatible with the 802.3at and 802.3at standards.

USB Port

The AP410C has a USB port that you can use to connect USB-based beacons (iBeacon, for example) and IoT (Internet of Things) devices. To access the port, remove the screw that secures the protective cover.

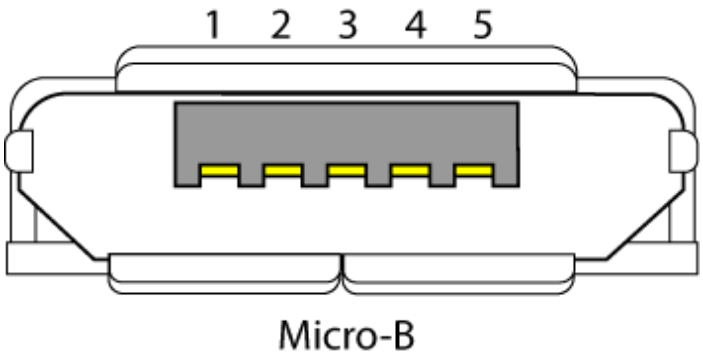
Micro USB Console Port

Through the Console port, you can make a serial connection between your management system and the AP. When you connect to the device using the micro USB Console port, the management station from which you connect to the device must have a VT100 emulation program, such as Tera Term Pro© (a free terminal emulator) or Hilgraeve HyperTerminal® (provided with Windows® operating systems from XP forward).

You can order a Micro USB console adapter cable for this AP here.

The serial connection settings are: 9600 bits per second, 8 data bits, no parity, 1 stop bit, no flow control.

The pin-to-signal mapping for the Console port is shown below:



Pin	Definition
1	NC
2	RxD (input to AP)
3	TxD (output to terminal)
4	Signal (GND)
5	Signal (GND)

Reset Button

Use the Reset button to reset the device or restore the factory default settings. Insert a paper clip or similar tool into the Reset pinhole and press the button. To reboot the device, press the button for 5 seconds. To return the configuration to the factory default settings, press it for at least 10 seconds. After releasing the button, the indicator light goes dark, and then glows steady amber while the firmware loads and the system performs a self-test. After the software finishes loading and the AP has connected to ExtremeCloud IQ, the status indicator glows steady white.

To prevent the reset button from resetting the configuration, enter this command:

```
no reset-button reset-config-enable
```

When this command is enabled, pressing the button for 5 seconds will still reboot the AP, but pressing it for more than 10 seconds will not reset its configuration.

Security Slot

The AP410C has a security slot for locking the device.

Extreme Networks recommends a variety of Kensington® locks. For more information, contact your sales representative.

Hardware Specifications

The following sections list radio, device, power, and environmental specifications for the AP410C.

Radio Specifications

- **Radio 1:** 5 GHx 2x2 band 1 and 2 + 2.4 GHz 2x2
- **Radio 2:** 2.4 GHz 1x1 + 5 GHz 1x1 (scanner)
- **Radio 3:** 5 GHz 4x4 full band or 5 GHz band 3 and 4

Operating Frequency:

- 2402 - 2483.5 MHz for the 2.4 GHz radio
- 5180-5905 MHz for the 5 GHz radio

Wi-Fi Channel Support

- WiFi 2.4G RX requirement: -96dBm@1Mbps
- WiFi 5G RX requirement: -93dBm@6M

Bluetooth BLE Beacon (BLE 5.0)

- 2402 - 2480 MHz
- Frequency Hopping Spread-spectrum (FHSS)

802.11a

- 5.150-5.850 GHz operating frequency
- Orthogonal Frequency Division Multiplexing (OFDM) modulation
- Rates (Mbps): 54, 48, 36, 24, 12, 9, 6 with auto fallback

802.11b

- 2.4-2.5 GHz operating frequency
- Direct-Sequence Spread-Spectrum (DSSS) modulation
- Rates (Mbps): 11, 5.5, 2.1 with auto fallback

802.11g

- 2.4-2.5 GHz operating frequency
- Orthogonal Frequency Division Multiplexing (OFDM) modulation
- Rates (Mbps): 54, 48, 36, 24, 18, 12, 9, 6 with auto fallback

802.11n

- 2.4-2.5 GHz and 5.150-5.850 GHz operating frequency
- 802.11n modulation
- 5 GHz: 4x4 MIMO radio
- 2.4 GHz: 2x2 MIMO radio
- HT20 support for 2.4 GHz
- HT40 support for 5 GHz
- A-MPDU and A-MSDU frame aggregation

802.11ac

- 5.150-5.850 GHz operating frequency
- 802.11ac modulation (256-QAM)
- Rates (Mbps): MCS0 - MCS31 (6.5 Mbps - 600 Mbps), NSS=1-4.
- 5 GHz: 4x4 MIMO and MU-MIMO radios
- 2.4 GHz: 2x2 MIMO radio
- 2.4 - 2.48 GHz MCS0-9, NSS=1-2
- Rates (Mbps): MCS0-MCS9 (6.5 Mbps - 3467 Mbps), NSS=1-4
- 4x4:4 stream MIMO radio
- VHT20/VHT40/VHT80 support (VT40 and VT80 for 5 GHz only)
- TxBF (Transmit Beamforming)

802.11ax

- 5.150-5.850 GHz operating frequency
- 802.11ax modulation (1024-QAM)
- Rates: MCS0 - MCS11, NSS = 1-2
- Dual-band OFDMA
- 4x4 MIMO and MU-MIMO radios
- 4x4:4 stream MIMO
- Rates (Mbps): HE0=HE11 (7.3 Mbps - 4800 Mbps), NSS=1-4
- HE20/HE40/HE80 support
- TxBF (Transmit Beamforming)

Transmit Power and Sensitivity Specifications

Output power may be limited by regulatory requirements.

Power: 2.4 GHz:

Tolerance +2/-2 dB @25°C

Channel	Data Rate	Power (dBm)
11b	1,2,5.5,11	18
11g	54 Mbps	15
	48 Mbps	16
	36 Mbps	17
	6 Mbps	18
HE20	MCS 0,1,2	18
	MCS 3	17
	MCS 4, 5	16
	MCS 6,7	15
	MCS 8,9	14
	MCS 10,11	12
2.4 G Sensitivity		
11b	1 Mbps	-99
	11 Mbps	-90
11g	6 Mpbs	-96
	36 Mpbs	-84
	48 Mbps	-80
	54 Mbps	-78
HE20	MCS 0	-95
	MCS 1	-91
	MCS 2	-89
	MCS 3	-86
	MCS 4	-83
	MCS 5	-79
	MCS 6	-77
	MCS 7	-76
	MCS 8	-72
	MCS 9	-70
	MCS 10	-67
	MCS 11	-64

AP410C Power: 5 GHz:

Mode	Data Rate	Power (dBm)
11a	54 Mbps	17
	48 Mbps	17
	36 Mbps	18
	6 Mbps	19
HE20	MCS 0, 1, 2	19
	MCS 3, 4	17
	MCS 5, 6	16
	MCS 7, 8	15
	MCS 9	14
	MCS 10	13
	MCS 11	12
HE40	MCS 0, 1, 2	17
	MCS 3, 4, 5	16
	MCS 7, 15, 23	14
	MCS 6, 7, 8	15
	MCS 10	13
	MCS 11	12
HE80	MCS 0,1,2	17
	MCS 3,4,5	16
	MCS 6,7,8	15
	MCS 9	14
	MCS 10	13
	MCS 11	12
Sensitivity		
11a	6 Mbps	-94
	36 Mbps	-83
	48 Mbps	-79
	54 Mbps	-77
11n HE20	MCS 0	-94
	MCS 1	-91
	MCS 2	-88
	MCS 3	-86
	MCS 4	-82
	MCS 5	-78

Mode	Data Rate	Power (dBm)
	MCS 6	-77
	MCS 7	-75
	MCS 8	-71
	MCS 9	-69
	MCS 10	-66
	MCS 11	-63
11n HE40	MCS 0	-92
	MCS 1	-88
	MCS 2	-86
	MCS 3	-83
	MCS 4	-80
	MCS 5	-76
	MCS 6	-74
	MCS 7	-73
	MCS 8	-69
	MCS 9	-67
	MCS 10	-63
	MCS 11	-60
HE80	MCS 0	-88
	MCS 1	-85
	MCS 2	-83
	MCS 3	-80
	MCS 4	-77
	MCS 5	-73
	MCS 6	-71
	MCS 7	-69
	MCS 8	-66
	MCS 9	-64
	MCS 10	-60
	MCS 11	-57

Tolerance +2/-2 dB @25° C

Mode	Data Rate	Power (dBm)
11a	6 Mbps	19
	36 Mbps	18
	48 Mbps	16
	54 Mbps	15
11n HE20	MCS 0,1, 2, 3, 4, 8, 9, 10, 11	19
	MCS 13, 21	18
	MCS 14, 22	16
	MCS 15, 23	15
	MCS 12, 16, 17, 18, 19, 20	19
11n HT40	MCS 0,1,2, 3, 4, 8	19
	MCS 5, 13, 21	18
	MCS 7, 15, 23	14
	MCS 9, 10, 11, 12, 16	19
	MCS 10	13
	MCS 17, 18, 19, 20	19
HE80	MCS 0,1,2	17
	MCS 3,4,5	16
	MCS 6,7,8	15
	MCS 9	14
	MCS 10	13
	MCS 11	12
Sensitivity		
11a	6 Mbps	-94
	36 Mbps	-83
	48 Mbps	-79
	54 Mbps	-77
11n HE20	MCS 0	-94
	MCS 1	-91
	MCS 2	-88
	MCS 3	-86
	MCS 4	-82
	MCS 5	-78
	MCS 6	-77
	MCS 7	-75

Mode	Data Rate	Power (dBm)
	MCS 8	-71
	MCS 9	-69
	MCS 10	-66
	MCS 11	-63
11n HE40	MCS 0	-92
	MCS 1	-88
	MCS 2	-86
	MCS 3	-83
	MCS 4	-80
	MCS 5	-76
	MCS 6	-74
	MCS 7	-73
	MCS 8	-69
	MCS 9	-67
	MCS 10	-63
	MCS 11	-60
HE80	MCS 0	-88
	MCS 1	-85
	MCS 2	-83
	MCS 3	-80
	MCS 4	-77
	MCS 5	-73
	MCS 6	-71
	MCS 7	-69
	MCS 8	-66
	MCS 9	-64
	MCS 10	-60
	MCS 11	-57

Device Specifications

- **Chassis dimensions**: 8.0" x 8.0" x 1.8" (205 mm x 205 mm x 37 mm
- **Weight**: 2.0 lbs (.9 kilograms)
- **Antennas**: Four dual band and three 5 GHz single band omnidirectional antennas
- **Ethernet ports**:

Eth1: autosensing 10/100/1000G BASE-T/TX Mbps, requiring Cat5 or better cable.

Eth0: autosensing 100/1000/2500G BASE-T/TX Mbps, requiring Cat5 or better cable. The AP receives power through an Ethernet connection to the ETH1 port from PSE (power sourcing equipment) that is compatible with the 802.3at and 802.3at standards.

- **5.0 BLE**

Antenna Gain

- WiFi 2.4 GHz: 3.9 dBi gain max
- WiFi 5 GHz: 4.7 dBi gain max

Antenna Plots

The antenna plots for the AP410C are available below. The Ethernet port location is noted on each chart.

AP410C

Antenna 1
Antenna 2
Antenna 3
Antenna 4
Antenna 5
Antenna 6
Antenna 7

Power and Environmental Specifications

Power Specifications

- **PoE input**:

  IEEE 802.3at (42.5 - 57.0V) with USB and full transmit power

  IEEE 802.3af (37.0 - 57.0V) without USB and reduced transmit power

- **ESD Protection**: 8 kV contact discharge / 15 kV air discharge

Power Profile

AP410C	802.3af	802.3at
2.4 G Radio	2x2 (14 dBm)	2x2 (18 dbm)
5 G Radio	3x3 (17 dBm)	4x4 (18 dBm)
Sensor Radio	2.4 G and 5 G (15 dBm)	2.4 G and 5 G (18 dBm)
BLE	Enabled	Enabled
USB	No	Yes
2.5 G Ethernet	Yes	Yes
1 G Ethernet	No	Yes

Power Consumption

- **Typical power draw:**

  54V ⎓ DC, 0.42A 22.7W Max. PoE with USB

  54V ⎓ DC, 0.33A 17.7W Max. PoE without USB

- **Maximum power draw:**

  54V ⎓ DC, 0.44A 23.74W Max. PoE with USB

  54V ⎓ DC, 0.35A 18.74W Max. PoE without USB

- 802.3at Power over Ethernet (PoE) capable
- Gigabit Ethernet port (RJ45 power input pins: Wires 4, 5, 7, 8 or 1, 2, 3, 6
- 802.3af PoE injector

Environmental Specifications

- Operating temperature: 32° to 104° F (0° to 40° C)
- Storage temperature: -40° to 158° F (-40° to 70° C)
- Relative Humidity: 10 to 95% (noncondensing)

Regulatory Compliance Statements

The regulatory compliance statements in this section apply to Extreme Networks devices.

Japan Indoor Use
Japan Equipment VCCI-B Statement
Compliance Statement - Europe
USA, Canada, and Taiwan Radio Frequency Bands
EU Radio Frequency and Power Levels
EU Radiation Warning Statement
Federal Communication Commission Interference Statement

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Brazil Statement
Mexico Statement
Industry Canada Statement:
Taiwan Compliance Information

European Waste Electrical and Electronic Equipment (WEEE) Notice

In accordance with Directive 2012/19/EU of the European Parliament on waste electrical and electronic equipment (WEEE):

1. The symbol above indicates that separate collection of electrical and electronic equipment is required.

2. When this product has reached the end of its serviceable life, it cannot be disposed of as unsorted municipal waste. It must be collected and treated separately.
3. It has been determined by the European Parliament that there are potential negative effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment.
4. It is the users' responsibility to utilize the available collection system to ensure WEEE is properlytreated.

For information about the available collection system, please contact Extreme Environmental Compliance at Green@extremenetworks.com.

Hazardous Substances Statement and RoHS Chart

Hazardous Substances

This product complies with the requirements of Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

單元Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛Lead (Pb)	汞Mercury (Hg)	鎘Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr^{+6})	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
金屬零件 (Metal Parts)	○	○	○	○	○	○
電路模組 (Circuit Modules)	—	○	○	○	○	○
電纜及電纜組件 (Cables & Cable Assemblies)	○	○	○	○	○	○
塑料和聚合物零件 (Plastic and Polymeric parts)	○	○	○	○	○	○

備考1. "超出0.1 wt %" 及 "超出0.01 wt %" 係指限用物質之百分比含量超出百分比含量基準值。
Note 1：“Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.

備考2. "○" 係指該項限用物質之百分比含量未超出百分比含量基準值。
Note 2：“○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

備考3. "—" 係指該項限用物質為排除項目。
Note 3：The “–” indicates that the restricted substance corresponds to the exemption.