

6 Outdoor AP

About This Chapter

The next-generation outdoor wireless access point (AP) complies with the Wi-Fi 6 (802.11ax) standard with excellent outdoor coverage performance, IP68 waterproof and dustproof design, and strong surge protection capability. It is applicable to outdoor coverage scenarios such as densely-populated stadiums, squares, pedestrian streets, and amusement parks.

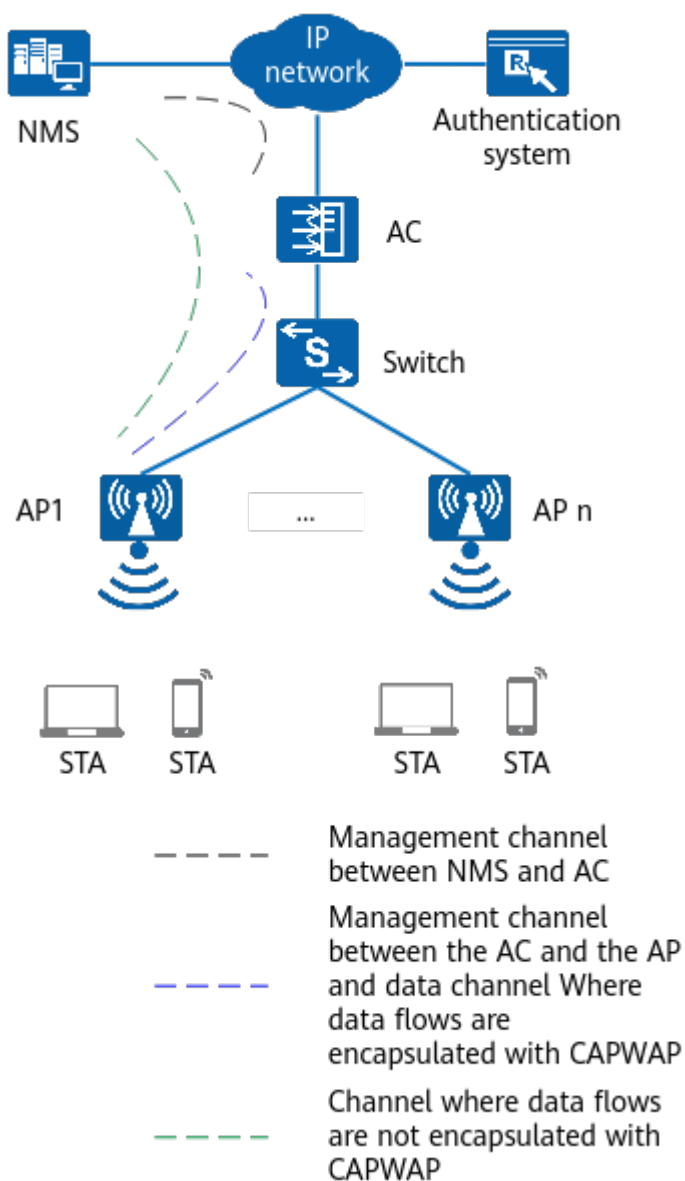
6.1 Application Scenarios

An outdoor access point (AP) can work as a Fat, Fit, or cloud AP. It can switch flexibly among three working modes based on the network plan.

Typical Fit AP Networking

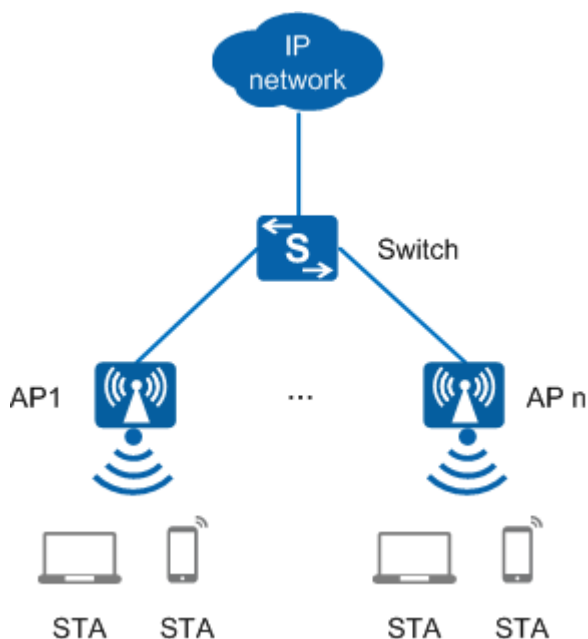
Figure 4-1 shows the Fit AP networking. Fit APs must work with an AC for user access, AP onboarding, authentication, routing, AP management, security, and QoS.

Figure 6-1 Typical Fit AP networking

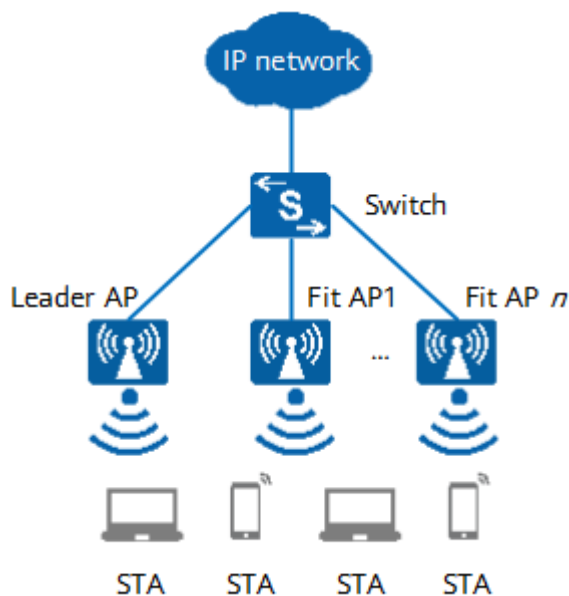


Typical Fat AP Networking

4.1 Application Scenarios shows the Fat AP networking. Fat APs can independently implement functions such as user access, authentication, data security, service forwarding, and QoS.

Figure 6-2 Typical Fat AP networking

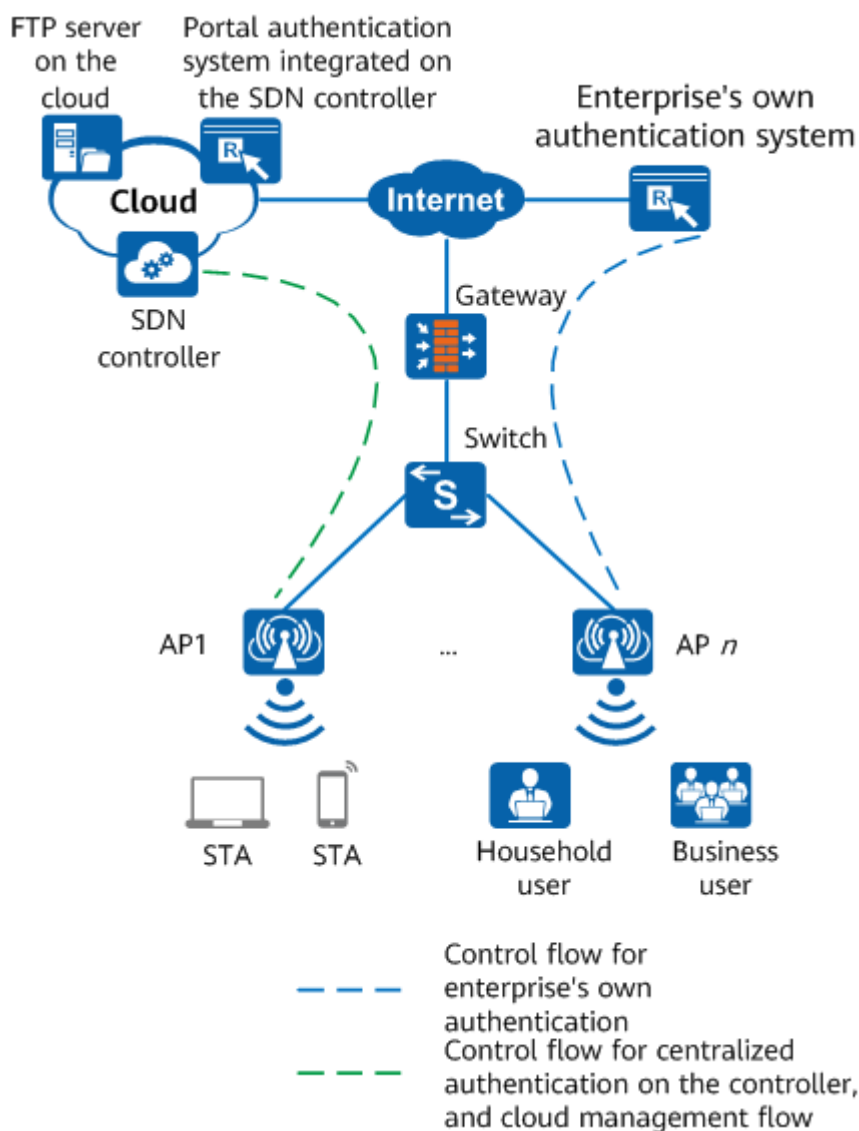
Starting from V200R020C10, some AP models running in Fat mode (depending on actual specifications) also support the leader AP networking and can manage a small number of Fit APs, thereby implementing small-scale batch deployment and simple O&M of basic WLAN services.

Figure 6-3 Leader AP networking

Typical Cloud AP Networking

In the networking, the device functions as a cloud AP and works with the SDN controller on the cloud for user access, AP onboarding, authentication, routing, AP management, security, and QoS. An enterprise can choose to use the Portal

authentication server integrated in the SDN controller or the authentication server deployed by itself.



6.2 AirEngine 6776I-X6TH

6.2.1 Product Characteristics

Huawei AirEngine 6776I-X6TH is an outdoor access point (AP) in compliance with Wi-Fi 7 (802.11be). It is empowered by brand-new Wi-Fi 7 technologies, significantly enhancing users' wireless network experience. This AP stands out with excellent outdoor coverage performance, IP68 waterproof and dustproof design, and strong surge protection capability. These strengths make the AirEngine 6776I-X6TH ideal for high-density scenarios such as stadiums and amusement parks.

- The AirEngine 6776I-X6TH has built-in directional antennas and works simultaneously on the 2.4 GHz (2x2), 5 GHz (2x2), and 6 GHz (4x4 MIMO) frequency bands.

- 6 KA surge protection for Ethernet ports, IP68 waterproof and dustproof design, and -40°C to +70°C (-40°F to +158°F) wide temperature, fully meeting industrial-grade requirements.
- Supports Bluetooth serial interface-based O&M through built-in Bluetooth and CloudCampus APP.
- Supports Fit and cloud management working modes, and enables Huawei cloud management platform to manage and operate APs and services on the APs, reducing network O&M costs.

 NOTE

The 6 GHz radio can be switched to the 5 GHz frequency band, after which the AP radios work in 2.4 GHz (2x2) + 5 GHz-H (2x2) + 5 GHz-L (4x4) mode.

6.2.2 Hardware Information

Overview

Table 6-1 Basic information about the AirEngine 6776I-X6TH

Item	Details
Description	AirEngine6776I-X6TH (11be outdoor, 2+2+4 three radios, built-in directional antenna, USB, Bluetooth)
Part Number	50087137
Model	AirEngine 6776I-X6TH
First supported version	V600R024C00

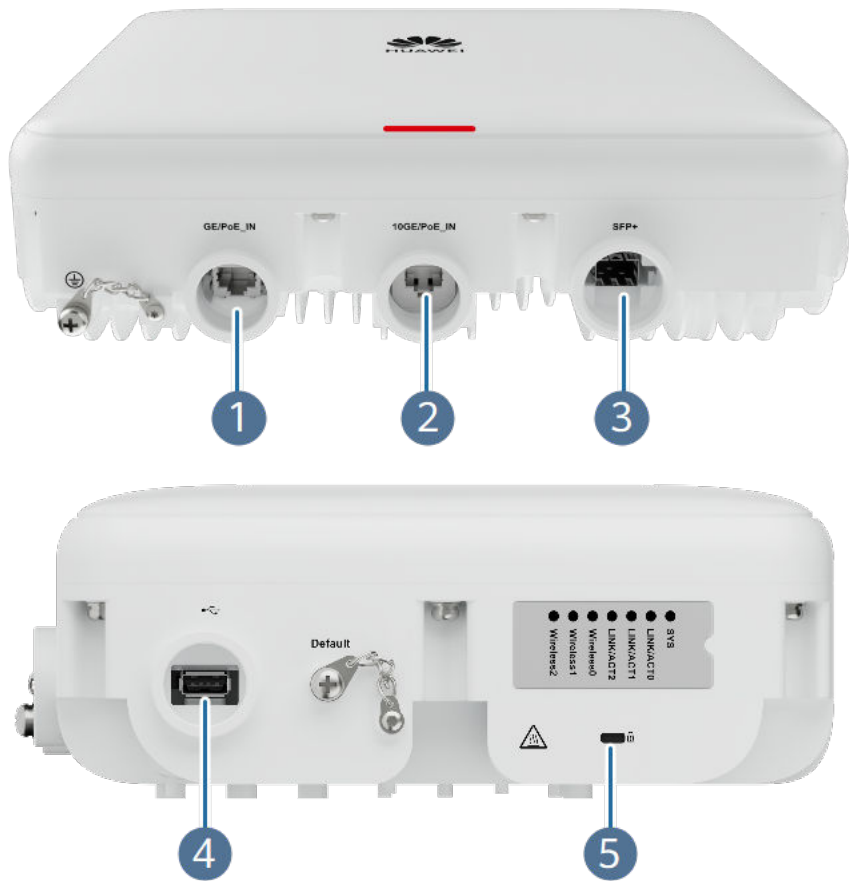
Appearance

Figure 6-4 Appearance of the AirEngine 6776I-X6TH



Ports

Figure 6-5 Ports on the AirEngine 6776I-X6TH



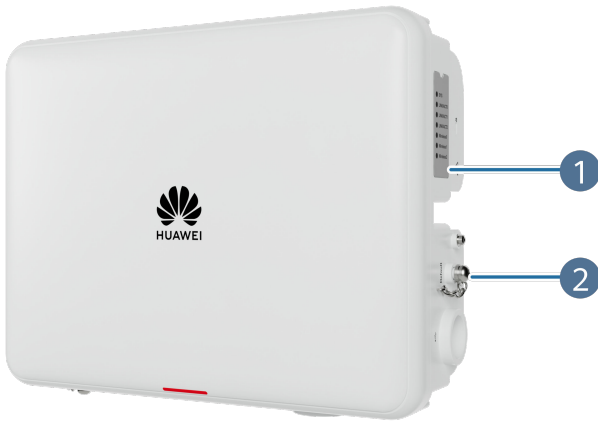
1	GE/PoE_IN	2	10GE/PoE_IN
3	SFP+	4	USB
5	Security slot	-	-

Table 6-2 Ports on the AirEngine 6776I-X6TH

Port	Connector Type	Description	Available Components
10GE/PoE_IN	RJ45	Ethernet electrical port that supports 100M/1000M/2.5G/5G/10G auto-sensing, connects to the wired Ethernet, and supports PoE input.	Network cable
GE/PoE_IN	RJ45	Ethernet electrical port that supports 10M/100M/1000M auto-sensing, connects to the wired Ethernet, and supports PoE input.	Network cable
SFP+	SFP+	Ethernet uplink optical port, which supports 1G/2.5G/10G auto-sensing and works with a matching optical module.	Optical module
USB	USB 2.0 Type A	Connects to an IoT terminal to implement IoT applications. The USB port is unavailable currently and will be supported through software upgrade in the future.	IoT module

Indicators and Buttons

Figure 6-6 Indicators and buttons on the AirEngine 6776I-X6TH



1	Indicator	2	Default
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Table 6-3 Indicators on the AirEngine 6776I-X6TH

Silkscreen	Name	Color	Status	Description
SYS	System indicator	-	Off	The system is not running.
		Green	Steady on	- The system is just powered on. - The system is starting after a reset. - The upper-layer system is starting.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP.
		Green	Slow blinking (0.2 Hz)	The AP is running properly, the Ethernet connection is normal, and no STA is associated with the AP.
		Green	Blinking once every 0.25s (4 Hz)	• The bottom-layer system is being started. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online in Fit or cloud management mode. The indicator remains in this state till the AP successfully goes online.

Silkscreen	Name	Color	Status	Description
		Red	Steady on	The system is faulty.
LINK/ACT0 to 2	Port indicator	Green	Steady on	The Ethernet connection is normal, and no data is being transmitted.
		Green	Blinking	The Ethernet connection is normal, and the AP is transmitting data.
		-	Off	The port is in link-down state.
WIRELESS0	Radio 0 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Green	Steady on	The AP has STAs connected, but no data is being transmitted.
		Green	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.

Silkscreen	Name	Color	Status	Description
WIRELESS1	Radio 1 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Yellow	Steady on	The AP has STAs connected, but no data is being transmitted.
		Yellow	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS2	Radio 2 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Blue	Steady on	The AP has STAs connected, but no data is being transmitted.

Silkscreen	Name	Color	Status	Description
		Blue	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.

Table 6-4 Buttons on the AirEngine 6776I-X6TH

Silkscreen	Name	Description
Default	Reset button	If you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the Fit mode, and restarts.

Technical Specifications

Table 6-5 Technical specifications of the AirEngine 6776I-X6TH

Item	Specification
Installation Type	• Wall • Ceiling • T-Rail
Dimensions without packaging (H x W x D) [mm(in.)]	85 mm x 280 mm x 220 mm (3.35 in. x 11.02 in. x 8.66 in.)
Dimensions with packaging (H x W x D) [mm(in.)]	185 mm x 570 mm x 380 mm (7.28 in. x 22.44 in. x 14.96 in.)
Weight without packaging [kg(lb)]	3.28 kg (7.23 lb)
Weight with packaging [kg(lb)]	5.97 kg (13.16 lb)
Storage	NAND Flash 512 MB

Item	Specification
Console port	Bluetooth console
Maximum power consumption [W]	33.1 (excluding USB)
Maximum heat dissipation [BTU/hour]	107.3 BTU/hour
Power supply mode	PoE
Rated input voltage [V]	PoE: 802.3bt/at
Input voltage range [V]	PoE: 802.3bt/at When multiple ports are used for receive PoE power: If the power supply classes are different, the port with the highest power class is used. If the power supply classes are the same, power supply backup can be implemented.
Service port surge protection	PoE port: Surge: Differential mode: 1.5 kV (D.1), 10/700 us, 15 ohms + 25 ohms, criterion B Differential mode: 1.5 kV (D.2), 10/700 us, 15 ohms + 25 ohms, criterion C Common mode: 6 kV (C.3), 10/700 us, 15 ohms + 25 ohms/wire, criterion B: 6) Differential mode: 1 kV (D.1), 1.2/50 us, 42 ohms, criterion B; Differential mode: 1 kV (D.2), 1.2/50 us, 42 ohms, criterion B; Common mode: 2 kV (C.3), 1.2/50 us, 2 ohms + 40 ohms x n/wire, criterion B Inrush current: Differential mode: 250 A (D.2), 8/20 μs, criterion C Common mode: 6 kA/8-wire, 8/20 us, criterion C
Maximum number of physical ports on the entire device	10GE (RJ45) x 1, 100M/1000M/2500M/5000M/10GE auto-sensing GE (RJ45) x 1, 10M/100M/1000M auto-sensing 10GE optical (SFP+), GE/2.5GE/10GE auto-sensing

Item	Specification
Long-term operating temperature [°C(°F)]	–40°C to +70°C (–40°F to +158°F) (From 1800 m to 5000 m [5905.51 ft. to 16404.20 ft.], the maximum temperature of the device decreases by 1°C [1.8°F] for every 300 m [984.25 ft.] increase in altitude.)
Storage temperature [°C(°F)]	–40°C to +85°C (–40°F to +185°F)
Long-term operating relative humidity [RH]	0% RH to 100% RH
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ingress protection level (dustproof/waterproof)	IP68
Ground	Ground
Wind resistance	67 m/s
USB	USB 2.0 is unavailable currently and will be supported through software upgrade in the future.
BLE	BLE5.2
Radio number	3
Operating frequency band	• 2.4GHz • 5GHz • 6GHz
MIMO spatial streams	Triple-radio 6G mode: • Radio 0 (2.4G): 2x2 • Radio 1 (5G): 2x2 • Radio 2 (6G): 4x4 Triple-radio dual-5G mode: • Radio 0 (2.4G): 2x2 • Radio 1 (5GH): 2x2 (high frequency band: 5490–5850 MHz) • Radio 2 (5GL): 4x4 (low frequency band: 5150–5330 MHz)
Wi-Fi standard	2.4 GHz: 802.11b/g/n/ax/be 5 GHz: 802.11a/n/ac/ac Wave 2/ax/be 6 GHz: 802.11a/n/ac/ac Wave 2/ax/be

Item	Specification
Radio interface	Built-in directional antennas
Antenna gain	Triple-radio 6G mode: 2.4G: 10 dBi/chain (peak gain) 10 dBi (combined gain) 5G: 11 dBi/chain (peak gain) 10 dBi (combined gain) 6G: 12 dBi/chain (peak gain) 10 dBi (combined gain) BLE: 5 dBi (peak value) Triple-radio dual-5G mode: 2.4G: 10 dBi/chain (peak gain) 10 dBi (combined gain) 5GH: 11 dBi/chain (peak gain) 10 dBi (combined gain) 5GL: 11 dBi/chain (peak gain) 10 dBi (combined gain) BLE: 5 dBi (peak value)

Item	Specification
Beamwidth of the built-in antenna [degrees]	Triple-radio 6G mode: 2.4G: • Horizontal plane: 70° • Vertical plane: 35° 5G: • Horizontal plane: 60° • Vertical plane: 20° 6G: • Horizontal plane: 55° • Vertical plane: 20° Triple-radio dual-5G mode: 2.4G: • Horizontal plane: 70° • Vertical plane: 35° 5GH: • Horizontal plane: 60° • Vertical plane: 20° 5GL: • Horizontal plane: 60° • Vertical plane: 25°

Item	Specification
Maximum transmit power	Triple-radio 6G mode: 2.4G: 25 dBm/chain 28 dBm (combined power) 5G: 20 dBm/chain 23 dBm (combined power) 6G: 21dBm/chain 27 dBm (combined power) BLE: < 10 dBm Triple-radio dual-5G mode: 2.4G: 25 dBm/chain 28 dBm (combined power) 5GH: 20 dBm/chain 23 dBm (combined power) 5GL: 21 dBm/chain 27 dBm (combined power) BLE: < 10 dBm
Singal radio transmit power [dBm]	Triple-radio 6G mode: 2.4G: -10 dBm to 25 dBm/chain 5G: -10 dBm to 20 dBm/chain 6G: -10 dBm to 21 dBm/chain Triple-radio dual-5G mode: 2.4G: -10 dBm to 25 dBm/chain 5GH: -10 dBm to 20 dBm/chain 5GL: -10 dBm to 21 dBm/chain
MTBF [year]	81.14417704 year
MTTR [hour]	2 hour
Frequency stability [ppm]	+/-20
802.3bt power supply description	No function is limited.

Item	Specification
802.3at power supply description	Wi-Fi service: supports a maximum of 2.4 GHz (2x2) + 5 GHz (2x2), 20 MHz bandwidth at 2.4 GHz, and 80 MHz bandwidth at 5 GHz. The USB function is unavailable, and other functions are not restricted.

6.3 AirEngine 6776I-X7TH

6.3.1 Product Characteristics

Huawei AirEngine 6776I-X7TH is an outdoor access point (AP) in compliance with Wi-Fi 7 (802.11be). It is empowered by brand-new Wi-Fi 7 technologies, significantly enhancing users' wireless network experience. This outdoor AP stands out with excellent outdoor coverage performance, IP68 waterproof and dustproof design, and strong surge protection capability. These strengths make the AirEngine 6776I-X7TH ideal for high-density scenarios such as stadiums and amusement parks.

- Built-in omnidirectional antennas and works simultaneously on the 2.4 GHz (2x2) , 5 GHz (2x2), and 6 GHz (4x4) frequency bands.
- 6 KA surge protection for Ethernet ports, IP68 waterproof and dustproof design, and -40°C to +70°C (-40°F to +158°F) wide temperature, fully meeting industrial-grade requirements.
- Bluetooth serial interface-based O&M through built-in Bluetooth and CloudCampus APP.
- Fit and cloud management working modes; in cloud management mode, Huawei cloud management platform can manage and operate APs and services on the APs, reducing network O&M costs.

 NOTE

The 6 GHz radio can be switched to the 5 GHz frequency band, after which the AP radios work in 2.4 GHz (2x2) + 5 GHz-H (2x2) + 5 GHz-L (4x4) mode.

6.3.2 Hardware Information

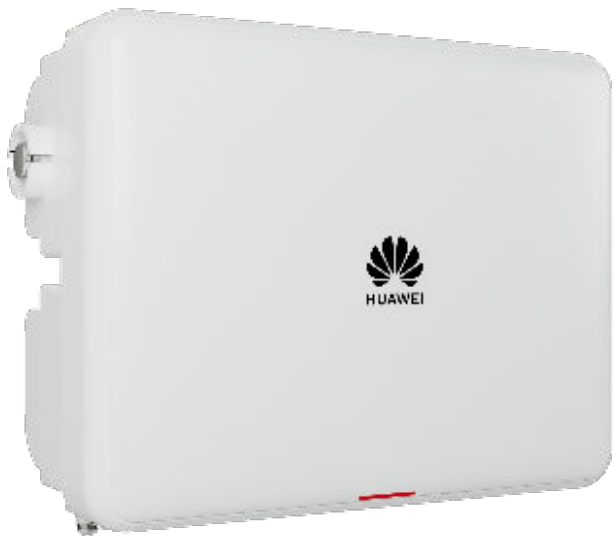
Overview

Table 6-6 Basic information about the AirEngine 6776I-X7TH

Item	Details
Description	AirEngine6776I-X7TH (11be outdoor, 2+2+4 three radios, built-in omnidirectional antenna, USB, Bluetooth)
Part Number	50087286
Model	AirEngine 6776I-X7TH
First supported version	V600R024C00

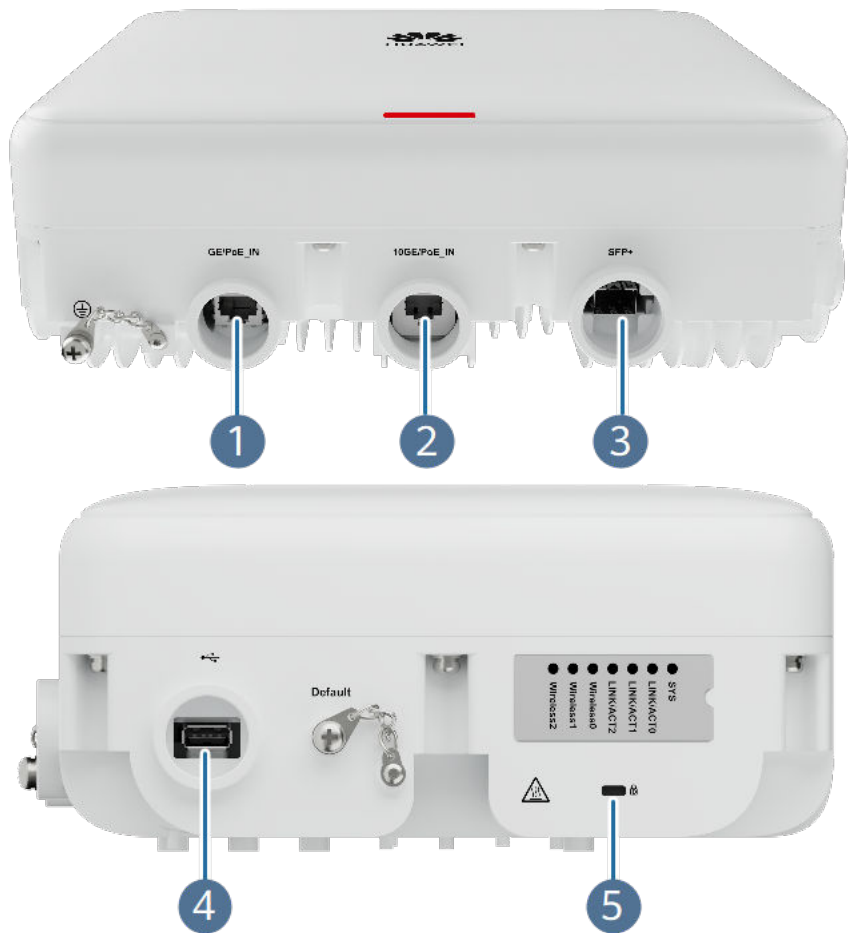
Appearance

Figure 6-7 Appearance of the AirEngine 6776I-X7TH



Ports

Figure 6-8 Ports on the AirEngine 6776I-X7TH



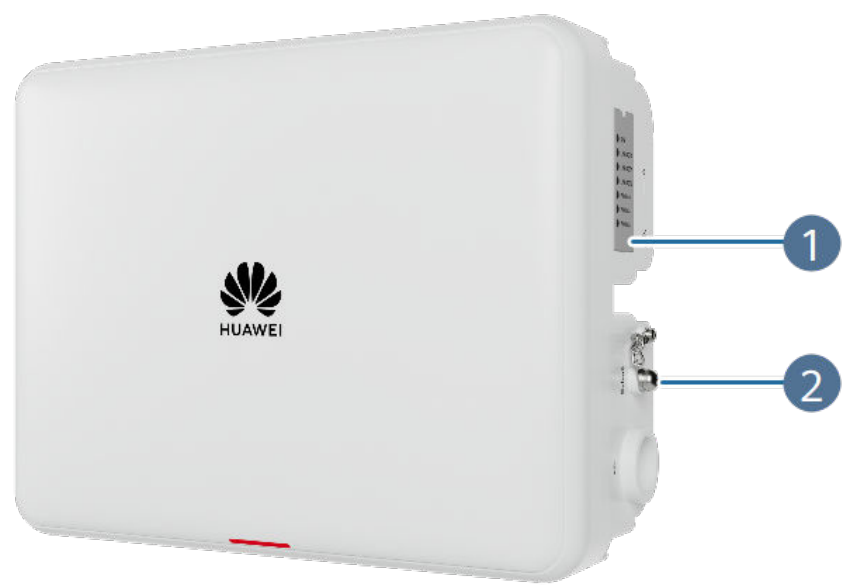
1	GE/PoE_IN	2	10GE/PoE_IN
3	SFP+	4	USB
5	Security slot	-	-

Table 6-7 Ports on the AirEngine 6776I-X7TH

Port	Connector Type	Description	Available Components
10GE/PoE_IN	RJ45	Ethernet electrical port that supports 100M/1000M/2.5G/5G/10G auto-sensing, connects to the wired Ethernet, and supports PoE input.	Network cable
GE/PoE_IN	RJ45	Ethernet electrical port that supports 10M/100M/1000M auto-sensing, connects to the wired Ethernet, and supports PoE input.	Network cable
SFP+	SFP+	Ethernet uplink optical port, which supports 1G/2.5G/10G auto-sensing and works with a matching optical module.	Optical module
USB	USB 2.0 Type A	Connects to an IoT terminal to implement IoT applications. The USB port is unavailable currently and will be supported through software upgrade in the future.	IoT module

Indicators and Buttons

Figure 6-9 Indicators and buttons on the AirEngine 6776I-X7TH



1	Indicator	2	Default
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Table 6-8 Indicators on the AirEngine 6776I-X7TH

Silkscreen	Name	Color	Status	Description
SYS	System indicator	-	Off	The system is not running.
		Green	Steady on	- The system is just powered on. - The system is starting after a reset. - The upper-layer system is starting.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP.
		Green	Slow blinking (0.2 Hz)	The AP is running properly, the Ethernet connection is normal, and no STA is associated with the AP.
		Green	Blinking once every 0.25s (4 Hz)	• The bottom-layer system is being started. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online in Fit or cloud management mode. The indicator remains in this state till the AP successfully goes online.

Silkscreen	Name	Color	Status	Description
		Red	Steady on	The system is faulty.
LINK/ACT0 to 2	Port indicator	Green	Steady on	The Ethernet connection is normal, and no data is being transmitted.
		Green	Blinking	The Ethernet connection is normal, and the AP is transmitting data.
		-	Off	The port is in link-down state.
WIRELESS0	Radio 0 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Green	Steady on	The AP has STAs connected, but no data is being transmitted.
		Green	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.

Silkscreen	Name	Color	Status	Description
WIRELESS1	Radio 1 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Yellow	Steady on	The AP has STAs connected, but no data is being transmitted.
		Yellow	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS2	Radio 2 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Blue	Steady on	The AP has STAs connected, but no data is being transmitted.

Silkscreen	Name	Color	Status	Description
		Blue	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.

Table 6-9 Buttons on the AirEngine 6776I-X7TH

Silkscreen	Name	Description
Default	Reset button	If you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the Fit mode, and restarts.

Technical Specifications

Table 6-10 Technical specifications of the AirEngine 6776I-X7TH

Item	Specification
Installation Type	- Wall (Facing Down) - Pole (Facing Down)
Dimensions without packaging (H x W x D) [mm(in.)]	100 mm x 280 mm x 220 mm (3.94 in. x 11.02 in. x 8.66 in.)
Dimensions with packaging (H x W x D) [mm(in.)]	185 mm x 570 mm x 380 mm (7.28 in. x 22.44 in. x 14.96 in.)
Weight without packaging [kg(lb)]	3.59 kg (7.91 lb)
Weight with packaging [kg(lb)]	5.57 kg (12.28 lb)
Storage	NAND Flash 512 MB
Console port	Bluetooth console

Item	Specification
Maximum power consumption [W]	33.5 (excluding USB)
Maximum heat dissipation [BTU/hour]	108.6 BTU/hour
Power supply mode	PoE
Rated input voltage [V]	PoE: 802.3bt/at
Input voltage range [V]	PoE: 802.3bt/at When multiple ports are used for receive PoE power: If the power supply classes are different, the port with the highest power class is used. If the power supply classes are the same, power supply backup can be implemented.
Service port surge protection	PoE port: Surge: Differential mode: 1.5 kV (D.1), 10/700 us, 15 ohms + 25 ohms, criterion B Differential mode: 1.5 kV (D.2), 10/700 us, 15 ohms + 25 ohms, criterion C Common mode: 6 kV (C.3), 10/700 us, 15 ohms + 25 ohms/wire, criterion B: 6) Differential mode: 1 kV (D.1), 1.2/50 us, 42 ohms, criterion B; Differential mode: 1 kV (D.2), 1.2/50 us, 42 ohms, criterion B; Common mode: 2 kV (C.3), 1.2/50 us, 2 ohms + 40 ohms x n/wire, criterion B Inrush current: Differential mode: 250 A (D.2), 8/20 μs, criterion C Common mode: 6 kA/8-wire, 8/20 us, criterion C
Maximum number of physical ports on the entire device	10GE (RJ45) x 1, 100M/1000M/2500M/5000M/10GE auto-sensing GE (RJ45) x 1, 10M/100M/1000M auto-sensing 10GE optical (SFP+), GE/2.5GE/10GE auto-sensing

Item	Specification
Long-term operating temperature [°C(°F)]	–40°C to +70°C (–40°F to +158°F) (From 1800 m to 5000 m [5905.51 ft. to 16404.20 ft.], the maximum temperature of the device decreases by 1°C [1.8°F] for every 300 m [984.25 ft.] increase in altitude.)
Storage temperature [°C(°F)]	–40°C to +85°C (–40°F to +185°F)
Long-term operating relative humidity [RH]	0% RH to 100% RH
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ingress protection level (dustproof/waterproof)	IP68
Ground	Ground
Wind resistance	67 m/s
USB	USB 2.0 is unavailable currently and will be supported through software upgrade in the future.
BLE	BLE5.2
Radio number	3
Operating frequency band	• 2.4GHz • 5GHz • 6GHz
MIMO spatial streams	Triple-radio 6G mode: • Radio 0 (2.4G): 2x2 • Radio 1 (5G): 2x2 • Radio 2 (6G): 4x4 Triple-radio dual-5G mode: • Radio 0 (2.4G): 2x2 • Radio 1 (5GH): 2x2 (high frequency band: 5490–5850 MHz) • Radio 2 (5GL): 4x4 (low frequency band: 5150–5330 MHz)
Wi-Fi standard	2.4 GHz: 802.11b/g/n/ax/be 5 GHz: 802.11a/n/ac/ac Wave 2/ax/be 6 GHz: 802.11a/n/ac/ac Wave 2/ax/be

Item	Specification
Radio interface	Built-in omnidirectional antennas
Antenna gain	Triple-radio 6G mode: 2.4G: 5 dBi/chain (peak gain) 3 dBi (combined gain) 5G: 5 dBi/chain (peak gain) 3 dBi (combined gain) 6G: 5 dBi/chain (peak gain) 3 dBi (combined gain) BLE: 5 dBi (peak gain) Triple-radio dual-5G mode: 2.4G: 5 dBi/chain (peak gain) 3 dBi (combined gain) 5GH: 5 dBi/chain (peak gain) 3 dBi (combined gain) 5GL: 5 dBi/chain (peak gain) 3 dBi (combined gain) BLE: 5 dBi (peak gain)

Item	Specification
Maximum transmit power	Triple-radio 6G mode: 2.4G: 25 dBm/chain 28 dBm (combined power) 5G: 21 dBm/chain 24 dBm (combined power) 6G: 21 dBm/chain 27 dBm (combined power) BLE: < 10 dBm Triple-radio dual-5G mode: 2.4G: 25 dBm/chain 28 dBm (combined power) 5GH: 21 dBm/chain 24 dBm (combined power) 5GL: 21 dBm/chain 27 dBm (combined power) BLE: < 10 dBm
Singal radio transmit power [dBm]	Triple-radio 6G mode: 2.4G: -10 dBm to 25 dBm/chain 5G: -10 dBm to 21 dBm/chain 6G: -10 dBm to 21 dBm/chain Triple-radio dual-5G mode: 2.4G: -10 dBm to 25 dBm/chain 5GH: -10 dBm to 21 dBm/chain 5GL: -10 dBm to 21 dBm/chain
MTBF [year]	81.16033041 year
MTTR [hour]	2 hour
Frequency stability [ppm]	+/-20
802.3bt power supply description	No function is limited.

Item	Specification
802.3at power supply description	Wi-Fi service: supports a maximum of 2.4 GHz (2x2) + 5 GHz (2x2), 20 MHz bandwidth at 2.4 GHz, and 80 MHz bandwidth at 5 GHz. The USB function is unavailable, and other functions are not restricted.

6.4 AirEngine 8760R-X1

6.4.1 Product Characteristics

Huawei AirEngine 8760R-X1 is a next-generation flagship outdoor access point (AP) in compliance with the Wi-Fi 6 standard. It stands out with excellent outdoor coverage performance, IP68 waterproof and dustproof design, and strong surge protection capability. The AP provides uplink optical and electrical ports, allowing customers to select different deployment modes and saving customers' investment. These strengths make the AP ideal for high-density scenarios such as stadiums, squares, pedestrian streets, and amusement parks.

- The AirEngine 8760R-X1 provides services simultaneously on both the 2.4 GHz and 5 GHz frequency bands.
 - Dual-radio mode: 2.4 GHz (4x4:4 MIMO) + 5 GHz (12x12:8 MIMO)
 - 2G enhanced dual-radio mode: 2.4 GHz (8x8:4 MIMO) + 5 GHz (8x8:8 MIMO)
 - Dual-radio + independent scanning radio mode: 2.4 GHz (4x4:4 MIMO) + 5 GHz (8x8:8 MIMO)
- 1 x 10GE electrical port + 1 x GE electrical port + 1 x 10GE SFP+ optical port
- 6 kA surge protection for Ethernet ports, IP68 waterproof and dustproof level, and extended operating temperature range of -40°C to +65°C, meeting industrial-grade requirements
- The AirEngine 8760R-X1 has built-in smart antennas to provide precise coverage for STAs, reduce interference, and improve signal quality.
- Built-in independent scanning radio, achieving real-time detection for interference and rogue devices in real time and timely network optimization
- Bluetooth serial interface-based O&M through the built-in Bluetooth module by collaborating with CloudCampus APP; collaboration with a location server to accurately locate Bluetooth terminals and tags
- Working modes: Fit, Fat, and cloud management

 NOTE

Independent radio scanning will be supported after the AP is upgraded to V200R020C00 or later.

The 2.4 GHz radio of the device allows at most four antennas to transmit and receive 802.11b packets.

6.4.2 Hardware Information (02353GSF-001)

Overview

Table 6-11 Basic information about the AirEngine 8760R-X1

Item	Details
Description	AirEngine8760R-X1(11ax outdoor,8+8 dual bands,smart antenna,BLE,PSE)
Part Number	02353GSF-001
Model	AirEngine 8760R-X1
First supported version	V200R021C10SPC100

 NOTE

Due to different production batches, the device has multiple BOM codes. The software specifications are the same, but the initial supported versions are different. Hardware specifications such as weight and power consumption may be slightly different.

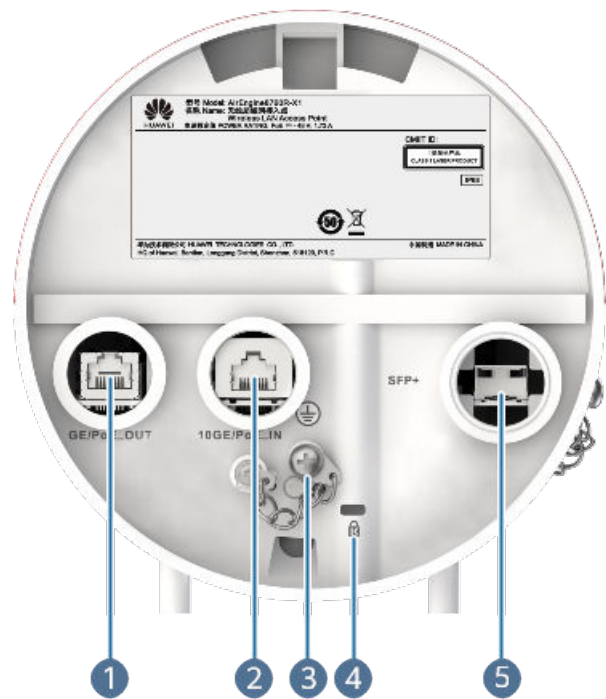
Appearance

Figure 6-10 Appearance of the AirEngine 8760R-X1



Ports

Figure 6-11 Ports on the AirEngine 8760R-X1



1	GE/PoE_OUT	2	10GE/PoE_IN
3	Ground screw	4	Security slot
5	SFP+	-	-

Table 6-12 Ports on the AirEngine 8760R-X1

Port	Connector Type	Description	Available Components
10GE/PoE_IN	RJ45	Ethernet electrical port that supports 100M/1000M/2.5G/5G/10G auto-sensing, connects to the wired Ethernet, and supports PoE input.	Network cable

Port	Connector Type	Description	Available Components
SFP+	SFP+	Ethernet optical port, supporting 1 Gbit/s or 10 Gbit/s auto-sensing and working with a matching optical module	Optical module
GE/PoE_OUT	RJ45	Ethernet electrical port that supports 10M/100M/1000M auto-sensing and connects to the wired Ethernet.	Network cable

Indicators and Buttons

Figure 6-12 Indicators and buttons on the AirEngine 8760R-X1



LINK/ACT0, LINK/ACT1, and LINK/ACT2 shows the link status of 10GE/PoE_IN, GE/PoE_OUT, and SFP+ ports respectively.

WIRELESS0 and WIRELESS1 show the wireless link status of the Radio 0 and Radio 1 interfaces, respectively. They are valid in V200R022C00 and later versions.

1	Indicator	2	Default
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Table 6-13 Indicators on the AirEngine 8760R-X1

Silkscreen	Name	Color	Status	Description
SYS	System indicator	-	Off	The system is not running.

Silkscreen	Name	Color	Status	Description
		Green	Steady on	• The system is just powered on. • The system is starting after a reset. • The upper-layer system is starting.
		Green	Steady on after blinking once	After the hardware reset is cleared and the software starts, the indicator blinks once. Then, the indicator is steady on until the bottom-layer system starts.
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP. This state is supported in V200R022C00 and later versions.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.2 Hz)	The AP is running properly, and the Ethernet connection is normal. For V200R022C00 and later versions, this state also indicates that no STA is associated with the AP.
		Green	Blinking once every 0.25s (4 Hz)	• The bottom-layer system is being started. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online in Fit or cloud management mode. The indicator remains in this state till the AP successfully goes online.
		Red	Steady on	The system is faulty.

Silkscreen	Name	Color	Status	Description
LINK/ACT0, LINK/ACT1, and LINK/ ACT2	Port indicator	Green	Steady on	The Ethernet connection is normal, and no data is being transmitted.
		Green	Blinking	The Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more frequently when the data traffic increases.
LINK/ACT1	Port indicator (PoE_OUT enabled)	-	Off	The Ethernet connection fails, and the PoE OUT function is available.
		Green	Steady on	The Ethernet connection is normal, and no data is being transmitted. The PoE OUT function is available.
		Green	Blinking	The Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more frequently when the data traffic increases. The PoE OUT function is available.

Silkscreen	Name	Color	Status	Description
		Yellow	Steady on	The Ethernet connection fails, and the PoE OUT function is unavailable.
		Yellow	Slow blinking (0.5 Hz)	The Ethernet connection fails, and the PoE OUT function is faulty.
WIRELESS0	Radio 0 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Green	Steady on	The AP has STAs connected, but no data is being transmitted.
		Green	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS0	Radio 0 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Green	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Green	Steady on	The AP is connected to a Mesh network and has good signal strength.
WIRELESS1	Radio 1 status indicator (service traffic mode)	-	Off	Radios are disabled, and no STA is connected to the AP.
		Yellow	Steady on	The AP has STAs connected, but no data is being transmitted.
		Yellow	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.

Silkscreen	Name	Color	Status	Description
WIRELESS1	Radio 1 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Yellow	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Yellow	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Yellow	Steady on	The AP is connected to a Mesh network and has good signal strength.

Table 6-14 Buttons on the AirEngine 8760R-X1

Silkscreen	Name	Description
Default	Reset button	- For versions earlier than V200R022C00SPC100, hold down the button for more than 3 seconds to restore the factory settings and restart the device. - For V200R022C00SPC100 and later versions, if you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the Fit mode, and restarts.

Technical Specifications

Table 6-15 Technical specifications of the AirEngine 8760R-X1

Item	Specification
Installation Type	- Wall - Pole
Dimensions without packaging (H x W x D) [mm(in.)]	Diameter x length: 165 mm x 387 mm (6.50 in. x 15.24 in.)
Weight without packaging [kg(lb)]	4.15 kg (9.15 lb)
Storage	NAND Flash 512 MB; NOR Flash 16 MB
Console port	BLE console
Maximum power consumption [W]	53.2 (excluding PoE OUT)
Maximum heat dissipation [BTU/hour]	181.5 (without PoE OUT)
Power supply mode	PoE
Input voltage range [V]	PoE: 802.3bt
Service port surge protection	6 kA in common mode

Item	Specification
PoE	Supported
Maximum PoE output power [W]	15.4 W
Maximum number of physical ports on the entire device	10GE (RJ45) x 1, 10M/100M/1000M/ 2.5GE/5GE/10GE auto-sensing GE (RJ45) x 1, 10M/100M/1000M auto-sensing 10GE optical port (SFP+), GE/10GE auto-sensing
Long-term operating temperature [°C(°F)]	–40°C to +65°C (–40°F to +149°F) (From 1800 m to 5000 m [5905.51 ft. to 16404.20 ft.], the maximum temperature of the device decreases by 1°C [1.8°F] for every 300 m [984.25 ft.] increase in altitude.)
Storage temperature [°C(°F)]	–40°C to +85°C (–40°F to +185°F)
Long-term operating relative humidity [RH]	0% RH to 100% RH
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ingress protection level (dustproof/ waterproof)	IP68
Ground	Ground
Wind resistance	67 m/s
BLE	BLE5.2
Radio number	2
Operating frequency band	• 2.4GHz • 5GHz

Item	Specification
MIMO spatial streams	Dual-radio standard mode: - Radio 0 (2.4 GHz): 4x4:4 - Radio 1 (5 GHz): 12x12:8 Dual-radio 2G enhanced mode: - Radio 0 (2.4 GHz): 8x8:4 (A maximum of four antennas can be used to transmit and receive 802.11b packets.) - Radio 1 (5 GHz): 8x8:8 Dual-radio + independent radio scanning mode: - Radio 0 (2.4 GHz): 4x4:4 - Radio 1 (5 GHz): 8x8:8
Wi-Fi standard	2.4 GHz: 802.11b/g/n/ax 5 GHz: 802.11a/n/ac/ac Wave 2/ax
Radio interface	Built-in directional antennas
Antenna gain	2.4G: 10 dBi 5G: 11 dBi BLE: 5 dBi
Beamwidth of the built-in antenna [degrees]	2.4 GHz: - Horizontal plane: 180° @ 6 dB, 70° @ 3 dB - Vertical plane: 40° 5 GHz: - Horizontal plane: 180° @ 6 dB, 100° @ 3 dB - Vertical plane: 20°
Maximum transmit power	2.4 GHz: 33 dBm 5 GHz: 33 dBm (Note: This is the total MIMO radio power, the same as: 2.4 GHz: 24 dBm/chain 5 GHz: 24 dBm/chain) BLE: < 10 dBm
Singal radio transmit power [dBm]	2.4G: -10 dBm to 24 dBm/chain 5G: -10 dBm to 24 dBm/chain
MTBF [year]	60.2 year
MTTR [hour]	0.5 hour

Item	Specification
Frequency stability [ppm]	+/-20

Item	Specification
802.3bt power supply description	In 802.3bt Class 8 power supply mode: If the PoE OUT port is not used, no function is restricted. In enhanced dual-radio 2G mode, the 2.4 GHz radio supports 8x8:4 MIMO and a maximum of 20 MHz bandwidth. If the PoE OUT port (supporting only 802.3af) is used, the 10GE electrical port and the SFP+ optical port work as combo ports, and when one of them is working, the other is unavailable. The GE electrical port is available. Other functions are not restricted. In enhanced dual-radio 2G mode, the 2.4 GHz radio supports 8x8:4 MIMO and a maximum of 20 MHz bandwidth. In 802.3bt Class 6 power supply mode: If the PoE OUT port is not used: Wi-Fi: The transmit power of radios is not affected. • Standard dual-radio mode: 2.4 GHz (4x4) + 5 GHz (12x12:8) • Dual-radio + independent scanning radio mode: 2.4 GHz (4x4) + 5 GHz (8x8) + 5 GHz independent radio scanning • Enhanced dual-radio 2G mode: 2.4 GHz (8x8:4) + 5 GHz (4x4). In this mode, the 2.4 GHz radio supports 8x8:4 MIMO and a maximum of 20 MHz bandwidth. Wired network port: The 10GE electrical port and the SFP+ optical port work as combo ports, and when one of them is working, the other is unavailable. The GE electrical port is available. Other ports: The PoE OUT port is not used. If the PoE OUT port is used: Wi-Fi: The transmit power of radios is automatically adjusted.

Item	Specification
	- Standard dual-radio mode: 2.4 GHz (4x4) + 5 GHz (4x4) - Dual-radio + independent scanning radio mode: 2.4 GHz (4x4) + 5 GHz (4x4) + independent radio scanning Wired network port: The 10GE electrical port and the SFP+ optical port are combo ports, and only one of them can be selected. The GE electrical port is available. Other ports: The PoE OUT port (supporting only 802.3af) is used.
802.3at power supply description	Wi-Fi: The transmit power of radios is automatically adjusted. - Standard dual-radio mode: 2.4 GHz (2x2) + 5 GHz (2x2) - Dual-radio + independent scanning radio mode: 2.4 GHz (2x2) + 5 GHz (2x2) + independent radio scanning Wired network port: The rate of the 10GE electrical port is reduced to GE or lower. The 10GE electrical port and the SFP+ optical port work as combo ports for each other, and when one of them is working, the other is unavailable. The GE electrical port is unavailable. Other ports: The PoE OUT port is unavailable.

6.4.3 Hardware Information (02353GSF)

Overview

Table 6-16 Basic information about the AirEngine 8760R-X1

Item	Details
Description	AirEngine8760R-X1(11ax outdoor,8+8 dual bands,smart antenna,BLE,PSE)

Item	Details
Part Number	02353GSF
Model	AirEngine 8760R-X1
First supported version	V200R019C10

 NOTE

Due to different production batches, the device has multiple BOM codes. The software specifications are the same, but the initial supported versions are different. Hardware specifications such as weight and power consumption may be slightly different.

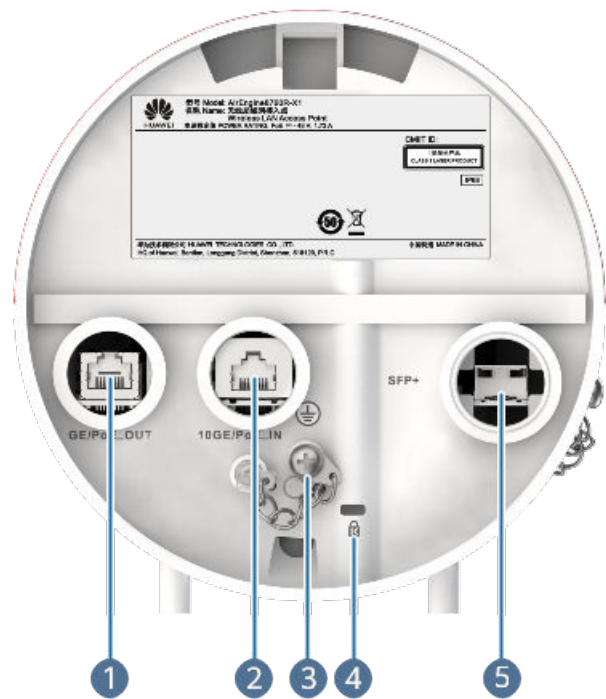
Appearance

Figure 6-13 Appearance of the AirEngine 8760R-X1



Ports

Figure 6-14 Ports on the AirEngine 8760R-X1



1	GE/PoE_OUT	2	10GE/PoE_IN
3	Ground screw	4	Security slot
5	SFP+	-	-

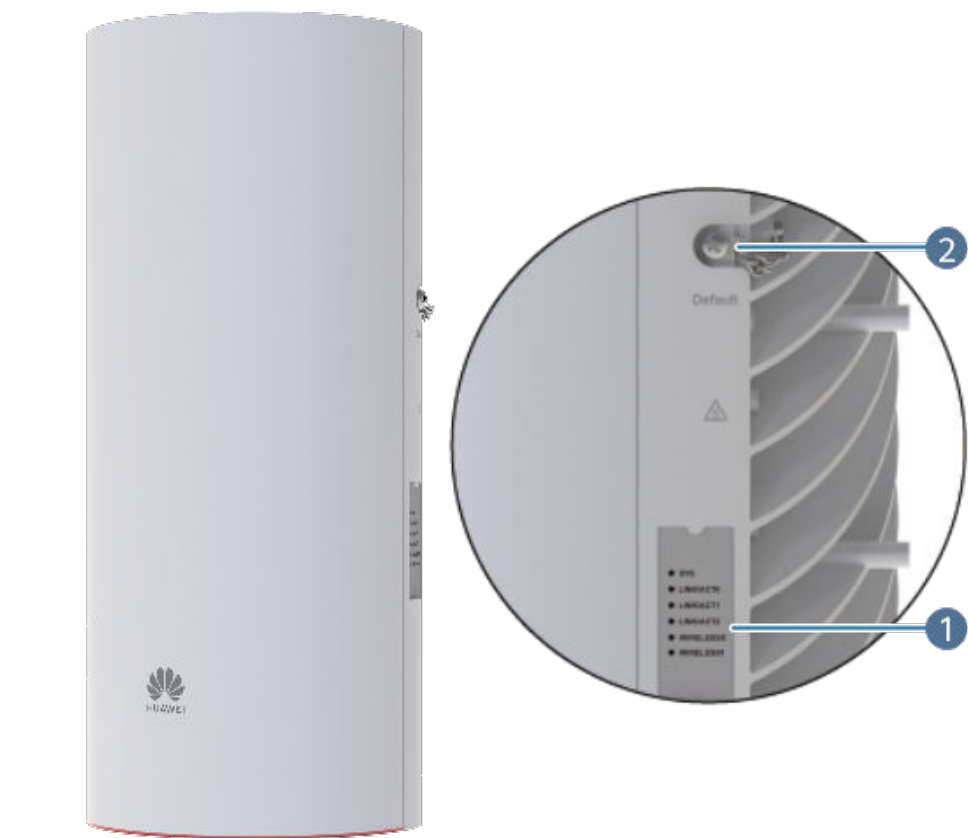
Table 6-17 Ports on the AirEngine 8760R-X1

Port	Connector Type	Description	Available Components
10GE/PoE_IN	RJ45	Ethernet electrical port that supports 100M/1000M/2.5G/5G/10G auto-sensing, connects to the wired Ethernet, and supports PoE input.	Network cable

Port	Connector Type	Description	Available Components
SFP+	SFP+	Ethernet optical port, supporting 1 Gbit/s or 10 Gbit/s auto-sensing and working with a matching optical module	Optical module
GE/PoE_OUT	RJ45	Ethernet electrical port that supports 10M/100M/1000M auto-sensing and connects to the wired Ethernet.	Network cable

Indicators and Buttons

Figure 6-15 Indicators and buttons on the AirEngine 8760R-X1



LINK/ACT0, LINK/ACT1, and LINK/ACT2 shows the link status of 10GE/PoE_IN, GE/PoE_OUT, and SFP+ ports respectively.

WIRELESS0 and WIRELESS1 show the wireless link status of the Radio 0 and Radio 1 interfaces, respectively. They are valid in V200R022C00 and later versions.

1	Indicator	2	Default
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Table 6-18 Indicators on the AirEngine 8760R-X1

Silkscreen	Name	Color	Status	Description
SYS	System indicator	-	Off	The system is not running.

Silkscreen	Name	Color	Status	Description
		Green	Steady on	• The system is just powered on. • The system is starting after a reset. • The upper-layer system is starting.
		Green	Steady on after blinking once	After the hardware reset is cleared and the software starts, the indicator blinks once. Then, the indicator is steady on until the bottom-layer system starts.
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP. This state is supported in V200R022C00 and later versions.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.2 Hz)	The AP is running properly, and the Ethernet connection is normal. For V200R022C00 and later versions, this state also indicates that no STA is associated with the AP.
		Green	Blinking once every 0.25s (4 Hz)	• The bottom-layer system is being started. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online in Fit or cloud management mode. The indicator remains in this state till the AP successfully goes online.
		Red	Steady on	The system is faulty.

Silkscreen	Name	Color	Status	Description
LINK/ACT0, LINK/ACT1, and LINK/ ACT2	Port indicator	Green	Steady on	The Ethernet connection is normal, and no data is being transmitted.
		Green	Blinking	The Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more frequently when the data traffic increases.
LINK/ACT1	Port indicator (PoE_OUT enabled)	-	Off	The Ethernet connection fails, and the PoE OUT function is available.
		Green	Steady on	The Ethernet connection is normal, and no data is being transmitted. The PoE OUT function is available.
		Green	Blinking	The Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more frequently when the data traffic increases. The PoE OUT function is available.

Silkscreen	Name	Color	Status	Description
		Yellow	Steady on	The Ethernet connection fails, and the PoE OUT function is unavailable.
		Yellow	Slow blinking (0.5 Hz)	The Ethernet connection fails, and the PoE OUT function is faulty.
WIRELESS0	Radio 0 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Green	Steady on	The AP has STAs connected, but no data is being transmitted.
		Green	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS0	Radio 0 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Green	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Green	Steady on	The AP is connected to a Mesh network and has good signal strength.
WIRELESS1	Radio 1 status indicator (service traffic mode)	-	Off	Radios are disabled, and no STA is connected to the AP.
		Yellow	Steady on	The AP has STAs connected, but no data is being transmitted.
		Yellow	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.

Silkscreen	Name	Color	Status	Description
WIRELESS1	Radio 1 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Yellow	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Yellow	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Yellow	Steady on	The AP is connected to a Mesh network and has good signal strength.

Table 6-19 Buttons on the AirEngine 8760R-X1

Silkscreen	Name	Description
Default	Reset button	- For versions earlier than V200R022C00SPC100, hold down the button for more than 3 seconds to restore the factory settings and restart the device. - For V200R022C00SPC100 and later versions, if you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the Fit mode, and restarts.

Technical Specifications

Table 6-20 Technical specifications of the AirEngine 8760R-X1

Item	Specification
Installation Type	- Wall - Pole
Dimensions without packaging (H x W x D) [mm(in.)]	Diameter x length: 165 mm x 387 mm (6.50 in. x 15.24 in.)
Weight without packaging [kg(lb)]	4.15 kg (9.15 lb)
Storage	NAND Flash 512 MB; NOR Flash 16 MB
Console port	BLE console
Maximum power consumption [W]	53.2 (excluding PoE OUT)
Maximum heat dissipation [BTU/hour]	181.5 (without PoE OUT)
Power supply mode	PoE
Input voltage range [V]	PoE: 802.3bt
Service port surge protection	6 kA in common mode

Item	Specification
PoE	Supported
Maximum PoE output power [W]	15.4 W
Maximum number of physical ports on the entire device	10GE (RJ45) x 1, 10M/100M/1000M/2.5GE/5GE/10GE auto-sensing GE (RJ45) x 1, 10M/100M/1000M auto-sensing 10GE optical port (SFP+), GE/10GE auto-sensing
Long-term operating temperature [°C(°F)]	–40°C to +65°C (–40°F to +149°F) (From 1800 m to 5000 m [5905.51 ft. to 16404.20 ft.], the maximum temperature of the device decreases by 1°C [1.8°F] for every 300 m [984.25 ft.] increase in altitude.)
Storage temperature [°C(°F)]	–40°C to +85°C (–40°F to +185°F)
Long-term operating relative humidity [RH]	0% RH to 100% RH
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ingress protection level (dustproof/waterproof)	IP68
Ground	Ground
Wind resistance	67 m/s
BLE	BLE5.2
Radio number	2
Operating frequency band	2.4GHz 5GHz

Item	Specification
MIMO spatial streams	Dual-radio standard mode: - Radio 0 (2.4 GHz): 4x4:4 - Radio 1 (5 GHz): 12x12:8 Dual-radio 2G enhanced mode: - Radio 0 (2.4 GHz): 8x8:4 (A maximum of four antennas can be used to transmit and receive 802.11b packets.) - Radio 1 (5 GHz): 8x8:8 Dual-radio + independent radio scanning mode: - Radio 0 (2.4 GHz): 4x4:4 - Radio 1 (5 GHz): 8x8:8
Wi-Fi standard	2.4 GHz: 802.11b/g/n/ax 5 GHz: 802.11a/n/ac/ac Wave 2/ax
Radio interface	Built-in directional antennas
Antenna gain	2.4G: 10 dBi 5G: 11 dBi BLE: 5 dBi
Beamwidth of the built-in antenna [degrees]	2.4 GHz: - Horizontal plane: 180° @ 6 dB, 70° @ 3 dB - Vertical plane: 40° 5 GHz: - Horizontal plane: 180° @ 6 dB, 100° @ 3 dB - Vertical plane: 20°
Maximum transmit power	2.4 GHz: 33 dBm 5 GHz: 33 dBm (Note: This is the total MIMO radio power, the same as: 2.4 GHz: 24 dBm/chain 5 GHz: 24 dBm/chain) BLE: < 10 dBm
Singal radio transmit power [dBm]	2.4G: -10 dBm to 24 dBm/chain 5G: -10 dBm to 24 dBm/chain
MTBF [year]	60.2 year
MTTR [hour]	0.5 hour

Item	Specification
Frequency stability [ppm]	+/-20

Item	Specification
802.3bt power supply description	In 802.3bt Class 8 power supply mode: If the PoE OUT port is not used, no function is restricted. In enhanced dual-radio 2G mode, the 2.4 GHz radio supports 8x8:4 MIMO and a maximum of 20 MHz bandwidth. If the PoE OUT port (supporting only 802.3af) is used, the 10GE electrical port and the SFP+ optical port work as combo ports, and when one of them is working, the other is unavailable. The GE electrical port is available. Other functions are not restricted. In enhanced dual-radio 2G mode, the 2.4 GHz radio supports 8x8:4 MIMO and a maximum of 20 MHz bandwidth. In 802.3bt Class 6 power supply mode: If the PoE OUT port is not used: Wi-Fi: The transmit power of radios is not affected. • Standard dual-radio mode: 2.4 GHz (4x4) + 5 GHz (12x12:8) • Dual-radio + independent scanning radio mode: 2.4 GHz (4x4) + 5 GHz (8x8) + 5 GHz independent radio scanning • Enhanced dual-radio 2G mode: 2.4 GHz (8x8:4) + 5 GHz (4x4). In this mode, the 2.4 GHz radio supports 8x8:4 MIMO and a maximum of 20 MHz bandwidth. Wired network port: The 10GE electrical port and the SFP+ optical port work as combo ports, and when one of them is working, the other is unavailable. The GE electrical port is available. Other ports: The PoE OUT port is not used. If the PoE OUT port is used: Wi-Fi: The transmit power of radios is automatically adjusted.

Item	Specification
	- Standard dual-radio mode: 2.4 GHz (4x4) + 5 GHz (4x4) - Dual-radio + independent scanning radio mode: 2.4 GHz (4x4) + 5 GHz (4x4) + independent radio scanning Wired network port: The 10GE electrical port and the SFP+ optical port are combo ports, and only one of them can be selected. The GE electrical port is available. Other ports: The PoE OUT port (supporting only 802.3af) is used.
802.3at power supply description	Wi-Fi: The transmit power of radios is automatically adjusted. - Standard dual-radio mode: 2.4 GHz (2x2) + 5 GHz (2x2) - Dual-radio + independent scanning radio mode: 2.4 GHz (2x2) + 5 GHz (2x2) + independent radio scanning Wired network port: The rate of the 10GE electrical port is reduced to GE or lower. The 10GE electrical port and the SFP+ optical port work as combo ports for each other, and when one of them is working, the other is unavailable. The GE electrical port is unavailable. Other ports: The PoE OUT port is unavailable.

6.5 AirEngine 8760R-X1E

6.5.1 Product Characteristics

Huawei AirEngine 8760R-X1E is a next-generation flagship outdoor access point (AP) in compliance with the Wi-Fi 6 standard. It stands out with excellent outdoor coverage performance, IP68 waterproof and dustproof design, and strong surge protection capability. The AP provides uplink optical and electrical ports, allowing customers to select different deployment modes and saving customers'

investment. These strengths make AirEngine 8760R-X1E ideal for high-density scenarios such as stadiums, squares, pedestrian streets, and amusement parks.

- The AirEngine 8760R-X1E provides services simultaneously on both the 2.4 GHz and 5 GHz frequency bands.
 - Dual-radio mode: 2.4 GHz (8x8:4 MIMO) + 5 GHz (8x8:8 MIMO)
 - Triple-radio mode: 2.4 GHz (8x8:4 MIMO) + 5 GHz (4x4:4 MIMO) + 5 GHz (4x4:4 MIMO)
 - Dual-radio + independent scanning radio mode: 2.4 GHz (4x4:4 MIMO) + 5 GHz (4x4:4 MIMO)
- 1 x 10GE electrical port + 1 x GE electrical port + 1 x 10GE SFP+ optical port
- 6 kA surge protection for Ethernet ports, IP68 waterproof and dustproof level, and extended operating temperature range of -40°C to +65°C, meeting industrial-grade requirements
- The external antenna port of the AirEngine 8760R-X1E supports 5 kA surge protection, eliminating the need to install an external surge protector, simplifying installation, and reducing the overall cost.
- Built-in independent scanning radio, achieving real-time detection for interference and rogue devices in real time and timely network optimization
- Bluetooth serial interface-based O&M through the built-in Bluetooth module by collaborating with CloudCampus APP; collaboration with a location server to accurately locate Bluetooth terminals and tags
- Working modes: Fit, Fat, and cloud management

 NOTE

Independent radio scanning will be supported after the AP is upgraded to V200R020C00 or later.

The 2.4 GHz radio of the device allows at most four antennas installed on RF ports A through D to transmit and receive 802.11b packets.

6.5.2 Hardware Information (02353GSH-001)

Overview

Table 6-21 Basic information about the AirEngine 8760R-X1E

Item	Details
Description	AirEngine8760R-X1E(11ax outdoor,Dedicated 3rd Radio,8+8 dual bands,external antenna,BLE,PSE)
Part Number	02353GSH-001
Model	AirEngine 8760R-X1E
First supported version	V200R021C10SPC100

 NOTE

Due to different production batches, the device has multiple BOM codes. The software specifications are the same, but the initial supported versions are different. Hardware specifications such as weight and power consumption may be slightly different.

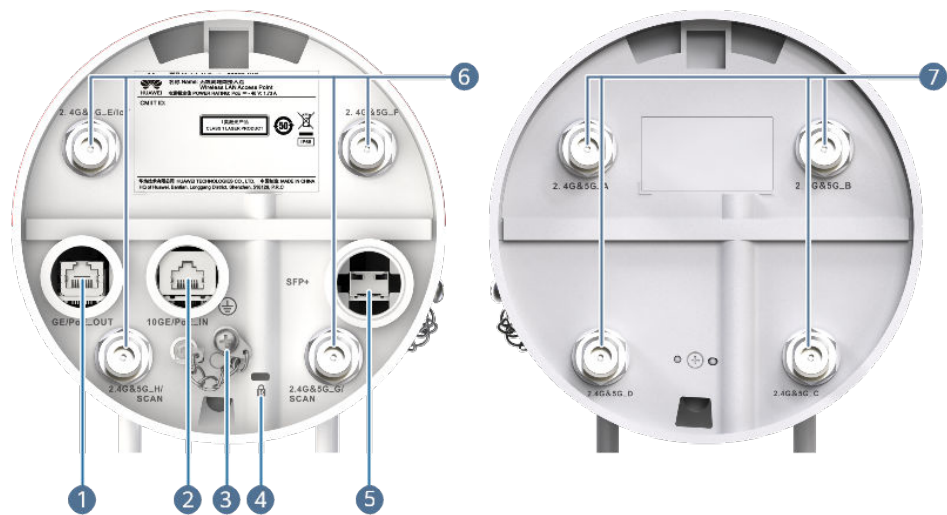
Appearance

Figure 6-16 Appearance of the AirEngine 8760R-X1E



Ports

Figure 6-17 Ports on the AirEngine 8760R-X1E



1	GE/PoE_OUT	2	10GE/PoE_IN
3	Ground screw	4	Security slot
5	SFP+	6	Antenna ports E to H
7	Antenna ports A to D	-	-

Table 6-22 Ports on the AirEngine 8760R-X1E

Port	Connector Type	Description	Available Components
10GE/PoE_IN	RJ45	Ethernet electrical port that supports 100M/1000M/2.5G/5G/10G auto-sensing, connects to the wired Ethernet, and supports PoE input.	Network cable

Port	Connector Type	Description	Available Components
SFP+	SFP+	Ethernet optical port, supporting 1 Gbit/s or 10 Gbit/s auto-sensing and working with a matching optical module	Optical module
GE/PoE_OUT	RJ45	Ethernet electrical port that supports 10M/100M/1000M auto-sensing and connects to the wired Ethernet.	Network cable
Antenna port	N-Type Female	Connects to an external antenna for transmitting and receiving service signals, and supports dual-band (2.4 GHz + 5 GHz) antennas.	Antenna

Indicators and Buttons

Figure 6-18 Indicators and buttons on the AirEngine 8760R-X1E



LINK/ACT0, LINK/ACT1, and LINK/ACT2 shows the link status of 10GE/PoE_IN, GE/PoE_OUT, and SFP+ ports respectively.

WIRELESS0 and WIRELESS1 show the wireless link status of the Radio 0 and Radio 1 interfaces, respectively. They are valid in V200R022C00 and later versions. If the AP runs in triple-radio mode, the WIRELESS0 indicator alternates between green (Radio 0 status) and yellow (Radio 2 status) at an interval of 20s.

1	Indicator	2	Default
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Table 6-23 Indicators on the AirEngine 8760R-X1E

Silkscreen	Name	Color	Status	Description
SYS	System indicator	-	Off	The system is not running.

Silkscreen	Name	Color	Status	Description
		Green	Steady on	• The system is just powered on. • The system is starting after a reset. • The upper-layer system is starting.
		Green	Steady on after blinking once	After the hardware reset is cleared and the software starts, the indicator blinks once. Then, the indicator is steady on until the bottom-layer system starts.
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP. This state is supported in V200R022C00 and later versions.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.2 Hz)	The AP is running properly, and the Ethernet connection is normal. For V200R022C00 and later versions, this state also indicates that no STA is associated with the AP.
		Green	Blinking once every 0.25s (4 Hz)	• The bottom-layer system is being started. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online in Fit or cloud management mode. The indicator remains in this state till the AP successfully goes online.
		Red	Steady on	The system is faulty.

Silkscreen	Name	Color	Status	Description
LINK/ACT0, LINK/ACT1, and LINK/ ACT2	Port indicator	Green	Steady on	The Ethernet connection is normal, and no data is being transmitted.
		Green	Blinking	The Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more frequently when the data traffic increases.
LINK/ACT1	Port indicator (PoE_OUT enabled)	-	Off	The Ethernet connection fails, and the PoE OUT function is available.
		Green	Steady on	The Ethernet connection is normal, and no data is being transmitted. The PoE OUT function is available.
		Green	Blinking	The Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more frequently when the data traffic increases. The PoE OUT function is available.

Silkscreen	Name	Color	Status	Description
		Yellow	Steady on	The Ethernet connection fails, and the PoE OUT function is unavailable.
		Yellow	Slow blinking (0.5 Hz)	The Ethernet connection fails, and the PoE OUT function is faulty.
WIRELESS0	Radio 0/Radio 2 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Green (Radio 0)/Yellow (Radio 2)	Steady on	The AP has STAs connected, but no data is being transmitted.
		Green (Radio 0)/Yellow (Radio 2)	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS0	Radio 0/Radio 2 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.

Silkscreen	Name	Color	Status	Description
		Green (Radio 0)/Yellow (Radio 2)	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Green (Radio 0)/Yellow (Radio 2)	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Green (Radio 0)/Yellow (Radio 2)	Steady on	The AP is connected to a Mesh network and has good signal strength.
WIRELESS1	Radio 1 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Yellow	Steady on	The AP has STAs connected, but no data is being transmitted.
		Yellow	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.

Silkscreen	Name	Color	Status	Description
WIRELESS1	Radio 1 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Yellow	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Yellow	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Yellow	Steady on	The AP is connected to a Mesh network and has good signal strength.

Table 6-24 Buttons on the AirEngine 8760R-X1E

Silkscreen	Name	Description
Default	Reset button	- For versions earlier than V200R022C00SPC100, hold down the button for more than 3 seconds to restore the factory settings and restart the device. - For V200R022C00SPC100 and later versions, if you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the Fit mode, and restarts.

Technical Specifications

Table 6-25 Technical specifications of the AirEngine 8760R-X1E

Item	Specification
Installation Type	- Wall - Pole
Dimensions without packaging (H x W x D) [mm(in.)]	Diameter x length: 165 mm x 387 mm (6.50 in. x 15.24 in.)
Weight without packaging [kg(lb)]	4.05 kg (8.93 lb)
Storage	NAND Flash 512 MB; NOR Flash 16 MB
Console port	BLE console
Maximum power consumption [W]	53.2 (excluding PoE OUT)
Maximum heat dissipation [BTU/hour]	181.5 (without PoE OUT)
Power supply mode	PoE
Input voltage range [V]	PoE: 802.3bt
Service port surge protection	6 kA in common mode

Item	Specification
PoE	Supported
Maximum PoE output power [W]	15.4 W
Maximum number of physical ports on the entire device	10GE (RJ45) x 1, 10M/100M/1000M/2.5GE/5GE/10GE auto-sensing GE (RJ45) x 1, 10M/100M/1000M auto-sensing 10GE optical port (SFP+), GE/10GE auto-sensing
Long-term operating temperature [°C(°F)]	–40°C to +65°C (–40°F to +149°F) (From 1800 m to 5000 m [5905.51 ft. to 16404.20 ft.], the maximum temperature of the device decreases by 1°C [1.8°F] for every 300 m [984.25 ft.] increase in altitude.)
Storage temperature [°C(°F)]	–40°C to +85°C (–40°F to +185°F)
Long-term operating relative humidity [RH]	0% RH to 100% RH
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ingress protection level (dustproof/waterproof)	IP68
Ground	Ground
Antenna port surge protection [kA]	5 kA surge protection capability without external surge protection devices
Wind resistance	67 m/s
BLE	BLE5.2
Radio number	2/3
Operating frequency band	2.4GHz 5GHz

Item	Specification
MIMO spatial streams	Dual-radio standard mode: - Radio 0 (2.4 GHz): 8x8:4 (A maximum of four antennas connected to RF ports A through D can be used to transmit and receive 802.11b packets.) - Radio 1 (5 GHz): 8x8:8 Triple-radio mode: - Radio 0 (2.4 GHz): 8x8:4 (A maximum of four antennas connected to RF ports A through D can be used to transmit and receive 802.11b packets.) - Radio 1 (5 GHz): 4x4:4 - Radio 2 (5 GHz): 4x4:4 Dual-radio + independent radio scanning mode: - Radio 0 (2.4 GHz): 4x4:4 - Radio 1 (5 GHz): 4x4:4
Wi-Fi standard	2.4 GHz: 802.11b/g/n/ax 5 GHz: 802.11a/n/ac/ac Wave 2/ax
Radio interface	External antenna
Antenna gain	BLE: 5 dBi
Maximum transmit power	2.4 GHz: 33 dBm 5 GHz: 33 dBm (Note: This is the total MIMO radio power, the same as: 2.4 GHz: 24 dBm/chain 5 GHz: 24 dBm/chain) BLE: < 10 dBm
Singal radio transmit power [dBm]	2.4G: -10 dBm to 24 dBm/chain 5G: -10 dBm to 24 dBm/chain
MTBF [year]	60.2 year
MTTR [hour]	0.5 hour
Frequency stability [ppm]	+/-20

Item	Specification
802.3bt power supply description	In 802.3bt Class 8 power supply mode: If the PoE OUT port is not used, no function is restricted. In standard dual-radio or three-radio mode, the 2.4 GHz radio supports 8x8:4 MIMO and a maximum of 20 MHz bandwidth. If the PoE OUT port (supporting only 802.3af) is used, the 10GE electrical port and the SFP+ optical port work as combo ports, and when one of them is working, the other is unavailable. The GE electrical port is available. Other functions are not restricted. In standard dual-radio or three-radio mode, the 2.4 GHz radio supports 8x8:4 MIMO and a maximum of 20 MHz bandwidth. In 802.3bt Class 6 power supply mode: If the PoE OUT port is not used: Wi-Fi: The transmit power of radios is not affected. • Standard dual-radio mode: 2.4 GHz (4x4) + 5 GHz (8x8) • Dual-radio + independent scanning radio mode: 2.4 GHz (4x4) + 5 GHz (4x4) + 5 GHz independent scanning radio • Triple-radio mode: 2.4 GHz (4x4) + 5 GHz (4x4) + 5 GHz (4x4) Wired network port: The 10GE electrical port and the SFP optical port work as combo ports. When one of them is working, the other is unavailable. The GE electrical port is available. Other ports: The PoE OUT port is not used. If the PoE OUT port is used: Wi-Fi: The radio power is self-adapted. • Standard dual-radio mode: 2.4 GHz (4x4) + 5 GHz (4x4) • Dual-radio + independent scanning radio mode: 2.4 GHz (4x4) + 5 GHz (4x4) + 5 GHz independent scanning radio

Item	Specification
	• Triple-radio mode: 2.4 GHz (2x2) + 5 GHz (2x2) + 5 GHz (2x2) Wired network port: The 10GE electrical port and SFP optical port work as combo ports. When one of them is working, the other is unavailable. The GE electrical port is available. Other ports: The PoE OUT port (supporting only 802.3af) is used.
802.3at power supply description	Wi-Fi: The radio power is self-adapted. • Standard dual-radio mode: 2.4 GHz (2x2) + 5 GHz (2x2) • Dual-radio + independent scanning radio mode: 2.4 GHz (2x2) + 5 GHz (2x2) + 5 GHz independent scanning radio • Triple-radio mode: 2.4 GHz (2x2) + 5 GHz (2x2) + 5 GHz (2x2) Wired network port: The rate of the 10GE electrical port rate is reduced to GE or lower and works with the SFP+ optical port as combo ports. When one of them is working, the other is unavailable. The GE electrical port is not available. Other ports: The PoE OUT port is unavailable.

6.5.3 Hardware Information (02353GSH)

Overview

Table 6-26 Basic information about the AirEngine 8760R-X1E

Item	Details
Description	AirEngine8760R-X1E(11ax outdoor,Dedicated 3rd Radio,8+8 dual bands,external antenna,BLE,PSE)
Part Number	02353GSH
Model	AirEngine 8760R-X1E

Item	Details
First supported version	V200R019C10

 NOTE

Due to different production batches, the device has multiple BOM codes. The software specifications are the same, but the initial supported versions are different. Hardware specifications such as weight and power consumption may be slightly different.

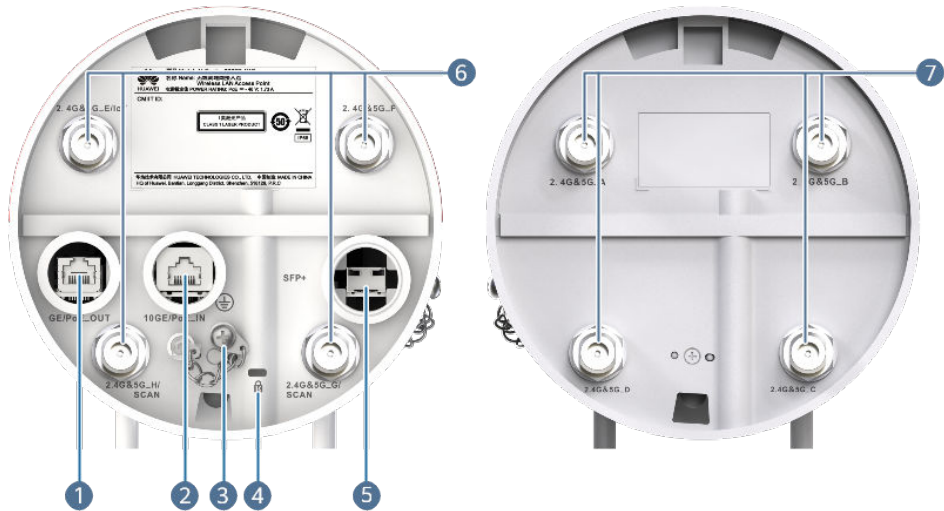
Appearance

Figure 6-19 Appearance of the AirEngine 8760R-X1E



Ports

Figure 6-20 Ports on the AirEngine 8760R-X1E



1	GE/PoE_OUT	2	10GE/PoE_IN
3	Ground screw	4	Security slot
5	SFP+	6	Antenna ports E to H
7	Antenna ports A to D	-	-

Table 6-27 Ports on the AirEngine 8760R-X1E

Port	Connector Type	Description	Available Components
10GE/PoE_IN	RJ45	Ethernet electrical port that supports 100M/1000M/2.5G/5G/10G auto-sensing, connects to the wired Ethernet, and supports PoE input.	Network cable

Port	Connector Type	Description	Available Components
SFP+	SFP+	Ethernet optical port, supporting 1 Gbit/s or 10 Gbit/s auto-sensing and working with a matching optical module	Optical module
GE/PoE_OUT	RJ45	Ethernet electrical port that supports 10M/100M/1000M auto-sensing and connects to the wired Ethernet.	Network cable
Antenna port	N-Type Female	Connects to an external antenna for transmitting and receiving service signals, and supports dual-band (2.4 GHz + 5 GHz) antennas.	Antenna

Indicators and Buttons

Figure 6-21 Indicators and buttons on the AirEngine 8760R-X1E



LINK/ACT0, LINK/ACT1, and LINK/ACT2 shows the link status of 10GE/PoE_IN, GE/PoE_OUT, and SFP+ ports respectively.

WIRELESS0 and WIRELESS1 show the wireless link status of the Radio 0 and Radio 1 interfaces, respectively. They are valid in V200R022C00 and later versions. If the AP runs in triple-radio mode, the WIRELESS0 indicator alternates between green (Radio 0 status) and yellow (Radio 2 status) at an interval of 20s.

1	Indicator	2	Default
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Table 6-28 Indicators on the AirEngine 8760R-X1E

Silkscreen	Name	Color	Status	Description
SYS	System indicator	-	Off	The system is not running.

Silkscreen	Name	Color	Status	Description
		Green	Steady on	• The system is just powered on. • The system is starting after a reset. • The upper-layer system is starting.
		Green	Steady on after blinking once	After the hardware reset is cleared and the software starts, the indicator blinks once. Then, the indicator is steady on until the bottom-layer system starts.
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP. This state is supported in V200R022C00 and later versions.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.2 Hz)	The AP is running properly, and the Ethernet connection is normal. For V200R022C00 and later versions, this state also indicates that no STA is associated with the AP.
		Green	Blinking once every 0.25s (4 Hz)	• The bottom-layer system is being started. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online in Fit or cloud management mode. The indicator remains in this state till the AP successfully goes online.
		Red	Steady on	The system is faulty.

Silkscreen	Name	Color	Status	Description
LINK/ACT0, LINK/ACT1, and LINK/ ACT2	Port indicator	Green	Steady on	The Ethernet connection is normal, and no data is being transmitted.
		Green	Blinking	The Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more frequently when the data traffic increases.
LINK/ACT1	Port indicator (PoE_OUT enabled)	-	Off	The Ethernet connection fails, and the PoE OUT function is available.
		Green	Steady on	The Ethernet connection is normal, and no data is being transmitted. The PoE OUT function is available.
		Green	Blinking	The Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more frequently when the data traffic increases. The PoE OUT function is available.

Silkscreen	Name	Color	Status	Description
		Yellow	Steady on	The Ethernet connection fails, and the PoE OUT function is unavailable.
		Yellow	Slow blinking (0.5 Hz)	The Ethernet connection fails, and the PoE OUT function is faulty.
WIRELESS0	Radio 0/Radio 2 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Green (Radio 0)/Yellow (Radio 2)	Steady on	The AP has STAs connected, but no data is being transmitted.
		Green (Radio 0)/Yellow (Radio 2)	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS0	Radio 0/Radio 2 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.

Silkscreen	Name	Color	Status	Description
		Green (Radio 0)/Yellow (Radio 2)	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Green (Radio 0)/Yellow (Radio 2)	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Green (Radio 0)/Yellow (Radio 2)	Steady on	The AP is connected to a Mesh network and has good signal strength.
WIRELESS1	Radio 1 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Yellow	Steady on	The AP has STAs connected, but no data is being transmitted.
		Yellow	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.

Silkscreen	Name	Color	Status	Description
WIRELESS1	Radio 1 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Yellow	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Yellow	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Yellow	Steady on	The AP is connected to a Mesh network and has good signal strength.

Table 6-29 Buttons on the AirEngine 8760R-X1E

Silkscreen	Name	Description
Default	Reset button	- For versions earlier than V200R022C00SPC100, hold down the button for more than 3 seconds to restore the factory settings and restart the device. - For V200R022C00SPC100 and later versions, if you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the Fit mode, and restarts.

Technical Specifications

Table 6-30 Technical specifications of the AirEngine 8760R-X1E

Item	Specification
Installation Type	- Wall - Pole
Dimensions without packaging (H x W x D) [mm(in.)]	Diameter x length: 165 mm x 387 mm (6.50 in. x 15.24 in.)
Weight without packaging [kg(lb)]	4.05 kg (8.93 lb)
Storage	NAND Flash 512 MB; NOR Flash 16 MB
Console port	BLE console
Maximum power consumption [W]	53.2 (excluding PoE OUT)
Maximum heat dissipation [BTU/hour]	181.5 (without PoE OUT)
Power supply mode	PoE
Input voltage range [V]	PoE: 802.3bt
Service port surge protection	6 kA in common mode

Item	Specification
PoE	Supported
Maximum PoE output power [W]	15.4 W
Maximum number of physical ports on the entire device	10GE (RJ45) x 1, 10M/100M/1000M/ 2.5GE/5GE/10GE auto-sensing GE (RJ45) x 1, 10M/100M/1000M auto-sensing 10GE optical port (SFP+), GE/10GE auto-sensing
Long-term operating temperature [°C(°F)]	–40°C to +65°C (–40°F to +149°F) (From 1800 m to 5000 m [5905.51 ft. to 16404.20 ft.], the maximum temperature of the device decreases by 1°C [1.8°F] for every 300 m [984.25 ft.] increase in altitude.)
Storage temperature [°C(°F)]	–40°C to +85°C (–40°F to +185°F)
Long-term operating relative humidity [RH]	0% RH to 100% RH
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ingress protection level (dustproof/ waterproof)	IP68
Ground	Ground
Antenna port surge protection [kA]	5 kA surge protection capability without external surge protection devices
Wind resistance	67 m/s
BLE	BLE5.2
Radio number	2/3
Operating frequency band	• 2.4GHz • 5GHz

Item	Specification
MIMO spatial streams	Dual-radio standard mode: - Radio 0 (2.4 GHz): 8x8:4 (A maximum of four antennas connected to RF ports A through D can be used to transmit and receive 802.11b packets.) - Radio 1 (5 GHz): 8x8:8 Triple-radio mode: - Radio 0 (2.4 GHz): 8x8:4 (A maximum of four antennas connected to RF ports A through D can be used to transmit and receive 802.11b packets.) - Radio 1 (5 GHz): 4x4:4 - Radio 2 (5 GHz): 4x4:4 Dual-radio + independent radio scanning mode: - Radio 0 (2.4 GHz): 4x4:4 - Radio 1 (5 GHz): 4x4:4
Wi-Fi standard	2.4 GHz: 802.11b/g/n/ax 5 GHz: 802.11a/n/ac/ac Wave 2/ax
Radio interface	External antenna
Antenna gain	BLE: 5 dBi
Maximum transmit power	2.4 GHz: 33 dBm 5 GHz: 33 dBm (Note: This is the total MIMO radio power, the same as: 2.4 GHz: 24 dBm/chain 5 GHz: 24 dBm/chain) BLE: < 10 dBm
Singal radio transmit power [dBm]	2.4G: -10 dBm to 24 dBm/chain 5G: -10 dBm to 24 dBm/chain
MTBF [year]	60.2 year
MTTR [hour]	0.5 hour
Frequency stability [ppm]	+/-20

Item	Specification
802.3bt power supply description	In 802.3bt Class 8 power supply mode: If the PoE OUT port is not used, no function is restricted. In standard dual-radio or three-radio mode, the 2.4 GHz radio supports 8x8:4 MIMO and a maximum of 20 MHz bandwidth. If the PoE OUT port (supporting only 802.3af) is used, the 10GE electrical port and the SFP+ optical port work as combo ports, and when one of them is working, the other is unavailable. The GE electrical port is available. Other functions are not restricted. In standard dual-radio or three-radio mode, the 2.4 GHz radio supports 8x8:4 MIMO and a maximum of 20 MHz bandwidth. In 802.3bt Class 6 power supply mode: If the PoE OUT port is not used: Wi-Fi: The transmit power of radios is not affected. • Standard dual-radio mode: 2.4 GHz (4x4) + 5 GHz (8x8) • Dual-radio + independent scanning radio mode: 2.4 GHz (4x4) + 5 GHz (4x4) + 5 GHz independent scanning radio • Triple-radio mode: 2.4 GHz (4x4) + 5 GHz (4x4) + 5 GHz (4x4) Wired network port: The 10GE electrical port and the SFP optical port work as combo ports. When one of them is working, the other is unavailable. The GE electrical port is available. Other ports: The PoE OUT port is not used. If the PoE OUT port is used: Wi-Fi: The radio power is self-adapted. • Standard dual-radio mode: 2.4 GHz (4x4) + 5 GHz (4x4) • Dual-radio + independent scanning radio mode: 2.4 GHz (4x4) + 5 GHz (4x4) + 5 GHz independent scanning radio

Item	Specification
	• Triple-radio mode: 2.4 GHz (2x2) + 5 GHz (2x2) + 5 GHz (2x2) Wired network port: The 10GE electrical port and SFP optical port work as combo ports. When one of them is working, the other is unavailable. The GE electrical port is available. Other ports: The PoE OUT port (supporting only 802.3af) is used.
802.3at power supply description	Wi-Fi: The radio power is self-adapted. • Standard dual-radio mode: 2.4 GHz (2x2) + 5 GHz (2x2) • Dual-radio + independent scanning radio mode: 2.4 GHz (2x2) + 5 GHz (2x2) + 5 GHz independent scanning radio • Triple-radio mode: 2.4 GHz (2x2) + 5 GHz (2x2) + 5 GHz (2x2) Wired network port: The rate of the 10GE electrical port rate is reduced to GE or lower and works with the SFP+ optical port as combo ports. When one of them is working, the other is unavailable. The GE electrical port is not available. Other ports: The PoE OUT port is unavailable.

6.6 AirEngine 6760R-51

6.6.1 Product Characteristics

Huawei AirEngine 6760R-51 is an outdoor AP in compliance with the Wi-Fi 6 standard. It stands out with excellent outdoor coverage performance, IP68 waterproof and dustproof design, and strong surge protection capability. The AP provides uplink optical and electrical ports, allowing customers to select different deployment modes and saving customers' investment. These strengths make AirEngine 6760R-51 ideal for high-density scenarios such as stadiums, squares, pedestrian streets, and amusement parks.

- The dual-radio mode is supported with 4x4:4 MIMO on 2.4 GHz and 4x4:4 MIMO on 5 GHz

- 1 x 5GE electrical port + 1 x GE electrical port + 1 x 10GE SFP+ optical port
- 6 kA surge protection for Ethernet ports, IP68 waterproof and dustproof level, and extended operating temperature range of -40°C to +65°C, meeting industrial-grade requirements
- The AirEngine 6760R-51 has built-in smart antennas to provide precise coverage for STAs, reduce interference, and improve signal quality.
- Bluetooth serial interface-based O&M through the built-in Bluetooth module by collaborating with CloudCampus APP; collaboration with a location server to accurately locate Bluetooth terminals and tags
- Working modes: Fit, Fat, and cloud management

6.6.2 Hardware Information (02353KCM-001)

Overview

Table 6-31 Basic information about the AirEngine 6760R-51

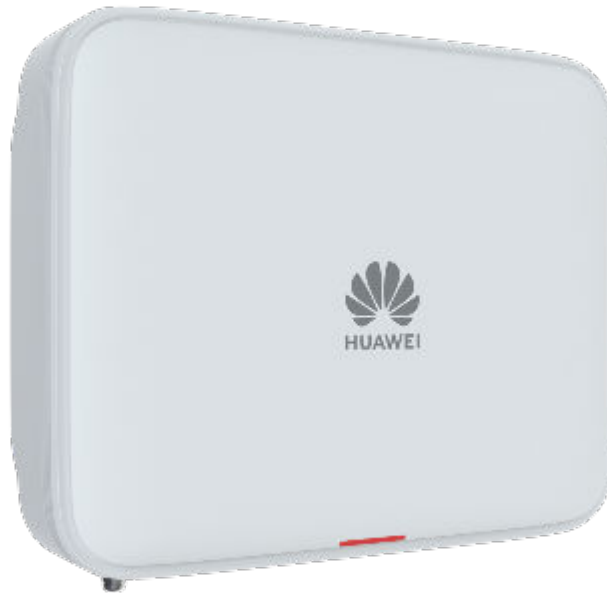
Item	Details
Description	AirEngine6760R-51 (11ax outdoor, 4+4 dual bands, smart antenna, BLE)
Part Number	02353KCM-001
Model	AirEngine 6760R-51
First supported version	V200R021C10SPC100

 NOTE

Due to different production batches, the device has multiple BOM codes. The software specifications are the same, but the initial supported versions are different. Hardware specifications such as weight and power consumption may be slightly different.

Appearance

Figure 6-22 Appearance of the AirEngine 6760R-51



Ports

Figure 6-23 Ports on the AirEngine 6760R-51



1	Ground screw	2	GE
3	5GE/PoE_IN	4	SFP+
5	Security slot	-	-

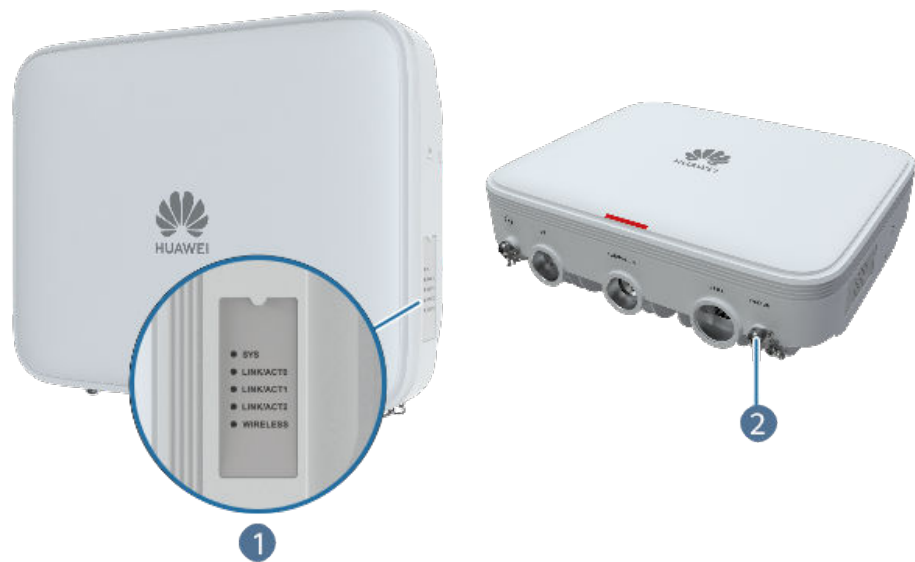
Table 6-32 Ports on the AirEngine 6760R-51

Port	Connector Type	Description	Available Components
5GE/PoE_IN	RJ45	Ethernet electrical port that supports 100M/1000M/2.5G/5G auto-sensing, connects to the wired Ethernet, and supports PoE input	Network cable

Port	Connector Type	Description	Available Components
SFP+	SFP+	Ethernet optical port, supporting 1 Gbit/s or 10 Gbit/s auto-sensing and working with a matching optical module	Optical module
GE	RJ45	Ethernet electrical port that supports 10M/100M/1000M auto-sensing and connects to the wired Ethernet.	Network cable

Indicators and Buttons

Figure 6-24 Indicators and buttons on the AirEngine 6760R-51



LINK/ACT0, LINK/ACT1, and LINK/ACT2 shows the link status of 5GE/PoE_IN, GE, SFP+ ports respectively.

The WIRELESS indicator shows the wireless link status, alternates between green (Radio 0 status) and yellow (Radio 2 status) at an interval of 20s. This mechanism is valid in V200R022C00 and later versions.

1	Indicator	2	Default
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Table 6-33 Indicators on the AirEngine 6760R-51

Silkscreen	Name	Color	Status	Description
SYS	System indicator	-	Off	The system is not running.
		Green	Steady on	• The system is just powered on. • The system is starting after a reset. • The upper-layer system is starting.
		Green	Steady on after blinking once	After the hardware reset is cleared and the software starts, the indicator blinks once. Then, the indicator is steady on until the bottom-layer system starts.
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP. This state is supported in V200R022C00 and later versions.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.2 Hz)	The AP is running properly, and the Ethernet connection is normal. For V200R022C00 and later versions, this state also indicates that no STA is associated with the AP.
		Green	Blinking once every 0.25s (4 Hz)	• The bottom-layer system is being started. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online in Fit or cloud management mode. The indicator remains in this state till the AP successfully goes online.
		Red	Steady on	The system is faulty.

Silkscreen	Name	Color	Status	Description
LINK/ACT0, LINK/ACT1, and LINK/ ACT2	Port indicator	Green	Steady on	The system is running properly, the Ethernet connection is normal, and no data is being transmitted.
		Green	Blinking	The system is running properly, the Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more quickly when more data is being transmitted.
WIRELESS	Radio status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Green (2G)/ Yellow (5G)	Steady on	The AP has STAs connected, but no data is being transmitted.

Silkscreen	Name	Color	Status	Description
		Green (2G)/ Yellow (5G)	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS	Radio status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Green (2G)/ Yellow (5G)	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Green (2G)/ Yellow (5G)	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Green (2G)/ Yellow (5G)	Steady on	The AP is connected to a Mesh network and has good signal strength.

Table 6-34 Buttons on the AirEngine 6760R-51

Silkscreen	Name	Description
Default	Reset button	- For versions earlier than V200R022C00SPC100, hold down the button for more than 3 seconds to restore the factory settings and restart the device. - For V200R022C00SPC100 and later versions, if you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the Fit mode, and restarts.

Technical Specifications

Table 6-35 Technical specifications of the AirEngine 6760R-51

Item	Specification
Installation Type	- Wall - Pole
Dimensions without packaging (H x W x D) [mm(in.)]	85 mm x 270 mm x 220 mm (3.35 in. x 10.63 in. x 8.66 in.)
Dimensions with packaging (H x W x D) [mm(in.)]	160 mm x 490 mm x 390 mm (6.30 in. x 19.29 in. x 15.35 in.)
Weight without packaging [kg(lb)]	3 kg (6.61 lb)
Weight with packaging [kg(lb)]	5 kg (11.02 lb)
Storage	NAND Flash 512 MB; NOR Flash 16 MB
Console port	BLE console
Maximum power consumption [W]	35.3 W
Maximum heat dissipation [BTU/hour]	120.4 BTU/hour

Item	Specification
Power supply mode	PoE
Input voltage range [V]	PoE: 802.3bt/at
Service port surge protection	6 kA in common mode
Maximum number of physical ports on the entire device	5GE (RJ45) x 1, 10M/100M/1000M/2.5GE/5GE auto-sensing GE (RJ45) x 1, 10M/100M/1000M auto-sensing 10GE optical port (SFP+), GE/10GE auto-sensing
Long-term operating temperature [°C(°F)]	–40°C to +65°C (–40°F to +149°F) (From 1800 m to 5000 m [5905.51 ft. to 16404.20 ft.], the maximum temperature of the device decreases by 1°C [1.8°F] for every 300 m [984.25 ft.] increase in altitude.)
Storage temperature [°C(°F)]	–40°C to +85°C (–40°F to +185°F)
Long-term operating relative humidity [RH]	0% RH to 100% RH
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ingress protection level (dustproof/waterproof)	IP68
Ground	Ground
Wind resistance	67 m/s
BLE	BLE5.2
Radio number	2
Operating frequency band	• 2.4GHz • 5GHz
MIMO spatial streams	Radio 0 (2.4 GHz): 4x4 Radio 1 (5 GHz): 4x4
Wi-Fi standard	2.4 GHz: 802.11b/g/n/ax 5 GHz: 802.11a/n/ac/ac Wave 2/ax
Radio interface	Built-in directional antennas

Item	Specification
Antenna gain	2.4G: 10 dBi 5G: 11 dBi BLE: 5 dBi
Beamwidth of the built-in antenna [degrees]	2.4 GHz: - Horizontal plane: 60° - Vertical plane: 40° 5 GHz: - Horizontal plane: 60° - Vertical plane: 20°
Maximum transmit power	2.4 GHz: 30 dBm 5 GHz: 30 dBm (Note: This is the total MIMO radio power, the same as: 2.4 GHz: 24 dBm/chain 5 GHz: 24 dBm/chain) BLE: < 10 dBm
Singal radio transmit power [dBm]	2.4G: -10 dBm to 24 dBm/chain 5G: -10 dBm to 24 dBm/chain
MTBF [year]	91.9 year
MTTR [hour]	0.5 hour
Frequency stability [ppm]	+/-20
802.3bt power supply description	No function is limited.
802.3at power supply description	Wi-Fi: 2.4 GHz (2x2) + 5 GHz (2x2), without affecting the transmit power of radios; Wired network port: The rate of the 5GE electrical port is reduced to GE or lower. The 5GE electrical port and the SFP+ optical port work as combo ports, and when one of them is working, the other is unavailable. The GE electrical port is unavailable.

6.6.3 Hardware Information (02353KCM)

Overview

Table 6-36 Basic information about the AirEngine 6760R-51

Item	Details
Description	AirEngine6760R-51(11ax outdoor,4+4 dual bands,smart antenna,BLE)
Part Number	02353KCM
Model	AirEngine 6760R-51
First supported version	V200R019C10

NOTE

Due to different production batches, the device has multiple BOM codes. The software specifications are the same, but the initial supported versions are different. Hardware specifications such as weight and power consumption may be slightly different.

Appearance

Figure 6-25 Appearance of the AirEngine 6760R-51



Ports

Figure 6-26 Ports on the AirEngine 6760R-51



1	Ground screw	2	GE
3	5GE/PoE_IN	4	SFP+
5	Security slot	-	-

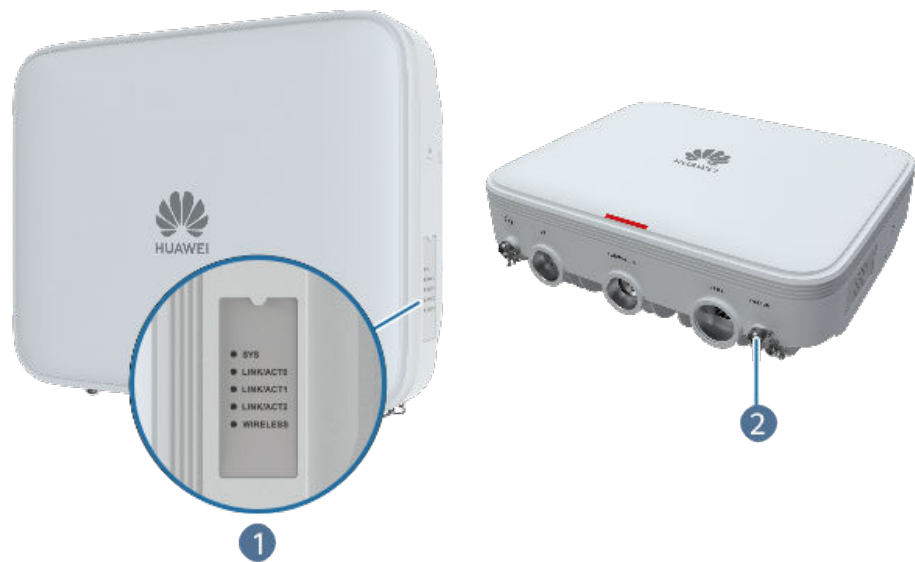
Table 6-37 Ports on the AirEngine 6760R-51

Port	Connector Type	Description	Available Components
5GE/PoE_IN	RJ45	Ethernet electrical port that supports 100M/1000M/2.5G/5G auto-sensing, connects to the wired Ethernet, and supports PoE input	Network cable

Port	Connector Type	Description	Available Components
SFP+	SFP+	Ethernet optical port, supporting 1 Gbit/s or 10 Gbit/s auto-sensing and working with a matching optical module	Optical module
GE	RJ45	Ethernet electrical port that supports 10M/100M/1000M auto-sensing and connects to the wired Ethernet.	Network cable

Indicators and Buttons

Figure 6-27 Indicators and buttons on the AirEngine 6760R-51



LINK/ACT0, LINK/ACT1, and LINK/ACT2 shows the link status of 5GE/PoE_IN, GE, SFP+ ports respectively.

The WIRELESS indicator shows the wireless link status, alternates between green (Radio 0 status) and yellow (Radio 2 status) at an interval of 20s. This mechanism is valid in V200R022C00 and later versions.

1	Indicator	2	Default
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Table 6-38 Indicators on the AirEngine 6760R-51

Silkscreen	Name	Color	Status	Description
SYS	System indicator	-	Off	The system is not running.
		Green	Steady on	• The system is just powered on. • The system is starting after a reset. • The upper-layer system is starting.
		Green	Steady on after blinking once	After the hardware reset is cleared and the software starts, the indicator blinks once. Then, the indicator is steady on until the bottom-layer system starts.
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP. This state is supported in V200R022C00 and later versions.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.2 Hz)	The AP is running properly, and the Ethernet connection is normal. For V200R022C00 and later versions, this state also indicates that no STA is associated with the AP.
		Green	Blinking once every 0.25s (4 Hz)	• The bottom-layer system is being started. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online in Fit or cloud management mode. The indicator remains in this state till the AP successfully goes online.
		Red	Steady on	The system is faulty.

Silkscreen	Name	Color	Status	Description
LINK/ACT0, LINK/ACT1, and LINK/ ACT2	Port indicator	Green	Steady on	The system is running properly, the Ethernet connection is normal, and no data is being transmitted.
		Green	Blinking	The system is running properly, the Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more quickly when more data is being transmitted.
WIRELESS	Radio status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Green (2G)/ Yellow (5G)	Steady on	The AP has STAs connected, but no data is being transmitted.

Silkscreen	Name	Color	Status	Description
		Green (2G)/ Yellow (5G)	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS	Radio status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Green (2G)/ Yellow (5G)	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Green (2G)/ Yellow (5G)	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Green (2G)/ Yellow (5G)	Steady on	The AP is connected to a Mesh network and has good signal strength.

Table 6-39 Buttons on the AirEngine 6760R-51

Silkscreen	Name	Description
Default	Reset button	- For versions earlier than V200R022C00SPC100, hold down the button for more than 3 seconds to restore the factory settings and restart the device. - For V200R022C00SPC100 and later versions, if you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the Fit mode, and restarts.

Technical Specifications

Table 6-40 Technical specifications of the AirEngine 6760R-51

Item	Specification
Installation Type	- Wall - Pole
Dimensions without packaging (H x W x D) [mm(in.)]	85 mm x 270 mm x 220 mm (3.35 in. x 10.63 in. x 8.66 in.)
Dimensions with packaging (H x W x D) [mm(in.)]	160 mm x 490 mm x 390 mm (6.30 in. x 19.29 in. x 15.35 in.)
Weight without packaging [kg(lb)]	3 kg (6.61 lb)
Weight with packaging [kg(lb)]	5 kg (11.02 lb)
Storage	NAND Flash 512 MB; NOR Flash 16 MB
Console port	BLE console
Maximum power consumption [W]	35.3 W
Maximum heat dissipation [BTU/hour]	120.4 BTU/hour

Item	Specification
Power supply mode	PoE
Input voltage range [V]	PoE: 802.3bt/at
Service port surge protection	6 kA in common mode
Maximum number of physical ports on the entire device	5GE (RJ45) x 1, 10M/100M/1000M/2.5GE/5GE auto-sensing GE (RJ45) x 1, 10M/100M/1000M auto-sensing 10GE optical port (SFP+), GE/10GE auto-sensing
Long-term operating temperature [°C(°F)]	–40°C to +65°C (–40°F to +149°F) (From 1800 m to 5000 m [5905.51 ft. to 16404.20 ft.], the maximum temperature of the device decreases by 1°C [1.8°F] for every 300 m [984.25 ft.] increase in altitude.)
Storage temperature [°C(°F)]	–40°C to +85°C (–40°F to +185°F)
Long-term operating relative humidity [RH]	0% RH to 100% RH
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ingress protection level (dustproof/waterproof)	IP68
Ground	Ground
Wind resistance	67 m/s
BLE	BLE5.2
Radio number	2
Operating frequency band	2.4GHz 5GHz
MIMO spatial streams	Radio 0 (2.4 GHz): 4x4 Radio 1 (5 GHz): 4x4
Wi-Fi standard	2.4 GHz: 802.11b/g/n/ax 5 GHz: 802.11a/n/ac/ac Wave 2/ax
Radio interface	Built-in directional antennas

Item	Specification
Antenna gain	2.4G: 10 dBi 5G: 11 dBi BLE: 5 dBi
Beamwidth of the built-in antenna [degrees]	2.4 GHz: - Horizontal plane: 60° - Vertical plane: 40° 5 GHz: - Horizontal plane: 60° - Vertical plane: 20°
Maximum transmit power	2.4 GHz: 30 dBm 5 GHz: 30 dBm (Note: This is the total MIMO radio power, the same as: 2.4 GHz: 24 dBm/chain 5 GHz: 24 dBm/chain) BLE: < 10 dBm
Singal radio transmit power [dBm]	2.4G: -10 dBm to 24 dBm/chain 5G: -10 dBm to 24 dBm/chain
MTBF [year]	91.9 year
MTTR [hour]	0.5 hour
Frequency stability [ppm]	+/-20
802.3bt power supply description	No function is limited.
802.3at power supply description	Wi-Fi: 2.4 GHz (2x2) + 5 GHz (2x2), without affecting the transmit power of radios; Wired network port: The rate of the 5GE electrical port is reduced to GE or lower. The 5GE electrical port and the SFP+ optical port work as combo ports, and when one of them is working, the other is unavailable. The GE electrical port is unavailable.

6.7 AirEngine 6760R-51E

6.7.1 Product Characteristics

Huawei AirEngine 6760R-51E is an outdoor AP in compliance with the Wi-Fi 6 standard. It stands out with excellent outdoor coverage performance, IP68 waterproof and dustproof design, and strong surge protection capability. The AP provides uplink optical and electrical ports, allowing customers to select different deployment modes and saving customers' investment. These strengths make AirEngine 6760R-51E ideal for high-density scenarios such as stadiums, squares, pedestrian streets, and amusement parks.

- The dual-radio mode is supported with 4x4:4 MIMO on 2.4 GHz and 4x4:4 MIMO on 5 GHz
- 1 x 5GE electrical port + 1 x GE electrical port + 1 x 10GE SFP+ optical port
- 6 kA surge protection for Ethernet ports, IP68 waterproof and dustproof level, and extended operating temperature range of -40°C to +65°C, meeting industrial-grade requirements
- The external antenna port of the AirEngine 6760R-51E supports 5 kA surge protection, eliminating the need to install an external surge protector, simplifying installation, and reducing the overall cost.
- Bluetooth serial interface-based O&M through the built-in Bluetooth module by collaborating with CloudCampus APP; collaboration with a location server to accurately locate Bluetooth terminals and tags
- Working modes: Fit, Fat, and cloud management

6.7.2 Hardware Information (02353KCN-001)

Overview

Table 6-41 Basic information about the AirEngine 6760R-51E

Item	Details
Description	AirEngine6760R-51E(11ax outdoor,4+4 dual bands,external antenna,BLE)
Part Number	02353KCN-001
Model	AirEngine 6760R-51E
First supported version	V200R021C10SPC100

 NOTE

Due to different production batches, the device has multiple BOM codes. The software specifications are the same, but the initial supported versions are different. Hardware specifications such as weight and power consumption may be slightly different.

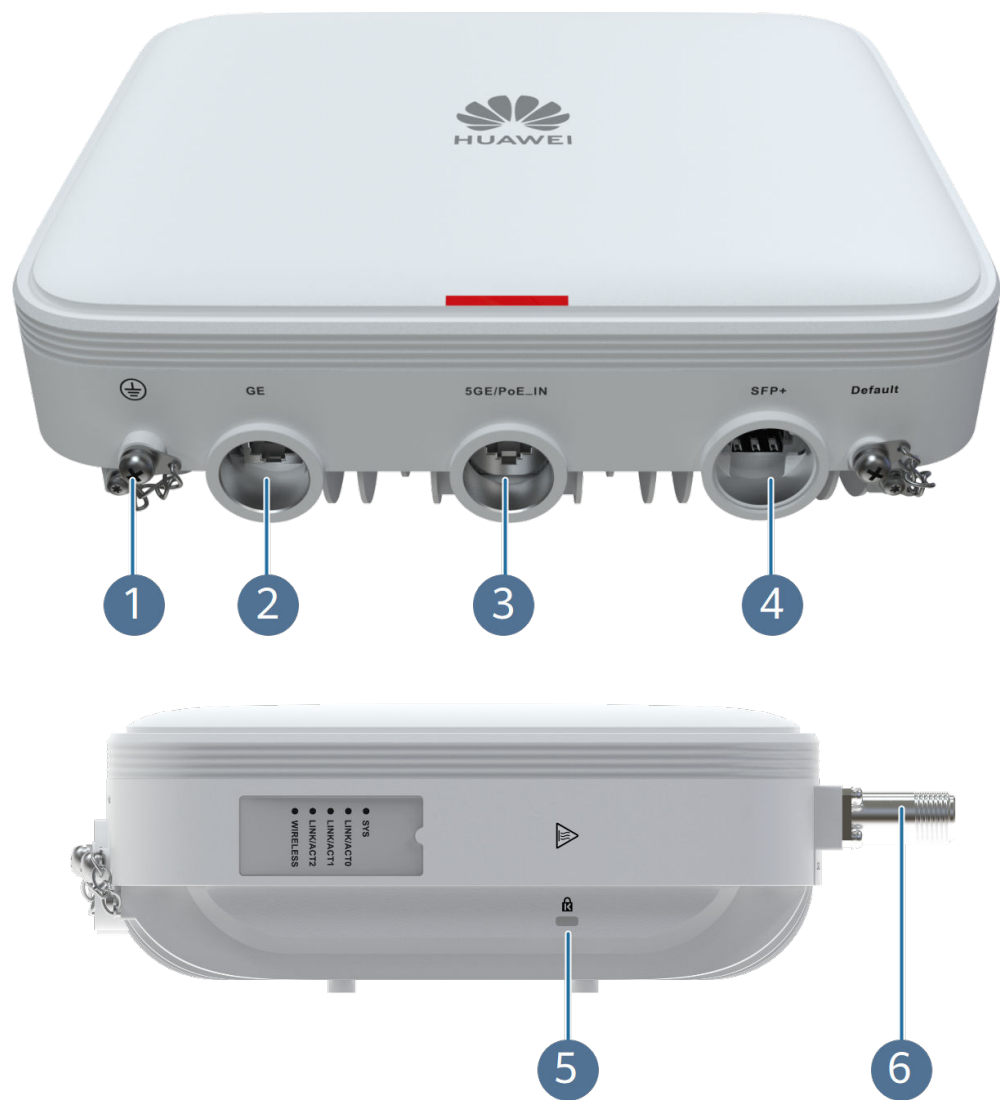
Appearance

Figure 6-28 Appearance of the AirEngine 6760R-51E



Ports

Figure 6-29 Ports on the AirEngine 6760R-51E



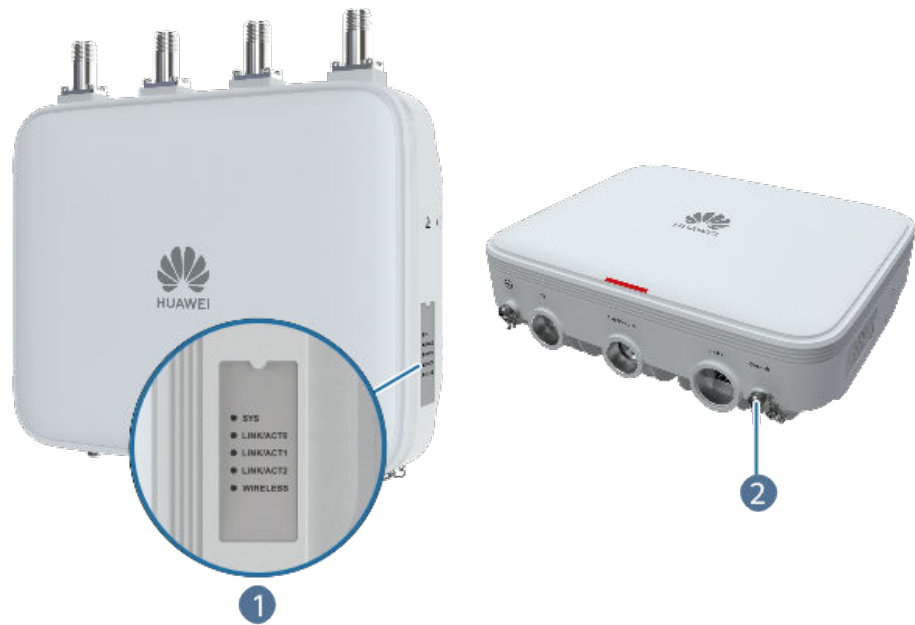
1	Ground screw	2	GE
3	5GE/PoE_IN	4	SFP+
5	Security slot	6	Antenna port

Table 6-42 Ports on the AirEngine 6760R-51E

Port	Connector Type	Description	Available Components
5GE/PoE_IN	RJ45	Ethernet electrical port that supports 100M/1000M/2.5G/5G auto-sensing, connects to the wired Ethernet, and supports PoE input	Network cable
SFP+	SFP+	Ethernet optical port, supporting 1 Gbit/s or 10 Gbit/s auto-sensing and working with a matching optical module	Optical module
GE	RJ45	Ethernet electrical port that supports 10/100/1000M auto-sensing and connects to the wired Ethernet.	Network cable
Antenna port	N-Type Female	Connects to an external antenna for transmitting and receiving service signals, and supports dual-band (2.4 GHz + 5 GHz) antennas.	Antenna

Indicators and Buttons

Figure 6-30 Indicators and buttons on the AirEngine 6760R-51E



LINK/ACT0, LINK/ACT1, and LINK/ACT2 shows the link status of 5GE/PoE_IN, GE, SFP+ ports respectively.

The WIRELESS indicator shows the wireless link status, alternates between green (Radio 0 status) and yellow (Radio 2 status) at an interval of 20s. This mechanism is valid in V200R022C00 and later versions.

1	Indicator	2	Default
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Table 6-43 Indicators on the AirEngine 6760R-51E

Silkscreen	Name	Color	Status	Description
SYS	System indicator	-	Off	The system is not running.

Silkscreen	Name	Color	Status	Description
		Green	Steady on	• The system is just powered on. • The system is starting after a reset. • The upper-layer system is starting.
		Green	Steady on after blinking once	After the hardware reset is cleared and the software starts, the indicator blinks once. Then, the indicator is steady on until the bottom-layer system starts.
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP. This state is supported in V200R022C00 and later versions.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.2 Hz)	The AP is running properly, and the Ethernet connection is normal. For V200R022C00 and later versions, this state also indicates that no STA is associated with the AP.
		Green	Blinking once every 0.25s (4 Hz)	• The bottom-layer system is being started. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online in Fit or cloud management mode. The indicator remains in this state till the AP successfully goes online.
		Red	Steady on	The system is faulty.

Silkscreen	Name	Color	Status	Description
LINK/ACT0, LINK/ACT1, and LINK/ ACT2	Port indicator	Green	Steady on	The system is running properly, the Ethernet connection is normal, and no data is being transmitted.
		Green	Blinking	The system is running properly, the Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more quickly when more data is being transmitted.
WIRELESS	Radio status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Green (2G)/ Yellow (5G)	Steady on	The AP has STAs connected, but no data is being transmitted.

Silkscreen	Name	Color	Status	Description
		Green (2G)/ Yellow (5G)	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS	Radio status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Green (2G)/ Yellow (5G)	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Green (2G)/ Yellow (5G)	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Green (2G)/ Yellow (5G)	Steady on	The AP is connected to a Mesh network and has good signal strength.

Table 6-44 Buttons on the AirEngine 6760R-51E

Silkscreen	Name	Description
Default	Reset button	- For versions earlier than V200R022C00SPC100, hold down the button for more than 3 seconds to restore the factory settings and restart the device. - For V200R022C00SPC100 and later versions, if you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the Fit mode, and restarts.

Technical Specifications

Table 6-45 Technical specifications of the AirEngine 6760R-51E

Item	Specification
Installation Type	- Wall - Pole
Dimensions without packaging (H x W x D) [mm(in.)]	85 mm x 270 mm x 220 mm (3.35 in. x 10.63 in. x 8.66 in.)
Weight without packaging [kg(lb)]	3.1 kg (6.83 lb)
Storage	NAND Flash 512 MB; NOR Flash 16 MB
Console port	BLE console
Maximum power consumption [W]	35.3 W
Maximum heat dissipation [BTU/hour]	120.4 BTU/hour
Power supply mode	PoE
Input voltage range [V]	PoE: 802.3bt/at
Service port surge protection	6 kA in common mode

Item	Specification
Maximum number of physical ports on the entire device	5GE (RJ45) x 1, 10M/100M/1000M/2.5GE/5GE auto-sensing GE (RJ45) x 1, 10M/100M/1000M auto-sensing 10GE optical port (SFP+), GE/10GE auto-sensing
Long-term operating temperature [°C(°F)]	–40°C to +65°C (–40°F to +149°F) (From 1800 m to 5000 m [5905.51 ft. to 16404.20 ft.], the maximum temperature of the device decreases by 1°C [1.8°F] for every 300 m [984.25 ft.] increase in altitude.)
Storage temperature [°C(°F)]	–40°C to +85°C (–40°F to +185°F)
Long-term operating relative humidity [RH]	0% RH to 100% RH
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ingress protection level (dustproof/waterproof)	IP68
Ground	Ground
Antenna port surge protection [kA]	5 kA surge protection capability without external surge protection devices
Wind resistance	67 m/s
BLE	BLE5.2
Radio number	2
Operating frequency band	• 2.4GHz • 5GHz
MIMO spatial streams	Radio 0 (2.4 GHz): 4x4 Radio 1 (5 GHz): 4x4
Wi-Fi standard	2.4 GHz: 802.11b/g/n/ax 5 GHz: 802.11a/n/ac/ac Wave 2/ax
Radio interface	External antenna
Antenna gain	BLE: 5 dBi

Item	Specification
Maximum transmit power	2.4 GHz: 30 dBm 5 GHz: 30 dBm (Note: This is the total MIMO radio power, the same as: 2.4 GHz: 24 dBm/chain 5 GHz: 24 dBm/chain) BLE: < 10 dBm
Singal radio transmit power [dBm]	2.4G: -10 dBm to 24 dBm/chain 5G: -10 dBm to 24 dBm/chain
MTBF [year]	91.9 year
MTTR [hour]	0.5 hour
Frequency stability [ppm]	+/-20
802.3bt power supply description	No function is limited.
802.3at power supply description	Wi-Fi: 2.4 GHz (2x2) + 5 GHz (2x2), without affecting the transmit power of radios; Wired network port: The rate of the 5GE electrical port is reduced to GE or lower. The 5GE electrical port and the SFP+ optical port work as combo ports, and when one of them is working, the other is unavailable. The GE electrical port is unavailable.

6.7.3 Hardware Information (02353KCN)

Overview

Table 6-46 Basic information about the AirEngine 6760R-51E

Item	Details
Description	AirEngine6760R-51E(11ax outdoor,4+4 dual bands,external antenna,BLE)
Part Number	02353KCN
Model	AirEngine 6760R-51E
First supported version	V200R019C10

 NOTE

Due to different production batches, the device has multiple BOM codes. The software specifications are the same, but the initial supported versions are different. Hardware specifications such as weight and power consumption may be slightly different.

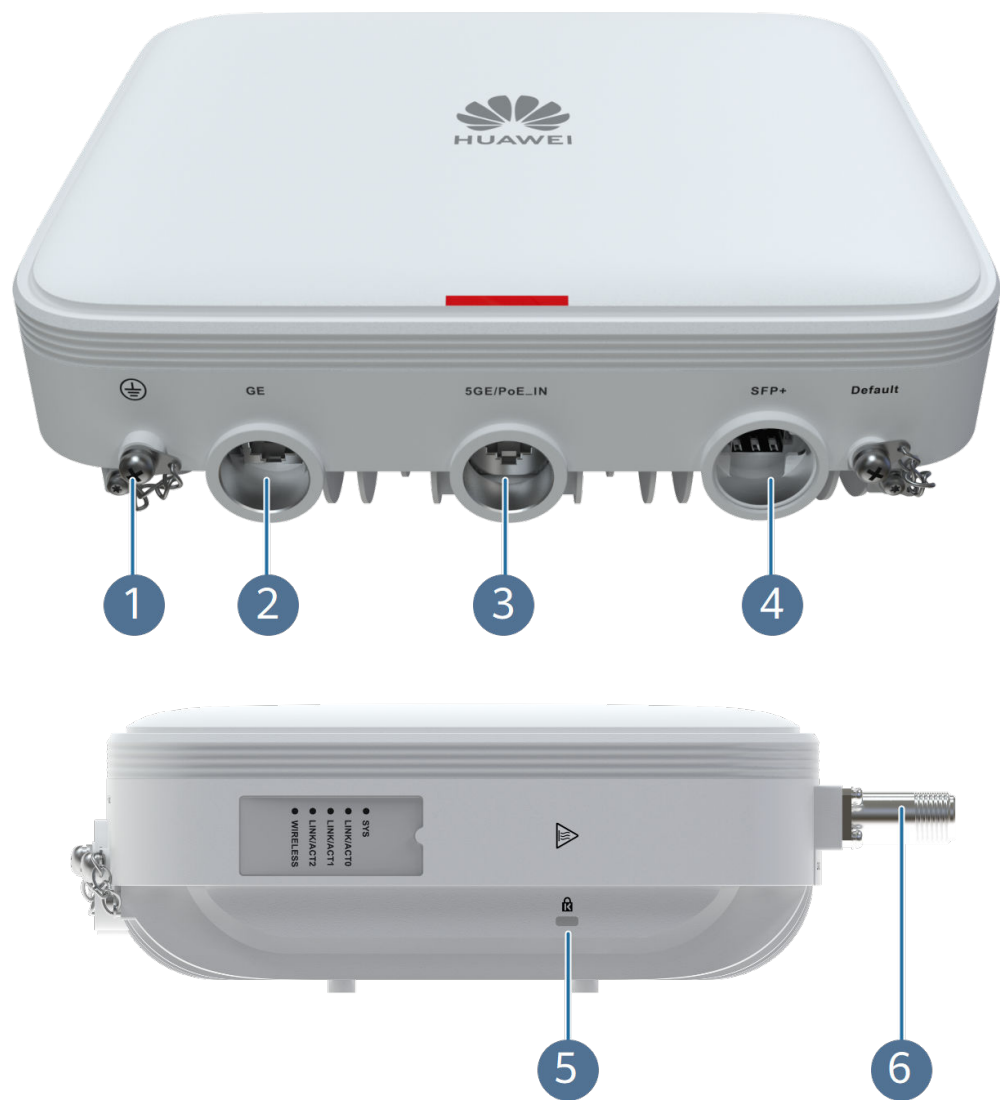
Appearance

Figure 6-31 Appearance of the AirEngine 6760R-51E



Ports

Figure 6-32 Ports on the AirEngine 6760R-51E



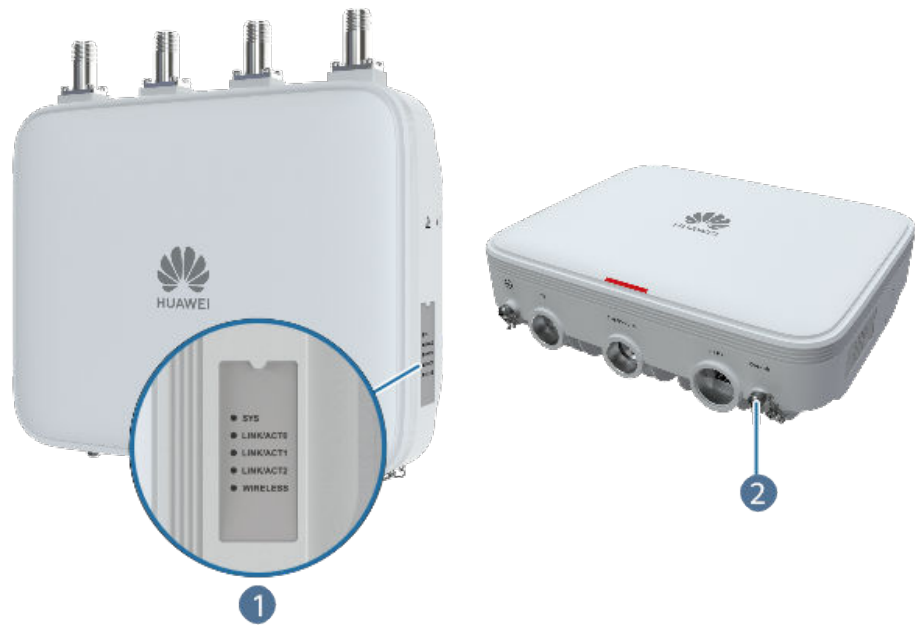
1	Ground screw	2	GE
3	5GE/PoE_IN	4	SFP+
5	Security slot	6	Antenna port

Table 6-47 Ports on the AirEngine 6760R-51E

Port	Connector Type	Description	Available Components
5GE/PoE_IN	RJ45	Ethernet electrical port that supports 100M/1000M/2.5G/5G auto-sensing, connects to the wired Ethernet, and supports PoE input	Network cable
SFP+	SFP+	Ethernet optical port, supporting 1 Gbit/s or 10 Gbit/s auto-sensing and working with a matching optical module	Optical module
GE	RJ45	Ethernet electrical port that supports 10/100/1000M auto-sensing and connects to the wired Ethernet.	Network cable
Antenna port	N-Type Female	Connects to an external antenna for transmitting and receiving service signals, and supports dual-band (2.4 GHz + 5 GHz) antennas.	Antenna

Indicators and Buttons

Figure 6-33 Indicators and buttons on the AirEngine 6760R-51E



LINK/ACT0, LINK/ACT1, and LINK/ACT2 shows the link status of 5GE/PoE_IN, GE, SFP+ ports respectively.

The WIRELESS indicator shows the wireless link status, alternates between green (Radio 0 status) and yellow (Radio 2 status) at an interval of 20s. This mechanism is valid in V200R022C00 and later versions.

1	Indicator	2	Default
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Table 6-48 Indicators on the AirEngine 6760R-51E

Silkscreen	Name	Color	Status	Description
SYS	System indicator	-	Off	The system is not running.

Silkscreen	Name	Color	Status	Description
		Green	Steady on	• The system is just powered on. • The system is starting after a reset. • The upper-layer system is starting.
		Green	Steady on after blinking once	After the hardware reset is cleared and the software starts, the indicator blinks once. Then, the indicator is steady on until the bottom-layer system starts.
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP. This state is supported in V200R022C00 and later versions.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.2 Hz)	The AP is running properly, and the Ethernet connection is normal. For V200R022C00 and later versions, this state also indicates that no STA is associated with the AP.
		Green	Blinking once every 0.25s (4 Hz)	• The bottom-layer system is being started. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online in Fit or cloud management mode. The indicator remains in this state till the AP successfully goes online.
		Red	Steady on	The system is faulty.

Silkscreen	Name	Color	Status	Description
LINK/ACT0, LINK/ACT1, and LINK/ ACT2	Port indicator	Green	Steady on	The system is running properly, the Ethernet connection is normal, and no data is being transmitted.
		Green	Blinking	The system is running properly, the Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more quickly when more data is being transmitted.
WIRELESS	Radio status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Green (2G)/ Yellow (5G)	Steady on	The AP has STAs connected, but no data is being transmitted.

Silkscreen	Name	Color	Status	Description
		Green (2G)/ Yellow (5G)	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS	Radio status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Green (2G)/ Yellow (5G)	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Green (2G)/ Yellow (5G)	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Green (2G)/ Yellow (5G)	Steady on	The AP is connected to a Mesh network and has good signal strength.

Table 6-49 Buttons on the AirEngine 6760R-51E

Silkscreen	Name	Description
Default	Reset button	- For versions earlier than V200R022C00SPC100, hold down the button for more than 3 seconds to restore the factory settings and restart the device. - For V200R022C00SPC100 and later versions, if you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the Fit mode, and restarts.

Technical Specifications

Table 6-50 Technical specifications of the AirEngine 6760R-51E

Item	Specification
Installation Type	- Wall - Pole
Dimensions without packaging (H x W x D) [mm(in.)]	85 mm x 270 mm x 220 mm (3.35 in. x 10.63 in. x 8.66 in.)
Weight without packaging [kg(lb)]	3.1 kg (6.83 lb)
Storage	NAND Flash 512 MB; NOR Flash 16 MB
Console port	BLE console
Maximum power consumption [W]	35.3 W
Maximum heat dissipation [BTU/hour]	120.4 BTU/hour
Power supply mode	PoE
Input voltage range [V]	PoE: 802.3bt/at
Service port surge protection	6 kA in common mode

Item	Specification
Maximum number of physical ports on the entire device	5GE (RJ45) x 1, 10M/100M/1000M/2.5GE/5GE auto-sensing GE (RJ45) x 1, 10M/100M/1000M auto-sensing 10GE optical port (SFP+), GE/10GE auto-sensing
Long-term operating temperature [°C(°F)]	–40°C to +65°C (–40°F to +149°F) (From 1800 m to 5000 m [5905.51 ft. to 16404.20 ft.], the maximum temperature of the device decreases by 1°C [1.8°F] for every 300 m [984.25 ft.] increase in altitude.)
Storage temperature [°C(°F)]	–40°C to +85°C (–40°F to +185°F)
Long-term operating relative humidity [RH]	0% RH to 100% RH
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ingress protection level (dustproof/waterproof)	IP68
Ground	Ground
Antenna port surge protection [kA]	5 kA surge protection capability without external surge protection devices
Wind resistance	67 m/s
BLE	BLE5.2
Radio number	2
Operating frequency band	2.4GHz 5GHz
MIMO spatial streams	Radio 0 (2.4 GHz): 4x4 Radio 1 (5 GHz): 4x4
Wi-Fi standard	2.4 GHz: 802.11b/g/n/ax 5 GHz: 802.11a/n/ac/ac Wave 2/ax
Radio interface	External antenna
Antenna gain	BLE: 5 dBi

Item	Specification
Maximum transmit power	2.4 GHz: 30 dBm 5 GHz: 30 dBm (Note: This is the total MIMO radio power, the same as: 2.4 GHz: 24 dBm/chain 5 GHz: 24 dBm/chain) BLE: < 10 dBm
Singal radio transmit power [dBm]	2.4G: -10 dBm to 24 dBm/chain 5G: -10 dBm to 24 dBm/chain
MTBF [year]	91.9 year
MTTR [hour]	0.5 hour
Frequency stability [ppm]	+/-20
802.3bt power supply description	No function is limited.
802.3at power supply description	Wi-Fi: 2.4 GHz (2x2) + 5 GHz (2x2), without affecting the transmit power of radios; Wired network port: The rate of the 5GE electrical port is reduced to GE or lower. The 5GE electrical port and the SFP+ optical port work as combo ports, and when one of them is working, the other is unavailable. The GE electrical port is unavailable.

6.8 AirEngine 5761R-11

6.8.1 Product Characteristics

Huawei AirEngine 5761R-11 is an outdoor AP in compliance with the Wi-Fi 6 standard (802.11ax). It stands out with excellent outdoor coverage performance, IP68 waterproof and dustproof design, and strong surge protection capability. The AP provides uplink optical and electrical ports, allowing customers to select different deployment modes and saving customers' investment. These strengths make AirEngine 5761R-11 ideal for high-density scenarios such as stadiums, squares, pedestrian streets, and amusement parks.

- The AirEngine 5761R-11 has built-in directional antennas and works simultaneously on the 2.4 GHz (2x2 MIMO) and 5 GHz (2x2 MIMO) frequency bands.
- 1 x GE electrical port + 1 x SFP optical port

- 6 kA surge protection for Ethernet ports, IP68 waterproof and dustproof level, and extended operating temperature range of -40°C to +65°C, meeting industrial-grade requirements
- Bluetooth serial interface-based O&M through the built-in Bluetooth module by collaborating with CloudCampus APP; collaboration with a location server to accurately locate Bluetooth terminals and tags
- Working modes: Fit, Fat, and cloud management

6.8.2 Hardware Information

Overview

Table 6-51 Basic information about the AirEngine 5761R-11

Item	Details
Description	AirEngine5761R-11(11ax outdoor,2+2 dual bands,directional antenna,BLE)
Part Number	02354DKS
Model	AirEngine 5761R-11
First supported version	V200R021C00

Appearance

Figure 6-34 Appearance of the AirEngine 5761R-11



Ports

Figure 6-35 Ports on the AirEngine 5761R-11



1	Ground screw	2	GE/PoE_IN
3	SFP	4	Security slot

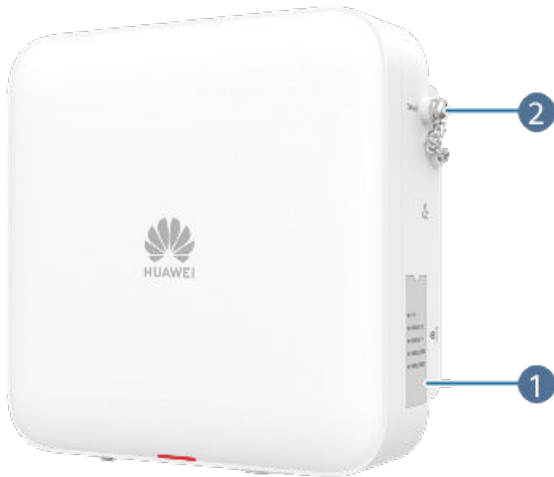
Table 6-52 Ports on the AirEngine 5761R-11

Port	Connector Type	Description	Available Components
GE/PoE_IN	RJ45	Ethernet electrical port that supports 10/100/1000M auto-sensing, connects to the wired Ethernet, and supports PoE input	Network cable

Port	Connector Type	Description	Available Components
SFP	SFP	Ethernet optical port, supporting 1000 Mbit/s and working with a matching optical transceiver.	Optical module

Indicators and Buttons

Figure 6-36 Indicators and buttons on the AirEngine 5761R-11



WIRELESS0 and WIRELESS1 show the wireless link status of the Radio 0 and Radio 1 interfaces, respectively. The signal strength mode is valid in V200R022C00 and later versions.

1	Indicator	2	Default
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Table 6-53 Indicators on the AirEngine 5761R-11

Silkscreen	Name	Color	Status	Description
SYS	System indicator	-	Off	The system is not running.

Silkscreen	Name	Color	Status	Description
		Green	Steady on	• The system is just powered on. • The system is starting after a reset. • The upper-layer system is starting.
		Green	Steady on after blinking once	After the hardware reset is cleared and the software starts, the indicator blinks once. Then, the indicator is steady on until the bottom-layer system starts.
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP. This state is supported in V200R022C00 and later versions.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.2 Hz)	The AP is running properly, and the Ethernet connection is normal. For V200R022C00 and later versions, this state also indicates that no STA is associated with the AP.
		Green	Blinking once every 0.25s (4 Hz)	• The bottom-layer system is being started. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online in Fit or cloud management mode. The indicator remains in this state till the AP successfully goes online.
		Red	Steady on	The system is faulty.

Silkscreen	Name	Color	Status	Description
LINK/ACT0	GE electrical port indicator	Green	Steady on	The port is running properly, the Ethernet connection is normal, and no data is being transmitted.
		Green	Blinking	The port is running properly, the Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more quickly when more data is being transmitted.
		-	Off	The port is in link-down state.
LINK/ACT1	SFP optical port indicator	Green	Steady on	The port is running properly, the Ethernet connection is normal, and no data is being transmitted.

Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is running properly, the Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more quickly when more data is being transmitted.
		-	Off	The port is in link-down state.
WIRELESS0	Radio 0 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Green	Steady on	The AP has STAs connected, but no data is being transmitted.
		Green	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.

Silkscreen	Name	Color	Status	Description
WIRELESS0	Radio 0 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Green	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Green	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Green	Steady on	The AP is connected to a Mesh network and has good signal strength.
WIRELESS1	Radio 1 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Yellow	Steady on	The AP has STAs connected, but no data is being transmitted.

Silkscreen	Name	Color	Status	Description
		Yellow	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS1	Radio 1 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Yellow	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Yellow	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Yellow	Steady on	The AP is connected to a Mesh network and has good signal strength.

Table 6-54 Buttons on the AirEngine 5761R-11

Silkscreen	Name	Description
Default	Reset button	- For versions earlier than V200R022C00SPC100, hold down the button for more than 3 seconds to restore the factory settings and restart the device. - For V200R022C00SPC100 and later versions, if you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the Fit mode, and restarts.

Technical Specifications

Table 6-55 Technical specifications of the AirEngine 5761R-11

Item	Specification
Installation Type	- Wall - Pole
Dimensions without packaging (H x W x D) [mm(in.)]	69 mm x 200 mm x 200 mm (2.72 in. x 7.87 in. x 7.87 in.)
Dimensions with packaging (H x W x D) [mm(in.)]	160 mm x 470 mm x 390 mm (6.30 in. x 18.50 in. x 15.35 in.)
Weight without packaging [kg(lb)]	1.91 kg (4.21 lb)
Weight with packaging [kg(lb)]	3.73 kg (8.22 lb)
Storage	NAND Flash 512 MB
Console port	BLE console
Maximum power consumption [W]	17.7 W
Maximum heat dissipation [BTU/hour]	60.4 BTU/hour
Power supply mode	PoE

Item	Specification
Input voltage range [V]	PoE: 802.3at/af
Service port surge protection	6 kA in common mode
Maximum number of physical ports on the entire device	GE (RJ45) x 1, 10M/100M/1000M auto-sensing GE optical port (SFP)
Long-term operating temperature [°C(°F)]	–40°C to +65°C (–40°F to +149°F) (If the altitude is in the range of 1800 m to 5000 m, the temperature decreases by 1°C or 1.8°F every time the altitude increases by 300 m.)
Storage temperature [°C(°F)]	–40°C to +85°C (–40°F to +185°F)
Long-term operating relative humidity [RH]	0% RH to 100% RH
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ingress protection level (dustproof/waterproof)	IP68
Ground	Ground
Antenna port surge protection [kA]	N/A
Wind resistance	67 m/s
BLE	BLE5.2
Radio number	2
Operating frequency band	• 2.4GHz • 5GHz
MIMO spatial streams	Radio 0 (2.4 GHz): 2x2 Radio 1 (5 GHz): 2x2
Wi-Fi standard	2.4G: 802.11b/g/n/ax 5G: 802.11a/n/ac/ac Wave 2/ax
Radio interface	Built-in directional antennas
Antenna gain	2.4G: 10 dBi 5G: 11 dBi BLE: 5 dBi

Item	Specification
Beamwidth of the built-in antenna [degrees]	2.4 GHz: - Horizontal plane: 65° - Vertical plane: 40° 5 GHz: - Horizontal plane: 65° - Vertical plane: 20°
Maximum transmit power	2.4G: 28 dBm (Max) 5G: 27 dBm (Max) NOTE This is the total MIMO radio power, which is the same as: 2.4G: 25 dBm/chain (Max) 5G: 24 dBm/chain (Max) BLE: < 10 dBm
Singal radio transmit power [dBm]	2.4G: -10 dBm to 25 dBm/chain 5G: -10 dBm to 24 dBm/chain
MTBF [year]	123 year
MTTR [hour]	0.5 hour
Frequency stability [ppm]	+/-20
802.3bt power supply description	No function is limited.
802.3at power supply description	No function is limited.
802.3af power supply description	Wi-Fi: 2.4 GHz (2x2) + 5 GHz (2x2). The maximum combined power is adjusted to 23 dBm (2.4 GHz) and 23 dBm (5 GHz). Wired network port: The SFP optical port and GE/PoE_IN work as combo ports, and only one of them is working at a time. If both of them are enabled, the optical port takes effect preferentially.

6.9 AirEngine 5761R-11E

6.9.1 Product Characteristics

Huawei AirEngine 5761R-11E is an outdoor AP in compliance with the Wi-Fi 6 standard (802.11ax). It stands out with excellent outdoor coverage performance,

IP68 waterproof and dustproof design, and strong surge protection capability. The AP provides uplink optical and electrical ports, allowing customers to select different deployment modes and saving customers' investment. These strengths make AirEngine 5761R-11E ideal for high-density scenarios such as stadiums, squares, pedestrian streets, and amusement parks.

- The AirEngine 5761R-11E uses external antennas and supports the following radio modes:
 - 2.4G+5G mode: 2.4 GHz (2x2 MIMO) and 5 GHz (2x2 MIMO).
 - Dual-5G mode: 5 GHz (2x2 MIMO) and 5 GHz (2x2 MIMO).
- 1 x GE electrical port + 1 x SFP optical port
- 6 kA surge protection for Ethernet ports, IP68 waterproof and dustproof level, and extended operating temperature range of -40°C to +65°C, meeting industrial-grade requirements
- The external antenna port of the AirEngine 5761R-11E supports 5 kA surge protection, eliminating the need to install an external surge protector, simplifying installation, and reducing the overall cost.
- Bluetooth serial interface-based O&M through the built-in Bluetooth module by collaborating with CloudCampus APP; collaboration with a location server to accurately locate Bluetooth terminals and tags
- Working modes: Fit, Fat, and cloud management

6.9.2 Hardware Information

Overview

Table 6-56 Basic information about the AirEngine 5761R-11E

Item	Details
Description	AirEngine5761R-11E(11ax outdoor,2+2/2 dual bands,external antenna,BLE)
Part Number	02354DKT
Model	AirEngine 5761R-11E
First supported version	V200R021C00

Appearance

Figure 6-37 Appearance of the AirEngine 5761R-11E



Ports

Figure 6-38 Ports on the AirEngine 5761R-11E



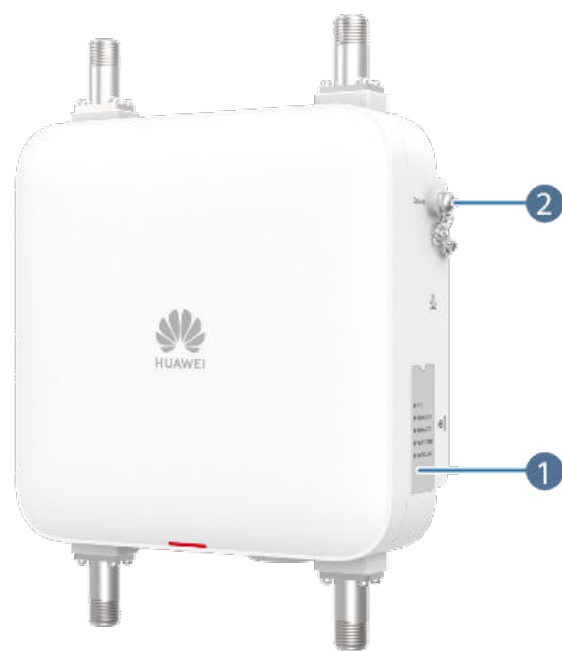
1	Ground screw	2	GE/PoE_IN
3	SFP	4	5 GHz antenna port
5	Security slot	6	2.4 GHz/5 GHz antenna port

Table 6-57 Ports on the AirEngine 5761R-11E

Port	Connector Type	Description	Available Components
GE/PoE_IN	RJ45	Ethernet electrical port that supports 10/100/1000M auto-sensing, connects to the wired Ethernet, and supports PoE input	Network cable
SFP	SFP	Ethernet optical port, supporting 1000 Mbit/s and working with a matching optical transceiver.	Optical module
5 GHz antenna port	N-Type Female	Connects to a 5 GHz antenna to transmit and receive service signals.	Antenna
2.4 GHz/5 GHz antenna port	N-Type Female	Connects to a 2.4 GHz or 5 GHz antenna to transmit and receive service signals.	Antenna

Indicators and Buttons

Figure 6-39 Indicators and buttons on the AirEngine 5761R-11E



WIRELESS0 and WIRELESS1 show the wireless link status of the Radio 0 and Radio 1 interfaces, respectively. The signal strength mode is valid in V200R022C00 and later versions.

1	Indicator	2	Default
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Table 6-58 Indicators on the AirEngine 5761R-11E

Silkscreen	Name	Color	Status	Description
SYS	System indicator	-	Off	The system is not running.

Silkscreen	Name	Color	Status	Description
		Green	Steady on	• The system is just powered on. • The system is starting after a reset. • The upper-layer system is starting.
		Green	Steady on after blinking once	After the hardware reset is cleared and the software starts, the indicator blinks once. Then, the indicator is steady on until the bottom-layer system starts.
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP. This state is supported in V200R022C00 and later versions.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.2 Hz)	The AP is running properly, and the Ethernet connection is normal. For V200R022C00 and later versions, this state also indicates that no STA is associated with the AP.
		Green	Blinking once every 0.25s (4 Hz)	• The bottom-layer system is being started. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online in Fit or cloud management mode. The indicator remains in this state till the AP successfully goes online.
		Red	Steady on	The system is faulty.

Silkscreen	Name	Color	Status	Description
LINK/ACT0	GE electrical port indicator	Green	Steady on	The port is running properly, the Ethernet connection is normal, and no data is being transmitted.
		Green	Blinking	The port is running properly, the Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more quickly when more data is being transmitted.
		-	Off	The port is in link-down state.
LINK/ACT1	SFP optical port indicator	Green	Steady on	The port is running properly, the Ethernet connection is normal, and no data is being transmitted.

Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is running properly, the Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more quickly when more data is being transmitted.
		-	Off	The port is in link-down state.
WIRELESS0	Radio 0 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Green (2G)/ Yellow (5G)	Steady on	The AP has STAs connected, but no data is being transmitted.
		Green (2G)/ Yellow (5G)	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.

Silkscreen	Name	Color	Status	Description
WIRELESS0	Radio 0 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Green (2G)/ Yellow (5G)	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Green (2G)/ Yellow (5G)	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Green (2G)/ Yellow (5G)	Steady on	The AP is connected to a Mesh network and has good signal strength.
WIRELESS1	Radio 1 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Yellow	Steady on	The AP has STAs connected, but no data is being transmitted.

Silkscreen	Name	Color	Status	Description
		Yellow	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS1	Radio 1 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Yellow	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Yellow	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Yellow	Steady on	The AP is connected to a Mesh network and has good signal strength.

Table 6-59 Buttons on the AirEngine 5761R-11E

Silkscreen	Name	Description
Default	Reset button	- For versions earlier than V200R022C00SPC100, hold down the button for more than 3 seconds to restore the factory settings and restart the device. - For V200R022C00SPC100 and later versions, if you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the Fit mode, and restarts.

Technical Specifications

Table 6-60 Technical specifications of the AirEngine 5761R-11E

Item	Specification
Installation Type	- Wall - Pole
Dimensions without packaging (H x W x D) [mm(in.)]	69 mm x 200 mm x 200 mm (2.72 in. x 7.87 in. x 7.87 in.)
Dimensions with packaging (H x W x D) [mm(in.)]	160 mm x 470 mm x 390 mm (6.30 in. x 18.50 in. x 15.35 in.)
Weight without packaging [kg(lb)]	2.04 kg (4.50 lb)
Weight with packaging [kg(lb)]	4.12 kg (9.08 lb)
Storage	NAND Flash 512 MB
Console port	BLE console
Maximum power consumption [W]	19.6 W
Maximum heat dissipation [BTU/hour]	66.9 BTU/hour
Power supply mode	PoE

Item	Specification
Input voltage range [V]	PoE: 802.3at/af
Service port surge protection	6 kA in common mode
Maximum number of physical ports on the entire device	GE (RJ45) x 1, 10M/100M/1000M auto-sensing GE optical port (SFP)
Long-term operating temperature [°C(°F)]	–40°C to +65°C (–40°F to +149°F) (If the altitude is in the range of 1800 m to 5000 m, the temperature decreases by 1°C or 1.8°F every time the altitude increases by 300 m.)
Storage temperature [°C(°F)]	–40°C to +85°C (–40°F to +185°F)
Long-term operating relative humidity [RH]	0% RH to 100% RH
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ingress protection level (dustproof/waterproof)	IP68
Ground	Ground
Antenna port surge protection [kA]	5 kA surge protection capability without external surge protection devices
Wind resistance	67 m/s
BLE	BLE5.2
Radio number	2
Operating frequency band	2.4GHz 5GHz
MIMO spatial streams	Radio 0 (2.4 GHz/5 GHz): 2x2 Radio 1 (5 GHz): 2x2
Wi-Fi standard	2.4G: 802.11b/g/n/ax 5G: 802.11a/n/ac/ac Wave 2/ax
Radio interface	External antenna
Antenna gain	BLE: 5 dBi

Item	Specification
Maximum transmit power	2.4G: 28 dBm (Max) 5G: 27 dBm (Max) NOTE This is the total MIMO radio power, which is the same as: 2.4G: 25 dBm/chain (Max) 5G: 24 dBm/chain (Max) BLE: < 10 dBm
Singal radio transmit power [dBm]	2.4G: -10 dBm to 25 dBm/chain 5G: -10 dBm to 24 dBm/chain
MTBF [year]	108 year
MTTR [hour]	0.5 hour
Frequency stability [ppm]	+/-20
802.3bt power supply description	No function is limited.
802.3at power supply description	No function is limited.
802.3af power supply description	Wi-Fi: 2.4 GHz + 5 GHz dual-radio mode: 2.4 GHz (2x2) + 5 GHz (2x2). The maximum combined transmit power is adjusted to 23 dBm (2.4 GHz radio) and 23 dBm (5 GHz radio). - Dual-5 GHz radio mode: 5 GHz (2x2) + 5 GHz (2x2). The maximum combined transmit power is adjusted to 23 dBm (both 5 GHz radios) . Wired network port: The GE/PoE_IN port and the SFP optical port cannot work simultaneously. Only one of them works at a time, and the optical port takes precedence.

6.10 AirEngine 5561R-11E

6.10.1 Product Characteristics

AirEngine 5561R-11E is Huawei's Wi-Fi 6 (802.11ax) outdoor access points (APs). AirEngine 5561R-11E provides services on 2.4 GHz (2x2 MIMO) and 5 GHz (2x2 MIMO) frequency bands or 5 GHz (2x2 MIMO) +5 GHz (2x2 MIMO) frequency

bands. This outdoor AP stands out with excellent outdoor coverage performance, IP68 waterproof and dustproof design, and strong surge protection capability. The AirEngine 5561R-11E provides uplink optical and electrical ports, allowing customers to select different deployment modes and saving customers' investment. These strengths make Huawei's Wi-Fi 6 outdoor AP ideal for high-density scenarios such as stadiums, squares, pedestrian streets, and amusement parks.

- The AirEngine 5561R-11E uses external antennas and supports the following radio modes:
 - 2.4G+5G mode: 2.4 GHz (2x2 MIMO) and 5 GHz (2x2 MIMO).
 - Dual-5G mode: 5 GHz (2x2 MIMO) and 5 GHz (2x2 MIMO).
- 1 x GE electrical port + 1 x SFP optical port
- 6 kA surge protection for Ethernet ports, IP68 waterproof and dustproof level, and extended operating temperature range of -40°C to +65°C, meeting industrial-grade requirements
- The external antenna port of the AirEngine 5561R-11E supports 5 kA surge protection, eliminating the need to install an external surge protector, simplifying installation, and reducing the overall cost
- Bluetooth serial interface-based O&M through the built-in Bluetooth module by collaborating with CloudCampus APP
- Working modes: Fit, Fat, and cloud management

6.10.2 Hardware Information

Overview

Table 6-61 Basic information about the AirEngine 5561R-11E

Item	Details
Description	AirEngine5561R-11E(11ax outdoor,2+2/2 dual bands,external antenna,BLE)
Part Number	02355XGB
Model	AirEngine 5561R-11E
First supported version	V200R023C10

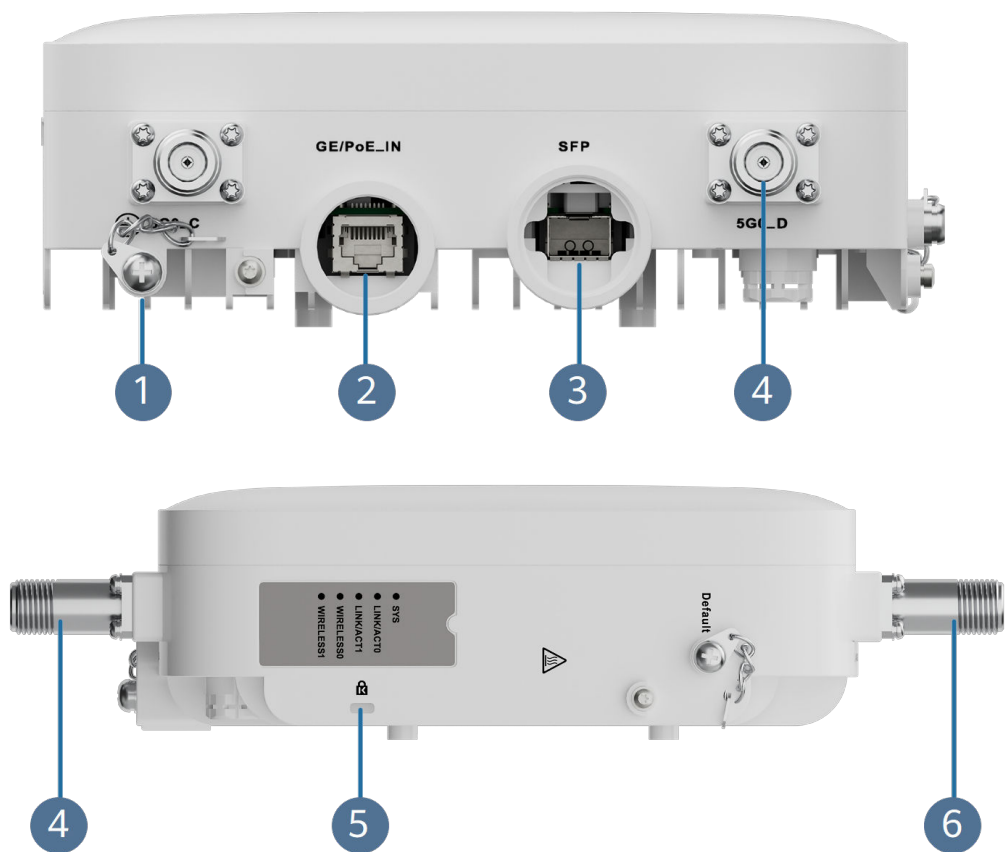
Appearance

Figure 6-40 Appearance of the AirEngine 5561R-11E



Ports

Figure 6-41 Ports on the AirEngine 5561R-11E



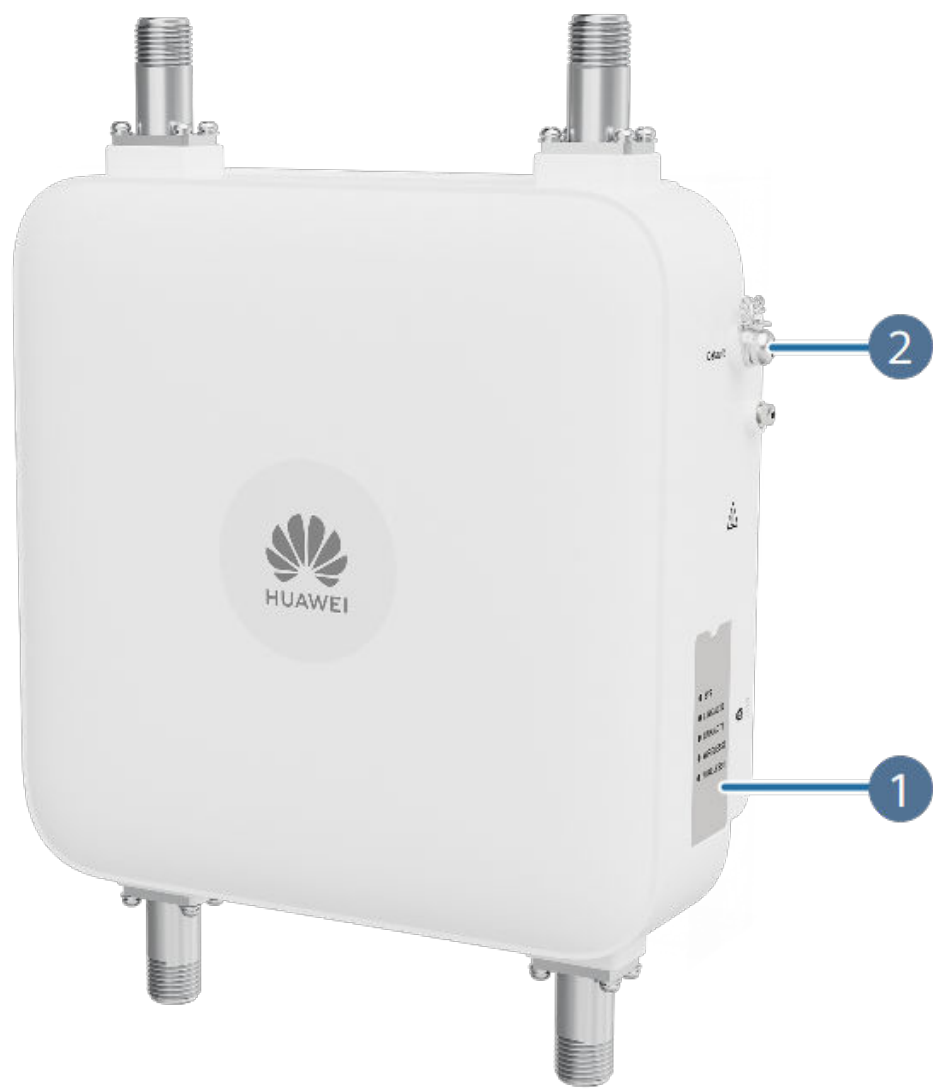
1	Ground screw	2	GE/PoE_IN
3	SFP	4	5 GHz antenna port
5	Security slot	6	2.4 GHz/5 GHz antenna port

Table 6-62 Ports on the AirEngine 5561R-11E

Port	Connector Type	Description	Available Components
GE/PoE_IN	RJ45	Ethernet electrical port that supports 10/100/1000M auto-sensing, connects to the wired Ethernet, and supports PoE input	Network cable
SFP	SFP	Ethernet optical port, supporting 2.5 Gbit/s or 10 Gbit/s auto-sensing and working with a matching optical module.	Optical module
5 GHz antenna port	N-Type Female	Connects to a 5 GHz antenna to transmit and receive service signals.	Antenna
2.4 GHz/5 GHz antenna port	N-Type Female	Connects to a 2.4 GHz or 5 GHz antenna to transmit and receive service signals.	Antenna

Indicators and Buttons

Figure 6-42 Indicators and buttons on the AirEngine 5561R-11E



1	Indicator	2	Default
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Table 6-63 Indicators on the AirEngine 5561R-11E

Silkscreen	Name	Color	Status	Description
SYS	System indicator	-	Off	The system is not running.

Silkscreen	Name	Color	Status	Description
		Green	Steady on	• The system is just powered on. • The system is starting after a reset. • The upper-layer system is starting.
		Green	Steady on after blinking once	After the hardware reset is cleared and the software starts, the indicator blinks once. Then, the indicator is steady on until the bottom-layer system starts.
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP. This state is supported in V200R022C00 and later versions.

Silkscreen	Name	Color	Status	Description
		Green	Slow blinking (0.2 Hz)	The AP is running properly, and the Ethernet connection is normal. For V200R022C00 and later versions, this state also indicates that no STA is associated with the AP.
		Green	Blinking once every 0.25s (4 Hz)	• The bottom-layer system is being started. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online in Fit or cloud management mode. The indicator remains in this state till the AP successfully goes online.
		Red	Steady on	The system is faulty.

Silkscreen	Name	Color	Status	Description
LINK/ACT0	GE electrical port indicator	Green	Steady on	The port is running properly, the Ethernet connection is normal, and no data is being transmitted.
		Green	Blinking	The port is running properly, the Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more quickly when more data is being transmitted.
		-	Off	The port is in link-down state.
LINK/ACT1	SFP optical port indicator	Green	Steady on	The port is running properly, the Ethernet connection is normal, and no data is being transmitted.

Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is running properly, the Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more quickly when more data is being transmitted.
		-	Off	The port is in link-down state.
WIRELESS0	Radio 0 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Green (2G)/ Yellow (5G)	Steady on	The AP has STAs connected, but no data is being transmitted.
		Green (2G)/ Yellow (5G)	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.

Silkscreen	Name	Color	Status	Description
WIRELESS0	Radio 0 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Green (2G)/ Yellow (5G)	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Green (2G)/ Yellow (5G)	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Green (2G)/ Yellow (5G)	Steady on	The AP is connected to a Mesh network and has good signal strength.
WIRELESS1	Radio 1 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Yellow	Steady on	The AP has STAs connected, but no data is being transmitted.

Silkscreen	Name	Color	Status	Description
		Yellow	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS1	Radio 1 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Yellow	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Yellow	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Yellow	Steady on	The AP is connected to a Mesh network and has good signal strength.

Table 6-64 Buttons on the AirEngine 5561R-11E

Silkscreen	Name	Description
Default	Reset button	If you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the Fit mode, and restarts.

Technical Specifications

Table 6-65 Technical specifications of the AirEngine 5561R-11E

Item	Specification
Installation Type	• Wall • Pole
Dimensions without packaging (H x W x D) [mm(in.)]	69 mm x 200 mm x 200 mm (2.72 in. x 7.87 in. x 7.87 in.)
Dimensions with packaging (H x W x D) [mm(in.)]	160 mm x 470 mm x 390 mm (6.30 in. x 18.50 in. x 15.35 in.)
Weight without packaging [kg(lb)]	2.04 kg (4.50 lb)
Weight with packaging [kg(lb)]	4.12 kg (9.08 lb)
Storage	NAND Flash 512 MB
Console port	BLE console
Maximum power consumption [W]	19.6 W
Maximum heat dissipation [BTU/hour]	66.9 BTU/hour
Power supply mode	PoE
Input voltage range [V]	PoE: 802.3at/af
Service port surge protection	6 kA in common mode
Maximum number of physical ports on the entire device	GE (RJ45) x 1, 10M/100M/1000M auto-sensing GE optical port (SFP)

Item	Specification
Long-term operating temperature [°C(°F)]	–40°C to +65°C (–40°F to +149°F) (From 1800 m to 5000 m [5905.51 ft. to 16404.20 ft.], the maximum temperature of the device decreases by 1°C [1.8°F] for every 300 m [984.25 ft.] increase in altitude.)
Storage temperature [°C(°F)]	–40°C to +85°C (–40°F to +185°F)
Long-term operating relative humidity [RH]	0% RH to 100% RH, non-condensing
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ingress protection level (dustproof/waterproof)	IP68
Ground	Ground
Antenna port surge protection [kA]	5 kA surge protection capability without external surge protection devices
Wind resistance	67 m/s
BLE	BLE5.2
Radio number	2
Operating frequency band	2.4GHz 5GHz
MIMO spatial streams	Radio 0 (2.4 GHz/5 GHz): 2x2 Radio 1 (5 GHz): 2x2
Wi-Fi standard	2.4 GHz: 802.11b/g/n/ax 5 GHz: 802.11a/n/ac/ac Wave 2/ax
Radio interface	External antenna
Antenna gain	BLE: 5 dBi
Maximum transmit power	2.4G: 28 dBm (Max) 5G: 27 dBm (Max) NOTE This is the total MIMO radio power, which is the same as: 2.4G: 25 dBm/chain (Max) 5G: 24 dBm/chain (Max) BLE: < 10 dBm

Item	Specification
Singal radio transmit power [dBm]	2.4G: -10 dBm to 25 dBm/chain 5G: -10 dBm to 24 dBm/chain
MTBF [year]	108 year
MTTR [hour]	0.5 hour
Frequency stability [ppm]	+/-20
802.3bt power supply description	The power supply mode is negotiated to 802.3at, and no function is restricted.
802.3at power supply description	No function is limited.
802.3af power supply description	Wi-Fi: 2.4 GHz + 5 GHz dual-radio mode: 2.4 GHz (2x2) + 5 GHz (2x2). The maximum combined transmit power is adjusted to 23 dBm (2.4 GHz radio) and 23 dBm (5 GHz radio). - Dual-5 GHz radio mode: 5 GHz (2x2) + 5 GHz (2x2). The maximum combined transmit power is adjusted to 23 dBm (both 5 GHz radios) . Wired network port: The GE/PoE_IN port and the SFP optical port cannot work simultaneously. Only one of them works at a time, and the optical port takes precedence.

6.11 AP761

6.11.1 Product Characteristics

AP761 is an outdoor AP in compliance with the Wi-Fi 6 standard (802.11ax). It stands out with excellent outdoor coverage performance, IP68 waterproof and dustproof design, and strong surge protection capability. The AP provides uplink optical and electrical ports, allowing customers to select different deployment modes and saving customers' investment. These strengths make AP761 ideal for high-density scenarios such as stadiums, squares, pedestrian streets, and amusement parks.

- The AP761 has built-in directional antennas and works simultaneously on the 2.4 GHz (2x2 MIMO) and 5 GHz (2x2 MIMO) frequency bands.

- 1 x GE electrical port + 1 x SFP optical port
- 6 kA surge protection for Ethernet ports, IP68 waterproof and dustproof level, and extended operating temperature range of -40°C to +65°C, meeting industrial-grade requirements
- Bluetooth serial interface-based O&M through the built-in Bluetooth module by collaborating with CloudCampus APP; collaboration with a location server to accurately locate Bluetooth terminals and tags
- Working modes: Fit, Fat, and cloud management

6.11.2 Hardware Information

Overview

Table 6-66 Basic information about the AP761

Item	Details
Description	AP761 (11ax outdoor, 2+2 dual bands, built-in antenna, BLE)
Part Number	02355VFB
Model	AP761
First supported version	V200R023C10

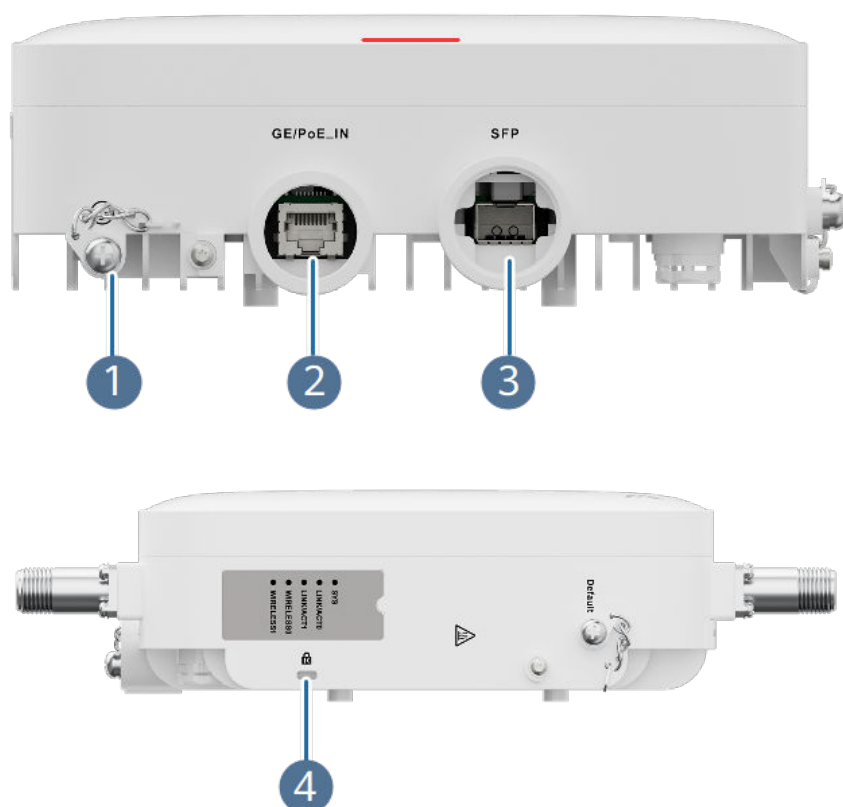
Appearance

Figure 6-43 Appearance of the AP761



Ports

Figure 6-44 Ports on the AP761



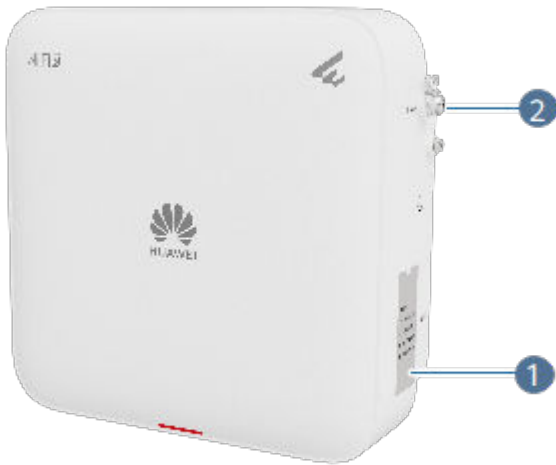
1	Ground screw	2	GE/PoE_IN
3	SFP	4	Security slot

Table 6-67 Ports on the AP761

Port	Connector Type	Description	Available Components
GE/PoE_IN	RJ45	Ethernet electrical port that supports 10/100/1000M auto-sensing, connects to the wired Ethernet, and supports PoE input	Network cable
SFP	SFP	Ethernet optical port, supporting 1000 Mbit/s and working with a matching optical transceiver.	Optical module

Indicators and Buttons

Figure 6-45 Indicators and buttons on the AP761



1	Indicator	2	Default
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Table 6-68 Indicators on the AP761

Silkscreen	Name	Color	Status	Description
SYS	System indicator	-	Off	The system is not running.
		Green	Steady on	• The system is just powered on. • The system is starting after a reset. • The upper-layer system is starting.
		Green	Steady on after blinking once	After the hardware reset is cleared and the software starts, the indicator blinks once. Then, the indicator is steady on until the bottom-layer system starts.
		Green	Slow blinking (0.5 Hz)	The AP is running properly, the Ethernet connection is normal, and STAs are associated with the AP.
		Green	Slow blinking (0.2 Hz)	The AP is running properly, the Ethernet connection is normal, and no STA is associated with the AP.

Silkscreen	Name	Color	Status	Description
		Green	Blinking once every 0.25s (4 Hz)	• The bottom-layer system is being started. • The software is being upgraded. • After the software is loaded and started, the AP requests to go online in Fit or cloud management mode. The indicator remains in this state till the AP successfully goes online.
		Red	Steady on	The system is faulty.
LINK/ACT0	GE electrical port indicator	Green	Steady on	The port is running properly, the Ethernet connection is normal, and no data is being transmitted.

Silkscreen	Name	Color	Status	Description
		Green	Blinking	The port is running properly, the Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more quickly when more data is being transmitted.
		-	Off	The port is in link-down state.
LINK/ACT1	SFP optical port indicator	Green	Steady on	The port is running properly, the Ethernet connection is normal, and no data is being transmitted.
		Green	Blinking	The port is running properly, the Ethernet connection is normal, and the AP is transmitting data. The indicator blinks more quickly when more data is being transmitted.
		-	Off	The port is in link-down state.

Silkscreen	Name	Color	Status	Description
WIRELESS0	Radio 0 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Green	Steady on	The AP has STAs connected, but no data is being transmitted.
		Green	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS0	Radio 0 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Green	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.
		Green	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.

Silkscreen	Name	Color	Status	Description
		Green	Steady on	The AP is connected to a Mesh network and has good signal strength.
WIRELESS1	Radio 1 status indicator (service traffic mode)	-	Off	Radios or all associated VAPs are disabled, and no STA is connected to the AP.
		Yellow	Steady on	The AP has STAs connected, but no data is being transmitted.
		Yellow	Blinking	The AP has STAs connected and is transmitting data traffic. The indicator blinks more quickly when more data is being transmitted.
WIRELESS1	Radio 1 status indicator (signal strength mode)	-	Off	The AP is not connected to a Mesh network or has extremely poor signal strength.
		Yellow	Slow blinking (0.5 Hz)	The AP is connected to a Mesh network and has poor signal strength.

Silkscreen	Name	Color	Status	Description
		Yellow	Blinking once every 0.25s (4 Hz)	The AP is connected to a Mesh network and has medium signal strength.
		Yellow	Steady on	The AP is connected to a Mesh network and has good signal strength.

Table 6-69 Buttons on the AP761

Silkscreen	Name	Description
Default	Reset button	If you press the button, the device resets; if you hold down the button for more than 6 seconds, the device restores the factory settings, switches to the cloud mode, and restarts.

Technical Specifications

Table 6-70 Technical specifications of the AP761

Item	Specification
Installation Type	- Wall - Pole
Dimensions without packaging (H x W x D) [mm(in.)]	69 mm x 200 mm x 200 mm (2.72 in. x 7.87 in. x 7.87 in.)
Dimensions with packaging (H x W x D) [mm(in.)]	160 mm x 470 mm x 390 mm (6.30 in. x 18.50 in. x 15.35 in.)
Weight without packaging [kg(lb)]	1.91 kg (4.21 lb)
Weight with packaging [kg(lb)]	3.73 kg (8.22 lb)

Item	Specification
Storage	NAND Flash 512 MB
Console port	BLE console
Maximum power consumption [W]	17.7 W
Maximum heat dissipation [BTU/hour]	60.4 BTU/hour
Power supply mode	PoE
Input voltage range [V]	PoE: 802.3at/af
Service port surge protection	6 kA in common mode
Maximum number of physical ports on the entire device	GE (RJ45) x 1, 10M/100M/1000M auto-sensing GE optical port (SFP)
Long-term operating temperature [°C(°F)]	–40°C to +65°C (–40°F to +149°F) (From 1800 m to 5000 m [5905.51 ft. to 16404.20 ft.], the maximum temperature of the device decreases by 1°C [1.8°F] for every 300 m [984.25 ft.] increase in altitude.)
Storage temperature [°C(°F)]	–40°C to +85°C (–40°F to +185°F)
Long-term operating relative humidity [RH]	0% RH to 100% RH
Long-term operating altitude [m(ft.)]	–60 m to +5000 m (–196.85 ft to +16404.20 ft)
Atmospheric pressure [kPa]	53kPa - 106kPa ETSI 300 019-2-3
Ingress protection level (dustproof/waterproof)	IP68
Ground	Ground
Antenna port surge protection [kA]	N/A
Wind resistance	67 m/s
BLE	BLE5.2
Radio number	2
Operating frequency band	• 2.4GHz • 5GHz
MIMO spatial streams	Radio 0 (2.4 GHz): 2x2 Radio 1 (5 GHz): 2x2
Wi-Fi standard	2.4 GHz: 802.11b/g/n/ax 5 GHz: 802.11a/n/ac/ac Wave 2/ax

Item	Specification
Radio interface	Built-in directional antennas
Antenna gain	2.4G: 10 dBi 5G: 11 dBi BLE: 5 dBi
Beamwidth of the built-in antenna [degrees]	2.4 GHz: - Horizontal plane: 65° - Vertical plane: 40° 5 GHz: - Horizontal plane: 65° - Vertical plane: 20°
Maximum transmit power	2.4G: 28 dBm (Max) 5G: 27 dBm (Max) NOTE This is the total MIMO radio power, which is the same as: 2.4G: 25 dBm/chain (Max) 5G: 24 dBm/chain (Max) BLE: < 10 dBm
Singal radio transmit power [dBm]	2.4G: -10 dBm to 25 dBm/chain 5G: -10 dBm to 24 dBm/chain
MTBF [year]	123 year
MTTR [hour]	0.5 hour
Frequency stability [ppm]	+/-20
802.3bt power supply description	No function is limited.
802.3at power supply description	No function is limited.
802.3af power supply description	Wi-Fi: 2.4 GHz (2x2) + 5 GHz (2x2). The maximum combined power is adjusted to 23 dBm (2.4 GHz) and 23 dBm (5 GHz). Wired network port: The SFP optical port and GE/PoE_IN work as combo ports, and only one of them is working at a time. If both of them are enabled, the optical port takes effect preferentially.