

<http://www.skspruce.com/>



San Jose

1885 Lundy Ave., Suite 270,
San Jose, CA 95131, USA

Tel: +1 (408) 449-5604

Hong Kong

15K International Industrial
Centre, 2-8 Kwei Tei Street,
Shatin, Hong Kong

Tel: +852 26983874

Chengdu

A1, Tianfu Software Park,
1129 Century City Road,
High-tech Zone, Chengdu,
Sichuan, P.R. China

Tel: +86 28 85231119

SAC700E INTELLIGENT MULTI-SERVICE CONTROLLER INSTALLATION MANUAL

Revision: 1

Issued on 2016-12-15

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Preface

Audience

This publication is for experienced network managers to configure and manage the AP under local forwarding or control forwarding mode.

Symbol

Symbol	Descriptions
Bold	The CLI command is Bold .
<i>Italic</i>	The secondary title is in <i>Italic</i> .
Courier New	Courier New. Example: # ping -t 10.10.10.1

Change Records

Version	Issue Date	Remarks
01	2015.04.24	Version 01
02	2016.02.18	Version 02

1 Installation Environments

1.1 Security Precautions

To avoid personal injury and equipment damage, please carefully read the following safety precautions before installations.

1.1.1 Security Advisories

Make sure the ground dry and smooth.

Keep the chassis clean and dust-free.

Keep the chassis away from radiator and heat source.

Keep the chassis and installation tools not in walking areas.

Before moving the chassis, remove the internal lines such as the power line.

To prevent any surface damage, please avoid friction between equipment.

Use only local and national electrical codes to upgrade the equipment.

1.1.2 ESD Protection

The equipment contains ESD sensitive devices and ESD can cause equipment and its parts seriously damaged. Please avoid electrostatic discharge damage according to the following precautions:

When unpacking, please remove the anti-static packing material components after the installation devices are ready. Before removing the anti-static packing, please make sure to use earth tape to discharge the static electricity of the body.

Before moving a sensitive device, please place it into the antistatic container or using anti-static packing.

If possible, even in the absence of electrostatic environment, please always use anti-static mat and work mat to handle any sensitive devices.

Please follow the steps below when putting on anti-static bracelet:

Wear the anti-static bracelet.

Fasten the anti-static bracelet, and ensure the antistatic bracelet keeping good contact with the skin.

Ensure the anti-static bracelet grounding end inserting into the ground, and good contact between the antistatic bracelet and the ground.

1.1.3 Security Consideration for the Use of Laser

The equipment supports optical interface. When using the optical fiber in upgrade operation, pay attention not to look directly into the optical interface.



Caution:
Optical fiber laser hurts eyes.

1.2 Tool List

Table 1-1 Tool list

Tool	Usage
Cross Screwdriver	Cross Screw Drive
Straight Screwdriver	Straight Screw Drive
Anti-Static Bracelet	Anti-Static Electricity
Optical Fiber Cleaning Kit	Optical Fiber Cleaning



Caution:
The tools mentioned above are not delivered with the equipment.

1.3 Environment Requirements

To ensure the normal operation and prolong its service life, please ensure meet the following installation environment requirements.

Table 1-2 Environment requirements

Item	Unit	Range
Temperature	°C	0 to 40
Relative Humidity	%	5 to 85 (Non-condensing)
Air Pressure	kPa	70 to 105 (Air pressure of 70 kPa is equivalent to 3000 m above sea level.)

Place the board in a clean and ventilated environment. The installation site should be far away from radiators and heat sources and without conductive dust, corrosive gas and explosives. Please do not place the equipment in dusty environment, or may clog the filter, and reduce the cooling efficiency.

1.4 Operator Requirements

Operators need to meet the following requirements:

Basic knowledge of equipment test and operation.

Basic knowledge of laser operation, ESD and electronic appliances.

Basic knowledge of using installation tools.

Experienced service engineers in communication technology or other relative fields.

Fully understand and seriously take security standards.

2 Unpacking and Inspections

2.1 Product Introductions

Figure 2-1 Product figure



The appearance of the product is as the above figure.

Table 2-1 The front panel

Name	No.	Description
USB	2	Managing CPU
Serial port	1	Adjusting CPU
Network port	6	Data transmission.
Optical port	8	Data transmission.

Table 2-2 Indicators

Name	Status	Description
Power	Steady Green	The chassis and board are both in normal power supply
DM	Yellow	Self-checking indicator
Status	Yellow	System status indicator
HA	Yellow	Master-backup indicator

2.2 Unpacking Inspections and Assembly

Follow these steps to unpack each container for delivery:

Before unpacking and sign for delivery, check damage of each container in transport. Any damage claim should be in accordance with the procedure that the carrier releases.

According to the packing list, check each package and its components, verify all the items, and make sure all the items are in good condition.

The equipment packaging item list is as following:

- 1U Equipment
- Assembly parts (hangers and screws)
- AC Power Line
- SFP module (optional)
- Debugging Cable
- A set of documents



Warnings:

This equipment contains sensitive devices. To prevent electrostatic damage, please wear anti-static bracelet.

3

Frame Installations

3.1 Frame Dimensions

The equipment can be installed in a standard 19-inch (48.26 cm) frame. The 19-inch frame, released on August 24th, 1992, must accord with the standard of EIA - 310 - D. Each case is 22.50 inches tall (57.16 cm). This is equivalent to about 13 frame installation units. (RMUs: 1RMU = 1.75 inches = 4.45 cm)

Frame installation security requirement is as shown below:

The frame or cabinet must meet the laws and regulations of all electrical and mechanical security in the installation country.

The products installed on frame and the frame must connect grounded correctly and ensure the ground connection is established in the process of normal use.

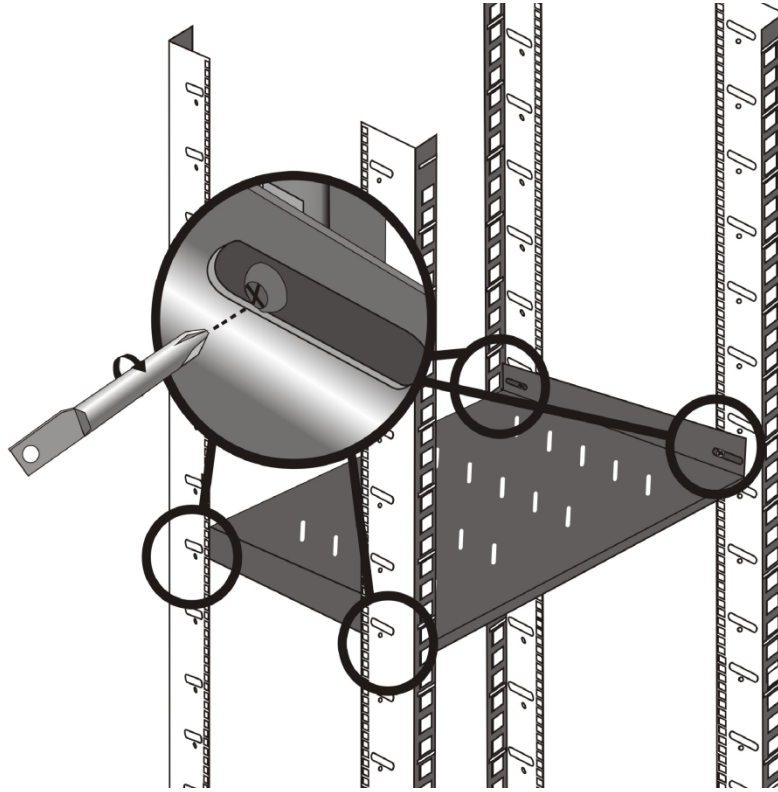
Shut off the power before building the power connection.

It is suggested that the circuit breaker should be installed on the top of each frame. The circuit breaker is designed as automatic operation electric switch to protect from circuit overload or short circuit caused damages. Its basic function is to detect fault conditions and immediately break the current by interrupting the continuity after a fault condition is detected. The 2 circuit breakers on the frame are for each case.

3.2 Frame Installations

The frame installation is under the following steps:

- Step 1** Tighten all the frame installation trays with M6 screws to support the safety and ensure not over tightened.

Figure 3-1 Frame Tray Installations

Step 2 Install the hangers onto the equipment.

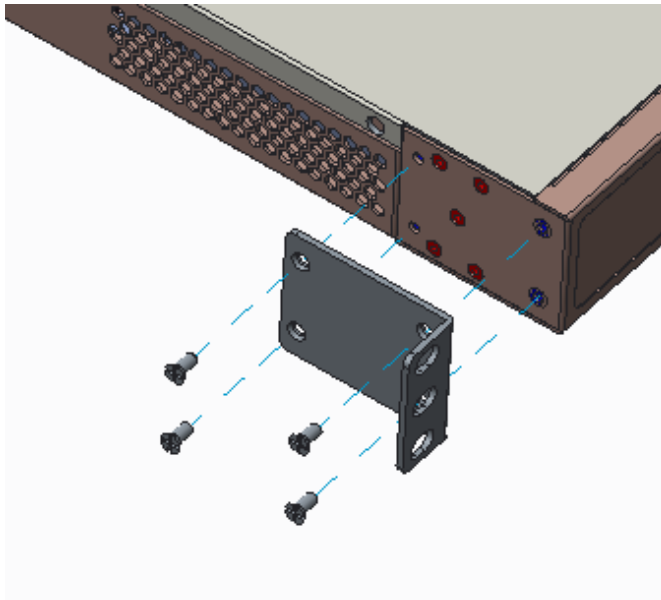
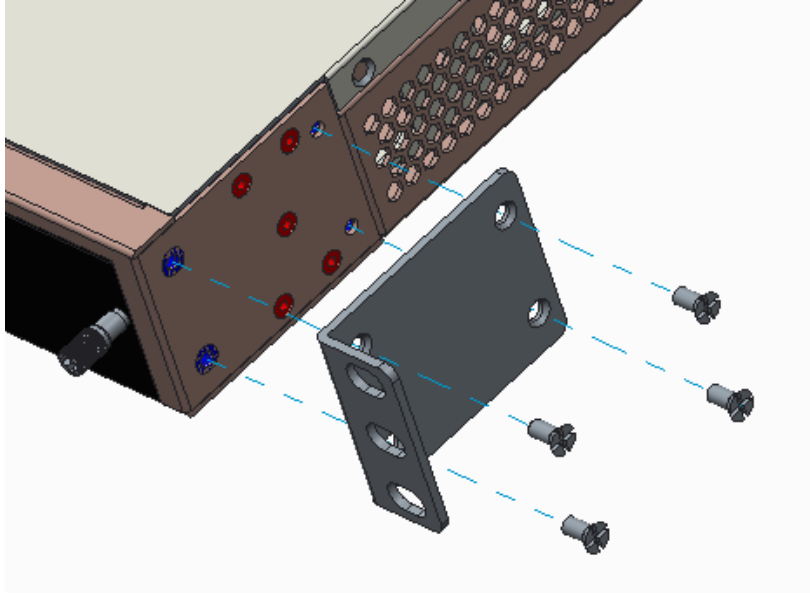
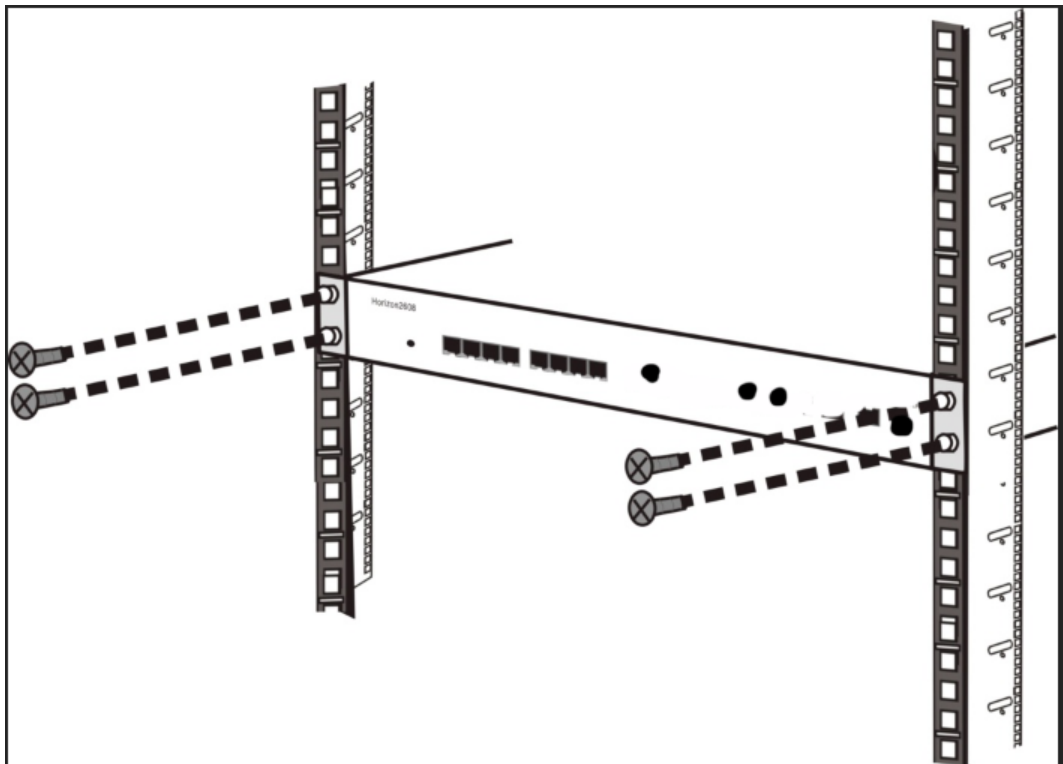
Figure 3-2 Left hanger installations

Figure 3-3 Right hanger installations

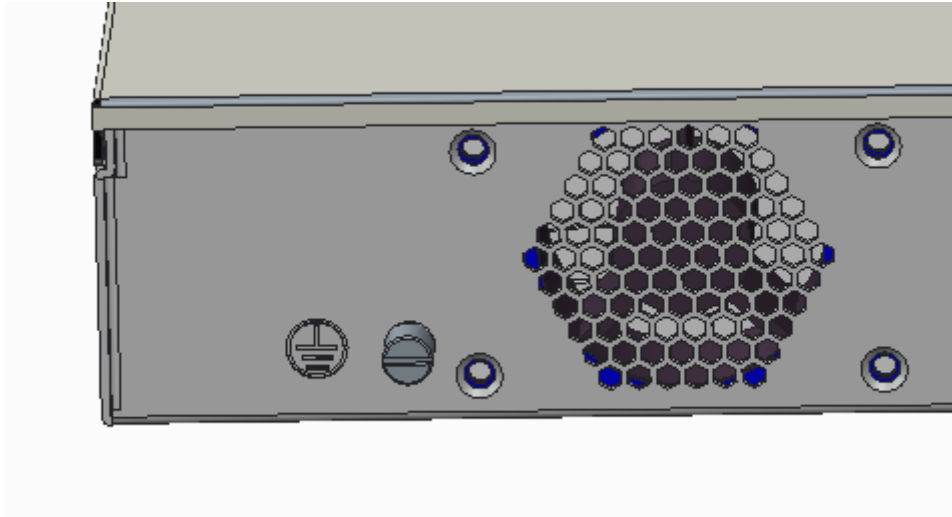
Step 3 Install the equipment onto the 19-inch frame and tighten it with 4 screws as shown below.

Figure 3-4 Tighten the Nut

3.3 Frame Ground Connections

The equipment provides 2 M6 frame ground ends on the bottom of the frame as shown below.

Figure 3-5 Frame Ground Ends



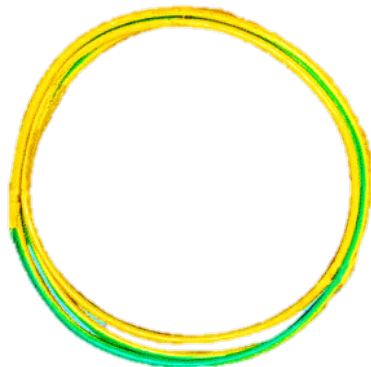
Frame Ground Cable Dimensions:

Cable Size: AWG6

End: 45° Tongue Connection End

Frame Grounding Cable

Figure 3-6 Frame Ground Cable



Caution:

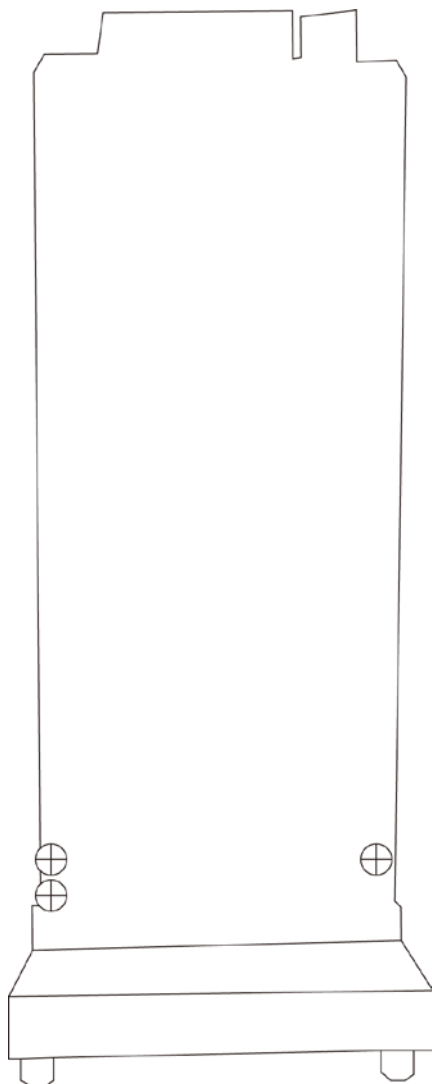
Frame ground connection must accord with the applicable standard, the local requirements and the company's regular installation methods. All the ground connections must be anti-oxidation coated.

4 Installing and Removing Components

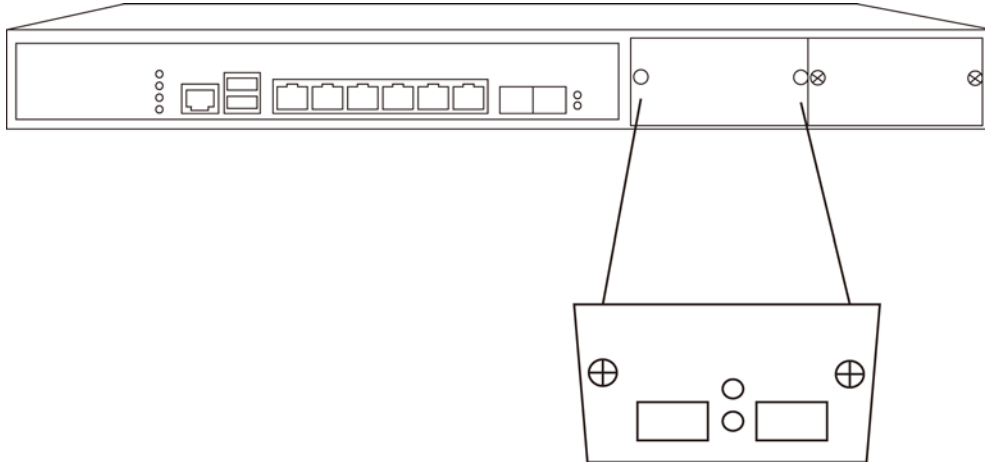
4.1 Installing CM-2XGEF/CM-4GEF Extended Module (optional)

The 2 installation methods are the same. Set CM-2XGEF module installation as an example to describe the installation steps of extended module.

Step 1 Fix the module and the installation plate with 3 M2.5x6 screws.



Remove one blank panel on the slot (set slot0 as an example) and push the extension plate into the slot as shown below.



Step 2 Tighten the screw on the panel to complete the installation.



4.2 Installing/Removing SFP Module

The equipment supports GE ports and 10 GE Ethernet ports on the small form factor pluggable (SFP) optical module. GE port can also support copper SFP modules as shown in the following figure:

Figure 4-1 Fiber SFP Module

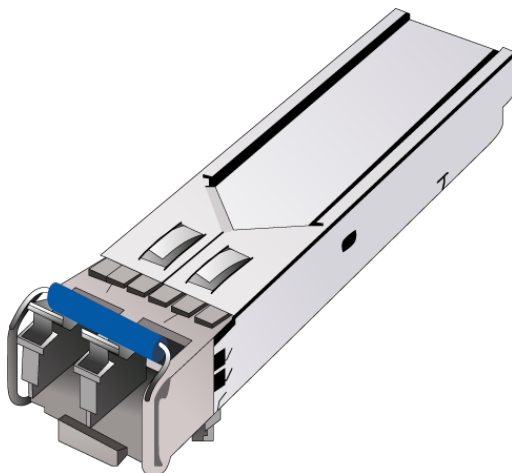


Figure 4-2 Copper SFP Module



Please notice the following when install/remove SFP modules:

- Slowly and carefully insert all modules to avoid damages.
- Slightly install/remove SFP Module to avoid serious module and card damages.
- Please unlock the locking mechanism before removing the SFP modules on card to avoid damages.

Install SFP modules as the following steps:

- Step 1** Remove the black dust plug on the port(the dust plug can be used multiple times)
- Step 2** Insert the SFP module into the corresponding port and ensure using the locking mechanism.

Remove SFP modules as the following steps:

- Step 1** Unlock the locking mechanism and pull the handle outward on the SFP module.
- Step 2** Pull the SFP card handle.
- Step 3** Install the dust plug into the empty interface.



Caution:

Please do not power off when installing/removing the SFP module.

5 Cable Connection

5.1 Cable Type

There are three kinds of cables which need to be established during the equipment cable connection

- Optical fiber
- Ethernet cable
- Console cable

Optical Fiber

The equipment GE ports and 10GE ports support SFP modules with LC connectors to establish fiber connections.

Figure 5-1 Optical fiber

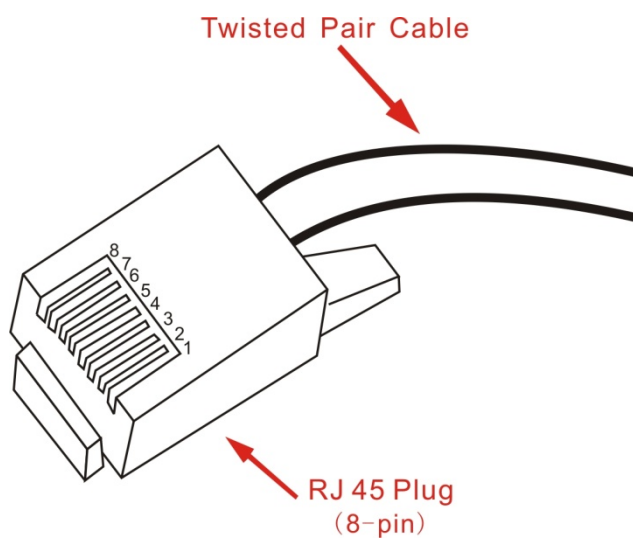


Caution:

Optical fiber will not be shipped with the equipment.

Ethernet cable

The equipment uses Category 5 (CAT 5) Ethernet cable with RJ 45 connectors to establish electrical Ethernet connections.

Figure 5-2 Ethernet cable**Figure 5-3** RJ45 connector**Table 5-1** RJ45 interface pin

Pin	100Base-Tx 100Mbps Cat5	1000Base-Tx 1Gbps Cat5
1	TX+	BI DA+
2	TX-	BI DA-
3	RX+	BI DB+
4	Na	BI DC+
5	Na	BI DC-
6	RX-	BI DB-
7	Na	BI DD+
8	Na	BI DD-
RX=Receive Data TX=Transmit Data BI=BI directional data DA,DB,DC,DD=Data Pair A,B,C and D		

6 Power On/Off

6.1 AC Power On/Off

The SAC700E equipment uses ATX power switch. After the power cord connected properly, if the last power status is off, the equipment will power on directly and if the last power status is ATX On/Off, click on the ATX power switch to power on the equipment.

After system boot starts, the fan will rotate faster than when it normally works, and all the LED lights on card and module will flash. After a period of time (up to one minute), the fan speed returns to normal working state, and the corresponding indicator shuts down.



Warnings:

Do not touch the power supply side when power on the system.

Push ATX power switch to power off the equipment. The equipment will save the data and close the related process and then power off.

6.2 DC Power Switch

The DC version equipment has 2 power switches: 1.AT switch; 2.ATX switch as shown below:

Figure 6-1 Power switch



The AT switch is on the DC power module. You can disable the DC power supply.

For the use of ATX power switch, please refer to the descriptions in the previous chapter.

7 Specifications

7.1 Chasis Specifications

Table 7-1 Chasis Specifications

Item	Description
Type	1 U
Dimensions (W x D x H)	450 mm x 440 mm x 44 mm
Interface	6 x RJ45 or 2 x SFP
Weight (full loaded)	6.25 kg
Power supply (AC)	100 V ~240 V AC , 50 Hz~60 Hz
DC power supply (optional)	36 V~72 V DC

7.2 Certifications

The following table lists the certifications of the SAC700E.

Certification	Description
FCC	This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: • Reorient or relocate the receiving antenna. • Increase the separation between the equipment and receiver. • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. • Consult the dealer or an experienced radio/TV technician for help. Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Abbreviations

A	
AC	Alternating Current
ACL	Access Control List
AP	Access Point
C	
CAPWAP	Control And Provisioning of Wireless Access Points
D	
DHCP	Dynamic Host Configuration Protocol
M	
MAC	Multi-Access Computer
N	
NAT	Network Address Translation
R	
RFC	Request For Comments
S	
SSID	Service Set Identifier
V	
VLAN	Virtual Local Area Network
W	
WEP	Wired Equivalent Privacy
WPA	Wi-Fi Protected Access