Contents

Electrostatic Discharge
静电放电

Before touching the device, or holding the boards and IC chips, wear the ESD gloves or the ESD wrist strap (Ensure that the other end of the ESD wrist strap is well grounded.) to prevent the electrostatic discharge of the human body from damaging the sensitive components.

在接触设备， 手拿单板或IC芯片等操作之前，为防止人体的静电损坏敏感元件，必须佩戴防静电手套或防静电腕带（确保防静电腕带的另一端接地良好）。

ESD gloves
防静电手套

ESD wrist strap
防静电腕带
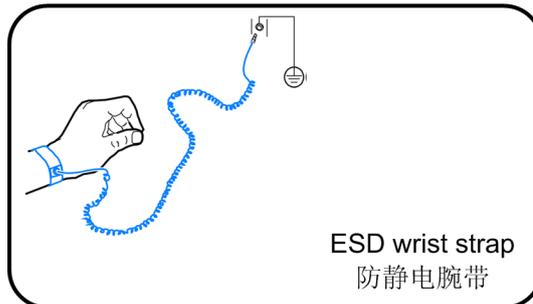
Bundling cables
捆绑电缆

The distance between cable ties for all cables outside the cabinet is determined according to the distance between two horizontal beams. For the cabling trough without beams, bundle the cables with the distance not exceeding 250 mm between cable ties.

室外机盒所有线缆的线扣绑扎距离以两横梁之间的间距为准，没有横梁的走线槽按照不超过250mm的间距进行绑扎。

Affixing labels / tags
粘贴标签

- After routing the cable, affix the label or fasten the tag to the cable, and 20 mm away from the connector.

  电缆布线后，距离电缆连接器20mm处贴上标签或固定标签。

- When the signal cable is placed vertically, the label should point towards the right. When the cable is placed horizontally, the label should point downwards. After bundling the cables, the completed identification plate should be visible on the top of the cable in the horizontal cabling, or on the right side of the cable in the vertical cabling. Make sure that the label points outwards.

  信号电缆垂直布线时，标签指向右边；电缆水平布线时，标签指向下方。电缆捆绑后，最终的识别牌，在水平布线时卷缆柱的上方或在垂直布线时卷缆柱的右边可见。确保标签向外。

Equipment protection grade
设备防护等级

If the network cabinet is installed outdoors or in a corridor that is exposed to rain, the network cabinet must meet the requirements of IP55 class protection. ("IP" refers to International Protection. The first number "5" refers to the class for preventing the solid particle from entering the device. That is, the network cabinet cannot completely prevent dust from entering the device, but the amount of dust that enters the network cabinet does not damage the device. The second number "5" refers to the class for preventing water from entering the network cabinet. That is, the water sprayed from different directions to the network cabinet does not damage the device.

在室外或易被雨水淋到的楼道环境中安装的网络箱必须达到IP55等级（"IP"为国际防护等级；第一个数字"5"为防外部固体颗粒侵入等级，即"网络箱不可能完全阻止灰尘进入，但灰尘进入的数量不会对设备造成损害"；第二个数字"5"为防水侵入等级，即"从每个方向对准网络箱柜体的射水都不会对设备造成损害"）。

Check Tools and Meters 检查工具仪表

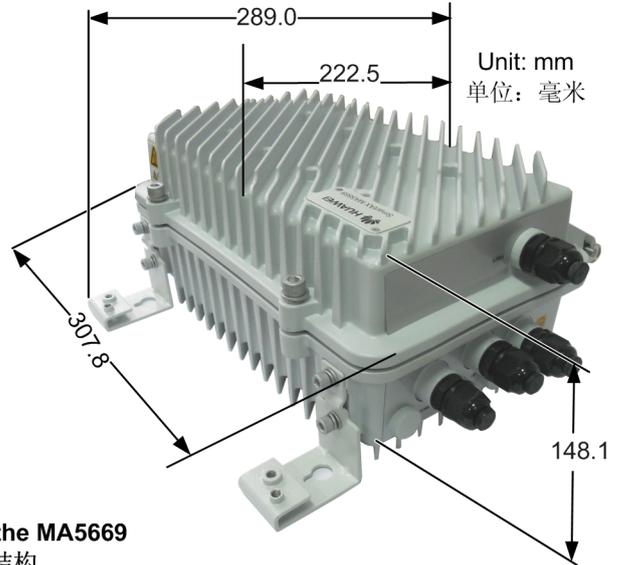Before you begin, get the following tools ready.

在安装前，请准备下面的工具：

Marker pen 记号笔	Flathead screwdriver 一字螺丝刀	Phillips screwdriver 十字螺丝刀	Diagonal pliers 斜口钳
Network cable crimping pliers 网线钳	Paper knife 裁纸刀	Adjustable wrench 活动扳手	Socket wrench 套筒扳手
Tape measure 卷尺	Claw hammer 羊角锤	Percussion drill 冲击钻	Bit 钻头
Wire stripper 剥线钳	Cable cutter 电缆剪	ESD gloves 防静电手套	ESD wrist strap 防静电腕带
Multimeter 万用表	Optical power meter 光功率计	M6,M8 inner hexagon spanner M6、M8内六角扳手	Network cable tester 网线测试仪

Outline and Structure 机箱外观结构

Appearance of the MA5669 (front view)
MA5669外观（正视图）

Appearance of the MA5669 dimension
MA5669外观尺寸

289.0

222.5

Unit: mm
单位：毫米

307.8

148.1

Internal structure of the MA5669
MA5669内部结构

Fiber splice tray
光纤熔接盒

Power supply module
电源模块

AC power grounding point
交流电源接地点

AC power point
交流电源接口

AC Power cable hole
交流电源进线孔

Network cable hole
网线进线孔

Optical cable hole
光缆进线孔

Thread clamp buckle
夹线扣

SFP port
SFP接口

RESET
复位键

LED
指示灯

Debug serial port
调试串口

Maintenance Ethernet port
以太网维护接口

GE1 PoE electrical port
GE1 PoE电口

GE0 PoE electrical port
GE0 PoE电口

Collecting the MAC Address and Serial Number 采集 MAC 地址和序列号

📖 **NOTE**

- On the installation site, the hardware installation engineer should collect the "MAC Address" and "Serial Number" of the MA5669 for the software commissioning engineer to configure and manage the MA5669 remotely.

  现场施工时，硬件安装工程师需采集MA5669的"MAC地址"和"序列号"，提供给软调工程师，以便软调工程师能对MA5669进行远程配置管理。

- The "MAC Address" is used for MA5669 (with the EPON optical port).

  "MAC地址"用于配置有EPON光接口的MA5669。

- The "Serial Number" is used for MA5669 (with the GPON optical port).

  "序列号"用于配置有GPON光接口的MA5669。

- When collecting the "MAC Address" and "Serial Number", the hardware installation engineer needs to affix the "MAC Address" and "Serial Number" labels to the corresponding place of the following table, and then record the actual installation location of the MA5669.

  硬件工程师采集时，分别把"MAC地址"和"序列号"标签粘贴到下面表格中的对应位置，并记录下MA5669安装的实际位置。

- After the hardware installation, transfer this piece of paper (titled "MAC Address and Serial Number Table") to the software commissioning engineer.

  硬件施工完毕，将该纸张提供给软调工程师。

	MAC Address (12bit) MAC地址(12位)

0018825A7EFC-FD(2) — MAC Address (12bit) MAC地址(12位)

323031317BE13441 — Serial Number (16bit) 序列号（16位）

| NO. 序号	Device type 设备类型		MAC Address and Serial Number MAC地址和序列号	Device Installation Location 设备所处位置
1	MA5669	EPON	0018825A7EFC-FD(2)	** Building ** Floor ONU-1 **大厦**楼ONU-1
		GPON	323031317BE13441	

Installing the Chassis 安装机箱

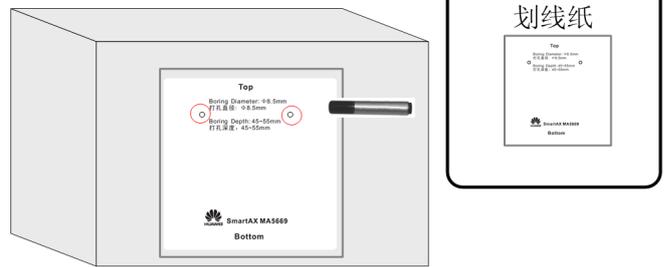## 5.1 Installation the MA5669 on a wall 在墙壁上安装 MA5669

📖 **NOTE**

- Ensure that the texture of the walls to withstand the weight of the chassis (full 3.7 Kg) .

  确保墙壁的质地能够承受机箱的重量（满载 3.7 Kg）。

- When install the MA5669 outside, it should avoid the device in the sun radiation long time.

  安装MA5669在室外墙面时，避免MA5669长时间处于太阳光辐射下。

- The chassis is flip cover, and it can not restrict the cover. When loosen the bolts, please buttress the cover, let it down slowly, or else it may drop down.

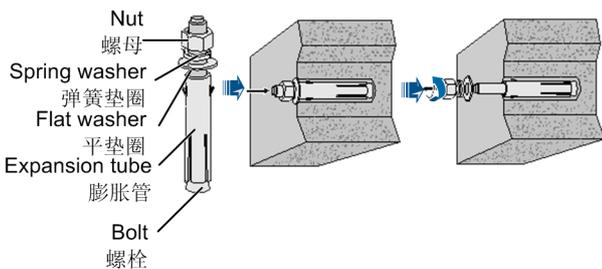 机箱是上下翻盖式，没有限位装置。当用户松开外壳螺栓时，请扶住机箱缓慢放下，否则箱盖可能突然翻下来。

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① Install the mounting ear with four M6 x 10 screws (torque: 48 kgf·cm)
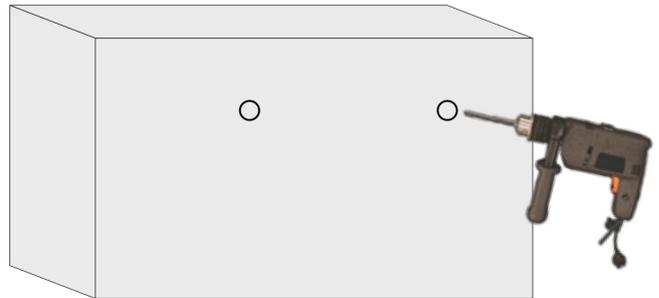用4个M6 x 10螺丝安装挂耳（扭矩：48公斤•厘米）
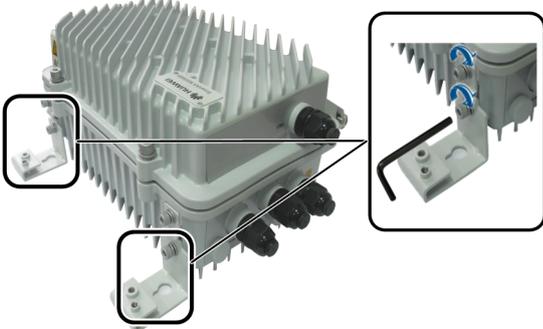
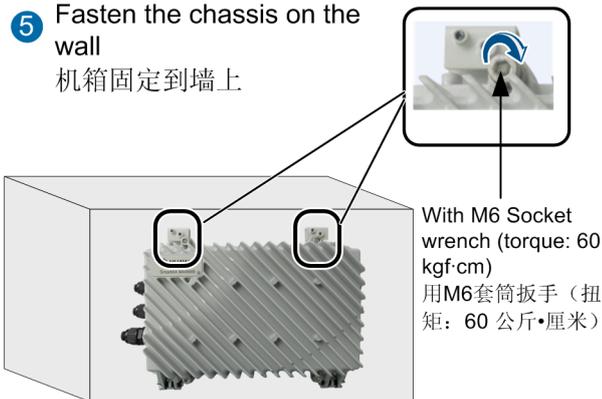② Mark the install points
标记安装点

Lineation paper
划线纸

③ Drill the install holes (with the ⌀ 8.5 bit)
钻安装孔（钻头直径8.5毫米）

④ Install the M6 x 60 expansion bolts
安装M6 x 60膨胀螺栓

Nut 螺母
Spring washer 弹簧垫圈
Flat washer 平垫圈
Expansion tube 膨胀管
Bolt 螺栓

⑤ Fasten the chassis on the wall
机箱固定到墙上

With M6 Socket wrench (torque: 60 kgf·cm)
用M6套筒扳手（扭矩：60 公斤•厘米）

Installing the Chassis 安装机箱

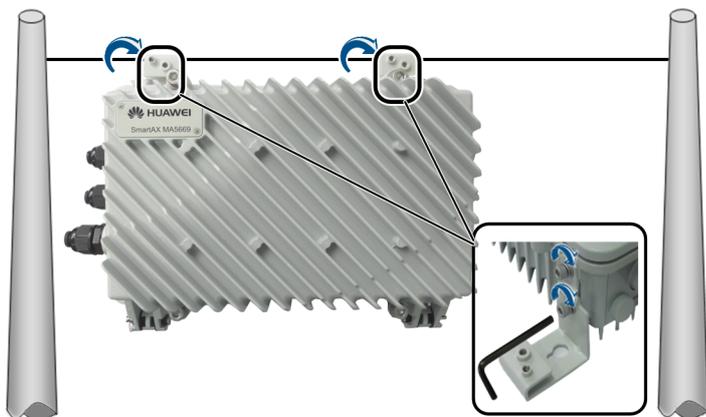## 5.2 Installation the MA5669 on a Steel Cable 在钢缆上安装 MA5669

📖 NOTE

- When MA5669 running in outdoor, it should wrap the screw thread part that external connections connect to the chassis using waterproof adhesive tape or waterproof adhesive.

  当MA5669在室外工作时，需要用防水胶带或防水胶缠住外置接头连接机箱的螺纹部分。

- The chassis is flip cover, and it can not restrict the cover. When loosen the bolts, please buttress the cover, let it down slowly, or else it may drop down.

  机箱是上下翻盖式，没有限位装置。当用户松开外壳螺栓时，请扶住机箱慢慢放下来，否则箱盖可能突然翻下来。

1 Install the mounting ear with four M6 x 10 screws and then put the MA5669 onto the steel cable
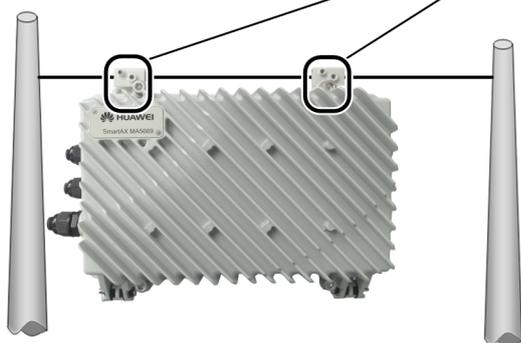安装挂耳（用4个M6x10螺丝），然后把MA5669挂放到钢缆上

2 Fasten the chassis on the steel cable
固定机箱到挂缆上

A M6 x 16 screw
M6x16螺丝

B M6 x 10 screw
M6x10螺丝

Please fasten the screw(A) at first and then fasten the screw(B)

首先锁紧螺丝（A），然后再锁紧螺丝（B）

## 5.3 Installing the MA5669 on a Steel Pipe 在钢管上安装 MA5669

NOTE

- If installing the MA5669 on a steel pipe (with the installation parts circling around the steel pipe), the diameter of the steel pipe should range from 114 mm to 350 mm.

  如果在钢管上安装MA5669（用安装部件环绕钢管），要确保钢管的直径范围在114-350 mm。

- When installing the stainless steel hoop, install the buckle facing outwards.

  当安装不锈钢钢圈时，安装带扣面对朝外。

- After installing the stainless steel hoop, deploy proper measures if the steel strap is too long. For example, cut off the excess portion of the steel strap that exceeds 50 mm (1.97 in.), and wrap the end of the steel strap with PVC tape to avoid bodily injury.

  安装不锈钢钢圈后，如果钢带太长，可采用适当措施，例如切断超过50毫米（1.97英寸）的钢带超出部分，并用PVC胶带包裹钢带末端，以避免人身伤害。

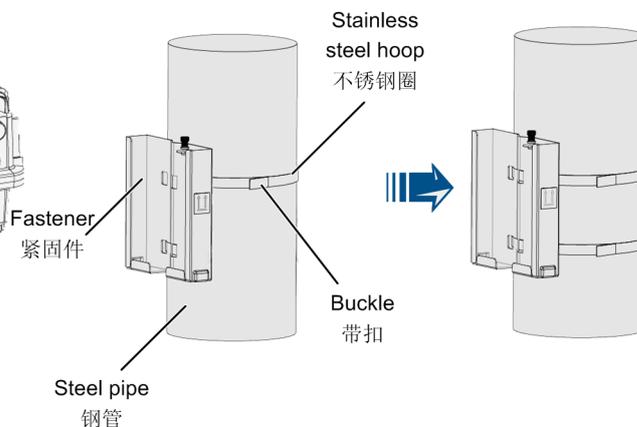① Install the bracket with four M6 x 10 screws
用4个M6 x 10螺丝安装主支架

M6 x 10 screw
M6 x 10 螺栓

Main bracket
主支架

Label
标签

The equipment
主设备
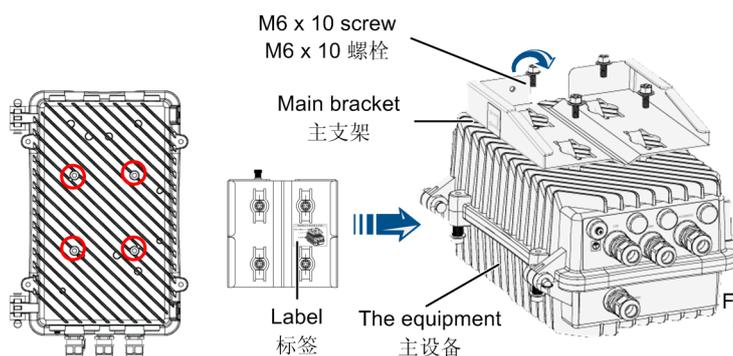
② Install the fastener with the stainless steel hoop and then fasten the screw on the buckle

(torque: 60 kgf·cm)
用不锈钢圈安装紧固件，然后紧固带扣上的螺丝
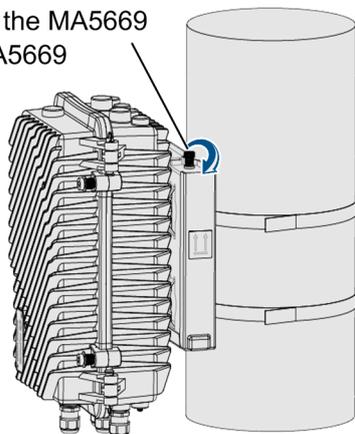（扭矩：60公斤·厘米）

Stainless steel hoop
不锈钢圈

Fastener
紧固件

Buckle
带扣

Steel pipe
钢管

③ Install the MA5669 onto the fastener
安装MA5669到紧固件上

Fasten the MA5669
锁紧MA5669

Routing Cables 布放线缆

⚠️ **CAUTION**

- Before routing cables, loosen the waterproof connector of the corresponding aperture. After routing cables is complete, fasten the waterproof connector to seal the aperture.

  布线前，需松开相应孔圈的防水连接器。布线完成后，需拧紧防水连接器密封接口。

- MA5669 support two kinds of AC wiring way: one is the MCB, the other is 3 pin terminal.

  MA5669支持两种交流接线方式：一种是空气开关，另一种是3pin接线端子。

- Strip approximately 8 mm (0.31 in.) off each of the three wires and then twist the copper cores to avoid any poor contact.

  三芯电线每根外皮剥去约8毫米（0.31英寸），然后扭转铜芯，以避免任何接触不良。

- Connect the PGND cable properly to ensure that the chassis is protected from the lightning and other interferences.

  PGND电缆正确接线以确保机箱不受雷电和其它干扰影响。

- Before routing the AC power cable, ensure that the external AC power input and the AC power switch of the MA5669 chassis is set to OFF.

  AC 电源电缆布线前，确保外部AC 电源输入及MA5669 机箱内的AC 电源开关设置为断开。

❶ Routing the PGND cable
布放PGND电缆

PGND cable
PGND电缆

To grounding bar
接地排

Cable crimping OT terminal choose guide 线缆压接OT端子选用指南			
Cable 线缆	Port 端口	Terminal type 端子型号	Terminal appearance 端子外形
AC power cable AC电源线	L	OT1.5-3	Shape smaller 外形较小
	N		
	PE	OT1.5-4	Shape medium 外形中等
PGND cable 外部接地线	PGND	OT10-4	Shape larger 外形较大

❷ With MCB (optional)
空气开关（选配）

For neutral wire
接零线

➡️ For live wire
接火线

For earth wire
接地线

AC Power cable
交流电源线

❷ With 3 pin terminal
3pin接线端子

For earth wire
接地线

➡️ For live wire
接火线

For neutral wire
接零线

AC Power cable
交流电源线

PGND cable
PGND电缆

Phillips screwdriver
十字螺丝刀

Wire stripper
剥线钳

With MCB (optional)
空气开关（选配）

40 mm   30 mm

With 3 pin terminal
3pin接线端子

40-45 mm   50-55 mm

📖 **NOTE**

The power cable need the peels line, with MCB optional live and neutral line, earth wire length is 40 mm, 40mm, 30 mm, with 3 pin terminal neutral and live line, earth wire length is 40 to 45 mm, 40 to 55 mm, 50 to 55 mm.

电源线需要现场做剥线，空气开关装置的火线和零线，地线的剥线长度为40 mm，40 mm，30mm，3pin接线端子的火线和零线，地线的剥线长度为40-45 mm，40-50 mm，50-55 mm。

Routing Cables 布放线缆

6.2 Routing the Optical Fiber 布放光纤

⚠ **CAUTION**

- Before routing cables, loosen the waterproof connector of the corresponding aperture. After routing cables is complete, fasten the waterproof connector to seal the aperture.

  布线前，需松开相应孔圈的防水连接器。布线完成后，需拧紧防水连接器密封接口。

- When routing optical fibers, do not stand close to or look into the optical fiber port directly with naked eyes.

  布放光纤时，不得靠近或用裸眼直视光纤口。

- The bending radius of the optical fiber should be more than 20 times the cable diameter. In general, the bending radius of the optical fiber is greater than or equal to 40 mm.

  光纤的弯曲半径应大于20倍的电缆直径。一般来说，光纤的弯曲半径大于或等于40毫米。

- Only the qualified personnel are allowed to melt the optical fiber.
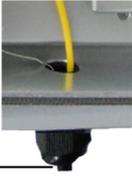
  仅专业人士才可熔接光纤。

1 Take off the waterproof plug
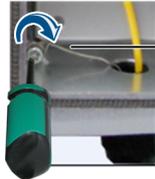取下防水栓

Waterproof plug
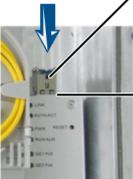防水栓

2 Routing the optical cable
布放光缆

Optical cable
光缆

3 Reinforcing core
加强钢筋
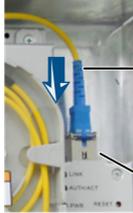
4 Optical transceiver
光模块

SFP port
SFP端口

5 Optical fiber
光纤

SFP port
SFP端口

Phillips screwdriver
十字螺丝刀

To ODF
到光配线架

Optical cable
光缆

Heat shrink tube
热收缩管

Fiber splice tray
光纤熔接盒

Optical cable grommet
光纤固定扣

Optical cable grommet
光纤固定扣

Routing Cables 布放线缆

⚠️ **CAUTION**

Before routing cables, loosen the waterproof connector of the corresponding aperture. After routing cables is complete, fasten the waterproof connector to seal the aperture.

布线前，需松开相应孔圈的防水连接器。布线完成后，需拧紧防水连接器密封接口。

To user end
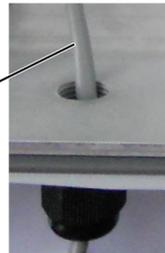到用户端

Network cable
网线线缆

① Take off the waterproof plug
取下防水栓

Waterproof plug
防水栓

② Routing the network cable
布放网线

Network cable
网线

③

Network cable
网线

RJ45 network cable plug
(Locally produced)
RJ45网线插头（本地制作）

④

Network cable grommet
网线固定扣

Checking the Installation 安装后检查

No. 序号	Description 检查内容	Method 检查方法
1	No any material is placed on the chassis. 机箱上没有放置其他物品。	Observe 查看
2	All the cables are bound with proper tightness. The space between the cable ties is even, and the remaining parts of the cable ties are cut off neatly. All cable ties face the same direction resulting in a uniform appearance. 电缆绑扎间距均匀，松紧适度，线扣扎好后应将多余部分齐根剪掉，不留尖刺，扎扣朝同一个方向，保持整体整齐美观。	Observe 查看
3	The cross sectional areas of the power cable and the ground cable comply with the engineering design and meet the requirements of device running. 电源线、地线线径符合工程设计文件，满足设备配电要求。	Observe 查看
4	The power cable and the ground cable use an entire segment of copper core. The cable has no connection in the middle or scratch on the jacket. 电源线、地线应采用整段铜芯材料，中间不能有接头，外皮无损伤。	Observe 查看
5	The power cable and the ground cable must be routed horizontally and vertically without crossover. Proper margins must be reserved at the turning. 电源线、地线走线应平直，绑扎整齐，转弯处留合适余量。	Observe 查看
6	The power cable and ground cable must be connected correctly and reliably. 电源线、地线连接正确可靠，接触良好。	Observe 查看
7	The identifiers on the power cable and ground cable must be correct, legible, and neat. 电源线、地线的标识正确、清晰、整齐。	Observe 查看
8	The power cable, ground cable, and signal cables must be routed separately. 电源线、地线与信号线分开布放。	Observe 查看
9	Signal cables must be of the correct length and must not be damaged or broken. There must not be any joints in the cable. 信号电缆必须有足够长度，不应有破损、断裂、中间接头。	Observe 查看
10	The connectors of the signal cables must be neat and intact. Each connector must be properly and firmly fastened. The tips must be connected securely. 信号电缆插头干净无损坏，插接正确可靠，芯线卡接牢固。	Observe 查看
11	Labels at both ends of the signal cables must be marked correctly, clearly and neatly. 信号电缆两端标识正确、清晰、整齐。	Observe 查看
12	Place the optical fiber pairs in order and bind them carefully with optical binders. No sharp edges are allowed. 成对光纤要理顺后用光纤绑扎带绑扎，且绑扎力度适宜，不能有扎痕。	Observe 查看

Powering On the System 上电检查

⚠ **CAUTION**

- Power on the device only when the input voltage is in the normal range. Test the AC input voltage for the MA5669. The voltage should range from 100 VAC to 240 VAC.

  测量MA5669的输入电压，若此电压在100V ～ 240V交流电正常范围内可将设备上电。

- After the device is powered on, during the registration, the Auth LED of the SFP port blinks quickly and the Link LED of the PON port is on.

  设备上电后，注册时SFP口上的Auth 灯快速闪烁并且Link 灯亮。

- According to the label information in a product, Input correct voltage value. If power plug drop when being used, you must open the product and connect to the power again based the information on the product label.

  使用前必须依据产品内部标签上的信息，输入正确的电压。若在使用中，电源插头松脱，必须打开产品，依据产品内部标签上的信息重新接上电源。

To AC Mains
接交流电源

With 3 pin terminal
3pin接线端子

① Turn on the output switch of the 220 V AC power system that supplies power to the MA5669.
闭合为MA5669 供电的220V交流电源系统输出开关。

② Green on
绿灯常亮

Green: on for 1 s and off for 1 s cycle flicker
绿灯：1秒亮并且1秒灭周期闪烁

LINK
AUTH/ACT
PWR   RESET
RUN/ALM
GE1 PoE
GE0 PoE

With MCB (optional)
空气开关（选配）

① OFF   ON
      断开   闭合

② Green on
绿灯常亮

Green: on for 1 s and off for 1 s cycle flicker
绿灯：1秒亮并且1秒灭周期闪烁

LINK
AUTH/ACT
PWR   RESET
RUN/ALM
GE1 PoE
GE0 PoE

Check and Sealing the Chassis 检查和密封机箱

Check whether the waterproof connectors of the four apertures are fastened properly.

检查四个防水连接器是否锁紧良好。

Waterproof connector
防水连接器

HUAWEI
SmartAX MA5669
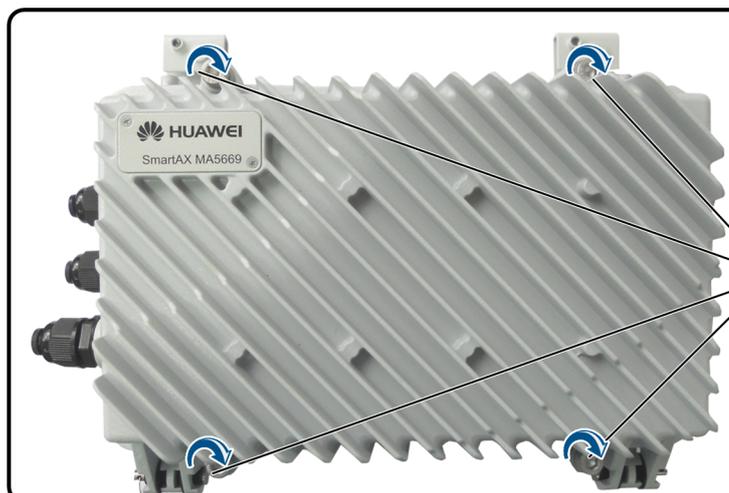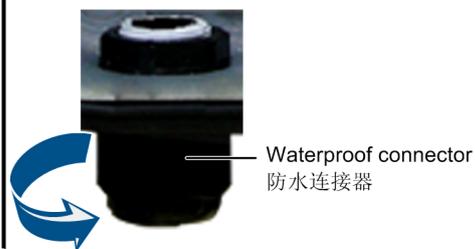
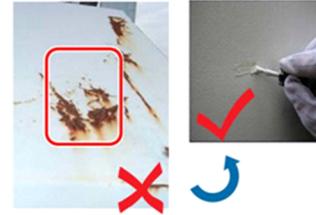Lock the chassis with four M8 x 34 screws (torque: 60 kgf·cm)
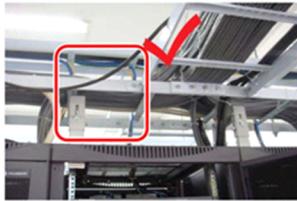
用4个M8 x 34螺丝锁住机箱（扭矩：60公斤·厘米）
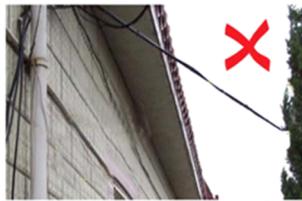
Keep of electromagnetic interface.
远离电磁干扰。

Use a dedicated lightning protection bar.
使用专业防雷插排。

Repaint the place that is collided.
磕碰处及时补漆。

Signal cables should be routed separately from power cables.
信号线与电源线应分开布放。

Do not route ground cables or subscriber cables into the room in the overhead mode.
禁止接地线、用户线架空入室。

Connect the ground cable to the grounding bar.
接地线应连接到接地排上。

The paint on the grounding point should be removed to ensure proper grounding. After the cable is connected to the grounding point, the grounding point should be repainted.
为保证有效接地，接地点应将油漆擦除。完成接地后应及时补漆。
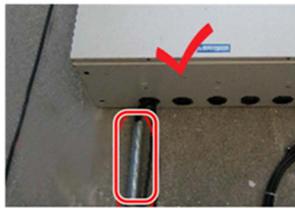
When routing cables out of the network cabinet, ground the outer jacket of the cable to the nearest grounding point on the network cabinet side, or use the metal tube that is grounded to route cables.
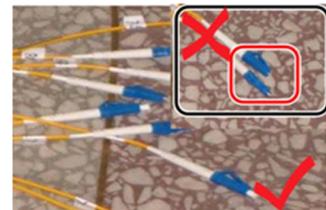网络箱出线，在近网络箱端将线缆外层接地，或使用接地的金属套管走线。

Coil and protect the redundant optical fiber in the fiber management tray, other fiber management parts, or the place convenient for operation.
多余的光纤应放入盘纤盒、可盘纤的器件或方便操作的地方进行保护。
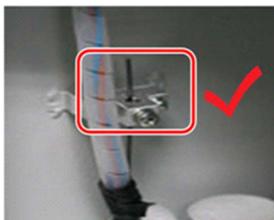
Metal wires of optical cables should be grounded.
光缆金属线应进行接地处理。

Do not distort cables.
避免电缆扭曲。

The ends of the optical fiber that is not used should be protected with dustproof caps.
光纤未使用时应盖上光纤防尘帽。

Cable to be installed on site
需要现场安装的线缆

Cable 线缆名称	Specification 线缆规格
AC power cable 交流电源线	Description: GB AC 250 V / 10 A Connectors (X1 / X2) type: MA5669 side for cold terminals, another side to PI straight and plug The cable length: 1.8 m Cable type: external power cable Conductor cross-sectional area: 3 * was 1.0 功能描述：国标交流250 V/10 A 连接器（X1/X2）类型：MA5669侧为冷压端子，另一侧为PI直公插头 电缆长度：1.8m 电缆类型：外部电源线 导体截面积：3*1.0 mm ^{2}
Protection earth wire 保护地线	Cable type: electronic power cable Colour: yellow green double color Connectors (X1 / X2) type: OT6-M6 / OT6-M4 Inner conductor wire gage: 10 AWG (sectional area was the ≈ 5.2) Maximum current: 50.0 A The cable length: 0.5 m 电缆类型：电子电力线缆 颜色：黄绿双色 连接器（X1/X2）类型：OT6-M6/OT6-M4 内导体线规：10 AWG（截面积≈5.2 mm ^{2}） 最大电流：50.0 A 电缆长度：0.5 m
Network cable 网线	Connectors (X1 / X2) type: RJ-45 connector (known as crystal head) Cable type: class 3, 5 kind of shielding twist cable (UTP-3, UTP-5) or shielded twist cable (STP) Color: dark grey Characteristic impedance: 100.0 Ω Core diameter of the inner conductor: 0.510 mm Breakdown voltage: 500.0 V DC resistance of the inner conductor: 93.8 Ω/km Number of wire: four pairs Frequency range: 0 ~ 100 MHz Frequency attenuation: 22 dB / 100 m @ 100 MHz 连接器（X1/X2）类型：RJ-45连接器（俗称水晶头） 电缆类型：3类、5类非屏蔽双绞线（UTP-3、UTP-5）或屏蔽双绞线（STP） 颜色：深灰色 特征阻抗：100.0Ω 内导体线径：0.510 mm 击穿电压：500.0V 内导体直流电阻：93.8Ω/km 芯数：4对 频率范围： 0～100 MHz 频率衰减：22 dB/100 m@100 MHz
Optical fiber 光纤	Length: the survey result Single-mode/multimode: light module type Optical fiber connectors type: square connector: SC/PCLC/PC, MTRJ/PC circular connector: ST/PC, FC/PC 长度：勘测结果 单模/多模：光模块的类型 光纤接头类型：方形接头：SC/PCLC/PC、 MTRJ/PC 圆形接头：ST/PC、 FC/PC