

# Aruba Networks MST200 Installation Guide





Copyright 2005-2010 by Aruba Networks, USA. All rights reserved.

## Statement of Conditions

In the interest of improving internal design, operation function, and/or reliability, Aruba Networks reserves the right to make changes to products described in this document without notice. Aruba Networks does not assume any liability that may occur due to the use or application of the product(s) described herein.

### **DISCLAIMER: LIMITATION OF LIABILITY**

1. Before installation, it's strongly recommended and requested that users pay particular attention to the safety warnings in the sequentially detailed operation procedures within the manual. If there's any uncertainty or incapability of solving problems, contact the company's customer support center. Please **DO NOT** incur any risk or try to verify situations by yourself. Otherwise, any consequence caused by the attempt shall be completely due to the user himself.
2. Please periodically check whether the installed MST200 is damaged, worn-out or poses any danger. Any actual proof, sign or phenomenon of the afore-mentioned situations should be brought to the attention of the company at point of sale. Please **DO NOT** attempt to repair the product or replace any component. Otherwise, for any consequence arising out of or relating to the users' attempt repair the product, including but not limited to damages, disuse, short circuit, fire, bodily injury, etc., the company shall not be liable.
3. Users shall purchase or use the company's MST200 voluntarily. Users shall understand on their own initiative and abide voluntarily by policies, regulations or laws of their respective nation or local territories. The consequence arising out of or relating to any violation of the local laws or regulations by the user, shall be solely imputed to the user himself, and the company shall not be liable.
4. The company disclaims any and all warranties and guarantees, express, implied or otherwise, arising, with respect to the MST200 products or services, including but not limited to the warranty of merchandisability, the warranty of fitness for a particular purpose, and any warranty of non-infringement of the intellectual property rights of any third party. Liability of the company for loss is limited to the total amount paid to the company by the customer during the previous calendar year. The company will have no obligation or liability, whether arising in contract (including Warranty), tort (including active, passive or imputed negligence, strict liability or product liability) or otherwise for any special, incidental,



consequential or indirect damages including but not limited to loss of use, loss of data, business interruption, loss of revenue, loss of business or other financial loss arising out of or in connection with any of the products or other goods or services furnished by the company under this manual, even if advised of the possibility of such damages.

5. It shall never be understood that the manual expresses or implies to any customer or any third party authorize or transfer any rights. The company reserves fully the final interpretation of the MST200 and this manual.

## **Safety Warnings**

The MST200 must be installed by trained professional installation technicians. All warnings below must be read and understood before installation.

### **General Safety Warnings**



You can be killed or injured if performing antenna installation near electrical power lines. Carefully read and follow all instructions in this guide. Please be sure there are no high voltage and electronic fields nearby.

### **Working Aloft Warning**



When working on tower or roof, individuals must wear safety belts. Tools must be tied to the individual using them. Workers below must wear safety helmets.

### **Lightning Activity Warning**



Make sure not to connect or disconnect cables during periods of lightning activity.

A surge protective device should be installed to prevent potential damage from very high surges, for instance, the peak surges caused by lightning.



### **Explosive Device Proximity Warning**



Do not operate wireless network devices close to explosive merchandise or in explosive environments, for example, in the vicinity of a gas station.

### **Antenna Placement Warning**



Do not install any antenna near overhead power lines or other electric light, or where the antenna can come into contact with such circuits.

### **Antenna Selection Warning**



Please use DC grounding antenna with lightning protection to prevent surge and static electricity.

### **Grounding Warning**



Please always remember to protect your MST200 system by installation of grounding lines. The ground connection must be complete before connecting power to the MST200 enclosure. The requirement of grounding is to make sure the resistance must be less than 5 ohm between the ground termination point to grounding tier.

### **Power Installation Warning**



The installation of the power switch must be performed by a trained professional technician. The power switch is not supplied with the MST200. The power cord must be assembled by a professional installer, and the final assembly must comply with related requirements.



## Solar Irradiation and High Temperature Protection



Pay attention to level of sunlight, which can increase the working temperature of MST200 to higher than specifications allow.

A solar shield is provided in the Aruba standard package and should be installed to protect any outdoor MST200. The Aruba Warrantee policy does not cover those outdoor products for which Solar shields are not installed. Please contact Aruba technical support engineers for detailed information.

## RF Device Protection



Before powering up the MST200, the RF port must be connected to an antenna or a valid load (not included in the standard accessories for MST200). Otherwise, the RF module may be burned out. Aruba will not take any responsibility for such damage. For RF module with power less than 100mW, in test environment, it is allowed worked without load but should be within 30 minutes.



Protection on unused RF module

The unused RF interface must be closed via configuration command and its protective cap must be wrapped up by waterproof PVC tape to prevent from falling off. Otherwise, the RF module may be damaged. Aruba will not take any responsibility for such damage.

## FCC Certificate

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## REMINDER

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.



## **NOTICE**

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.

## **Precautions**

The radiated output power of this device is below the FCC radio frequency exposure limits based on that human proximity to the antenna shall not be less than 20cm during normal operation.

## **IC notice**

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

## **Region Selection**

Limited by local law regulations, version for North America does not have region selection option.



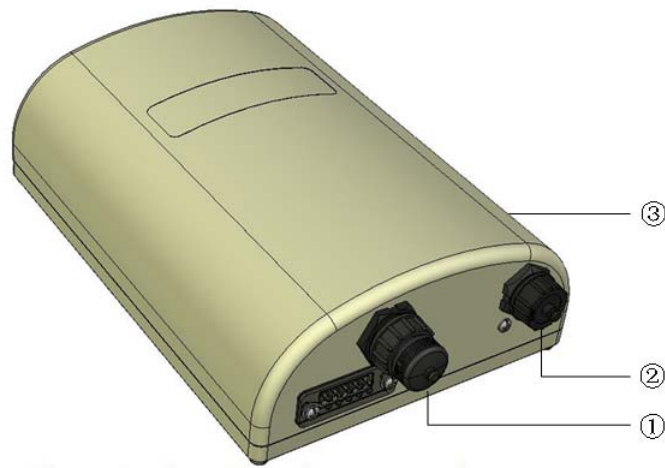
# Table of Contents

<b>1</b>	<b>PRODUCT OVERVIEW</b> .....	<b>7</b>
1.1	INTERFACES .....	7
<b>2</b>	<b>INSTALLATION PREPARATIONS</b> .....	<b>8</b>
2.1	PREPARING INSTALLATION TOOLS.....	8
2.2	EXAMINING THE INSTALLATION SITE .....	8
<b>3</b>	<b>MST200 INSTALLATION</b> .....	<b>9</b>
3.1	INSTALLING MST200 ON A POLE .....	9
3.2	GROUNDING THE MST200 .....	14
3.3	CONNECTING THE ETHERNET CABLE.....	15
<b>4</b>	<b>NOTE</b> .....	<b>17</b>

## 1 Product Overview

### 1.1 Interfaces

Figure 1-1 Interfaces on MST200



1	Ethernet interface (POE)	2	USB console interface
3	Grounding hole		



## 2 Installation Preparations

This chapter describes the preparations for MST200 installation, including preparation of installation tools, selection of installation sites and etc.

### 2.1 Preparing Installation Tools

When installing MST200, you may need the following tools. You shall select the tools according to the actual situation.

**Table 2-1 Installation tools list**

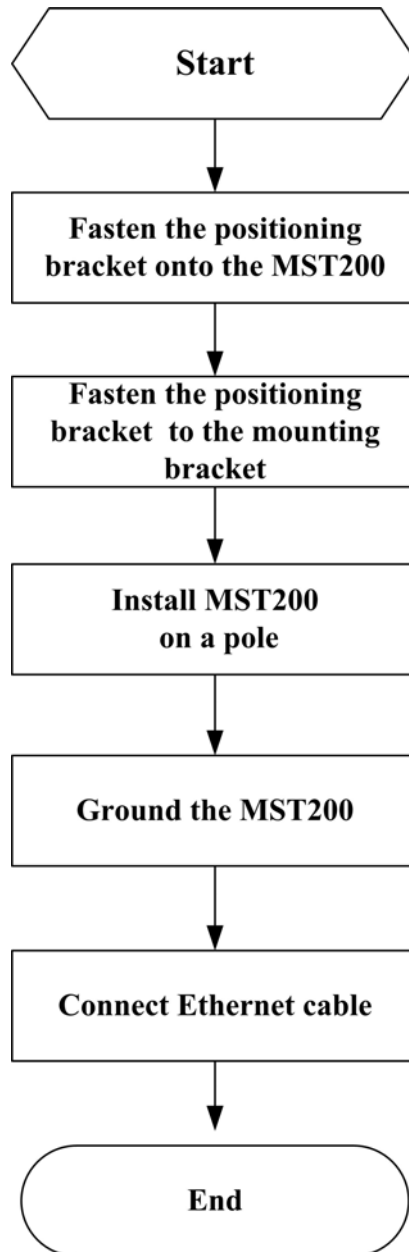
Type	Tools
General tools	Screwdriver, adjustable spanner, vice, safety belt, hard hat, power board (220 VAC or as required by local regulation), POE power injector, crimping pliers, electric soldering iron, welding wire, PVC insulation tape, adhesive insulation tape, strap, insulation tools

### 2.2 Examining the Installation Site

1. The site should be located within at least a 60% range of the 1st fresnel zone without obstacles to provide LOS transmission, increase coverage capacity, and minimize the number of necessary sites.
2. If no LOS secured, area in NLOS area could be covered as well, but the distance of coverage and area of coverage are decreased; more sites are needed to provide coverage for same area than in the LOS scenario.
3. Interference must be considered in site selection. New site should avoid known interference, unless the interference is controllable.
4. Keep the MST200 away from places that are susceptible to high temperature, dust, harmful gas, inflammable, explosive, electromagnetic interference (high power radar, radio station and transformer), unstable voltage, heavy vibration, or loud noise. In engineering design, the site should be selected according to the network planning and technical requirements of communications equipment, as well as the considerations such as climate, hydrology, geology, earthquake, electric power, and transportation.

### 3 MST200 Installation

The installation flowchart of MST200:



#### 3.1 Installing MST200 on a pole

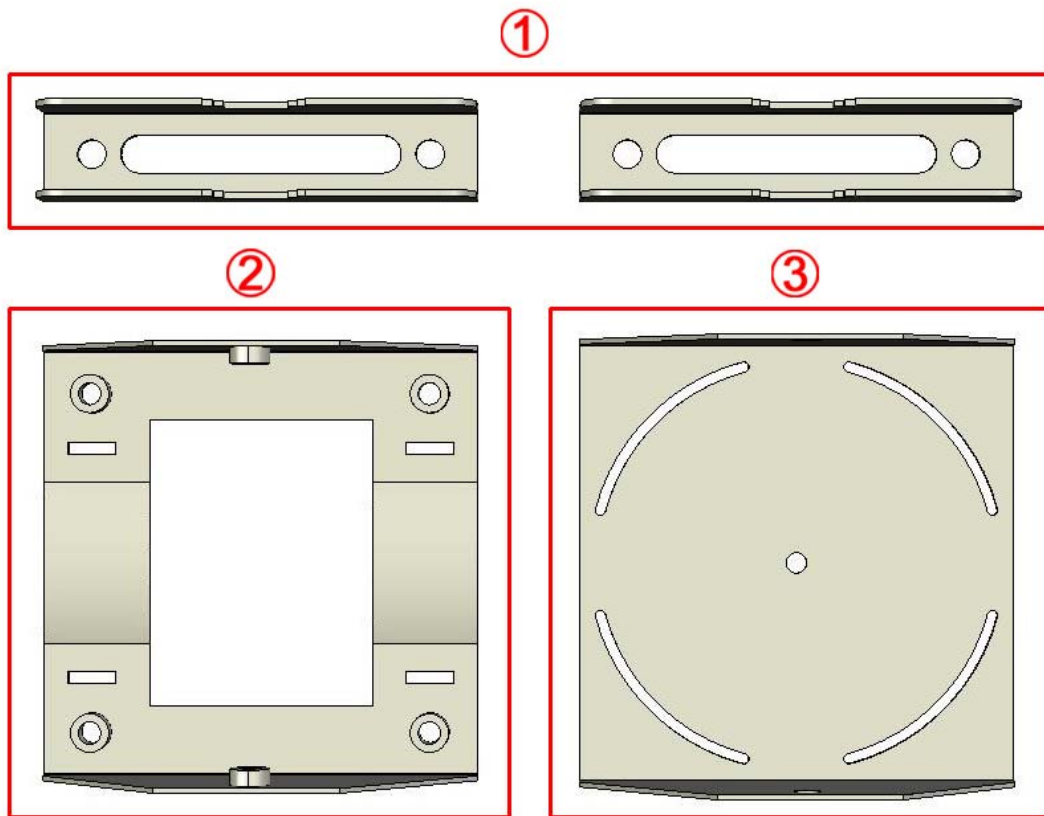
The mounting assembly for installing MST200 concludes: a pair of pole anchors, a positioning bracket, a mounting bracket and bolts. MST200 can be mounted on a pole or wall. (Pole diameter must be 40 to 60

mm at the position where the MST200 will be mounted.)

**⚠ Note**

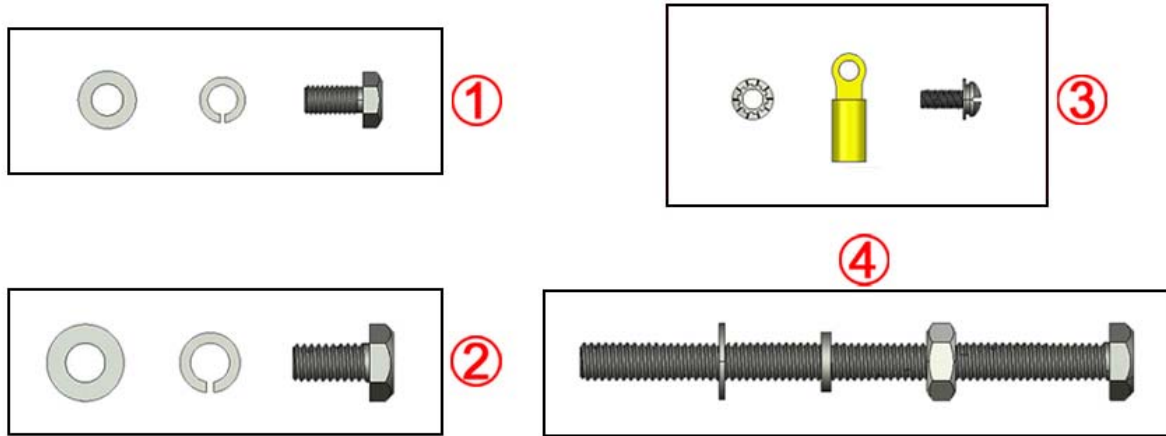
- If using M8 x150 long bolts (not provided in the box shipped with MST200), the MST200 can be mounted on a pole with 96mm diameter.

**Figure 3-1 the mounting assembly**



1	a pair of pole anchors	2	A mounting bracket
3	A positioning bracket		

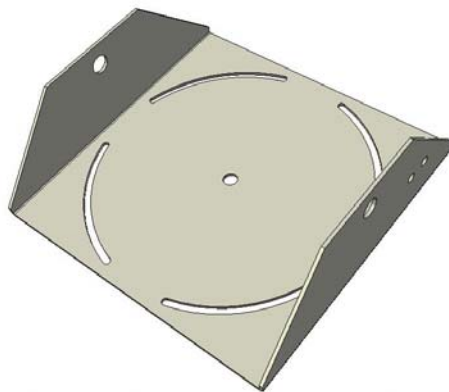
Figure 3-2 Bolts

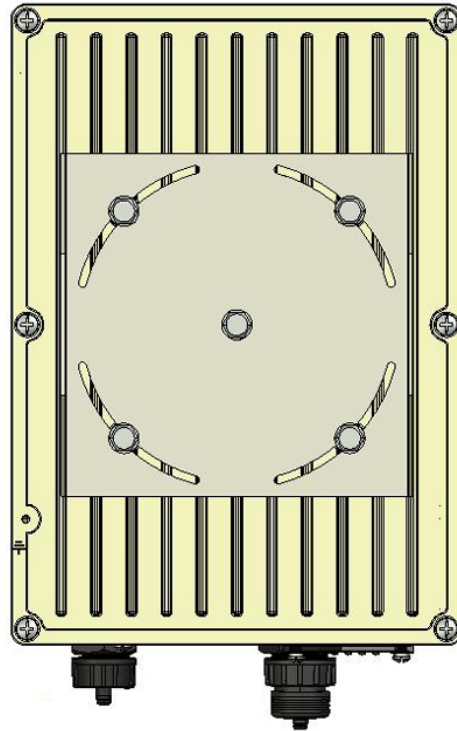


1	{M6 x12 bolt, flat washer, spring washer}x5	3	{M4 x12 bolt, external-tooth washer, OT copper lug}x1
2	{M8 x16 bolt, flat washer, spring washer}x2	4	{M8 x110 bolt, flat washer, spring washer, nut}x4

**Step 1** Fasten the positioning bracket onto the back of the MST200 using the five M6 x 12 bolts (with flat and spring washers). (There is screw thread in the screw hole of the mounting bracket, so nuts are not required)

Figure 3-3 Fasten the positioning bracket onto the back of the MST200

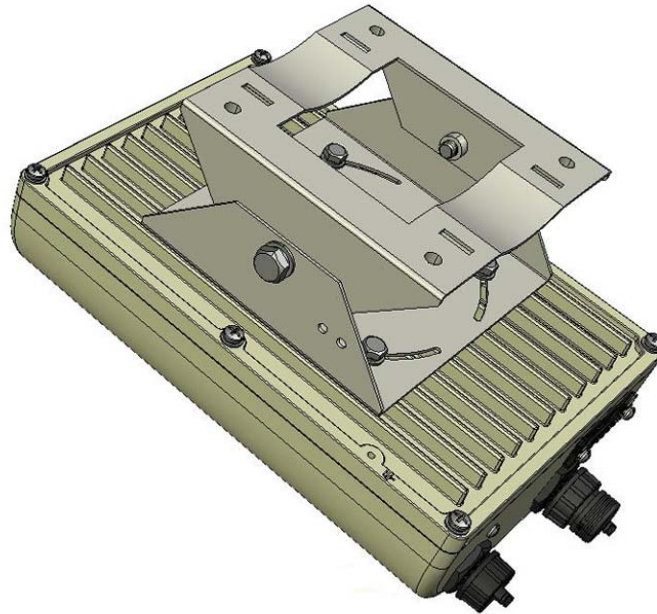




**Step 2** Use the two M8 x 16 bolts (with flat washers and spring washers) to fasten the positioning bracket flanges to the mounting bracket flanges.

**Figure 3-4 Positioning bracket and mounting bracket bolted at flanges**

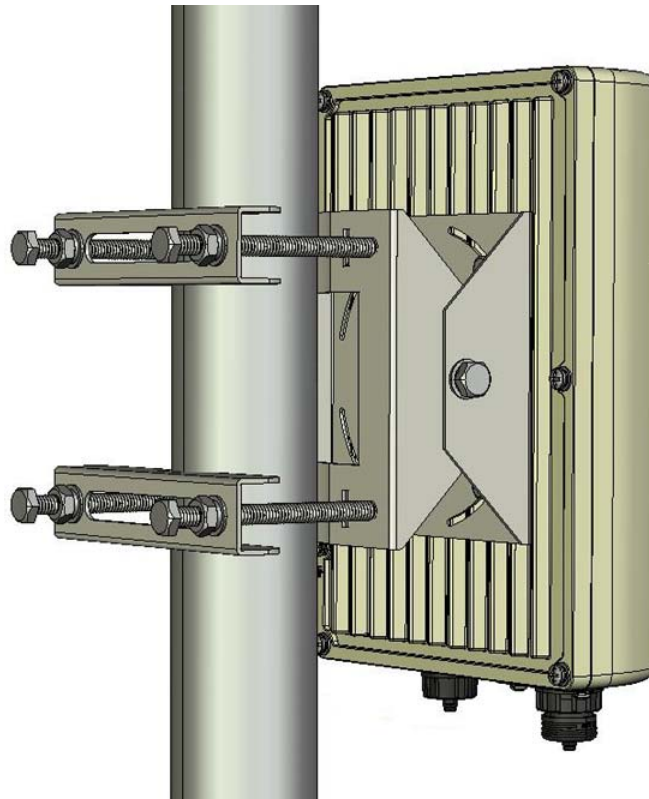




The flange bolts allow the inclination of the MST200 to be adjusted by shifting the angle of the bracket using the fastening bolts as an axis.

**Step 3** When mounting the MST200 to a pole, use the four M8 x 110 bolts (with flat washers, spring washers and nuts) and two pole anchors to fasten the mounting bracket to the pole.

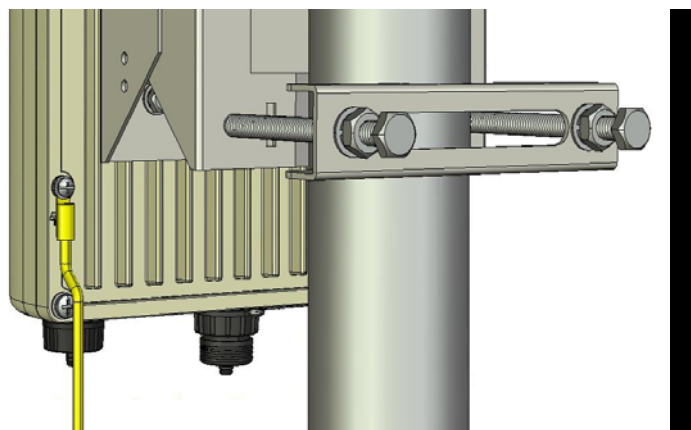
Figure 3-5 Mounting MST200 on a pole



### 3.2 Grounding the MST200

The grounding must be completed before powering up the MST200. The resistance of grounding wire should be less than 5 ohm and the grounding cable's cross-section area should be no less than 6 mm<sup>2</sup>. The grounding hole is at the left side of the MST200.

Figure 3-6 Grounding the MST200



**Step 1** Peel the cover of one end of the grounding cable (green or yellow and green grounding cable with 6 mm<sup>2</sup> cross-section area) and place the bare grounding cable into the copper lug, and press firmly



with the crimping pliers.

**Step 2** Fasten the copper lug to the grounding hole on the MST200 with the M4 x12 bolt and external-tooth washer.

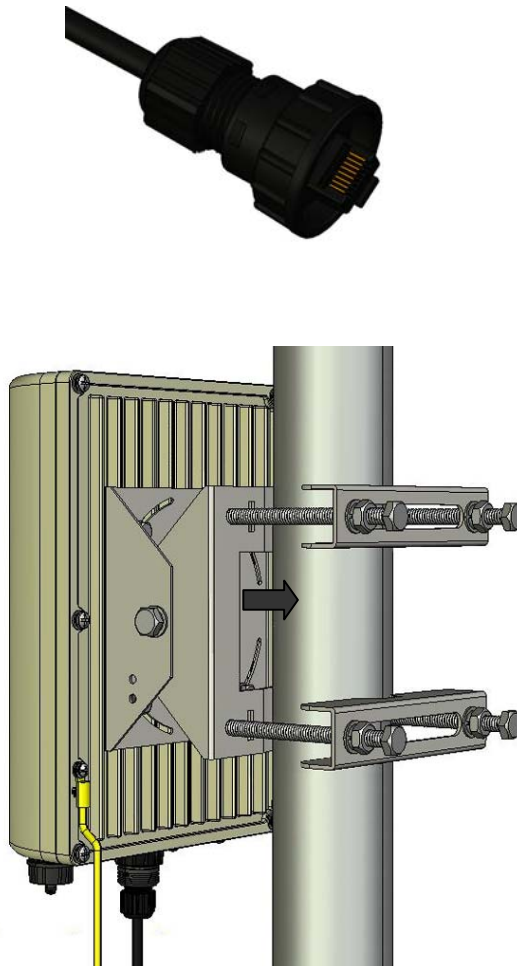
### 3.3 Connecting the Ethernet cable

**Step 1** Remove the protective cap on the Ethernet interface.

**Step 2** Insert the Ethernet cable connector into the Ethernet interface and hand-fasten the waterproof cover.

**Step 3** Water-proof the Ethernet cable connection with PVC insulation tape, adhesive insulation tape and strap.

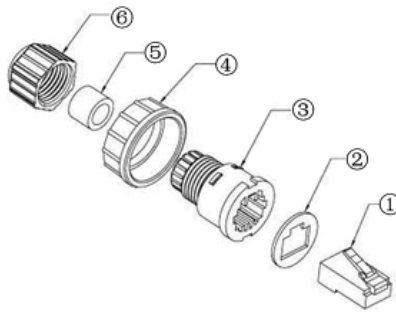
**Figure 3-7** Connecting Ethernet cable





 **Note**

- A waterproof Ethernet connector kit will be shipped with the MST200, including ① shielded RJ45 connector, ② gasket mat, ③ waterproof Ethernet connector socket, ④ locknut, ⑤ seal ring, ⑥ sealing nut, as shown in the figure below:





## 4 Note

- To log onto the MST200 via Console port, use the setting as shown in table below:

Baud Rate	115200
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None
Default Username and Password	root : public