WM5030-OD WiMAX Outdoor Modem

Mounting Guide

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IMPORTANT NOTE:
To comply with the RF exposure compliance requirements, the antenna(s) used for this
transmitter must be installed to provide a separation distance of at least 1 meter from all persons
and must not be co-located or operating in conjunction with any other antenna or transmitter. No
change to the antenna or the device is permitted. Any change to the antenna or the device could
result in the device exceeding the RF exposure requirements and void user's authority to operate
the device.

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1. UNPACK THE OUTDOOR MODEM

The following figure lists the items shipped with WM5030-OD outdoor modem:

1. PoE Adapter: Qty 1
2. 1.5 M 8P4C gray Ethernet cable (between computer and PoE): Qty 1
3. 1 M 8P8C white Ethernet cable (between PoE and Modem): Qty 1
4. Quick Installation Guide: Qty 1
5. WM5030-OD outdoor modem: Qty 1
6. Mounting kit: Qty 1
7. RJ45 connector water sealing plug: Qty 1
8. CD-ROM: Qty 1
9. 1.5M Power Cable for PoE Adapter: Qty 1
10. Warranty Card : Qty 1

Note: The length of Ethernet cable required connecting outdoor modem and PoE adapter pending on

actual installation requirements, and it is thus not provided. The cable provided is for configuration

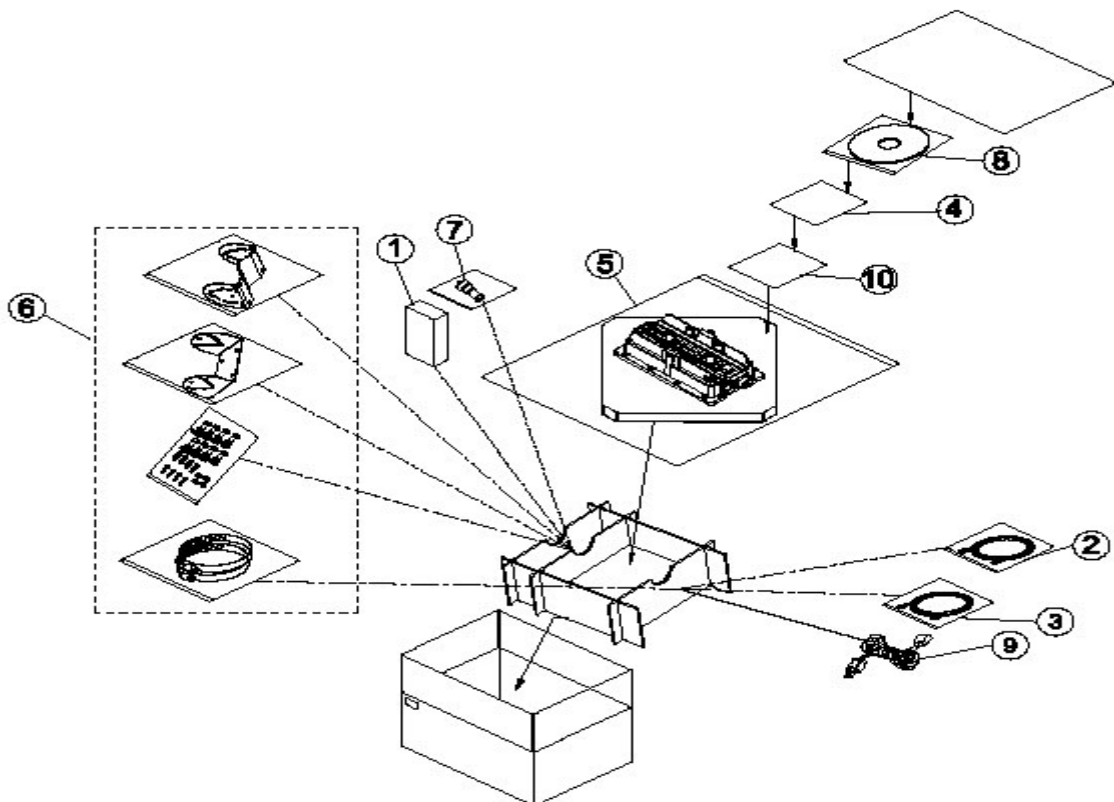or testing purpose only – not for installation purpose.

Figure 1. WM5030-OD Outdoor Modem Package Contents

2. HOW TO CONNECT

In order to configure WM5030-OD outdoor modem, please take the following steps:

1. Power is supplied thru the 8P8C Ethernet cable to outdoor modem, therefore it is important to use 8P8C Ethernet cable of adequate length to connect the RJ-45 connector located at the bottom of the outdoor modem and the "Data & Power Out" port of PoE adapter.

2. Connect the gray Ethernet cable between the "data in" port of the PoE adapter and subscriber's personal computer.

3. Plug the PoE adapter power cable to power outlet

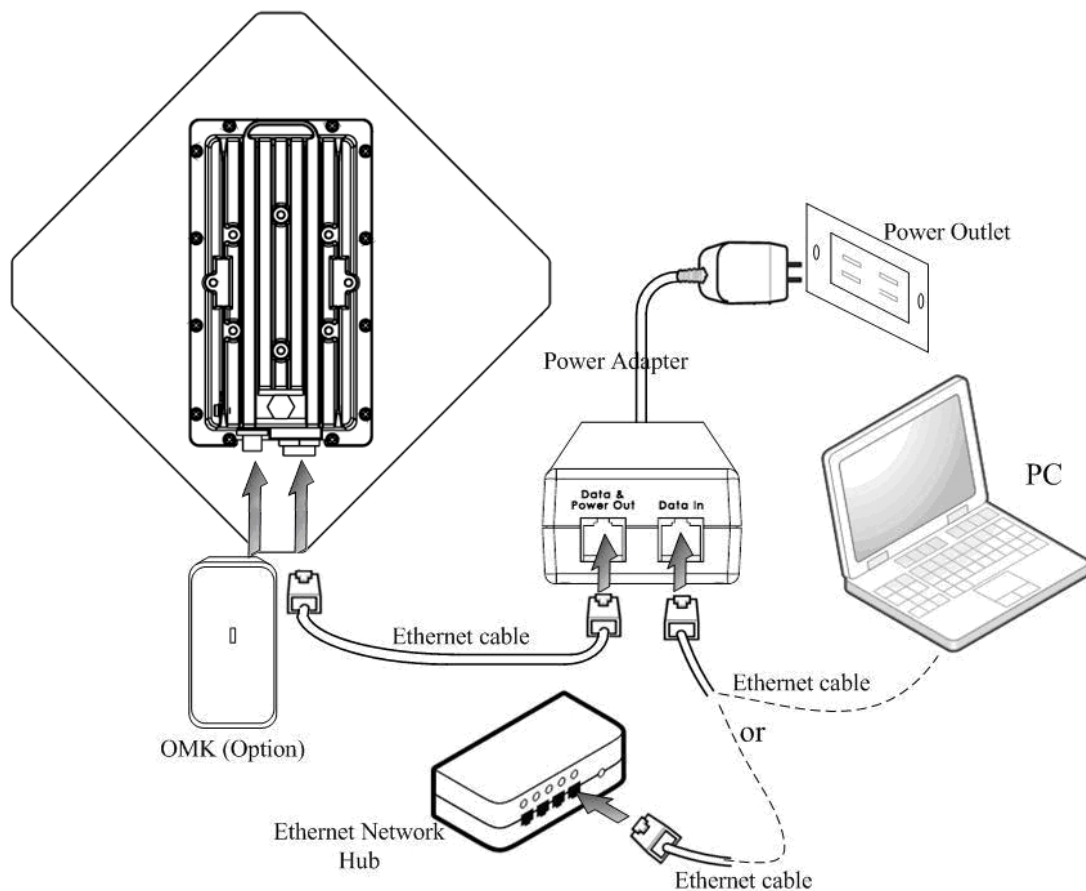4. Plug the OMK (Outdoor modem Monitoring Kit) to OMK connector

Figure 2. Typical Installation Diagram

3.   BEFORE YOU START

3.1 Mounting Location

Choosing a good mounting location for the outdoor modem is important because it affects the reliability of the

wireless link and maximum data rates it can support. The most important considerations are distance from

base station and clearance from obstacles. The mounting location can be a wall, ceiling, the top or side of a

building, or on a tower providing a clear unobstructed line-of-sight to the base station to provide the best

performance.   Line-of-sight to the base station is not required, but provides best performance for subscriber.

With the high gain panel antenna outdoor modem configuration, the location must allow the antenna to be

oriented in the proper direction. The outdoor modem can be located in a convenient location that minimizes the

cable length to the outdoor modem.

When choosing mounting location, try to avoid the following common obstacles:

- ■   Trees and large plants: Remember to include allowance of future tree growth.
- ■   Man-made obstacles: A large round container such as a gas storage reservoir or water tower that is

   partially in the path causing some blocking. These obstacles may also reflect some energy, which

   can interfere with other receivers. Square or rectangular objects in or near the path have rectangular

   surfaces that can block and diffract signals over and around them.

Make sure the following cable route requirements are met before beginning the installation:

- Identify cable routes, building entry points, and any special routing or support requirements (conduits, bracing, cable trays, safety structures, and so on). Make sure the total cable length between the outdoor modem and the PoE is no longer than 100 meters.

- Identify necessary floor, roof, or wall penetrations and specify the locations.

- Document existing grounding system and connection requirements for new equipment.

- Refer to electrical codes for your local regulations

3.2 Lighting Protection

In outdoor installations, your outdoor modem can be damaged by surges that develop on the antenna and cable from close lightning strikes. You can use a lightning arrestor to help protect your outdoor modem from static electricity and lightning-induced surges; however, an arrestor will not prevent damage from a direct lightning hit.

3.3 Safety Precautions

- For your safety, and to help you properly install hardware, please read and follow these safety precautions.

- If you are installing an outdoor modem for the first time, for your own safety as well as others, seek assistance from a person with skills and knowledge related to the construction and operation of electrical equipment and has received safety training on the hazards involved.

- Keep safety as well as performance in mind when selecting your installation site. Remember: electric power lines and phone lines look alike. Always assume that overhead lines are very dangerous.

- Call your electric power company. Tell them your plans, and ask them to look at your proposed installation. This is a reasonable request considering the danger.

- Plan your installation carefully and completely before you begin. Successful rising of a mast or tower is largely a matter of coordination. Assign each person a specific task, and ensure that they know what to do and when to do it. Put one person in charge of the operation to issue instructions and watch for signs of trouble.

- When installing your antenna, remember:

    - Do not use a metal ladder.

    - Do not work on a wet or windy day.

    - Do dress properly—shoes with rubber soles and heels, gloves, long sleeved shirt or jacket.

- If the assembly starts to fall, get away from it and let it fall. Remember: the antenna, mast, cable, and metal guy wires are excellent conductors of electrical current and may touch power lines.

- If any part of the outdoor modem comes in contact with a power line, don't touch it or try to remove it yourself. Call your local power company. They can remove it safely. If an accident occurs with the power lines, call for qualified emergency help immediately.

3.4 Tool

- Spanner

- Flat screwdriver

- Crimpers

- Cable stripping tool

- Cutting tools

- RJ-45 connectors

- Category 5E Ethernet cable of proper length (8P8C, 24 AWG)

- Cable tester

4.   MOUNTING WM5030-OD

4.1 Polarization

Polarization helps reduce interference because the antenna tends to reject cross-polarized signals from other sources.   Please contact your base station vendor for information on polarization.   Orient WM5030-OD according to the base station polarization.   For example, BTS use the vertical polarization for antenna 0 (preamble path), and horizontal polarization for antenna 1 (secondary path), the WM5030-OD should be mounted by vertical polarized for T/R path and horizontal polarized for R path. If BTS uses the dual slant 45 polarization, and +45 degree for antenna 0 (preamble path), and -45 degree for antenna 1 (secondary path), the WM5030-OD should be mounted by -45 degree polarized for T/R path and +45 degree polarized for R path.
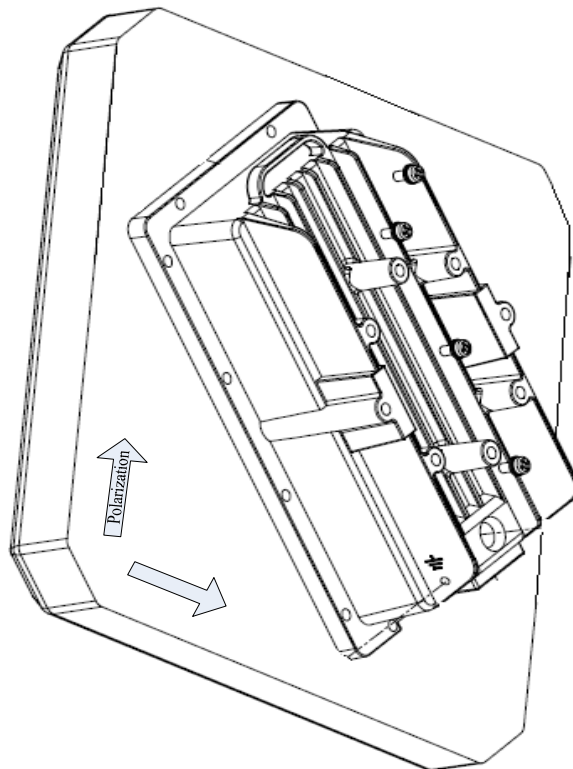

Figure 3. Polarization of WM5030-OD

4.2 Mounting

■ Mounting on pole

A.   The metal bands supplied with WM5030-OD, support pole diameter of 75mm~90mm.   Run the

metal bands thru the elevation clamp and the pole to fix the mounting unit to the pole.   Do not tight

the screws fully at this point yet, but tight enough to support the weight of WM5030-OD.   You will

need to orient the WM5030-OD for best reception later.

B.   Fasten the mounting clamp to the WM5030-OD with screws provided.

C.   Fasten WM5030-OD on the pole by fastening bolts and nuts provided thru mounting clamp and

elevation clamp.

D.   Connect Category 5E Ethernet cable to the RJ-45 connector located at the bottom of WM5030-OD.

(refer to appendix)

E.   Connect OMK (please refer to next section for details of OMK) to the OMK connector located at the

bottom of WM5030-OD.   Make sure the power LED is on.   Please check Ethernet cable and PoE

connection if the power LED is not on.

F.   OMK (Outdoor modem Monitoring Kit) provides you the signal strength (CINR) with CINR LED.

Orient WM5030-OD when you have more than 7 or more CINR LED off.

G.   If base station is nearby, and locates higher or lower than WM5030-OD, then adjust the tilt of

WM5030-OD accordingly.   Use the elevation indication labels on the elevation clamp to find the

best tilt for best CINR.

■ Wall mount

A.   Connect Category 5E Ethernet cable to the RJ-45 connector located at the bottom of WM5030-OD

(please refer to appendix)

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B.   Connect OMK (please refer to next section for details of OMK) to the OMK connector located at the bottom of WM5030-OD.   Make sure the power LED is on.   Please check Ethernet cable and PoE connection if the power LED is not on.

C.   OMK (Outdoor modem Monitoring Kit) provides you the signal strength (CINR) with CINR LED. Position WM5030-OD when you have more than 7 or more CINR LED on.   Use a marker to mark this position for wall mount.

D.   Screw the elevation clamp to the wall.

E.   Fasten the mounting clamp to the WM5030-OD with screws provided.

F.   Fasten WM5030-OD on the wall by fastening bolts and nuts provided thru mounting clamp and elevation clamp.

G.   If base station is nearby, and locates higher or lower than WM5030-OD, then adjust the tilt of WM5030-OD accordingly.   Use the elevation indication labels on the elevation clamp to find the best tilt for best CINR.

5. OMK

OMK (Outdoor modem Monitoring Kit) is a convenient tool for technician during installation, testing and maintenance for WM5030-OD.   It is designed for easy carrying and an excellent tool to display radio quality for technician to adjust orientation and tilt of WM5030-OD for best reception from WiMAX base station.   OMK features include:

- CINR signal quality
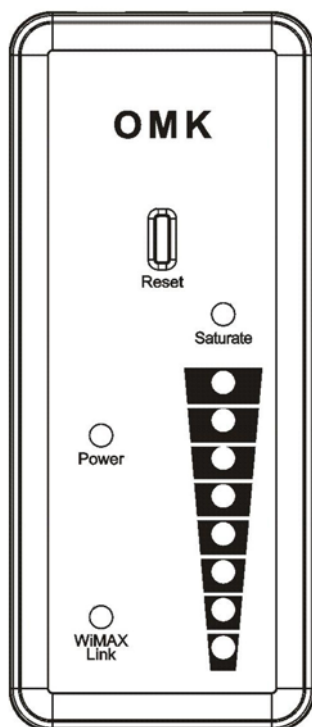- Power indicator
- Link status
- Reset to factory default

Figure 4. OMK

Table 1. Definitions of OMK LED

	Color	Function								
WiMAX Signal Indicator	Green	CINR > 31dBm	31 ≥ CINR ≥ 29dBm	29 > CINR ≥ 27dBm	27 > CINR ≥ 24dBm	24 > CINR ≥ 20dBm	20 > CINR ≥ 15dBm	15 > CINR ≥ 10dBm	10 > CINR ≥ 5dBm	CINR < 5dBm
Saturate LED	Red	RSSI > -20dBm: ON (saturate)								
WiMAX Link LED	Green	Operational: ON Not in operation: OFF								
Power LED	Green	Power-on: ON, Power-off: OFF								
Reset Button		Push and hold for 20 seconds will reset WM5030-OD to factory default								

6.   APPENDIX: CONNECTING ETHERNET CABLE TO WM5030-OD

This appendix explains how to prepare and connect Ethernet cable to WM5030-OD.   The Ethernet cable
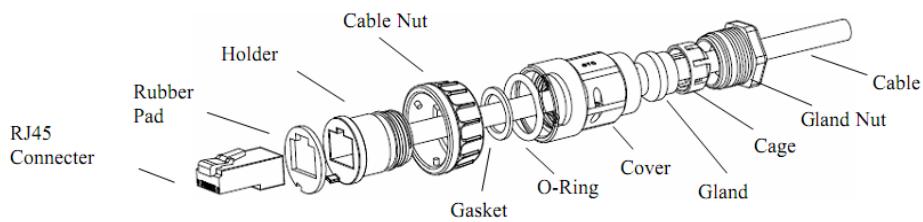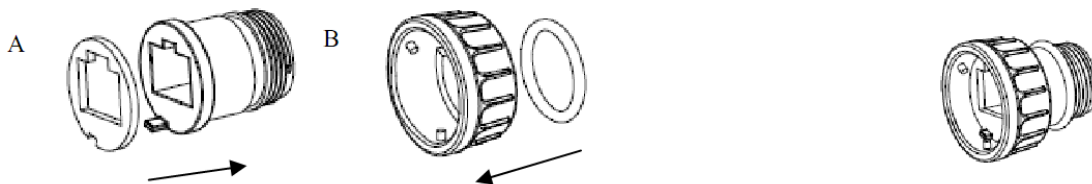
assembly is shown below.
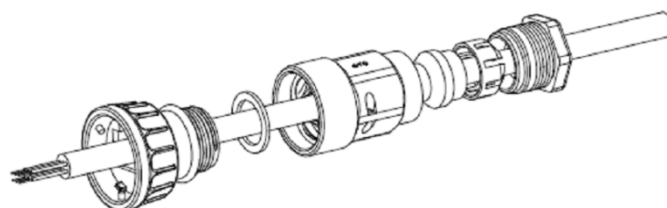

Figure 5. Ethernet Cable Assembly

Step 1：Assemble the water proof unit as follows:
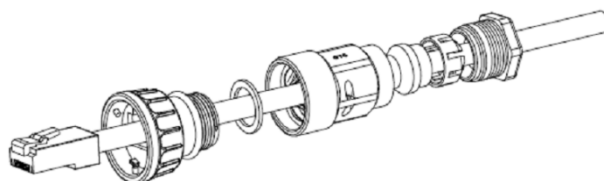

Step 2: Peel the Ethernet cable as follows:
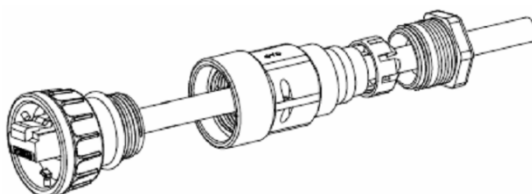

Step 3：Run the Ethernet cable thru water proof units.

Step 4.

Step 5.

Step 6.

Step 7.

Step 8.   You are ready to connect the Ethernet cable to WM5030-OD.   Please prepare the other

end and make connection to the PoE adapter.