

## WiMAX Outdoor Modem

# OX-350I

*Dual Transmitter, High Antenna Gain, Robust Enclosure*

*Provides extended coverage, high throughput, and robust performance.*

## Key Features

- IEEE802.16e, WiMAX Wave 2 Compliant
- Built-in 14 dBi dual polarization antenna
- Transmission power up to 27 dBm
- 2Tx, 2Rx
  - Uplink / downlink MIMO Matrix A,
  - Downlink MIMO Matrix B
- Uplink / downlink Modulation QPSK, 16 QAM, 64 QAM
- OX-350I supports 2300 to 2400 MHz (3600 to 3800 MHz optional)
- Industrial robust enclosure: IP-67 level dust / waterproof, corrosion-resistant
- 4KV lightning surge protector
- External 802.3af Power-over-Ethernet injector
- Auto authentication with EAP-TLS / TTLS
- Over-the-air firmware upgrade and remote management

## Benefits

### Extending Service Coverage

#### Uplink MIMO Matrix A

In most wireless systems, including WiMAX, uplink performance is often weaker than downlink performance.

To tackle this weakness, OX-350I adopts uplink MIMO Matrix A technology to improve the uplink performance.

With appropriate base station support, MIMO Matrix A allows a single data stream to be transmitted in parallel over two different radio paths. This provides a perceived 3 dB combining gain in uplink performance. As the result, the received signal can be stronger and more robust.

Moreover, MIMO Matrix A also reduces significant power consumptions on OX-350I. It enables both power amplifiers to transmit at lower power levels, while maintaining performance equivalent to a single power amplifier.

#### Intelligent Transmit Antenna Diversity

OX-350I is further **equipped with i-TAD**, Intelligent Transmit Antenna Diversity technology. When base stations do not support uplink MIMO Matrix A, this smart antenna technology **combines the power of the two transmitters and dynamically selects a better antenna to transmit signals, providing actual measured gain.**



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ISD Version 1.01

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# Datasheet

## Best-in-class 14 dBi Antenna

OX-350I comes with a built-in 14 dBi dual polarization antenna. The best-in-class antenna gain provides better signal strength for both downlink and uplink. That ensures stable connectivity and improves subscribers' user experience.

## Higher Throughput

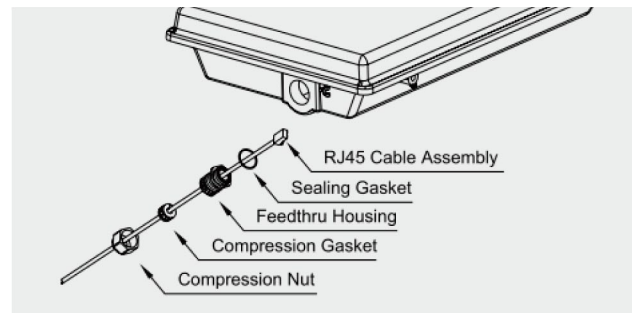
OX-350I supports both uplink and downlink 64 QAM modulation. The quality signals provided by the MIMO technology and best-in-class antenna allows the 64 QAM modulation to achieve better throughput for subscribers. That shortens transmission time for given subscribers, and then operators are able to spare network capacity to other subscribers.

## Robust and Flexible Mechanical Design

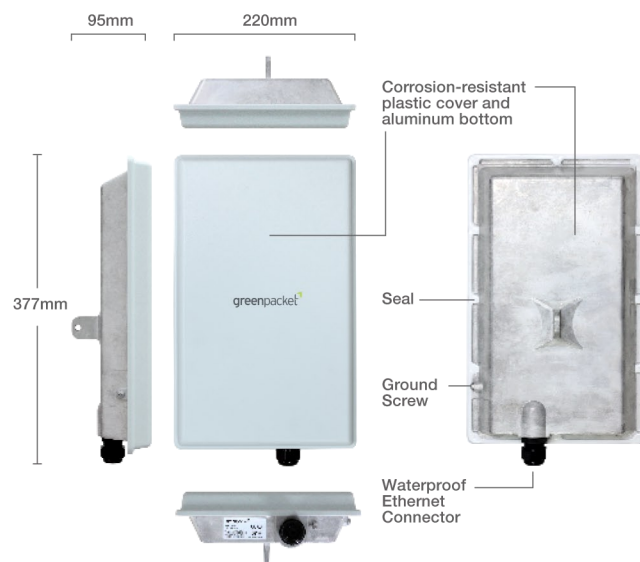
OX-350I is built to withstand extreme weather conditions. **The enclosure meets IP-67 rating, which protects against dust and effects of water immersion.** In addition, **the surge protector keeps OX-350I safe from lightning and other electrical surge voltages up to 4KV.**

OX-350I mount kit provides extreme flexibility for installation. The pole-mounting and wall-mounting brackets can be chosen according to field conditions, and the OX-350I can be adjusted toward the base station to achieve Line Of Sight (LOS) and best quality signals.

In addition, the robust mount kit has passed severe windward and crosswind tests. The below results show the OX-350I is even capable of withstanding hurricane forces. (windward / crosswind under 60 m / s for 10 minutes, Beauford Wind Force Scale 17)



< Waterproof Ethernet Connector >



## Package Information

- 1 x OX-350I WiMAX outdoor modem
- 1 x PoE injector
- 1 x RJ45 network cable (200 cm, connecting PoE to computer)
- 1 x Quick installation guide
- 1 x mounting kit
- Box dimension: 416 mm (L) X 254 mm (W) X 160 mm (H)
- Box weight: 2.6 kg

# Datasheet

## Specifications

### Physical Layer

<b>Standard</b>	<ul style="list-style-type: none"><li>• IEEE 802.16e-2005 (WiMAX Wave 2)</li></ul>
<b>Frequency Range</b>	<ul style="list-style-type: none"><li>• OX-350I:3300-3600 MHz (3600-3800)MHz may be supported with special firmware)</li></ul>
<b>Data Rate</b>	<ul style="list-style-type: none"><li>• Downlink up to 30 Mbps</li><li>• Uplink up to 6 Mbps</li></ul>
<b>Channel Bandwidth</b>	<ul style="list-style-type: none"><li>• 5, 7, 10 MHz</li></ul>
<b>Adaptive Modulation</b>	<ul style="list-style-type: none"><li>• Downlink:QPSK, 16 QAM, 64 QAM</li><li>• Uplink:QPSK, 16 QAM, 64 QAM*</li></ul>
<b>Transmit Power</b>	<ul style="list-style-type: none"><li>• 26 dBm (combined 2Tx)</li></ul>
<b>Antenna</b>	<ul style="list-style-type: none"><li>• 14 dBi Dual polarization</li><li>• 2 Rx with receive MRC, MIMO A, MIMO B</li><li>• 2 Tx with Dual Transmission Technology with ITAD</li></ul>
<b>Smart Antenna System / RF Path Diversity</b>	<ul style="list-style-type: none"><li>• STC and MRC</li></ul>
<b>MIMO</b>	<ul style="list-style-type: none"><li>• Downlink:Matrix A, Matrix B</li><li>• Uplink:Matrix A's</li></ul>
<b>Beamforming</b>	<ul style="list-style-type: none"><li>• UL Sounding</li><li>• AMC 2x3 with dedicated pilots</li><li>• PUSC with dedicated pilots</li></ul>

\*Subject to BS support

### MAC Layer

<b>Convergence Sub-layer Service</b>	<ul style="list-style-type: none"><li>• IPv4 CS, IPv4 over IEEE 802.3, Ethernet CS</li></ul>
<b>QoS Scheduler Options</b>	<p>Advanced scheduling algorithm with full QoS support:</p> <ul style="list-style-type: none"><li>• Unsolicited grants service (UGS)</li><li>• Enhanced real time polling service (ertPS)</li><li>• Real-time polling service (rtPS)</li><li>• Non-real-time polling service (nrtPS)</li><li>• Best effort (BE)</li></ul>
<b>Radio Optimization</b>	<ul style="list-style-type: none"><li>• ARQ, HARQ (Cat 1 Cat 6)</li><li>• Payload header suppression</li><li>• Robust header compression</li></ul>
<b>Security Options</b>	<ul style="list-style-type: none"><li>• EAP client TLS and TTLS (MSCHAPv2, MSCHAP, CHAP, MD5)End-to-end PKMv2</li><li>• Authentication based on X.509 certificate (Optional)</li></ul>
<b>Encryption</b>	<ul style="list-style-type: none"><li>• AES-CCM 128-bit, 3DES 128-bit</li></ul>

### Networking

<b>NAT</b>	<ul style="list-style-type: none"><li>• Many-to-Many / Many-to-One NAT</li><li>• One-to-One NAT (DMZ)</li><li>• Port Forwarding (Virtual Server)</li><li>• Port Triggering (ALG)</li><li>• ALG (SIP, FTP, H.323, PPTP)</li></ul>
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<b>DNS</b>	<ul style="list-style-type: none"><li>• DNS Proxy for LAN</li><li>• DDNS (DynDNS, TZO)</li></ul>
<b>VPN</b>	<ul style="list-style-type: none"><li>• Pass-through</li></ul>
<b>VLAN</b>	<ul style="list-style-type: none"><li>• 802.11q (Pass-through only)</li></ul>
<b>DHCP</b>	<ul style="list-style-type: none"><li>• DHCP Server for LAN</li><li>• DHCP Client for WAN</li></ul>
<b>NTP</b>	<ul style="list-style-type: none"><li>• Yes</li></ul>
<b>UPnP</b>	<ul style="list-style-type: none"><li>• Yes</li></ul>
<b>Firewall</b>	<p>Stateful Packet Inspection</p> <ul style="list-style-type: none"><li>• DoS / DDOS Prevention</li><li>• Policy Based IP Packet Filter</li><li>• ACL (MAC / IP / TCP, UDP ports)</li></ul>
<b>Software Upgrade</b>	<p>Local:</p> <ul style="list-style-type: none"><li>• OTA (Over-the-air):HTTP, FTP / TFTP Client, TR-069, OMA-DM**</li></ul>
<b>Remote Management</b>	<ul style="list-style-type: none"><li>• TR069**</li><li>• OMA-DM**</li><li>• SNMP v2c</li></ul>

\*\*Subject to IOT (Inter Operability Testing) results and extra fee

### Electrical & Mechanical

<b>Dimension (L x W x H)</b>	<ul style="list-style-type: none"><li>• 354 x 220 x 68 mm (Without Mounting Kit)</li><li>• 354 x 220 x 102 mm (With Mounting Kit)</li></ul>
<b>Weight</b>	<ul style="list-style-type: none"><li>• &lt; 2 Kg</li></ul>
<b>Interface</b>	<ul style="list-style-type: none"><li>• 1 X 10 / 100 Base-T (RJ-45)</li></ul>
<b>Temperature</b>	<ul style="list-style-type: none"><li>• Minus 40 C - 60 C (Operating)</li><li>• Minus 40 C - 75 C (Storage)</li></ul>
<b>Humidity</b>	<ul style="list-style-type: none"><li>• 10%-85% non-condensing (Operating)</li><li>• 5%-95% non-condensing (Storage)</li></ul>
<b>Power Supply</b>	<ul style="list-style-type: none"><li>• IEEE 802.3af compliant PoE</li><li>• AC 90-264C, 47 / 63Hz, 0.5A</li></ul>
<b>Power Consumption</b>	<ul style="list-style-type: none"><li>• &lt;12W</li></ul>
<b>Material</b>	<ul style="list-style-type: none"><li>• RoHS compliant</li></ul>
<b>Regulatory</b>	<ul style="list-style-type: none"><li>• CE:OX-230 / 250</li><li>• FCC:OX-250</li></ul>
<b>Surge Protection</b>	<ul style="list-style-type: none"><li>• 4KV</li></ul>
<b>Ingress Protection Rating</b>	<ul style="list-style-type: none"><li>• IP-67</li></ul>
<b>Wind Resistance</b>	<ul style="list-style-type: none"><li>• Windward / crosswind:60 m / sec for 10 minutes</li></ul>
<b>MTBF</b>	<ul style="list-style-type: none"><li>• 50,000 Hours</li></ul>
<b>Battery</b>	<ul style="list-style-type: none"><li>• N / A</li></ul>

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