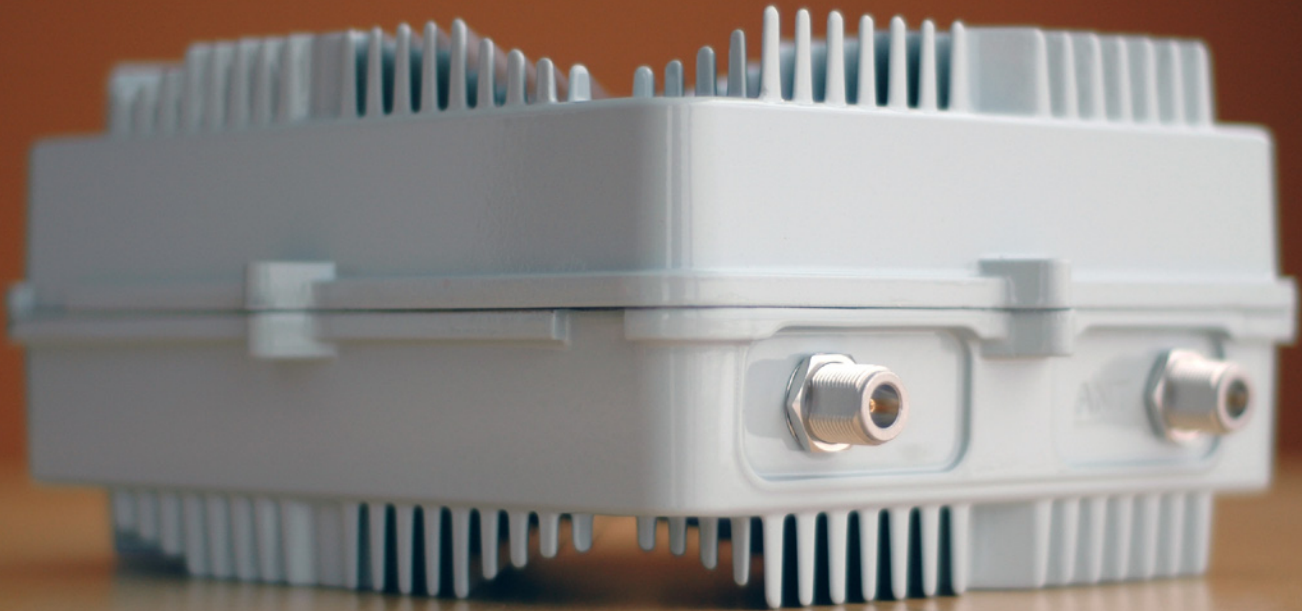




# Libra MAX-RBS

Dual Antenna Rapid Backhaul System



The Libra MAX-RBS is a full line-speed WiMAX Rapid Backhaul System. MAX-RBS offers increased flexibility to service providers with their installation options. The Libra MAX-RBS is an economical way to extend the coverage of WiMAX sectors to reach remote CPEs or avoid large obstacles. Everything in the MAX-RBS is packaged in a rugged all-in-one ODU enclosure to simplify deployment options. The intelligence inside the MAX-RBS unlocks advanced deployment options for WiMAX service providers by enabling the deployment of WiMAX mesh and WiMAX ring topologies.

## Dual Antenna Rapid Backhaul System



## Line Speed System

MAX-RBS is a carrier class, dual radio, full line-speed, WiMAX system. Unlike the store and forward algorithm that is in typical WiFi repeater mesh networks that cuts net throughput in half for every hop in the mesh, MAX-RBS through its dual antenna ports maintains the original 100 percent net throughput capacity without any throughput losses in all hops. The store & forward algorithm has two major drawbacks; throughput is cut in half because a single radio is performing the receiving and transmission tasks and the latency of the system is high since the CPU on the radio is involved in reading and writing the data to memory. Both of these issues are fixed in the MAX-RBS through careful design choices. The MAX-RBS contains dual WiMAX radio cards for full line-speed transmission. Because the uplink path and downlink path are independent, throughput capacity is not cut in half. Finally low latency is achieved by bridging the data over layer 3, eliminating the labourious 'store & forward' process.



## Twin Antenna Ports

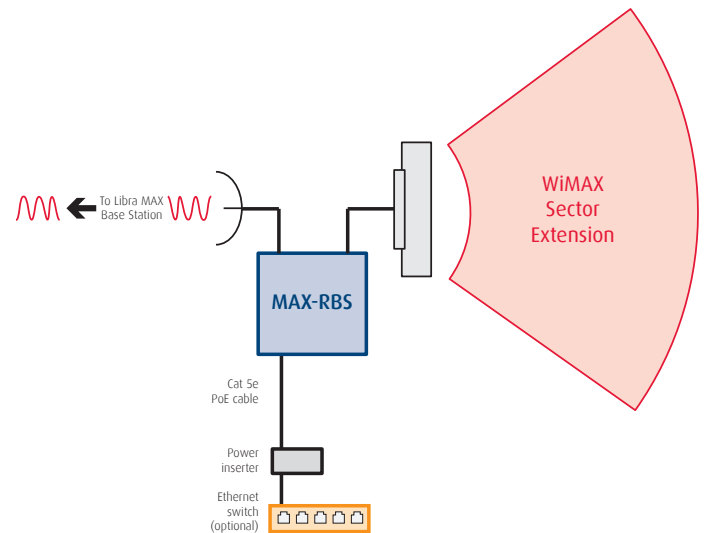
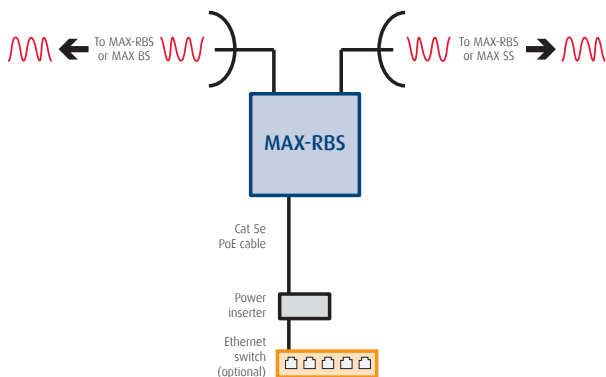
The MAX-RBS has two N-type female antenna connectors for 'northbound' and 'southbound' antennas. The operator is free to choose the combination of directional or sectoral antennas that best fit the application.

## Repeater Mode

In the simple repeater mode, two directional antennas are used for point-to-point communication. The repeater mode is useful for avoiding large obstacles which prevent LOS or NLOS paths, and for establishing advanced backhaul topologies such as ring and mesh architectures. Repeater mode is the default operating mode for the Libra MAX-RBS.

## Sector Extension Mode

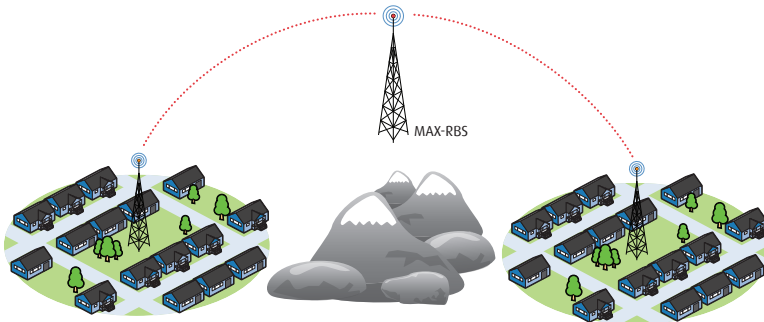
MAX-RBS can extend the range of a Libra MAX Base Station Sector to reach remote subscriber stations that are out of range of the base station antenna. In this operating mode, a directional antenna and a sectoral antenna are used.



## Rugged All-in-One Design

Libra MAX-RBS is designed for deployment in difficult and remote locations. All of the electronics are located in a rugged metal die cast enclosure. The enclosure is rated for outdoor operation in temperatures from  $-50^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ , and all environmental conditions.

The unit can be attached to a wall, pole or tower using the included mounting hardware. Power is supplied to the Libra MAX-RBS using PoE over an outdoor rated Ethernet cable.



Libra MAX-RBS used as a repeater to get around an obstacle

## Enterprise Network Management

Libra MAX takes a carrier-grade approach to network management with a rich Graphical User Interface (GUI) for element management and SNMPv2 with enterprise MIBs for Network Management. Using these management features, a network administrator can easily control a large Libra MAX network from a single central location. EION's Enterprise MIB allows the monitoring of RF statistics like power, RSSI, and modulation.

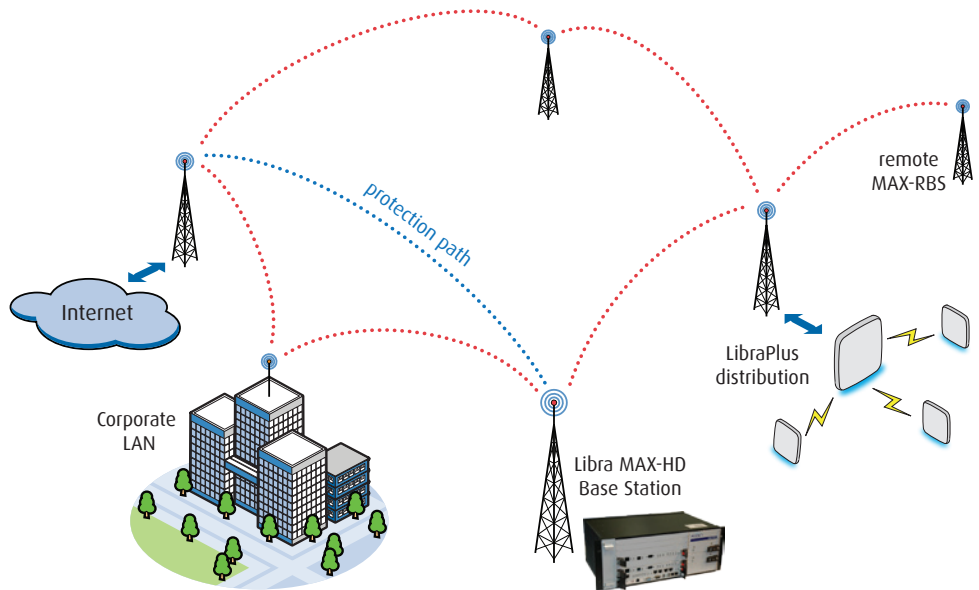
## Topologies

**PTP Repeater** provides range extensions for remote subscriber stations and allows protection paths for critical services.

**Sector Extension** enables the expansion of coverage areas through using the MAX-RBS point-to-multipoint feature.

**Ring and Mesh** topologies can be established for backhaul approaching carrier-grade availability at the system level.

**Jumbo Sector** - Combined with a single Libra MAX-HD Base Station at the central office, MAX-RBS enables hub and spoke architecture, allowing very large WiMAX coverage areas and very high subscriber capacity and throughput.



## Features

- Full line-speed operation
- Rugged all-in-one ODU design
- 10/100 Ethernet Port
- Minimal indoor footprint simplifies deployment
- IEEE 802.16 WiMAX compliant
- Dual N-type female antenna connectors
- Part of the award winning Libra MAX platform
- Supports Ring and Mesh topologies
- Repeat as Sector or Point-to-Point
- Layer 3 bridging for simple passthrough of all traffic including VLAN and SCADA

More Subscribers. More Reach. More Performance.

# Libra MAX-RBS



## RADIO SPECIFICATIONS

Technology	802.16-2004, Corr D5 & D12	
PHY Profile	256 FFT OFDM	
Frequency Range	3.3 to 3.5 GHz; 3.4 to 3.6 GHz; 3.6 to 3.8 GHz, 5.725 to 5.875 GHz	
Duplex Scheme	TDD	
Channel Size	3.5 and 7 MHz, 10 MHz (5. GHz)	
Receive Sensitivity (at 10E-6 BER)	<b>BPSK 1/2</b>	<b>64QAM 3/4</b>
Min Sensitivity - 3.5 MHz	-91 dBm	-74 dBm
Min Sensitivity - 7 MHz	-88 dBm	-71 dBm
Min Sensitivity - 10 MHz	-89 dBm	-70.5 dBm
Tx Power	+22 dBm, +18.5 dBm	
Ranging	Initial, Periodic	
WiMAX System Profile	{profM3_PMP.TDD.profP3_3_5.profP3_7.profC3_23}	

## SYSTEM FEATURES

Configurable Frame Sizes	2.5, 5, 10, 20 ms, with configurable cyclic prefix
Antenna	2x N-type female
Network Connection	10/100/BaseT

## WIRELESS NETWORKING

Scheduling (QoS)	BE, nrtPS, UGS, rtPS
Service Flow Management	16 Service Flows per SS
Classification	IPv4, 802.3
Service Classes	Supported
Polling	Unicast, Broadcast
Service Provisioning	Dynamic

## NETWORKING FEATURES

Routing Support	Static
Repeater Support	Layer 2
Topologies	Mesh, Ring, Jumbo Sector, PtP and PtMP
Bridge Functionality	Yes
VLAN (802.1q)	Yes
Intrasector Bridging	Yes

## SECURITY

Encryption	DES, 3DES, Configuration Security
Data Security Password	Yes
Configuration Security	Yes

## MANAGEMENT

Management	Web-based GUI
Remote Upgrade	Yes

## PHYSICAL ELECTRICAL & ENVIRONMENTAL

Extended Temperature Range	-50° C to + 60° C
Input Voltage	48 VDC supplied via 100-240 VAC PoE
Dimensions	240 mm (9.5") x 200 mm (7.9") x 120 mm (4.7")
Weight	5.8 kg (12.8 lbs)
Enclosure	Fully weatherproof, designed to IP67 standards
Relative Humidity	0-95%
Regulatory Compliance	ETSI EN 301, 489-1, 302, 326-2; EN50385, EN55022 (EU)RSS 210, Issue 6: 2005 (Canada) FCC Part 15 Subpart C, 15.203, 15.207, 15.251: 2007, (US) UL 60950, equivalent EN60950 (EU) RoHS; CE; WiMAX Certified Chipset



EION Wireless, a division of EION Inc., is a global provider of Broadband Wireless Access products that enable effective, economic and secure wireless high-speed communications solutions. EION is a Principal Member of the WiMAX Forum and was named one of the fastest fifty growing wireless companies in North America by Deloitte and Touche. With over ten thousand broadband wireless installations worldwide, the company's licensed and unlicensed frequency products are used by wireless ISPs, private network operators, and remote rural networks and in voice and data backhaul applications to solve last mile challenges. EION Wireless works with more than 165 worldwide channel partners to support its diverse global customer base.