

STARMAX 6000 SERIES

802.16-2004

STARMAX 6000 SERIES BASE STATION FOR FIXED AND NOMADIC WiMAX

EION Wireless' StarMAX 6000 Series WiMAX base station encompasses the flexibility and performance needed for a future proof 16e base station product. By delivering highly competitive and innovative mobile broadband triple-play services, it reduces your cost and increases your revenues for a faster ROI.



StarMAX 6400 Base Station

The StarMAX 6000 Series encompasses EION Wireless' leading mobility solution that enables nomadic and mobile use of user services based on 802.16-2004 today, while offering a seamless migration path to 16e-2005 at the customer choice. StarMAX 6000 Series architecture is designed for Mobile WiMAX—and is dimensioned to fully support 802.16e-2005, MIMO and beam-forming technologies.

POWERFUL, MODULAR BLADE ARCHITECTURE

StarMAX 6400 supports up to 4 WiMAX blades plus one switch blade and one clock blade. Each WiMAX blade can support 2 WiMAX OFDM sectors or a single WiMAX STC/MRC sector (or respective diversity/MIMO options). Each WiMAX blade accepts two modules for 16d-Point-to-Multipoint (D-PMP). A single StarMAX 6400 can support up to 8 sectors that can be configured for immediate deployments with the flexibility of accommodating future requirements.

The switch blade aggregates all traffic and offers various L2 and L3 switching and routing functions—in line with mobility architecture—for mobility and advanced Triple Play services.

A variety of connectivity options, including T1/E1, 10/100/1000bT and wireless interfaces, provide a variety of build-in backhaul choices. This gives the operator the advantage of using the backhaul that is available at each site. The EION Wireless IDU Blade is software upgradable with a fail-back option.

KEY FEATURES

- Multiple antenna system support
- VoIP, SIP support
- Scalable high-density solution (1U and 4U)
- GE and Fast Ethernet uplinks
- In-band or out-band management
- NMS –OSS integration-ready
- Provisioning manager
- Uplink sub-channelization
- 2.5 GHz, 3.3 GHz, 3.5 GHz TDD solution
- ETSI 300 mm, 19" form factor, all front I/O
- GPS TDD sync
- Optional 24/12 hour clock stability

16D FEATURES

- WiMAX 802.16-2004 compliant
- 4 sector WiMAX Base Station
- Upgrade to 4 sectors STC/MRC
- STC/MRC diversity

COMPACT HIGH DENSITY DESIGN MODEL

The StarMAX 6100 Series IDU has been designed to keep both modularly and tight space constraints of a typical deployment site in mind. It is offered in a 1U 19" rack-mountable form factor. Each 1U chassis is capable of supporting up to two sectors.

ENHANCED FEATURES FOR SUPERIOR COVERAGE AND THROUGHPUT

The StarMAX IDU Blade implements several enhanced modes of WiMAX for performance differentiation. These include:

- Increase IP payload throughput through Payload Header Suppression (PHS)
- Advanced Layer 6 support including double VLAN tagging

CARRIER CLASS RELIABILITY

The StarMAX IDU features a rugged design with hot-swappable blades and a removable cooling fan tray to ensure reliability and high performance in adverse conditions and short maintenance cycles. High reliability configurations can be built by adding redundant blades to the system. The equipment is built to meet ETSI form factor requirements for 300 mm rack depth and back-to-back mounting.

STARMAX 6012 – 16D WiMAX BLADE

For support of IEEE 802.16-2004 WiMAX, the WiMAX blade is configured with 2 PMP-D daughter cards, each supporting a single WiMAX sector. Hence, when it is configured with four StarMAX 6012 blades, the StarMAX 6400 base station IDU can support 8 single WiMAX sectors or 4 sectors with STC/MRC functionality. The StarMAX 6400 Series offers leading performance in WiMAX technology, which can even be enhanced by enabling STC/MRC diversity and sub-channelization.

To enable maximum coverage and maximum data throughput, many channel bandwidths, modulations and frame lengths are implemented. TDD duplexing is used for optimal RF spectrum usage and better support of asymmetrical-type of traffic. The SNMP-based Network Management System and Central Provisioning System offers full control over network performance, offering central, remote maintenance and provisioning.



StarMAX 6100 Base Station

STARMAX 8100 - 802.16D ODU UNIT

These ODUs are typically mounted in close proximity to the antennas and convert the intermediate frequency (IF) signal from the IDU to the desired transmit/receive frequencies and power levels. The EION ODU is enclosed in a lightweight, rugged, weather-proof enclosure that allows for peak performance in unprotected, extreme conditions. It is available in a variety of options for supporting 2.5/3.3/3.5GHz TDD modes of operation.

The EION ODU can be ordered along with a full complement of sectorized, high-gain antennas, cables, connectors and mounting kits providing a complete solution to network operators.

PROVISION FEATURES

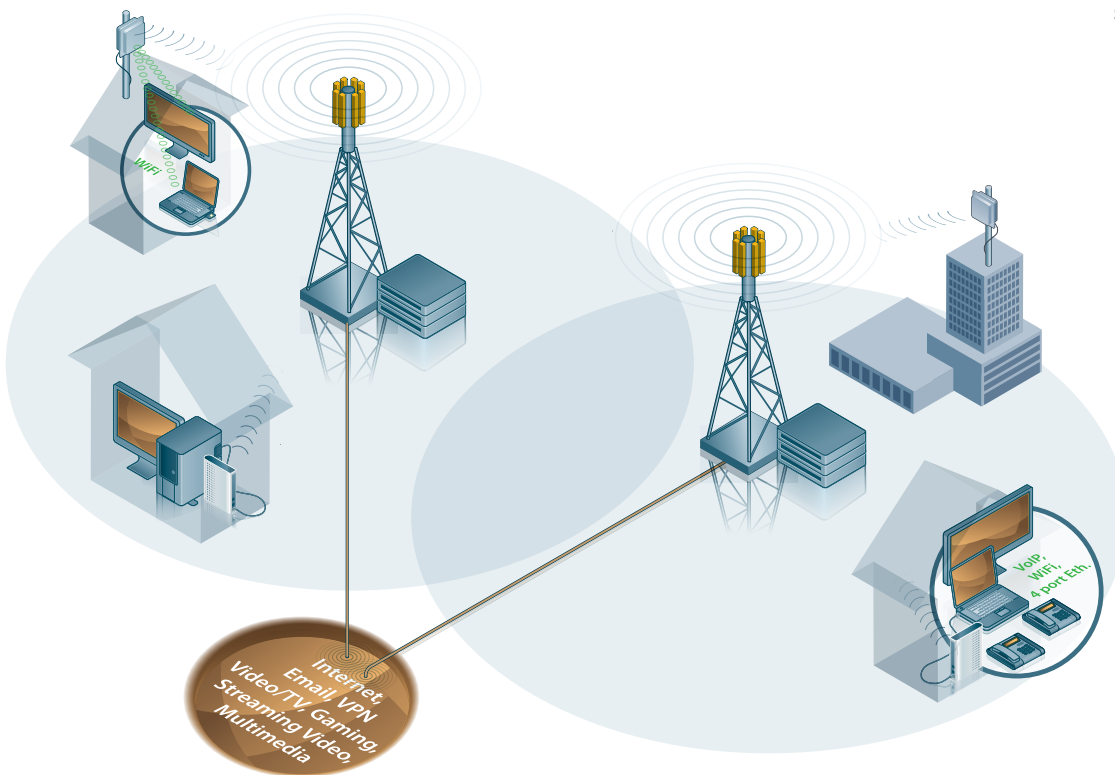
- Mobility services and handoff management
- Mobile, nomadic and fixed subscriber station provisioning
- QoS management offering BE, nrtPS, rtPS, UGS categories
- Minimum and maximum data rates, VLANs
- Three tier architecture for scalability and redundancy
- Management of service profiles for millions of subscribers

16D TO 16E MIGRATION

The StarMAX 6400 can also be configured to support IEEE 802.16e-2005 Mobile WiMAX. In this case, the WiMAX blade is configured with PMP-E modules. A single blade supports 2 sectors with MIMO 2x2 diversity.



StarMAX 8100 ODU Unit



DATASHEET

STARMAX 6000 16D SERIES

GENERAL	STARMAX 6400 WITH 6012 WiMAX BLADES AND STARMAX 8100 ODU	6100 WITH 6012
RF PHY	OFDM	
Frequency Bands	3.30-3.40 GHz, 3.40-3.60GHz, 2.50-2.69 Ghz	
Channel Bandwidth	3/3.5/5/6/7 MHz - SW Configurable. Other channel sizes can be configurable on request	
Number of Sectors	Up to 8 Sectors; Up to 4 Sector STC/MRC antenna diversity	Up to 2 sectors
Duplex Method	TDD	
BS Synchronization	Yes (using GPS)	
IDU-ODU Interconnection	Coax cable RG214 or equivalent (max 15 dB loss at 500MHz)	
Backhaul Options	Gig Eth, 10/100 Eth, WiMAX backhaul, P2P backhaul, IP over 8 E1	
WiMAX		
WiMAX Specification	IEEE 802.16-2004	
Dynamic Modulations Supported	64QAM 3/4, 64QAM 2/3, 16QAM 3/4, 16QAM 1/2, QPSK 3/4, QPSK 1/2, BPSK 1/2	
Tx Power Maximum	30 dBm	
Rx Sensitivity (BPSK, 3 MHz, BER 10-6)	-97 dBm	
Uplink Subchannelization Support	Yes (up to 1:16)	
Configurable Cyclic Prefix	1/4, 1/8, 1/16, 1/32	
Enhanced WiMAX Features	Packing, PHS	
Antenna Diversity: STC/MRC Support	Yes	
ANTENNAS		
Antenna Supported	Any (from beam antenna over 60/90/120deg. to omni antenna)	
SERVICES AND PROVISIONING		
Service Flows, averages	typ. 1500 service flows per sector, 8 service flows per Subscriber Station	
QoS Priorities	Up to 16 classifiers per Subscriber Station	
QoS WiMAX	BE, nRT-PS, rt-PS, UGS	
Access Control Lists	Yes	
Data Rate Control	Minimum data rate, Data Rate Limiting	
Portability and Mobility	Yes, enabled hand-overs and mobility management	
Security	Data: DES, AES	
NETWORKING		
IP Protocols	IPv4	
Bridging/Routing (Base Station)	Transparent L2 switch, Bridging, L3 Routing	
Packet Handling	802.1Q VLAN, diffserv, PHS	
MANAGEMENT		
Management Protocol	SNMP, CLI	
Software Upgrade	Yes, fail-save software upgrade; Configuration file up- and download	
EMS Remote Management	Yes	
ARCHITECTURE		
Blade System	4 slots reserved for WiMAX blades	1 slot for WiMAX blade
MECHANICAL/ELECTRICAL		
Interfaces per WiMAX Blade	WAN interface	1 GBE and 10/100 Base-T on RJ-45/Electrical
	Management Interface	10/100 Base-T and serial on RJ-45
	Clock Interface	1PPS or GPS on RJ45
	PWR interface	dual -48V DC
	IDU/ODU	electrical (F)
Voltage	-37V to -74V DC	
Power Consumption	100 W (single sector) to 560 W (8 sectors)	
Indoor Dimensions (height-width-depth)	4U = 17.6mm (.9 in) x 430mm (16.9 in) x 280mm (11.0 in); IDU without mounting ears	
Outdoor Dimensions (height-width-depth)	260mm x 160mm x 90mm; ODU without mounting kit and without heat sink	
Rack/Pole Requirements	Indoor: 19" and 23" Equipment Rack, side-to-side airflow; front cabling of communication ports, power, E1 Outdoor: up to 120 mm pole diameter supported for ODU mounting	
Weight (Indoor/Outdoor)	10 kg/5.35 kg (22.0/11.8 lb) per ODU	
Environmental Indoor	Temperature: 0°C to 50°C (+32°F to +122°F), Humidity: 5% to 95% noncondensing	
Environmental Outdoor	Temperature: -40°C to 50°C (-40°F to +122°F), Humidity: 0% to 100%	
Regulatory Compliances	CE Mark, RoHS/WEEE	

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