



WiN4000™

System Overview

WiNMAX™ series

WiMAX Micro Base Station



Features

- **Highly efficient triple-play delivery**
- **Carrier grade solution for low-density areas**
- **High capacity, high throughput per subscriber**

GENERAL DESCRIPTION

The WiNetworks WiN4000 is a member of the WiNMAX family, a line of WiMAX-based Broadband Wireless Access systems. WiNMAX systems are designed for robustness and simplicity, offering feature-rich services with low deployment and operation costs, for unmatched operator competitiveness and fast ROI.

WiN4000 Micro Base Station is an ideal, cost-effective solution for wireless access services in rural and low-density areas.

The carrier grade WiN4000 is based on the IEEE 802.16/ETSI HIPERMAN standards, to effectively meet the unique requirements of the wireless Metropolitan Area Network (MAN) environment and to deliver broadband access services to a wide range of customers. Designed specifically for point-to-multipoint broadband wireless access applications in densely populated areas, it provides a very efficient use of the wireless spectrum, supporting difficult user environments. The access and bandwidth allocation mechanisms accommodate hundreds of subscriber units per channel, with subscriber units that may support different services to multiple end users.

The system uses OFDM radio technology, which is robust in adverse channel conditions and enables Non-Line-Of-Sight (NLOS) operation, enabling easy installation and improved coverage, while maintaining a high level of spectral efficiency. Modulation and coding are continuously adapted to prevailing link conditions, ensuring an optimal balance between robustness and efficiency.

The WiN4000 Micro Base Station supports up to 500 subscriber units. The Micro Base Station provide all the functionality necessary to communicate with subscriber units according to the service criteria and customer Service Level Agreements (SLA), and to connect to the backbone of the Service Provider, supporting the necessary end-to-end Quality of Service (QoS).

The WIN4000 Micro Base Station equipment is comprised of the following components:

- WiN4001 Micro Base Station
- WiN3101/WiN3102 Outdoor Radio Unit (AU-ODU)

WiN4000 Highlights:

- **WiMAX compliance** based on IEEE 802.16-2004 and ETSI HiperMAN
- **High capacity architecture**, enabling support of a very large number of subscribers and providing up to 10 Mbps net throughput per subscriber
- **Low cost ownership** - An ideal solution for entry-level deployment and for providing services in rural and other low-density areas. Simple installation and demand-based build-out enable operators to rapidly penetrate new market segments with minimal CAPEX
- **Excellent performance in NLOS conditions** - overcoming multi-path and deep fades, providing extended range and easier installation
- **Adaptive modulation** to optimize throughput and facilitate performance robustness
- **Automatic Transmit Power Control (ATPC)** to allow for optimal network deployment and interference avoidance
- **Numerous Applications and Services** - Addressing multiple markets and supporting differentiated multi-services through multiple QoS levels and a variety of classification/prioritization schemes

WiN4000 System Specifications (3.5Ghz version)

Radio and Modem:

Frequency	<p>WiN3101 AU-ODU: Rx: 3399.5-3453.5 MHz Tx: 3499.5-3553.5 MHz</p> <p>WiN3102 AU-ODU: Rx: 3450-3500 MHz Tx: 3550-3600 MHz</p>
Frequency Separation	100 MHz
Radio Access Method	TDMA
Operation Mode	FDD Full Duplex
Channel Bandwidth	3.5 MHz, 1.75 MHz
Frequency Resolution	0.125 MHz
Antenna Port (AU-ODU)	N-Type, 50 ohm, lightning protected
Output Power @ antenna port	28dBm +/-1dB maximum Power control range: 15dB
Modulation	OFDM modulation, 256 FFT points; BPSK, QPSK, QAM16, QAM64
FEC	Convolutional Coding: 1/2, 2/3, 3/4
Sensitivity	<p>QAM64 3/4: -82dBm @ 3.5 MHz, -85dBm @ 1.5 MHz</p> <p>BPSK 1/2: -100dBm @ 3.5 MHz, -103dBm @ 1.5 MHz</p>

Data Communication:

Ethernet Standard Compliance	IEEE 802.3 CSMA/CD
Data Port	10/100 Mbps, Full Duplex
Management Port	10/100 Mbps, Half/Full Duplex with Auto Negotiation
VLAN Support	IEEE 802.1Q
Traffic Classification	<ul style="list-style-type: none"> IEEE 802.1p DiffServe (DSCP)

Configuration and Management:

Out-of-Band Management	<ul style="list-style-type: none"> Telnet via Management port SNMP via Management port CLI via Monitor port
In-Band Management	<ul style="list-style-type: none"> Telnet via Data port SNMP via Data port
SNMP Agent	SNMP ver 1 client: MIB II (RFC 1213), Private WiNMAX MIBs
Authentication	X509v3 digital certificate
Software Upgrade	TFTP
Configuration upload/download	TFTP

Mechanical:

WiN4001 Micro Base Station	1U ETSI type shelf, 1U x 43.19cm x 27.9cm, 3kg
WiN3101/3102 AU-ODU	31.5cm x 8.8cm x 15.7cm, 2.9kg

Electrical:

Power Source	AC model: 85 – 264 VAC, 47 – 63 Hz DC model: -40.5 to -60 VDC
Indoor Micro Base Station Power Consumption	100W maximum
WiN3101/3102 AU-ODU Power Consumption	32W maximum, 27W typical

Environmental:

Operating Temperature	Outdoor units: -40°C to +55°C Indoor equipment: 0°C to +40°C
Operating Humidity	Outdoor units: 5%-95% non condensing, Weather protected Indoor equipment: 5%-95% non condensing

Standards Compliance:

EMC	ETSI EN 300 489-1
Safety	EN 60950 (CE) IEC 60 950 US/C (TUV)
Environmental	ETS 300 019: Part 2-1 T 1.2 & part 2-2 T 2.3 for indoor & outdoor Part 2-3 T 3.2 for indoor Part 2-4 T 4.1E for outdoor
Radio	ETSI EN 301 021 V.1.5.1 ETSI EN 301 753 V.1.1.1



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