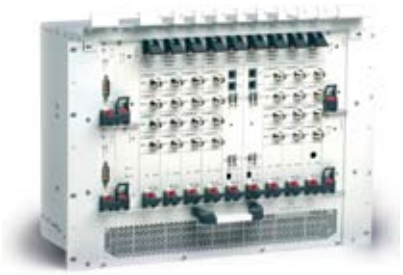
alvarion®
Your Open WiMAX Choice

Carrier-class Broadband Wireless Access Platform

BreezeMAX® Base Station

BreezeMAX, is a carrier-class WiMAX 802.16e certified platform for fixed, nomadic and mobile wireless access, and is the foundation of Alvarion's 4Motion® solution. Leveraging years of experience and industry leadership, BreezeMAX incorporates Alvarion's SentieM™ technologies for optimized air link coverage and capacity providing best value for operators.



Indoor Unit

Outdoor Unit

BreezeMAX System Components

Indoor Unit (IDU)

The IDU is the main chassis of the BreezeMAX base station, which establishes wireless network connections and manages bandwidth in compliance with the IEEE 802.16e-2005 wireless standard. The IDU is designed for diversity, provides high throughput and is built according to the Software Defined Radio (SDR) approach. This creates a highly flexible platform that supports beamforming (BF) and allows for seven access unit (AU) cards and two network processing unit (NPU) cards to be hosted for redundancy support. The IDU is comprised of two main units in addition to power and management components:

Access Unit (AU): is a programmable, cutting-edge WiMAX modem card, which ensures maximum resource utilization for both personal and primary broadband access. The AU implements four transmit/receive channels, supports BF and MIMO Matrix A and B technologies and is connected directly to remote radio outdoor units (ODUs).

Network Processing Unit (NPU): is a central processing unit managing the base station components and all connected subscriber units.

The NPU can operate in either of the following two modes:

Transparent mode: which includes traffic aggregation of all access units to and from the backbone via 100/1000 Mbps network interface

ASN-GW mode: which includes the following functions:

- Traffic classification and connection establishment initiation
- Policy-based data switching
- Service level agreement management
- Overall base station, operation control and alarm management
- Distributed or centralized architecture

Outdoor Access Unit (ODU)

A high-power remote radio unit that connects to an external antenna, the ODU provides high system gain and interference robustness utilizing high transmit power and low noise figure. Supporting up to 20 MHz bandwidth, the ODU is scalable for future options such as increased capacity through carrier multiplexing or wider frequency bandwidths. The BreezeMAX base station offers a range of ODUs featuring diverse configurations and streamlining 2nd and 4th order diversity.

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Specifications

Radio & Modem

Frequency			
2.3 GHz band	2,300 - 2,360 MHz		
2.3 GHz band	2,300 - 2,400 MHz *		
2.5 GHz band	2,496 - 2,690 MHz		
3.3 GHz band	3,300 - 3,400 MHz *		
3.5 GHz band	3,400 - 3,600 MHz		
3.6 GHz band	3,600 - 3,800 MHz *		
Access Method	SOFDMA		
Channel bandwidth	5 MHz	10 MHz	7 MHz
FFT Size	512	1024	1024
Sampling frequency	5.6 MHz	11.2 MHz	8 MHz
Subcarrier frequency spacing	10.9375 KHz	10.9375 KHz	7.8125 KHz
Total symbol duration	102.8571429 µs	102.8571429 µs	144 µs
Useful symbol duration	91.42857143 µs	91.42857143 µs	128 µs
Guard interval duration	11.42857143 µs	11.42857143 µs	16 µs
Flexible DL/UL ratio for all channel bandwidths		3:1, 2:1, 1:1, 1:2*, 1:3*	
Central Frequency Resolution	0.125 MHz		
Modulation	OFDMA modulation, 1024/512 FFT points; QPSK, QAM16, QAM64		

Radio units	**ODU Type**	**ODU Tx Power**	**ODU Bandwidth**
2.3-2.4 GHz	1 Tx + 1 Rx	36dBm	Up to 10 MHz
2.496-2.69 GHz	1 Tx + 1 Rx	36dBm	Up to 10 MHz
	2 Tx + 4 Rx	38dBm / 38dbm	Up to 20 MHz
3.4-3.6 GHz	1 Tx + 1 Rx	34dBm	Up to 14 MHz
	2 Tx + 2 Rx	38dBm	Up to 20 MHz
	2 Tx + 4 Rx	37dBm / 37dbm	Up to 20 MHz

* Future

Data Communication

Parameter	**Indoor Unit**	
Standard compliance	IEEE 802.3 CSMA/CD	
Speed	Data Interface	100/1000 Mbps, Full Duplex with Auto Negotiation
	Management Interface	10/100 Mbps, Half/Full Duplex with Auto Negotiation
	Cascade Interface	100/1000 Mbps, Full Duplex with Auto Negotiation
	ACU Interface	10/100 Mbps, Half/Full Duplex with Auto Negotiation

Electrical

Parameter	**Dimensions (cm)**	**Weight (kg)**
BST-SH	8U 19''/ETSI type shelf, 8U x 43.19 x 24	6.9 (excluding AVU)
PIU	3U x 5HP x 16	0.35
PSU	3U x 8HP x 16	0.7
NPU	6U x 7HP x 16	0.7
AU	6U x 7HP x 16.	0.6
AVU	2U x 84HP x 16	1.7
ODU 1 Tx + 1 Rx	329 x 157 x 169	6.1
ODU 1 Tx + 2 Rx	420 x 340 x 155	10.5
ODU 2 Tx + 2 Rx	420 x 340 x 270	14
ODU 2 Tx + 4 Rx	420 x 340 x 270	15

AU to ODU Communication

Item	**Description**
IF frequency	Tx: 240 MHz Rx: 140 MHz
Reference synchronization frequency	64 MHz
Bidirectional control frequency	14 MHz
IF cable impedance	50 ohm
Maximum IF cable attenuation	10 dB @ 240 MHz 7.5 dB @ 140 MHz 8 dB @ 64 MHz

Environmental

Operating temperature
IDU 0°C to 40°C
ODU-40°C to 55°C for all ODU types
Operating humidity
IDU 5%-95% non condensing
ODU 8%-100% (optional BreezeSHIELD for external use)

Standard Compliance

Type	**Standard**
EMC	ETSI EN 301 489-1
Safety	EN 60950 (CE) IEC 60 950 US/C (TUV)
Environmental	ETSI 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 302 326 FCC part 15, part 27

About Alvarion

Alvarion is the largest WiMAX pure player, ensuring customer long-term success with fixed and mobile solutions for the full range of frequency bands. Based on its OPEN™ WiMAX strategy, the company offers superior wireless broadband infrastructure and an all-IP best-of-breed ecosystem in cooperation with its strategic partners. Alvarion has delivered over 200 commercial WiMAX deployments worldwide.