
New Product Announcement

BreezeNET B in the 2.4 GHz Band



April 2007

System Description

General

BreezeNET B is a high performance wireless bridge system that provides high-capacity, high-speed point-to-point connectivity. The BreezeNET B system operates in the unlicensed 5.8 (FCC), 5.4 (ETSI), 5.3 (FCC) and 5.2 GHz bands, and now it is available also in the 2.4 GHz band.

The BreezeNET B was released initially in Q4/2003 for the 5.8 GHz band, followed by additional releases in other bands. The new product in the 2.4 GHz band is therefore similar to tens of thousands of units that already operate worldwide.

BreezeNET B products operate in Time Division Duplex (TDD) mode, using Orthogonal Frequency Division Multiplexing (OFDM) modulation with Forward Error Correction (FEC) coding. Using the enhanced multi-path resistance capabilities of OFDM modem technology, BreezeNET B enables operation in near and non-line-of-sight (NLOS) environments such as buildings, foliage or ridgelines. These qualities enable deployment of PTP links in previously inaccessible situations. The system also features adaptive modulation for automatic selection of modulation schemes to maximize data rate and improve spectral efficiency.

Several system models are available: The entry level, medium throughput BreezeNET B14 system (comprising a BU-B14 Base Unit and an RB-B14 Remote Bridge), the high throughput BreezeNET B28 system (comprising a BU-B28 Base Unit and an RB-B28 Remote Bridge), and the high-end BreezeNET B100 system (comprising a BU-B100 Base Unit and an RB-B100 Remote Bridge) which can deliver a very high throughput.

BreezeNET B supports the use of either 20 or 40 MHz frequency channels. When using 40 MHz channels, BreezeNET B is operating in "Turbo Mode" that increases the net throughput of the BreezeNET B link, especially for links that suffer from low net throughput due to challenging link budget conditions due to very long link distances, RF absorbing terrain or non line of sight conditions.

BreezeNET B supports sensitive applications through optional use of authentication and/or data encryption utilizing WEP or AES algorithm with 128-bit keys. FIPS (Federal Information Processing Standards) 197 certified encryption algorithm is optionally available for BreezeNET B100.

The wireless link prioritization feature available in BreezeNET B100 fully supports delay sensitive applications, enabling Multimedia Application Prioritization (MAP) for high performance voice and video.

The system supports Virtual LANs based on IEEE 802.1Q, enabling secure operation and Virtual Private Network (VPN) services and enabling tele-workers or remote offices to conveniently access their enterprise network. The system supports layer-2 traffic

prioritization based on IEEE 802.1p and layer-3 traffic prioritization based on either IP ToS Precedence (RFC791) or DSCP (RFC2474). It also supports traffic prioritization based on UDP and/or TCP port ranges.

BreezeNET B system components are managed using a simple to use and friendly tool, BreezeCONFIG. It can be also managed using standard SNMP management systems for remote setting of operational modes and parameters.

The BreezeCONFIG utility is an SNMP-based application designed to manage BreezeNET B system components and upgrade unit software versions. The system administrator can use the BreezeCONFIG utility to control any number of units from a single location. In addition, BreezeCONFIG enables loading an updated configuration file to multiple units simultaneously, thus radically reducing the time spent on unit configuration maintenance.

BreezeNET B is best suited for ISPs and Enterprises for Building to Building connection, Backbone and Backhauling, Leased Line replacement, etc.

Base Unit (BU) and Remote Bridge (RB) components

A BreezeNET B link includes two identical units. One is configured as Base Unit (BU), typically installed at the main site, and another is configured as Remote Bridge (RB).

Each unit (configured as BU or RB) is composed of two parts, the Indoor Unit (IDU) and the Outdoor Unit (ODU) that are connected to each other using a simple to install CAT-5 cable.



Integrated and Detached models

BreezeNET B units are available with or without antenna.

The Integrated units in the 2.4 GHz band include a 16 dBi antenna that is physically attached to the outdoor unit and is part of it.

The Detached unit is an outdoor unit that has no antenna included. For the 2.4 GHz band, a 24 dBi and 18 dBi detached antennas (supplied with a 1.5m RF cable) are optionally available from Alvarion for Universal/Russia country code. A 16 dBi detached antenna (supplied with 1.5m RF cable) is available from Alvarion for ETSI country code.

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BreezeNET B – key benefits and advantages

BreezeNET B delivers a comprehensive range of product features, ensuring fast, consistent and reliable data and voice service.

- **Cost efficient** high capacity system for a very fast payback
- **Robust Radio Technology:** OFDM modulation including BPSK, QPSK, 16QAM, and 64QAM, delivering unmatched link capacity and ensuring NLOS (Non-Line-of sight) capability. Adaptive modulation facilitates superior performance and automatically adjusts transmission to enable continuous & robust link
- **Advanced Security:** Advanced encryption options for authentication and data security including FIPS-197 encryption with BreezeNET B100, protocol filtering, and 802.1Q VLAN functionality
- **Rich Features Set,** QoS for voice and video applications
- **Easy-to-use Management:** SNMP-based remote management system, enabling simple unit configuration and simultaneous configuration of multiple units. Easy over the air SW upgrade and configuration
- **Simple, Fast and Cost Saving** installation and maintenance with Low cost IDU-ODU cable, Automatic Transmit Power Control (ATPC), adaptive modulation & over the air management including SW upgrade

Product Availability

BreezeNET B in the 2.4 GHz band is available for ordering.

Sales & Marketing Material

The following sales & marketing material is available:

- BreezeNET B solution presentation
- BreezeNET B Data sheet
- BreezeNET B General Description
- BreezeNET B Country Codes document

Technical documentation and application software

The following documentation is shipped with each BU, on CD (updated documentation is on the customer support web site):

- BreezeNET B System Manual
- BreezeCONFIG User Manual

Also available on the CD:

- The proprietary Alvarion BreezeNET B MIB file
- The BreezeCONFIG application software
- Set factory defaults application software

Note: The Set Factory Defaults Utility is intended to enable management access to a unit in cases where such access is not possible due to wrong or unknown configuration of certain parameters. This includes cases such as unknown Management VLAN ID and wrong management access filtering. The utility performs the same operation as Set Complete Factory Defaults, restoring the default factory configuration of all parameters, except for Passwords, general FTP parameters and BU's Frequency (see System Manual for more details).

Important Notes (for the 2.4 GHz band)

- 2.4 GHz is a crowded frequency band in most places. Alvarion recommends to use 5GHz BreezeNET B solutions instead where possible
- BreezeNET B supports 40MHz channel mode (Turbo Mode) for increasing capacity at the expenses of using additional bandwidth. However, in 2.4 GHz using 40MHz may actually reduce capacity due to increase of interfering noise
- For long links of 5km and above better capacity is sometime obtained by manually tuning of the link distance parameter
- In some interference sectaries high SNR yet with low throughput may be observed.

- In such cases it is recommended to check also alternative channels
- Extra care should be taken when configuring VLAN management and management IP filtering in order not to lose connectivity with unit. In case of connectivity loss, use the “restore default parameters” application to reset to factory values
 - Remote changes of the Maximum Modulation Level in an RB while Adaptive Modulation is disabled may lead to lose of connectivity with the unit. The recommended workaround is to enable Adaptive Modulation, reset the unit to apply the change, and then change the Maximum Modulation Level
 - The following traps are not supported by the Trap Monitor of BreezeCONFIG:
 - Ethernet Broadcast/Multicast Limiter Threshold Exceeded: The number of packets that were dropped is not displayed
 - Unit Type Changed: The new unit type is not displayed. The MAC address of the unit is displayed in the Associated SU/RB Mac Address column
 - SNMP management was checked with SNMPC version 5.1.11e

Ordering Information for 2.4 GHz BreezeNET B

Below is the BreezeNET B part numbers list with product descriptions (note that the units are supplied as BUs, where each unit can be configured as an RB before or during installation. The units can be ordered in “packs” of 10, 50 and 100).

PRODUCT	DESCRIPTION	P/N
BU/RB-B14	Up to 14 Mbps, 2.4 GHz, Base Unit/Remote Bridget that includes: Outdoor Unit (ODU) with integrated 16 dBi 10.5 degrees antenna, Indoor Units (IDU), 20m Indoor to Outdoor cable and 1.5m Power Cable.	ETSI:824251
		Universal:824251RU
		Cuba: 824251CU
BU/RB-B14D	Up to 14 Mbps, 2.4 GHz, Base Unit/Remote Bridget that includes: Outdoor Unit (ODU) without antenna (the antenna must be ordered separately), Indoor Units (IDU), 20m Indoor to Outdoor cable and 1.5m Power Cable.	ETSI:824253
		Universal:824253RU
		Cuba: 824283CU
Antennas and Antenna kits (for models with detached antennas support)		
UNI-16	16 dBi, 12" x 12", flat antenna (with detached ETSI country code)	901916
UNI-18	18 dBi, 16" x 20", grid antenna (with detached RU country code)	872211
UNI-24	24 dBi, 23.6" x 39.2", grid Antenna (with detached RU country code)	872212
IDU-ODU Cable kits		
CBL-30	30m Indoor unit to outdoor unit baseband cable	811572
CBL-50	50m Indoor unit to outdoor unit baseband cable	811593
CBL-70	70m Indoor unit to outdoor unit baseband cable	811573
CBL-90	90m Indoor unit to outdoor unit baseband cable	811598

Note: BreezeNET B28, BreezeNET B 100 and an upgrade option from BreezeNET B14 to BreezeNET B28 may be available in the future in 2.4 GHz, not at current released.