

VB-400

Broadband Wireless Multiplexer



Carrier-class Point-to-Point Solution

- Carrier-class cost-effective broadband wireless radio system with Layer-2 Ethernet capabilities
- Net throughput of up to 100 Mbps aggregated (symmetric and asymmetric)
- Hybrid E1/T1 and Ethernet services on a single platform
- Multiband operation over 3.4 to 3.6 GHz frequencies
- High reliability and availability based on robust air interface protocol
- Long transmission range of up to 120 km (75 miles)

VB-400 is a carrier-class, cost-effective multiple point-to-point broadband wireless transmission device. It combines legacy TDM and Ethernet services for transmission over 3.4 to 3.6 GHz bands, and is suitable for deployment in FCC, IC and ETSI-regulated countries.

VB-400 offers high throughput, longer range and robustness at a competitive price for the global markets of cellular backhaul, WiMAX and ISP backhaul, broadband access, large private and government networks.

All types of VB-400 ODUs can be ordered with optional anti-salt coating for installation in harsh marine environments.

MARKET SEGMENTS AND APPLICATIONS

Private Networks

VB-400 can be used in high-capacity inter-branch connectivity applications for university campuses, health care organizations, government institutions, large enterprises and public establishments with high traffic requirements (Figure 1).

Service Providers and ISPs

Providing IP backhaul of 4G/broadband services in multiple point-to-point topologies, VB-400 offers broadband access for remote, rural and underserved communities:

- nLOS (near line of sight) in urban environment

- Long haul in rural setting.

Large corporate clients can build their networks to eliminate the recurring fee of incumbent leased line services while maintaining a secured dedicated capacity per site.

Mobile Carriers

In rural-to-urban cellular backhaul applications, VB-400 extends mobile reach to rural locations with carrier-grade, long-haul, point-to-point E1/T1 and Ethernet services. It can also be used for backhauling 3G traffic in urban environments, with easy migration path from converged TDM/IP networks to all-IP networks.

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Security and Surveillance

Aggregation and backhaul of traffic from multiple co-located megapixel video cameras, make VB-400 suitable for homeland security applications, municipal 'safe city' projects, or border control installations.

CAPACITY

VB-400 ensure 100 Mbps aggregated throughput with up to 16 E1/T1 channels. This model operates in the following modes:

- 100 Mbps full duplex with 40 MHz channel bandwidth
- 200 Mbps asymmetric with 10, 20 or 40 MHz channel bandwidths and user-selectable uplink/downlink capacity (50–50% up to 92–8%).

Vibicom wireless systems can be deployed to create a single point-to-point link, in a central site co-locating a multiple point-to-point array of links, or as a resilient ring for Ethernet-only services.

Transmission range of up to 120 km (75 miles) is attainable with an external antenna.

ARCHITECTURE

Vibicom multiplexer consist of a mast- or wall-mountable outdoor unit (ODU), an optional external antenna and an indoor unit (IDU) with redundant DC power supplies.

RADIO

Built on advanced MIMO and OFDM technologies, a pair of VB-400 units provides a high-capacity link at channel bandwidth of 10, 20 or 40 MHz. This guarantees a robust air interface able to withstand strong RF interference and harsh ambient conditions.

Security

Data transmitted over the air interface is encrypted using Advanced Encryption System (AES) with a 128-bit encryption key.

Air Link Quality of Service

When the link quality is low, VB-400 automatically searches for a clear channel within a pre-selected list of frequencies.

Short Time-to-Service

Because VB-400 operates in license-exempt frequencies, it can be deployed in record time, eliminating the costs and delays involved in leasing lines or trenching fiber.

Site Synchronization

Hub Site Synchronization (HSS) assists in the co-location of multiple radios, by reducing the interference that normally occurs when several radios transmit and receive in close proximity to one another. HSS enables a complex radio environment of mixed services (TDM and Ethernet) and channel bandwidth frequencies.

New, cable -free HSS allows co-located radio synchronization without HSS unit and cables.

For long distance coverage, the synchronization is obtained by a GPS Synchronization Unit (GSU). The GSU reduces the interference between the co-located radios by providing a GPS signal simultaneously to ODUs at all locations.

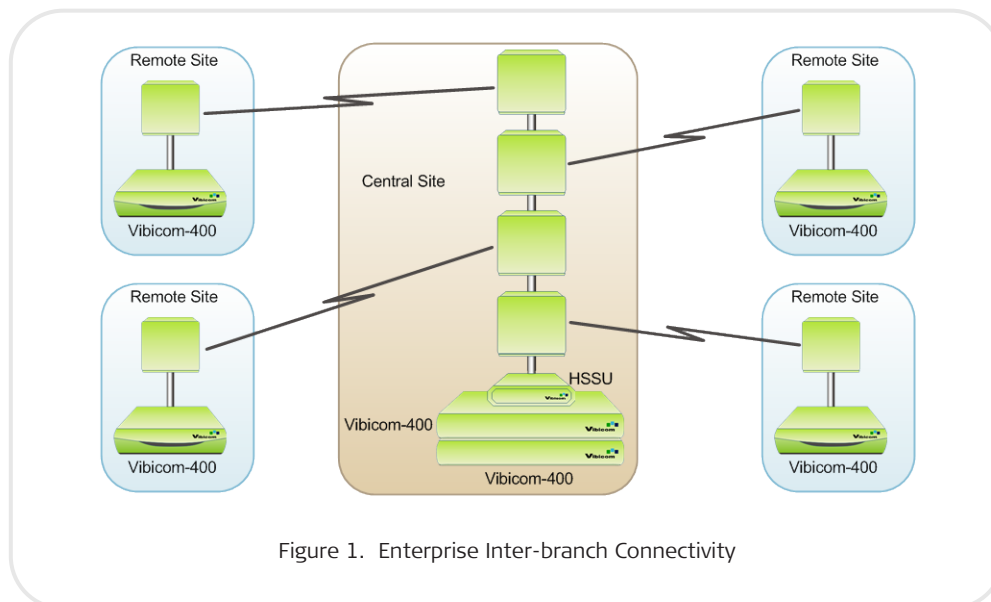


Figure 1. Enterprise Inter-branch Connectivity

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Specifications

RADIO

Compliance

FCC/IC:

FCC 47CFR, Part 15, Subpart C,
FCC 47CFR, Part 15, Subpart E
FCC 47CFR, Part 90, Subpart Y
RSS-111
IC RSS-210

ETSI:

ETSI EN 302 502
ETSI EN 301 893

Duplex Technique

TDD

Frequencies, Channel Bandwidths and Regulations

See *Table 1*

Modulation

2×2 MIMO-OFDM

Encryption

AES 128, FIPS-197

IDU-to-ODU Connection

Outdoor Cat.5e cable, 100m (328 ft) max.
length

THROUGHPUT

Up to 100 Mbps aggregated (Ethernet and
up to 16 E1/T1 combined)

MANAGEMENT AND SECURITY

Protocol

SNMP, Telnet

Interface

10/100/1000BaseT

Note: 1000BaseT is supported by the IDU-E
Gigabit only.

Connector

RJ-45

Upgrade Capabilities

Local and over-the-air software download

MONITORING AND DIAGNOSTICS

Constant traffic monitoring over the radio
link

Statistics data collecting

Internal and external loopbacks on both
sides of a link

RESILIENCY

Grounding and Lightning Protection

Individual grounding for each IDU/ODU

Internal arrestors for lightning protection

Internal ESD protection circuits over
power/telecom lines

Optional lightning protection kit

Table 1. Supported Bands

Band	Channel BW 5MHz [GHz]	Channel BW 10MHz [GHz]	Channel BW 20MHz [GHz]	Channel BW 40MHz [GHz]	Compliance
3.6 GHz FCC/IC	3.6505-3.6745	3.650-3.675	3.650-3.675	-	FCC 47CFR Part 90 subpart Z; IC RSS-197
3.5 GHz IC	3.4755-3.6495	3.473-3.652	3.468-3.657	-	IC RSS-192
3.5 GHz Universal	3.2975-3.8025	3.295-3.805	3.290-3.810	3.280-3.820	Universal
3.4 GHz Universal	3.3975-3.7025	3.395-3.705	3.390-3.710	-	Universal

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GENERAL

Power

DC: -20 to -60 VDC (AC/DC power adapter can be ordered separately)

Power Consumption

35W max (ODU with IDU)

Indicators

IDU (green/orange/red): IDU status

ODU (green/red): ODU status

AIR I/F (green/orange/red): Air link status

SVC (green/orange/red): TDM service status

HSS (green/orange/red): HSS status

STBY (green/orange/red): MHS status

LINK (yellow): Ethernet link status

ACT (green): Ethernet activity status

Environment

Outdoor unit and external antenna:

Enclosure: IP67 all-weather case

Temperature: -35° to 60°C (-31° to 140°F)

Indoor units:

Temperature: 0° to 50°C (32° to 122°F)

Humidity: Up to 90%, non-condensing

Physical

ODU with integrated antenna:

Height: 371 mm (14.8 in)

Width: 371 mm (14.8 in)

Depth: 110 mm (4.3 in)

Weight: 3.6 kg (7.94 lb)

IDU-E

Height: 44 mm (1.7 in)

Width: 436 mm (17.2 in)

Depth: 210 mm (8.2 in)

Weight: 1.5 kg (3.3 lb)

Ordering

VB-400/ODU/F3XF/100M/INT

Outdoor Unit with an integrated antenna and 100 Mbps net aggregate throughput

VB-400/IDUE/2GBE

Indoor unit with redundant DC power supply and 2 Gigabit Ethernet ports

ACCESSORIES

CBL-VB/50

50m assembled cable for connection between IDU and ODU

CBL-VB/75

75m assembled cable for connection between IDU and ODU

VB-Lightning-Protection-Kit

Set of 10 Vibicom-Lightning-Protection units



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