

VB-101v

Ruggedized Multiservice Gateway

- Enhanced security capabilities: stateful firewall, VPNs, automated PKI
- Resilient HSPA+/LTE cellular network uplink for maximum service continuity and built-in GNSS for location reporting
- Reduced OPEX with secure Zero Touch provisioning
- Hosting of third-party software for customized applications (edge computing)
- SCADA protocol gateway for IEC-101, IEC-104, Modbus-RTU/TCP, and DNP3 protocols
- Option for second cellular modem
- Embedded, isolated DC power supply

VB-101v is a multiservice gateway optimized for industrial IoT and other mission-critical applications, a member of VIBICOM's suite of ruggedized Ethernet products.

In addition to its communication capabilities, VB-101v is an open platform suitable for quick introduction of new capabilities, by hosting third-party software, using Linux containers.

VB-101v features four GbE Copper ports and one GbE SFP port, two serial RS-232 ports, and a cellular modem with two SIM cards for maximum link resiliency.

VB-101v is equipped with serial interfaces for connectivity of legacy RTUs with new IP-based IED systems. VB-101v gateway converts legacy IEC-101 protocol to IP-based IEC-104, Modbus-RTU to Modbus/TCP and encapsulated DNP3 serial to DNP over IP, enabling seamless communication from IP SCADA to both old and new RTUs. This provides a single box solution for multi-service applications and smooth migration to all-IP networks.

In addition to its cellular uplink that provides wireless connection towards the network, VB-101v can be equipped with additional wireless technologies.

The gateway is designed for installation under harsh environmental conditions. It features DIN-rail mount, IP30 protection level, wide operating temperature range (-40°C to 65°C) without fans, and EMI immunity.

VB-101v supports several powering options that all use an embedded isolated DC power supply, to meet the harsh environmental requirements.

MARKET SEGMENTS AND APPLICATIONS

VB-101v addresses Industrial IoT, for example:

- Distributed automation in secondary substations
- Smart meter and sensors concentration
- Water resources management
- Industry 4.0
- Smart and safe cities
- Out-of-band management using cellular uplink
- Smart retail

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INTEROPERABILITY

VB-101v operates with VB-SGW, VB-101, VB-102, and with third party VPN aggregators.

ROUTER AND VPN SERVICES

VB-101v features static routing, RIPv2, OSPF, BGP, VRF and NAT/NAT-Traversal.

The device features a VPN gateway with two operation modes:

- Inter-site connectivity using IPsec or Open VPN tunnels
- Remote user access, using SSH

Inter-site VPN-based encrypted link ensures L3 transparent connection of the Ethernet networks sites.

For remote access, the router uses an SSH-encrypted tunnel, with user authentication and specific access authorization.

LAYER-2 SWITCH

VB-101v provides local switching capabilities with and without VLAN support, maintaining 2K MAC addresses and 16 broadcast domains (VLAN IDs).

- Per-port ingress rate limiting
- Per-port storm control policer

QoS:

- 4 priority queues
- Classification based on:
 - Port
 - 802.1p
 - IPv4 DCSP
- Scheduling
 - Strict priority
 - Mix of strict and Weighted Round Robin (WRR)

MANAGEMENT AND SECURITY

The device can be managed via the proprietary web-based interface (HTTP/HTTPS).

VB-101v also supports a variety of access protocols, including CLI and TFTP/SFTP.

Specifications

CAPACITY

Memory	1 GB RAM (unless otherwise specified)
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ETHERNET INTERFACES

Fiber	1 x 1000FX, SFP socket
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Copper	4 x 10/100/1000BASE-T
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Max Frame Size	1.5 kB
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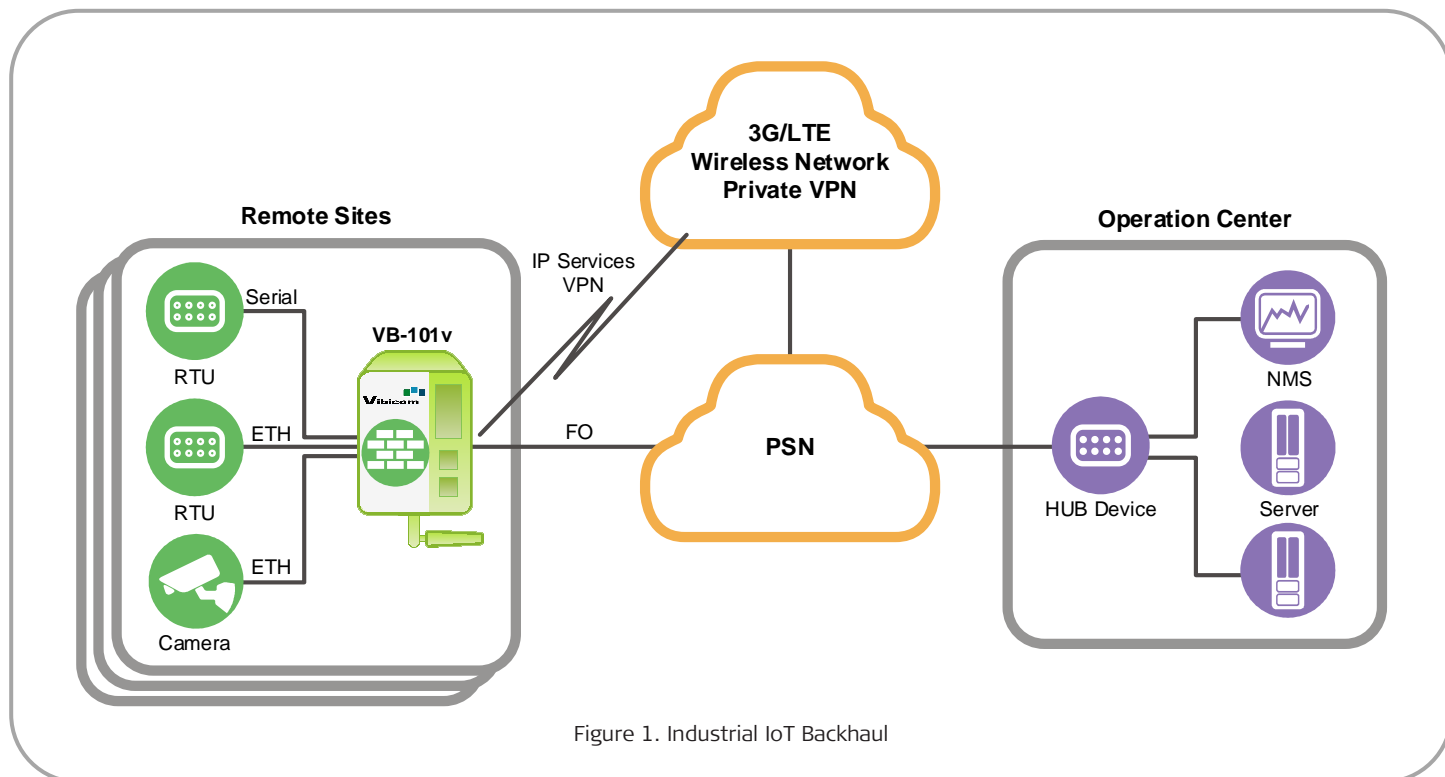


Figure 1. Industrial IoT Backhaul

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SERIAL INTERFACES

Isolation	Non-isolated/Isolated (for specific ordering options)
Serial Interface	2 x RS-232 ports

BRIDGE

Compliance	IEEE 802.1Q
Max. Number of Concurrent VLANs (Broadcast domains)	16
MAC Address Table	2K
Operation Mode	VLAN-aware learning bridge

MODEMS

Dual SIM	LTE bands
Cellular Modem	HSPA+/EVDO networks (technology backward compatible)
FOTA	Firmware upgrade over the Air
Configurable Cellular Authentication	PAP, CHAP
SIM Card	Mini SIM, 25 mm x 15 mm (0.98 in x 0.59 in) Form factor: 2FF

NETWORKING

VPN	L3 mGRE DMVPN L3 IPsec VPN OpenVPN client
Gateway	SCADA gateway for IEC101/104, Modbus RTU/TCP and DNP3

QUALITY OF SERVICE (QOS)

Policing	Per port ingress policer, L1 rate, CIR
Egress Queues	4 queues per port
Queue Mapping	Per ingress port; p-bit mapping, dscp mapping
Scheduling	Strict Priority / WRR
Shaping	Per port egress shaper, L1 rate, CIR

ROUTER

Protocols	RIPv2, OSPFv2, BGP, VRF, IPv4, IPv6, NAT, NAT-T
Static routing	

MANAGEMENT

Control Port	RS-232 interface, RJ-45 connector
DHCP	DHCP client
Protocols	TFTP/SFTP Web-based interface using HTTPS or HTTP
Options	CLI with password-protected access SMS commands USB 2.0 host for software upload* SD memory card*

TIMING

Timing	Local time setting SNTP
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* This feature will be released in a future version.

SECURITY

Firewall	Stateful firewall
Login	Login lockout
ACL	ACL with MAC white list
TACACS+	Multiuser TACACS+
IPsec	AES128 and AES256 GCM encryption PKI with X.509 certification IKEv1, IKEv2, SHA2 Interoperability with SCEP server 2012 and higher

RESILIENCY

Routing	Dynamic routing, OSPFv2, BGP
Cellular ISP Redundancy	SIM cards backup or
IPsec VPN Redundancy	Policy-based Route-based

MONITORING

GNSS	GPS – American (default) Galileo – European
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DIAGNOSTICS

Interface Counters	Per port
Syslog	
SNMPv3	GET and traps
LEDs	Including alarm indication
Dry Contacts	2-in and 2-out
SMS	Status indication

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GENERAL

Environment

Storage Temperature -40 to 85°C (-40 to 185°F)

Operating Temperature -20 to 65°C (-4 to 149°F)

Humidity Up to 90%

Physical

Height mm (in) 138 (5.43)

Width mm (in) 53.3 (2.1)

Depth mm (in) 123.3 (4.85)

Weight 0.88 kg (1.94 lb)

Power

Power Supply Embedded isolated power supply
WDC: 20–60 VDC (Dual power inlet)

Power Consumption < 10W

Ordering

VB-101V/E1/WDC/4U1S/2RS/L1

Legend

VB-101V/Ex/@/#/%/Lx/*/Lx

Ex Chassis

E1 E1 enclosure

@ Power Supply

WDC Wide-range 20–60 VDC

Ethernet Ports

4U1S 1 x 1000FX, 4 x 10/100/1000BASE-T ports

% Serial Ports

2RS 2 x RS-232 ports

Lx Cellular Ports

L1 LTE modem for Europe

Antennas

VB-ANT4G-2M

Outdoor antenna for VB 4G cellular modem, 2m connecting cable, 3dBi, 699-960 MHz/1710-2170 MHz/2500-2690 MHz

VB-ANT4G-5M

Outdoor antenna for VB 4G cellular modem, 5m connecting cable, 3 dBi, 699-960 MHz/1710-2170 MHz/2500-2690 MHz

OPTIONAL ACCESSORIES

CBL-RJ45/D9/F/6FT

Serial console and RS-232 data ports cable

RM-DIN-SINGLE

Rack Mount adaptor for single DIN RAIL device

RM-DIN-19

19" Rack Mount adaptor for DIN RAIL device

Power Supplies

VB-101-ACADP

External DIN rail AC to 48 VDC power supply, 40 W, -20 to 60°C (-4 to 140°F); 20 W at 60°C (140°F) and above



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