

VB-101

Ruggedized SCADA-Aware Router Gateway



- Compact ruggedized SCADA-aware router gateway for serial and Ethernet devices, supporting IEC-101, IEC-104, Modbus, and DNP3 protocols
- Resilient 3G/HSPA+/LTE cellular network uplink for maximum service continuity with multi-service Ethernet and Serial (RS-232/RS-485) interfaces
- Stateful Firewall
- IEC 61850-3/IEEE1613 design

VB-101 is a ruggedized router, a member of Vibicom's IIoT suite.

With a unique built-in packet processing SCADA-aware engine, it fits mission-critical industrial applications. It is most suitable for infrastructure at utility companies with remotely distributed sites, connected to a SCADA control center. VB-101 is installed at remote locations, forwarding Ethernet or serial traffic over fiber optic or cellular links.

VB-101 features one FE UTP port and one GbE SFP port, two serial RS-232 ports or one RS-232 plus one RS-485, and a cellular modem with two SIM cards for maximum link resiliency.

VB-101 utilizes Ethernet ports for new IEC 61850 compliance IEDs for automation in substations.

VB-101 is equipped with serial interfaces for connectivity of legacy RTUs with new IP-based IEDs. VB-101 gateway converts legacy IEC-101 protocol to IP-based IEC-104, enabling seamless communication from the IP SCADA to both the old and new RTUs. This provides a single box solution for multi-service applications and smooth migration to all-IP networks.

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 70°C) without fans, and EMI immunity (IEC61850-3, IEEE1613, and EN50121-4).

MARKET SEGMENTS AND APPLICATIONS

VB-101 addresses the following Industrial IOT:

- Distributed automation in secondary substations
- Smart meter concentration
- Water Resources Management
- Retail
- Out-of-band management using cellular uplink

ROUTER AND VPN SERVICES

VB-101 features static routing, OSPF, BGP, VRF and NAT.

The device features a VPN gateway with two operation modes:

- Inter-site connectivity using IPSec tunnels
- Remote user access, using SSH

Inter-site VPN based on IPSec 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.

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MANAGEMENT

The device can be managed via the RealVIEW, which provides management for Vibicom devices.

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

Specifications

ETHERNET INTERFACES

Fast Ethernet Port

1 x 10/100BaseT, RJ-45 connector
Autonegotiation IEEE 802.3ab

GbE Port

SFP socket
100BaseFx/1000BaseSx/Lx
10/100/1000BaseTx
Autonegotiation IEEE 802.3ab

Max Frame Size

1.5 kB

SERIAL INTERFACES

2 RS-232 ports
1 RS-485 (4-wire) + 1 RS-232 port

Serial transparent tunneling byte mode

Serial-to-Ethernet protocol gateway (IEC-60870-5-101, IEC-60870-5-104)

Modbus RTU/TCP and DNP3

Terminal server frame and byte mode

CELLULAR MODEM

Dual-SIM cellular modem for HSPA+/EVDO or LTE networks (technology backward-compatible)

Configurable Cellular authentication using PAP or CHAP

NETWORKING

SCADA gateway for IEC101/104, Modbus RTU/TCP and DNP3

L3 mGRE DMVPN

L3 IPsec VPN

ROUTER

Static routing, OSPFv2, BGP, VRF, IPv4, NAT

MANAGEMENT

Control Port

Interface: RS-232
Connector: RJ-45
Telnet/SSH
Web-based interface
RealVIEW
SNMP traps

Management Options

Command-line interface with password-protected access and authorization levels
SFTP
Multi-user TACACS+ (up to 5 authorized users configured on the server or locally)

TIMING

Local time setting
SNTP

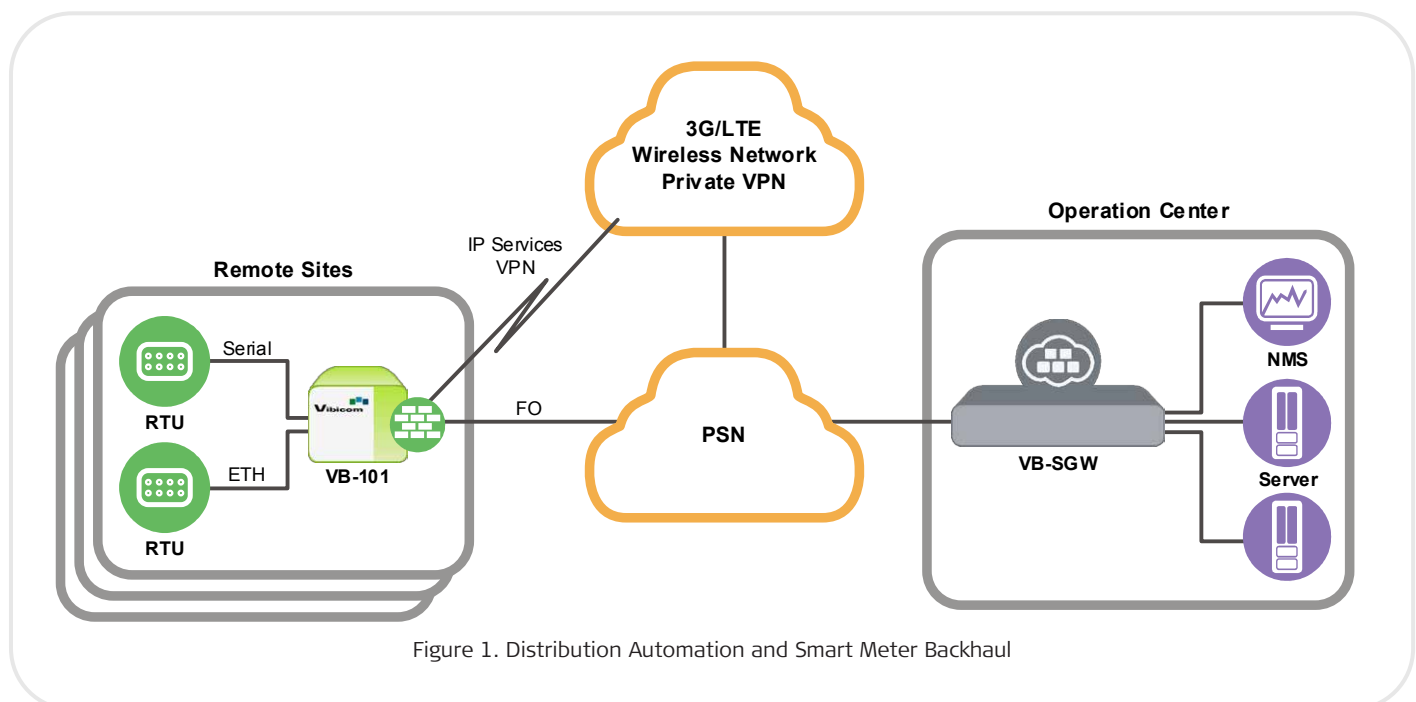


Figure 1. Distribution Automation and Smart Meter Backhaul

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SECURITY

SFTP client
Stateful Firewall

IPsec

X.509 certification

RESILIENCY

Conditioned/scheduled system reboot
OSPF v2
Cellular ISP redundancy (SIM cards backup)

DIAGNOSTICS

Statistic counters per interface
Syslog
LEDs
2 input and 2 output dry contacts

GENERAL

Physical

Height: 106 mm (4.17 in)
Width: 44.7 mm (1.76 in)
Depth: 120 mm (4.72 in)
Weight: 0.6–1.0 kg (1.3–2.2 lb)

Power

48 VDC: 20–60 VDC
24 VDC: 11–36 VDC

Power Consumption

8W

Environment

Temperature:
Operating: -40 to 70°C (-40 to 158°F)
Storage: -40 to 85°C (-40 to 185°F)
Operation humidity: up to 90%
Rugged enclosure – fanless, IP30 rated
Substation automation per IEC 61850-3/
IEEE1613 EMI
Vibration and shock resistance per
EN50121-4

Ordering

VB-101/48VDC/1GBE1UTP/RS232/LTEEU
48 VDC (20-60 VDC), 10/100BaseT Ethernet port and Gigabit Ethernet SFP port, 2 RS-232 serial interfaces, LTE cellular modem with European bands

VB-101/24VDC/1GBE1UTP/RS232/LTEEU
24 VDC (11-36 VDC), 10/100BaseT Ethernet port and Gigabit Ethernet SFP port, 2 RS-232 serial interfaces, LTE cellular modem with European bands



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