

SecFlow-1v

Ruggedized Multiservice Gateway



- Compact ruggedized Industrial IoT gateway for serial and Ethernet devices
- Enhanced security capabilities: stateful firewall, VPNs, automated PKI
- Resilient HSPA+/LTE cellular network uplink for maximum service continuity
- Reduced OPEX with secure Zero Touch provisioning
- Hosting of third-party software for customized applications (Edge computing)
- Supporting SCADA IEC-101, IEC-104, Modbus, and DNP3 protocols
- GbE ports with optional PoE

SecFlow[®]-1v is an industrial IoT gateway, a member of RAD's SecFlow suite of ruggedized Ethernet products.

SecFlow-1v is an open platform hosting third-party software, besides its communication capabilities.

SecFlow-1v features four GbE Copper ports and one GbE SFP port, two serial RS-232 ports, PoE, and a cellular modem with two SIM cards for maximum link resiliency.

SecFlow-1v supports third-party applications using Linux containers for quick introduction of new capabilities for Industrial IoT solutions.

SecFlow-1v is equipped with serial interfaces for connectivity of legacy RTUs with new IP-based IEDs. 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 75°C) without fans.

SecFlow-1v supports several powering options that all use an embedded isolated DC power supply, to meet the harsh environmental requirements.

MARKET SEGMENTS AND APPLICATIONS

SecFlow-1v addresses the Industrial IoT, for example:

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

INTEROPERABILITY

SecFlow-1v operates with SecurityGateway, SecFlow-1, and SecFlow-2.

ROUTER AND VPN SERVICES

SecFlow-1v features static routing, OSPF, BGP, VRF and NAT/NAT-Traversal.

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.

MANAGEMENT AND SECURITY

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

For easy and safe deployment, RAD offers Zero Touch provisioning thus reducing OPEX and providing a simple way to securely deploy thousands of elements in the network.

SecFlow-1v also supports a variety of access protocols, including CLI and TFTP/SFTP.

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Specifications

ETHERNET INTERFACES

Copper Ethernet Port

4 x 10/100/1000BASE-T, RJ-45 connector
Autonegotiation IEEE 802.3ab

Optional PoE:

- 2x30W
- 4x15W

SFP Port

1 x 1000FX, SFP socket

Max Frame Size

1.5 kB

SERIAL INTERFACES

Isolated/non-isolated

2 x RS-232 ports

CELLULAR MODEM

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

Configurable Cellular authentication using PAP or CHAP

FOTA (Firmware upgrade Over the Air)

NETWORKING

L3 mGRE DMVPN

L3 IPsec VPN

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

ROUTER

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

MANAGEMENT

Control Port

Interface: RS-232

Connector: RJ-45

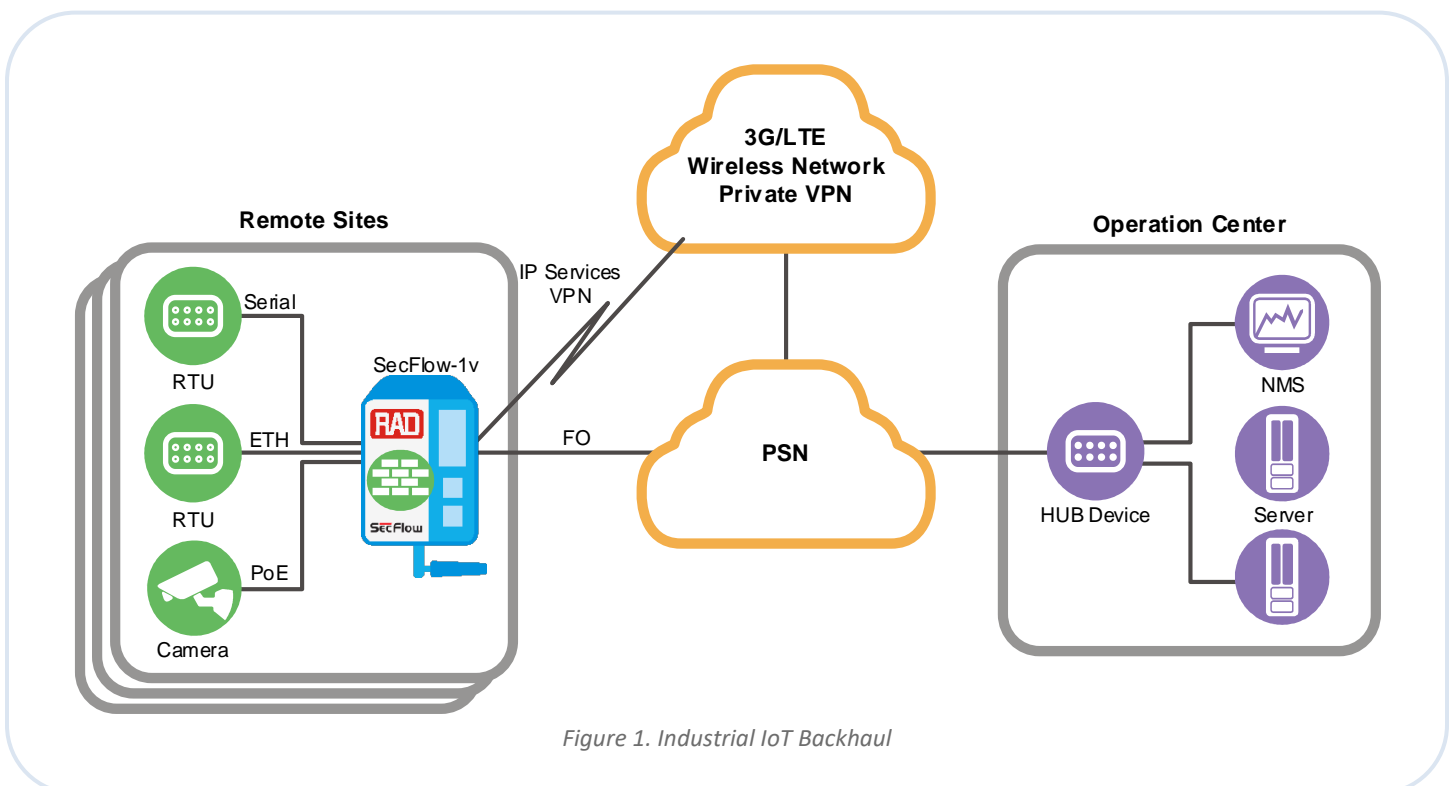


Figure 1. Industrial IoT Backhaul

Management Options

CLI with password-protected access
Web-based interface using HTTP or HTTPS
USB 2.0 host for software upload

Tools

TFTP/SFTP
Multiuser TACACS+

TIMING

Local time setting
SNTP

SECURITY

Stateful Firewall

IPsec

AES128 and AES256 GCM encryption
PKI with X.509 certification
IKEv1
IKEv2
SHA2
Interoperability with SCEP server 2012 and higher

RESILIENCY

Conditioned/scheduled system reboot
OSPFv2
Cellular ISP redundancy (SIM cards backup)
Policy-based IPsec VPN redundancy between fiber and cellular links

DIAGNOSTICS

Interface counters per port
Syslog
SNMPv3 GET and traps
LEDs including Alarm indication
Dry contacts 2-in and 2-out

GENERAL

Physical

Enclosure 1 (E1 in ordering options)

Height: 138 mm (5.43 in)
Width: 53.3 mm (2.1 in)
Depth: 123.3 mm (4.85 in)
Weight: 0.88 kg (1.94 lb)

Enclosure 2 (E2 in ordering options)

Height: 157.2 mm (6.19 in)
Width: 82.8 mm (3.25 in)
Depth: 150 mm (5.9 in)
Weight: 1.4 kg (3.1 lb)

Power

Embedded isolated power supply:

- 48 VDC: 44–57 VDC
- WDC: 20–60 VDC

Power Consumption

Enclosure 1: < 11W
Enclosure 2: < 12W (regular operation / no PoE)
< 72W (60W for PoE)

Environment

Storage Temperature: -40 to 85°C (-40 to 185°F)
Enclosure 1: -40 to 65°C (-40 to 149°F)
Enclosure 2: -40 to 75°C (-40 to 167°F) w/o PoE
-40 to 65°C (-40 to 149°F) with PoE

Note: The actual chassis and operating temperature depend on the ordering options.

Ordering

RECOMMENDED CONFIGURATIONS

SF-1V/E1/WDC/4U1S/2RS

E1 chassis, wide range 20–60V DC power supply, 4 GBE copper ports, 1 GBE SFP port, 2 RS-232 Interfaces

SF-1V/E1/WDC/4U1S/2RS/L1(2,3)

E1 chassis, wide range 20–60V DC power supply, 4 GBE copper ports, 1 GBE SFP port, 2 RS-232 Interfaces, cellular modem for Europe/North America AT&T/Oceania and Latin America

SF-1V/E1/WDC/4U1S/2RS/HSP

E1 chassis, wide range 20–60V DC power supply, 4 GbE copper ports, 1 GbE SFP port, 2 RS-232 Interfaces, HSPA+ (high-speed packet access) modem, 3.5 G

SF-1V/E2/48V/4U1S/POE/2RS

E2 chassis, 48 VDC (44-57 VDC) power supply, 4 GBE copper ports, 1 GBE SFP port, Power over Ethernet, 2 RS-232 Interfaces

SF-1V/E2/48V/4U1S/POE/2RS/L1(2,3)

E2 chassis, 48 VDC (44-57 VDC) power supply, 4 GBE copper ports, 1 GBE SFP port, Power over Ethernet, 2 RS-232 Interfaces, cellular modem for Europe/North America AT&T/Oceania and Latin America

SF-1V/E2/48V/4U1S/2PA/2RS/L1(2,3)

E2 chassis, 48 VDC (44-57 VDC) power supply, 4 GBE copper ports, 1 GBE SFP port, two Ethernet ports with Power over Ethernet for Airmux, 2 RS-232 Interfaces, cellular modem for Europe/North America AT&T/Oceania and Latin America

Note: L1(2,3) means that any of L1/L2/L3 options can be ordered:

- L1 – Europe
- L2 – North America AT&T
- L3 – Oceania and Latin America

SPECIAL CONFIGURATIONS

Zero Touch Provisioning

PS-ZT-PRE_CONFIGURATION

One Zero Touch pre-configuration service package per each SecFlow-1v unit

and either of the following:

PS-ZT-STAGING

Local Zero Touch staging service package (one per project)

PS-ZT-ONSITE-STAGING

Onsite Zero Touch staging service package (one per project)

Please contact your local RAD partner for additional configuration options

OPTIONAL ACCESSORIES

SF-AC-48VDC-40W

AC to 48 VDC power supply, 40W, -20 to 60°C (-4 to 140°F); 20W at 65°C (149°F)

SF-AC-48VDC-120W

AC to 48 VDC power supply, 120W, -20 to 60°C (-4 to 140°F); 60W at 65°C (149°F)

SF-24VDC-48VDC-240W

24 VDC to 48 VDC power supply, 240W, -40 to 50°C (-40 to 122°F); 120W at 65°C (149°F)

SF-AC-12VDC-40W

AC to 12 VDC power supply, 40W, -20 to 60°C (-4 to 140°F); 20W at 65°C (149°F)

CBL-RJ45/D9/F/6FT

Serial console and RS-232 data ports cable

SF-ANT4G-2M

Outdoor antenna for SecFlow 4G cellular modem, 2m connecting cable

SF-ANT4G-5M

Outdoor antenna for SecFlow 4G cellular modem, 5m connecting cable

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