EDR-G903 Series

Industrial VPN secure routers, 2 WAN/1 DMZ, firewall/NAT, 25 VPN tunnels

▶ *Award-winning Product*

2011

TAIWAN EXCELLENCE 2010

> VPN security with IPSec (Server & Client Mode), L2TP and PPTP functions
> Firewall/NAT/VPN/Router all-in-one
> High performance Gigabit copper/fiber combo port
> WAN redundancy function with 2 WAN interfaces and 1 LAN interface
> Firewall with Quick Automation Profile for Fieldbus protocols
> Network address translation (N-to-1, 1-to-1, and port forwarding)
> Intelligent PolicyCheck and SettingCheck tools
> -40 to 75°C operating temperature range (T model)
> NERC CIP compliance

c(UL)us LISTED CE FC

: Introduction

The EDR-G903 series is a high performance, industrial VPN server with firewall/NAT all-in-one secure router. It is designed for Ethernet security applications in sensitive remote control or monitoring networks, and provides an Electronic Security Perimeter for the protection of critical cyber assets. The EDS-G903 series includes the following cyber security features:

• Virtual Private Networking (VPN): VPNs are designed to provide users with secure communication links when accessing a private network from the public Internet. Uses IPSec (IP Security) server or client mode for encryption and authentication of all IP packets at the network layer to ensure confidentiality and sender authentication.

• Firewall: Controls network traffic between different trust zones. Network Address Translation (NAT), which shields the internal LAN from unauthorized activity from outside hosts, is included.

The EDR-G903 supports one WAN, one LAN, and a user-configurable WAN/DMZ interface that provides high flexibility in different applications such as WAN redundancy or Data/FTP server security protection. The EDR-G903's Quick Automation Profile function supports most common Fieldbus protocols, including EtherCAT, EtherNet/IP, FOUNDATION Fieldbus, Modbus/TCP, and PROFINET. Users can easily create a secure Ethernet Fieldbus network from a user-friendly web UI with a single click operation. In addition, wide temperature models are available that operate reliably in hazardous, -40 to 75°C environments.

: Specifications

Technology
Standards:
IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseT(X) and 100BaseFX
IEEE 802.3ab for 1000BaseT(X)
IEEE 802.3z for 1000BaseX
Protocols: SNMPv1/v2c/v3, DHCP Server/Client, TFTP, NTP, HTTP, HTTPS, Telnet, SSH, Syslog, SMTP, LLDP, PPPoE, PPTP, Dynamic DNS, QoS (Quality of Service), VRRP*
*Available in Q2, 2012
Routing: Static routing, RIP V1/V2
Flow Control: IEEE 802.3x flow control, back pressure flow control

Interface
WAN 1: 1 RJ45/fiber combo port
WAN 2 / DMZ: 1 RJ45/fiber combo port
LAN: 1 RJ45/fiber combo port
RJ45 Ports: 10/100/1000BaseT(X) auto negotiation speed
Fiber Ports: 100/1000BaseSFP slot
LED Indicators: PWR1, PWR2, FAULT, 10/100/1000M, DMZ/WAN
Alarm Contact: One relay output with current carrying capacity of 1 A @ 24 VDC

Digital Inputs: 1 input
• +13 to +30 V for state "1"
• -30 to +3 V for state "0"
• Max. input current: 8 mA

Security Function
Firewall:
• Stateful inspection
• Filter: IP and MAC address, ports, protocol
• Bridge mode firewall
Quick Automation Profile: EtherCAT, EtherNet/IP, FOUNDATION Fieldbus, LonWorks, Modbus/TCP, PROFINET, IEC 60870-104, DNP, FTP, SSH, Telnet, HTTP, IPSec, L2TP, PPTP, RADIUS
NAT: N-to-1, 1-to-1, and port forwarding
VPN: IPSec, L2TP, PPTP
Encryption: DES, 3DES, AES
Authentication: Pre-shared key (PSK), X.509v3 certificates, MD5, SHA
Data Throughput: 500 Mbps (large packets)
VPN Throughput: 150 Mbps (AES-256, SHA-256)

Power Requirements
Input Voltage: 12/24/48 VDC (9.6 to 60 VDC), redundant dual inputs
Input Current: 0.53 A @ 24 V

MOXA®

Overload Current Protection: Present
Connection: Removable terminal block
Reverse Polarity Protection: Present

Physical Characteristics
Housing: Metal, IP 30 protection
Dimensions: 51 x 152 x 131.1 mm (2.01 x 5.98 x 5.16 in)
Weight: 1250 g
Installation: DIN-Rail mounting, wall mounting (with optional kit)

Environmental Limits
Operating Temperature:
Standard Models: 0 to 60°C (32 to 140°F)
Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95 % (non-condensing)

Standards and Certifications
Safety: UL 508, UL 60950-1
EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A

EMS:
EN 61000-4-2 (ESD) Level 3, EN 61000-4-3 (RS) Level 3,
EN 61000-4-4 (EFT) Level 3, EN 61000-4-5 (Surge) Level 3,
EN 61000-4-6 (CS) Level 3
Shock: IEC 60068-2-27
Freefall: IEC 60068-2-32
Vibration: IEC 60068-2-6
Note: Please check Moxa's website for the most up-to-date certification status.

MTBF (mean time between failures)
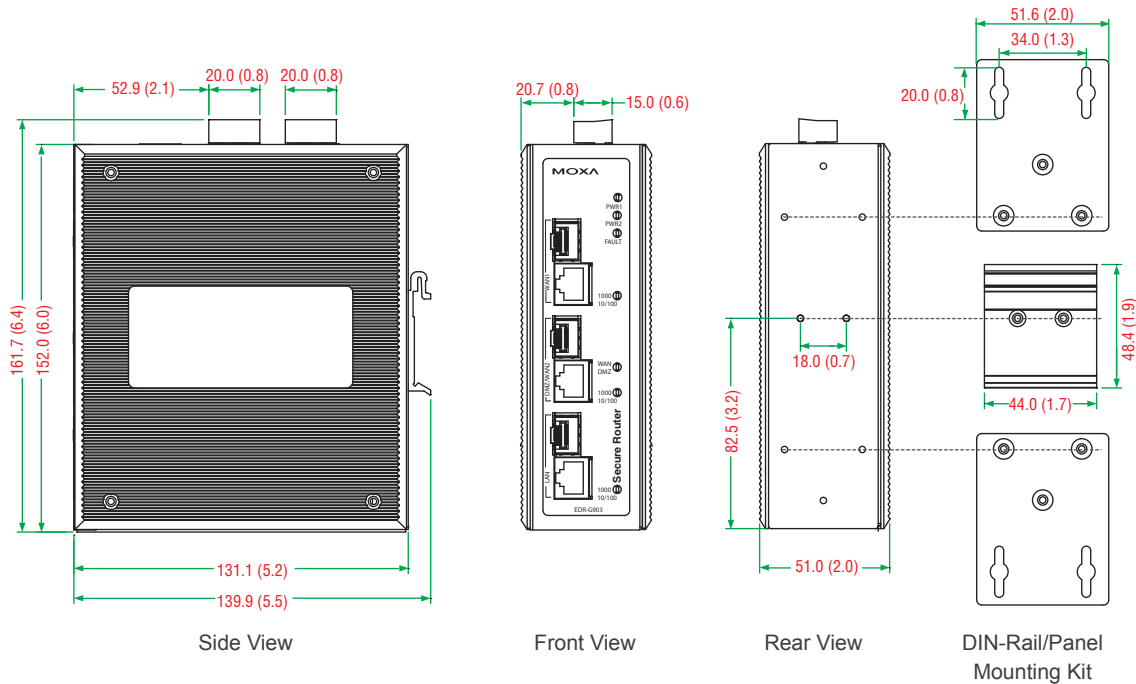**Time:** 530,000 hrs
Database: Telcordia (Bellcore), GB

Warranty
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)

Side View

Front View

Rear View

DIN-Rail/Panel
Mounting Kit

⦂ Ordering Information

Available Models
EDR-G903: Industrial VPN secure router with 2 WAN/1 DMZ, Firewall/NAT, 25 VPN tunnels, 0 to 60°C operating temperature
EDR-G903-T: Industrial VPN secure router with 2 WAN/1 DMZ, Firewall/NAT, 25 VPN tunnels, -40 to 75°C operating temperature
Note: The EDR-G903 series secure routers support 3 100/1000BaseSFP slots. See pages 1-82 and 1-84 for information about SFP-1G/1FE series Gigabit/Fast Ethernet SFP modules.

Optional Accessories (can be purchased separately)
DR-4524/75-24/120-24: 45/75/120 W DIN-Rail 24 VDC power supplies
WK-51-01: Wall mounting kit
RK-4U: 4U-high 19" rack mounting kit

Package Checklist
- EDR-G903 secure router
- RJ45 to DB9 console port cable
- Documentation and software CD
- Hardware installation guide (printed)
- Warranty card

SFP-1G Series

1-port Gigabit Ethernet SFP modules

> IEEE 802.3z compliant
> Differential LVPECL inputs and outputs
> TTL signal detect indicator
> Hot pluggable LC duplex connector
> Class 1 laser product, complies with EN 60825-1

EN : 60825   c **RU** US

⁞ Specifications

Interface
Ethernet Ports: 1
Connectors: Duplex LC Connector or Simplex LC Connector (WDM-type only)
Note: WDM-type SFP modules must be used in pairs (e.g., SFP-1GXXALC and SFP-1GXXBLC)
Note: When connecting long distance SFP (SFP-ZX, EZX or EZX-120), please ensure at least 5 dB attenuation between both ends. Without attenuation, excessive optical power may damage the transeivers.

Optical Fiber

	Gigabit Ethernet													
	SFP-SX	SFP-LSX	SFP-LX	SFP-LH	SFP-LHX	SFP-ZX	SFP-EZX	SFP-EZX-120	SFP-10A	SFP-10B	SFP-20A	SFP-20B	SFP-40A	SFP-40B
Wavelength	850 nm	1310 nm	1310 nm	1310 nm	1310 nm	1550 nm	1550 nm	1550 nm	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm
Max. TX	-4 dBm	-1 dBm	-3 dBm	-2 dBm	1 dBm	5 dBm	5 dBm	3 dBm	-3 dBm		-2 dBm		2 dBm	
Min. TX	-9.5 dBm	-9 dBm	-9.5 dBm	-8 dBm	-4 dBm	0 dBm	0 dBm	-2 dBm	-9 dBm		-8 dBm		-3 dBm	
RX Sensitivity	-18 dBm	-19 dBm	-20 dBm	-23 dBm	-24 dBm	-24 dBm	-30 dBm	-33 dBm	-21 dBm		-23 dBm		-23 dBm	
Link Budget	8.5 dB	10 dB	10.5 dB	15 dB	20 dB	24 dB	30 dB	31 dB	12 dB		15 dB		20 dB	
Typical Distance	550 m[a]	2 km[b]	10 km[c]	30 km[c]	40 km[c]	80 km[c]	110 km[c]	120 km[c]	10 km[c]		20 km[c]		40 km[c]	
Saturation	0 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-3 dBm	-8 dBm	-1 dBm		-1 dBm		-1 dBm	

a. 50/125 μm, 400 MHz * km or 62.5/125 μm, 500 MHz * km @ 850 nm multi-mode fiber optic cable
b. 62.5/125 μm, 750 MHz * km @ 1310 nm multi-mode fiber optic cable
c. 9/125 μm single-mode fiber optic cable

Note: The actual communication distance depends on many factors, including connector loss, cable deployment, and the age of the cabling system. We recommend doing a link budget analysis and reserving a 3 dB margin for such factors.

Environmental Limits
Operating Temperature:
Standard Models: 0 to 60°C (32 to 140°F)
Wide Temp. Models: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

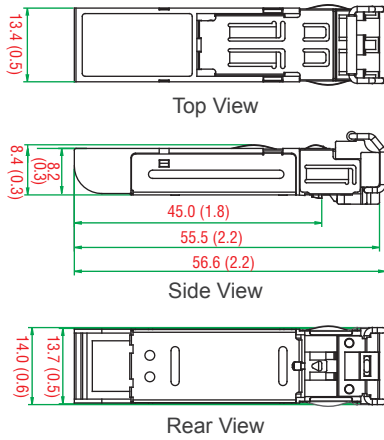### Standards and Certifications
Safety: UL 60950-1, TÜV

Warranty
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)
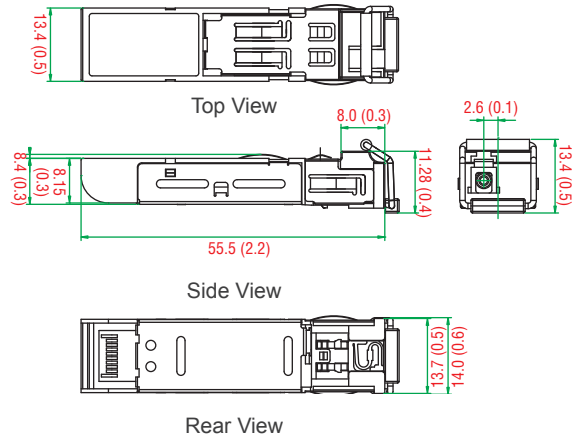
SFP-1G Series

Top View

Side View

45.0 (1.8)
55.5 (2.2)
56.6 (2.2)

13.4 (0.5)

8.4 (0.3)
8.2

13.4 (0.5)

6.3 (0.2)

Rear View

14.0 (0.6)
13.7 (0.5)

SFP-1G Series (WDM Type)

Top View

13.4 (0.5)

Side View

8.0 (0.3)
8.4 (0.3)
8.15 (0.3)
11.28 (0.4)
55.5 (2.2)

2.6 (0.1)
13.4 (0.5)

Rear View

14.0 (0.6)
13.7 (0.5)

: Ordering Information

SFP Modules

Available Models		Port Interface							
Standard Temperature (0 to 60˚C)	Wide Temperature (-40 to 85˚C)	1000BaseSX, LC Connector, 0.5 km	1000BaseLSX, LC Connector, 2 km	1000BaseLX, LC Connector, 10 km	1000BaseLH, LC Connector, 30 km	1000BaseLHX, LC Connector, 40 km	1000BaseZX, LC Connector, 80 km	1000BaseEZX, LC Connector, 110 km	1000BaseEZX, LC Connector, 120 km
SFP-1GSXLC	SFP-1GSXLC-T*	1	–	–	–	–	–	–	–
SFP-1GLSXLC	SFP-1GLSXLC-T	–	1	–	–	–	–	–	–
SFP-1GLXLC	SFP-1GLXLC-T	–	–	1	–	–	–	–	–
SFP-1GLHLC	SFP-1GLHLC-T	–	–	–	1	–	–	–	–
SFP-1GLHXLC	SFP-1GLHXLC-T	–	–	–	–	1	–	–	–
SFP-1GZXLC	SFP-1GZXLC-T	–	–	–	–	–	1	–	–
SFP-1GEZXLC	–	–	–	–	–	–	–	1	–
SFP-1GEZXLC-120	–	–	–	–	–	–	–	–	1

* SFP-1GSXLC-T: -20 to 75˚C operating temperature

WDM-type (BiDi) SFP Modules

Availabe Models		Port Interface					
Standard Temperature (0 to 60˚C)	Wide Temperature (-40 to 85˚C)	1000BaseSFP, LC Connector, 10 km		1000BaseSFP, LC Connector, 20 km		1000BaseSFP, LC Connector, 40 km	
		TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm
SFP-1G10ALC	SFP-1G10ALC-T	1	–	–	–	–	–
SFP-1G10BLC	SFP-1G10BLC-T	–	1	–	–	–	–
SFP-1G20ALC	SFP-1G20ALC-T	–	–	1	–	–	–
SFP-1G20BLC	SFP-1G20BLC-T	–	–	–	1	–	–
SFP-1G40ALC	SFP-1G40ALC-T	–	–	–	–	1	–
SFP-1G40BLC	SFP-1G40BLC-T	–	–	–	–	–	1

Available Models

The SFP-1G series modules can be used with the following products:
ICS-G7826/G7828 series, ICS-G7526/G7528 series, IKS-G6524/G6824 series,
IKS-6726/6728 series, EDS-611/619 series, EDS-G509 series, EDS-518A series, EDS-510A series,
EDS-G308 series, EDS-P510 series, EDS-G205-4PoE series, IM-G7000-4GSFP, IM-2GSFP,
PM-7200-2G/4G series, PT-G7509, EDR-G903/G902 series, IMC-101G series

Package Checklist
- SFP-1G module
- Warranty card

MOXA®

SFP-1FE Series

1-port fast Ethernet SFP modules

> IEEE 802.3u compliant
> Differential PECL inputs and outputs
> TTL signal detect indicator
> Hot pluggable LC duplex connector
> Class 1 laser product; complies with EN 60825-1

: Specifications

Interface
Ethernet Ports: 1
Connectors: Duplex LC Connector

Optical Fiber

	Fast Ethernet		
	SFP-M	SFP-S	SFP-L
Wavelength	1300 nm	1310 nm	1550 nm
Max. TX	-18 dBm	0 dBm	0 dBm
Min. TX	-8 dBm	-5 dBm	-5 dBm
RX Sensitivity	-34 dBm	-34 dBm	-34 dBm
Link Budget	26 dB	29 dB	29 dB
Typical Distance	4 km [a]	40 km [b]	80 km [b]
Saturation	0 dBm	-3 dBm	-3 dBm

a. 50/125 μm or 62.5/125 μm, 800 MHz * km @ 1300 nm multi-mode fiber optic cable
b. 9/125 μm single-mode fiber optic cable

Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Standards and Certifications
Safety: UL 60950-1, TÜV

Warranty
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)

Top View

Side View

Rear View
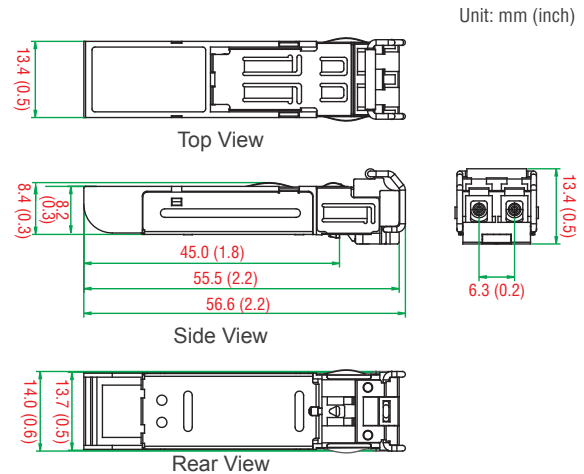
: Ordering Information

Available Models	Port Interface		
Wide Temperature (-40 to 85°C)	100BaseFX, Multi-mode, LC Connector, 4 km	100BaseFX, Single-mode, LC Connector, 40 km	100BaseFX, Single-mode, LC Connector, 80 km
SFP-1FEMLC-T	1	–	–
SFP-1FESLC-T	–	1	–
SFP-1FELLC-T	–	–	1

Available Models
The SFP-1FE series modules can be used with the following products:
ICS-G7826/G7828 series, ICS-G7526/G7528 series, IKS-G6524/G6824 series,
IKS-6726/6728 series, EDS-611/619 series, EDS-G509 series, EDS-G308-2SFP, EDS-P510 series,
IM-G7000-4GSFP, PM-7200-8SFP, EDR-G903/G902 series, IM-6700-8SFP

Package Checklist
• SFP-1FE module
• Warranty card