

EDR-G902 Series

Industrial Gigabit Secure Router, 1 WAN, Firewall/NAT, 10 VPN Tunnels



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



Introduction

The EDR-G902 series is a Gigabit performance, all-in-one Firewall/VPN/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 such as pumping stations, DCS, PLC systems on oil rigs, and water treatment systems. The EDR-G902 series includes the following cyber security features:

- 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.
- 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) for encryption and authentication of all IP packets at the network layer to ensure confidentiality and sender authentication.

The EDR-G902'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

Routing: Static routing, RIP V1/V2

Flow Control: IEEE 802.3x flow control, back pressure flow control

Interface

WAN: 1 RJ45/fiber combo port

LAN: 1 RJ45 port

RJ45 Ports: 10/100/1000BaseT(X) auto negotiation speed

Fiber Ports: 100/1000BaseSFP slot

LED Indicators: PWR1, PWR2, FAULT, 10/100/1000M

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

Power Requirements

Input Voltage: 12/24/48 VDC (9.6 to 60 VDC), redundant dual inputs

Input Current: 0.53 A @ 24 V

Overload Current Protection: Present

Connection: Removable terminal block

Reverse Polarity Protection: Present

Physical Characteristics

Housing: Metal

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 60950-1, UL 508 (pending)

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

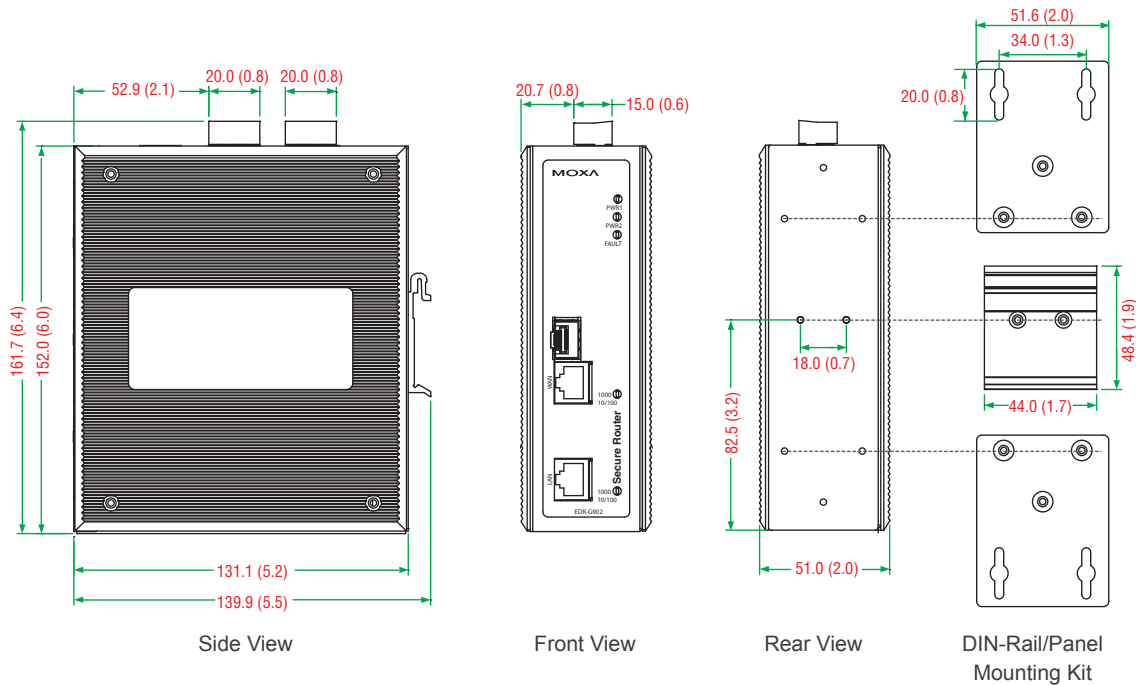
Warranty

Warranty Period: 5 years

Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)



Ordering Information

Available Models

EDR-G902: Industrial Gigabit Firewall/NAT secure router with 1 WAN port, 10 VPN tunnels, 0 to 60°C operating temperature

EDR-G902-T: Industrial Gigabit Firewall/NAT secure router with 1 WAN port, 10 VPN tunnels, -40 to 75°C operating temperature

Note: The EDR-G902 series secure routers support 100/1000BaseSFP slots. See pages 1-87 and 1-89 for information about SFP-1G/1FE series Gigabit/fast Ethernet SFP modules.

Optional Accessories (can be purchased separately)

DR-45/24/75-24/120-24: 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-G902 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



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)

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	-2 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	-8 dBm	-8 dBm	-3 dBm	-3 dBm
RX Sensitivity	-18 dBm	-19 dBm	-20 dBm	-23 dBm	-24 dBm	-24 dBm	-30 dBm	-33 dBm	-21 dBm	-21 dBm	-23 dBm	-23 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	12 dB	15 dB	15 dB	20 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	10 km ^c	20 km ^c	20 km ^c	40 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	-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 Operating 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

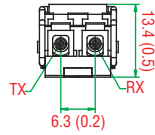
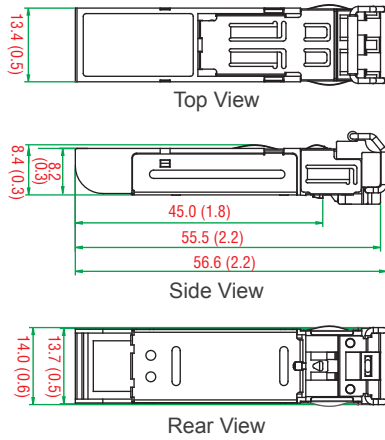
Warranty Period: 5 years

Details: See www.moxa.com/warranty

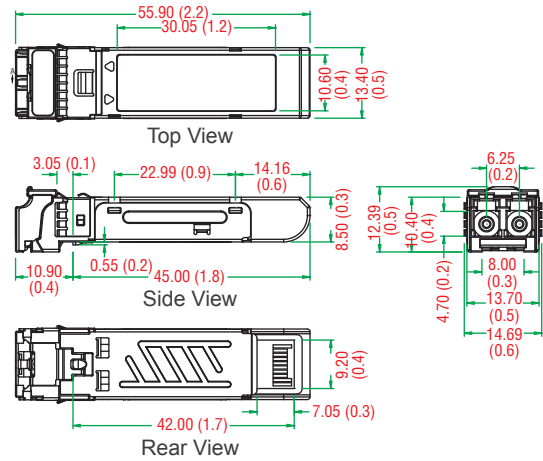
Dimensions

Unit: mm (inch)

SFP-1G Series



SFP-1GEZXC-120



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	1000BaseEZXC, LC Connector, 110 km	1000BaseEZXC, 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-1GLHXC	SFP-1GLHXC-T	-	-	-	-	1	-	-	-
SFP-1GZXLC	SFP-1GZXLC-T	-	-	-	-	-	1	-	-
SFP-1GEZXC	-	-	-	-	-	-	-	1	-
SFP-1GEZXC-120	-	-	-	-	-	-	-	-	1

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

WDM-type (BiDi) SFP Modules

Available 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

The SFP-1G series modules can be used with the following products:

IM-2GSFP, EDS-611/619 series, EDS-G509 series, EDS-518A series, EDS-510A series, EDS-P510 series, ICS-G7826/G7828 series, ICS-G7526/G7528 series, IM-G7000-4GSFP, IKS-G6824 series, IKS-G6524 series, IKS-6526-2GTXSFP series, PM-7200-2G/4G series, EDS-G308 series, EDR-G903 series, IMC-101G series, PT-G7509

Package Checklist

- SFP-1G module
- Warranty card

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

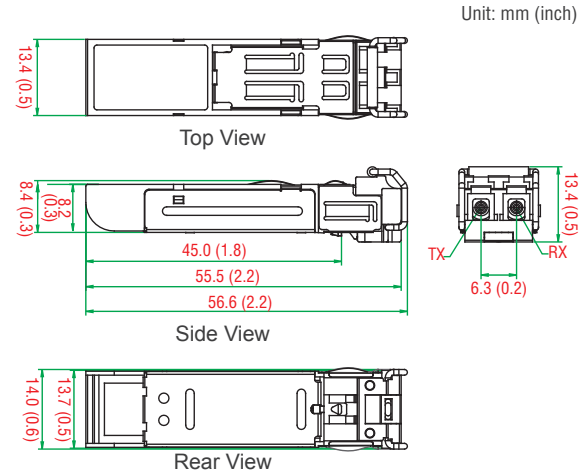
Environmental Limits

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



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

The SFP-1FE series modules can be used with the following products:

EDS-611/619 series, EDS-G509 series, EDS-G308-2SFP, EDS-P510 series, ICS-G7826/G7828 series, ICS-G7526/G7528 series, IM-G7000-4GSFP, IKS-G6824 series, IKS-G6524 series, IKS-6524-8SFP series, PM-7200-8SFP, EDR-G903 series

Package Checklist

- SFP-1FE module
- Warranty card