▶ *Award-winning Product*

EDR-810 Series

8+2G multiport industrial secure router with switch/firewall/NAT/VPN

> 8+2G all-in-one firewall/NAT/VPN/router/switch
> Build up secure remote access tunnel with VPN
> Protect critical assets by stateful firewall
> Inspect industrial protocol with PacketGuard technology
> Easy network setup with network address translation (NAT)
> RSTP/Turbo Ring redundant protocol enhances network redundancy
> -40 to 75°C operating temperature range (T model)
> Security features based on IEC 62443 / NERC CIP
> Check firewall settings with intelligent SettingCheck feature

NEMA TS2　EN 50121　c(UL)us LISTED　CE　FC

: Introduction

The EDR-810 is a highly integrated industrial multiport secure router with firewall/NAT/VPN and managed Layer 2 switch functions. It is designed for Ethernet-based security applications in sensitive remote control or monitoring networks, and it provides an electronic security perimeter for the protection of critical cyber assets such as pumping/treatment systems in water stations, DCS systems in oil and gas applications, and PLC/SCADA systems in factory automation. The EDS-810 series includes the following cybersecurity features:

• **Firewall/NAT:** Firewall policies control network traffic between different trust zones, and Network Address Translation (NAT) shields the internal LAN from unauthorized activity by outside hosts.

• **VPN:** Virtual Private Networking (VPN) is designed to provide users with secure communication tunnels when accessing a private network from the public Internet. VPNs use 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.

The EDR-810's "WAN Routing Quick Setting" provides an easy way for users to set up WAN and LAN ports to create a routing function in four steps. In addition, the EDR-810's "Quick Automation Profile" gives engineers a simple way to configure the firewall filtering function with general automation protocols, including EtherNet/IP, Modbus TCP, EtherCAT, FOUNDATION Fieldbus, and PROFINET. Users can easily create a secure Ethernet network from a user-friendly web UI with a single click, and the EDR-810 is capable of performing deep Modbus TCP packet inspection. Wide temperature range models that operate reliably in hazardous, -40 to 75°C environments are also available.

: Specifications

Technology

Standards:
IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseT(X)
IEEE 802.3u for 100BaseFX
IEEE 802.3ab for 1000BaseT(X)
 IEEE 802.3z for 1000BaseX
IEEE 802.1Q for VLAN tagging
IEEE 802.3ad for port trunk

Protocols: SNMP v1/v2c/v3, DHCP server/client, TFTP, NTP/SNTP server/client, HTTP, HTTPS, Telnet, SSH, IPSec, L2TP, IGMP v1/v2/v3, QoS/CoS/ToS, Radius, RSTP/STP, LLDP, DDNS, Proxy ARP
Routing: Static routing, RIP V1/V2, OSPF
Throughput: 10000 packets per second (max. 100 Mbps)
Routing Redundancy: VRRP
Multicast Routing: Static, DVMRP, PIM-SM/SSM
Broadcast Forwarding: IP directed broadcast, broadcast forwarding
Redundancy: STP/RSTP, Turbo Ring V2, Ring Coupling, and Dual Homing
Flow Control: IEEE 802.3x flow control, back pressure flow control

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Security Functions

Firewall:

Features:
- Stateful inspection
- Router firewall and transparent (bridge) firewall
- Filter: IP and MAC address, ports, ICMP, DDoS, Ethernet protocols
- Deep Packet Inspection: Modbus TCP/UDP
- Quick Automation Profiles: EtherCAT, EtherNet/IP, FOUNDATION Fieldbus, LonWorks, Modbus/TCP, PROFINET, IEC 60870-104, DNP, FTP, SSH, Telnet, HTTP, IPSec, L2TP, PPTP, RADIUS

Throughput: Max. 10000 packets per second (Max. 100 Mbps)

DoS and DDoS Protection: Null Scan, Xmas Scan, NMAP-Xmas Scan, SYN/FIN Scan, FIN Scan, NMAP-ID Scan, SYN/RST Scan, NEW-Without-SYN Scan, ICMP-Death, SYN-Flood, ARP-Flood

NAT: N-to-1, 1-to-1, bidirectional 1-to-1, and port forwarding

IPSec VPN:

Protocols:
- IPSec
- L2TP (server)
- PPTP (client)

Encryption:
- DES, 3DES, AES-128, AES-192, AES-256

Authentication:
- RSA (key size: 1024-bit, 2048-bit)
- X.509 v3 certificate
- MD5 and SHA (SHA-256)

Throughput:
- Max. 17 Mbps (Conditions: AES-256, SHA-256)

Concurrent VPN Tunnels:
- Max. 10 IPSec VPN tunnels

OpenVPN:

Protocols:
- OpenVPN (client and server), UDP and TCP
- Tunnel mode (routing) and TAP mode (bridge)

Encryption:
- Blowfish CBC, DES CBC, DES-EDE3 CBC, AES-128/192/256 CBC

Authentication:
- User password by MD5 and SHA1

Throughput:
- Max. 5 Mbps

Concurrent VPN Tunnels:
- Server mode: max. 5 external clients
- Client mode: max. 2 external servers

Real-Time Firewall / VPN Event Log:
- Event Type: Firewall Event, VPN Event, System Security Event
- Media: Local storage, Syslog server, and SNMP trap

Switch Properties

Max. Number of VLANs: 16
VLAN ID Range: 1 to 4094
IGMP Groups: 256

Interface

RJ45 Ports: 10/100BaseT(X) auto negotiation speed
Fiber Ports: 100/1000Base SFP slot
Console Port: Web/Telnet/SSH/CLI, and RS-232 serial console
RESET button: Reset to default settings
LED Indicators: STATE, PWR1, PWR2, FAULT, 10/100M (TP Port), 100/1000M (SFP Port), MSTR, CPLR, VRRP.M, VPN
Alarm Contact: One relay output with current-carrying capacity of 1 A @ 24 VDC
Digital Inputs: 1 2-contact terminal block
- +13 to +30 V for state "1"
- -30 to +3 V for state "0"
- Max. input current: 8 mA

Power Requirements

Input Voltage: 12/24/48 VDC, redundant dual inputs
Input Current: 0.32 A @ 24 V
Overload Current Protection: Present
Connection: Removable terminal block
Reverse Polarity Protection: Present

Physical Characteristics

Housing: Metal
Dimensions: 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in)
Weight: 830 g (2.10 lb)
Installation: DIN-rail mounting, wall mounting (with optional kit)

Environmental Limits

Operating Temperature:
Standard Models: -10 to 60°C (14 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)
Altitude: Up to 2000 m
Note: Please contact Moxa if you require products guaranteed to function properly at higher altitude.
properly at higher altitude.)

Standards and Certifications

Safety: UL 508
EMC: EN 55032/24
Hazardous Location: UL/cUL Class I Division 2 Groups A/B/C/D
EMI: CISPR 32, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV
IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV
IEC 61000-4-6 CS: Signal: 10 V
IEC 61000-4-8
Rail Traffic: EN 50121-4
Transportation: NEMA TS2
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)
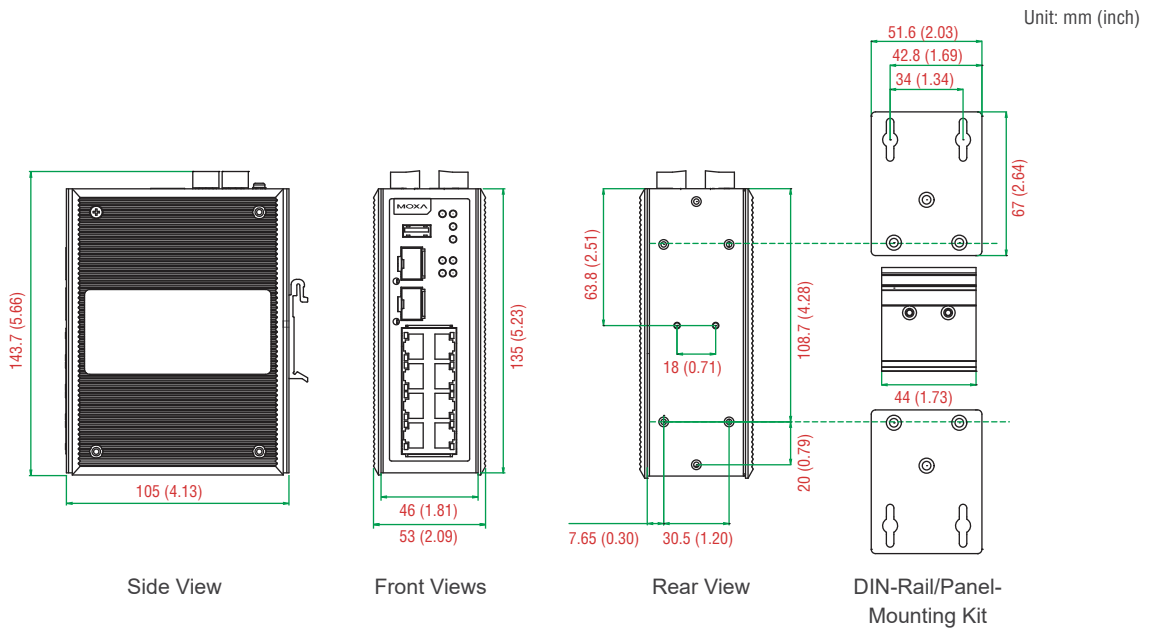
Time: 981,954 hrs
Standard: Telcordia (Bellcore), GB

Warranty

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

Dimensions

Unit: mm (inch)

Side View

Front Views

Rear View

DIN-Rail/Panel-Mounting Kit

: Ordering Information

Available Models

EDR-810-2GSFP: 8+2G-port industrial multiport secure router with firewall/NAT, -10 to 60°C operating temperature

EDR-810-2GSFP-T: 8+2G-port industrial multiport secure router with firewall/NAT, -40 to 75°C operating temperature

EDR-810-VPN-2GSFP: 8+2G-port industrial multiport secure router with firewall/NAT/VPN, -10 to 60°C operating temperature

EDR-810-VPN-2GSFP-T: 8+2G-port industrial multiport secure router with firewall/NAT/VPN, -40 to 75°C operating temperature

Note: The EDR-810 series supports 1000BaseSFP slots. See the SFP-1G series Gigabit Ethernet SFP module product datasheet for more information.

Optional Accessories (can be purchased separately)

ABC-02-USB: Automatic Backup Configurator

DR-4524/75-24/120-24: 45/75/120 W DIN-rail 24 VDC power supplies

MDR-40-24/60-24: 40/60 W DIN-rail 24 VDC power supplies, -20 to 70°C operating temperature

WK-51-01: Wall-mounting kit, 2 plates with 6 screws

RK-4U: 4U-high 19-inch rack-mounting kit

Package Checklist

- EDR-810 industrial secure router
- Serial Cable: CN20070
- Documentation and software CD
- Hardware installation guide (printed)
- Warranty card

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SFP-1G Series

1-port Gigabit Ethernet SFP modules

> Digital Diagnostic Monitor Function
> -40 to 85°C operating temperature range (T models)
> 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)

Optical Fiber

		Gigabit Ethernet SFP								
		SFP-SX		SFP-LSX		SFP-LX	SFP-LH	SFP-LHX	SFP-ZX	SFP-EZX	SFP-EZX-120
Transceiver Type		Multi-Mode		Multi-Mode		Single-Mode	Single-Mode	Single-Mode	Single-Mode	Single-Mode	Single-Mode
Fiber Cable Type		OM1	OM2	OM2	OM1	G.652	G.652	G.652	G.652	G.652	G.652
Typical Distance		300 m	550 m	1 km	2 km	10 km	30 km	40 km	80 km	110 km	120 km
Wave-length	Typical (nm)	850		1310		1310	1310	1310	1550	1550	1550
	TX Range (nm)	830 to 860		1270 to 1355		1280 to 1355	1280 to 1355	1280 to 1340	1530 to 1570	1530 to 1570	1530 to 1570
	RX Range (nm)	770 to 860		1260 to 1610		1260 to 1610	1260 to 1610	1260 to 1610	1260 to 1610	1260 to 1610	1100 to 1600
Optical Power	TX Range (dBm)	-4 to -9.5		-1 to -9		-3 to -9	-3 to -8	+3 to -4	+5 to 0	+5 to 0	+3 to -2
	RX Range (dBm)	0 to -18		-1 to -19		-3 to -21	-3 to -23	-1 to -24	-1 to -24	-9 to -30	-8 to -33
	Link Budget (dB)	8.5		10		12	15	20	24	30	31
	Dispersion Penalty (dB)	4.3	3.6	5	5	2	1	1	1	1	2

Note: When connecting the SFP-LHX, ZX, EZX, or EZX-120, we recommend using an attenuator to prevent the transceiver from being damaged by excessive optical power.

		WDM Gigabit Ethernet SFP					
		SFP-10A	SFP-10B	SFP-20A	SFP-20B	SFP-40A	SFP-40B
Transceiver Type		Single-Mode		Single-Mode		Single-Mode	
Fiber Cable Type		G.652		G.652		G.652	
Typical Distance		10 km		20 km		40 km	
Wave-length	Typical (nm)	TX 1310, RX 1550	TX 1550, RX 1310	TX 1310, RX 1550	TX 1550, RX 1310	TX 1310, RX 1550	TX 1550, RX 1310
	TX Range (nm)	1270 to 1355	1530 to 1570	1270 to 1355	1530 to 1570	1290 to 1330	1530 to 1570
	RX Range (nm)	1480 to 1580	1260 to 1360	1480 to 1580	1260 to 1360	1480 to 1580	1260 to 1360
Optical Power	TX Range (dBm)	-3 to -9		-2 to -8		+2 to -3	
	RX Range (dBm)	-3 to -21		-2 to -23		-1 to -23	
	Link Budget (dB)	12		15		20	
	Dispersion Penalty (dB)	2		3		1	

Note: WDM-type SFP modules must be used in pairs (e.g., SFP-1G10ALC and SFP-1G10BLC)
Note: When connecting the SFP-40A and 40B, we recommend using an attenuator to prevent damage caused by excessive optical power.

Typical Distance: To reach the typical distance of specified fiber transceiver, please refer to formula: Link budget(dB) > dispersion penalty(dB) + total link loss(dB).

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Power Requirements
Power Consumption: Max. 1 W

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
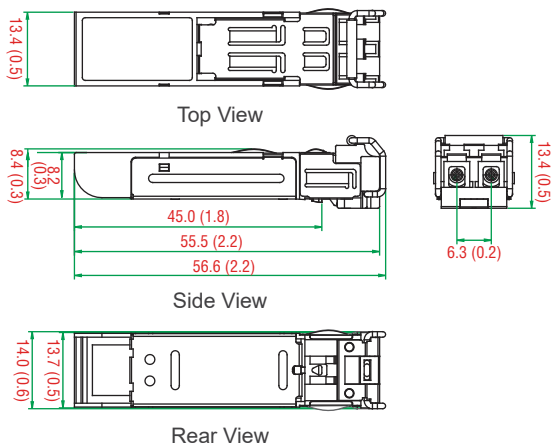**Safety:** CE, FCC, TÜV (EN 60825), UL 60950-1
Marine: DNV, GL

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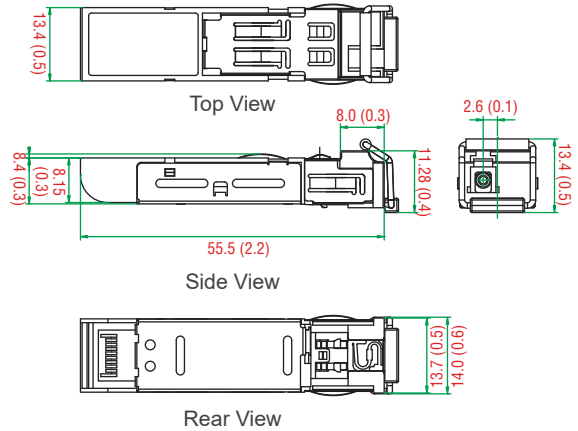**Warranty Period:** 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)

SFP-1G Series

SFP-1G Series (WDM Type)

: Ordering Information

Gigabit Ethernet SFP Models				WDM Gigabit Ethernet SFP Models			
Standard Temperature Models (0 to 60˚C)	Wide Temperature Models (-40 to 85˚C)	Transeiver Type	Typical Distance	Standard Temperature (0 to 60˚C)	Wide Temperature (-40 to 85˚C)	Transeiver Type	Typical Distance
SFP-1GSXLC	SFP-1GSXLC-T	Multi-Mode	300/550 m	SFP-1G10ALC	SFP-1G10ALC-T	Single-Mode	10 km
SFP-1GLSXLC	SFP-1GLSXLC-T	Multi-Mode	1/2 km	SFP-1G10BLC	SFP-1G10BLC-T	Single-Mode	10 km
SFP-1GLXLC	SFP-1GLXLC-T	Single-Mode	10 km	SFP-1G20ALC	SFP-1G20ALC-T	Single-Mode	20 km
SFP-1GLHLC	SFP-1GLHLC-T	Single-Mode	30 km	SFP-1G20BLC	SFP-1G20BLC-T	Single-Mode	20 km
SFP-1GLHXLC	SFP-1GLHXLC-T	Single-Mode	40 km	SFP-1G40ALC	SFP-1G40ALC-T	Single-Mode	40 km
SFP-1GZXLC	SFP-1GZXLC-T	Single-Mode	80 km	SFP-1G40BLC	SFP-1G40BLC-T	Single-Mode	40 km
SFP-1GEZXLC	–	Single-Mode	110 km	–	–	–	–
SFP-1GEZXLC-120	–	Single-Mode	120 km	–	–	–	–

Package Checklist
- SFP-1G module
- Warranty card