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TAIWAN
EXCELLENCE 2014

CONTROL ENGINEERING
2014
ENGINEERS' CHOICE AWARDS
FINALISTS

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)
> ISA99 / IEC 62443 / NERC CIP compliance
> Check firewall settings with intelligent SettingCheck feature

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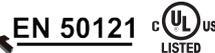
: Introduction

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 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/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 cyber security features:

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

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 4 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 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 802.3ab 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
Routing Redundancy: VRRP
Multicast Routing: Static, DVMRP, PIM-SM/SSM
Broadcast: IP directed broadcast, broadcast forwarding
Redundancy: STP/RSTP, Turbo Ring V2
Flow Control: IEEE 802.3x flow control, back pressure flow control

Security Functions
Firewall:
• Stateful inspection
• Router firewall and transparent (bridge) firewall
• Filter: IP and MAC address, ports, ICMP, DDoS, Ethernet Protocols
• Deep Packet Inspection on Modbus TCP

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, bidirectional 1-to-1, and port forwarding
VPN: IPSec (client/server), L2TP (server), PPTP (client), Max. 10 VPN tunnels (VPN model)
Real-Time Firewall / VPN Event Log: Local storage, syslog, and SNMP trap
Encryption: DES, 3DES, AES-128/192/256 (VPN model)
Authentication: Pre-shared key (PSK), X.509v3 certificates, MD5, SHA
Data Throughput: 100 Mbps (10000 fps)
VPN Throughput: 17 Mbps (AES-256, SHA-256)

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: 1000BaseSFP slot
Console Port: Web/telnet/SSH/CLI, and RS-232 serial console
RESET button: Reset to default settings
LED Indicators: STATE, PWR1, PWR2, FAULT, 10/100/1000M

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 (9.6 to 60 VDC), redundant dual inputs
Input Current: 0.37 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
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)

Standards and Certifications
Safety: UL 508
Hazardous Location: UL/cUL Class I Division 2 Groups A/B/C/D
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, EN 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.

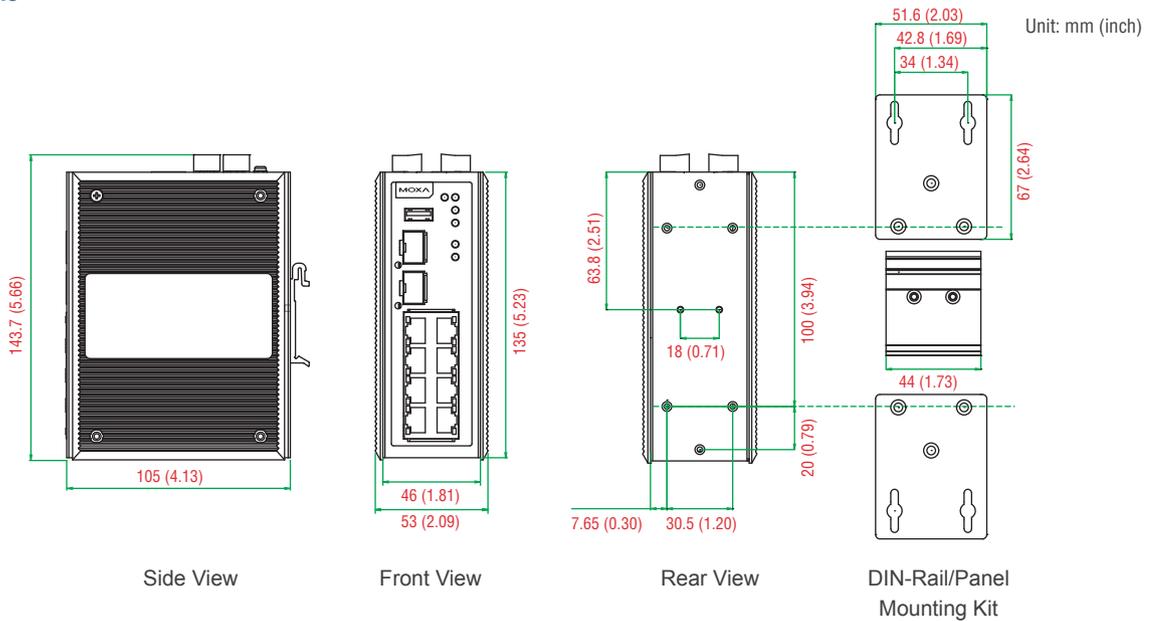### MTBF (mean time between failures)
Time: 981,954 hrs
Database: Telcordia (Bellcore), GB

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-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)
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
RK-4U: 4U-high 19" rack mounting kit
ABC-02-USB: Automatic Backup Configurator

Package Checklist
• EDR-810 industrial 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-1G10ALC and SFP-1G10BLC)
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
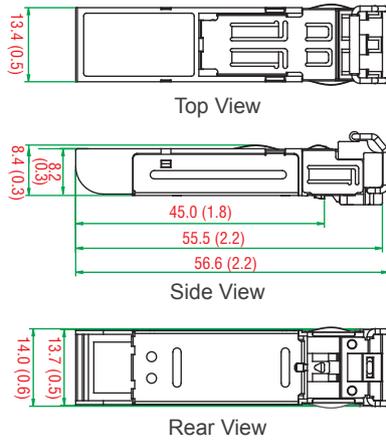**Safety:** UL 60950-1, TÜV
Marine: DNV, GL, LR, NK

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

Dimensions

Unit: mm (inch)
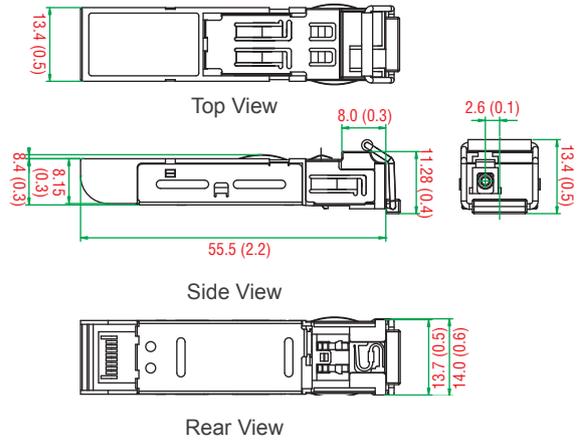
SFP-1G Series

Top View

Side View

Rear View

SFP-1G Series (WDM Type)

Top View

Side View

Rear View

: 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	–

Available Models

The SFP-1G series modules can be used with the following products:
ICS-G7850A/G7852A series, ICS-G7850/G7852 series, ICS-G7750A/G7752A series, ICS-G7750/G7752 series, IM-G7000A-4GSFP, IM-G7000-4GSFP, ICS-G7826A/G7828A series, ICS-G7826/G7828 series, ICS-G7526A/G7528A series, ICS-G7526/G7528 series, IKS-G6524A/G6824A series, IKS-G6524/G6824 series, IKS-6726A/6728A series, IKS-6726/6728 series, IM-2GSFP, EDS-611/619 series, EDS-G516E series, EDS-G512E series, EDS-G509 series, EDS-518A series, EDS-510A series, EDS-510E series, EDS-G308 series, EDS-210A series, IKS-6728A-8PoE series, IKS-6728-8PoE series, EDS-P510A-8PoE series, EDS-P510 series, EDS-G205A-4PoE series, PM-7200-2G/4G series, PM-7500-2G/4G series, PT-G7509 series, IMC-101G series, EDR-G903/G902 series, EDR-810 series, PT-7528 series

Package Checklist

- SFP-1G module
- Warranty card