

# EDR-G9010 Series

## 8 GbE copper + 2 GbE SFP multiport industrial secure router



### Features and Benefits

- Marine cybersecurity certified (IACS UR E27 Rev.1 & IEC 61162-460 Ed. 3.0), supporting 460-gateway, forwarder and switch roles
- Developed according to the IEC 62443-4-1 and compliant with the IEC 62443-4-2 industrial cybersecurity standards
- 10-port Gigabit all-in-one firewall/NAT/VPN/router/switch
- Next-generation industrial firewall with Intrusion Prevention/Detection System (IPS/IDS)
- Visualize OT security with the MXsecurity management software
- Secure remote access tunnel with VPN
- Examine industrial protocol data with Deep Packet Inspection (DPI) technology
- Easy network setup with Network Address Translation (NAT)
- RSTP/Turbo Ring redundant protocol enhances network redundancy
- Supports Secure Boot for checking system integrity
- -40 to 75°C operating temperature range (-T model)

### Certifications



## Introduction

The EDR-G9010 Series is a set of highly integrated industrial multi-port secure routers with firewall/NAT/VPN and managed Layer 2 switch functions. These devices are designed for Ethernet-based security applications in critical remote control or monitoring networks. These secure routers provide an electronic security perimeter to protect critical cyber assets including substations in power applications, pump-and-treat systems in water stations, distributed control systems in oil and gas applications, and PLC/SCADA systems in factory automation. Furthermore, with the addition of IDS/IPS, the EDR-G9010 Series is an industrial next-generation firewall, equipped with threat detection and prevention capabilities to further protect critical infrastructure from cybersecurity attacks.

### MX-ROS Addresses Growing Cybersecurity Threats

Moxa's MX-ROS (<https://www.moxa.com/en/spotlight/portfolio/mx-ros/index>) is a software platform for industrial security routers and firewalls. The platform supports the robust security and user-friendly operation of secure routers through simplified web and CLI interfaces. In addition to adhering to IEC 62443-4-2, MX-ROS devices offer a wealth of the latest cross-industry Operational Technology (OT) network management features with each release to safeguard hardware and software.

### Defend Against Malicious Threats With Advanced Cybersecurity Features

The EDR-G9010 Series' embedded firewall uses policy rules to control network traffic between trusted zones while Network Address Translation (NAT) shields the internal network from unauthorized access by outside hosts. The Virtual Private Networking (VPN) functionality further provides users with secure communication tunnels when accessing the private network from the public Internet. To help protect your OT assets from cyberattacks, the EDR-G9010 Series supports Deep Packet Inspection (DPI) to examine the data portion of network packets for various OT-specific protocols.

### Simplify Configurations With the User-friendly Interface and Quick Settings

The EDR-G9010 Series' Setup Wizard provides an easy way for users to set up WAN, LAN, and Bridge ports for routing functionality in just four steps. In addition, the object-based firewall management feature gives engineers a simple way to configure and maintain firewall filtering for IP addresses and subnets, network services, industrial application services, and user-defined services.

### Industrial-grade Design to Ensure Uninterrupted Network Connectivity

The EDR-G9010 Series' rugged hardware makes these secure routers ideal for harsh industrial environments, featuring wide-temperature models that are built to operate reliably in hazardous conditions and extreme temperatures of -40 up to 75°C. Moreover, the EDR-G9010 Series supports comprehensive Layer 2 and Layer 3 redundancy mechanisms to ensure that your network stays connected at all times.

## Virtual Patching and Intelligent Threat Protection

Patching remains a major challenge in OT environments because OT applications cannot afford interrupting operations by shutting down systems to apply patches. Virtual patching technology can help complement existing patch management processes by shielding known and unknown vulnerabilities. In addition, the EDR-G9010 features intelligent IPS functionality for continuous protection against cyberthreats which uses pattern-based detection to identify and block known attacks.

## Specifications

### Input/Output Interface

Alarm Contact Channels	Resistive load: 1 A @ 24 VDC
Buttons	Reset button
Digital Input Channels	+13 to +30 V for state 1 -30 to +3 V for state 0 Max. input current: 8 mA

### Ethernet Interface

10/100/1000BaseT(X) Ports (RJ45 connector)	8
1000/2500BaseSFP Ports	2
Standards	IEEE 802.1Q for VLAN Tagging IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) Static Port Trunk IEEE 802.3u for 100BaseT(X) IEEE 802.3x for flow control IEEE 802.3z for 1000BaseSX/LX/LHX/ZX IEEE 802.1X for authentication
DMZ	User-configurable DMZ ports

### Ethernet Software Features

Broadcast Forwarding	IP directed broadcast, broadcast forwarding
Management	Back Pressure Flow Control DDNS DHCP Server/Client Web Console (HTTP/HTTPS) LLDP QoS/CoS/ToS SNMPv1/v2c/v3 Telnet TFTP HTTPS SSH
Redundancy Protocols	RSTP STP Turbo Ring v2 Turbo Chain
Routing Throughput	Max. 350K packets per second / 2 Gbps (based on RFC 2544)
Routing Table	Max. 4K routing rules
Concurrent Connections	Max. 400K (based on RFC 3511)
Connections Per Second	Max. 20K (based on RFC 3511)
Routing Redundancy	VRRP
Security	Secure Boot IPsec L2TP (server) RADIUS Trust access control

	TACACS+ SCP SFTP NTP authentication Syslog Authentication
Time Management	NTP Server/Client SNTP
Unicast Routing	OSPF RIPv1/V2 Static Route
Multicast Routing	Static Route
Filter	IGMP v1/v2/v3
<b>Switch Properties</b>	
VLAN ID Range	VID 1 to 4094
IGMP Groups	1000
Max. No. of VLANs	32
<b>LED Interface</b>	
LED Indicators	PWR1, PWR2, STATE, MSTR/H.TC, CPLR/T.TC, VRRP/HA, VPN, USB
<b>DoS and DDoS Protection</b>	
Technology	ARP-Flood FIN Scan ICMP Flood TCP Sessions Without SYN NMAP-ID Scan NMAP-Xmas Scan Null Scan SYN/FIN Scan SYN/RST Scan SYN-Flood Xmas Scan
<b>Firewall</b>	
Filter	DDoS Ethernet protocols ICMP IP address MAC address Ports
Stateful Inspection	Router firewall Transparent (bridge) firewall
Deep Packet Inspection	DNP3 EtherNet/IP IEC 60870-5-104 IEC 61850 MMS MELSEC Modbus TCP Modbus UDP Omron FINS OPC UA Siemens S7 Comm. Siemens S7 Comm. Plus Additional protocols will be supported through future firmware updates.

Intrusion Prevention System	Requires an additional license.
Throughput	Firewall: Max. 350K packets per second / 2 Gbps (based on RFC 2544)  IPS: Max. 200K packets per second / 2 Gbps (based on RFC 2544)
<b>IPsec VPN</b>	
Authentication	MD5 and SHA (SHA-512) RSA (key size: 1024-bit, 2048-bit) X.509 v3 certificate
Concurrent VPN Tunnels	Max. 250 IPsec VPN tunnels
Encryption	DES 3DES AES-128 AES-192 AES-256 AES-256-GCM
Protocols	IPsec L2TP (server) PPTP (client)
Throughput	Conditions: AES-256, SHA-256 Max. 100K packets per second / 800 Mbps (based on RFC 2544)
<b>NAT</b>	
Features	1-to-1 N-to-1 NAT loopback Port forwarding
<b>Real-Time Firewall / VPN Event Log</b>	
Event Type	Firewall event VPN event
Media	Local storage SNMP Trap Syslog server
<b>Serial Interface</b>	
Console Port	RS-232 (TxD, RxD, GND), 3-pin (115200, n, 8, 1)
Connector	USB Type-C
<b>Power Parameters</b>	
Connection	Removable terminal block
Input Voltage	EDR-G9010-VPN-2MGSFP(-T, -CT, -CT-T) models: 12/24/48 VDC, redundant dual inputs (DNV-certified for 24 VDC)  EDR-G9010-VPN-2MGSFP-HV(-T) models: 120/240 VDC/VAC, redundant dual inputs
Operating Voltage	non-HV(-T) models: 9.6 to 60 VDC  -HV(-T) models: 88 to 300 VDC, 90 to 264 VAC

Input Current	<p>EDR-G9010-VPN-2MGSFP(-T, -CT, -CT-T) models: 1.51 A @ 12 VDC 0.70 A @ 24 VDC 0.35 A @ 48 VDC</p> <p>EDR-G9010-VPN-2MGSFP-HV(-T) models: 0.28 A @ 120 VAC 0.18 A @ 240 VAC 0.15 A @ 120 VDC 0.08 A @ 240 VDC</p>
Reverse Polarity Protection	Supported
<b>Physical Characteristics</b>	
Housing	Metal
IP Rating	IP40
Dimensions	<p>EDR-G9010-VPN-2MGSFP(-T, -CT, -CT-T) models: 58 x 135 x 105 mm (2.28 x 5.31 x 4.13 in)</p> <p>EDR-G9010-VPN-2MGSFP-HV(-T) models: 64 x 135 x 105 mm (2.52 x 5.31 x 4.13 in)</p>
Weight	<p>EDR-G9010-VPN-2MGSFP(-T, -CT, -CT-T) models: 1030 g (2.27 lb)</p> <p>EDR-G9010-VPN-2MGSFP-HV(-T) models: 1150 g (2.54 lb)</p>
Installation	<p>DIN-rail mounting (DNV-certified)</p> <p>Wall mounting (with optional kit)</p>
Protection	-CT models: PCB conformal coating
<b>Environmental Limits</b>	
Operating Temperature	<p>Standard models: -10 to 60°C (14 to 140°F)</p> <p>Wide temp. models: -40 to 75°C (-40 to 167°F)</p> <p>EDR-G9010-VPN-2MGSFP(-T, -CT-, CT-T) models: DNV-certified for -25 to 70°C (-13 to 158°F)</p>
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
<b>Standards and Certifications</b>	
Safety	<p>IEC 62368-1</p> <p>UL 62368-1</p> <p>IEC 60950-1</p> <p>UL 60950-1</p>
EMC	EN 55032/35
EMI	CISPR 32, FCC Part 15B Class A
EMS	<p>IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV</p> <p>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m</p> <p>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV</p> <p>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 4 kV</p> <p>IEC 61000-4-6 CS: 10 V</p> <p>IEC 61000-4-8 PFMF</p>
Industrial Cybersecurity	<p>IEC 62443-4-1</p> <p>IEC 62443-4-2</p>
Railway	EDR-G9010-VPN-2MGSFP(-T, -CT, -CT-T) models: EN 50121-4
Traffic Control	EDR-G9010-VPN-2MGSFP(-T, -CT, -CT-T) models: NEMA TS2

Maritime	EDR-G9010-VPN-2MGSFP(-T, -CT, -CT-T) models: DNV, DNV IEC 61162-460 Edition 3.0 460-gateway, 460-forwarder and 460-switch, DNV security profile 2, IACS UR E27 Rev.1, IEC 60945
Power Substation	IEEE 1613 IEC 61850-3 Edition 2.0
Hazardous Locations	EDR-G9010-VPN-2MGSFP(-T, -CT, -CT-T) models: ATEX, Class I Division 2
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

## MTBF

Time	EDR-G9010-VPN-2MGSFP(-T, -CT, -CT-T) models: 1,080,807 hrs EDR-G9010-VPN-2MGSFP-HV(-T) models: 509,714 hrs
Standards	Telcordia (Bellcore), GB

## Warranty

Warranty Period	5 years
Details	See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a>

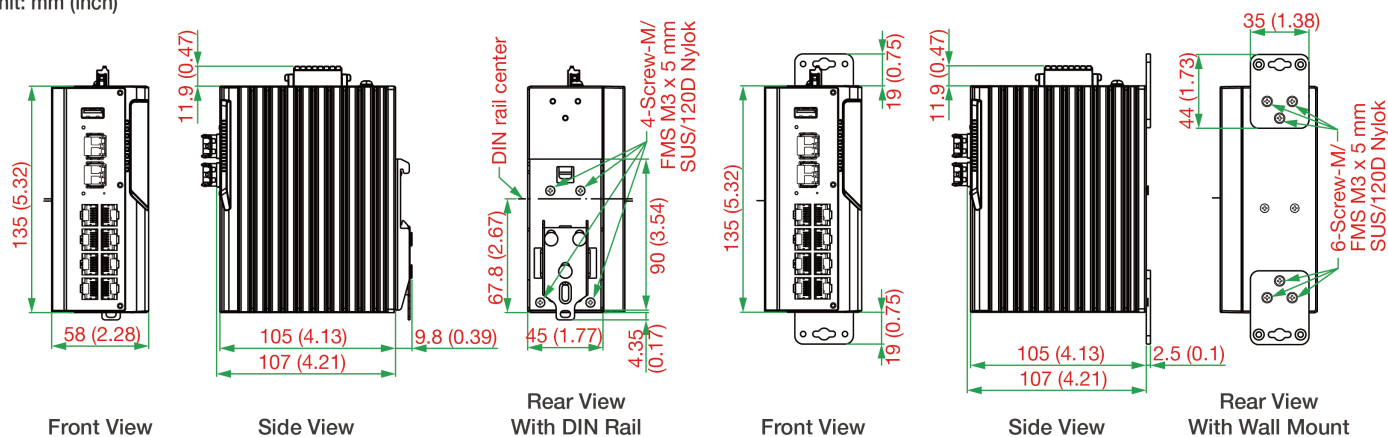
## Package Contents

Device	1 x EDR-G9010 Series secure router
Cable	1 x DB9 female to USB Type-C
Installation Kit	4 x cap, plastic, for RJ45 port 2 x cap, plastic, for SFP slot
Documentation	1 x quick installation guide 1 x warranty card
Note	SFP modules need to be purchased separately for use with this product.

## Dimensions

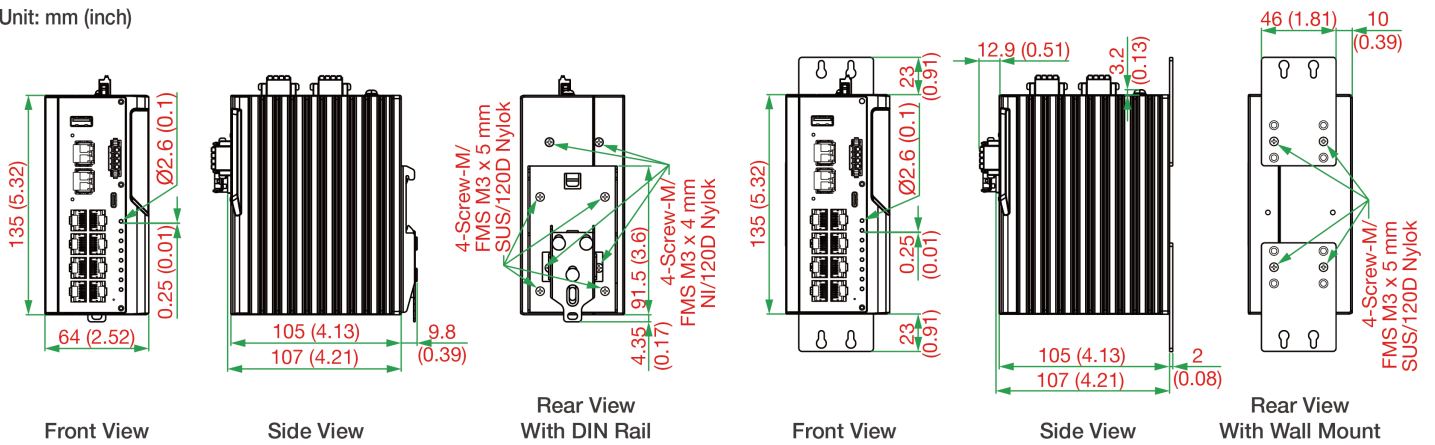
### Standard Models

Unit: mm (inch)



## HV Models

Unit: mm (inch)



## Ordering Information

Model Name	10/100/1000BaseT(X) Ports (RJ45 Connector)	10002500 BaseSFP Slots	Firewall	NAT	VPN	Input Voltage	Conformal Coating	Operating Temp.
EDR-G9010-VPN-2MGSFP	8	2	✓	✓	✓	12/24/48 VDC	–	-10 to 60°C (DNV-certified)
EDR-G9010-VPN-2MGSFP-T	8	2	✓	✓	✓	12/24/48 VDC	–	-40 to 75°C (DNV-certified for -25 to 70°C)
EDR-G9010-VPN-2MGSFP-HV	8	2	✓	✓	✓	120/240 VDC/VAC	–	-10 to 60°C
EDR-G9010-VPN-2MGSFP-HV-T	8	2	✓	✓	✓	120/240 VDC/VAC	–	-40 to 75°C
EDR-G9010-VPN-2MGSFP-CT	8	2	✓	✓	✓	12/24/48 VDC	✓	-10 to 60°C
EDR-G9010-VPN-2MGSFP-CT-T	8	2	✓	✓	✓	12/24/48 VDC	✓	-40 to 75°C

## Accessories (sold separately)

### Storage Kits

ABC-02-USB	Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, 0 to 60°C operating temperature
ABC-02-USB-T	Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, -40 to 75°C operating temperature

### SFP Modules

SFP-1G10ALC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature
SFP-1G10ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G10BLC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature
SFP-1G10BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature
SFP-1G20ALC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature
SFP-1G20ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature





## Software

LIC-MXsecurity-NEW-XN-SR	MXsecurity perpetual node license with customizable node quantity (minimum 1 node)
LIC-IPS-MXsecurity-NEW-1Y-XN-SR	1-year IPS license for MXsecurity with customizable node quantity (minimum 1 node)
LIC-IPS-MXsecurity-NEW-XM-XN-DMR	IPS license for MXsecurity with customizable duration and node quantity (minimum 1 month, minimum 1 node)
LIC-IPS-MXsecurity-RENEW-1Y-XN-SR	1-year IPS renewal license for MXsecurity with customizable node quantity (minimum 1 node)
LIC-IPS-MXsecurity-RENEW-XM-XN-DMR	IPS renewal license for MXsecurity with customizable duration and node quantity (minimum 1 month, minimum 1 node)
LIC-IPS-MXsecurity-ADD-1Q-XN-SR	3-month IPS add-on license for MXsecurity with customizable node quantity (minimum 1 node)
LIC-IPS-MXsecurity-ADD-2Q-XN-SR	6-month IPS add-on license for MXsecurity with customizable node quantity (minimum 1 node)
LIC-IPS-MXsecurity-ADD-3Q-XN-SR	9-month IPS add-on license for MXsecurity with customizable node quantity (minimum 1 node)
LIC-IPS-MXsecurity-ADD-4Q-XN-SR	1-year IPS add-on license for MXsecurity with customizable node quantity (minimum 1 node)
LIC-IPS-MXsecurity-ADD-XM-XN-DMR	IPS add-on license for MXsecurity with customizable duration and node quantity (minimum 1 month, minimum 1 node)
LIC-IPS-DEVICE-NEW-1Y-1N-MR	1-year device-based IPS license
LIC-IPS-DEVICE-RENEW-1Y-1N-MR	1-year device-based IPS renewal license

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