

# KY-2189RG Cyber-Secure Routing

## 20 Port, Gigabit, Layer 3, Din Rail, MRP, High Security, Device Binding, Router & Firewall



Supports the New  
KY-1-Button  
Easy Backup /Restore

- 8 X 10/100/1000Base(T)X RJ-45 Ports  
12 X 100/1000Base(X) SFP Slots
- Supports IP, RIPv2, Static Routing, MultiCast, GRE, IPv4, IPv6, PIM SM / PIM DM and Access Control Lists (ACL's)
- MRP Ring, SNMPv3, HTTPS, SSH Security Features, TACACS+ IEEE 1588v2 PTP, 802.1x NAC, Device Binding +, IP Source Guard
- EMC Performance Industrial Level 4 / JUMBO Frame
- Dual Redundant Power Input - 12 ~ 48 Volts DC
- Cyber-Secure Routing - Industrial Internet Certified



### » Overview

The KY-2189RG is a High Security & High Performance Ethernet router designed by DYMEC for rugged applications and security. The all gigabit port router combined with Device Binding Security is an easy to configure Layer 3 routing switch with 12 X 100/1000 SFP uplink ports. Dual DC Inputs for redundancy, and low cost, make this the ruggedized router of choice for layer 3 applications. Temperature hardened with every port surge protected. Supports IEC 62439-2 MRP for redundant application support. This is a Certified Secure Router and is designated a High Security Ethernet (HSE) device. The routing switch has full DHCP and IEEE 1588v2 timing capabilities. Supports TACACS+, LLDP, SMTP, RADIUS and port authentication. and lockdown. 15 Security Levels available.

Easy configuration, backup and restore. Supports Html / ASCII file edits over TFTP, SFTP, and Telnet. Supports **1-Button Backup** and Restoral for complete configuration maintenance. No Pc is needed for configuration replacement or hardware swap outs.

### » Features & Benefits

1. Redundancy Technology: supports Ring / Routing protocols (recovery time<25ms) and MSTP
2. Multicast Protocol: supports IGMP Snooping, GMRP and static multicast
3. Network Partition: supports VLAN, PVLAN
4. Service Quality: supports QoS
5. Bandwidth Management: supports port trunking, port speed limit, broadcast storm control
6. Network Management and Monitoring: supports CLI, Telnet, WEB management methods,SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP
7. Network Security: supports: SSH, SSL, ACL, SFTP
8. Device Management: supports FTP upgrade
9. Device Maintenance: supports port mirroring
10. Alarm Output: supports IP/MAC conflicts, power, port and ring alarms
11. MVR - MultiCast VLAN Registration, IEEE 802.1Q with GVRP

### » Technical Specifications

#### Standards:

IEEE 802.3, IEEE 802.3i, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z, IEEE 802.3ad  
IEEE 802.1D, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1s, IEEE 802.1w,  
IEEE 802.3x, IEEE 802.1AB, IEEE 802.z  
Modbus TCP

#### Protocols:

**Layer 3 Routing / RIPv2, OSPFv2, Static Routing, Multicast Routing; PIM-SM, PIM-DM, & IEEE 1588v2 Timing, Device Binding, TACACS+, Black List, IPv6, VRRP, GRE, BGP, and OSPF**

**Ring, Ring+, VLAN, PVLAN, MSTP, IGMP Snooping, MRP IEC 62439-2 MRP (Media Redundancy Protocol);**

Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP server; Sec, SSH, SSL, ACL, IP Source Guard, Authorization (15 Levels); FTP, Cyber-Secure Routing (CSR), LLDP, Jumbo Frame, ARP, QoS, ASCII, HTML Config Files, MVR, SysLog, Clean Code Technology, and Cyber-Secure Video

#### Router Properties:

Priority Queues: 64  
Number of VLANs: 512  
VLAN ID: 1-4094  
Security Queues: 16 Per VLAN  
Number of Multicast Groups: 256  
MAC Table: 16K  
Packet Buffer: 16 Mb  
Packet Forwarding Rate: 42 Gbps Fabric, Wire Speed -All Ports  
Switching Delay: <5µs

#### Interface:

Gigabit SFP Ethernet Ports: max 12 X 100/1000Base(X) SFP Slots  
Gigabit Ethernet RJ45 Ports: 8 X 10/100/1000Base-TX RJ45 ports  
Console Port: RS232 (RJ45 connector)  
Alarm Contact: 2-pin 3.81mm-spacing plug-in terminal block, 250VAC/350VDC Max, 120mA Max

## Layer 3, Managed, Din Rail, High Security, Ethernet Router

10/100/1000Base-T(X) Ports in RJ45 Auto MDI/MDIX	8
100/1000Base-X - SFP port	12
<b>Technology</b>	
Ethernet Standards	<p>IEEE 802 3i for 10Base-T  IEEE 802 3u for 100Base-TX and 100Base-FX  IEEE 802 3ab for 1000Base-T  IEEE 802 z for 1000Base-X  IEEE 802 3x for Flow Control  IEEE 802 3ad for LACP (Link Aggregation Control Protocol)  IEEE 802 1p for COs (Class of Service)  IEEE 802 1Q for VLAN Tagging  IEEE 802 1w for RSTP (Rapid Spanning Tree Protocol)  IEEE 802 1s for MSTP (Multiple Spanning Tree Protocol)  IEEE 802 1x for Authentication  IEEE 802 1AB for LLDP (Link Layer Discovery Protocol)</p> <p>RFC5798 - VRRP  RFC2784 - Generic Routing Encapsulation  RFC1105 - BGP  RFC4271 - BGP-4  RFC1887 - IPv6 Architecture  RFC2460 - IPv6 Protocol Specification  RFC2464 - IPv6 Transmission  RFC2246 - SSH FTP  RFC4250 - SSH PAN  SFTPv4  SFTPv6 (soon to be released)  RFC4253 - SSH Transport</p> <p>IEEE 802 1AE-2013 (MACsec) MAC Security  IEEE 802 1AEbn (GCM-AES-256 Cipher Suite)  IEEE 802 1AEbw-2013</p>
MAC Table	8K Entries
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	Switching Latency: 5us Switching Bandwidth: 36 Gbps Maximun # of Available VLANs: 512 IGMP Multicast Groups: 128 for each VLAN Port Rate Limiting: User Defined Security Queues: 16 Per VLAN
Jumbo Frame	Up to 9 6 K Bytes
Security Features	Device Binding Security Feature with Silicon Enhancements Enable / Disable Ports, MAC Based Port Security Port Based Network Access Control (802 1x) Single 802 1x and Multiple 802 1x MAC Based Authentication IP Address Based Authentication QOS Assignment Flow-Check Guest VLAN MAC Address Limit TACACS+ Keep-Alive Check VLAN (802 1Q) Segregate and Secure Network Traffic Radius Centralized Password Management SNMPv3 Encrypted Authentication and Access Security WEB and CLI Autentication and Authorization Security (Access) 15 Security Levels of Authorization IP Source Guard HTTPS / SSH Enhanced Network Security SSH FTP / Advanced Encryption Selectable Backup Security Defaults
Software Features	DoS / DDoS Auto-Prevention: Port & Flow Security IEEE 1588v2 Clock Synchronization IEEE 802 1D Bridge, Auto MAC Address learning / aging and MAC Address (Static) Multiple Registration Protocol (MRP) RSTP / MSTP (IEEE 802 1w/s) Per Port Power Saving Feature Redundant Ring (RING) w th a recovery time of less than 20ms over 300 units TOS / DiffServ Supported QoS Quality of Service (IEEE 802 1p) for real time traffic VLAN (IEEE 802 1Q) with VLAN Tagging Voice & Guest VLAN ASCII / HTML Configuration File - Transport / Edit over SSH / SFTP IGMP v2 / v3 Snooping IP-Based Bandwidth Management Application Based QOS Management Port Configuration , Status Statistics, Monitoring & Security DHCP Server / Client / Snooping DHCP Relay ModBUS TCP DNS Client Proxy ARP Inspection SMTP Client IP Policing / Protocol 41 (IPv6 & IPv6 Secure) Clean Code Technology (CCT) Cyber-Secure Video (CSV) Media Redundancy Protocol (MRP: IEC 62439-2 Media Redundancy Protocol) Ultra-fast Ring Broadcast Storm Control SSH / FTP / AES / SHA2 Encryption
Network Redundancy	Ring and Ring+, Open Ring VRRP, Chain MRP MSTP (RSTP/STP compatible)

## » Layer 3, Managed, Din Rail, High Security, Ethernet Router

RS-232 Serial Console	RS-232 Serial with RJ45 Connector (Console Cable / 115,200bps, 8, N, 1) Supports KY-1-Button
<b>LED Indicator Lights</b>	
Power LED (PWR)	Green Lower LED x 2
Ring Master LED (RM)	Green Indicates the system is operating in Ring Master mode
Ring LED (Ring)	Green Indicates that the system is operating Green Blinking Indicates the Ring is Broken
Fault LED (Fault)	Amber Indicates an Unexpected Event has Occurred
10/100/1000Base-T(X) RJ45 LED	Dual Color LED Green for 1000 Mbps Link / Activity & Amber for 10/100 Mbps Link / Activity
100/1000Base-X SFP Port LED	Green For Port Link / Activity
<b>Fault Contact</b>	
Relay	Relay Output Carrying Capacity 1.5 Amps @ 24 Volts DC
<b>Power Specifications</b>	
Redundant Input Power	Dual DC Power Inputs. Supports 12 ~ 48 Volts DC on a 6 -pin terminal block
Power Consumption (Typical)	<23 Watts Typical without PoE+
Overload Current Protection	Yes
Reverse Polarity Protection	Yes
<b>Physical Characteristics</b>	
Enclosure	IP-30
Dimensions (W x D x H)	96.4 (W) X 109.0 (D) X 154.0 (H) // Millimeters (mm)
Weight (g)	1550g
<b>Environmental Specifications</b>	
Storage Temperature	-40 C ~ +85 C (-40 ~ +185 F)
Operating Temperature	-40 C ~ +85 C (-40 ~ +185 F)
Operating Humidity	5% ~ 97% Non-Condensing
<b>Regulatory Approvals</b>	
EMI	FCC Part 15, CISPR (EN55022) Class A
EMS	EN61000-4-2 (ESD) EN61000-4-3 (RS) EN61000-4-4 (EFT) EN61000-4-5 (Surge) EN61000-4-6 (CS) EN61000-4-8 EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
<b>Warranty</b>	5 Years

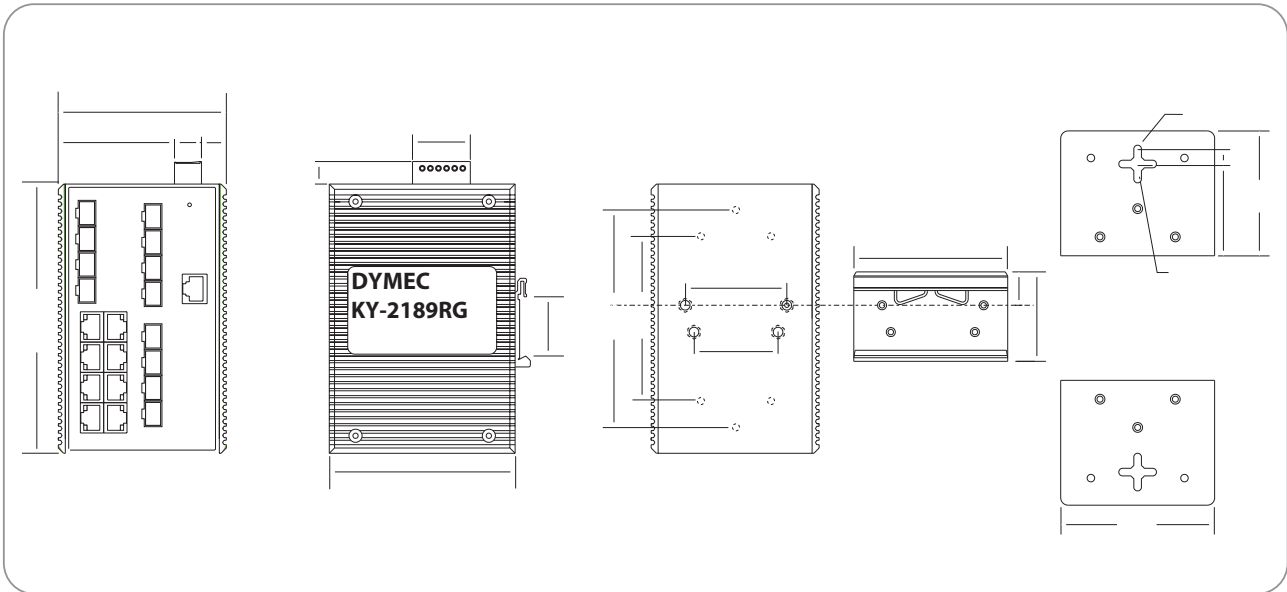


**Supports: KY-1-Button**  
**Easy Maintenance**  
**Lowers Cost**  
**Full Backup / Restore**  
**(Optional)**  
**No PC Required !**

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**Network Security for the 21st Century**

## Layer 3, Managed, Din-Rail, High Security, Ethernet Router



# Network Security For The 21st Century

MTBF (Mean Time Between Failure)  
35 Years

**Warranty  
Limited Lifetime**

### Approvals & Certifications

NEMA TS 1 and TS 2 Certified Device  
IEC61000-4-2(ESD): ±8KV contact discharge, ±15KV air discharge  
IEC61000-4-3(RS): 10V/M (80-1000MHz)  
IEC61000-4-4(EFT): ±4KV power line, ±2KV data line  
IEC61000-4-5(Surge): power line ±4KV CM/ ±2KV DM, data line ±2KV IEC61000-4-6(CS): 3V(10KHZ-150KHZ), 10V(150KHZ-80MHz)  
IEC61000-4-8(Power frequency magnetic field): 100A/m cont. 1000A/m, 1s to 3s  
IEC61000-4-12/18(Damped oscillatory wave): 2.5KV CM, 1KV DM  
IEC61000-4-10(Damped oscillatory): 30A/m  
IEC61000-4-16(Common mode conduct): 30V cont. 300V, 1s  
FCC CFR47 Part 15/EN55022: Class A&B  
IEC61000-6-2(Industrial Standards), IEC61850-3(Substations), IEEE1613(Electric Power Substations), EN50121-4(Railway Applications)  
Multi-Cast Certified for High Definition Video, Electro-Magnetic Pulse (EMP) Non-Nuclear Electro-Magnetic Pulse (NNEMP)



### Ordering Information:

Model	Description	Power
<b>KY-2189RG</b>	(12) 100/1000Base(X) SFP Ports (1) Console Management Port (8) 10/100/1000Base(T)X Ports	Power: 12 ~ 48 Volts DC Ultra-Low Power Consumption

### Optional Gigabit SFP Modules

Model	Description
KY-SGSFP-LX550M	SFP module, 1 x 1000M Multi Mode, LC Connector, 1310nm, 550m
KY-SGSFP-LX10K	SFP module, 1 x 1000M Single Mode, LC Connector, 1310nm, 10km
KY-SGSFP-LX20K	SFP module, 1 x 1000M Single Mode, LC Connector, 1310nm, 20km
KY-SGSFP-LX40K	SFP module, 1 x 1000M Single Mode, LC Connector, 1550nm, 40km
KY-SGSFP-ZX80K	SFP module, 1 x 1000M Single Mode, LC Connector, 1550nm, 80km

### DYMEC Authorized Distributor