

KY-1010EMD

10 GbE, PoE, Device Binding

12 Port, 4 x 10 GbE, Layer 2

PoE, Auto DOS /DDoS Protection

Din Rail, High Security, Switch

Class 1, Division 2 - Hazardous Location



Supports the New
KY-Dongle
Easy Backup /Restore



- 8 X 10/100/1000Base-T(X) PSE (30 Watt) RJ-45 ports
4 x 1000 / 10000 (1 GbE or 10GbE) SFP Slots
- Supports Cyber-Secure Video, Device Binding, IP Source Guard & Clean Code Technology, ACL's
- SNMPv3, HTTPS, SSH security features, TACACS+, IEEE1588v2 Timing, 802.1x, Cyber-Locking & DDMI
- EMC performance: Industrial level 4 / JUMBO FRAME
- Supports 44-57 Volts DC power input / Dual Input
- High Security Cyber-Lock Device - Qualified for Military ICS Applications.



Overview

The KY-1010EMD is a managed, redundant ring, high security 10 GbE, PoE, Ethernet Switch 8 X 10/100/1000Base(T)X PSE & 4 X 1GE/10GE SFP/SFP+ slots. Built in DoS / DDoS Enhanced silicon Protection. Automatically protects the network before damage occurs. Built-in **Auto-Notification of Events** such as: (email / Text). High Security features such as **Device Binding**, IP Source Guard, MAC Locing / IP Locking and Hybrid locking. Supports Black List, Cyber-Lock, Cyber-Secure Video, Clean Code Technology, IP Flow Checking, Keep Alive Checking as well as 15 Levels of Authorization & Access. The switch is very power efficient, using a fraction of the power that competitor switches use. Power savings alone pays for this switch. The security insure your network is NOT compromised. SAVINGS, SAFETY, and SECURITY!

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
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
MTBF: 287,212 Hours

Protocols:

IEEE 802.1x, Device Binding, TACACS+, MultiCast, PIM, SIM, PoE, Black List, IPsec, TACACS+ & Cyber-Lock, Fiber & Copper Diagnostics Ring, Ring+, VLAN, PVLAN, MSTP, IGMP Snooping, GMRP;
Remote Temperature Sensing, SFTP, SSH Sessions
Telnet, HTTP, HTTPS, SNMPv1/v2/v3, RMON, LLDP, SNTP, DHCP server; Sec, SSH, SSL, ACL, IP Source Guard, Authorization (15 Levels); FTP, LLDP, Jumbo Frame
ARP, QoS, MVR, SysLog, Clean Code Technology (CCT), Cyber-Secure Video, Extended Special Character Set (SNMP) - AES Encryption

Router Properties:

Priority Queues: 8
Number of VLANs: 256
VLAN ID: 1-4094
Security Queues: 16 Per VLAN
Number of Multicast Groups: 256
MAC Table: 32 K
Packet Buffer: 1.5 Mbyte
Packet Forwarding Rate: 125 Gbps Fabric, Wire Speed -All Ports
Delay: <5µs

Interface:

Gigabit SFP Ethernet Ports: max 4 X 1GE/10GE SFP/SFP+ Slots
Gigabit Ethernet RJ45 Ports: 8 X 10/100Base-TX RJ45 ports
Console Port: RS232 (RJ45 connector)
Alarm Contact: 2-pin 3.81mm-spacing plug-in terminal block, 250VAC/350VDC Max, 120mA Max

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Layer 2, Managed, Din Rail, 10 GbE, PoE, High Security, Industrial Ethernet SCADA Switch

10/100/1000Base-T(X) PSE (30 Watt) Ports in RJ45 Auto MDI/MDIX	8
1000/10000Base-X SFP port 1/10 GbE	4
Technology	
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>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	32 K Entries
Priority Queues	8
Processing	Store-and-Forward
Switch Properties	<p>Switching Latency: 5us Switching Bandwidth: 125 Gbps Maximun # of Available VLANs: 512 IGMP Multicast Groups: 128 for each VLAN Port Rate Limiting: User Defined Security Queues: 16 Per VLAN</p>
Jumbo Frame	Up to 9.2 K Bytes
Security Features	<p>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</p>
Software Features	<p>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 VLAN Guest VLAN 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) ERPS Redundancy Protocol Broadcast Storm Control SSH / FTP / AES / SHA2 Encryption</p>
Network Redundancy	<p>ERPS Ring Protection FI Ring MSTP (RSTP/STP compatible)</p>

Layer 2, Managed, Din Rail, 10 GbE, PoE, High Security, Industrial Ethernet SCADA Switch

RS-232 Serial Console	RS-232 Serial with RJ45 Connector (Console Cable / 115,200bps, 8, N, 1) Supports KY-Dongle
LED Indicator Lights	
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
1GE/10GE SFP/SFP+ Port LED	Green For Port Link / Activity
Fault Contact	
Relay	Relay Output Carrying Capacity 1.5 Amps @ 24 Volts DC
Power Specifications	
Redundant Input Power	Dual DC Power Inputs. Supports 44 ~ 57 Volts DC on a 6 -pin terminal block
Power Consumption (Typical)	< 18 Watts
Overload Current Protection	Yes
Reverse Polarity Protection	Yes
Physical Characteristics	
Enclosure	IP-40 / Class 1, Division 2, Hazardous Location
Dimensions (W x D x H)	70 (W) x 122 (D) x 145 (H) mm
Weight (g)	1400 g
Environmental Specifications	
Storage Temperature	-40 C ~ +85 C (-40 ~ +185 F)
Operating Temperature	-40 C ~ +85 C (-40 ~ +185 F)
Operating Humidity	5% ~ 95% Non-Condensing
Regulatory Approvals	
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
Warranty	Limited Lifetime



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

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Engineered for ITS, SCADA, Connected Cities, Power Utilities, Sub-station & ISP's Wireless, Waste & Water Utilities



Network Security For The 21st Century

MTBF (Mean Time Between Failure)
35 years

> 227,000 Hours

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
KY-1010EMD	(4) 100/1000Base(X) SFP Ports (1) Console Management Port (8) 10/100/1000 PSE RJ45 Ports	Power: 44 ~ 57 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

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