

# KY-3000EMD with Device Binding



Supports the New  
KY-Dongle  
Easy Backup /Restore



## 10 Port, Gigabit, Layer 2 MRP, Auto DOS /DDoS Protection Din Rail, High Security, Switch

- 7 X 10/100Base-T(X) RJ-45 ports,  
1 X 10/100/1000Base-T(X) RJ-45, &  
2 X 1000Base(X) 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 & DDML
- EMC performance: Industrial level 4 / JUMBO FRAME
- Supports 12-55 Volts DC power input / Dual Input
- High Security Cyber-Lock Device - Qualified for Military ICS Applications.



### Overview

The KY-3000EMD is a managed, redundant ring, high security Gigabit Ethernet Switch with 7 X 10/100Base(T)X ports, 1 X 10/100/1000Base(T)X port, and 2 X 1000Base(X) 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: 57,212 Hours

#### Protocols:

**IEEE 1588v2 Timing, Device Binding, TACACS+, MultiCast, PIM, SIM, Black List, IPv6, TACACS+, & Cyber-Lock**  
Ring, Ring+, VLAN, PVLAN, MSTP, IGMP Snooping, GMRP;  
**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, LLDP, Jumbo Frame  
ARP, QoS, MVR, SysLog, Clean Code Technology (CCT),  
Cyber-Secure Video

#### Router Properties:

Priority Queues: 4  
Number of VLANs: 256  
VLAN ID: 1-4094  
Security Queues: 16 Per VLAN  
Number of Multicast Groups: 256  
MAC Table: 8K  
Packet Buffer: 1 Mbit  
Packet Forwarding Rate: 42 Gbps Fabric, Wire Speed -All Ports Switching  
Delay: <5µs

#### Interface:

Gigabit SFP Ethernet Ports: max 2 X 1000Base(X) SFP Slots  
Gigabit Ethernet RJ45 Ports: 7 X 10/100Base-TX RJ45 ports  
1 X 10/100/1000Base-TX RJ45 port  
Console Port: RS232 (RJ45 connector)  
Alarm Contact: 2-pin 3.81mm-spacing plug-in terminal block,  
250VAC/350VDC Max, 120mA Max

10/100Base-T(X) Ports in RJ45 Auto MDI/MDIX	7 + 1 10/100/1000Base-T(X) Port
100/1000Base-X - SFP port	2
<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>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	4
Processing	Store-and-Forward
Switch Properties	<p>Switching Latency: 5us          Switching Bandwidth: 42.6 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 6 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 &amp; 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 &amp; Security          DHCP Server / Client / Snooping          DHCP Relay          ModBUS TCP          DNS Client Proxy          ARP Inspection          SMTP Client          IP Policing / Protocol 41 (IPv6 &amp; 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</p>
Network Redundancy	<p>Fast Ring Protection          FRP          MSTP (RSTP/STP compatible)</p>

RS-232 Serial Console	RS-232 Serial with RJ45 Connector (Console Cable / 115,200bps, 8, N, 1) Supports KY-Dongle
<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
10/100Base-T(X) RJ45 LED	Dual Color LED Green for 1000 Mbps Link / Activity & Amber for 10/100 Mbps Link /Activity
10/100/1000Base-T(X) RJ45 LED	Dual Color LED Green for 1000 Mbps Link / Activity & Amber for 10/100 Mbps Link /Activity
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 ~ 55 Volts DC on a 6 -pin terminal block
Power Consumption (Typical)	<10 Watts
Overload Current Protection	Yes
Reverse Polarity Protection	Yes
<b>Physical Characteristics</b>	
Enclosure	IP-40
Dimensions (W x D x H)	70.0 (W) X 120.0 (D) X 151.0 (H) // Millimeters (mm)
Weight (g)	750 g
<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% ~ 95% 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>	<b>5 years</b>



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

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## Network Security For The 21st Century

MTBF (Mean Time Between Failure)  
35 years

> 87,000 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-3000EMD	(2) 1000Base(X) SFP Ports (1) Console Management Port (7) 10/100Base(T)X Ports (1) 10/100/1000Base(T)X Port	Power: 12 ~ 55 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

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