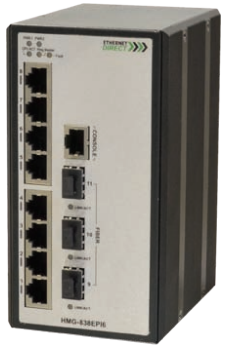


HMG-838EPI6Z1

Introduction

Overview

Ethernet Direct pioneers in offering Utility-grade, fully managed Gigabit Ethernet switches specifically designed to operate reliably and safely in harsh environment found in electric utility substations.

The HMG-838EPI6Z1 is an IEC-61850-3 and IEEE 1613 certified industrial Ethernet managed switch that comes with 8 x 10/100Base-T(X) ports and 3 Gigabit/Fast Ethernet SFP ports that provides a high level of immunity to electromagnetic interference and heavy electrical surges to meet the demands of power substation systems. This powerful utility switch uses Made in the USA CPU platform for maximum hardware product reliability and has an operating temperature of -40 to 85°C. It is designed with redundant and isolated power supplies (24/48 VDC) to protect the substation system. In addition, the enhanced software features support a variety of Ethernet functions including STP/RSTP/MSTP/ITU-T G.8032 ERPS and multiple Direct-Ring for redundant cabling, IEEE 1588 PTP V2, layer 2 Ethernet IGMP, VLAN, Quality of Service, ACL, Security, IPv6, bandwidth control, port mirroring, cable diagnostic and Energy Efficient Ethernet.

Ethernet Direct smart grid technology products ensures "zero packet loss" and support GOOSE multicasts. The HMG-838EPI6Z1 is ideal for applications in distribution automation, substation automation, renewable power generation, thermal power generation, power grid interconnection, advance metering infrastructure and more.

Features

High Performance Network Switching Technology

- Complies with IEEE standards
- Provides 8 x 10/100Base-T(X) with RJ-45 connector with supporting of Green Ethernet IEEE802.3az EEE (Energy Efficient Ethernet)
- Provides 3 x 100/1000Base SFP slots with supporting of DDMI
- Supports various network redundant solutions, including Direct-Ring, Direct-Chain, Join-Ring, STP, RSTP, MSTP and ITU-T G.8032
- Proprietary ultra high speed redundant technology with < 10ms recovery time @ 250 devices
- Supports IEEE1588 PTP V2 for precise time synchronization, to operate in Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave mode by each port
- Supports various network security solutions, Port and MAC based IEEE802.1X, RADIUS, ACL, TACACS+, HTTP/HTTPS, SSL/SSH v2
- Supports DHCP Server/Client/Relay/Snooping/Snooping option 82/Relay option 82
- Network traffic priority, QoS, Traffic classification QoS, CoS, bandwidth control for Ingress/Egress, broadcast storm control, DiffServ
- Supports GOOSE Message
- Supports IEEE802.1Q VLAN, MAC-based VLAN, IP Subnet-based VLAN, Protocol-based VLAN, VLAN translation, GVRP/MVRP
- Supports IGMP/MLD snooping V1/V2/V3, IGMP Filtering/Throttling, IGMP query, IGMP proxy reporting, MLD snooping
- Supports dynamic IEEE 802.3ad LACP Link Aggregation, Static Link Aggregation
- Supports RMON, MIB II, Port mirroring, Syslog, IEEE802.1ab LLDP for network monitoring
- Supports IPv6 Telnet server, ICMPv6
- Supports CLI, Web based management, SNMP v1/v2c/v3, Telnet server for management
- Supports firmware upgrade via TFTP & HTTP with redundant firmware option

Reliable Power Design

- Supports 24 to 48VDC or -48VDC redundant power input
- Power reverse polarity protection and overload current protection

Robust Industrial Design

- IEC 61850-3 & IEEE 1613 certified for Power Substation
- EN 61000-6-2 and EN 61000-6-4 certified to use in heavy industrial environment
- EN 50121-4 certified for Railway Applications (Track Side)
- Robust industrial design case complies with IP30 housing standard
- Supports operating temperature -40 to 85°C
- DIN-Rail or optional wall mounting installation

Specifications

Hardware Specifications

Interface

Total Ports: 11 ports
RJ-45 Ports: 8 x 10/100Base-T(X) auto-negotiation speed, Full/Half duplex, auto MDI/MDI-X
Console Port: RS-232 (RJ-45 interface)
Fiber Ports: 3 x 100/1000Base SFP slots
LEDs: System: Power 1 (Green), Power 2 (Green), Fault (Amber), CPU Act (Green), Ring Master (Yellow)
Fiber Ports: Link/Active (Green)
RJ-45 Ports: 10/100 Link/Active (Green)
Alarm Contact: 1A@24VDC
CPU Watchdog: Supported

Power Requirements

Power Input: 24 to 48VDC or -48VDC, redundant dual inputs
Power Consumption: 24VDC/8W, 48VDC/9.2W
Power Protection: Reverse polarity protection, overload current protection

Physical

Dimensions: IP30 standard, 82mm (W) x 152mm (H) x 106mm (D)
Installation: DIN-Rail or optional wall mounting

Environmental

Operating Temperature: -40 to 85°C
Storage Temperature: -40 to 85°C
Operating Humidity: 5% to 95% RH (Non-condensing)

Technical

Standard:
IEEE 802.3 10Base-T Ethernet
IEEE 802.3u 100Base-TX/100Base-FX
IEEE 802.3z Gigabit Fiber
IEEE 802.3x Flow Control
IEEE 802.3ad Port trunk with LACP
IEEE 802.3ac VLAN Tagging extension (Max. frame size extended to 1522 Bytes)
IEEE 802.3az EEE (Energy Efficient Ethernet)
IEEE 802.1D Spanning Tree
IEEE 802.1w Rapid Spanning Tree
IEEE 802.s Multiple Spanning Tree
IEEE 802.1p Class of Service
IEEE 802.1Q VLAN Tagging
IEEE 802.1X User Authentication (Radius)
IEEE 802.1AB LLDP
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection Switching)
Protocol Technology: CSMA/CD
Switching Architecture: Store and Forward

Regulatory Approvals

EMC: CE, EN 61000-6-2, EN 61000-6-4
EMI: FCC Part 15 Subpart B Class A,CE EN55022 Class A
EMS: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8,
Safety: UL 60950-1
Power Substation: IEC 61850-3 IEEE 1613 (Certified)
Railway Application (Track Side): EN 50121-4 (Certified)
Vibration: IEC 60068-2-6
Free Fall: IEC 60068-2-32
Environmental: WEEE, RoHS
MTBF: 535,335 hours based on Mil-Hdbk-217F, GB
Warranty: 5 years

Software Specifications

Redundancy:
Direct-Ring, Direct-Chain, Join-Ring < 10ms recovery time,
(Each switch can configure up to 5 rings regardless of Direct-Ring, Direct-Chain, Join-Ring, and each ring can contents 250 units of switches), supports loop protection
STP/RSTP/MSTP
ITU-T G.8032 / Y.1344 ERPS with < 50ms recovery time
(Single Ring, Sub-Ring, Multiple ring topology networks)
Link Aggregation: Static supports up to 5 trunk groups
Dynamic (IEEE 802.3ad LACP) supports up to 5 trunk groups

VLAN:
VID 1 to 4094
VLAN group up to 4094 groups
IEEE 802.1ad Q-in-Q
MAC-based VLAN (256 entries)
IP Subnet-based VLAN (128 entries)
Protocol-based VLAN (Ethernet, SNAP, LLC), (128 entries)
VLAN Translation (256 entries)
GVRP (GARP VLAN Registration Protocol)
MVR (Multicast VLAN Registration)

QoS:
Supports GOOSE Message, follow IEC 61850 standard to achieve zero packet loss
Port based and IEEE 802.1p based CoS
QoS determined by port, per port 8 active priorities queues
IP Precedence based Co, IP DSCP based CoS
DiffServ (RFC 2474) Remarking

Bandwidth Control:
Ingress/Egress

Storm Control:
Unicast, Broadcast, Multicast

IGMP/MLD Snooping:
IGMP Snooping v1/v2/v3, MLD Snooping v1/v2
Port Filtering Profile
Throttling, Fast Leave
Maximum Multicast Group: Up to 1022 entries
Query / Static Router Port

Security:
IEEE 802.1X (Port-based, MAC-based), RADIUS, TACACS+ 3.0
Supports ACL, no. of rules up to 256 entries
HTTP/HTTPS, SSL, SSH v2
Local Authentication
Remote Access Security: RADIUS, TACACS+
Management interface access filtering via Web, Telnet/SSH, CLI console

Management:
SNMP, Web, Telnet/SSH, CLI management
TFTP/HTTP backup/restore configurations
Firmware upgrade via TFTP/HTTP, supports dual firmware
RMON I (1, 2, 3, 9 group), RMON II
RFC1213 MIB II, Private MIB
Supports UPnP, IP Source Guard, Port Mirroring
Warning message sends to syslog, e-mail, alarm relay
DNS Client, Proxy
LLDP: LLDP-MED

System Log:
Supports local system log and remote Syslog server

DHCP:
Server, Client, Relay, Snooping
Snooping option 82, Relay option 82

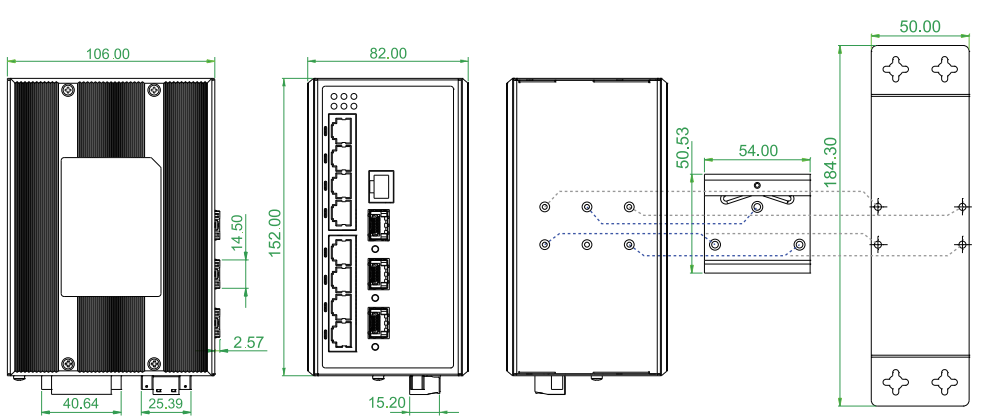
Time Management:
IEEE1588 PTP V2: Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave
NTP/SNTP Client

IPv6:
IPv6 Management Telnet Server/ICMP v6
SNMP over IPv6, HTTP over IPv6, SSH over IPv6, IPv6 Telnet, IPv6 NTP (Client), IPv6 SNTP (Client), IPv6 TFTP, IPv6 QoS, IPv6 ACL (256 entries)

Green Ethernet:
Supports IEEE802.3az EEE (Energy Efficient Ethernet): Management to optimize the power consumption
Determine the cable length and lowering the power for ports work with short cable
Lower the power for a port when there is no link
LED Power Management: Adjustment on LEDs intensity

Cable Diagnostic: (Copper ports only)
Shows physical status of the UTP cable, in order to get more accurate result the cable length suggestion is 7-140 meters

Dimensions (unit=mm)



Side View | Front View | Rear View | DIN-Rail View | Wall Mount View (Optional Accessories)

Ordering Information

HMG-838EPI6Z1	IEC 61850 Industrial 8 x 10/100Base-T(X) + 3 x 100/1000Base SFP Gigabit Managed Ethernet Switch, -40 to 85°C, (IEEE 1588 PTP)

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