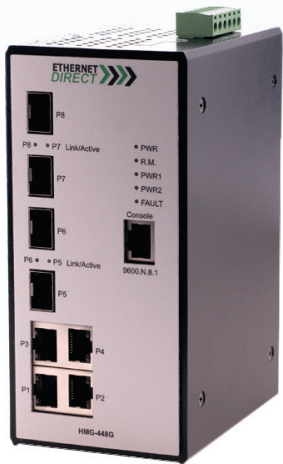


**HMG-448G**

**Industrial 4-port Full Gigabit Managed Ethernet Switch**



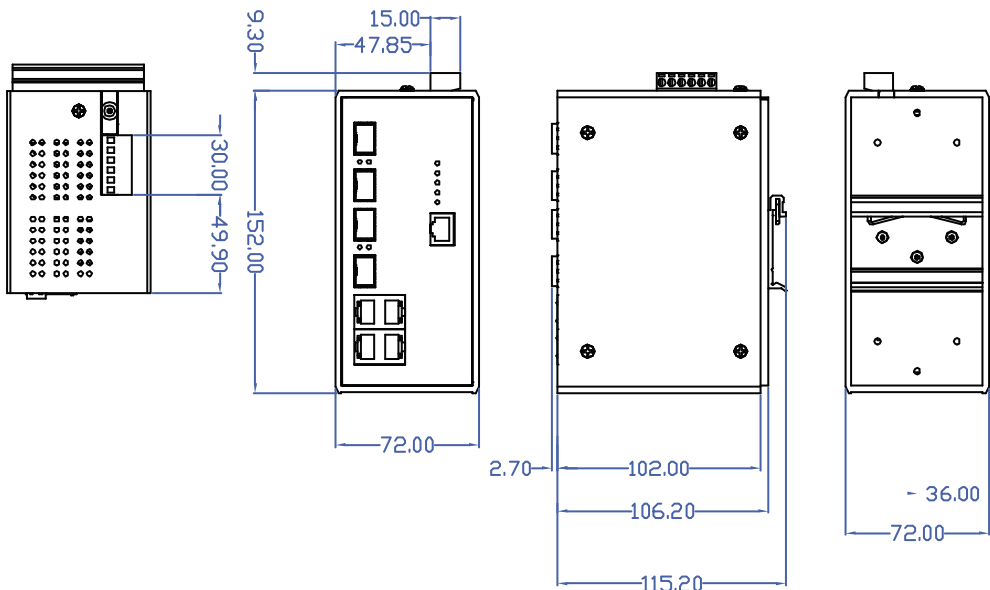
**Features**

- High Performance Network Switching Technology**
  - ✓ Complies with IEEE 802.3, IEEE 802.3u, IEEE 802.3X, IEEE 802.1p, IEEE 802.1q, IEEE 802.1d, IEEE 802.1w, IEEE 802.1x, IEEE 802.3ad, IEEE 802.3z
  - ✓ Provides 4 x 10/100/1000T Ethernet ports with RJ-45 connector
  - ✓ Provides 4 x 10/100/1000T Mini-GBIC socket
  - ✓ RJ-45 Port support auto MDI/MDI-X crossover
  - ✓ Provides broadcast storm protection
  - ✓ Redundant X-Ring recovery time < 10 ms on full load
  - ✓ Supports Dual Homing – RSTP over X-ring
  - ✓ Supports Ring coupling
  - ✓ SNMP for network management
  - ✓ IGMP snooping for filtering multicast traffic
  - ✓ QoS / ToS to increase network packet determinism
  - ✓ VLAN for easy network planning
  - ✓ Event notification by e-mail, SNMP trap, Syslog & Relay output
  - ✓ Online Port Mirroring for online debugging
  - ✓ IP security to define access levels for protection
  - ✓ Configurable by WEB browser
  - ✓ IntraVUE Network Management software compatible
- Robust Industrial Design**
  - ✓ Robust Aluminum case complying to IP-30 housing standard
  - ✓ Supports operating temperature -10 to 60°C
  - ✓ DIN-Rail, Panel mount or desktop installation
  - ✓ High level of immunity to electromagnetic interference & power supply surges typically found in industrial plant environments or external curb side enclosures
- Reliable Power Design**
  - ✓ Wide range redundant power design
  - ✓ Equipped with redundant power inputs
  - ✓ Supports 24 to 48VDC redundant power with polarity reverse protection
  - ✓ Terminal block present for master and slave power

**Overview**

The Husky series HMG-448G is a highly reliable and fault-tolerant Industrial 8-port Full Gigabit Managed Ethernet Switch. It supports state of the art design with four 10/100/1000T Ethernet ports and four small form pluggable (SFP) ports that supports Gigabit SX or LC depending on your existing network structure. The innovative SFP fiber slot design provides user the flexibility to insert different fiber modules, either multi-mode or single-mode at various distances, whether you require typical 10 km or overhaul 40 km, 80 km and 120 km distances. With its high performance switching device, HMG-448G provides redundant self-recovery mechanism in less than 10ms on full load which allows you to establish a redundant Ethernet network to build a back-up ring topology. Dual homing and Ring coupling are supported to add reliability by allowing a device to be connected to be network by way of two independent connection points. HMG-448G offers powerful network management functions including SNMP, SMTP, SNTp, Quality of Service, Class of Service, IGMP, Snooping, LACP, DHCP, VLAN, RMON, Port Trunk, Port Mirror, User Authentication (Radius) and IP Security. The HMG-448G is equipped with a terminal block to provide dual power inputs with reverse polarity protection. Its IP-30 housing protection, wide operating temperature of -10 to 60°C and DIN-Rail mounting is suitable for an industrial environment. The HMG-448G is a plug-and-play solution for your Industrial Ethernet applications.

**Dimensions**



## Hardware Specifications

### Interface

<b>RJ-45 Ports</b>	4 10/100/1000T auto-negotiation speed, Full/Half duplex, auto MDI/MDI-X
<b>Fiber ports</b>	4 10/100/1000T Mini-GBIC socket
<b>LEDs</b>	Per unit: Power (Green), Power 1 (Green), Power 2 (Green), Fault (Red), Master (Green) Per port: Link/Activity (Green), Speed (1000Mbps Green) SFP: Link/Activity (Green)
<b>Alarm</b>	Relay output for port break and power failure Current carry ability (1A at DC 24V)
<b>Power Input</b>	VDC 24-48V Redundant power with polarity reverse protect function and removable terminal block
<b>Power Protection</b>	ESD (Ethernet) : Present Surge : 1500VDC Power Reverse Polarity: Present
<b>Power Consumption</b>	17 watts
<b>Dimensions</b>	IP-31 standard, 72 mm (W) x 152 mm (H) x 105 mm (D)
<b>Installation</b>	DIN-Rail, panel mounting or desktop

### Environmental

<b>Operating Temperature</b>	Regular: -10 to 60°C
<b>Storage Temperature</b>	-40 to 85°C (-40 to 185°F)
<b>Operating Humidity</b>	5%~90% RH (Non-condensing)

## Technology Specifications

<b>Standard</b>	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX IEEE802.3ab 1000Base-T IEEE802.3z Gigabit fiber IEEE802.3x Flow Control and Back Pressure IEEE802.3ad Port trunk with LACP IEEE802.1d Spanning Tree/ IEEE802.1w Rapid Spanning Tree IEEE802.1p Class of Service IEEE802.1Q VLAN Tag IEEE 802.1x User Authentication (Radius)
<b>RFC Standard</b>	RFC2030 SNTP, RFC 2821 SMTP, RFC 1215 Trap, RFC2233 MIBII, RFC 1157 SNMP MIB, RFC 1493 Bridge MIB, RFC 2674 VLAN MIB, RFC 2665 Ethernet like MIB, RFC 2819 RMON MIB, Private MIB

<b>Network Media</b>	10Base-T: 2-pair UTP/STP Cat. 3, 4, 5/ 5E cable EIA/TIA-568 100-ohm (100m) 100Base-TX: 2-pair UTP/STP Cat. 5/ 5E cable EIA/TIA-568 100-ohm (100m) 1000Base-TX: 2-pair UTP/STP Cat. 5/ 5E cable EIA/TIA-568 100-ohm (100m)
<b>Packet Filter</b>	Broadcast packet filtering -Number of MAC (50 Tables) -IP Address Security (10 Sections)
<b>Protocol Technology</b>	CSMA/CD
<b>Switching Architecture</b>	Store and Forward

## Performance

<b>Data Transfer Rate</b>	14,880 pps for Ethernet port 148,800 pps for Fast Ethernet port 1,488,000pps for Gigabit Fiber Ethernet port
<b>MAC Address</b>	8K
<b>System Log</b>	4Mbytes
<b>Transfer packet size</b>	1000 records
<b>Back-plane</b>	16 Gbps
<b>Local Configuration</b>	RJ-45 for RS-232 series
<b>Port Statistics</b>	Supported
<b>Flow Control</b>	Full-duplex and Back Pressure for Half-duplex
<b>Packet Filter</b>	Broadcast/Multi-cast/Unknown Broadcast storm packet filter
<b>Transfer Packet Size</b>	23.8 Mpps at 64 bytes

## Regulatory Approvals

<b>EMI</b>	FCC Class A
<b>EMS</b>	EN6100-4-2 EN6100-4-3 EN6100-4-4 EN6100-4-5 EN6100-4-6 EN6100-4-8 EN6100-4-11
<b>Safety</b>	UL, cUL, CE/EN60950
<b>Shock</b>	IEC60068-2-27
<b>Vibration</b>	IEC60068-2-6
<b>Free Fall</b>	IEC60068-2-32
<b>Class 1 DIV 2</b>	Pending *

<b>DNV</b>	Pending *
<b>Environmental</b>	WEEE, RoHS
<b>MTBF</b>	325,000 hrs based on Mil-Hdbk-217F, GB
<b>Warranty</b>	5 years

## Management Specifications

<b>Redundancy</b>	<ul style="list-style-type: none"> <li>Supports X-ring redundant back-up path</li> <li>Supports Dual Homing</li> <li>Supports Ring Coupling.</li> <li>Recovery time less than 10 ms</li> <li>Web interface management can activate X-ring protocol</li> <li>Supports Dual Ring - Dual Ring can connect two rings without couple ring</li> </ul>
<b>Management Protocols</b>	SNMP V1/V2c, RMON 1 (Statistics, History, Alarm, Events) SMTP, SNTP, IGMP V1 & Query mode, DHCP/Client, TFTP
<b>MIB</b>	MIB-II, Bridge MIB, Ethernet like MIB, VLAN MIB, Private MIB
<b>Configuration</b>	<ul style="list-style-type: none"> <li>Web interface management</li> <li>Default button is available to restore default settings</li> </ul>
<b>VLAN</b>	<ul style="list-style-type: none"> <li>Support Port based VLAN/Tag VLAN(256 entries)</li> <li>VLAN ID(Up to 4K)</li> <li>GVRP(256 Groups)</li> <li>Static VLAN groups up to 256, the VLAN ID can be assigned from 1 to 4094</li> </ul>
<b>Quality of Service</b>	Hardware supports 4 queues per port
<b>Port Mirroring</b>	Online traffic monitoring on selected ports
<b>MAC IP Security</b>	Supports ingress and egress MAC address filter and static source MAC address lock, Dumping MAC address Table, Ingress/Egress MAC address security, per port support learning 50 MAC addresses
<b>IP Security</b>	Support 10 IP address accounts for system management security for Web, SNMP and Telnet management security to prevent intruder.
<b>IGMP Snooping</b>	v1 and v2, query mode, multicast group with 256 entries
<b>LACP Port Trunk</b>	3 Trunk groups/Maximum 4 trunk members
<b>Port Mirror</b>	Global system supports 3 mirroring types: "RX, TX and Both packet". Maximum of 8 entries
<b>Port Trunk</b>	802.3ad with LACP function. Up to 3 trunk groups and maximum group member up to 4 ports
<b>Class of Service</b>	Per port 4 queues
<b>E-mail Warning</b>	Pre-defined events
<b>SNMP Trap</b>	Cold start, link down, link up, authorization fail, X-ring topology Change, Power alarm trap, Trap station up to 3
<b>SMTP</b>	Support up to 6 e-mail accounts
<b>Firmware upgrade</b>	By TFTP

**SFP Specifications**



- Compliant with IEEE 802.3z Gigabit Ethernet Standard
- Single mode LX versions are compliant with Fiber Channel 100-SM-LC-L standard
- Multimode SX versions are compliant with Fiber Channel 100-M5-SN-I & 100-M6-SN-I
- Industry standard small form pluggable SFP package
- Duplex LC connector
- Single power supply 3.3V
- Class 1 laser product complies with EN 60825-1

**Optical Specifications**

Model	Fiber type (um)	Connector	Wavelength (um)	TX Power (min)	TX Power (Max)	Rx Power (Min)	Rx Power (Max)	Link Budget (dbm)	Distance (km)
SFP-SX-LC	Multi-mode 50/125	Duplex LC	850nm	-15dBm	8dBm	-34dBm	8dBm	19dBm	0.55 km
SFP-LX-LC-10	Single-mode 9/125	Duplex LC	1310nm	-15dBm	-8dBm	-34dBm	-8dBm	19dBm	10 km
SFP-LX-LC-40	Single-mode 9/125	Duplex LC	1310nm	-4dBm	-1dBm	-24dBm	-1dBm	20dBm	40 km
SFP-LX-LC-80	Single-mode 9/125	Duplex LC	1550nm	0dBm	5dBm	-24dBm	5dBm	24dBm	80 km

**Ordering Information**

<b>HMG-448G</b>	Industrial 8-port Full Gigabit Managed Ethernet Switch With 4 SFP port
<b>SFP-SX-LC</b>	SFP 850nm Multimode transceiver, 0.55 km
<b>SFP-LX-LC-10</b>	SFP 1310nm Single mode transceiver, 10 km
<b>SFP-LHX-LC-40</b>	SFP 1550nm Single mode transceiver, 40 km
<b>SFP-ZX-LC-80</b>	SFP 1550nm Single mode transceiver, 80 km

**Recommended Accessories**

<b>DR-4524</b>	45W/2A DIN-Rail 24 VDC power supply
<b>DR-7524</b>	75W/3.2A DIN-Rail 24 VDC power supply
<b>DR-120-24</b>	120W/5A DIN-Rail 24 VDC power supply