

## Industrial Managed GbE Switch

## IGS-A804SM

8x GbE RJ45 + 4x 100M/1G/2.5G SFP

- ◆ Compliant with the IEC 62443-4-2\* industrial cybersecurity standards
- ◆ Supports  $\mu$ -Ring, ERPS, APS, MRP, MSTP, RSTP, STP for Redundant Cabling
- ◆ EN50121-4, EN61000-6-2, EN61000-6-4, CE and FCC Certified
- ◆ 4KV Surge Protection for RJ45 and SFP Ports
- ◆ Supports Secure Boot



The industrial cyber-hardened managed gigabit Ethernet switch IGS-A804SM is one of our new generation designs and comes with 8 gigabit UTP ports, and equipped with 4 100M/1G/2.5G SFP slots for fiber optic connectivity. Meet the requirements for extended transmission distance, fanless design, high MTBF, 4KV surge protection and supports wide temperature operation, 12~48VDC redundant power input, and is designed to comply with cybersecurity regulations. Suitable for heavy-duty applications in harsh environments such as industrial factory automation, data centers, smart transportation systems, military and utility market applications beyond environmental conditions commercial product specifications.

## Features

- 12/24/48VDC redundant dual power input
- Provides 5 ring instances that each can support  $\mu$ -Ring,  $\mu$ -Chain or Sub-Ring type for flexible uses. Supports up to 5 rings in one device (Please see CTC  $\mu$ -Ring white paper for more details and more topology application)
- $\mu$ -Ring for redundant cabling, recovery time<20ms in 250 devices
- Supports EMS Management

## Specifications

Standard		
IEEE 802.3		10Base-T 10Mbit/s Ethernet
IEEE 802.3u		100Base-TX, 100Base-FX, Fast Ethernet
IEEE 802.3ab		1000Base-T Gbit/s Ethernet over twisted pair
IEEE 802.3z		1000Base-X Gbit/s Ethernet over Fiber-Optic
IEEE 802.3cb		2.5GBase-X
IEEE 802.1D		STP (Spanning Tree Protocol)
IEEE 802.1W		RSTP (Rapid Spanning Tree Protocol )
IEEE 802.1S		MSTP (Multiple Spanning Tree Protocol)
ITU-T G.8032 / Y.1344		ERPS (Ethernet Ring Protection Switching)
ITU-T G.8031 / Y.1342		APS (Automatic Protection Switching)
IEEE 802.1Q		Virtual LANs (VLAN)
IEEE 802.1X		Port based and MAC based Network Access Control, Authentication
IEEE 802.3ac		Max frame size extended to 1522Bytes
IEEE 802.3ad		Link aggregation for parallel links with LACP (Link Aggregation Control Protocol)
IEEE 802.3x		Flow control for Full Duplex
IEEE 802.1ad		Stacked VLANs, Q-in-Q
IEEE 802.1p		LAN Layer 2 QoS/CoS Protocol for Traffic Prioritization
IEEE 802.1ab		Link Layer Discovery Protocol (LLDP)

Switch Architecture	Back-Plane (Switching Fabric): 36Gbps (Full Wire-Speed)	
Forwarding Rate	26.7Mpps	
Data Processing	Store and Forward	
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode	
Network Connector	8x 10/100/1000Base-T RJ-45 + 4x 100M/1G/2.5G SFP	
	RJ-45 UTP port supports Auto negotiation speed, Auto MDI/MDI-X function	
	SFP port supports 100M/1G/2.5G speed with DDMI	
Storage Port	USB type A	
Console Port	USB type C	
Network Cable	UTP/STP Cat. 5e cable or above	
	EIA/TIA-568 100-ohm (100meter)	
Protocols	CSMA/CD	
Reverse Polarity Protection	Supported for power input	
Overload Current Protection	Supported	
CPU Watch Dog	Supported	
Power Supply	Redundant Dual input power (Removable terminal block) 12/24/48VDC (9.6~57VDC)	
Power Consumption	Input Voltage	Total Power Consumption
	12 VDC	19W
	24 VDC	21W
	48 VDC	23W
LED	System: Power 1 (Green), Power 2 (Green), Alarm (Amber), CPU Act (Green), Ring Master (Green)	
	UTP: 10/100 Link/Active (Green), 1000 Link/Active (Amber)	
	SFP Slot: 100M/1G Link/Active (Green), 2.5G Link/Active (Amber)	
Jumbo Frame	10KB	
MAC Address Table	16K	
Memory Buffer	12Mb for packet buffer	
Device Memory	4G Bytes eMMC, 2G Bytes RAM	
Warning Message	System Syslog, SMTP/ e-mail event message, alarm relay	
Alarm Relay Contact	Relay outputs with current carrying capacity of 1A @24VDC	
Removable Terminal Block	Provides 1 terminal block for Alarm relay, redundant power PWR1 and PWR2	
Operating Temperature	-10 ~ 60°C (IGS-A804SM)	
	-40 ~ 75°C (IGS-A804SM-E)	
Operating Humidity	5% to 95% (Non-condensing)	
Storage Temperature	-40 ~ 85°C	
Housing	Rugged Metal, IP30 Protection and Fanless	
Dimensions	106 x 72 x 152mm (D x W x H)	
Weight	1,190g	
Installation Mounting	DIN Rail mounting or wall mounting (Optional)	
MTBF (MIL-HDBK-217)	335,192	
Certification		
Industrial Cybersecurity	IEC 62443-4-1, IEC 62443-4-2*	
EMC	CE (EN55032, EN55035)	
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A, CE	
Railway Traffic	EN50121-4	
Immunity for Heavy Industrial Environment	EN61000-6-2	
Emission for Heavy Industrial Environment	EN61000-6-4	
EMS (Electromagnetic Susceptibility) Protection Level	EN61000-4-2 (ESD) Level 3, Criteria B	
	EN61000-4-3 (RS) Level 3, Criteria A	
	EN61000-4-4 (Burst) Level 3, Criteria A	
	EN61000-4-5 (Surge) Level 3, Criteria B	

<b>EMS (Electromagnetic Susceptibility) Protection Level</b>	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (PFMF, Magnetic Field) Field Strength: 300A/m, Criteria A
<b>Safety</b>	UL 61010-2-201, EN62368-1
<b>Surge Protection</b>	4KV for UTP and Fiber ports
<b>Shock</b>	IEC 60068-2-27
<b>Freefall</b>	IEC 60068-2-31
<b>Vibration</b>	IEC 60068-2-6

\*Future release

## Software Specifications

### Topology

<b>VLAN</b>	IEEE 802.1q VLAN, up to 4094 802.1Q VLAN ID
	IEEE 802.1q VLAN, up to 4094 Groups
	IEEE 802.1ad Q-in-Q
	MAC-based VLAN, up to 256 entries
	IP Subnet-based VLAN, up to 128 entries
	Protocol-based VLAN (Ethernet, SNAP, LLC), up to 128 entries
	VLAN Translation, up to 256 entries
	Private VLAN for port isolation
	GVRP (GARP VLAN Registration Protocol)
	MVR (Multicast VLAN Registration )
	Voice VLAN
<b>Link Aggregation (Port Trunk)</b>	Static (Hash with SA, DA, IP, TCP/UDP port), up to 6 trunk group
	Dynamic (IEEE 802.3ad LACP), up to 6 trunk group
<b>Spanning Tree</b>	IEEE 802.1D STP, IEEE 802.1W RSTP, IEEE 802.1S MSTP
<b>MRP (IEC62439-2)</b>	Supported
<b>Multiple <math>\mu</math>-Ring</b>	Up to 5 instances that each supports $\mu$ -Ring, $\mu$ -Chain or Sub-Ring type for flexible uses, and maximum up to 5 Rings
	Recovery time <20ms
	The maximum number of devices in the ring supports 250 nodes.
<b>Loop Protection</b>	Supported
<b>ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection )</b>	Recovery time <50ms
	Single Ring, Sub-Ring, Multiple ring topology network
<b>ITU-T G.8031 / Y.1342 EPS (Ethernet Protection Switching)</b>	Supported

### QoS Features

<b>Class of Service</b>	IEEE 802.1p 8 active priorities queues for per port
<b>Traffic Classification QoS</b>	IEEE 802.1p based CoS, IP Precedence based CoS, IP DSCP based CoS
	QCL (QoS Control List): Frame Type, Source/Destination MAC, VLAN ID, PCP, DEI, Protocol, Source IP, IP Fragment, DSCP, TCP/UDP port number
<b>Bandwidth Control for Ingress</b>	100~1,000,000 when the "Unit" is "kbps", and 1~1,000 when the "Unit" is "Mbps"
<b>Bandwidth Control for Egress</b>	100~1,000,000 when the "Unit" is "kbps", and 1~1,000 when the "Unit" is "Mbps"
	Per queue / Port shaper
<b>DiffServ (RF 2474) Remarking</b>	
<b>Storm Control</b>	for Unicast, Broadcast, Multicast

### IP Multicasting Features

<b>IGMP / MLD Snooping</b>	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 Features**

<b>IEEE 802.1X</b>	Port-Based
	MAC-Based
<b>ACL</b>	Number of rules : up to 256 entries
	for L2 / L3 / L4
	L2 : Mac address SA/DA/VLAN
	L3: IP address SA/DA, Subnet
<b>RADIUS</b>	L4: TCP/UDP
	Authentication & Accounting
<b>TACACS+</b>	Authentication, Authorization, Accounting
<b>HTTPS, HTTP</b>	Supported
<b>SSL / SSH v2</b>	Supported
<b>User Name Password Authentication</b>	Local Authentication
	Remote Authentication (via RADIUS / TACACS+)
<b>Management Interface Access Filtering</b>	Web, Telnet / SSH, CLI USB console

**Management Features**

<b>CLI</b>	Cisco® like CLI
<b>Web UI</b>	Supported
<b>Telnet</b>	Server
<b>SNMP</b>	V1, V2c, V3
<b>sFlow</b>	Supported
<b>Modbus/TCP</b>	Supports for management and monitoring
<b>SW &amp; Configuration Upgrade</b>	SFTP, TFTP, HTTPS, HTTP, FTP
	Redundant firmware in case of upgrade failure
<b>FTP client</b>	Supports for upload/download configuration
<b>RMON</b>	RMON I (1, 2, 3, 9 group), RMON II
<b>MIB</b>	RFC1213 MIB II, Private MIB
<b>UPnP</b>	Supported
<b>DHCP v4</b>	Server, Client, Relay, Relay option 82, Snooping
<b>ARP Inspection</b>	Supported
<b>IP Source Guard</b>	Supported
<b>Port Mirroring</b>	Supported
<b>Event Syslog</b>	Syslog server (RFC3164) (Support 4 server)
<b>Warning Message</b>	System syslog, e-mail, alarm relay
<b>DNS</b>	Client, Proxy
<b>NTP V4.0, SNTP</b>	Client
<b>LLDP (IEEE 802.1ab)</b>	Link Layer Discovery Protocol
	LLDP-MED

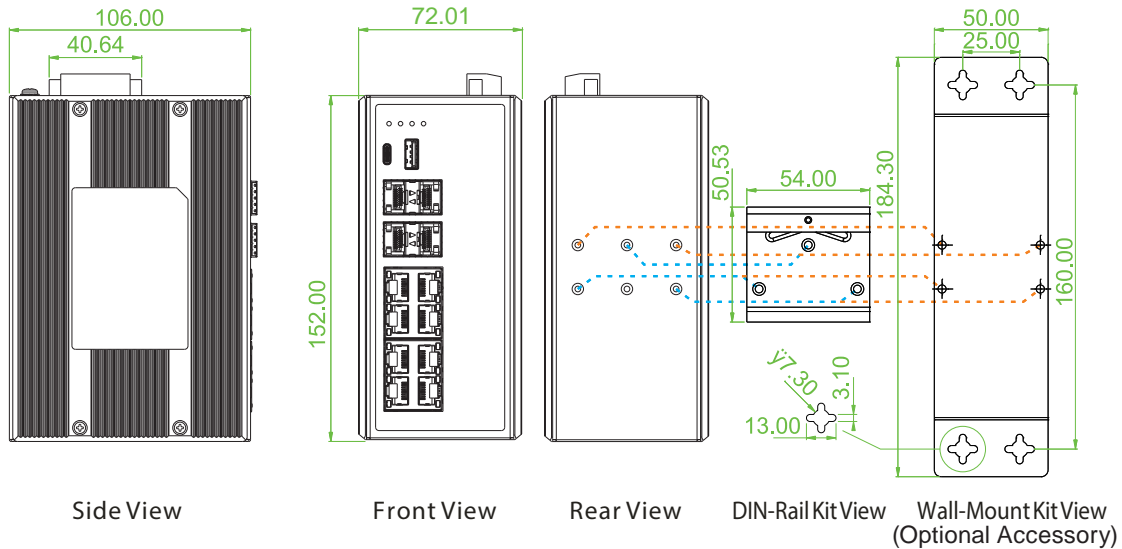
**IPv6 Features**

<b>IPv6 Management</b>	Telnet Server/ICMP v6
<b>SNMP over IPv6</b>	Supported
<b>HTTP over IPv6</b>	Supported
<b>SSH over IPv6</b>	Supported
<b>IPv6 Telnet</b>	Supported
<b>IPv6 NTP, SNTP</b>	Client
<b>IPv6 TFTP</b>	Supported
<b>IPv6 QoS</b>	Supported
<b>IPv6 ACL</b>	Number of rules: up to 256 entries
	for L2 / L3 / L4
	L2 : Mac address SA/DA/VLAN
	L3: IP address SIP, Subnet (32bit)
<b>IPv6 Source Guard</b>	L4: TCP/UDP
	Supported
<b>DHCPv6</b>	Relay, Snooping

## Others Features

Green Ethernet	Determine the cable length and lowering the power for ports with short cables
	Lower the power for a port when there is no link

## Dimensions



## Ordering Information

Model Name	Managed	Total Port	RJ45	SFP	Input Power	Certification			Operating Temperature
			10/100/1000 Base-T(X)	100M/1G/2.5G		EN50121-4	EN61000-6-2 EN61000-6-4	CE FCC	
IGS-A804SM	V	12	8	4	12/24/48VDC	V	V	V	-10~60°C
IGS-A804SM-E	V	12	8	4	12/24/48VDC	V	V	V	-40~75°C

## Optional Accessories

### ■ Auto Backup Kit

BUK1-USB	Backup kit for USB Type-C Console Managed Switch
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### ■ Wall Mount Kit

IND-WMK02	Wall Mount kit for Industrial product (Wide) (184 x 50mm)
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### ■ Industrial SFP Transceiver

The ISFP series of industrial grade SFP modules have been fully tested with all CTC Union industrial grade Ethernet switches for guaranteed compatibility and performance. Best performance can be guaranteed, even in mission-critical applications. (Please see CTC Union's Industrial SFP datasheets for more items and detailed information.)

ISFP-M7000-85-D(E)	Industrial SFP GbE 1000Base-SX, M/M, 500 meter, wave length 850nm, 7.5dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-S7020-31-D(E)	Industrial SFP 1000Base-LX, S/M, 20km, wave length 1310nm, 15dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-T7T00-00-(E)	Industrial SFP 10/100/1000Base-T UTP 100meter, -10~70°C (-40~85°C)
ISFP-M5002-31-D(E)	Industrial SFP 155M 100Base-FX, MM, 2km, wave length 1310nm, 12dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-S5030-31-D(E)	Industrial SFP 155M 100Base-FX, SM, 30km, 1310nm, 19dB, LC, DDMI, -10~70°C (-40~85°C)

### ■ Industrial Power Supply

MDR-40-48	Industrial Power, Input 85 ~ 264VAC/120 ~ 370VDC, Output 48VDC, 40W, -20 ~ 70°C
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