

## 8x GbE RJ45 + 4x 100/1000Base-X SFP with SyncE

- » Supports Sync Ethernet & IEEE1588 PTP v2
- » Utilizes a DPLL & TCXO for Accurate Clock Recovery.
- » Timing Accuracy of <20ns for SyncE & IEEE1588 v2
- » 2.25K VDC Hi-Pot Isolation Protection for Ethernet Ports and Power
- » 4KV Surge Protection for UTP and Fiber Ports
- » EN60950-1, EN50121-4, EN61000-6-2, EN61000-6-4, CE and FCC Certified



The industrial grade of synchronization Ethernet switch IGS-804SM-SE with 8 Gigabit UTP ports and 4x 100/1000Mbps SFP slots, supports timing synchronization features of SyncE and IEEE1588 PTP that allow operators to deliver services with optimal stability and continuity in end to end connectivity. it provides a variety functions of power input redundancy, link redundancy of STP/RSTP/ MSTP/ERPS and a proprietary ring protocol, it features of IGMP, VLAN QoS, ACL bandwidth control and port mirroring. fanless and rugged enclosure specifically designed for harsh network environments.

## Features

- Cable diagnostic, measuring cable normal or broken point distance
- u-Ring, STP, RSTP, MSTP, EPS, ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) for redundant cabling
- Provides 5 instances that each can support μ-Ring, μ-Chain or Sub-Ring type for flexible uses.  
(Please see CTC μ-Ring white paper for more details and more topology application)
- μ-Ring for Redundant Cabling, recovery time<10ms in 250 devices
- Supports Sync Ethernet allow operators to deliver service with optimal stability and continuity in end-to-end connectivity
- Supports IEEE 1588 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 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 802.1d		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		EPS (Ethernet 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

# Industrial GbE Switch with SyncE

Standard	IEEE 802.1p	LAN Layer 2 QoS/CoS Protocol for Traffic Prioritization	
	IEEE 802.1ab	Link Layer Discovery Protocol (LLDP)	
	IEEE 802.3az	EEE (Energy Efficient Ethernet)	
VLAN ID	4094	IEEE 802.1Q VLAN ID	
Switch Architecture	Back-plane (Switching Fabric): 24Gbps (Full wire-speed)		
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 100/1000Base-X SFP		
	RJ-45 UTP port supports Auto negotiation speed, Auto MDI/MDI-X function		
	SFP port supports dual speed with DDMI		
Console	RS-232 (RJ-45)		
Network Cable	UTP/STP Cat. 5e cable or above		
	EIA/TIA-568 100-ohm (100meter)		
Protocols	CSMA/CD		
Reverse Polarity Protection	Supported		
Overload Current Protection	Supported		
CPU Watch Dog	Supported		
Power Consumption	Input Voltage	IGS-804SM-SE	
	12 VDC	11W	
	24 VDC	12.4W	
	48 VDC	12.9W	
Power Supply	Redundant Dual DC 12/24/48V (9.6~60VDC) Input power		
	Removable Terminal Block for input power connector		
LED	System: Power 1 (Green), Power 2 (Green), Fault (Amber), CPU Act (Green), Ring Master (Yellow)		
	UTP: 10/100 Link/Active (Green), 1000 Link/Active (Amber)		
	SFP Slot: Link/Active (Green)		
Jumbo Frame	9.6KB		
IEEE 802.3ac	Max frame size extended to 1522Bytes (allow Q-tag in packet)		
MAC Address Table	8K		
Memory Buffer	512K Bytes for packet buffer		
Device Memory	16M Bytes Flash ROM, 128M 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 2 redundant power, alarm relay contact, 6 Pin		
Operating Temperature	-10 ~ 60°C (IGS-804SM-SE)		
	-40 ~ 75°C (IGS-804SM-SE-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	0.74kg		
Installation Mounting	DIN Rail mounting or wall mounting (optional)		
MTBF	593,726 Hours (MIL-HDBK-217)		
Warranty	5 years		
Certification			
EMC	CE (EN55024, EN55032)		
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		

# Industrial GbE Switch with SyncE

<b>EMS</b> (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
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (PFMF, Magnetic Field) Field Strength: 300A/m, Criteria A
<b>Hipot</b>	DC 2.25KV for power to chassis ground, Ethernet ports to chassis ground
<b>Surge Protection</b>	4KV for UTP and Fiber ports
<b>Safety</b>	EN60950-1
<b>Shock</b>	IEC 60068-2-27
<b>Freefall</b>	IEC 60068-2-32
<b>Vibration</b>	IEC 60068-2-6

## 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</b> (Port Aggregation Trunk)	Static (Hash with SA, DA, IP, TCP/UDP port), Maximum trunk group : 6group
	Dynamic (IEEE 802.3ad LACP), Maximum trunk group : 6group
	Per group up-to 8 port
<b>Spanning Tree</b>	IEEE 802.1d STP
	IEEE 802.1w RSTP
	IEEE 802.1s MSTP
<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 <10ms
	The maximum number of device is allowed 250 nodes in a Ring.
<b>Loop Protection</b>	Supported
<b>ITU-T G.8032 / Y.1344 ERPS</b> (Ethernet Ring Protection)	Recovery time <50ms
	Single Ring, Sub-Ring, Multiple ring topology network
<b>ITU-T G.8031 / Y.1342 EPS</b> (Ethernet Protection Switching)	Supported
<b>QoS Features</b>	
<b>Class of Service</b>	IEEE 802.1p 8 active priorities queues 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 and Multicast

# Industrial GbE Switch with SyncE

8

## 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
	L4: TCP/UDP
<b>RADIUS</b>	Authentication & Accounting
<b>TACACS+</b>	Authentication
<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 RS-232 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>	Supported
<b>SW &amp; Configuration Upgrade</b>	TFTP, HTTP, FTP client
	Redundant firmware in case of upgrade failure
<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>BootP</b>	Bootstrap Protocol Supported
<b>RARP</b>	Reverse Address Resolution Protocol Supported
<b>DHCP</b>	Server, Client, Relay, Relay option 82, Snooping
<b>IP Source Guard</b>	Supported
<b>Port Mirroring</b>	Supported
<b>Event Syslog</b>	Syslog server (RFC3164)
<b>Warning Message</b>	System syslog, e-mail, alarm relay
<b>DNS</b>	Client, Proxy
<b>SyncE</b>	ITU-T G.8262 Sync Ethernet
<b>IEEE 1588 PTP V2</b>	Supports 5 operating mode in each port :
	Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master and Slave
<b>NTP, SNTP</b>	Client
<b>LLDP (IEEE 802.1ab)</b>	Link Layer Discovery Protocol
	LLDP-MED

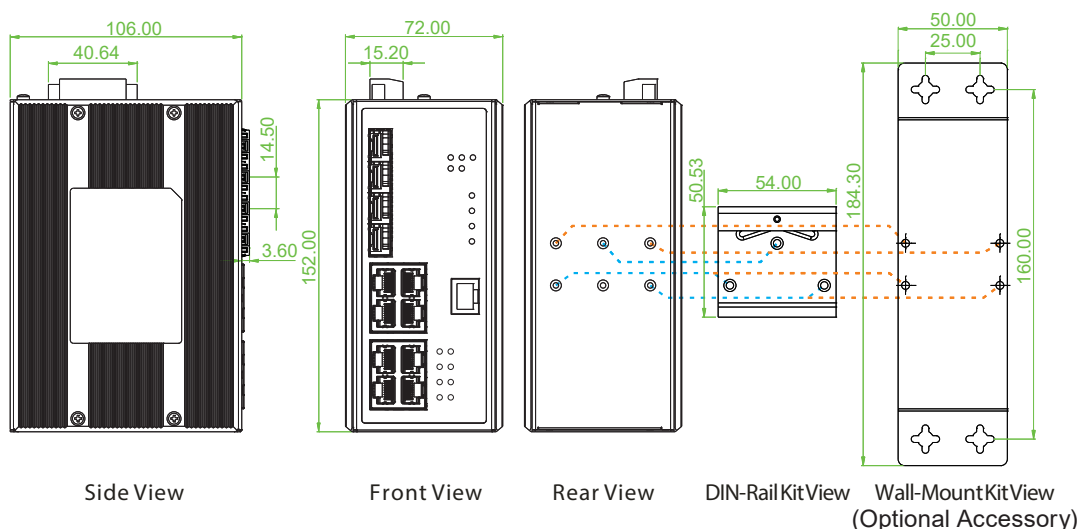
## IPv6 Features

<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

# Industrial GbE Switch with SyncE

IPv6 NTP, SNTP	Client
IPv6 TFTP	Supported
IPv6 QoS	Supported
IPv6 ACL	Number of rules: up to 256 entries for L2 / L3 / L4 L2 : Mac address SA/DA/VLAN L3: IP address SIP, Subnet (32bit) L4: TCP/UDP
<b>Others Features</b>	
Green Ethernet	Supports IEEE 802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption Determine the cable length and lowering the power for ports with short cables Lower the power for a port when there is no link LED Power Management :Adjustment LEDs intensity
Cable Diagnostic	Measuring UTP cable normal or broken point distance

## Dimensions



## Ordering Information

Model Name	Managed	Total Port	RJ45	SFP	Certification				Operating Temperature
			10/100/1000 Base-T(X)	100/1000 Base-X	EN60950-1	EN50121-4	EN61000-6-2 EN61000-6-4	CE FCC	
IGS-804SM-SE	V	12	8	4	V	V	V	V	-10~60°C
IGS-804SM-SE-E	V	12	8	4	V	V	V	V	-40~75°C

## Optional Accessories

### ■ 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, DDML, -10~70°C (-40~85°C)
ISFP-S7020-31-D(E)	Industrial SFP 1000Base-LX, S/M, 20km, wave length 1310nm, 15dB, LC, DDML, -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, DDML, -10~70°C (-40~85°C)
ISFP-S5030-31-D(E)	Industrial SFP 155M 100Base-FX, SM, 30km, 1310nm, 19dB, LC, DDML, -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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