



IGS-804SM-SE-8PH NEW

8x 10/100/1000Base-T +
4x 100/1000Base-X SFP With SyncE and 8x PoE+

IGS-1608SM-SE-8PH NEW

16x 10/100/1000Base-T +
8x 100/1000Base-X SFP With SyncE and 8x PoE+



These models are managed industrial grade Gigabit Sync Ethernet with 8 ports PoE switches, that 8/16 ports 10/100/1000Base-T(X) come standard with 8 ports IEEE802.3af PoE (15.4W), IEEE802.3at PoE+ (30W) and up to 4/8 dual speed 100/1000Base-X SFP ports. With the Gigabit Ethernet PoE+ ports, it is perfect for high bandwidth PD device communications and provide up to 15.4 watts of power per PoE port also allow high power output of up to 30 watts for industrial heavy-duty PoE+ devices, such as outdoor wireless access points, high resolution Gigabit IP cameras and IP phones.

The switches provide stable and reliable Ethernet transmission, especially support timing synchronization features including SyncE and IEEE 1588 PTP V2 that allow operators to deliver services with optimal stability and continuity in End to End connectivity. The function of SyncE and IEEE1588 PTP V2 are also increasingly applied in mobile backhaul applications that need industrial grade design as many devices are placed in outdoor cabinets.

These models support a variety of Ethernet functions, including STP/RSTP/MSTP/ITU-T G.8032 ERPS and μ -Ring, μ -Chain for networking redundancy, as well layer 2 Ethernet IGMP, VLAN, QoS, Security, IPv6, bandwidth control, port mirroring, cable diagnostic and Green Ethernet, these switches are designed for harsh environments IP30 fan-less, housed in rugged DIN rail or wall mountable enclosures, such as industrial networking, security automations, intelligent transportation systems (ITS) and are also suitable for military and power utility applications.

Features

- 8x 10/100/1000Base-T RJ45+ 4x100/1000Base-X SFP with SyncE and 8x PoE+ (IGS-804SM-SE-8PH)
- 16x 10/100/1000Base-T RJ45+ 8x100/1000Base-X SFP with SyncE and 8x PoE+ (IGS-1608SM-SE-8PH)
- 48VDC (44~57VDC) redundant dual input power
- **Supports negative voltage power input with isolated RS-232 console port (for example in telecom system)**
- Up to 8x IEEE802.3af / 802.3at PoE+ output, 30W per port, 240W PoE power budget in total
- Advanced PoE Management, PoE PD Failure Auto Checking and auto reset when PD fail, PoE port on/off weekly scheduling, PoE configuration for power planning
- Rugged metal, IP30 protection & Fan-less design
- UL60950-1, EN60950-1, CE, FCC, Rail Traffic EN50121-4 certified
- Heavy Industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Support 4KV surge protection for PoE, UTP and Fiber ports
- **2.25KVDC Hi-pot isolation protection for Ethernet ports and power**
- Cable diagnostics, Measuring cable OK or broken point distance
- Supports Green Ethernet IEEE802.3az EEE (Energy Efficient Ethernet) management to optimize power consumption
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) for redundant cabling
- Provides 5 ring instances that each can support μ -Ring, μ -Chain or Sub-Ring type for flexible uses. Supports up to 5 rings in one device (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
- DHCP Server/Client/Relay/Snooping/Snooping option 82/Relay option 82
- QoS, Traffic classification QoS, CoS, bandwidth control for Ingress and Egress, Storm Control, DiffServ
- IEEE802.1q VLAN, MAC based VLAN, IP subnet based VLAN, Protocol based VLAN, VLAN translation, GVRP, MVR
- Dynamic IEEE 802.3ad LACP Link Aggregation, Static Link Aggregation
- IGMP snooping V1/V2/V3, IGMP Filtering/ Throttling, IGMP query, IGMP proxy reporting, MLD snooping V1/V2
- Flexibility security: Port based and MAC based IEEE802.1X, RADIUS, ACL, TACACS+, HTTP/HTTPS, SSL/SSH v2
- Software upgrade via TFTP and HTTP, redundant firmware to avoid upgrade failure
- Supports Sync Ethernet allow operators to deliver service with optimal stability and continuity in end-to-end connectivity
- 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
- RMON, MIB II, Port mirroring, Event syslog, DNS, NTP, SNMP, IEEE802.1ab LLDP
- Supports IPv6 Telnet server / ICMP v6
- CLI, Web based management, SNMP v1/v2c/v3, Telnet server for management
- Provides SmartConfig for quick and easy mass configuration tool*
- Supports SmartView for centralized management tool*
- Supporting Central EMS for management of up to 50 SmartView Server, and maximum up to 25,000 device*

* Please see Catalog chapter 1- Software Management for more details

Specifications

Standard	Specification
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 802.3af	PoE (Power over Ethernet)
IEEE 802.3at	PoE+ (Power over Ethernet enhancements)
IEEE 802.3bt	PoE++(4 pairs Power over Ethernet)
IEEE 802.1d	STP (Spanning Tree Protocol)
IEEE 802.1w	RSTP (Rapid Spanning Tree Protocol)
IEEE 802.1s	MSTP (Multiple Spanning Tree Protocol)

Standard	Specification
ITU-T G.8032 / Y.1344	ERPS (Ethernet Ring Protection Switching)
IEEE 802.1Q	Virtual LANs (VLAN)
IEEE 802.1X	Port based and MAC based Network Access Control, Authentication
IEEE802.3ac	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

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)							
Switch Architecture	Back-plane (Switching Fabric): 24Gbps (IGS-804SM-SE-8PH) 48Gbps (IGS-1608SM-SE-8PH) 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 connector (IGS-804SM-SE-8PH) 16x 10/100/1000Base-T RJ-45 + 8x 100/1000Base-X SFP connector (IGS-1608SM-SE-8PH)								
	RJ-45 port support Auto negotiation speed, Auto MDI/MDI-X function SFP port support 100/1000 dual speed with DDMI								
Console	RS-232 (RJ-45) Isolated RS-232 port grounding for negative voltage power system, or telecom network application								
PoE standard & RJ-45 Pin Assignment	8x IEEE 802.3at /IEEE 802.3af PoE+ End-Span, Alternative A mode. Positive (V+) : RJ-45 pin 1, 2. Negative (V-) : RJ-45 pin 3, 6. Data (1,2,3,6,4,5,7,8)								
Network Cable	UTP/STP above Cat. 5e cable EIA/TIA-568 100-ohm (100m)								
Protocols	CSMA/CD								
Reverse Polarity Protection	Supported for power input								
Overload Current Protection	Supported								
CPU Watch Dog	Supported								
Power Supply	Redundant Dual DC 48V (44~57VDC) input power, and support negative voltage input power for telecom (Removable terminal block) (50~57V input is recommended for IEEE802.3at PoE+ in 30W applications)								
Power Consumption	IGS-1608SM-SE-8PH Power consumption								
	<table border="1"> <thead> <tr> <th>Input Voltage</th> <th>Total Power Consumption</th> <th>Device Power Consumption</th> <th>PoE Budget</th> </tr> </thead> <tbody> <tr> <td>48VDC</td> <td>255.2W</td> <td>15.2W</td> <td>240W</td> </tr> </tbody> </table>	Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget	48VDC	255.2W	15.2W	240W
Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget						
48VDC	255.2W	15.2W	240W						
	IGS-804SM-SE-8PH: TBD								
PoE Power Budget	Per port 30W Total power budget 240W								
LED	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber), CPU Act (Green), Ring Master (Yellow) Per RJ-45 port: 10/100 Link/Active (Green) 1000 Link/Active (Amber) SFP Fiber Per port: Link/Active (Green) PoE Port LED 1 LED /per Port : • PoE Output Power On : ON (Green) • PoE Fault (Over Load, Short Circuit,Port failed at Startup) : Flash 1times /sec (Green) • PoE Output Power Off : Off								
Jumbo Frame	9.6KB								

Software Specifications

Topology	
VLAN	IEEE 802.1q VLAN, up to 4094 802.1Q VLAN VID 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 GVRP (GARP VLAN Registration Protocol) MVR (Multicast VLAN Registration)
Link Aggregation (Port Trunk)	Static (Hash with SA, DA, IP, TCP/UDP port), up to 5 trunk group Dynamic (IEEE 802.3ad LACP), up to 5 trunk group
Spanning Tree	IEEE802.1d STP, IEEE802.1w RSTP, IEEE802.1s MSTP

IEEE802.3ac	Max frame size extended to 1522Bytes (allow Q-tag in packet)
MAC Address Table	8K
Memory Buffer	512K Bytes for packet buffer
Warning Message	System Syslog, SMTP/ e-mail event message, alarm relay
Alarm Relay Contact	Relay outputs with current carrying capacity of 1 A @24VDC
Removable Terminal Block	Provide 2 redundant power, alarm relay contact, 6 Pin
Operating Temperature	-10 ~ 60°C (IGS-804SM-SE-8PH, IGS-1608SM-SE-8PH) -40 ~ 75°C (IGS-804SM-SE-8PHE, IGS-1608SM-SE-8PHE)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection, Fanless
Dimensions	106 x 72 x 152 mm (D x W x H) (IGS-804SM-SE-8PH) 116 x 91 x 157 mm (Dx Wx H) (IGS-1608SM-SE-8PH)
Weight	1.39kg (IGS-1608SM-SE-8PH) TBD (IGS-804SM-SE-8PH)
Installation Mounting	DIN Rail mounting, or wall mounting (Optional)
MTBF	TBD (MIL-HDBK-217)
Warranty	5 years
Certification	
EMC	CE
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 EN61000-4-6 (CS) Level 3, Criteria A EN61000-4-8 (PFMF, Magnetic Field) Field Strength: 300A/m, Criteria A
Safety	UL60950-1, EN60950-1
Hi pot protection	DC 2.25KV for power to chassis ground, Ethernet port to chassis ground
4KV surge protection	Support for PoE, UTP and Fiber ports
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Multiple μ-Ring	up to 5 instances that each supports μ -Ring, μ -Chain or Sub-Ring type for flexible uses, and maximum up to 5 Rings Recovery time <10ms The maximum number of devices allowed in a Ring supported ring is 250 (Please see CTC Union μ -Ring white paper for more details and more topology application)
Loop Protection	Supported
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)	Recovery time <50ms Single Ring, Sub-Ring, Multiple ring topology network
QoS Features	
Class of Service	IEEE802.1p 8 active priorities queues for per port
Traffic Classification QoS	IEEE802.1p based CoS, IP Precedence based CoS IP DSCP based CoS QCL(QoS Control List): Frame Type, Source/Destination MAC, VLAN ID, PCP, DEI QCE(QoS Control Entry): Protocol, Source IP, IP Fragment, DSCP, TCP/UDP port number

Bandwidth Control for Ingress	Rate in steps :1 kbps / Mbps / fps / kfps Range : 100 kbps to 1Gbps / 1fps to 3300kfps Rate Unit : bit or frame
Bandwidth Control for Egress	Rate in steps : 1 kbps / Mbps Range : 100 kbps to 1Gbps Rate Unit : bit Per queue / Per port shaper
DiffServ (RF 2474) Remarking	
Storm Control	for Unicast, Broadcast, Multicast
IP Multicasting Features	
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 Features	
IEEE 802.1X	Port-Based MAC-Based
ACL	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
RADIUS authentication & accounting	
TACACS+ authentication & accounting, TACACS+ 3.0	
HTTPS, HTTP	Supported
SSL / SSH v2	Supported
User Name Password Authentication	Local Authentication Remote Authentication (via RADIUS / TACACS+)
Management Interface Access Filtering	Web, Telnet / SSH , CLI RS-232 console
Management Features	
CLI	Cisco® like CLI
Web Based Management	
Telnet	Server
SNMP	V1, V2c, V3
SW & Configuration Upgrade	TFTP, HTTP Redundant firmware in case of upgrade failure
RMON	RMON I (1, 2, 3, 9 group), RMON II
MIB	RFC1213 MIB II, Private MIB
UPnP	Supported
DHCP	Server, Client, Relay, Snooping, Snooping option 82, Relay option 82
IP Source Guard	Supported
Port Mirroring	Supported
Event Syslog	Syslog server (RFC3164) (Support 1 server)
Warning Message	System syslog, e-mail, alarm relay
DNS	Client, Proxy

SyncE	ITU-T G.8262 Sync Ethernet
IEEE1588 PTP V2	Support 5 operating mode in each port : Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave
NTP, SNTP	Client
LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol LLDP-MED
IPv6 Features	
IPv6 Management	Telnet Server/ICMP v6
SNMP over IPv6	Supported
HTTP over IPv6	Supported
SSH over IPv6	Supported
IPv6 Telnet	Supported
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 SA/DA, Subnet L4: TCP/UDP
Others Features	
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 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
Advanced PoE Management	
	PoE PD failure auto checking, and auto reset when PD fail PoE port on/off weekly scheduling PoE Configuration PoE Enable/Disable Power limit by classification Power limit by management Total PoE Power budget limitation: Maximum 240W for IGS-804SM-SE-PH and IGS-1608SM-SE-8PH Power feeding priority

Application

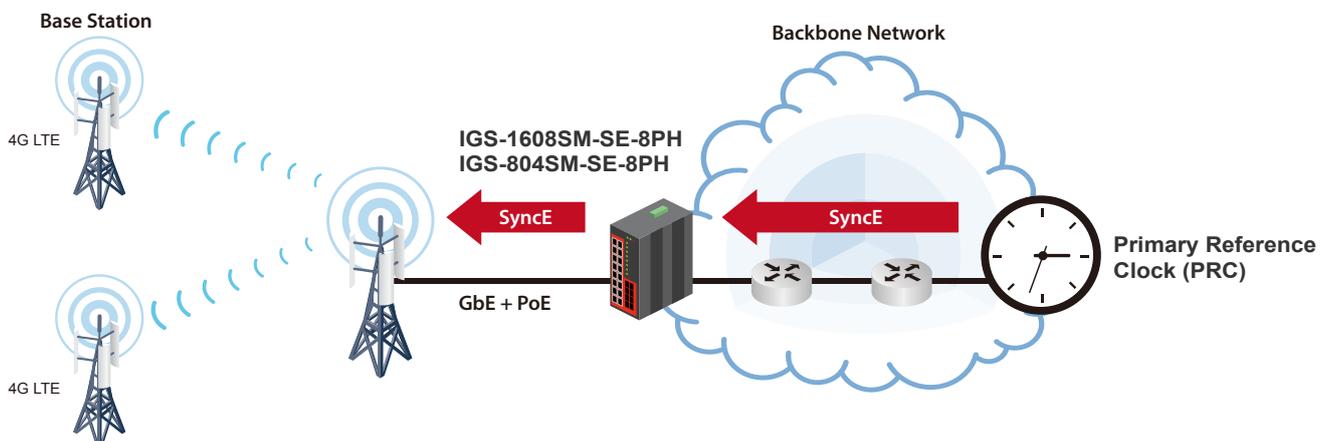
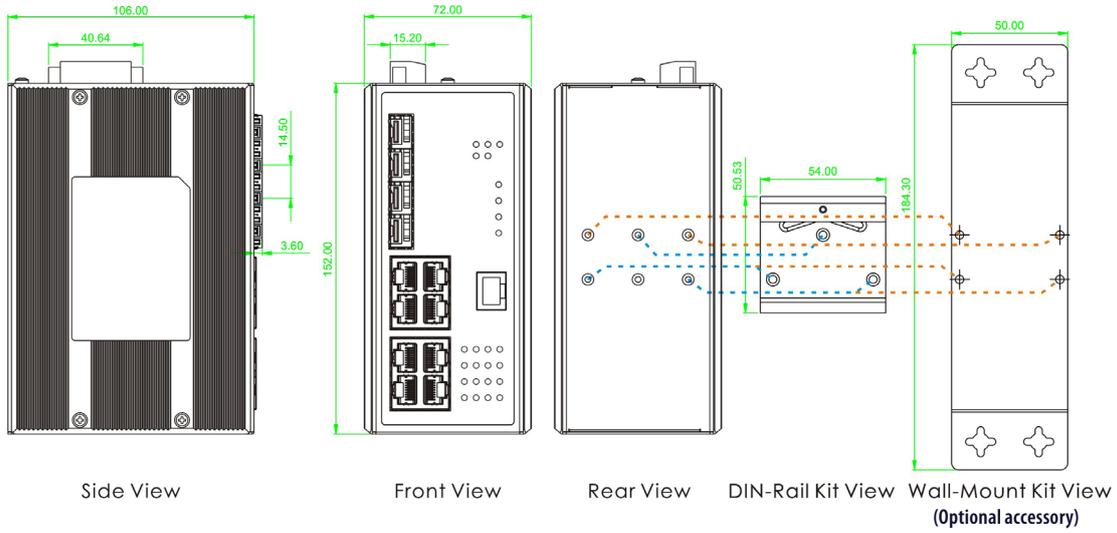


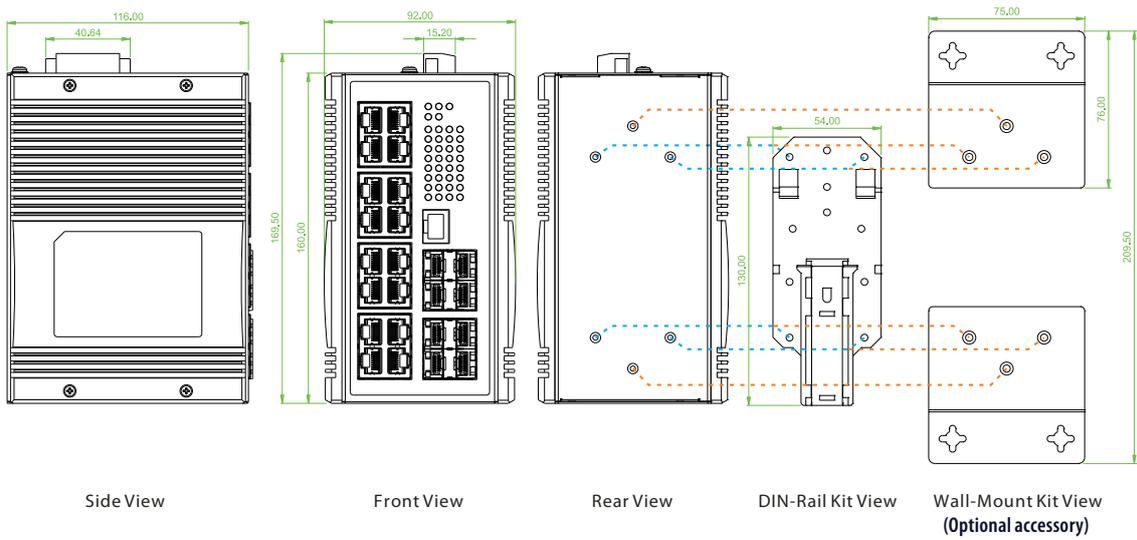
Figure 1 : Application for mobile backhaul

Dimensions

► IGS-804SM-SE-8PH



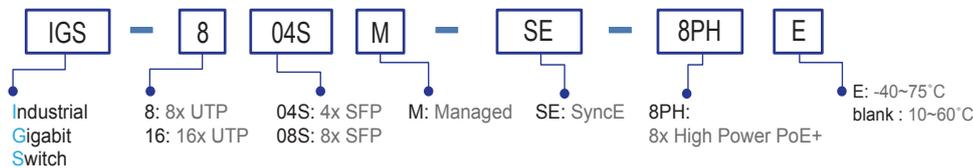
► IGS-1608SM-SE-8PH



Ordering Information

Model Name	Managed	Total Port	UTP		Fiber	PoE Port		Input power		Certification				Operating Temperature
			10/100/1000 Base-T	100/1000 Base-X	IEEE802.3af/at	Power Budget	Redundant	Railway EN50121-4	Safety UL60950-1 EN60950-1	EN61000-6-2	EN61000-6-4	CE, FCC		
IGS-804SM-SE-8PH	V	12	8	4 SFP	8	240W	-48, 48VDC	V	V	V	V	V	-10~60°C	
IGS-804SM-SE-8PHE	V	12	8	4 SFP	8	240W	-48, 48VDC	V	V	V	V	V	-40~75°C	
IGS-1608SM-SE-8PH	V	24	16	8 SFP	8	240W	-48, 48VDC	V	V	V	V	V	-10~60°C	
IGS-1608SM-SE-8PHE	V	24	16	8 SFP	8	240W	-48, 48VDC	V	V	V	V	V	-40~75°C	

Model Naming Rule



Optional Accessories

Wall mount kit

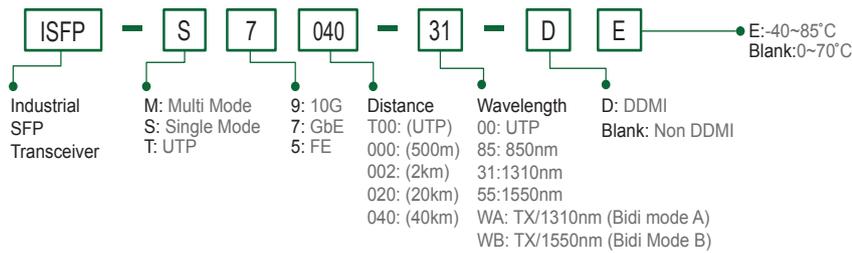
IND-WMK02	Wall Mount kit for Industrial product (Wide) (184 x 50mm) (For IGS-804SM-SE-8PH)
IND-WMK04	Wall Mount kit for Industrial product (Wide) (2 pcs 184 x 50mm) (For IGS-1608SM-SE-8PH)

Industrial SFP Transceiver

The ISFP series of industrial grade SFP modules have been fully tested with the series product for guaranteed compatibility and performance. The best performance can be guaranteed even in mission-critical applications. (Please see CTC Union's Industrial SFP datasheet for more details and more items.)

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 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)

SFP Naming Rule



Package List

- One of the series device
- Console cable (RJ-45 to DB9)
- CD (SmartConfig, MIB file, Manual)
- Quickly installation guide
- Din Rail with screws
- Terminal block
- Protective caps for SFP ports