IGS-402SM-4PH24

4x10/100/1000Base-T + 2x100/1000Base-X SFP w/ 4x PoE+

IGS-803SM-8PH24

8x10/100/1000Base-T + 3x100/1000Base-X SFP w/ 8x PoE+

UL60950-1 · CE · FC · EN50121-4 · EN61000-6-2 EN61000-6-4 · NEMA TS2 · PoE Regulated · SmartView · u-Ring · IEEE 1588v2

These models are managed industrial grade Gigabit PoE (Power over Ethernet) switches with 4/8 10/100/1000Base-T PoE ports and 2/3 Gigabit/Fast SFP ports that provide stable and reliable Ethernet transmission. With dual power input design, these models can provide redundant mechanisms for critical applications that need always-on connections. These switches can also operate either at standard operating temperature range (-10 to 60°C) or at wide operating temperature range (-40 to 75°C) so as to fulfill the special needs of industrial automation applications. Housed in rugged DIN rail or wall mountable IP-30 enclosures, these switches are perfect choices for harsh environments, such as industrial networking, intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications.

These managed switches also support a wide variety of Ethernet functions, including STP/RSTP/MSTP/ ITU-T G.8032 ERPS and multiple u-Ring for redundant cabling, advanced PoE management functions such as weekly PoE power scheduling as well as device auto-checking and auto-reset. They also support layer 2 Ethernet IGMP, VLAN, QoS, ACL, Security, IPv6, bandwidth control, port mirroring, cable diagnostics and Green Ethernet. Additionally, these switches can also be managed by CTC Union's SmartView™ Element Management System which offers a user-friendly and centralized device management platform and provides network administrators the ability to monitor and configure these connected switches remotely (see figure 1).

Features

- 4x10/100/1000Base-T RJ-45+ 2x100/1000Base-X SFP with 4xPoE+, total 120W power budget (IGS-402SM-4PH24)
- 8x10/100/1000Base-T RJ-45+ 3x100/1000Base-X SFP with 8xPoE+, total 180W power budget (IGS-803SM-8PH24)
- 24/48VDC (20~57VDC) redundant dual input power with built-in very high efficiency booster (94~97%) to rise up 55 VDC for PoE output (Figure 2)
- Regulated PoE output voltage (55VDC) to stabilize PoE device, and guarantee delivery PoE power distance to 100meter (Figure 2)
- Provides 4/8 port IEEE802.3af / 802.3at PoE output (30W per Port)
- 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 & Fanless design
- UL60950-1, CE, FCC, Rail Traffic EN50121-4, Traffic control NEMA TS2 certified
- Heavy industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Cable diagnostics, Measuring UTP 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 u-Ring, u-Chain or Sub-Ring type for flexible uses. Supports up to 5 rings in one device (Please see CTC Union u-Ring white paper for more details and more topology application)
- u-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 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, SNTP, 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 (Please see Catalog chapter 1- Software Management for more details)
- Supports SmartView for centralized management (Please see Catalog chapter 1- Software Management for more details)
- Supporting Central EMS for management of up to 50 SmartView Servers, and maximum up to 25,000 devices (Please see Catalog chapter 1- Software Management for more details)

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 802.3af	PoE (Power over Ethernet)
	IEEE 802.3at	PoE+ (Power over Ethernet enhancements)
	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)
	IEEE 802.1Q	Virtual LANs (VLAN)

Standard		
	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
	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): 12Gbps (IGS-402SM-4PH24) 22Gbps (IGS-803SM-8PH24) Full wire-speed

Specifications & design are subject to change without prior notice. Please visit CTC Union website for more details.

Data Processing	Store and Forward	**Jumbo Frame**	9.6KB	
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode	**IEEE802.3ac**	Max frame size extended to 1522Bytes (allow Q-tag in packet)	

Data Processing	Store and Forward
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode
Network Connector	4x 10/100/1000Base-T RJ-45 + 2x 100/1000Base-X SFP connector (IGS-402SM-4PH24) 8x 10/100/1000Base-T RJ-45 + 3x 100/1000Base-X SFP connector (IGS-803SM-8PH24) RJ-45 UTP port support Auto negotiation speed, Auto MDI/MDI-X function, SFP port support 100/1000 dual speed with DDMI
PoE standard & RJ-45 pin assignment	4x IEEE 802.3af /IEEE 802.3at PoE+ (IGS-402SM-4PH24) 8x IEEE 802.3af /IEEE 802.3at PoE+ (IGS-803SM-8PH24) 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)
Console	RS-232 (RJ-45)
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 24/48V (20~57VDC) Input power (Removable Terminal Block) Built-in very high efficiency booster(94~97%) to rise up 55 VDC for PoE output Regulated PoE output voltage (55VDC) to stabilize PoE device, and guarantee delivery PoE power distance to 100meter (Figure 2)

Power Consumption

IGS-402SM-4PH24 Power consumption & Booser efficiency

Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget	Boost Efficiency
24VDC	135.2W	7.5W	120W	94.0%
48VDC	132.5W	9W	120W	97.2%

IGS-803SM-8PH24 Power consumption & Booser efficiency

Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget	Boost Efficiency
24VDC	200.2W	9.2W	180W	94%
48VDC	195.1W	9.8W	180W	97%

PoE Power Budget	Maximum PoE Output power budget 30W / Per Port 120W (IGS-402SM-4PH24) 180W (IGS-803SM-8PH24)
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
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-402SM-4PH24, IGS-803SM-8PH24) -40 ~ 75°C (IGS-402SM-4PHE24, IGS-803SM-8PHE24)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection, Fanless
Dimensions	106 x 62.5 x 135 mm (D x W x H) (IGS-402SM-4PH24) 106 x 72 x 152 mm (D x W x H) (IGS-803SM-8PH24)
Weight	0.715kg (IGS-402SM-4PH24) 0.96kg (IGS-803SM-8PH24)
Installation Mounting	DIN Rail mounting, or wall mounting (Optional)
MTBF	674,963 Hours (IGS-402SM-4PH24) 466,542 Hours (IGS-803SM-8PH24) (MIL-HDBK-217)
Warranty	5 years

Certification

EMC	CE
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A,CE
Railway Traffic	EN50121-4
Traffic control	NEMA TS2
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
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

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(Ethernt, SNAP, LLC), up to 128 entries
	VLAN Translation, up to 256 entries
	GVRP (GARP VLAN Registration Protocal)
	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
Multiple u-Ring	up to 5 instances that each supports u-Ring, u-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 u-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

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Specifications & design are subject to change without prior notice. Please visit CTC Union website for more details.

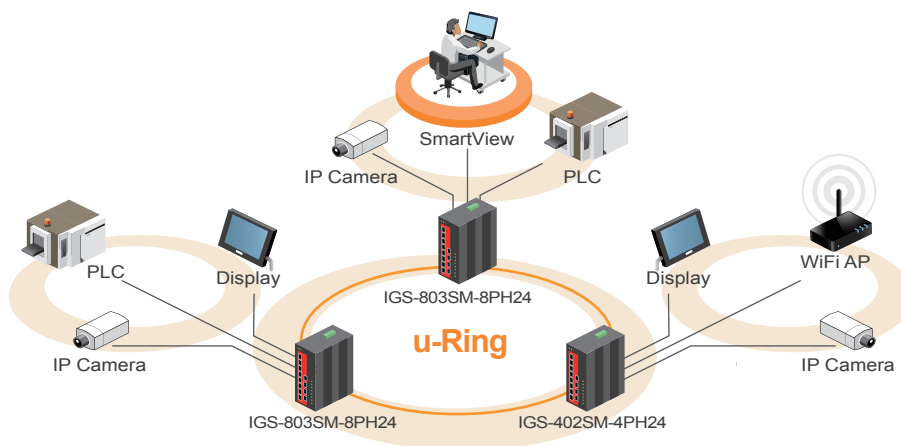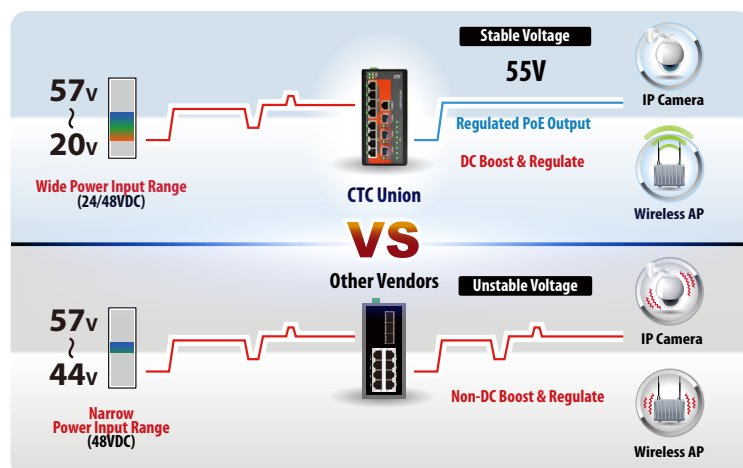|				
ACL	Number of rules : up to 256 entries		**NTP, SNTP**	Client
	for L2 / L3 / L4		**LLDP (IEEE 802.1ab)**	Link Layer Discovery Protocol
	L2 : Mac address SA/DA/VLAN			LLDP-MED
	L3 : IP address SA/DA, Subnet		**IPv6 Features**	
	L4 : TCP/UDP		**IPv6 Management**	Telnet Server/ICMP v6
RADIUS authentication & accounting			**SNMP over IPv6**	Supported
TACACS+ authentication & accounting, TACACS+ 3.0			**HTTP over IPv6**	Supported
HTTPS, HTTP	Supported		**SSH over IPv6**	Supported
SSL / SSH v2	Supported		**IPv6 Telnet**	Supported
User Name Password Authentication	Local Authentication		**IPv6 NTP, SNTP**	Client
	Remote Authentication (via RADIUS / TACACS+)		**IPv6 TFTP**	Supported
			IPv6 QoS	Supported
Management Interface Access Filtering	Web, Telnet / SSH , CLI RS-232 console		**IPv6 ACL**	Number of rules: up to 256 entries
				for L2 / L3 / L4
Management Features				L2 : Mac address SA/DA/VLAN
CLI	Cisco® like CLI			L3: IP address SA/DA, Subnet
Web Based Management				L4: TCP/UDP
Telnet	Server		**Others Features**	
SNMP	V1, V2c, V3		**Green Ethernet**	Supports IEEE802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption
SW & Configuration Upgrade	TFTP, HTTP			Determine the cable length and lowering the power for ports with short cables
	Redundant firmware in case of upgrade failure			Lower the power for a port when there is no link
RMON	RMON I (1, 2, 3, 9 group), RMON II			LED Power Management : Adjustment LEDs intensity
MIB	RFC1213 MIB II, Private MIB		**Cable Diagnostic**	Measuring UTP cable normal or broken point distance
UPnP	Supported		**Advanced PoE**	
DHCP	Server, Client, Relay, Snooping		**Management**	PoE PD failure auto checking ,and auto reset when PD fail
	Snooping option 82			PoE port on/off weekly scheduling
	Relay option 82			PoE Configuration
IP Source Guard	Supported			PoE Enable/Disable
Port Mirroring	Supported			Power limit by classification
Event Syslog	Syslog server (RFC3164) (Support 1 server)			Power limit by management
Warning Message	System syslog, e-mail, alarm relay			Total PoE Power budge limitation (maximum 120W for IGS-402SM-4PH24 ,180W for IGS-803SM-8PH24,
DNS	Client, Proxy			Power feeding priority
IEEE1588 PTP V2	Support 5 operating mode in each port : Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave			

Application
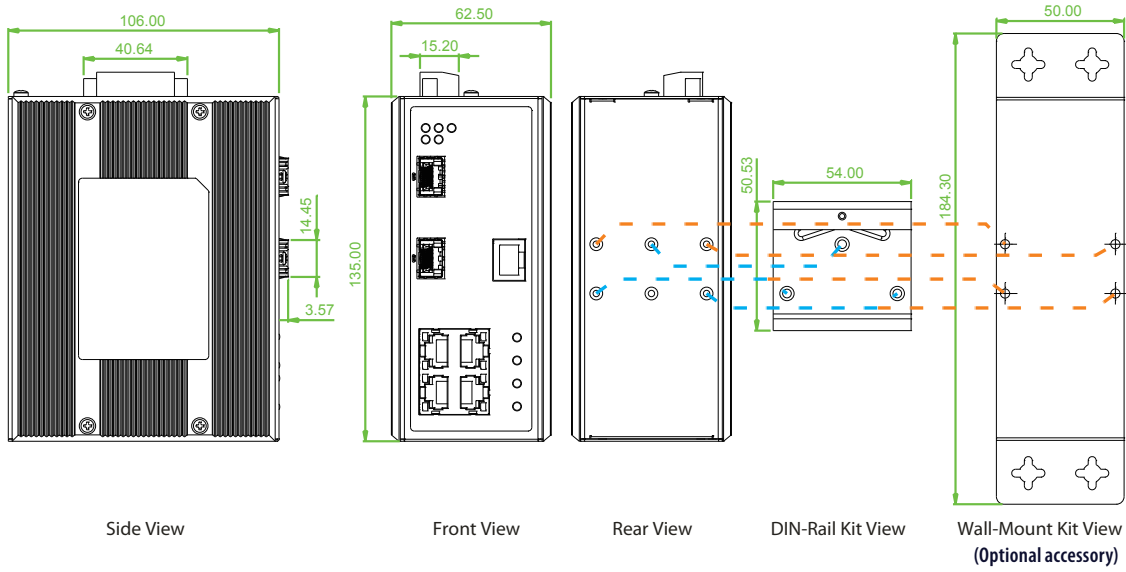

Figure 1 : Application Example

- Regulated PoE output voltage (55VDC) to stabilize PoE device
- Guarantee delivery PoE power distance to 100 meters
- Wide range input power 24/48VDC (20~57VDC)
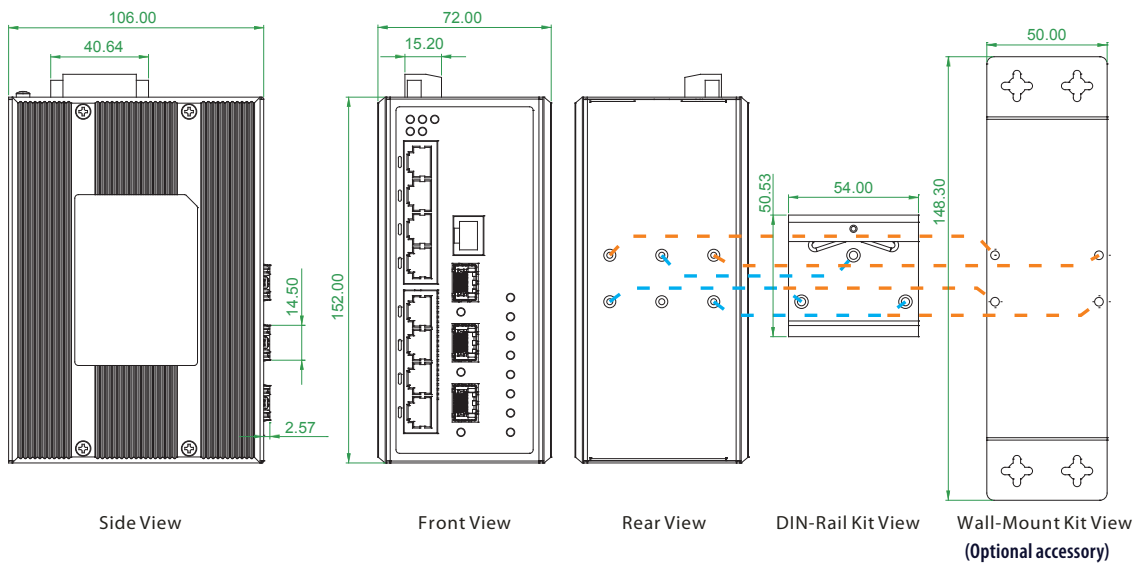- Built-in very high efficiency (94~97%) to boost PoE output voltage

Figure 2 : High Efficiency Boost Technology for PoE
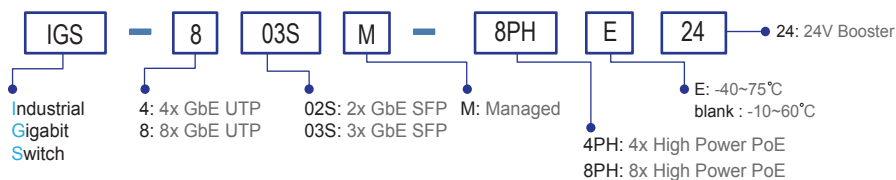
Dimensions

▶ IGS-402SM-4PH24

| Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View **(Optional accessory)** |

▶ IGS-803SM-8PH24

| Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View **(Optional accessory)** |

Ordering Information

Model Name	Managed	Total Port	UTP 10/100/1000 Base-T	Fiber 100/1000 Base-X	PoE Port IEEE802.3at	Power Budget	Input power Redundant	Certification Railway EN50121-4	Traffic Control NEMA TS2	Safety UL60950-1	EN61000-6-2 EN61000-6-4	CE, FCC	Operating Temperture
IGS-402SM-4PH24	V	6	4	2 SFP	4	120W	24/48VDC	V	V	V	V	V	-10~60℃
IGS-402SM-4PHE24	V	6	4	2 SFP	4	120W	24/48VDC	V	V	V	V	V	-40~75℃
IGS-803SM-8PH24	V	11	8	3 SFP	8	180W	24/48VDC	V	V	V	V	V	-10~60℃
IGS-803SM-8PHE24	V	11	8	3 SFP	8	180W	24/48VDC	V	V	V	V	V	-40~75℃

Model Naming Rule

IGS — 8 03S M — 8PH E 24 → 24: 24V Booster

Industrial Gigabit Switch

4: 4x GbE UTP
8: 8x GbE UTP

02S: 2x GbE SFP
03S: 3x GbE SFP

M: Managed

4PH: 4x High Power PoE
8PH: 8x High Power PoE

E: -40~75℃
blank : -10~60℃

Optional Accessories
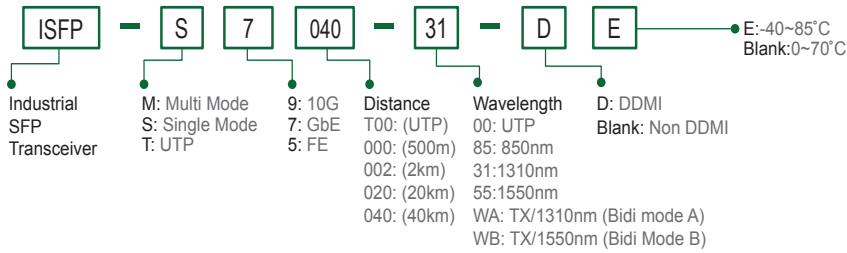
■ Wall mount kit accessories

IND-WMK02	Wall Mount kit for Industrial product (Wide) (184*50mm)

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

SFP Naming Rule

ISFP	—	S	7	040	—	31	—	D	E

E:-40~85˚C
Blank:0~70˚C

Industrial
SFP
Transceiver

M: Multi Mode
S: Single Mode
T: UTP

9: 10G
7: GbE
5: FE

Distance
T00: (UTP)
000: (500m)
002: (2km)
020: (20km)
040: (40km)

Wavelength
00: UTP
85: 850nm
31:1310nm
55:1550nm
WA: TX/1310nm (Bidi mode A)
WB: TX/1550nm (Bidi Mode B)

D: DDMI
Blank: Non DDMI

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