PoE Series

Stability and Efficiency in IP Surveillance Networks

Industrial PoE Managed Switch

Advanced PoE Management- Auto Test & Auto Reset PD, Scheduling
Boost and Regulated for PoE Output Voltage
SmartView™ Management System
SmartConfig™ Tool for Quick & Easy Setting
u-Ring, Sub-Ring, u-Chain for Flexible Redundancy
5-Ring, 250 nodes expansion
Recovery Time < 10ms

PoE (Power over Ethernet) capability enables PD devices such as surveillance cameras or wireless access points to be powered over standard twisted-pair Ethernet cable, eliminating the needs for requiring external power for PD devices. CTC Union provides a variety of PoE products, ranging from injectors, converters to managed switches so as to fulfill different application needs. All PoE models are fanless and designed in robust IP30 housing that make them ideal for din rail installation or wall mounting. Additionally, PoE models support IEEE 802.3af/802.3at standards which are able to provide up to 30W (use 50VDC or above) power supply per port. With power boost and regulation technology, PoE devices can offer 24~48V to 55V power supply for applications that require more power inputs.

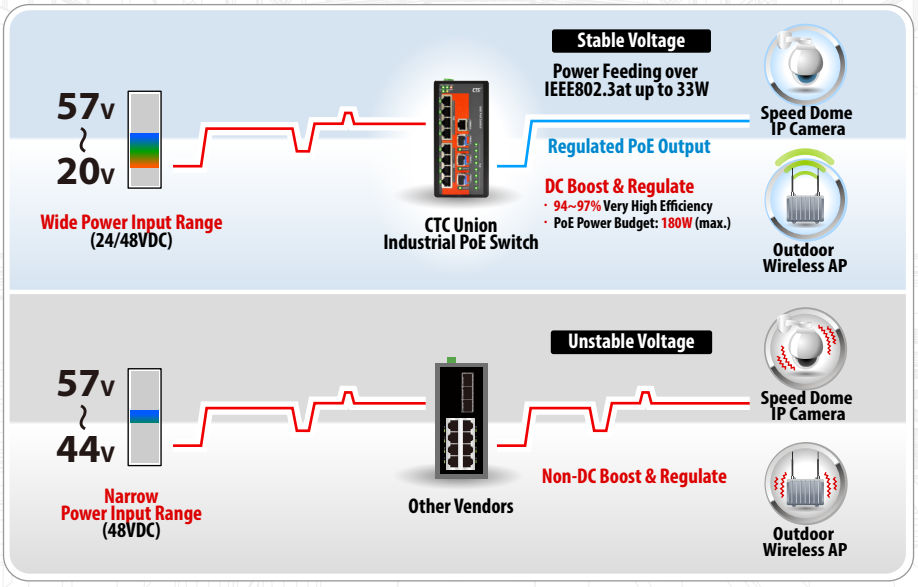
Remote PD Auto Test & Reset

The PoE application is generally used in places where power is not easily accessible. Using remote PD auto test function, our PSE devices can regularly send test packets to the connected PD devices so that users can know the real-time condition of the remote PD devices without paying on-site visits. If PSE devices do not receive responses from the connected PD devices for a certain period, then PSE devices can initiate a reset action automatically to power down and power up the connected PD devices. With both auto test and reset function, network administrators can remotely monitor the condition of the connected PDs and initiate a power reset to bring PD devices back to normal state before paying on-site visits. Eventually, these two features help the company saves truck rolls and reduce operational expenses.

PD Auto Test & Reset Process

Boost DC Power & Regulate Power Voltage

All CTC Union's PoE/PoE+ switches, injectors or converters are equipped with PoE Power Booster & Regulation technology. With built-in power booster feature, PoE devices can be powered up by 24/48V to deliver 15.4W per port and by 50V to deliver 30W per port for IEEE 802.3at applications. The boost efficiency is able to reach 94%~97% high and the maximum PoE power budget can be raised up to 180W for applications like power-hungry PTZ cameras or wireless access points on buses, railcars, ships, etc. Output power is also able to be regulated and stabilized at 55V output voltage so as to enhance the stability of your connected PD devices.



Weekly PoE ON/OFF Scheduling

For PSE devices, power usage can be allocated manually or automatically to PoE ports by users based on actual application needs. Besides, PoE switches and converters offer PoE ON/OFF scheduling function on a weekly basis to provide PoE to the connected devices based on the planned schedule.

PoE Application Scenarios

120 Watts, 24V Booster

IGS-402S-4PH24
4x 10/100/1000Base-T and 2x100/1000Base-X SFP with 4x PoE+

IGS-401F-4PH24
4x 10/100/1000Base-T and 1x 1000Base-X Fiber with 4x PoE+

IGS-402F-4PH24
4x 10/100/1000Base-T and 2x 1000Base-X Fiber with 4x PoE+

IGS-600-4PH24
6x 10/100/1000Base-T with 4x PoE+

The series models are 5~6 Ports unmanaged industrial grade Gigabit PoE switches with 4x 10/100/1000Base-T PoE that provide stable and reliable Ethernet transmission. Housed in rugged DIN rail or wall mountable enclosures, these switches are designed for harsh environments, such as industrial networking, security automation applications, IP Surveillance, intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications. Standard operating temperature range models (-10 to 60°C) and wide operating temperature range models (-40 to 75°C) fulfill the special needs of industrial automation applications.

Features

- Provides 4-port IEEE802.3at/af PoE output (30W/Per Port)
- Maximum PoE output power budget 120W
- 24/48VDC (20~57VDC) redundant dual input power, and built-in 94~97% Very High Efficiency power booster
- Regulated PoE output voltage at 55VDC
- Wide operating temperature -40 ~ 75°C ("E" model)
- UL60950-1, CE, FCC, EN50121-4 certification
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- IP30 rugged metal housing and fanless

Specifications

IEEE Standard	IEEE 802.3 10Base-T Ethernet
	IEEE 802.3u 100Base-TX Fast Ethernet
	IEEE 802.3ab 1000Base-T Gigabit Ethernet
	IEEE 802.3z 1000Base-X Gigabit Ethernet
	IEEE 802.3x Flow Control and Back Pressure
	IEEE 802.3at, IEEE802.3af
Switch Architecture	Back-plane (Switching Fabric): 10Gbps (IGS-401F- 4PH24) 12Gbps (IGS-402S- 4PH24, IGS-402F-4PH24, IGS-600-4PH24)
	Back-plane (Switching Fabric): 10Gbps (IGS-401F- 4PH24) 12Gbps (IGS-402S- 4PH24, IGS-402F- 4PH24, IGS-600-4PH24)
Data Processing	Store and Forward
Flow Control	IEEE 802.3x flow control, back pressure flow control
Provides Broadcast Storm Protection	Present, Enable / Disable set by DIP SW
Jumbo Frame	10K Bytes
MAC Address Table	8K
Packet Buffer Size	1Mbits
PoE standard	IEEE 802.3at/af
PoE RJ-45 pin Assignment	RJ-45 port # 1~# 4 support IEEE 802.3at/af 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 Connector	4 x RJ-45 (IGS-402S-4PH24, IGS-401F-4PH24, IGS-402F-4PH24) 6 x RJ-45 (IGS-600-4PH24) 10/100/1000Base-T auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex
	2x 100/1000Base-X SFP (IGS-402S-4PH24) 1 or 2x1000Base-X Fiber connector: SC Muti Mode or Single Mode (IGS-401F-4PH24, IGS-402F-4PH24)
Network Cable	UTP/STP above Cat. 5e cable
	EIA/TIA-568 100-ohm (100m)
	Fiber Cable (Multi-mode): 50/125um, 62.5/125um Fiber Cable (Single-mode): 9/125um
Protocols	CSMA/CD

LED	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber)	
	Per RJ-45 port : Link/Active (Green), Speed 10 (OFF), 100 (Green), 1000 (Yellow)	
	Fiber Per port: Link/Active (Green)	
	PoE Port LED : • Active : ON • Inactive : OFF • Fault : Flash (Over Load, Short Circuit, Port failed at Startup)	
DIP SW	DIP 1	ON : Disable power failure alarm
		OFF : Enable power failure alarm
	DIP 2	ON : Disables broadcast storm protection
		OFF : Enable broadcast storm protection
	DIP 3	ON : Fiber 2 for 100Base-FX SFP
		OFF : Fiber 2 for Gigabit SFP
		(Only for IGS-402S-4PH24)
	DIP 4	ON : Fiber 1 for 100Base-FX SFP
		OFF : Fiber 1 for Gigabit SFP
		(Only for IGS-402S-4PH24)
Reserve Polarity Protection	Present	
Overload Current Protection	Present	
Power Supply	Redundant Dual DC 24/48V (20~57VDC) Input power (Removable Terminal Block)	

Power Consumption

Input Voltage	IGS-402S-4PH24	IGS-401F-4PH24	IGS-402F-4PH24	IGS-600-4PH24
24VDC	143.3W	142.1W	143.2W	142.9W
48VDC	138.2W	137.4W	138.2W	139.6W

PoE Power Output	Maximum PoE Output power budget 120W (30W/ Per Port)
Alarm Relay Contact	Relay outputs with current carrying capacity of 1A @24VDC
Removable Terminal Block	Provide 2 Redundant power, Alarm relay contact, 6 Pin
Operating Temperature	-10 ~ 60°C (IGS-402S-4PH24, IGS-401F-4PH24, IGS-402F-4PH24, IGS-600-4PH24)
	-40 ~ 75°C (IGS-402S-4PHE24, IGS-401F-4PHE24, IGS-402F-4PHE24, IGS-600-4PHE24)
Operating Humidity	5% to 95% (Non-condensing)

Storage Temperature	-40 ~ 85°C
Housing	Rugged metal, IP30 Protection and fanless
Dimensions	106 x 62.5 x 134.8mm (D X W X H)
Weight	0.84kg (IGS-402S-4PH24) 0.67kg (IGS-401F-4PH24) 0.68kg (IGS-402F-4PH24) 0.84kg (IGS-600-4PH24)
Installation Mounting	DIN Rail mounting or wall mounting
MTBF	334,448 Hours (IGS-402S-4PH24) 316,408 Hours (IGS-401F-4PH24) 306,704 Hours (IGS-402F-4PH24) 296,517 Hours (IGS-600-4PH24) (MIL-HDBK-217)
Warranty	5 years

Certification	
EMC	CE
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A,CE EN55022 Class A
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
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Application

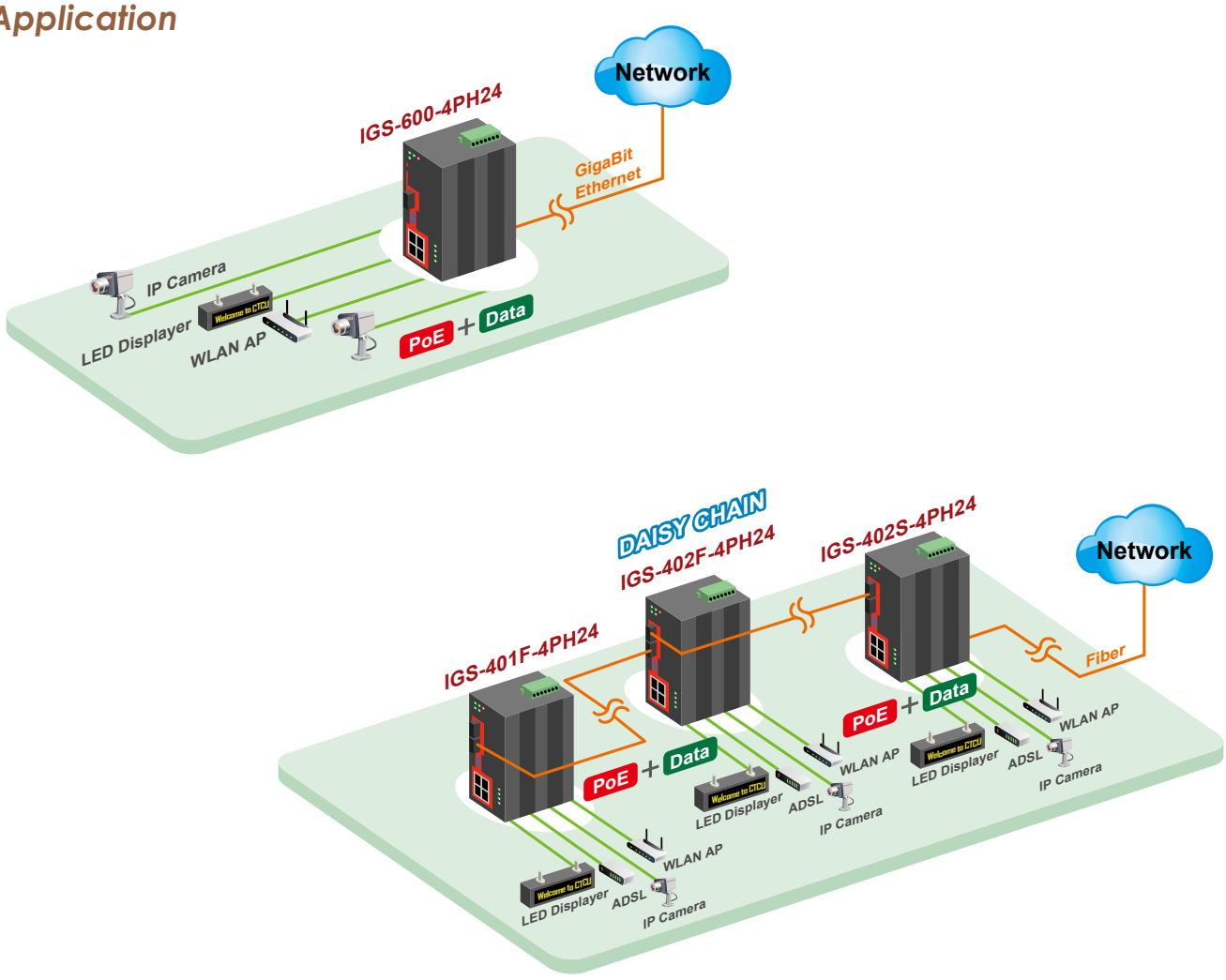
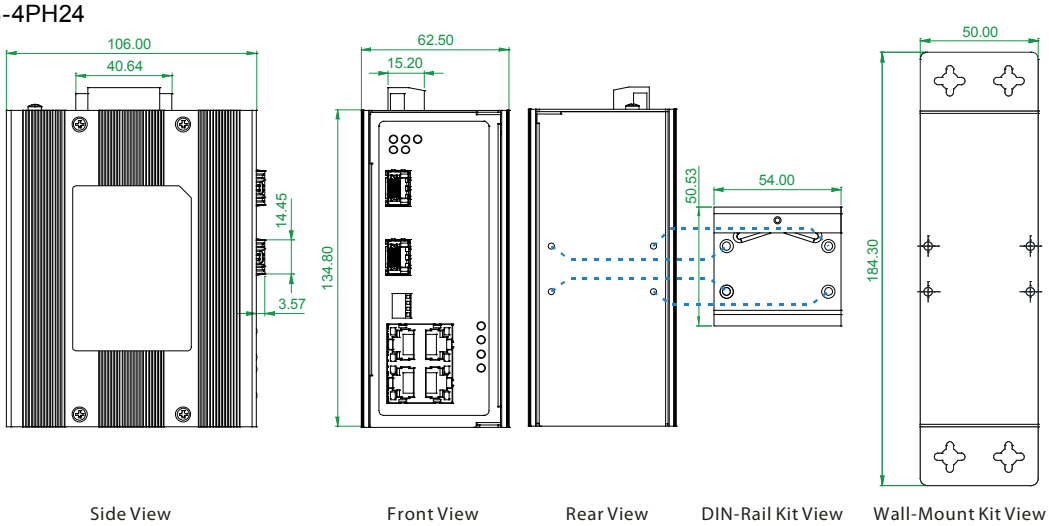


Figure : IGS-402S-4PH24, IGS-401F-4PH24, IGS-402F-4PH24, IGS-600-4PH24 PoE Gigabit Ethernet Switch Transmission

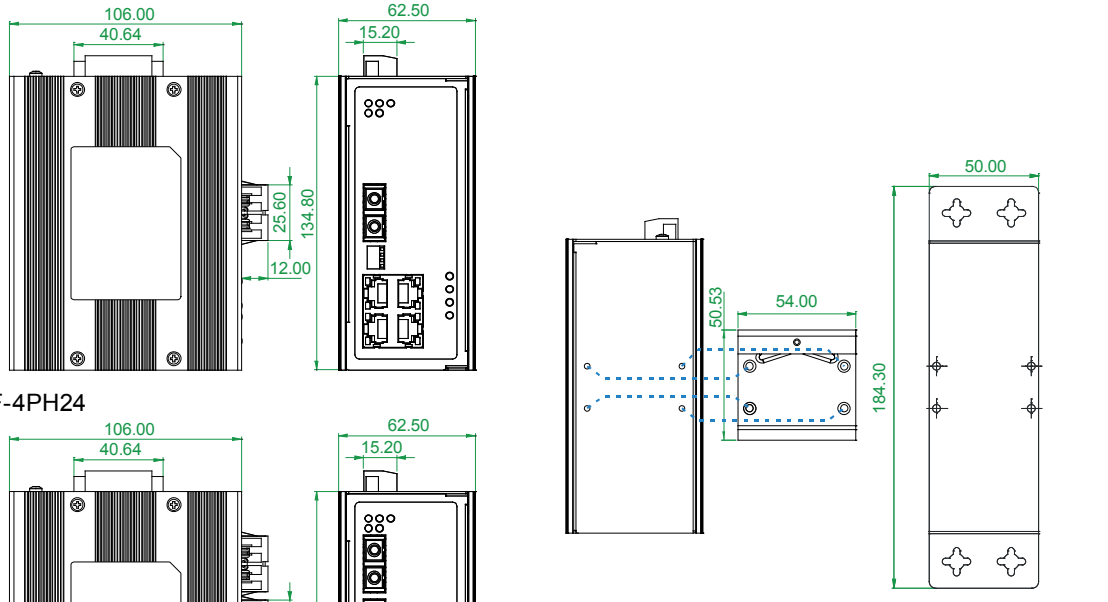
Dimensions

IGS-402S-4PH24



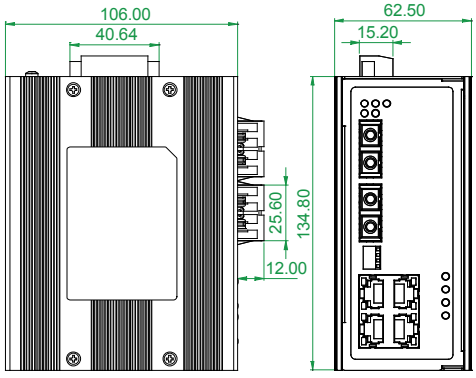
Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View

IGS-401F-4PH24



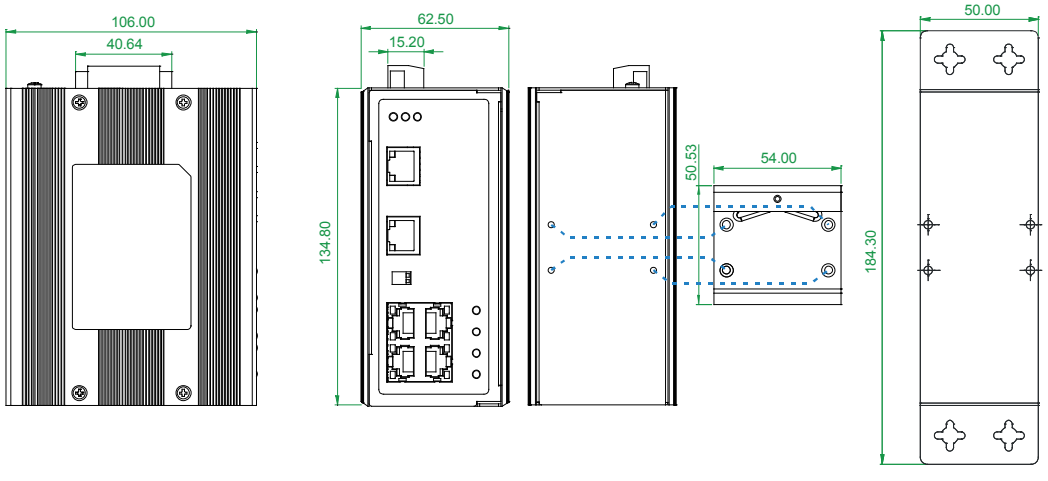
Rear View | DIN-Rail Kit View | Wall-Mount Kit View

IGS-402F-4PH24



Side View | Front View

IGS-600-4PH24

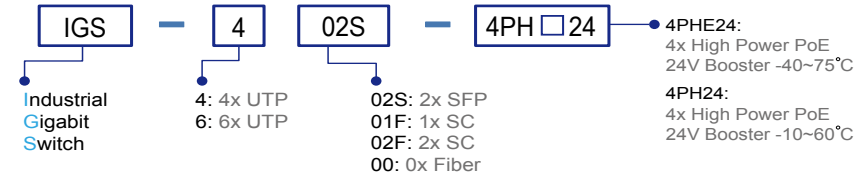


Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View

Ordering Information

Model Name	Port	UTP Port	Fiber Port		Certification				Operating Temperture
		10/100/1000 Base-T(X)	1000 Base-X	100/1000 Base-X	Railway EN50121-4	Safety UL60950-1	EN61000-6-2 EN61000-6-4	CE, FCC	
IGS-402S-4PH24	6	4	—	2 SFP	V	V	V	V	-10~60°C
IGS-402S-4PHE24	6	4	—	2 SFP	V	V	V	V	-40~75°C
IGS-401F-4PH24	5	4	1 SC	—	V	V	V	V	-10~60°C
IGS-401F-4PHE24	5	4	1 SC	—	V	V	V	V	-40~75°C
IGS-402F-4PH24	6	4	2 SC	—	V	V	V	V	-10~60°C
IGS-402F-4PHE24	6	4	2 SC	—	V	V	V	V	-40~75°C
IGS-600-4PH24	6	6	—	—	V	V	V	V	-10~60°C
IGS-600-4PHE24	6	6	—	—	V	V	V	V	-40~75°C

Model Naming Rule

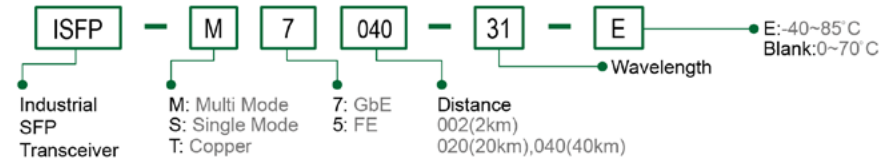


Fiber Connector Type	Connectivity Distance
SC (Only for IGS-401F-4PH24, IGS-402F-4PH24)	SC001: 500m (SC, M/M) SC002: 2km (SC, M/M) SC020: 20km (SC, S/M) SC040: 40km (SC, S/M) SC020A: WDM 20km A type (TX: 1310nm) SC020B: WDM 20km B type (TX: 1550nm)

Accessories

DR-120-24	Industrial Power, Input 88 ~ 132VAC / 176 ~ 264VAC, Output 24VDC, 120W, -10 ~ +60°C
DRP-240-48	Industrial Power, Input 85 ~ 264VAC, Output 48VDC, 240W, -10 ~ +70°C

SFP Naming Rule



120 or 180 Watts, 24V Booster

IGS-402SM-4PH24

4x10/100/1000Base-T + 2x100/1000Base-X SFP with 4xPoE+

IGS-803SM-8PH24

8x10/100/1000Base-T + 3x100/1000Base-X SFP with 8xPoE+

The series models are managed industrial grade Gigabit PoE (Power over Ethernet) switches with 4/8 ports 10/100/1000Base-T PoE ports and 2/3 ports Fast/Gigabit Ethernet SFP ports that provide stable and reliable Ethernet transmission. With dual power input design, the series models can provide redundancy mechanism 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.

Apart from specially-designed outlook and hardware features, the Ethernet switches also support a wide variety of management functions, including STP/RSTP/MSTP/ ITU-T G.8032 Ring and multiple u-Ring for redundant cabling, advanced PoE management functions such as PoE device auto-checking and auto reset, PoE power on/off weekly scheduling, layer 2 Ethernet IGMP, VLAN, QoS, Security, IPv6, bandwidth control, port mirroring, cable diagnostics and Green Ethernet. Additionally, these switches can work with CTC Union's proprietary SmartView that offers user-friendly and centralized network management platform and provides to network administrators to monitor and configure these connected switches remotely.

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 redundant dual input power with built-in very high efficiency booster(94~97%) to rise up 55 VDC for PoE output
- Constant and regulated PoE output voltage at 55VDC
- 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
- UL60950-1, CE, FCC, Rail Traffic EN50121-4 certified
- Industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- 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 u-Ring, u-Chain or Sub-Ring type for flexible uses (Figure 3). Supports up to 5 rings in one device (Figure 2).
- u-Ring for Redundant Cabling, recovery time<10ms in 250 devices
- DHCP 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
- Support IEEE1588 PTP V2 for precise time synchronization to operate in Master, Boundary, 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
- Supports SmartView for centralized 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 802.3af	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)
	IEEE 802.1X	Port based and MAC based Network Access Control, Authentication
	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)
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
Console	RS-232 (RJ-45)
PoE 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)
Network Cable	UTP/STP above Cat. 5e cable EIA/TIA-568 100-ohm (100m)
Protocols	CSMA/CD
Reverse Polarity Protection	Present

Overload Current Protection	Present
CPU Watch Dog	Present
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
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%

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
MAC Address Table	8K
Memory Buffer	256K 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
MTBF	276,161Hrs (IGS-402SM-4PH24) 311,376Hrs (IGS-803SM-8PH24) (MIL-HDBK-217)
Warranty	5 years
Certification	
EMC	CE
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A,CE EN55022 Class A
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
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 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
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 (Figure 2,3,4,5). Recovery time <10ms The maximum number of devices allowed in a Ring supported ring is 250.
Loop Protection	Present
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
RADIUS authentication & accounting	
TACACS+ authentication & accounting, TACACS+ 3.0	
HTTPS, HTTP	
SSL / SSH v2	
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

DHCP	Client
	Relay
	Snooping
	Snooping option 82
	Relay option 82
IP Source Guard	
Port Mirroring	
Event Syslog	Syslog server (RFC3164) (Support 1 server)
Warning Message	System syslog, e-mail, alarm relay
DNS	Client, Proxy
IEEE1588 PTP V2	Master, Boundary, Slave Operating mode Operating in each port of these switch
NTP / SNTP	
LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol
	LLDP-MED
IPv6 Features	
IPv6 Management	Telnet Server/ICMP v6
SNMP over IPv6	
HTTP over IPv6	
SSH over IPv6	
IPv6 Telnet Support	
IPv6 NTP / SNTP Support	
IPv6 TFTP Support	
IPv6 QoS	
IPv6 ACL	Number of rules: up to 256 entries
	L2 / L3 / L4
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
Green Ethernet	Lower the power for a port when there is no link
	LED Power Management :Adjustment LEDs intensity
Cable Diagnostic	Measuring 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 budge limitation (maximum 120W for IGS-402SM-4PH24 ,180W for IGS-803SM-8PH24) Power feeding priority

Application

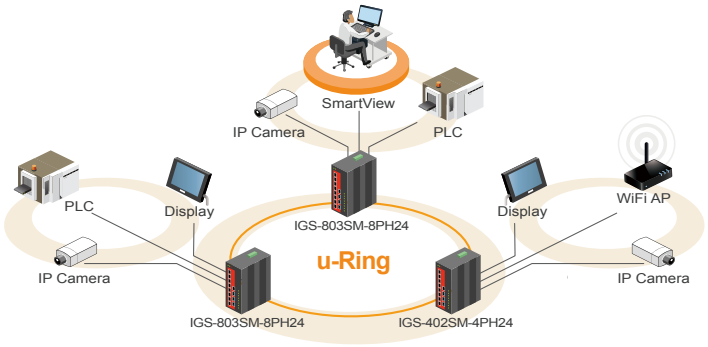


Figure 1 : Application Example

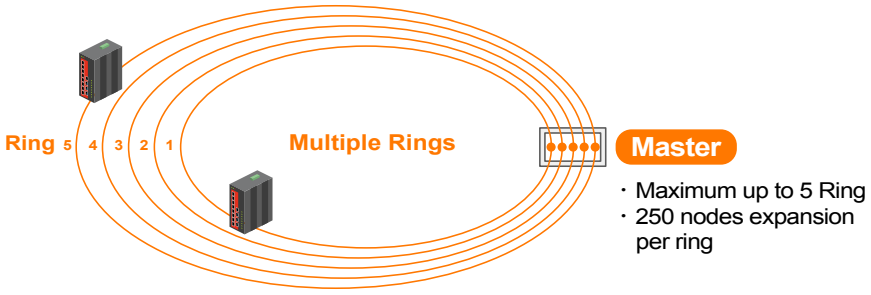


Figure 2 : Multiple Ring

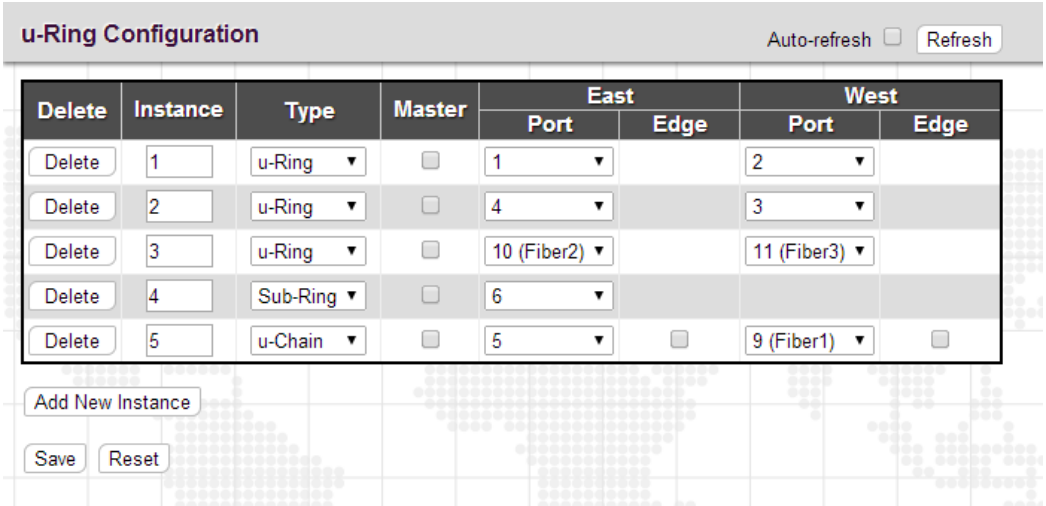
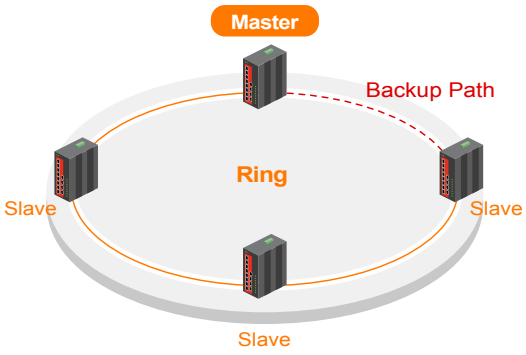
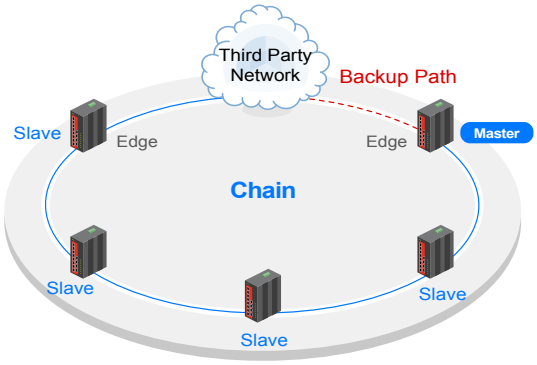


Figure 3 : Friendly to set u-Ring configuration in Web

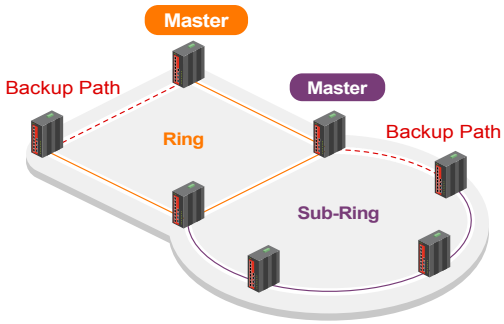
Figure 4 : u-Ring Type



u-Ring Type

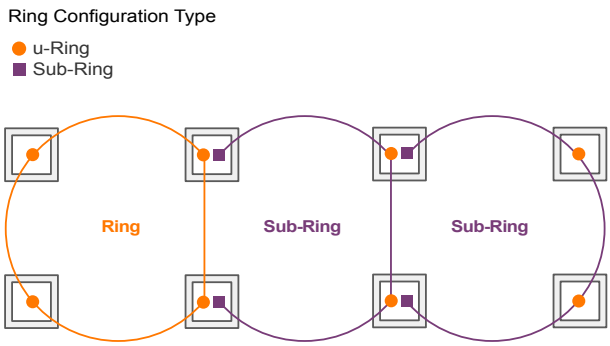


Determining the backup path (u-Chain type)

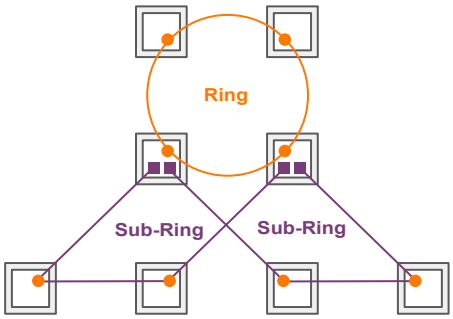


A major ring and a Sub-Ring topology

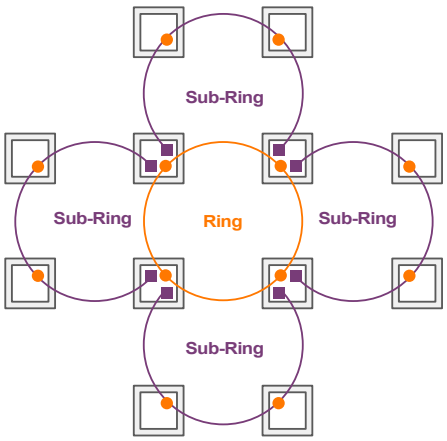
Figure 5 : Ring Configuration Example



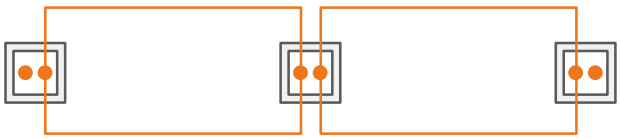
Ring Configuration Type



Combination of a ring and two Sub-Ring



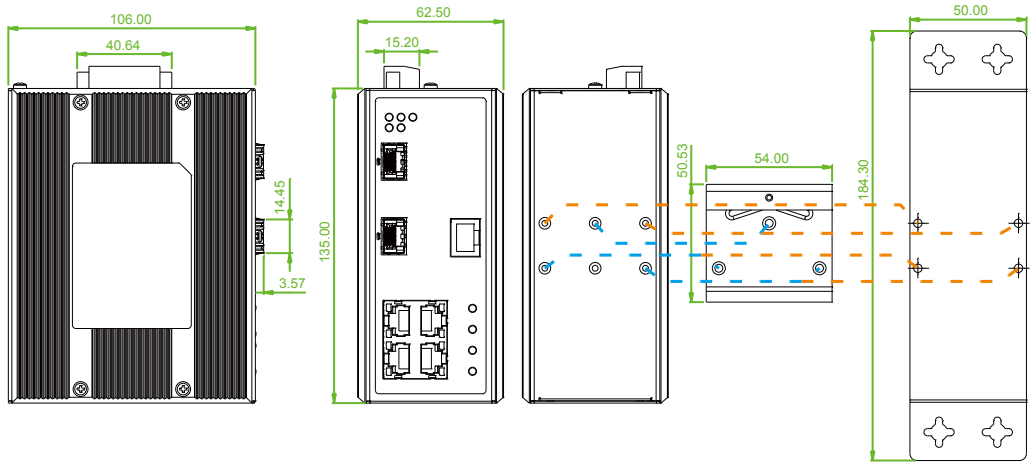
Combination of a ring and four Sub-Ring



Cable Redundancy

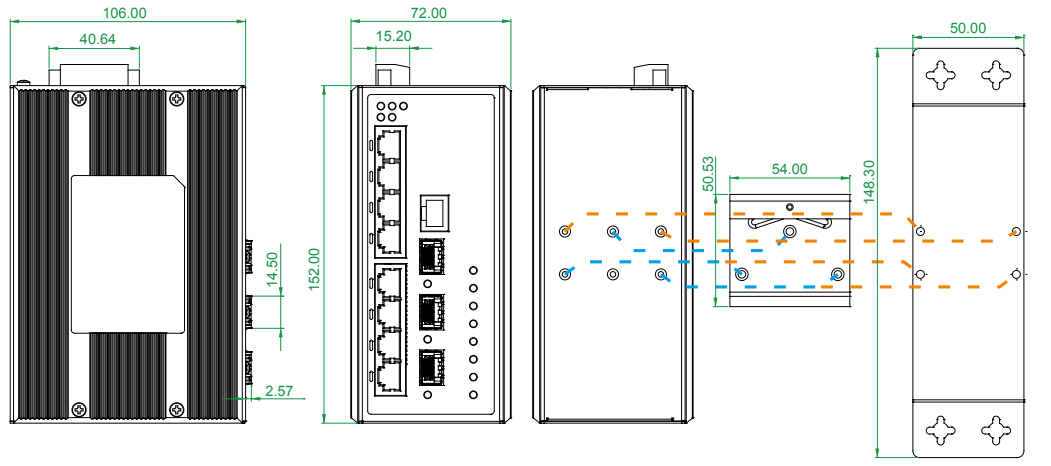
Dimensions

IGS-402SM-4PH24



Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View

IGS-803SM-8PH24



Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View

Ordering Information

Model Name	Managed	Total Port	UTP	Fiber	PoE Port		Certification				Operating Temperture
			10/100/1000 Base-T	100/1000 Base-X	IEEE 802.3at	Power Budget	Railway EN50121-4	Safety UL60950-1	EN61000-6-2 EN61000-6-4	CE, FCC	
IGS-402SM-4PH24	V	6	4	2 SFP	4	120W	V	V	V	V	-10~60 C
IGS-402SM-4PHE24	V	6	4	2 SFP	4	120W	V	V	V	V	-40~75 C
IGS-803SM-8PH24	V	11	8	3 SFP	8	180W	V	V	V	V	-10~60 C
IGS-803SM-8PHE24	V	11	8	3 SFP	8	180W	V	V	V	V	-40~75 C

Model Naming Rule

IGS - 8 - 03S - M - 8PH - E24

- IGS: Industrial Gigabit Switch
- 8: 4: 4x UTP; 8: 8x UTP
- 03S: 02S: 2x SFP; 03S: 3x SFP
- M: Managed
- 8PH: 4PH: 4x High Power PoE; 8PH: 8x High Power PoE
- E24: E24: 24V Booster -40~75℃; 24: 24V Booster-10~60℃

Accessories

DR-120-24	Industrial Power, Input 88 ~ 132VAC / 176 ~ 264VAC, Output 24VDC, 120W, -10 ~ +60℃
DRP-240-48	Industrial Power, Input 85 ~ 264VAC, Output 48VDC, 240W, -10 ~ +70℃
SFP Transceiver	Compatible, Reliable, 5-year Warranty

SFP Naming Rule

ISFP - M - 7 - 040 - 31 - E

- ISFP: Industrial SFP Transceiver
- M: M: Multi Mode; S: Single Mode; T: Copper
- 7: 7: GbE; 5: FE
- 040: Distance 002(2km) 020(20km),040(40km)
- 31: Wavelength
- E: E:-40~85°C; Blank:0~70°C

120 or 180 Watts, 24V Booster

IFS-402GSM-4PH24

4x10/100Base-TX + 2x100/1000Base-X SFP with 4xPoE+

IFS-803GSM-8PH24

8x10/100Base-TX + 3x100/1000Base-X SFP with 8xPoE+

The series models are managed industrial grade Ethernet PoE (Power over Ethernet) switches with 4/8 ports 10/100Base-TX PoE ports and 2/3 ports Fast/Gigabit Ethernet SFP ports that provide stable and reliable Ethernet transmission. With dual power input design, the series models can provide redundancy mechanism 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.

Apart from specially-designed outlook and hardware features, the Ethernet switches also support a wide variety of management functions, including STP/RSTP/MSTP/ ITU-T G.8032 Ring and multiple u-Ring for redundant cabling, advanced PoE management functions such as PoE device auto-checking and auto reset, PoE power on/off weekly scheduling, layer 2 Ethernet IGMP, VLAN, QoS, Security, IPv6, bandwidth control, port mirroring, cable diagnostics and Green Ethernet. Additionally, these switches can work with CTC Union's proprietary SmartView that offers user-friendly and centralized network management platform and provides to network administrators to monitor and configure these connected switches remotely.

Features

- 4x 10/100Base-TX RJ-45+ 2x 100/1000Base-X SFP with 4x PoE+, total 120W power budget (IFS-402GSM-4PH24)
- 8x 10/100Base-TX RJ-45+ 3 x100/1000Base-X SFP with 8x PoE+, total 180W power budget (IFS-803GSM-8PH24)
- 24/48VDC redundant dual input power with built-in very high efficiency booster(94~97%) to rise up 55 VDC for PoE output
- Constant and regulated PoE output voltage at 55VDC
- 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
- UL60950-1, CE, FCC, Rail Traffic EN50121-4 certified
- Industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- 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 u-Ring, u-Chain or Sub-Ring type for flexible uses (Figure 3). Supports up to 5 rings in one device (Figure 2).
- u-Ring for Redundant Cabling, recovery time<10ms in 250 devices
- DHCP 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
- Support IEEE1588 PTP V2 for precise time synchronization to operate in Master, Boundary, 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
- Supports SmartView for centralized 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 802.3af	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)
	IEEE 802.1X	Port based and MAC based Network Access Control, Authentication
	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): 4.8Gbps (IFS-402GSM-4PH24) 7.6Gbps (IFS-803GSM-8PH24)
Data Processing	Store and Forward
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode
Network Connector	4x 10/100Base-TX RJ-45 + 2x 100/1000Base-X SFP connector (IFS-402GSM-4PH24) 8x 10/100Base-TX RJ-45 + 3x 100/1000Base-X SFP connector (IFS-803GSM-8PH24) RJ-45 UTP port support Auto negotiation speed, Auto MDI/MDI-X function, SFP port support 100/1000 dual speed with DDMI
Console	RS-232 (RJ-45)
PoE RJ-45 Pin Assignment	4x IEEE 802.3af /IEEE 802.3at PoE+ (IFS-402GSM-4PH24) 8x IEEE 802.3af /IEEE 802.3at PoE+ (IFS-803GSM-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)
Network Cable	UTP/STP above Cat. 5e cable EIA/TIA-568 100-ohm (100m)
Protocols	CSMA/CD
Reverse Polarity Protection	Present

Overload Current Protection	Present
CPU Watch Dog	Present
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
Power Consumption	IFS-402GSM-4PH24 Power consumption & Booser efficiency

Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget	Boost Efficiency
24VDC	134.8W	7.1W	120W	94.0%
48VDC	132.2W	8.5W	120W	97.2%

IFS-803GSM-8PH24 Power consumption & Booser efficiency

Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget	Boost Efficiency
24VDC	198.3W	7.3W	180W	94%
48VDC	193.2W	7.9W	180W	97%

LED	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber), CPU Act (Green), Ring Master (Yellow) Per RJ-45 port: Link/Active (Green) 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
MAC Address Table	8K
Memory Buffer	256K 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 (IFS-402GSM-4PH24, IFS-803GSM-8PH24) -40 ~ 75°C (IFS-402GSM-4PHE24, IFS-803GSM-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) (IFS-402GSM-4PH24) 106 x 72 x 152 mm (D x W x H) (IFS-803GSM-8PH24)
Weight	0.715kg (IFS-402GSM-4PH24) 0.96kg (IFS-803GSM-8PH24)
Installation Mounting	DIN Rail mounting or wall mounting
MTBF	276,161Hrs (IFS-402GSM-4PH24) 314,064Hrs (IFS-803GSM-8PH24) (MIL-HDBK-217)
Warranty	5 years
Certification	
EMC	CE
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A,CE EN55022 Class A
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
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 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
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 (Figure 2,3,4,5). Recovery time <10ms The maximum number of devices allowed in a Ring supported ring is 250.
Loop Protection	Present
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
RADIUS authentication & accounting	
TACACS+ authentication & accounting, TACACS+ 3.0	
HTTPS, HTTP	
SSL / SSH v2	
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

DHCP	Client
	Relay
	Snooping
	Snooping option 82
	Relay option 82
IP Source Guard	
Port Mirroring	
Event Syslog	Syslog server (RFC3164) (Support 1 server)
Warning Message	System syslog, e-mail, alarm relay
DNS	Client, Proxy
IEEE1588 PTP V2	Master, Boundary, Slave Operating mode Operating in each port of these switch
NTP / SNTP	
LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol
	LLDP-MED
IPv6 Features	
IPv6 Management	Telnet Server/ICMP v6
SNMP over IPv6	
HTTP over IPv6	
SSH over IPv6	
IPv6 Telnet Support	
IPv6 NTP / SNTP Support	
IPv6 TFTP Support	
IPv6 QoS	
IPv6 ACL	Number of rules: up to 256 entries
	L2 / L3 / L4
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
Green Ethernet	Lower the power for a port when there is no link
	LED Power Management :Adjustment LEDs intensity
Cable Diagnostic	Measuring 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 budge limitation (maximum 120W for IFS-402GSM-4PH24 ,180W for IFS-803GSM-8PH24) Power feeding priority

Application

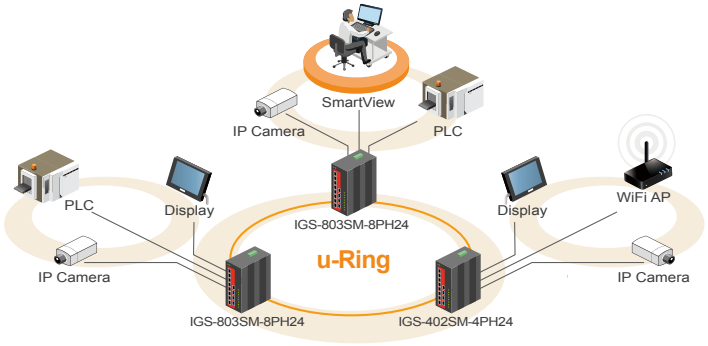


Figure 1 : Application Example

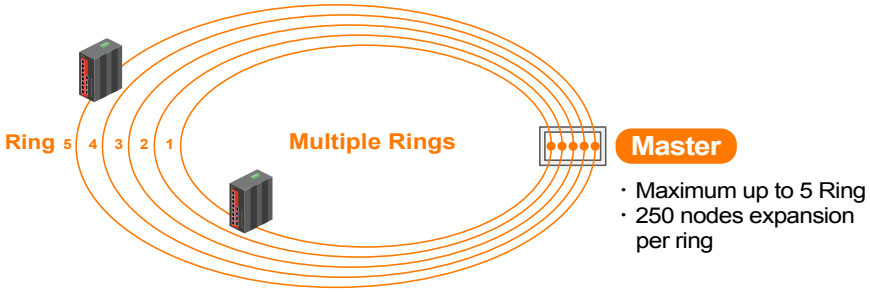


Figure 2 : Multiple Ring

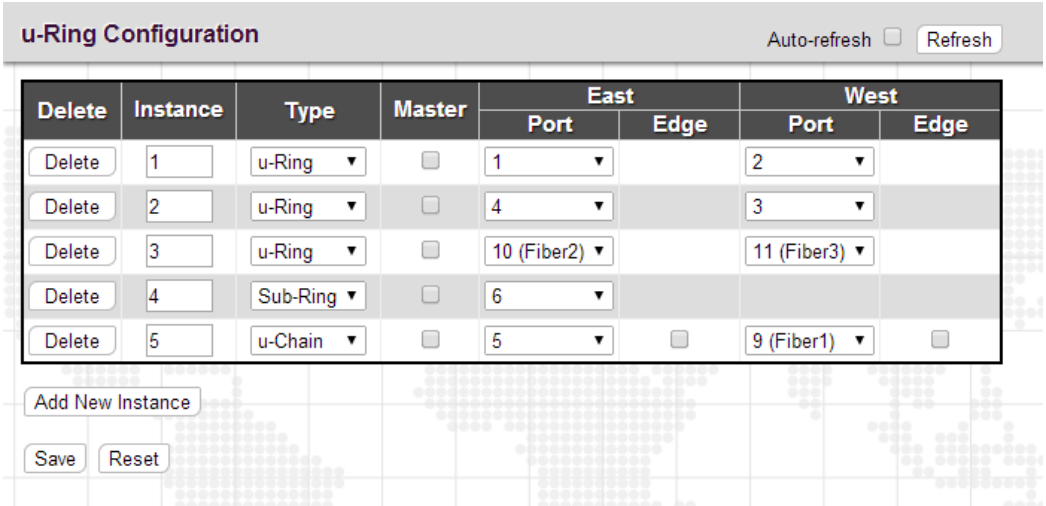


Figure 3 : An illustration of u-Ring instances configured in Web interface

Figure 4 : u-Ring Type

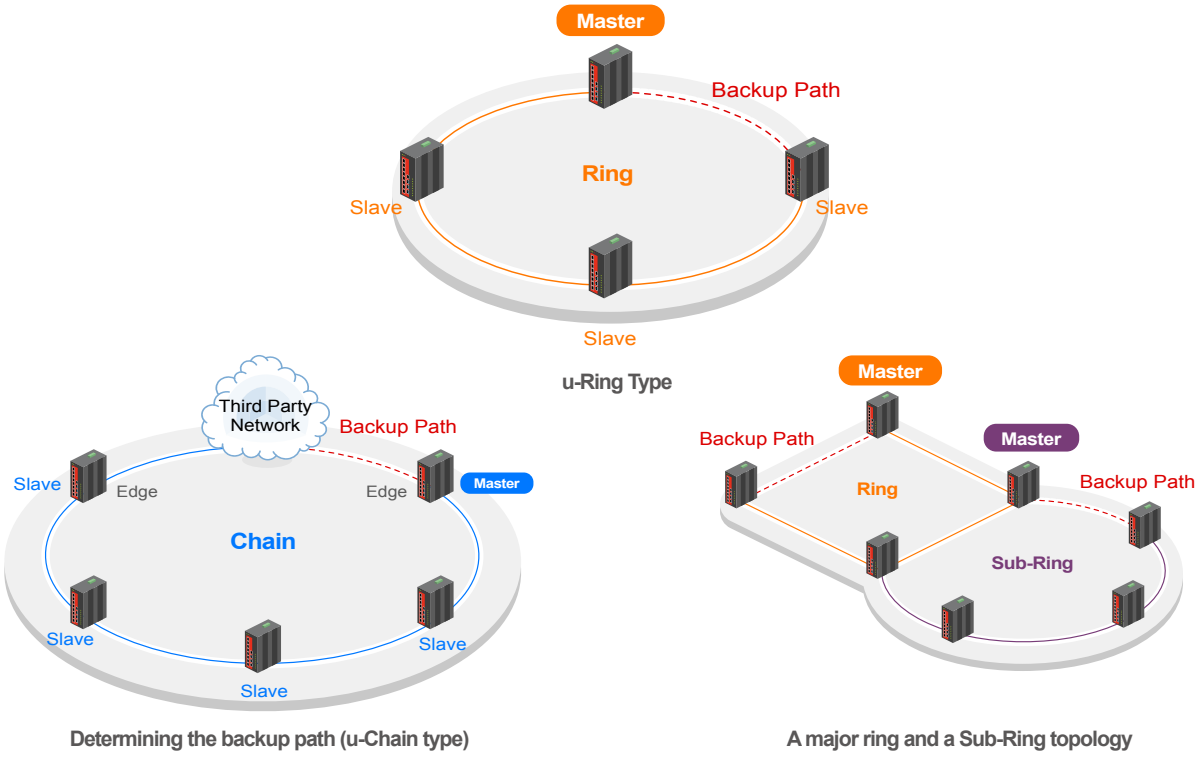
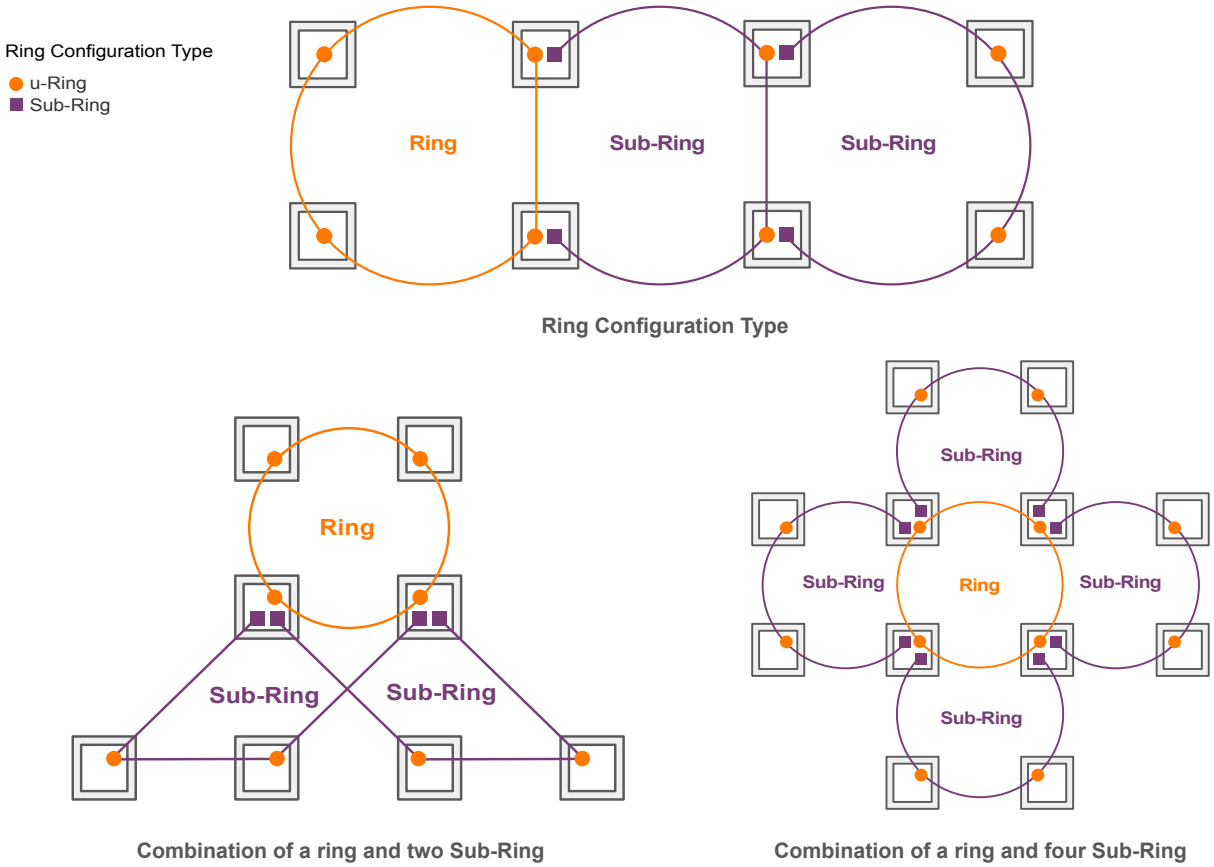
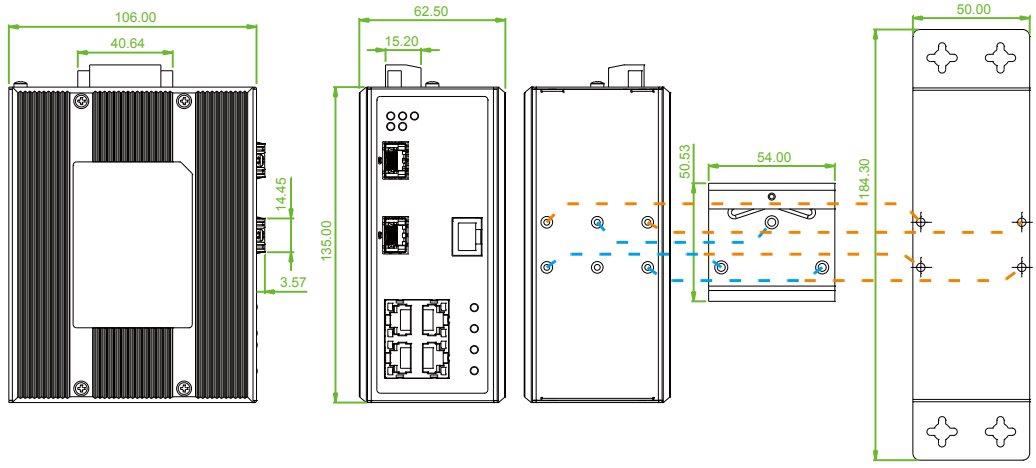


Figure 5 : Ring Configuration Example



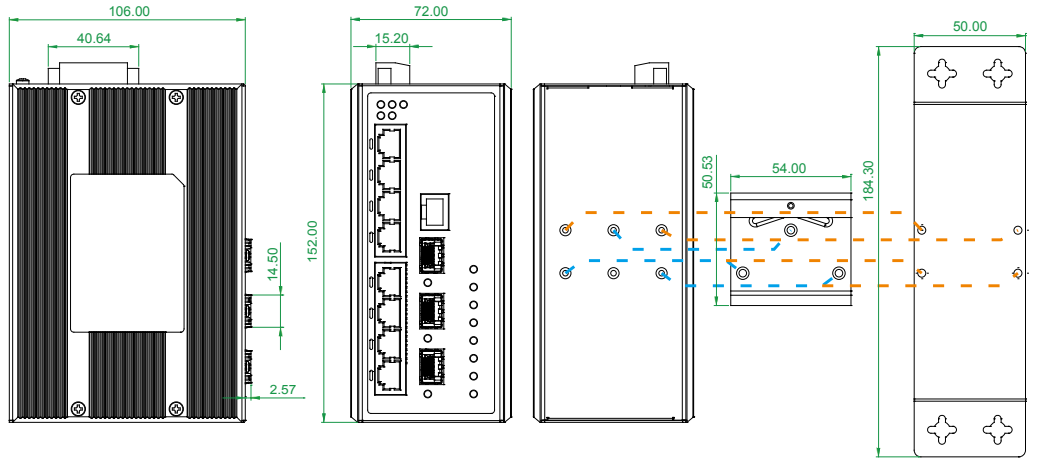
Dimensions

IFS-402GSM-4PH24



Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View

IFS-803GSM-8PH24



Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View

Ordering Information

Model Name	Managed	Total Port	UTP	Fiber	PoE Port		Certification				Operating Temperture
			10/100 Base-TX	100/1000 Base-X	IEEE 802.3at	Power Budget	Railway EN50121-4	Safety UL60950-1	EN61000-6-2 EN61000-6-4	CE, FCC	
IFS-402GSM-4PH24	V	6	4	2 SFP	4	120W	V	V	V	V	-10~60 C
IFS-402GSM-4PHE24	V	6	4	2 SFP	4	120W	V	V	V	V	-40~75 C
IFS-803GSM-8PH24	V	11	8	3 SFP	8	180W	V	V	V	V	-10~60 C
IFS-803GSM-8PHE24	V	11	8	3 SFP	8	180W	V	V	V	V	-40~75 C

Model Naming Rule

IFS - 8 03GS M - 8PH E24

- IFS: Industrial Fast Ethernet Switch
- 8: 4: 4x FE UTP; 8: 8x FE UTP
- 03GS: 02GS: 2xGbE SFP; 03GS: 3xGbE SFP
- M: Managed
- 8PH: 4PH: 4x High Power PoE; 8PH: 8x High Power PoE
- E24: E24: 24V Booster -40~75℃; 24: 24V Booster-10~60℃

Accessories

DR-120-24	Industrial Power, Input 88 ~ 132VAC / 176 ~ 264VAC, Output 24VDC, 120W, -10 ~ +60℃
DRP-240-48	Industrial Power, Input 85 ~ 264VAC, Output 48VDC, 240W, -10 ~ +70℃
SFP Transceiver	Compatible, Reliable, 5-year Warranty

SFP Naming Rule

ISFP - M 7 040 - 31 - E

- ISFP: Industrial SFP Transceiver
- M: Multi Mode; S: Single Mode; T: Copper
- 7: GbE; 5: FE
- Distance: 002(2km); 020(20km),040(40km)
- 31: Wavelength
- E: E:-40~85°C; Blank:0~70°C

30 Watts,
12V Booster

CE FC EN50121-4 EN61000-6-2 EN61000-6-4 PoE Regulated

IMC-1000-PH12

10/100/1000Base-T to 100/1000Base-FX/SX/LX with PoE + (PSE) Fiber Converter

IMC-1000S-PH12

10/100/1000Base-T to 100/1000Base-X SFP with PoE + (PSE) Fiber Converter

IMC-1000(S)-PH12 is a family of non-managed Gigabit Ethernet media converters that support conversion between electrical 10/100/1000Base-T and optical 1000Base-X Ethernet and as PSE (Power Source Equipment) provide PoE+ power over Ethernet. Two options are available for optical interfaces, the IMC-1000-PH12 uses a fixed optical transceiver operating at 1000Base-X, while the IMC-1000S-PH12 provides an SFP cage for 100/1000Base-X compatible SFP modules. Housed in rugged DIN rail or wall mountable enclosures, these converters are designed 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.

Features

- Conversion between 10/100/1000Base-T and 100/1000Base-X Fiber cable interface
- Supports dual rate (100/1000) SFP for selectable Fast or Gigabit speed on fiber
- 12/24/48VDC (9.6~57VDC) redundant dual input power with built-in very high efficiency booster (97~99%) to rise up 55 VDC for PoE output
- Constant and regulated PoE output voltage at 55VDC
- Provides IEEE802.3at PoE output (30Watts)
- Supports Remote PD reset by fiber port link down
- Supports LFPT (Link Fault Pass Through)
- IP30 rugged metal housing and fanless
- Wide operating temperature -20~75°C (IMC-1000-PHE12, IMC-1000S-PHE12)
- CE, FCC, Railway traffic EN50121-4 certification
- Industrial grade EMS,EMI EN61000-6-2, EN61000-6-4 certification
- Supports Jumbo frame 9K bytes packet

Specifications

Standard	IEEE802.3 10Base-T 10Mbit/s Ethernet
	IEEE802.3u 100Base-TX, 100Base-FX, Fast Ethernet
	IEEE802.3ab 1000Base-T Gbit/s Ethernet over twisted pair
	IEEE802.3z 1000Base-X Gbit/s Ethernet over Fiber-Optic
	IEEE802.3x Flow Control and Back pressure
	IEEE802.3at Power over Ethernet+, PoE+
	IEEE802.3af Power over Ethernet, PoE
	IEEE802.1q Tag VLAN
RJ45 Ports	10/100/1000Base-T
Fiber Ports	100/1000Base-SX/LX (IMC-1000-PH12, IMC-1000-PHE12)
	100/1000Base-X SFP (IMC-1000S-PH12, IMC-1000S-PHE12)
Data Process Architecture	Store and Forward mode or Pass Through mode Set by DIP SW
Jumbo Frame	9K bytes
Fiber Parameters	Fiber Cable (Multi-mode): 50/125um, 62.5/125um
	Fiber Cable (Single-mode): 9/125um
	Wavelength: 1310nm (Multi-mode/Single-mode)
	Available distance: • 500M (Multi-mode SX), 20KM (Single-mode), 50KM(Single-mode) (IMC-1000-PH12, IMC-1000-PHE12) • SFP, Distance depend on plug-in Fiber Transceiver (IMC-1000S-PH12, IMC-1000S-PHE12)
Link Fault Pass Through (LFPT)	TX- Fiber: If TX port link down, the media converter will force Fiber port to link down
	Fiber-TX: If Fiber port link down, the media converter will force TX port to link down
DIP Switch	ON: Disable Alarm For Power Loss OFF: Enable Alarm For Power Loss
	ON: Disable Alarm For Port Link-Failure OFF: Enable Alarm For Port Link-Failure
	ON: LFPT Enable, OFF: LFPT Disable
	Data process Architecture : ON : Pass through mode OFF : Store and Forward Switch mode
	Fiber Speed: OFF: 1000Base-X ON: 100Base-X
	PoE Output: OFF: Enable PoE output ON: Disable PoE output
	Remote PD reset Off : Disable Remote PD reset On: Enable Remote PD reset by fiber port link down
Connector and Pin Assignment	Fiber: SC (Multi-mode, 500M), SC (Single-mode, 20KM, 40KM) (IMC-1000-PH12, IMC-1000-PHE12) SFP Slot (IMC-1000S-PH12, IMC-1000S-PHE12)

Connector and Pin Assignment	RJ-45 Socket: CAT-3/5 (10/100/1000Mbps) Twisted Pair cable Auto MDI/MDI-X and Auto-Negotiation Function Support RJ-45 Port support IEEE 802.3at/af End-Span, Alternative A mode. PoE (V+): RJ-45 pin 1, 2. PoE (V-): RJ-45 pin 3, 6. Data (1,2,3,6,4,5,7,8)
LED	Per Unit :Power 1 (Green) ,Power 2 (Green) ,Fault (Amber)
	Fiber LNK/ACT (Green): ON: Connected to network, OFF: Not connected to network , BLK: Receive /Transmit Data
	Fiber Speed : Yellow : 1000Base-X, Green : 100 Base- X
	RJ-45 Port: Speed: 10 (OFF), 100 (Green), 1000 (Yellow)
	LNK/ACT for RJ45(Green): ON: Connected to network, OFF: Not connected to network, BLK: Networking is active
	PoE Status (Green): Flash: PoE Fault (Over-load or short), ON: PoE normal working, OFF : PoE No Power output
Reverse Polarity Protection	Present for Power Input
Overload Current Protection	Present
Power Supply	12/24/48VDC (9.6~57VDC), Redundant power with polarity reverse protect function and removable terminal block Built-in very high efficiency booster(97~99%) to rise up 55 VDC for PoE output
Power Consumption	IMC-1000-PH12 Power consumption & Booser efficiency

Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget	Boost Efficiency
12VDC	34.4W	3.9W	30W	98.4%
24VDC	34.9W	4.5W	30W	98.7%
48VDC	35.4W	4.7W	30W	97.7%

IMC-1000S-PH12 Power consumption & Booser efficiency

Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget	Boost Efficiency
12VDC	34.2W	3.9W	30W	99.0%
24VDC	34.7W	4.4W	30W	99.0%
48VDC	35.4W	4.7W	30W	97.7%

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 Humidity	5%~95% (Non-condensing)
Operating Temperature	-10°C~60°C (IMC-1000-PH12, IMC-1000S-PH12) -20°C~75°C (IMC-1000-PHE12, IMC-1000S-PHE12)
Storage Temperature	-40°C~85°C
Housing	Rugged Metal, IP30 Protection and fanless
Dimensions	106 x 38.6 x 142 mm(D x W x H)
Weight	655g (IMC-1000-PH12, IMC-1000-PHE12) 650g (IMC-1000S-PH12, IMC-1000S-PHE12)
Installation	DIN Rail mounting or wall mounting
Certification	
EMC	CE
EMI	FCC Part 15 Subpart B Class A, CE EN 55022 Class A
Railway Traffic	EN50121-4
Immunity for Heavy Industrial environment	EN 61000-6-2
Emission for Heavy industrial environment	EN 61000-6-4
EMS	EN61000-4-2 (ESD) Level 3, Criteria B EN61000-4-3 (RS) Level 3, Criteria A EN61000-4-4 (EFT) Level 3, Criteria A EN 61000-4-5 (Surge) Level 3, Criteria B EN 61000-4-6 (CS) Level 3, Criteria A EN61000-4-8 (PFMF) Field strength 300A/m Criteria A
Safety	UL60950-1 (pending)
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
MTBF	419,822Hrs (IMC-1000-PH12, IMC-1000-PHE12) 432,104Hrs (IMC-1000S-PH12, IMC-1000S-PHE12) MIL-HDBK-217
Warranty	5 years

Application

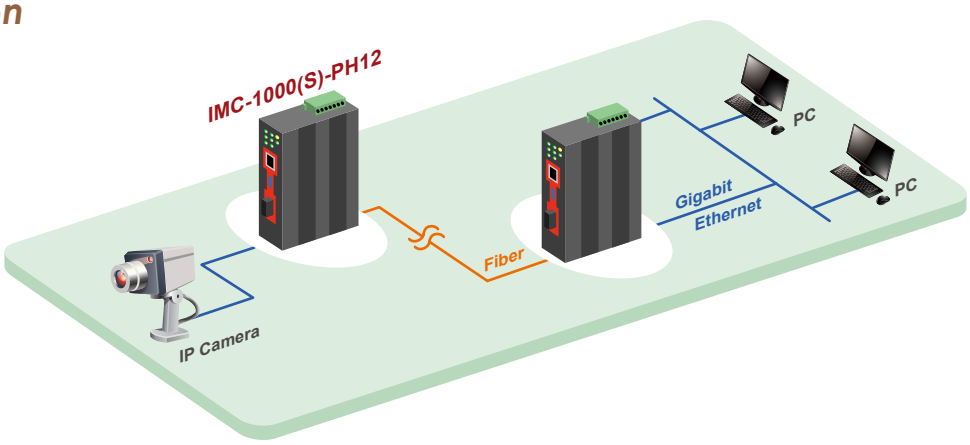
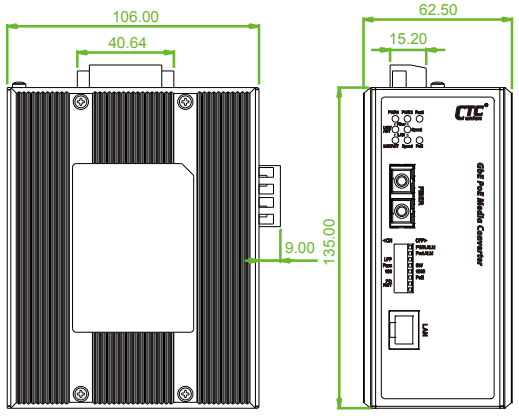


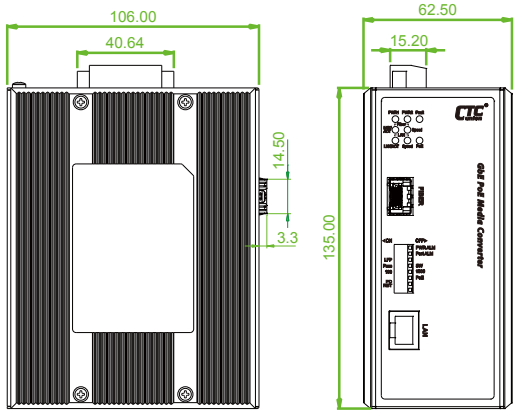
Figure : IMC-1000(S)-PH12 Industrial PoE Transmission

Dimensions

IMC-1000-PH12

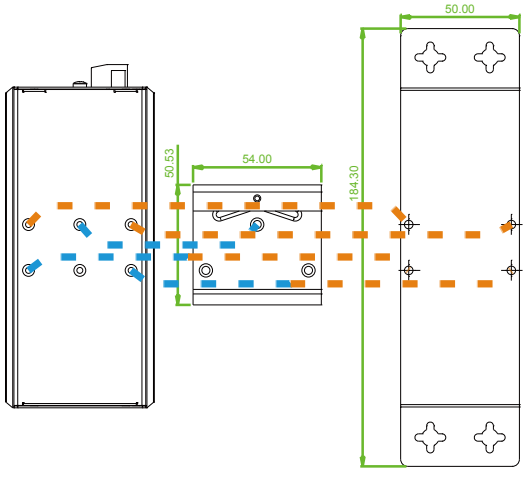


IMC-1000S-PH12



Side View

Front View



Rear View

DIN-Rail Kit View

Wall-Mount Kit View

Ordering Information

Model Name	UTP	Fiber	PoE Port		Input Voltage (Boost)	Certification				Operating Temperture
	10/100/1000 Base-T	Dual Speed 100/1000Base-X	IEEE802.3at (PSE)	Power Budget		Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE	FCC	
IMC-1000-PH12	1	1 SC	1	30W	12/24/48VDC	V	V	V	V	-10~60℃
IMC-1000-PHE12	1	1 SC	1	30W	12/24/48VDC	V	V	V	V	-20~75℃
IMC-1000S-PH12	1	1 SFP	1	30W	12/24/48VDC	V	V	V	V	-10~60℃
IMC-1000S-PHE12	1	1 SFP	1	30W	12/24/48VDC	V	V	V	V	-20~75℃

Model Naming Rule

IMC – 1000 S – PH E12

- IMC: Industrial Media Converter
- 1000: 1000Base-X Converter
- S: SFP type; Blank: Fix fiber type
- PH: 1x High Power PoE
- E12: 12V Booster-20~75℃; 12: 12V Booster-10~60℃

Fiber Connector Type	Connectivity Distance
SC (IMC-1000-PH12 & IMC-1000-PHE12 only)	001: 500M (M/M) 002: 2km (M/M) 020: 20km (S/M) 040: 40km (S/M) 020A: WDM 20km A Type (TX:1310nm) 020B: WDM 20km B Type (TX:1550nm)

Temperature / Connector Type / Connectivity Distance

IMC-1000 –PH □12 - □□□□□

Example: IMC-1000 – PHE12 – SC001

Accessories

DR-4524	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 48W, -10 ~ +50℃
MDR-40-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70℃
MDR-60-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 60W, -20 ~ +70℃
SFP Transceiver	Compatible, Reliable, 5-year Warranty

SFP Naming Rule

ISFP – M 7 040 – 31 – E

- ISFP: Industrial SFP Transceiver
- M: Multi Mode; S: Single Mode; T: Copper
- 7: GbE; 5: FE
- Distance: 002(2km); 020(20km),040(40km)
- Wavelength: 00: Copper; 85: 850nm; 31: 1310nm; 55: 1550nm; WA: TX 1310/RX 1550 (Bidi Mode A); WB: TX 1550/RX 1310 (Bidi Mode B)
- E: -40~85℃; Blank: 0~70℃

30 Watts,
12V Booster

IMC-100-PH12

10/100Base-TX to 100Base-FX with PoE + (PSE) Fiber Converter

CE FC EN50121-4 EN61000-6-2 EN61000-6-4 PoE Regulated

IMC-100-PH12 is a family of non-managed Ethernet media converters that support conversion between electrical 10/100Base-TX and optical 100Base-FX Ethernet and as PSE (Power Source Equipment) provide PoE+ power over Ethernet. Housed in rugged DIN rail or wall mountable enclosures, these converters are designed 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.

Features

- Conversion between 10/100Base-TX and 100Base-FX SC or ST Fiber interface
- 12/24/48VDC (9.6~57VDC) redundant dual input power with built-in very high efficiency booster (98~99%) to rise up 55 VDC for PoE output
- Constant and regulated PoE output voltage at 55VDC
- Provides IEEE802.3at PoE output (30Watts)
- Supports Remote PD reset by fiber port link down
- Supports LFPT (Link Fault Pass Through)
- IP30 rugged metal housing and fanless
- Wide operating temperature -20~75°C (IMC-100-PHE12)
- CE, FCC, Railway traffic EN50121-4 certification
- Industrial grade EMS,EMI EN61000-6-2, EN61000-6-4 certification
- Supports Jumbo frame 9K bytes packet

Specifications

Standard	IEEE802.3 10Base-T 10Mbit/s Ethernet
	IEEE802.3u 100Base-TX, 100Base-FX, Fast Ethernet
	IEEE802.3x Flow Control and Back pressure
	IEEE802.3at Power over Ethernet+, PoE+
	IEEE802.3af Power over Ethernet, PoE
	IEEE802.1q Tag VLAN
RJ45 Ports	10/100Base-TX
Fiber Ports	100Base-FX with SC or ST connector
Data Process Architecture	Store and Forward mode or Pass Through mode (Set by DIP SW)
Jumbo Frame	9K bytes
Fiber Parameters	Fiber Cable (Multi-mode): 50/125um, 62.5/125um
	Fiber Cable (Single-mode): 9/125um
	Wavelength: 1310nm (Multi-mode/Single-mode)
	Available Distance: 2KM (Multi-mode), 30KM (Single-mode), 50KM(Single-mode)
Link Fault Pass Through (LFPT)	TX- Fiber: If TX port link down, the media converter will force Fiber port to link down
	Fiber-TX: If Fiber port link down, the media converter will force TX port to link down
DIP Switch	ON: Disable Alarm For Power Loss OFF: Enable Alarm For Power Loss
	ON: Disable Alarm For Port Link-Failure OFF: Enable Alarm For Port Link-Failure
	ON: LFPT Enable, OFF: LFPT Disable
	Data process Architecture : ON : Pass through mode OFF : Store and Forward Switch mode
	PoE Output OFF: Enable PoE output ON: Disable PoE output
	Remote PD reset OFF : Disable Remote PD reset ON: Enable Remote PD reset by fiber port link down
Fiber Connector	Fiber: SC / ST (Multi-mode, 2KM), SC / ST (Single-mode, 30KM, 50KM)
RJ45 Connector and Pin Assignment	RJ-45 Socket: CAT-3/5 (10/100Mbps) Twisted Pair cable Auto MDI/MDI-X and Auto-Negotiation Function Support RJ-45 Port support IEEE 802.3at/af End-Span, Alternative A mode. PoE (V+): RJ-45 pin 1, 2. PoE (V-): RJ-45 pin 3, 6. Data (1,2,3,6)

LED	Per Unit :Power 1 (Green) ,Power 2 (Green) ,Fault (Amber) Fiber LNK/ACT (Green): ON: Connected to network OFF: Not connected to network BLK: Receive /Transmit Data Fiber Speed :Green : 100 Base- X RJ-45 Port: Speed: 10 (OFF), 100 (Green) LNK/ACT for RJ45(Green): ON: Connected to network OFF: Not connected to network BLK: Networking is active PoE States (Green) Flash: PoE Fault (Over-load or short) ON: PoE normal working, OFF : PoE No Power output
Reverse Polarity Protection	Present for Power Input
Overload Current Protection	Present
Power Supply	12/24/48VDC (9.6~57VDC), Redundant power with polarity reverse protect function and removable terminal block Built-in very high efficiency booster(97~99%) to rise up 55 VDC for PoE output
Power Consumption	See table below
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 Humidity	5%~95% (Non-condensing)
Operating Temperature	-10°C~60°C (IMC-100-PH12) -20°C~75°C (IMC-100-PHE12)
Storage Temperature	-40°C~85°C
Housing	Rugged Metal, IP30 Protection and fanless
Dimensions	106 x 62.5 x 135 mm (D x W x H)
Weight	655g
Installation	DIN Rail mounting or wall mounting
MTBF	419,822hrs
Warranty	5 years

Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget	Boost Efficiency
12VDC	34W	3.5W	30W	98.4%
24VDC	34.4W	4.1W	30W	99.0%
48VDC	34.9W	4.3W	30W	98.0%

Certifications	
EMC	CE
EMI	FCC Part 15 Subpart B Class A, CE EN 55022 Class A
Railway Traffic	EN50121-4
Immunity for Heavy Industrial environment	EN 61000-6-2
Emission for Heavy industrial environment	EN 61000-6-4

EMS (Electromagnetic Susceptibility) Protection leve	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (EFT) Level 3, Criteria A
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (PFMF) Field strength 300A/m Criteria A
Safety	UL60950-1 (pending)
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Application

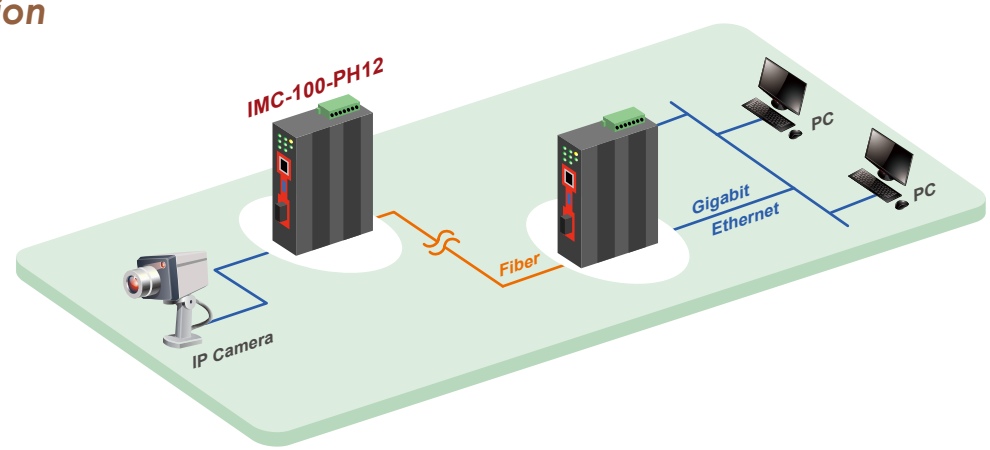
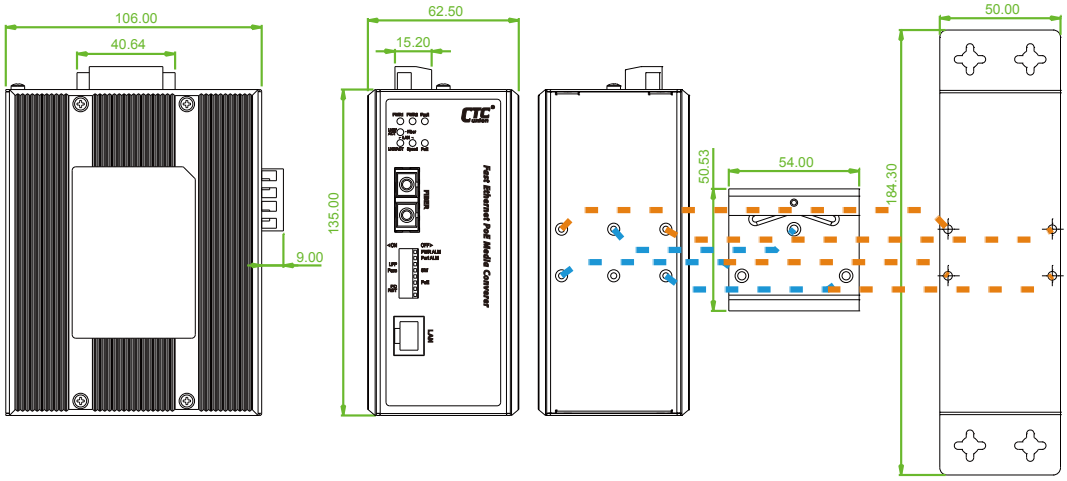


Figure : IMC-100-PH12 Industrial PoE Transmission

Dimensions



Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View

Ordering Information

Model Name	UTP	Fiber	PoE Port		Input Voltage (Boost)	Certification				Operating Temperture
	10/100 Base-TX	100Base-FX	IEEE802.3at (PSE)	Power Budget		Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE	FCC	
IMC-100-PH12	1	1 SC/ST	1	30W	12/24/48VDC	V	V	V	V	-10~60 C
IMC-100-PHE12	1	1 SC/ST	1	30W	12/24/48VDC	V	V	V	V	-20~75 C

Model Naming Rule

IMC – 100 – PH – E12

- IMC: Industrial Media Converter
- 100: 100Base Converter
- PH: 1x High Power PoE
- E12: 12V Booster-20~75°C
  12: 12V Booster-10~60°C

Fiber Connector Type	Connectivity Distance
SC, ST	002: 2km (M/M) 030: 30km (S/M) 050: 50km (S/M) 020A: WDM 20km A Type (TX:1310nm) 020B: WDM 20km B Type (TX:1550nm)

Temperature | Connector Type | Connectivity Distance

IMC-100 –PH □12 - □□□□□

Example: IMC-100 – PHE12 – SC002

LISTED EN50121-4 EN61000-6-2 EN61000-6-4

IMC-100-PD

10/100Base-TX to 100Base-FX Fiber Converter with PoE PD

IMC-100-PD are industrial media converters designed for conversion between electrical 10/100Base-TX and optical 100Base-FX transmission medium, which also provide PoE (Power over Ethernet) PD (Power Device) function. Simple DIP switch settings allow configuring the UTP port for auto-negotiation or for forced 10/100 speed and half/full duplex as well as for enabling LFPT (Link Fault pass through), Ethernet Flow Control (802.3x) and selecting Switch Mode (store & forward) or Converter Mode (Pass-through). Industrial designed converters feature rugged design with metal housings for DIN Rail mounting, highly reliable electrical design to support very long MTBF (mean time between failure), enhanced safety and surge protection, better EMS (Electro Magnetic Susceptibility), as well as expanded operating temperature ranges.

Features

- Redundant dual DC input power 12/24/48VDC (9.6~58VDC) with additional power input capability via PoE
- Complies with 802.3af PoE/PD standard
- IP30 rugged metal housing
- Wide operating temperature -40 ~75°C (IMC-100-PDE)
- UL60950-1, CE, FCC, Rail traffic EN50121-4 certification
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Store-and-Forward mode and Pass-through mode (set by DIP SW)
- Conversion between 10/100Base-TX and 100Base-FX cable interface
- Provides a 6 Pole DIP-Switch to set functions

Specifications

Standard	IEEE 802.3 10BASE-T
	IEEE 802.3u 100BASE-TX/100BASE-FX
	IEEE 802.3x Flow Control and Back pressure
	IEEE 802.3af PoE (Power Device PD)
RJ45 Ports	10/100Base-TX
Fiber Ports	100Base-FX (SC/ST connectors)
Switch Architecture	Store and Forward in Switch mode
	Supports 1024 MAC addresses in Switch mode
Ethernet Packet length	2046Byte (Max) in Switch mode
Jumbo Frame	9K bytes in Pass through (Converter mode)
Fiber Parameters	Fiber Cable (Multi-mode): 50/125um,62.5/125um
	Fiber Cable (Single-mode): 9/125um
	Wavelength: 1310nm (Multi-mode/Single-mode)
	Available distance: 2KM (Multi-mode) 30KM (Single-mode) 50KM (Single-mode)
Link Fault Pass Through (LFPT)	TX- Fiber: If TX port link down, the media converter will force Fiber port to link down
	Fiber-TX: If Fiber port link down, the media converter will force TX port to link down
DIP Switch	TP Auto Negotiation OFF: Auto Mode, ON: Force Mode
	Force TP Speed OFF:100 Mbps, ON:10 Mbps
	Force TP Duplex OFF:Full Duplex, ON: Half Duplex
	DIP Switch: ON: Enables LFPT(Link Fault Pass through) OFF: Disables LFPT(Link Fault Pass through)
	DIP Switch: ON: Flow Control Enable OFF: Flow Control Disable
	DIP Switch: OFF: Switching mode ON: Pass through Converter mode
Connector	Fiber: SC (Multi-mode, 2km), SC (Single-mode, 30km, 50KM) ST (Multi-mode, 2km), ST (Single-mode, 30km, 50KM)
	RJ-45 Socket: CAT-3/5 (10/100Mbps) Twisted Pair cable
	Auto MDI/MDI-X and Auto-Negotiation Function Support
LED	PWR 1 (Green): ON: Power1 active/ OFF: Power1 is inactive
	PWR 2 (Green): ON: Power2 active/ OFF: Power2 is inactive
	Fault (Red): ON : Fiber or TP has failed OFF: Fiber and TP are functional
	Fiber(Green): ON: Connected to network OFF: Not connected to network/ BLK: Receive/Transmit Data
	100(Amber): ON: 100Mbps/ OFF: 10Mbps
	LAN (Green): ON: Connected to network OFF: Not connected to network/ BLK: Networking is active
	PoE (Green) : ON: PSE Connect OFF: PSE Disconnect

Reserve Polarity Protection	Present
Overload Current Protection	Present
Power Supply	12/24/48VDC(9.6~58VDC), Redundant power with polarity reverse protect function and removable terminal block
	Provide DC Power JACK adapter cable for external power adapter
	Supports IEEE 802.3af Power over Ethernet (PoE) Power Device (PD)
Alarm Relay Contact	Relay outputs with current carrying capacity of 1 A @24VDC
Removable Terminal Block	Provide 2 Redundant power, Alarm relay contact
Power Consumption	2.9 W
Operating Humidity	5% ~ 95% (Non-condensing)
Operating Temperature	-10 ~ 60°C (IMC-100-PD), -40 ~ 75°C (IMC-100-PDE)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection and fanless
Dimensions	106 x 38.6 x 142mm (D X W X H)
Weight	0.63 kg
Installation Mounting	DIN Rail mounting and Wall Mounting
Certifications	
EMI	FCC Part 15 Subpart B Class A
	EN 55022 Class A
	EN 61000-6-4 – Emission for industrial environment
EMS	EN 61000-6-2 – Immunity for Industrial environment
	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (EFT) Level 3, Criteria A
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (Magnetic Field) Level 3, Criteria A
Safety	UL60950-1
Rail traffic	EN50121-4
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6 (Operating, Packing)
MTBF	755,114 Hrs
Warranty	5 years

Application

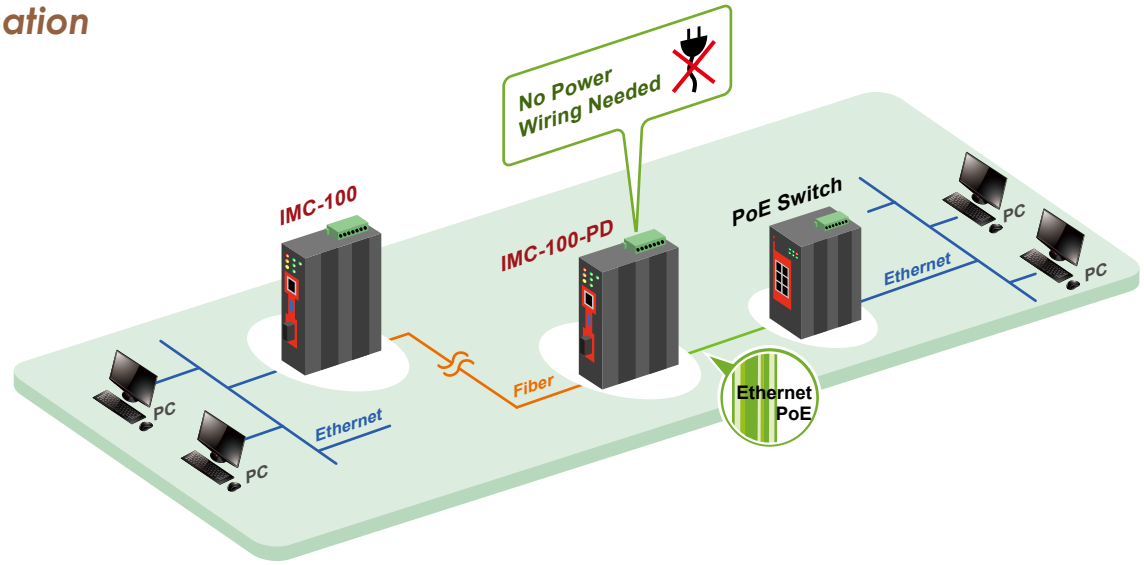
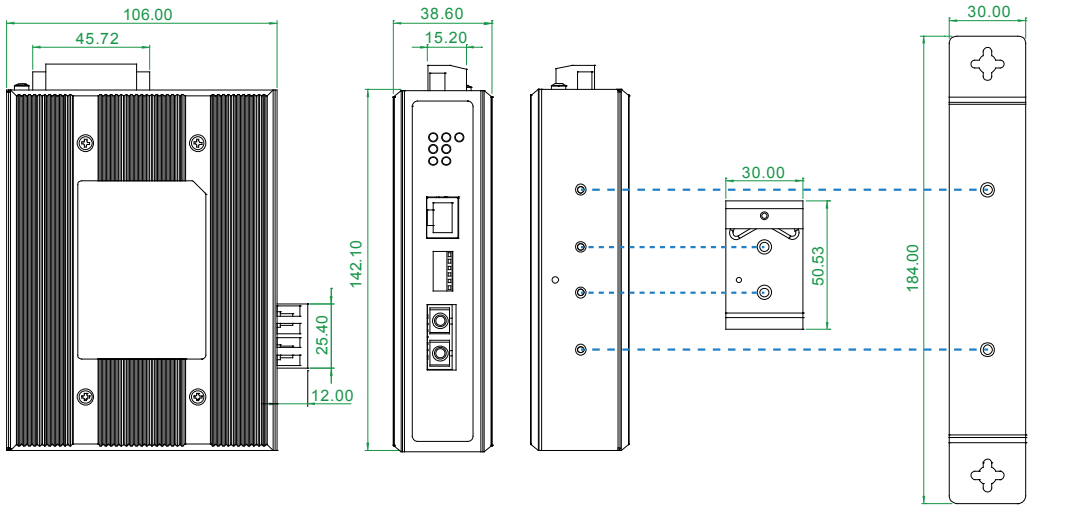


Figure : IMC-100-PD Industrial PoE Transmission

Dimensions



Ordering Information

Model Name	Description
IMC-100-PD	10/100-TX to 100-FX Fiber Converter with PoE PD ; Temperature Range : -10 ~ 60°C
IMC-100-PDE	10/100-TX to 100-FX Fiber Converter with PoE PD ; Temperature Range : -40 ~ 75°C

Fiber Connector Type	Connectivity Distance
SC, ST	002:2km (M/M) 030:30km (S/M) 050:50km (S/M) 020A: WDM 20km A type (TX:1310nm) 020B: WDM 20km B type (TX: 1550nm)

Accessories

DR-4524	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 48W, -10 ~ +50°C
MDR-40-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70°C
MDR-60-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 60W, -20 ~ +70°C

Temperature / Connector Type / Connectivity Distance

IMC-100-PD □ – □□□□□

Example: IMC-100-PDE – SC002

30 Watts, 12V Booster

IMC-1000M-PH12

10/100/1000Base-T to 100/1000Base-FX/SX/LX with PoE + (PSE) Managed Fiber Converter

IMC-1000MS-PH12

10/100/1000Base-T to 100/1000Base-X SFP with PoE + (PSE) Managed Fiber Converter

CE FC EN50121-4 EN61000-6-2 EN61000-6-4 SmartView PoE Regulated

IMC-1000M(S)-PH12 is a 10/100/1000Base-T to 100/1000Base-X Gigabit Ethernet Media converter which not only offers dual-speed fixed fiber transceiver and SFP cage module options for the optical interface, but also injects PoE+ power through the electrical RJ-45 port. Housed in rugged DIN rail or wall mountable enclosures, IMC-1000M(S)-PH12 converters are designed for harsh environments, such as IP surveillance, industrial networking, intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications.

IMC-1000M(S)-PH12 also provides many advanced L2 functions (VLAN, storm filter, ingress/egress bandwidth control, etc.) and can be managed via easy-to-use GUI or standard SNMP manager such as CTC SarmtView. With built-in OAM (Operation, Administration, Maintenance & Provisioning) functions such as loop-back test and dying gasp, IMC-1000M(S)-PH12 can be monitored from a centrally located OAM-enabled FRM220-1000MS via remote in-band management which helps to reduces operational expenditures by keeping truck rolls to a minimum.

Features

- Conversion between 10/100/1000Base-T and 100/1000Base-X fiber cable interface
- Supports Dual Rate (100/1000) SFP for selectable fast or gigabit speed on fiber port
- 12/24/48VDC (9.6~57VDC) redundant dual input power with built-in very high efficiency booster(97~99%) to rise up 55 VDC for PoE output
- Constant and regulated PoE output voltage at 55VDC
- Provides IEEE802.3at PoE output (30W)
- IP30 rugged metal housing and fanless
- Wide operating temperature -20~75°C (IMC-1000M-PHE12, IMC-1000MS-PHE12)
- CE, FCC, Railway traffic EN50121-4 certification
- Industrial grade EMS, EMI EN61000-6-2, EN61000-6-4 certification
- Supports Jumbo frame 9K bytes packet
- Ingress/Egress bandwidth control with 64K granularity
- PoE configuration and monitor
- Auto Laser Shutdown (ALS)
- Supports LFPT (Link Fault Pass Through)
- Supports Digital Diagnostic Monitor Interface (DDMI) for SFP
- Supports 16 IEEE802.1Q Tag VLAN Group
- MIB counters
- SNMP alarm trap for power loss and port link down
- Web based and SNMP for management (Figure 1, 3)
- Remote Loop-Back test
- Supports in-band management from FRM220 Chassis With FRM220-1000MS (Figure 2)
- Supports SmartView for centralized management

Specifications

Standard	IEEE802.3 10Base-T 10Mbit/s Ethernet
	IEEE802.3u 100Base-TX, 100Base-FX, Fast Ethernet
	IEEE802.3ab 1000Base-T Gbit/s Ethernet over twisted pair
	IEEE802.3z 1000Base-X Gbit/s Ethernet over Fiber-Optic
	IEEE802.3x Flow Control and Back pressure
	IEEE802.3at Power over Ethernet+, PoE+
	IEEE802.3af Power over Ethernet, PoE
	IEEE802.1q Tag VLAN
Fiber Ports	100/1000Base-FX/SX/LX, 100M /1000M Speed set by Web (IMC-1000M-PH12, IMC-1000M-PHE12)
	SFP slot for 100Base-X or 1000Base-X, 100M/1000M speed set by Web (IMC-1000MS-PH12, IMC-1000MS-PHE12)
RJ45 Ports	10/100/1000Base-T
Push Button	Reset, Load default setting
Data Process Architecture	Pass through mode
Jumbo Frame	9K bytes
Fiber Parameters	Fiber Cable (Multi-mode): 50/125um,62.5/125um
	Fiber Cable (Single-mode): 9/125um
	Wavelength: 1310nm (Multi-mode/Single-mode)
	Available distance: 500M (Multi-mode SX), 20KM (Single-mode), 40KM (Single-mode) (IMC-1000M-PH12, IMC-1000M-PHE12)
	SFP, Distance depending on plugged-in Fiber Tranceiver (IMC-1000MS-PH12 , IMC-1000MS-PHE12)
LFPT (Link Fault Pass Through)	TX- Fiber: If TX port link down, the media converter will force Fiber port to link down
	Fiber-TX: If Fiber port link down, the media converter will force TX port to link down

Connector and Pin Assignment	Fiber: SC (Multi-mode, 500M), SC (Single-mode, 20KM, 40KM) (IMC-1000M-PH12, IMC-1000M-PHE12) SFP Slot (IMC-1000MS-PH12, IMC-1000MS-PHE12)
	RJ-45 Socket: CAT-3/5 (10/100/1000Mbps) Twisted Pair cable
	Auto MDI/MDI-X and Auto-Negotiation Function Support
	RJ-45 Port support IEEE 802.3at/af End-Span, Alternative A mode
	PoE (V+): RJ-45 pin 1, 2
	PoE (V-): RJ-45 pin 3, 6
	Data (1,2,3,6,4,5,7,8)
LED	Per Unit: Power 1 (Green), Power 2 (Green), Fault (Amber)
	Fiber LNK/ACT (Green): ON : Connected to network, OFF: Not connected to network, BLK : Receive /Transmit Data
	Fiber Speed: Yellow : 1000Base-X, Green : 100Base-X
	RJ-45 port: Speed: 10 (OFF), 100 (Green), 1000 (Yellow)
	LNK/ACT for RJ45(Green): ON : Connected to network, OFF: Not connected to network, BLK : Networking is active
	PoE Status (Green): Flash : PoE Fault (Over-load or short), ON : PoE normal working, OFF : PoE No Power output
Reverse Polarity Protection	Present for Power Input
Overload Current Protection	Present
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 Humidity	5%~95% (Non-condensing)
Operating Temperature	-10°C~60°C (IMC-1000M-PH12, IMC-1000MS-PH12)
	-20°C~75°C (IMC-1000M-PHE12, IMC-1000MS-PHE12)

Storage Temperature	-40°C~85°C
Housing	Rugged Metal, IP30 Protection and fanless
Dimensions	106 x 62.5 x 135 mm (D X W X H)
Weight	655g (IMC-1000M-PH12, IMC-1000M-PHE12) 650g (IMC-1000MS-PH12, IMC-1000MS-PHE12)
Installation	DIN Rail mounting or wall mounting
Power Supply	12/24/48VDC (9.6~57VDC), Redundant power with polarity reverse protect function and removable terminal block Built-in very high efficiency booster(97~99%) to rise up 55 VDC for PoE output
Power Consumption	IMC-1000M-PH12 & IMC-1000M-PHE12

Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget	Boost Efficiency
12VDC	34.4W	3.9W	30W	98.4%
24VDC	34.9W	4.5W	30W	98.7%
48VDC	35.4W	4.7W	30W	97.7%

IMC-1000MS-PH12 & IMC-1000MS-PHE12

Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget	Boost Efficiency
12VDC	34.2W	3.9W	30W	99.0%
24VDC	34.7W	4.4W	30W	99.0%
48VDC	35.4W	4.7W	30W	97.7%

MTBF	401235 (IMC-1000M-PH12, IMC-1000M-PHE12) 331689 (IMC-1000MS-PH12, IMC-1000MS-PHE12) MIL-HDBK-217
Warranty	5 years
Certifications	
EMC	CE
EMI	FCC Part 15 Subpart B Class A, CE EN 55022 Class A
Rail Way Traffic	EN50121-4
Immunity for Heavy Industrial environment	EN 61000-6-2
Emission for Heavy industrial environment	EN 61000-6-4
EMS (Electromagnetic Susceptibility) Protection leve	EN61000-4-2 (ESD) Level 3, Criteria B EN61000-4-3 (RS) Level 3, Criteria A EN61000-4-4 (EFT) Level 3, Criteria A EN61000-4-5 (Surge) Level 3, Criteria B EN61000-4-6 (CS) Level 3, Criteria A EN61000-4-8 (PFMF) Field strength 300A/m Criteria A
Safety	UL60950-1 (pending)
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Software Specifications

SNMP or Web Mode (figure 1, 3)	
Management	Ingress/Egress bandwidth control with 64K granularity
	Web management, Firmware upgrade via Web
	Supports SNMP, MIB for management
	Supports DHCP client for automatic IP configuration
	Supports 802.1Q tag VLAN, 16 Tag VLAN group, MIB counters display
Configuation	IP configuration, password setting, converter configuration
	port configuration, MIB counter, SNMP configuration
	VLAN group configuration, alarm configuration
	PoE Configuration
Diagnostic & Monitor	Supports Link Fault Pass-Through (LFPT) Function
	Broadcast/Multicast/Unicast storm filter
	SNMP alarm trap for power loss and port link Up/Down
	PoE Status

In-Band Remote mode (Figure 2)	
Management	Supports in-band management from FRM220 Chassis With FRM220-1000MS card
	Ingress/Egress bandwidth control with 64K granularity
Configuation	IP configuration, converter configuration, port configuration, MIB counter
	VLAN group configuration, alarm configuration, PoE Configuration
Diagnostic & Monitor	Remote loop-back test
	Supports Link Fault Pass-Through (LFPT) Function
	Broadcast/Multicast/Unicast storm filter
	PoE Status

Application

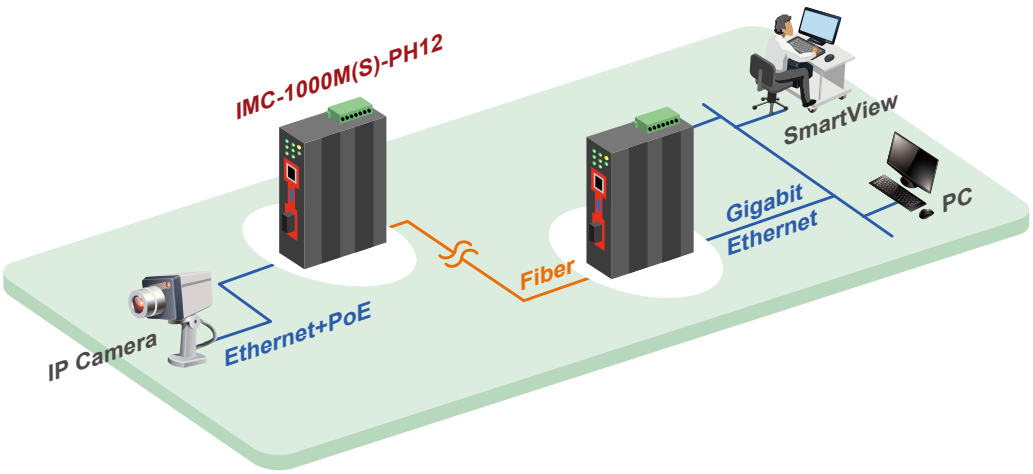


Figure 1 : IMC-1000M(S)-PH12 Management by SNMP, SmartView

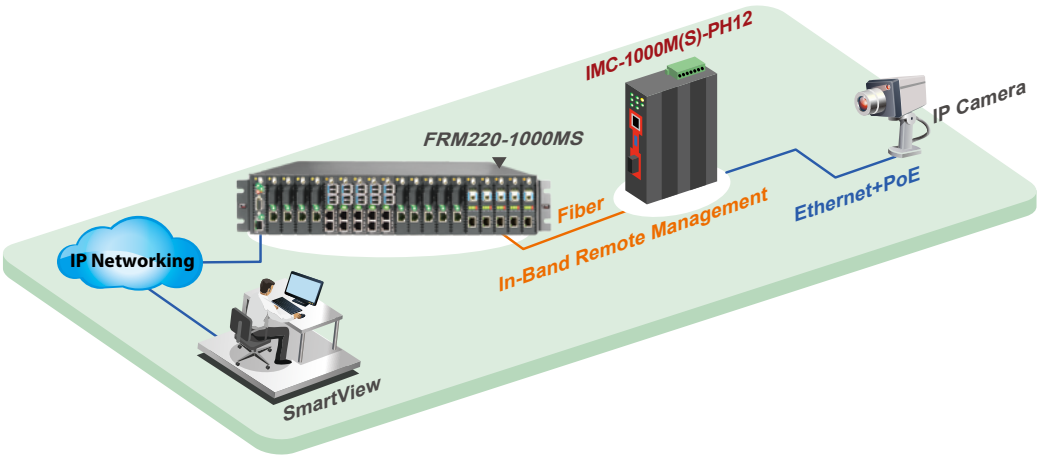


Figure 2 : IMC-1000M(S)-PH12 Application in Remote, In-Band Managment

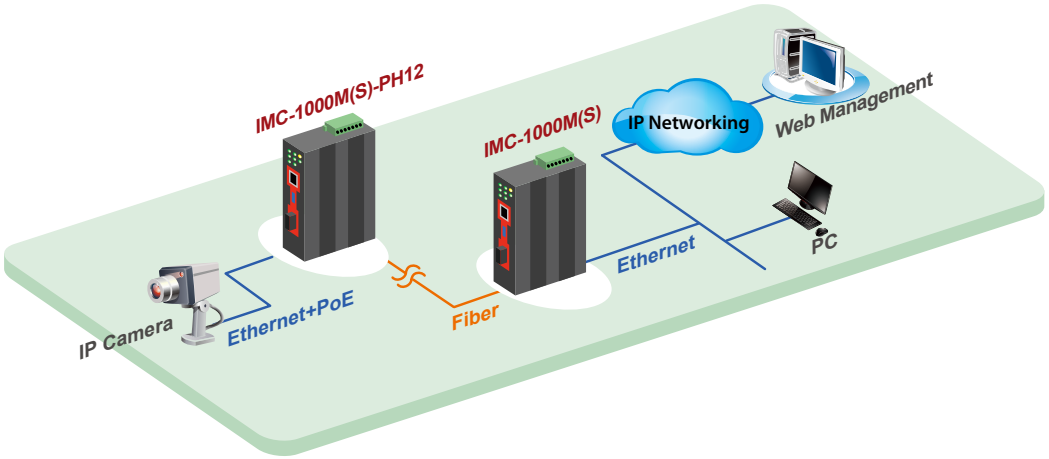
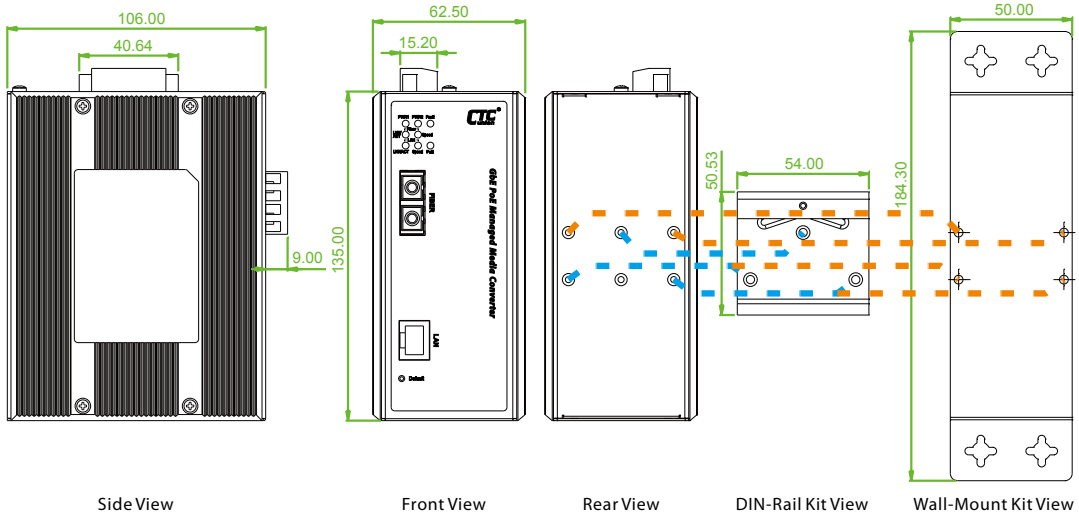


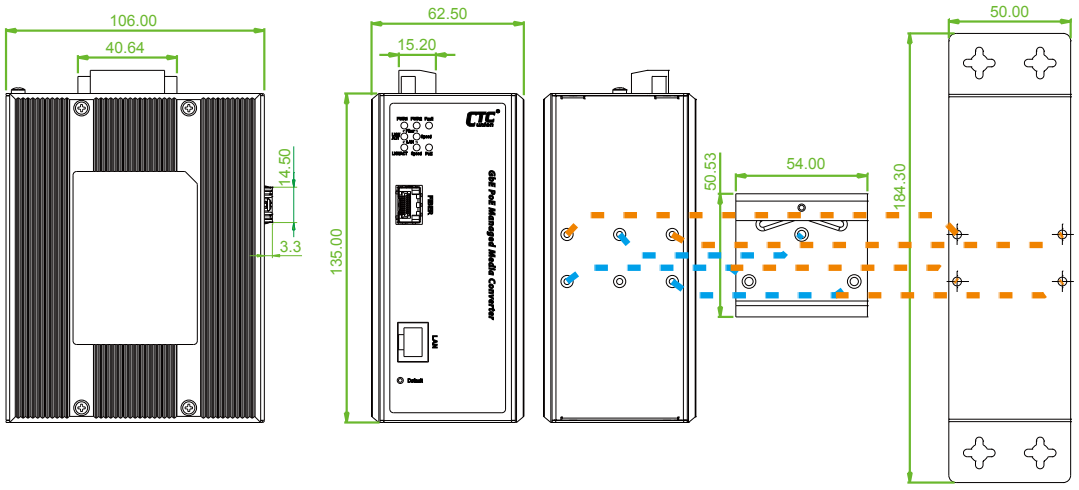
Figure 3 : IMC-1000M(S)-PH12 Application in Web Management

Dimensions

IMC-1000M-PH12



IMC-1000MS-PH12



Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View

Ordering Information

Model Name	Managed	UTP	Fiber	PoE Port		Input Voltage (Boost)	Certification			Operating Temperture
		10/100/1000 Base-T	Dual Speed 100/1000Base-X	IEEE802.3at (PSE)	Power Budget		Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE, FCC	
IMC-1000M-PH12	V	1	1 SC	1	30W	12/24/48VDC	V	V	V	-10~60°C
IMC-1000M-PHE12	V	1	1 SC	1	30W	12/24/48VDC	V	V	V	-20~75°C
IMC-1000MS-PH12	V	1	1 SFP	1	30W	12/24/48VDC	V	V	V	-10~60°C
IMC-1000MS-PHE12	V	1	1 SFP	1	30W	12/24/48VDC	V	V	V	-20~75°C

Model Naming Rule

IMC – 1000 M S – PH E12

- E12: 12V Booster-20~75°C
  12: 12V Booster-10~60°C

- IMC: Industrial Media Converter
- 1000: 1000Base-X Converter
- M: Managed
- S: SFP type
  Blank: Fix fiber type
- PH: 1x High Power PoE

Fiber Connector Type	Connectivity Distance
SC (IMC-1000M-PH12 & IMC-1000M-PHE12 only)	001:500M (M/M) 002 : 2km (M/M) 020:20km (S/M) 040:40km (S/M) 020A: WDM 20km A Type (TX:1310nm) 020B: WDM 20km B Type (TX:1550nm)

Temperature | Connector Type | Connectivity Distance

IMC-1000M –PH □ 12 – □□□□

Example: IMC-1000M – PHE12 – SC001

Accessories

DR-4524	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 48W, -10 ~ +50°C
MDR-40-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70°C
MDR-60-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 60W, -20 ~ +70°C
SFP Transceiver	Compatible, Reliable, 5-year Warranty

SFP Naming Rule

ISFP – M 7 040 – 31 – E

- E:-40~85°C
  Blank:0~70°C

- ISFP: Industrial SFP Transceiver
- M: Multi Mode
  S: Single Mode
  T: Copper
- 7: GbE
  5: FE
- Distance
  002(2km)
  020(20km),040(40km)
- Wavelength
  00: Copper
  85: 850nm
  31: 1310nm
  55: 1550nm
  WA: TX 1310/RX 1550 (Bidi Mode A)
  WB: TX 1550/RX 1310 (Bidi Mode B)

30 Watts,
12V Booster

IMC-100M-PH12

10/100Base-TX to 100Base-FX with PoE + PSE Managed Fiber Converter

IMC-100M-PH12 is a 10/100Base-TX to 100Base-FX Ethernet Media converter which not only offers 100M fixed fiber transceiver for the optical interface, but also injects PoE+ power through the electrical RJ-45 port. Housed in rugged DIN rail or wall mountable enclosures, IMC-100M-PH12 converters are designed for harsh environments, such as IP surveillance, industrial networking, intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications. IMC-100M-PH12 also provides many advanced L2 functions (VLAN, storm filter, ingress/egress bandwidth control, etc.) and can be managed via easy-to-use GUI or standard SNMP manager such as CTC SarmtView. With built-in OAM (Operation, Administration, Maintenance & Provisioning) functions such as loop-back test and dying gasp, IMC-100M-PH12 can be monitored from a centrally located OAM-enabled FRM220-1000MS via remote in-band management which helps to reduces operational expenditures by keeping truck rolls to a minimum.

Features

- Conversion between 10/100Base-TX and 100Base-FX fiber cable interface
- 12/24/48VDC (9.6~57VDC) redundant dual input power with built-in very high efficiency booster(97~98%) to rise up 55 VDC for PoE output
- Constant and regulated PoE output voltage at 55VDC
- Provides IEEE802.3at PoE output (30W)
- IP30 rugged metal housing and fanless
- Wide operating temperature -20~75°C (IMC-100M-PHE12)
- CE, FCC, Railway traffic EN50121-4 certification
- Industrial grade EMS, EMI EN61000-6-2, EN61000-6-4 certification
- Supports Jumbo frame 9K bytes packet
- Ingress/Egress bandwidth control with 64K granularity
- PoE configuration and monitor
- Auto Laser Shutdown (ALS)
- Supports LFPT (Link Fault Pass Through)
- Supports Digital Diagnostic Monitor Interface (DDMI) for SFP
- Supports 16 IEEE802.1Q Tag VLAN Group
- MIB counters
- SNMP alarm trap for power loss and port link down
- Web based and SNMP for management (Figure 1, 3)
- Remote Loop-Back test
- Supports in-band management from FRM220 Chassis With FRM220-1000MS (Figure 2)
- Supports SmartView for centralized management

Specifications

Standard	IEEE802.3 10Base-T 10Mbit/s Ethernet
	IEEE802.3u 100Base-TX, 100Base-FX, Fast Ethernet
	IEEE802.3x Flow Control and Back pressure
	IEEE802.3at Power over Ethernet+, PoE+
	IEEE802.3af Power over Ethernet, PoE
	IEEE802.1q Tag VLAN
Fiber Ports	100Base-FX , 100M Speed
RJ45 Ports	10/100Base-TX
Push Button	Reset, Load default setting
Data Process Architecture	Pass through mode
Jumbo Frame	9K bytes
Fiber Parameters	Fiber Cable (Multi-mode): 50/125um,62.5/125um
	Fiber Cable (Single-mode): 9/125um
	Wavelength: 1310nm (Multi-mode/Single-mode)
	Available distance: 2KM (Multi-mode), 30KM ,50KM(Single-mode) ,20KM (WDM Bidi)
LFPT (Link Fault Pass Through)	TX- Fiber: If TX port link down, the media converter will force Fiber port to link down
	Fiber-TX: If Fiber port link down, the media converter will force TX port to link down
Connector and Pin Assignment	Fiber: SC/ST (Multi-mode, 2km), SC/ST (Single-mode, 30km, 50km)
	RJ-45 Socket: CAT-3/5 (10/100Mbps) Twisted Pair cable
	Auto MDI/MDI-X and Auto-Negotiation Function Support
	RJ-45 Port support IEEE 802.3at/af End-Span, Alternative A mode
	PoE (V+): RJ-45 pin 1, 2
	PoE (V-): RJ-45 pin 3, 6
	Data (1,2,3,6)

LED	Per Unit: Power 1 (Green), Power 2 (Green), Fault (Amber)
	Fiber LNK/ACT (Green): ON : Connected to network, OFF: Not connected to network BLK : Receive /Transmit Data
	Fiber Speed: Green : 100Base-X
	RJ-45 port: Speed: 10 (OFF), 100 (Green)
	LNK/ACT for RJ45(Green): ON : Connected to network, OFF: Not connected to network, BLK : Networking is active
	PoE Status (Green): Flash : PoE Fault (Over-load or short), ON : PoE normal working, OFF : PoE No Power output
Reverse Polarity Protection	Present for Power Input
Overload Current Protection	Present
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 Humidity	5%~95% (Non-condensing)
Operating Temperature	-10°C~60°C (IMC-100M-PH12) -20°C~75°C (IMC-100M-PHE12)
Storage Temperature	-40°C~85°C
Housing	Rugged Metal, IP30 Protection and fanless
Dimensions	106 x 62.5 x 135 mm (D X W X H)
Weight	655g
Installation	DIN Rail mounting or wall mounting
Power Supply	12/24/48VDC (9.6~57VDC), Redundant power with polarity reverse protect function and removable terminal block Built-in very high efficiency booster(97~99%) to rise up 55 VDC for PoE output

Power Consumption	Input Voltage	Total Power Consumption	Device Power Consumption	PoE Budget	Boost Efficiency
	12VDC	34.4W	3.9W	30W	98.4%
	24VDC	34.9W	4.5W	30W	98.7%
	48VDC	35.4W	4.7W	30W	97.7%
MTBF	410,235 Hrs (IMC-100M-PH12, IMC-100M-PHE12)				
Warranty	5 years				
Certifications					
EMC	CE				
EMI	FCC Part 15 Subpart B Class A, CE EN 55022 Class A				
Rail Way Traffic	EN50121-4				
Immunity for Heavy Industrial environment	EN 61000-6-2				

Emission for Heavy industrial environment	EN 61000-6-4
EMS (Electromagnetic Susceptibility) Protection leve	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (EFT) Level 3, Criteria A
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (PFMF) Field strength 300A/m Criteria A
Safety	UL60950-1 (pending)
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Software Specifications

SNMP or Web Mode (figure 1, 3)	
Management	Ingress/Egress bandwidth control with 64K granularity
	Web management, Firmware upgrade via Web
	Supports SNMP, MIB for management
	Supports DHCP client for automatic IP configuration
	Supports 802.1Q tag VLAN, 16 Tag VLAN group, MIB counters display
Configuation	IP configuration, password setting, converter configuration
	port configuration, MIB counter, SNMP configuration
	VLAN group configuration, alarm configuration
	PoE Configuration
Diagnostic & Monitor	Supports Link Fault Pass-Through (LFPT) Function
	Broadcast/Multicast/Unicast storm filter
	SNMP alarm trap for power loss and port link Up/Down
	PoE Status

In-Band Remote mode (Figure 2)	
Management	Supports in-band management from FRM220 Chassis With FRM220-1000MS card
	Ingress/Egress bandwidth control with 64K granularity
Configuation	IP configuration, converter configuration, port configuration, MIB counter
	VLAN group configuration, alarm configuration, PoE Configuration
Diagnostic & Monitor	Remote loop-back test
	Supports Link Fault Pass-Through (LFPT) Function
	Broadcast/Multicast/Unicast storm filter
	PoE Status

Application

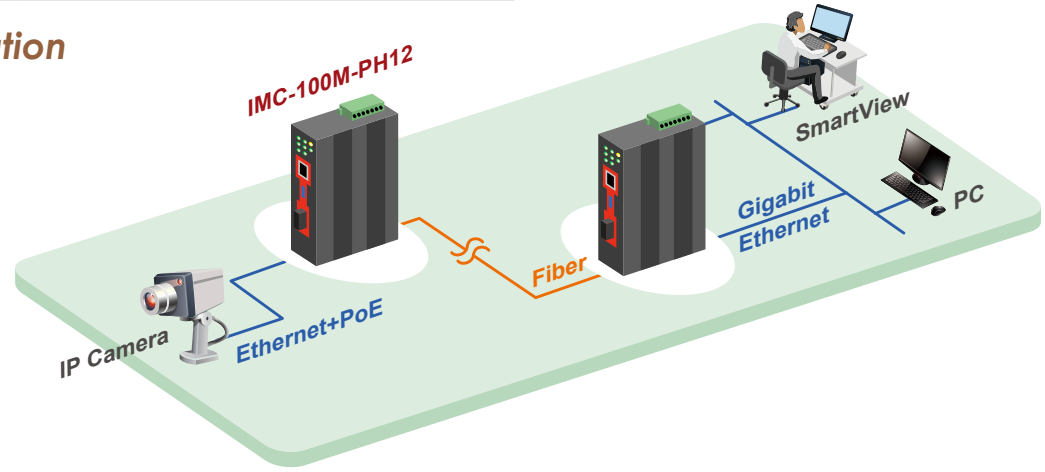


Figure 1 : IMC-100M-PH12 Management by SNMP, SmartView

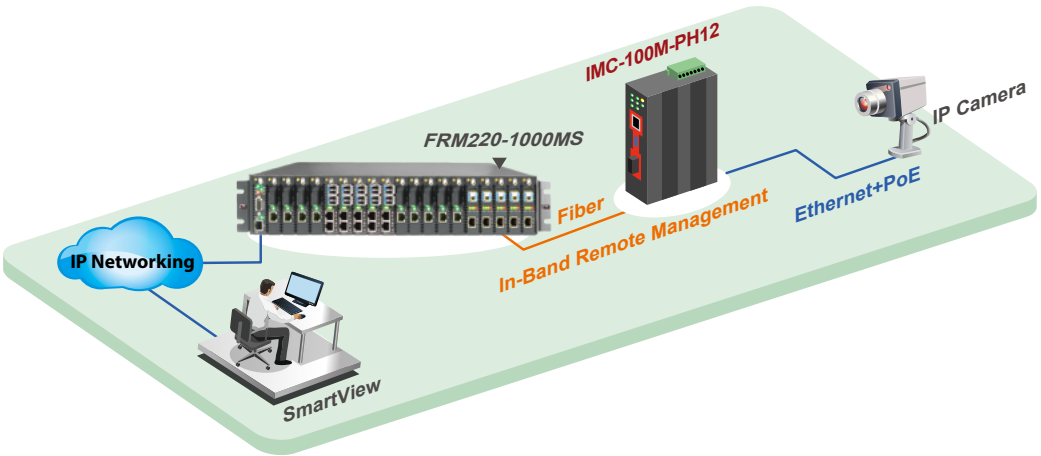


Figure 2 : IMC-100M-PH12 Application in Remote, In-Band Managment

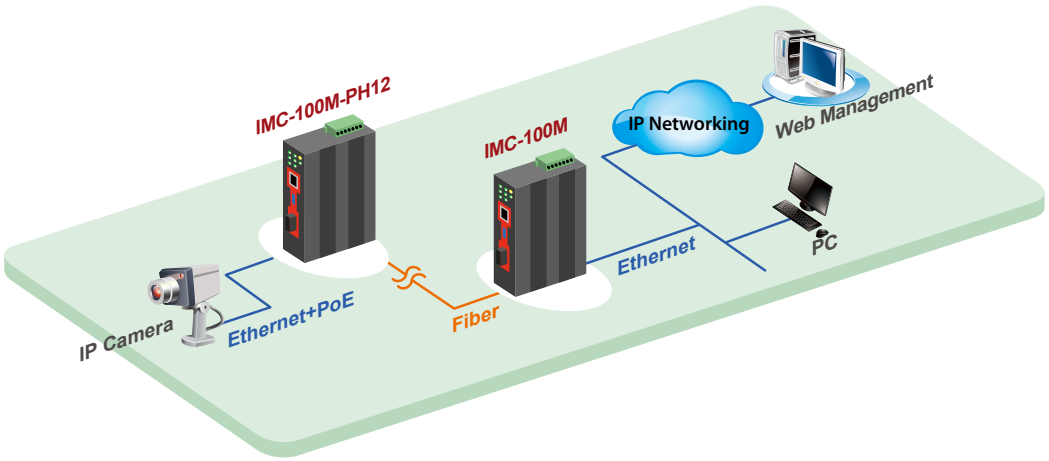
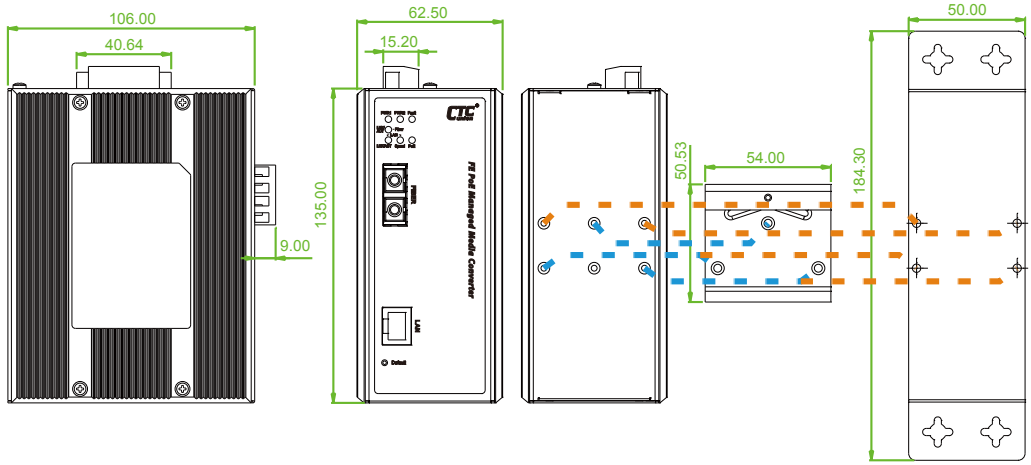


Figure 3 : IMC-100M-PH12 Application in Web Management

Dimensions



Ordering Information

Model Name	Managed	UTP	Fiber	PoE Port		Input Voltage (Boost)	Certification			Operating Temperture
		10/100 Base-TX	100Base-FX	IEEE802.3at (PSE)	Power Budget		Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE, FCC	
IMC-100M-PH12	V	1	1 SC	1	30W	12/24/48VDC	V	V	V	-10~60 C
IMC-100M-PHE12	V	1	1 SC	1	30W	12/24/48VDC	V	V	V	-20~75 C

Model Naming Rule

IMC – 100 – M – PH – E12

- IMC: Industrial Media Converter
- 100: 100Base Converter
- M: Managed
- PH: 1x High Power PoE
- E12: 12V Booster-20~75°C
- 12: 12V Booster-10~60°C

Fiber Connector Type	Connectivity Distance
SC	002:2km (M/M) 030:30km (S/M) 050:50km (S/M) 020A: WDM 20km A type (TX:1310nm) 020B: WDM 20km B type (TX: 1550nm)

Accessories

DR-4524	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 48W, -10 ~ +50°C
MDR-40-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70°C
MDR-60-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 60W, -20 ~ +70°C

Temperature / Connector Type / Connectivity Distance

IMC-100M -PH □ 12 - □□□□□

Example: IMC-100M -PHE12 - SC002

NEW

Up to 1.2KM

CE FC EN50121-4

IEXT224-4PH
IEXT204-4PH

Long Reach PoE Extenders

(Phone line and Coaxial cable)

IEXT224-4PH & IEXT204-4PH series are intended to extend the reach of Ethernet Data and IEEE 802.3at Power over Ethernet beyond its natural limitations of 100 m for the network infrastructure. The solution works in pairs for point-to-point connectivity. The unit at the local site can transmit data and power over a single pair of telephone grade UTP wire or Coaxial cable up to 1,200 m. The unit at the remote side provides four 10/100Base-TX IEEE 802.3at PoE ports for total power budget of 30W that can receive power supply from the local unit when power is unavailable at the remote side.

These products are particularly designed for harsh environments, such as industrial networking, traffic surveillance, security automation applications, IP surveillance, city security, intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications.

Features

- Long transmission data and power feeding distance up to 1200 meter
- Complies to IEEEE 802.3at PoE
- Simultaneous transmission of Ethernet data and PoE Power over Phone line wire or coaxial cable
- Centralized management of power supply
- Eliminated the need for power supply at remote sites
- Easy cabling for quick installation
- Quick deployment and easy maintenance.
- Flexible and efficient power management
- Dip Switch to option the remote unit that can be powered by remote-side power or local power.
- Display data rate by LED
- Display real power loading by LED

Specifications

Hardware Interfaces	**Standard**	
	IEEE802.3	10Base-T
	IEEE802.3u	100Base-TX
	IEEE802.3af	PoE
	IEEE802.3af	PoE+
	ITU-T G.993.2	VDSL2
Power over Copper PoE Extender with 4x 10/100Base-TX IEEE 802.3at PoE Ports		
Network Connector	Terminal Block for Copper Port BNC Female for Coaxial Port (IEXT204-4PH24) 4 x RJ-45 10/100Base-TX IEEE 802.3at PoE Port	
Dip Switch	SW 1: Selectable Asy (30a) or Sym(17a) (VDSL2 Profile)	
	SW 2 : Selectable target SNR margin 6dB or 9dB	
	SW 3 : Selectable Remote Power: ON: Feeding power by remote power (See Figure 1) OFF: Feeding power by local power (See Figure 2)	
Performance	Phone line distance vs Rate and Power	

Distance	Line Rate	Total PoE power (Watt) (Remote power mode)
300m	100Mbps	30W
600m	65Mbps	15W
700m	50Mbps	10W
800m	45Mbps	7W
1000m	35Mbps	5W

(Power over Copper, 24AWG copper wire)

LED	Active: System Status
	Local PWR : Local Power mode (See Figure 2)
	Remote PWR: Remote Power (See Figure 1)

LED	PoE: PoE Port Status for per PoE Port
	PoE Output: 5/15/30 Watts (Display total PoE loading) (Remote power mode)
	Line Speed: Link/20/40/60/80/100 Mbps
Standards Support	VDSL2 ITU-T G.993.2
	VDSL2 Profiles: 17a and 30a
Protocol Support	Transparent bridging to higher layer protocols
Dimension	106 x 62.5 x 135mm (D x W x H)
Operating Environment	Operating Temperature: -40°C to 75°C
	Storage Temperature: -40°C to 85°C
	Humidity: 10% - 95% (non-condensing)
Physical/Electrical	Hardened aluminum case, IP30
	Dimensions: 62 x 135 x 106.5 mm
	Input Voltage: 40 to 60 VDC
	Power Consumption: 65 Watts maximum
	Installation: DIN-Rail, Panel Rack Mounting
	Over current protection
	Automatic short protection
Warranty	5 Years
Certification	
EMS	CE, FCC
Railway Traffic	EN50121-4
Safety	EN60950-1
Shock	IEC60068-2-27
Freefall	IEC60068-2-32
Vibration	IEC60068-2-6

Application

Figure 1 : When Remote Power Active

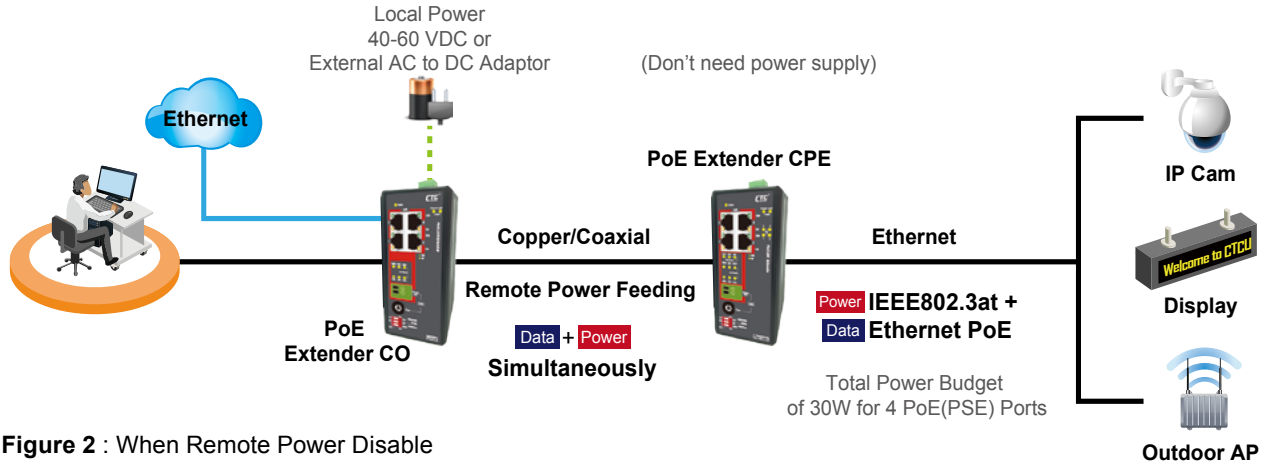
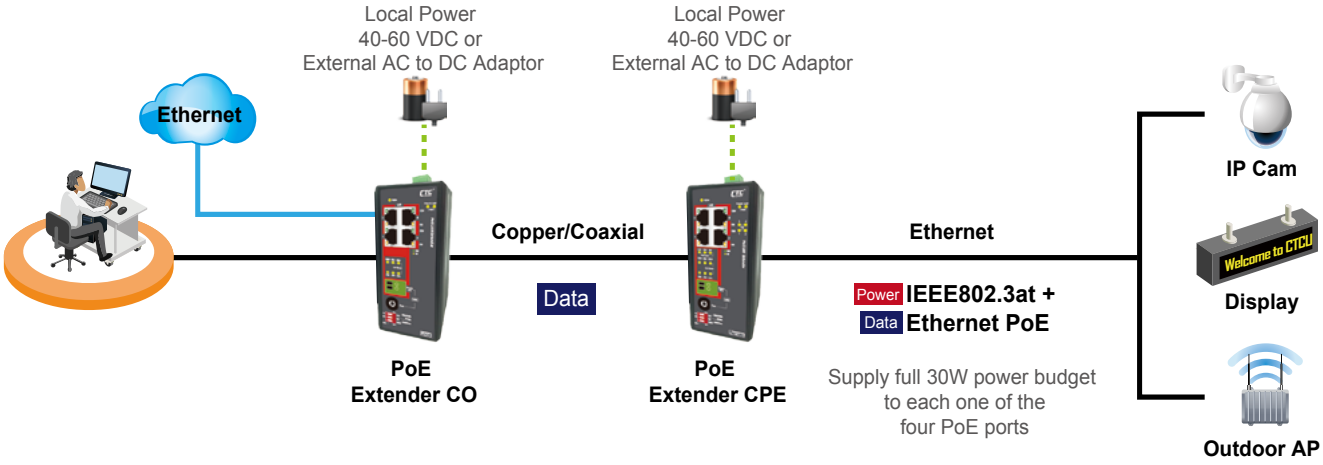
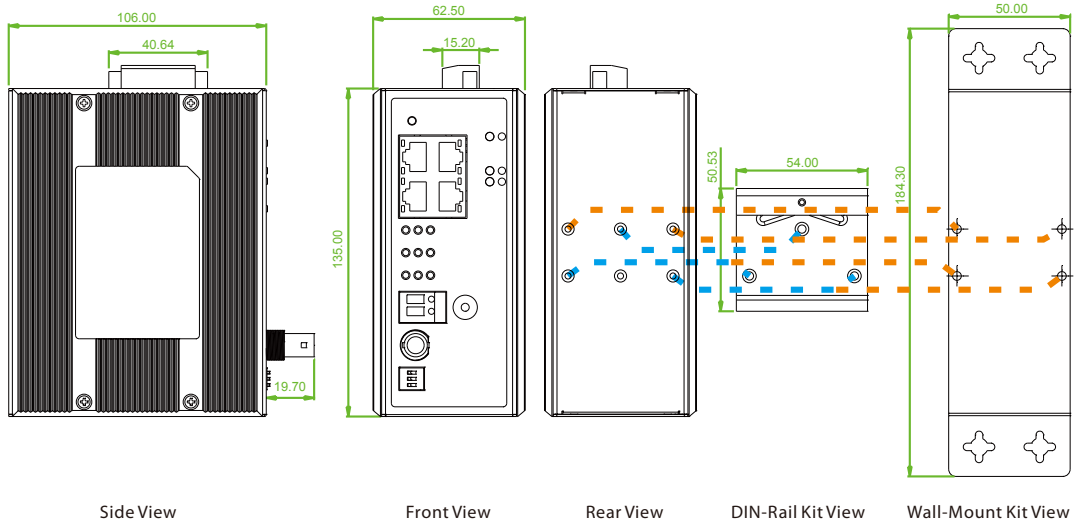


Figure 2 : When Remote Power Disable



Dimensions



Ordering Information

Model Name	Description
IEXT224-4PH	Industrial LAN Extender with 4 Ports PoE (1.2km, Phone line or Coaxial)
IEXT204-4PH	Industrial LAN Extender with 4 Ports PoE (1.2km, Phone line)

24V Booster

INJ-IG60-24

Gigabit Ethernet PoE + Injector
IEEE802.3at/af, 15.4/30/36/60/72W

CE FC EN50121-4 EN61000-6-2 EN61000-6-4 PoE Regulated

INJ-IG60-24 is an industrial grade, single port, gigabit Ethernet PoE (Power over Ethernet) injector. PoE technology describes a system to pass electrical power safely, along with data, on Ethernet cabling. The original IEEE 802.3af-2003 PoE standard provides up to 15.4 W of DC power to each device. The updated IEEE 802.3at-2009 PoE standard also known as PoE+ or PoE plus, provides up to 30 W of power. Additionally, INJ-IG60-24 can provide up to 36/60/72W through the non-standard use of all 4 pairs of category 5 cable. Housed in a rugged DIN rail or wall mountable enclosure, this product is designed for harsh environments, such as industrial networking, security, intelligent transportation systems (ITS) and is also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications. Standard operating temperature range models (-10 to 60°C) and wide operating temperature range models (-40 to 75°C) fulfill the special needs of industrial automation applications.

Features

- Provides 1 port IEEE802.3at/af PoE Injector
- Power output 15.4W, 30W, 36W, 60W, 72W select by DIP SW
- 24/48VDC (20~57VDC) redundant dual input power with built-in very high efficiency booster (94~96%) to rise up 55 VDC for PoE output
- Constant and regulated PoE output voltage at 55VDC
- PoE Mode A/B Select by DIP SW
- 4 Pairs (60W/72W) PD handshake mode select by DIP SW (Such as AXIS® IP cam)
- Wide operating temperature -40 ~ 75°C (INJ-IG60-E24)
- UL60950-1, CE, FCC, Railway traffic EN50121-4 certification
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- IP30 rugged metal housing and fanless

Specifications

IEEE Standard	IEEE 802.3 10Base-T Ethernet
	IEEE 802.3u 100Base-TX Fast Ethernet
	IEEE 802.3ab 1000Base-T Gigabit Ethernet
	IEEE 802.3at, IEEE802.3af
PoE Standard	IEEE802.3at, IEEE802,3af
PoE RJ-45 Pin Assignment	RJ-45 support IEEE 802.3at/af Middle-Span Alternative B mode or End-Span Alternative A mode, set by DIP SW
	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)
	Middle-Span, Alternative B mode Positive (V+): RJ-45 pin 4,5 Negative (V-): RJ-45 pin 7,8 Data (1, 2, 3, 6, 4, 5, 7, 8)
Network Connector	1 RJ-45 for 10/100/1000Base-T Data, and 1 RJ-45 for 10/100/1000Base-T Data with PoE Output power
Network Cable	UTP/STP above Cat. 5e cable
	EIA/TIA-568 100-ohm (100m)
LED	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber)
	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)
	4/2 Pairs (Green) ON: 4 Pairs PoE Power output for 60W PoE OFF: 2 Pairs PoE Power output
DIP SW	SW1 Reserved SW2 ON: Hi Power 36W 36W PoE output OFF: Standard PoE 802.3af (15.4W), 802.3at (30W) SW3 ON: 4 Pair PoE Pin Ultra-High Power 60W/72W PoE Output OFF: 2 Pair PoE Pin depand on DIP SW 1,2 SW4 ON: Alternative B mode PoE Power Pin 4, 5, 7, 8 (When DIP SW 3 Off) OFF:Alternative A mode PoE Power Pin 1, 2, 3, 6 (When DIP SW 3 Off)
Reserve Polarity Protection	Present
Overload Current Protection	Present

Power Supply	Redundant Dual DC 24/48V (20~57VDC) Input power (Removable Terminal Block)
	Built-in very high efficiency booster(97~99%) to rise up 55 VDC for PoE output
PoE Power Output	Maximum Ultra High Power 60W, IEEE802.3at 30W, IEEE802.3at High power 36W, IEEE802.3af 15.4W
Power Consumption	INJ-IG60-24 in 30W mode (2 Pair)

Input Voltage	Input Power Consumption	Device Power Consumption	PoE Power Budge	Boost Efficiency
24VDC	33W	1.4W	30W	94.90%
48VDC	33.2	1.9W	30W	95.80%

INJ-IG60-24 in 60W mode (4 Pair)

Input Voltage	Input Power Consumption	Device Power Consumption	PoE Power Budge	Boost Efficiency
24VDC	65.2W	1.4W	60W	94.10%
48VDC	64.7W	1.9W	60W	95.50%

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 (INJ-IG60-24)
	-40 ~ 75°C (INJ-IG60-E24)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection and fanless
Dimensions	106 x 31.6 x 142 mm (D x W x H)
Weight	0.425kg
Installation Mounting	DIN Rail mounting and Wall Mounting
MTBF	763,725Hrs
Warranty	5 years

Certification	
EMC	CE
EMI	FCC Part 15 Subpart B Class A, CE EN55022 Class A
Railway Traffic	EN50121-4
Immunity for Heavy Industrial environment	EN 61000-6-2
Emission for Heavy industrial environment	EN 61000-6-4

EMS	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (EFT) Level 3, Criteria A
	EN 61000-4-5 (Surge) Level 3, Criteria B
	EN 61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (PFMF) Field strength 300A/m Criteria A
Safety	UL60950-1 (pending)
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Application

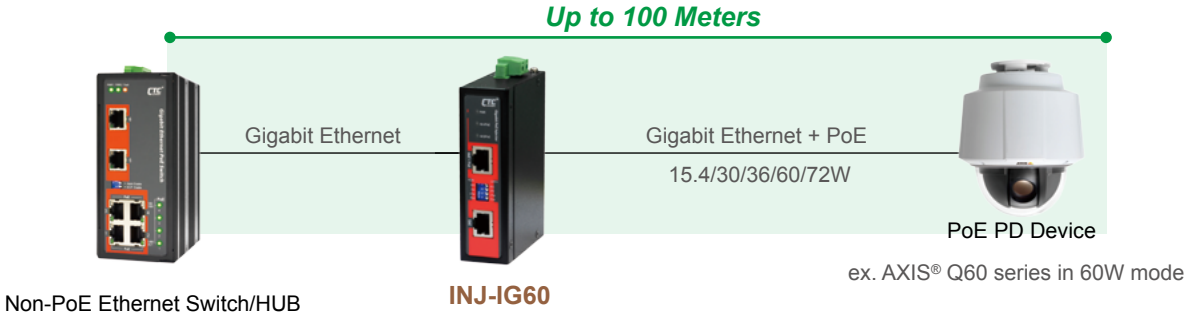
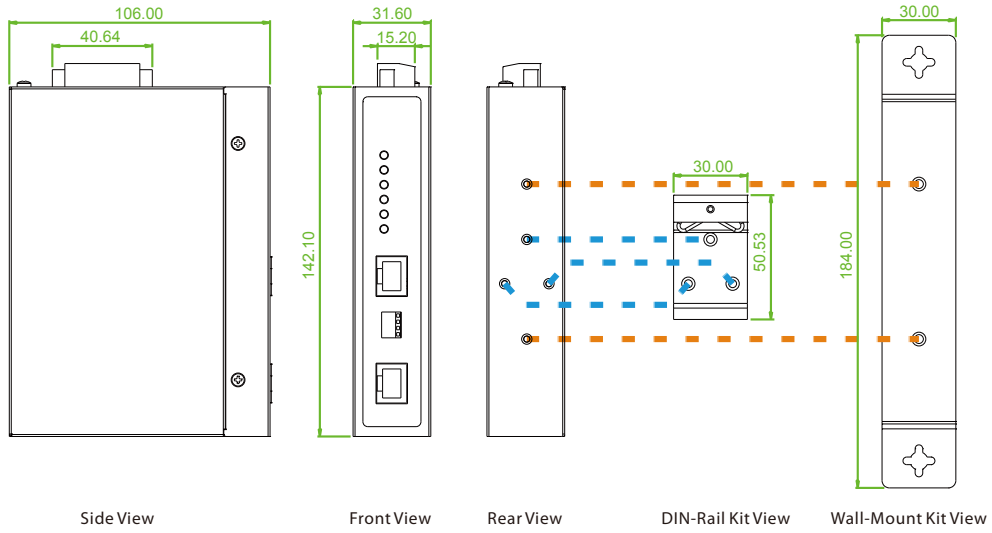


Figure : INJ-IG60-24 Gigabit Ethernet PoE Injector

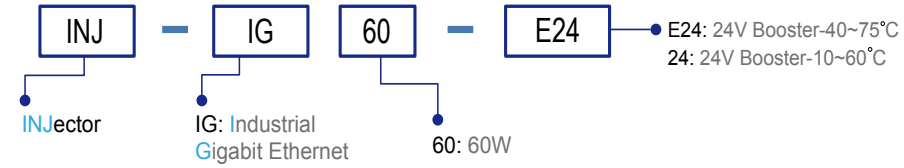
Dimensions



Ordering Information

Model Name	Ethernet	PoE Port		Input Voltage (Boost)	Certification			Operating Temperture
	10/100/1000 Base-T	IEEE802.3at (PSE)	Power Budget		Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE FCC	
INJ-IG60-24	1	1	15/30/36/60/72W	24/48VDC	V	V	V	-10~60 C
INJ-IG60-E24	1	1	15/30/36/60/72W	24/48VDC	V	V	V	-40~75 C

Model Naming Rule



Accessories

DR-120-24	Industrial Power, Input 88 ~ 132VAC / 176 ~ 264VAC, Output 24VDC, 120W, -10 ~ +60℃
DR-4524	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 48W, -10 ~ +50℃
MDR-40-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70℃
MDR-60-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 60W, -20 ~ +70℃

NEW

CE FC EN50121-4 EN61000-6-2 EN61000-6-4

INJ-IG01-PH

Gigabit Ethernet PoE+ Injector IEEE802.3at/af, 15.4/30/36/60W

INJ-IG01-PH is an industrial grade, single port, gigabit Ethernet PoE (Power over Ethernet) injector. PoE technology describes a system to pass electrical power safely, along with data, on Ethernet cabling. The original IEEE 802.3af-2003 PoE standard provides up to 15.4 W of DC power to each device. The updated IEEE 802.3at-2009 PoE standard also known as PoE+ or PoE plus, provides up to 30 W of power. Additionally, INJ-IG01-PH can provide up to 36/60W through the non-standard use of all 4 pairs of category 5 cable. Housed in a rugged DIN rail or wall mountable enclosure, this product is designed for harsh environments, such as industrial networking, security, intelligent transportation systems (ITS) and is also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications. Standard operating temperature range models (-10 to 60°C) and wide operating temperature range models (-40 to 75°C) fulfill the special needs of industrial automation applications.

Features

- Provides 1 port IEEE802.3at/af PoE Injector
- Power output 15.4W, 30W, 36W, 60W select by DIP SW
- PoE Mode A/B Select by DIP SW
- 4 Pairs PD handshake mode select by DIP SW (Such as AXIS® IP cam)
- Wide operating temperature -40 ~ 75°C (INJ-IG01-PHE)
- IP30 rugged metal housing and fanless

Specifications

IEEE Standard	IEEE 802.3 10Base-T Ethernet
	IEEE 802.3u 100Base-TX Fast Ethernet
	IEEE 802.3ab 1000Base-T Gigabit Ethernet
	IEEE 802.3at, IEEE802.3af
PoE Standard	IEEE802.3at, IEEE802,3af
PoE RJ-45 Pin Assignment	RJ-45 support IEEE 802.3at/af Middle-Span Alternative B mode or End-Span Alternative A mode, set by DIP SW
	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)
	Middle-Span, Alternative B mode Positive (V+): RJ-45 pin 4,5 Negative (V-): RJ-45 pin 7,8 Data (1, 2, 3, 6, 4, 5, 7, 8)
Network Connector	1 RJ-45 for 10/100/1000Base-T Data, and 1 RJ-45 for 10/100/1000Base-T Data with PoE Output power
Network Cable	UTP/STP above Cat. 5e cable
	EIA/TIA-568 100-ohm (100m)
LED	Per unit: Power (Green)
	Alt A/PoE ,Alt B/PoE (Green) ON when a PD device is connected to the GbE+PoE RJ-45 connector and the Injector is feeding power in Alt A or B mode. Blinking One of the Injector faults (overload, short circuit or over-temperature) occurs.
DIP SW	SW1 ON: Alternative B mode PoE Power Pin 4, 5, 7, 8 (When DIP SW 3 Off) OFF: Alternative A mode PoE Power Pin 1, 2, 3, 6 (When DIP SW 3 Off)
	SW2 ON: Hi Power 36W 36W PoE output OFF: Standard PoE 802.3af (15.4W), 802.3at (30W)
	SW3 ON: 4 Pair PoE Pin Ultra-High Power 60W PoE Output OFF: 2 Pair PoE Pin depand on DIP SW 1,2
	SW4 60W PD handshake mode OFF: General PD at ether 2 or 4 pairs mode ON: Compatible with some particular PD devices at high power mode (4 Pair mode),such as AXIS® Q60
Reserve Polarity Protection	Present
Overload Current Protection	Present
Power Supply	(44~57VDC) Input power (Removable Terminal Block)
PoE Power Output	Maximum Ultra High Power 60W, IEEE802.3at 30W, IEEE802.3at High power 36W, IEEE802.3af 15.4W

Power Consumption		In 30W mode (2 Pairs)	In 60W mode (4 Pairs)
	Input Power Consumption (Input 48VDC)	31.1W	62.8W
	PoE Output Power	30W	60W

Removable Terminal Block	Provide 2 Pin for power input connectorn
Operating Temperature	-10 ~ 60°C (INJ-IG01-PH) -40 ~ 75°C (INJ-IG01-PHE)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection and fanless
Dimensions	70 x 30 x 103 mm (D x W x H)
Weight	215g
Installation Mounting	DIN Rail mounting, and Wall Mounting (Optional)
MTBF	409,994Hours (MIL-HDBK-217)
Warranty	5 years
Certification	
EMC	CE
EMI	FCC Part 15 Subpart B Class A, CE EN55022 Class A
Railway Traffic	EN50121-4
Immunity for Heavy Industrial environment	EN 61000-6-2
Emission for Heavy industrial environment	EN 61000-6-4
EMS	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (EFT) Level 3, Criteria A
	EN 61000-4-5 (Surge) Level 3, Criteria B
	EN 61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (PFMF) Field strength 300A/m Criteria A
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Application

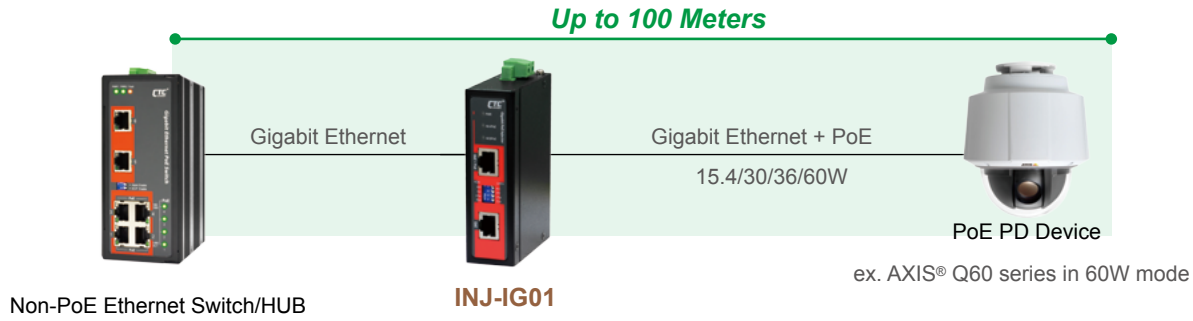
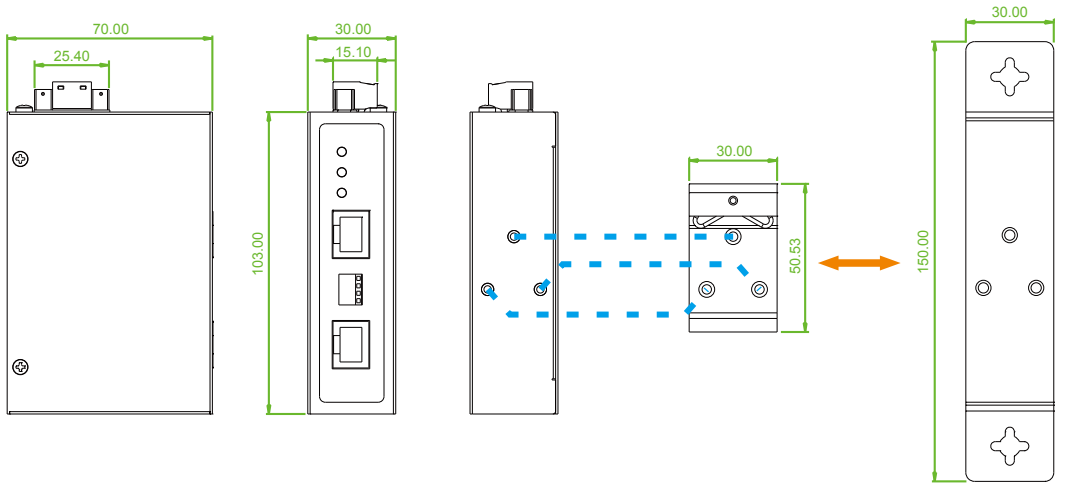


Figure : INJ-IG01-PH Gigabit Ethernet PoE Injector

Dimensions



Ordering Information

Model Name	Ethernet	PoE Port		Certification				Operating Temperture
	10/100/1000 Base-T	IEEE802.3at (PSE)	Power Budget	Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE	FCC	
INJ-IG01	1	1	15/30/36/60	V	V	V	V	-10~60 C
INJ-IG01-E	1	1	15/30/36/60	V	V	V	V	-40~75 C

Model Naming Rule

INJ - IG - 01 - PHE

- INJ: INJector
- IG: IG: Industrial Gigabit Ethernet
- 01: 01: Model 1
- PHE: PHE: 1x High Power PoE -40~75˚C
- PH: PH: 1x High Power PoE -10~60˚C

Accessories

MDR-40-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70℃
DR-120-24	Industrial Power, Input 88 ~ 132VAC / 176 ~ 264VAC, Output 24VDC, 120W, -10 ~ +60℃
IND-WMK03	Wall Mount kit for Industrial product (Compact, 150x 30mm)