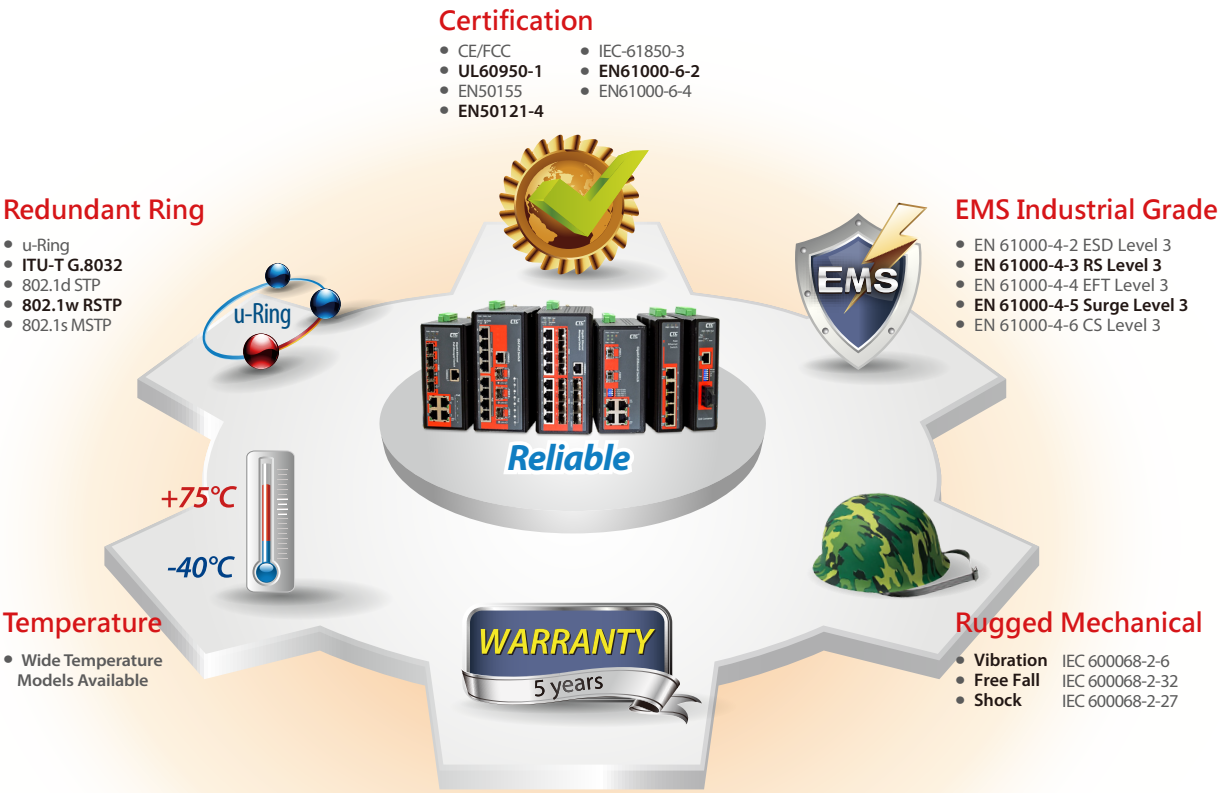
Reliable Industrial Ethernet Networks

- Certified Industrial Standards
- Managed by Centralized SmartView™
- Quick & Easy SmartConfig™ for Mass Configuration
- Flexible u-Ring Network Redundancy
- Standard ITU G.8032
- IEEE 1588 v.2 P2P Precision Time Protocol
- Rugged & Fanless Design with Wide Operating Temperature
- Redundant & Wide Range Power Inputs
- IEEE 802.3 az Green Power
- 5 Years Warranty

Industrial networking switches, designed and manufactured by CTC Union, are to deliver high performance and reliable solutions in fields such as automation, railway transmission, power substation and so on. The products have passed strict tests and are certified to UL60950-1 safety standard, railway traffic EN50121-4 & EN50155 and EN61000-6-2 & EN61000-6-4 standards. With wide operating temperature, IP30 rugged housing, redundant wide range power inputs features, CTC Union's industrial networking devices are able to provide uninterrupted and stable services for mission-critical projects especially carried out in harsh environments. SmartView™ centralized management, friendly and flexible u-Ring redundancy and real-time alarm notifications make CTC Union's industrial networking devices even more resilient in connecting your network. To demonstrate confidence in our products, we offer a 5-Year warranty on industrial networking products to our customers.

Reliability Elements



Key Certificates

CTC Union's industrial networking products are UL listed and certified. UL-certified products are intended to reduce risks of electric shocks, fire, energy related hazards, heat related hazards, mechanical hazards, radiation, and chemical hazards for operator, layman or service personnel.

For Trackside and Railway Applications

CTC Union's industrial networking products are certified to the EN50121-4 EMC (Electromagnetic compatibility standard) for emission and immunity and EMS (Electromagnetic Susceptibility Protection) for surge, EFT, ESD requirements and so on.

EN50121-4

For Heavy Industrial Ethernet Applications

CTC Union's industrial networking products are certified to the EN61000-6-2 & EN61000-6-4 Immunity & Emission for Heavy Industrial Environment and EMS (Electromagnetic Susceptibility Protection) for surge, EFT, ESD requirements and so on.

EN61000-6-2
EN61000-6-4

For Power Substation Applications

CTC Union's industrial networking products are certified to the IEC 61850-3 standard that meets the EMC (Electromagnetic compatibility standard) requirements and EMS (Electromagnetic Susceptibility Protection) for surge, EFT, ESD requirements and so on.

IEC 61850-3

For Railway, Buses and Moving Machine Applications

CTC Union's industrial networking products are certified to the EN50155 standard that meets the EMC (Electromagnetic compatibility standard) requirements and EMS (Electromagnetic Susceptibility Protection) for surge, EFT, ESD requirements and so on. The devices can also withstand environmental disturbances including vibration and shock variations.

EN50155

Comparison of CE & EN50121-4 Compliant Standards for Trackside

Compared with general CE compliant products, our EN50121-4 products meet a range of demanding standards, including EMC, vibration and power. For trackside applications, surge, EFT, ESD indicators are also important to successful installations. See below for a comparison between genernal CE compliant and EN50121-4 (Trackside) test levels:

	CE Compliant	EN50121-4 Compliant (Trackside)
Surge		
Signal L-E	1kV	2kV
Signal L-L	N/A	2kV
DC Power L-E	0.5kV	2kV
DC Power L-L	0.5kV	2kV
ESD (Contact)	4kV	6kV
Radio frequency magnetic field	10V/m	20V/m
EFT (fast transient)	0.5kV Criteria B*	2kV Criteria A*
Power magnetic field	10 A/meter	300 A/meter
Pulse magnetic field	N/A	300 A/meter

* Criteria A: During the test storage devices shall maintain normal operation both in read/write and in stand-by conditions.
* Criteria B: During and after the test failures which can be recovered by read and write retires are permissible (temporary delay in processing caused by this process is acceptable).

Managed by Centralized SmartView™

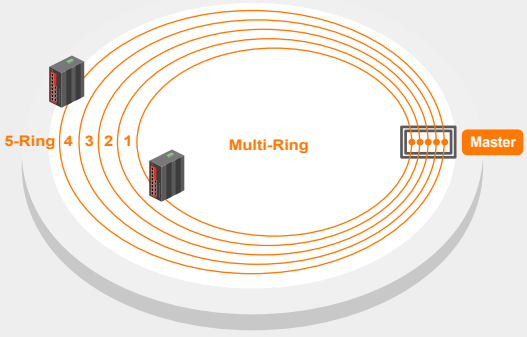
SmartView is a centralized network management platform that offers visual representations of connected devices. Users can remotely access and manage devices and upgrade Firmware image for a group of member devices at the far end via user-friendly and easy-to-use operation interface. So far, Smartview contains Fault management, Configuration Management, Accounting management, Performance Management and Security management.

Quick & Easy SmartConfig™ for Mass Configuration

CTC Union’ s SmartConfig is an intuitive and convenient network configuration tool that enables users to access multiple and discovered industrial networking products at a time to perform mass configuration tasks. Compared with one-to-one configuration, SmartConfig can complete a task automatically and simultaneously even faster and effortlessly. For large network deployments, SmartConfig is a useful configuration tool to not only help users save time and cost, but also improve operational efficiency and security. SmartConfig provides functions like Account Management, Auto Discovery, Auto Grouping/Create/Modify Group, Device Configuration, u-Ring Configuration, IP Address Assignment, Firmware Upgrade, Export/Import Configuration, Connectivity Test and so on.

The Most User-Friendly & Flexible u-Ring Network Redundancy

u-Ring is a proprietary redundancy protocol developed by CTC Union that supports flexible networking topologies and provides faster recovery time (10ms) when a point of failure occurs on the network. u-Ring that outperforms other network redundancy protocols can support 5 rings and up to 250 devices in a ring. It also provides the best flexibility for various network applications to users when structuring their rings by offering three u-Ring types (u-Ring, u-Chain, Sub-Ring). Additionally, u-Ring configuration page is easy-to-use and user-friendly. Users can set up a ring instance quickly as long as they select the suitable u-Ring type and the port numbers participating in redundancy operation.



- 5-Ring(Max.)
- 250 nodes expansion pre ring

u-Ring configuration

Delete	Instance	Type	Master	East		West	
				Port	Edge	Port	Edge
Delete	1	u-Ring	☐	1		2	
Delete	2	u-Ring	☐	4		3	
Delete	3	u-Ring	☐	10 (Fiber2)		11 (Fiber3)	
Delete	4	Sub-Ring	☐	6			
Delete	5	u-Chain	☐	5	☐	9 (Fiber1)	☐

User-Friendly Configuration Web Interface

Standard ITU G.8032, IEEE 802.1W RSTP, IEEE 802.1s MSTP Supported

Other than the proprietary u-Ring redundancy protocol, standard ring redundancy protocols such as ITU G.8032, RSTP and MSTP are also supported. Among standard redundancy protocols, ITU G.8032 achieves the fastest recovery time (<50ms) than others. Users can choose the most suitable ring redundancy protocol based on their actual networking needs.

IEEE1588v2 PTP Supported.

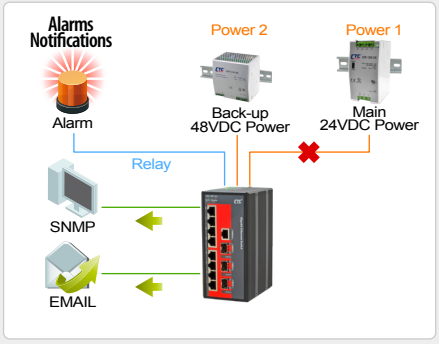
CTC Union's IEEE 1588v2 PTP (Precision Time Protocol) feature provides timestamp for receive and transmit frames to synchronize clocks in a network. Our IEEE 1588v2 PTP-enabled products support a hierarchical master-slave structure for clock distribution and each port provides Master, Slave, and Ordinary mode. Through continuous message exchanges between the master and slave clock, our products can achieve synchronization accuracy in sub-microsecond range.

5-Year Warranty and High MTBF Values

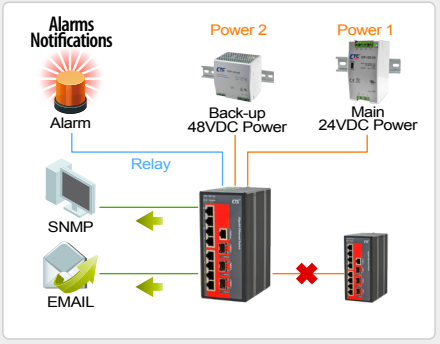
Before the industrial networking products are delivered to customers, they were undergone reliability tests that meet rigorous standards in our lab and various strict quality checks in our factory. Our products using specially-chosen parts such as industrial-grade IC, PCB, transformers, screws and specially-installed method for heatsink have been approved to achieve high MTBF values. EMC and EMS certificates we received are further to approve that our products can function stably and safely even in harsh environments. To demonstrate our confidence in our products, we offer a 5-Year warranty on our industrial networking products to customers.

Diverse & Immediate Alarm Notifications

The industrial networking products offer several ways of notifying alarms in response to a particular abnormal event. One way is to send an Email warning or to trigger a SNMP trap when a fault is automatically detected. These faulty events can also be recorded in system log for further analysis. The other way is to use alarm relay contacts on the terminal block. When the selected alarm events (power failure, link up & down, etc.) occur, the alarm relay contacts will be open and the FAULT LED will be lit in amber color to alert the user. The industrial networking products allow users to use one or more notification actions for a specific abnormal event. Users can take advantage of alarm notification feature and select the most appropriate alarm actions for their own application.

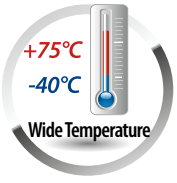


Alarms for Main Power Failure



Alarms for Main Port Link Down

Rugged & Fanless Design with Wide Operating Temperature



CTC Union's industrial networking products are all fanless and protected in a rugged metal housing to endure extreme and rapidly changing conditions such as shock, vibration, moisture, etc. They can also operate at standard (-10 ° C~60 ° C) and wide (-40°C~75°C) operating temperature range, making them suitable for harsh environments like railways, roadside, factory, warehouse, dock, parking lot, electrical poles and so on.

IP67 Rated & M12 Connection

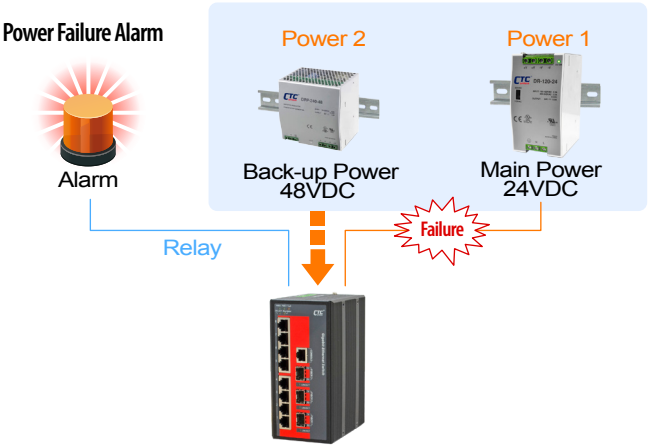
Our ITP series is EN50155 compliant and provides solutions for rugged and long life usage in industrial and harsh environments. When exposing in outdoor, offshore or railways environments, ITP series equipped with M12 connectors is able to withstand vibration, shock, extreme temperature, and humidity. Additionally, our EN50155 compliant switches are IP67 rated to protect against dust, oil and submission in water and to meet the most rigorous standards for extreme temperature, vibration, shock, humidity and others. ITP products with M12 connectors and IP67 rating are purpose-built for automotive, manufacturing, oil, gas, mining and other industrial environments, requiring no extra housing protection.

Waterproof

Anti-vibration

Redundant & Wide Range Power Inputs

The industrial networking products use a removable terminal block to offer two separate and wide range DC power (12/24/48V) connections. Basically, one pair of power connection is enough to power up the system. However, if two power inputs are connected, the back-up power supply will take over to provide the entire power when the main power supply fails. The power redundancy is enabled automatically; no software configuration is required.

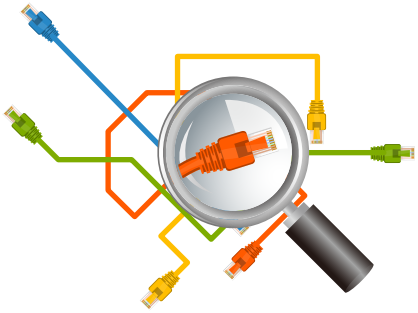


IEEE 802.3az Green Power

802.3az Less Power Consumption GREEN

IEEE 802.3az EEE (Energy Efficient Ethernet) is intended to reduce power consumption during periods of low data activity. CTC Union's industrial networking products that comply with IEEE 802.3az standard can reduce consumption in two ways. One is to reduce power usage when ports are in idle state. The other way is to reduce power usage according to cable length meaning that the shorter the cable length, the less power it consumes. Both ways can save power consumption and achieve the goal of energy efficiency without affecting the entire network.

Cable Diagnostics



Cable Diagnostics feature is useful to troubleshoot Ethernet cabling problems especially for Ethernet cables buried or hidden underground. The diagnostic results reveal cable states (shorts or open connections), the length of cable and distances to the faults. When a cabling problem has been detected, an appropriate recovery action can be taken according to information (the pairs of the cable and the location of the fault) obtained without interrupting unaffected network.

Industrial Ethernet Product Comparison Table

Industrial Ethernet Switches

Model Name	Managed	Total Port	UTP		Fiber			Certification			
			10/100 Base-TX	10/100/1000 Base-T	100Base-FX	1000Base-X	Dual Speed 100/1000Base-X	Railway EN50121-4	Safety UL60950-1	EN61000-6-2 EN61000-6-4	CE FCC
IFS-500		5	5					✓		✓	✓
IFS-800		8	8					✓		✓	✓
IFS-401F		5	4		1 SC/ST			✓		✓	✓
IFS-402F		6	4		2 SC/ST			✓		✓	✓
IFS-500C		5	5					✓		✓	✓
IGS-500		5		5				✓		✓	✓
IGS-501S		6		5			1 SFP	✓		✓	✓
IGS-800		8		8				✓		✓	✓
IGS-401F		5		4		1 SC		✓	✓	✓	✓
IGS-402F		6		4		2 SC		✓	✓	✓	✓
IGS-402S		6		4			2 SFP	✓	✓	✓	✓
IFS-402GSM	✓	6	4				2 SFP	✓	✓	✓	✓
IFS-803GSM	✓	11	8				3 SFP	✓	✓	✓	✓
IFS-1604GSM	✓	20	16				4 SFP	✓	✓	✓	✓
IGS-404SM	✓	8		4			4 SFP	✓	✓	✓	✓
IGS-803SM	✓	11		8			3 SFP	✓	✓	✓	✓
IGS-812SM	✓	20		8			12 SFP	✓	✓	✓	✓
IGS-1604SM	✓	20		16			4 SFP	✓	✓	✓	✓

Industrial Ethernet Converters

Model Name	Managed	UTP		Fiber Port			Certification			
		10/100 Base-TX	10/100/1000 Base-T	100Base-FX	1000Base-X	Dual Speed 100/1000Base-X	Railway EN50121-4	UL60950-1	EN61000-6-2 EN61000-6-4	CE FCC
IMC-100C		1		1 SC/ST			✓		✓	✓
IMC-100		1		1 SC/ST			✓	✓	✓	✓
IMC-1000C			1		1 SC		✓		✓	✓
IMC-1000			1			1 SC	✓	✓	✓	✓
IMC-1000CS			1			1 SFP	✓		✓	✓
IMC-1000S			1			1 SFP	✓	✓	✓	✓
IMC-1000MS	✓		1			1 SFP	✓	✓	✓	✓
IMC-1000M	✓		1			1 SC	✓	✓	✓	✓
IMC-100M	✓	1		1 SC/ST			✓	✓	✓	✓

Industrial Serial Fiber Converters

Model Name	Dual Channel	Serial			Fiber		Certification			
		RS232	RS422/485	Isolation 2.5KV	SC/ST	Daisy Chain	Safety UL60950-1	EN61000-6-2 EN61000-6-4	CE	FCC
IFC-FDC	✓	2	1	✓	2	✓	✓	✓	✓	✓
IFC-Serial	✓	2	1	✓	1		✓	✓	✓	✓

Industrial Ethernet PoE Switches

Model Name	Managed	Total Port	UTP		Fiber		PoE Port IEEE802.3at	Certification			
			10/100 Base-TX	10/100/1000 Base-T	1000Base-X	Dual Speed 100/1000Base-X		Railway EN50121-4	UL60950-1	EN61000-6-2 EN61000-6-4	CE FCC
IGS-600-4PH24		6		6			4	✓	✓	✓	✓
IGS-401F-4PH24		5		4	1 SC		4	✓	✓	✓	✓
IGS-402F-4PH24		6		4	2 SC		4	✓	✓	✓	✓
IGS-402S-4PH24		6		4		2 SFP	4	✓	✓	✓	✓
IFS-402GSM-4PH24	✓	6	4			2 SFP	4	✓	✓	✓	✓
IFS-803GSM-8PH24	✓	11	8			3 SFP	8	✓	✓	✓	✓
IGS-803SM-8PH24	✓	11		8		3 SFP	8	✓	✓	✓	✓
IGS-402SM-4PH24	✓	6		4		2 SFP	4	✓	✓	✓	✓

Industrial Ethernet PoE Converters

Model Name	Managed	UTP		Fiber Port		PoE		Input Voltage (Boost)	Certification		
		10/100 Base-TX	10/100/1000 Base-T	100 Base-FX	Dual Speed 100/1000Base-X	IEEE802.3 at /af (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	✓	✓	✓
IMC-1000S-PH12			1		1 SFP	1	30W	12/24/48VDC	✓	✓	✓
IMC-100-PH12		1		1 SC/ST		1	30W	12/24/48VDC	✓	✓	✓
IMC-1000M-PH12	✓		1		1 SC	1	30W	12/24/48VDC	✓	✓	✓
IMC-1000MS-PH12	✓		1		1 SFP	1	30W	12/24/48VDC	✓	✓	✓
IMC-100M-PH12	✓	1		1 SC/ST		1	30W	12/24/48VDC	✓	✓	✓

Industrial PoE Gigabit Ethernet Injector

Model Name	Network	PoE		Input Voltage	Certification		
	10/100/1000 Base-T (UTP)	IEEE802.3 at /af (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 (Boost)"	✓	✓	✓
INJ-IG01-PH	1	1	15/30/60W	48VDC	✓	✓	✓

PoE LAN Extenders

Model Name	UTP	Long Distance		PoE Port IEEE802.3at	Certification			
	10/100	RJ11	Coaxial		Rail Way EN50121-4	Safety EN60950-1	EN61000-6-2 EN61000-6-4	CE, FCC
IEXT224-4PH	4	1	1	24/48VDC	✓	✓	✓	✓
IEXT204-4PH	4	1		48VDC	✓	✓	✓	✓

EN50155 Ethernet Switches

Model Name	Managed	IP67	Total Port	UTP M12		Fiber Port	PoE Port IEEE802.3at	Certification					Shock/ Vibration
				10/100 Base-TX	10/100/1000 Base-T	Dual Speed 100/1000Base-X		EN50155	EN50121-4	Safety UL60950-1	EN61000-6-2 EN61000-6-4	CE FCC	IEC61377
ITP-500		✓	5	5				✓	✓		✓	✓	✓
ITP-800		✓	8	8				✓	✓		✓	✓	✓
ITP-800M	✓	✓	8	8				✓	✓	Plan	✓	✓	✓
ITP-802GTM	✓	✓	10	8	2			✓	✓	Plan	✓	✓	✓
ITP-802GSM	✓	✓	10	8		2 SFP		✓	✓	Plan	✓	✓	✓
ITP-G800M	✓	✓	8		8			✓	✓	Plan	✓	✓	✓
ITP-G802SM	✓	✓	10		8	2 SFP		✓	✓	Plan	✓	✓	✓
ITP-800M-8PH24	✓	✓	8	8			8	✓	✓	Plan	✓	✓	✓
ITP-802GTM-8PH24	✓	✓	10	8	2		8	✓	✓	Plan	✓	✓	✓
ITP-802GSM-8PH24	✓	✓	10	8		2 SFP	8	✓	✓	Plan	✓	✓	✓
ITP-G802SM-8PH24	✓	✓	10		8	2 SFP	8	✓	✓	Plan	✓	✓	✓
ITP-G800M-8PH24	✓	✓	8		8		8	✓	✓	Plan	✓	✓	✓

IEC61850-3 Ethernet Switches

Model Name	Managed	Total Port	UTP		Fiber Port	Certification			
			10/100 Base-TX	10/100/1000 Base-T	Dual Speed 100/1000Base-X	IEC-61850-3	Safety UL60950-1	Railway EN50121-4	CE, FCC
IPS-G803SM	✓	✓		8	3 SFP	✓	✓	✓	✓
IPS-803GSM	✓	✓	8		3 SFP	✓	✓	✓	✓

Industrial Core Switches

Model Name	Managed	Total Port	GbE Port		10GbE	Input Power		Certification			
			100/1000 Base-X SFP	10/100/1000 Base-T UTP or 100/1000Base-X SFP	IEEE 802.3ae SFP+	DC (Low Volt) isolated 24/48VDC	AC (High Volt) 110/240V AC	Safety UL60950-1	EN50121-4	EN61000-6-2 EN61000-6-4	CE FCC
ICS-G24S4X-AA	V	28	20	4 Combo	4		2	V	V	V	V
ICS-G24S4X-DD	V	28	20	4 Combo	4	1	1	V	V	V	V
ICS-G24S4X-AD	V	28	20	4 Combo	4	2		V	V	V	V
ICS-G24S2X-AA	V	26	20	4 Combo	2		2	V	V	V	V
ICS-G24S2X-DD	V	26	20	4 Combo	2	1	1	V	V	V	V
ICS-G24S2X-AD	V	26	20	4 Combo	2	2		V	V	V	V

Ethernet Device Servers

Model Name	LAN UTP Port	WAN Port		Certification
	10/100Base-TX	RS-232	RS232/422/485	CE, FCC
STE100A-232	✓	✓		✓
STE100A-Serial	✓		✓	✓

IGS-401F
4x 10/100/1000Base-T+ 1x 1000Base-SX/LX

IGS-402F
4x 10/100/1000Base-T+ 2x 1000Base-SX/LX

IGS-402S
4x 10/100/1000Base-T+ 2x 100/1000Base-X SFP

The series models are 4-port 10/100/1000Base-T Ethernet non-managed Gigabit switches, with 1 or 2 fiber ports, 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, 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

- 4x 10/100/1000Base-T RJ45 + 1x 1000Base-SX/LX Fiber (IGS-401F)
- 4x 10/100/1000Base-T RJ45 + 2x 1000Base-SX/LX Fiber (IGS-402F)
- 4x 10/100/1000Base-T RJ45 + 2x 100/1000Base-X SFP (IGS-402S)
- 12/24/48VDC redundant dual input power design
- Wide operating temperature -40 ~ 75°C ("-E" model)
- Provides broadcast storm protection
- Supports DIP SW for alarm setting and broadcast storm protection
- Supports power failure alarm message by relay
- Supports flow control
- 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, 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 802.3x Flow Control and Back Pressure
Switch Architecture	Back-plane (Switching Fabric): 10Gbps (IGS-401F)
	Back-plane (Switching Fabric): 12Gbps (IGS-402S, IGS-402F)
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
Network Connector	4 x RJ-45
	10/100/1000Base-TX auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex
	1 or 2 1000Base-X Fiber SC connector (IGS-401F, IGS-402F) 2 100/1000Base-X SFP connector (IGS-402S)
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)
	RJ-45 port : Link/Active (Green), Speed 10 (OFF), 100 (Green), 1000 (Yellow)
	Fiber Per port: Link/Active (Green)

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 (IGS-402S)
	DIP 4	ON : Fiber 1 for 100Base-FX SFP OFF : Fiber 1 for Gigabit SFP (IGS-402S)
Reserve Polarity Protection	Present	
Overload current protection	Present	
Power Supply	Redundant Dual DC 12/24/48V (9.6~60VDC) Input power (Removable Terminal Block)	
	Provide DC Power JACK adapter cable for external power supply	
Power Consumption	7.9W (IGS-402F)	
	7.8W (IGS-401F)	
	7.9W (IGS-402S)	
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-402S, IGS-401F, IGS-402F)	
	-40 ~ 75°C (IGS-402S-E, IGS-401F-E, IGS-402F-E)	
Operating Humidity	5% to 95% (Non-condensing)	
Storage Temperature	-40 ~ 85°C	
Housing	Rugged Metal, IP30 Protection, Fanless	
Dimensions	106 x 62.5 x 134.8 mm (D X W X H)	
Weight	0.84kg (IGS-402S) 0.67kg (IGS-401F) 0.68kg (IGS-402F)	
Installation Mounting	DIN Rail mounting or wall mounting	
MTBF	438,031 Hours (IGS-402S) 407,596 Hours (IGS-401F) 391,633 Hours (IGS-402F) (MIL-HDBK-217)	
Warranty	5 years	

Certification	
EMC/EMS	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	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

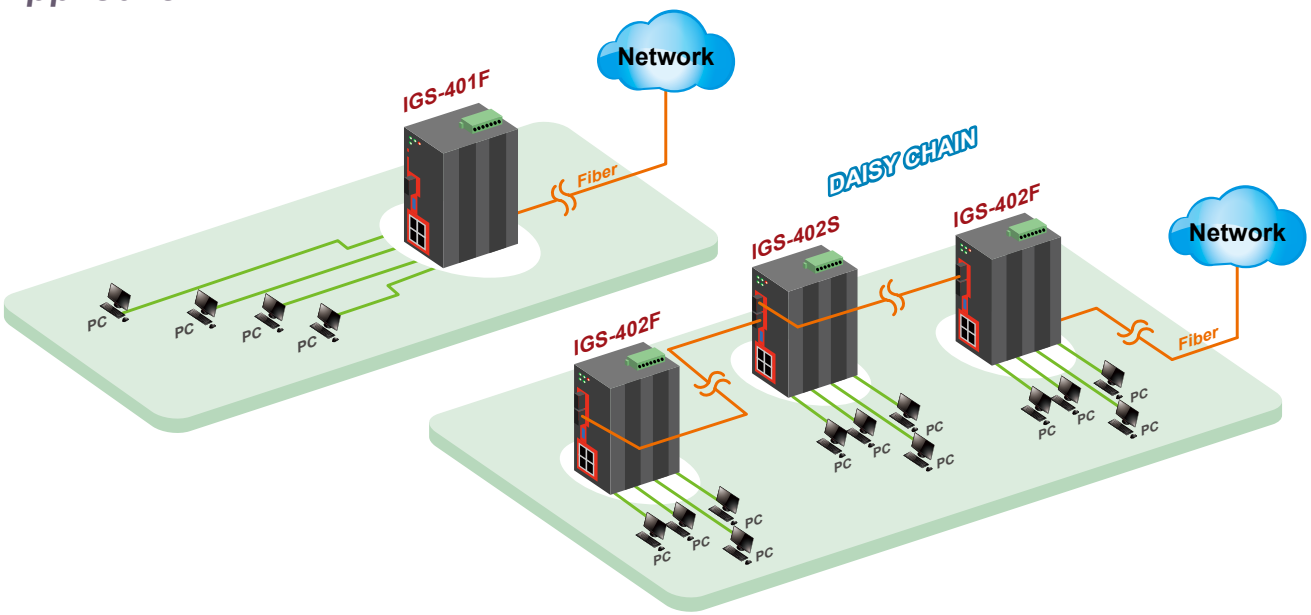
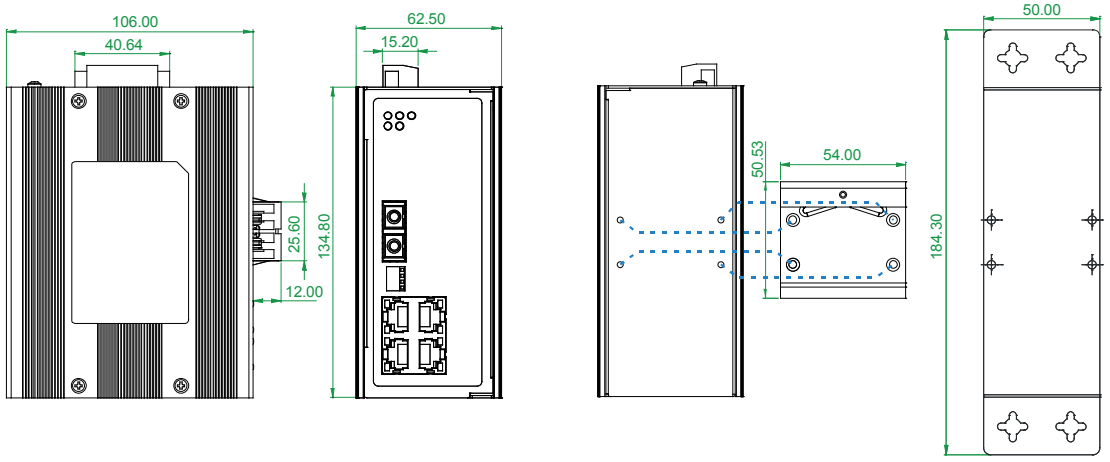


Figure : IGS-402S, IGS-401F & IGS-402F Gigabit Ethernet Switch Transmission

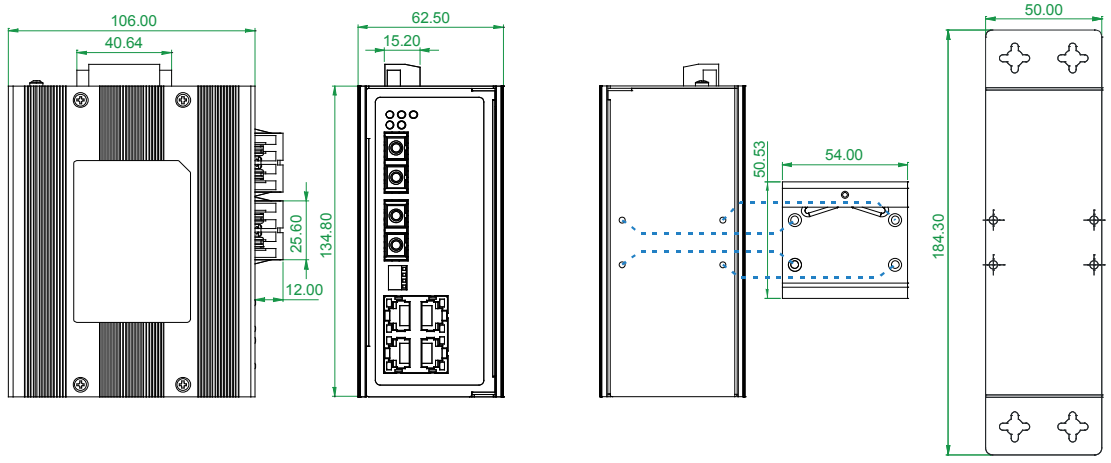
Dimensions

IGS-401F



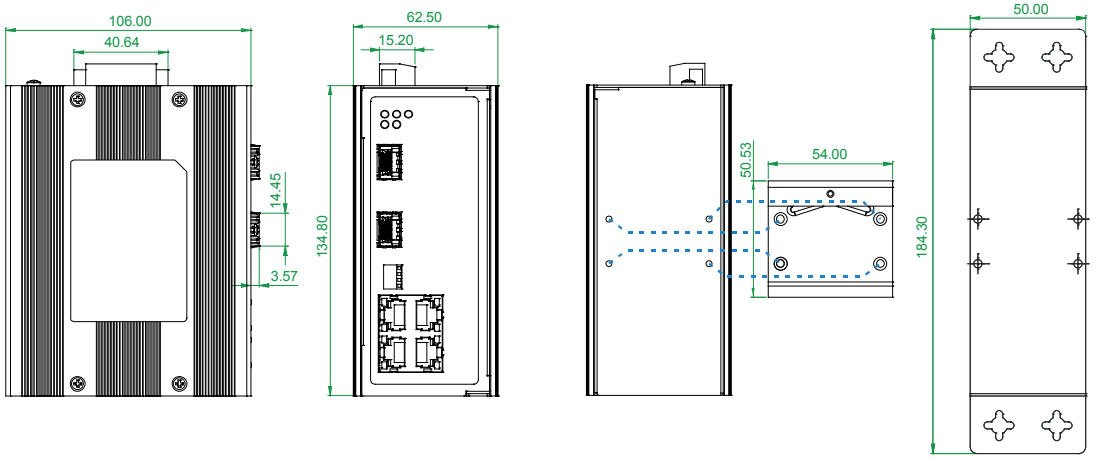
Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View

IGS-402F



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

IGS-402S

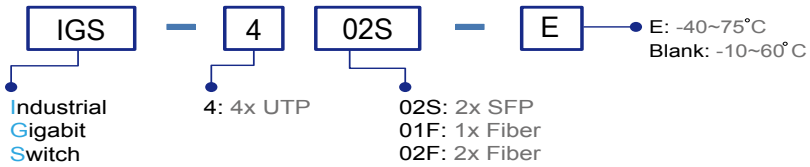


Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View

Ordering Information

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

Model Naming Rule



Fiber Connector	Connectivity Distance
SC (IGS-401F & IGS-402F only)	SC001: 500m (SC, M/M) 002 : 2km (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)

Port Number | Temperature | Connector Type | Connectivity Distance

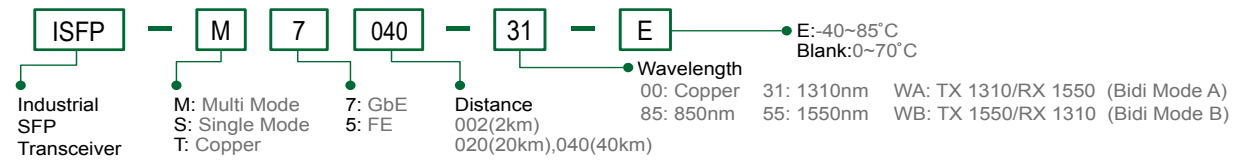
IGS – 40□ F – □ – □□□□□

Example: IGS – 401F – E – SC002

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℃
SFP Transceiver	Compatible, Reliable, 5-year Warranty

SFP Naming Rule



NEW

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

IGS-501S
5x 10/100/1000Base-T + 1x 100/1000Base-X SFP

IGS-500
5x 10/100/1000Base-T

IGS-800
8x 10/100/1000Base-T

The series models are 5/8-port 10/100/1000Base-T Ethernet non-managed Gigabit switches, with either 1 or 0 port 1000Base-X SFP port, 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, 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

- 5x 10/100/1000Base-T RJ-45 + 1x100/1000Base-X SFP (IGS-501S)
- 5x 10/100/1000Base-T RJ-45 (IGS-500)
- 8x 10/100/1000Base-T RJ-45 (IGS-800)
- Supports broadcast storm protection
- Supports power failure alarm message by relay
- Supports flow control
- Jumbo frame support
- Supports auto-negotiation and auto-MDI/MDI-X
- Redundant dual DC input power 12/24/48VDC (9.6~60VDC)
- IP30 rugged metal housing, Fanless
- Supports DIN Rail or wall mounting installation
- Wide operating temperature -40~75°C (-E model)
- EN50121-4, CE, FCC Certification
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified

Specifications

IEEE Standard	IEEE 802.3 10Base-T Ethernet	
	IEEE 802.3u 100Base-TX, 100Base-FX, Fast Ethernet	
	IEEE 802.3ab 1000Base-T Gbit/s Ethernet over twisted pair	
	IEEE802.3x Flow Control	
	IEEE 802.3z 1000Base-X Gbit/s Ethernet over Fiber-Optic	
Switch Architecture	Back-plane (Switching Fabric): 12Gbps (IGS-501S) 10Gbps (IGS-500) 16Gbps (IGS-800)	
Data Processing	Store and Forward	
Flow Control	IEEE 802.3x flow control for Full duplex , back pressure for half duplex	
Provides Broadcast Storm Protection	Present	
Jumbo Frame	9.6KBytes	
MAC Address Table	8K	
Packet Buffer Size	128KByte	
Network Connector	5 x 10/100/1000Base-T RJ-45 (IGS-500,IGS-501S)	
	8 x 10/100/1000Base-T RJ-45 (IGS-800)	
	1x 100/1000Base-X SFP connector (only for IGS-501S)	
	10/100/1000Base-TX auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex	
Network Cable	10Base-T: 2-pair UTP/STP Cat. 5 cable	
	EIA/TIA-568 100-ohm (100m)	
	100Base-TX: 2-pair UTP/STP Cat. 5 cable	
	EIA/TIA-568 100-ohm (100m)	
	Fiber Cable (Multi-mode): 50/125um, 62.5/125um (only for IGS-501S)	
	Fiber Cable (Single-mode): 9/125um (only for IGS-501S)	
Protocols	CSMA/CD	
LED	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber)	
	Per RJ45 Link/Act 1000 (Yellow) Link/Act 10/100 (Green)	
	Fiber LED Link/Act (Green)	
DIP SW	DIP 1	ON : Disable
		OFF : Enable power failure alarm
	DIP 2	ON : Disables broadcast storm protection
		OFF : Enable broadcast storm protection
	DIP 3	Green Ethernet
		ON : Disable Green Ethernet
		OFF : Enable 802.3az Green Ethernet
	DIP 4	SFP speed (only for IGS-501S)
		ON : 100M OFF : 1000M
Reserve Polarity Protection	Present for Power Input	
Overload Current Protection	Present	

Power Supply	Redundant Dual DC 12/24/48V (9.6~60VDC), or AC 24V (18~36VAC) Input power (Removable Terminal Block)
	Provide DC Power JACK adapter cable for external power supply

Power Consumption

Input	IGS-500	IGS-501S	IGS-800
12VDC	3.3W	3.9W	7.0W
24VDC	3.4W	3.9W	7.0W
48VDC	4.8W	5.3W	8.7W

Alarm Relay Contact	Relay outputs with current carrying capacity of 1 A @24VDC, NC
Removable Terminal Block	Provide 2 redundant power, alarm relay contact, 6 Pin
Operating Temperature	-10°C~60°C (IGS-501S, IGS-500, IGS-800)
	-40°C~75°C (IGS-501S-E, IGS-500-E, IGS-800-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal,IP30Protection and fanless
Dimensions	106 x 31.6 x 142 mm (D x W x H)
Weight	0.415kg (IGS-501S) 0.41kg (IGS-500) 0.44kg (IGS-800)
Installation Mounting	DIN Rail mounting or wall mounting
MTBF	569,039hrs (IGS-501S) 612,034hrs (IGS-500) 301,121hrs (IGS-800) (MIL-HDBK-217)
Warranty	5 years
Certification	
EMC/EMS	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	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
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Application

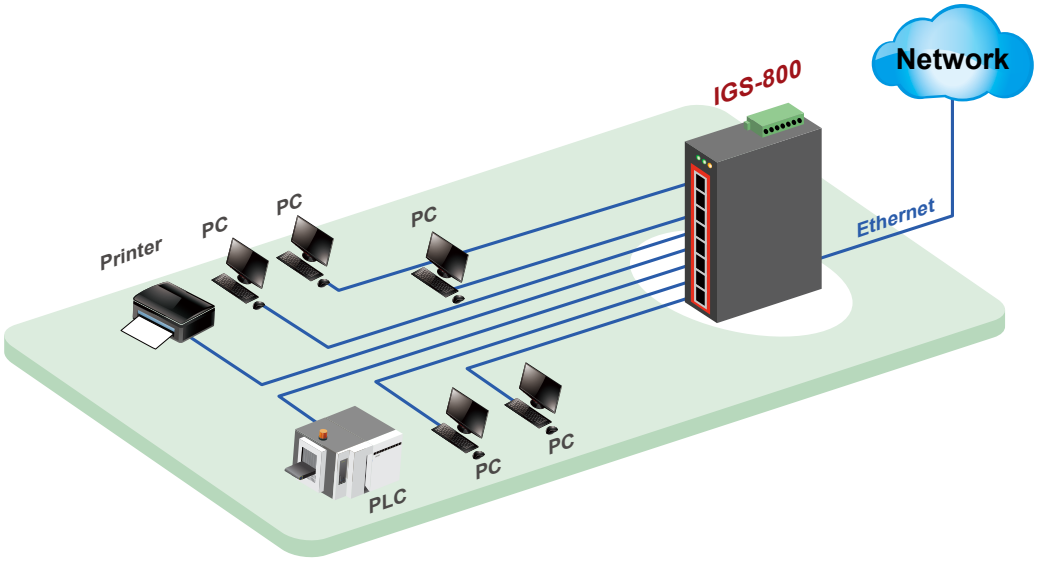
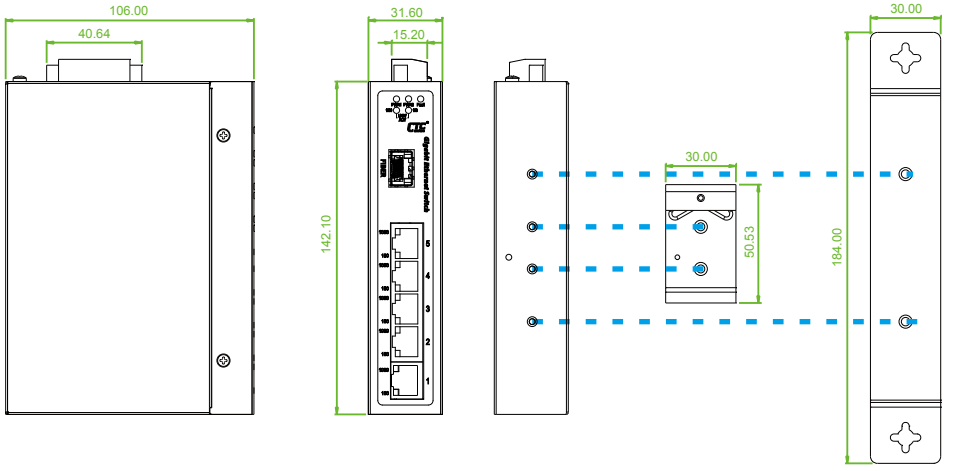


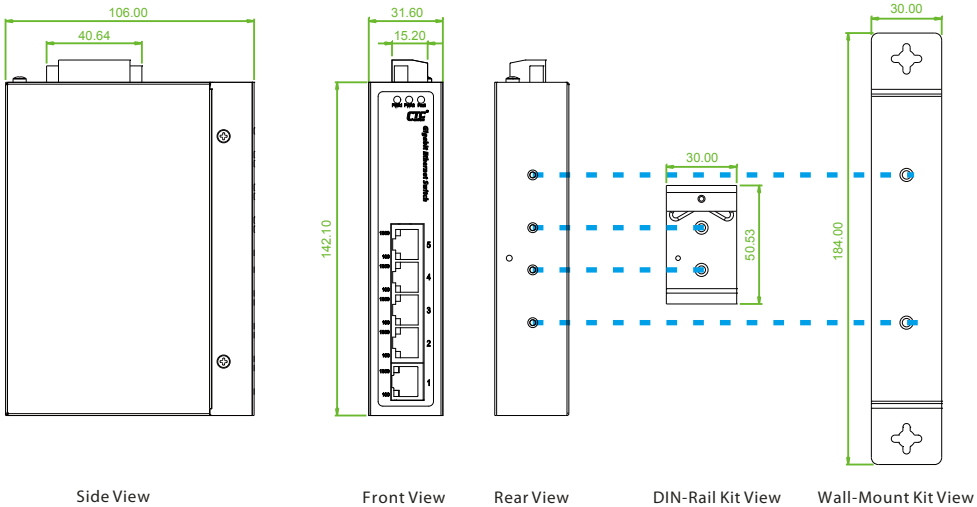
Figure : IGS-800 Gigabit Ethernet Switch Transmission

Dimensions

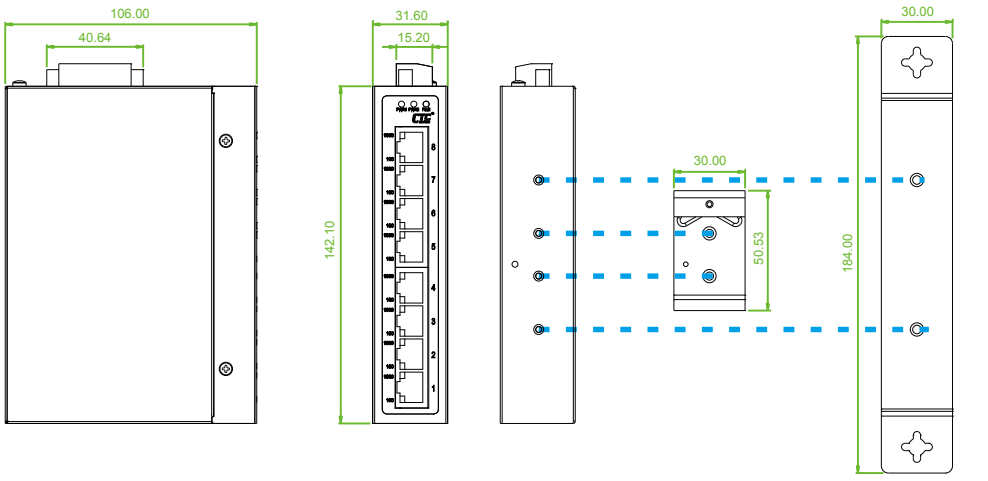
IGS-501S



IGS-500



IGS-800



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

Ordering Information

Model Name	Total Port	UTP Port	Fiber Port	Certification				Operating Temperture
		10/100/1000 Base-T	100/1000Base-X	Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE	FCC	
IGS-501S	6	5	1x SFP	V	V	V	V	-10~60 C
IGS-501S-E	6	5	1x SFP	V	V	V	V	-40~75 C
IGS-500	5	5	—	V	V	V	V	-10~60 C
IGS-500-E	5	5	—	V	V	V	V	-40~75 C
IGS-800	8	8	—	V	V	V	V	-10~60 C
IGS-800-E	8	8	—	V	V	V	V	-40~75 C

Model Naming Rule

IGS – 5 – 01S – E → E: -40~75°C, Blank: -10~60°C

- IGS: Industrial Gigabit Switch
- 5: 5x UTP; 8: 8x UTP
- 01S: 1x SFP; 00: 0x SFP

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
SFP	Transceiver Compatible, Reliable, 5-year Warranty

Temperature

IGS – 500 – ☐

Example: IGS – 500 – E

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)
- 31: Wavelength

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

IFS-401F
4x10/100Base-TX + 1x100Base-FX

IFS-500
5x10/100Base-TX

IFS-402F
4x10/100Base-TX + 2x100Base-FX

IFS-800
8x10/100Base-TX

The series models are 4~8 ports 10/100Base-TX Ethernet unmanaged Fast Ethernet switches, with 0~2x 100Base-FX fiber port, 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, 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

- Redundant dual DC input power 12/24/48VDC (9.6~60VDC)
- IP30 rugged metal housing and Fanless
- Wide operating temperature -40 ~ 75°C (-E model)
- Provides broadcast storm protection
- Supports DIP SW for alarm setting and broadcast storm protection
- Supports power failure alarm message by relay
- Supports flow control
- CE, FCC,and EN50121-4 certification
- Industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified

Specifications

IEEE Standard	IEEE 802.3 10Base-T Ethernet	
	IEEE 802.3u 100Base-TX and 100Base-FX Fast Ethernet	
	IEEE 802.3x Flow Control and Back Pressure	
Switch Architecture	Back-plane (Switching Fabric) : 1.0 Gbps (IFS-401F) 1.2Gbps (IFS-402F) 1.0 Gbps (IFS-500) 1.6Gbps (IFS-800)	
Data Processing	Store and Forward	
Transfer Rate	14,880pps for Ethernet port	
	148,800pps for Fast Ethernet port	
Flow Control	IEEE 802.3x flow control, back pressure flow control	
Provides Broadcast Storm Protection	Present	
MAC Address Table	2K	
Packet Buffer Size	448Kbits	
Network Connector	4X RJ-45, 1 Fiber (IFS-401F)	
	4X RJ-45, 2 Fiber (IFS-402F)	
	5x RJ-45 (IFS-500)	
	8x RJ-45 (IFS-800)	
	RJ-45 Port:	Auto MDI/MDI-X function, 10/100Base-TX auto negotiation speed, Full/Half duplex
	100Base-FX Fiber Port : SC/ST, Muti Mode/Single Mode	
Network Cable	10Base-T: 2-pair UTP/STP Cat. 5 cable	
	EIA/TIA-568 100-ohm (100m)	
	100Base-TX: 2-pair UTP/STP Cat. 5 cable	
	EIA/TIA-568 100-ohm (100m)	
	Fiber Cable (Multi-mode): 50/125um~62.5/125um	
	Fiber Cable (Single-mode): 8/125um~10/125um	
	Wavelength: 1310nm (Multi-mode/Single-mode)	
	Available distance: 2KM (Multi-Mode) 30KM (Single-Mode) 50KM (Single Mode)	
Protocol	CSMA/CD	
LED	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber)	
	RJ-45 Per port: Link/Active (Green), Speed 100 (Yellow)	
	Fiber Per port: Link/Active (Green) (IFS-401F, IFS-402F)	
DIP SW	DIP 1	OFF : Enable power failure alarm
		ON : Disable
	DIP 2	OFF : Enable broadcast storm protection
		ON : Disables broadcast storm protection
Reverse Polarity Protection	Present	
Overload Current Protection	Present	

Power Supply	Redundant Dual DC 12/24/48V (9.6~60VDC) Input power (Removable Terminal Block)
	Provide DC Power JACK adapter cable for external power supply
Power Consumption	4.4W (IFS-401F) 5.8W (IFS-402F) 2.9W (IFS-500) 3.9W (IFS-800)
Alarm Relay Contact	Relay outputs with current carrying capacity of 1 A @24VDC, NC
Removable Terminal Block	Provide 2 Redundant power, Alarm relay contact, 6 Pin
Operating Temperature	-10 ~ 60°C (IFS-401F, IFS-402F, IFS-500, IFS-800)
	-40 ~ 75°C (IFS-401F-E, IFS-402F-E, IFS-500-E, IFS-800-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection and Fanless
Dimensions	106 x 38 x 142mm (D x W x H) (IFS-401F, IFS-402F) 106 x 31.6 x 142mm (D x W x H) (IFS-500, IFS-800)
Weight	0.625Kg (IFS-401F) 0.63kg (IFS-402F) 0.42kg (IFS-500) 0.43kg (IFS-800)
Installation Mounting	DIN Rail mounting or wall mounting
MTBF	587,670Hrs (IFS-401F) 509,883Hrs (IFS-402F) 650,473Hrs (IFS-500) 552,587Hrs (IFS-800) (MIL-HDBK-217)
Warranty	5 years
Certification	
EMC/EMS	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	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 (Pending)
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Application

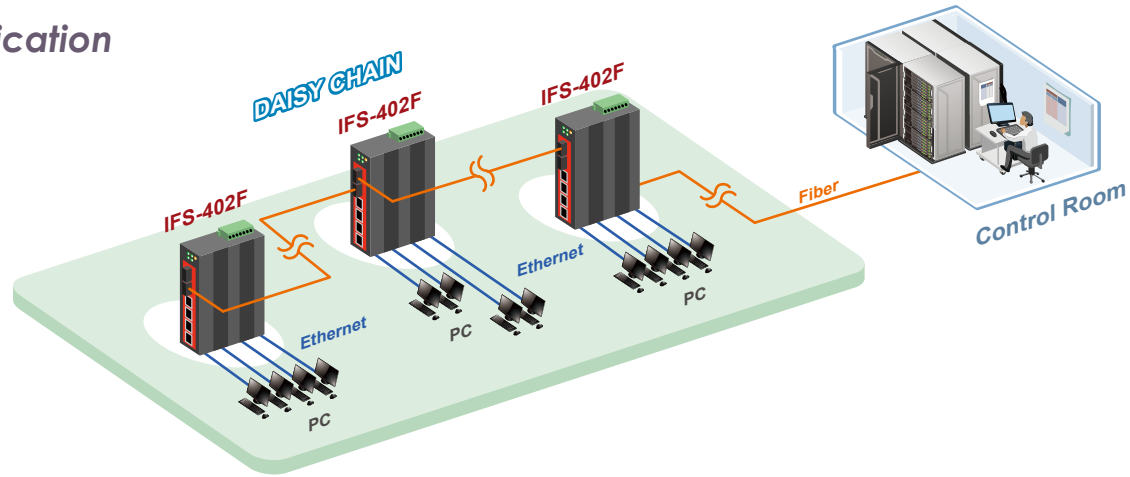


Figure 1 : IFS-402F Fast Ethernet Switch Transmission with Daisy Chain

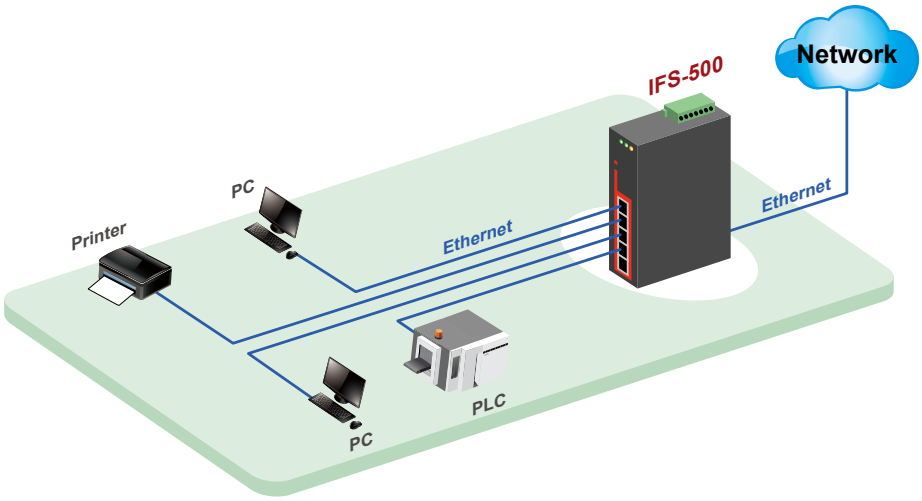
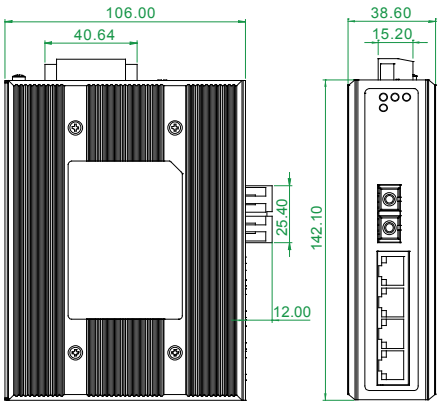


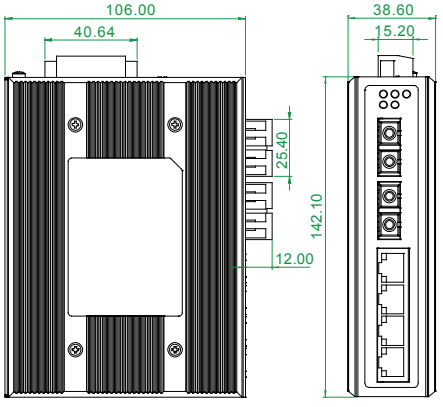
Figure 2 : IFS-500 Fast Ethernet Switch Transmission

Dimensions

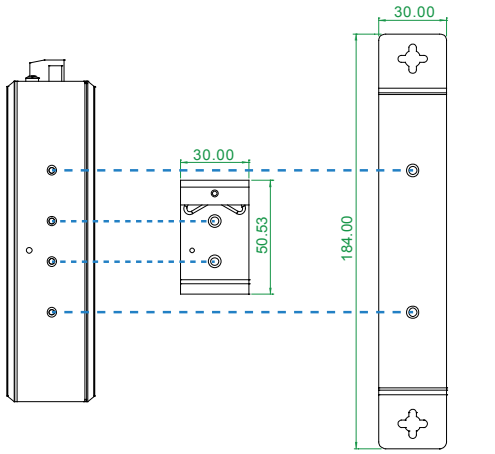
IFS-401F



IFS-402F

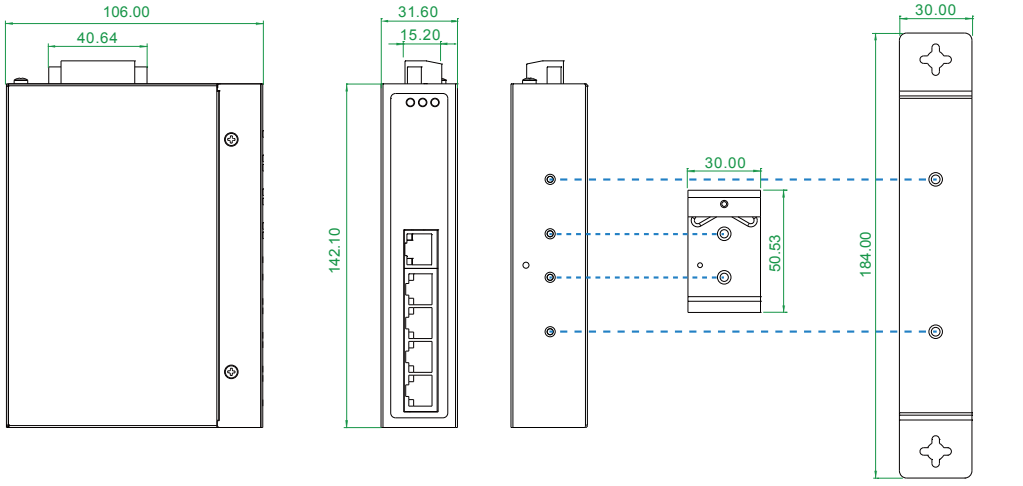


Side View Front View



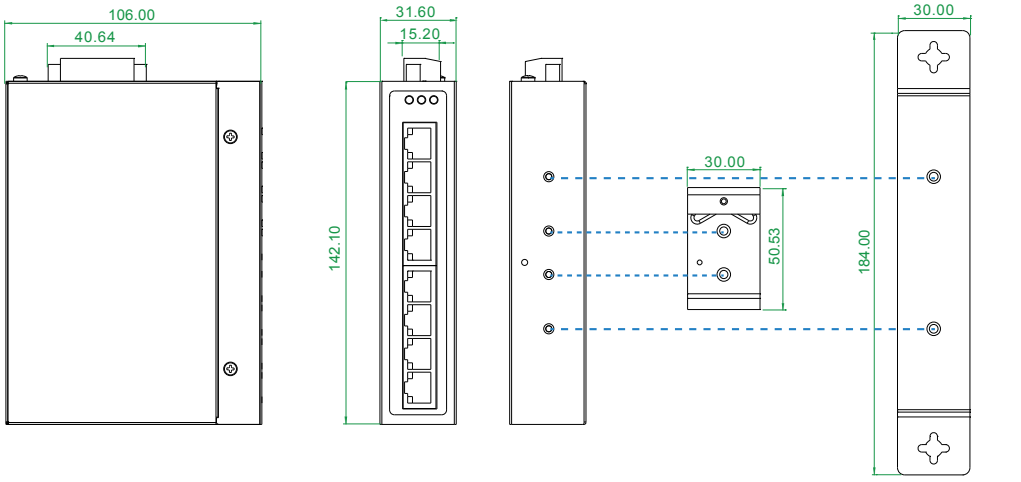
Rear View DIN-Rail Kit View Wall-Mount Kit View

IFS-500



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

IFS-800



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

Ordering Information

Model Name	Total Port	UTP Port	Fiber Port	Certification				Operating Temperture
		10/100Base-TX	100Base-FX	Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE	FCC	
IFS-401F	5	4	1 SC/ST	V	V	V	V	-10~60˚C
IFS-401F-E	5	4	1 SC/ST	V	V	V	V	-40~75˚C
IFS-402F	6	4	2 SC/ST	V	V	V	V	-10~60˚C
IFS-402F-E	6	4	2 SC/ST	V	V	V	V	-40~75˚C
IFS-500	5	5	—	V	V	V	V	-10~60˚C
IFS-500-E	5	5	—	V	V	V	V	-40~75˚C
IFS-800	8	8	—	V	V	V	V	-10~60˚C
IFS-800-E	8	8	—	V	V	V	V	-40~75˚C

Model Naming Rule

IFS – 4 – 02F – E → E: -40~75˚C, Blank: -10~60˚C

- IFS: Industrial Fast Ethernet Switch
- 4: 4x UTP; 5: 5x UTP; 8: 8x UTP
- 02F: 2x Fiber; 01F: 1x Fiber; 00: 0x Fiber

Fiber Option Type	Connectivity Distance
SC, ST (only for IFS-401F ,IFS-402F)	002: 2km 030: 30km 050: 50km 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℃
MDR-40-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70℃

Temperature | Connector Type | Connectivity Distance

IFS – 401F – □ – □□□□□

Example: IFS – 401F – E – SC002

NEW

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

IFS-500C

5x10/100Base-TX Switch

The IFS-500C is 5 ports 10/100Base-TX Ethernet unmanaged Fast Ethernet switches, 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, 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

- Wide range input power 12/24/48VDC (9.6~60VDC), or AC24V (18~36VAC)
- IP30 rugged metal housing and Fanless
- Compact size for easy installation
- Wide operating temperature -40 ~ 75°C (-E model)
- Provides broadcast storm protection
- Very low power consumption
- Supports flow control
- CE, FCC,and EN50121-4 for railway traffic certification
- Industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified

Specifications

IEEE Standard	IEEE 802.3 10Base-T Ethernet
	IEEE 802.3u 100Base-TX and 100Base-FX Fast Ethernet
	IEEE 802.3x Flow Control and Back Pressure
Switch Architecture	Back-plane (Switching Fabric) : 1.0 Gbps
Data Processing	Store and Forward
Transfer Rate	14,880pps for Ethernet port
	148,800pps for Fast Ethernet port
Flow Control	IEEE 802.3x flow control, back pressure flow control
Provides Broadcast Storm Protection	Present
MAC Address Table	1K
Packet Buffer Size	448Kbits
Network Connector	5x RJ-45
	RJ-45 Port: Auto MDI/MDI-X function, 10/100Base-TX auto negotiation speed, Full/Half duplex
Network Cable	10Base-T: 2-pair UTP/STP Cat. 5 cable
	EIA/TIA-568 100-ohm (100m)
	100Base-TX: 2-pair UTP/STP Cat. 5 cable
	EIA/TIA-568 100-ohm (100m)
Protocol	CSMA/CD
LED	Per unit: Power (Green)
	RJ-45 Per port: Link/Active (Green), Speed 100 (Yellow)
Reverse Polarity Protection	For DC input power protection
Overload Current Protection	Present
Power Supply	DC 12/24/48V (9.6~60VDC) or AC 24V (18~36VAC) input power (Removable Terminal Block)
Power Consumption	Input Voltage: Power Consumption(Watt)
	DC 12V: 0.9W
	DC 24V: 1.2W
	DC 48V: 2W
Removable Terminal Block	Provide for input power (2 Pin)
Operating Temperature	-10 ~ 60°C (IFS-500C)
	-40 ~ 75°C (IFS-500C-E)
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	220g
Installation Mounting	DIN Rail mounting, or wall mounting (optional)
MTBF	1,013,759 Hours (MIL-HDBK-217)
Warranty	5 years
Certification	
EMC/EMS	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	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
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Application

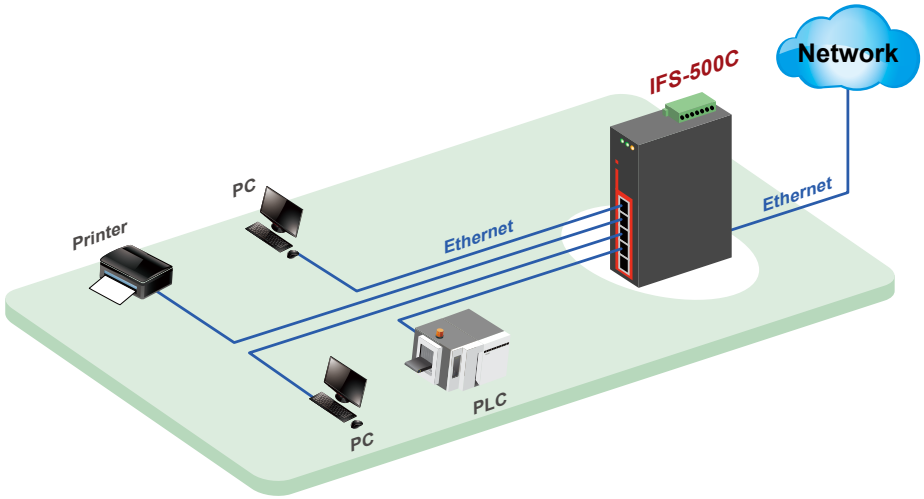


Figure : IFS-500C Fast Ethernet Switch Transmission

Ordering Information

Model Name	Total Port	UTP Port	Certification				Operating Temperture
		10/100Base-TX	Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE	FCC	
IFS-500C	5	5	V	V	V	V	-10~60°C
IFS-500C-E	5	5	V	V	V	V	-40~75°C

Model Naming Rule

IFS - 5 00 C - E

- IFS: Industrial Fast Ethernet Switch
- 5: 5x UTP
- 00: 0x Fiber
- C: Compact Size
- E: -40~75°C
- Blank: -10~60°C

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
IND-WMK03	Wall Mount kit for Industrial product (Compact, 150x 30mm)

IGS-404SM
4x 10/100/1000Base-T+ 4x 100/1000Base-X SFP

IGS-803SM
8x 10/100/1000Base-T+ 3x 100/1000Base-X SFP

IGS-812SM
8x 10/100/1000Base-T+ 12x 100/1000Base-X SFP

IGS-1604SM
16x 10/100/1000Base-T+ 4x 100/1000Base-X SFP

The series models are managed industrial grade Gigabit switches with 4~16 ports 10/100/1000Base-T ports and 3~12 ports SFP Gigabit/Fast Ethernet ports that provide stable and reliable Ethernet transmission. The Ethernet switches support a variety of management functions, including STP/RSTP/MSTP/ ITU-T G.8032 Ring and multiple u-Ring for redundant cabling , layer 2 Ethernet IGMP, VLAN, QoS ,Security ,IPv6, bandwidth control, port mirroring, cable diagnostic and Green Ethernet. Housed in rugged DIN rail or wall mountable enclosures, these switches are designed for harsh environments, such as industrial networking, security automation applications, 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

- 4x 10/100/1000Base-T RJ-45 and 4x 100/1000Base-X SFP Fiber (IGS-404SM)
- 8x 10/100/1000Base-T RJ-45 and 3x 100/1000Base-X SFP Fiber (IGS-803SM)
- 8x 10/100/1000Base-T RJ-45 and 12x 100/1000Base-X SFP Fiber (IGS-812SM)
- 16x 10/100/1000Base-T RJ-45 and 4x 100/1000Base-X SFP Fiber (IGS-1604SM)
- UL60950-1, CE, FCC, Rail Traffic EN50121-4 certified
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Cable diagnostic, Measuring cable normal or broken point distance
- Supports Green Ethernet IEEE802.3az EEE (Energy Efficient Ethernet) management to optimize the power consumption
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) for redundant cabling
- Provides 5 instances that each can support u-Ring, u-Chain or Sub-Ring type for flexible uses (see Figure 3). Supports up to 5 rings in one device (see 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
- 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 in case of 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 802.1d	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)
VLAN ID	4094 IEEE802.1Q VLAN VID	
Switch Architecture	Back-plane (Switching Fabric): 16Gbps (IGS-404SM) 22Gbps (IGS-803SM) 40Gbps (IGS-812SM, IGS-1604SM)	
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 + 4x 100/1000Base-X SFP connector (IGS-404SM) 8x 10/100/1000Base-T RJ-45 + 3x 100/1000Base-X SFP connector (IGS-803SM) 8x 10/100/1000Base-T RJ-45+ 12x 100/1000Base-X SFP connector (IGS-812SM) 16x 10/100/1000Base-T RJ-45+ 4x 100/1000Base-X SFP connector (IGS-1604SM) RJ-45 UTP port support Auto negotiation speed, Auto MDI/MDI-X function, SFP port support dual speed with DDMI
Console	RS-232 (RJ-45)
Network Cable	UTP/STP above Cat. 5e cable
	EIA/TIA-568 100-ohm (100m)
Protocols	CSMA/CD
Reverse Polarity Protection	Present
Overload Current Protection	Present
CPU Watch Dog	Present
Power Supply	Redundant Dual DC 12/24/48V (9.6~60VDC) Input power (Removable Terminal Block)
Power Consumption	(see table below)
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)
Jumbo Frame	9.6KB

Power Consumption

Input Voltage	IGS-404SM	IGS-803SM	IGS-812SM	IGS-1604SM
12VDC	8.2W	8.5W	14.3W	14.5W
24VDC	8.1W	9.1W	14.2W	14.4W
48VDC	9.6W	10.6W	15.8W	16.3W

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-404SM, IGS-803SM, IGS-812SM, IGS-1604SM) -40 ~ 75°C (IGS-404SM-E, IGS-803SM-E, IGS-812SM-E, IGS-1604SM-E)
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-404SM) 106 x 72 x152 mm (D x W x H) (IGS-803SM, IGS-812SM, IGS-1604SM)
Weight	0.725kg (IGS-404SM) 0.78kg (IGS-803SM) 0.795kg (IGS-812SM) 0.82kg (IGS-1604SM)
Installation Mounting	DIN Rail mounting or wall mounting
MTBF	302,826hrs (IGS-404SM) 404,589hrs (IGS-803SM) 204,078hrs (IGS-812SM) 145,967hrs (IGS-1604SM) (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 Protocal)
	MVR (Multicast VLAN Registration)
Link Aggregation (Port Trunk)	Static (Hash with SA, DA, IP, TCP/UDP port), up to 5 trunk group
	Dynamic (IEEE 802.3ad LACP), up to 5 trunk group
Spanning Tree	IEEE802.1d STP
	IEEE802.1w RSTP
	IEEE802.1s MSTP
Multiple u-Ring	up to 5 instances that each supports u-Ring, u-Chain or Sub-Ring type for flexible uses, and maximum up to 5 Rings. Recovery time <10ms The maximum number of devices allowed in a Ring supported ring is 250.
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

Application

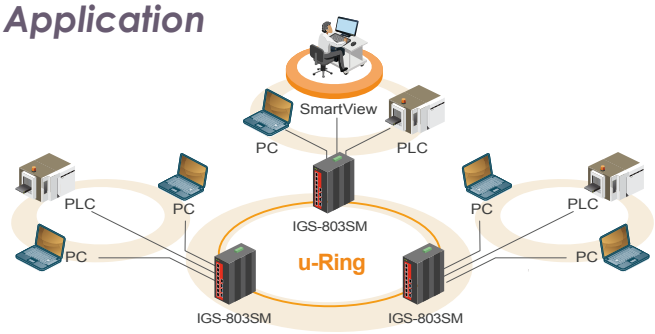


Figure 1 : Application Example

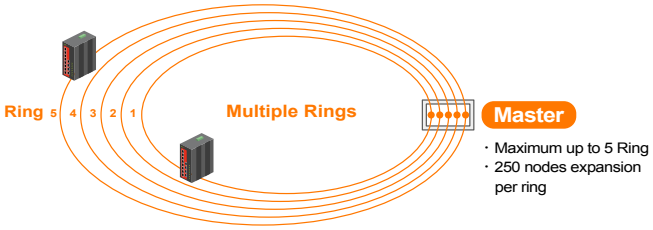


Figure 2 : Multiple Rings

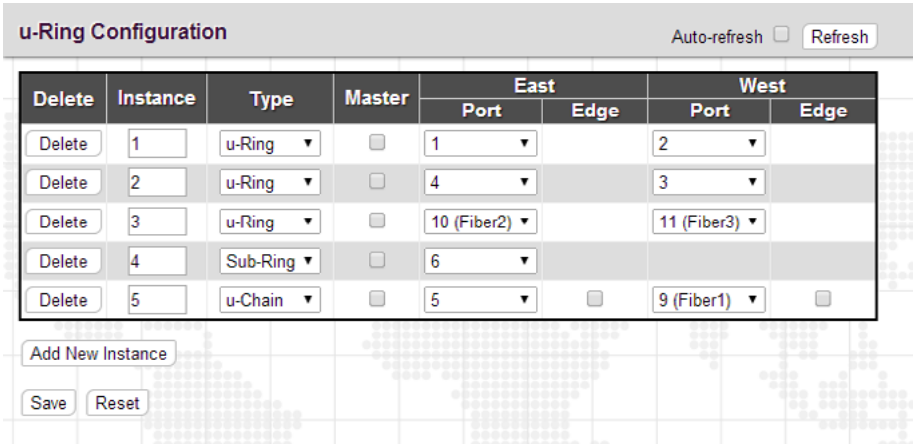
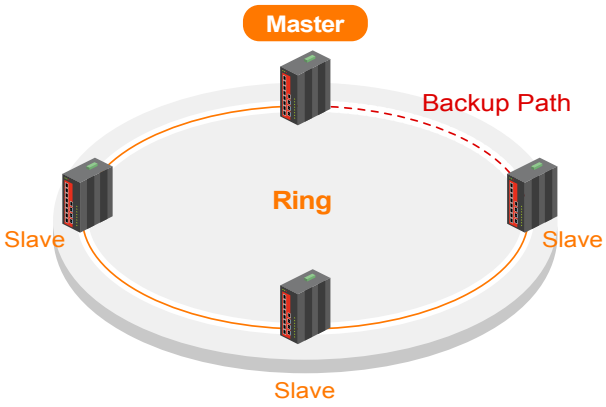
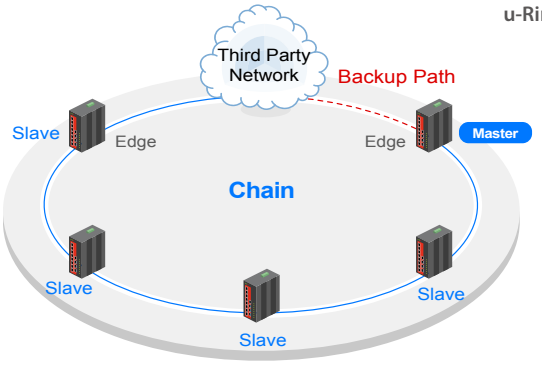


Figure 3 : User-Friendly Configuration In Web Interface

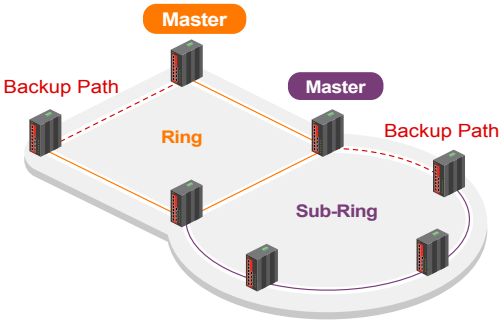
Figure 4 : u-Ring Type



u-Ring Type

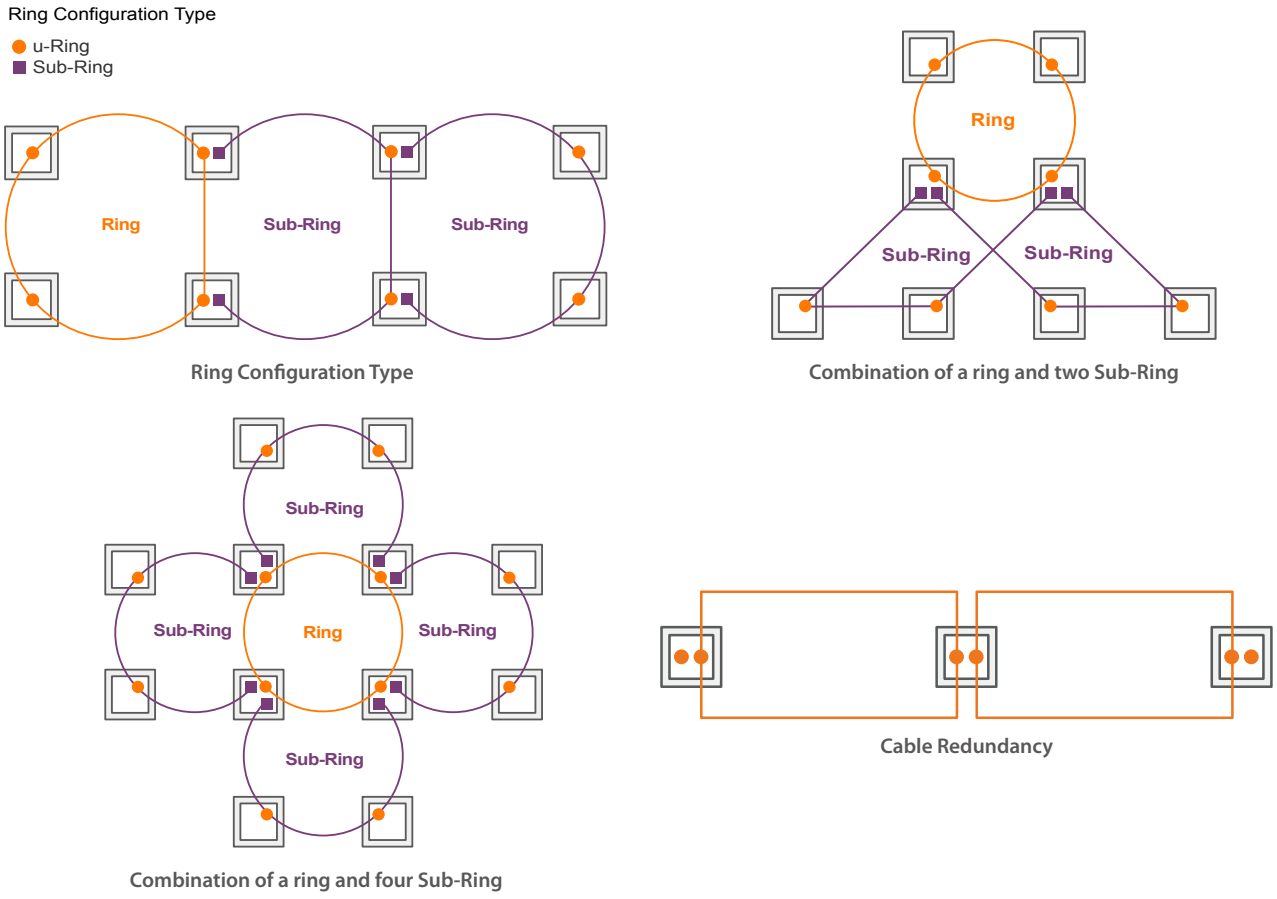


Determining the backup path (u-Chain type)



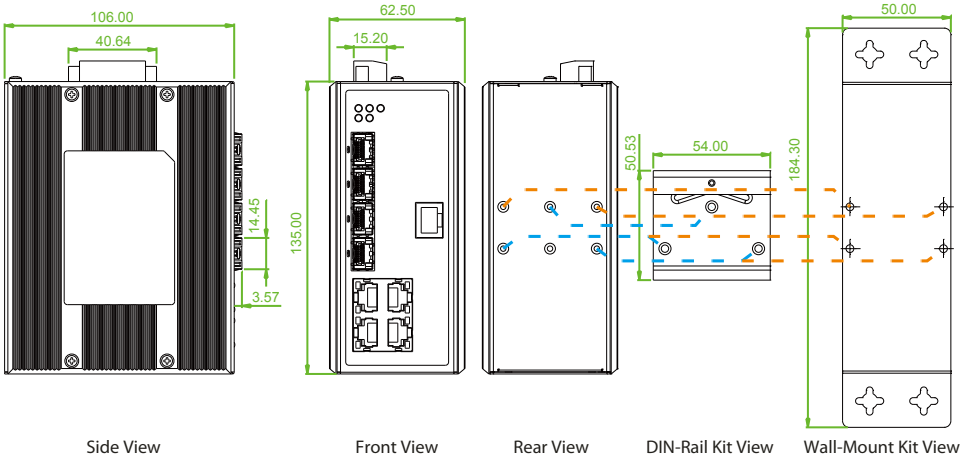
A major ring and a Sub-Ring topology

Figure 5 : Ring Configuration Example

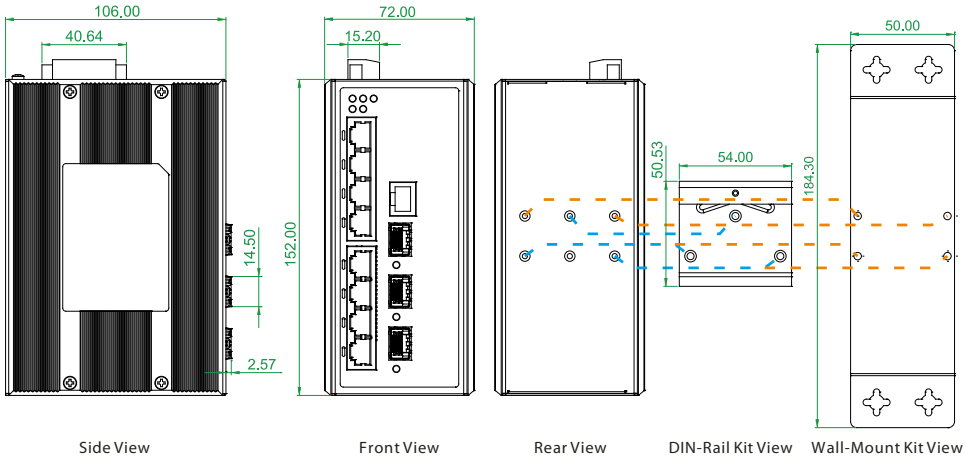


Dimensions

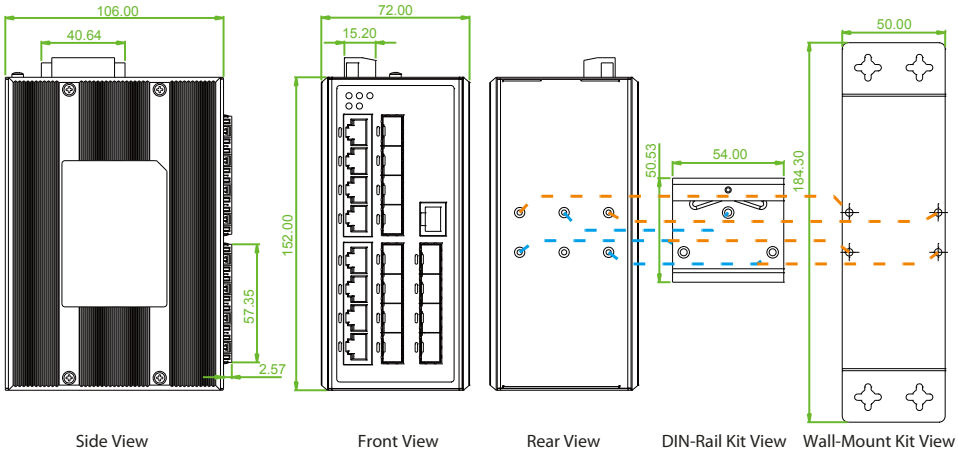
IGS-404SM



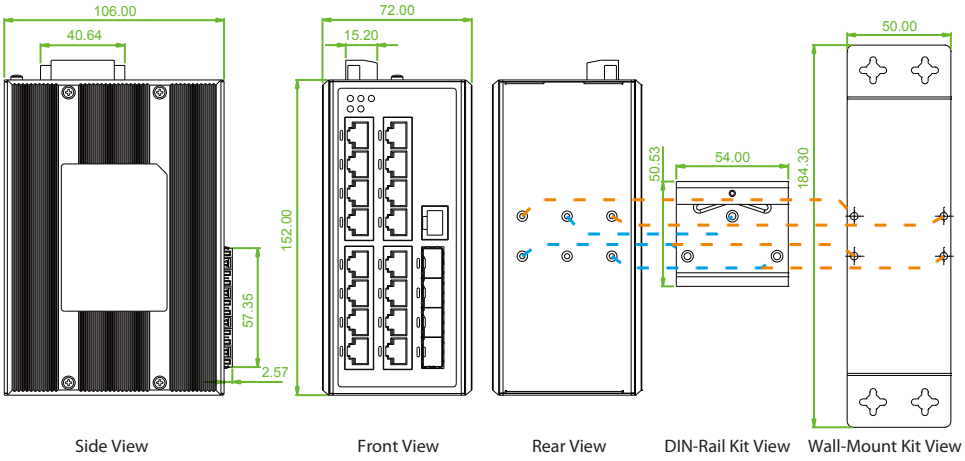
IGS-803SM



IGS-812SM



IGS-1604SM



Ordering Information

Model Name	Managed	Total Port	UTP Port	Fiber Port	Certification				Operating Temperture
			10/100/1000 Base-T	100/1000 Base-X	Railway EN50121-4	Safety UL60950-1	EN61000-6-2 EN61000-6-4	CE FCC	
IGS-404SM	V	8	4	4 SFP	V	V	V	V	-10~60℃
IGS-404SM-E	V	8	4	4 SFP	V	V	V	V	-40~75℃
IGS-803SM	V	11	8	3 SFP	V	V	V	V	-10~60℃
IGS-803SM-E	V	11	8	3 SFP	V	V	V	V	-40~75℃
IGS-812SM	V	20	8	12 SFP	V	V	V	V	-10~60℃
IGS-812SM-E	V	20	8	12 SFP	V	V	V	V	-40~75℃
IGS-1604SM	V	20	16	4 SFP	V	V	V	V	-10~60℃
IGS-1604SM-E	V	20	16	4 SFP	V	V	V	V	-40~75℃

Model Naming Rule

IGS – 16 04S M – E

- IGS: Industrial Gigabit Switch
- 16: 4: 4x UTP; 8: 8x UTP; 16: 16x UTP
- 04S: 03S: 3x SFP; 04S: 4x SFP; 12S: 12x SFP
- M: Managed
- E: E: -40~75˚C; Blank: -10~60˚C

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℃
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
- 040: Distance 002(2km); 020(20km),040(40km)
- 31: Wavelength
- E: E:-40~85˚C; Blank:0~70˚C

IFS-402GSM
4x 10/100Base-TX+ 2x 100/1000Base-X SFP

IFS-803GSM
8x 10/100Base-TX+ 3x 100/1000Base-X SFP

IFS-1604GSM
16x 10/100Base-TX+ 4x 100/1000Base-X SFP

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Features

- 4x 10/100Base-TX RJ-45 and 2x 100/1000Base-X SFP Fiber (IFS-402GSM)
- 8x 10/100Base-TX RJ-45 and 3x 100/1000Base-X SFP Fiber (IFS-803GSM)
- 16x 10/100Base-TX RJ-45 and 4x 100/1000Base-X SFP Fiber (IFS-1604GSM)
- UL60950-1, CE, FCC, Rail Traffic EN50121-4 certified
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Cable diagnostic, Measuring cable normal or broken point distance
- Supports Green Ethernet IEEE802.3az EEE (Energy Efficient Ethernet) management to optimize the power consumption
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) for redundant cabling
- Provides 5 instances that each can support u-Ring, u-Chain or Sub-Ring type for flexible uses (see Figure 3). Supports up to 5 rings in one device (see 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
- 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 in case of 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
- Support SmartView for Centralized Management

Specifications

Standard	IEEE 802.3	10Base-T 10Mbit/s Ethernet
	IEEE 802.3u	100Base-TX, 100Base-FX, Fast Ethernet
	IEEE 802.3z	1000Base-X Gbit/s Ethernet over Fiber-Optic
	IEEE 802.1d	STP (Spanning Tree Protocol)
	IEEE 802.1w	RSTP (Rapid Spanning Tree Protocol)
	IEEE 802.1s	MSTP (Multiple Spanning Tree Protocol)
	ITU-T G.8032 / Y.1344	ERPS (Ethernet Ring Protection Switching)
	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)
VLAN ID	4094 IEEE802.1Q VLAN VID	
Switch Architecture	Back-plane (Switching Fabric): 4.8Gbps (IFS-402GSM) 7.6Gbps (IFS-803GSM) 11.2Gbps (IFS-1604GSM)	
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 and 2x 100/1000Base-X SFP Fiber connector (IFS-402GSM) 8x 10/100Base-TX RJ-45 and 3x 100/1000Base-X SFP Fiber connector (IFS-803GSM) 16x 10/100Base-TX RJ-45 and 4x 100/1000Base-X SFP Fiber connector (IFS-1604GSM) RJ-45 UTP port supports Auto negotiation speed, Auto MDI/MDI-X function, SFP port support dual speed with DDMI
Console	RS-232 (RJ-45)
Network Cable	UTP/STP above Cat. 5e cable EIA/TIA-568 100-ohm (100m)
Protocols	CSMA/CD
Reverse Polarity Protection	Present
Overload Current Protection	Present
CPU Watch Dog	Present
Power Supply	Redundant Dual DC 12/24/48V (9.6~60VDC) Input power (Removable Terminal Block)

Power Consumption

Input Voltage	IFS-402GSM	IFS-803GSM	IFS-1604GSM
12VDC	5.7W	6.5W	10.8W
24VDC	5.8W	7W	10.6W
48VDC	8.5W	8.6W	12.5W

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) SFP Fiber Per port: Link/Active (Green)

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, IFS-803GSM, IFS-1604GSM) -40 ~ 75°C (IFS-402GSM-E, IFS-803GSM-E, IFS-1604GSM-E)
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) 106 x 72 x152 mm (D x W x H) (IFS-803GSM, IFS-1604GSM)
Weight	0.715kg (IFS-402GSM) 0.79kg (IFS-803GSM) 0.82kg (IFS-1604GSM)
Installation Mounting	DIN Rail mounting or wall mounting
MTBF	321,556Hrs (IFS-402GSM) 409,312Hrs (IFS-803GSM) 145,967Hrs (IFS-1604GSM)
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. 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

Application

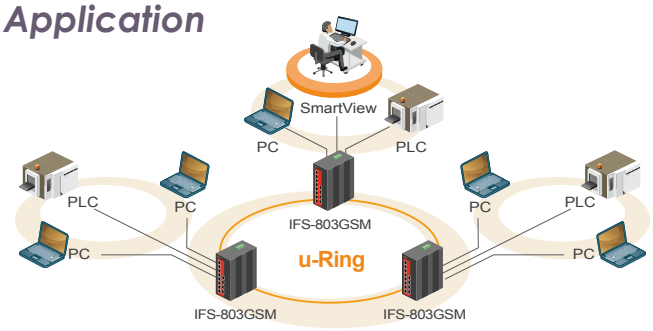


Figure 1 : Application Example

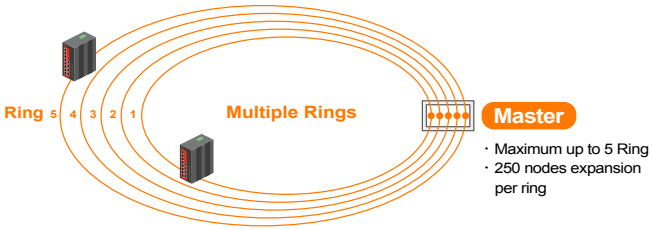


Figure 2 : Multiple Rings

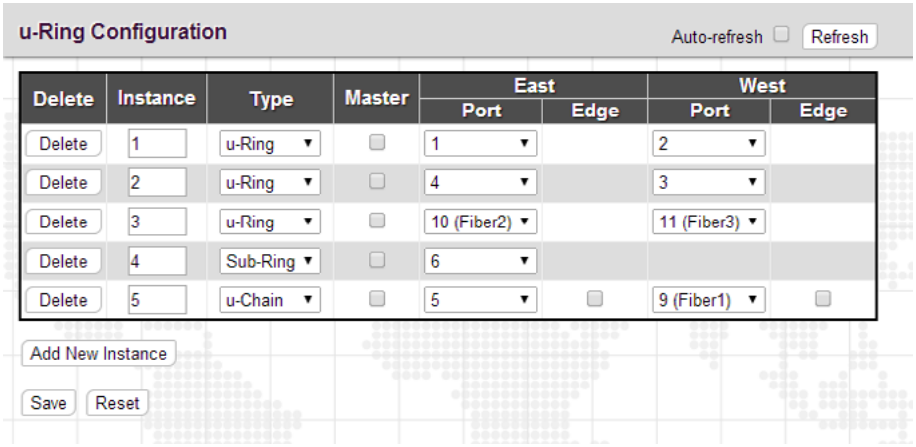
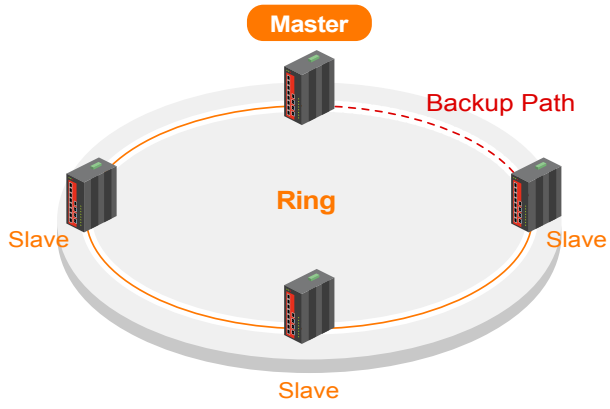
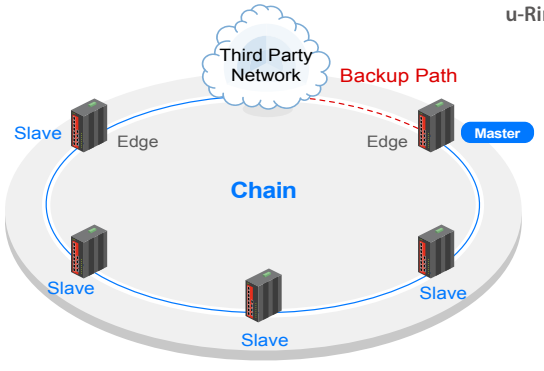


Figure 3 : User-Friendly Configuration In Web Interface

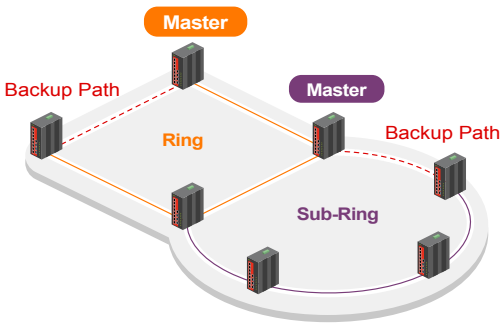
Figure 4 : u-Ring Type



u-Ring Type

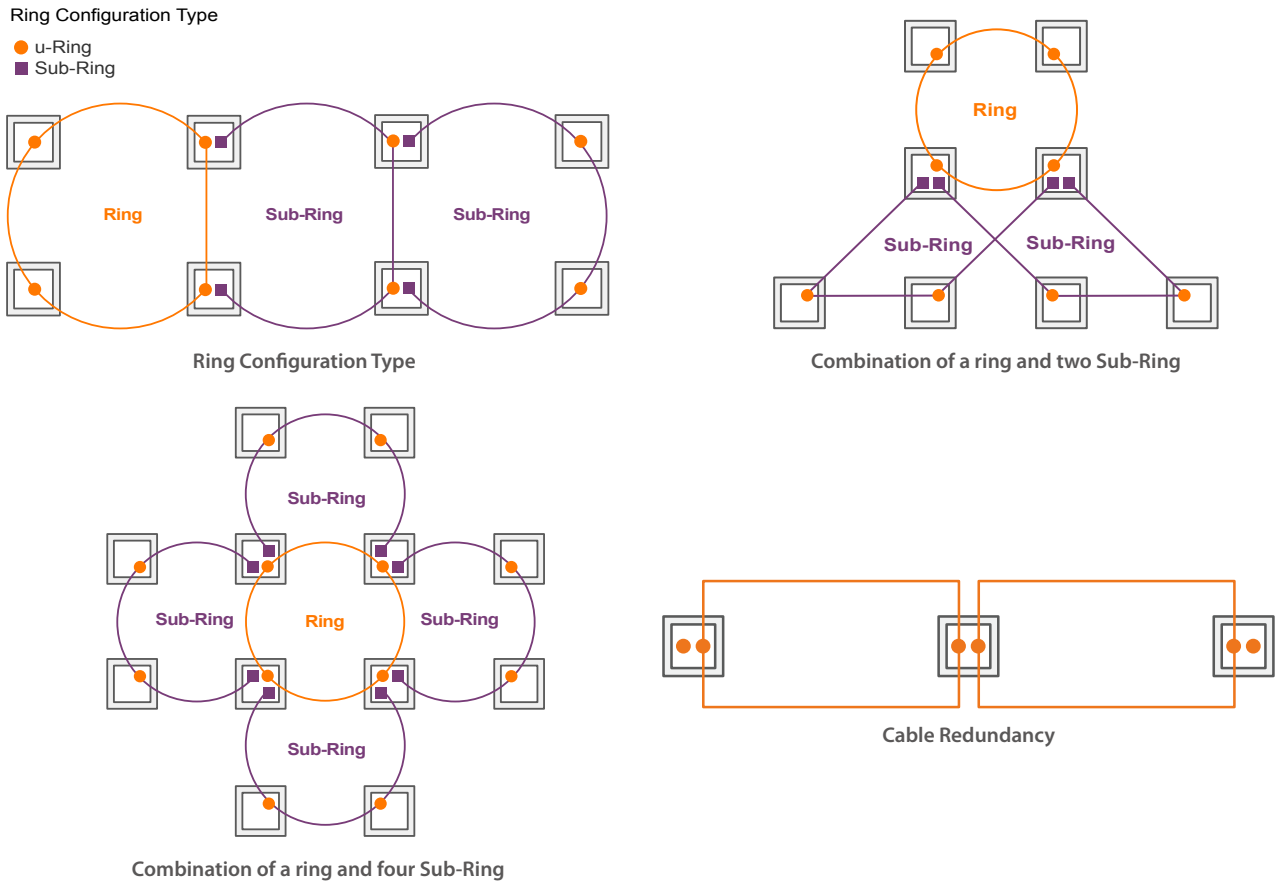


Determining the backup path (u-Chain type)



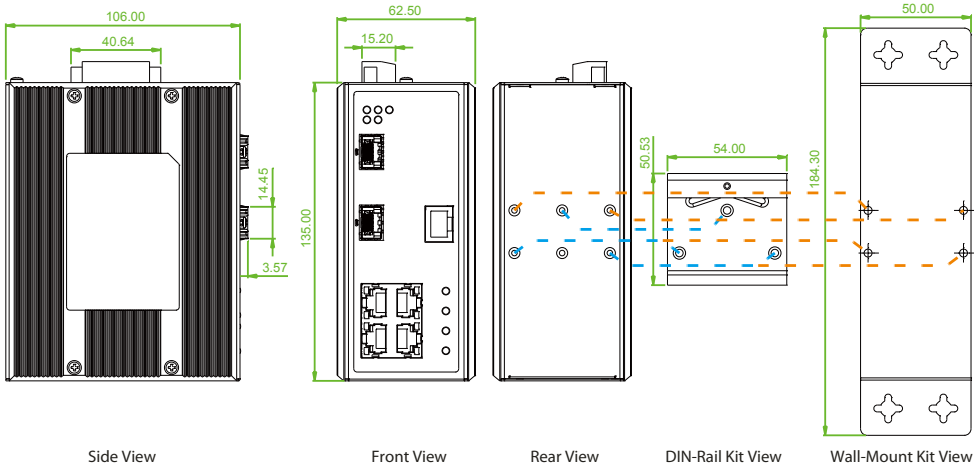
A major ring and a Sub-Ring topology

Figure 5 : Ring Configuration Example

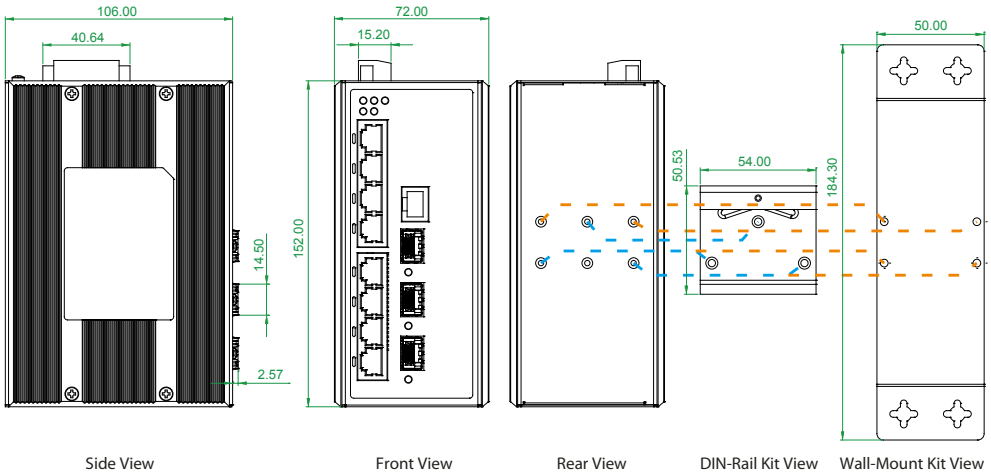


Dimensions

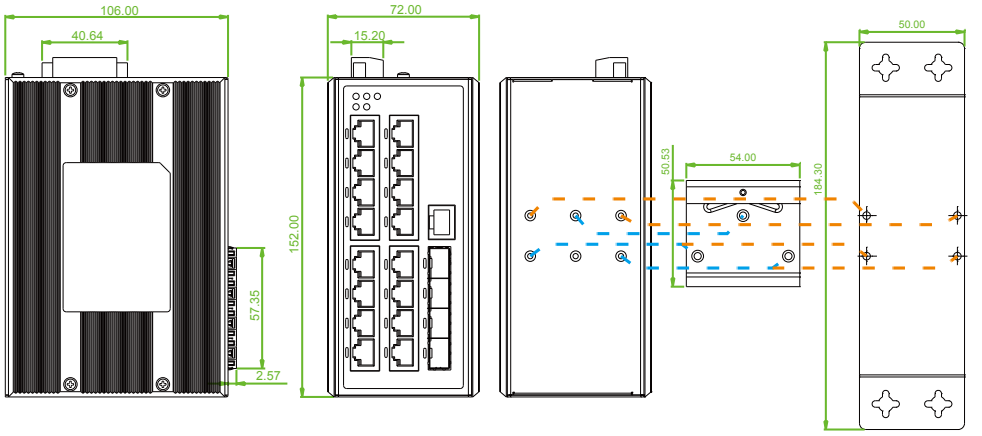
IFS-402GSM



IFS-803GSM



IFS-1604GSM



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

Ordering Information

Model Name	Managed	Total Port	UTP Port	Fiber Port	Certification				Operating Temperture
			10/100 Base-TX	100/1000 Base-X	Railway EN50121-4	Safety UL60950-1	EN61000-6-2 EN61000-6-4	CE FCC	
IFS-402GSM	V	6	4	2 SFP	V	V	V	V	-10~60°C
IFS-402GSM-E	V	6	4	2 SFP	V	V	V	V	-40~75°C
IFS-803GSM	V	11	8	3 SFP	V	V	V	V	-10~60°C
IFS-803GSM-E	V	11	8	3 SFP	V	V	V	V	-40~75°C
IFS-1604GSM	V	20	16	4 SFP	V	V	V	V	-10~60°C
IFS-1604GSM-E	V	20	16	4 SFP	V	V	V	V	-40~75°C

Model Naming Rule

IFS - 16 04GS M - E

- IFS: Industrial Fast Ethernet Switch
- 16: 4: 4x UTP; 8: 8x UTP; 16: 16x UTP
- 04GS: 02GS: 2x GbE SFP; 03GS: 3x GbE SFP; 04GS: 4x GbE SFP
- M: Managed
- E: E: -40~75°C; Blank: -10~60°C

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
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

IFC-FDC

RS-232/422/485 Daisy Chain Fiber Converter

IFC-Serial

RS-232/422/485 Fiber Converter

IFC Series are industrial grade serial/fiber converters that provide a single fiber or dual fiber connections to extend asynchronous RS-232, RS-485 or RS-422 serial transmissions over a distance of up to 2km using multi-mode fiber or up to 60km using single-mode fiber. The single duplex fiber provides point-to-point connections and allows connecting multiple devices in a cascaded or "daisy chain" fashion. However, no redundancy is provided for the model with a single fiber and any single port failure can disable the entire ring. On the other hand, the dual fiber inputs not only allow connecting multiple devices in a cascade or "daisy chain" fashion but also can create ring architecture for fiber redundancy and auto recovery.

IFC Series converters are capable of selecting interface modes for connection to RS-232 (3 wire), RS-485 (2 wire, half duplex) or RS-422/485 (4 wire, full duplex) and feature a three-way communication plus a second independent RS-232 communication channel. Additionally, the terminal block offers an alarm relay contact and two redundant DC power inputs. IFC Series converters are also available in two operating temperature ranges, a standard -10° to 60°C commercial temperature range and an extended -40° to 75°C range. With all these specifically-designed features, IFC Series are reliable and ideal solutions for keeping your industrial automation applications running smoothly and continuously even in harsh environments.

Features

- Supports 2 fiber link (IFC-FDC)
- Supports 1 fiber link (IFC-Serial)
- Supports dual channel communication, including Triple-Way communication, and Two-Way communication
- Extend serial transmission distance up to 2km, 30km, 60km
- Supports several topology , cable redundancy(Figure 2), ring connections (Figure 3), fiber daisy chain (Figure 4) ,point to point (IFC-FDC)
- Supports half-duplex ring application(Figure 6), point to point (Figure 7) (IFC-Serial)
- Redundant dual power inputs (12/24/48VDC)
- Supports RS-232, RS-422, RS-485(2/4 wire) transmission to dual fiber connections
- Enhanced serial baudrate up to 1024kpbs
- 2.5KV isolation for serial signal
- Supports relay output for power or link failure warning
- Hardened housing with IP30 protection
- Fanless and DIN-Rail design for harsh industrial environment
- Adjustable pull high/low resistor and terminator for RS-422/485 transmission

Specifications

Data Flow	Dual Channel Communication	Both of Triple-Way and Two-Way Communication Way (Figure 1 or 6)
Optical Interface	Connector	SC, ST
	Fiber Optical rate	36.864Mbps
	Fiber Port	2 fiber ports (IFC-FDC) 1 fiber port (IFC-Serial)
	Fiber Type	MM 2km, SM 30km/60km
	Wavelength	MM 1310nm, SM 1310, 1550nm
	Point to Point Transmission	Half or Full duplex
	Ring Transmission	Half / Full duplex, self-healing operation
Optical Topology	Cable redundancy(Figure 2), ring connections (Figure 3), fiber daisy chain (Figure 4), point to point (IFC-FDC)	
	Half-duplex ring application(Figure 7), point to point(Figure 6) (IFC-Serial)	
Electrical Interface	Serial Port Connector	RS-232(DB9), RS-422/RS-485(5 pin terminal block)
		RS-485 : 4, 2 wires, RS-422 : 4 wires
	RS-485 direction	Automatically detection
	Copper Baud rate	50 up to 1024Kbps
	Serial Isolation	2.5KV for serial signals
	Surge Protection	8KV ESD for serial signals
	Pull High	Selected by 10 position rotary switch
	Pull Low	Selected by 10 position rotary switch
	120 ohm terminator	Built-in 120 ohm terminator (Option by Dip Switch)
Environmental	Operating Temperature	-10 ~ 60°C (IFC-FDC, IFC-Serial) -40 ~ 75°C (IFC-FDC-E, IFC-Serial-E)
	Storage Temperature	-40 ~ 85°C
	Humidity	5 ~ 95% RH
LED Indications	PWR1, PWR2, Alarm, Master, TD, RD, Fiber Link, Fiber2 Link (IFC-FDC only), Ringg	

Power	Power Input	Redundant Dual Power 12, 24, 48 VDC (9.6 ~ 58VDC)
	Power Consumption	6W (IFC-FDC) 5W (IFC-Serial)
	Power Reversal Protection	Yes
	Over Current Protection : Signal Short Together Protected	
	Terminal Block for Power and Alarm : Terminal Block : V1+, V1-, V2+, V2-, Alarm NC, Alarm COM, Alarm NO	
Mechanical	Water & Dust Proof	IP30 Protection, Fanless
	Dimensions	106 x 38.6 x 142.1mm (D x W x H)
	Mounting	DIN-Rail, wall mount
	Weight	0.64kg (IFC-FDC) 0.63kg (IFC-Serial)
Certification	Safety	UL60950-1
	EMC	CE, FCC
	EMI	EN55022 Class A
		EN61000-6-4 – Emission for heavy industrial environment
	EMS	EN61000-6-2 – Immunity for heavy industrial environment
		EN61000-4-2 ESD Level 3
		EN61000-4-3 RS Level 3
		EN61000-4-4 EFT Level 3
		EN61000-4-5 Surge Level 3
		EN61000-4-6 CS Level 3
	Free Fall	IEC 60068-2-32
	Vibration	IEC 60068-2-6
	Shock	IEC 60068-2-27
	Green	RoHS
	MTBF	687,418 Hrs (IFC-FDC) 797,101 Hrs (IFC-Serial) (MIL-HDBK-217)

IFC-FDC Topology & Application

Figure 1 : Dual Channel Data Flow

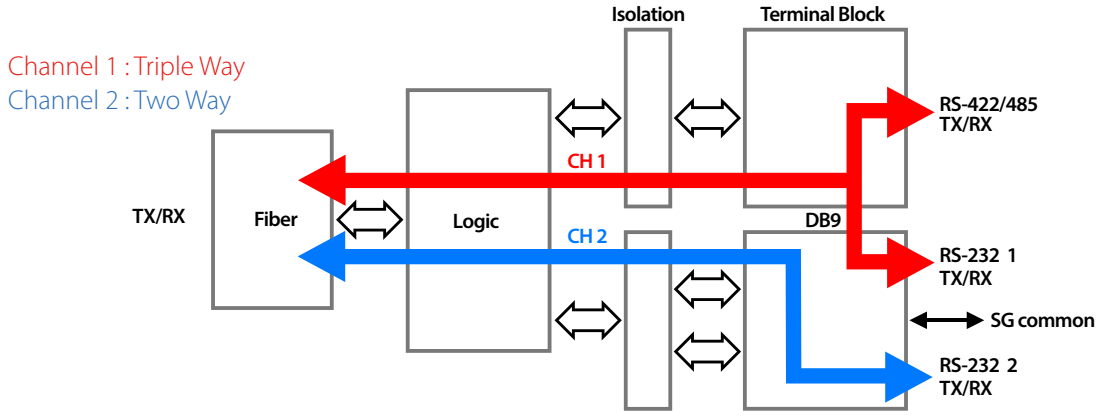


Figure 2 : Dual Fiber for Cable Redundancy

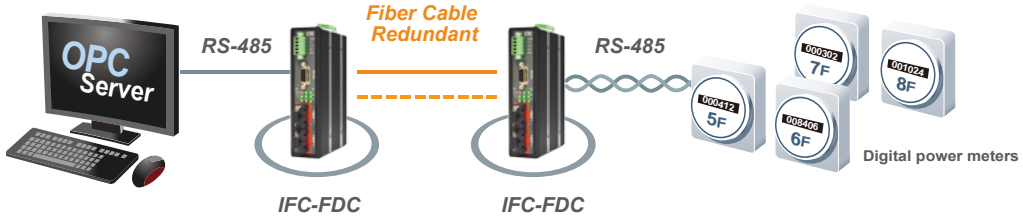


Figure 3 : Fiber Ring for Cable Redundancy

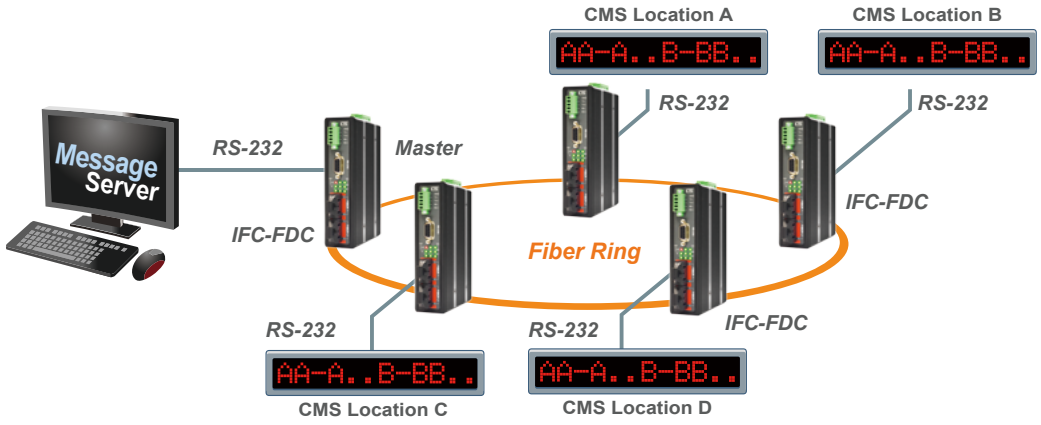
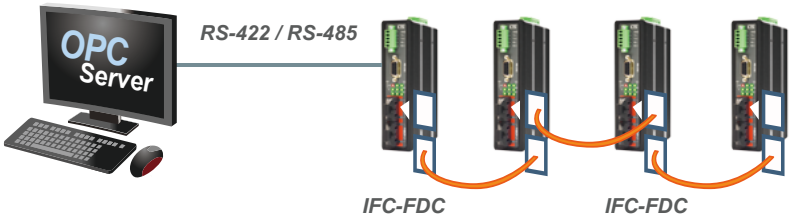


Figure 4 : Dual Fiber for Daisy Chain



IFC-Serial Topology & Application

Figure 5 : Dual Channel Data Flow

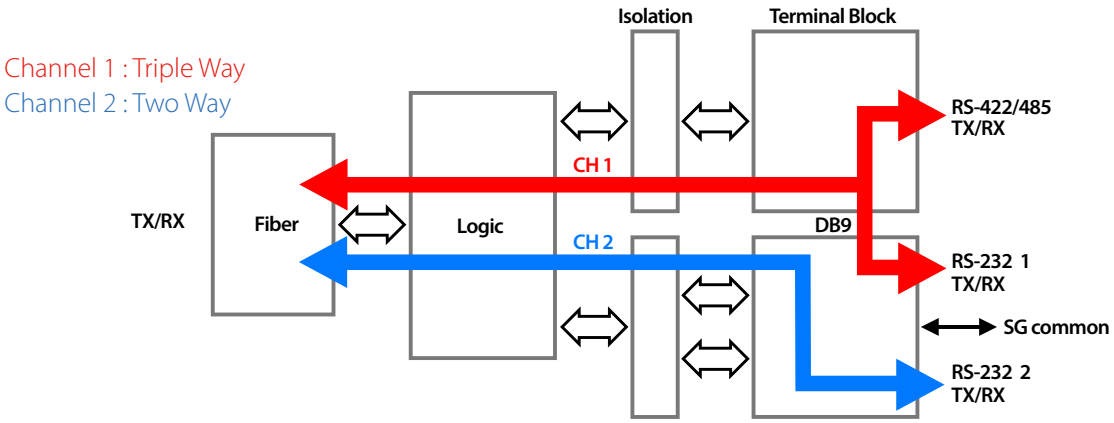


Figure 6 : Point to Point

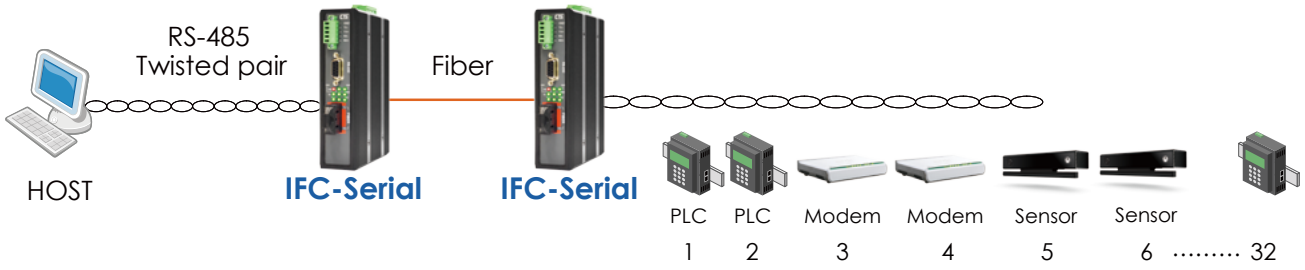
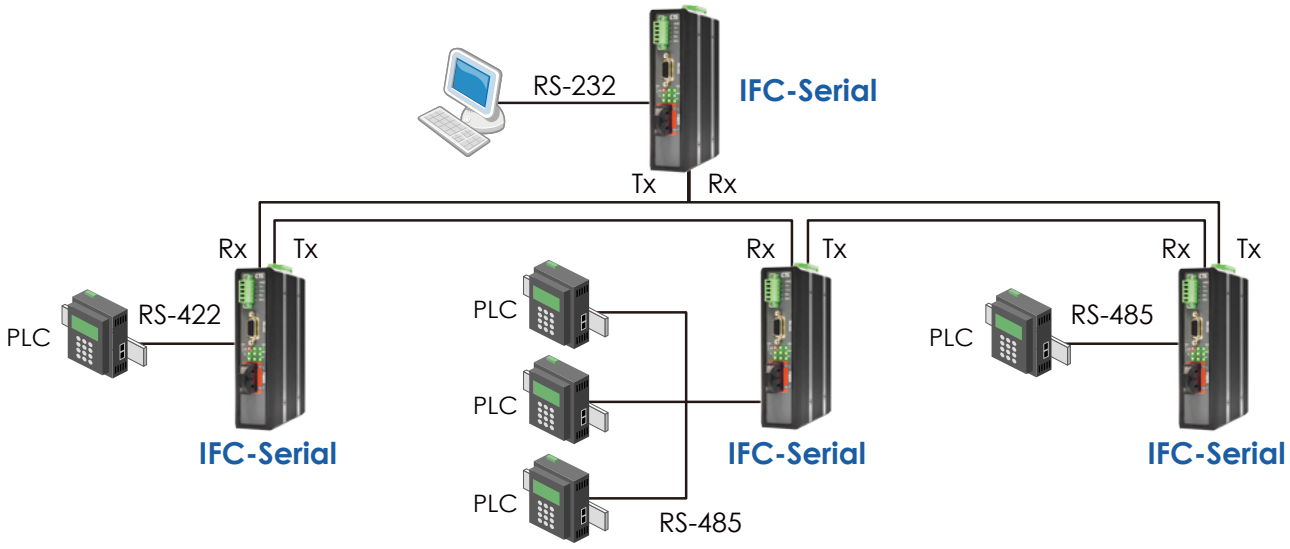
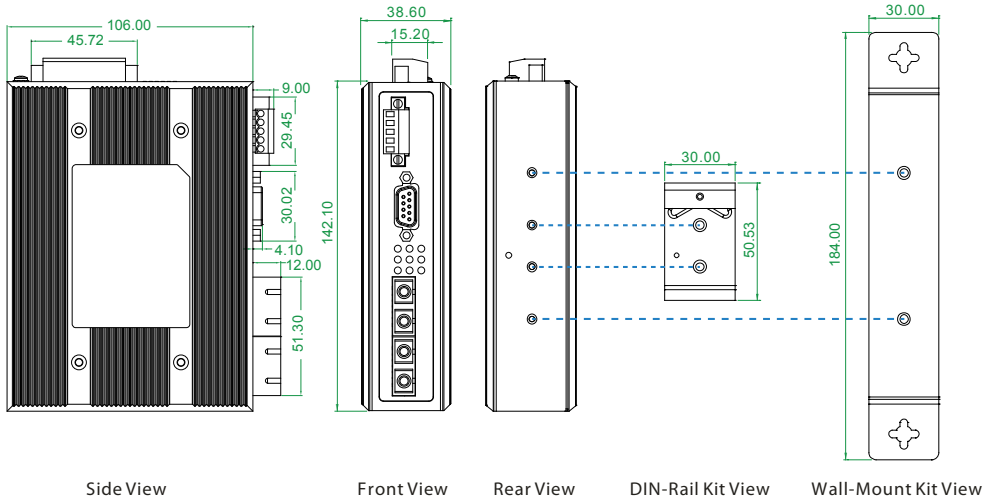


Figure 7 : Ring (Half duplex)



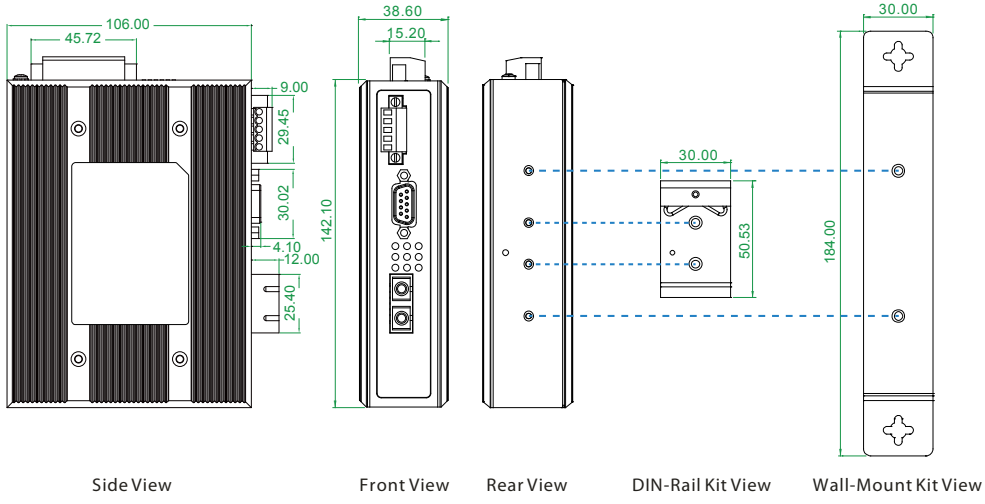
Dimensions

IFC-FDC



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

IFC-Serial



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

Ordering Information

Model Name	Dual Channel	Serial			Fiber		Certification				Operating Temperature
		RS232	RS422/485	Isolation 2.5KV	SC/ST	Daisy Chain	Safety UL60950-1	EN61000-6-2 EN61000-6-4	CE	FCC	
IFC-FDC	V	2	1	V	2	V	V	V	V	V	-10~60°C
IFC-FDC-E	V	2	1	V	2	V	V	V	V	V	-40~75°C
IFC-Serial	V	2	1	V	1	—	V	V	V	V	-10~60°C
IFC-Serial-E	V	2	1	V	1	—	V	V	V	V	-40~75°C

Model Naming Rule

IFC – FDC – E

- IFC: Industrial Serial Fiber Converter
- FDC: FDC Serial
- E: -40~75°C; Blank: -10~60°C

Connector Type	Connectivity Distance
SC, ST	002: 2km 030: 30km 060: 60km

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

Temperature / Connector Type / Connectivity Distance

IFC – FDC – □ – □□□□□

Example: IFC – FDC – E – SC002

NEW

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

IMC-1000C

10/100/1000Base-T to 1000Base-SX/LX Fiber Converter

IMC-1000CS

10/100/1000Base-T to 100/1000Base-X SFP Fiber Converter

IMC-1000C(S) is a family of Gigabit Ethernet non-managed media converters that support conversion between electrical 10/100/1000Base-T and optical 1000Base-X Ethernet. Simple DIP switch settings allow configuring the UTP port for auto-negotiation or for forced 10/100/1000 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 (Jumbo frame Pass-through). Housed in rugged DIN rail or wall mountable enclosures, these converters are designed for harsh environments, such as industrial networking and intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications.

Features

- DC input power 12/24/48VDC (9.6 ~ 60VDC)
- IP30 rugged metal housing and fanless
- Wide operating temperature -20 ~ 75°C (IMC-1000C-E, IMC-1000CS-E)
- CE, FCC, Railway 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 10/100/1000Base-T and 1000Base-X Fiber cable interface
- Provides a DIP-Switch to set functions
- Supports LFPT (Link Fault Pass Through)

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
RJ45 Ports	10/100/1000Base-TX
Fiber Ports	1000Base SX/LX, SC (IMC-1000C) 100/1000Base-X SFP Slot (IMC-1000CS)
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: (IMC-1000C) 500M (Multi-mode SX) 20KM (Single-mode) 40KM (Single-mode)
	SFP (IMC-1000CS), Distance depend on SFP Fiber Tranceiver
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	Data process architecture OFF: Switch Mode ON: Converter Mode
	LFPT OFF:LFPT Disable ON: LFPT Enable
	Fiber Duplex OFF: Auto ON: Force
	Fiber Speed (Only for IMC-1000CS) OFF: 1000Base-X ON: 100Base-FX
Connector	Fiber: SC (Multi-mode, 500M), SC (Single-mode, 20KM, 40KM) (IMC-1000C) SFP Slot (IMC-1000CS)
	RJ-45 Socket: CAT 5e Twisted Pair cable Auto MDI/MDI-X and Auto-Negotiation Function Supports
LED	Per Unit: Power (Green)
	SFP/Fiber port Link/Act (Yellow)
	RJ-45 port: Speed & Link/Act 10/100 (Green), 1000 (Yellow)
Reserve Polarity Protection	Present
Overload Current Protection	Present

Power Supply	12/24/48VDC (9.6~60VDC) or 24VAC (18~36VAC) with polarity reverse protect function and removable terminal block
Power Consumption	

Input Voltage	IMC-1000C	IMC-1000CS
12VDC	2.1W	1.8W
24VDC	2.2W	2W
48VDC	3.4W	2.9W

Removable Terminal Block	Provide for input power (2 Pin)
Operating Humidity	5% ~ 95% (Non-condensing)
Operating Temperature	-10 ~ 60°C (IMC-1000C, IMC-1000CS) -20 ~ 75°C (IMC-1000C-E, IMC-1000CS-E)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection and fanless
Dimensions	70x 30x 103 mm (D x W x H)
Weight	220g (IMC-1000C) 215g (IMC-1000CS)
Installation	DIN Rail, or wall mounting (Optional)
MTBF	325,508 (IMC-1000C) 326,287 (IMC-1000CS) (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	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
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Application & Topology

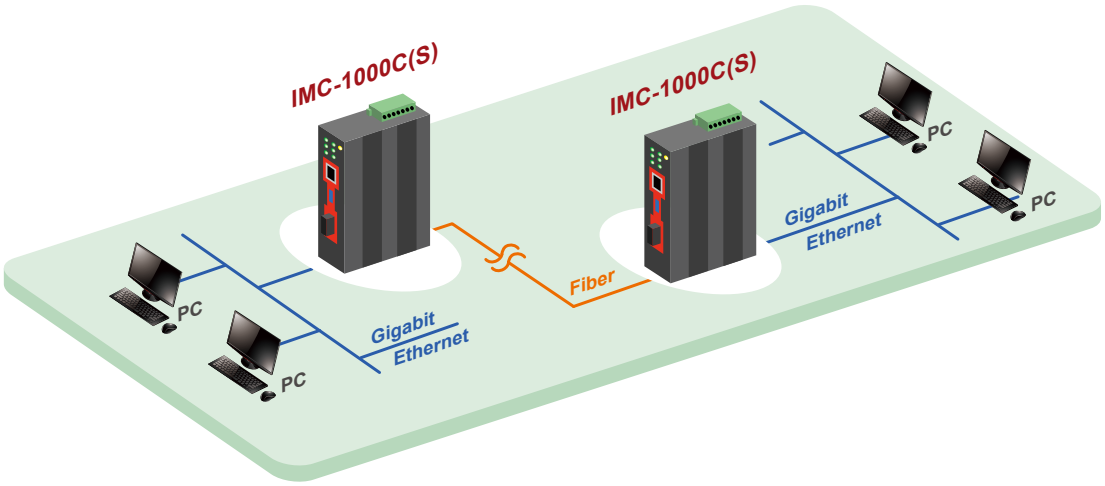
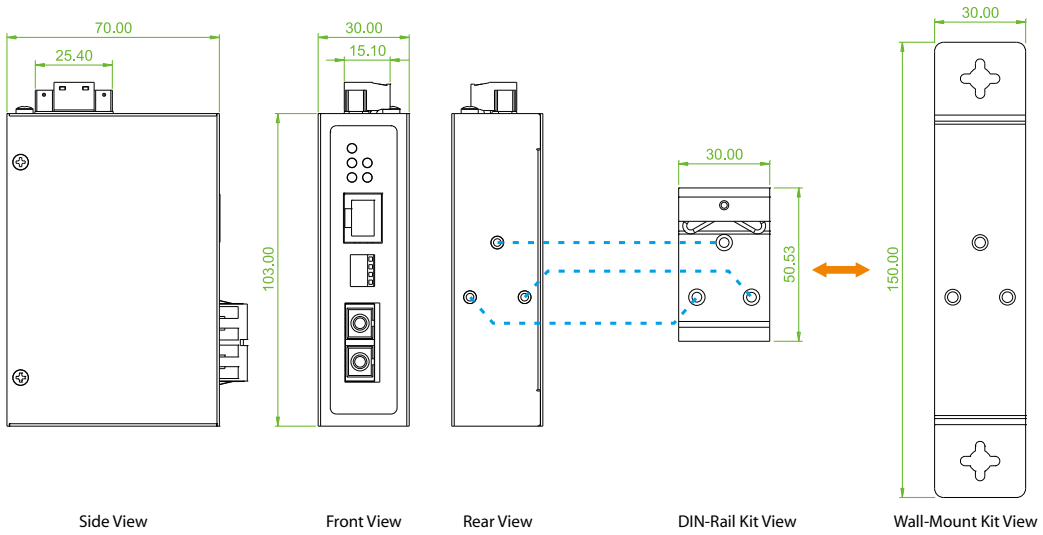


Figure : IMC-1000C(S) Media Converter Transmission

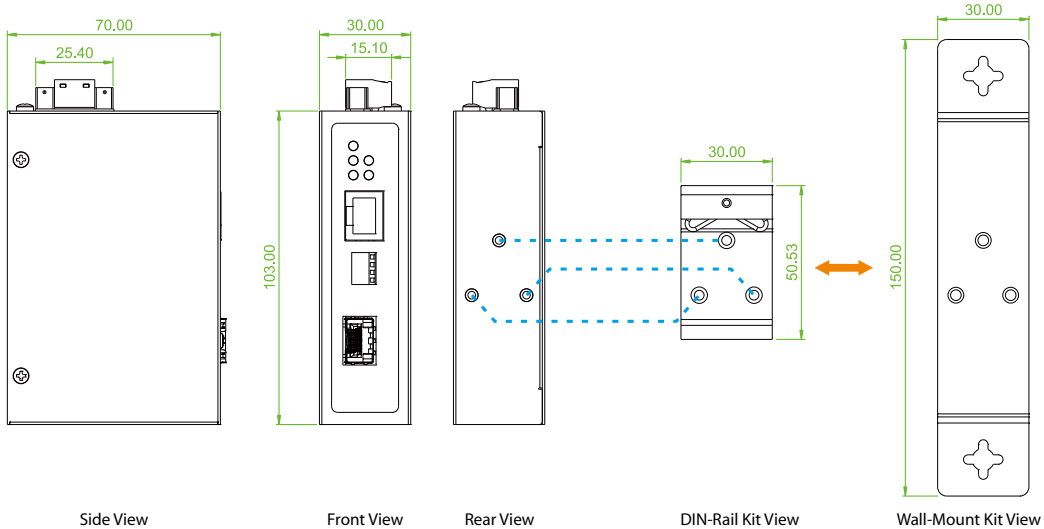
Dimensions

IMC-1000C



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

IMC-1000CS

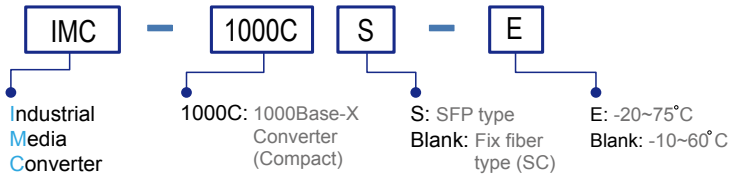


Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View

Ordering Information

Model Name	UTP	Fiber		Certification				Operating Temperature
	10/100/1000Base-T	1000Base-X	Dual Speed 100/1000Base-X	Railway EN50121-41	EN61000-6-2 EN61000-6-4	CE	FCC	
IMC-1000C	1	1 SC	—	V	V	V	V	-10~60°C
IMC-1000C-E	1	1 SC	—	V	V	V	V	-20~75°C
IMC-1000CS	1	—	1 SFP	V	V	V	V	-10~60°C
IMC-1000CS-E	1	—	1 SFP	V	V	V	V	-20~75°C

Model Naming Rule



Connector Type	Connectivity Distance
SC (IMC-1000 & IMC-1000-E 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)type

Temperature / Connector Type / Connectivity Distance

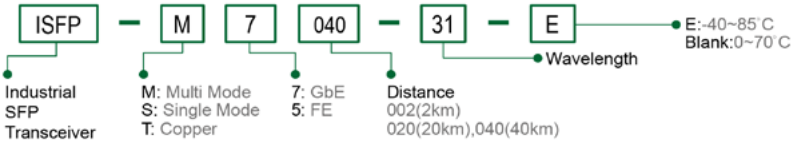
IMC – 1000C – □ – □□□□□

Example: IMC – 1000C – E – SC002

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℃
IND-WMK03	Wall Mount kit for Industrial product (Compact, 150x 30mm)

SFP Naming Rule



NEW

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

IMC-100C

10/100Base-TX to 100Base-FX Fiber Converter

IMC-100C is a compact size of Fast Ethernet non-managed industrial media converters that support conversion between electrical 10/100Base-TX and optical 100Base-FX Ethernet.Simple DIP switch settings allow configuring fiber port to half or full duplex, enabling LFPT (Link Fault Pass Through), and selecting Switch Mode (store & forward) or Converter Mode (Jumbo frame Pass-through). Housed in rugged DIN rail or wall mountable enclosures, these converters are designed for harsh environments, such as industrial networking and intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications.

Features

- DC input power 12/24/48VDC (9.6 ~ 60VDC) or 24VAC (18~36VAC)
- IP30 rugged metal housing, compact size and fanless
- Wide operating temperature -40 ~ 75°C (IMC-100C-E)
- CE, FCC, railway 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)
- Support LFPT (Link Fault Pass Through)
- Conversion between 10/100Base-TX and 100Base-FX cable interface
- Provide a 4 pin DIP-Switch to set functions

Specifications

Standard	IEEE 802.3 10Base-T 10Mbit/s Ethernet
	IEEE 802.3u 100Base-TX, 100Base-FX, Fast Ethernet
	IEEE 802.3x Flow Control
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	Force Fiber port Duplex OFF: Full Duplex ON: Half Duplex
	LFPT: ON: Enables LFPT (Link Fault Pass through) OFF: Disables LFPT
	Architecture: 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 (Green): ON: Power active / OFF: Power is inactive
	Fiber (Green): LNK/Act (Green) : Link & Active Dup (Green) : Fiber port Full or Half duplex
	LAN:100 (Green): 100M Link & Active 10 (Green): 10M Link & Active
Reserve Polarity Protection	Present
Overload Current Protection	Present

Power Supply	12/24/48VDC (9.6~60VDC) or 24VAC (18~36VAC), polarity reverse protect function and removable terminal block
Power Consumption	Input Voltage / Watt(W) 12VDC / 1.8W 24VDC / 1.8W 48VDC / 2.1W
Removable Terminal Block	Provide for 1x DC input power (2 Pin)
Operating Humidity	5% ~ 95% (Non-condensing)
Operating Temperature	-10 ~ 60°C (IMC-100C) -40 ~ 75°C (IMC-100C-E)
Storage Temperature	-40 ~ 85°C
Housing	IP30 rugged metal housing ,compact size and fanless
Dimensions	70 x 30 x 103 mm (D x W x H)
Weight	215g
Installation	DIN Rail mounting, Wall Mounting (Optional)
MTBF	319,971Hours (MIL-HDBK-217)
Warranty	5 years
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	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
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Application

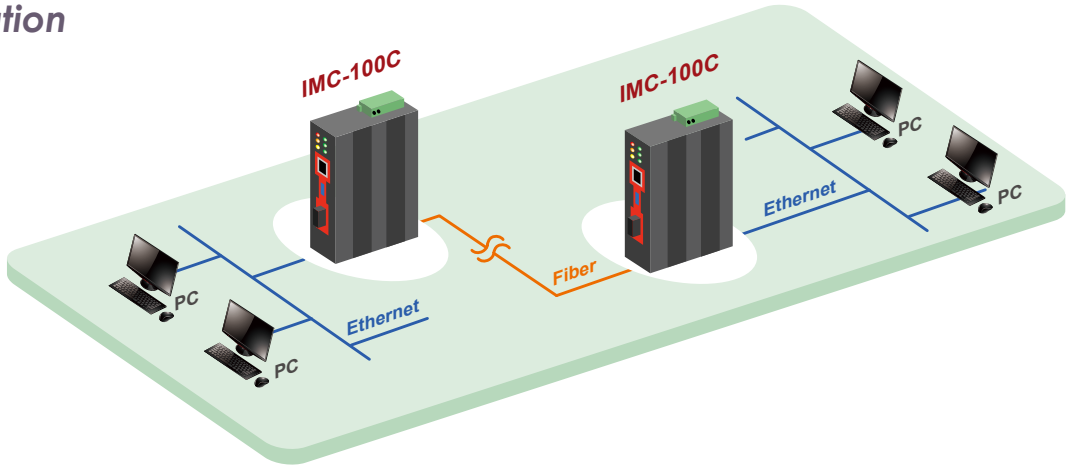
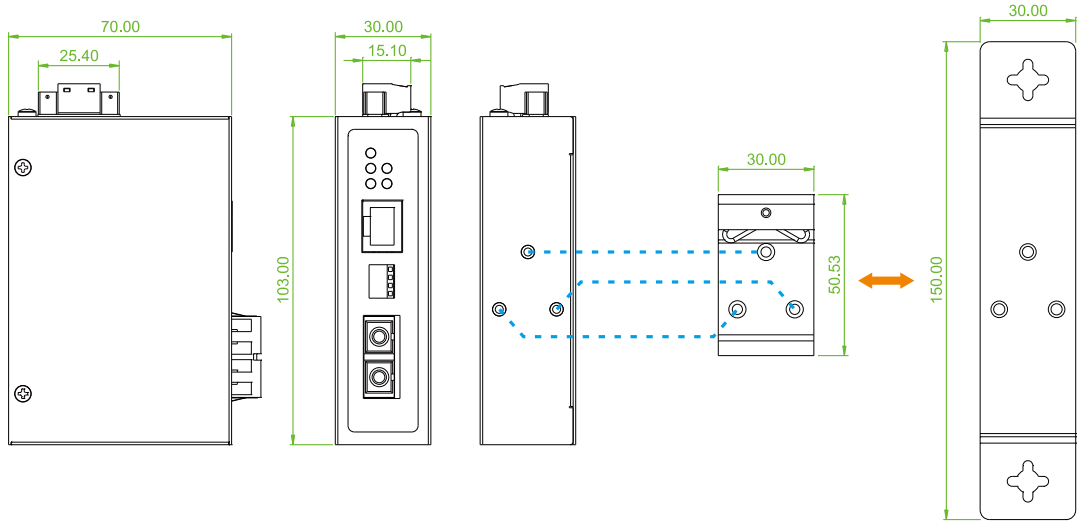


Figure : IMC-100C Media Converter Transmission

Dimensions



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

Ordering Information

Model Name	UTP	Fiber	Certification				Operating Temperature
	10/100Base-TX	100Base-FX	Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE	FCC	
IMC-100C	1	1 SC	V	V	V	V	-10~60°C
IMC-100C-E	1	1 SC	V	V	V	V	-40~75°C

Model Naming Rule

IMC – 100C – E

- IMC: Industrial Media Converter
- 100C: 100Base-X Converter (Compact)
- E: -40~75°C
- Blank: -10~60°C

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

Temperature / Connector Type / Connectivity Distance

IMC – 100C – □ – □□□□□

Example: IMC – 100C – E – SC002

IMC-1000

10/100/1000Base-T to 100/1000Base-SX/LX Fiber Converter

IMC-1000S

10/100/1000Base-T to 100/1000Base-X SFP Slot Fiber Converter

IMC-1000(S) is a family of Gigabit Ethernet non-managed media converters that support conversion between electrical 10/100/1000Base-T and optical 100/1000Base-X Ethernet. Simple DIP switch settings allow configuring the UTP port for auto-negotiation or for forced 10/100/1000 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 (Jumbo frame Pass-through). Housed in rugged DIN rail or wall mountable enclosures, these converters are designed for harsh environments, such as industrial networking and intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications.

Features

- Redundant dual DC input power 12/24/48VDC (9.6 ~ 60VDC)
- IP30 rugged metal housing and fanless
- Wide operating temperature -20 ~ 75°C (IMC-1000-E, IMC-1000S-E)
- UL60950-1, CE, FCC, Railway 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 10/100/1000Base-T and 100/1000Base-X Fiber cable interface
- Provides a DIP-Switch to set functions
- Supports LFPT (Link Fault Pass Through)

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
RJ45 Ports	10/100/1000Base-TX
Fiber Ports	1000Base SX/LX,100Base-FX SC (IMC-1000, IMC-1000-E) SFP Slot (IMC-1000S, IMC-1000S-E)
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: (IMC-1000, IMC-1000-E) 500M (Multi-mode SX) 20KM (Single-mode) 40KM (Single-mode)
	SFP (IMC-1000S, IMC-1000S-E), Distance depend on Fiber Tranceiver
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	Off: Alarm For Power Enable On: Alarm For Power Disable
	Off: Alarm For Port Enable On: Alarm For Port Disable
	Off: LFPT Disable On: LFPT Enable
	Off: Switch Mode On: Converter Mode
	Off: 1000Base-X On: 100Base-FX
Connector	Fiber: SC (Multi-mode, 500M), SC (Single-mode, 20KM, 40KM) (IMC-1000, IMC-1000-E) SFP Slot (IMC-1000S, IMC-1000S-E)
	RJ-45 Socket: CAT 5e Twisted Pair cable Auto MDI/MDI-X and Auto-Negotiation Function Supports
LED	Per Unit: Power 1 (Green), Power 2 (Green), Fault (Amber)
	LNK/ACT for Fiber(Green): ON : Connected to network/ OFF : Not connected to network/ BLK : Receive /Transmit Data
	SFP Fiber speed: Yellow : 1000Base-X Green : 100Base-FX
LED	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
Reserve Polarity Protection	Present
Overload Current Protection	Present

Power Supply	12/24/48VDC (9.6~60VDC) , Redundant power with polarity reverse protect function and removable terminal block
	Provide DC Power JACK adapter cable for external Power adapter
Power Consumption	4.2W
Alarm Relay Contact	Relay outputs with current carrying capacity of 1 A @24VDC
Removable Terminal Block	Provide 2 Redundant power, Alarm relay contact
Operating Humidity	5% ~ 95% (Non-condensing)
Operating Temperature	-10 ~ 60°C (IMC-1000, IMC-1000S)
	-20 ~ 75°C (IMC-1000-E ,IMC-1000S-E)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection and fanless
Dimensions	106 x 38 x 142 mm (D x W x H)
Weight	630g (IMC-1000, IMC-1000-E)
	620g (IMC-1000S, IMC-1000S-E)
Installation	DIN Rail or wall mounting
MTBF	563,813Hrs (IMC-1000, IMC-1000-E)
	578,980Hrs (IMC-1000S, IMC-1000S-E)
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	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 & Topology

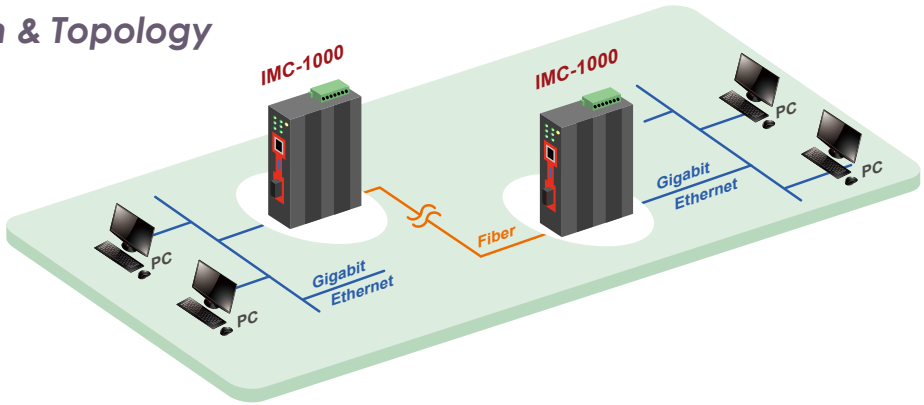
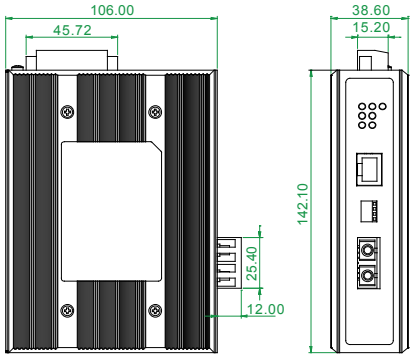


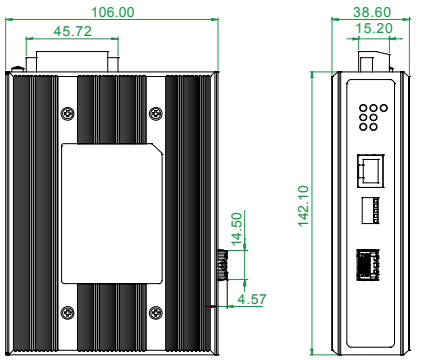
Figure : IMC-1000 Media Converter Transmission

Dimensions

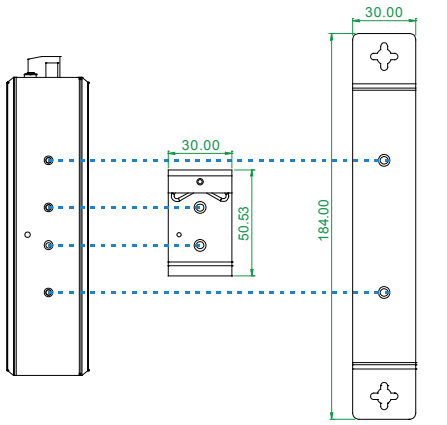
IMC-1000(E)



IMC-1000S(E)



Side View Front View



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

Ordering Information

Model Name	UTP	Fiber	Certification					Operating Temperature
	10/100/1000 Base-T	Dual Speed 100/1000Base-X	Safety UL60950-1	Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE	FCC	
IMC-1000	1	1 SC	V	V	V	V	V	-10~60°C
IMC-1000-E	1	1 SC	V	V	V	V	V	-40~75°C
IMC-1000S	1	1 SFP	V	V	V	V	V	-10~60°C
IMC-1000S-E	1	1 SFP	V	V	V	V	V	-40~75°C

Model Naming Rule

IMC – 1000 S – E → E: -20~75°C, Blank: -10~60°C

- IMC: Industrial Media Converter
- 1000: 1000Base-X Converter
- S: SFP type; Blank: Fix fiber type (SC)

Connector Type	Connectivity Distance
SC (IMC-1000 & IMC-1000-E 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)type

Temperature / Connector Type / Connectivity Distance

IMC – 1000 – □ – □□□□□

Example: IMC – 1000 – E – SC002

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℃
SFP Transceiver	Compatible, Reliable, 5-year Warranty

SFP Naming Rule

ISFP – M 7 040 – 31 – E → E:-40~85°C, Blank:0~70°C; Wavelength

- ISFP: Industrial SFP Transceiver
- M: Multi Mode, S: Single Mode, T: Copper
- 7: GbE, 5: FE
- Distance: 002(2km), 020(20km),040(40km)

IMC-100

10/100Base-TX to 100Base-FX Fiber Converter

IMC-100 is a family of Fast Ethernet non-managed media converters that support conversion between electrical 10/100Base-TX and optical 100Base-FX Ethernet. 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 (Jumbo frame Pass-through). Housed in rugged DIN rail or wall mountable enclosures, these converters are designed for harsh environments, such as industrial networking and intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications.

Features

- Redundant dual DC input power 12/24/48VDC (9.6 ~ 58VDC)
- IP30 rugged metal housing and fanless
- Wide operating temperature -40 ~ 75°C (IMC-100-E)
- 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 DIP-Switch to set functions
- Supports LFPT (Link Fault Pass Through)

Specifications

Standard	IEEE 802.3 10Base-T 10Mbit/s Ethernet
	IEEE 802.3u 100Base-TX, 100Base-FX, Fast Ethernet
	IEEE 802.3x Flow Control
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: 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
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
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)
	-40 ~ 75°C (IMC-100-E)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection and fanless
Dimensions	106 x 38.6 x 142.1mm (D X W X H)
Weight	0.62kg
Installation	DIN Rail mounting and Wall Mounting
MTBF	852,727 Hrs
Warranty	5 years
Certification	
EMI	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	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

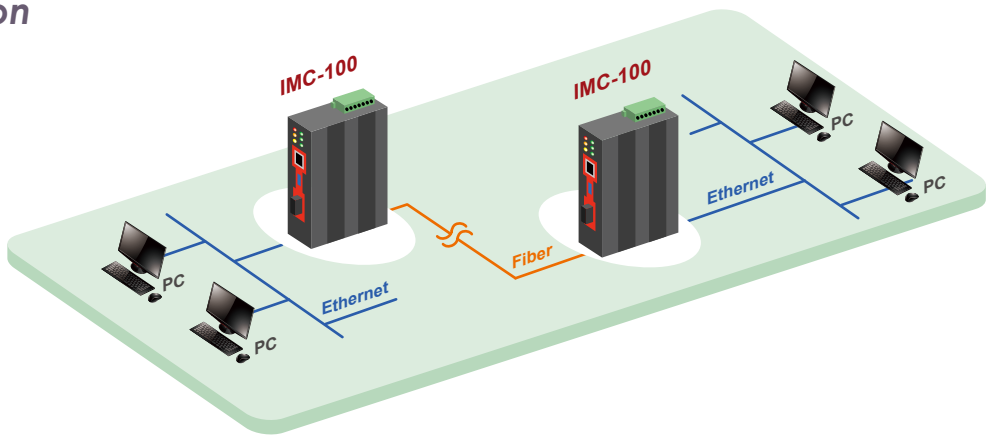
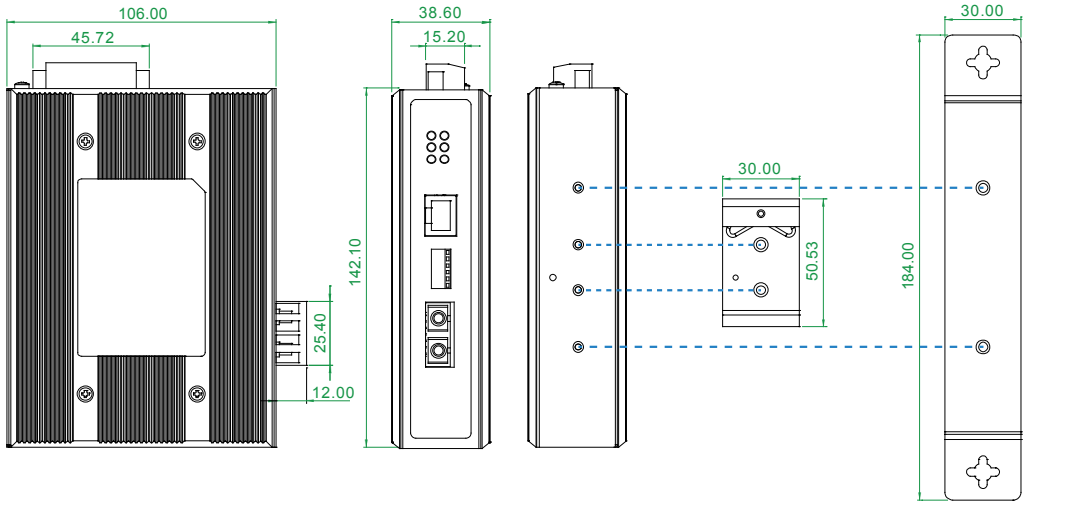


Figure : IMC-100 Media Converter Transmission

Dimensions



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

Ordering Information

Model Name	UTP	Fiber	Certification					Operating Temperature
	10/100Base-TX	100Base-FX	Safety UL60950-1	Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE	FCC	
IMC-100	1	1 SC	V	V	V	V	V	-10~60 C
IMC-100-E	1	1 SC	V	V	V	V	V	-40~75 C

Model Naming Rule

IMC – 100 – E → E: -40~75°C, Blank: -10~60°C

- IMC: Industrial Media Converter
- 100: 100Base-X Converter

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℃
MDR-40-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70℃

Temperature | Connector Type | Connectivity Distance

IMC – 100 – □ – □□□□□

Example: IMC – 100 – E – SC002

IMC-1000M

10/100/1000Base-T to 100/1000Base-SX/LX Managed Fiber Converter

IMC-1000MS

10/100/1000Base-T to 100/1000Base-X SFP Managed Fiber Converter

IMC-1000M(S) models are managed Gigabit media converters that support conversion between electrical 10/100/1000Base-T and optical 100/1000Base-X Ethernet. Housed in rugged DIN rail or wall mountable enclosures, these converters are designed for harsh environments, such as industrial networking and intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications. The converters are Web, SNMP or In-Band managed with an easy to use user interface for Operation, Administration, Maintenance & Provisioning, including bandwidth control, speed, VLAN, Diagnostic, storm filter or converter configurations. The network administrator can manage IMC-1000M(S) via standard SNMP manager such as SmartView. It also provide loop-back test and dying gasp, and can be monitored from a centrally located OAM-enabled FRM220-1000MS converter via remote in-band management.

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
- Redundant dual DC input power 12/24/48VDC (9.6 ~ 60VDC)
- IP30 rugged metal housing and fanless
- Wide operating temperature -20~75°C (IMC-1000M(S)-E)
- UL60950-1, CE, FCC, RailWay traffic EN50121-4 certification
- Industrial grade EMS, EMI EN61000-6-2, EN61000-6-4 certification
- MIB counters
- Supports LFPT (Link Fault Pass Through)
- Auto Laser Shutdown (ALS)
- Supports SmartView for centralized management (Figure 1)
- Web management (Figure 3)
- SNMP management (Figure 1)
- Supports 16 IEEE 802.1Q Tag VLAN Group
- SNMP alarm trap for power loss and port link down
- Supports in-band management from FRM220 Chassis With FRM220-1000MS (Figure 2)
- Remote loop-back test
- Dying gasp (remote power failure detection)

Specifications

Standard	IEEE802.3 10Base-T 10Mbit/s Ethernet
	IEEE802.3u 100Base-TX, 100Base-FX, Fast Ethernet
	IEEE802.3ab 1000Base-TX Gbit/s Ethernet over twisted pair
	IEEE802.3z 1000Base-X Gbit/s Ethernet over Fiber-optic
	IEEE802.3x Flow Control and Back pressure
	IEEE802.3ah OAM management
Fiber Ports	100Base-X or 1000Base-X set by Web Supports Auto Laser Shutdown (ALS)
RJ45 Ports	10/100/1000Base-T
CPU watch dog	Present
Push Button	Reset, Load default seting
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, IMC-1000M-E)
	SFP, Distance depend on plug-in Fiber Tranceiver (IMC-1000MS, IMC-1000MS-E)
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
Connector	Fiber: SC (Multi-mode, 500M), SC (Single-mode, 20KM, 40KM) (IMC-1000M, IMC-1000M-E) SFP Slot (IMC-1000MS, IMC-1000MS-E)
	RJ-45: CAT 5e (10/100/1000Mbps) Twisted Pair cable
	Auto MDI/MDI-X and Auto-Negotiation Function Supports
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

LED	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
Reverse Polarity Protection	Present for power Input
Overload Current Protection	Present
Power Supply	12/24/48VDC (9.6~60VDC) , Redundant power with polarity reverse protect function and removable terminal block
	Provide DC Power JACK adapter cable for external power adapter
Alarm Relay Contact	Relay outputs with current carrying capacity of 1 A @24VDC
	Relay alarm output for power fail or port link down
Removable Terminal Block	Provide 2 redundant power, alarm relay contact, 7 Pin
Power Consumption	4.8 W
Operating Humidity	5% ~ 95% (Non-condensing)
Operating Temperatur	-10° ~ 60°C (IMC-1000M, IMC-1000MS)
	-20 ~ 75°C (IMC-1000M-E, IMC-1000MS-E)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection and fanless
Dimensions	106 x 38.6 x 142.1mm (D x W x H)
Weight	0.63kg (IMC-1000M, IMC-1000M-E)
	0.62kg (IMC-1000MS, IMC-1000MS-E)
Installation	DIN Rail mounting or wall mounting
MTBF	544,905 hrs (IMC-1000MS, IMC-1000MS-E) (MIL-HDBK-217) 559,059 hrs (IMC-1000MS, IMC-1000MS-E) (MIL-HDBK-217)
Warranty	5 years

Certification	
EMI	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	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

SNMP or Web management 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
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

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
Diagnostic & Monitor	Remote loop-back test
	Dying gasp (remote power failure detection)
	Supports Link Fault Pass-Through (LFPT) Function
	Broadcast/Multicast/Unicast storm filter

Application

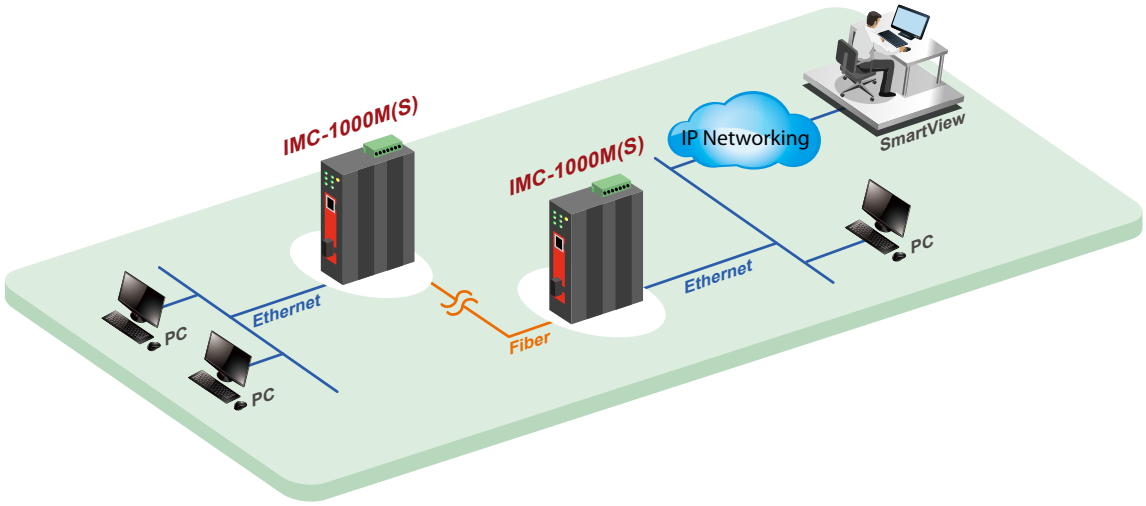


Figure 1 : IMC-1000M(S) Management by SNMP, SmartView

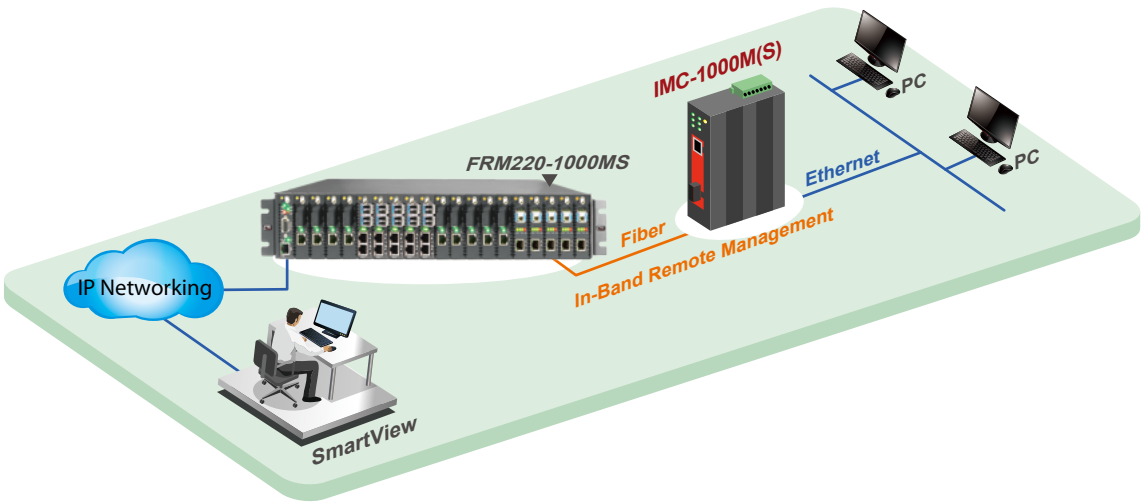


Figure 2 : IMC-1000M(S) Application in Remote, in-Band Management

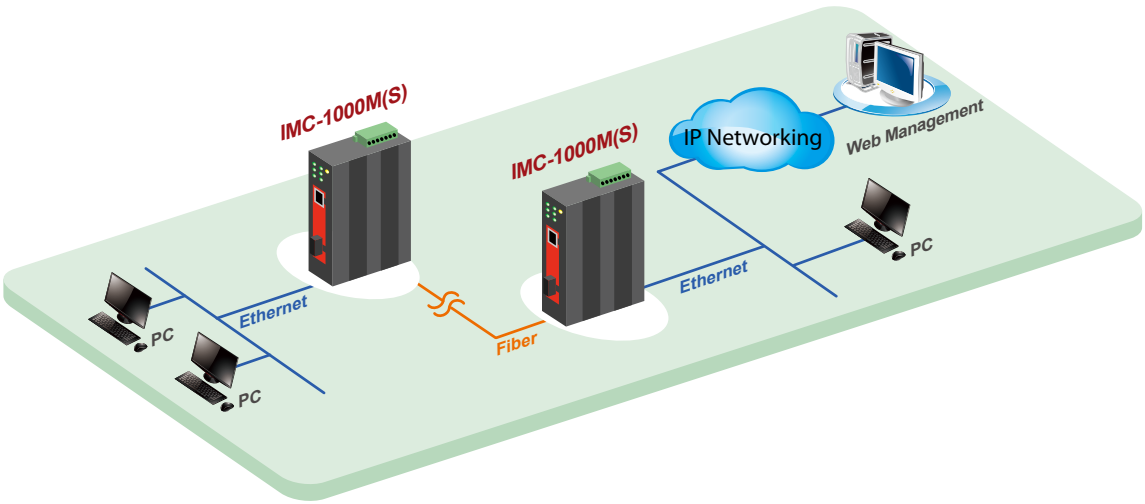
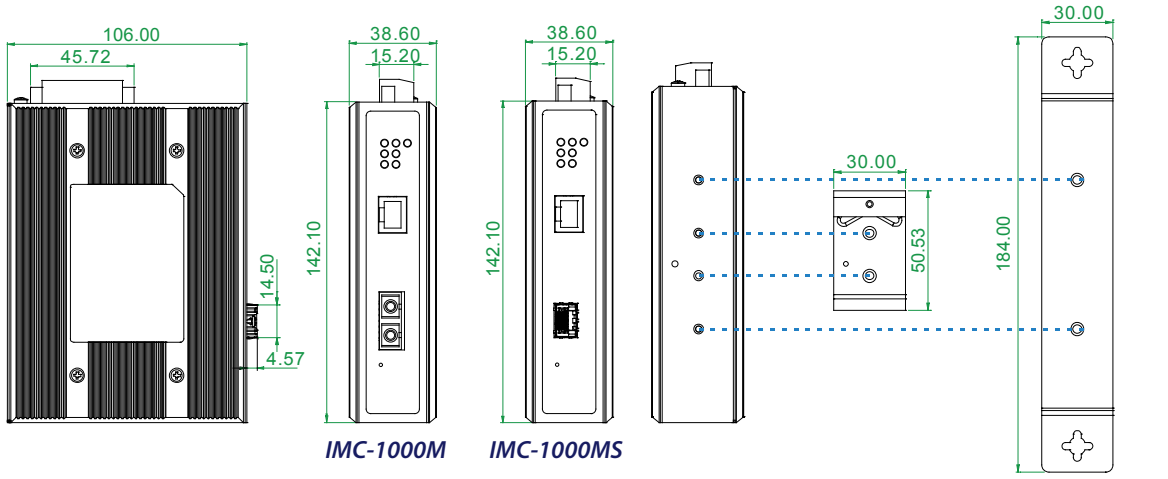


Figure 3 : IMC-1000M(S) Application in Web Management

Dimensions



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

Ordering Information

Model Name	Managed	UTP	Fiber	Certification					Operating Temperature
		10/100/1000 Base-T	Dual Speed 100/1000Base-X	Safety UL60950-1	Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE	FCC	
IMC-1000M	V	1	1 SC	V	V	V	V	V	-10~60 C
IMC-1000M-E	V	1	1 SC	V	V	V	V	V	-20~75 C
IMC-1000MS	V	1	1 SFP	V	V	V	V	V	-10~60 C
IMC-1000MS-E	V	1	1 SFP	V	V	V	V	V	-20~75 C

Model Naming Rule

IMC – 1000 M S – E
- IMC: Industrial Media Converter
- 1000: 1000Base-X Converter
- M: Managed
- S: SFP type; Blank: Fix fiber type (SC)
- E: -20~75°C; Blank: -10~60°C

Connector Type	Connectivity Distance
SC (IMC-1000M, IMC-1000M-E 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)

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
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
- E:-40~85°C; Blank:0~70°C

Temperature / Connector Type / Connectivity Distance

IMC – 1000M – □ – □□□□□

Example: IMC – 1000M – E – SC002

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

IMC-100M

10/100Base-TX to 100Base-FX Managed Fiber Converter

IMC-100M is a family of managed Fast Ethernet media converters that support conversion between electrical 10/100Base-TX and optical 100Base-FX Ethernet. Housed in rugged DIN rail or wall mountable enclosures, these converters are designed for harsh environments, such as industrial networking and intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications. The converter is Web, SNMP or In-Band managed with an easy to use user interface for Operation, Administration, Maintenance & Provisioning, including bandwidth control, speed, and VLAN, Diagnostic, storm filter or converter configurations. It also provide loop-back test and dying gasp, and can be monitored from a centrally located OAM-enabled FRM220-1000MS converter via remote in-band management.

Features

- Conversion between 10/100Base-TX and 100Base-FX Fiber cable interface
- Redundant dual DC input power 12/24/48VDC (9.6 ~ 60VDC)
- IP30 rugged metal housing and fanless
- Wide operating temperature -20~75°C
- UL60950-1, CE, FCC, Railway traffic EN50121-4 certification
- Industry grade EMS, EMI EN61000-6-2, EN61000-6-4 certification
- Supports jumbo frame 9K bytes packet
- Ingress/Egress bandwidth control
- MIB counters
- Supports LFPT (Link Fault Pass Through)
- Auto Laser Shutdown (ALS)
- Supports SmartView for centralized management (Figure 1)
- SNMP management (Figure 1)
- Web management (Figure 3)
- Supports 16 IEEE 802.1Q Tag VLAN Group
- SNMP alarm trap for power loss and port link down
- Supports in-band management from FRM220 Chassis With FRM220-1000MS (Figure 2)
- Remote loop back test
- Dying gasp (remote power failure detection)

Specifications

Standard	IEEE802.3 10Base-T 10Mbit/s Ethernet
	IEEE802.3u 100Base-TX, 100Base-FX, Fast Ethernet
	IEEE802.3x Flow Control and Back pressure
	IEEE802.1q Tag VLAN
Fiber Ports	100Base-FX Supports Auto laser shutdown (ALS)
RJ45 Ports	10/100Base-TX
Push Button	Reset, Load default seting
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: 2 KM (Muti-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
Connector	Fiber: SC/ST (Multi-mode, 2KM), SC/ST (Single-mode, 30KM, 50KM)
	RJ-45: CAT 5e (10/100Mbps) Twisted Pair cable
	Auto MDI/MDI-X and Auto-Negotiation Function Supports
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
	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
Reverse Polarity Protection	Present for Power Input
Overload Current Protection	Present
Power Supply	12/24/48VDC (9.6~60VDC), Redundant power with polarity reverse protect function and removable terminal block
Power Suppl	Provide DC Power JACK adapter cable for external power adapter

Alarm Relay Contact	Relay outputs with current carrying capacity of 1 A @24VDC
	Relay Alarm Output for Power Fail or Port link down
Power Consumption	4.8W
Removable Terminal Block	Provide 2 redundant power, alarm relay contact, 7 Pin
Operating Humidity	5% ~ 95% (Non-condensing)
Operating Temperatur	-10 ~ 60°C (IMC-100M)
	-20 ~ 75°C (IMC-100M-E)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection and fanless
Dimensions	106 x 38.6 x 142 mm (D x W x H)
Weight	630g
Installation	DIN Rail mounting or wall mounting
Warranty	5 years
MTBF	778,604 hrs (MIL-HDBK-217)
Certification	
EMI	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	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

SNMP or Web management 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
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

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
Diagnostic & Monitor	Remote loop-back test
	Dying gasp (remote power failure detection)
	Supports Link Fault Pass-Through (LFPT) Function
	Broadcast/Multicast/Unicast storm filter

Application

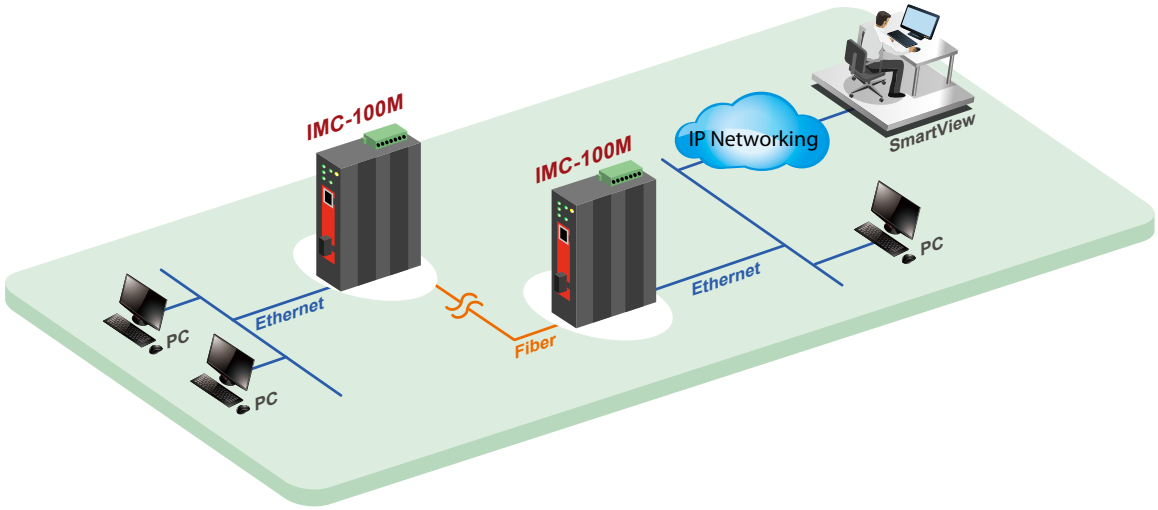


Figure 1 : IMC-100M Management by SNMP, SmartView

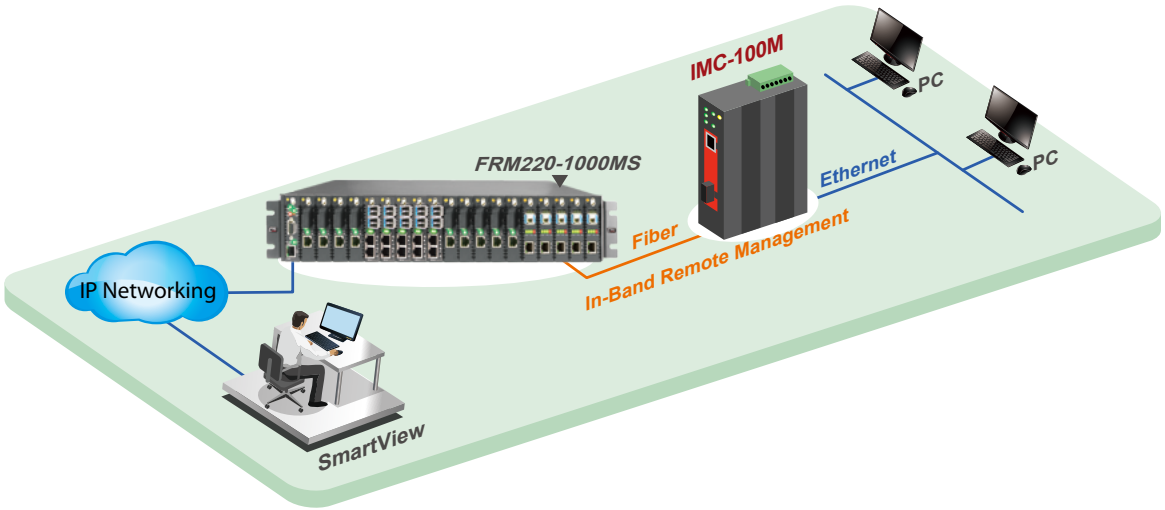


Figure 2 : IMC-100M Application in Remote, in-Band Management

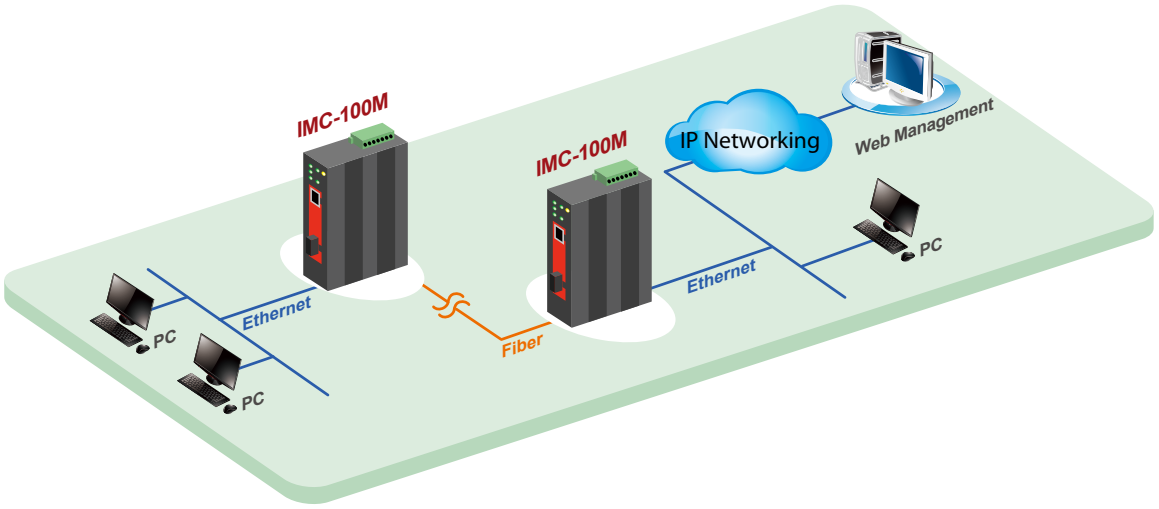
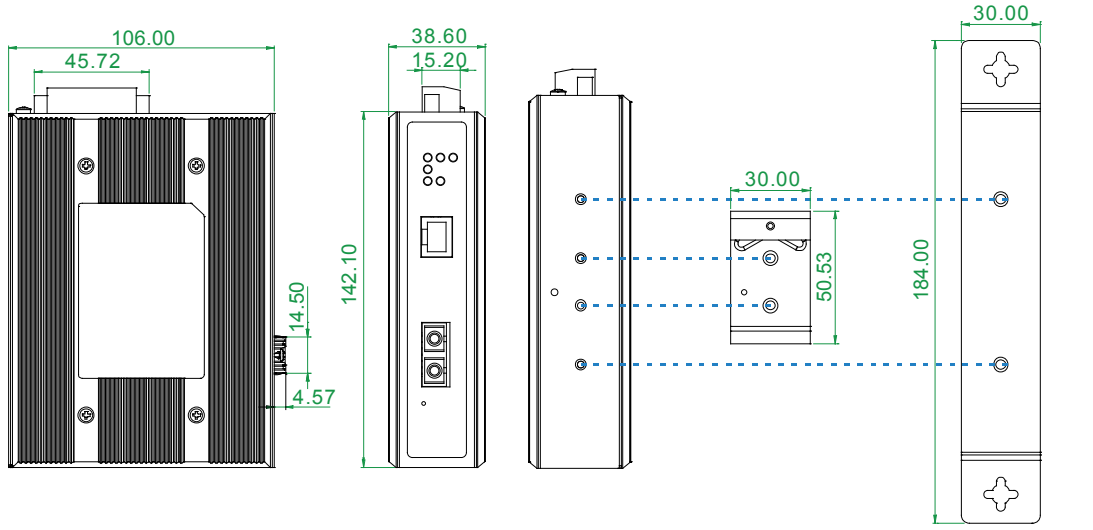


Figure 3 : IMC-100M Application in Web Management

Dimensions



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

Ordering Information

Model Name	Managed	UTP	Fiber	Certification					Operating Temperature
		10/100Base-TX	100Base-FX	Safety UL60950-1	Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE	FCC	
IMC-100M	V	1	1 SC/ST	V	V	V	V	V	-10~60 C
IMC-100M-E	V	1	1 SC/ST	V	V	V	V	V	-20~75 C

Model Naming Rule

IMC – 100 – M – E → E: -20~75°C, Blank: -10~60°C

- IMC: Industrial Media Converter
- 100: 100Base-X Converter
- M: Managed

Connector Type	Connectivity Distance
SC, ST	002: 2KM (M/M) 030k : 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℃
MDR-40-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70℃

Temperature / Connector Type / Connectivity Distance

IMC–100M – □ – □□□□□

Example: IMC–100M – E – SC002