IGS-401F

4x 10/100/1000Base-T+ 1x 1000Base-SX/LX Gigabit Ethernet Switch

IGS-402F

4x 10/100/1000Base-T+ 2x 1000Base-SX/LX Gigabit Ethernet Switch

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IGS-401F/402F models are 4 port 10/100/1000Base-T Ethernet non-managed Gigabit switches, with either 1 x 1000Base-X fiber port (IGS-401F) or 2 x 1000Base-X 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

- 12/24/48VDC redundant dual input power design
- 4x Port 1000Base-T RJ-45 with 1 or 2 Fiber Gigabit Ethernet
- Wide operating temperature -40 ~ 75°C (IGS-401F-E, IGS-402F-E)
- 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 certification
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- IP30 rugged metal housing

Specifications

IEEE Standard	IEEE 802.3 10Base-T Ethernet	
	IEEE 802.3u 100Base-TX Fast Ethernet	
	IEEE 802.3ab 1000Base-T Gigabit Ethernet	
	IEEE 802.3z 1000Base-X Gigabit Ethernet	
	IEEE 802.3x Flow Control and Back Pressure	
Switch Architecture	Back-plane (Switching Fabric): 10Gbps (IGS-401F, IGS-401F-E)	
	Back-plane (Switching Fabric): 12Gbps (IGS-402F, IGS-402F-E)	
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 connector : SC	
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
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	Max 7.79W (IGS-401F)
	Max 7.83W (IGS-402F)
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-401F, IGS-402F)
	-40 ~ 75°C (IGS-401F-E, IGS-402F-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection
Dimensions	106 x 62.5 x 134.8 mm (D X W X H)
Weight	0.67kg (IGS-401F), 0.68kg (IGS-402F)
Installation Mounting	DIN Rail mounting or wall mounting
EMC/EMS	CE, FCC
EMI	FCC Part 15 Subpart B Class A, CE EN 55022 Class A
	EN61000-6-4 – Emission for industrial environment
EMS	EN61000-6-2 – Immunity for Industrial environment
	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (EFT) Level 3, Criteria A
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (Magnetic Field) Level 3, Criteria A
Safety	UL60950-1
Rail Traffic	EN 50121-4
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
MTBF	407,596 Hours (IGS-401F)
	391,633 Hours (IGS-402F)
Warranty	5 years

Application

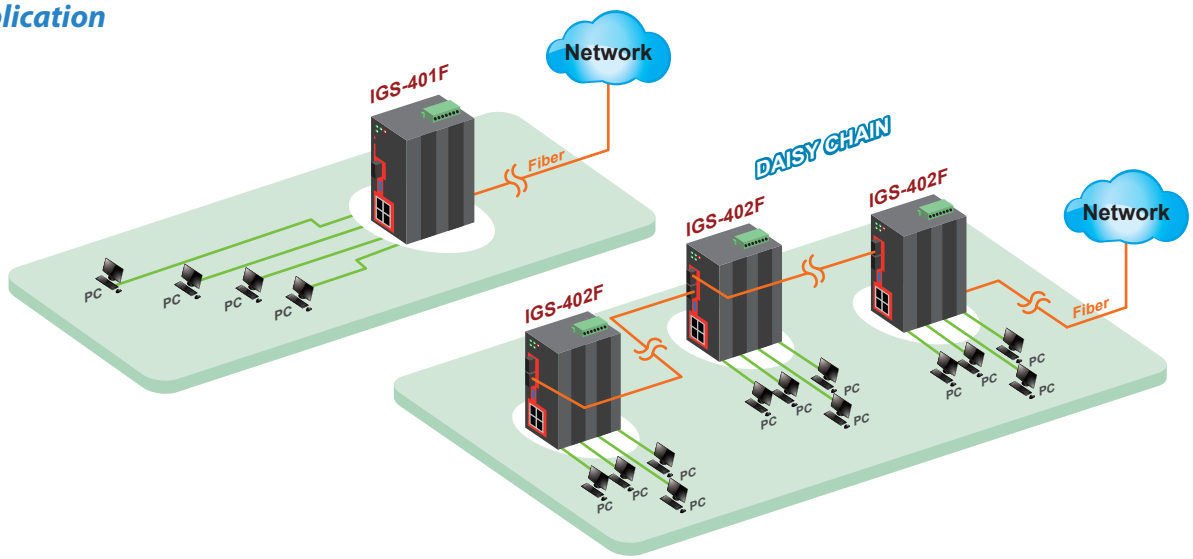
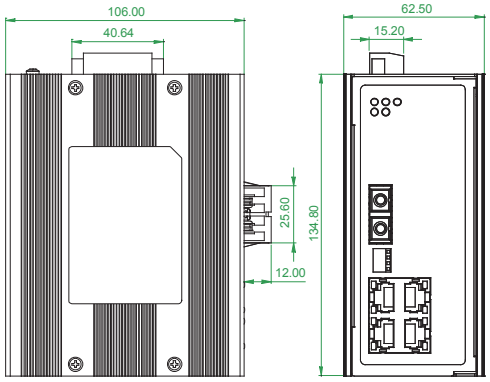


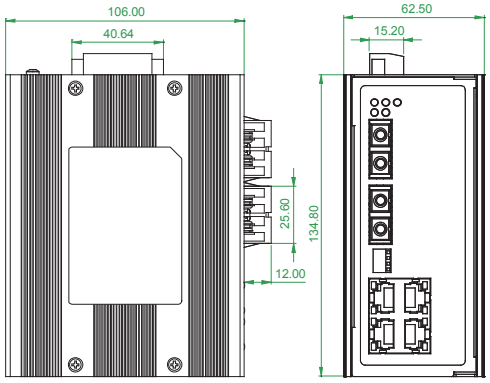
Figure : IGS-401F & IGS-402F Gigabit Ethernet Switch Transmission

Dimensions

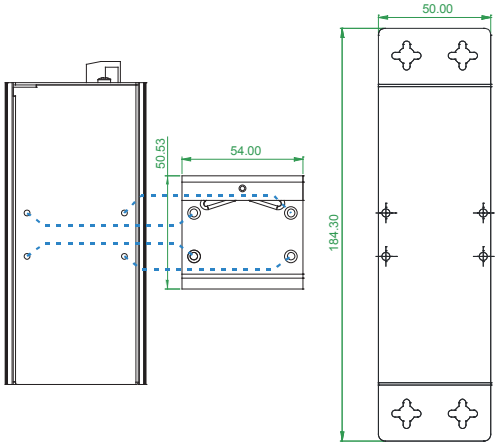
IGS-401F



IGS-402F



Side View Front View



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

Ordering Information

Model Name	Description
IGS-401F	4-Port 10/100/1000Base-T + 1-Port 1000Base Gigabit Ethernet Switch (-10 ~ 60°C)
IGS-401F-E	4-Port 10/100/1000Base-T + 1-Port 1000Base Gigabit Ethernet Switch (-40 ~ 75°C)
IGS-402F	4-Port 10/100/1000Base-T + 2-Port 1000Base Gigabit Ethernet Switch (-10 ~ 60°C)
IGS-402F-E	4-Port 10/100/1000Base-T + 2-Port 1000Base Gigabit Ethernet Switch (-40 ~ 75°C)

Fiber Connector	Connectivity Distance
SC (IGS-401F & IGS-401F-E 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)

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

	Port Number	Temperature	Connector Type	Connectivity Distance
IGS – 40□ F	– □	–	□□	□□□

Example: IGS – 401F – E – SC002

IGS-402S

4x 10/100/1000Base-T+ 2x 100/1000Base-X SFP Slot Gigabit Ethernet Switch

EN50121-4

EN61000-6-2
EN61000-6-4

IGS-402S models are 4 port 10/100/1000Base-T Ethernet non-managed Gigabit switches, with 2x 1000Base-X SFP 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

- 12/24/48VDC redundant dual input power design
- 4-Port 1000Base-T RJ-45 with 2 Fiber Gigabit Ethernet
- Wide operating temperature -40 ~ 75°C (IGS-402S-E)
- Provides broadcast storm protection
- Supports DIP SW for alarm setting and broadcast storm protection
- Supports power failure alarm message by relay
- Supports flow control
- Support dual speed option for SFP
- UL60950-1, CE, FCC, certification
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 Certified
- IP30 rugged metal housing

Specifications

IEEE Standard	IEEE 802.3 10Base-T Ethernet	
	IEEE 802.3u 100Base-TX Fast Ethernet	
	IEEE 802.3ab 1000Base-T Gigabit Ethernet	
	IEEE 802.3z 1000Base-X Gigabit Ethernet	
	IEEE 802.3x Flow Control and Back Pressure	
Switch Architecture	Back-plane (Switching Fabric): 12Gbps	
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-T auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex	
	2 SFP 100/1000 Base-X dual mode slot	
Network Cable	UTP/STP above Cat. 5e cable	
	EIA/TIA-568 100-ohm (100m)	
	Fiber Cable (Multi-mode): 50/125um, 62.5/125um	
	Fiber Cable (Single-mode): 9/125um	
Protocols	CSMA/CD	
LED	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber)	
	Per RJ-45 port : Link/Active (Green), Speed 10(OFF), 100(Green), 1000(Yellow)	
	Fiber Per port: Link/Active (Green)	
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
	DIP 4	ON : Fiber 1 for 100Base-FX SFP
		OFF : Fiber 1 for Gigabit SFP
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	Max 7.83W
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)
	-40 ~75°C (IGS-402S-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection , Fan-less
Dimensions	106 x 62.5 x 134.8mm (D X W X H)
Weight	0.84kg
Installation Mounting	DIN Rail mounting or wall mounting
EMC/EMS	CE, FCC
EMI	FCC Part 15 Subpart B Class A, CE EN 55022 Class A
	EN61000-6-4 – Emission for industrial environment
EMS	EN61000-6-2 – Immunity for Industrial environment
	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (EFT) Level 3, Criteria A
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (Magnetic Field) Level 3, Criteria A
Safety	UL60950-1
Rail Traffic	EN 50121-4
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
MTBF	438,031 Hours
Warranty	5 years

Application

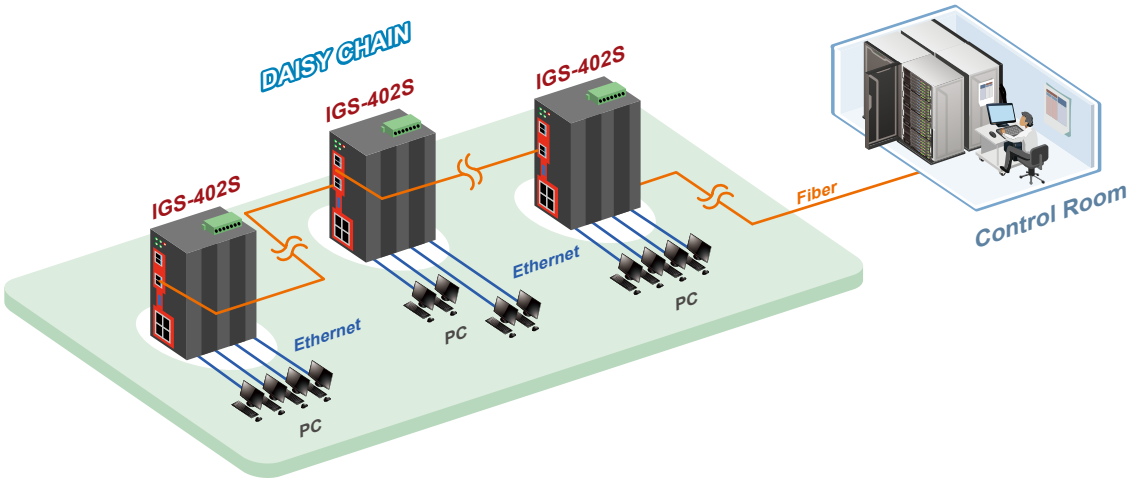
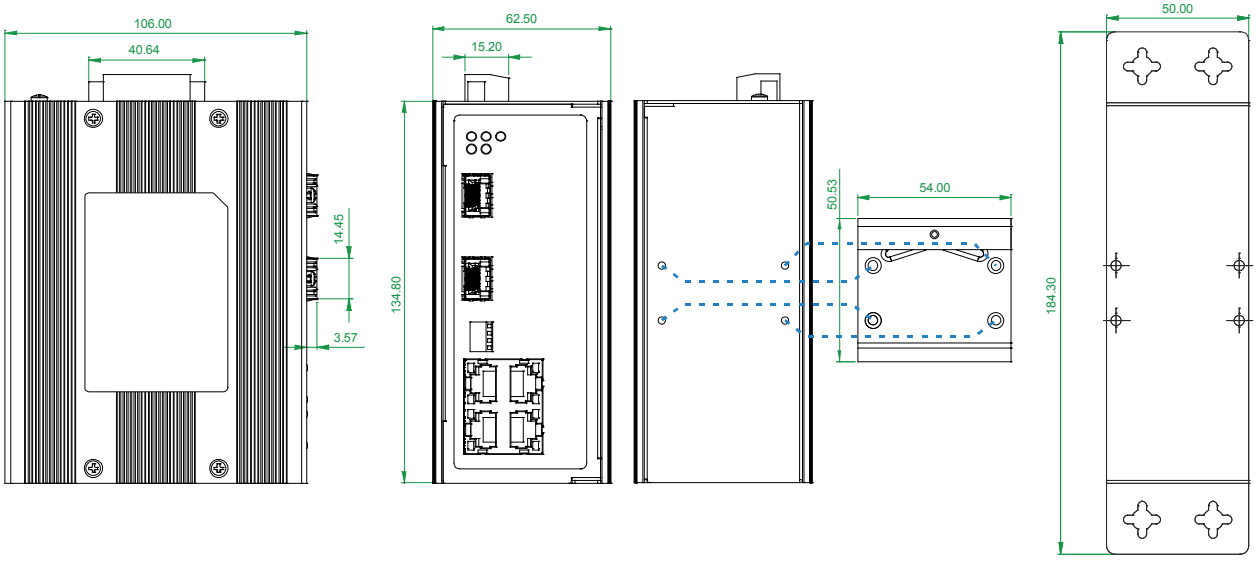


Figure : IGS-402S Gigabit Ethernet Switch Transmission with Daisy Chain

Dimensions



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

Ordering Information

Model Name	Description
IGS-402S	4-Port 10/100/1000Base-T + 2-Port 100/1000Base SFP Slot Gigabit Ethernet Switch (-10 ~ 60°C)
IGS-402S-E	4-Port 10/100/1000Base-T + 2-Port 100/1000Base SFP Slot Gigabit Ethernet Switch (-40 ~ 75°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

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: -40~85°C; Blank: 0~70°C

Temperature

IGS – 402S – □

Example: IGS – 402S – E

IGS-500

5x 10/100/1000Base-T Gigabit Ethernet Switch

IGS-800

8x 10/100/1000Base-T Gigabit Ethernet Switch

NEW

IGS-500/800 models are 5-port/8-port respectively 10/100/1000Base-T non-managed Gigabit 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

- 5 or 8-Port 10/100/1000Base-T RJ-45 Gigabit Ethernet Switch
- Supports broadcast storm protection
- Supports power failure alarm message by relay
- Supports flow control
- Jumbo frame supports
- Supports auto-negotiation and auto-MDI/MDI-X
- Redundant dual DC input power 12/24/48VDC (9.6~60VDC)
- IP30 rugged metal housing
- Supports DIN Rail or wall mounting installation
- Wide operating temperature -40~75°C (IGS-800-E)
- UL60950-1, 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 Fast Ethernet	
	IEEE 802.3ab 1000Base-T Gigabit Ethernet	
	IEEE802.3x Flow Control	
Switch Architecture	Back-plane (Switching Fabric): 10Gbps (IGS-500, IGS-500-E)	
	Back-plane (Switching Fabric): 16Gbps (IGS-800, IGS-800-E)	
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	512KByte	
Network Connector	5 x RJ-45 (IGS-500, IGS-500-E)	
	8 x RJ-45 (IGS-800, IGS-800-E)	
	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)	
Protocols	CSMA/CD	
LED	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber)	
	Per RJ-45 Port: Link/Active (Green), Speed: 10 (OFF), 100 (Green), 1000 (Yellow)	
DIP SW	DIP 1	ON : Disable
		OFF : Enable power failure alarm
	DIP 2	ON : Disables broadcast storm protection
		OFF : Enable broadcast storm protection
Reserve Polarity Protection	Present for Power Input	
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	
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	

Power Consumption	TBD
Operating Temperature	-10°C~60°C (IGS-500, IGS-800)
	-40°C~75°C (IGS-500-E, IGS-800-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection
Dimensions	106 x 38.6 x 142 mm (D x W x H)
Weight	TBD
Installation Mounting	DIN Rail mounting or wall mounting
EMI	FCC Part 15 Subpart B Class A
	EN 55022 Class A
	EN 61000-6-4 - Emission for industrial environment
EMS	EN 61000-6-2 - Immunity for Industrial environment
	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (Burst) Level 3, Criteria B
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (Magnetic Field) Level 3, Criteria A
Safety	UL60950-1(Pending)
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
MTBF	TBD (Above 30 years)
Warranty	5 years

Application

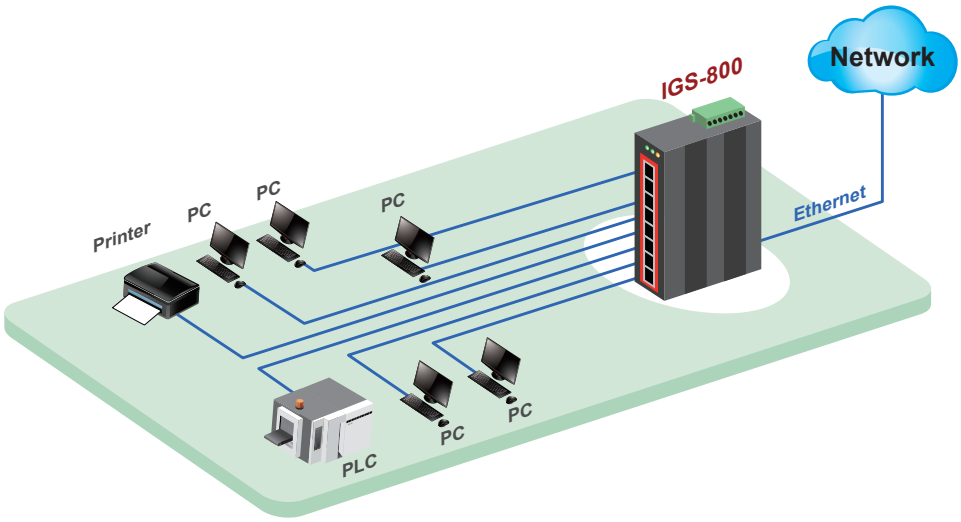
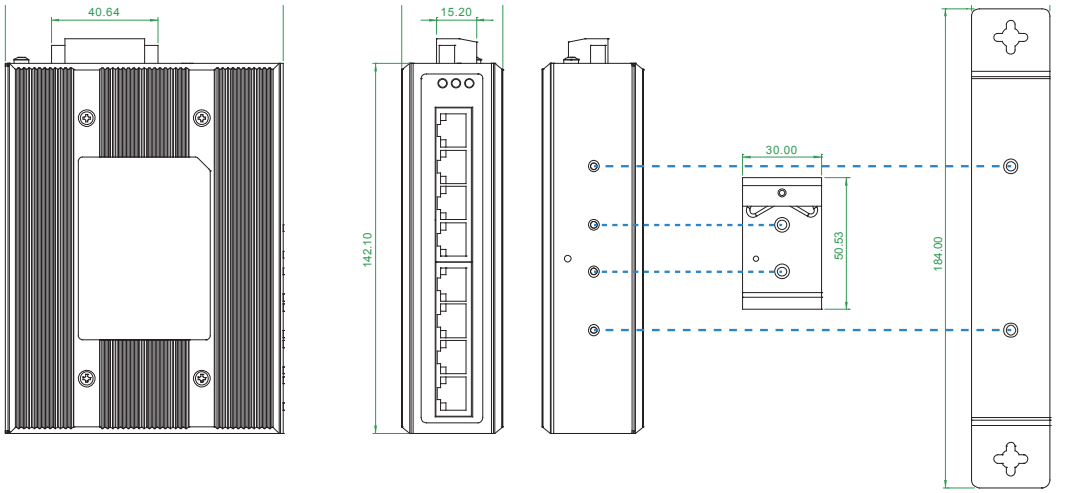


Figure : IGS-800 Gigabit Ethernet Switch Transmission

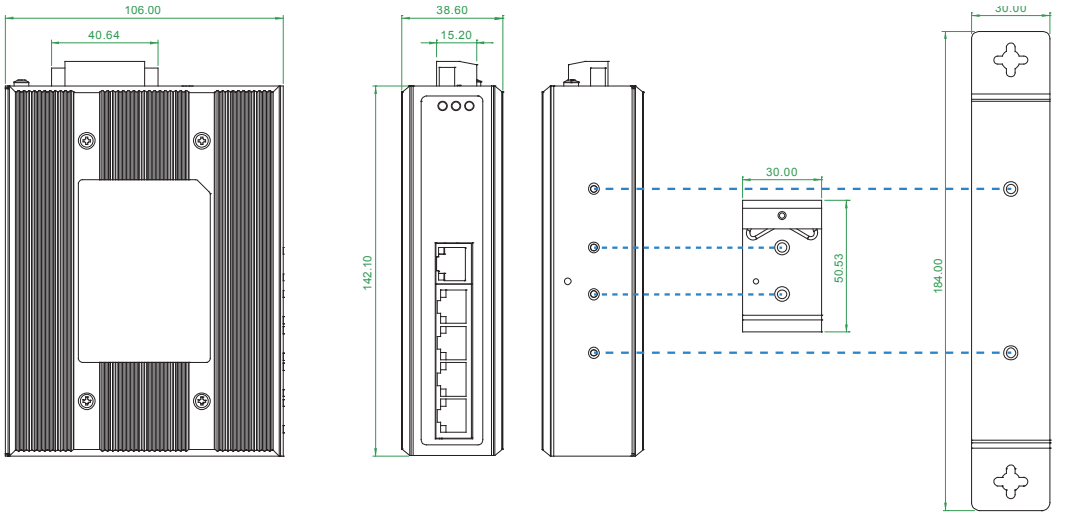
Dimensions

IGS-800



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

IGS-500



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

Ordering Information

Model Name	Description
IGS-500	5-Port 10/100/1000Base-T Gigabit Ethernet Switch, -10°C~60°C
IGS-500-E	5-Port 10/100/1000Base-T Gigabit Ethernet Switch, -40°C~75°C
IGS-800	8-Port 10/100/1000Base-T Gigabit Ethernet Switch, -10°C~60°C
IGS-800-E	8-Port 10/100/1000Base-T Gigabit Ethernet Switch, -40°C~75°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

Temperature

IGS – 500 – ☐

Example: IGS – 500 – E

IFS-401F

4x 10/100Base-TX + 1x 100Base-FX Fast Ethernet Switch

IFS-402F

4x 10/100Base-TX + 2x 100Base-FX Fast Ethernet Switch

IFS-401F/402F models are 4 port 10/100Base-T Ethernet non-managed Fast Ethernet switches, with either 1x 100Base-FX fiber port (IFS-401F) or 2x 100Base-FX 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

- Redundant dual DC input power 12/24/48VDC (9.6~60VDC)
- IP30 rugged metal housing
- Wide operating temperature -40 ~ 75°C (IFS-401F-E and IFS-402F-E)
- 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 Certification
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- 4-Port 10/100Base-TX (RJ-45) with 1 or 2-port 100Base-FX Fiber

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, IFS-401F-E) 1.2Gbps (IFS-402F, IFS-402F-E)	
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, IFS-401F-E)	
	4X RJ-45, 2 Fiber (IFS-402F, IFS-402F-E)	
	RJ-45 Port:	Auto MDI/MDI-X function, 10/100Base-TX auto negotiation speed, Full/Half duplex
	100Base-FX Fiber connector : 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)	
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, IFS-401F-E)
	5.8W (IFS-402F, IFS-402F-E)
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)
	-40 ~ 75°C (IFS-401F-E, IFS-402F-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection
Dimensions	106 x 38 x 142mm (D x W x H)
Weight	0.625Kg (IFS-401F, IFS-401F-E)
	0.63kg (IFS-402F, IFS-402F-E)
Installation Mounting	DIN Rail mounting or wall mounting
EMI	FCC Part 15 Subpart B Class A, CE EN 55022 Class A
	EN61000-6-4 – Emission for industrial environment
EMS	EN61000-6-2 – Immunity for Industrial environment
	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (Burst) Level 3, Criteria B
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (Magnetic Field) Level 3, Criteria A
Safety	UL60950-1 (Pending)
Rail Traffic	EN50121-4
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
MTBF	587,670Hrs (IFS-401F, IFS-401F-E)
	509,883Hrs (IFS-402F, IFS-402F-E)
Warranty	5 years

Application

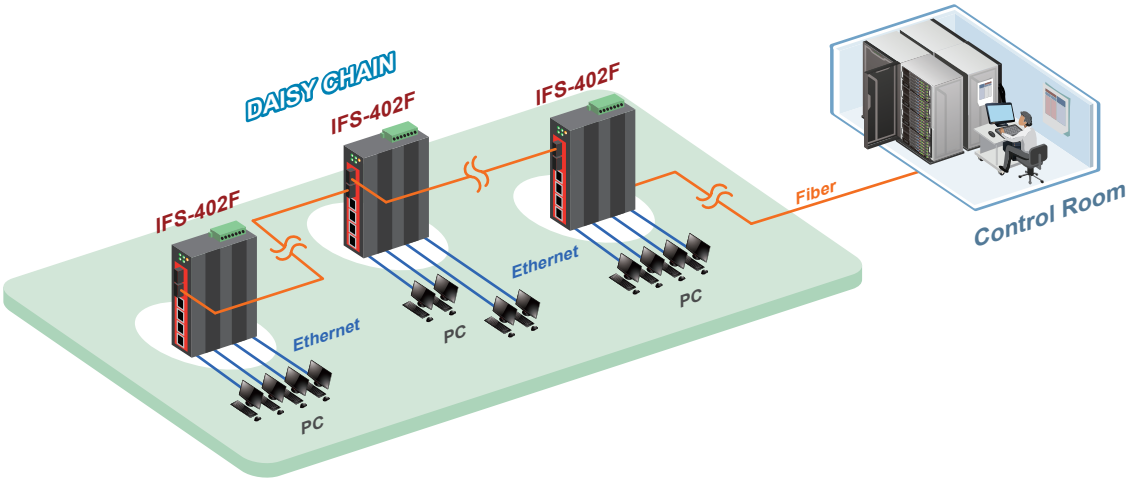
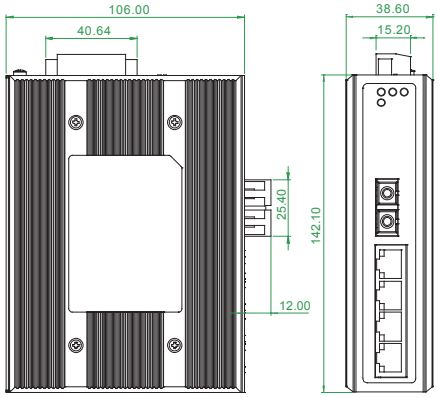


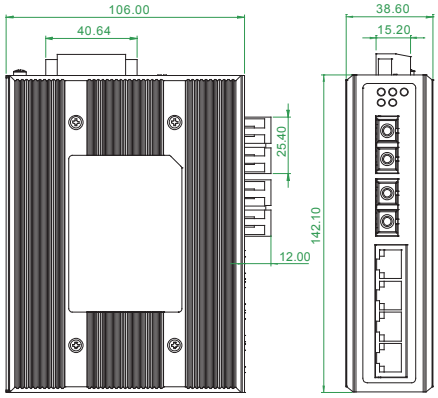
Figure : IFS-402F Fast Ethernet Switch Transmission with Daisy Chain

Dimensions

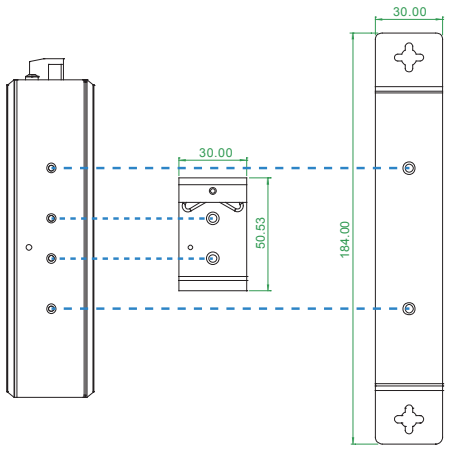
IFS-401F(-E)



IFS-402F(-E)



Side View Front View



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

Ordering Information

Model Name	*Description*
IFS-401F	4-Port 10/100Base-TX + 1-Port 100Base-FX Fast Ethernet Switch, -10 ~ 60°C
IFS-401F-E	4-Port 10/100Base-TX + 1-Port 100Base-FX Fast Ethernet Switch, -40 ~ 75°C
IFS-402F	4-Port 10/100Base-TX + 2-Port 100Base-FX Fast Ethernet Switch, -10 ~ 60°C
IFS-402F-E	4-Port 10/100Base-TX + 2-Port 100Base-FX Fast Ethernet Switch, -40 ~ 75°C

Fiber Option Type	*Connectivity Distance*
SC, ST	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°C
MDR-40-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70°C

Temperature Connector Type Connectivity Distance

IFS – 401F – □ – □□□□□

Example: IFS – 401F – E – SC002

IFS-500, IFS-800

5x 10/100Base-TX Fast Ethernet Switch
8x 10/100Base-TX Fast Ethernet Switch

IFS-500/800 models are 5-port/8-port respectively 10/100Base-TX non-managed 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

- Redundant dual DC input power 12/24/48VDC (9.6~60VDC)
- IP30 rugged metal housing
- Wide operating temperature -40~75°C (IFS-500, IFS-800)
- UL60950-1, CE, FCC Certification
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- 5 or 8-Port 10/100Base-TX (RJ-45)
- Provides broadcast storm protection
- Supports DIP SW for alarm setting and broadcast storm protection
- Supports power failure alarm message by relay
- Supports flow control

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-500, IFS-500-E) 1.6Gbps (IFS-800, IFS-800-E)	
Data Processing	Store and Forward	
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	5 x RJ-45 (IFS-500 ,IFS-500-E) 8 x RJ-45 (IFS-800, IFS-800-E) 10/100Base-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)	
Protocols	CSMA/CD	
LED	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber)	
	Per port: Link/Active (Green), Speed/100 (Yellow)	
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	2.9W (IFS-500, IFS-500-E) 3.9W (IFS-800, IFS-800-E)	
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-500, IFS-800)	
	-40 ~ 75°C (IFS-500-E, IFS-800-E)	

Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection
Dimensions	106 x 31.6 x 142mm (D x W x H)
Weight	0.625kg (IFS-500, IFS-500-E) 0.64kg (IFS-800, IFS-800-E)
Installation Mounting	DIN Rail mounting or wall mounting
EMI	FCC Part 15 Subpart B Class A, CE EN 55022 Class A
	EN61000-6-4 – Emission for industrial environment
EMS	EN61000-6-2 – Immunity for Industrial environment
	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (Burst) Level 3, Criteria A
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (Magnetic Field) Level 3, Criteria A
Safety	UL60950-1 (Pending)
Rail Traffic	EN50121-4
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
MTBF	650,473Hrs (IFS-500, IFS-500-E) 552,587Hrs (IFS-800, IFS-800-E)
Warranty	5 years

Application

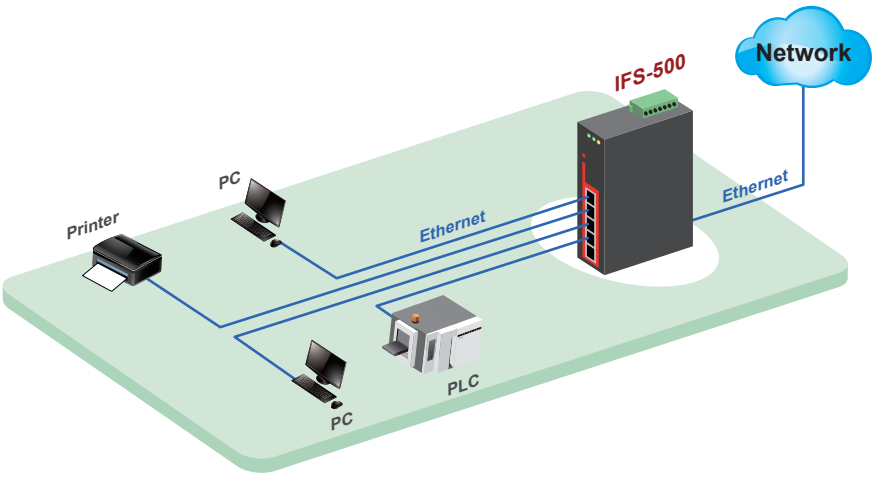
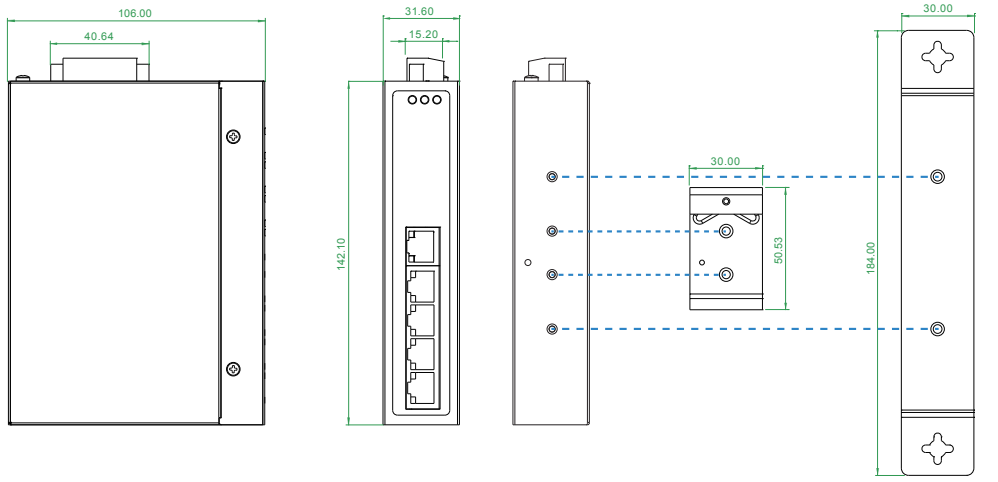


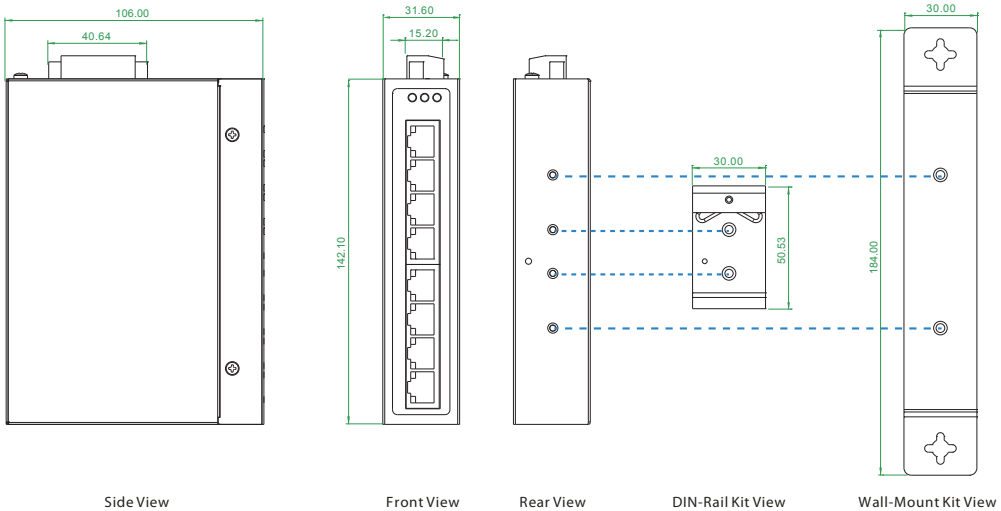
Figure : IFS-500 Fast Ethernet Switch Transmission

Dimensions

IFS-500



IFS-800



Ordering Information

Model Name	Description
IFS-500	5-Port 10/100Base-TX Ethernet Switch, -10 ~ 60°C
IFS-500-E	5-Port 10/100Base-TX Ethernet Switch, -40 ~ 75°C
IFS-800	8-Port 10/100Base-TX Ethernet Switch, -10 ~ 60°C
IFS-800-E	8-Port 10/100Base-TX Ethernet Switch, -40 ~ 75°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

Temperature

IFS – 500 – □

Example: IFS – 500 – E

IGS-803SM

8x 10/100/1000Base-T+ 3x 100/1000Base-X SFP Slot Managed Switch

IGS-803SM models are managed industrial grade Gigabit switches with 8 x 10/100/1000Base-T(X) ports and 3 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℃) and wide operating temperature range models (-40 to 75℃) fulfill the special needs of industrial automation applications.

Features

- 8x 10/100/1000Base-T RJ-45 with 3x 100/1000Base-X SFP Fiber
- UL60950-1, CE, FCC, Rail Traffic EN50121-4 certified
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Cable diagnostic, Measuring cable OK 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 Protection Ring (EPR) for redundant cabling
- Provide up to 5 instances that each supports u-Ring, u-Chain or Sub-Ring type for flexible uses, and maximum up to 5 Rings.
- u-Ring for Redundant Cabling, recovery time<10ms in 250 maximum 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, 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
- 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
- SmartView Management System support

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): 22Gbps
Data Processing	Store and Forward
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode
Network Connector	8 x RJ-45 10/100/1000Base-T auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex 3X 100/1000 Base-X dual speed mode SFP slot, 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	9.6W
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)

Specifications

Jumbo Frame	9.6KB
MAC Address Table	8K
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-803SM) -40 ~ 75°C (IGS-803SM-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection
Dimensions	106 x 72 x152 mm (D x W x H)
Weight	0.78kg
Installation Mounting	DIN Rail mounting or wall mounting
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
MTBF	404,589hrs (MIL-HDBK-217)
Warranty	5 years

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
	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 Feature	
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 Feature	
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	
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 II	RFC 1213
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
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
	Lower the power for a port when there is no link
	LED Power Management :Adjustment LEDs intensity
Cable Diagnostic	Measuring cable OK or broken point distance

Application

Figure 1: Application Example

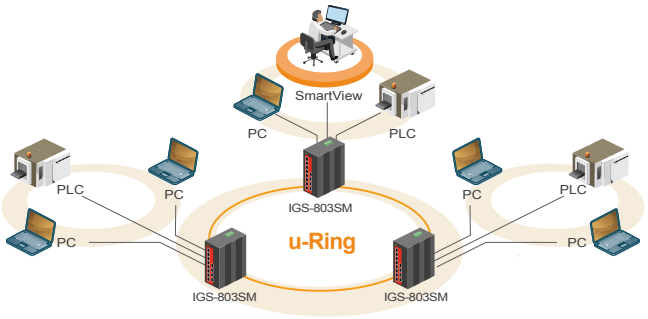


Figure 2: Multiple Rings

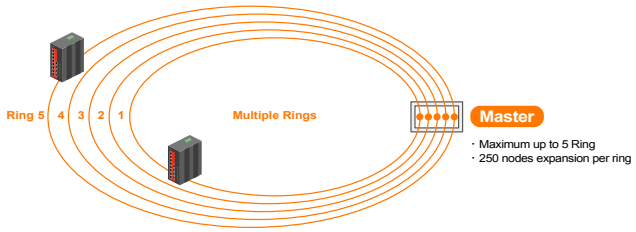
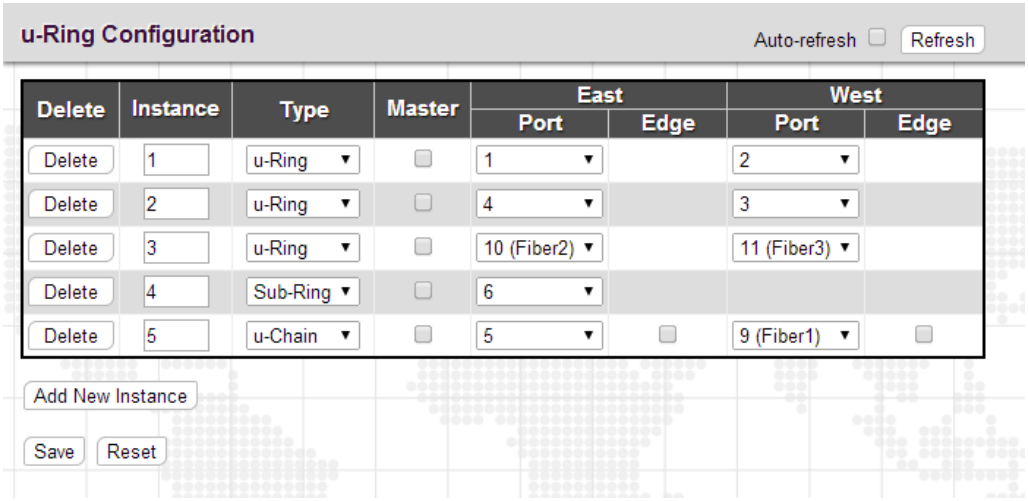


Figure 3: An illustration of u-Ring instances configured in Web interface



u-Ring Configuration

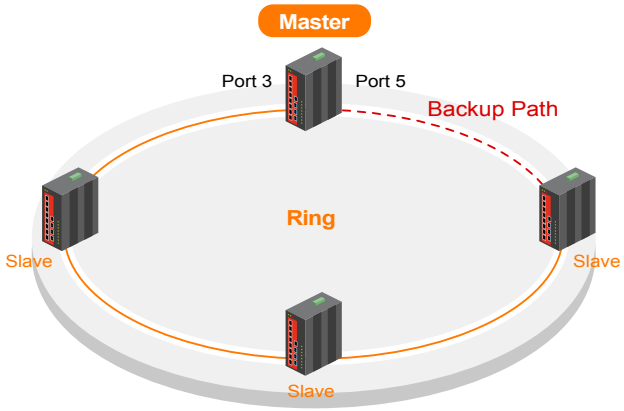
Auto-refresh ☐ Refresh

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)	☐

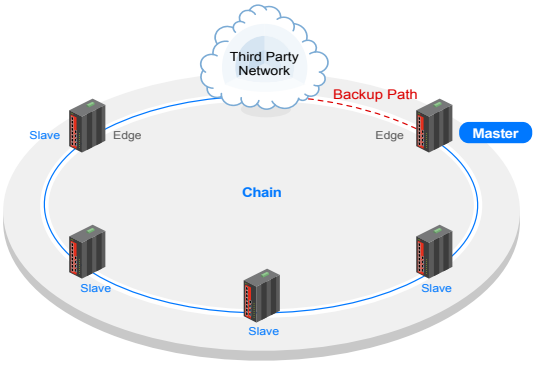
Add New Instance

Save Reset

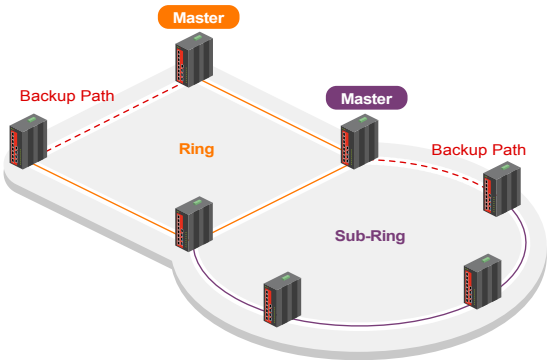
Figure 4: u-Ring Type



u-Ring Type

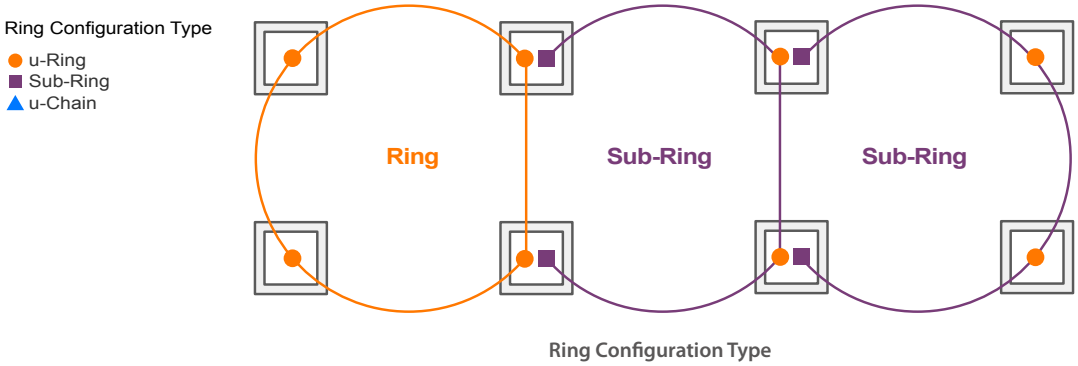


Determining the backup path (u-Chain type)

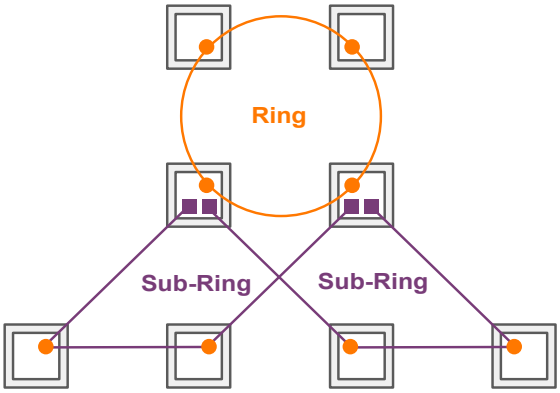


A major ring and a Sub-Ring topology

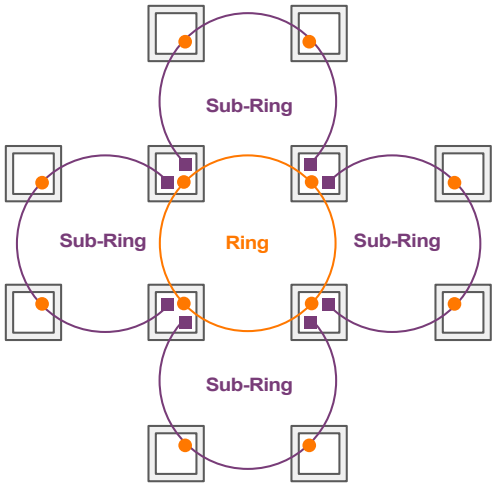
Figure 5: Ring Configuration Example



Ring Configuration Type

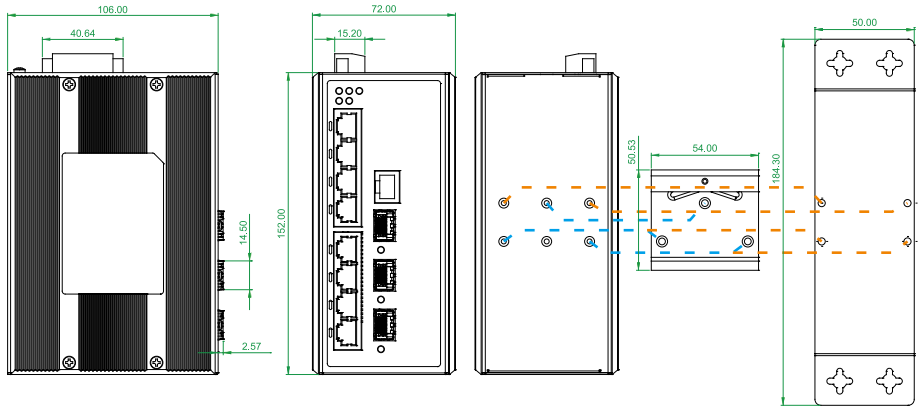


Combination of a ring and two Sub-Ring



Combination of a ring and four Sub-Ring

Dimensions



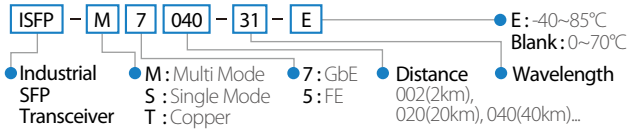
Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View

Ordering Information

Model Name	*Description*
IGS-803SM	8x 10/100/1000Base-T + 3x 100/1000Base-X SFP slot Managed Switch (-10~60°C)
IGS-803SM-E	8x 10/100/1000Base-T + 3x 100/1000Base-X SFP slot Managed Switch (-40~75°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



Temperature

IGS-803SM – ☐

Example: IGS-803SM – E

IGS-404SM

4x 10/100/1000Base-T+ 4x 100/1000Base-X SFP Slot Managed Switch

IGS-404SM models are managed industrial grade Gigabit switches with 4 x 10/100/1000Base-T(X) ports and 4 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 with 4x 100/1000Base-X SFP Fiber
- UL60950-1, CE, FCC, Rail Traffic EN50121-4 certified
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Cable diagnostic, Measuring cable OK 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 Protection Ring (EPR) for redundant cabling
- Provide up to 4 instances that each supports u-Ring, u-Chain or Sub-Ring type for flexible uses, and maximum up to 4 Rings.
- u-Ring for Redundant Cabling, recovery time<10ms in 250 maximum 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, 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
- 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
- SmartView Management System support

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): 8Gbps
Data Processing	Store and Forward
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode
Network Connector	4 x RJ-45 10/100/1000Base-T auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex 4X 100/1000 Base-X dual speed mode SFP slot, 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	8.1W in 24VDC 9.6W in 48VDC
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)

Specifications

Jumbo Frame	9.6KB
MAC Address Table	8K
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) -40 ~ 75°C (IGS-404SM-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection
Dimensions	106 x 62.5 x 135 mm (D x W x H)
Weight	0.725kg
Installation Mounting	DIN Rail mounting or wall mounting
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
MTBF	302,826hrs (MIL-HDBK-217)
Warranty	5 years

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
	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 4 instances that each supports u-Ring, u-Chain or Sub-Ring type for flexible uses, and maximum up to 4 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 Feature	
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 Feature	
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	
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 II	RFC 1213
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
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
	Lower the power for a port when there is no link
	LED Power Management :Adjustment LEDs intensity
Cable Diagnostic	Measuring cable OK or broken point distance

Application

Figure 1: Application Example

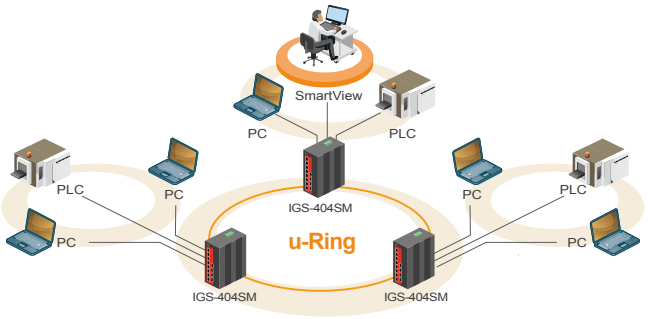


Figure 2: Multiple Rings

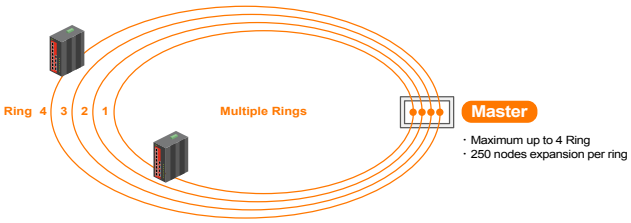
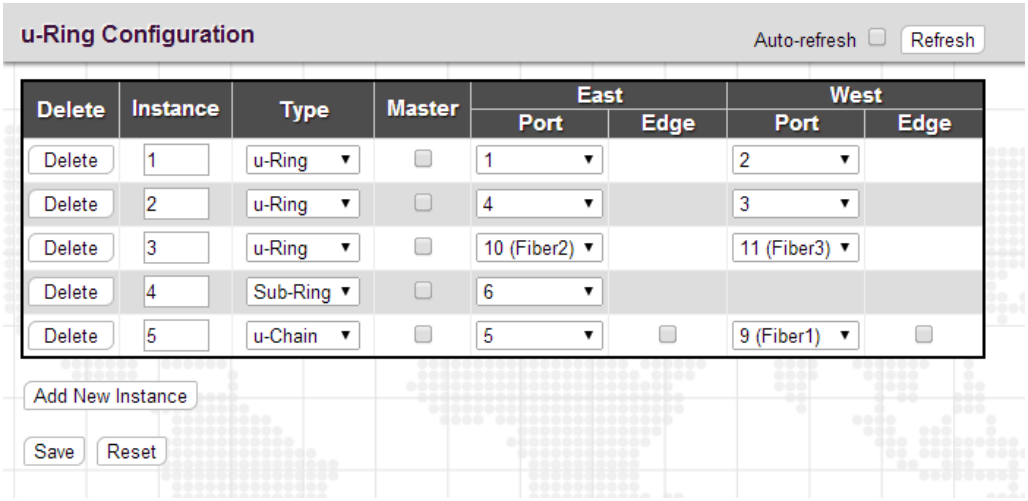


Figure 3: An illustration of u-Ring instances configured in Web interface



u-Ring Configuration

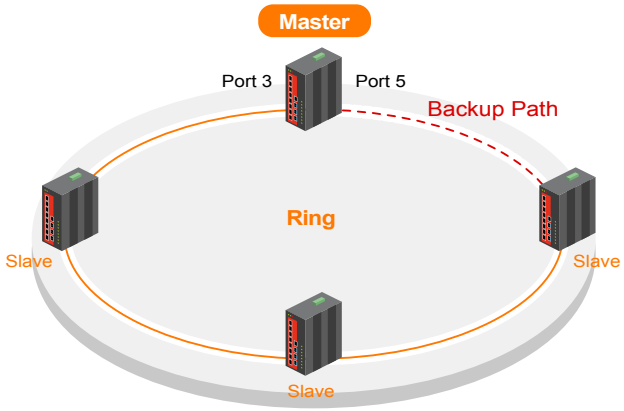
Auto-refresh Refresh

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)	

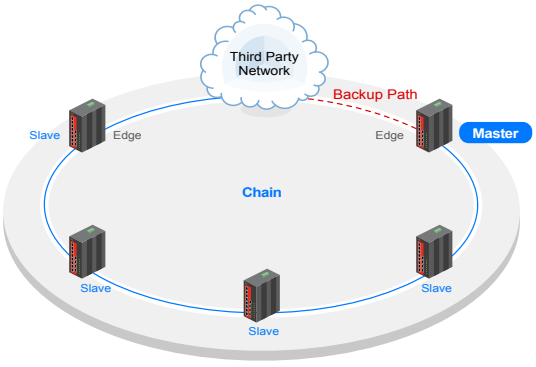
Add New Instance

Save Reset

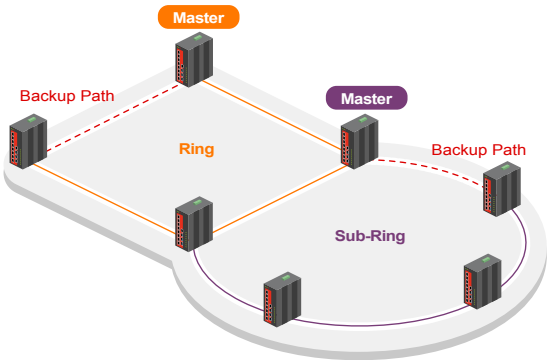
Figure 4: u-Ring Type



u-Ring Type

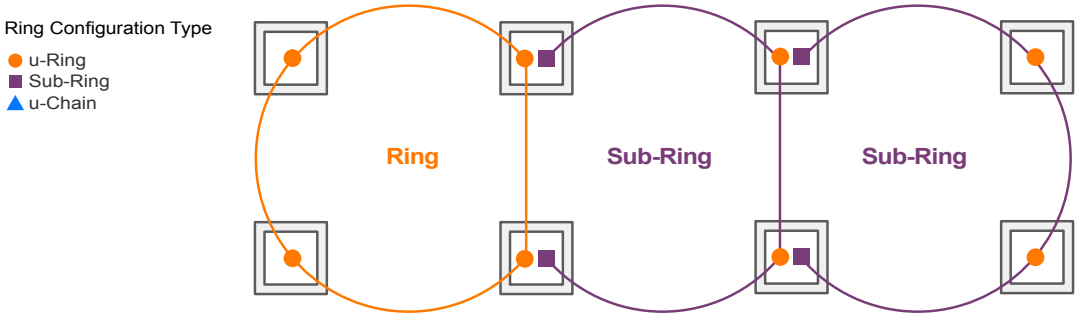


Determining the backup path (u-Chain type)

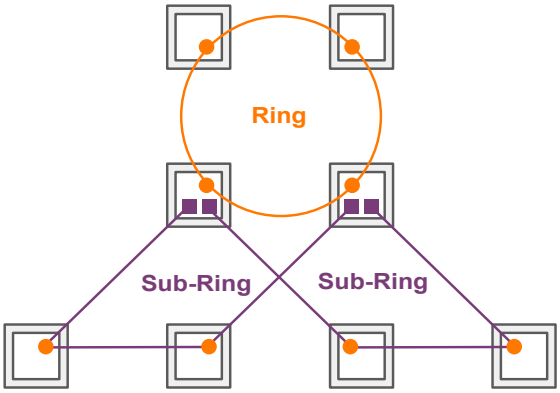


A major ring and a Sub-Ring topology

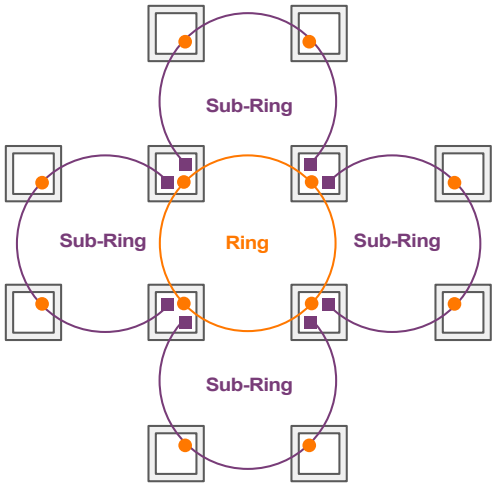
Figure 5: Ring Configuration Example



Ring Configuration Type

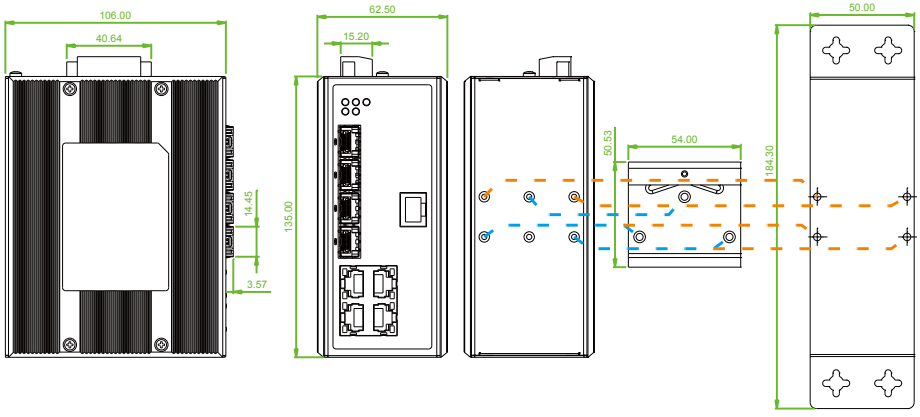


Combination of a ring and two Sub-Ring



Combination of a ring and four Sub-Ring

Dimensions



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

Ordering Information

Model Name	*Description*
IGS-404SM	4x 10/100/1000Base-T + 4x 100/1000Base-X SFP slot Managed Switch (-10~60°C)
IGS-404SM-E	4x 10/100/1000Base-T + 4x 100/1000Base-X SFP slot Managed Switch (-40~75°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

Temperature

IGS-404SM – ☐

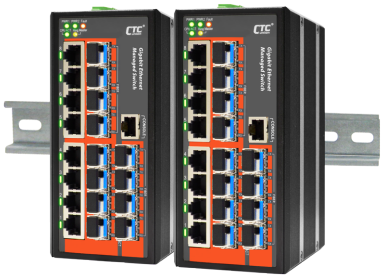
Example: IGS-404SM – E

ISFP – M 7 040 – 31 – E

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

IGS-812SM

8x 10/100/1000Base-T+ 12x 100/1000Base-X SFP Slot Ethernet Managed Switch



NEW

IGS-812SM models are managed industrial grade Gigabit switches with 8x 10/100/1000Base-TX ports and 12 SFP Gigabit/Fast Ethernet fiber ports that provide stable and reliable Ethernet transmission. The Ethernet switches support a variety of management functions, including STP/RSTP/MSTP and ITU-T G.8032 Ring <50ms recovery time, 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

- 8x 10/100/1000Base-T RJ-45 with 12x 100/1000Base-X SFP Fiber
- UL60950-1, CE, FCC, Rail Traffic EN50121-4 certified
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Cable diagnostic, Measuring cable OK or broken point distance
- Support IEEE802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Protection Ring (EPR) for cabling redundant
- µ-Ring for Redundant Ethernet Ring, recovery time<20ms in 250 units
- QoS, Traffic classification QoS, CoS, bandwidth control for Ingress and Egress, Storm Control, DiffServ
- IEEE802.1Q VLAN, port based VLAN, MAC based VLAN, IP subnet based VLAN, Protocol based VLAN, VLAN translation, MVR
- Dynamic IEEE 802.3ad LACP Link Aggregation, Static Link Aggregation
- IGMP/MLD snooping V1/V2/V3, IGMP Filtering / Throttling, IGMP query, IGMP proxy reporting, MLD snooping
- 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 upgradeing failure
- DHCP client/Relay/Snooping/Snooping option 82/Relay option 82
- RMON, MIB II, Port mirroring, Event syslog, DNS, NTP/SNTP, IEEE802.1ab LLDP
- Supports IPv6 Telnet server /ICMP v6, SNMP, HTTP, SSH/SSL, NTP/SNTP, TFTP, QoS, ACL
- CLI, Web based management, **SNMP** v1/v2c/v3, Telnet server for management
- **SmartView** Management System

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	EPR (Ethernet Protection Ring)
	IEEE 802.1Q	Virtual LANs (VLAN)
	IEEE 802.1X	Port 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	4096	
Switch Architecture	Back-plane (Switching Fabric): 40Gbps	
Data Processing	Store and Forward	
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode	
Jumbo Frame	9.6KB	
MAC Address Table	8K	

Network Connector	8x RJ-45 10/100/1000Base-T auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex 12x 100/1000Base-X dual speed mode SFP slot, with DDMI
Console	RS-232 (RJ-45)
Network Cable	UTP/STP above Cat. 5e cable EIA/TIA-568 100-ohm (100m)
Protocol	CSMA/CD
Reverse Polarity Protection	Present
Overload Current Protection	Present
CPU Watch Dog	Present
Power Supply	Redundant Dual DC12/24/48VDC (9.6~60VDC) Input power (Removable Terminal Block)
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)
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-812SM) -40 ~ 75°C (IGS-812SM-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection
Dimensions	106 x 72 x152 mm (D x W x H)
Installation Mounting	DIN Rail mounting or wall mounting

Specifications

EMC/EMS	CE, FCC
EMI	FCC Part 15 Subpart B Class A, CE EN 55022 Class A
	EN61000-6-4 – Emission for industrial environment
EMS	EN61000-6-2 – Immunity for Industrial environment
	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (EFT) Level 3, Criteria A
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (Magnetic Field) Level 3, Criteria A

Safety	UL60950-1 (Pending)
Rail Traffic	EN 50121-4
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
MTBF	TBD (Above 30 years)
Warranty	5 years

Software Specifications

Topology	
VLAN	IEEE 802.1q VLAN,up to 4095 ID
	IEEE 802.1q VLAN,up to 4095 Groups
	IEEE 802.1ad Q-in-Q
	Port Based VLAN
	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
	MVR (Multiple 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
Loop Protection	Present
μ-Ring	Easy set for Ethernet protection Ring, Recovery Time <20ms, Maximum 250 Node
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)	Convergence time <50ms
	Single Ring, Sub-Ring, Multiple ring topology network
QoS Feature	
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) : MAC Access control list (Source/ Destination MAC, Ether type, Priority ID/ VLAN ID)
	QCL : IP extended access control list (Source/ Destination IP, Protocol, TCP/UDP port number)
Bandwidth Control for Ingress	Rate in steps : 100 kbps / 1fps / 100fps
	Range : 100 kbps to 1Gbps / 1fps to 3300kfps
	Rate Unit : bit or frame
Bandwidth Control for Egress	Rate in steps : 100 kbps / 1fps / 100fps
	Range : 100 kbps to 1Gbps / 1fps to 3300kfps
	Rate Unit : bit or frame
	Per queue shaper
DiffServ (RF 2474) Remarking	
Storm Control	for Unicast, Broadcast, Multicast
IP Multicasting Feature	
IGMP / MLD Snooping	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2
	Port Filtering Profile
	Throttling
	Fast Leave
	Query
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
Management Features	
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 II	RFC 1213
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
NTP /SNTP	
LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol
	LLDP-MED
IPv6 Features	
IPv6 Management	Telnet Server/ICMP v6
Stateless Auto-Configuration	
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
	Lower the power for a port when there is no link
	LED Power Management : Adjustment LEDs intensity
Cable Diagnostic	Measuring cable OK or broken point distance

Application

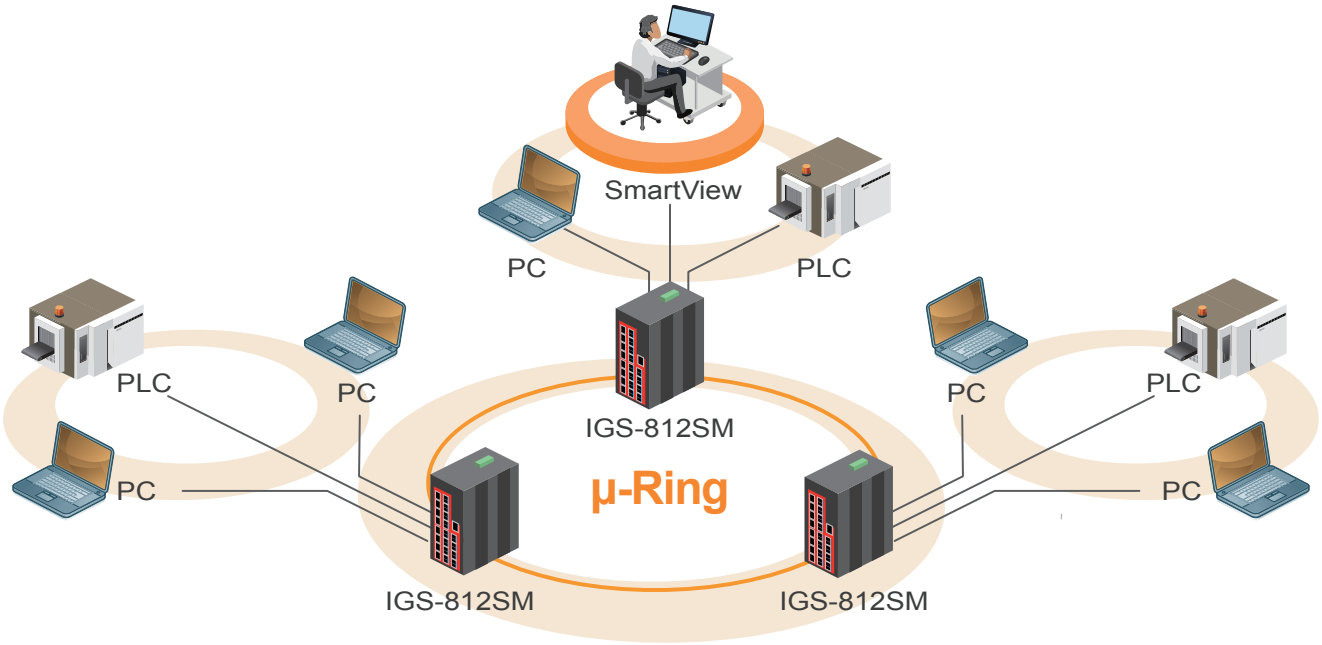
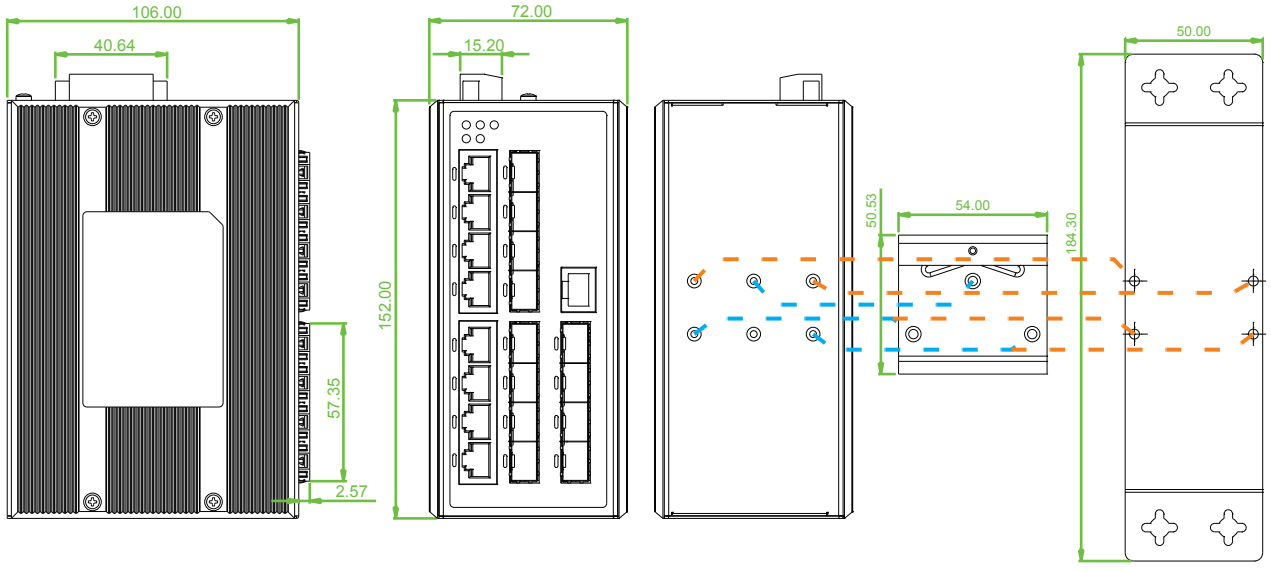


Figure : Topology

Dimensions



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

Ordering Information

Model Name	Description
IGS-812SM	8x 10/100/1000Base-T + 12x 100/1000Base-X SFP Slot Managed Switch (-10~60°C)
IGS-812SM-E	8x 10/100/1000Base-T + 12x 100/1000Base-X SFP Slot Managed Switch (-40~75°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

Temperature

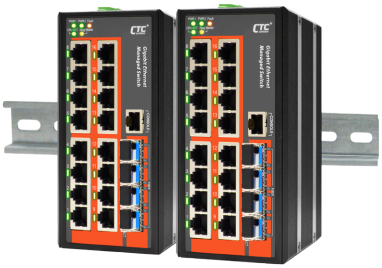
IGS-812SM – ☐

Example: IGS-812SM – E

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: -40~85°C; Blank: 0~70°C

NEW



IGS-1604SM

16x 10/100/1000Base-T+ 4x 100/1000Base-X SFP Slot Ethernet Managed Switch

IGS-1604SM models are managed industrial grade Gigabit switches with 16x 10/100/1000Base-T ports and 4 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 and ITU-T G.8032 Ring <50ms recovery time, 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

- 16x 10/100/1000Base-T RJ-45 with 4x 100/1000Base-X SFP Fiber
- UL60950-1, CE, FCC, Rail Traffic EN50121-4 Certified
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 Certified
- Cable diagnostic, Measuring cable OK or broken point distance
- Supports IEEE802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Protection Ring(EPR) for cabling redundant
- μ-Ring for Redundant Ethernet Ring, recovery time<20ms in 250 units
- QoS, Traffic classification QoS, CoS, bandwidth control for Ingress and Egress, Storm Control, DiffServ
- IEEE802.1Q VLAN, port based VLAN, MAC based VLAN, IP subnet based VLAN, Protocol based VLAN, VLAN translation, MVR
- Dynamic IEEE 802.3ad LACP Link Aggregation, Static Link Aggregation
- IGMP/MLD snooping V1/V2/V3, IGMP Filtering / Throttling, IGMP query, IGMP proxy reporting, MLD snooping
- Security : Port based and MAC based IEEE802.1X, RADIUS, ACL, TACACS+, HTTP/HTTPS, SSL/SSH v2
- Software upgrade via TFTP and HTTP, redundant firmware in case of upgrade failure
- DHCP client/Relay/Snooping/Snooping option 82/Relay option 82
- RMON, MIB II, Port mirroring, Event syslog, DNS, NTP/SNTP, IEEE802.1ab LLDP
- Supports IPv6 Telnet server /ICMP v6, SNMP, HTTP, SSH/SSL, NTP/SNTP, TFTP, QoS, ACL
- CLI, Web based management, **SNMP** v1/v2c/v3, Telnet server for management
- **SmartView** Management System

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	EPR (Ethernet Protection Ring)
	IEEE 802.1Q	Virtual LANs (VLAN)
	IEEE 802.1X	Port 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	4096	
Switch Architecture	Back-plane (Switching Fabric):40Gbps	
Data Processing	Store and Forward	
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode	
Jumbo Frame	9.6KB	
MAC Address Table	8K	

Network Connector	16x RJ-45 10/100/1000Base-T auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex 4X 100/1000Base-X dual speed mode SFP slot, 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 DC12/24/48VDC (9.6~60VDC) Input power (Removable Terminal Block)
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)
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-1604SM) -40 ~ 75°C (IGS-1604SM-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection
Dimensions	106 x 72 x 152mm (D x W x H)
Installation Mounting	DIN Rail mounting or wall mounting

Specifications

EMC/EMS	CE, FCC
EMI	FCC Part 15 Subpart B Class A, CE EN 55022 Class A
	EN61000-6-4 – Emission for industrial environment
EMS	EN61000-6-2 – Immunity for Industrial environment
	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (EFT) Level 3, Criteria A
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (Magnetic Field) Level 3, Criteria A

Safety	UL60950-1 (Pending)
Rail Traffic	EN 50121-4
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
MTBF	TBD (Above 30 years)
Warranty	5 years

Software Specifications

Topology	
VLAN	IEEE 802.1q VLAN,up to 4095 ID
	IEEE 802.1q VLAN,up to 4095 Groups
	IEEE 802.1ad Q-in-Q
	Port Based VLAN
	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
	MVR (Multiple 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
Loop Protection	Present
µ-Ring	Easy set for Ethernet protection Ring, Recovery Time <20ms, Maximum 250 Node
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)	Convergence time <50ms
	Single Ring, Sub-Ring, Multiple ring topology network
QoS Feature	
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): MAC Access control list (Source/ Destination MAC, Ether type, Priority ID/ VLAN ID)
	QCL: IP extended access control list (Source/ Destination IP, Protocol, TCP/UDP port number)
Bandwidth Control for Ingress	Rate in steps : 100 kbps / 1fps / 100fps
	Range : 100 kbps to 1Gbps / 1fps to 3300kfps
	Rate Unit : bit or frame
Bandwidth Control for Egress	Rate in steps : 100 kbps / 1fps / 100fps
	Range : 100 kbps to 1Gbps / 1fps to 3300kfps
	Rate Unit : bit or frame
	Per queue shaper
DiffServ (RF 2474) Remarking	
Storm Control	for Unicast, Broadcast, Multicast
IP Multicasting Feature	
IGMP / MLD snooping	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2
	Port Filtering Profile
	Throttling
	Fast Leave
	Query

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
Management Features	
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 II	RFC 1213
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
NTP /SNTP	
LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol
	LLDP-MED
IPv6 Features	
IPv6 Management	Telnet Server/ICMP v6
Stateless Auto-Configuration	
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
	Lower the power for a port when there is no link
	LED Power Management : Adjustment LEDs intensity
Cable Diagnostic	Measuring cable OK or broken point distance

Application

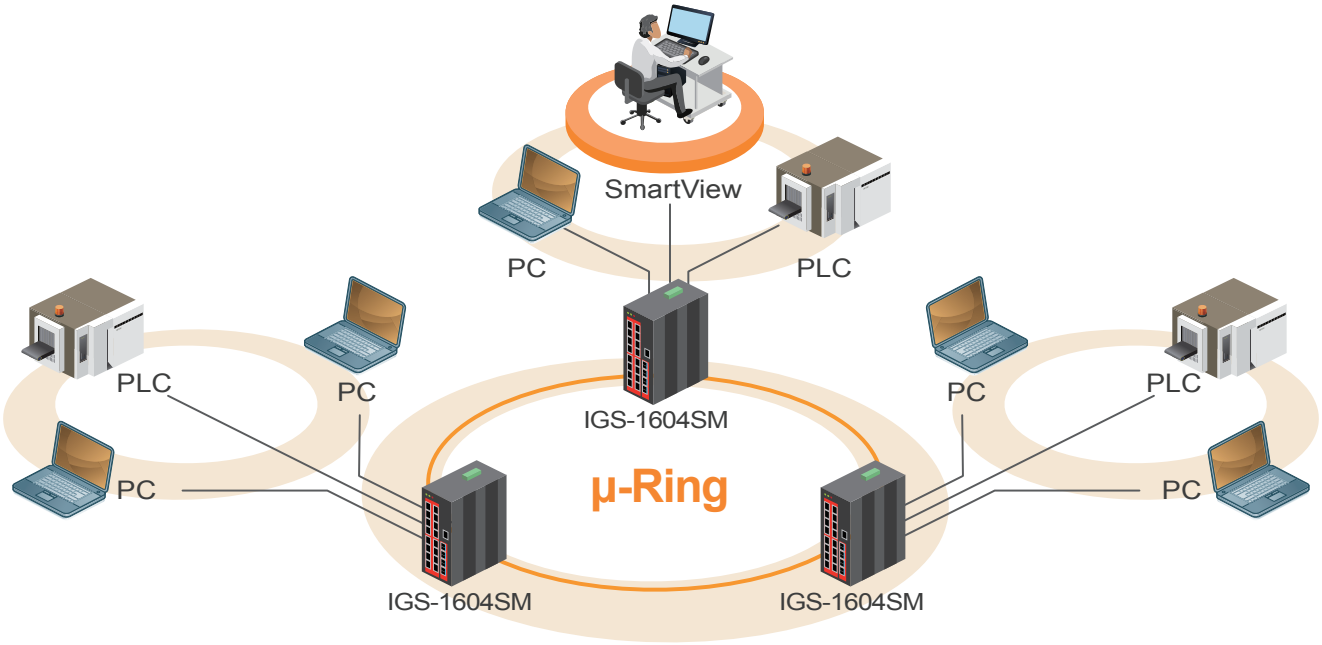
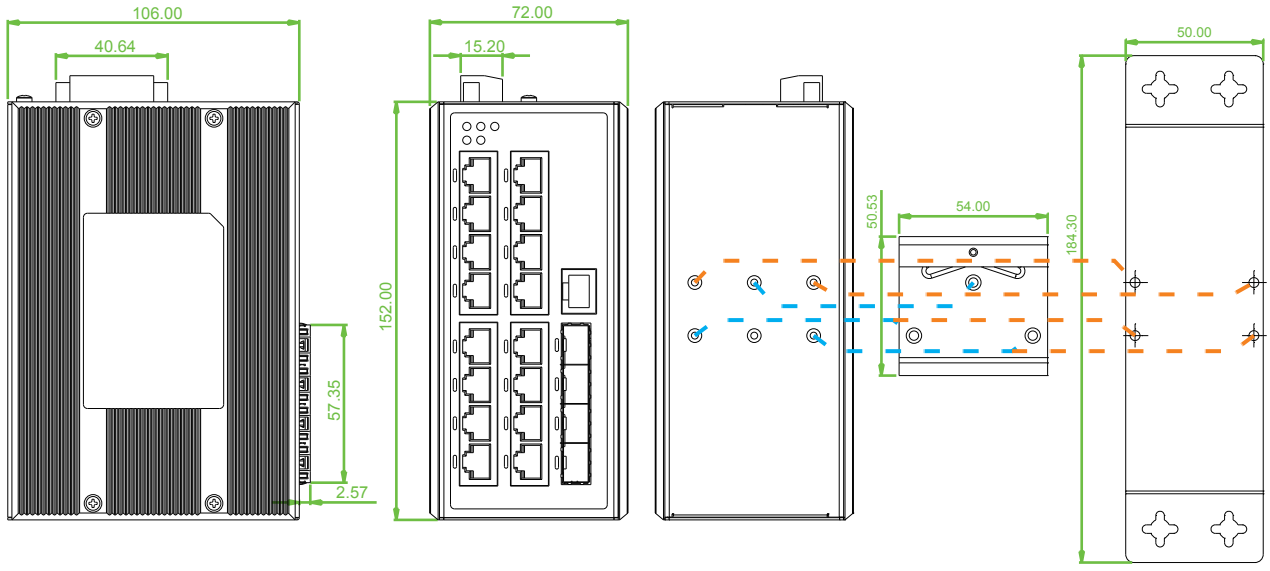


Figure : Topology

Dimensions



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

Ordering Information

Model Name	Description
IGS-1604SM	16x 10/100/1000Base-T + 4x 100/1000Base-X SFP Slot Managed Switch (-10~60°C)
IGS-1604SM-E	16x 10/100/1000Base-T + 4x 100/1000Base-X SFP Slot Managed Switch (-40~75°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

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: -40~85°C; Blank: 0~70°C

Temperature

IGS-1604SM – ☐

Example: IGS-1604SM – E

IFS-803GSM

8x 10/100Base-T+ 3x 100/1000Base-X SFP Slot (11 port) Managed Switch

IFS-803GSM models are managed industrial grade Ethernet switches with 8 x 10/100Base-T(X) ports and 3 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

- 8x 10/100Base-T RJ-45 with 3x 100/1000Base-X SFP Fiber (Total 11 Port)
- UL60950-1, CE, FCC, Rail Traffic EN50121-4 certified
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Cable diagnostic, Measuring cable OK 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 Protection Ring (EPR) for redundant cabling
- Provide up to 5 instances that each supports u-Ring, u-Chain or Sub-Ring type for flexible uses, and maximum up to 5 Rings.
- u-Ring for Redundant Cabling, recovery time<10ms in 250 maximum 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, 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
- 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
- SmartView Management System support

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): 7.6Gbps	

Data Processing	Store and Forward
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode
Network Connector	8 x RJ-45 10/100Base-T auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex 3X 100/1000 Base-X dual speed mode SFP slot, 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	7.7W
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)

Specifications

Jumbo Frame	9.6KB
MAC Address Table	8K
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-803GSM) -40 ~ 75°C (IFS-803GSM-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection
Dimensions	106 x 72 x152 mm (D x W x H)
Weight	0.79kg
Installation Mounting	DIN Rail mounting or wall mounting
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
MTBF	409,312hrs (MIL-HDBK-217)
Warranty	5 years

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
	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 Feature	
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 Feature	
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	
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 II	RFC 1213
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
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
	Lower the power for a port when there is no link
	LED Power Management :Adjustment LEDs intensity
Cable Diagnostic	Measuring cable OK or broken point distance

Application

Figure 1: Application Example

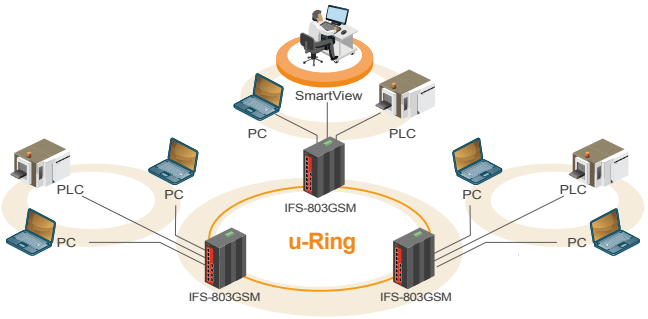


Figure 2: Multiple Rings

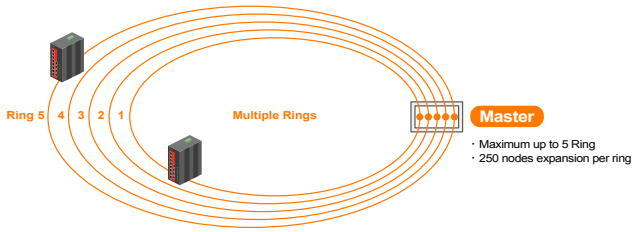


Figure 3: An illustration of u-Ring instances configured in Web interface

u-Ring Configuration

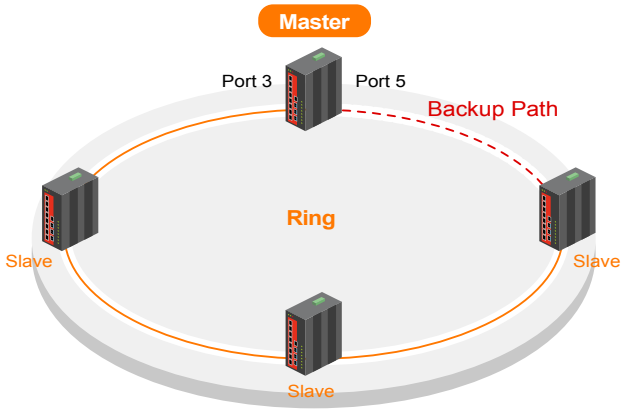
Auto-refresh ☐ Refresh

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)	☐

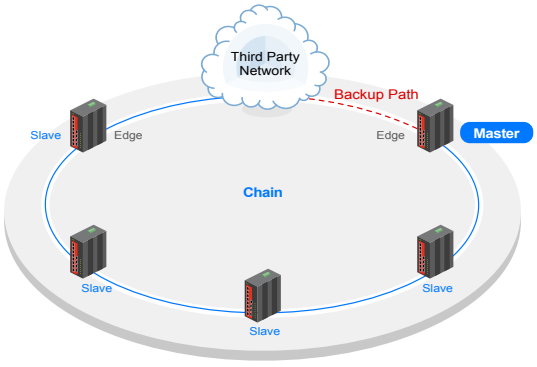
Add New Instance

Save Reset

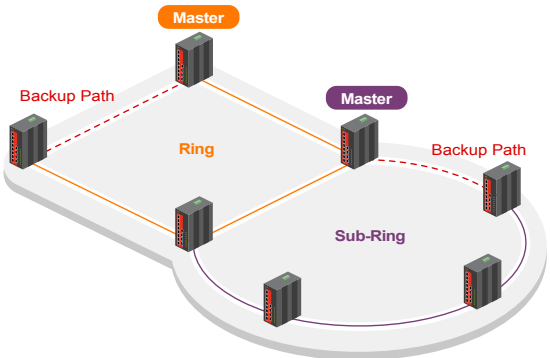
Figure 4: u-Ring Type



u-Ring Type

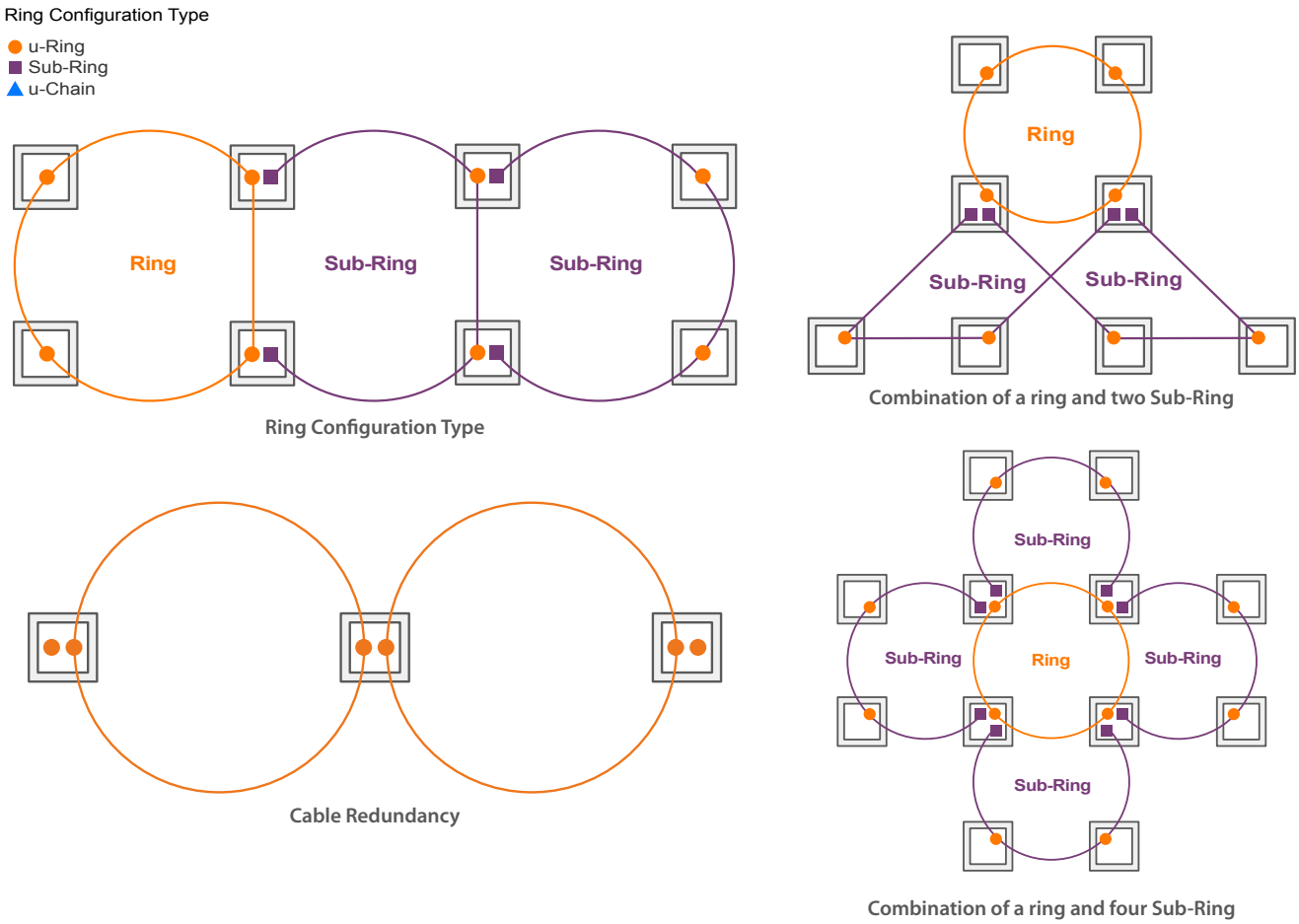


Determining the backup path (u-Chain type)

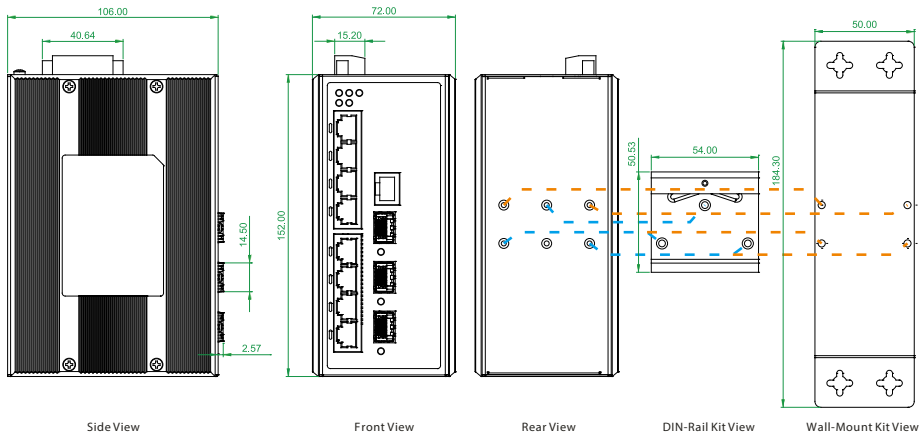


A major ring and a Sub-Ring topology

Figure 5: Ring Configuration Example



Dimensions

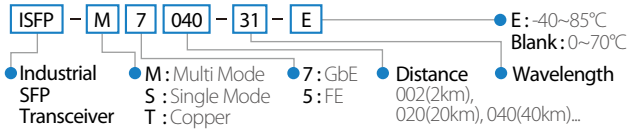


Ordering Information

Model Name	*Description*
IFS-803GSM	8x 10/100Base-T + 3x 100/1000Base-X SFP slot (11 Port) Managed Switch (-10~60°C)
IFS-803GSM-E	8x 10/100Base-T + 3x 100/1000Base-X SFP slot (11 Port) Managed Switch (-40~75°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

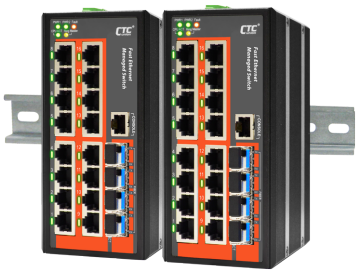


Temperature

IFS-803GSM – ☐

Example: IFS-803GSM – E

NEW



IFS-1604GSM

16x 10/100Base-TX+ 4x 100/1000Base-X SFP Slot Ethernet Managed Switch

IFS-1604GSM models are managed industrial grade Fast Ethernet switches with 16x 10/100Base-TX ports and 4 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 and ITU-T G.8032 Ring <50ms recovery time, 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

- 16x 10/100Base-TX RJ-45 with 4x 100/1000Base-X SFP Fiber
- UL60950-1, CE, FCC, Rail Traffic EN50121-4 certified
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Cable diagnostic, Measuring cable OK or broken point distance
- Supports IEEE802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Protection Ring(EPR) for cabling redundant
- µ-Ring for Redundant Ethernet Ring, recovery time<20ms in 250 units
- QoS, Traffic classification QoS, CoS, bandwidth control for Ingress and Egress, Storm Control, DiffServ
- IEEE802.1Q VLAN, port based VLAN, MAC based VLAN, IP subnet based VLAN, Protocol based VLAN, VLAN translation, MVR
- Dynamic IEEE 802.3ad LACP Link Aggregation, Static Link Aggregation
- IGMP/MLD snooping V1/V2/V3, IGMP Filtering/ Throttling, IGMP query, IGMP proxy reporting, MLD snooping
- Security : Port based and MAC based IEEE802.1X, RADIUS, ACL, TACACS+, HTTP/HTTPS, SSL/SSH v2
- Software upgrade via TFTP and HTTP, redundant firmware in case of upgrade failure
- DHCP client/Relay/Snooping/Snooping option 82/Relay option 82
- RMON, MIB II, Port mirroring, Event syslog, DNS, NTP/SNTP, IEEE802.1ab LLDP
- Supports IPv6 Telnet server /ICMP v6, SNMP, HTTP, SSH/SSL, NTP/SNTP, TFTP, QoS, ACL
- CLI, Web based management, **SNMP** v1/v2c/v3, Telnet server for management
- **SmartView** Management System

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	EPR (Ethernet Protection Ring)
	IEEE 802.1Q	Virtual LANs (VLAN)
	IEEE 802.1X	Port 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	4096	
Switch Architecture	Back-plane : 11.2Gbps	
Data Processing	Store and Forward	
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode	
Jumbo Frame	9.6KB	
MAC Address Table	8K	

Network Connector	16x RJ-45 10/100Base-TX auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex 4x 100/1000 Base-X dual speed mode SFP slot, 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 DC12/24/48VDC (9.6~60VDC) Input power (Removable Terminal Block)
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)
Power Consumption	TBD
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-1604GSM) -40 ~ 75°C (IFS-1604GSM-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection
Dimensions	106 x 72 x 152 mm (D x W x H)

Specifications

Installation Mounting	DIN Rail mounting or wall mounting
EMC/EMS	CE, FCC
EMI	FCC Part 15 Subpart B Class A, CE EN 55022 Class A
	EN61000-6-4 – Emission for industrial environment
EMS	EN61000-6-2 – Immunity for Industrial environment
	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (EFT) Level 3, Criteria A
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (Magnetic Field) Level 3, Criteria A
Safety	UL60950-1 (Pending)
Rail Traffic	EN 50121-4
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
MTBF	TBD (Above 30 years)
Warranty	5 years

Software Specifications

Topology	
VLAN	IEEE 802.1q VLAN,up to 4095 ID
	IEEE 802.1q VLAN,up to 4095 Groups
	IEEE 802.1ad Q-in-Q
	Port Based VLAN
	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
	MVR (Multiple 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
Loop Protection	Present
μ-Ring	Easy set for Ethernet protection Ring, Recovery Time <20ms, Maximum 250 Node
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)	Convergence time <50ms
	Single Ring, Sub-Ring, Multiple ring topology network
QoS Feature	
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): MAC Access control list (Source/ Destination MAC, Ether type, Priority ID/ VLAN ID)
	QCL: IP extended access control list (Source/ Destination IP, Protocol, TCP/UDP port number)
Bandwidth Control for Ingress	Rate in steps : 100 kbps / 1fps / 100fps
	Range : 100 kbps to 1Gbps / 1fps to 3300kfps
	Rate Unit : bit or frame
Bandwidth Control for Egress	Rate in steps : 100 kbps / 1fps / 100fps
	Range : 100 kbps to 1Gbps / 1fps to 3300kfps
	Rate Unit : bit or frame
	Per queue shaper
DiffServ (RF 2474) Remarking	
Storm Control	for Unicast, Broadcast, Multicast
IP Multicasting Feature	
IGMP / MLD Snooping	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2
	Port Filtering Profile
	Throttling
	Fast Leave
	Query
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
Management Features	
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 II	RFC 1213
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
NTP /SNTP	
LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol
	LLDP-MED
IPv6 Features	
IPv6 Management	Telnet Server/ICMP v6
Stateless Auto-Configuration	
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
	Lower the power for a port when there is no link
	LED Power Management : Adjustment LEDs intensity
Cable Diagnostic	Measuring cable OK or broken point distance

Application

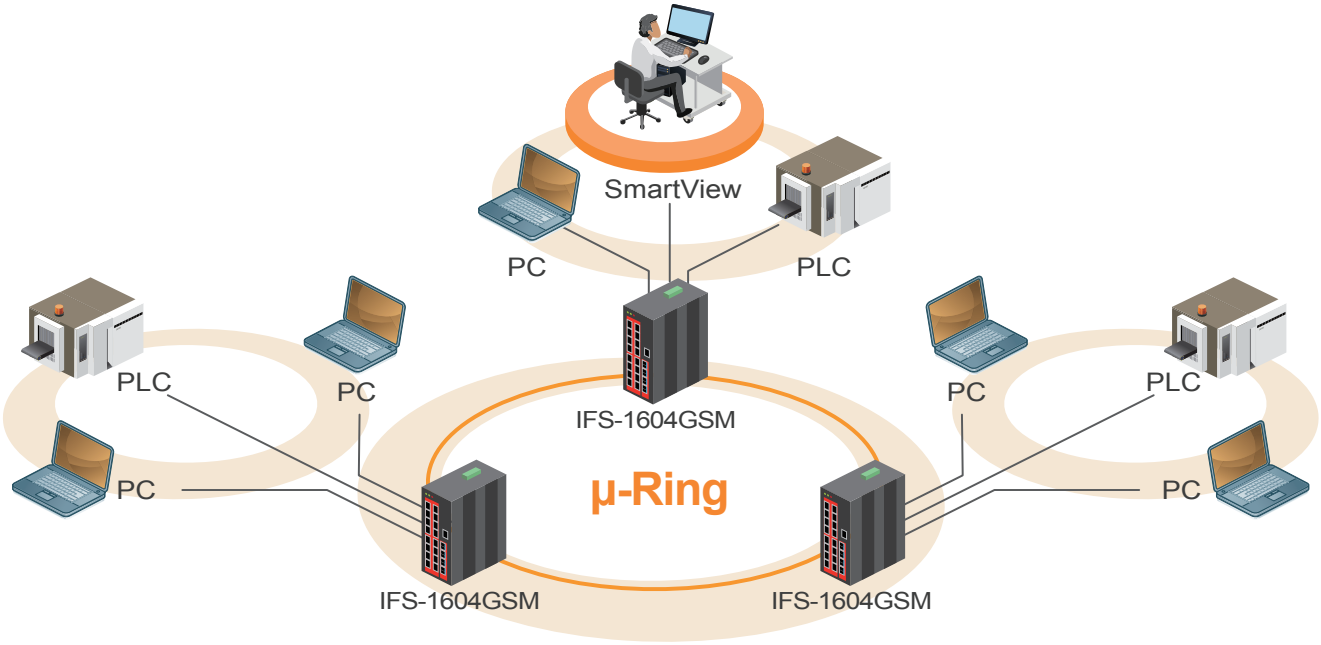
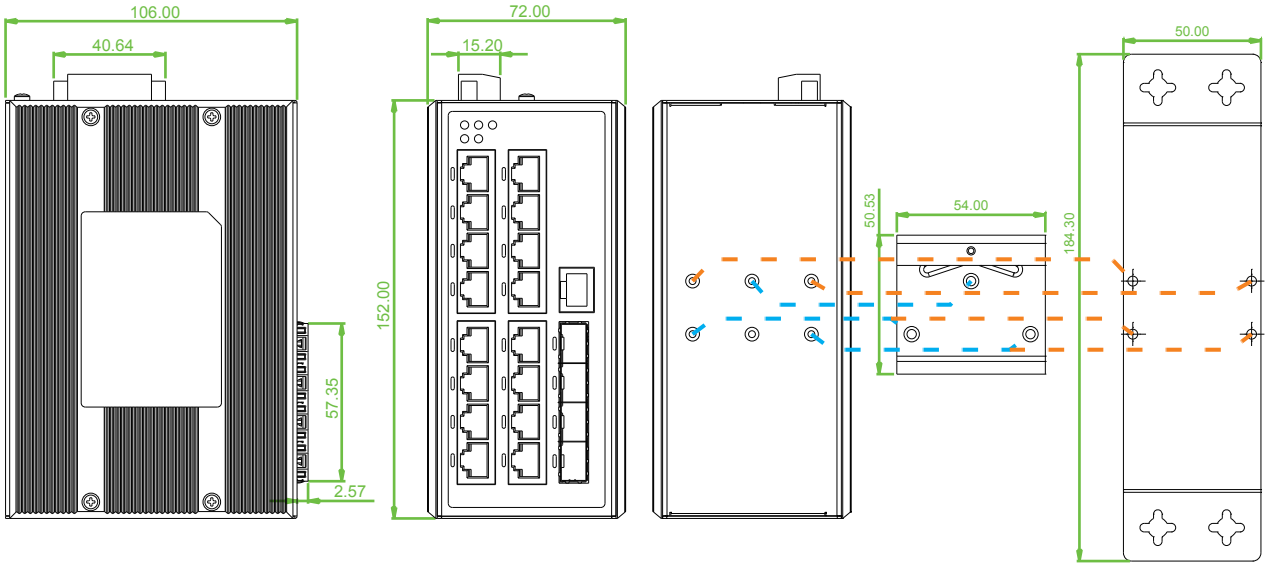


Figure : Topology

Dimensions



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

Ordering Information

Model Name	Description
IFS-1604GSM	16x 10/100Base-TX + 4x 100/1000Base-X SFP Slot Managed Switch (-10~60°C)
IFS-1604GSM-E	16x 10/100Base-TX + 4x 100/1000Base-X SFP Slot Managed Switch (-40~75°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

IFS-1604GSM – □ (Temperature)

Example: IFS-1604GSM – E

ISFP – M 7 040 – 3 1 – 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: -40~85°C; Blank: 0~70°C

IFC-Serial

RS-232/422/485 Fiber Converter

c UL us LISTED

IFC-Serial are industrial grade fiber media converters that provides a fiber connection to extend asynchronous RS-232, RS-485 or RS-422 serial transmissions over a distance of up to 2km using multimode fiber or up to 60km using single mode fiber. The duplex fiber provides point-to-point connections. Single fiber simplex connections allow connecting multiple devices in a cascaded or "daisy chain" fashion with a single fiber ring architecture. However, no redundancy is provided and any break can disable the entire ring. The converter is 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). IFC-Serial Series media converters feature an alarm relay contact and two redundant DC power inputs. The IFC-Serial Series reliable industrial design is perfect for keeping your industrial automation applications running smoothly and continuously. The IFC-Serial Series media converters are available in two operating temperature ranges, a standard -10° to 60°C commercial temperature range or an extended -40° to 75°C range.

Features

- Supports dual channel communication, including Triple-Way communication and Two-Way communication
- Extend serial transmission distance up to 2km, 30km, 60km
- Redundant dual power inputs (12 ~ 48VDC)
- Supports half-duplex ring application
- Supports RS-232, RS-422, RS-485(2/4 wire) transmission to fiber connections
- Wide Temperature -40 ~ 75°C (IFC-Serial-E)
- 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
- Fan-less 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)
Optical Interface	Connector	SC, ST
	Fiber Optical rate	36.864Mbps
	Fiber Port	One fiber
	Fiber Type	MM 2km, SM 30km/60km
	Wavelength	MM 1310nm, SM 1310, 1550nm
	Point to Point Transmission	Half or Full duplex
	Ring Transmission	Half duplex
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
	Isolation	2.5KV for sevic 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-Serial) -40 ~ 75°C (IFC-Serial-E)
	Storage Temperature	-40 ~ 85°C
	Humidity	5 ~ 95% RH
LED Indications	PWR1, PWR2, Alarm, Master, TD, RD, Fiber Link, Ring	
Power	Power Input	Redundant Dual Power 12, 24, 48 VDC (9.6 ~ 58VDC)
	Power Consumption	5W
	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
	Dimensions	106 x 38 x 142 mm (D x W x H)
	Mounting	DIN-Rail or wall mount
	Weight	0.63kg
Certification	Safety	UL60950-1
	EMC	CE, FCC
	EMI	EN55022 Class A
		EN61000-6-4 – Emission for industrial environment
	EMS	EN61000-6-2 – Immunity for 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	797,101 Hrs

Block Diagram

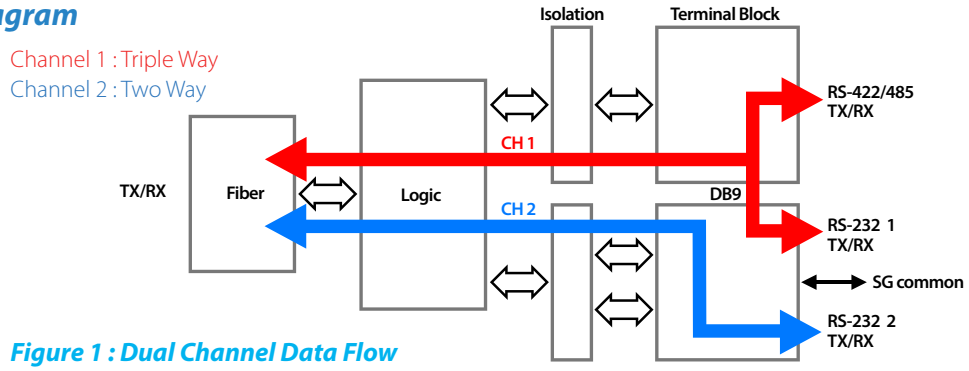


Figure 1 : Dual Channel Data Flow

Application

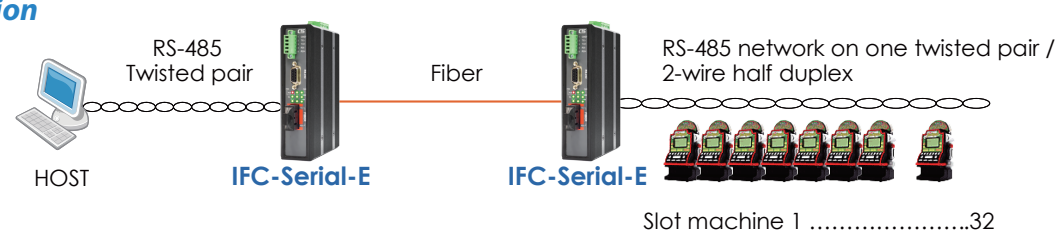


Figure 2 : Point to Point

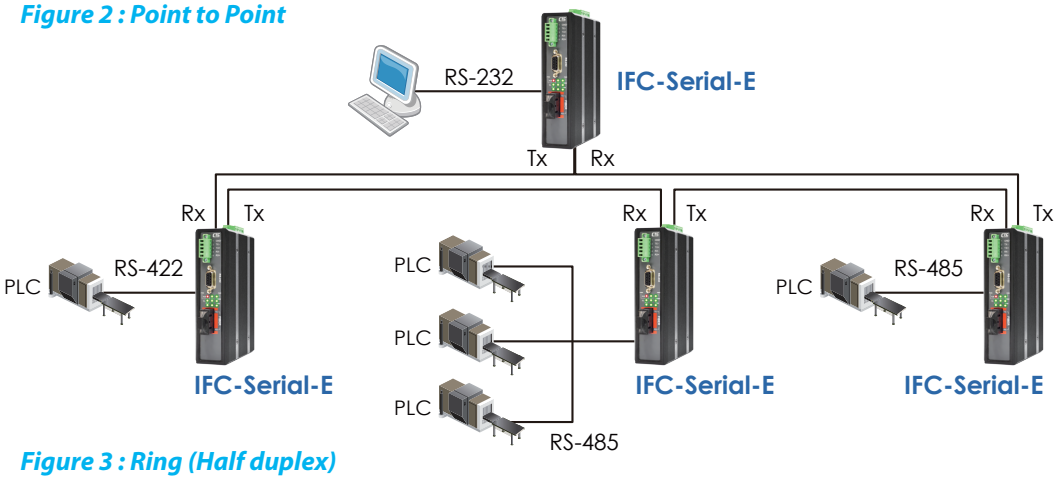
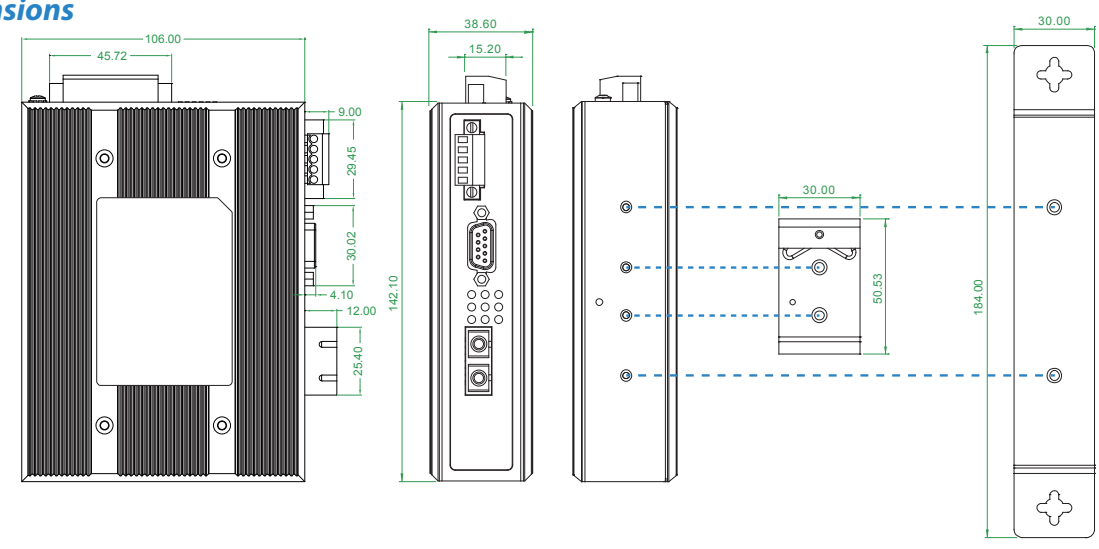


Figure 3 : Ring (Half duplex)

Dimensions



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

Ordering Information

Model Name	Description
IFC-Serial	RS-232/422/485 serial to fiber media converter; Temperature Range : -10 ~ 60°C
IFC-Serial-E	RS-232/422/485 serial to fiber media converter; Temperature Range : -40 ~ 75°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

IFS – Serial – □ – □□□□□

Example: IFS – Serial – E – SC002

IFC-FDC

RS-232/422/485 Daisy Chain Fiber Converter

c UL us LISTED

The IFC-FDC Series are industrial grade fiber media converters that provide dual fiber connections to extend asynchronous RS-232, RS-485 or RS-422 serial transmissions over a distance of up to 2km using multimode fiber or up to 60km using single mode fiber. The dual fiber inputs allow connecting multiple devices in a cascade or "daisy chain" fashion as well as creating ring architecture for fiber redundancy. The converter is 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). IFC-FDC Series media converters feature a three-way communications plus a second independent RS-232 communication channel. Models also feature an alarm relay contact and two redundant DC power inputs. The IFC-FDC Series reliable industrial design is perfect for keeping your industrial automation applications running smoothly and continuously. The IFC-FCD Series media converters are available in two operating temperature ranges, a standard -10° to 60°C commercial temperature range or an extended -40° to 75°C range (IFC-FDC-E).

Features

- Supports dual channel communication, including Triple-Way communication, and Two-Way communication
- Extend serial transmission distance up to 2km, 30km, 60km
- Supports fiber daisy chain or ring connections
- Redundant dual power inputs (12~48VDC)
- Supports dual fiber link redundancy
- 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
- Fan-less 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)
Optical Interface	Connector	SC, ST
	Fiber Optical rate	36.864Mbps
	Fiber Port	Two fiber ports
	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
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) -40 ~ 75°C (IFC-FDC-E)
	Storage Temperature	-40 ~ 85°C
	Humidity	5 ~ 95% RH
LED Indications	PWR1, PWR2, Alarm, Master, TD, RD, Fiber Link, Fiber2 Link, Ring	
Power	Power Input	Redundant Dual Power 12, 24, 48 VDC (9.6 ~ 58VDC)
	Power Consumption	6W
	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
	Dimensions	106 x 38 x 142mm (D x W x H)
	Mounting	DIN-Rail, wall mount
	Weight	0.64kg
Certification	Safety	UL60950-1
	EMC	CE, FCC
	EMI	EN55022 Class A
		EN61000-6-4 – Emission for industrial environment
	EMS	EN61000-6-2 – Immunity for 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

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

Block Diagram

Channel 1 : Triple Way
Channel 2 : Two Way

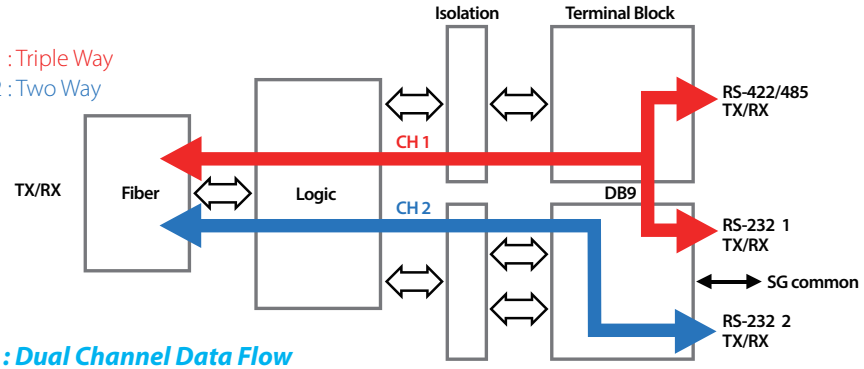


Figure 1 : Dual Channel Data Flow

Application

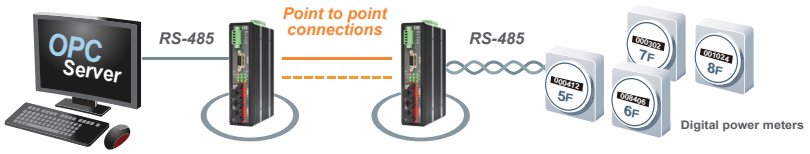


Figure 2 : Dual Fiber Auto Recovery

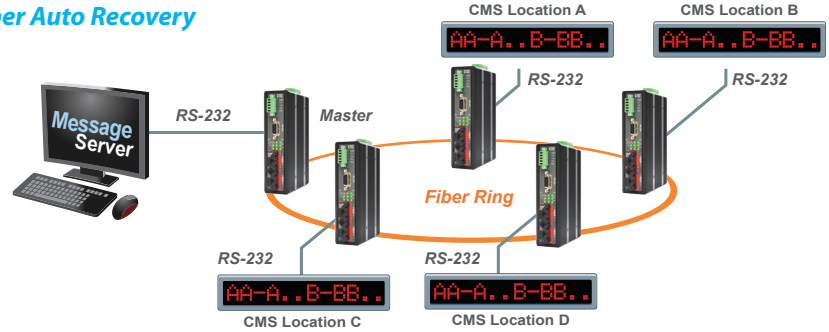


Figure 3 : Fiber Ring for RS-232 Data Broadcasting

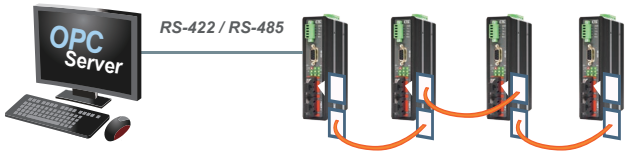
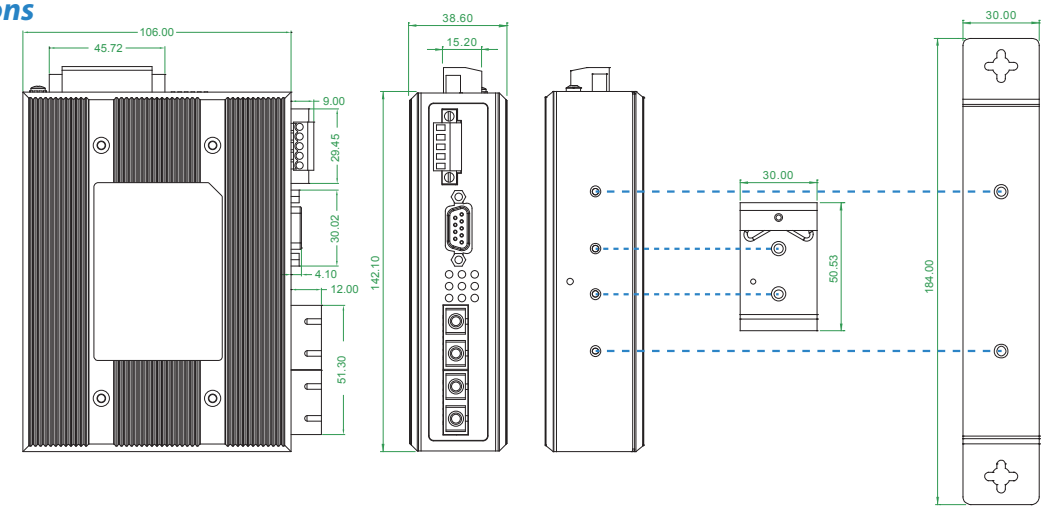


Figure 4 : RS-422/485 Fiber Daisy Chain

Dimensions



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

Ordering Information

Model Name	Description
IFC-FDC	RS-232/422/485 serial to dual fiber media converter; Temperature Range : -10 ~ 60°C
IFC-FDC-E	RS-232/422/485 serial to dual fiber media converter; Temperature Range : -40 ~ 75°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

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

c UL us LISTED

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
- 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
- Provide a DIP-Switch to set functions

Specifications

Standard	IEEE802.3 10Base-T
	IEEE802.3u 100Base-TX, 100Base-FX
	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: LFP Disable On: LFP 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
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
EMI	FCC Part 15 Subpart B Class A, EN 55022 Class A
	EN61000-6-4 – Emission for industrial environment
EMS	EN61000-6-2 – Immunity for Industrial environment
	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (EFT) Level 3, Criteria A
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (Magnetic Field)
Safety	UL60950-1
Railway Traffic	EN 50121-4
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
MTBF	563,813Hrs (IMC-1000, IMC-1000-E)
	578,980Hrs (IMC-1000S, IMC-1000S-E)
Warranty	5 years

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

Application & Topology

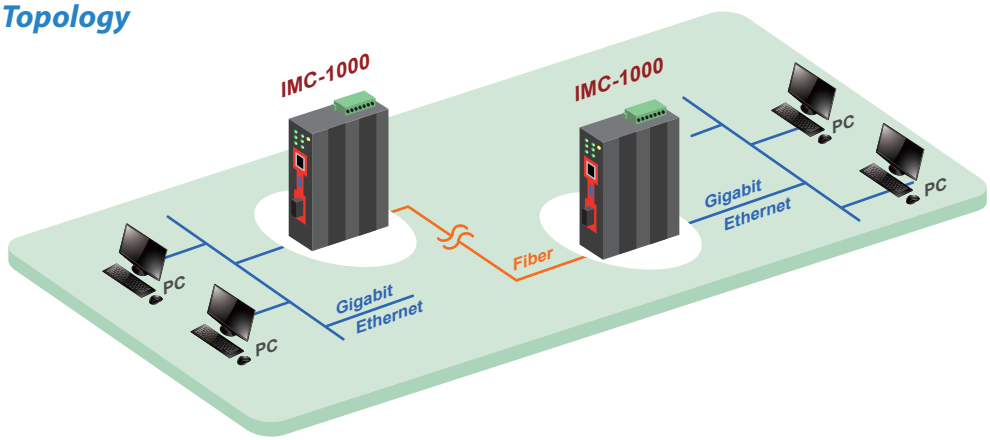
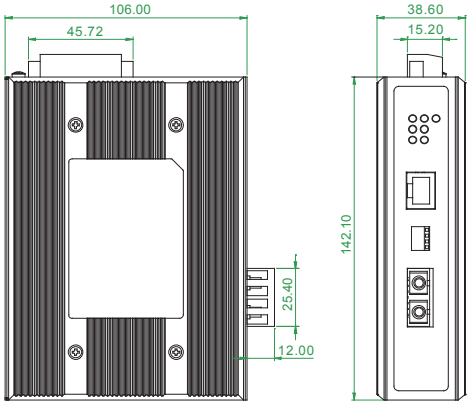


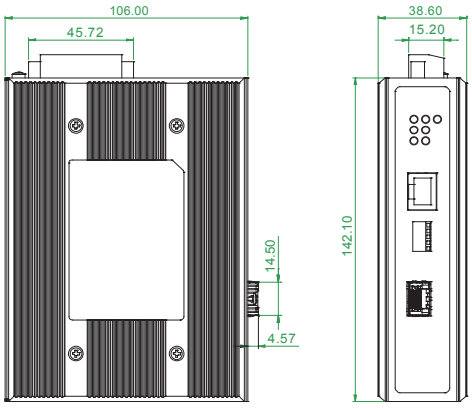
Figure : IMC-1000 Media Converter Transmission

Dimensions

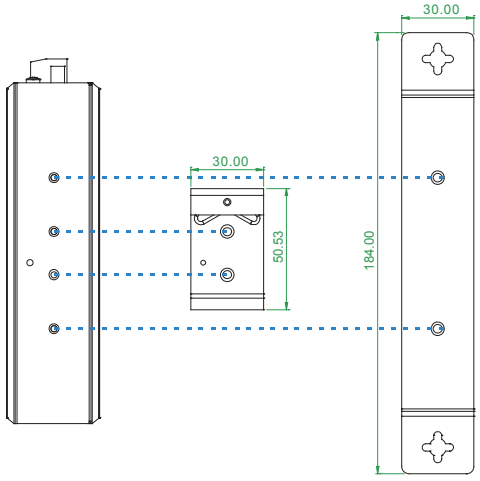
IMC-1000/1000-E



IMC-1000S/1000S-E



Side View Front View



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

Ordering Information

Model Name	Description
IMC-1000	10/100/1000Base-T to 100/1000Base FX/SX/LX Fiber Converter Temperature Range : -10 ~ 60°C
IMC-1000-E	10/100/1000Base-T to 100/1000Base FX/SX/LX Fiber Converter Temperature Range : -20 ~ 75°C
IMC-1000S	10/100/1000Base-T to 100/1000Base FX/SX/LX SFP Slot Fiber Converter Temperature Range : -10 ~ 60°C
IMC-1000S-E	10/100/1000Base-T to 100/1000Base FX/SX/LX SFP Slot Fiber Converter Temperature Range : -20 ~ 75°C

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

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

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: -40~85°C; Blank: 0~70°C

Temperature / Connector Type / Connectivity Distance

IMC – 1000 – □ – □□□□□

Example: IMC – 1000 – E – SC002

IMC-100

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

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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
- 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
- Provide a 6 Pole DIP-Switch to set functions

Specifications

Standard	IEEE 802.3 10Base-T
	IEEE 802.3u 100Base-TX/100Base-FX
	IEEE 802.3x Flow Control
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
Dimensions	106 x 38 x 142mm (D X W X H)
Weight	0.62kg
Installation	DIN Rail mounting and Wall Mounting
EMI	FCC Part 15 Subpart B Class A
	EN 55022 Class A
	EN 61000-6-4 – Emission for industrial environment
EMS	EN 61000-6-2 – Immunity for Industrial environment
	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (EFT) Level 3, Criteria A
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (Magnetic Field) Level 3, Criteria A
Safety	UL60950-1
Railway Traffic	EN 50121-4
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6 (Operating, Packing)
MTBF	852,727 Hrs
Warranty	5 years

Application

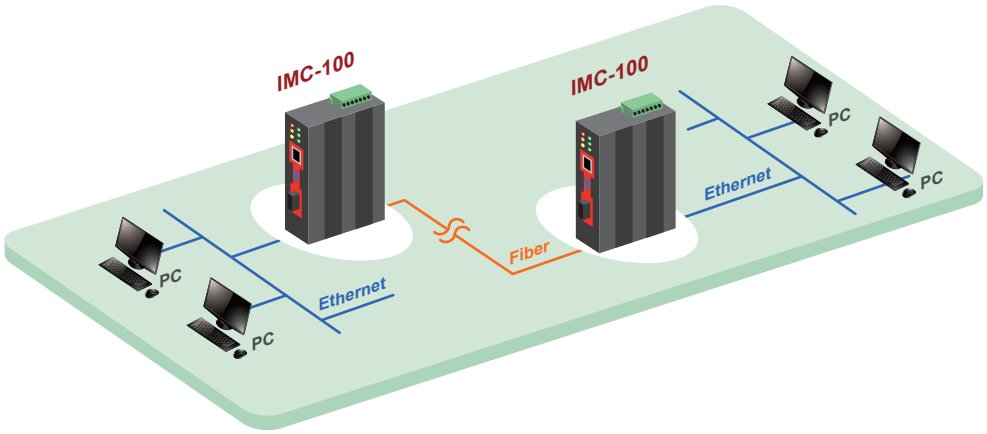
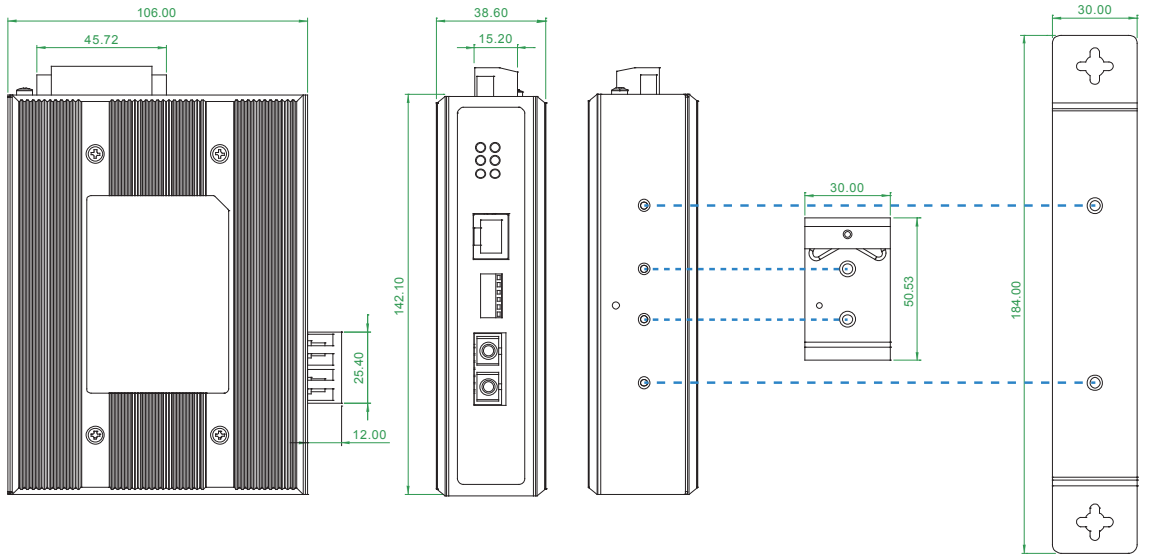


Figure : IMC-100 Media Converter Transmission

Dimensions



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

Ordering Information

Model Name	Description
IMC-100	1-Port 10/100-TX to 100-FX Fiber Converter ; Temperature Range : -10 ~ 60°C
IMC-100-E	1-Port 10/100-TX to 100-FX Fiber Converter ; Temperature Range : -40 ~ 75°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°C
MDR-40-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70°C

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

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SmartView

EN50121-4

EN61000-6-2 EN61000-6-4

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
- 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
- Auto Laser Shutdown (ALS)
- CTC SmartView Management System support
- Web management
- SNMP management
- 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
- Remote loop-back test
- Dying gasp (remote power failure detection)

Specifications

Standard	IEEE802.3 10Base-T
	IEEE802.3u 100Base-TX , 100Base-FX
	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 Lose Forward	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
	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
Dimensions	106 x 38.6 x 142 mm (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

Specifications

EMI	FCC Part 15 Subpart B Class A, CE EN 55022 Class A
EMS	EN 61000-6-2 – Immunity for Industrial environment
	EN61000-4-2 (ESD) Level 3, Criteria B
	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (EFT) Level 3, Criteria A
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (Magnetic Field) Field strength: 300A/m, Criteria A

Safety	UL60950-1
Railway Traffic	EN 50121-4
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
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

Software Specification

Stand-alone or Web Mode

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

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

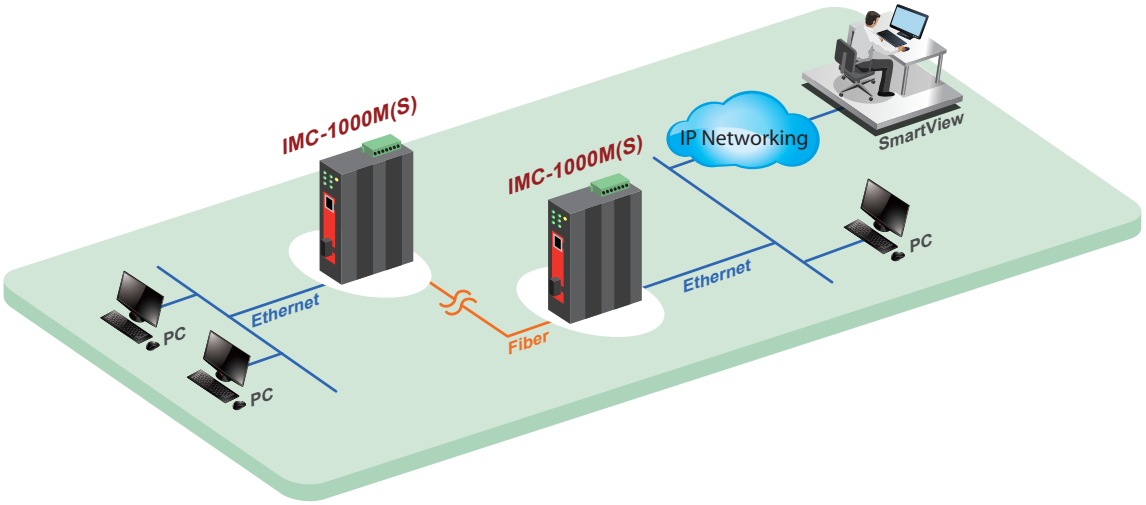


Figure : IMC-1000M(S) Application in Stand-alone SNMP management by CTC SmartView

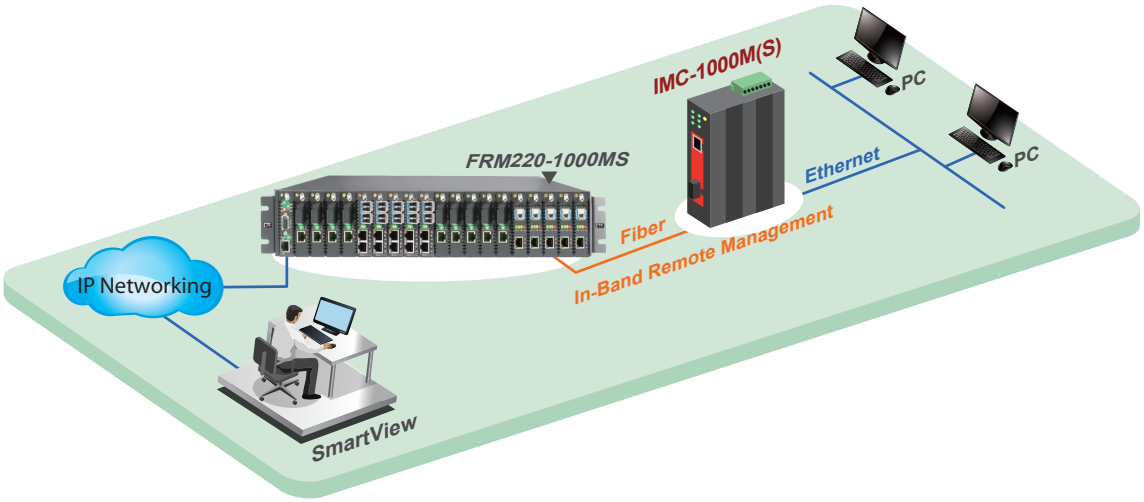


Figure : IMC-1000M(S) Application in Remote, In-Band managment

Application

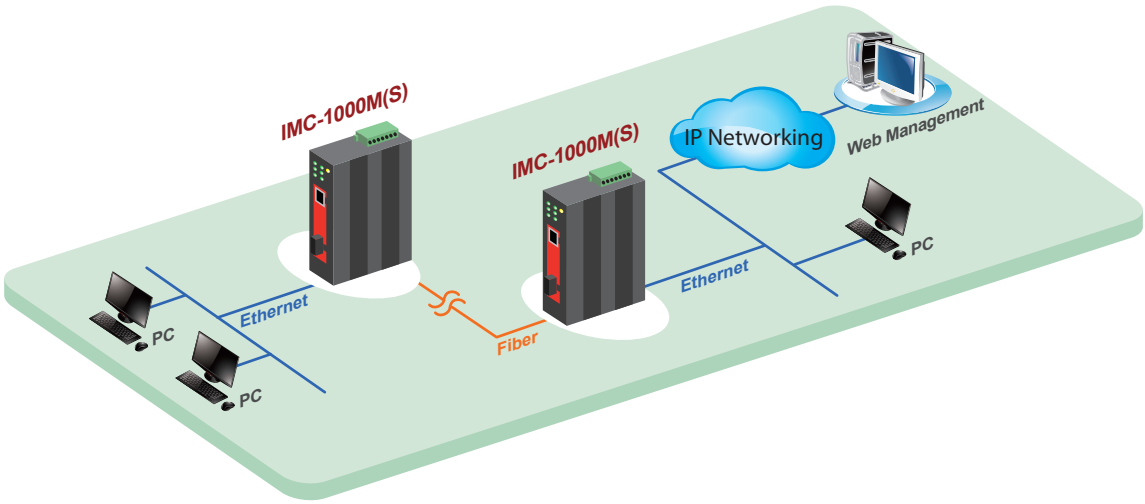
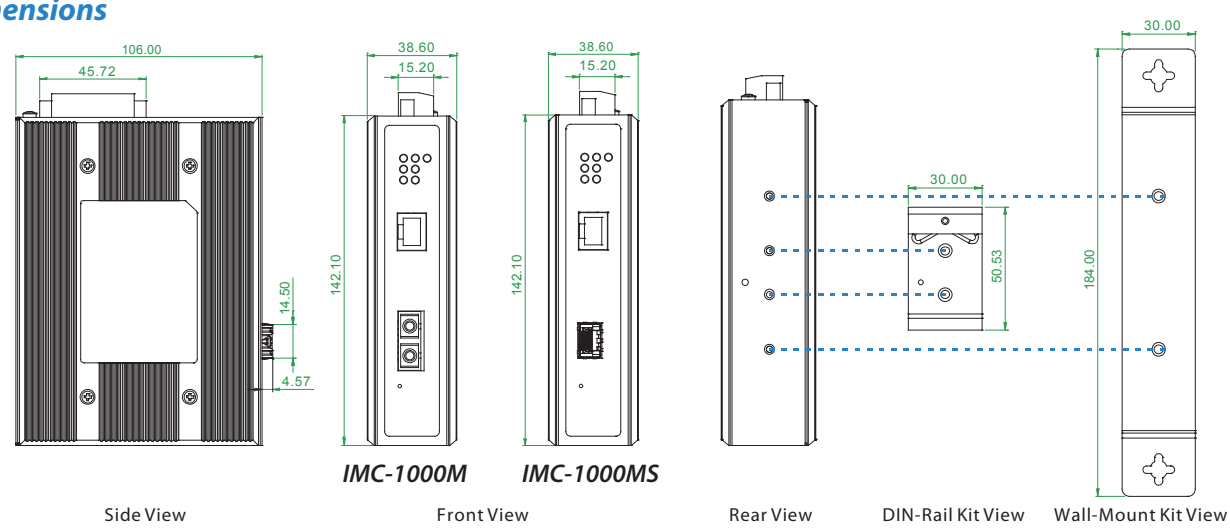


Figure : IMC-1000M(S), Application in Web Management

Dimensions



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

Ordering Information

Model Name	Description
IMC-1000M	Industrial Managed 10/100/1000Base-T to 1000Base-SX/LX/ FX Fiber Converter (-10 ~ 60°C)
IMC-1000M-E	Industrial Managed 10/100/1000Base-T to 1000Base-SX/LX/ FX Fiber Converter (-20 ~ 75°C)
IMC-1000MS	Industrial Managed 10/100/1000Base-T to 1000Base-X SFP Fiber Converter (-10 ~ 60°C)
IMC-1000MS-E	Industrial Managed 10/100/1000Base-T to 1000Base-X SFP Fiber Converter (-20 ~ 75°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

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: -40~85°C; Blank: 0~70°C

Temperature | Connector Type | Connectivity Distance

IMC – 1000M – □ – □□□□□

Example: IMC – 1000M – E – SC002

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
- 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
- Auto Laser Shutdown (ALS)
- CTC SmartView Management System support
- Web management
- SNMP management
- 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
- Remote loop back test
- Dying gasp (remote power failure detection)

Specifications

Standard	IEEE802.3 10Base-T
	IEEE802.3u 100Base-TX, 100Base-FX
	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 Lose Forward	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, 2KM), SC (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
Dimensions	106 x 38.6 x 142 mm (D x W x H)
Weight	630g
Installation	DIN Rail mounting or wall mounting
EMC	CE
EMI	FCC, FCC Part 15 Subpart B Class A, CE EN 55022 Class A
Railway Traffic	EN 50121-4
Immunity for Heavy Industrial Environment	EN61000-6-2
Emission for Heavy Industrial Environment	EN61000-6-4
EMS 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 (Magnetic Field)
Safety	UL60950-1
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
Warranty	5 years
MTBF	778,604 hrs (MIL-HDBK-217)

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

Software Specification

Stand-alone or Web Mode

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

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

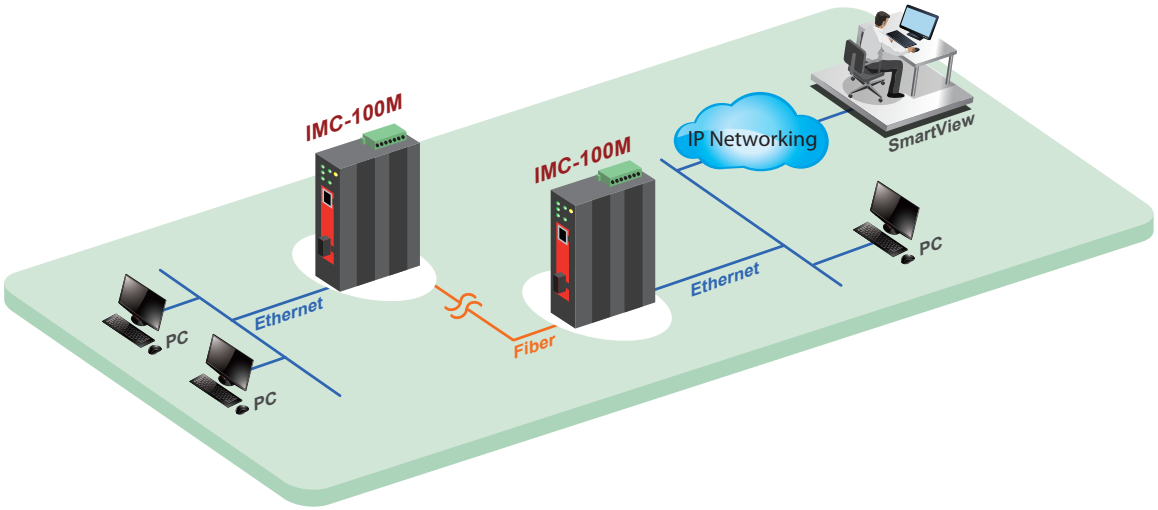


Figure : IMC-100M Application in Stand-alone SNMP management by CTCSmartView

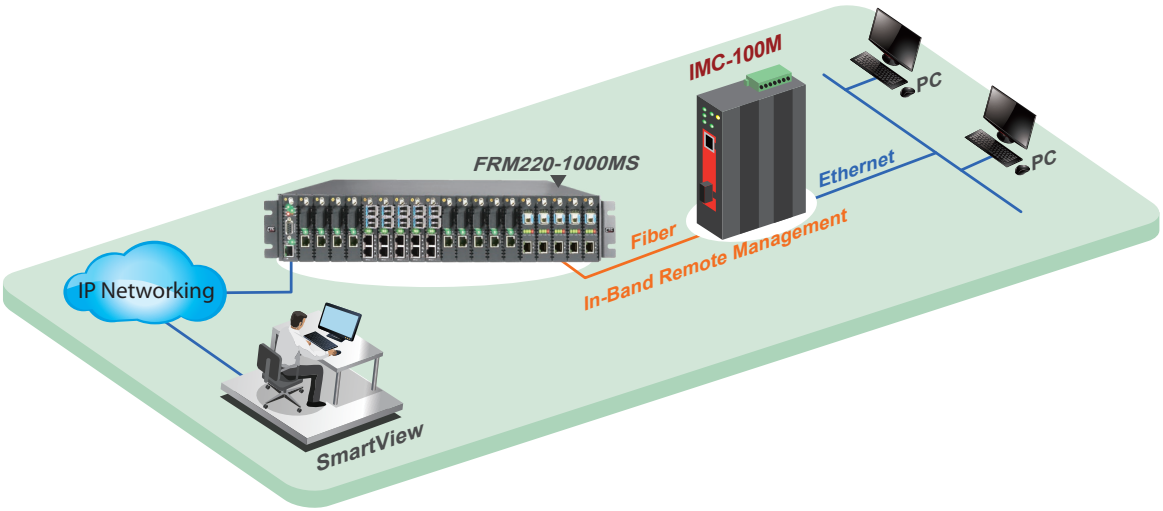


Figure : IMC-100M Application in Remote, In-Band managment

Application

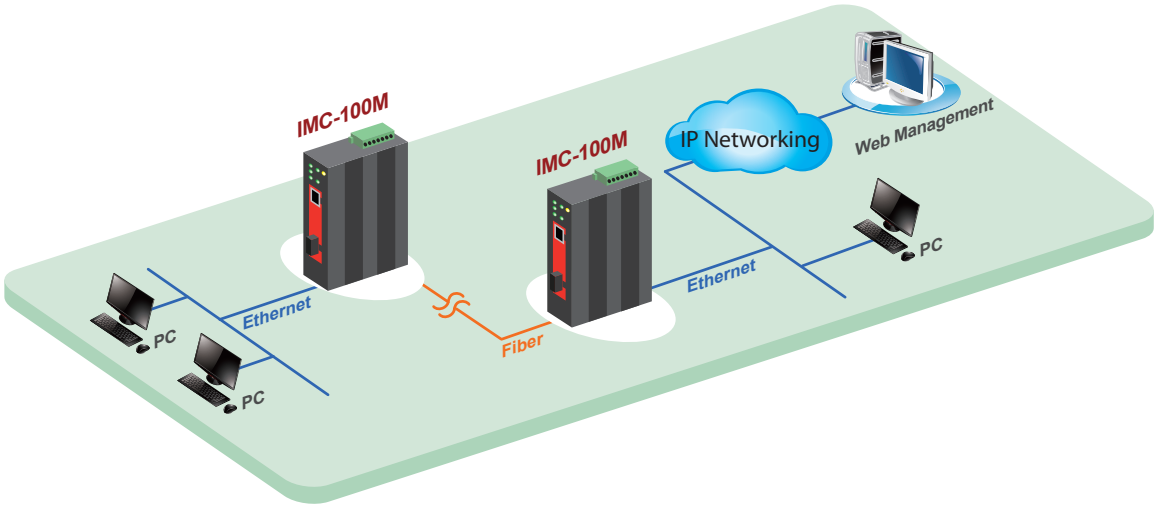
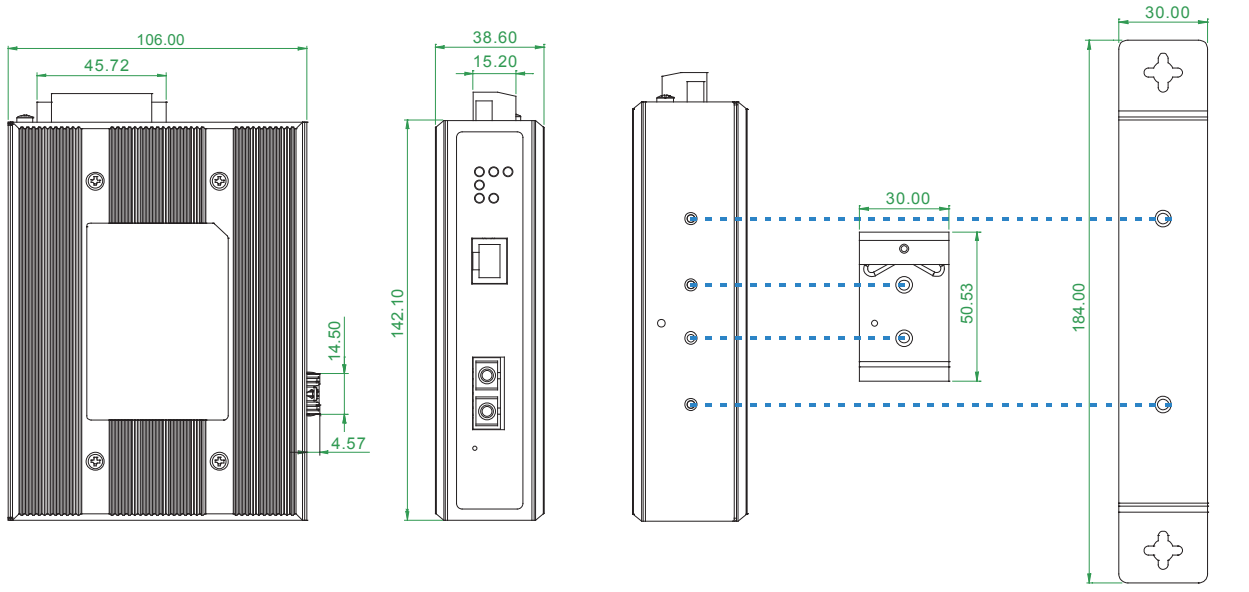


Figure : IMC-100M Application in Web Management

Dimensions



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

Ordering Information

Model Name	Description
IMC-100M	Industrial Managed 10/100Base-TX to 100Base FX Fiber Converter (-10 ~ 60°C)
IMC-100M-E	Industrial Managed 10/100Base-TX to 100Base FX Fiber Converter (-20 ~ 75°C)
Connector Type	**Connectivity Distance**
SC	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°C
MDR-40-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70°C

Temperature | Connector Type | Connectivity Distance

IMC–100M – □ – □□□□□

Example: IMC–100M – E – SC002

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