



**IFS-401F**  
4x 10/100Base-TX+  
1x 100Base-FX FE Switch

**IFS-402F**  
4x 10/100Base-TX+  
2x 100Base-FX FE Switch

**IFS-800**  
8x 10/100Base-TX Fast  
Ethernet Switch

**IFS-802GS**  
8x 10/100Base-TX +  
2x 1000Base-X SFP FE Switch

**IFS-1602GS**  
16x 10/100Base-TX +  
2x 1000Base-X SFP Switch



These models are unmanaged industrial grade switches with 4~16 10/100Base-TX ports and 0~2 fiber ports, that provide stable and reliable Ethernet transmission. Housed in rugged DIN rail or wall mountable enclosures, these switches are designed for harsh environments, such as industrial networking, intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications (See Figure 1, 2). 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 10/100Base-TX RJ45 + 1x 100Base-FX Fiber (IFS-401F)
- 4x 10/100Base-TX RJ45 + 2x 100Base-FX Fiber (IFS-402F)
- 8x 10/100Base-TX RJ45 (IFS-800)
- 8x 10/100Base-TX RJ45 +2x 1000Base-X SFP (IFS-802GS)
- 16x 10/100Base-TX RJ45 +2x 1000Base-X SFP (IFS-1602GS)
- Redundant dual DC input power 12/24/48VDC (9.6~60VDC)
- IP30 rugged metal housing and Fanless
- Wide operating temperature -40 ~ 75°C (-E model)
- Provides broadcast storm protection (IFS-401F, IFS-402F, IFS-800, IFS-1602GS)
- Supports DIP SW for alarm setting and broadcast storm protection
- Supports power failure alarm message by relay
- Supports flow control
- CE, FCC, and EN50121-4 certification
- Heavy industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- 4KV surge protection for UTP ports (IFS-1602GS)
- 2.25K VDC Hi-pot isolation protection for Ethernet ports and power (IFS-1602GS)

**Specifications**

<b>IEEE Standard</b>	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX and 100Base-FX Fast Ethernet IEEE 802.3x Flow Control and Back Pressure IEEE 802.3z 1000Base-X Gbit/s Ethernet over Fiber-Optic
<b>Switch Architecture</b>	Back-plane (Switching Fabric) : 1.0Gbps (IFS-401F) 1.2Gbps (IFS-402F) 1.6Gbps (IFS-800) 5.6Gbps (IFS-802GS) 7.2 Gbps (IFS-1602GS) Full wire-speed
<b>Data Processing</b>	Store and Forward
<b>Transfer Rate</b>	14,880pps for Ethernet port 148,800pps for Fast Ethernet port 1,488,000pps for Giga Ethernet port
<b>Flow Control</b>	IEEE 802.3x flow control, back pressure flow control
<b>Jumbo Frame</b>	16K Byte (IFS-1602GS)
<b>Provides Broadcast Storm Protection</b>	Present, Enable /Disable set by DIP SW (IFS-401F, IFS-402F, IFS-800, IFS-1602GS)
<b>MAC Address Table</b>	2K (IFS-401F, IFS-402F, IFS-800) 8K (IFS-802GS) 16K (IFS-1602GS)
<b>Packet Buffer Size</b>	448Kbit (IFS-401F, IFS-402F, IFS-800) 1024Kbit (IFS-802GS) 4M bit (IFS-1602GS)
<b>Network Connector</b>	4x RJ-45, 1x Fiber (IFS-401F), 4x RJ-45, 2 Fiber (IFS-402F) 8x RJ-45 (IFS-800) 8x RJ-45, 2 SFP (IFS-802GS) 16x RJ-45, 2x SFP (IFS-1602GS) RJ-45 Port: Auto MDI/MDI-X function, 10/100Base-TX auto negotiation speed, Full/Half duplex 1 or 2x 100Base-FX SC/ST fiber port, Multi/Single Mode (IFS-401F, IFS-402F) 2x 1000Base-X SFP port (IFS-802GS, IFS-1602GS)
<b>Network Cable</b>	10Base-T: 2-pair UTP/STP Cat. 5e cable EIA/TIA-568 100-ohm (100m) 100Base-TX: 2-pair UTP/STP Cat. 5e cable EIA/TIA-568 100-ohm (100m) Fiber Cable (Multi-mode): 50/125um~62.5/125um
<b>Network Cable</b>	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) SFP: Distance depend on SFP Fiber Transceiver

<b>Protocol</b>	CSMA/CD
<b>LED</b>	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber) RJ-45 Per port: Link/Active (Green), Speed 100 (Yellow) Fiber Per port: Link/Active (Green) (IFS-401F, IFS-402F) SFP Port : Link/Active (Green) (IFS-802GS, IFS-1602GS)
<b>DIP SW</b>	DIP 1 OFF : Enable power failure alarm ON : Disable DIP 2 Broadcast storm protection (IFS-401F, IFS-402F, IFS-800, IFS-1602GS) OFF : Enable ON : Disables
<b>Reverse Polarity Protection</b>	Supported for Power Input
<b>Overload Current Protection</b>	Supported
<b>Power Supply</b>	Redundant Dual DC 12/24/48V (9.6~60VDC) Input power (Removable Terminal Block)
<b>Power Consumption</b>	4.4W (IFS-401F) 5.8W (IFS-402F) 4.4W (IFS-802GS) 3.9W (IFS-800) 8.7W (IFS-1602GS)
<b>Alarm Relay Contact</b>	Relay outputs with current carrying capacity of 1 A @24VDC, NC
<b>Removable Terminal Block</b>	Provides 2 Redundant power, Alarm relay contact, 6 Pin
<b>Operating Temperature</b>	-10 ~ 60°C (IFS-401F, IFS-402F, IFS-800, IFS-802GS, IFS-1602GS) -40 ~ 75°C (IFS-401F-E, IFS-402F-E, IFS-800-E, IFS-802GS-E, IFS-1602GS-E)
<b>Operating Humidity</b>	5% to 95% (Non-condensing)
<b>Storage Temperature</b>	-40 ~ 85°C
<b>Housing</b>	Rugged Metal, IP30 Protection and Fanless
<b>Dimensions</b>	106 x 31.6 x 142mm (D x W x H) (IFS-401F, IFS-402F, IFS-800) 106 x 72 x 152 mm (D x W x H) (IFS-802GS, IFS-1602GS)
<b>Weight</b>	0.37kg (IFS-401F), 0.42kg (IFS-402F), 0.67kg (IFS-802GS) 0.43kg (IFS-800), 0.82kg (IFS-1602GS)
<b>Installation Mounting</b>	DIN Rail mounting, or wall mounting (Optional)
<b>MTBF</b>	908,971 Hours (IFS-401F) 907,622 Hours (IFS-402F) 1,064,064 Hours (IFS-800) 837,414 Hours (IFS-802GS) 461,653 Hours (IFS-1602GS) (MIL-HDBK-217)

Warranty	5 years
<b>Certification</b>	
EMC/EMS	CE
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A, CE
Railway Traffic	EN50121-4
Immunity for Heavy Industrial Environment	EN61000-6-2
Emission for Heavy Industrial Environment	EN61000-6-4

<b>EMS (Electromagnetic Susceptibility) Protection Level</b>	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
<b>Safety</b>	EN61000-4-8 (PFMF, Magnetic Field) Field Strength: 300A/m, Criteria A
	UL60950-1 (Pending)
<b>Hi-pot isolation protection</b>	DC 2.25KV for power to chassis ground, and UTP port to chassis ground (IFS-1602GS)
<b>4KV surge protection</b>	Supported for UTP Port (IFS-1602GS)
<b>Shock</b>	IEC 60068-2-27
<b>Freefall</b>	IEC 60068-2-32
<b>Vibration</b>	IEC 60068-2-6

## Application

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

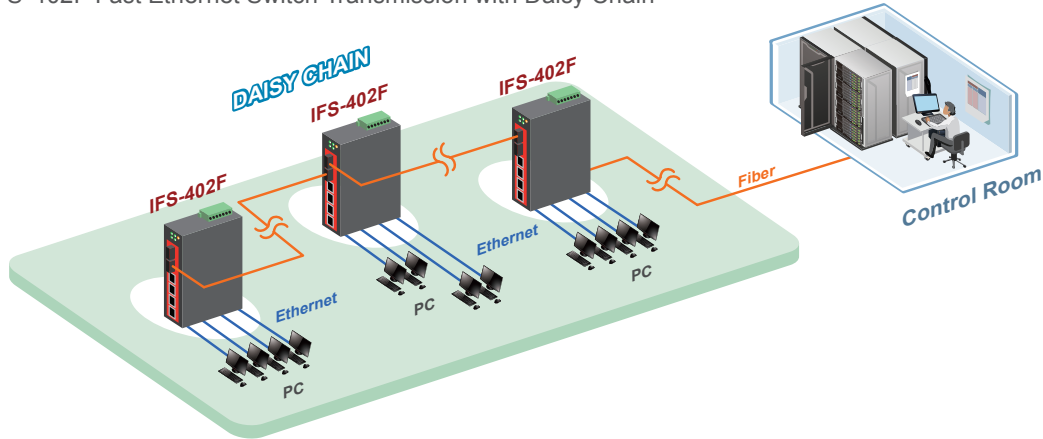
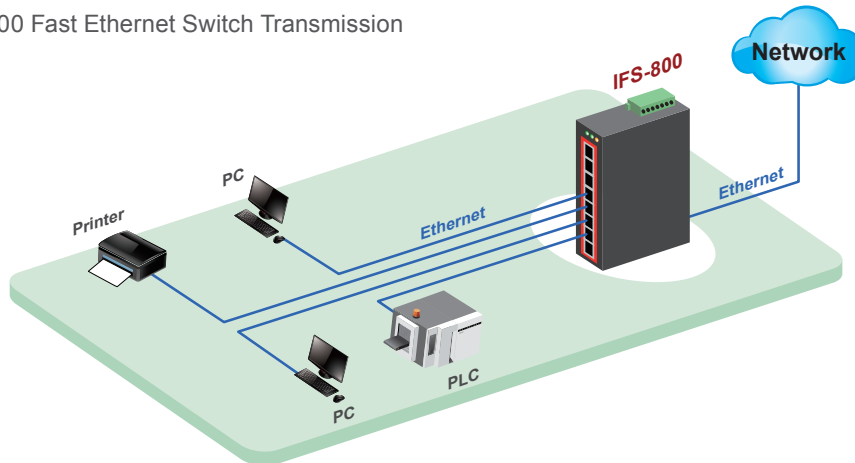
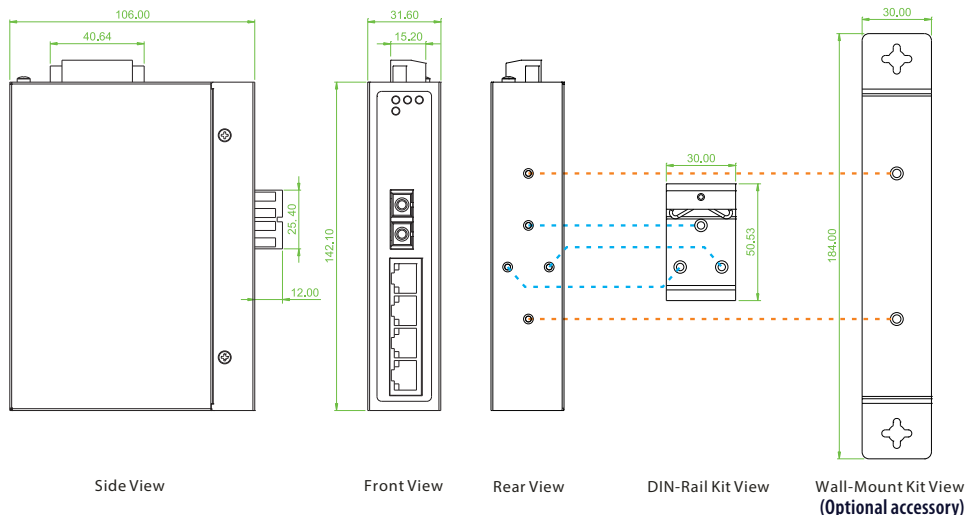


Figure 2 : IFS-800 Fast Ethernet Switch Transmission



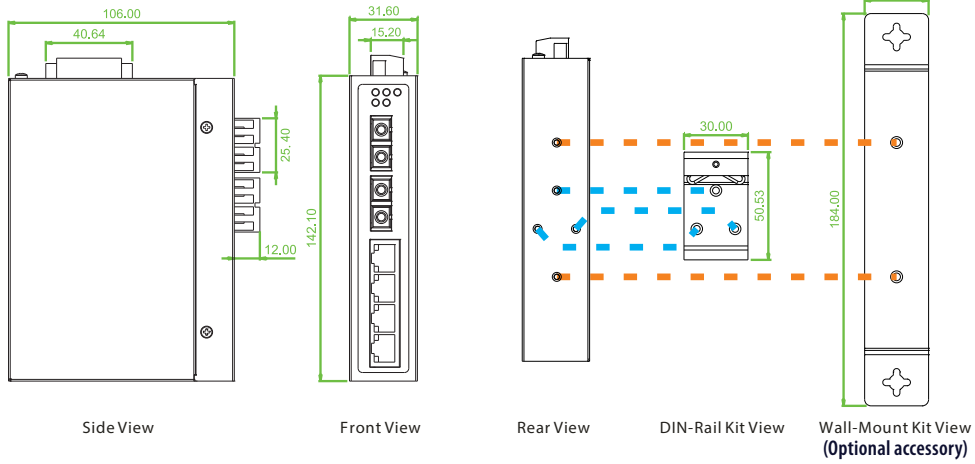
## Dimensions

### ► IFS-401F

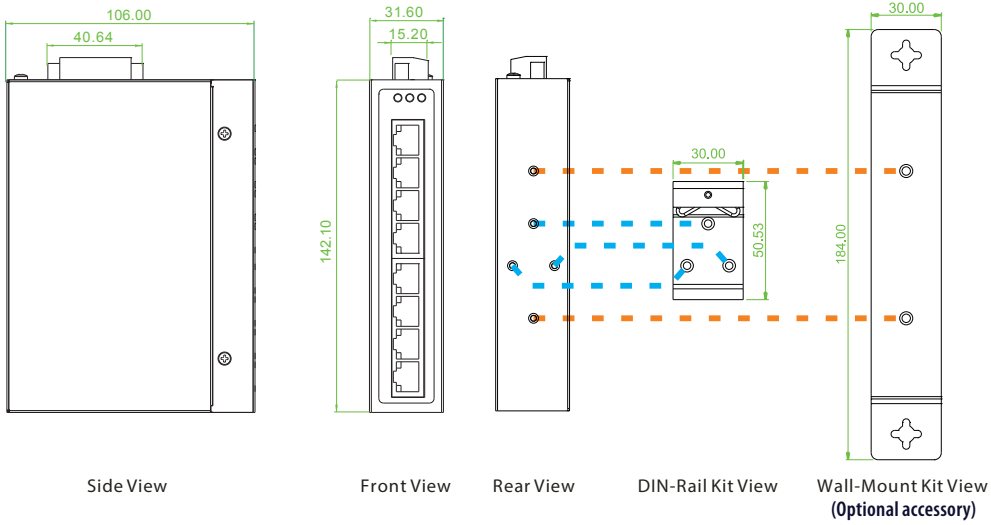


**7**  
**Unmanaged FE Switch**  
 IFS-401F / IFS-402F / IFS-800  
 IFS-802GS / IFS-1602GS

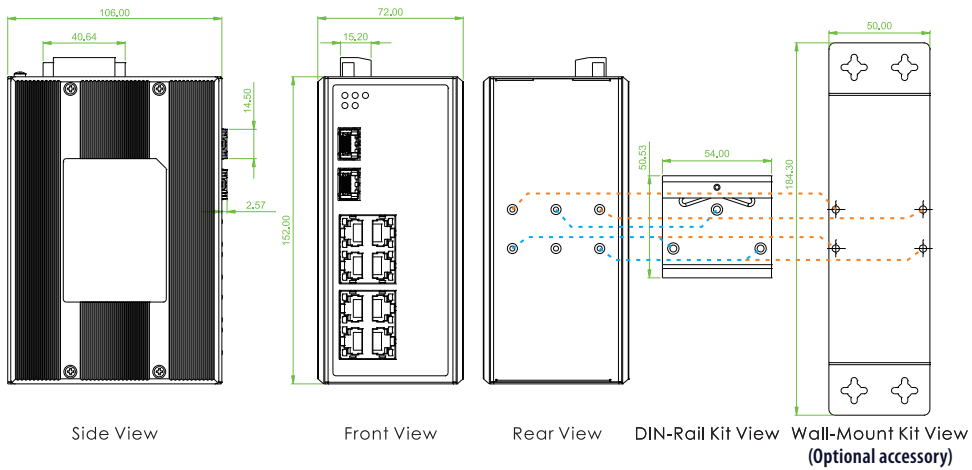
► IFS-402F



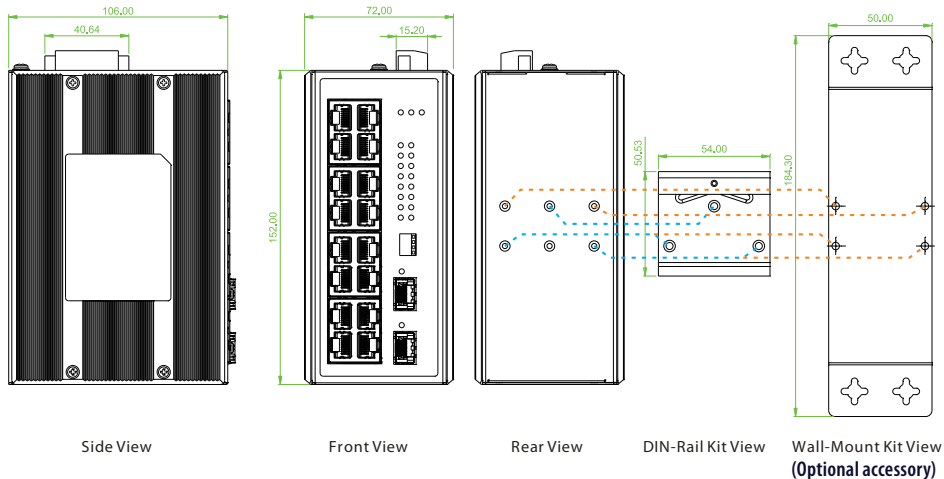
► IFS-800



► IFS-802GS



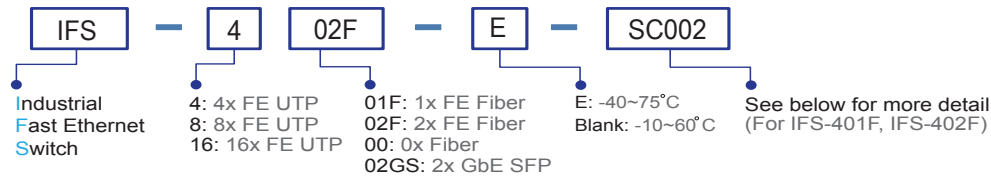
► IFS-1602GS



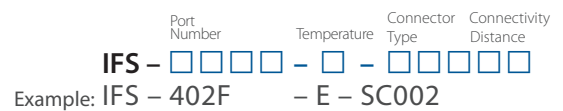
## Ordering Information

Model Name	Total Port	RJ45 UTP Port			Fiber Port		Certification				Operating Temperature
		10/100Base-TX	100Base-FX	1000Base-X	Railway EN50121-4	EN61000-6-2 EN61000-6-4	CE	FCC			
IFS-401F	5	4	1 SC/ST		V	V	V	V		-10~60°C	
IFS-401F-E	5	4	1 SC/ST		V	V	V	V		-40~75°C	
IFS-402F	6	4	2 SC/ST		V	V	V	V		-10~60°C	
IFS-402F-E	6	4	2 SC/ST		V	V	V	V		-40~75°C	
IFS-800	8	8			V	V	V	V		-10~60°C	
IFS-800-E	8	8			V	V	V	V		-40~75°C	
IFS-802GS	10	8		2 SFP	V	V	V	V		-10~60°C	
IFS-802GS-E	10	8		2 SFP	V	V	V	V		-40~75°C	
IFS-1602GS	18	16		2 SFP	V	V	V	V		-10~60°C	
IFS-1602GS-E	18	16		2 SFP	V	V	V	V		-40~75°C	

### Model Naming Rule



Fiber Option Type	Connectivity Distance
SC, ST (for IFS-401F, IFS-402F)	002: 2km 030: 30km 050: 50km 020A: WDM Bidi 20km A type (TX:1310nm) 020B: WDM Bidi 20km B type (TX:1550nm)



### Package List

- One device of the series
- Quick installation guide
- Din Rail with screws
- Terminal block
- Protective caps for SFP ports (for IFS-802GS, IFS-1602GS)

## Optional Accessories

### Wall mount kit Accessories

IND-WMK01	Wall Mount kit for Industrial product, 184 x 30mm (Narrow) (For IFS-401F, IFS-402F, IFS-800)
IND-WMK02	Wall Mount kit for Industrial product, 184 x 50mm (Wide) (For IFS-802GS, IFS-1602GS)

### Industrial SFP Transceiver

The ISFP series of industrial grade SFP modules have been fully tested with the IFS-802GS & IFS-1602GS product for guaranteed compatibility and performance. The best performance can be guaranteed even in mission-critical applications. (Please see CTC Union's Industrial SFP datasheet for more details and more items.)

ISFP-M7000-85-(E)	Industrial SFP GbE 1000Base-SX, M/M, 500 meter, wave length 850nm, 7.5dB, LC, -10~70°C (-40~85°C)
ISFP-S7020-31-(E)	Industrial SFP 1000Base-LX, S/M, 20km, wave length 1310nm, 15dB, LC, -10~70°C (-40~85°C)
ISFP-T7100-00-(E)	Industrial SFP 1000Base-T UTP 100meter, -10~70°C (-40~85°C)

### SFP Naming Rule

