



## IFS-402GSM-4PH24

4x 10/100Base-TX + 2x FE/GbE SFP with 4x PoE+

## IFS-803GSM-8PH24

8x 10/100Base-TX + 3x FE/GbE SFP with 8x PoE+



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

These managed switches also support a wide variety of Ethernet functions, including STP/RSTP/MSTP/ITU-T G.8032 ERPS and multiple µ-Ring for redundant cabling, advanced PoE management functions such as weekly PoE power scheduling as well as device auto-checking and auto-reset. They also support layer 2 Ethernet IGMP, VLAN, QoS, ACL, Security, IPv6, bandwidth control, port mirroring, cable diagnostics and Green Ethernet. Additionally, these switches can also be managed by SmartView™ Element Management System which offers a user-friendly and centralized device management platform and provides network administrators the ability to monitor and configure these connected switches remotely (see figure 1).

### Features

- 4x 10/100Base-TX RJ-45+ 2x FE/GbE SFP with 4x PoE+, total 120W power budget (IFS-402GSM-4PH24)
- 8x 10/100Base-TX RJ-45+ 3x FE/GbE SFP with 8x PoE+, total 180W power budget (IFS-803GSM-8PH24)
- 24/48VDC (20~57VDC) redundant dual input power with built-in very high efficiency booster (94~97%) to rise up 55 VDC for PoE output (Figure 2)
- Regulated PoE output voltage (55VDC) to stabilize PoE device, and guarantee delivery PoE power distance to 100meter (Figure 2)
- Provides 4/8 port IEEE 802.3af / 802.3at PoE output (30W per Port)
- Advanced PoE Management, PoE PD Failure Auto Checking and auto reset when PD fail, PoE port on/off weekly scheduling, PoE configuration for power planning
- Rugged metal, IP30 protection & Fanless design
- UL60950-1, CE, FCC, Rail Traffic EN50121-4, Traffic control NEMA TS2 certified
- Heavy industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Cable diagnostics, Measuring UTP cable OK or broken point distance
- Supports Green Ethernet IEEE 802.3az EEE (Energy Efficient Ethernet) management to optimize power consumption
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) for redundant cabling
- Provides 5 ring instances that each can support µ-Ring, µ-Chain or Sub-Ring type for flexible uses. Supports up to 5 rings in one device
- µ-Ring for Redundant Cabling, recovery time < 10ms in 250 devices
- DHCP Server/Client/ Relay/ Relay option 82/ Snooping
- QoS, Traffic classification QoS, CoS, bandwidth control for Ingress and Egress, Storm Control, DiffServ
- IEEE 802.1q VLAN, MAC based VLAN, IP subnet based VLAN, Protocol based VLAN, VLAN translation, GVRP, MVR
- Dynamic IEEE 802.3ad LACP Link Aggregation, Static Link Aggregation
- IGMP snooping V1/V2/V3, IGMP Filtering/ Throttling, IGMP query, IGMP proxy reporting, MLD snooping V1/V2
- Flexibility security: Port based and MAC based IEEE 802.1X, RADIUS, ACL, TACACS+, HTTP/HTTPS, SSL/SSH v2
- Software upgrade via TFTP and HTTP, redundant firmware to avoid upgrade failure
- Supports IEEE 1588 PTP V2 for precise time synchronization to operate in Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave mode by each port
- RMON, MIB II, Port mirroring, Event syslog, DNS, NTP, SNTP, IEEE 802.1ab LLDP
- Supports IPv6 Telnet server / ICMP v6
- CLI, Web based management, SNMP v1/v2c/v3, Telnet server for management
- Supports Modbus/TCP protocols for management
- Provides SmartConfig for quick and easy mass Configuration Tool\*
- Supports SmartView for Centralized Management Tool\*

\*Please see Chapter 1- **Software Management** for more details

### Specifications

Standard	IEEE 802.3	10Base-T 10Mbit/s Ethernet	Standard	IEEE 802.3at	PoE+ (Power over Ethernet enhancements)
	IEEE 802.3u	100Base-TX, 100Base-FX, Fast Ethernet		IEEE 802.1d	STP (Spanning Tree Protocol)
	IEEE 802.3ab	1000Base-T Gbit/s Ethernet over twisted pair		IEEE 802.1w	RSTP (Rapid Spanning Tree Protocol)
	IEEE 802.3z	1000Base-X Gbit/s Ethernet over Fiber-Optic		IEEE 802.1s	MSTP (Multiple Spanning Tree Protocol)
	IEEE 802.3af	PoE (Power over Ethernet)		ITM-T G.8032 / Y.1344	ERPS (Ethernet Ring Protection Switching)
				IEEE 802.1Q	Virtual LANs (VLAN)

<b>Standard</b>	IEEE 802.1X	Port based and MAC based Network Access Control, Authentication
	IEEE 802.3ac	Max frame size extended to 1522Bytes
	IEEE 802.3ad	Link aggregation for parallel links with LACP(Link Aggregation Control Protocol)
	IEEE 802.3x	Flow control for Full Duplex
	IEEE 802.1ad	Stacked VLANs, Q-in-Q
	IEEE 802.1p	LAN Layer 2 QoS/CoS Protocol for Traffic Prioritization
	IEEE 802.1ab	Link Layer Discovery Protocol (LLDP)
	IEEE 802.3az	EEE (Energy Efficient Ethernet)
<b>Switch Architecture</b>	Back-plane (Switching Fabric): 7.8Gbps (IFS-402GSM-4PH24) 10.6Gbps (IFS-803GSM-8PH24) Full wire-speed	
<b>Data Processing</b>	Store and Forward	
<b>Flow Control</b>	IEEE 802.3x for full duplex mode Back pressure for half duplex mode	
<b>Network Connector</b>	4x 10/100Base-TX RJ-45 + 2x 100/1000Base-X SFP slot (IFS-402GSM-4PH24) 8x 10/100Base-TX RJ-45 + 3x 100/1000Base-X SFP slot (IFS-803GSM-8PH24)  RJ-45 UTP port support Auto negotiation speed, Auto MDI/MDI-X function, SFP ports support 100/1000M with DDMI	
<b>PoE standard &amp; RJ-45 pin assignment</b>	4x IEEE 802.3af /IEEE 802.3at PoE+ (IFS-402GSM-4PH24) 8x IEEE 802.3af /IEEE 802.3at PoE+ (IFS-803GSM-8PH24) End-Span, Alternative A mode. Positive (V+) : RJ-45 pin 1, 2. Negative (V-) : RJ-45 pin 3, 6. Data (1,2,3,6,4,5,7,8)	
<b>Console</b>	RS-232 (RJ-45)	
<b>Network Cable</b>	UTP/STP above Cat. 5e cable EIA/TIA-568 100-ohm (100m)	
<b>Protocols</b>	CSMA/CD	
<b>Reverse Polarity Protection</b>	Supported for power input	
<b>Overload Current Protection</b>	Supported	
<b>CPU Watch Dog</b>	Supported	
<b>Power Supply</b>	Redundant Dual DC 24/48V (20~57VDC) Input power (Removable Terminal Block) Built-in very high efficiency booster(94~97%) to rise up 55 VDC for PoE output Regulated PoE output voltage (55VDC) to stabilize PoE device, and guarantee delivery PoE power distance to 100meter (Figure 2)	
<b>Power Consumption</b>	<b>IFS-402GSM-4PH24 Power consumption &amp; Booser efficiency</b>	
	<b>Input Voltage</b>	<b>Total Power Consumption</b>
	24VDC	134.8W
	48VDC	132.2W
	<b>Device Power Consumption</b>	<b>PoE Budget</b>
	7.1W	120W
	<b>Boost Efficiency</b>	
	94.0%	
	97.2%	
	<b>IFS-803GSM-8PH24 Power consumption &amp; Booser efficiency</b>	
	<b>Input Voltage</b>	<b>Total Power Consumption</b>
	24VDC	198.3W
	48VDC	193.2W
	<b>Device Power Consumption</b>	<b>PoE Budget</b>
	7.3W	180W
	7.9W	180W
	<b>Boost Efficiency</b>	
	94%	
	97%	
<b>PoE Power Budget</b>	Maximum PoE Output power budget 30W / Per Port 120W (IFS-402GSM-4PH24) 180W (IFS-803GSM-8PH24)	

<b>LED</b>	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) PoE Port LED 1 LED /per Port : • PoE Output Power On : ON (Green) • PoE Fault (Over Load, Short Circuit,Port failed at Startup) : Flash 1times /sec (Green) • PoE Output Power Off : Off
<b>Jumbo Frame</b>	9.6KB
<b>IEEE 802.3ac</b>	Max frame size extended to 1522Bytes (allow Q-tag in packet)
<b>MAC Address Table</b>	8K
<b>Memory Buffer</b>	512K Bytes for packet buffer
<b>Warning Message</b>	System Syslog, SMTP/ e-mail event message, alarm relay
<b>Alarm Relay Contact</b>	Relay outputs with current carrying capacity of 1 A @24VDC
<b>Removable Terminal Block</b>	Provide 2 redundant power, alarm relay contact, 6 Pin
<b>Operating Temperature</b>	-10 ~ 60°C (IFS-402GSM-4PH24, IFS-803GSM-8PH24) -40 ~ 75°C (IFS-402GSM-4PHE24, IFS-803GSM-8PHE24)
<b>Operating Humidity</b>	5% to 95% (Non-condensing)
<b>Storage Temperature</b>	-40 ~ 85°C
<b>Housing</b>	Rugged Metal, IP30 Protection, Fanless
<b>Dimensions</b>	106 x 62.5 x 135 mm (D x W x H) (IFS-402GSM-4PH24) 106 x 72 x 152 mm (D x W x H) (IFS-803GSM-8PH24)
<b>Weight</b>	0.715kg (IFS-402GSM-4PH24) 0.96kg (IFS-803GSM-8PH24)
<b>Installation Mounting</b>	DIN Rail mounting, or wall mounting (Optional)
<b>MTBF</b>	674,963 Hours (IFS-402GSM-4PH24) 466,542 Hours (IFS-803GSM-8PH24) (MIL-HDBK-217)
<b>Warranty</b>	5 years
<b>Certification</b>	
<b>EMC</b>	CE
<b>EMI (Electromagnetic Interference)</b>	FCC Part 15 Subpart B Class A,CE
<b>Railway Traffic</b>	EN50121-4
<b>Traffic control</b>	NEMA TS2
<b>Immunity for Heavy Industrial Environment</b>	EN61000-6-2
<b>Emission for Heavy Industrial Environment</b>	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 EN61000-4-8 (PFMF, Magnetic Field) Field Strength: 300A/m, Criteria A
<b>Safety</b>	UL60950-1
<b>Shock</b>	IEC 60068-2-27
<b>Freefall</b>	IEC 60068-2-32
<b>Vibration</b>	IEC 60068-2-6

## Software Specifications

<b>Topology</b>	
<b>VLAN</b>	IEEE 802.1q VLAN,up to 4094 802.1Q VLAN VID IEEE 802.1q VLAN,up to 4094 Groups IEEE 802.1ad Q-in-Q MAC-based VLAN,up to 256 entries IP Subnet-based VLAN, up to 128 entries Protocol-based VLAN(Ethernt, SNAP, LLC), up to 128 entries VLAN Translation, up to 256 entries GVRP (GARP VLAN Registration Protocol) MVR ( Multicast VLAN Registration)
<b>Link Aggregation (Port Trunk)</b>	Static (Hash with SA, DA, IP, TCP/UDP port), up to 5 trunk group Dynamic (IEEE 802.3ad LACP), up to 5 trunk group
<b>Spanning Tree</b>	IEEE 802.1d STP IEEE 802.1w RSTP IEEE 802.1s MSTP
<b>Multiple μ-Ring</b>	up to 5 instances that each supports μ-Ring, μ-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.
<b>Loop Protection</b>	Supported
<b>ITM-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)</b>	Recovery time <50ms  Single Ring, Sub-Ring, Multiple ring topology network

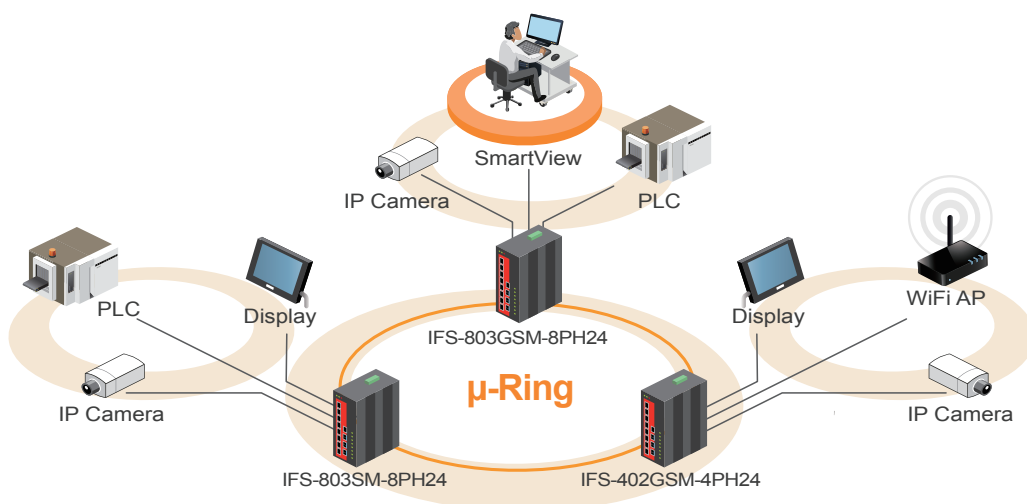
QoS Features	
<b>Class of Service</b>	IEEE 802.1p 8 active priorities queues for per port
<b>Traffic Classification</b>	IEEE 802.1p based CoS
<b>Classification QoS</b>	IP Precedence based CoS
	IP DSCP based CoS
	QCL(QoS Control List): Frame Type, Source/Destination MAC, VLAN ID, PCP, DEI
	QCE(QoS Control Entry): Protocol, Source IP, IP Fragment, DSCP, TCP/UDP port number
<b>Bandwidth Control for Ingress</b>	Rate in steps : 1 kbps / Mbps / fps / kfps
	Range : 100 kbps to 1Gbps / 1fps to 3300kfps
	Rate Unit : bit or frame
<b>Bandwidth Control for Egress</b>	Rate in steps : 1 kbps / Mbps
	Range : 100 kbps to 1Gbps
	Rate Unit : bit
	Per queue / Per port shaper
<b>DiffServ (RF 2474) Remark</b>	
<b>Storm Control</b>	for Unicast, Broadcast, Multicast
IP Multicasting Features	
<b>IGMP / MLD Snooping</b>	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	
<b>IEEE 802.1X</b>	Port-Based
	MAC-Based
<b>ACL</b>	Number of rules : up to 256 entries
	for L2 / L3 / L4
	L2 : Mac address SA/DA/VLAN
	L3: IP address SA/DA, Subnet
	L4: TCP/UDP
<b>RADIUS authentication &amp; accounting</b>	
<b>TACACS+ authentication &amp; accounting, TACACS+ 3.0</b>	
<b>HTTPS, HTTP</b>	Supported
<b>SSL / SSH v2</b>	Supported
<b>User Name Password Authentication</b>	Local Authentication
	Remote Authentication (via RADIUS / TACACS+)
<b>Management Interface Access Filtering</b>	Web, Telnet / SSH, CLI RS-232 console
Management Features	
<b>CLI</b>	Cisco® like CLI
Web Based Management	
<b>Telnet</b>	Server
<b>SNMP</b>	V1, V2c, V3
<b>Modbus/TCP</b>	Support for management and monitoring
<b>SW &amp; Configuration Upgrade</b>	TFTP, HTTP
	Redundant firmware in case of upgrade failure

<b>RMON</b>	RMON I (1, 2, 3, 9 group), RMON II
<b>MIB</b>	RFC1213 MIB II, Private MIB
<b>UPnP</b>	Supported
<b>DHCP</b>	Server, Client, Relay, Relay option 82, Snooping
<b>IP Source Guard</b>	Supported
<b>Port Mirroring</b>	Supported
<b>Event Syslog</b>	Syslog server (RFC3164) (Support 1 server)
<b>Warning Message</b>	System syslog, e-mail, alarm relay
<b>DNS</b>	Client, Proxy
<b>IEEE1588 PTP V2</b>	Support 5 operating mode in each port : Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave
<b>NTP, SNTP</b>	Client
<b>LLDP (IEEE 802.1ab)</b>	Link Layer Discovery Protocol
	LLDP-MED
IPv6 Features	
<b>IPv6 Management</b>	Telnet Server/ICMP v6
<b>SNMP over IPv6</b>	Supported
<b>HTTP over IPv6</b>	Supported
<b>SSH over IPv6</b>	Supported
<b>IPv6 Telnet</b>	Supported
<b>IPv6 NTP, SNTP</b>	Client
<b>IPv6 TFTP</b>	Supported
<b>IPv6 QoS</b>	Supported
<b>IPv6 ACL</b>	Number of rules: up to 256 entries
	for L2 / L3 / L4
	L2 : Mac address SA/DA/VLAN
	L3: IP address SA/DA, Subnet
	L4: TCP/UDP

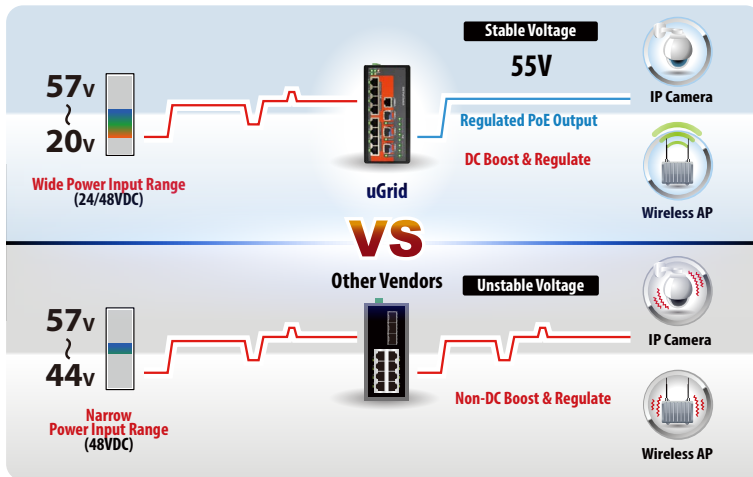
Others Features	
<b>Green Ethernet</b>	Supports IEEE 802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption
	Determine the cable length and lowering the power for ports with short cables
	Lower the power for a port when there is no link
	LED Power Management : Adjustment LEDs intensity
<b>Cable Diagnostic</b>	Measuring UTP cable normal or broken point distance
Advanced PoE Management	
	PoE PD failure auto checking ,and auto reset when PD fail
	PoE port on/off weekly scheduling
	PoE Configuration
	PoE Enable/Disable
	Power limit by classification
	Power limit by management
	Total PoE Power budget limitation (Maximum 120W for IFS-402GSM-4PH24, 180W for IFS-803GSM-8PH24)
	Power feeding priority

## Application

Figure 1 : Application Example



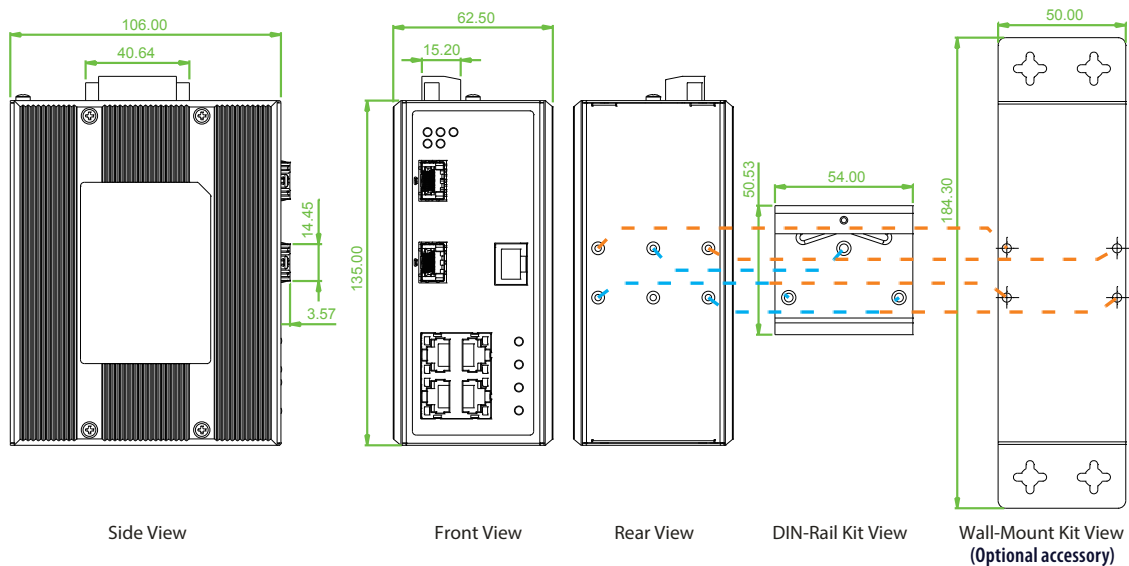
**Figure 2 : High Efficiency Boost Technology for PoE**



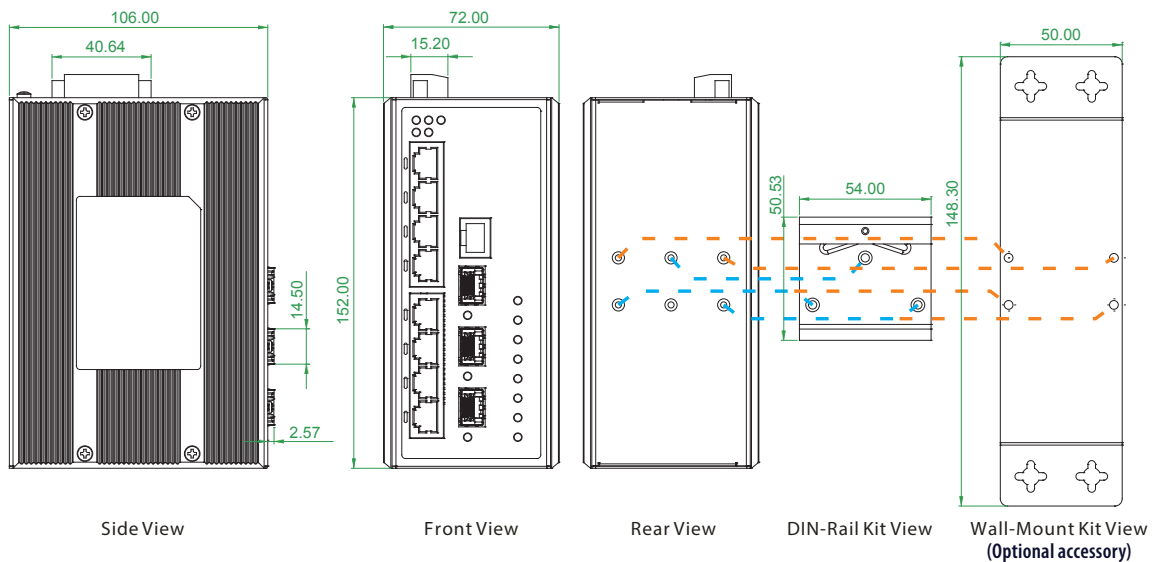
- Regulated PoE output voltage (55VDC) to stabilize PoE device
- Guarantee delivery PoE power distance to 100 meters
- Wide range input power 24/48VDC (20~57VDC)
- Built-in very high efficiency (94~97%) to boost PoE output voltage

## Dimensions

### ► IFS-402GSM-4PH24



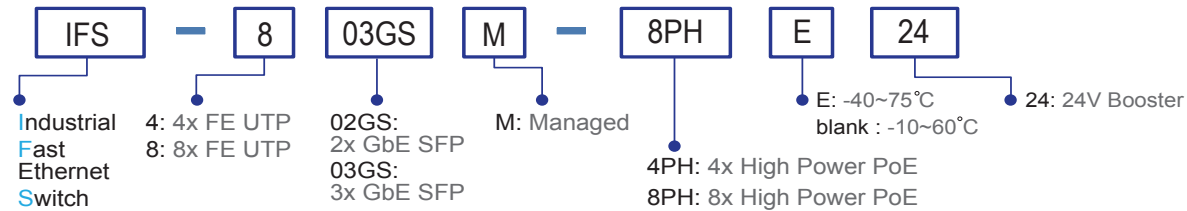
### ► IFS-803GSM-8PH24



## Ordering Information

Model Name	Total Port	UTP	Fiber	PoE Port		Input power	Certification					Operating Temperature
		10/100 Base-TX	100/1000 Base-X	IEEE802.3at	Power Budget		Railway EN50121-4	Traffic Control NEMA TS2	Safety EN60950-1	Safety UL60950-1	CE, FCC EN61000-6-2 EN61000-6-4	
IFS-402GSM-4PH24	6	4	2 SFP	4	120W	24/48VDC	V	V	V	V	V	-10~60°C
IFS-402GSM-4PHE24	6	4	2 SFP	4	120W	24/48VDC	V	V	V	V	V	-40~75°C
IFS-803GSM-8PH24	11	8	3 SFP	8	180W	24/48VDC	V	V	V	V	V	-10~60°C
IFS-803GSM-8PHE24	11	8	3 SFP	8	180W	24/48VDC	V	V	V	V	V	-40~75°C

### Model Naming Rule



## Optional Accessories

### Package List

- One device of the series
- Console cable (RJ-45 to DB9)
- CD (SmartConfig, MIB file, Manual)
- Quick installation guide
- Din Rail with screws
- Terminal block
- Protective caps for SFP ports

### Wall mount kit

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

### Industrial SFP Transceiver

The ISFP series of industrial grade SFP modules have been fully tested with the series product for guaranteed compatibility and performance. The best performance can be guaranteed even in mission-critical applications.

ISFP-M7000-85-D(E)	Industrial SFP GbE 1000Base-SX, M/M, 500 meter, wave length 850nm, 7.5dB, LC, DDML, -10~70°C (-40~85°C)
ISFP-S7020-31-D(E)	Industrial SFP 1000Base-LX, S/M, 20km, wave length 1310nm, 15dB, LC, DDML, -10~70°C (-40~85°C)
ISFP-T7T00-00-(E)	Industrial SFP 10/100/1000Base-T UTP 100meter, -10~70°C (-40~85°C)
ISFP-M5002-31-D(E)	Industrial SFP 155M 100Base-FX, MM, 2km, wave length 1310nm, 12dB, LC, DDML, -10~70°C (-40~85°C)
ISFP-S5030-31-D(E)	Industrial SFP 155M 100Base-FX, SM, 30km, 1310nm, 19dB, LC, DDML, -10~70°C (-40~85°C)

### SFP Naming Rule

