

# IFS-402GSM-4PH24 Industrial Managed FE PoE Switch

**4x FE RJ45 + 2x 100/1000Base-X SFP with 4x PoE 120W, 24/48VDC**

- » Supports IEEE 1588 PTP V2
- » Supports u-Ring, ERPS, EPS, MSTP, RSTP, STP for Redundant Cabling
- » 24/48VDC (20~57VDC) Redundant Dual Power input with Built-in Very High Efficiency Booster
- » Auto Checking and Auto Reset When PoE PD Fail
- » EN50121-4, UL60950-1, NEMA-TS2, EN61000-6-2, EN61000-6-4, CE and FCC Certified



The industrial PoE Ethernet switch, Layer 2 managed, IFS-402GSM-4PH24 has 4 10/100Mbps UTP ports and each port supports 30W PoE+. Equipped with two 100/1000Mbps SFP slots for fiber optic connections to meet the requirements for extended transmission distance, fanless design, high MTBF, supports wide operating temperature, redundant 24/48VDC power input, suitable for heavy-duty applications in harsh environments, such as industrial factory automations, data centers, intelligent transportation systems, military and utility market applications where environmental conditions exceed commercial product specifications.

## Features

- Regulated PoE output voltage (52VDC) to stabilize PoE device, and guarantee delivery PoE power distance to 100meter
- Provides 4-port IEEE 802.3af / 802.3at PoE output (30W per Port)
- Cable diagnostics, identifies opens/shorts distance
- Provides 5 ring instances that each can support  $\mu$ -Ring,  $\mu$ -Chain or Sub-Ring type for flexible uses. Supports up to 5 rings in one device
- $\mu$ -Ring for redundant cabling, recovery time<10ms in 250 devices
- 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
- Supports EMS Management

## Specifications

| Standard              |  |                                                                                   |
|-----------------------|--|-----------------------------------------------------------------------------------|
| IEEE 802.3            |  | 10Base-T 10Mbit/s Ethernet                                                        |
| IEEE 802.3u           |  | 100Base-TX, 100Base-FX, Fast Ethernet                                             |
| IEEE 802.3ab          |  | 1000Base-T Gbit/s Ethernet over twisted pair                                      |
| IEEE 802.3z           |  | 1000Base-X Gbit/s Ethernet over Fiber-Optic                                       |
| IEEE 802.3af          |  | PoE (Power over Ethernet)                                                         |
| IEEE 802.3at          |  | PoE+ (Power over Ethernet enhancements)                                           |
| IEEE 802.1d           |  | STP (Spanning Tree Protocol)                                                      |
| IEEE 802.1w           |  | RSTP (Rapid Spanning Tree Protocol)                                               |
| IEEE 802.1s           |  | MSTP (Multiple Spanning Tree Protocol)                                            |
| ITU-T G.8032 / Y.1344 |  | ERPS (Ethernet Ring Protection Switching)                                         |
| ITU-T G.8031 / Y.1342 |  | EPS (Ethernet Protection Switching)                                               |
| IEEE 802.1Q           |  | Virtual LANs (VLAN)                                                               |
| 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                                                             |

|                                     |                                                                                                                                                             |                                                         |                          |            |                  |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|--------------------------|------------|------------------|
| Standard                            | IEEE 802.1p                                                                                                                                                 | LAN Layer 2 QoS/CoS Protocol for Traffic Prioritization |                          |            |                  |
|                                     | IEEE 802.1ab                                                                                                                                                | Link Layer Discovery Protocol (LLDP)                    |                          |            |                  |
|                                     | IEEE 802.3az                                                                                                                                                | EEE (Energy Efficient Ethernet)                         |                          |            |                  |
| Switch Architecture                 | Back-Plane (Switching Fabric): 7.8Gbps (Full Wire-Speed)                                                                                                    |                                                         |                          |            |                  |
| Data Processing                     | Store and Forward                                                                                                                                           |                                                         |                          |            |                  |
| Flow Control                        | IEEE 802.3x for full duplex mode Back pressure for half duplex mode                                                                                         |                                                         |                          |            |                  |
| Network Connector                   | 4x 10/100Base-TX RJ-45 + 2x 100/1000Base-X SFP                                                                                                              |                                                         |                          |            |                  |
|                                     | RJ-45 UTP port supports Auto negotiation speed, Auto MDI/MDI-X function                                                                                     |                                                         |                          |            |                  |
|                                     | SFP port supports 100/1000M with DDMI                                                                                                                       |                                                         |                          |            |                  |
| PoE Standard & RJ-45 Pin Assignment | 4x IEEE 802.3af /IEEE 802.3at PoE+<br>End-Span, Alternative A mode.<br>Positive (V+) : RJ-45 pin 1, 2.<br>Negative (V-) : RJ-45 pin 3, 6.<br>Data (1,2,3,6) |                                                         |                          |            |                  |
| Console                             | RS-232 (RJ-45)                                                                                                                                              |                                                         |                          |            |                  |
| Network Cable                       | UTP/STP Cat. 5e cable or above                                                                                                                              |                                                         |                          |            |                  |
|                                     | EIA/TIA-568 100-ohm (100meter)                                                                                                                              |                                                         |                          |            |                  |
| Protocols                           | CSMA/CD                                                                                                                                                     |                                                         |                          |            |                  |
| Reverse Polarity Protection         | Supported for power input                                                                                                                                   |                                                         |                          |            |                  |
| Overload Current Protection         | Supported                                                                                                                                                   |                                                         |                          |            |                  |
| CPU Watch Dog                       | Supported                                                                                                                                                   |                                                         |                          |            |                  |
| Power Supply                        | Redundant Dual DC 24/48V (20~57VDC) Input power (Removable Terminal Block)                                                                                  |                                                         |                          |            |                  |
|                                     | Built-in very high efficiency booster (94~97%) to rise up 52VDC for PoE output                                                                              |                                                         |                          |            |                  |
|                                     | Regulated PoE output voltage (52VDC) to stabilize PoE device, and guarantee delivery PoE power distance to 100meter                                         |                                                         |                          |            |                  |
| Power Consumption                   | Input Voltage                                                                                                                                               | Total Power Consumption                                 | Device Power Consumption | PoE Budget | Boost Efficiency |
|                                     | 24VDC                                                                                                                                                       | 134.8W                                                  | 7.1W                     | 120W       | 94.0%            |
|                                     | 48VDC                                                                                                                                                       | 132.2W                                                  | 8.5W                     | 120W       | 97.2%            |
| PoE Power Budget                    | Maximum PoE Output power budget 30W/port, Total 120W                                                                                                        |                                                         |                          |            |                  |
| LED                                 | System: Power 1 (Green), Power 2 (Green), Fault (Amber), CPU Act (Green), Ring Master (Yellow)                                                              |                                                         |                          |            |                  |
|                                     | UTP: 10/100 Link/Active (Green)                                                                                                                             |                                                         |                          |            |                  |
|                                     | SFP Slot: Link/Active (Green)                                                                                                                               |                                                         |                          |            |                  |
|                                     | PoE: ON (Green)                                                                                                                                             |                                                         |                          |            |                  |
| Jumbo Frame                         | 9.6KB                                                                                                                                                       |                                                         |                          |            |                  |
| IEEE 802.3ac                        | Max frame size extended to 1522Bytes (allow Q-tag in packet)                                                                                                |                                                         |                          |            |                  |
| MAC Address Table                   | 8K                                                                                                                                                          |                                                         |                          |            |                  |
| Memory Buffer                       | 512K Bytes for packet buffer                                                                                                                                |                                                         |                          |            |                  |
| Device Memory                       | 16M Bytes Flash ROM, 128M Bytes RAM                                                                                                                         |                                                         |                          |            |                  |
| Warning Message                     | System Syslog, SMTP/ e-mail event message, alarm relay                                                                                                      |                                                         |                          |            |                  |
| Alarm Relay Contact                 | Relay outputs with current carrying capacity of 1A @24VDC                                                                                                   |                                                         |                          |            |                  |
| Removable Terminal Block            | Provides 2 redundant power, alarm relay contact, 6 Pin                                                                                                      |                                                         |                          |            |                  |
| Operating Temperature               | -10 ~ 60°C (IFS-402GSM-4PH24)                                                                                                                               |                                                         |                          |            |                  |
|                                     | -40 ~ 75°C (IFS-402GSM-4PHE24)                                                                                                                              |                                                         |                          |            |                  |
| Operating Humidity                  | 5% to 95% (Non-condensing)                                                                                                                                  |                                                         |                          |            |                  |
| Storage Temperature                 | -40 ~ 85°C                                                                                                                                                  |                                                         |                          |            |                  |
| Housing                             | Rugged Metal, IP30 Protection, Fanless                                                                                                                      |                                                         |                          |            |                  |
| Dimensions                          | 106 x 62.5 x 135mm (D x W x H)                                                                                                                              |                                                         |                          |            |                  |
| Weight                              | 0.715kg                                                                                                                                                     |                                                         |                          |            |                  |
| Installation Mounting               | DIN Rail mounting or wall mounting (Optional)                                                                                                               |                                                         |                          |            |                  |
| MTBF                                | 674,963 Hours (MIL-HDBK-217)                                                                                                                                |                                                         |                          |            |                  |
|                                     |                                                                                                                                                             |                                                         |                          |            |                  |
| Certification                       |                                                                                                                                                             |                                                         |                          |            |                  |
| EMC                                 | CE                                                                                                                                                          |                                                         |                          |            |                  |
| EMI (Electromagnetic Interference)  | FCC Part 15 Subpart B Class A,CE                                                                                                                            |                                                         |                          |            |                  |

|                                                                    |                                                                       |
|--------------------------------------------------------------------|-----------------------------------------------------------------------|
| <b>EMS</b><br>(Electromagnetic Susceptibility)<br>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 |
| <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>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

### Topology

|                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>VLAN</b>                                                      | IEEE 802.1q VLAN, up to 4094 802.1Q VLAN ID<br>IEEE 802.1q VLAN, up to 4094 Groups<br>IEEE 802.1ad Q-in-Q<br>MAC-based VLAN, up to 256 entries<br>IP Subnet-based VLAN, up to 128 entries<br>Protocol-based VLAN (Ethernet, SNAP, LLC), up to 128 entries<br>VLAN Translation, up to 256 entries<br>Private VLAN for port isolation<br>GVRP (GARP VLAN Registration Protocol)<br>MVR (Multicast VLAN Registration)<br>Voice VLAN |
| <b>Link Aggregation (Port Trunk)</b>                             | Static (Hash with SA, DA, IP, TCP/UDP port), up to 5 trunk group<br>Dynamic (IEEE 802.3ad LACP), up to 5 trunk group                                                                                                                                                                                                                                                                                                             |
| <b>Spanning Tree</b>                                             | IEEE 802.1d STP<br>IEEE 802.1w RSTP<br>IEEE 802.1s MSTP                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Multiple <math>\mu</math>-Ring</b>                            | Up to 5 instances that each supports $\mu$ -Ring, $\mu$ -Chain or Sub-Ring type for flexible uses, and maximum up to 5 Rings.<br>Recovery time <10ms<br>The maximum number of device is allowed 250 nodes in a Ring.                                                                                                                                                                                                             |
| <b>Loop Protection</b>                                           | Supported                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)</b>     | Recovery time <50ms<br>Single Ring, Sub-Ring, Multiple ring topology network                                                                                                                                                                                                                                                                                                                                                     |
| <b>ITU-T G.8031 / Y.1342 EPS (Ethernet Protection Switching)</b> | Supported                                                                                                                                                                                                                                                                                                                                                                                                                        |

### QoS Features

|                                      |                                                                                                                                            |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Class of Service</b>              | IEEE 802.1p 8 active priorities queues for per port                                                                                        |
| <b>Traffic Classification QoS</b>    | IEEE 802.1p based CoS                                                                                                                      |
|                                      | IP Precedence based CoS                                                                                                                    |
|                                      | IP DSCP based CoS                                                                                                                          |
|                                      | QCL (QoS Control List): Frame Type, Source/Destination MAC, VLAN ID, PCP, DEI, Protocol, Source IP, IP Fragment, DSCP, TCP/UDP port number |
| <b>Bandwidth Control for Ingress</b> | 100~1,000,000 when the "Unit" is "kbps", and 1~1,000 when the "Unit" is "Mbps"                                                             |
| <b>Bandwidth Control for Egress</b>  | 100~1,000,000 when the "Unit" is "kbps", and 1~1,000 when the "Unit" is "Mbps"                                                             |
|                                      | Per queue / Port shaper                                                                                                                    |
| <b>DiffServ (RF 2474) Remarking</b>  |                                                                                                                                            |
| <b>Storm Control</b>                 | For Unicast, Broadcast and Multicast                                                                                                       |

|                            |                                                |
|----------------------------|------------------------------------------------|
| <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<br>MAC-Based                                                                                                               |
| <b>ACL</b>                                   | Number of rules : up to 256 entries<br>for L2 / L3 / L4<br>L2 : Mac address SA/DA/VLAN<br>L3: IP address SA/DA, Subnet<br>L4: TCP/UDP |
| <b>RADIUS</b>                                | Authentication & Accounting                                                                                                           |
| <b>TACACS+</b>                               | Authentication                                                                                                                        |
| <b>HTTPS, HTTP</b>                           | Supported                                                                                                                             |
| <b>SSL / SSH v2</b>                          | Supported                                                                                                                             |
| <b>User Name Password Authentication</b>     | Local Authentication<br>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                                                                                                                               |
| <b>Web UI</b>                         | Supported                                                                                                                                     |
| <b>Telnet</b>                         | Server                                                                                                                                        |
| <b>SNMP</b>                           | V1, V2c, V3                                                                                                                                   |
| <b>sFlow</b>                          | Supported                                                                                                                                     |
| <b>Modbus/TCP</b>                     | Supports for management and monitoring                                                                                                        |
| <b>SW &amp; Configuration Upgrade</b> | TFTP, HTTP<br>Redundant firmware in case of upgrade failure                                                                                   |
| <b>FTP client</b>                     | Supports for upload/download configuration                                                                                                    |
| <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>BOOTP</b>                          | Supported                                                                                                                                     |
| <b>DHCP</b>                           | Server, Client, Relay, Relay option 82, Snooping                                                                                              |
| <b>RARP</b>                           | Supported                                                                                                                                     |
| <b>IP Source Guard</b>                | Supported                                                                                                                                     |
| <b>Port Mirroring</b>                 | Supported                                                                                                                                     |
| <b>Event Syslog</b>                   | Syslog server (RFC3164)                                                                                                                       |
| <b>Warning Message</b>                | System syslog, e-mail, alarm relay                                                                                                            |
| <b>DNS</b>                            | Client, Proxy                                                                                                                                 |
| <b>IEEE1588 PTP V2</b>                | Supports 5 operating mode in each port :<br>Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master and Slave |
| <b>NTP, SNTP</b>                      | Client                                                                                                                                        |
| <b>LLDP (IEEE802.1ab)</b>             | Link Layer Discovery Protocol<br>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             |



**IPv6 ACL** Number of rules: up to 256 entries  
for L2 / L3 / L4  
L2 : Mac address SA/DA/VLAN  
L3: IP address SIP, Subnet (32bit)  
L4: TCP/UDP

## Others Features

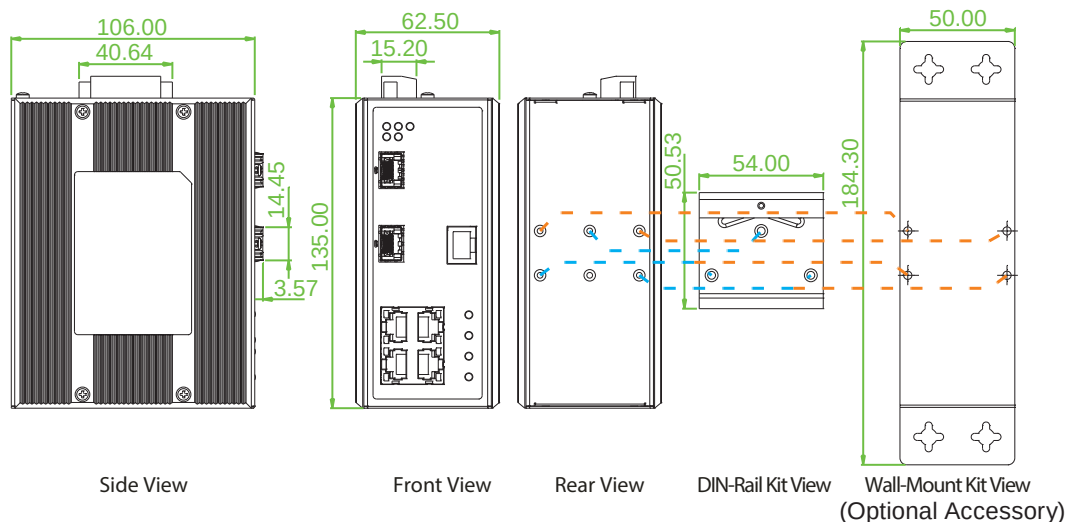
**Green Ethernet** Supports IEEE 802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption  
Determine the cable length and lowering the power for ports with short cables  
Lower the power for a port when there is no link  
LED Power Management : Adjustment LEDs intensity

**Cable Diagnostic** 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  
Power feeding priority  
Total PoE power budget limitation: maximum 120W

## Dimensions



## Ordering Information

| Model Name        | Total Port | RJ45           | SFP             | PoE             |              | Input Power | Certification |           |          |                            |        | Operating Temperature |
|-------------------|------------|----------------|-----------------|-----------------|--------------|-------------|---------------|-----------|----------|----------------------------|--------|-----------------------|
|                   |            | 10/100 Base-TX | 100/1000 Base-X | IEEE802.3 at/af | Power Budget |             | UL60950-1     | EN50121-4 | NEMA TS2 | EN61000-6-2<br>EN61000-6-4 | CE FCC |                       |
| IFS-402GSM-4PH24  | 6          | 4              | 2               | 4               | 120W         | 24/48VDC    | V             | V         | V        | V                          | V      | -10~60°C              |
| IFS-402GSM-4PHE24 | 6          | 4              | 2               | 4               | 120W         | 24/48VDC    | V             | V         | V        | V                          | V      | -40~75°C              |

## Optional Accessories

### ■ 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 all CTC Union industrial grade Ethernet switches for guaranteed compatibility and performance. Best performance can be guaranteed, even in mission-critical applications. (Please see CTC Union's Industrial SFP datasheets for more items and detailed information.)

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

### ■ Industrial Power Supply

NDR-120-48 Industrial Power, Input 90 ~ 264VAC/127 ~ 370VDC, Output 48VDC, 120W, -20 ~ 70°C