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Make network communication more reliable

# IPS716-2GC-4POE

# Industrial PoE Switch User Manual


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## 【Summarize】


IPS716-2GC-4POE is an industrial grade, managed and redundancy PoE Ethernet switch. The IPS716-2GC-4POE switch provides 4 ports Fast Ethernet PoE and 2 ports Combo Gigabit SFP slots or 10/100/1000Base-T(X) ports. The PoE port supports POE function (IEEE802.3af/at). It provided some kinds of advanced network managed function, such as: SW-Ring redundancy ring network, VLAN, LLDP, Trunking, Quality of Service, Speed control, port mirroring and fault alarm. SW-Ring can bring your Ethernet to intelligent redundancy. The -40～75℃ working temperature, can meet all kinds of industrial environment requirement and provide the solution of the economy.


## 【Packing list】

The industrial PoE switch is shipped with the following items. If any of these items are missing or damaged, please contact your customer service representative for assistance.

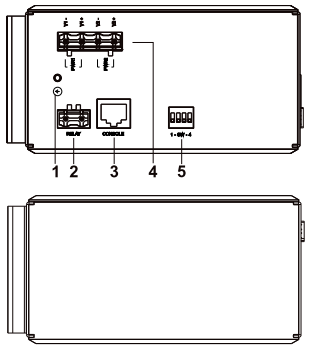
- Industrial PoE switch x 1
- User manual x 1
- Documentation and software CD x 1
- DIN-Rail mounting kit x 1
- Warranty card x 1

## 【Feature】

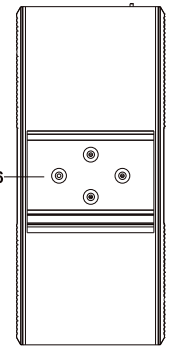
- Support IEEE802.3, IEEE802.3u, IEEE802.3x, IEEE802.3z/ab, IEEE802.1Q, IEEE802.1p, IEEE802.1D/W
- Compatible with both IEEE802.3at(30W) and IEEE802.3af(15.4W)
- Supports 2 Gigabit combo ports and 4 Fast Ethernet PoE ports
- SW-Ring ring network patent technology (Fault recovery time<20ms)
- Support RSTP for network redundancy
- Support static multicast, IGMP Snooping and LLDP
- Support Port based VLAN and IEEE802.1Q VLAN
- Support QoS absolutely and opposite priority
- Support WEB, SNMP and Telnet configuration
- Support port status display, data update.
- Industrial grade design, -40~75℃work temperature
- IP40 protection grade, DIN rail mounted

## 【Panel layout】

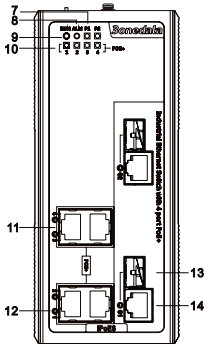
**Vertical view and bottom view**



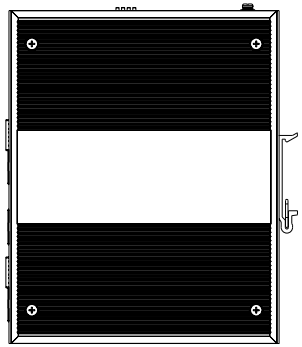

**Rear view**




**Front view**




**Side view**

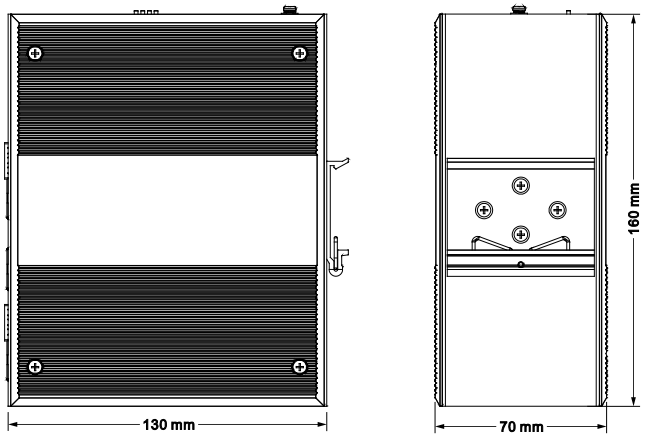


1. Ground screw
2. Terminal block for relay output
3. Console port
4. Terminal block for power input (PWR1, PWR2)
5. DIP switches
6. DIN-Rail mounting kit
7. Power input P1(P2) LED
8. Relay alarm indicator

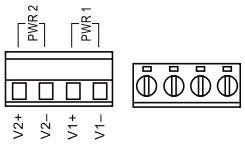
9. System running indicator
10. PoE port Link/ACT indicator
11. 10/100M Base-T(x) PoE port
12. Ethernet port Link/ACT indicator
13. Gigabit SFP port of the combo port
14. Gigabit copper port of the combo port

## 【Dimension】

Unit (mm)

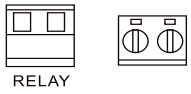



## 【Power supply input】




The product top panel provided 4 bit power supply input terminal block, support DC input. DC power supply input supported redundancy function, provided PWR1 and PWR2 power input, can use for single, and can connect 2 separately power supply system, use 1 pair terminal block connect the device at the same time. If one of the power systems broke, the device can work un-interruptible. Built-in overcorrect protection, Reverse connection protection. Voltage input range is 48VDC (terminal block defined as: V1-、V1+、V2-、V2+). The power supports reverse connection protection.

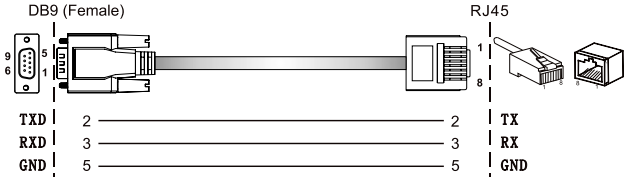
## 【Relay connection】




Relay access terminals in the top panel of the device. Between the two terminal relay, as an open circuit state in normal non alarm state, when there is power alarm information to the closed state. The two terminal block connector are used to detect power failure and network anomaly. The two wires attached to the Fault contacts form a closed circuit when the device port connection disconnect or has lost power supply from one of the DC power inputs. The user can connect the relay to the lamp indicate or buzzer alarm to remind the relevant staff.

## 【Console port】

This product provided 1pcs procedure test port based in serial port. It adopts RJ45 interface, located in top panel, can configure related command through RJ45 to DB9 female cable.




## 【DIP Switch】

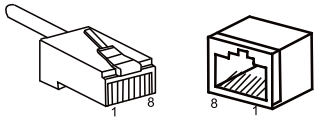



Top panel provided 4 bits DIP switch to do function configure (ON to enable effective), 1 and 4 keep for future function. 2 is recovery default factory. 3 is for upgrade. Please power off and power on when you change the status of DIP switch.

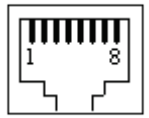
## 【Communication connector】

**10/100/1000BaseT(X) Ethernet port**

The pinout of RJ45 port display as below, connect by UTP or STP. The connect distance is no more than 100m. 1000Mbps is used 120Ω of UTP 5e; 100Mbps is used 120Ω of UTP 5; 10Mbps is used 120Ω of UTP 3, 4, 5.



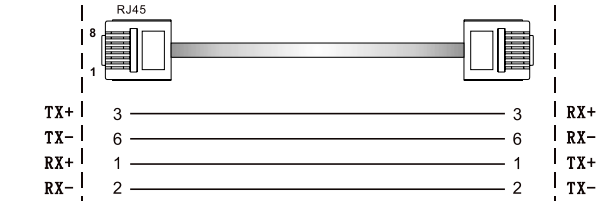
RJ 45 port support automatic MDI/MDI-X operation. That can connect the PC, Server, Converter and HUB. Pin 1, 2, 3, 4, 5, 6, 7, 8 Corresponding connections in MDI. 1→3, 2→6, 3→1, 4→7, 5→8, 6→2, 7→4, 8→5, are used as cross wiring in the MDI-X port of Converter and HUB. In MDI/MDI-X, 100/1000Base-TX PIN defines is as follows:



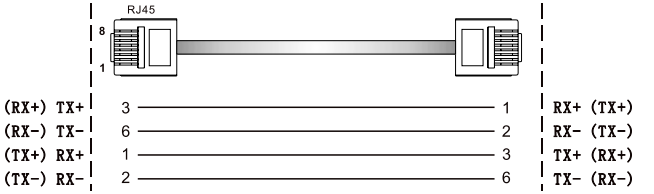
| PIN | MDI | MDI-X |
|---|---|---|
| 1 | BI_DA+/TX+ | BI_DB+/RX+ |
| 2 | BI_DA-/TX- | BI_DB-/RX- |
| 3 | BI_DB+/RX+ | BI_DA+/TX+ |
| 4 | BI_DC+/— | BI_DD+/— |
| 5 | BI_DC-/— | BI_DD-/— |
| 6 | BI_DB-/RX- | BI_DA-/TX- |
| 7 | BI_DD+/— | BI_DC+/— |
| 8 | BI_DD-/— | BI_DC-/— |

Note：10Base-T/100Base-TX, “TX±”transmit data±, “RX±”receive data±, “—”not use.

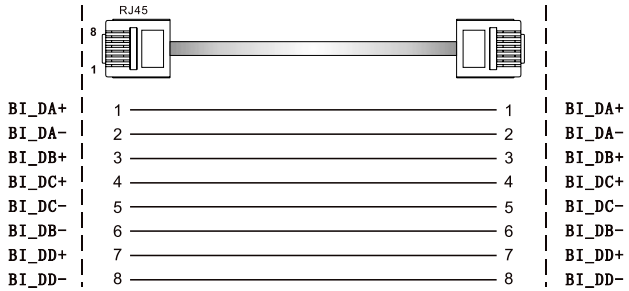
**10/100Base-T(X) MDI (straight-through cable)**



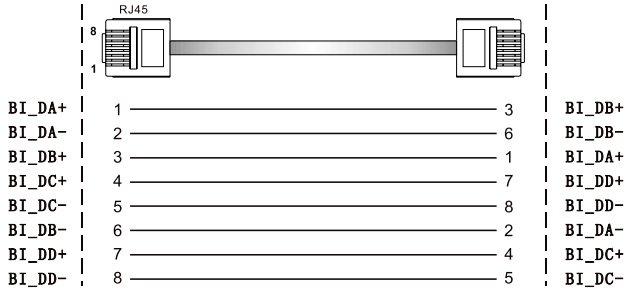

**10/100Base-T(X) MDI-X (Cross over cable)**



**Gigabit MDI (straight-through cable)**




**Gigabit MDI-X (Cross over cable)**

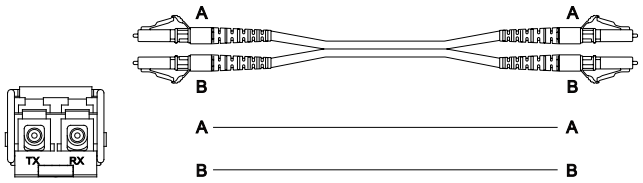



MDI/MDI-X auto connection makes switch easy to use for customers without considering the type of network cable.

**1000BaseSFP fiber port(mini-GBIC)**

1000BaseSFP fiber port adopts gigabit mini-GBIC transmission, can choice different SFP module according to different transfer distance. Fiber interface must use for pair, TX port is transmit side, must connect to RX (receive side). The fiber interface support loss line indicator.

**Suppose**: If you make your own cable, we suggest labeling the two sides of the same line with the same letter (A-to-A and B-to-B, shown as below, or A1-to-A2 and B1-to-B2).




## 【LED Indicator】

LED indictor light on the front panel of product, the function of each LED is described in the table as below.

| System indication LED | | |
|---|---|---|
| **LED** | **State** | **Description** |
| **PWR** (1~2) | ON | Power is being supplied to power input PWR input |
| | OFF | Power is not being supplied to power input PWR input |
| **RUN** | ON/OFF | System is not running well |
| | Blinking | System is running well |
| **ALM** | ON | When the alarm is enabled, power or the port's link is inactive. |
| | OFF | Power and the port's link is active, the alarm is disabled. |
| **Link/ACT** (1~4/G1~G2) | ON | Port connection is active |
| | OFF | Port connection is not active |
| | Blinking | Data transmitted |
| **POE** (1~4) | ON | The PoE device is connected by IEEE802.3af/at standard |
| | OFF | No PoE power output or no PoE connected PoE devices |

## 【Installation】

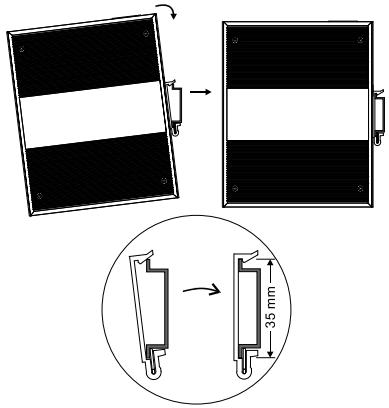
Before installation, confirm that the work environment meet the installation require, including the power needs and abundant space. Whether it is close to the connection equipment and other equipments are prepared or not.

1. Avoid in the sunshine, keep away from the heat fountainhead or the area where in intense EMI.
2. Examine the cables and plugs that installation requirements.
3. Examine whether the cables be seemly or not (less than 100m) according to reasonable scheme.
4. Power: 48VDC power input
5. Environment: Working temperature: -40～75℃
   Storage temperature: -40～85℃
   Relative humidity: 5%～95%

**DIN Rail Installation**

In order to use in industrial environments expediently, the product adopt 35mm DIN-Rail installation, the installation steps as below:

1. Examine the DIN-Rail attachment
2. Examine DIN Rail whether be firm and the position is suitability or not.
3. Insert the top of the DIN-Rail into the slot just below the stiff metal spring.
4. The DIN-Rail attachment unit will snap into place as shown below.




**Wiring Requirements**

Cable laying need to meet the following requirements,

1. It is needed to check whether the type, quantity and specification of cable match the requirement before cable laying;
2. It is needed to check the cable is damaged or not, factory records and quality assurance booklet before cable laying;
3. The required cable specification, quantity, direction and laying position need to match construction requirements, and cable length depends on actual position;
4. All the cable cannot have break-down and terminal in the

middle;

5. Cables should be straight in the hallways and turning;
6. Cable should be straight in the groove, and cannot beyond the groove in case of holding back the inlet and outlet holes. Cables should be banded and fixed when they are out of the groove;
7. Pigtail cannot be tied and swerved as less as possible. Swerving radius cannot be too small (small swerving causes terrible loss of link). Its banding should be moderate, not too tight, and should be separated from other cables;
8. It should have corresponding simple signal at both sides of the cable for maintaining.

## 【Specification】

**Technology**

Standard: Support IEEE802.3, IEEE802.3u, IEEE802.3z/ab, IEEE802.3x, IEEE802.1Q, IEEE802.1p, IEEE802.1D/W

Protocol: ARP, ICMP, TCP, DNS, HTTP, SW-Ring, Telnet, RSTP, SNMP, LLDP

Flow control: IEEE802.3x flow control, back press flow control

POE Standard: IEEE802.3af/at

**Function**

Switch function: SW-Ring, QoS, 802.1QVLAN, RSTP, SNMP, LLDP, Port Trunking, static multicast filter, port mirroring, bandwidth management, broadcast storm control, port flow statistics, upgrade online, up and download configuration file, user name access system

SW-Ring: Support Single, Couple, Chain, Dual homing

**Exchange attribute**

100M forward speed: 148810pps

1000M forward speed: 1488100pps

Transmit mode: store and forward

System exchange bandwidth: 7.8G

MAC address table: 8K

Memory: 1M

**Interface**

Fast Ethernet Port: 10Base-T/100Base-TX auto speed control, Half/full duplex and MDI/MDI-X auto detect

Gigabit Combo port: 1000Base-X SFP slot or 10/100/1000Base-T(X)

Console port: RS-232 (RJ45 connector)

Alarm port: 2 bit 7.62mm terminal block, 1 channel relay alarm output, Current load capacity 1A@24VDC

PoE Pin-out: 1/2(+), 3/6(-)

**Transfer distance**

Twisted cable: 100M (standard CAT5/CAT5e cable)

Multi-mode: 1310nm, 2Km

Single-mode: 1310nm, 20/40/60Km

1550nm, 80/100/120Km

**Power supply**

Input Voltage: 48VDC

Type of input: 4 bits 7.62mm terminal block

Support over-current protection: 4.0A (DC)

Support redundant power, reverse connection protection

**Consumption**

No-load consumption: 5.28W@48VDC

Full-load consumption: 113.4W@48VDC

Single PoE port maximum consumption: 30W@48VDC

**Working environment**

Working temperature: -40～75℃

Storage temperature: -40～75℃

Relative Humidity: 5%~95 %( no condensation)

**Mechanical Structure**

Shell: IP40 protect grade, metal shell

Installation: DIN-Rail mounting

Size (W×H×D): 70mm×160mm×130mm

Weight: 1.07kg

**Industry Standard**

EMI: FCC Part 15, CISPR (EN55022) class A

EMS: EN61000-4-2 (ESD), Level 3

EN61000-4-4 (EFT), Level 3

EN61000-4-5 (Surge), Level 3

Shock: IEC 60068-2-27

Free fall: IEC 60068-2-32

Vibration: IEC 60068-2-6

**Certification**

CE, FCC, RoHS, UL508 (Pending)

**Warranty:** 5 years