IT-ES7120-IM-4GS Series

Managed Industrial Ethernet Switch

User Manual

Intellisystem Technologies S.r.l.

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【Summarize】

IT-ES7120-IM-4GS series is an industrial grade, managed and redundancy Ethernet switch. The IT-ES7120-IM-4GS-P (12-48VDC) industrial Ethernet switches consists of 16 Ethernet ports and 4 gigabit ports. The IT-ES7120-IM-4GS-2F-P (12-48VDC) consists of 14 Ethernet ports, 2 Fiber ports and 4 gigabit ports. The IT-ES7120-IM-4GS-4F-P (12-48VDC) consists of 12 Ethernet ports, 4 Fiber ports and 4 gigabit ports that provide an economical solution for your industrial Ethernet connection. It supports auto flow control, full/half duplex mode and MDI/MDI-X self-adaption.

SW-Ring™ is designed as rapid redundancy network arithmetic. It provided recover technology for fault of rapid redundant network, the recovery time<20ms. Product accorded to CE, FCC standard and Industry grade 4 design requirement, support 1 channel power input and 1 channel relay alarm output, and -40～75℃ working temperature, can meet all kinds of Industrial environment requirement. It can use in power, water conservancy, transportation area etc.

【Packing list】

Please check the packaging and accessories by your first using.

- Industrial Ethernet switch x 1
- User manual x 1
- CD x 1
- Certificate of quality x 1
- Warranty card x 1

Please inform us or our distributor if your equipments have been damaged or lost any accessories, we will try our best to satisfy you.

【Features】

High performance network exchange technology

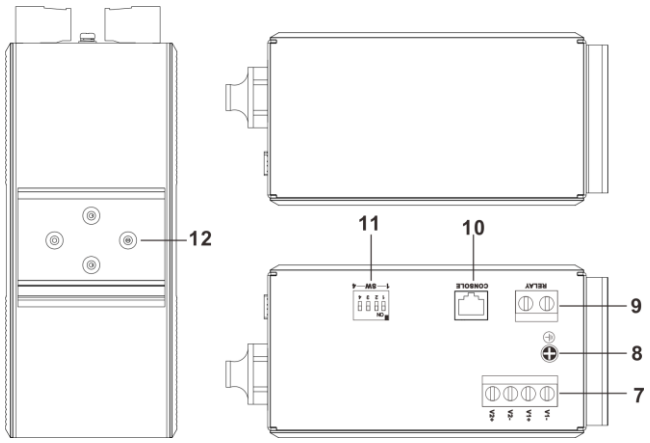
- Support IEEE802.3, IEEE802.3u, IEEE 802.3x, IEEE802.3z, IEEE802.1Q, IEEE802.1p, IEEE802.1D, IEEE802.1W
- SW-Ring ring network patent technology (Fault recovery time<20ms）
- Support RSTP, way exchange time<50ms
- Support WEB configuration
- Support Port based VLAN and IEEE 802.1Q VLAN
- Support absolutely and opposite priority, support IEEE802.1P, DSCP priority
- Store and Forward switching process type
- Support port status display, data update.
- Support MAC address auto-learning, auto-aging
- Support 8K MAC address
- Support 12.8Gbps backboard bandwidth
- Support redundancy power supply (12～48VDC)
- Support 1 channel relay alarm output

Reliable Industrial grade design

- Industrial grade 4 design, -40-75℃ work temperature
- No fan deign
- IP40 protection grade
- DIN rail and wall mount

【Panel layout】

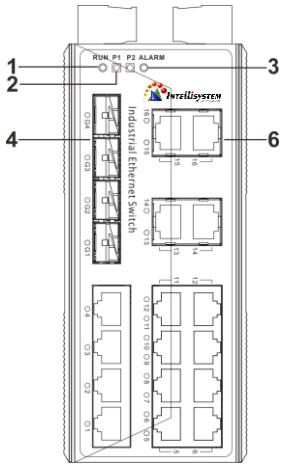
IT-ES7120-IM-4GS series



Rear view　　Top view and below view

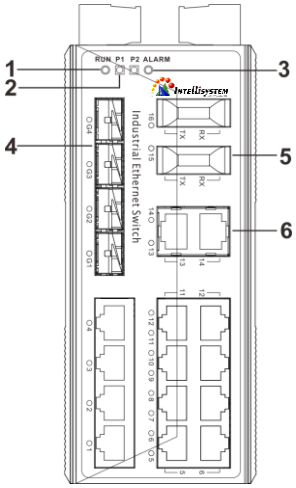
IT-ES7120-IM-4GS-P (12-48VDC)

1. Systems running LED
2. The power LED
3. Relay alarm LED
4. 1000Base-FX SFP ports
6. 10/100BaseT(X) (RJ45) ports
7. Power input terminal block
8. Ground screw
9. Relay output terminal block
10. Console port
11. DIP switch
12. DIN-Rail mount



IT-ES7120-IM-4GS-2F-P (12-48VDC)

1. Systems running LED
2. The power LED
3. Relay alarm LED
4. 1000Base-FX SFP ports
5. 100Base-FX ports
6. 10/100BaseT(X) (RJ45) ports
7. Power input terminal block
8. Ground screw
9. Relay output terminal block
10. Console port
11. DIP switch
12. DIN-Rail mount



IT-ES7120-IM-4GS-4F-P (12-48VDC)

1. Systems running LED
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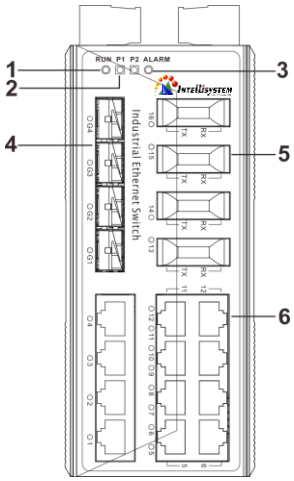
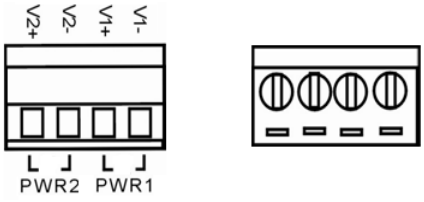


【Power supply input】

IT-ES7120-IM-4GS series front 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 12～48VDC（terminal block defined as: V1-、V1+、V2-、V2+）.



Front view Top view

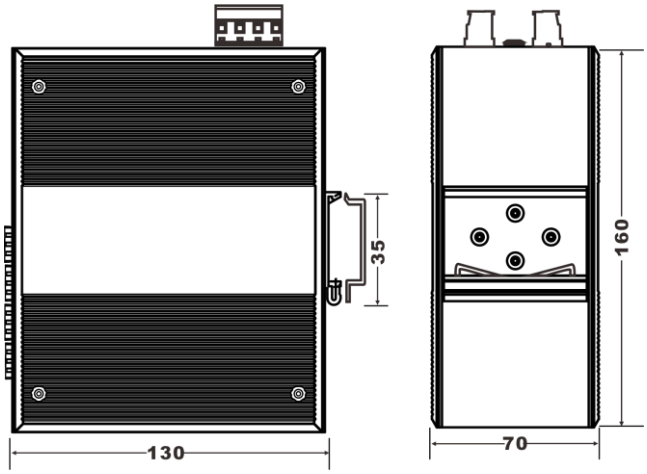
Important notice:

1. Power ON operation: first of all, insert power cable's terminal block into device's power port, then insert power supply plug into power source
2. Power OFF operation: First off all, unpin power plug, then strike the terminal block, please take care of operation sequence.

【Appearance and dimensions】

This series of dimensions length width height, between product series port number is different.

Unit（mm）

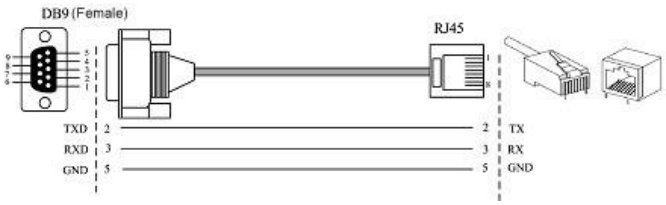


【Relay connection】

Relay access terminals in the top panel of the device. The two terminal block connector are used to detect both power failure and port failure. The two wires attached to the Fault contacts form a close circuit when the device has lost power supply from one of the DC power inputs or one of the ports is failure.

【Console port】

This series 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.



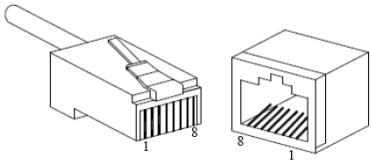
【DIP switch】

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

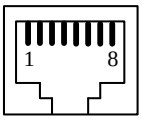
【Communication connector】

10/100BaseT(X) Ethernet port

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



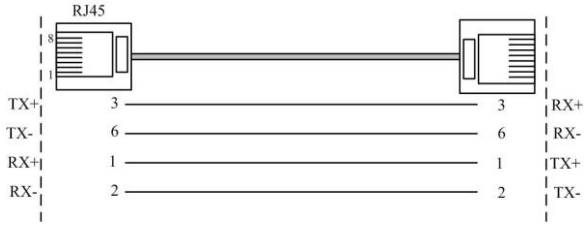
RJ 45 port support automatic MDI/MDI-X operation. Can connect the PC, Server, Converter and HUB .Pin 1,2,3,6 Corresponding connections in MDI. 1→3, 2→6, 3→1, 6→2 are used as cross wiring in the MDI-X port of Converter and HUB. 10Base-T/100Base-TX are used in MDI/MDI-X, the define of Pin in the table as below.



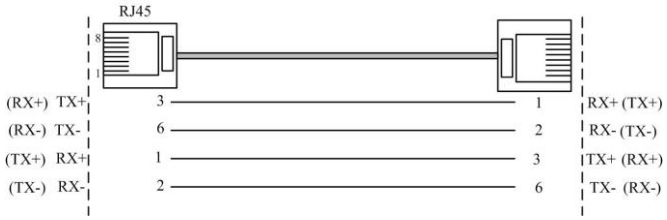
NO.	MDI signal	MDI-X signal
1	TX+	RX+
2	TX-	RX-
3	RX+	TX+
6	RX-	TX-
4, 5, 7, 8	—	—

Note：“TX±”Transmit Data±，“RX±”Receive Data±，“—”Not Use.

MDI (straight-through cable)



MDI-X (Cross-over cable)

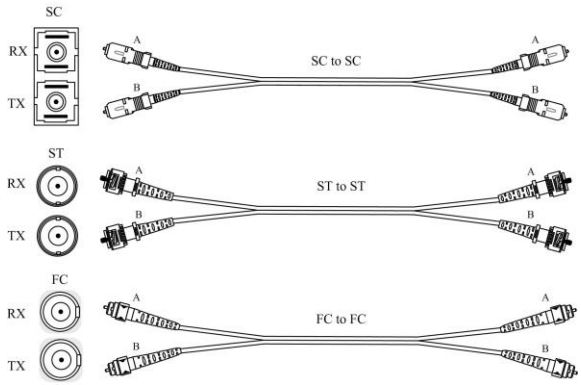


MDI/MDI-X auto connection makes switch easy to use for customers without considering the type of network cable.

100Base-FX Fiber port

100Base-FX full-duplex SM or MM port, SC/ST/FC type .The fiber port must be used in pair, TX (transmit) port connect remote switch's RX (receive) port; RX (receive) port connect remote switch's TX (transmit) port.

The optical fiber connection supports the line to instruct enhance the reliability of network effectively.

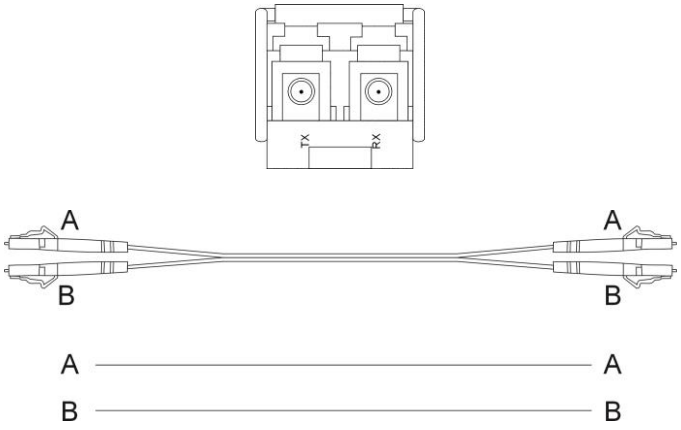


Suppose: If you make your own cable, we suggest labeling the two sides of the same line with the same letter (A-to-A and B-to-B, shown as below, or A1-to-A2 and B1-to-B2).

1000SFP fiber port (mini-GBIC)

1000Base-FX SFP 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 Indicators】

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 (P1, P2)	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
Link/ACT (1~16/G1~G4)	ON	Port connection is active
	Blinking	Data transmitted
	OFF	Port connection is not active
ALARM	ON	Has alarm information
	OFF	No alarm information

【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: 12~48VDC power input

5. Environment： working temperature -40～75℃
Storage Temperature: -40～85℃
Relative humidity 5%～95%

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. User cable should be separated from the power lines. Cables, power lines and grounding lines cannot be overlapped and mixed when they are in the same groove road. When cable is too long, it cannot hold down other cable, but structure in the middle of alignment rack;
8. 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;
9. It should have corresponding simple signal at both sides of the cable for maintaining.

【Specifications】

Technology

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

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

Functions

Switch function: SW-Ring, QOS, 802.1QVLAN, RSTP, SNMP, 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 attributes:

100M forward speed: 148810pps
1000M forward speed: 1488100pps
100M maximum filter speed: 148810pps
1000M maximum filter speed: 1488100pps
Transmit mode: store and forward
System exchange bandwidth: 12.8G
MAC address table: 8K
Memory: 4M

Interfaces

Electric port: 10Base-T/100Base-TX auto speed control, Half/full duplex and MDI/MDI-X auto detect

100M optic fiber port: 100Base-FX, SC/ST/FC connector, support single mode (20/40/60/80Km optional), multi-mode (2Km), wavelength:
1310nm, 1550nm
1000M fiber port: 1000Base-FX（LC interface）

Console port: debug serial port carry out CLI command

Alarm port: 2 bit terminal block

1 channel relay alarm output

Transfer distance:

Twisted cable: 100M（ standard CAT5/CAT5e cable）
Multi-mode: 1310nm, 2/5Km
Single-mode: 1310nm, 20/40/60Km

1550nm, 80/100/120Km

LED indicators:

Run indicator: Run

Interface indicator: Link (1~16/G1~G4)

Power supply indicator: PWR (P1, P2)

Alarm indicator: Alarm

Power supply

Input voltage: 12~48VDC
Type of input: 4 bit terminal block
Overload Current Protection: 4.0A
Support DC dual power supply alarm input
Support DC dual power supply redundancy

Consumption

➢ IT-ES7120-IM-4GS-P (12~48VDC):

Unload consumption: 6.48W@24VDC

Full load consumption: 11.93W@24VDC

➢ IT-ES7120-IM-4GS-2F-P (12~48VDC):

Unload consumption: 7.47W@24VDC

Full load consumption: 12.6W@24VDC

➢ IT-ES7120-IM-4GS-4F-P (12~48VDC):

Unload consumption: 9.05W@24VDC

Full load consumption: 14.35W@24VDC

Working environment:

Working temperature: -40～75℃

Storage temperature:-40～85℃

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

Mechanical Structure:

Shell: IP40 protect grade, metal shell

Installation: DIN rail and wall mount

Size（W×H×D）：160mm×70mm×130mm

Industry Standards:

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

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

EN61000-4-3 (RS), Level 3

EN61000-4-4 (EFT), Level 4

EN61000-4-5 (Surge), Level 4

EN61000-4-6 (CS), Level 3

EN61000-4-8, Level 5

Shock: IEC 60068-2-27

Free fall: IEC 60068-2-32

Vibration: IEC 60068-2-6

Certifications

CE, FCC, RoHS, UL508 (Pending)

Warranty: 5 years