# IT-ES618-IM-4D Series
# Industrial Ethernet Switch
# User Manual

## 【**Summarize**】

IT-ES618-IM-4D series is an industrial, management, redundant industrial Ethernet switch and integrate 4 ports serial device server. It included

1. IT-ES618-IM-4D(RS-232)-P(12/48VDC),

Support 8 ports 10/100Base T(X) and 4 ports RS-232,

2. IT-ES618-IM-4D(RS-485)-P(12/48VDC),

Support 8 ports 10/100BaseT(X) and 4 ports RS-485/422,

3. IT-ES618-IM-4F-4D(RS-485)-P(12/48VDC),

Support 1-4 ports is 10/100BaseT(X) Ethernet, 5-8 ports is 100BaseFX fiber port and 4 ports RS-485/RS-422,

4. IT-ES618-IM-2F-4D(RS-232)-P(12/48VDC),

Support 1-6 ports is 10/100BaseT(X) Ethernet, 7-8 ports is 100BaseFX fiber port and 4 ports RS-232,

5. IT-ES618-IM-4F-4D(RS-232)-P(12/48VDC),

Support 1-4 ports is 10/100BaseT(X) Ethernet, 5-8 ports is 100BaseFX fiber port and 4 ports RS-232,

6. IT-ES618-IM-2F-4D(RS-485)-P(12/48VDC).

Support 1-6 ports is 10/100BaseT(X) Ethernet, 7-8 ports is 100BaseFX fiber port and 4 ports RS-485/422.

It adopted SW-Ring redundant technology (Recovery time<20ms), users can set the redundant easily to increase network reliability, furthermore. It adopted no fan, low power consumption design, IP40, corrugate high strength iron shell, the performance is more steadily.

It accorded with CE, FCC standard and Industrial 4 class, DIN rail installation and wide operating temperature (-40~85°C), it can satisfied some kinds of industrial environment, it can provide reliable and quickly solution for your Ethernet device.

【**Packing list**】

Please check the packaging and accessories by your first

using.

- Industrial Ethernet switch（IT-ES618-IM-4D series）x 1
- User manual x 1
- CD x 1
- Certificate of quality x 1
- Warranty card x 1

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Please inform us or our distributor if your equipment have been

damaged or lost any accessories, we will try our best to satisfy

you.

【**Features**】

- IEEE802.3, IEEE802.3u, IEEE 802.3x, IEEE802.1Q, IEEE802.1p, IEEE802.1D, IEEE802.1W
- Support SW-Ring™ redundant network patent technology (Faulty recovery time<20ms)
- Support IEEE802.1Q VLAN configuration,

  Control broadcast storm effectively
- Support 802.1p _QOS
- Support RSTP
- Support SNMP
- Support IGMP snooping, static multicast filter, port trunking and port mirroring
- Support port bandwidth limited function, optimize bandwidth utilize
- Support 4 port RS-232/ RS-485/ RS-422 serial device server
- Support based on socket application access
- Support Sever, Client, UDP based mode and Sever, UDP advanced mode
- Support Windows serial driver procedure mode

- Support TCP, UDP, ARP, ICMP and DHCP protocol
- Support cross-gateway and cross-router communication
- Specific serial self-adapt function (Realcom)
- Support Web, CLI, Telnet management
- Support 2K MAC address table
- Support 2 power supply input and 1 relay alarm output
- Support port line and redundant network faulty/unusual, local and remote alarm
- High strength iron shell, IP40 protection
- Industrial 4 class design
- Redundant 24VDC power supply input(12~48VDC)
- -40~85℃ working temperature
- DIN-rail, wall mounting installation

## 【Panel Layout】
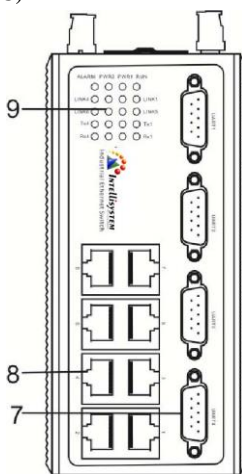
**IT-ES618-IM-4D series**
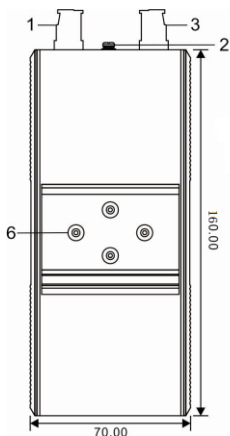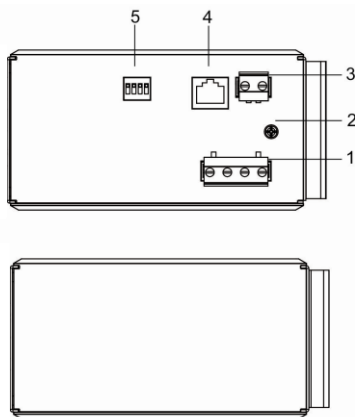


Back view                    Top and below view
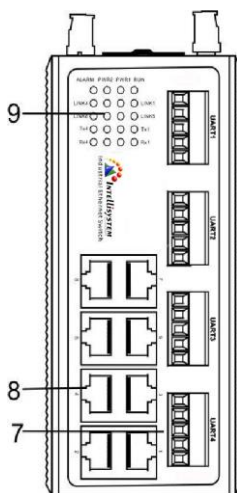
**IT-ES618-IM-4D (RS-232)-P(12/48VDC)**

1. PWR1/PWR2 power supply

2. Ground screw

3. Relay output terminal block

4 Console port

5. DIP switch (4 bits)

6. DIN-Rail

7. RS-232 port

8. 10/100Base-TX RJ45 port

9. LED indicator
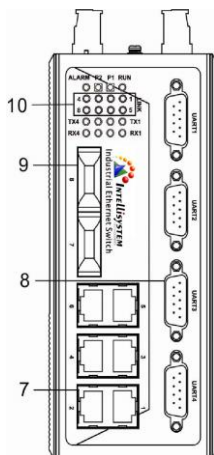
Front view

**IT-ES618-IM-4D(RS-485)-P(12/48VDC)**

1. PWR1/PWR2 power supply

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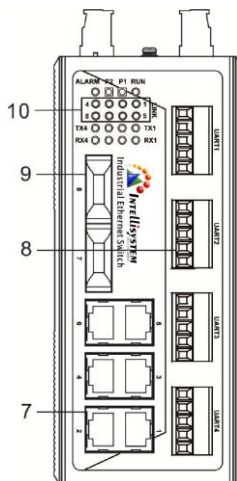Front     view

**IT-ES618-IM-2F-4D(RS-232)-P(12/48VDC)**

1. PWR1/PWR2 power supply

2. Ground screw

3. Relay output terminal block

4 Console port

5. DIP switch (4 bits)

6. DIN-Rail

7. RS-232 port

8. 10/100Base-TX RJ45 port

9. 100Base-FX fiber port

10. LED indicator

Front     view

**IT-ES618-IM-2F-4D(RS-485)-P(12/48VDC)**

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2. Ground screw

3. Relay output terminal block

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Front view

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Front view

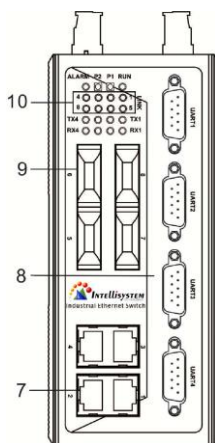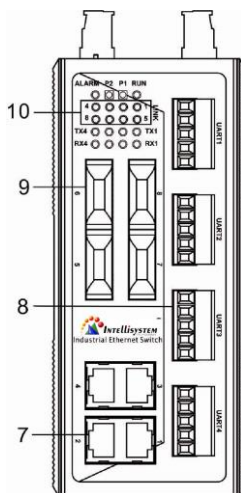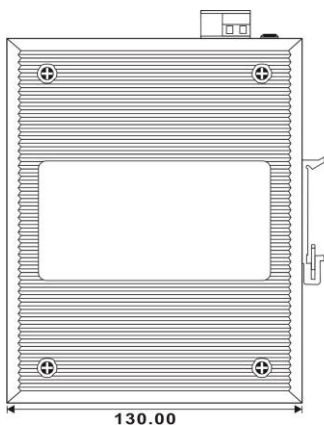**IT-ES618-IM-4F-4D(RS-485)-P(12/48VDC)**

1. PWR1/PWR2 power supply

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3. Relay output terminal block

4 Console port

5. DIP switch (4 bits)

6. DIN-Rail

7. RS-485/422 port

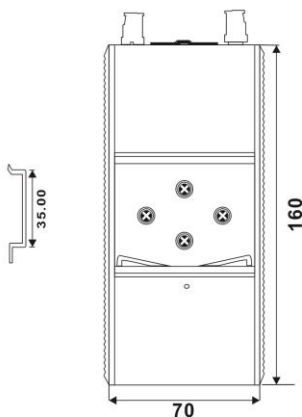8. 10/100Base-TX RJ45 port

9. 100Base-FX fiber port

10. LED indicator

Front view
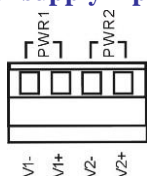
## 【Appearance and dimensions】

**Unit (mm)**

35.00

130.00

Front view

160

70

Back view

# 【Power supply input】
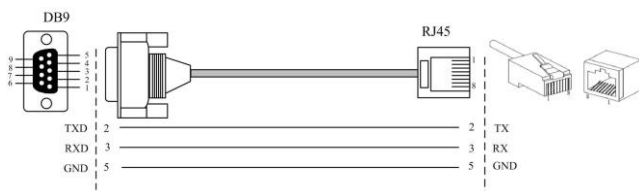


Vertical view                    Top view

IT-ES618-IM-4D series provide 4 bits industry terminal block (V1-, V1+, V2-, V2+）), V-, V+ is 12～48VDC power supply input.

IT-ES618-IM-4D series 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 system broke, the device can work un-interruptible. Built-in over current protection, Reverse connection protection

# 【Console port】

IT-ES618-IM-4D series provided 1pcs procedure test port based in serial port. It adopts RJ45 interface, located in top panel, can configure the CLI command through RJ45 to DB9 female cable.
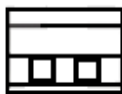
## 【Relay connection】



RELAY

Vertical view          Top view

The relay owns two contacts of the terminal block on the top panel of IT-ES618-IM-4D series. It is used to detect both power failure and port failure. The two wires attached to contacts form an open circuit when:

(1) IT-ES618-IM-4D series has lost power supply from one of the DC power inputs.

(2) One of the ports is failure.

## 【DIP switch】



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

## 【Communication connector】

IT-ES618-IM-4D series provided

IT-ES618-IM-4D(RS-232)-P(12/48VDC),

Support 8 ports 10/100Base T(X) and 4 ports RS-232,

IT-ES618-IM-4D(RS-485)-P(12/48VDC),

Support 8 ports 10/100BaseT(X) and 4 ports RS-485/422,

IT-ES618-IM-4F-4D(RS-485)-P(12/48VDC),

1-4 ports is 10/100BaseT(X) Ethernet, 5-8 ports is 100BaseFX fiber port and 4 ports RS-485/RS-422,

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1-6 ports is 10/100BaseT(X) Ethernet, 7-8 ports is 100BaseFX fiber port and 4 ports RS-232,

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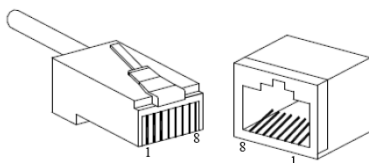
IT-ES618-IM-2F-4D(RS-485)-P(12/48VDC).

1-6 ports is 10/100BaseT(X) Ethernet, 7-8 ports is 100BaseFX fiber port and 4 ports RS-485/422,

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

The pinout of RJ45 port display as below, connect by UTP or STP. The connect distance is no more than 100m. 100Mbps is used 100 $\Omega$ of UTP 5, 10Mbps is used 100 $\Omega$ 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 connection 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.
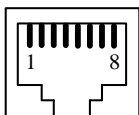
| NO. | MDI signal | MDI-X signal |
|-----|-----------|--------------|
| 1   | TX+       | RX+          |

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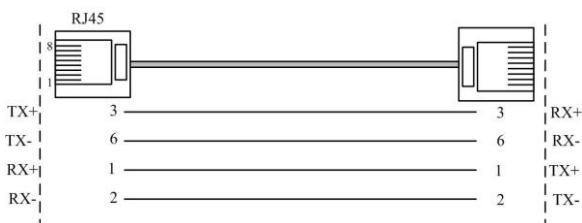
**MDI-X (Cross-over cable)**
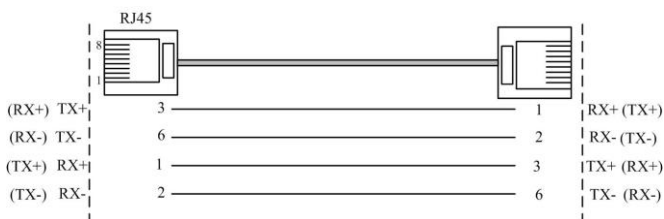


MDI/MDI-X auto connection makes IES5028-4GS-2F easy to use for customers without considering the type of network cable.


**100Base-FX Fiber port**


100Base-FX full-duplex SM or MM port, SC/ST 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).



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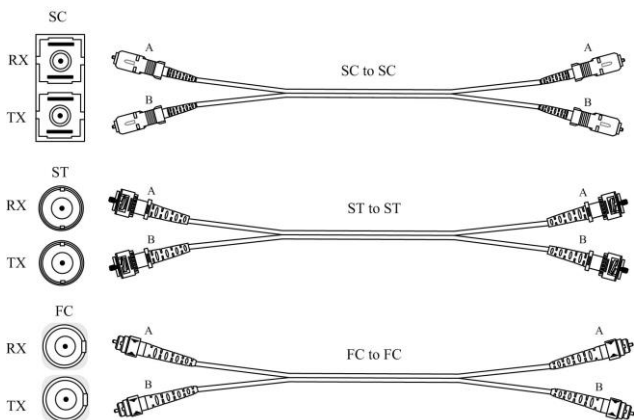
**RS-232 port:**

| PIN | RS-232 |
|-----|--------|
| 1 | DCD |
| 2 | RxD |
| 3 | TxD |
| 4 | DTR |
| 5 | GND |
| 6 | DSR |
| 7 | RTS |
| 8 | CTS |
| 9 | — |
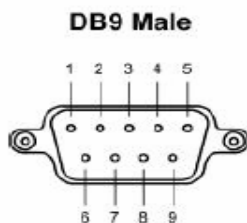
DB9 male (RS-232)

**RS-485 port:**

| PIN | RS-485 |
|-----|--------|
| 1 | D+ |
| 2 | D- |
| 3 | / |
| 4 | / |
| 5 | / |

**RS-422 port:**

| PIN | RS-422 |
|-----|--------|
| 1 | T+ |
| 2 | T- |
| 3 | GND |
| 4 | R+ |
| 5 | R- |
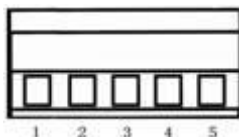


RS-485/422

## 【LED indicators】

IT-ES618-IM-4D series LED indicator light on the front panel .the function of each LED is described in the table as below:

| System status LED | | |
|---|---|---|
| **LED** | Indicator | Description |
| **PWR1** | ON | P1 connection regularly |
| | OFF | P1 Power supply have no connection or unwonted |
| **PWR2** | ON | P2 connection regularly |
| | OFF | P2 Power supply have no connection or unwonted |
| **Alarm** | ON | Power, port have alarm |
| | OFF | Power, port have no alarm |
| **Run** | ON | Device unwonted |
| | Blinking | Device working steadily, Blinking per second |
| **Link/Act** | ON | Established effective network connection |
| | Blinking | Network in activity status |
| | OFF | Did not establish effective network connection |
| **TX** | Blinking | Transmit data unwonted |
| | OFF | Transmit data wonted |
| **RX** | Blinking | Receive data unwonted |
| | OFF | Receive data wonted |

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## 【**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 equipment 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. Screw, nut, tool provide by yourself.
5. Power: redundant 12-48VDC o power input
6. Environment: working temperature -40～85℃

Relative humidity 5%～95%

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### DIN rail installation

In order to use in industrial environments expediently, IT-ES618-IM-4D series adopt 35mm DIN-Rail installation, the installation steps as follows:

1. Examine the DIN-Rail attachment

2. Examine DIN Rail whether be firm and the position be 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.
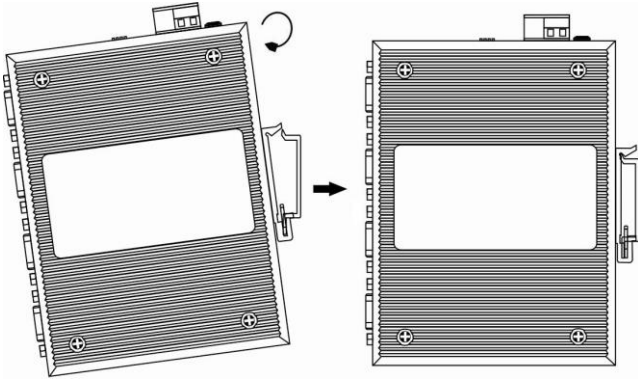
**Wiring Requirements**

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. 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.

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## 【Specifications】

**Technology**

Standard: IEEE802.3, IEEE802.3u, IEEE 802.3x, IEEE802.1Q, IEEE802.1p, IEEE802.1D, IEEE802.1W

Protocol: ARP, ICMP, TCP, UDP, DHCP, DNS, HTTP, Telnet, SW-Ring™

Flow control: IEEE802.3x, back pressure control

**Functions**

Function: SW-Ring™, QOS, 802.1Q VLAN, port-trunking, static multicast filter, port mirroring, Broadcast storm control, flow statistics, upgrade online, up and download configuration file, user name access system.

SW-Ring™: Single, Couple, Chain, Dual homing ring.

Serial device server: 4 port serial device sever, each port support 4pcs TCP or UDP session connection

**Interfaces**

100M Ethernet: 10/100Base-TX self-adapt RJ45 port.

100M fiber port: 100Base-FX (SC/ST/FC)

Console port: Procedure debug (RS-232), RJ45

Alarm port: 2 bit 7.62mm terminal block,

       1 channel relay alarm output

**Serial**

RS-232 signal:TXD,RXD,RTS,CTS,DTR,DSR,GND

RS-422 signal: T+, T-, R+, R-, GND

RS-485 signal: D+, D-, GND

Parity: None,Even,Odd,Space,Mark

Data bit: 5bit, 6bit, 7bit, 8bit

Band rate; 300～115200bps

Direction control: RS485 side adopt ADDC technology,

auto detect and control data transfer direction

Loading: RS-485/422 side support 32 nodes loop back

Protection: 2KV isolation, 15KV static protection.

Connector: RS232: DB9 male, RS485/4225 bit terminal block

**Transfer distance**

Twisted cable: 100m (CAT5/CAT5e)

Multi mode fiber: 1310nm, 2Km

Single mode fiber: 1310nm, 20K, 1310nm, 40Km

                1310nm, 60K, 1550nm, 80Km

RS-485/422: 1200m

RS-232: 15m

**Exchange attributes**

100M transmit speed: 148810pps

Transfer: Store and forward

System exchange bandwidth: 1.6 G

Buffer memory: 1MKbits

Support 2K MAC address table

**LED indicators**

Power supply indicator: PWR

Alarm indicator: Alarm

System indicator: Run

Ethernet port indicator: Link/Act（1-8）

Serial port indicator: TX (1-4), RX (1-4)

**Power supply**

Input voltage: 24VDC (12~48VDC)

Terminal block: 4 bits 7.62mm terminal block

➢ IT-ES618-IM-4D（RS-232）-P(12/48VDC)

None load consumption: 1.5 W@24VDC

Full load consumption: 3.5 W@24VDC

➢ IT-ES618-IM-4D（RS-485）-P(12/48VDC)

None load consumption: 1.8 W@24VDC

Full load consumption: 3.9 W@24VDC

➢ IT-ES618-IM-4F-4D（RS-485）-P(12/48VDC)

None load consumption: 4.8W@24VDC

Full load consumption:   6.9W@24VDC

➢ IT-ES618-IM-2F-4D（RS-232）-P(12/48VDC)

None load consumption: 3.2W@24VDC

Full load consumption: 5.0W@24VDC

➢ IT-ES618-IM-2F-4D（RS-485）-P(12/48VDC)

None load consumption: 3.576W@24VDC

Full load consumption: 5.352W@24VDC

➢ IT-ES618-IM-4F-4D（RS-232）-P(12/48VDC)

None load consumption: 4.752W@24VDC

Full load consumption: 6.144W@24VDC

Support dual redundant power supply

Support inside over-current 4.0A protection

Support opposite connection protection

**Mechanical**

Shell: IP40, high strength iron shell.

Installation: DIN Rail

Dimensions（W×H×D: 160 mm×70mm×130mm

Weight: 1021g

**Environmental**

Operating Temperature: -45°C to 85°C

Storage Temperature: -45°C to 85°C

Relative Humidity: 10 to 95% (non-condensing)

**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(PFM), Level 5

Shock: IEC 60068-2-27

Free fall: IEC 60068-2-32

Vibration: IEC 60068-2-6

**Warranty**

Warranty time: 5 years

**Certification**

CE, FCC, RoHS, UL508 (Pending)