IFS MC252-4P-1S and NS2052-4P-1T User Manual

Package contents

Unless specified, the term "**industrial PoE+ switch**" mentioned in this user manual refers to the MC252-4P-1S and the NS2052-4P-1T.

Open the box of the industrial PoE+ switch and carefully unpack it. The box should contain the following items:

- Industrial PoE+ switch × 1
- Dust cap × 4
- Wall-mount kit × 1

If any of these are missing or damaged, please contact your dealer immediately. If possible, retain the carton including the original packing material, and use them again to repack the product in case there is a need to return it to us for repair.

Product features

Physical port

Model Name	10/100 Mbps RJ45 Ports	100FX SFP Slots	PoE Ports
NS2052-4P-1T	5	-	4
MC252-4P-1S	4	1	4

Interface

- **NS2052-4P-1T**: Four 10/100BASE-TX Fast Ethernet IEEE 802.3at PoE+ RJ45 copper ports (Port-1 to Port-4)
- **MC252-4P-1S**: Four 10/100BASE-TX Fast Ethernet RJ45 copper ports with IEEE 802.3at PoE+ Injector (Port-1 to Port-4)
- **NS2052-4P-1T**:One 10/100BASE-TX Fast Ethernet non-PoE RJ45 copper port.
- **MC252-4P-1S**: One 100BASE-FX SFP interface
- One terminal block for master and slave power input (Power Range: 12~48 VDC redundant power).
- Hardware DIP switch for Standard, VLAN, and Extend mode selection; the Extend mode features a 25 W PoE transmission distance of 250 m at a speed of 10 Mbps (Port-1 to Port-4 only).

Power over Ethernet

- Complies with IEEE 802.3at Power over Ethernet Plus, end-span PSE
- Backward compatible with IEEE 802.3af Power over Ethernet
- Up to four ports of IEEE 802.3af/at devices powered
- Up to 120 W PoE budget
- Supports PoE power up to 36 W for each PoE port
- Each port supports 54 VDC power to PoE powered device
- Auto detects powered device (PD)
- Circuit protection prevents power interference between ports
- Remote power feeding up to 100 m in standard mode with 250 m in extend mode (switch selectable)

Switching

- Hardware-based 10/100 Mbps (half/full duplex), auto-negotiation, and auto MDI/MDI-X
- Features Store-and-Forward mode with wire-speed filtering and forwarding rates
- IEEE 802.3x flow control for full duplex operation and back pressure for half duplex operation
- 2K MAC address table size
- 10K jumbo frame
- IEEE 802.1Q VLAN transparency
- Automatic address learning and address aging
- Supports CSMA/CD protocol

Industrial case and installation

- IP40 metal case
- DIN-rail, wall-mount design
- 12~48 VDC redundant power with polarity reverse protect function
- Fault alarm for power input failed
- Supports 5 KV DC Ethernet ESD protection
- -40 to 75°C operating temperature
- Four real-time PoE power usage indicators

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Product description

Cost-effective full PoE+ power solution ideal for hardened environment

Featuring Plug and Play designed to be installed in heavy industrial demanding environments, the industrial PoE+ switches are industrial-grade, DIN-rail type unmanaged Fast Ethernet PoE+ switches with four 10/100BASE-TX PoE+ ports, with one additional Fast Ethernet (NS2052-4P-1T) or 100BASE-FX fiber optic (MC252-4P-1S) interface for video uplink. The industrial PoE+ switches are designed with a redundant power system and operate reliably, stably, and quietly in any hardened environment without affecting performance. It comes with a total power budget of up to 120 W for different kinds of PoE applications and an operating temperature ranging from -40 to 75°C in a rugged IP40 metal housing.

Extension of ethernet data transmission distance

The industrial PoE+ switch has a built-in solid DIP switch providing Standard, VLAN, and Extend operation modes. By default, the industrial PoE+ switch operates as a normal IEEE 802.3af/at PoE+ switch in the “Standard” operation mode.

The "VLAN" operation mode features with port-based VLAN function helps to prevent the IP camera’s multicast or broadcast storm from influencing each other.

In the “Extend” operation mode, the industrial PoE+ switch operates on a per-port basis at 10 Mbps full duplex operation and can support 25 W PoE power output over a distance of up to 250 meters, overcoming the 100-meter limit on Ethernet UTP cable.

Convenient and reliable power system

To facilitate the 802.3at PoE+ usage with commonly used 12~48V DC power input for transportation and industrial-lev el applications, the industrial PoE+ switch adopts 12~48 VDC to 54V power boost technology to solve power source issues but does not require special power supplies. The industrial PoE+ switch provides an integrated power solution with a wide range of voltages (12~48 VDC) for worldwide operability. It also provides dual-redundant, reversible polarity 12~48 VDC power supply inputs for high availability applications.

Environmentally hardened design

With the IP40 metal industrial case, the industrial PoE+ switch provides a high level of immunity against electromagnetic interference and heavy electrical surges which are usually found on plant floors or in curb-side traffic control cabinets without air conditioning. It features a ventilated construction in which a cooling fan is not necessary, thereby making its operation noiseless. Being able to operate under the temperature range from -40 to 75°C, the industrial PoE+ switch can be placed in almost any difficult environment.

Robust protection

The industrial PoE+ switch provides contact discharge of ±5 KV DC and air discharge of ±5 KV DC for Ethernet ESD protection. It also supports ±5 KV surge immunity to improve product stability and protects users’ networks from devastating ESD attacks, making sure the flow of operation does not fluctuate.

Hardware introduction

Switch front panel

Figure 1: Industrial PoE+ switch front panels

NS2052-4P-1T MC252-4P-1S

Fast Ethernet TP interfaces

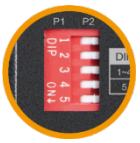
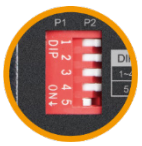
10/100BASE-TX copper, RJ45 twisted-pair: Up to 100 meters.

100BASE-FX SFP slot (MC252-4P-1S)

100BASE-FX mini-GBIC slot, SFP (Small Factor Pluggable) transceiver module: From 2 kilometers (multi-mode fiber) to 20/40/60 kilometers (single-mode fiber).

DIP switch

The industrial PoE+ switch provides one DIP switch for Standard, VLAN, and Extended mode selections. The detailed descriptions are shown in the following table.

DIP Switch Mode	Function
Standard 	In this mode, the industrial PoE+ switch operates as a general switch and all PoE ports operate at 10/100Mbps auto-negotiation.
VLAN 	In this mode, the industrial PoE+ switch operates as a VLAN isolation switch and 1. Port 1 to port 4 will isolate respectively. 2. Port 1 to port 4 can only communicate with port 5. **Note:** After adjusting the VLAN DIP switch, reboot the industrial PoE+ switch to effectuate the change.
Extended 	In this mode, the industrial PoE+ switch operates on a per-port basis at 10 Mbps full duplex operation but can support IEEE 802.3af PoE power output over a distance of up to 250 meters, overcoming the 100 m limit on a Ethernet UTP cable.

LED indicators

System

LED	Color	Function
P1	Green	**Lit**: indicates power 1 has power.
P2	Green	**Lit**: indicates power 2 has power.
FAULT	Red	**Lit**: indicates either power 1 or power 2 has no power.
30W	Orange	**Off:** indicates the PoE usage is less than 14 W. **Blinking:** indicates that the PoE usage is around 15 to 29 W. **Lights:** indicates the PoE usage is around/over 30 W.
60W	Orange	**Blinking:** indicates that the PoE usage is around 45 to 59 W. **Lit:** indicates the PoE usage is around/over 60 W.
90W	Orange	**Blinking:** indicates that the PoE usage is around 75 to 89 W. **Lit:** indicates the PoE usage is around/over 90 W.
120W	Orange	**Blinking:** indicates that the PoE usage is around 100 to 119 W. **Lit:** indicates the PoE usage is at the maximum.

Per 802.3at PoE+ 10/100BASE-TX Interface (Port 1 to Port 4)

LED	Color	Function
Link/ACT	Green	**Lit**: indicates the port is successfully connecting to the network at 10 Mbps or 100 Mbps. **Blinking**: indicates that the port is actively sending or receiving data.
PoE in Use	Orange	**Lit**: indicates the port is providing DC in-line power. **Off**: indicates the connected device is not a PoE powered device (PD).

Per 10/100BASE-TX Interface (Port 5 of NS2052-4P-1T)

LED	Color	Function
Link/ACT	Green	**Lit**: indicates the port is successfully connecting to the network at 10 or 100 Mbps. **Blinking**: indicates that the port is actively sending or receiving data.

Per 100FX SFP Slot (Port 5 of MC252-4P-1S)

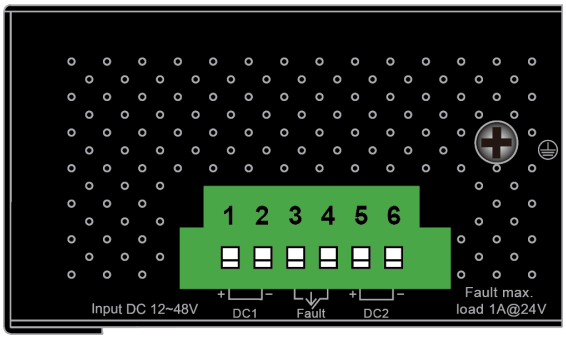
LED	Color	Function
Link/ACT	Green	**Lit**: indicates the port is successfully connecting to the network at 100 Mbps. **Blinking**: indicates that the port is actively sending or receiving data.

Switch upper panel

The upper panel of the industrial PoE+ switch consists of one terminal block connector within two DC power inputs.

Figure 2 below shows the upper panel of the industrial PoE+ switch.

Figure 2: Industrial PoE+ switch upper panel

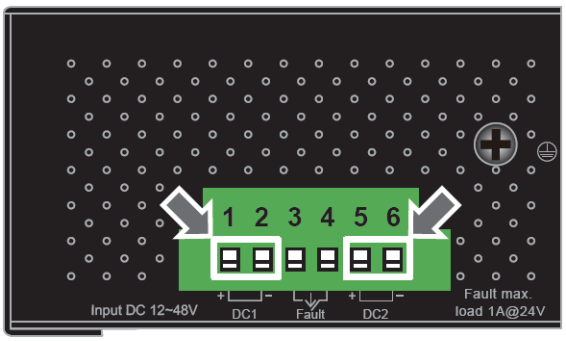


Wiring the power inputs

The six-contact terminal block connector on the top panel of industrial PoE+ switch is used for two DC redundant power inputs. Follow the steps below to insert the power wire.

Caution: When performing procedures like inserting the wires or tightening the wire-clamp screws, ensure that the power is OFF to prevent electrical shock.

1. Insert positive and negative DC power wires into contacts 1 and 2 for Power 1 or 5, and 6 for Power 2.



2. Tighten the wire-clamp screws for preventing the wires from loosening.

1 2 3 4 5 6
Power 1 Fault Power 2
\+ - + -

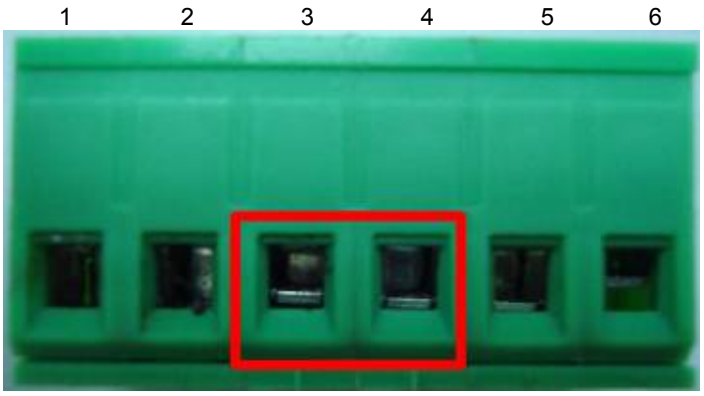
Notes:

1. The wire gauge for the terminal block should be in the range between 12 and 24 AWG.
2. The DC power input range is 12 to 48 VDC.

3. When the DC power input range is 12 V, the PoE budget is 60 W;
   When the DC power input range is 24 V, the PoE budget is 90 W;
   When the DC power input range is 48 V, the PoE budget is 120 W.
   To avoid damage, use the industrial PoE+ switch under its specification.

Wiring the fault alarm contact

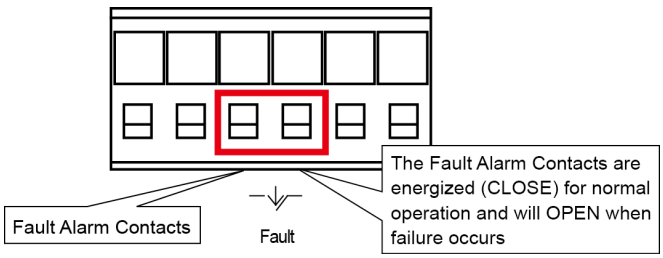
The fault alarm contacts are in the middle of the terminal block connector. Upon inserting the wires, the industrial PoE+ switch detects the fault status of the power failure and then forms an open circuit. The following illustration shows an application example for wiring the fault alarm contacts.



Insert the wires into the fault alarm contacts.

Note:

1. The wire gauge for the terminal block should be in the range between 12 to 24 AWG.
2. Alarm relay circuit accepts up to 24 V, max. 1 A currents.



Mounting

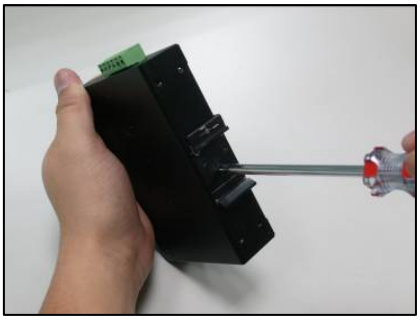
Note: Ensure that the industrial PoE+ switch is mounted vertically with the power connectors on the top and a minimum of three inches above and below the switch to allow for proper air flow. This device uses a convection flow of hot air which rises and brings cold air in from the bottom and out of the top of the device. Do not mount the switch horizontally as this does not allow air to flow up into the device and will result in damage to the switch. Do not tie DC1 to DC2. DC2 is for secondary power redundancy. Do not plug DC power into the device while the AC power cord is plugged in. This is not a hot-swappable switch. Hot-swapping this device will result in damage.

DIN-rail mounting installation

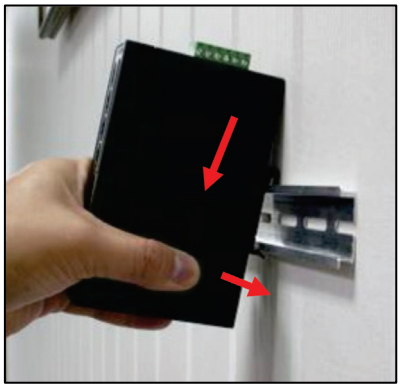
To replace the wall-mount application with DIN-rail application on the industrial PoE+ switch, refer to the following figures to screw the DIN-rail on the industrial PoE+ switch.

To hang the industrial PoE+ switch, follow the steps below:

1. Screw the DIN-rail on the industrial PoE+ switch.



2. Place the bottom of DIN-rail lightly into the track.



3. Ensure that the DIN-rail is secured to the track.

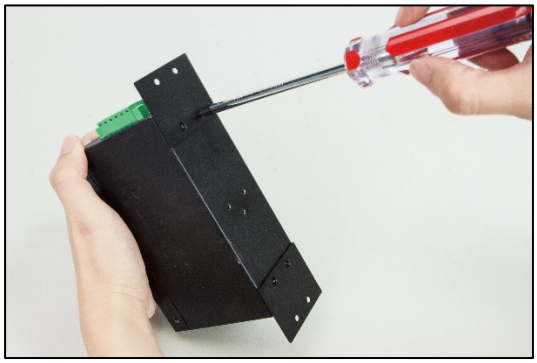
To remove the industrial PoE+ switch from the track, carefully pull out the bottom of the DIN-rail to remove it from the track.

P/N 1073625-EN • REV A • ISS 17APR19

Wall-mount plate mounting

To install the industrial PoE+ switch on the wall, follow the steps below.

1. Remove the DIN-rail from the industrial PoE+ switch. Loosen the screws to remove the DIN-rail.
2. Place the wall-mount plates on the rear panel of the industrial PoE+ switch as shown below.



3. Use the screws to screw the wall-mount plates on the industrial PoE+ switch.
4. Use the hook holes at the corners of the wall-mount plates to hang the industrial PoE+ switch on the wall.
5. To remove the wall-mount plates, reverse the steps above.

Installation Steps

This section describes the functionalities of the Industrial PoE+ components and guides how to install it on the desktop. Basic knowledge of networking is assumed. Please read this chapter completely before installation.

1. Unpack the industrial PoE+ switch.
2. Check the DIN-Rail that is pre-installed on the industrial PoE+ switch. (Please refer to DIN-Rail Mounting section for DIN-Rail installation. If you want to wall mount the industrial PoE+ switch, then please refer to Wall Mount Plate Mounting section for specific instructions.
3. To hang the industrial PoE+ switch on the DIN-Rail track or wall, please refer to the Mounting section.
4. Power on the industrial PoE+ switch. (Please refer to the Wiring the Power Inputs section for power input) The power LED on the industrial PoE+ switch illuminates. Please refer to the LED indicators section for LED definitions.
5. Prepare the twisted-pair, straight through Category 5 cable for Ethernet connection.
6. Insert one side of Category 5 cables into the industrial PoE+ switch Ethernet port (RJ-45 port) and the other side to the network device Ethernet port (RJ-45 port), ex: Switch, PC, or Server. The UTP port (RJ-45) LED on the industrial PoE+ switch illuminates when the cable is connected to the network device. Please refer to the LED indicators section for LED definitions.
7. Insert the fiber cable from the industrial PoE+ switch to the fiber network. TX, RX must be paired at both ends. The optical port LED on the MC252-4P-1S illuminates when the connection is established with a network device. Please refer to the LED indicators section for LED definitions.
8. When all connections are set up and the LEDs illuminate, the installation is complete.

Troubleshooting

This section contains issue-solving information. If the industrial PoE+ switch is not functioning properly, ensure that the industrial PoE+ switch was set up according to instructions in this manual.

Issue	Solution
The per port LED does not illuminate.	*Check the cable connection and try swapping out a cable.*
Performance is poor	*Check the speed duplex mode of the partner device. The industrial PoE+ switch is run in auto-negotiation mode and if the partner is set to half duplex, then the performance will be poor.*
The per port LED illuminates, but the traffic is irregular.	*Ensure that the attached device is not set to dedicated full duplex. Some devices use a physical or software switch to change duplex modes. Auto-negotiation may not recognize this type of full-duplex setting.*
The industrial PoE+ switch doesn't connect to the network	*Check the per port LED and/or try another port on the industrial PoE+ switch. Ensure that the cable is installed properly and is the correct type. Turn off the power and then, after a while, turn on the power again.*

Product specifications

MC252-4P-1S

Hardware specifications	
Fast Ethernet Copper Ports	Four 10/100BASE-TX RJ45 auto-MDI/MDI-X ports
PoE Injector Port	Four ports with 802.3af/at PoE+ injector function (Port-1 to Port-4)
SFP Port	One 100BASE-FX SFP port
Switch Architecture	Store-and-Forward
Switch Fabric	1 Gbps/non-blocking
Switch Throughput@64 bytes	0.74 Mpps @64 bytes
MAC Address Table	2K entries
Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex
Jumbo Frame	10 Kbytes
DIP Switch (Port-1 to Port-4)	Standard mode: 30 W PoE transmission distance of 100 m at speed of 10/100 Mbps. VLAN mode: "Port-based VLAN Protection" where ports can be isolated from each other via one DIP switch. Only Port-5 can visit other ports. Extend mode: 25 W PoE transmission distance of

	250 m at a speed of 10 Mbps (switch selectable).
Connector	Removable 6-pin terminal block: Pin 1/2 for Power 1 Pin 3/4 for power fault alarm Pin 5/6 for Power 2
Alarm	One relay output for power failure. Alarm relay current carry ability: 1 A @ 24 VAC
Power requirements	12 to 48 VDC, 7 A (max.)
Power Consumption/ Dissipation	4.3 W, 14.6 BTU (Standby without PoE function) at DC 12 V power input 72.5 W, 247.4 BTU (Full loading with PoE function) at DC 12 V power input 5 W, 17 BTU (Standby without PoE function) at DC 24 V power input 103.9 W, 354.5 BTU (Full loading with PoE function) at DC 24 V power input 5.3 W, 18.1 BTU (Standby without PoE function) at DC 48V power input 135.8 W, 463.4 BTU (Full loading with PoE function) at DC 48 V power input
Dimensions (W × D × H)	50 × 85.1 × 135 mm
Weight	598 g
ESD protection	5 KV DC
Enclosure	IP40 metal case
Installation	DIN rail kit and wall-mount ear
Power over Ethernet	
PoE Standard	IEEE 802.3at Power over Ethernet Plus / PSE
PoE Power Supply Type	End-Span
Power Pin Assignment	1/2(+), 3/6(-)
PoE Power Output	54 VDC Per Port, Max. 36 W
PoE Power Budget (max.)	60 W @ 12 VDC input 90 W @ 24 VDC input 120 W @ 48 VDC input
Max. Number of Class 2 PDs	4
Max. Number of Class 3 PDs	4
Max. Number of Class 4 PDs	4
Standards conformance	
Regulatory compliance	FCC Part 15 Class A, CE
Stability testing	IEC60068-2-32 (Free Fall) IEC60068-2-27 (Shock) IEC60068-2-6 (Vibration)
Standards Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab Gigabit 1000BASE-T IEEE 802.3z Gigabit SX/LX IEEE 802.3x Flow Control and Back Pressure IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus
Environment	
Temperature	Operating: -40 to +75°C Storage: -40 to 85°C
Humidity	5% to 95% (non-condensing)

NS2052-4P-1T

Hardware specifications	
Fast Ethernet Copper Ports	Five 10/100BASE-TX RJ45 auto-MDI/MDI-X ports (Port-1 to Port-5)
PoE Injector Port	Four ports with 802.3af/at PoE+ injector function (Port-1 to Port-4)
Switch Architecture	Store-and-Forward
Switch Fabric	1 Gbps/non-blocking
Switch Throughput@64 bytes	0.74 Mpps @64 bytes
MAC Address Table	2K entries
Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex
Jumbo Frame	10 Kbytes
DIP Switch (Port-1 to Port-4)	Standard mode: 30 W PoE transmission distance of 100 m at speed of 10/100 Mbps. VLAN mode: "Port-based VLAN Protection" where ports can be isolated from each other via one DIP switch. Only Port-5 can visit other ports. Extend mode: 25 W PoE transmission distance of 250 m at a speed of 10 Mbps (switch selectable).
Connector	Removable 6-pin terminal block: Pin 1/2 for Power 1 Pin 3/4 for power fault alarm Pin 5/6 for Power 2
Alarm	One relay output for power failure. Alarm relay current carry ability: 1 A @ 24 VAC
Power requirements	12 to 48 VDC, 7 A (max.)
Power Consumption/ Dissipation	3.7 W, 12.6 BTU (Standby without PoE function) at DC 12 V power input 70 W, 238.8 BTU (Full loading with PoE function) at DC 12 V power input 4.6 W, 15.7 BTU (Standby without PoE function) at DC 24 V power input 105.1 W, 358.6 BTU (Full loading with PoE function) at DC 24 V power input 4.8 W, 16.4 BTU (Standby without PoE function) at DC 48V power input 136.8 W, 466.8 BTU (Full loading with PoE function) at DC 48 V power input
Dimensions (W × D × H)	50 × 85.1 × 135 mm
Weight	596 g
ESD protection	5 KV DC
Enclosure	IP40 metal case
Installation	DIN rail kit and wall-mount ear

Power over Ethernet	
PoE Standard	IEEE 802.3at Power over Ethernet Plus / PSE
PoE Power Supply Type	End-Span
Power Pin Assignment	1/2(+), 3/6(-)
PoE Power Output	54 VDC Per Port, Max. 36 W
PoE Power Budget (max.)	60 W @ 12 VDC input 90 W @ 24 VDC input 120 W @ 48 VDC input
Max. Number of Class 2 PDs	4
Max. Number of Class 3 PDs	4
Max. Number of Class 4 PDs	4
Standards conformance	
Regulatory compliance	FCC Part 15 Class A, CE
Stability testing	IEC60068-2-32 (Free Fall) IEC60068-2-27 (Shock) IEC60068-2-6 (Vibration)
Standards Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab Gigabit 1000BASE-T IEEE 802.3x Flow Control and Back Pressure IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus
Environment	
Temperature	Operating: -40 to +75°C Storage: -40 to 85°C
Humidity	5% to 95% (non-condensing)

Appendix: Networking connection

RJ45 pin assignments

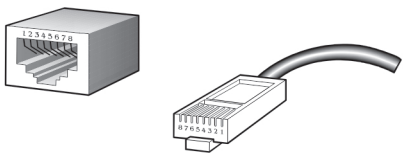
1000Mbps, 1000BASE-T

Contact	MDI	MDI-X
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-

10/100Mbps, 10/100BASE-TX

Contact	MDI Media Dependent Interface	MDI-X Media Dependent Interface-Cross
1	Tx + (transmit)	Rx + (receive)
2	Tx - (transmit)	Rx - (receive)
3	Rx + (receive)	Tx + (transmit)
4, 5	Not used	
6	Rx - (receive)	Tx - (transmit)
7, 8	Not used	

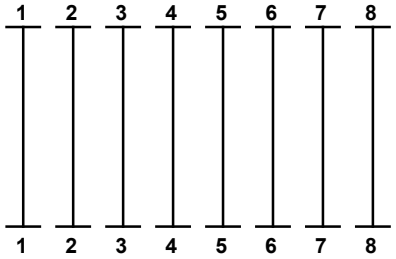
RJ45 cable pin assignments



The standard RJ45 receptacle/connector

There are eight wires on a standard UTP/STP cable and each wire is color-coded. Figure 3 on page 8 shows the pin allocation and color of straight-through cable and crossover cable connection:

Figure 3: Straight-through and crossover cable



SIDE 1

SIDE 2

SIDE 1

SIDE 2

SIDE 1	SIDE 2
1 = White / Orange	1 = White / Orange
2 = Orange	2 = Orange
3 = White / Green	3 = White / Green
4 = Blue	4 = Blue
5 = White / Blue	5 = White / Blue
6 = Green	6 = Green
7 = White / Brown	7 = White / Brown
8 = Brown	8 = Brown

SIDE 1	SIDE 2
1 = White / Orange	1 = White / Green
2 = Orange	2 = Green
3 = White / Green	3 = White / Orange
4 = Blue	4 = Blue
5 = White / Blue	5 = White / Blue
6 = Green	6 = Orange
7 = White / Brown	7 = White / Brown
8 = Brown	8 = Brown

Ensure that the connected cables have the same pin assignment and color as described above.

Regulatory information

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Contact information and manuals/tools/ firmware	For contact information and to download the latest manuals, tools, and firmware, go to the web site of your region. **Americas**: www.interlogix.com **EMEA**: www.firesecurityproducts.com Manuals are available in several languages. **Australia/New Zealand**: www.utcfs.com.au
Manufacturer	Interlogix. 2955 Red Hill Avenue, Costa Mesa, CA 92626 5923, USA Authorized EU manufacturing representative: UTC Fire & Security B.V. Kelvinstraat 7, 6003 DH Weert, The Netherlands
FCC compliance	Class A: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
FCC conditions	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference. (2) This Device must accept any interference received, including interference that may cause undesired operation.
ACMA compliance	Notice! This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

P/N 1073625-EN • REV A • ISS 17APR19

Canada	This Class A digital apparatus complies with CAN ICES-003 (A)/NMB-3 (A). Cet appareil numérique de la classe A est conforme à la norme CAN ICES-003 (A)/NMB-3 (A).
Certification	CE
European Union directives	This product complies with the applicable harmonized European standards listed under the EMC Directive 2014/30/EU, the RoHS Directive 2011/65/EU.
	2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: www.recyclethis.info.

Contact information

North America	
T	+1 855.286.8889
E	techsupport@interlogix.com
W	www.interlogix.com/support
Latin America	
T	+1 561-998-6114
E	latam@interlogix.com
Europe, Middle East, and Africa	
W	Select *Contact Us* at www.firesecurityproducts.com
Australia	
E	security.tech.support@interlogix.com.au