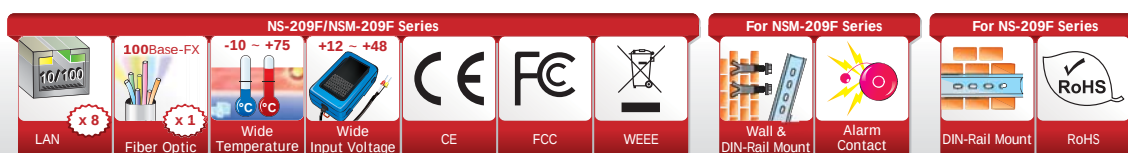


NS-209F Series/NSM-209F Series

Unmanaged 8-port Industrial 10/100 Base-TX with 100 Base-FX Fiber Switch



Features ▶▶▶

- Each port supports both 10/100 Mbps speed auto negotiation
- Automatic MDI/MDI-X crossover for plug-and-play
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- DIN-Rail Mounting or Wall Mounting for NSM-209F series
- MAC address 2048
- Store-and-forward architecture
- Supports +12 V_{DC} ~ +48 V_{DC} power input
- DIN-Rail Mounting for NS-209F series

Introduction

The NS-209F/NSM-209F series is a Unmanaged 8-port Industrial 10/100 Base-TX with 100 Base-FX Switch that secures data transmission by using fiber optic transmission to provide immunity from EMI/RFI interference. It uses Ethernet for transmitting a signal up to 30 km, and is the perfect solution for applications where transmission must be protected from electrical exposure, surges, lightning or chemical corrosion.

The NS-209F/NSM-209F series operates at full duplex mode. In full duplex mode, range is 30 km with 8.3/125, 8.7/125, 9/125 or 10/125 μm fiber cables.

NSM-209F provides two power inputs that can be connected simultaneously to live DC power sources. If one of the power inputs fails, the other live source will act as a backup to automatically support the NSM-209F's power needs.

Specifications

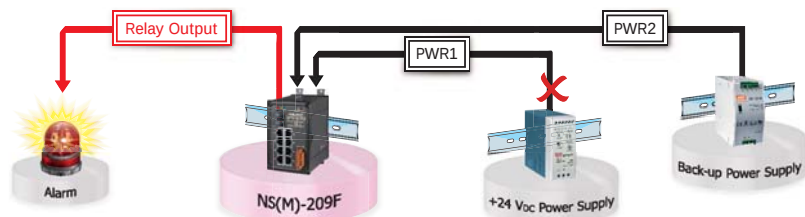
Models	NS-209F Series	NSM-209F Series
Technology		
Standards	IEEE 802.3, 802.3u, 802.3x	
Processing Type	Store & forward; wire speed switching	
MAC Addresses	2048	
Memory Bandwidth	2 Gbps	
Frame Buffer Memory	512 Kbit	
Flow Control	IEEE 802.3x flow control, back pressure flow control	
Ethernet Interface		
RJ-45 Ports	10/100 Base-T(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection	
LED Indicators	Power, Link/Act, 10/100M	
Fiber Optics Port	100 Base-FX	
Ethernet Isolation	1500 V _{rms} 1 minute	
EMS Protection	Yes	

Models		NS-209F Series	NSM-209F Series
Fiber Interface (100 Base-FX; SC/ST type)			
Multi-Mode	NS-209FT/FC NSM-209FT/FC	Multi mode fiber cables: 50/125, 62.5/125 or 100/140 μm	
		Distance: 2 km, (62.5/125 μm recommended) for full duplex	
		Wavelength: 1300 or 1310 nm	
		Min. TX Output: -20 dBm	
		Max. TX Output: -14 dBm	
		Max. RX Sensitivity: -32 dBm	
Fiber Interface (100 Base-FX; SC/ST type)			
Single-Mode	NS-209FCS NSM-209FCS	Single-mode fiber cables: 8.3/125, 8.7/125, 9/125 or 10/125 μm	
		Distance: 30 km, (9/125 μm recommended) for full duplex	
		Wavelength: 1300 or 1310 nm	
		Min. TX Output: -15 dBm	
		Max. TX Output: -8 dBm	
		Min. RX Sensitivity: -34 dBm	
Power Input			
Input Voltage Range		+12 V _{DC} ~ +48 V _{DC} (Non-isolated)	+12 V _{DC} ~ +48 V _{DC} (Non-isolated) Redundant Inputs with one relay output (1 A @ 24 V _{DC}) for alarm
Power Consumption		0.26 A @ 24 V _{DC}	
LED Indicator		Yes	
Protection		Power reverse polarity protection	
+/-4 kV ESD Protection		Yes	
Mechanical			
Casing		Plastic (Flammability UL 94V-0)	Metal (IP20 Protection)
Dimensions (W x L x H)		64 mm x 101 mm x 118 mm	73 mm x 105 mm x 132 mm
Installation		DIN-Rail Mounting	DIN-Rail Mounting or Wall Mounting
Environmental			
Operating Temperature		-10 °C ~ +75 °C	
Storage Temperature		-20 °C ~ +85 °C	
Ambient Relative Humidity		10% ~ 90% RH, non-condensing	

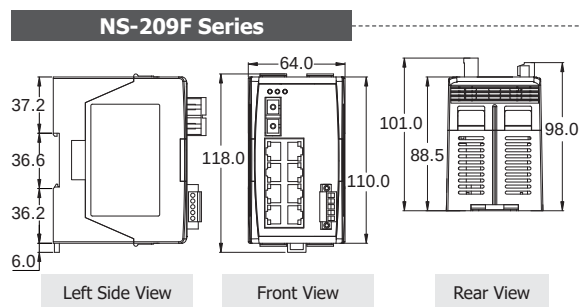
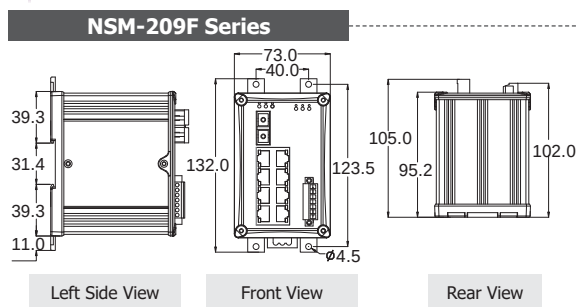
Redundant Power Input

Both power inputs can be connected simultaneously to live DC power sources.

If one power source fails, the other live source will act as a backup, and automatically supplies all of NSM-209F series power needs.



Dimensions (Units: mm)



Ordering Information

NS-209FT CR	Multi-mode, ST Connector, 8-port 10/100 Mbps with 1 Fiber port Switch (RoHS)
NS-209FC CR	Multi-mode, SC Connector, 8-port 10/100 Mbps with 1 Fiber port Switch (RoHS)
NS-209FCS CR	Single-mode 30 km, SC Connector, 8-port 10/100 Mbps with 1 Fiber port Switch (RoHS)
NSM-209FT	Multi-mode, ST Connector, 8-port 10/100 Mbps with 1 Fiber port Switch; metal case
NSM-209FC	Multi-mode, SC Connector, 8-port 10/100 Mbps with 1 Fiber port Switch; metal case
NSM-209FCS	Single-mode 30 km, SC Connector, 8-port 10/100 Mbps with 1 Fiber port Switch; metal case

Accessories

DIN-KA52F	24V/1.04A, 25 W Power Supply with DIN-Rail Mounting
MDR-20-24	24V/1A, 24 W Power Supply with DIN-Rail Mounting
MDR-60-24	24V/2.5A, 60 W Power Supply with DIN-Rail Mounting

How PoE Works

There are two basic components in an IEEE 802.3af compliant PoE network:

- Power Sourcing Equipment (PSE)
A device that supplies power
- Powered Device (PD)
A device that receives and utilizes the power

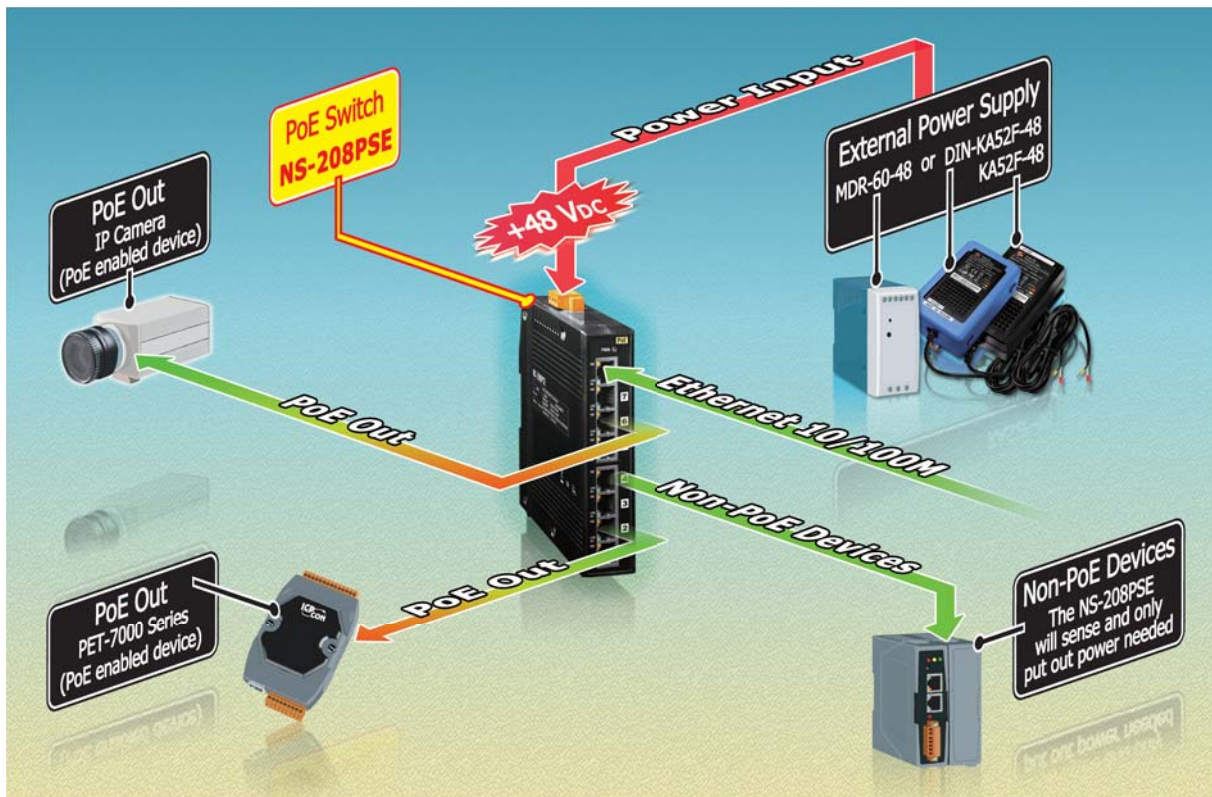
When the PSE connects to a network device, the PSE determines or “discovers” if the device is a PD or not. This prevents non-PoE enabled Ethernet equipment from receiving power, which could cause damage. The PSE applies two small current-limited voltage signals across the cable as it checks for the presence of a characteristic resistance. If resistance is detected, power is provided. A PD may also classify how much power it will require from the PSE. This feature supports the PSE by helping it supply power in an efficient way.

After the PSE has discovered a PD, it supplies 48 V and a maximum current of 350 mA. Voltage may be lost along the cable, depending on length of cable. However, a minimum of about 13 W is available to each PD, which is adequate power for numerous applications including VoIP telephones, WAPs, security cameras and building automation systems.

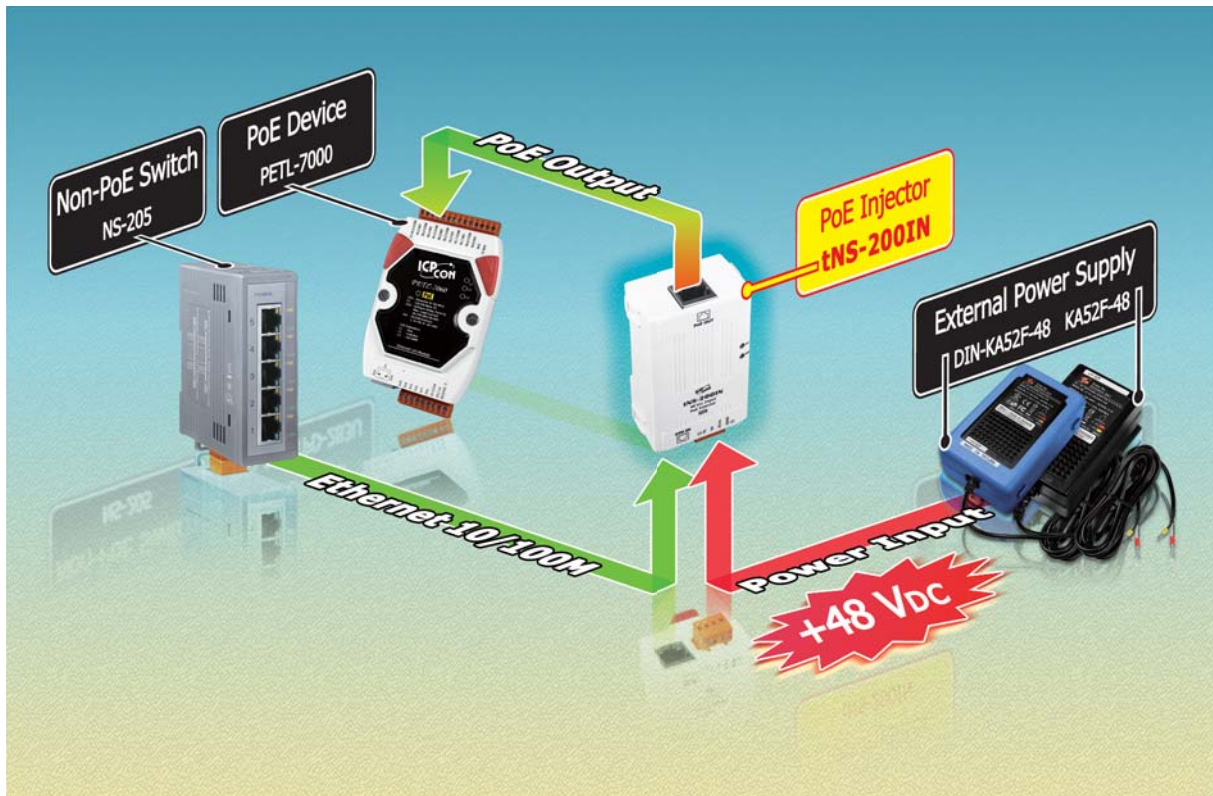
Once the PSE begins to provide power, it continuously monitors the PD current draw. If the PD current consumption drops below a minimum value, for example when the device is unplugged, the PSE discontinues supplying power and the discovery process begins again.

The IEEE 802.3af standard defines two different types of PSEs: endspan and midspan.

An endspan PSE - Integrates the power sourcing functionality with a network switch. Endspans available today look and function exactly the same as any other Ethernet switch, except they can provide PoE in addition to routing data. Since Ethernet data pairs use transformers coupled at each end of the link, DC power can easily be added to the center tap of the transformer without disrupting the data. In this mode of operation, an endspan injects both power and data on pin-pairs 3 and 6 and pin-pairs 1 and 2.

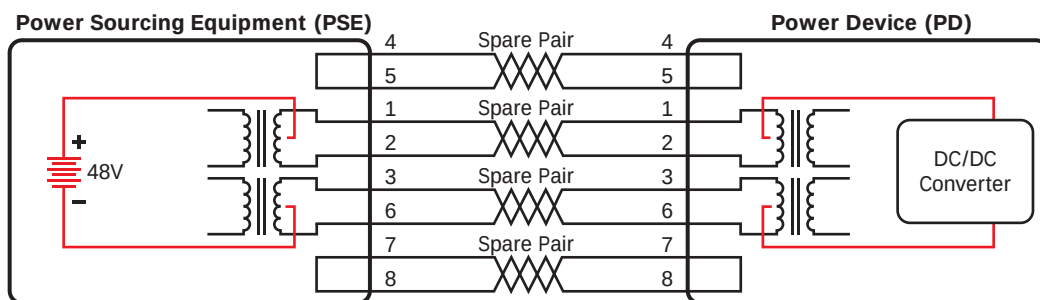


A midspan PSE - Fits in between the switch and the PD. It supplies power over the unused cable pin-pairs 4 and 5 and pin-pairs 7 and 8. Data is routed through the midspan device without modification. These devices are usually mounted adjacent to the Ethernet switch in an equipment rack. It is important to note that although the PSE can only use pin-pairs assigned from an endspan or a midspan, the PD must have the capability to accept power from both.

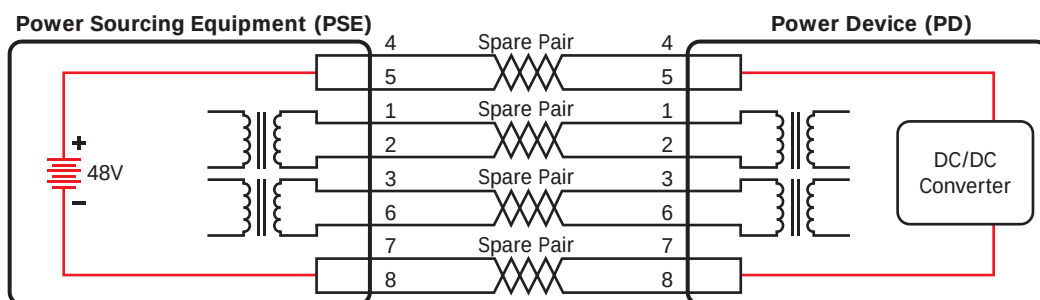


Power is carried over the cabling using two techniques: Mode A and Mode B

Mode A: Power is carried on the same conductors as data. CAT-5 cabling for standard 10 BaseT and 100 Base-TX Ethernet uses two data/signal pairs connected to pins 1 and 2 and pins 3 and 6 on RJ-45 connectors. Power sourcing equipment superimposes power onto these pins via the center tap of internal signal coupling transformers. In the powered device (PD) the power is derived from these lines using the reverse technique.



Mode B: The twisted pair on pins 4 and 5 is connected to form the positive electric power supply, while the pair on pins 7 and 8 is connected to form the negative supply. Each pair can accommodate either polarity.



The IEEE 802.af standard specifies that all power sourcing equipment and powered devices must be compatible with both methods above. However, only one of the methods may be used at a time.