High Reliability Industrial Ethernet Switch for Rugged Environment

Vol. IES 2.0.00

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Introduction

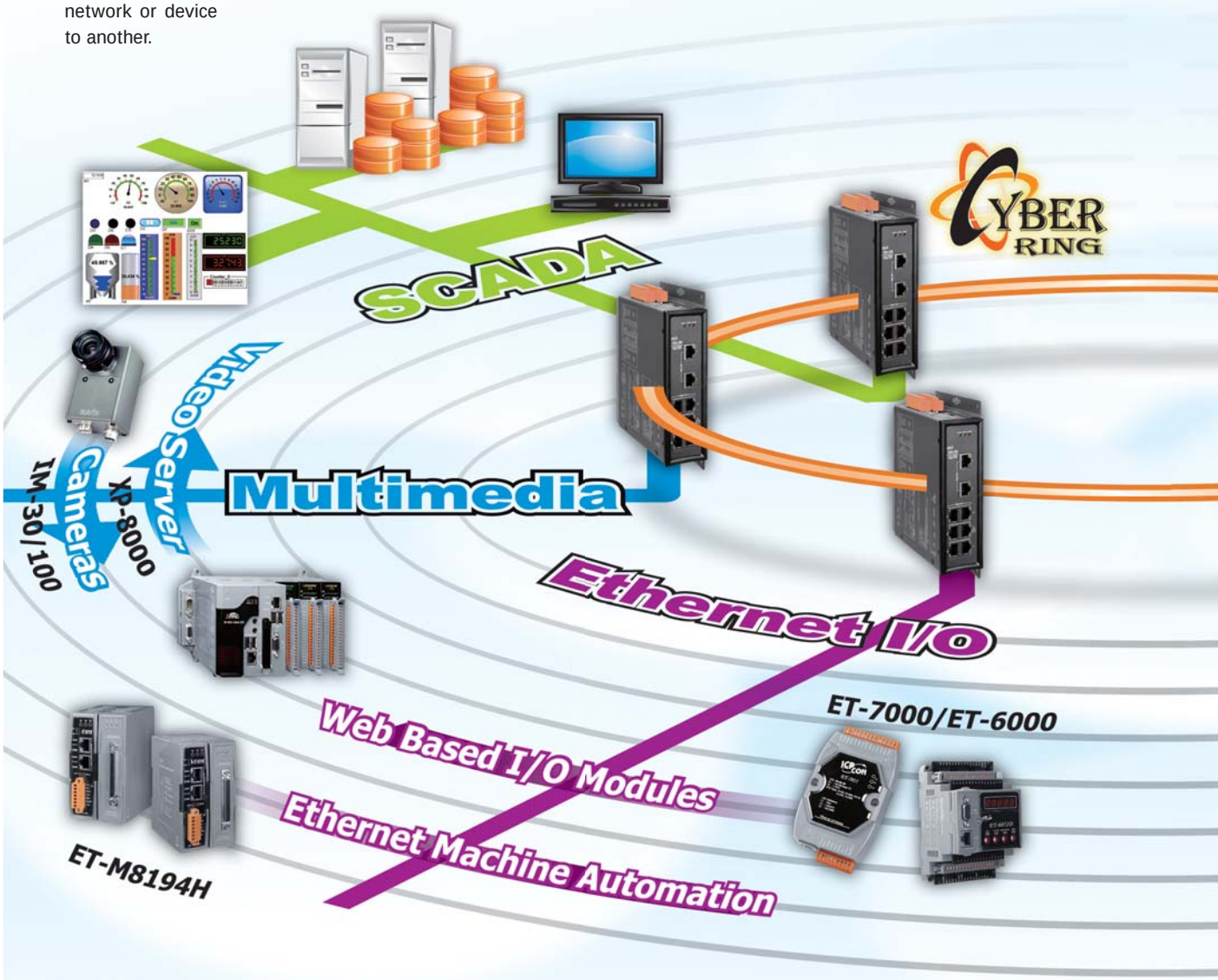
1

Introduction

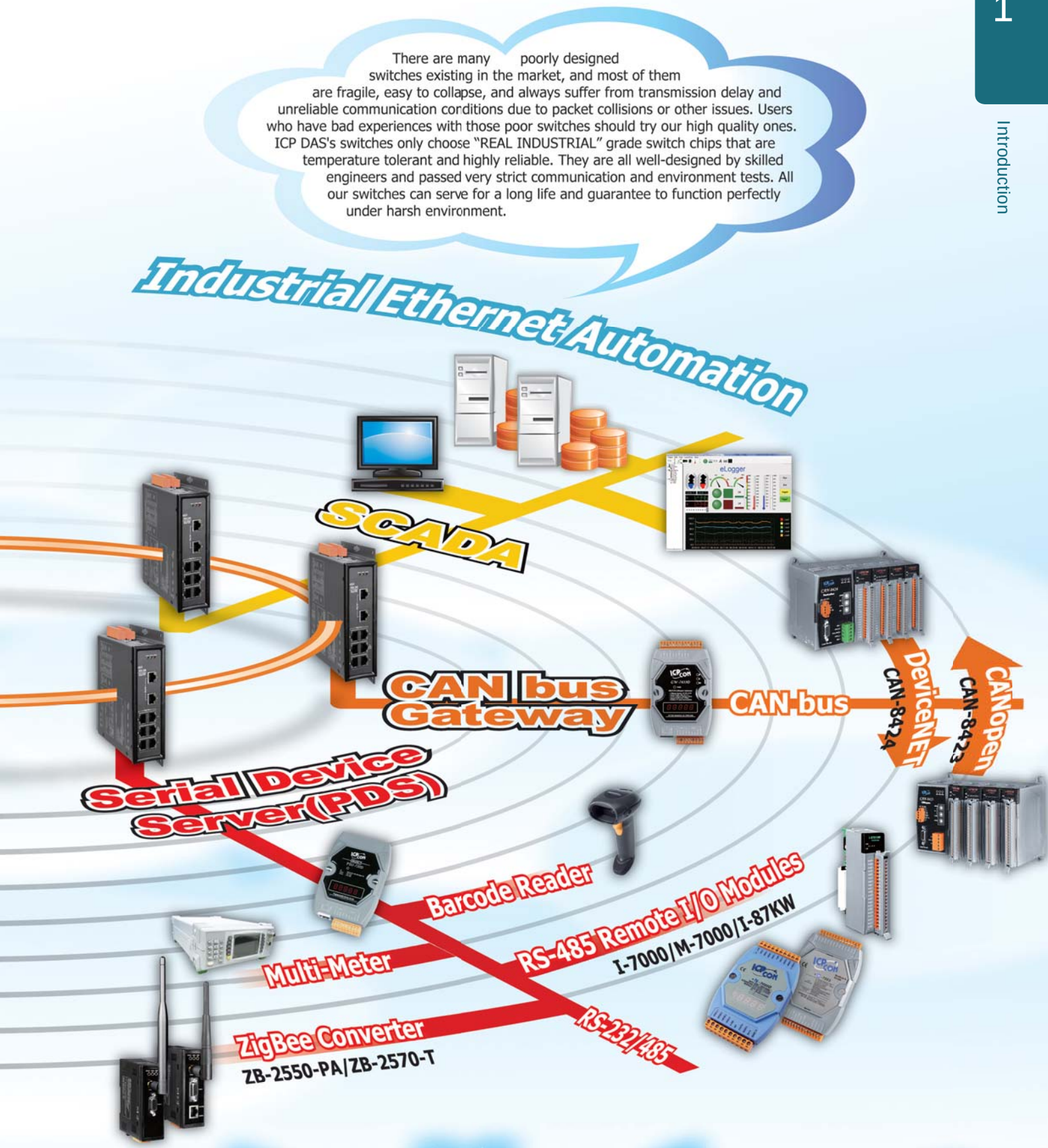
Ethernet is an ideal medium to transport large volumes of data, at speed, across great distances. Previously, multiple networks carrying specific protocols were installed side by side to carry out unique tasks. This inevitably led to project costs increasing as additional fiber optic or copper cables were installed to deal with the increasing volume of data. Using Ethernet a single fiber optic cable can carry multiple protocols. Furthermore, manufacturers are exporting their legacy protocols onto Ethernet, designing new IP based communication protocols and providing embedded Web-Pages within devices that offer real-time information using simple tools like Internet Explorer and Mozilla Firefox.

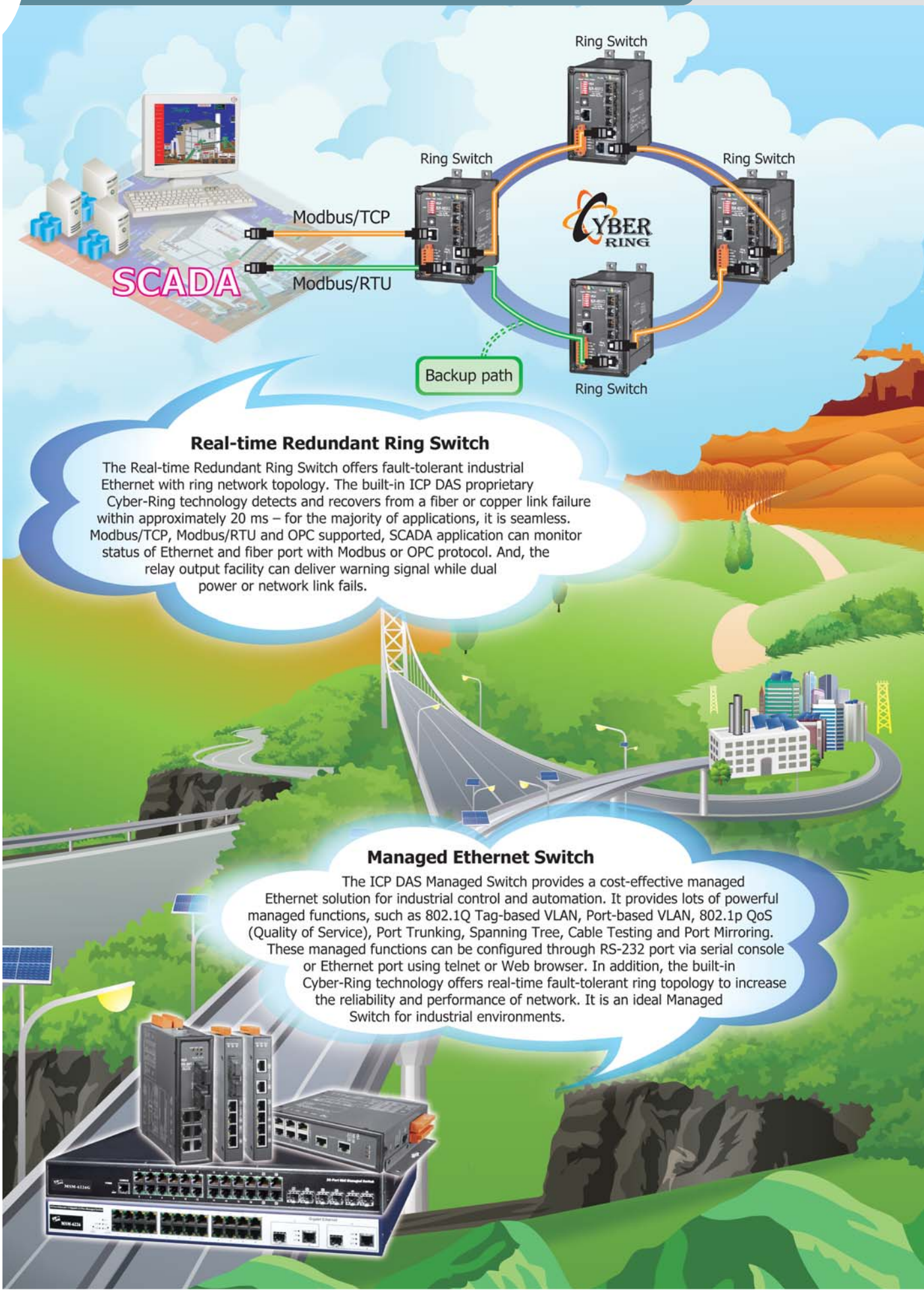
Early Ethernet were based on a hub or repeater. These units have no intelligence and therefore are unable to identify any information contained within the Header frame of an Ethernet packet. This means that it is not capable of determining which port to send the frame to. Therefore, every frame is sent to every port.

A switch, like a hub, has to forward and receive packets from one network or device to another. The switch could forward all packets, but if this was the case it would have similar behavior to a hub. It would be more intelligent if the switch only forwarded packets which needed to travel from one network or device to another.



There are many poorly designed switches existing in the market, and most of them are fragile, easy to collapse, and always suffer from transmission delay and unreliable communication conditions due to packet collisions or other issues. Users who have bad experiences with those poor switches should try our high quality ones. ICP DAS's switches only choose "REAL INDUSTRIAL" grade switch chips that are temperature tolerant and highly reliable. They are all well-designed by skilled engineers and passed very strict communication and environment tests. All our switches can serve for a long life and guarantee to function perfectly under harsh environment.





Real-time Redundant Ring Switch

The Real-time Redundant Ring Switch offers fault-tolerant industrial Ethernet with ring network topology. The built-in ICP DAS proprietary Cyber-Ring technology detects and recovers from a fiber or copper link failure within approximately 20 ms – for the majority of applications, it is seamless. Modbus/TCP, Modbus/RTU and OPC supported, SCADA application can monitor status of Ethernet and fiber port with Modbus or OPC protocol. And, the relay output facility can deliver warning signal while dual power or network link fails.

Managed Ethernet Switch

The ICP DAS Managed Switch provides a cost-effective managed Ethernet solution for industrial control and automation. It provides lots of powerful managed functions, such as 802.1Q Tag-based VLAN, Port-based VLAN, 802.1p QoS (Quality of Service), Port Trunking, Spanning Tree, Cable Testing and Port Mirroring. These managed functions can be configured through RS-232 port via serial console or Ethernet port using telnet or Web browser. In addition, the built-in Cyber-Ring technology offers real-time fault-tolerant ring topology to increase the reliability and performance of network. It is an ideal Managed Switch for industrial environments.

Media Converter

The utilization of fiber optic data transmission for industrial automation and process control has become increasingly popular over the past decade. A basic fiber optic system, using an optical transceiver circuit and fiber optic media, offers a wide array of benefits that are not available with traditional copper conductors.

Rugged M12 Ethernet Switch

The Rugged M12 Ethernet Switch is designed for industrial applications in harsh environments. The M12 connector ensure tight, robust connections, and guarantee reliable operation, even for applications that are subject to high vibration and shock.

PoE Ethernet Switch

The PoE (Power over Ethernet) Ethernet Switch makes centralized power supply come true and provides up to 15.4 watts of power per port.

IP67 Water Proof Switch

IP67 Ethernet Switches are designed for use in industrial waterproof/harsh environments. The rugged packaging and IP67 connectors guarantee a total protection that can withstand a variety of extreme conditions such as high temperatures, extreme shocks & vibrations, dust particles or even liquid immersion. They can be directly mounted to any machine or convenient flat surface.

Unmanaged Ethernet Switch

Industrial rate switches are intended to be installed in both harsh climatic environments and noisy electrical installations. Such switches are excellent examples of true industrial design principles

- Very high operating temperatures (down to -40 °C and up to +75 °C)
- DIN-Rail Mounting
- Wide DC operating voltages (+12 VDC ~ +48 VDC)

Selection Guide

Unmanaged Ethernet Switches

Model Name	Speed	Port	Power Input	Casing	Page
NS-205	10/100 M	5	+10 VDC ~ +30 VDC	Plastic	3-1
NS-205A	10/100 M	5	+12 VDC ~ +56 VDC	Plastic	3-1
NS-105A	10/100 M	5	+12 VDC ~ +56 VDC	Plastic	3-1
I-8135W	10/100 M	5	+5 VDC	Plastic	3-3
NS-208A/NSM-208A	10/100 M	8	+12 VDC ~ +48 VDC	Plastic/Metal	3-5
NS-208R	10/100 M	8	+12 VDC ~ +48 VDC	Plastic	3-7
NS-205G	10/100/100 M	5	+10 VDC ~ +30 VDC	Plastic	3-9
NS-205AG	10/100/100 M	5	+12 VDC ~ +48 VDC	Plastic	3-9
NS-208G/NS-208AG NSM-208G/NSM-208AG	10/100/100 M	8	+12 VDC ~ +48 VDC	Plastic/ Metal	3-11
NSM-216	10/100 M	16	+12 VDC ~ +48 VDC	Metal	3-13
NS-205-IP67	10/100 M	5	+10 VDC ~ +30 VDC	Plastic with IP67	3-33
NS-208-IP67	10/100 M	8	+12 VDC ~ +53 VDC	Plastic with IP67	3-37
NSM-208-M12	10/100 M	8	+12 VDC ~ +53 VDC	Metal with IP40	3-41

Unmanaged Ethernet Switches with Fiber Port

Model Name	Fiber Port		Ethernet Port		Power Input	Casing	Page
	Speed	Port	Speed	Port			
NS-205AF/NSM-205AF series	100 M	1	10/100 M	4	+12 VDC ~ +48 VDC	Plastic/Metal	3-15
NS-206AF/NSM-206AF series	100 M	2	10/100 M	4	+12 VDC ~ +48 VDC	Plastic/Metal	3-15
NS-209F/NSM-209F series	100 M	1	10/100 M	8	+12 VDC ~ +48 VDC	Plastic/Metal	3-19

Unmanaged PoE (IEEE 802.3af) Ethernet Switches

Model Name	Speed	PoE Port	Ethernet Port	Power Input	Casing	Page
NS-105PSE	10/100 M	4	1	+46 VDC ~ +56 VDC	Plastic	3-23
NS-205PSE	10/100 M	4	1	+46 VDC ~ +56 VDC	Plastic	3-23
NS-208PSE	10/100 M	8	–	+46 VDC ~ +56 VDC	Plastic	3-27
NSM-208PSE	10/100 M	8	–	+46 VDC ~ +56 VDC	Metal	3-27
NS-208PSE-4	10/100 M	4	4	+46 VDC ~ +56 VDC	Plastic	3-27
NSM-208PSE-4	10/100 M	4	4	+46 VDC ~ +56 VDC	Metal	3-27
NS-105PSE-24V	10/100 M	4	1	+18 VDC ~ +32 VDC	Plastic	3-25
NS-205PSE-24V	10/100 M	4	1	+18 VDC ~ +32 VDC	Plastic	3-25
NSM-205PSE-24V	10/100 M	4	1	+18 VDC ~ +32 VDC	Metal	3-25
NSM-210PSE-24V	10/100 M	8	2	+18 VDC ~ +32 VDC	Metal	3-25
NS-205PSE-IP67	10/100 M	4	1	+46 VDC ~ +53 VDC	Plastic with IP67	3-33
NS-208PSE-IP67	10/100 M	8	–	+46 VDC ~ +53 VDC	Plastic with IP67	3-37
NSM-208PSE-M12	10/100 M	8	–	+46 VDC ~ +53 VDC	Metal with IP40	3-41

PoE Injector (PSE)

Model Name	Speed	Port	Type	Power Input	Casing	Page
tNS-200IN	10/100 M	1	PSE (IEEE 802.3af)	+46 VDC ~ +53 VDC	Plastic	3-45
tNS-200IN-24V	10/100 M	1	PSE (IEEE 802.3af)	+18 VDC ~ +32 VDC	Plastic	3-45

PoE Splitter (PD)

Model Name	Speed	Port	Type	Power Output	Casing	Page
NS-200SP	10/100 M	1	PD (IEEE 802.3af, Class 1)	+24 VDC	Plastic	call

Unmanaged PoE Ethernet Switches with Fiber Port

Model Name	Fiber Port		Ethernet Port		Power Input	Casing	Page
	Speed	Port	Speed	Port			
NS-205PF series	100 M	1	10/100 M	4	+46 VDC ~ +55 VDC	Plastic	3-29
NSM-205PF series	100 M	1	10/100 M	4	+46 VDC ~ +55 VDC	Metal	3-29
NS-205PF-24V series	100 M	1	10/100 M	4	+18 VDC ~ +32 VDC	Plastic	3-29
NSM-205PF-24V series	100 M	1	10/100 M	4	+18 VDC ~ +32 VDC	Metal	3-29

Industrial Media Converters & WDM Media Converter

Model Name	Fiber Port		Ethernet Port		Power Input	Casing	Page
	Speed	Port	Speed	Port			
NS-200AF series	100 M	1	10/100 M	1	+12 VDC ~ +48 VDC	Plastic	4-1
NS-200SX	1000 M	1	100/1000 M	1	+12 VDC ~ +48 VDC	Plastic	4-5
NS-200LX	1000 M	1	100/1000 M	1	+12 VDC ~ +48 VDC	Plastic	4-5
NS-200WDM series	100 M	1	10/100 M	1	+12 VDC ~ +48 VDC	Plastic	4-3
NS-201F	100 M (SFP)	1	10/100 M	1	+12 VDC ~ +48 VDC	Plastic	call
NS-201GF	1000 M (SFP)	1	100/1000 M	1	+12 VDC ~ +48 VDC	Plastic	call

Managed Ethernet Switches

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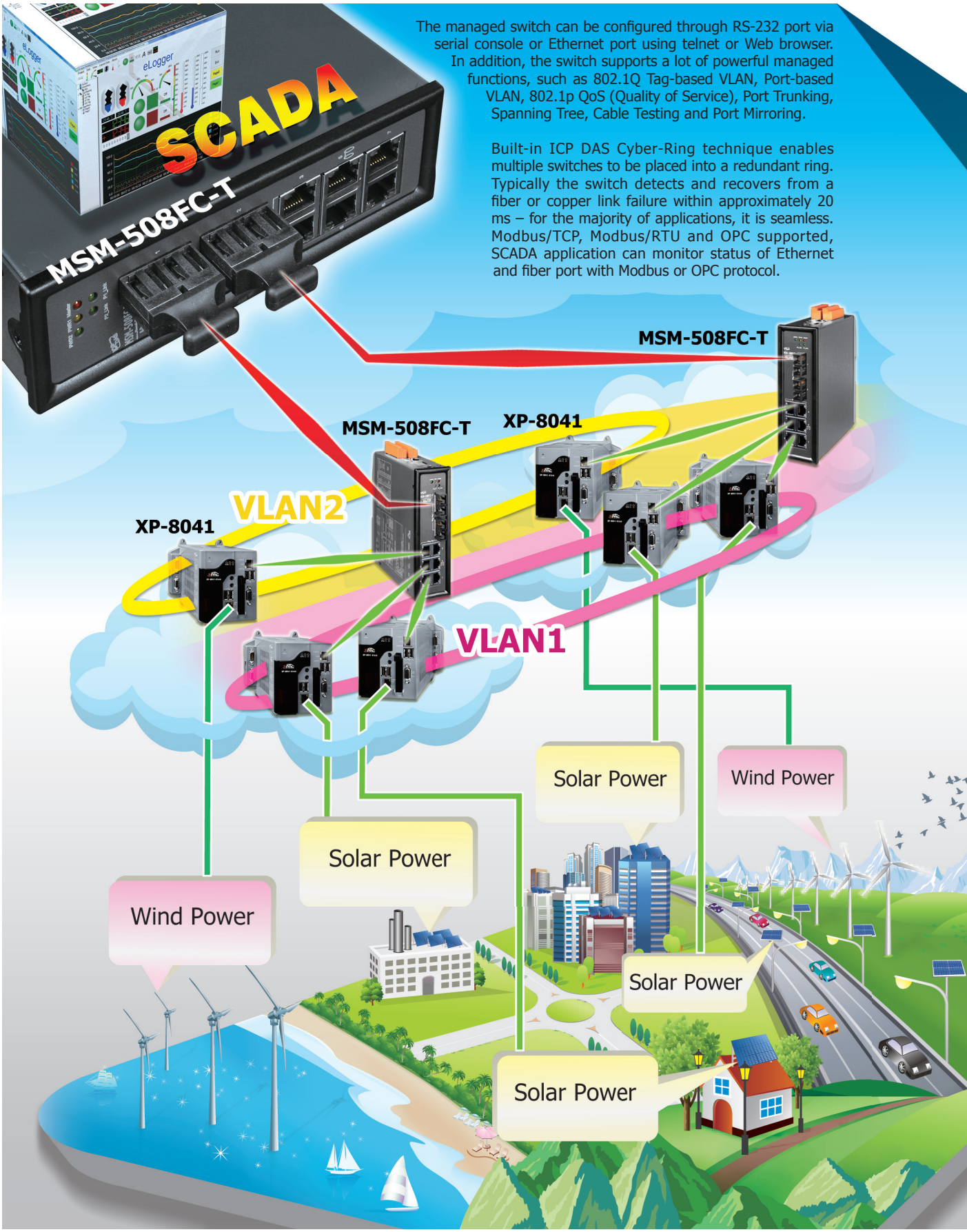
Managed Switch for Industrial Ethernet Applications



Ethernet highway
for your industrial applications
Video
Data
Voice
Video
Data
Voice
Video
Data
Voice

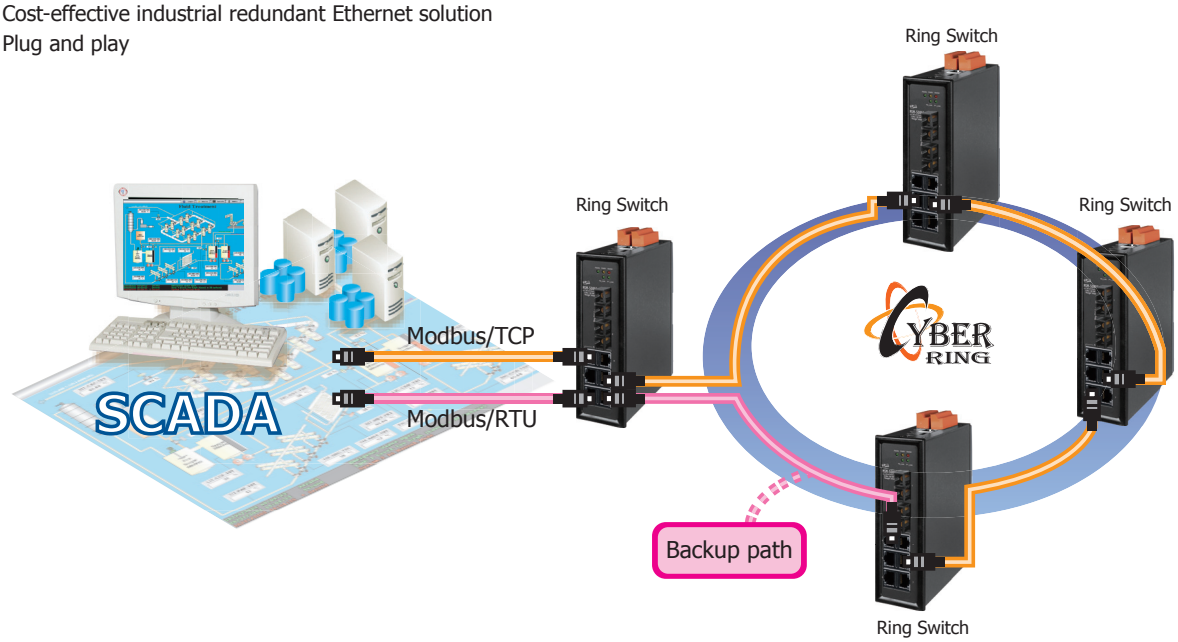
Cyber-Ring Ethernet Self-healing Technology

The power of applying an Ethernet LAN (Local Area Network) to factory floor or industrial automation applications is undoubtedly tremendous. However, a commercial Ethernet switch cannot meet the high reliability requirements demanded by industrial applications. To satisfy these requirements, ICP DAS's Cyber-Ring technology provides you a rugged fault-tolerant, plug and play Ethernet solution.

The ICP DAS's proprietary Cyber-Ring self-healing Ethernet technology can establish industrial Ethernet with high reliability and fault-tolerant capability. It can employ a ring topology network over either copper or fiber optic cable. While standard STP typically requires 20s to 30s for network structure reconfiguration following a link failure, Cyber-Ring technology reduces this downtime to within half a second. Average experience indicates a typical fault recovery time is 20 ms for Cyber-Ring fault-tolerant network.

Features

- High reliability and fault-tolerant
- Real-time performance
- Scalable and flexible ring topology
- Cost-effective industrial redundant Ethernet solution
- Plug and play



Recovery Time

The recovery time of Cyber-Ring network consists of two parts, fault detected time and reconfiguration time. Recovery time of Cyber-Ring network is associated with the number of switches of the network and Cyber-Ring technology offers a variable preconfigured recovery time to support a wide range of number of switches. Typically, the recovery time of Cyber-Ring network is less than 20 ms.

Fault Detected Time

Fault detected time is defined as the time from the occurrence of the fault until fault is detected. There is a master switch of Cyber-Ring network checks the health condition of Cyber-Ring network periodically. If active path dose not response after a preconfigured period of time, the master assumes that active path is failed and invokes reconfiguration mechanism to redirect traffics to the backup path.

Reconfiguration Time

The reconfiguration time of Cyber-Ring network is less than 5 ms per switch. For example, a Cyber-Ring fault-tolerant network that is comprised of ten switches, the expected worst case reconfiguration time will be 50 ms. When a fault is detected, the Cyber-Ring network will reconfigure to provide alternative traffic path of the ring within 50 ms.

Selection Guide

Managed Ethernet Switches

Model Name	Speed		Port		Operation Temperature	Power Input	Casing	Page
MSM-6226	10/100 M	1000 M	24	2	-10 °C ~ +60 °C	+100 VAC ~ +240 VAC	Metal	2-5
MSM-6226G	10/100/1000 M	100/1000 M	20	6	0 °C ~ +50 °C	+100 VAC ~ +240 VAC	Metal	2-9
MSM-506	10/100 M		6		-40 °C ~ +75 °C	+12 VDC ~ +48 VDC (Redundant Power)	Metal	2-13
MSM-508	10/100 M		8		-40 °C ~ +75 °C	+12 VDC ~ +48 VDC (Redundant Power)	Metal	2-13

Managed Ethernet Switches with Fiber Port

Model Name	Fiber Optics				Ethernet		Operation Temperature	Redundant Power	Casing	Page
	Mode	Connector	Speed	Port	Speed	Port				
MSM-506FC-T	Multi-mode	SC	100 M	2	10/100 M	4	-30 °C ~ +75 °C	+12 VDC ~ +48 VDC	Metal	2-17
MSM-506FCS-T	Single-mode	SC	100 M	2	10/100 M	4	-30 °C ~ +75 °C	+12 VDC ~ +48 VDC	Metal	2-17
MSM-506FT-T	Multi-mode	ST	100 M	2	10/100 M	4	-30 °C ~ +75 °C	+12 VDC ~ +48 VDC	Metal	2-17
MSM-508FC-T	Multi-mode	SC	100 M	2	10/100 M	6	-30 °C ~ +75 °C	+12 VDC ~ +48 VDC	Metal	2-17
MSM-508FCS-T	Single-mode	SC	100 M	2	10/100 M	6	-30 °C ~ +75 °C	+12 VDC ~ +48 VDC	Metal	2-17
MSM-508FT-T	Multi-mode	ST	100 M	2	10/100 M	6	-30 °C ~ +75 °C	+12 VDC ~ +48 VDC	Metal	2-17

Real-time Redundant Ring Ethernet Switches

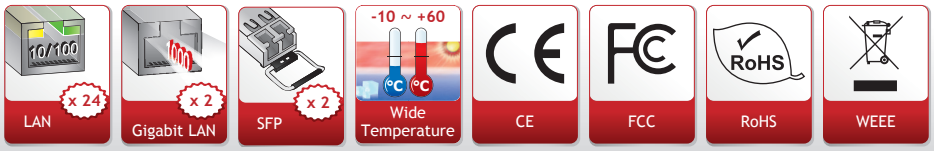
Model Name	Speed	Port	Operation Temperature	Redundant Power	Casing	Page
RS-405	10/100 M	5	-40 °C ~ +75 °C	+10 VDC ~ +30 VDC	Plastic	2-21
RSM-405	10/100 M	5	-40 °C ~ +75 °C	+10 VDC ~ +30 VDC	Metal	2-21
RSM-405-R	10/100 M	5	-40 °C ~ +75 °C	+12 VDC ~ +48 VDC (Non-isolated)	Metal	2-21
RS-408	10/100 M	8	-40 °C ~ +75 °C	+10 VDC ~ +30 VDC	Plastic	2-25
RSM-408	10/100 M	8	-40 °C ~ +75 °C	+10 VDC ~ +30 VDC	Metal	2-25
RSM-408A	10/100 M	8	-40 °C ~ +75 °C	+12 VDC ~ +48 VDC (Non-isolated)	Metal	2-25

Real-time Redundant Ring Ethernet Switches with Fiber Port

Model Name	Fiber Optics				Ethernet		Operation Temperature	Redundant Power	Casing	Page
	Mode	Connector	Speed	Port	Speed	Port				
RS-405FC	Multi-mode	SC	100 M	2	10/100 M	3	0 °C ~ +75 °C	+10 VDC ~ +30 VDC	Plastic	2-29
RSM-405FC	Multi-mode	SC	100 M	2	10/100 M	3	0 °C ~ +75 °C	+10 VDC ~ +30 VDC	Metal	2-29
RS-405FCS	Single-mode	SC	100 M	2	10/100 M	3	0 °C ~ +75 °C	+10 VDC ~ +30 VDC	Plastic	2-29
RSM-405FCS	Single-mode	SC	100 M	2	10/100 M	3	0 °C ~ +75 °C	+10 VDC ~ +30 VDC	Metal	2-29
RS-405FT	Multi-mode	ST	100 M	2	10/100 M	3	0 °C ~ +75 °C	+10 VDC ~ +30 VDC	Plastic	2-29
RSM-405FT	Multi-mode	ST	100 M	2	10/100 M	3	0 °C ~ +75 °C	+10 VDC ~ +30 VDC	Metal	2-29

MSM-6226 NEW

24-port Ethernet + 2 TP/SFP Gigabit Dual Media Layer2 Managed Switch



Features

- 2 Dual Media for Flexible Fiber Connection
- Supports Q-in-Q (Double-tag)
- IEEE802.1X Access Control improves network security
- Unknown Unicast/Broadcast/Multicast storm control
- IP-MAC-port binding for LAN security
- ACL Based on Ethernet Type/ARP/IPv4 for packets permit or deny, rate limitation and port copy
- Supports LLDP (Link Layer Discovery Protocol) provides a standards-based method for enabling switches to advertise themselves.
- Port Mirroring helps supervisor monitoring network
- IEEE802.1Q tag-based VLAN for performance & security
- IEEE802.1D Compatible, IEEE802.1w Rapid Spanning Tree & IEEE802.1s
- Multiple Spanning Tree
- Multicast VLAN management for IPTV
- QCL Based on Application traffic for QoS and rate
- Supports DHCP snooping (DHCP option 82)
- Supports "power saving" for Green Ethernet requirement
- Supports IGMPv3 snooping and IGMP Proxy

Introduction

MSM-6226 is a L2 Managed Switch that meets all IEEE 802.3/u/x/z Gigabit, Fast Ethernet and Ethernet specifications. It provides 24 Fast Ethenret ports (10/100 Mbps TP) and 2 Gigabit dual media ports with TP/SFP (or GBIC).

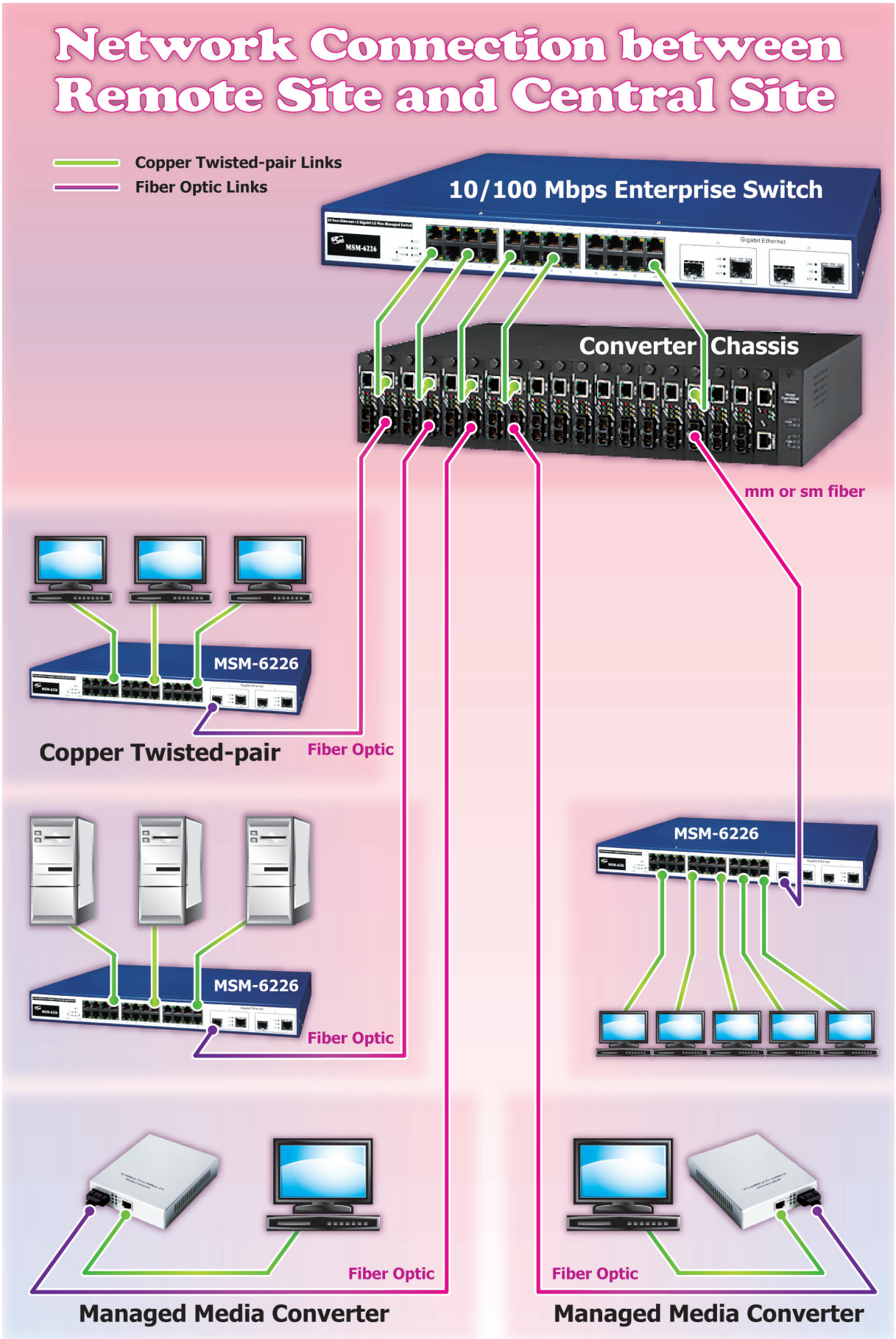
The switch can be managed through RS-232 serial port via direct connection, or through Ethernet port using Telnet or Web-Based management unit, associated with SNMP agent. With the SNMP agent, the network administrator can logon the switch to monitor, configure and control each port activity in a friendly way. The overall network management is enhanced and the network efficiency is also improved to accommodate high bandwidth applications. In addition, the switch features comprehensive and useful function such as DHCP Option 82, QoS (Quality of Service), Spanning Tree, VLAN, Port Trunking, Bandwidth Control, Port Security, SNMP/RMON and IGMPv3 Snooping capability via the intelligent software. It is suitable for both Metro-LAN and office application.

The switch also supports the power saving to reduce the power consumption with Power Management technique. It could efficiently saving the switch power by auto detect the client idle and cable length.

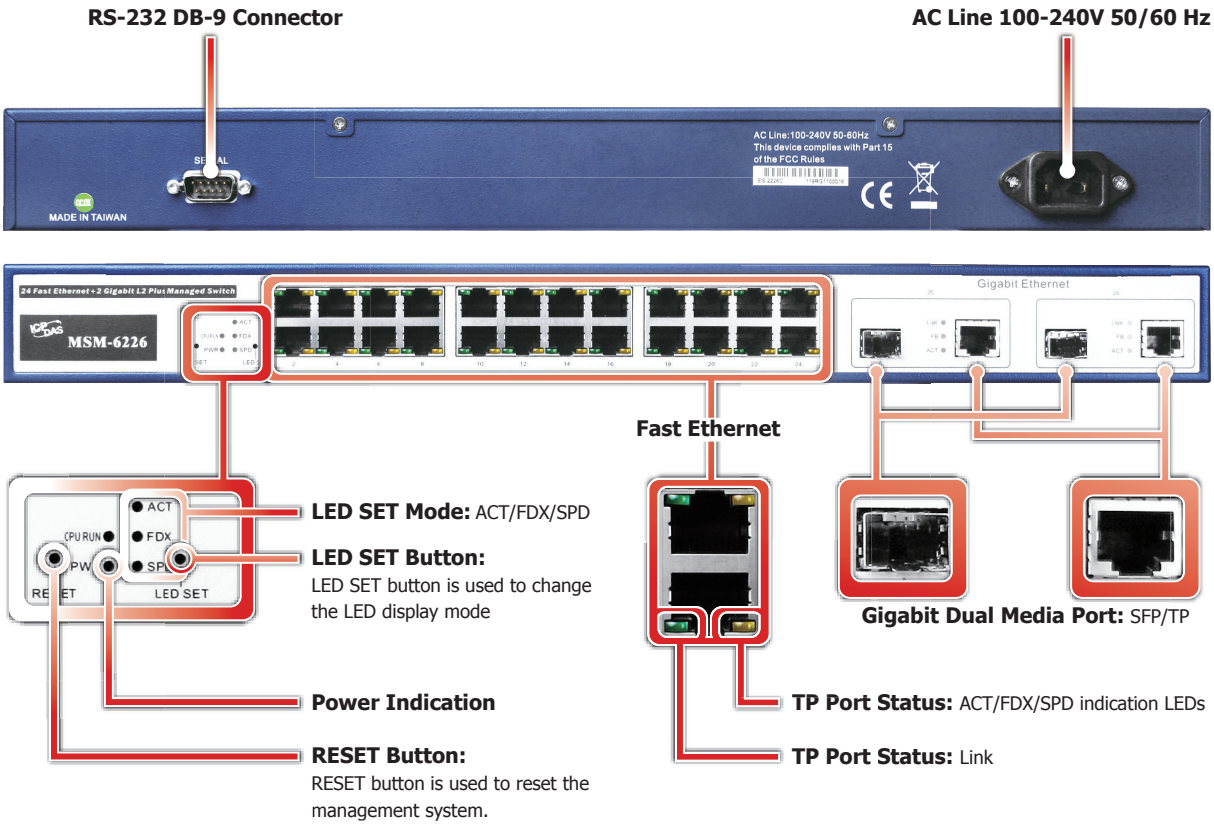
Specifications

Technology	
Standards	2 Dual Media for Flexible Fiber Connection
	Port Mirroring helps supervisor monitoring network
	Improves Q-in-Q (Double-tag)
	IEEE802.1Q tag-based VLAN for performance & security and 4094 VLAN entries
	IEEE802.1X Access Control improves network security
	IEEE802.1D Compatible, IEEE802.1w Rapid Spanning Tree & IEEE802.1s Multiple Spanning Tree
	Unknown Unicast/Broadcast/Multicast storm control
	Multicast VLAN management for IPTV
	IP-MAC-port binding for LAN security
	QCL Based on Application traffic for QoS and rate limitation managmenet
	Supports IGMPv3 snooping and IGMP Proxy
	Supports DHCP snooping (DHCP option 82)
	ACL Based on Ethernet Type/ARP/IPv4 for packets permit or deny, rate limitation and port copy
	Supports "power saving" for Green Ethernet requirement
	Supports LLDP (Link Layer Discovery Protocol) provides a standards-based method for enabling switches to advertise themselves.
MAC Addresses	8192
Processing Type	Non-blocking, store-and-forward and shared-memory L2 managed switch
Memory Bandwidth	8.8 Gbps
Frame Buffer Memory	Embedded 256 KB packet buffers and 128 KB control memory
Flow Control	Backpressure flow control for half duplex
	802.3x flow control for full duplex
Protocol	VLAN, QoS, Port Trunk, SMTP, TELNET, SNMP, IGMP, IEEE802.1X, LLDP
Interface	
RJ-45 Ports	24-port 10/100 Base-TX auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection and 2 Gigabit Ethernet ports with non-blocking wise speed performance.
SFP	2-port 1000 Mbps SFP Fiber Module Dual Media Auto Detection
LED Indicators	CPURUN, POWER, ACT, FDX, SPD
Ethernet Isolation	2 K V_{DC} Isolation
COM1	RS-232 (TxD, RxD and GND); Non-isolated
Frame Ground for EMS Protection	EMS Requirements: IEC-61000-4-2, IEC-61000-4-3, IEC-61000-4-4, IEC-61000-4-5, IEC-61000-4-6, IEC-61000-4-8, IEC-61000-4-11
Power	
Input Voltage Range	+100 V_{AC} ~ +240 V_{AC}
Power Consumption	15 W
Protection	Over-Voltage Protection (Spec.: 6.5 V+/-0.7 V); Over-Current Protection (Spec.: 6 A ~ 10 A); Short Circuit Protection
Frame Ground for EMS Protection	Yes
Mechanical	
Casing	Metal
Environmental Rating	IP20
Dimensions (W x L x H)	442 mm x 209 mm x 44 mm
Installation	Installing Chassis to a 19-Inch Wiring Closet Rail; No Wall mounting
Environmental	
Operating Temperature	-10 °C ~ +60 °C
Storage Temperature	-10 °C ~ +70 °C
Ambient Relative Humidity	5% ~ 90% RH, non-condensing

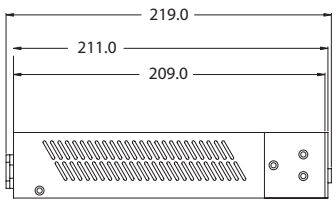
Applications



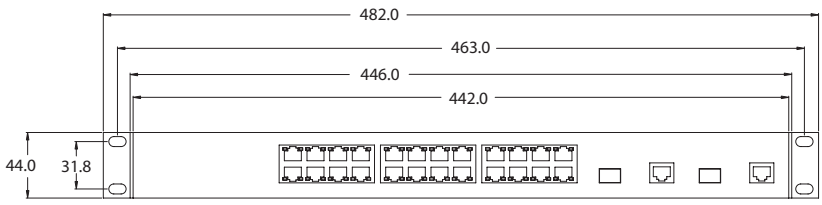
Appearance



Dimensions (Units: mm)



Left Side View



Front View

Ordering Information

MSM-6226 CR	24-port Ethernet + 2 TP/SFP Gigabit Dual Media Layer2 Managed Switch. (include 9-Pin Female-Female D-sub cable, 1.8 M Cable and Power Cord)

Accessories

	SFP-1G85M-SX	Multi-mode 850 nm, 0.5 km SFP module
	SFP-1G13M-SX2	Multi-mode 1310 nm, 2 km SFP module
	SFP-1G13S-LX	Single-mode 1310 nm, 10 km SFP module
	SFP-1G13S-LX20	Single-mode 1310 nm, 20 km SFP module
	SFP-1G13S-LHX	Single-mode 1310 nm, 40 km SFP module
	SFP-1G15S-XD	Single-mode 1550 nm, 60 km SFP module

MSM-6226G NEW

20-Port 10/100/1000 Base-T + 4 Combo 100/1000 TP/SFP Port + 2 SFP Port L2 Managed Switch

Features

- IEEE 802.3ab 1000BASE-T Gigabit Ethernet
- L2+ features provide better manageability, security, QoS, and performance
- IPv6 and s-Flow supports
- Supports IGMPv3 snooping and IGMP Proxy
- IEEE 802.3z Gigabit Ethernet
- Dual speed SFPs for FE or GbE fiber uplink
- 802.3az Energy Efficient Ethernet standard
- Port Mirroring helps supervisor monitoring network

Introduction

MSM-6226G is a L2 Managed Switch that meets all IEEE 802.3ab/u/x/z Gigabit, Gigabit Ethernet and Ethernet specifications. It provides 20 gigabit Ethernet ports (10/100/1000 Mbps TP) , 4 combo TP/SFP ports and 2 SFP ports.

The switch can be managed through RS-232 serial port via direct connection, or through Ethernet port using Telnet or Web-Based management unit, associated with SNMP agent. With the SNMP agent, the network administrator can logon the switch to monitor, configure and control each port activity in a friendly way. The overall network management is enhanced and the network efficiency is also improved to accommodate high bandwidth applications. In addition, the switch features comprehensive and useful function such as DHCP Option 82, QoS (Quality of Service), Spanning Tree, VLAN, Port Trunking, Bandwidth Control, Port Security, SNMP/RMON and IGMPv3 Snooping capability via the intelligent software. It is suitable for both Metro-LAN and office application.

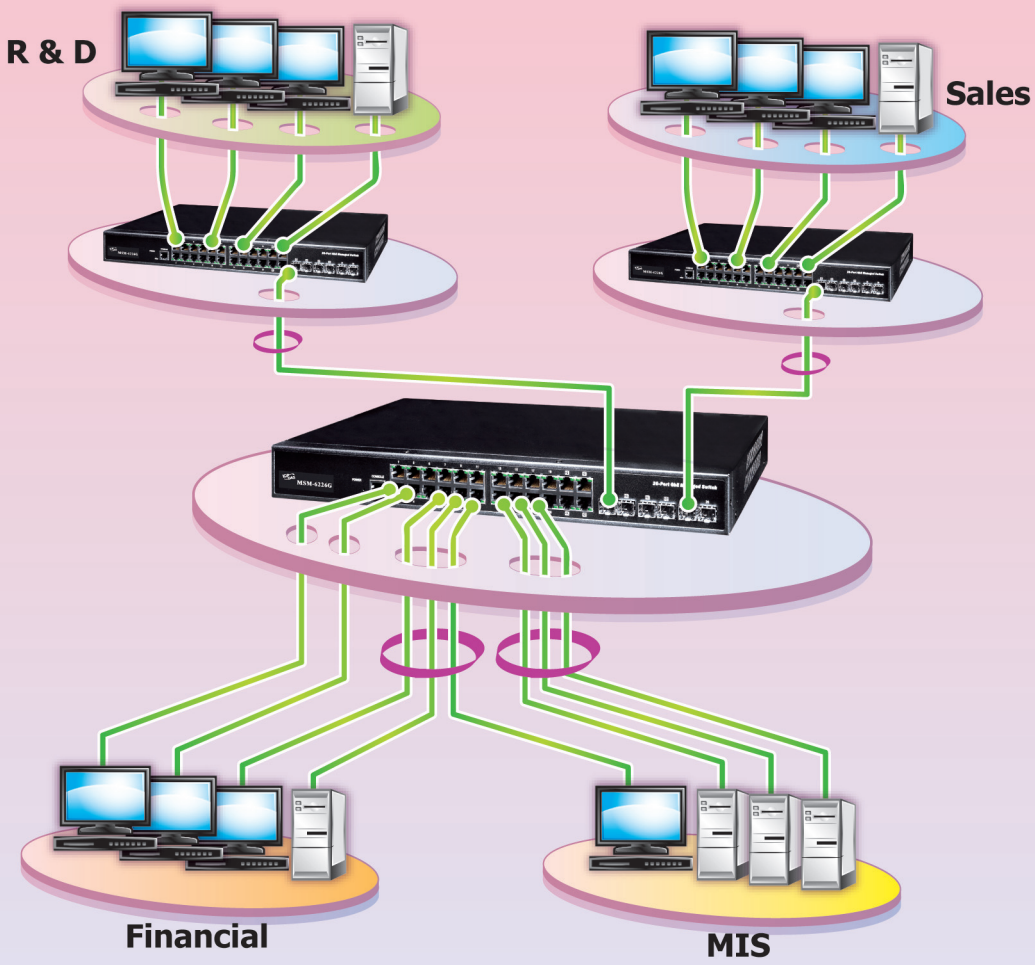
The switch also supports the power saving to reduce the power consumption with Power Management technique. It could efficiently saving the switch power by auto detect the client idle and cable length.

Specifications

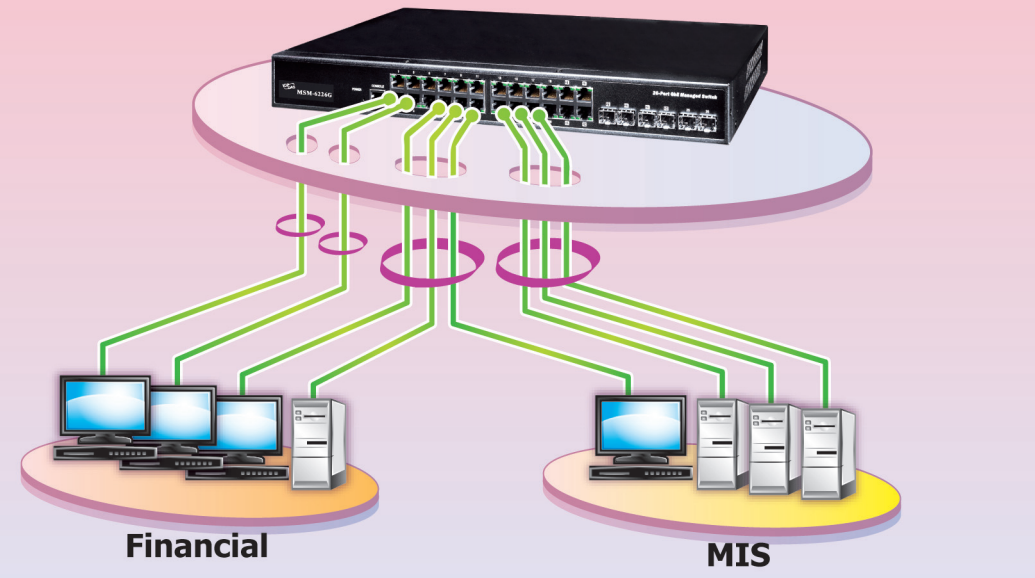
Technology	
Standards	Port Mirroring helps supervisor monitoring network
	IEEE 802.1Q tag-based VLAN for performance
	IEEE 802.1X Access Control improve network security
	IEEE 802.1D Compatible, IEEE802.1w Rapid Spanning Tree & IEEE802.1s Multiple Spanning Tree
	IEEE 802.3ab 1000BASE-T Gigabit Ethernet (twisted-pair copper)
	IEEE 802.3z Gigabit Ethernet (fiber) ANSI/IEEE 802.3
	Unknown Unicast/Broadcast/Multicast storm control
	IP-MAC-Port binding for LAN security
	QCL Based on Application traffic for QoS and rate limitation management
	Supports IGMPv3 snooping and IGMP Proxy
	Supports DHCP snooping (DHCP option 82)
	ACL Based on Ethernet Type/ARP/IPv4 for packets permit or deny, rate limitation and port copy
	Supports "power saving" for Green Ethernet requirement
	Supports LLDP (Link Layer Discovery Protocol) provides a standards-based method for enabling switches to advertise themselves.
MAC Addresses	8 K
Processing Type	Store & forward
Memory Bandwidth	52 Gbps
Frame Buffer Memory	4 Mbits
Protocol	VLAN, QoS, Port Trunk, SMTP, TELNET, SNMP, IGMP, IEEE802.1X, LLDP
Interface	
RJ-45 Ports	20-port 10/100/1000 Base-TX auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
UTP/SFP Combo	4-port combo 100/1000 BAST-T/SFP slots
SFP	2-port 100/1000 Mbps SFP Fiber Module slots
LED Indicators	POWER, TP Port LED, SFP Port LED
Ethernet Isolation	2 K V_{DC} Isolation
Serial Port	RS-232 (TxD, RxD and GND); Non-isolated
Frame Ground for EMS Protection	EMS Requirements: IEC-61000-4-2, IEC-61000-4-3, IEC-61000-4-4, IEC-61000-4-5, IEC-61000-4-6, IEC-61000-4-8, IEC-61000-4-11
Power	
Input Voltage Range	+100 V_{AC} ~ +240 V_{AC}
Power Consumption	16 W
Frame Ground for EMS Protection	Yes
Mechanical	
Casing	Metal
Environmental Rating	IP20
Dimensions (W x L x H)	442 mm x 170 mm x 44 mm
Installation	Wall mounting, 19" rackmountable, brackets included
Environmental	
Operating Temperature	0 °C ~ +50 °C
Storage Temperature	-20 °C ~ +70 °C
Ambient Relative Humidity	10% ~ 90% RH, non-condensing

Applications

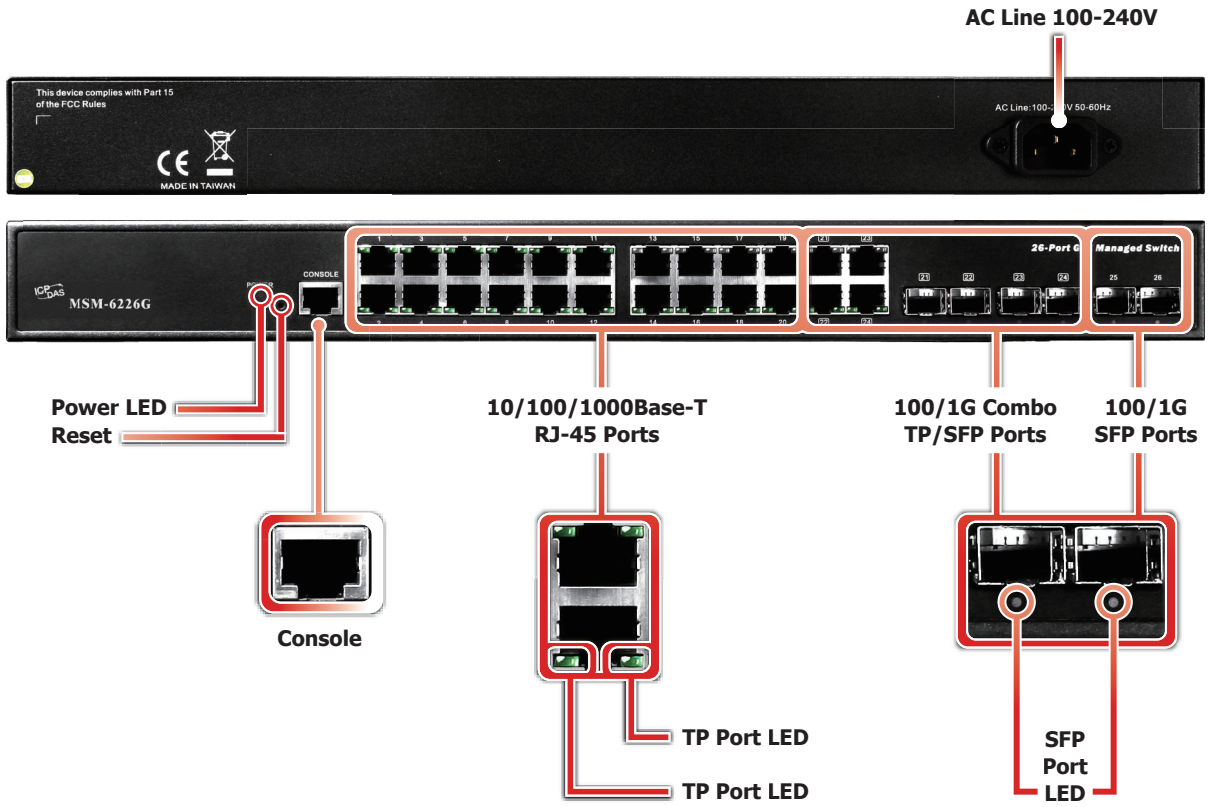
Office Network Connection



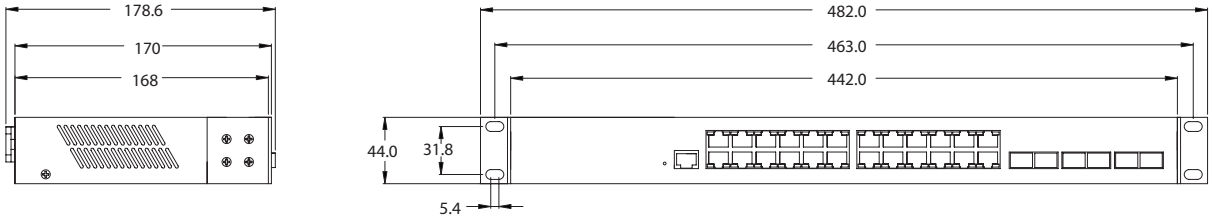
Peer-to-peer Network Connection



Appearance



Dimensions (Units: mm)



Left Side View

Front View

Ordering Information

MSM-6226G CR	20-port 10/100/1000Base-T + 4 TP/(100/1G) SFP Combo + 2 (100/1G) SFP L2 Plus Managed Switch (9-Pin Female D-sub & RJ-45 cable, and Power Cord)

Accessories

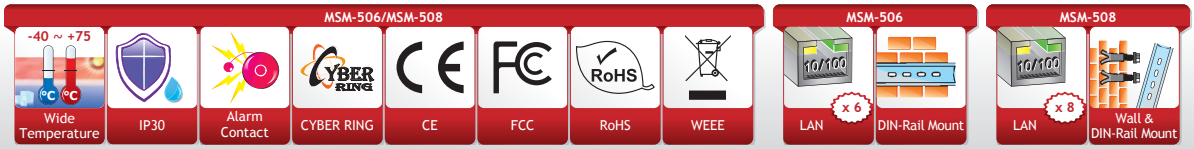
	SFP-1G85M-SX	Multi-mode 850 nm, 0.5 km SFP module
	SFP-1G13M-SX2	Multi-mode 1310 nm, 2 km SFP module
	SFP-1G13S-LX	Single-mode 1310 nm, 10 km SFP module
	SFP-1G13S-LX20	Single-mode 1310 nm, 20 km SFP module
	SFP-1G13S-LHX	Single-mode 1310 nm, 40 km SFP module
	SFP-1G15S-XD	Single-mode 1550 nm, 60 km SFP module

MSM-506 *Available soon*

6-port Industrial Ethernet Layer 2 Managed Switch

MSM-508

8-port Industrial Ethernet Layer 2 Managed Switch



Features

- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Supports wide operating temperature -40 °C ~ +75 °C
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 3.2 Gbps high performance memory bandwidth
- Redundant Dual Power Inputs +12 V_{DC} ~ +48 V_{DC}
  Power failure alarm by relay output
- Frame buffer memory: 1 Mbit
- 2048 MAC addresses
- Store-and-forward architecture
- DIN-Rail Mounting
- Modbus remote monitoring
- Supports Modbus OPC Server
- Built-in Cyber-Ring redundant technique

Introduction

The MSM-506/MSM-508 is an 6-port/8-port Industrial Ethernet (10/100 Base-TX) Layer 2 Managed Switch. MSM-506/MSM-508 supports 10/100M auto negotiation feature and auto MDI/MDI-X function. It can automatically switch the transmission speed (10 Mbps or 100 Mbps) for corresponding connections. The connectors of Ethernet port are shielded RJ-45. The shielded RJ-45 connectors offer a high reliability Ethernet environment for industrial control and automation.

It can be managed through RS-232 port via serial console or Ethernet port using telnet or Web browser. In addition, the switch supports a lot of powerful managed functions, such as 802.1Q Tag-based VLAN, Port-based VLAN, 802.1p QoS (Quality of Service), Port Trunking, Spanning Tree, Cable Testing and Port Mirroring. Built-in ICP DAS Cyber-Ring technique that enable multiple switches to be placed into a redundant ring. Typically the switch detects and recovers from a copper link failure within approximately 20 ms – for the majority of applications a seamless process. Modbus/TCP, Modbus/RTU and OPC supported, SCADA application can monitor status of Ethernet port with Modbus or OPC protocol.

MSM-506/MSM-508 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 it's power needs. And the relay output facility can deliver warning signal while power or network link failure.

Specifications

Models	MSM-508	MSM-506
Technology		
Standards	IEEE 802.3, 802.3u and 802.3x	
Processing Type	Store & forward, wire speed switching	
MAC Addresses	2048	
Memory Bandwidth	3.2 Gbps	
Frame Buffer Memory	1 Mbit	
Flow Control	IEEE 802.3x flow control, back pressure flow control	
Protocol	VLAN, QoS, Port Trunk, SMTP, TELNET	
Interface		
RJ-45 Ports	8-port 10/100 Base-TX auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection	6-port 10/100 Base-TX auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
LED Indicators	Power, 10/100M, Link/Act, Master	
Ethernet Isolation	1500 V_{rms} 1 minute	
COM1	RS-232 (TxD, RxD and GND); Non-isolated	
COM2	RS-485 (D2+, D2-; self-tuner ASIC inside); Non-isolated	
Frame Ground for EMS Protection	Yes	
Digital Input/Output		
Digital Input	3-channel, Wet Contact, L: +11 V_{DC} Max., H: +19 V_{DC} ~ +30 V_{DC}	–
Digital Output	3-channel, Open Collector, Sink/NPN, 30V/100 mA Max.	–
Power		
Input Voltage Range	+12 V_{DC} ~ +48 V_{DC} Redundant Dual Inputs (Non-isolated)	
Power Consumption	0.25 A @ 24 V_{DC}	0.2 A @ 24 V_{DC}
Protection	Power reverse polarity protection	
Frame Ground for EMS Protection	Yes	
Connector	20-Pin Removable Terminal Block	6-Pin Removable Terminal Block
Mechanical		
Casing	Metal	
Environmental Rating	IP30 Protection	
Dimensions (W x L x H)	47 mm x 128 mm x 175 mm	25 mm x 119 mm x 168 mm
Installation	DIN-Rail Mounting or Wall mounting	DIN-Rail Mounting
Environmental		
Operating Temperature	-40 °C ~ +75 °C	
Storage Temperature	-40 °C ~ +85 °C	
Ambient Relative Humidity	10% ~ 90% RH, non-condensing	
Accessories		
Included Cable	CA-090510 x 1	

Comparison Table of MSM-508 and MSM-506

Mode Name	MSM-508	MSM-506
RJ-45 Ports	8-port 10/100 Base-TX	6-port 10/100 Base-TX
Digital Input	3-channel, Wet Contact	–
Digital Output	3-channel, Open Collector	–
Power Consumption	0.25 A @ 24 V_{DC}	0.2 A @ 24 V_{DC}
Connector	20-Pin Removable Terminal Block	6-Pin Removable Terminal Block
Dimensions (W x L x H)	47 mm x 128 mm x 175 mm	25 mm x 119 mm x 168 mm
Installation	DIN-Rail Mounting or Wall mounting	DIN-Rail Mounting

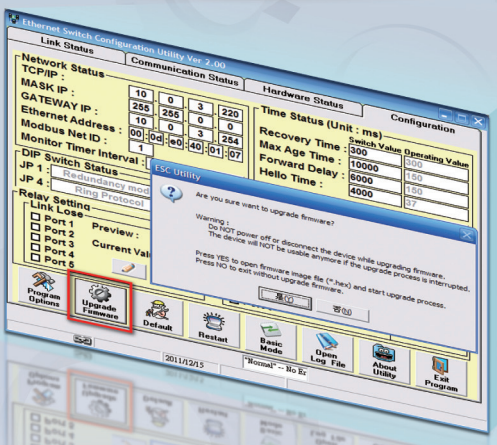
Applications

Web Configuration

Built-in web-based management, providing a more convenient UI for the user.

Firmware Upgrade

Use ESC Utility to upgrade firmware.

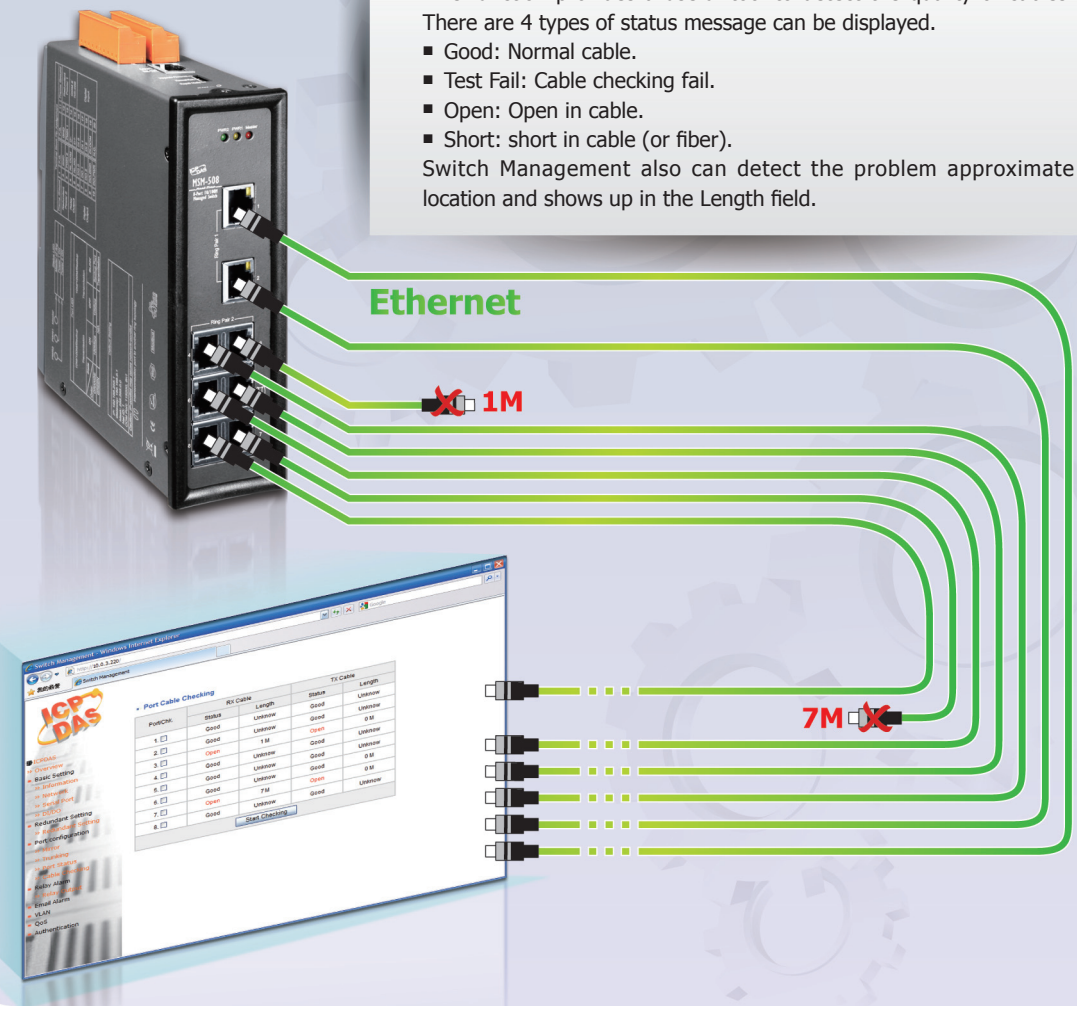


Cable Test

This function provides a useful tool to detect the quality of cables. There are 4 types of status message can be displayed.

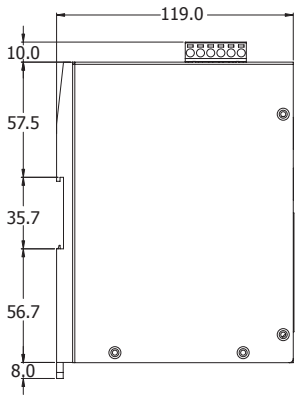
- Good: Normal cable.
- Test Fail: Cable checking fail.
- Open: Open in cable.
- Short: short in cable (or fiber).

Switch Management also can detect the problem approximate location and shows up in the Length field.

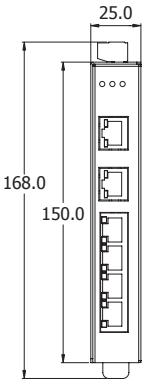


Dimensions (Units: mm)

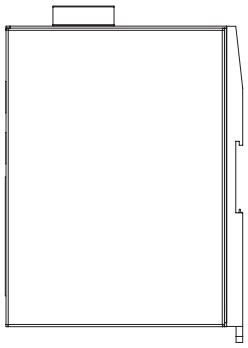
MSM-506



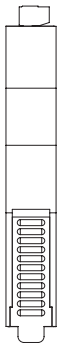
Left Side View



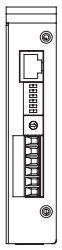
Front View



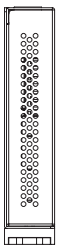
Right Side View



Rear View

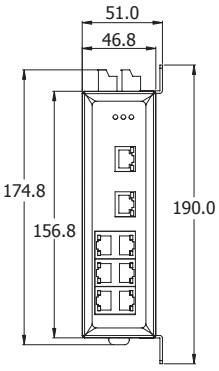


Top View

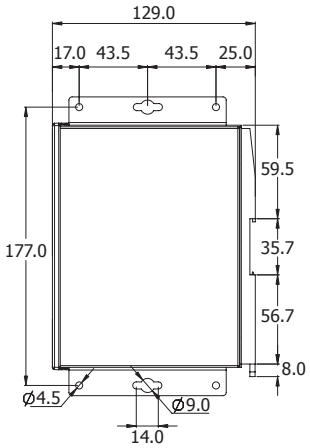


Bottom View

MSM-508 Wall Mounting

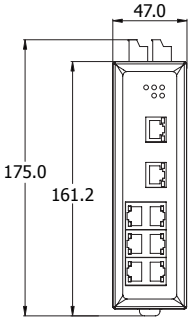


Front View

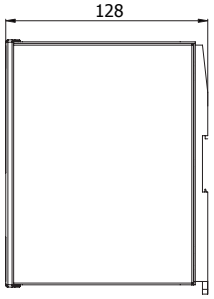


Right Side View

MSM-508 DIN-Rail Mounting



Front View



Right Side View

Ordering Information

MSM-506 CR	6-port Layer 2 Managed Switch with metal casing (RoHS)
MSM-508 CR	8-port Layer 2 Managed Switch with metal casing (RoHS)

Accessories

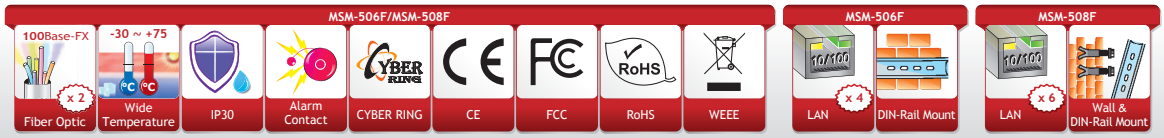
CA-090510	9-Pin Female D-Sub & RJ-45 Cable, 1 M Cable
MDR-20-24	24 V/1 A, 24 W Power Supply with DIN-Rail Mounting
MDR-60-48	48 V/1.25 A, 60 W Power Supply with DIN-Rail Mounting
DIN-KA52F	24 V/1.04 A, 25 W Power Supply with DIN-Rail Mounting
DR-120-24	24 V/5 A, 120 W Power Supply with DIN-Rail Mounting

MSM-506F Series *Available soon*

6-port Industrial Ethernet Layer 2 Managed Switch with 2-Fiber Port

MSM-508F Series *NEW*

8-port Industrial Ethernet Layer 2 Managed Switch with 2-Fiber Port



Features

- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Supports wide operating temperatures from -30 °C ~ +75 °C
- Built-in Cyber-Ring redundant technique
- Redundant Dual Power Inputs +12 V_{DC} ~ +48 V_{DC}
  Power failure alarm by relay output
- Modbus remote monitoring
- Supports Modbus OPC Server
- Store-and-forward architecture
- Frame buffer memory: 1 Mbit
- 2048 MAC addresses
- 3.2 Gbps high performance memory bandwidth
- DIN-Rail Mounting

Introduction

The MSM-506F/MSM-508F series is an 6-port/8-port Industrial Ethernet Layer 2 Managed Switch with 2-Fiber Port that secures data transmission by using fiber optic transmission to provide immunity from EMI/RFI interference. It is a perfect solution for applications where transmission must be protected from electrical exposure, surges, lightning or chemical corrosion.

It can be managed through RS-232 port via serial console or Ethernet port using telnet or Web browser. In addition, the switch supports a lot of powerful managed functions, such as 802.1Q Tag-based VLAN, Port-based VLAN, 802.1p QoS (Quality of Service), Port Trunking, Spanning Tree, Cable Testing and Port Mirroring.

Built-in ICP DAS Cyber-Ring technique enables multiple switches to be placed into a redundant ring. Typically the switch detects and recovers from a fiber or copper link failure within approximately 20 ms – for the majority of applications, it is seamless. Modbus/TCP, Modbus/RTU and OPC supported, SCADA application can monitor status of Ethernet and fiber port with Modbus or OPC protocol.

MSM-506F/MSM-508F 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 it's power needs. And the relay output facility can deliver warning signal while power or network link failure.

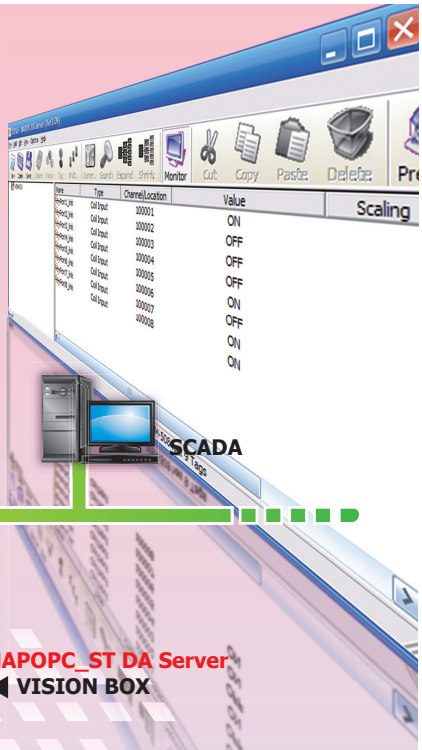
Specifications

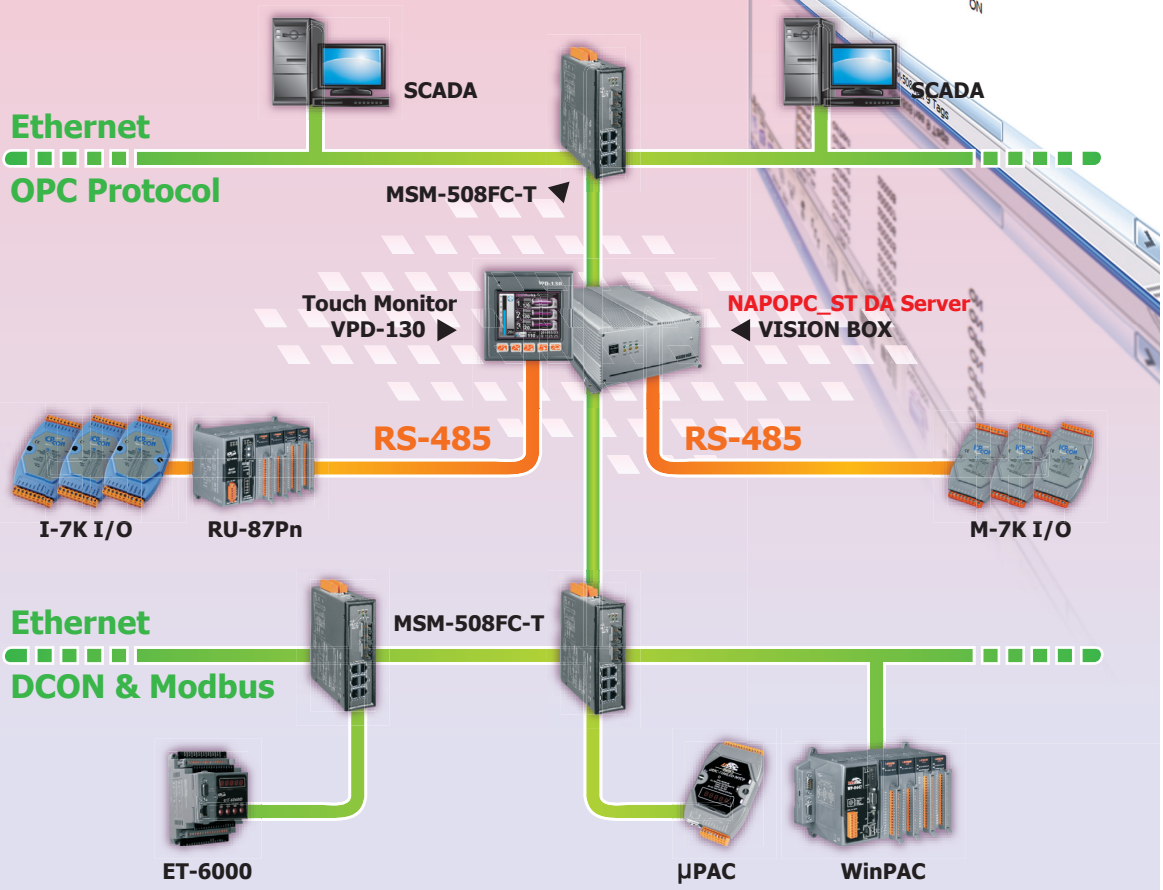
Models		MSM-506FC-T MSM-506FCS-T Series	MSM-506FT-T Series	MSM-508FC-T MSM-508FCS-T Series	MSM-508FT-T Series
Technology					
Standards		IEEE 802.3, 802.3u and 802.3x			
Processing Type		Store & forward, wire speed switching			
MAC Addresses		2048			
Memory Bandwidth		3.2 Gbps			
Frame Buffer Memory		1 Mbit			
Flow Control		IEEE 802.3x flow control, back pressure flow control			
Protocol		VLAN, QoS, Port Trunk, SMTP, TELNET			
Interface					
RJ-45 Ports		4-port 10/100 Base-TX auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection		6-port 10/100 Base-TX auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection	
Fiber Optics Port		2-port 100 Base-FX			
LED Indicators		10/100M, Link/Act, Full duplex/Half duplex (Fiber Port)			
Ethernet Isolation		1500 V_{rms} 1 minute			
Multi-mode	**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			
	RX Sensitivity	-34 ~ -31 dBm			
Single-mode	**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 nm or 1310 nm			
	Min. TX Output	-15 dBm			
	Max. TX Output	-8 dBm			
	RX Sensitivity	-36 dBm ~ -31 dBm			
COM1		RS-232 (TxD, RxD and GND); Non-isolated			
COM2		RS-485 (D2+, D2-; self-tuner ASIC inside); Non-isolated			
Frame Ground for EMS Protection		Yes			
Digital Input/Output					
Digital Input		–		3-channel, Wet Contact, L: +11 V_{DC} Max., H: +19 V_{DC} ~ +30 V_{DC}	
Digital Output		–		3-channel, Open Collector, Sink/NPN, 30V/100 mA Max.	
Power					
Input Voltage Range		+12 V_{DC} ~ +48 V_{DC} Redundant Dual Inputs (Non-isolated)			
Power Consumption		0.2 A @ 24 V_{DC}		0.3 A @ 24 V_{DC}	
LED Indicator		Yes			
Protection		Power reverse polarity protection			
Frame Ground for EMS Protection		Yes			
Connector		6-Pin Removable Terminal Block		20-Pin Removable Terminal Block	
Mechanical					
Casing		Metal			
Environmental Rating		IP30 Protection			
Dimensions (W x L x H) (Units: mm)		25 x 131 x 168	25 x 131 x 168	47 x 140 x 175	47 x 142 x 175
Installation		DIN-Rail Mounting		DIN-Rail Mounting or Wall mounting	
Environmental					
Operating Temperature		-30 °C ~ +75 °C			
Storage Temperature		-40 °C ~ +85 °C			
Ambient Relative Humidity		10% ~ 90% RH, non-condensing			
Accessories					
Included Cable		CA-090510 x 1			

Applications

OPC Server

NAPOPC_ST DA Server is a **free** OPC DA Server **(The "OPC" stands for "OLE for Process Control"and the "DA" stands for "Data Access")** for ICP DAS products. NAPOPC_ST DA Server provides many benefits to users such as reduce time through lower system integration costs, integrate easily with plug-and-play SCADA/HMI/Database, connect and interoperate easily to custom applications, access to data by anyone in the automation hierarchy, reduce troubleshooting and maintenance cost,write to devices synchronously and asynchronously.

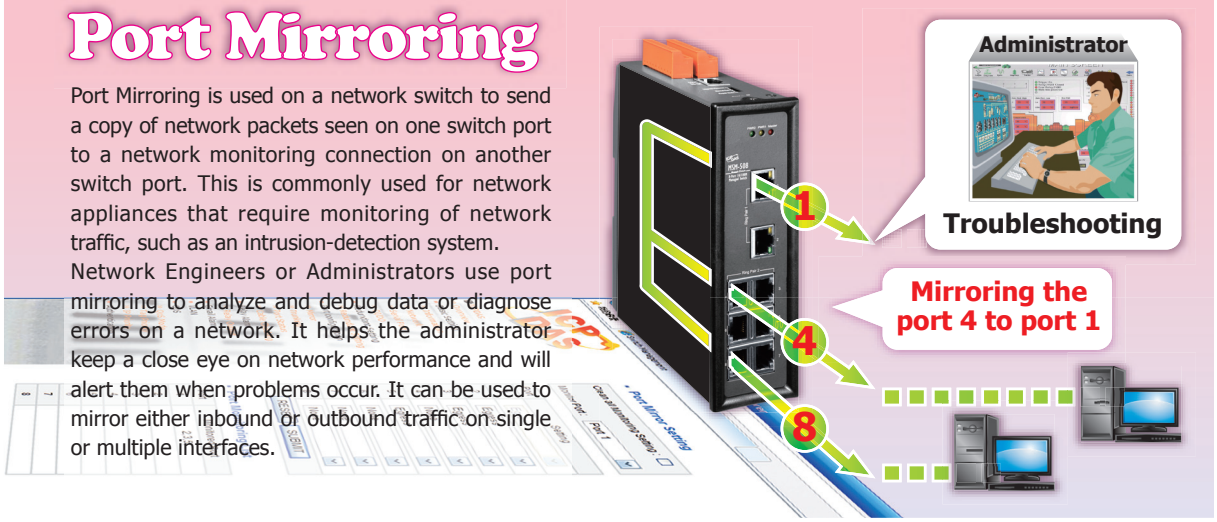




Port Mirroring

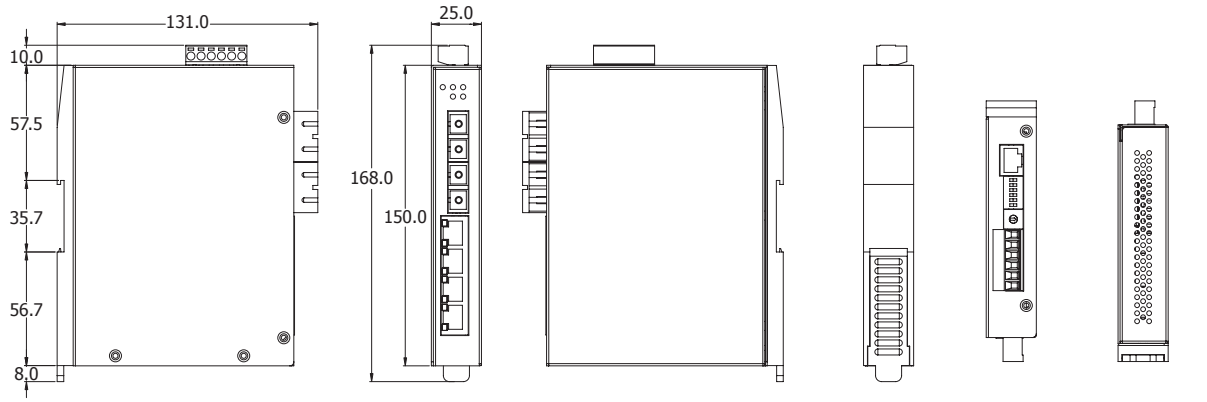
Port Mirroring is used on a network switch to send a copy of network packets seen on one switch port to a network monitoring connection on another switch port. This is commonly used for network appliances that require monitoring of network traffic, such as an intrusion-detection system.

Network Engineers or Administrators use port mirroring to analyze and debug data or diagnose errors on a network. It helps the administrator keep a close eye on network performance and will alert them when problems occur. It can be used to mirror either inbound or outbound traffic on single or multiple interfaces.



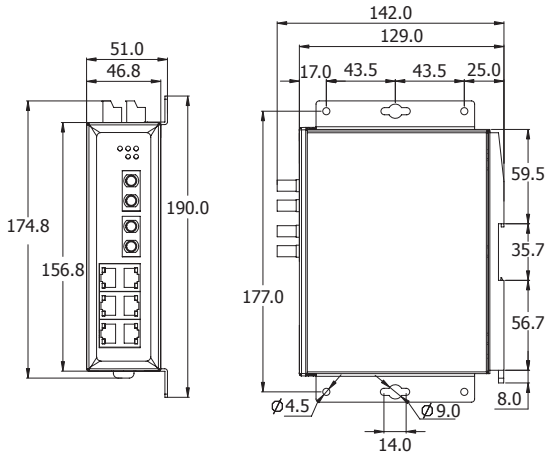
Dimensions (Units: mm)

MSM-506F Series



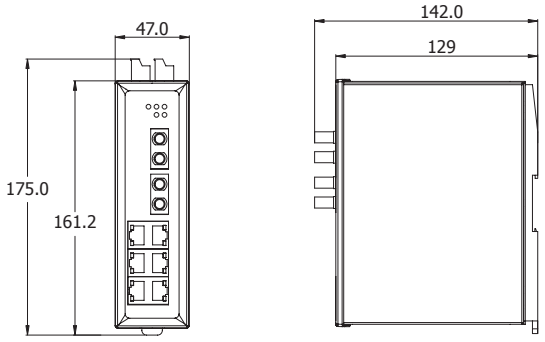
Left Side View | Front View | Right Side View | Rear View | Top View | Bottom View

MSM-508F Series Wall Mounting



Front View | Right Side View

MSM-508F Series DIN-Rail Mounting



Front View | Right Side View

Ordering Information

MSM-506FT-T CR	6-port Layer 2 Managed Switch with 2-Fiber Port, Multi-mode, ST Connector (RoHS)
MSM-506FC-T CR	6-port Layer 2 Managed Switch with 2-Fiber Port, Multi-mode, SC Connector (RoHS)
MSM-506FCS-T CR	6-port Layer 2 Managed Switch with 2-Fiber Port, Single-mode, SC Connector (RoHS)
MSM-506FCS-60T CR	6-port Layer 2 Managed Switch with 2-Fiber Port, Single-mode 60 km, SC Connector (RoHS)
MSM-508FT-T CR	8-port Layer 2 Managed Switch with 2-Fiber Port, Multi-mode, ST Connector (RoHS)
MSM-508FC-T CR	8-port Layer 2 Managed Switch with 2-Fiber Port, Multi-mode, SC Connector (RoHS)
MSM-508FCS-T CR	8-port Layer 2 Managed Switch with 2-Fiber Port, Single-mode, SC Connector (RoHS)
MSM-508FCS-60T CR	8-port Layer 2 Managed Switch with 2-Fiber Port, Single-mode 60 km, SC Connector (RoHS)

Accessories

CA-090510	9-Pin Female D-Sub & RJ-45 Cable, 1 M Cable
MDR-20-24	24 V/1 A, 24 W Power Supply with DIN-Rail Mounting
MDR-60-48	48 V/1.25 A, 60 W Power Supply with DIN-Rail Mounting
DIN-KA52F	24 V/1.04 A, 25 W Power Supply with DIN-Rail Mounting
DR-120-24	24 V/5 A, 120 W Power Supply with DIN-Rail Mounting

RS-405/RSM-405 Series/RSM-405-R NEW

5-port Real-time Redundant Ring Switch

Features

- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports both 10/100 Mbps speed auto negotiation
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 2048 MAC addresses
- Supports wide operating temperature -40 °C ~ +75 °C
- Redundant Dual Power Inputs +10 V_{DC} ~ +30 V_{DC}
  Power failure alarm by relay output
- Modbus remote monitoring
- Supports Modbus OPC Server
- Frame buffer memory: 1 Mbit
- Store-and-forward architecture
- 3.2 Gbps high performance memory bandwidth
- Absolutely free of software setting
- DIN-Rail Mounting

Introduction

The RS-405/RSM-405/RSM-405-R series is a 5-port Industrial Ethernet (10/100 Base-TX) Real-time Redundant Ring Switch. RS-405/RSM-405/RSM-405-R supports 10/100M auto negotiation feature and auto MDI/MDI-X function, it can automatically switch the transmission speed (10 Mbps or 100 Mbps) for corresponding connections.

Built-in ICP DAS Cyber-Ring technique enables multiple switches to be placed into a redundant ring. Typically the switch detects and recovers from a copper link failure within approximately 20 ms – for the majority of applications, seamless.

The RS-405/RSM-405/RSM-405-R series is much more easy to use and absolutely free of software setting. After unpacking the shipping case, it just takes one or two dip or rotary switch to make it work.

RS-405/RSM-405/RSM-405-R 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 it's power needs. And the relay output facility can deliver warning signal while power or network link failure.

Specifications

Models	RS-405	RSM-405	RSM-405-R
Technology			
Standards	IEEE 802.3, 802.3u and 802.3x		
Processing Type	Store & forward, wire speed switching		
MAC Addresses	2048		1024
Memory Bandwidth	3.2 Gbps		
Frame Buffer Memory	1 Mbit		
Flow Control	IEEE 802.3x flow control, back pressure flow control		
Interface			
RJ-45 Ports	10/100 Base-TX auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection		
LED Indicators	Power, 10/100M, Link/Act, Master		
Ethernet Isolation	1500 V_{rms} 1 minute		
COM1	RS-232 (TxD, RxD and GND); Non-isolated		
COM2	RS-485 (D2+, D2-; self-tuner ASIC inside); Non-isolated		–
Frame Ground for EMS Protection	Yes		
Power			
Input Voltage Range	+10 V_{DC} ~ +30 V_{DC} Redundant Dual Inputs (Isolated)		+12 V_{DC} ~ +48 V_{DC} Redundant Dual Inputs (Non-isolated)
Power Consumption	0.22 A @ 24 V_{DC}		
Protection	Power reverse polarity protection		
Frame Ground for EMS Protection	Yes		
Connector	7-Pin Removable Terminal Block		6-Pin Removable Terminal Block
Mechanical			
Casing	Plastic	Metal	Metal
Environmental Rating	Flammability UL 94V-0	IP30 Protection	IP30 Protection
Dimensions (W x L x H)	64 mm x 98 mm x 118 mm	73 mm x 102 mm x 132 mm	25 mm x 119 mm x 168 mm
Installation	DIN-Rail Mounting	DIN-Rail Mounting or Wall Mounting	DIN-Rail Mounting
Environmental			
Operating Temperature	-40 °C ~ +75 °C		
Storage Temperature	-40 °C ~ +85 °C		
Ambient Relative Humidity	10% ~ 90% RH, non-condensing		
Accessories			
Included Cable	CA-090510 x 1		

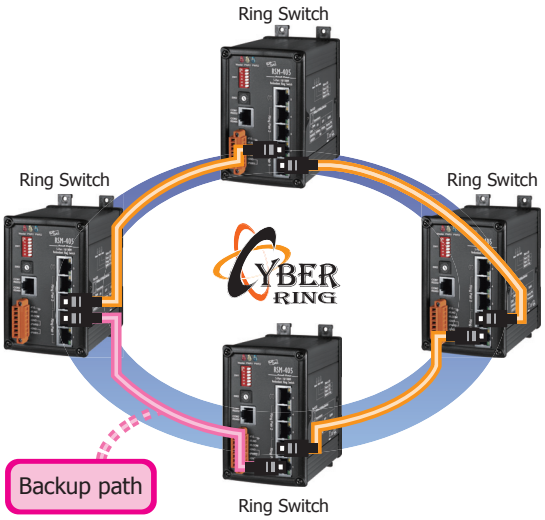
Comparison Table of 5-port Real-time Redundant Ring Switch

Mode Name	RS-405	RSM-405	RSM-405-R
Input Voltage Range	+10 V_{DC} ~ +30 V_{DC}		+12 V_{DC} ~ +48 V_{DC} (Non-isolated)
Casing	Plastic	Metal	Metal
Installation	DIN-Rail Mounting	DIN-Rail Mounting or Wall Mounting	DIN-Rail Mounting
Dimensions (W x L x H)	64 mm x 98 mm x 118 mm	73 mm x 102 mm x 132 mm	25 mm x 119 mm x 168 mm

Applications

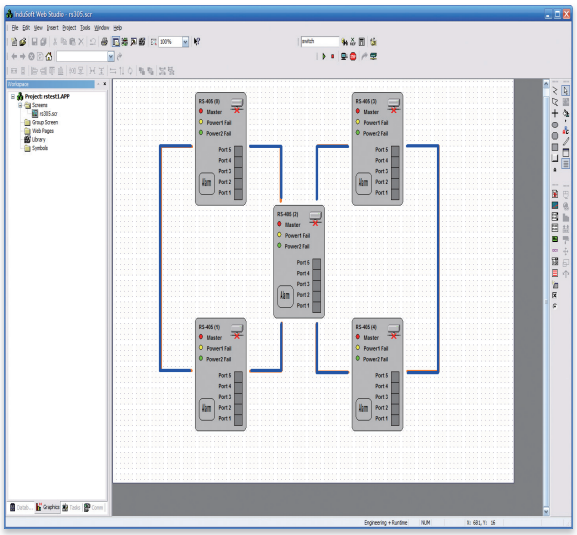
Ring Topology

A Single Ring network topology with Cyber-Ring technology can satisfy the requirement for link-lose-backup in the industrial field application. (In normal operation, traffic on the backup path is either blocked or ignored. If any network node or cable segment of active path is failure, Cyber-Ring will redirect traffics to the backup path automatically. After repair of the failed path, the network is again reconfigured to normal operation stat.



HMI Monitor

Use HMI (Human Machine Interfaces) to monitor Redundant Ring Network status.



LED Functions

RS/RSM-405 Series LED Indicator Functions

LED	Color	Description
Master	Red On	The switch is master of ring network
	Red Off	The switch is slave of ring network
PWR1	Orange On	Power input 1 is alive
	Orange Off	Power input 1 is offline
PWR2	Green On	Power input 2 is alive
	Green Off	Power input 2 is offline
Ethernet Port	Orange On	Link to 100 Mbps
	Orange Off	Link to 10 Mbps
	Orange Blink	Backup Port
	Green Blink	Data Transmission

DIP/Rotary Switches

SW1: Redundancy mode configuration

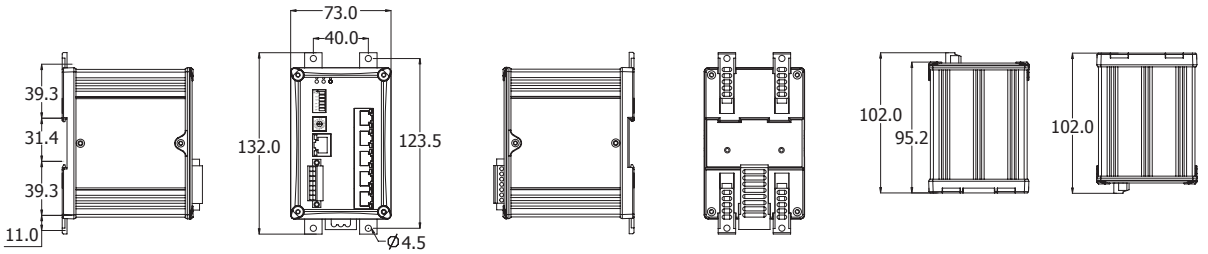
	OFF	ON
1	Redundancy Mode	Tradition Mode
2	Normal State	Default Setting
3	Primary Switch	Secondary Switch
4	Ring Protocol	STP Protocol
5	Disable Ring Pair2	Enable Ring Pair2
6	Disable Ring Pair1	Enable Ring Pair1

SW2: Max. Recovery time selection

State	Time	State	Time	State	Time
F	1.5 s	9	900 ms	3	300 ms
E	1.4 s	8	800 ms	2	200 ms
D	1.3 s	7	700 ms	1	100 ms
C	1.2 s	6	600 ms	0	N/A
B	1.1 s	5	500 ms		
A	1.0 s	4	400 ms		

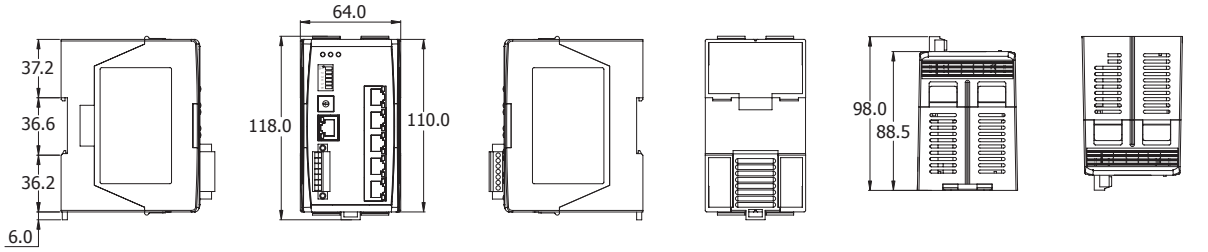
Dimensions (Units: mm)

RSM-405 Series



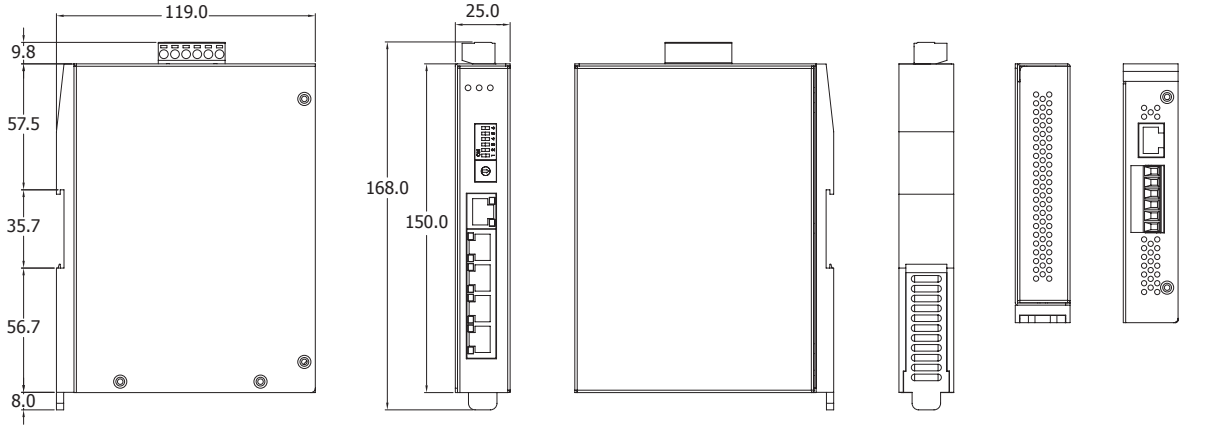
Left Side View | Front View | Right Side View | Rear View | Bottom View | Top View

RS-405 Series



Left Side View | Front View | Right Side View | Rear View | Bottom View | Top View

RSM-405-R



Left Side View | Front View | Right Side View | Rear View | Bottom View | Top View

Ordering Information

RS-405 CR	5-port Redundant Ring Switch with Isolated Power Input +10 VDC ~ +30 VDC (RoHS)
RSM-405 CR	5-port Redundant Ring Switch with Isolated Power Input +10 VDC ~ +30 VDC, metal casing (RoHS)
RSM-405-R CR	5-port Redundant Ring Switch with Non-isolated Power Input +12 VDC ~ +48 VDC, metal casing (RoHS)

Accessories

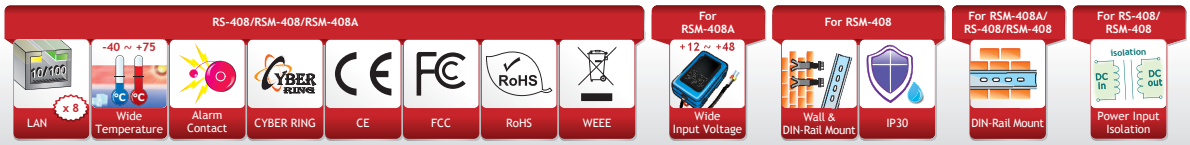
CA-090510	9-Pin Female D-Sub & RJ-45 Cable, 1 M Cable
MDR-20-24	24 V/1 A, 24 W Power Supply with DIN-Rail Mounting
MDR-60-48	48 V/1.25 A, 60 W Power Supply with DIN-Rail Mounting
DIN-KA52F	24 V/1.04 A, 25 W Power Supply with DIN-Rail Mounting
DR-120-24	24 V/5 A, 120 W Power Supply with DIN-Rail Mounting

RS-408/RSM-408

8-port Redundant Ring Switch with Isolated Power Input +10 VDC ~ +30 VDC

RSM-408A *Available soon*

8-port Redundant Ring Switch with Non-isolated Power Input +12 VDC ~ +48 VDC



Features

- Automatic MDI/MDI-X crossover for plug-and-play
- Store-and-forward architecture
- Each port supports both 10/100 Mbps speed auto negotiation
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Supports wide operating temperature -40 °C ~ +75 °C
- 3.2 Gbps high performance memory bandwidth
- Redundant Dual Power Inputs +12 VDC ~ +48 VDC for RSM-408A
  Power failure alarm by relay output
- Modbus remote monitoring
- Supports Modbus OPC Server
- 2048 MAC addresses
- Frame buffer memory: 1 Mbit
- Absolutely free of software setting
- Built-in Cyber-Ring redundant technique
- DIN-Rail Mounting

Introduction

The RS-408/RSM-408/RSM-408A series is a 8-port Industrial Ethernet (10/100 Base-TX) Real-time Redundant Ring Switch. RS-408/RSM-408 supports 10/100M auto negotiation feature and auto MDI/MDI-X function, it can automatically switch the transmission speed (10 Mbps or 100 Mbps) for corresponding connections.

Built-in ICP DAS Cyber-Ring technique enables multiple switches to be placed into a redundant ring. Typically the switch detects and recovers from a copper link failure within approximately 20 ms – for the majority of applications, it is seamless process. The RS-408/RSM-408/RSM-408A series is much more easy to use and absolutely free of software setting. After unpacking the shipping case, it just takes one or two dip or rotary switch to make it work.

RS-408/RSM-408/RSM-408A 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 it's power needs. And the relay output facility can deliver warning signal while power or network link failure.

Specifications

Models	RS-408	RSM-408	RSM-408A
Technology			
Standards	IEEE 802.3, 802.3u and 802.3x		
Processing Type	Store & forward, wire speed switching		
MAC Addresses	2048		
Memory Bandwidth	3.2 Gbps		
Frame Buffer Memory	1 Mbit		
Flow Control	IEEE 802.3x flow control, back pressure flow control		
Interface			
RJ-45 Ports	10/100 Base-TX auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection		
LED Indicators	Power, 10/100M, Link/Act, Master		
Ethernet Isolation	1500 V_{rms} 1 minute		
COM1	RS-232 (TxD, RxD and GND); Non-isolated		
COM2	RS-485 (D2+, D2-; self-tuner ASIC inside); Non-isolated		
Frame Ground for EMS Protection	Yes		
Power			
Input Voltage Range	+10 V_{DC} ~ +30 V_{DC} Redundant Dual Inputs (Isolated)		+12 V_{DC}~ +48 V_{DC} Redundant Dual Inputs (Non-isolated)
Power Consumption	0.3 A @ 24 V_{DC}		0.25 A @ 24 V_{DC}
Protection	Power reverse polarity protection		
Frame Ground for EMS Protection	Yes		
Connector	7-Pin Removable Terminal Block		6-Pin Removable Terminal Block
Mechanical			
Casing	Plastic	Metal	Metal
Environmental Rating	Flammability UL 94V-0	IP30 Protection	IP30 Protection
Dimensions (W x L x H)	64 mm x 98 mm x 118 mm	73 mm x 102 mm x 132 mm	25 mm x 119 mm x 168 mm
Installation	DIN-Rail Mounting	DIN-Rail Mounting or Wall Mounting	DIN-Rail Mounting
Environmental			
Operating Temperature	-40 °C ~ +75 °C		
Storage Temperature	-40 °C ~ +85 °C		
Ambient Relative Humidity	10% ~ 90% RH, non-condensing		
Accessories			
Included Cable	CA-090510 x 1		

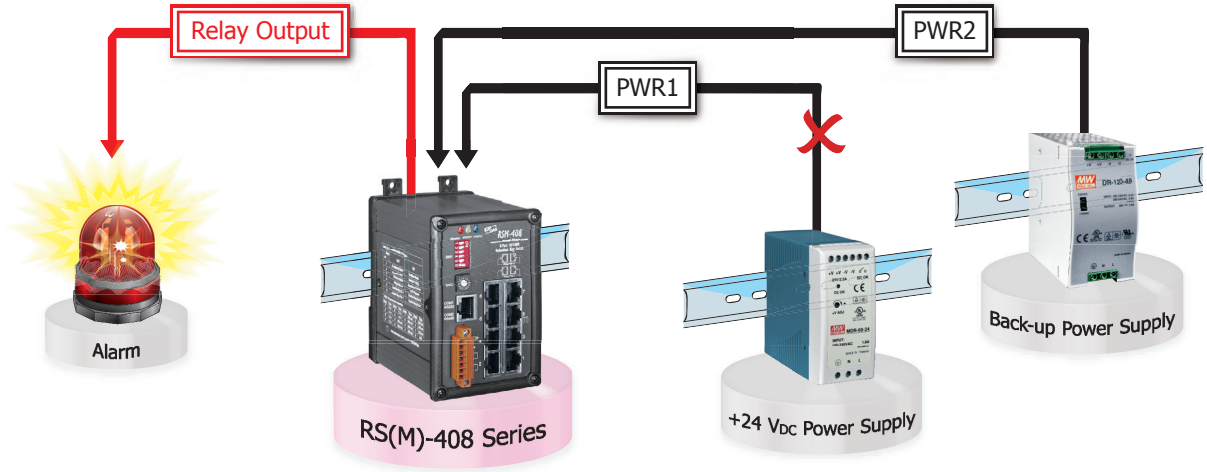
Comparison Table of 8-port Real-time Redundant Ring Switch

Mode Name	RS-408	RSM-408	RSM-408A
Input Voltage Range	+10 V_{DC} ~ +30 V_{DC}		+12 V_{DC} ~ +48 V_{DC} (Non-isolated)
Casing	Plastic	Metal	Metal
Installation	DIN-Rail Mounting	DIN-Rail Mounting or Wall Mounting	DIN-Rail Mounting
Dimensions (W x L x H)	64 mm x 98 mm x 118 mm	73 mm x 102 mm x 132 mm	25 mm x 119 mm x 168 mm

Applications

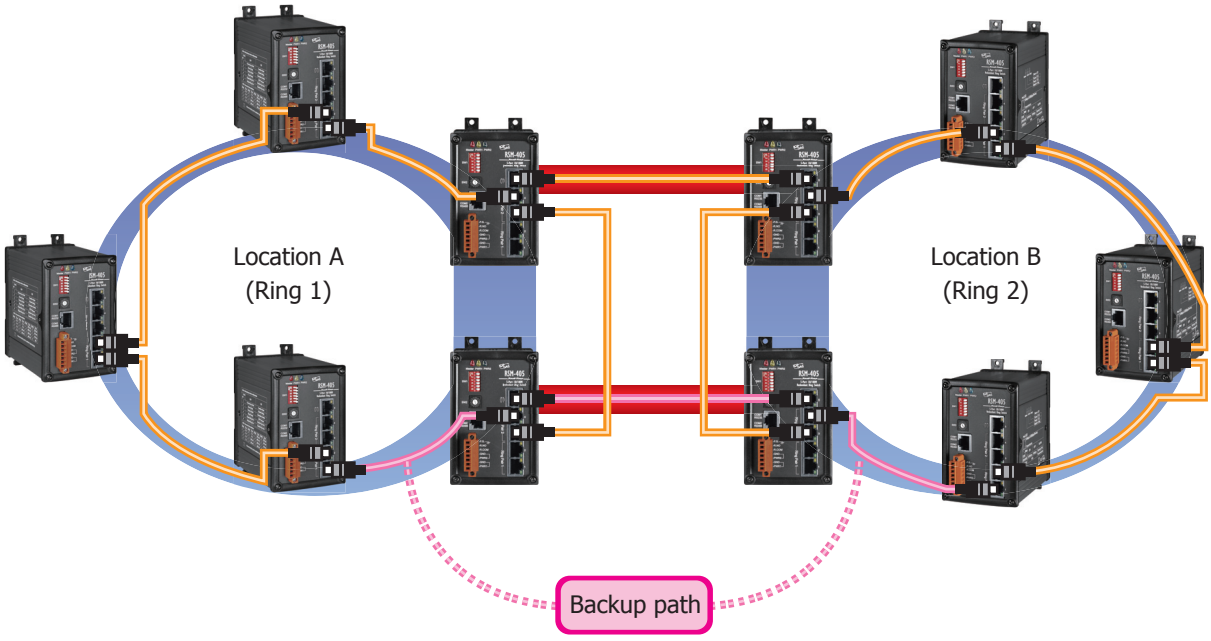
Redundant Power Inputs

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 RS-408/RSM-408 series power needs.



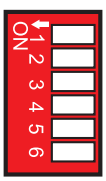
Double Ring Coupling

Double Ring Coupling is the enhanced version of Ring Coupling topology. It improves the reliability of Ring Coupling topology. In Double Ring Coupling topology, there are two coupling points providing redundant coupling path of two rings.



DIP/Rotary Switches

SW1: Redundancy mode configuration



	OFF	ON
1	Redundancy Mode	Tradition Mode
2	Normal State	Default Setting
3	Primary Switch	Secondary Switch
4	Ring Protocol	STP Protocol
5	Disable Ring Pair2	Enable Ring Pair2
6	Disable Ring Pair1	Enable Ring Pair1

SW2: Max. Recovery time selection

State	Time	State	Time	State	Time
F	1.5 s	9	900 ms	3	300 ms
E	1.4 s	8	800 ms	2	200 ms
D	1.3 s	7	700 ms	1	100 ms
C	1.2 s	6	600 ms	0	N/A
B	1.1 s	5	500 ms		
A	1.0 s	4	400 ms		

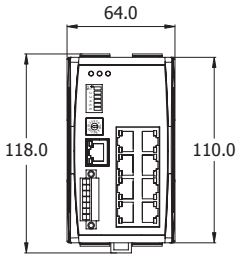
LED Functions

RS/RSM-408 Series LED Indicator Functions

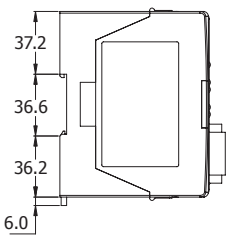
LED	Color	Description
Master	Red On	The switch is master of ring network
	Red Off	The switch is slave of ring network
PWR1	Orange On	Power input 1 is alive
	Orange Off	Power input 1 is offline
PWR2	Green On	Power input 2 is alive
	Green Off	Power input 2 is offline
Ethernet Port	Orange On	Link to 100 Mbps
	Orange Off	Link to 10 Mbps
	Orange Blink	Backup Port
	Green Blink	Data Transmission

Dimensions (Units: mm)

RS-408

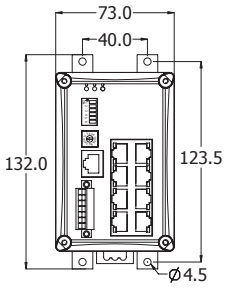


Front View

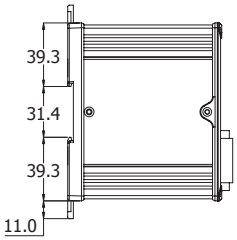


Left Side View

RSM-408

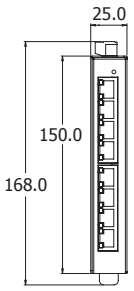


Front View

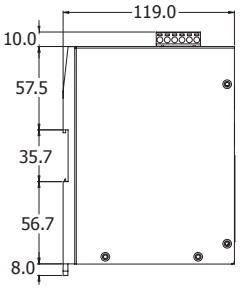


Left Side View

RSM-408A



Front View



Left Side View

Ordering Information

RS-408 CR	8-port Redundant Ring Switch with Isolated Power Input +10 VDC ~ +30 VDC (RoHS)
RSM-408 CR	8-port Redundant Ring Switch with Isolated Power Input +10 VDC ~ +30 VDC, metal casing (RoHS)
RSM-408A CR	8-port Redundant Ring Switch with Non-isolated Power Input +12 VDC ~ +48 VDC, metal casing (RoHS)

Accessories

CA-090510	9-Pin Female D-Sub & RJ-45 Cable, 1 M Cable
MDR-20-24	24 V/1 A, 24 W Power Supply with DIN-Rail Mounting
MDR-60-48	48 V/1.25 A, 60 W Power Supply with DIN-Rail Mounting
DIN-KA52F	24 V/1.04 A, 25 W Power Supply with DIN-Rail Mounting
DR-120-24	24 V/5 A, 120 W Power Supply with DIN-Rail Mounting

RS-405F/RSM-405F Series

5-port Real-time Redundant Ring Switch with 2-Fiber Port

RS-405FC/FCS Series | RS-405FT Series | RSM-405FC/FCS Series | RSM-405FT Series

RS-405F Series/RSM-405F Series: LAN (10/100, x 3), Fiber Optic (100Base-FX, x 2), Alarm Contact, Power Input Isolation (Isolation, DC in, DC out), CYBER RING, CE, FCC, RoHS, WEEE

For RSM-405F Series: Wall & DIN-Rail Mount, IP30

For RS-405F Series: DIN-Rail Mount

Features

- Automatic MDI/MDI-X crossover for plug-and-play
- 3.2 Gbps high performance memory bandwidth
- Each port supports both 10/100 Mbps speed auto negotiation
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Supports wide operating temperature from 0 °C ~ +70 °C
- Redundant Dual Power Inputs +10 V_{DC} ~ +30 V_{DC}
  Power failure alarm by relay output
- Modbus remote monitoring
- Supports Modbus OPC Server
- Store-and-forward architecture
- Built-in Cyber-Ring redundant technique
- Frame buffer memory: 512 Kbit
- 1024 MAC addresses
- DIN-Rail Mounting

Introduction

The RS-405F/RSM-405F series is a 5-port Industrial Ethernet Real-time Redundant Ring Switch with 2-Fiber Port that secures data transmission by using fiber optic transmission to provide immunity from EMI/RFI interference.

Built-in ICP DAS Cyber-Ring technique enables multiple switches to be placed into a redundant ring. Typically the switch detects and recovers from a fiber or copper link failure within approximately 20 ms – for the majority of application, it is seamless. After unpacking the shipping case, it just takes one or two dip or rotary switch to make it work.

RS-405F/RSM-405F 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 it's power needs. And the relay output facility can deliver warning signal while power or network link failure.

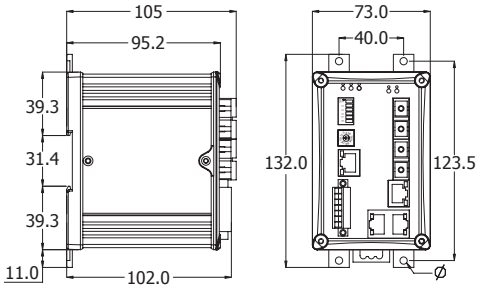
Specifications

Models	RS-405F Series	RSM-405F Series
Technology		
Standards	IEEE 802.3, 802.3u and 802.3x	
Processing Type	Store & forward, wire speed switching	
MAC Addresses	1024	
Memory Bandwidth	3.2 Gbps	
Frame Buffer Memory	512 Kbit	
Flow Control	IEEE 802.3x flow control, back pressure flow control	

Models		RS-405F Series	RSM-405F Series
Interface			
RJ-45 Ports		10/100 Base-TX auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection	
Fiber Optics Port		100 Base-FX	
LED Indicators		10/100M, Link/Act, Full duplex/Half duplex (Fiber Port)	
Ethernet Isolation		1500 V_{rms} 1 minute	
Multi-mode	**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	
	Min. RX Overload	-8 dBm	
	Budget	12 dBm	
Single-mode	**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 nm or 1310 nm	
	Min. TX Output	-15 dBm	
	Max. TX Output	-8 dBm	
	Max. RX Sensitivity	-34 dBm	
	Min. RX Overload	-5 dBm	
	Budget	19 dBm	
Single-mode (60T)	**Single-mode Fiber Cables**	8.3/125, 8.7/125, 9/125 or 10/125 µm	
	Distance	60 km, (9/125 µm recommended) for full duplex	
	Wavelength	1300 nm or 1310 nm	
	Min. TX Output	-5 dBm	
	Max. TX Output	0 dBm	
	Max. RX Sensitivity	-35 dBm	
	Min. RX Overload	-5 dBm	
	Budget	30 dBm	
Ethernet Transmission Distance	**Ethernet**	2-pair UTP/STP Cat.3, 4, 5, EIA/TIA-568 100 Ω	
	Fast Ethernet	2-pair UTP/STP Cat. 5, EIA/TIA-568 100 Ω	
COM1		RS-232 (TxD, RxD and GND); Non-isolated	
COM2		RS-485 (D2+, D2-; Self-Tuner ASIC inside); Non-isolated	
Frame Ground for EMS Protection		Yes	
Power			
Input Voltage Range		+10 V_{DC} ~ +30 V_{DC} Redundant Dual Inputs (Isolated)	
Power Consumption		0.4 A @ 24 V_{DC}	
LED Indicator		Yes	
Protection		Power reverse polarity protection	
Frame Ground for EMS Protection		Yes	
Connector		7-Pin Removable Terminal Block	
Mechanical			
Casing		Plastic	Metal
Environmental Rating		Flammability UL 94V-0	IP30 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		0 °C ~ +70 °C	
Storage Temperature		-20 °C ~ +85 °C	
Ambient Relative Humidity		10% ~ 90% RH, non-condensing	
Accessories			
Included Cable		CA-090510 x 1	

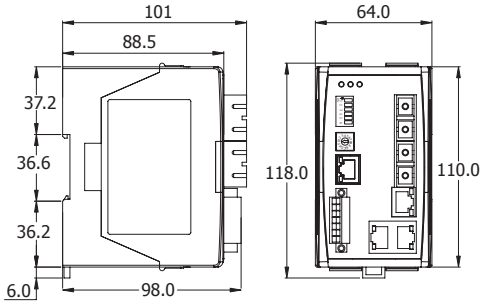
Dimensions (Units: mm)

RSM-405F Series



Left Side View | Front View

RS-405F Series



Left Side View | Front View

LED Functions

Standard RJ-45 female connectors are provided. A standard RJ-45 plug cable is all that is necessary to connect your device to the unit since switch that supports auto crossover.

RS/RSM-405F Series LED Indicator Functions

LED	Color	Description
Master	Red On	The switch is master of ring network
	Red Off	The switch is slave of ring network
PWR1	Orange On	Power input 1 is alive
	Orange Off	Power input 1 is offline
PWR2	Green On	Power input 2 is alive
	Green Off	Power input 2 is offline
Ethernet Port	Orange On	Link to 100 Mbps
	Orange Off	Link to 10 Mbps
	Orange Blink	Backup Port
	Green Blink	Data Transmission
Fiber Port	Orange Blink	Fiber1 is active port
	Orange Off	Fiber1 backup port
	Green Blink	Fiber2 is active port
	Green Off	Fiber2 backup port

DIP/Rotary Switches

SW1: Redundancy mode configuration

	OFF	ON
1	Redundancy Mode	Tradition Mode
2	Normal State	Default Setting
3	Primary Switch	Secondary Switch
4	Ring Protocol	STP Protocol
5	Disable Ring Pair2	Enable Ring Pair2
6	Disable Ring Pair1	Enable Ring Pair1

SW2: Max. Recovery time selection

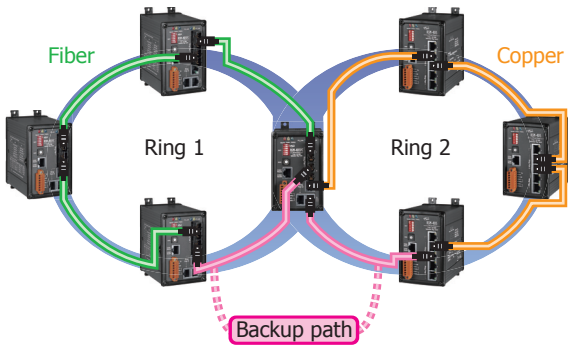
State	Time	State	Time	State	Time
F	1.5 s	9	900 ms	3	300 ms
E	1.4 s	8	800 ms	2	200 ms
D	1.3 s	7	700 ms	1	100 ms
C	1.2 s	6	600 ms	0	N/A
B	1.1 s	5	500 ms		
A	1.0 s	4	400 ms		

Applications

Ring Coupling

The Ring Coupling topology can connect separate Cyber-Ring network together. It is ideal for two-ring application scene.

The Ring Coupling topology not only construct individual Cyber-Ring network for each floor but also provide backup path to each other. It is a cost-effective solution to coupling ring topology.



Ordering Information

RS-405FT CR	5-port Real-time Redundant Ring Switch with 2-Fiber Port, Multi-mode, ST Connector (RoHS)
RSM-405FT CR	5-port Real-time Redundant Ring Switch with 2-Fiber Port, Multi-mode, ST Connector; metal case (RoHS)
RS-405FC CR	5-port Real-time Redundant Ring Switch with 2-Fiber Port, Multi-mode, SC Connector (RoHS)
RSM-405FC CR	5-port Real-time Redundant Ring Switch with 2-Fiber Port, Multi-mode, SC Connector; metal case (RoHS)
RS-405FCS CR	5-port Real-time Redundant Ring Switch with 2-Fiber Port, Single-mode, SC Connector (RoHS)
RSM-405FCS CR	5-port Real-time Redundant Ring Switch with 2-Fiber Port, Single -mode, SC Connector; metal case (RoHS)

Accessories

CA-090510	9-Pin Female D-Sub & RJ-45 Cable, 1 M Cable
MDR-20-24	24 V/1 A, 24 W Power Supply with DIN-Rail Mounting
DIN-KA52F	24 V/1.04 A, 25 W Power Supply with DIN-Rail Mounting
DR-120-24	24 V/5 A, 120 W Power Supply with DIN-Rail Mounting

Unmanaged Ethernet Switches

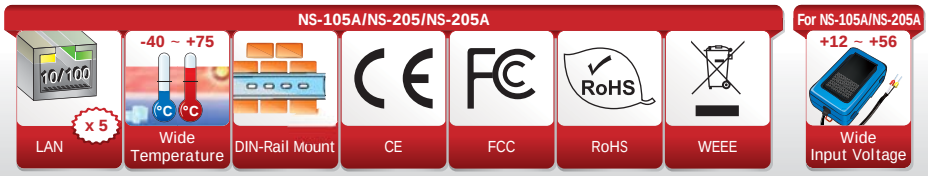
3

NS-205

Unmanaged 5-port Industrial 10/100 Mbps Ethernet Switch

NS-105A/NS-205A NEW

Unmanaged 5-port Industrial 10/100 Mbps Ethernet Switch



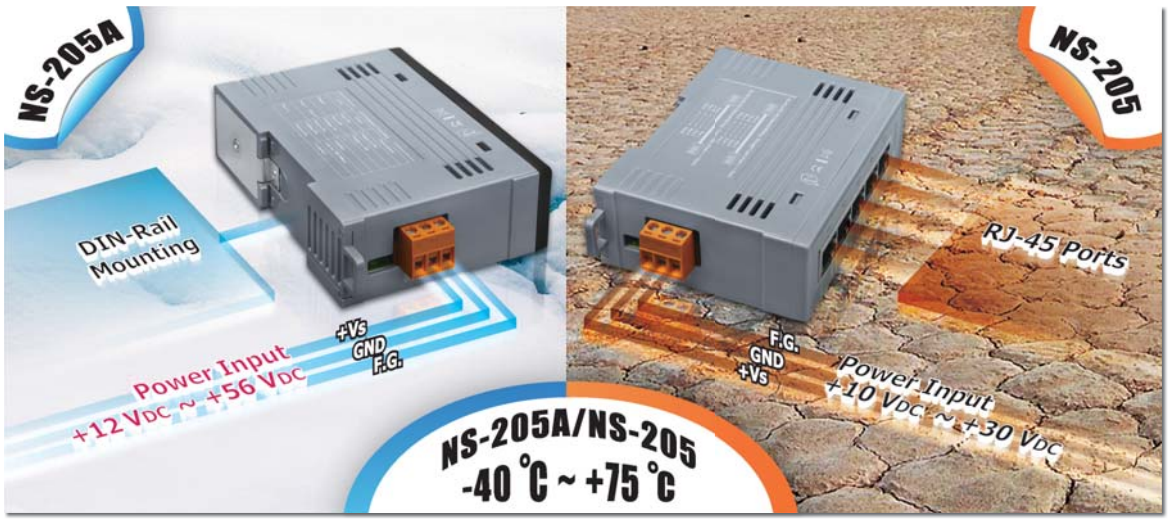
Features

- Automatic MDI/MDI-X crossover for plug-and-play
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Slim packaging fits on your DIN-Rail Mounting
- Each port supports both 10/100 Mbps speed auto negotiation
- Supports +12 V_{DC} ~ +56 V_{DC} for NS-105A/NS-205A
- Supports operating temperatures from -40 °C ~ +75 °C

Introduction

The NS-205/NS-205A/NS-105A has 5 Ethernet Switching ports that support 10/100 Base-TX, with a 10/100M auto-negotiation feature and auto MDI/MDI-X function. It can connect 5 workstations and automatically switches the transmission speed (10 Mbps or 100 Mbps) for corresponding connections. The flow control mechanism is also negotiated. There is activity/link/data rate LEDs for each port to aid trouble-shooting. Port connectors are shielded RJ-45. It contains "soft start" function with overload protection, high-low voltage protection. The width of the NS-205/NS-205A is just 33 mm, so it can be used where space is limited.

The NS-205A/NS-105A provides +12 V_{DC} ~ +56 V_{DC} power input to fit various power source.

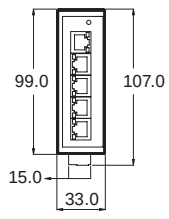


Specifications

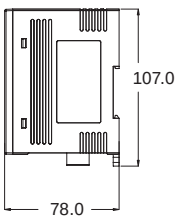
Models		NS-205	NS-205A	NS-105A
Technology				
Standards		IEEE 802.3, 802.3u, 802.3x		
Processing Type		Store & forward; wire speed switching		
MAC Addresses		1024		
Memory Bandwidth		1.4 Gbps	3.2 Gbps	
Frame Buffer Memory		256 Kbit	512 Kbit	
Flow Control		IEEE 802.3x flow control	IEEE 802.3x flow control, back pressure flow control	
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		
Ethernet Isolation		1500 V_{rms} 1 minute		
Frame Ground for EMS Protection		Yes		
Cable	**Ethernet**	2-pair UTP/STP Cat.3, 4, 5, EIA/TIA-568 100 Ω		
	Fast Ethernet	2-pair UTP/STP Cat. 5, EIA/TIA-568 100 Ω		
Redundant Power				
Input Voltage Range		+10 V_{DC} ~ +30 V_{DC} (Non-isolated)	+12 V_{DC} ~ +56 V_{DC} (Non-isolated)	
Power Consumption		0.1 A @ 24 V_{DC}		
Protection		Power reverse polarity protection		
Frame Ground for EMS Protection		Yes		
Connector		3-Pin Removable Terminal Block		5-Pin Removable Terminal Block
Mechanical				
Casing		Plastic		
Flammability		UL 94V-0		
Dimensions (W x L x H)		33 mm x 78 mm x 107 mm		76 mm x 38 mm x 118 mm
Installation		DIN-Rail Mounting		
Environment				
Operating Temperature		-40 °C ~ +75 °C		
Storage Temperature		-40 °C ~ +85 °C		
Ambient Relative Humidity		10% ~ 90% RH, non-condensing		

Dimensions (Units: mm)

NS-205/NS-205A

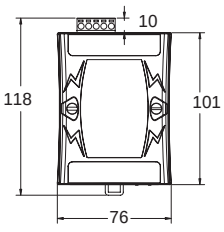


Front View

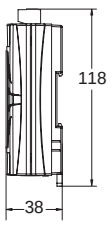


Right Side View

NS-105A



Front View



Right Side View

Ordering Information

NS-205 CR	Unmanaged 5-port Industrial Ethernet Switch (RoHS)
NS-205A CR	Unmanaged 5-port Industrial Ethernet Switch with Power Input +12 V_{DC} ~ +56 V_{DC} (RoHS)
NS-105A CR	Unmanaged 5-port Industrial Ethernet Switch with Power Input +12 V_{DC} ~ +56 V_{DC} (RoHS)

Accessories

GPSU06U-6 CR	24 V/0.25 A, 6 W Power Supply (RoHS)
GPSU06E-6 CR	24 V/0.25A, 6 W Power Supply with 2 pole EURO plug (RoHS)
DIN-KA52F CR	24 V/1.04 A, 25 W Power Supply with DIN-Rail Mounting (RoHS)
DIN-KA52F-48 CR	48 V/0.52 A, 25 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-20-24 CR	24 V/1 A, 24 W Power Supply with DIN-Rail Mounting (RoHS)
MDR-60-48 CR	48 V/1.25 A, 60 W Power Supply with DIN-Rail Mounting (RoHS)

I-8135W NEW

5-port 10/100 Mbps Fast Ethernet Switch Module

LAN (x 5) | Wide Temperature (-25 ~ +75) | CE | FCC | RoHS | WEEE

Features

- 5-port RJ-45 Ethernet Switch
- Each port supports both 10/100 Mbps speed auto negotiation
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Automatic MDI/MDI-X crossover for plug-and-play
- 3.2 Gbps high performance memory bandwidth
- 512 Kbit frame buffer memory

Introduction

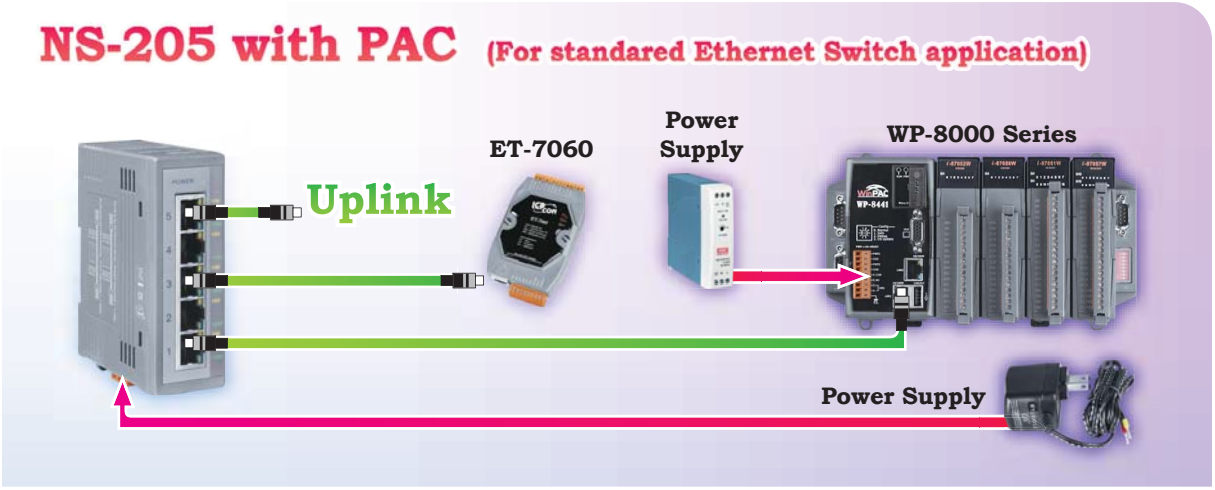
The I-8135W is a flexible and high performance five-port Ethernet switch module. It can be installed in PAC (XPAC, WinPAC, LinPAC, iPAC, ViewPAC, ...) and directly gets power from the backplane. An extra power adapter for an Ethernet switch is not need any more.

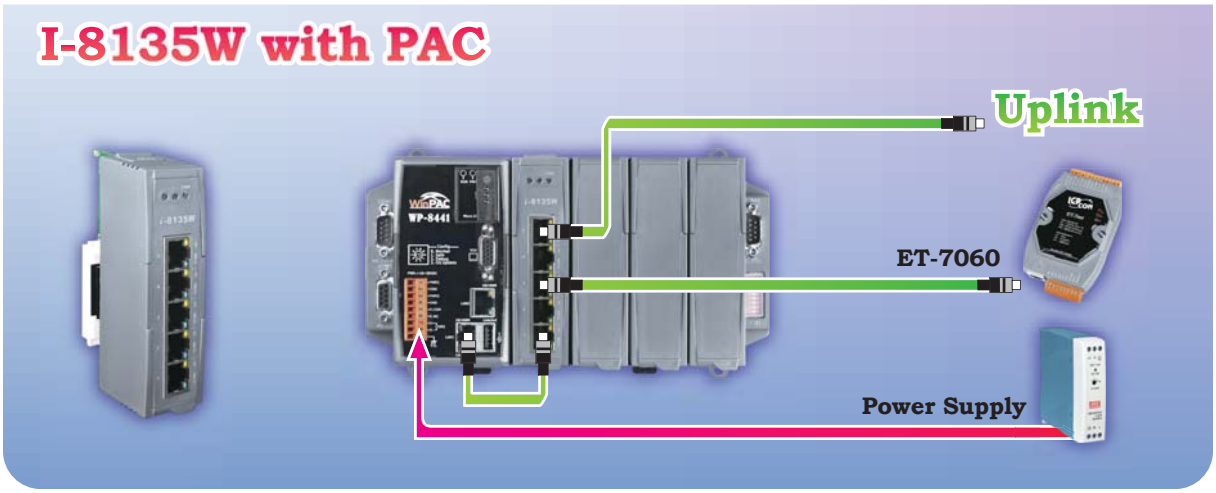
In your PAC solutions, if you want to expand Ethernet connection, I-8135W is good to replace regular Ethernet switchs to save installation space and power adapter.

Specifications

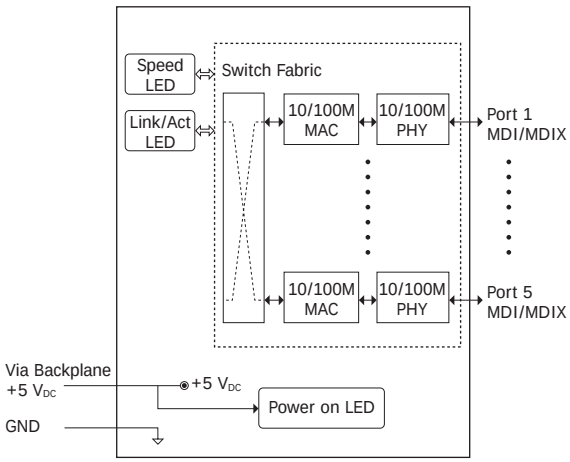
Technology	
Standards	IEEE 802.3, 802.3u, 802.3x
Processing Type	Store & forward, wire speed switching
MAC Addresses	1024
Memory Bandwidth	3.2 Gbps
Frame Buffer Memory	512 Kbit
Flow Control	IEEE802.3x flow control, back pressure flow control
Ethernet Switch	No external software required (for iP-8000, WP-8000, XP-8000, VP-23/25W)
Interface	
LED Indicators	1 LED as power indicator; 10 LEDs as speed and Link/Act indicators
Redundant Power	
Power Consumption	3 W
Mechanical	
Dimensions (W x H x D)	30 mm x 82 mm x 114 mm
Environment	
Operating Temperature	-25 °C ~ +75 °C
Storage Temperature	-30 °C ~ +85 °C
Ambient Relative Humidity	5% ~ 90% RH, non-condensing

Applications

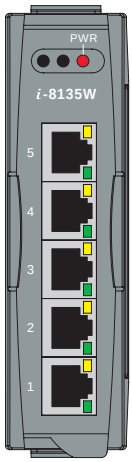




Internal I/O Structure

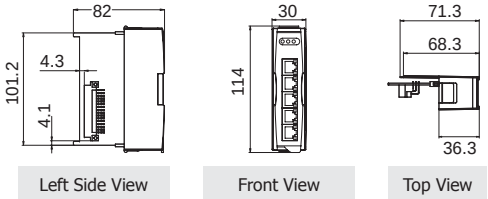


LED Functions



LED	Color	Description
PWR	Red	Power is ON
	Off	Power is Off
10/100M (Port 1)	Green	Link/Act
	Yellow	10/100M
10/100M (Port 2)	Green	Link/Act
	Yellow	10/100M
10/100M (Port 3)	Green	Link/Act
	Yellow	10/100M
10/100M (Port 4)	Green	Link/Act
	Yellow	10/100M
10/100M (Port 5)	Green	Link/Act
	Yellow	10/100M

Dimensions (Units: mm)



Left Side View | Front View | Top View

Ordering Information

I-8135W-G CR	5-port 10/100 Mbps Fast Ethernet Switch Module (RoHS)

NS-208A/NSM-208A NEW

8-port Industrial 10/100 Mbps Ethernet Switch

Features

- Cost-effective
- Automatic MDI/MDI-X crossover for plug-and-play
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Each port supports both 10/100 Mbps speed auto negotiation
- Supports +12 V_{DC} ~ +48 V_{DC} power input
- Supports operating temperatures from -40 °C ~ +75 °C
- DIN-Rail Mounting

Introduction

The NS-208A/NSM-208A has 8 Ethernet ports that support 10/100 Base-TX, with a 10/100M auto negotiation feature and auto MDI/MDI-X function.

All Ethernet ports have memory buffers that support the store-and-forward mechanism, which assures that data can be transmitted properly. The NS-208A/NSM-208A supports advanced network standards to optimize network performance, reduce maintenance costs, and secure network safety.

The flow control mechanism is also negotiated. There is link/data rate LEDs for each port to aid troubleshooting. Port connectors are shielded RJ-45.

Comparison Table of 8-port 10/100 Mbps Ethernet Switch

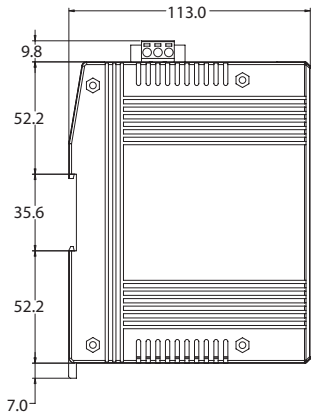
Mode Name	NS-208	NSM-108	NS-208A	NSM-208A	NS-208R
Input Voltage Range	+10 V_{DC} ~ +30 V_{DC}		+12 V_{DC} ~ +48 V_{DC}		
Casing	Plastic	Metal	Plastic	Metal	Plastic
Installation	DIN-Rail Mounting	DIN-Rail Mounting or Wall Mounting	DIN-Rail Mounting		
Dimensions (W x L x H) (Unit: mm)	64 x 98 x 118	73 x 102 x 132	31 x 113 x 157	25 x 119 x 168	64 x 98 x 118
Remarks	–		Cost-effective		EN50155-certified

Specifications

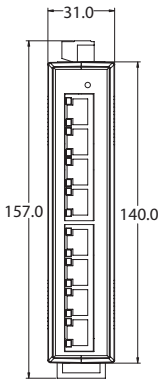
Models	NS-208A	NSM-208A
Technology		
Standards	IEEE 802.3, 802.3u, 802.3x	
Processing Type	Store & forward; wire speed switching	
MAC Addresses	1024	
Memory Bandwidth	2 Gbps	
Frame Buffer Memory	512 Kbit	
Flow Control	IEEE 802.3x flow control, back pressure flow control	
Interface		
RJ-45 Ports	10/100 Base-T(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection	
LED Indicators	Power, Link/Act, 10/100M	
Ethernet Isolation	1500 V_{rms} 1 minute	
EMS Protection	Yes	
Power Input		
Input Voltage Range	+12 V_{DC} ~ +48 V_{DC}	
Power Consumption	0.2 A @ 24 V_{DC}	
Protection	Power reverse polarity protection	
EMS Protection	Yes	
Connector	3-Pin Removable Terminal Block	
Mechanical		
Casing	Plastic (Flammability UL 94V-0)	Metal (IP30 Protection)
Dimensions (W x L x H)	31 mm x 113 mm x 157 mm	25 mm x 119 mm x 168 mm
Installation	DIN-Rail Mounting	
Environment		
Operating Temperature	-40 °C ~ +75 °C	
Storage Temperature	-40 °C ~ +85 °C	
Ambient Relative Humidity	10% ~ 90% RH, non-condensing	

Dimensions (Units: mm)

NS-208A

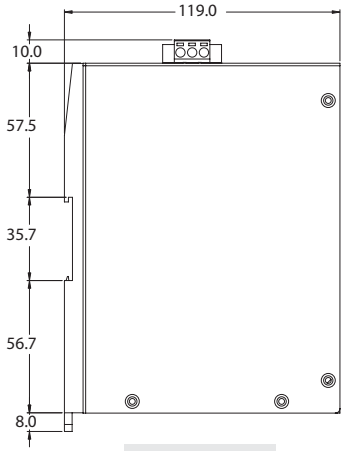


Left Side View

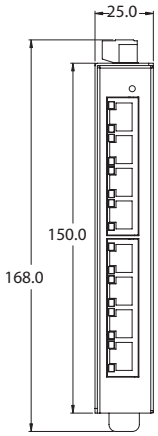


Front View

NSM-208A



Left Side View



Front View

Ordering Information

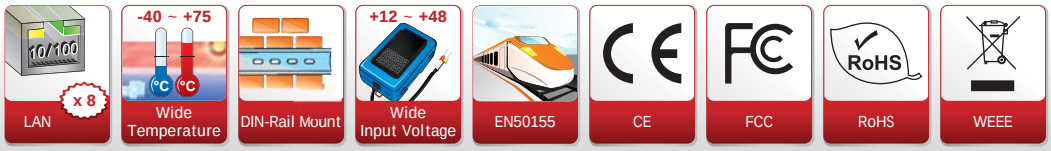
NS-208A CR	Unmanaged 8-port Industrial 10/100 Mbps Ethernet Switch (RoHS)
NSM-20A CR	Unmanaged 8-port Industrial 10/100 Mbps Ethernet Switch with Metal Casing (RoHS)

Accessories

MDR-60-48	48 V/1.25 A, 60 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48 V/0.52 A, 25 W Power Supply with DIN-Rail Mounting
KA52F-48	48 V/0.52 A, 25 W Power Supply

NS-208R NEW

EN50155 8-port Industrial 10/100 Mbps Ethernet Switch



Features

- EN50155-certified for harsh railway standards
- Automatic MDI/MDI-X crossover for plug-and-play
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Each port supports both 10/100 Mbps speed auto negotiation
- Supports +12 V_{DC} ~ +48 V_{DC} power input
- Supports operating temperatures from -40 °C ~ +75 °C
- DIN-Rail Mounting

Introduction

NS-208R Ethernet switch is designed for industrial applications, such as rolling stock, vehicle, and railway applications. The NS-208R is an unmanaged Ethernet switch with 8 x 10/100 Base-T(X) ports which is compliant with EN50155 request.

NS-208R provides a wide +12 V_{DC} ~ +48 V_{DC} power range to fit all the common power standards found in industrial automation, without external power converters. The wide power input lowers installation and maintenance costs.

The flow control mechanism is also negotiated. There is link/data rate LEDs for each port to aid troubleshooting. Port connectors are shielded RJ-45.

Comparison Table of 8-port 10/100 Mbps Ethernet Switch

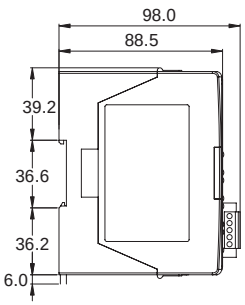
Mode Name	NS-208	NSM-108	NS-208A	NSM-208A	NS-208R
Input Voltage Range	+10 V_{DC} ~ +30 V_{DC}		+12 V_{DC} ~ +48 V_{DC}		
Casing	Plastic	Metal	Plastic	Metal	Plastic
Installation	DIN-Rail Mounting	DIN-Rail Mounting or Wall Mounting	DIN-Rail Mounting		
Dimensions (W x L x H) (Unit: mm)	64 x 98 x 118	73 x 102 x 132	31 x 113 x 157	25 x 119 x 168	64 x 98 x 118
Remarks	–		Cost-effective		EN50155-certified

Specifications

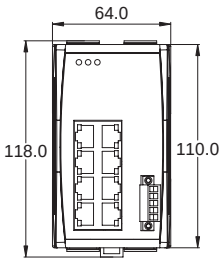
Technology	
Standards	IEEE 802.3, 802.3u, 802.3x
Processing Type	Store & forward; wire speed switching
MAC Addresses	2048
Memory Bandwidth	3.2 Gbps
Frame Buffer Memory	512 Kbit
Flow Control	IEEE 802.3x flow control, back pressure flow control
Interface	
RJ-45 Ports	10/100 Base-T(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
LED Indicators	Power, Link/Act, 10/100M
Ethernet Isolation	1500 V_{rms} 1 minute
EMS Protection	Yes
Power Input	
Input Voltage Range	+12 V_{DC} ~ +48 V_{DC}
Power Consumption	0.15 A @ 24 V_{DC}
Protection	Power reverse polarity protection
EMS Protection	Yes
Connector	5-Pin Removable Terminal Block
Mechanical	
Casing	Plastic (Flammability UL 94V-0)
Dimensions (W x L x H)	64 mm x 98 mm x 118 mm
Installation	DIN-Rail Mounting
Environment	
Operating Temperature	-40 °C ~ +75 °C
Storage Temperature	-40 °C ~ +85 °C
Ambient Relative Humidity	10% ~ 90% RH, non-condensing

Applications

Dimensions (Units: mm)



Left Side View



Front View

Ordering Information

NS-208R CR	Unmanaged EN50155 8-port Industrial 10/100 Mbps Ethernet Switch (RoHS)

Accessories

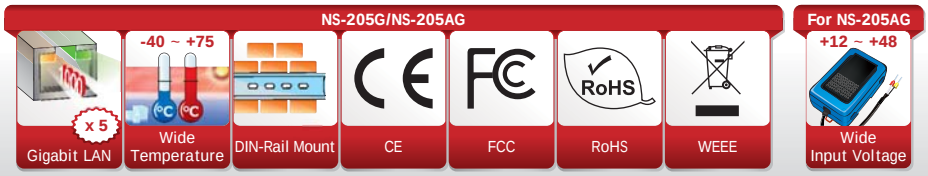
MDR-60-48	48 V/1.25 A, 60 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48 V/0.52 A, 25 W Power Supply with DIN-Rail Mounting
KA52F-48	48 V/0.52 A, 25 W Power Supply

NS-205G

Unmanaged 5-port Industrial 10/100/1000 Base-T Ethernet Switch

NS-205AG *Available soon*

NS-205G with +48 V_{DC} Input



Features

- Automatic MDI/MDI-X crossover for plug-and-play
- Each port supports 10/100 and 1000 Mbps speed auto negotiation
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Supports operating temperatures from -40 °C ~ +75 °C
- 10 Gbps high performance memory bandwidth
- Power saving technology
- Supports +12 V_{DC} ~ +48 V_{DC} power input (NS-205AG)
- Store-and-forward architecture
- Slim packaging fits on your DIN-Rail Mounting

Introduction

The NS-205G/NS-205AG is 5-port unmanaged gigabit switches that support 10/100/1000 Base-T, with a 10/100/1000M auto negotiation feature and auto MDI/MDI-X function. It can connect 5 workstations and automatically switches the transmission speed (10 Mbps or 100 Mbps or 1000 Mbps) for corresponding connections.

That is an ideal solution for bandwidth-hungry applications (such as high resolution digital image transmission, video/audio file streaming/downloading, and server farm connectivity).

The flow control mechanism is also negotiated. There is link/data rate LEDs for each port to aid troubleshooting. Port connectors are shielded RJ-45.

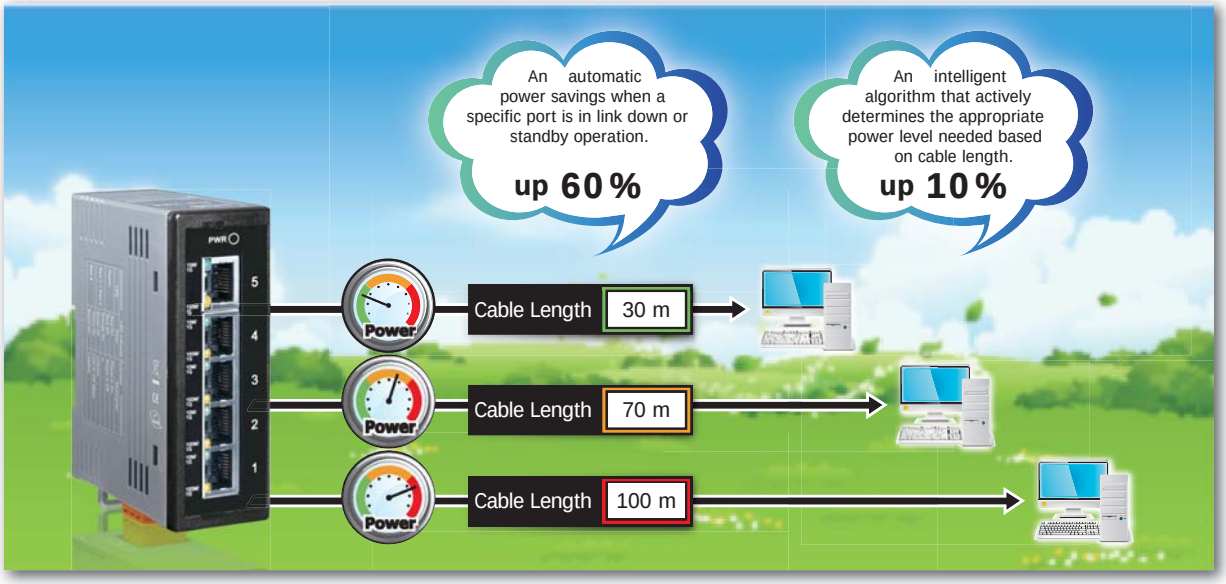
Power Savings by Number of Connected Ports and Link Status: Computers do not require Internet access all the time; neither do switches utilize all ports at all times. When a computer or network equipment is shutdown, switches often remain on and continue to consume considerable amount of power. With Green Ethernet technology, NS-205G/NS-205AG can automatically detect link status and reduce power usage of ports that are idle. Computers or any connecting parties set to standby mode (not power off), however, will not provide significant power savings.

Specifications

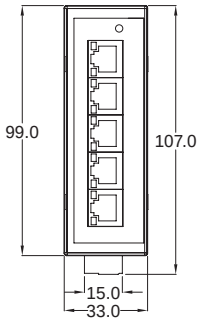
Models	NS-205G	NS-205AG
Technology		
Standards	IEEE 802.3, 802.3u, 802.3ab and 802.3x	
Processing Type	Store & forward, wire speed switching	
MAC Addresses	8192	
Memory Bandwidth	10 Gbps	
Frame Buffer Memory	1 Mbit	
Jumbo Frames	9K for Speed 1000M	
Flow Control	IEEE 802.3x flow control, back pressure flow control	

Models		NS-205G	NS-205AG
Interface			
RJ-45 Ports		10/100/1000 Base-T auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection	
LED Indicators		Power, 10/100/1000M, Link/Act	
Ethernet Isolation		1500 V_{rms} 1 minute	
Frame Ground for EMS Protection		Yes	
Cable	**Ethernet**	2-pair UTP/STP Cat.3, 4, 5, EIA/TIA-568 100 Ω	
	Fast Ethernet	2-pair UTP/STP Cat. 5, EIA/TIA-568 100 Ω	
	Gigabit Ethernet	4-pair UTP/STP Cat.5, EIA/TIA-568 100 Ω	
Power			
Input Voltage Range		+10 VDC ~ +30 VDC (Non-isolated)	+12 VDC ~ +48 VDC (Non-isolated)
Power Consumption		0.1 A @ 24 VDC	
Protection		Power reverse polarity protection	
Frame Ground for EMS Protection		Yes	
Connector		3-Pin Removable Terminal Block	
Mechanical			
Casing		Plastic (Flammability UL 94V-0)	
Flammability		UL 94V-0	
Dimensions (W x L x H)		33 mm x 78 mm x 107 mm	
Installation		DIN-Rail Mounting	
Environment			
Operating Temperature		-40 °C ~ +75 °C	
Storage Temperature		-40 °C ~ +85 °C	
Ambient Relative Humidity		10% ~ 90% RH, non-condensing	

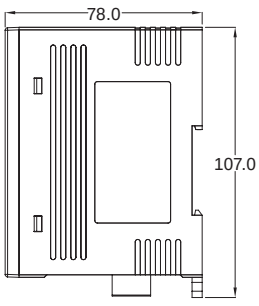
Power Saving Application



Dimensions (Units: mm)



Front View



Right Side View

Ordering Information

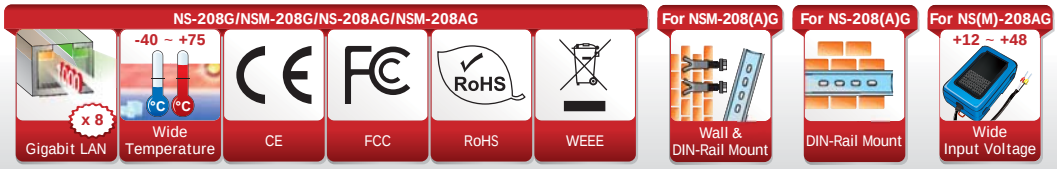
NS-205G CR	Unmanaged 5-port Industrial 10/100/1000 Base-T Ethernet Switch (RoHS)
NS-205AG CR	NS-205G with +48 VDC Input (RoHS)

Accessories

GPSU06U-6 CR	24 V/0.25 A, 6 W Power Supply (RoHS)
DIN-KA52F CR	24 V/1.04 A, 25 W Power Supply with DIN-Rail Mounting (RoHS)

NS-208G/NS-208AG/NSM-208G/NSM-208AG

Unmanaged 8-port Industrial 10/100/1000 Base-T Ethernet Switch



Features

- Automatic MDI/MDI-X crossover for plug-and-play
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Supports +12 V_{DC} ~ +48 V_{DC} power input for NS-208AG and NSM-208AG
- Each port supports 10/100 and 1000 Mbps speed auto negotiation
- 16 Gbps high performance memory bandwidth
- Supports 9K Jumbo Frames for Speed 1000M
- Supports operating temperatures from -40 °C ~ +75 °C
- DIN-Rail Mounting

Introduction

The NS-208G/NSM-208G has 8 Ethernet Switching ports that support 10/100/1000 Base-T, with a 10/100/1000M auto negotiation feature and auto MDI/MDI-X function. It can connect 8 workstations and automatically switches the transmission speed (10 Mbps or 100 Mbps or 1000 Mbps) for corresponding connections.

The flow control mechanism is also negotiated. There is link/data rate LEDs for each port to aid troubleshooting. Port connectors are shielded RJ-45.

NS-208AG/NSM-208AG is exactly the same as NS-208G/NSM-208G except for the power input.

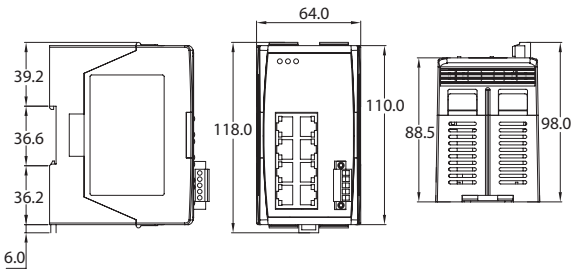
Specifications

Models	NS-208G	NS-208AG	NSM-208G	NSM-208AG
Technology				
Standards	IEEE 802.3, 802.3u, 802.3x			
Processing Type	Store & forward; wire speed switching			
MAC Addresses	8192			
Memory Bandwidth	16 Gbps			
Frame Buffer Memory	1 Mbit			
Jumbo Frames	9K for Speed 1000M			
Flow Control	IEEE 802.3x flow control, back pressure flow control			

Models		NS-208G	NS-208AG	NSM-208G	NSM-208AG
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, 10/100/1000M, Link/Act			
Ethernet Isolation		1500 V_{rms} 1 minute			
EMS Protection		Yes			
Cable	**Ethernet**	2-pair UTP/STP Cat.3, 4, 5, EIA/TIA-568 100 Ω			
	Fast Ethernet	2-pair UTP/STP Cat. 5, EIA/TIA-568 100 Ω			
	Gigabit Ethernet	4-pair UTP/STP Cat.5, EIA/TIA-568 100 Ω			
Power Input					
Input Voltage Range		+10 VDC ~ +30 VDC	+12 VDC ~ +48 VDC	+10 VDC ~ +30 VDC	+12 VDC ~ +48 VDC
Power Consumption		0.3 A @ 24 VDC			
Protection		Power reverse polarity protection			
EMS Protection		Yes			
Connector		5-Pin Removable Terminal Block			
Mechanical					
Casing		Plastic (Flammability UL 94V-0)		Metal (IP20 Protection)	
Dimensions (W x L x H)		64 mm x 98 mm x 119 mm		73 mm x 102 mm x 132 mm	
Installation		DIN-Rail Mounting		DIN-Rail Mounting or Wall Mounting	
Environment					
Operating Temperature		-40 °C ~ +75 °C			
Storage Temperature		-40 °C ~ +75 °C			
Ambient Relative Humidity		10% ~ 90% RH, non-condensing			

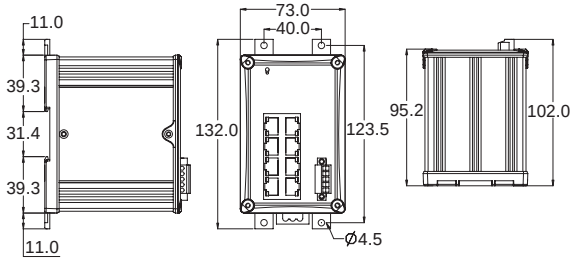
Dimensions (Units: mm)

NS-208G/NS-208AG



Left Side View | Front View | Bottom View

NSM-208G/NSM-208AG



Left Side View | Front View | Bottom View

Ordering Information

NS-208G CR	Unmanaged 8-port 10/100/1000 Base-T Ethernet Switch with Power Input +10 VDC ~ +30 VDC (RoHS)
NSM-208G CR	Unmanaged 8-port 10/100/1000 Base-T Ethernet Switch with Power Input +10 VDC ~ +30 VDC, metal casing (RoHS)
NS-208AG CR	Unmanaged 8-port 10/100/1000 Base-T Ethernet Switch with Power Input +12 VDC ~ +48 VDC (RoHS)
NSM-208AG CR	Unmanaged 8-port 10/100/1000 Base-T Ethernet Switch with Power Input +12 VDC ~ +48 VDC, metal casing (RoHS)

Accessories

DIN-KA52F	24 V/1.04 A, 25 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48 V/0.52 A, 25 W Power Supply with DIN-Rail Mounting
KA52F-48	48 V/0.52 A, 25 W Power Supply without DIN-Rail Mounting
MDR-20-24	24 V/1 A, 24 W Power Supply with DIN-Rail Mounting
MDR-60-48	48 V/1.25 A, 60 W Power Supply with DIN-Rail Mounting

NSM-216 NEW

Unmanaged 16-port Industrial 10/100 Base-TX Ethernet Switch

Features

- Provides 16 10/100 Mbps Ethernet ports
- Each port supports both 10/100 Mbps speed auto negotiation
- Supports 4 kV Ethernet ESD protection and 1 kV EFT protection
- Supports operating temperatures from -40 °C ~ +75 °C
- DIN-Rail Mounting, Wall Mounting
- Automatic MDI/MDI-X crossover for plug-and-play
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Supports Dual +12 V_{DC} ~ +48 V_{DC} power input and 1 relay output

Introduction

The NSM-216 has 16 Ethernet ports that support 10/100 Base-TX, with a 10/100M auto negotiation feature and auto MDI/MDI-X function. It can connect 16 workstations and automatically switches the transmission speed (10 Mbps or 100 Mbps) for corresponding connections.

All Ethernet ports have memory buffers that support the store-and-forward mechanism, which assures that data can be transmitted properly. The NSM-216 supports advanced network standards to optimize network performance, reduce maintenance costs, and secure network safety.

The flow control mechanism is also negotiated. There is link/data rate LEDs for each port to aid troubleshooting. Port connectors are shielded RJ-45.

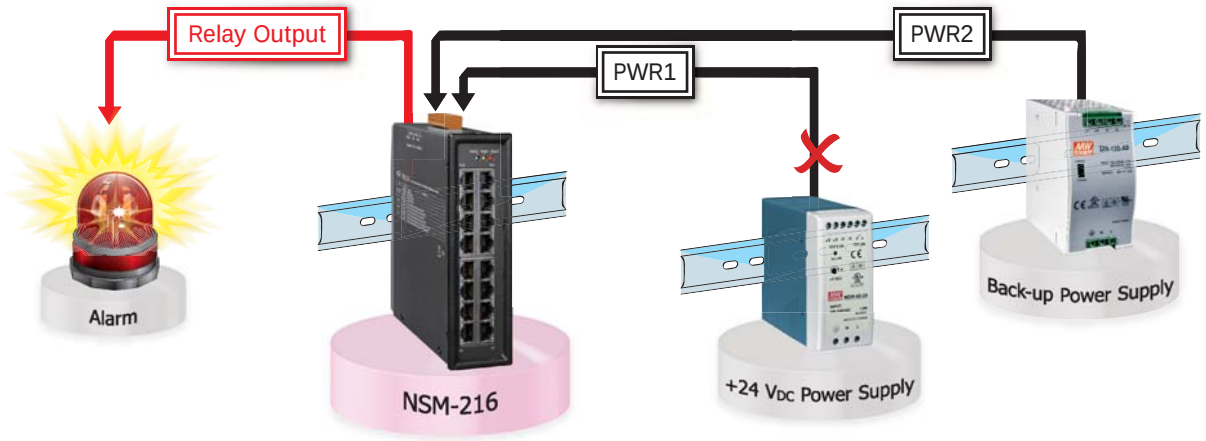
Specifications

Technology	
Standards	IEEE802.3, 802.3u, 802.3x
Processing Type	Store & forward, wire speed switching
MAC Addresses	8K
Memory Bandwidth	3.2 Gbps
Frame Buffer Memory	3 Mbit
Flow Control	IEEE 802.3x flow control, back pressure flow control

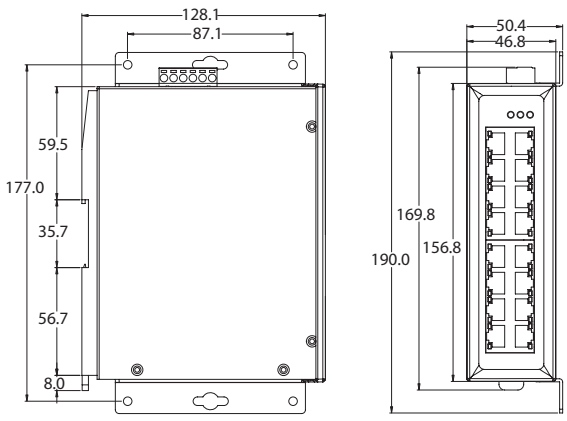
Interface	
RJ-45 Ports	10/100 Base-TX auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
LED Indicators	PWR1, PWR2, Power fail, 10/100M, Link/Act
Ethernet Isolation	1500 V_{rms} 1 minute
Power	
Redundant Input Range	+12 V_{DC} ~ +48 V_{DC} (Non-isolated)
Power Consumption	0.6 A @ 24 V_{DC}
Alarm Contact	One relay output with current carrying capacity of 1A @ 30 V_{DC}
Protection	Power reverse polarity protection
Connector	6-Pin Removable Terminal Block (Power & Relay)
Mechanical	
Casing	Metal (IP30 Protection)
Dimensions (W x L x H)	47 mm x 128 mm x 160 mm
Installation	DIN-Rail Mounting or Wall Mounting
Environmental	
Operating Temperature	-40 °C ~ +75 °C
Storage Temperature	-40 °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-216 series power needs.



Dimensions (Units: mm)



Left Side View

Front View

Ordering Information

NSM-216 CR	Unmanaged 16-port Industrial 10/100 Base-TX Ethernet Switch with metal casing (RoHS)

Accessories

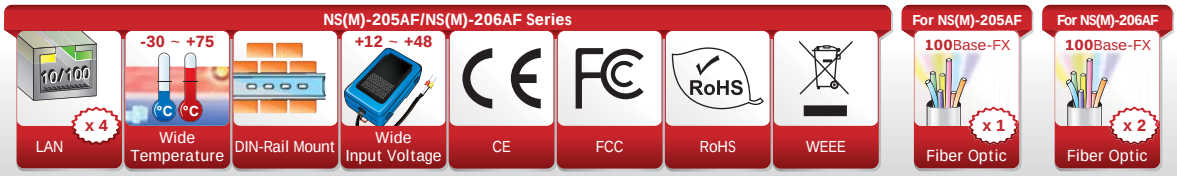
MDR-20-24	24 V/1 A, 24 W Power Supply with DIN-Rail Mounting
DIN-KA52F	24 V/1.04 A, 25 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48 V/0.52 A, 25 W Power Supply with DIN-Rail Mounting

NS-205AF Series / NSM-205AF Series *Available soon*

4-port 10/100 Mbps Ethernet with 1 Fiber Port Switch

NS-206AF Series / NSM-206AF Series *NEW*

4-port 10/100 Mbps Ethernet with 2 Fiber Ports Switch



Features

- Provides 1 x 100-FX fiber port for NS-205AF/NSM-205AF series
- Provides 2 x 100-FX fiber ports for NS-206AF/NSM-206AF series
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Supports operating temperatures from -30 °C ~ +75 °C
- Automatic MDI/MDI-X crossover for plug-and-play
- Store-and-forward architecture
- Redundant dual +12 V_{DC} ~ +48 V_{DC} power inputs
- DIN-Rail Mounting

Introduction

The NS-206AF/NSM-206AF is a 4-port unmanaged Ethernet with 2 fiber ports switch. Using fiber optics, you can prevent noise from interfering with your system and supports high-speed (100 Mbps) and high-distance (up to 60 km) transmissions.

The NS-205AF/NSM-205AF/NS-206AF/NSM-206AF provides a wide +12 V_{DC} ~ +48 V_{DC} power range to fit all the common power standards found in industrial automation, without external power converters. The wide power input lowers installation and maintenance costs.

Comparison Table of Fiber Switch

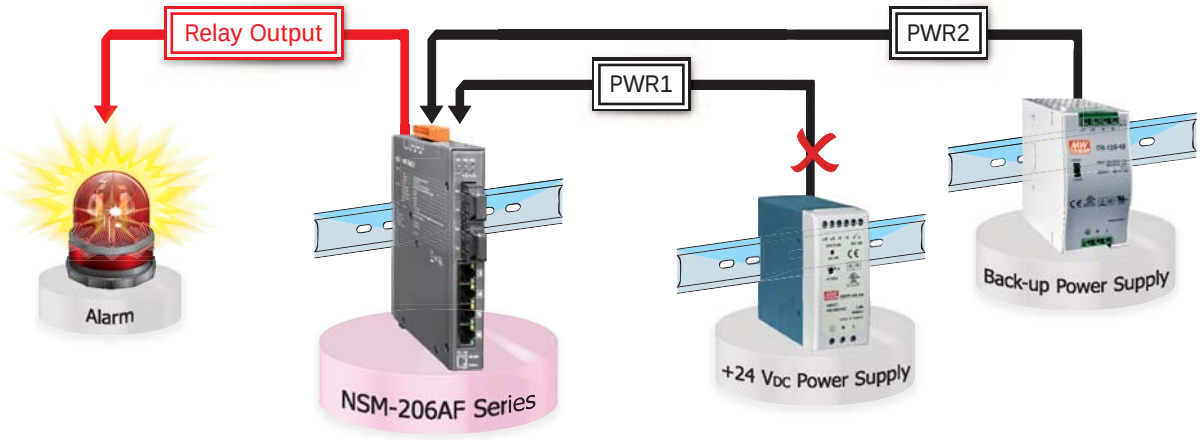
Mode Name	NS-205F NS-206F	NSM-205F NSM-206F	NS-205AF NS-206AF	NSM-205AF NSM-206AF
PoE	–			
Input Voltage Range	+10 V_{DC} ~ +30 V_{DC}		+12 V_{DC} ~ +48 V_{DC}	
Operating Temperature	0 °C ~ +70 °C		-30 °C ~ +75 °C	
Casing	Plastic	Metal (IP20)	Plastic	Metal (IP30)
Installation	DIN-Rail Mounting	DIN-Rail Mounting or Wall Mounting	DIN-Rail Mounting	
Dimensions (W x L x H) (Unit: mm)	64 x 98 x 110	73 x 102 x 110	31 x 127 x 157	25 x 133 x 168

Specifications

Models		NS-205AF Series	NS-206AF Series	NSM-205AF Series	NSM-206AF Series
Technology					
Standards		IEEE 802.3, 802.3u, 802.3x			
Processing Type		Store & forward; wire speed switching			
MAC Addresses		1024			
Memory Bandwidth		2.0 Gbps			
Frame Buffer Memory		512 Kbit			
Flow Control		IEEE 802.3x 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			
Ethernet Isolation		1500 V_{rms} 1 minute			
+/-4 kV ESD Protection		Yes			
Fiber Interface (100 Base-FX; SC/ST type)					
Multi-Mode	**NS-205AFT-T** **NS-205AFC-T** **NSM-205AFT-T** **NSM-205AFC-T** **NS-206AFT-T** **NS-206AFC-T** **NSM-206AFT-T** **NSM-206AFC-T**	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 Min. RX Overload: -8 dBm Budget: 12 dBm			
Single-Mode	**NS-205AFCS-T** **NSM-205AFCS-T** **NS-206AFCS-T** **NSM-206AFCS-T**	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 Max. RX Sensitivity: -34 dBm Min. RX Overload: -5 dBm Budget: 19 dBm			
Single-Mode	**NS-205AFCS-60T** **NSM-205AFCS-60T** **NS-206AFCS-60T** **NSM-206AFCS-60T**	Single-mode fiber cables: 8.3/125, 8.7/125, 9/125 or 10/125 µm Distance: 60 km, (9/125 µm recommended) for full duplex Wavelength: 1300 or 1310 nm Min. TX Output: -5 dBm Max. TX Output: 0 dBm Max. RX Sensitivity: -35 dBm Min. RX Overload: -5 dBm Budget: 30 dBm			
Power Input					
Input Voltage Range		+12 V_{DC} ~ +48 V_{DC} (Redundant input)			
Power Consumption		0.12 A @ 24 V_{DC}	0.14 A @ 24 V_{DC}	0.12 A @ 24 V_{DC}	0.14 A @ 24 V_{DC}
Protection		Power reverse polarity protection			
+/-4 kV ESD Protection		Yes			
Connector		6-Pin Removable Terminal Block			
Mechanical					
Casing		Plastic (Flammability UL 94V-0)		Metal (IP30 Protection)	
Dimensions (W x L x H)		31 mm x 127 mm x 157 mm		25 mm x 133 mm x 168 mm	
Installation		DIN-Rail Mounting			
Environmental					
Operating Temperature		-30 °C ~ +75 °C			
Storage Temperature		-40 °C ~ +85 °C			
Ambient Relative Humidity		10% ~ 90% RH, non-condensing			

Redundant Power Input

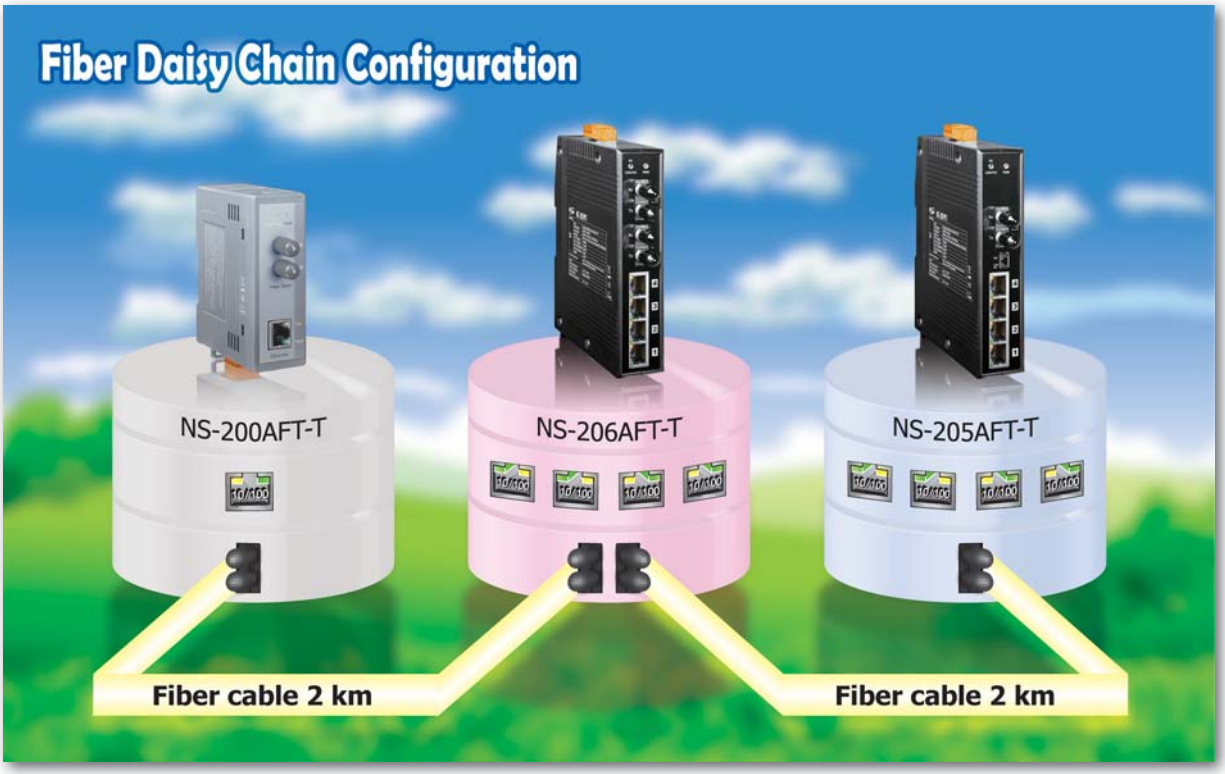
Both power inputs can be connected simultaneously to live DC power sources.
If one power source fails, the other live source will act as a backup, and automatically supplies all of NSM-205AF/NSM-206AF series power needs.



Pin Functions for Power Input

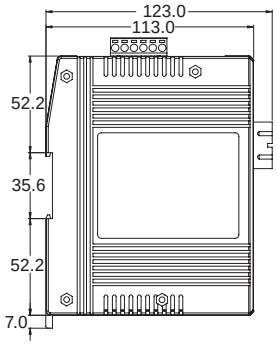
External power supply is connected using the removable terminal block:
PWR: Power input and should be connected to the power supply (+)
GND: Ground and should be connected to the power supply (-)
F.G. : F.G. stands for Frame Ground (protective ground). It is optional. If you use this pin, it can reduce EMI radiation; improve EMI performance and ESD protection.

Applications

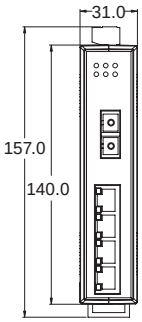


Dimensions (Units: mm)

NS-205AFC-T/NS-205AFCS-T/NS-205AFCS-60T

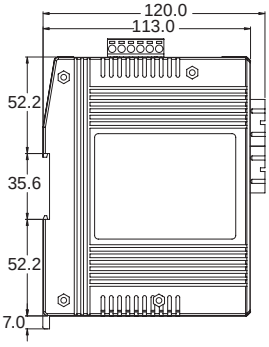


Left Side View

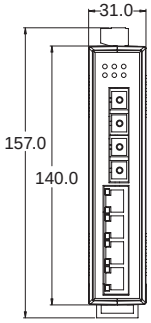


Front View

NS-206AFC-T/NS-206AFCS-T/NS-206AFCS-60T

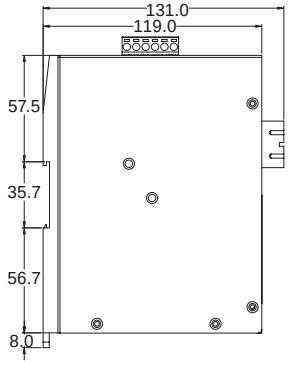


Left Side View

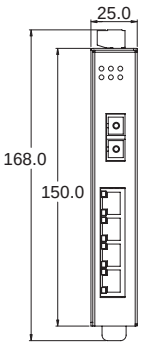


Front View

NSM-205AFC-T/NSM-205AFCS-T/ NSM-205AFCS-60T

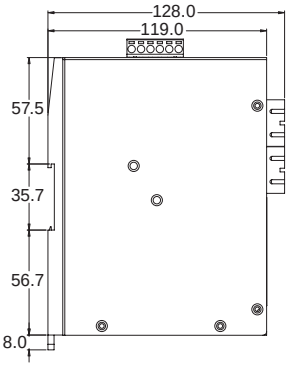


Left Side View

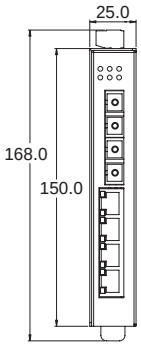


Front View

NSM-206AFC-T/NSM-206AFCS-T/ NSM-206AFCS-60T



Left Side View



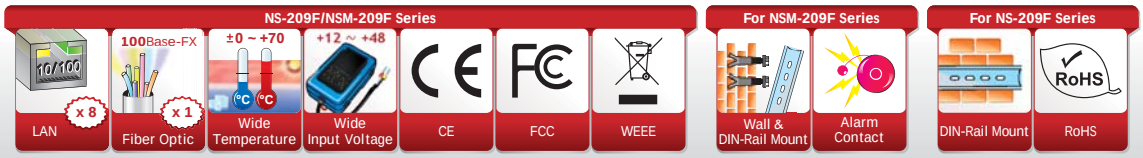
Front View

Ordering Information

NS-205AFT-T CR	Multi-mode, ST Connector, 4-port 10/100 Mbps with 1 Fiber port Switch (RoHS)
NS-205AFC-T CR	Multi-mode, SC Connector, 4-port 10/100 Mbps with 1 Fiber port Switch (RoHS)
NS-205AFCS-T CR	Single-mode 30 km, SC Connector, 4-port 10/100 Mbps with 1 Fiber port Switch (RoHS)
NS-205AFCS-60T CR	Single-mode 60 km, SC Connector, 4-port 10/100 Mbps with 1 Fiber port Switch (RoHS)
NSM-205AFT-T CR	Multi-mode, ST Connector, 4-port 10/100 Mbps with 1 Fiber port Switch; metal case (RoHS)
NSM-205AFC-T CR	Multi-mode, SC Connector, 4-port 10/100 Mbps with 1 Fiber port Switch; metal case (RoHS)
NSM-205AFCS-T CR	Single-mode 30 km, SC Connector, 4-port 10/100 Mbps with 1 Fiber port Switch; metal case (RoHS)
NSM-205AFCS-60T CR	Single-mode 60 km, SC Connector, 4-port 10/100 Mbps with 1 Fiber port Switch; metal case (RoHS)
NS-206AFT-T CR	Multi-mode, ST Connector, 4-port 10/100 Mbps with 2 Fiber ports Switch (RoHS)
NS-206AFC-T CR	Multi-mode, SC Connector, 4-port 10/100 Mbps with 2 Fiber ports Switch (RoHS)
NS-206AFCS-T CR	Single-mode 30 km, SC Connector, 4-port 10/100 Mbps with 2 Fiber ports Switch (RoHS)
NS-206AFCS-60T CR	Single-mode 60 km, SC Connector, 4-port 10/100 Mbps with 2 Fiber ports Switch (RoHS)
NSM-206AFT-T CR	Multi-mode, ST Connector, 4-port 10/100 Mbps with 2 Fiber ports Switch; metal case (RoHS)
NSM-206AFC-T CR	Multi-mode, SC Connector, 4-port 10/100 Mbps with 2 Fiber ports Switch; metal case (RoHS)
NSM-206AFCS-T CR	Single-mode 30 km, SC Connector, 4-port 10/100 Mbps with 2 Fiber ports Switch; metal case (RoHS)
NSM-206AFCS-60T CR	Single-mode 60 km, SC Connector, 4-port 10/100 Mbps with 2 Fiber ports Switch; metal case (RoHS)

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.

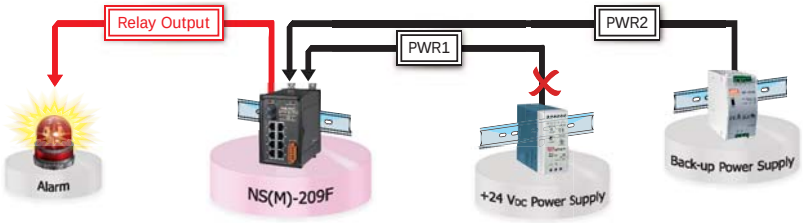
Specifications

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 VDC ~ +48 VDC (Non-isolated)	+12 VDC ~ +48 VDC (Non-isolated) Redundant Inputs with one relay output (1 A @ 24 VDC) for alarm
Power Consumption		0.26 A @ 24 VDC	
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		0 °C ~ +70 °C	
Storage Temperature		-20 °C ~ +85 °C	
Ambient Relative Humidity		10% ~ 90% RH, non-condensing	

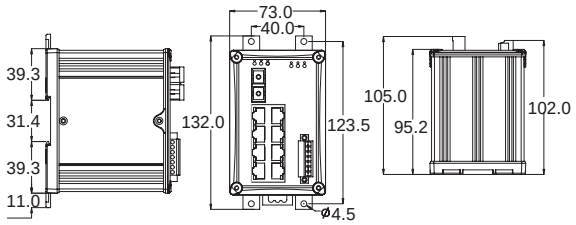
Redundant Power Input

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.



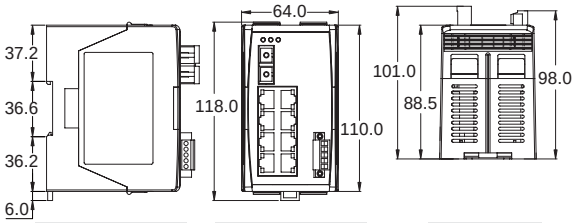
Dimensions (Units: mm)

NSM-209F Series



Left Side View | Front View | Rear View

NS-209F Series



Left Side View | Front View | Rear View

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

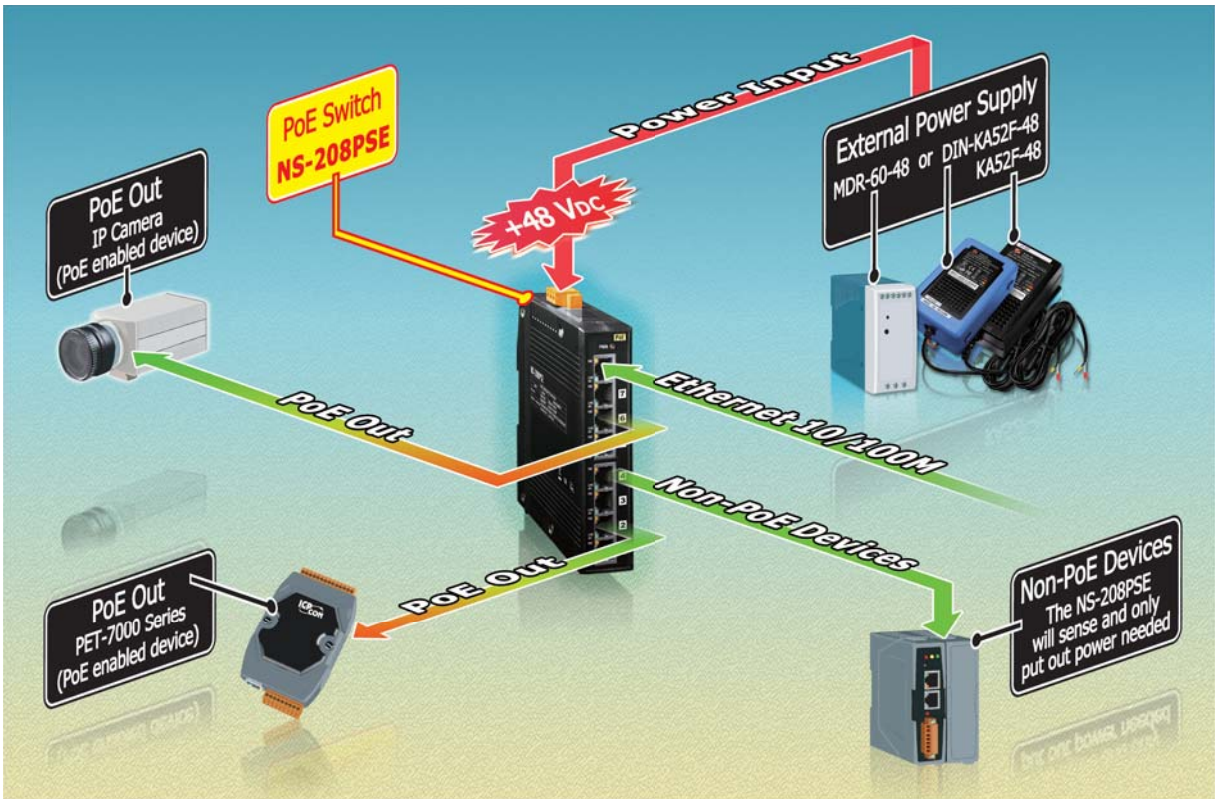
When the PSE connects to a network device, the PSE determines or "discovers" if the device is a PD or not. This prevents non-PoE enabled Ethernet equipment from receiving power, which could cause damage. The PSE applies two small current-limited voltage signals across the cable as it checks for the presence 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.

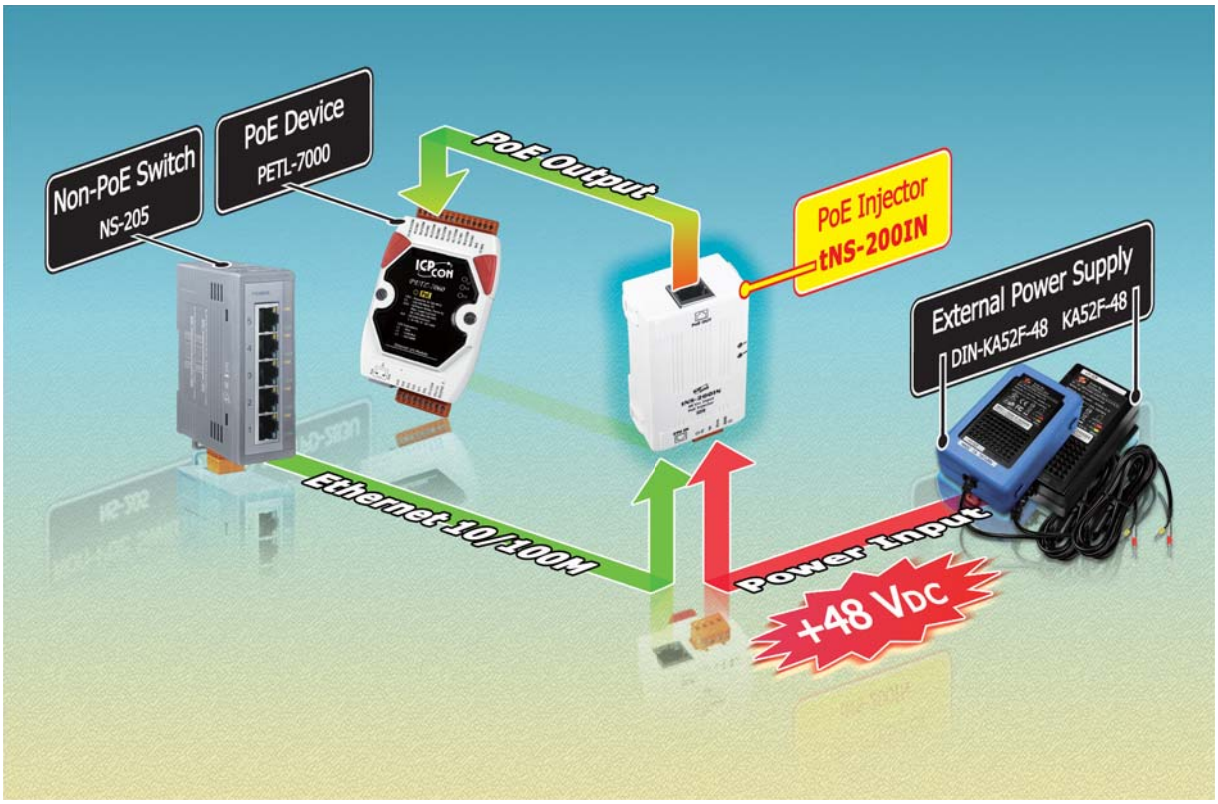
Once the PSE begins to provide power, it continuously monitors the PD current draw. If the PD current consumption drops below a minimum value, for example when the device is unplugged, the PSE discontinues supplying power and the discovery process begins again.

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.

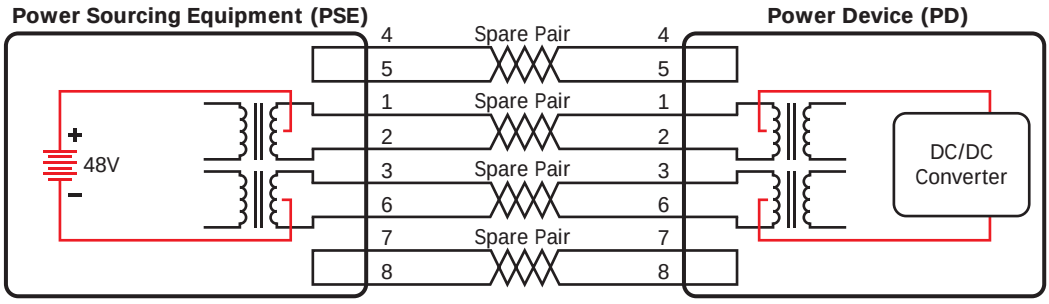


A midspan PSE - Fits in between the switch and the PD. It supplies power over the unused cable pin-pairs 4 and 5 and pin-pairs 7 and 8. Data is routed through the midspan device without modification. These devices are usually mounted adjacent to the Ethernet switch in an equipment rack. It is important 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.

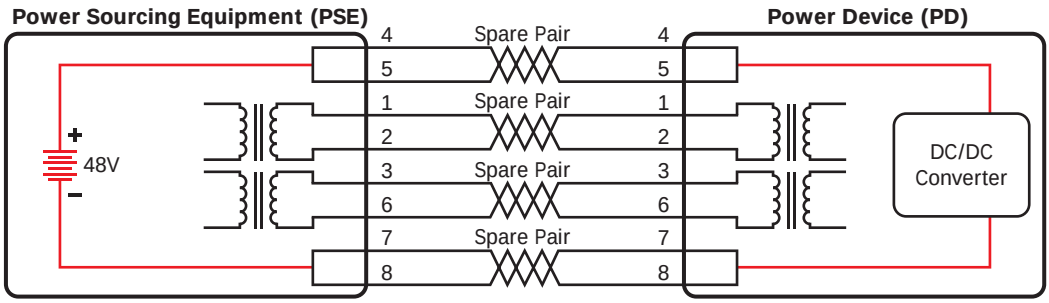


Power is carried over the cabling using two techniques: Mode A and Mode B

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.

NS-105PSE/NS-205PSE NEW

5-port 10/100 Mbps PoE (PSE) Ethernet Switch

Features

- Automatic MDI/MDI-X crossover for plug-and-play
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Supports operating temperatures from -40 °C ~ +75 °C
- Each port supports both 10/100 Mbps speed auto negotiation
- Power Inputs +46 V_{DC} ~ +55 V_{DC}
- Store-and-forward architecture
- 3.2 Gbps high performance memory bandwidth
- IEEE 802.3af compliant PoE ports
- Slim packaging fits on your DIN-Rail Mounting

Introduction

The NS-105PSE/NS-205PSE is a 5-port unmanaged PoE (Power over Ethernet) Industrial Ethernet switch; it supports 4 PoE ports which are classified as power source equipment (PSE). The NS-105PSE/NS-205PSE makes centralized power supply come true and provides up to 15.4 watts of power per PSE port.

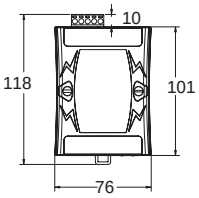
Specifications

Models	NS-105PSE	NS-205PSE
Technology		
Standards	IEEE 802.3, 802.3u, 802.3x ,802.3af (Power over Ethernet)	
Processing Type	Store & forward; wire speed switching	
MAC Addresses	1024	
Memory Bandwidth	3.2 Gbps	
Frame Buffer Memory	512 Kbit	
Flow Control	IEEE 802.3x flow control, back pressure flow control	
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, Power Device is detected	
Ethernet Isolation	1500 V_{rms} 1 minute	
EMS Protection	Yes	

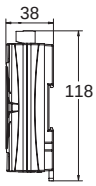
Models	NS-105PSE	NS-205PSE
Power Input		
Input Voltage Range	+46 VDC ~ +55 VDC	
Power Consumption	0.05 A @ 48 VDC without PD loading 1.45 A @ 48 VDC with PD full loading	
Protection	Power reverse polarity protection	
EMS Protection	Yes	
Connector	3-Pin Removable Terminal Block	
PoE Technology		
PoE Compliance	100% IEEE 802.3af compliant	
PoE Classification	PSE (Power Sourcing Equipment)	
PoE Power	Up to 15.4 watts per channel	
PoE Operation	Automatic detection and power management	
PoE Pin Assignments	V+ (Pin 1, 3), V- (Pin 2, 4)	
PoE Disconnect Mode	DC disconnect	
Mechanical		
Casing	Plastic (Flammability UL 94V-0)	
Dimensions (W x L x H)	76 mm x 38 mm x 118 mm	33 mm x 78 mm x 107 mm
Installation	DIN-Rail Mounting	
Environment		
Operating Temperature	-40 °C ~ +75 °C	
Storage Temperature	-40 °C ~ +85 °C	
Ambient Relative Humidity	10% ~ 90% RH, non-condensing	

Dimensions (Units: mm)

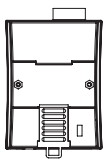
NS-105PSE



Front View

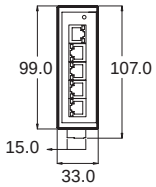


Right Side View

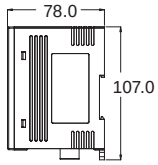


Rear View

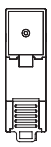
NS-205PSE



Front View

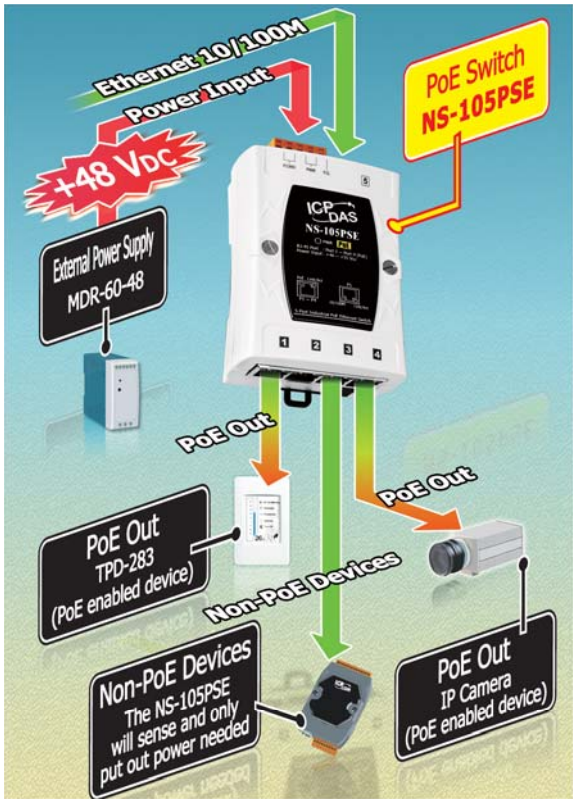


Right Side View



Rear View

Applications



Ordering Information

NS-105PSE CR	Unmanaged 5-port 10/100 Mbps PoE (PSE) Ethernet Switch (RoHS)
NS-205PSE CR	Unmanaged 5-port 10/100 Mbps PoE (PSE) Ethernet Switch (RoHS)

Accessories

DR-120-48	48V/2.5A, 120 W Power Supply with DIN-Rail Mounting
MDR-60-48	24V/1.25A, 60 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48V/0.52A, 25 W Power Supply with DIN-Rail Mounting

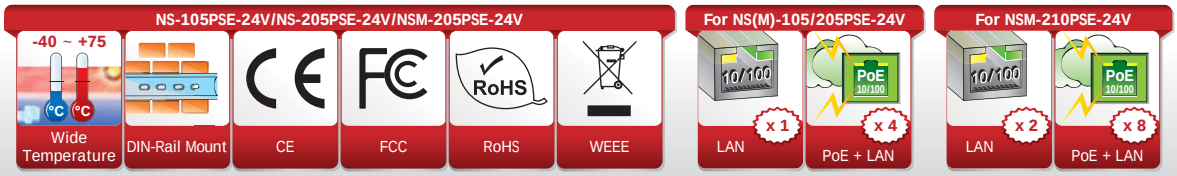
NS-105PSE-24V *Available soon*

NS-205PSE-24V/NSM-205PSE-24V *NEW*

5-port 10/100 Mbps PoE (PSE) Ethernet Switch with +24 VDC Input

NSM-210PSE-24V *Available soon*

10-port 10/100 Mbps PoE (PSE) Ethernet Switch with +24 VDC Input



Features

- Automatic MDI/MDI-X crossover for plug-and-play
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Supports operating temperatures from -40 °C ~ +75 °C
- Each port supports both 10/100 Mbps speed auto negotiation
- Power Inputs +18 VDC ~ +32 VDC
- Store-and-forward architecture
- 3.2 Gbps high performance memory bandwidth
- IEEE 802.3af compliant PoE ports
- DIN-Rail Mounting

Introduction

The NS-105PSE-24V/NS-205PSE-24V/NSM-205PSE-24V is a 5-port unmanaged PoE (Power over Ethernet) Industrial Ethernet switch; it supports 4 PoE ports which are classified as power source equipment (PSE). The NS-105PSE-24V/NS-205PSE-24V/NSM-205PSE-24V makes centralized power supply come true and provides up to 15.4 watts of power per PSE port.

The NSM-210PSE-24V is a 10-port unmanaged Ethernet switch; it supports 8 PoE ports which are classified as power source equipment (PSE).

Ethernet switches are designed with +24 VDC to +48 VDC boost for PoE application where +48 VDC power supply is not available.

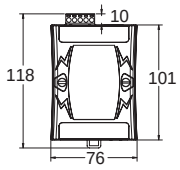
Specifications

Models	NS-105PSE-24V	NS-205PSE-24V	NSM-205PSE-24V	NSM-210PSE-24V
Technology				
Standards	IEEE 802.3, 802.3u, 802.3x ,802.3af (Power over Ethernet)			
Processing Type	Store & forward; wire speed switching			
MAC Addresses	1024			
Memory Bandwidth	3.2 Gbps			
Frame Buffer Memory	512 Kbit			
Flow Control	IEEE 802.3x flow control, back pressure flow control			
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, Power Device is detected			
Ethernet Isolation	1500 Vrms 1 minute			
EMS Protection	Yes			

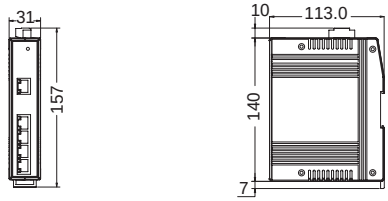
Models	NS-105PSE-24V	NS-205PSE-24V	NSM-205PSE-24V	NSM-210PSE-24V
Power Input				
Input Voltage Range	+18 VDC ~ +32 VDC			
Power Consumption	0.24 A @ 24 VDC without PD loading 3.2 A @ 24 VDC with PD full loading			0.6 A @ 24 VDC without PD loading 6.5 A @ 24 VDC with PD full loading
Protection	Power reverse polarity protection			
EMS Protection	Yes			
Connector	5-Pin Removable Terminal Block	3-Pin Removable Terminal Block		
PoE Technology				
PoE Compliance	100% IEEE 802.3af compliant			
PoE Classification	PSE (Power Sourcing Equipment)			
PoE Power	Up to 15.4 watts per channel			
PoE Operation	Automatic detection and power management			
PoE Pin Assignments	V+ (Pin 1, 3), V- (Pin 2, 4)			
PoE Disconnect Mode	DC disconnect			
Mechanical				
Casing	Plastic (Flammability UL 94V-0)		Metal (IP30 Protection)	
Dimensions (W x L x H) (Units: mm)	76 x 38 x 118	31 x 113 x 157	25 x 119 x 168	25 x 119 x 168
Installation	DIN-Rail Mounting			
Environment				
Operating Temperature	-40 °C ~ +75 °C			
Storage Temperature	-40 °C ~ +85 °C			
Ambient Relative Humidity	10% ~ 90% RH, non-condensing			

Dimensions (Units: mm)

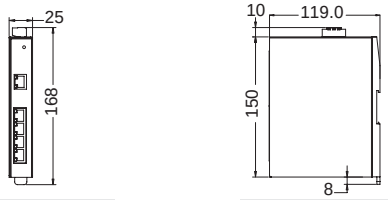
NS-105PSE-24V



NS-205PSE-24V

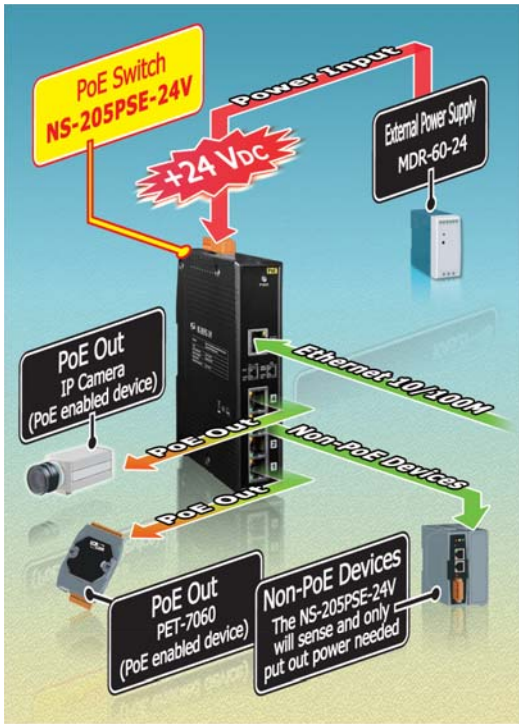


NSM-205PSE-24V



Front View | Right Side View

Applications



Ordering Information

NS-105PSE-24V CR	Unmanaged 5-port 10/100 Mbps PoE (PSE) Ethernet Switch; +24 VDC Input (RoHS)
NS-205PSE-24V CR	Unmanaged 5-port 10/100 Mbps PoE (PSE) Ethernet Switch; +24 VDC Input (RoHS)
NSM-205PSE-24V CR	Unmanaged 5-port 10/100 Mbps PoE (PSE) Ethernet Switch with Metal Casing; +24 VDC Input (RoHS)
NSM-210PSE-24V CR	Unmanaged 10-port 10/100 Mbps PoE (PSE) Ethernet Switch with Metal Casing; +24 VDC Input (RoHS)

Accessories

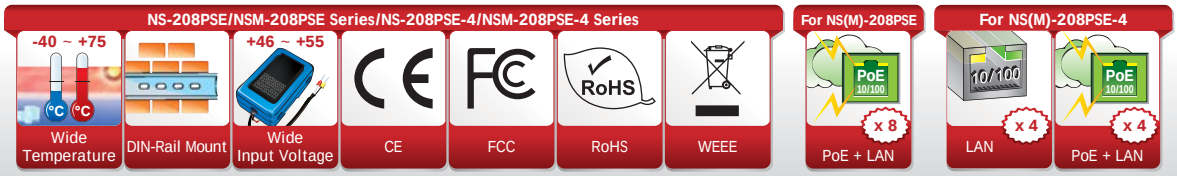
DP-1200	24V/5A, 120 W Power Supply with DIN-Rail Mounting
MDR-60-24	24V/2.5A, 60 W Power Supply with DIN-Rail Mounting
DIN-KA52F	24V/1.04A, 25 W Power Supply with DIN-Rail Mounting

NS-208PSE/NSM-208PSE NEW

8-port Industrial 10/100 Mbps Ethernet with 8-PoE (PSE) Switch

NS-208PSE-4/NSM-208PSE-4 NEW

8-port Industrial 10/100 Mbps Ethernet with 4-PoE (PSE) Switch



Features

- Each port supports both 10/100 Mbps speed auto negotiation
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Auto-detection of PD (powered devices) and automatic power management
- Over-temperature, over-current and over/under-voltage detection
- Supports operating temperatures from -40 °C ~ +75 °C
- Automatic MDI/MDI-X crossover for plug-and-play
- Store-and-forward architecture
- 8 PoE ports for NS-208PSE/NSM-208PSE; 4 PoE ports for NS-208PSE-4/NSM-208PSE-4
- Supports +46 V_{DC} ~ +55 V_{DC} power input
- DIN-Rail Mounting

Introduction

The NS-208PSE/NS-208PSE-4 is an 8-port unmanaged PoE (Power over Ethernet) Industrial Ethernet switch, it supports 8/4 PoE ports which are classified as power source equipment (PSE). The NS-208PSE/NS-208PSE-4 makes centralized power supply come true and provides up to 15.4 W of power per port. The NS-208PSE/NS-208PSE-4 can be used to power IEEE802.3af compliant powered devices (PD) by Ethernet cable and eliminates the need for additional power wiring.

The NS-208PSE/NSM-208PSE is exactly the same as the NS-208PSE-4/NSM-208PSE-4, except for the PoE ports.

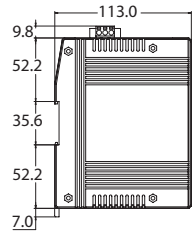
Specifications

Models	NS-208PSE	NSM-208PSE	NS-208PSE-4	NSM-208PSE-4
Technology				
Standards	IEEE 802.3, 802.3u, 802.3x ,802.3af (Power over Ethernet)			
Processing Type	Store & forward; wire speed switching			
MAC Addresses	1024			
Memory Bandwidth	3.2 Gbps			
Frame Buffer Memory	512 Kbit			
Flow Control	IEEE 802.3x flow control, back pressure flow control			
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, Power Device is detected			
Ethernet Isolation	1500 V_{rms} 1 minute			
EMS Protection	Yes			

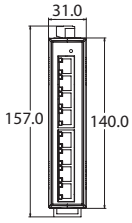
Models	NS-208PSE	NSM-208PSE	NS-208PSE-4	NSM-208PSE-4
Power Input				
Input Voltage Range	+46 VDC ~ +55 VDC for PoE output			
Power Consumption	0.1 A @ 48 VDC without PD loading 2.8 A @ 48 VDC with PD full loading		0.09 A @ 48 VDC without PD loading 1.45 A @ 48 VDC with PD full loading	
Protection	Power reverse polarity protection			
ESD Protection	Yes			
Connector	3-Pin Removable Terminal Block			
PoE Technology				
PoE Compliance	100% IEEE 802.3af compliant			
PoE Classification	PSE (Power Sourcing Equipment)			
PoE Voltage	+46 VDC ~ +55 VDC depending on power input			
PoE Power	Up to 15.4 watts per channel			
PoE Operation	Automatic detection and power management			
PoE Pin Assignments	V+ (Pin 1, 2), V- (Pin 3, 6)			
PoE Disconnect Mode	DC disconnect			
Mechanical				
Casing	Plastic (Flammability UL 94V-0)	Metal (IP30 Protection)	Plastic (Flammability UL 94V-0)	Metal (IP30 Protection)
Dimensions (W x L x H)	31 mm x 113 mm x 157 mm	25 mm x 119 mm x 168 mm	31 mm x 113 mm x 157 mm	25 mm x 119 mm x 168 mm
Installation	DIN-Rail Mounting			
Environment				
Operating Temperature	-40 °C ~ +75 °C			
Storage Temperature	-40 °C ~ +85 °C			
Ambient Relative Humidity	10% ~ 90% RH, non-condensing			

Dimensions (Units: mm)

NS-208PSE/NS-208PSE-4

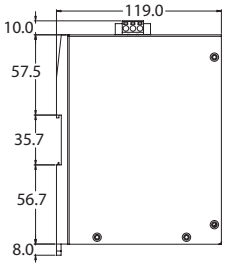


Left Side View

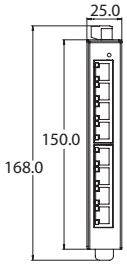


Front View

NSM-208PSE/NSM-208PSE-4

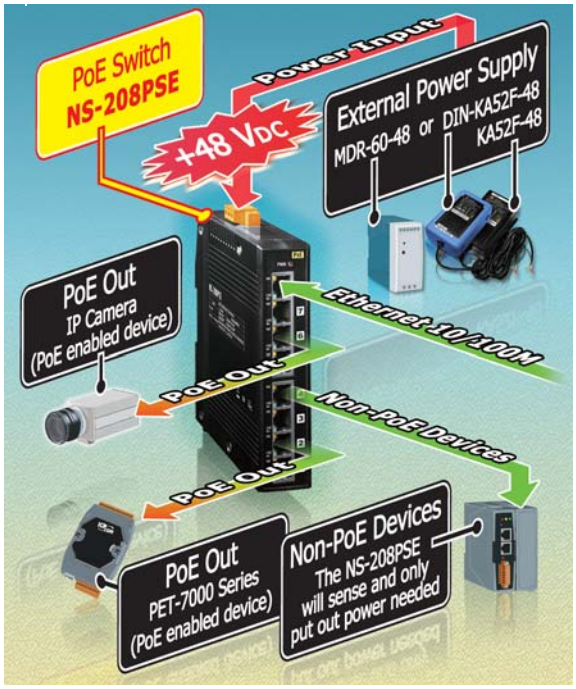


Left Side View



Front View

Applications



Ordering Information

NS-208PSE CR	8-port Industrial 10/100 Mbps Ethernet with 8-PoE (PSE) Switch (RoHS)
NS-208PSE-4 CR	8-port Industrial 10/100 Mbps Ethernet with 4-PoE (PSE) Switch (RoHS)
NSM-208PSE CR	8-port Industrial 10/100 Mbps Ethernet with 8-PoE (PSE) Switch; Metal Casing (RoHS)
NSM-208PSE-4 CR	8-port Industrial 10/100 Mbps Ethernet with 4-PoE (PSE) Switch; Metal Casing (RoHS)

Accessories

MDR-60-48	48 V/1.25 A, 60 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48 V/0.52 A, 25 W Power Supply with DIN-Rail Mounting
KA52F-48	48 V/0.52 A, 25 W Power Supply

NS-205PF Series / NSM-205PF Series

4-port 10/100 Mbps PoE (PSE) with 1 Fiber Port Switch

NS-205PF-24V Series / NSM-205PF-24V Series

4-port 10/100 Mbps PoE (PSE) with 1 Fiber Port and +24 VDC Input Switch *Available soon*

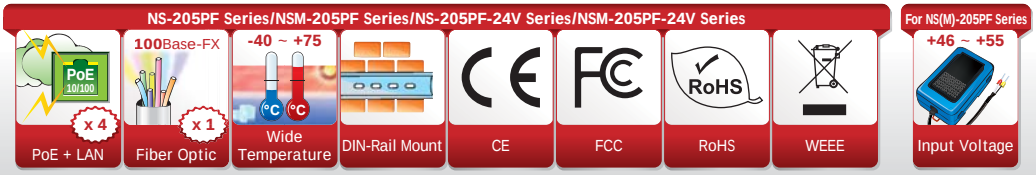
NS-205PFC/FCS/FCS-60
NS-205PFC-24V/FCS-24V/FCS-60-24V

NS-205PFT
NS-205PFT-24V

NSM-205PFC/FCS/FCS-60
NSM-205PFC-24V/FCS-24V/FCS-60-24V

NSM-205PFT
NSM-205PFT-24V

NS-205PF Series/NSM-205PF Series/NS-205PF-24V Series/NSM-205PF-24V Series



For NS(M)-205PF Series

Features

- Provides 1 x 100-FX fiber port plus 4 x Ethernet ports
- Each port supports both 10/100 Mbps speed auto negotiation
- Supports operating temperatures from -30 °C ~ +75 °C
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 4 PoE ports with Power Sourcing Equipment (PSE) operation
- Over-temperature, over-current and over/under-voltage detection
- Automatic MDI/MDI-X crossover for plug-and-play
- Store-and-forward architecture
- Auto-detection of PD (powered devices) and automatic power management
- DIN-Rail Mounting

Introduction

The NS-205PF/NSM-205PF is a 4-port unmanaged PoE (PSE) with 1 fiber port switch; it supports 4 PoE ports which are classified as power source equipment (PSE). The NS-205PF/NSM-205PF makes centralized power supply come true and provides up to 15.4 watts of power per PSE port. Using fiber optics, you can prevent noise from interfering with your system and supports high-speed (100 Mbps) and high-distance (up to 60 km) transmissions.

The NS-205PF-24V/NSM-205PF-24V series is designed with +24 VDC to +48 VDC boost for PoE application where +48 VDC power supply is not available.

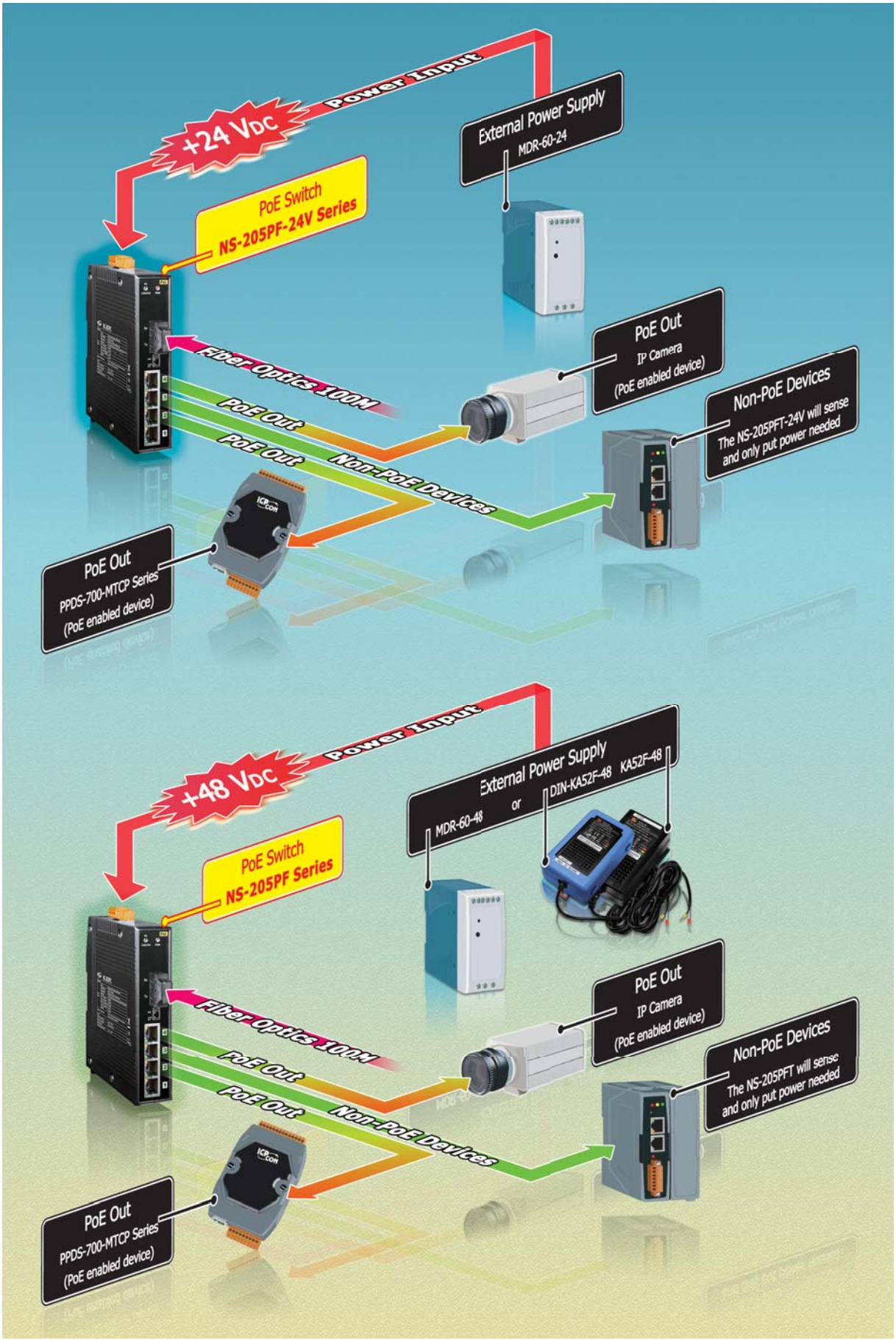
Comparison Table of 4-port 10/100 Mbps PoE (PSE) with 1 Fiber Port Switch

Mode Name	NS-205PF-24V	NSM-205PF-24V	NS-205PF	NSM-205PF
PoE	802.3af			
Input Voltage Range	+18 VDC ~ +32 VDC		+46 VDC ~ +55 VDC	
Operating Temperature	-30 °C ~ +75 °C			
Casing	Plastic	Metal (IP30)	Plastic	Metal (IP30)
Installation	DIN-Rail Mounting			
Dimensions (W x L x H)	31 mm x 127 mm x 157 mm	25 mm x 133 mm x 168 mm	31 mm x 127 mm x 157 mm	25 mm x 133 mm x 168 mm

Specifications

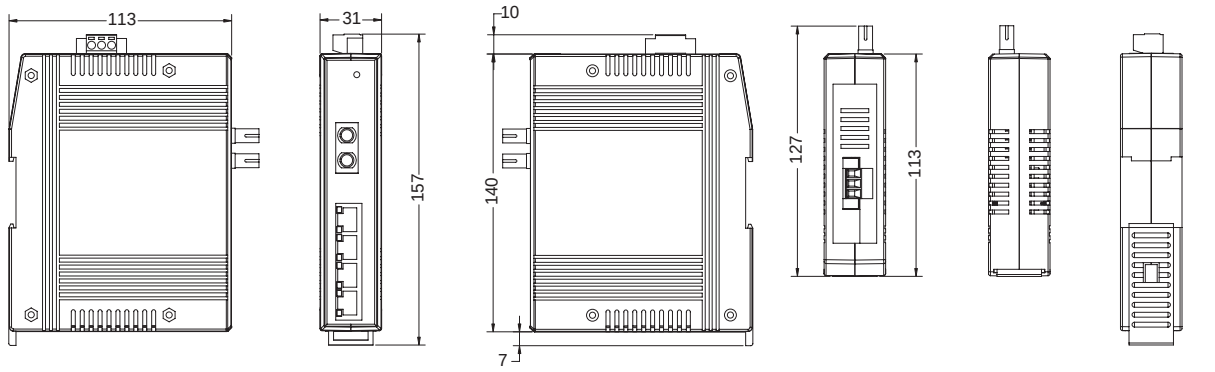
Models		NS-205PF Series	NSM-205PF Series	NS-205PF-24V Series	NSM-205PF-24V Series
Technology					
Standards		IEEE 802.3, 802.3u, 802.3x ,802.3af (Power over Ethernet)			
Processing Type		Store & forward; wire speed switching			
MAC Addresses		1024			
Memory Bandwidth		3.2 Gbps			
Frame Buffer Memory		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, Power Device is detected			
Ethernet Isolation		1500 V_{rms} 1 minute			
+/-4 kV ESD Protection		Yes			
Fiber Interface (100 Base-FX; SC/ST type)					
Multi-Mode	**NS-205PFT** **NS-205PFC** **NSM-205PFT** **NSM-205PFC** **NS-205PFT-24V** **NS-205PFC-24V** **NSM-205PFT-24V** **NSM-205PFC-24V**	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 Min. RX Overload: -8 dBm Budget: 12 dBm			
Single-Mode	**NS-205PFCS** **NSM-205PFCS** **NS-205PFCS-24V** **NSM-205PFCS-24V**	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 Max. RX Sensitivity: -34 dBm Min. RX Overload: -5 dBm Budget: 19 dBm			
Single-Mode	**NS-205PFCS-60** **NSM-205PFCS-60** **NS-205PFCS-60-24V** **NSM-205PFCS-60-24V**	Single-mode fiber cables: 8.3/125, 8.7/125, 9/125 or 10/125 µm Distance: 60 km, (9/125 µm recommended) for full duplex Wavelength: 1300 or 1310 nm Min. TX Output: -5 dBm Max. TX Output: 0 dBm Max. RX Sensitivity: -35 dBm Min. RX Overload: -5 dBm Budget: 30 dBm			
Power Input					
Input Voltage Range		+46 V_{DC} ~ +55 V_{DC} for PoE output		+18 V_{DC} ~ +32 V_{DC}	
Power Consumption		0.08 A @ 48 V_{DC} without PD loading; 1.5 A @ 48 V_{DC} with PD full loading		0.24 A @ 24 V_{DC} without PD loading; 3.2 A @ 24 V_{DC} with PD full loading; 4.6 A @ 18 V_{DC} with PD full loading	
Protection		Power reverse polarity protection			
+/-4 kV ESD Protection		Yes			
Connector		3-Pin Removable Terminal Block			
PoE Technology					
PoE Compliance		100% IEEE 802.3af compliant			
PoE Classification		PSE (Power Sourcing Equipment)			
PoE Voltage		+48 V_{DC} depending on power input			
PoE Voltage		Up to 15.4 watts per channel			
PoE Operation		Automatic detection and power management			
PoE Pin assignments		V+ (Pin 1,2), V- (Pin 3,6)			
PoE disconnect mode		DC disconnect			
Mechanical					
Casing		Plastic (Flammability UL 94V-0)	Metal (IP30 Protection)	Plastic (Flammability UL 94V-0)	Metal (IP30 Protection)
Dimensions (W x L x H) (Unit: mm)		31 x 127 x 157	25 x 133 x 168	31 x 127 x 157	25 x 133 x 168
Installation		DIN-Rail Mounting			
Environmental					
Operating Temperature		-30 °C ~ +75 °C			
Storage Temperature		-40 °C ~ +85 °C			
Ambient Relative Humidity		10% ~ 90% RH, non-condensing			

Applications



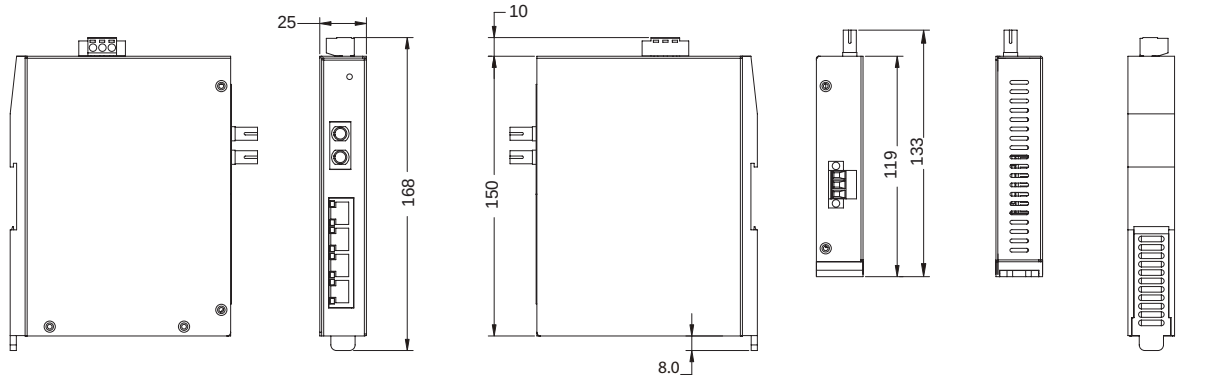
Dimensions (Units: mm)

NS-205PF/NS-205PF-24V Series



Left Side View | Front View | Right Side View | Top View | Bottom View | Rear View

NSM-205PF/NSM-205PF-24V Series



Left Side View | Front View | Right Side View | Top View | Bottom View | Rear View

Ordering Information

NS-205PFT CR	Multi-mode, ST Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port Switch (RoHS)
NS-205PFC CR	Multi-mode, SC Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port Switch (RoHS)
NS-205PFCS CR	Single-mode 30 km, SC Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port Switch (RoHS)
NS-205PFCS-60 CR	Single-mode 60 km, SC Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port Switch (RoHS)
NSM-205PFT CR	Multi-mode, ST Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port Switch; metal case (RoHS)
NSM-205PFC CR	Multi-mode, SC Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port Switch; metal case (RoHS)
NSM-205PFCS CR	Single-mode 30 km, SC Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port Switch; metal case (RoHS)
NSM-205PFCS-60 CR	Single-mode 60 km, SC Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port Switch; metal case (RoHS)
NS-205PFT-24V CR	Multi-mode, ST Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port and +24 VDC Input Switch (RoHS)
NS-205PFC-24V CR	Multi-mode, SC Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port and +24 VDC Input Switch (RoHS)
NS-205PFCS-24V CR	Single-mode 30 km, SC Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port and +24 VDC Input Switch (RoHS)
NS-205PFCS-60-24V CR	Single-mode 60 km, SC Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port and +24 VDC Input Switch (RoHS)
NSM-205PFT-24V CR	Multi-mode, ST Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port and +24 VDC Input Switch; metal case (RoHS)
NSM-205PFC-24V CR	Multi-mode, SC Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port and +24 VDC Input Switch; metal case (RoHS)
NSM-205PFCS-24V CR	Single-mode 30 km, SC Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port and +24 VDC Input Switch; metal case (RoHS)
NSM-205PFCS-60-24V CR	Single-mode 60 km, SC Connector, 4-port 10/100 Mbps PoE (PSE) with 1 Fiber port and +24 VDC Input Switch; metal case (RoHS)

Accessories

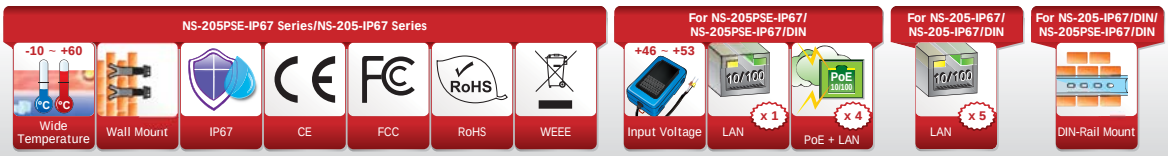
DR-120-24	24V/5 A, 120 W Single Output Industrial DIN Rail Power Supply
MDR-60-24	24V/2.5A, 60 W Power Supply with DIN-Rail Mounting
MDR-60-48	48 V/1.25 A, 60 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48 V/0.52 A, 25 W Power Supply with DIN-Rail Mounting
KA52F-48	48 V/0.52 A, 25 W Power Supply

NS-205PSE-IP67 Series *Available soon*

Industrial 5-port Unmanaged IP67 Ethernet Switch with PoE

NS-205-IP67 Series

Industrial 5-port Unmanaged IP67 Ethernet Switch



Features

- Automatic MDI/MDI-X crossover for plug-and-play
- Store-and-forward architecture
- Each port supports both 10/100 Mbps speed auto negotiation
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Rugged RJ-45 connector for anti-vibration and shock
- IP67 grade protection approval
- 4 PoE ports with Power Sourcing Equipment (PSE) operation (NS-205PSE-IP67 series)
- Auto-detection of PD (powered devices) and automatic power management (NS-205PSE-IP67 series)
- Over-temperature, over-current and over/under-voltage detection (NS-205PSE-IP67 series)

Introduction

The NS-205PSE-IP67/NS-205-IP67 is designed for industrial applications in harsh environments. The rugged RJ-45 ensure tight, robust connections, and guarantee reliable operation, even for applications that are subject to high vibration and shock.

The NS-205PSE-IP67 PoE switch provides 5 fast Ethernet with 4 IEEE 802.3af compliant PoE ports. The switch is classified as power source equipment (PSE) and provides up to 15.4 W of power per port.

The Ethernet switch supports IEEE 802.3/802.3u/802/3x with 10/100M, full/half-duplex, MDI/MDI-X auto-sensing, and provide an economical solution for your industrial Ethernet network.

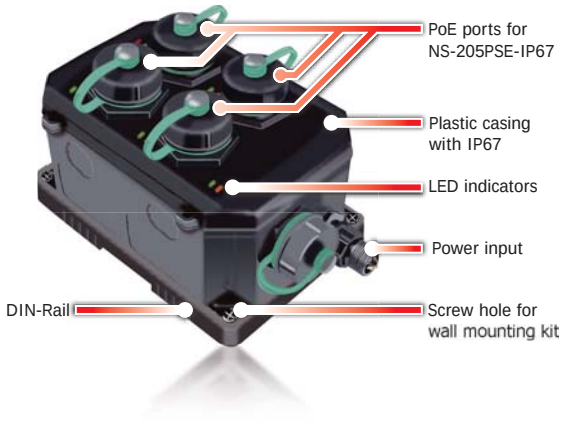
Comparison Table of 5/8-port IP67 Ethernet Switch

Mode Name	NS-205-IP67	NS-205-IP67/DIN	NS-205PSE-IP67	NS-205PSE-IP67/DIN	NS-208PSE-IP67	NS-208-IP67
PoE	–		802.3af x 4		802.3af x 8	–
Input Voltage Range	+10 VDC ~ +30 VDC (1 kV Isolated)		+46 VDC ~ +53 VDC			+12 VDC ~ +53 VDC
Installation	Wall Mounting	DIN-Rail Mounting or Wall Mounting	Wall Mounting	DIN-Rail Mounting or Wall Mounting	DIN-Rail Mounting or Wall Mounting	
Dimensions (W x L x H) (Unit: mm)	85 x 76 x 137	89 x 90 x 138	85 x 76 x 137	89 x 90 x 138	190 x 155 x 104	

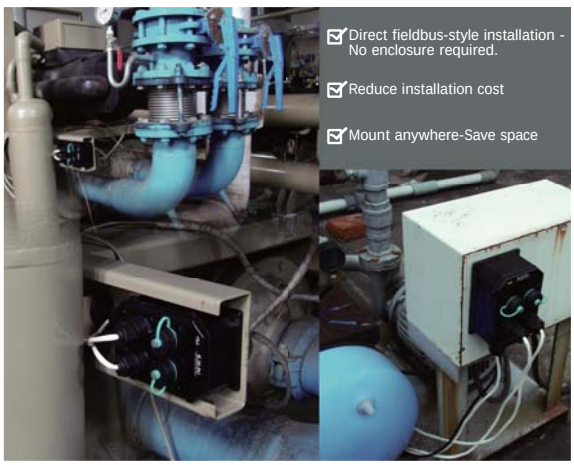
Specifications

Models	NS-205PSE-IP67	NS-205PSE-IP67/DIN	NS-205-IP67	NS-205-IP67/DIN
Technology				
Standards	IEEE 802.3, 802.3u, 802.3x, 10/100 Base-T(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection			
Processing Type	Store & forward; wire speed switching			
MAC Addresses	1024			
Memory Bandwidth	2 Gbps		1.4 Gbps	
Frame Buffer Memory	512 Kbit		256 Kbit	
Flow Control	IEEE 802.3x flow control, back pressure flow control			
Interface				
LED Indicators	PWR, Link/Act , Power Device is detected		PWR, 10/100M, Link/Act	
Ethernet Isolation	1500 Vrms 1 minute			
Connector	Rugged RJ-45			
Power Input				
Input Voltage Range	+46 VDC ~ +53 VDC for PoE output		+10 VDC ~ +30 VDC (1 kV Isolated)	
Power Consumption	0.05 A @ 48 VDC without PD loading; 1.45 A @ 48 VDC with PD full loading		0.12 A @ 24 VDC	
Protection	Power reverse polarity protection			
Connector	IP67 PWR Plug			
PoE Technology				
PoE Compliance	100% IEEE 802.3af compliant		–	
PoE Classification	PSE (Power Sourcing Equipment)		–	
PoE Voltage	+48 VDC depending on power input		–	
PoE Power	Up to 15.4 watts per channel		–	
PoE Operation	Automatic detection and power management		–	
PoE Pin Assignments	V+ (Pin 1, 2), V- (Pin 3, 6)		–	
PoE Disconnect Mode	DC disconnect		–	
Mechanical				
Casing	Plastic (Flammability UL 94V-0)			
Environmental Rating	Protection rating IP67 for Operating Temperature -10 °C ~ +60 °C			
	Protection rating IP66 for Operating Temperature -40 °C ~ +75 °C			
Dimensions (W x L x H)	85 mm x 76 mm x 137 mm	89 mm x 90 mm x 138 mm	85 mm x 76 mm x 137 mm	89 mm x 90 mm x 138 mm
Installation	Wall mounting	DIN-Rail Mounting or Wall Mounting	Wall mounting	DIN-Rail Mounting or Wall Mounting
Environment				
Operating Temperature	-10 °C ~ +60 °C (Protection rating IP67)			
	-40 °C ~ +75 °C (Protection rating IP66)			
Storage Temperature	-10 °C ~ +60 °C (Protection rating IP67)			
	-40 °C ~ +75 °C (Protection rating IP66)			
Ambient Relative Humidity	100% RH for Operating Temperature -10 °C ~ +60 °C			
	10% ~ 90% RH, non-condensing for Operating Temperature -40 °C ~ +75 °C			

Appearance



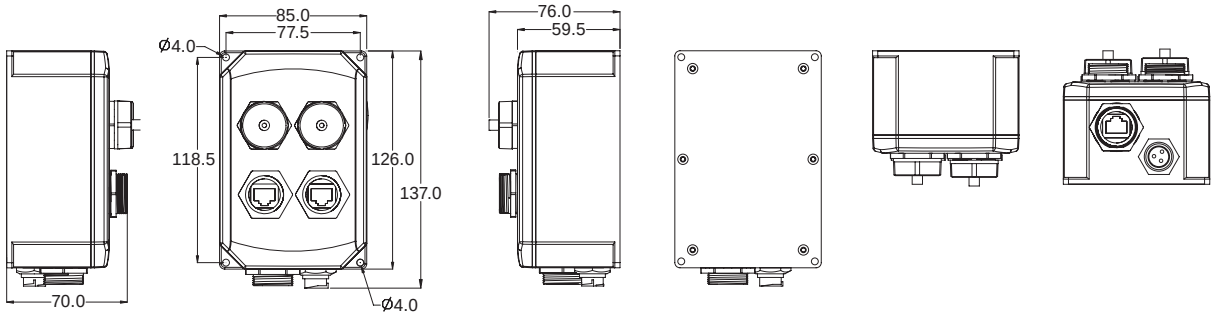
Applications



Industrial
IP67
5-port
Unmanaged
Ethernet Switch
PoE
NS-205PSE-IP67
NS-205PSE-IP67/DIN
NS-205-IP67
NS-205-IP67/DIN
IP67 grade protection approval
Rugged RJ-45 connector for anti-vibration and shock

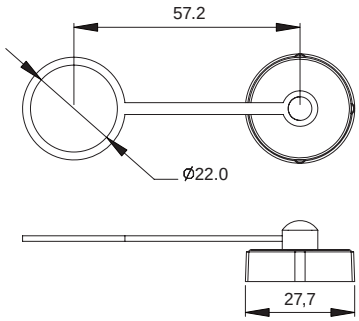
Dimensions (Units: mm)

NS-205PSE-IP67/NS-205-IP67



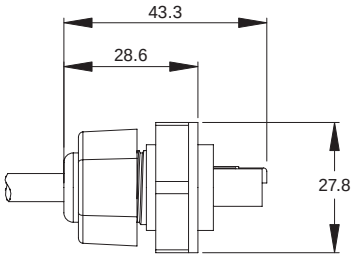
Left Side View | Front View | Right Side View | Rear View | Top View | Bottom View

IP67 Ethernet Cap with Tether



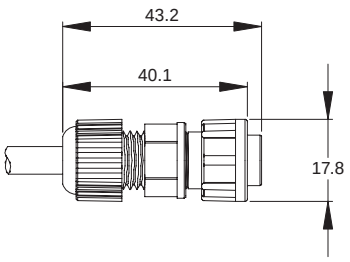
IP67 Ethernet Plug

Cable Dia:
Max. 7.0 mm
Min. 5.5 mm



IP67 PWR Plug

Cable Dia:
Max. 6.5 mm
Min. 5.0 mm



Ordering Information

NS-205PSE-IP67 CR	Industrial 5-port unmanaged IP67 Ethernet switch with PoE Includes IP67 RJ-45 Plug x 5, IP67 Power Plug x 1, Cap with Tether x 5 (RoHS)
NS-205PSE-IP67/DIN CR	NS-205PSE-IP67 with DIN-Rail Mounting (RoHS)
NS-205-IP67 CR	Industrial 5-port unmanaged IP67 Ethernet switch Includes IP67 RJ-45 Plug x 5, IP67 Power Plug x 1, Cap with Tether x 5 (RoHS)
NS-205-IP67/DIN CR	NS-205-IP67 with DIN-Rail Mounting (RoHS)

Accessories

MDR-60-48	48 V/1.25 A, 60 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48 V/0.52 A, 25 W Power Supply with DIN-Rail Mounting
DR-120-48	48 V/2.5 A,120 W Power Supply with DIN-Rail Mounting

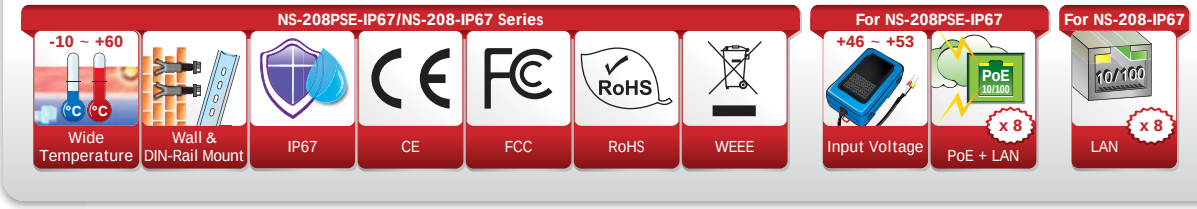
IP67 RJ-45 Plug	IP67 Power Plug	Cap with Tether
4SASO-001	4SIO1K0000016	4SASO-0004

NS-208PSE-IP67 *Available soon*

Industrial 8-port Unmanaged IP67 Ethernet Switch with PoE

NS-208-IP67 *NEW*

Industrial 8-port Unmanaged IP67 Ethernet Switch



Features

- Automatic MDI/MDI-X crossover for plug-and-play
- Store-and-forward architecture
- Each port supports both 10/100 Mbps speed auto negotiation
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- Rugged RJ-45 connector for anti-vibration and shock
- IP67 grade protection approval
- 8 PoE ports with Power Sourcing Equipment (PSE) operation (NS-208PSE-IP67 series)
- Auto-detection of PD (powered devices) and automatic power management (NS-208PSE-IP67 series)
- Over-temperature, over-current and over/under-voltage detection (NS-208PSE-IP67 series)

Introduction

The NS-208PSE-IP67/NS-208-IP67 is designed for industrial applications in harsh environments. The rugged RJ-45 ensures tight, robust connections, and guarantees reliable operation, even for applications that are subject to high vibration and shock.

The NS-208PSE-IP67 PoE switch provides 8 fast Ethernet with 8 IEEE 802.3af compliant PoE ports. The switch is classified as power source equipment (PSE) and provide up to 15.4 W of power per port.

The Ethernet switch supports IEEE 802.3/802.3u/802/3x with 10/100M, full/half-duplex, MDI/MDI-X auto-sensing, and provides an economical solution for your industrial Ethernet network.

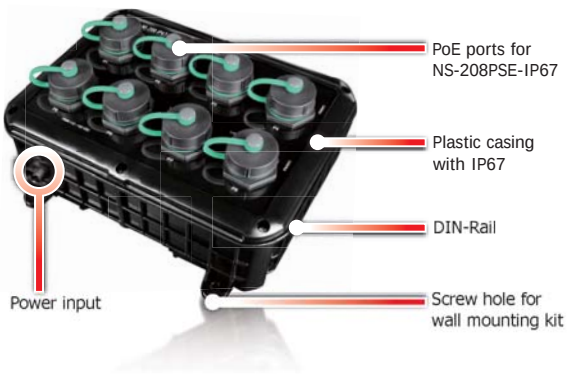
Comparison Table of 5/8-port IP67 Ethernet Switch

Mode Name	NS-205-IP67	NS-205-IP67/DIN	NS-205PSE-IP67	NS-205PSE-IP67/DIN	NS-208PSE-IP67	NS-208-IP67
PoE	–		802.3af x 4		802.3af x 8	–
Input Voltage Range	+10 VDC ~ +30 VDC (1 kV Isolated)		+46 VDC ~ +53 VDC			+12 VDC ~ +53 VDC
Installation	Wall Mounting	DIN-Rail Mounting or Wall Mounting	Wall Mounting	DIN-Rail Mounting or Wall Mounting	DIN-Rail Mounting or Wall Mounting	
Dimensions (W x L x H) (Unit: mm)	85 x 76 x 137	89 x 90 x 138	85 x 76 x 137	89 x 90 x 138	190 x 155 x 104	

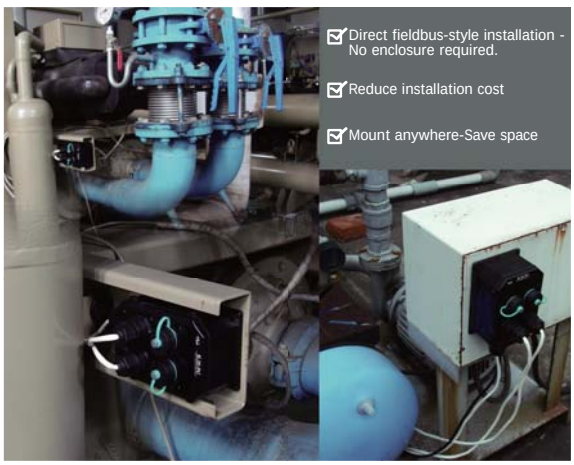
Specifications

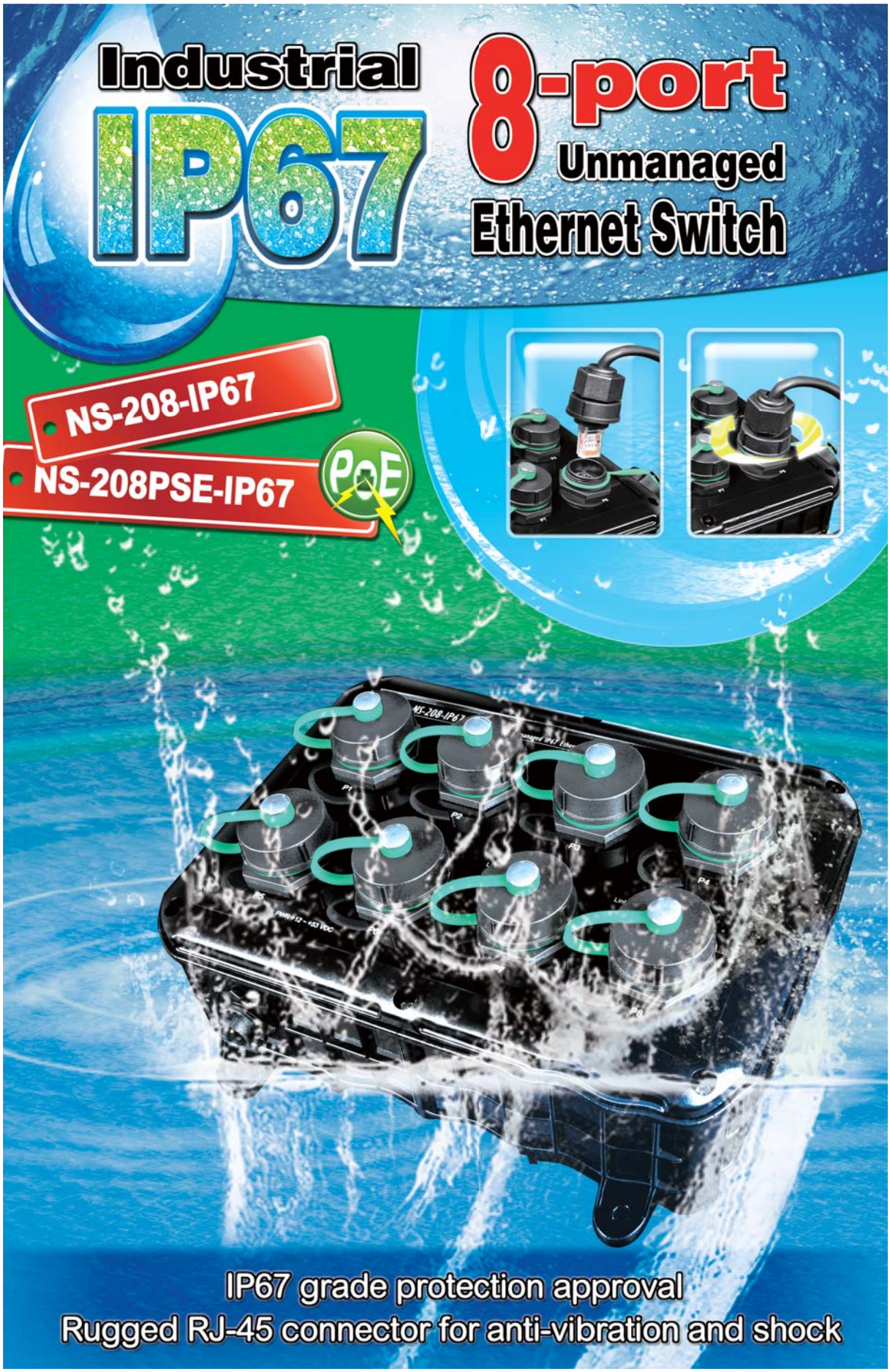
Models	NS-208PSE-IP67	NS-208-IP67
Technology		
Standards	IEEE 802.3, 802.3u, 802.3x, 10/100 Base-T(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection	
Processing Type	Store & forward; wire speed switching	
MAC Addresses	1024	
Memory Bandwidth	2 Gbps	
Frame Buffer Memory	512 Kbit	
Flow Control	IEEE 802.3x flow control, back pressure flow control	
Interface		
LED Indicators	PWR, Link/Act , Power Device is detected	PWR, Link/Act
Ethernet Isolation	1500 V_{rms} 1 minute	
Connector	Rugged RJ-45	
Power Input		
Input Voltage Range	+46 V_{DC} ~ +53 V_{DC} for PoE output	+12 V_{DC} ~ +53 V_{DC}
Power Consumption	0.05 A @ 48 V_{DC} without PD loading; 1.45 A @ 48 V_{DC} with PD full loading	0.12 A @ 24 V_{DC}
Protection	Power reverse polarity protection	
Connector	IP67 PWR Plug	
PoE Technology		
PoE Compliance	100% IEEE 802.3af compliant	–
PoE Classification	PSE (Power Sourcing Equipment)	–
PoE Voltage	+48 V_{DC} depending on power input	–
PoE Power	Up to 15.4 watts per channel	–
PoE Operation	Automatic detection and power management	–
PoE Pin Assignments	V+ (Pin 1, 2), V- (Pin 3, 6)	–
PoE Disconnect Mode	DC disconnect	–
Mechanical		
Casing	Plastic (Flammability UL 94V-0)	
Environmental Rating	Protection rating IP67 for Operating Temperature -10 °C ~ +60 °C	
	Protection rating IP66 for Operating Temperature -40 °C ~ +75 °C	
Dimensions (W x L x H)	190 mm x 155 mm x 104 mm	
Installation	DIN-Rail Mounting or Wall Mounting	
Environment		
Operating Temperature	-10 °C ~ +60 °C (Protection rating IP67)	
	-40 °C ~ +75 °C (Protection rating IP66)	
Storage Temperature	-10 °C ~ +60 °C (Protection rating IP67)	
	-40 °C ~ +75 °C (Protection rating IP66)	
Ambient Relative Humidity	100% RH for Operating Temperature -10 °C ~ +60 °C	
	10% ~ 90% RH, non-condensing for Operating Temperature -40 °C ~ +75 °C	

Appearance



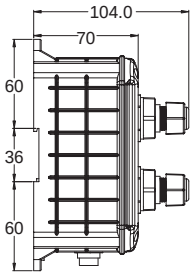
Applications



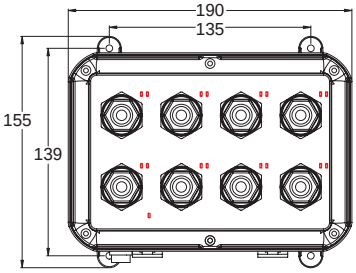

Industrial
IP67
8-port
Unmanaged
Ethernet Switch
NS-208-IP67
NS-208PSE-IP67
PoE
IP67 grade protection approval
Rugged RJ-45 connector for anti-vibration and shock

Dimensions (Units: mm)

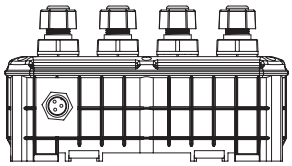
NS-208PSE-IP67/NS-208-IP67



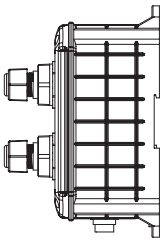
Left Side View



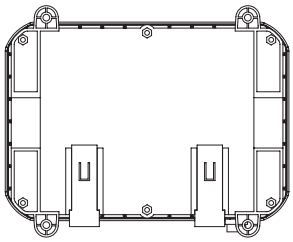
Front View



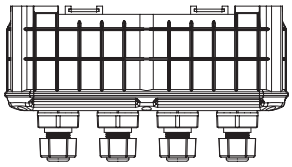
Rear View



Right Side View

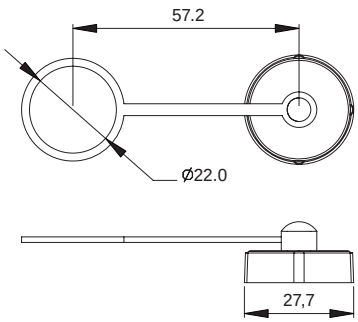


Bottom View



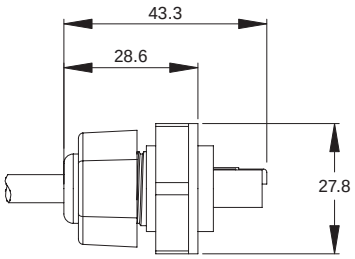
Top View

IP67 Ethernet Cap with Tether



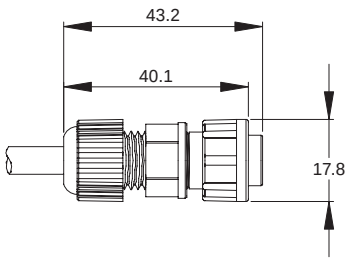
IP67 Ethernet Plug

Cable Dia:
Max. 7.0 mm
Min. 5.5 mm



IP67 PWR Plug

Cable Dia:
Max. 6.5 mm
Min. 5.0 mm



Ordering Information

NS-208PSE-IP67 CR	Industrial 8-port unmanaged IP67 Ethernet switch with PoE Includes IP67 RJ-45 Plug x 8, IP67 Power Plug x 1, Cap with Tether x 8 (RoHS)
NS-208-IP67 CR	Industrial 8-port unmanaged IP67 Ethernet switch Includes IP67 RJ-45 Plug x 8, IP67 Power Plug x 1, Cap with Tether x 8 (RoHS)

Accessories

MDR-60-48	48 V/1.25 A, 60 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48 V/0.52 A, 25 W Power Supply with DIN-Rail Mounting
DR-120-48	48 V/2.5 A,120 W Power Supply with DIN-Rail Mounting

IP67 RJ-45 Plug	IP67 Power Plug	Cap with Tether
4SASO-001	4SIO1K0000016	4SASO-0004

NSM-208-M12 NEW

EN50155 8-port M12 Unmanaged Ethernet Switch

NSM-208PSE-M12 NEW

EN50155 8-port M12 Unmanaged PoE Ethernet Switch

Features

- Each port supports both 10/100 Mbps speed auto negotiation
- 8 PoE ports with Power Sourcing Equipment (PSE) operation (NSM-208PSE-M12)
- Over-temperature, over-current and over/under-voltage detection (NSM-208PSE-M12)
- 8-port 10/100 Mbps M12 type connector with IP40 protection
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- EN50155-certified for harsh railway standards
- Automatic MDI/MDI-X crossover for plug-and-play
- Store-and-forward architecture
- Auto-detection of PD (powered devices) and automatic power management (NSM-208PSE-M12)
- Supports operating temperatures from -40 °C ~ +75 °C

Introduction

The NSM-208PSE-M12/NSM-208-M12 is designed for industrial applications in harsh environments. The M12 connectors ensure tight, robust connections, and guarantees reliable operation, even for applications that are subject to high vibration and shock.

The NSM-208PSE-M12 PoE switch provides 8 fast Ethernet M12 ports with 8 IEEE 802.3af compliant PoE ports. The switch is classified as power source equipment (PSE) and provide up to 15.4 W of power per port.

The Ethernet switch supports IEEE 802.3/802.3u/802/3x with 10/100M, full/half-duplex, MDI/MDI-X auto-sensing, and provides an economical solution for your industrial Ethernet network.

The NSM-208-M12 provides a wide +12 V_{DC} ~ +53 V_{DC} power range to fit all the common power standards found in industrial automation, without external power converters. The wide power input lowers installation and maintenance costs.

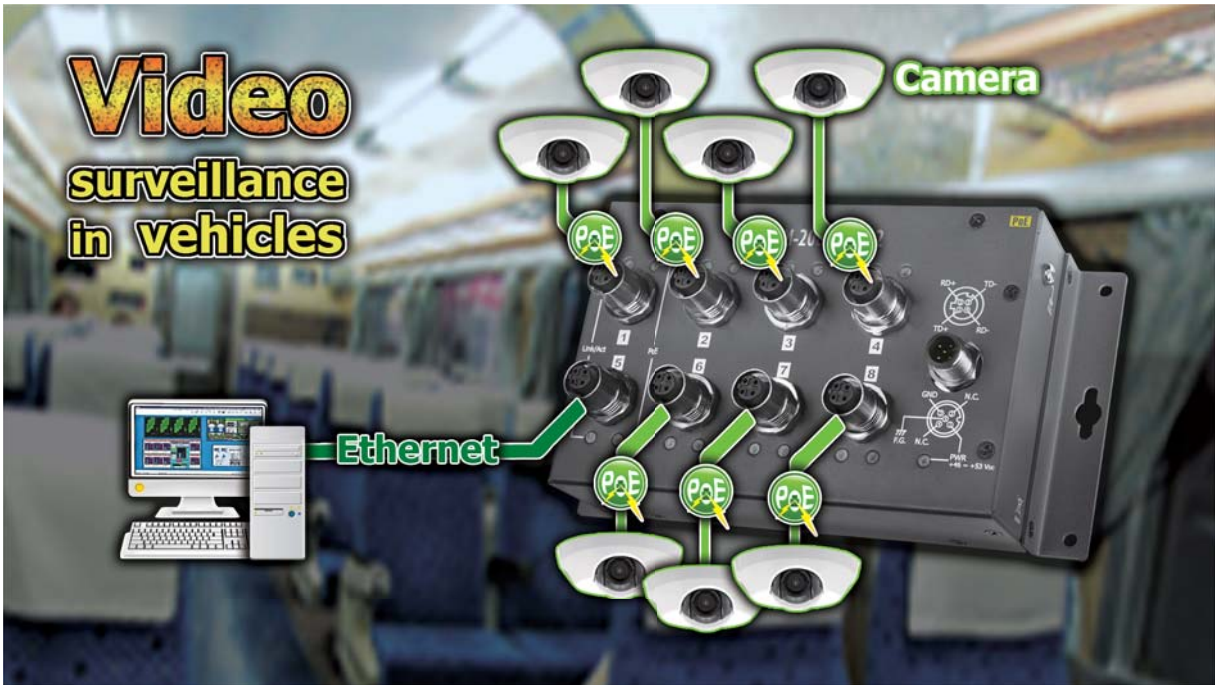
Comparison Table of 8-port M12/IP67 Ethernet Switch

Mode Name	NSM-208PSE-M12	NSM-208-M12	NS-208PSE-IP67	NS-208-IP67
PoE	802.3af x 8	–	802.3af x 8	–
Input Voltage Range	+46 V_{DC} ~ +53 V_{DC}	+12 V_{DC} ~ +53 V_{DC}	+46 V_{DC} ~ +53 V_{DC}	+12 V_{DC} ~ +53 V_{DC}
Operating Temperature	-40 °C ~ +75 °C		-10 °C ~ +60 °C	
Casing	Metal with IP40		Plastic (Flammability UL 94V-0) with IP67	
Installation	Wall Mounting		DIN-Rail Mounting or Wall Mounting	
Dimensions (W x L x H)	190 mm x 56 mm x 100 mm		190 mm x 155 mm x 104 mm	

Specifications

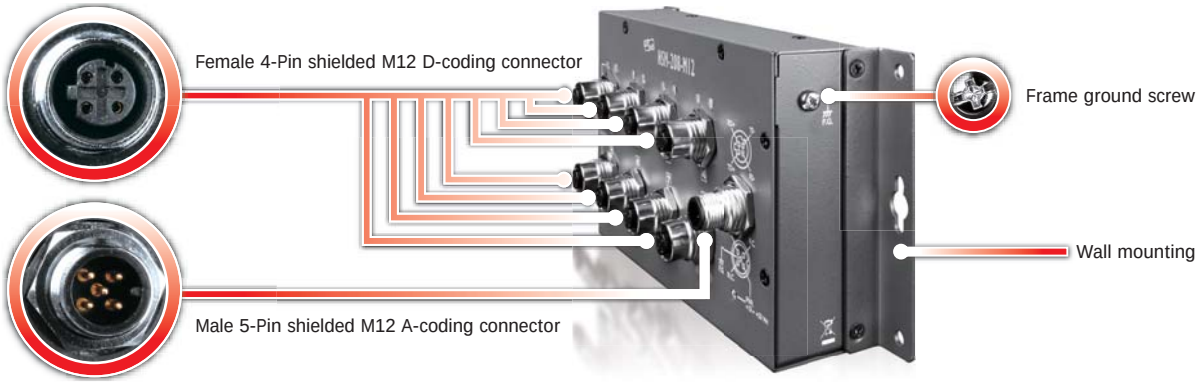
Models	NSM-208PSE-M12	NSM-208-M12
Technology		
Standards	IEEE 802.3, 802.3u, 802.3x, 10/100 Base-T(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection	
Processing Type	Store & forward	
MAC Addresses	1024	
Memory Bandwidth	3.2 Gbps	
Frame Buffer Memory	512 Kbit	
Flow Control	IEEE 802.3x flow control, back pressure flow control	
Interface		
LED Indicators	PWR, Link/Act, Power Device is detected	PWR, Link/Act
Ethernet Isolation	1500 V_{rms} 1 minute	
Connector	Female 4-Pin shielded M12 D-coding connector x 8	
Power Input		
Input Voltage Range	+46 V_{DC} ~ +53 V_{DC}	+12 V_{DC} ~ +53 V_{DC}
Power Consumption	0.12 A @ 48 V_{DC} without PD loading 3.0 A @ 48 V_{DC} with PD full loading	0.12 A @ 48 V_{DC}
Protection	Power reverse polarity protection	
Connector	Male 5-Pin shielded M12 A-coding connector x 1	
PoE Technology		
PoE Compliance	100% IEEE 802.3af compliant	–
PoE Classification	PSE (Power Sourcing Equipment)	–
PoE Voltage	+48 V_{DC} depending on power input	–
PoE Power	Up to 15.4 W per port	–
PoE Operation	Automatic detection and power management	–
PoE Pin Assignments	V+ (Pin 1, 3), V- (Pin 2, 4)	–
PoE Disconnect Mode	DC disconnect	–
Mechanical		
Casing	Metal with IP40	
Dimensions (W x L x H)	190 mm x 56 mm x 100 mm	
Installation	Wall Mounting	
Environmental		
Operating Temperature	-40 °C ~ +75 °C	
Storage Temperature	-40 °C ~ +85 °C	
Ambient Relative Humidity	10 ~ 95% RH, non-condensing	

Applications



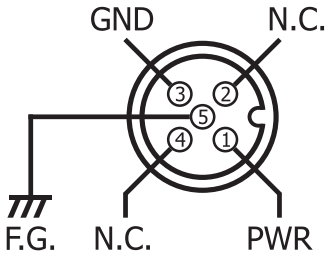
EN50155 8-port M12
Unmanaged Ethernet Switch
NSM-208-M12
NSM-208PSE-M12
PoE
Wide Range Temperature: -40 ℃ ~ +75 ℃
EN50155-certified for harsh railway standard

Appearance



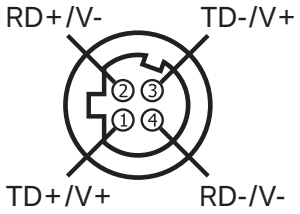
Pin Functions for Power Input

External power supply is connected using the M12 A-coding:
PWR: Power input and should be connected to the power supply (+)
GND: Ground and should be connected to the power supply (-)
F.G.: F.G. stands for Frame Ground (protective ground). It is optional. If you use this pin, it can reduce EMI radiation; improve EMI performance and EMS protection.

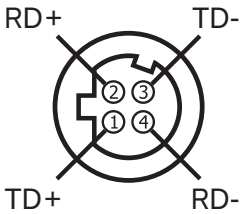


Pin Functions for Ethernet Port

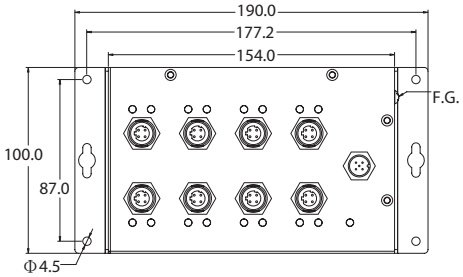
For NSM-208PSE-M12



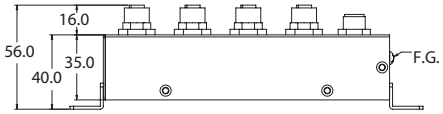
For NSM-208-M12



Dimensions (Units: mm)



Front View



Bottom View

Ordering Information

NSM-208-M12 CR	EN50155 8-port M12 Unmanaged Ethernet Switch (RoHS) Includes M12D-4P-IP68 x 8, A-CAP-M12M x 8, M12A-5P-IP68 and A-CAP-M12F x 1
NSM-208PSE-M12 CR	EN50155 8-port M12 Unmanaged PoE Ethernet Switch (RoHS) Includes M12D-4P-IP68 x 8, A-CAP-M12M x 8, M12A-5P-IP68 and A-CAP-M12F x 1

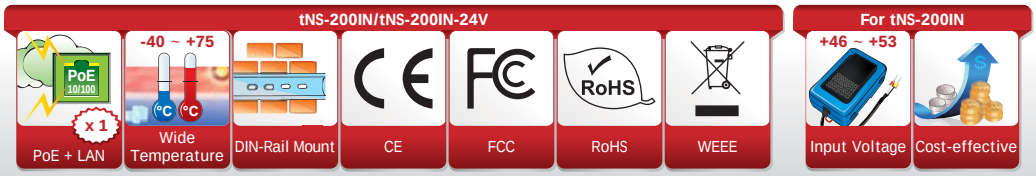
Accessories

MDR-60-48	48 V/1.25 A, 60 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48 V/0.52 A, 25 W Power Supply with DIN-Rail Mounting
KA52F-48	48 V/0.52 A, 25 W Power Supply

M12D-4P-IP68	A-CAP-M12M	M12A-5P-IP68	A-CAP-M12F
4PIO1K0000001	4PIO1K0000002	4PIO1K0000003	4PIO1K0000004
You need to choose high quality M12 cable, please refer to http://www.balluff.ca/Balluff			

tNS-200IN NEW
tNS-200IN-24V Available soon

PoE injector (RoHS)



Features

- Auto-detection of PD (powered devices)
- Over-temperature, over-current and over/under-voltage detection
- No user settings
- Power Sourcing Equipment (PSE) operation
- Supplies up to 15.4 W
- Tiny packaging fits on your DIN-Rail Mounting
- Cost-effective for tNS-200IN

Introduction

The tNS-200IN/tNS-200IN-24V Single Port PoE Injector supports PoE powered devices in industrial environments. The tNS-200IN/tNS-200IN-24V delivers both data and power over a single standard Ethernet cable to a PoE Powered Device designed to receive both Data and Power through its RJ-45 port connector.

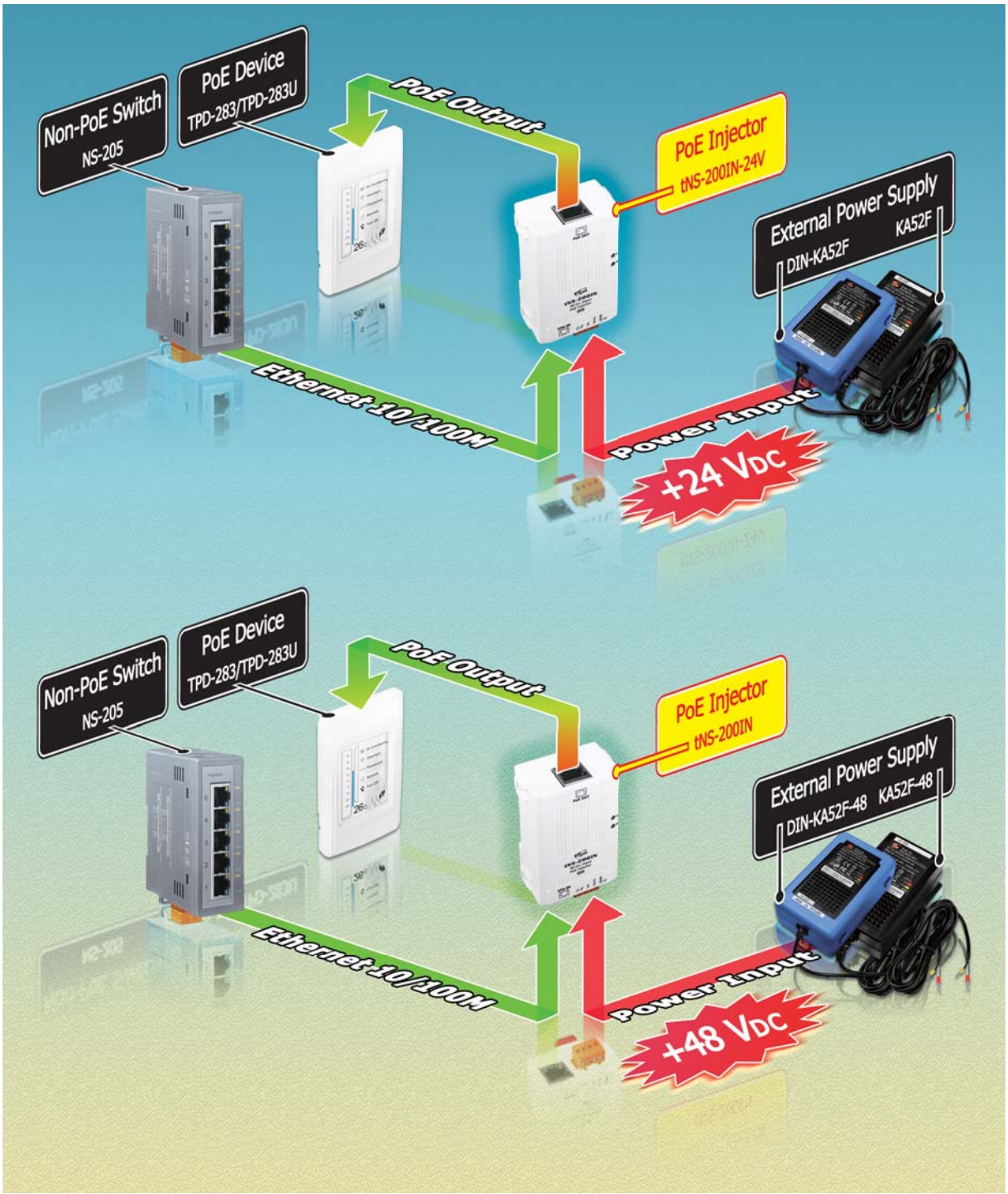
The tNS-200IN-24V is designed with +24 V_{DC} to +48 V_{DC} boost for PoE application where +48 V_{DC} power supply is not available.

Specifications

Models	tNS-200IN	tNS-200IN-24V
Interface		
RJ-45 Ports	1 for Ethernet in, 1 for PoE out	
LED Indicators	Power, Power Device is detected	
Power Input		
Input Voltage Range	+46 V_{DC} ~ +53 V_{DC}	+18 V_{DC} ~ +32 V_{DC}
Power Consumption	0.4 A @ 48 V_{DC} with PD full loading	0.9 A @ 24 V_{DC} with PD full loading
Protection	Power reverse polarity protection	
Frame Ground for EMS Protection	Yes	
Connector	4-Pin Removable Terminal Block	
PoE Technology		
PoE Compliance	100% IEEE 802.3af compliant	
PoE Classification	PSE (Power Sourcing Equipment)	
PoE Voltage	+48 V_{DC} depending on power input	
PoE Power	Up to 15.4 W	
PoE Operation	Automatic detection and power management	
PoE Pin Assignments	V+ (Pin 4, 5), V- (Pin 7, 8)	
PoE Disconnect Mode	DC disconnect	

Models	tNS-200IN	tNS-200IN-24V
Mechanical		
Casing	Plastic (Flammability UL 94V-0)	
Dimensions (W x L x H)	52 mm x 27 mm x 86 mm	
Installation	DIN-Rail Mounting	
Environmental		
Operating Temperature	-40 °C ~ +75 °C	
Storage Temperature	-40 °C ~ +85 °C	
Ambient Relative Humidity	10 ~ 90% RH, non-condensing	

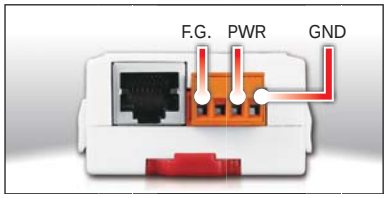
Applications



Appearance

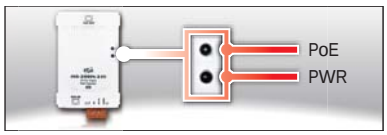
Pin Function for Terminal Block

External power supply is connected using the removable terminal block:
PWR: Power input and should be connected to the power supply (+)
GND: Ground and should be connected to the power supply (-)
F.G.: F.G. stands for Frame Ground (protective ground). It is optional. If you use this pin, it can reduce EMI radiation; improve EMI performance and ESD protection.

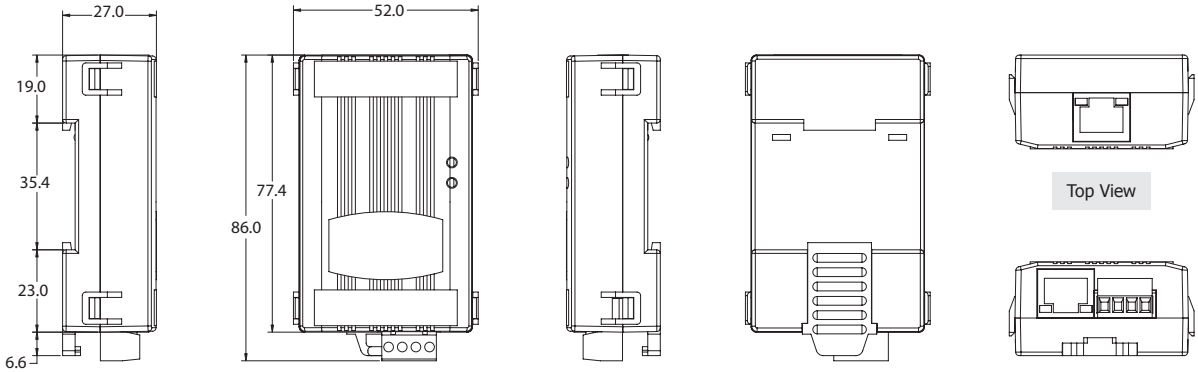


LED Indicator Functions

LED	Color	Description
PoE	Orange On	Power Device is detected
PWR	Red On	Power is On
	Red Off	Power is Off



Dimensions (Units: mm)



Left Side View | Front View | Right Side View | Rear View | Top View | Bottom View

Ordering Information

tNS-200IN CR	PoE injector for 1 PoE port (uses spare pairs), +48 VDC input (RoHS)
tNS-200IN-24V CR	PoE injector for 1 PoE port (uses unused pairs), +24 VDC input (RoHS)

Accessories

MDR-60-48	48 V/1.25 A, 60 W Power Supply with DIN-Rail Mounting
DIN-KA52F-48	48 V/0.52 A, 25 W Power Supply with DIN-Rail Mounting
DIN-KA52F	24 V/1.04 A, 25 W Power Supply with DIN-Rail Mounting

Media Converters

4

NS-200AF Series

Industrial 10/100 Base-TX to 100 Base-FX Media Converter

Features

- Automatic MDI/MDI-X crossover for plug-and-play
- Supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x and half duplex backpressure flow control
- 1.4 Gbps high performance memory bandwidth
- Frame buffer memory: 256 Kbit
- 1024 MAC addresses
- Supports +10 V_{DC} ~ +30 V_{DC} Reverse Polarity Protection
- Supports operating temperatures from -30 °C ~ +75 °C
- Slim packaging fits on your DIN-Rail Mounting

Introduction

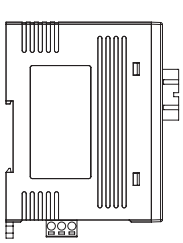
The NS-200AF series is a Ethernet (10/100 Base-TX) to Media (100 Base-FX) converter. The Ethernet supports 10/100M auto negotiation feature and auto MDI/MDI-X function.
NS-200A can work normally from -30 °C ~ +75 °C and accepts a wide voltage range from +12 V_{DC} ~ +48 V_{DC}.

Specifications

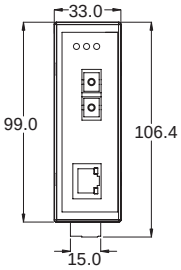
Models	NS-200AFC-T	NS-200AFT-T	NS-200AFCS-T	NS-200AFCS-60T
Technology				
Standards	IEEE 802.3, 802.3u, 802.3x			
Processing Type	Store & forward, wire speed switching			
MAC Addresses	1024			
Memory Bandwidth	1.4 Gbps			
Frame Buffer Memory	256 Kbit			
Flow Control	IEEE 802.3x flow control, back pressure flow control			
Interface				
RJ-45 Port	10/100 Base-TX auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection			
Fiber Port	100 Based-FX			
LED Indicators	10/100M, Link/Act, Full duplex/Half duplex (Fiber Port)			
Ethernet Isolation	1500 V_{rms} 1 minute			

Models		NS-200AFC-T	NS-200AFT-T	NS-200AFCS-T	NS-200AFCS-60T
Multi-mode	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		–	
	Min. RX Overload	-8 dBm		–	
	Budget	12 dBm		–	
Single-mode	Single-mode Fiber Cables	–		8.3/125, 8.7/125, 9/125 or 10/125 µm	
	Distance	–		30 km	60 km
	Wavelength	–		1300 or 1310 nm	
	Min. TX Output	–		-15 dBm	-5 dBm
	Max. TX Output	–		-8 dBm	0 dBm
	Max. RX Sensitivity	–		-34 dBm	-35 dBm
	Min. RX Overload	–		-5 dBm	
	Budget	–		19 dBm	30 dBm
Ethernet Transmission Distance	Ethernet	2-pair UTP/STP Cat.3, 4, 5, EIA/TIA-568 100 Ω			
	Fast Ethernet	2-pair UTP/STP Cat. 5, EIA/TIA-568 100 Ω			
Power					
Input Voltage Range		+12 VDC ~ +48 VDC (Non-isolated)			
Power Consumption		0.12 A @ 24 VDC			
LED Indicator		Yes			
Protection		Power reverse polarity protection			
Frame Ground for EMS Protection		Yes			
Mechanical					
Casing		Plastic (Flammability UL 94V-0)			
Dimensions (W x L x H)		33 mm x 85 mm x 107 mm			
Installation		DIN-Rail Mounting			
Environmental					
Operating Temperature		-30 °C ~ +75 °C			
Storage Temperature		-30 °C ~ +85 °C			
Ambient Relative Humidity		10% ~ 90% RH, non-condensing			

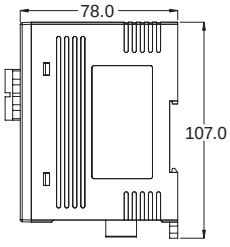
Dimensions (Units: mm)



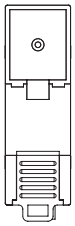
Left Side View



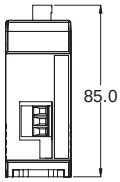
Front View



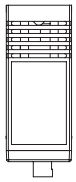
Right Side View



Rear View



Bottom View



Top View

Ordering Information

NS-200AFC-T CR	Industrial 10/100 Base-T to 100 Base-FX Media Converter; 1 Multi-mode, SC connector (RoHS)
NS-200AFT-T CR	Industrial 10/100 Base-T to 100 Base-FX Media Converter; 1 Multi-mode, ST connector (RoHS)
NS-200AFCS-T CR	Industrial 10/100 Base-T to 100 Base-FX Media Converter; 1 Single-mode, SC connector (RoHS)
NS-200AFCS-60T CR	Industrial 10/100 Base-T to 100 Base-FX Media Converter; 1 (60 km) Single-mode, SC connector (RoHS)

Accessories

GPSU06U-6	24V/0.25A, 6 W Power Supply
DIN-KA52F	24V/1.04A, 25 W Power Supply with DIN-Rail Mounting

NS-200WDM Series NEW

Industrial Single-Strand 10/100 Base-TX to 100 Base-FX Media Converter

Features

- Automatic MDI/MDI-X crossover for plug-and-play
- Supports both 10/100 Mbps speed auto negotiation
- Store-and-forward architecture
- Full duplex IEEE 802.3x flow control
- MAC addresses 1024
- Supports +12 V_{DC} ~ +48 V_{DC}
- Supports operating temperatures from 0 °C ~ +70 °C
- Slim packaging fits on your DIN-Rail Mounting

Introduction

Using the fiber optic medium for Ethernet applications has become more popular due to fiber optic's excellent physical features, especially for long distance networks. However, fiber optic cable is very expensive, so if we can apply a solution that uses only 1 cable instead of 2, the infrastructure cost can be cut in half. The NS-200WDM series provides a solution that reduces your expense by 50%!

The NS-200WDM series of Single-Strand Fiber Converters supports Wavelength Division Multiplexing (WDM) technology that allows two independent data communication channels to transmit and receive over one standard, single-mode, fiber optic line. This not only doubles your existing bandwidth, but also effectively reduces the cost of creating a new fiber optic infrastructure.

50% Cost Saving for Fiber Optic Infrastructures

With a pair of NS-200WDM series products (NS-200WDM-A and NS-200WDM-B), you can double the utilization of your existing, costly fiber optic cable, and save 50% of the cost of a newly installed fiber optic application.

The width of the NS-200WDM is just 33 mm, so it can be used where space is limited.

Specifications

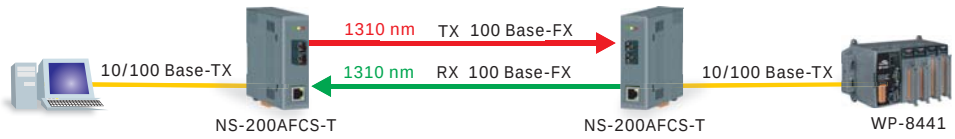
Technology	
Standards	IEEE 802.3, 802.3u, 802.3x
Processing Type	Store & forward, wire speed switching
MAC Addresses	1024
Memory Bandwidth	1.4 Gbps
Frame Buffer Memory	256 Kbit
Flow Control	IEEE 802.3x flow control

Interface		
RJ-45 Port		10/100 Base-TX auto negotiation speed, and auto MDI/MDI-X connection
Fiber Port		100 Base-FX (Single-mode; SC Connector)
LED Indicators		10/100M, Link/Act, Full duplex/Half duplex (Fiber Port)
Ethernet Isolation		1500 V_{rms} 1 minute
Frame Ground for EMS Protection		Yes
Interface		
Single-mode	**Single-mode Fiber Cables**	8.3/125, 8.7/125, 9/125 or 10/125 µm
	Distance	15 km, (9/125 µm recommended) for full duplex
	Wavelength	TX: 1310, RX: 1550 nm for NS-200WDM-A TX: 1550, RX: 1310 nm for NS-200WDM-B
	Min. TX Output	-14 dBm
	Max. TX Output	-8 dBm
	RX Sensitivity	-31 dBm
Ethernet Transmission Distance	**Ethernet**	2-pair UTP/STP Cat.3, 4, 5, EIA/TIA-568 100 Ω
	Fast Ethernet	2-pair UTP/STP Cat. 5, EIA/TIA-568 100 Ω
Power		
Input Voltage Range		+12 V_{DC} ~ +48 V_{DC} (Non-isolated)
Power Consumption		0.12 A @ 24 V_{DC}
LED Indicator		Yes
Protection		Power reverse polarity protection
Frame Ground for EMS Protection		Yes
Connector		3-Pin Removable Terminal Block
Mechanical		
Casing		Plastic (Flammability UL 94V-0)
Dimensions (W x L x H)		33 mm x 85 mm x 107 mm
Installation		DIN-Rail Mounting
Environmental		
Operating Temperature		0 °C ~ +70 °C
Storage Temperature		-20 °C ~ +85 °C
Ambient Relative Humidity		10% ~ 90% RH, non-condensing

Applications

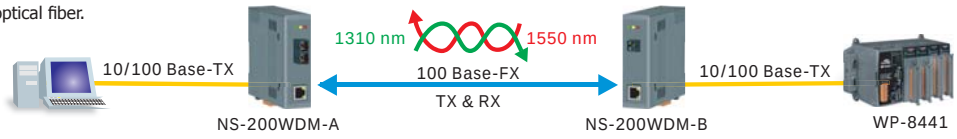
General Media Converter Solution

A general media converter requires a pair of fiber optic cables for data transmission and receiving.

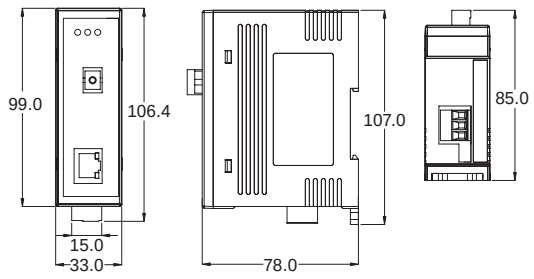


Single-Strand Fiber Converter Solution

Wavelength Division Multiplexing (WDM) supports bi-directional data transmission and receiving using dual wavelengths (1310/1550 nm) over a single strand, of single-mode optical fiber.



Dimensions (Units: mm)



Front View | Right Side View | Rear View

Ordering Information

NS-200WDM-A CR	10/100 Base-TX to 100 Base-FX Single-Strand Media Converter, TX 1310 nm, RX 1550 nm, SC (RoHS)
NS-200WDM-B CR	10/100 Base-TX to 100 Base-FX Single-Strand Media Converter, TX 1550 nm, RX 1310 nm, SC (RoHS)

Important Note:
You must purchase both **NS-200WDM-A** and **NS-200WDM-B** since these products work as a pair.

Accessories

GPSU06U-6	24V/0.25A, 6 W Power Supply
DIN-KA52F	24V/1.04A, 25 W Power Supply with DIN-Rail Mounting

NS-200SX *Available soon*

Giga Ethernet to 1000 Base-SX Fiber Converter

NS-200LX *Available soon*

Giga Ethernet to 1000 Base-LX Fiber Converter

Features

- Provides 1 x 1000 Mbps fiber port with SC type connector for 1000 Base-SX/LX device
- Supports wide operating temperatures from -30 °C ~ +75 °C (NS-200SX-T/NS-200LX-T)
- Supports Jumbo Frames 9K bytes
- Provides Link Fault Pass-through (LFP)
- Supports redundant +12 V_{DC} ~ +48 V_{DC} power input

Introduction

NS-200SX/LX is an enhanced gigabit Ethernet to fiber optic converter. Aside from its standard features, the versatile NS-200SX/LX also has the LFP (Link Fault Pass-through) feature. When one side of the link fails, the other side continues transmitting packets, and waiting for a response that never arrives from the disconnected side. NS-200SX/LX will force the link to shut down as soon as noticed that the other link has failed, giving the application software a chance to react to the situation.

Specifications

Models	NS-200SX	NS-200SX-T	NS-200LX	NS-200LX-T
Interface				
RJ-45 Port	10/100/1000 Base-T(X) auto negotiation speed and auto MDI/MDI-X connection			
Fiber Port	Multi-mode: Up to 550 m; Single-mode: Up to 10 km			
LED Indicators	PWR1, PWR2, P-Fail, Link/Act, 1000M			
Optical Fiber	62.5/125 μm (Multi-mode)		10/125 μm (Signal Mode)	
Distance	0.5 km		10 km	
Wavelength	850 nm		1310 nm	
Min. TX Output	-9.4 dBm		-9.4 dBm	
Max. TX Output	-4 dBm		-3 dBm	
Max. RX Sensitivity	-17 dBm		-20 dBm	
Min. RX Overload	-3 dBm		-3 dBm	
Power				
Input Voltage Range	+12 V_{DC} ~ +48 V_{DC} (Non-isolated)			
Power Consumption	0.24 A @ 24 V_{DC}			
Mechanical				
Dimensions (W x L x H)	33 mm x 85 mm x 107 mm			
Installation	DIN-Rail Mounting			
Environmental				
Operating Temperature	-10 °C ~ +70 °C	-30 °C ~ +75 °C	-10 °C ~ +70 °C	-30 °C ~ +75 °C
Storage Temperature	-40 °C ~ +85 °C			
Ambient Relative Humidity	10% ~ 90% RH, non-condensing			

Ordering Information

NS-200SX CR	Industrial 1000 Base-T to 1000 Base-SX Fiber Converter, Multi-mode 850 nm, 0.5 km, SC connector (RoHS)	NS-200LX CR	Industrial 1000 Base-T to 1000 Base-LX Fiber Converter, Single-mode 1310 nm, 10 km, SC connector (RoHS)
NS-200SX-T CR	NS-200SX w/Wide Temperature (-30 °C ~ +75 °C)	NS-200LX-T CR	NS-200LX w/Wide Temperature (-30 °C ~ +75 °C)

Related Products

5

Power Supplies

DR-120-24 NEW
DR-120-48 NEW

Specifications

Models	DR-120-24	DR-120-48
Input		
Range	88 AC ~ 264 AC	
Frequency	47 Hz ~ 63 Hz	
Output		
Power	24 VDC/5.0 A max., 120 W	48 VDC/2.5 A max., 120 W
Mechanical		
Dimensions (W x H x D)	65 mm x 125 mm x 100 mm	
Installation	DIN-Rail Mounting	
Environmental		
Operating Temperature	-10 °C ~ +60 °C	
Storage Temperature	-20 °C ~ +85 °C	-25 °C ~ +85 °C

DR-120-48 DR-120-24

MDR-20-24 NEW
MDR-60-24 NEW
MDR-60-48 NEW

Specifications

Models	MDR-20-24	MDR-60-24	MDR-60-48
Input			
Range	100 AC ~ 250 AC		
Frequency	50 Hz ~ 60 Hz		
Output			
Power	24 VDC/1 A max., 24 W	24 VDC/2.5 A max., 60 W	48 VDC/1.25 A max., 60 W
Mechanical			
Dimensions (W x H x D)	22.5 mm x 90 mm x 100 mm	40 mm x 90 mm x 100 mm	40 mm x 90 mm x 100 mm
Installation	DIN-Rail Mounting		
Environmental			
Operating Temperature	-20 °C ~ +70 °C		
Storage Temperature	-20 °C ~ +85 °C		

MDR-60-24/ MDR-60-48 MDR-20-24

KA-52F/DIN-KA52F
KA52F-48/DIN-KA52F-48 NEW

Specifications

Models	KA-52F	DIN-KA52F	KA-52F-48	DIN-KA52F-48
Input				
Range	100 AC ~ 250 AC			
Frequency	50 Hz ~ 60 Hz			
Output				
Power	24 VDC/1.04 A max., 25 W		48 VDC/0.52 A max., 25 W	
Mechanical				
Dimensions (W x H x D, Unit: mm)	54 x 36 x 93	68 x 50 x 107	54 x 36 x 93	68 x 50 x 107
Installation	No-mounting	DIN-Rail Mounting	No-mounting	DIN-Rail Mounting
Environmental				
Operating Temperature	0 °C ~ +50 °C			
Storage Temperature	-20 °C ~ +85 °C			

KA-52F/KA-52F-48

DIN-KA52F/DIN-KA52F-48

GPSU06U-6 NEW
GPSU06E-6 NEW

Specifications

Input	
Range	100 VAC ~ 240 VAC or 127 VDC ~ 370 VDC
Frequency	50 Hz ~ 60 Hz
Output	
Power	24 VDC/0.25 A max., 6 W
Mechanical	
Dimensions (W x H x D)	32 mm x 66 mm x 68 mm
Installation	No-mounting
Environmental	
Operating Temperature	0 °C ~ +40 °C
Storage Temperature	-20 °C ~ +85 °C

GPSU06U-6

GPSU06E-6
(2 pole EURO plug)

Stainless 35 mm DIN-Rail

DRS-125
DRS-240
DRS-360

DRS-125

DRS-240

DRS-360

Material	stainless sos304-1.0t

Ordering Information

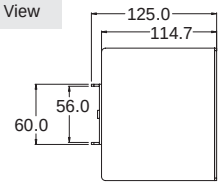
DRS-125	125 mm length, Stainless 35 mm DIN-Rail
DRS-240	240 mm length, Stainless 35 mm DIN-Rail
DRS-360	360 mm length, Stainless 35 mm DIN-Rail

19" Rack Mounting Kit 3U

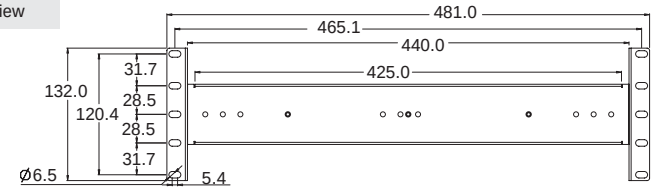
RK-3UD-R

Dimensions

Left Side View



Front View



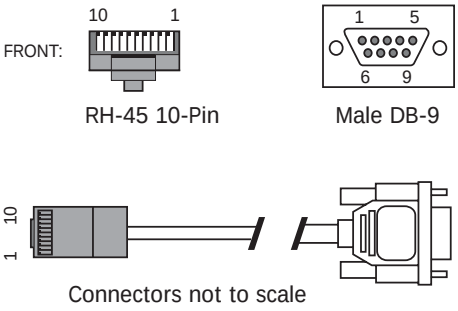
Ordering Information

RK-3UD-R	19" Rack Mounting Kit 3U

Cable

CA-090510

Pin Assignments



RJ-45 8-Pin to DB-9 cable

The wiring diagram for a CA-090510 cable is shown in Table.

RJ-45		DB-9
Pin 1	⟷	Pin 6
Pin 2	⟷	Pin 7
Pin 3	⟷	Pin 5
Pin 4	⟷	Pin 2
Pin 5	⟷	Pin 3

Ordering Information

CA-090510	9-Pin Female D-Sub & RJ-45 Cable, 1 m

Industrial Enclosures

I-950-ENC
I-951-ENC

Specifications

Models	I-950-ENC	I-951-ENC
Includes		
Case Accessory		
2 x Polyamide cable glands		
4 x captive lid screws		
1 x DIN-Rail Mounting (20 cm)		
Mechanical		
Casing	Plastic	
Dimensions (W x H x D)	254 mm x 180 mm x 90 mm	254 mm x 180 mm x 111 mm
Environmental		
Temperature	0 °C ~ +50 °C for Protection rating IP66	

I-950-ENC

I-951-ENC

Ordering Information

I-950-ENC CR	Industrial Enclosure (254 mm x 180 mm x 90 mm) (RoHS)
I-951-ENC CR	Industrial Enclosure (254 mm x 180 mm x 111 mm) (RoHS)

I-3625-ENC

Specifications

Includes	
Case Accessory	
2 x Polyamide cable glands	
6 x captive lid screws	
1 x DIN-Rail Mounting (35.8 cm)	
Mechanical	
Casing	Plastic
Dimensions (W x H x D)	360 mm x 254 mm x 165 mm
Environmental	
Temperature	0 °C ~ +50 °C for Protection rating IP66

I-3625-ENC

Ordering Information

I-3625-ENC CR	Industrial Enclosure (RoHS)

ICP DAS Catalogs

Compact PAC Products Catalog

- XP-8000-Atom Series
- XP-8000 Series
- WP-8000 Series
- LP-8000 Series
- iP-8000 Series
- ViewPAC Series
- MotionPAC Series
- I/O Expansion Units
- I/O Modules
- 7188/7186 Series
- 5000 Series

Industrial Remote I/O Products Catalog

- RS-485 Remote I/O Modules
- Ethernet Remote I/O Modules
- FRnet I/O Modules
- CAN bus Remote I/O Modules
- PROFIBUS Remote I/O Modules

Touch HMI Devices Brochure

- 2.8" high-color LCD touch screen
- 3.5" high-color LCD touch screen
- 4.3" high-color LCD touch screen
- RS-232, RS-485 or Ethernet Interface
- HMIWorks development software
- Modbus TCP, Modbus RTU and DCON protocols
- Standard C or Ladder programming

Industrial Data Acquisition for ISA and PCI Bus Full Catalog

- Multi-port Serial Communication Boards
- CAN bus Communication Boards
- PCI/ISA Data Acquisition and I/O Boards
- PCI bus Battery-Backup Memory Boards
- Daughter Boards & Accessories
- Motion Control & Watchdog Boards
- Signal Conditioning & Power Modules
- FRnet Remote I/O Products
- LED Display

Industrial Communication & Networking Products Catalog

- Multi-port Serial Communication Boards
- Programmable Serial-to-Ethernet Device Servers with PoE or LAN Switch
- Programmable Serial-to-Fiber Device Servers
- Modbus TCP to RTU/ASCII Gateway
- Addressable RS-232 to RS-485 Converter
- RS-232/422/485 Converter, Repeater and HUB

New Members in I/O Cards Short Form

- PCI Express Cards
- Universal PCI Cards
- Analog Input and Output Cards
- Digital Input and Output Cards
- Multi-port Serial Cards

Fieldbus Solutions Full Catalog

- CAN bus Communication Products
- CANopen Communication Products
- DeviceNet Communication Products
- J1939 Communication Products
- PROFIBUS Communication Products
- HART Communication Products
- Ethernet/IP Communication Products
- BACnet Communication Products

Industrial Wireless Communication Products

- Industrial Wireless Series
- DSSS RF Modems
- 2G/3G Mini-PAC/Modules/Modems
- ZigBee Converters & I/O Modules
- GPS Solutions

Industrial CAN bus Products Catalog

- CAN Converters, CAN Repeater, CAN Bridge, CAN Switch, CAN Cards, Surge Protector, PACs, CAN Expansion Modules, CAN Power Meters, CAN Connector, CAN Transformation Cable
- CANopen Gateways, CANopen Master Interfaces, CANopen Remote I/O Modules
- DeviceNet Gateways, DeviceNet Master Interfaces, DeviceNet Remote I/O Modules
- J1939 Gateways

M2M Total Solutions

- 2G/3G Solutions
- WLAN Solutions
- Remote Maintenance Solutions
- DSSS RF/GPS Solutions
- M2M Series Selection Guide

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