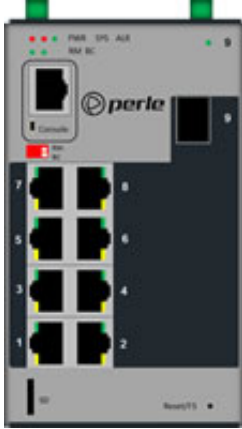


# IDS-409-SFP Managed Industrial Ethernet Switch

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 [perle.com/products/switches/ids-409-sfp-industrial-managed-gigabit-switch.shtml](https://www.perle.com/products/switches/ids-409-sfp-industrial-managed-gigabit-switch.shtml)

## 9 port Compact DIN Rail Switch



- 10/100/1000Base-T ( RJ45 ) ports for Gigabit and Fast Ethernet devices
- 100/1000Base-X SFP fiber ports (empty)
- IP Manageability, VLAN and resiliency management
- Compact, corrosion resistant case attaches to a standard DIN Rail
- Redundant dual power input 12/24/48 VDC, 24 VAC
- Out-of-band management via RJ45 or USB serial ports
- Programmable Controller safety and Hazardous Location Certification
- -40 to 75C industrial operating temperature ( XT Models )

The **IDS-409-SFP** is a **9 port Managed Ethernet Switch** that can operate in **industrial environments** providing advanced performance and enabling **real-time deterministic network operation**. Choose any combination of **10/100/1000-Base-T Ethernet copper ports** and **100/1000Base-X SFP fiber ports** to meet the needs of your environment.

- 8 copper, 1 SFP fiber
- 7 copper, 2 SFP fiber
- 6 copper, 3 SFP fiber
- 4 copper, 5 SFP fiber

The SFP slots allow for flexible network configurations using [SFP transceivers supplied by Perle, Cisco](#) or other manufacturers of MSA compliant SFPs. In addition, they make **utilizing fiber is easy** in environments where **high levels of electromagnetic interference ( EMI )** is a common phenomenon, like industrial plants. This interference can cause data corruption over copper-based Ethernet links. However, data transmitted over fiber optic cable is

completely immune to this type of noise ensuring optimal data transmission across the plant floor.

Perle **Industrial-grade Ethernet Switches** are designed to stand up to **extreme temperatures, surges, vibrations, and shocks** found in **industrial automation, government, military, oil and gas, mining and outdoor applications**.

Perle's **Fast Setup feature** provides simple **Plug and Play** installation to get your Ethernet devices networked immediately. The familiar **Command Line Interface ( CLI )**, via in-band Telnet or the out-band serial console port, will be appreciated by **CCNA** ( Cisco Certified Network Associate ) and **CCNP** ( Cisco Certified Network Professional ) trained engineers.

**P-Ring, management VLAN, QoS, RMON, N:1 port mirroring and local alert log**, are only a few of the comprehensive management functions supported in the **IDS-409**. In addition, the switch can be **managed with an IPv6 address**.

The IDS-409-SFP, which comes in a variety of models, are **rugged fan-less switches** that are hardened to provide superior reliability **in -10 to 60°C, or** harsh extended operating temperatures **from -40 to 75°C**. **Every component** on every industrial (XT) model has been **designed and tested** to handle operating temperatures between -40 and 75C.

All Perle Industrial Ethernet Switches only use **high-end components** from the **leading chip manufacturers** to ensure the highest level of **durability and reliability**. In addition, all units have a corrosion resistance aluminum case and dual redundant power input with reverse polarity and overload protection.

Perle has been **designing industrial hardware** for **over 35 years** and have used this expertise to design the **toughest Ethernet switches on the market** that will keep your system running for years to come.

## IDS-409-SFP Industrial Managed DIN Rail Switch Features

Simple deployment      Zero-touch discovery using Dynamic Host Control Protocol (DHCP), Perle's "Fast Setup" for first time installation, provides simple deployment in Ethernet environments

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### Resiliency

- STP and RSTP protocols for fast recovery.
  - Perle's [P-Ring protocol](#) for fast convergence in ring topologies
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### Manageability

- Web Device Manager, Telnet, SNMP and Perle's [PerleView](#) NMS for centralized management
  - In-band management via RJ45 or USB serial ports
  - Use an IPv4 or IPv6 address
  - Removable MicroSD flash for configuration files and firmware backup and restoration
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### Rugged design for

- Corrosion resistant case

- harsh environments
- Programmable Controller Safety certified
  - Certified for hazardous locations
  - Extended industrial temperature models

- Reliable operation
- Fan-less, no moving parts
  - Dual power input. Connect to separate power sources for redundancy.
    - Reverse polarity protection
    - Overload current protection
  - Handles vibration and shock conditions found in industrial environments

- Real-time Ethernet performance
- Fast wire-speed , store and forward switching
  - Auto-sensing for speed and duplex
  - Auto-mdi/mdix-crossover works with straight and crossover cables

## Performance Features

**Port Auto-sensing**      Auto-sensing of port speed and auto-negotiation of duplex on all switch ports for optimizing bandwidth

**Auto MDI/MDIX**      Medium-dependent interface crossover ( Auto-MDIX ) capability on 10/100 and 10/100/1000 mbps interfaces that enables the interface to automatically detect the required cable type ( straight thru or crossover ) and to configure the connection appropriately

**802.3x flow control**      IEEE 802.3x flow control on all ports. ( The switch does not initiate pause frames )

**Storm Control**      Storm control prevents traffic on a LAN from being disrupted by a broadcast, multicast, or unicast storm on one of the physical interfaces. A LAN storm occurs when packets flood the LAN, creating excessive traffic and degrading network performance. Storm Control enables limits to be placed on broadcast, multicast and unicast traffic

**Static MAC Addressing**      This feature enables the manual configuration of the MAC addresses on a per port basis. Flooding is prevented by retaining MAC entries across a reboot of the switch.

## Port Blocking

Port Blocking provides the ability to block the flooding of unknown layer 2 unicast and multicast traffic on an interface

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## IPV4 IGMP Snooping

Internet Group Management Protocol ( IGMP ) constrains the flooding of multicast traffic by dynamically configuring Layer 2 interfaces so that multicast traffic is forwarded to only those interfaces associated with IP multicast devices.

IGMPv1, v2, v3, IGMP snooping querier mode, IGMP report suppression, topology change notification and robustness variable features are supported

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## Port Quick Disconnect

In some network environments, it is desirable to move an Ethernet from one switch port to another and have the device come on-line quickly. The Port Quick Disconnect feature if enabled, provides an immediate age-out of the MAC addresses learned on the port when the port status changes from a link-up to a link-down state

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## Manageability Features

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### Web Device Manager

The Perle Web Device Manager is an embedded Web based application that provides an easy to use browser interface for managing the switch. Unlike competitive products, Java applet technology is not required or used

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### Command Line Interface ( CLI )

A familiar text-based Command Line Interface that is based on accepted industry standard syntax and structure. Ideal for CCNA and CCNP trained engineers, this interface is available via in-band Telnet or the out-band serial console port

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### SNMP

Manage the switch with an SNMP compatible management station that is running platforms such as HP Openview or Perle's PerleVIEW NMS. SNMP V1 and V2C

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### PerleVIEW

PerleVIEW is Perle's SNMP-based network management system that provides a view of the network with a large scale of Perle networking devices.

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### IPv6

Manage with an IPv4 or IPV6 address

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### DHCP Client Auto-Configuration

Automates configuration of switch information such as IP address, default gateway, hostname and Domain Name System ( DNS ) as well as TFTP server names. Firmware and configuration file locations are provided through options 54, 66, 67, 125 and 150

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## DHCP Relay

DHCP Relay is used for forwarding requests from DHCP clients when they are not on the same physical subnet. As a DHCP relay agent the switch operates as a Layer 3 device that forwards DHCP packets between clients and servers.

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## DHCP Option 82 Insertion

Normally used in metro or large enterprise deployments DHCP Option 82 insertion is used to provide additional information on “physical attachment” of the client. As per RFC 3046, option 82 enables additional pre-defined information to be inserted into the DHCP request packet ( for DHCP Servers that support this option )

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## LLDP

LLDP-Link Layer Discovery Protocol as per IEEE 802.1AB is a neighbor discovery protocol that is used for network devices to advertise information about themselves to other devices on the network. This protocol runs over the data-link layer, which allows two systems running different network layer protocols to learn about each other ( via TLVs – Type-Length-Value )

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## File Download

Firmware can be transferred via TFTP, HTTP or via insertion of a microSD card. Text-based files that can be created or edited by common text editors.

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## Availability and Redundancy Features

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### Spanning Tree Protocol ( STP )

IEEE 802.1D now incorporated in IEEE 802.1Q-2014, STP prevents bridge loops and the broadcast radiation that results from them.

Other Spanning Tree features include BPDU guard, Root guard, loop guard, root guard and TCN Guard

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### Rapid Spanning Tree Protocol ( RSTP )

Interoperable with STP, RSTP ( IEEE 802.1w ) takes advantage of point-to-point wiring and provides rapid convergence of the spanning tree. Reconfiguration of the spanning tree can occur in less than 1 second

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### P-Ring

Perle’s Ring Protocol provides resilient operation of a network made up of managed switches in a ring topology. The implementation prevents a switch loop scenario and also enables communication within the ring if a failure occurs somewhere in the ring.

P-Ring also has an auto-configuration feature that automatically determines the master control switch in the ring reducing installation time.

Recovery time of 10 ms or better in rings composed of up to 14 switches

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## VLAN Features

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**VLAN Range** Up to 255 VLANS across a VLAN ID range of 1 to 4094

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**VLAN Interfaces** Perle switches provide the ability to configure management VLAN interfaces. This enables network administrators to access the switch's management interface from separate VLAN networks

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### **Quality of Service ( QoS ) and Class of Service ( CoS ) Features**

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**Classification** IP ToS/DSCP and IEEE 802.1p CoS

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**Congestion Avoidance** Weighted Fair Queuing or Strict Queuing

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**Egress Queues and scheduling**

- 4 traffic class queues per port
- output queue mapping
- DSCP to output queue mapping

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### **Monitoring Features**

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**Port Mirroring** N:1 Port Mirroring is a method of monitoring network traffic. With port mirroring enabled, the switch sends a copy of one or more ports to a predefined destination port. Selection of Transmit, Receive frames or both can be made

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**RMON** RMON statistics provided for statistics, history, alarms and events for network monitoring and traffic analysis

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**Syslog** Facility for logging systems messages to an external SYSLOG server

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**Alert Log** Facility for logging systems messages locally

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**Traceroute** Layer 2 traceroute to identify the path that a frame takes from source to destination

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**Virtual cable**

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**test**

A test that enables the detection of potential copper cabling issues such as pair polarity pair swaps and excessive pair skew as well as any opens, shorts or any impedance mismatch. Will report the distance in the cable to the open or short.

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**SFP Diagnostics and Monitoring**

Interface provided to the SFP's Digital Optical Monitoring facility to monitor operational or physical operating status of the SFP and link

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**Power Supply Monitoring**

Provides the status of power supplies of the switch

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**Alarm Processing**

The switch can monitor global switch conditions as well as individual ports. These alarms can be configured to send messages to ;

- an internal log file
- external Syslog server
- SNMP trap server
- An external alarm device such as a bell, light or other signaling device via the switch's built-in dry contact alarm relay

#### Global Status Monitoring Alarms

- Dual power supply alarm

#### Port Status Monitoring Alarms

- Link Fault Alarm ( IE loss of signal )
  - Port not forwarding alarm
  - Port not operating alarm ( failure upon start up tests )
  - FCS Bit error rate alarm
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**Alarm Relay**

When enabled, energizes the built-alarm relay triggering an external alarm circuit such as a bell, light or other signaling device according to alarm conditions set

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## Management and Standards

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**IEEE**

IEEE 802.3 for 10Base-T

<b>Standards</b>	IEEE 802.3u for 100BaseT(X) and 100BaseX
	IEEE 802.3ab for 1000Base-T
	IEEE 802.3z for 1000BaseX
	IEEE 802.3x for Flow Control
	IEEE 802.1D-2004 for Spanning Tree Protocol
	IEEE 802.1w for Rapid STP
	IEEE 802.1Q for VLAN Tagging
	IEEE 802.1p for Class of Service
	IEEE 802.3ad for Port Trunk with LACP
	IEEE 802.1AB LLDP

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<b>SNMP MIB Objects</b>	RFC 1213-MIB II
	RFC 1493-BRIDGE-MIB
	RFC 1907-SNMPv2-MIB
	RFC 2012-TCP-MIB
	RFC 2013-UDP-MIB
	RFC 2578-SNMPv2-SMI
	RFC 2579-SNMPv2-TC
	RFC 2819-RMON-MIB
	RFC 4502-RMON2-MIB
	RFC 2613-SMON-MIB
	RFC 2863-IF-MIB
	RFC 4363-Q-Bridge-MIB and P-Bridge MIB
	RFC 4318-RSTP-MIB
	IP-MIB
LLDP-MIB	

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## Hardware Features & Technical Specifications: IDS-409-SFP Industrial Managed DIN Rail Switch

### Power

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<b>Dual Power Input</b>	Both inputs draw power simultaneously. If one power source fails, the other live source can, acting as a backup, supply enough power to meet the operational needs of the switch.
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12/24/48 VDC Nominal. ( 9.6 to 60 VDC)

24 VAC Nominal ( 18 to 30 VAC )

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<b>Power Connector</b>	4-Pin Removable Terminal Block.
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Grounding screw on metal chassis



Overload Current Protection	Fused overload current protection
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Reverse polarity protection	The positive and negative inputs can be reversed providing safe and simple power connectivity.
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### Access Ports

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RJ45	<p>4, 6, 7 or 8 shielded RJ45 ports for 10/100/1000Base-T up to 100 meters ( 328 ft )</p> <p>Auto-negotiation</p> <p>Auto-MDI/MDIX-crossover for use with either crossover over straight-through cable types</p> <p>Ethernet isolation 1500 V</p>
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RJ45 Serial Console port	<p>RJ45 DTE</p> <p>Optional rolled and straight thru RJ45 cables and DB adapters are available</p>
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Small Form Factor Pluggable ( SFP ) slot	<p>1,2 or 3 SFP slots for SERDES 100/1000Base-X <a href="#">SFP modules supplied by Perle, Cisco</a> or other manufacturers of MSA compliant SFPs</p> <p>SFPs supporting the SGMII protocol are also supported ( example 1000Base-T )</p>
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USB Serial Console port	MicroUSB Type B female port for serial console management. Used as an alternative port for out of band management connections
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### Alarms

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- NC (Normally Closed ) or NO ( Normally Open ) dry contact.
  - 1A @ 24V
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### Switch Properties

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Standards	IEEE 802.3 for 10Base-T
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IEEE 802.3u for 100Base-TX and 100Base-FX

IEEE 802.3ab for 1000Base-T

IEEE 802.3z for 1000BaseX

IEEE 802.3x for Flow Control

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Processing Type	Store and Forward
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MAC Address Table Size	8K
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VLAN ID range	1 to 4094
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IGMP groups	1024
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Packet Buffer Memory	1 Mbit
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Jumbo Frame Size	10 KB
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### Indicators

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Power	This LED is turned on when the appropriate level of voltage is applied to one or both of the power inputs
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System	Indicates whether the switch O/S is operating normally
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RJ45 Ethernet	These integrated colored LEDs indicate link, activity and speed for each port.
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Fiber Link	Fiber link LED indicates Link and Data Activity
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Alarm	The alarm LED ( Red ) will be turned on under alarm conditions
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P-Ring Master LED	Status of the P-Ring Master
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Backup Network Coupling	Indicates whether or not the “Backup Network Coupling” feature is enabled ( Redundant links connecting two P-Ring networks )
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### External Configuration DIP Switches

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RM	When enabled, designates this switch as the P-Ring Master
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BC	Activate Backup Coupling between 2 ring networks
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### Environmental Specifications

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Operating Temperature Ranges	Standard temperature models ( Std ): -10° C to 60° C (14° F to 140° F).
	XT Industrial extended temperature models ( Ind ) : -40° C to 75° C ( -40 F to 167° F )

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Storage Temperature Range	Minimum range of -25° C to 70° C (-13° F to 158° F). -40 C to 85 C (-40 F to 185 F) for industrial extended temperature models
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Operating Humidity Range	5% to 90% non-condensing
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Storage Humidity Range	5% to 95% non-condensing
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Operating Altitude	Up to 3,048 meters (10,000 feet)
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Chassis	Metal with an IP20 ingress protection rating
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Din Rail Mountable      DIN Rail attachment included. Mounts to standard 35 mm DIN rail in accordance with DIN EN 60175.

Removable to accommodate optional Panel/Wall mount kit

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### Product Weight and Dimensions

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Weight                      1.5 kg

Dimensions                75 x 130 x 121mm

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### Packaging

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Shipping Weight         2.0 kg

Shipping Dimensions     170 x 260 x 70 mm

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### Standards and Certifications

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Safety                      UL 60950-1

IEC 60950-1:2005+A1:2009 and

EN 60950-1:2006+A11:2009+A1:2010+A12:2011

CE Mark

UL 61010-1 and UL 61010-2-201 ( Standard for Safety for Programmable Controllers )

Emissions                 FCC 47 Part 15 Class A

CISPR 22:2008/EN55022:2010 (Class A)

CISPR 24:2010/EN 55024:2010

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EMC and Immunity      CISPR 24:2010/EN 55024:2010  
IEC/EN 61000-4-2 (ESD)  
IEC/EN 61000-4-3 (RS)  
IEC/EN 61000-4-4 (EFT)  
IEC/EN 61000-4-5 (Surge)  
IEC/EN 61000-4-6 (CS)  
IEC/EN 61000-4-8 (Magnetic Field)  
IEC/EN 61000-6-2 ( General Immunity in Industrial Environments )

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Industrial Safety      UL 61010-1 and UL 61010-2-201 ( Standard for Safety for Programmable Controllers ).  
Formerly known as UL508 (Safety standard for Industrial Control Equipment )

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Hazardous Locations ( Hazloc )      ANSI/ISA 12.12.01, Class 1 Division 2 Groups A-D ( formerly known as UL 1604 ) \*  
  
ATEX Class 1 Zone 2 \*

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Environmental      [Reach, RoHS and WEEE Compliant](#)

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Other      ECCN: 5A991

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HTSUS Number: 8517.62.0050

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5 year Warranty

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Contents Shipped

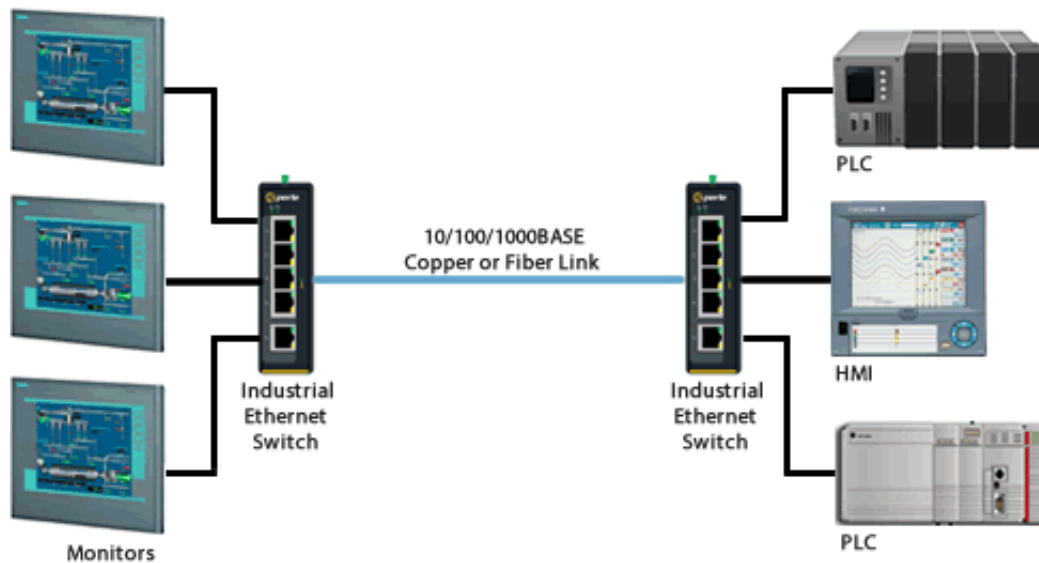
- Industrial Ethernet Switch with DIN Rail attachment
- Terminal block
- Installation guide

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\* *pending*

## **IDS-409-SFP Industrial Managed DIN Rail Switch**

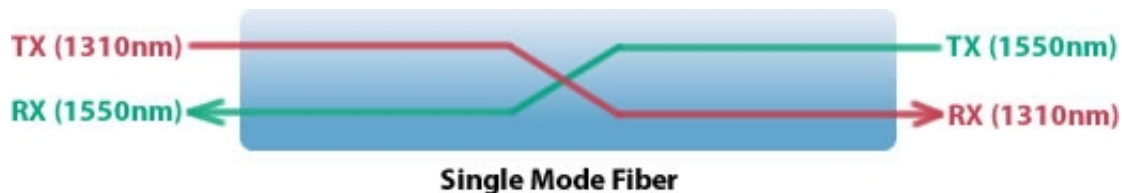
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### Single Mode / Single Strand ( WDM ) Fiber

#### Connecting devices over a single fiber strand ( also referred to as “Bi-Directional” BiDi or Simplex)

To reduce costs, or where there are limits on available fiber, Wavelength-Division Multiplexing (WDM) technology may be utilized. WDM uses separate transmit and receive frequencies to communicate on a single fiber strand. WDM technology relies on the fact that optical fibers can carry many wavelengths of light simultaneously without interaction between each wavelength. Thus, a single fiber can carry many separate wavelength signals or channels simultaneously. WDM systems are divided into different wavelength patterns, conventional/coarse (CWDM) and dense (DWDM).



When Single Strand fiber is used, you will need an “**Up**” side and a “**Down**” side when interconnecting fiber devices.

Perle offers a wide variety of Single Fiber (“Up/Down”) [Ethernet Switches](#) and [Media Converters](#) for use with single strand of fiber.

#### Select a Model to obtain a Part Number – IDS-409-SFP

Std = Standard Temperature models: -10° C to 60° C (14° F to 140° F).

Ind = Industrial Extended Temperature Models: -40° C to 75° C ( -40 F to 167° F )

Model	Temp	RJ45 ports		SFP Slots (empty)	
		10/100/1000Base-T		100Base-X	1000Base-X
IDS-409-1SFP	Std	8		1	
IDS-409-1SFP-XT	Ind	8		1	
IDS-409-2SFP	Std	7		2	
IDS-409-2SFP-XT	Ind	7		2	
IDS-409-3SFP	Std	6		3	
IDS-409-3SFP-XT	Ind	6		3	
IDS-409-5SFP	Std	4		5	
IDS-409-5SFP-XT	Ind	4		5	

### Industrial Ethernet Switch Accessories

**Panel Mount kit PM3** Brackets for attaching 30 to 75 mm wide Perle IDS industrial switches inside a control panel or to a wall for wall.

**Rack Mount Kit RM4U** Bracket for mounting Perle DIN Rail switches in a standard 19" rack. Occupies "4U" of vertical rack space. 275 mm ( 10 inches ) deep

DIN Rail 24V  
Power  
Supply

IDPS-24-40-XT - DIN-Rail 24 VDC, 40Watt power supply with universal 85 to 264 VAC or 120-370 VDC input, -20 to 70°C extended operating temperature. [Power Supply Specifications](#).

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DBA0020C

RJ-45F to DB-9F crossover (DTE) adapter for Perle serial console ports with Sun/Cisco pinout.  
#1100300-10

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