IDS-409C Managed Industrial Gigabit Switch with Combo Ports

5 x 10/100/1000Base-T and 4 x 10/100/1000Base-T or 100/1000Base-X SFP Ports

- 5 port 10/100/1000Base-T (RJ45) ports for Gigabit and Fast Ethernet devices
- 4 flexible dual purpose Combo ports: 100/1000Base-X SFP fiber or 10/100/1000Base-T (RJ45)
- IP Manageability, VLAN and resiliency management
- Digital inputs for generation of alerts
- 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-409C** is a **9 port Managed Ethernet Switch** that can operate in **industrial environments** providing advanced performance and enabling **real-time deterministic network operation**. Five 10/100/1000-Base-T Ethernet ports are available for networking Gigabit and Fast Ethernet devices. The other four ports can be **configured to use either 100/1000Base-X SFP fiber or 10/100/1000Base-T**. This flexibility allows for **easy adaptation to network growth and changes**.

Data corruption over copper-based Ethernet links can be caused by **high levels of electromagnetic interference (EMI)** in environments like industrial plants. Utilizing fiber is the solution. Data transmitted over fiber optic cable is completely immune to EMI 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**.

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

An IPv6 address can be used to manage the **IDS-205G** which also supports a comprehensive set of management functions, such as P-Ring, **management VLAN**, **QoS**, **RMON**, **N:1 port mirroring** and **local alert log**.

The IDS-409C, 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 have a corrosion resistance aluminum case and dual redundant power input with reverse polarity and overload protection. In addition, all units only use **high-end components** from the **leading chip manufacturers** to ensure the highest level of **durability and reliability**.

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-409C 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
Resiliency	• STP and RSTP protocols for fast recovery. • Perle's <u>P-Ring protocol</u> for fast convergence in ring topologies
Manageability	• Web Device Manager, Telnet, SNMP and Perle's <u>PerleView</u> 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
Rugged design for harsh environments	• Corrosion resistant case • 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
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
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

Manageability Features

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
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
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
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.
IPv6	Manage with an IPv4 or IPV6 address
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
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.

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)
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)
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.

Availability and Redundancy Features

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.
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
P-Ring	P-Ring provides an easy to use method for configuring a ring network using standard spanning tree protocols. Prevents a switch loop scenario in a ring topology.
Link Standby	A link recovery feature using a primary and backup link. Provides a simple alternative to spanning tree protocols for link redundancy

VLAN Features

VLAN Range	Up to 256 VLANS across a VLAN ID range of 1 to 4000
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

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

Classification	IP ToS/DSCP and IEEE 802.1p CoS
Congestion Avoidance	Weighted Fair Queuing or Strict Queuing
Egress Queues and scheduling	• 4 traffic class queues per port • output queue mapping • DSCP to output queue mapping

Monitoring Features

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

RMON	RMON statistics provided for statistics, history, alarms and events for network monitoring and traffic analysis
Syslog	Facility for logging systems messages to an external SYSLOG server
Alert Log	Facility for logging systems messages locally
Traceroute	Layer 2 traceroute to identify the path that a frame takes from source to destination
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
Power Supply Monitoring	Provides the status of power supplies of the switch
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
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

Management and Standards

IEEE Standards	IEEE 802.3 for 10Base-T 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
SNMP MIB Objects	IEEE8021-PAE-MIB NTPv4-MIB IEEE8021-SPANNING-TREE-MIB SYSAPPL-MIB LLDP-EXT-MED-MIB

SNMP-COMMUNITY-MIB
LLDP-EXT-MED-MIB
IGMP-STD-MIB
IEEE8021-MSTP-MIB
Q-BRIDGE-MIB
LLDP-EXT-DOT3-MIB
IF-MIB
RSTP-MIB
DIFFSERV-DSCP-TC
LLDP-EXT-DOT1-MIB
IEEE8021-TC-MIB
LLDP-MIB
RMON2-MIB
ENTITY-MIB
P-BRIDGE-MIB
PERLE-LOGIN-MIB
PERLE-ALERT-MIB
PERLE-IP-SSH-MIB
PERLE-IP-PROTOCOLS-MIB
PERLE-USER-MIB
PERLE-SMI
PERLE-MAC-NOTIFICATION-MIB
PERLE-SYSINFO-MIB
PERLE-LINKSTANDBY-MIB
PERLE-AAA-MIB
perle-AAA.MIB
PERLE-IPV6-MIB
PERLE-LOGGING-MIB
PERLE-VLAN-MIB
PERLE-IF-MIB
PERLE-ENTITY-VENDORTYPE-OID-MIB
PERLE-ERR-DISABLE-MIB
PERLE-SWITCH-PLATFORM-MIB
PERLE-ENVMON-MIB
PERLE-TIME-MIB
PERLE-PTP-MIB
PERLE-P-RING-MIB
PERLE-SNMP-MIB
PERLE-FILE-TRANSFER-MIB
PERLE-SWITCH-GLOBAL-MIB
PERLE-BOOT-MIB
PERLE-PRODUCTS-MIB
PERLE-BANDWIDTH-CONTROL-MIB
PERLE-IP-TELNET-MIB
PERLE-GVRP-MIB
PERLE-PORT-SECURITY-MIB
PERLE-DHCP-SERVER-MIB
PERLE-GARP-MIB
PERLE-ARCHIVE-MIB
PERLE-NTP-MIB
PERLE-SSL-MIB
PERLE-IGMP-MIB
PERLE-ACL-MIB
PERLE-POE-MIB
PERLE-RELOAD-MIB
PERLE-ENTITY-ALARM-MIB
PERLE-IPV6-NEIGHBOR-MIB
PERLE-DOT1X-AUTH-MIB
PERLE-TC
PERLE-DHCP-CLIENT-MIB
PERLE-LINE-MIB
PERLE-ARP-MIB
PERLE-GMRP-MIB
PERLE-MLD-MIB
PERLE-IP-HTTP-MIB
PERLE-PORT-MONITOR-MIB
PERLE-SpTreeExtensions-MIB
PERLE-IP-MIB

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

	Power		
Dual Power Input	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. 12/24/48 VDC Nominal. (9.6 to 60 VDC) 24 VAC Nominal (18 to 30 VAC)		
Power Connector	4-Pin Removable Terminal Block. Grounding screw on metal chassis		
Maximum Current Consumption @24 vDC	0.78 amps		
Maximum Power Consumption @24 vDC	18.8 watts		
Overload Current Protection	Fused overload current protection		
Reverse polarity protection	The positive and negative inputs can be reversed providing safe and simple power connectivity.		
	Access Ports		
RJ45	5 shielded RJ45 ports for 10/100/1000Base-T up to 100 meters (328 ft) Auto-negotiation Auto-MDI/MDIX-crossover for use with either crossover over straight-through cable types Ethernet isolation 1500 V		
RJ45 Serial Console port	RJ45 DTE Optional rolled and straight thru RJ45 cables and DB adapters are available		
USB Serial Console port	MicroUSB Type B female port for serial console management. Used as an alternative port for out of band management connections		
Digital Inputs	Two Digital Inputs are provided that can be used for generation of alarms (SNMP trap, energizing of on-board Alarm Relay,etc)		

Dual Purpose Combo ports	Four Combo ports are provided
	A Dual-purpose Combo port is a single port with two interfaces, one for an RJ-45 10/100/1000Base-T cable and another for an SFP fiber module. Only one interface can be active at a time. This provides flexibility in environments where the type of connection (copper or fiber) may change.

Alarms

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

Switch Properties

Standards	IEEE 802.3 for 10Base-T
	IEEE 802.3u for 100Base-TX and 100Base-FX
	IEEE 802.3z 1000BASE-X
	IEEE 802.3ab for 1000Base-T
Processing Type	Store and Forward
MAC Address Table Size	8K
VLAN ID range	1 to 4000
IGMP groups	1024
Packet Buffer Memory	1 Mbit

Indicators

Power	This LED is turned on when the appropriate level of voltage is applied to one or both of the power inputs
System	Indicates whether the switch O/S is operating normally
RJ45 Ethernet	These integrated colored LEDs indicate link, activity and speed for each port.
Fiber Link	Fiber link LED indicates Link and Data Activity
Alarm	The alarm LED (Red) will be turned on under alarm conditions
P-Ring Master LED	Status of the P-Ring Master

Backup Network Coupling	Indicates whether or not the "Backup Network Coupling" feature is enabled (Redundant links connecting two P-Ring networks)

External Configuration DIP Switches

S2	When enabled, designates this switch as the Ring Master
S1	Activate Backup Coupling between 2 ring networks

Environmental Specifications

MTBF	118,448 Hours *Calculation model based on MIL-HDBK-217-FN2 @ 30 °C*
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)
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
Operating Humidity Range	5% to 90% non-condensing
Storage Humidity Range	5% to 95% non-condensing
Maximum Heat Output	64.2 Btu/hr
Operating Altitude	Up to 3,048 meters (10,000 feet)
Chassis	Metal with an IP20 ingress protection rating
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

Product Weight and Dimensions

Weight	1.5 kg

Dimensions	75 x 130 x 121mm

Packaging

Shipping Weight	2.0 kg
Shipping Dimensions	170 x 260 x 70 mm

Standards and Certifications

Safety	UL 60950-1
	IEC 60950-1(ed 2); am1, am2
	EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013
	UL 62368-1
	IEC 62368-1(ed 2)
	EN 62368-1:2014
	UL 61010-1 and UL 61010-2-201 (Standard for Safety for Programmable Controllers)
	IEC 61010-1(ed.3), IEC 61010-2-201(ed.1)
	EN 61010-1:2010
	CE Mark
Emissions	FCC 47 Part 15 Class A
	CISPR 32:2015/EN 55032:2015 (Class A)
EMC and Immunity	- CISPR 24:2010/EN 55024:2010 - IEC/EN 61000-4-2 (ESD) : Contact discharge +/- 4kv, Air discharge +/- 8kv - IEC/EN 61000-4-3 (RS) : 80mhz to 1Ghz ; 10v/m, 1.4Gkz to 2.0ghz ; 5 v/m, 2.0ghz to 2.7 ghz ; 5 v/m - IEC/EN 61000-4-4 (EFT) : DC power line +/- 2kv, data line +/- 1kv - IEC/EN 61000-4-5 (Surge) : DC power line, Line/Line +/- 1kv, Line/Earth +/- 2kv, data line /earth +/- 2kv - IEC/EN 61000-4-6 (CS) :150khz-80Mhz 10vrms - IEC/EN 61000-4-8 (Magnetic Field) :30 A/M - IEC/EN 61000-6-2 (General Immunity in Industrial Environments)
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)
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
	EN 60079-0:2012+A11:2013 and EN 60079-15:2010
Environmental	Reach, RoHS and WEEE Compliant

Other	ECCN: 5A991
	HTSUS Number: 8517.62.0050
	5 year Warranty

Contents Shipped	• Industrial Ethernet Switch with DIN Rail attachment • Terminal block • Installation guide

IDS-409C Industrial Switch Diagram