

IDS-105G – Industrial Gigabit Switch



perle.com/products/switches/5-port-industrial-gigabit-ethernet-switch.shtml

5 to 7 Port Compact DIN Rail Switch

- 5 port 10/100/1000Base-T (RJ45)
- 5 port 10/100/1000Base-T (RJ45) with 1 or 2 Gigabit fiber ports (SC/ST/SFP)
- Hazardous Location and Industrial Control Equipment Certification
- Corrosion resistant IP30 aluminum case
- Redundant dual power input 12/24/48 VDC, 18 to 30 VAC
- Overload current and reverse polarity protection
- Industrial operating temperature support up to -40 to 75C



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 **IDS-105G** is a **5 to 7 port Industrial Gigabit Ethernet** switch providing advanced performance enabling real-time deterministic network operation. It requires no configuration and will operate instantly as soon as you power it up.

The IDS-105G which comes in a variety of models with 5 copper ports, 5 copper ports plus 1 fiber port or 5 copper ports plus 2 fiber ports. All are **rugged fan-less switches** that are hardened to provide superior reliability in **0 to 60°C**, or harsh extended operating temperatures from **-40 to 75°C**.

Perle has been **designing industrial hardware** for serial ModBus and Profinet to Ethernet conversion environments **for over 35 years** and have used this expertise to design the **toughest Ethernet switches on the market**. Don't trust your critical communications to commercial switch products. Perle Industrial Ethernet switches give you proven assurance that your system will keep running for years to come.

IDS-105G Industrial Gigabit Ethernet Switch Features

Rugged design for harsh environments

- Corrosion resistant IP30 aluminum case
- UL508A Industrial Control Equipment Safety certified
- Hazardous locations - Class1/Div2, ATEX Class1/Zone2

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, non-blocking architecture • Auto-sensing for speed and duplex • Auto-mdi/mdix-crossover works with straight and crossover cables
Jumbo Frames	Supports Jumbo frames up to 10 KB
Energy Efficient Ethernet (EEE)	Energy Efficient Ethernet (EEE) as per 802.3az. This provides power savings during idle network activity.

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) 18 to 30 VAC
Power Connector	4-Pin Removable Terminal Block Grounding screw on metal chassis
Maximum Current Consumption @24 vDC	500 mA
Maximum Power Consumption @24 vDC	12.0 Watts
Overload Current Protection	Reset-able fuse provides 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
Small Form Factor Pluggable (SFP) slot(s)	1 or 2 empty SFP slot models for 1000Base-X <u>SFP modules supplied by Perle, Cisco</u> or other manufacturers of MSA compliant SFPs
Fixed Fiber port	1 x fixed fiber port Duplex SC or ST connector • Multimode 50/125 or 62.5/125 micron fiber cable • Single mode 9/125 micron fiber cable Simplex (BIDI, single strand) SC connector • Multimode 50/125 or 62.5/125 micron fiber cable • Single mode 9/125 micron fiber cable PC and UPC type patch cords supported.
Fixed Fiber Port Speed	

Fiber1 Type	Transmit (dBm)		Receive (dBm)		Power Budget (dB)	Wavelength (nm)	IEEE	Core Size (um)	Modal Bandwidth (MHz *Km)	Maximum Operating Distance
	Min	Max	Min	Max						
MMF (Duplex SC/ST)	-9.5	-4.0	-	-3.0	7.5	850	1000Base- SX	62.5	160	220 m (722 ft)
								62.5	200	275 m (902 ft)
								50	400	500 m (1,640 ft)
								50	500	550 m (1,804 ft)
								50	500	1000 m (3,281 ft)
MMF (Duplex SC/ST)	-6.0	0.0	-	0.0	11.0	1310	1000Base- LX	62.5	160	2 km (1.2 mi)
								50	500	1 km 3,280 ft)
SMF (Duplex SC/ST)	-9.5	-3.0	-	-3.0	10.5	1310	1000Base- LX/LH	9	**	10 km (6.2 mi)
SMF (Simplex SC)	-9.0	-3.0	-	-3.0	11.0	1310 / 1490 1490 / 1310	1000Base- BX-U 1000Base- BX-D	9	**	10 km (6.2 mi)
SMF (Simplex SC)	-8.0	-3.0	-	-3.0	14.0	1310 / 1490 1490 / 1310	1000Base- BX-U 1000Base- BX-D	9	**	20 km (12.4 mi)
SMF (Duplex SC/ST)	-2.0	2.0	-	-3.0	21.0	1310	1000Base- EX	9	**	40 Km 24.9 mi
SMF (Simplex SC)	-3.0	2.0	-	-3.0	2-0	1310 / 1490 1490 / 1310	1000Base- BX-U 1000Base- BX-D	9	**	40 Km (24.9 mi)
SMF (Duplex SC/ST)	-2.0	5.0	-	-3.0	21.0	1550	1000Base- ZX	9	**	70 Km (43 mi)
SMF (Simplex SC)	-2.0	3.0	-	-3.0	24.0	1510 / 1590 1590 / 1510	1000Base- BX-U 1000Base- BX-D	9	**	80 Km (50 mi)
SMF (Duplex SC/ST)	0.0	5.0	-	-9.0	32.0	1550	1000Base- ZX	9	**	120 Km (74.6 mi)
SMF (Simplex SC)	-3.0	2.0	-	-9.0	31.0	1510 / 1590 1590 / 1510	1000Base- BX-U 1000Base- BX-D	9	**	120 Km (74.6 mi)

SMF (Duplex SC/ST)	2.0	5.0	- 34.0	-9.0	36.0	1550	1000Base- ZX	9	**	160 Km (100 mi)
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* 1db/km multimode fiber cable

** as per ITU-T G.652 SMF specifications

Switch Properties

Standards	• IEEE 802.3 for 10Base-T • IEEE 802.3u for 100Base-TX and 100Base-FX • IEEE 802.3ab for 1000Base-T • Energy Efficient Ethernet (EEE) as per 802.3az. • IEEE 802.3x for Flow Control
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Processing Type	Store and Forward, non-blocking architecture
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MAC Address Table Size	8K
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Packet Buffer Memory	1 Mbit
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Jumbo Frame Size	10 KB
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Indicators

P1	This green LED is turned on when power is applied to the power #1 input
P2	This green LED is turned on when power is applied to the power #2 input
RJ45 Ethernet	These integrated colored LEDs indicate link, activity and speed for each port.
Fiber Link	Fiber link LED indicates Link and Data Activity

Environmental Specifications

Operating Temperature Ranges	Standard temperature models : 0° C to 60° C (32° F to 140° F). Industrial extended temperature models : -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
Operating Altitude	Up to 3,048 meters (10,000 feet)
Chassis	Aluminum with an IP30 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
Maximum Heat Output	41 BTU/Hr
MTBF	696,618 hours (without fiber module) 522,423 (with fixed fiber module) 489,383 hours (with 1 SFP slot) 385,036 hours (with 2 SFP slots) <i>MTBF Calculation model based on MIL-HDBK-217-FN2 @ 30 °C</i>
Product Weight and Dimensions	
Weight	0.32 Kg, 0.7 lbs
Dimensions	35.5 x 111 x 138 mm, 1.39 x 4.37 x 5.43 inches
Packaging	
Shipping Weight	0.47 Kg, 1.04 lbs
Shipping Dimensions	170 x 260 x 70 mm, 6.69 x 10.24 x 2.76 inches
Contents Shipped	Industrial Ethernet Switch with DIN Rail attachment Terminal block Installation guide
Standards and Certifications	
Safety	UL 60950-1 CSA C22.2 No. 60950-1 IEC 60950-1:2005+A1:2009 and EN 60950-1:2006+A11:2009+A1:2010+A12:2011 CE Mark UL508 (Industrial)
EMC Emissions	FCC 47 Part 15 Class A ICES-0003 CISPR 22:2008/EN55022:2010 (Class A) EN61000-6-4
EMC 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) : 80 MHz to 2.7 Ghz ; 10V/m, 800 MHz to 1000 MHz; 20V/m IEC/EN 61000-4-4 (EFT) : DC power line +/- 2 kV, Data Line +/- 2kV IEC/EN 61000-4-5 (Surge) : DC power line, Line/Line +/- 1kV, Line/Earth +/- 2kV, Data Line line/earth +/- 1kV IEC/EN 61000-4-6 (CS) : 150kHz to 80 MHz; 10V IEC/EN 61000-4-8 (Magnetic Field): 30 A/m IEC/EN 61000-6-2 (General Immunity in Industrial Environments)
Industrial Safety	UL508 (Safety standard for Industrial Control Equipment) CSA C22.2 No. 142
Hazardous Locations (Hazloc)	ANSI/ISA 12.12.01, Class I Division 2 Groups A-D (formerly known as UL 1604) CSA C22.2 No. 213 ATEX Class I Zone 2, EN60079-0,15
Laser Safety	EN 60825-1:2007 Fiber optic transmitters on this device meet Class 1 Laser safety requirements per IEC-60825 FDA/CDRH standards and comply with 21CFR1040.10 and 21CFR1040.11.
Environmental	<u>Reach, RoHS and WEEE Compliant</u>

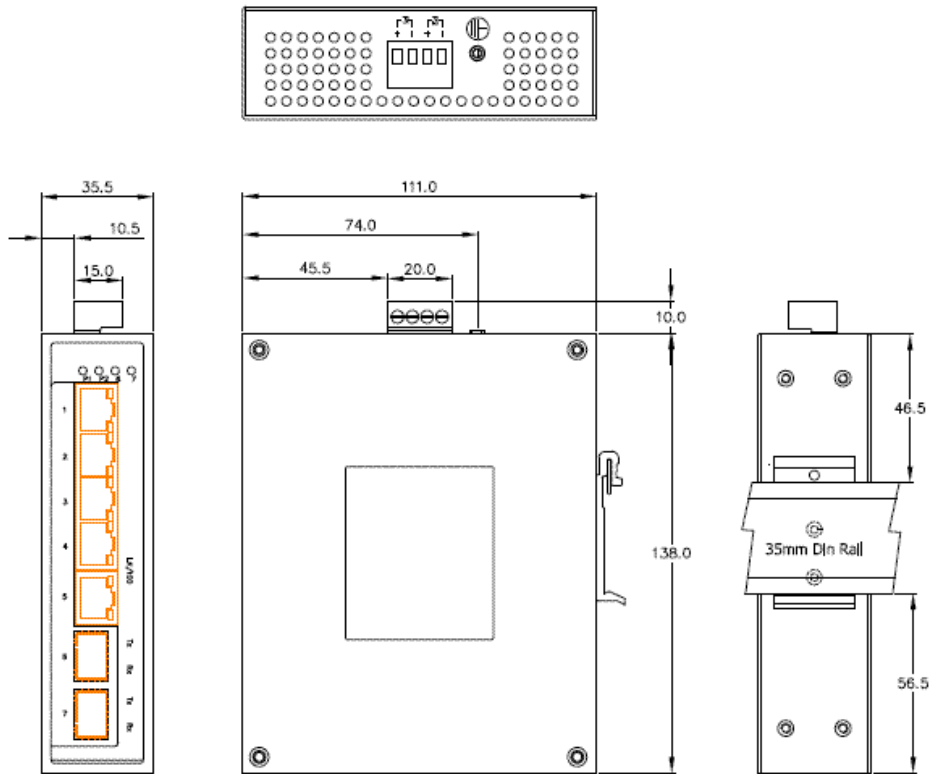
Other

ECCN: 5A991

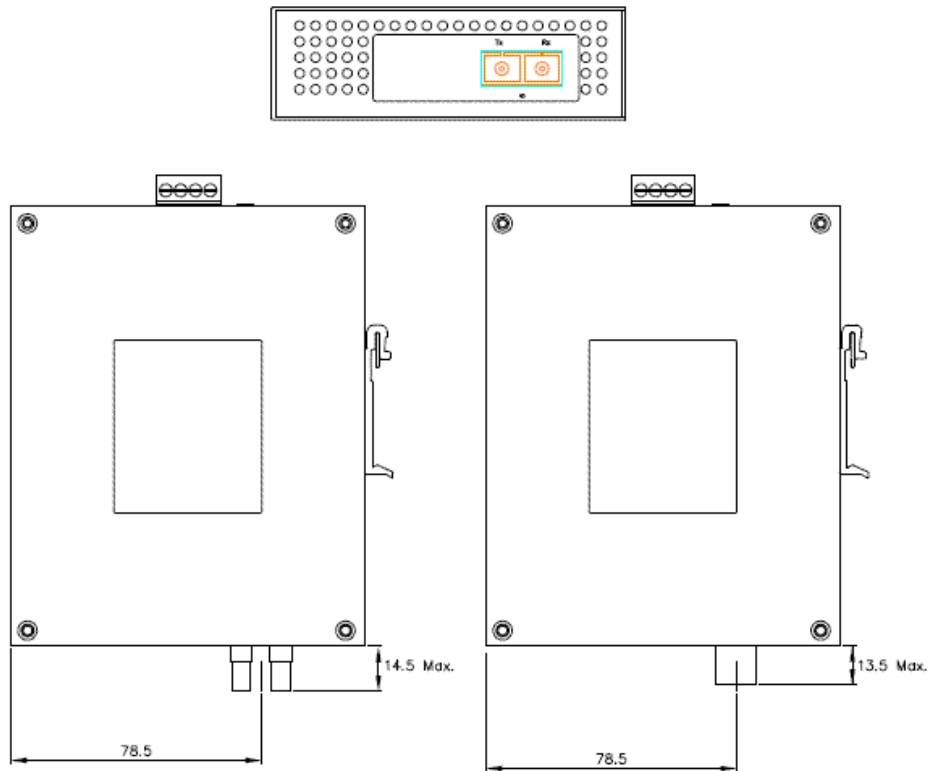
HTSUS Number: 8517.62.0050

5 year warranty

IDS-105G with Standard DIN Rail



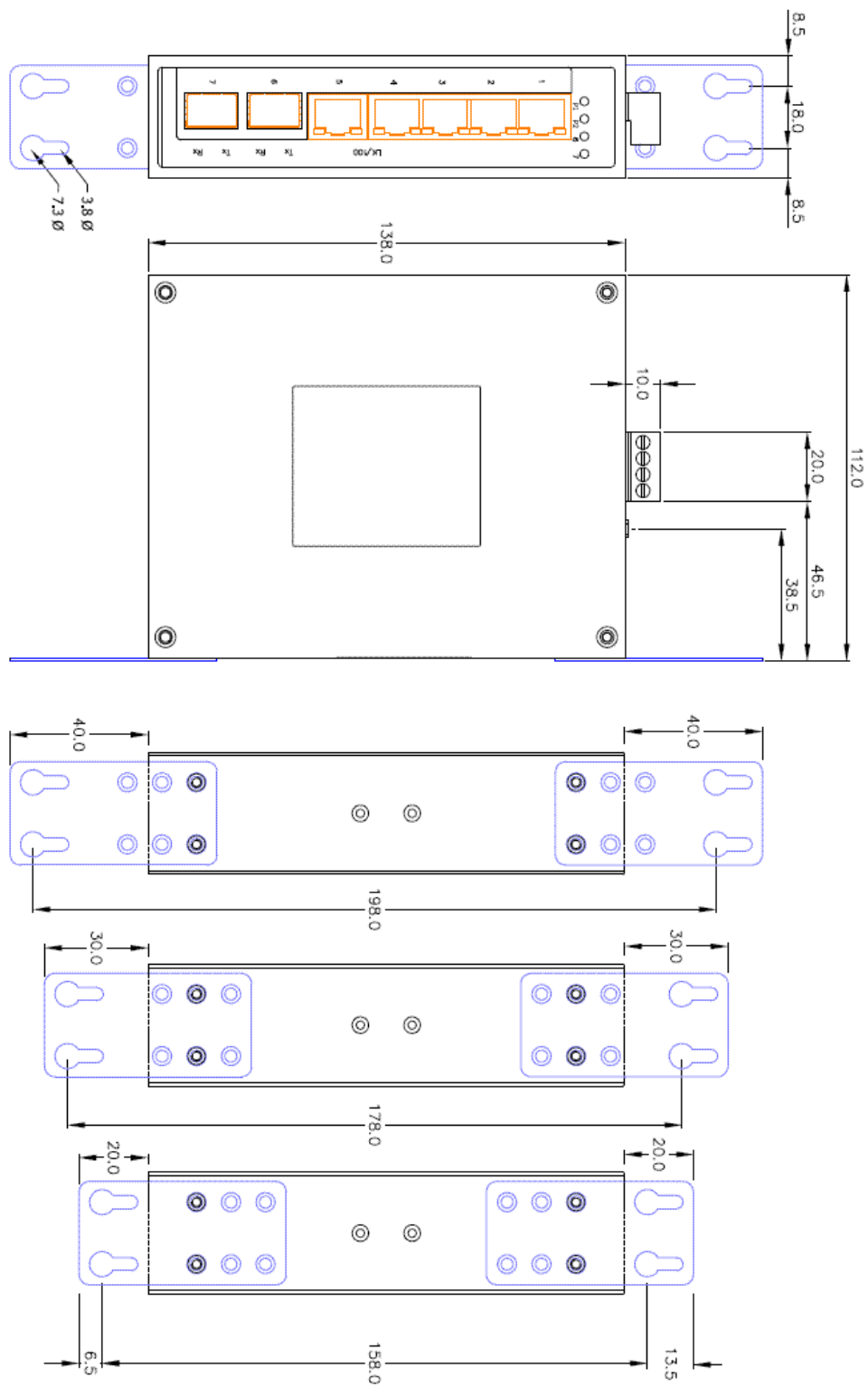
RJ45 , SC & SFP type dimensions



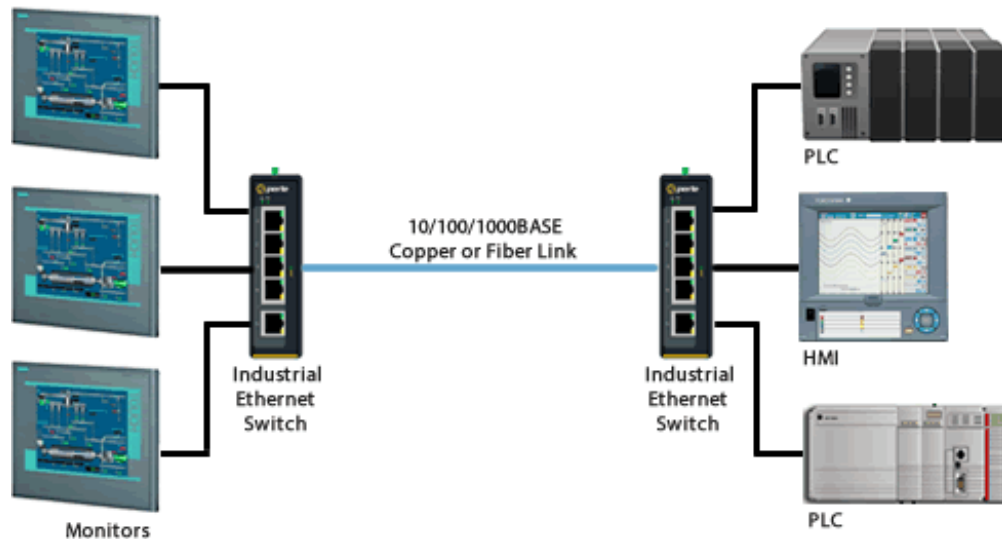
ST type dimensions

SC BiDi type dimensions

IDS-105G with Optional Wall/Panel Mount Brackets



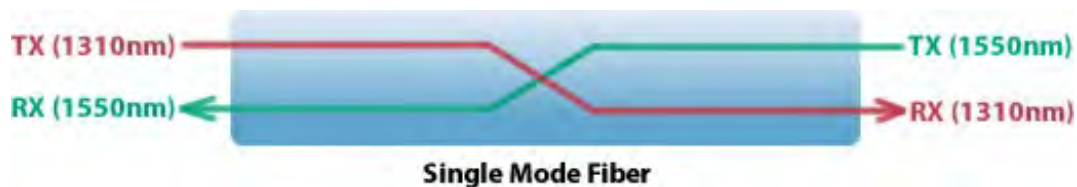
IDS-105G Industrial Gigabit Switch Diagram



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-105G

Operating Temperature (Std) = 0° C to 60° C (32° F to 140° F).
All Models have 5 x 10/100/1000Base-T (RJ45) Connectors

Choose your Fiber Connection from the table below
1000Base-X Duplex Fiber

Model	Fiber Connector	Transmit (dBm)		Receive (dBm)		Power Budget (dB)	Wavelength (nm)	Fiber Type	Operating Distance
		Min	Max	Min	Max				
IDS-105G									
No Fiber connection									
IDS-105G-SFP	1 x SFP slot (empty)	Fiber specifications are dependent upon the choice of SFP used							
IDS-105G-DSFP	2 x SFP slot (empty)	Fiber specifications are dependent upon the choice of SFP used							
IDS-105G-M2SC05	1 x Duplex SC	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	550 m (1,804 ft)
IDS-105G-M2ST05	1 x Duplex ST	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	550 m (1,804 ft)
IDS-105G-M2SC2	1 x Duplex SC	-6.0	0.0	-17.0	0.0	11.0	1310	MMF	2 km (1.2 mi)
IDS-105G-M2ST2	1 x Duplex ST	-6.0	0.0	-17.0	0.0	11.0	1310	MMF	2 km (1.2 mi)
IDS-105G-S2SC10	1 x Duplex SC	-9.5	-3.0	-20.0	-3.0	10.5	1310	SMF	10 km (6.2 mi)
IDS-105G-S2ST10	1 x Duplex ST	-9.5	-3.0	-20.0	-3.0	10.5	1310	SMF	10 km (6.2 mi)
IDS-105G-S2SC40	1 x Duplex SC	-2.0	2.0	-23.0	-3.0	21.0	1310	SMF	40 km (24.9 mi)
IDS-105G-S2ST40	1 x Duplex ST	-2.0	2.0	-23.0	-3.0	21.0	1310	SMF	40 km (24.9 mi)
IDS-105G-S2SC70	1 x Duplex SC	-2.0	5.0	-23.0	-3.0	21.0	1550	SMF	70 km (43 mi)
IDS-105G-S2ST70	1 x Duplex ST	-2.0	5.0	-23.0	-3.0	21.0	1550	SMF	70 km (43 mi)
IDS-105G-S2SC120	1 x Duplex SC	0.0	5.0	-32.0	-9.0	32.0	1550	SMF	120 km (74.6 mi)
IDS-105G-S2ST120	1 x Duplex ST	0.0	5.0	-32.0	-9.0	32.0	1550	SMF	120 km (74.6 mi)
IDS-105G-S2SC160	1 x Duplex SC	2.0	5.0	-34.0	-9.0	36.0	1550	SMF	160 km (100 mi)
IDS-105G-S2ST160	1 x Duplex ST	2.0	5.0	-34.0	-9.0	36.0	1550	SMF	160 km (100 mi)

Operating Temperature (Ind) = -40° C to 75° C (-40 F to 167° F)
All Models have 5 x 10/100/1000Base-T (RJ45) Connectors

**Choose your Fiber Connection from the table below
1000Base-X Duplex Fiber**

Model	Fiber Connector	Transmit (dBm)		Receive (dBm)		Power Budget (dB)	Wavelength (nm)	Fiber Type	Operating Distance
		Min	Max	Min	Max				
<u>IDS-105G-XT</u>		No Fiber connection							
<u>IDS-105G-SFP-XT</u>	1 x SFP slot (empty)	Fiber specifications are dependent upon the choice of SFP used							
<u>IDS-105G-DSFP-XT</u>	2 x SFP slot (empty)	Fiber specifications are dependent upon the choice of SFP used							
<u>IDS-105G-M2SC05-XT</u>	1 x Duplex SC	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	550 m (1,804 ft)
<u>IDS-105G-M2ST05-XT</u>	1 x Duplex ST	-9.5	-4.0	-17.0	-3.0	7.5	850	MMF	550 m (1,804 ft)
<u>IDS-105G-S2SC10-XT</u>	1 x Duplex SC	-9.5	-3.0	-20.0	-3.0	10.5	1310	SMF	10 km (6.2 mi)
<u>IDS-105G-S2ST10-XT</u>	1 x Duplex ST	-9.5	-3.0	-20.0	-3.0	10.5	1310	SMF	10 km (6.2 mi)

* 1db/km multimode 50/125 micron fiber cable

Single Fiber (Simplex / BiDi) Models Recommended use in pairs

**Operating Temperature (Std) = 0° C to 60° C (32° F to 140° F).
All Models have 5 x 10/100/1000Base-T (RJ45) Connectors**

**Choose your Fiber Connection from the table below
1000Base-X Simplex (BiDi) Fiber**

Model	Fiber Connector	Transmit (dBm)		Receive (dBm)		Power Budget (dB)	Wavelength (nm) TX / RX	Fiber Type	Operating Distance
		Min	Max	Min	Max				
<u>IDS-105G-S1SC10U</u>	1 x Simplex SC	-9.0	-3.0	-20.0	-3.0	11.0	1310 / 1490	SMF	10 km (6.2 mi)
<u>IDS-105G-S1SC10D</u>	1 x Simplex SC	-9.0	-3.0	-20.0	-3.0	11.0	1490 / 1310	SMF	10 km (6.2 mi)
<u>IDS-105G-S1SC20U</u>	1 x Simplex SC	-8.0	-3.0	-22.0	-3.0	14.0	1310 / 1490	SMF	20 km (12.4 mi)

<u>IDS-105G-S1SC20D</u>	1 x Simplex SC	-8.0	-3.0	-22.0	-3.0	14.0	1490 / 1310	SMF	20 km (12.4 mi)
<u>IDS-105G-S1SC40U</u>	1 x Simplex SC	-3.0	2.0	-23.0	-3.0	20.0	1310 / 1490	SMF	40 km (24.9 mi)
<u>IDS-105G-S1SC40D</u>	1 x Simplex SC	-3.0	2.0	-23.0	-3.0	20.0	1490 / 1310	SMF	40 km (25 mi)
<u>IDS-105G-S1SC80U</u>	1 x Simplex SC	-2.0	3.0	-26.0	-3.0	24.0	1510 / 1590	SMF	80 km (50 mi)
<u>IDS-105G-S1SC80D</u>	1 x Simplex SC	-2.0	3.0	-26.0	-3.0	24.0	1590 / 1510	SMF	80 km (50 mi)
<u>IDS-105G-S1SC120U</u>	1 x Simplex SC	-3.0	2.0	-34.0	-9.0	31.0	1510 / 1590	SMF	120 km (74.6 mi)
<u>IDS-105G-S1SC120D</u>	1 x Simplex SC	-3.0	2.0	-34.0	-9.0	31.0	1590 / 1510	SMF	120 km (74.6 mi)

Operating Temperature (Ind) = -40° C to 75° C (-40 F to 167° F)
All Models have 5 x 10/100/1000Base-T (RJ45) Connectors

Choose your Fiber Connection from the table below
1000Base-X Simplex (BiDi) Fiber

Model	Fiber Connector	Transmit (dBm)		Receive (dBm)		Power Budget (dB)	Wavelength (nm) TX / RX	Fiber Type	Operating Distance
		Min	Max	Min	Max				
<u>IDS-105G-S1SC10U-XT</u>	1 x Simplex SC	-9.0	-3.0	-20.0	-3.0	11.0	1310 / 1490	SMF	10 km (6.2 mi)
<u>IDS-105G-S1SC10D-XT</u>	1 x Simplex SC	-9.0	-3.0	-20.0	-3.0	11.0	1490 / 1310	SMF	10 km (6.2 mi)

Industrial Ethernet Switch Accessories

<u>Panel Mount kit PM3</u>	Brackets for attaching 30 to 45 mm wide Perle IDS industrial switches inside a control panel or to a wall for wall.
<u>Rack Mount Kit RM4U</u>	Bracket for mounting one or more Perle DIN Rail switches in a standard 19" rack. Occupies "4U" of vertical rack space. 275 mm (10 inches) deep
<u>UNO-PS/1AC/24DC/60W DIN-Rail Power Supply</u>	UNO-PS/1AC/24DC/60W DIN-Rail Power Supply: 24 VDC, 60 Watt with universal 85 to 264 VAC, -25 to 70°C extended operating temperature. <u>Power Supply Specifications.</u>
<u>UNO-PS/1AC/24DC/150W Power Supply</u>	UNO-PS/1AC/24DC/150W Power Supply - DIN-Rail 24 VDC , 150 Watt power supply with universal 85 to 264 VAC, -25 to 70°C extended operating temperature. <u>Power Supply Specifications.</u>

