EDS-G308 Series
Quick Installation Guide

Moxa EtherDevice Switch

Version 6.3, June 2021

Technical Support Contact Information
www.moxa.com/support

P/N: 1802003082018

Overview

The EDS-G308 Series is equipped with 8 Gigabit Ethernet ports and up to 2 fiber optic ports, making it ideal for applications that demand high bandwidth. The EDS-G308 series provides an economical solution for your industrial Gigabit Ethernet connection, and the built-in relay warning function alerts maintainers when power failures or port breaks occur. In addition, the 4-pin DIP switches can be used to configure the following features: broadcast storm protection (BSP), jumbo frame rate (Jumbo), and IEEE 802.3az energy saving. The EDS-G308 series includes 2 models: one with an operating temperature range of -10 to 60°C, and the other one with an extended operating temperature range of -40 to 75°C. These 2 models have passed a 100% burn-in test to ensure that they fulfill the special needs of industrial automation control. The EDS-G308 series can be easily installed with DIN-Rail mounting as well as distribution boxes.

NOTE Throughout this Hardware Installation Guide, we use **EDS** as an abbreviation for Moxa EtherDevice Switch:
EDS = Moxa EtherDevice Switch

Package Checklist

Your EDS is shipped with the following items. If any of these items is missing or damaged, please contact your customer service representative for assistance.

- Moxa EtherDevice™ Switch
- Quick installation guide (printed)
- Warranty card
- Protective caps for unused ports

Features

High Performance Network Switching Technology

- 10/100/1000BaseT(X) (RJ45), auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection, 100/1000 BaseSFP slot.
- IEEE 802.3/802.3u/802.3ab/802.3z/802.3x.
- Store and Forward switching process type, 8K MAC address entries.

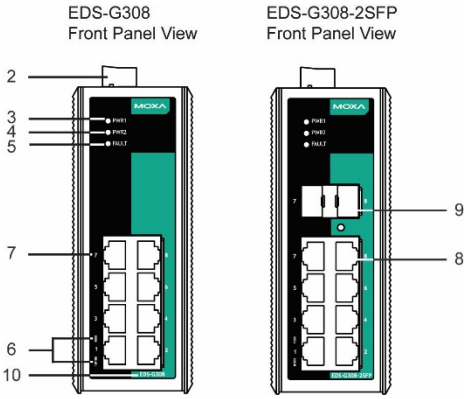
Industrial Grade Reliability and Efficiency

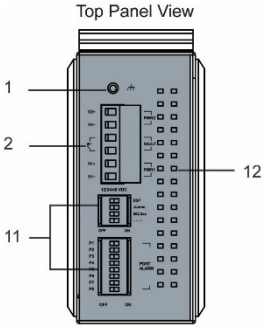
- Power failure, port break alarm by relay output
- Redundant dual 12/24/48 VDC power inputs
- IEEE 802.3az energy-efficient Ethernet settings by DIP switch
- Broadcast storm protection and jumbo frame setting by DIP switch

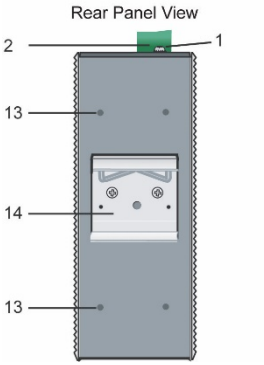
Rugged Design

- Operating temperature range of -10 to 60°C, or extended operating temperature of -40 to 75°C for "T" models
- IP30, rugged high-strength case
- DIN-rail or panel mounting ability

Panel Layout of EDS-G308/EDS-G308-2SFP



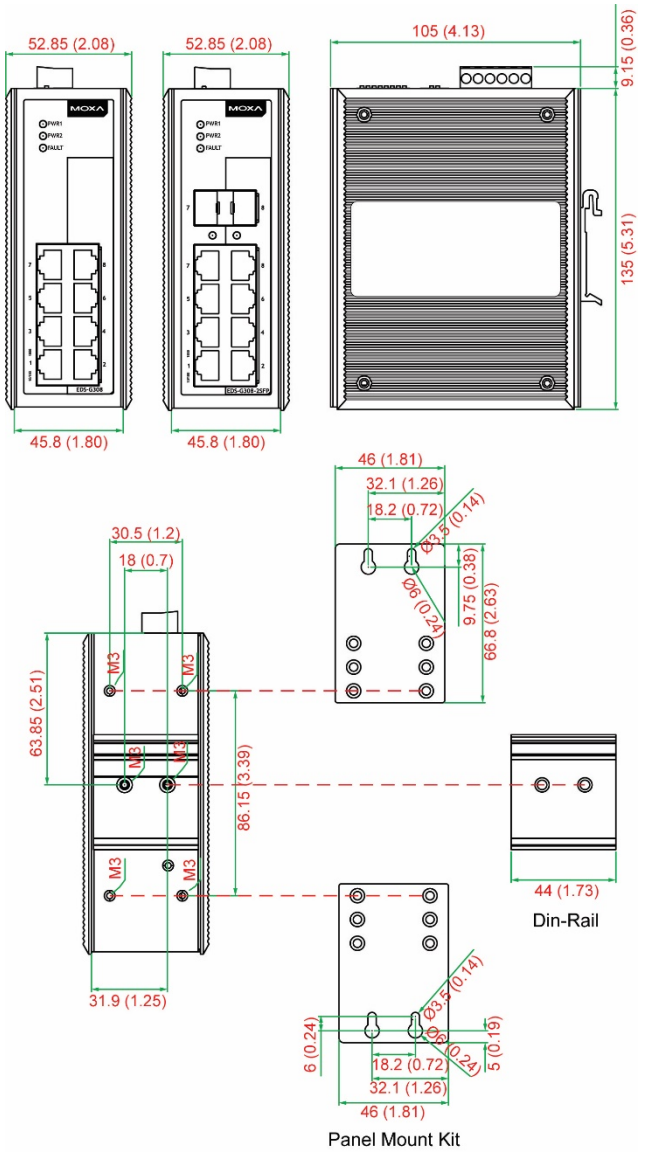




1. Grounding screw
2. Terminal block for power input (PWR1, PWR2) and relay output
3. Power input PWR1 LED
4. Power input PWR2 LED
5. Fault LED
6. TP port's 10/100 Mbps LED
   TP port's 1000 Mbps LED
   SFP port's 100/1000 Mbps LED
   (Amber: 100M; Green: 1000M)
7. Port number
8. 10/100/1000BaseT(X) Port
9. 100/1000Base SFP slot
10. Model Name
11. DIP switches
12. Heat dissipation orifices
13. Screw hole for wall mounting kit
14. DIN-rail Kit

Mounting Dimensions

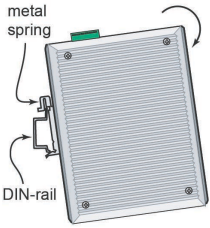
Unit = mm (inch)



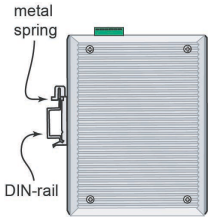
DIN-Rail Mounting

The aluminum DIN-rail attachment plate should already be fixed to the back panel of the EDS when you take it out of the box. If you need to reattach the DIN-rail attachment plate, make sure the stiff metal spring is situated towards the top, as shown in the figures below.

STEP 1: Insert the top of the DIN-rail into the slot just below the stiff metal spring.

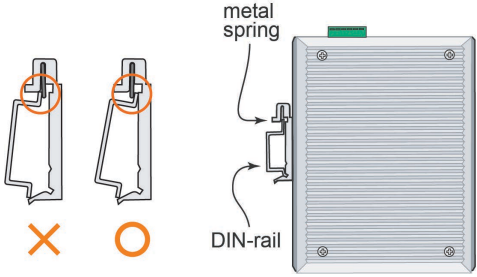


STEP 2: The DIN-rail attachment unit will snap into place as shown below.



To remove the DIN-rail from the EDS, simply reverse Steps 1 and 2.

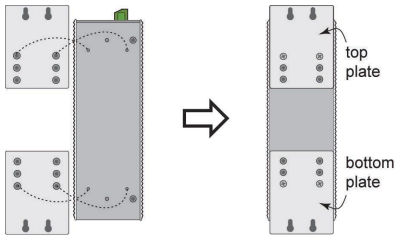
In order to ensure proper installation, please insert the DIN-rail below the metal spring.



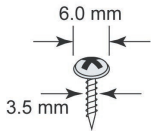
Wall Mounting (optional)

For some applications, you will find it convenient to mount the EDS on the wall, as illustrated below.

STEP 1:
Remove the aluminum DIN-rail attachment plate from the EDS's rear panel, and then attach the wall mount plates, as shown in the figure.



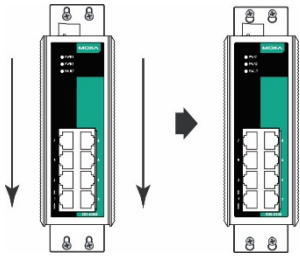
STEP 2:
Mounting the EDS on the wall requires 4 screws. Use the switch, with wall mount plates attached, as a guide to mark the correct locations of the 4 screws. The heads of the screws should be less than 6.0 mm in diameter, and the shafts should be less than 3.5 mm in diameter, as shown in the figure at the right.



NOTE Before tightening screws into the wall, make sure the screw head and shank size are suitable by inserting the screw into one of the keyhole-shaped apertures of the Wall Mounting Plates.

Do not screw the screws in all the way—leave about 2 mm to allow room for sliding the wall mount panel between the wall and the screws.

STEP 3:
Once the screws are fixed in the wall, insert the four screw heads through the large parts of the keyhole-shaped apertures, and then slide the EDS downwards, as indicated. Tighten the four screws for added stability.



Hazardous Location Information

Logo	MOXA®
Model/Rating	**Model Name.** / **Rated Supply Voltage and Current** EDS-G308, EDS-G308-T: 12-48 VDC, Class 2, Maximum 0.8 A EDS-G308-2SFP, EDS-G308-2SFP-T: 12-48 VDC, Class 2, Maximum 0.9 A Relay Output: 24 VDC, 1 A, resistive load.
Serial Number	SERIAL_NUMBER
ATEX information	CE Ex II 3 G DEMKO 10 ATEX 0917324X Ex nA nC IIC T4 Gc Ambient Range: -40°C ≤ Tamb ≤ 75°C (With -T) Ambient Range: -10°C ≤ Tamb ≤ 60°C (Without -T) WARNING: DO NOT SEPARATE WHEN ENERGIZED Rated Cable Temp ≥ 90°C
Address of manufacturer	No. 1111, Heping Rd., Bade Dist., Taoyuan City 334004, Taiwan

Standards and Certifications	
Hazardous Location	EN 60079-0:2012+A11:2013 EN 60079-15:2010/

Conditions of safe use

- Transient protection shall be provided to limit the peak rated voltage to a maximum of 140% of the peak-rated voltage.
- When end users are providing Optical SFP Communications modules, these must be limited to Laser Class 1 only.
- The equipment shall only be used in an area of not more than pollution degree 2, as defined in EN 60664-1.
- The equipment shall be installed in an IP 54 casing in accordance with the EN 60079-15 standard and should only be accessible by the use of a tool.

Wiring Requirements

WARNING

Safety First!

Turn the power off before disconnecting modules or wires. The proper power supply voltage is listed on the product label. Check the voltage of your power source to make sure you are using the correct voltage. Do NOT use a voltage greater than what is specified on the product label.

These devices must be supplied by an SELV source as defined in the Low Voltage Directive 2014/35/EU and 2014/30/EU.

WARNING

Safety First!

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

You should also pay attention to the following items:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.
  NOTE: Do not run signal or communications wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.
- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring with similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separated.
- It is strongly advised that you label wiring for all devices in the system when necessary.

Grounding Moxa EtherDevice Switch

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

ATTENTION

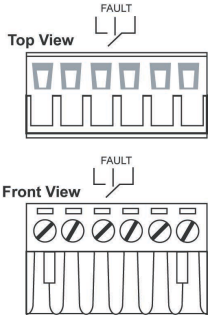
This product is intended to be mounted to a well-grounded mounting surface, such as a metal panel.

We suggest using the cable type AWG min. 18 for grounding the EDS-G308.

Wiring the Alarm Contact

The Alarm Contact consists of the two middle contacts of the terminal block on the EDS's top panel. You may refer to the next section for detailed instructions on how to connect the wires to the terminal block connector, and how to attach the terminal block connector to the terminal block receptor.

In this section, we explain the meaning of the two contacts used to connect the Alarm Contact.



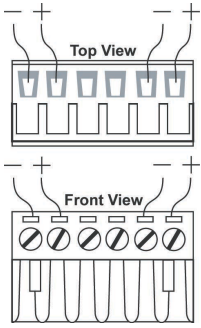
FAULT: The two middle contacts of the 6-contact terminal block connector are used to detect both power faults and port faults. The two wires attached to the Fault contacts form an open circuit when:

1. EDS has lost power from one of the DC power inputs.
   OR
2. The PORT ALARM DIP switch for one of the ports is set to ON, but the port is not connected properly.

If neither of these two conditions is satisfied, the Fault circuit will be closed.

Wiring the Redundant Power Inputs

The top two contacts and the bottom two contacts of the 6-contact terminal block connector on the EDS's top panel are used for the EDS's two AC/ DC inputs. Top and front views of one of the terminal block connectors are shown here.



STEP 1: Insert the negative/positive DC wires into the V-/V+ terminals.

STEP 2: To keep the DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.

STEP 3: Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on EDS's top panel.

ATTENTION

Before connecting the EDS to the DC power inputs, make sure the DC power source voltage is stable.

We suggest using a copper conductor with the cable type - AWG 18-24 and the corresponding pin type cable terminals. In addition, the wire must be able to withstand at least 105°C.

The wire must be able to withstand at least 105°C and the torque value should be 4.5 lb-in (0.51 N-m).

There should only be one individual conductor in a clamping point.

Communication Connections

EDS-G308 switches have 2 types of communications port:

- 10/100/1000BaseT(X) Ethernet ports
- Combination 10/100/1000T(X) Ethernet or 100/1000BaseSFP fiber ports

10/100/1000BaseT(X) Ethernet Port Connection

The 10/100/1000BaseT(X) ports located on Moxa EtherDevice Switch's front panel are used to connect to Ethernet-enabled devices. Most users will choose to configure these ports for Auto MDI/MDI-X mode, in which case the port's pinouts are adjusted automatically depending on the type of Ethernet cable used (straight-through or cross-over), and the type of device (NIC-type or HUB/Switch-type) connected to the port.

In what follows, we give pinouts for both MDI (NIC-type) ports and MDI-X (HUB/Switch-type) ports. We also give cable wiring diagrams for straight-through and cross-over Ethernet cables.

10 /100Base T(x) RJ45 Pinouts

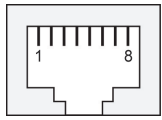
MDI Port Pinouts

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-

MDI-X Port Pinouts

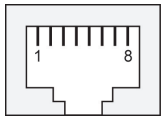
Pin	Signal
1	Rx+
2	Rx-
3	Tx+
6	Tx-

8-pin RJ45

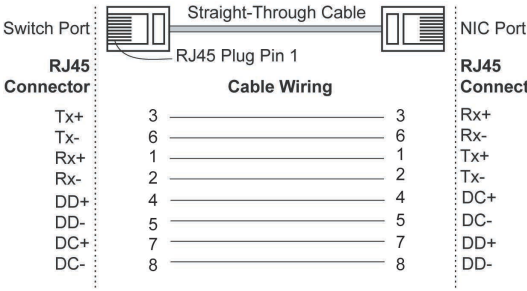


1000BaseT RJ45 Pinouts

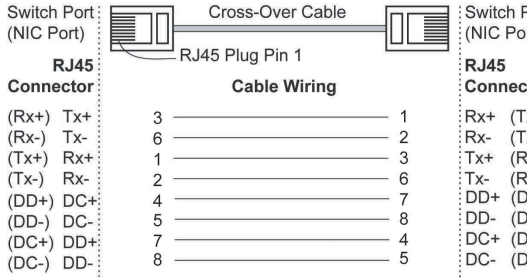
Pin	MDI	MDI-X
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-



RJ45 (8-pin) to RJ45 (8-pin) Straight-Through Cable Wiring



RJ45 (8-pin) to RJ45 (8-pin) Cross-Over Cable Wiring



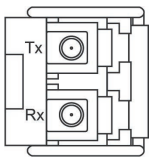
100/1000BaseSFP (mini-GBIC) Fiber Port

The Fiber ports on the EDS-G308 series are SFP type slots, which require 100M or 1G mini-GBIC fiber transceivers to work properly. Moxa provides complete transceiver models for various distance requirements.

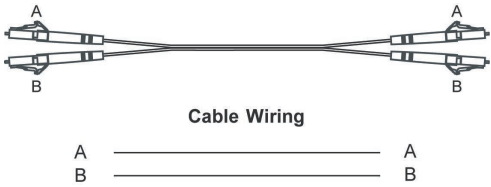
The concept behind the LC port and cable is quite straightforward. Suppose you are connecting devices I and II. Unlike electrical signals, optical signals do not require a circuit in order to transmit data. Consequently, one of the optical lines is used to transmit data from device I to device II, and the other optical line is used to transmit data from device II to device I, for full-duplex transmission.

Remember to connect the Tx (transmit) port of device I to the Rx (receive) port of device II, and the Rx (receive) port of device I to the Tx (transmit) port of device II. If you make your own cable, we suggest labeling the two sides of the same line with the same letter (A-to-A and B-to-B, as shown below, or A1-to-A2 and B1-to-B2).

LC-Port Pinouts



LC-Port to LC-Port Cable Wiring



ATTENTION

This is a Class 1 Laser/LED product. To avoid causing serious damage to your eyes, do not stare directly into the Laser Beam.

Redundant Power Inputs

Both power inputs can be connected simultaneously to live DC power sources. If one power source fails, the other live source acts as a backup, and automatically supplies all of the EDS's power needs.

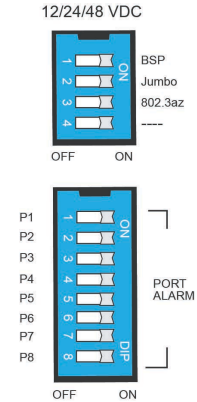
Alarm Contact

The Moxa EtherDevice Switch has one Alarm Contact located on the top panel. For detailed instructions on how to connect the Alarm Contact power wires to the two middle contacts of the 6-contact terminal block connector, see the **Wiring the Alarm Contact** section on page 7. A typical scenario would be to connect the Fault circuit to a warning light located in the control room. The light can be set up to switch on when a fault is detected.

The Alarm Contact has two terminals that form a Fault circuit for connecting to an alarm system. The two wires attached to the Fault contacts form an open circuit when (1) EDS has lost power from one of the DC power inputs, or (2) one of the ports, for which the corresponding PORT ALARM DIP switch is set to ON, is not properly connected.

If neither of these two conditions occurs, the Fault circuit will be closed.

DIP Switch Settings



The default setting for each DIP switch is OFF. The following table explains the effect of setting the DIP switches to the ON positions.

DIP Switch	Setting	Description
BSP	ON	Enables broadcast storm protection
	OFF	Disables broadcast storm protection
Jumbo Frame	ON	Enables jumbo frame function
	OFF	Disables jumbo frame function
802.3az	ON	Enables the energy-efficient Ethernet function
	OFF	Disables the energy-efficient Ethernet function

DIP Switch	Setting	Description
Port Alarm	ON	Enables the corresponding PORT Alarm. If the port's link fails, the relay will form an open circuit and the fault LED will light up
	OFF	Disables the corresponding PORT Alarm. If the port's link fails, the relay will form a closed circuit and the fault LED will never light up

ATTENTION

To actively update DIP switch settings, power off and then power on the EDS.

LED Indicators

The front panel of the Moxa EtherDevice Switch contains several LED indicators. The function of each LED is described in the table below.

LED	Color	State	Description
PWR1	AMBER	On	Power is being supplied to power input PWR1
		Off	Power is **not** being supplied to power input PWR1
PWR2	AMBER	On	Power is being supplied to power input PWR2
		Off	Power is **not** being supplied to power input PWR2
FAULT	RED	On	When the corresponding PORT alarm is enabled, and the port's link is inactive.
		Off	When the corresponding PORT alarm is enabled and the port's link is active, or when the corresponding PORT alarm is disabled.
10/100M (TP port)	AMBER	On	TP port's 10/100 Mbps link is active.
		Blinking	Data is being transmitted at 10/100 Mbps.
		Off	TP Port's 10/100 Mbps link is inactive.
1000M (TP port)	GREEN	On	TP port's 1000 Mbps link is active.
		Blinking	Data is being transmitted at 1000 Mbps.
		Off	TP Port's 1000 Mbps link is inactive.
100/1000M (SFP port)	AMBER	On	SFP port's 100 Mbps link is active.
		Blinking	Data is being transmitted at 100 Mbps.
		Off	SFP port 100 Mbps link is inactive.
	GREEN	On	SFP port's 1000 Mbps link is active.
		Blinking	Data is being transmitted at 1000 Mbps.
		Off	SFP port's 1000 Mbps link is inactive.

Auto MDI/MDI-X Connection

The Auto MDI/MDI-X function allows users to connect the EDS's 10/100/1000BaseT(X) ports to any kind of Ethernet device, without paying attention to the type of Ethernet cable being used for the connection. This means that you can use either a straight-through cable or cross-over cable to connect the EDS to Ethernet devices.

Triple Speed Functionality and Switching

The EDS's 10/100/1000 Mbps RJ45 switched port auto negotiates with the connected device for the fastest data transmission rate supported by both devices. The EDS is a plug-and-play device, so software configuration is not required at installation or during maintenance.

The half/full duplex mode for the RJ45 switched ports is user dependent and changes (by auto-negotiation) to full or half duplex, depending on which transmission speed is supported by the attached device.

Auto-Negotiation and Speed Sensing

The EDS's RJ45 Ethernet ports independently support auto-negotiation for transmission speeds of 10 Mbps, 100 Mbps, and 1000 Mbps, with operation according to the IEEE802.3 standard.

This means that some nodes could be operating at 10 Mbps, while at the same time, other nodes are operating at 100 Mbps or 1000 Mbps.

Auto-negotiation takes place when an RJ45 cable connection is made, and then each time a LINK is enabled. The EDS advertises its capability for using 10 Mbps, 100 Mbps, or 1000 Mbps transmission speeds, with the device at the other end of the cable expected to advertise similarly. Depending on what type of device is connected, this will result in agreement to operate at a speed of 10 Mbps, 100 Mbps, or 1000 Mbps.

If an EDS's RJ45 Ethernet port is connected to a non-negotiating device, it will default to 10 Mbps speed and half-duplex mode, as required by the IEEE802.3 standard.

Specifications

Specifications and Pin Assignments

Technology	
Standards	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X) and 100Base FX, IEEE 802.3ab for 1000BaseT, IEEE 802.3z for 1000BaseX IEEE 802.3az for Energy-Efficient Ethernet
Flow Control	IEEE 802.3x flow control, back pressure flow control
Interface	
RJ45 Ports	10/100/1000BaseT(X) auto negotiation speed
Fiber Ports	100Base FX or 1000BaseX SFP slot SFP slot
LED Indicators	PWR1, PWR2, FAULT, 10/100M/1000M
DIP Switch	Port break alarm, broadcast storm protection, jumbo frame, IEEE 802.3az
Alarm Contact	One relay output with current carrying capacity of 1A @ 24 VDC

Power	
Input Voltage	12/24/48 VDC, redundant dual inputs
Input Current	EDS-G308: 0.8 A @ 12-48 VDC EDS-G308-2SFP: 0.9 A @ 12-48 VDC
Connection	One removable 6-pin terminal block
Overload Current Protection	Present
Reverse Polarity Protection	Present
Mechanical	
Casing	IP30 protection, metal case
Dimension (W x H x D)	52.85 x 135 x 105 mm (2.08 x 5.31 x 4.13 in)
Weight	880 g (1.94 lb)
Installation	DIN-rail, Wall Mounting (optional kit)
Environmental	
Operating Temperature	-10 to 60°C (14 to 140°F) -40 to 75°C (-40 to 167°F) for -T models
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Regulatory Approvals	
Safety	UL 508, EN 62368-1
EMI	FCC Part 15, CISPR 32, EN 55032 class A
EMS	EN 61000-4-2 (ESD), Level 3 EN 61000-4-3 (RS), Level 3 EN 61000-4-4 (EFT), Level 3 EN 61000-4-5 (Surge), Level 3 EN 61000-4-6 (CS), Level 3 EN 61000-4-8 EN 61000-4-11 EN 61000-4-12
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-32
Vibration	IEC 60068-2-6
Note: Please check Moxa's website for the latest certification status.	
MTBF (mean time between failures)	
Time	2,260,195 hours
Standard	Telcordia (Bellcore), GB
Warranty	
Warranty Period	5 years
Details	www.moxa.com/warranty