EDS-505A/508A Series Quick Installation Guide

Moxa EtherDevice™ Switch

Version 11.1, January 2021

Technical Support Contact Information
www.moxa.com/support

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P/N: 180200500001B

Package Checklist

The Moxa EDS-505A/508A is shipped with the following items. If any of these items is missing or damaged, please contact your customer service representative for assistance.

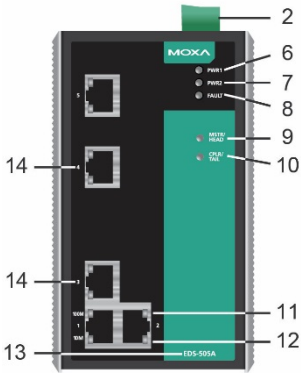
- 1 Moxa EtherDevice Switch (EDS-505A or EDS-508A)
- Quick installation guide (printed)
- Warranty card
- RJ45 to DB9 Console port cable
- Protective caps for unused ports
- Panel Mounting Kit (optional—must be ordered separately)

Default Settings

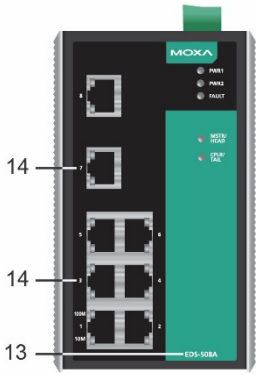
- Default IP address: 192.168.127.253
- Default Subnet Mask: 255.255.255.0
- Default Usernames: admin, user
- Default Password: (By default, no password is assigned to the Moxa switch's web, serial, and Telnet consoles.)

Panel Layout of EDS-505A/508A (Standard)

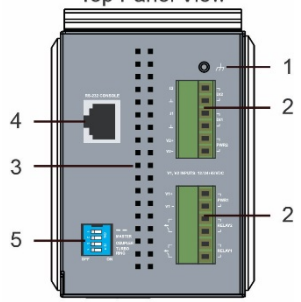
EDS-505A
Front Panel View



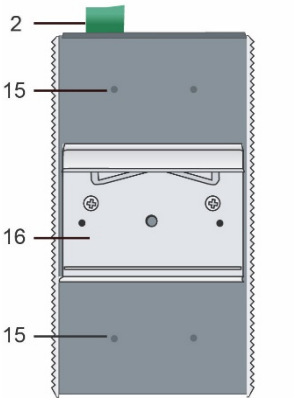
EDS-508A
Front Panel View



Top Panel View



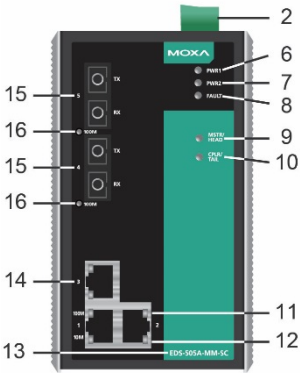
Rear Panel View



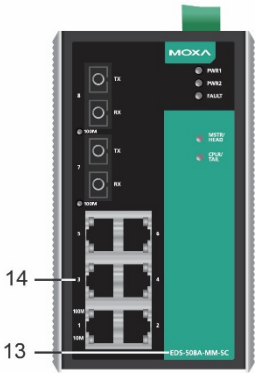
1. Grounding screw
2. Terminal block for power input PWR1/PWR2 and relay output
3. Heat dissipation orifices
4. Console port
5. DIP switches
6. Power input PWR1 LED
7. Power input PWR2 LED
8. Fault LED
9. MSTR/HEAD: LED indicator
10. CPLR/TA IL: LED indicator
11. TP port's 100 Mbps LED
12. TP port's 10 Mbps LED
13. Model Name
14. 10/100BaseT(X) ports
15. Screw hole for wall mounting kit
16. DIN-Rail kit

Panel Layout of EDS-505A/508A (SC-type)

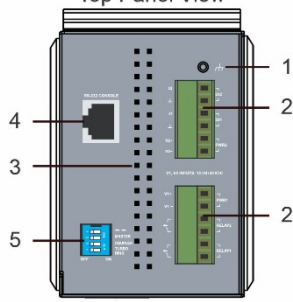
EDS-505A-MM-SC
Front Panel View



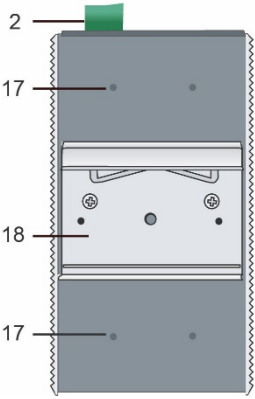
EDS-508A-MM-SC
Front Panel View



Top Panel View



Rear Panel View



NOTE: The appearance of EDS-505A-SS-SC is identical to that of EDS-505A-MM-SC.
The appearance of EDS-508A-SS-SC is identical to that of EDS-508A-MM-SC.

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3. Heat dissipation orifices
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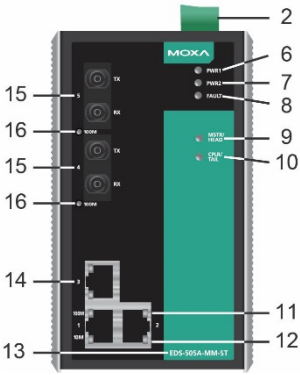
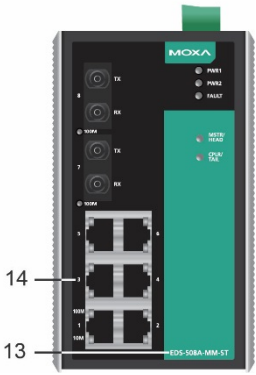
8. Fault LED
9. MSTR/HEAD: LED indicator
10. CPLR/TAIL: LED indicator
11. TP port's 100 Mbps LED
12. TP port's 10 Mbps LED
13. Model Name
14. 10/100BaseT(X) ports
15. 100BaseFX ports
16. FX port's 100 Mbps LEDs
17. Screw hole for wall mounting kit
18. DIN-Rail kit

Panel Layout of EDS-505A/508A (ST-type)

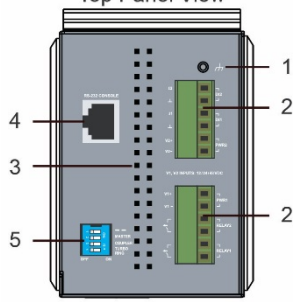
EDS-505A-MM-ST
Front Panel View



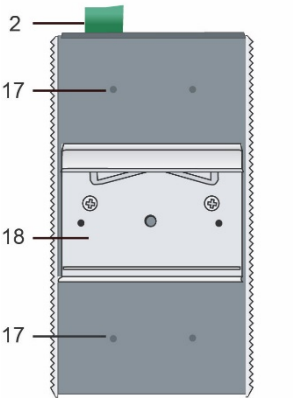
EDS-508A-MM-ST
Front Panel View



Top Panel View



Rear Panel View



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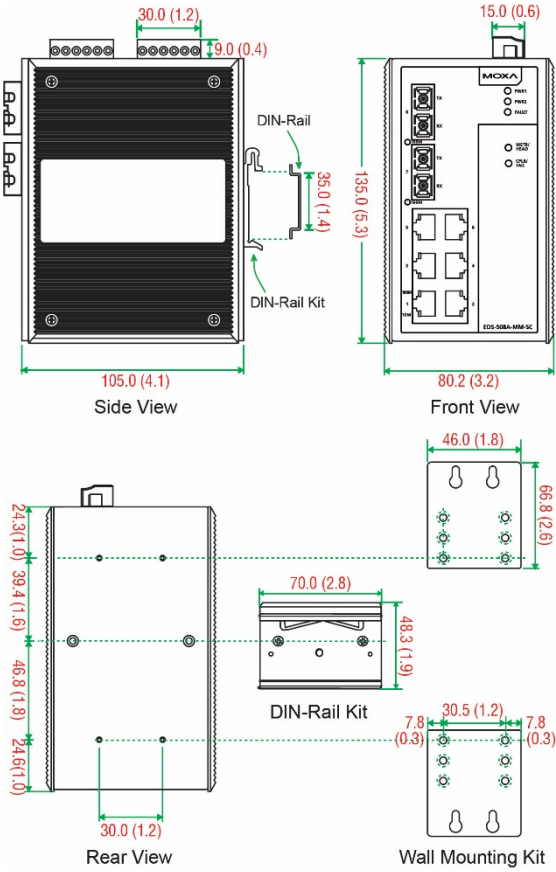
Mounting Dimensions



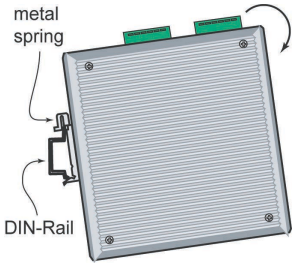
Unit = mm (inch)

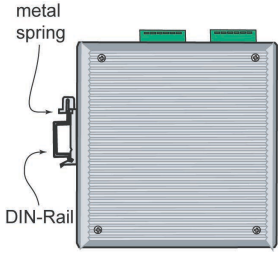
DIN-Rail Mounting

The aluminum DIN-Rail attachment plate should already be fixed to the back panel of the EDS-505A/508A when you take it out of the box.

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.



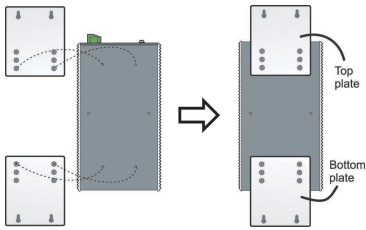


To remove EDS-505A/508A from the DIN-Rail, simply reverse Steps 1 and 2.

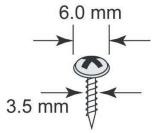
Wall Mounting (optional)

For some applications, you will find it convenient to mount the EDS-505A/508A on the wall, as shown in the following figures.

STEP 1:
Remove the aluminum DIN-Rail attachment plate from the EDS-505A/508A's rear panel, and then attach the wall mount plates with M3 screws, as shown in the figures at the right.



STEP 2:
Mounting the EDS-505A/508A on the wall requires 4 screws. Use the EDS, 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 the 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 completely—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-505A/508A downwards, as indicated. Tighten the four screws for added stability.

ATEX Information

1. Certificate number DEMKO 18 ATEX 2143X
2. Ambient range: -40°C ≤ Tamb ≤ 75°C (Products with suffix –T), -10 °C≤ Tamb ≤60 °C (Products without suffix –T)
3. Certification string: Ex nA nC IIC T4 Gc
4. Standards covered:
   EN60079-0:2012+A11:2013, EN60079-15:2010
5. The conditions of safe usage:
   - These devices shall be mounted in a suitable tool-accessible ATEX/IECEx certified enclosure rated to at least IP54 as defined in IEC/EN 60079-0 and Pollution Degree 2 as defined in EN/IEC 60664-1, and used within their rated electrical and environmental ratings.
   - The min. cross-sectional area of the protective conductor is 3.31 mm^2. The external earthing conduct shall be at least 4 mm^2.
   - Conductors suitable for Rated Cable Temperature ≥ 100°C
   - Input conductor with 28-12 AWG (max. 3.3mm^2) to be used with the devices.

Wiring Requirements

WARNING

The power for this product is intended to be supplied by a Listed Power Unit, with output marked LPS, and rated to deliver 12 to 48 VDC at a maximum of 620 mA.

WARNING

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your Moxa EtherDevice Switch. 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.

Please read and follow these important guidelines:

- 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 through the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.
- Use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.

- Keep input wiring and output wiring separate.
- It is strongly advised that you label wiring to all devices in the system, when necessary.

Grounding the EtherDevice Switch

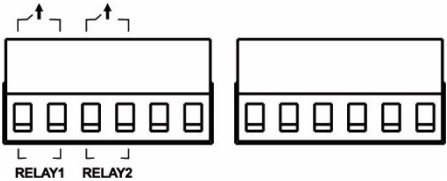
Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

ATTENTION

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

Wiring the Relay Contact

The EDS-505A/508A has two sets of relay output—relay 1 and relay 2. Each relay contact consists of two contacts of the terminal block on the EDS-505A/508A's top panel. 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.



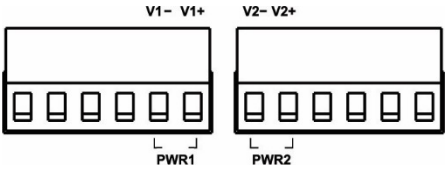
The fault circuit will open if:

1. A relay warning event is triggered, OR
2. The EDS-505A/508A is the Master of this Turbo Ring, and the Turbo Ring is broken, OR
3. Start-up failure.

If none of these three conditions is met, the fault circuit will remain closed.

Wiring the Redundant Power Inputs

The EDS-505A/508A unit has two sets of power inputs—power input 1 and power input 2. Top and front views of one of the terminal block connectors are shown below.



Take the following steps to wire the redundant power inputs:

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.

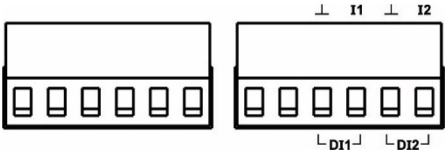
STEP 3: Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on the EDS's top panel.

ATTENTION

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

Wiring the Digital Inputs

The EDS-505A/508A unit has two sets of digital inputs, DI 1 and DI 2. Each DI consists of two contacts of the 6-pin terminal block connector on the EDS's top panel. The remaining contacts are used for the EDS's two DC inputs. Top and front views of one of the terminal block connectors are shown below.



Take the following steps to wire the digital inputs:

STEP 1: Insert the negative (ground)/positive DI wires into the ⊥/I1 terminals.

STEP 2: To keep the DI 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 the EDS-505A/508A's top panel.

Communication Connections

EDS-508A models have 8 or 6 10/100BaseT(X) Ethernet ports, and 0 (zero) or 2 100BaseFX (SC/ST-type connector) fiber ports. EDS-505A models have 5 or 3 10/100BaseT(X) Ethernet ports, and 0 (zero) or 2 100 BaseFX (SC/ST-type connector) fiber ports

10/100BaseT(X) Ethernet Port Connection

The 10/100BaseT(X) ports located on EDS's front panel are used to connect to Ethernet-enabled devices.

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

10/100Base T(x) RJ45 Pinouts

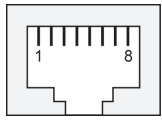
MDI Port Pinouts

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

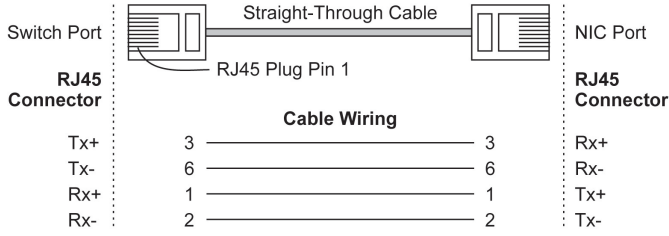
MDI-X Port Pinouts

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

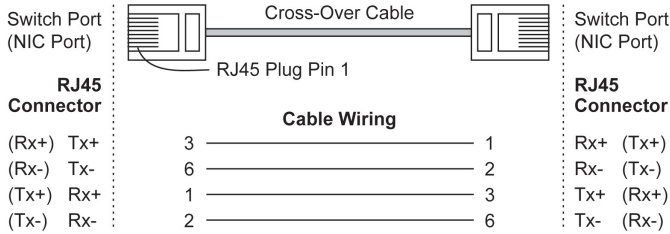
8-pin RJ45



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



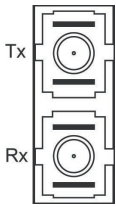
RJ45 (8-pin) to RJ45 (8-pin) Cross-Over Cable Wiring



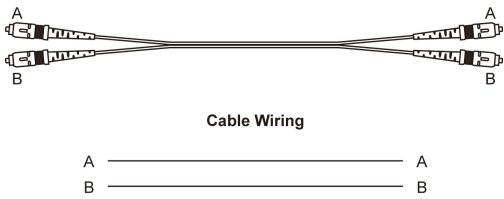
100BaseFX Ethernet Port Connection

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).

SC-Port Pinouts

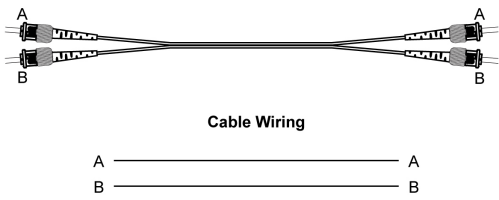


SC-Port to SC-Port Cable Wiring



ST-Port Pinouts

ST-Port to ST-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.

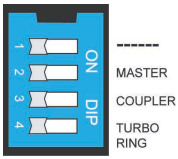
Turbo Ring DIP Switch Settings

EDS-505A/508A series are plug-and-play managed redundant Ethernet switches. The proprietary Turbo Ring protocol was developed by Moxa to provide better network reliability and faster recovery time. Moxa Turbo Ring's recovery time is less than 300 ms (**Turbo Ring**) or 20 ms (**Turbo Ring V2**) —compared to a 3- to 5-minute recovery time for commercial switches—decreasing the possible loss caused by network failures in an industrial setting.

There are 4 Hardware DIP Switches for Turbo Ring on the top panel of EDS-505A/508A that can help setup the Turbo Ring easily within seconds. If you do not want to use a hardware DIP switch to setup the Turbo Ring, you can use a web browser, telnet, or console to disable this function.

NOTE Please refer to the ***Turbo Ring DIP Switch*** section and ***Using Communication Redundancy*** section in User's Manual for more detail information about the settings and usage of ***Turbo Ring*** and ***Turbo Ring V2***.

EDS-505A/508A Series DIP Switches



The default setting for each DIP Switch is OFF. The following table explains the effect of setting the DIP Switch to the ON position.

"Turbo Ring" DIP Switch Settings

DIP 1	DIP 2	DIP 3	DIP 4
Reserved for future use.	ON: Enables this EDS as the Ring Master.	ON: Enables the default "Ring Coupling" ports.	ON: Activates DIP switches 1, 2, 3 to configure "Turbo Ring" settings.
	OFF: This EDS will not be the Ring Master.	OFF: Do not use this EDS as the ring coupler.	OFF: DIP switches 1, 2, 3 will be disabled.

"Turbo Ring V2" DIP Switch Settings

DIP 1	DIP 2	DIP 3	DIP 4
ON: Enables the default "Ring Coupling (backup)" port.	ON: Enables this EDS as the Ring Master.	ON: Enables the default "Ring Coupling" port.	ON: Activates DIP switches 1, 2, 3 to configure "Turbo Ring V2" settings.
OFF: Enables the default "Ring Coupling (primary)" port.	OFF: This EDS will not be the Ring Master.	OFF: Do not use this EDS as a ring coupler.	OFF: DIP switches 1, 2, 3 will be disabled.

NOTE You must enable the Turbo Ring function first before using the DIP switch to active the Master and Coupler functions.

NOTE If you do not enable any of the EDS-505A/508A switches to be the Ring Master, the Turbo Ring protocol will automatically choose the EDS-505A/508A with the smallest MAC address range to be the Ring Master. If you accidentally enable more than one EDS-505A/508A to be the Ring Master, these EDS-505A/508A switches will auto-negotiate to determine which one will be the Ring Master.

LED Indicators

There are several LEDs on the EDS's front panel. The function of each LED is described in the following table.

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 (1) a relay warning event is triggered, (2) EDS-505A/508A is the Master of this Turbo Ring, and the Turbo Ring is broken, or (3) start-up failure.
		Off	When a relay warning event is not triggered.
MSTR/HEAD	GREEN	On	When the EDS-505A/508A is set as the Master of the Turbo Ring, or as the Head of the Turbo Chain.
		Blinking	The EDS-505A/508A has become the Ring Master of the Turbo Ring, or the Head of the Turbo Chain, after the Turbo Ring or the Turbo Chain is down.
		Off	When theEDS-505A/508A is not the Master of this Turbo Ring or is set as the Member of the Turbo Chain.

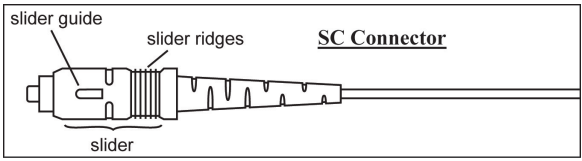
LED	Color	State	Description
CPLR/TAIL	GREEN	On	When the EDS-505A/508A coupling function is enabled to form a back-up path, or when it's set as the Tail of the Turbo Chain.
		Blinking	When the Turbo Chain is down.
		Off	When the EDS-505A/508A disables the coupling function, or is set as the Member of the Turbo Chain.
10M (TP)	GREEN	On	TP port's 10 Mbps link is active.
		Blinking	Data is being transmitted at 10 Mbps.
		Off	TP Port's 10 Mbps link is inactive.
100M (TP)	GREEN	On	TP port's 100 Mbps link is active.
		Blinking	Data is being transmitted at 100 Mbps.
		Off	TP Port's 100 Mbps link is inactive.
100M (FX)	GREEN	On	FX port's 100 Mbps is active.
		Blinking	Data is being transmitted at 100 Mbps.
		Off	FX port's 100 Mbps is inactive.

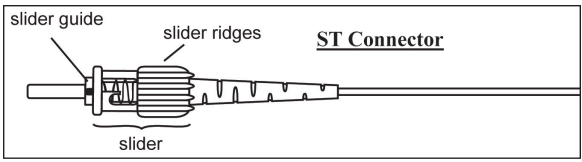
Auto MDI/MDI-X Connection

The Auto MDI/MDI-X function allows users to connect the EDS-505A/508A's 10/100BaseTX ports to any kind of Ethernet device, without needing to pay 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-505A/508A to Ethernet devices.

Fiber Ports

The fiber ports are factory-built as either multi-mode or single-mode SC/ST connectors. Therefore, you should use fiber cables that have SC/ST connectors at both ends. When plugging the connector into the port, make sure the slider guide is positioned to the right side such that it fits snuggly into the port.





Specifications

Technology	
Standards	IEEE802.3, 802.3u, 802.3x, 802.1D, 802.1w, 802.1Q, 802.1p, 802.1X, 802.3ad
Protocols	IGMPv1/v2, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, BootP, TFTP, SNTP, SMTP, RARP, GMRP, LACP, RMON, HTTP, HTTPS, Telnet, Syslog, DHCP Option 66/67/82, SSH, SNMP Inform, Modbus/TCP, LLDP, IEEE 1588 PTP, IPv6
MIB	MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1,2,3,9
Forwarding and Filtering Rate	148810 pps
Processing Type	Store and Forward
Flow Control	IEEE802.3x flow control, back pressure flow control
Interface	
RJ45 Ports	10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
Fiber Ports	100BaseFX ports (SC/ST connector)
Console	RS-232 (RJ45)
LED Indicators	PWR1, PWR2, FAULT, 10/100M (TP port), 100M (Fiber Port), MSTR/HEAD and CPLR/TAIL
Relay Contact	Two relay outputs with current carrying capacity of 1A @ 24 VDC
DIP Switches	Master, Coupler, Turbo Ring, Reserve
Digital Input	Two inputs with the same ground, but electrically isolated from the electronics • For state "1": +13 to +30V • For state "0": -30 to +3V • Max. input current: 8 mA

Optical Fiber

		100Base FX			
		Multi-mode		Single-mode 40 km	Single-mode 80 km
Fiber Cable Type		OM1	50/125 µm 800 MHz*Km	G.652	G.652
Typical Distance		4 km	5 km	40 km	80 km
Wave-length	Typical (nm)	1300		1310	1550
	TX Range (nm)	1260 to 1360		1280 to 1340	1530 to 1570
	RX Range (nm)	1100 to 1600		1100 to 1600	1100 to 1600
Optical Power	TX Range (dBm)	-10 to -20		0 to -5	0 to -5
	RX Range (dBm)	-3 to -32		-3 to -34	-3 to -34
	Link Budget (dB)	12		29	29
	Dispersion Penalty (dB)	3		1	1

Note: When connecting a single-mode fiber transceiver, we recommend using an attenuator to prevent damage caused by excessive optical power.

Note: Compute the "typical distance" of a specific fiber transceiver as follows: Link budget (dB) > dispersion penalty (dB) + total link loss (dB).	
Power	
Input Voltage	12/24/48 VDC, redundant inputs
Input Current (@ 24 V)	Max. 0.21 A: (EDS-505A) Max. 0.22 A: (EDS-508A) Max. 0.29 A: (EDS-505A-MM, EDS-505A-SS) Max. 0.3 A: (EDS-508A-MM, EDS-508A-SS)
Rated Current	0.60/0.29/0.16 A, Relay output 24 VDC/1 A (Resistive), Class 2 for the EDS-505A Series 0.62/0.3/0.16 A, Relay output 24 VDC/1 A (Resistive), Class 2 for the EDS-508A Series
Connection	Two removable 6-pin terminal blocks
Overload Current Protection	Present
Reverse Polarity Protection	Present
Mechanical	
Casing	IP30 protection, metal case
Dimensions	80.5 × 135 × 105 mm (W × H × D)
Weight	1.04 kg
Installation	DIN-Rail, Wall Mounting (optional kit)
Environment	
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	UL60950-1, UL 508, EN 60950-1 (LVD)
Hazardous Location	UL/cUL Class I, Division 2, Groups A, B, C, and D. ATEX Zone 2
EMI	FCC Part 15, CISPR (EN 55032) class A
EMS	EN61000-4-2 (ESD), Level 3 EN61000-4-3 (RS), Level 3 EN61000-4-4 (EFT), Level 3 EN61000-4-5 (Surge), Level 3 EN61000-4-6 (CS), Level 3 EN61000-4-8 EN61000-4-11 EN61000-4-12
Shock	IEC60068-2-27
Freefall	IEC60068-2-31
Vibration	IEC60068-2-6
WARRANTY	5 years