

# TRC-190 User's Manual

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# TRC-190 User's Manual

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# 1

## Introduction

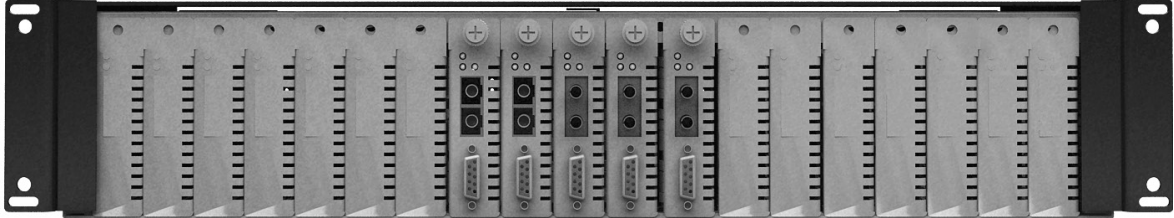
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The following topics are covered in this chapter:

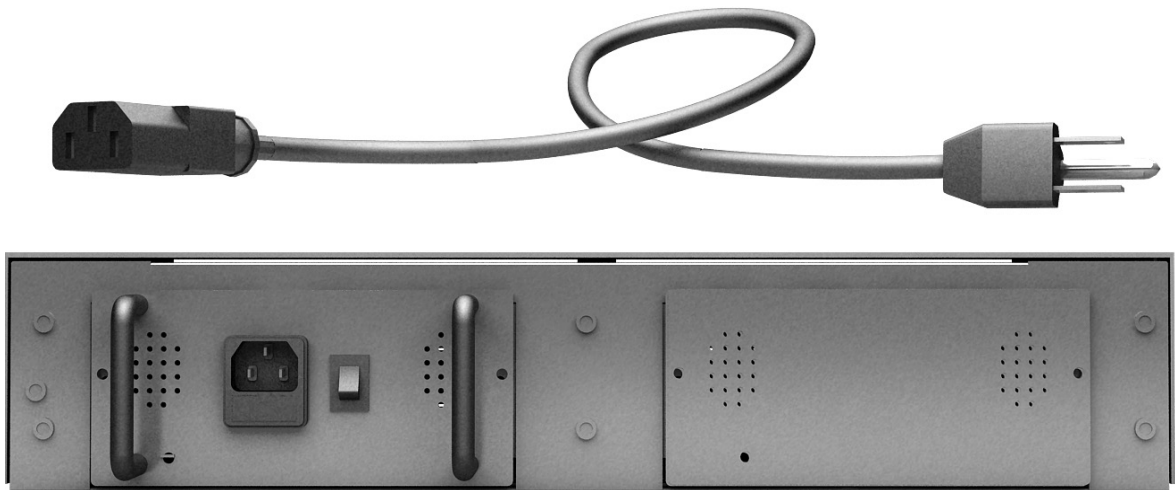
- ❑ **Overview**
- ❑ **Package Checklist**
- ❑ **Product Specifications**

## Overview

Moxa's NRack System includes the TRC-190-series, which is a 19-inch, rack-mountable chassis for selected Moxa media converter slide-in modules. The TRC-190-series allows the network administrator to connect various copper and fiber-optic network media over protocols that include RS-232, RS-422, and RS-485. Support for additional protocols will be available in the future. The TRC-190-series provides installation space for up to 19 single-slot media converter slide-in modules in the front of the unit.



The TRC-190-series is equipped with an AC or DC power supply installed in the back of the chassis. An extra installation space is available for an optional redundant power supply (AC or DC).



Last but not least, the TRC-190 also comes with a grounding lug to provide grounding for the chassis.

## Package Checklist

The Moxa TRC-190-series products are shipped with the following items:

### **Standard Accessories**

- TRC-190-series with one AC or DC power supply in the back of the chassis
- 18 units of chassis face plates and screws
- Rackmount kit
- Power cord (for the TRC-190-AC only)
- User's manual
- Warranty card

### **Optional Accessories**

- PWR-190-AC            Redundant AC Power Supply Module
- PWR-190-DC-xx      Redundant DC Power Supply Module

**NOTE**    Notify your sales representative if any of the above items are missing or damaged.

# Product Specifications

## Physical Characteristics

**Housing:** SECC (1.2 mm)

**Dimensions:** 440 x 260 x 88 mm (17.32 x 10.24 x 3.46 in)

**Weight:** 5.2 kg (11.4 lb), with one power module installed

**Number of Slots:** 19 slots on the front for slide-in modules, 2 slots at the back for power supply modules

## Environmental Limits

**Operating Temperature:** 0 to 60°C (32 to 140°F)

**Storage Temperature:** -20 to 75°C (-4 to 167°F)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

## Power Requirements

**Input Voltage:** Universal 100 to 240 VAC (47 to 63 Hz) or ±48 VDC (36 to 53 VDC and -36 to -53 VDC)

**Input Current:** 3.2 A @ 36 VDC max.

## Standards and Certifications

**Safety:** UL 60950-1, EN 60950-1

**EMC:** CE, FCC

**EMI:** EN 55022 Class A, FCC Part 15 Subpart B Class A

### EMS:

EN 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV

EN 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m

EN 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV

EN 61000-4-5 Surge: Power: 1 kV; Signal: 0.5 kV

EN 61000-4-6 CS: 150 kHz to 80 MHz: 3 V/m

EN 61000-4-8 PFMF

EN 61000-4-11

**Green Product:** RoHS, CRoHS, WEEE

## MTBF (mean time between failures)

**Time:** 1,055,112 hrs.

**Standard:** Telcordia (Bellcore), GB

## Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

## Slide-in Modules

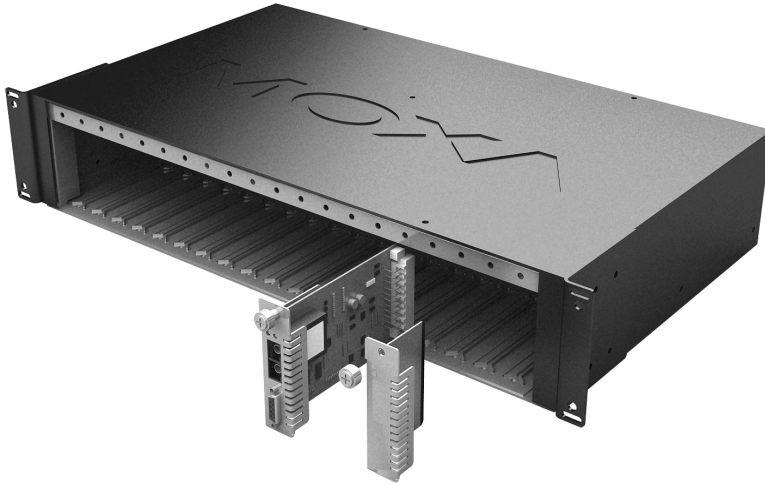
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The following topics are covered in this chapter:

- ❑ **Installing or Removing Chassis Face Plate**
- ❑ **Installing the Media Converter Slide-in Modules**
- ❑ **Replacing the Media Converter Slide-in Modules**

## Installing or Removing Chassis Face Plate

Install a chassis face plate over any unused slot by aligning the hole in the face plate with a threaded hole in the chassis. Secure the face plate with the enclosed screw.



### ATTENTION

Each slot in the TRC-190-series chassis without a slide-in module installed **MUST** have a chassis face plate covering the empty slot for Class A compliance.

Remove the front plate by loosening the screw before installing any slide-in module. We suggest storing the removed face plates together in case you need to use them again.



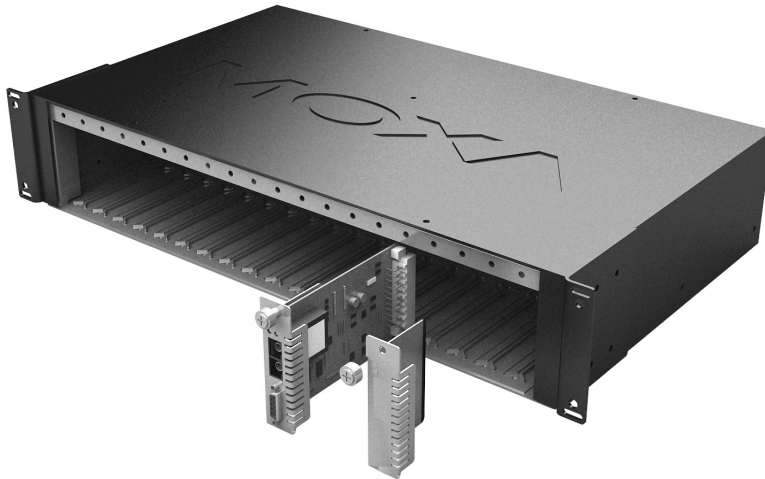
# Installing the Media Converter Slide-in Modules



## ATTENTION

Wear a grounding device and observe electrostatic discharge precautions when installing or replacing the media converter slide-in modules into the chassis. Failure to observe this caution could result in damage to, and subsequent failure of, the media converter slide-in modules.

Instructions to install the media converter slide-in module into the TRC-190 chassis are as follows:



1. Slide-in modules can be installed in any empty slot of the chassis in any order.
2. The media converter slide-in module can be hot-swapped, which means the chassis doesn't have to power off during installation or when removing the module.
3. Before installing the slide-in module, make sure the front plate has been removed. Please refer to the previous **Installing or Removing Chassis Face Plate** section.
4. Align the slide-in module with the chassis installation slot so that the panel fastener screw is at the top of the module.
5. Carefully slide the slide-in module into the slot while aligning the module's circuit board with the installation guide.
6. Ensure the slide-in module is firmly seated inside the chassis.
7. Push in and rotate the attached panel fastener screw clockwise to secure the module to the chassis.
8. Repeat step 3 to 7 for any additional media converter slide-in module.

## Replacing the Media Converter Slide-in Modules

To replace a media converter slide-in module in the TRC-190 chassis:

1. The media converter slide-in module can be hot-swapped, which means the chassis doesn't have to power off during the installation or when removing the module.
2. Remove the slide-in module to be replaced by loosening the panel fastener screw that secures the module to the chassis. Slide the module out from the chassis.
3. Align the replacement slide-in module with the chassis installation slot so that the panel fastener screw is at the top of the module.
4. Carefully slide the slide-in module into the slot while aligning the module's circuit board with the installation guide.
5. Ensure the slide-in module is firmly seated inside the chassis.
6. Push in and rotate the attached panel fastener screw clockwise to secure the module to the chassis.

## Powering the TRC-190

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The TRC-190-AC chassis is equipped with an AC power supply in the back of the chassis. When the power supply module is correctly installed in the back of the chassis, powering on the power supply module will power on the whole TRC-190-AC.

The following topics are covered in this chapter:

❑ **AC Power Supply Modules**

- Optional Redundant Power Supply Module
- Powering the AC Power Supply Module

❑ **DC Power Supply Modules**

- Optional Power Supply Modules
- Powering the DC power supply module

❑ **Power Supply Module Installation**

❑ **Power Supply Module Replacement**

❑ **Power Supply Fuse Replacement**

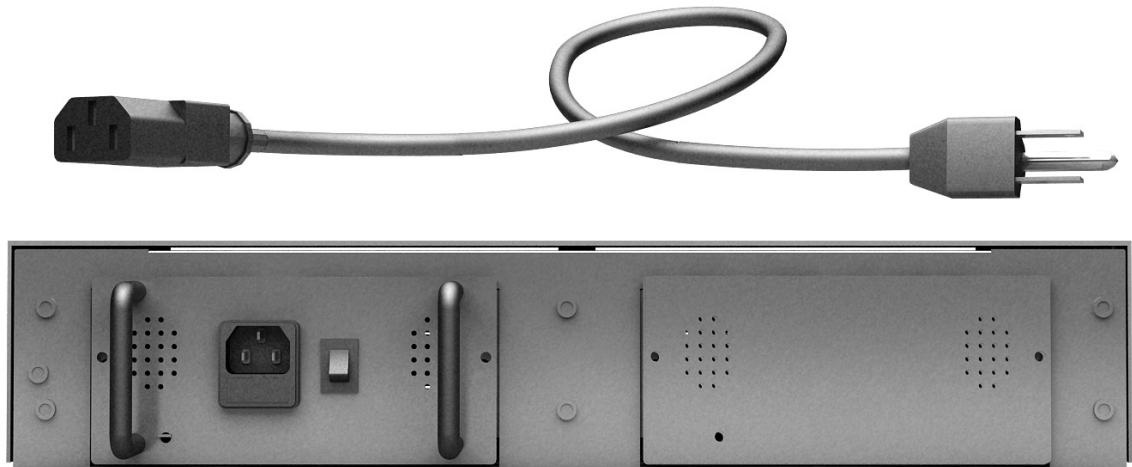
**(TRC-190-AC, power supply module only)**

- Replacing the Fuse

## AC Power Supply Modules

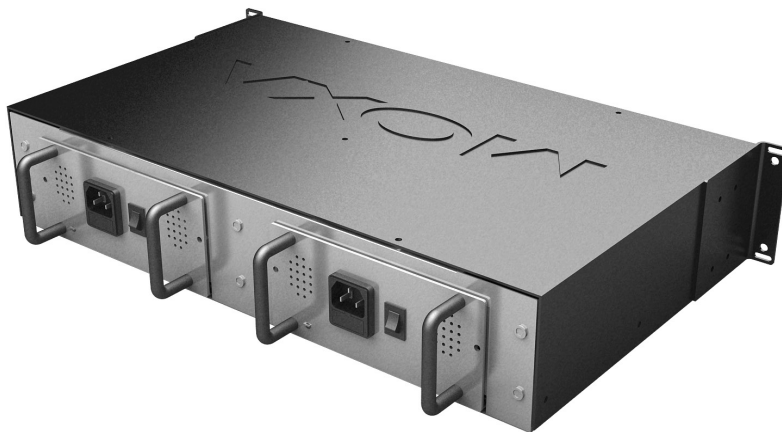
The AC power supply module includes:

- An AC power module that supports 110 to 220 VAC input and supplies power to the chassis and installed media converter slide-in modules.
- An AC power connector with a fuse holder.
- A power cord.
- An ON/OFF switch, which allows the module to supply power to the chassis and slide-in modules when set to "I".
- A power LED indicator.
- An additional fuse installed in a fuse holder on the PCB of the module.



## Optional Redundant Power Supply Module

An extra space is available at the right side of the back of the chassis to install an optional power module, the PWR-190-AC or PWR-190-DC-48. The specification is the same as the one that comes with the PWR-190-AC or PWR-190-DC-48 chassis.



## Powering the AC Power Supply Module



### ATTENTION

Ensure that the ON/OFF switch is set to "O" before connecting to the external power source. Failure to observe this caution could result in damage to, and subsequent failure of, the AC power supply module and human life.

To power on the power supply modules:

1. Set the ON/OFF switch to "O".
2. Connect the female end of the power cord to the AC power connector on the power supply module.
3. Plug the male end on the power cord into the correct voltage AC rack or wall socket.
4. Set the ON/OFF switch to "I".
5. Check whether or not the power LED is illuminated to see if the power supply module is working.

## DC Power Supply Modules

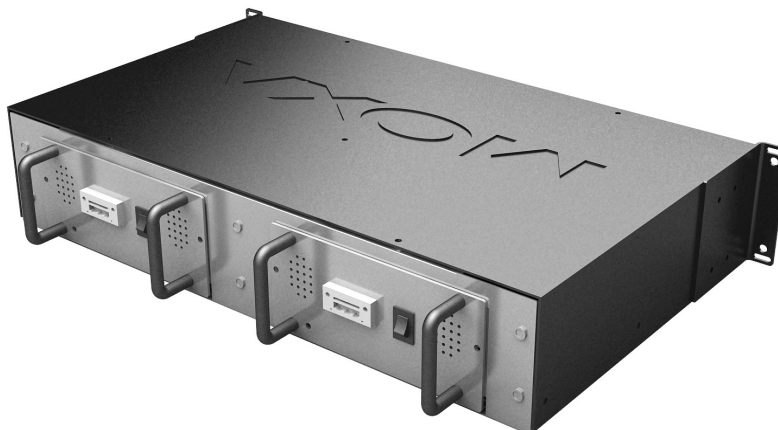
The TRC-190-DC-xx is equipped with a DC power supply in the back of the chassis. When the power supply module is correctly installed in the back of the chassis, powering on the power supply module will power on the whole TRC-190-AC.

The DC power supply module includes:

- A DC power module that supports 36 to 70 VDC input and supplies power to the chassis and installed media converter slide-in modules.
- A DC power connector.
- An ON/OFF switch, which allows the module to supply power to the chassis and slide-in modules when set to "I".
- A power LED indicator.

## Optional Power Supply Modules

An extra space is available at the right side of the back of the chassis to install an optional power module, the PWR-190-AC or PWR-190-DC-48. The specification is the same as the one that comes with the PWR-190-AC or PWR-190-DC-48 chassis.



## Powering the DC power supply module



### ATTENTION

- Before connecting to the external power source, ensure that the ON/OFF switch is set to "O". Failure to observe this caution could result in damage to, and subsequent failure of, the DC power supply module and human life.
- This product is intended to be used in a restricted access location. Proper grounding (earth ground) is required to ensure safe operation. A grounding terminal is provided for proper grounding of the device as per customer installation requirements and local electrical codes. Before installation, use a voltmeter/ohmmeter to check the wiring.

To power on the power supply modules:

1. Set the ON/OFF switch to "O".
2. Be sure that the external power source is **NOT** powered.
3. Connect the power cord and the shielding ground to the male terminal block.
4. Link the male and female terminal blocks.
5. Tighten the screws (clockwise) to secure the male and female terminals.
6. Power up the external power source.
7. Set the ON/OFF switch to "I".
8. Check whether or not the power LED is illuminated to see if the power supply module is working.

## Power Supply Module Installation



### ATTENTION

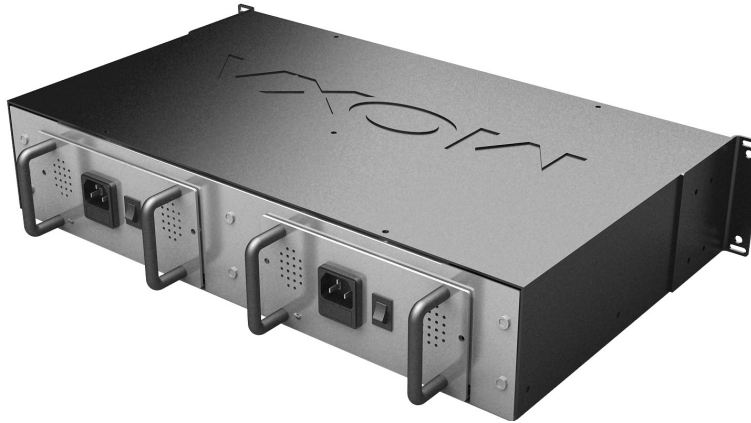
Do not connect the power supply module to the external power source before installing it into the chassis. Failure to observe this may cause equipment damage, personal injury or even death.

1. Install the AC power supply module and DC power supply module the same way. The default power supply module will be at power module Slot A. We can install an additional power supply module in Slot B. You can install the power supply module or remove it from Slot A or Slot B in the same manner.
2. When installing a power supply module to Slot A or Slot B, be sure that there is no plate installed in the specific slot. If there is, remove the plate first. To remove the plate, remove the two screws that secure the plate to the chassis.





3. Where there is no plate on the chassis, slide the power supply module slowly and follow the installation guide in the chassis. Push the power supply module into the chassis till the end and ensure that the power supply module is firmly connected to the chassis.



4. Screw the power supply module clockwise and fix the power supply module.
5. Connect the power supply module to the external power source.

## Power Supply Module Replacement

Replace the AC power supply module or DC power supply module by the same way. Do not remove the power supply module from chassis when the power source is connected and the external power switch is set to "O." When the chassis is equipped with two power supply modules, any one of them can be hot swapped without making the other one stop working.

1. Set the power supply module power switch to "O."
2. Disconnect the power supply module from the external power source.
3. Loose the two screws on the power supply module.
4. Slide the power supply module smoothly.
5. Install another new power supply module following the instructions in the previous section.

# Power Supply Fuse Replacement (TRC-190-AC, power supply module only)

To replace a fuse on the power supply module does not require to pull the power supply module out of the chassis.

## Replacing the Fuse



### ATTENTION

Wear a grounding device and observe electrostatic discharge precautions when replacing the fuse in the power supply module. Failure to observe this caution could result in damage to, and subsequent failure of, the power supply module.

Follow the instructions below when you need to change the fuse:

1. Set the power switch on the power supply module to "O."
2. Disconnect the power supply module from the external power source.
3. Remove the fuse from the holder carefully.
4. Install a same-sized fuse with the same current rating in the fuse holder.

### NOTE

Failure to use a fuse of the same size and same rating may damage your power module or even the entire equipment setup.

5. Connect the power supply module to the external power source.



### ATTENTION

Do not connect the power supply module to the external power source before installing it into the chassis. Failure to observe this may cause the equipment damage, personal injury, or even death.



## TRC-190 Rackmounting

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The following topics are covered in this chapter:

- **Installing the TRC-190 Chassis**
- **Grounding**

# Installing the TRC-190 Chassis

The TRC-190 series can be installed in a standard 19-inch rack.

**NOTE** Rackmounted equipment must be reliably grounded. Power supply connections other than direct connections to the branch circuit (e.g., use of power strips) should be employed.

The TRC-190 series chassis is designed so that the installation brackets can be installed to align the chassis either flush against the front of the rack or recessed from the front of the rack.



## ATTENTION

Select mounting bracket locations on the chassis that will keep the chassis balanced when mounted to the rack. Failure to observe this warning could allow the chassis to fall, resulting in equipment damage and/or possible injury to personnel.

To install the TRC-190 chassis into a standard 19-inch rack:

1. Determine the preferred alignment of the chassis in the rack.

**NOTE** Installation bracket mounting screws are provided. Rackmount screws and clip nuts are **NOT** provided.

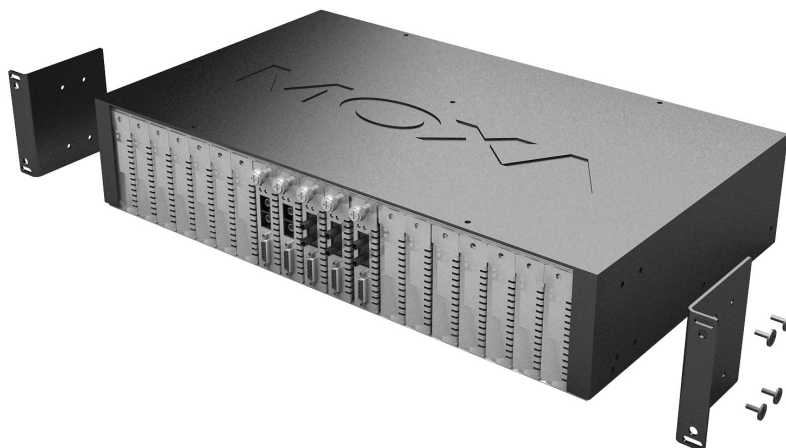
2. Locate four (4) installation bracket mounting screws (provided) for each chassis to be installed.



## ATTENTION

Mount the chassis evenly and securely onto the rack. Failure to observe this warning could allow the chassis to fall, resulting in equipment damage and/or possible injury to personnel.

3. Align the mounting bracket in the selected position against the side of the chassis so that the chassis installation holes are visible through the bracket installation holes.
4. Using a Phillips (crosshead) screwdriver, install the four (4) screws through the mounting bracket into the installation holes on the side of the chassis.
5. Repeat step 3 and step 4 for the second mounting bracket.



6. Carefully align the chassis at a secure and level position between the 19-inch site rackmounting rails.
7. Install two (2) screws through the bracket at each side into the mounting rail, using the clip nuts to secure, if necessary.



## Grounding

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. Attach the grounding wire (12 AWG copper wire gauge or larger) to the chassis grounding lug carefully.

# 5

## Troubleshooting

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The following topics are covered in this chapter:

- **General Troubleshooting**

## General Troubleshooting

| Condition   | Try this  |
|---|---|
| 1. The LED indicator on power supply module is not illuminated.   | <ul style="list-style-type: none"> <li>• Check if the power cord is correctly connected to the power source.</li> <li>• Check if the power source is supplying power.</li> <li>• Check if the fuse in the fuse holder is not damaged.</li> <li>• Check if the power switch on the panel is set to "I"</li> <li>• If none of the above, please contact your local distributor/reseller or our technical support staff. Or, write to <a href="mailto:info@moxa.com">info@moxa.com</a>.</li> </ul>   |
| 2. The power LED indicator on the slide-in module is not illuminated.                                   | <ul style="list-style-type: none"> <li>• Check if the LED indicator on the power supply module is illuminated. If no, follow the steps for Condition 1.</li> <li>• Check if the power supply module is really connected to the panel.</li> <li>• Check if the slide-in module is correctly attached to the chassis.</li> <li>• If none of the above, please contact our local distributor/reseller or our technical support staff. Or, write to <a href="mailto:info@moxa.com">info@moxa.com</a>.</li> </ul>  |
| 3. The power LED indicator on the front panel is illuminated, but the data transmission is not working. | <ul style="list-style-type: none"> <li>• Check if the cables are correctly attached to the slide-in module.</li> <li>• Check the pin-assignment of the serial cable</li> <li>• Check if the OP Mode switch on the front panel is correctly set for your operation.</li> <li>• Check if the fiber patch cord is not damaged.</li> <li>• Check if the length of the fiber cable is under our claimed distance.</li> <li>• If none of above, please contact our local distributor/reseller or our technical support staff. Or, write to <a href="mailto:info@moxa.com">info@moxa.com</a>.</li> </ul> |