

ioThinX 4530 Series Quick Installation Guide

Version 1.6, March 2024

Technical Support Contact Information
www.moxa.com/support

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P/N: 1802045300007



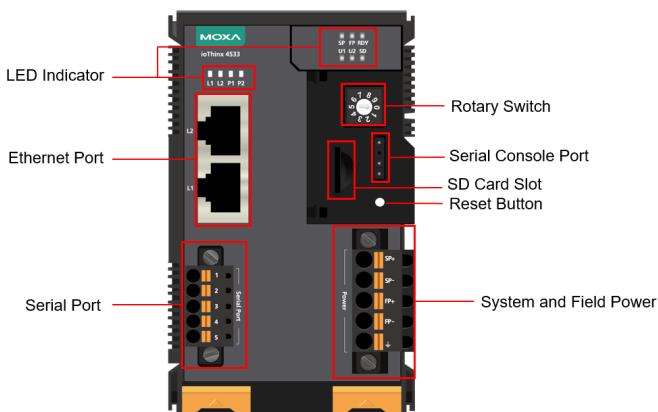
Introduction

The ioThinX 4530 Series advanced modular controllers with built-in serial port come with a unique hardware and software design, making them ideal for a variety of industrial data-acquisition applications.

Package Checklist

- 1 x ioThinX 4530 Series product
- 1 x console cable
- 2 x side cover plate
- 1 x quick installation guide (printed)

Appearance (ioThinX 4530)



Installation

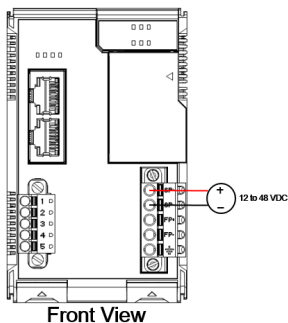
Connecting the System Power

Wire Range:

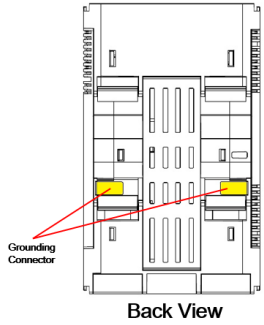
12 to 16 AWG (ferrule diameter: 2.053 mm to 1.291 mm)

Wire Strip Length: 10 mm

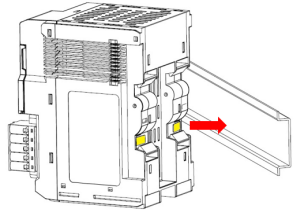
Connect your 12 to 48 VDC power source to the SP+ and SP- terminals on the ioThinX 4530 Series' terminal block.



The system grounding connectors are on the back of the unit, as shown in the diagram.



The grounding connectors will contact the DIN rail when the product is attached to it.



WARNING

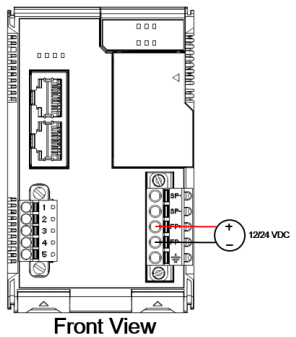
- Cables rated at minimum 120°C must be used for the power supply terminal.
- Terminal blocks should not have more than one conductor connected per clamping point.

Connecting the Field Power

Wire Range: 12 to 18 AWG (ferrule diameter: 2.053 to 1.024 mm)

Wire Strip Length: 10 mm

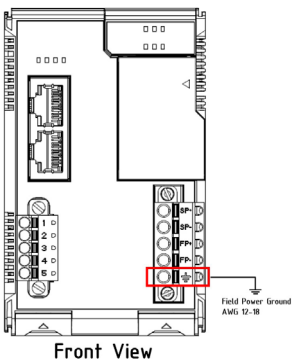
The ioThinX 4530 Series can receive field power through a 12/24 VDC power input. Field power can supply power for some types of I/O modules, such as digital input and analog output modules.



Connecting the Field Power Ground

The UC-8100 has a field power ground and two ground pins on the back of the device.

For surge protection, connect the Field Ground pin (\equiv) to your field power ground and connect the DIN rail to the earth ground.



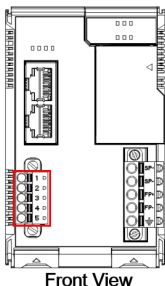
Connecting to the Network

Ethernet Communication

The ioThinx 4530 Series is equipped with two RJ45 LAN ports with two MAC addresses. Connect a network Ethernet cable to either port to provide an Ethernet connection to the unit.

Serial Communication

The ioThinx 4530 Series is equipped with a 3-in-1 serial interface that supports either 1 RS-232 port, 1 RS-422 port, or 2 RS-485 ports. Refer to the pin assignment table below for details.



PIN	RS-232 (P1)	RS-422 (P1)	RS-485 (P1/P2)
1	TXD	TXD+	DATA 1+
2	RXD	TXD-	DATA 1-
3	RTS	RXD+	DATA 2+
4	CTS	RXD-	DATA 2-
5	GND	GND	GND

Wire Range: 16 to 28 AWG (ferrule diameter: 1.291 to 0.321 mm)

Wire Strip Length: 10 mm

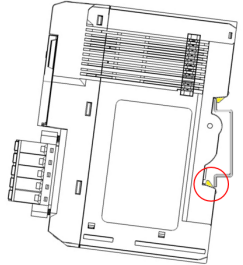
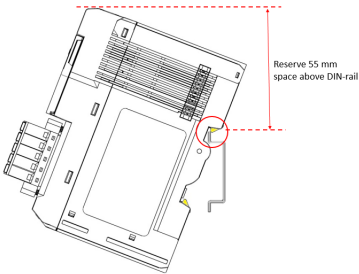
45MR/ML Module Wiring

For more detailed information about 45MR/ML module wiring, additional ioThinx 4530 Series documentation can be downloaded from the Moxa website.

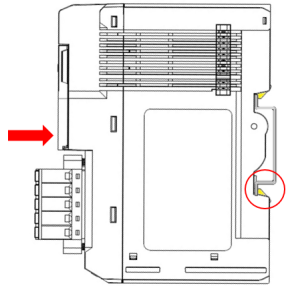
Installing the System on a DIN Rail

Reserve at least 55 mm of space above the DIN rail to ensure that there is enough room to install the unit.

Step 1: Hook the top mounting clip of the unit onto the DIN rail and then rotate the unit downwards until the bottom mounting clip comes in contact with the DIN rail.

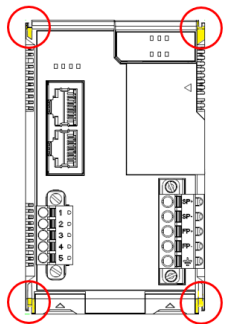


Step 2: Push the unit towards the DIN rail until the mounting clip snaps into place.



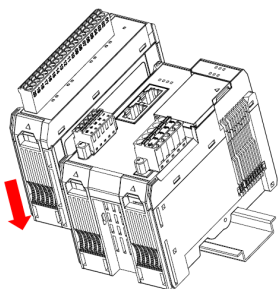
Installing a 45MR/ML Module on a DIN Rail

Step 1: There are rails on both sides of the ioThinX 4530 Series head/CPU module. Align 45MR modules on the right side, and 45ML modules on the left side, making sure that the upper and lower rails are hooked together.

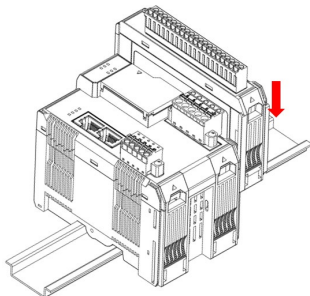


Step 2: Push the 45MR/ML module until it touches the DIN rail. Next, apply more force until the module clips to the DIN rail.

45ML Modules



45MR Modules



NOTE After the module is firmly attached to the DIN rail, the connections between the module and the internal bus will be established.

NOTE The maximum number that can be installed on the ioThinX 4530 for 45ML module is 5 pcs; for 45MR, it is 64 pcs. For information on the use of the 45MR module with ioThinX 4530, please refer to <https://iothinxcaculator.moxa.com/>. If the website is invalid, contact Moxa to confirm product installation.

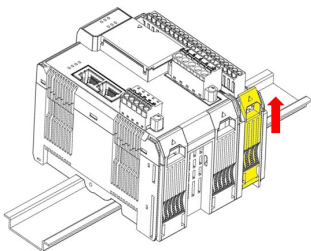
Removing a 45MR/ML Module from a DIN Rail



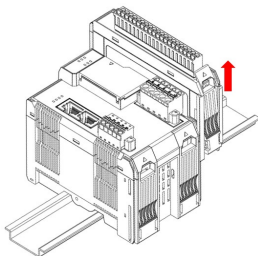
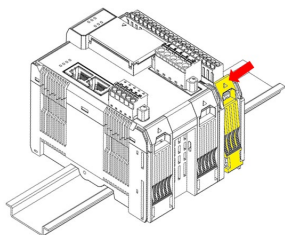
WARNING

Be sure the power is off before removing modules to avoid damaging the equipment.

Step 1: Use your finger to lift the release tab on the lower part of the module.



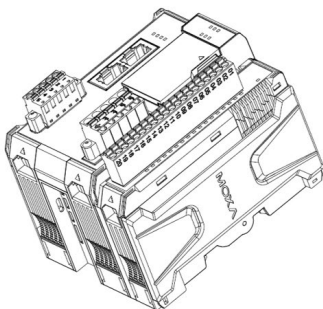
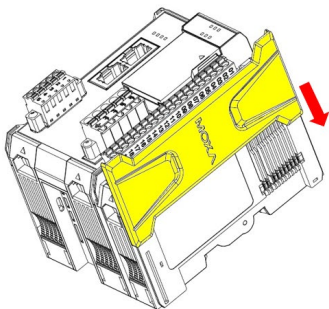
Step 2: Push the top of the release tab to latch it, and then pull the module out.



NOTE Electrical connections for the internal bus will be disconnected when the 45MR/ML module is removed.

Installing Covers on the First and Last Modules

Attach the covers to the first and last module to protect the modules' contacts.



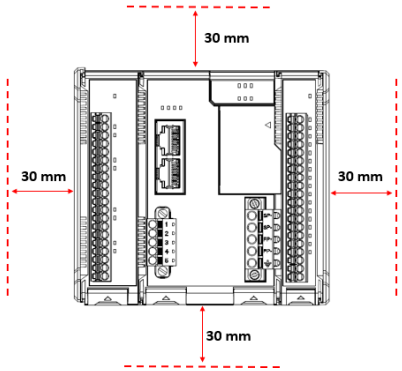
CAUTION

Be sure to attach the covers to provide protection against electrostatic discharge.

Horizontal Installation

Before installing the device, make sure there is enough space between the device and nearby items (walls, other devices, etc.) to ensure proper heat dissipation.

To ensure that the device works properly, we suggest reserving at least 30 mm of space on each of the four sides, as shown in the figure.



CAUTION

Do not install the device vertically. If the device is installed vertically, the fanless heat dissipation design will not perform as intended.

LED Indicators

Label	Usage	Qty	Color	Action
SP	System Power	1	Green	On: Power on Off: Power off
FP	Field Power	1	Green	On: Power on Off: Power off
RDY	System (kernel)	1	Green/Red	Green: System ready Green (blinking): System is booting up or setting up the factory default values
U1/U2	User defined	1 of each	Green/Red	User-defined
SD	microSD card	1	Green	Green: Micro SD card inserted and working normally Off: Micro SD card is not detected
L1/L2	Ethernet	1 of each	Green/Amber	Green: 100Mb Amber: 10Mb Blinking: Data is being transmitted Off: Inactive
P1/P2	Serial	1 of each	Green/Amber	Green: Tx Amber: Rx Blinking: Data is being transmitted Off: Inactive

Connecting to the ioThinx 4530 Series Controller

Accessing the ioThinx 4530 Series Using a PC

You can use a PC to access the ioThinx 4530 Series by one of the following methods:

1. Through the serial console port by the console cable with the following settings:

Baudrate=115200 bps, **Parity**=None, **Data bits**=8, **Stop bits**=1, **Flow Control**=None, **Terminal type**=VT100.

2. Using SSH over the network.

Refer to the following IP addresses and login information:

Port	Default IP	Subnet Mask
LAN1	192.168.3.127	255.255.255.0
LAN2	192.168.4.127	255.255.255.0

Username: moxa

Password: moxa

Loading the Factory Default Settings

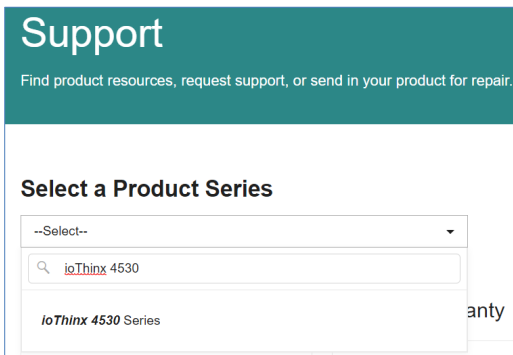
Press and hold the reset button between 7 to 9 seconds to reset the computer to the factory default settings. When the reset button is held down, the RDY LED will blink GREEN once every second and become steady after 7 to 9 seconds. Release the button within this period to load the factory default settings.

Downloading Software

All related software packages can be downloaded from the Moxa website.

Step 1: Go to <https://www.moxa.com/en/support>

Step 2: Select a product list from the drop-down box or type the model name in the search box.



Step 3: Go to the Software & Documentation page to download the latest software for the product.

Software & Documentation Product FAQs Security Advisories

Related Software, Firmware, and Drivers

FILTER Operating System All Firmware(11) Library(5) **Software Package(21)** Utility(3)

Specifications

Input Current	System Power: 1.94 A (Max.) Field Power: 2 A (Max.)
Input Voltage	System Power: 12 to 48 VDC Field Power: 12/24 VDC
Operating Temperature	Standard Models: -20 to 60°C (-4 to 140°F) Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)

Hazardous Locations Information



II 3G Ex ec IIC T4 Gc
UL 20 ATEX 2412X

Standards Covered:

EN IEC 60079-0:2018

EN IEC 60079-7:2015 + A1:2018

EN IEC 60079-15:2019

Conductors suitable for Rated Cable Temperature $\geq 120^{\circ}\text{C}$

Ambient Range:

$-40^{\circ}\text{C} \leq T_{\text{amb}} \leq 75^{\circ}\text{C}$ (-T models)

$-20^{\circ}\text{C} \leq T_{\text{amb}} \leq 60^{\circ}\text{C}$ (standard models)

WARNING – DO NOT SEPARATE WHEN ENERGIZED

Rated Cable Temp $\geq 120^{\circ}\text{C}$

Address of the Manufacturer:

Moxa Inc.

No. 1111, Heping Rd., Bade Dist., Taoyuan City 334004, Taiwan



ATTENTION

These devices are open-type devices that are to be installed in an enclosure only accessible with the use of a tool, suitable for the environment.

This equipment is suitable for use in Class I, Division 2, Groups A, B, C, and D or non-hazardous locations only.



WARNING—EXPLOSION HAZARD

Do not disconnect equipment unless power has been removed, or the area is known to be non-hazardous.

Substitution of any components may impair suitability for Class I, Division 2.



WARNING

The Debug port and Console port are FOR MAINTENANCE ONLY; NOT FOR USE IN HAZARDOUS LOCATIONS

Conditions for Safe Use

1. This device is only for indoor use in environments with pollution degree 2, as defined in EN IEC 60664-1.
2. The equipment shall be installed in an enclosure that provides a minimum ingress protection of IP54, in accordance with EN IEC 60079-0.
3. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired. The manufacturer is not responsible for accidents caused by improper use of the equipment.