

ioThinx 4530 Series Quick Installation Guide

Version 1.5, September 2023

Technical Support Contact Information
www.moxa.com/support



© 2023 Moxa Inc. All rights reserved.

P/N: 1802045300006



Introduction

The ioThinX 4530 Series is an advanced modular controller with unique hardware and software design, making it ideal for a variety of industrial data acquisition applications.



ATTENTION

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.



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.

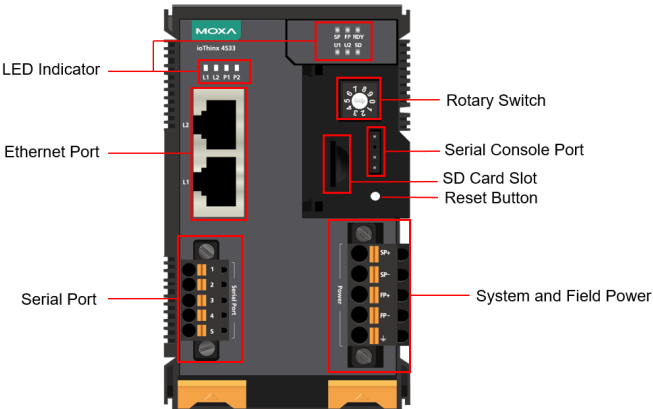
Substitution of any components may impair suitability for Class I, Division 2.



WARNING

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

Appearance (ioThinX 4533)



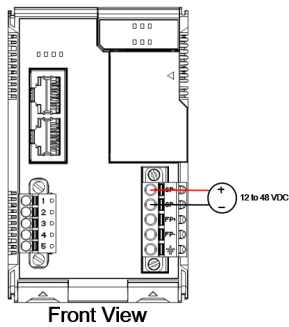
Package Checklist

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

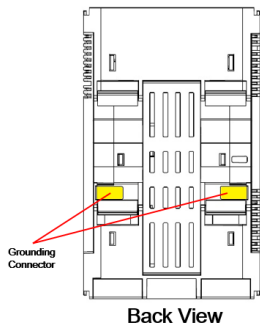
Installation

Connecting the System Power

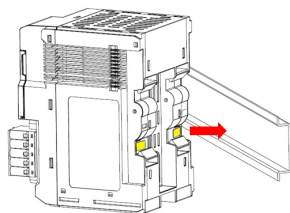
Connect your 12 to 48 VDC power source to the SP+ and SP- terminals on the ioThinx 4530 Series' terminal block.



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

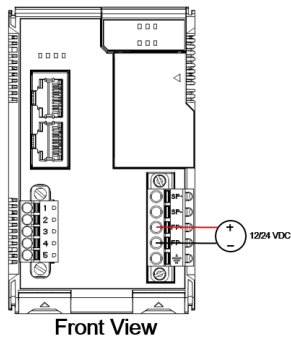


The grounding connectors will contact the DIN rail when the product is attached to it.



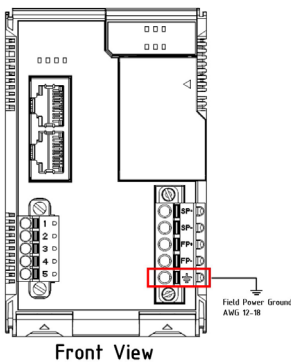
Connecting the Field Power

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

Connect the Field Ground pin (\equiv) to the field power ground.



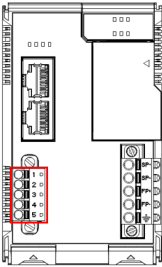
Connecting to the Network

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.



Front View

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

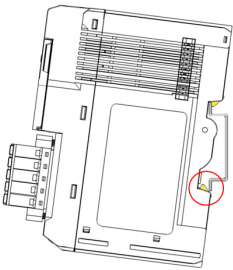
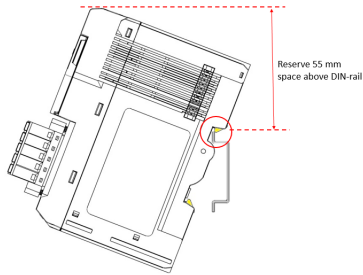
45MR/ML Module Wiring

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

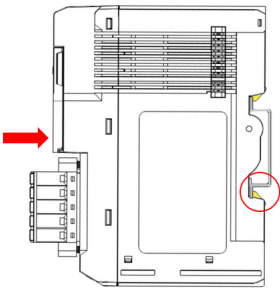
Installing the System on a DIN Rail

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.

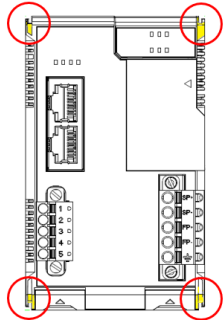


Step 2: Push the unit towards the DIN rail until the mounting clip snaps into place.



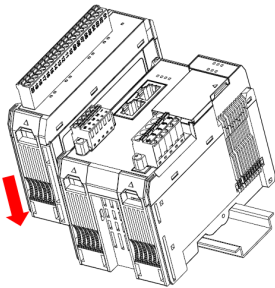
Installing a 45MR/ML Module on a DIN Rail

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.

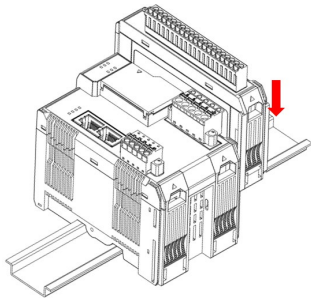


Step 2: Push the 45MR/ML module until it touches the DIN rail. Next, apply more force until the module clips to the DIN rail.

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 4533 for 45ML module is 5 pcs; for 45MR, it is 64 pcs. For information on the use of the 45MR module with ioThinX 4533, please refer to <https://iothinxcalsulator.moxa.com/>. If the website is invalid, contact Moxa to confirm product installation.

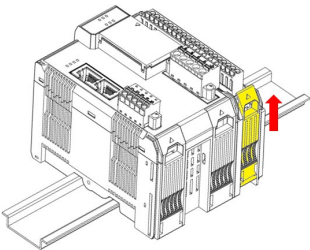
Removing a 45MR/ML Module from a DIN Rail



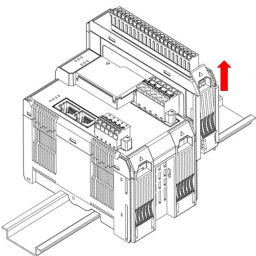
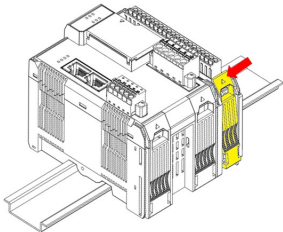
WARNING

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.



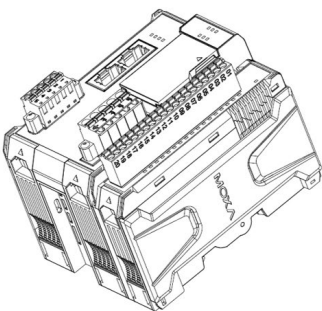
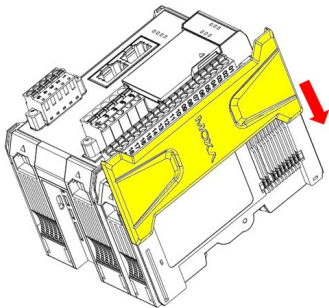
Step 2: Push the top of the release tab to latch it, and then pull the module out.



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.



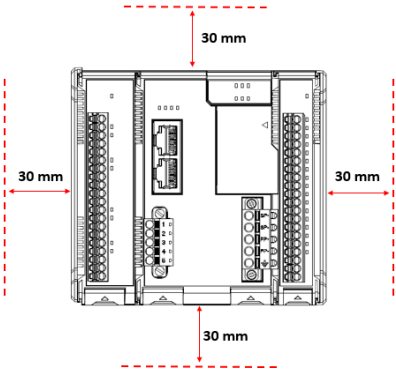
NOTICE

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 Factory Default
U1/U2	User defined	1 of each	Green/Red	User-defined
SD	microSD card	1	Green	Green: SD card is inserted OFF: SD card is being accessed
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 4533 Series Using a PC

You can use a PC to access the ioThinx 4533 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	DHCP	DHCP
LAN2	192.168.4.127	255.255.255.0

Username: moxa
Password: moxa

NOTE Please prioritize using LAN2 for connecting the ioThinx 4533. The LAN1 is assigned by DHCP server by default; the link-local IP addresses will be assigned when the DHCP server is not available.

Loading the Factory Default Settings

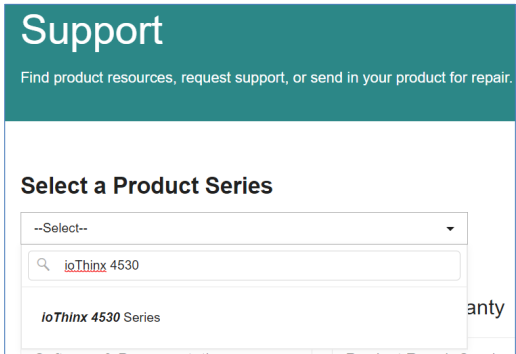
Press and hold the reset button between 7 to 9 seconds to reset the computer to the factory default settings. When the reset button is held down, the RDY LED will blink GREEN once every second and become steady after 7 to 9 seconds. Release the button within this period to load the factory default settings.

How to Download the Software

Related software packages can be downloaded from the Moxa website.

Step 1: Go to the following address:
<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)

Attention

1. This device is only for indoor use in environments with pollution degree 2.
2. This device has field power ground and two ground pins on the back of the device. For surge protection, connect the field power ground pin to your field power ground and connect the DIN rail to earth ground. See pages 3 and 4 for location and wiring information.
3. Cables rated for a minimum temperature of 120°C must be used for the power supply terminal.
4. We suggest using the following cable types for wiring:
ioThinX 4530 Series:
 - AWG 12 to 16 for power connections (Ferrule diameter: 2.053 mm to 1.291 mm), with 10 mm wire strip length.
 - AWG 16 to 28 for serial connections (Ferrule diameter: 1.291 mm to 0.321 mm), with 10 mm wire strip length.
 - AWG 12 to 18 for field power ground connections (Ferrule diameter 2.053 mm to 1.024 mm), with 10 mm wire strip length.
5. Terminal blocks do not accommodate more than one individual conductor on a clamping point.

ATEX Information



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

1. Standards covered:
EN IEC 60079-0:2018
EN IEC 60079-7:2015 + A1:2018
EN IEC 60079-15:2019
2. Conductors suitable for Rated Cable Temperature $\geq 120^{\circ}\text{C}$
3. Ambient Range : $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq 75^{\circ}\text{C}$ (with -T model)
Ambient Range : $-20^{\circ}\text{C} \leq T_{\text{amb}} \leq 60^{\circ}\text{C}$ (without -T model)
WARNING – DO NOT SEPARATE WHEN ENERGIZED
Rated Cable Temp $\geq 120^{\circ}\text{C}$

Conditions for Safe Use

1. The equipment shall only be used in an area of at least 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.

Moxa Inc.

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