

MOXA 4510 Series Advanced Controllers Installation Guide

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Introduction

The ioThinX 4510 is an advanced modular remote I/O device with a unique hardware and software design that makes it ideal for a variety of industrial data acquisition applications.

Package Checklist

- 1 x ioThinX 4510 Series product
- 1 x quick installation guide (printed)
- 2 x side cover plate

Appearance

Installation

Connecting the System Power

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

Wire Strip Length: 10 mm

Connect your 12 to 48 VDC power source to the terminal block SP+ and SP- terminals on the ioThinx 4510. The ground connector of the system is on the back of the unit, which will connect to 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 Field Power

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

Wire Strip Length: 10 mm

The ioThinx 4510 can receive field power through a 12/24 VDC power input. Field power can be used to supply power for some I/O modules, such as digital input and analog output modules.

Connecting the Field Power Ground

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

Wire Strip Length: 10 mm

The ioThinx 4510 has a field power ground and two ground pins on the back of the device.

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

Connecting To The Network

Ethernet Communication

The ioThinx 4510 is equipped with dual unmanaged LAN ports (RJ45).

Connect a network Ethernet cable to either port to provide an Ethernet connection to the unit.

Serial Communication

The ioThinx 4510 is equipped with a 3-in-1 serial interface, which supports 1 RS-232 port, or 1 RS-422 port, or 2 RS-485 ports. Refer to the pin assignment table below to set up serial connections to the unit.

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

Wire Strip Length: 10 mm

45M Module Wiring

For detailed 45M module wiring, refer to the ioThinx 4510 User's Manual on Moxa's official website.

Installing the System on a DIN Rail

Step 1: Hook the mounting clip of the unit onto the DIN rail and lower the clip onto the DIN rail. Reserve at least 5.5 cm of space above the DIN rail to ensure that there is enough room to install the unit.

Step 2: Push the unit toward the DIN rail until the mounting clip snaps in place.

Installing a 45M Module on a DIN Rail

Step 1: Align the 45M module side by side with the head/CPU module, making sure that the upper and lower rails are hooked together.

Step 2: Align the 45M module side by side with the head/CPU module and then push the 45M module until it touches the DIN rail. Next, apply more force until the module clips on to the DIN rail.

NOTE

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

NOTE

The maximum number installing on the ioThinx 4510 for 45MR modules is 32 pcs and that does not support 45ML modules.

For information on the use of the 45MR module with ioThinx 4533, please refer to this website (<https://iothinxcalsulator.moxa.com/>). If the website is invalid, be sure to contact MOXA to confirm product installation.

Removing a 45M Module from a DIN Rail

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 removing the 45M module.

WARNING

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

Installing the Covers on the First and Last Module

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

NOTICE

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

Horizontal Installation

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

To ensure that the device works properly, we suggest reserving the amount of space indicated in the adjacent 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

Name	Indication	LED Qty	Description
SP	System Power	1	On: Power on Off: Power off
FP	Field Power	1	On: Power on Off: Power off
RDY	System (Kernel) Ready	1	Green: System ready Green Slow Blinking: Booting up Red: System error Red Slow Blinking: Loading Factory Default Recovery/Upgrading firmware/Backup mode Red Fast Blinking: Safe mode Off: Power off
LAN	Ethernet Connection	1 for each port	Green: 100Mb connection Amber: 10Mb connection Blinking: Data transmitting Off: Disconnected
Px	Serial Connection	1 for each port	Green: Tx Amber: Rx Non-simultaneous Blinking: Data transmitting Off: Disconnected

System Configuration

1. Configuration via Web Console

Main configuration of the unit is done through the web console.

- Default IP Address: 192.168.127.254
- Subnet Mask: 255.255.255.0

NOTE Be sure to configure the host PC's IP address to use the same subnet as the unit. For example, 192.168.127.253

2. IOxpress Utility

IOxpress is a utility that helps users with mass deployment of, searching for, and locating units on the local network. This utility can be downloaded from Moxa's website.

3. Loading the Factory Default Settings

There are three ways to restore the unit to the factory default settings:

- Hold the Reset button inside the front door of the unit for 10 seconds while it is powered on.
- Select the unit from the IOxpress utility's Device Library page, and then choose Load Factory Default.
- Go to the System tab on the unit's web console and choose Load Factory Default in the Configuration section.

NOTE Please refer to the user's manual for information on detailed configuration and settings.

Downloading Software Packages

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: Type the model name in the search box or select a product from the drop-down box and then click Search. The ioThinX 4500 Series is used for the examples below.

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

Specifications

Input Current	System Power: 0.8 A @ 12 VDC Field Power: 2 A (max.)
Input Voltage	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

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)

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 nonhazardous locations only.

WARNING—EXPLOSION HAZARD

Do not disconnect the equipment unless the power has been removed or the area is known to be nonhazardous. 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.

Documents / Resources

	<p>MOXA 4510 Series Advanced Controllers [pdf] Installation Guide</p> <p>4510 Series Advanced Controllers, 4510 Series, Advanced Controllers, Controllers</p>
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References

- [M Moxa - Support](#)
- [M ioThinX 4500 Series Power Calculator | Moxa](#)
- [M Moxa - Support](#)
- [User Manual](#)

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