ioThinx 4530 Series

Advanced modular controllers with built-in serial port

Features and Benefits

- -40 to 75°C wide operating temperature model available
- Supports TPM v2.0 (optional)
- Supports secure boot function
- Easy tool-free installation and removal
- Built-in OPC UA server library
- Supports up to 64 45MR I/O and up to 5 45ML communication modules
- Includes Azure/AWS/Alibaba cloud Integration package
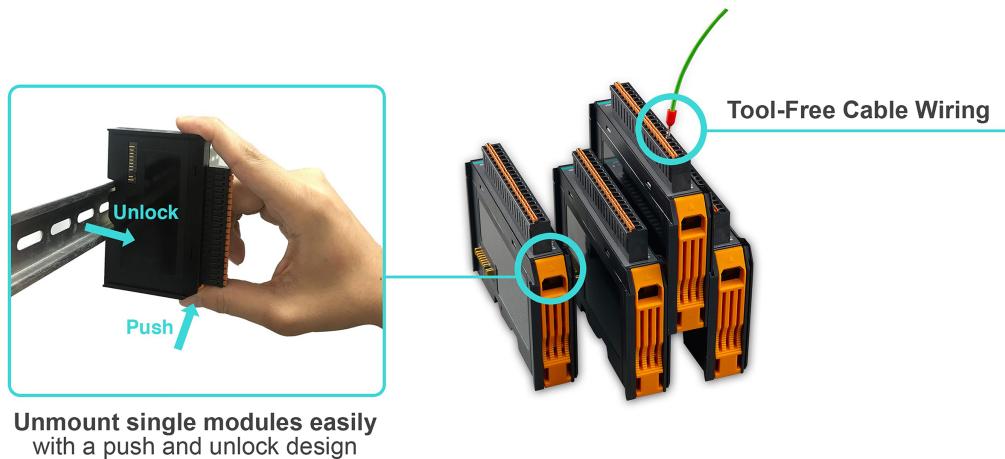
Certifications

CE FC

Introduction

The ioThinx 4530 Series is an advanced modular controller product with a unique hardware design, making it an ideal solution for a variety of industrial data-acquisition applications. The ioThinx 4530 Series has a unique mechanical design that reduces the amount of time required for installation and removal, simplifying deployment and maintenance. In addition, the ioThinx 4530 Series provides an Azure/AWS/Alibaba cloud-integration package so that users can easily save field data to different cloud accounts.
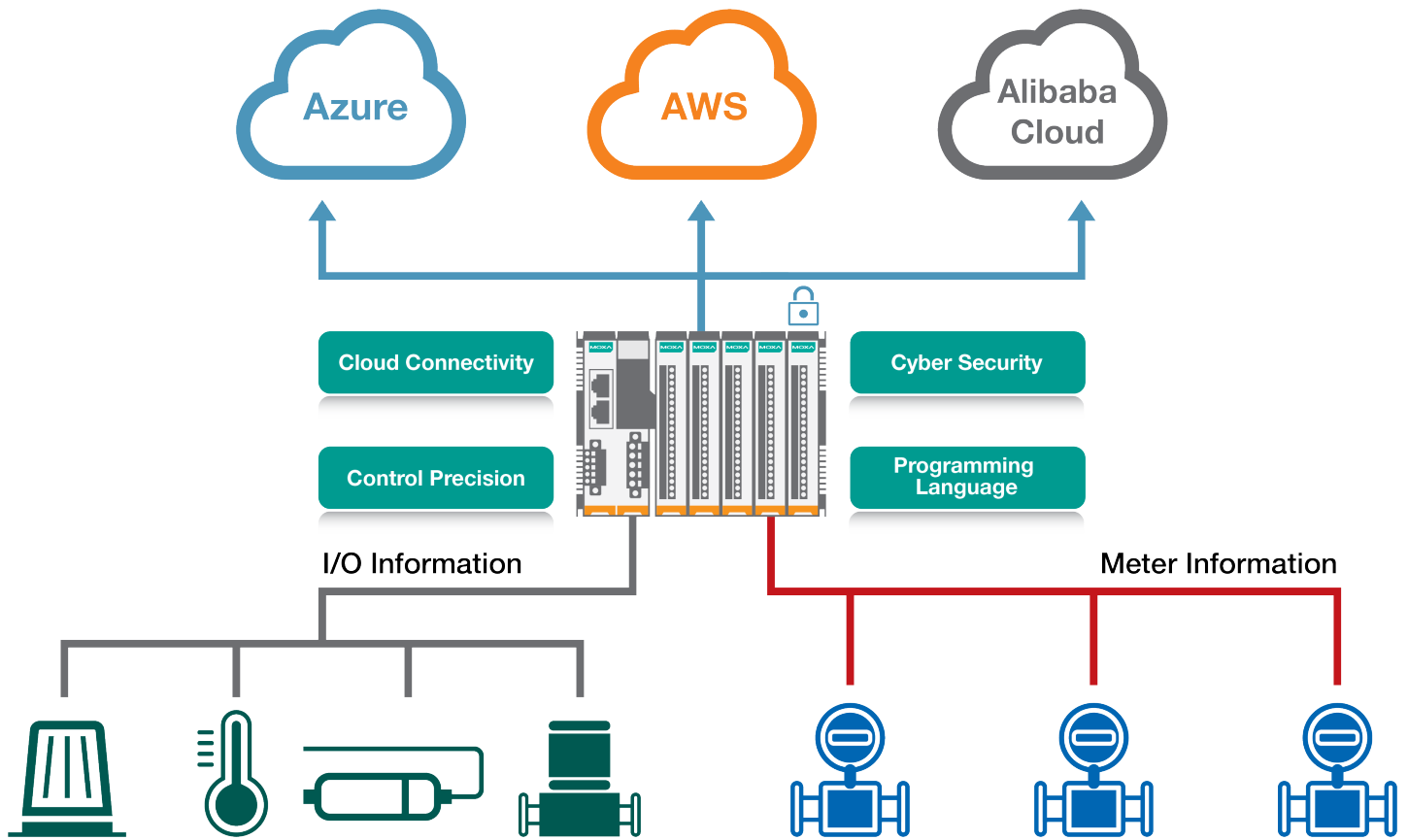
Easy Tool-free Installation and Removal

The ioThinx 4500 Series has a unique mechanical design that reduces the amount of time required for installation and removal. In fact, screwdrivers and other tools are not required for any part of the hardware installation, including mounting the device on a DIN-rail, as well as connecting the wiring for both communication and I/O signal acquisition. Furthermore, no tools are required to remove the ioThinx from a DIN-rail. Removing all of the modules from a DIN-rail is also easy using the latch and release tab.

Tool-Free Cable Wiring

Unlock

Push

Unmount single modules easily
with a push and unlock design

Azure/AWS/Alibaba Cloud Integration Package Provided

Saving field site data to the cloud to improve Overall Equipment Effectiveness (OEE) or implement predictive maintenance is an important aspect of IIoT or Industry 4.0 applications. To help users to connect to the cloud more easily, the ioThinx 4530 series provides a cloud integration package that includes a sample library and programming guide, saving engineers a lot of time on developing cloud connectivity applications.

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Specifications

Computer

CPU	NXP i.MX7D 1 GHz
OS	Linux kernel 4.4 (CIP, PREEMPT_RT), Debian 9
Clock	Real-time clock with capacitor backup
DRAM	512 MB DDR3
MRAM	128 kB
Storage Pre-installed	8 GB eMMC (6 GB reserved for the user)
Storage Slot	microSD Slots x 1 (up to 32 GB)
Expansion Slots	Up to 64 (with 45MR I/O modules) Up to 5 (with 45ML communication modules)

Control Logic

Language	C/C++, Python

Computer Interface

Buttons	Reset button

Input/Output Interface

Rotary Switch	0 to 9

Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	Auto negotiation speed
Magnetic Isolation Protection	1.5 kV (built-in)

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Security Functions

Authentication	Local database
Encryption	AES-256, SHA-256
Security Protocols	SSHv2

Serial Interface

Console Port	RS-232 (TxD, RxD, GND), 3-pin (115200, n, 8, 1)
No. of Ports	1 x RS-232/422 or 2 x RS-485-2w
Connector	Spring-type Euroblock terminal
Serial Standards	RS-232/422/485 (software selectable)
Baudrate	300, 600, 1200, 1800, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
Flow Control	RTS/CTS
Parity	None, Even, Odd
Stop Bits	1, 2
Data Bits	7, 8

Serial Signals

RS-232	TxD, RxD, RTS, CTS, GND
RS-422	Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w	Data+, Data-, GND

System Power Parameters

Power Connector	Spring-type Euroblock terminal
No. of Power Inputs	1
Input Voltage	12 to 48 VDC
Power Consumption	1940 mA @ 12 VDC
Over-Current Protection	3 A @ 25°C
Over-Voltage Protection	55 VDC
Output Current	1 A (max.)

Field Power Parameters

Power Connector	Spring-type Euroblock terminal
No. of Power Inputs	1
Input Voltage	12/24 VDC
Over-Current Protection	5 A @ 25°C
Over-Voltage Protection	33 VDC
Output Current	2 A (max.)

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Physical Characteristics

Wiring	Serial cable, 16 to 28 AWG Power cable, 12 to 26 AWG
Strip Length	Serial cable, 9 to 10 mm Power cable, 12 to 13 mm
Housing	Plastic
Dimensions	60.3 x 99 x 75 mm (2.37 x 3.9 x 2.96 in)
Weight	207.7 g (0.457 lb)
Installation	DIN-rail mounting

Standards and Certifications

EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1000 MHz: 3 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Standards	Telcordia SR332
Time	856,064 hrs

Environmental Limits

Operating Temperature	ioThinx 4533-LX: -20 to 60°C (-4 to 140°F) ioThinx 4533-LX-T: -40 to 75°C (-40 to 167°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Altitude	Up to 4000 m

Declaration

Green Product	RoHS, CRoHS, WEEE

Warranty

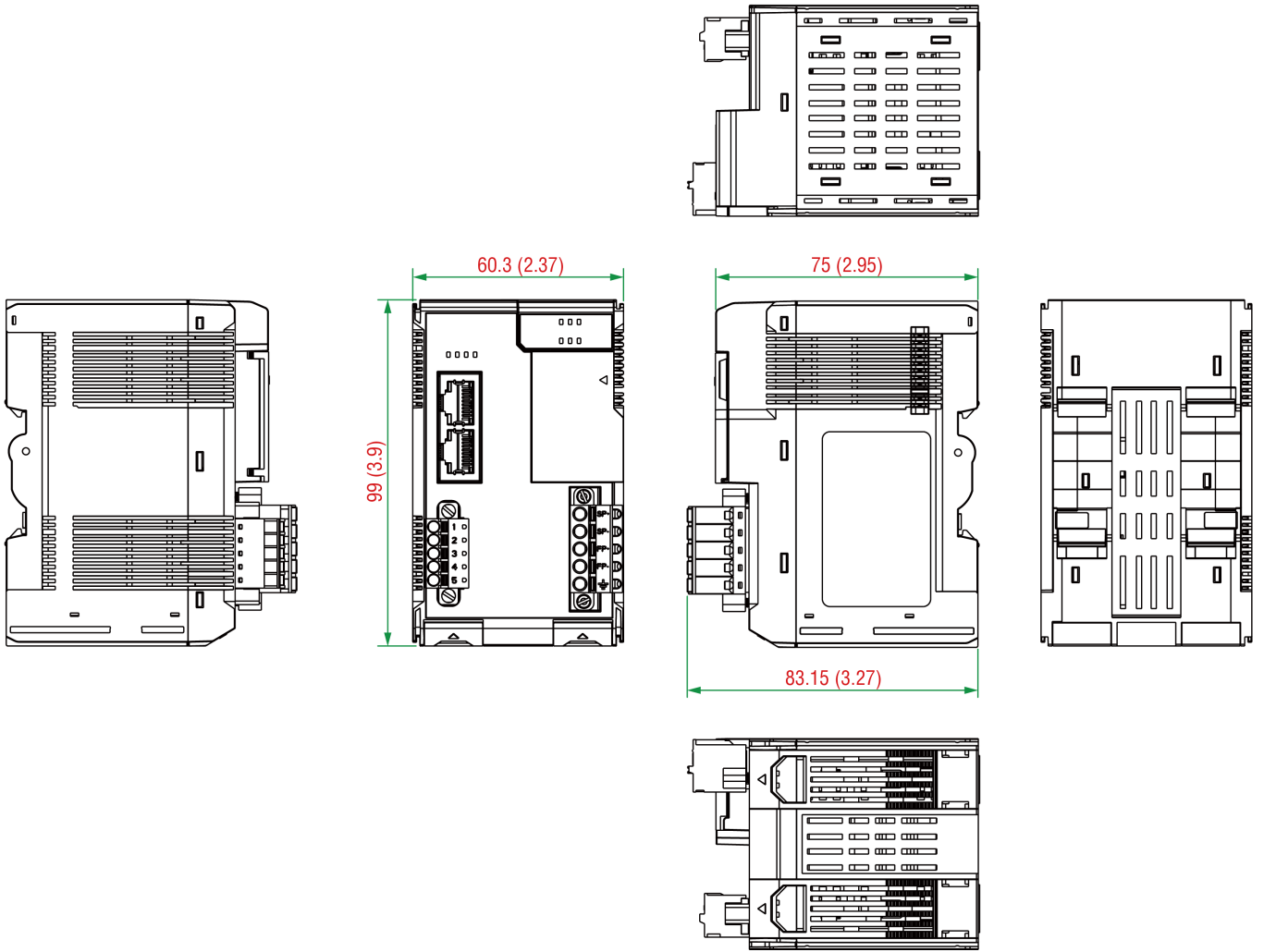|	
Details	See www.moxa.com/warranty
Warranty Period	5 years

Package Contents

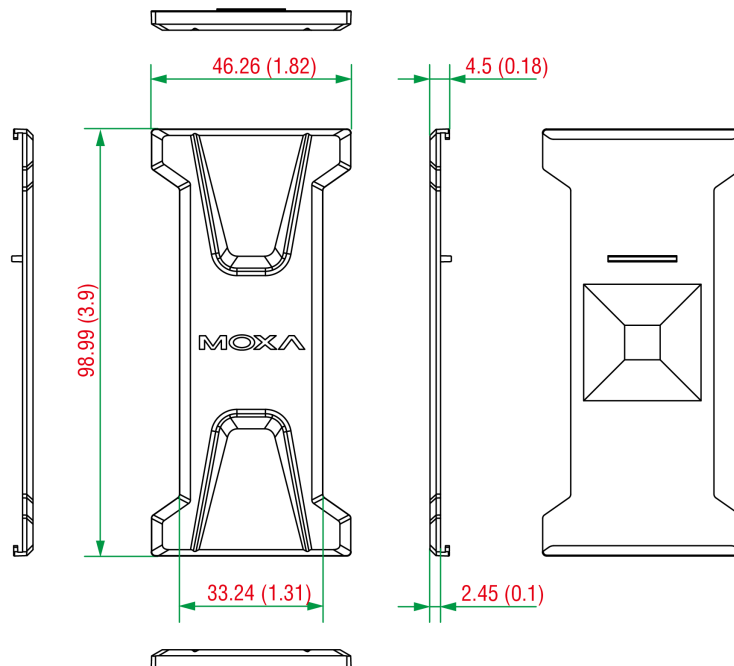|	
Device	1 x ioThinx 4530 Series Controller
Cable	1 x 4-pin header to DB9 console port
Installation Kit	1 x terminal block, 5-pin, 5.00 mm 1 x terminal block, 5-pin, 3.81 mm
Documentation	1 x warranty card 1 x quick installation guide

Dimensions

Top/Side/Bottom Panels

Unit: mm (inch)

60.3 (2.37)

75 (2.95)

99 (3.9)

83.15 (3.27)

Side Cover

Unit: mm (inch)

46.26 (1.82)

4.5 (0.18)

98.99 (3.9)

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33.24 (1.31)

2.45 (0.1)

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Ordering Information

Model Name	Language	Ethernet Interface	Serial Interface	No. of Support I/O Modules	Operating Temp.
ioThinx 4533-LX	C/C++, Python	2 x RJ45	RS-232/RS-422/RS-485	64	-20 to 60°C
ioThinx 4533-LX-T	C/C++, Python	2 x RJ45	RS-232/RS-422/RS-485	64	-40 to 75°C

Accessories (sold separately)

I/O Modules

45MR-1600	Module for the ioThinx 4500 Series, 16 DIs, 24 VDC, PNP, -20 to 60°C operating temperature
45MR-1600-T	Module for the ioThinx 4500 Series, 16 DIs, 24 VDC, PNP, -40 to 75°C operating temperature
45MR-1601	Module for the ioThinx 4500 Series, 16 DIs, 24 VDC, NPN, -20 to 60°C operating temperature
45MR-1601-T	Module for the ioThinx 4500 Series, 16 DIs, 24 VDC, NPN, -40 to 75°C operating temperature
45MR-2404	Module for the ioThinx 4500 Series, 4 relays, form A, -20 to 60°C operating temperature
45MR-2404-T	Module for the ioThinx 4500 Series, 4 relays, form A, -40 to 75°C operating temperature
45MR-2600	Module for the ioThinx 4500 Series, 16 DOs, 24 VDC, sink, -20 to 60°C operating temperature
45MR-2600-T	Module for the ioThinx 4500 Series, 16 DOs, 24 VDC, sink, -40 to 75°C operating temperature
45MR-2601	Module for the ioThinx 4500 Series, 16 DOs, 24 VDC, source, -20 to 60°C operating temperature
45MR-2601-T	Module for the ioThinx 4500 Series, 16 DOs, 24 VDC, source, -40 to 75°C operating temperature
45MR-2606	Module for the ioThinx 4500 Series, 8 DIs, 24 VDC, PNP, 8 DOs, 24 VDC, source, -20 to 60°C operating temperature
45MR-2606-T	Module for the ioThinx 4500 Series, 8 DIs, 24 VDC, PNP, 8 DOs, 24 VDC, source, -40 to 75°C operating temperature
45MR-3800	Module for the ioThinx 4500 Series, 8 AIs, 0 to 20 mA or 4 to 20 mA, -20 to 60°C operating temperature
45MR-3800-T	Module for the ioThinx 4500 Series, 8 AIs, 0 to 20 mA or 4 to 20 mA, -40 to 75°C operating temperature
45MR-3810	Module for the ioThinx 4500 Series, 8 AIs, -10 to 10 V or 0 to 10 V, -20 to 60°C operating temperature
45MR-3810-T	Module for the ioThinx 4500 Series, 8 AIs, -10 to 10 V or 0 to 10 V, -40 to 75°C operating temperature
45MR-4420	Module for the ioThinx 4500 Series, 4 AOs, 0 to 10 V or 0 to 20 mA or 4 to 20 mA, -20 to 60°C operating temperature
45MR-4420-T	Module for the ioThinx 4500 Series, 4 AOs, 0 to 10 V or 0 to 20 mA or 4 to 20 mA, -40 to 75°C operating temperature
45MR-6600	Module for the ioThinx 4500 Series, 6 RTDs, -20 to 60°C operating temperature
45MR-6600-T	Module for the ioThinx 4500 Series, 6 RTDs, -40 to 75°C operating temperature
45MR-6810	Module for the ioThinx 4500 Series, 8 TCs, -20 to 60°C operating temperature
45MR-6810-T	Module for the ioThinx 4500 Series, 8 TCs, -40 to 75°C operating temperature

Power Modules

45MR-7210	Module for the ioThinx 4500 Series, system and field power inputs, -20 to 60°C operating temperature
45MR-7210-T	Module for the ioThinx 4500 Series, system and field power inputs, -40 to 75°C operating temperature
45MR-7820	Module for the ioThinx 4500 Series, potential distributor module, -20 to 60°C operating temperature
45MR-7820-T	Module for the ioThinx 4500 Series, potential distributor module, -40 to 75°C operating temperature

Communication Modules

45ML-5401	Module for the ioThinx 4530 Series, 4 serial ports (RS-232/422/485 3-in-1), -20 to 60°C operating temperature
45ML-5401-T	Module for the ioThinx 4530 Series, 4 serial ports (RS-232/422/485 3-in-1), -40 to 75°C operating temperature

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