

ioThinx 4530 系列

配備內建串列埠的進階模組化控制器



特色與優點

- 提供 -40 至 75°C 寬操作溫度型號
- 無需使用工具即可輕鬆安裝及卸除
- 支援最多 64 個 45MR I/O 模組和最多 5 個 45ML 通訊模組
- 具有 microSD 插槽，可擴充儲存空間
- Class I Division 2 和 ATEX Zone 2 認證

認證



簡介

ioThinx 4530 系列是基於 Linux 的多功能控制器，且支援 I/O 和串列擴充模組。ioThinx 4530 系列配備 Cortex-A7 雙核心 CPU、2 GB 記憶體以及三合一串列介面，可提供穩健的效能。這些控制器可支援最多 64 個裝置且其具有專用的 45MR 系列模組，其中包括數位和類比 I/O、繼電器以及溫度模組。此外，ioThinx 4530 系列還支援最多五個 45ML 系列串列模組。

Moxa Industrial Linux 3 (MIL3)

ioThinx 4530 系列在 Moxa Industrial Linux 3 (MIL3) 上執行，且其為基於 Debian 的工業級 Linux 發行版。MIL3 由 Moxa 開發及維護，專為滿足工業自動化系統的安全性、可靠性和長期支援需求而設計。

體積小巧，且具有高密度的 I/O 點

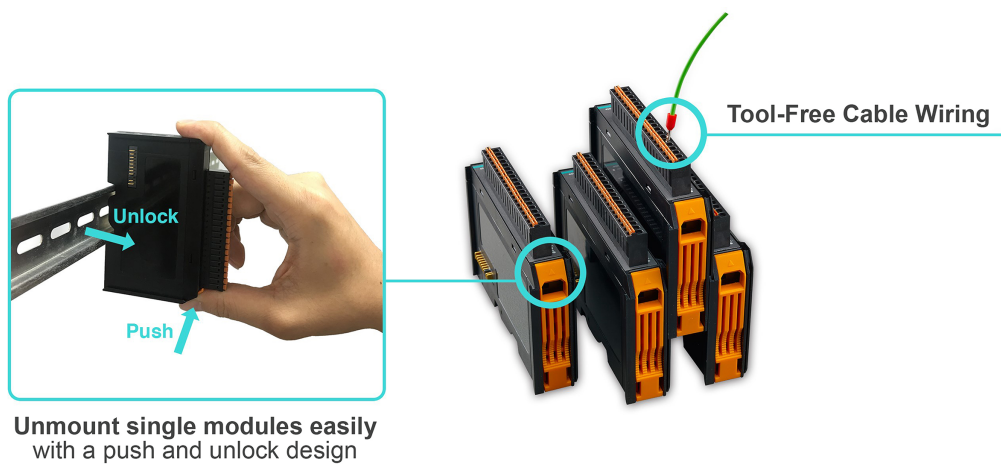
全面配備擴充模組的單一 ioThinx 4530 系列控制器，可支援最多 1,024 個數位 I/O 點，且體積小巧不佔空間，其寬度小於 10 公分 (3.9 英吋)，高度為 6.1 公分 (2.4 英吋)。45MR 系列模組的寬度甚至更小，為 1.8 公分 (0.7 英吋)。此輕巧設計可讓您將其安裝於有限空間，進而提高控制櫃的簡單性和可維護性。

彈性模組化設計可擴充 I/O 和串列介面

ioThinx 4530 系列具備彈性模組化設計，可擴充 I/O 和串列介面，讓使用者輕鬆修改擴充模組的組合，以適合各種應用情境。此模組化功能有助於開發人員將程式從一個專案順利移轉至另一個專案。

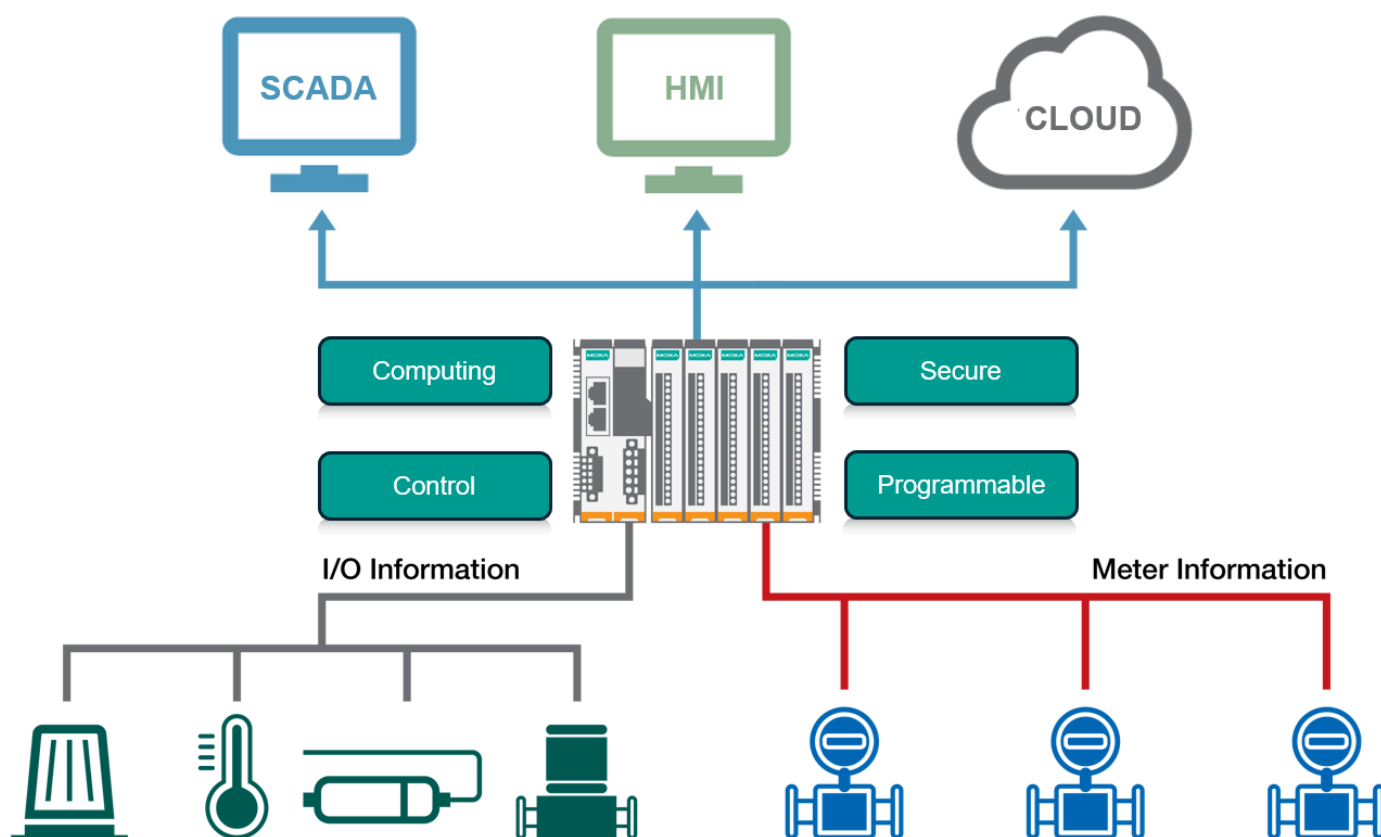
輕鬆免工具安裝和拆卸

ioThinx 4500 系列採用獨特的機構設計，可減少安裝和拆卸所需的時間。事實上，硬體安裝的任何部分都不需要螺絲起子和其他工具，包括將裝置安裝在 DIN 導軌上，以及連接用於通訊和 I/O 訊號擷取的接線。此外，從 DIN 導軌上拆卸 ioThinx 不需要任何工具。您可輕鬆使用門鎖和解鎖片，將模組自 DIN 導軌移除。



對程式設計人員友好

Moxa 提供 ioThinx 系列的全面性文件和工具，具備 C/C++ 和 Python 程式庫、cross-compiler toolchain 以及範例程式碼。這些資源有助於程式設計人員加速處理專案的時間。



規格

Computer	
CPU	Armv7 Cortex-A7 dual-core 1 GHz
OS	Moxa Industrial Linux 3 (Debian 11, kernel 5.10) See www.moxa.com/MIL
Clock	Real-time clock with capacitor backup
DRAM	2 GB DDR3L
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)
Security Functions	
Authentication	Local database
Encryption	AES-256 SHA-256
Security Protocols	SSHv2
Hardware-based Security	TPM 2.0
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.)

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 55032/35
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: 1 kV; Signal: 0.5 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV IEC 61000-4-6 CS: 3 V IEC 61000-4-8 PFMF
Safety	UL 61010-2-201
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6
Hazardous Locations	Class I Division 2 ATEX

MTBF

Time	954,606 hrs
Standards	Telcordia Standard SR-332

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

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

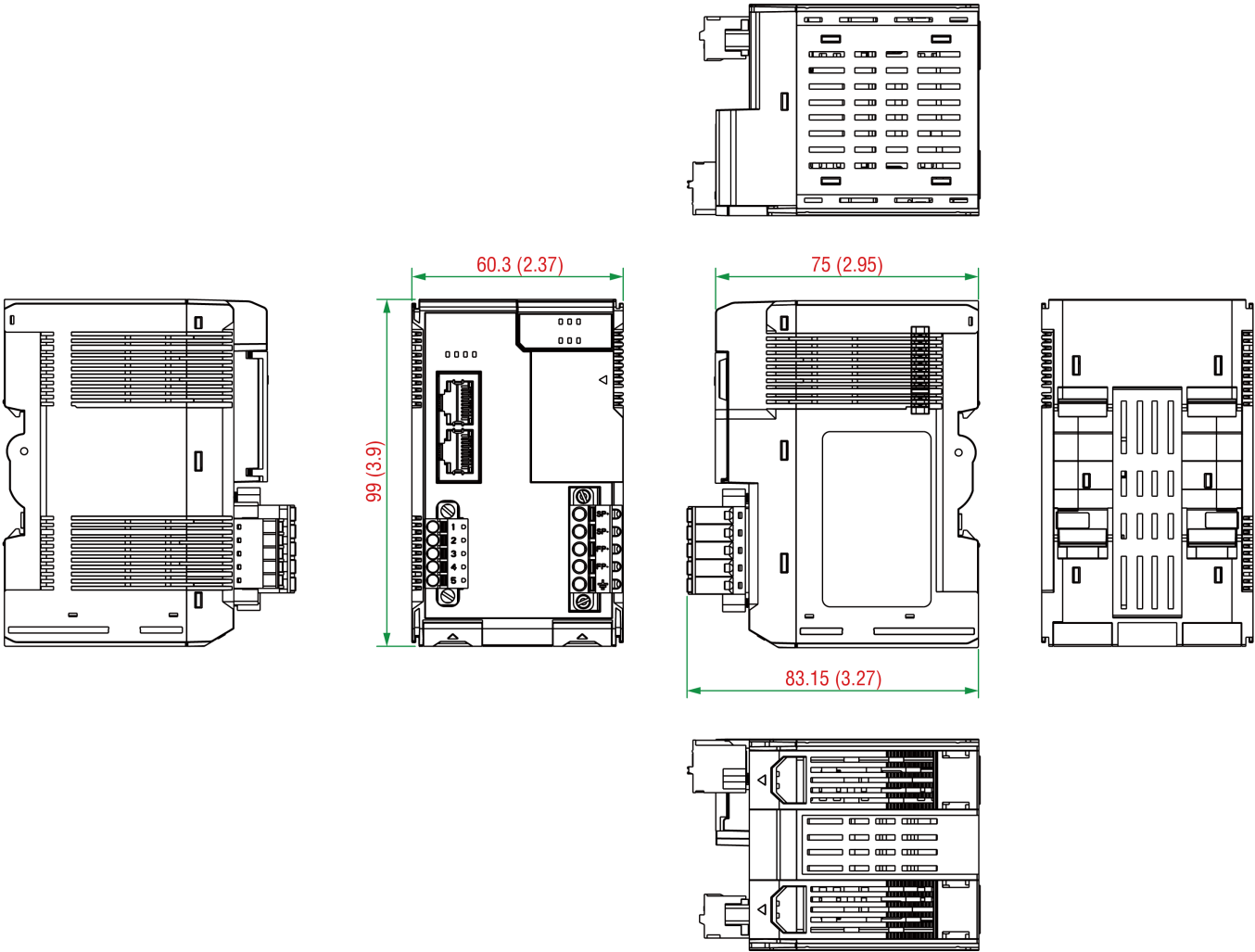
Package Contents

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

尺寸

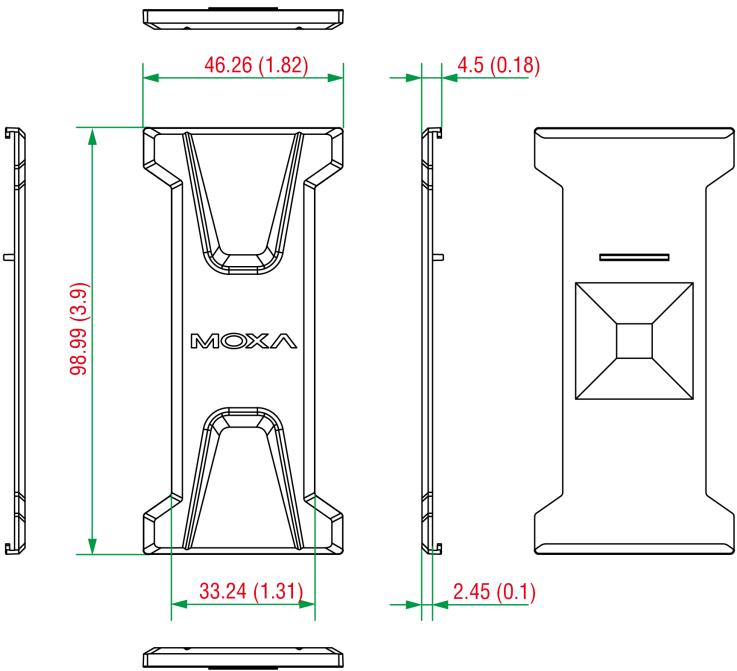
頂部/側面/底部 面板

單位：公釐（英吋）



側蓋

單位：公釐（英吋）



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

配件 (選購)

I/O Modules

45MR-1600	Module for the ioThinX 4500 Series, 16 DIIs, 24 VDC, PNP, -20 to 60°C operating temperature
45MR-1600-T	Module for the ioThinX 4500 Series, 16 DIIs, 24 VDC, PNP, -40 to 75°C operating temperature
45MR-1601	Module for the ioThinX 4500 Series, 16 DIIs, 24 VDC, NPN, -20 to 60°C operating temperature
45MR-1601-T	Module for the ioThinX 4500 Series, 16 DIIs, 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 DIIs, 24 VDC, PNP, 8 DOs, 24 VDC, source, -20 to 60°C operating temperature
45MR-2606-T	Module for the ioThinX 4500 Series, 8 DIIs, 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

© Moxa Inc. 版權所有.2025 年 10 月 22 日更新。

未經 Moxa Inc. 明確書面許可，不得以任何方式複製或使用本文件及其任何部分。產品規格如有變更，恕不另行通知。請至本公司官網了解最新的產品資訊。