

ioThinx 4500 系列 (45MR) 模組

ioThinx 4500 系列的 I/O 和電源模組



特色與優點

- I/O 模組包括 DI/O、AI/O、繼電器和其他 I/O 類型
- 系統電源輸入和現場電源輸入的電源模組
- 免工具輕鬆安裝和拆卸
- IO 通道內建 LED 指示燈
- 寬操作溫度範圍-40 至 75°C (-40 至 167°F)
- Class I Division 2 和 ATEX Zone 2 認證

認證

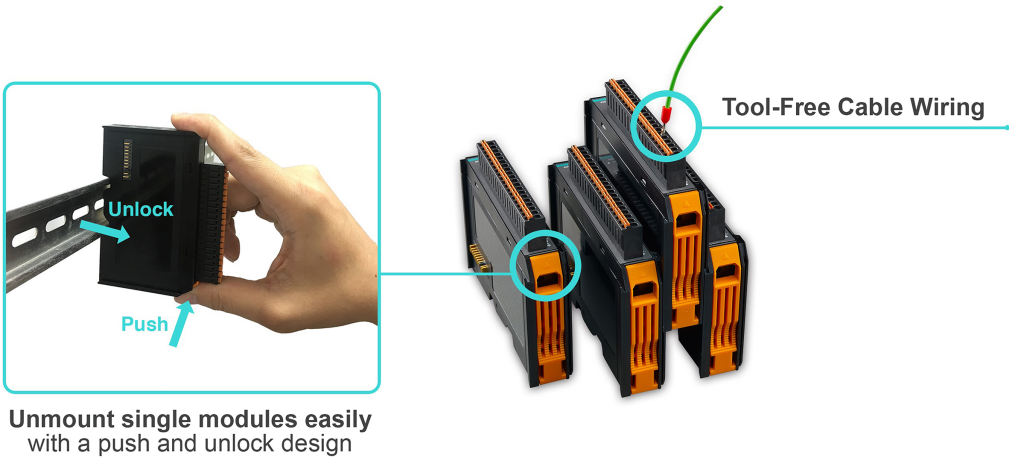


簡介

Moxa 的 ioThinx 4500 系列 (45MR) 模組提供 DI/O、AI、繼電器、RTD 和其他 I/O 類型，為使用者提供多種選擇，並且讓使用者選擇最適合目標應用的 I/O 組合。藉由獨特的機械設計，不需要工具即可輕鬆完成硬體安裝和拆卸，大幅減少設定和更換模組所需的時間。

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。



規格

Input/Output Interface	
Digital Input Channels	45MR-1600: 16 45MR-1601: 16 45MR-2606: 8
Digital Output Channels	45MR-2600: 16 45MR-2601: 16 45MR-2606: 8
Analog Input Channels	45MR-3800: 8 45MR-3810: 8

Relay Channels	45MR-2404: 4
Analog Output Channels	45MR-4420: 4
RTD Channels	45MR-6600: 6
Thermocouple Channels	45MR-6810: 8
System Power Input Channels	45MR-7210: 1
Field Power Input Channels	45MR-7210: 1
Field Potential Output Channels	45MR-7820: 8
Isolation	3k VDC or 2k Vrms

Digital Inputs

Connector	Spring-type Euroblock terminal
Sensor Type	Dry contact Wet contact (NPN or PNP)
I/O Mode	45MR-1600/1601: DI or event counter (only supports the first 4 channels) 45MR-2606: DI or event counter (only supports the first 2 channels)
Dry Contact	On: short to FP+/FP- Off: open
Wet Contact (DI to FP-)	On: 10 to 30 VDC Off: 0 to 3 VDC
Wet Contact (DI to FP+)	On: 10 to 30 VDC Off: 0 to 3 VDC
Counter Frequency	1 kHz
Digital Filtering Time Interval	Software configurable

Digital Outputs

Connector	Spring-type Euroblock terminal
I/O Type	45MR-2600: Sink 45MR-2601/2606: Source
I/O Mode	45MR-2600/2601: DO or pulse output (only supports the first 4 channels) 45MR-2606: DO or pulse output (only supports the first 2 channels)
External Power	12/24 VDC
Pulse Output Frequency	1 kHz
Over-Voltage Protection	45 VDC
Over-Temperature Shutdown	175°C (typical), 150°C (min.)
Current Rating	500 mA per channel

Relays

Connector	Spring-type Euroblock terminal
Type	Form A (N.O.) power relay
I/O Mode	DO
Contact Current Rating	Resistive load: 2 A @ 30 VDC Resistive load: 2 A @ 250 VAC

Relay On/Off Time	10 ms (max.)
Initial Insulation Resistance	1000 mega-ohms (min.) @ 500 VDC
Mechanical Endurance	5,000,000 operations
Electrical Endurance	400,000 operations @ 2 A resistive load
Contact Resistance	100 milli-ohms (max.)

Analog Inputs

Connector	Spring-type Euroblock terminal
I/O Mode	Voltage/Current
I/O Type	Differential
Resolution	16 bits
Input Range	45MR-3800: 0 to 20 mA, 4 to 20 mA, 4 to 20 mA (burnout detection) 45MR-3810: 0 to 10 VDC or -10 to 10 VDC
Over-Voltage Protection	-25 to +30 VDC (power on) -35 to +35 VDC (power off)
Accuracy	±0.1% FSR @ 25°C ±0.3% FSR @ -40 and 75°C
Sampling Rate	All channels: 100 samples/sec Per channel: 12.5 samples/sec Single channel: 100 samples/sec
Input Impedance	45MR-3800: 120 ohms 45MR-3810: 10 mega-ohms (min.)

Analog Outputs

Connector	Spring-type Euroblock terminal
I/O Mode	Voltage/Current
Output Range	0 to 10 VDC 0 to 20 mA 4 to 20 mA
Resolution	12-bit
Accuracy	±0.1% FSR @ 25°C ±0.3% FSR @ -40 to 75°C
Load (Current Mode)	Internal power: 500 ohms (max.)
Load (Voltage Mode)	1000 ohms (min.)

RTDs

Connector	Spring-type Euroblock terminal
Sensor Type	PT50, PT100, PT200, PT500 (-200 to 850°C) PT1000 (-200 to 350°C) JPT100, JPT200, JPT500 (-200 to 640°C) JPT1000 (-200 to 350°C) NI100, NI200, NI500 (-60 to 250°C) NI1000 (-60 to 150°C) NI120 (-80 to 260°C)
Resistance Type	310, 620, 1250, and 2200 ohms
Input Connection	2- or 3-wire

Sampling Rate	All channels: 12 samples/sec Per channel: 2 samples/sec
Resolution	0.1°C or 0.1 ohms
Accuracy	±0.1% FSR @ 25°C ±0.3% FSR @ -40 and 75°C
Input Impedance	625 kilo-ohms (min.)

Thermocouples

Connector	Spring-type Euroblock terminal
Sensor Type	J, K, T, E, R, S, B, N
Millivolt Type	±19.532 mV ±39.062 mV ±78.126 mV
Resolution	16 bits
Millivolt Accuracy	±0.1% FSR @ 25°C ±0.3% FSR @ -40 and 75°C
Sampling Rate	All channels: 12 samples/sec Per channel: 1.5 samples/sec
Input Impedance	1 mega-ohms (min.)

System Power Parameters

Power Connector	Spring-type Euroblock terminal
No. of Power Inputs	1
Input Voltage	12 to 48 VDC
Output Current	1 A (max.)
Power Consumption	800 mA @ 12 VDC
Over-Voltage Protection	55 VDC
Over-Current Protection	1 A @ 25°C

Field Power Parameters

Power Connector	Spring-type Euroblock terminal
No. of Power Inputs	1
Input Voltage	12/24 VDC
Output Current	2 A (max.)
Over-Current Protection	2.5 A @ 25°C
Over-Voltage Protection	33 VDC
Potential Output Mode	45MR-7820: 0 VDC, 12/24 VDC

Power Consumption

System Power	45MR-1600: 59.4 mA @ 3.3 VDC 45MR-1601: 59.4 mA @ 3.3 VDC 45MR-2404: 44 mA @ 3.3 VDC 45MR-2600: 57.2 mA @ 3.3 VDC 45MR-2601: 63.8 mA @ 3.3 VDC 45MR-2606: 62.7 mA @ 3.3 VDC 45MR-3800: 197.3 mA @ 3.3 VDC 45MR-3810: 187 mA @ 3.3 VDC 45MR-4420: 44 mA @ 3.3 VDC 45MR-6600: 131.7 mA @ 3.3 VDC 45MR-6810: 148.1 mA @ 3.3 VDC 45MR-7210: 45mA @ 24 VDC
Field Power	45MR-1600: 19.3 mA @ 12 VDC, 25.3 mA @ 24 VDC 45MR-1601: 19.3 mA @ 12 VDC, 25.3 mA @ 24 VDC 45MR-2404: 31.2 mA @ 12 VDC, 24.7 mA @ 24 VDC 45MR-2606: 15.4 mA @ 12 VDC, 18.7 mA @ 24 VDC 45MR-4420: 220.2 mA @ 12 VDC, 122.3 mA @ 24 VDC

Physical Characteristics

Housing	Plastic
Dimensions	19.5 x 99 x 60.5 mm (0.77 x 3.90 x 2.38 in)
Weight	45MR-1600: 77 g (0.17 lb) 45MR-1601: 77.6 g (0.171 lb) 45MR-2404: 88.4 g (0.195 lb) 45MR-2600: 77.4 g (0.171 lb) 45MR-2601: 77 g (0.17 lb) 45MR-2606: 77.4 g (0.171 lb) 45MR-3800: 79.8 g (0.176 lb) 45MR-3810: 79 g (0.175 lb) 45MR-4420: 79 g (0.175 lb) 45MR-6600: 78.7 g (0.174 lb) 45MR-6810: 78.4 g (0.173 lb) 45MR-7210: 77 g (0.17 lb) 45MR-7820: 73.6 g (0.163 lb)
Installation	DIN-rail mounting
Strip Length	I/O cable, 9 to 10 mm
Wiring	45MR-2404: 18 AWG 45MR-7210: 12 to 18 AWG 45MR-2600/45MR-2601/45MR-2606: 18 to 22 AWG All Other 45MR Models: 18 to 24 AWG

Environmental Limits

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 (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing) ¹
Altitude	Up to 4000 meters ²

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 1 GHz: 3 V/m IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV

1. 45MR-2404 的繼電器在低於 0°C 的高冷凝環境中運作時可能會發生故障。
2. 如果您需要產品能在高海拔地區正常運作，請與 Moxa 聯繫。

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

Declaration

Green Product	RoHS, CRoHS, WEEE
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MTBF

Time	45MR-1600: 661,247 hrs 45MR-1601: 661,247 hrs 45MR-2404: 1,955,805 hrs 45MR-2600: 647,334 hrs 45MR-2601: 660,179 hrs 45MR-2606: 638,652 hrs 45MR-3800: 2,085,426 hrs 45MR-3810: 2,478,459 hrs 45MR-4420: 1,450,453 hrs 45MR-6600: 2,291,755 hrs 45MR-6810: 1,649,892 hrs 45MR-7210: 2,550,077 hrs 45MR-7820: 256,886,914 hrs
Standards	Telcordia SR332

Warranty

Warranty Period	All models except 45MR-2404: 5 years 45MR-2404: 2 years ³
Details	See www.moxa.com/tw/warranty

Package Contents

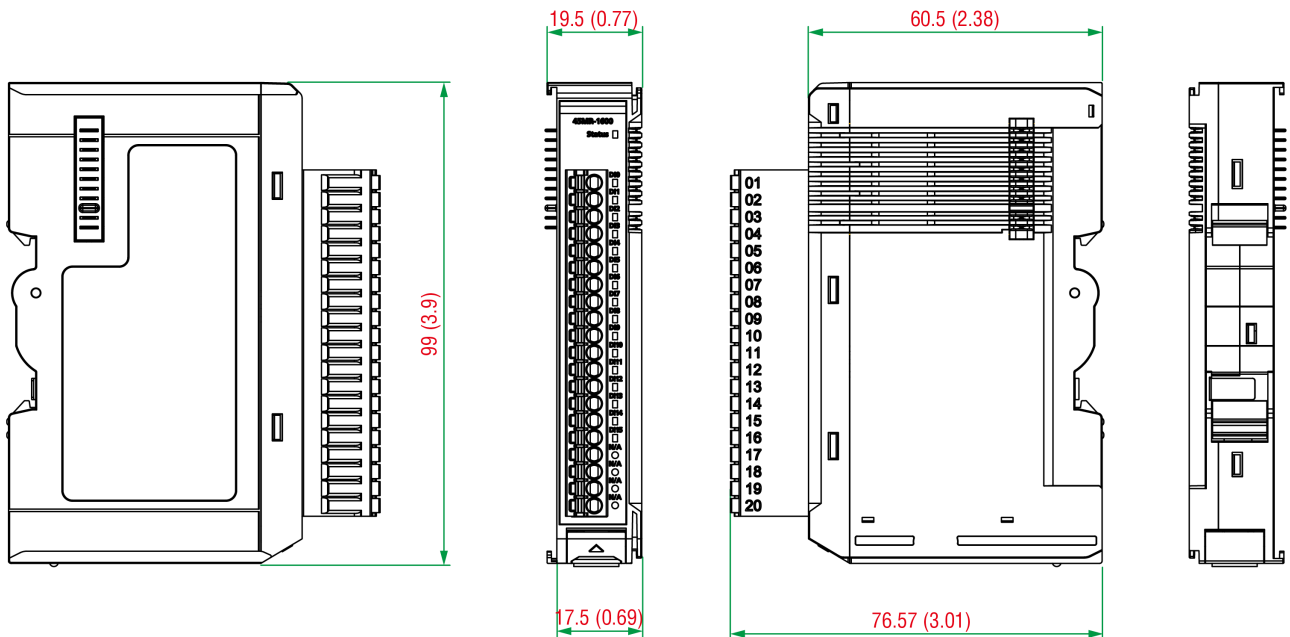
Device	1 x 45MR Series product
Installation Kit	1 x terminal block, 20-pin, 3.5 mm
Documentation	1 x quick installation guide 1 x warranty card

3. 由於功率繼電器的使用壽命有限，使用此元件的產品享有 2 年保固。

尺寸

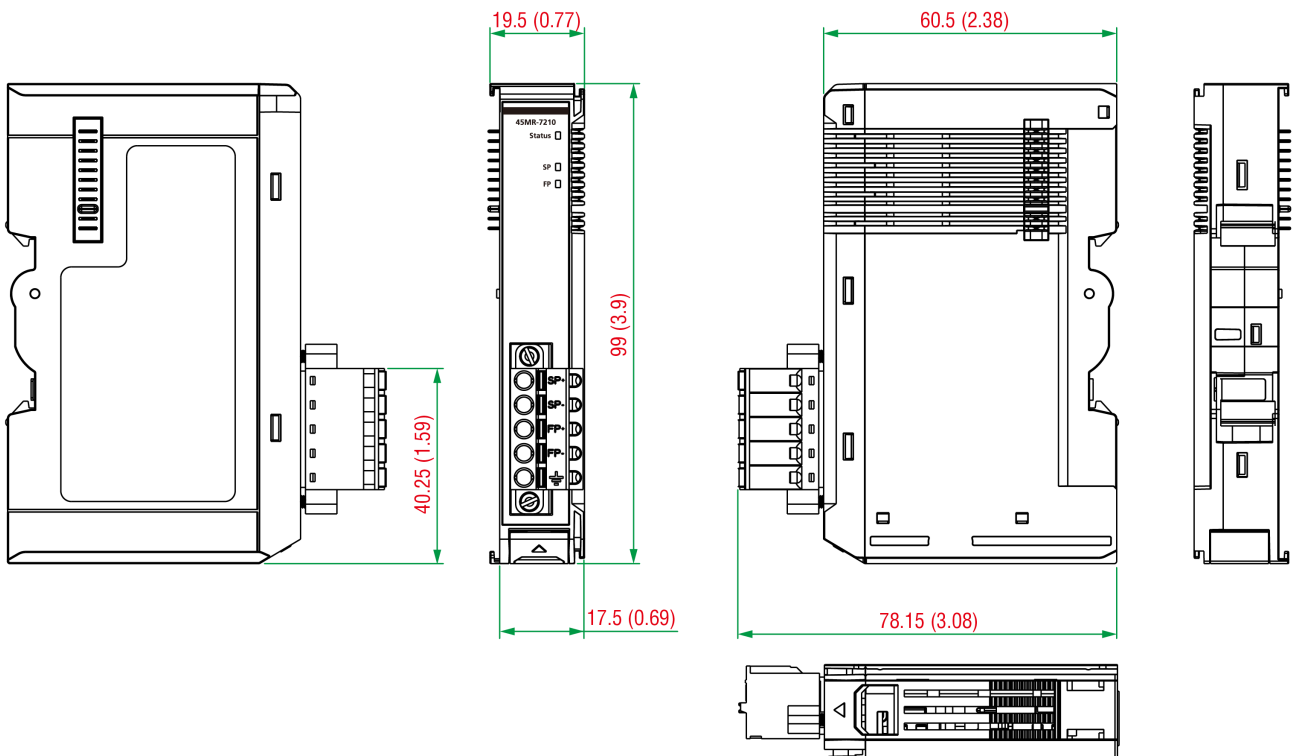
ioThinx 4500 模組 (不包括 45MR-7200)

單位：公釐 (英吋)



ioThinx 4500 45MR-7200 模組

單位：公釐 (英吋)



Model Name	Input/Output Interface	Digital Input	Digital Output	Relay	Analog Input Type	Analog Output Type	Power	Operating Temp.
45MR-1600	16 x DI	PNP 12/24VDC	–	–	–	–	–	-20 to 60°C
45MR-1600-T	16 x DI	PNP 12/24VDC	–	–	–	–	–	-40 to 75°C
45MR-1601	16 x DI	NPN 12/24 VDC	–	–	–	–	–	-20 to 60°C
45MR-1601-T	16 x DI	NPN 12/24 VDC	–	–	–	–	–	-40 to 75°C
45MR-2404	4 x Relay	–	–	Form A 30 VDC/250 VAC, 2 A	–	–	–	-20 to 60°C
45MR-2404-T	4 x Relay	–	–	Form A 30 VDC/250 VAC, 2 A	–	–	–	-40 to 75°C
45MR-2600	16 x DO	–	Sink 12/24 VDC	–	–	–	–	-20 to 60°C
45MR-2600-T	16 x DO	–	Sink 12/24 VDC	–	–	–	–	-40 to 75°C
45MR-2601	16 x DO	–	Source 12/24 VDC	–	–	–	–	-20 to 60°C
45MR-2601-T	16 x DO	–	Source 12/24 VDC	–	–	–	–	-40 to 75°C
45MR-2606	8 x DI, 8 x DO	PNP 12/24VDC	Source 12/24 VDC	–	–	–	–	-20 to 60°C
45MR-2606-T	8 x DI, 8 x DO	PNP 12/24VDC	Source 12/24 VDC	–	–	–	–	-40 to 75°C
45MR-3800	8 x AI	–	–	–	0 to 20 mA 4 to 20 mA	–	–	-20 to 60°C
45MR-3800-T	8 x AI	–	–	–	0 to 20 mA 4 to 20 mA	–	–	-40 to 75°C
45MR-3810	8 x AI	–	–	–	-10 to 10 VDC 0 to 10 VDC	–	–	-20 to 60°C
45MR-3810-T	8 x AI	–	–	–	-10 to 10 VDC 0 to 10 VDC	–	–	-40 to 75°C
45MR-4420	4 x AO	–	–	–	–	0 to 10 V 0 to 20 mA 4 to 20 mA	–	-20 to 60°C
45MR-4420-T	4 x AO	–	–	–	–	0 to 10 V 0 to 20 mA 4 to 20 mA	–	-40 to 75°C
45MR-6600	6 x RTD	–	–	–	RTD	–	–	-20 to 60°C
45MR-6600-T	6 x RTD	–	–	–	RTD	–	–	-40 to 75°C
45MR-6810	8 x TC	–	–	–	TC	–	–	-20 to 60°C
45MR-6810-T	8 x TC	–	–	–	TC	–	–	-40 to 75°C
45MR-7210	1 x system power input 1 x field power input	–	–	–	–	–	1 x SP+ 1 x SP- 1 x FP+ 1 x FP- 1 x FP GND	-20 to 60°C
45MR-7210-T	1 x system power input 1 x field power input	–	–	–	–	–	1 x SP+ 1 x SP- 1 x FP+ 1 x FP- 1 x FP GND	-40 to 75°C

Model Name	Input/Output Interface	Digital Input	Digital Output	Relay	Analog Input Type	Analog Output Type	Power	Operating Temp.
45MR-7820	8 x field power output	–	–	–	–	–	8 x FP+ 8 x FP-	-20 to 60°C
45MR-7820-T	8 x field power output	–	–	–	–	–	8 x FP+ 8 x FP-	-40 to 75°C

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