MIKOM

MX Series Programmable Controller

V1.4

MIKOM Electrical Technology Co., Ltd.

MIKOM Electrical Technology Co., Ltd. is a high-tech enterprise which integrates research and development, production, sale and service, with the registered trademark of "**MIKOM**". The company is devoted to becoming a professional supplier in the field of industrial automation and is able to provide comprehensive and professional solutions of automatic control system for customers.

The company mainly produces PLCs, temperature controllers, motion controllers, frequency converters, servo drivers and so on which are widely applied to automation related fields such as auto industry, printing-packaging industry, printing and dyeing industry, machinery manufacturing industry, electronic industry, power industry, tyre industry, power equipment and municipal engineering.

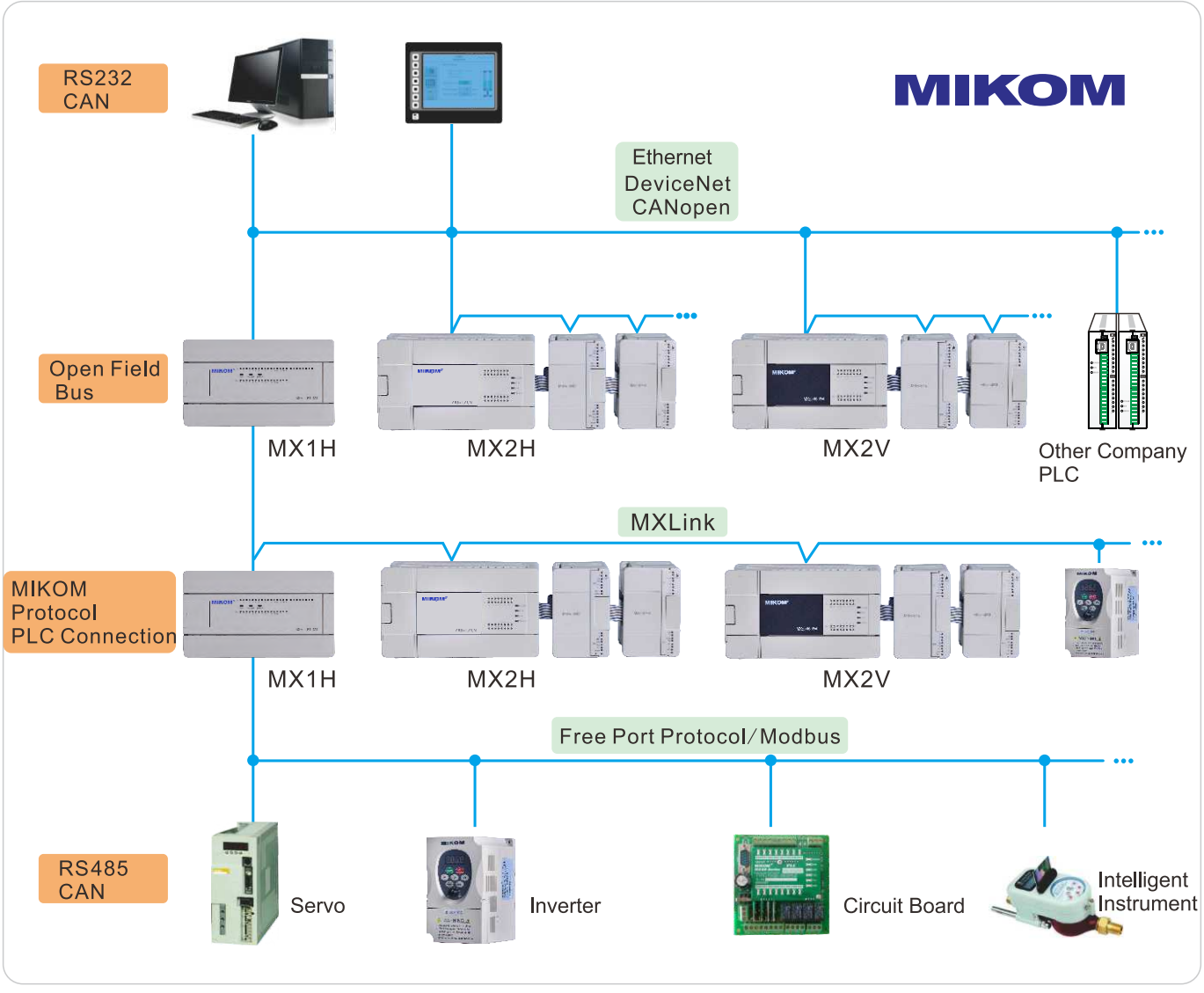
Relying on its strong technical R & D team and taking international advanced products as the benchmark, the company, on high starting pint and with high requirement, makes continuous innovation and ceaseless surpassing. It has mastered core technologies of PLC, high-performance vector frequency converters, servo drivers, etc. and successively developed MX PLC, MV frequency converters, MS servo drivers, etc., which are all patented.

The company always sticks to the business philosophy of "Creating Profits for Customers Equals Creating Profits for the Company". Shouldering the responsibility of maximizing the demands and interests of customers and developing the automation cause of the society, the company constantly improves and perfects its products so as to meet the demands of the market and customers.

Under the enterprise tenet of "Forge a Time-honored Enterprise, Create a National Brand", the company will give full display to its advantage in independent innovation, build high-quality, efficient and eco-friendly manufacture system and continuously improve the core competence, in an effort to turn the company into the leader of the domestic industrial control industry.

MX系列PLC产品

- MX0H series miniature PLC
- MX1H series small PLC
- MX2H series small and medium-sized PLC
- MX2V series motion control type PLC
- MX3H series medium-sized PLC



MX series PLC technical specification table

			MX2V	MX2H	MX1H
General Performance	Logic maximum I/O points		512	512	256
	Maximum number of special modules		8	8	2
	High-speed pulse output		8×200 kHz Support the 4-way differential output	3×100kHz（Transistor output type）	2×100kHz（Transistor output type）
	Single-phase counting channel		8×200 kHz Support the 4-way differential intput	2×50kHz;4×10kHz	2×50kHz;4×10kHz
	Duplex counter channels		4×200kHz	1×25kHz;2×5kHz	1×20kHz;2×10kHz
	Sum of counting frequency		800kHz	100kHz	80kHz
	Basic instruction execution time		0.050us	0.084us	0.084us
	The program execution time		0.6ms/1K step①	1ms/1K step①	1ms/1K step①
	Real time clock		Support（off electricity to keep at least 3 years）		
	Constant scanning way		Support		
	Digital filter function		0.8,1.6,3.2,6.4,12.8,25.6,51.2ms adjustable		
Directive Types	Basic Instructions		31	31	31
	Step-by-step instructions		2	2	2
	Apply instructions		264	234	174
Memory	User program		32K step	24K step	12K step
	Components to keep		The user setting	The user setting	2K Word
	Components to keep time		Backup battery, keep time for 3 years		Remain permanently
Element Resources	Timer	100ms	100ms precision:T0~T209 a total of 210 points(0.1~3276.7seconds)		
		10ms	100ms precision:T210~T251 a total of 42 points(0.01~327.67seconds)		
		1ms	1ms precision:T252~T255 a total of 4 points(0.001~32.767seconds)		
	Counter	16 bit	16bit Increase：C0~C199 a total of 200 points		
		32 bit	32bit Increase or decrease：C200~C234 a total of 35 points		
	High speed counter	Single-phase counting input (32bit)	C235~C245	C235~C245	C235~C245
		Single phase double counting input (32bit)	C246~C250	C246~C250	C246~C250
		Diphasic double counting input (32bit)	C251~C255	C251~C255	C251~C255
	Data register		D0~D32767	D0~D7999	D0~D3999
	Local data register		V0~V63	V0~V63	V0~V63
	Indexed addressing registers		Z0~Z15	Z0~Z15	Z0~Z15
	Special data register		SD0~SD511	SD0~SD511	SD0~SD511
	Auxiliary relay		M0~M4095	M0~M4095	M0~M2047
	Local auxiliary relay		LM0~LM63	LM0~LM63	LM0~LM63
	Special auxiliary relay		SM0~SM511	SM0~SM511	SM0~SM511
	State relay		S0~S1023	S0~S1023	S0~S1023
Interrupt Resources	Internal timer interrupt		3	3	3
	External interrupt		16	16	16
	High speed counter interrupt		8	6	6
	Serial port interrupt		12	12	8
	PTO Output complete interrupt		8	3	2
	Power break off		1	1	1
Communication resources	COM port		PORT0:RS232;PORT1:RS485 Extensible RS232/RS485/CAN and Ethernet		PORT0:RS232;PORT1:RS485;CAN
	Communication protocol		Modbus/Free port/MXLink/Programming port agreement;Ethernet card supports Modbus and Modbus TCP protocol		
Security policy	Basic strategy		Project password；Program password； Upload password, download password, monitoring password		
	Advanced strategy		Ban on formatting,Ban on upload Password retry count limit②		

①1k step standard test procedures, including basic instruction (60%), application instructions (40%).
②With in 30 seconds, Password authentication try again more than 5 times,the lock password authentication function for 10 minutes.

MX series PLC model named

Main module and I/O extension module naming rules

MX 2 H–16 16 M R _ _ –CAN

- Integration CAN
- Special Function Code
  Increase the special function based on the main module, starting from 1, according to the increase of time sequence, for example1,2,…,A,B,…(the main module is the default)
- Power Input Mode
  The default is Ac100~240V input;
  D: DC24V power input N: no external power input
- Output Mode
  R: relay output T: transistor output
  C: relay and transistor output N: no output
- Transducer Type
  M: MIKOM programmable controller main module
  E: MIKOM programmable controller extension module
  B: MIKOM panel controlle
- Integrated digital output points: the example is 16 output
- Integrated digital input points: the example is 16 input
- Child Serial Number
  H: High-performance, general child series
  C: Customized series
  V: Motion control series
- Serial Number
  0:Miniature PLC 1:Small PLC
  2:Small and medium-sized PLC 3:Medium-sized PLC
- MX:MIKOM programmable controller

Special function module naming rule

MX 2 H–4 TC

- TC:Module name
  - "AD" Analog input module
  - "DA" Analog output module
  - "TC" Thermocouple temperature module
  - "PT" Thermal resistance temperature module
  - "PG" High-speed pulse output module
  - "HC" High-speed pulse input module
  - "WT" Weighing module
  - "ADH" High precision analog input module
- Number of channels
- Child serial number
- Small and medium-sized PLC
- MX:MIKOM programmable controller

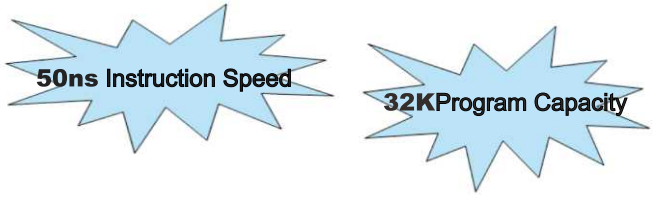
Expansion card naming rules

MX 2 H–CAN–BD

- Expansion board
  - "CAN" CAN interface
  - "RS485" 485 interface
  - "RS232" 232 interface
  - "CAN- RS232" CAN and 232interface
  - "ETH" Ethernet interface
- Child serial number
- Small and medium-sized PLC
- MX:MIKOM programmable controller

MX2V series motion control type PLC

MX2V series PLC is MIKOM motion control type programmable controller, 8 channels independent 200KHz high-speed input and 8 channels independent 200KHz high-speed output, 4 road differential input and 4 road differential output. Supports a variety of motion control instruction and 2/3/4 axis linear interpolation and 2 axis circular arc interpolation instructions, can meet the needs of users for a variety of motion control.



MX2V series outstanding characteristic

Rich movement and positioning control functions

- High-speed counter
  At most 8 channel high-speed input; Support for single-phase single count, single phase double counting, bipolar double counting three ways; Support quadruplicated frequency count. Single-phase high-speed counting support 8x200KHz; Bipolar high-speed counting support 4x200KHz;support 4 road differential input.
- High-speed pulse output
  At most 8 channel independent high-speed pulse output (Max 200KHz), Support pulse+direction, plus-minus pulse, AB phase pulse output mode, support 4 road differential output.
- Positioning instruction
  Support the origin regression (DZRN), relative position control (DDRVI), absolute position control (DDRVA), interrupt positioning control (DDVIT), variable speed pulse output instruction(PLSV), handwheel pulse output instruction (HPRC), linear interpolation instruction (LIN), instruction of circular interpolation (CW/CCW).
- Envelope pulse output
  Control servo or stepper motor multistep acceleration, uniform speed and deceleration process, up to 256 steps, applicable to speed change frequently occasions.

High speed, large capacity

- MX2V series PLC basic instruction processing speed is 0.050 us/step, comprehensive instruction processing speed is 0.6ms/1k step, can satisfy the PID temperature control, data communication, high-speed positioning and complicated calculation, etc.
- MX2V series PLC program capacity can be up to 32K step.

Support all functions of MX2H series

Support all extension module of MX2H series

MX2V main module

Module		I/O	On-Off input		On-Off output		CAN extend card	Size（mm）L＊W＊H	Product order no.
			Input point	Type	Output point	Type			
	MX2V-1616MT	32	16	Leak/source type	16	Transistor	—	158*90*83	M04010070
	MX2V-1616MT-CAN	32	16	Leak/source type	16	Transistor	Support	158*90*83	M04010097
	MX2V-1616MT1①	32	16	Leak/source type	16	Transistor	—	158*90*83	M04010071
	MX2V-1616MT1-CAN①	32	16	Leak/source type	16	Transistor	Support	158*90*83	M04010098
	MX2V-2828MT②	56	28	Leak/source type	28	Transistor	—	226*90*83	M04010068
	MX2V-2828MT-CAN②	56	28	Leak/source type	28	Transistor	Support	226*90*83	M04010099

①: Support 4-way high-speed pulse output, other support 8-way high-speed pulse output
②: Supports 4-way high-speed differential input and 4-way high-speed differential output

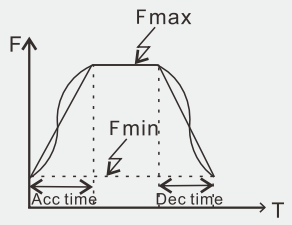
MX2V main module power consumption

Type	Logic circuit power（3.3V/GND）		Max current consumption(24V/GND)		Accessory power supply output(24V/COM)	
	Internal consumption	External available capacity	Internal consumption	External available capacity	Internal consumption	External available capacity
MX2V-1616MT	450mA	550mA	120mA	680mA	0mA	500mA
MX2V-2828MT	500mA	500mA	200mA	600mA	0mA	500mA

MX2V series motion control type PLC

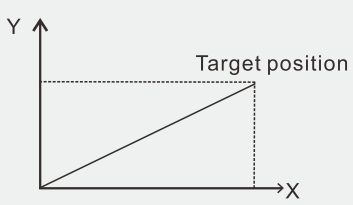
Accelerate and decelerate

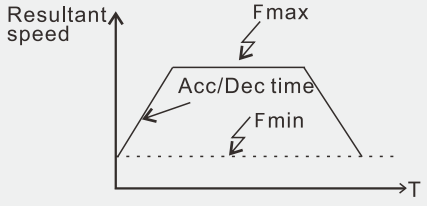
Linear/S curve
acceleration-deceleration



line interpolation

Support 2/3/4 axis linear interpolation
According to the specified vector speed, moving to the target position

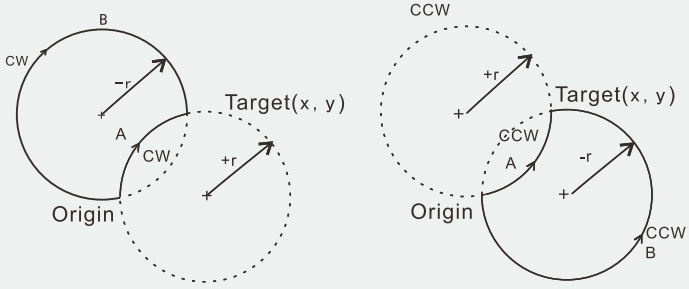




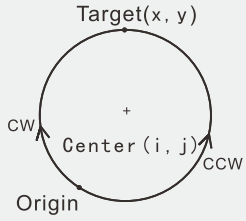
Circular interpolation

Support 2 axis circular arc interpolation
According to the instruction of circular interpolation, in order to specify the linear velocity of moving to the target position.

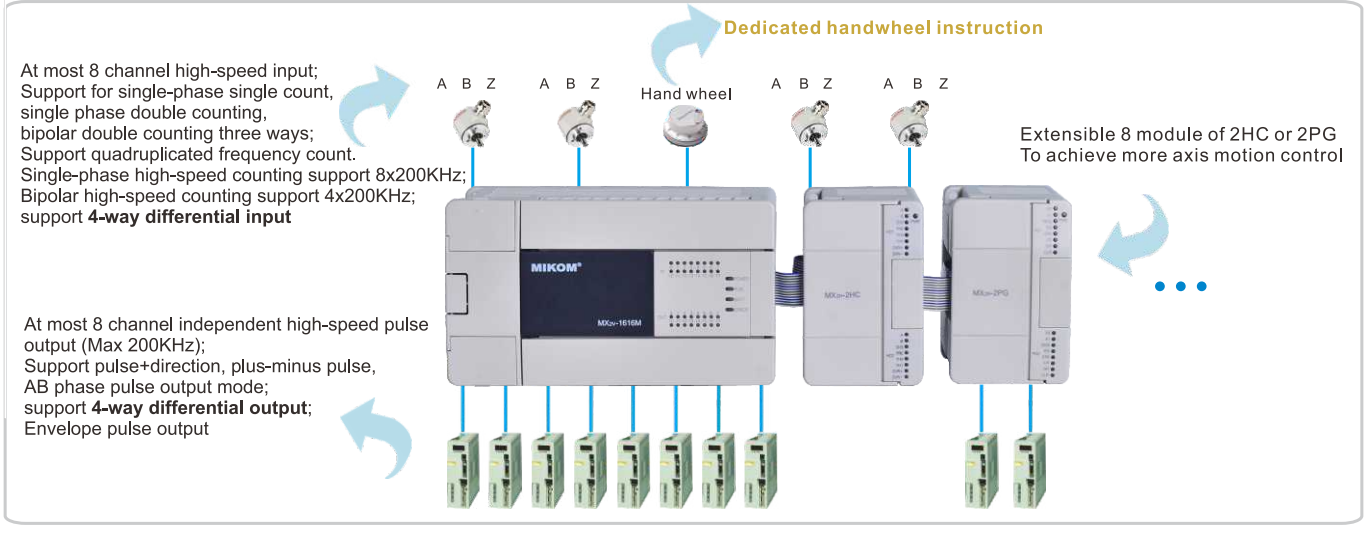
Radius given



Center given



Based on the MX2V multi-axis control scheme



MX2H series PLC

MX2H series PLC is MIKOM small programmable controller, combined with computer technology, communication technology, automatic control technology and the latest development of electronic technology, can be widely used in printing, electronic processing equipment, textile, machine tools, cable, packaging, construction machinery, elevator, air conditioning and other industries, greatly satisfy the industry customers' demand for high-performance small PLC.

84ns Instruction speed

24K Program Capacity

MX2H series outstanding characteristic

High stability, high reliability

- Wide working voltage:rated voltage AC100～240V, allow working voltage AC85～264V
- Strict anti-corrosion treatment, panel adapt the adverse environments, working temperature is -5℃～55℃, can withstand the shock and vibration
- The user program permanent preservation
- Excellent anti-interference
- Isolation of 24VDC power supply output, can be directly provide power supply to sensors, HMI, external intermediate relay, etc

High speed, large capacity

- MX2H series PLC basic instruction processing speed is 0.084us/step, comprehensive instructions for 1K step /ms, can satisfy the PID temperature control, data communication, high-speed positioning and complicated calculation, etc
- MX2H series PLC program capacity can reach 24K steps, can meet the needs of the current, can be flexible to cope with the future system expansion

Reliable security

- Multi-level password protection, all the main program and subroutine encrypted separately; Program can be binding specified serial number of the PLC, and effectively protect intellectual property rights of users

Super system extension

- Support MX2H series all the I/O extension module and special function extension module
- Support MX2H series all communications expansion card

Rich movement and positioning control functions

- High-speed counter
  Support for single-phase single count, single phase double counting, bipolar double counting three ways, support the fourfold frequency count. High speed counting frequency sum up to 100 KHz, Single-phase high speed counting support 50KHz×2 channel +10KHz×4 channel, bipolar high-speed counting support 25KHz×1 channel +5KHz×2 channel
- High-speed pulse output
  Main module (transistor) provide 3 independent high-speed pulse output (up to 100KHz), support the output pulse sequence (PTO) and pulse width modulation (PWM) two modes
- Envelope pulse output
  Control servo or stepper motor step acceleration, uniform speed and deceleration process, up to 256 steps, applicable to speed change frequently
- Positioning instruction
  Support of origin (DZRN), relative position control (DDRVI), absolute position control (DDRVA), interrupt positioning control (DDVIT), variable speed pulse output instruction (PLSV), manual pulse output instruction (HPRC)

Temperature control PID

- Integrated temperature control PID instruction (TPID), support 32 road temperature control, support of self-tuning, temperature control by TPID instruction guide made simple

Multiple communication protocols

- Provide free port, Modbus, MXLink (MIKOM special communication protocol), convenient system integration

Real-time clock

- The main module built-in real-time clock (RTC), provide the calendar function, support the leap year

MX2Hmain module

Module		I/O	On-Off input		On-Off output		CAN card	Size（mm）L *H *W	Product order no.
			Input point	Type	Output point	Type			
	MX2H-1616MR	32	16	Leak/source type	16	Relay	—	158*90*83	M04010001
	MX2H-1616MT	32	16	Leak/source type	16	Transistor	—	158*90*83	M04010002
	MX2H-1616MR-CAN	32	16	Leak/source type	16	Relay	Support	158*90*83	M04010003
	MX2H-1616MT-CAN	32	16	Leak/source type	16	Transistor	Support	158*90*83	M04010004
	MX2H-3232MR	64	32	Leak/source type	32	Relay	—	226*90*83	M04010019
	MX2H-3232MT	64	32	Leak/source type	32	Transistor	—	226*90*83	M04010020
	MX2H-3232MR-CAN	64	32	Leak/source type	32	Relay	Support	226*90*83	M04010078
	MX2H-3232MT-CAN	64	32	Leak/source type	32	Transistor	Support	226*90*83	M04010079

MX2Hmain module power consumption specifications

Type	Logic circuit power (3.3V/GND)		Max current consumption (24V/GND)		Accessory power supply output (24V/COM)	
	Internal consumption	External available capacity	Internal consumption	External available capacity	Internal consumption	External available capacity
MX2H-1616MR	250mA	750mA	80mA	720mA	0	500mA
MX2H-1616MT	250mA	750mA	120mA	680mA	0	500mA
MX2H-3232MR	420mA	580mA	160mA	640mA	0	500mA
MX2H-3232MT	420mA	580mA	230mA	570mA	0	500mA

Extension module

I/O Extension module

Module		I/O	On-Off input		On-Off output		Size（mm） L*W*H	Product order no.
			Input point	Type	Output point	Type		
	MX2H-0800ENN	8	8	Leak/source type	—	—	58*90*83	M04010021
	MX2H-0808ERN	16	8	Leak/source type	8	Relay	58*90*83	M04010011
	MX2H-0808ETN	16	8	Leak/source type	8	Transistor	58*90*83	M04010012
	MX2H-0008ERN	8	—	—	8	Relay	58*90*83	M04010022
	MX2H-0008ETN	8	—	—	8	Transistor	58*90*83	M04010054
	MX2H-1600ENN	16	16	Leak/source type	—	—	58*90*83	M04010015
	MX2H-0016ERN	16	—	—	16	Relay	58*90*83	M04010013
	MX2H-0016ETN	16	—	—	16	Transistor	58*90*83	M04010014
	MX2H-1616ER	32	16	Leak/source type	16	Relay	158*90*83	M04010052
	MX2H-1616ET	32	16	Leak/source type	16	Transistor	158*90*83	M04010053
	MX2H-1616ERN	32	16	Leak/source type	16	Relay	158*90*83	M04010080
	MX2H-1616ETN	32	16	Leak/source type	16	Transistor	158*90*83	M04010081

Pecific function module

Module		Input		Output		Size(mm) L * W * H	Product order no.
		Input point	Input type	Output point	Input type		
	MX2H-2AD	2	Voltage, current	—		58*90*83	M04010094
	MX2H-4AD	4	Voltage, current	—		58*90*83	M04010007
	MX2H-2DA	—		2	Voltage, current	58*90*83	M04010095
	MX2H-4DA	—		4	Voltage, current	58*90*83	M04010008
	MX2H-2AD2DA	2	Voltage, current	2	Voltage, current	58*90*83	M04010111
	MX2H-2PT	2	Thermal resistance	—		58*90*83	M04010100
	MX2H-4PT	4	Thermal resistance	—		58*90*83	M04010009
	MX2H-2TC	2	Thermocouple	—		58*90*83	M04010096
	MX2H-4TC	4	Thermocouple	—		58*90*83	M04010010
	MX2H-8TC	8	Thermocouple	—		58*90*83	M04010024
	MX2H-2PG	—		2	Pulse output	58*90*83	M04010092
	MX2H-2HC	2	Pulse input	—		58*90*83	M04010091
	MX2H-4ADH	4	High precision voltage and current	—		58*90*83	M04010037
	MX2H-4WT	4	Weighing sensor	—		58*90*83	M04010038

Expansion card

Module		Product standard	Product order no.
	MX2H-CAN-BD	Support CAN2.0A/CAN2.0B hardware interface (isolated) Support free port agreement, MXLink agreement	M04010017
	MX2H-RS485-BD	Support Rs485 hardware interface	M04010016
	MX2H-CAN-RS232-BD	SupportCAN2.0A/CAN2.0B、RS232 hardware interface	M04010018
	MX2H-RS232-BD	Support RS232 hardware interface	M04010025
	MX2H-ETH-BD	10/100M adapt; Support TCP/IP protocol; programming port protocol and Modbus TCP protocol (slave station)	M04010090

Passive I/O extension module power consumption specifications

Type	Max current consumption(3.3V/GND)	Max current consumption(24V/GND)
MX2H-0808ERN	30mA	40mA
MX2H-0808ETN	30mA	64mA
MX2H-1600ENN	30mA	0
MX2H-0016ERN	25mA	80mA
MX2H-0016ETN	25mA	128mA
MX2H-0800ENN	30mA	0
MX2H-0008ERN	25mA	40mA
MX2H-0008ETN	25mA	64mA
MX2H-1616ERN	30mA	80mA
MX2H-1616ETN	30mA	128mA

Active I/O extension module power consumption specifications

Type	Logic circuit power(24V/GND)		Accessory power supply output(24V/COM)	
	Internal consumption	External available capacity	Internal consumption	External available capacity
MX2H-1616ER	120mA	680mA	0	500mA
MX2H-1616ET	170mA	630mA	0	500mA

Special function module power consumption specification

Type	Max current consumption(3.3V/GND)	Max current consumption(24V/COM)
MX2H-2AD	25mA	43mA
MX2H-4AD	25mA	48mA
MX2H-2DA	25mA	153mA
MX2H-4DA	25mA	158mA
MX2H-2AD2DA	25mA	185mA
MX2H-2PT	25mA	45mA
MX2H-4PT	25mA	50mA
MX2H-2TC	25mA	25mA
MX2H-4TC	25mA	30mA
MX2H-8TC	30mA	30mA
MX2H-2PG	140mA	10mA
MX2H-2HC	110mA	0
MX2H-4ADH	30mA	48mA
MX2H-4WT	25mA	30mA

Power consumption calculation rules

Input power over the rated voltage range, more than 50℃ ambient temperature, derating design should be considered.
If the main module output current is less than the extension module consumption sum of current,need active extension module or external 24VDC power supply.

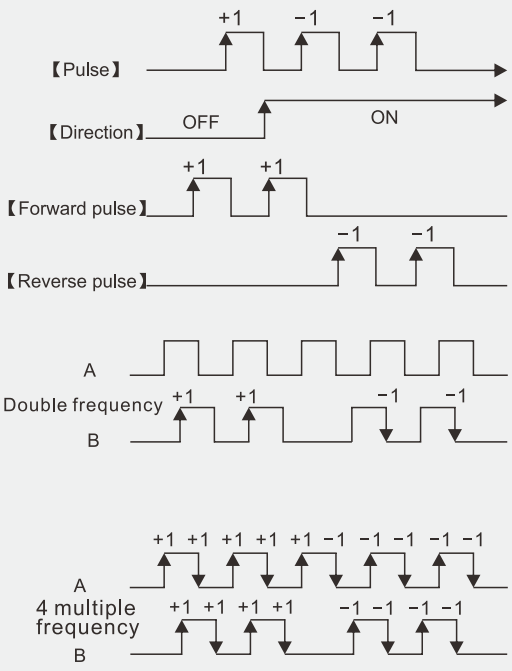
Super system extension

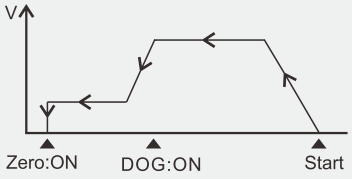
Maximum can be extended to 512 points, 8 special function module

Main module　　I/O Extension module　　Special function extension module

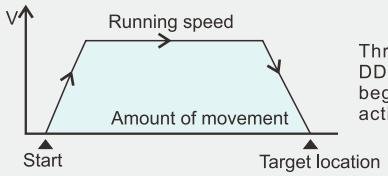
Rich movement and positioning control functions

Provide multi-channel high-speed input and output port, the built-in pulse output, which can realize multi-axis control.

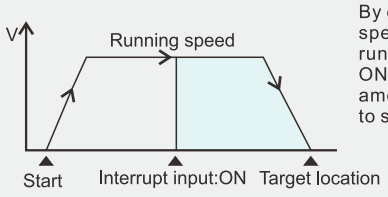




Through DSZR/DZRN instruction to origin regression rate began to action, after the origin point, reset signal output.



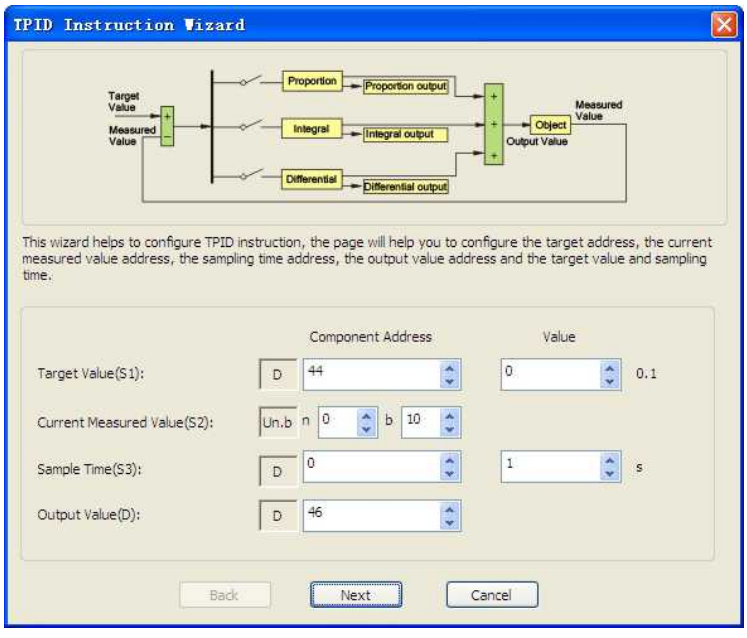
Through the drive DDRVI/DDRVA instruction, begins with running speed action, stop in target position.

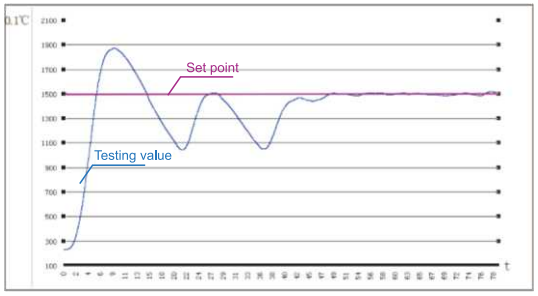


By driving DDVIT instructions to speed action; If in the process of running, the interrupt input to ON, is run after the specified amount of mobile, slowing down to stop.

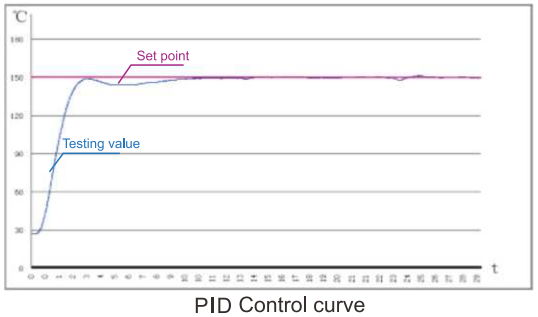
Integrated temperature control function

In the main module integrates the function of temperature control, coordinate MX2H series TC, PT module can achieve up to 32 TPID temperature control, support TPID parameters self-tuning function.





Parameter self-tuning curve



PID Control curve

Communication port features

MX2H/2V series PLC comes with PORT0,PORT1; use the PORT2,CAN0 need to extend card.

	COM port	COM port type	Isolation method	Applicable baud rate(BPS)	Supported protocol
	PORT0	RS232	No	115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200	Programming port agreement Free port conmmnication protocol Modbus communication protocol (slave station)
	PORT1	RS485	No	115200，57600，38400，19200，9600，4800，2400，1200	Free port conmmnication protocol Modbus communication protocol (master station, slave station) MXLink communication protocol (master station, slave station)
 MX2H-CAN-BD	CAN0	CAN①	Yes	250K, 125K, 100K, 50K, 40K, 20K；Customize the baud rate for below 250K	Free port conmmnication protocol MXLink communication protocol (master station, slave station)
 MX2H-RS485-BD	PORT2	RS485	Yes	115200，57600，38400，19200，9600，4800，2400，1200	Free port conmmnication protocol Modbus communication protocol (master station, slave station) MXLink communication protocol (master station, slave station)
 MX2H-CAN-RS232-BD	PORT2	RS232	No	115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200	Programming port agreement Free port conmmnication protocol Modbus communication protocol (slave station)
	CAN0	CAN①	No	500K, 250K, 125K, 100K, 50K, 40K, 20K；Customize the baud rate for below 500K	Free port conmmnication protocol MXLink communication protocol (master station, slave station)
 MX2H-RS232-BD	PORT2	RS232	No	115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200	Programming port agreement Free port conmmnication protocol Modbus communication protocol (slave station)
 MX2H-ETH-BD	PORT2	Ethernet	Yes	100M/10MSelf-adaption	TCP/IPagreement；Programming port agreement；Modbus TCPagreement(slave station)

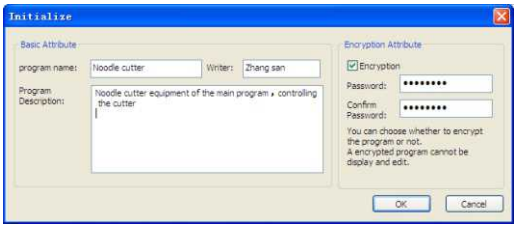
① Isolation expansion card support up to 250K, not isolation expansion card support up to 500K.

Reliable safety

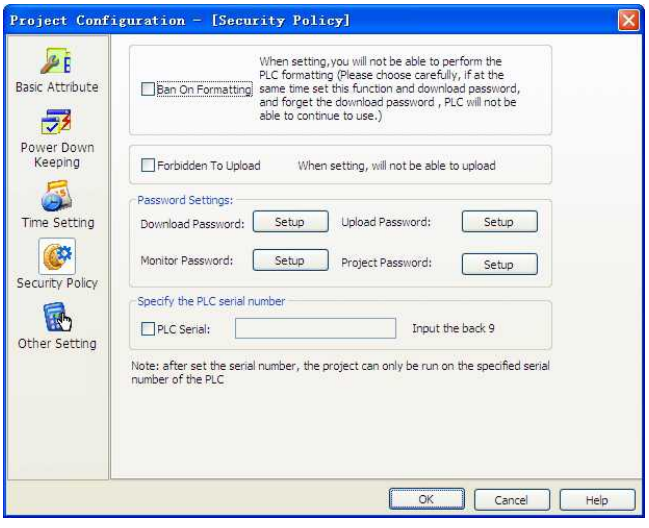
Safer, more stable, more reliable

- All the main program and subroutine encrypted separately, prevent leakage proprietary technology
- Limit password retries, prevent illegal decryption
- Upload/download/monitor all can set different passwords
- Provide ban format and upload function
- Support to compile the results file download, without user program, suitable for mass production and field maintenance
- User program specified PLC serial number, can only be run in the corresponding PLC

Main program and subroutine encryption



Safety strategy

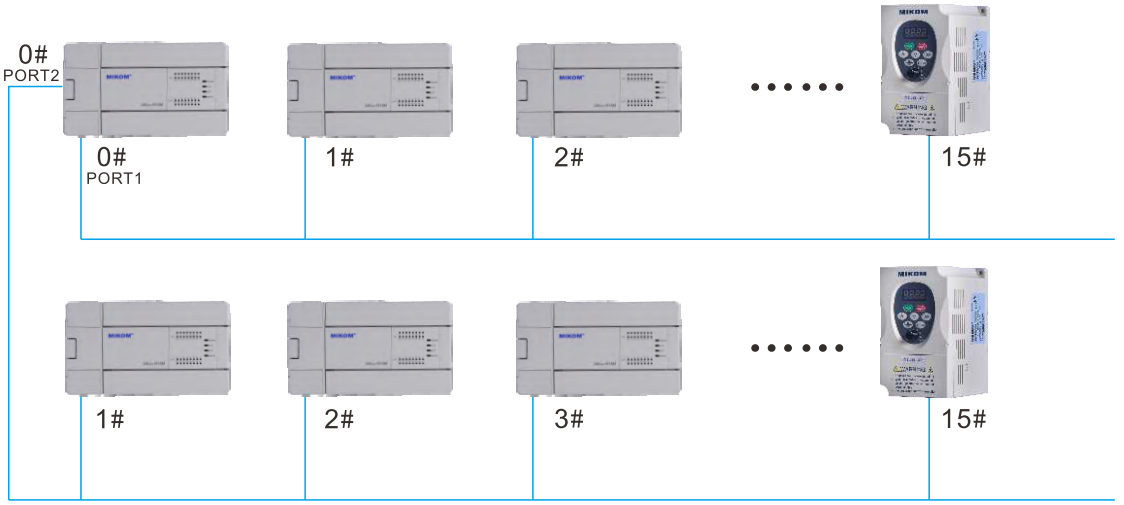


MXLink communication protocol

MXLink description

MXLink is independent research and development of the electrical it a small industrial equipment field bus. Access MXLink equipment can automatic switching part of the data, this makes the other devices in the network data access, This makes the other devices in the network data access,becomes as simple as access to its data. The equipment Data access between MXLink is completely equivalent (N:N network). MXLink can automatically detect the new join in the network equipment, any equipment from network interruption, other equipment will continue to exchange data, by any one device, MXLink can monitor to the whole network of communications.

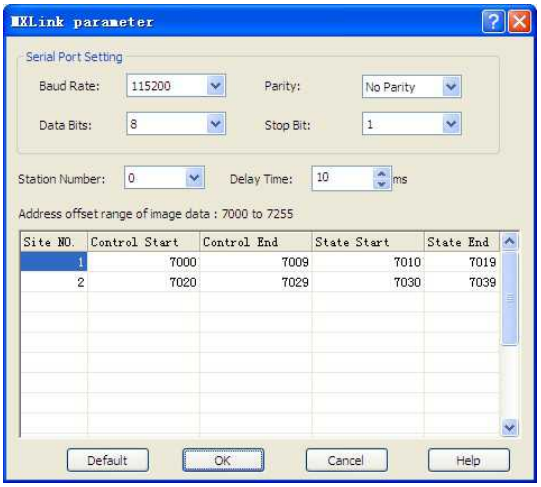
MX2H/2V supports two layer MXLink network, PORT1 (RS485 interface style) can form a layer of network, up to 16station; PORT2 (CAN interface/RS485 interface) CAN form a layer of network, up to 16station, RS485 interface way high baud rate 115.2K, the CAN interface baud rate up to 500K.



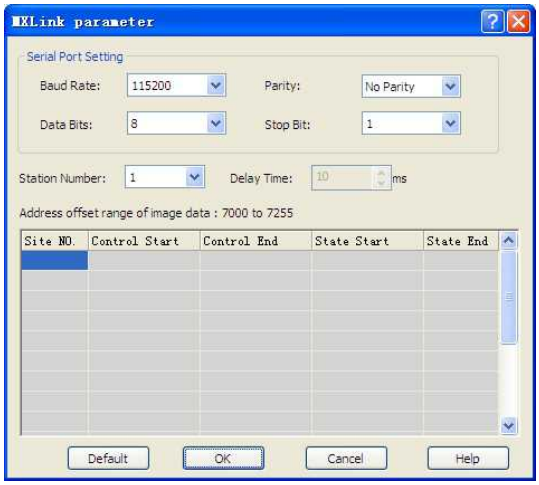
MXLink Communication diagram

MXLink configuration

MXLink only at 0 station (master station) configured in the scope of shared data stations. All shared data area can be flexible configuration, the following figure, the master station share data D7000~D7009 and D7020~D7029, stand 1 share data D7010~D7019, stand 2 share data D7030~D7039 to share data.



Master station configure



Slave station configure

MX2H-ETH-BD Ethernet expansion card

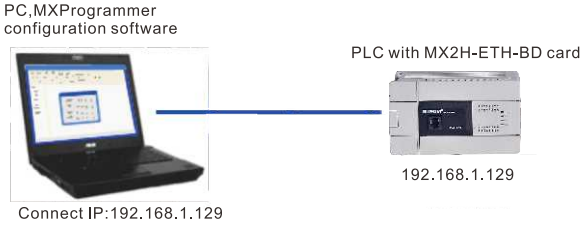
Product feature

- MX2H-ETH-BD card IP address, subnet mask,gateway address can be set through the net port or serial
- Dynamic access IP, make remote more simple
- Can be on PLC through backend software MXProgrammer download/upload,monitoring LAN or wan, provide high efficiency and low cost way of remote service
- Can use configuration software or touch screen to real-time monitoring PLC for the Modbus TCP,when through the configuration software of the Modbus TCP to monitor PLC, configuration software in the same picture to monitor more than one local or remote PLC

Product standard

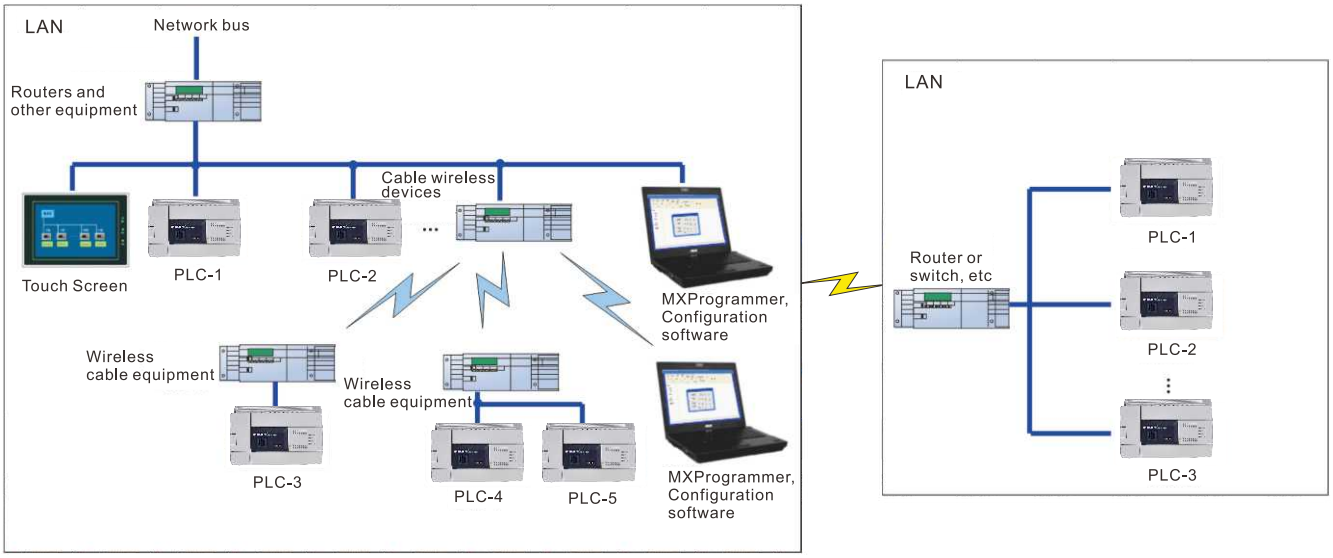
Signal standard	RMII
Communication mode	Net port support full duplex mode
Protocol	Programming mouth agreement and Modbus TCP communication protocol (slave station)
Work power	3.3VDC, PLCInternal power supply
Signal isolation	16KV ESD protect

Computer(MXProgrammer software,configuration software) direct connection with PLC

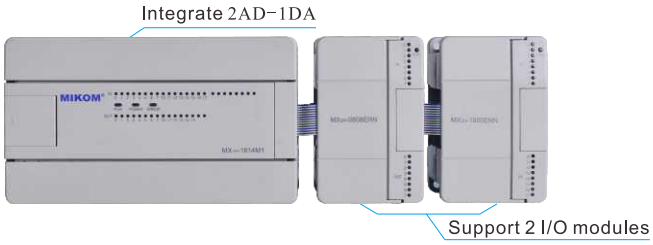


Touch screen and PLC directly connected

Network topology



MX1H series small PLC



MX1H series PLC is MIKOM launched a small programmable controller, the structure is compact, powerful, has a very high cost performance, can be integrated analog, can be controlled independently, and use the Modbus protocol and MXLink protocol as MX2H/2V series of remote I/O extension module and remote analog quantity control module is used, easy to build control network.

High stability, high reliability

- Wide working voltage:rated voltage AC100~240V, allow working voltage AC85~264V
- Strict anti-corrosion treatment, panel adapt the adverse environments, working temperature is -5℃～55℃, can withstand the shock and vibration
- The user program permanent preservation
- Excellent anti-interference
- Isolation of 24VDC power supply output, can be directly provide power supply to sensors, HMI, external intermediate relay, etc

Large capacity,high speed

- Program capacity is 12K steps, instruction speed is0.084us

Powerful communication function

- Provide free port, Modbus,MXLink(MIKOM special communication protocol)
- Convenient for system integration
- Integratable: CAN port
  485 port

Reliable security

- Multi-level password protection, all the main program and subroutine encrypted separately; Program can be binding specified serial number of the PLC, and effectively protect intellectual property rights of users

Integrated analog functions

- Integrated multi-channel 12bit analog input and output, simplify the small application system design

Extension module function

- Part MX1H module can support 2 MX2H series analog module and 2 I/O module

Real-time clock

- MX1H series PLC main module built-in real-time clock (RTC), provide the calendar function

High speed counter and output

- Provide multi-channel high-speed input and output port, built-in pulse output, which can realize multi-axis control

MX1H series integrated temperature control PLC

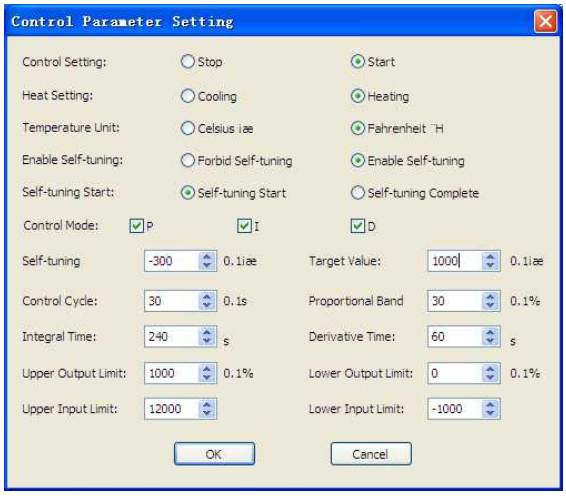
Product feature

- Support all function of MX1H series main module
- Integrated multiplex temperature sampling and control
- Support self-tuning function
- Support temperature control parameters uninterrupted output
- Output the flexible configuration, can be used as the output of the temperature control, also can be used as a common output

Product Selection

Type	I/O	RS485 port	CAN port	Output mode	Derivation function	Size (mm) L * W *H	Product order no.
MX1H-0816MTD-6LC	8input 16output	Support	–	Transistor	6 channels thermocouple input	126×90×72	M04010026
MX1H-9LC	9output	Support	–	Transistor	9 channels thermocouple/thermal resistance input	126×90×72	M04010006

System configuration



MXIH series selection table

Type	I/O	RS485 port	CAN port	Output mode	Derivation function	Size (mm) L*W*H	Product order no.
MX1H-0806MR	8 input	Support	–	Relay	–	126×90×72	M04010027
MX1H-0806MT	6 output			Transistor		126×90×72	M04010028
MX1H-0806MR1	8 input	Support	–	Relay	Integrate 4AD-2DA	126×90×72	M04010031
MX1H-0806MT1	6 output			Transistor		126×90×72	M04010032
MX1H-1208MR	12 input	Support	–	Relay	–	126×90×72	M04010060
MX1H-1208MT	8 output			Transistor		126×90×72	M04010061
MX1H-1208MR1	12 input	Support	–	Relay	Integrate 2AD-1DA	126×90×72	M04010064
MX1H-1208MT1	8 output			Transistor		126×90×72	M04010065
MX1H-1208MR2	12 input	Support	–	Relay	Integrate 1AD-1PT-1DA	126×90×72	M04010073
MX1H-1208MT2	8 output			Transistor		126×90×72	M04010069
MX1H-1208MR3	12 input	Support	–	Relay	Integrate 2PT-1DA	126×90×72	M04010074
MX1H-1208MT3	8 output			Transistor		126×90×72	M04010075
MX1H-1614MR	16 input	Support	–	Relay	Supports 2 I/O modules and	126×90×72	M04010043
MX1H-1614MT	14 output			Transistor	2 analog modules	126×90×72	M04010044
MX1H-1614MR1	16 input	Support	–	Relay	Integrate 2AD-1DA Supports 2 I/O modules and 2 analog modules	158×90×74	M04010077
MX1H-1614MT1	14 output			Transistor		158×90×74	M04010076
MX1H-1410MR	14 input	Support	–	Relay	Supports 2 I/O modules and 2 analog modules	126×90×72	M04010082
MX1H-1410MT	10 output			Transistor		126×90×72	M04010083
MX1H-2416MR	24 input	Support	–	Relay		158×90×74	M04010084
MX1H-2416MT	16 output			Transistor		158×90×74	M04010085
MX1H-3624MR	36 input	Support	–	Relay		195×90×74	M04010086
MX1H-3624MT	24 output			Transistor		195×90×74	M04010087

MXIH-CAN series selection table

Type	I/O	RS485 port	CAN port	Output mode	Derivation function	Size (mm) L*W*H	Product order no.
MX1H-0806MR-CAN	8 input	Support	Support	Relay	–	126×90×72	M04010029
MX1H-0806MT-CAN	6 output			Transistor		126×90×72	M04010030
MX1H-0806MR1-CAN	8 input	Support	Support	Relay	Integrate 4AD-2DA	126×90×72	M04010033
MX1H-0806MT1-CAN	6 output			Transistor		126×90×72	M04010034
MX1H-1208MR-CAN	12 input	Support	Support	Relay	–	126×90×72	M04010062
MX1H-1208MT-CAN	8 output			Transistor		126×90×72	M04010063
MX1H-1208MR1-CAN	8 input	Support	Support	Relay	Integrate 2AD-1DA	126×90×72	M04010066
MX1H-1208MT1-CAN	6 output			Transistor		126×90×72	M04010067
MX1H-1614MR-CAN	16 input	Support	Support	Relay	–	126×90×72	M04010045
MX1H-1614MT-CAN	14 output			Transistor		126×90×72	M04010046
MX1H-2416MR-CAN	24 input	Support	Support	Relay	–	158×90×74	M04010039
MX1H-2416MT-CAN	16 output			Transistor		158×90×74	M04010040
MX1H-3624MR-CAN	36 input	Support	Support	Relay	–	195×90×74	M04010041
MX1H-3624MT-CAN	24 output			Transistor		195×90×74	M04010042

MX1H Power consumption specification

Type	Logic circuit power(3.3V/GND)		Max current consumption(24V/GND)		Accessory power supply output(24V/COM)	
	Internal consumption	External available capacity	Internal consumption	External available capacity	Internal consumption	External available capacity
MX1H-2416MR	350mA	650mA	80mA	720mA	0mA	500mA
MX1H-2416MT	350mA	650mA	120mA	680mA	0mA	500mA
MX1H-3624MR	400mA	600mA	120mA	680mA	0mA	500mA
MX1H-3624MT	400mA	600mA	180mA	620mA	0mA	500mA

① 30 points (including) the following AC MX1H support 400 ma, 24 v power supply output

MX series specifications and technical indexes

Digital quantity input interface specifications

Project		High speed input X0~X7	Common input
Mode of input		Difference or source/drain type way, user can choose by S/S	
Electrical parameters	Detection voltage	Difference: DC5V single-ended: DC24V	
	Input impedance	Difference: 250Ω Single-ended: 3.3kΩ	4.3kΩ
	Input ON	External loop resistance less than 400Ω	
	Input OFF	External loop resistance more than 24kΩ	
Filter function	Software filter	0.8,1.6,3.2,6.4,12.8,25.6,51.2ms adjustable	
	Hardware filter	MX1H/2H: X0~X1 filtering time is 10us X2~X7 filtering time is 50us MX2V:X0~X7 filtering time is 1us The rest of the I/O port is 1ms	
High speed function		MX1H/2H: X0~X5 can realize high speed counter, interrupt, pulse capture, etc X6~X7 can realize the interrupt, pulse capture, etc X0~X1 port count top frequency is 50KHZ X2~X5 port count top frequency is 10KHZ Summation of input frequency demand is less than 100KHz MX2V: X0~X7 can realize high speed counter, interrupt, pulse capture, etc Port count the highest frequency is 200KHz Summation of input frequency demand is less than 800KHz	
Public terminal		There is only one public side as the S/S	

Digital output interface specifications

Project		Relay output port	Transistor output port	Differential output port
Loop power rated voltage		250VAC , Below 30VDC	5~24VDC	5VDC
Circuit insulation		Relay mechanical insulation	Optocoupler insulation	Insulation IC
Motion instructions		Relay output contact closure LED light up	Optical coupling is drive LED light up	When output positive voltage difference the LED light up
Leakage current when open		—	Less than 0.1mA/24VDC	Negative output level difference
Minimum load		2mA/5VDC	5mA (5～24VDC)	—
Max current output	Resistive load	4A/2point group public side 8A/4point group public side 8A/8point group public side	0.3A/1point 0.8A/4 point 1.6A/8 point	20mA/point
	Inductive load	80VA	7.2W/24VDC	10mA/point
ON response time		20ms Max	Y0~Y1: Above is less than 5us/10mA Other: Above is less than 0.5ms/100mA	Above is less than 1us/10mA
OFF response time				
Fuse protection		No		

Analog input module index

Project		Index
Artificial circuit		24VDC(-15%~20%),Maximum permissible ripple voltage is 5%, 48mA (external power supply or external from the host unit)
Digital circuit		3.3VDC 25mA(From the interior of the main module power supply)
Slew rate		2ms/Channel
Analog input range	Voltage input	-10V~10V,Input impedance for 500kΩ
	Current input	-20mA~20mA,,Input impedance for 250Ω
Resolution	Voltage input	5mV
	Current input	20 μA
Accuracy		±1%full scale
Isolation		Between analog circuits and digital circuits through digital isolator in isolation; Analog circuit with 24 VDC power supply module input internal isolation; No separation between analog channel

Analog output module index

Project		Index
Analog circuit		24VDC(-15%~20%),Maximum permissible ripple voltage is 5%, 158mA (external power supply or external from the host unit)
Digital circuit		3.3VDC 25mA(From the interior of the main module power supply)
Slew rate		1ms/channel (change the channel number will not change the converting speed)
Analog output range	Voltage output	-10V~10VDC（External load impedance is more than1kΩ）
	Current input	0~20mA（External load impedance is less than500Ω） 4~20mA（External load impedance is less than500Ω）
Resolution	Voltage output	5mV
	Current input	20 μA
Accuracy		±1%full scale
Isolation		Between analog circuits and digital circuits through digital isolator in isolation; Analog circuit with 24 VDC power supply module input internal isolation; No separation between analog channel

Integrated analog index

Project		Index
Slew rate		2ms/channel
Analog input range	Voltage input	-10V~10V,Input impedance for 500kΩ
	Current input	-20mA~20mA,Input impedance for 250Ω
Analog output range	Voltage output	-10V~10VDC（External load impedance is more than1kΩ） 0~20mA（External load impedance is less than500Ω）
	Current output	4~20mA（External load impedance is less than500Ω）
Resolution	Voltage	5mV
	Current	20 μA
Accuracy		±1%full scale

MX series specifications and technical indexes

Thermocouple temperature input module index

Project	Index			
	(℃)		(℉)	
Analog circuit	24VDC(-15%~20%),Maximum permissible ripple voltage is 5%, 30mA (external power supply or external from the host unit)			
Digital circuit	3.3VDC 25mA(From the interior of the main module power supply)			
Thermocouple type	K、J、E、N、T、R、S			
Slew rate	100ms/ channel			
Nominal temperature range	K	−100℃~1200℃	K	−148℉~2192℉
	J	−100℃~600℃	J	−148℉~1112℉
	E	−100℃~850℃	E	−148℉~1562℉
	N	−100℃~1200℃	N	−148℉~2192℉
	T	−200℃~300℃	T	−328℉~572℉
	R	−0℃~1600℃	R	−32℉~2912℉
	S	−0℃~1600℃	S	−32℉~2912℉
Minimum resolution	K	0.3℃	K	0.54°F
	J	0.2℃	J	0.36°F
	E	0.3℃	E	0.54°F
	N	0.3℃	N	0.54°F
	T	0.2℃	T	0.36°F
	R	0.5℃	R	0.9°F
	S	0.5℃	S	0.9°F
Accuracy	±(1%total range±1.5℃)			
Isolation	Between analog circuits and digital circuits through digital isolator in isolation; Analog circuit with 24 VDC power supply module input internal isolation; No separation between analog channel			

Thermal resistance temperature input module index

Project	Index			
	(℃)		(℉)	
Analog circuit	24VDC(-15%~20%),Maximum permissible ripple voltage is 5%, 30mA (external power supply or external from the host unit)			
Digital circuit	3.3VDC 25mA(From the interior of the main module power supply)			
Thermal resistance type	Pt100 、 JPt100 、 Cu100 、 Cu50			
Slew rate	100ms/ channel			
Nominal temperature range	Pt100	−150℃~600℃	Pt100	−238℉~1112℉
	JPt100	−150℃~500℃	JPt100	−238℉~932℉
	Cu100	−30℃~120℃	Cu100	−22℉~248℉
	Cu50	−30℃~120℃	Cu50	−22℉~248℉
Minimum resolution	Pt100	0.2℃	Pt100	0.36°F
	JPt100	0.2℃	Pt100	0.36°F
	Cu100	0.2℃	Cu100	0.36°F
	Cu50	0.2℃	Cu50	0.36°F
Accuracy	±1%full scale			
Isolation	Between analog circuits and digital circuits through digital isolator in isolation; Analog circuit with 24 VDC power supply module input internal isolation; No separation between analog channel			

Weighing module index

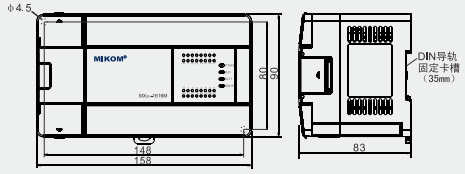
Project		Index
Analog circuit		24VDC(-15%~20%),Maximum permissible ripple voltage is 5%, 48mA (external power supply or external from the host unit)
Digital circuit		3.3VDC 25mA(From the interior of the main module power supply)
Slew rate		2ms/channel
The weighing function	Sensor characteristic	0～4mV/V
	Measuring signal range	-40mV～40mV
	Resolution	50uV
Output excitation power supply	Voltage output	10VDC（Rated value）±5%
	Max current	240mA
	Load capacity	40～4010Ω
Accuracy		±0.2%full scale
Connect sensor maximum distance		100m
Isolation		Between analog circuits and digital circuits through digital isolator in isolation; Analog circuit with 24 VDC power supply module input internal isolation; No separation between analog channel

High precision analog input module index

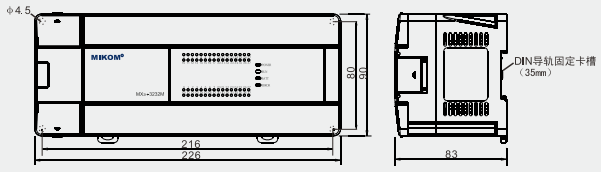
Project		Index
Analog circuit		24VDC(-15%~20%),Maximum permissible ripple voltage is 5%, 48mA (external power supply or external from the host unit)
Digital circuit		3.3VDC 25mA(From the interior of the main module power supply)
Slew rate		2ms/channel
Analog input range	Voltage input	-10V~10V,Input impedance for 500kΩ
	Current input	-20mA～20mA,Input impedance for 250Ω
Resolution	Voltage input	1mV
	Current input	5μA
Accuracy		±0.2%full scale
Isolation		Between analog circuits and digital circuits through digital isolator in isolation; Analog circuit with 24 VDC power supply module input internal isolation; No separation between analog channel

Mounting dimension

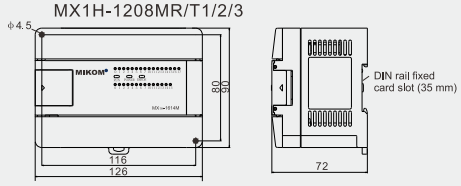
MX2V-1616MT MX2V-1616MT1
MX2H-1616MR/T MX2H-1616ER/T
MX2H-1616ER/TN



MX2H-3232MR/T MX2V-2828MT

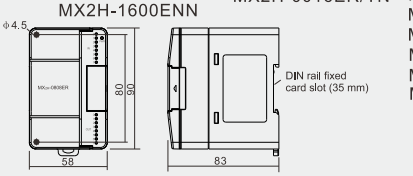


MX1H-0806MR/T MX1H-0806MR/T1 MX1H-0816M-6LC
MX1H-1410MR/T MX1H-1614MR/T MX1H-9LC
MX1H-1208MR/T1/2/3

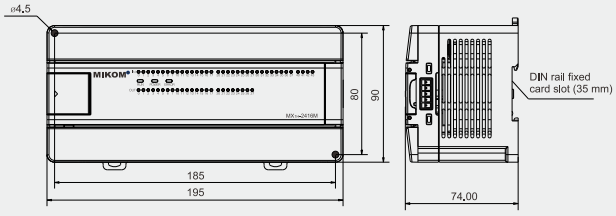


MX2H-0800ENN MX2H-0008ER/TN
MX2H-0808ER/TN MX2H-0016ER/TN
MX2H-1600ENN

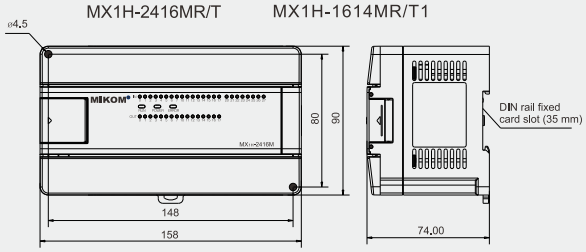
MX2H-2AD MX2H-8TC
MX2H-4AD MX2H-2PT
MX2H-2DA MX2H-4PT
MX2H-4DA MX2H-2PG
MX2H-2TC MX2H-2HC
MX2H-4TC MX2H-4WT
MX2H-4ADH MX2H-2AD2DA



MX1H-3624MR/T



MX1H-2416MR/T MX1H-1614MR/T1

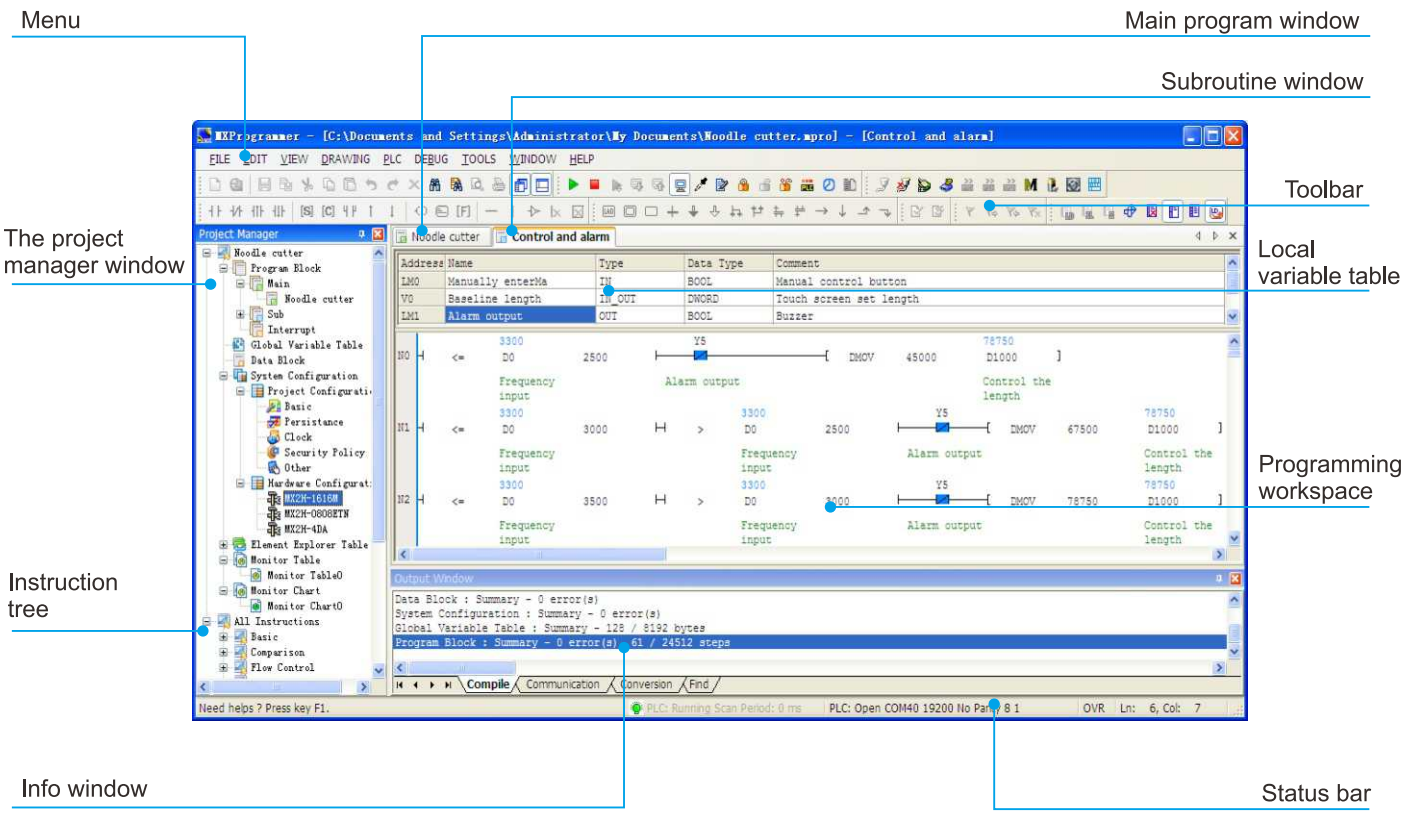


Units:mm

MXProgrammer PLC programming environment

MXProgrammer whole chinese programming software

Conform IEC61131-3 international standard

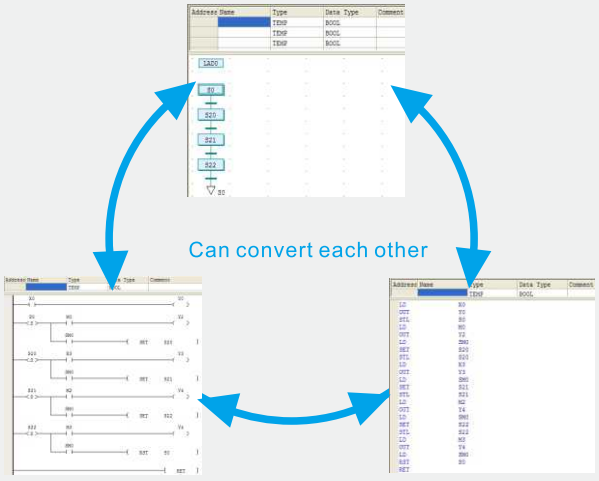


MXProgrammer—PLC programming environment

Efficient program editing and transplantation

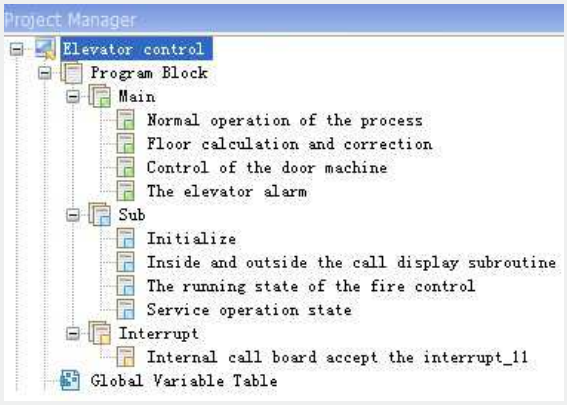
Three kinds of programming languages

Support the ladder diagram and instruction list, sequence function diagram three kinds of programming languages, three languages can convert each other. Ladder diagram and instruction list transformation can be retained.



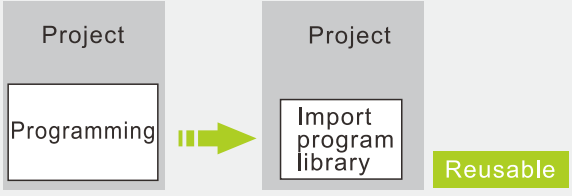
Many of the main program function

Can be established in a project more than one of the main program, each scan cycle all the main program loop scanning, in turn in large complex systems integration project, many of the main program function for complex projects more modular.



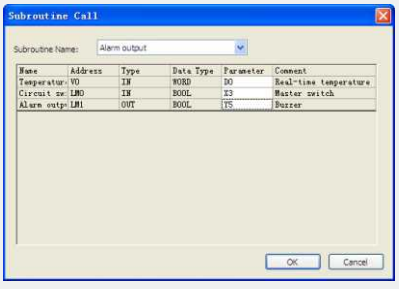
Program import and export function

The main program and subroutine can import and export, repeated use in different engineering, don't need to write again.



Subroutine

Subroutine parameter types are divided into IN, IN-OUT and OUT type, input and output parameters can be set, if changing subroutine names, all call the subroutine place Iin the engineering change automatically, without having to manually change.



Global variable table

Different categories element paging display; SM components, SD components don't need to manually add annotations; Support for import/export of global variables, greatly convenient for customer management of the engineering documents.

Spinning frame | Global Variable Table

X | Y | M | S | SM | T | C | D | Z | SD | U | Combination

	Name	Address	R/W	Reference	
1		SM0	R	2/0	Monitoring running bit
2		SM1	R	1/0	The first cycle mark
3		SM2	R		Electricity sign
4		SM3	R		System Error
5		SM4	R		Low Battery Voltage
6		SM5	R		AC power cut detection mark

Local vriable table

Program to support local variables, word and bit unit a local variable of each program's each support for 64.

Logic control subroutine

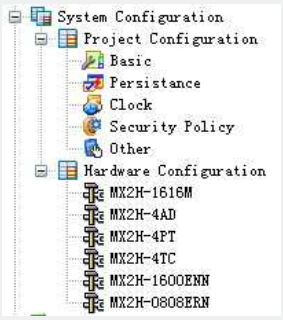
Address	Name	Type	Data Type	Comment
LM0	Control button	IN	BOOL	Button
V0	The input values	IN_OUT	WORD	Calculated value
LM1	Output	OUT	BOOL	Output channel
V1	Working time	TEMP	WORD	Length of time
V2	Execution speed	TEMP	WORD	The work efficiency

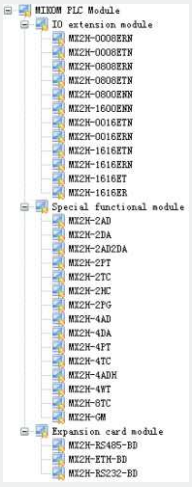
MXProgrammer—PLC programming environment

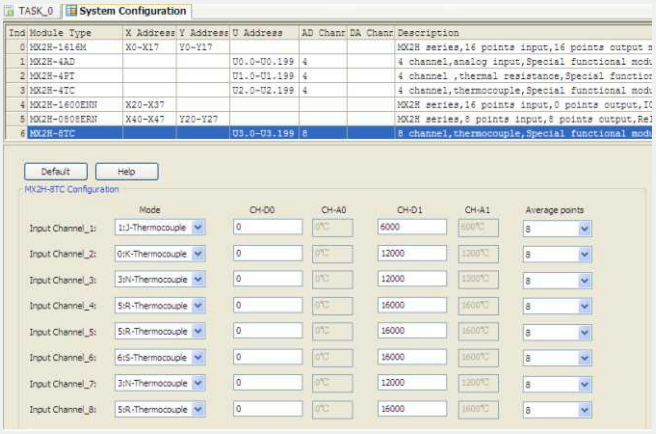
Practical and convenient system configuration function

The system configuration is provided in each function module configuration window, simple and intuitive, programming without instructions. Special module without having to define the data storage address, through reading and writing U component implementation for the operation of BFM area, without using the FROM/TO the instructions.

System configuration

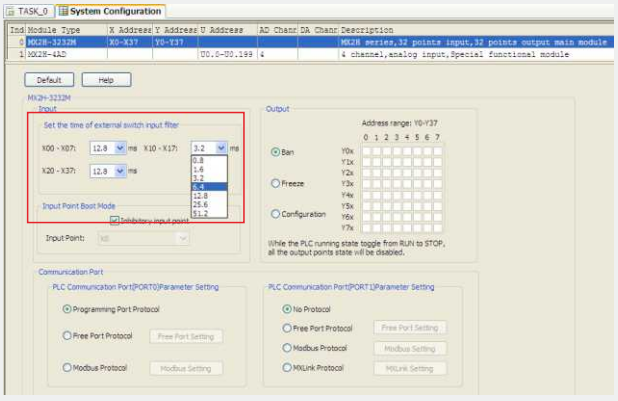






Digital filtering

Main module and extended module of all input ports support digital filter, filter time by software configuration, support 0.8ms,1.6ms,3.2ms,6.4ms,12.8ms,25.6ms,51.2ms.



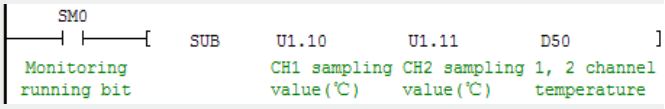
Word element bit specified

If the tenth position of D1 to ON, the 0 position of D100 to ON.

Bit unit of indexed addressing

If Z0=3, Z1=2, the X3 to ON, the Y12 conduction.

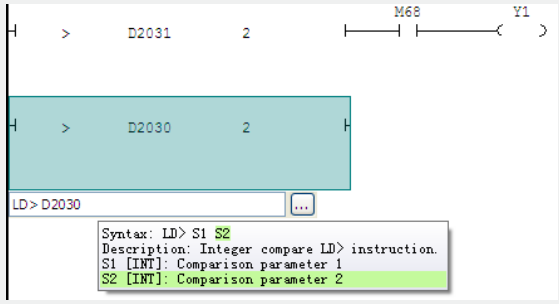
Special module and U component addressing



With the above instructions can be the temperature difference of 8TC channel 1 and channel 2 in the D50.

Instruction prompt

Complete instruction function,When you enter the characters enough to distinguish the instruction, as long as you press the Tab key, Enter key or the blank space key, can immediately insert the selected command keyword.
Parameter Info provide the information needed to related instructions of parameter number, parameter name and parameter type, to highlight the required next parameters.



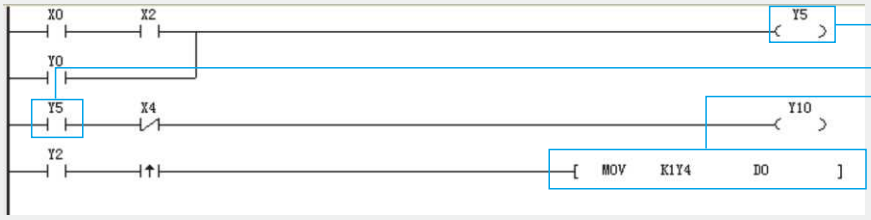
MXProgrammer—PLC programming environment

Flexible debug method

MXProgrammer provides written component values, forced element, cancel the mandatory and other means of debugging, provides the components table, cross reference table, monitoring table and order cancellation function.

Components table

In the program, the number of active and passive quoted each element can be reflected in the element table, passive reference to join the great convenience of the users to debug.

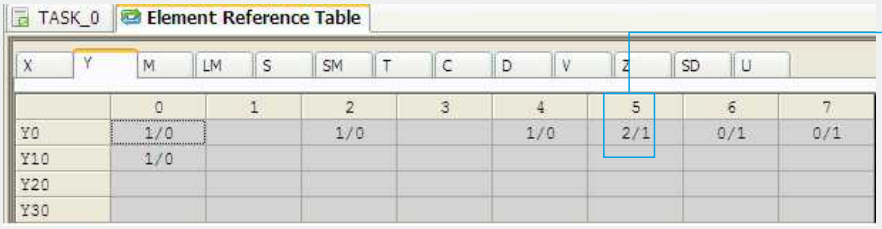


Y5 active reference

Y5 active reference

Y4、D0 active reference

Y5、Y6、Y7passive reference

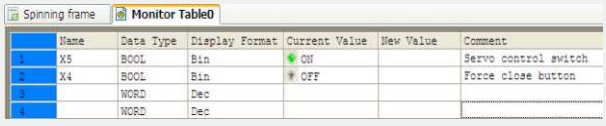


Y5 active reference twice
passive reference once

Note: Active reference number refers to the number of elements as the parameters of the instruction;
Passive reference number refers to the element not as the parameters of the instruction, but the execution of instructions indirectly used the number of times.

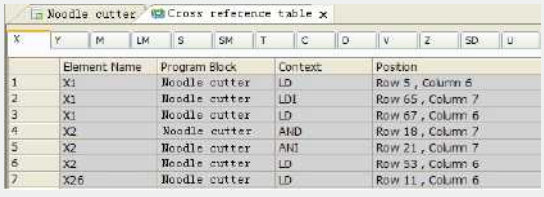
Practical and convenient monitoring table

Defines the components of a element in the global variables, element of a comment will be displayed on the monitor in the table, so you know status, or values represented by the meaning of the monitoring.



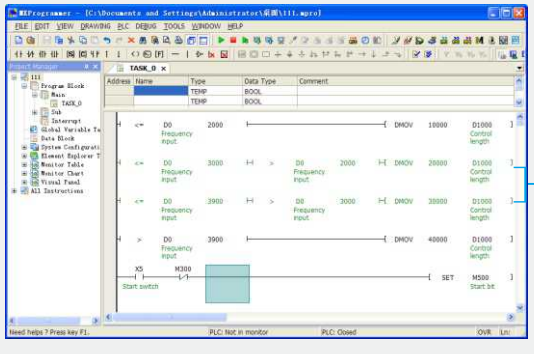
Cross reference table

In the cross reference table, can display the components used in the engineering of each place, double-click automatically jump to the program corresponding position.



Instruct cancellation function of ladder diagram

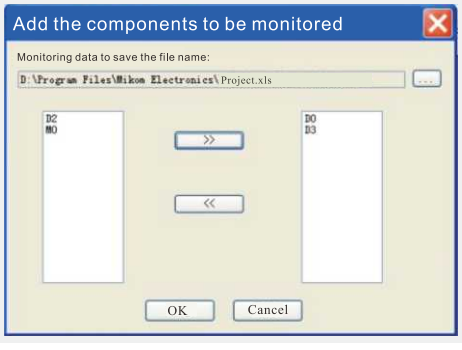
Below program, the second and third line is the color of the cancellation procedure and comment the same color, be cancelled part program no execute.



Be cancelled instruction

Data record

Trajectory monitoring function, can monitor the change of the values in the table, export to EXCEL documents, convenient to check the data changes in the details.



MXProgrammer monitoring diagram and visualization panel

The function introduction of the monitoring diagram

MXProgrammer provides monitoring figure (scope view), component values change over time in monitoring can be shown in the figure, convenient debug view the data changes in the details.

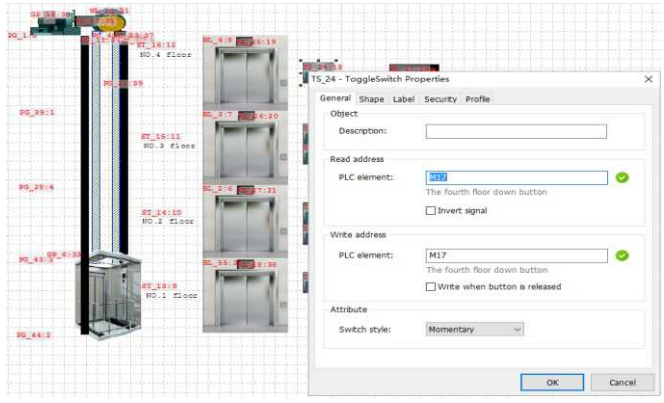
CH1 for waveform without the anti-jamming measures
CH2 for waveform after the anti-interference measures

- Support the absolute time axis, facilitate curve of archiving and analysis;
- MouseOver real-time display sampling point current sampling value, minimum, maximum and average;
- Can set the sampling interval and sampling time;
- Can tracking/pause curve capture is advantageous for the observation curve;
- Support for importing curve function;
- Support the monitoring diagram of import and export functions;
- Support single curve and multicurve operation;
- Support various curve scaling, pan functions, making it easy for users to flexible operation;
- Support curve display, panoramic display and tiled, applicable to the analysis of curve under different conditions;
- Support multiple sets of monitoring curve;

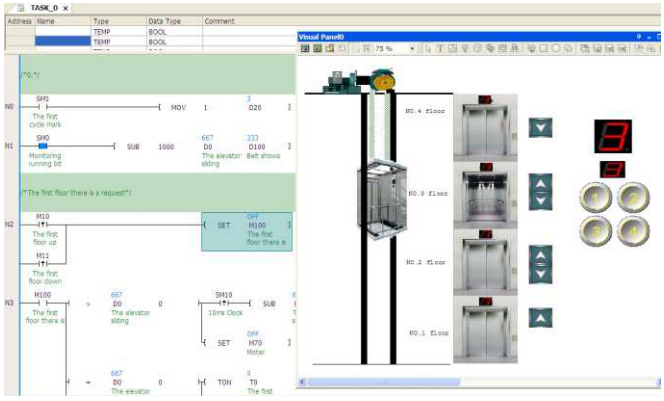
The function introduction of the visualization panel

MXProgrammer provides visualization panel, visualization panel is a kind of monitoring in automatic control system monitoring layer of software platform and development environment, can be used to computer the automation equipment or process monitoring, control and management, is a kind of to provide users to quickly build industrial automatic control system has the function of monitor software tools.

Editing interface:



Operation interface:



- Powerful interface display

Visualization panel make full use of the Windows graphics functions improve the characteristics of the boundary surface is beautiful, the characteristics of the style of the visual interface, rich in the toolbar, operators can directly enter into the state of development, to save time.

Provide abundant drawing tools to users and gallery, and can draw all kinds of industrial interface follow one's inclinationsly, rich animation connection mode, such as hidden, flicker, mobile, etc., vivid, intuitive interface.

- Powerful database

Equipped with real-time database, can store all kinds of data, such as analog and discrete quantity, character and so on, to realize data exchange with external devices.

- Rich function module

Provide a rich control function library, satisfy the requirement of the user control requirements and current field. Use a variety of functional modules, complete real-time monitoring, provide a reminder alarm, formulation functions such as operation, make the system have better man-machine interface, easy to operate.

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