XC SMALL-SIZED PLC

XC Series
XC1 series/XC2 series/XC3 series/XC5 series/XCM series

- Rich control projects
- Complete product lineup
- Flexible extension performance
- Fit for various needs

XC Small-sized PLC

Special function extension BD card

XC-2AD2PT-BD	XC-2AD2PT-H-BD	XC-COM-H-BD	XC-COM-BD	XC-SD-BD
2-channel 14-bit high precision analog input (voltage),2-channel PT100 temperature input, built-in PID function.	2-channel 14-bit high precision analog input (voltage), 2-channel PT100 temperature input, built-in PID function. It is electric isolated from the PLC unit, and the AD input channel enhances the protection function.	RS232, RS485 communication BD card, to extend the communication ability of PLC. RS485 port has isolation.	RS232, RS485 communication BD card, to extend the communication abilityofPLC.	Install the SD card to extend the XC PLC internal capacity and store data.

XC-2AD2DA-BD	XC-TBOX-BD	XC-OFC-BD	XC-4AD-BD	XC-4AD-H-BD
2 channels of analog input (voltage), 2 channels of analog output (current).	Make the PLC connect to Ehternet, the function is same to module T-BOX.	Connect to PLC for RS485 optical fiber communication.	2 channels of analog voltage input, 2 channels of analog current input.	2 channels of analog voltage input, 2 channels of analog current input. It is electric isolated from the PLC unit, and the AD input channel enhances the protection function.

Special PLC

- PLC XC3-19AR-E with analog function

  Logic control
  Analog input and output
  Cost-effective, save space

- PLC XMP/XP with HMI function

  XC3 series PLC functions
  TH series HMI functions
  Integral controller, integrated solution

Peripheral equipment

TM/MTG/TG series HMI	OP text display	Programming cable	Communication cable	USB-COM	COM-BLT 【Bluetooth module】
HMI		Connection			

Product Introduction

XC basic unit divided by series

• XC1 series cost-effective type

Control points: 10/16/24/32

The control system of small points is suitable for general application occasions. Its function is relatively simple. It can carry out logic control, data operation and other functions.

• XC2 series   basic type

Control points: 14/16/24/32/42/48/60

The functions include data processing, high speed count, high speed pulse output, communication. The processing speed is 2 times of XC1 series. The register numbers are less than XC3, cannot expand module but can connect expansion BD (except 14/16/42 models).

• XC3 series   standard type

Control points: 14/24/32/42/48/60

The functions include data processing, high speed count, high speed pulse output, communication, PWM, frequency measurement, precise timing, interruption. Can connect expansion module and BD (14 points cannot support expansions; 42 points cannot support BD).

• XC5 series enhanced type

Control points: 24/32

In addition to all the functions of XC3, it also supports the functions of 4-axis pulse output, connection between expansion module and BD card, and has larger internal resource space.

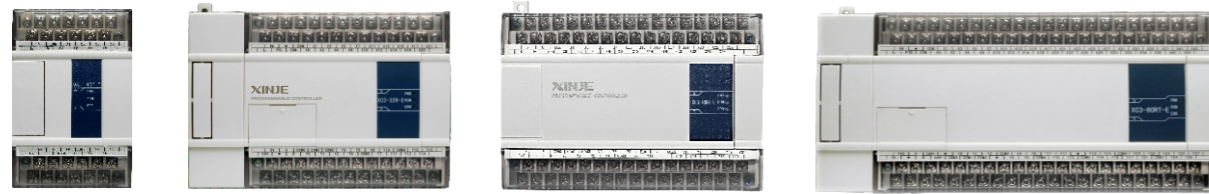### • XCM series   motion control type

Control points: 60

Support 10-axis pulse output. Support most functions of XC series such as PID control, high speed count, interruption. Cannot connect expansion modules but can install BD card.

Sort by I/O numbers

| 10/14/16 points | 24/32 points | 42 points | 48/60 points |

Extension module

• I/O extension

XC-E16X XC-E8X8YR XC-E32YR

If the I/O numbers of main unit cannot meet the requirements, it can use I/O extension modules.

Input extension module	Output extension module	I/O extension module
XC-E8X XC-E16X XC-E32X	XC-E8YR XC-E8YT XC-E16YR XC-E16YT XC-E32YR XC-E32YT	XC-E8X8YR XC-E8X8YT XC-E16X16YR XC-E16X16YT

• MA series extension module

MA-8X8YR Digital value 8 I nputs 8 outputs

MA-4AD2DA Analog value 4 inputs 2 outputs

Based on Modbus protocol, can extend up to 16 modules

Digital I/O	Analog I/O	Temperature control
MA-8X8YR , MA-8X8YT MA-16X MA-16YR , MA-16YT	MA-2DA , MA-4DA MA-4AD , MA-8AD-A(V) MA-4AD2DA	MA-6PT-P MA-6TCA-P

★Note: the model with "H" is photoelectricity isolation for each channel.

• Analog extension

XC-E4AD-H XC-E4DA-H XC-E4AD2DA-H

AD, DA transformation, temperature control

AD model	DA model	Mixed model
XC-E2AD-H XC-E4AD-H XC-E8AD-H XC-E8AD-B	XC-E2DA-H XC-E4DA-H XC-E4DA-B-H	XC-E4AD2DA-H XC-E4AD2DA-B-H

• Temperature control

XC-E6PT-P XC-E6TCA-P

Pt100 thermal resistor and K/E thermocouple signal input, built-in PID function

PT100	Thermocouple model	Analog and temperature mixed model
XC-E2PT-H XC-E6PT-H XC-E6PT-P-H	XC-E2TCA-P XC-E6TCA-P	XC-E3AD4PT2DA-H XC-E2AD2PT2DA

High speed calculation

Basic instruction 0.2~0.5μs, scanning time 10000 steps 5ms, program capacity 32K~128K.
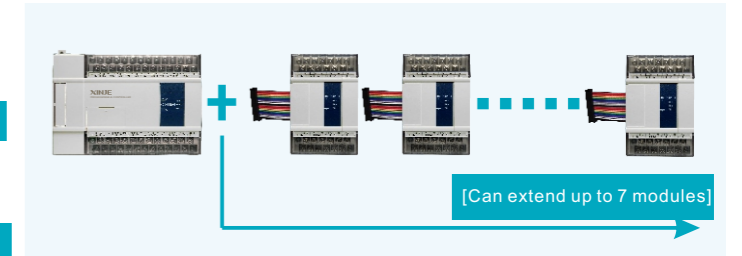
Rich extensions

In order to meet more application needs, XC series PLC can extend I/O module, analog module, temperature control module. Support 7 different modules and 1 BD card.

I/O extension module

① To extend I/O numbers, the numbers are 8~32, can extend the basic unit I/O numbers to 284.
② The output expansion module contains transistor (T) and relay (R).
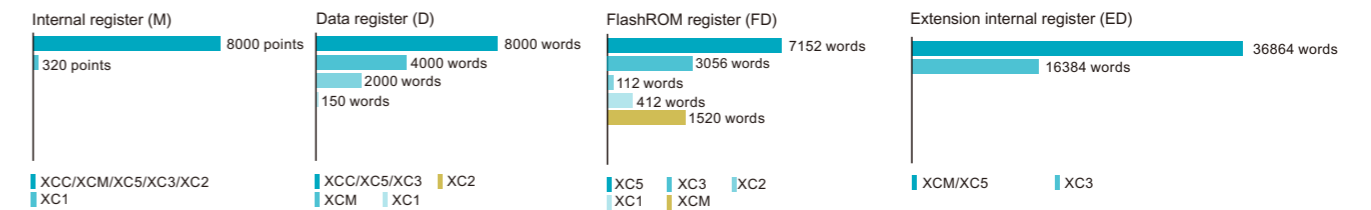
Analog and temperature extension module

① AD, DA transformation function, fit for process control system such as temperature, flow, liquid level, pressure, etc.

② Built-in PID function, wide range of application, high control accuracy.

③ Each channel of XC-E6TCA-P and XC-E2AD2PT2DA can perform PID and auto-tune individually, exchange data with PLC by instruction FROM and TO.

[Can extend up to 7 modules]

Extension BD

① AD, DA transformation function, fit for process control system such as temperature, flow, liquid level, pressure, etc.

② Can install on the PLC directly, not occupy extra space, with wired and wireless communication functions.

Larger capacity for soft component

Internal register (M)

8000 points
320 points

■ XCC/XCM/XC5/XC3/XC2
■ XC1

Data register (D)

8000 words
4000 words
2000 words
150 words

■ XCC/XC5/XC3 ■ XC2
■ XCM ■ XC1

FlashROM register (FD)

7152 words
3056 words
112 words
412 words
1520 words

■ XC5 ■ XC3 ■ XC2
■ XC1 ■ XCM

Extension internal register (ED)

36864 words
16384 words

■ XCM/XC5 ■ XC3

Communication function

● Multi-communication port (max 4 ports), support RS232, RS485, Ethernet. Can communicate with frequency inverter, meter and other devices, easy to build communication network.
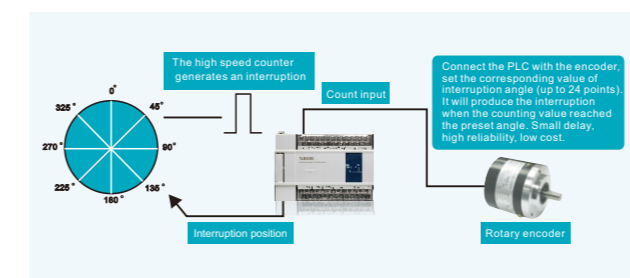
High speed count

● XC series PLC has 2~6 channels 2 phases 32 bits high speed counter and high speed count comparator, can connect rotary encoder directly and count the encoder signal.
● The counting mode includes single phase (incremental mode), pulse and direction mode, AB phase mode (*1, *4). The max frequency is 80KHz.
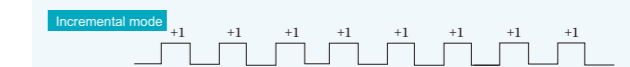
Counting input

Sensor Rotary encoder

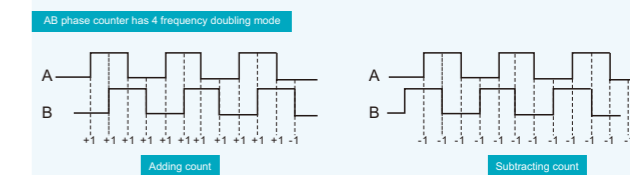| | X1 | X3 | X5 | |
| COM | X0 | X2 | X4 | X6 |
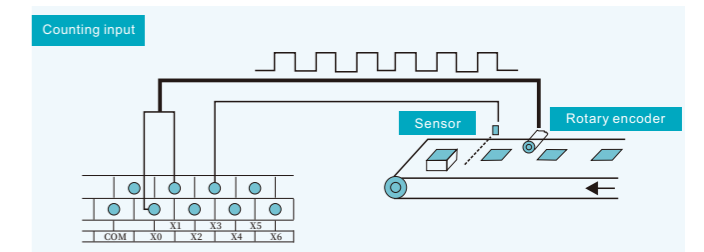
24-segment high speed count interruption

● High speed count interruption has good real-time feature.
● The high speed count has 24-segment 32 bits preset value, the interruption is produced when the count difference value is equal to the preset value.

The high speed counter generates an interruption

Count input

Connect the PLC with the encoder, set the corresponding value of interruption angle (up to 24 points) It will produce the interruption when the counting value reached the preset angle. Small delay, high reliability, low cost.

Interruption position

Rotary encoder

Various counting modes

Incremental mode

+1 +1 +1 +1 +1 +1 +1 +1

4 frequency doubling mode

AB phase counter has 4 frequency doubling mode

A
B

Adding count

A
B

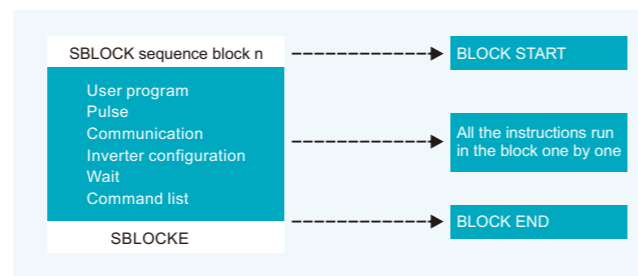Subtracting count

PLC PID control

● XC series PLC has PID control instruction and auto-tune function.
● Users can get the best sampling time and PID parameters by auto-tune function, improve the controlling accuracy.

PID principle diagram

RS485

PID application of constant water supply

Power
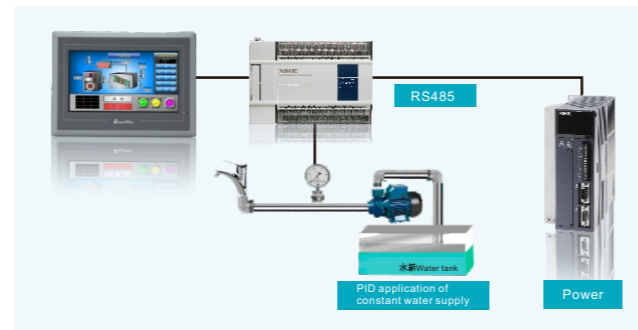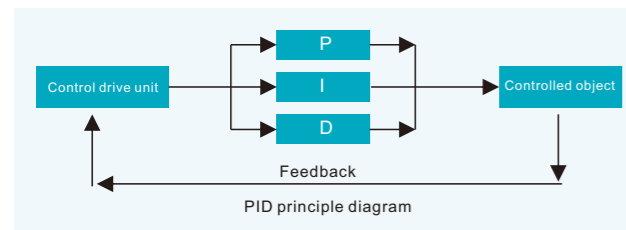
Sequence block

All the instructions run one by one in the sequence block. The next instruction will run after the current instruction ends.

● The block can optimize the programming method of pulse and communication instruction in the program.
Multi-pulse and communication instructions cannot run at the same time in the process which makes the programming method complicated. The block can simplify the program.

SBLOCK sequence block n ————————➤ BLOCK START

User program
Pulse
Communication
Inverter configuration
Wait
Command list

All the instructions run in the block one by one

SBLOCKE ————————➤ BLOCK END

Precise timing

●32 bits instruction STR is precise timing function.
●The precise timer will generate an interruption flag when it reaches the timing value. Each precise timer has corresponding interruption flag.
●The precise timer is a 1ms 32 bits timer.

Frequency measurement

● 32 bits instruction FRQM can measure the frequency.

Real-time clock

● Built-in real-time clock, Li-battery power-off retentive.

Self-diagnosis

● Power-on self-examination, timer monitoring, grammar checking.

Password protection

● 6 bits ASCII, protect the program security.
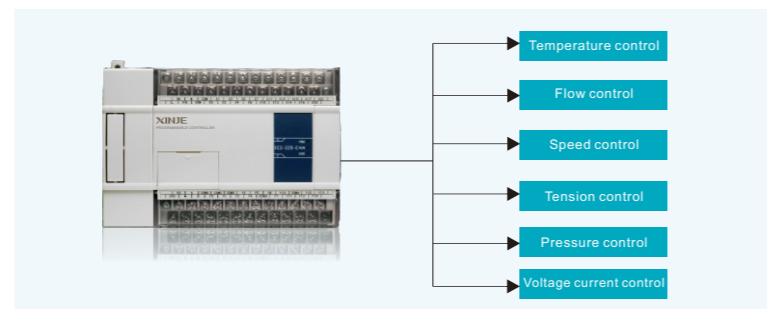
Small size, easy to install

● Compact structure, improve the utilization, two installation modes.

XC3-19AR-E meets diverse needs

● Has analog I/O function without connecting extension module

Logic control and analog I/O in one unit
Digital input: 9 (NPN optical-coupler isolation); digital output: 10 (relay)
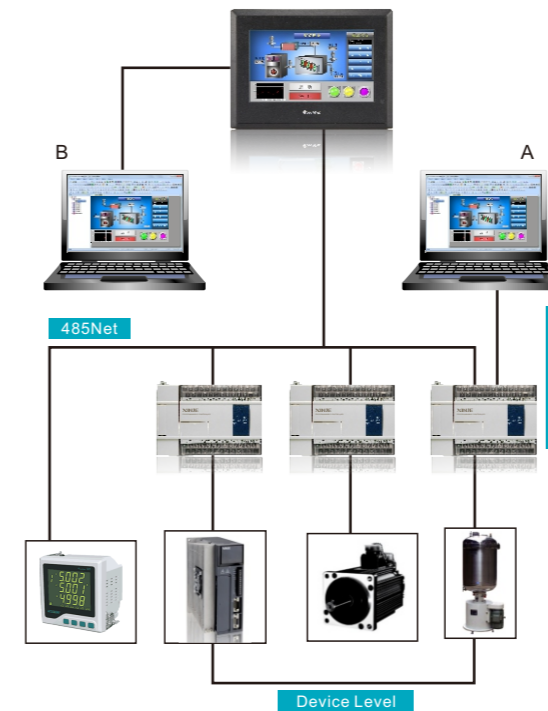Analog input: 8 (voltage); analog output: 2 (voltage/current)

● 12 bits high precision analog input, 8 bits analog output
● 2 channels AB phase input, 4 channels high speed count (10KHz)
● 2 channels 32 bits pulse output
● Cost-effective, save space

Temperature control
Flow control
Speed control
Tension control
Pressure control
Voltage current control

Powerful communication and networking function

XC series PLC supports Modbus protocol, free format protocol and other complicated network. The PLC can communicate with printer and meter through free format protocol.

● Modbus networking
XC series PLC supports Modbus master-slave mode. PLC master station can send requests to other devices, other devices will response it. PLC slave station only can response the master station.

B   A

485Net

Control Level

Device Level

Interruption function

The interruption function includes external interruption, timing interruption, 24-segment high speed count interruption. The special operations can be done by calling the interruption. It will not be affected by the PLC scanning period.

● External interruption
X terminal is the external interruption input, each X is corresponding to an interruption which is activated by falling or rising edge.

● Timing interruption
The timing interruption is very useful when it needs to process special program in long running period main program, or it needs to run special program every certain time in sequence control program. The interruption will not be affected by PLC scanning period. The interruption subprogram will run every N ms.

Main program   Main program
Interruption program
Input interruption

C programming function

● Better program privacy, the C program is invisible after encrypted and can be called in the main program.
● Support rich calculation functions: contain all the C functions.
● Save internal space, reduce the workload, programming is more efficient.

To get the sum for many times, users don't have to input many ADD instructions, but make a C program and call it.

1 + 2 = ?
23 + 69 = ?

c=1 + 2 = 3
c=23 + 69 = 92

c = a + b

Call the C program

Up to 100KHz pulse output, support 10 channels

XC2/XC3 (I/O 48/60) have 2 channels pulse output. Support multi-mode output with different instructions. The output frequency can up to 100KHz.
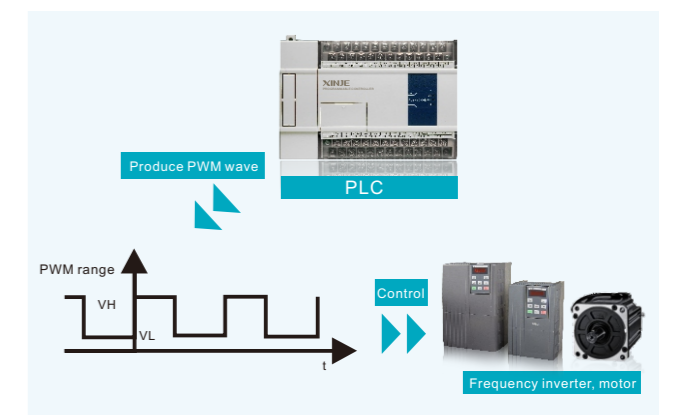
① It needs transistor output PLC to output pulse, such as XC3-14T-E or XC3-60RT-E
② XC5 (I/O 24/32) series have 4 channels pulse output (Y0~Y3)
③ XCM-60T-E has 10 channels pulse output (Y0~Y11)

Y0   Y1   Y2
COM0 COM1 COM2
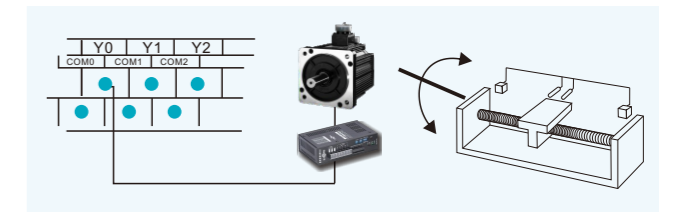
*Note: When using high-speed pulse output function, the PLC can output 100-200KHz pulse, but it can not guarantee the normal operation of all servos. Please connect about 500Ω resistor between the output and 24V power supply.
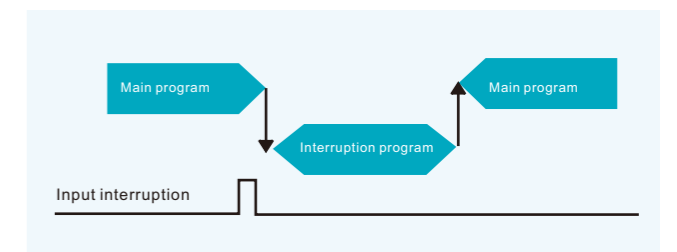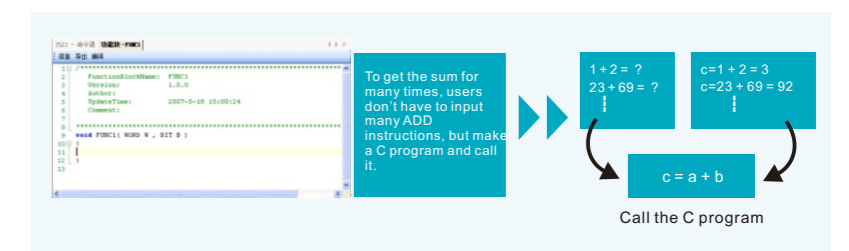
PWM pulse width modulation

● PWM instruction has pulse width modulation function.
● This function can control the frequency inverter and DC motor.

Produce PWM wave

PLC

PWM range

VH
VL
t

Control

Frequency inverter, motor

Programmable Logic Controller

XCPpro Software

Support all series of PLC products

XCPpro software is fit for XC series PLC and XMH, XMP, XP series HMI&PLC integrated controller. It can make PLC program and configure the network module, extension module and extension BD.
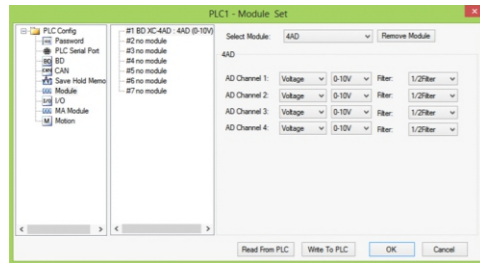
Enhanced password function

The password can block the program uploading and protect the intellectual property rights of user. The password is also added to program downloading to avoid program damage.

Panel configuration
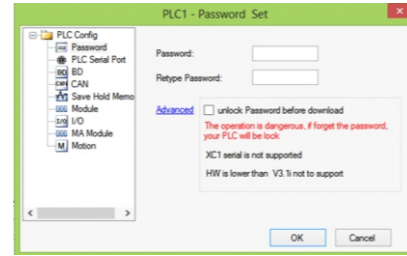
Reduce the difficulty of making complicated instructions
XCPpro provides easy editing environment for complicated instructions such as multi-pulse output, PID control, 24-segment high speed count interruption.

Improve the configuration of pulse instruction

New pulse instructions such as PTO are added to XCPpro software, these instructions can be configured in the panel.
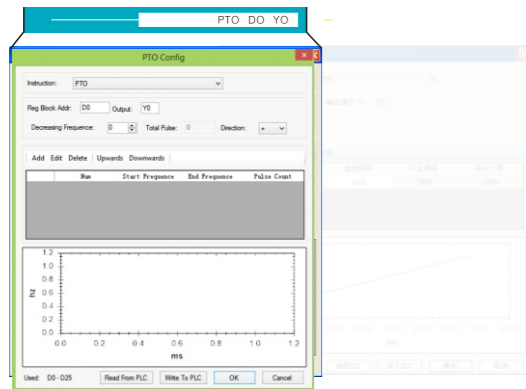
Powerful programming ability, better compatibility

Support ladder chart and instructions, the two modes can be switched.
XCPpro software can make C program, no need changes to C programming software.
The function block can be exported and imported, support source code and passive code. If exporting the passive code, the program cannot be read. The privacy is better.
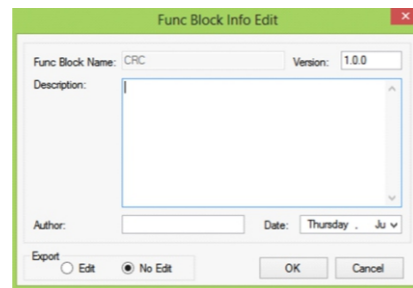
C function library contains more C instructions which can be called directly.
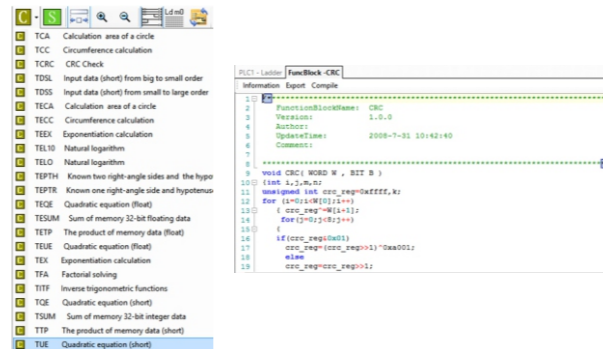
Power-off retentive in sections

User can set the power-off retentive range of ED register.
XCPpro software can set the power-off retentive range of various registers such as timer, counter by changing the value in FD register.

The shaded area is power-off retentive.
Area A, B, C, D, E can be set by users.
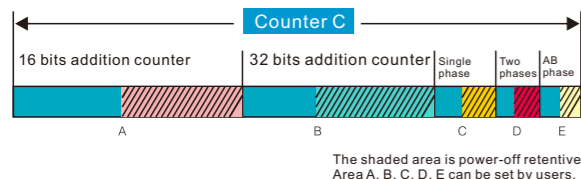
Serial port setting
Can configure COM1 to COM3.

Download the program online
Online downloading will not clear the data and shut down the output.
PLC will auto-run after downloading.

Better system compatibility

Compatible with different OS: Windows2000/XP/7.

Windows XP, Windows7.
Support 64 bits operation system.

Calculate the program size

The programmer can command the program capacity accurately.

Useful simple functions

Cancel, redo, forward, backward, grammar, checking, instruction prompt.

MA Series Data Acquisition And Control Module

MA series module includes digital I/O, analog I/O and temperature control. MA module has RS485 port which based on Modbus protocol, can connect to PLC, HMI, integrated PLC&HMI controller and other devices which support Modbus. It is suitable for process control system such as temperature, flow, level, pressure. Support 16 extension modules.

Digital I/O module MA-nXnY

Model	Explanation
MA-8X8YR	8 channels digital input, 8 channels digital output (relay output)
MA-8X8YT	8 channels digital input, 8 channels digital output (transistor output)
MA-16X	16 channels digital input
MA-16YR	16 channels digital output (relay output)
MA-16YT	16 channels digital output (transistor output)

Analog output module MA-nDA

Model	Explanation
MA-2DA	2 channels 10 bits high precision analog output (voltage/current)
MA-4DA	4 channels 10 bits high precision analog output (voltage/current)

Analog input module MA-nAD

Model	Explanation
MA-4AD	4 channels 12 bits high precision analog input (voltage/current), each channel has PID control
MA-8AD-A	8 channels 12 bits high precision analog input (current), each channel has PID control
MA-8AD-V	8 channels 12 bits high precision analog input (voltage), each channel has PID control

Analog I/O module MA-nADmDA

Model	Explanation
MA-4AD2DA	4 channels 12 bits high precision analog input (voltage/current), each channel has PID control. 2 channels 10 bits high precision analog output (voltage/current).

Temperature control module MA-nPT-P/MA-nTCA-P

Model	Explanation
MA-6PT-P	6 channels PT100 input, each channel has PID control; 6 channels output. 1mA constant current output will not be affected by external environment.
MA-6TCA-P	6 channels thermocouple input, each channel has PID control; 6 channels output. 1mA constant current output will not be affected by external environment.

XC Series Product Specification

Specifications of basic unit

• General specification

Item	Specification
Insulation voltage	Above DC500V 2MΩ
Noise immunity	Noise voltage 1000Vp-p 1μs
Air	No corrosive, flammable gas
Ambient temperature	0℃ ~ 60℃
Ambient humidity	5RH%~95RH% (no condensation)
COM1	RS232, connect with PC, HMI to program and debug
COM2	RS232/RS485, connect with network, meters, inverter…
COM3	Extension port of BD board, RS232/RS485
Installation	Fix with M3 screw or install on the rail directly
Ground	Third ground (cannot ground with strong power system)

• XC3-19AR-E specification

Item	Analog input (AD)	Analog output (DA)	
	Voltage input	Voltage output	Current output
Analog input range	0~10V	–	
Max input range	DC±18V	–	
Analog output range	–	DC 0~10V (external load resistor 2KΩ~1MΩ)	DC4~20mA (external load resistor less than 500Ω)
Digital input range	–	8 bits (0~255)	
Digital output range	12 bits (0~4095)	–	
Resolution	1/4095 (Bit)	1/255 (8-bit)	
Integrated precision	0.8%		
Transformation speed	15ms/channel	2ms/channel	
Power for analog	DC24V±10%,100mA		

• Performance specification

Item		Specification									
Series		XC1		XC2			XC3			XC5	XCM
I/O numbers		10/16	24/32	14/16	24/32/42	48/60	14	24/32/42	48/60	24/32	60
Program running mode		Cyclic scan									
Programming mode		Instruction, ladder chart									
Processing speed		0.5us									
Power-off retentive		FlashROM		FlashROM and Li-battery							
User program capacity		32KB		96KB						128KB	128KB
I/O points		5/5 8/8	12/12 16/16	8/6 8/6	14/10 18/14 24/18	28/20 36/24	8/6	14/10 18/14 24/18	28/20 36/24	14/10 18/14	36/24
Internal coil (M)		448		8768							
Timer (T)	Points	80		640							
	Specification			100ms timer: 0.1~3276.7s 10ms timer: 0.01~327.67s 1ms timer: 0.001~32.767s							
Counter (C)	Points	48		640							
	Specification			16 bits counter: 0~32767 32 bits counter: -2147483648~2147483647							
Process (S)		32		1024		1024			1024		1024
Data register (D)		288		2612		9024			9024		5024
FlashROM register (FD)		510		496		4080			8176		1980
Extension internal register (ED)		–		-		16384			36864		36864
High speed counter		–		Max 6 channels, 80KHz, 3 kinds of high speed counting mode (single phase, pulse&direction, AB phase is 50KHz)							
Pulse output		–		2 channels					4 channels		10 channels
External interruption		–		2 kinds of external interruption (rising edge, falling edge)							
Password		6 bits ASCII									
Self-diagnosis		Power-on self-test, monitoring timer, grammar checking									

XC series basic unit model list

	Model						Input points (DC24V)	Output points (R,T)
	AC power supply			DC power supply				
	Relay output	Transistor output	Transistor relay mixed output	Relay output	Transistor output	Transistor relay mixed output		
NPN type	XC1-10R-E	XC1-10T-E	-	XC1-10R-C	XC1-10T-C	-	5 points	5 points
	XC1-16R-E	XC1-16T-E	-	XC1-16R-C	XC1-16T-C	-	8 points	8 points
	XC1-24R-E	XC1-24T-E	-	XC1-24R-C	XC1-24T-C	-	12 points	12 points
	XC1-32R-E	XC1-32T-E	-	XC1-32R-C	XC1-32T-C	-	16 points	16 points
PNP type	XC1-10PR-E	XC1-10PT-E	-	XC1-10PR-C	XC1-10PT-C	-	5 points	5 points
	XC1-16PR-E	XC1-16PT-E	-	XC1-16PR-C	XC1-16PT-C	-	8 points	8 points
	XC1-24PR-E	XC1-24PT-E	-	XC1-24PR-C	XC1-24PT-C	-	12 points	12 points
	XC1-32PR-E	XC1-32PT-E	-	XC1-32PR-C	XC1-32PT-C	-	16 points	16 points
NPN type	XC2-14R-E	XC2-14T-E	XC2-14RT-E	XC2-14R-C	XC2-14T-C	XC2-14RT-C	8 points	6 points
	XC2-16R-E	XC2-16T-E	XC2-16RT-E	XC2-16R-C	XC2-16T-C	XC2-16RT-C	8 points	8 points
	XC2-24R-E	XC2-24T-E	XC2-24RT-E	XC2-24R-C	XC2-24T-C	XC2-24RT-C	14 points	10 points
	XC2-32R-E	XC2-32T-E	XC2-32RT-E	XC2-32R-C	XC2-32T-C	XC2-32RT-C	18 points	14 points
	XC2-42R-E	XC2-42T-E	XC2-42RT-E	XC2-42R-C	XC2-42T-C	XC2-42RT-C	24 points	18 points
	XC2-48R-E	XC2-48T-E	XC2-48RT-E	XC2-48R-C	XC2-48T-C	XC2-48RT-C	28 points	20 points
	XC2-60R-E	XC2-60T-E	XC2-60RT-E	XC2-60R-C	XC2-60T-C	XC2-60RT-C	36 points	24 points
PNP type	XC2-14PR-E	XC2-14PT-E	XC2-14PRT-E	XC2-14PR-C	XC2-14PT-C	XC2-14PRT-C	8 points	6 points
	XC2-16PR-E	XC2-16PT-E	XC2-16PRT-E	XC2-16PR-C	XC2-16PT-C	XC2-16PRT-C	8 points	8 points
	XC2-24PR-E	XC2-24PT-E	XC2-24PRT-E	XC2-24PR-C	XC2-24PT-C	XC2-24PRT-C	14 points	10 points
	XC2-32PR-E	XC2-32PT-E	XC2-32PRT-E	XC2-32PR-C	XC2-32PT-C	XC2-32PRT-C	18 points	14 points
	XC2-42PR-E	XC2-42T-E	XC2-42PRT-E	XC2-42R-C	XC2-42PT-C	XC2-42PRT-C	24 points	18 points
	XC2-48PR-E	XC2-48PT-E	XC2-48PRT-E	XC2-48PR-C	XC2-48PT-C	XC2-48PRT-C	28 points	20 points
	XC2-60PR-E	XC2-60PT-E	XC2-60PRT-E	XC2-60PR-C	XC2-60PT-C	XC2-60PRT-C	36 points	24 points
NPN type	XC3-14R-E	XC3-14T-E	XC3-14RT-E	XC3-14R-C	XC3-14T-C	XC3-14RT-C	8 points	6 points
	XC3-24R-E	XC3-24T-E	XC3-24RT-E	XC3-24R-C	XC3-24T-C	XC3-24RT-C	14 points	10 points
	XC3-32R-E	XC3-32T-E	XC3-32RT-E	XC3-32R-C	XC3-32T-C	XC3-32RT-C	18 points	14 points
	XC3-42R-E	XC3-42T-E	XC3-42RT-E	XC3-42R-C	XC3-42T-C	XC3-42RT-C	24 points	18 points
	XC3-48R-E	XC3-48T-E	XC3-48RT-E	XC3-48R-C	XC3-48T-C	XC3-48RT-C	28 points	20 points
	XC3-60R-E	XC3-60T-E	XC3-60RT-E	XC3-60R-C	XC3-60T-C	XC3-60RT-C	36 points	24 points
PNP type	XC3-14PR-E	XC3-14PT-E	XC3-14PRT-E	XC3-14PR-C	XC3-14PT-C	XC3-14PRT-C	8 points	6 points
	XC3-24PR-E	XC3-24PT-E	XC3-24PRT-E	XC3-24PR-C	XC3-24PT-C	XC3-24PRT-C	14 points	10 points
	XC3-32PR-E	XC3-32PT-E	XC3-32PRT-E	XC3-32PR-C	XC3-32PT-C	XC3-32PRT-C	18 points	14 points
	XC3-42PR-E	XC3-42PT-E	XC3-42PRT-E	XC3-42PR-C	XC3-42PT-C	XC3-42PRT-C	24 points	18 points
	XC3-48PR-E	XC3-48PT-E	XC3-48PRT-E	XC3-48PR-C	XC3-48PT-C	XC3-48PRT-C	28 points	20 points
	XC3-60PR-E	XC3-60PT-E	XC3-60PRT-E	XC3-60PR-C	XC3-60PT-C	XC3-60PRT-C	36 points	24 points
NPN type	-	XC5-24T-E	XC5-24RT-E	-	XC5-24T-C	XC5-24RT-C	14 points	10 points
	-	XC5-32T-E	XC5-32RT-E	-	XC5-32T-C	XC5-32RT-C	18 points	14 points
PNP type	-	XC5-24PT-E	XC5-24PRT-E	-	XC5-24PT-C	XC5-24PRT-C	14 points	10 points
	-	XC5-32PT-E	XC5-32PRT-E	-	XC5-32PT-C	XC5-32PRT-C	18 points	14 points
NPN type	-	XCM-60T-E	-	-	XCM-60T-C	-	36 points	24 points
PNP type	-	XCM-60PT-E	-	-	XCM-60PT-C	-	36 points	24 points

*Note: NPN and PNP is input type.

Programmable Logic Controller

I/O extension modules

Model				I/O points	Input points (DC24V)	Output points (R,T)
	Input	Output				
		Relay output	Transistor output			
NPN type	XC-E8X	–	–	8 points	8 points	–
	-	XC-E8YR	XC-E8YT	8 points	–	8 points
	-	XC-E8X8YR	XC-E8X8YT	16 points	8 points	8 points
	XC-E16X	-	-	16 points	16 points	–
	-	XC-E16YR	XC-E16YT	16 points	–	16 points
	-	XC-E16X16YR-E	XC-E16X16YT-E	32 points	16 points	16 points
	-	XC-E16X16YR-C	XC-E16X16YT-C	32 points	16 points	16 points
	XC-E32X-E	-	-	32 points	32 points	–
	XC-E32X-C	-	-	32 points	32 points	–
	-	XC-E32YR-E	XC-E32YT-E	32 points	–	32 points
	-	XC-E32YR-C	XC-E32YT-C	32 points	–	32 points
PNP type	XC-E8PX	–	–	8 points	8 points	–
	-	XC-E8PX8YR	XC-E8PX8YT	16 points	8 points	8 points
	XC-E16PX	-	-	16 points	16 points	–
	-	XC-E16PX16YR-E	-	32 points	16 points	16 points
	-	XC-E16PX16YR-C	-	32 points	16 points	16 points
	XC-E32PX-E	-	-	32 points	32 points	–

*Note: NPN and PNP is input type.

Analog and temperature extension modules

Model		Description
Analog input	XC-E2AD-H	2 channels analog input
	XC-E4AD-H	4 channels analog input
	XC-E8AD-H	8 channels analog input (first 4 channels are voltage input, last 4 channels are current input)
	XC-E8AD-B	First 4 channels are voltage input (-10~10V/-5~5V), last 4 channels are current input (-20~20mA)
	XC-E4AD2DA-H	4 channels analog input, 2 channels analog output
	XC-E4AD2DA-B-H	4 channels analog input (voltage/current), 2 channels voltage output (-10~10V/-5~5V)
Analog output	XC-E2DA-H	2 channels analog output
	XC-E4DA-H	4 channels analog output
	XC-E4DA-B-H	4 channels voltage output (-10~10V/-5~5V)
Temperature measurement	XC-E2PT-H	2 channels PT100 input
	XC-E6PT-H	6 channels PT100 input
	XC-E6PT-P-H	6 channels PT100 input, with PID control function
	XC-E6TCA-P	6 channels K, S, E, N, J, T, R thermocouple input, each channel has PID function
	XC-E2TCA-P	2 channels K, S, E, N, J, T, R thermocouple input, each channel has PID function
	XC-E3AD4PT2DA-H	3 channels analog input, 4 channels PT100 input, 2 channels analog output
	XC-E2AD2PT2DA	2 channels analog input, 2 channels PT100 input, each channel has PID function, 2 channels analog output

* Note: the model with H is photoelectric isolation for each channel.

Extension BD card model list

Model		Description
Temperature measurement	XC-2AD2PT(-H)-BD	2 channels analog input, 2 channels PT100 input
Communication	XC-COM(-H)-BD	RS232/485 communication
SD card	XC-SD-BD	Extend the XC PLC data capacity
Analog I/O	XC-2AD2DA-BD	2 channels analog input, 2 channels analog output
Ethernet	XC-TBOX-BD	Connect to the Ethernet
Optical fiber communication	XC-OFC-BD	Connect PLC and make optical fiber communication
Analog input	XC-4AD(-H)-BD	2 channels voltage input, 2 channels current input

Connection accessory model list

Model		Description
USB convertor	USB-COM	PLC connect to PC via USB port
Bluetooth	COM-BLT	Short distance wireless connection between PLC and PC

Basic instructions

Instruction	Function
LD	Initial logic normally open contactor
LDI	Initial logic normally close contactor
AND	Serial connection normally open contactor
ANI	Serial connection normally close contactor
OR	Parallel connection normally open contactor
ORI	Parallel connection normally close contactor
LDP	Initial logic rising-edge of pulse
LDF	Initial logic falling-edge of pulse
ANDP	Serial connection rising-edge of the pulse
ANDF	Serial connection falling-edge of the pulse
ORP	Parallel connection rising-edge of the pulse
ORF	Parallel connection falling-edge of the pulse
LDD	Read normally open contactor
LDDI	Read normally close contactor
ANDD	Read normally open contactor, serial connection
ANDDI	Read normally close contactor, serial connection
ORD	Read normally open contactor, parallel connection
ORDI	Read normally close contactor, parallel connection
OUT	Coil drive
OUTD	Output to the contactor
ORB	Parallel connection of serial circuit block
ANB	Serial connection of parallel circuit block
MCS	New generatrix start
MCR	Generatrix reset
ALT	Coil reverse
PLS	ON for one scanning period at rising-edge
PLF	ON for one scanning period at falling-edge
SET	Keep the coil ON
RST	Reset the coil
OUT	Counter drive
RST	Reset the contactor or present value
END	I/O operation and return to step 0
GROUP	Instruction block folding start
GROUPE	Instruction block folding end

Motion control instruction

Instruction	Function
ABS	Absolute address
CCW	Arc anticlockwise interpolation
CHK	Servo checking
CW	Arc clockwise interpolation
DRV	High speed positioning
DRVR	Electrical back to zero
DRVZ	Mechanical back to zero
FOLLOW	Follow
INC	Incremental address
LIN	Linear interpolation
PLAN	Plane or space choice
TIM	Stable time
SETR	Set the electrical zero
SETP	Set the coordinate system

Application instruction

Type	Instruction	Function
Program process	CJ	Condition jump
	CALL	Call the subprogram
	SRET	Subprogram return
	STL	Process start
	STLE	Process end
	SET	Open assigned process, close present process
	ST	Open assigned process, not close present process
	FOR	Cycle start
	NEXT	Cycle end
	FEND	Main program end
Data comparison	LD=	Initial logic ON when (S1)=(S2)
	LD>	Initial logic ON when (S1)>(S2)
	LD<	Initial logic ON when (S1)<(S2)
	LD<>	Initial logic ON when (S1)≠(S2)
	LD>=	Initial logic ON when (S1)≥(S2)
	LD<=	Initial logic ON when (S1)≤(S2)
	AND=	Serial connection ON when (S1)=(S2)
	AND>	Serial connection ON when (S1)>(S2)
	AND<	Serial connection ON when (S1)<(S2)
	AND<>	Serial connection ON when (S1)≠(S2)
	AND>=	Serial connection ON when (S1)≥(S2)
	AND<=	Serial connection ON when (S1)≤(S2)
	OR=	Parallel connection ON when (S1)=(S2)
	OR>	Parallel connection ON when (S1)>(S2)
	OR<	Parallel connection ON when (S1)<(S2)
	OR<>	Parallel connection ON when (S1)≠(S2)
	OR>=	Parallel connection ON when (S1)≥(S2)
	OR<=	Parallel connection ON when (S1)≤(S2)
Data transmission	CMP	Data comparison
	ZCP	Data range comparison
	MOV	Transmission
	BMOV	Data block transmission
	FMOV	Multi-point repeat transmission
	EMOV	Transfer of floating-point numbers
	FWRT	Write in FlashROM
	MSET	Batch set on
	ZRST	Batch reset
	SWAP	Exchange the high byte and low byte
	XCH	Exchange the data
Data calculation	ADD	Addition
	SUB	Subtraction
	MUL	Multiplication
	DIV	Division
	INC	Increase by one
	DEC	Decrease by one

Type	Instruction	Function
Data calculation	MEAN	Get the mean value
	WAND	Logic AND
	WOR	Logic OR
	WXOR	Logic XOR
	CML	Reverse
	NEG	Negative
Data shift	SHL	Arithmetic shift left
	SHR	Arithmetic shift right
	LSL	Logic shift left
	LSR	Logic shift right
	ROL	Cycle shift left
	ROR	Cycle shift right
	SFTL	Bit shift left
	SFTR	Bit shift right
	WSFL	Word shift left
	WSFR	Word shift right
Data transformation	WTD	Word integer change to double word integer
	FLT	16 bits integer change to floating number
	DFLT	32 bits integer change to floating number
	FLTD	64 bits integer change to floating number
	INT	Floating number change to integer
	BIN	BCD code change to binary
	BCD	Binary change to BCD code
	ASCI	Hex change to ASCII
	HEX	ASCII change to hex
	DECO	Decoding
	ENCO	High-bit encoding
	ENCOL	Low-bit encoding
	GRY	Binary change to gray code
	GBIN	Gray code change to binary
Floating calculation	ECMP	Floating number comparison
	EZCP	Floating number range comparison
	EADD	Floating number addition
	ESUB	Floating number subtraction
	EMUL	Floating number multiplication
	EDIV	Floating number division
	ESQR	Floating number square
	SIN	Floating number sine
	COS	Floating number cosine
	TAN	Floating number tangent
	ASIN	Floating number arcsine
	ACOS	Floating number arccosine
	ATAN	Floating number arctangent
Clock	TRD	Read clock data
	TWR	Write clock data

## Special instruction

Type	Instruction	Function
Pulse output	PLSY	Single-segment pulse output without acceleration hand deceleration
	PLSA	Absolute position multi-segment pulse output
	PLSR	Relative position multi-segment pulse output
	PLSF	Variable frequency pulse output
	PLSNEXT/PLSNT	Pulse segment changing
	DRVA	Absolute position single segment pulse control
	DRVI	Relative position single segment pulse control
	PLSMV	Store the pulse numbers in the register
	STOP	Stop the pulse
	ZRN	Mechanical return to zero
	PTO	Relative multi-segment pulse output
	PTOA	Absolute multi-segment pulse output
	PSTOP	Pulse stop
	PTF	Variable frequency pulse output

Type	Instruction	Function
High speed counter	HSCR	Read 32 bits high speed counter
	HSCW	Write 32 bits high speed counter
	OUT	24-segment high speed count interruption
	RST	Reset high speed counter
Modbus communication	COLR	Modbus read coil
	INPR	Modbus read input coil
	COLW	Modbus write single coil
	MCLW	Modbus write multi coils
	REGR	Modbus read register
	INRR	Modbus read input register
	REGW	Modbus write single register
	MRGW	Modbus write multi registers
Free format communication	SEND	Free format data send
	RCV	Free format data receive

Type	Instruction	Function
Precise timing	STR	Precise timing
	STRR	Read precise timing register
	STRS	Stop precise timing
Interruption	EI	Enable the interruption
	DI	Disable the interruption
	IRET	Interruption return
Sequence block	SBLOCK	Block start
	SBLOCKE	Block end
	BSTOP	Stop block
	BGOON	Continue running the stop block
Write and read the module	WAIT	Wait
	FROM	Read the module
	TO	Write in
Others	FRQM	Frequency measurement
	PWM	Pulse width modulation
	PID	PID control
	NAME_C	C function block

Programmable Logic Controller

Product Dimension (unit: mm)

Dimension of basic unit
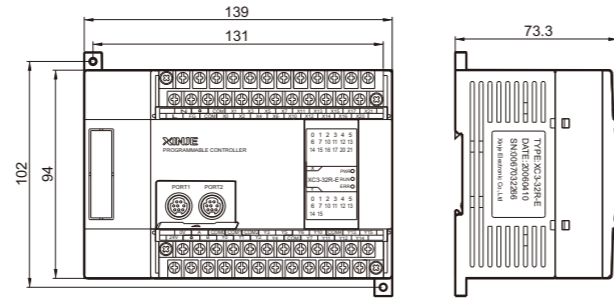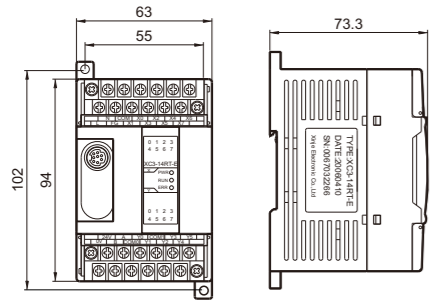
Suitable model

Series name	I/O points
XC1 series	10/16 points
XC2 series	14/16 points
XC3 series	14points

Suitable model

Series name	I/O points
XC1 series	24/32 points
XC2 series	24/32 points
XC3 series	24/32 points
XC5 series	24/32 points
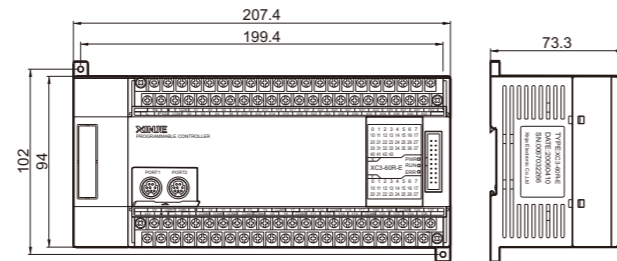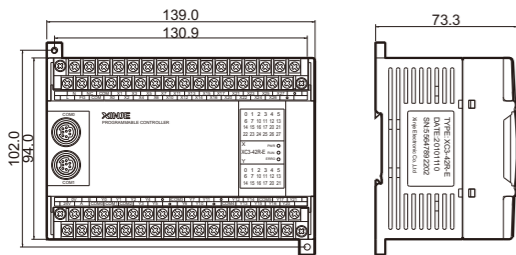
Suitable model

Series name	I/O points
XC2 series	42 points
XC3 series	42 points

Suitable model

Series name	I/O points
XC2 series	48/60 points
XC3 series	48/60 points
XCM series	60 points

Dimension of extension module

● Diagram 1
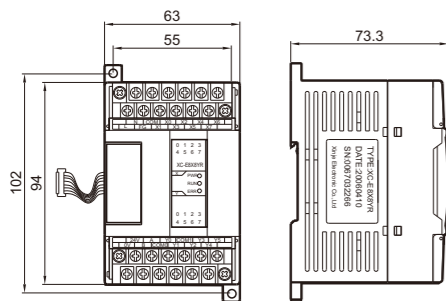
Suitable model

Series name	I/O points
I/O	8 points, 16 points
Analog	All
Temperature	All
Mixed	All

● Diagram 2
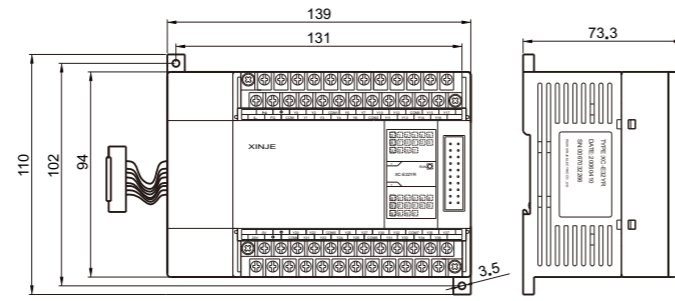
Suitable model

Series name	I/O points
I/O	32 points
Analog	–
Temperature	–
Mixed	–