

AMX-FX3U-M series programmable controllers

User Manual



Rev: V1.1

Foreword

Manual contents

The content of this manual mainly describes the programming resources, functions and use of AMX-FX3U-M series PLC products, such as PLC soft component distribution, support instructions, analog input and output, high-speed counter, high-speed pulse output, Ethernet, MODBUS RTU communication, expansion module use, etc., for customers who buy this product to provide reference.

Instructions for use

- Before using PLC products, users should read and master the information content of this PLC more comprehensively
- The content examples in the manual are for users' reference and understanding only. If in doubt, please contact the relevant technical personnel of Aimoxun
- If the user uses this PLC with other products, please ensure that it complies with the relevant technical specifications

Contact Information

If you have any questions about the use of this PLC product, please talk to the agent, sales staff, or contact us by phone.

- The official website: <http://amsamotion.com>
- Mail box: amx@amsamotion.com
- Tel: 4001-522-518 dial 1 (technical hotline), 4001-522-518 dial 2 (sales hotline)
- Address: 1F, Building B, Zhaoxuan Manufacturing Park, No.9 Yizhan Road,

Yuanwubian, Nancheng District, Dongguan City, Guangdong Province

- Scan the QR code below to follow Aimoxun official account for more product information



Version history

Version	revision	Date	Revision	Notes	page	number
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V1.0		2022.07.02	Initial version	-		
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V1.1		2023.06.10	Added 4-way pulse output model	-		
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- ❖ The content after "REV:" on the cover of this user manual indicates the document version

User Manual Guide

The content structure of this manual is as follows:

Chap ters	Items	Content description
1	Product overview	This paper introduces the name and main features of AMX-FX3U-M series PLC
2	Product Specifications	Description AMX-FX3U-M series PLC each model product specifications and wiring definition
3	Functional planning	Describe the main functions of each model of AMX-FX3U-M series PLC
4	Software component Instructions	Description AMX-FX3U-M series PLC programming software components, high-speed counter distribution
5	Analog use	Explain AMX-FX3U-M series PLC analog function and use
6	Newsletter Guide	Describes the communication functions and usage supported by the AMX-FX3U-M series PLC
7	Positioning control instructions	Description of AMX-FX3U-M series transistor output PLC positioning control related functions
8	Expansion	Description AMX-FX3U-M series EM3 expansion module to use

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	module Instructions	
9	Addendum	Supported instructions, error codes, analog cases, version number instructions

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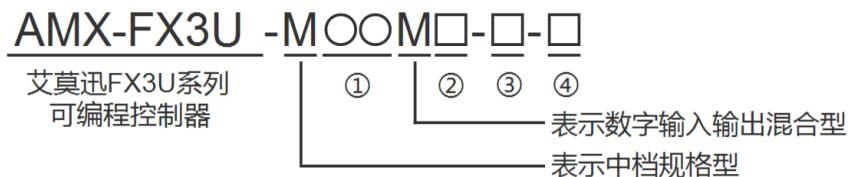
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1. Product Overview

AMX-FX3U-M series products are the latest research and development of a new generation of high-speed, support MC and MODBUS TCP protocol RJ45 network port communication high performance programmable controller (PLC).

1.1 Model naming rules

The basic unit model structure of AMX-FX3U-M series programmable controllers is generally as follows:



In the composition of the model name, ① and ② indicate the following specifications

① Total I/O points: 26 (16 in 10 out)

② Output type: R indicates relay output (with contacts, AC/DC load)

T stands for transistor output (no contact, DC load)

③ Whether 4 pulse output: the model has -4P means that the transistor type PLC has 4 pulse output channels, otherwise there are only 2

④ There is no network port: E means that the PLC comes with a network port

1.2 Model and main configuration

Compatible with FX3U-M Series model	Switching		Analog amount		Type of communication port and number of				High Speed counting		High speed
	Lo se	Lo se	In pu	O ut	422	485	232	Net wor	Single phase	AB phase	
AMX-FX3U-M26MR	16	10	4	2	1	1	The re is no	Ther e is no	4 way 100K, 2 ways 20K	Two ways	Unsup ported
AMX-FX3U-M26MT	16	10	4	2	1	1	The re is no	Ther e is no			2 ways 100K
AMX-FX3U-M26MT- 4P	16	10	4	2	1	1	The re is	Ther e is no			4 ways 100K

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							no				
AMX-FX3U-M26MR-E	16	10	4	2	1	1	The re is no	1			No support
AMX-FX3U-M26MT-E	16	10	4	2	1	1	The re is no	1			2 ways 100K
AMX-FX3U-M26MT- 4P-E	16	10	4	2	1	1	The re is no	1			4 Ways 100K

1.3 Product Features

■ Main Features

- The MCU uses ARM32 bit industrial processor, which is suitable for small PLC in industrial automation applications
- Mitsubishi FX3U most instructions, support GX Works2/GX Developer programming; Comes with independent programming port
- All IO ports use photoelectric isolation transmission signal, effectively filter out all kinds of interference, input support positive/negative trigger, easy to use
- AMX-FX3U-Mxxxx-E model with 1 10/100Mbps network port, support MC and MODBUS TCP protocol communication
- High-speed counter function
- Transistor type PLC supports 2 or 4 100K high-speed pulse output
- With analog input and output channels
- The power circuit adopts anti-reverse connection and anti-surge design
- All key electronic components are imported big brands with 3-year warranty
- Widely used in industrial field equipment signal acquisition and control

■ Substantial basic functions

1, basic instruction speed: 0.18us/ step, instruction execution speed is fast

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2, large program capacity: program memory size of 0~16000 steps, with a more complete basic/application instructions

3, with clock calendar, RUN/STOP switch, A/D, D/A, firmware upgrade and other powerful functions

4, DIN rail installation, easy maintenance

■ Rich communication function

1、The programming port is the standard RS422 S terminal, in addition, the programming port can also communicate with the touch screen that supports FX3U PLC protocol

2、RS485 communication port, support MODBUS RTU communication protocol, support FX3U PLC protocol touch screen communication

3、Network mouth PLC comes with 1 RJ45 network port, support **2 MODBUS** TCP communication protocol, and support Mitsubishi GX Works2 programming software to use network port and PLC communication

■ High speed counter function

1, support 6 (X0~X5) single-phase high-speed pulse count, 2 AB phase count, of which 4 (X0~X3) 100K single-phase count, 2 (X4~X5) 20K pulse count

■ Pulse output function

1, AMX-FX3U-M26MT(-4P)(-E) model supports 2 channels (Y0~Y1) or 4 channels (Y0~Y3) 100K high-speed pulse output at the same time

■ Extended function

1, AMX-FX3U-M series PLC supports the expansion of the digital quantity and analog quantity of the machine through the expansion port, without programming, directly mapped to the corresponding PLC address after connection and power on, easy to use.

Second, product specifications

2.1 Main Specifications

Model number	AMX-FX3U-M26MR	AMX-FX3U-M26MR-E	AMX-FX3U-M26MT(-4P)-E	AMX-FX3U-M26MT(-4P)
Digital quantity input				
Enter number of points	16			
Type of input signal	Switch contact signal or level signal that supports positive and negative trigger			

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Input signal voltage	DC 20~28V	
Insulated loop	Optocoupler isolation	
Digital quantity output		
Output points	10	
Output type	Relays	NPN transistor
Output capability	2A/ dot; 8A/4 points; 12A/6 o'clock	0.5A/ dot; 2A/4 dots; 3A/6 points
Insulated loop	Mechanical insulation	Optocoupler isolation
Analog input		
Input points	4	
Type in	Voltage/current, DIP switch switch input type, factory default voltage input	
Input range	0~10V/0~20ma	
Conversion accuracy	12-bit	
Analog output		
Output points	2	
Output type	Voltage, current	
Output range	0~10V/0~20ma	
Conversion accuracy	12-bit	
High Speed counter		
Input points	6 way (X0~X5) single phase, 2 way AB phase	
Pulse frequency	Single phase 4 channels 100K (X0~X3), 2 channels 20K (X4~X5)	
Input signal voltage	DC 20~28V	
High speed pulse output		
Output points	No high speed pulse output	Model without -4P branch 2 way (Y0~Y1), Model with 4P Support 4 channels (Y0~Y3)
Pulse frequency		100K per path
Communication interface		
RS485	1 way	
	Support MODBUS RTU, FX3U PLC communication protocol	

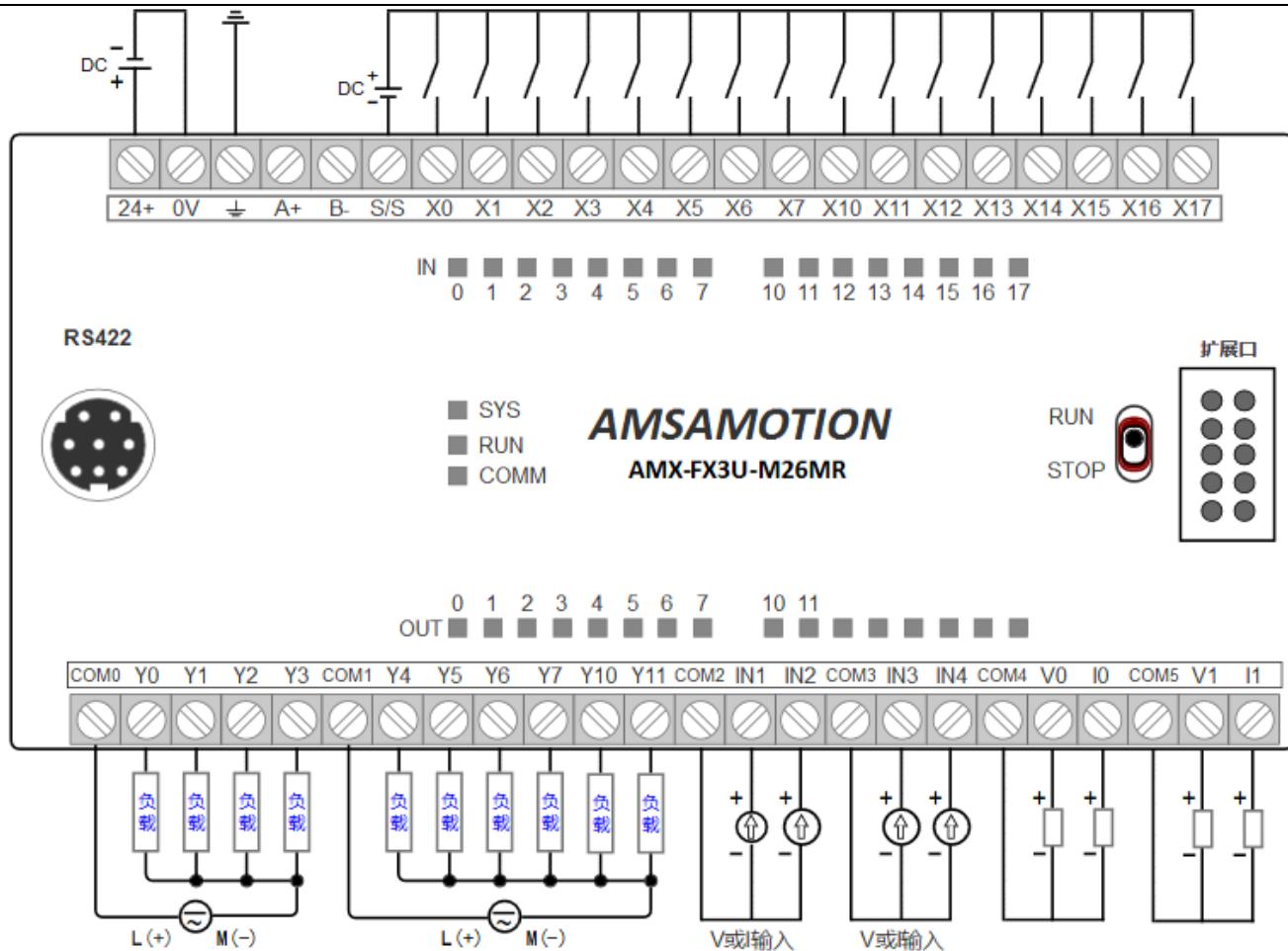
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RS422	1 way, support download on, Monitor		
RJ45	There is no	1 channel,10/100Mbps communication rate, support MODBUS TCP, Mitsubishi FX3U built-in TCP/IP protocol	There is no
Power supply			
Power supply	DC24V, terminal access; With anti-reverse connection protection		
Power Consumption	2W~4W		
Environment			
Operating temperature	Operating temperature -10°C ~ +60°C (without freezing)		
Working humidity	10 to 80%RH (non-condensing)		
Construction			
Dimensions (mm)	129 * 86 * 50		
Installation method	35mm DIN rail		

2.2 Interface Description

2.2.1 AMX-FX3U-M26MR Interface Definition

- Terminal Diagram



➤ Terminal instructions

Termina	Function description
24 +	DC 24V power supply positive
0V	DC 24V power supply negative
—	to
A+	485 A+ (See Section 6.2 for)
B-	485 B- (See Section 6.2 for)
S/S	1-16 digital input channel common
X0	1st way digital quantity input
X1	Number 2 input
X2	Third digital input
X3	4th way digital quantity input
X4	5th digital quantity input
X5	6th digital quantity input
X6	Number 7 input

Termina	Function description
COM1	5~10 outputs of digital output
Y4	5th way digital quantity output
Y5	6th way digital quantity output
Y6	Number 7 output
Y7	8th way digital quantity output
Y10	9th way digital quantity output
Y11	Number 10 output
COM2	Analog input ground
IN1	1st analog 0~10V voltage /0~20ma current input
IN2	2nd analog 0~10V voltage /0~20ma current input
COM3	Analog input ground

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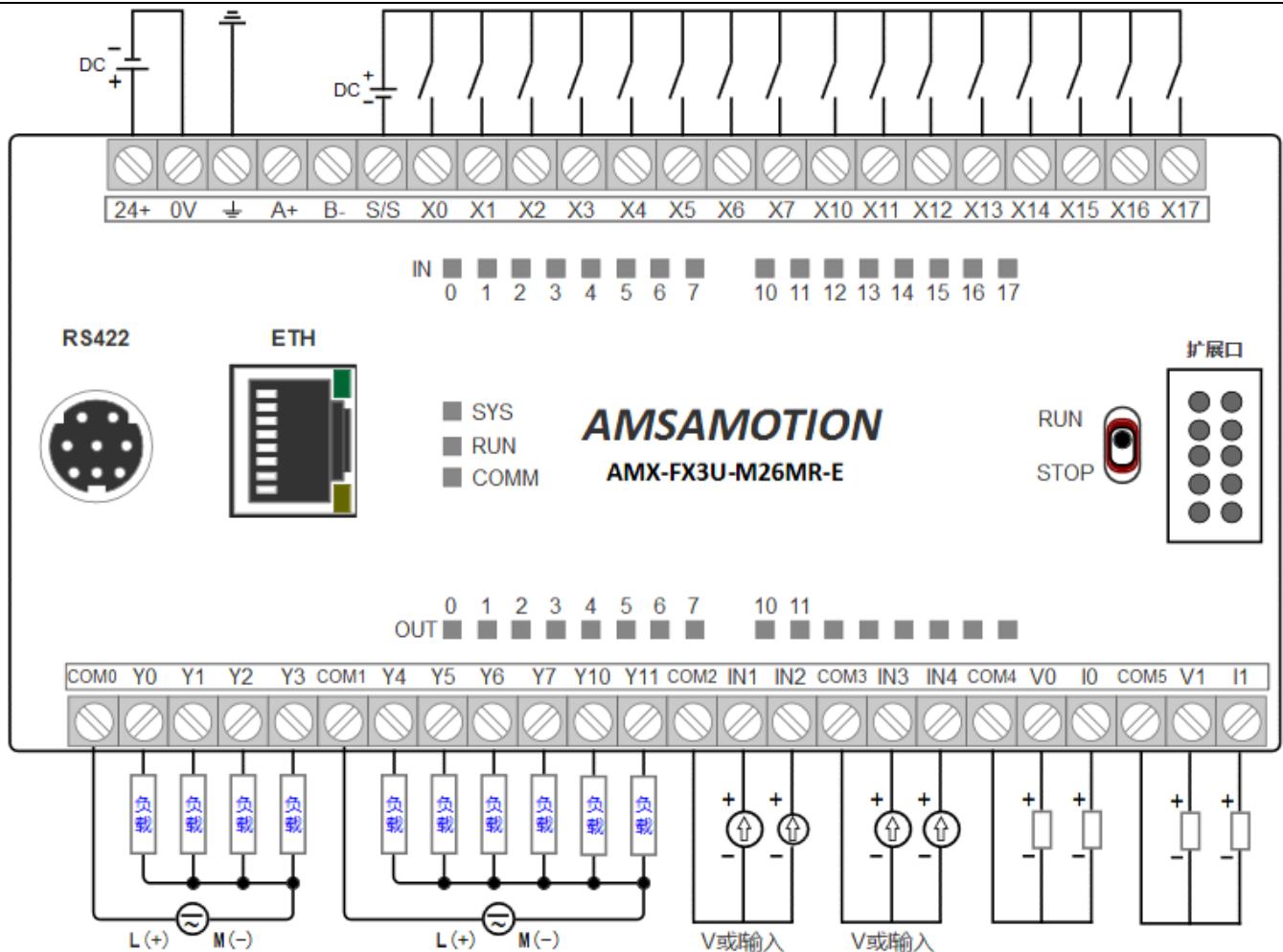
X7	The 8th digital input
X10	9th way digital quantity input
X11	Number 10 input
X12	11th digital quantity input
X13	12th digital quantity input
X14	The 13th digital input
X15	14th digital quantity input
X16	15th digital quantity input
X17	16th digital quantity input
COM0	Common end of 1 to 4 digital
Y0	1st way digital quantity output
Y1	# 2 digital output
Y2	3rd way digital quantity output
Y3	# 4 digital output

IN3	3rd analog 0~10V voltage /0~20ma current input
IN4	4th analog 0~10V voltage /0~20ma current input
COM4	Analog output ground
V0	Analog 0~10V voltage output
I0	Analog 0~20ma Current output
COM5	Analog output ground
V1	Analog 0~10V voltage output
I1	Analog 0~20ma Current output
RS422	RS422 programming port, S
SYS	PLC lights green when normal and
RUN	Run indicator: Green when the PLC is running and
COMM	RS485 communication indicator
Expansion	Connecting cable interface for the

2.2.2 AMX-FX3U-M26MR-E interface definition

➤ Terminal Diagram

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➤ Terminal instructions

Termina	Function description
24 +	DC 24V power supply positive
0V	DC 24V power supply negative
<u> </u>	to
A+	485 A+ (See Section 6.2 for)
B-	485 B- (see section 6.2 for)

Termina	Function description
COM1	5~10 outputs of digital output
Y4	5th way digital quantity output
Y5	6th way digital quantity output
Y6	Number 7 output
Y7	8th way digital quantity output

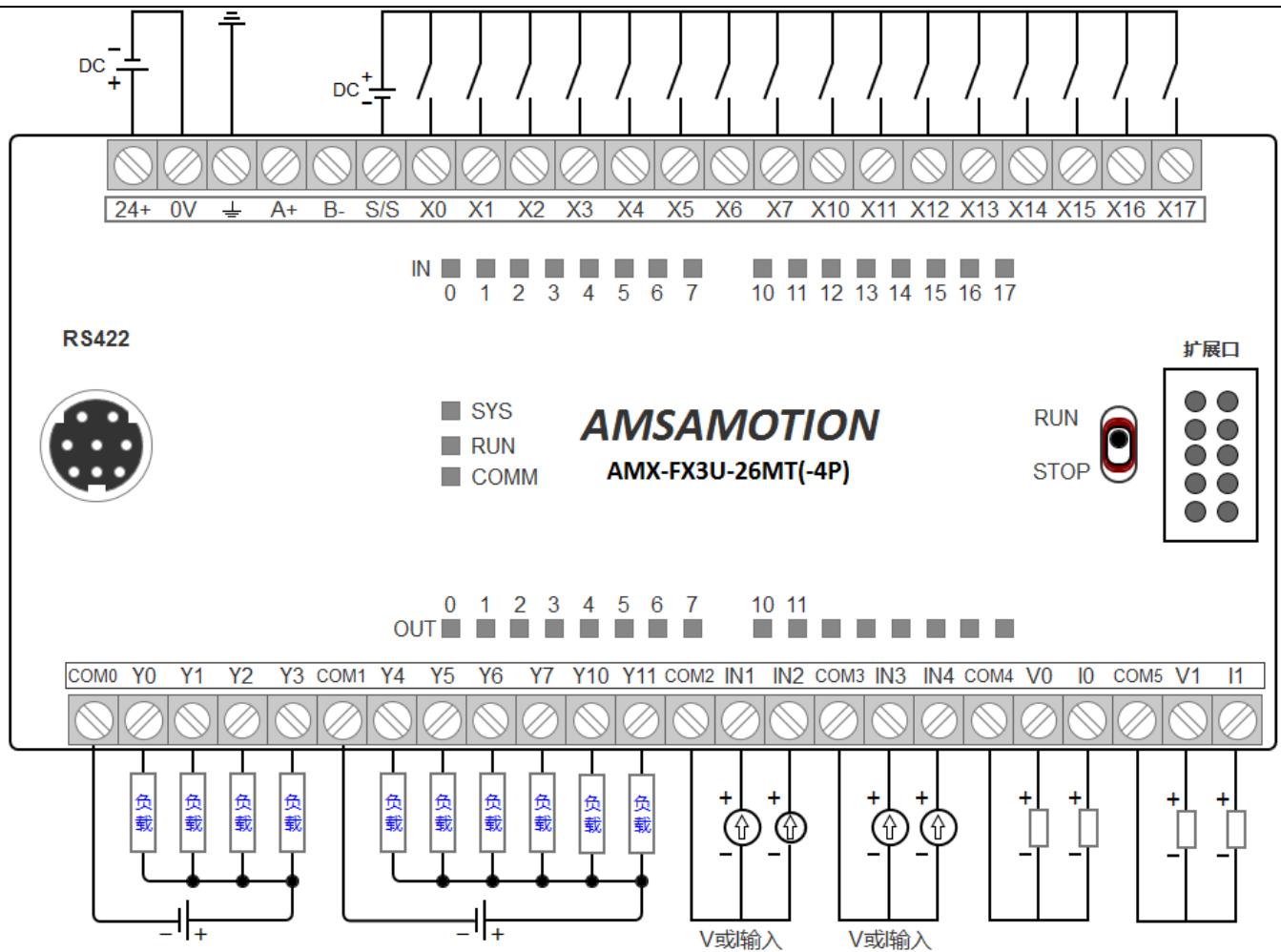
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S/S	1-16 digital input channel common		Y10	9th digital output
X0	1st way digital quantity input		Y11	Number 10 output
X1	Number 2 input		COM2	Analog input ground
X2	3rd way digital quantity input		IN1	1st analog 0~10V voltage /0~20ma current input
X3	4th way digital quantity input		IN2	2nd analog 0~10V voltage /0~20ma current input
X4	The fifth digital input		COM3	Analog input ground
X5	6th digital quantity input		IN3	3rd analog 0~10V voltage /0~20ma current input
X6	Number 7 input		IN4	4th analog 0~10V voltage /0~20ma current input
X7	The 8th digital quantity input		COM4	Analog output ground
X10	9th way digital quantity input		V0	Analog 0~10V voltage output
X11	The 10th digital input		I0	Analog 0 to 20ma Current Output
X12	11th digital quantity input		COM5	Analog output ground
X13	12th digital quantity input		V1	Analog 0~10V voltage output
X14	13th digital quantity input		I1	Analog 0~20ma Current output
X15	14th digital quantity input		RS422	RS422 programming port, S
X16	15th digital quantity input		ETH	10/100Mbps network port, RJ45
X17	16th digital quantity input		SYS	PLC lights green when normal and
COM0	1 to 4 digital output channels		RUN	Run indicator: Green when the PLC is running and
Y0	1st way digital quantity output		COMM	RS485 communication indicator,
Y1	# 2 digital output		Expansion	Connecting cable interface for the
Y2	3rd way digital quantity output			
Y3	# 4 digital output			

2.2.3 AMX-FX3U-M26MT(-4P) interface definition

➤ Terminal Diagram

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➤ Terminal instructions

Termina	Function description
24 +	DC 24V power supply positive
0V	DC 24V power supply negative
$\underline{\underline{}}$	to
A+	485 A+ (See Section 6.2 for
B-	485 B- (see section 6.2 for

Termina	Function description
COM1	5~10 outputs of digital output
Y4	The fifth digital output
Y5	6th way digital quantity output
Y6	Number 7 output
Y7	8th way digital quantity output

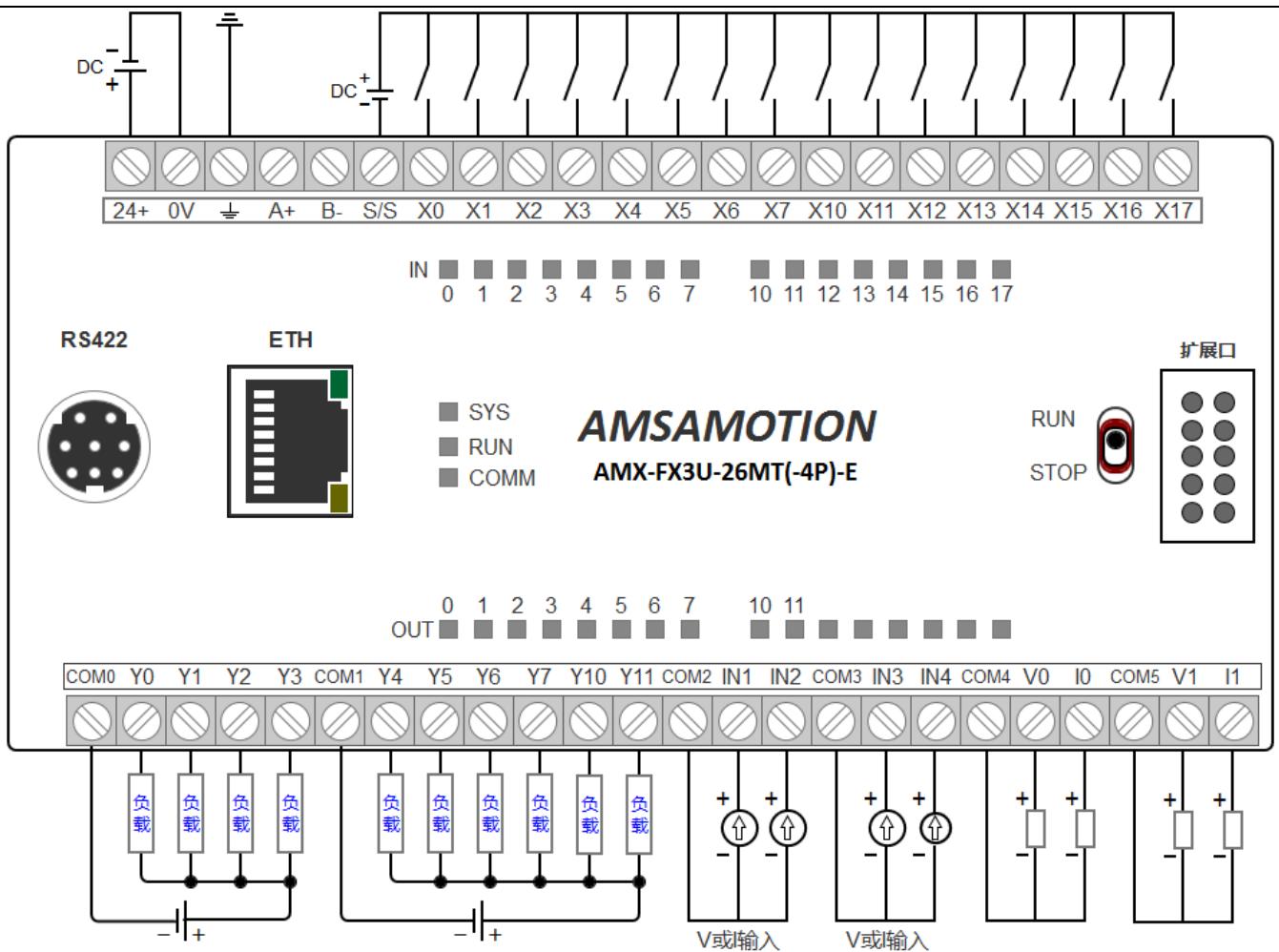
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S/S	1-16 digital input channel common	Y10	9th way digital quantity output
X0	1st way digital quantity input	Y11	Number 10 output
X1	Number 2 input	COM2	Analog input ground
X2	3rd way digital quantity input	IN1	1st analog 0~10V voltage /0~20ma current input
X3	4th way digital quantity input	IN2	2nd analog 0~10V voltage /0~20ma current input
X4	5th digital quantity input	COM3	Analog input ground
X5	6th digital quantity input	IN3	3rd analog 0~10V voltage /0~20ma current input
X6	Number 7 input	IN4	4th analog 0~10V voltage /0~20ma current input
X7	The 8th digital quantity input	COM4	Analog output ground
X10	9th way digital quantity input	V0	Analog 0~10V voltage output
X11	Number 10 input	I0	Analog 0~20ma Current output
X12	11th digital quantity input	COM5	Analog output ground
X13	12th digital quantity input	V1	Analog 0~10V voltage output
X14	13th digital quantity input	I1	Analog 0~20ma Current output
X15	14th digital quantity input	RS422	RS422 programming port, S
X16	15th digital quantity input	SYS	PLC lights green when normal and
X17	16th digital quantity input	RUN	Run indicator: Green when the PLC is running and
COM0	1 to 4 digital output channels	COMM	RS485 communication indicator,
Y0	1st way digital quantity output	Expansion	Connecting cable interface for the
Y1	# 2 digital output		
Y2	3rd way digital quantity output		
Y3	# 4 digital output		

2.2.4 AMX-FX3U-M26MT(-4P)-E interface definition

➤ Terminal diagram

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➤ Terminal instructions

Termina	Function description
24 +	DC 24V power supply positive
0V	DC 24V power supply negative
$\underline{\underline{}}_{\text{A+}}$	to
A+	485 A+ (See Section 6.2 for

Termina	Function description
COM1	5~10 outputs of digital output
Y4	5th way digital quantity output
Y5	The sixth digital output
Y6	Number 7 output

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B-	485 B- (see section 6.2 for		Y7	8th way digital quantity output
S/S	1-16 digital input channel common		Y10	9th way digital quantity output
X0	1st way digital quantity input		Y11	The 10th digital output
X1	Number 2 input		COM2	Analog input ground
X2	3rd way digital quantity input		IN1	1st analog 0~10V voltage /0~20ma current input
X3	4th way digital quantity input		IN2	2nd analog 0~10V voltage /0~20ma current input
X4	5th digital quantity input		COM3	Analog input ground
X5	The sixth digital input		IN3	3rd analog 0~10V voltage /0~20ma current input
X6	Number 7 input		IN4	4th analog 0~10V voltage /0~20ma current input
X7	The 8th digital quantity input		COM4	Analog output ground
X10	9th way digital quantity input		V0	Analog 0~10V voltage output
X11	Number 10 input		I0	Analog 0~20ma Current output
X12	The 11th digital input		COM5	Analog output area
X13	12th digital quantity input		V1	Analog 0~10V voltage output
X14	13th digital quantity input		I1	Analog 0~20ma Current output
X15	14th digital quantity input		RS422	RS422 programming port, S
X16	15th digital quantity input		ETH	10/100Mbps network port, RJ45
X17	16th digital quantity input		SYS	PLC lights green when normal and
COM0	1 to 4 digital output channels		RUN	Run indicator: Green when the PLC is running and
Y0	1st way digital quantity output		COMM	RS485 communication indicator,
Y1	# 2 digital output		Expansion	Connecting cable interface for the
Y2	3rd way digital quantity output			
Y3	# 4 digital output			

Three, function planning

The functional planning information of different types of PLC of AMX-FX3U-M series products is shown in Table 4 below.

Function name		Function description
IO Configuration	IO count	16 points photoelectric isolation digital input, 10 points relay output, support expanded IO points
	High Speed	4 channels single-phase (X0~X3) 100K pulse counting, 2 channels single-phase

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	counting (hardware)	(X4~X5) 20K pulse counting; 2 ways AB phase (X0, X1 is 1 way, X3, X4 is 1 way) counting
User program ming capacity	Program capacity	0 to 16K steps
	Comment capacity	0 blocks to 31 blocks
	File register capacity	File registers are not supported, the default is 0 blocks
Communication features	Communication port	1 asynchronous serial communication port: RS422 (S terminal), RS485, RJ45 network port
	Communication protocol	FX3U PLC, MODBUS RTU, MODBUS TCP, Mitsubishi FX built-in TCP/IP protocol
	Programming method	Programming port: RS422, ETH Programming cable: "USB-SC09-FX" programming cable or 10/100Mbps network cable Programming software: Support through GX-Works2/Gx-Developer (only RS422) to achieve download and monitoring debugging
	Device communication	Including RS422, RS485 serial port and support FX3U PLC protocol equipment or host computer can communicate with this PLC Including RS485 serial port and support MODBUS RTU protocol equipment or host computer can communicate with this PLC
Analog value Inputs	Number of channels	4 ways
	Input range	0~10V voltage or 0~20ma current
	Switching mode	4 way DIP switch to switch voltage/current
	Resolution	12-bit
	Precision	8‰ of full scale
Analog quantities Output	Number of channels	2 ways
	Output range	0 to 10V voltage or 0 to 20ma current
	Resolution	12-bit
	Precision	8‰ of full scale
Other features	Run/stop	Control the operation stop of PLC through RUN/SOTP dip switch, and the green light indicates that PLC is in working mode; Orange light indicates that PLC is in stop mode
	Wrong indication	The error light is red when the PLC is operating incorrectly
	Power-off save	Yes. See Section 4.1 for the retention range. The power-off retention range cannot be modified by software
	Clock	Supported, button battery powered when power off
	Firmware Upgrade	Support

Table 3.1 List of AMX-FX3U-M26MR features

Feature Names		Function description
IO Configuration	IO number	16 points photoelectric isolation digital input, 10 points relay output, support expanded IO points
	High Speed counting (hardware)	4 channels single-phase (X0~X3) 100K pulse counting, 2 channels single-phase (X4~X5) 20K pulse counting; 2 ways AB phase (X0, X1 is 1 way, X3, X4 is 1 way) counting
User programming capacity	Program capacity	0 to 16K steps
	Comment capacity	0 blocks to 31 blocks
	File register capacity	File registers are not supported, the default is 0 blocks
Communication features	Communication port	1 asynchronous serial communication port: RS422 (S terminal), RS485, RJ45 network port
	Communication protocol	FX3U PLC, MODBUS RTU, MODBUS TCP, Mitsubishi FX built-in TCP/IP protocol
	Programming method	Programming port: RS422, ETH Programming cable: "USB-SC09-FX" programming cable or 10/100Mbps network cable Programming software: Support through GX-Works2/Gx-Developer (only RS422) to achieve download and monitoring debugging
	Device communication	Including RS422, RS485 serial port and support FX3U PLC protocol equipment or host computer can communicate with this PLC
		Including RS485 serial port and support MODBUS RTU protocol equipment or host computer can communicate with this PLC
		Including RJ45 network port and support MODBUS TCP, MC protocol equipment or host computer can communicate with this PLC
Analog value Inputs	Number of channels	4 ways
	Input range	0 to 10V voltage or 0 to 20ma current
	Switching mode	4 DIP switches switch voltage/current
	Resolution	12-bit
	Precision	8‰ of full scale

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Analog quantities Output	Number of channels	2 ways
	Output range	0 to 10V voltage or 0 to 20ma current
	Resolution	12-bit
	Precision	8‰ of full scale
Other features	Run/stop	Control the operation stop of PLC through RUN/SOTP dip switch, and the green light indicates that PLC is in working mode; Orange light indicates that PLC is in stop mode
	Wrong indication	The error light is red when the PLC is operating incorrectly
	Power-off save	Yes. See Section 4.1 for the retention range. The power-off retention range cannot be modified by software
	Clock	Supported, button battery powered when power off
	Firmware Upgrade	Support

Table 3.2 List of AMX-FX3U-M26MR-E features

Feature Names		Function description
IO Configuration	IO count	16 points photoelectric isolation digital input, 10 points relay output, support expanded IO points
	High Speed counting (hardware)	4 channels single-phase (X0~X3) 100K pulse counting, 2 channels single-phase (X4~X5) 20K pulse counting; 2 ways AB phase (X0, X1 is 1 way, X3, X4 is 1 way) counting
	High speed pulse output	The model supports 2 100K pulse outputs (Y0~Y1) without -4P, and 4 with -4P
User programming capacity	Program capacity	0 to 16K steps
	Comment capacity	0 blocks to 31 blocks
	File register capacity	File registers are not supported, the default is 0 blocks
Communication features	Communication port	1 asynchronous serial communication port: RS422 (S terminal), RS485, RJ45 network port
	Communication protocol	FX3U PLC, MODBUS RTU, MODBUS TCP, Mitsubishi FX built-in TCP/IP protocol
	Programming method	Programming port: RS422, ETH Programming cable: "USB-SC09-FX" programming cable or 10/100Mbps network

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	cable Programming software: Support through GX-Works2/Gx-Developer (only RS422) to achieve download and monitoring debugging	
	Device communication	Including RS422, RS485 serial port and support FX3U PLC protocol equipment or host computer can communicate with this PLC
		Including RS485 serial port and support MODBUS RTU protocol equipment or host computer can communicate with this PLC
Analog value Inputs	Number of channels	4 ways
	Input range	0 to 10V voltage or 0 to 20ma current
	Switching mode	4 way DIP switch to switch voltage/current
	Resolution	12-bit
	Precision	8‰ of full scale
Analog quantities Output	Number of channels	2 ways
	Output range	0 to 10V voltage or 0 to 20ma current
	Resolution	12-bit
	Precision	8‰ of full scale
Other features	Run/stop	The RUN/SOTP dip switch is used to stop the operation of the PLC. The green light indicates that the PLC is in working mode. Orange light indicates that PLC is in stop mode
	Wrong indication	The error light is red when the PLC is operating incorrectly
	Power-off save	Yes. See Section 4.1 for the retention range. The power-off retention range cannot be modified by software
	Clock	Supported, button battery powered when power off
	Firmware Upgrade	Support

Table 3.3 List of AMX-FX3U-M26MT(-4P) features

Function Name		Function description
IO Configuration	IO count	16 points photoelectric isolation digital input, 10 points relay output, support expanded IO points
	High Speed counting (hardware)	Four single-phase (X0~X3) 100K pulse counting, two single-phase (X4~X5) 20K pulse counting; 2 ways AB phase (X0, X1 is 1 way, X3, X4 is 1 way) counting

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	High speed pulse output	The model supports 2 100K pulse outputs (Y0~Y1) without -4P, and 4 with -4P
User program ming capacity	Program capacity	0 to 16K steps
	Comment capacity	Blocks 0 to 31
	File register capacity	File registers are not supported, the default is 0 blocks
Communication features	Communication port	1 asynchronous serial communication port: RS422 (S terminal), RS485, RJ45 network port
	Communication protocol	FX3U PLC, MODBUS RTU, MODBUS TCP, Mitsubishi FX built-in TCP/IP protocol
	Programming method	Programming port: RS422, ETH Programming cable: "USB-SC09-FX" programming cable or 10/100Mbps network cable Programming software: Support through GX-Works2/Gx-Developer (only RS422) to achieve download and monitoring debugging
	Device communication	Including RS422, RS485 serial port and support FX3U PLC protocol equipment or host computer can communicate with this PLC
		Including RS485 serial port and support MODBUS RTU protocol equipment or host computer can communicate with this PLC
		Including RJ45 network port and support MODBUS TCP, MC protocol equipment or host computer can communicate with this PLC
Analog quantity Inputs	Number of channels	4 ways
	Input range	0 to 10V voltage or 0 to 20ma current
	Switching mode	4 way DIP switch to switch voltage/current
	Resolution	12-bit
	Precision	8‰ of full scale
Analog quantities Output	Number of channels	2 ways
	Output range	0 to 10V voltage or 0 to 20ma current
	Resolution	12-bit
	Precision	8‰ of full scale
Other features	Run/stop	Control the operation stop of PLC through RUN/SOTP dip switch, and the green light indicates that PLC is in working mode; Orange light indicates that PLC is in stop mode
	Wrong indication	The error light is red when the PLC is operating incorrectly
	Power-off save	Yes. See Section 4.1 for the retention range. The power-off retention range cannot be modified by software

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	Clock	Supported, button battery powered when power off
	Firmware Upgrade	support

Table 3.4 AMX-FX3U-M26MT(-4P)-E feature list

4. Software component description

4.1 Distribution of soft components

The following table describes the types of software components supported by AMX-FX3U-M series programmable controllers:

Serial Number	Soft components	Function description
1	Input Relay X	A bit element corresponding to the PLC's digital input, addressed in base 8 numbers
2	Output Relay Y	A bit element corresponding to the PLC's digital output, addressed in base 8 numbers
3	Auxiliary relay M	Auxiliary relay bit element inside PLC
4	Status relay S	Mainly used for sequence function diagram programming, as a step control with status marker bit element
5	Timer T	16bit timer that supports 1ms, 10ms, 100ms clock pulses
6	Counter C	Support 16bit/32bit increase/decrease type count, high-speed count, single/biphase count
7	Data register D	Support hold data with register D; Index registers V and Z
8	Pointers	Jump pointer P, subroutine pointer P (interrupt pointer not supported)
9	The constant K •H	Support binary, decimal, hexadecimal, floating point and other data operations

Soft component Category	Range of soft components			
Input relay X	X0~X17, total 16 points (not extended)			
Output relay Y	Y0~Y11, total 10 points (not extended)			
Auxiliary relay M	M0~M499 500 points * 1	M500~M1023 524 points * 2	M1024~M7679 6656 points * 4	M8000~M8424 425 points for special use
Status Relay S	S0~S499, total 500 points * 1	S500~S999, total 500 points * 2	S1000 to S4095, a total of 3096 points * 4	T0~T199 T200~T245 T246~T249 T250~T255 T256~T511

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Timer T	200 points 100ms ×4	46 o'clock 10ms ×4	4 o'clock 1ms cumulative type ×3	6 o'clock 100ms Cumulative type ×3	256 points 1ms ×4
Counter C	Count in 16-bit increments		32 bit bidirectional counter		32-bit bidirectional high-speed counter
	C0~C99 100 points * 1	C100~C199 100 points * 2	C200~C219 20 o'clock * 1	C220~C234 15 o'clock * 2	C235~C255 21 o'clock * 2
Data register D	D0~D199 200 points * 1	D200~D511 312 points * 2	D512~D7999 7488 points * 4	D8000~D8483 484 points for special use	V0~V7, Z0~Z7 Index at 16 points each
Pointer	N0~N7, 8:00, total control		P0~P127, total 128 points, branch pointer		
Constant	K	16 bits -32768~32767		32 bits -2147483648~2147483647	
	H	16 digit 0~FFFFH		32 bit 0~FFFFFFH	
	E	±1.175495 e-38 ~ ±3.402823 E+38 (significant 7 bits)			

※1. Non-power off hold range, using the parameter setting, can change the power off hold range.

※2. Power off hold range, the use of parameter Settings, can change the non-power off hold range.

※3. Power failure hold range, can not change the non-power failure hold range.

※4. No power failure hold range, can not change the power failure hold range.

4.2 Power-off hold Address Description

The address range of AMX-FX3U-M series PLC power failure saving is shown in Table 4.2. If you want to adjust the default latch start and end range, you can set it through the programming software-PLC parameters-Software component setting window, and then download the new PLC parameters to the PLC to take effect.

	Default latch start address (adjustable)	Default latching End address (adjustable)	Maximum range of latches
Auxiliary relay M	M500	M1023	M0~M1023
Status Relay S	S500	S999	S0~S999
Timer T	T246 (fixed, non-adjustable)	T255 (fixed, non-adjustable)	T246~T255
Counter C	16 bits	C100	C0~C199
	32 bits	C220	C200~C255
Data register D	D200	D511	D0~D511

Table 4.2 PLC power failure save address range

4.3 Description of high speed counter

AMX-FX3U-M series programmable controllers support 4 single-phase (X0~X3)100K pulse counting, 2 single-phase (X4~X5)20K pulse counting; Support 2 AB phase (X0, X1 for 1 way, X3, X4

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for 1 way), counting for hardware counting, do not support software counting, high-speed counter description as follows:

	1 phase 1 count input															1 Phase 1 Count input				
	C23 5	C23 6	C23 7	C23 8	C23 9	C24 0	C24 1	C24 2	C24 3	C24 4	C24 5	C24 6	C24 7	C24 8	C24 9	C25 0				
X0	U/D						U/D			U/D		U	U		U					
X1		U/D					R			R		D	D		D					
X2			U/D				U/D			U/D		R		R						
X3				U/D			R			R			U		U					
X4					U/D			U/D					D		D					
X5						U/D		R					R		R					
X6									S					S						
X7										S									S	
U: upper count; D: lower count; R: reset; S: start																				

Phase 2 Count input					Instructions					
	C25 1	C25 2	C25 3	C25 4	C25 5					
X0	A	A		A		M8251 disconnects when C251 counts forward and connects when it counts backward				
X1	B	B		B		The M8252 is disconnected when the C252 counts forward, and connected when the C252 counts backward				
X2		R		R		When C253 counts forward, M8253 is disconnected, and when counting backwards, M8253 is connected				
X3			A		A	When C254 is counting forward, M8254 is disconnected, and when counting backward, M8254 is connected				
X4			B		B	When C255 is counting forward, M8255 is disconnected, and when counting backward, M8255 is connected				
X5			R		R					
X6				S						
X7					S					
A: Phase A; B: phase B; R: reset; S: start										

The auxiliary relay is used to change the counting direction of the high speed counter. When the state is OFF, the high speed counter counts on the number; When the state is ON, the high-speed counter counts the number below.

Counter Number	Counting direction Switchin g addresse s	Counter Number	Counting direction Switchin g addresse s
C235	M8235	C241	M8241
C236	M8236	C242	M8242
C237	M8237	C243	M8243
C238	M8238	C244	M8244
C239	M8239	C245	M8245
C240	M8240		

4.4 Special software components

The types of software components supported by AMX-FX3U-M series programmable controllers are described in the following table:

Special AIDS Relay M	Function type	Function Description	Special Data Register D	Function type	Function Description
M8000	PLC Status	Set 1 while running and clear 0 when stopped	D8000	PLC Status	Retention

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M8001		Clear 0 while running, set 1 when stopping	D8001		Model version FX3U(C) (D8101 is also saved), PC type and version number
M8002		Initial pulse (first scan on)	D8002		Memory capacity (D8102 also has saves)
M8003		Initialization pulse (first scan disconnected)	D8003		Memory type, register type
M8011	System clock	10ms pulse	D8004		Error M Address number BCD conversion value
M8012		100ms pulse	D8010	System clock	Scan current values
M8013		1s pulse	D8013		Corresponding seconds
M8014		1 min pulse	D8014		Corresponding minutes
M8015		1 means the clock is stopped and 0 means the clock is running	D8015		Corresponding hours
M8018		1 indicates that the clock is up and running normally; 0 means stop	D8016		Corresponding date
M8020	Logo with Tips	Zero mark	D8017		Corresponding month
M8021		Borrow sign	D8018		Corresponding year
M8022		Carry flag	D8019		Corresponding week
M8029		Instruction completed	D8020	Input Filter	Input filter, the input filter initial value of X010-X017 is passed to the special data register D8020; The filter of X0~X7 can be set by REFF instruction, unit :ms
M8063		Master MODBUS communication error latch	D8028	Index content	The contents of the Z0(Z) register
M8064		Parameter error	D8029		Contents of the VO(V) register
M8065		Grammar errors	D8030	Analog quantity A/D value	Analog input channel 1 value
M8067		Arithmetic error	D8031		Analog input channel 2 value
M8235		C235 Add and subtract count control bits	D8032	Analog quantity A/D value	Analog input channel 3 value
M8236	High Speed Count Direction control	C236 Add and subtract count control bits	D8033		Analog input channel 4 value
M8237		C237 Add or subtract count control bits	D8067	Error record	Operation error Error code number (corresponding to M8067)
M8238		C238 Add or subtract count control bits	D8068		Save the error PC step

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M8239		C239 Add or subtract count control bits	D8080	Analog quantity	Set analog output channel 0 value
M8240		C240 Add and subtract count control bits	D8081	D/A value	Set analog output channel 1 value

M8241	High speed counting Direction control	C241 Add and subtract count control bits	D8101	PLC State	Model Version FX2N(C) (D8001 also has a save)
M8242		C242 Add or subtract count control bits	D8102		Memory capacity (D8002 also has saves)
M8243		C243 Add or subtract count control bits	D8105		Hardware version number + software version number (5 digits decimal, the first two digits represent the hardware version, the last three digits represent the software version, e.g. 10101 Hardware version v1.0 Software version v1.01)
M8244		C244 Add and subtract count control bits	D8140 Low		Total number of pulses output to Y0 (FNC59(PLSR) Total number of pulses output to FNC57(PLSY) instruction
M8245		C245 Add and subtract count control bits	D8141 high		Total number of pulses output to Y1 (FNC59(PLSR) Total number of pulses output to FNC57(PLSY) instruction
M8251		C251 Add or subtract count status bits	D8142 Low		Total number of pulses output to Y02 (FNC59(PLSR) Total number of pulses output to FNC57(PLSY) instruction
M8252		C252 Add or subtract count status bits	D8143 high		Total number of pulses output to Y03 (FNC59(PLSR) Total number of pulses output to FNC57(PLSY) instruction
M8253		C253 Add or subtract count status bits	D8144 Low		
M8254		C254 Add or subtract count status bits	D8145 High		
M8255		C255 Add or subtract count status bits	D8146 Low		
M8329	Pulse monitoring	Instruction execution exception end flag bit	D8147 High	Index address Content	Contents of the Z1 register
M8338	g and positionin	PLSV command acceleration and deceleration action enabled	D8182		The contents of the V1 register
M8340	g	Y0 pulse output in monitor (ON: Busy/Off:Ready)	D8183		

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M8341	Y0 Clear Signal Output function active (zrn)	D8184		Contents of the Z2 register
M8342		D8185		Contents of the V2 register
M8343		D8186		The contents of the Z3 register
M8344		D8187		Contents of the V3 register
M8348		D8188		Contents of the Z4 register
M8349		D8189		Contents of the V4 register
M8350		D8190		The contents of the Z5 register
M8351		D8191		Contents of the V5 register
M8353		D8192		The contents of the Z6 register

M8354	Pulse monitoring and positioning	Y1 reverse limit	D8193	Index address Content	Contents of the V6 register
M8358		Y1 Positioning instruction driver	D8194		The contents of the Z7 register
M8359		Y1 Pulse output stop command	D8195		Contents of the V7 register
M8360		Y2 Pulse output in monitor (ON: Busy/OFF:Ready)	D8200		RS485 function configuration register, 1 for Modbus master station, 2 for slave station
M8361		Y2 Clear signal output function works	D8340	Motion positionin g	Y0 Current value register with D8340 as low and D8341 as high
M8363		Y2 forward turn limit	D8341		Y0 Base Speed Initial value: 0
M8364		Y2 Reverse limit	D8342		Y0 Top speed
M8368		Y2 Positioning instruction driver	D8343		Y0 Acceleration time initial value
M8369		Y2 pulse output stop command	D8344		Y0 Deceleration time initial value
M8370		Y3 Pulse output in monitor (ON: Busy/OFF:Ready)	D8348		Y01 Current value register with D8350 for low and D8351 for high
M8371		Y3 Clear signal output function works	D8349		Y01 Base Speed Initial value: 0
M8373		Y3 forward turn limit	D8350		Y01 Top speed
M8374		Y3 reverse limit	D8351		
M8378		Y3 Positioning command driver	D8352		
M8379		Y3 pulse output stop command	D8353		
M8401	MODBUS Communi	MODBUS communication in progress	D8354		

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M8402	cation	The MODBUS communication fails. Procedure	D8358		Y01 Acceleration time initial value
M8403		MODBUS communication error latch	D8359		Y01 Deceleration time initial value
M8408		Retry occurs	D8360		Y02 Current value register with D8360 as low and D8361 as high
M8409		Timeout occurs	D8361		
M8411		Flag bit set by MODBUS communication parameter, the PLC will remain connected after power- on	D8362		Y02 Base Speed Initial value: 0
M8422		An error occurred in MODBUS communication	D8363		Y02 Top speed
M8423		MODBUS communication error latch	D8364		
M8464	Pulse monitorin g and positionin g	Y0 clear signal software component specified function is effective	D8368		Y02 Acceleration time initial value
M8465		Y1 Clear signal software element specified function valid	D8369		Y02 Deceleration time initial value
M8466		Y2 Clear signal software element specified function valid	D8370		Y03 Current value register with D8370 as low and D8371 as high
M8467		Y3 Clear signal software element specified function valid	D8371		
			D8372		Y03 Base Speed Initial value: 0
			D8373		
			D8374		Y03 Top speed

D8378	Motion positionin g	Y03 Initial value of acceleration time
D8379		Y03 Deceleration time initial value
D8464		Y0 Clear signal soft element specify register
D8465		Y1 Clear signal soft element designation register
D8466		Y2 Clear signal soft element designation register
D8467		Y3 Clear signal soft element designation register
D8400		MODBUS Master station communication

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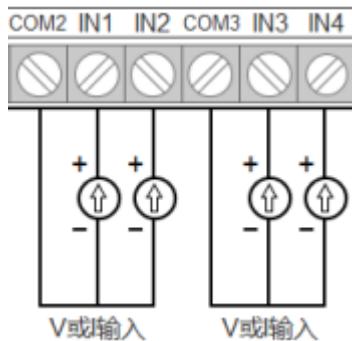
	Communication	format
D8402		Master communication error code
D8403		Details of the master station error
D8408		Current number of retries (master)
D8409		Slave station response timeout (master station)
D8410		Play delay (main station)
D8411		Interrequest delay (Interframe delay)(master)
D8412		Number of retries (main station)
D8414		Station number (0-247) (main station)
D8420		Slave station communication format
D8422		Slave station communication error code
D8423		Details of what went wrong from station
D8431		Interrequest delay (interframe delay)
D8434		Station number (1-247) (from station)
D8438		Serial Communication Error code (slave station)
D8470	Network port parameters	High byte :IP address segment 1, low byte IP address segment 2
D8471		High byte :IP address segment 3, low byte IP address segment 4
D8472		High byte :MAC address end 1, low byte :MAC address end 2
D8473		High byte :MAC address end 3, low byte :MAC address end 4
D8474		High byte :MAC address end 5, low byte :MAC address end 6
D8475		Number of connections in the first 4 digits of the high byte, and error codes in the low 12 digits

5. Instructions for using analog quantity

5.1 Analog input

AMX-FX3U-M series PLC contains 4 analog input channels, support "0~10V/0~20ma" analog input, factory default 0~10V voltage input, if you want to change the input type, need to open the PLC shell, adjust the bottom PCB DIP ON/OFF state, See "analog input signal switching instructions" content.

➤ Analog input terminals



Analog input terminals are described in the following table:

Analog input terminal description			
Serial number	Terminal name	Function description	Remarks
1	COM2	Analog input common-field	
2	IN1	1st analog voltage/current input	Analog range 0~10V/0~20ma, factory default 0~10V voltage input
3	IN2	2nd analog voltage/current input	Analog range 0~10V/0~20ma, factory default 0~10V voltage input
4	COM3	Analog input common-field	
5	IN3	3rd analog voltage/current input	Analog range 0~10V/0~20ma, factory default 0~10V voltage input
6	IN4	4th analog voltage/current input	Analog range 0~10V/0~20ma, factory default 0~10V voltage input

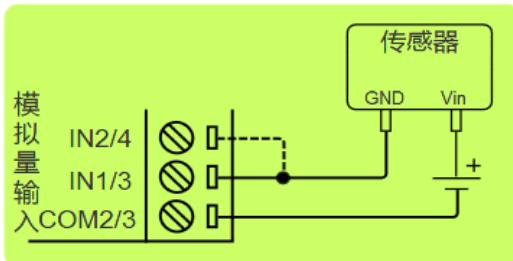
➤ Conversion parameters

Analog input numeric conversion instructions			
Serial numb	Parameter characteristics	Details Description	Remarks

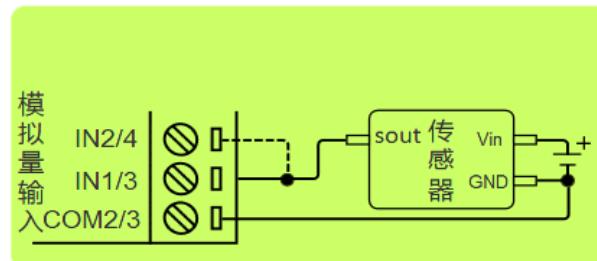
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er			
1	Corresponding AD value	0 ~ 4000	Analog amount is converted to decimal data after input to PLC
2	IN1 channel corresponding register	D8030	
3	IN2 channel corresponding register	D8031	
4	IN3 channel corresponding register	D8032	
5	IN4 channel corresponding register	D8033	

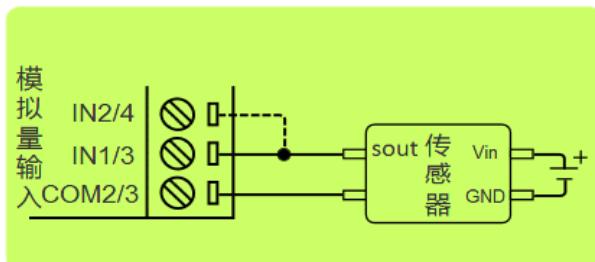
➤ Sensor wiring diagram



两线制传感器接法



三线制传感器接法



四线制传感器接法

Note: The dashed line connection part in the figure indicates that the other analog input channel is the same connection, but a sensor can only select one of the channels to input analog signals.

➤ Analog input signal switching instructions

The measurement type of PLC analog input signal is determined by the DIP DIP ON/OFF status of the bottom PCB board. Open the PLC shell using a flat-head screwdriver, take out the PCB board and look at the bottom, and you can see the 4-way DIP dip as shown below. The 1-4 DIP DIP corresponds to the IN1-IN4 analog input channel respectively. When the dip switch is OFF, it is voltage input, when it is ON, it is current input, and the **factory default is 4 voltage input**.



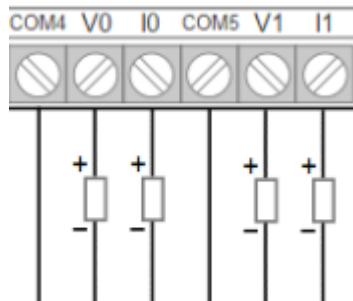
➤ Analog input programming case

Refer to Appendix C-1 Cases 1-4.

5.2 Analog output

AMX-FX3U-M series PLC supports 2 analog outputs, each of which supports 2 analog output types of "0~10V" or "0~20ma".

➤ Analog output terminals



Analog output terminals are described in the following table:

Analog output terminal description			
Serial Number	Terminal name	Function description	Remarks
1	COM4	Analog output common-land	

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2	V0	0~10V analog voltage output channel 0	Two channels can be used at the same time, but by the same The PLC register controls the analog output value
3	I0	0~20ma analog current output channel 0	
4	COM5	Analog output common-land	
5	V1	0~10V analog voltage output channel 1	Two channels can be used at the same time, but receive the same The PLC register controls the analog output value
6	I1	0~20ma analog current output channel 1	

➤ Conversion parameters

Analog output parameter conversion instructions			
Serial number	Parameter characteristics	Details Description	Remarks
1	Output analog range	0~10V/0~20ma	
2	Corresponding range of values	0 ~ 4000	Decimal
3	Analog output channel 0 (V0, I0) register	D8080	Numeric values of registers D8080, D8081, Determines the size of the analog output value of the corresponding channel
4	Analog output channel 1 (V1, I1) register	D8081	

➤ Analog output programming case

Refer to Appendix C-2.

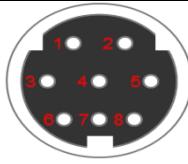
6. Guidelines for Communication

At present, AMX-FX3U-M series PLC supports RS422, RS485, RJ45 network port (10/100Mbps) three kinds of interface communication.

6.1 RS422 interface communication

The PLC RS422 (female) interface is used as a programming port, and can also communicate with the upper computer/touch screen that supports FX3U protocol.

➤ RS422 communication port (female head) position and pin description (for PLC)



Pin sequence	Pin name
1	422_RX-
2	422_RX+
3	SG
4	422_TX-
7	422_TX+

➤ Programming Communication

The user can use the S terminal serial cable of USB to RS422 signal to program and communicate with PLC. It is recommended that the company's "USB-SC09" model programming cable can be purchased.

Programming steps:

Step 1: Connect the programming wire

Connect the USB port of the USB-SC09 programming cable to the computer, and connect the round end of the S8 serial port to the PLC programming port;

Step 2: Power on PLC and computer

After powering on the PLC, the RUN indicator (RUN light) and the power indicator (SYS light is green and normal) will light up.

Step 3: Look at the port number of the programming line in your computer's device Manager

As shown in Figure 6.1, the USB-SC09 port number used for this demonstration is COM6 (the user depends on his actual).

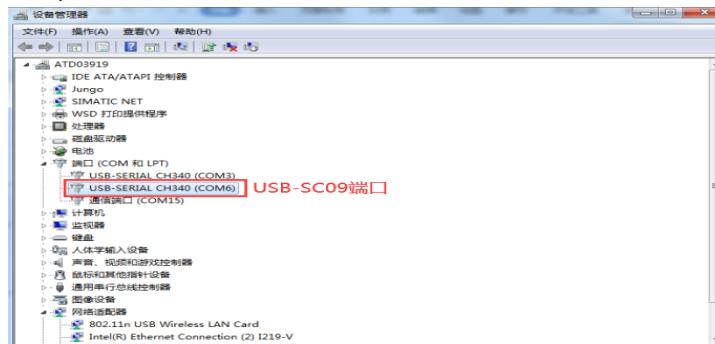


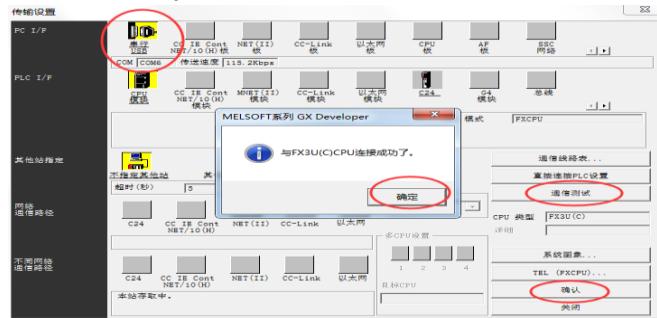
Figure 6.1 Device Manager View the USB-SC09 port number

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If the driver is not installed, please go to www.amsamotion.com and download the document -USB driver - CH340 driver to download and install the driver.

Step 4: Programming software communication Settings

After creating the FX3U project, open the transmission setting or connection target setting, select the USB port number as the port number of USB-SC09 (the user depends on his actual), and then click the communication test, pay attention to click OK and exit after success.



➤ Communicate with RS422 serial port device

When the user device supports RS422 serial signal and FX3U PLC protocol, you can monitor the PLC data through RS422, the default communication parameters 9600, 7, EVEN, 1 (baud rate adaptive).

6.2 RS485 interface communication

AMX-FX3U-M series programmable controllers contain only one 485 terminal channel, but can be programmed to switch the following 3 communication functions: FX3U PLC protocol communication (default), PLC for MODBUS RTU master station communication, PLC for MODBUS RTU slave station communication, specific configuration and use refer to the following chapters.

6.2.1. 485 communication function using FX3U PLC protocol

AMX-FX3U-M series programmable controller factory, RS485 terminal default FX3U PLC protocol communication port (corresponding D8200 register value is 0), communication parameters default 9600, 7, EVEN, 1. When the 485 communication function is MODBUS communication function, the user needs to pass the program in the following figure, M8411 driver set the value of register D8200 to 0, power off and restart before you can resume to PLC protocol communication.



6.2.2, PLC for MODBUS RTU master station communication

By default, the master station function is off, which needs to be started by the setting instruction D8200 of the M8411 driver with the value K1.

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The realization of PLC communication function for MODBUS RTU master station is generally divided into two steps:

- 1) Through the **master station PLC setting program**, configure the related parameters of the master station (**must use M8411 driver** configuration, such as configuring RS485 function configuration register D8200 value is 1, configure communication format D8400, etc.), you can refer to the master station communication parameters, the master station PLC program content.
- 2) With **ADPRW instructions** of different functional codes, to achieve reading and writing of data from the slave station, you can refer to the summary of ADPRW instructions and the use of routine contents of each functional code of the master station.

➤ RTU master station serial port communication parameters

MODBUS RTU master station function communication format						
Registers D8400	Bit number	Meaning	Bit State Description		Read and Write	
			0 (OFF)	1 (ON)		
	b0	Data length	Unsupported		8-bit	
	b2b1	Check method	00: None check 01: odd check (Old) 11: Even check (Even)		R/W	
	b3	Stop bit	1 bit	2 bits		
	b7b6b5b4	Baud rate	0101:1200 1001:19200 0110:2400 1010:38400 0111:4800 1011:57600 1000:9600 1100:115200			
	b8	Communication protocol	Unsupported	MODBUS Protocol		
	b9	Communication mode	RTU mode	Unsupported		
	b15~b10	Not used	0000000			
Example: When D8400= 0x0181, data length 8, no parity, 1 stop bit, baud rate 9600, MODBUS protocol RTU mode						

➤ RTU master station function related configuration register

Registers	Function name	Function description
M8411	Flag bit for MODBUS communication parameter setting	M8411 drive must be used to set MODBUS parameters, and the PLC will remain connected after power-on
D8200	R485 Interface function Switch	When D8200=K1, the RS485 communication function is switched to PLC for MODBUS RTU master station
D8400	MODBUS RTU Master station communication format	Configure PLC as MODBUS RTU master station communication format; See the above MODBUS RTU master station communication format for details
D8409	Timeout time	The timeout time (unit: ms) of the response of the slave station. If the response exceeds the timeout time, the response is judged to be timeout
D8411	Interrequest delay	The delay between the master station sending one request and the next (in ms)
D8412	Number of retries requested	The number of times the master resends a communication request when a timeout occurs at the slave station
D8414	PLC as MODBUS RTU master station time number	Default 0 is OK
M8402	Communication error flag bit	When PLC as MODBUS RTU master station communication error, M8402 set ON
D8402	Communication Error code content	Store the master station communication error code, error code description see Appendix B

➤ RTU master station PLC setup program



Above master station PLC setup program routine software components are described as follows:

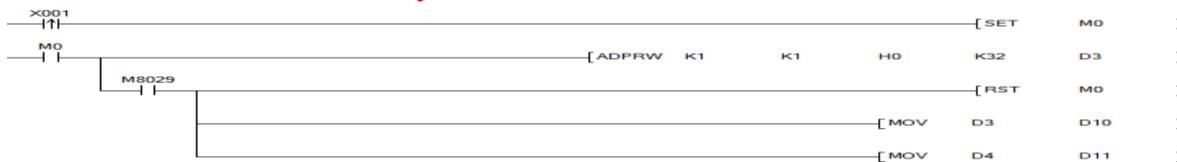
手册

Address	Feature name	Instructions
M8411	Flag bits for setting MODBUS communication parameters	M8411 drive must be used to set MODBUS parameters, and the PLC will remain connected after power-on
D8200	This PLC R485 interface function configuration	The routine set value to K1 indicates that the 485 interface is configured as the MODBUS master station
D8400	PLC as MODBUS RTU master communication format	The routine set value is H181, indicating 8 data bits, no check, 1 stop bit, 9600 baud rate, using MODBUS protocol RTU mode, other format Settings refer to the master station communication format table
D8409	Reply Response timeout (ms) for the slave station	The routine set value k2000, expressed as a timeout of 2 seconds
D8411	Delay between Frame data requests (ms)	If set to K0 in the routine, it means that the system default delay interval is used
D8412	Number of retries requested	The value K3 is set in the routine, indicating that the communication connection is retried 3 times after the timeout
D8414	The station number when PLC is the main MODBUS RTU station	Default 0 is fine

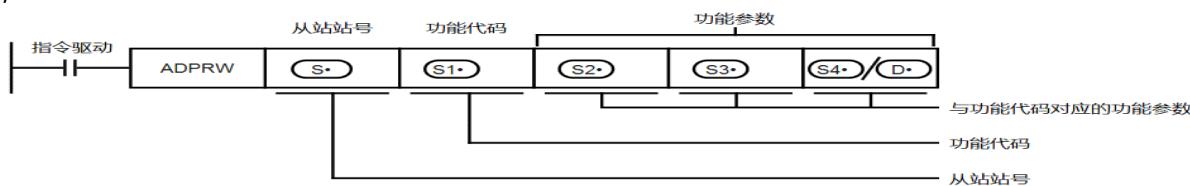
Attention

- ✧ PLC power-on execution of the above initialization code, the master station communication can be carried out, so the master station PLC setting program should be maintained when power-on communication.
- ✧ When PLC is powered on, if you change the parameters of the master station setting program, it will work after power failure and restart.

➤ ADPRW instruction summary



PLC MODBUS master station communication function is through the ADPRW instruction (16 bit continuous execution instruction) to communicate (read/write data). Operation instruction, according to the function code S1 on the slave station S in accordance with the parameters S2,S3,S4 action.



◆ Set instruction operand

Operand classes	Content	Data type

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S	Secondary station number (station number range 1-247)	BIN16 digits
S1	Function codes (support 01, 02, 03, 04, 05, 06, 15, 16 function codes)	BIN16 digits
S2	Function parameters corresponding to the function code	bin16-bit
S3	Function parameters corresponding to the function code	BIN16 bits
S4/D	Function parameters corresponding to the function code	Bit /BIN16 bits

◆ ADPRW instruction function parameter

The function parameters required by each function code are shown in the following table.

S1 Function code	S2 Modbus start address	S3 Access points	S4 Initial data storage software component
01H Coil Read	MODBUS address: 0000H ~ FFFEH	Access points :1 ~ 2000	Read object software component/(starting address)
			Object software component: D
02H Input discrete quantity to read out	MODBUS address: 0000H ~ FFFEH	Access points :1 ~ 2000	Read object software component/(starting address)
			Object software component: D
03H Hold register read	MODBUS address: 0H~FFEH	Access points :1 ~ 125	Read object software element (starting address)
			Object software element: D
04H Input register Read	MODBUS address: 0000H ~ FFFEH	Access points :1 ~ 125	Read object software element/(starting address)
			Object software component: D
05H Single coil write	MODBUS address: 0000H ~ FFFEH	0 (fixed)	Write object soft element/(starting address)
			Object software component: D
06H Single register write	MODBUS address: 0000H ~ FFFEH	0 (fixed)	Write object soft element (starting address)
			Object software element: D
0FH: Batch coil write	MODBUS address: 0000H ~ FFFEH	Access points :1 ~ 1968	Write object software (starting address)
			Object software component: D
10H Batch register write	MODBUS address: 0000H ~ FFFEH	Access points :1 ~ 123	Write object software (starting address)
			Object software element: D

Note

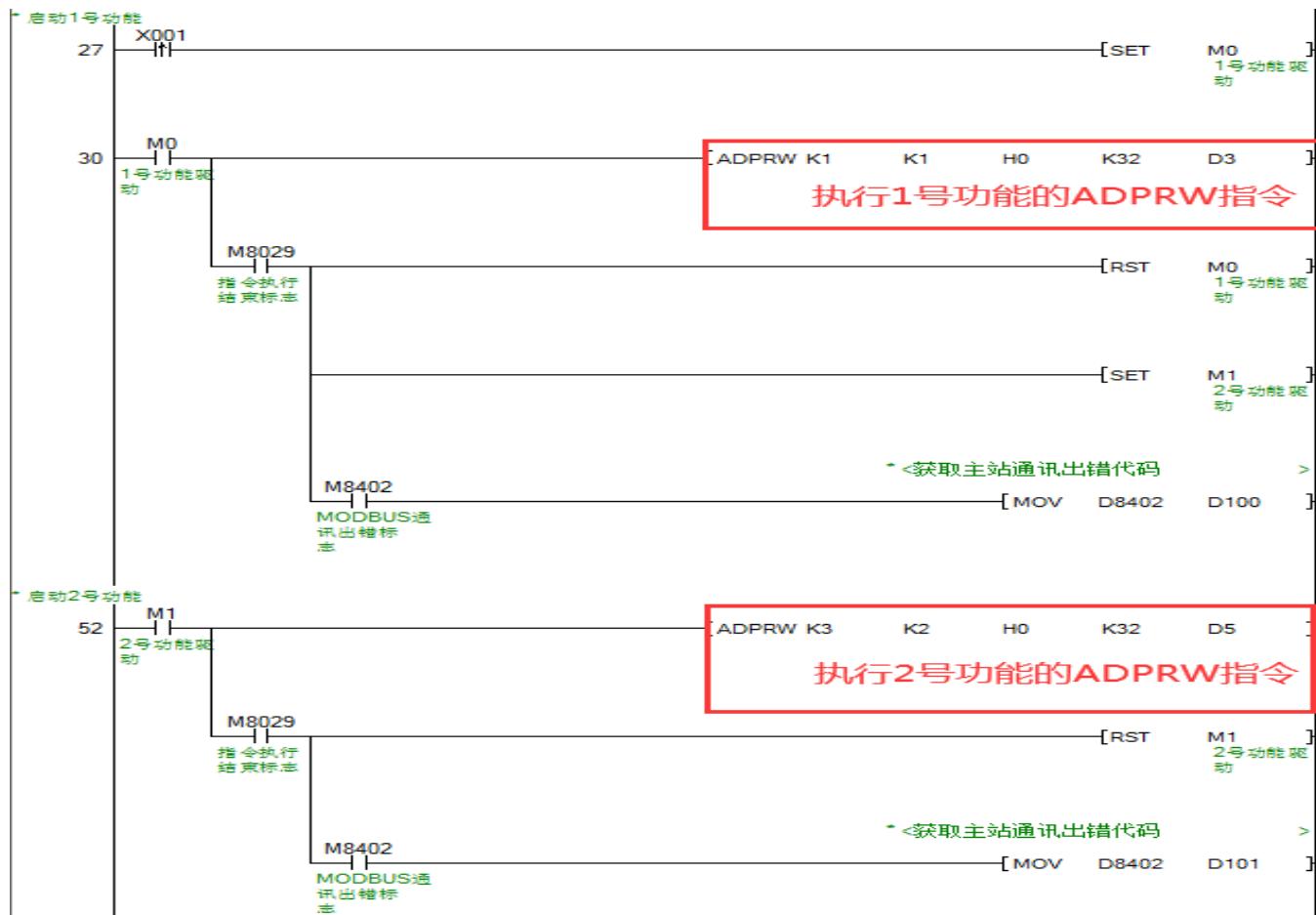
- ◆ The object software component in function code S4 only supports data register D. The PLC error indicator will light up when setting other software components.

➤ RTU master station each function code use routine

The following routines have omitted the part of "master station setting program". Before using the master station function code, users should follow the former part of "Master station PLC setting program" to ensure that the master station is set correctly.

The detailed instructions for the use of ADPRW are mainly introduced by the "01 function" routine, and other routines are not repeated.

◆ Coil read function 01



1) ADPRW instruction operand description that performs function No. 1 in routine:

Operand	1 Function operand name	Description of routine contents
---------	-------------------------	---------------------------------

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S	This PLC master station to visit the slave station number	K1 in the routine, represents the slave station equipment data of the PLC access station number 1
S1	The functional code used by the PLC master station to access the slave station	K1 in the routine, indicating that the PLC uses 01 function code to read the coil state of the slave station
S2	This PLC master station accesses the MODBUS starting address of the slave station	0H in the routine means that the PLC accesses the slave station from MODBUS address 0H
S3	Number of MODBUS addresses accessed by this PLC master station to the slave station	K32 in the routine, indicating that the PLC reads the status of 32 coils in the slave station
S4/D	After the PLC master station accesses the data in the MODBUS address of the slave station, the data should be stored in the starting address of the PLC register	D3 in the routine indicates that the PLC will access the coil status data obtained from the station MODBUS address, which is stored from the PLC address D3

2) Other software components in the routine parameter description:

M8029: instruction execution end flag, drive ADPRW instruction start execution to the end of instruction execution, M8029 to ON.

M8402: MODBUS communication error mark, when MODBUS communication due to artificial program setting error or equipment damage, etc

M8402 turns to ON when the communication fails due to cause.

D8402: When MODBUS communication error, PLC D8402 will give the communication error related code, combined with Appendix B

Error code description, easy for users to check the cause of communication error.

3) With the routine of the function of No. 01, the action process of reading the coil state of the slave station of this PLC master station is explained:

In the routine, whenever X1 changes from OFF to ON, M0 is set to ON, and after M0 becomes ON, ADPRW is driven

Instruction execution function (the routine is No. 01 function, the execution should keep the driving condition M0 ON), when M8029 from OFF to ON, indicating that the ADPRW instruction execution is completed.

The specific action result of the ADPRW instruction executing No. 01 function in the routine is that the PLC master station is from No. 1 slave station device

MODBUS address 0 starts to access the state of 32 coils, and then put the read coil state into the PLC address starting from D3, store the order to start access MODBUS address low to high high words, one by one from the PLC start to store the address low to high high words.

 Attention

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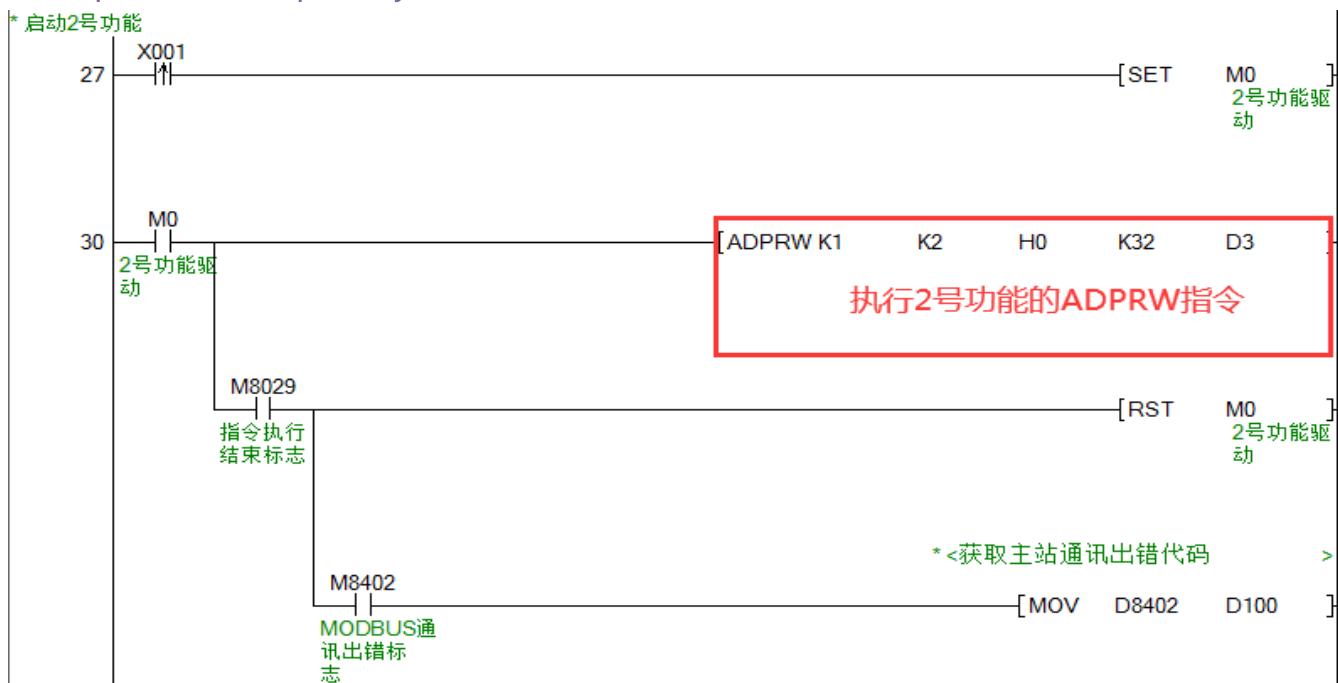
- ❖ With the ADPRW instruction, keep the drive contact (such as M0) ON until the end of the ADPRW instruction (when the M8029 is ON).
 - ❖ When driving multiple ADPRW instructions at the same time in the MODBUS master station, only execute 1 instruction at a time. When the current instruction ends, execute the next ADPRW instruction in program order.
 - ❖ Do not disconnect the state until the end of one ADPRW communication. When the state is disconnected during communication, the ADPRW command becomes a stop state. It will not be transferred to other ADPRW instructions. Program cis control with the following considerations:

In the transfer condition of the state, please add the ON condition of M8029(command execution end flag bit) to interlock, to ensure that the state will not be transferred during the communication with other stations. For example, only when M8029 is ON, the driving condition M0 of function 01 will be reset, and the driving condition M1 of function 02 will be set.

- ❖ In the case that the status is disconnected during communication, the remaining communication can be completed after the status is ON again, but the communication timeout may occur depending on the length of the disconnection.
 - ❖ When the ADPRW instruction is used in the program flow, the ADPRW instruction cannot be used in the following program flow:

Between CJ-P conditional jump instructions, between FOR-NEXT loop instructions, between P-SRET subroutines, I-IRET interrupt subroutines;

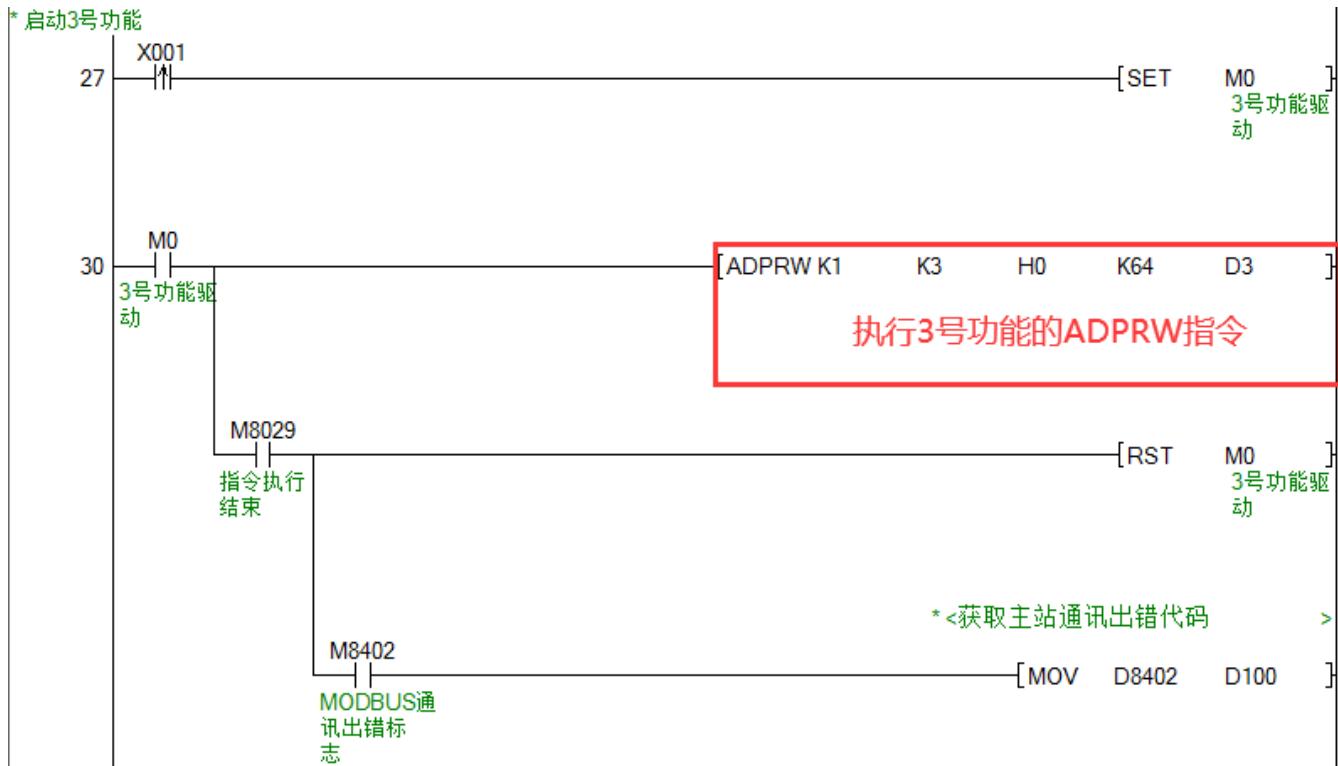
◆ Input discrete quantity read out 02 function



02 function routine as shown in the figure above, use instructions refer to the "coil read 01 function" content

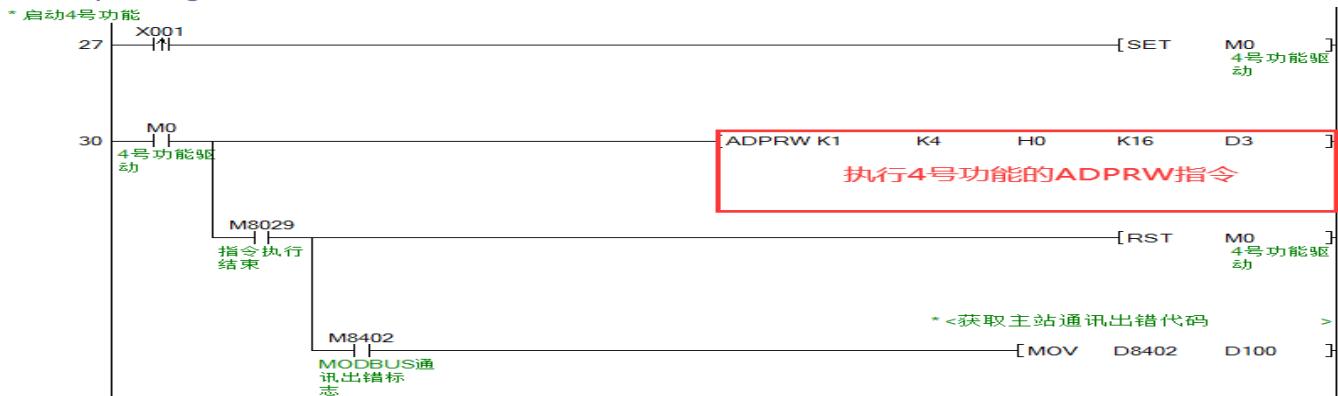
手册

◆ Keep register read 03 function



03 function routine as shown in the figure above, use method instructions refer to the "coil read 01 function" content

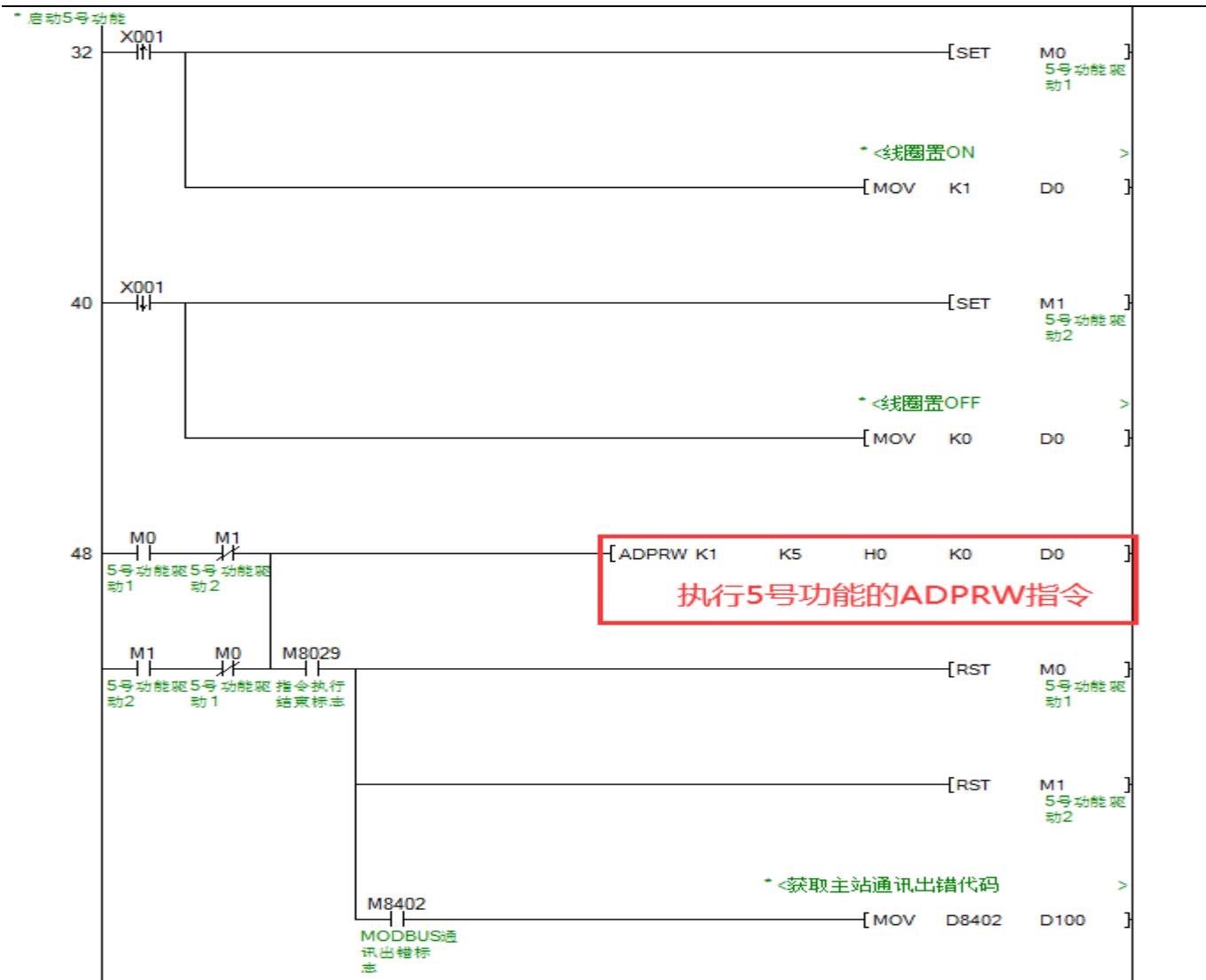
◆ Input register read 04 function



04 function routine as shown in the figure above, use instructions refer to the "coil read 01 function" content

◆ Coil read No. 05 function

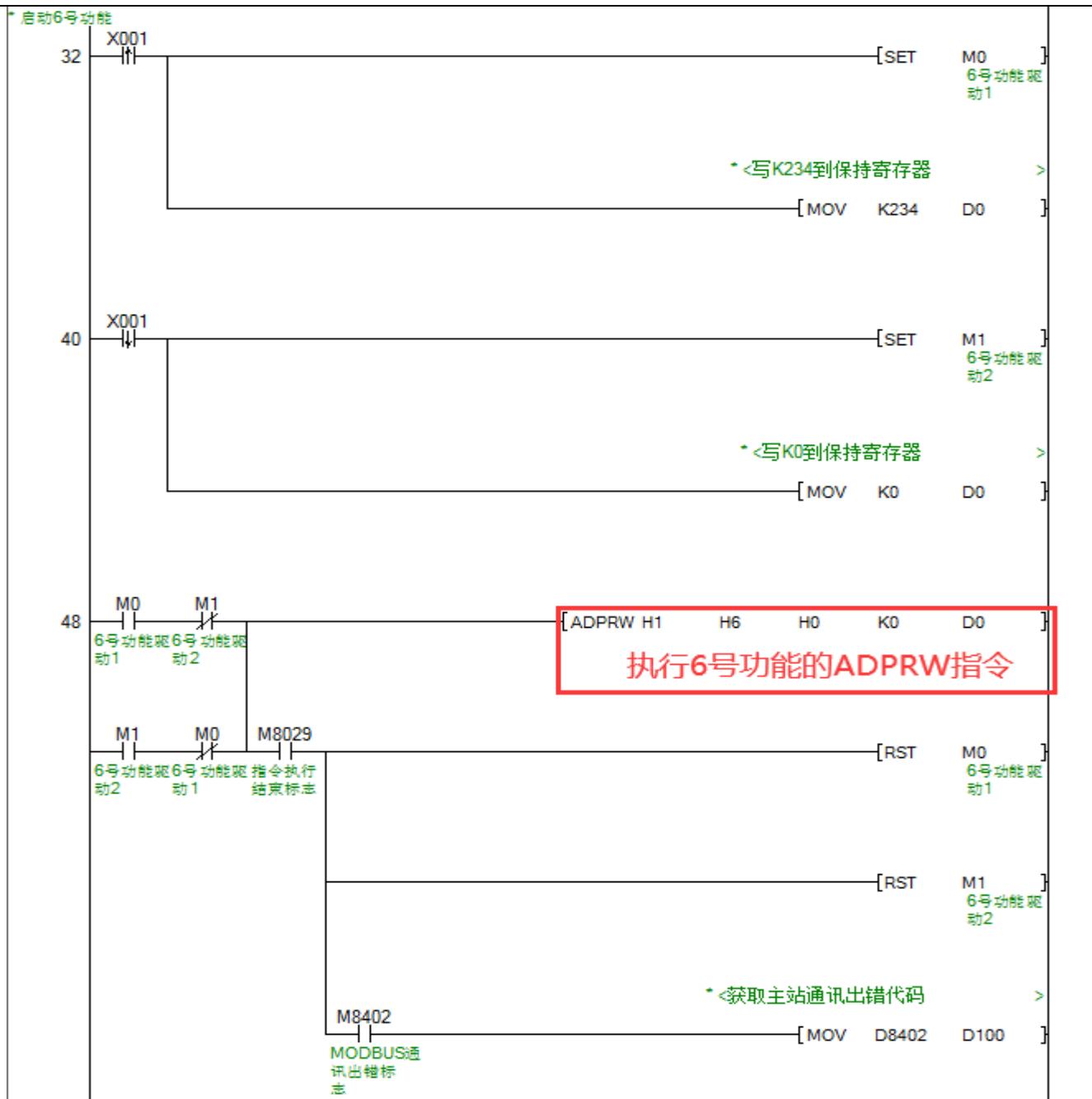
手册



05 function routine as shown in the figure above, use method instructions refer to the "coil read 01 function" content

- ◆ Register write No. 06 function

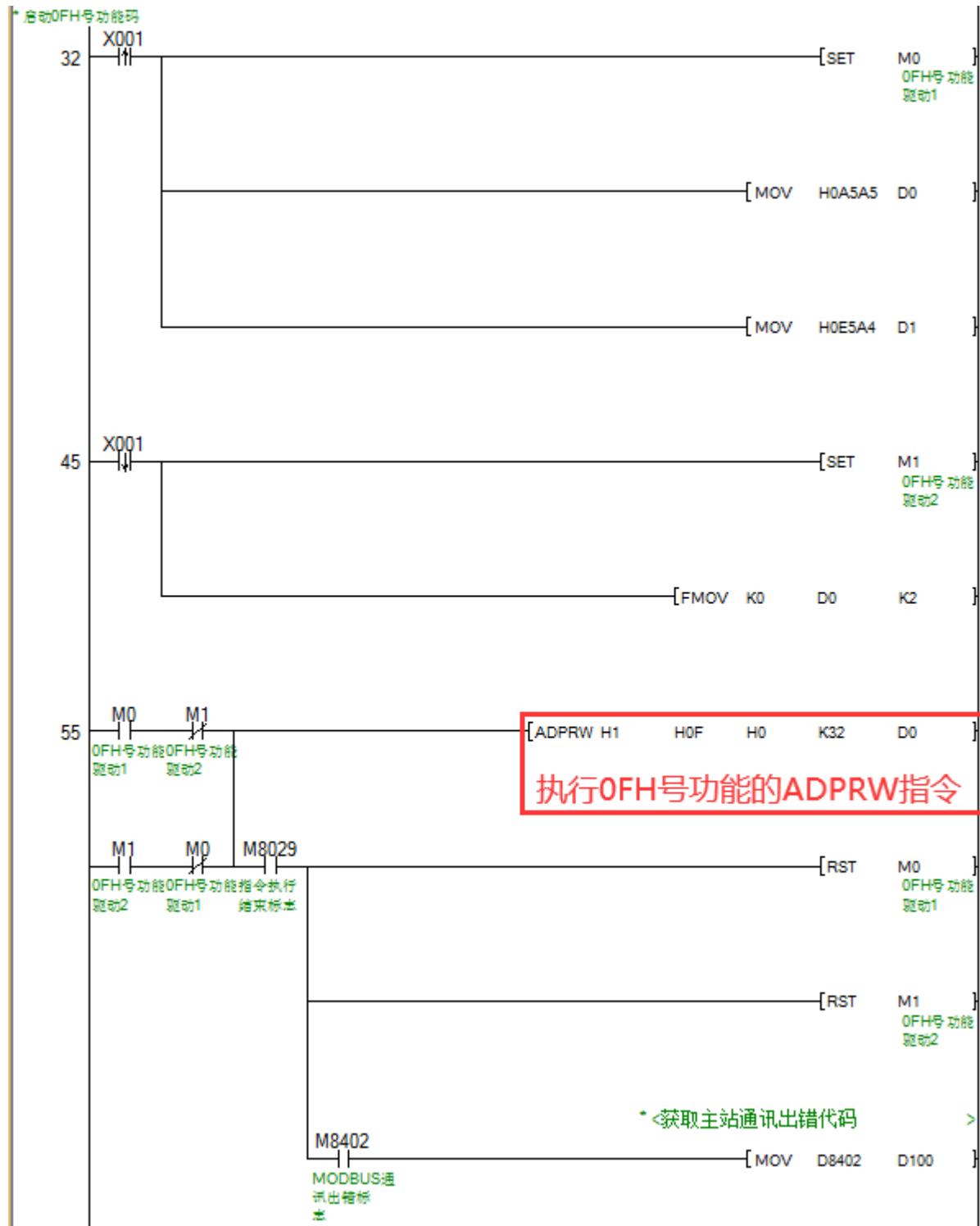
手册



06 function routine as shown in the figure above, use method instructions refer to the "coil read 01 function" content

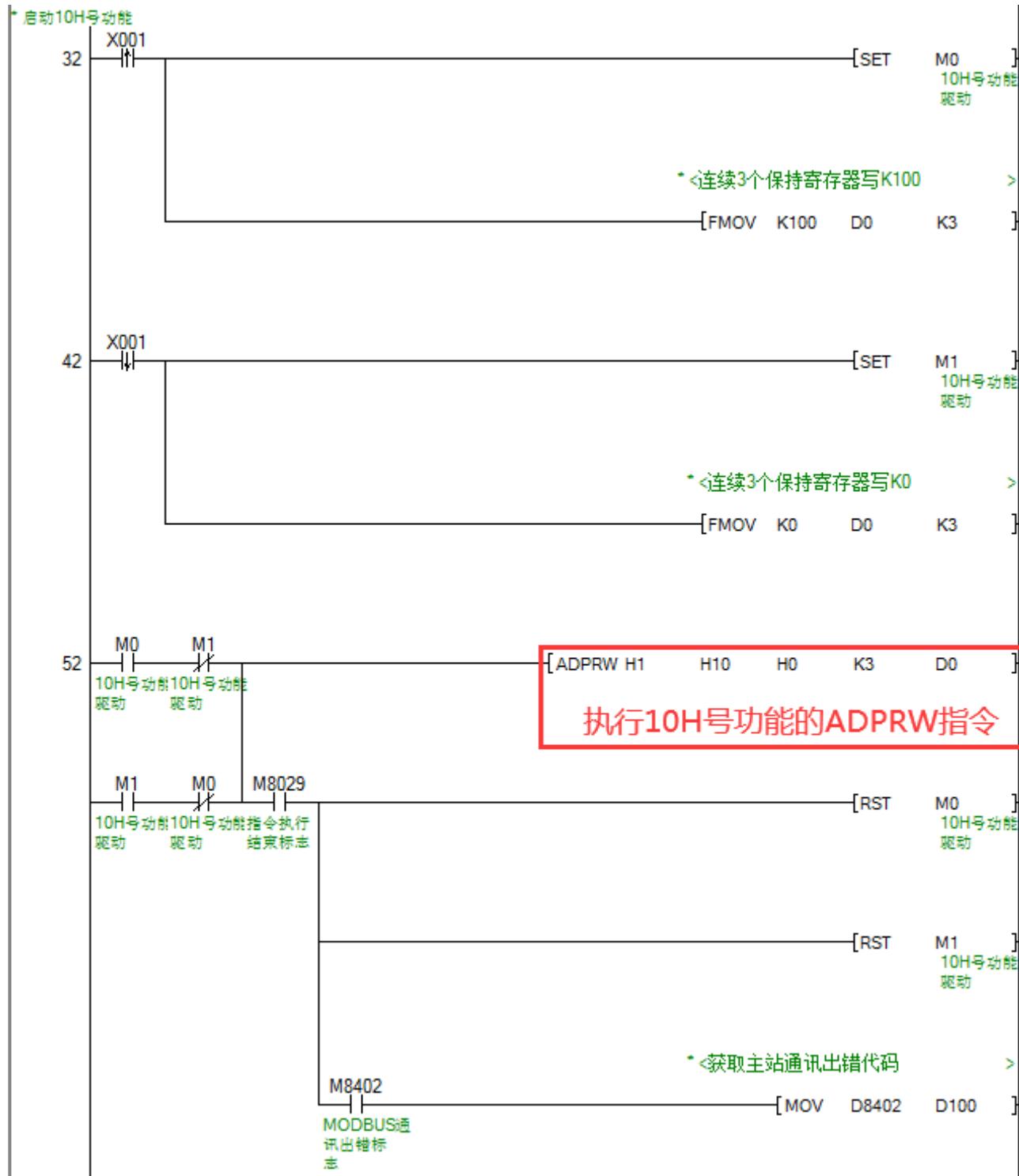
手册

◆ Batch coil write OFH function



OF function routine as shown in the figure above, the use of instructions refer to the "coil read 01 function" content

◆ Batch register write 10H number function



No. 10 function routine as shown in the figure above, use method instructions refer to "coil read No. 01 function" content

6.2.3, PLC for MODBUS RTU slave station communication

The slave station function is off by factory default, which needs to be started by the setting instruction D8200 of M8411 driver with the value K2.

PLC for MODBUS RTU slave station communication function realization, generally divided into 2 steps:

1) Through the slave station PLC setting program, configure the related parameters of the master station (must use M8411 driver configuration, such as configuring RS485 function configuration register D8200 value for 2, configure the communication format D8420, configure the local as the station number D8434 from the slave station), can refer to the slave station communication parameters, the slave station PLC program content.

2) According to the function code supported by the RTU slave station and the mapping relationship of the software components, access the corresponding PLC software components.

➤ RTU slave station serial port communication parameters

MODBUS RTU slave station function communication format					
Registers D8420	Bit number	Meaning	Bit State Description		Read and Write
			0 (OFF)	1 (ON)	
	b0	Data length	Unsupported		8-bit
	b2b1	Check method	00: None check 01: odd check (Old) 11: Even check (Even)		
	b3	Stop bit	1 bit	2 bits	
	b7b6b5b4	Baud rate	0101:1200 1001:19200 0110:2400 1010:38400 0111:4800 1011:57600 1000:9600 1100:115200		
	b8	Communication protocol	Unsupported	MODBUS Protocol	R/W
	b9	Communication mode	RTU mode	Unsupported	
	b15~b10	Not used	0000000		

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	For example, if D8420 is 0x0181, the data length is 8, none parity, one stop bit, baud rate is 9600, and MODBUS mode is RTU
--	---

➤ RTU slave station function configuration register

Registers	Function name	Function description
M8411	Flag bit for MODBUS communication parameter setting	M8411 drive must be used to set MODBUS parameters, and the PLC will remain connected after power-on
D8200	R485 Interface function Switch	When D8200=K2, RS485 communication function switch, for PLC MODBUS RTU slave station
D8420	MODBUS RTU Slave Station Communication Format	Configure PLC as MODBUS RTU slave station communication format; See the MODBUS RTU slave station communication format above for details
D8434	PLC as the address of the slave station	Station address when configuring PLC as slave station (station number range 1-247)

➤ RTU slave station PLC setup program



Through the slave station PLC setting program, the PLC RS485 port is switched to the MODBUS RTU slave station communication port, the serial port communication parameters are set, and the station number when PLC is the slave station RTU. The above figure shows the parameter configuration software components in the slave station PLC setting program routine as follows:

Address	Feature name	Instructions
M8411	Flag bit for MODBUS communication parameter	M8411 drive must be used to set MODBUS parameters, and the PLC will remain connected after power-on

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	setting	
D8200	R485 Interface function Switch	A routine set value of K2 indicates that the 485 interface is configured for use as the MODBUS RTU slave station function
D8420	PLC as MODBUS RTU slave serial port communication format	The routine set value is H181, indicating 8 data bits, no check, 1 stop bit, 9600 baud rate, using MODBUS protocol RTU mode, other format Settings refer to the slave station communication format table
D8434	PLC as slave station address (1-247)	A routine set value of K1 indicates that the station address of the PLC is 1

Attention

- ✧ Must be driven by M8411 as an instruction, through MOV and other data transmission to write instructions, change the parameter configuration of the soft component value, PLC **power off and restart after the effect**, the following instructions do not emphasize this provision again, users need to pay attention to.
- ✧ After executing the above initialization code on the PLC power, the parameters will be saved, and the parameters set after the power off and restart will work.
- ✧ In order to reduce the number of times to write the FLASH parameters when powering on, after executing the setting code once, you can delete this setting program, and then write and join the operation if you need to change the communication parameters.

➤ RTU slave station support function code and software component mapping relationship

PLC as MODBUS RTU slave station, support 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x0F, 0x10 these function codes, support the soft components M, Y, X, D these soft components for RTU master station access.

The corresponding relationship between the function code and the PLC software components is as follows:

Function code	Function code name	Modbus address prefix	Operable software components	Access Points
01H	Read coil	0x	M, Y	1-1999
02H	Read input discrete quantity	1x	M, Y, X	1-1999
03H	Read hold register	4x	D	1-125

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04H	Read input register	3x	D	1-124
05H	Write individual coils	0x	M, Y	1
06H	Write a single register	4x	D	1
0FH	Write multiple coils	0x	M, Y	1-1600
10H	Write multiple registers	4x	D	1-120

The PLC bit software element corresponds to the MODBUS address as follows:

Area number	Bit element address	Modbus address (in base 10)	Modbus address (in hexadecimal)	Support function code (in hexadecimal)
1	M0~M1535	0 ~ 1535	0~5FF	01, 02, 05, 0F
2	M1536~M7679	1536 ~ 7679	600~1DFF	
3	M8000~M8511	7680 ~ 8191	1E00~1FFF	
4	Y0~Y377	8192 ~ 8447	2000~20FF	
5	X0~X377	8448 ~ 8703	2100~21FF	02

The corresponding relationship between PLC word software component and MODBUS address is as follows:

Area Number	Word element address	Modbus address (in base 10)	Modbus address (in hexadecimal)	Support function code (in hexadecimal)
1	D0~D7999	0 ~ 7999	0~1F3F	03, 04, 06, 10
2	D8000~D8511	8000 ~ 8511	1F40~213F	03, 04, 06 ^{*3} , 10

***1 & *2: Access points refer to the length of the address when the MODBUS RTU master station reads and writes the PLC address, in addition to access within the allowed number range, it should also be noted that it cannot be accessed across the address area.**

***3: In order to protect the parameter security of PLC, only analog output addresses D8080~D8081, D8274~D8329 can be written in the range of D8000~D8511.**

6.3 Network Port Communication

The AMX-FX3U-M26Mxx-E programmable controller supports network port communication,

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through which users can program communication or communicate with devices that support the FX3U protocol (such as touch screen communication). This chapter mainly describes the PLC side communication Settings, part of the touch screen or host computer side communication Settings, please refer to "Appendix D" content.

➤ Ethernet parameters

Ethernet Parameter Description			
Serial number	Parameter type	Function Description	Remarks
1	Support Agreement	MODBUS TCP, MC protocol	MC protocol refers to Mitsubishi PLC protocol, here for Ethernet interface communication
2	Network port rate	10/100Mbps	
3	Default IP	192.168.1.18	Modifiable
4	MODBUS TCP service port number	502 (2 ways)	Port number cannot be changed, PLC can only be used as server
5	MC 1E protocol service port number	5551, 6551	

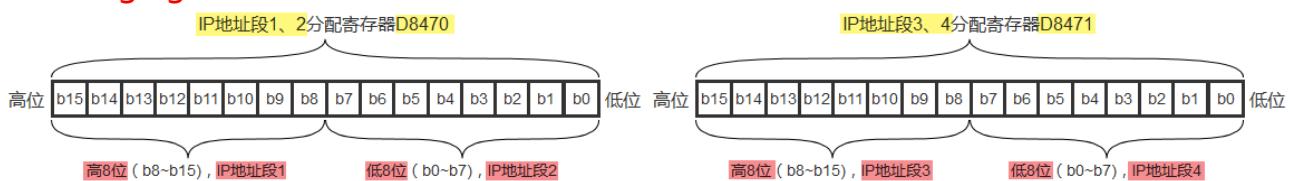
➤ Ethernet parameters correspond to special registers

Ethernet parameters correspond to special register descriptions			
Serial Number	Parameter name	Parameter address	Remarks
1	IP address segment 1	Corresponds to D8470 high bytes	Power-off hold
2	IP address segment 2	Corresponds to D8470 low byte	Power-off hold
3	IP address segment 3	Corresponds to D8471 high bytes	Power-off hold
4	IP address segment 4	Corresponds to D8471 low byte	Power-off hold
5	MAC address segment 1	Corresponds to D8472 high bytes	Power-off hold
6	MAC address segment 2	Corresponds to D8472 low bytes	Power-off hold
7	MAC address segment 3	Corresponds to D8473 high bytes	Power-off hold
8	MAC address segment 4	Corresponds to D8473 low bytes	Power-off hold
9	MAC address segment 5	Corresponds to D8474 high bytes	Power-off hold

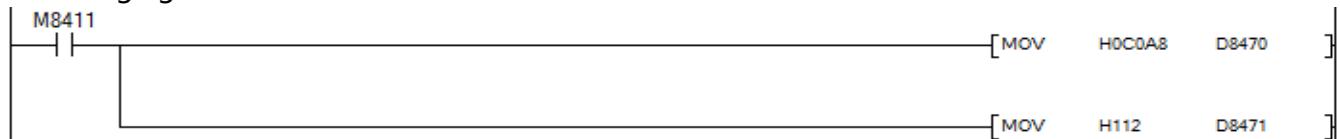
手册

10	MAC address segment 6	Corresponds to D8474 low bytes	Power-off hold
11	Error codes	Corresponds to the lower 12 digits of D8475	Power drop does not hold

➤ Changing IP



As shown above, the high and low byte sizes of registers D8470 and D8471 are used as the IP four address segments of the PLC. By writing a program to be assigned to these two addresses by the M8411 driver, the PLC will take effect after power off and restart the new IP, as shown in the following figure:



The above illustration of the software components in the modification IP program routine is as follows:

- 1) M8411: Set the MODBUS communication parameters of the flag bit, must use its drive, PLC will be on after powering on
- 2) D8470: Set the address segment 1 and address segment 2 of the 4-bit IP address, the set value in the routine is HC0A8;



Hexadecimal HC0 corresponds to IP address segment 1, which is converted to a decimal number of 192

Hexadecimal HA8 corresponds to IP address segment 2, which translates to a decimal

number of 168

3) D8471: Set the address segment 3 and address segment 4 of the 4-bit IP address, set the value H112 in the routine:



Hexadecimal H01 corresponds to IP address segment 3, converted to a decimal number of 1

Hexadecimal H12 corresponds to IP address segment 4, which is converted to a decimal number of 18

In summary, the IP of the PLC is 192.168.1.18.

The subnet mask is fixed as 255.255.255.0 (the default subnet mask corresponding to the class C IP address), the first three segments of the default gateway are the first three segments of the IP set by the user (the network number of the class C IP address), and the last segment is fixed as 1, so the default gateway in the example program is 192.168.1.1.

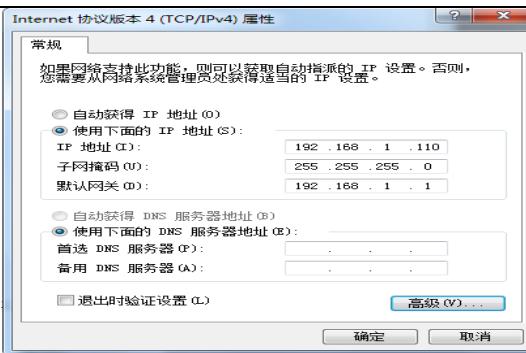
Attention

- ✧ After powering on the PLC and executing the initialization code above, the IP parameters will be saved, and the parameters set after running will take effect.
- ✧ In order to reduce the number of times to write the FLASH parameters when powering on, after the new IP has taken effect, you can delete this setting program, and then write and join the operation if you need to change the communication parameters.
- ✧ Since the subnet mask and default gateway are not available, the user only needs to set the IP address for network port parameters.

6.3.1, Communication with Mitsubishi Programming Software (GX Works2 version)

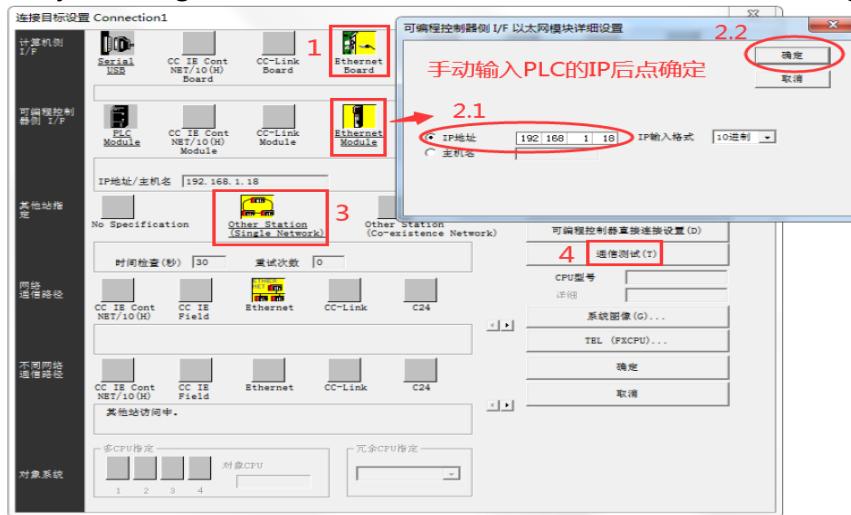
➤ Local connection Settings on the computer side

The default IP address of AMX-FX3U-M26M-E is 192.168.1.18 (you can change the IP according to the "Ethernet Parameter setting routine"). Ensure that the IP network segment of the computer is consistent with that of the PLC and IP does not conflict. Set the local IP address of the computer to 192.168.1.110 as shown in the following figure.



➤ Programming software communication connection Settings (GX Works2 example)

After opening the Mitsubishi Programming software "Connection target Settings" window, configure it by directly entering the Ethernet module IP, as shown in the following figure.



Perform steps 1-4 as shown in Figure 1.

Watch

- When GX Works2 programming software and PLC establish Ethernet connection, that is, use **5551 port**, the user needs other support MC Ethernet protocol PC/touch screen at the same time to connect to the PLC please use 6551 port

6.3.2, MODBUS TCP communication description

PLC fixed port 502 as MODBUS TCP server communication.

The realization of communication function between MODBUS TCP client and PLC as MODBUS TCP server is generally divided into 2 steps:

1) Client select MODBUS TCP protocol, fill in the PLC IP (default IP: 192.168.1.18) and port number 502.

2) According to the function code supported by the MODBUS TCP server and the mapping relationship between the software components, access the corresponding PLC software components.

➤ Function code and software component mapping supported by MODBUS TCP server

PLC as MODBUS TCP server, support 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x0F, 0x10 these function codes, support the soft components M, Y, X, D these soft components for MODBUS TCP client access.

The corresponding relationship between the function code and the PLC software components is as follows:

Function code	Function code name	Modbus address prefix	Operable software components	Access Points
01H	Read coil	0x	M, Y	1-1999
02H	Read input discrete quantity	1x	M, Y, X	1-1999
03H	Read hold register	4x	D	1-125
04H	Read input register	3x	D	1-124
05H	Write individual coils	0x	M, Y	1
06H	Write a single register	4x	D	1
0FH	Write multiple coils	0x	M, Y	1-1600
10H	Write multiple registers	4x	D	1-120

The PLC bit software element corresponds to the MODBUS address as follows:

Area number	Bit element address	Modbus address (in base 10)	Modbus address (in hexadecimal)	Support function code (hexadecimal)
1	M0~M1535	0 ~ 1535	0~5FF	01, 02, 05, 0F
2	M1536~M7679	1536 ~ 7679	600~1DFF	
3	M8000~M8511	7680 ~ 8191	1E00~1FFF	
4	Y0~Y377	8192 ~ 8447	2000~20FF	

5	X0~X377	8448 ~ 8703	2100~21FF	02
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The corresponding relationship between PLC word software component and MODBUS address is as follows:

Area number *2	Word element address	Modbus address (in base 10)	Modbus address (in hexadecimal)	Support function code (in hexadecimal)
1	D0~D7999	0 ~ 7999	0~1F3F	03, 04, 06, 10
2	D8000~D8511	8000 ~ 8511	1F40~213F	03, 04, 06 ^{*3} , 10

*1 & *2: Access points refer to the length of the address when the MODBUS TCP client reads and writes the PLC address, in addition to access within the allowed number range, it should also be noted that it cannot be accessed across the address area.

*3: In order to protect the parameter security of PLC, only analog output addresses D8080~D8081, D8274~D8329 can be written in the range of D8000~D8511.

Seven, positioning control description

AMX-FX3U-M series PLC only transistor type PLC support positioning control, the following brief description.

7.1 Positioning control features

- Maximum support Y0~Y3 a total of 4 axis of high-speed pulse output (positioning control);
- Maximum pulse output of 100kHz per channel;
- Support Mitsubishi PLSV, PLSY, PLSR, DRVA, DRVI, ZRN and other instructions;
- Support the switch of pulse + direction signal and forward and reverse pulse.

7.2 Function Overview

The following table lists the instructions used in the AMX-FX3U-M26MT(-4P)(-E) positioning function.

Positioning instructions	Features	Chapters
ZRN/DZRN	Mechanical origin regression	7.5.1
PLSY/DPLSY	Pulse output	7.5.2
PLSV/DPLSV	Variable speed pulse output	7.5.3
PLSR/DPLSR	With acceleration and deceleration pulse output	7.5.4
DRVI/DDRVI	Relative positioning	7.5.5
DRVA/DDRVA	Absolute positioning	7.5.6

7.3 I/O point allocation

The following table lists the instructions used in the AMX-FX3U-M26MT(-4P)(-E) positioning function.

➤ Assignment of input points

Features	Enter the number	Instructions										
Origin regression	All input points	<p>Please wire on any input. If the input for the wire is ON, drive the ZRN instruction.</p>										
Forward turning Limit (LSF)	All input points	<p>Please wire on any input. If the input for the wire is ON, drive the forward limit flag bit. Depending on the pulse output end, the forward turn limit flag bit is shown in the table below.</p> <table border="1"> <thead> <tr> <th>Pulse output terminal</th> <th>Forward turn limit marker bit</th> </tr> </thead> <tbody> <tr> <td>Y0</td> <td>M8343</td> </tr> <tr> <td>Y1</td> <td>M8353</td> </tr> <tr> <td>Y2</td> <td>M8363</td> </tr> <tr> <td>Y3</td> <td>M8373</td> </tr> </tbody> </table>	Pulse output terminal	Forward turn limit marker bit	Y0	M8343	Y1	M8353	Y2	M8363	Y3	M8373
Pulse output terminal	Forward turn limit marker bit											
Y0	M8343											
Y1	M8353											
Y2	M8363											
Y3	M8373											

Reverse Limit (LSR)	All input points	<p>Please wire on any input. If the input for the wire is ON, drive the reverse limit flag bit. Depending on the pulse output end, reverse limit flag bits are shown in the table below.</p> <table border="1"> <thead> <tr> <th>Pulse output terminal</th><th>Reverse limit marker bit</th></tr> </thead> <tbody> <tr> <td>Y0</td><td>M8344</td></tr> <tr> <td>Y1</td><td>M8354</td></tr> <tr> <td>Y2</td><td>M8364</td></tr> <tr> <td>Y3</td><td>M8374</td></tr> </tbody> </table>	Pulse output terminal	Reverse limit marker bit	Y0	M8344	Y1	M8354	Y2	M8364	Y3	M8374
Pulse output terminal	Reverse limit marker bit											
Y0	M8344											
Y1	M8354											
Y2	M8364											
Y3	M8374											

➤ Allocation of output points

Features	Output number	Instructions
Pulse train signal	Y0~Y3	Please connect Y0 ~ Y3 to the pulse output with the positioning command set.

手册

(pulse output end)																						
Direction signal (Rotating direction signal)	Soft component Y, numbered by the positioning instruction, but can not be reused or function conflict between instructions (such as Y0~Y3 both pulse output and rotation direction)	Please wire the output specified by the positioning instruction as the rotation direction signal.																				
Clear the signal	All output points	<p>ZRN command output clear signal when wiring. Depending on the pulse output end specified by the ZRN instruction, the default clear signal As shown in the following table.</p> <table border="1"> <thead> <tr> <th>Pulse output end</th> <th>Clear signal</th> </tr> </thead> <tbody> <tr> <td>Y0</td> <td>Y4</td> </tr> <tr> <td>Y1</td> <td>Y5</td> </tr> <tr> <td>Y2</td> <td>Y6</td> </tr> <tr> <td>Y3</td> <td>Y7</td> </tr> </tbody> </table> <p>If the Clear signal designation function is used, then the clear signal soft component designation register can be used to specify any output corresponding to each pulse output. According to the different pulse output end, the clear signal software element designated register is as follows As shown below.</p> <table border="1"> <thead> <tr> <th>Pulse output terminal</th> <th>Clear signal soft element specify register</th> </tr> </thead> <tbody> <tr> <td>Y0</td> <td>D8464</td> </tr> <tr> <td>Y1</td> <td>D8465</td> </tr> <tr> <td>Y2</td> <td>D8466</td> </tr> <tr> <td>Y3</td> <td>D8467</td> </tr> </tbody> </table>	Pulse output end	Clear signal	Y0	Y4	Y1	Y5	Y2	Y6	Y3	Y7	Pulse output terminal	Clear signal soft element specify register	Y0	D8464	Y1	D8465	Y2	D8466	Y3	D8467
Pulse output end	Clear signal																					
Y0	Y4																					
Y1	Y5																					
Y2	Y6																					
Y3	Y7																					
Pulse output terminal	Clear signal soft element specify register																					
Y0	D8464																					
Y1	D8465																					
Y2	D8466																					
Y3	D8467																					

7.4 List of related software components

➤ Special auxiliary relays:

The relevant special auxiliary relays are listed in the table below. Y0, Y1, Y2 and Y3 are the soft components at the pulse output end.

Soft component number	Name	Stats	Object instruction
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手册

					(32-bit instructions supported)	
M8029				End of instruction execution flag bit	Read Only	ZRN/PLSY/PLSR/DRV1/DRVA
M834 0	M835 0	M836 0	M837 0	Monitor in Pulse Output (BUSY/READY)	Read Only	ZRN/PLSY/PLSV/PLSR/DRV1/DRVA
M834 1	M835 1	M836 1	M837 1	Clear signal output function effective	Read Only	ZRN
M834 3	M835 3	M836 3	M837 3	Forward turning limit	Read Only	ZRN/PLSY/PLSV/PLSR/DRV1/DRVA
M834 4	M835 4	M836 4	M837 4	Inversion limit	Read Only	ZRN/PLSY/PLSV/PLSR/DRV1/DRVA
M834 8	M835 8	M836 8	M837 8	Location command driver	Read Only	ZRN/PLSV/PLSR/DRV1/DRVA
M834 9	M835 9	M836 9	M837 9	Pulse stop command	Readable and writable	ZRN/PLSY/PLSV/PLSR/DRV1/DRVA
M846 4	M846 5	M846 6	M846 7	Clear signal software element specified function valid	Readable and writable	ZRN

➤ Special data registers:

The relevant special data relays are shown in the table below. Y0, Y1, Y2 and Y3 are the soft components of the pulse output end.

Soft component number				Name	Data length	Initial value	Object instructions (32-bit instructions supported)
Y0	Y1	Y2	Y3				
D8140 (Low)	D8142 (Low)	D8144 (Low)	D8146 (Low)	Current value register [PLS]	32-bit	0	PLSY/PLSR
D8141 (high)	D8143 (high)	D8145 (high)	D8147 (high)				
D8340 (Low)	D8350 (Low)	D8360 (Low)	D8370 (Low)	Current value register [PLS]	32-bit	0	ZRN/PLSV/DRV1/DRVA
D8341 (high)	D8351 (high)	D8361 (high)	D8371 (high)				
D8342	D8352	D8362	D8372	Base speed [Hz]	16-bit	50	ZRN/DRV1/DRVA
D8343	D8353	D8363	D8373	Top speed [Hz]	32-bit	50k	ZRN/DRV1/DRVA

手册

(Low)	(Low)	(Low)	(low)				
D8344 (high)	D8354 (high)	D8364 (high)	D8374 (high)				
D8348	D8358	D8368	D8378	Acceleration time [ms]	16-bit	100	ZRN/DRV1/DRVA
D8349	D8359	D8369	D8379	Deceleration time [ms]	16-bit	100	ZRN/DRV1/DRVA
D8464	D8465	D8466	D8467	Clear signal soft element designation	16-bit	0	ZRN

7.5 Instructions for related commands

7.5.1 Mechanical origin regression -- ZRN instruction

➤ Instruction Overview

Instructions to make a quick return to the origin.

Instructions	Features	Number of bits (bits)	Instruction format	Number of steps
ZRN	Origin regression	16		9
DZRN		32		17

Operand	Bit element				Word element			Constant	
	X	Y	M	S	T	C	D	K	H
					'	'	'	'	'
					'	'	'	'	'
	'	'	'	'					

手册

D			I						
---	--	--	---	--	--	--	--	--	--

S1

For the speed at the beginning of the origin regression, frequency range: : 10~32,767Hz (BIN16 bit),

Or 10 to 100,000Hz (BIN32 bits);

S2

To specify crawling speed, enabled when origin signal is ON, range: 10 ~ 32,767(Hz);

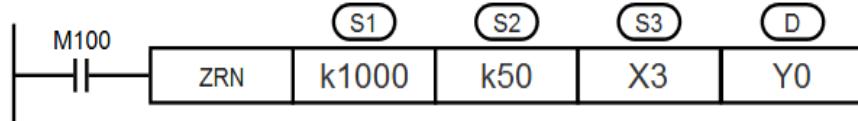
S3

DOG origin signal input, where X signal responds best;

D

To specify the port number of the pulse output, you can specify Y0 or Y1.

➤ Function Action



- Pulse output: Support Y0~Y1 two-axis output
- S1 S2 And the absolute value of the former is greater than the absolute value of the latter
- D S1 Origin regression speed 1000HZ pulse to make the servo/stepper motor move towards the origin
- S3 S2 Crawl speed 50HZ
- When the status of DOG origin signal X3 changes from ON to OFF, Y0 stops pulse output and writes 0 to the current value register (Y000: [D8341, D8340]).
- When M8341 (clear signal output function) is ON, the clear signal is output. Then, when the execution completion flag (M8029) is set to ON, the pulse output monitor (Y0: [M8340]) is turned OFF.

➤ This instruction is related to special software components

1. Y0 output current value register (32 bits) : [D8341 (high), D8340 (low)]
2. Y1 output current value register (32 bits) : [D8351 (high), D8350 (low)]
3. Y2 output current value register (32-bit) : [D8341 (high), D8340 (low)]

手册

4. Y3 output current value register (32 bits) : [D8351 (high), D8350 (low)]
5. Y0~Y3 pulse output stop (stop immediately) : M8349, M8359, M8369, M8379
- Monitor (BUSY/READY) in Y0~Y3 pulse output: M8340, M8350, M8360, M8370
7. Y0~Y3 positioning instruction driven monitoring (BUSY/READY) : M8348, M8358, M8368, M8378
8. Y0-y3 forward rotation limit (BUSY/READY) : M8343, M8353, M8363, M8373
- Y0~Y3 reverse limit (BUSY/READY) : M8344, M8354, M8364, M8374
10. End of instruction flag bit: M8029
11. Base speed when executing ZRN instruction:

Y0 pulse output: D8342; Y1 pulse output: D8352; Y2 pulse output: D8362; Y3 pulse output: D8372

Set range: below 1/10 of the maximum speed, if it is above this value, take 1/10 of the maximum speed.

12. Maximum speed when executing ZRN instruction:

Y0 pulse output: [D8344 (high), D8343 (low)]

Y1 pulse output: [D8354 (high), D8353 (low)]

Y2 pulse output: [D8364 (high), D8363 (low)]

Y3 pulse output: [D8374 (high), D8373 (low)]



Need to be less than the maximum speed, set range: 10 to 100,000Hz

13. Acceleration and deceleration time when executing ZRN instruction (unit: ms) :

Y0~Y3 pulse output acceleration time: D8348, D8358, D8368, D8378

Y0 ~Y3 pulse output deceleration time: D8349, D8359, D8369, D8379

Acceleration time indicates the time it takes to reach base speed to top speed

Deceleration time represents the time it takes to reach top speed to base speed

7.5.2 Pulse output -- PLSY instruction

➤ Instruction overview

No acceleration and deceleration time change one-way quantitative pulse output instruction.

Instructions	Feature	Number of bits (bits)	Instruction format	Number of steps
PLSY	Pulse output	16		7
DPLSY		32		13

手册

Operand	Bit element				Word element			Constant	
	X	Y	M	S	T	C	D	K	H
(S1)					'	'	'	'	'
(S2)					'	'	'	'	'
(D)		'							

(S1)

For the specified pulse output frequency, range: 10~32,767Hz (BIN16 bit),
Or 10~100,000Hz (BIN32 bits);

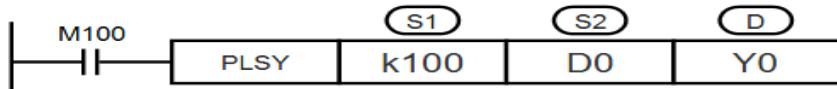
(S2)

To specify the number of output pulses, range: 1 ~ 32,767PLS (BIN16 bits),
Or 1~2,147,483,647PLS (BIN32 bits);

(D)

To specify the port number of the pulse output, you can specify Y0 or Y1.

➤ Function Action



- (D) (S1) (S2) Specify the value of the D0 register when the Y0 pulse output stops and the execution completion flag (M8029) is set to ON.

➤ This instruction is related to special software components

1. Y0 output pulse number (32bits, reduced when inverted) : [D8141 (high), D8140 (low)]
2. Y1 output pulses (32bits, reduced during inversion) : [D8143 (high), D8142 (low)]
3. Y2 output pulses (32bits, reduced during inversion) : [D8145 (high), D8144 (low)]
4. Y3 output pulses (32bits, reduced when inverted) : [D8147 (high), D8146 (low)]

手册

5. Y0~Y3 pulse output stop (stop immediately) : M8349, M8359, M8369, M8379

Monitor (BUSY/READY) in Y0~Y3 pulse output: M8340, M8350, M8360, M8370

Y0~Y3 forward speed limit (BUSY/READY) : M8343, M8353, M8363, M8373

8. Y0-y3 reverse limit (BUSY/READY) : M8344, M8354, M8364, M8374

9. End of instruction flag bit: M8029

7.5.3 Variable speed pulse output - PLSV instruction

➤ Instruction overview

Variable speed pulse output instruction with rotation direction.

Instructio ns	Features	Number of bits (bits)	Instruction format	Number of steps
PLSV	Variable speed	16		7
DPLSV	Pulse output	32		13

Operand	Bit element				Word element			Constant	
	X	Y	M	S	T	C	D	K	H
					'	'	'	'	'
		'							
		'	'	'					

S1

For the specified pulse output frequency, range: -32,7681~32,767Hz (except -10~10, BIN16 bits),

Or -100,000~100,000Hz (except -10~10, BIN32 bits), where the negative sign represents the opposite direction

D1

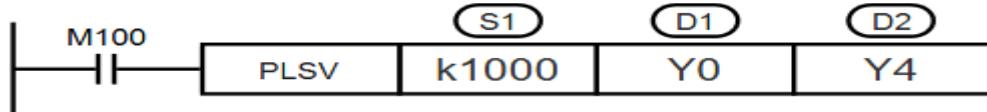
For the port number of the specified pulse output, you can specify Y0 or Y1;

D2

S1

Pulse output frequency value positive or negative determines the direction, when the frequency is positive, the Y4 output port state is ON, indicating forward operation, otherwise the state is OFF, indicating reverse operation.

➤ Functional action



- D1 S1 D2

 Specify the spin direction signal output port number Y4=ON to indicate the positive direction.

➤ This instruction is related to special soft components

1. Y0 output current value register (32 bits) : [D8341 (high), D8340 (low)]
2. Y1 output current value register (32 bits) : [D8351 (high), D8350 (low)]
3. Y2 output current value register (32 bits) : [D8361 (high), D8360 (low)]
4. Y3 output current value register (32 bits) : [D8371 (high), D8370 (low)]
5. Y0~Y3 pulse output stop (stop immediately) : M8349, M8359, M8369, M8379
Monitor (BUSY/READY) in Y0~Y3 pulse output: M8340, M8350, M8360, M8370
Y0~Y3 forward speed limit (BUSY/READY) : M8343, M8353, M8363, M8373
6. Y0-Y3 reverse limit (BUSY/READY) : M8344, M8354, M8364, M8374
7. Y0~Y3 Positioning instruction driven monitoring (BUSY/READY) : M8348, M8358, M8368, M8378
8. Acceleration/deceleration action Enable : M8338
9. The base speed when executing PLSV command acceleration and deceleration:

Y0 pulse output: D8342; Y1 pulse output: D8352; Y2 pulse output: D8362; Y3 pulse output: D8372

Set range: below 1/10 of the maximum speed, if it is above this value, take 1/10 of the maximum speed

手册

12. The highest speed (unit: ms) when executing PLSV instruction acceleration and deceleration:

Y0 pulse output: [D8344 (high), D8343 (low)]

Y1 pulse output: [D8354 (high), D8353 (low)]

Y2 pulse output: [D8364 (high), D8363 (low)]

Y3 pulse output: [D8374 (high), D8373 (low)]

S1

Need to be less than the maximum speed, set range: 10 to 100,000Hz

13. Acceleration and deceleration time when executing PLSV instruction acceleration and deceleration:

Y0~Y3 pulse output acceleration time: D8348, D8358, D8368, D8378

Y0 ~Y3 pulse output deceleration time: D8349, D8359, D8369, D8379

Acceleration time indicates the time it takes to reach base speed to top speed

Deceleration time represents the time it takes to reach top speed to base speed

7.5.4, with acceleration and deceleration pulse output -- PLSR instruction

➤ Instruction overview

Pulse output instruction with acceleration and deceleration function.

Instructions	Features	Number of bits (bits)	Instruction format	Number of steps
PLSR	Acceleration and deceleration Pulse output	16		9
DPLSR		32		17

operand	Bit element				Word element			Constant	
	X	Y	M	S	T	C	D	K	H
S1					'	'	'	'	'
S2					'	'	'	'	'

手册

S3					'	'	'	'	'
D		'							

S1

Maximum frequency for specified pulse output, range: 10~32,767Hz (BIN16 bit),
Or 10~100,000Hz (BIN32 bits);

S2

To specify the number of output pulses, range: 1 ~ 32,767 (BIN16 bits),
Or 1~2,147,483,647(PLS) (BIN32 bits);

S3

For the specified acceleration and deceleration time, range: 50 ~ 5000 (unit: ms), pay attention to the same acceleration and deceleration time;

D

To specify the port number of the pulse output, you can specify Y0 or Y1.

➤ Function Action



- **D** **S3** **S1** **S3** **S2** Specify the number of output pulses.



➤ This instruction relates to special soft components

1. Y0 output current value register (32 bits) : [D8141 (high), D8140 (low)]
2. Y1 output current value register (32 bits) : [D8143 (high), D8142 (low)]
3. Y2 output current value register (32 bits) : [D8145 (high), D8144 (low)]
4. Y3 output current value register (32 bits) : [D8147 (high), D8146 (low)]
5. Y0~Y3 pulse output stop (stop immediately) : M8349, M8359, M8369, M8379

手册

Monitor (BUSY/READY) in Y0~Y3 pulse output: M8340, M8350, M8360, M8370

Y0~Y3 forward speed limit (BUSY/READY) : M8343, M8353, M8363, M8373

8. Y0-y3 reverse limit (BUSY/READY) : M8344, M8354, M8364, M8374

9. Y0~Y3 Positioning instruction driven monitoring (BUSY/READY) :M8348, M8358, M8368, M8378

10. Command execution end flag bit: M8029

7.5.5, relative positioning -- DRVI instruction

➤ Instruction overview

Relative positioning single segment pulse control instruction.

Instructions	Features	Number of bits (bits)	Instruction format	Number of steps
DRVI	Relative positioning	16		9
DDRVI		32		17

Operand	Bit element				Word element			Constant	
	X	Y	M	S	T	C	D	K	H
					'	'	'	'	'
					'	'	'	'	'
		'							

手册

D2		'	'	'				
----	--	---	---	---	--	--	--	--

S1

To specify the number of output pulses, range: -32,768 ~ 32,767 (except 0, BIN16 bits),

Or -999,999~999,999Hz (except 0, BIN32 bits), where the negative sign represents the opposite direction;

S2

For the specified pulse output frequency, range: 10~32,767Hz (BIN16 bit),

Or 10~100,000Hz (BIN32 bits);

D1

To specify the port number of the pulse output, you can specify Y0 or Y1;

D2

S1

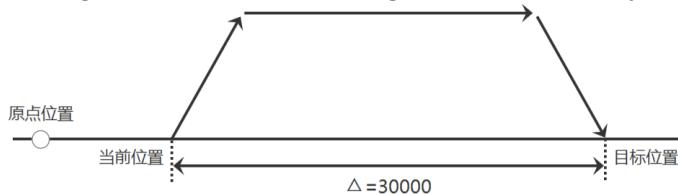
Output pulse number value positive or negative determines the direction, pulse number is positive, Y4 output port status is ON, indicating forward operation, otherwise the status is OFF, indicating reverse operation.

➤ Function action



- D1 S2 S1 D2 Specifies the rotation direction signal output port number Y5=ON, indicating the positive direction
- The number of output pulses is relative to the current value register as relative position
- Instructions can be used multiple times in the program, but do not output to the same port at the same time
- Change operand contents during instruction execution, only in the next execution of the instruction
- When the driving contact is OFF during instruction execution, slow down and stop. At this time, the command execution end sign bit M8029 does not move.
- When monitoring (BUSY/READY) in the pulse output is ON, the positioning command using the output cannot be executed.
- Even if the instruction drive contact is OFF and the monitoring (BUSY/READY) in the pulse output is ON, please

Do not execute positioning instructions (including PLSY) that specify the same output number.



➤ This instruction relates to special software components

1. Y0 output current value register (32 bits) : [D8341 (high), D8340 (low)]
 2. Y1 output current value register (32 bits) : [D8351 (high), D8350 (low)]
 3. Y2 output current value register (32 bits) : [D8361 (high), D8360 (low)]
 4. Y3 output current value register (32 bits) : [D8371 (high), D8370 (low)]
 5. Y0~Y3 pulse output stop (stop immediately) : M8349, M8359, M8369, M8379
- Monitor (BUSY/READY) in Y0~Y3 pulse output: M8340, M8350, M8360, M8370
7. Y0~Y3 positioning instruction driven monitoring (BUSY/READY) : M8348, M8358, M8368, M8378
 8. Y0 to Y3 forward speed limit (BUSY/READY) : M8343, M8353, M8363, M8373
- Y0~Y3 reverse limit (BUSY/READY) : M8344, M8354, M8364, M8374
10. End of instruction flag bit: M8029
 10. Base speed when executing DRVI and DRVA instructions:

Y0 pulse output: D8342; Y1 pulse output: D8352; Y2 pulse output: D8362; Y3 pulse output: D8372

Set range: below 1/10 of the maximum speed, if it is above this value, take 1/10 of the maximum speed

11. The highest speed when executing DRVI and DRVA instructions (unit: ms) :

Y0 pulse output: [D8344 (high), D8343 (low)]
Y1 pulse output: [D8354 (high), D8353 (low)]
Y2 pulse output: [D8364 (high), D8363 (low)]
Y3 pulse output: [D8374 (high), D8373 (low)]

S2

Need to be less than the maximum speed, set range: 10 to 100,000Hz

12. Acceleration and deceleration time when executing DRVI and DRVA instructions:

Y0~Y3 pulse output acceleration time: D8348, D8358, D8368, D8378

Y0 ~Y3 pulse output deceleration time: D8349, D8359, D8369, D8379

Acceleration time indicates the time it takes to reach base speed to top speed

Deceleration time represents the time it takes to reach top speed to base speed

7.5.6. Absolute Positioning -- DRVA instruction

➤ Instruction Overview

手册

Relative positioning single segment pulse control instruction.

Instructions	Features	Number of bits (bits)	Instruction format	Number of steps
DRVA	Absolute positioning	16		9
DDRVA		32		17

Operand	Bit element				Word element			Constant	
	X	Y	M	S	T	C	D	K	H
S1					'	'	'	'	'
S2					'	'	'	'	'
D1		'							
D2		'	'	'					

S1

To specify the absolute (target) position, range: -32,768 ~ 32,767 (except 0, BIN16 bits),

Or -999,999~999,999Hz (except 0, BIN32 bits);

S2

For the specified pulse output frequency, range: 10~32,767Hz (BIN16 bit),

Or 10~100,000Hz (BIN32 bits);

D1

To specify the port number of the pulse output, AMX-FX3U-26MT-E can specify Y0 or Y1;

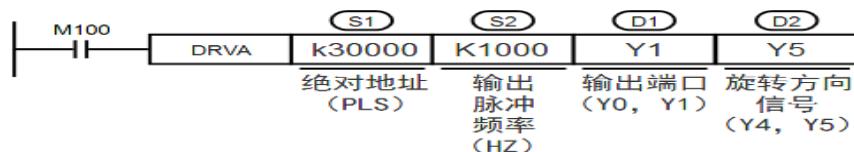
D2

S1

The difference between the absolute position and the current position is positive or negative to determine the direction, when the difference is positive, the state of the Y4 output port is ON, indicating forward operation, otherwise the state is OFF, indicating reverse

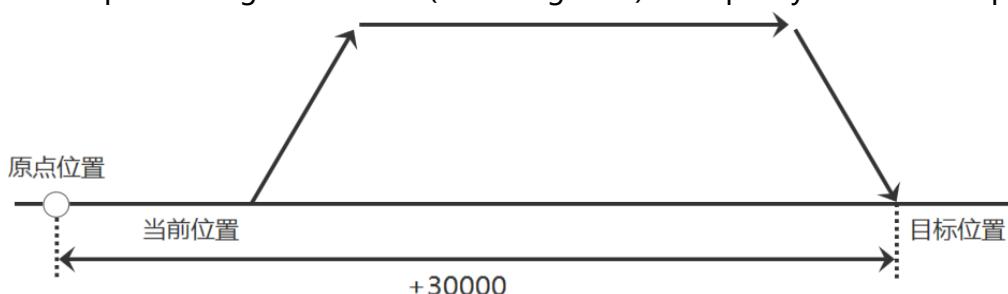
operation.

➤ Functional action



- **D1** **S2** **S1** **D2** Specify the spin direction signal output port number Y5=ON to indicate the positive direction
- The absolute position is the number of pulses relative to the origin position, so to ensure that the absolute position is accurate, the initialization should use the ZRN instruction to go back to the origin to determine the origin position
- The instruction can be used multiple times in the program, but do not output to the same port at the same time
- The operand content is changed during the execution of the instruction and is only displayed when the instruction is executed next time
- When the driving contact is OFF during instruction execution, slow down and stop. At this time, the command execution end sign bit M8029 does not move.
- When monitoring (BUSY/READY) in the pulse output is ON, the positioning command using the output cannot be executed.
- Even if the instruction drive contact is OFF and the monitoring (BUSY/READY) in the pulse output is ON, please

Do not execute positioning instructions (including PLSY) that specify the same output number.



➤ This instruction relates to special software components

1. Y0 output current value register (32 bits) : [D8341 (high), D8340 (low)]
2. Y1 output current value register (32 bits) : [D8351 (high), D8350 (low)]
3. Y2 output current value register (32 bits) : [D8361 (high), D8360 (low)]
4. Y3 output current value register (32 bits) : [D8371 (high), D8370 (low)]
5. Y0~Y3 pulse output stop (stop immediately) : M8349, M8359, M8369, M8379

Monitor (BUSY/READY) in Y0~Y3 pulse output: M8340, M8350, M8360, M8370

7. Y0~Y3 positioning instruction driven monitoring (BUSY/READY) :M8348, M8358, M8368, M8378

8. Y0-y3 forward rotation limit (BUSY/READY) : M8343, M8353, M8363, M8373

Y0~Y3 reverse limit (BUSY/READY) : M8344, M8354, M8364, M8374

10. End of instruction flag bit: M8029

10. Base speed when executing DRVI and DRVA commands:

Y0 pulse output: D8342; Y1 pulse output: D8352; Y2 pulse output: D8362; Y3 pulse output: D8372

Set range: below 1/10 of the maximum speed, if it is above this value, take 1/10 of the maximum speed

11. The highest speed when executing DRVI and DRVA instructions (unit: ms) :

Y0 pulse output: [D8344 (high), D8343 (low)]

Y1 pulse output: [D8354 (high), D8353 (low)]

Y2 pulse output: [D8364 (high), D8363 (low)]

Y3 pulse output: [D8374 (high), D8373 (low)]

S2

Need to be less than the maximum speed, set range: 10 to 100,000Hz

12. Acceleration and deceleration time when executing DRVI and DRVA instructions:

Y0~Y3 pulse output acceleration time: D8348, D8358, D8368, D8378

Y0 ~Y3 pulse output deceleration time: D8349, D8359, D8369, D8379

Acceleration time indicates the time it takes to reach base speed to top speed

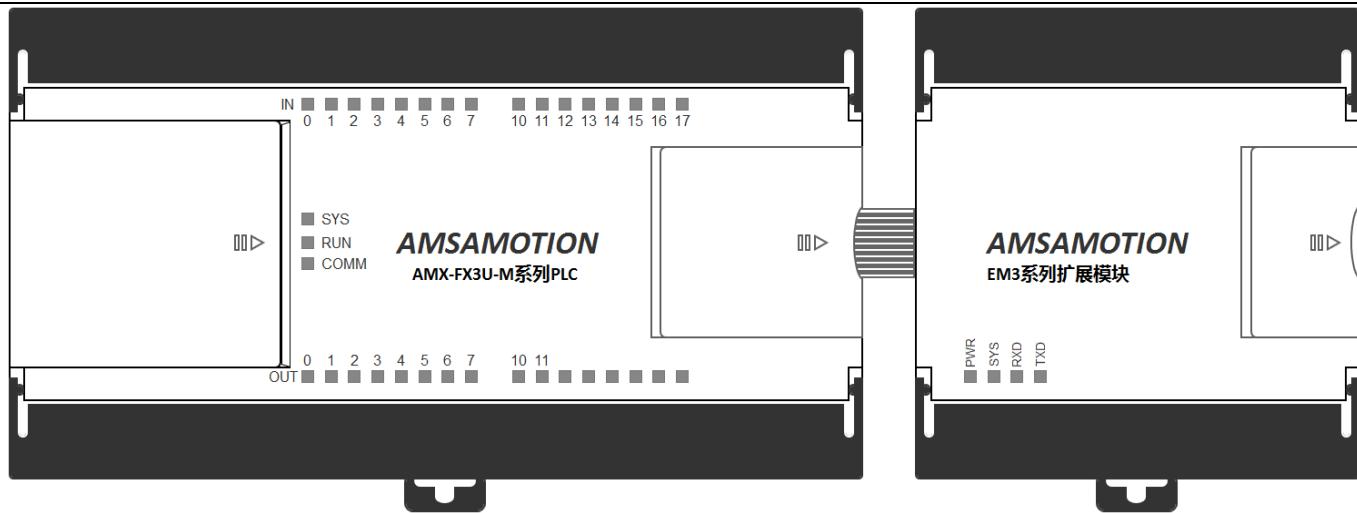
Deceleration time represents the time required to reach top speed to base speed

8. Use of EM3 expansion module

8.1 Overview of expansion module

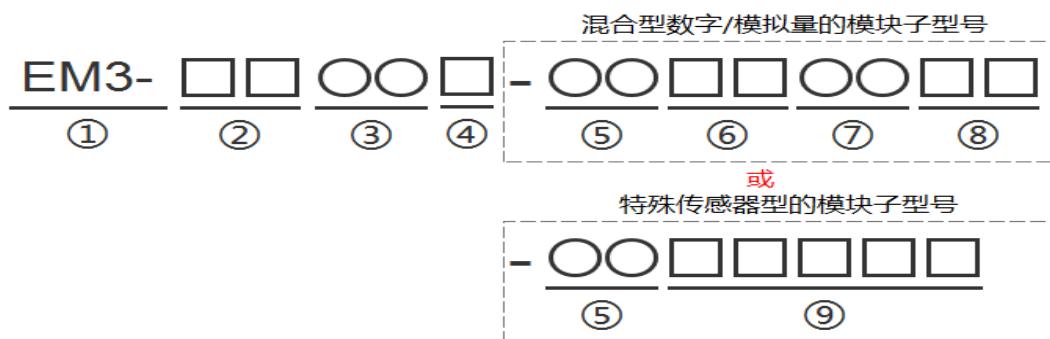
8.1.1 Introduction to Expansion module

AMX-FX3U-M series PLC supports the expansion of the digital quantity and analog quantity points of the machine through the expansion port. The expansion module is EM3 series module, which is connected through the expansion cable without programming and directly mapped to the corresponding PLC address after being connected and powered on, which is easy to use.



8.1.2, extension module naming rules

EM3 series expansion module model composition is generally as follows:



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①产品系列：	AMX-FX3U-M 系列 PLC 的扩展模块
②产品类型：	DI 表示纯数字输入型 DR 表示纯数字输出继电器型 DT 表示纯数字输出晶体管型 IO 表示数字输入输出型混合型，且输入输出通道数相等 IM 表示数字输入输出型混合型，且输入输出通道数不等 AE 表示纯模拟量输入型 AQ 表示纯模拟量输出型 AM 表示模拟量输入输出混合型 AR 表示纯 PT 温度传感器型 AN 表示纯 NTC 温度传感器型 AT 表示纯 TC 温度传感器型
③输入输出通道数：	纯数字/模拟量型或特殊传感器的通道数； 或混合型输入输出通道数相等时，表示输入输出各自通道数； 或混合型输入输出通道数不相等时，表示合计通道数
④数字量混合型的输出类型：	R 继电器输出 T 晶体管输出
⑤混合型输入或特殊传感器型通道数：	如 4
⑥混合型输入类型：	DI 表示数字量输入 AI 表示模拟量输入
⑦混合型输出通道数：	如 8
⑧混合型输出类型：	DR 表示继电器输出 DT 表示晶体管输出 AO 表示模拟量输出
⑨特殊传感器类型：	如 PT100、 NTC10K、 TC 等

8.1.3. Model and configuration

AMX-FX3U-M series PLC expansion module		
Serial number	Product model number	Description
1	EM3-IM12R-4DI8DR	Digital input output expansion module, 4-way input, 8-way relay output
2	EM3-AE8	Pure analog input expansion module, 8-channel 0-10V/0-20ma input, 15-bit resolution
3	EM3-AQ8	Pure analog output expansion module, 8-channel 0-10V/0-20ma output, resolution 12 bits
4	EM3-AM8-4AI4AO	Analog I/O Hybrid expansion module, 4 inputs, 8 outputs, range 0-10V/0-20ma, resolution 12 bits

5	EM3-AR8-8PT100	8-channel PT100 temperature acquisition module
6	EM3-AN8-8NTC10K	8-channel NTC10K temperature acquisition module

8.2, connection instructions

As shown in Figure 8.2, starting from the expansion cable interface of PLC, press the expansion cable interface of the first EM3 series expansion module to connect to the expansion port of PLC, and then connect the additional expansion module to the expansion interface of the expansion module that is already in the expansion communication bus according to the demand. Each PLC supports up to 7 EM3 series expansion modules.

Each type of expansion module requires D24V power supply, can be mixed and matched expansion, there is no limit on the installation sequence, but does not support hot swap installation, so after the expansion module is connected and installed, power on the PLC and expansion module together.

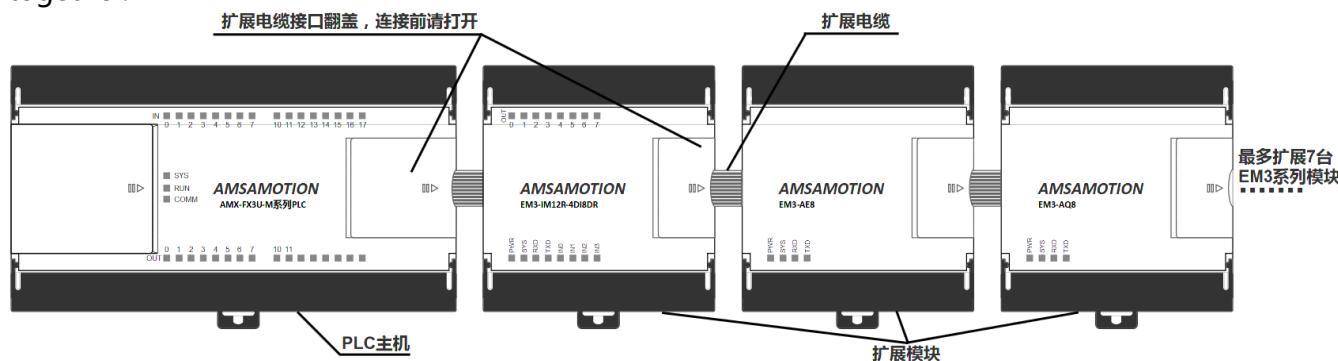


Figure 8.2 Schematic diagram of connection between PLC and expansion module

8.3. Address description

8.3.1 Channel address Mapping

AMX-FX3U-M series PLC reflects the channel state of EM3 series expansion module through the specific soft component state of the machine. The expansion module is divided into two types: digital and analog expansion module. According to this, the soft component address mapping of the expansion module is as follows:

Module type	Mapping address
Numeric quantity input	X20 address start
Numeric quantity output	Y12 address start

Analog input	D8210~D8265
Analog output	D8274~D8329

The address mapping sequence of each channel in each module is sorted according to the size of the channel number of this module, with the low channel address in front.

On the expansion communication bus of AMX-FX3U-M series PLC, for the same type of expansion module (that is, the same digital expansion module or analog expansion module), the mapping address of the module closer to the PLC expansion port is more in front, when the digital and analog expansion modules are mixed connected, the two types of installation order does not affect the mapping address ordering of both sides.

The address mapping case is shown in Figure 8.3.1:

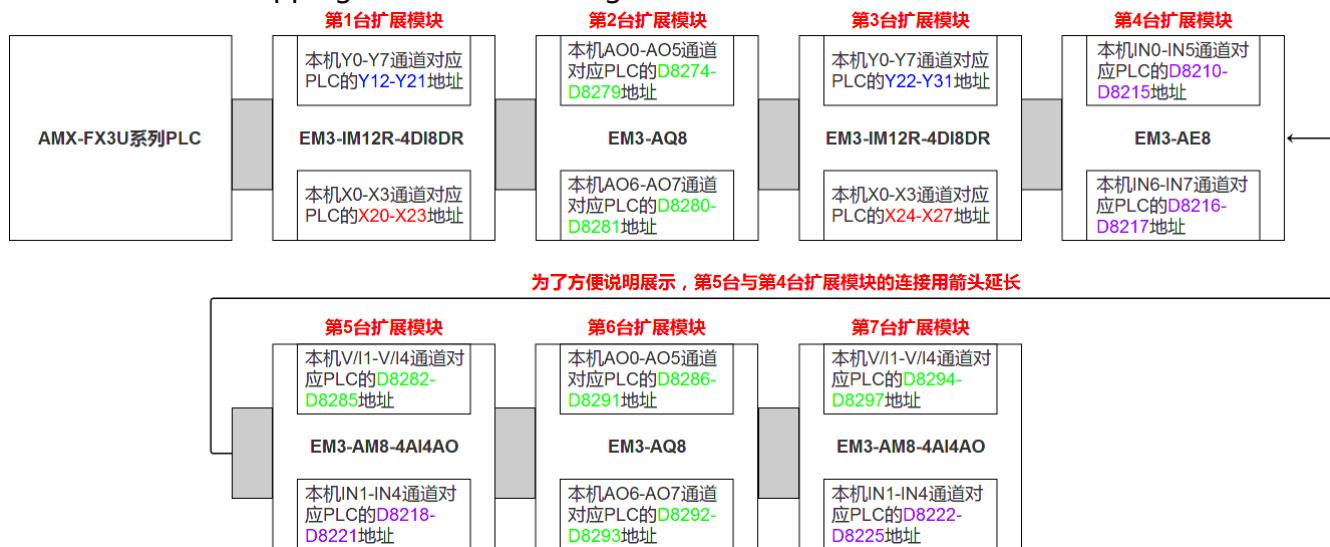


Figure 8.3.1 EM3 extension module address mapping case

Note: For the analog output of EM3-AM8-4AI4AO module, the voltage/current of the same channel number uses the same PLC address. The value of the fifth expansion module in Figure 8.3.1, D8282 address, also determines the analog output size of V1 and I1

8.3.2. Status register

AMX-FX3U-M series PLC through the machine D8106~D8133 a total of 28 special registers, reflecting the PLC successfully connected after powering on each expansion module type, version, digital quantity points, analog quantity points 4 states, the corresponding relationship is shown in the following table:

Status function	x extension module status address	Data Display type	Instructions
Module	D (8106+ (x-1) *4)	ASCII	See the description of ② product type in Section 8.1.2

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type		characters	
Software version number	D (8107+ (x-1) *4)	Hexadecimal	If 100, the version is V1.00
Number quantity Points	D (8108+ (x-1) *4)	Hexadecimal	The high 8 bits of the address are the number of digital input points, and the low 8 bits are the number of digital output points, such as the address value 0408, indicating 4 digital input and 8 digital output
Analog number of points	D (8109+ (x-1) *4)	hexadecimal	The high 8 bits of the address are analog input points, and the low 8 bits are analog output points, such as the address value 0404, indicating 4 analog inputs and 4 analog outputs

*1. Directly connected with the PLC expansion port for the first, refer to Figure 8.3.1

Appendix A, AMX-FX3U-M series PLC support instruction table

Type of instruction	Instruction code	Function description	Remarks
Contact instruction	LD	Take (logical operation of a contact begins)	
	LDI	Invert (logical operation of b contact begins)	
	LDP	Take pulse rising edge (operation to detect rising edge begins)	
	LDF	Take the pulse falling edge (the operation to detect the falling edge begins)	
	AND	With (tandem a contact)	
	ANI	With non (series b contact)	
	ANDP	Andp with pulse rising edge (series connection to detect rising edge)	
	ANDF	With pulse falling edge (series connection to detect falling edge)	
	OR	Or (Parallel a contacts)	
	ORI	Or not (parallel b contacts)	
	ORP	Or pulse rising edge (detect parallel connections of rising	

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		edge)	
	ORF	Or pulse falling edge (detect parallel connections of falling edge)	
	INV	Inversion of the result of the operation	
Associative instruction	ANB	Loop block with (serial connection of loop block)	
	ORB	Loop block or (parallel connection of loop block)	
	MPS	Stack (arithmetic storage)	
	MRD	Read stack (read storage)	
	MPP	Out of stack	
	MEP	Arithmetic result rising edge	
	MEF	Result falling edge	
Output instruction	OUT	Output (coil drive)	
	SET	Set (action hold)	
	RST	Reset (unholding action, clearing of current value and register)	
	PLS	Rising pulse (rising edge pulse output)	
	PLF	Drop pulse (drop along pulse output)	
Master command	MC	Master control (coil instruction for general purpose series contacts)	
	MCR	Master reset (General series contact release command)	
Other instructions	NOP	No program (empty operation)	
End instruction	END	End (end of program and I/O processing, and return 0 step)	
Step ladder diagram Instructions	STL	Step ladder diagram (the beginning of step ladder diagram)	
	RET	Return (end of step ladder diagram)	

Program flow	CJ	Conditional jump	
	CALL	Subroutine call	
	SRET	Subroutine return	
	FEND	Main program over	
	FOR	The beginning of the loop scope	
	NEXT	End of loop range	
Transfer comparison	MOV	Transmit to	
	SMOV	Shift	
	CMP	Compare	

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	ZCP	Interval comparison	
	CML	Reverse transfer	
	BMOV	Batch transfer	
	FMOV	Multipass	
	XCH	Swap	
	BCD	BCD conversion	
	BIN	BIN conversion	
Four rules.logic Arithmetic	ADD	BIN Add	
	SUB	BIN subtraction	
	MUL	BIN multiplication	
	DIV	BIN division	
	INC	BIN plus one	
	DEC	BIN minus one	
	WAND	Logic &	
	WOR	Logic or	
	WXOR	Logical XOR	
	NEG	complement	
Contact comparison	LD=	Contact comparison LD S1=S2	
	LD>	Contact comparison LD S1>S2	
	LD<	Contact comparison LD S1<S2	
	LD<>	Contact comparison LD S1≠S2	
	LD<=	Contact comparison LD S1≤S2	
	LD>=	Contact comparison LD S1≥S2	
	AND=	Contact comparison AND S1=S2	
	AND>	Contact comparison AND S1>S2	

	AND<	Contact comparison AND S1<S2	
	AND<>	Contact comparison AND S1≠S2	
	AND<=	Contact comparison AND S1≤S2	
	AND>=	Contact comparison AND S1≥S2	
	OR=	Contact comparison OR S1=S2	
	OR>	Contact comparison OR S1>S2	
	OR<	Contact comparison OR S1<S2	
	OR<>	Contact comparison OR S1≠S2	
	OR<=	Contact comparison OR S1≤S2	
	OR>=	Contact comparison OR S1≥S2	

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Cycle. Shift	ROR	Loop right shift	
	ROL	Loop shift left	
	RCR	Move right with carry loop	
	RCL	Shift left with carry loop	
	SFTR	Bit shift to right	
	SFTL	Bit shift left	
Data processing	ZRST	Batch reset	
	MEAN	MEAN	
	FLT	BIN integer to binary floating-point conversion	
High-speed processing	REFF	Filter adjustment	
Positioning control	ZRN	Mechanical origin regression	Two-word instruction support
	PLSY	Pulse output	
	PLSV	Variable speed pulse	
	PLSR	Pulse output with acceleration and deceleration	
	DRVI	Relative positioning	
	DRVA	Absolute positioning	
Floating point arithmetic	DECMP	Binary floating-point comparison	
	DEZCP	Binary floating-point interval comparison	
	DEMOV	Binary floating-point data transfer	
	DEBCD	Binary floating-point to decimal floating-point conversion	
	DEBIN	Decimal floating point - conversion of binary floating point numbers	
	DEADD	Binary floating-point number addition	
	DESUB	Subtraction of binary floating point numbers	
	DEMUL	Binary floating-point multiplication	

Floating-point arithmetic	DEDIV	Binary floating-point number division	
	INT	Binary floating-point number -BIN integer conversion	
	DSIN	Binary floating-point SIN operation	
	DCOS	Binary floating-point COS arithmetic	
	DTAN	Binary floating-point TAN arithmetic	
Data Processing 2	SWAP	Up-down byte conversion	
	BTOW	Data combination in byte units	
Clock arithmetic	TCMP	Clock data comparison	
	TZCP	Clock data interval comparison	

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	TADD	Clock data addition operation	
	TSUB	Clock data subtraction operation	
	TRD	Read out of clock data	
	TWR	Writing of clock data	
External devices	GRY	Gray code conversion	
	GBIN	Reverse change of Gray code	
	ADPRW	MODBUS Read out • Write	
	PID	PID arithmetic	
Convenience instruction	ALT	Alternate output	

Appendix B, MODBUS RTU communication error code (D8402 data) description

MODBUS Communication Error Code (decimal)	Error name And details	Master/slave station	Related soft component action (Special M, D addresses)	Disposition
201	MODBUS does not detect error with communication ADP	Master/slave station	1)M8063 will be set to ON and 6321 will be stored in using a MODBUS	Verify that you are

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	Failed to detect MODBUS communication adapter		D8063 2)M8122 will be set to ON and the communication error code will be stored In D8122 3)M8123 will be set to ON and the error details will be stored In D8123	communication adapter
202	The MODBUS communication parameter setting is abnormal The MODBUS communication parameters are not set correctly	Master/slave	Refer to above	Please confirm the parameter values of the relevant data register, please confirm the MODBUS communication setup program
203	Other communications occupy communication ports More than two types of communication are configured in a channel (Example: MODBUS communication and N:N network are used in the same channel)	Master/slave station	Refer to above	Verify that MODBUS communication is only 1 channel
204	Parity error, overflow error, frame error	Master/slave	Refer to the above	Please confirm the communication format setting D8400/D8420
205	CRC/LRC error Text CRC/LRC invalid RTU mode text length is less than 3 bytes, ASCII mode text length is less than 8 bytes	Master/slave	Refer to above	Please confirm the error status of communication format set D8120, play delay D8180, interrequest delay D8174
206	Character Overflow - When receiving more than 256	Master/slave station	Refer to above	Please confirm an error with Play delay D8180, interrequest

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	<p>bytes in RTU mode (513 bytes or more in ASCII mode)</p> <ul style="list-style-type: none"> - During the processing of the previous request, when other requests are received (from the station only) 			<p>delay D8174 Occurrence status. Verify that the communication port Settings are correct</p>
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207	The request text is incorrectly formatted	Master/slave	Refer to above	Verify that MODBUS communication is being used on the slave station and that the correct one is being received
	The number of access points for the received text does not match the number of points actually received			Function, please confirm that the access points of the command are within the range of the slave and master stations . Protocol errors can sometimes occur if not programmed correctly
	Or access points exceed the maximum value of the function			
208	Error receiving text. Cannot be converted to byte code in ASCII mode	Master/slave station	Refer to above	Refer to the disposal of error code 207
209	No corresponding function code received The requested function code is invalid or does not correspond	Slave station	Refer to above	Verify that the features used meet the specifications of the master and slave stations
210	A visit was made to a MODBUS software component with unassigned software components	Slave Station	Refer to above	Please confirm that the MODBUS software component allocation of the

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	The selected MODBUS software or software + access points are beyond the range supported by the slave			slave station is set correctly. Please verify that the master data is in the valid range of the selected function Verify that the master station has access to a valid soft component range
211	Slave station response timeout	Master station	Refer to the above	Please confirm that the slave station number and communication parameters are correctly set
212	Exception response text reception: An exception response text was sent from the station (please refer to the exception response below Code) Details: High byte: Exception function code Low byte: exception response code	Primary station	Refer to above	Please confirm that the functions and functional parameters used are consistent with those of the master and slave stations Specs

213	Station number inconsistency: The request text and response text do not agree with the station number from the station Details: High byte: The requested slave station number Low byte: The number of the	Master station	Refer to above	Refer to the disposal of error code 0207
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	responding slave			
214	Inconsistent functional codes: The function codes for the request text and the response text are inconsistent Details: High byte: The function code of the request text Low byte: The function code of the response text	Master station	Refer to above	Refer to the disposal of error code 0207
215	Play request error: A play request was received from the station that the play function does not support Details: No diagnostic function Diagnostic function High byte: 0 function code (08H) Low byte: Function code Subfunction code	Slave station	Refer to above	Verify that the features correspond to playback within the specifications of the slave station
216	Request text data exception: Data values are inconsistent with MODBUS specifications (Example :OFF=[0000H],ON=[FF00H] outer Hu 1 coil write [5H] value)	Slave station	Refer to above	Please refer to error code 0207 for handling
217	ADPRW instruction used incorrectly, The ADPRW command was used at the slave station	Slave station	Refer to above	Use the ADPRW command at the main station
218	Out of application instruction operand data range: Read object/write object software element of ADPRW instruction is invalid. Or the number of occupied points exceeds the valid range Details: High byte: 0 Low byte: Store 1-4 according to invalid arguments of RS instruction S.SD	Master station	Refer to the above or M8067 will be set to ON, and 6705 or 6706 will be stored in In the D8076	Verify that the features are within the master station specifications or software components

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219	Incorrect data length	Master/slave	The length of data received does not meet MODBUS specifications	Refer to the handling method of error code 207
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Abnormal response code corresponding to MODBUS slave station (details of master station error, data in D8403)		
Abnormal response code	Name of the exception response code	
01H	Function code exception	The requested function code is not aligned
02H	Soft component exception	The requested MODBUS software component or access point exceeds the valid range of the slave station
03H	Data anomalies	1 data area of the request text exceeds the valid range (data length, number of soft components)
04H	Handling interrupts	A fatal error occurred while processing a request text from the site
0CH	I/O error in sending or receiving data	The length of the data received is incorrect or the CRC check is incorrect

Appendix C, analog application part of the calculation cases

Appendix C-1, analog input

Supplement basic knowledge:

The analog signals (such as temperature and humidity, pressure, weight, CO2 concentration, etc.) that the user needs to collect are collected by the relevant sensors (such as temperature and humidity sensors, weighing sensors, PT100 temperature sensors, etc.), and then converted into current or voltage signals (output signals have different ranges, etc.). Common 0~20ma, 4~20ma, 0~10V, etc.), access to the PLC analog input channel, and the PLC and the voltage/current analog signal through A/D conversion circuit into a digital quantity, can be used for MCU calculation.

For this PLC, it can accept the analog signal input in the range of 0~10V or 0~20ma, and then

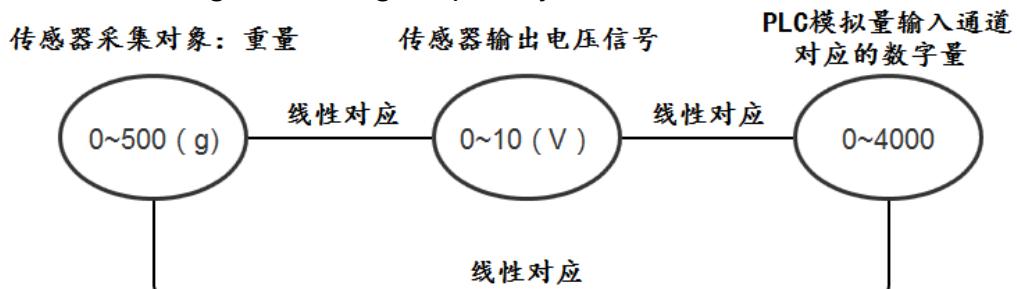
手册

directly access the analog input channel used (IN1, IN2, IN3, IN4) corresponding to the channel address (D8030, D8031, D8032, D8033). Substituted by the user -- according to the linear relationship between analog and PLC digital (D8030, D8031, D8032, D8033 value) and the calculation of the binary equation related PLC program, you can connect to the PLC PC, configuration or touch screen, directly display the analog value collected by the sensor, The following will be the sensor output voltage/current range relative to the PLC analog input range of the size of the four cases.

Note: If infinite decimal numbers appear in the calculation result, it is recommended to be accurate to the 4th decimal place.

Case 1: Analog input signal 0~10V (full PLC scale)

Assume that there is such a weighing sensor at this time: it can measure the weight 0~500g, output analog 0~10V voltage signal, and access the analog input channel 1 of PLC, then the linear relationship between analog and PLC digital quantity (ideal state) :



Set the weight of the weighing sensor to be y , and the digital quantity of the PLC analog input channel to be x , then the binary equation can be obtained:

$$4000k = 500$$

Solution: $k=0.125$

So the analog and digital conversion relation in this case is $y=0.125x$.

The following reference routine can be obtained:

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* 某称重传感器可测量0~500g，输出0~10v模拟量电压，接模拟量输入通道1

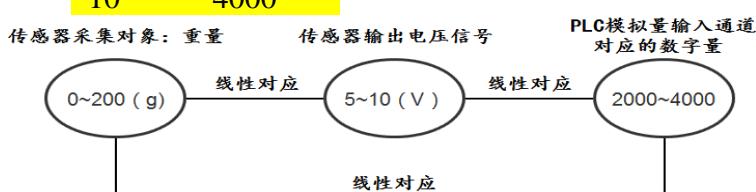
* 设传感器测量重量为y克，D8030地址（模拟量输入通道1）读取数值为x

* 则可得测量重量与D8030读取数值的二元一次方程为： $y=0.125x$



Case 2: Analog input signal 5~10V (part of the PLC range)

Assume that there is such a weighing sensor at this time: the weight can be measured 0~200g, the output analog 5~10V voltage signal, access to the PLC analog input channel 1, then the linear relationship between the analog and PLC digital quantity (ideal state, the corresponding **digital range of the lower limit**, is based on the sensor output voltage signal and digital quantity proportional relationship " $\frac{5}{10} = \frac{5v\text{对应数字量}}{4000}$ "):



Set the weight of the weighing sensor to be y , and the digital quantity of the PLC analog input channel to be x , then the binary equation can be obtained:

$$\begin{cases} 2000k + b = 0 \\ 4000k + b = 200 \end{cases}$$

Can be solved:

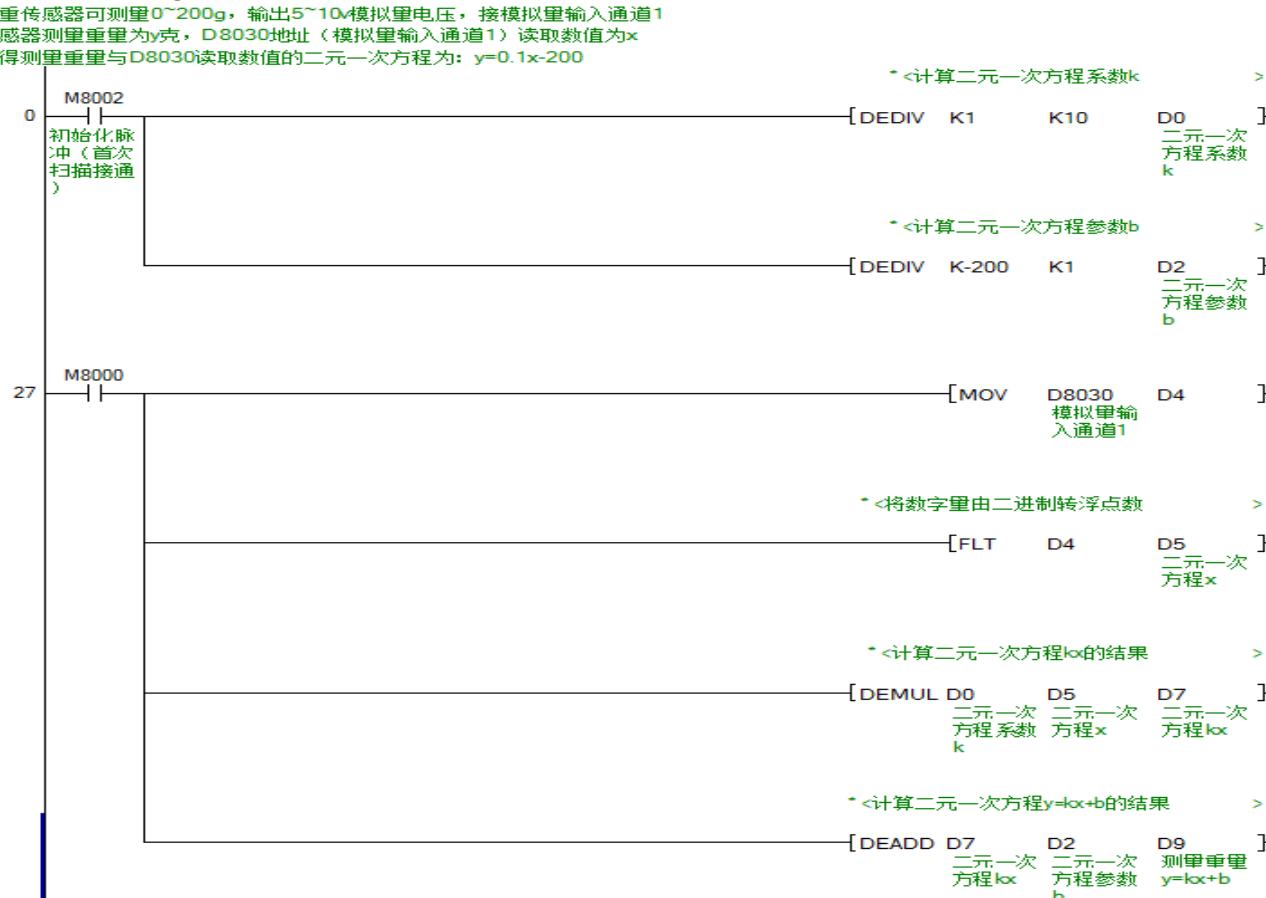
手册

$$\begin{cases} k = 0.1 \\ b = -200 \end{cases}$$

Therefore, the conversion relationship between analog and digital quantities in this case is $y=0.1x-200$.

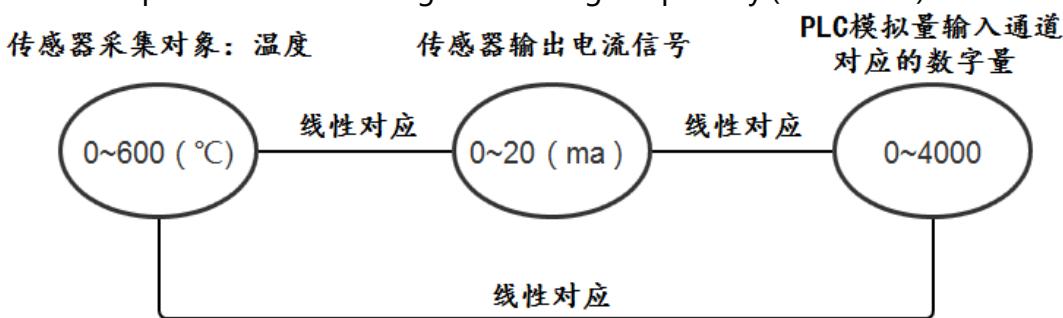
The following reference routine can be obtained:

- * 某称重传感器可测量0~200g，输出5~10V模拟量电压，接模拟量输入通道1
- * 设传感器测量重量为y克，D8030地址（模拟量输入通道1）读取数值为x
- * 则可得测量重量与D8030读取数值的二元一次方程为： $y=0.1x-200$



Case 3: Analog input signal 0~20ma (full PLC scale)

Assume that there is such a temperature sensor at this time: the temperature can be measured 0~600°C, the output analog 0~20ma current signal, access to the PLC analog input channel 1, then the linear relationship between the analog and PLC digital quantity (ideal state) :



Set the temperature sensor acquisition weight is y , PLC analog input channel digital quantity is

x, then binary equation can be obtained:

$$4000k = 600$$

Solution: $k=0.15$

Therefore, the conversion relation between analog and digital quantity in this case is $y=0.15x$.

The following reference routine can be obtained:

* 某传感器可测量0~600℃，输出0~20mA模拟量电流，接模拟量输入通道1

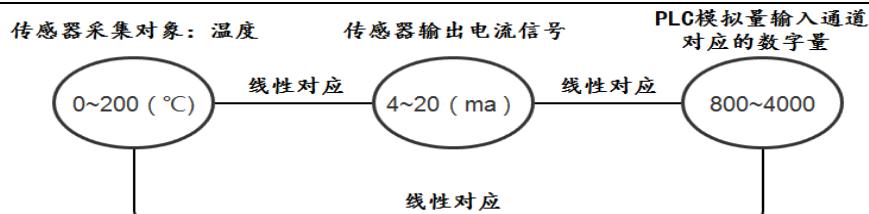
* 设传感器测量温度为y，D8030地址（模拟量输入通道一）读取数值为x

* 则可得测量温度与D8030读取数值的二元一次方程为: $y=0.15x$



Case 4: Analog input signal 4~20ma (part of the PLC range)

Assume that there is such a temperature sensor at this time: the temperature can be measured 0~200°C, the output analog 4~20ma current signal, access to the PLC analog input channel 1, then the linear relationship between the analog and PLC digital quantity (ideal state, the corresponding digital quantity range of the lower limit, is based on the sensor output current signal and digital quantity proportional relationship " $\frac{4}{20} = \frac{4\text{ma对应数字量}}{4000}$ ") :



Set the temperature sensor acquisition weight to y, PLC analog input channel digital quantity to x, then binary equation can be obtained:

$$\begin{cases} 800k + b = 0 \\ 4000k + b = 200 \end{cases}$$

Can be solved:

$$\begin{cases} k = 0.0625 \\ b = -50 \end{cases}$$

Therefore, the conversion relationship between analog and digital quantity in this case is $y=0.0625x-50$.

The following reference routine can be obtained:

- 某传感器可测量0~200℃温度，输出4~20mA模拟量电流
- 设传感器测量温度为y，D8030地址（模拟量输入通道一）读取数值为x
- 则可得测量温度与D8030读取数值的二元一次方程为： $y=0.0625x-50$

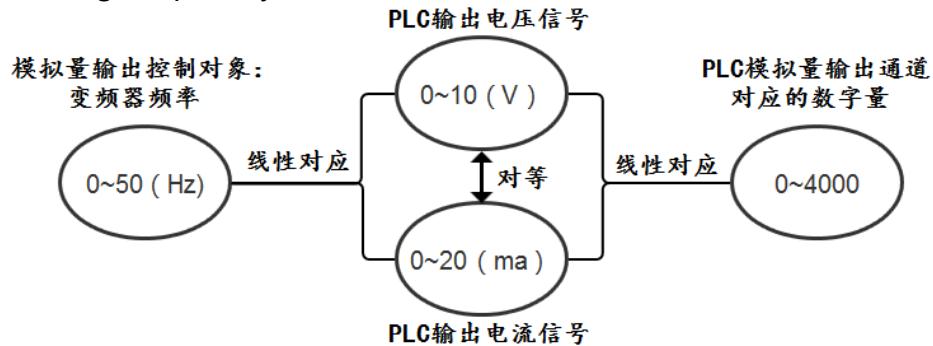


Appendix C-2, analog output

Assume that there is such a frequency converter: from the PLC access analog 0~10V or

手册

0~20ma current signal, you can control the frequency change of the frequency converter 0~50hz, the analog input channel into the PLC analog output channel, then the linear relationship between the analog and PLC digital quantity (ideal state) :



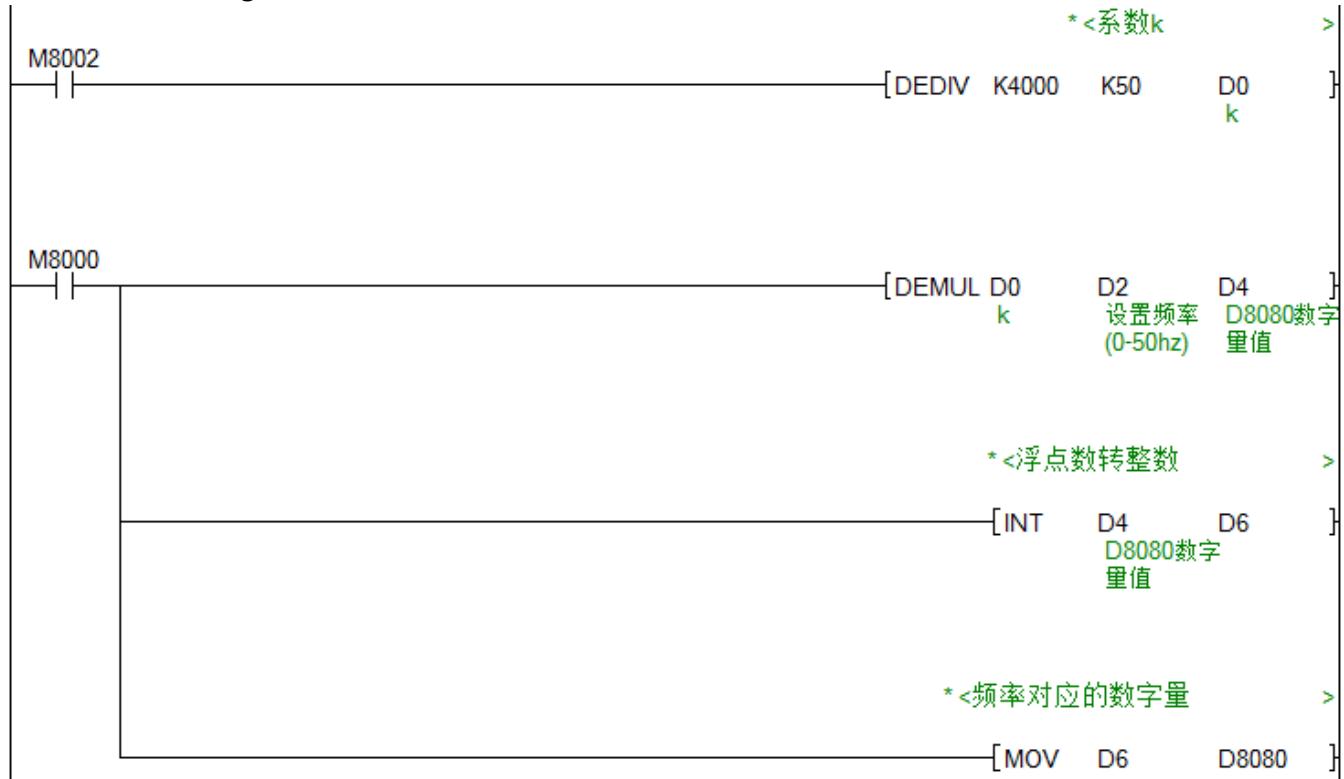
Set the frequency of the inverter x and the digital quantity of the PLC analog output channel to y , then the binary primary equation can be obtained:

$$50k = 4000$$

Solution: $k=80$

Therefore, the conversion relationship between analog and digital quantities in this case is $y=80x$.

The following reference routine can be obtained:



Appendix D, some examples of touch screen/upper computer side network port communication Settings

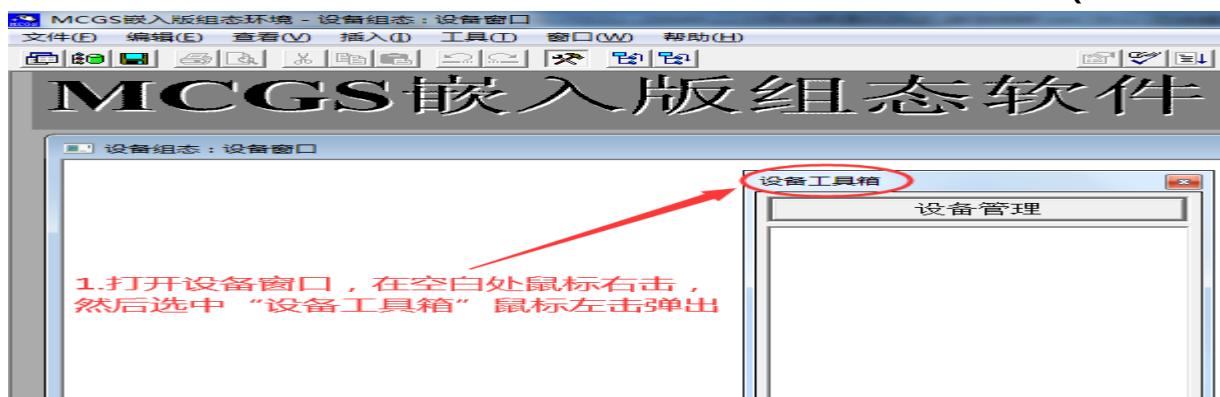
Description:

The touch screen/PC brand and even product series on the market are many, here can not be one example, but the communication Settings are much the same, the user basically just follow the following two points:

- A. Set the correct communication protocol, MC protocol communication, choose words similar to "FX3 Ethernet" or "FX Series Ethernet" (words are definitely not "FX5" or "FX5U") protocol
- B. Set the correct touch screen/host computer, PLC IP and port number (the default IP of PLC is 192.168.1.18, the port number of MC protocol communication is 5551, and the MODBUS TCP communication protocol port number is 502)

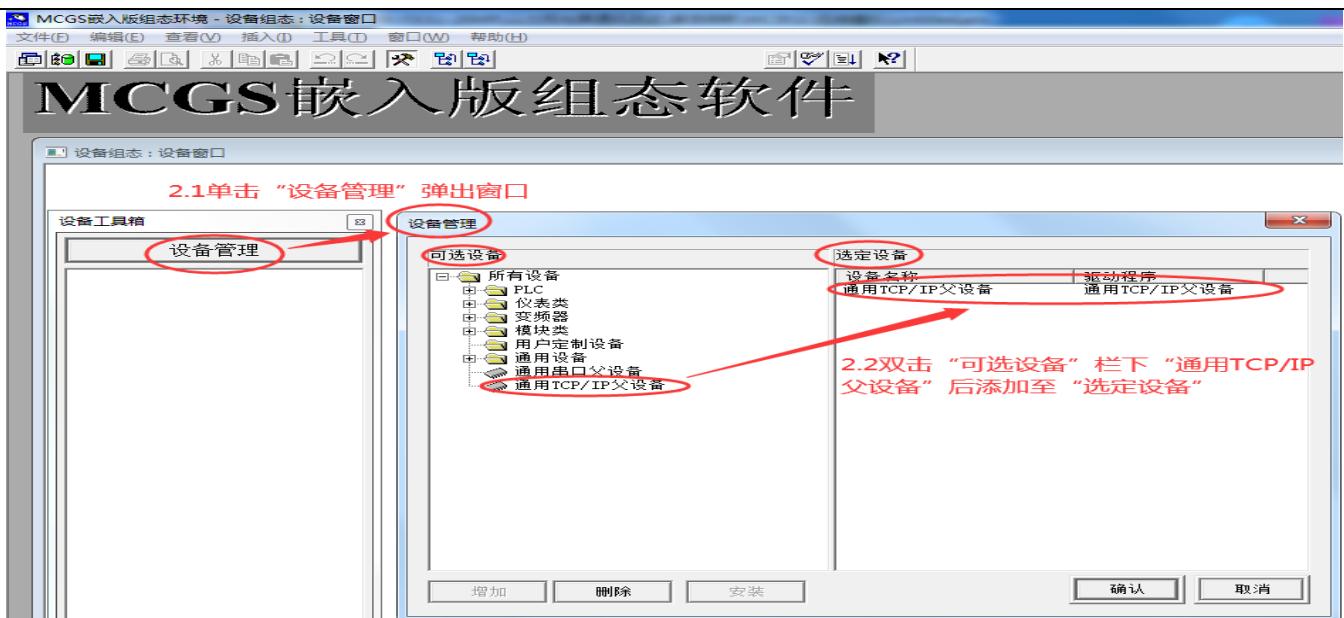
Example of some communication Settings:

1. Connect with Kunlun Communication MCGS Embedded Edition (version 7.7)



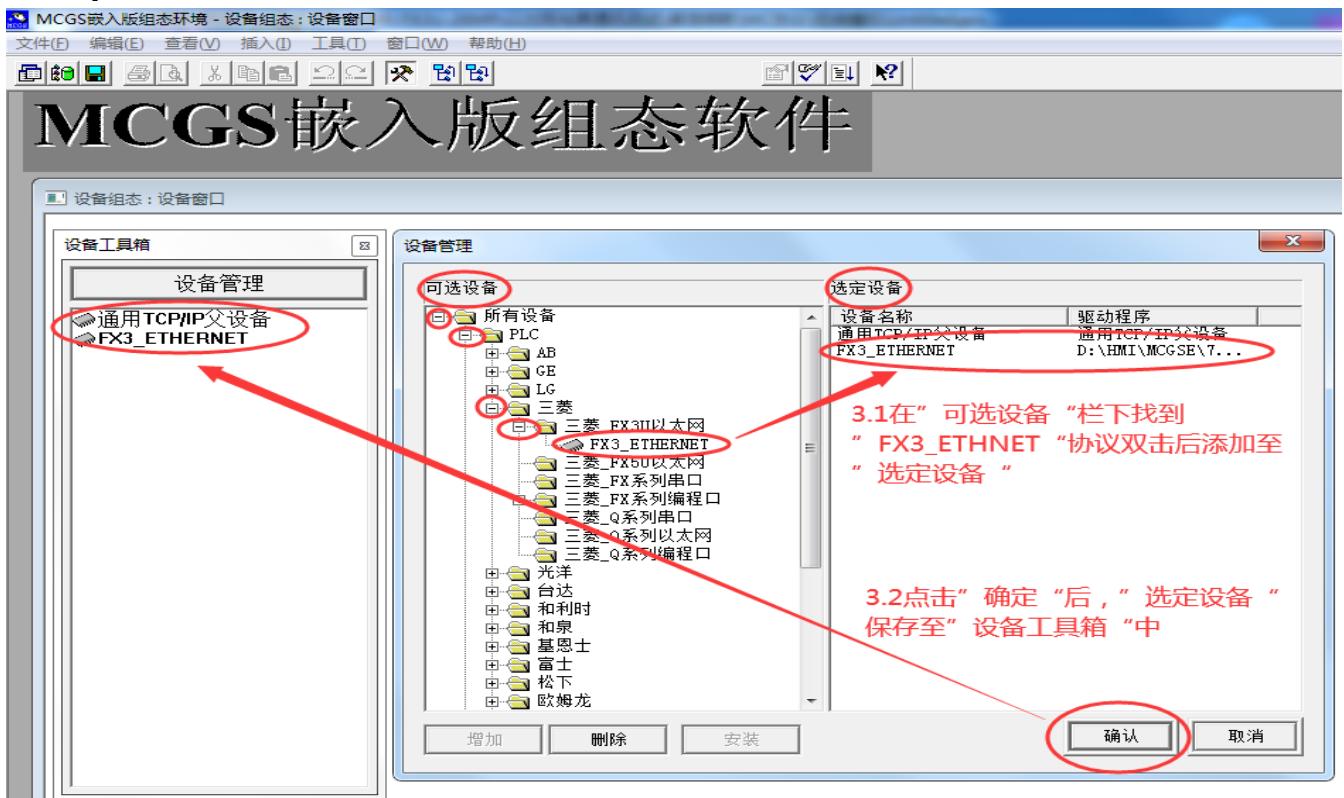
Open the device window on the MCGS engineering workbench and open the "Device Toolbox" according to the image above.

手册

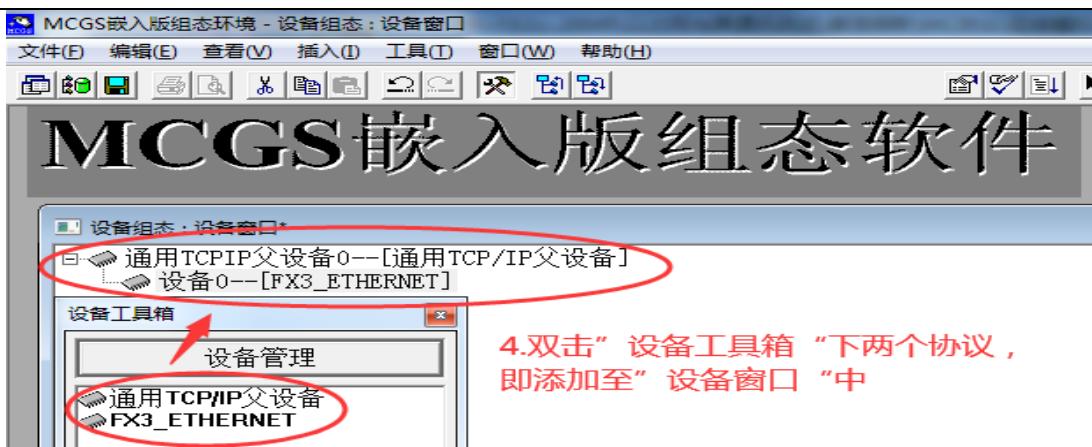


Add the selected device "Universal TCP/IP Parent Device".

I. MC protocol communication

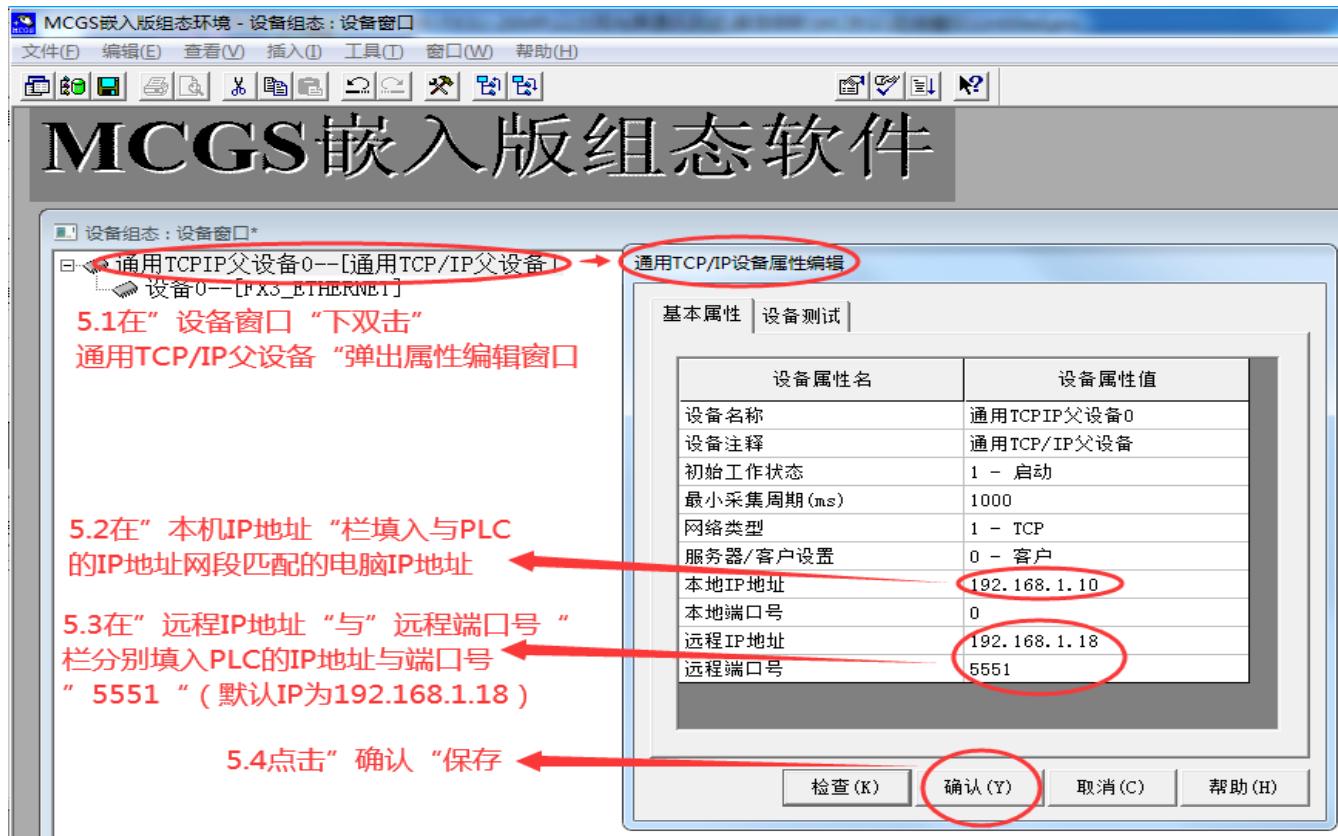


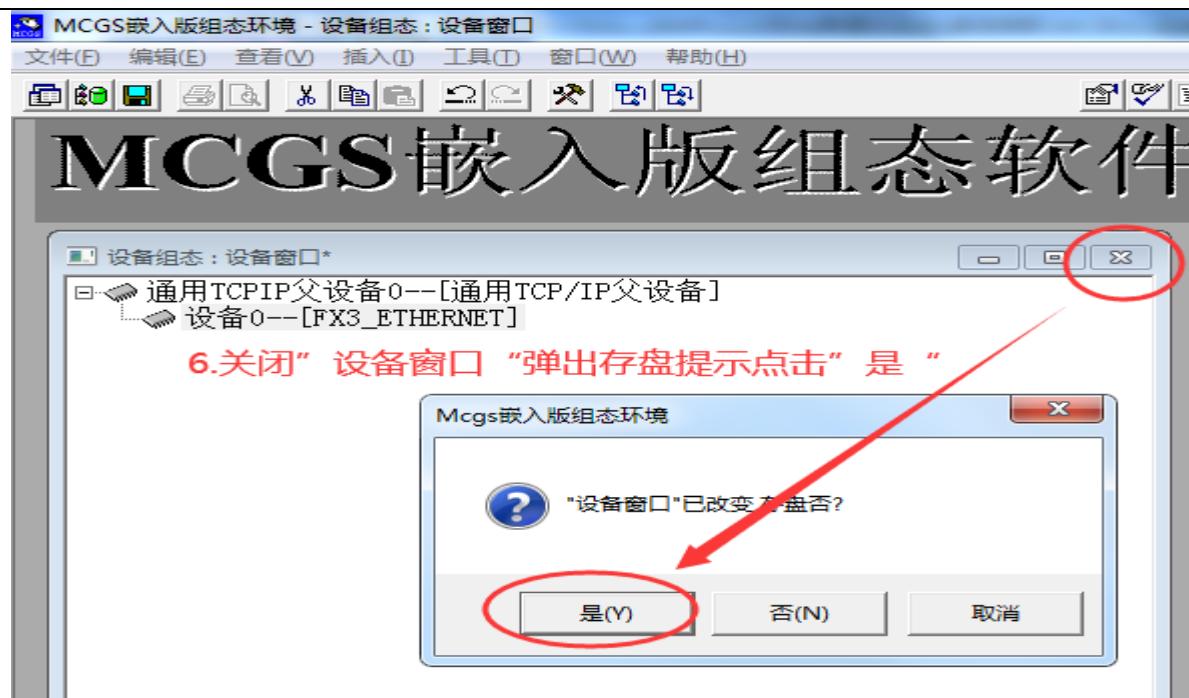
手册



4. 双击“设备工具箱”下两个协议，即添加至“设备窗口”中

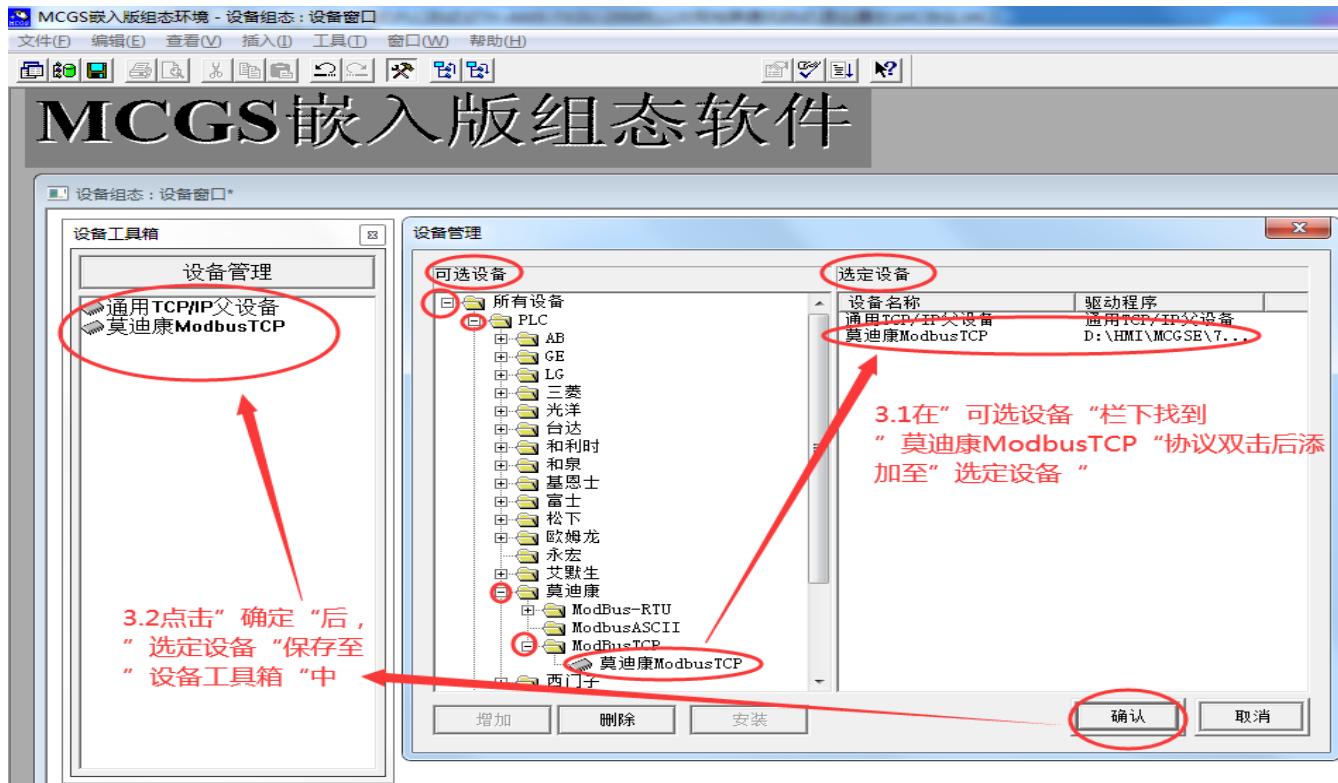
Next steps 1 and 2, add "Universal TCP/IP Parent Device" and "FX3_ETHERNET" to the device toolbox.

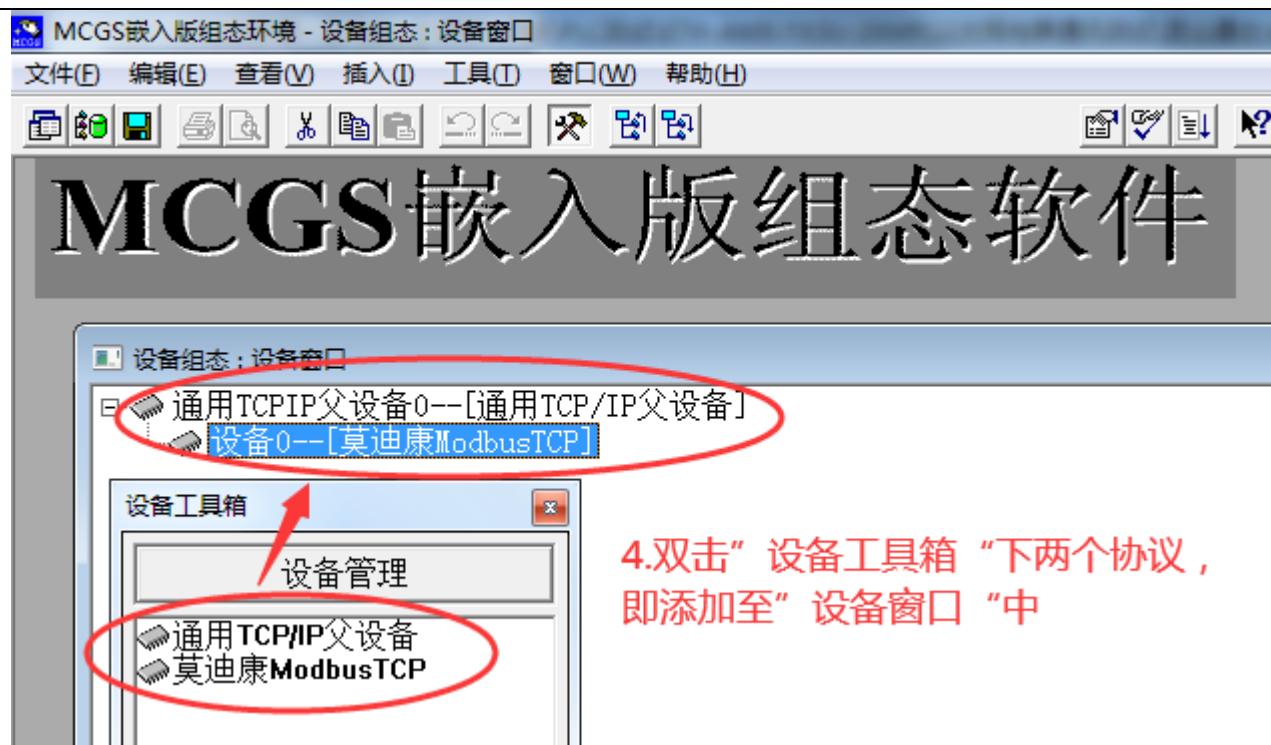




In the "General TCP/IP Parent Device Properties Edit" window, set the computer IP, PLC IP, and port number "5551 or 6551", and co-disk.

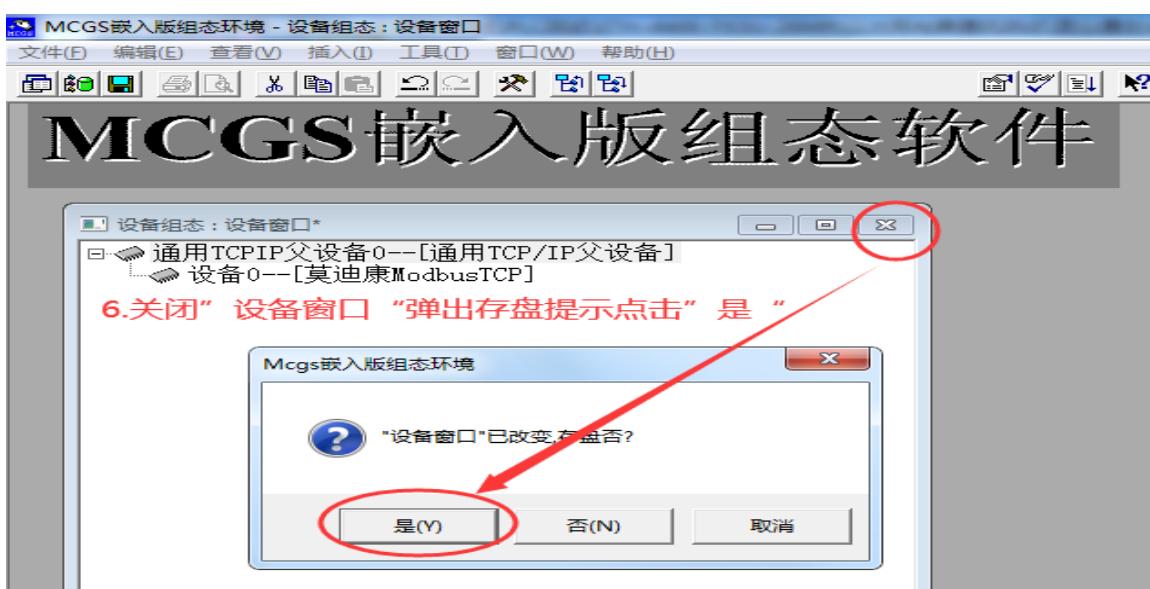
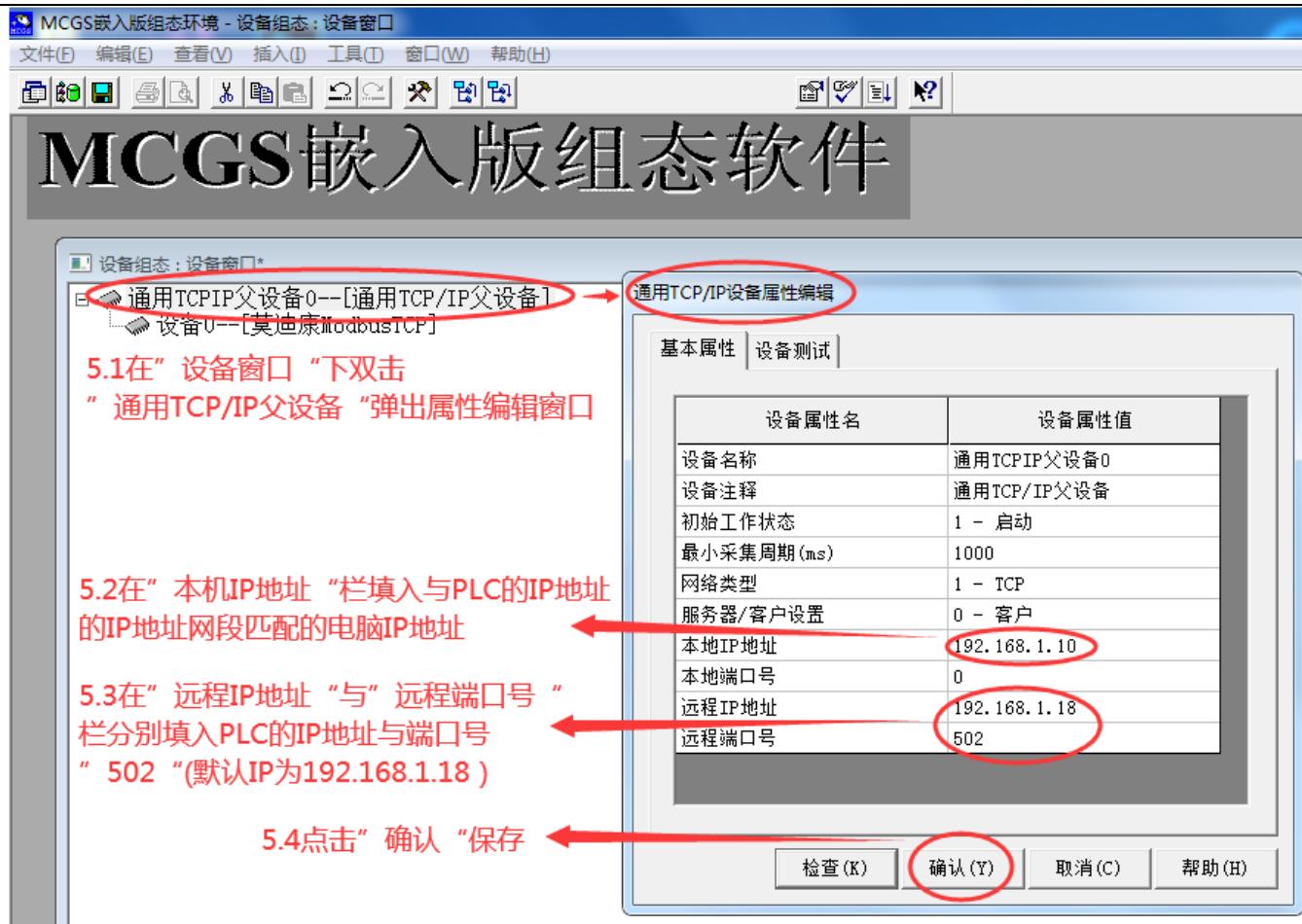
II.MODBUS TCP communication





Follow steps 1 and 2 to add "Universal TCP/IP Parent Device" and "Modecon ModbusTCP" to the device toolbox.

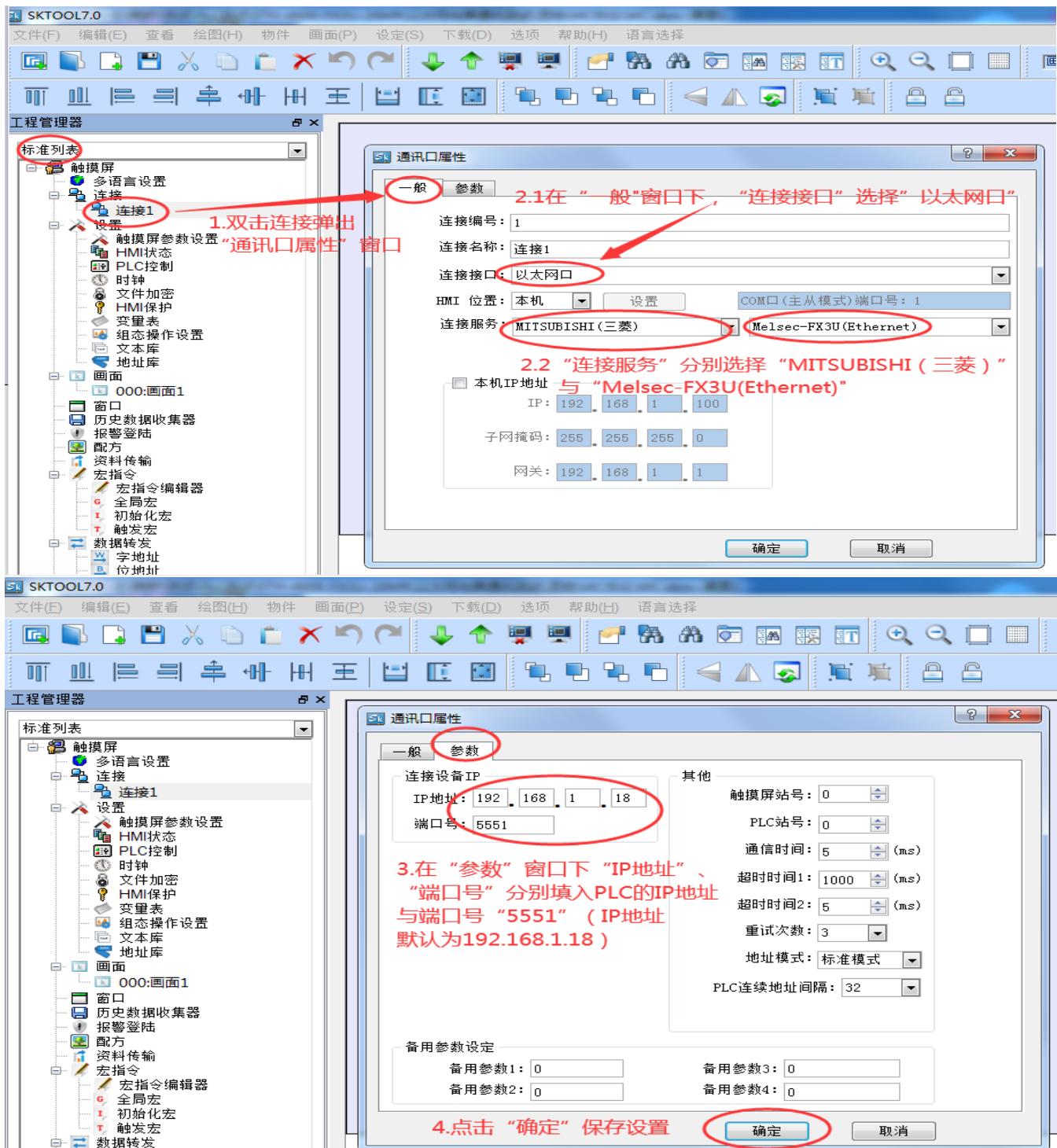
手册



In the "General TCP/IP Parent Device Properties Edit" window, set the computer IP, PLC IP and port number (502), and co-disk.

2. Connect with the display control touch screen (software version SKTOOL7.0)

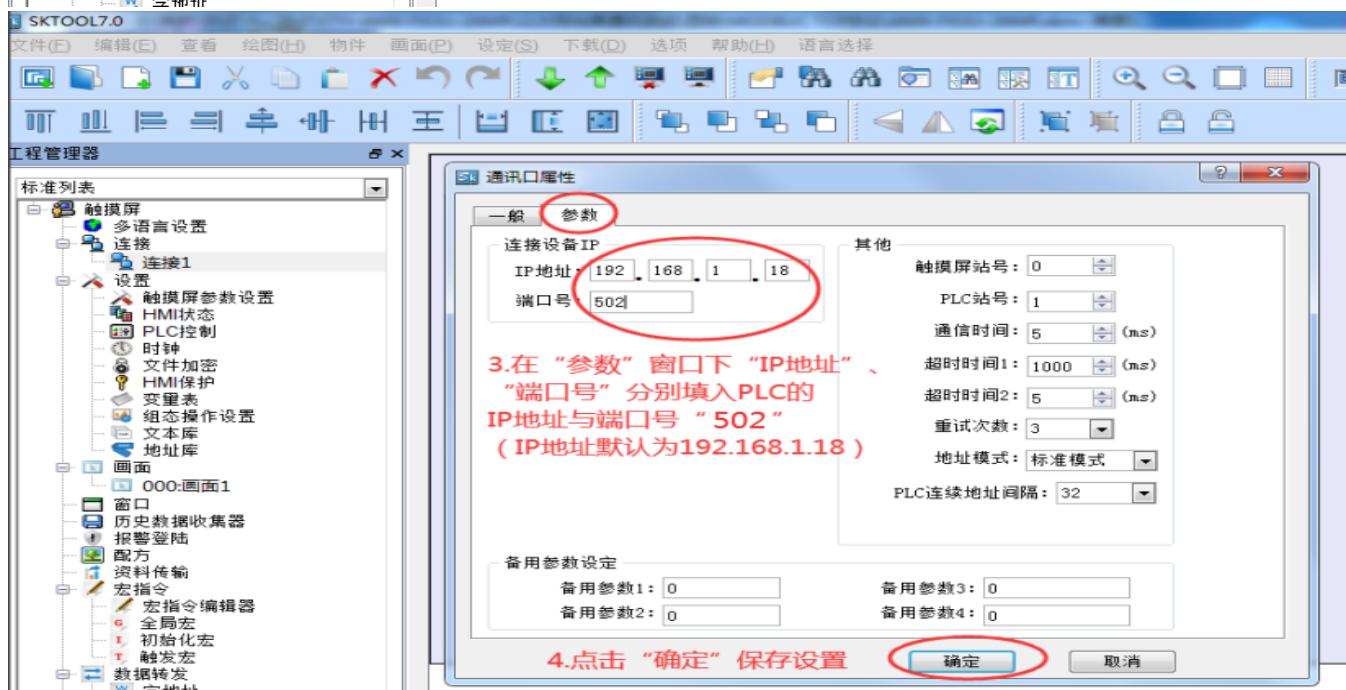
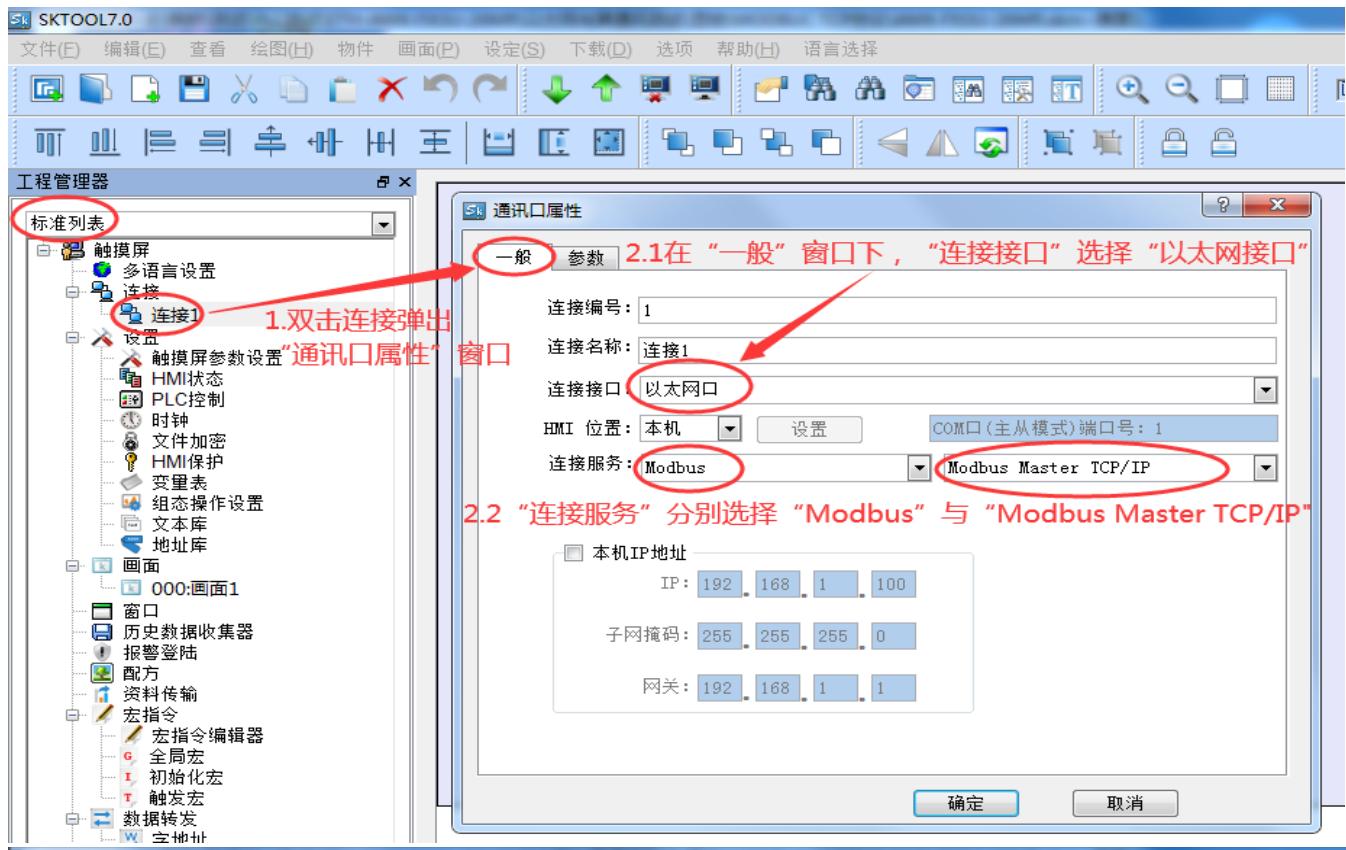
I.mic protocol communication



Select the connection protocol as "Melsec-FX3U(Ethernet)" through the "Communication Port Properties" window, set the IP address and port number of PLC "5551 or 6551" and save.

手册

II. MODBUS TCP protocol communication

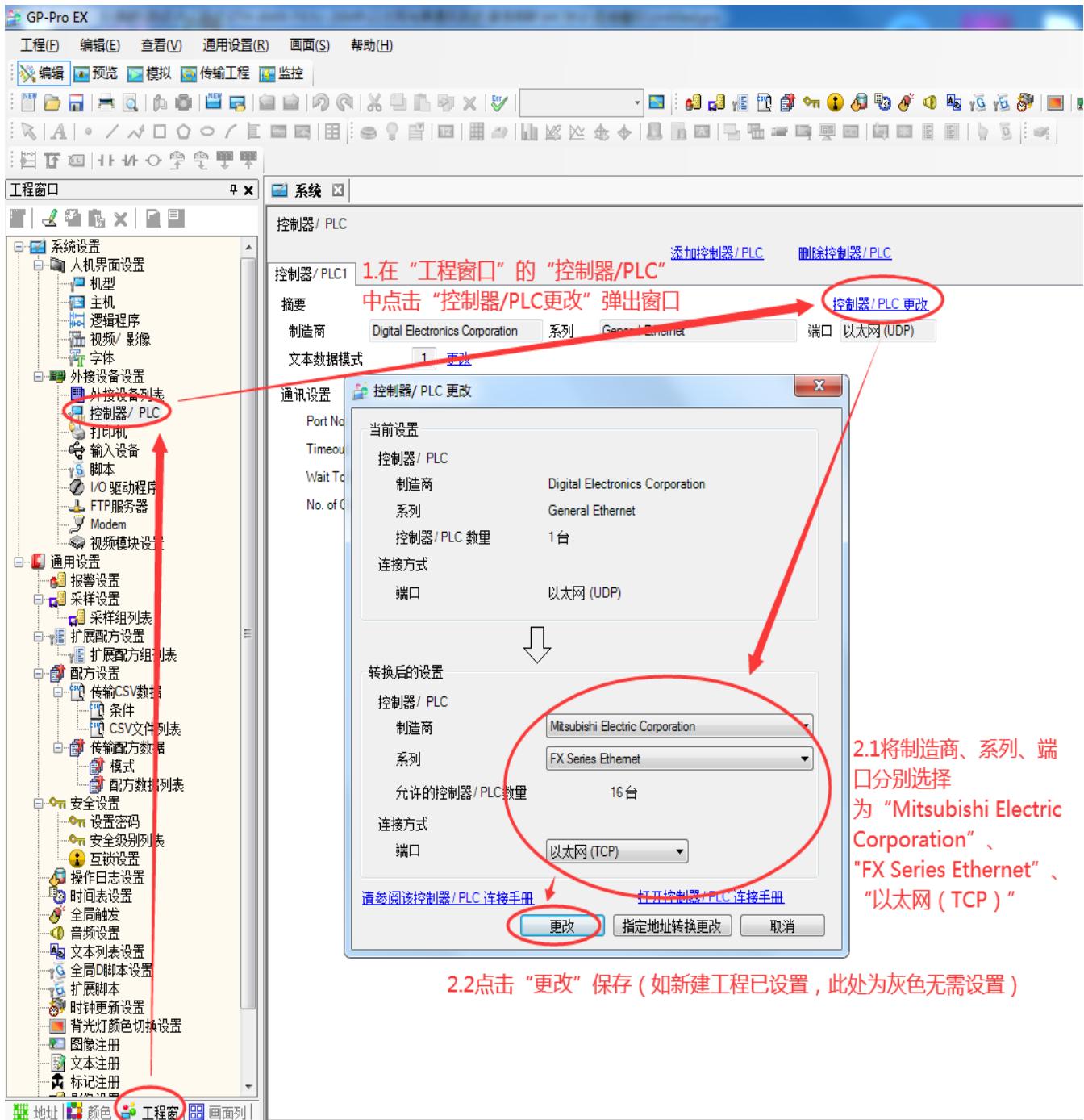


In the "Communication Port Properties" window, set the connection protocol to "Modbus Master TCP/IP", set the PLC IP address and port number "502" and save.

手册

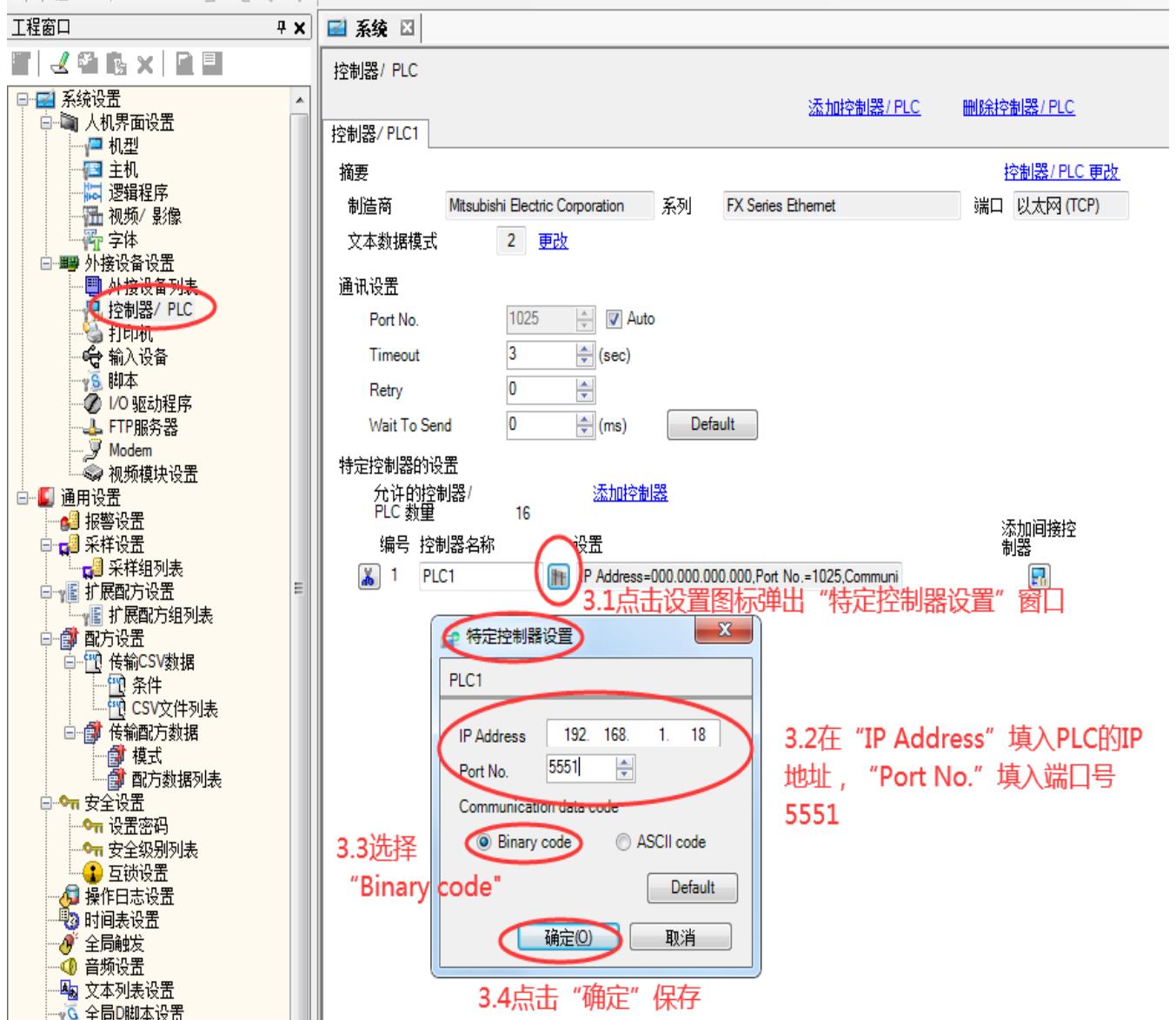
3. Connect with Proface touch screen (software version GP-Pro EX 4.08)

I. mic protocol communication



In "Engineering Window - External Device Settings - Controller/PLC-Controller /PLC Changes", Select the manufacturer, Series, and port as Mitsubishi Electric Corporation, FX Series Ethernet, and Ethernet (TCP) respectively (if the new project has been set, you can ignore this step).

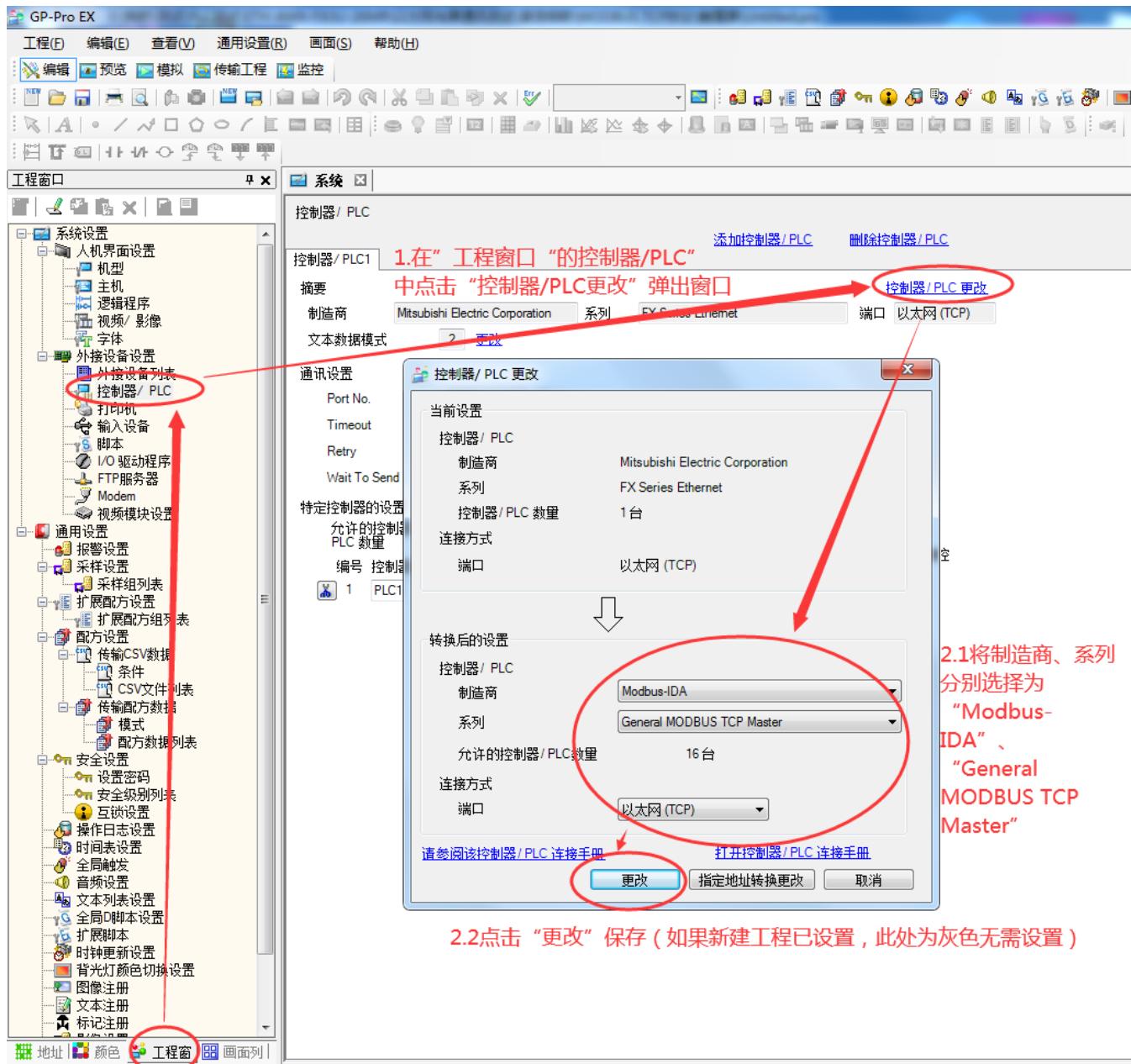
手册



Enter the IP address of the PLC, and the port number "5551 or 6551" through the "Specific Controller Settings" window.

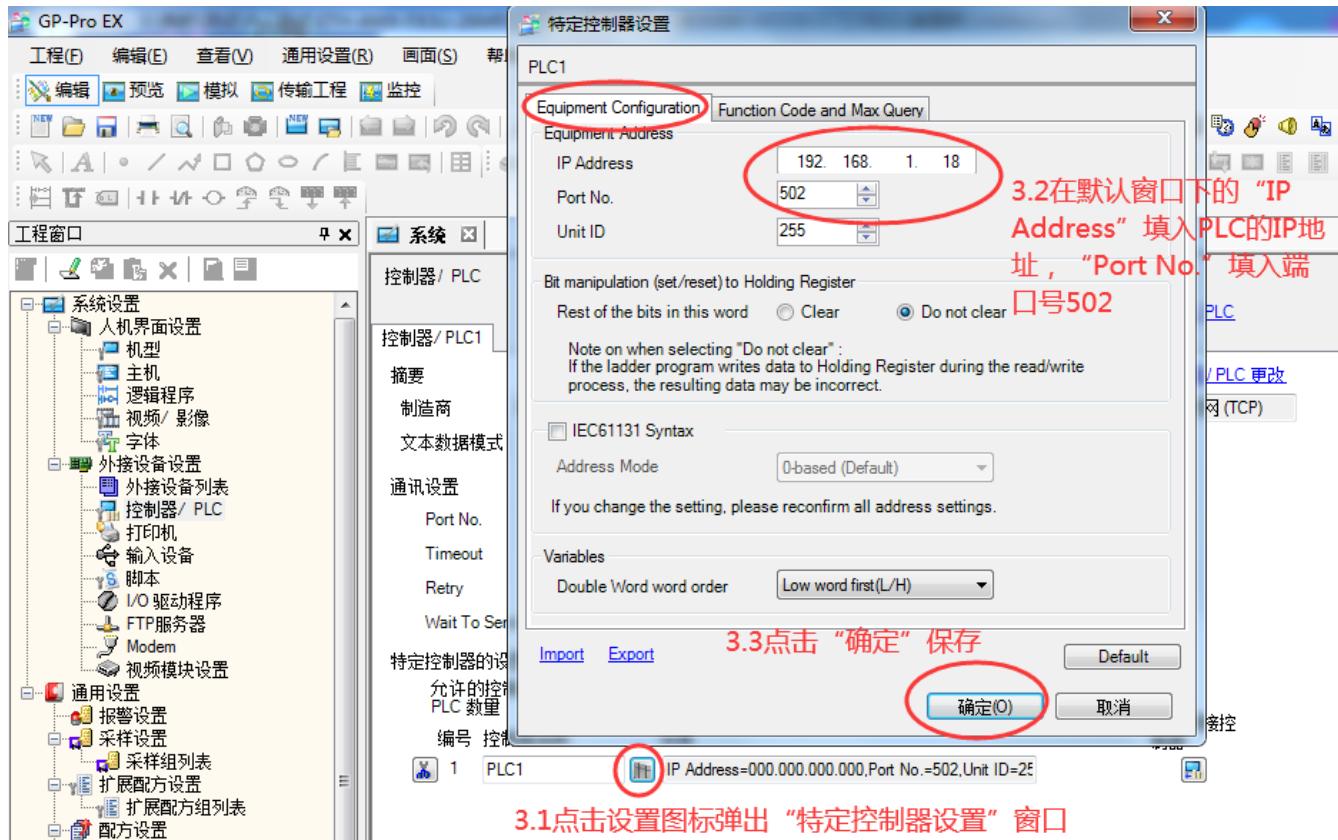
手册

II. MODBUS TCP protocol communication



In "Engineering Window - External Device Setup - Controller/PLC-Controller /PLC change", select the manufacturer, series, and port as "Modbus-IDA" and "General MODBUS TCP Master" respectively (if the new project has been set, you can ignore this step).

手册

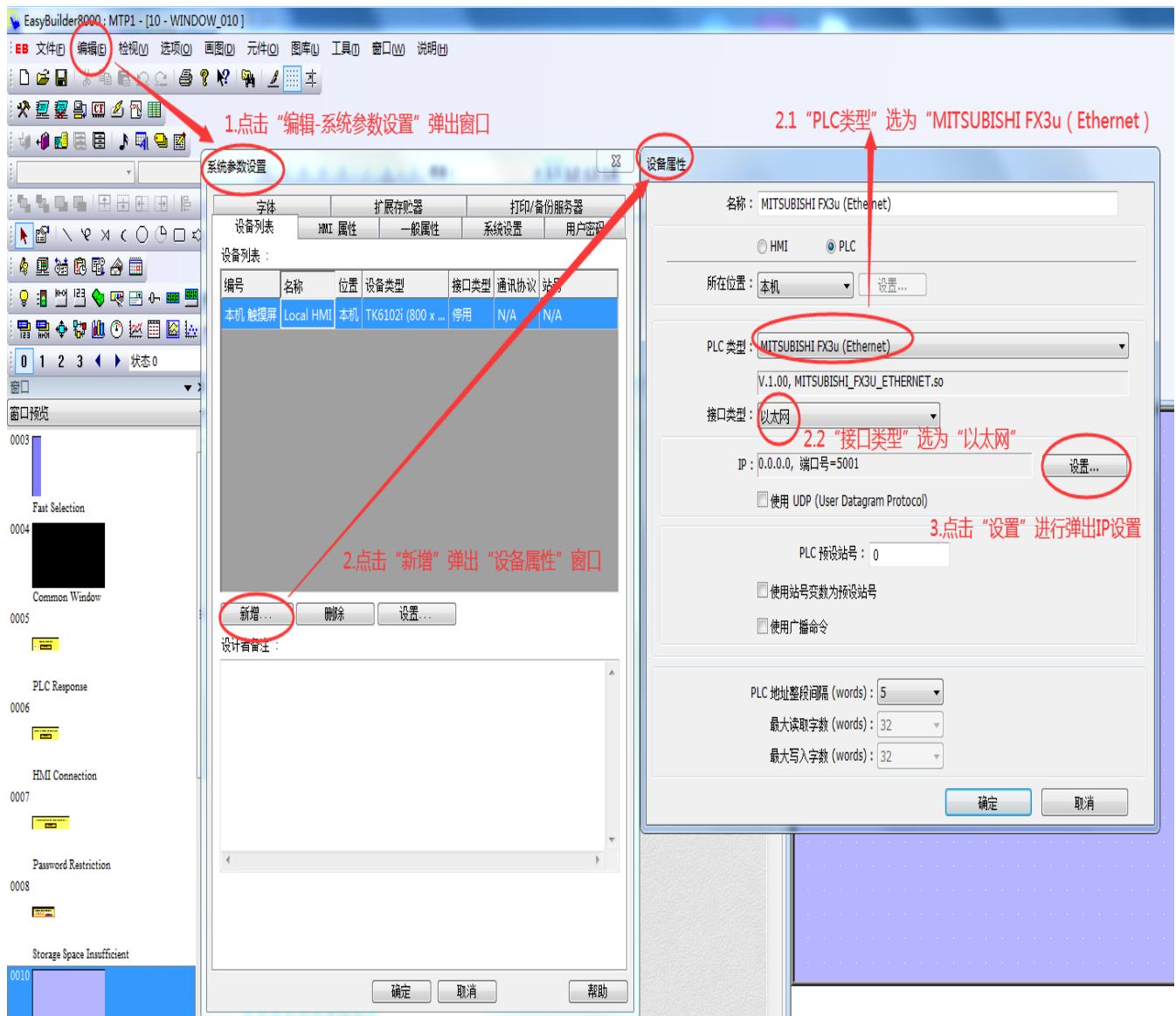


Enter the IP address of the PLC, and the port number "502" through the "Specific Controller Settings" window.

4 Connect to the Valiton touch screen

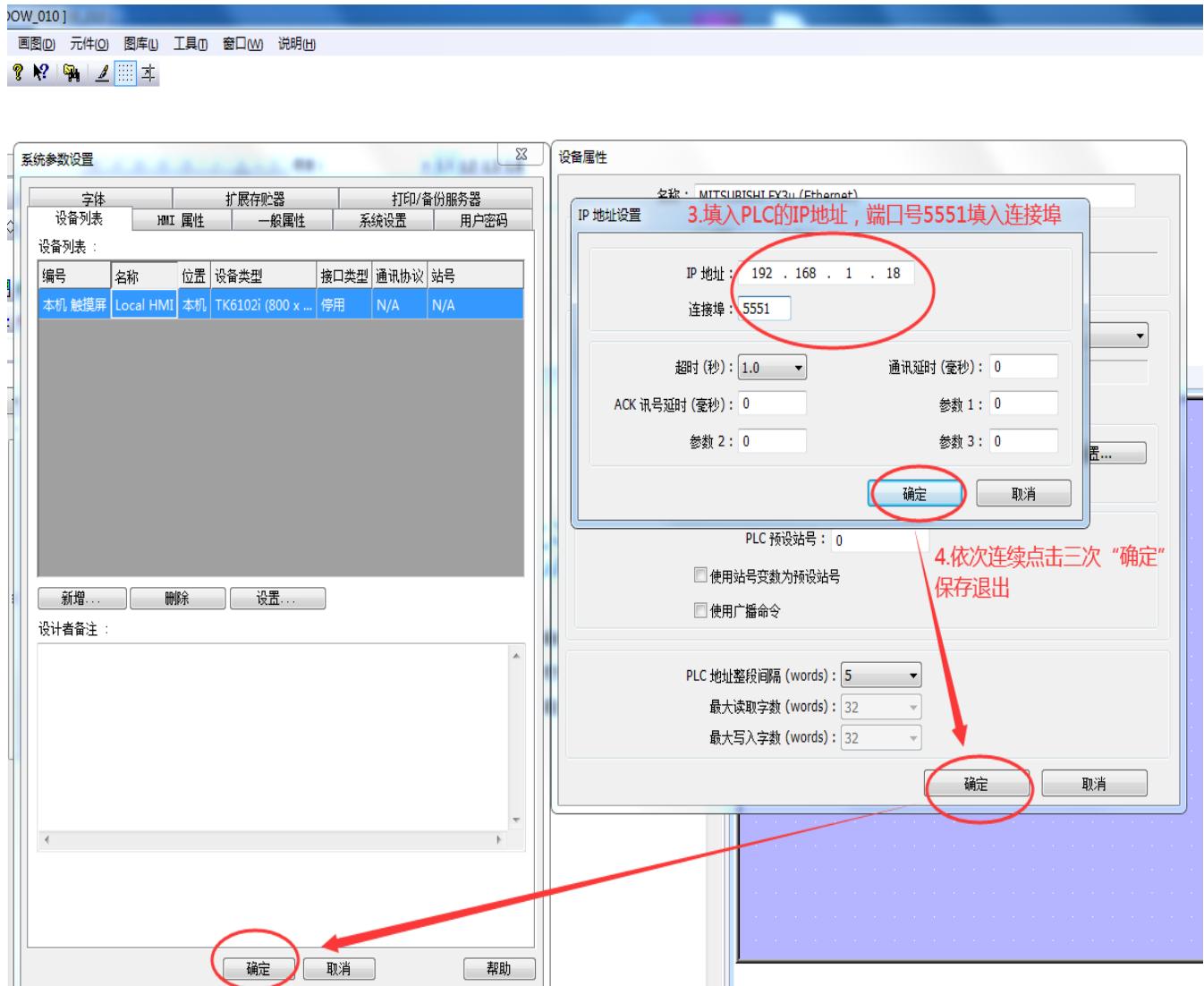
I.mic protocol communication

1) Software EB8000 Project Manager, version V4.43



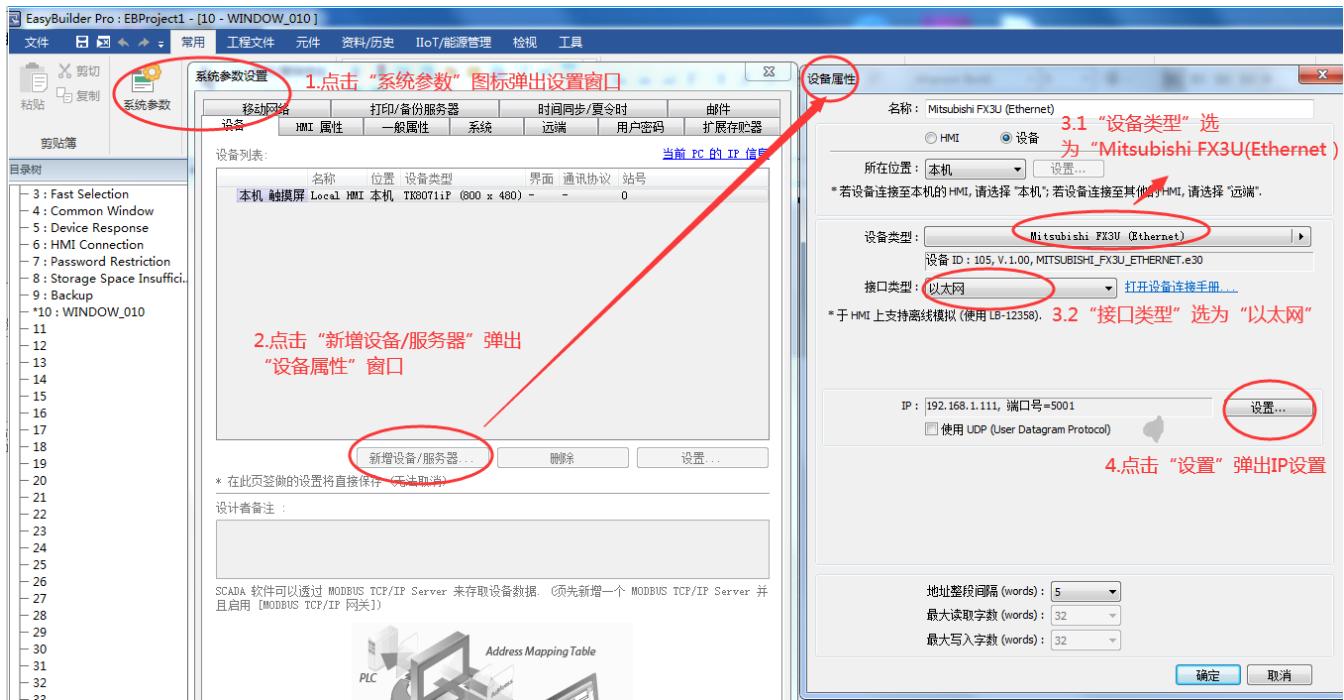
Set PLC type to "MITSUBISHI FX3u (Ethernet)" and interface type to Ethernet in device properties, and set IP.

手册

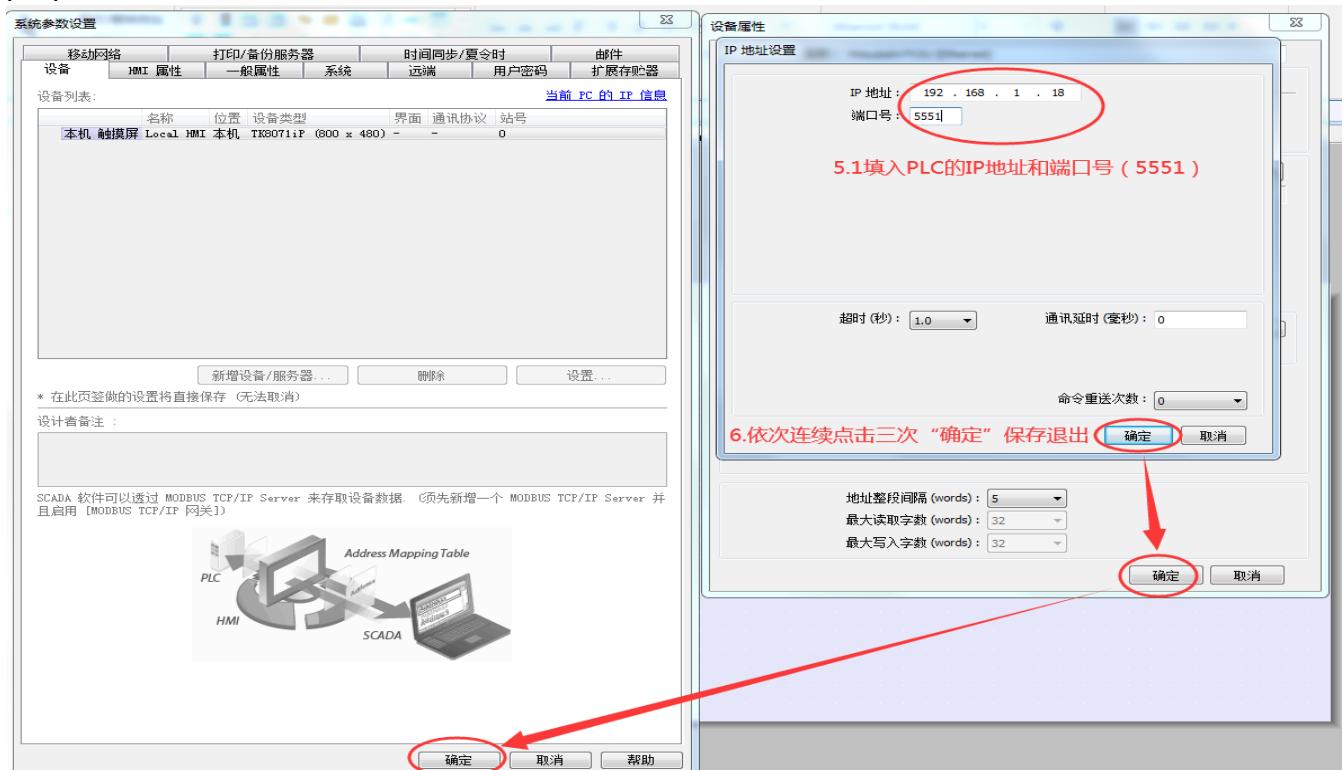


Enter the PLC IP address and port number "5551 or 6551" in the "IP Address Settings" window and save.

2) Software EasyBuilder Pro, version V6.04.01



Set PLC type to "Mitsubishi FX3U (Ethernet)" and interface type to Ethernet in device properties, and set IP.

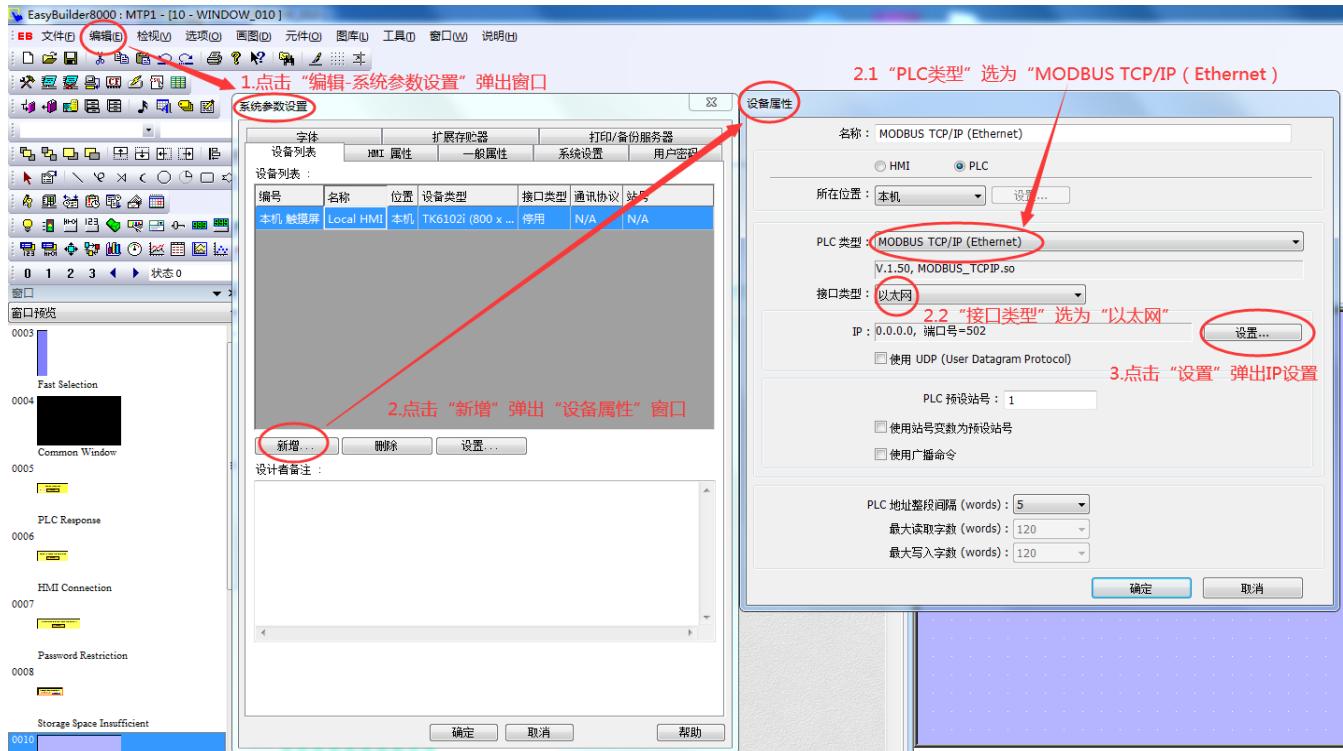


手册

Enter the PLC IP address and port number "5551 or 6551" in the "IP Address Settings" window and save.

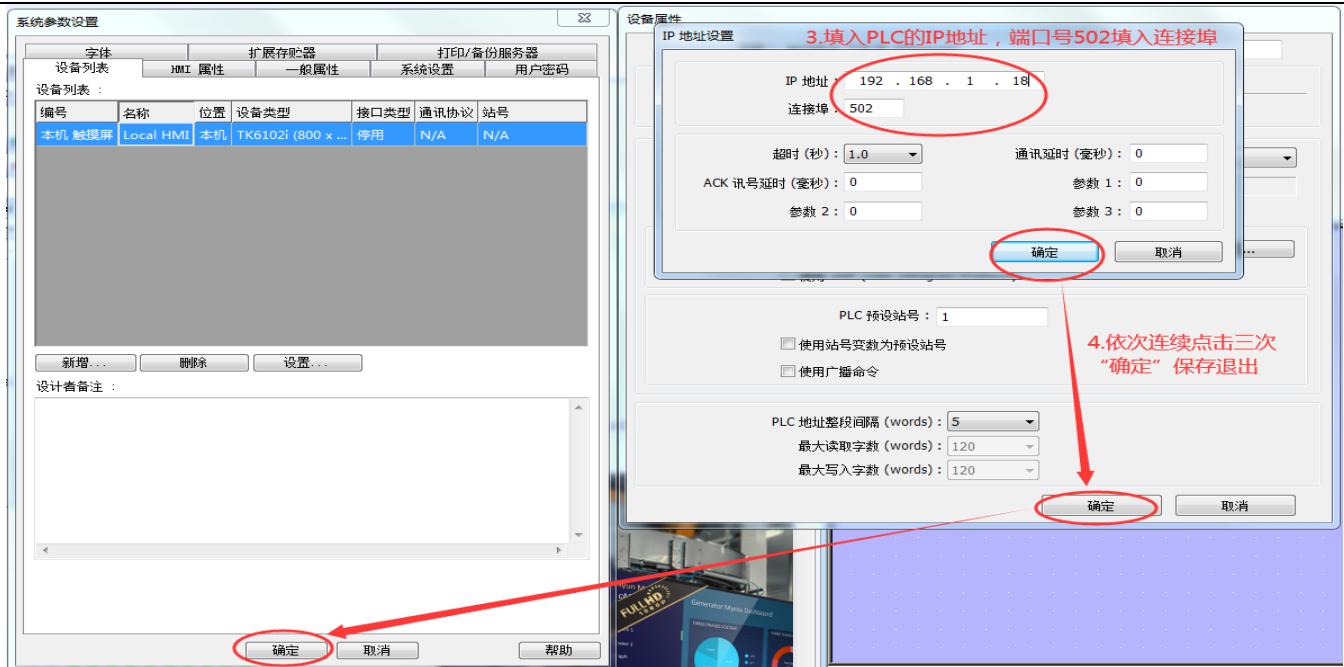
II. MODBUS TCP protocol communication

1) Software EB8000 Project Manager, version V4.43



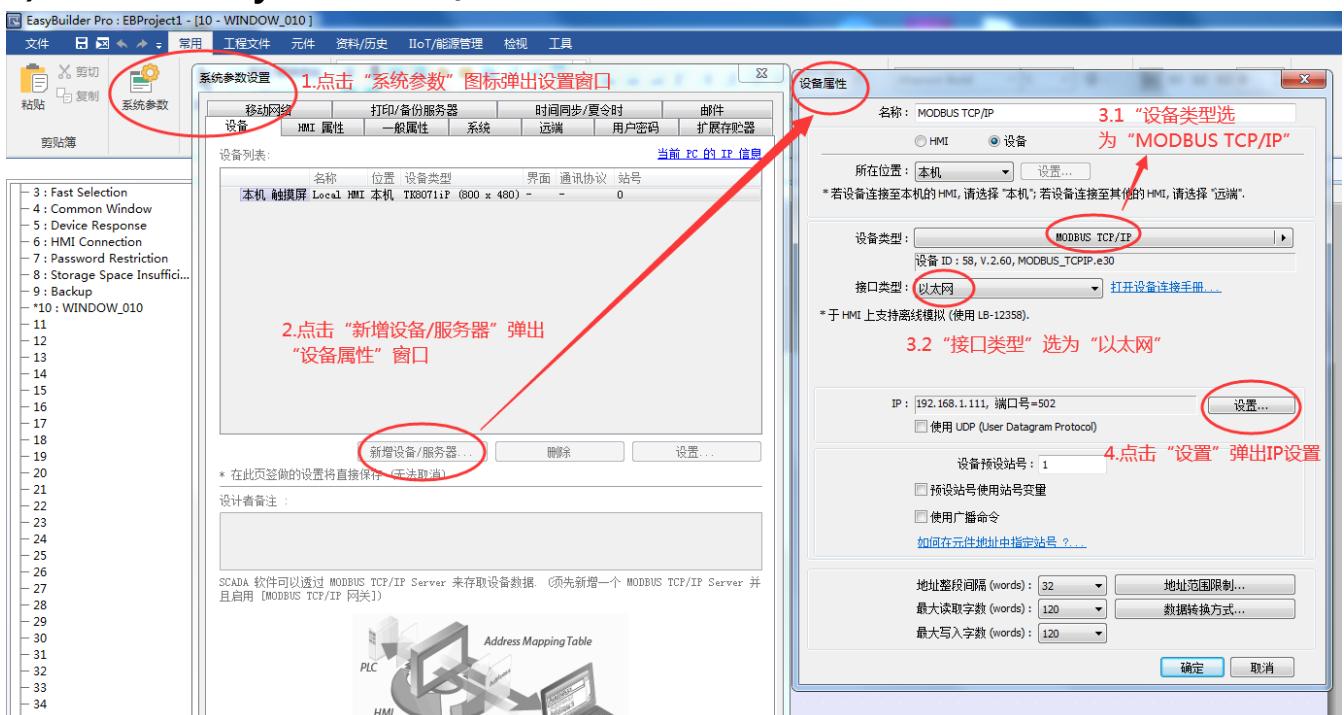
Set PLC type as "MODBUS TCP/IP (Ethernet)" and interface type as Ethernet in device properties, and set IP.

手册



The PLC IP address, and the port number "502" through the "IP address setting" window fill in and save.

2) Software EasyBuilder Pro, version V6.04.01



Set PLC type as "MODBUS TCP/IP (Ethernet)" and interface type as Ethernet in device properties, and set IP.

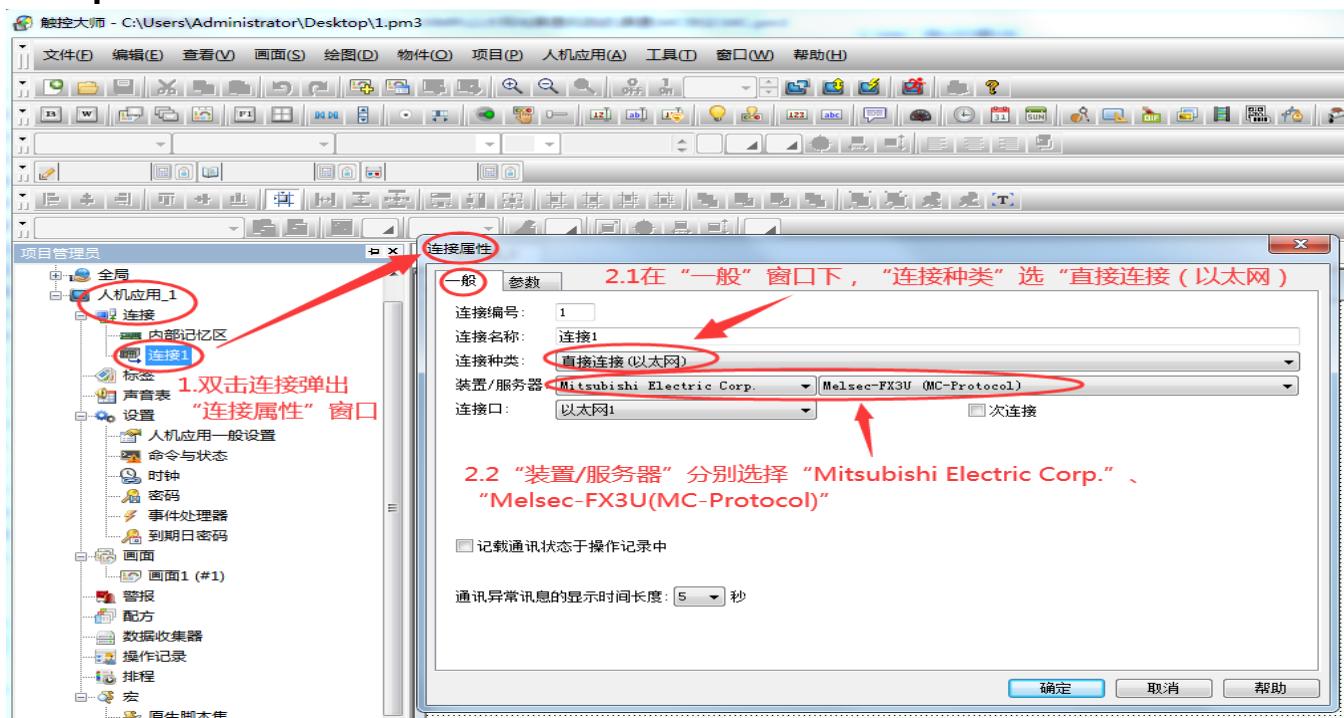
手册



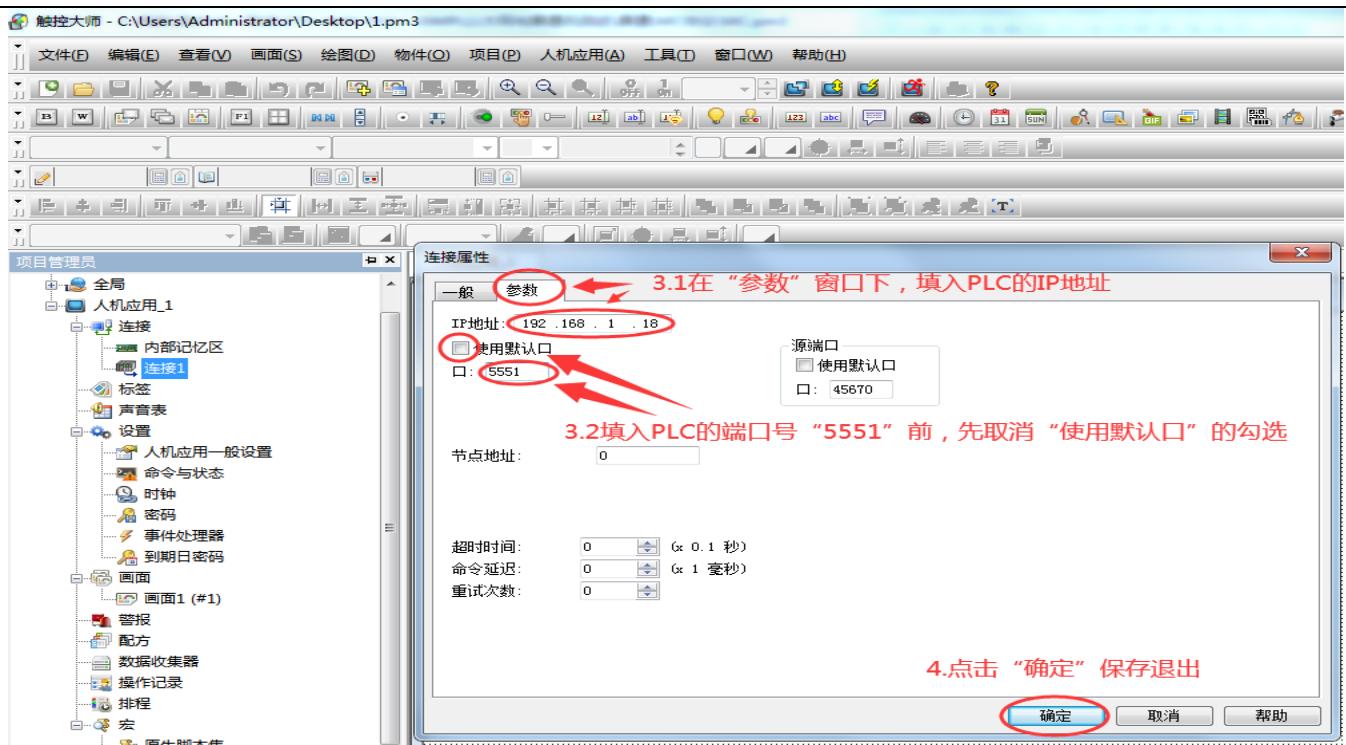
The PLC IP address, and the port number "502" through the "IP address setting" window fill in and save.

5. Connect with the screen Pass touch screen (Touch Master V2.1 software version)

I.mic protocol communication



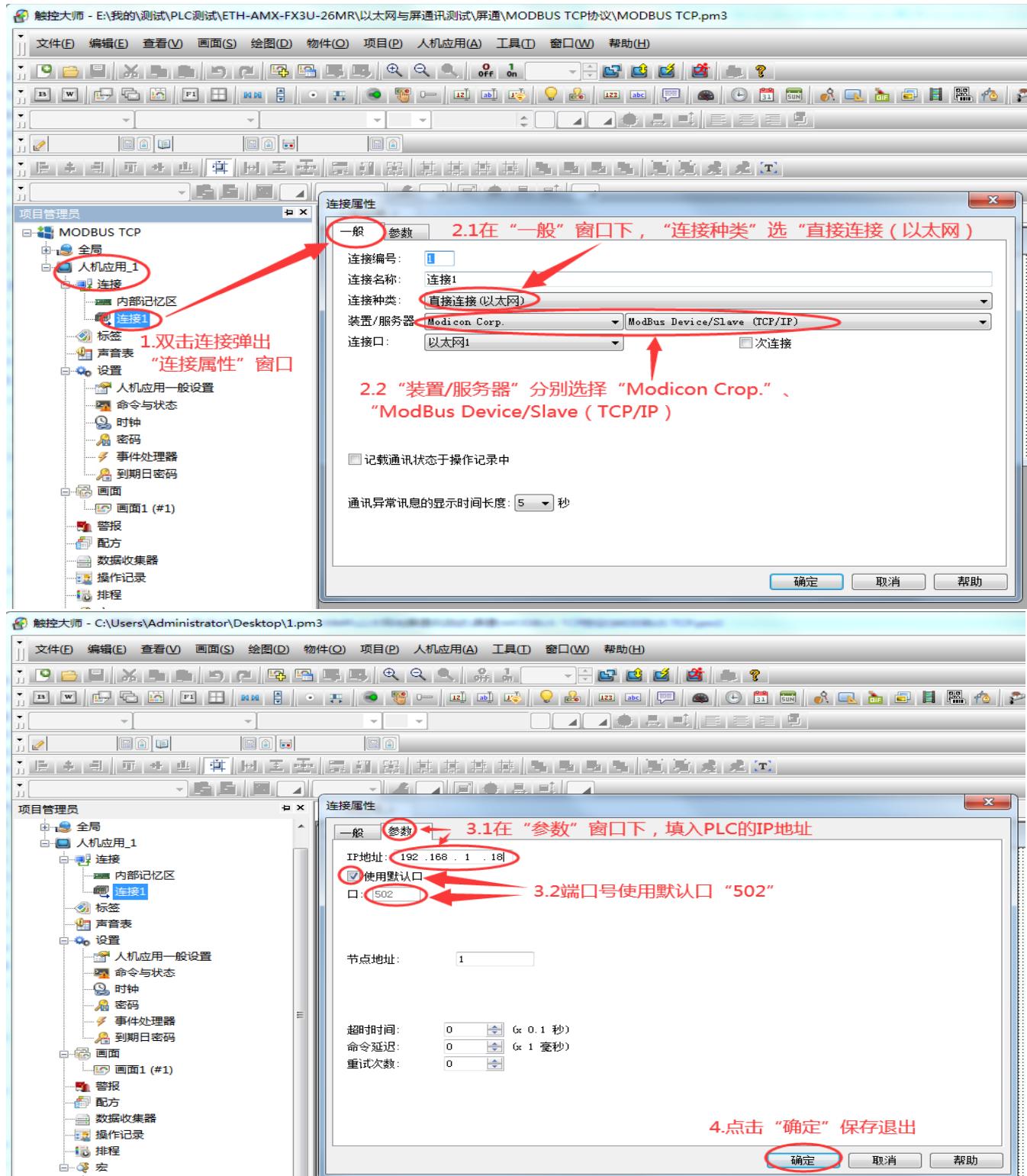
手册



In the Connection Properties window, set Connection Type to Direct Connection (Ethernet) and connection protocol to Melsec-FX3U(MC-Protocol). Set the IP address and port number of the PLC 5551 or 6551 and save the Settings.

手册

II. MODBUS TCP protocol communication



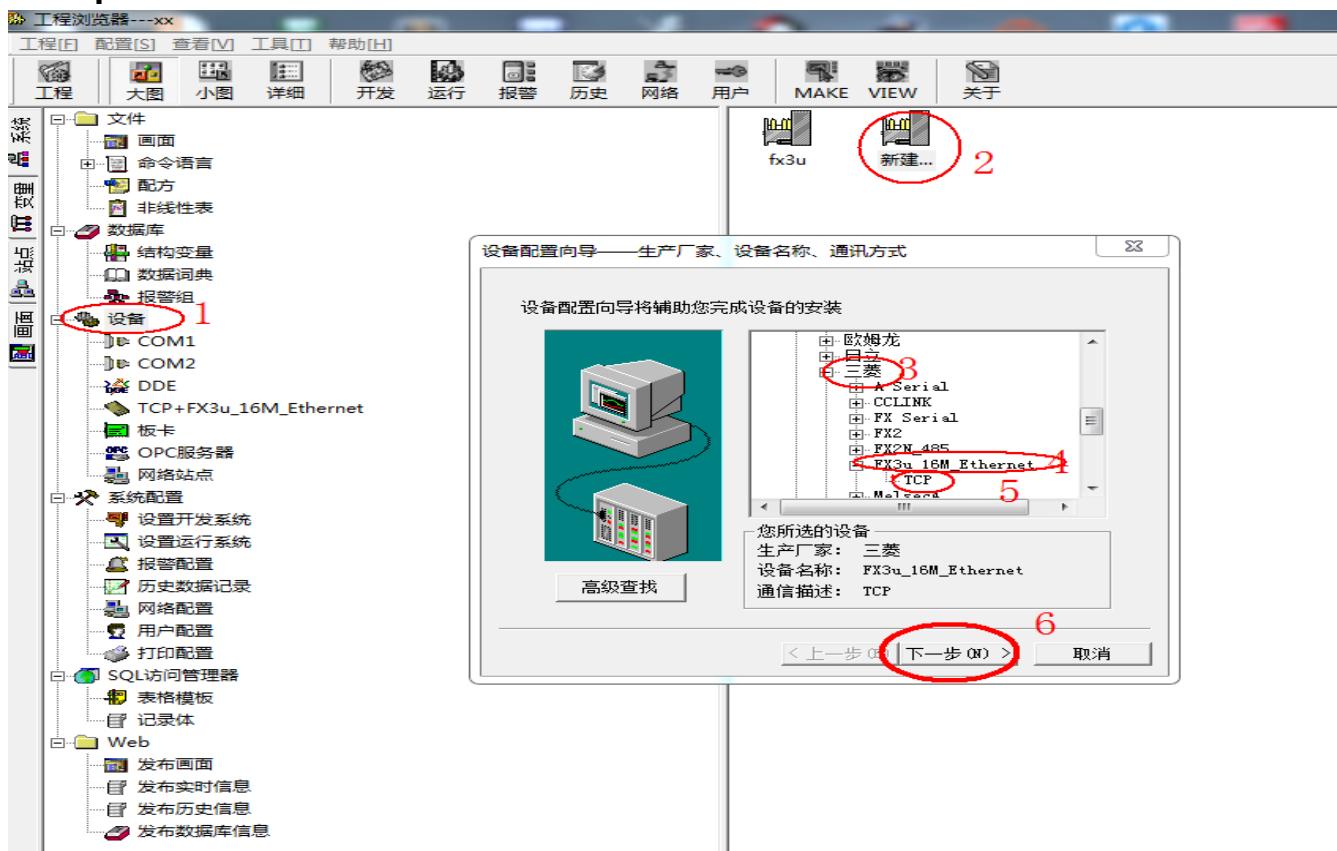
Through the "Connection Properties" window, select "Connection Type" as "Direct connection (Ethernet)", connection protocol as "ModBus Device/Slave (TCP/IP)", set the IP address and port

手册

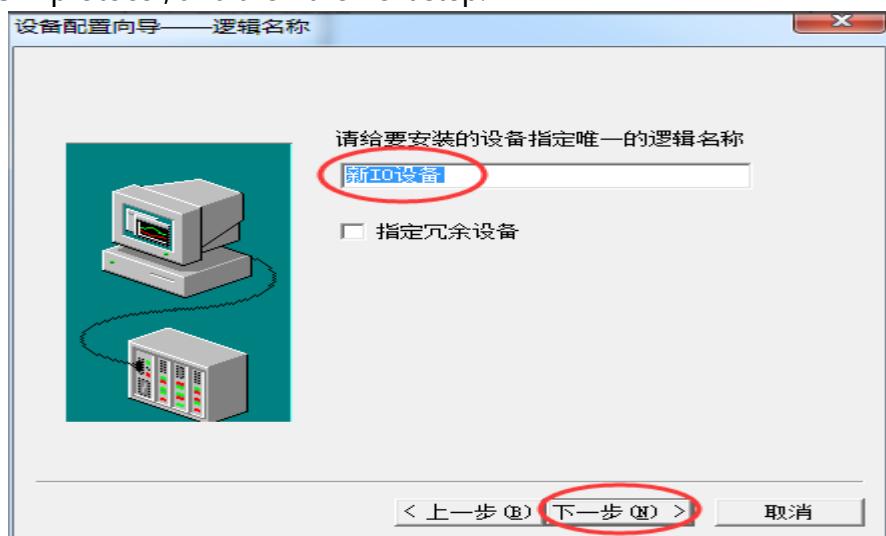
number of PLC "502" and save.

6 Connect to Kingview (software version 6.55)

I. mic protocol communication



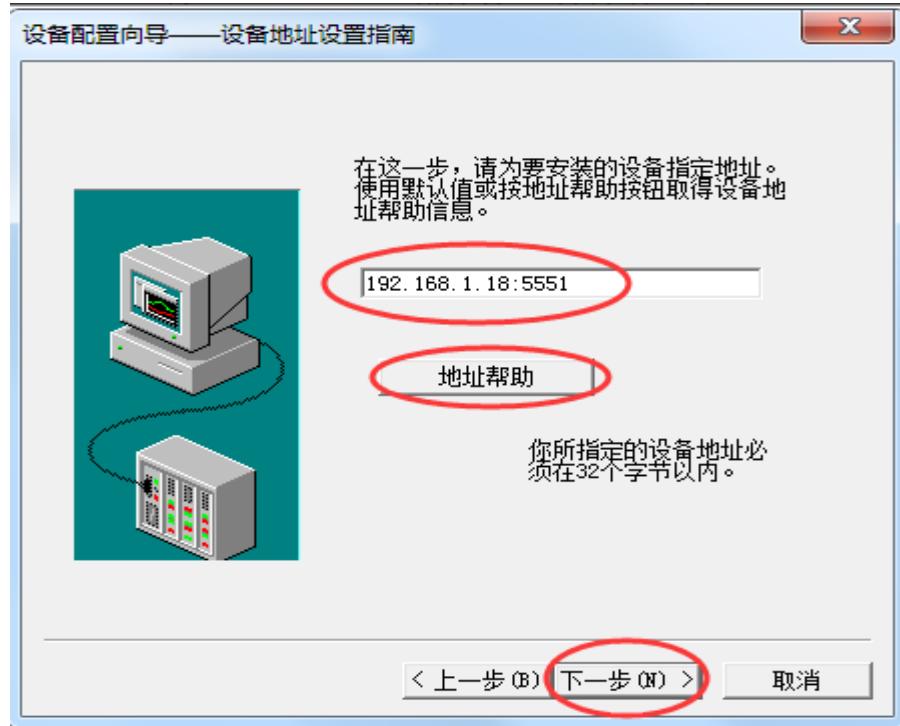
After opening the new project, follow the steps 1-5 above to create "Mitsubishi FX3u 16M Ethernet-TCP" protocol, and then the next step.



Enter the IP address of the PLC and the port number "5551 or 6551", separated by a colon (if

手册

you need to learn more about the IP setting rules, please click the address help).

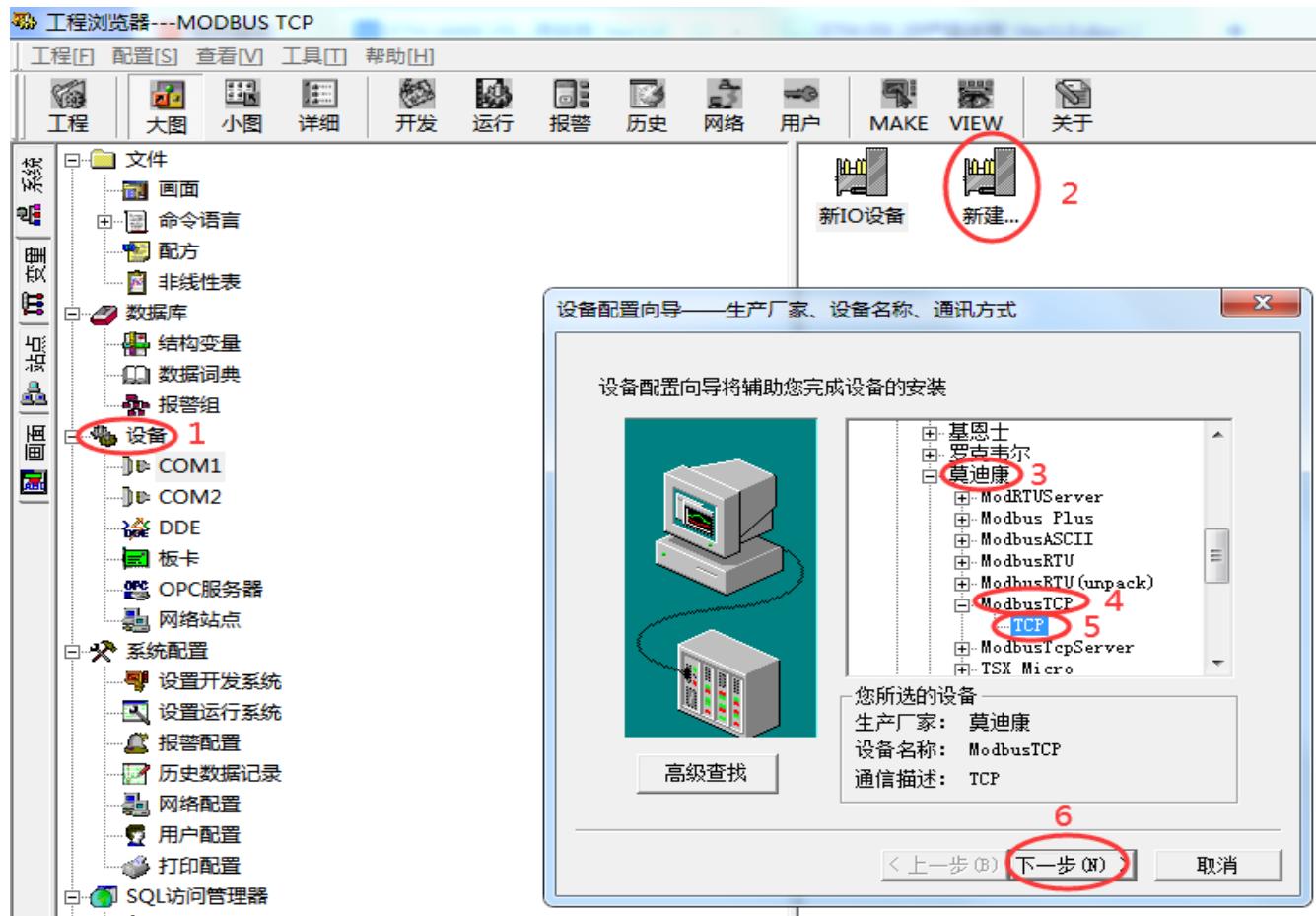


Click Next and wait until you are done.

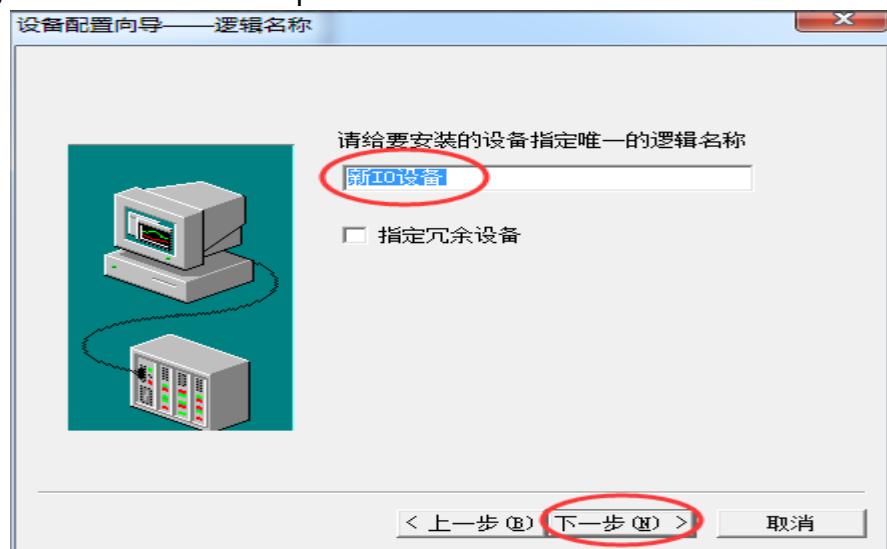


手册

II. MODBUS TCP protocol communication



After opening the new project, create the "Modbus ModbusTCP-TCP" protocol according to the steps 1-5 above, and then the next step.



手册

Enter the PLC IP address and port number "502", separated by colons in the middle, add space to separate the device address 1, and the delay time 1 second separated by "/" (If you need to know more about the IP setting rules, please click the address help).

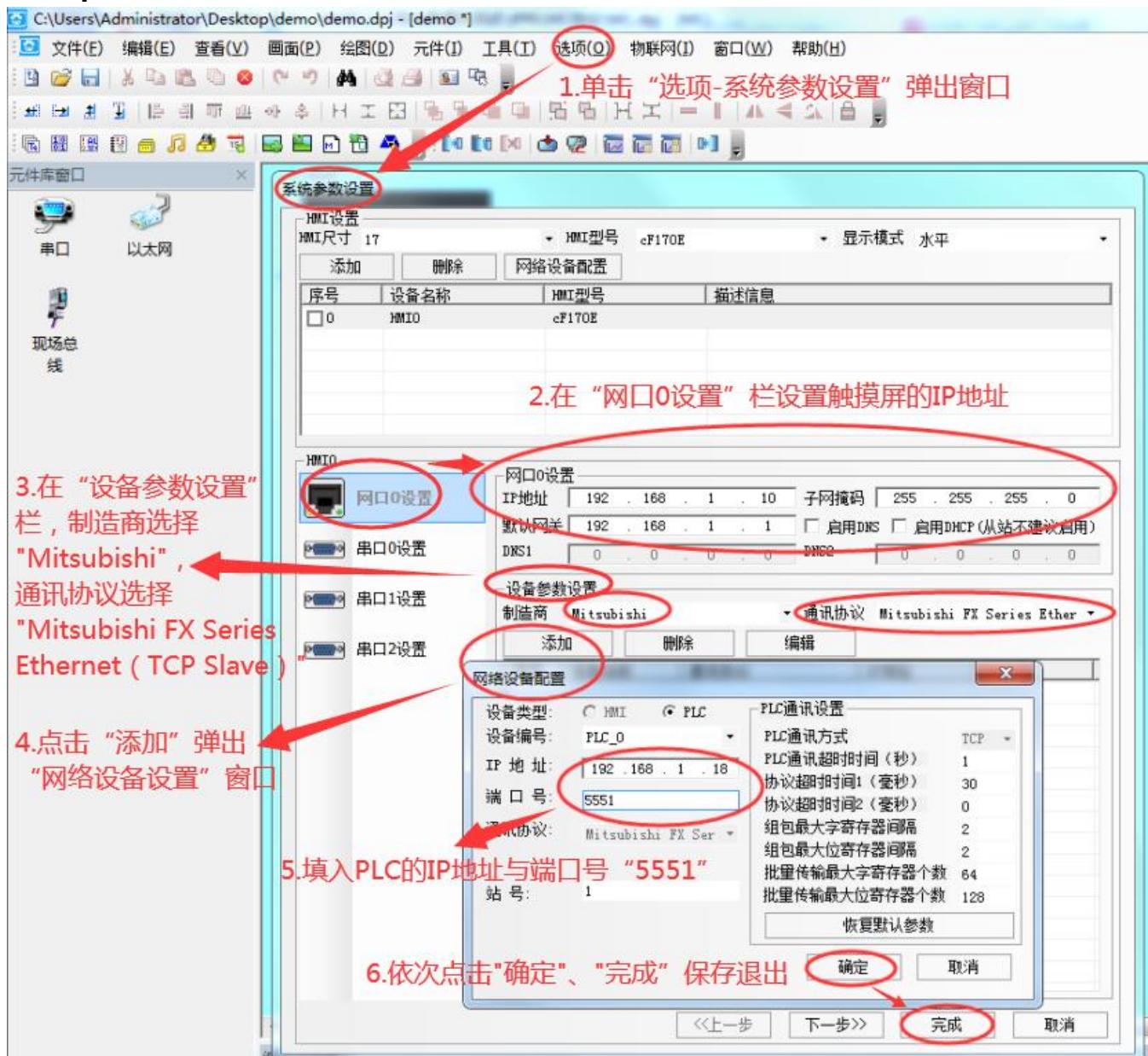


Click Next and wait until you are done.



7 Connect with the Buco touch screen (software version Kinco DTools v3.4)

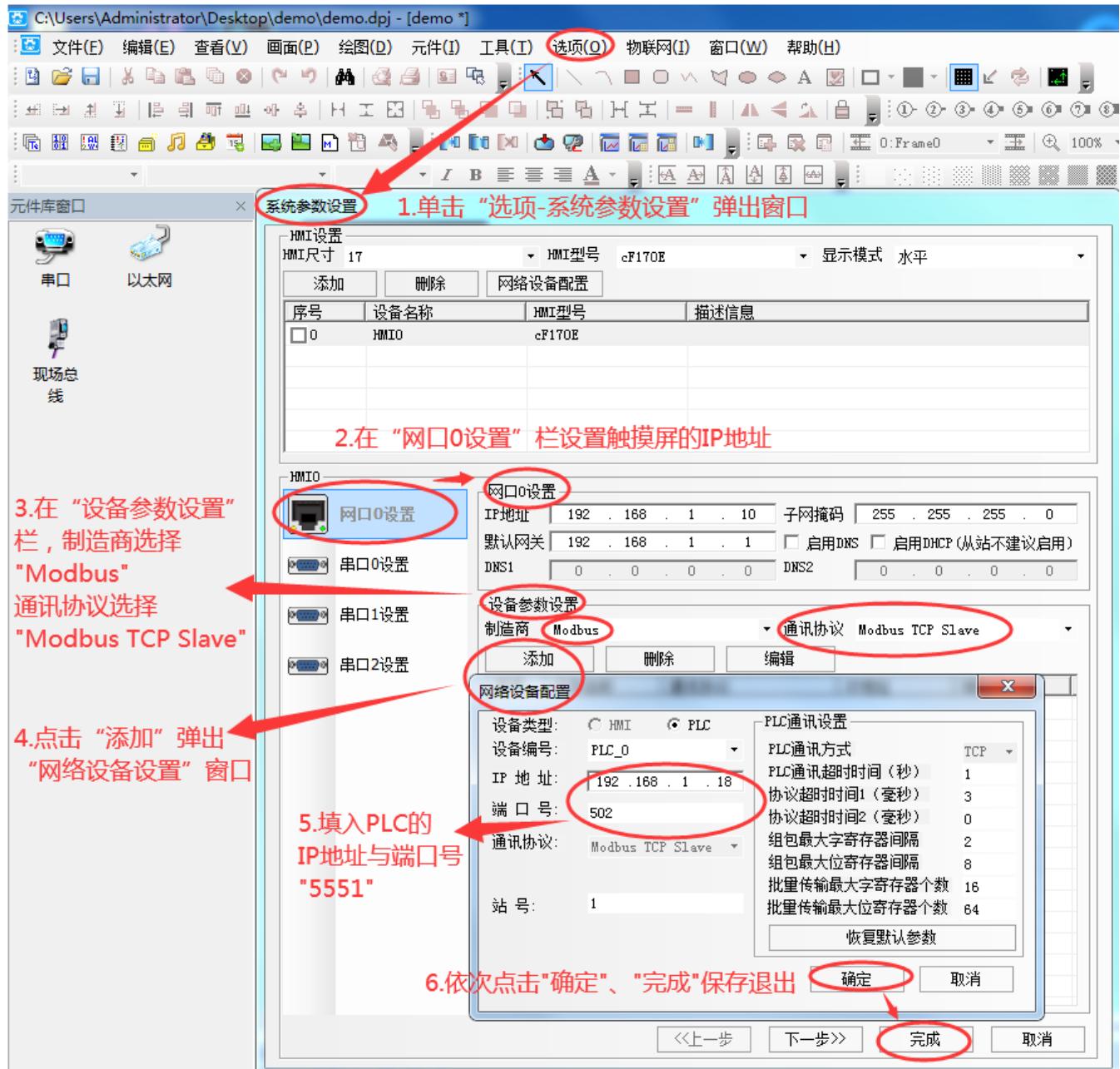
I.mic protocol communication



Open the "System Parameter Settings" window to set the IP of the touch screen, select "Mitsubishi" for the manufacturer of the device parameters, Communication protocol select "Mitsubishi FX Series Ethernet (TCP Slave)", and then fill in the PLC IP address and port number "5551 or 6551" to save the Settings.

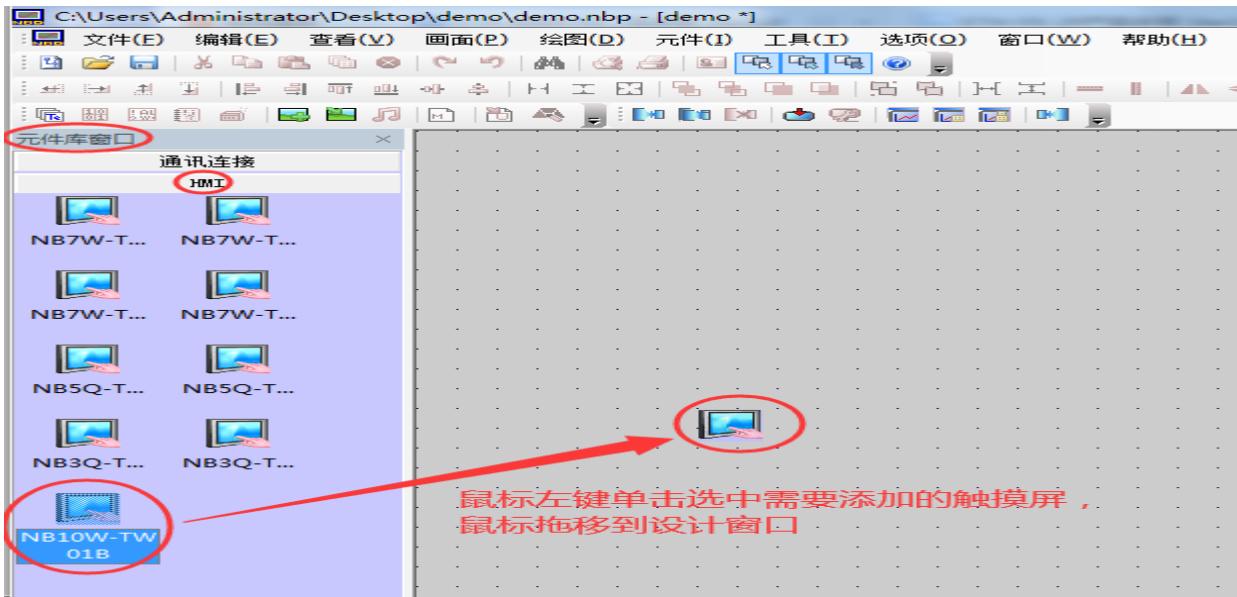
手册

II. MODBUS TCP communication



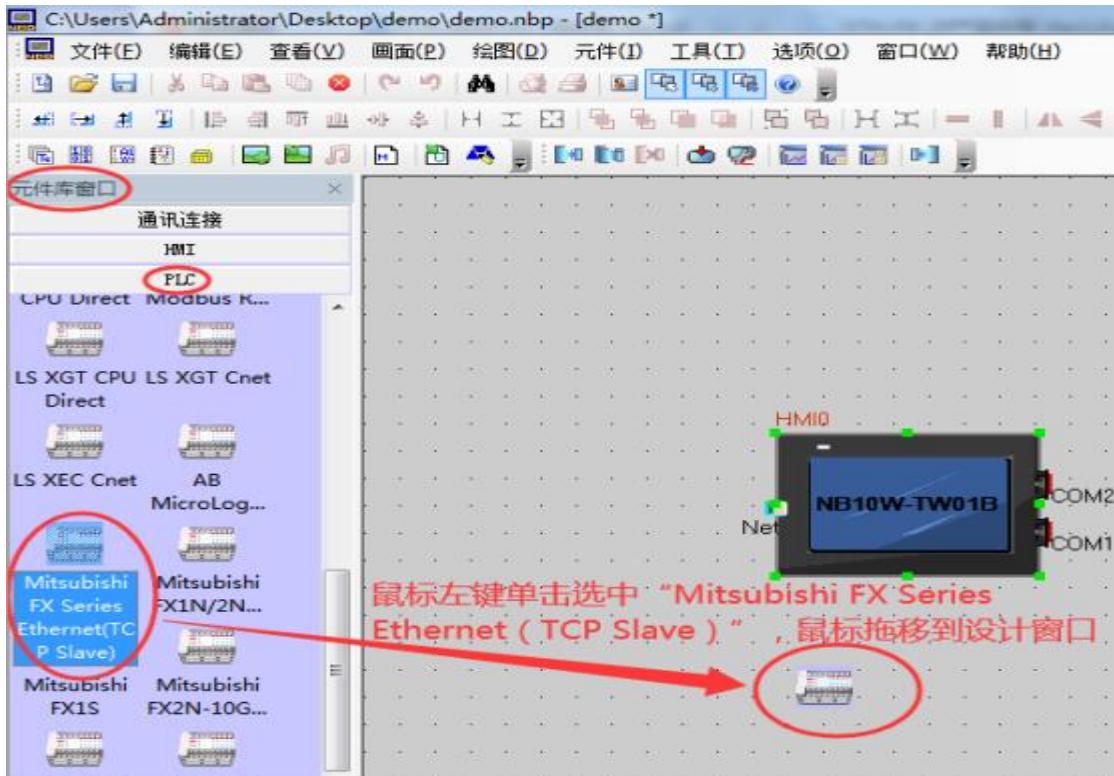
Open the "System Parameter Setting" window to set the IP of the touch screen, select "Modbus" for the manufacturer of the device parameters, select "Modbus TCP Slave" for the communication protocol, and then fill in the PLC IP address and port number "502" to save the Settings.

8. Connect with Omron touch screen (software version NB-Designer V1.4)



Select the user touch screen icon from "Component Library Window -HMI" and drag the HMI icon to the design window after clicking on it.

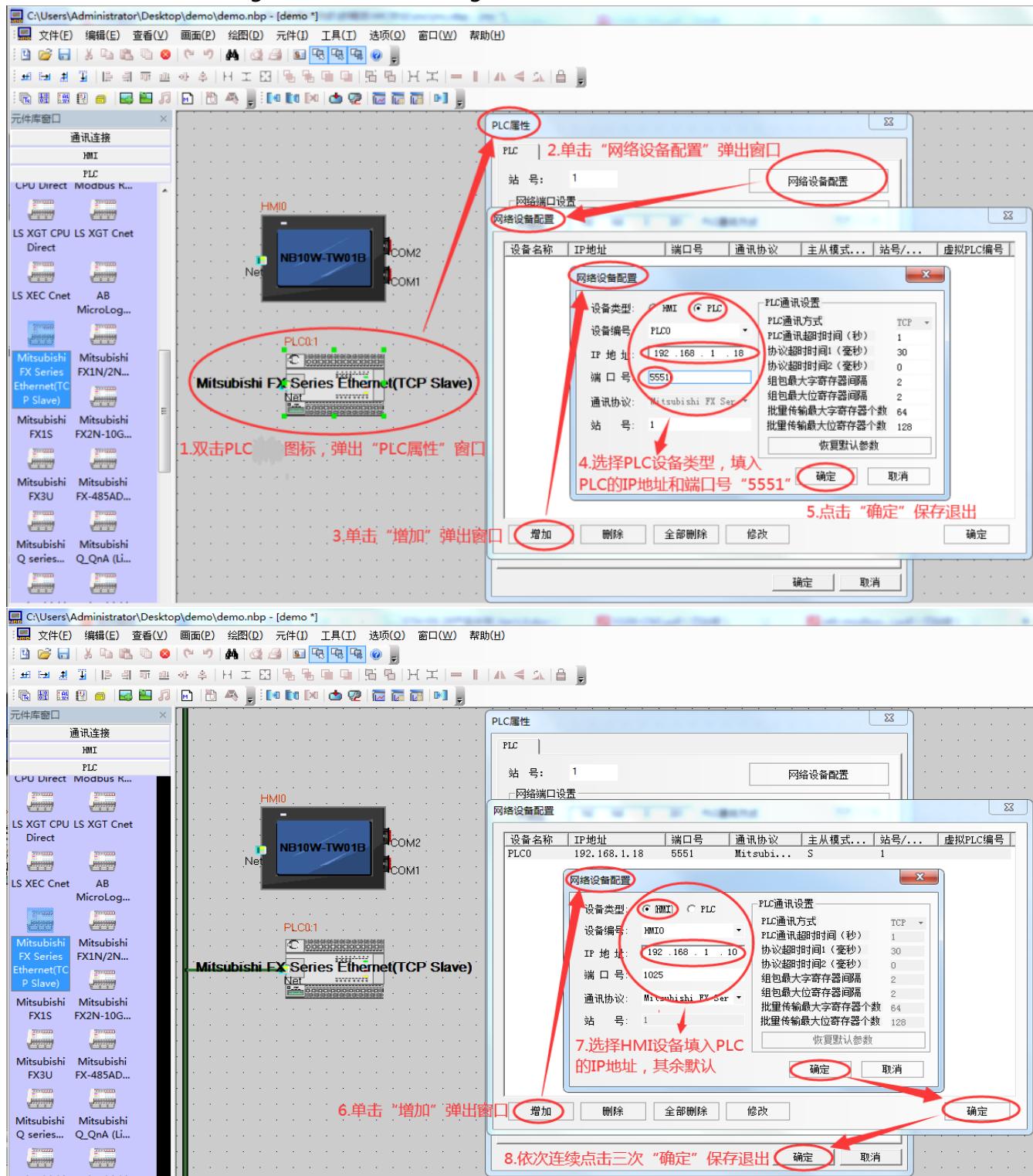
I.mic Protocol communication



Select the "Mitsubishi FX Series Ethernet (TCP Slave)" icon from "Component Library Window -

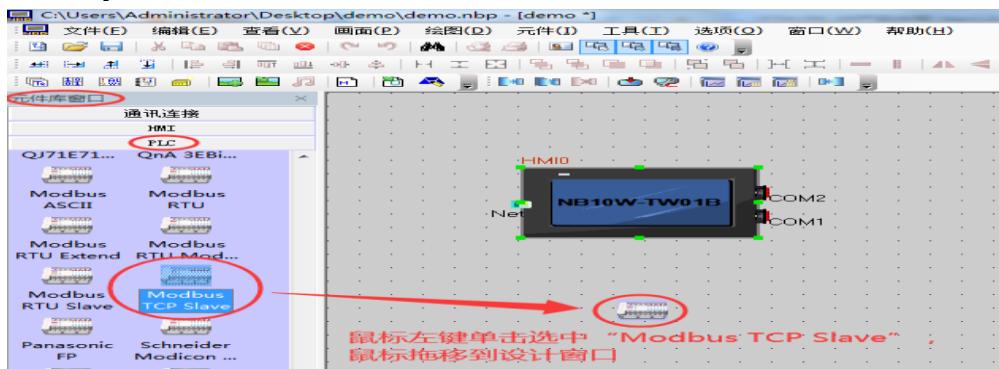
手册

PLC", click on it and drag the icon to the design window.

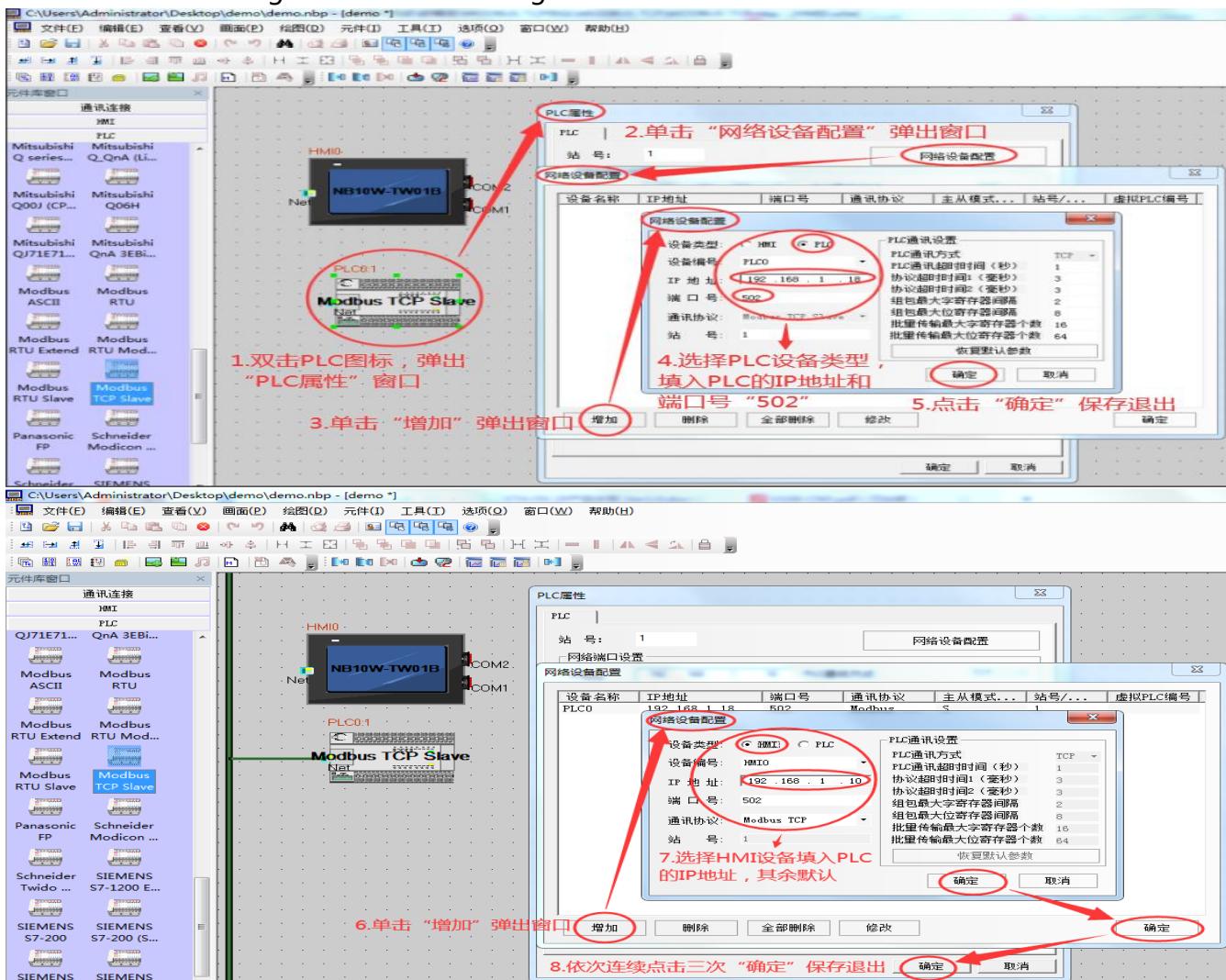


Open "PLC Properties - Network Device Configuration", add the IP address of the PLC with the port number "5551 or 6551", and the IP address of the touch screen after saving exit.

II. MODBUS TCP protocol communication



Select the "Modbus TCP Slave" icon from the "Component Library Window-PLC", click the selected icon and drag the icon to the design window.



Open "PLC Properties - Network Device Configuration", add the IP address of PLC and port number "502", as well as the IP address of the touch screen, save and exit.

Appendix E, PLC version number view

Register D8105 records the PLC version information, as shown in the following figure, the D8105 value is converted into an unsigned decimal number, the ten digit represents the main version of the software version number, and the one digit represents the sub-version of the software version number.

D8105数值 (16位无符号10进制数)

