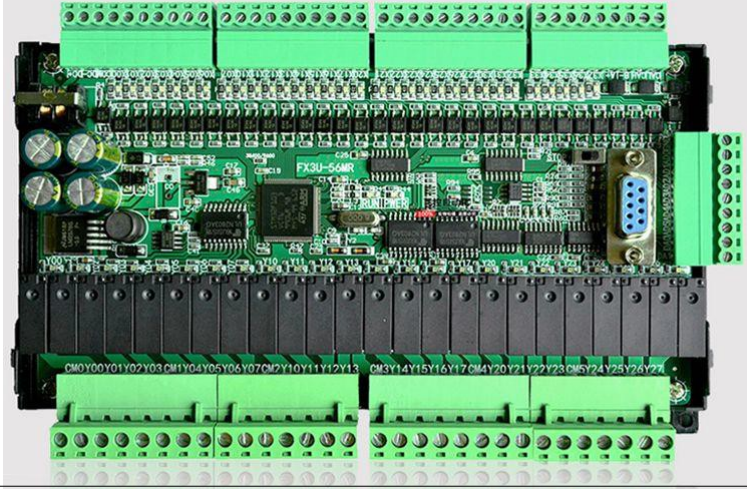


LE3U-56MR-6AI2AO

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Internal components	
Input power	DC24
Program steps	8000 steps ; 2 communication ports : 1*RS232 (Standard 9 pin serial FX3U protocol 38400,7 , E , 1 ; 1*RS485
Input point X element	X0-X37 , DC24 input, active low. Among them, X0-5 is a high-speed counting input (12KHZ).
Input point Y element	Y0-Y27 for the optional relay output, relay output current 5A.
Analog input	6 analog input, 12-bit precision, AD0 ~ AD2 is the voltage input: 0-10V AD3 ~ AD5 is 0-20MA current input; read analog with RD3A means
Analog output	2 analog output, 12-bit precision, output voltage: 0-10V. Output analog voltage with WR3A instruction
Intermediate relay M	M0-M3071,Power-down protection range can be set M0-M1023
Step point S	S0-1023,Power-down protection range can be set S0-S1023
100Ms Timers	T0-T199 , Accumulate power-down save T184-T199
10Ms Timers	T200-T249 , Accumulate power-down save T246-T249
1Ms timer	T250-T383 , Which T250-255 for the cumulative type
16 bit counter	C0-C199 , Power down save C100-199
32 bit counter	C200-C219 , Power down save C220-C234
32-bit high-speed counter	C235-255 ; C235-240 is a single-phase counter , JT Multiplier ; C241-240 is a single , 2 Multiplier;C247-249 is a biphas counter , JT Multiplier ; C250-252 is a biphas counter , 2 Multiplier ; C253 for the biphas counter, 4 times the frequency;
Register D	D0-D7999 , Power-down save range can be set D0-7999,
Indirect addressing pointer V, Z	V0-7 , Z0-7
P subroutine jump number	P0-63
I interrupt	X0-5 external interrupt. Timer interrupt (1MS units). The counter is interrupted.

Special M components	M8000 running normally closed, M8002 power pulse, M8011 for the 10Ms pulse, M8012 for the 100Ms pulse
----------------------	---

二、Basic instructions

Mnemonic	Features
LD 符号	Initial start contact
LDI	Operation start normally closed contact
LDP	The start of the rising edge check operation begins
LDF	The start of the falling edge check begins
AND	Series normally open contact
ANI	Series normally closed contact
ANDP	The rising edge is detected in series connection
ANDF	The falling edge is detected in series connection
OR	Parallel normally open contact
ORI	Parallel normally closed contact
ORP	Parallel connection at rising edge
ORF	Parallel connection is detected on the falling edge
ANB	The circuit blocks are connected in series
ORB	The circuit blocks are connected in parallel
OUT	Coil output drive
SET	Coil action holding
RST	Remove coil movement, hold
PLS	Coil rising edge output
PLF	Coil falling edge output
ALT	Alternating output
MC	Common string connection with coil command
MCR	Common contact release instruction
MPS	Computing storage
MRD	Memory readout
MPP	Memory read not reset
INV	The result is reversed
END	Program end
STL	Step ladder begins
RET	Step ladder end
CALL	调用子程
SRET	序 子程

三、Application instruction

classification	instruction mnemonic	function
Program flow	CJ	conditional Jump
	CALL	Subroutine call
	SRET	Subroutine return
	FEND	End of main program
	FOR	Cycle range start
	NEXT	End of cycle range
Transfer comparison	CMP	compare
	ZCP	Regional comparison
	MOV	Delivery
	CML	Reverse transmission
	BMOV	Send together
	FMOV	Multicast
	XCH	exchange
	BCD	BCD Transformation
	BIN	BIN Transformation
Four logical operations	ADD	BIN addition
	SUB	BIN subtraction
	MUL	BIN multiplication
	DIV	BIN Division
	INC	BIN plus 1
	DEC	BIN minus 1
	WAND	Logical word not
	WPR	Logical word or
	WXOR	Logical word XOR
	NEG	Seeking complement
Cycle position	ROR	Moving right circulation
	ROL	Moving left circulation
	RCR	Right moving position
	RCL	Left moving position
	SFTL	A left moving
	SFTR	Right moving

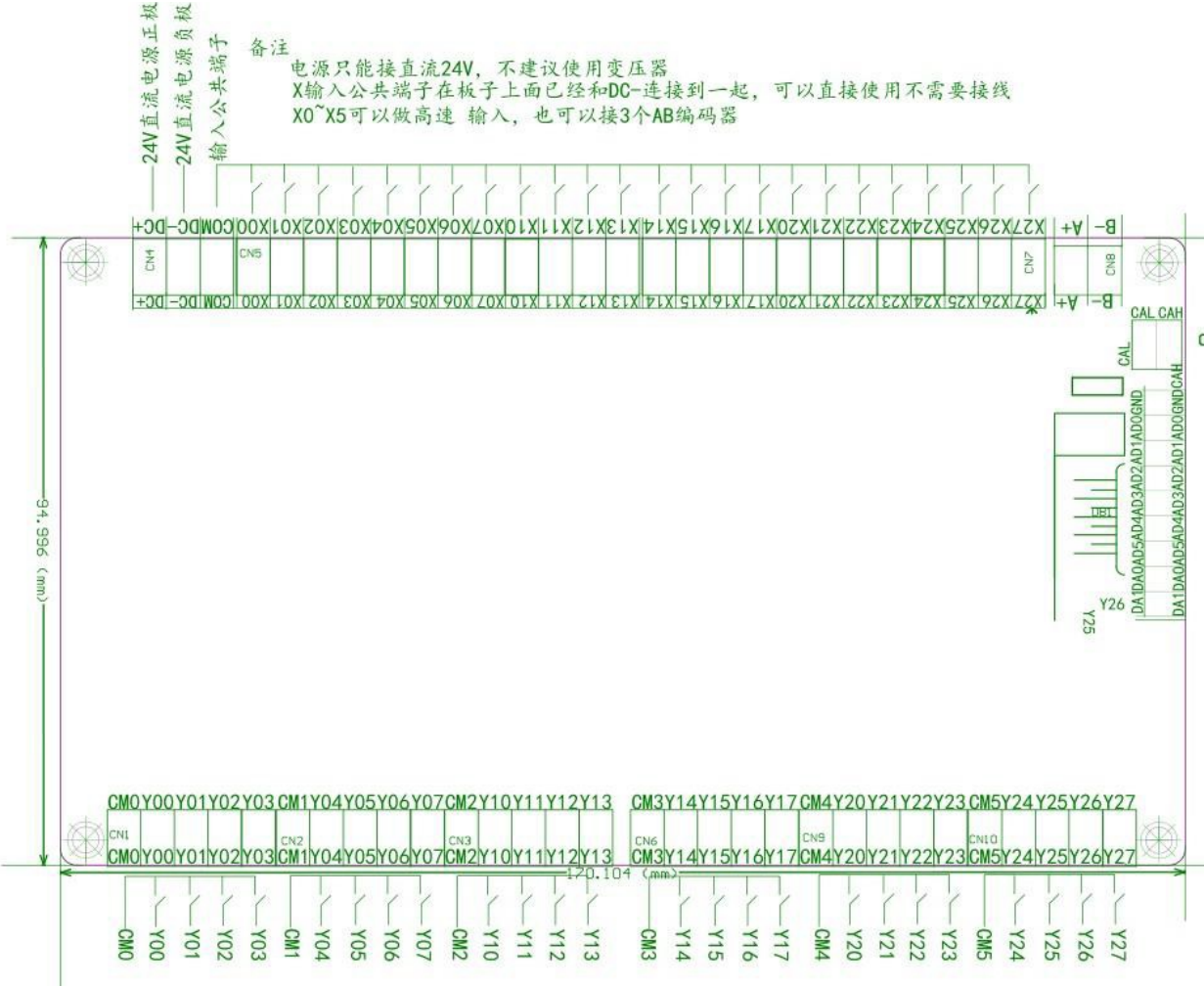
class	instruction mnemonic	function
	ZRST	Batch reset
	MEAN	average value
	FLT	BIN integer → binary floating point conversion
	GRY	BIN integer → Gray code conversion
	GBIN	Gray code → BIN integer
	DHSCS	High speed compare setting
	DHSCR	High speed reset
	SPD	Pulse density can also be measured by pulse width (pulse interval time)
	PLSY	Pulse output
	PLSV	With direction control pulse output
	PWM	PWM, 0-32767us
	PLSR	Pulse output with acceleration and deceleration
	DRVA	Absolute position control
	DRVI	Relative position control
	ZRN	The origin regression supports only 16 bit instructions
	DSZR	Origin regression with DOG search
	DVIT	Interrupt location
	ABSD	Cam control (absolute mode)

	RS	Serial data transfer
	ASCI	HEX-ASCII conversion
	HEX	ASCII-HEX conversion
	CCD	Check code
	PID	PID operation
	SEGD	BCD turn 7 segment code digital tube
	ECMP	Comparison of 2 digit floating point numbers
	EZCP	2 decimal floating point interval comparison
	EBIN	0 decimal floating point, -2 decimal floating point conversion
	EADD	2 decimal floating point addition
	ESUB	2 decimal floating point subtraction
	EMUL	2 decimal floating point multiplication
	EDIV	2 decimal floating point division
	INT	2 decimal floating point -BIN integer conversion
	SIN	Floating point number SIN operation
	TAN	Floating point number TAN operation
	COS	Floating point number COS operation
	ASIN	Floating point number SIN-1 operation
	ATAN	Floating point number TAN-1 operation
	ACOS	Floating point number COS-1 operation
	EXP	2 decimal index arithmetic
	LOGE	2 decimal floating point natural logarithm arithmetic
	LOGE10	2 decimal floating point, commonly used logarithmic arithmetic
	SWAP	Up and down byte conversion

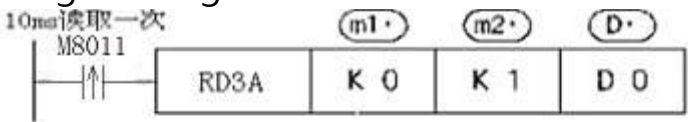
	SER	Data search
	ALT	Alternate output
	RAMP	Ramp signal
	BON	ON bit decision
	SUM	ON bit
	ANS	Alarm setting
	ANR	Alarm reset
	HOURL	Timing technique
	TCMP	Clock data comparison
	TRD	Clock data readout
	TWR	Clock data write
	LD=	(S1=(S2)
	LD>	(S1)>(S2)
	LD<	(S1)<(S2)
	LD◇	(S1)≠ (S2)
	LD≤	(S1)≤ (S2)
	LD≥	(S1)≥ (S2)
	AND=	(S1=(S2)
	AND>	(S1)>(S2)
	AND<	(S1)<(S2)
	AND◇	(S1)≠ (S2)
	AND≤	(S1)≤ (S2)
	AND≥	(S1)≥ (S2)
	OR=	(S1=(S2)
	OR>	(S1)>(S2)
	OR<	(S1)<(S2)
	OR◇	(S1)≠ (S2)
	OR≤	(S1)≤ (S2)
	OR≥	(S1)≥ (S2)

Note: supports 32 bit instruction with pulse execution instruction P.

四、LE3u-56MR-6AI2AO wiring diagram :



五、Host with analog input and output instructions 1, analog reading instructions:



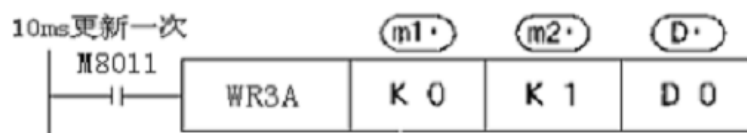
● 模拟量模块的模拟量输入值的读取指令。

(m1) : 模块号, 主机设为K0

(m2) : 模拟量输入通道号
K0-K5(对应AI1-6)

(D) : 读取数据瞬时值保存到D0
保存读取自模拟量模块的数值。

2、Analog output command :



- 用于向模拟量模块写入数字值的指令

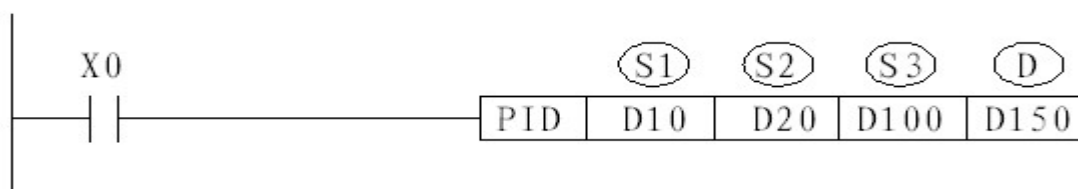
m1. : 模块号, 主机设为0

m2. : 模拟量输出通道号
K0-K1

D. : 写入数据
指定写入模拟量模块的值(0-4095)

六、The clock module Description: Set the clock M8015 should be set to resume operation M8015 reset. D8018 for the year, D8017 for the month, D8016 for the day, D8019 for the week, D8015 for hours, D8014 for the minutes, D8013 for the second. You can use the clock data read instruction TRD to read the clock data to the general register or to modify the clock with the clock write instruction TWR. Use this instruction without setting the M8015.

七、PID operation instructions :



This instruction is used for the PID control PID operation program.

S1 : Set target value ;

S2 : Current value (feedback back value)

S3: PID control parameter, occupies S3 consecutive 9 consecutive D registers. S3 + 3 is the coefficient of variation K3; S3 + 2 is the integral coefficient KI; S3 + 3 is the differential coefficient KD; S3 + 4 is the error coefficient KE, only when the error is greater than this value only PID processing; S3 +5 output upper limit value PMAX; S3 + 6 output lower limit value PMIN; S3 + 7 standby; S3 + 8 standby; D: control value output;

八、CAN host automatic communication: (debugging)

Station number	Data exchange area	Station number	Data exchange area	Station number	Data exchange area
0	D3500-3515	8		16	
1	D3516-3531	9		17	
2	D3532-3547	10		18	
3	D3548-3563	11		19	
4	D3564-3579	12		20	
5	D3580-	13		21	
6		14		22	
7		15		23	

CAN communication example : LD M8002 //Power on once

SET M8181 //CAN Host communication allowed

MOV K0D8121 //Set the station number to 0

Station No. 0 PLC to write data to the D3500-3515, other station number of the PLC as long as the data to read their own D3500-3515 is equal to read the station number 0 D3500-3515 data. Station No. 0 PLC to read its own D3516-3531 data is equal to read the station number 1 D3516-3531 data.

CAN communication between the CAN_H between the host and other PLC CANH connected, CAN_L and other PLC CAN_L connected to the transmission distance, to connect the PLC board on the terminal resistance, the corresponding DIP switch (upper left corner 2 That) hit the ON position.

九、RS232 communication port: default communication protocol : FX3u · 38400,7 · E · 1

with 38400/9600 resistance	baud rate 38400
without 38400/9600 resistance	baud rate 9600

十、Serial data transmission :

Special relay	Explain	Special relay	Explain
D8120	RS485 communication format definition	M8121	When data is sent, set position, send end, automatic reset
D8121	RS485 communication station number setting	M8122	Send a request, when M8122 is set, once the communication port is free, open it
D8122	Send data residue	M8123	After receiving a frame of data, the bit is automatically received
		M8124	Data receive center, received data reset
White 3 foot RS232 communication port			
D8126	RS232 communication format definition	M8125	When data is sent, set position, send end, automatic reset

D8127	RS232 communication station number setting	M8126	Send a request, when M8126 is set, once the communication port is free
D8128	Send data residue	M8127	After receiving a frame of data, the bit is automatically received
		M8128	Data receive center, received data reset
M8129: Communication timeout mark, M8029 is set when the host sends the command and the machine does not respond in D8129 time			

D8120 of the corresponding communication parameters are as follows :

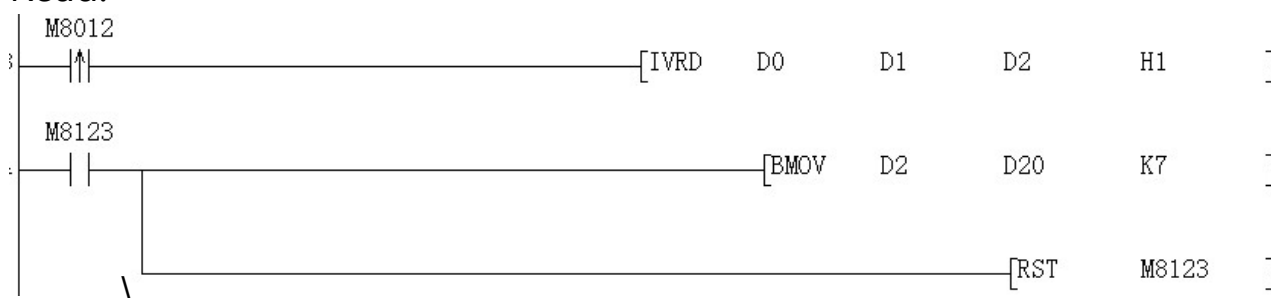
Bit number	Name	content	
		0 (bit OFF)	1 (bit ON)
B0	Data length	7 bit	8 bit
B1 B2	Parity bit	b2 b1 (0 , 0) : 无校验 (0 , 1) : 奇数 ODD (1 , 1) : 偶校验 EVEN	
B3	Stop bit	1 bit	2 bit
B4 B5 B6 B7	Transmi ssion rate bps	b7 b6 b5 b4 { 0 , 0 , 1 , 1 } : 300 { 0 , 1 , 0 , 0 } : 600 { 0 , 1 , 0 , 1 } : 1200 { 0 , 1 , 1 , 0 } : 2400	b7 b6 b5 b4 { 0 , 1 , 1 , 1 } : 4800 { 1 , 0 , 0 , 0 } : 9600 { 1 , 0 , 0 , 1 } : 19200 { 1 , 0 , 1 , 0 } : 38400
B8	Start character	NO	Yes (D8124)
B9	Terminator	NO	Yes (D8125)
B10 B11	⌈ can not be used		
B12 B13 B14 B15	communication protocol	B15 b14 b13 b12 { 0 , 0 , 0 , 0 } : MITSUBISHI FX2N protocol (slave) { 0 , 1 , 0 , 0 } : MODBUS RTU (slave) { 1 , 0 , 0 , 0 } : MODBUSRTU (host, IVRD, IVWR instructions) { 1 , 1 , 0 , 0 } : Free communication (RS instruction, check with CCD)	

When the M8120 is reset, when the RS is executed, the arguments are given to the RS485 port. When the M8120 is set, when the RS is executed, the arguments given are for the RS232 port.

CCD instruction :

The N component data, starting with the S specified component, stores the sum of its data with the CRC checksum data stored in D. and D.+2, D.+3. This example and checksum are placed in D0, and the CRC check is placed in D2, D3. Eleven communication with frequency conversion or instrument:

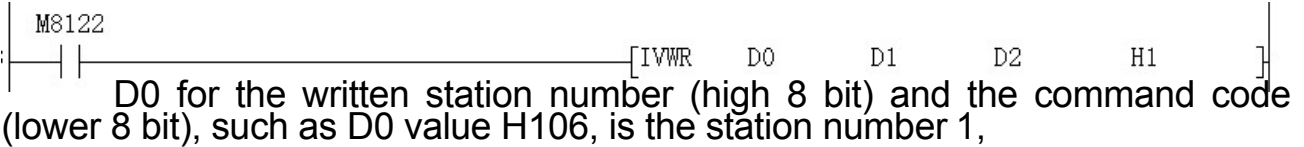
Read:



D0 reads the station number (8 bits high) and the command code (low 8 bits), such as D0 whose value is H103, which is the station number

1, read the command 3. D1 is the data address to be read, D2 is the first address of the data received by the inverter or instrument, and the data is received. If channel 0 and M8123 are set, H1, high 8-bit channel, low 8-bit read number. Through channel 0 (485 channel), read 1 data. If bit H101, is through the channel (RS232 channel) 1 to read a data.

Write:



Write a single data command. D1 is the data address to be written, and D2 is the first address of the write frequency or instrument data. H1, the upper 8 bits are the channel, and the lower 8 bits are written. Write 1 data via channel 0 (485 channel). If it is H101, is through the channel (RS232 channel) 1 to write a data. M8122 is automatically reset.

12, high-speed counting: SPD instruction (support X0-5), if the encoder is a 360-pulse pulse, 2 times the frequency can be 720 pulses, 4 times the frequency can be 1440 pulses, thereby enhancing the encoder Resolution.

Count input	Single phase counter number	Up and down count direction switch	Count input	Single phase 2 frequency doubler	Up and down count direction switch
X0	C235	M8235	X0	C241	M8241
X1	C236	M8236	X1	C242	M8242
X2	C237	M8237	X2	C243	M8243
X3	C238	M8238	X3	C244	M8244
X4	C239	M8239	X4	C245	M8245
X5	C240	M8240	X5	C246	M8246

Count input	Dual phase 2 times counter number	Up and down direction (read)	Count input	Dual phase 4 times counter	Up and down direction (read)
X0 (A phase)	C250	M8250	X0 (A phase)	C253	M8253
X1 (B phase)			X1 (B phase)		
X2 (A phase)	C251	M8251	X2 (A phase)	C254	M8254
X3 (B phase)			X3 (B phase)		
X4 (A phase)	C252	M8252	X4 (A phase)	C255	M8255
X5 (B phase)			X5 (B phase)		

C247 (X0 · X1) · C248 (X2 · X3) · 249 (X6 · X7) 为不倍频的双相计数器。 十 三
、 high speed pulse output and pulse width modulation: support 8 pulse output Y0-7,PLSY, PLSV, PLSR, DRVA, DRVI, ZRN, DSZR, DVIT) or 6 - way pulse width modulation Y0-5 (PWM)
) frequency 100K Note: the relay outputs no pulses

pulse	Pulse train	Transport mark	Pulse stop	Minimum outgoing	Addition and subtraction	DSZR, DVIT direction	DVIT break input 0-17	Origin return speed	Origin climb speed	ZRN line count
Y0	D8132	M8147	M8141	D8144	D8145	M8080	D8080	D8220	D8090	D8072
Y1	D8134	M8148	M8142	D8146	D8147	M8081	D8081	D8221	D8091	D8073
Y2	D8136	M8149	M8143	D8148	D8149	M8082	D8082	D8222	D8092	D8074
Y3	D8138	M8150	M8144	D8150	D8151	M8083	D8083	D8223	D8093	D8075
Y4	D8140	M8151	M8145	D8152	D8153	M8084	D8084	D8224	D8094	D8076
Y5	D8142	M8152	M8146	D8154	D8155	M8085	D8085	D8225	D8095	D8077
Y6	D8166	M8153	M8155	D8156	D8157	M8086	D8086	D8226	D8096	D8078
Y7	D8168	M8154	M8156	D8158	D8159	M8087	D8087	D8227	D8097	D8079

十四、Interrupt description:

1 · External interrupt support X0-X5, interrupt number as follows:

	Rising edge	Falling edge	Interrupt disable
X0	I0	I1	M8050
X1	I100	I101	M8051
X2	I200	I201	M8052
X3	I300	I301	M8053
X4	I400	I401	M8054
X5	I500	I501	M8055

2 · The timer interrupt pointer is I600 and the interrupt is disabled for M8056. Interrupt time range I601 (1MS) -I699 (99MS) 。

3 · Counter interrupt pointer

Pointer number	Interrupt disabled
I10	M8059
I20	
I30	
I40	
I50	
I60	

十五、Third party programming software Description: Compatible
with programming software GX Developer7.8 or

8.52、8.86 version, create a new project:



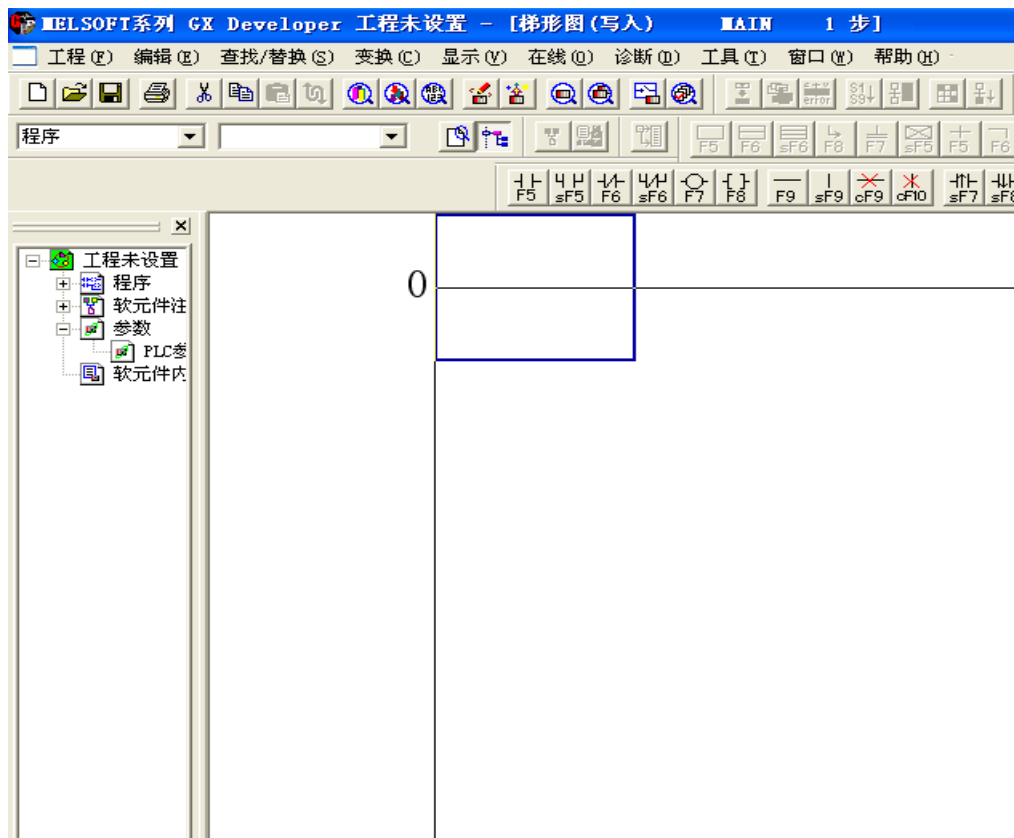
Set the program step to 8000 steps :



Online, transfer settings, set the download port and baud rate :



Enter the ladder editing interface, write your program:



Download the program: select the program, press the start to download

