LE3U-Manual

Specification:

Input power	DC24 DC 24V
Number of steps	8000 steps; 2 communication ports: 1 RS232 (standard 9-pin serial port FX3u protocol 38400, 7, E, 1); 1 RS485
Input point X component	High-speed counting input (12KHZ)
Output point Y component	Transistor output or relay output
Analog input	6 analog inputs, 12-bit precision, AD0~AD2 are voltage inputs: 0-10V, AD3~AD5 are 0-20MA current inputs; read analogs with RD3A instructions
Analog output	2 analog outputs, 12-bit precision, output voltage 0-10V. Output analog voltage with WR3A command
Intermediate relay M	M0-M3071, the power-down storage range can be set to M0-M1023
Step point S	S0-1023, the power-down storage range can be set to S0-S1023
100Ms timer	T0-T199, cumulative power-down save T184-T199
10Ms timer	T200-T249, cumulative power-down save T246-T249
1Ms timer	T250-T383, where T250-255 is cumulative
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, no multiplier; C241-240 is a single-phase counter, 2 times the frequency; C 2 4 7 - 2 4 9 is a two-phase counter, not multiplier; C 2 5 0 - 2 5 2 is a two-phase counter, 2 times the frequency; C 2 5 3 - 2 is a 5-pair 5-phase counter, 4 times the frequency;
Register D	D0-D7999, the power-down storage range can be set to 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). The counter is interrupted.
Special M component	M8000 is normally closed during operation, M8002 is powered on pulse, M8011 is 10Ms pulse, M8012 is 100Ms pulse, M8013 is 1s

	pulse, M8014 is minute pulse.

Basic instruction

Mnemonic
LD
LDI
LDP
LDF
AND
ANI
ANDP
ANDF
OR
ORI
ORP
ORF
ANB
ORB
OUT
SET
RST
PLS
PLF
ALT
MC
MCR
MPS
MRD
MPP
INV
END
STL
RET CALL SRET

Application instruction

Classification	Instruction mnemonic
Procedure flow chart	CJ

	CALL
	SRET
	FEND
	FOR
	NEXT
Transmission and comparison	CMP
	ZCP
	MOV
	CML
	BMOV
	FMOV
	XCH
	BCD
	BIN
Four logical operations	ADD
	SUB
	MUL
	DIV
	INC
	DEC
	WAND
	WPR
	WXOR
	NEG
Cycle shift	ROR
	ROL
	RCR
	RCL
	SFTL
	SFTR

分 类	指令助记符
	ZRST
	MEAN
	FLT
	GRY
	GBIN
	DHSCS
	DHSCR
	SPD

	PLSY
	PLSV
	PWM
	PLSR
	DRVA
	DRVI
	ZRN
	DSZR
	DVIT
	ABSD

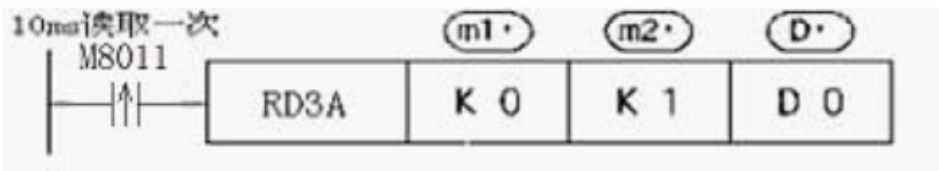
	RS	串行数据传送
	ASCI	HEX-ASCII 转换
	HEX	ASCII-HEX 转换
	CCD	校验码
	PID	PID 运算
	SEGD	BCD 转 7 段码数码管
	ECMP	2 进制浮点数比较
	EZCP	2 进制浮点数区间比较
	EBIN	10 进制浮点数-2 进制浮点数转换
	EADD	2 进制浮点数加法
	ESUB	2 进制浮点数减法
	EMUL	2 进制浮点数乘法
	EDIV	2 进制浮点数除法
	INT	2 进制浮点数-BIN 整数转换
	SIN	浮点数 SIN 运算
	TAN	浮点数 TAN 运算
	COS	浮点数 COS 运算
	ASIN	浮点数 SIN-1 运算
	ATAN	浮点数 TAN-1 运算
	ACOS	浮点数 COS-1 运算
	EXP	2 进制浮点数指数运算
	LOGE	2 进制浮点数自然对数运算
	LOGE10	2 进制浮点数常用对数运算
	SWAP	上下字节变换

	SER	数据查找
	ALT	交替输出
	RAMP	斜坡信号
	BON	ON 位判定
	SUM	ON 位数
	ANS	报警置位
	ANR	报警复位
	HOUR	计时仪
	TCMP	时钟数据比较
	TRD	时钟数据读出
	TWR	时钟数据写入
	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: 32-bit instructions and pulse-execution instructions P are supported.

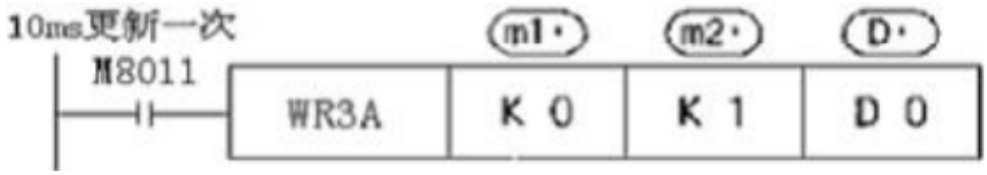
4. Description of analog input and output of PLC:

1. Analog reading command:



Reading instruction of analog input value of analog module
M1: module number, host is set to K0
M2: analog input channel number K0–K5 (corresponding to AI 1–6)
D: The instantaneous value of the read data is saved to D0, and the value read from the analog module is saved.

2. Analog output command:

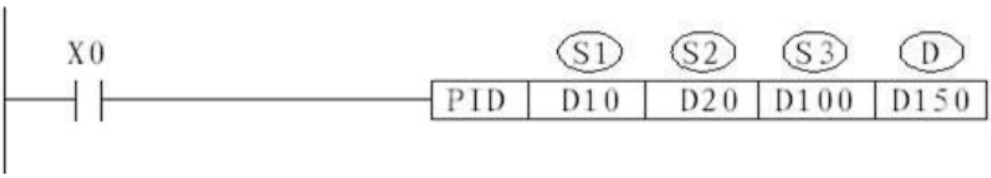


Instruction for writing a digital value to an analog module
M1: module number, host is set to K0
M2: analog input channel number K0–K1
D: Write data Specify the value to be written to the analog module (0–4095)

Clock module description:

When setting the clock, M8015 should be set and resume operation. M8015 reset. D8018 is the year, D8017 is the month, D8016 is the day, D8019 is the week, D8015 is the hour, D8014 is the minute, and D8013 is the second. The clock data read command TRD can be used to read the clock data to the general register, or the clock write command TWR can be used to modify the clock. This instruction does not require setting M8015.

Description of PLC's PID operation instructions:



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

S1: set target value;
S2: current value (feedback back
Value)
S3: PID control parameter, occupying 9 consecutive D registers starting from S3. S3 is the PID channel
No. S3+1 is the proportional coefficient KP; S3+2 is the integral coefficient KI; S3+3 is the differential coefficient KD; S3+4 is the error coefficient KE, and PID processing is performed only when the error is greater than this value; S3+5 output Limit value PMAX; S3+6 output lower limit value PMIN; S3+7 standby; S3+8 standby; D: control value output;

RS232 communication port: Default communication protocol: FX3u, 38400, 7, E, 1

38400/9600 resistor	Baud rate38400
No 38400/9600 resistor	Baud rate 9600

Serial data transfer:

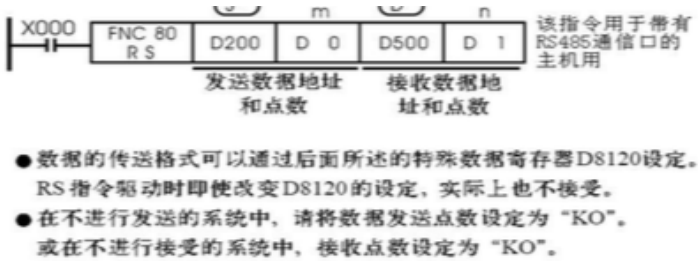
Special register	Description	Special register	Description
D8120	RS485 communication format definition	M8121	Set when data is sent, automatically reset after transmission
D8121	RS485 communication station number setting	M8122	Send a request, when M8122 is set, it will be opened once the communication port is idle.
D8122	Number of remaining data	M8123	The receipt of the initial number of receipts is completed, and the opening of the label is issued, and the post is automatically sent to the frame after the data is transferred.
		M8124	Set the number of data, the receiving user should be placed in the bit, after receiving the receipt, the number of the receipt is restored.
M8129: Communication timeout flag. When the host issues a command, the slave does not respond within D8129 time, M8029 will be set.			

The communication parameters corresponding to each of D8120 are as follows:

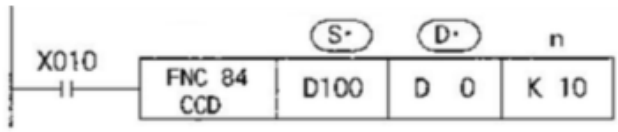
位号	name	内容	
		0(bit OFF)	1(bit ON)
B0	Data length	7bit	8 bit
B1 B2	Parity	b2 b1 (0，0):无校验 (0，1):奇数 ODD (1，1):偶校验 EVEN	
B3	Stop bit	1 bit	2 bit
B4 B5 B6 B7	Transfer rate bps	b7 b6 b5 b4{0，0，1，1}:300 {0，1，0，0}:600 {0，1，0，1}:1200 {0，1，1，0}:2400 b7 b6 b5 b4{0，1，1，1}:4800 {1，0，0，0}:9600 {1，0，0，1}:19200 {1，0，1，0}:38400	
B8	Starter	None	有(D8124)
B9	Terminator	None	有(D8125)
B10 B11	unavailable		

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 }: MODBUS RTU (host, IVRD, IVWR instruction) {1, 1, 0, 0}: Free communication (RS instruction, CCD check)

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

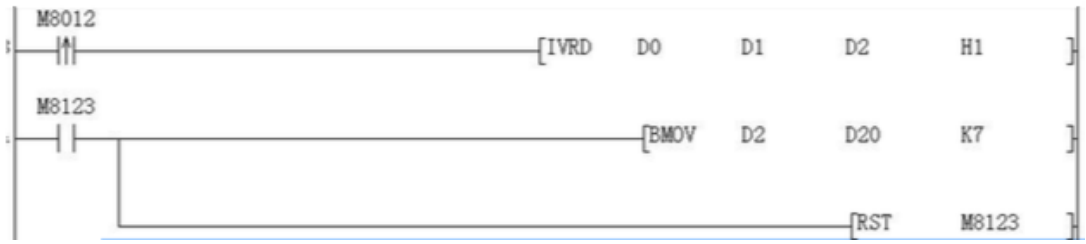


CCD instruction:

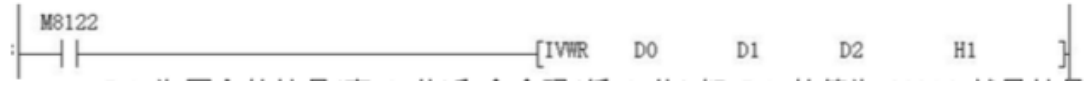


The n-point data starting with the component specified by S stores the sum of its bits and data and the CRC check data in D. and D.+2, D.+3. This example and the check are placed in D0, and the CRC check is placed in D2, D3.

Communicate with inverter or instrument:
Read:



D0 is the station number read (high 8 bits) and the command code (low 8 bits). If the value of D0 is H103, it is station number 1, read command 3. D1 is the data address to be read, D2 is the data first address received by the inverter or the meter, and the data is received. If channel 0, M8123 will be set. H1, high 8-bit channel, low 8-bit read number. Read 1 data via channel 0 (485 channel). If bit H101, one data is read through the channel (RS232 channel)1.
Write:



D0 is the station number (high 8 bits) and command code (lower 8 bits) written. For example, the value of D0 is H106, which is station number 1, and writes a single data command 6. D1 is the data address to be written, and D2 is the first address to be

written to the inverter or meter data. H1, the upper 8 bits are channels, and the lower 8 bits are written. Write 1 data via channel 0 (485 channel). If it is H101, it writes 1 data through the channel (RS232 channel)1. After the writing is completed, M8122 is automatically reset.

High-speed counting: SPD instruction (supports X0-5). If the encoder is 360 pulses in one circle, 720 pulses can be obtained at 2 times, and 1440 pulses can be obtained at 4 times, thus improving the resolution of the encoder. .

Count input	Single phase counter	Count the direction switch up and down	Count input	Single phase 2 octave counter number	Count the direction switch up and down
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	Two-phase 2 octave counter number	Count up and down (read only)	Count input	Two-phase 4 octave counter number	Count up and down (read only)
X0(Phase A)	C250	M8250	X0(A 相)	C253	M8253
X1(PhaseB)			X1(B 相)		
X2(PhaseA)	C251	M8251	X2(A 相)	C254	M8254
X3(PhaseB)			X3(B 相)		
X4(PhaseA)	C252	M8252	X4(A 相)	C255	M8255
X5(PhaseB)			X5(B 相)		

C247 (X0, X1), C248 (X2, X3), 249 (X6, X7) are two-phase counters that do not multiply.

High-speed pulse output and pulse width modulation: support 8 pulse outputs Y0-7 (PLSY, PLSV, PLSR, DRVA, DRVI, ZRN, DSZR, DVIT) or 6 pulse width modulation Y0-5 (PWM), frequency 100K.

Pulse	Output pulse	Output tag	Pulse prohibited	Minimum output	Acceleration time	DSZR, DVIT direction	DVIT interrupt input X address 0-17	Origin return speed	Origin return crawling speed	ZRN line pulse climb

	number			frequency						number
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

Interruption

1, external interrupt support X0–X5, the interrupt number is as follows:

		Rising edge	Falling edge	Interruption
	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 as M8056. Interrupt time range I601(1MS)–I699(99MS).

3, the counter interrupt pointer

Pointer number	Interruption
I10	M8059
I20	
I30	
I40	

I50	
I60	