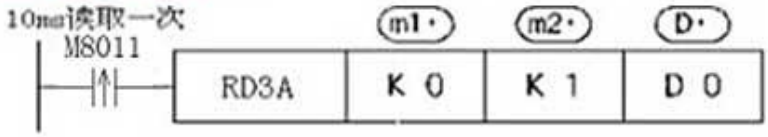
PLC with analog input and output instructions

1、Analog reading instruction



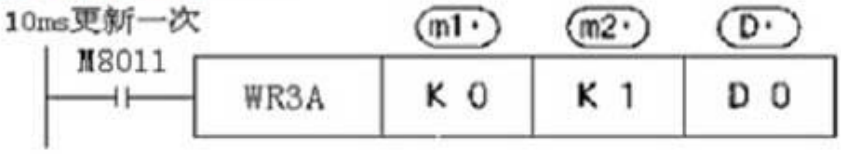

● 模拟量模块的模拟量输入值的读取指令。

(m1·) : Module number, the host is set to K0

(m2·) : Analog input channel number.
K0-K5(对应AI1-6)

(D·) : Read data stored instantaneous value to D0
Save the module to read Zimo nil value

2、Analog Output command




● 用于向模拟量模块写入数字值的指令

(m1·) : Module number, the host is set to K0

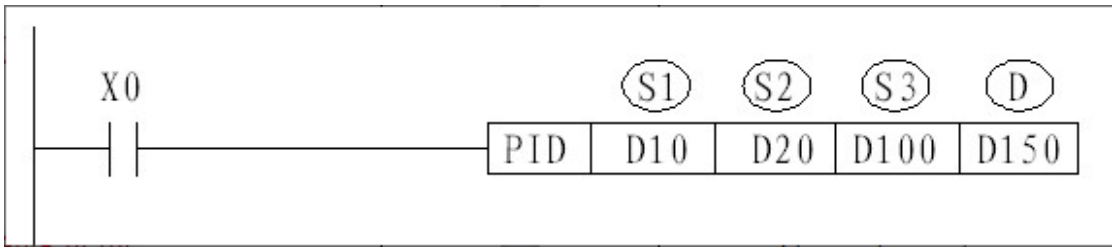
(m2·) : Analog output channel number
K0-K1

(D·) : Write data
Value specifies the write analog modules (0-4095)

Clock module description:

Set the clock when the M8015 should be set，Restore run M8015 reset。D8018 for the year, D8017 for the month, D8016 for the day， D8019 for weeks, D8015 for hours, D8014 for minutes, D8013 for seconds.Can use the clock data to read the instruction TRD to read the clock data to the general register， Or use the clock to write to the instruction TWR to modify the clock, using this instruction does not need to set the bit M8015.

PID rithmetic instructions：




This directive is used to carry out PID control of the PID computing program。
S1: set the target value; S2: the current value (the value of feedback back);
S3:PID control parameters, occupy the S3 start of the 9 consecutive D registers。
S3 channel number for PID；S3+1 ratio coefficient KP；S3+2 for integral coefficient KI；S3+3 is the differential coefficient KD；The error coefficient S3+4 is KE，PID processing is performed only if the error is greater than this value;S3+5 output upper limit value PMAX； S3+6 output lower limit value PMIN；S3+7 backup; S3+8 standby； D: control value output;

Automatic communication between CAN hosts

| Station No. | Data exchange area | Station No. | Data exchange area | Station No. | 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-D359 | 13 | | 21 | |
| 6 | | 14 | | 22 | |
| 7 | | 15 | | 23 | |

CAN communication example：
LD M8002 The implementation of a power / / said

M8181 //CAN SET host communication
MOV K0 D8121 / / station number is 0
Station number 0 PLC as long as the D3500-3515 to write data，Other station number PLC as long as the reading of their own D3500-3515

The data is equal to the D3500-3515 data read station number 0。Station number 0 PLC to read their own D3516-3531 data, etc.

D3516-3531 data read station No. 1.

CAN communication between the host of the PLC and other CAN_H connected to the CAN_H,CAN_L is connected with other CAN_L PLC, and the transmission distance

is far.，To connect the terminal resistance on the PLC board，The corresponding code switch (the upper left corner of the 2) to play in the ON bit。
9、RS232 communication port (S terminal 8 core): default communication protocol：FX3u，38400,7，E，1
The baud rate can be changed via S2 DIP switch # 3：

| State<br>Dial switch | OFF | ON |
|---|---|---|
| No. 1 | SPI extension 16 | SPI extension 32 |
| No. 2 | SPI extension is valid | CS5532 extension is |
| No. 3 | 9600 | 38400 |
| No. 4 | Factory trial | |

10、Serial data transmission：
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| Special register | explain | Special relay | explain |
|---|---|---|---|
| White 3 pin RS485 communication port | | | |
| D8120 | RS485 Communication format definition | M8121 | When the data is sent, the data is sent, and the automatic reset is sent. |
| D8121 | RS485 communication station number setting | M8122 | Send a request, when the M8122 position, once the communication port is free to start sending data, start the automatic reset |
| D8122 | Send data surplus | M8123 | When the data is received, the data can be automatically set after receiving a frame data, and the user should reset the position after receiving the data |
| | | M8124 | The data receiving center, receiving the data reduction |
| White 3 pin RS232 communication port | | | |
| D8126 | RS232 communication | M8125 | When the data is sent, the data is sent, and the automatic reset is sent. |
| D8127 | RS232 communication station number setting | M8126 | Send a request, when the M8126 position, once the communication port is free to start sending data, start the automatic reset |
| D8128 | Send data surplus | M8127 | When the data is received, the data can be automatically set after receiving a frame data, and the user should reset the position after receiving the data |
| | | M8128 | The data receiving center, receiving the data reduction |

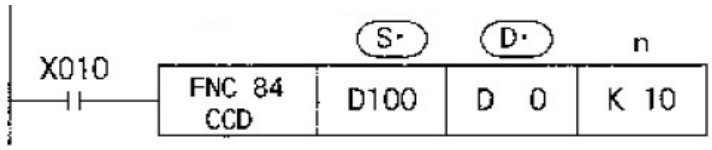
M8129：Communication timeout tag, when the host issued a command, from the time the machine did not respond to the M8029, D8129 will set the bit

The corresponding communication

| No. | name | content | |
|---|---|---|---|
| | | 0（位 OFF） | 1（位 ON） |
| B0 | Data length | 7 | 8 |
| B1<br>B2 | Parity bit | b2 b1<br>（0，0）：No verification<br>（0，1）：Odd ODD | |
| B3 | Stop bit | 1 | 2 |
| B4<br>B5<br>B6<br>B7 | Transfer ratebps | b7 b6 b5 b4 b7 b6 b5 b4<br>{0，0，1，1}：300 {0，1，1，1}：4800<br>{0，1，0，0}：600 {1，0，0，0}：9600<br>{0，1，0，1}：1200 {1，0，0，1}：19200 | |
| B8 | Start symbol | nothing | yes（D8124） |
| B9 | Terminator | nothing | yes（D8125） |
| B10<br>B11 | Do not use | | |
| B12<br>B13<br>B14<br>B15 | communication protocol | B15 b14 b13 b12<br>{0， 0， 0， 0}：MITSUBISHI FX2N protocol (from machine)<br>{0， 1， 0， 0}：MODBUS RTU (from machine)<br>{1， 0， 0， 0}：RTU MODBUS (host, IVRD, IVWR instruction)<br>{1， 1， 0， 0}：Free communication (RS instruction, with CCD check) | |

When M8120 reset, the implementation of RS, the parameters are for the RS485 port, when the M8120 set, the implementation of RS, the parameters are for the RS232 port.


- 数据的传送格式可以通过后面所述的特殊数据寄存器D8120设定。RS指令驱动时即使改变D8120的设定，实际上也不接受。
- 在不进行发送的系统中，请将数据发送点数设定为“KO”。或在不进行接受的系统中，接收点数设定为“KO”。

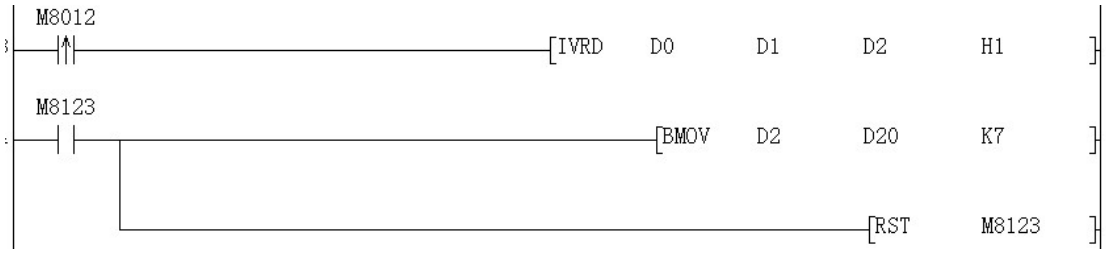



CCD instruction：

S specified by the n components as the starting point of the data, the sum of their data and CRC calibration data Stored in D. with D.+2, D.+3.This example and the check on the D0, CRC check in D3, D2.

十一、Communication with frequency conversion or instrument:：

The corresponding communication

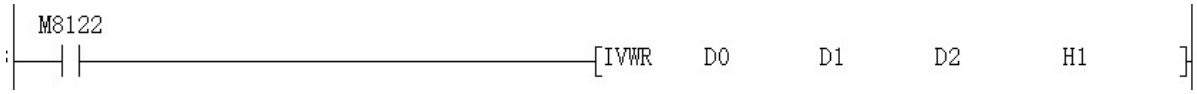



D0 for reading the station number (high 8) and the command code (low 8), such as the value of H103 D0, is the number of stations

1, read the order 3。D1 to read the data address，D2 the first address of the data returned by the receiving frequency conversion or instrument., Receive data, such as channel 0, M8123 will set the bit。H1，High 8 bit channel, low 8 bit read a number。Through the channel 0 (485 channels), read the 1 data. If the bit H101, is through the channel (RS232 channel) 1 to read the 1 data.

write in

D0 to write the number of stations (high 8) and command code (low 8),Such as the




value of H106 is D0, that is, station number 1, write a single data command 6　D1 for the data to be written to the address，D2 to write the first address of the frequency conversion or instrumentation data。H1, high 8 bit for the channel, low 8 bit write a number。Through the channel 0 (485 channels), write 1 data。If it is H101, is through the channel (RS232 channel) 1 to write 1 data。Write complete M8122 automatic reset.

Twelve, high speed count: SPD instruction (support X0-5), if the encoder is a circle of 360 pulses, 2 times the 720 pulse can be obtained, 4 times, then you can get 1440 pulses, thus improving the resolution of the encoder.

| Count input | Single phase meter number | Up and down Number direction switch | Count input | Single phase 2 frequency Counter number | Up and down Number 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 | Counter | | Count input | Dual phase 4 | Up and down |
| | | direction (only | | Counter number | Read) |
| | | Read) | | | |
| X0（A 相） | C250 | M8250 | X0（A 相） | C253 | M8253 |
| X1（B 相） | | | X1（B 相） | | |
| X2（A 相） | C251 | M8251 | X2（A 相） | C254 | M8254 |
| X3（B 相） | | | X3（B 相） | | |
| X4（A 相） | C252 | M8252 | X4（A 相） | C255 | M8255 |
| X5（B 相） | | | X5（B 相） | | |

C247 (X0, X1), C248 (X2, X3), 249 (X6, X7) for the non double phase counter。

13 、 High speed pulse and pulse width modulation ： Support and 8 pulse rushed out of the Y0-7 (PLSY, PLSV, PLSR, DRVA, DRVI, DSZR, ZRN, DVIT) or 6 way pulse width modulation Y0-5 (PWM), frequency 100K.

| pulse | Number of output pulses | Output tag | Pulse disabled | Minimum output frequency | Acceler ation / decelera | DSZ R, DVIT | The DVIT interrupt | Origin return speed | OPR creep speed | ZRN Numb er of |
|---|---|---|---|---|---|---|---|---|---|---|
| Y0 | D8132 | M8147 | M8141 | D8144 | D8145 | M808 | D8080 | D8220 | D8090 | D807 |
| Y1 | D8134 | M8148 | M8142 | D8146 | D8147 | M808 | D8081 | D8221 | D8091 | D807 |
| Y2 | D8136 | M8149 | M8143 | D8148 | D8149 | M808 | D8082 | D8222 | D8092 | D807 |
| Y3 | D8138 | M8150 | M8144 | D8150 | D8151 | M808 | D8083 | D8223 | D8093 | D807 |
| Y4 | D8140 | M8151 | M8145 | D8152 | D8153 | M808 | D8084 | D8224 | D8094 | D807 |
| Y5 | D8142 | M8152 | M8146 | D8154 | D8155 | M808 | D8085 | D8225 | D8095 | D807 |
| Y6 | D8166 | M8153 | M8155 | D8156 | D8157 | M808 | D8086 | D8226 | D8096 | D807 |
| Y7 | D8168 | M8154 | M8156 | D8158 | D8159 | M808 | D8087 | D8227 | D8097 | D807 |

14、Interrupt description:

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

| | Rising edge | Falling edge | Interrupt inhibit |
|---|---|---|---|
| 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，Timer interrupt pointer to I600, interrupt disable time range I601 (1MS) -I699 (99MS) M8056.。

3，Counter interrupt pointer

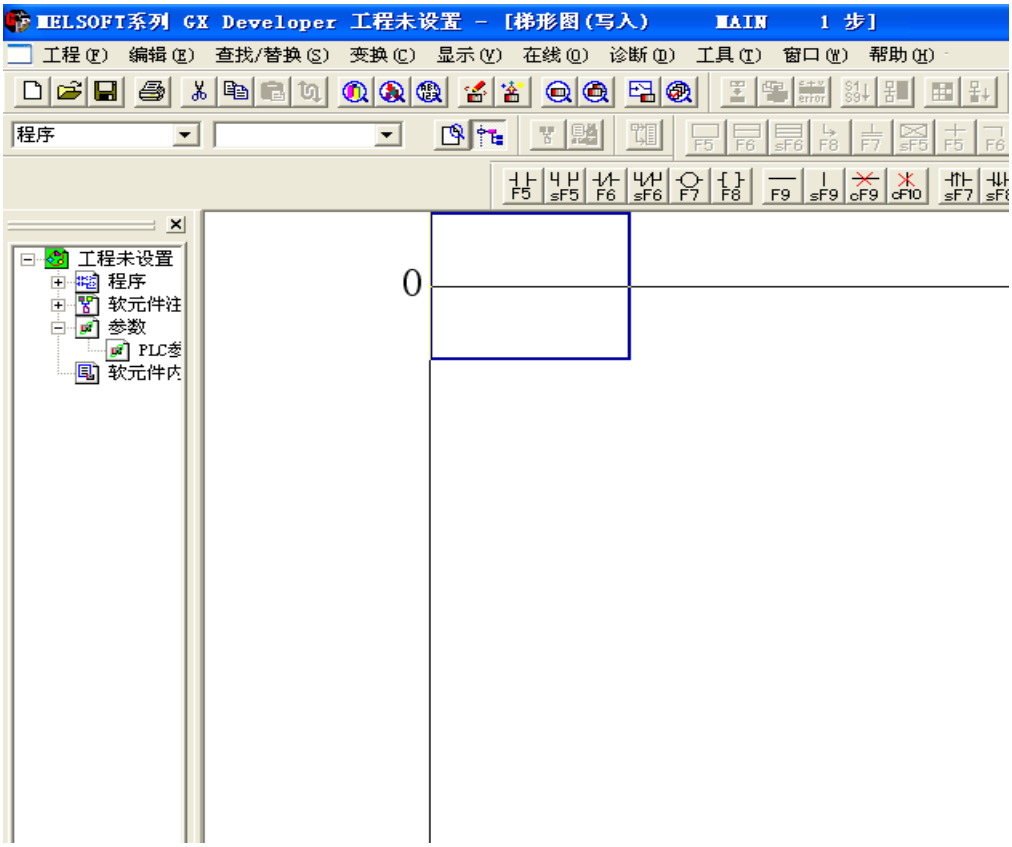
| Pointer number | Interrupt inhibit |
|---|---|
| I10 | M8059 |
| I20 | |
| I30 | |
| I40 | |
| I50 | |
| I60 | |

15、Third party Programming Software Description: can be compatible with the programming software Developer7.8 GX or 8.52、8.86 Version, create a new project:


Set the program step to 8000 steps:

Online, transmission settings, set the baud rate and the communication port to download：


Enter the ladder diagram editing interface, write your program:




Download the program: select the program, according to the implementation of the start download


PLC写入
链接接口
COM1
<-->
CPU 模块
链接PLC
网络号
0
站号
本站
PLC类型
FX3U(C)
对象内存
索引
文件选择
软元件数据
程序
程序共用
参数+程序
选择所有
取消所有选择
执行
关闭
程序
MAIN
软元件注释
COMMENT
参数
PLC参数
软元件内存
MAIN
关联功能
传输设置...
登录关键字...
远程操作...
冗余操作...
清除PLC内存...
格式化PLC内存...
整理PLC内存...
生成标题...
空余容量
最大连续容量
字节
所有可用容量
字节