Contents [hide]

Coolmay L01S Series Programmable Controller

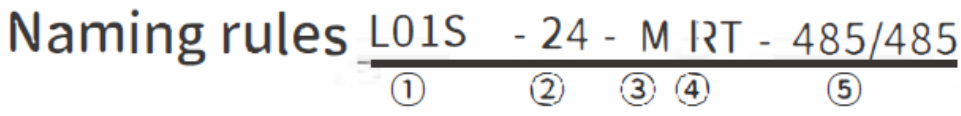
Thank you for purchasing the Coolmay LOl S series PLC. This manual mainly explains

the product characteristics, general specifications, and wiring methods of this series of PLCs. For detailed programming, please refer to the Cool may LOI S series programming manual. More specifications can be customized in bulk.

The LOI S series PLC has the following characteristics:

1. It uses military-grade 32-bit CPU + ASIC dual processors, supports online monitoring and downloading, and the fastest execution speed of basic instructions is 0.24us. The program capacity can reach 30k steps. Built-in 12k data registers.
2. Transistor output high-speed pulse output 4-axis YO~Y3 can reach 200KHz. Support 4 sets of dual-phase 200KHz hardware high-speed counters.
3. It comes with 1 RS232 and 2 RS485, both support mod bus RTU/ASCII, free port and other protocols.
4. Support multiple interrupts, input interrupts (rising edge, falling edge), timer interrupts, communication interrupts, high-speed counter interrupts and high-speed pulse output interrupts. Among them, external input interrupts support 16 interrupt inputs.
5. The maximum 1/0 points can support 168 digital points (40 points for the host + 128 points for expansion).
6. The programming languages that can be supported are: instructions, ladder diagrams (LD), and step ladder diagrams (SFC).
7. Special encryption is possible. Setting the password to 12345678 can completely prohibit the reading of the program. [Note: Only 8-bit password encryption is supported]
8. 5.0MM pitch pluggable terminals are used for easy wiring; DIN rails (35mm width) and fixing holes can be used for installation.

Product Information



1. Company product series LOIS: LOIS series PLC
2. Input/output points 16:8DA 8 DO 24:14 DAIO DO 34:18 DA16DO 40:24 DA16 DO
3. Module classification M: General controller main module
4. Switch output type R: relay output type; T: Transistor output type; RT: Hybrid output of transistor relay

5. The maximum number of analog input points is 4, which can be selected
6. The maximum number of analog output points is 2, which can be selected
7. Analog input type E: E-type thermocouple (customizable K-type/T-type/S-type/J-type, supports negative temperature) PT: PTlOO PTlOOO: PTlOOO
   NTC: Thermistor (10K/50K/100K) AO: 0-20mA current A4: 4-20mA current
   V: 0-lOV voltage V: -10~ lOV voltage
8. Analog output type AO: 0-20mA current A4: 4-20mA current V: 0-lOV voltage V: -10~ lOV voltage
9. For other parameters, please refer to Table 1: Basic Parameters

Basic parameters

Table 1: Basic parameters

L01S series Scalable PLC	Digital points		Analog (Max)		COM.Port	High speed counting		High speed pulse	Size	
	DI	DO	AI	AO	485/232	Single-phase	ABphase	Output	External dimensions (mm)	Opening size(mm)
L01S-16M-4AD1DA	8	8	4	1	Comes with 1 round port RS232 and 2 RS485 ports	Up to 4 routes, Maximum frequency 200KHz	Up to 4 routes Maximum frequency 200KHz; Default2x	MT output: Conventional 4-way Y0-Y3 It is 200KHz. (Please note: Partial) High speed counting+ High speed pulse Simultaneously using Limited)	93*88*75	74*80
L01S-24MRT/MT	14	10	/	/						
L01S-34M-4AD2DA	18	16	4	2					143*88*75	124*80
L01S-40MR/MT	24	16	/	/						

MT is the output of a transistor; MR is the relay output; MRT is a hybrid output, optional according to customer requirements. Among them, Y0/Y1 of 16M/24M/32M are fixed as transistors;
Common model specifications: L01S-16MRT/MT-4AD1DA L01S-24MT/MRT 、L01S-34MRT/MT-4AD2DA 、L01S-40MT/MR
Limitations of high-speed pulses and high-speed counters:
When using Y1 and Y3 high-speed pulse output channels, X4, X5, X6, X7 hard high-speed counting functions cannot be used, and vice versa.

Table 2: Electrical Parameters

Electrical parameters		
Input voltage	I	*AC 220V*
		Digital input indicators

Isolation method		*Optoelectronic coupling*	
Input impedance		*High speed input 2.4K 0*	*Normal input 3.3K 0*

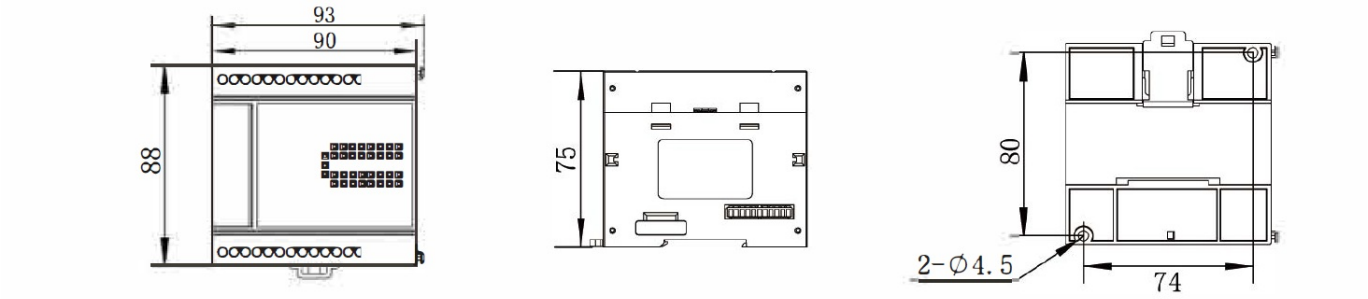
(Continued from the table above)

Input as ON	The input current at the high-speed input end is greater than 5.8mA/24V	The input current of the ordinary input terminal is greater than 9.9mA/24V
Input as OFF	The input current at the high-speed input end is less than 4.5mA/19V	The input current at the ordinary input end is less than 4mA/17V
Filtering function	With filtering function, the filtering time can be set within the range of 0-60ms, with a default of 10ms	
High speed counting function	Conventional 4-way, single-phase 200KHz or 4-way AB phase 200KHz	
Input level	Passive NPN, common isolated, S/S connected to 24V+	
Digital relay output indicators		
Maximum allowable current	2A/point, 4A/4 points COM, 5A/8 points COM, 5A/12 points COM	
Loop power supply voltage	DC/AC24V~220V	
Circuit insulation	Relay mechanical insulation	
On response time	About 10ms	
Mechanical lifespan (no load)	10 million times	
Electrical lifespan (rated load)	300000 times	
Output level	Normally open dry contact output, COM can be connected positive or negative	
Digital transistor output indicators		
Maximum allowable current	24M Y0-Y1 fixed to MT, 0.1A/point; MT: 0.5A/point, 0.8A/4 point COM, 1.6A/8 point COM;	
Loop power supply voltage	DC24V	
Circuit insulation	Optocoupler insulation	
Isolation voltage (power supply external terminal)	1500VAC	
On response time	High speed output: 10 μ s, other 0.5ms	
High speed output frequency	The conventional 10 channel Y0-Y11 is 200KHz.	
Output level	Low level NPN, COM connected to negative	
External interface		
Programming port	Comes with two programming ports: Type-C 232 (faster download speed) and RS232 (8-hole mouse head socket)	
Communication port	Refer to Table 1: Basic Parameters	
environment condition		
Working temperature	0°C~50°C	
Relative humidity	5%~95%RH	
Storage temperature	-20°C~70°C	
Vibration frequency	10-57Hz, amplitude 0.035mm; 57Hz-150Hz, acceleration 4.9m/s^2 (10 times in X, Y, and Z directions, totaling 80 minutes each)	

Mechanical Design Reference

Installation and external dimensions

L01S-16M/24M



L01S-34M/40M

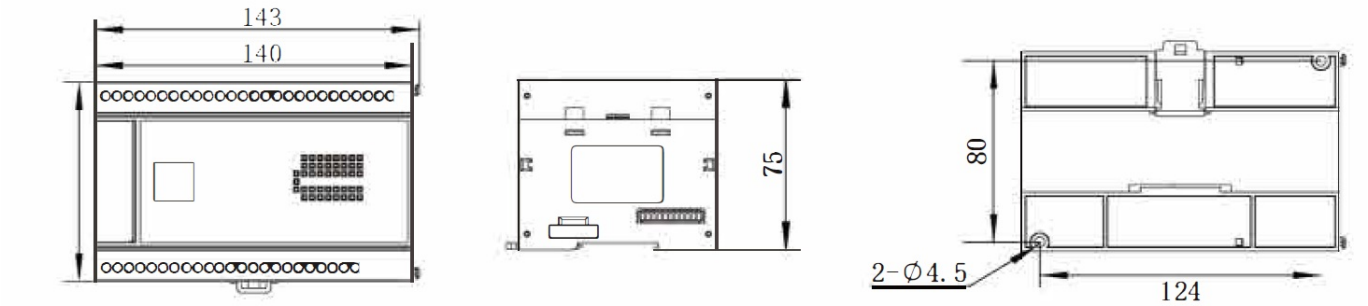


Figure 1 Installation dimension diagram

Electrical design reference

Product Structure

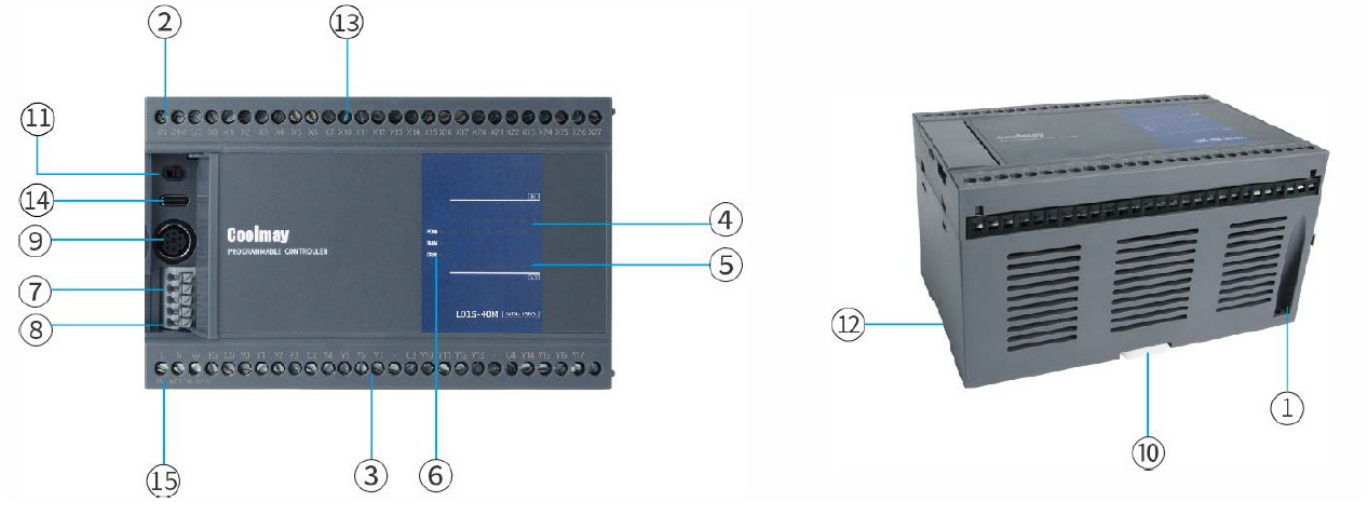


Figure 2 Product Structure

1. Installation holes
2. DC24V power output terminal block
3. Digital output terminal block
4. Switching input display LED

5. Switching output display LED
6. PWR: indicates power on status
   RUN: PLC lights up during operation
   ERR: The indicator light will light up
   when there is a program error
7. RS485/RS232
8. RS485
9. PLC programming port RS232
10. Buckle fixation
11. RUN/STOP PLC operation switch
12. DIN rail (35mm wide) mounting groove
13. Switching input terminal block
14. PLC Type-C programming port
15. AC220V power input terminal block

Hardware interface

OV 24V S/S XOO~X07 GND ADO ADl GND AD2 AD3

L N FG CO YOO YOl Cl Y02 Y03 C2 Y04 VOS C3 Y6 Y7 GND DAO

L01S-16MT/16MRT-4AD1DA

OV 24V S/S XOO~X07 XlO~XlS

L N FG CO YOO YOl Cl Y02 Y03 C2 Y04 VOS C3 Y6 Y7 YlO Yll

L01S-24MT/24MRT

OV 24V S/S XOO~X07 XlO~Xl 7 X20 X21 GND ADO ADl GND AD2 AD3

L N FG CO YOO YOl Cl Y02 Y03 C2 Y04~Y07 C3 Y10~Y13 C4 Y14~Yl 7 GND DAO DAl

L01S-34MT/MRT-4AD2DA

OV 24V S/S XOO~X07 XlO~Xl 7 X20~X27

L N FG CO YOO~Y03. Cl Y04~Y07. C2 Y10~Y13. C3 Y14~Yl 7.

L01S-40MT/MR

Figure 3 Hardware Interface Diagram

LOIS series PLC pin definition

Pin number	*Signal*	*Describe*
4	*RXD*	*Connection*
5	*TXD*	*Send*
8	*GND*	*Ground wire*

Figure 4 PLC programming port

Terminal wiring specifications: 22-14AWG wires. The terminals of this series of models are all pluggable terminals

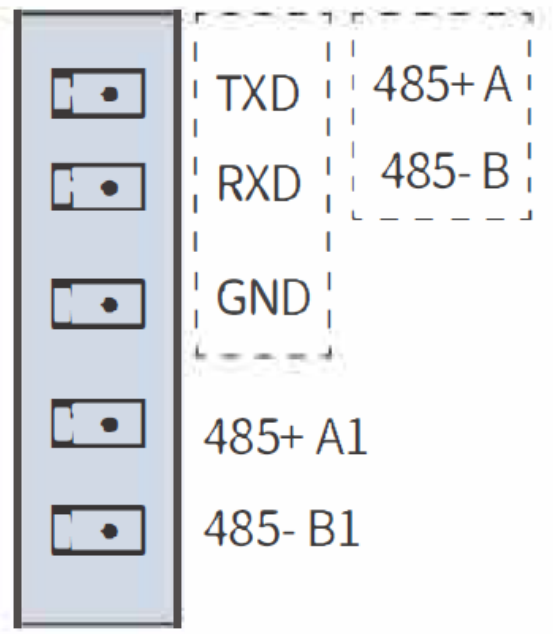


Figure 5 Optional Communication Port

Communication interface definition:

Comes with two programming ports: Type-C port (faster download speed) and RS232 (8-hole mouse head socket)

By default, there are 2 RS485, or it can be customized as 1 RS485 and 1 RS232.

Communication port description:

- Serial port 1: RS232 (8-pin circular port): Supports Delta DVP programming port protocol, free port protocol, and MODBUS RTU/ASCII protocol;
- Serial port 2: RS485 (Al Bl port)/optional RS232: Supports Delta DVP programming port protocol, free port protocol, and Modbus RTU/ASCII protocol
- Serial port 3: RS485 (A and B ports): Supports Delta DVP programming port protocol, free port protocol, and Mod bus RTU/ASCII protocol

* When the PLC serves as the host, it supports MODRW instruction, MOORD instruction, and MODWR instruction
Note: For detailed settings, please refer to the Cool may LOlS series PLC programming manual

Equivalent circuit

Digital input wiring

The PLC input (X) is a biphasic optocoupler, and users can choose between NPN or PNP connections when using it. However, please note that since the common terminals of the input points are all connected, each module or host can only have one wiring method and cannot be mixed.
The 24V and OV terminals already have internal power supply, which can be directly used as input for pointX.

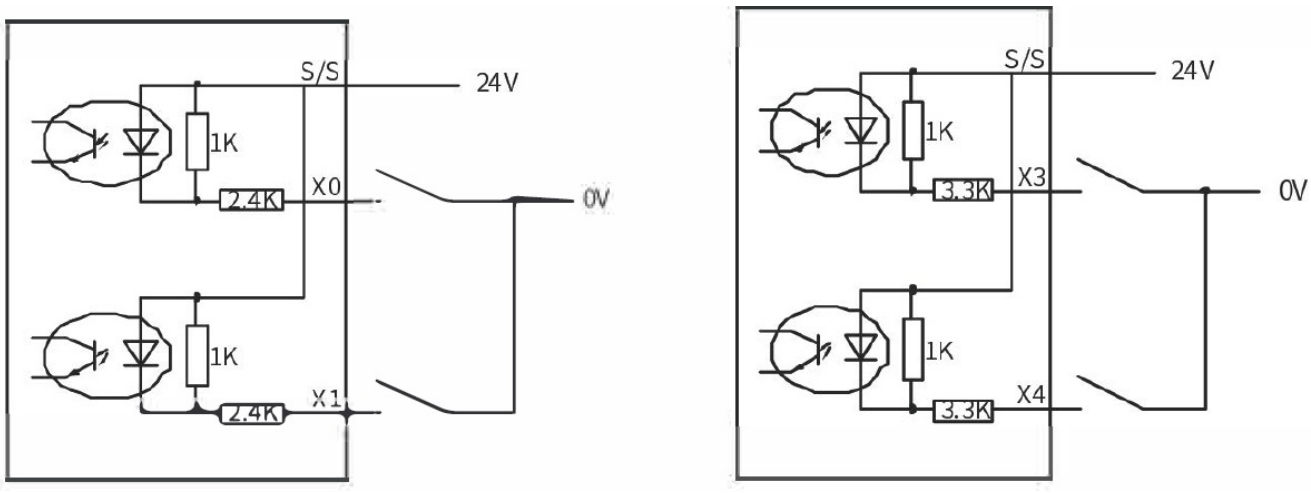


Figure 6 InputWiring Diagram (High speed contact shown in the above figure, ordinary

contact shown in the following figure)

PLC Digital NPNinputwiring:

Port short circuit: The S/S of the PLC input terminal is connected to 24V, and theX terminal is connected to the power supply OV, indicating that there is a signal input;
Two wire system (magnetic switch): PLC switch input is connected to a two-wire magnetic switch, with the positive pole of the magnetic switch connected to the X terminal and the negative pole connected to OV;
Three wire system (photoelectric sensor or encoder): The PLC switch is connected to the photoelectric sensor or encoder of the three wire system. The power supply of the sensor or encoder is connected to the positive pole of the power supply, and the signal line is connected to the X terminal; Encoders and photoelectric sensors require NPN type.

PLC Digital PNP input wiring:

Port short circuit: The S/S of the PLC input terminal is connected to OV, and theX terminal is connected to the 24V power supply, indicating that there is a signal input;
Two wire system (magnetic control switch): PLC switch input is connected to a two-wire magnetic control switch, with the negative pole of the magnetic control switch connected to the X terminal and the positive pole connected to 24V;
Three wire system (photoelectric sensor or encoder): The PLC switch is connected to the photoelectric sensor or encoder of the three wire system. The power supply of the sensor or encoder is connected to the positive pole of the power supply, and the signal line is connected to the X terminal; The encoder and photoelectric sensor require PNP type.

Digital output wiring

Figure 7 shows the equivalent circuit diagram of the relay output module, with several groups of output terminals that are electrically isolated from each other. The output contacts of different groups are connected to different power circuits.
The equivalent circuit of the output part of the PLC with transistor output type shown in Figure 8. As can also be seen from the figure, the output terminals are divided into several groups, and each group is electrically isolated. The output of different groups can be connected to different power circuits; The transistor output can only be used for

DC 24V load circuits. The output wiring method is NPN, COM common cathode.

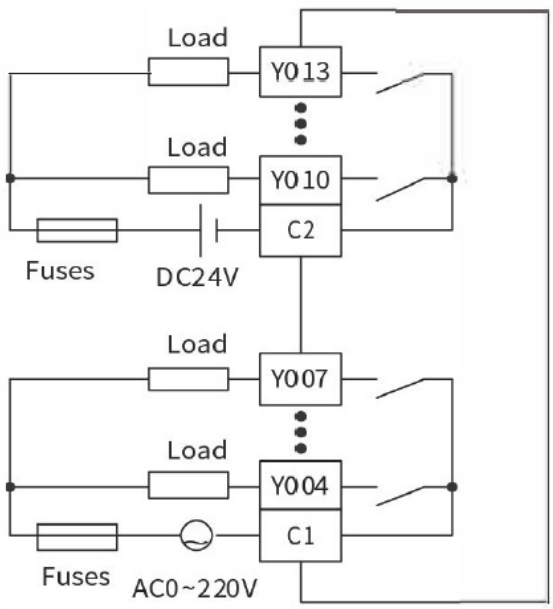


Figure 7 Equivalent Circuit of Relay Output

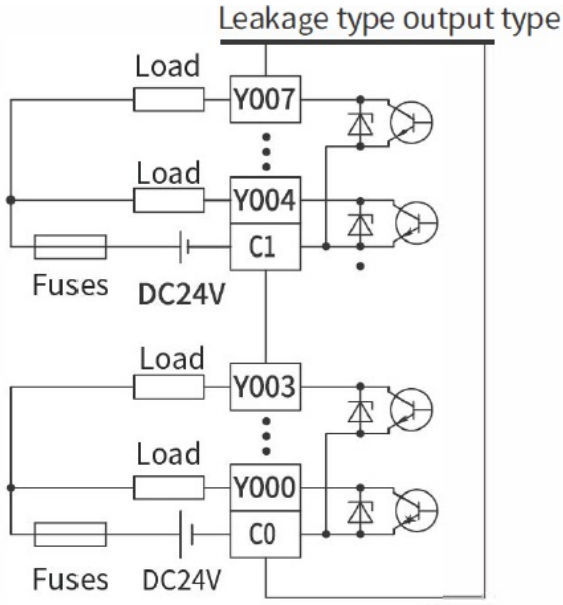


Figure 8 Transistor Output Equivalent Circuit

For inductive loads connected to AC circuits, the external circuit should consider the RC instantaneous voltage absorption circuit; Corresponding to the load of the DC circuit, it should be considered to add a freewheeling diode, as shown in Figure 9.

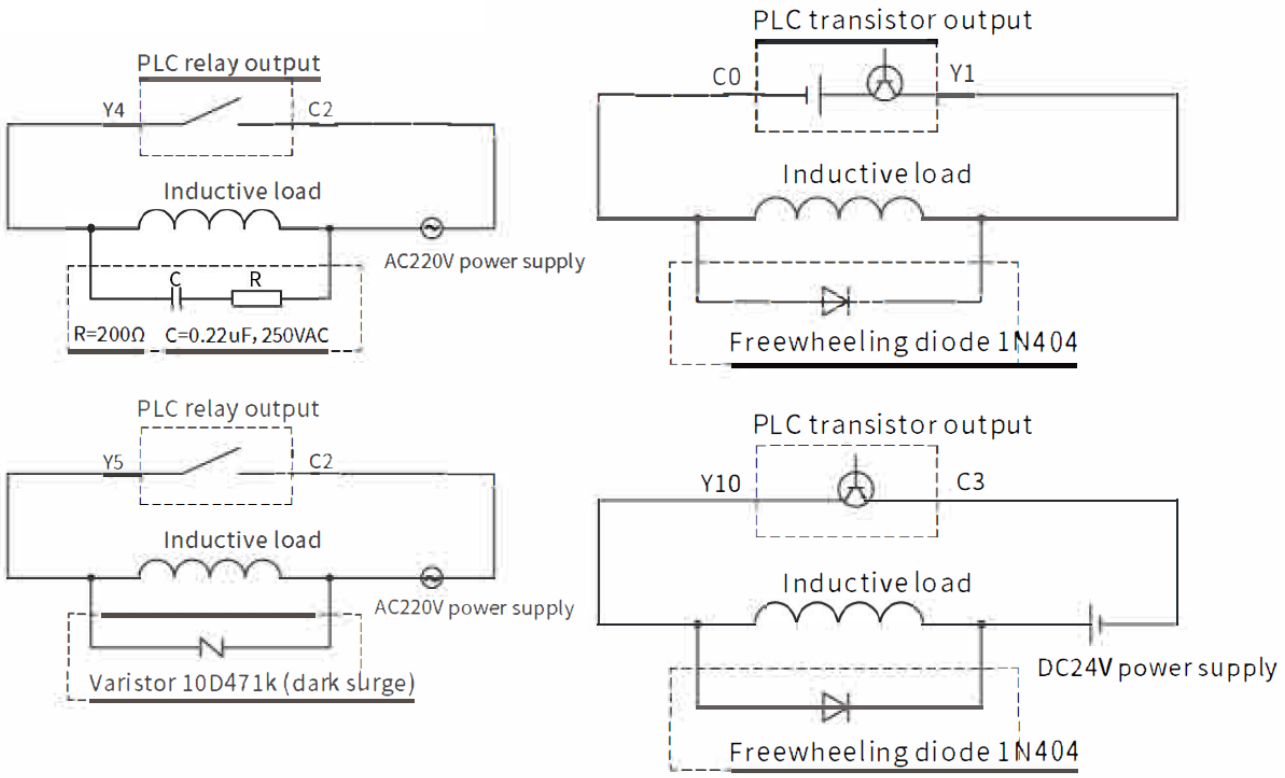


Figure 9 Schematic diagram of inductive load absorption circuit

* Note: All internal circuits shown in the diagram are for reference only

The wiring of the stepper or servo motor is shown in Figure 10. The LOIS series transistor output PLC defaults to YO-Y3 as pulse points, and the direction can be

customized.As shown in Figure 10. Note: A2K O resistor must be connected in series with DC24V for SV drive.

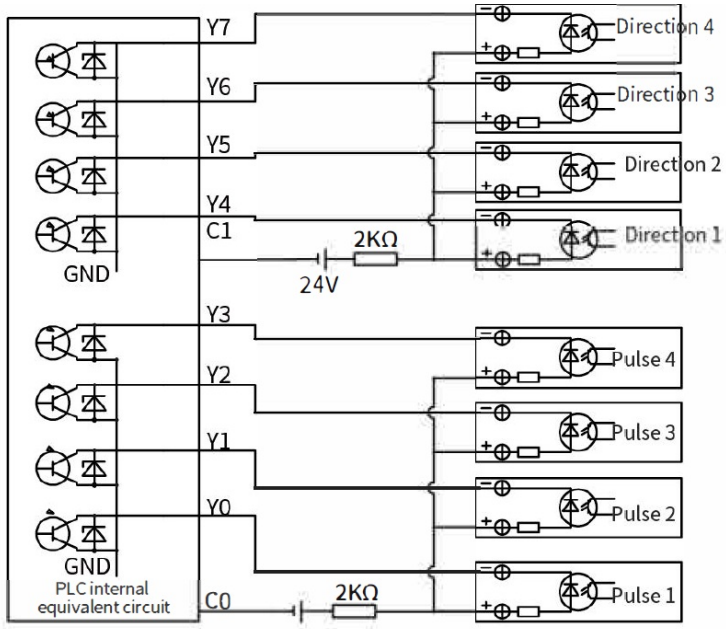


Figure 10 Pulse output wiring diagram

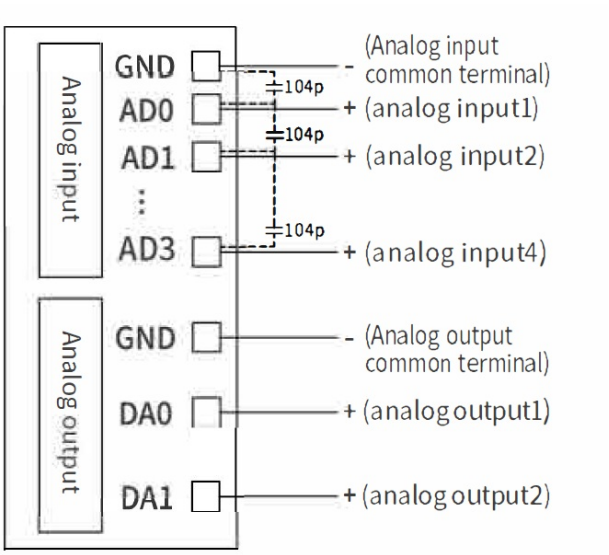


Figure 11 Analog wiring diagram

Analog wiring

The L01-16M/34M series can be selected with a maximum analog input of ADO-AD3, analog outputs ofDAO and DAI, and negative terminals connected to the GND of the analog input/output terminals.

Two wire system: the positive pole of the power supply is connected to the positive pole of the transmitter, the negative pole of the transmitter is connected to the AD terminal, and the negative pole of the power supply is connected to the GND terminal. Generally, the wiring method for 4-20mA/0-20mA transmitters is used;

Three wire system: the positive pole of the power supply is connected to the positive pole of the transmitter, the negative pole of the power supply and the negative pole of the signal output are the same terminal, and the signal output of the transmitter is connected to the AD terminal;

Four wire system: The positive and negative poles of the power supply are connected to the positive and negative poles of the transmitter, respectively. The positive and negative poles of the transmitter signal output are connected to the AD terminal and GND terminal, respectively; The temperature analog quantity is connected to the AD terminal and GND terminal separately. If it is a three wire PTlOO, it needs to be combined into two wires and then connected.

PLC anti-interference processing

1. Strong and weak electricity should be wired separately and cannot be grounded together; When there is strong electrical interference, add a magnetic ring at the power supply end; And carry out correct and effective grounding treatment according to the type of casing.
2. When the analog signal is disturbed, a 104 ceramic capacitor can be added for filtering and correctly and effectively grounded.

Note: For more detailed information, please refer to the “PLC anti-interference processing method” on the official website of Cool may

Programming reference

- Analog input register (AD stands for analog input) with an accuracy of 12 bits supports direct reading of registers:

D [lllO]~D [1113] are the input values corresponding to the analog quantities [ADO~AD3], channel switch D1114;
Note: When the analog input has a thermocouple type, a maximum of 3 channels can be used, where AD3 [D1113] is the ambient temperature of the thermocouple.
When there is no thermocouple type, 4 channels can be used.

No.	Register reading value	Channel switch register
ADO	D1110	Start when D1114-0~D114.3=1
ADl AD2	D1111 D1112	
AD3	D1113	

Sampling of analog input

D1377 is the number of sampling periods: range 0-7, default= 7; After modification, restart to take effect. If Dl377=1, then one PLC scanning cycle samples once and

changes the value in the analog input once. DIIIS is the number of filtering cycles: range 0-32767.

- Analog output register (DA represents analog output, with an accuracy of 12 bits); Support direct register assignment operation

The range of setting values is shown in the following table:

No.	Register address	Set value range	Illustration
DAO	D1116	0-4000	Write value automatic conversion output
DAI	D1117	0-4000	

Software component allocation and power-off maintenance instructions

Maximum number of switching points	L01S-16M	L01S-24M	L01S-32M	L01S-40M
Switching input X	XOO-X07 Bpoints	XOO-XIS 14points	XOO~XI7 24points	XOO~X27 24points
Switching output Y	YOO-Y07 Bpoints	YOO-YII IOpoints	YOO~YI 7 16points	YOO~YI 7 16points
Auxiliary relay M	[MO-M499] 500 points for general use (can be modified to maintain power outage)/[M500-M991, M2000-M4095] 25 86 points for maintenance [M1000-MI999] 1000 points special use			
States	[50-59] for initial state at 10 points/1510-519] for origin regression at 10 points/[520-5127] for maintaining 108 points/[5128-5899] for general use at 771 points			

<table>
<tr><td colspan="2">TimerT</td><td colspan="2">[TO-Tl99] 200 o’clock lOOms general use/[T250-T255] 6 o’clock lOOms maintenance use; [T246-T249] 4 o’clock lms cumulative holding time/[T256-T319) Generally used for lms at 64o’clock; [T200-T239) Generally used for !Oms at40 o’clock/ [T240-T245] Hold for!Oms at 6pm</td></tr>
<tr><td colspan="2" rowspan="3">Counter C</td><td colspan="2">16 bit incremental counter [CO-C99] 100 points generally used/[Cl00-Cl99] 100points maintained</td></tr>
<tr><td colspan="2">32-bit increase/decrease counter [C200-C219] 20 points generally used/[C220-C234] 15 points maintained</td></tr>
<tr><td colspan="2">High speed counter [C235-C245 single-phase single counting] [C246-C250 single-phase double counting] [C251-C255 two-phase double counting]</td></tr>
<tr><td colspan="2">Data Register D</td><td colspan="2">(DO-D199) 200 points for general use/[D200-D999), [D2000-D11999] 10800 points for maintenance use/ [D1000~D1999] 1000 points for special use/[D8000~D8511] 512 points for special use</td></tr>
<tr><td colspan="2">Data registers E, F</td><td colspan="2">[EO-E 7] [FO-F7] Used for 16 point indexing</td></tr>
<tr><td colspan="2">Used for JUMP and CALL branches with pointers</td><td colspan="2">[PO-P255] 256points</td></tr>
<tr><td colspan="2">Nesting</td><td colspan="2">[NO-N7] Used for 8-point main control</td></tr>
<tr><td rowspan="2">Interrupt Constant</td><td rowspan="2">K</td><td colspan="2">[10 • 0~17 0 0]8-point input interrupt/[16 [[~18 •] 3-point timer interrupt/[110 • [~170 •J [] 7-point counter interrupt</td></tr>
<tr><td>16bit -32, 768-32,76 7</td><td>32bit -2,147,483,648-2,147,483,647</td></tr>
</table>

	H	16bit 0-FFFFH	32bit 0-FFFFFFFFH

The power-off retention of LOIS PLC's software components is permanent, meaning that all software components in the retention area are not lost after the module is powered off. The real-time clock uses non rechargeable batteries for easy replacement by users. All power-of f retention functions must ensure that the voltage of the DC24V power supply with load is above 23V, and the PC is powered on for more than 2 minutes, otherwise abnormal power-off function may occur.
Programming software compatible with CoolmayPLC programming software Vtool PRO
For detailed information, refer to the Cool may LOIS Series PLC Programming Manual

TIPS

LOIS series programmable controller (PLC) user manual
Before using this product, please carefully read the relevant manual and use it under the environmental conditions specified in the instruction manual.

1. Please confirm the power supply voltage range of this product (conventional product power supply AC220V!) and correct wiring before powering on to avoid damage.
2. When installing this product, please make sure to tighten the screws or clamp the guide rail to avoid detachment.
3. Avoid wiring or unplugging cable plugs while in a live state, as it may cause electric shock or circuit damage; When the product emits an odor or abnormal sound, please immediately turn off the power switch; When processing screw holes and wiring, do not let metal shavings and wire heads fall into the ventilation holes of the controller, as this may cause product malfunctions and misoperation.
4. Do not tie the power cord and communication cable together or place them too close together. Keep a distance of more than 10cm; Strong and weak currents need to be separated and properly and effectively grounded; In situations with severe interference, shielded cables should be used for communication and high-frequency signal input and output to improve anti-interference performance. The grounding terminal FG on this machine must be properly grounded to improve anti-interference ability.
5. The switch input is an external power supply DC24V leakage type (passive NPN), and

the input signal is isolated from the power supply. When using it, the S/S needs to be connected to the 24V positive of the external power supply.

6. The Cx of the output common terminal of a switching transistor is a common cathode.
7. Please do not disassemble the product or modify the wiring at will. Otherwise, it may cause malfunctions, malfunctions, losses, and fires.
8. When installing and disassembling products, please make sure to cut off all power sources, otherwise it will cause equipment malfunction and malfunction.

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Alibaba

AliExpress

Documents / Resources

	Coolmay L01S Series Programmable Controller [pdf] User Manual L01S Series Programmable Controller, L01S Series, Programmable Controller, Controller

References

- User Manual

controller, Coolmay, L01S Series, L01S Series Programmable Controller, Programmable Controller

Coolmay

—Previous Post
Coolmay TK6043BH Touch Screen Panel Owner's Manual

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