HC10 Series Intelligent Controller

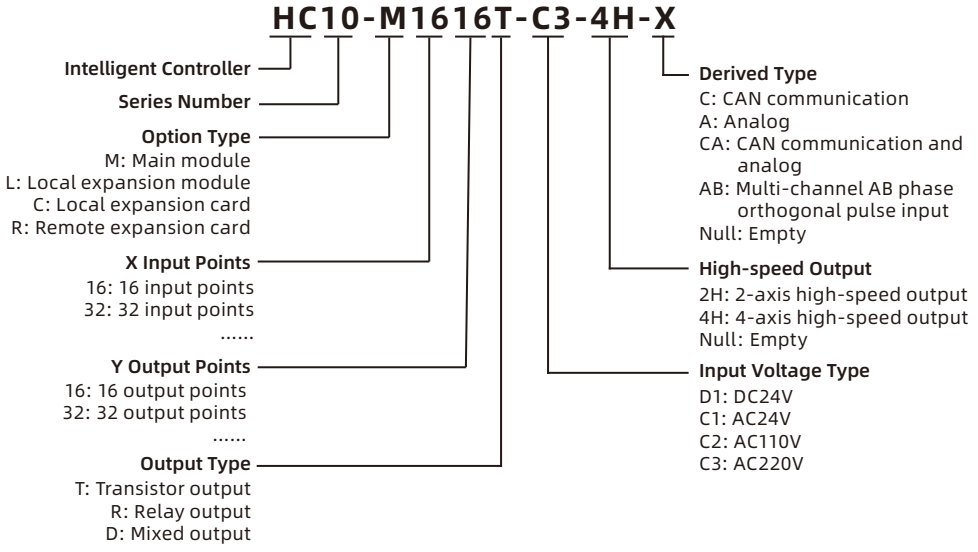
User Manual

Warning

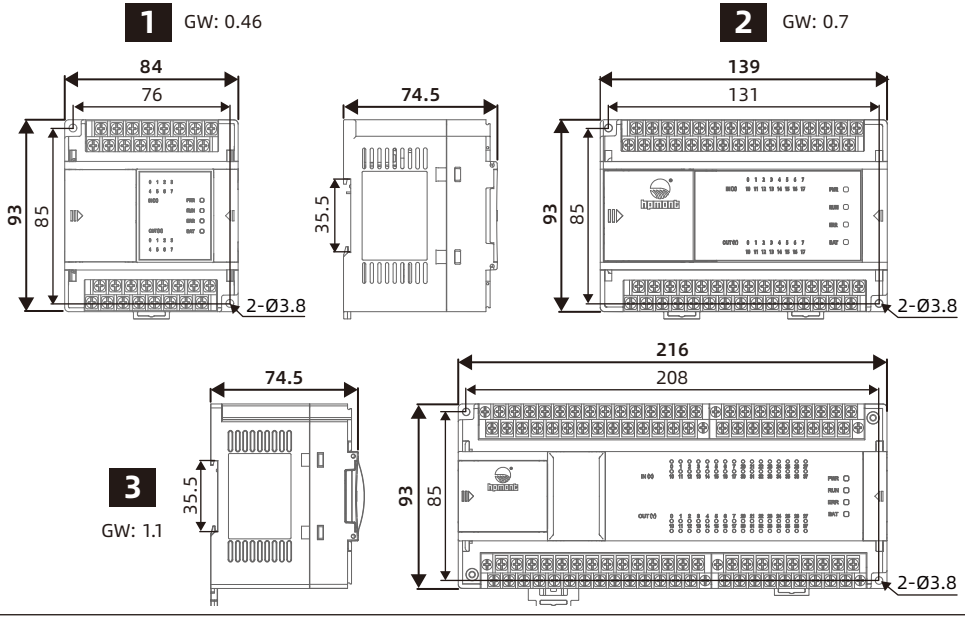
- Be sure to check the terminal label carefully when wiring.
- Avoid installation in places exposed to direct sunlight, moisture, or water.
- Avoid installation in locations with flammable and explosive gases and liquids.
- Avoid installation in areas with oily dust, fibers and metal particles.
- Use rails or M3 screws for installation.

V1.5 2021.07

Model Definition

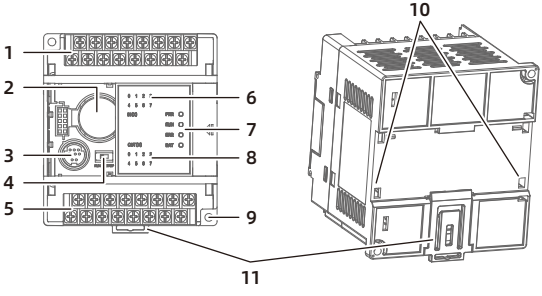


Size and Gross Weight (mm/kg)



Structure Description

1



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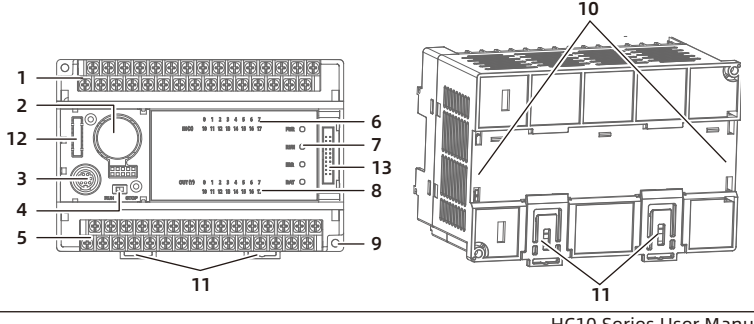
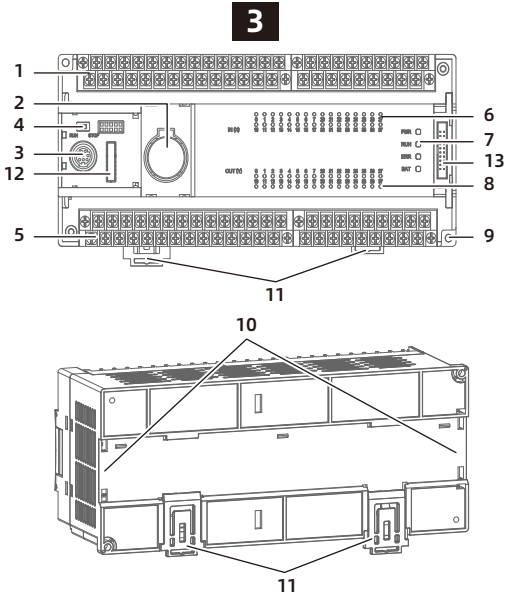
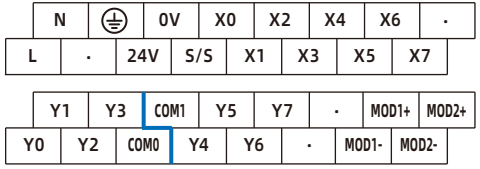


Structure Description (Continued)



1/5	**Input and output terminal**
2	**Battery**
3	**Programming interface**
4	**Run/Stop**
6/8	**Input and output indicator**
7	**Power/run/fault/battery indicator LED**
9	**Mounting fixing hole (M3)**
10	**DIN guideway groove (35mm)**
11	**DIN rail fixing buckle**
12	**Local expansion card installation location**
13	**Expansion module interface**

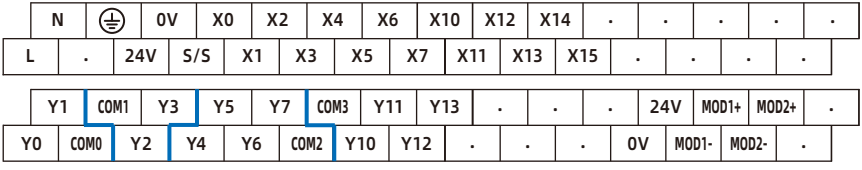
M0808



Model	
HC10-M0808R-C3	
Digital Input	
Digital	X0~X7 (S/S)
High speed	X0~X1 (S/S)
Digital Output	
Relay	Y0~Y3 (COM0), Y4~Y7 (COM1)
Communication	
RS485	MOD1+/MOD1-, MOD2+/MOD2-
Power	
+24V (output)	24V, 0V
200~240VAC	L, N
Size and Structure	
Size / structure	Figure 1

Model	
HC10-M0808R-C3-AB	
Digital Input	
Digital	X0~X7 (S/S)
High speed	X0~X7 (S/S)
Digital Output	
Relay	Y0~Y3 (COM0) , Y4~Y7 (COM1)
Communication	
RS485	MOD1+/MOD1-, MOD2+/MOD2-
Power	
+24V (output)	24V, 0V
200~240VAC	L, N
Size and Structure	
Size / structure	Figure 1

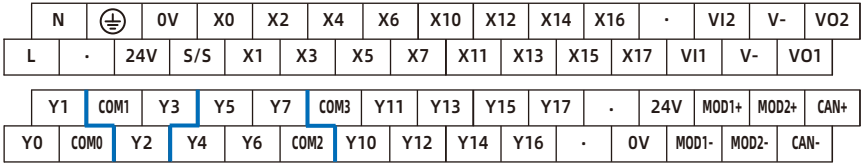
M1412



Model	
HC10-M1412R-C3 HC10-M1412T-C3-4H	
Digital Input	
Digital	X0~X7 (S/S) , X10~X15 (S/S)
High speed	X0~X3 (S/S)
Digital Output	
Relay	Y0~Y1 (COM0) , Y2~Y3 (COM1) Y4~Y7 (COM2) , Y10~Y13 (COM3)
Transistor	
High speed	Y0~Y1 (COM0) , Y2~Y3 (COM1)

Communication	
RS485	MOD1+/MOD1-, MOD2+/MOD2-
Power	
+24V (output)	24V, 0V
200~240VAC	L, N
Size and Structure	
Size / structure	Figure 2

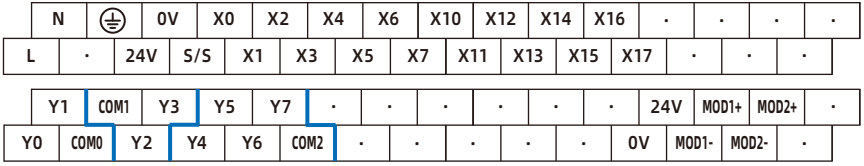
M1412 (Continued)



Model	
HC10-M1412R-C3-CA HC10-M1412T-C3-4H-CA	
Digital Input	
Digital	X0~X7 (S/S) , X10~X15 (S/S)
High speed	X0~X3 (S/S)
Digital Output	
Relay	Y0~Y1 (COM0) , Y2~Y3 (COM1) Y4~Y7 (COM2) , Y10~Y13 (COM3)
Transistor	
High speed	Y0~Y1 (COM0) , Y2~Y3 (COM1)

Analog Input and Output	
Input	VI1~VI2 (V-)
Output	VO1~VO2 (V-)
Communication	
RS485	MOD1+/MOD1-, MOD2+/MOD2-
CAN	CAN+/CAN-
Power	
+24V (output)	24V, 0V
200~240VAC	L, N
Size and Structure	
Size / structure	Figure 2

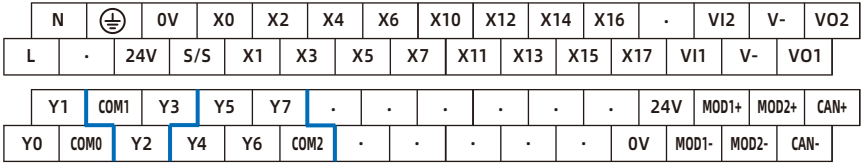
M1608M



Model	
HC10-M1608R-C3 HC10-M1608T-C3-4H	
Digital Input	
Digital	X0~X7 (S/S) , X10~X17 (S/S)
High speed	X0~X3 (S/S)
Digital Output	
Relay	Y0~Y1 (COM0) , Y2~Y3 (COM1) Y4~Y7 (COM2)
Transistor	
High speed	Y0~Y1 (COM0) , Y2~Y3 (COM1)

Communication	
RS485	MOD1+/MOD1-, MOD2+/MOD2-
Power	
+24V (output)	24V, 0V
200~240VAC	L, N
Size and Structure	
Size / structure	Figure 2

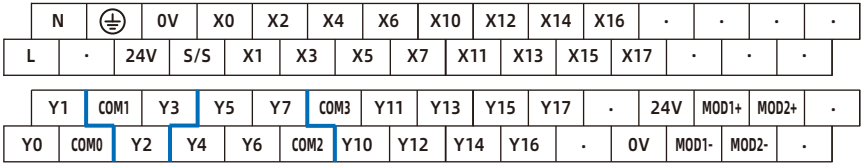
M1608 (Continued)



Model	
HC10-M1608R-C3-CA HC10-M1608T-C3-4H-CA	
Digital Input	
Digital	X0~X7 (S/S) , X10~X17 (S/S)
High speed	X0~X3 (S/S)
Digital Output	
Relay	Y0~Y1 (COM0) , Y2~Y3 (COM1) Y4~Y7 (COM2)
Transistor	
High speed	Y0~Y1 (COM0) , Y2~Y3 (COM1)

Analog Input and Output	
Input	VI1~VI2 (V-)
Output	VO1~VO2 (V-)
Communication	
RS485	MOD1+/MOD1-, MOD2+/MOD2-
CAN	CAN+/CAN-
Power	
+24V (output)	24V, 0V
200~240VAC	L, N
Size and Structure	
Size / structure	Figure 2

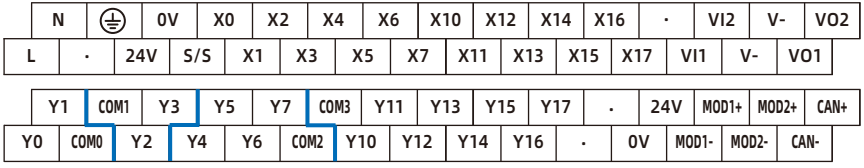
M1616



Model	
HC10-M1616R-C3 HC10-M1616T-C3-4H	
Digital Input	
Digital	X0~X7 (S/S) , X10~X17 (S/S)
High speed	X0~X3 (S/S)
Digital Output	
Relay	Y0~Y1 (COM0) , Y2~Y3 (COM1) Y4~Y7 (COM2) , Y10~Y17 (COM3)
Transistor	
High speed	Y0~Y1 (COM0) , Y2~Y3 (COM1)

Communication	
RS485	MOD1+/MOD1-, MOD2+/MOD2-
Power	
+24V (output)	24V, 0V
200~240VAC	L, N
Size and Structure	
Size / structure	Figure 2

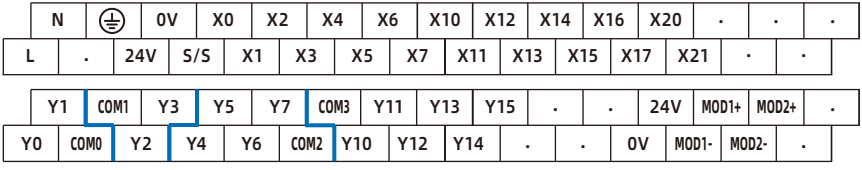
M1616 (Continued)



Model	
HC10-M1616R-C3-CA HC10-M1616T-C3-4H-CA	
Digital Input	
Digital	X0~X7 (S/S) , X10~X17 (S/S)
High speed	X0~X3 (S/S)
Digital Output	
Relay	Y0~Y1 (COM0) , Y2~Y3 (COM1) Y4~Y7 (COM2) , Y10~Y17 (COM3)
Transistor	
High speed	Y0~Y1 (COM0) , Y2~Y3 (COM1)

Analog Input and Output	
Input	VI1~VI2 (V-)
Output	VO1~VO2 (V-)
Communication	
RS485	MOD1+/MOD1-, MOD2+/MOD2-
CAN	CAN+/CAN-
Power	
+24V (output)	24V, 0V
200~240VAC	L, N
Size and Structure	
Size / structure	Figure 2

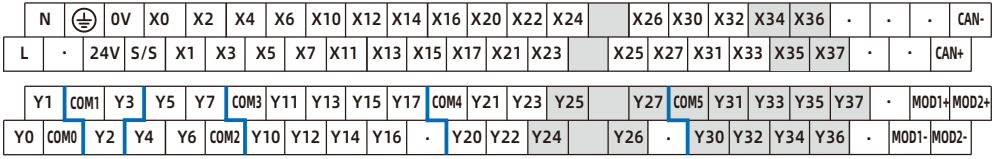
M1814



Model	
HC10-M1814R-C3 HC10-M1814T-C3-4H	
Digital Input	
Digital	X0~X7 (S/S) , X10~X17 (S/S) X20~X21 (S/S)
High speed	X0~X3 (S/S)
Digital Output	
Relay	Y0~Y1 (COM0) , Y2~Y3 (COM1) Y4~Y7 (COM2) , Y10~Y15 (COM3)
Transistor	
High speed	Y0~Y1 (COM0) , Y2~Y3 (COM1)

Communication	
RS485	MOD1+/MOD1-, MOD2+/MOD2-
Power	
+24V (output)	24V, 0V
200~240VAC	L, N
Size and Structure	
Size / structure	Figure 2

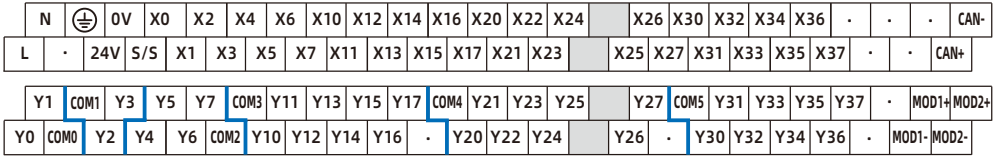
M2820



Model	
HC10-M2820R-C3, HC10-M2820T-C3-4H HC10-M2820R-C3-C, HC10-M2820T-C3-4H-C	
Digital Input	
Digital	X0~X7 (S/S) , X10~X17 (S/S) X20~X27 (S/S) , X30~X33 (S/S)
High speed	X0~X3 (S/S)
Digital Output	
Relay	Y0~Y1 (COM0) , Y2~Y3 (COM1) Y4~Y7 (COM2) , Y10~Y17 (COM3) Y20~Y23 (COM4)
Transistor	
High speed	Y0~Y1 (COM0) , Y2~Y3 (COM1)

Communication	
RS485	MOD1+/MOD1-, MOD2+/MOD2-
CAN	CAN+/CAN-
Power	
+24V (output)	24V, 0V
200~240VAC	L, N
Size and Structure	
Size / structure	Figure 3

M3232



Model	
HC10-M3232R-C3, HC10-M3232T-C3-4H HC10-M3232R-C3-C, HC10-M3232T-C3-4H-C	
Digital Input	
Digital	X0~X7 (S/S) , X10~X17 (S/S) X20~X27 (S/S) , X30~X37 (S/S)
High speed	X0~X3 (S/S)
Digital Output	
Relay	Y0~Y1 (COM0) , Y2~Y3 (COM1) Y4~Y7 (COM2) , Y10~Y17 (COM3) Y20~Y27 (COM4) , Y30~Y37 (COM5)
Transistor	
High speed	Y0~Y1 (COM0) , Y2~Y3 (COM1)

Communication	
RS485	MOD1+/MOD1-, MOD2+/MOD2-
CAN	CAN+/CAN-
Power	
+24V (output)	24V, 0V
200~240VAC	L, N
Size and Structure	
Size / structure	Figure 3

Product Specifications

General	
Environmental temperature	Run: -10~+55℃ Storage: -40~+70℃
Relative humidity	<95%, no condensation
Altitude	Run: <2000m Storage: 0~3000m (not less than 70kPa)
Pollution level	Pollution level2
Withstand voltage	1,500VAC (primary side (P1) -ALL) 1,500VAC (secondary side (P2) -ALL) 500VDC (ELV-ALL)
Electromagnetic compatibility	ESD: 8kV air discharge EFT: Power cable 2kV, I/O 1kV, analog 1kV
Ground	Third grounding (cannot be grounded in common with high voltage systems)

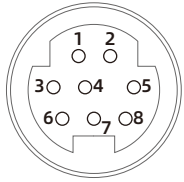
Digital Input			
Connection		Barrier terminal block (end point distance: 7.62mm)	
Signal form		Contact input or source (drain) mode	
Circuit insulation		Photoelectrical coupling insulation	
Action display		LED light goes on with system's operation, LED light goes out when system is shut-down	
Voltage range		15~30VDC	
Common		S/S	
Point type		High speed	Digital
Current	ON:	>7.5mA (>15V)	>3.5mA (>15V)
	OFF:	<2.5mA (<5V)	<1.2mA (<5V)
Resistance		3.3kΩ	4.7kΩ
Hardware filtering time		/	About 200us
Support pulse		≤100kHz	≤1kHz

Product Specifications (Continued)

Digital Output				
Connection		Barrier terminal block (end point distance: 7.62mm)		
Circuit insulation		Photoelectrical coupling insulation		
Action display		LED light goes on with system's operation, LED light goes out when system is shut-down		
Common		Two groups, four groups or eight groups have a common terminal, the group is isolated from the group		
Point type		High speed	Transistor	Relay
Response time		/	ON-OFF: <0.2ms	ON-OFF: <5ms
Support frequency		≤100kHz	≤1kHZ	/
External voltage		5~30VDC	5~30VDC	250VAC, below 30VDC
Max. load	Resistive	50mA/1 point	50mA/1 point	3A/1 point (5A/COM)
	Inductive	1.2W (24VDC)	1.2W (24VDC)	80VA
	Light bulb	0.2W (24VDC)	0.2W (24VDC)	20W (DC) /100W (AC)

Product Specifications (Continued)

Analog Input and Output	
Connection	Barrier terminal block (end point distance: 7.62mm)
Form	Voltage or current optional
Negative common	V-
Range	Voltage: 0~10V Current: 0~20mA
Resistance (input)	Voltage: 31kΩ Current: 500Ω
Load (output)	Voltage: 2kΩ~1MΩ Current: 0~500Ω
Resolution	Voltage: 10mV Current: 10uA
Array (input or output)	0~32000
Comprehensive accuracy	±3% full range

Communication	
RS485 interface	MOD1+/MOD2+ (485+) MOD1-/MOD2- (485-)
RS422 interface	1: RXD- 2: RXD+ 3: GND 4: TXD- 5: VCC 7: TXD+ 
CAN interface	CAN+, CAN-

Product Specifications (Continued)

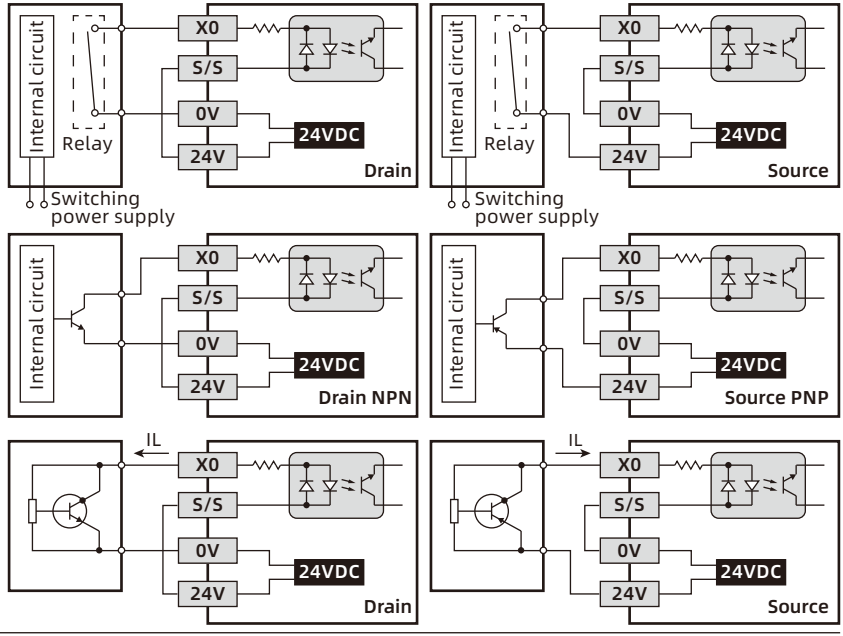
Power Supply	
Power supply voltage	200~240VAC (-10~+10%) , 50/60Hz
Action specification	When the power supply rises to 90 ~ 100VAC, HC10 starts to operate. When the power supply drops to 88VAC, HC10 stops
Allow instant power outage	The power supply will continue to run within the instantaneous power outage 10ms
Power fuse capacity	3.15A/250VAC
Electric shock	≤12A
Power consumption	30VA
DC24V current outpu	200mA
Power protection	DC24V output has short circuit protection

1. The power cable needs to be larger than 2mm^2 to prevent voltage drop.

2. Avoid access to high-voltage, high-current power supplies or cables.

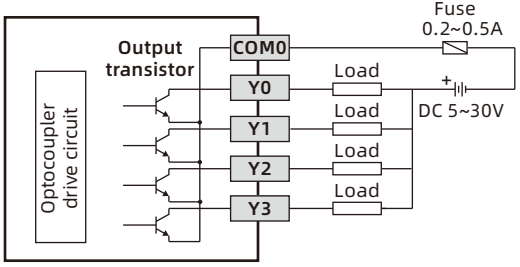
3. Do not overvoltage the power supply, polarity is correct.

Instructions (Digital Input)

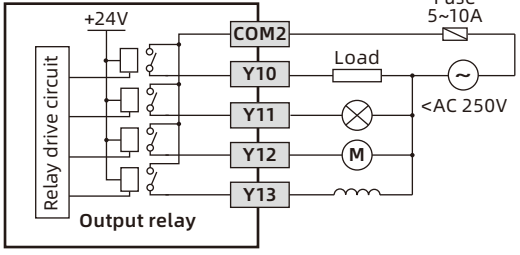


Instructions (Digital Output)

Transistor



Relay

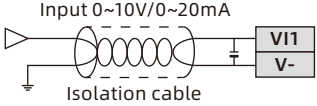


Note:

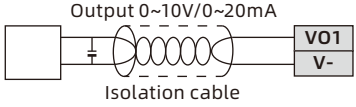
In order to prevent the load from short-circuiting and other blows to burn out the output unit, please select the fuse for each load.

Instructions (Analog Input and Output)

Input



Output



Note:

- *Please isolate the analog input or output from other power cables.*
- *If the analog input or output is disturbed by noise, the 0.1~0.47uF 25V capacitor or ferrite ring can be connected.*
- *Before current input or output, need to change the address corresponding to the analog to current type.*

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