

HC10 Series Intelligent Controller

User Manual



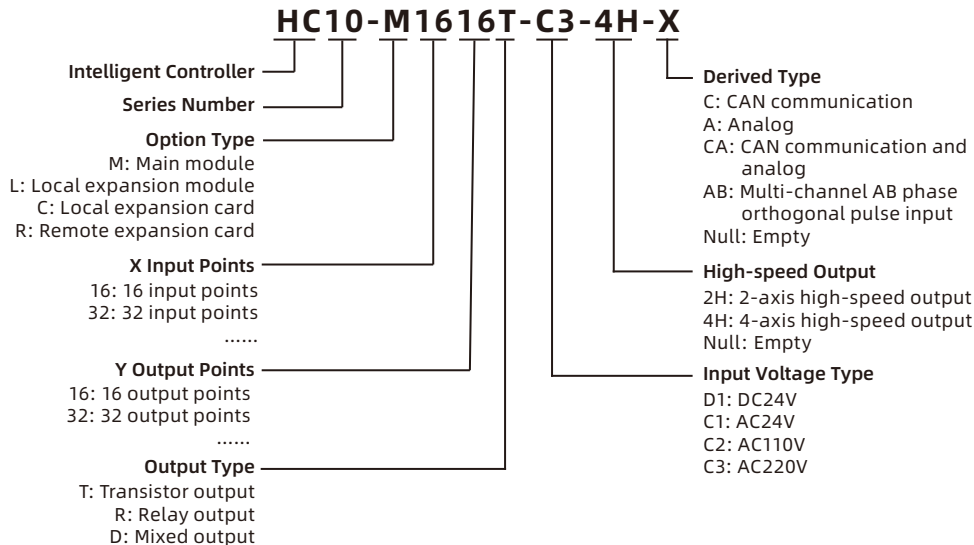
Warning

- 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.



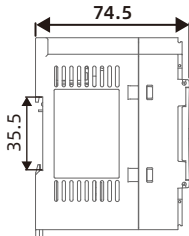
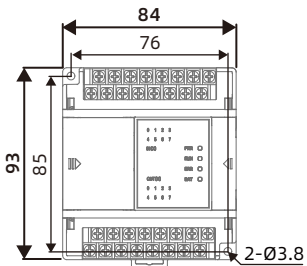
V1.5 2021.07

Model Definition

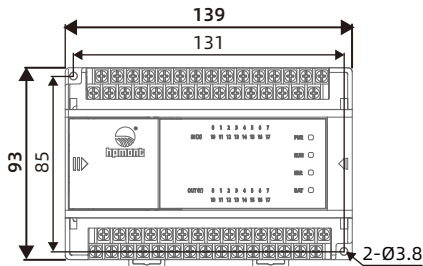


Size and Gross Weight (mm/kg)

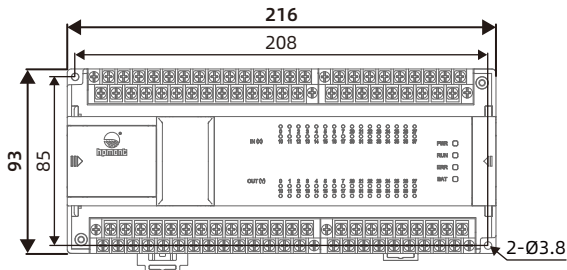
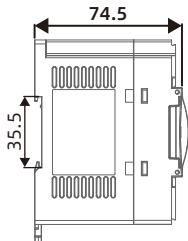
1 GW: 0.46



2 GW: 0.7

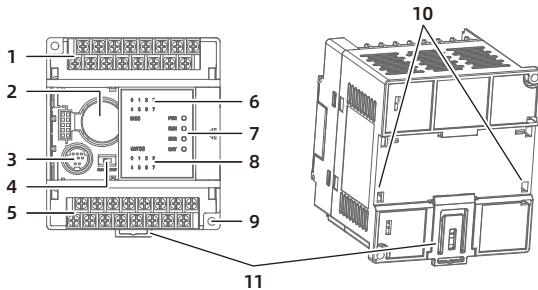


3
GW: 1.1

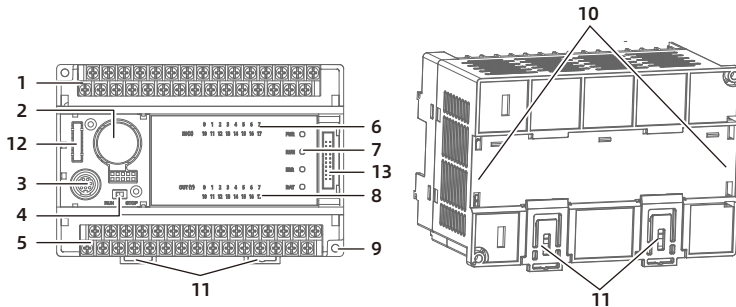


Structure Description

1

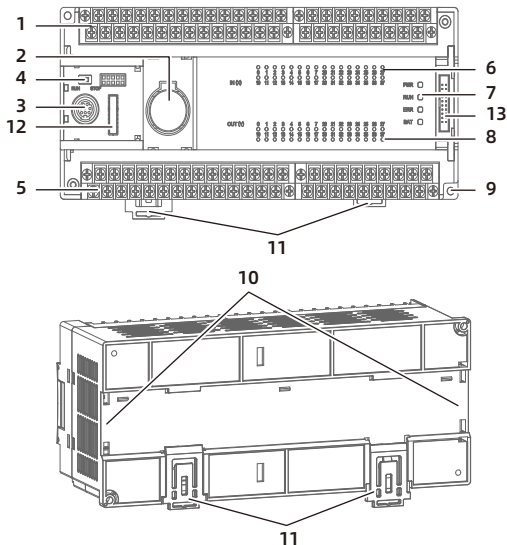


2

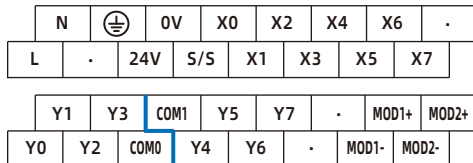


Structure Description (Continued)

3




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



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

N		0V	X0	X2	X4	X6	X10	X12	X14	.	.	.	.	.
L	.	24V	S/S	X1	X3	X5	X7	X11	X13	X15	.	.	.	.
Y1	COM1	Y3	Y5	Y7	COM3	Y11	Y13	.	.	.	24V	MOD1+	MOD2+	.
Y0	COM0	Y2	Y4	Y6	COM2	Y10	Y12	.	.	.	0V	MOD1-	MOD2-	.

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)
Transistor	Y4~Y7 (COM2) , Y10~Y13 (COM3)
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)

N	\oplus	0V	X0	X2	X4	X6	X10	X12	X14	X16	.	VI2	V-	VO2
L	.	24V	S/S	X1	X3	X5	X7	X11	X13	X15	X17	VI1	V-	VO1
Y1	COM1	Y3	Y5	Y7	COM3	Y11	Y13	Y15	Y17	.	24V	MOD1+	MOD2+	CAN+
Y0	COM0	Y2	Y4	Y6	COM2	Y10	Y12	Y14	Y16	.	0V	MOD1-	MOD2-	CAN-

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)
Transistor	Y4~Y7 (COM2) , Y10~Y13 (COM3)
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
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M1608M

N		0V	X0	X2	X4	X6	X10	X12	X14	X16
L	.	24V	S/S	X1	X3	X5	X7	X11	X13	X15	X17	.	.	.
Y1	COM1	Y3	Y5	Y7	24V	MOD1+	MOD2+	.
Y0	COM0	Y2	Y4	Y6	COM2	.	.	.	.	.	0V	MOD1-	MOD2-	.

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)
Transistor	Y4~Y7 (COM2)
High speed	Y0~Y1 (COM0) , Y2~Y3 (COM1)

Communication

RS485	MOD1+/MOD1- , MOD2+/MOD2-
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Power

+24V (output)	24V, 0V
200~240VAC	L, N

Size and Structure

Size / structure	Figure 2
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M1608 (Continued)

N		0V	X0	X2	X4	X6	X10	X12	X14	X16	.	VI2	V-	VO2
L	.	24V	S/S	X1	X3	X5	X7	X11	X13	X15	X17	VI1	V-	VO1
Y1	COM1	Y3	Y5	Y7	.	.	.	.	.	.	24V	MOD1+	MOD2+	CAN+
Y0	COM0	Y2	Y4	Y6	COM2	.	.	.	.	.	0V	MOD1-	MOD2-	CAN-

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)
Transistor	Y4~Y7 (COM2)
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
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M1616

N		0V	X0	X2	X4	X6	X10	X12	X14	X16
L	.	24V	S/S	X1	X3	X5	X7	X11	X13	X15	X17	.	.	.
Y1	COM1	Y3	Y5	Y7	COM3	Y11	Y13	Y15	Y17	.	24V	MOD1+	MOD2+	.
Y0	COM0	Y2	Y4	Y6	COM2	Y10	Y12	Y14	Y16	.	0V	MOD1-	MOD2-	.

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)
Transistor	Y4~Y7 (COM2) , Y10~Y17 (COM3)
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)

N		0V	X0	X2	X4	X6	X10	X12	X14	X16	.	VI2	V-	VO2
L	.	24V	S/S	X1	X3	X5	X7	X11	X13	X15	X17	VI1	V-	VO1
Y1	COM1	Y3	Y5	Y7	COM3	Y11	Y13	Y15	Y17	.	24V	MOD1+	MOD2+	CAN+
Y0	COM0	Y2	Y4	Y6	COM2	Y10	Y12	Y14	Y16	.	0V	MOD1-	MOD2-	CAN-

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)
Transistor	Y4~Y7 (COM2) , Y10~Y17 (COM3)
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
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M1814

N		0V	X0	X2	X4	X6	X10	X12	X14	X16	X20	.	.	.
L	.	24V	S/S	X1	X3	X5	X7	X11	X13	X15	X17	X21	.	.
Y1	COM1	Y3	Y5	Y7	COM3	Y11	Y13	Y15	.	.	24V	MOD1+	MOD2+	.
Y0	COM0	Y2	Y4	Y6	COM2	Y10	Y12	Y14	.	.	0V	MOD1-	MOD2-	.

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)
Transistor	Y4~Y7 (COM2), Y10~Y15 (COM3)
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

N		0V	X0	X2	X4	X6	X10	X12	X14	X16	X20	X22	X24		X26	X30	X32	X34	X36	.	.	.	CAN-
L	.	24V	S/S	X1	X3	X5	X7	X11	X13	X15	X17	X21	X23		X25	X27	X31	X33	X35	X37	.	.	CAN+
Y1	COM1	Y3	Y5	Y7	COM3	Y11	Y13	Y15	Y17	COM4	Y21	Y23	Y25		Y27	COM5	Y31	Y33	Y35	Y37	.	MOD1+	MOD2+
Y0	COM0	Y2	Y4	Y6	COM2	Y10	Y12	Y14	Y16	.	Y20	Y22	Y24		Y26	.	Y30	Y32	Y34	Y36	.	MOD1-	MOD2-

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)
Transistor	Y20~Y23 (COM4)
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
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M3232

N	⊕	0V	X0	X2	X4	X6	X10	X12	X14	X16	X20	X22	X24		X26	X30	X32	X34	X36	.	.	.	CAN-
L	.	24V	S/S	X1	X3	X5	X7	X11	X13	X15	X17	X21	X23		X25	X27	X31	X33	X35	X37	.	.	CAN+
Y1	COM1	Y3	Y5	Y7	COM3	Y11	Y13	Y15	Y17	COM4	Y21	Y23	Y25		Y27	COM5	Y31	Y33	Y35	Y37	.	MOD1+	MOD2+
Y0	COM0	Y2	Y4	Y6	COM2	Y10	Y12	Y14	Y16	.	Y20	Y22	Y24		Y26	.	Y30	Y32	Y34	Y36	.	MOD1-	MOD2-

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)
Transistor	Y20~Y27 (COM4), Y30~Y37 (COM5)
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
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Product Specifications

General	
Environmental temperature	Run: -10~+55°C Storage: -40~+70°C
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)

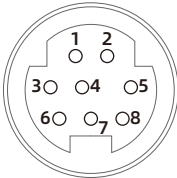
Digital Input		
Connection	Barrier terminal block (end point distance: 7.62mm)	
Signal form	Contact input or source (drain) mode	
Circuit insulation	Photoelectrical coupling insulation	
Action display	LED light goes on with system's operation, LED light goes out when system is shut-down	
Voltage range	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
Response time		/	ON-OFF: <0.2ms
Support frequency		≤100kHz	≤1kHz
External voltage		5~30VDC	250VAC, below 30VDC
Max. load	Resistive	50mA/1 point	3A/1 point (5A/COM)
	Inductive	1.2W (24VDC)	80VA
	Light bulb	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: 31k Ω Current: 500 Ω
Load (output)	Voltage: 2k Ω ~1M Ω Current: 0~500 Ω
Resolution	Voltage: 10mV Current: 10uA
Array (input or output)	0~32000
Comprehensive accuracy	\pm 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-

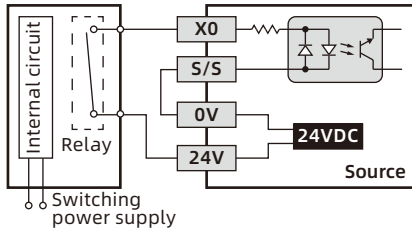
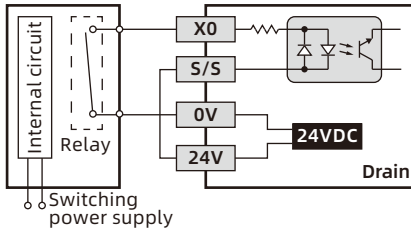
Product Specifications (Continued)

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 output	200mA
Power protection	DC24V output has short circuit protection

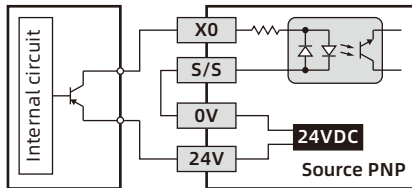
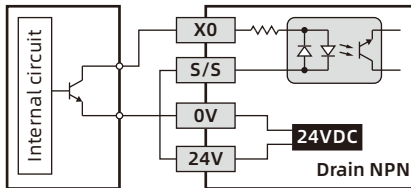
1. The power cable needs to be larger than 2mm² to prevent voltage drop.
2. Avoid access to high-voltage, high-current power supplies or cables.
3. Do not overvoltage the power supply, polarity is correct.

Instructions (Digital Input)

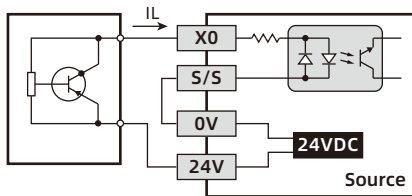
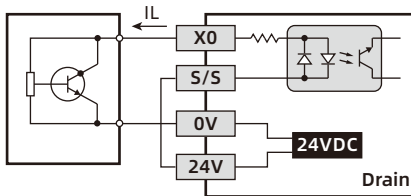
Relay



Open-circuit
Collect

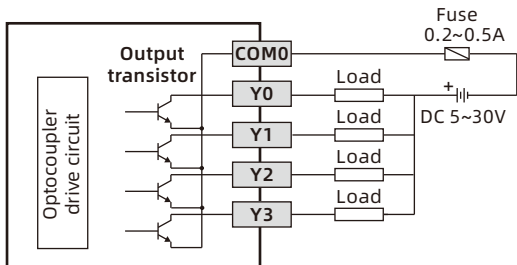


2-wire
Proximity
Switch

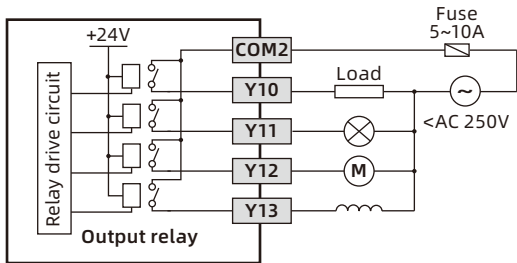


Instructions (Digital Output)

Transistor



Relay

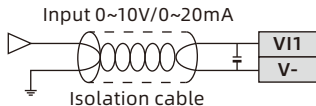


Note:

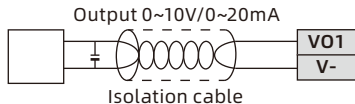
In order to prevent the load from short-circuiting and other blows to burn out the output unit, please select the fuse for each load.

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 0.1~0.47 μ F 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.*

Hpmont Group Company

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