

HC10 Series Temperature Module

User Manual



V1.1 2022.01

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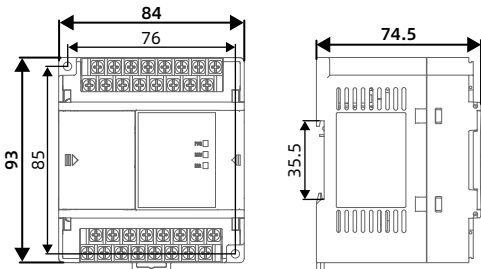
Warning

- **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.**

Size and Gross Weight

1

GW: 0.3kg



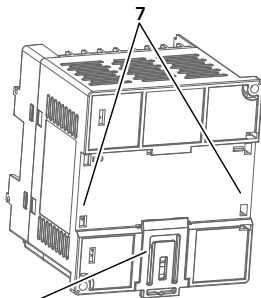
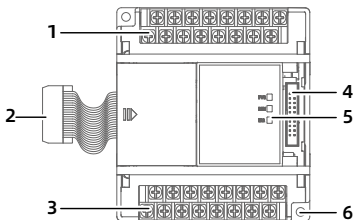
Unit: mm

Structure Description

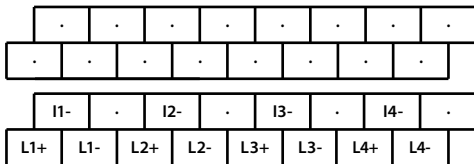
1	Output terminal(Reserved)
2	Extension cable
3	Input terminal
4	Expansion port

5	Power/run/fault indicator LED
6	Mounting fixing hole (M3)
7	DIN guideway groove (35mm)
8	DIN rail fixing buckle

1



L0400PT1 Terminal Description



Model

HC10-L0400PT1 (PT100 thermistor)

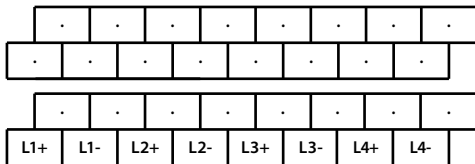
Terminal

L1+ ~ L4+	PTA terminal
L1- ~ L4-	PTB terminal
I1- ~ I4-	PTC terminal

Size and Structure

Size and structure	Figure 1
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L0400TC Terminal Description



Model

HC10-L0400TC (thermocouple)

Terminal

L1+ ~ L4+	Positive terminal
L1- ~ L4-	Negative terminal

Size and Structure

Size and structure	Figure 1
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Product Specifications

General Specifications

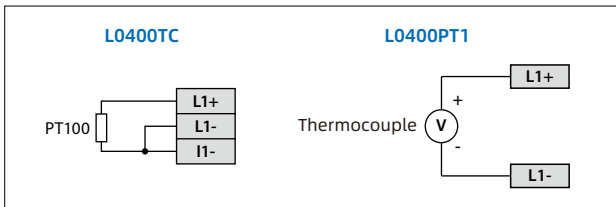
Environmental Temperature	Run: -10 ~ +55°C Storage: -40 ~ +70°C
Relative Humidity	<95%, no condensation
Altitude	Run: <2000m Storage: 0 ~ 3000m (not less than 70kPa)
Pollution Level	Pollution level 2

Temperature Expansion Module Specifications

Connection	Barrier terminal block (end point distance: 7.62mm)	
Input Number	L1+ ~ L4+	
Input Function	PT100 thermistor	Thermocouple
Temperature Sampling Range	-100.0 ~ +600.0°C	It depends on the type of thermocouple <ul style="list-style-type: none">• K-type: -100.0 ~ +1200.0°C• J-type: -100.0 ~ +800.0°C• T-type: -200.0 ~ +400.0°C• E-type: -100.0 ~ +600.0°C• N-type: -100.0 ~ +1200.0°C• R-type: 0.0 ~ +1700.0°C• S-type: 0.0 ~ +1700.0°C• B-type: 100.0 ~ 1700.0°C
Comprehensive Accuracy	±0.5% full range	±0.3% full range
Resolution	0.1°C	

Instructions

1. Wiring the temperature module and confirm that it is correct.



2. After connecting all expansion modules with expansion module cables, the main module is powered up.
 - Connect up to 8.
 - According to the distance from the main module from near to far, the expansion modules are numbered 0, 1, 2, 3, 4, 5, 6, 7.
3. Write user instructions to achieve read and write functions.
 - See page 8 for instruction description.
 - See page 9 for the description of the module data address.

Instruction Description (FROM, TO)

Read Input Data

FROM S1 S2 S3 S4

S1: Module number.

S2: Module data read starting address.

S3: Read the data storage register.

- When reading multiple data, the read data is stored sequentially from this address.

S4: Read data length.

Write Thermocouple Type

TO S1 S2 S3 S4

S1: Module number.

S2: Module data write start address.

S3: Write the data register.

- When writing multiple data, write data sequentially from this address.

S4: Write data length.

Module Data Address Description (L0400PT1)

HC10-L0400PT1		
Module Data Address	Data Content	Read/Write
0	Module type (0x40)	Read only
1	Software version	Read only
2 ~ 4	Reserved	/
5 ¹⁾	Channel 1 temperature results	Read only
6 ¹⁾	Channel 2 temperature results	Read only
7 ¹⁾	Channel 3 temperature results	Read only
8 ¹⁾	Channel 4 temperature results	Read only
9 ~ 11	Reserved	/

1): -100.0 ~ +600.0°C corresponding range -1000 ~ +6000.

Module Data Address Description (L0400TC)

HC10-L0400TC		
Module Data Address	Data Content	Read/Write
0	Module type (0x41)	Read only
1	Software version	Read only
2 ~ 4	Reserved	/
5	Channel 1 temperature results	Read only
6	Channel 2 temperature results	Read only
7	Channel 3 temperature results	Read only
8	Channel 4 temperature results	Read only
9 ~ 11	Reserved	/
12	Thermocouple type selection	Read and write

Module Data Address Description (L0400TC) (Continued)

5 ~ 8: Channel 1 ~ 4 Temperature Results

12: Thermocouple Type Selection

Module Data Address	Bit15 ~ Bit12	Bit11 ~ Bit8	Bit7 ~ Bit4	Bit3 ~ Bit0
12	Channel 4	Channel 3	Channel 2	Channel 1

The values of each channel setting (thermocouple type) are shown in the table below.

Value	Thermocouple Type	Range	Range (Digital)
0000	K	-100.0 ~ +1200.0°C	-1000 ~ +12000
0001	J	-100.0 ~ +800.0°C	-1000 ~ +8000
0010	T	-200.0 ~ +400.0°C	-2000 ~ +4000
0011	E	-100.0 ~ +600.0°C	-1000 ~ +6000
0100	N	-100.0 ~ +1200.0°C	-1000 ~ +12000
0101	R	0.0 ~ +1700.0°C	0 ~ +17000
0110	S	0.0 ~ +1700.0°C	0 ~ +17000
0111	B	100.0 ~ 1700.0°C	1000 ~ 17000

Example: The thermocouple types of module channels 1 ~ 4 need to be set to K-type, J-type, N-type, and T-type in sequence, and the module data address 12 should be written as 0x2410.

Expansion Module Type

According to the distance from the main module from near to far, the expansion modules are numbered 0, 1, 2, 3, 4, 5, 6, 7.

Number	1st	2nd	3rd	4th
Module Number	0	1	2	3
Mapped Address	D8265	D8267	D8269	D8271
Data	0x40: L0400PT1, 0x41: L0400TC			

Number	5th	6th	7th	8th
Module Number	4	5	6	7
Mapped Address	D8273	D8275	D8277	D8279
Data	0x40: L0400PT1, 0x41: L0400TC			

Hpmont Group Company

Shenzhen Hpmont Technology Co., Ltd.

Add: Building 28, Wangjingkeng Industry Park, Xili Town, Nanshan District, Shenzhen, China

Tel: +86 755-26791688

Fax: +86 755-26558128

Email: marketing@hpmont.com

HPMONT (Hong Kong) Co., Ltd.

Add: Room 709, 7/F, Silvercord Tower 1, 30 Canton Road, Tsim Sha Tsui, -Kowloon. Hong Kong

Tel: +852 6607 2243

Email: info.hk@hpmont.com.hk

Hpmont (Turkey) Teknoloji Ltd. Sti.

Add: Floor 3, Building 20, Fil Yokuşu Street, Cevizli District, Maltepe/Istanbul

Tel: +90 533 261 38 76

Email: info.tr@hpmont.com.hk

www.hpmont.com

Mont Korea Co., Ltd.

Add: Ace pyungchon tower, #811, 361 Slimin-daero, Dongan-gu, Anyang-si, Gyeonggi-Do, 14057

Tel: +82-31-345-8181

Email: info.kr@hpmont.com.hk

Hpmont (Malaysia) Sdn Bhd

Add: VO3-11-20, Lingkaran SV, Sunway Velocity, 55100 Kuala Lumpur

Tel: +603 9202 8812

Email: info.ma@hpmont.com.hk

Hpmont (Taiwan) Co., Ltd.

Add: 17F., No. 368-3, Sec. 2, Gaotie S. Rd., Zhongli Dist., Taoyuan City 320, Taiwan

Tel: +886 905 333 600

Email: info.tw@hpmont.com.hk