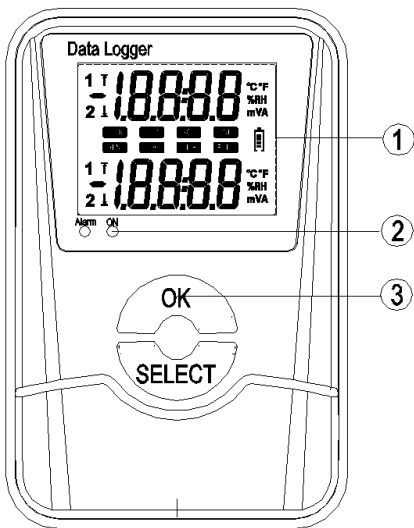


Multifunction Data Logger

User Manual



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1. Overview

1.1 Product Overview

The Data logger is multifunction measurement data logger (such as temperature, humidity, AC/DC current, AC/DC voltage). It can use difference standard sensor for temperature measurement like Thermocouple and RTD. Data Logger have two measurement modes, one is the online mode and logger mode.

Online Mode: you can use the USB to connect the computer with the Data Logger, according the software interface you can get the real-time measurement data and the wave curve online.

Logger Mode: the software interface can set difference log operation after offline state. If the configuration is complete, it can be measured for offline state, and can keep 16,000 record data each 2 log bank in build-in memory without battery. After completing the measurement, you can connect to computer read the data on the software interface, also can get the curve and graph.

1.2 Cautions

- * If the Data logger is used near noise generating equipment, be aware that display may become unstable or indicate large errors.
- * Please confirm the sensor is connect to the correct place before use the Data Logger.

- * Do not exceed the range specified for each input avoid damage the instrument.
- * Do not use the Data logger or accessories if they look damaged.
- * Any adjustment, maintenance or repair work carried out on the data logger while it is live should be carried out only by appropriately qualified personnel, after having taken into account the instructions in this present manual.
- * Before open the data logger case, you must finish measurement and remove all leads from the input. Also to ensure that you are not with the static electricity to avoid damages the instrument components.
- * Replace the  battery immediately when LCD appears. With a low battery, the data log might produce false readings that can lead to electric shock and personal injury.

1.3 Safety Information

- * When the measured voltage exceeds 60Vdc or 30Vac RMS, so be careful to avoid electric shock.
- * Do not use in explosive gas, vapor or dust near the use of the instrument.

1.4 Safety Symbols



Important safety information should refer before using.



Fuse



Comply with CE safety standards

1.5 Data logger models, features and specifications

1.51 Model record sheet corresponding to those measurements function and specifications of the corresponding

	Data Logger				
	Parameter		Basic type	Single type	Dual type
	Type	Sensor			
Build-in function	N	Build-in NTC	●	●	●
	NH	Build-in NTC	●		
		Build-in RH%			
voltage	V1	V DC		○	○○
	V2	V AC		○	○○
Current	A1	mA DC		○	○○
	A2	A AC		○	○○
Thermocouple	TK	K TYPE		○	○○
	TJ	J TYPE		○	○○
PTC	R1	PT100		○	○○
	R2	PT1000		○	○○
○: Can be choose ●: Must be choose					

- * Basic type is built-in sensor; Single type is single external channel; Dual type is dual external channel;
- * For more measure range and specification information, please read 4.2 table.

1.52 The model of Data Logger instruction

(1) Basic – XX

Measurement parameters:

N: Internal temperature measurement
(have other water proof mode)

NH: Internal temperature+Humidity
measurement

Basic type

For example: Basic-N internal NTC temperature

(2) Single – XX

CH1

measurement parameters:

V1: DCV 0~50V

V2: ACV 0~400V

A1: DC mA 0~24mA

A2: ACA 0~600A

TK: TC-K TYPE

TJ: TC-J TYPE

R1: PT100

R2: PT1000

External single way

(include internal NTC temperature
measurement)

For example: Single-V1 external DCV 0~50V

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(3) Dual – XX – XX

CH1

CH2

measurement parameters:

measurement parameters:	V1: DCV 0~50V
V1:DCV 0~50V	V2: ACV 0~400V
V2:ACV 0~400V	A1: DCmA 0~24mA
A1:DCmA 0~24mA	A2: ACA 0~600A
A2:ACA 0~600A	TK: TC-K TYPE
TK:TC-K TYPE	TJ: TC-J TYPE
TJ:TC-J TYPE	R1: PT100
R1:PT100	R2: PT1000
R2:PT1000	

External dual ways

(include internal temperature measurement)

For example: Dual-V1-R1 external 1 DCV0~50V
external 2 PT100

2. Data Logger introduction

2.1. Data Logger panel instructions

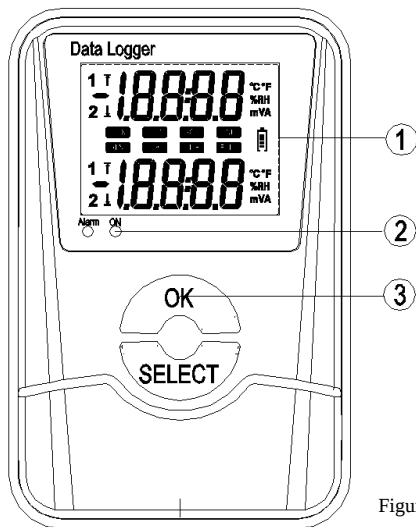


Figure 2—1

① **LCD Monitor**

② **LED indication**

“Alarm” LED and “ON” LED

③ **Keypad**

“OK” key and “SELECT” key.

2.1.1 LCD Monitor and symbol.

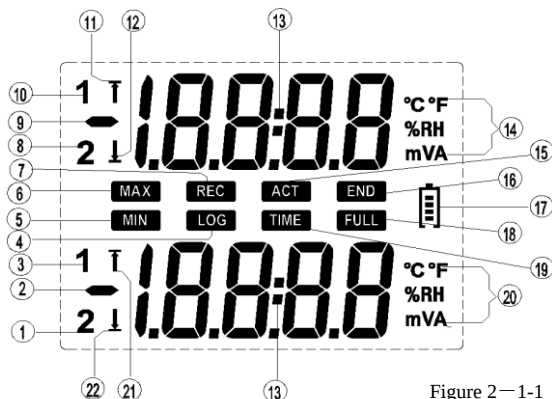


Figure 2—1-1

Nb	Symbol	Implications
1	2	Log Bank2 measure External Channel-2
2		Log Bank2 shows the measured data is negative
3	1	Log Bank2 measure External Channel-1
4	LOG	Log data when that symbol shows
5	MIN	The currently data displayed is the minimum value.
6	MAX	The currently data displayed is the maximum value.

7		The displayed value is the total recorded number
8		Log Bank1 measure External Channel-2
9		Log Bank1 shows the measured data is negative
10		Log Bank1 measure External Channel-1
11		Log Bank1 measure High limit occur
12		Log Bank1 measure Low limit occur
13		Hours, minutes, seconds, interval notation
14		Log Bank1 measure unit
15		Running measure task
16		Measure task finish
17		The battery power indication
18		Record data is full to 16000 point

19		When the measure task finish, it display this symbol which show value of time interval.
20		Log Bank2 measure unit
21		Log Bank2 measure High limit occur
22		Log Bank2 measure Low limit occur

2.1.2 LED lights

2.1.2.0 Alarm LED

Users set Alarm function and enable Alarm LED on PC software interface, when the measurement reach the limit setting. Then the Alarm LED will light 1 seconds each 5 seconds until the end. After finish measurement, Alarm LED will stop light, but when use the “SELECT” button to review the state of measurement task, Alarm LED will show the Alarm state in the last measurement task. LED color is red.

2.1.2.1 ON LED

Users set enable ON LED on PC software interface, when the measurement task start, the ON LED will light 1 seconds each 5 seconds until the task end. LED color is green.

2.1.3 Key Function

2.1.3.0 OK key

When users select start measurement or finish measurement trigger function is button, through PC software operation. Then OK key is enabled. Keep press OK key more than 5 seconds, the trigger function will active.

2.1.3.1 SELECT

a. Quick start measure mode

Keep Press 5 sec when END mode, will quick start measure, but without record function at offline mode.

Press 5 sec again will finish this mode.

b. Record state review mode

Press short when END mode, will review following information

State		Sample figure
State1	The total number of records. REC is shown	
State2	The interval time. TIME is shown	

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State3	The last time measurement data review. When the task setting is disable display LCD, then will show NO DISP on LCD.	
State4	Back to normal finish state	

2.2. USB port

(1): Mini-USB-B

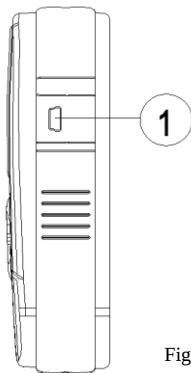


Figure 2—2

Mini-USB-B Socket uses:

1. Communication with PC software
(Download setting, upload log data, online

measure, etc)

2. External power input
(5V DC 0.1A max)

2.3. The back of the Data logger (Figure 2-3)

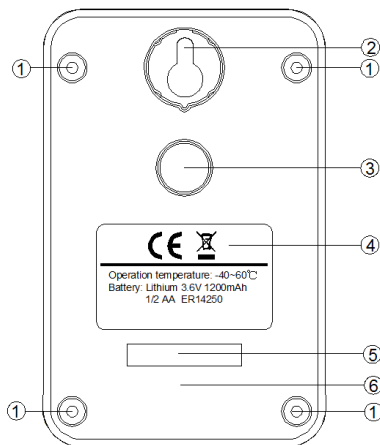


Figure 2—3

1. The case screws. Remove the screws before replace battery.
2. Hook hole: hanging on the wall.
3. Magnet: used for adsorb on metal surface.
4. Instrument information
5. Serial number.
6. Produce model.

2.4 Data logger memory

Data logger has 2 banks of memory. Each bank can be setting to log the internal or external channel measure function that data logger can be measurement.

Each bank have 16000 points can be log.

The memory data do not lost while lost power, except set a new measure task.

3. Measuring Instructions

Install software and USB drivers with CD disk. All Data logger setting is used by software, please read the software manual file on the CD-disk before use.

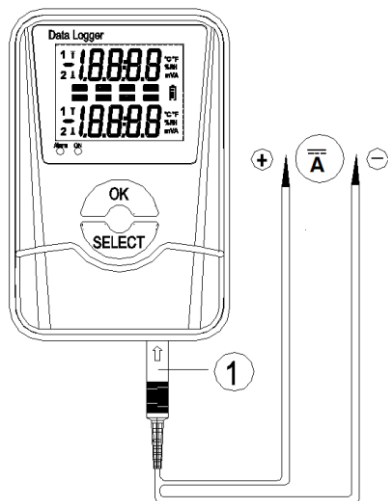
3.1 DC current measurement (figure 3-1)

The Data logger DC current measurement range is -24.00 to 24.00mA, the protection fuse is 100mA.

1. Connect to computer with USB cable.
2. Set measure parameter via the software on the computer. (measure mode, function, trigger, interval, etc)
3. Connect the DC current accessories to the Mini-DIN jack on the Data logger external channel.
4. Connect the accessories lead to the measure circuits.
5. Start Measurement

Note: *If the current measure error, replace the fuse.

*DC current MINI-DIN connection detail checks Appendix.



(1): Mini-DIN accessories plug

Figure 3—1

3.2 AC current measurement (figure 3-2)

The Data Logger of AC current range is 0.0 ~ 600.0A

1. Connect to computer with USB cable.
2. Set measure parameter via the software on the computer. (measure mode, function, trigger, interval, etc)

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3. Connect the AC current accessories to the Mini-DIN port on the Data logger external channel.
4. Connect the accessories lead to the measure circuits.
5. Start Measurement

Note: *AC current MINI-DIN connection detail checks Appendix.

	*Be care to operate on danger voltage
	*When use 2 external channel voltage or current measurement, all black probe must be connect at same common point,or else will get the error reading or damage the meter.

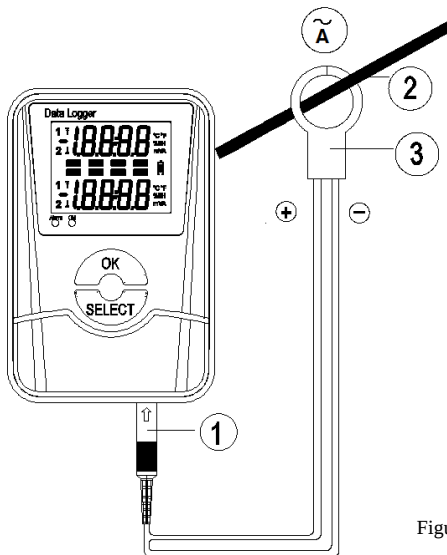


Figure 3—2

- (1) Mini-DIN accessories plug
- (2) Measured AC wire
- (3) AC clamp

3.3 DC voltage measurement (figure 3-3)

The Data logger for the DC voltage range is -50.00V to 50.00V

1. Connect to computer with USB cable.
2. Set measure parameter via the software on the

computer. (measure mode, function, trigger, interval, etc)

3. Connect the DC voltage accessories to the Mini-DIN port on the Data logger external channel.
4. Connect the accessories lead to the measure circuits.
5. Start Measurement.

Note: * DC voltage MINI-DIN connection detail checks
Appendix.



***When use 2 external channel voltage or current measurement, all black probe must be connect at same common point, or else will get the error reading or damage the meter.**

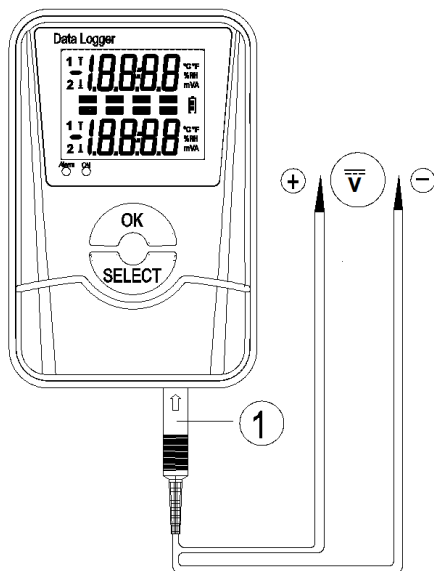


Figure 3—3

(1): Mini-DIN accessories plug

3.4 AC voltage measurement (figure 3-4)

AC voltage of the Data Logger range is 0 .0~ 380.0V

1. Connect to computer with USB cable.
2. Set measure parameter via the software on the computer. (measure mode, function, trigger, interval, etc)
3. Connect the AC voltage accessories to the Mini-DIN port on the Data logger external channel.
4. Connect the accessories lead to the measure circuits.
5. Start Measurement.

Note: * AC voltage MINI-DIN connection detail checks Appendix.

	*Be care to operate on danger voltage
	*When use 2 external channel voltage or current measurement, all black probe must be connect at same common point,or else will get the error reading or damage the meter.

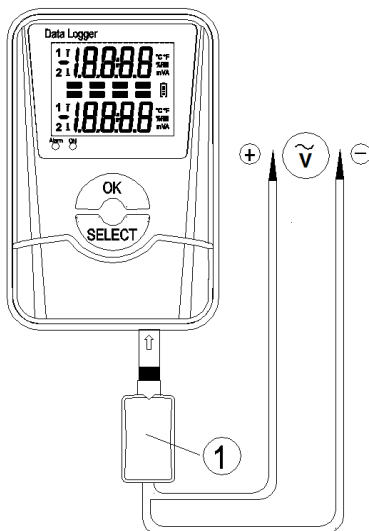


Figure 3—4

(1): Attenuation accessories plug

3.5 Built-in humidity sensor measures humidity (figure 3-5)

Humidity of the Data
Logger range is 0.0~99.9 %RH

1. Connect to computer with USB cable.
2. Set measure parameter via the software on the computer. (measure mode, function, trigger, interval, etc)

3. Place the Data Logger to the environment where needs measured.
4. Start Measurement.

NOTE: *The humidity of the ventilated window, Please check the appendix.

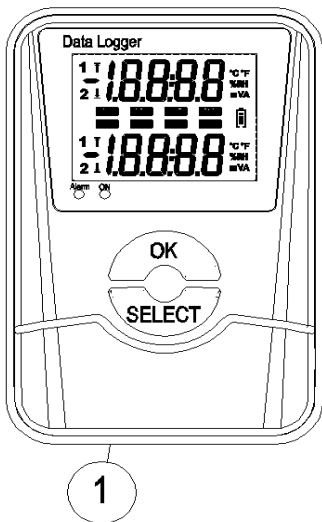


Figure 3—5

- (1) Built-in humidity sensor place

3.6 Using the built-in NTC sensor to measure temperature (figure 3-6)

The range of the Data Logger is -40.0 to 70.0 °C.

1. Connect to computer with USB cable.
2. Set measure parameter via the software on the computer. (measure mode, function, trigger, interval, etc)
3. Place the Data Logger to the environment where needs measured.
4. Start Measurement.

Note: *if the Data Logger is water proof, bottom side of the Data Logger is closed please check appendix.

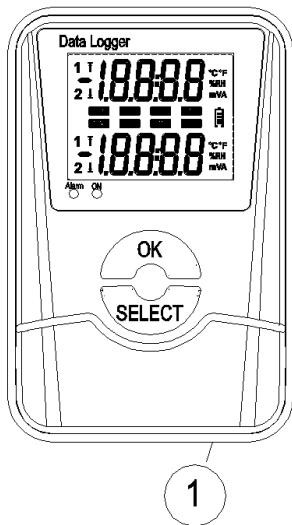


Figure 3—6

- (1) the built-in NTC sensors place

3.7 External PT100 or PT1000 temperature sensor channel (figure 3-7)

The temperature range of the Data Logger is -200.0 ~ 850.0 °C

1. Connect the Data Logger with a data cable to the computer.
2. Set measure parameter via the software on the computer. (measure mode, function, trigger,

interval, etc)

3. Connect the R1 or R2 accessories to the Mini-DIN port on the Data logger external channel.
4. Place the pt100 or Pt1000 Sensor to the environment where needs measured.
5. Start Measurement.

Note: * PT100/PT1000 MINI-DIN connection detail checks Appendix.

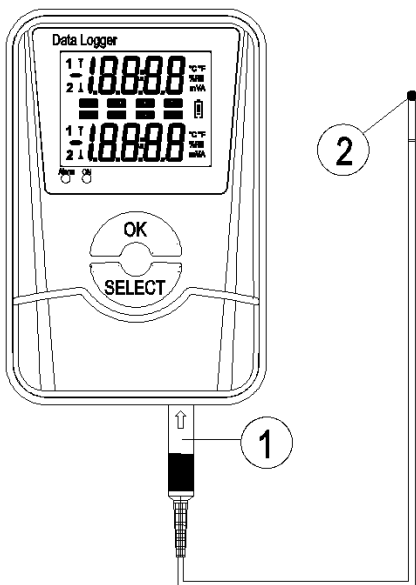


Figure 3—7

- (1): Mini-DIN accessories plug**
- (2): Pt100 or Pt1000 temperature sensor**

3.8 External thermocouple type J or type K temperature sensor channel (figure 3-8)

The temperature range of the Data Logger is -200.0 ~ 800.0 °C

1. Connect the Data Logger with a data cable to the computer.
2. Set measure parameter via the software on the computer. (measure mode, function, trigger, interval, etc)
3. Connect the type j or type k accessories to the appropriate port on the Data logger external channel.
4. Place the pt100 or Pt1000 Sensor to the environment where needs measured.
5. Start Measurement.

Note: * TCK/TCJ appropriate port connection detail checks Appendix.

*Attention the right polarity while plug sensor.

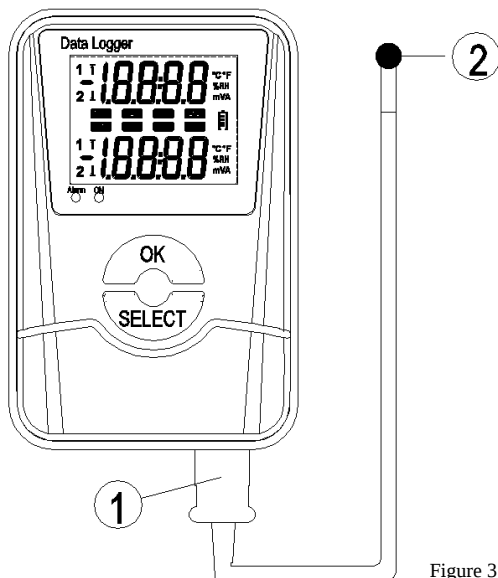


Figure 3—8

(1): Thermocouple plug

(2): Thermocouple temperature sensor head

4. Technical indicators

4.1 Composite indicator

Altitude: <2000 m.

Environment temperature and humidity: -40 ~ 70°C, -40°F ~ 158 °F (<80% RH, °C <10 without consideration).

Storage temperature and humidity: -40~80 °C, 40°F ~176°F (<80% RH, removing its batteries).

Temperature Coefficient: $0.1 \times \text{accuracy} / ^\circ\text{C}$ (<18 °C, or> 28 °C).

Sample interval: 5sec~24hour.

Record number: 16000 points x 2 log bank.

IP level: IP65 (except NH type IP40)

Display: LCD display.

Battery low indication: LCD indicate  .

External Power supply: DC 5V  Mini-USB plug.

Battery type: ER14250 Lithium-thionyl Chloride
Battery 1/2AA 3.6V 1200mAh.

Battery life: 1000days at standby state.

Dimensions: 74(L)×113(W)×31(H) mm.

Weight: 150g (with battery)

Fuse: 100mA fast fuse only DC mA type (R1 on PCB)

Cable: Mini-USB cable, 1meter

4.2 Measuring function specification table

Specification			
parameter	measuring range	resolution	accuracy
Build-in NTC	-40.0~70.0°C	0.1°C	±0.5°C
Build-in RH%	0.0~99.9%	0.1%	±4.0%RH
V DC	-50.00~50.00V	0.01V	±0.04V
V AC	0.0~400.0V	0.1V	±1.0V
mA DC	-24.00~24.00mA	0.01mA	±0.05mA
A AC	0.0~600.0A (clamp adapter)	0.1A	±(2.5%+30 Count)
TC-K TYPE	-200.0~800.0°C	0.1°C	±(0.8%+1.2°C)
TC-J TYPE	-200.0~800.0°C	0.1°C	±(0.8%+1.2°C)
PT100	-200.0~850.0°C	0.1°C	±(0.2%+0.5°C)
PT1000	-200.0~850.0°C	0.1°C	±(0.2%+0.5°C)

5. Instrument maintenance and repair

5.1 General Maintenance



To avoid electrical shock or damage to the Data Logger, not wet the internal meter.
Please remove all the cable before open the case.

Regular cleaning with a damp cloth and a small amount of detergent instrument case, do not use abrasives or chemical solvents.

If dirty or wet input socket may affect the readings.

5.2 Replace the battery



To avoid false readings caused by elec  shock or personal injury, instrument displays, "  " symbol, should be replace the battery immediately.

Please remove all the cable before open the case.

Follow these steps to replace the battery:

- i. Remove all the connection from the input jack.
- ii. Remove the screws on the case, and open the case.
- iii. Replace with new ER14250 battery.
- iv. Loaded on cover and lock the screws.

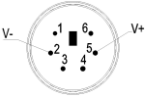
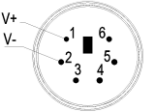
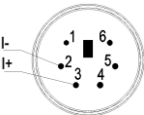
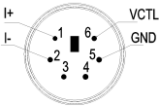
6. Accessories

- | | | |
|-----|---|---------|
| (1) | Instrument manual | 1 piece |
| (2) | Lithium-thionyl Chloride Battery inside | 1 piece |
| (3) | PC-LINK software CD | 1 piece |
| (4) | Mini-USB data cable | 1 piece |
| (5) | External channel sensor or accessories are shown following: | |

Measuring function	Accessories name	
DC current (A1)	The MINI-DIN plugs with a line	1piece
AC current (A2)	The MINI-DIN plugs with a line	1piece
	AC embedded head	Option
DC voltage (V1)	The MINI-DIN plugs with a line	1piece
AC voltage (V2)	The attenuation box with a line	1piece
Measuring temperature (R1)	PT100 sensor	Option
	The MINI-DIN plugs	1piece
Measuring temperature (R2)	PT1000 sensor	Option
	The MINI-DIN plugs	1piece
Measuring temperature (TK)	Sensor thermocouple K type	1piece
Measuring temperature (TJ)	Sensor thermocouple J type	Option

7. Appendix

Connection detail of sensor

Measure type	The different sensor link method	Figure
V1	Measuring DC voltage 5: V“+” 2: V“-”	
V2	Measuring AC voltage 1: V“+” 2: V“-”	
A1	Measuring DC current 3: I+ 2: I -	
A2	Measuring AC current 1: I“+” 2: I“-” 6: External power supply 5: GND	

R1	Measuring PT100 5: V“+” 3: V“-” 6: I“+” 4: I“-”	
R2	Measuring PT1000 5: V“+” 3: V“-” 1: I“+” 4: I“-”	
TK/TJ	The left is positive and the right is negative	
NTC	Using the build-in NTC sensor (Water proof)	
RH	Built-in humidity sensor (window of case)	