Thermosense®
.CO.UK

RTD Process Calibrator
User Manual HCAL-720

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Safety Information

To avoid possible electric shock or personal injury:

- Never apply more than 30V between any two jacks, or between any jack and earth ground.
- Make sure the battery door is closed and latched before you operate the calibrator.
- Remove test leads from the calibrator before you open the battery door.
- Do not operate calibrator if it is damaged.
- Do not operate the calibrator around explosive gas, vapor, or dust.

To avoid possible damage the calibrator:

- Make sure to choose the right jack and range, before using the calibrator to measure or calibrate.
- Take away the calibrator from the used circumstance, before operating the calibrator or after closing the calibrator.

Introduction

RTD Process Calibrator is an exactitude measurement and source instrument, it can be used to calibrate the RTD* transmitter (include most impulse transmitter).

RTD Process Calibrator can be used to measure or simulate 7 difference types of RTD (℃ or ℉), and measure or simulate the Resistance. But it could not be used for measurement or source at the same time.

The accessories: a pair of test leads, alligator clip, 6 * AAA 1.5V battery and user manual.

If the Calibrator is broken or short of some accessories, please contact the supplier.

The following table has shown the technical parameter and function of the Calibrator.

* RTD Resistance Temperature Detector

Specification

All the specification will under 1 year calibration cycle and temperature between 18~28℃, except addition explanation.

Measure (input) / Simulate (output) Resistance specification

Range	Measure accuracy 4W ± Ω	Simulate accuracy ± Ω	admit excitation mA
0.00Ω ~ 400.00Ω	0.1	0.15	0.1 ~ 0.5
		0.1	0.5 ~ 3.0
400.0Ω ~ 1500.0Ω	0.5	0.5	0.05 ~ 0.8
1500.0Ω ~ 3200.0Ω	1	1	0.05 ~ 0.4
	2		

Admit excitation current only apply on simulate mode. The admit excitation current could be marked on the OHM meter or RTD meter which was connected to the calibrator.

admit excitation current: 0.2mA. MAX input voltage: 30V.

Measure (input) / Simulate (output) RTD specification

Mode	Range	Accuracy ℃			admit excitation mA
		Input 4W	Input 2W/3W	Output	
Pt10 385	-200~800℃ / -328~1472℉	Not Specified			0.1~3.0
Pt50 385	-200~800℃ / -328~1472℉	0.7	1.0	0.7	0.1~3.0
Pt100 385	-200~800℃ / -328 ~ 1472℉	0.33	0.5	0.33	0.1~3.0
Pt200 385	-200~250℃ / -328~482℉	0.2	0.3	0.2	0.1~3.0
	250~630℃ / 482~1166℉	0.8	1.6	0.8	
Pt500 385	-200~500℃ / -328~932℉	0.3	0.6	0.3	0.05~0.8
	500~630℃ / 932~1166℉	0.4	0.9	0.4	
Pt1000 385	-200~100℃/-328~212℉	0.2	0.4	0.2	0.05~0.8
	100~630℃/212~1166℉	0.2	0.5	0.2	
Pt100 JIS	-200~630℃ / -328~1166℉	0.3	0.5	0.3	0.1~3.0

Admit excitation current only apply on simulate mode. The admit excitation current could be marked on the OHM meter or RTD meter which was connected to the calibrator.

admit excitation current: 0.2mA. MAX input voltage: 30V.

General Specifications：

Maximum voltage applied between any jack and earth ground or between any two jacks：30V

Resolution: RTD 0.1 ℃/℉ Resistance 0.01/0.1 Ω

Storage temperature：-40℃～60℃

Operating temperature：-10℃～55℃

Operating altitude：3000 meters maximum

Temperature coefficient：±0.01%/℃ on 0℃～18℃ and 28℃～50℃

Relative humidity：95% up to 30℃，75% up to 40℃，45% up to 50℃，35% up to 55℃

Shock：Random 2g, 5Hz to 500Hz

Safety：1 meter drop test

Power requirements: 6 x AAA 1.5V battery

Size：204mm×96mm×41mm

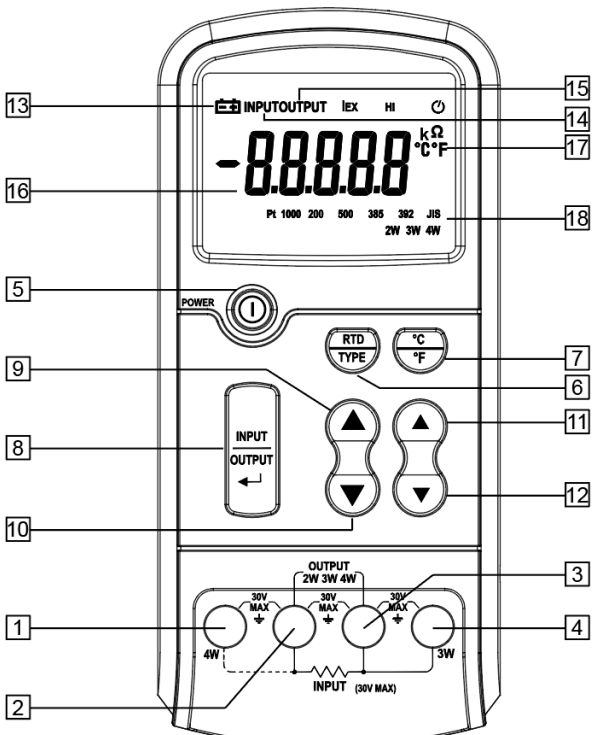
Weight：402g (without battery)

International Symbols

Symbol	Meaning
	Earth ground
	Conforms to European Union directives
	Refer to this instruction sheet for information about this feature.
	Battery
	Double insulation

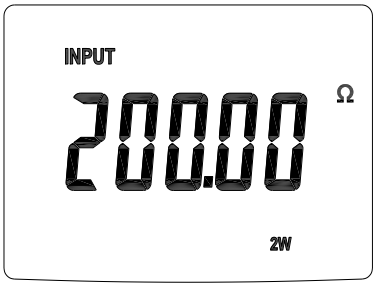
Explanation on Front Panel

The front panel is shown as in right figure：



1 4wire input jack (NC on output)
2 2wire input/output jack
3 2wire input/output jack
4 3wire input jack (NC on output)
5 Power key
6 RTD mode key
7 ℃/℉ key
8 Input/Output key
9 Increase more value key/wire mode select
10 Reduce more value key/wire mode select
11 Increase less value key
12 Reduce less value key
13 Low power indication
14 Input state indication
15 Output state indication
16 Reading value
17 Unit indication
18 Mode indication

Operation Instructions



RTD measurement

①Press the power key5, turn on the calibrator.

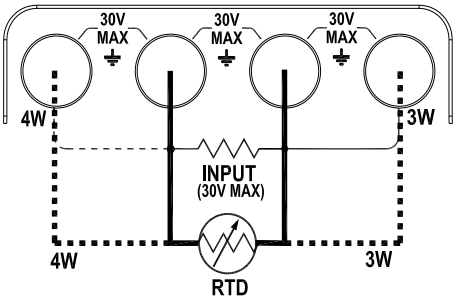
②Press the Input/Output key8, When on the input mode.

③Press RTD mode key6, on the measure type you want.

④Put the RTD or Resistance on the input jack.

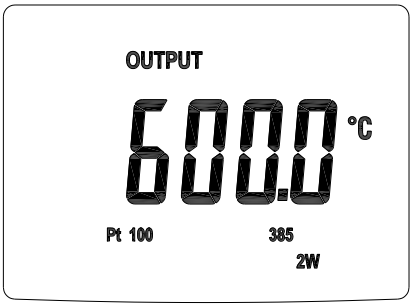
⑤If you want to measure with 3W/4W mode, press the wire mode select key9,10to select, and put the wire to the correspond input jack.

⑥Get the reading value16。



* The number in the ☐, referring to the “Explanation on Front Panel” (Page8)

RTD Simulate



①Press the power key 5, turn on the calibrator.

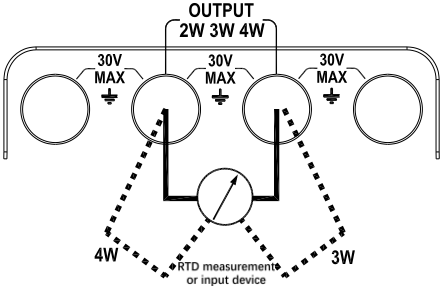
②Press the Input/Output key 8, When on the output mode.

③Press RTD mode key 6, on the measure type you want.

④Press the adjust value key 9 10 11 12,
to let the value on your need.

⑤Put the RTD meter on the input jack.

⑥If you want to output with 3W/4W mode, put the other wire on the 2wir jack like the left picture.



⑦If you want to change the output value, then press the adjust value key 9 10 11 12, or change to other RTD type use the RTD mode key 6.

Resistance Output

①Press the power key 5, turn on the calibrator.

②Press the unit key 7 to ˚C mode and press 8 to select output mode.

③Press RTD mode key 6 to select resistance function.

④Connect the testlead to the output terminal and Resistance meter .

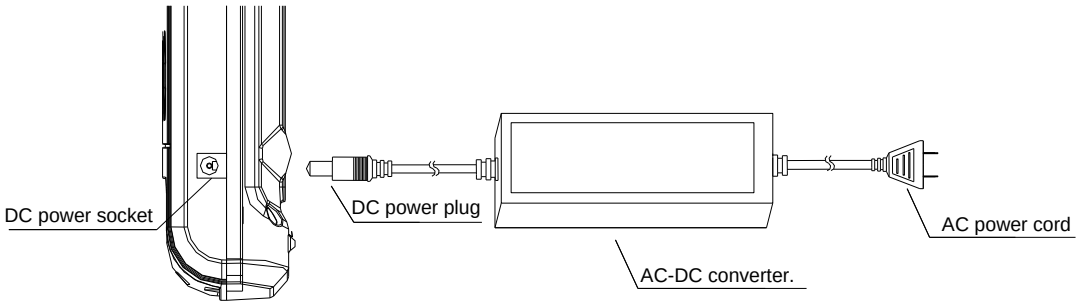
⑤If you want to change the output value, then press the adjust value key 9 10 11 12.

* The number in the ☐, referring to the “Explanation on Front Panel” (Page8)

To Use Adapter (Only apply to AC power adapter version Calibrator)

Connecting the power adapter：

1. Connect the AC power cord to the AC—DC converter.
2. Plug the AC power cord into an electrical outlet (220V-240V).
3. Plug the DC power plug of the converter into DC power socket of the meter.



AC/DC adapter information：

Input：220V-240VAC,50-60Hz 1A

Output: DC 9V⎓1A MAX，±8%

Polarity：

Plug size: DCPLUG(Round) -5.5mm-2.1mm(hole)

Ripple: ≤50mVpp

Operation temperature: -10℃-40℃ 5%-90%RH

Storage temperature: -20℃-80℃ 5%-95%RH

WARNING:

1. Please use the original AC power adapter, using other AC power adapter may damage your instrument.
2. The AC power adapter can only be used indoors.
3. Please plug the AC power cord into an electrical outlet first and then firmly insert DC plug into DC input end in the right of the meter. When unplugged, firstly pull out the DC plug perpendicular to DC input end and then unplug the AC plug from the electrical outlet.
4. Do not use the AC power adapter in other equipment except this instrument.
5. In use, it is a normal phenomenon that the AC power adapter will be hot.
6. Do not demolish the AC power adapter. Otherwise, it may be dangerous.
7. Do not use the AC power adapter in a high temperature or wet place.
8. Please make the AC power adapter avoid a strong bump.
9. It is normal when the AC power adapter make some noise in use.

Maintenance

Cleaning

Periodically wipe the case with a damp cloth and detergent; do not use abrasives or solvents.

Calibration

Calibrate your calibrator once a year to ensure that it performs according to its specifications.

Replacing the Battery

Please change the battery when the LCD indicates 

Turn off the power of the Calibrator, when you change the battery, and screw off the breechblock on the battery cabinet cover, then take off it and instead the fresh AAA 1.5V battery.