Thermosense®
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Thermocouple Process Calibrator User Manual HCAL-710

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

Thermocouple Process Calibrator is an exactitude handhold measurement instrument and source tool, it can be used to calibrate the Thermocouple instrument.

Thermocouple Process Calibrator can be used to measure or simulate 8 types of difference Thermocouples (℃ or ℉) and measure or simulate the millivolt. But it could not be used for measurement or source at the same time.

The accessories: 2 pcs Thermocouple plugs (no wire), 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 showed the technical parameter and function of the Calibrator.

Specification

All the specification will under 1 year calibration cycle and temperature between 18~28℃, except addition explanation. “Counts” means number of increments or decrements of the least significant digit.

Measure (input) / Simulate (output) Millivolt specification

INPUT/OUTPUT RANGE	RESOLUTION	ACCURACY
-10mV~100mV	0.01mV	±（0.025%+2counts）

Maximal input voltage：30Vpp.

Measure (input) / Simulate (output) Thermocouple Specification

FUNCTION	RANGE	RESOLUTION	ACCURACY	REFERENCE JUNCTION ERROR
J TYPE	-200~1200℃ / -328~2192℉	0.1℃/℉	±(0.3℃+10uV)	±0.3℃
K TYPE	-200~1370℃ / -328~2498℉	0.1℃/℉	±(0.3℃+10uV)	±0.3℃
T TYPE	-200~400℃ / -328 ~ 752℉	0.1℃/℉	±(0.3℃+10uV)	±0.3℃

E TYPE	**-200~950℃ / -328~1742℉**	**0.1℃/℉**	**±(0.3℃+10uV)**	**±0.3℃**
R TYPE	**-20~1750℃ / -4~3182℉**	**1℃/℉**	**±(1℃+10uV)**	**±0.3℃**
S TYPE	**-20~1750℃/ -4~3182℉**	**1℃/℉**	**±(1℃+10uV)**	**±0.3℃**
B TYPE	**600~1800℃ / 1112~3272℉**	**1℃/℉**	**±(1℃+10uV)**	**±0.3℃**
N TYPE	**-250~1300℃ / -418~2372℉**	**0.1℃/℉**	**±(0.3℃+10uV)**	**±0.3℃**

Maximal input voltage：30Vpp.

General Specifications:

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

Storage temperature: -40℃～60℃

Operating temperature: 0℃～50℃

Operating altitude: 3000 meters maximum

Temperature coefficient: ±0.02%/℃ on 0℃～18℃ and 28℃～50℃

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

Shock: Random 2g, 5Hz to 500Hz

Safety: 1 meter drop test

Fuse: F 0.125A/250V

Power requirements: 6 x AAA 1.5V battery

Size: 204mm×96mm×41mm

Weight: 402g (without battery)

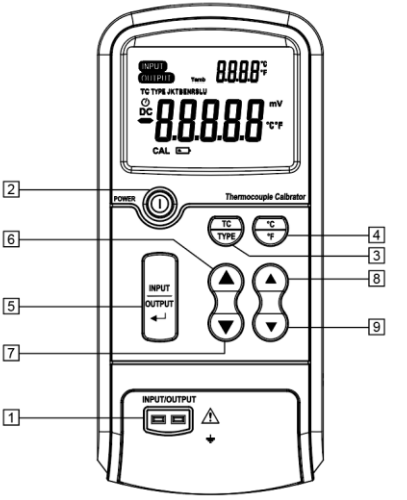
International Symbols

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

Explanation on Front Panel

The front panel is shown as in right figure：

1. Input / output jack
2. Power key
3. Mode key
4. ℃/°F key
5. Input/output key
6. Increase more value key
7. Reduce more value key
8. Increase less value key
9. Reduce less value key



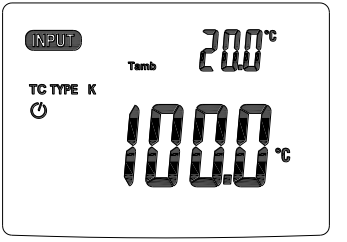
Understanding Display Screen

LCD screen is shown as in following figure:

10	Input state indication	15	Low power indication
11	Output state indication	16	Unit indication
12	Indicating AUTO POWER OFF is available	17	Type indication
13	Result value	18	Ambient temperature display
14	Calibration mode indication		

Operation Instructions

Thermocouple or Millivolt measurement/input



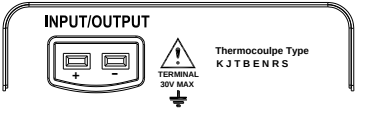
①Press the power key2, turn on the calibrator.

②Press the Input/output key5, when on the input mode.

③Press mode key3, on the measure type you want.

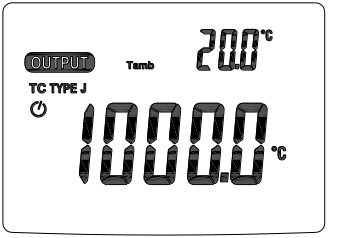
④Put the measure thermocouple or millivolt source into the input jack1.

⑤Get the reading value13.In thermocouple measurement, ambient temperature value18 is displayed on LCD. In voltage measurement, there is no temperature display.



* The number in the□,referring to the Explanation on Front Panel (Page8) and the Understanding Display Screen (Page9).

Thermocouple or Millivolt Simulate/output



①Press the power key2, turn on the calibrator.

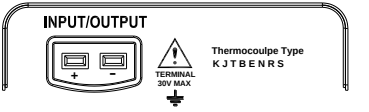
②Press the Input/output key5, When on the output mode.

③Press mode key3, on the measure type you want.

④Press the adjust value key6 7 8 9 to let the value on your need.

⑤Put the thermocouple instrument or voltage meter into the output jack1.

⑥If you want to change the output value, then press the adjust value key6 7 8 9 or change to other thermocouple type use the mode key3.



Auto power off

Auto power off default setting is 30min.

Setting Auto power off option:

1. Keep press 4 ℃/℉ key, then turn on the power.
2. Release 4 ℃/℉ key, press 6 Increase more value key or 7 Reduce more value key to adjust the time. (off,15min.~60min.)
3. Then press 4 ℃/℉ key to finish setting auto power off option.

*. After change battery the auto power off setting get to default setting.

*. If change battery and found can't turn on power, please take off the battery, and wait 3min, then try again.

Display all symbol

Setting display all symbol:

1. Keep press 3 mode key, then turn on the power.
2. It will display all symbol on LCD.
3. Press any key exit and go on.

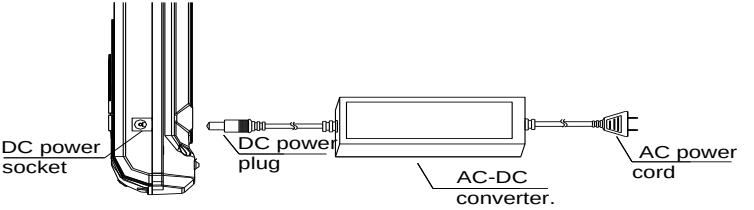
To Use Adapter (Only apply to AC power adapter version calibrator)

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.



Linear power adaptor 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 battery.

Replacing a Fuse

⚠ Warning!

To avoid personal injury or damage to the calibrator, use only a 0.125A 250V fast fuse.

In the thermocouple input mode, if “OL” does not appear on LCD with no thermocouple input, the fuse is probably blown. A new fuse should be used.

Connecting wire

Use the accessories thermocouple plug to make the difference plug connect wire which you want.