

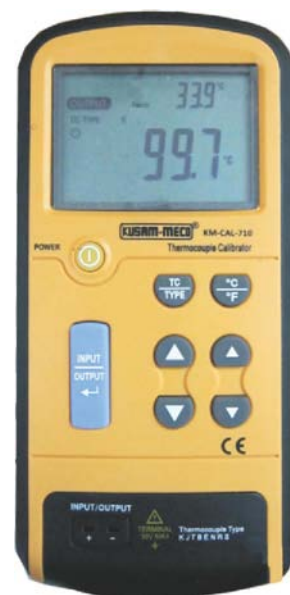
Thermocouple Process Calibrator is a exactitude measurement and source handhold instrument, it can be use to calibrate the Thermocouple instrument. Thermocouple Process Calibrator can measure or simulate 8 types of difference Thermocouple (°C or °F), and measure or simulate the millivolt. But is could not use to measurement or source at a same time.

### SPECIAL FEATURES :

- Maximum voltage applied between any jac and earth ground or between any two jack : 30V
- Sources and measures 7 thermocouple type devices (J, K, T, E, R, S, B, N) or mV (-10mV ~ 100mV)
- Large 5 digit LCD with full angel
- High accuracy maximum up to 0.3°C and 0.025% for mV
- With standard jack for external power supply

### GENERAL SPECIFICATIONS :

- \* Thermocouple Type : J, K, T, E, R, S, B, N
- \* Measure or Simulating a Thermocouple
- \* Ambient temperature compensation and display
- \* Operating Temperature : 0°C ~ 50°C
- \* Storage Temperature : -40°C ~ 60°C
- \* Operating altitude : 3000 meters maximum.
- \* Temperature Coefficient : ± 0.02% / °C on 0°C ~ 18°C and 28°C ~ 50°C
- \* Relative humidity : 95%upto 30°C, 75% upto 40°C, 45% upto 50°C
- \* Shock : Random 2g. 5Hz to 500Hz.
- \* Fuse : F 0.125A / 250V
- \* Temperature Resolution : J,K,T,E,B,R,S,N 0.1°C or °F
- \* Temperature error : ± (0.3 + 10uV)
- \* Voltage range : -10mV ~ 75mV
- \* Voltage resolution : 0.01mV
- \* Voltage accuracy : ± (0.025% + 2 counts)
- \* LCD size : 64 x 42mm
- \* Power Supply : 1.5V AAA x 6 batteries.
- \* External power option
- \* Dimension : 205(L) x 97(W) x 45(H)mm
- \* Weight : Approx. 472g. (including battery)



Preliminary Data

### ELECTRICAL SPECIFICATIONS : KM-CAL-710

#### Measure (input) / Simulate (output) Millivolt specification

Input / Output Range	Resolution	Accuracy
-10mV ~ 100mV	0.01mV	±(0.025% + 2 counts)

Maximum Input Voltage : 30Vpp.

#### Measure (input) / Simulate (output) Thermocouple Specification

Function	Range	Resolution	Accuracy	Reference Junction Error
J TYPE	-200 ~ 1200°C / -328 ~ 2192°F	0.1°C / °F	±(0.3°C + 10 V)	± 0.3°C
K TYPE	-200 ~ 1370°C / -328 ~ 2498°F			
T TYPE	-200 ~ 400°C / -328 ~ 752°F			
E TYPE	-200 ~ 950°C / -328 ~ 1742°F			
Function	Range	Resolution	Accuracy	Reference Junction Error
R TYPE	-20 ~ 1750°C / -4 ~ 3182°F	1°C / °F	±(1°C + 10 V)	± 0.3°C
S TYPE	-20 ~ 1750°C / -4 ~ 3182°F		±(1°C + 10 V)	± 0.3°C
B TYPE	600 ~ 1800°C / 1112 ~ 3272°F		±(1°C + 10 V)	± 0.3°C
N TYPE	-250 ~ 1300°C / -418 ~ 2372°F	0.1°C / °F	±(0.3°C + 10 V)	± 0.3°C

Maximum Input Voltage : 30Vpp.

Note: All Specification are Subject to change without prior notice.

## LIST OF PRODUCTS

- \* Digital Multimeter
- \* Digital AC & AC/DC Clampmeter
- \* AC Clamp Adaptor
- \* AC/DC Current Adaptor
- \* Transistorised Electronic Analog & Digital Insulation Resistance Testers(upto 10 KV)
- \* Digital Sound Level Meter & Sound Level Calibrator
- \* Digital contact & Non-contact Type Tachometer
- \* Digital Non-contact (infrared) Thermometer & Portable Infrared Calibrator
- \* Thermo Hygrometer / Anemometer
- \* Digital Absolute pressure meter
- \* Wood, Paper & Grain Moisture Meter
- \* Distance Meter & Network Cable Tester
- \* Digital Hand Held Temperature Indicators
- \* Digital Lux Meter
- \* Thermal Imaging Camera
- \* Power Factor Regulator
- \* Maximum Demand Controller/Digital Power Meter
- \* Earth Resistance Tester
- \* Digital Panel Meters & DC Power Supplies
- \* Digital Storage / Analog Storage Oscilloscope.
- \* Coating Thickness Guage
- \* Process Calibrators & Multifunction Calibrators
- \* Gas Analysers & Waterproof Pen Testers
- \* Frequency Counter / Function Generator
- \* Phasing Sticks & High Voltage Detector
- \* Transducer & Transmitter
- \* Digital Milli Ohm Meter
- \* Solar Power Meter
- \* EMF/ELF Detector / RF Field Strength Meter

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**KUSAM-MECO**<sup>®</sup>

## Thermocouple Process Calibrator MODEL KM 710



## OPERATION MANUAL

**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 measurement or calibrator

**Introduction**

Thermocouple Process Calibrator is a precision measurement and source handheld instrument, it can be used to calibrate the Thermocouple instrument.

Thermocouple Process Calibrator can measure or simulate 8 types of difference Thermocouples (°C of °F) and measure or simulate the millivolt. But it can not be used for measurement & source at a same time.

The accessories: 2 pcs Thermocouple plugs (no wire), 6\* AAA 1.5V battery, user's 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°C, except if mentioned otherwise.

**Measure (input)/Simulate (output) Millivolt specification**

Input / Output Range	Resolution	Accuracy
-10mV~100mV	0.01mV	± (0.025%+2counts)

Maximum input voltage : 30Vpp.

**Measurement (input)/Simulate (output) Thermocouple specification**

Function	Range	Resolution	Accuracy	Reference Junction Error
J TYPE	-200~1200°C/ -328~2192°F	0.1°C/°F	±(0.3°C+10 V)	±0.3°C
K TYPE	-200~1370°C/ -328~2498°F	0.1°C/°F	±(0.3°C+10 V)	±0.3°C
T TYPE	-200~400°C/ -328~752°F	0.1°C/°F	±(0.3°C+10 V)	±0.3°C
E TYPE	-200~950°C/ -328~1742°F	0.1°C/°F	±(0.3°C+10 V)	±0.3°C
R TYPE	-20~1750°C/ -4~3182°F	1°C/°F	±(1°C+10 V)	±0.3°C
S TYPE	-20~1750°C/ -4~3182°F	1°C/°F	±(1°C+10 V)	±0.3°C
B TYPE	600~1800°C/ 1112~3272°F	1°C/°F	±(1°C+10 V)	±0.3°C
N TYPE	-250~1300°C/ -418~2372°F	0.1°C/°F	±(0.3°C+10 V)	±0.3°C

Maximum input voltage : 30Vpp.

**General Specifications :**

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

**Storage temperature :** -40°C ~ 60°C

**Operating temperature :** 0°C ~ 55°C

**Operating altitude :** 3000 meters maximum

**Temperature coefficient :** ± 0.02% /°C on 0°C~18°C and 28°C~50°C

**Relative humidity :** 95% up to 30°C, 75% up to 40°C, 45% up to 50°C

**Shock :** Random 2g, 5Hz to 500Hz.

**Safety :** 1 meter drop test






**Fuse :** F 0.125A/250V

**Power requirement :** 6 Pcs AAA 1.5V Battery

**Size :** 205mm x 98mm x 46mm

**Weight :** approx. 472 g (include battery)

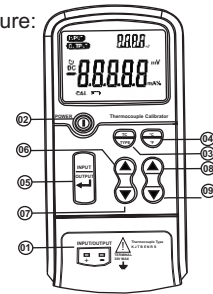
**INTERNATIONAL SYMBOLS**

Symbol	Meanings
	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 show as in figure:

- 1) Input / Output jack
- 2) Power key
- 3) Mode key
- 4) °C / °F key
- 5) Input / Output key
- 6) Increase set value key
- 7) Reduce set value key
- 8) Increase set value key
- 9) Reduce set value key



**Understanding Display Screen**

LCD screen is shown as in following figure



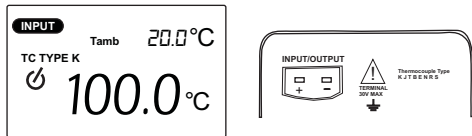
- 10) Input state indication
- 11) Output state indication
- 12) Indicating AUTO POWER OFF function is enabled.
- 13) Result value
- 14) Calibration mode indication
- 15) Low power indication
- 16) Unit indication
- 17) Type indication
- 18) Ambient temperature display

**Operation Instructions.**

**Thermocouple or Millivolt measurement / input**

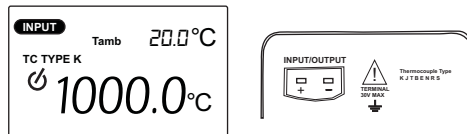
- 1) Press the power switch **2**, turn on the calibrator.
- 2) Press the input/output key **5**, to set the input mode.
- 3) Press mode key **3**, on the measure type you want
- 4) Put the measure thermocouple or millivolt source into the input jack **1**
- 5) Get the reading value **13**. In the thermocouple measurement, ambient temperature value **18** is displayed on LCD. In voltage measurement, there is no temperature display.

\* The number in the **□**, referring to the Explanation on Front panel (Page 4 ) and the Understanding Display Screen (Page 4).



**Thermocouple or Millivolt simulate / output**

- 1) Press the power switch **2**, turn on the calibrator.
- 2) Press the input/output key **5**, to set the input mode.
- 3) Press mode key **3**, on the measure type you want
- 4) Press the adjust key **6** **7** **8** **9** to set the value as required.
- 5) Put the thermocouple instrument or voltage meter into the output jack **1**
- 5) If you want to change the output value, then press the adjust key **6** **7** **8** **9** or change to other thermocouple type use the mode key **3**.



**Auto power OFF**

Auto power off default setting is 30 min. setting Autopower off option:

- 1) Keep press **4** °C / °F key, then turn on the power.
- 2) Release **4** °C / °F key, press **6** increase more value key or **7** Reduce more value key to adjust the time. (off, 15min. ~ 60min.)
- 3) Then press **4** °C / °F key to finish setting autopower off option.

After change battery the autopower off setting is set to default setting

If change battery and found that meter can not turn on power, please take off the battery, and wait 3min, then try again.

**Display all symbol**

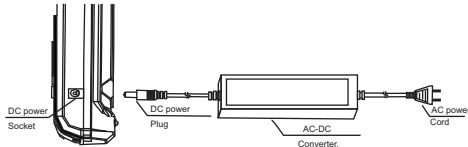
Setting display all symbol:

- 1) Keep press **3** mode key, then turn on the power.
- 2) It will display all symbols on LCD.
- 3) Press any key to exit and enter into measurement / source mode.

**To use Adapter** (Only apply to AC power adapter version mentioned in manual).

**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 (100V-240V).
- 3) Plug the DC power plug of the convertor into DC power socket of the meter



**AC/DC adapter information:**

Input : 100V-240VAC, 50-60Hz 1.8A

Output : DC 12V  $\equiv$  2A MAX

Polarity :  $\oplus$   $\ominus$

**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 side of the meter. When unplugged, first 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 replace it with a 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 appears on LCD with no thermocouple input, the fuse is probably blown. A new fuse should be used.

**Connect wire.**

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



MUMBAI

**TEST CERTIFICATE**  
**THERMOCOUPLE PROCESS**  
**CALIBRATOR**

This Test Certificate warrants that the product has been inspected and tested in accordance with the published specifications

The instrument has been calibrated by using equipment which has already been calibrated to standards traceable to national standards.

MODEL NO.   KM-CAL-710  

SERIAL NO. \_\_\_\_\_

DATE: \_\_\_\_\_

ISO 9001  
REGISTERED



**WARRANTY**

Each "KUSAM-MECO" product is warranted to be free from defects in material and workmanship under normal use & service. The warranty period is one year (12 months) and begins from the date of despatch of goods. In case any defect occurs in functioning of the instrument, under proper use, within the warranty period, the same will be rectified by us free of charges, provided the to and fro freight charges are borne by you.

This warranty extends only to the original buyer or end-user customer of a "KUSAM-MECO" authorized dealer.

This warranty does not apply for damaged IC's, burnt PCB's, fuses, disposable batteries, carrying case, electrodes probes, cables or to any product which in "KUSAM-MECO's" opinion, has been misused, altered, neglected, contaminated or damaged by accident or abnormal conditions of operation or handling.

"KUSAM-MECO" authorized dealer shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of "KUSAM-MECO".

"KUSAM-MECO's" warranty obligation is limited, at option, free of charge repair, or replacement of a defective product which is returned to a "KUSAM-MECO" authorized service center within the warranty period.

THIS WARRANTY IS BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. "KUSAM-MECO" SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE WHATSOEVER.

All transaction are subject to Mumbai Jurisdiction.