LIST OF PRODUCTS

- ✶ Digital Multimeter
- ✶ Digital AC & AC/DC Clampmeter
- ✶ AC Clamp Adaptor
- ✶ AC/DC Current Adaptor
- ✶ Thermo Anemometer
- ✶ Thermo Hygrometer
- ✶ Distance Meter
- ✶ Digital Lux Meter
- ✶ Network Cable Tester
- ✶ Power Factor Regulator
- ✶ Earth Resistance Tester
- ✶ Digital Panel Meters
- ✶ DC Power Supplies
- ✶ High Voltage Detector
- ✶ Calibrators
- ✶ Gas Analysers
- ✶ Frequency Counter
- ✶ Function Generator
- ✶ Phasing Sticks
- ✶ Battery Tester
- ✶ Waterproof Pen Testers
- ✶ Solar Power Meter
- ✶ EMF Detector
- ✶ Wood, Paper & Grain Moisture Meter
- ✶ 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
- ✶ Maximum Demand Controller/Digital Power Meter
- ✶ Digital Hand Held Temperature Indicators

KUSAM-MECO®

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Email : sales@kusam-meco.co.in; kusam_meco@vsnl.net
Website : www.kusamelectrical.com

KUSAM-MECO®

AN ISO 9001:2015 COMPANY

RTD CALIBRATOR
(Source & Sink)

MODEL - KM -CAL 803

OPERATION MANUAL

KUSAM-MECO®

RTD CALIBRATOR
(Source & Sink)

MODEL - KM -CAL 803

KUSAM-MECO®

TABLE OF CONTENTS

Section One Safe Use

To ensure safe use, the meter and manual employ the following symbols:

⚠ **Warning** : Identifies conditions and actions that may pose hazard (s) to the user and avoid methods.

⚠ **Caution** : Identifies conditions and actions that may damage the meter or the equipment under test and avoid methods.

⚠ **Note** : Reminds Users of knowledge of symbols for the operation and explanations of the features.

To avoid possible electric shock or any other dangers, please do follow the under-mentioned rules:

⚠ **Warning**

- Do not operate the meter around explosive gas, vapor, or Dust, which is extreme dangerous.
- Never apply voltage exceeding 30V between any two Terminals and earth ground terminals.

⚠ **Caution**

- Do not open the meter's case except for the professional Technicians.
- Use a damp cloth with neutral detergent for cleaning the Meter periodically. Do not use abrasives or solvents.

⚠ **Note**

- To ensure accuracy, preheat for 5 minutes after power - on.
- Please contact the manufacture or dealers if the Users have higher accuracy requirement.

Section Two Components and functions of Meter's Panel

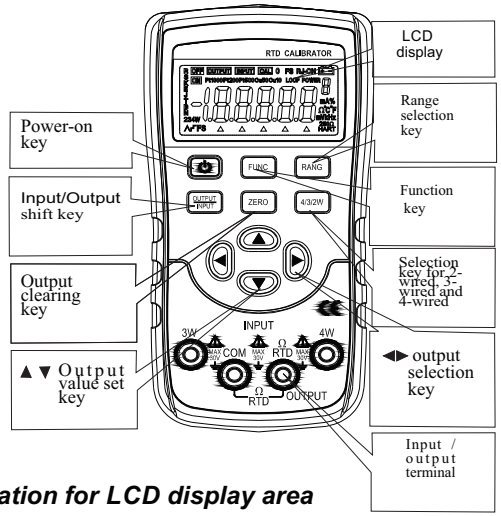

Illustration for LCD display area

A) OUTPUT : indicates the meter is in output state.
B) INPUT : indicates the meter is in input state.
C) CAL : indicates the meter is in calibration state.
D) 0 FS : indicates the present calibrated zero point or full point etc. when the meter is in calibration state
E) : indicates the batteries are exhausting and needs replacement (See detailed section).
F) ▲ : indicates present set output value.
G) Ω、℃、℉ : indicates the unit for present output value.
H) ON : indicates connection of output signals.
I) Pt10、Pt100、pt200、pt500、Cu50、Cu10 :

Indicates the graduation no. of thermal resistance(RTD)

Section Three Maintenance

This section provides some basic maintenance procedures. Repair, Calibration, and servicing not covered in this manual must Be performed by qualified personnel. For maintenance procedures not described in this manual, contact a Service Center.

（1）***General maintenance***

- Periodically wipe the case with a damp cloth and detergent; do not use abrasives or solvents.
- Take out the batteries if the meter won't be used for a long time.
- Dirt or moisture in the terminals can affect readings.

Clean the terminals as follows:

（1） Turn the meter off and remove all test leads.

（2） Shake out any dirt that may be in terminals.

（3） Soak a new swab with alcohol. Clean each terminal with the swab

（2）***Replacing the batteries***

The meter is powered by two LR6 alkaline batteries (AA).

⚠ Warning

To avoid electrical shock or personal injury:

- Remove test leads from the meter before opening the battery door.
- Close and latch the battery door before using the Meter.

⚠ Note

- The new and old batteries can not be mixed.
- Make sure the battery's odes are in accordance with the marks illustrated in battery pool when replacing them.
- Take out the batteries if the meter won't be used for a long time.
- Dispose the old batteries in accordance with the local law.

Replace the batteries as follows (See Figure 3-1):

1.Turn the rotary switch to OFF and remove the test leads from the terminals;
2.Take off the support of the meter, remove the battery door by a standard-blade screwdriver, and then take off the battery case;
3.Replace with two new batteries;
4.Reinstall the battery case, spin the screws and tighten screws.

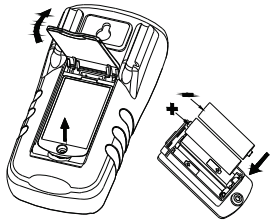

Figure 3-1 replacing batteries

Section Four Power on/Power off the Meter

（1）Turn on/off the meter

Press〔power〕key to electrify the meter, and repress〔power〕key for more than 1 second to cut off the power.

When turning on the power, the meter starts to make inner diagnose and display in full screen, and then undertakes corresponding operation.

⚠ Note

To ensure correct electrifying operation, please wait for 5 seconds to turn on the meter after cutting off the power.

（2）Automatically turn off the power

The default factory value is set as: the meter will automatically turn off if no operation has been made within 15 minutes. The Users can set by themselves to choose whether using this function or not (See detailed section).

Section Five Output of the Meter

The Instrument may output resistance or thermal resistance analog signal set by the User through corresponding terminal (OUTPUT).

⚠ Caution

Do not apply any voltage to output terminal; otherwise damage to interior circuit may occur if the voltage is not proper.

（1）Resistance or thermal resistance(RTD)simulate output

⚠ Note

·Resistance simulate ： The meter generates a simulate Resistance value Ranging from 400 to 4000 from the output terminal (RTD/Ω). The output method for simulate resistance is that the meter output scorresponding voltage “Vx “ according to incentive current “Ix” generated by the calibrated meter, and for the R(set resistance) equals to Vx (output voltage)/Ix(incentive current), thus the calibrated body should supply a simulate

Current to this meter. For realizing the correct simulateoutput of 400Ω,the incentive current should be within ±0.5～±3mA range;for simulate output of 4000Ω,the incentive current should be within ±0.05～±0.3mA range;

⚠ Note

·Resistance simulate：

When the output resistance is 4-wired for Calibration, the error generated by there sistance (approximately 0.1) of test lead should be considered if the User semploy two wires connection method; The meter may generate incorrect resistance valueif the capacity between the output terminals and the measured meter is higher than 0.1 uf.

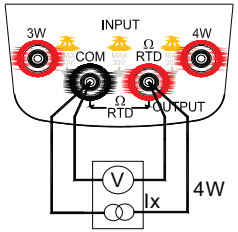

Figure 5-1

1.When pressing 〔OUTPUT/INPUT〕key, symbol 'OUTPUT' may display on the screen, indicating that the Instrument is on output state.

2.Press〔FUN〕key to select resistance or thermal resistance(RTD)function, and units of" or 'C' and Graduation 'Pt100'forthermal resistance will display in the screen.

3.Insert one end of the test probe into the output jack （RTD/）, and connect the other one with the input jack of User's meter, as shown in Figure 5-1(the special test probe provided by the Instrument can be connected as 4-wired system output according to User's request)

4.Press〔RANG〕 key to select resistance range or corresponding Graduation of thermal resistance

5.Press 〔◀〕/〔▶〕 key to select output setting bit.

6.Press 〔▲〕/〔▼〕key to change the value of the setting bit. The value can abdicate or carry automatically. Press the key tightly; the value will undertake successive change after one second.

7.Press 〔ZERO〕key to set the output as 000.0°C directly.

Section Six Measurement

⚠ Warning

Usage: the maximum voltage allowed between the terminals and within the terminals and the ground is 30V, any exceeding over this voltage may cause damage to the meter and even make injury to persons.

⚠ Caution

Usage: do not apply any voltage exceeding the maximum allowed to the input terminals, which may cause damage to the meter.

Usage: when connected to the measured meter, please first cut off the electricity supply. A connection to the measured meter with power may cause damage of this meter.

Usage: pay particular attention to not to connect the current signal to the input terminal, incorrect connection may cause damage to this meter and the meter under measured.

Measuring resistance and thermal resistance (RTD)

1.When pressing〔OUTPUT/INPUT〕key, symbol 'INPUT' may display on the screen, indicating that the instrument is on input state.

2.Press〔FUN〕key to select the needed measurement function, corresponding units and Graduation for thermal resistance will display on the screen.

3.Press〔4/3/2W〕key to select 2-wire, 3-wire or 4-wire measurement methods.

4.Insert one end of the test probe into the input jack （INPUT）as shown in Figure 6-1, 6-2 and 6-3, and connect the other one with the output terminal of User's meter.

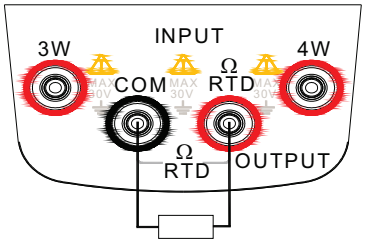

Figure 6-1 2-wire connection method

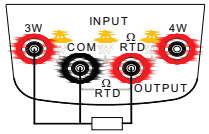

Figure 6-2 3-wire connection method

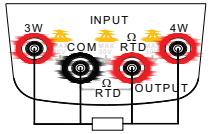

Figure 6-3 4-wire connection method

5.Press〔RANG key to select resistance range or corresponding Graduation of thermal resistance.

6.The Instrument will read the stable measured value. The refreshing rate for measurement is nearly 1/second, and symbol'OL' may display on the screen if the measured value is out of range.

Section Seven Setting Functions

Undertaking the following operation may change the auto-power-off function or the temperature unit of the thermal resistance of the Instrument.

1.Settings for auto-power-off function:

When the Instrument is on power-off state, press 〔POWER〕key for full-screen display, release〔POWER〕key and press〔RANG〕key immediately, the Instrument will go into maintenance state, and symbol 'AP-XX'displaysonthescreen. When pressing〔▼〕key, the Instrument may remove auto-power-off function if symbol 'AP- OF 'displays on the screen; The Instrument may restore auto-power-off function if symbol 'AP- ON 'displays on the screen. Press〔4/3/2W〕key to store the setting.

1.When pressing 〔▲〕key, the Instrument will shift to the setting interface for temperature unit of thermal resistance, and the symbol 'TC-OC'displays on the screen, which means Celsius degree is the temperature unit;

2.When pressing 〔▼〕key, the Instrument will shift to the setting interface for temperature unit of thermal resistance, and the symbol 'TC- OF 'displays on the screen, which means

Fahrenheit degree is the temperature unit;
Press〔4/3/2W〕key to store the setting.

Section Eight Performance Index

Accuracy is specified for a period of one year after calibration, at 23±5ºC, with relative humidity to 75%.Accuracy specifications are given as: ± ([% of reading] + [number of least significant digits]) (“Counts” refers to the number of increments or decrements of the least significant digit).

Output function and technical index

Output function	Range	Output range	Resolution	Accuracy	Illustration	
Simulate resistance OHM	400Ω	0.0 ~ 400.0Ω	0.1Ω	0.05%+2	Incentive current is set as:±0.5 ~ ±3mA When the incentive current is set as ±0.1 ~ 0.5mA, add an extra 0.1Ω to additional error. The accuracy does not include lead resistance	
	4000Ω	0 ~ 4000Ω	1Ω	0.05%+2	Incentive current is set as ±0.05 ~ ±0.3mA The accuracy does not include lead resistance	
Thermal resistance RTD	Cu10	-10°C ~ 250°C	0.1°C	0.05%+6	Incentive current is set as ±0.5 ~ ±3mAWhen the incentive current is set as ±0.1 ~ 0.5mA, add an extra 0.5°C to additional error.	Employs Pt(385) standard temperature The accuracy does not include lead resistance
	Cu50	-50.0°C ~ 150.0°C				
	Pt10 385	-200.0°C ~ 850.0°C				
	Pt100 385	-200.0°C ~ 850.0°C				
	Pt200 385	-200°C ~ 630C			Incentive current is set as± 0.05 ~ ±0.3mA	
	Pt500 385	-200°C ~ 630°C				
	Pt1000 385	-200.0°C ~ 630.0°C				

Output function and technical index

Output Function	Range	Output Range	Resolution	Accuracy	Illustration
Resistance OHM	500Ω	0.0 ~ 500.0Ω	0.1Ω	0.05%+2	Measurement current: about 1mAOpen circuit voltage: about 2.5VThe accuracy does not include lead resistance
	5000Ω	0 ~ 5000Ω	1Ω	0.05%+2	Measurement curren ： about 1mA Open circuit voltage: about 2.5Vthe accuracy does not include lead resistance
Thermal resistance RTD	Cu10	-10.0°C ~ 250.0°C	0.1ºC	0.05%+0.6ºC	The incentive current is set as ： ±0.5 ~ ±3mA When the incentive current is set as ±0.1 ~ 0.5mA, add an extra 0.5C to additional error.
	Cu50	-50.0°C ~ 150.0°C			
	Pt10 385	-200.0°C ~ 850.0°C			
	Pt100 385	-200.0°C ~ 850.0°C			
	Pt200 385	-200°C ~ 630°C			Incentive current is set as ±0.05 ~ ±0.3mA
	Pt500 385	-200°C ~ 630°C			
	Pt1000 385	-200.0°C ~ 630.0°C			

- **Power** : Two 1.5V alkaline batteries(LR6)
- **Power consumption** : About 70m/3V
- **Maximum allowed voltage** : 30V (within terminals or between terminal and earth ground)
- **Operation temperature range** : 0°C ~ 50°C
- **Operation humidity range** : ≤ 80%RH
- **Storage temperature range** : ≤ - 10°C ~ 55ºC
- **Storage humidity range** : ≤ 90%RH
- **Temperature coefficient** : 0.1× (dedicated accuracy) %/°C (5°C ~ 18ºC、28ºC ~ 40ºC)
- **Measurement** : 180 (L) ×90 (W) ×47 (D) mm (with protector)
- **Weight** : About 500g
- **Accessory** : User's Manual, industrial testing lead H00000 (including alligator clip)
- **Safety** : Complies with IEC1010 (safety standard issued by International Electrician Committee)

Section Nine Note for the Manual

- The present operation instruction is subject to change without notice;
- The content of the operation instruction is regarded as correct. Whenever any user finds its mistakes, omission, etc., he or she is requested to contact the manufacturer;
- The present manufacturer is not liable for any accident and hazard arising from the customer misuse or inadvertent operation;
- The functions described in this operation instruction should not be used as grounds to apply this product to a particular purpose.

KUSAM-MECO®

MUMBAI

TEST CERTIFICATE

RTD CALIBRATOR
(Source & Sink)

This Test Certificate warrantees 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-803**

SERIAL NO. _____

DATE: _____

ISO 9001
REGISTERED

QC
KUSAM-MECO
PASS

KUSAM-MECO®

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, fuses, burnt PCB's, disposable batteries, carrying case, test leads, 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