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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KUSAM-MECO®

AN ISO 9001:2015 COMPANY

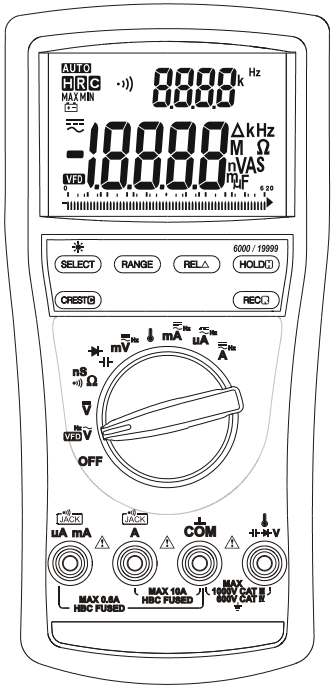
AC TRMS DIGITAL MULTIMETER

MODEL - KM 839

OPERATION MANUAL

KUSAM-MECO®

AC TRMS
DIGITAL MULTIMETER
MODEL - KM 839



KUSAM-MECO®

TABLE OF CONTENTS

I. SAFETY :

This manual contains information and warnings that must be followed for operating the meter safely and maintaining the meter in a safe operating condition. If the meter is used in a manner not specified by the manufacturer, the protection provided by the meter may be impaired.

Terms in this manual :

WARNING : Identifies conditions and actions that could result in serious injury or even death to the user.

CAUTION : Identifies conditions and actions that could cause damage or malfunction in the instrument.

WARNING :

To reduce the risk of fire or electric shock, do not expose this product to rain or moisture. The meter is intended only for indoor use.

Observe proper safety precautions when working with voltages above 33 Vrms, 46.7 Vpeak or 70 VDC. These voltage levels pose a potential shock hazard to the user. Before and after hazardous voltage measurements, check the voltage function on a known source such as line voltage to determine proper meter functioning.

The meter meets UL/IEC/EN61010-1 Ed. 3.0, CAN/CSA C22.2 No. 61010-1 Ed. 3.0, UL/IEC/EN61010-2-033 Ed. 1.0 to Measurement CAT-III 1kV and CAT-IV 600V, AC & DC.

The accompanied test probe assembly meets UL/IEC/EN61010-031 Ed. 1.1 to the same meter ratings or better. IEC 61010-031 requires exposed conductive test probe tips to be ≤ 4mm for CAT III & CAT IV ratings. Refer to the category markings on your probe assemblies as well as on the add-on accessories (like detachable Caps or Alligator Clips), if any, for applicable rating changes.

Keep your hands/fingers behind the hand/finger barriers (of the meter and the test probe assembly, where applicable) that indicate the limits of safe access of the hand-held parts during measurements. Inspect lead wires, connectors, and probes for damaged insulation or exposed metal before using the meter. If any defects are found, replace them immediately. Only use the probe assembly provided with the meter or a UL Listed Probe Assembly to the same meter ratings or better.

CAUTION

Disconnect the test leads from the test points before changing functions.

Measurement Categories

Measurement Category IV is applicable to test and measuring circuits connected at the source of the building's low-voltage MAINS installation. Examples are measurements on devices installed before the main fuse or circuit breaker in the building installation.

Measurement Category III is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation. Examples are measurements on distribution boards (including secondary meters), circuit-breakers, wiring, including cables, bus-bars, junction boxes, switches, socket-outlets in the fixed installation, and equipment for industrial use and some other equipment such as stationary motors with permanent connection to the fixed installation.

Measurement Category II is applicable to test and measuring circuits connected directly to utilization points (socket outlets and similar points) of the low-voltage MAINS installation. Examples are measurements on MAINS CIRCUITS of household appliances, portable tools and similar equipment.

CENELEC DIRECTIVES :

The instruments conform to CENELEC Low-voltage directive 2014/35/EC, Electromagnetic compatibility directive 2014/30/EU and RoHS directive 2011/65/EU.

INTERNATIONAL ELECTRICAL SYMBOLS :

- ⚠ Caution ! Refer to the explanation in this Manual
- ⚠ Caution ! Risk of electric shock
- ⏚ Earth (Ground)
- ▣ Double Insulation or Reinforced insulation
- ⎓ Fuse
- ~ AC--Alternating Current
- ⎓ DC--Direct Current
- 3~ 3 Phase Alternating Current

SPECIAL FEATURES :

- Beep-Jack Audible & Visible Input Warning
- BeepLit Continuity Tester
- Relative Zero Mode
- Crest (Peak Hold) MAX/MIN Readings
- VFD Function
- 61 Segment Analog Bar-graph
- Display Hold
- Record MAX / MIN

FEATURES :

- DC Voltage Basic Accuracy 0.09%
- Dual digital display AC + Hz readings
- Selectable 6,000 & 20,000 counts resolution.
- Nominal 5/sec Fast Measurements, Fully Auto-Ranging
- Paper-White Back-lighted LCD Display.
- High update record Max/Min readings
- Rugged fire retarded casing with battery & fuse access door.
- Replaceable protective holster with probe holders & tilt-stand.
- Diode & Continuity Test
- Auto Power Off

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IV. GENERAL SPECIFICATIONS :

Sensing: AC True RMS

Display: 3-5/6 digits 6,000 counts & 4½ digits 20,000 counts max

Polarity: Automatic

3-5/6 digits Update Rate: 5 per second nominal

4½ digits Update Rate: 5 per second nominal

Bar graph Update Rate: 61 Segments 40 per second max

Operating Temperature: -10°C to 50°C

Relative Humidity: Maximum relative humidity 90% for temperature up to 28°C decreasing linearly to 50% relative humidity at 50°C.

Pollution Degree: 2

IP Rating: IP40

Storage Temperature:

-20°C to 60°C, < 80% R.H. (with battery removed)

Altitude: Operating below 2000m

Temperature Coefficient: nominal 0.1 x (specified accuracy)/ °C @(-10°C ~ 18°C or 28°C ~ 50°C), or otherwise specified

Safety: ETL certified per IEC/UL/EN61010-1 Ed. 3.0, IEC/UL/EN61010-2-030 Ed. 1.0, IEC/UL/EN61010-2-033 Ed. 1.0, IEC/UL/EN61010-031 Ed. 1.1 and the corresponding CAN/CSA-C22.2 regulations to Measurement Categories:

CAT III 1000 V AC & DC and Category IV 600V AC & DC

Overload Protections:

µA & mA: 0.4A/1kV DC/AC rms, IR 30kA, F Fuse; or better

A: 11A/1kV DC/AC rms, IR 20kA, F Fuse; or better

V: 1100V DC/AC rms

mV, Ω & Others: 1000 V DC/AC rms

Transient Protection: 8kV (1.2/50µs surge)

E.M.C.: Meets EN61326-1:2013

In an RF field of 3V/m:

Total Accuracy = Specified Accuracy + 150 digits

Performance above 3V/m is not specified

Power Supply: Four Alkaline AA batteries (IEC LR6)

Power Consumption: 8mA typical for VFD ACV +Hz;

6.5mA typical for other functions

Low Battery: approx. 4.6V

APO Timing: Idle for 20 minutes

APO Consumption: 20µA typical

Dimension: L208mm X W103mm X H64.5mm with holster

Weight: 635 gm with holster

Accessories: Test probe pair, Holster, User's manual,

Bkp60 banana plug type-K thermocouple & Carrying case.

Optional Accessories: BKB32 banana plug to type-K socket plug adaptor, BMH-01 magnetic hanger; BMP-86x Carrying case.

ELECTRICAL SPECIFICATIONS :

Accuracy is ± (% reading digits + number of digits) or otherwise specified, at 23°C ± 5°C & less than 80% relative Humidity. True RMS Voltage & Current accuracies are specified from 1% to 100% of range or otherwise specified. Maximum Crest Factor <1:8.1 at full scale & <3.6:1 at half scale, and with frequency 6 components fall within the specified frequency bandwidth for non-sinusoidal waveforms.

AC VOLTAGE (6000 count mode)

Range	Resolution	Accuracy
50Hz ~ 60Hz		
600.0 mV	0.1 mV	±(0.7% rdg + 3 dgts)
6.000 V	0.001 V	
60.00 V	0.01 V	
600.0 V	0.1 V	
1000 V	1 V	
40Hz ~ 1kHz		
600.0 mV	0.1 mV	±(1% rdg + 3 dgts)
6.000 V	0.001 V	
60.00 V	0.01 V	
600.0 V	0.1 V	
1000 V	1 V	±(2% rdg + 3 dgts)
1kHz ~ 5kHz		
600.0 mV	0.1 mV	±(1.8% rdg + 4 dgts)[2)]
6.000 V	0.001 V	
60.00 V	0.01 V	
600.0 V	0.1 V	
1000 V	1 V	Unspecified

5kHz ~ 20kHz[3]		
600.0 mV	0.1 mV	±(2% rdg + 20dgts)[2]
6.000 V	0.001 V	
60.00 V	0.01 V	
600.0 V	0.1 V	Unspecified
1000 V	1 V	

Input Impedance : 10MΩ, 110pF nominal

[2] Add 20d @ reading > 80% of range

[3] Unspecified for < 5% of range

AC VOLTAGE (20000 count mode)

Range	Resolution	Accuracy
50Hz ~ 60Hz		
199.99 mV	0.01 mV	±(0.7% rdg + 30dgts)
1.9999 V	0.0001 V	
19.999 V	0.001 V	
199.99 V	0.01 V	
1000.0 V	0.1 V	
40Hz ~ 1kHz		
199.99 mV	0.01 mV	±(1% rdg + 30 dgts)
1.9999 V	0.0001 V	
19.999 V	0.001 V	
199.99 V	0.01 V	
1000.0 V	0.1 V	±(2% rdg + 30 dgts)

1kHz ~ 5kHz		
199.99 mV	0.01 mV	±(1.8% rdg + 40 dgts)
1.9999 V	0.0001 V	
19.999 V	0.001 V	
199.99 V	0.01 V	
1000.0 V	0.1 V	Unspecified
5kHz ~ 20kHz[2]		
199.99 mV	0.01 mV	±(2% rdg + 40dgts)
1.9999 V	0.0001 V	
19.999 V	0.001 V	
199.99 V	0.01 V	
1000.0 V	0.1 V	Unspecified

Input Impedance : 10MΩ, 110pF nominal

[2] Unspecified for < 5% of range

AC CURRENT (6000- count mode)

Range	Resolution	Accuracy	Burden Voltage
40Hz ~ 3kHz			
600.0 μA	0.1 μA	±(1%rdg + 2dgts)	0.2mV / μA
6000 μA	1 μA		
60.00 mA	0.01 mA		3mV / mA
600.0 mA[1]	0.1 mA		
6.000 A	0.001 A	±(1%rdg + 4dgts)	30mV / A
10.00 A[2]	0.01 A		

3kHz ~ 5kHz			
600.0 µA	0.1 µA	±(2%rdg + 2dgts)	0.2mV / µA
6000 µA	1 µA		
60.00 mA	0.01 mA		3mV / mA
600.0 mA[1]	0.1 mA		
6.000 A	0.001 A	Unspecified	30mV / A
10.00 A[2]	0.01 A		

[1] ≤ **400mA continuous :** >40mA for < 1.1 hours on per > 20 minutes off

[2] 10A continuous upto ambient 35°C; < 15 mins on per >5 mins off @ 35°C~50°C.
>10A to 20A for < 30 second on per >5 mins off.

AC CURRENT (20000- count mode)

Range	Resolution	Accuracy	Burden Voltage
40Hz ~ 3kHz			
199.99 µA	0.01 µA	±(1%rdg + 20dgts)	0.2mV / µA
1999.9 µA	0.1 µA		
19.999 mA	0.001 mA		3mV / mA
199.99 mA	0.01 mA		
1.9999 A	0.0001 A	±(1%rdg + 40dgts)	30mV / A
10.000 A[1]	0.001 A		
3kHz ~ 5kHz			
199.99 µA	0.01 µA	±(2%rdg + 20dgts)	0.2mV / µA
1999.9 µA	0.1 µA		
19.999 mA	0.001 mA		3mV / mA
199.99 mA	0.01 mA		
1.9999 A	0.0001 A	Unspecified	30mV / A
10.000 A[1]	0.001 A		

[1] 10A continuous upto ambient 35°C; < 15 mins on per >5 mins off @ 35°C~50°C.
>10A to 20A for < 30 second on per >5 mins off.

VFD AC VOLTAGE

Range	Resolution	Accuracy[1]
10Hz ~ 45Hz		
600.0 V	0.1 V	±(0.7%rdg + 3dgts)
1000 V	1 V	
45Hz ~ 200Hz		
600.0 V	0.1 V	±(2.5%rdg + 5dgts)
1000 V	1 V	
200Hz ~ 440Hz		
600.0 V	0.1 V	±(9%rdg + 5dgts)[2]
1000 V	1 V	

Input Impedance : 10MΩ, 110pF nominal

[1] Unspecified for fundamental frequency >440Hz

[2] Accuracy linearly decreases from
2.5% + 5d @ 200Hz to 9.0% + 5d @440Hz

DC VOLTAGE (6000 count mode)

Range	Resolution	Accuracy
600.0 mV	0.1 mV	±(0.09%rdg + 1dgts)
6.000 V	0.001 V	±(0.045%rdg + 1dgts)
60.00 V	0.01 V	
600.0 V	0.1 V	
1000 V	1 V	±(0.09%rdg + 1dgts)

Input Impedance : 10MΩ, 110pF nominal

DC VOLTAGE (20000 count mode)

Range	Resolution	Accuracy
199.99 mV	0.1 mV	±(0.09%rdg + 6dgts)
1.9999 V	0.0001 V	±(0.045%rdg + 6dgts)
19.999 V	0.001 V	
199.99 V	0.01 V	
1000.0 V	0.1 V	±(0.09%rdg + 6dgts)

Input Impedance : 10MΩ, 110pF nominal

DC CURRENT (20000- count mode)

Range	Resolution	Accuracy	Burden Voltage
199.99 μA[1]	0.01 μA	±(0.18%rdg + 40dgts)	0.2mV / μA
1999.9 μA[1]	0.1 μA	±(0.18%rdg + 20dgts)	
19.999 mA[1]	0.001 mA	±(0.18%rdg + 40dgts)	3.0mV / mA
199.99 mA[1]	0.01 mA	±(0.3%rdg + 30dgts)	
1.9999 A	0.0001 A	±(0.5%rdg + 40dgts)	30mV / A
10.000 A[2]	0.001 A	±(0.7%rdg + 20dgts)	

[1] μA / mA DC accuracies will be affected by extreme interior temperatures of the meter. For rated accuracies allow 6 to 20 minutes cool down interval after measuring A-currents of 3 to 10A continuously.

[2] 10A continuous upto ambient 35°C; <15 mins on per >5 mins off @ 35°C~ 50°C. >10A to 20A for < 30 second on per >5 mins off.

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DC CURRENT (6000- count mode)

Range	Resolution	Accuracy	Burden Voltage
600.0 μA[1]	0.1 μA	±(0.18%rdg + 4dgts)	0.2mV / μA
6000 μA[1]	1 μA	±(0.18%rdg + 2dgts)	
60.00 mA[1]	0.01 mA	±(0.18%rdg + 4dgts)	3.0mV / mA
600.0 mA[1][2]	0.1 mA	±(0.3%rdg + 3dgts)	
6.000 A	0.001 A	±(0.5%rdg + 4dgts)	30mV / A
10.00 A[3]	0.01 A	±(0.7%rdg + 2dgts)	

1) μA / mA DC accuracies will be affected by extreme interior temperatures of the meter. For rated accuracies allow 6 to 20 minutes cool down interval after measuring A-currents of 3 to 10A continuously.

2) ≤ **400mA continuous :** >400mA for < 1.1 hours on per > 20 minutes off

3) 10A continuous upto ambient 35°C; <15 mins on per >5 mins off @ 35°C~ 50°C. >10A to 20A for < 30 second on per >5 mins off.

RESISTANCE (6000 count mode)

Range[1]	Resolution	Accuracy
600.0 Ω	0.1 Ω	±(0.15%rdg + 3dgts)
6.000 kΩ	0.001 kΩ	±(0.15%rdg + 1dgts)
60.00 kΩ	0.01 kΩ	
600.0 kΩ	0.1 kΩ	±(0.3%rdg + 1dgts)
6.000 MΩ[2]	0.001 MΩ	±(0.5%rdg + 1dgts)
60.00 MΩ[3]	0.01 MΩ	±(1.5%rdg + 3dgts)[4][5]
60.00 nS[3]	0.01 nS	±(2.0%rdg +10dgts)[4][5]

[1] **Open Circuit Voltage :** < 1.7VDC typical
[2] **Constant Test Current :** 0.2μA typical
[3] **Constant Test Current :** 0.02μA typical
[4] **Add 1% @ >20MΩ**
[5] **Add 30d @ < 20% of range**

RESISTANCE (20000 count mode)

Range[1]	Resolution	Accuracy
199.99 Ω[2]	0.01 Ω	±(0.15%rdg + 20dgts)
1.9999 kΩ	0.0001 kΩ	±(0.15%rdg + 6dgts)
19.999 kΩ	0.001 kΩ	
199.99 kΩ	0.01 kΩ	±(0.3%rdg + 6dgts)
1.9999 MΩ[3]	0.0001 MΩ	±(0.5%rdg + 6dgts)
19.999 MΩ[4]	0.001 MΩ	±(1.5%rdg + 30dgts)[5]
60.00 nS[3]	0.01 nS	±(2.0%rdg +10dgts)[4][5]

[1] **Open Circuit Voltage :** < 1.7VDC typical
[2] Specified with input lead resistance been offset by **REL** or **Shrt** (short) feature
[3] **Constant Test Current :** 0.2μA typical
[4] **Constant Test Current :** 0.02μA typical
[5] **Add 2% @ operation temperature > 35°C**

CAPACITANCE

Range	Resolution	Accuracy[1]
20.00 nF	0.01 nF	±(1%rdg + 8dgts)
200.0 nF	0.1 nF	±(1%rdg + 2dgts)
2.000 μF	0.001 μF	
20.00 μF	0.01 μF	
200.0 μF	0.1 μF	
2000 μF	1 μF	
20.00 mF	0.01 mF	±(2%rdg + 2dgts)

[1] **Accuracies with film capacitor or better**

TEMPERATURE (K-Type Thermocouple)

Range	Accuracy [1][2]
-40.0°C to 0.0°C	±(1% + 2.0°C)
0.0°C to 50.0°C	±(1% + 1.0°C)
50.0°C to 1090.0°C	±(1% + 1.5°C)
-40.0°F to 32.0°F	±(1% + 3.6°F)
32.0°F to 122.0°F	±(1% + 1.8°F)
122.0°F to 1994.0°F	±(1% + 2.7°F)

[1] Accuracies assume meter interior has the same temperature of the ambient (isothermal stage) for a correct junction voltage compensation. Allow enough time to reach the isothermal stage for a significant change of ambient temperature. It can take up to an hour for changes > 5°C.
[2] Type-K thermocouple range & accuracy not included.

BEEPLIT™ CONTINUITY TESTER

Continuity Threshold	Between 20Ω & 350Ω
Response time	< 30ms
Audible Response	Beep sound
VisibleResponse	LCD Backlight

DIODE TESTER

Range	Accuracy
2.700V	±(1.5%rdg + 4dgts)

Test Current (Typically) : 0.4mA
Open Circuit Voltage : < 2.8V DC

CREST MODE

DC / AC Functions
For changes > 5ms in duration
6000-count mode only Specified accuracy ± 150 counts

~ Hz LINE LEVEL FREQUENCY

Function Range	Sensitivity (sine Rms)	Range
199.99mV	40 mV	6Hz ~ 100kHz
600.0mV	40 mV	6Hz ~ 100kHz
1.9999V	0.4 V	10Hz ~ 50kHz
6.000V	0.4 V	10Hz ~ 50kHz
19.999V	4 V	10Hz ~ 50kHz
60.00 V	4 V	10Hz ~ 50kHz
199.99V	40 V	10Hz ~ 30kHz
600.0V	40 V	10Hz ~ 30kHz
1000.0V	400 V	10Hz ~ 5kHz
1000V	400 V	10Hz ~ 5kHz
VFD 600.0V	40 V	10Hz ~ 440Hz
VFD 1000V	400 V	10Hz ~ 440Hz
199.99μA	40 μA	10Hz ~ 5kHz
600.0μA	40 μA	10Hz ~ 5kHz
1999.9μA	400 μA	10Hz ~ 5kHz
6000μA	400 μA	10Hz ~ 5kHz
19.999mA	4 mA	10Hz ~ 5kHz
60.00mA	4 mA	10Hz ~ 5kHz
199.99mA	40 mA	10Hz ~ 5kHz
600.0mA	40 mA	10Hz ~ 5kHz
1.9999A	0.6 A	10Hz ~ 3kHz
6.000A	0.6 A	10Hz ~ 3kHz
10.000A	6 A	10Hz ~ 3kHz
10.000A	6 A	10Hz ~ 3kHz

Accuracy : 0.01% + 4d

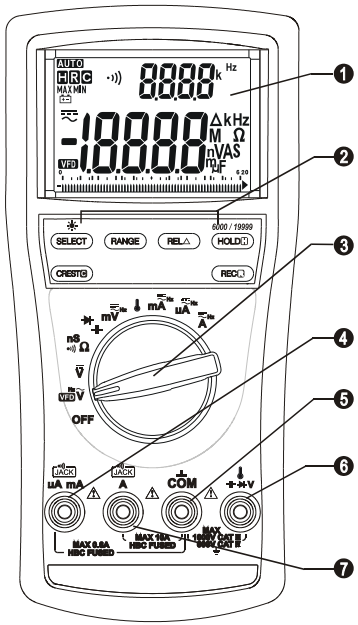
High-Update Record Mode

DC function update interval 100ms, nominal response to 85%;
For changes > 200ms in duration:
6000-count mode : Specified accuracy ± 12 counts
20000-count mode : Specified accuracy ± 120 counts

AC functions update interval 120ms, nominal response to 85%;
For changes > 350ms in duration & input >5% of range:
6000-count mode : Specified accuracy ± 30 counts
20000-count mode : Specified accuracy ± 300 counts

V. PRODUCT DESCRIPTION :

Note : Top of the line model is used as representative for illustration purposes. Please refer to your particular model for function availability.



1. 4-1/2 digits 20000 counts & 3-5/6 digits 6000 counts selectable dual displays
2. Push-buttons for special functions & features
3. Selector to turn the Power On or Off and Select a function
4. Input Jack for mA/µA function positive input
5. Common (Ground reference) Input Jack for all functions
6. Input Jack for all functions EXCEPT A, mA and µA functions
7. Input Jack for A function positive input

Analog bar-graph :

The analog bar graph provides a visual indication of measurement like a traditional analog meter needle. It is excellent in detecting faulty contacts, identifying potentiometer clicks, and indicating signal spikes during adjustments.

VI. OPERATION :

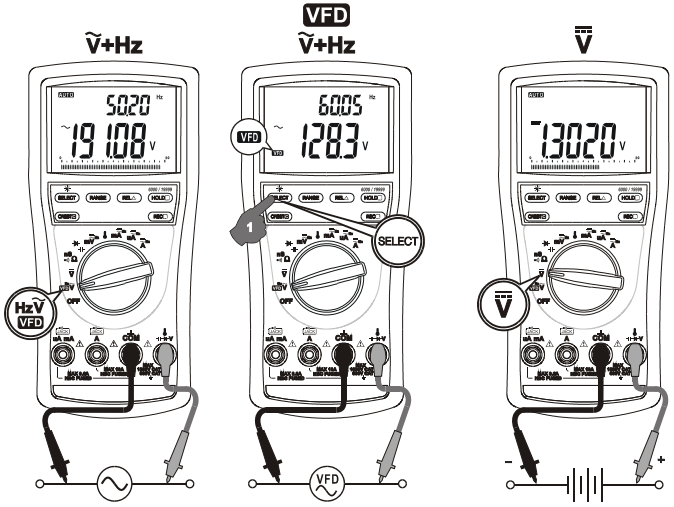
CAUTION :

Before and after hazardous voltage measurements, test the voltage function on a known source such as line voltage to determine proper meter functioning.

ACV^{+Hz} & VFD ACV^{+Hz} Functions :

Press the **SELECT** button momentarily to toggle the subject functions. Last selection will be saved as power up default for repeat measurement convenience. For **ACV^{+Hz}** function, press the **RANGE** button momentarily to select other ranges when needed. For **VFD ACV^{+Hz}** function, only 600V range to best cope with the measurements of most Variable Frequency Drives (VFD). Press the RANGEbutton momentarily to select 1000V range when needed.

DCV Function : Turn Rotary Knob to **DCV** position for measurement.

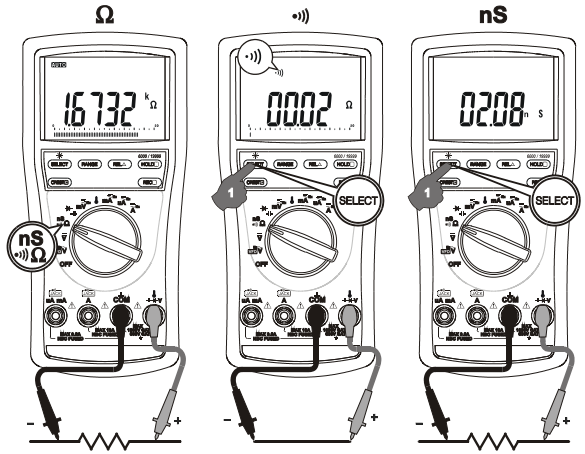


Ω Resistance, •)) BeepLit™ Continuity, nS Conductance functions

Press the SELECT button momentarily to select the subject functions. Last selection will be saved as power up default for repeat measurement convenience.

•)) BeepLit™ Continuity function is having improved convenience for checking wiring connections & operation of switches. A continuous beep tone together with flashing display backlight indicate a complete wire. Such audible and visible indications improve continuity readabilities in noisy working environments.

Conductance is the inverse of Resistance, that is S=1/Ω or nS=1/GΩ. It virtually extends the Resistance measurements to the order of Giga-Ohms for leakage measurements.



CAUTION :
Using resistance, continuity OR Ns function in a live circuit will produce false results & may damage the instrument. In many cases the suspected component must be disconnected from the circuit to obtain an accurate reading.

Auto leads resistance calibration

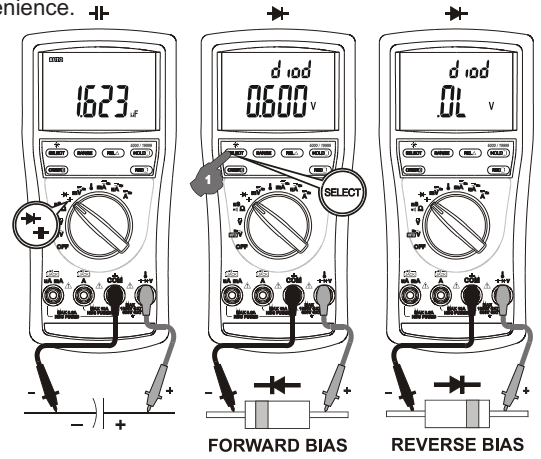
When entering the 200Ω range manually by **RANGE** button for high precision low resistance measurement, this feature will prompt you to short the inputs for temporary test lead resistance calibration on this range.

The fastest way is to short the leads to auto-range to the 200Ω range, then press the **RANGE** button momentarily. The display shows "**Shrt**". Keep shorting the leads for further 3 seconds until the display shows zero. The lead resistance is then temporarily compensated.

The compensation value stays until the next meter power reset, & can be as high as 5Ω. If you need a compensation value that is higher than that, Relative Zero mode is recommended

⊣ Diode Test, ⊣⊢ Capacitance Function

Press the **SELECT** button momentarily to toggle the functions. Last selection will be saved as power up default for repeat measurement convenience.



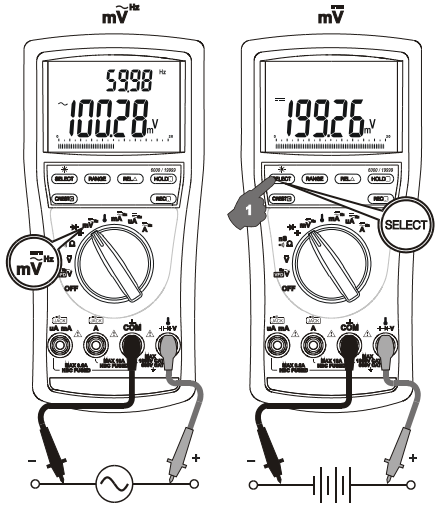
CAUTION :

Discharge capacitors before making any measurement. Large value capacitors should be discharged through an appropriate resistance load.

Normal forward voltage drop (forward biased) for a good silicon diode is between 0.400V to 0.900V. A reading higher than that indicates a leaky diode (defective). A zero reading indicates a shorted diode (defective). An OL indicates an open diode (defective). Reverse the test leads connections (reverse biased) across the diode. The digital display shows OL if the diode is good. Any other readings indicate the diode is resistive or shorted (defective).

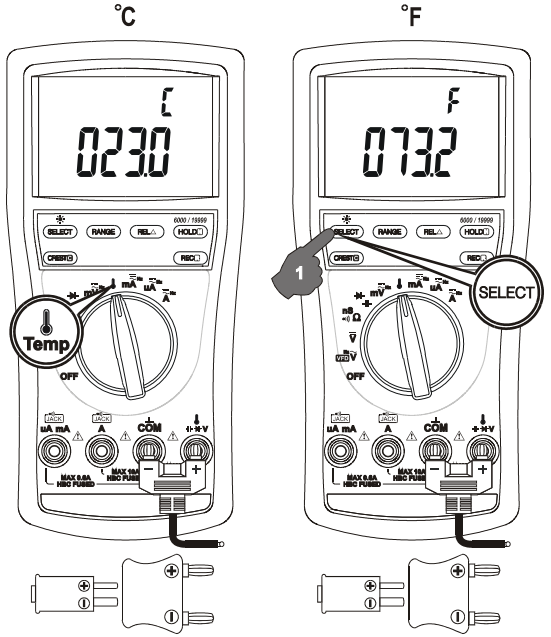
DCmV, ACmV^{+Hz} functions :

Press the **SELECT** button momentarily to toggle the subject functions. Last selection will be saved as power up default for repeat measurement convenience.



Temperature functions :

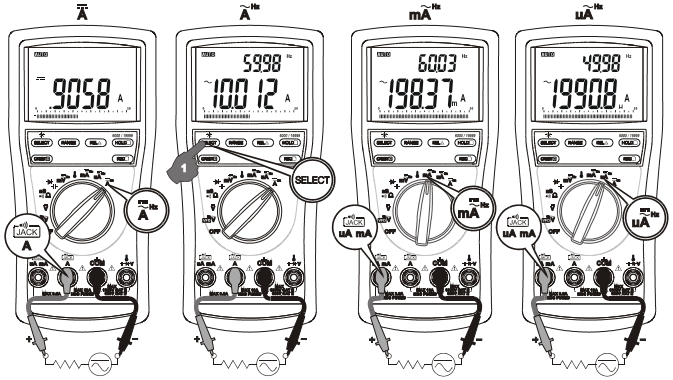
Press **SELECT** button momentarily to toggle ºC and ºF readings. Last selection will be saved as power up default for repeat measurement convenience.



Note : Be sure to insert the banana plug type-K temperature bead probe Bkp60 with correct **+ –** polarities. You can also use a plug adapter Bkb32 (Optional purchase) with banana pins to type-K socket to adapt other standard type-K mini plug temperature probes.

A, mA, µA Current functions

Press the SELECT button momentarily to toggle the DC or AC+Hz of the subject functions. Last selection will be saved as power up default for repeat measurement convenience.



Backlighted display :

Press the ☼ button for 1 second or more to toggle the LCD backlight. The backlight will also be turned off automatically after approximate 10 minutes to extend battery life.

Auto- or Manual-ranging (ACV, DCV, Current & Ω functions only) :

Press the **RANGE** button momentarily to select manual-ranging, and the meter will remain in the range it was in, the LCD AUTO turns off. Press the button momentarily again to select an adjacent range. Press and hold the button for 1 second to resume auto-ranging.

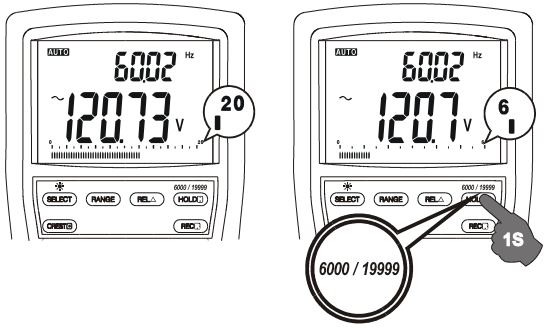
Δ Relative Zero mode

Relative-Zero allows the user to offset the meter consecutive measurements with the main display displaying reading as the reference value. LCD "Δ" turns on. Press the **REL**Δ button momentarily to toggle Relative-Zero mode

Hold: The hold feature freezes the display for later view. LCD "H" turns on. Press the **HOLD** button momentarily to toggle the hold feature.

20000 counts High Resolution mode

Press the **6000/19999** button for one second or more to toggle between the Standard 6000 counts and 20000 counts High Resolution modes. The analog bar-graph full-scale shows "**6**" and "**20**" accordingly. Last selection is saved as power up default. 20000 counts High Resolution mode is available to AC/DC Voltage (except VFD-ACV^{+Hz}), AC/DC Current and Resistance functions



MAX/MIN Recording Mode: Press **REC** button momentarily to activate MAX/MIN recording mode. The LCD "**R**" & "**MAX MIN**" turn on. The meter beeps when a new MAX(maximum) or MIN(minimum) reading is updated. Press the button momentarily to read the Real-time, MAX & MIN readings in sequence. Press the button for 1 second or more to exit MAX/MIN recording mode. When activated, Auto-Power-Off is disabled automatically.

5ms CREST capture mode

Press CREST button momentarily to activate CREST (Instantaneous Peak-Hold) mode to capture voltage or current signal duration as short as 5ms. The LCD "**C**" & "**MAX**" turn on. Press the button momentarily to read the MAX and MIN readings in sequence. Press the button for 1 second or more to exit CREST mode. Auto-Power-Off is disabled automatically in this mode.

Beep-Jack™ Input Warning : The meter beeps as well as displays "**InEr**" to warn the user against possible damage to the meter due to improper connections to the "μ**A/mA**" or "**A**") input jack whenother functions, especially voltage function, is selected.

Set Beeper Off : Press the **RANGE** button while turning the meter on to temporarily disable the Beeper feature. Turn the rotary switch OFF and then back on to resume.

Auto-Power-off (APO) : The Auto-Power-off (APO)mode turns the meter off automatically to extend battery life after approximately 20 minutes of no rotary switch or push button operations. To wake up the meter from APO, press the **SELECT** or **CREST** button momentarily or turn the rotary switch OFF and then back on. Always turn the rotary switch to the OFF position when the meter is not in use.

Disabling Auto-Power-off :

Press the **SELECT** button while turning the meter on to temporarily disable the Auto-Power-Off feature. Turn the rotary switch OFF and then back on to resume.

MAINTENANCE :

WARNING :

To avoid electrical shock, disconnect the meter from any circuit, remove the test leads from the input jacks and turn OFF the meter before opening the case. Do not operate with open case. Install only the same type of fuse or equivalent.

Cleaning and Storage :

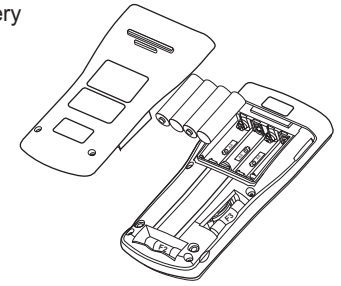
Periodically wipe the case with a damp cloth and mild detergent; do not use abrasives or solvents. If the meter is not to be used for periods of longer than 60 days, remove the battery and store it separately.

Trouble Shooting :

If the instrument fails to operate, check battery, fuses, leads, etc., and replace as necessary. Double check operating procedure as described in this manual.

Battery and Fuse replacement :

Battery use : Four 1.5V AA battery
Fuses use :
Fuse (F2) for μ**A/mA** input :
0.4A/1000Vac & Vdc,
IR 30kA F Fuse or better
Dimension : 6 x 32 mm
Fuse (F3) for A input :
11A/1000Vac & Vdc,
IR 20kA F Fuse or better
Dimension :10 x 38 mm



Battery and Fuse replacement :

Loosen the screws from the access cover of the case bottom. Lift the access cover. Replace the batteries or fuse. Re-fasten the screws.

KUSAM-MECO®

MUMBAI

TEST CERTIFICATE

AC TRMS DIGITAL MULTIMETER

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 839**

SERIAL NO. _____

DATE: _____

ISO 9001:2015
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 WHATSOEVER.

All transaction are subject to Mumbai Jurisdiction.