

KUSAM-MECO[®]

An ISO 9001:2015 Company

**3-5/6 DIGIT & 4½ DIGIT
20,000 COUNTS****TRUE RMS DIGITAL MULTIMETER**THINK SAFETY
THINK **KUSAM-MECO**[®]**SPECIAL FEATURES :**

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

FEATURES :

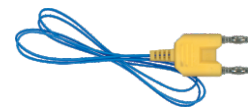
- DC Voltage Basic Accuracy 0.09%
- Dual digital display AC + Hz readings
- Selectable 6,000 & 20,000 counts resolution.
- Nominal 5/sec Fast Measurements, Fully Auto-Ranging
- Paper-White Back-lighted LCD Display.
- High update record Max/Min readings
- Rugged fire retarded casing with battery & fuse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

GENERAL SPECIFICATIONS

- * **Sensing** : AC True RMS
- * **Display** :
3-5/6 digits 6000 counts & 4½ Digit 20,000 counts
Max Large Backlight LCD Dual Display.
- * **Update Rate** :
3-5/6 Digits : 5 per second nominal;
4-1/2 Digits : 5 per second nominal;
61 Segments Bar-graph : 40 per second max
- * **Operating Temperature** : -10°C to 50°C
- * **Relative Humidity** : Max. 90% R.H. for Temperature
up to 28°C decreasing linearly to 50% R.H. at 50°C
- * **Pollution degree** : 2
- * **IP Design** : IP40

SAFETY :

- Double insulation 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 & the corresponding CAN/CSA-C22.2 regulations to measurement CAT III 1000V AC & DC & Category IV 600V AC & DC.
- **Overload Protection** :
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 : 1000V DC/AC rms
- **Transient Protection** : 8 kV (1.2/50µs surge)
- **EMC** : Meets EN61326-1:2013
In an RF field of 3V/m :
Total Accuracy = Specified Accuracy + 150 dgts
Performance above 3V/m is not specified.

**Model KM 839****22 FUNCTIONS 143 RANGES****Thermocouple****Magnetic Hanger**

- * **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
- * **Power Supply** : Four Alkaline AA batteries.
- * **APO Timing** : Idle for 20 minutes
- * **Power Consumption** : 8mA typical for VFD ACV+Hz,
6.5 mA typical for other functions.
- * **Low Battery** : Approx. 4.6V
- * **Weight** : Approx. 635gm with holster
- * **Dimension** : 208(L) x 103(W) x 64.5(H) mm with holster.

ACCESSORIES :

Test lead pair, Holster, Battery installed, User Manual, BKP60 banana plug type-K Thermocouple.

OPTIONAL ACCESSORIES :

BKB32 banana plug to type-K socket plug adaptor, BMH-01 Magnetic Hanger, Current Clamp CA300, Current Clamp Adaptor CA500, CA1000, CA2000, High Voltage Probe PD-28.

All Specifications are subject to change without prior notice.

ELECTRICAL SPECIFICATIONS - KM 839

Accuracy is \pm (% reading digits + number of digits) or otherwise specified, at $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ & 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	$\pm(0.7\% \text{ rdg} + 3 \text{ dgts})$
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	$\pm(1\% \text{ rdg} + 3 \text{ dgts})$
6.000 V	0.001 V	
60.00 V	0.01 V	
600.0 V	0.1 V	
1000 V	1 V	$\pm(2\% \text{ rdg} + 3 \text{ dgts})$
1kHz ~ 5kHz		
600.0 mV	0.1 mV	$\pm(1.8\% \text{ rdg} + 4 \text{ dgts})^{2)}$
6.000 V	0.001 V	
60.00 V	0.01 V	
600.0 V	0.1 V	
1000 V	1 V	Unspecified
5kHz ~ 20kHz³⁾		
600.0 mV	0.1 mV	$\pm(2\% \text{ rdg} + 20\text{dgts})^{2)}$
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 : 10M Ω , 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	$\pm(0.7\% \text{ rdg} + 30\text{dgts})$
1.9999 V	0.0001 V	
19.999 V	0.001 V	
199.99 V	0.01 V	
1000.0 V	0.1 V	
40Hz ~ 1kHz		
199.99 mV	0.01 mV	$\pm(1\% \text{ rdg} + 30 \text{ dgts})$
1.9999 V	0.0001 V	
19.999 V	0.001 V	
199.99 V	0.01 V	
1000.0 V	0.1 V	$\pm(2\% \text{ rdg} + 30 \text{ dgts})$
1kHz ~ 5kHz		
199.99 mV	0.01 mV	$\pm(1.8\% \text{ rdg} + 40 \text{ dgts})$
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 ~ 20kHz²⁾		
199.99 mV	0.01 mV	$\pm(2\% \text{ rdg} + 40\text{dgts})$
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

Input Impedance : 10M Ω , 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	$\pm(1\% \text{ rdg} + 2\text{dgts})$	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	$\pm(1\% \text{ rdg} + 4\text{dgts})$	30mV / A
10.00 A ²⁾	0.01 A		
3kHz ~ 5kHz			
600.0 μA	0.1 μA	$\pm(2\% \text{ rdg} + 2\text{dgts})$	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⁾ $\leq 400\text{mA}$ 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	$\pm(1\% \text{ rdg} + 20\text{dgts})$	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	$\pm(1\% \text{ rdg} + 40\text{dgts})$	30mV / A
10.000 A ¹⁾	0.001 A		
3kHz ~ 5kHz			
199.99 μA	0.01 μA	$\pm(2\% \text{ rdg} + 20\text{dgts})$	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.

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ELECTRICAL SPECIFICATIONS - KM 839

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 ³⁾	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.

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

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.

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ELECTRICAL SPECIFICATIONS - KM 839

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 + 4dgt)

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

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.

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

~ 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

CREST MODE

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

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