

**9999 / 6000 COUNTS INTRINSICALLY SAFE
TRUE RMS DIGITAL MULTIMETER
WITH PC INTERFACE
MODEL - KM 822EX**

THINK SAFETY
THINK **KUSAM-MECO**[®]

- Ex-rating : Ex ib IIA T4 Gb / ib I Mb
- INTRINSICALLY SAFE
- These meters comply to IEC SANS 600790:2000 & IEC SANS 60079-11:1999, which is applicable for electrical apparatus for use in explosive gas atmospheres. Part 0 (general requirements) & Part 1 (intrinsic). The approved explosive protection rating of this equipment is suitable for use in Zone 1 hazardous area. Group I (coal mines) underground & Group II (surface).

*** SPECIAL FEATURES :**

- Splash / Drop Proof
- Measuring Range 1000V AC / DC
- Dual Display
- Backlit Display
- Beep-Jack Audible & Visible Input Warning
- Relative Zero Mode
- PC Interface Capability
- Data Hold
- Fuse 1A / 1kV (IR10kA) for mA & mA (1000V HRC Fuse)
- Fuse 11A / 1kV (IR20kA) for A (1000V HRC Fuse)

*** GENERAL SPECIFICATIONS :**

- **Sensing** : AC True RMS
- **Display** : 9999 Counts : ACV, DCV, Hz & nS
6000 Counts : mV, μ A, mA, A, Ohm & Capacitance
- **Update Rate** :
Digital Display : 5 per second nominal;
41 Segments Bar-graph : 60 per second max
- **Low Battery** : Below approx 7V
- **Operating Temperature** : 0°C to 45°C
- **Relative Humidity** : Max. 80% R.H. for Temperature up to 31°C decreasing linearly to 50% R.H. at 45°C
- **Pollution degree** : 2
- **Storage Temperature** : -20°C to 60°C, <80% R.H. (with battery removed)
- **Altitude** : Operating below 2000m
- **Temperature Coefficient** : nominal 0.15 x (specified accuracy)/°C @ (0°C ~ 18°C or 28°C ~ 45°C), or otherwise specified.
- **Power Consumption** : 5mA typical
- **APO Timing** : Idle for 30 minutes
- **APO Consumption** : 50 μ A typical
- **Power Supply** : Single Alkaline 9V batteries.
- **Weight** : Approx. 635gm with holster
- **Dimension** : Approx. 208(L)x103(W)x64.5(H)mm with holster

*** ACCESSORIES :**

Test lead pair, Battery installed, User Manual, Carrying case.

*** OPTIONAL ACCESSORIES :**

USB interface kit BU-86X, BMH-01 Magnetic Hanger.

*** FEATURES :**

- DC Voltage Basic Accuracy 0.08%
- 4 Digit 10,000 counts large easy to read Backlight LCD display
- Fast Measurements, 5/sec;
- Fully Auto-Ranging
- Logic & Line Level Frequency
- Logic Level Duty Cycle Readings & Diode Tester
- Fast Audible Continuity
- Auto Power Off
- **Warranty** : 2(Two) year.

*** MARKING ON METER :**

- MTEEx-MS/19.0358 X
- Ex Rating: Ex ib IIA T4 Gb
- Ex ib I Mb.
- IP 64



Test Lead Pair



Carrying Case



USB Interface Kit
BU-86X
(Optional)



Magnetic Hanger
(Optional)

*** SAFETY :**

- Double insulation per IEC/UL/EN61010-1 Ed.3.0 IEC/EN61010-2-030 eD. 1.0, IEC/EN61010-2-033 Ed. 1.0, IEC/UL/EN61010-031 Ed. 1.1 & CAN/CSA-C22.2 No. 61010-1-12 Ed. 3.0 to Category IV 1000V AC & VDC.
- **Transient Protection** : 12 kV (1.2/50 μ s surge)
- **Terminals (to COM) Measurement Category** :
V / A / mA μ A : Category IV 1000VAC & DC
- **Overload Protection** :
 μ A & mA : 0.44A/1000V AC/DC, IR 10kA, F Fuse
A : 11A/1000Vac & Vdc, IR 20kA or better, F Fuse
V : 1100V DC/AC rms
mV, Ω & Others : 1000V DC/AC rms
- **EMC** : Meets EN61326-1:2006
Capacitance function is not specified
Other function ranges :
Total Accuracy = Specified Accuracy + 100 dgts
Performance above 3V/m is not specified.



All Specifications are subject to change without prior notice.

ELECTRICAL SPECIFICATIONS : KM 822EX

Accuracy is $\pm$ (% readings digits + number of digits) or otherwise specified, at $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ & less than 75% relative humidity.

True RMS Voltage & Current accuracies are specified from 10% to 100% of range or otherwise specified.

Maximum Crest Factor < 2:1 at full scale & <4:1 at half scale, and with frequency components within the specified frequency bandwidth for non-sinusoidal waveforms.

AC VOLTAGE

Range	Resolution	Accuracy
50Hz ~ 60Hz		
60.00 mV	0.01 mV	±(0.5% rdg + 3 dgts)
600.0 mV	0.1 mV	
9.999 V	1 mV	
99.99 V	10 mV	
999.9 V	100 mV	
40Hz ~ 500Hz		
60.00 mV	0.01 mV	±(0.8% rdg + 4 dgts)
600.0 mV	0.1 mV	
9.999 V	1 mV	±(1.0% rdg + 4 dgts)
99.99 V	10 mV	
999.9 V	100 mV	±(2.0% rdg + 4 dgts)
500Hz ~ 1kHz		
60.00 mV	0.01 mV	±(2.0% rdg + 3 dgts)
600.0 mV	0.1 mV	
9.999 V	1 mV	±(1.0% rdg + 4 dgts)
99.99 V	10 mV	
999.9 V	100 mV	±(2.0% rdg + 4 dgts)
1kHz ~ 3kHz		
60.00 mV	0.01 mV	±(2.0% rdg + 3 dgts)
600.0 mV	0.1 mV	
9.999 V	1 mV	±(3.0% rdg + 4 dgts)
99.99 V	10 mV	
999.9 V	100 mV	
3kHz ~ 20kHz		
60.00 mV ¹⁾	0.01 mV	±(2% rdg + 3 dgts)
600.0 mV ¹⁾	0.1 mV	
9.999 V ²⁾	1 mV	3dB
99.99 V	10 mV	3dB
999.9 V	100 mV	Unspec'd

¹⁾ Specified from 30% to 100% of range.

²⁾ For 3kHz ~ 15kHz only

Input Impedance : 10M Ω , 50pF nominal
(80pF nominal for mV ranges)

DC VOLTAGE

Range	Resolution	Accuracy
60.00 mV	0.01 mV	$\pm(0.12\% \text{rdg} + 2 \text{dgts})$
600.0 mV	0.1 mV	$\pm(0.06\% \text{rdg} + 2 \text{dgts})$
9.999 V	1 mV	$\pm(0.08\% \text{rdg} + 2 \text{dgts})$
99.99 V	10 mV	
999.9 V	100 mV	

Input Impedance : 10M Ω , 50pF nominal
(80pF nominal for 600mV range)

AC & AC+ DC CURRENT

Range	Resolution	Accuracy	Burden Voltage
50Hz ~ 60Hz			
600.0 μA	0.1 μA	$\pm(0.6\%\text{rdg} + 3\text{dgts})$	0.08mV / μA
6000 μA	1 μA		2.1mV / mA
60.00 mA	0.01 mA		
600.0 mA	0.1 mA	$\pm(1.0\%\text{rdg} + 3\text{dgts})$	
6.000 A	0.001 A	$\pm(0.8\%\text{rdg} + 6\text{dgts})$	0.02V / A
10.00 A ¹⁾	0.01 A		
40Hz ~ 1kHz			
600.0 μA	0.1 μA	$\pm(0.8\%\text{rdg} + 4\text{dgts})$	0.08mV / μA
6000 μA	1 μA		2.1mV / mA
60.00 mA	0.01 mA		
600.0 mA	0.1 mA	$\pm(1.0\%\text{rdg} + 4\text{dgts})$	
6.000 A	0.001 A	$\pm(0.8\%\text{rdg} + 6\text{dgts})$	0.02V / A
10.00 A ¹⁾	0.01 A		

¹⁾ 10A continuous, > 10A to 20A for 30 second max with 5 minutes cool down interval

DC CURRENT

Range	Resolution	Accuracy	Burden Voltage
600.0 μA	0.1 μA	$\pm(0.2\% \text{rdg} + 4 \text{dgts})$	0.08mV / μA
6000 μA	1 μA		2.1mV / mA
60.00 mA	0.01 mA		
600.0 mA	0.1 mA		0.02V / A
6.000 A	0.001 A		
10.00 A ¹⁾	0.01 A		

¹⁾ 10A continuous, > 10A to 20A for 30 second max with 5 minutes cool down interval

CAPACITANCE

Range	Accuracy ¹⁾
60.00nF, 600.0nF	0.8% + 3d
6.000 μF	1.0% + 3d
60.00 μF	2.0% + 3d
600.0 μF ²⁾	3.5% + 5d
6.000mF ²⁾	5.0% + 5d
25.00mF ²⁾	6.5% + 5d

¹⁾ Accuracies with film capacitor or better

²⁾ In manual-ranging mode, measurements not specified below 50.0 μF , 0.54mF and 5.4mF for 600.0 μF , 6.000mF and 25.00mF ranges respectively.

RESISTANCE (OHMS)

Range	Resolution	Accuracy
600.0 Ω	0.1 Ω	$\pm(0.1\% \text{rdg} + 3 \text{dgts})$
6.000 k Ω	0.001 k Ω	
60.00 k Ω	0.01 k Ω	
600.0 k Ω	0.1 k Ω	
6.000 M Ω	0.001 M Ω	$\pm(0.4\% \text{rdg} + 3 \text{dgts})$
60.00 M Ω	0.01 M Ω	$\pm(1.5\% \text{rdg} + 5 \text{dgts})$

Open Circuit Voltage : < 1.2VDC (<1.0VDC for 60M Ω range)

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ELECTRICAL SPECIFICATIONS : KM 822EX

AUDIBLE CONTINUITY TESTER

Audible threshold	Between 20Ω and 300Ω
Response time	< 100μs

DIODE TESTER

Range	Accuracy
2.000V	±(1.0%rdg + 1dgt)

Test Current (Typically) : 0.4mA
Open Circuit Voltage : < 3.5V DC

CREST MODE (INSTANTANEOUS PEAK HOLD)

Accuracy :
Specified accuracy adds 250 digits for changes > 1.0ms in duration

LINE LEVEL FREQUENCY (~Hz)

Function Range	Frequency	Sensitivity (sine Rms)
AC 60.00mV	15.00 ~ 50.00kHz	40mV
AC 600.0mV		60mV
AC 9.999V	15.00 ~ 10.00kHz	2.5V
AC 99.99V		25V
AC 999.9V		100V
AC 600.0μA	15.00 ~ 3.000kHz	200μA
AC 6000μA		600μA
AC 60.00mA		40mA
AC 600.0mA		60mA
AC 6.000A		4A
AC 10.00A		6A

Accuracy : 0.04% + 4d

LOGIC LEVEL FREQUENCY (⏏ Hz) & DUTY CYCLE (D%)

@DCmV Function	Range	Accuracy ¹⁾
Frequency	5.00Hz ~ 1.000MHz	±(0.04%rdg + 4dgt)
Duty Cycle	0.00% ~ 100.0%	±(3d/kHz + 2d ²⁾)

¹⁾ Sensitivity : 2.5Vp (Square wave) for 3V & 5V Logic Family

²⁾ Specified Frequency : 5Hz ~ 10kHz

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