

KUSAM-MECO®

An ISO 9001:2008 Company

AC; AC+ DC TRUE RMS DIGITAL MULTIMETER WITH PC INTERFACE

26 FUNCTIONS ; 64 RANGES

Model KM 829

CAT IV
1KV



SPECIAL FEATURES :

- Beep-Jack Audible & Visible Input Warning
- Auto-Ranging
- Relative Zero Mode
- PC Interface Capability
- AutoCheck V- ; Auto-Ranging
- Crest (Instantaneous Peak Hold)
- T1-T2 differential Temperature readings.
- Data Hold

FEATURES :

- DC Voltage Basic Accuracy 0.08%
- AC; AC+DC True RMS Conversion Frequency Bandwidth upto 20kHz (V) & 1kHz (A)
- 4 Digit 10,000 counts large easy to read Backlight LCD display
- Fast Measurements, 5/sec; Fully Auto-Ranging
- Record Max/Min readings, Auto Ranging
- NCV & Probe-Contact EF-Detection
- dBm function with 20 selectable values
- Lo-Z volts to drain Ghost Voltages (AutoCheck Feature)
- Logic & Line Level Frequency
- Logic Level Duty Cycle Readings & Diode Tester
- Fast Audible Continuity
- Auto Power Off

ACCESSORIES :

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

OPTIONAL ACCESSORIES :

USB interface kit BU-82X; BMH-01 Magnetic Hanger; BKB32 banana plug to type-K socket plug adaptor. Current Clamp CA300, Current Clamp Adaptor CA500, CA1000, CA2000, High Voltage Probe PD-28.

GENERAL SPECIFICATIONS

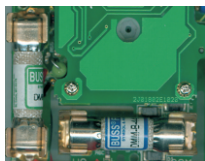
- * **Sensing** : AC, AC+DC True RMS
- * **Display** :
9999 Counts : ACV, DCV, Hz & nS
6000 Counts : mV, A, mA, A, Ohm & Capacitance
- * **Update Rate** :
Digital Display : 5 per second nominal;
41 Segments Bar-graph : 60 per second max
- * **Low Battery** : Below approx 7V
- * **Operating Temperature** : 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 A typical
- * **Power Supply** : Single 9V battery
- * **Weight** : Approx. 635gm with holster
- * **Dimension** : 208(L) x 103(W) x 64.5(H) mm

SAFETY :

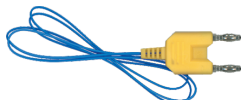
- Double insulation per IEC61010-1 2nd Ed., EN61010-1 2nd Ed., UL61010-1 2nd Ed., & CAN/CSA C22.2 No. 61010.1-0.92 to Category IV 1000V AC & V DC.
- **Transient Protection** : 12 kV (1.2/50 s surge)
- **Terminals (to COM) Measurement Category** :
V : Category IV 1000VAC & DC
mA A : Category IV 600VAC & 300VDC
A : Category IV 600VAC & 500VDC
- **Overload Protection** :
A & mA : 1A/600VAC, IR 100kA, F Fuse
A : 10A/600VAC, IR 100kA, F Fuse
V : 1050Vrms, 1450Vpeak
mV, & Others : 600VDC & VAC rms
- **EMC** : Meets EN61326-1:2006 (EN55022, EN61000-3-2, EN61000-3-3, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11)
In an RF field of 3V/m :
Capacitance function is not specified
Other function ranges :
Total Accuracy = Specified Accu. + 100 dgts
Performance above 3V/m is not specified.
- Rugged fire retarded casing with battery access door
- Replaceable protective holster with probe-holders & Tilt-stand.
- 600V (Ohm, Capacitance & all other Functions) Input protection.
- 600V High Breaking Capacity fuses protection on Current inputs.
- LVD meets EN61010-1 CAT IV 1kV.



Software CD



Fuse



Thermocouple



Magnetic Hanger



Software



Software Cable



All Specifications are subject to change without prior notice

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ELECTRICAL SPECIFICATIONS : KM 829

Accuracy is (% readings digits + number of digits) or otherwise specified, at 23°C ± 5°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 < 3:1 at full scale & < 6:1 at half scale, and with frequency components within the specified frequency bandwidth for non-sinusoidal waveforms.

AC & AC+ DC 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% 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	1 mV	3dB
99.99 V	10 mV	3dB
999.9 V	100 mV	Unspec'd

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

CMRR : > 60dB @ DC to 60Hz, Rs=1K

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

Residual reading less than 5 digits with test leads shorted.

AC & AC+ DC CURRENT

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

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

DC CURRENT

Range	Resolution	Accuracy	Burden Voltage
600.0 A	0.1 A	±(0.2% rdg + 4 dgts)	0.08mV / A
6000 A	1 A		1.5mV / mA
60.00 mA	0.01 mA		
600.0 mA	0.1 mA		0.04V / A
6.000 A	0.001 A		
10.00 A	0.01 A		

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

DC VOLTAGE

Range	Resolution	Accuracy
60.00 mV	0.01 mV	±(0.12%rdg + 2dgts)
600.0 mV	0.1 mV	±(0.06%rdg + 2dgts)
9.999 V	1 mV	±(0.08%rdg + 2dgts)
99.99 V	10 mV	
999.9 V	100 mV	

NMRR : >60dB @ 50/60Hz

CMRR : >110dB @ DC 50/60Hz, Rs=1K

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

RESISTANCE (OHMS)

Range	Resolution	Accuracy
600.0	0.1	±(0.1%rdg + 3dgts)
6.000 k	0.001 k	
60.00 k	0.01 k	
600.0 k	0.1 k	
6.000 M	0.001 M	±(0.4%rdg + 3dgts)
60.00 M	0.01 M	±(1.5%rdg + 5dgts)

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

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ELECTRICAL SPECIFICATIONS : KM 829

AUTOCHECK (DCV)

Range	Resolution	Accuracy
50Hz ~ 60Hz		
9.999 V	0.001 V	$\pm(0.5\%rdg + 3dgt)$
99.99 V	0.01 V	
999.9 V	1 V	

Lo-Z DCV Threshold : >+1.5 VDC or < -1.0VDC nominal

Lo-Z DCV Input Impedance : Initially approx. 3.0k ,
165pF nominal; Impedance increases abruptly within a fraction
of a second as display voltage is above 50V (typical).

Ended up impedances vs display voltages typically are:

18k @ 100V 125k @ 300V
320k @ 600V 500k @ 1000V

AUTOCHECK (ACV)

Range ¹⁾	Resolution	Accuracy
50Hz ~ 60Hz		
9.999 V	0.001 V	$\pm(1.0\%rdg + 4dgt)$
99.99 V	0.01 V	
999.9 V	1 V	

Lo-Z ACV Threshold : >3VAC (50/60Hz)nominal

Lo-Z ACV Input Impedance : Initially approx. 3.0k ,
150pF nominal Impedance increases abruptly within a fraction of a second as display
voltage is above 50V (typical). Ended up impedances vs display voltages typically are:

18k @100V 125k @300V
320k @600V 460k @1000V

AUTOCHECK (RESISTANCE)

Range	Resolution	Accuracy
600.0	0.1	$\pm(0.5\%rdg + 4dgt)$
6.000 k	0.001 k	
60.00 k	0.01 k	
600.0 k	0.1 k	
6.000 M	0.001 M	$\pm(0.8\%rdg + 3dgt)$
60.00 M	0.01 M	$\pm(2.0\%rdg + 5dgt)$

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

CONDUCTANCE

Range	Resolution	Accuracy
99.99nS	0.01 nS	$\pm(0.8\%rdg + 10dgt)$

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

AUDIBLE CONTINUITY TESTER

Audible threshold	Between 20 and 300
Response time	< 100 s

dBm

At 600 , -11.76 dBm to 54.25 dBm,
Accuracy : $\pm 0.25dB + 2d$ (@40Hz -- 20kHz)
Input Impedance : 10M , 50pF nominal
Selectable reference impedance of 4, 8, 16,
32, 50, 75, 93, 110, 125, 135, 150, 200, 250,
300, 500, 600, 800, 900, 1000, 1200 .

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 600.0 A	15.00 ~ 3.000kHz	45 A
AC 6000 A		600 A
AC 60.00mA		40mA
AC 600.0mA		60mA
AC 6.000A		4A
AC 10.00A		6A

Accuracy : 0.04% + 4d

NON-CONTACT EF-DETECTION

Typical Voltage	Bar Graph Indication
20V (tolerance : 10V ~ 36V)	—
55V (tolerance : 23V ~ 83V)	— —
100V (tolerance : 59V ~ 165V)	— — —
220V (tolerance : 124V ~ 330V)	— — — —
440V (tolerance : > 250V)	— — — — —

Indication : Bar graph segments & audible beep
tones proportional to the field strength.

Detection Frequency : 50/60 Hz

Detection Antenna : Top end of the meter

Probe-Contact EF-Detection : For more precise indication of live wires,
such as distinguishing between live and
groundconnections, use the Red(+) test
measurements.

LOGIC LEVEL FREQUENCY (MHz) & DUTY CYCLE (D%)

@DCmV Function	Range	Accuracy ¹⁾
Frequency	5.00Hz ~ 1.000MHz	$\pm(0.004\%rdg + 4dgt)$
Duty Cycle	0.00% ~ 100.0%	$\pm(3d/kHz + 2d^{2})$

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

²⁾ **Specified Frequency** : 5Hz ~ 10kHz

TEMPERATURE (K-Type Thermocouple)

Range	Accuracy
-50°C to 1000°C	$\pm(0.3\% + 2^{\circ}C)$
-58°F to 1832°F	$\pm(0.3\% + 5^{\circ}F)$

Type-K thermocouple range & accuracy not included.

Supplied thermocouple suitable for measurement upto 250°C.

DIODE TESTER

Range	Accuracy
2.000V	$\pm(1.0\%rdg + 1dgt)$

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

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