

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-Ω; 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

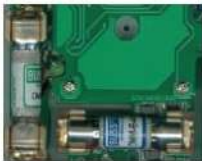
- * **Sensing** : AC, AC+DC True RMS
- * **Display** :
9999 Counts : ACV, DCV, Hz & nS
6000 Counts : mV, μA, mA, A, Ohm & Capacitance
- * **Update Rate** :
Digital Display : 5 per second nominal;
41 Segments Bar-graph : 60 per second max
- * **Low Battery** : Below approx 7V
- * **Operating Temperature** : 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** : 50μA 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 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 and CAN/CSA-C22.2 No. 61010-1-12 Ed. 3.0 to Cat IV 1000V AC & DC.
- **Transient Protection** : 12 kV (1.2/50μs surge)
- **Terminals (to COM) Measurement Category** :
V/A/mA/μA : Category IV 1000VAC & DC
- **Overload Protection** :
μA & mA : 0.44A / 1000V DC/AC rms, IR 10kA, F fuse
A : 11A / 1000V DC/AC rms, IR 20kA, F fuse
V : 1100V DC/AC rms
mV, Ω, & others : 1000V DC/AC 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



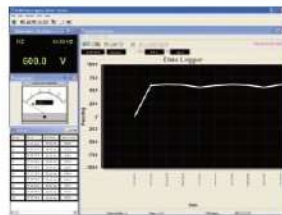
Fuse



Thermocouple



Magnetic Hanger



Software



Software Cable



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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 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 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 : 10MΩ, 50pF nominal
(80pF nominal for 600mV range)

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 | |

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

AC & AC+ DC CURRENT

| Range | Resolution | Accuracy | Burden Voltage |
|-----------------------|------------|--------------------|----------------|
| 50Hz ~ 60Hz | | | |
| 600.0 μA | 0.1 μA | ±(0.6%rdg + 3dgts) | 0.08mV / μA |
| 6000 μA | 1 μA | | |
| 60.00 mA | 0.01 mA | ±(1.0%rdg + 3dgts) | 2.1mV / mA |
| 600.0 mA | 0.1 mA | | |
| 6.000 A | 0.001 A | ±(0.8%rdg + 6dgts) | 0.02V / A |
| 10.00 A ¹⁾ | 0.01 A | | |
| 40Hz ~ 1kHz | | | |
| 600.0 μA | 0.1 μA | ±(0.8%rdg + 4dgts) | 0.08mV / μA |
| 6000 μA | 1 μA | | |
| 60.00 mA | 0.01 mA | ±(1.0%rdg + 4dgts) | 2.1mV / mA |
| 600.0 mA | 0.1 mA | | |
| 6.000 A | 0.001 A | ±(0.8%rdg + 6dgts) | 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 | ±(0.2% rdg + 4 dgts) | 0.08mV / μA |
| 6000 μA | 1 μA | | |
| 60.00 mA | 0.01 mA | | 2.1mV / mA |
| 600.0 mA | 0.1 mA | | |
| 6.000 A | 0.001 A | | 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

CAPACITANCE

| Range | Accuracy ¹⁾ |
|-----------------------|------------------------|
| 60.00nF, 600.0nF | 0.8% + 3d |
| 6.000μF | 1.0% + 3d |
| 60.00μF | 2.0% + 3d |
| 600.0μF 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 50.0μF, 0.54mF and 5.4mF for 600.0μF, 6.000mF and 25.00mF ranges respectively.

RESISTANCE (OHMS)

| Range | Resolution | Accuracy |
|----------|------------|--------------------|
| 600.0 Ω | 0.1 Ω | ±(0.1%rdg + 3dgts) |
| 6.000 kΩ | 0.001 kΩ | |
| 60.00 kΩ | 0.01 kΩ | |
| 600.0 kΩ | 0.1 kΩ | ±(0.4%rdg + 3dgts) |
| 6.000 MΩ | 0.001 MΩ | |
| 60.00 MΩ | 0.01 MΩ | |

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

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ELECTRICAL SPECIFICATIONS : KM 829

AUTOCHECK™ (DCV)

| Range | Resolution | Accuracy |
|---------|------------|--------------------|
| 9.999 V | 0.001 V | ±(0.5%rdg + 3dgts) |
| 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. 3.0kΩ, 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:

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

AUTOCHECK™ (ACV)

| Range | Resolution | Accuracy |
|--------------------|------------|--------------------|
| 50Hz ~ 60Hz | | |
| 9.999 V | 0.001 V | ±(1.0%rdg + 4dgts) |
| 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. 3.0kΩ,

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:

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

AUTOCHECK™ (RESISTANCE)

| Range | Resolution | Accuracy |
|------------------------|------------|--------------------|
| 600.0 Ω | 0.1 Ω | ±(0.5%rdg + 4dgts) |
| 6.000 kΩ | 0.001 kΩ | |
| 60.00 kΩ | 0.01 kΩ | |
| 600.0 kΩ | 0.1 kΩ | |
| 6.000 MΩ | 0.001 MΩ | ±(0.8%rdg + 3dgts) |
| 60.00 MΩ ¹⁾ | 0.01 MΩ | ±(2.0%rdg + 5dgts) |

¹⁾ Temperature Coefficient 0.6 x (specified accuracy) / °C @ (0°C ~ 18°C or 28°C ~ 45°C)

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

CONDUCTANCE

| Range | Resolution | Accuracy |
|---------|------------|---------------------|
| 99.99nS | 0.01 nS | ±(0.8%rdg + 10dgts) |

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

AUDIBLE CONTINUITY TESTER

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

dBm

At 600Ω, -11.76 dBm to 54.25 dBm,
Accuracy : ± 0.25dB + 2d (@40Hz -- 20kHz)
Input Impedance : 10MΩ, 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, 1200Ω.

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 | 45μA |
| AC 6000μA | | 600μA |
| 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 | ±(0.004%rdg + 4dgts) |
| 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

TEMPERATURE (K-Type Thermocouple)

| Range | Accuracy |
|-----------------|---------------|
| -50°C to 1000°C | ±(0.3% + 2°C) |
| -58°F to 1832°F | ±(0.3% + 5°F) |

Type-K thermocouple range & accuracy not included.

Supplied thermocouple suitable for measurement upto 250°C.

DIODE TESTER

| Range | Accuracy |
|--------|--------------------|
| 2.000V | ±(1.0%rdg + 1dgts) |

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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