

KUSAM-MECO

An ISO 9001:2008 Company

1000A AC/DC TRMS DIGITAL CLAMPMETER**WITH VFD, EF-DETECTION****MODEL KM 088****27 Functions 46 Ranges****SPECIAL FEATURES :**

- AmpTip™ low-current range calibrated at Jaw-tip for slim-conditions
- MAX/MIN/AVG Recording mode (Auto ranging)
- VFD-V & Hz for fundamental V/Hz of most Variable-Frequency-Drives
- Display Hold & Non-Contact EF-Detection (NCV)
- Back-lighted easy-to-read LCD display
- Flashlight for easy operation in dim areas
- Fast 80ms Peak-RMS mode to capture in-rush currents
- Auto-ranging Relative mode with DC-Zero mode & 5ms Crest (Instantaneous Peak-Hold) mode

GENERAL SPECIFICATIONS :

- * Sensing : AC; True RMS
- * Jaws Opening size & conductor diameter : 51mm Max.
- * Display : 3-5/6 digits 6000 counts
- * Update Rate : 5 per second nominal
- * Polarity : Automatic
- * Operating Temperature : -10°C to 50°C
- * Relative Humidity : Non condensing ($\leq 10^\circ\text{C}$) Maximum 90%R.H. at 10-30°C decreasing linearly to 75% R.H. at 30-40°C & 45% R.H. at 40-50°C
- * Altitude : Operating below 2000m; Storage below 12000m
- * Storage Temperature : -20°C ~ 60°C, <80% R.H. (with battery removed)
- * Temperature Coefficient : Nominal 0.10 x (specified accuracy) / °C @ (-10°C — 18°C or 28°C — 50°C), or otherwise Specified
- * Power Supply : Standard 1.5V AA Battery x 2
- * Power Consumption : typical 13mA for Current Functions
- * Low Battery : Below approx. 2.85V for Capacitance & Hz
Below approx. 2.5V for other functions
- * APO timing : Idle for 32 minutes
- * APO Consumption : typical 5 μA
- * Dimension : 258(L) x 94(W) x 44(H)mm
- * Weight : approx 392 gms.

SAFETY :

- Safety : Double insulation per UL/IEC/EN61010-1 Ed. 3.0, IEC/EN61010-2-033 Ed. 1.0, CAN/CSA C22.2 No. 61010-1 Ed. 3.0, IEC/EN61010-2-032 Ed. 3.0 & IEC/EN61010-031 Ed. 1.1
- Measurement Category : CAT III 1000V AND CAT IV 600V AC & DC
- E.M.C. : 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) :
ACA, DCA and DC+ACA Functions, in an RF field of 1V/m :
Total Accuracy = Specified Accuracy + 60 digits at around 200MHz~350MHz
DC μA and Ohm Functions, in an RF field of 1V/m : Total Accuracy = Specified Accuracy + 80 digits
Other Functions, in an RF field of 3V/m : Total Accuracy = Specified Accuracy + 20 digits
- Overload Protection :
Current & Hz functions via jaws : 1000ADC/AAC rms at <400Hz
Other functions via terminals : 1000VDC/ VAC rms
- Pollution Degree : 2
- Transient Protection : 8.0kV (1.2/50 μs surge)
- Rugged Fire retarded casing.
- LVD EN61010-2-032/EN61010-2-033 to CAT III 1000V & CAT IV 600V

ACCESSORIES :

Test leads set, Users Manual, Soft carrying pouch.

**Preliminary Data****All Specifications are subject to change without prior notice.**

ELECTRICAL SPECIFICATIONS : KM 088

Accuracy is \pm (% of reading digits + number of digits) or otherwise specified, at 23°C \pm 5°C
 Maximum Crest Factor <2.5:1 at full scale & <5:1 at half scale or otherwise specified, and with frequency spectrum not exceeding the specified frequency bandwidth for non-sinusoidal waveforms.

AmpTip™ Clamp-on AC Current :

| Range | Resolution | Accuracy ^(1) 2) 3) |
|----------------------|------------|-------------------------------|
| 40Hz ~ 100Hz | | |
| 00.00A~20.00A | 10 mA | $\pm(1.5\%rdg+5dgts)$ |
| 20.00A~60.00A | 10 mA | $\pm(3.0\%rdg+5dgts)$ |
| 100Hz ~ 400Hz | | |
| 00.00A~20.00A | 10 mA | $\pm(2.0\%rdg+5dgts)$ |
| 20.00A~60.00A | 10 mA | $\pm(3.0\%rdg+5dgts)$ |

¹⁾ Induced error from adjacent current-carrying conductor : < 0.02A/A

²⁾ Specified with Relative Zero Δ mode applied to offset the non-zero residual readings, if any

³⁾ Add 10d to the specified accuracy @ < 4A

REGULAR CLAMP-ON DC CURRENT

| Range | Resolution | Accuracy ^(1) 2) |
|-----------------------|------------|----------------------------|
| 60.00 A ³⁾ | 0.01 A | $\pm(1.8\%rdg + 5dgts)$ |
| 600.0 A | 0.1 A | |
| 1000 A | 1 A | |

¹⁾ Induced error from adjacent current-carrying conductor : < 0.02A/A

²⁾ Specified with DC-Zero mode applied to offset the non-zero residual readings, if any

³⁾ Add 10d to the specified accuracy @ < 9A

REGULAR CLAMP-ON AC CURRENT

| Range | Resolution | Accuracy ^(1) 2) |
|-----------------------|------------|----------------------------|
| 40Hz ~ 100Hz | | |
| 60.00 A ²⁾ | 0.01 A | $\pm(1.8\%rdg + 5dgts)$ |
| 600.0 A | 0.1 A | |
| 1000 A ³⁾ | 1 A | |
| 100Hz ~ 400Hz | | |
| 60.00 A ²⁾ | 0.01 A | $\pm(2.2\%rdg + 5dgts)$ |
| 600.0 A | 0.1 A | |
| 1000 A ³⁾ | 1 A | |

¹⁾ Induced error from adjacent current-carrying conductor : < 0.02A/A

²⁾ Add 10d to the specified accuracy @ < 9A

³⁾ Maximum Crest Factor < 1.4 : 1 at full scale & < 2.8 : 1 at half scale

DC + AC VOLTAGE (with Digital Low-pass Filter)

| Range | Resolution | Accuracy |
|-------------------------|------------|-------------------------|
| 50Hz ~ 60Hz | | |
| 600.0 V | 0.1 V | $\pm(1.0\%rdg + 7dgts)$ |
| 1000 V | 1 V | |
| DC, 40Hz ~ 200Hz | | |
| 600.0 V | 0.1 V | $\pm(1.8\%rdg + 7dgts)$ |
| 1000 V | 1 V | |
| 200Hz ~ 400Hz | | |
| 600.0 V | 0.1 V | $\pm(12\%rdg + 7dgts)$ |
| 1000 V | 1 V | |

Input Impedance : 10M Ω , 100pF nominal

AmpTip™ Clamp-on DC+AC Current :

| Range | Resolution | Accuracy ^(1) 2) 3) |
|-------------------------|------------|-------------------------------|
| DC, 40Hz ~ 100Hz | | |
| 00.00A~20.00A | 10 mA | $\pm(2.0\%rdg + 7dgts)$ |
| 20.00A~60.00A | 10 mA | $\pm(3.0\%rdg + 7dgts)$ |
| 100Hz ~ 400Hz | | |
| 00.00A~20.00A | 10 mA | $\pm(2.2\%rdg + 7dgts)$ |
| 20.00A~60.00A | 10 mA | $\pm(3.0\%rdg + 7dgts)$ |

¹⁾ Induced error from adjacent current-carrying conductor : < 0.08A/A

²⁾ Specified with DC-Zero mode applied to offset the non-zero residual readings, if any

³⁾ Add 10d to the specified accuracy @ < 4A

AmpTip™ Clamp-on DC Current :

| Range | Resolution | Accuracy ^(1) 2) 3) |
|---------------|------------|-------------------------------|
| 00.00A~20.00A | 10 mA | $\pm(1.5\%rdg + 5dgts)$ |
| 20.00A~60.00A | 10 mA | $\pm(3.0\%rdg + 5dgts)$ |

¹⁾ Induced error from adjacent current-carrying conductor : < 0.02A/A

²⁾ Specified with DC-Zero mode applied to offset the non-zero residual readings, if any

³⁾ Add 10d to the specified accuracy @ < 4A

REGULAR CLAMP-ON DC + AC CURRENT

| Range | Resolution | Accuracy ^(1) 2) |
|-------------------------|------------|----------------------------|
| DC, 40Hz ~ 100Hz | | |
| 60.00 A ³⁾ | 0.01 A | $\pm(2.2\%rdg + 7dgts)$ |
| 600.0 A | 0.1 A | |
| 1000 A ⁴⁾ | 1 A | |
| 100Hz ~ 400Hz | | |
| 60.00 A ³⁾ | 0.01 A | $\pm(2.5\%rdg + 7dgts)$ |
| 600.0 A | 0.1 A | |
| 1000 A ⁴⁾ | 1 A | |

¹⁾ Induced error from adjacent current-carrying conductor : < 0.08A/A

²⁾ Specified with DC-Zero mode applied to offset the non-zero residual readings, if any

³⁾ Add 10d to the specified accuracy @ < 9A

⁴⁾ Maximum Crest Factor < 1.4 : 1 at full scale & < 2.8 : 1 at half scale

AC VOLTAGE (with Digital Low-Pass Filter)

| Range | Resolution | Accuracy |
|----------------------|------------|-------------------------|
| 50Hz ~ 60Hz | | |
| 600.0 V | 0.1 V | $\pm(0.8\%rdg + 5dgts)$ |
| 1000 V | 1 V | |
| 20Hz ~ 200Hz | | |
| 600.0 V | 0.1 V | $\pm(1.5\%rdg + 5dgts)$ |
| 1000 V | 1 V | |
| 200Hz ~ 400Hz | | |
| 600.0 V | 0.1 V | $\pm(10\%rdg + 5dgts)$ |
| 1000 V | 1 V | |

Input Impedance : 10M Ω , 100pF nominal

All Specifications are subject to change without prior notice.

ELECTRICAL SPECIFICATIONS : KM 088

DC VOLTAGE

| Range | Resolution | Accuracy |
|---------|------------|--------------------|
| 600.0 V | 0.1 V | ±(0.8%rdg + 5dgts) |
| 1000 V | 1 V | |

RESISTANCE

| Range | Resolution | Accuracy |
|---------|------------|--------------------|
| 600.0Ω | 0.1 Ω | ±(1.0%rdg + 5dgts) |
| 6.000KΩ | 1 Ω | |
| 60.00KΩ | 10 Ω | |

Open Circuit Voltage : 1.0VDC typical

Hz Line Level Frequency

| Function | Sensitivity ¹⁾ (Sine RMS) | Range |
|----------------|---|-----------------|
| 600 V | 50 V | 5.00Hz~999.9Hz |
| 1000 V | | |
| 60 A (AmpTip™) | 20 A | 40.00Hz~400.0Hz |
| 60 A | 20 A | 40.00Hz~400.0Hz |
| 600 A | | |
| 1000A | | |

Accuracy : ±(1%rdg + 5dgts)

¹⁾ DC-bias, if any, not more than 50% of Sine RMS.

AUDIBLE CONTINUITY TESTER

| | |
|--------------------------|----------------------|
| Audible Threshold | Between 10Ω and 250Ω |
| Response Time | 32ms approx. |

CAPACITANCE

| Range | Resolution | Accuracy ¹⁾ |
|----------|------------|------------------------|
| 200.0 μF | 0.1 μF | ±(2.0%rdg + 4dgts) |
| 2500 μF | 1 μF | |

¹⁾ Accuracies with film capacitor or better

Non-Contact EF-Detection

| Typical Voltage | Bar-Graph Indication |
|-------------------------------|----------------------|
| 20V (tolerance : 10V~36V) | - |
| 55V (tolerance : 23V~83V) | -- |
| 110V (tolerance : 59V~165V) | --- |
| 220V (tolerance : 124V~330V) | ---- |
| 440V (tolerance : 250V~1000V) | ----- |

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

Detection Frequency : 50/60Hz

Detection Antenna : Inside the top side of the stationary jaw

Probe-Contact EF-Detection : For more precise indication of live wires, such as distinguishing between live and ground connections, use one single probe to test via terminal COM for direct EF-Detection with best sensitivity.

DIODE TESTER

| Range | Resolution | Accuracy ¹⁾ |
|---------|------------|------------------------|
| 2.000 V | 1 mV | ±(1.5%rdg + 5dgts) |

Test Current : 0.3mA typically

Open Circuit Voltage : < 3.5VDC typically

PEAK-RMS (ACV & ACA)

| | |
|-----------------|--------------|
| Response | 80ms to >90% |
|-----------------|--------------|

CREST (PEAK-HOLD)

| | |
|-----------------|--|
| Accuracy | Add 250 digits to specified accuracy for changes > 5ms |
|-----------------|--|

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