

SPECIAL FEATURES :

- Measure line-level ACV frequency via test leads
- Relative Zero feature
- 4000 Counts high resolution, Fast measurements
- Versatile & Handy
- Backlight display (KM 062)
- Fully Autoranging on all functions for ease of use
- AC True RMS Voltage & Current Functions (KM 062)
- 30ms Max HOLD to capture in-rush currents
- DCA / ACA 0.1A to 400A non-invasive current measurements.
- Display Hold, PEAK-rms MAX HOLD & Data Hold
- Fast Audible Continuity
- Diode Test

Model KM 061 - AVERAGE SENSING - 18 FUNCTION 37 RANGES

KM 062 - TRUE RMS SENSING - 20 FUNCTION 37 RANGES

**GENERAL SPECIFICATIONS :**

- * Sensing : Average Sensing ((KM 061) ; True RMS sensing (KM 062)
- * Jaw opening & Conductor diameter : 30mm max
- * Display : 3-3/4 digits 4000 counts LCD display
- * Update Rate : 3 per second nominal
- * Polarity : Automatic
- * Low Battery : Below approx 2.4V
- * Operating Temperature : 0°C to 40°C
- * Relative Humidity : Maximum relative humidity 80% for temperature upto 31°C decreasing linearly to 50% Relative Humidity at 40°C
- * Altitude : Operating below 2000m
- * Storage Temperature : -20°C to 60°C, < 80% R.H. (With battery removed)
- * Temperature Coefficient : nominal 0.15 x (specified accuracy) / °C @ (0°C-18°C or 28°C-40°C), or otherwise specified
- * Power supply : Standard 1.5V AAA Battery x 2.
- * Power Consumption : DCA & ACA : 11mA typical
Other function : 2.9mA typical
- * APO Timing : Idle for 30 minutes
- * APO Consumption : 190 A typical
- * Dimension : 188(L) x 63(W) x 40(H) mm
- * Weight : Approx. 218 gms

SAFETY :

- Meets IEC61010-1 2nd Ed., EN61010-1 2nd Ed., UL61010-1 2nd Ed., IEC61010-2-032, EN61010-2-032, UL61010B-2-032.
- Measurement Category : CAT III 600 Volts AC & DC
- Transient Protection : 6.5kV (1.2/50 S surge)
- Pollution degree : 2
- E. M. C. : Meets EN61326-1:2006 (EN55022, EN61000-3-2, EN61000-3-3, EN61000-4-2 / 3 / 4 / 5 / 6 / 8 / 11.
In an RF field of 3V/m :
Capacitance function is not specified.
Other function ranges :
Total Accuracy = Specified Accuracy + 50 digits
Performance above 3V/m is not specified
- Overload Protections :
Clamp-on jaws : DC / AC 400A rms continuous
+ & COM terminals (all functions) : 600 V DC / V AC rms
- 600V AC / DC input protection on all functions
- Battery cover with Probe Holders
- Rugged Fire retarded casing; Soft carrying pouch
- LVD EN61010-1 & EN61010-2-032 CAT III 600V

**Backside Photo****ACCESSORIES :**

Test leads (pair), Battery installed, User's Manual & Carrying Case.

All Specifications are subject to change without prior notice

ELECTRICAL SPECIFICATIONS : KM 061/ KM 062

Accuracy is \pm (% reading digits + number of digits) or otherwise specified, at 23°C \pm 5°C & less than 75% R.H.

True RMS ACV & ACA clamp-on accuracies are specified from 5% to 100% of range or otherwise specified. Maximum Crest Factor are as specified below, and with frequency spectrums, besides fundamentals, fall within the meter specified AC bandwidth for non-sinusoidal waveforms. Fundamentals are specified at 50Hz and 60Hz.

AC CURRENT (Clamp-On)

Range	Accuracy ¹⁾
400.0A	
40Hz ~ 60Hz @ 0~50A	$\pm(1.0\%rdg + 6dgts)$
60Hz ~ 400Hz @ 0~50A	$\pm(1.5\%rdg + 5dgts)$
40Hz ~ 60Hz @ 50A~200A	$\pm(1.5\%rdg + 5dgts)$
60Hz ~ 200Hz @ 50A~200A	$\pm(2.0\%rdg + 5dgts)$
40Hz ~ 60Hz @ 200A~300A	$\pm(2.0\%rdg + 5dgts)$
40Hz ~ 60Hz @ 300A~400A	$\pm(2.5\%rdg + 5dgts)$

¹⁾Induced error from adjacent current-carrying conductor : <0.01A/A
Crest Factor : < 1 : 8 at full scale & < 3.6 : 1 at half scale

DC CURRENT (Clamp-On)

Range	Accuracy ^{1) 2)}
400.0A	
0 ~ 50.0A	$\pm(1.0\%rdg + 4dgts)$
50.0A ~ 200.0A	$\pm(1.5\%rdg + 5dgts)$
200.0A ~ 300.0A	$\pm(2.0\%rdg + 5dgts)$
300.0A ~ 400.0A	$\pm(2.5\%rdg + 5dgts)$

¹⁾Induced error from adjacent current-carrying conductor : <0.01A/A

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

RESISTANCE

Range	Resolution	Accuracy
400.0	100 m	$\pm(0.8\%rdg + 6dgts)$
4.000 k	1	$\pm(0.6\%rdg + 4dgts)$
40.00 k	10	$\pm(0.6\%rdg + 4dgts)$
400.0 k	100	$\pm(0.6\%rdg + 4dgts)$
4.000 M	1 k	$\pm(1.0\%rdg + 4dgts)$
40.00 M	10 k	$\pm(2.0\%rdg + 4dgts)$

Open Circuit Voltage : 0.4V DC typical

CAPACITANCE

Range ¹⁾	Resolution	Accuracy ²⁾³⁾
500.0 nF	100 pF	$\pm(3.5\%rdg + 6dgts)$
5.000 F	1 nF	$\pm(3.5\%rdg + 6dgts)$
50.00 F	10 nF	$\pm(3.5\%rdg + 6dgts)$
500.0 F	100 nF	$\pm(3.5\%rdg + 6dgts)$
3000 F	1 F	$\pm(3.5\%rdg + 6dgts)$

¹⁾ Additional 50.00nF range accuracy is not specified

²⁾ Accuracies with film capacitor or better

³⁾ Specified with battery voltage above 2.8V (approximately half full battery).

Accuracy decreases gradually to 12% at low battery warning voltage of approximately 2.4V

DC VOLTAGE

Range	Resolution	Accuracy
400.0 mV	100 V	$\pm(0.3\%rdg + 3dgts)$
4.000 V	1 mV	$\pm(0.5\%rdg + 3dgts)$
40.00 V	10 mV	$\pm(0.5\%rdg + 3dgts)$
400.0 V	100 mV	$\pm(0.5\%rdg + 3dgts)$
600.0 V	100 mV	$\pm(1.0\%rdg + 4dgts)$

NMRR : > 50dB @ 50 / 60Hz

CMRR : > 120dB @ DC, 50 / 60Hz, Rs=1k

Input Impedance: 10M Ω , 30pF nominal (1000M Ω for 400mV range)

AC VOLTAGE

Range	Resolution	Accuracy
50Hz / 60Hz		
4.000 V	1 mV	$\pm(1.0\%rdg + 4dgts)$
40.00 V	10 mV	$\pm(1.0\%rdg + 4dgts)$
400.0 V	100 mV	$\pm(1.0\%rdg + 4dgts)$
60Hz ~ 500Hz		
4.000 V	1 mV	$\pm(1.5\%rdg + 4dgts)$
40.00 V	10 mV	$\pm(1.5\%rdg + 4dgts)$
400.0 V	100 mV	$\pm(1.5\%rdg + 4dgts)$
50Hz ~ 500Hz		
600.0 V	100 mV	$\pm(2.0\%rdg + 4dgts)$

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

Input Impedance : 2M Ω , 30pF nominal

Crest Factor : < 2 : 1 at full scale & < 4 : 1 at half scale

HZ FREQUENCY

Function	Sensitivity (Sine Wave)	Range
400.0mV	350 mV	10Hz ~ 1kHz
4.000V	3.2 V	5Hz ~ 20kHz
40.00V	25 V	5Hz ~ 100kHz
400.0V	100 V	5Hz ~ 100kHz
600 V	410 V	5Hz ~ 5kHz
DCA/ACA	Unspecified	

Display counts : 5000

Maximum resolution : 0.001Hz

Accuracy : 0.5% + 4d

DIODE TESTER

Test Current	0.4 mA typical
Open Circuit Voltage	< 1.6V DC typical

AUDIBLE CONTINUITY TESTER

Audible Threshold	between 10 and 120
Range	400.0
Accuracy	1.5%rdg + 8dgts
Open Circuit Voltage	0.4V DC typical

All Specifications are subject to change without prior notice

KUSAM-MECO[®]
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USE TRUE RMS WHEN MEASURING AC WAVEFORMS

The waveforms on today's AC power lines are anything but clean. Electronic equipment such as office computers, with their switching power supplies, produce harmonics that distort power-line waveforms. These distortions make measuring AC voltage inaccurate when you use an averaging DMM.

Average voltage measurements work fine when the signal you're measuring is a pure sine wave, but errors mount as the waveform distorts. By using true RMS measurements, however, you can measure the equivalent heating effect that a voltage produces, including the heating effects of harmonics. Table 1 shows the difference between measurements taken on averaging DMMs & those taken on true RMS DMMs. In each case, the measured signal's peak-to-peak value is 2V. Therefore, the peak value is 1V.

For a 1-V peak sine wave, the average & RMS values are both 0.707V. But when the input signal is no longer a sine wave, differences between the RMS values & the average reading values occur. Those errors are most prominent when you are measuring square waves & pulse waveforms, which are rich in harmonics.

Table 1. Average versus true RMS comparison of typical waveforms.

Waveform	Actual Pk-Pk	True RMS Reading	Average Reading	Reading Error
Sine Wave	2.000	0.707	0.707	0%
Triangle Wave	2.000	0.577	0.555	-3.8%
Square Wave	2.000	1.000	1.111	+11.1%
Pulse (25% duty Cycle)	2.000	0.433	0.416	-3.8%
Pulse (12.5% duty Cycle)	2.000	0.331	0.243	-26.5%
Pulse (6.25% duty Cycle)	2.000	0.242	0.130	-46.2%

One limitation to making true RMS measurements is crest factor, and you should consider crest factor when making AC measurements. Crest factor is the ratio of a waveform's peak ("crest") voltage to its RMS voltage. Table 2 shows the crest factors for ideal waveforms.

Table 2. Crest factors of typical waveforms.

Waveform	Crest Factor
DC	1.000
Square Wave	1.000
Sine Wave	1.414
Triangle Wave	1.732
Pulse (25% duty Cycle)	1.732
Pulse (12.5% duty Cycle)	2.646
Pulse (6.25% duty Cycle)	3.873

A DMM's specifications should tell you the maximum crest factor that the meter can handle while maintaining its measurement accuracy. True RMS meters can handle higher crest factors when a waveform's RMS voltage is in the middle of the meter's range setting. Typically, a DMM may tolerate a crest factor of 3 near the top of its scale but it might handle a crest factor of 5 that's in the middle of the range. Therefore, if you're measuring waveforms with high crest factors (greater than 3), you should adjust the DMM so the measured voltage is closest to the center of the measurement range.

Another limitation of true RMS is speed. If you're measuring relatively clean sine waves, then you can save time & money by using an averaging DMM. True RMS meters cost more than averaging meters and can take longer to produce measurements, especially when measuring millivolt-level AC signals. At those low levels, true RMS meters can take several seconds to stabilize a reading. Averaging meters won't leave you waiting.

LIST OF PRODUCTS

- * Digital Multimeter
- * AC Clamp Adaptor
- * Thermo Anemometer
- * Distance Meter
- * Network Cable Tester
- * Earth Resistance Tester
- * DC Power Supplies
- * Calibrators
- * Frequency Counter
- * Phasing Sticks
- * Waterproof Pen Testers
- * EMF Detector
- * Wood, Paper & Grain Moisture Meter
- * Transistorised Electronic Analog & Digital Insulation Resistance Testers(upto 10 KV)
- * Digital Sound Level Meter & Sound Level Calibrator
- * Digital contact & Non-contact Type Tachometer
- * Digital Non-contact (infrared) Thermometer
- * Maximum Demand Controller/Digital Power Meter
- * Digital Hand Held Temperature Indicators
- * Digital AC & AC/DC Clampmeter
- * AC/DC Current Adaptor
- * Thermo Hygrometer
- * Digital Lux Meter
- * Power Factor Regulator
- * Digital Panel Meters
- * High Voltage Detector
- * Gas Analysers
- * Function Generator
- * Battery Tester
- * Solar Power Meter

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KUSAM-MECO

AN ISO 9001:2008 COMPANY

DIGITAL CLAMP METER + MULTIMETER

MODEL KM 061 / KM 062

OPERATION MANUAL

TAKE MEASUREMENT CAREFULLY AND YOU'LL SPARE YOUR METER AND YOURSELF, SOME PAIN

Nearly every electrical engineer has a hand held digital clamp meter (Tongtester). We sometimes take them for granted, until we damage them or “burn them out”. If you incorrectly connect your clamp meter to a circuit, or if you have the clamp meter on wrong setting, you damage the meter and possibly hurt yourself. You can also get into trouble if you try to measure the voltage across a charged capacitor.

Clamp meter users frequently burn their meters by trying to measure current the same way as they measure voltage. Remember, you measure voltage across a circuit, and current through a circuit. When you use the current input, your clamp meter becomes a low impedance circuit element.

Even if you correctly insert your clamp meter in to the circuit, you can still damage your meter. Don't try to measure current in excess of your meter's capacity. Check the current capacity of the Clamp meter.

If you are measuring current in industrial environment to prevent excess current from flowing through your meter, always disconnect your test leads from the circuit under test whenever you change Clamp meter functions. Set your meter to the correct function, say current, and its highest range for the setting. If the reading is small, change the range to the next lower range till the reading can be read with the best possible accuracy. When measuring voltage, connect the test leads before your apply power to your circuit. To be safe, start by setting your meter to its highest range first.

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SAFETY

This manual contains information & warnings that must be followed for operating the instrument safely and maintaining the instrument in a safe operating condition. If the instrument is used in a manner not specified by the manufacturer, the protection provided by the instrument may be impaired.

The meter protection rating, against the users, is double insulation per IEC61010-1 2nd Ed., EN61010-1 2nd Ed., UL61010-1 2nd Ed., CAN / CSA C22.2 No. 61010-1, 2nd Ed., IEC61010-2-032, EN61010-2-032, UL61010B-2-032 & CAN / CSA C22.2 N0.61010-2-032-04 :

Category CAT III 600V AC & DC.

PER IEC61010 OVERVOLTAGE INSTALATION CATEGORY**OVERVOLTAGE CATEGORY II**

Equipment of OVERVOLTAGE CATEGORY II is energy-consuming equipment to be supplied from the fixed installation. .

Note - Examples include household, office, and laboratory appliances.

OVERVOLTAGE CATEGORY III

Equipment of OVERVOLTAGE CATEGORY III is equipment in fixed installations

Note - Examples include switches in the fixed installation and some equipment for industrial use with permanent connection to the fixed installation.

OVERVOLTAGE CATEGORY IV

Equipment of OVERVOLTAGE CATEGORY IV is for use at the origin of the installation.

Note - Examples include electricity meters and primary over-current protection equipment.

TERMS IN THIS MANUAL

WARNING Identifies conditions and actions that could result in serious injury or even death to the user.



CAUTION Identifies conditions and actions that could cause damage or malfunction in the instrument.



WARNING

To reduce the risk of fire or electric shock, do not expose this product to rain or moisture. The meter is intended only for indoor use.

To avoid electrical shock hazard, observe the proper safety precautions when working with voltages above 60 VDC or 30 VAC rms. These voltage levels pose a potential shock hazard to the user.









Keep your hands/fingers behind the hand/finger barriers (of the meter and the test leads) that indicate the limits of safe access of the hand-held part during measurement. Inspect test leads, connectors, and probes for damaged insulation or exposed metal before using the instrument. If any defects are found, replace them immediately.

This Clamp-on meter is designed to apply around or remove from uninsulated hazardous live conductors. But still, individual protective equipment must be used if hazardous live parts in the installation where measurement is to be carried out could be accessible.



CAUTION Disconnect the test leads from the test points before changing meter functions.

INTERNATIONAL ELECTRICAL SYMBOLS

	Caution ! Refer to the explanation in this Manual
	Caution ! Risk of electric shock
	Earth (Ground)
	Double Insulation or Reinforced Insulation
	Fuse
	AC--Alternating Current
	DC--Direct Current
	Application around and removal from hazardous live conductors is permitted

2) CENELEC Directives

The instruments conform to CENELEC Low-voltage directive 2006/95/EC and Electromagnetic compatibility directive 2004/108/EC

SPECIFICATIONS

General Specifications

- Display** : 3¼ digits 4000 counts LCD display(s)
- Update Rate** : 3 per second nominal
- Polarity** : Automatic
- Low Battery** : Below approx. 2.4V
- Operating Temperature** : 0°C to 40°C.
- Relative Humidity** : Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative at 40°C
- Altitude** : Operating below 2000m
- Storage Temperature** : -20°C to 60°C, <80% R.H. (With battery removed)
- Temperature Coefficient:** nominal 0.15 x (specified accuracy)/°C @ (0°C ~ 18°C or 28°C ~ 40°C), or otherwise specified.
- Sensing** : Average sensing (KM 061)
True RMS sensing (KM 062)
- Safety** : Meets IEC61010-1 2nd Ed., EN61010-1 2nd Ed., UL61010-1 2nd Ed., CAN/CSA C22.2 No. 61010.1-0.92, IEC61010-2-032, EN61010-2-032 & UL61010B-2-032 & CAN/CSA C22.2 No. 61010-2-032-04: Category III 600 Volts AC & DC.
- Transient Protection** : 6.5kV (1.2/50 S surge)
- Pollution degree** : 2

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)

In anRF field of 3V/m :
 Capacitance function is not specified
 Other function ranges : Total Accuracy = Specified Accuracy + 50digits
 Performance above 3V/m is not specified

Overload Protections :
 Clamp-on jaws : DC/AC 400A rms continuous
 + & COM terminals (all functions) : 600V DC / VAC rms

Power Supply : Standard 1.5V AAA size Alkaline battery x 2.

Power Consumption : 11mA typical for ACA / DCA & 2.9 mA typical for other functions.

APO Timing : Idle for 30 minutes

APO Consumption : typical 10 A (KM 061) & 190 A (KM062)

Dimension : 188(L) x 63(W) x 40(H) mm

Weight : 218gm approx.

Jaw opening & Conductor diameter : 30mm max.

Accessories : Test lead pair, batteries installed, User's Manual, Carrying case,

ELECTRICAL SPECIFICATIONS

Accuracy is ± (% reading digits + number of digits) or otherwise specified, at 23°C ± 5°C & less than 75% R.H.

DC Voltage

Range	Resolution	Accuracy
400.0 mV	100 V	±(0.3%rdg + 3dgts)
4.000 V	1 mV	±(0.5%rdg + 3dgts)
40.00 V	10 mV	
400.0 V	100 mV	±(1.0%rdg + 4dgts)
600 V	1 V	

Input Impedance : 10M , 30pF nominal (1000M for 400.0mV range)

AC Voltage

Range	Resolution	Accuracy
50Hz ~ 60Hz		
4.000 V	1 mV	±(1.0%rdg + 4dgts)
40.00 V	10 mV	
400.0 V	100 mV	
60Hz ~ 500Hz		
4.000 V	1 mV	±(1.5%rdg + 4dgts)
40.00 V	10 mV	
400.0 V	100 mV	
50Hz ~ 500Hz		
600 V	1 V	±(2.0%rdg + 4dgts)

Input Impedance : 10M , 30pF nominal

Crest Factor : <2:1 at full scale & <4:1 at half scale (Model KM062 only)
 For KM062, ACV & ACA Clamp-on accuracies are specified from 5% to 100% of range or otherwise specified.

Resistance (Ohms)

Range	Resolution	Accuracy
400.0	100 m	$\pm(0.8\%rdg + 6dgts)$
4.000 k	1	$\pm(0.6\%rdg + 4dgts)$
40.00 k	10	
400.0 k	100	
4.000 M	1 K	$\pm(1.0\%rdg + 4dgts)$
40.00 M	10 K	$\pm(2.0\%rdg + 4dgts)$

Open Circuit Voltage : 0.4V DC typical

Audible Continuity Tester

Open Circuit Voltage : 0.4V DC typical

Range : 400.0 ; Accuracy : 1.5% + 8d

Audible threshold : between 10 & 120 .

Diode Tester

Open Circuit Voltage : < 1.6V DC typical

Test Current : 0.4mA typical

Capacitance

Range ¹⁾	Resolution	Accuracy ²⁾³⁾
500.0 nF	100 pF	$\pm(3.5\%rdg + 6dgts)$
5.000 F	1 nF	
50.00 F	10 nF	
500.0 F	100 nF	
3000 F	1 F	

¹⁾ Additional 50.00nF range accuracy is not specified

²⁾ Accuracies with film capacitor or better

³⁾ Specified with battery voltage above 2.8V (approx. Half full battery). Accuracy decreases gradually to 12% at low battery warning voltage of approx. 2.4V

DCA Current (Clamp-on)

Range	Resolution	Accuracy ¹⁾²⁾
400.0 A		
0A ~ 50.0A	100 mA	$\pm(1.0\%rdg + 4dgts)$
50.0A ~ 200.0A	100 mA	$\pm(1.5\%rdg + 5dgts)$
200.0A ~ 300.0A	100 mA	$\pm(2.0\%rdg + 5dgts)$
300.0A ~ 400.0A	100 mA	$\pm(2.5\%rdg + 5dgts)$

¹⁾ Induced error from adjacent current-carrying conductor : <0.01A/A

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

ACA Current (Clamp-on)

Range	Accuracy ¹⁾
400.0 A	
40Hz ~ 60Hz @ 0 ~ 50A	$\pm(1.0\%rdg + 6dgts)$
60Hz ~ 400Hz @ 0 ~ 50A	$\pm(1.5\%rdg + 5dgts)$
40Hz ~ 60Hz @ 50A ~ 200A	$\pm(1.5\%rdg + 5dgts)$
60Hz ~ 200Hz @ 50A ~ 200A	$\pm(2.0\%rdg + 5dgts)$
40Hz ~ 60Hz @ 200A ~ 300A	$\pm(2.0\%rdg + 5dgts)$
40Hz ~ 60Hz @ 300A ~ 400A	$\pm(2.5\%rdg + 5dgts)$

¹⁾ Induced error from adjacent current-carrying conductor : <0.01A/A

Crest Factor : < 1.8:1 at full scale & < 3.6:1 at half scale
(Model KM 062 only)

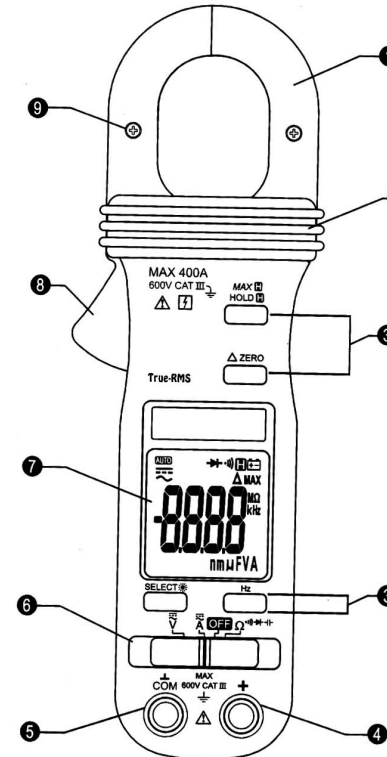
Hz Frequency

Function	Sensitivity (Sine wave)	Range
400.0 mV	350 mV	10Hz ~ 1kHz
4.000 V	3.2 V	5Hz ~ 20kHz
40.00 V	25 V	5Hz ~ 100kHz
400.0 V	100 V	5Hz ~ 100kHz
600 V	410 V	5Hz ~ 5kHz
DCA / ACA	Unspecified	

Display Counts : 5000
 Maximum resolution : 0.001Hz
 Accuracy : 0.5% + 4d

3) PRODUCT DESCRIPTION

Note : Top of the line model is used as representative for illustration purposes.

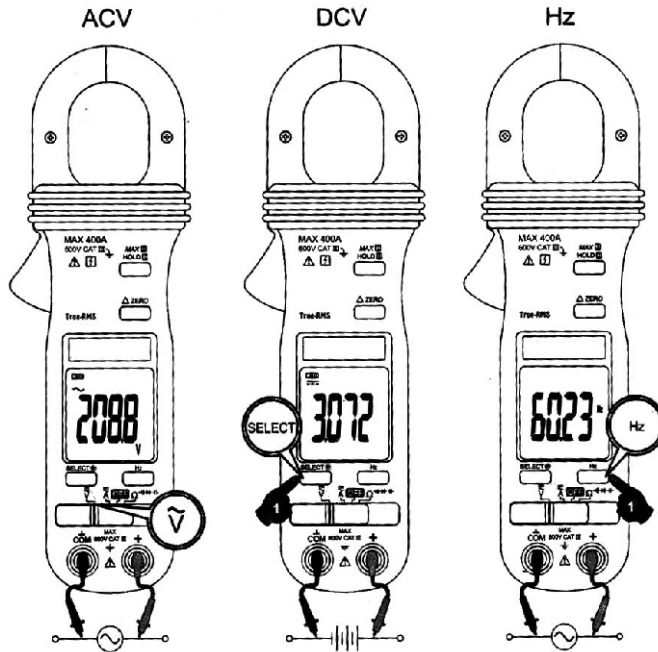


1. Hall-effect Clamp Jaw for AC & DC Current magnetic field pick up
2. Hand/Finger Barrier to indicate the limits of safe access of the meter during measurement.
3. Push-buttons for special functions & features
4. Input jack for all functions EXCEPT non-invasive ACA & DCA current functions
5. Common (Ground reference) input Jack for all functions EXCEPT non-invasive ACA & DCA current functions.
6. Slide-switch Selector to turn the power ON/OFF and Select a function.
7. 3½ digits 4000 counts LCD display
8. Jaw trigger for opening the clamp jaw
9. DCA direction for + polarity as well as Jawcenter indicator, at where best ACA & DCA accuracy is specified.

4) OPERATION

CAUTION : Before and after hazardous voltage measurements, test the Voltage function on a known source such as line voltage to determine proper meter functioning.

DC Voltage, AC Voltage, Hz Frequency Functions

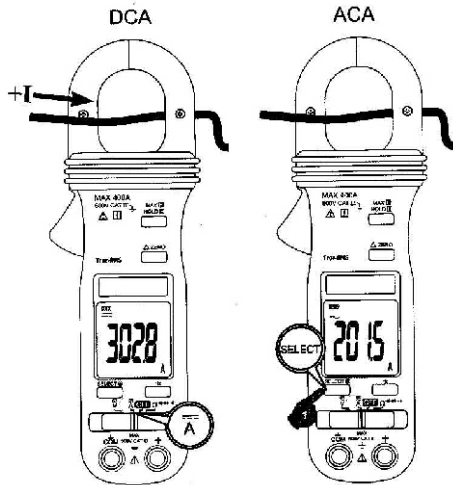


Set slide-switch to Voltage function position. Inputs are made through the test leads terminals.

Press the Hz button momentarily to activate Hz Frequency. The Hz trigger Level is determined by the selected function-range from where the Hz function is activated. In ACV function, activating the Hz function during significant measurements can get the most appropriate trigger level to avoid electrical noises in most cases. Electrical noise may cause unstable Hz readings. Activating the Hz function at AC 4.000V range (before making significant measurements) can get lower trigger level (higher sensitivity). Hz reading may show zero when the sensitivity is insufficient.

Note : DC 400.0mV range is designed with 1000M high input impedance for least current drain in measuring small signals, and can cope better with most commercially available voltage output transducers / adapters. The non-zero display reading is normal when the meter inputs are open circuit, which will not affect actual measurement accuracy. The meter will show close-to-zero readings when the inputs are shorted. Open input is actually a floating condition, which is not a zero-volt-input condition.

ACA & DCA Current Clamp-on function



Inputs are made through the clamp jaws for non-invasive ACA & DCA current measurements.

CAUTION (Application and removal of the Clamp-on meter)

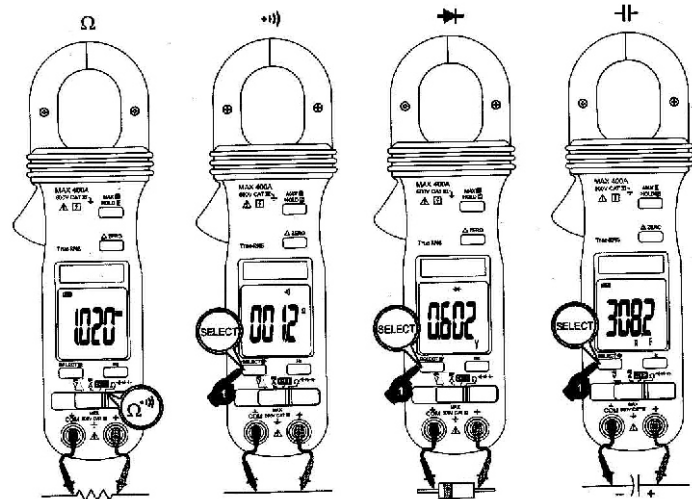
Press the jaw trigger and clamp the jaws around only one single conductor of a circuit for load current measurement. Make sure the jaws are completely closed, or else it will introduce measurement errors. Enclosing more than one conductor of a circuit will result in differential current measurement (like identifying leakage current). Locate the conductor(s) at the Jaws center as much as possible to get the best measuring accuracy. The jaw "+" mark indicates current flow direction on DCA positive readings.

For removal, press the jaw trigger and remove the jaws from the conductor(s).

Note : In DCA measurements, hysteresis of the jaws (after measuring high DC currents) may introduce non-zero residual readings. Relative Zero Δ mode should be used each time to offset the residual readings, if any, for more accurate measurements.

Adjacent current-carrying devices such as transformers, motors & conductor wires will affect measurement accuracy. Keep the jaws away from them as much as possible to minimize influence.

Ω RESISTANCE, AND \rightarrow CONTINUITY FUNCTIONS



CAUTION

Using Resistance, Continuity, Diode or Capacitance function in a live circuit will produce false results and may damage the instrument. In many cases the suspected component must be disconnected from the circuit to obtain an accurate measurement reading.

Inputs are made through the test leads terminals. Slide-switch ON defaults at Ω . Press SELECT button momentarily to select \rightarrow) continuity function which is convenient for checking wiring connections and operation of switches. A continuous beep tone indicates a complete wire.

\rightarrow DIODE TEST FUNCTION

Inputs are made through the test leads terminals. Slide-switch ON defaults at Ω . Press SELECT button momentarily 2 times to Select \rightarrow Diode test function. Normal forward voltage drop (forward biased) for a good silicon diode is between 0.400V to 0.900V. A reading higher than that indicates a leaky diode (defective). A zero reading indicates a shorted diode (defective). An OL indicates an open diode (defective). Reverse the test leads connections (reverse biased) across the diode. The digital display shows OL if the diode is good. Any other readings indicate the diode is resistive or shorted (defective).

\rightarrow CAPACITANCE FUNCTION

Inputs are made through the test leads terminals. Slide-switch ON defaults at . Press SELECT button momentarily 3 times to select \rightarrow Capacitance function.

Relative zero Δ mode can be used to zero out the parasitic capacitance of the leads and the internal protection circuitry of the meter when measuring low capacitance in the order of Pico Farad (pf).

CAUTION

Discharge capacitors before making any measurements. Large value capacitors should be discharged through an appropriate resistance load.

HOLD \square

The Hold feature freezes the display for later viewing. Press the HOLD \square button momentarily to toggle to the Hold feature. The annunciator \square turns on.

MAX \square

The max feature compares and displays the measured maximum value as fast as 30ms with auto-ranging capability. It allows the meter to capture INRUSH currents in current functions. Press and hold the **MAX** \square button for 1 second or more to toggle to the max feature. The annunciators **MAX** and \square turn on.

RELATIVE ZERO Δ MODE

Relative zero Δ mode allows the user to offset the meter consecutive measurements with the displaying reading as the reference value. The display will now show readings relative to the stored reference value. That is, display = reading - stored value. Press the Δ button momentarily to toggle to relative zero mode.

The Annunciator Δ turns on. The meter also enters manual ranging mode where available. The annunciator **AUTO** turns off.

Display Backlight (KM 062 only)

Press the SELECT button for 1 second or more to toggle the display backlight on and off.

AUTO POWER OFF (APO)

When the meter is on, the Auto Power Off (APO) feature will switch the meter into a sleep mode automatically to extend battery life after approximately 30 minutes of no slide-switch nor push button operations to extend battery life. To wake up the meter from APO, press any push button momentarily or set the slide-switch to the OFF position and then slide back on again. Always set the slide-switch to the OFF position manually when the meter is not in use.

5) MAINTENANCE

WARNING

To avoid electrical shock, disconnect the meter from any circuit, remove the test leads from the input jacks and turn OFF the meter before opening the case. Do not operate with open case.

Trouble Shooting

If the instrument fails to operate, check batteries and test leads etc., and replace as necessary. Double check operating procedure as described in this user's manual

If the instrument voltage-resistance input terminal has subjected to high voltage transient (caused by lightning or switching surge to the system) by accident or abnormal conditions of operation, the series fusible resistors will be blown off (become high impedance) like fuses to protect the user and the instrument. Most measuring functions through this terminal will then be open circuit. The series fusible resistors and the spark gaps should then be replaced by qualified technician. Refer to the LIMITED WARRANTY section for obtaining warranty or repairing service.

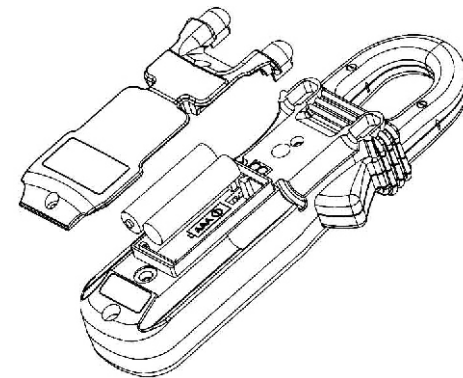
Cleaning and Storage

Periodically wipe the case with a damp cloth and mild detergent; do not use abrasives or solvents. If the meter is not to be used for periods of longer than 60 days, remove the batteries and store them separately

Battery Replacement

The meter uses standard 1.5V AAA size battery x 2; or 1.5V AAA size Alkaline battery x 2.

Loosen the 2 captive screws from the battery cover case. Lift the battery cover case. Replace the batteries. Replace battery cover case. Re-fasten the screws.



MUMBAI
TEST CERTIFICATE
**DIGITAL CLAMPMETER +
MULTIMETER**

This Test Certificate warrants that the product has been inspected and tested in accordance with the published specifications.

The instrument has been calibrated by using equipment which has already been calibrated to standards traceable to national standards.

MODEL NO. KM 061 / KM 062

SERIAL NO. _____

DATE: _____

ISO 9001
REGISTERED



WARRANTY

Each "KUSAM-MECO" product is warranted to be free from defects in material and workmanship under normal use & service. The warranty period is one year (12 months) and begins from the date of despatch of goods. In case any defect occurs in functioning of the instrument, under proper use, within the warranty period, the same will be rectified by us free of charges, provided the to and fro freight charges are borne by you.

This warranty extends only to the original buyer or end-user customer of a "KUSAM-MECO" authorized dealer.

This warranty does not apply for damaged IC's, fuses, burnt PCB's, disposable batteries, carrying case, test leads, or to any product which in "KUSAM-MECO's" opinion, has been misused, altered, neglected, contaminated or damaged by accident or abnormal conditions of operation or handling.

"KUSAM-MECO" authorized dealer shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of "KUSAM-MECO".

"KUSAM-MECO's" warranty obligation is limited, at option, free of charge repair, or replacement of a defective product which is returned to a "KUSAM-MECO" authorized service center within the warranty period.

THIS WARRANTY IS BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. "KUSAM-MECO" SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE WHATSOEVER.

All transactions are subject to Mumbai Jurisdiction.