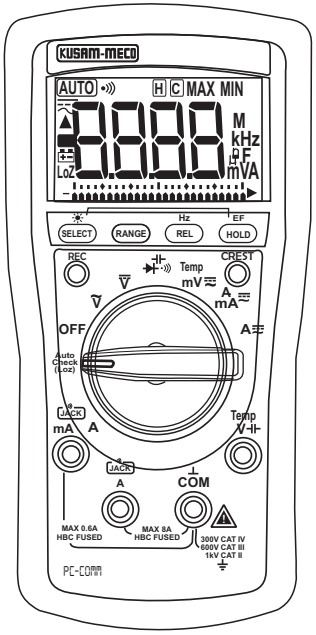
KUSAM-MECO

DIGITAL MULTIMETER

MODEL - KM 255 / KM 257



KUSAM-MECO

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

Nearly every electrical engineer has a hand held Multimeter. We sometimes take them for granted, until we damage them or "burn them out". If you incorrectly connect your DMM to a circuit or have the DMM 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.

DMM 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 DMM becomes a low impedance circuit element. If you accidentally connect this low impedance path across your circuit, you'll effectively short-circuit it. You can, therefore send high current through your meter and severely damage it. Unless the meter has a fused input, you can even get an explosion or fire.

Even if you correctly insert your DMM into the circuit, you can still damage your meter. Don't try to measure current in excess of your meter's capacity. Handheld DMMs usually have a maximum current rating of 10A or 20A.

If you are measuring current in industrial environment, you can easily exceed those ratings. The best way to avoid damage is to use a clamp meter or to connect a clamp attachment to your DMM.

To prevent excess current from flowing through your meter, always disconnect the test leads from the circuit under test whenever you change DMM functions, Set your meter to the correct function, say current and its highest range for the setting, say 20A. Next, connect the test leads before you apply power to the circuit. To be safe, start by setting your meter to its highest range first.

KUSAM-MECO

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KUSAM-MECO

1) SAFETY

Terms in this manual

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

CAUTION : identifies conditions and action that could cause damage or malfunction in the instrument.

This manual contains information and warning that must be followed for operating the instrument safely and maintaining the instrument in a safe operating conditions. If the instrument is used in a manner not specified by the manufactures, the protection provided by the instrument may be impaired. The meter is intended only for indoor use.

The meter protection rating against the users, is double insulation per IEC61010-1 2nd Ed. EN61010-1 2nd Ed. UL61010-2nd Ed. and CAN/CSA C22.2 No. 61010.1-1-0.92 to category II 1000V, CAT III 600V & CAT IV 300V AC & DC.

Terminals (to COM) measurement category:

V : Category II 1000V, CAT III 600V and CAT IV 300V AC & DC.

mA A : Category III 500VAC and 300VDC.

A : Category III 600VAC and 300VDC.

Per IEC61010-1 2nd Ed. (2001) Measurement Category

Measurement Category IV (CAT IV) is for measurements performed at the source of the low-voltage installation. Examples are electricity meters and measurement on primary overcurrent protection devices and ripple control units.

Measurement Category III (CAT III) is for measurements performed in the building installation. Examples are measurements on distribution boards, circuit-breakers, wiring, including cables, bus-bars, junction boxes, switches, socket-outlets in the fixed installation, and equipment for industrial use and some other equipment, for example, stationary motors with permanent connection to the fixed installation.

Measurement Category II (CAT II) is for measurements performed on circuits directly connected to the low voltage installation. Examples are measurements on household appliances, portable tools and similar equipment

Warning

To reduce the risk of fire or electric shock, do not expose this product to rain or moisture. To avoid electrical shock hazard, observe the proper safety precautions when working with voltage above 60 VDC or 30 VAC rms. These voltage levels pose a potential shock hazard to the user. Do not touch test lead tips or the circuit being tested while power is applied to the circuit being measured. Keep your fingers behind the finger guards of the test leads 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. Do not measure any current that exceeds the current rating of the protection fuse. Do not attempt a current measurement to any circuit where the open circuit voltage is above the protection fuse voltage rating. Suspected open circuit voltage should be checked with voltage functions. Never attempt a voltage measurement with the test lead inserted into the A/mA or A input jack. Only replace the blown fuse with the proper rating as specified in this manual.

CAUTION

Disconnect the test leads from the test points before changing functions. Always set the instrument to the highest range and work downward for an unknown value when using manual ranging mode.

2) CENELEC DIRECTIVES

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

3) GENERAL SPECIFICATION

- **Display** : 3-5/6 digits 6,000 counts
- **Update Rate** : 5 per second nominal
- **24 Segments Bar graph** :40 per second max.
- **Operating Temperature** : 0°C to 40°C
- **Relative Humidity** : Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative humidity at 40°C
- **Altitude** : Operating below 2000m
- **Storage Temperature** : -20°C~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** :
  KM255 : Average sensing
  KM257 : True RMS sensing

- **Pollution Degree** : 2
- **Safety :** Double insulation per IEC61010-1 2nd Ed. EN6100-1 2nd Ed., UL61010-1 2nd Ed. & CAN / CSA C22.2 No. 61010.1-0.92 to Category II 1000V, CAT III 600V and CAT IV 300V AC & DC
- **Transient Protection :** 6.5kV (1.2/50 s surge)
- **Terminals (to Com) Measurement Category** :
  V : Category II 1000V, CAT III 600V and CAT IV 300V AC & DC.
  mA A : Category III 500VAC and 300VDC.
  A : Category III 600VAC and 300VDC.
- **E.M.C.** : Meets EN61326 -1:2006 (En55022, EN61000-3-2, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-8, EN61000-4-11)
  In an RF field of 3V/m:
  Capacitance function is not specified
  Other function ranges:
  Total Accuracy = Specified Accuracy+100 digits
  Performance above 3V/m is not specified
- **Overload Protection** :
  A & mA : 0.63A/500Vac, IR 150kA @500Vac
  A : 10A/600Vac IR 100kA@600Vac
  V : 1050 Vrms, 1450 Vpeak
  AutoCheck , mV, Ohm & others : 600 Vrms

- **Low Battery** : Blow approx. 2.3V
- **Power Supply**: 1.5V AAA Size battery x 2
- **Power Consumption (typical)**: 3.5mA
- **APO Consumption (typical)** : 10 A
- **APO Timing** : Idle for 34 minutes
- **Dimension** :161(L) x 80(W) x 50(H)mm (With Holster)
- **Weight :** Approx. 340 gm (With Holster)
- **Special Features :** AutoCheck V & ; Auto-ranging MAX / MIN record ; Crest mode (Peak Hold), Backlighted LCD ; Auto-ranging Relative Zero mode; Display Hold; EF-Detection (NCV); Interface capabilities with PC computer; Input warning detection.
- **Accessories :** Test lead pair : batteries installed ; user's manual; BKP 60 banana plug type-K thermocouple.
- **Optional purchase accessories :** USB interface kit BRUA-20; Magnetic hanger BMH-01; BKB32 banana plug to type-K socket plug adaptor.

4) Electrical Specification

Accuracy is given as ±(%of reading digits + number of digits) or otherwise specified @ 23°C±5°C and less than 75% R.H.

True RMS model KM257 ACV & ACA accuracies are specified from 5% to 100% of range or otherwise specified . Maximun Crest Factor <3:1 at full scale & 6:1 at half scale, and with frequency components fall within the meter specified frequency bandwidth for non-sinusoidal waveforms.

AC Voltage

Range	Resolution	Accuracy
50Hz ~ 400Hz		
60.00 mV	10 V	±(1.0%rdg + 5dgts)
600.0 mV	100 V	
6.000 V	1 mV	
60.00 V	10 mV	
600.0 V	100 mV	
1000 V	1 V	

CMRR : >60dB @ DC to 60Hz, Rs= 1k
Input Impedance : 10M , 50 pF nominal

DC Voltage

Range	Resolution	Accuracy
60.00 mV	10 V	±(0.2%rdg + 3dgts)
600.0 mV	100 V	
6.000 V	1 mV	
60.00 V	10 mV	
600.0 V	100 mV	
1000 V	1 V	

NMRR : >60dB @ DC to 50Hz / 60Hz
CMRR : >100dB @ DC, 50Hz / 60Hz; Rs= 1k
Input Impedance : 10M , 50 pF nominal

AutoCheck _ACV

Range	Resolution	Accuracy
50Hz / 60Hz		
1.000V~1000V	1mV~1V	±(1.4%rdg+5dgts)

AutoCheck Lo-Z ACV Thershold : >1V nominal

AutoCheck Lo-Z ACV input Impedance:

Initially approx. 2.5k , 120pF nominal;
Impedance increases abruptly within a fraction of a second as display voltage is above 50V(typical).
Ended up impedance vs display voltages typically are:

15k @100V
100k @300V
250k @600V
375k @1000V

AutoCheck _DCV

Range	Resolution	Accuracy
50Hz / 60Hz		
1.000V~1000V	1mV~1V	±(1.3%rdg+3dgts)

AutoCheck™ Lo-Z DCV Threshold :
>+1.0VDC & <-1.0VDC nominal.

AutoCheck™ Lo-Z DCV Input Impedance :

Initially approx. 2.5k , 120pF 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 :

15k @ 100V
100k @ 300V
250k @ 600V
375k @ 1000V

Resistance

Range	Resolution	Accuracy
600.0	100 m	±(0.5%rdg + 4dgts)
6.000 K	1	
60.00 K	10	
600.0 K	100	
6.000 M	1 k	±(0.7%rdg + 4dgts)
600.00 M	10 k	±(1.2%rdg + 4dgts)

Open Circuit Voltage : 0.45VDC typical.

CREST Mode :
Accuracy : Specified accuracy plus 150 digits for changes > 5ms in duration.

RECORD Mode :
Accuracy : Specified accuracy plus 100 digits for change >100ms in duration.

Autocheck™ Ohm :

Range[1)]	Resolution	Accuracy
00.00 ~ 60.00M	10m ~10k	±(1.2%rdg+10dgts)

Open Circuit Voltage : 0.45VDC typical.

[1)] AutoCheck™ Ohm Threshold : < 10.00M nominal

Audible Continuity Tester:

AudibleThreshold	Response time
Between 10 and 80	32ms

Capacitance

Range	Resolution	Accuracy
60.00 nF	10 pF	±(2.0%rdg + 5dgts)
600.0 nF	100 pF	
6.000 F	1 nF	±(1.5%rdg + 5dgts)
60.00 F	10 nF	
600.0 F	100 nF	
3000 F	1 F	±(2.0%rdg + 5dgts)

Accuracies with film capacitor or better

Diode Tester

Range	Resolution	Accuracy
1.000 V	100 mV	±(1.0%rdg + 3dgts)

Test Current : 0.56mA typical.

Open Circuit Voltage : <1.8VDC typically.

DC Current

Range	Resolution	Accuracy
600.0 A	100 nA	±(0.5%rdg + 3dgts)
6000 A	1 A	
60.00 mA	10 A	
600.0 mA	100 A	
6.000 mA	1 mA	
8.00 A[1)]	10 mA	

Burden Voltage :

0.10mV/ A **(600.0 A & 6000 A)** ranges.

1.7mV/mA **(60.00mA & 600.0mA)** ranges

0.03V/A **(6.000mA & 8.00A[1)])** ranges.

[1)] 8A Continuous, > 8A to 15A for 30 Sec. Max. with 5 minutes cool down interval.

AC Current

Range	Resolution	Accuracy
50Hz ~ 400Hz		
600.0 A	100 nA	±(1.0%rdg + 3dgts)
6000 A	1 A	
60.00 mA	10 A	
600.0 mA	100 A	
6.000 mA	1 mA	
8.00 A[1)]	10 mA	

Burden Voltage :

0.10mV/ A **(600.0 A & 6000 A)** ranges.

1.7mV/mA **(60.00mA & 600.0mA)** ranges

0.03V/A **(6.000mA & 8.00A[1)])** ranges.

[1)] 8A Continuous, > 8A to 15A for 30 Sec. Max. with 5 minutes cool down interval.

Hz (Line) @ ACV, DCV, Current & AutoCheck

Function	Sensitivity (sine RMS)	Range
6 V	0.4 V	10Hz - 10kHz
60 V	4 V	10Hz - 50 kHz
600 V	40 V	10Hz - 50kHz
1000 V	400 V	45Hz - 1kHz
600 A	40 A	10Hz - 10kHz
6000 A	400 A	10Hz - 10kHz
60 mA	4 mA	10Hz - 10kHz
600 mA	40 mA	10Hz - 10kHz
6 A	1 A	10Hz - 1kHz
10 A	6 A	10Hz - 1kHz

Accuracy : 0.03% + 3d

Temperature

Range	Accuracy
-50°C ~ 1000°C	±(0.3%rdg + 3dgts)
-58°F ~ 1832°F	±(0.3%rdg + 6dgts)

K Type Thermocouple range & accuracy not included. Supplied Thermocouple suitable for measurement upto 250°C.

Logic Level Hz (mV Function)

Range	Sensitivity (square wave)
5.00Hz ~ 500.0kHz	3 Vpeak
5.00Hz ~ 1.000MHz	5 Vpeak

Accuracy : 0.03% + 2d.

Non-Contact EF-Dection :

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 : Top-right end of the meter

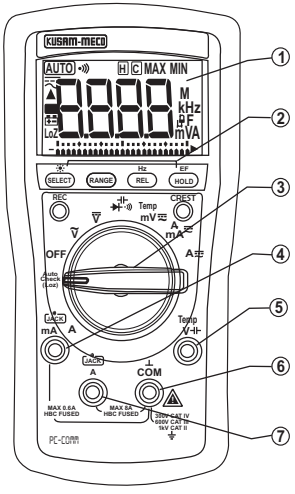
Probe-Contact EF-Detection: For more precise indication of live wires, such as distinguishing between live & ground connections, use the Red (+) test probe for direct contact measurements.

5) 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

6) PRODUCT DESCRIPTION

Note: Top of the line model is used as representative for illustration purposes. Please refer to your respective model for function availability.



1. 3-5/6 digits 6000 counts LCD display
2. Push-buttons for special functions & features
3. Selector to turn the Power On or Off & Select a function
4. Input Jack for milli-amp and micro-amp current functions
5. Input Jack for all functions EXCEPT current (A, mA, A) functions
6. Common (Ground reference) Input Jack for all functions.
7. Input Jack for 8A (15A for 30sec) current function

Analog bar-graph

The analog bar graph provides a visual indication of measurement like a traditional analog meter needle. It is excellent in detecting faulty contacts, identifying potentiometer clicks, and indicating signal spikes during adjustments.

Average sensing RMS calibrated

RMS (Root-Mean-Square) is the term used to describe the effective or equivalent DC value of an AC signal. Most digital multimeters use average sensing RMS calibrated technique to measure RMS values of AC signals. This technique is to obtain the average value by rectifying and filtering the AC signal. The average value is then scaled upward (calibrated) to read the RMS value of a sine wave. In measuring pure sinusoidal waveform this technique is fast, accurate and cost effective. In measuring non-sinusoidal waveforms, however, significant errors can be introduced because of different scaling factors relating average to RMS values.

True RMS

True RMS is a term which identifies a DMM that responds accurately to the effective RMS value regardless of the waveforms such as: square, sawtooth, triangle, pluse trains, spikes, as well as distorted waveforms with the presence of harmonics. Harmonics may cause:

1) Overheated transformers, generators and motors to burn out faster than normal

2) Circuit breakers to trip prematurely

3) Fuses to blow

4) Neutrals to overheat due to the triplen harmonics present on the neutral

5) Bus bars and electrical panels to vibrate

Crest Factor

Crest Factor is the ratio of the Crest (instantaneous peak) value to the True RMS value, and is commonly used to define the dynamic range of a True RMS DMM. A pure sinusoidal waveform has a Crest Factor of 1.4 A badly distorted sinusoidal waveform normally has a much higher Crest Factor.

NMRR (Normal Mode Rejection Ratio)

NMRR is the DMM's ability to reject unwanted AC noise effect that can cause inaccurate DC measurements. NMRR is typically specified in terms of dB(decibel). This series has a NMRR specification of >60dB at 50 and 60Hz, which means a good ability to reject the effect of AC noise in DC measurements.

CMRR (Common Mode Rejection Ratio)

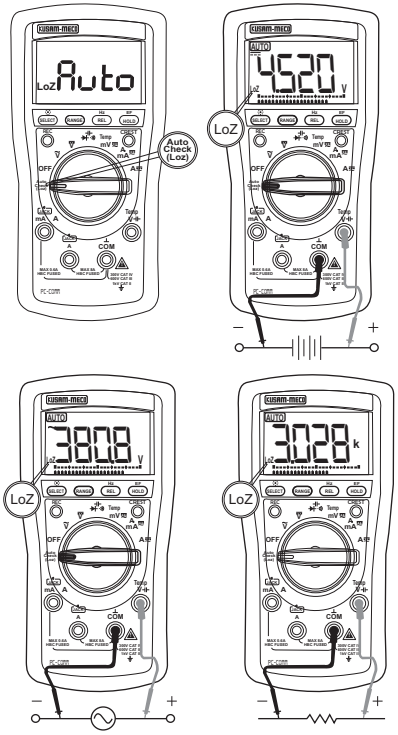
Common mode voltage is voltage present on both the COM and VOLTAGE input terminals of a DMM, with respect to ground. CMRR is the DMM's ability to reject common mode voltage effect that can cause digit rolling or offset in voltage measurements. This series has a CMRR specifications of >60dB at DC to 60Hz in ACV function; and >120dB at DC, 50 and 60 Hz in DCV function. If neither NMRR nor CMRR specification is specified, a DMM's performance will be uncertain.

7) 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.

Auto Check V -



AutoCheck mode

This innovative **AutoCheck** feature automatically selects measurement function of DCA, ACV or Resistance ( ) based on the input via the test leads.

- With no input, the meter displays "Auto" when it is ready.
- With no voltage signal but a resistance below 10M nominal) is present, the meter displays the resistance value. When the resistance is below "Audible Threshold", the meter further gives a continuity beep tone.
- When a signal above the voltage threshold of 1V DC or AC up to the rated 1000V is present, the meter displays the voltage value in appropriate DC or AC, whichever larger in peak magnitude.

Note:

***Range-Lock and Function-Lock Feature**: When a measurement reading is being displayed in AutoCheck mode, press the **RANGE** or **SELECT** button momentarily 1 time can lock the range or functions it was in. Press the button momentarily repeatedly to step through the ranges or functions.

***As Hazardous-Alter** : When making resistance measurement in AutoCheck mode, an unexpected display of voltage readings alters you that the object under test is being energized.

***Ghost-voltage Buster** : Ghost-voltages are unwanted stray signals coupled form adjacent hard signals, which confuse common multimeter voltages measurements. Our AutoChecks mode provides low(ramp-up) input impedance (approx. 2.5k at low voltage) to drain ghost voltages leaving mainly hard signal values on meter readings. It is an invaluable feature for precise indication of hard signals, such as distinguishing between hot and open wires (to ground) in electrical installation applications.

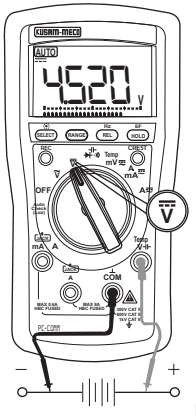
WARNING:

AutoChecks mode input impedance increases abruptly from initial 2.5k to a few hundred k 's on high voltage hard signals. "**LoZ**" displays on the LCD to remind the users of being in such low impedance mode. Peak initial load current, while probing 1000VAC for example, can be up to 566mA (1000V x 1.414 / 2.5k decreasing abruptly to approx. 3.8mA (1000V x 1.414 / 375k within a fraction of a second. Do not use AutoCheck mode on circuits that could be damaged by such low input impedance. Instead, use rotary selector $\tilde{V}$ or $\overline{\tilde{V}}$ high input impedance voltage modes to minimize loading for such circuits.

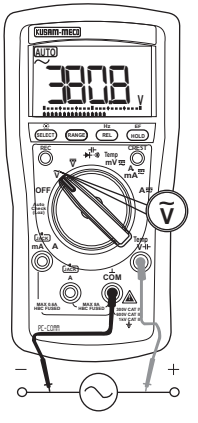
DCV, ACV & Line Frequency functions

Press the Hz push-buttion for one second or more to activate or to exit Hz.

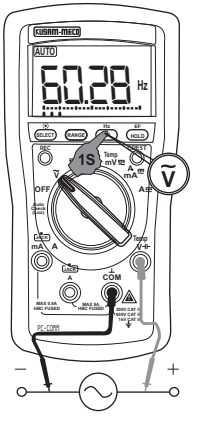
DCV



ACV



Hz



Note:

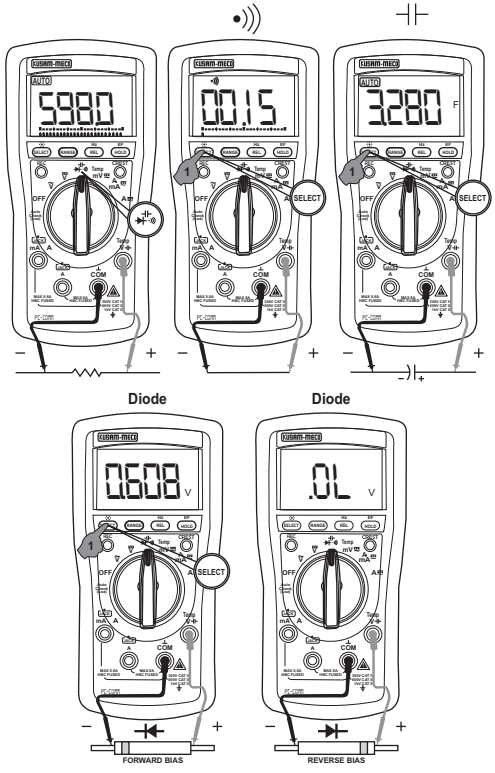
*Input sensitivity varies automatically with function range selected before activating the Hz function. 6V function range has the highest and the 1000V range has the lowest. It is recommended to first measure the signal voltage (or current) level then activate the Hz function in that voltage (or current) range to automatically set the most appropriate trigger level. You can also press the **RANGE** button momentarily to select another trigger level manually. If the Hz reading becomes unstable, select lower sensitivity to avoid electrical noise. If the reading shows zero, select higher sensitivity.

*Number of Bar-graph pointer is used to indicate input range (sensitivity) selected. 1 / 2 / 3 / 4 pointers indicate 6 / 60 / 600 / 1000V, 6 / 10 / - / -A, 60 / 600 / - / -mA or 600 / 6000 / - / - A is selected in corresponding V, A mA or A function respectively. ("-" means range not available)

* The Hz of mV function is designed specially for logic level (3V or 5V family) frequency measurement.

Resistance, **Continuity** , **Capacitance**, **Diode test functions**

Press the **SELECT** button momentarily to select the subject functions in sequence. Last selection will be saved as power up default for repeat measurement convenience.



CAUTION

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

CAUTION

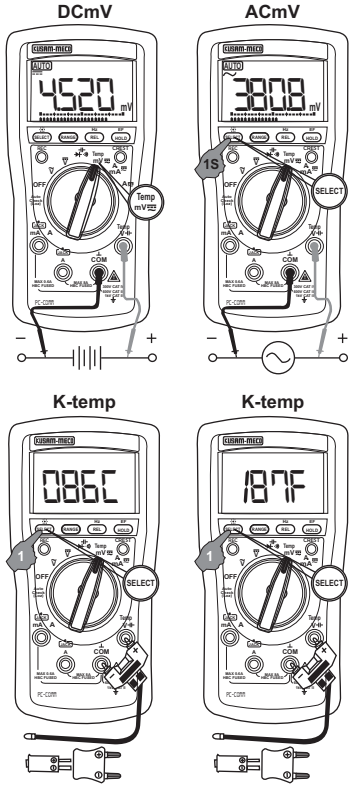
Using resistance and continuity function in a live circuit will produce false results and may damage the instrument. In may cases the suspected component must be disconnected from the circuit to obtain an accurate reading.

•))) Continuity function is convenient for checking wiring connections and operation of switches. A continuous beep tone indicates a complete wire.

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 (defetive). A zero reading indicates a shorted diode (defetive). 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).

DCmV, ACmV, Temperature °C & °F functions

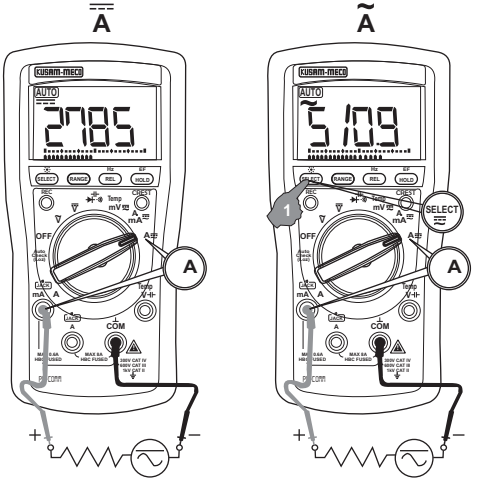
Press the **SELECT** button momentarily to select the subject functions in sequence. Last selection will be saved as power up default for repeat measurement convenience.

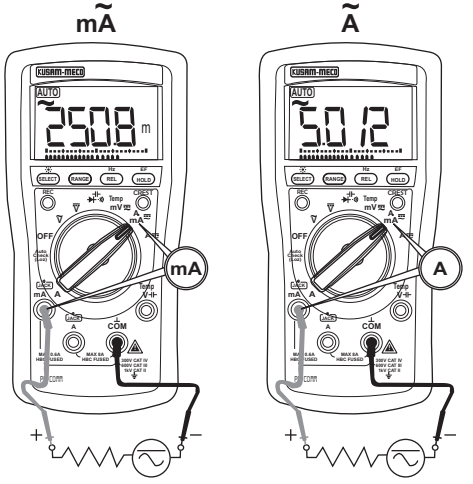


Note : Be sure to insert the banana plug K-type temperature bead probe Bkp60 with correct **+ -** polarities. You can also use a plug adapter Bkb32 (Optional purchase) with banana pins to K-type socket to adapt other standard K type mini plug temperature probes.

A, mA, and A Current functions

Press SELECT button momentarily to toggle between DC and AC. Last selection will be saved as power up default for repeat measurement convenience.

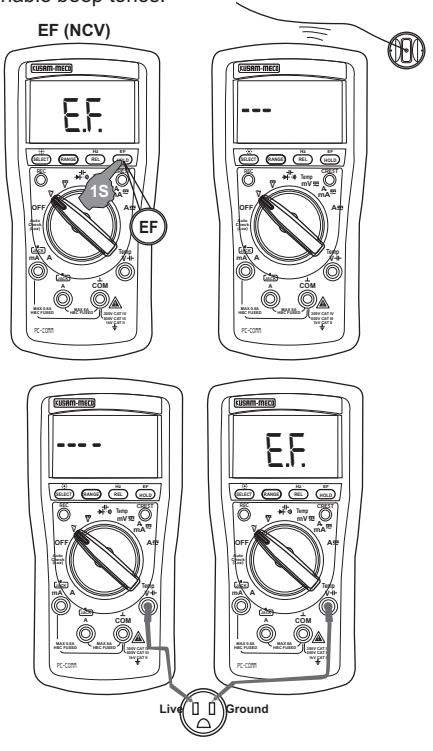




***Note:** When measuring a 3-phase system, special attention should be taken to the phase-to-phase voltage which is significantly higher than the phase-to-earth voltage. To avoid exceeding the voltage rating of the protection fuses(s) accidentally, always consider the phase-to-phase voltage as the working voltage for the protection fuse(s).

Electric Field EF-Detection

At Volt or Current funcion, press the EF button for one second or more and release to toggle to EF-Detection feature. The meter displays “E.F” when it is ready. Signal strength is indicated as a series of bar-graph segments on the display plus variable beep tones.



- **Non-Contact EF-Detection** :

An antenna is located along the top-right end of the mater, which detects electric field surrounds current carrying conductors. It is ideal for tracing live wiring connections, locating wiring breakage and to distinguish between live or earth connections.

- **Probe-Contact EF-Detection :**

For more precise indication of live wires, such as distinguishing between live & ground connections, use the Red (+) test probe for direct contact measurements.

PC computer interface capabilities

The instrument equips with an optical isolated interface port at the meter back for data communication. Optional purchase PC interface kit BRUA20X is required to connect the meter to the PC computer RS232 or USB ports.

MAX/MIN at Fast 20/s measurement mode

Press **REC** button momentarily to activate MAX/MIN recording mode. The LCD “MAX MIN” turn on, and the reading update rate will be increased to 20/second. The meter beeps when new MAX (maximum) or MIN (minimum) reading is updated. Press the button momentarily to read the MAX and MIN readings in sequence. Press the button for 1 second or more to exit MAX/MIN recording mode. Auto-ranging remains, and Auto-Power-Off is disabled automatically in this mode.

5ms CREST capture mode

Press **CREST** button momentarily to activate CREST (instantaneous Peak-Hold) mode to capture voltage or current signal duration as short as 5ms. The LCD “C” & “MAX” turn on. The meter beeps when new MAX(maximum) or MIN(minium) reading is updated. Press the button momentarily to read the MAX and MIN readings in sequence. Press the button for 1 second or mode to exit CREST capture mode. Auto-ranging and Auto-Power-Off are disabled automatically in this mode.

Backlighted LCD display

Press the **SELECT** button for 1 second or more to toggle the LCD backlight. The backlight will also be turned off automatically after 32 second to extend battery life.

Hold

The hold feature freezes the display for later vies. Press the HOLD button momentarily to toggle the hold feature.

Relative Zero ( ) mode

Relative zero allows the user to offset the meter consecutive measurements with the displaying reading as the reference value. Practically all displaying readings can be set as relative reference value including MAX/MIN feature readings. Press the **REL** button momentarily to toggle relative zero mode.

Manual or Auto- ranging

Press the **RANGE** button momentarily to select manual-ranging, and the meter will remain in the range it was in, the LCD **AUTO** turns off. Press the button momentarily again to step through the ranges. Press and hold the button for 1 second or more to resume auto-ranging.
Note : Manual ranging feature is not available in Hz and ⊣⊢ functions.

Set Beeper Off

Press the **RANGE** button while turning the meter on to temporarily disable the Beeper feature. Turn the rotary switch OFF and then back on to resume.

Beep-Jack Input Warning

The meter beeps as well as display “InEr” to warn the user against possible damage to the meter due to improper connections to the A, mA or A input jacks when other function (like voltage function) is selected.

Auto-Power-Off (APO)

The Auto-Power-Off (APO) mode turns the meter off automatically to extend battery life after approx. 34 minutes of no rotary switch or push button operations. To wake up the meter from APO, press the **SELECT, CREST** or **REC** button momentarily or turn the rotary switch OFF and then back on. Always turn the rotary switch to the OFF position when the meter is not in use and then back on.

Disabling Auto-Power-Off

Press the **SELECT** button while turning the meter on to temporarily disable the Auto-Power-Off (APO) feature. Turn the rotary switch OFF and then back on to resume.

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. Install only the same type of fuse or equivalent.

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 battery and store it separately.

Trouble Shooting

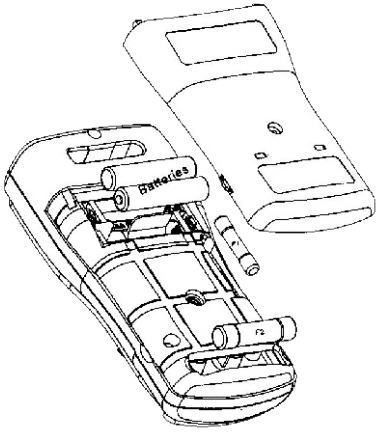
If the instrument fails to operate, check battery, fuses, leads, etc., and replace as necessary. Double check operating procedure as described in this user's manual.

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 in 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 WARRANTY section for obtaining warranty or repairing service.

Battery and Fuse replacement

Battery use : 1.5V AAA Size battery x 2
Fuses use : Fuse (FS1) for AmA current input
: 0.63A/500Vac, IR 150kA. F fuse;
Fuse(FS2) for A current input:
10A/600Vac, IR 100kA, F fuse

Battery and Fuse replacement :
Loosen the screw from the access cover of the case bottom. Lift the access cover. Replace the batteries or fuse. Re-fasten the screw.



KUSAM-MECO

MUMBAI

TEST CERTIFICATE

DIGITAL MULTIMETER

This Test Certificate warrantees 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 255 / 257**

SERIAL NO. _____

DATE: _____

ISO 9001
REGISTERED

QC
KUSAM-MECO
PASS

KUSAM-MECO

WARRANTY

Each “KUSAM-MECO” product is warranted to be free from defects in material and workmanship under normal use & service. The warranty period is Two years (24 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.

KUSAM-MECO

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 transaction are subject to Mumbai Jurisdiction.

KUSAM-MECO

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