

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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AN ISO 9001:2015 COMPANY

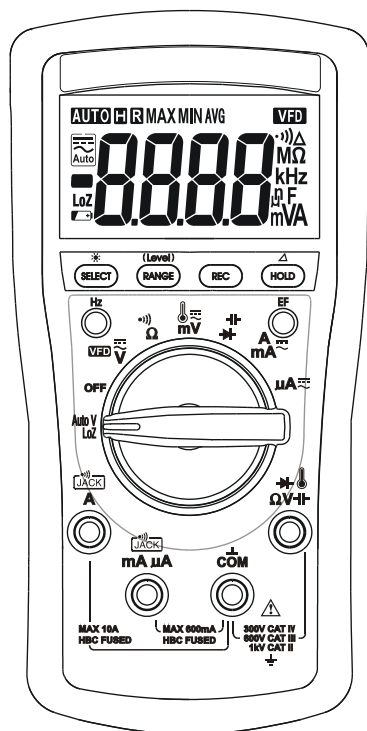
TRMS DIGITAL MULTIMETER

MODEL - KM 235

OPERATION MANUAL

KUSAM-MECO®

TRMS DIGITAL MULTIMETER MODEL - KM 235



KUSAM-MECO®

TABLE OF CONTENTS

TITLE	PAGE NO.
I. Safety.....	01
II. Cenelec Directives.....	03
III. Special Features.....	04
IV. General Specifications.....	04
V. Electrical Specifications.....	06
VI. Product Description.....	13
VII. Maintenance.....	25
VIII. Test Certificate.....	27
IX. Warranty.....	28

I) SAFETY :

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

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.

Keep your hands/fingers behind the hand/finger barriers (of the meter and the test probe assembly, where applicable) that indicate the limits of safe access of the hand-held parts during measurements. Inspect lead wires, connectors, and probes for damaged insulation or exposed metal before using the meter. If any defects are found, replace them immediately. Only use the probe assembly provided with the meter or a UL Listed Probe Assembly to the same meter ratings or better.

IEC 61010-031 requires exposed conductive test probe tips to be $\leq 4\text{mm}$ for CAT III & CAT IV ratings. Refer to the category markings on your probe assemblies as well as on the add-on accessories (like detachable Caps or Alligator Clips), if any, for applicable rating changes.

Observe proper safety precautions when working with voltages above 33 Vrms, 46.7 Vpeak or 70 VDC. These voltage levels pose In other words, the meter will intelligently avoid entering the APO a potential shock hazard to the user. Before and after hazardous voltage measurements, check the voltage function on a known source such as line voltage to determine proper meter functioning.

CAUTION

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

INTERNATIONAL ELECTRICAL SYMBOLS :

-  Marking of Electrical and Electronic Equipment (EEE). Do not dispose of this product as unsorted municipal waste. Contact a qualified recycler
-  Caution ! Refer to the explanation in this Manual
-  Caution ! Possibility of electric shock
-  Earth (Ground)
-  Meter protected throughout by Double Insulation or Reinforced insulation
-  Fuse
-  Direct Current (DC)
-  Alternating Current (AC)
-  3 Phase Alternating Current

Brief Information about Measurement Categories

Measurement Category IV is applicable to test and measuring circuits connected at the source of the building's low-voltage MAINS installation. Examples are measurements on devices installed before the main fuse or circuit breaker in the building installation.

Measurement Category III is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation. Examples are measurements on distribution boards (including secondary meters), 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 such as stationary motors with permanent connection to the fixed installation.

Measurement Category II is applicable to test and measuring circuits connected directly to utilization points (socket outlets and similar points) of the low-voltage MAINS installation. Examples are measurements on MAINS CIRCUITS of household appliances, portable tools and similar equipment.

II) CENELEC DIRECTIVES :

The instruments conform to CENELEC Low-voltage directive 2014/35/EC, Electromagnetic compatibility directive 2014/30/CU and RoHS directive 2011/65/EU.

III) SPECIAL FEATURES :

- BeepLit™ Continuity
- Backlighted LCD
- EF-Detection (NCV)
- BeepJack™ on mA/A terminal
- AutoV (Loz)
- VFD
- Auto-ranging MAX/MIN/AVG Record
- Display Hold
- Auto-ranging Relative Zero mode

IV) GENERAL SPECIFICATIONS :

- **Sensing** : True RMS sensing
- **Display** : 3-5/6 digits 6,000 counts
- **Update Rate** : 5 per second nominal
- **Operating Temperature** : -10°C to 45°C
- **Relative Humidity** : Maximum relative humidity 80% for temperature up to 31°C decreasing linearly to 50% relative humidity at 45°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 @ (-10°C ~ 18°C or 28°C ~ 45°C), or otherwise specified.
- **Ingress Protection** : IP40
- **Pollution Degree** : 2
- **Safety** : Certified per IEC/UL/EN61010-1 Ed. 3.0, IEC/UL/EN61010-2-030 Ed.1.0, IEC/UL/EN61010-2-033 Ed.1.0, IEC/UL/EN61010-031 Ed. 1.1 and the corresponding. CAN/CSA-C22.2 regulations to Measurement Categories: CAT II 1000V, CAT III 600V and CAT IV 300V AC & DC.
- **Transient Protection** : 6.0kV (1.2/50µs surge).
- **E.M.C.** : Meets EN61326-1:2013
In an RF field of 3V/m:

Temperature function is not specified

Ohm function :

Total Accuracy = Specified Accuracy + 15 digits

Other functions :

Total Accuracy = Specified Accuracy

Performance above 3V/m is not specified

• **Overload Protection :**

mA & mA : 0.4A/1000V DC/AC rms, IR 30kA, F fuse or better

A : 11A/1000V DC/AC rms, IR 20kA, F fuse or better

V & AutoV : 1100V DC/AC rms

mV, Ohm & others : 1000V DC/AC rms

• **Low Battery :** Below approx. 2.5V

• **Power Supply :** 1.5V AAA Size battery X 2

• **Power Consumption (typical) :** 3.2mA

• **APO Consumption (typical) :** 10mA

• **APO Timing :** Idle for 30 minutes

• **Dimension :** 161*80*50mm L*W*H (With Holster)

• **Weight :** Approx. 334 gm (With Holster)

• **Accessories :** Test lead pair; Batteries installed; User's manual,

BKP60 banana plug type-K thermocouple.

• **Optional Purchase Accessories :** BKB32 banana plug to

type-k socket plug adaptor, BMH-01 magnetic hanger;

BMP-25x soft carrying pouch.

V) ELECTRICAL SPECIFICATIONS :

Accuracy is given as $\pm$ (% of reading digits + number of digits) or otherwise specified @ 23°C $\pm$ 5°C ACV & ACA accuracies are specified from 1 % to 100 % of range or otherwise specified. Maximum Crest Factor <2:1 at full scale & <4:1 at half scale, and with frequency components fall within the meter specified frequency bandwidth for non-sinusoidal waveforms

AC VOLTAGE

Range	Resolution	Accuracy
50Hz ~ 60Hz		
6.000V ¹⁾	1 mV	±(0.7%rdg+3dgts)
60.00V	10 mV	
600.0V	100 mV	
1000 V	1 V	
45Hz ~ 440Hz		
6.000V ¹⁾	1 mV	±(2.0%rdg+3dgts)
60.00V	10 mV	
600.0V	100 mV	
1000 V	1 V	

Input Impedance: 10MW, 54pF nominal

¹⁾ <5d non-zero residue may appear when backlight is on, which will not affect the specified measuring range and accuracy

ACmV

Range	Resolution	Accuracy
10Hz ~ 500Hz		
60.00mV ¹⁾²⁾	10 mV	±(1%rdg+3dgts)
600.0mV ³⁾	100 mV	
500Hz ~ 800Hz		
60.00mV ¹⁾²⁾	10 mV	±(2%rdg+3dgts)
600.0mV ³⁾	100 mV	

Input Impedance : 10MW, 54pF nominal

- 1) <5d non-zero residue may appear when back light is on, which will not affect the specified measuring range and accuracy
- 2) Signal peak absolute values, including DC bias, less than 130mVpeak
- 3) Signal peak absolute values, including DC bias, less than 1300mVpeak

DC VOLTAGE

Range	Resolution	Accuracy
60.00mV	10 nV	±(0.3%rdg+2dgts)
600.0mV	100 nV	
6.000V	1 mV	
60.00V	10 mV	±(0.4%rdg+2dgts)
600.0V	100 mV	±(0.2%rdg+2dgts)
1000V	1 V	±(0.4%rdg+2dgts)

Input Impedance : 10MW, 54pF nominal

VFD_ACV (with Low Pass Filter)

Range	Resolution	Accuracy
10Hz ~ 100Hz (Fundamental)		
600.0V	100 mV	±(1.0%rdg+3d)
1000V	1 V	
100Hz ~ 400Hz (Fundamental)		
600.0V	100 mV	±(10%rdg+3d ²)
1000V	1 V	

- 1) Not specified for fundamental frequency > 400Hz
- 2) Accuracy linearly decreases from 1% + 3d @100Hz to 10% + 3d @400Hz

Ohm

Range ¹⁾	Resolution	Accuracy
600.0W	100 mW	0.3% + 3d
6.000kW	1 W	
60.00kW	10 W	0.5% + 3d
600.0kW	100 W	
6.000MW ²⁾	1 kW	0.9% + 2d ⁴⁾
60.00MW ³⁾	10 kW	

- 1) Open Circuit Voltage : 1.6VDC typical
- 2) Constant Test Current : 0.2mA Typical
- 3) Constant Test Current : 0.02mA Typical
- 4) 5%+20d @ >30WMM

AutoV_ACV

Range	Resolution	Accuracy ¹
45Hz ~ 440Hz		
600.0V	100 mV	±(2%rdg+3dgts)
1000V	1 V	

1)Not specified at <1VAC
 Threshold: > 1VAC nominal
 Approximate input impedance (//164pF) for reference:
 At direct input 50Vac (typical) from quiescence:
 >8MΩ@ < 5.6Vac
 22kΩ@ 7Vac
 12kΩ@ 8Vac
 2.6kΩ@ 50Vac
 At direct input >>50V (typical) from quiescence:
 Initial impedance is approximately 2.3kΩ. Impedance increases abruptly within a fraction of a second as display voltage (hard signal) is much higher than 50V (typical). End-up impedances vs display voltages typically are:
 12kΩ@100V
 100kΩ@300V
 240kΩ@600V
 580kΩ@1000V

AutoV_DCV

Range	Resolution	Accuracy ¹
600.0V	100 mV	±(2%rdg+3dgts)
1000V	1 V	

1)Not specified at <1VDC
 Threshold: > +1.0VDC or < -1.0VDC nominal
 Approximate input impedance (//164pF) for reference:
 At direct input ≤ 50Vdc (typical) from quiescence:

>8MΩ@ < 8Vdc (Protection clamping threshold)
 25kΩ@ 9Vdc
 13kΩ@ 10Vdc
 2.6kΩ@ 50Vdc
 At direct input >>50V (typical) from quiescence:
 Initial impedance is approximately 2.3kΩ. Impedance increases abruptly within a fraction of a second as display voltage (hard signal) is much higher than 50V (typical). End-up impedances vs display voltages typically are:
 12kΩ@100V
 100kΩ@300V
 240kΩ@600V
 580kΩ@1000V

AC Current

Range	Resolution	Accuracy	Burden Voltage
50HZ ~ 400HZ			
600.0mA	100 nA	1.5% + 3d	0.1mV/mA
6000mA	1 mA		
60.00mA	10 mA	1.0% + 3d	1.9mV/mA
600.0mA	100 mA		
6.000A ¹⁾	1 mA		0.04V/A
10.00A ²⁾	10 mA		

- 1) <5d non-zero residue may appear when backlight is on, which will not affect the specified measuring range and accuracy
 2) 10A continuous, >10A to 20A for 30 seconds max with 5 minutes cool down interval

Diode Tester

Range	Resolution	Accuracy
3.000V	100 mV	±(0.9%rdg+2d)

Test Current : 0.3mA typical
Open Circuit Voltage : < 3.2VDC typical

DC Current

Range	Resolution	Accuracy	Burden Voltage
600.0mA	100 nA	1.0% + 3d	0.1mV/mA
6000mA	1 mA		
60.00mA	10 nA	0.7% + 3d	1.9mV/mA
600.0mA	100 nA		
6.000A	1 mA		0.04V/A
10.00A ¹⁾	10 mA		

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

Line Frequency

Function	Sensitivity (Sine RMS)	Range
60mV	50mV	10Hz - 50kHz
600mV		
6V	5V	10Hz - 50kHz
60V	10V	10Hz - 50kHz
600V	50V	10Hz - 1kHz
1000V	500V	10Hz - 1kHz
VFD 600V	50V	10Hz - 1kHz
VFD 1000V	500V	10Hz - 1kHz
600mA	500mA	10Hz - 5kHz
6000mA		
60mA	50mA	10Hz - 5kHz
600mA		
6A, 10A	8A	50Hz - 1kHz

Temperature

Range	Accuracy ^{1) 2)}
-40.0 °C~99.9 °C	1% + 1 °C
100 °C~400 °C	
-40.0 °F~99.9 °F	1% + 2 °F
100 °F~752 °F	

1)Accuracies assume meter interior and the ambient have reached the same temperature (isothermal stage) for a correct junction voltage compensation. Allow enough settling time for a significant change of ambient temperature. It can take up to an hour for changes > 5°C.

2)Type-K thermocouple range & accuracy not included

BeepLit™ Continuity Tester

Continuity Threshold : Between 30W and 480W

Continuity ON Response Time : <15ms

Audible Indication : Beep sound

Visible Indication : LCD Backlight

Capacitance

Range	Resolution	Accuracy
20.00nF	10 pF	±(1.5%rdg+8d)
200.0nF	100 pF	
2000nF	1 nF	±(1.5%rdg+2d)
20.00nF	10 nF	
200.0nF	100 nF	
2000nF	1 nF	±(4.5%rdg+10d)
10.00mF	10 nF	

Accuracies with film capacitor or better

VI) PRODUCT DESCRIPTION :

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



True RMS :

RMS (Root-Mean-Square) is a term used to describe the effective or equivalent DC value of an AC signal. True RMS is the term which identifies a DMM that responds accurately to the effective RMS value regardless of the waveforms such as: square, sawtooth,

triangle, pulse 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

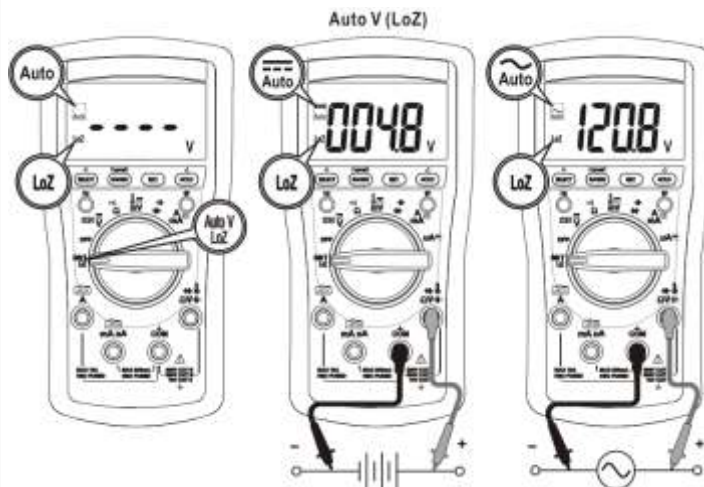
Crest Factor is the ratio of the Crest (instantaneous peak) value to the True RMS value, and is commonly used to define the dynamic range of a True RMS DMM. A pure sinusoidal waveform has a Crest Factor of 1.414. A badly distorted sinusoidal waveform normally has a much higher Crest Factor.

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.

AutoV (LoZ) mode

AutoV automatically selects measurement function of DCV or ACV, based on their input levels via the test leads. The input also provides a low ramp-up impedance (LoZ) to drain ghost voltages*.



- With no input, the meter displays “- - -” when it is ready.
- 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 :

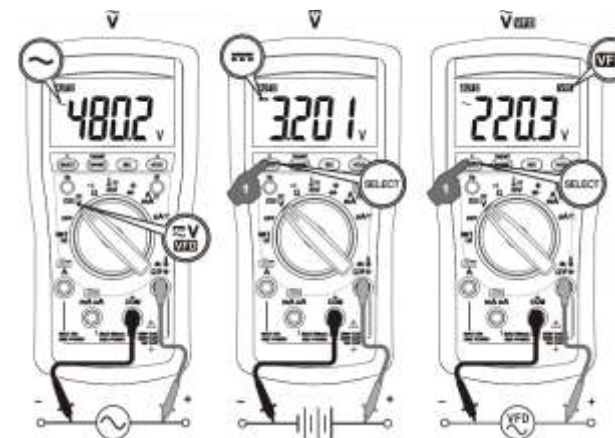
***Ghost-voltage Buster:** Ghost-voltages are unwanted stray signals coupled from adjacent hard signals, which confuse common multimeter voltage measurements. The **AutoV** mode provides low (ramp-up) input impedance (approx. 2.1kΩ at low voltage) to drain ghost voltages leaving mainly hard signal values 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.
*Only **HOLD, EF & Backlight** push-button features are available in AutoV mode.

WARNING :

AutoV mode input impedance increases abruptly from initial 2.1kΩ to a few hundred kΩ'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 673mA ($1000V \times 1.414 / 2.1k\Omega$), decreasing abruptly to approx. 2.4mA ($1000V \times 1.414 / 580k\Omega$) within a fraction of a second. Do not use AutoV mode on circuits that could be damaged by such low input impedance. Instead, use rotary selector ∇ or ∇ high input impedance voltage modes to minimize loading for such circuits.

ACV, DCV & VFD-ACV 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.



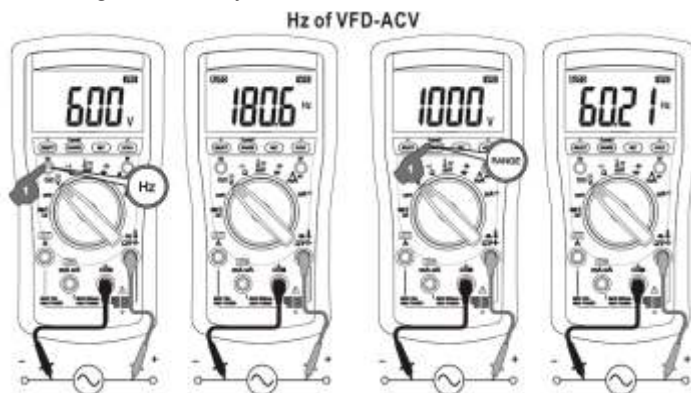
Note:

VFD-ACV and the associated Hz are equipped with digital low-pass filter (DSP), and are capable of handling VFD (Variable Frequency Drives) signals for fundamental V & Hz readings. It also improves ACV and Hz reading stability when being used in most noisy electrical environments.

Line Frequency functions

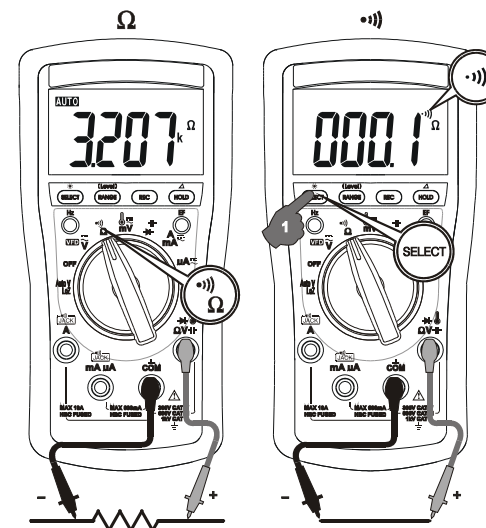
Press the Hz push-button momentarily to toggle Hz function. It is only available to Voltage and Current related ranges.

Input sensitivity varies automatically with the function range selected while activating the Hz function. 6V function range has the highest and the 1000V range has the lowest. When activated under DCV, ACV or VFD-ACV voltage function, the trigger voltage range will be displayed right before starting the Hz readings. Press momentarily the RANGE button can manually select another trigger voltage range (not available to current ranges). It is recommended to first measure the signal voltage (or current) level and activate Hz function in that range to get the most appropriate trigger level. If the Hz reading becomes unstable, select lower sensitivity to avoid electrical noise. If the reading shows zero, select higher sensitivity.



Resistance, BeepLit™ Continuity”;

Press the SELECT button momentarily to toggle the functions. Last selection will be saved as power up default for repeat measurement convenience.



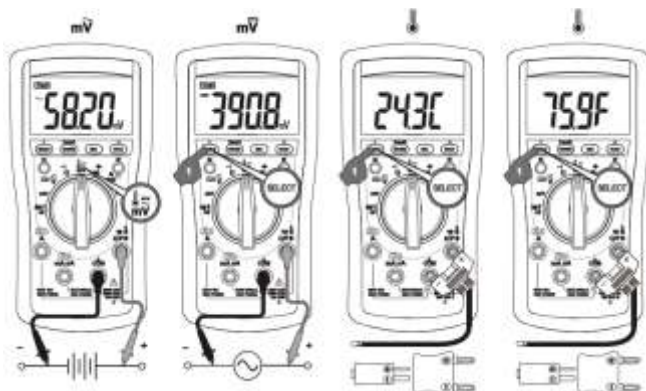
BeepLit™ Continuity function is having improved convenience for checking wiring connections and operation of switches. A continuous beep tone together with flashing display backlight indicate a complete wire. Such audible and visible indications improve continuity readabilities in noisy working environments.

CAUTION

Using resistance and continuity 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 reading

ACmV & DCmV; Temperature °C & °F

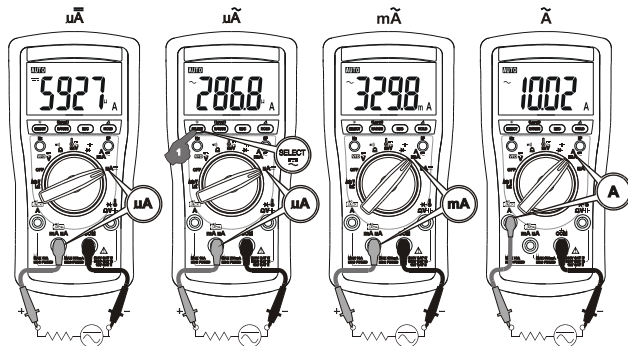
Press the SELECT button momentarily to select the subject functions in sequence. Last selection will be saved as power up default for repeat measurement convenience.



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

mA, mA and A Current

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



Application notes for flame sensors:

DCmA function is useful for HVAC/R flame sensor applications. The 0.1mA resolution can identify the minute current changes in flame detector applications. Flame signal current check should indicate steady flame signal of at least 2mA for a rectification type, or 1.5mA for an ultraviolet type (8mA for self checking systems). If a flame signal current with inadequate strength or fluctuation beyond 10%, check the following to avoid the risk of unwanted flame relay dropout :

For gas flames (Flame Rod):

- Ignition interference (A flame signal current difference with the ignition both on and off greater than 0.5μA indicates the presence of ignition interference)
- Insufficient ground (must be at least 4 times the detector area)
- Flame lifting off burner head (ground), or not continuously in contact with the flame rod
- Temperature in excess of 600 °F (316 °C) at the flame electrode insulator causing short to ground.

For gas or oil flames (Minipeeper) :

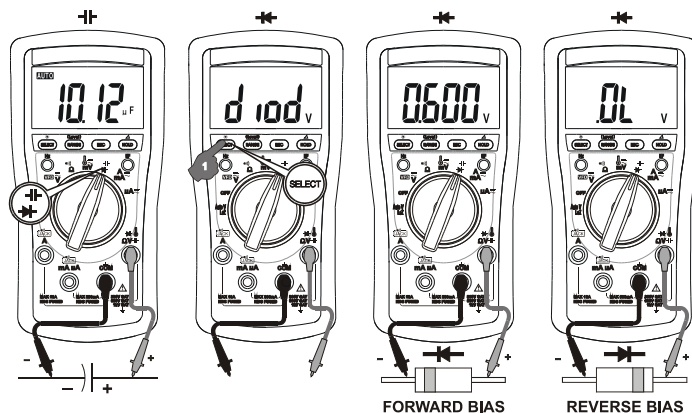
- Low supply voltage
- Detector location
- Defective detector wiring
- Dirty viewing windows
- Faulty Minipeeper

For oil flames (Photocell) :

- Detector location & wiring
- Smoky flame or poorly adjusted air shutter
- Faulty Photocell
- Temperature over 165 °F (74 °C) at photocell

Capacitance; Diode

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



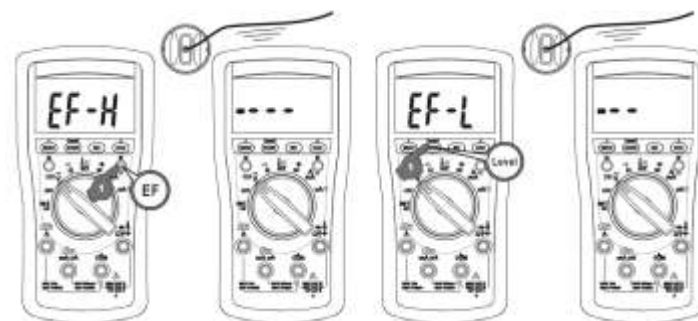
In **Diode** function, the normal forward voltage drop (forward biased) for a good silicon diode is between 0.400V to 0.900V. A reading higher than that indicates a leaky diode (defective). A reading indicates a shorted diode (defective). A zero reading indicates a shorted diode (defective). An OL indicates 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).

CAUTION

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

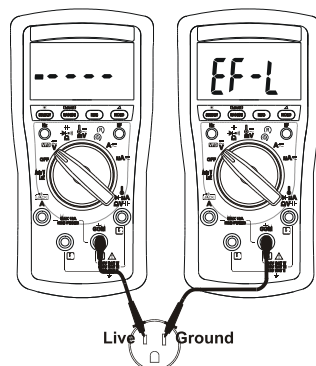
Electric Field EF-Detection

Press the EF button momentarily to toggle EF-Detection feature. The meter displays "EF-H" when it is ready. If it is too sensitive for your applications, press (Level) button momentarily toggles to lower sensitivity "EF-L". The detected Electric Field 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-left end of the meter, which detects electric field surrounding energized live conductors. It is ideal for tracing live wiring connections, locating wiring breakages and to distinguish between live and earth connections.

• **Probe-Contact EF-Detection** : For more precise indication of live wires, such as distinguishing between Live and Ground connections, use direct contact testing with one single test-probe via the input terminal COM or V. The COM terminal (Black) has the best sensitivity.



MAX/MIN/AVG Record mode

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

Backlight 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 10 minutes to extend battery life.

Hold

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

Relative Zero (Δ) 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/AVG feature readings. Press the Δ button for one second or more to toggle Relative Zero mode.

Manual or Auto-ranging

For most auto-ranging functions (LCD **AUTO** turns on by default), press the **RANGE** button momentarily to select manual-ranging override. The meter will remain in the range it was in, the LCD **AUTO** turns off. Press the button momentarily again to select the next range. Press and hold the button for 1 second or more to resume auto-ranging.

Note : Manual-ranging feature is not available to Auto-V, Capacitance & Hz functions.

Beep-Jack™ Input Warning

The meter beeps as well as displays “InEr” to warn the user against possible damage to the meter due to improper connections to the A, mA, or A input jacks when another function, especially a voltage function, is selected.

Intelligent Auto-Power-Off (APO)

The Auto-Power-off (APO) mode turns the meter off automatically to extend battery life after approximately 32 minutes of no specified activities, where applicable:

- 1) Rotary switch or push button operations
- 2) Significant measuring readings of above 8.5% of ranges
- 3) Non-OL readings for Resistance, Continuity or Diode function
- 4) Non-zero readings for Hz function
- 5) Electric field signal present for EF function
- 6) Significant movement indication as in Phase Rotation functions

In other words, the meter will intelligently avoid entering the APO mode when it is under normal measurements. To wake up the meter from APO, press the SELECT button momentarily and release, 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

VII) 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(s) 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

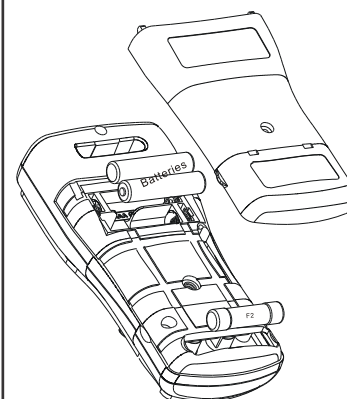
Battery use :

1.5V AAA Size battery x 2

Fuse use :

Fuse F1 for μ mA current input:
0.4A/1000V DC/AC, IR 30kA
F fuse or better; Dimension :
6 x 32mm

Fuse F2 for A current input:
11A/1000V DC/AC, IR 20kA F
fuse or better;
Dimension: 10 x 38mm



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.



MUMBAI

TEST CERTIFICATE

TRMS DIGITAL 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 235**

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.