KUSAM-MECO®

An ISO 9001:2008 Company

3¾ DIGIT 1000A AC DUAL DISPLAY DIGITAL CLAMP METER

15 FUNCTIONS 34 RANGES

Model KM 2783

Preliminary Data

GENERAL SPECIFICATIONS :

- **Sensing :** Average sensing.
- **Jaw opening size :** 45 mm
- **Display :** 3¾ digit LCD with a max. Reading of 3999.
- **Range Selection :** Autorange selection
- **Polarity :** Automatic negative polarity indication
- **Zero adjustment :** Automatic
- **Over range indication :** only the "OL" display
- **Low battery indication :** The " " is display when the battery Voltage is below 7.2V.
- **Auto Power Off :** 30 minutes after stopping the switch or no push button, the meter automatically enter to power off mode. Push button or run switch, auto power off disable.
- **Operating Temperature :** 0 ~ 40°C, Humidity < 80% R.H.
- **Storage Temperature :** -20 ~ 60°C, Humidity < 90% R.H.
- **Power Supply :** 9V zinc ~ carbon battery.
- **Dimension :** 225(H) x 77(W) x 45(D) mm
- **Weight :** approx. 330g. (Including battery)

SAFETY :

- **Safety Standards :** The meter is up to the standards of IEC 1010 double insulation, Pollution Degree 2, Overvoltage CAT II

ACCESSORIES :

Battery, Manual, Test leads(1 pair), Carrying Case.

ELECTRICAL SPECIFICATIONS - KM 2783

Accuracies are ±(% of reading + digit) at 23°C ± 5°C Less than 70% R.H.

AC CURRENT

Range	Resolution	Accuracy	Frequency
40 A	0.01 A	±(2.5%rdg + 25dgts)	50~60Hz
400 A	0.1 A	±(2.0%rdg + 20dgts)	
1000 A			
0~800	1 A	±(2.5%rdg + 25dgts)	50~60Hz
800~1000		±(5.5%rdg + 25dgts)	

Average sensing, calibrated to rms of sine wave
Overload protection : 1000Arms within 60 seconds.

AC VOLTAGE

Range	Resolution	Accuracy	Frequency
400 mV	0.1 mV	±(3.0%rdg + 15dgts)	50~400Hz
4 V	1 mV	±(1.0%rdg + 15dgts)	
40 V	10 mV		
400 V	100 mV		
750 V	1 V	±(2.5%rdg + 15dgts)	50~100Hz

Average sensing, calibrated to rms of sine wave
Overload protection : 1000V DC /750Vrms AC;
Impedance : 10M , More then 100M on 400mV scale

DIODE AND AUDIBLE CONTINUITY TEST

Range	Description	Test condition
▶|	Display read approx. Forward voltage of diode.	Forward DC current approx. 0.4mA Reversed DC Voltage Approx. 1.5V
)))	Built-in buzzer sounds if reisitance is less than 90	Open circuit voltage approx. 0.5V

Overload protection : 250V DC/250Vrms AC

DC VOLTAGE

Range	Resolution	Accuracy
400 mV	0.1 mV	±(0.5%rdg + 7dgts)
4 V	1 mV	
40 V	10 mV	
400 V	100 mV	
1000 V	1 V	±(0.8%rdg + 7dgts)

Overload protection : 1000V DC/750Vrms AC
Impedance : 10M , More then 100M on 400mV scale

RESISTANCE

Range	Resolution	Accuracy
400	0.1	±(1.8%rdg + 20dgts)
4 k	1	±(1.2%rdg + 20dgts)
40 k	10	
400 k	100	
4 M	1 k	
40 M	10 k	±(2.0%rdg + 20dgts)

Overload protection : 250V DC/250Vrms AC

CAPACITANCE

Range	Resolution	Accuracy
40 nF	10 pF	±(3.5%rdg + 30dgts)
400 nF	100 pF	±(2.5%rdg + 25dgts)
4 F	1 nF	
40 F	10 nF	
100 F	100 nF	±(5.0%rdg + 20dgts)

Overload protection : 250V DC/250Vrms AC

FREQUENCY

Range	Resolution	Accuracy
10 Hz	0.01 Hz	±(0.5%rdg + 15dgts)
100 Hz	0.1 Hz	
1000 Hz	1 Hz	
10 kHz	10 Hz	
100 kHz	100 Hz	
1000 kHz	1 kHz	
10 MHz	10 kHz	

Overload protection : 250V DC/250Vrms AC
Sensitivity : Range of input voltage : 1.5V~1 0V, if input voltage over range, need adjust

DUTY CYCLE

0.1% ~99.9%

All Specifications are subject to change without prior notice

KUSAM-MECO®

An ISO 9001:2008 Company

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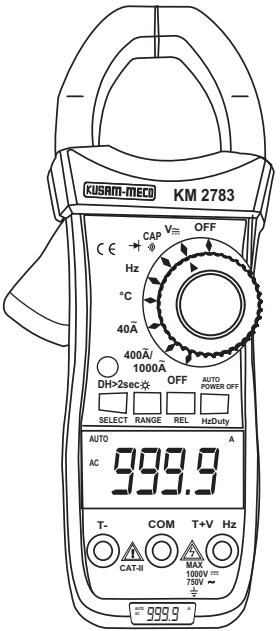
DIGITAL DUAL DISPLAY AC CLAMPMETER MODEL - KM 2783



OPERATION MANUAL

KUSAM-MECO

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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This LCD Auto Range & Auto Power off Digital AC clamp multimeter is a portable, 3 3/4-digit multimeter. It is ideally suited for field, laboratory, shop and home applications.

1. SAFETY INFORMATION

The following safety information must be observed to insure maximum personal safety during the operation of this meter.

1. When measuring voltage ensure that instrument is not switched to the current range, resistance range, diode and continuity range, capacitance range or temperature range.
2. Use extreme care when measuring voltage above 50V especially from sources where high energy is existed.
3. Avoid making connections to “live” circuits whenever possible.
4. Before making resistance measurements, diode or continuity test, capacitance test or temperature test, ensure that the circuit under test is de-energized.
5. Always ensure that the correct function and range is selected.
6. Extreme care should be taken when using the instrument to conjunction with a current transformer connected to the terminals if an open circuit occurs.

7. Ensure that the test leads and probes are in good condition with no damage to the insulation.
8. Take care not to exceed the over-load limits as given in the specifications.
9. Before opening the cover of the battery cabinet to replace batteries. Disconnect the test leads from any external circuit, set the selector switch to “OFF” position.
10. Keep the fingers after the protection ring when measuring through the instrument lead.
11. Change the battery when the symbol appears to avoid incorrect data.
12. Do not use the meter in any environmental conditions beyond those specified in the manual.

2. GENERAL SPECIFICATIONS

- **Display :** 3¾ digit LCD with a max. reading of 3999.
- **Range control :** Auto / Manual range control.
- **Polarity :** Automatic negative polarity indication.
- **Zero adjustment :** Automatic.
- **Over range indication :** Only the “OL” display.
- **Low battery :** The “ ” is display when the battery voltage is below 2.4V.
- **Auto Power Off :** 30 minutes after shopping the switch or no push button, the meter automatically enter to power off mode. Push button or run switch, auto power off disable.
- **Safety standards :** The meter is up to the standards of IEC1010 Double Insulation, Pollution Degree 2, Overvoltage Category II.
- **Clamp opening size :** 45 mm.
- **Operating Environment :**
  Temperature 32 ~ 104° F(0 ~ 40°C), humidity <80% R.H.
- **Storage Environment :**
  Temperature -4 ~ 140° F(-20 ~ 60°C), humidity <90% R.H.
- **Power Supply :** 9V Zinc-carbon battery.
- **Dimension :** 225(H) x 90(W) x 45(D) mm
- **Weight :** Approx. 330g (including batteries)

3. ELECTRICAL SPECIFICATIONS

Accuracies are ± (% of reading + number in last digits) at 23 ± 5°C, 75%RH.

DC Voltage

Range	Resolution	Accuracy
400 mV	0.1 mV	±(0.5% rdg + 7 digits)
4 V	1 mV	
40 V	10 mV	
400 V	100 mV	
1000 V	1 V	1.0% rdg + 10 digits)

Overload protection : 1000V DC / 750V rms AC
Impedance : 10MΩ, more than 100MΩ on 400mV scale.

AC Voltage

Range	Resolution	Accuracy
400 mV	0.1 mV	3.0% rdg + 15 dgts)
4 V	1 mV	1.0% rdg + 15 dgts)
40 V	10 mV	
400 V	100 mV	
750 V	1 V	2.5% rdg + 15 dgts)

Average sensing, calibrated to rms of sine wave
Overload protection : 1000V DC / 750 V rms AC;
Impedance : 10M , more than 100M on 400mV scale.
Frequency : 50~400Hz for 400mV, 4V, 40V & 400V ranges.
50~100Hz for 750V range.

AC Current

Range		Resolution	Accuracy
40A		0.01 A	2.5% rdg + 25 dgts
400A		0.1 A	2.0% rdg + 20 dgts
1000A	0~800	1 A	2.5% rdg + 25 dgts
	800~1000		5.5% rdg + 25 dgts

Average sensing, calibrated to rms of sine wave
Overload protection: 1000Arms within 60 seconds
Frequency : 50~60Hz.

Resistance

Range	Resolution	Accuracy
400 Ω	0.1 Ω	1.8% rdg + 20 dgts
4 kΩ	1 Ω	1.2% rdg + 20 dgts
40 kΩ	10 Ω	
400 kΩ	100 Ω	
4 MΩ	1 kΩ	
40 MΩ	10 kΩ	2.0% rdg + 20 dgts

Overload protection : 250V DC / 250 V rms AC

Capacitance

Range	Resolution	Accuracy
40 nF	10 PF	3.5% rdg + 30 dgts
400 nF	100 PF	2.5%rdg + 25 dgts
4 µF	1 nF	
40 µF	10 nF	
100 µF	100 nF	5.0%rdg + 20 dgts

Overload protection : 250V DC / 250 V rms AC

Frequency

Range	Resolution	Accuracy
10 Hz	0.01 Hz	0.5% rdg + 15 dgts
100 Hz	0.1 Hz	
1000 Hz	1 Hz	
10 kHz	10 Hz	
100 kHz	100 Hz	
1000 kHz	1 kHz	
10 MHz	10 kHz	

Overload protection : 250V DC/250V rms AC

Sensitivity : Range of input voltage : 1.5V~10V,
if input voltage is over range, need adjust.

Duty cycle : 0.1%~99.9%

Temperature (NiCr-NiSi sensor)

Range	Resolution	Accuracy*
-20~150°C	1°C	3°C + 2
150~300°C	1°C	3.0% rdg + 2dgts
300~1000°C	1°C	3.5% rdg + 10dgts

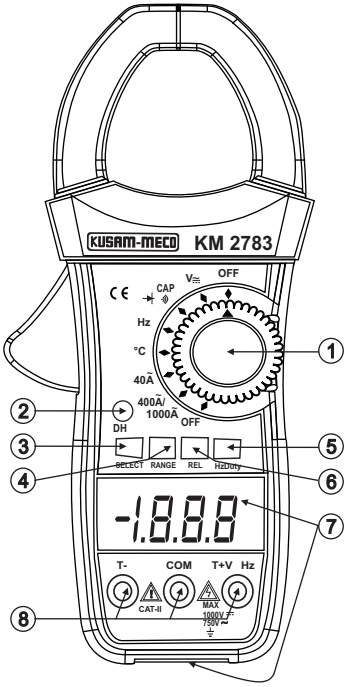
Overload protection : 36V DC / 36V rms AC

Diode and Audible Continuity Test

Range	Description	Test Condition
→||	Display read approx. Forward voltage of diode	Forward DC current approx. 0.4mA Reversed DC voltage approx. 1.5V
•)))	Built-in buzzer sounds if resistance is less than 90	Open circuit voltage approx. 0.5V

Overload protection : 250V DC/250V rms AC

2. PANEL DESCRIPTION



1. **Rotary Switch :** Use this switch to select functions and ranges.

2. **D.Hold Key :** In any range press the key, the present display value will be locked and the "DH" symbol will appear, press it again to exit HOLD and the "DH" symbol disappear.

3. SELECT Key :

This key works on the "Ω" & "V ≅ " range. Press the key to choose resistance, diode or continuity test. Press "SELECT" in "V≅ " range, choose AC voltage or DC Voltage test.

4. RANGE key :

Press the key to select manual mode, press it again to change the range. Press the key for more than 2 seconds to go back to auto range mode. But in Hz/Duty & Capacitance measurement, it can not select manual range mode.

5. Hz / DUTY key :

In Hz range, push the key, you can measure the duty, push again, go back to Hz measurement. In voltage range, push it, you can measure Hz and duty, but the measurement range will be smaller, and the auto range mode will changed to manual range mode.

6. REL key:

Press the key, the present display value will be stored in memory, then the new display value is the difference between input value & stored data. In Hz/Duty measurement, it can not work.

7. LCD Display :

LCD Dual Display, facilitates reading the data.

8. T+V input jack, COM input jack, T-input jack

3. MEASURING INSTRUCTION

DC Voltage measurement

1) Connect the black test lead to "COM" socket and red test lead to the "+" socket.
2) Set the selector switch to desired "mV" or "V" position and connect the probes across the the source or load under measurement.
3) Read the result from the LCD panel.

AC Voltage measurement

1) Connect the black test lead to "COM" socket and red test lead to the "+" socket.
2) Set the selector switch to desired "V~" position and connect the probes across the source or load under measurement.
3) Read the result from the LCD panel.

AC Current measurement

1) Set the selector switch to desired "A~" position.
2) Open the clamp by pressing the jaw-opening handle.
3) Close the clamp and get the reading from the LCD panel.

Note :

a) Before this measurement, disconnect the test lead with the meter for safety.
b) In same occasion that the reading is hard to read, push the D.HOLD button and read the result later.

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Resistance measurement

1) Connect the black test lead to "COM" socket and red test lead to the "+" socket.
2) Set the selector switch to desired "O" position, the present function is resistance measurement, if it is other function, push the SELECT to select resistance measurement.
3) Connect the probes across circuit to be tested.
4) Read the result from the LCD panel.

Caution :

Ensure that the circuit to be tested is "dead".

Max. Input Over-load : 250V rms<10 sec.

Capacitance measurement

1) Connect the black test lead to "COM" socket and red test lead to the " " socket.
2) Set the selector switch to desired "CAP" position.
3) Connect the probes to the capacitance to be tested.
4) Read the result from the LCD panel.

Caution :

a) Capacitors should be discharged before being tested.
b) This device adopts charging mode to measure capacitance, so when testing large capacitance it will take longer time before the final indication, and larger the capacitor, the longer the time (For 100uF range, it will take about 15 seconds).
c) When testing small capacitance, to assure the measurement accuracy, first press "REL" then go on measuring.

Max. Input Over-load : 250V rms<10 sec.

Frequency measurement

1) Connect the black test lead to "COM" socket and red test lead to the "+" socket.
2) Set the selector switch to desired "Hz" position.
3) Connect the probes to the point of measurement and read the frequency from the display.

Max. Input over-load: 250Vrms< 10sec

Diode test

1) Connect the black test lead to "COM" socket and red test lead to the "+" socket.
2) Set the selector switch to " " position.
3) Push "SELECT" to select diode test.
4) Connect the black and red test probe to the cathode (-) and anode (+) ends of diode to be tested respectively. Read the forward voltage drop (junction) value from the display. If reverse connected the probes to diode, display shows over-load.

Caution :

Ensure that the circuit to be tested is "dead".

Max. Input Over-load : 250V rms<10Sec

Audible Continuity test

1) Connect the black test lead to "COM" socket and red test lead to the "+" socket.
2) Set the selector switch to " " position.
3) Push "SELECT" to select audible continuity test.
4) Connect the probes across circuit to be tested, the beeper sounds continuously if the resistance is less than approx. 50Ω.

Caution :

Ensure the that circuit to be tested is "dead".

Max. Input over-load : 250V rms<10Sec

Temperature measurement

1) Connect the black test lead of the sensor to "COM" socket and the red test lead to the " " socket. +
2) Set the selector switch to " °C" position.
3) Put the sensor probe into the temperature field under measurement.
4) Read the result from the LCD panel.

Max. Input Over-load : 250V rms<10 sec.

NOTE :

A. The temperature function shows random number at ordinary times, must insert the thermocouple in temperature test hole while examining temperature.
B. This meter inclosure WRNM-010 type contact thermocouple limit temperature is 250°C (300°C shortly).
C. Please don't change the thermocouple at will otherwise we can't guarantee to measure accuracy.
D. Please don't importing the voltage in the temperature function.

Auto/Manual Range Control

The auto range mode is a convenient function, but it might be faster to manually set the range when you measure values that you know to be within a certain range. To select manual range control, repeatedly press "RANGE" for more than 2 seconds, then it can go to auto range mode. In Hz/Duty and capacitance measurement, it can not select manual range mode.

Caution :

While suing the manual range control, if "OL" appears on the display and you hear an intermittent tone, immediately set RANGE to a higher range.

Relative measurement

Press “REL” button you can measure the relative value and “▲” appears on the display, the auto range mode will changed to manual range mode. Press again to return to the previous condition & “▲” disappears, but you can not go back to auto range mode. In Hz/Duty measurement, you can not measure the relative value.

4. CARE AND MAINTENANCE

1) Caring For Your Multimeter

KM 2783 Digital Multimeter is an example of superior design & craftsmanship. The following suggestions will help you care for the multimeter so you can enjoy it for years.

1) Keep the Multimeter dry. If it gets wet, wipe it dry immediately. Liquids can contain minerals that can corrode electronic circuits.
2) Use and store the multimeter only in normal temperature environments. Temperature extremes can shorten the life of electronic devices, damage batteries and distort & melt plastic parts.
3) Handle the multimeter gently and carefully. Dropping it can damage the circuit boards and cause and accuse the multimeter to work improperly.
4) While take current measurement, keep the cable at the center of the clamp will get more accurate test result.
5) Keep the multimeter away from dust and dirt, which can cause premature wear of parts.

6) Wipe the multimeter with a damp cloth occasionally to keep it looking new. Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the multimeter.
7) Use only fresh batteries of the required size and type. Always remove old or weak batteries. They leak chemical that destroy electronic circuits.
8) Please take out the battery when not using for a long time.

2) Battery Replacement

1) Ensure the instrument is not connected to any external circuit. Set the selector switch to “OFF” position and remove the test leads from the terminals.
2) Open the cover of the battery cabinet using a screwdriver.
3) Replace the old batteries with the same type new batteries.
4) Close the battery cabinet cover and fasten the screw.

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TEST CERTIFICATE

DIGITAL DUAL DISPLAY AC CLAMPMETER

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 2783**

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 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 transaction are subject to Mumbai Jurisdiction.