KUSAM-MECO®

An ISO 9001:2008 Company

1000A DC/AC DIGITAL CLAMP METER

Model 2781 / 2781-T(True RMS)

9 FUNCTIONS 32 RANGES

FEATURES :

- Overload protection on all ranges.
- Maximum Voltage between any terminal and earth ground 600V rms
- Dual slope integration
- Data-hold facility
- DCA zero button for accurate reading
- Low battery indication
- Auto power off

GENERAL SPECIFICATIONS :

- **Sensing :** Average sensing **(Model 2781)** True RMS sensing **(Model 2781-T)**
- **Jaw opening size :** cables 40mm
- **Display :** 3 ¾ digit 3999 counts liquid crystal LCD display.
- **Over range indication :** Display of "OL" on LCD at the highest position means range selection too low for the input. (Except for ranges of 1000A AC, & 600V AC / DC)
- **Polarity :** Symbol "-" automatic displayed for negative input.
- **Sampling rate :** 3 times per second (Digital display)
- **Auto power off :** The meter is automatically powered off after idling for 15 minutes. To awake the meter, turn the rotary function switch or push any button.
- **Operating Temperature & Humidity :** 0°C to 40°C; < 80% R.H. Non-condensing
- **Low battery :** The symbol "⊟" is displayed when the batteries are weak and below the operating Voltage. Replace batteries immidiately.
- **Battery life :** Approx. 60 hrs continuously use with alkaline batteries.
- **Power supply :** 1.5V AAA x 2
- **Dimension :** 228(L) x 76(W) x 39(H) mm
- **Weight :** approx. 465gms. (Including batteries)

ACCESSORIES :

Test leads (pair), Battery installed, User's manual, K-Type Thermocouople(model 2781-T) & Carrying case.

ELECTRICAL SPECIFICATIONS : 2781 / 2781-T

Accuracy are : ±(% of reading + number of digits) at 18°C to 28°C with relative humidity below 80%R.H.

CAPACITANCE

Range	Resolution	Accuracy
40 nF	0.01nF	±(2.5%rdg+10dgts)
400 nF	0.1 nF	±(2.0%rdg+4dgts)
4 F	1 nF	
40 F	10 nF	
100 F	10 nF	Unspecified

Overload Protection : 250V rms

FREQUENCY

Range	Resolution	Accuracy
10Hz (2781only)	0.001Hz	Unspecified
100Hz	0.01 Hz	±(0.5%rdg+3dgts)
1KHz	0.1 Hz	
10KHz	1 Hz	
100KHz	10 Hz	
1MHz	100 Hz	
10MHz	1 KHz	Unspecified

Over load protection : 250Vrms
Sensitivity : 1V

DIODE & CONTINUITY TEST

Range	Description
⊣◁	Display read approx. Forward voltage of diode. Accuracy ± (3.0%rdg+3)
•))	If the resistance is less than 50 , the beeper sounds continuously

Overload Protection : 250V RMS

DC CURRENT

Range	Resolution	Accuracy
40 A (2781-T)	10 mA	± (2%rdg + 5dgts)
400 A	0.1 A	
1000 A	1 A	

Overload Protection : 1200A

DC VOLTAGE

Range	Resolution	Accuracy
400 mV (2781-T)	0.1 mV	±(1.0%rdg+5dgts)
4 V	0.001 V	±(0.8%rdg+2dgts)
40 V	0.01 V	
400 V	0.1 V	
1000 V	1 V	±(1.0%rdg+2dgts)

Overload protection : 1200Vrms
Input Impedance : 10M

RESISTANCE

Range	Resolution	Accuracy
400	0.1	±(1.2%rdg+8dgts)
4 K	1	±(1.0%rdg+2dgts)
40 K	10	
400 K	100	
4 M	1 K	
40 M	10 K	± (2%rdg+5dgts)

Overload Protection : 250V rms

AC CURRENT

Range	Resolution	Accuracy
40 A (2781-T)	10 mA	± (2%rdg + 5dgts)
400 A	0.1 A	
1000 A	1 A	

Overload Protection : 1200A

AC VOLTAGE

Range	Resolution	Accuracy
400 mV (2781-T)	0.1 mV	±(1.8%rdg+5dgts)
4 V	0.001 V	±(1.0%rdg+5dgts)
40 V	0.01 V	
400 V	0.1 V	
750 V	1 V	±(1.5%rdg+5dgts)

Overload protection : 660Vrms
Input Impedance : 10M
Frequency Response : 40Hz ~ 450Hz for 400V & below, 40Hz ~ 100Hz for 750V

TEMPERATURE (2781-T)

Range	Resolution	Accuracy
-40°C~1000°C	1°C	±(2.5%+3°C)
-40°F~1820°F	1°F	±(2.5%+5°F)

Type-K thermocouple range & accuracy not specified
Supplied K-type thermocouple suitable for 250°C.

DUTY CYCLE

Range	Resolution	Accuracy
0.1% ~ 99.9%		

All Specifications are subject to change without prior notice

KUSAM-MECO®
An ISO 9001:2008 Company

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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 readig 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 as 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.

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LIST OF PRODUCTS

* Digital Multimeter
* Digital AC & AC/DC Clampmeter
* AC Clamp Adaptor
* AC/DC Current Adaptor
* Transistorised Electronic Analog & Digital Insulation Resistance Testers
* Digital Sound Level Meter & Sound Level Calibrator
* Digital contact & Non-contact Type Tachometer
* Digital Non-contact (infrared) Thermometer
* Thermo Hygrometer
* Thermo Anemometer
* Wood Moisture Meter
* Distance Meter
* Digital Hand Held Temperature Indicators
* Digital Lux Meter
* Network Cable Tester
* Power Factor Regulator
* Maximum Demand Controller/Digital Power Meter
* Gas Analysers
* Panel Meters
* Battery Testers

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DIGITAL AC / DC CLAMP METER

MODEL 2781-T

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.

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 guarantee 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, 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.

KUSAM-MECO

MUMBAI

TEST CERTIFICATE

DIGITAL CLAMPMETER

This Test Certificate guarantees 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. 2781-T

SERIAL NO. _____

DATE: _____

ISO 9001
REGISTERED

QC
KUSAM-MECO
PASS

KUSAM-MECO

CONTENTS

1 SAFETY INFORMATION

1.1 Read and understand the following safety information carefully before attempting to operate the meter.
1.2 To avoid damages to the instrument, do not exceed the maximum limits of the inputs as shown in the technical specifications bellow.
1.3 Never measure current while the test leads are inserted into the input jacks.
1.4 Do not use the meter or the test leads if they are damaged.
1.5 Use the meter only as specified in this manual; otherwise, the warranty may be voided.
1.6 Be cautious when working with voltages above 60V DC or 30 V AC RMS. Such voltages pose a shock hazard.
1.7 Before taking resistance continuity, disconnect circuit from main power supply and all loads from circuit.
1.8 Do not use the meter in any Environmental conditions beyond the specifications.
1.9 **Safety symbols**

Caution refers to this manual before using the meter.

Dangerous voltages.

Meter is protected throughout by double insulation or reinforced insulation.When service to the meter is needed, use only specified replacement parts.

CE Comply with EN-61010-1,IEC 1010-2-032

2 TECHNICAL SPECIFICATIONS

2.1 **General Specifications**
2.1.1 **Environment conditions:**
2.1.1.1 Installation Categories **III**
2.1.1.2 Pollution Degree 2
2.1.1.3 Altitude up to 2000 meters
2.1.1.4 Indoor and good weather outdoor use only

5 MAINTENANCE

5.1 **Battery Replacement**

WARNING
To prevent electrical hazard or hock, turn off clamp meter and disconnect test leads before removing back cover

When the battery power is not sufficient, LCD will display ⊟. Replacement with two new AAA batteries.
5.1.1 Set Range Switch to OFF position.
5.1.2 Use a screw driver to remove the screw on back cover of battery compartment. Take out the batteries and replace with two new batteries. Notice the polarity of the batteries.
5.1.3 Place back the cover and secure it with the same screw.

5.2 **MAINTENACE WARNING**

WARNING
To avoid electrical shock or damage to the meter, do not get water near the meter. Remove the test leads and any input signals before opening the case.

Clean the out side with a damp cloth and mild detergent as needed. Do not use abrasives or solvents.

Remove batteries from the battery compartment if the meter is not going to be used for an extended period of time to avoid damage from battery leak.

negative leg.

4.9 **Frequency and Duty cycle Measurements**

4.9.1 Set the function switch to "**Hz**" position.

4.9.2 Connect the black test lead to "**COM**" terminal and red test lead to "**+**" terminal.

4.9.3 Press to select Hz or DUTY test mode.

4.9.4 Touch the probes to signal source and read display.

Note: In voltage measurement positions, press **Hz/DUTY** button can measure frequency or duty cycle.

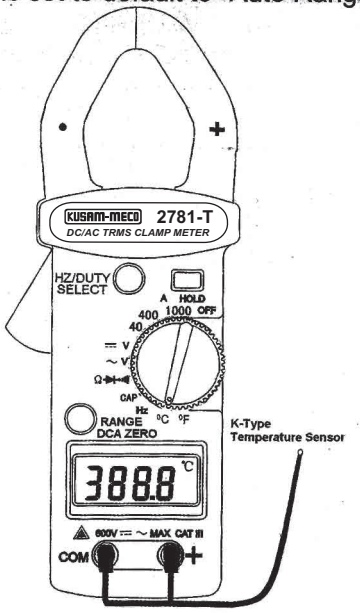
4.10 TEMPERATURE MEASUREMENT

4.10.1 Set the function switch to TEMP range position. The meter automatically defaults to °C range.

4.10.2 Insert the red terminal of the K-Type temperature sensor into the "V Ω TEMP HZ" input socket and the black terminal into "COM" socket.

4.10.3 Read the temperature directly on the display.

Note: The meter is set to default to "Auto Range" mode



2.1.1.5 Relatively humidity 80% max.

2.1.1.6 Operation Ambient temperature 40°C

2.1.2 **Maintenance & Clearing:**

2.1.2.1 Repair services are not covered in this User Manual and should only be performed by qualified professionals. Attempt to repair by non-qualified personal may void the warranty provided by manufacturer.

2.1.2.2 Dusting or wiping the out-side case with a dry cloth when needed. Do not use abrasives or solvents on this instrument.

2.1.3 **Maximum Voltage between any terminal and earth ground** 600 Vrms

2.1.4 **Operating Principle**

Dual slope integration

2.1.5 **Display**

$3^3/_4$ digits liquid crystal display (LCD) Maximum Reading 3999. Automatic display of functions and symbols.

2.1.6 Over Range Indication

Display of "OL" (Over Load) on LCD at the highest position means range selection too low for the input. (Except for ranges of 1000A AC, and 1000V AC/DC)

2.1.7 **Low Battery Indication**

The symbol is displayed when the batteries are weak and below the operating voltage. Replace batteries mmidiately.

2.1.8 **Sampling Rate**

2 times per second (Digital Display)

2.1.9 **Battery Life**

Proximal 60 hrs continuously use for alkaline batteries.

2.1.10 **Polarity**

Symbol "-" automatic displayed for negative input.

2.1.11 **Jaw Opening**

Cables Φ40mm(1.57 inch).

2.1.12 **Auto Power Off**

The meter is automatically powered off after idling for 15 minutes. To awake the meter, turn the rotary function

switch or push any button.

2.1.13 **Operating Temperature and Humidity**

0°C to 40°C (relative humidity <80% non-condensing)

2.1.14 **Storage Temperature and Humidity**

0°C to 55°C (relative humidity T≤80% non-condensing)

2.1.15 **Dimensions**

228(L)×76(W)×39(H)mm

2.1.16 **Weight**

465 gr.aprox.(battery included).

2.1.17 **Accessories**

Battery (two AAA 1.5V), instruction manual, Test leads, type K thermocouple, and a soft Carry pouch.

2.2 **Measurement Specifications**

Accuracy are: ±(% of reading + number of digits) at 18°C to 28°C with relative humidity below 80%.

2.2.1 **DC Current**

Range	Resolution	Accuracy	Overload protection
40A	10mA	±(2%+5)	1200A
400A	0.1A		
1000A	1A		

2.2.2 **AC Current (True RMS)**

Range	Resolution	Accuracy	Overload protection	Frequency Response
40A	10mA	±(2%+5)	1200A	40~60Hz
400A	0.1A			
1000A	1A			

2.2.3 **DC Voltage**

Range	Resolution	Accuracy	Input Impedance	Overload protection
4V	0.001V	±(0.8%+2)	10MΩ	1200Vrms
40V	0.01V			
400V	0.1V			
1000V	1V	±(1.0%+2)		

4.7.1.4 Read forward voltage (Vf) value on LCD.
If the test leads are connected in reverse to the above procedure, the digital reading should equal to the reading in the open circuit condition. This can be used for distinguishing anode and cathode poles of a diode.

4.7.2 **CONTINUITY MEASUREMENT**

4.7.2.1 Connect red test lead to the "**+**" terminal and black test lead to the "**COM**" terminal.

4.7.2.2 Set function switch to the " Ω ⊣+ •))) "position and press **SELECT** button to select •)))mode.

4.7.2.3 Remove power from the circuit being tested and discharge all capacitors.

4.7.2.4 Connect the other ends of the test leads to the points of circuit that the resistance is measured.

4.7.2.5 When the test lead to the circuit is below 50Ω, a continuous beeping sound indicates the continuity between the 2 points.

NOTE: Continuity test is available to check open/short of the circuit.

4.8 **Capacitance measurement**

WARNING
To avoid electrical shot and damage to the meter or to the equipment under test, disconnect circuit power and discharge the capacitor before testing.

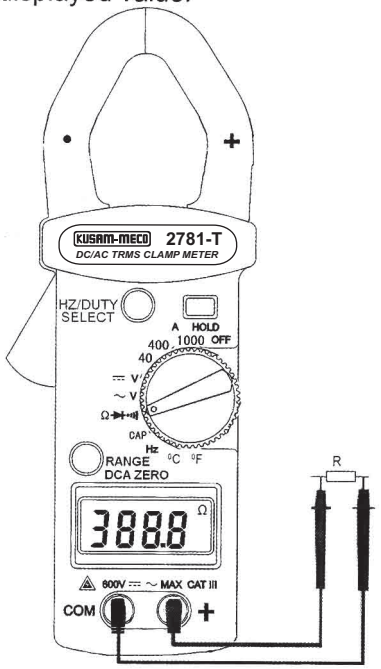
4.8.1 Discharge the capacitor before measuring capacitance. Use the DC voltage function to confirm that the capacitor is discharged.

4.8.2 Set the function switch to "**CAP**" position.

4.8.3 Connect the black test lead to "**COM**" terminal and red test lead to "**+**" terminal.

4.8.4 Touch the probes to test point, if the capacitor has polarity, the red test lead to positive leg and black test lead to

and read the displayed value.



4.7 **Diode Test / Continuity measurement**

WARNING
Before taking any in-circuit resistance measurement, remove power from the circuit being tested and discharge all capacitors.

4.7.1 **Diode Test**

4.7.1.1 Connect red test lead to the "**+**" terminal and black test lead to the "**COM**" terminal.

4.7.1.2 Set function switch to the " Ω ⊣ •))) " position and press **SELECT** button to select ⊣ mode.

4.7.1.3 Connect the red test to the anode side and black test lead to the cathode side of the diode being tested.

2.2.4 **AC Voltage (True RMS)**

Range	Resolution	Accuracy	Input Impedance	Overload protection
4V	0.001V	±(1.0%+5)	10MΩ	660Vrms
40V	0.01V			
400V	0.1V			
750V	1V	±(1.5%+5)		

Frequency Response:
40Hz~450Hz for 400V and below, 40Hz~100Hz for 750V

2.2.5 **Resistance(Ω)**

Range	Resolution	Accuracy	Overload protection
400Ω	0.1Ω	±(1.2%+8)	250Vrms
4KΩ	1Ω	±(1.0%+2)	
40KΩ	10Ω		
400KΩ	100Ω		
4MΩ	1KΩ		
40MΩ	10KΩ	±(2%+5)	

2.2.6 **Diode/Audible continuity**

Range	Description
⊣	Display read approx. Forward voltage of diode. Accuracy: ±(3.0%rdg+3)
•)))	If the resistance is less than 50Ω, the beeper sounds continuously

Note: Overload protect: 250V RMS

2.2.7 **Capacitance**

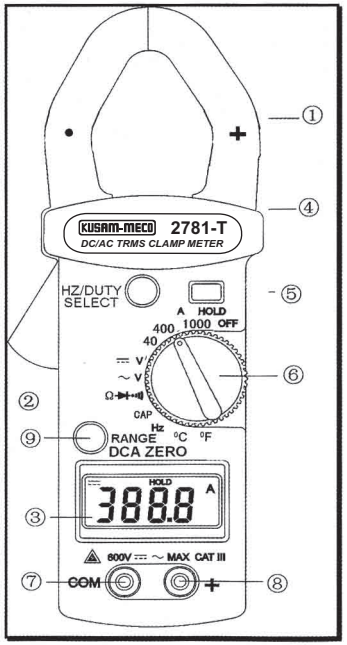
Range	Resolution	Accuracy	Overload protection
40nF	0.01nF	±(2.5%+10)	250Vrms
400nF	0.1nF	±(2.0%+4)	
4μF	1nF		
40μF	10nF		
100μF	100nF	Unspecified	

2.2.8 Frequency (Hz) and Duty

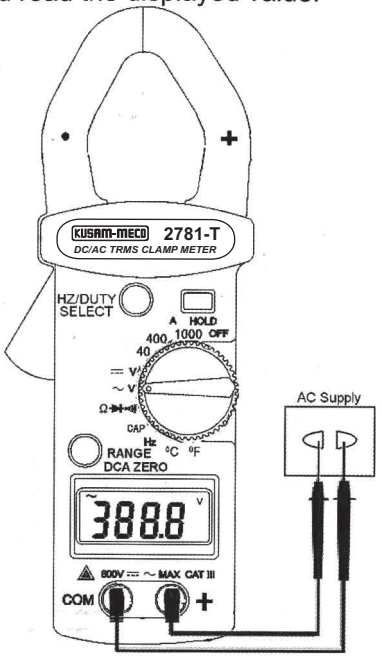
Range	Resolution	Accuracy	Sensitivity	Overload protection
10Hz	0.001Hz	Unspecified	1V	250Vrms
100Hz	0.01Hz	±(0.5%+3)		
1KHz	0.1Hz			
10KHz	1Hz			
100KHz	10Hz			
1MHz	100Hz			
10MHz	1KHz	Unspecified		
DUTY Range:		0.1% to 99.9%		

2.2.9 Temperature

unit	Range	Resolution	Accuracy
°C	-40°C- 1000°C	1 °C	± (2.5% + 3°C)
°F	-40°F- 1820°F	1 °F	± (2.5% + 5°F)



4.5.3 Connect the other ends of test leads to the circuit being measured and read the displayed value.



4.6 Resistance Measurement

WARNING
Before taking any in-circuit resistance measurement, disconnect power supply to the circuit being tested and discharge all capacitors.

4.6.1 Before taking resistance measurements, make sure the circuit is not live and discharge any capacitors present in the circuit.

4.6.2 Set the function switch to Ω ⊣◀ •)) range.

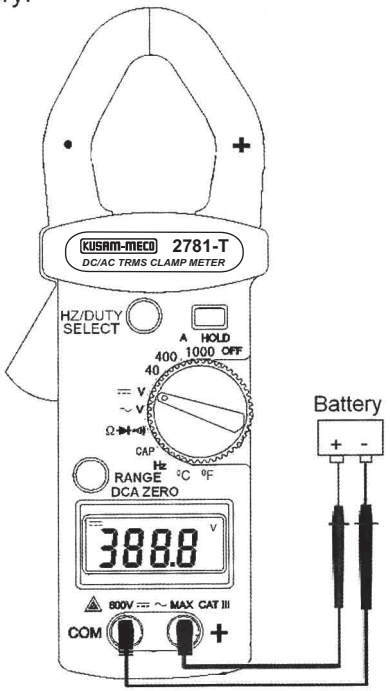
4.6.3 Connect the black test lead to the "**COM**" terminal and the red test lead to the "**+**" terminal.

4.6.4 Connect the test leads to the circuit being measured

lead to **"+"** port terminal respectively.

4.4.2 Connect the other ends of the test leads to the points of circuit being measured and read the displayed value.

4.4.3 Test battery:



4.5 **AC Voltage Measurements**

WARNING

Maximum input voltage of AC VOLT Range is 600Vrms. Do not attempt to measure circuit higher than 600Vrms! Electrical shock or damage to the instrument may occur at this high voltage.

4.5.1 Set the function switch to the ~**V** range.

4.5.2 Connect the black and red test leads to the "COM" and "VΩHz" port terminals respectively.

3 CONTROLS and DISPLAY

3.1 Description of Parts & Control

① **Current sensor jaws**
Pick up the AC current flowing through the conductor.

② **Jaw opening trigger**

③ **LCD display**
$3^3/_4$ digits LCD with symbols for measurements and values(includes unit, decimal point, polarity etc.)

④ **SELECT or Hz/DUTY button**
Jogging switch at DCA, ACA test position, press this button to select DCA or ACA mode.Jogging switch at Ω ⊣◀ •))) test position, press this button to select Ω or ⊣◀ or •))) mode. Jogging switch at DCV, ACV test position, press this button to select V or Hz or DUTY mode.
Jogging switch at Hz test position, press this button to select Hz or DUTY mode.

⑤ **HOLD button**
Press it once to hold the measured value on LCD and store the value in memory. Press again to release the hold function.

⑥ **Function selector**
For selections of functions and desired range and waking up the meter of auto-power off mode.

⑦ **COM port**
Common terminal for all measurements. (black test lead)

⑧ **"V Ω Hz"port**
Receive the input from positive lead (red test lead) for voltage, resistance, continuity, diode, capacitance, frequency and duty cycle measurement. Also, thermocouple input.

⑨ **RANGE or DCA ZERO button**
Jogging switch for selections manual range mode or auto-range mode for DCV, ACV or Ω test. Press this button to enter the manual range mode. Press this button more than 2 seconds, to get auto-range mode.
At DCA test position, push this button to zero the display before measuring DCA current.

4 OPERATIONAL INSTRUCTIONS

4.1 Caution before Measurement

4.1.1 Make sure that the selected range is suitable for the measurement to be taken.

4.1.2 If the current under measurement is higher than the selected range for a long period (6 seconds), overheating may take place, resulting in compromising the safety and operation of inner circuits.

4.1.3 Do not attempt to measure current or voltage on circuit/wire having a voltage higher than 750 V rms.

4.2 DC Current measurements

WARNING
Make sure that all test leads are disconnected from the meter terminals.

4.2.1 Set the function/range switch to one of the **A** position; 40A, 400A or 1000A. Press **SELECT** switch untill **DC** symbol displays on LCD.

4.2.2 Press **DCA ZERO** button, make sure the display is zeroed.

4.2.3 Press the jaw trigger to open the current sensor jaw and clamp it around one conductor(wire).The most accurate reading will be obtained by keeping the conduct or aligned with the center mark on the sensor jaw, the direction of the current correspond to the indication of the pointer on the jaw. Polarity inversion is indicated by "-" on the display.

4.2.4 Release the trigger to keep the clamp jaw closed.

4.2.5 Read the displayed value.

4.3 AC Current Measurements

WARNING
Make certain that all test leads are disconnected from the meter terminal ports.

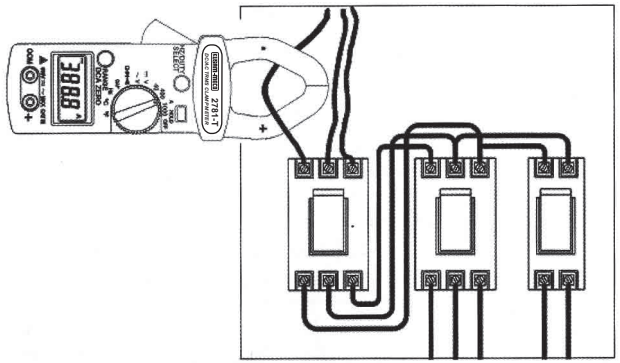
4.3.1 Set the function/range switch to one of the **A** position; 40A, 400A or 1000A. Press **SELECT** switch untill **AC** symbol display on LCD.

4.3.2 Clamp the current sensor jaw

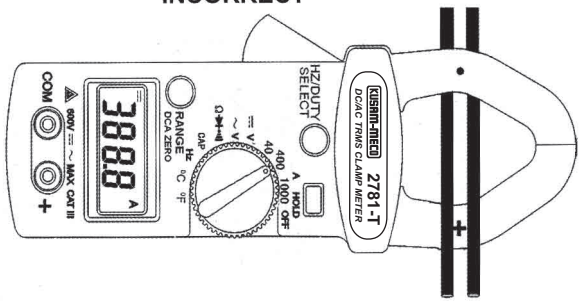
round one of the conductors under test. Release the trigger to keep the clamp jawclosed.

4.3.3 Read the displayed value.

CORRECT



INCORRECT



4.4 DC Voltage Measurements

WARNING
Maximum input voltage of DC circuit is 600 Vrms. Do not attempt to measure circuit higher than 600Vrms! Electrical shock or damage to the instrument may occur at this high voltage.

4.4.1 Set the function switch to the ⎓ **V** range.
Connect the black and lead to the "**COM**" port and red test