DIGITAL CLAMP METER

MODEL : 27-AUTO/27T-AUTO

INSTRUCTION MANUAL

1. SPECIFICATIONS

1.1 General Specification

Display	■	3½ digit liquid crystal display (LCD) with a maximum reading of 2000 counts.
Polarity	■	Automatic, positive implied, negative polarity indication.
Overrange	■	(OL) or (-OL) is displayed.
Zero	■	Automatic.
Low battery indication	■	"[+ -]" is displayed when the battery voltage drops below the operating level.
Measurement rate	■	3 times per second, nominal.
Operating Environment	■	0°C to 50°C at < 70% relative humidity.
Storage Temperature	■	-20°C to 60°C, 0 to 80% R.H. with battery removed from meter.
Accuracy	■	Stated accuracy at 27^{0}C ± 5^{0}C, <75% relative humidity.
Power	■	Two 1.5V 'AAA' Size Battery
Battery life	■	200 hours typical
Dimensions	■	185 x 65 x 28mm (approx.)
Weight	■	170gms including battery (approx.)
Accessories	■	Pair of test leads x 1, Instruction manual x 1, 1.5V batterys (installed) x 2, Carring Case x 1, (K type thermocouple upto 260^{0}C for 27T-AUTO only) x 1
Maximum Jaw Opening	■	25mm

1.2 Electrical Specification

Accuracies are ± (% reading + number of digits) at 27 ± 5°C and humidity of less than 75% RH.

AC CURRENT (Auto Ranging) 50-60Hz

Range	Accuracy	Overload Protection
2A	±(3% rdg + 5 dgt)	400A AC Max. for 1 minute
20A	±(2% rdg + 3 dgt)	
200A	±(2% rdg + 5 dgt)	
400A		

DC VOLTAGE (Auto Ranging)

Range	Accuracy	Overload Protection
600V	±(0.8% rdg + 3 dgt)	600V DC / AC rms

AC VOLTAGE (Auto Ranging) 50-60Hz

Range	Accuracy	Overload Protection
600V	±(1.2% rdg + 3 dgt)	600V DC / AC rms

RESISTANCE (Auto Ranging)

Range	Accuracy	Overload Protection
20MV	±(1.2% rdg + 3 dgt)	250V DC / AC rms

Continuity Check

Threshold Level : 40V Approx.
Response Time : 1m Sec. Approx.
Open Circuit Voltage : 0.4V Approx.
Indication : '•))' is displayed on LCD and buzzer sounds at continuity.

Diode Test

Measurement Current : 1.0 ± 0.6 mA Approx.
Open Circuit Voltage : 1.6V Approx.

Temperature (27T-AUTO only)

Range : -20^{0}C to 750^{0}C
-4^{0}F to 1400^{0}F
Accuracy : ± (3% rdg + 5 dgts)
Resolution : 1^{0}C / 1^{0}F
Sensor : K type thermocouple

2. OPERATION

Before taking any measurements, read the safety information section. Always examine the instrument for damage, contamination (excessive dirt, grease, etc.) and defects. Examine the test leads for cracked or frayed insulation. If any abnormal conditions exist do not attempt to make any measurements.

AUTO POWER OFF (APO)

The meter will be switch off if no range switch or key is used for approx 15 minutes.

FUNCTION BUTTON

The Button is used for select →|/•)) range and ^{0}C/^{0}F (27T-AUTO only)

HOLD BUTTON

Press Hold button to toggle in and out of Hold mode, In the Hold mode, the "H" annunciator is displayed.

MAX BUTTON

Press MAX button to toggle in and out of MAX mode (holding the highest absolute reading) In the MAX mode, the "MAX" annunciator is displayed. This function is available for DCV, ACV & Current ranges.

2.1 Current Measurements

1. Set the Range switch to the highest 400A range.
2. Press the trigger to open transformer jaws, clamp onto one conductor only and release trigger. Jaws should be completely closed. Read the current directly on the display. It is recommended that the conductor be placed at th e center of the closed jaws for maximum accuracy (Fig. - 1).

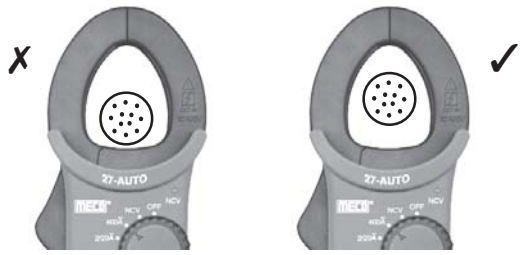


Fig. 1

3. When the reading is lower than 20A, set the Range switch to the next lower range position.

2.2 Voltage Measurements (AC or DC)

1. Connect the red test lead to the "VV" jack and the black test lead to the "COM" jack.
2. Set the Range switch to the desired Voltage type (AC or DC)
3. Connect the test leads to the device or circuit being measured.
4. For DC, a (-) sign is displayed for negative polarity; positive polarity is implied.

2.3 Resistance Measurements

1. Connect red test lead to the "VV" jack and black test lead to the "COM" jack.
2. Set Range switch to the V range.
3. If the resistance being measured is connected to a circuit, turn off power to the circuit being tested and discharge all capacitors.
4. Connect test leads across the resistance being measured. When measuring high resistance, be sure not to contact adjacent points even if insulated because some insulators have a relatively low insulation resistance, causing the measured resistance to be lower than the actual resistance.
5. Read resistance value on digital display. If a high resistance value is shunted by a large value of capacitance allow display to stabilize.

2.4 Diode Test

1. Connect the red test lead to the "VV" jack and black test lead to the " COM " jack.
2. Set the Range switch to the "→+ / •))) ".

3. Select Diode range by using Function Button.
4. Turn off power to the circuit under test.
5. Touch probes to the diode. A forward-voltage drop is about 0.6V (typical for a silicon diode).
6. If the digital display reads overrange " OL ", reverse the lead connections. The placement of the test leads when the forward reading is displayed indicates the orientation of the diode. The red lead is positive and the black lead is negative. If overrange " OL " is displayed with both lead connections, the junction is open. If a low reading (less than 1000) is obtained with both lead connections, the junction is shorted internally or (if junction is measured in a circuit) the junction is shunted by a resistance less than 1KV. In the letter case the junction must be disconnected from the circuit in order to verify its operartion.

2.5 Continuity Measurement

1. Connect red test lead to the "VV" jack and black test lead to the "COM" jack.
2. Set Range switch to the →+ / •))) range.
3. Select Continuity range by using Function Button.
   In the continuty test, the beeper sounds cuntinuously, if the resistance is less than 40V.

2.6 NCV Check (ACV only)

Indicates presence of voltage in an electrical circuit or equipment without touching them.

1. Set Range switch to the NCV Range.
2. The NCV indicator flashing every 1-2 sec.
3. When the clamp jaw near to the object under test it detected voltage. The NCV LED is quickly flashing.
   - Detection against inwall outlet is possible.
   - In NCV range meter will be auto power off within 3 minutes, if no signals is obtained

2.7 Temperature Measurment (27T-AUTO only)

1. Set range switch to ^{0}C possition.
2. Using function button select ^{0}C or ^{0}F.
3. Connect the thermocouple "+, -" at VV and COM input terminals.
4. Touch the end of temperature probe to the area or surface of the object whose temperature is to be measured.

Important : To avoid heat damage to the meter keep it away from sources of very high temperature. The life of the temperature probe is also reduced. When subjected to very high temperature.

3. MAINTENANCE

***WARNING** : Remove test leads before changing battery or servicing.*

Battery Replacement

Power is supplied by two 1.5V 'AAA' size battery or Equivalent.

The "[+ -]" appears on the LCD display when replacement is needed, To replace the battery, remove the screw from the battery cover and lift off the battery cover. Remove the batterys & repleced with new batterys.

4. SAFETY INFORMATION

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

1. Do not use the meter if the meter or test leads look damaged, or if you suspect that the meter is not operating properly.
2. This Clamp Meter is designed to take current measurements on circuits with a maximum voltage difference of 500VAC between any conductor and ground potential. Using the instrument for current measurements on circuits above this voltage may cause electric shock, instrument damage or damage to the equipment under test.
   Before measuring current make certain the test leads are removed from the instrument.
3. The instrument is protected for overload upto 600 VAC for 1 minute. Do not take current readings on circuits where the maximum current potential is not known.
   Do not exceed the maximum currents that this instrument is designed to measure.
4. Turn off power to the circuit under test before cutting, unsoldering, or breaking the circuit. Small amounts of current can be dangerous.
5. Use caution when working above 60V DC or 30V AC rms. Such voltages pose a shock hazard.
6. When using the probes, keep your fingers behind the finger guards on the probes.
7. Measuring voltage which exceeds the limits of the clamp meter may damage the meter and expose the operator to a shock hazard. Always recognize the meter voltage limits as stated on the front of the meter.

MECO®

Certificate of Calibration

We hereby certify that this product has been calibrated and found to be in accordance with the applicable SPECIFICATIONS and STANDARDS.

Accuracies of the standard equipment used in this calibration are traceable to the National Standards.

MECO METERS PVT. LTD.

Plot No. EL-60, MIDC Electronic Zone, TTC Industrial Area,
Mahape, Navi Mumbai - 400710 (INDIA)

Tel : 0091-22-27673311-16, 27673300 (Board)

Fax : 0091-22-27673310, 27673330

E-mail : sales@mecoinst.com

Web : www.mecoinst.com

SR. NO. : _____

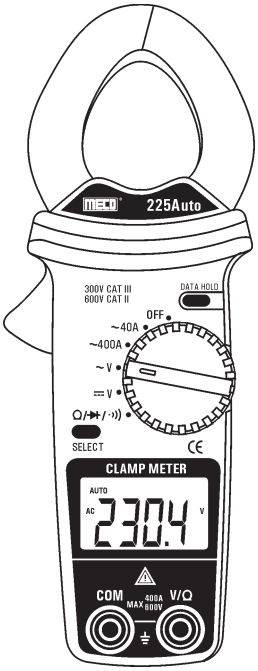
CHECKED BY : _____

DATE : _____

MODEL NO. : _____

AUTORANGING DIGITAL CLAMP METER

MODEL : 225AUTO



INSTRUCTION MANUAL

1. SPECIFICATIONS

1.1 General Specification

Display	■	3¾ digit liquid crystal display (LCD) with a maximum reading of 3999.
Polarity	■	Automatic, positive implied, negative polarity indication.
Overrange	■	(OL) or (-OL) is displayed.
Zero	■	Automatic.
Low battery indication	■	" [+ −] " is displayed when the battery voltage drops below the operating level.
Measurement rate	■	3 times per second, nominal.
Operating Environment	■	0°C to 50°C at < 70% relative humidity.
Storage Temperature	■	-20°C to 60°C, 0 to 80% R.H. with battery removed from meter.
Accuracy	■	Stated accuracy at 27^0C ± 5^0C, <75% relative humidity.
Power	■	Two 1.5V 'AAA' Size Battery
Battery life	■	200 hours typical
Dimensions	■	186 x 58 x 30mm (approx.)
Weight	■	165gms including battery (approx.)
Accessories	■	Pair of test leads x 1, instruction manual x 1, 1.5V batterys (installed) x 2, Carring Case x 1
Maximum Jaw Opening	■	32mm

1.2 Electrical Specification

Accuracies are ± (% reading + number of digits) at 27 ± 5°C and humidity of less than 75% RH.

AC CURRENT (50-60Hz)

Range	Accuracy	Overload Protection
40A	±(1.5% rdg + 5dgt)	400A AC Max. for 1 minute
400A		

DC VOLTAGE (Auto Ranging)

Range	Accuracy	Overload Protection
600V	±(0.8% rdg + 1dgt)	AC voltage ranges 600V AC Resistance ranges 250V AC

AC VOLTAGE (Auto Ranging) 50-60Hz

Range	Accuracy	Overload Protection
600V	±(1.0% rdg + 3dgt)	AC voltage ranges 600V AC Resistance ranges 250V AC

RESISTANCE (Auto Ranging)

Range	Accuracy	Overload Protection
40MV	±(1.0% rdg + 2dgt)	AC voltage ranges 600V AC Resistance ranges 250V AC

Continuity Check

Threshold Level : 50V Approx.
Response Time : 1m Sec. Approx.
Open Circuit Voltage : 0.4V Approx.
Indication : '·))' is displayed on LCD and buzzer sounds at continuity.

Diode Test

Measurement Current : 1.0 ± 0.6 mA Approx.
Open Circuit Voltage : 0.4V Approx.

2. OPERATION

Before taking any measurements, read the safety information section. Always examine the instrument for damage, contamination (excessive dirt, grease, etc.) and defects. Examine the test leads for cracked or frayed insulation. If any abnormal conditions exist do not attempt to make any measurements.

SELECT BUTTON

The Button is used for select V / ⊣⊢ / ·)) range.

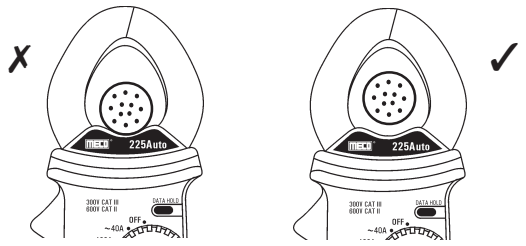
DATA HOLD BUTTON

Press Data Hold button to toggle in and out of Data Hold mode, In the Data Hold mode, the "HOLD" annunciator is displayed.

2.1 Current Measurements

1. Set the Function / Range switch to the highest 400A range.
2. Press the trigger to open transformer jaws, clamp onto one conductor only and release trigger. Jaws should be completely closed. Read the current directly on the display. It is recommended that the conductor be placed at th e center of the closed jaws for maximum accuracy (Fig. - 1).

Fig. 1



3. When the reading is lower than 40A, set the Function / Range switch to the next lower range position.

2.2 Voltage Measurements

1. Connect the red test lead to the "VV" jack and the black test lead to the "COM" jack.
2. Set the Function/Range switch to the desired Voltage type (AC or DC)
3. Connect the test leads to the device or circuit being measured.
4. For DC, a (-) sign is displayed for negative polarity; positive polarity is implied.

2.3 Resistance Measurements

1. Connect red test lead to the "VV" jack and black test lead to the "COM" jack.
2. Set Function / Range switch to the V / ⊣◀ / •)) range.
3. Select resistance range by using Select Button.
4. If the resistance being measured is connected to a circuit, turn off power to the circuit being tested and discharge all capacitors.

5. Connect test leads across the resistance being measured. When measuring high resistance, be sure not to contact adjacent points even if insulated because some insulators have a relatively low insulation resistance, causing the measured resistance to be lower than the actual resistance.
6. Read resistance value on digital display. If a high resistance value is shunted by a large value of capacitance allow display to stabilize.

2.4 Diode Test

1. Connect the red test lead to the "VV" jack and black test lead to the " COM " jack.
2. Set the Function / Range switch to the " V / ⊣◀ / •)) ".
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3. Select Continuity range by using Select Button.

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3. MAINTENANCE

WARNING

Remove test leads before changing battery or servicing.

Battery Replacement

Power is supplied by two 1.5V 'AAA' size battery or Equivalent.
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   Before measuring current make certain the test leads are removed from the instrument.
3. The instrument is protected for overload upto 600 VAC for 1 minute. Do not take current readings on circuits where the maximum current potential is not known.
   Do not exceed the maximum currents that this instrument is designed to measure.
4. Turn off power to the circuit under test before cutting, unsoldering, or breaking the circuit. Small amounts of current can be dangerous.
5. Use caution when working above 60V DC or 30V AC rms. Such voltages pose a shock hazard.
6. When using the probes, keep your fingers behind the finger guards on the probes.
7. Measuring voltage which exceeds the limits of the clamp meter may damage the meter and expose the operator to a shock hazard. Always recognize the meter voltage limits as stated on the front of the meter.

MECO®

CERTIFICATE OF CALIBRATION

We hereby certify that this product has been calibrated and found to be in accordance with the applicable SPECIFICATIONS and MECO STANDARDS.

Accuracies of the standard equipment used in this calibration are traceable to the National Standards.

MECO METERS PVT. LTD.

Plot No. EL-60, MIDC Electronic Zone, TTC Industrial Area, Mahape, Navi Mumbai - 400710 (INDIA)

Tel : 0091-22-27673311-16, 27673300 (Board)

Fax : 0091-22-27673310, 27673330

E-mail : sales@mecoinst.com **Web :** www.mecoinst.com

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DATE : _____

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