AC/DC DIGITAL CLAMP METER

INSTRUCTION MANUAL

1. INTRODUCTION

NOTE
This meter has been designed and tested According to Safety Requirements for Electronic Measuring Apparatus, IEC-61010 and other safety standards. Follow all warnings to ensure safe operation.

WARNING
READ "SAFETY NOTES" (NEXT PAGE)
BEFORE USING THE METER.

2. SAFETY NOTES

Read the following safety information carefully before attempting to operate or service the Meter.

● Use the meter only as specified in this manual; otherwise the protection provided by the meter may be impaired.

● Always keep hands behind the meter barrier.

● Use extreme caution when clamping around uninstalled conductors or bus bars.

● Never clamp around any conductor carrying a voltage above 600V R.M.S.

● Rated environmental conditions :

1.Indoor use.
2.Installation category Ⅲ.
3.Pollution degree Ⅱ.
4.Altitude up to 2000 meter.
5.Relative humidity 80% max.
6.Ambient temperature 0°~40°C.

● Observe the international Electrical Symbols listed


Meter protected throughout by double insulation or reinforced insulation.


Warning ! Risk of electric shock.


Caution ! Refer to this manual before using the meter.

Alternating current.


Earth (ground) terminal.

3. FEATURES

- 4000- count LCD.
- Full automatic measurement.
  - Voltage measurement.
  - Current measurement.
  - Resistor measurement.
  - Frequency counter.
  - Capacitor measurement.
- Range change function.
- Data Hold function freezes the reading.
- REL function.
- Peak function.
- Bargraph indication.
- Diode measurement.
- Max/Min function.
- Continuity check.
- Low battery indication.
- Auto Power Off (APO) function.
- Safety design throughout with no exposed metal parts, shielded banana plugs and recessed input terminals.
  - IEC/EN 61010-1
  - IEC/EN 61010-2-032 CAT. 600V

4. GENERAL

- Overload protection: ACV 600V rms
  DCV 600V
  Frequency & Ohm 500V rms

- Conductor Size: Approx. 35mm max
- Dimensions: 210mm(L) x 90mm(W) x 40mm(D)
- Weight: Approx. 330g(battery included)

- Power source:
One type PP3, 6F22, 006P(or equivalent), 9V manganese.

- Operating Principle: Dual slope integration.

- Over rage indication: " O.L " indicated.

- Low Battery Indication:
" " sign appears on the display when the battery voltage drops below accurate operating level.

- Response Time: Approx. 1 second.

- Sample Rate: Approx. 2 times per second.

- Temperature & Humidity for Guaranteed:
-0°C to 50°C at < 80% max. relative humidity.

- Storage Temperature & Humidity:
-10°C to 60°C at < 80% max. relative humidity.

- Battery Life:
Approx. 100 hours on continuous use.(Alkaline)

- Accessories:
Test leads, Carrying Case, instruction Manual

SPECIFICATIONS(All at 23°C±5°C , ≦80%R.H)

DC Voltage：

Range	Resolution	Accuracy
400 mV	0.1 mV	±(1.0%rdg+3dgt)
4 V	1 mV	
40 V	10 mV	
400 V	100 mV	
600 V	1 V	

◆ Overload protection：600V DC

AC Voltage：

Range	Resolution	Accuracy
400 mV	0.1 mV	±(2.0%rdg+3dgt)
4 V	1 mV	±(1.5%rdg+3dgt)
40 V	10 mV	
400 V	100 mV	
600 V	1 V	

◆ Overload protection：600V AC rms

◆ Requency Response：0~400mV at 40Hz~120Hz
4V~600V at 40Hz~500Hz

AC Current：

Range	Resolution	Accuracy
400 A	0.1 A	±(1.5%rdg+4dgt)
600 A	1 A	±(2.0%rdg+4dgt)

◆ Frequency Response：40Hz~500Hz

DC Current :

Range	Resolution	Accuracy
400 A	0.1 A	±(1.5%rdg+4dgt)
600 A	1 A	±(2.0%rdg+4dgt)

Resistance :

Range	Resolution	Accuracy
400 Ω	0.1 Ω	±(1.5%rdg+3dgt)
4 kΩ	1 Ω	
40 kΩ	10 Ω	
400 kΩ	100 Ω	
4 MΩ	1 kΩ	
40 MΩ	10 kΩ	±(2.0%rdg+4dgt)

◆Buzzer sounds below 35Ω

◆Overload protection：500V AC rms or 500V DC

Continuity:

Range	Audible Threshold
400Ω	Less than 35Ω

◆Overload protection:500V AC rms or 500V DC

Frequency:

Range	Resolution	Accuracy	Trigger Level
4 kHz	1 Hz	±(0.3%rdg+2dgt)	0.2 V
15 kHz	10 Hz		

◆Overload protection: 500V AC rms or 500V DC

Diode：

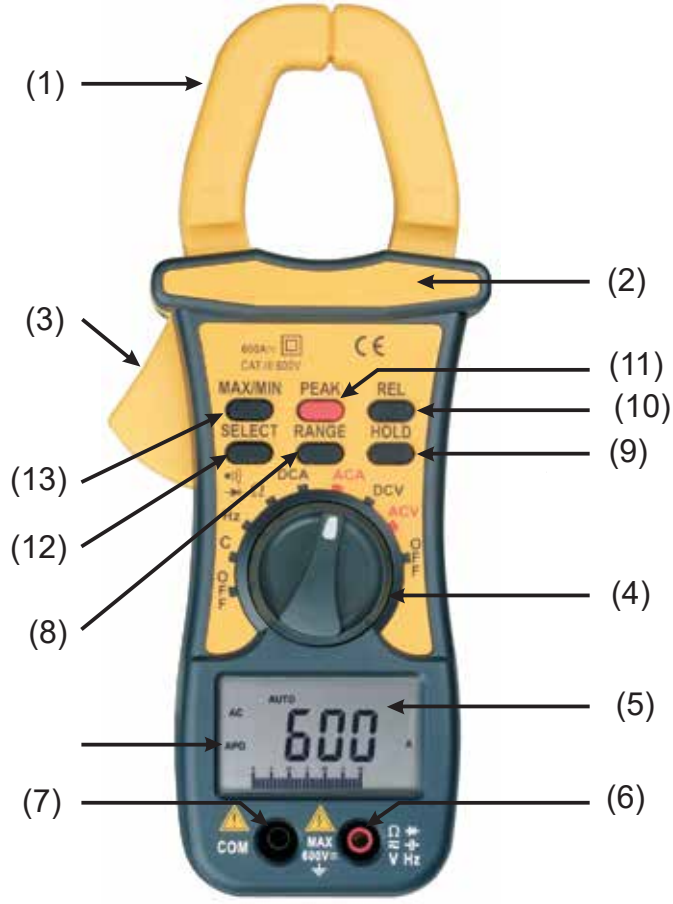
Range	Resolution	Accuracy
2V	1 mV	±(1.5% rdg+3dgt)

Capacitor：

Range	Resolution	Accuracy
4 nF	1 pF	±(2.0% rdg+4dgt)
40 nF	10 pF	
400 nF	100 pF	
4 μF	1 nF	
40 μF	10 nF	
400 μF	100 nF	
4 mF	1 μF	
40 mF	10 μF	±(3.0% rdg+4dgt)

◆Overload protection：500V AC RMS or 500V DC

5. INSTRUMENT LAYOUT



(1) Transformer Jaws
Pick up the AC current or DC current flowing through the conductor. The "-" marking on the jaw indicates direction of DC current existing on the conductor being tested which follows forward and vertically with jaws, the reading shown on display is positive.

(2) Barrier
Provide a protective distance from hands to conductor.

(3) Jaw Trigger
Press the lever to open the transformer jaws.
When the lever is released, the jaws will close again.

(4) Function selector rotary switch
The rotary switch selects the function.

(5) LCD Display
The LCD display indicates the function mode, bar graph, annunciator, and measured value of a signal. Field effects 3¾ digit LCD with maximum reading of 3999.

(6) Volt/Ohm/Frequency Terminal
This is positive input terminal for voltage / ohm / frequency measurement. Use the RED test lead to connect.

(7) COM Terminal
This is the ground input terminal. Use the BLACK test lead to connect.

(8) RANGE Button
Press the RANGE button to selects the manual range mode .and turns off the AUTO annunciator and turns on the MANUAL annunciator. In manual range mode, each time press RANGE button (less than one second), the range increments and a new value is displayed. To exit the manual range mode and return to auto mode, press the RANGE button (more than one second).

(9) Hold Button
Press the HOLD button (HOLD annunciator turns on) makes the meter stop updating the display. This mode can nested in most of the special modes. Enabling HOLD function in AUTO mode makes the meter switch to MANUAL mode, but the full scale range remain the same. HOLD function can be cancelled by changing the measurement mode, pressing the RANGE button, or Press the HOLD button again.

(10) REL Button
The "REL" mode means relative mode. Press the REL button, the REL annunciator turns on, zero the display, and store the displayed reading as a reference value. Press the REL button more than 1 second to exit the REL mode. In the REL mode, the value shown on the display is always difference between the stored reference value and the present reading. If the new reading is the same as the reference value, the display will be zero. This function is also made DCA zero adjustment.

(11) PEAK Button
The PEAK mode is used to measure the peak value of a signal. It is useable with AC Current measurements. Press the PEAK button, the PMAX annunciator turns on, and the display shows the maximum peak value. When the PEAK button is pressed again (less than one second), the PMIN annunciator turns on, PMAX annunciator turns off and the display shows the minimum peak value. When the PEAK button is pressed for the third time (less than one second), the PMAX and PMIN PMIN annunciators are blinking, and display shows current input value. The meter returns to normal operation if the PEAK button is pressed and held for longer than one second.

(12) SELECT Button
If SELECT button pressed in ACV or ACA measurement mode, the meter enters frequency counter mode with automatic range selection. Therefore, pressing RANGE button in VAHZ mode doesn't change the frequency range. However, range changes the sensitivity of frequency detection.
If the input signal has a small amplitude, the user shall increase the sensitivity.
If SELECT button pressed in Ω measurement mode, the meter exchange to Continuity Check & Diode Measurement selection.
If press this key in these function circulation.

(13) MAX / MIN Button
Press button to enter the MAX/MIN recording mode. When the MAX/MIN button is pressed for the first time, the "MAX" annunciator turns on, and the display shows the maximum value. When the MAX/MIN button is pressed again (less than one second), the "MIN" annunciator turns on, and the display shows the minimum value. When the MAX/MIN button is pressed for the third time (less than one second), the MAX and MIN annunciators are blinking, and display shows current input value. The meter returns to normal operation if the MAX/MIN button is pressed and held for longer than one second. Pressing the HOLD button in MAX/MIN mode makes the meter stop updating the maximum or the minimum value.

(14) Auto Power Off (APO)
This meter has a default auto power off function (APO annunciator turns on). If the meter idles for more than 30 minutes, the meter automatically turns the power off. When this happens, the state of the meter is saved. In order to disable auto power off function, power on the meter when any of the push function, except for HOLD, is pressed down.

6. MEASUREMENT

Before proceeding with measurement, read the safety notes.

(1) Voltage measurement
Insert the BLACK test lead to COM and the RED one to the other terminal.
Switch to ACV range for AC voltage or DCV range for DC Voltage.
Use the test lead tip to the circuit and read the reading of display directly.
If the reading exceed AC 600V(DC 600V), maybe the reading value is wrong and it is dangerous. (refer to the safety notes)

(2) Current measurement
Switch to ACA range for AC current or DCA for DC current.
If the initial reading of DCA is not zero, press the REL button to adjust.
Make sure that the test lead is not connect to the terminal.
Press the jaw trigger to open the transformer jaws and clamp onto one conductor only.
Read the display reading directly.

(3) Resistance Measurement
Switch to OHM range and make sure there is no power in the circuit being measured. Insert the BLACK lead to the COM and the RED one to another.
Connect the test leads to the circuit or device under test and read the display directly.

(4) Continuity Check
Continuity check shares the same configuration with 200.0 Ω manual resistance measurement mode, but with buzzer output to indicate continuity.
The buzzer generates a 2KHz sound whenever the digit number less than 35 Ω . Because the cycle time of measurement is only 70ms, the least significant digit will not display.

(5) Diode Measurement
Diode measurement mode shares the same configuration with 2.000V manual voltage measurement mode.
If the test circuit is open or the voltage drop between the two ports of the device (diode) under test are larger than 2V, the LCD panel will show "OL".
The buzzer generates a 2KHz sound whenever the digit number is less than 0.25V. Because the cycle time of measurement is only 70ms, the least significant digit will \ not display.

(6) Capacitance measurement
Switch to capacitance measurement mode.
Insert the BLACK test lead to COM and the RED one to the other terminal.
Connect the test leads to the capacitance test and read the display directly.
In order to obtain an accurate reading, a capacitor must be discharged before measurement begins.

The chip has a built-in discharge mode to in discharge mode, the LCD displays DS.C discharging through the chip is quite slow.
We recommend the user to discharge the Capacitor with some other apparatus.

(7) Frequency measurement
Switch to frequency measurement mode.
Insert the BLACK test lead to COM and the RED one to the other terminal.
Apply the test leads to the points across which the frequency is to be measured, and read the result directly from the display.

7. MAINTENANCE

Battery replacement

When low battery warning appears, change a new battery as follows:

(1) Disconnect the test leads from the instrument and turn off power.

(2) Unscrew the battery cover and replace a new battery.

Cleaning and Storage

> WARNING
>
> To avoid electrical shock or damage to the meter, do not get water inside the case.

Periodically wipe the case with a damp cloth and detergent. Do not use abrasives or solvents.

If the meter is not used for over 60 days, remove the battery for storage.

CAT IV - Is for measurements performed at the source of the low voltage installation.

CAT III - Is for measurements performed in the building installation.

CAT II - Is for measurement performed on circuits directly connected to the low voltage installation.

CAT I - Is for measurements performed on circuits not directly Connected to Mains.