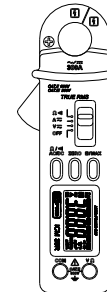


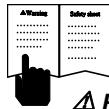


**INSTRUCTION MANUAL**  
**ICM30R CLAMP MULTIMETER**

EN FR IT DE ES



**ICM30R**  
**CLAMP MULTIMETER**  
**INSTRUCTION MANUAL**



**⚠ Read First**

### **⚠ Safety Information**

Understand and follow operating instructions carefully.  
Use the meter only as specified in this manual; otherwise, the protection provided by the meter may be impaired.

#### **⚠ WARNING**

Identifies hazardous conditions and actions that could cause **BODILY HARM** or **DEATH**

#### **⚠ CAUTION**











Identifies conditions and actions that could **DAMAGE** the meter or equipment under test

**⚠ WARNING**

- Examine the instrument and probes before use. Do not use the instrument if it is wet or damaged
- When using test leads or probes, keep your fingers behind the finger guards.
- Remove the test lead from the instrument before opening the battery cover or instrument case.
- Always use the correct terminals, switch position and range for measurements.
- Verify the instrument is operating correctly by measuring a known voltage before use. If in doubt, have the instrument serviced.
- Do not apply more than the rated voltage, as marked on the instrument, between terminals or between any terminal and earth ground.
- Use caution when measuring voltages above 30 Vac rms or 60 Vdc. These voltages pose a shock hazard.
- To avoid incorrect readings that can lead to electric shock, replace the battery as soon as the low battery indicator appears in the display.
- Do not use the instrument in a hazardous area or around explosive gasses or vapours.
- Wear suitable personal protective equipment when working around or near hazardous live conductors which could be accessible.

<b>Measurement Category</b>	<b>Application</b>
<b>II</b>	Measurements on circuits directly connected to the low voltage installation.
<b>III</b>	Measurements performed in the building installation.

#### Symbols as marked on the meter and Instruction

	Risk of electric shock
	See instruction manual
	DC measurement
	Equipment protected by double or reinforced insulation
	Battery
	Earth
	AC measurement
	Conforms to EU directives
	Application around and removal from hazardous live conductors is permitted
	Do not discard this product or throw away

## **INTRODUCTION**





### **1-1 Unpacking and Inspection**


Upon removing your new Digital Clamp Multimeter from its packing, you should have the following items:

1. Digital Clamp Multimeter.
2. Test lead set (one black, one red).
3. Carrying case.
4. Instruction manual.
5. Battery.

## 1-2 Front Panel

Refer to Figure 1 and to the following numbered steps to familiarize yourself with the meter's front panel controls and connectors.

- 1. Digital Display** — The digital display has a 3 3/4 digit LCD readout (maximum reading 3999) plus decimal point, AC~, DC=, , MAX,  and unit annunciators.
- 2. Input Terminal** — The black test lead is always connected to the "COM" input terminal and red test lead is always connected to the "V-Ω" input terminal when measuring ACV or DCV or RESISTOR or CONTINUITY.
- 3. Drop-Proof Wrist Strap** — Prevents the instrument from slipping out of the hand while in use.
- 4. Function Switch** — This slide switch is used to select V~, V=, A~, A=, Ω,  function.
- 5.  / MAX Switch** — This switch has two modes. One is data hold the other is maximum hold .

Sliding the function switch to power on , this switch will work in data hold mode. By pressing the  / MAX Switch then sliding the function switch from power off to power on, this switch will work in maximum hold mode.

**Data hold mode** — This mode is used to hold the measured value for all functions , push this switch then the AUTO annunciator is displayed. Conversions are made but the display is not updated.

**Maximum hold mode** — This mode is used to hold the maximum measured value for all functions.

Press this switch the "**MAX**" annunciator turns on then enters the maximum hold mode.

Press this switch again to restart recording. Press this switch more than 1 seconds to exit the maximum hold mode.

**6. ZERO Switch** — This switch is used to ZERO the reading on display.

**7.  $\Omega / \rightarrow$  AC/DC Selection Switch** — Push the " $\Omega / \rightarrow$ ", AC/DC" switch alternately to measure AC voltage or DC voltage in the " $V \sim$ " function or to measure AC current or DC current in the " $A \sim$ " function or to measure resistor or continuity in " $\Omega \rightarrow$ " function.

Auto power off disable mode : Press and hold this switch for 1 second whilst sliding the power switch on, this will disable the auto power off function.

**8. Trigger** — Press the lever to open the transformer jaws. When the pressure on the lever is released, the jaws will close again.

**9. Hand Guard** — Designed to protect user for safety.

**10. Transformer Jaws** — Designed to pick up the AC/DC current flowing through the conductor.



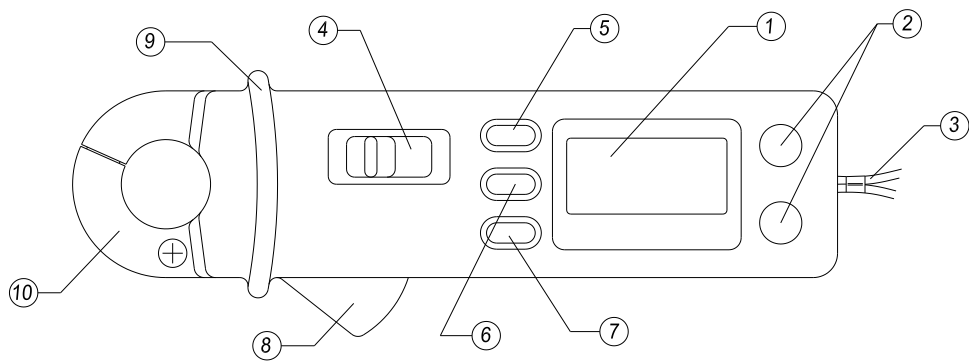


Figure 1

## **SPECIFICATIONS**

### **2-1 General Specifications**

**Display** : 3 3/4 Digital Liquid Crystal Display (LCD) with a maximum reading of 3999.

**Polarity Indication** : Automatic polarity indicated.

**Over range Indication** : "OL" indicated.

**Low Battery Indication** : "⚡" is displayed when the battery voltage drops below operating voltage.

**Measuring Rate** : 2 times/second normal.

**Position Error** : +/- 1% of reading.

**Type of Sensing** : Hall effect sensing for AC and DC current.

**Shook Proof** : 4 feet drops.

**Power Requirement** : Alkaline AAA size 1.5V x 2.

**Battery Life** : Alkaline 100 hours.

**Maximum Jaw Opening** : 25mm.

**Max/Conductor Size** : 22 mm diameter.

**Temperature Coefficient** :  $0.15 \times (\text{spec. Acc'y}) / ^\circ\text{C} < 18^\circ\text{C}$  or  $> 28^\circ\text{C}$  .

**Size** : 66 mm (W) x 192 mm (L) x 27 mm (H) .

**Weight** : 205 grams (including battery)

**Accessories** : Test leads, battery, manual and carrying case.

## **2-2 Environmental Conditions**

**Indoor use.**

**Maximum Altitude** : 2000 Meter.

**Installation Category** : IEC 1010 CAT. II 600V, CAT. III 300V

**Pollution Degree** : 2

**Operating Temperature** :  $0^\circ\text{C}$  to  $30^\circ\text{C}$  ( $\leq 80\%$  RH),  $30^\circ\text{C}$  to  $40^\circ\text{C}$  ( $\leq 75\%$  RH),  $40^\circ\text{C}$  to  $50^\circ\text{C}$  ( $\leq 45\%$  RH).

**Storage Temperature** :  $-20^\circ\text{C}$  to  $60^\circ\text{C}$  .

## 2-3 Electrical Specifications

Accuracy is  $\pm$  (% reading + number of digits) at 23°C  $\pm$  5°C at less than 80% R.H.

### (1) AC Voltage : Auto-ranging

Range	Resolution	Accuracy	Over voltage protection
400.0mV	100 $\mu$ V	$\pm$ (2.0% reading + 5digits ) 50Hz ~ 60Hz *	600V rms
4.000V	1mV	$\pm$ (1.5% reading + 5digits ) 40Hz ~ 300Hz	
40.00V	10mV	$\pm$ (1.5% reading + 5digits ) 40Hz ~ 500Hz	
400.0V	100mV		
600V	1V		

Input Impedance :  $\geq$  10 M $\Omega$  //less than 100pF.

\* Less than 30 digital rolling.

The LCD displays 0 count when the reading  $\leq 1\text{mV}$

**AC Conversion Type** : AC conversions are ac-coupled, true rms responding, calibrated to the rms value of a sine wave input . Accuracies are given for sine wave at full scale. For distorted signals, add the following Crest Factor corrections :

For Crest Factor of 1.4 to 2.0, add 1.0% to accuracy.

For Crest Factor of 2.0 to 2.5, add 2.5% to accuracy.

For Crest Factor of 2.5 to 3.0, add 4.0% to accuracy.

**(2) DC Voltage : Auto-ranging**

<b>Range</b>	<b>Resolution</b>	<b>Accuracy</b>	<b>Over voltage protection</b>
400.0mV	100 $\mu$ V	$\pm(0.5\%$ reading + 5 digits)	600V rms
4.000V	1mV	$\pm(0.5\%$ reading + 2 digits)	
40.00V	10mV		
400.0V	100mV		
600V	1V		

**Input Impedance :  $\geq 10M\Omega$ .**

**(3) Resistance Auto-ranging**

<b>Range</b>	<b>Resolution</b>	<b>Accuracy</b>	<b>Overload Protection</b>
400.0Ω	100mΩ	±(1.2% reading + 6 digits) *1	600V rms
4.000KΩ	1Ω	±(0.9% reading +3 digits) *2	
40.00KΩ	10Ω		
400.0KΩ	100Ω	±(1.2% reading + 3 digits) *2	
4.000MΩ	1KΩ		
40.00MΩ	10KΩ	±(2.5% reading + 5digits) *1 *3	

- \* 1: The reading may be rolling  $\leq 6$  digits when the reading is close to full scale.
- \* 2: The reading may be rolling  $\leq 3$  digits when the reading is close to full scale.
- \* 3: The response time is approximately 20 seconds.
- \* : Connecting a low resistance to the input terminals prior to moving the sliding function switch to resistor and continuity function may cause a the internal sounder to operate.

#### **(4) Continuity**

The internal sounder will operate when the measured resistance is less than  $50\Omega$ , and will turn off when the measured resistance is greater than  $300\Omega$ .

Between  $50\Omega$  to  $300\Omega$  the buzzer maybe sound or off either.



**(5) DCA : Auto-ranging**

<b>Range</b>	<b>Resolution</b>	<b>Accuracy</b>	<b>Over load protection</b>
0 ~ 40.00A	10mA	±(1.0% reading + 2 digits)	400A rms
40.0A ~ 200.0A	100mA		
200.0A ~ 300.0A	100mA	±(2.0% reading + 2 digits)	

For DCA & ACA :

1. Temperature Coefficient :  $0.2 \times (\text{Specified Accuracy}) / ^\circ\text{C}$   $< 20^\circ\text{C}$  or  $> 26^\circ\text{C}$  .
2. Operating Temperature :  $0^\circ\text{C}$  to  $30^\circ\text{C}$  ( $\leq 80\%RH$ ) ,  $30^\circ\text{C}$  to  $40^\circ\text{C}$  ( $\leq 75\%RH$ )

**(6) ACA : Auto-ranging**

<b>Range</b>	<b>Resolution</b>	<b>Accuracy</b>	<b>Frequency Response</b>	<b>Overload Protection</b>
0 ~ 4.00A	10mA	$\pm(1.0\% \text{ reading} + 5 \text{ digits})$	50Hz ~ 60Hz	400A r.m.s.
4.00A ~ 40.00A	10mA	$\pm(1.0\% \text{ reading} + 3 \text{ digits})$		
40.0A ~ 200.0A	100mA			
200.0A ~ 300.0A	100mA	$\pm(3.0\% \text{ reading} + 3 \text{ digits})$		
0 ~ 40.00A	10mA	$\pm(2.0\% \text{ reading} + 7 \text{ digits})$	40Hz ~ 1KHz	
4.00A ~ 40.00A		$\pm(2.0\% \text{ reading} + 5 \text{ digits})$		
40.0A ~ 200.0A	100mA			
200.0A ~ 300.0A	100mA	$\pm(5.0\% \text{ reading} + 5 \text{ digits})$		

The LCD displays 0 count when the reading  $\leq 0.1A$

**AC Conversion Type :** AC conversions are ac-coupled, true rms responding, calibrated to the rms value of a sine wave input . Accuracies are given for sine wave at full scale. For distorted signals, add the following Crest Factor corrections:

For Crest Factor of 1.4 to 2.0, add 1.0% to accuracy.

For Crest Factor of 2.0 to 2.5, add 2.5% to accuracy.

For Crest Factor of 2.5 to 3.0, add 4.0% to accuracy.

#### **(7) Maximum Hold**

**7-1** In maximum hold function the accuracy is changed as following.

Original Accuracy + 10 digits/ change steps of range .

**For example :**

At first , the maximum hold reading on display is 100.0mV on 400.0mV range. If the voltage changes the maximum hold reading to 120.0V, then the change in steps of range is 3 steps ( 400.0mV to 4.000V to 40.00V to 400.0V) so the accuracy is arrived at by adding (3 steps x 10 digits / change steps of range) = 30 digits.

**7-2** In maximum hold mode the accuracy of resistance is specified from 400.0Ω to 400.0kΩ range only.

**(8) Auto Power Off**

The meter will automatically shut itself off approximately 30 minutes after power on.

**OPERATION**

This instrument has been designed and tested in accordance with IEC Publication 1010, Safety Requirements for Electronic Measuring Apparatus and has been supplied in a safe condition. This instruction manual contains some Information and warnings which have to be followed by the user to ensure safe operation and to retain the instrument in safe condition.

**3-1 Preparation and Caution before Measurement**

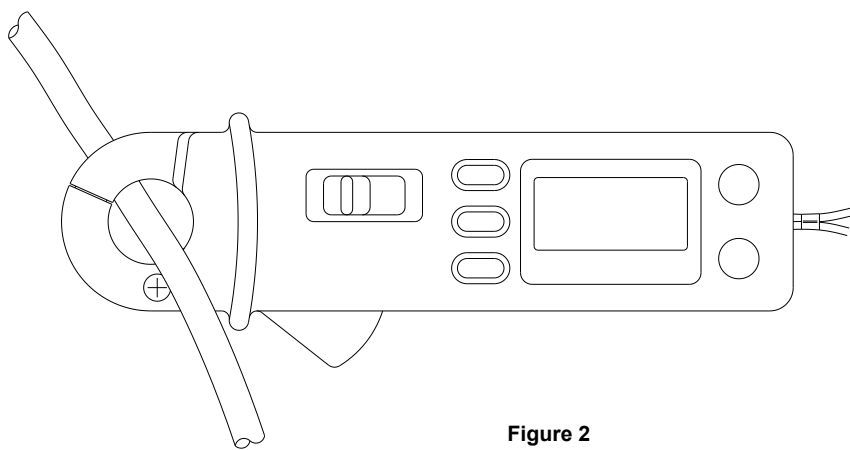
1. If the meter is used near equipment that generates electro-magnetic interference, the display may be unstable or indicate incorrect measurement values.
2. Make sure that the battery is properly connected.

3. The instrument should only be operated between 0°C ~ 50°C and at less than 80% R.H. except current function is operated between 0°C ~ 40°C .
4. Do not use or store this instrument in a high temperature or high humidity environment and do not store the unit in direct sunlight.
5. Do not replace battery with power on condition.
6. If the unit is not to be used for a long period of time , remove the battery.
7. Do not forget to turn off after use.
8. ⚠ Maximum rated voltage to earth for voltage measurement terminals is 600V CAT.II , 300V CAT. III

⚠ THIS INSTRUMENT MUST NOT BE USED ON UNINSULATED CONDUCTORS AT A VOLTAGE GREATER THAN 600V ac/dc.

### **3-2 AC/DC Current Measurement**

1. Set the slide switch to the "A  $\overline{\sim}$ " position.
2. Open the spring-loaded clamp by pressing the trigger on the left side of the meter.
3. Position the clamp around the wire or conductor and release the trigger smoothly, do not release quickly, make sure that the clamp is entirely closed. Position the conductors in the center of the clamp jaws for accurate measurement . The clamp must be positioned around only one conductors of a circuit .  
If the clamp is placed around two or more current-carrying conductors , the meter reading will be FALSE.
4. For DC measurement , the reading is positive value when the current flows from the upper side to the lower side of the instrument as Fig. 2.
5. Use the zero switch to zero the reading. Due to the high sensitivity of the clamp meter, zero in the same direction as in measurement to avoid interference by external magnetic field. (see Fig.3)



**Figure 2**

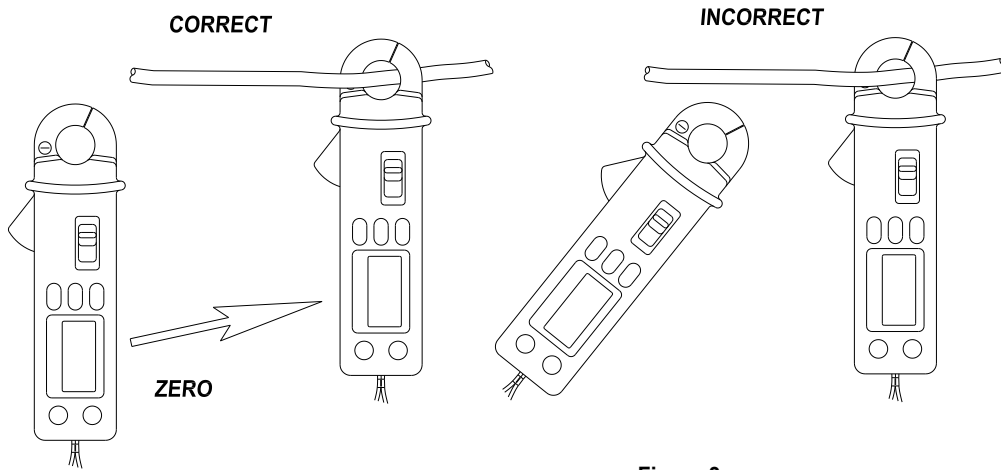


Figure 3



### **TEST EQUIPMENT RISK ASSESSMENT**

*Users of this equipment and or their employers are reminded that Health and Safety Legislation require them to carry out valid risk assessments of all electrical work so as to identify potential sources of electrical danger and risk of electrical injury such as from inadvertent short circuits. Where the assessments show that the risk is significant then the use of fused test leads constructed in accordance with HSE guidance note GS38 "Electrical Test Equipment for use by Electricians" should be used.*

#### **3-3 AC/DC Voltage Measurement**

1. Set the slide switch to the "V  $\overline{\sim}$ " position.
2. Connect the black test lead to the "COM" terminal on the bottom of the meter and the red test lead to the "V- $\Omega$ " terminal. You can now place the test probes on the conductors to make the measurement.
3. Press the AC/DC switch to select AC mode or DC mode.

#### **3-4 Resistance Measurement**

1. Set the slide switch to the " $\Omega$   $\rightarrow$ " position.
2. Connect the black test lead to the "COM" terminal and red lead to the "V- $\Omega$ " terminal.
3. Verify that the power to the circuit under test is off. Connect test leads to the circuit to make the measurement.
4. Press the  $\Omega$  /  $\rightarrow$  switch to select Resistance mode or Continuity mode.
5. In  $\rightarrow$  mode, the internal sounder will operate if the resistance of the circuit under test is less than 50 $\Omega$ .

## **MAINTENANCE**

**⚠ WARNING :** TO AVOID ELECTRICAL SHOCKS REMOVE TEST LEADS FROM INSTRUMENT BEFORE OPENING THE COVER.

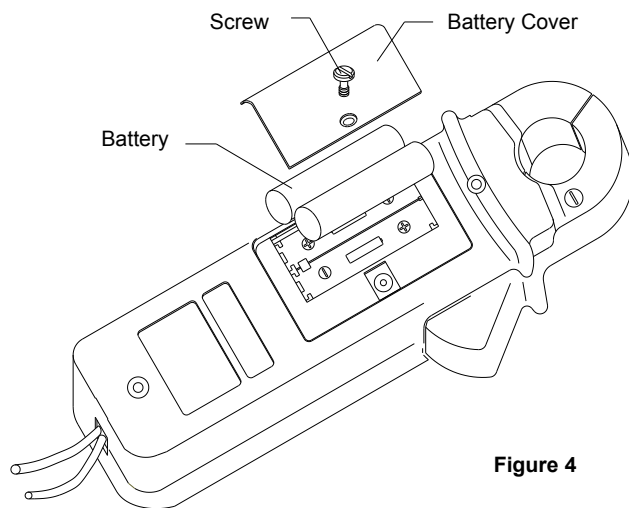
### **4-1 General Maintenance**

1. Repairs or servicing not covered in this manual should only be performed by qualified personnel.
2. Periodically wipe the case with a dry cloth and detergent do not use abrasives or solvents.

### **4-2 Battery Installation or Replacement**

The meter is powered by two 1.5V alkaline batteries. Refer to Fig. 4 and use the following procedure to replace the battery.

1. Disconnect the test leads and turn the meter off. Remove the test leads from the front terminals.
2. Remove the battery cover of case bottom from the instrument by removing the screw and then lifting off battery cover.
3. Lift the batteries from the battery box.
4. Reinsert new batteries into the battery box.
5. Replace the battery cover and reinstall the screw.



**Figure 4**

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