

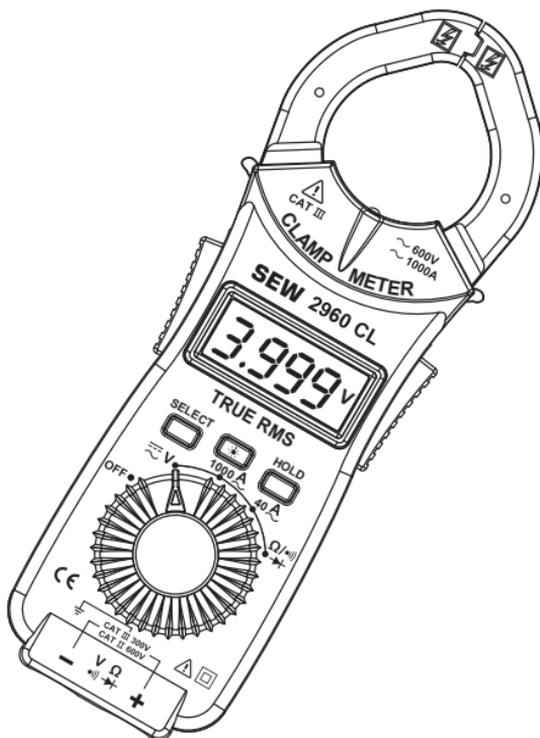
# SEW

# 2960 CL

## TRUE RMS AC CLAMP METER

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## INSTRUCTION MANUAL

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# 1. Introduction

## **Note**

This clamp meter has been designed and tested according to CE Safety Requirements for Electronic Measuring Apparatus, EN 61010-1 EN 61010-2-32 and other safety standards. Follow all warnings to ensure safe operation.

## **Warning**

Read "Safety Notes"(next page) before using the clamp meter.

## 2. Safety Notes

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

- Use the clamp meter only as specified in this manual, otherwise the protection provided by the clamp meter may be impaired.
- Always keep hands behind the clamp meter barrier.
- Use extreme caution when clamping around uninstalled conductors or bus bars.
- Never clamp around any conductor carrying a voltage above 600V AC.
- During current measurement to avoid an electric shock accident, do not connect the test leads to the instrument.
- To avoid electric shock when measuring live lines, wear appropriate protective gear, such as insulated rubber gloves and boots.
- Rated environmental conditions:
  - (1) Indoor use.
  - (2) Installation Category II 600V  
Category III 300V
  - (3) Pollution Degree 2.
  - (4) Altitude up to 2000 Meter.
  - (5) Relative Humidity 80% Max.
  - (6) Ambient Temperature 0~40°C.

- Observe the international electrical symbols listed below.

 Meter is protected throughout by double insulation or reinforced insulation.

 Warning ! Risk of electric shock.

 Caution ! Refer to this manual before using the meter.

 Alternating current.

 Direct current.

 Earth (ground).

### 3.Features

- True RMS measurement.
- 4000-count LCD.
- Full automatic measurement.  
AC Current measurement.  
AC/DC Voltage measurement.  
Resistor measurement.
- Data Hold function.
- Continuity check.
- Diode measurement.
- Low battery indication.
- Auto-off function.
- Flashlight.
- Re-power on by pushing any of the push buttons or by changing the rotary switch mode after auto power off.

## 4. Specifications

### AC Current

Range	Resolution	Accuracy
40.00A	0.01A	$\pm(2.0\%rdg+5dgt)$ (40~200Hz)
400.0A / 1000A	0.1A / 1A	

### AC Voltage

Range	Resolution	Accuracy
4.000V	1mV	$\pm(1.5\%rdg+10mV)$ (40~500Hz)
40.00V	10mV	$\pm(1.5\%rdg+5dgt)$ (40~500Hz)
400.0V	100mV	
750V	1V	

- Input impedance : 10M $\Omega$

### DC Voltage

Range	Resolution	Accuracy
4.000V	1mV	$\pm(1.0\%rdg+5dgt)$
40.00V	10mV	
400.0V	100mV	
1000V	1V	

- Input impedance : 10M $\Omega$

## Resistance

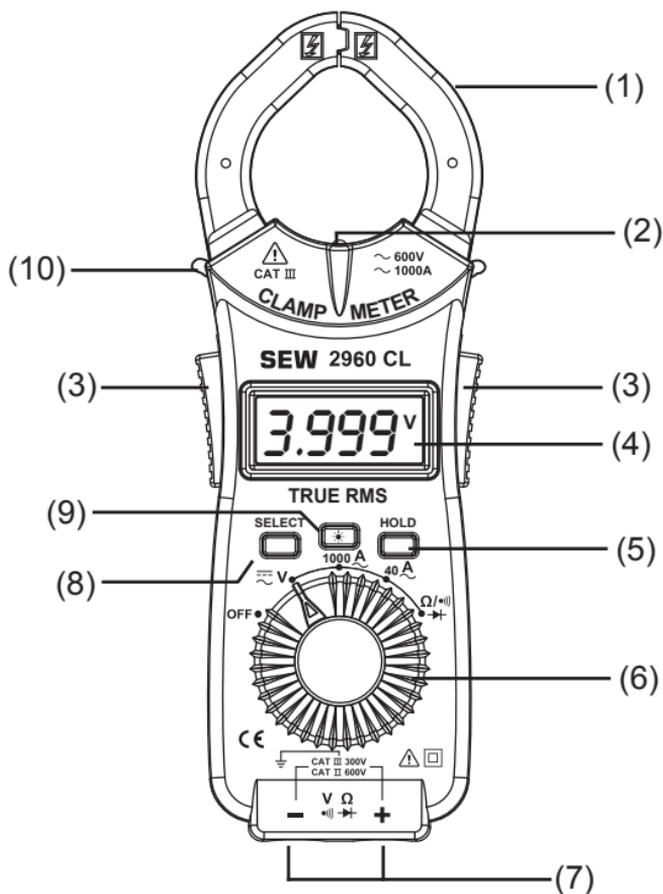
Range	Resolution	Accuracy
400.0Ω	0.1Ω	±(1.5%rdg+3dgt)
4.000kΩ	1Ω	
40.00kΩ	10Ω	
400.0kΩ	100Ω	
4.000MΩ	1kΩ	
40.00MΩ	10kΩ	±(2.0%rdg+4dgt)

Threshold level (beep sound) : less than 25Ω

- Overload protection :  
ACV 750V rms  
DCV 1000V  
Diode & Ohm 250V rms
- Conductor size : 35mm
- Low battery indication :  
"  " sign appears on the display.
- Response time :  
Approx. 1 second.
- Sample rate :  
Approx. 2 times per second.

- Operating temperature and humidity :  
0°C~40°C 80% R.H. Max.
- Storage temperature and humidity :  
-10°C~50°C 80% R.H. Max.
- Battery life :  
Approx. 100 hours on continuity use.
- Dimension :  
183(L) × 62(W) × 20(D)mm
- Weight : Approx 124g (battery included)
- Power source : DC 3V (CR2032) battery × 1
- Safety Standard :  
EN 61010-1 CAT II 600V / CAT III 300V  
EN 61010-2-32 EN 61326-1
- Accessories :  
Instruction manual  
Test leads  
Soft pouch  
Battery

## 5. Instrument layout



(1) Transformer Jaws

(2) Flashlight

(3) Jaw Trigger

(4) LCD

(5) Data Hold Button

(6) Function Switch

(7) Input Terminal

(8) SELECT Push Button

(9) Flashlight Button

(10) Barrier

**(1) Transformer Jaws**

Pick up the conductor within the jaws center.

**(2) Flashlight**

For easier viewing in the dark.

**(3) Jaw Trigger**

Press to open the jaws.

**(4) LCD**

3¾ digit LCD(4000 counts).

**(5) Data Hold Button**

Freeze the reading for all ranges with "HOLD" indicated.

**(6) Function Switch**

For function selection

**(7) Input Terminal**

"+" and "-" terminal

**(8) SELECT Push Button**

For select function :

a. ACV / DCV

b.  $\Omega$  /  $\bullet$ ) /  $\rightarrow$  

**(9) Flashlight Button**

For flashlight function

**(10) Barrier**

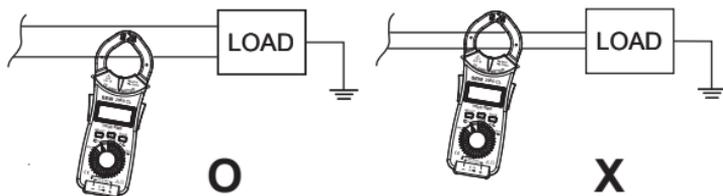
Provide a protective distance from hands to conductor.

## 6. Measurement

Before proceeding with measurement, read the safety notes.

### (1) AC current measurement

- Set the function switch to " 1000  $\tilde{A}$ " or "40  $\tilde{A}$ " position.
- Press the jaw trigger to open the transformer jaws and clamp onto one conductor only.
- Read the display reading directly.



### (2) ACV measurement

- Insert the BLACK test lead to the (-)terminal and the RED one to the other terminal.
- Set the function switch to "  $\tilde{V}$ " position and press the SELECT button, until the "  $\tilde{AC}$  " symbol appears.
- Connect the test leads to the object to be measured.
- Read the display.

### (3) DCV measurement

- Insert the BLACK test lead to the (-)terminal and the RED one to the other terminal.
- Set the function switch to "  $\tilde{V}$ " position.

- Connect the test leads to the object to be measured.
- Read the display.

 Note

Reversing the polarity of the test leads displays a negative value.

(4) Resistance measurement

- Insert the BLACK lead to the (-)terminal and the RED one to another.
- Set the function switch to " $\Omega / \bullet$ ) /  $\rightarrow +$ " position and make sure there is no power in the circuit being measured.
- Connect the test leads to the object under test and read the display directly.
- If the reading on the display disappears once you connect the test leads to the object. That means there is power(voltage) in the object being measured. Please remove the test leads immediately. Then check the object or circuit being measured again, and remove the power.

(5) Continuity test

- Insert the BLACK lead to the (-)terminal and the RED one to another.
- Set the function switch to " $\Omega / \bullet$ ) /  $\rightarrow +$ " position and press the "SELECT" button, until the " $\bullet$ )" symbol appears.
- Connect the test leads to the object under test.

- If the reading on the display disappears once you connect the test leads to the object. That means there is power(voltage) in the object being measured. Please remove the test leads immediately. Then check the object or circuit being measured again, and remove the power.
- The buzzer will work when the resistance is less than  $25\Omega$ .

#### (6) Diode test

- Turn the function switch to " $\Omega / \bullet$ ) /  $\rightarrow$ " position and press the "SELECT" button twice, until the " $\rightarrow$ " symbol appears.
- Connect the test leads, red test lead should connect Diode (+Anode), black test lead should connect Diode (-Cathode).  
The display will show the reading.
- If the reading on the display disappears once you connect the test leads to the object. That means there is power(voltage) in the object being measured. Please remove the test leads immediately. Then check the object or circuit being measured again, and remove the power.

## 7. Maintenance

### (1) Battery Replacement:

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

Disconnect the test leads from the clamp meter and turn off the power. Unscrew the battery cover and replace with a new battery.

### (2) 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 to be used for a long time over 60 days, please remove the battery for storage.



