



ACM-2368

AC/DC TRMS Clamp meter

User's Manual



Safety

International Safety Symbols



This symbol, adjacent to another symbol or terminal, indicates the user must refer to the manual for further information.



This symbol, adjacent to a terminal, indicates that, under normal use, hazardous voltages may be present



Double insulation

SAFETY NOTES

- Do not exceed the maximum allowable input range of any function.
- Do not apply voltage to meter when resistance function is selected.
- Set the function switch OFF when the meter is not in use.
- Remove the battery if meter is to be stored for longer than 60 days.

WARNINGS

- Set function switch to the appropriate position before measuring.
- When measuring volts do not switch to current/resistance modes.
- Do not measure current on a circuit whose voltage exceeds 600V.
- When changing ranges always disconnect the test leads from the circuit under test.

CAUTIONS

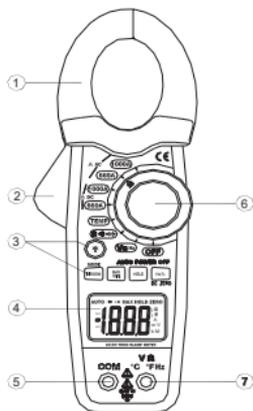
- Improper use of this meter can cause damage, shock, injury or death. Read and understand this user manual before operating the meter.
- Always remove the test leads before replacing the battery or fuses.
- Inspect the condition of the test leads and the meter itself for any damage before operating the meter. Repair or replace any damage before use.
- Use great care when making measurements if the voltages are greater than 25VAC rms or 35VDC. These voltages are considered a shock hazard.
- Always discharge capacitors and remove power from the device under test before performing Diode, Resistance or Continuity tests.
- Voltage checks on electrical outlets can be difficult and misleading because of the uncertainty of connection to the recessed electrical contacts. Other means should be used to ensure that the terminals are not "live".
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Function	Maximum Input
A DC, A AC	1000A DC/AC
V DC, V AC	600V DC/AC
Resistance, Frequency, Diode Test	250V DC/AC
Temperature	60V DC, 24V AC

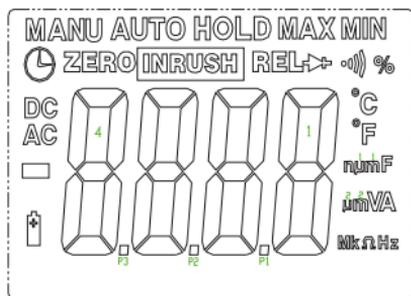
Description

Meter Description

1. Current clamp
2. Clamp opening trigger
3. Control buttons:
 - Backlight 
 - Inrush / Mode
 - Max/Min
 - Data Hold
 - Hz/%/DC Zero
4. Backlit LCD Display
5. **COM** negative input jack for black test lead
6. Rotary function switch
7. **V·Ω·CAP·TEMP·Hz** positive input jack for red lead



Display icons Description



HOLD

Data Hold

Minus sign

Negative reading display

0 to 6600

Measurement display digits

DC ZERO	DCA Zero
MAX/MIN	Maximum/Minimum
INRUSH	Inrush Current
AUTO	Auto Range mode
DC/AC	Direct Current / Alternating Current
BAT	Low battery
mV or V	Milli-volts or Volts (Voltage)
Ω	Ohms (Resistance)
A	Amperes (Current)
F	Farad (Capacitance)
Hz	Hertz (Frequency)
$^{\circ}$ F and $^{\circ}$ C	Fahrenheit and Celsius units (Temperature)
n, m, μ , M, k micro, mega, and kilo	Unit of measure prefixes: nano, milli,
•)))	Continuity test
	Diode test

Specifications

Function	Range Resolution	&	Accuracy (% of reading)
AC Current True RMS (50 Hz to 60 Hz)	660.0 AAC		± (2.5% +8digits)
	1000 AAC		± (2.8% +8digits)
DC Current	660.0 ADC		± (2.5% +5digits)
	1000 ADC		± (2.8% +8digits)
DC Voltage	6.600 VDC		± (1.5% + 3 digits)
	66.00 VDC		
	600.0 VDC		
AC Voltage True RMS (50 Hz to 60 Hz)	6.600 VAC		± (1.8% + 5 digits)
	66.00 VAC		
	600.0 VAC		
Resistance	660.0 Ω		± (1.0% + 4 digits)
	6.600KΩ		± (1.5% + 2 digits)
	66.00KΩ		
	660.0KΩ		
	6.600MΩ		± (2.5% + 3 digits)
	66.0MΩ		± (3.5% + 5 digits)
Frequency	30Hz to 15KHz		±(1.2% reading + 2 digits) Sensitivity: 30~5kHz:10Vrms min. 5kHz~15kHz:40Vrms min. @ 20% to 80% duty cycle

Duty Cycle	10.0 to 94.9%	$\pm(1.2\% \text{ reading} + 2 \text{ digits})$
	Pulse width: 100 μ s - 100ms, Frequency: 30Hz to 15kHz; Sensitivity: 30~5kHz:10Vrms min. 5kHz~15kHz:40Vrms min.	
Temp (type-K) (probe accuracy not included)	-20 to 760°C	$\pm(3.0\% \text{ reading} + 5 \text{ }^\circ\text{C})$
	-4 to 1400°F	$\pm(3.0\% \text{ reading} + 9^\circ\text{F})$

General Specifications

Clamp jaw opening	1.2" (30mm) approx.
Display	6600 counts backlit LCD
Continuity check	Threshold 40 Ω ; Test current < 0.5mA
Diode test	Test current of 0.3mA typical; Open circuit voltage < 3VDC typical
Low Battery indication	'BAT' is displayed
Over-range indication	'OL' display
Measurement rate	2 readings per second, nominal
INRUSH	Integration Time 100ms
Temperature sensor	Type K thermocouple
Input Impedance	10M Ω (VDC and VAC)
AC bandwidth	50 to 400Hz (AAC and VAC)

AC response	True rms (AAC and VAC)
Operating Temperature	41°F to 104°F (5°C to 40°C)
Storage Temperature	-4°F to 140°F (-20°C to 60°C)
Operating Humidity	Max 80% up to 87°F (31°C) decreasing linearly to 50% at 104°F (40°C)
Storage Humidity	<80%
Operating Altitude	7000ft. (2000meters) maximum.
Battery	One (1) 9V Battery
Auto power OFF	After approx. 25 minutes
Dimensions & Weight	9.0 x 3.1 x 2.0" (229 x 80 x 49mm); 10.7 oz. (303g)
Safety	For indoor use and in accordance with the requirements for double insulation to IEC1010-1 (1995): EN61010-1 (1995) Overvoltage Category III 600V and Category II 1000V, Pollution Degree 2.

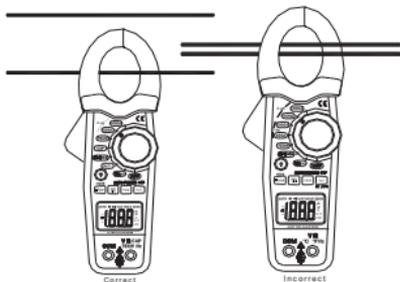
Operation

NOTES: Read and understand all **Warning** and **Caution** statements in this operation manual prior to using this meter. Set the function select switch to the OFF position when the meter is not in use.

AC/DC Current Measurements

WARNING: Ensure that the test leads are disconnected from the meter before making current clamp measurements.

1. Set the Function switch to the **1000A or 660A** range. If the approx. range of the measurement is not known, select the highest range then move to the lower ranges if necessary.
2. Press the **DC ZERO** button to zero the meter display .
3. Press the trigger to open jaw. Fully enclose only one conductor. For optimum results, center the conductor in the jaw.



The clamp meter LCD will display the reading.

AC/DC Voltage Measurements

1. Insert the black test lead into the negative **COM** terminal and the red test lead into the positive **V·Ω·TEMP·Hz** terminal.
2. Set the function switch to the **V Hz** position.
3. Use the **MODE** button to select AC or DC Voltage.
4. Connect the test leads in parallel to the circuit under test.
5. Read the voltage measurement on the LCD display.

Resistance Measurements

1. Insert the black test lead into the negative **COM** terminal and the red test lead into the **V· Ω ·TEMP·Hz·** positive terminal.
2. Set the function switch to the **Ω** position.
3. Touch the test probe tips across the circuit or component under test.
4. Read the resistance on the LCD display.

Frequency or % duty cycle measurements

1. Insert the black test lead banana plug into the negative **COM** jack and the red test lead banana plug into the **V· Ω ·TEMP·Hz·** positive jack.
2. Set the function switch to the **V Hz** Position.
3. Press the **Hz/%** button to select the Frequency (Hz) or Duty cycle (%)function.
4. Touch the test probe tips across the part under test.
5. Read the Frequency value on the display
6. Duty cycle measurement : When the duty cycle is less than 10.0%,the LCD panel shows UL .When the duty cycle is more than 94.9%,the LCD panel shows OL..
7. The display will indicate the proper decimal point and value.
8. Press the **HZ/%** button again to return to the voltage mode.

Temperature Measurements

1. Set the function switch to the **TEMP** position.
2. Insert the Temperature Probe into the negative **COM** and the **V·Ω·TEMP·Hz·** positive jacks, observing polarity.
3. Touch the Temperature Probe head to the device under test. Continue to touch the part under test with the probe until the reading stabilizes.
4. Read the temperature on the display. The digital reading will indicate the proper decimal point and value.
5. Use the **MODE** button to select °F or °C.

WARNING: To avoid electric shock, be sure the thermocouple probe has been removed before changing to another measurement function.

Continuity Measurements

1. Insert the black test lead into the negative **COM** terminal and the red test lead into the **V·Ω·TEMP·Hz·** positive terminal.
2. Set the function switch to the **•))** position.
3. Use the **MODE** button to select continuity "**•))**". The display icons will change when the **MODE** button is pressed.
4. Touch the test probe tips across the circuit or component under test.
5. If the resistance is $< 40\Omega$, a tone will sound.

Diode Test

1. Insert the black test lead banana plug into the negative **COM** jack and the red test lead banana plug into the **V·Ω·TEMP·Hz·** positive jack

2. Turn the function switch to  position. Use the **MODE** button to select the diode function if necessary (diode symbol will appear on the LCD when in Diode test mode)
3. Touch the test probe tips to the diode or semiconductor junction under test. Note the meter reading
4. Reverse the test lead polarity by reversing the red and black leads. Note this reading
5. The diode or junction can be evaluated as follows:
 - If one reading displays a value (typically 0.400V to 0.900V) and the other reading displays **OL**, the diode is good.
 - If both readings display **OL** the device is open.
 - If both readings are very small or '0', the device is shorted.

Data Hold

To freeze the LCD reading, press the **HOLD** button. While data hold is active, the **HOLD** icon appears on the LCD. Press the **HOLD** button again to return to normal operation.

DC ZERO (Relative)

The **DC ZERO** is a relative feature and can be used in any function.

1. Press the **DC ZERO** button to zero the display. "**ZERO**" will appear in the display. The displayed reading is now the actual value less the stored "zero" value.
2. To exit this mode, press and Hold the **ZERO** button until "**ZERO**" is no longer in the display.

Inrush

The Inrush current function for AC current measurement to detect the starting-up current of a motor. In ACA modes, press INRUSH button will force meter to enter INRUSH mode. Then LCD Displays"- - -"until the motor starting up an being detected. The detection will be done only one time and the output reading will be hold. To exit INRUSH mode, press INRUSH button more than one second.

LCD Backlight Button

The LCD is equipped with backlighting for easier viewing, especially in dimly lit areas. Press the backlight button to turn the backlight on. Press again to turn the backlight off. Note that the meter does have an auto power off feature as described below.

Automatic Power OFF

In order to conserve battery life, the meter will automatically turn off after approximately 25 minutes. To turn the meter on again, turn the function switch to the OFF position and then to the desired function position.

Maintenance

WARNING: To avoid electrical shock, disconnect the meter from any circuit, remove the test leads from the input terminals, and turn OFF the meter before opening the case. Do not operate the meter with an open case.

Cleaning and Storage

Periodically wipe the case with a damp cloth and mild detergent; do not use abrasives or solvents. If the meter is not to be used for 60 days or more, remove the battery and store it separately.

Battery Replacement

1. Remove the Phillips head screw that secures the rear battery door
2. Open the battery compartment
3. Replace the 9V battery
4. Secure the battery compartment

Temperature Probe Replacement

The replacement bead wire probe (with banana plug connectors) is Part Number TP873.

Note: To use a Type K thermocouple probe that is terminated by a subminiature (flat blade) connector, a subminiature-to-banana plug adaptor (Part Number TP879) is required.

