

Zico Zi-9987

AC/DC TRMS Clamp Meter User Manual



**Please read this manual before switching the unit on.
Important safety information inside.**

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1. 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.

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 240V.
- When changing ranges using the selector switch always disconnect the test leads from the circuit under test.
- Do not exceed the maximum rated input limits.

2. 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.

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.

Remove the battery if the meter is to be stored for long periods.

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 AC, A DC	80A
V DC, V AC	600V DC/AC
Resistance, Diode, Continuity, Frequency, Capacitance Test, Temp	250V DC/AC

3. Meter description

- 1-Current clamp
- 2-Clamp trigger
- 3-Safety protection ring
- 4-ZERO button
- 5-Data Hold and Backlight button
- 6-Mode select button
- 7-Range select button
- 8-Hz/% duty button
- 9-Rotary Function swith
- 10-LCD display
- 11-COM input jack
- 12-V Ω Hz jack
- 13-Battery Cover



- 1-AC DC AC(alternating current) and DC(direct current)
- 2-Minus sign
- 3- ~~8888~~ 5000 count (0 to 4999) measurement reading
- 4-AUTO AutoRange mode
- 5-ZERO mode
- 6-Diode test mode
- 7- Audible Continuity
- 8-HOLD Data Hold mode
- 9-°C, °F, m, V, A, K, M, Ω , Units of measure list

4. Specifications

Function	Range	Resolution	Accuracy \pm (% of reading + digits)
AC True RMS Current	5000mA	1mA	\pm (2.8% of rdg + 25digits)
	80.0A	100mA	\pm (3% of rdg + 8 digits)

AC Current ranges specified 3%-100% of range

Over rang protection: Maximum input 80A

Frequency Response: 50Hz to 60Hz True RMS

Function	Range	Resolution	Accuracy \pm (% of reading + digits)
DC Current	5000mA	1mA	\pm (2.8% of rdg + 20digits)
	80.0A	100mA	\pm (3% of rdg + 8 digits)

DC Current ranges specified 3%-100% of range

Over rang protection: Maximum input 80A

Function	Range	Resolution	Accuracy \pm (% of reading + digits)
DC Voltage (Auto-ranging)	500.0mV	0.1mV	\pm (0.8% of rdg + 5digits)
	5.000V	1mV	\pm (1.0% of rdg + 3digits)
	50.00V	10mV	\pm (1.0% of rdg + 3digits)
	500.0V	100mV	\pm (1.0% of rdg + 3digits)
	600V	1V	\pm (2% of rdg + 3digits)

Maximum Input: 600V DC

Function	Range	Resolution	Accuracy \pm (% of reading + digits)
AC True RMS Voltage (Auto-ranging)	500.0mV	0.1mV	\pm (1.0% of rdg + 10digits)
	5.000V	1mV	\pm (1.5% of rdg + 5digits)
	50.00V	10mV	\pm (1.5% of rdg + 5digits)
	500.0V	100mV	\pm (1.5% of rdg + 5digits)
	600V	1V	\pm (2% of rdg + 8digits)

AC Voltage ranges specified 3%-100% of range

AC Response: 50Hz to 400Hz

Maximum Input: 600V AC rms.

Function	Range	Resolution	Accuracy \pm (% of reading + digits)
Resistance (Auto-ranging)	500.0 Ω	0.1 Ω	\pm (1% of rdg + 4digits)
	5.000k Ω	1 Ω	\pm (1.5% of rdg + 2digits)
	50.00k Ω	10 Ω	\pm (1.5% of rdg + 2digits)
	500.0k Ω	100 Ω	\pm (1.5% of rdg + 2digits)
	5.000M Ω	1k Ω	\pm (2.5% of rdg + 5digits)
	50.00M Ω	10k Ω	\pm (3.5% of rdg + 5digits)

Input Protection: 250V DC or 250V AC rms.

Function	Range	Resolution	Accuracy \pm (% of reading + digits)
Capacitance (Auto-ranging)	5.000nF	1pF	\pm (5% of rdg + 30digits)
	50.00nF	10pF	\pm (5% of rdg + 20digits)
	500.0nF	0.1nF	\pm (3% of rdg + 5digits)
	5.000uF	1nF	\pm (3% of rdg + 5digits)
	50.00uF	10nF	\pm (3% of rdg + 5digits)
	500.0uF	0.1uF	\pm (5% of rdg + 5digits)

Input Protection: 250V DC or 250V AC rms.

AC/DC Trms Clamp Meter

Function	Range	Resolution	Accuracy \pm (% of reading + digits)
Frequency (Auto-ranging)	5.000Hz	0.001Hz	\pm (1.2% of rdg + 3digits)
	50.00Hz	0.01Hz	\pm (1.2% of rdg + 3digits)
	500.0Hz	0.1Hz	\pm (1.2% of rdg + 3digits)
	5.000KHz	1Hz	\pm (1.2% of rdg + 3digits)
	50.00KHz	10Hz	\pm (1.2% of rdg + 3digits)
	500.0KHz	100Hz	\pm (1.2% of rdg + 3digits)
	5.000MHz	1KHz	\pm (1.2% of rdg + 3digits)
	10.00MHz	10KHz	\pm (1.5% of rdg + 3digits)

Sensitivity: > 15V RMS

Input Protection: 250V DC or 250V AC rms.

Function	Range	Resolution	Accuracy \pm (% of reading + digits)
Temperature	-20°C ~ +760°C	0.1/1°C	\pm (3% of rdg + 5°C)
	-4°F ~ +1400°F	0.1/1°F	\pm (3% of rdg + 9°F)

Sensor: Type K Thermocouple

Input Protection: 250V DC or 250V AC rms.

Function	Testing Condition	Reading
Diode	Forward DCA is approx. 1.5mA, open circuit Voltage MAX . 3V	Forward voltage drop of Diode
Continuity	Test current MAX. 0.35mA	Buzzer makes a long sound, While resistance is less than ($< 35 \pm 5\Omega$)

Input Protection: 250V DC or 250V AC rms.

Clamp size	Opening 0.7" (19mm) approx
Diode Test	Test current of 0.35mA typical; Open circuit voltage 3V DC typical.
Continuity Check	Threshold $<35 \pm 5\Omega$; Test current $<1.5\text{mA}$
Low Battery Indication	"BAT" is displayed
Overrange Indication	"OL" is displayed
Measurements Rate	3per second, nominal
Input Impedance	10M Ω (VDC and VAC)
Display	5000 counts LCD
Operating Temperature	14 to 122°F(-10 to 50°C)
Storage Temperature	-22 to 140°F(-30 to 60°C)
Relative Humidity	90%(0°C to 30°C); 75%(30°C to 40°C); 45%(40°C to 50°C)
Altitude Operating:	3000m; Storage 10,000m
Over voltage	Category III 600V
Battery	Two 1.5V "AAA" Batteries
Auto OFF	pprox. 30 mins

5. Operation

NOTICES: Read and understand all warning and precaution statements listed in the safety section of this operation manual prior to using this meter. Set the function select switch to the OFF position when the meter is not in use.

5.1-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 **ADC, mADC, AAC or mAAC** range. If the range of the measured is not known, select the higher range first then move to the lower range if necessary.
- 2-Press the trigger to open jaw. Fully enclose one conductor to be measured.
- 3-If is DCA measurement need press REL button to enter the zero reading.
- 4-The clamp meter LCD will display the reading.

5.2-DC/AC Voltage Measurements

- 1-Insert the black test lead into the negative COM terminal and the red test lead into the positive V terminal.
- 2-Set the function switch to the V position.
- 3-Select AC or DC with the MODE button.
- 4-Connect the test leads in parallel to the circuit under test.
- 5-Read the voltage measurement on the LCD display.

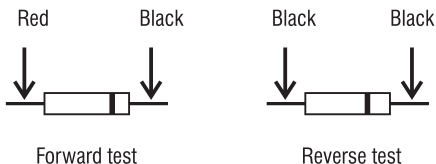
5.3-Resistance and Continuity Measurements

- 1-Insert the black test lead into the negative COM terminal and the red test lead into the positive terminal.
- 2-Set the function switch to the $\rightarrow \Omega \cdot \cdot \cdot$ position.
- 3-Use the multifunction MODE button to select resistance.
- 4-Touch the test probe tips across the circuit or component under test. It is best to disconnect one side of the device under test so the rest of the circuit will not interfere with the resistance reading.
- 5-For Resistance tests, read the resistance on the LCD display.
- 6-For Continuity tests, if the resistance is $<35\Omega$, a tone will sound.

5.4-Diode Measurements

- 1-Insert the black test lead banana plug into the negative COM jack and the red test lead banana plug into the positive diode jack.
- 2-Turn the rotary switch to the $\rightarrow \Omega \cdot \cdot \cdot$ position.
- 3-Press the MODE button until “ \rightarrow ” appears in the display.
- 4-Touch the test probes to the diode under test. Forward voltage will indicate 0.4V to 0.7V.

Reverse voltage will indicate “OL”. Shorted devices will indicate near 0mV and an open device will indicate “OL” in both polarities.



6. Capacitance Measurements

WARNING: To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any capacitance measurements. Remove the batteries and unplug the line cords.

- 1-Set the rotary function switch to the cap position.
- 2-Insert the black test lead banana plug into the negative (COM) jack. Insert the red test lead banana plug into the positive (V) jack.
- 3-Touch the test leads to the capacitor to be tested.
- 4-Read the capacitance value in the display

6.1-Frequency measurements

- 1-Set the rotary function switch to the “Hz” position.
- 2-Insert the black lead banana plug into the negative COM jack and the red test lead banana plug into the positive V jack.
- 3-Touch the test probe tips to the circuit under test.
- 4-Read the frequency on the display.

6.2-Temperature Measurements

- 1-Set the function switch to the TEMP position.
- 2-Insert the Temperature Probe into the negative COM and the **V · \rightarrow · CAP · TEMP · Hz · Ω** 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.

Note:

If measuring DC via clamp, signal output will be DC voltage. If measuring AC via clamp, signal output will be DC voltage. If measuring AC via clamp, signal output will be AC voltage.

MODE

Press MODE key the selection of double measured functions which are present at display is possible. In particular this key is active in **V** \rightarrow **CAP** Ω position to select among resistance test, diode test, continuity test and capacitance test, and in Temp position to select between °F or °C. and in current position to select between AC or DC current measurements.

Data Hold

To freeze the LCD meter reading, press the data hold button. The data hold button is located on the left side of the meter (top button). While data hold is active, the HOLD display icon appears on the LCD. Press the data hold button again to return to normal operation.

Note: The HOLD feature will activate when the Backlight is turned on. Press the HOLD key again to exit Hold.

Backlight

Press and hold the HOLD key for >2seconds to turn on or off the display backlight function.

Note: The HOLD feature will activate when the Backlight is turned on. Press the HOLD key again to exit Hold.

REL BUTTON

For ACA and Capacitance Zero & Offset adjustment.

MAX/MIN BUTTON

Press MAX/IN key the maximum and minimum values are measured. This mode is activated on each measurement except for continuity test, diode test capacitance test, frequency test and duty cycle test.

This mode is disabled keeping pressed MAX/MIN key or moving the rotary switch.

Flash Light Button

Press the Flash light button to turn the flash light on. Press again to turn the flash light off.

7. Automatic Power OFF

In order to conserve battery life, the meter will automatically turn off after approximately 30 minutes. To turn the meter on again, turn the function switch to the OFF position and then to the desired function position.

8. Battery Replacement

- 1-Remove the one rear Phillips head screw
- 2-Open the battery compartment
- 3-Replace the Requires two “AAA” batteries (UM4 R03)
- 4-Re-assemble the meter

9. 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.

Rev.160107

