

# CM1050

## 1000A TRMS AC/DC Clamp Meter



### ***Introduction***

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Congratulations on your purchase of the Triplet CM1050 1000A True RMS AC/DC Clamp meter. The CM1050 True RMS AC/DC Clamp meter features:

- AC/DC Current measurements up to 1000A.
- Variable Frequency Drive (VFD) Voltage Measurements
- Inrush Current Mode
- Temperature Measurements
- Non-contact AC voltage detection
- Lo Z Voltage Measurements

# Safety

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## 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.
- When the instrument is not in use, press the ON/OFF key to turn off the meter.
- Remove the battery if meter is to be stored for longer than 60 days.

## 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.
- 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.
- 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”.

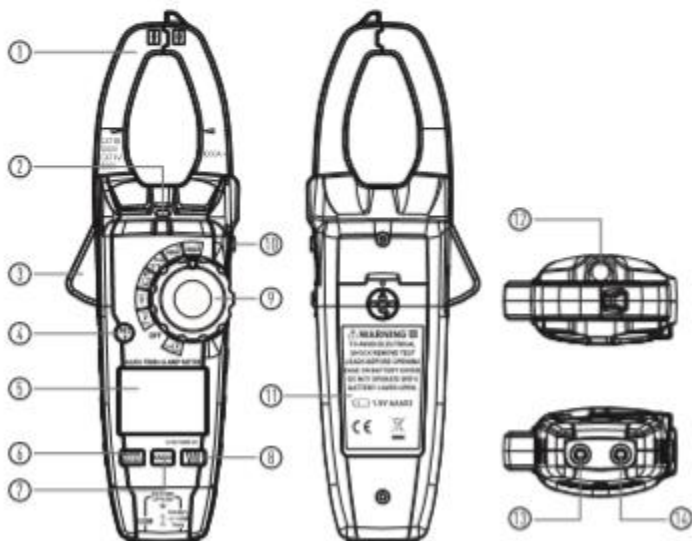
Input Limits	
Function	Maximum Input
A AC/DC	1000A
V DC, V AC	1000V DC/AC
Frequency, Resistance, Diode, Continuity , Capacitance Test	1000V DC/AC
Temperature (°C/°F)	1000V DC/ AC

## Description

### Meter Description

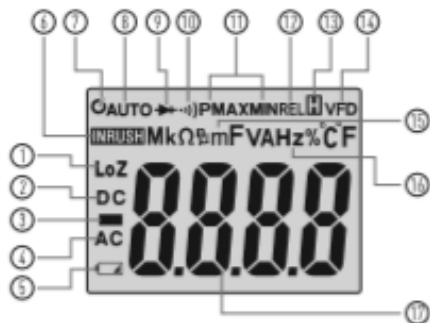
#### 2-1. Meter Description

- |  |                                  |
|--|----------------------------------|
| 1-Current Clamp                          | 8-PEAK / VFD Button              |
| 2-Non-Contact AC Voltage Indicator Light | 9-Rotary Function Switch         |
| 3-Clamp Trigger                          | 10-Data Hold / Flashlight Button |
| 4-Relative / Backlight Button            | 11-Battery Cover                 |
| 5-LCD Display                            | 12-Flashlight                    |
| 6-MODE / INRUSH Select Button            | 13-COM Input Jack                |
| 7-RANGE Button                           | 14-V $\square$ Hz% CAP TEMP Jack |



## Display Icons Description

- 1-Low Impedance Input Mode
- 2-DC (Direct Current)
- 3-Minus Sign
- 4-AC (Alternating Current)
- 5-Low Battery
- 6-Inrush Current Mode
- 7-Auto Power Off
- 8-AutoRange Mode
- 9-Diode Test Mode
- 10-Audible Continuity
- 11-Peak Voltage Value
- 12-Relative Mode
- 13-Data Hold Mode
- 14-Variable Frequency Drive Voltage Value
- 15-Units of Measure List
- 16-Frequency/Duty Cycle Test Mode
- 17-6000 Count (0 to 5999) Measurement Reading



## Operation

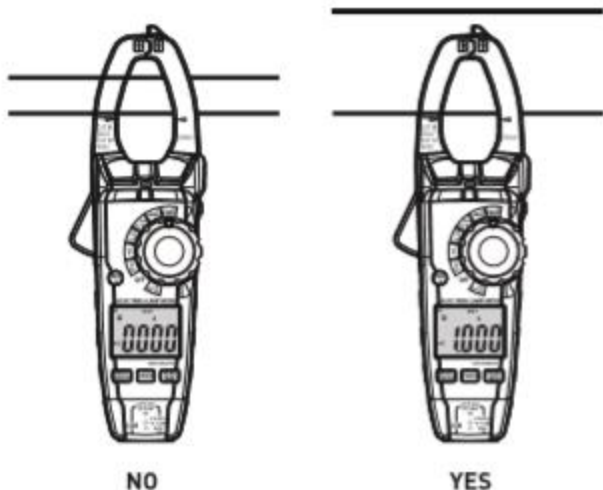
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**NOTICES:** Read and understand all warning and precaution statements listed in the safety section of this operation manual prior to using this meter. Set the function select switch to the OFF position when the meter is not in use.

### 4-1.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 **1000A AC/DC, 600A AC/DC** range.
2. If the range of the measured is not known, select the higher range first then move to the lower range if necessary.
3. Press the trigger to open jaw. Fully enclose one conductor to be measured.
4. The clamp meter LCD will display the reading.



#### 4-2.AC/DC Voltage Measurements

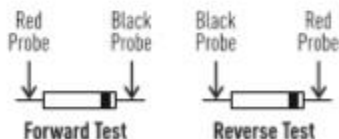
- 1.Insert the black test lead into the negative **COM** terminal and the red test lead into the positive **V** terminal.
- 2.Set the function switch to the **ACV** or **DCV** position.
- 3.Connect the test leads in parallel to the circuit under test.
- 4.Read the voltage measurement on the LCD display.

#### 4-3.Resistance 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  $\Omega$   $\leftrightarrow$  CAP position.
- 3.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.
- 4.For Resistance tests, read the resistance on the LCD display.

#### 4-4.Diode and Continuity 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  $\Omega$   $\leftrightarrow$  CAP position.
- 3.Press the **MODE / INRUSH** 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.



For Continuity tests, if the resistance is  $< 50 \Omega$ , a tone will sound.

**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  $\Omega$   $\rightarrow$  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. Press the **MODE / INRUSH** button change to capacitance measurements.
4. Touch the test leads to the capacitor to be tested.
5. Read the capacitance value in the display.

#### 4-6. Frequency or % Duty Cycle Measurements

1. Set the rotary function switch to the "VAC/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. Select **Hz** or **%** duty with the **MODE / INRUSH** button.
4. Touch the test probe tips to the circuit under test.
5. Read the frequency on the display.

#### 4-7. Temperature Measurements

**WARNING:** To avoid electric shock, disconnect both test probes from any source of voltage before making a temperature measurement.

1. Set the function switch to **TEMP**.
2. Insert the Temperature Probe into the negative **COM** and the **V** jacks, making sure to observe the correct polarity.
3. Touch the Temperature Probe head to the part whose temperature you wish to measure. Keep the probe touching the part under test until the reading stabilizes (about 30 seconds).
4. Read the temperature in the display. The digital reading will indicate the proper decimal point and value.

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

#### 4-8.Non-Contact AC Voltage Measurements

**WARNING:** Risk of Electrocution. Before use, always test the Voltage Detector on a known live circuit to verify proper operation

- 1.Touch the probe tip to the hot conductor or insert into the hot side of the electrical outlet.
- 2.If AC voltage is present, the detector light will illuminate.

**NOTE:** The conductors in electrical cord sets are often twisted. For best results, rub the probe tip along a length of the cord to assure placing the tip in close proximity to the live conductor.

**NOTE:** The detector is designed with high sensitivity. Static electricity or other sources of energy may randomly trip the sensor. This is normal operation.

### 5.Button

#### 5-1.MODE/INRUSH Button

To select ACV / Hz / %; OHM / Continuity / Diode / CAP; °C/ °F; ACA/DCA.

#### 5-2.RANGE Button

When the meter is first turned on, it automatically goes into AutoRanging. This automatically selects the best range for the measurements being made and is generally the best mode for most measurements. For measurement situations requiring that a range be manually selected, perform the following:

1. Press the **RANGE** button. The "Auto Range" display indicator will turn off, The "Manual Range" display indicator will turn on.
2. Press the **RANGE** button to step through the available ranges until you select the range you want.
3. Press and hold the **RANGE** button for 2 seconds to exit the ManualRanging mode and return to AutoRanging.

#### 5-3.PEAK/VFD Button

In the AC voltage mode, Press the **PEAK/VFD** key to display "----" first and then enter the PEAK measurement mode. The maximum PEAK and minimum PEAK voltage can be measured circularly. Long press the button to enter the VFD function measurement. In the VFD mode, the voltage value of the variable frequency drive device can be measured. The measured values of "PEAK" and "VFD" are for reference only.



#### **5-4.REL /Backlight Button**

REL for DCA and Capacitance Zero & Offset adjustment. Long press this button to turn on the backlight, then long press the turn backlight off.

#### **5-5.Data Hold / Flashlight Button**

- 1.To freeze the LCD meter reading, press the data hold button. The data hold button is located on the right side of the meter (top button). While data hold is active, the H display icon appears on the LCD. Press the data hold button again to return to normal operation.
- 2.Long press this button to turn on the flashlight, then press the turn off flashlight.

### **6.Battery Replacement**

- 1.Remove the one rear head screw.
- 2.Open the battery compartment.
- 3.Replace the Requires Three "AAA" 1.5V Battery.
- 4.Re-assemble the meter.

## *Maintenance*

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**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.

### **Type K Temperature Probe Replacement**

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

## Specifications

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Function	Range & Resolution	Accuracy $\pm$ (% of reading+digits)
AC Current (50/60Hz)	600.0A	$\pm$ (2.5% + 8 digits)
	1000A	$\pm$ (2.8% + 8 digits)
DC Current	600.0A	$\pm$ (2.5% + 5 digits)
	1000A	$\pm$ (2.8% + 5 digits)
AC Voltage (50-400Hz)	6.000V	$\pm$ (1.5% + 5 digits)
	60.00V	
	600.0V	
	1000V	
LoZ AC Voltage	6.000V	$\pm$ (3.0% + 40 digits)
	60.00V	
	300.0V	
DC Voltage	600.0mV	$\pm$ (0.5% + 5 digits)
	6.000V	$\pm$ (1.5% + 2 digits)
	60.00V	
	600.0V	
	1000V	
Resistance	600.0 $\Omega$	$\pm$ (1.0% + 4 digits)
	6.000K $\Omega$	$\pm$ (1.5% + 2 digits)
	60.00K $\Omega$	
	600.0K $\Omega$	
	6.000M $\Omega$	$\pm$ (2.5% + 3 digits)
	60.00M $\Omega$	$\pm$ (3.5% + 5 digits)

Function	Range & Resolution	Accuracy $\pm$ (% of reading+digits)
Capacitance	60.00nF	$\pm$ (4.0% + 20 digits)
	600.0nF	$\pm$ (3% + 5 digits)
	6.000 $\mu$ F	
	60.00 $\mu$ F	
	600.0 $\mu$ F	$\pm$ (5% + 5 digits)
	6.000mF	
	60.00mF	
100.0mF	$\pm$ (5% + 15 digits)	

Frequency Sensitivity: =>5Vrms	9.999Hz to 99.99kHz	$\pm$ (1.2% + 5 digits)
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Duty Cycle Sensitivity: =>5Vrms	10.0% to 90.0%	$\pm$ (1.2% + 2 digits)
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Temp (Type-K)	-20.0 to 1000°C	$\pm$ (3% + 5°C)
	-4.0 to 1832°F	$\pm$ (3% + 9°F)

[Probe accuracy not included]

**Note:** Accuracy is given as  $\pm$ (% of reading + counts of least significant digit) at 23°C $\pm$ 5°C, with relative humidity less than 80%RH. AC voltage and current shall be subject to sine wave.

## General Specifications

Clamp Size	Opening 1.4" (35mm) approx
TRMS	The AC voltage and AC current of this instrument are measured by TRMS. True RMS measurement is different from mean measurement. The mean measurement method can only measure the symmetric waveform, such as sine wave. True RMS measurements can reliably measure any irregular waveform and obtain valid values for AC voltage or AC current.
Diode Test	Test current of 0.3mA typical; Open circuit voltage 3.2V DC typical.
Continuity Check	Threshold $\leq 50 \Omega$ ; Test current $< 0.5\text{mA}$
Low Battery Indication	"  " is displayed
Overrange Indication	"OL" is displayed
Measurements Rate	2 per second, nominal
Input Impedance	10M (VDC and VAC)
Display	6000 counts LCD
AC Current	50-60Hz (AAC)
AC Voltage Bandwidth	50-400Hz (VAC)
Operating Temperature	5 to 40°C (41 to 104°F)
Storage Temperature	-20 to 60°C (-4 to 140°F)
Operating Humidity	Max 80% up to 31°C (87°F) decreasing linearly to 50% at 40°C(104°F)
Storage Humidity	<80%
Operating Altitude	7000ft. (2000meters) maximum.
Over Voltage	Category III 1000V
Battery	Three "AAA" 1.5V Battery
Auto Off	Approx. 30 minutes
Safety	For indoor use and in accordance with Overvoltage Category II, Pollution Degree 2. Category II includes local level, appliance, portable equipment, etc., with transient overvoltages less than Overvoltage Cat. III

Dimensions 9.8" x 3.2" 1.7" (249\*81.5\*42.2mm)

Weight 11.5 oz (327g)

## **Warranty Information**

Triplett / Jewell Instruments extends the following warranty to the original purchaser of these goods for use. Triplett warrants to the original purchaser for use that the products sold by it will be free from defects in workmanship and material for a period of (1) one year from the date of purchase. This warranty does not apply to any of our products which have been repaired or altered by unauthorized persons in any way or purchased from unauthorized distributors so as, in our sole judgment, to injure their stability or reliability, or which have been subject to misuse, abuse, misapplication, negligence, accident or which have had the serial numbers altered, defaced, or removed. Accessories, including batteries are not covered by this warranty

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