

## MM300

# True RMS Manual Ranging Digital Multimeter



## Introduction

Congratulations on your purchase of the Triplet MM300 True RMS Manual Ranging Digital Multimeter. This instrument performs AC/DC voltage, AC/DC Current, Resistance, Audible Continuity, Diode, Temperature measurements and Frequency measurements, it is a 3 3/4 digits, 3999 counts

## Safety

- Circuits under test must be de-energized and isolated before connections are made (except for voltage measurements).
- Circuit connections must not be touched during a test. Use extreme caution when working near bare conductors and bus bars. Accidental contact with conductors could result in electrical shock.
- Use caution when working near voltages above 60VDC or 30VACrms.
- After insulation tests, capacitors must be discharged.
- Test leads (including alligator clips) must be in good working order, clean and without broken or cracked insulation.
- When servicing, use only specified replacement parts.

## International Safety Symbols



Caution, refer to this manual before using this meter



Dangerous Voltages



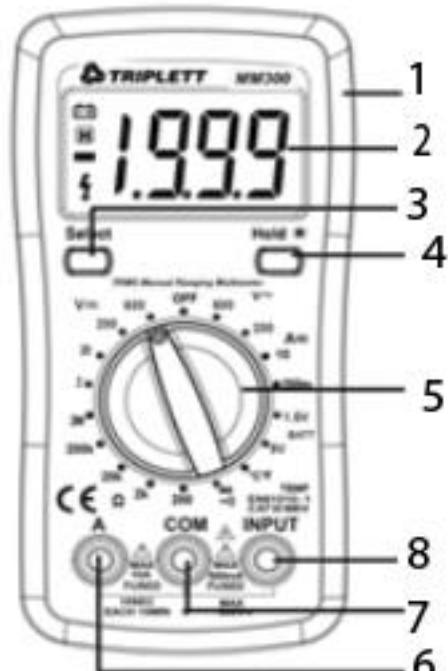
Meter is protected throughout by double or reinforced insulation

## ELECTRICAL SYMBOLS

	DC (Direct Current)
	AC (Alternating Current)
	DC or AC
	Important safety information.
	Refer to the manual
	Dangerous voltage maybe present
	Earth ground
	Low battery
	Fuse
	Diode
	Continuity test
	Centigrade
	Fahrenheit
	AUTO Auto range
	CE Conforms to European Union directive
	Double insulated
	APO auto power off
	Battery capacity
	Relative test
	Data hold

## ***Meter Description***

- 1) Protective Holster
- 2) LCD Display
- 3) "Select." Button  
When you measure the current, pressing this button will switch the meter between DC function and AC function.  
When you measure the diode or the continuity, pressing this button will switch the meter between the diode and the continuity functions.
- 4) "Hold/H" Button  
After pressing the button, the present reading is held on the display, meanwhile "Hold/H" is displayed on the LCD as an indicator. To exit the Hold Mode, press the button again and the indicator "H" will disappear.  
Press the button for 2 seconds to turn the Backlight ON.  
Press again for 2 seconds to turn OFF.
- 5) Function/Range Rotary Switch  
This switch can be used to select desired function and range.
- 6) "A" Jack  
Plug-in connector for the red test lead for Current (200mA ~ 10A) measurements.
- 7) "COM" Jack  
Plug-in connector for black (negative) test lead.
- 8) "INPUT" Jack  
Plug-in connector for the red test lead for all measurements except current (>200mA) measurements



# **Operation**

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## **DC & AC VOLTAGE MEASUREMENT**

1. Connect red test lead to “INPUT” jack, Black lead to “COM” jack.
2. Set RANGE switch to desired VOLTAGE range, if the voltage to be measured is not known beforehand, set switch to the highest range and reduce it until satisfactory reading is obtained.
3. Connect test leads to device or circuit being measured.
4. Turn on power of the device or circuit being measured voltage value will appear on Digital Display along with the voltage polarity.

## **DC/AC CURRENT MEASUREMENT**

1. Red lead to “INPUT”. Black lead to “COM” (for measurements between 200mA and 10A connect red lead to “10A” jack with fully depressed.)
2. Range switch to desired **A=** range. The default function of the meter is the measurement of DCA.
3. Press “select” button to switch to ACA measurement mode.
4. Open the circuit to be measured, and connect test leads in series with the load in with current is to measure.
5. Read current value on Digital Display.
6. Additionally, “A” function is designed for intermittent use only. Maximum contact time of the test leads with the circuit is 15 seconds, with a minimum intermission time of seconds between tests.

## **RESISTANCE MEASUREMENT**

1. Red lead to “INPUT”. Black lead to “COM”.
2. Range switch to desired  $\Omega$  range.
3. If the resistance being measured is connected to a circuit, turn off power and discharge all capacitors before measurement.

4. Connect test leads to circuit being measured.
5. Read resistance value on Digital Display.

## **DIODE MEASUREMENT**

1. Red lead to "INPUT", Black lead to "COM".
2. RANGE switch to "►" range.
3. Connect the red test lead to the anode of the diode to be measured and black test lead to cathode.
4. The forward voltage drop in mV will be displayed. If the diode is reversed, figure "OL" will be shown.

## **TEMPERATURE MEASUREMENT**

1. Range switch to  $^{\circ}\text{C}$  or  $^{\circ}\text{F}$  range, it will display room temperature in  $^{\circ}\text{C}$  or  $^{\circ}\text{F}$  value.
2. Connect the K-type thermoelectric couple to "INPUT" and "COM" jacks.
3. The display will read Temperature value  $^{\circ}\text{C}$  or  $^{\circ}\text{F}$ .
4. Press "select" button, can switch the unit of measurement of temperature. The default is temperature measurement in Celsius.

NOTE: The K-type thermocouple Max. Operating temperature of Probe:  $250^{\circ}\text{C}/482^{\circ}\text{F}$  ( $300^{\circ}\text{C}/572^{\circ}\text{F}$  short-term). The sensor supplied with the instrument is an ultra- fast response naked bead thermocouple suitable for many general purpose applications.

## **AUDIBLE CONTINUITY TEST**

1. Red lead to "INPUT", Black lead to "COM".
2. RANGE switch to "►" range.
3. Connect test leads to two points of circuit to be tested. If the resistance is lower than  $30\Omega \pm 20\Omega$ , the buzzer will sound.

## **BATTERY TEST**

1. Connect the black test lead to the "COM" jack and the red test lead to the "INPUT" jack (Note: The polarity of the red test lead is positive "+").
2. According to the different type of the battery (1.5V, 9V,) to be tested, set the range switch to the desired BATT range.
3. Connect the test leads to the battery to be tested.
4. Read the reading on the display. The polarity of the red test lead connection will be indicated.

### **“Hold/•” FUNCTION**

5. After pressing the button, the present reading is held on the display, meanwhile “Hold/•” is displayed on the LCD as an indicator. To exit the Hold Mode, press the button again and the indicator “Hold/•” will disappear.
6. Pressing the Hold/• button more than 2 seconds will turn the Backlight ON and OFF.

### **Auto Power Off**

If you don't operate the meter for about 15 minutes, it will range switch or press a button.

In the power off state, press and “Select” button to Rotary range switch, you can cancel the auto power off function, “APO” symbol disappear from the LCD.

## ***Specifications***

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Accuracies are guaranteed for 1 year,  $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ , less than 80%RH

### **DC VOLTAGE**

RANGE	RESOLUTION	ACCURACY
2V	1mV	$\pm$ (0.8% of rdg+5D)
20V	10mV	
200V	100mV	
600V	1V	

OVERLOAD PROTECTION: 220V rms AC for 200mV range and 600V DC or 600V rms for all ranges.

### **AC VOLTAGE**

RANGE	RESOLUTION	ACCURACY
200V	100mV	$\pm$ (1.0% of rdg+5D)
600V	1V	

RESPONSE: Average responding, calibrated in rms of a sine wave.

FREQUENCY RANGE: 45Hz ~ 450Hz

OVERLOAD PROTECTION: 600V DC or 600V rms for all ranges.

## AUDIBLE CONTINUITY

RANGE	DESCRIPTION
	Built-in buzzer sounds if resistance is less than $30\pm20\Omega$

OVERLOAD PROTECTION: 15 second maximum 220 V rms.

## DC CURRENT

RANGE	RESOLUTION	ACCURACY
200mA	100 $\mu$ A	$\pm$ (1.5% of rdg+4D)
10A	10mA	$\pm$ (2.0% of rdg+10D)

OVERLOAD PROTECTION: 500mA/600V fuse or 10A/600V fuse

MEASURING VOLTAGE DROP: 200mV

## AC CURRENT

Range	Resolution	Accuracy
200mA	100 $\mu$ A	$\pm$ (1.5% of rdg + 4D)
10A	10mA	$\pm$ (2.0% of rdg + 4D)

Overload Protection:

$\mu$ A ranges and mA ranges: F0.5A/600V fuse

10A ranges: F10A/600V fuse

Max. Input Current:

“INPUT” jack: 200mA

“A” jack: 10A

(For measurements >5A: duration <10 seconds, interval >15 minutes)

Voltage Drop: 200mA 10A ranges: 200mV

Frequency Range: 40Hz ~ 400Hz

Response: Average, calibrated in rms of sine wave

## RESISTANCE

RANGE	RESOLUTION	ACCURACY
200Ω	0.1Ω	± (1.0% of rdg+10D)
2KΩ	1Ω	
20KΩ	10Ω	
200KΩ	100Ω	
2MΩ	1KΩ	

OVERLOAD PROTECTION: 15 seconds maxi- mum 220Vrms.

## TEMPERATURE (with K-TYPE PROBE)

RANGE	RESOLUTION	ACCURACY
-40°C~150°C	1°C	± (1.0%+4D)
150°C~1370°C		± (1.5%+15D)
-40°C~302°C	1°C	± (1.0%+4D)
302°C~1999°C		± (1.5%+15D)

## BATTERY TEST

Range	Resol.	Internal Resistance
9V	10mV	910Ω
1.5V	1mV	150Ω

## BATTERY AND FUSE REPLACEMENT

Fuse rarely need replacement and blow almost always as a result of operator error.

If “” appears in display, it indicates that the battery should be replaced.

To replace battery & Fuse (500mA/600V or 10A/600V) remove the 1 screws in the bottom of the battery case, simply remove the old, and replace with a new one. Be careful to observe polarity .Remove the hostel and remove the bottom cover of the meter to replace the fuse. Please replace the appropriate fuse according to operation manual.

## ACCESSORIES

- Operator's instruction manual
- Set of test leads
- Gift box
- K-type thermoelectric couple
- 1.5V 3, AAA s

## General specifications

Display	: LCD, 1999 counts updates 2/sec
LCD Size	: 55 x 31mm
Polarity Indication	: “-” displayed automatically
Over-range Indication	: “OL” displayed
Low Battery Indication	: “  ” displayed
Range select	: auto or manual
Operation Temperature	: 0°C to 40°C, less than 80%RH
Storage Temperature	: -10°C to 50°C, less than 85%RH
Battery Type	: 1.5V x 3, AAA size
Dimension (HxWxD)	: 145x70x35mm
Weight	: Approx 157g

Approvals



## Warranty Information

Triplet / Jewell Instruments extends the following warranty to the original purchaser of these goods for use. Triplet 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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