T1003	Digital Multimeter CATIII 600V

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Features

- High performance, full featured digital Multimeter
- Suitable for wide range of AC/DC electrical measurements
- 4-digit (999 count) LCD screen, true RMS
- Low battery indication
- Non-Contact Voltage (NCV) detection function
- Battery voltage measurement
- Integral LED flashlight
- Overload protection and fuse disconnection
- Powered by 2 x 1.5V AAA batteries (included)

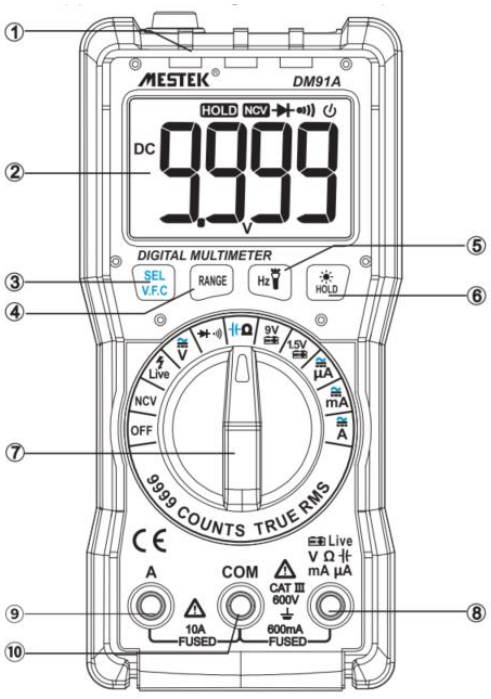
Safety Instructions

1. These instructions should be read carefully and retained for future reference.
2. Do not use the Meter if it is damaged or the case (or part of the case) is removed. Look for any cracks or missing plastic. Pay attention to the insulation around the connectors.
3. Inspect the test leads for damaged insulation and exposed conductors. Check the test leads for continuity.
4. Do not measure voltages exceeding the ratings marked on the Meter and between the terminals.
5. To prevent damage to the meter, do not change the rotary switch settings/range during measurements.
6. When using the test leads, keep fingers behind the finger guard.
7. Take extra precaution when measuring voltages above 60V DC or 30V rms AC.
8. Do not store the Meter in an environment with high humidity and temperature, and in areas with strong magnetic fields.
9. This product is suitable for indoor use only. Do not use in damp or wet conditions.
10. When not in use, store in a dry and secure place. Battery powered tools must not be stored in locations where the ambient temperature may increase above 40°C.
11. Replace the battery as soon as the battery indicator appears. With a low battery, the Meter may produce false readings that can lead to electric shock and personal injury.
12. Turn the meter off when not in use. Remove the battery before leaving the meter unused for long time.

Environmental Instructions

This product may contain substances that can be hazardous to the environment if not disposed of properly. Electrical and electronic equipment and batteries should never be disposed of with general household waste but must be separated for its correct treatment and recovery. Where possible recycle your packaging.

Front Panel Layout



1. Non-Contact Voltage (NVC), continuity and Live wire indicator
2. LCD Display
3. Function selection and variable-frequency voltage measurement button
4. Range selection button
5. Frequency switching and flashlight control button
6. Data hold and LCD backlight control button
7. Function range selection rotary switch
8. V/Q/mA/µA/Cap/Battery/Live input terminal
9. 10A input terminal
10. COM input terminal

Electrical Symbols

⚡	Dangerous voltage	⏚	Earth
~	AC (Alternating Current)	⚠	Warning, check the manual for relevant instructions
⎓	DC (Direct Current)	⧈	Double Insulation
≂	AC or DC	▭	Fuse

Function Buttons

Button	Function
SEL/V.F.C	Press SEL/V.F.C button to switch between the DC and AC measurement modes. When the unit is in AC measurement mode, the V.F.C (Variable Frequency Voltage) measurement mode can be activated by pressing down the SEL/V.F.C button for 2 seconds. To disable the automatic shutdown function of the meter, turn the rotary switch to OFF Position. Press and hold the SEL/V.F.C button and turn the rotary switch to switch meter ON. This operation cancels the automatic shutdown function.
RANGE	Press RANGE button to select auto/manual measurement range modes. When the meter is switched ON, it defaults to Auto measurement range mode. If the meter is in Auto measurement range mode, press the RANGE button to enter manual measurement range mode. In the manual mode, each time the RANGE button is pressed, the meter switches to a higher measurement range mode. When the meter is in the highest measurement range mode, pressing the RANGE button reverts it back to the lowest measurement range mode and it cycles in that order. To switch back to the Auto measurement mode, press and hold the RANGE button for two seconds.
Hz/🔦	When measuring an AC voltage or an AC current, press this button to display the measured AC voltage or the frequency of the AC current. Press the button again to exit the frequency display mode. To turn ON the flashlight, press and hold this button for about 2 seconds. The flashlight turns OFF automatically after 15 seconds or it can be turned OFF by pressing down the button for 2 seconds.
HOLD/☀	Press the HOLD button to lock the current reading on the display. Press the HOLD button again to release the reading hold state. To turn ON the LCD backlight, press and hold this button for about 2 seconds. The LCD backlight turns OFF automatically after 15 seconds or it can be turned OFF by pressing down the button for 2 seconds.

LCD Display Symbols and Indicators

AC	Alternating current		Fuse disconnected
DC	Direct current	HOLD	Data hold
OL	Overrange indication		Low battery indication
	Diode	MKΩ	Resistance unit: Ω, KΩ, MΩ
	Continuity	nF µF mF	Capacitance unit: nF, µF, mF
NCV	Non-contact AC voltage sensing	Auto	Automatic range
V.C.F	Variable frequency voltage measurement	Manual	Manual range
Live	Live wire test	µm VA	Voltage unit mV, V & Current unit: mA, A
	Automatic shutdown		Stands for Negative

Technical Information

DC Voltage

Range	Resolution	Accuracy
999.9mV	0.1mV	±(0.7% of reading + 3 digits)
9.999V	1mV	
99.99V	10mV	
600V	0.1V	±(0.8% of reading + 2 digits)

Overload protection: PTC 600V DC or AC RMS

AC Voltage

Range	Resolution	Accuracy
999.9mV	1mV	±(1% of reading + 3 digits)
9.999V	10mV	
99.99V	0.1V	
600V	0.1V	±(1.2% of reading + 3 digits)

Shows RMS value when input impedance is 10MΩ, Frequency response: 45-400HZ. Maximum input voltage: 600V AC

DC Current

Range	Resolution	Accuracy
999.9µA	0.1µA	±(0.8% of reading + 3 digits)
9999µA	1µA	
99.99mA	0.01mA	
600.0mA	0.1mA	
10A	0.01A	±(1.2% of reading + 3 digits)

Overload protection: µA/mA Range: F600mA/250V fuse
10A Range: F10A/250V Fuse
Maximum input current: mA terminal: 600mA, 10A terminal:10A

AC Current

Range	Resolution	Accuracy
999.9µA	0.1µA	±(1.0% of reading + 3 digits)
9999µA	1µA	
99.99mA	0.01mA	
600.0mA	0.1mA	
10A	0.01A	±(1.5% of reading + 3 digits)

Overload protection: µA/mA Range: F600mA/250V fuse
10A Range: F10A/250V Fuse
Maximum input current: mA terminal: 600mA, 10A terminal:10A
Frequency response: 45-400HZ.

Resistance

Range	Resolution	Accuracy
999.9Ω	0.1Ω	±(1% of reading + 2 digits)
9.999KΩ	0.001KΩ	
99.99KΩ	0.01KΩ	
999.9KΩ	0.1KΩ	
9.999MΩ	0.001MΩ	
99.99MΩ	0.01MΩ	±(2% of reading + 3 digits)

Capacitance

Range	Resolution	Accuracy
9.999nF	9.999nF	±(4% of reading + 30 digits)
99.99nF	99.99nF	±(4% of reading + 3 digits)
999.9nF	999.9nF	
9.999µF	9.999µF	
99.99µF	99.99µF	
999.9µF	999.9µF	
9.999mF	9.999mF	
99.99mF	99.99mF	±(5% of reading + 30 digits)

Frequency Measurement

Range	Resolution	Accuracy
10Hz-60KHz	0.01Hz-0.01KHz	±(1% of reading + 4 digits)

Battery Voltage Measurement

Range	Description
1.5V	30 Ohm load resistance
9V	300 Ohm load resistance

Diode and Circuit Continuity

Range	Operation
	Continuity is verified at resistance value <30Ω. Green LED lights up and the buzzer sounds When diode is measured, approximate forward voltage of the diode is displayed on the LCD.

NCV (Non-contact AC Voltage) sensing

Range	Operation
Weak electric field	Green LED lights up and the buzzer sounds continuously
Strong electric field	Two RED LEDS light up and the buzzer sounds continuously

Operating Instructions

DC & AC Voltage Measurement

1. Insert the RED rest probe into the input terminal 'V' and the black probe into the 'COM' terminal.
2. Turn the rotary switch to the voltage (⎓) setting. Th meter is factory set to DC voltage measurement mode. Press the SEL/V.F.C button to select the desired AC or DC voltage measurement mode. In the AC measurement mode, the V.F.C (Variable Frequency Voltage) measurement mode can be activated by pressing down the SEL/V.F.C button for 2 seconds. To exit the V.F.C mode, press the button again.
3. To measure the voltage, connect the test leads in parallel to the circuit or device under test. The measured voltage value will show on the LCD screen. For DC voltages, the polarity of the voltage will be relative to the position of the RED probe in the circuit. When measuring AC voltage, press HZ button to display the voltage frequency value.

Note If the meter shows small voltage values on the screen without there being any circuit under test, reset the display to zero short-circuiting the meter probes.

Warning Do not measure any voltages higher than DC 600V or AC 600V RMS to prevent electric shock and/or damage to the meter.

AC and DC Current Measurement

1. Cut off the power of the circuit under test to discharge all high voltage capacitors on the circuit under test.
2. Turn the rotary switch to the desired current measurement setting. Use the SEL button to select DC or AC measurement mode.
3. Insert the BLACK test lead into the "COM" input terminal and the RED test lead into the corresponding current input terminal.
4. Connect the test probes in series with the test load whose current is to be measured.
5. Tum on the power to the circuit under test to get the current readings to show on the display.
6. Cut off the power of the circuit under test. Discharge all high-voltage capacitors. Remove the meter probes and restore the circuit to its original condition.

Note If the display only shows "OL", it means that the current input exceeds the measurement range of the circuit.
Use the correct input terminal and settings for current measurement. If the probe is inserted into the current input terminal , do not connect the probe to any circuit in parallel mode.
If the fuse blows during measurement, please replace it with a fuse of the same rating, before carrying out any measurements.

Warning Do not attempt current measurements on a circuit where open circuit voltage exceeds 250V.
When measuring a large current between 5-10A, ensure the power-on time doesn't exceed 10 second as it may result in incorrect test data due to the heat generated by high current.

Resistance Measurement

1. Turn the rotary switch to the resistance (⊣⊢Ω) setting. The symbol "0L" on the display indicates open circuit .i.e., no resistance is connected.
2. Ensure the black test lead is inserted into the "COM" terminal and the red test lead into the "V" terminal.
3. If the resistance being measured is connected to a circuit, turn off power and discharge all capacitors before measurement.
4. Use the probe tips to measure the resistance of the circuit under test.
5. Read the resistance value on Digital Display.

Warning To prevent damage to the meter or the device under test, disconnect the power supply of the circuit under test and fully discharge all high-voltage capacitors before measuring the resistance.

Capacitance Measurement

1. Turn the rotary switch to the (⊣⊢Ω) setting. Press the SEL key to switch to capacitance measurement mode.
2. Insert the black test lead into the "COM" terminal and the red test lead into the "V" terminal.
3. Use the probe tips to measure the capacitance of the circuit under test. Read the capacitance value on Digital Display.

Note In the capacitance measurement mode, the symbol “0L” appears on the display when the maximum range is exceeded. When measuring a high value capacitor, it may take a few seconds to get a stable reading.

Warning Before measuring capacitance, it is important to discharge any residual charge from the capacitor to prevent damage to the meter or a hazardous situation

Diode Test

1. Turn the rotary switch to(⊣◗•))) setting. Insert the black test lead into the "COM" terminal and the red test lead into the "V" terminal.
2. Connect the red test lead probe to the anode of the diode to be measured and black test lead prone to cathode.
3. The meter will display approximate forward voltage of the diode. If the diode is open circuit (broken) or in reverse polarity, the screen will display “0L”.

Note A working diode in the circuit should generate a forward voltage drop of 0.5Vto 0.8V.

Audible Continuity Test

1. Turn the rotary switch to (⊣◗•))) setting. Insert the black test lead into the "COM" terminal and the red test lead into the "V" terminal.
2. Connect test leads probes to two points on the circuit to be tested. If the resistance between the two points is less than 30Ω, the green LED on the meter lights up and the buzzer sounds to indicate continuity between the test points. The resistance value between the test point is also displayed on the LCD screen.

Live wire Test

1. Turn the rotary switch to LIVE setting. The readings on the display should show “----“. Insert only the red test lead into the "V" terminal.
2. Connect or insert the probe into the Live terminal of an AC power socket or move it closer to a Live wire. On detecting the AC Voltage, the meter will display word ‘LIVE’ on the LCD screen. Additionally, the two RED LEDs on the meter will light up and the buzzer will start to sound.

NCV (Non-contact Voltage) Test

1. Turn the rotary switch to NCV setting.
2. NCV test probe is integrated at the top of meter and is marked NCV. To determine the presence of an AC voltage or electromagnetic field near an object (socket, wire) ,move the NCV probe closer to the object.
3. On sensing the AC voltage, the LCD screen, NVC LED indicator and the buzzer will indicate the presence and strength of the electromagnetic field.
   - If the detected AC voltage is low, the LCD screen displays “--L”, the green LED lights up and the buzzer sounds continuously.
   - If the detected AC voltage is low, the LCD screen displays “-H”, the two red LEDs light up and the buzzer sounds continuously at a higher frequency.

Battery Measurement

1. Insert the black test lead into the "COM" terminal and the red test lead into the "VmA" terminal.
2. Turn the rotary switch to the required battery measurement setting .i.e., 9V or 1.5V.
3. Connect the red probe to the “+” end of the battery and the black probe to the “-” end of the battery.
4. Read the battery voltage on the LCD display.

Frequency Measurement

1. When in AC measurement mode, press Hz button to view the frequency of the AC voltage or AC current on the LCD screen.
2. To exit the frequency measurement mode, press Hz button again.

Maintenance

Battery Replacement

Appearance of the battery symbol on the LCD display indicates low battery. Replace the battery as soon as the low battery indicator appears. Before replacing the battery, make sure lest leads are disconnected from any circuit under test.

1. Turn the rotary switch to OFF position. To remove the battery cover, unscrew the retaining screw at the rear of the device.
2. Remove the old battery and replace with a new one. Screw in place the battery compartment cover.

Fuse Replacement

1. Turn the rotary switch to OFF position. Unscrew and remove the back cover of the meter housing to access the PCB.
2. Remove the faulty fuse with a new fuse of the same rating. Screw in place the back cover.

General Specification

Display	4 digits (9999 count)	Automatic Shutdown Time	15 Minutes
Safety Level	IEC 61010-1, CAT III 600V	Operating Conditions	0°C - 40°C @ <80%RH
Power (Battery)	2 x 1.5 AAA (included)	Storage Conditions	-10°C - 50°C @ <80%RH
Low Battery Indication	Yes	Dimensions:	150x70x50mm

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