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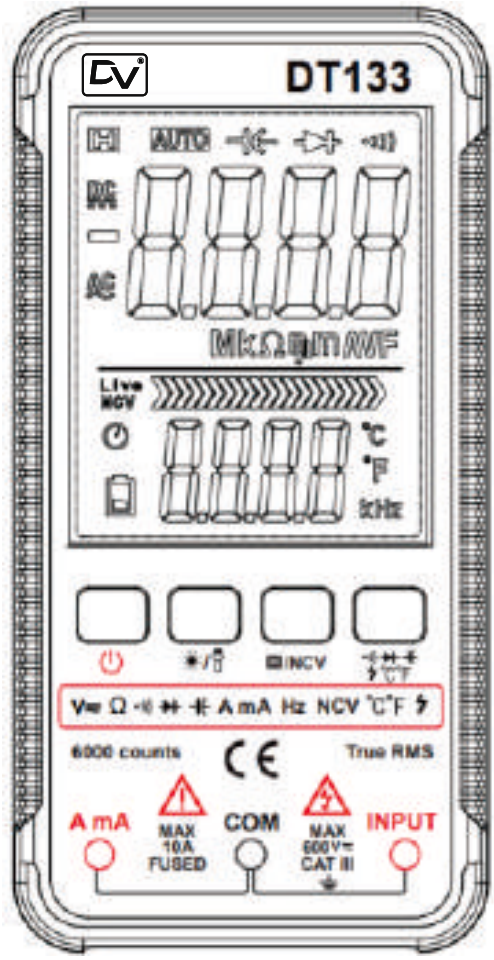
SMART MULTIMETER

OPERATOR'S INSTRUCTION MANUAL

DT133



- True RMS measurement
- Ultrathin large screen
- Double display of test data
- Automatic range design
- Intelligent identification signal

WARNING

READ AND UNDERSTAND THIS MANUAL BEFORE USING THE INSTRUMENT.

1. INTRODUCTION

This manual provides all safety information, operation instruction, specifications and maintenance for the meter, which is compact, handheld, and battery operated.
This instrument can measure AC/DC voltage, AC/DC Current, resistance, audible continuity, diode, temperature , capacitor,NCV, live line, it is a 3 5/6 digits, 6000 counts auto ranging DMM.
It has the functions of polarity indication, data hold, torch, back light ,over range indication and auto power off.
It can be operated easily and is an ideal instrument tool. The digital multimeter has been designed according to EN61010-1 oncoming electronic measuring instruments with an over voltage category (CAT III 600V) and Pollution degree 2.

⚠Warning

To avoid possible electric shock or personal injury, and to avoid possible damage to the Meter or to the equipment under test, adhere to the following rules:

- ➢ Before using the Meter inspect the case. Do not use the Meter if it is damaged or the case (or part of the case) is removed. Look for cracks or missing plastic. Pay attention to the insulation around the connectors.
- ➢ Inspect the test leads for damaged insulation or exposed metal. Check the test leads for continuity.
- ➢ Do not apply more than the rated voltage, as marked on the Meter, between the terminals or between any terminal and grounding.
- ➢ When the Meter working at an effective voltage over 60V in DC or 30V rms in AC, special care should be taken for there is danger of electric shock.
- ➢ Use the proper terminals, function for your measurements.

- Do not use or store the Meter in an environment of high temperature, humidity, explosive, inflammable and strong magnetic field. The performance of the Meter may deteriorate after dampened.
- When using the test leads, keep your fingers behind the finger guards.
- Disconnect circuit power and discharge all high-voltage capacitors before testing resistance, continuity, diodes .
- Replace the battery as soon as the battery indicator  appears. With a low battery, the Meter might produce false readings that can lead to electric shock and personal injury.
- Remove the connection between the testing leads and the circuit being tested, and turn the Meter power off before opening the Meter case.
- When servicing the Meter, use only the same model number or identical electrical specifications replacement parts.
- The internal circuit of the Meter shall not be altered at will to avoid damage of the Meter and any accident.
- Soft cloth and mild detergent should be used to clean the surface of the Meter when servicing. No abrasive and solvent should be used to prevent the surface of the Meter from corrosion, damage and accident.
- The Meter is suitable for indoor use.
- Turn the Meter power off when it is not in use and take out the battery when not using for a long time. Constantly check the battery as it may leak when it has been using for some time, replace the battery as soon as leaking appears. A leaking battery will damage the Meter.

2. GENERAL CHARACTERISTICS

Display	: LCD, 6000 counts updates 2/sec
LCD Size	: 65 x 54mm
Polarity Indication	: "-" displayed automatically
Over-range Indication	: "OL" displayed
Low Battery Indication	: " " displayed
Range select	: auto range
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 2, AAA size
Dimension(H×W×D)	: 143×72×19mm
Weight	: Approx 46.5g with battery

3. ELECTRICAL & LCD SYMBOLS

Safety warning symbol
High voltage warning
Grounding Conductor
Double insulation
EU Safety Certification
Battery low voltage
Live line judgment
AC signal
DC signal
AC & DC signal
Auto range
EF Electromagnetic field intensity
NCV Non - contact voltage test
Data hold
Electric field sensitivity
Auto power off symbol
Live Live line test symbol
continuous test
°C Celsius temperature
°F Fahrenheit temperature
Capacitance measurement
Diode test
Back light and torch
Power switch symbol

4. SPECIFICATIONS

Accuracy is guarantied for 1 year 23°C±5°C less than 80%RH

4-1. DC VOLTAGE

Range	Resolution	Accuracy
500mV	0.1mV	±(0.8% of rdg + 5dgts)
6V	1mV	±(0.8% of rdg + 3dgts)

60V	10mV	
600V	1V	±(1.0% of rdg + 5dgts)

Note： Voltages below 500mv cannot be accurately measured

Input Impedance: 10MΩ

Overload Protection: 600V DC or 600AC rms
(600mV range: 250V DC/AC rms)

Max. Input voltage: 600V DC

4-2. AC VOLTAGE

Range	Resolution	Accuracy
500mV	0.1mV	±(1.2% of rdg + 8dgts)
6V	1mV	±(1.0% of rdg + 8dgts)
60V	10mV	
600V	1V	±(1.2% of rdg + 8dgts)

Note： Voltages below 500mv cannot be accurately measured

Input Impedance: 10MΩ

Frequency Range: 40Hz ~ 400Hz

Overload Protection: 600V DC or 600AC rms

Response: Average, calibrated in rms of sine wave

Max. Input voltage: 600V AC rms

4-4. DC CURRENT

Range	Resolution	Accuracy
20-600mA	0.1mA	±(1.2% of rdg + 8dgts)
10A	10mA	

Overload Protection:

10A ranges: F10A/600V fuse

Max. Input Current:

“A mA” jack: 10A

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

4-5. AC CURRENT

Range	Resolution	Accuracy

20-600mA	0.1mA	±(2.0% of rdg + 10dgts)
10A	10mA	

Max. Input Current:

"A mA" jack: 10A

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

Note：Current below 500mv cannot be accurately measured

Frequency Range: 40Hz ~ 400Hz

Response: Average, calibrated in rms of sine wave

NOTE:Currents less than 20mA will not be measured.

4-6. RESISTANCE

Range	Resolution	Accuracy
6Ω	0.001Ω	±(1.2% of rdg + 5dgts)
60Ω	0.01Ω	
600Ω	0.1Ω	
6KΩ	1Ω	
60KΩ	10Ω	
600KΩ	100Ω	
6MΩ	10KΩ	±(3% of rdg + 10dgts)
60MΩ	100KΩ	

Open Circuit Voltage: about 0.25V

Overload Protection: 250V DC/AC rms

4-7. Diode and Continuity

Range	Introduction	Remark
	The approximate forward voltage drop will be displayed	Open circuit voltage: about 3V
	The built-in buzzer will sound if the resistance is less than about 50Ω.	Open circuit voltage: about 3V

Overload Protection: 250V DC/AC rms

For continuity test: When the resistance is between 50Ω and 100Ω, the buzzer may sound or may not sound. When the

resistance is more than 100Ω, the buzzer won't sound.

4-8. Capacitance

Range	Resolution	Accuracy
60nF	0.01nF	±(8% of rdg + 10dgts)
600nF	0.1nF	±(5% of rdg + 5dgts)
6uF	1nF	
60uF	10nF	
600uF	100nF	
6mF	100uF	±(8% of rdg + 10dgts)
60mF	1000uF	

Overload Protection: 250V DC/AC rms

4-9. Temperature

Range	Resolution	Accuracy
-40 ~ 1370°C	1°C	-40~150°C: ±(1%rdg + 4dgts)
		150~1370°C: ±(2%rdg + 3dgts)
-40 ~ 2498°F	1°F	-40~302°F: ±(1%rdg + 4dgts)
		302~2498°F: ±(2% rdg+ 3dgts)

Overload Protection: 250V DC/AC rms

4-10. Frequency

Range	Resolution	Accuracy
40-6000Hz	1Hz	±(2.0%rdg + 5dgts)

Overload Protection: 250V DC/AC rms

5. OPERATION INSTRUCTION

5.1 POWER ON : Press the power button ⏻ more than one second to turn on the meter, the meter will beep, and the LCD will display Auto, indicating that the meter enter signal be tested auto identifies the state. At the same time, AUTO is displayed at the top half of the LCD, Indicates that the meter enters the test mode of automatic range, and the current Celsius ambient temperature will be displayed at the bottom of the LCD by default only,Temperature cannot be measured in the current state. The measurement unit of the

measured signal is shown below the test data.

5.2 auto identifies the state: Insert the black lead into the COM jack and the red lead into the INPUT jack. The meter can auto identify whether the measured signal is voltage or resistance signal. Insert the red lead into the mA A jack, and the meter enters the state of auto range test current. The red lead should be connected to the positive pole of the measured signal, otherwise the negative polarity symbol will appear.

NOTE: If the measured voltage signal is less than 500mV AC/DC, The meter will not measure correctly or will not be identifiable.

5.3 Voltage & resistance measure: When the meter recognizes that the signal is DC voltage, the LCD will directly display the voltage reading, and the red lead will indicate the polarity. When the meter recognizes the AC voltage signal, the top half part of the LCD shows the reading of AC voltage, and the bottom part shows the frequency of the ACV. When the meter identification signal is resistance, the LCD shows the reading of resistance, when the test resistance is less than 50 Ω, the meter will emit a beep. Indicates that the circuit under test is in short circuit state. When the measured voltage exceeds 600V, the meter will issue a warning sound and the LCD will display OL.

5.4 Current measure: Connect the red lead to the mA A jack, and the black lead to the COM jack. Connect the meter in series in the circuit, and the meter will auto identify the AC and DC current signals. The current passes through the meter, and the LCD displays the reading of the current.

5.5 10A measure: Since the meter have only one 10A fuse , the test time should be shortened as much as possible when the current exceeds 1A, so as to avoid the heat of the meter, which may cause large measure errors. When

measuring 5-10A current, the duration of each measure should not exceed 10 seconds, and the interval between two measurements should be more than 15 minutes.

5.6 Selecting the Measure Function: Press the key to enter the manual test state. Press the key successively, and the meter enters the test state of continuous, diode, capacitor, live line judgment, Celsius temperature and Fahrenheit temperature. The LCD Displays the corresponding symbol. Press the key again to enter signal be tested auto identifies the state.

Note: Resistance and voltage can only be tested in intelligent identification state.

5.7 Manual Test Tips: Under the above conditions, you need to carefully determine the type of the input model, Select the correct measure function on the meter, and connect the lead to the measured object in parallel. The reading displayed on the meter is the reading of the input signal.

5.8 Continuous Test: In manual function selection mode, the meter will beep when the test resistance is less than 50 Ω. In auto mode in resistance measure. When the test resistance is less than 50 Ω, the meter will beep.

5.9 Capacitance measurement: Press the key successively, and the symbol of capacitance measure will appear on the LCD. Firstly, the measured capacitor will be discharged. In case of online measurement, the power supply of the circuit should be disconnected. The red and black leads contact the ends or pins of the capacitor. The LCD shows reading of capacitance and units of measure.

5.10 Back light and torch: Press the key quickly to turn on the back light, press it again to turn off the back light, press the key for a long time to turn on the torch to illuminate the measured environment space. press this button for a long time to turn off the flashlight.

5.11 NCV measure: press the button H/NCV for a long time in the mode of auto signal identification, the LCD displays EF, and the meter is used to test the strength of the electromagnetic field. When the front end of the meter is placed within 5mm of the electromagnetic field, the meter will emit a beeping sound and a symbol indicating the intensity of the electromagnetic field will appear. The stronger the electromagnetic field, the more rapid the beeping sound and the longer the electromagnetic field intensity banner. (**Note:** that this function is only used to determine the existence and strength of the electromagnetic field. Because there may be electric field interference in the test environment or electric field interference caused by non-standard wiring arrangement, this measure method cannot be used to identify the null line and live line.) press the button H/NCV for a long time , the meter exits the NCV measure mode, and enters the auto signal recognition mode at the same time, the screen displays Auto symbol.

5.12 Data Hold: Quickly press the button H/NCV, the LCD will display H symbols, the meter can be normal measure display data fixed on the LCD, even if the test lead left the data will continue to hold. press the hold button before measure, the meter will be unable to measure. Press this button again quickly to cancel the data hold function.

5.13 Live wire judgment: Press the button H/NCV successively and LivE symbol is displayed on the LCD, and the meter will enter the measure mode of live line judgment. Connect the red lead to the INPUT jack and connect the probe reliably to the metal portion of the line. If the buzzer emits a continuous beeping sound and the electromagnetic field intensity symbol appears, the lead is connected to the live line.

NOTE: This function is for live line test, need professional use. Non-professionals are strictly prohibited from using .

5.14 Temperature measure: Press the button successively until only the current ambient temperature is displayed at the bottom of the LCD, connect the positive electrode of the temperature sensor to the INPUT jack and the negative electrode to the COM jack. Connect the sensor end to the measured object reliably. After the reading is stable, the LCD will display the temperature of the measured object. press the button again to display the temperature in Fahrenheit.

5.15 Frequency measurement: This meter cannot be directly used to test the frequency. Frequency measurement is an auxiliary function of AC voltage and AC current measurement. When the meter displays the measured AC voltage or AC current, the frequency of the AC signal is displayed at the bottom of the LCD.

Note: Only when the AC voltage is greater than 600mV or the AC current is greater than 1.6A, the frequency measure can be carried out. It is recommended that the frequency measure be used only for power frequency measurement.

5.16 Auto power off : press the power button for a long time, and a symbol will be displayed on the LCD, indicating that the meter will be turn off automatically if there is no operation within 15 minutes. There is a warning tone before turn off. The meter has weak standby current, so turn off the meter in time to save battery power, if not used for a long time, please take out the battery.

5.17 Replace the battery and fuse If a low voltage symbol is displayed on the LCD, replace the battery in time. Disconnect the test lead from the circuit under test and turn off the power. Loosen the battery cover screw with the appropriate screwdriver, open the battery cover, remove the old battery, install the new battery in alignment with polarity, install the battery cover and lock the screw. The meter is powered by two 1.5V AAA batteries, which must be

replaced correctly.

If the current level cannot be measured, please check the fuse inside the meter first. If the fuse of the meter is damaged, please replace the fuse of the same specification. Fuse specifications ceramic tube 5*20mm 600V 10A, if the replacement of a new fuse, the meter can not work normally, please contact the dealer !

6.accessories :

Owners manual:	1 piece
Test leads:	1 pair
K type thermocouple :	1 piece

DISPOSAL OF THIS ARTICLE

Dear Customer,

If you as some point intend to dispose of this article, then please keep in mind that many of its components consist of valuable materials, which can be recycled. Please do not discharge it in the garbage bin, but check with your local council for recycling facilities in your area.