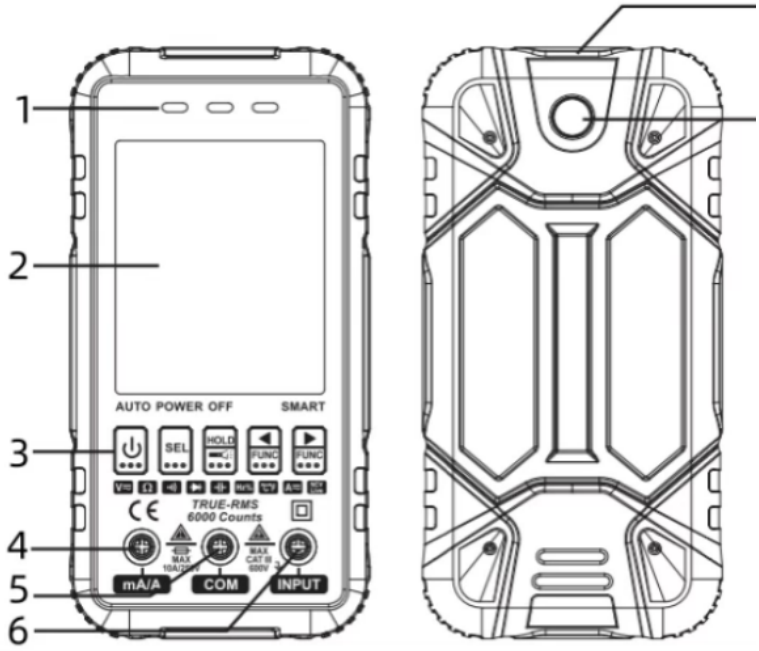
DMM-125A

SMART TRUE RMS DIGITAL MULTIMETER

English Instruction Manual



WARNING / CAUTION
Read this manual carefully before use. Improper operation may cause injury or damage.

TECPEL CO., LTD.

www.tecpel.com

1. Product Overview

This smart True RMS digital multimeter provides automatic SMART measurement and manual professional measurement modes. It features a function display and analog bar graph, and measures AC/DC voltage, resistance, continuity, diodes, capacitance, frequency/duty cycle, temperature and AC/DC current. It also provides non-contact AC voltage detection (NCV), live-wire identification and a secondary display, such as ambient temperature or AC frequency.

Low-battery and blown-fuse indicators, together with illuminated input-jack guidance, make operation more convenient and intuitive.

2. Unpacking and Inspection

Remove the meter from its packaging and check that the following items are complete and undamaged:

1. Instruction manual

2. Test leads

3. K-type thermocouple wire

4. Four 1.5 V AAA LR03 batteries

5. One carrying pouch

3. Safe Operating Instructions

The source manual states that this instrument is designed and manufactured to GB4793 and IEC 61010-1, with a CAT III 600 V rating and Pollution Degree 2.

1. Never apply voltage or current above the limit of the selected range.

2. The source describes voltages below 36 V as generally safe. When measuring above 36 V DC or 25 V AC, ensure correct connections, reliable probe contact and sound insulation to prevent electric shock. The high-voltage warning appears when AC/DC input exceeds 24 V.

3. Do not exceed the rated voltage between terminals or between a terminal and earth.

4. Remove the probes from the measurement points before changing functions.

5. Select the correct function and range. Operate carefully even though protection is provided across the ranges.

6. Follow local and national safety regulations. Near hazardous live conductors, wear suitable personal protective equipment, such as approved rubber gloves, a face shield and flame-resistant clothing, to prevent shock and arc injury.

7. Use only probes, leads and adapters with the correct CAT, voltage and current ratings.

8. Do not use the meter in explosive gas, vapor or wet environments.

9. Connect the neutral or earth lead before the live lead. Disconnect the live lead before the neutral or earth lead.

10. Observe the safety symbols and operate the instrument as instructed in this manual.

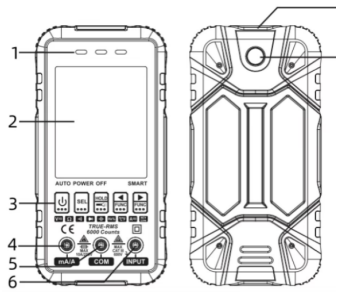
4. Safety Symbols

Symbol / marking	Meaning
Warning triangle	Danger; consult the manual
Lightning bolt	Hazardous voltage / electric shock
Earth symbol	Earth / ground
Double square	Double insulation
DC symbol	Direct current
AC symbol	Alternating current
Fuse symbol	Fuse
CE	Conformity with EU requirements

5. General Specifications

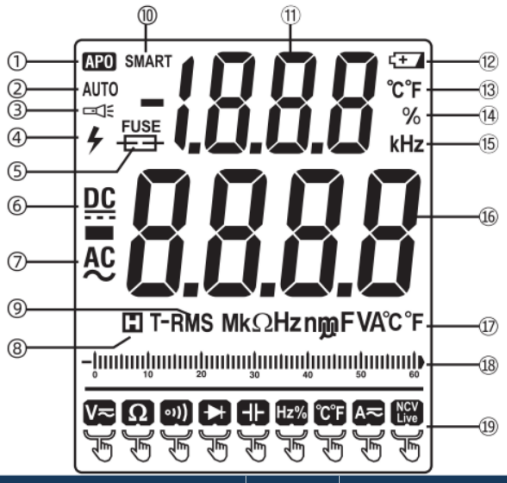
Item	Specification
Display	Maximum reading 5999 (3 5/6 digits); approximately 3 updates/s
Polarity / overrange	Automatic negative sign (-) / OL
Status indicators	Low battery; blown fuse; flashing or illuminated input-jack guidance
Altitude	Below 2,000 m
Operating environment	0 to 40 °C; <75% RH; no condensation below 10 °C
Storage environment	-20 to 60 °C; <85% RH; remove batteries for prolonged storage
Temperature coefficient	0.1 × specified accuracy per °C below 18 °C or above 28 °C
Power supply	Four 1.5 V AAA LR03 batteries
Dimensions	144 × 73 × 27 mm (L × W × H)
Weight	Approximately 235 g including batteries

6. Instrument Layout



1. Warning indicator light 2. LCD display 3. Function keys
4. Current input jack 5. Common terminal (COM)
6. INPUT jack: voltage, resistance, diode, continuity, frequency, capacitance, live-wire identification and temperature
7. Non-contact AC voltage sensing area 8. Flashlight

7. Display Indicators



No.	Indicator	No.	Indicator
1	Auto power-off	11	Secondary display
2	Auto range	12	Low battery
3	Flashlight	13	Temperature units
4	High-voltage warning	14	Duty cycle
5	Blown fuse	15	Frequency units
6	DC measurement	16	Main display
7	AC measurement	17	Voltage, current, capacitance, frequency, resistance and temperature units
8	Data hold	18	Analog bar graph
9	True RMS	19	Function display
10	SMART mode		

8. Keys and Indicators

8.1 Power On/Off

Press and hold the power key for approximately 2 seconds to switch the meter on or off.

8.2 Function Selection

Press SEL to switch between functions within the selected position, for example AC/DC in voltage mode or NCV/Live in the detection mode.

8.3 Manual Function Selection

Press the left or right FUNC key to enter manual mode. Press again to move left or right through measurement functions. In any range, hold either FUNC key for approximately 2 seconds to return to SMART (AUTO) mode. SMART mode is the default at power-on.

8.4 Data Hold / Flashlight

Briefly press HOLD to enable or disable data hold. Hold it for more than 2 seconds to switch the flashlight on or off. A flashlight symbol appears when it is on.

8. Keys and Indicators (continued)

WARNING / CAUTION
To avoid electric shock, fire or injury, do not use HOLD to measure unknown potentials. With HOLD enabled, the displayed value does not change when the measured potential changes.

8.5 Blown-Fuse Warning

The fuse symbol appears if the fuse is blown. Selecting current mode also displays a warning symbol. Do not measure current until the fuse has been replaced.

8.6 Input-Jack Guidance

When the measurement function changes, the corresponding input-jack indicator flashes eight times to prompt correct test-lead insertion.

8.7 Automatic Current-Mode Recognition

Inserting a test lead into the mA/A jack automatically selects current measurement. Other measurement functions cannot be selected manually while the lead remains in this jack.

8.8 Auto Power-Off

Auto power-off is enabled by default and the APO symbol appears. The meter switches off after approximately 15 minutes without key operation to conserve battery power. To disable this function, hold SEL while switching on. The APO symbol disappears. Auto power-off is enabled again after restarting the meter.

9. Measurement Instructions

Check battery condition before use. Replace weak batteries when the low-battery symbol appears. Observe the warning markings beside the input jacks: applied voltage and current must not exceed the marked ratings.

SMART Automatic Measurement Mode

SMART mode is selected at power-on. The meter automatically identifies DC voltage, AC voltage, resistance or continuity.

1. Switch on the meter. Auto appears on the display.
2. Connect the red lead to INPUT and the black lead to COM.
3. Place the probes across the source or resistor (parallel connection). The meter identifies the measurement signal automatically.
4. For resistance below approximately 50 Ω, the buzzer sounds and the indicator lights.
5. Read the result on the display.

WARNING / CAUTION
The minimum measurable voltage in SMART mode is approximately 0.8 V.

9. Professional Measurement Mode

For each procedure below, switch on the meter first. Auto appears. Use the left/right FUNC keys to select the required function. Read the result on the display after making the specified connections.

(I) AC/DC Voltage

1. Select voltage mode and press SEL to choose AC or DC. The corresponding symbol appears.
2. Connect the red lead to INPUT and the black lead to COM.
3. Place the probes across the power source in parallel.

(II) Resistance

1. Select resistance (Ω).
2. Connect the red lead to INPUT and the black lead to COM.
3. Place the probes across the resistor in parallel.

(III) Continuity

1. Select continuity mode. Connect red to INPUT and black to COM.
2. Place the probes across the test points. Below 50 Ω, the buzzer sounds and the indicator lights.

(IV) Frequency / Duty Cycle

1. Select Hz%. Connect red to INPUT and black to COM.
2. Place the probes across the frequency signal source.

(V) Capacitance

1. Select capacitance mode. Connect red to INPUT and black to COM.
2. Observe polarity when measuring polarized capacitors. For ceramic capacitors, place the probes across the two terminals and read the result.

(VI) Diode Test

1. Select diode mode. Connect red to INPUT and black to COM.
2. Place the red probe on the anode and the black probe on the cathode.
3. Reversing the probe polarity causes OL to appear.

(VII) Temperature

1. Select temperature mode.
2. Connect the positive K-type thermocouple lead to INPUT and the negative lead to COM.
3. Place the thermocouple probe in contact with the object.

9. Professional Measurement Mode (continued)

(VIII) Non-Contact AC Voltage Detection (NCV)

1. Select NCV/Live mode. Press SEL to choose NCV (the default).

2. Move the NCV sensing area gradually toward the conductor.

3. Weak electric field: ---L appears, the buzzer sounds slowly and the green light illuminates.

4. Strong electric field: ---H appears, the buzzer sounds rapidly and the red light illuminates.

(IX) Live-Wire Identification

1. Select NCV/Live mode, then press SEL to choose Live.

2. Connect only the red lead to INPUT; the black lead is not required.

3. Touch the conductor with the red probe.

4. Weak electric field: ---L, slow buzzer and green light. Strong electric field: ---H, rapid buzzer and red light.

(X) AC/DC Current

1. Select current mode with FUNC, or insert the red lead into mA/A to select it automatically.

2. Press SEL to select AC or DC current. DC current is the default; the corresponding AC/DC symbol appears.

3. Connect red to mA/A and black to COM.

4. Switch off power to the circuit. Connect the meter in series, then switch circuit power on.

5. Read the result.

10. Technical Specifications

Accuracy is expressed as ±(a% of reading + b digits), with a one-year calibration guarantee period. Specified accuracy applies at 23 ±5 °C and relative humidity below 75%.

10.1 DC Voltage (DCV)

Range	Accuracy	Resolution
600 mV	±(0.5% + 3)	0.1 mV
6 V	±(0.5% + 3)	0.001 V
60 V	±(0.5% + 3)	0.01 V
600 V	±(0.5% + 3)	0.1 V

Input impedance: approximately 10 MΩ. Maximum input: ±600 V. An alarm sounds at inputs ≥600 V; OL appears above 610 V. Do not exceed the rated input.

10. Technical Specifications (continued)

10.2 AC Voltage (ACV)

Range	Accuracy	Resolution
6 V	±(1.0% + 3)	0.001 V
60 V	±(1.0% + 3)	0.01 V
600 V	±(1.0% + 3)	0.1 V

Input impedance: approximately 10 MΩ. Maximum input: ±600 V. An alarm sounds at inputs ≥600 V; OL appears above 610 V. Do not exceed the rated input.

10.3 Resistance

Range (as printed)	Accuracy	Resolution (as printed)
600 Ω	±(1.0% + 5)	0.1 Ω
6 kΩ	±(1.0% + 5)	0.001 kΩ
60 kΩ	±(1.0% + 5)	0.01 ΩΩ [sic]
600 kΩ	±(1.0% + 5)	0.1 kΩ
60 V [sic]	±(1.0% + 5)	0.001 MΩ
600 V [sic]	±(2.0% + 10)	0.01 MΩ

Overload protection: 250 V. Source inconsistencies: 0.01 ΩΩ, 60 V and 600 V are printed in the resistance table. Their intended values require confirmation.

10.4 AC/DC Current

Range (as printed)	Accuracy	Resolution
600 mA	±(1.2% + 3)	0.1 mA
60 A [sic]	±(1.2% + 3)	0.001 A
10 A	±(1.2% + 3)	0.01 A

Overload protection: F10A/250V fuse. The source prints 60 A despite the stated 10 A protection. This is unconfirmed and must not be treated as permission to measure above 10 A.

10.5 Capacitance

Range	Accuracy	Resolution
6 nF / 60 nF / 600 nF	±(4.0% + 5)	0.001 / 0.01 / 0.1 nF
6 µF / 60 µF / 600 µF	±(4.0% + 5)	0.001 / 0.01 / 0.1 µF
6 mF	±(5.0% + 5)	0.001 mF
60 mF	±(1.0% + 10)	0.01 mF

Overload protection: 250 V.

10. Technical Specifications (continued)

10.6 Frequency / Duty Cycle

Range	Accuracy	Resolution
6 Hz	±(1.0% + 3)	0.001 Hz
60 Hz	±(1.0% + 3)	0.01 Hz
600 Hz	±(1.0% + 3)	0.1 Hz
6 kHz	±(1.0% + 3)	0.001 kHz
60 kHz	±(1.0% + 3)	0.01 kHz
600 kHz	±(1.0% + 3)	0.1 kHz
6 MHz	±(1.0% + 3)	0.001 MHz
10 MHz	±(1.0% + 3)	0.01 MHz

Overload protection: 250 V. No separate duty-cycle range or accuracy is given in the source.

10.7 Diode and Continuity

Function	Resolution*	Description
Diode	0.001 V	Displays forward voltage drop; open-circuit voltage approximately 3.5 V
Continuity	1 Ω	Buzzer sounds and indicator lights below 50 Ω

*The source labels this column “Accuracy”; the values are reproduced here as display increments.

10.8 Temperature

Range	Accuracy (as stated)	Resolution
-40 to 0 °C	±3 °C	1 °C
0 to 1000 °C	±2% or 2 °C	1 °C
-40 to 32 °F	±6 °F	1 °F
32 to 1832 °F	±2% or 4 °F	1 °F

Sensor: K-type thermocouple. The source does not state which criterion governs the “or” accuracy terms.

11. Battery or Fuse Replacement

1. Remove the probes from the circuit, unplug the leads from the input jacks and switch off the meter.
2. Loosen the battery-cover screw with a screwdriver and remove the cover.
3. Remove the old batteries or blown fuse. Install new 1.5 V alkaline batteries or a replacement fuse.
4. Refit the cover and tighten the screw.
5. Battery specification: four 1.5 V AAA alkaline batteries.
6. Fuse specification: Ø5 × 20 mm, 10 A, 250 V ceramic fuse.

WARNING / CAUTION
Replace the batteries promptly when the low-battery symbol appears. Low battery voltage may affect measurement accuracy.

12. Instrument Maintenance

This is a precision measuring instrument. Do not alter the internal circuitry. Protect it against water, dust and impact. Do not store or operate it in high temperature, high humidity, flammable or explosive environments, or strong magnetic fields.

Clean the surface with a slightly damp soft cloth and mild neutral detergent. Do not use abrasive cleaners, alcohol or other organic solvents. Remove the batteries during prolonged storage to prevent leakage and corrosion.

13. Instrument Care and Maintenance

Do not disassemble or modify this precision instrument or its internal circuits. Keep it protected from water, dust and drops, and avoid high temperature, high humidity, flammable or explosive environments and strong magnetic fields.

Use a slightly damp soft cloth with neutral detergent for cleaning. Avoid abrasive cleaners, alcohol and organic solvents. Remove batteries when the instrument will not be used for a long time.

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Translation Notes

This English version translates the supplied Chinese manual. The duplicated voltage heading for procedure (II) has been changed to Resistance to match its instructions. Sections 12 and 13 are retained although they repeat the same maintenance advice. Apparent numerical or unit errors are flagged in the specification tables rather than silently corrected.