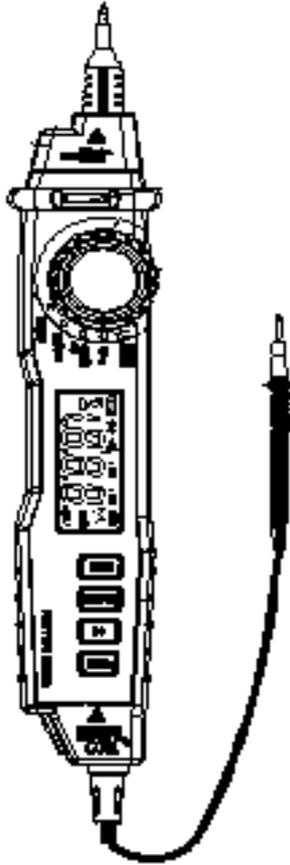


# DURATOOL



**MODEL: D03127**

**Digital Multimeter, Pen Type**

## CONTENTS

<b>Page Number</b>	<b>Description</b>
3	Important Safety Information
3	Electrical Symbols
4	Overview
4	Measurement Operation
5	AC & DC Voltage Measurement
5	AC & DC Current Measurement
5	Resistance Measurement
6	Diode Measurement
6	Connectivity Test
6	Non-contact Voltage Detection
6	General Technical Specification
7	Accuracy Specifications
8	Cleaning & Maintenance
8	Replacing the Batteries

## IMPORTANT SAFETY INFORMATION

Please read these instructions carefully before use and retain for future reference.

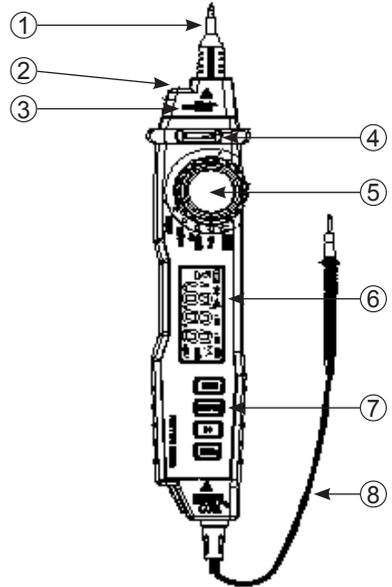
- When using electrical appliances basic safety precautions should always be followed.
- Before use, check that there is no damage to the instrument, there is no metal exposed or sign of wear to the insulating layer of the probe.
- Do not touch the charged body with voltage exceeding 30V AC RMS, 42V AC or 60V DC.
- When the low battery indicator is displayed, replace the battery immediately to avoid any potential measurement error.
- The input measurement voltage should not exceed the rated value regulated by the instrument.
- Do not use the instrument around explosive gas, steam or in a wet environment.
- When measuring, connect the zero/ground line first, then connect the live wire.
- When disconnecting, ensure you disconnect the live wire first and then disconnect the zero line and ground line.
- When measuring, ensure your fingers are behind the finger protector of the probe.
- Do not use the instrument in the event of a single element, whose rating is the lowest in the instrument, probe or accessories, exceeding the measurement category (CAT) ratings.

## ELECTRICAL SYMBOLS

Symbol	Description
	High voltage warning.
	AC (Alternating Current).
	DC (Direct Current).
	AC or DC.
	Warning. Important safety information.
	Ground.
	Fuse.
	Equipment with double insulation protection.
<b>CAT III</b>	CAT III measurement is suitable for test and measurement of circuits which are connected to the mains installation of a building.

## OVERVIEW

Number	Description
1	Test probe
2	Light
3	Non-contact voltage induction area
4	Non-contact voltage indicator
5	Rotary dial
6	Display
7	Buttons: <ul style="list-style-type: none"><li>• Data Hold</li><li>• Range Select</li><li>• Backlight and Light - press and hold for more than two seconds to turn the backlight on. Press and hold for two more seconds to turn off.</li></ul>
8	Black probe



## MEASUREMENT OPERATION

### Manual & Automatic Range

- The instrument is equipped with manual and automatic range. In automatic range mode, the instrument will select the best range for the input signal detected. This way the user does not need to re-select range when changing the measuring signal.
- The instrument can also be set to manual range.
- The default mode is automatic range mode after the unit is turned the default mode is automatic range on or the function is switched, the instrument displays "AUTO" symbol.
- The operations of entering or quitting manual range are as follows:
  - In automatic range mode, press the "Range" button. The "AUTO" symbol will be hidden.
  - Press the "Range" button to increase the range. When the maximum range is reached it will return to the minimum range.
  - Press and hold the "Range" button for two seconds to quit manual range mode. The instrument will display the "AUTO" symbol.

Note: There is only one range for connectivity and diode function.

If there is no operation for 15 minutes after being turned on, the instrument will make five short sounds.

One minute later, it will make a longer sound before automatically turning off.

After automatic turn-off, press any button between "FUNC." and "HOLD" and the instrument will turn back on.

By pressing the "FUNC." button to turn the instrument back on, it will cancel the

## AC & DC VOLTAGE MEASUREMENT

- Move the rotary dial to **V $\overline{\sim}$** , press the “FUNC.” button and select DC or AC voltage measurement.
- Connect the probe to be measured to the circuit or power supply in parallel and measure the voltage.
- Read the measurement on the screen. When measuring DC voltage, the display also shows the voltage polarity of the red probe test point.

### **Warning**

- Do not input voltage above 600V as there is a risk of damaging the instrument.
- After completing all measurements, always disconnect the probe and the measured circuit.

## AC & DC CURRENT MEASUREMENT

- Move the rotary dial to the **mA $\overline{\sim}$**  position, press the “FUNC.” button and select DC or AC current measurement.
- Cut off the power supply to the measured circuit and discharge all of the high voltage capacitors on the measured circuit.
- Disconnect the circuit to be tested and connect the instrument to the circuit to be measured in series.
- Connect to the power supply of the circuit and then read the measurement on the screen. When measuring DC current, the display also shows the voltage polarity of the red probe test point.

Note: If “OL” is displayed it means that the instrument exceeds the measurement range of the instrument.

- Disconnect the circuit to be tested, remove the probe of the instrument and restore the circuit.

### **Warning**

- Do not input current above 200mA, otherwise the fuse in the instrument may be burned.
- Disconnect the power supply of the measured circuit firstly and fully discharge all high voltage capacitors, then connect the instrument to the circuit in series.
- After completing all measurements, always disconnect the probe and the measured circuit.

## RESISTANCE MEASUREMENT

- Move the rotary dial to the  **$\Omega$**  position. Note: If it's not in the resistance measurement function, press “FUNC.” to switch to resistance measurement function.
- Connect the probe to the circuit to be measured in parallel and measure the resistance.
- Read the measurement result of the screen.

### **Warning**

- Firstly, disconnect the power supply of the circuit to be measured and fully discharge all high voltage capacitors.
- After completing all measurements, always disconnect the probe and the measured circuit.

## DIODE MEASUREMENT

- Move the rotary dial to the  position and switch to the diode function.
- Contact the red probe to the anode of the measured diode, and the black probe to the cathode of the measured diode.
- The reading on the screen is the approximate value of the diode forward voltage drop. If it is connected in reverse, it will display “OL”.

### Warning

- Firstly, disconnect the power supply of the circuit and discharge all high voltage capacitors.
- If the diode to be tested is an open circuit or with reverse polarity, the instrument will display “OL”.
- After completing all measurements, always disconnect the probe and the measured circuit.

## CONNECTIVITY TEST

- Move the rotary dial to the  position, press “FUNC.” and switch to the connectivity function.
- Contact the probe to both ends of the measured circuit. When the resistance of the measured circuit is below 50Ω, the buzzer will sound.

### Warning

- Firstly, disconnect the power supply of the circuit to be measured and fully discharge all high voltage capacitors.
- After completing all measurements, always disconnect the probe and the measured circuit.

## NON-CONTACT VOLTAGE DETECTION

- Move the rotary knob of the instrument to NCV.
- Approach the non-contact voltage induction area of the instrument to the live wire of the AC voltage (less than 5mm).
- The non-contact voltage indicating light of the instrument will light up. At the same time there is a ‘beep’, which indicates that there is AC voltage on the fire wire.

## GENERAL TECHNICAL SPECIFICATION

Environmental conditions for use	IEC/EN 61010-1 600V CAT III, pollution level 2, altitude <2000m
Working environment temperature & humidity	0~40°C
Storage environment temperature & humidity	-10~60°C (remove the battery when it is below 70%RH)
Temperature coefficient	0.1 x accuracy/°C
Max. Voltage allowed between measuring terminal and ground	DC or AC 600V RMS
Fuse Protection	Fuse FF 250mA/600V
Sampling rate	About 3 times/second

Display	3½ LCD screen
Super range indication	LCD display screen will display "OL"
Low battery indication	 will be displayed on the screen
Input polarity indication	Automatically displays "-"
Power supply	2 x 1.5V AAA batteries
Dimensions	225mm x 38mm x 26mm

## ACCURACY SPECIFICATIONS

- The accuracy is applicable within one year of calibration.
- Reference conditions: the environmental temperature is 18°C to 28°C and relative humidity is no more than 80%.

DC Voltage		
Range	Resolution	Accuracy
200mV	0.1mV	± (0.5% reading + 3)
2V	0.001V	
20V	0.01V	
200V	0.1V	
600V	1V	± (0.8% reading + 5)

- Input impedance: 10MΩ.
- Maximum input voltage: DC or AC 600V RMS.

AC Voltage		
Range	Resolution	Accuracy
2V	0.001V	± (0.8% reading + 3)
20V	0.01V	
200V	0.1V	
600V	1V	± (1.0% reading + 5)

- Input impedance: 10MΩ.
- Maximum input voltage: DC or AC 600V RMS.
- Frequency range: 40Hz~400Hz

DC Current		
Range	Resolution	Accuracy
20mA	0.01mA	± (1.8% reading + 5)
200mA	0.1mA	

- Input protection: FF250mA/600V fuse.

AC Current		
Range	Resolution	Accuracy
20mA	0.01mA	± (2.0% reading + 5)
200mA	0.1mA	

- Input protection: FF250mA/600V fuse.

Resistance		
Range	Resolution	Accuracy
200Ω	0.1Ω	± (1.0% reading + 3)
2kΩ	0.001kΩ	
20kΩ	0.01kΩ	
200kΩ	0.1kΩ	
2MΩ	0.001MΩ	
20MΩ	0.01MΩ	± (1.2% reading + 15)

- Input protection: Maximum DC or AC 600V RMS

Diode			
Function	Range	Resolution	Test Environment
Diode test 	1V	0.001V	Testing current: about 1mA; open circuit voltage: about 2.8V. The display will show the approximate value of the diode forward voltage drop.

- Input protection: Maximum DC or AC 600V RMS.

Buzzer On/Off		
Function	Description	Test Environment
	When the built-in buzzer sounds, the measured resistance is no more than about 50Ω.	Testing current: about 1mA; open circuit voltage: about 2.8V.

- Input protection: Maximum DC or AC 600V RMS.

## CLEANING & MAINTENANCE

- Clean the outer cabinet of the instrument with a clean, damp cloth and a small amount of mild detergent.
- Do not use any chemicals, abrasives or solvents that could damage the meter.

## REPLACING THE BATTERIES

- Turn off the power supply and disconnect the probe from the measured circuit.
- Loosen the screws used for fixing the battery cover and remove the battery cover.
- Remove the old batteries and replace with new ones.
- Mount the battery cover and and tighten the screws.



### RECYCLING INFORMATION

This symbol indicates that separate collection of Waste Electrical and Electronic Equipment (WEEE) or waste batteries is required. Do not dispose of these items with general household waste. Separate for the treatment, recovery and recycling of the materials used. Waste batteries can be returned to any waste battery recycling point which are provided by most battery retailers. Contact your local authority for details of the battery and WEEE recycling schemes available in your area.

