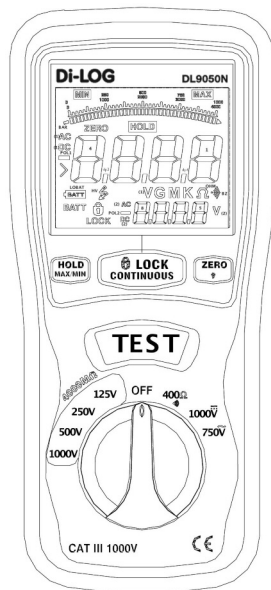




DL9050N

Digital Insulation Tester

Instruction Manual



Please read this manual before switching the unit on.
Important safety information inside.

Safety Notice

This manual contains information that must be followed for operating the meter safely and maintaining the meter in a safe operating condition. If this meter is not used in the manner specified, the protection provided may be impaired.

Warning! Warns of potential danger, refer to the instruction manual to avoid personal injury or damage to the meter.

Caution! Dangerous voltage. Danger of electrical shock

Continuous double or reinforced insulation complies with IEC536, class 11

CE Symbol of conformity, confirms conformity with relevant EU directives. The meter complies with EMC directives (89/336/EEC). Specifically standards EN 50081-1 and EN 50082-1 as well as the Low Voltage Directive (73/23/EEC) described in the standard EN 61010-1.

The meter has been designed in accordance with the safety regulations for electronic measuring instruments, EN 61010-1, IEC 61010

Voltages above 75V DC or 50V AC may constitute a serious shock hazard.

Before using the meter casing check for physical damage to the casing in particular around the connectors. If the case is damaged do not use the meter.

Check the test leads for damaged insulation or expose metal. Check the leads for continuity. Replace damaged leads with identical model or specification before using the meter.

Where applicable use GS38 approved leads (not supplied) these are available from Di-Log. When using test leads keep fingers behind the finger guards.

Do not apply more than the rated voltage, as marked on the meter between the terminals or between any terminal and ground.

Before making a measurement ensure that the rotary switch is set to the appropriate range. Do not turn the rotary switch whilst making a measurement.

Use the appropriate terminals, function and range for your measurements. If the value to be measured is not known use the maximum measurement position and reduce the range step by step until a satisfactory reading is obtained.

Do not use or store the meter in an environment of high temperature, humidity, fumes, vapour, gaseous, inflammable and strong magnetic field. The performance and safety of the use may be compromised in such circumstances.

Disconnect circuit power and discharge all high voltage capacitors before testing resistance, continuity, diodes, capacitance or current.

Before measuring current check the meters fuses and turn off power to the circuit before connecting the meter to the circuit.

Replace the battery as soon as the low battery indicator appears. If the battery is low the meter may give false readings.

Turn the meter power off when not in use,. Remove the battery if the meter is in use for a long period. Constantly check the battery as it may have leaked. A leaking battery will damage the meter.

The meter may only be opened by a qualified service technician for calibration and repair.

1. Specifications

1.1) General Information

Environmental conditions

- ① Installation categories III
- ② Pollution degree 2
- ③ Altitude up to 2000 meters
- ④ Indoor use only
- ⑤ Relatively humidity 80% max.
- ⑥ Operating Ambient 0 - 40°C

Maintenance & Cleaning

- ① Repairs of servicing not covered in this manual should only be performed by qualified personnel
- ② Periodically wipe the case with a dry cloth. Do not use abrasives or solvents on this instrument.

Display: Large LCD with dual display.

Measurement Range: 4000M Ω /125V, 4000M Ω /250V, 4000M Ω /500V, 4000M Ω /1000V, 400 Ω /BZ, 1000V/DCV, 750V/ACV

Sampling Rate: 2.5 times per second.

Zero adjustment: Automatic adjustment.

Over Range Indicator: "OL" of highest digit is displayed.

Low Battery Indication: The  is displayed when the battery voltage drops below the operating voltage.

Operating temperature: 0°C to 40°C (32°F to 104°F) and humidity below 80% RH.

Storage temperature: -10°C to 60°C (14°F to 140°F) and humidity below 70% RH.

Power source: DC9V (6 x 1.5V size "AA" batteries or equivalent).

Dimensions (mm): 200(L) x 92(W) x 50(H).

Weight: Approx 700g including batteries

Accessories: Test leads, 6 pcs battery, carrying cases, user manual.

1.2) Electrical Specifications

Accuracies are specified as:
 $\pm$ (...% of reading +...digits) at 23°C $\pm$ 5°C, below 80% RH.

OHMS

Range	Resolution	Accuracy	Max. open Circuit Voltage	Overload Protection
40.00 Ω	0.01 Ω	$\pm$ (1.2%+3)	5.8V	250Vrms
400.0 Ω	0.1 Ω		5.8V	

Continuity Beeper

Range	Resolution	Operation Resistance	Max. open Circuit Voltage	Overload Protection
•)))	0.01 Ω	Resistance $\leq$ 35 Ω	5.8V	250Vrms
Short circuit current		$\geq$ 200mA		

DC Voltage

Range	Resolution	Accuracy	Input Impedance	Overload Protection
1000V	1V	$\pm$ (0.8%+3)	10M Ω	1000Vrms

AC Voltage (40Hz - 400Hz)

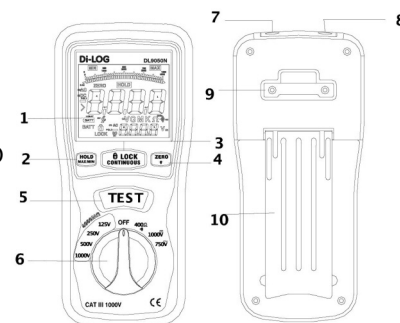
Range	Resolution	Accuracy	Input Impedance	Overload Protection
750V	1V	$\pm(1.2\%+10)$	10M Ω	750Vrms

Meg OHMS

Terminal Voltage	Range	Resolution	Accuracy	Test Current	Short Circuit Current
125V (0%~+10%)	0.125-4.00M Ω	0.001M Ω	$\pm(2\%+10)$	1mA	$\leq 1\text{mA}$
	4.001-40.0M Ω	0.01M Ω	$\pm(2\%+10)$	@load	
	40.01-400.0M Ω	0.1M Ω	$\pm(4\%+5)$	125k Ω	
	400.1-4000M Ω	1M Ω	$\pm(5\%+5)$		
250V (0%~+10%)	0.250-4.00M Ω	0.001M Ω	$\pm(2\%+10)$	1mA	$\leq 1\text{mA}$
	4.001-40.0M Ω	0.01M Ω	$\pm(2\%+10)$	@load	
	40.01-400.0M Ω	0.1M Ω	$\pm(3\%+5)$	250k Ω	
	400.1-4000M Ω	1M Ω	$\pm(4\%+5)$		
500V (0%~+10%)	0.500-4.00M Ω	0.001M Ω	$\pm(2\%+10)$	1mA	$\leq 1\text{mA}$
	4.001-40.0M Ω	0.01M Ω	$\pm(2\%+10)$	@load	
	40.01-400.0M Ω	0.1M Ω	$\pm(2\%+5)$	500k Ω	
	400.1-4000M Ω	1M Ω	$\pm(4\%+5)$		
1000V (0%~+10%)	1.000-4.00M Ω	0.001M Ω	$\pm(3\%+10)$	1mA	$\leq 1\text{mA}$
	4.001-40.0M Ω	0.01M Ω	$\pm(2\%+10)$	@load	
	40.01-400.0M Ω	0.1M Ω	$\pm(2\%+5)$	1M Ω	
	400.1-4000M Ω	1M Ω	$\pm(5\%+5)$		

2. Parts & Controls

- 1) Digital display
- 2) Data hold button; MAX/MIN
- 3) Lock button
- 4) Backlight button; ZERO
- 5) Test button
- 6) Rotary function switch
- 7) V Ω terminal
- 8) COM input terminal
- 9) Pothook
- 10) Battery cover.

**2.1 How to connect test leads**

On M Ω range and 400 Ω /BZ, ACV, DCV, connect the red test lead into the "V Ω " terminal and the black lead into the "COM" terminal.

2.2 Battery check & replacement

If battery power is not sufficient, LCD will display .

Replacement of 6 pcs new batteries, type 1.5V size "AA" is required.

Replace the battery cover and the four screws.

2.3 Test lead check

Set the range select switch to the 400 Ω range. With the tip and croc clip of the test leads connected. The indicator should read 00.0 Ω . When the leads are not connected the display will read infinity indicated by "OL". This will ensure that test leads are in working condition.

2.4 Rotary switch positions

Turn the tester on by selecting any measurement
 Left < 1000V, 500V, 250V, 125V (4000M Ω).
 OFF 400 Ω /BZ, 1000V DC, 750V AC > Right

2.5 Switches and display indicators

A) HOLD/MAX/MIN: pressing HOLD will freeze the displayed value.

Hold the switch down for 2 seconds to enter MAX mode. Press switch to toggle to MIN mode. Press the HOLD switch for 2 seconds to exit MIN/MAX mode.

LOCK: In insulation mode press LOCK to enable continuous testing.

TEST: When in insulation test mode holding down the TEST switch will output the set voltage.

ZERO/LIGHT: Press once will zero out the lead resistance, when set on 400 Ω (continuity) range. Hold down for 2 seconds to turn on the display back light.

B) Display Indicators: The primary display shows the testing value. The secondary display will indicate the output DC voltage when in insulation test and battery voltage while in AC V test mode.

The analogue bar graph displays the test value (as shown in the primary display).

-  Symbol is displayed continuously when carrying out an insulation test.
-  Symbol flashes if a voltage above 30V is present in the circuit.
-  Symbol flashes continuously when carrying out an insulation test. The buzzer will sound if a voltage above 30V is present in the circuit.

 Warning: Prior to any testing ensure that the circuit to be tested is not live.

2.6 Insulation resistance measurement (M ohms)

Warning: Prior to any testing ensure that the circuit to be tested in not live.

Select the required test voltage (125/250/500/1000V).

Connect red lead to the V Ω terminal and the black lead to the COM terminal.

Press test switch to carry out the test. The insulation resistance is shown in the primary display and on the bar graph. The test voltage is shown in the secondary display.

For continuous test press LOCK then press test. The tester will continuously output the test voltage. Press test to exit LOCK mode.

If a voltage in excess of 30V is present on the circuit the test will be blocked and >30V will be displayed and  symbol will flash.

Do not turn the range switch whilst the TEST switch is pressed or the instrument may be damaged.

The charge stored in the circuit will be automatically discharged when the TEST button is released.

2.7 Continuity (Low ohms) measurement

 Warning: Prior to any testing ensure that the circuit to be tested is not live

Connect red lead to the V Ω terminal and the black lead to the COM terminal. Connect test leads to the circuit to be tested using the croc clips.

Press test switch to carry out the test. the circuit resistance will be shown in the primary display and also on the bar graph.

If the resistance is below 35 Ω the buzzer will sound continuously.

If a voltage in excess of 30V is present on the circuit the  symbol will flash continuously together with a display of “>30V” in the primary display and the buzzer will sound, warning of the presence of voltage on the circuit.

To zero the lead resistance connect the test leads with croc clips and press ZERO.

2.8 AC/DC voltage measurement

Set the range switch to the AC V or DC V position.

Connect red lead to the V Ω terminal and the black lead to the COM terminal. Connect test leads in PARALLEL to the circuit to be tested.

Read the voltage value on the primary display.

2.9 Battery saver (sleep mode)

The tester will automatically enter sleep mode if there is no function change or switch press for 10 minutes.

24 Month Warranty

Di-Log instruments are subject to stringent quality controls. If in the course of normal daily use a fault occurs we will provide a 24 month warranty (only valid with invoice).

Faults in manufacture and materials defect will be rectified by us free of charge, provided the instrument has not been tampered with and returned to us unopened.

Damage due to dropping, abuse or misuse is not covered by the warranty.

Maintenance

WARNING: Do not attempt to repair or service your meter unless you are qualified to do so and have the relevant calibration, performance test and service information. To avoid electrical shock or damage to the meter do not get water inside the case.

Periodically wipe the case with a damp cloth and mild detergent. Do not use chemical solvent. Clean the input terminals with cotton bud, as dirt or moisture in the terminal can effect readings.

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