

Di-LOG

...measurably better

DL6799 - CombiVolt™ 5



CAT II
1000V

CAT III
600V

Instruction Manual

200A TrueRMS Current, Voltage & Continuity Tester

Certificate of conformity

As per the supplier of the apparatus listed, declare under our sole responsibility.

Instrument Identification:

Di-LOG DL6799 - CombiVolt™ 5

Declaration of Conformity:

To which this declaration relates are in conformity with the relevant clauses of the following standard.

Standards:

**EN 61010-1
EN 61010-2-032
EN 61010-2-33
EN 61010-031
EN 61326-1
EN 61326-2-2**

Performance:

The instrument operates within specification when used under the conditions in the above standards and EMC safety standards.

The product identified above conforms to the requirements of council directive 89/336/EEC and 73/23 EEC.

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I. Overview

Thank you for purchasing a Di-Log DL6799 current, voltage and continuity tester. The tester has been designed in accordance with the latest international safety standards.

200A AC/DC current
1000 V DC, 750 V AC
Continuity test with audible indication.



Warning:

The instruction manual includes relevant safety information and warnings. Please read all relevant contents carefully and strictly observe all warnings and safety notices.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

II. Contents

1. DL6799 CombiVolt 5
2. Carry Case
3. Instruction Manual

Please contact your supplier if any of the contents are missing or damaged.

III. Safety Notices

This instrument is to be used only by trained and competent persons.

The instrument is designed and produced in strict accordance with the safety requirements for Electronic Measuring Apparatus and **EN61010-1, EN61010-2-032, EN61010-2-033, EN61010-031, EN61326-1 and EN61326-2-2** standards, and complies with the safety standard of double insulation, over-voltage CATII 1000V, CAT III 600V and pollution level 2. If you fail to use the instrument according to relevant operation instructions, the protection provided by the CombiVolt 5 instrument is likely to be weakened or undermined.

CAT II: Applicable to test and measuring circuits connected directly to live voltage (socket outlets or similar points) of the low voltage mains installation.

CAT III: Applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation.

1. Prior to using, please check the CombiVolt 5 and integrated test lead & probe set for any damage or abnormality. If any of the probes insulating layer or lead are obviously damaged, the display screen fails to display or you consider there is a fault with the instrument, please do not use and contact Di-log for further assistance.

2. It is strictly prohibited to use the CombiVolt 5 without the rear cover or battery cover, otherwise a potential shock hazard may occur.
3. When carrying out any measurement, please keep fingers behind the finger guards on both the instrument and the test probes.
4. Before measurement, the instrument must be switched to the correct functional position. It is prohibited to switch the rotary dial to an alternative position during measurement, so as to prevent the instrument being damaged.
5. Do not apply in excess of 1000V DC/750V AC between the CombiVolt test probes or between line and ground so as to prevent electric shock and instrument damage.
6. When the instrument is used to measure a DC voltage (in excess of) >42V or AC TRMS voltage (in excess of) >30V, it is necessary to operate the instrument carefully as there may be danger of electric shock.
7. Do not measure voltage or current higher than the stated input limits. Before measuring resistance, diode or continuity, it is essential to isolate all power supplies in the circuit and discharge all capacitors, otherwise, it may lead to incorrect measurement results.

8. When the “” symbol is displayed on the LCD, it is necessary to replace the batteries.

10. Do not store or use the clamp meter in an environment with high-temperature, high-humidity, inflammable, explosive or with a strong electromagnetic field.

11. During maintenance, please clean the case of the instrument with a soft cloth soaked with neutral detergent, and not use abrasive solvents.

12. Instrument must be proved working before use on a known voltage source to confirm instrument is operating correctly.

IV. Electrical Symbols

	Double insulation
	Grounding
	Warning
	AC (alternating current)
	DC (direct current)
	Buzzer on/off
	Diode
	Capacitance
	AC or DC (alternating current or direct current)
	Danger high voltage
	Meet European Union Standard

V. Appearance Overview

1. Clamp head
2. Clamp body
3. Rotary dial
4. Function key
5. Display screen
6. Test lead input terminal

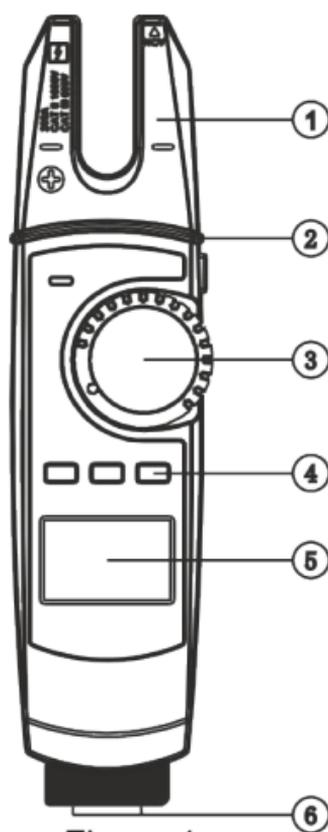


Figure 1

VI. Function Keys

Key:**ACI/DCI - AC/DC Current****RES - Resistance****DIO - Diode****ACV/DCV - AC/DC Voltage****CON - Continuity****CAP - Capacitance**

SELECT: Function selection button, which works on ACI/DCI, ACV/DCV, and RES/CON/DIO/CAP measurement.

REL: Measurement of relative values, enabling quick and easy differential measurement on: ACV, DCV, ACI and RES functions.

A short press of the REL button whilst performing a measurement will allow the instrument to zero the displayed value. The instrument will display Δ to indicate you have entered relative mode. The next measured value will display the differential value in relation to the previously measured value.

To exit REL mode, a short press of the REL button, will enable the instrument to return to normal operation.

ZERO: The DCI Zero button: this function is used with REL and works on the DCI measurement.

A short press of the ZERO button before performing a DCI measurement will allow the instrument to zero any displayed values caused by terrestrial magnetism. The instrument will display ZERO in the secondary display to indicate you have entered zero mode.

To exit REL mode, a short press of the REL button, will enable the instrument to return to normal operation.

HOLD: the data hold button works in all measurement positions. A short press of the “HOLD” button under normal measurement will enter the data-hold mode, the instrument will not update the measurement and the displayed value will remain unchanged. The “H” symbol will be displayed on the top left of the display screen, to indicate the instrument has entered the data—hold mode. The data-hold feature can be cancelled, with either a short press of the “HOLD” button, a turn the rotary dial or a press of the “SELECT” button.

SCREEN BACKLIGHT :

A long press of the “” button will turn on the backlight . A long press of the “” button again will increase the brightness. A long press of the “” button again will turn the backlight off.

FLASHLIGHT :

A short press of the LED flashlight button will switch the light on, and another short press of the LED flashlight button will switch the light off.

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VII. Technical Index

1. General specifications

Liquid crystal display: Maximum display up to 5999;

Polarity display: Automatic positive and negative polarity display;

Over-load display: Display "OL" or "-OL";

Battery voltage display: When the battery voltage is below 2.4V the instrument will display the low battery symbol;

Sampling rate; Approximately 3 times/second;

Sensor Types: Hall-effect sensor for AC/DC measurement;

Measured position error: When measuring the current, $\pm 1.0\%$ additional error may occur if the source to be measured is not centred at the base of the clamp jaw;

Impact-resistant Strength: 1m height impact can be borne;

Maximum opening dimension of clamp head:

Diameter of conductor 14.7mm;

Electromagnetic field effect: When any electromagnetic field interference exists, the instrument may displays unstable or incorrect readings;

Power supply: 2 x AA 1.5 V batteries;

Auto OFF function: 15 min;

Dimensions: 210mm x 53mm x35mm;

Weight approximately 163.7g (battery included);

2. Environmental limits

Working environment: Indoor use;

Altitude: <2,000 m;

Safety standards: EN61010-1, EN61010-2-032, EN 61010-2-033, EN61010-031

CATII 1000V, CATIII 600V;

Pollution degree 2;

Operating temperature and humidity. 0°C - 30°C (maximum of 80%RH), 30°C - 40°C (maximum of 75%RH), 40°C - 50°C (maximum of 45%RH);

Storage temperature and humidity: -20°C - +60°C (maximum of 80%RH) (not larger than 80%RH);

3. Electrical specification

Accuracy: \pm (% of reading plus number of digits), calibration period is 1 year

Ambient temperature: 23°C \pm 5°C;

Ambient humidity: \leq 80%RH;

Temperature coefficient: 0.1x(accuracy)/°C;

(1). Measuring of AC current (A~)

ACI	Measurement Range	Resolution	Accuracy	Overload Protection
	200.0A	0.1A	\pm (2.5%+5)	200A

Main display: true virtual value current;

Frequency response: 50Hz-60Hz;

(2). Measuring of DC current (A=)

DCI	Measurement Range	Resolution	Accuracy	Overload Protection
	200.0A	0.1A	\pm (2.5%+5)	200A

DCI base number shall be reset by pressing ZERO key

(3). Measuring of AC voltage (\tilde{V})

	Measurement Range	Resolution	Accuracy	Overload Protection
ACV	6.000V	0.001V	$\pm(1.2\%+5)$	DC1000V /AC750V
	60.00V	0.01V	$\pm(1.2\%+3)$	
	600.0V	0.1V		
	750V	1V	$\pm(1.5\%+5)$	

Main display: true virtual value voltage;

Input impedance $\geq 10M\Omega$;

Frequency response: 45-400 Hz

(50-100Hz when $\leq 400mV$);

(4). Measuring of DC voltage(\bar{V})

	Measurement Range	Resolution	Accuracy	Overload Protection
DCV	6.000V	0.001V	$\pm(0.8\%+3)$	DC1000V /AC750V
	60.00V	0.01V		
	600.0V	0.1V		
	1000V	1V	$\pm(1.0\%+5)$	

Input impedance $\geq 10M\Omega$;

(5). Measuring of resistance(Ω)

	Measurement Range	Resolution	Accuracy	Overload Protection
RES	600.0 Ω	0.1 Ω	$\pm(1.2\%+2)$	DC1000V /AC750V
	6.000k Ω	0.001k Ω	$\pm(1.0\%+2)$	
	60.00k Ω	0.01k Ω		
	600.0k Ω	0.1k Ω		
	6.000M Ω	0.001M Ω	$\pm(1.2\%+2)$	
	60.00M Ω	0.01M Ω	$\pm(1.5\%+5)$	

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(6). Continuity testing (••)

	Measurement Range	Resolution	Accuracy	Overload Protection
CON	600.0Ω	0.1Ω	<10Ω, the buzzer will sound >100Ω, the buzzer will not sound	DC1000V /AC750V

Open-circuit voltage is about 1.2 V;

(7). Diode measurement (→←)

	Measurement Range	Resolution	Accuracy	Overload Protection
DIO	6.000V	0.001V	0.5V-0.8V	DC1000V /AC750V

Open-circuit voltage is about 3.3 V;

(8). Measuring of capacitance (←→)

	Measurement Range	Resolution	Accuracy	Overload Protection
CAP	60.00nF	0.01nF	±(4.0%+20)	DC1000V /AC750V
	600.0nF	0.1nF		
	6.000uF	0.001uF		
	60.00uF	0.01uF		
	600.0uF	0.1uF		
	6.000mF	0.001mF	±10%	
	60.00mF	0.01mF	For reference only	

	Measurement Range	Accuracy
NCV / SPD	NCV	Induced voltage ≥ 100Vrms; distance ≤ 10mm (LED flashes, and the buzzer alarms)
	SPD	Single Pole Voltage Detection ≥100Vrms, (LED flashes and the buzzer alarms)

VIII. Measurement Operation

 Before measuring, it is necessary to ensure that the instrument has been switched to correct measurement position. Measurement shall be in strict accordance with the guidance herein, and it is prohibited to switch the rotary dial position during measurement, in order to avoid injury to users or damage to the instrument.

1. Measuring of AC Current (ACI)

- (1) Set the rotary dial to A_{AC} ;
- (2) Place the conductor to be tested at the bottom of the open jaw clamp "U". The instrument will automatically select the correct range and display the true virtual value of AC current on the display.

Frequency range: 50Hz-60Hz.

Warning:

The largest measured current shall not be greater than AC 200A during the measurement of AC current.

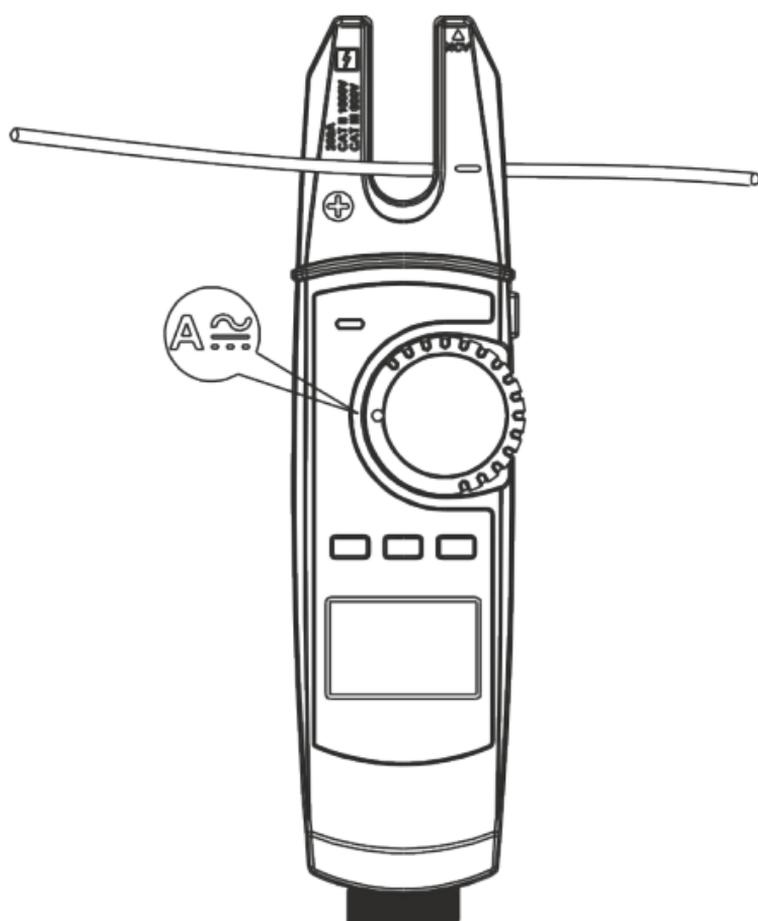


Figure 2

2. Measuring of DC Current (DCI)

- (1) Set the rotary dial to A_{DC} ; Press the "SELECT" key to switch the function to DC current;
- (2) A short press of the ZERO button before performing a DCI measurement will allow the instrument to zero any displayed values caused by terrestrial magnetism. The instrument will display ZERO in the secondary display to indicate you have entered zero mode.
- (3) Place the conductor at the bottom of the open jaw "U". The instrument will automatically select the correct range. If the current direction is the same as that of clamp head, it will display the positive value of DC current on the display screen, otherwise, it will display the negative current value:



Warning:

The largest measured current shall not be greater than DC 200A during the measurement of DC current.

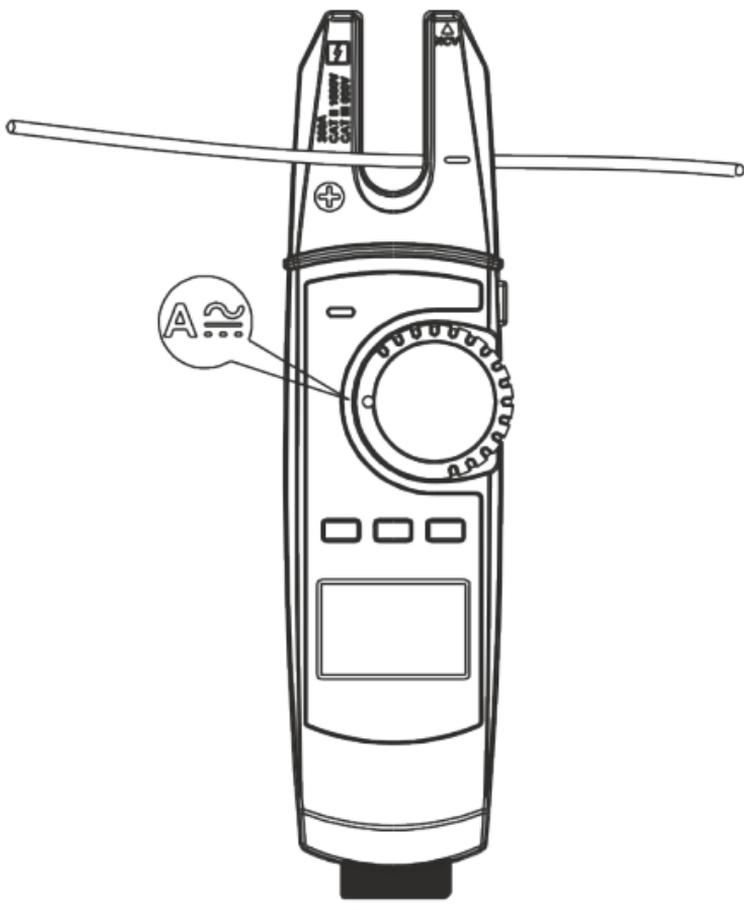


Figure 3

3. Measuring of AC Voltage (ACV)

- (1) Set the rotary dial to V_{AC} ;
- (2) Connect the red and black test probes to the circuit to be measured, the instrument will automatically select the correct range. The central screen will display the current true visual value of AC voltage. When the voltage value exceeds 30V AC, the screen will display a high-voltage alarm signal to warn against a potential shock hazard; frequency response scope: 45Hz - 400Hz.



Warning:

AC voltage measuring range shall not be greater than 750V AC.

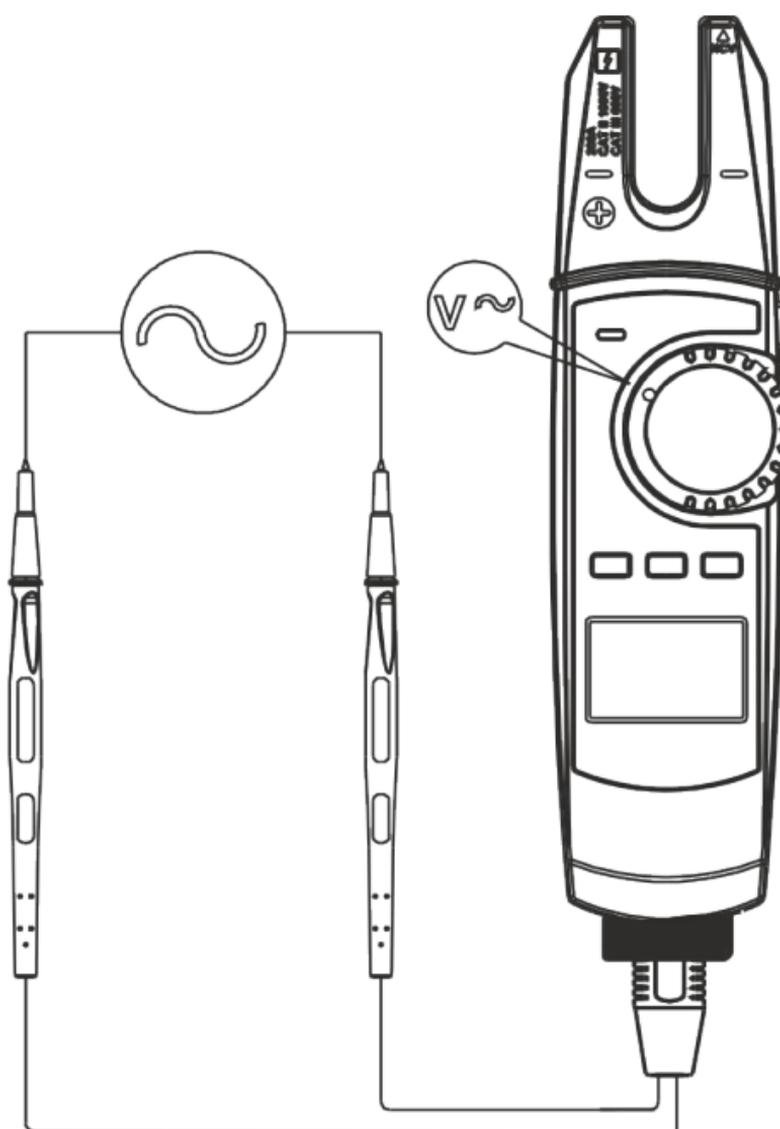


Figure 4

3. Measuring of DC Voltage (DCV)

- (1) Set the rotary dial to V_{DC} ; Press "SELECT" key to switch the instrument function to DC voltage;
- (2) Connect the red and black test probes to the circuit to be measured, the instrument will automatically select the correct range. The display screen will display the current true virtual value of DC voltage; if the potential at the red probe is higher than that at the black probe, the screen will display the positive voltage value, otherwise the negative value will be displayed; when voltage exceeds 42V DC, the screen will display the high-voltage alarm signal to warn against a potential shock hazard.



Warning:

DC Voltage measuring range shall not be greater than 1000V DC.

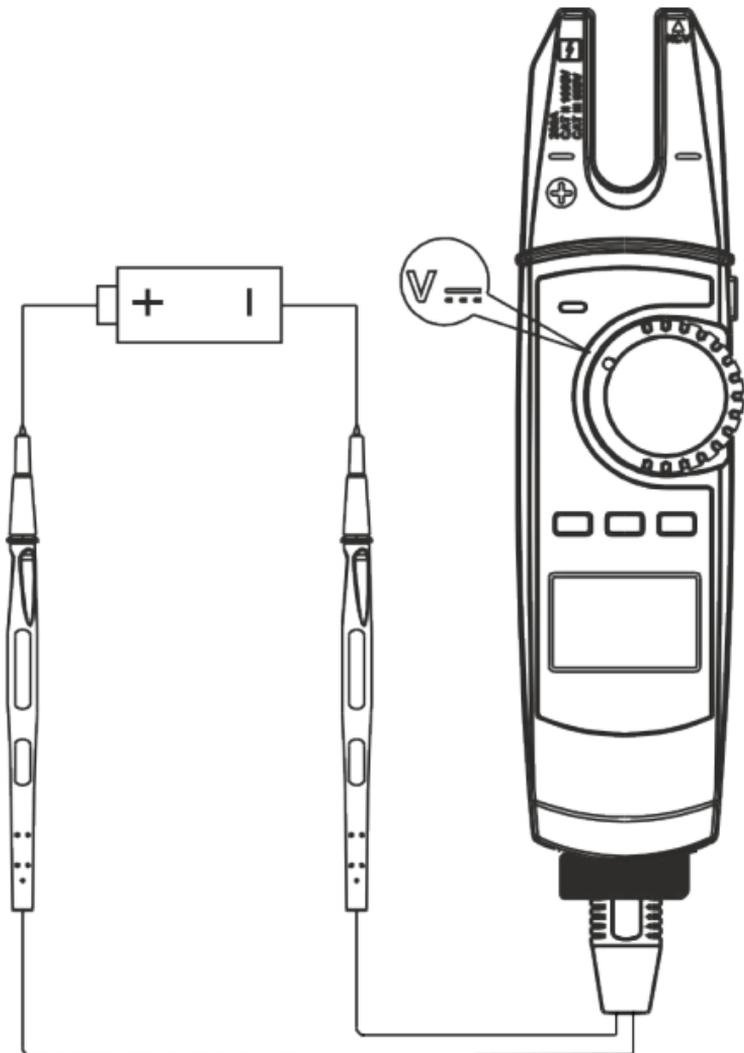


Figure 5

5. Measuring of Resistance (OHM)

- (1) Set the rotary dial to “ Ω ”;
- (2) Connect the red and black test probes to the component to be measured, the instrument will automatically select the correct range. The central screen will display the current value of resistance;

Warning:

During the measurement of resistance, the power must be isolated before connecting, and the residual electric charge of all capacitors should be fully discharged. More accurate measurement will be possible when the elements are separated from circuit.

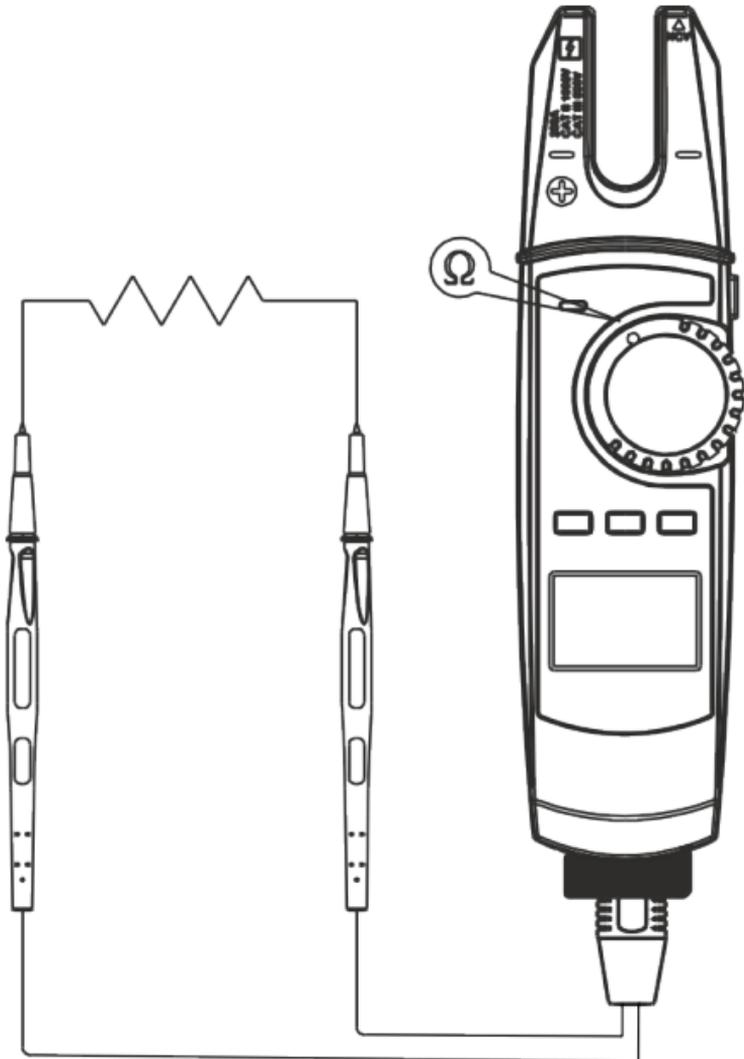


Figure 6

6. Continuity Testing (CON)

- (1) Set the rotary dial to “••” ; Press “SELECT” button on the measuring function range once to select Continuity.
- (2) Connect the red and black test probes to the component or circuit to be tested. If the measured resistance is below 10Ω , the audible alarm will sound continuously; If the measured value is between 10Ω and 100Ω the audible alarm may not sound. If the measured value is greater than 100Ω , the audible alarm will not sound.

Warning;

When measuring on-off condition, the circuit power must be isolated. All the residual electric charge of all electric capacitors must be fully discharged before the components or conductors are connected with this product.

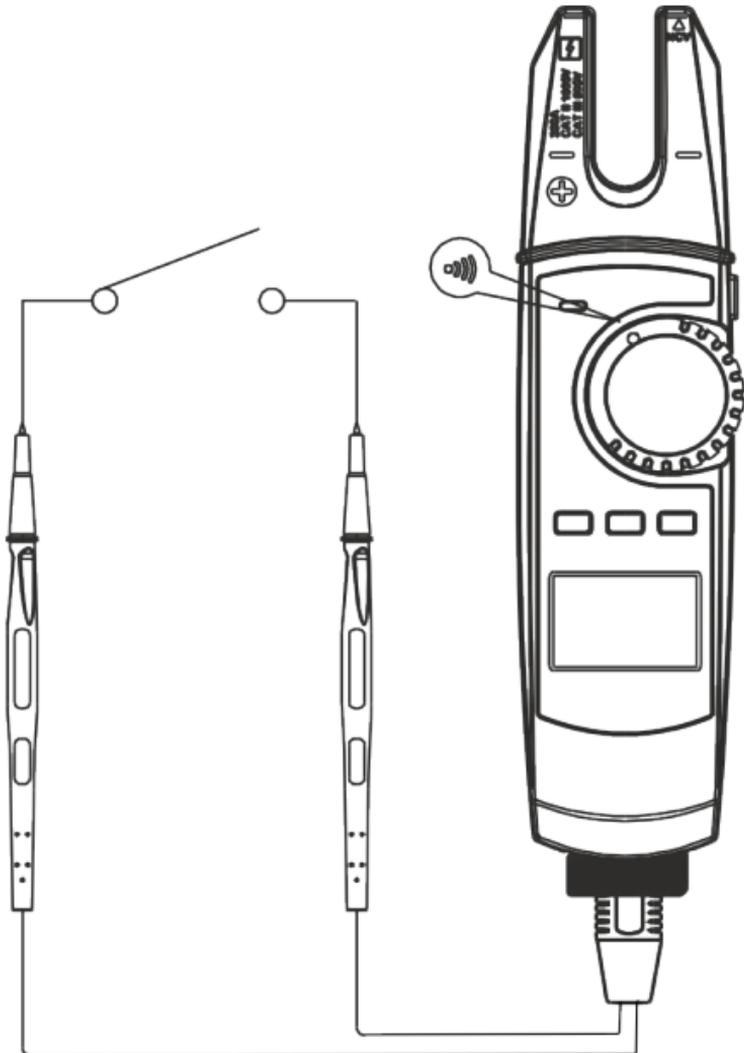


Figure 7

7. Diode Measurement (DIO)

- (1) Set the rotary dial to “  “; Press “SELECT” button on the measuring function range twice to select Diode.
- (2) Connect the red and black test probes to the positive and negative poles of the diode to be tested. The positive conductivity voltage value will be displayed in the centre of the screen; If the probes are connected to the incorrect polarity, the screen shall display the measurement sign “OL”;

Warning:

When measuring the diode, the circuit power must be isolated and electric charge of all electric capacitors must be fully discharged before the diode is connected with the product. More accurate measurement will be possible when the components are separated from the circuit.

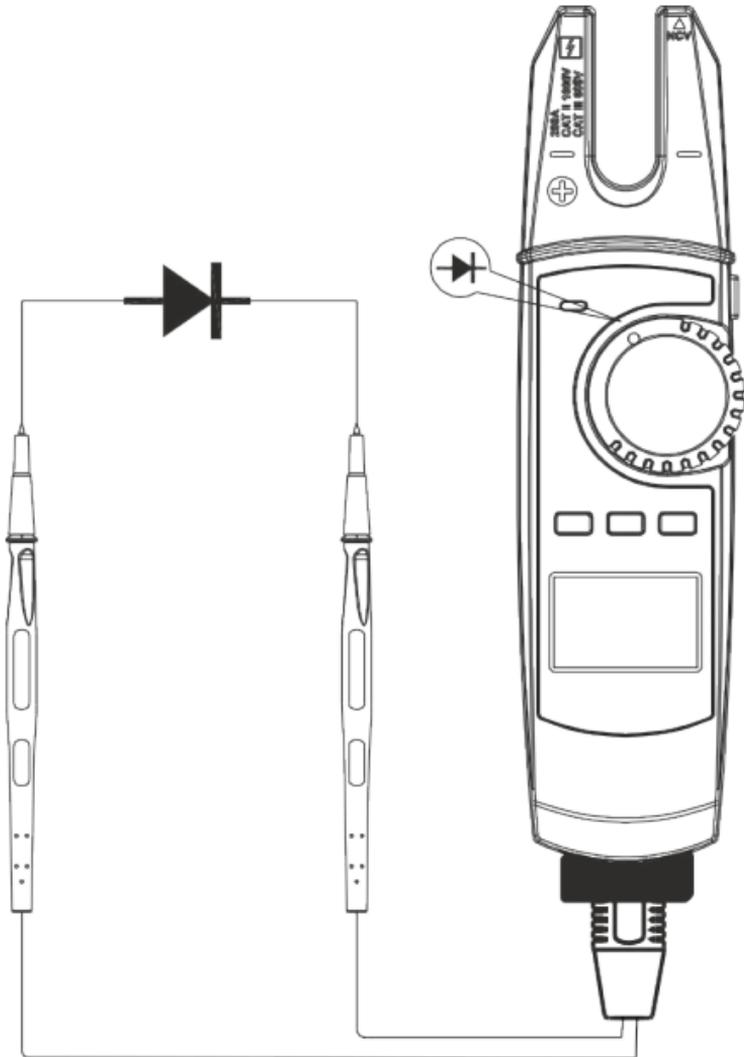


Figure 8

8. Measuring of Capacitance (CAP)

- (1) Set the rotary dial to "H←"; Press "SELECT" button on the measuring function range three times to select Capacitance.
- (2) Connect the red and black test probes to the two sides of the capacitor to be tested and the instrument will select the correct range. The display screen will display the current value of capacitance.

Warning:

During the measurement of capacitance, the power must be isolated before connecting, and the residual electric charge of all capacitors must be fully discharged. More accurate measurement may be possible when the elements are separated from the circuit. Before measuring the capacitance, the "REL" key should be pressed to clear the base number to eliminate the effect of probe parasitic capacitance.

Note:

At the range 60nF, it is suggested to firstly press the "REL" key to clear the short circuit base number before measurement, to eliminate impact of probe resistance.

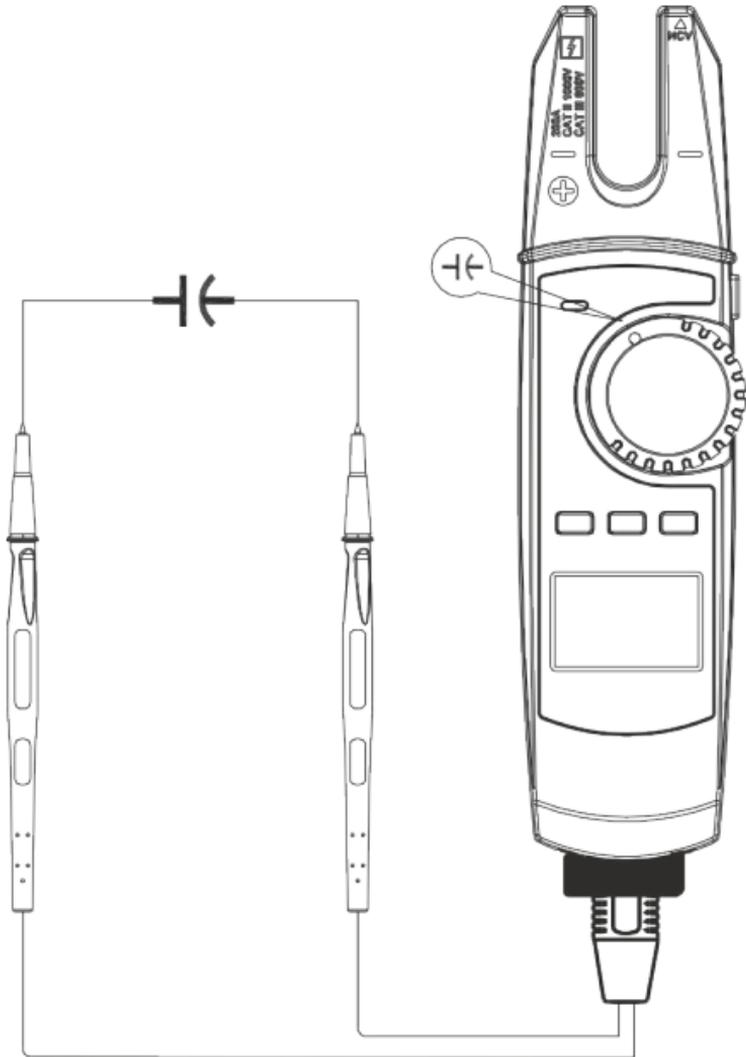


Figure 9

9. Non-contact Voltage Indication (NCV)

- (1) Set the rotary dial to “**NCV**”;
- (2) Connect the instrument to the conductor to be checked. The top right end of the clamp head is equipped with a sensor.

The screen will display “EF” if the induced voltage is not detected. When the test distance is less than 10cm and the tested voltage is greater than 100Vrms the instrument will emit an audible alarm the NCV LED light will also start to flicker. According to the magnitude of voltage present, the display screen will display four levels as “-”, “- -”, “- - -” or “- - - -”. The greater the voltage, the higher the level displayed.

Warning:

This unit can only be used as a single pole voltage detector when batteries are inserted. The single pole test is intended only as a quick check, the circuit must be checked again for the presence of voltage using the AC voltage setting and 2 pole method.

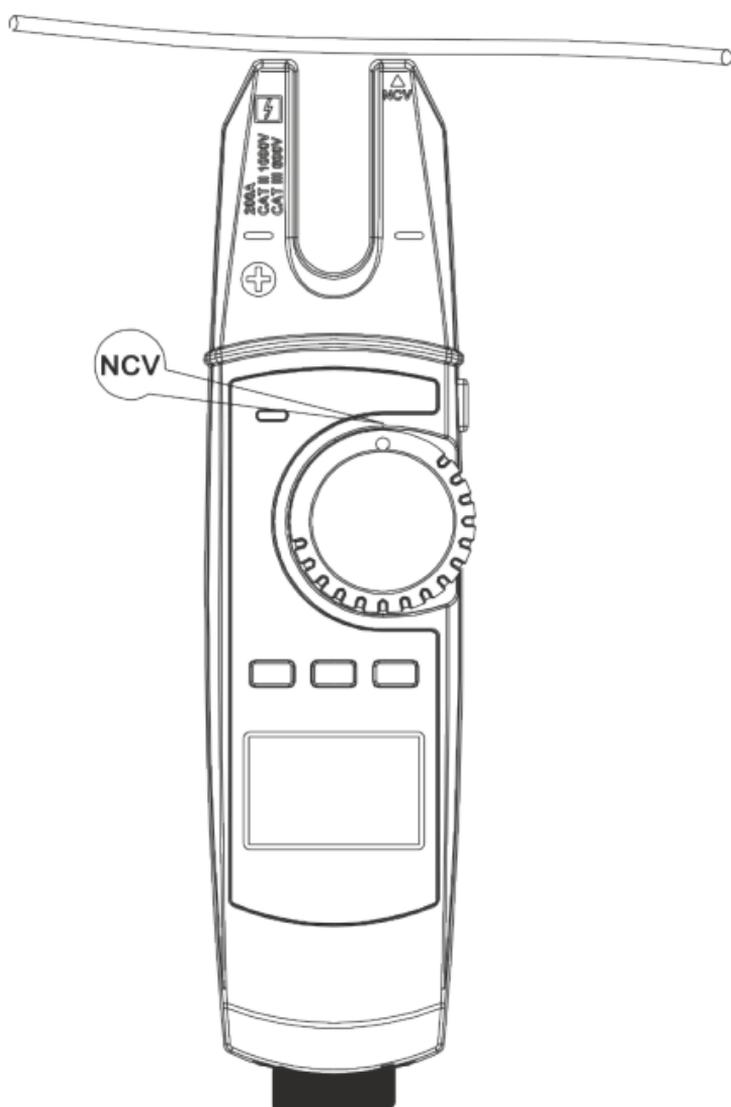


Figure 10

10. Single Pole Voltage Detection (SPD)

- (1) Set the rotary dial to "SPD";
- (2) Connect the red or black test probe to the conductor to be checked making direct contact with either of the probes. Detection of Single Pole Voltage can be achieved with either the red or black test probe as both are equipped to indicate if voltage is present in excess of 100Vrms.

If an AC voltage above 100Vrms is present, the LED is illuminated and the audible alarm will sound. The screen will display "EF" if no voltage is detected. When the contact voltage is greater than 100Vrms, the meter will indicate with an audible alarm and the NCV/SPD LED alarm light will also start to flicker. According to the magnitude of voltage present, the central screen will display the four levels as "-", "- -", "- - -" or "- - - -". The greater the voltage, the higher the level displayed.

Warning:

This unit can only be used as a single pole voltage detector when batteries are inserted. The single pole test is intended only as a quick check, the circuit must be checked again for the presence of voltage using the AC voltage setting and 2 pole method.

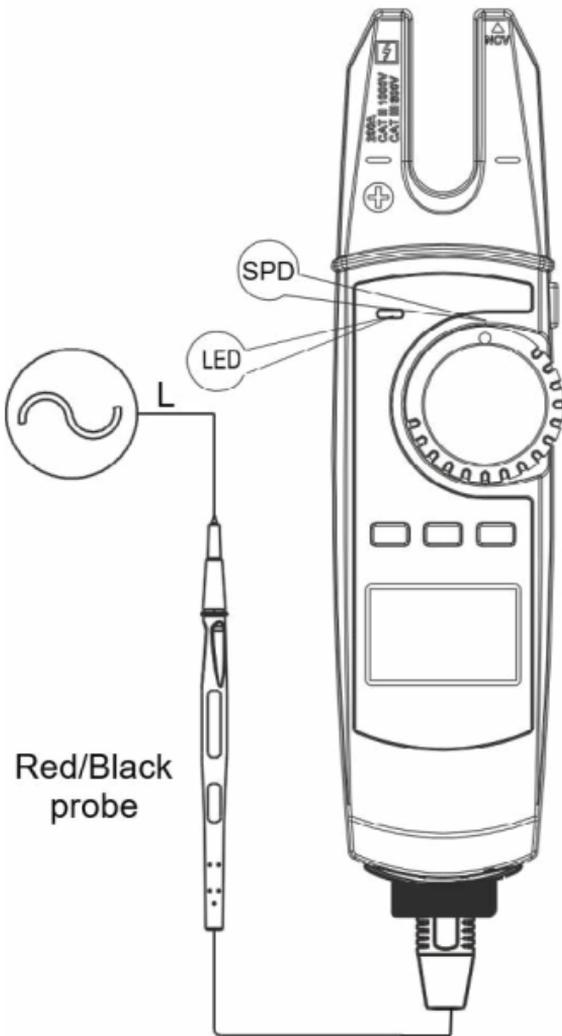


Figure 11

IX. Maintenance and Repair

 **Warning:** please make sure the test probes are disconnected from any measured circuit or component before removing the battery cover so as to avoid electric shock.

1. General Maintenance

- a. The maintenance and other services of this instrument must be carried out by qualified professional maintenance staff.
- b. Test leads are classed as a wear and tear item and are replaceable for a charge at our service department: contact us for more information.
- c. The outer casing should be regularly cleaned by a dry cloth. Detergent which contains **abrasives** or **solvents must not** be applied.

2. The installation or replacement of batteries:

The power supply of this product is two 1.5V AA batteries, please install or replace batteries following the guidance below:

- a. Turn off the product, and make sure the test probes are disconnected from any conductor or component
- b. Turn the instrument face down, unscrew the battery holder and remove the battery cover. Remove the batteries and install new batteries according to the polarity indication.
- c. Please use batteries of the same specification.
- d. After installing new batteries, re-fit the battery cover, and lock the screws tight.

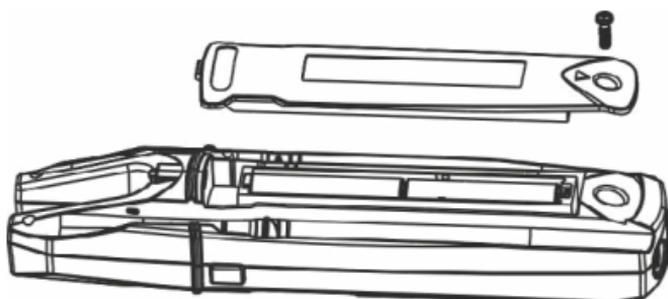


Figure 12

Instructions are subject to change without prior notice.

24 Month Warranty

Di-log instruments are subject to stringent quality controls. If in the course of normal daily use a fault occurs we provide a 24 month warranty (only valid with proof of purchase). Faults in manufacture and material defects 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 are not covered by the warranty. The fitted test leads are deemed a wear and tear item and are not covered by the warranty, however replacement leads are available for a chargeable repair and will be fitted by our service department.

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