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If applicable, the applications database and any instructional information provided has been designed to offer general guidance for a particular tool's use and while all attention is given to the accuracy of the data no project should be attempted without referring first to the manufacturer's technical documentation (workshop or instruction manual) or the use of a recognised authority such as Autodata.

It is our policy to continually improve our products and thus we reserve the right to alter specifications and components without prior notice. It is the responsibility of the user to ensure the suitability of the tools and information prior to their use.

Part No. 6843

LASER[®]

High Voltage Tester CAT IV 1000v

Instructions



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Guarantee

If this product fails through faulty materials or workmanship, contact our service department direct on: **+44 (0) 1926 818186**. Normal wear and tear are excluded as are consumable items and abuse.



Butts of Bawtry

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1.Feature

- (1) High voltage category: CAT IV 1000V AC/DC
- (2) Dual switch for protection & function switch
- (3) Display range: DC 6V – DC 1000V, AC 24V – AC 1000V, LCD resolution 1V
- (4) Voltage bar graph to display the voltage range: 6/12/24/50/120/230/400/690/1000V
- (5) Polarity test (the polarity indication LED lights up when voltage approximate $\geq 24V$ AC/DC.)
- (6) Phase test: 100V ~ 1000V
- (7) Continuity test: 0 ~ 1.3M Ω , with LCD and buzzing indication, and conducting current 5uA
- (8) Non-contact voltage sensing: >AC 90V
- (9) Auto power off
- (10) Illumination for testing point
- (11) Probe cap to protect user and test probe
- (12) IP65

2.Safety Warning

Please read manual carefully before any operation. This manual includes safety warning and safety requirement, which help user to operate the equipment safely.

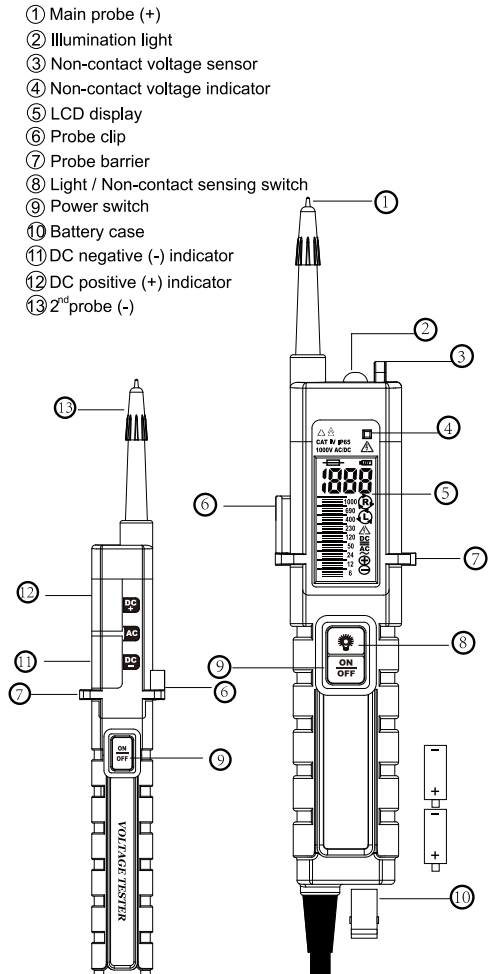
⚠ WARNING is reserved for conditions and actions that are likely to cause serious or fatal injury.

⚠ CAUTION is reserved for conditions and actions that can cause injury or instrument damage.

⚠ WARNING

- After measuring AC/DC voltage source for 3 minutes, the tester must take a rest for 1 minute.
- Never measure the voltage beyond specified (1000V).
- Do not operate the equipment near flammable gasses.
- Never operating the equipment with wet hands.
- Keep hands and fingers behind the barriers during measurements.
- Never unlock and open the battery case during measurements.
- Confirm the function of the equipment with a known source before measure unknown voltage source.
- Do not make any measurement when there is abnormal condition, such as broken case or exposed metal parts are present on the instrument, test probes, and cables.
- Do not modify the equipment.
- Extreme caution when operating with a live circuit.
- LED only function properly when temperature is between 0 ~ 50 C .
- Before using a voltage detector with audible indicator at locations with a high background noise level, it has to be determined whether the audible signal is perceptible.

3.Instrument Layout



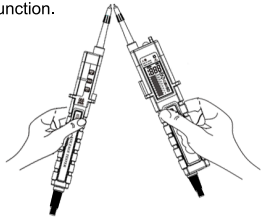
LCD indication

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- The diagram shows the LCD display with numbered labels pointing to the following indicators:
- ① Battery power indication
 - ② Voltage value
 - ③ Phase direction
 - ④ High voltage warning
 - ⑤ DC indication
 - ⑥ AC indication
 - ⑦ DC positive (+) polarity
 - ⑧ DC negative (-) polarity
 - ⑨ Voltage bar-graph indicator

4.Preparation

4.1 Power on / Self-diagnostic

- (1) Press the "ON/OFF" button on both main probe and 2nd probe simultaneously,then shorting the two metal probes. The power shall automatically turn on, and the equipment start self-diagnostic function.



- (2) **CAUTION:** Do not operate the equipment if any abnormal appear during self-diagnostic.
- (3) All indicators on LCD shall show up, and buzzer shall buzzing during the normal self-diagnostic.
- (4) LCD will flash 5 times when battery power is lower than $2.2 \pm 0.1V$. Please change the battery.

4.2 Trouble shooting

If any of the following happened, please open the battery case and close it again after 5 seconds. Please do self-diagnostic after closing the case again.

- (1) Cannot self-diagnostic before or after the operation of the equipment.

- (2) Cannot auto power off.

5. Measurement

- CAUTION:** Please read the manual carefully.
- Please do self-diagnostic to insure the LCD and buzzer function properly.
- Please conform the equipment with a known voltage source.
- Please place the hand behind the barrier.
- As the equipment has higher impedance(about 300k Ω), capacitor and inductor voltage may indicate.

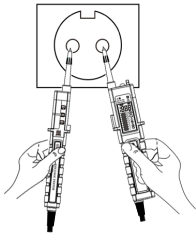
5.1 AC / DC Polarity Measurement (on 2nd probe)

- (1) Connecting two probes to two ports of the voltage source.
- (2) Without pressing any button, the polarity of AC / DC (24V – 1000V) will be indicated on the 2nd test probe.
- (3) AC: both polarity lights up.
(+) DC: DC+ lights up. (-) DC: DC- lights up.
- (4) The direction of the main probe will determine (+)DC or (-)DC. If main probe is on the positive port, DC+ lights up, and vice versa.
- (5) This function will be canceled if any one of the ON / OFF button is pressed.

5.2 Voltage Measurement

5.2.1 Voltage And Polarity

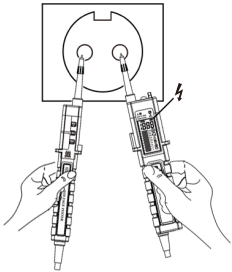
- (1) Connecting two probes to two ports of the voltage source.



- (2) Press two ON / OFF buttons on two probes at same time. Voltage and polarity will be displayed on the LCD.
(DC6 – 1000V; AC24 – 1000V; AC / +DC / -DC).
- (3) The direction of the main probe will determine DC+ or DC-. If main probe is on the positive port, DC+ lights up, and vice versa.
- (4) **CAUTION:** If only one of the buttons has pressed, error voltage value AC 23V – AC 55V will be displayed on the LCD when voltage is greater than AC 300V.

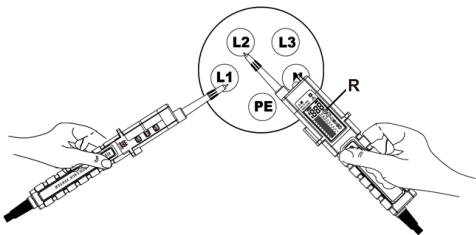
5.2.2 High Voltage indication

LCD will display "A" when voltage source $\geq 100VAC / VDC$.

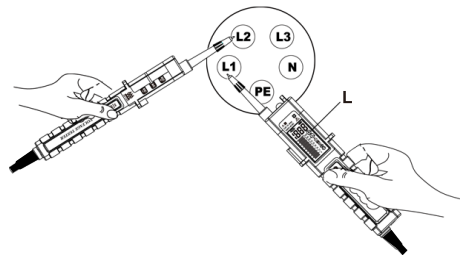


5.2.3 Phase Rotation

- (1) Phase rotation measurement is only for 3 phase (4 lines) system. Please using the right hand hold the main probe handle (behind the barrier) properly during the measurement (because one of the sensing area is on the main probe handle).
- (2) LCD will display voltage between phases.
- (3) If the rotation is clockwise, LCD will display "R".



- (4) If the rotation is counter-clockwise, LCD will display "L".



- (5) Testing tips: This measurement use tester as a virtual ground; if equipment or user is not with proper insulation condition, measurement may not function properly.

5.3 Non-contact Voltage Sensing

- (1) To switch on the function, press the "LIGHT / NOT-CONTACT SENSING SWITCH", LCD will display "DE-".
- (2) Non-contact voltage indicator "A" on the top right of the main probe will light up and buzzer will buzzing when the sensor is near electromagnetic file greater than 90VAC.
- (3) Press the "LIGHT / NON-CONTACT SENSING SWITCH" again to switch off the function.
- (4) This function will automatically switch off after 3 minutes.

5.4 Continuity

- (1) **CAUTION:** Please make sure there is no live voltage in the circuit before continuity measurement.
- (2) Connecting the two probe to the to circuit wish to test, press both "ON / OFF SWITCH" on two probes, if the circuit is continued, all indicator on the LCD will flashing, and buzzer will be buzzing.
- (3) **CAUTION:** If the circuit is continued, equipment shall act like self-diagnostic.

5.5 Illumination

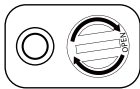
- (1) Long press and hold the "LIGHT / NON-CONTACT VOLTAGE SENSING SWITCH" to switch on the illumination light.
- (2) **CAUTION:** Illumination function and non-contact voltage sensing function share the same button, please operating these two functions carefully.

6. Battery Replacement

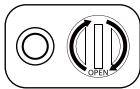
- WARNING:** Please do not operate any functions and move the equipment away from the voltage source when replacing the batteries.
- If LCD flash 5 times then switch off automatically during self-diagnostic or voltage measurement, it indicating the equipment is run out of the battery power. Please change the batteries.

- Battery power level will also display on the LCD during the voltage measurement; please take caution with the battery power level.

- (1) Unlock the battery cap by a coin.
- (2) Open the battery cap and replace the battery. Please take care of the battery polarity.
- (3) Put back the battery cap and lock it by a coin.



CLOSE



OPEN

- WARNING:** Please make sure the battery cap is locked before any operation.

7. Specification

Voltage Measurement	
Voltage Range	6 – 1000VDC 24 – 1000VAC
Voltage Bar Indication	6/12/24/50/120/ 230/400/690/1000V
Accuracy	$\pm(3\%+3)V$
Response Time	<1s at 90% each voltage
Maximum Current @ 1000V	<3.5mA
High Voltage Indication	
Voltage Range	100V-1000V AC/DC
Phase Rotation Measurement	
System	Three Phase 4 Lines
Voltage Range	100V ~ 1000V
Phase Angle	120 \pm 5 degree
Non-Contact Voltage Sensing	
Voltage Range	>90VAC
Continuity	
Continuity Resistance	0 ~ 1.3M Ω
Conducting Current	$\leq 5uA$
Operating Environment	
Battery	3V (AAA 1.5V x2)
Temperature	0~50 C operation -10~60 C storage
Humidity	max 85% RH
Safety Certification	
CAT Category	CAT IV 1000V
GS LVD	EN 61243-3
EMC	EN 61326-1
IP code	IP65
Pollution Level	2

8. Cleaning & Storage

- Use a light damp cloth with neutral detergent for cleaning the instrument. Do not use abrasives or solvent.
- Do not expose the instrument to the direct sun, high temperature and humidity or dewfall.
- Remove batteries when the instrument will not be in use for a long period.
- Do not lock the battery cap without batteries.
- Read the manual carefully and follow the safety guide for any operation.

9. Measurement Category

Category IV is for measurements performed at the source of the low-voltage installation.

Category III is for measurements performed in the building installation.

10. Environment Protection



- Do not dispose electrical appliances as unsorted municipal waste, use separate collection facilities.

- Contact your local government for information regarding the collection systems available.

- If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.

- When replacing old appliances with new ones, the retailer is legally obligated to take back your old appliance for disposal at least for free of charge.

11. Safety Symbol



Always check proper operation of the device on a known working circuit before using.



Suitable for live working



Caution, risk of electric shock. Under normal use, hazardous voltages may be present.



Alternating current.



Both direct and alternating current.

12. Ingress protection (IP) ratings

Ingress protection numbers are used to specify the environmental protection – electrical enclosure – of electrical equipment.

The IP rating normally has two numbers:

1. The first number – protection against solid objects.
2. The second number – protection against liquids.

IP65:

The instrument is totally protected against dust and against low pressure jets of water from all directions



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