

Information

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 direct sunlight, high temperatures, humidity or damp.
- Remove batteries when the instrument will not be in use for a long period.
- Do not lock the battery cap without batteries.
- Read the instruction carefully and follow the safety guide for any operation.

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.

Environment Protection

- Do not dispose of electrical appliances in general 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 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 free of charge.

Safety Symbols

- ⚠ 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.

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.

Safety Warnings - please read

Please read these instructions carefully before any operation. These instructions include safety warnings and safety requirements, which will help the user to operate the equipment safely.

- After measuring an AC/DC voltage source for 3 minutes, you must rest the tester for 1 minute.
- Never measure a voltage beyond specified (1000v).
- Do not operate the equipment near flammable gasses.
- Never operate 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 measuring an unknown voltage source.
- Do not use if the tester is damaged i.e. the case is broken or exposed metal parts are present on the instrument, test probes or cables.
- Do not modify the equipment.
- Take extreme caution when operating with a live circuit.
- LEDs will only function properly when ambient temperature is between 0°C-50°C.
- Before using the tester with audible indicator at locations with high background noise, determine whether the audible signal is perceptible.



Safety First. Be Protected.

Our products are designed to be used correctly and with care for the purpose for which they are intended. No liability is accepted by the Tool Connection for incorrect use of any of our products, and the Tool Connection cannot be held responsible for any damage to personnel, property or equipment when using the tools. Incorrect use will also invalidate the warranty.

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.



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Guarantee

If this product fails through faulty materials or workmanship, contact our service department direct on: +44 (0) 1926 818166. Normal wear and tear are excluded as are consumable items and abuse.

Part No. 6843

LASER®

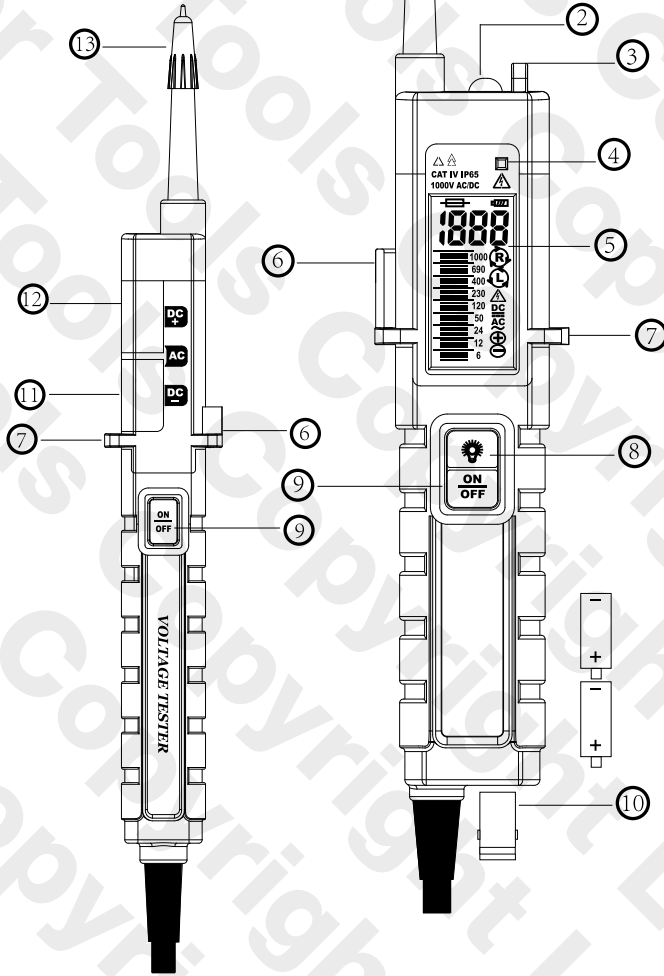
High Voltage Tester
CAT IV 1000v

Instructions



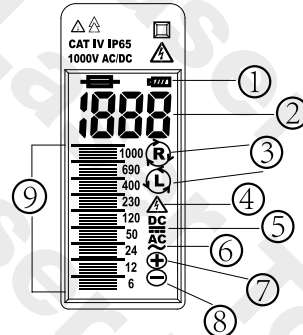
Instrument Layout

1. Main Probe (+)
2. Illumination Light
3. Non-contact Voltage Sensor
4. Non-contact Voltage Indicator
5. LCD Display
6. Probe Clip
7. Probe Barrier
8. Light / Non-contact Sensing Switch
9. Power Switch
10. Battery Case
11. DC Negative (-) Indicator
12. DC Positive (+) Indicator
13. 2nd Probe (-)



LCD Indication

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



Features

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

Specification

Voltage Measurement	
Voltage Range	6-1000V DC 24-1000V AC
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	>90V AC
Continuity	
Continuity Resistance	0~1.3M Ω
Conducting Current	$\leq 5uA$
Operating Environment	
Battery	3V (AAA 1.5V x2)
Temperature	0°C - 50°C operation -10°C - 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

Instructions

Preparation

Power on/Self-diagnostic

1. Press the “ON/OFF” button on both main probe and 2nd probe simultaneously, then short the two metal probes. The power shall automatically turn on, and the equipment will start self-diagnostic function.
2. CAUTION: Do not operate the equipment if anything abnormal appears during self-diagnostic.
3. All indicators on LCD shall show up, and buzzer shall be 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.



Troubleshooting

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

1. Cannot complete self-diagnostic before or after the operation of the equipment.
2. Cannot auto power off.

Measurement

- CAUTION: Please read the instructions carefully.
- Please do self-diagnostic to insure the LCD and buzzer functions properly.
- Please confirm the function of the equipment with a known voltage. Known voltage must be 6 volts or greater. Less than 6 volts will not register.
- Please place hands behind the barrier.
- As the equipment has higher impedance (about 300k Ω), capacitor and inductor voltage may indicate.

AC/DC Polarity Measurement (on 2nd probe)

1. Connect two probes to two ports of the voltage source.
2. Without pressing any buttons, 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 cancelled if any of the ON/OFF buttons are pressed.

Instructions

Voltage Measurement

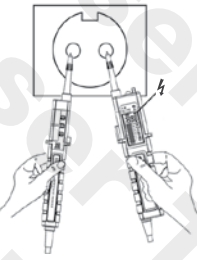
Voltage and Polarity

1. Connect 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 been pressed, error voltage value AC 23V-AC 55V will be displayed on the LCD when voltage is greater than AC 300V.



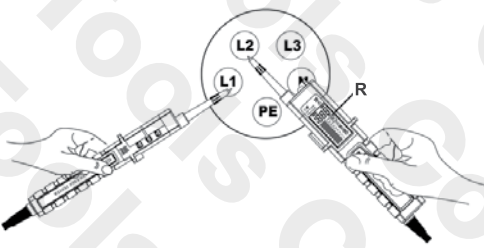
High Voltage Indication

LCD will display Δ when voltage source $\geq 100V$ AC/DC.



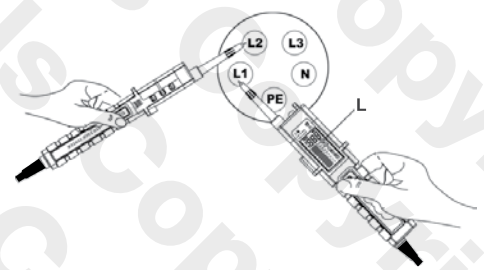
Phase Rotation

1. Phase rotation measurement is only for 3 phase (4 lines) system. When using the main probe in the right hand please hold the handle (behind the barrier) properly during the measurement (because one of the sensing areas 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 anti-clockwise, LCD will display “L”.



5. Testing tips: This measurement uses tester as a virtual ground; if equipment or user is without proper insulation, measurement may not function properly.

Instructions

Non-contact Voltage Sensing

1. To switch on the function, press the “Light / Non-contact Sensing” switch, LCD will display “DE-”.
2. Non-contact voltage indicator Δ on the top right of the main probe will light up and buzzer will sound when the sensor is near electromagnetic field greater than 90V AC.
3. Press the “Light / Non-contact Sensing” switch again to switch off the function.
4. This function will automatically switch off after 3 minutes.

Continuity

1. CAUTION: Please make sure there is no live voltage in the circuit before continuity measurement.
2. Connecting two probes to the circuit you wish to test, press both ON/OFF buttons on two probes, if the circuit is continued, all indicators on the LCD will flash, and buzzer will sound.
3. CAUTION: If the circuit is continued, equipment shall act like self-diagnostic.

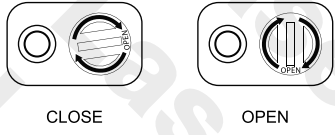
Illumination

1. Long press and hold the “Light / Non-contact Sensing” switch to turn on the illumination light.
2. CAUTION: Illumination function and non-contact voltage sensing function share the same button, please operate these two functions carefully.

Battery Replacement

WARNING: Please do not operate any functions and move the equipment away from the voltage source when replacing the batteries.

- If LCD flashes 5 times then switches off automatically during self-diagnostic or voltage measurement, it is indicating that the equipment is running out of battery power. Please change the batteries.
 - Battery power level will also display on the LCD during the voltage measurement; please take note of the battery power level.
1. Unlock the battery cap with a coin.
 2. Open the battery cap and replace the battery. Please take note of the battery polarity.
 3. Put back the battery cap and lock it with a coin.



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