



For regional contact information, please go to our website at <http://www.hioki.com>.

The Declaration of Conformity for instruments that comply to CE mark requirements may be downloaded from the HIOKI website.

Warranty

Warranty malfunctions occurring under conditions of normal use in conformity with the Instruction Manual and Product Precautionary Markings will be repaired free of charge. This warranty is valid for a period of three (3) years from the date of purchase. Please contact the distributor from which you purchased the product for further information on warranty provisions.

Introduction

Thank you for purchasing the HIOKI Model 3258 SAFETY HiTESTER.

To obtain maximum performance from the instrument, please read this manual first, and keep it handy for future reference.

Overview

The HiTester employs a coupling capacitance cancellation method to measure voltage in AC circuits without requiring metal-to-metal contact. Voltage can be measured safely in practically any location, on either insulated or exposed metal conductors. The inter-probe voltage measurement design is ideal for confirming line voltage.

Inspection

When you receive the instrument, inspect it carefully to ensure that no damage occurred during shipping. If damage is evident, or if it fails to operate according to the specifications, contact your dealer or Hioki representative.

Maintenance and Service

- To clean the instrument, wipe it gently with a soft cloth moistened with water or mild detergent. Never use solvents such as benzene, alcohol, acetone, ether, ketones, thinners or gasoline, as they can deform and discolor the case.
- If the protective functions of the instrument are damaged, either remove it from service or mark it clearly so that others do not use it inadvertently.
- If the instrument seems to be malfunctioning, contact your dealer or Hioki representative.
- Pack the instrument so that it will not sustain damage during shipping, and include a description of existing damage. We do not take any responsibility for damage incurred during shipping.

Safety



This manual contains information and warnings essential for safe operation of the instrument and for maintaining it in safe operating condition. Before using it, be sure to carefully read the following safety precautions.

DANGER

This instrument is designed to comply with IEC 61010 Safety Standards, and has been thoroughly tested for safety prior to shipment. However, mishandling during use could result in injury or death, as well as damage to the instrument. Be certain that you understand the instructions and precautions in the manual before use. We disclaim any responsibility for accidents or injuries not resulting directly from instrument defects.

Safety Symbol

	In the manual, the symbol indicates particularly important information that the user should read before using the instrument. The symbol printed on the instrument indicates that the user should refer to a corresponding topic in the manual (marked with the symbol) before using the relevant function.
	Indicates AC (Alternating Current).
	Indicates DC (Direct Current).
	Indicates a double-insulated device.
	Indicates a grounding terminal.

Symbols for Various Standards

	WEEE marking: This symbol indicates that the electrical and electronic appliance is put on the EU market after August 13, 2005, and producers of the Member States are required to display it on the appliance under Article 11.2 of Directive 2002/96/EC (WEEE).
	This symbol indicates that the product conforms to safety regulations set out by the EC Directive.

The following symbols in this manual indicate the relative importance of cautions and warnings.

	Indicates that incorrect operation presents an extreme hazard that could result in serious injury or death to the user.
	Indicates that incorrect operation presents a significant hazard that could result in serious injury or death to the user.
	Indicates that incorrect operation presents a possibility of injury to the user or damage to the device.
	Indicates advisory items related to performance or correct operation of the instrument.

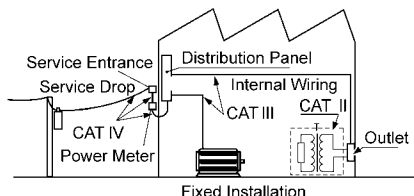
Measurement categories

This instrument complies with CAT IV (600V) safety requirements. To ensure safe operation of measurement instruments, IEC 61010 establishes safety standards for various electrical environments, categorized as CAT II to CAT IV, and called measurement categories. These are defined as follows.

CAT II: Primary electrical circuits in equipment connected to an AC electrical outlet by a power cord (portable tools, household appliances, etc.) CAT II covers directly measuring electrical outlet receptacles.

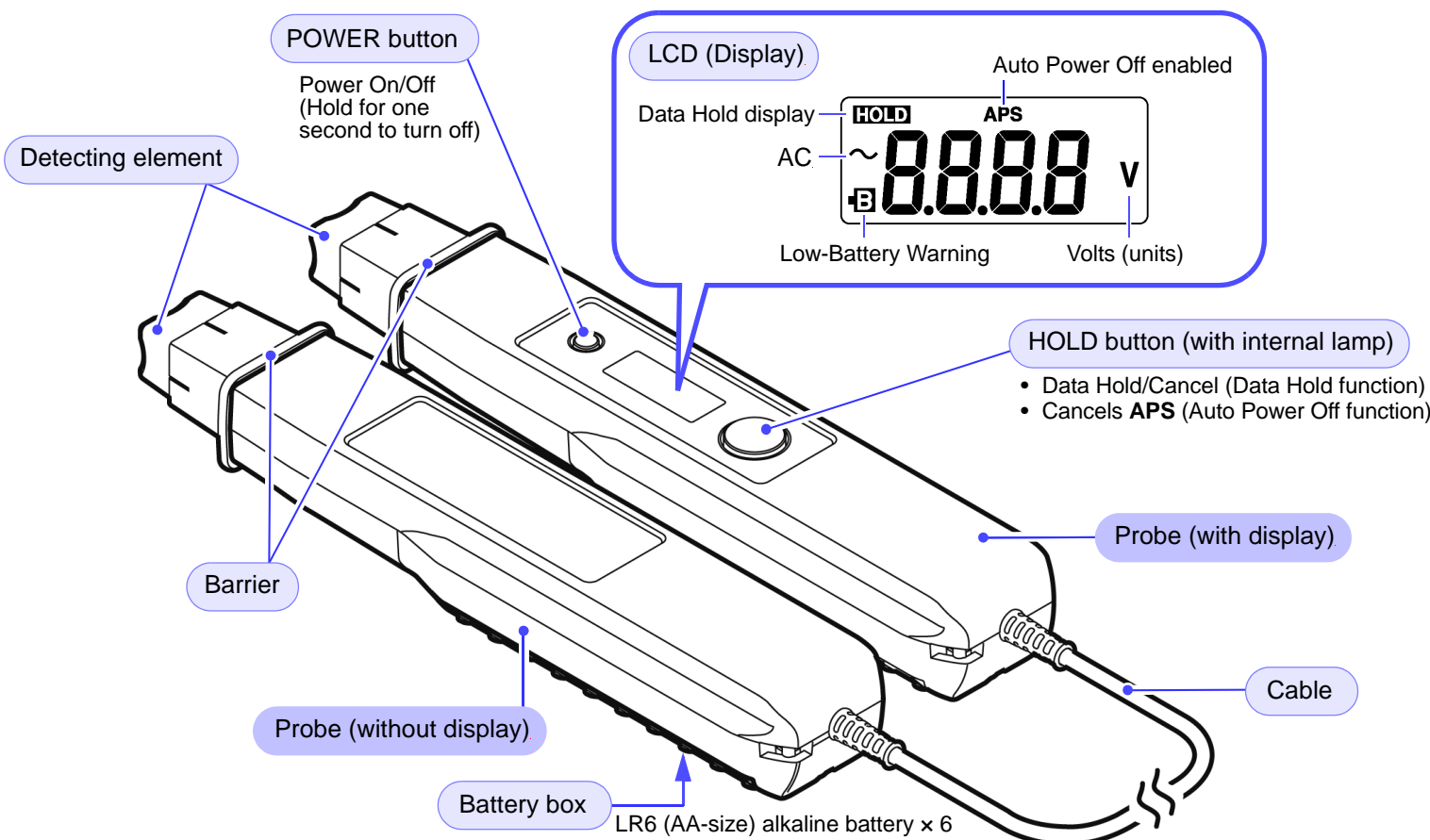
CAT III: Primary electrical circuits of heavy equipment (fixed installations) connected directly to the distribution panel, and feeders from the distribution panel to outlets.

CAT IV: The circuit from the service drop to the service entrance, and to the power meter and primary overcurrent protection device (distribution panel).



Using a measurement instrument in an environment designated with a higher-numbered category than that for which the instrument is rated could result in a severe accident, and must be carefully avoided. Use of a measurement instrument that is not CAT-rated in CAT II to CAT IV measurement applications could result in a severe accident, and must be carefully avoided.

Name of Parts



Usage Notes



Follow these precautions to ensure safe operation and to obtain the full benefits of the various functions.

WARNING

- To avoid electric shock when measuring live lines, wear appropriate protective gear, such as insulated rubber gloves, boots and a safety helmet.
- Do not allow the instrument to get wet, and do not take measurements with wet hands. This may cause an electric shock.
- To avoid electric shock, do not hang cables over your body.

CAUTION

- Touching any of the high-voltage points inside the HiTester is very dangerous. Do not attempt to modify, disassemble or repair the HiTester; as fire, electric shock and injury could result.
- Do not store or use the instrument where it could be exposed to direct sunlight, high temperature or humidity, or condensation. Under such conditions, the instrument may be damaged and insulation may deteriorate so that it no longer meets specifications.
- This instrument is designed for use indoors. It can be operated at temperatures between 0 and 40°C without degrading safety.
- This instrument is not designed to be entirely water- or dust-proof. Do not use it in an especially dusty environment, nor where it might be splashed with liquid. This may cause damage.
- To avoid damage to the instrument, protect it from physical shock when transporting and handling. Be especially careful to avoid physical shock from dropping.
- Do not use the instrument near a source of strong electromagnetic radiation, or near a highly electrically charged object. These may cause a malfunction.
- To avoid breaking the cables and probes, do not bend or pull them.
- Avoid stepping on or pinching cables, which could damage the cable insulation.
- Keep in mind that, in some cases, conductors to be measured may be hot.

NOTE

This instrument may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.

Functions

Live Wire Check Function
When the line to be measured is live (30 V AC or more present), the HOLD button lamp blinks. Monitors contact conditions between the detecting elements and object to be measured, and displays the measured value when the detecting elements are properly applied. At this point, the HOLD button lamp lights. While the detecting elements are not properly applied, "----" is displayed.

Data Hold Function
Data hold is inactive when the HOLD button is blinking or off (unlit). When the HOLD button lamp is lit, press the HOLD button to hold the measured value on the display (**HOLD** appears on the LCD, and the HOLD button lamp turns off). When Data Hold is active, overflow warning and live wire check functions are disabled. To Cancel: Press the HOLD button again (**HOLD** is cleared from the display).

Overflow Warning Function
Overflow occurs when the measured value exceeds 600 V ("600 V" appears blinking, and the HOLD button lamp also blinks).

Auto Power Off Function (APS)
The Auto Power Off function is enabled when the power is turned on (**APS** appears on the LCD). Power is automatically turned off after ten minutes of inactivity (since the last operation). To disable Auto Power Off, hold the HOLD button when turning the power on.

Low-Battery Warning Function
When the battery voltage gets low appears on the LCD, and the power turns off automatically soon afterwards. While is displayed, the measurement value blinks and the HOLD button is disabled.

Measurement Procedure



Preliminary Checks

Confirm the following items before using the HiTester.

- Check for any damage from storage or transportation, and ensure that the cable insulation is intact and that no bare metal is exposed. Any damage could present an electrical hazard, so contact your supplier or Hioki representative if damage is found.
- Turn the power on and confirm that the batteries are not depleted (if the low-battery indicator is displayed, accurate measurements cannot be performed).
- Check that the detecting elements on the ends of the probes are clean (accurate measurement may not be possible if a detecting element is dirty).

DANGER

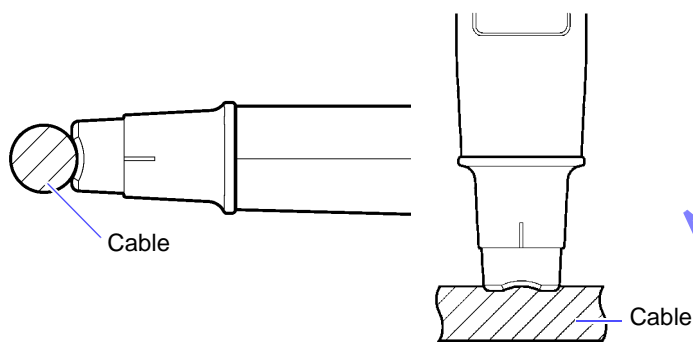
Observe the following precautions to avoid electric shock.

- Avoid touching the ends of the probes beyond the barrier.
- The maximum rated voltage between input terminals and ground is 600V AC. Attempting to measure voltages exceeding 600V with respect to ground could damage the instrument and result in personal injury.
- Even when the HOLD button lamp is not lit and when no measurement value is displayed, wiring may be live, so avoid touching the electrical circuit.

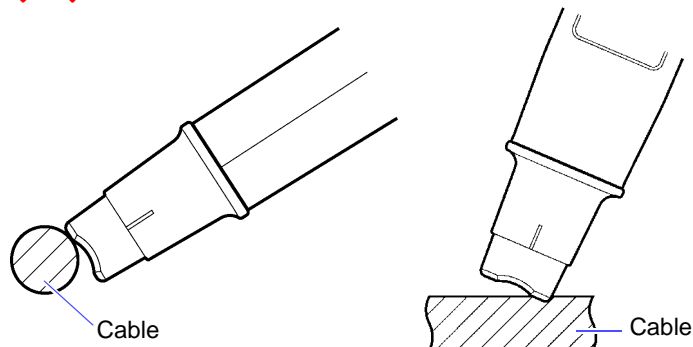
NOTE

- The HiTester normally emits beeping tones during operation.
- Accurate measurements may not be possible if the measured waveform contains frequency components outside of the specified frequency range for guaranteed accuracy.
- Dirt on the measurement surfaces can prevent accurate measurement.
- This is an inter-probe voltage measurement design. Ensure that the detecting elements on the probes are properly applied to the object to be measured, as illustrated below.

Apply detecting elements perpendicular to and flush with the surface of the cables to be measured.



Proper measurement is not possible.



1 Pre-Operation Inspection (Required)

To avoid electric shock, always confirm the following before operating.

Apply the probes to live conductors with a known voltage of least 30 V AC between them, and check the displayed values. Then reposition the probes so that both are applied to the same (live) conductors, and confirm the displayed voltage. Note, however, that this method is not usable with shielded conductors.

- If the correct voltage is displayed, proceed with measurements.
- If the correct voltage is not displayed, do not proceed with measurements. Contact your supplier or Hioki representative.

Check the cables to be measured.

Confirm that they are type IV or CV insulated cables with at least 100 mm² cross-section.

2 AC Voltage Measurement

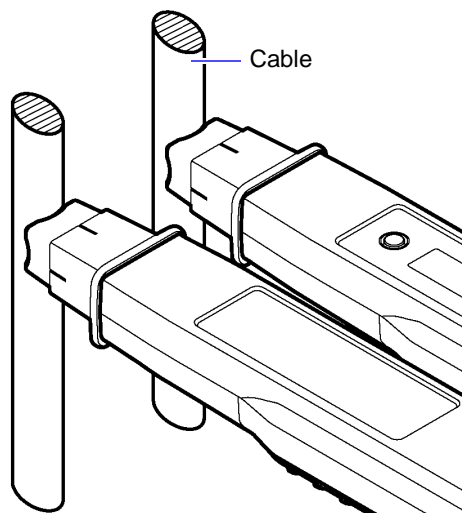
- Press the POWER button to turn the HiTester on.
- This is an inter-probe voltage measurement design. Apply the detecting elements of both probes to the measurement points. When measuring between the line and earth, one of the two probes must be contact with the grounding line.
- When the detecting elements are properly applied, measurement occurs, the HOLD lamp lights, and the measured voltage is displayed.

Operating Status		Description
HOLD Button Lamp	LCD	
Lit	Displays measured value	Displays the measured voltage. To hold the displayed value, press the HOLD button (Data Hold function). If the detecting elements are not properly applied to the objects being measured, "----" is displayed.
Blinking	"600 V" is displayed, blinking	The voltage to be measured exceeds 600 V AC. This is the over-range measurement state (Overflow Warning function)
Blinking	"----"	The object to be measured has live voltage (30 V AC or more, Live Wire Check function).
Unlit	"----"	Non-live condition or detecting element is improperly applied to measurement object.

NOTE

- This is an inter-probe voltage measurement design. Properly apply the detecting elements of both probes to the measurement points.
- When battery charge is low, is displayed, the HOLD button lamp is not lit, and the measured value, "----" or "600 V" blinks, depending on measurement conditions (Low-Battery Warning function).
- Be aware that measured values below 30 V AC are outside of the range of guaranteed accuracy, regardless of any displayed value.

Correct probe application



Replacing the Batteries

WARNING

- To avoid electric shock when replacing batteries, remove each probe from the object being measured and turn the power off before opening the case.
- Use only LR6 (AA-size) alkaline batteries. Use of any other battery may result in explosion.
- Do not mix old and new batteries, or different types of batteries. Also, be careful to observe battery polarity during installation. Otherwise, poor performance or damage from battery leakage could result.
- Battery may explode if mistreated. Do not short-circuit, recharge, disassemble or dispose of in fire.
- Handle and dispose of batteries in accordance with local regulations.

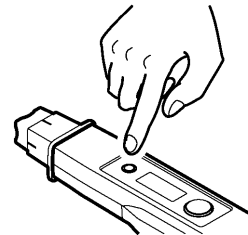
NOTE

To avoid corrosion from battery leakage, remove the batteries from the instrument if it is to be stored for a long time.

Replacing the batteries

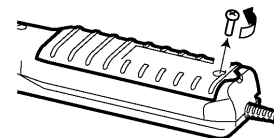
Required items :
Phillips screwdriver and six new LR6 (AA-size) alkaline batteries.

1



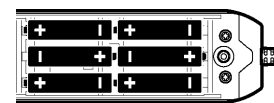
Hold the POWER button for one second to turn the HiTester off.

2



Loosen the screw in the battery compartment cover on the back of the probe (without the display), and remove the cover.

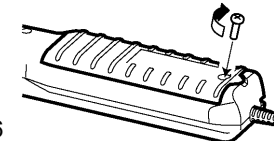
3



LR6 (AA-size) alkaline battery × 6

Replace the batteries. Confirm the correct polarity when installing the new batteries.

4



Replace the battery compartment cover and screw.

Error Display

When an error is displayed on the LCD, the HiTester requires repair. Contact your supplier or Hioki representative.

Error Display	Meaning	Remedial Action
E-01	Internal ROM Error	Repair is necessary. Contact your supplier or Hioki representative.
E-02	Calibration Data Faulty	
E-03 to 05	Internal Variable Error	

NOTE

- Display of "----" or blinking indicators on the LCD are not error indications.
- "----" is displayed when the detecting element on a probe is not applied correctly.
- The display blinks when the batteries are depleted, and when the measured voltage exceeds 600 V.

Specifications

Environmental and Safety Specifications

Operating environment	Indoors, Pollution degree2, altitude up to 2000 m (6562-ft.)
Storage temperature and humidity	-10 to 50°C (14 to 122°F), 80%RH or less (non-condensating)
Operating temperature and humidity	0 to 40°C (32 to 104°F), 80%RH or less (non-condensating)
Dielectric strength	AC 8540 Vrms (@1 mA sensing current) Between detecting elements and cable
Applicable standards	Safety EN61010 EMC EN61326 Class A
Power supply	DC 1.5 V × 6 LR6 alkaline battery × 6
Maximum rated power	2 VA
Maximum operating time	Approx. 14 h (power on, no measurement), or the equivalent of 1000 one-minute uses or 200 five-minute uses
Dimensions	Approx. 51W × 275H × 37.5D mm (Each device) (2.01"W × 10.83"H × 1.48"D)
Cable length	Approx. 900 mm (35.43")
Mass	Approx. 670 g (23.6oz.)
Accessories	Instruction manual ×1, LR6 alkaline battery × 6 Carrying soft case ×1

Voltage Detection Specifications

Voltage Detection Method	Coupling capacitance cancellation method
Maximum rated voltage to earth	AC 600 V (Measurement Category IV) Anticipated Transient Overvoltage: 8000 V

Functional Specifications Refer to the "Functions" section for details.

Auto Power Off	The HiTester automatically turns off after 10 ±1 minutes of inactivity (since the last operation). The operator can disable this function.
Data Hold	Holds the displayed value (displayed value updating is stopped, can be disabled).
Low-Battery Warning	When the HiTester supply voltage falls below 6.3 V DC, this indicator appears, the HOLD button is disabled, and measurement accuracy cannot be guaranteed. The HiTester shuts itself off if the supply voltage falls to 5.5 V.

Guaranteed Accuracy Specifications

Accuracy guarantee for temperature and humidity	23°C±5°C (73°F±9°F), 80%RH or less
Guaranteed accuracy period	1 year
Measurement Method	True RMS value (True RMS)
Measurement Ranges	AC 420.0 V / 600 V (Fully automatic ranging, no manual range selection)

AC Voltage Measurement Accuracy (Auto-Ranging):

Range	Display Range	Display Resolution	Range of Guaranteed Accuracy	Accuracy	
				40 to 66 Hz	66 to 400 Hz
420.0 V	0.0 V to 420.0 V	0.1 V	30.0 V to 420.0 V	±1.5%rdg. ±5dgt.	±2.5%rdg. ±5dgt.
600 V	380 V to 600 V	1 V	380 V to 480 V 481 V to 600 V	±2.0%rdg. ±5dgt. ±5.0%rdg. ±5dgt.	

- Zero-suppression prevents display of values between 0.0 and 1.0 V. When is displayed, accuracy cannot be guaranteed.

Maximum rated voltage to earth	AC600 Vrms
Circuit Dynamics	Crest Factor: 1.8 (in 600 V range, sine waves only)
Objects of Measurement	Insulated conductors (IV or CV equivalent, min. 100 mm ² x-section), bare metal conductors Note: Not usable on shielded conductors.
Influence of Conductor Diameter	0.5% rdg. IV or CV equivalent insulated conductors (combine with above accuracy if diameter is 38 mm ² to 100 mm ²)
Temperature Characteristic	0.05% rdg./°C (combine with above accuracy except at 23°C ±5°C (73°F±9°F))
Influence of Adjacent Wiring	Within ±5% rdg. *The indicated voltage measurement value (rdg.) can be affected by phase changes on the third wire when measuring the other two wires in a 3-wire system.
Influence of External Magnetic Field	None

Display Specifications

Voltage Display	4200 counts Less than 10 counts zero-suppressed
Function Display	HOLD Data Hold APS Auto Power Off Active Low-Battery Warning "600 V" (blinking)... Over-Range Measurement Indicator (for 601+ V AC)
Display Response	Not more than 2.4 s
Display Refresh Interval	600 ms ±200 ms