3258

SAFETY HITESTER

Instruction Manual

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ΗΙΟΚΙ

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Introduction нюкі DECLARATION OF CONFORMITY nufacturer's Name: HIOKI E.E. CORPORATION Manufacturer's Address: 81 Koizumi, Ueda, Nagano 386-1192, Japan Product Name: SAFETY HITESTER lodel Number: 3258 orms to the following The above mentioned product specifications: Safety: EN61010-1:2001 EMC: EN61326-2-2:2006 ClassA equipment Portable test, measuring and monitoring equipment used in low-voltage distribution systems pplementary Information: The product herewith complies with the requirements of the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC. HIOKI E.E. CORPORATIO Atsuspi Mizmo

Thank you for purchasing the HIOKI Model 3258 SAFETY HiT-ESTER.

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

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9 September 2010
                                 Atsushi Mizuno
Director of Quality Assurance
                                                    3258A999
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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.

Safetv

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.

ADANGER

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

Symbols for Various Standards

-,	
Ŕ	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).
CE	This symbol indicates that the product conforms to safety regula- tions set out by the EC Directive.
The followir and warning	ng symbols in this manual indicate the relative importance of cautions

Indicates that incorrect operation presents an extreme hazard **DANGER** that could result in serious injury or death to the user

Indicates that incorrect operation presents a significant hazard MARNING Indicates that incorrect operation process a contract that could result in serious injury or death to the user.

Indicates that incorrect operation presents a possibility of **ACAUTION** injury to the user or damage to the device Indicates advisory items related to performance or correct

NOTE Indicates advisor, 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) con-

nected 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 highernumbered category than that for which the instrument is rated could result in a



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



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Usage Notes

A This instrument may cause interference if used in residential areas. Such use must be avoided unless the user takes special Follow these precautions to ensure safe operation and to obtain measures to reduce electromagnetic emissions to prevent interthe full benefits of the various functions. ference to the reception of radio and television broadcasts.

MARNING

- To avoid electric shock when measuring live lines wear appropriate protective gear, such as insu-lated 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.

<u> ACAUTION</u>

- 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

Functions

ive Wire Check unction	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 min- utes of inactivity (since the last operation). To disable Auto Power Off, hold the HOLD but- ton when turning the power on.
ow-Battery Varning Function	When the battery voltage gets low • appears on the LCD, and the power turns off automati- cally 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.

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- Check for any damage from storage or transportation, and metal is exposed. Any damage could present an electrical conductors, and confirm the displayed voltage. hazard, so contact your supplier or Hioki representative if damage is found.
- Turn the power on and confirm that the batteries are not If the correct voltage is displayed, proceed with measurements. depleted (if the low-battery indicator is E 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).

ADANGER

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.



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 ensure that the cable insulation is intact and that no bare reposition the probes so that both are applied to the same (live)

Note, however, that this method is not usable with shielded conductors.

• 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

1. Press the POWER button to turn the HiTester on.

- 2. 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 granding line.
- 3. When the detecting elements are properly applied, measurement occurs, the HOLD lamp lights, and the measured voltage is displayed.

Operating Status				
HOLD Button Lamp	LCD	Description		
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

AWARNING

- 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 shortcircuit, 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.





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

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



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LR6 (AA-size) alkaline battery × 6

Confirm the correct polarity when

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.	
E-02	Calibration Data Faulty	Contact your supplier or	
E-03 to 05	Internal Variable Error	nioki representative.	

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.

Replace the batteries.

installing the new batteries.

Specifications

Enviro	onmen	tal and S	Safety S	oecifications			
Operating	environm	ent Indoors,	Pollution deg	gree2, altitude up to	2000 m (6562-ft.)		
Storage te and humic	emperature ditv	e -10 to 50)°C (14 to 122	2°F), 80%RH or less	(non-condensating)		
Operating and humi	temperati dity	^{ure} 0 to 40°0	0 to 40°C (32 to 104°F), 80%RH or less (non-condensating)				
Dielectric	strength	AC 6880	AC 6880 Vrms (@1 mA sensing current)				
Applicable	e standard	s Safety FMC	EN61010 EN61326 Cla	ass A			
Power su	pply	DC 1.5 \ L R6 alka	/ × 6	< 6			
Maximum	rated pov	ver 2 VA	,				
Maximum time	operating	Approx. of 1000	Approx. 14 h (power on, no measurement), or the equivalen of 1000 one-minute uses or 200 five-minute uses				
Dimensio	ns	Approx. (2.01"W	Approx. 51W × 275H × 37.5D mm (Each device) (2.01"W × 10.83"H × 1.48"D)				
Cable len	gth	Approx.	900 mm (35.	43")			
Accessori	es	Instructio	Instruction manual ×1, LR6 alkaline battery × 6				
Voltad	e Dete			ions			
Voltage D Method	etection	Coupling	Coupling capacitance cancellation method				
Maximum	rated	AC 600	AC 600 V (Measurement Category IV)				
Functi	ional S	necifica		er to the "Functions	" section for datails		
Auto Pow	er Off	The HiTe	ester automa	tically turns off after	10 ± 1 minutes of		
		inactivity this func	(since the la tion.	ist operation). The c	operator can disable		
Data Hold	1	Holds to stopped	ne displayed , can be disal	I value (displayed bled).	value updating is		
Low-Batte	ery Warnin	g When th	e HiTester su	pply voltage falls be HOLD button is di	elow 6.3 V DC, this		
		suremer	accuracy ca	annot be guarantee	d. d.		
Guara	nteed	Accura	v Sneci	fications			
Accuracy	guarante	e		lications			
for tempe humidity	rature and	23°C±5°	C (73°F±9°F)	, 80%RH or less			
Guarante period	ed accura	^{icy} 1 year					
Measurer	ment Meth	od True RN	IS value (Tru	e RMS)			
Measurer	nent Rang	ges AC 420. (Fully au	0 V/ 600 V Itomatic rang	ing, no manual rang	ge selection)		
AC Voltag	ge Measur	ement Accu	racy (Auto-Ra	anging):			
Range	Display	Display	Range of Guaranted	Accu			
400.0.1/	0.0 V to	Resolution	Accuracy 30.0 V to	40 to 66 Hz	66 to 400 Hz		
420.0 V	420.0 V	0.1 V	420.0 V 380 V to	±1.5%rdg. ±5dgt.	±2.5%rag. ±5agt.		
600 V	380 V to 600 V	1 V	480 V 481 V to	±5.0%rdg. ±5dgt.			
 Zero-si 	uppressio	n prevents d	splay of valu	es between 0.0 and	1.0 V.		
When	B is disp	played, accur	acy cannot b	e guaranteed.			
Maximum voltage to	rated earth	AC600 \	/rms				
Circuit Dy	/namics	Crest Fa	Crest Factor: 1.8 (in 600 V range, sine waves only)				
Objects o Measurer	f nent	Insulated section)	Insulated conductors (IV or CV equivalent, min. 100 mm ² x-				
		Note: No	ot usable on s	shielded conductors			
Influence Diameter	of Conduc	tor 0.5% rdt: with abo	g. IV or CV eq ve accuracv	luivalent insulated c if diameter is 38 mn	onductors (combine n ² to 100 mm ²)		
Temperat Characte	mperature 0.05% rdg./°C (combine with above accuracy except at 23° $\pm 5\%$ (73% $\pm 9\%$))				racy except at 23°C		
Influence	fluence of Adjacent Within ±5% rdg. *The indicated voltage measurement value						
wiring		(rdg.) car measurir	(rdg.) can be affected by phase changes on the third wire when measuring the other two wires in a 3-wire system.				
nfluence of External Nagnetic Field None							
Display Specifications							
Voltage Display 4200 counts Less than 10 counts zero-suppressed							
Function	Display	HOLD	HOLD				
			Low-Battery Warning				
		"600 V"	"600 V" (blinking) Over-Range Measurement Indicator (for 601+ V AC)				
Display R	esponse	Not mor	e than 2.4 s				
Diamlay D	- free als beta						