HIOKI

INSULATION / WITHSTANDING Test Instrument series
3153, 3159, 3174, ST5520



3153 CE



3174 CE



3159 Not CE Marked



ST5520 CE

This electrical safety test instrument series is designed for insulation resistance and voltage withstand testing of electrical devices and components according to various safety standards. A multitude of automation and labor-saving features are provided to ensure effective testing for a wide variety of requirements and test conditions. Select the most appropriate model for your applications.

AUTOMATIC INSULATION / WITHSTANDING HiTESTER 3153
INSULATION / WITHSTANDING HiTESTER 3159
AC AUTOMATIC INSULATION/WITHSTANDING HiTESTER 3174
INSULATION TESTER ST5520

3 year Warranty

Model 3153

Automatic Insulation Voltage Withstand Testing

Voltage Control from a PC

Full Remote Control

All test parameters can be controlled by RS-232C or GP-IB, including test voltage, cut-off current, resistance threshold and timer durations. Start-stop control can be provided with the 9613 single hand remote control or 9614 two-hand remote control.

Standards-Based Testing

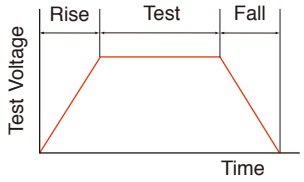
Comparator/Timer

Includes built-in pass-fail comparator and timer functions for easy compliance testing to various safety standards such as those for Electrical Appliance Safety Regulations.

Settable Ramp Up/Down Test Voltage Timing

Ramp Timer Functions

Raising and lowering of test voltage can be set for voltage withstand testing.

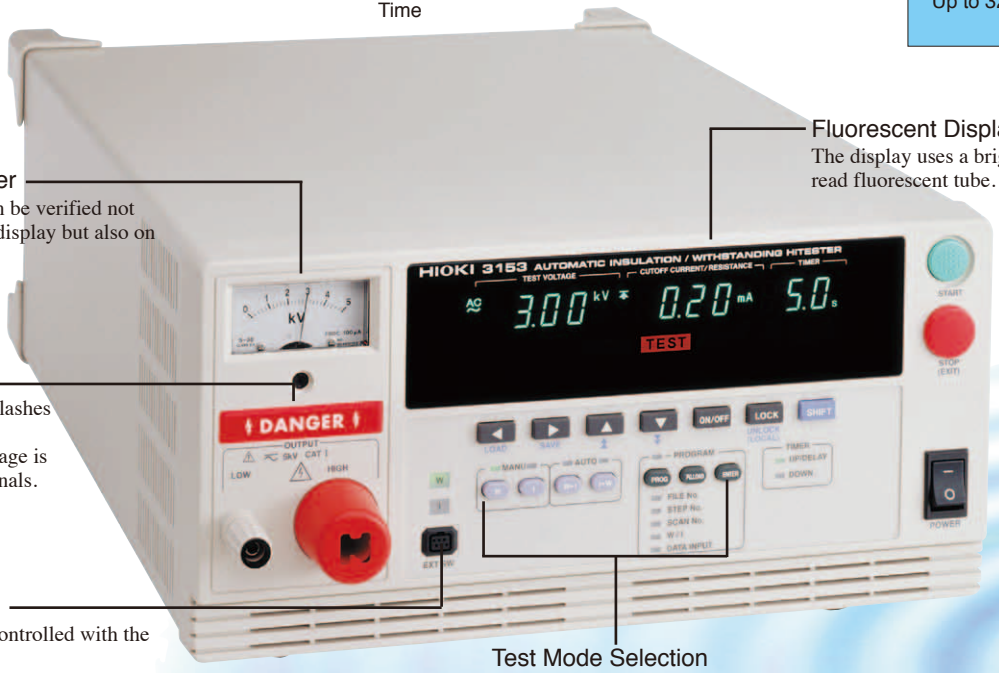


Test Status Read/Write

Program Function

Test conditions can be stored and recalled to support complete automation by sequencer. Up to 32 files can be stored with up to 50 steps per file.





Analog Voltmeter
The test voltage can be verified not only on the digital display but also on the analog meter.

Fluorescent Display Tube
The display uses a bright, easy-to-read fluorescent tube.

Danger Lamp
The warning light flashes during testing and whenever high voltage is present at the terminals.

External Switch
Start/stop may be controlled with the 9613 or the 9614 .
(The 9613 and 9614 are options.)

Test Mode Selection
Three test modes are selectable:
1. Manual test modes: ACW, DCW, I
2. Automatic test modes: W→ I, I → W
3. Programmed test modes: testing by preprogrammed functions.

● Automation Support
Automation features include programmable testing modes, EXT I/O, RS-232C, GP-IB, connection scanning and various data management functions.

● Save 10 Sets of Test Conditions
Store up to 10 sets of test conditions for voltage withstand and insulation resistance modes, so you can quickly switch among the test conditions. (Save/Load)

● Interlock Protect Function
To ensure safety during automatic testing, test output can be interrupted and testing inhibited by input signals from automatic sensing devices.

● Auto Discharge Feature
Any charge on the object under test is discharged by the test instrument, so there is no residual charge after testing. (DC voltage withstand, insulation resistance tests)

● Zero-V Switching
Test voltage on/off switching can be forced to occur only at sine wave zero-crossings.
(AC voltage withstand testing)

● PWM Switching Technique
Enhanced accuracy is obtained by preventing variations in supply voltage from affecting test voltage.

Wide Range of Functions for Various Conditions

1. Pass Hold Function (0: No Hold, 1: Hold)
The pass state is held when it is activated.This is convenient for verifying the decision value.

2. Fail Hold Function (0: No Hold, 1: Hold)
The fail state is held when it is activated.This is convenient for temporarily stopping the test process.

3. Hold State (0: No Hold, 1: Hold)
This saves the state when the Stop key is pressed during a test to unconditionally end the test.

4. Momentary Out (0: Disabled, 1: Enabled)
This function outputs a voltage only when the Start key is being pressed. The Start key is effective both for EXT SW and external I/O.

5. Double Action (0: Disabled, 1: Enabled)
This function allows testing to start only if the Start key is pressed within a half second after the Stop key.

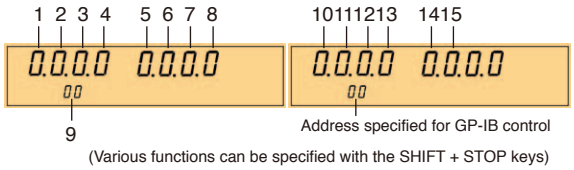
6. Fail Mode (0: Disabled, 1: Enabled)
This function allows the Hold state to be released only by the Stop key on the instrument panel.

7. "START" Interface Command (0: Disabled, 1: Enabled)
This specifies whether the "START" command is enabled.

8. Interlock Function (0: Disabled, 1: Enabled)
This specifies whether the interlock terminal for external I/O is enabled.

9. Maximum Output Voltage
Sets the upper limit of the test voltage.

10. Insulation Resistance Measurement Range
(0: Fixed Range, 1: Automatic Range)
This specifies whether the measurement range for insulation resistance testing should be fixed or automatically determined.



(Various functions can be specified with the SHIFT + STOP keys)

11. Insulation Resistance Test End Mode
0: Test for the specified time
1: Stop when "pass" is detected
2: Stop when "fail" is detected
This specifies the method of ending insulation resistance tests.

12. Ramp Time Setting
0: No judgment during ramp-up
1: Judgment during ramp-up
This specifies whether the judgment is enabled during ramp-up. Valid only during voltage withstand testing.

13. PC Interface
0: RS-232C (PC, 9600 bps)
1: RS-232C (PC, 19200 bps)
2: GP-IB
This specifies the type of PC interface to use.

14. Electrical Discharge Function
(0: Disabled, 1: Enabled)
This specifies whether the electrical discharge function is enabled at the end of testing.

15. Test Signal Output
0: ON also when TEST indicator is flashing
1: OFF when TEST indicator is flashing
2: ON only when TEST indicator is flashing
(excluding ramp down time)
This specifies whether the TEST signal of the external I/O should be outputwhen the TEST indicator is flashing.

Enhanced System Measurements

Maximum 32-Channel Multi-Point Testing

Model 3930 HIGH VOLTAGE SCANNER

Combine Model 3153 with the HIGH VOLTAGE SCANNER 3390 to perform insulation withstand testing easily. Single-end inputs test up to 8 points (between any 4 points) per instrument, and can connect up to 4 instruments together.

■ Model 3390 Basic Specifications

Operation modes	Multi-mode: Scanning of user-selected points for high 4 ch / low 4 ch Single mode: Common scan of high 8 ch - common
Rated voltage used	5 kV AC / 5 kV DC
Operation indications	Lamps light up when power is supplied and when a specified channel is operating
[Relay area]	
Max. open and closed voltage	5000 V DC, 5000 V AC
Max. open and closed current	1.0 A (open and closed capacity: 50 W)
Contact point indirect contact resistance	500 mΩ or less, with 1 mA AC
Contact point max. capacity	50 W
Time	Operation time: 6 ms or less, Recovery time: 6 ms or less
Power supply	VSCV 24 V DC, ±10% (applied using the control signal input connector), 12 VA max.
Dimensions and mass	316 mm (12.44 in)W × 100 mm (3.94 in)H × 350 mm (13.78 in)D, 4.2 kg (148.1 oz)
Accessories	Control input connector connection cable ×1, H.V. Test lead 9615-01 (red) ×8, H.V. Test lead (black) ×1, Grounding cable ×1, Instruction manual ×1

Simultaneous Protective Ground Continuity Testing

Safety Inspection System

Combine Model 3153 with the AC GROUNDING HiTESTER 3157-01 and a general-purpose sequencer for a simple safety test inspection system that includes protective ground continuity and insulation withstand testing.



Model 3157-01
AC GROUNDING HiTESTER

Settable current ranges:
3.0 to 31 A AC

Max. output power:
130VA

Resistance measurement range:
0 to 1.800 Ω

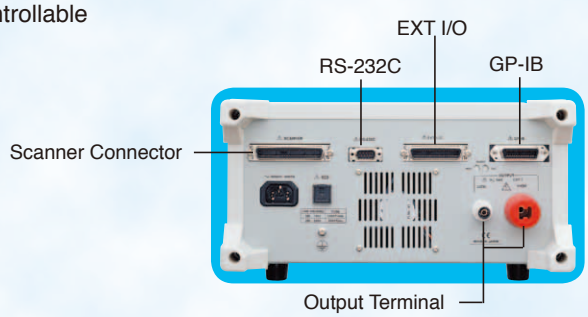
A Full Line-up of Models to Suit Various Needs

Model 3153
AUTOMATIC INSULATION / WITHSTANDING HiTESTER

GP-IB
RS-232C



- Insulation and AC/DC continuous voltage withstand testing
- Safety standards compliance testing
- Stores up to 10 sets of test conditions (10 each for insulation and voltage withstand)
- Zero-V Switching (voltage withstand testing)
- Electrical Discharge function (DC voltage withstand, insulation testing)
- Automated testing support
- Interlock Protect function
- Remote controllable



Voltage Withstand Testing
AC: 0.20 to 5.00 kV, 500 VA
DC: 0.20 to 5.00 kV, 50 VA
0.01 to 100.0 mA

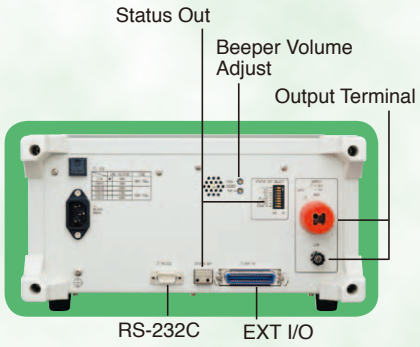
Insulation Testing
DC: 50 to 1200 V
0.10 to 9999 MΩ

Model 3159
INSULATION / WITHSTANDING HiTESTER

RS-232C



- Insulation and voltage withstand testing
- Safety standards compliance testing
- Stores up to 10 sets of test conditions (10 each for insulation and voltage withstand)
- Voltage comparator functions (voltage withstand testing)
- Zero-V Switching (voltage withstand testing)
- Electrical Discharge function (insulation testing)
- Automated testing support
- Interlock Protect function
- Remote controllable
- Not CE marked



Voltage Withstand Testing
AC: 0 to 2.5 kV/5.0 kV, 500 VA
0.01 to 120.0 mA

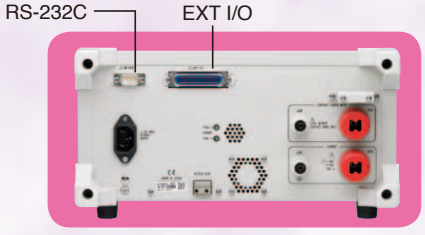
Insulation Testing
DC: 500/1000 V
0.5 to 2000 MΩ

Model 3174
AC AUTOMATIC INSULATION/WITHSTANDING HiTESTER

RS-232C



- Continuous testing of insulation (500/1000 V) and withstand voltage (100 VA transformer capacity)
- Full remote operation when used in combination with the Safety Test Data Management Software 9267
- Save up to 8 test settings each for the withstanding and insulation testing modes
- Precise test voltage without power voltage dependency is generated using the PWM method



Voltage Withstand Testing
AC: 0.2 V to 5.00 kV
0.01 mA to 20.0 mA

EXT I/O Output Signals

External control can be provided by various signals (signal lines have photocoupler isolation)

Pin	I/O	Signal	Function
1	OUT	READY	LO when in "ready state"
2	OUT	L-FAIL	LO when in "fail state" for the lower bound
3	OUT	U-FAIL	LO when in "fail state" for the upper bound
4	OUT	PASS	LO when in "pass state"
5	OUT	TEST	LO when in "test state"
6	OUT	H.V.ON	LO when voltage is present at the output terminals
7	IN	EXT-E	When LO, external I/O input signals are enabled
8	IN	START	When LO, it functions as a "Start" key
9	IN	STOP	When LO, it functions as a "Stop" key
10	IN	INT.LOCK	Interlock engaged when open
11	OUT	W-MODE	LO during voltage withstand testing
12	OUT	I-MODE	LO during insulation testing
13	OUT	W-FAIL	LO when in "fail state" for voltage withstand testing
14	OUT	I-FAIL	LO when in "fail state" for insulation testing
15-16	IN	ISO.GND	Ground inputs for external devices

Pin	I/O	Signal	Function
17-18	IN	EXT.COM	Common terminals for external devices
19	OUT	STEP-END	LO when at the end of a step
20	OUT	FILE-END	LO when at the end of a file
21	IN	FILE-E	LO when FILE 0 to 4 is in use
22	IN	FILE-0	File selection
23	IN	FILE-1	File selection
24	IN	FILE-2	File selection
25	IN	FILE-3	File selection
26	IN	FILE-4	File selection
33-34	OUT	ISO.DCV	Internal power 5V DC (60 mA)
35-36	IN	EXT.DCV	External power supply (5 to 30V DC)

Various Function Settings

1. PASS Hold function
2. FAIL Hold function
3. Hold function
4. Momentary out
5. Double actions
6. FAIL mode
7. "START" interface command
8. Interlock function
9. Maximum Output Voltage
10. Insulation Resistance measurement range
11. Insulation Resistance Test End mode
12. Ramp Timer setting
13. PC Interface
14. Electrical Discharge function
15. TEST signal output

Status Out

When the output conditions set by the DIP switches are satisfied (OR condition), output is provided at relay contacts.

1. H.V.ON	Output voltage generation
2. TEST	Testing in progress
3. PASS	Passed
4. FAIL	Failed
5. INT.LOCK	Interlocked
6. READY	Ready
7. EXT.CONT.	Under external control
8. POWER.ON	Powers the 3159 on

Pin	I/O	Signal	Function
1	OUT	READY	LO when in "ready state"
2	OUT	L-FAIL	LO when in "fail state" for the lower bound
3	OUT	U-FAIL	LO when in "fail state" for the upper bound
4	OUT	PASS	LO when in "pass state"
5	OUT	TEST	LO when in "test state"
6	OUT	H.V.ON	LO when voltage is present at the output terminals
7	IN	EXT-E	When LO, external I/O input signals are enabled
8	IN	START	When LO, it functions as a "Start" key
9	IN	STOP	When LO, it functions as a "Stop" key
10	IN	INT.LOCK	Interlock engaged when open
11	OUT	W-MODE	LO during voltage withstand testing
12	OUT	I-MODE	LO during insulation testing
13	OUT	W-FAIL	LO when in "fail state" for voltage withstand testing
14	OUT	I-FAIL	LO when in "fail state" for insulation testing
15-18	IN	ISO.COM	Ground inputs for external devices
33-36	OUT	ISO.DCV	Internal power 15V DC (100 mA)

1. PASS Hold function
2. FAIL Hold function
3. Hold function
4. Momentary out
5. Double actions
6. FAIL mode
7. "START" RS command
8. Interlock function
9. Voltage Comparator position
10. Insulation Resistance measurement range
11. Insulation Resistance Test End mode

Pin	I/O	Signa	Function
1	OUT	READY	Low in ready state
2	OUT	L-FAIL	Low in FAIL state (lower bound)
3	OUT	U-FAIL	Low in FAIL state (upper bound)
4	OUT	PASS	Low in PASS state
5	OUT	TEST	Low in test sate
6	OUT	H.V.ON	Low when voltage is present at output terminals
7	IN	EXT-E	When low, external I/O input signals are enabled
8	IN	START	When low, same function as START key
9	IN	STOP	When low, same function as STOP key
10	IN	INT.LOCK	Interlock on open
11	OUT	W-MODE	Low during withstanding voltage testing
12	OUT	I-MODE	Low during insulation resistance testing
13	OUT	W-FAIL	Low in FAIL state during withstand voltage testing
14	OUT	I-FAIL	Low in FAIL state during insulation resistance testing
15-18	IN	ISO.COM	Ground inputs for external devices
22-25	IN	MEM-0 to 3	Saved test selected pins
27	IN	MEM-E	When low, enables memory selected pins
28-29	OUT	MODE-0,1	Current test mode
33-36	OUT	ISO.DCV	Internal DC 15 V power supply (100 mA)

1. Contact check function improves test reliability
2. Judgment output at forced stop
3. Continued analytical testing after FAIL judgments
4. Ramp timer function
5. True effective value display
6. Eliminate the effects of supply voltage fluctuations
7. Delay timer function
8. Continuous full-auto withstanding voltage and insulation resistance testing
9. Interlock function

Specifications Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year

■ Voltage Withstand Testing

	Model 3153 AUTOMATIC INSULATION / WITHSTANDING HiTESTER		Model 3159 INSULATION / WITHSTANDING HiTESTER	Model 3174 AC AUTOMATIC INSULATION/WITHSTANDING HiTESTER
	AC	DC	AC	
Output voltage	0.20 to 5.00 kV	0.20 to 5.00 kV	0.2 V AC to 5.00 kV AC	
Voltage output method	PWM switching method (zero-switching)	PWM switching method	Zero-switching	PWM switching method (zero-switching)
Transformer capacity	500 VA (rated 30 minutes)	N/A	500 VA (rated 30 minutes)	AC: 100 VA (continuous)
Output capacity	N/A	50 VA (continuous)	N/A	N/A
Voltage adjustment method	Digital setting (0.01 kV setting resolution)		Manual adjustment	Digital setting (0.01 kV setting resolution)
Output voltage accuracy	±1.5% of setting voltage ±2 dgt.		N/A	±1.5% of setting voltage ±2 dgt.
Fluctuation rate	±7% or less (max. 5 kV at 100 mA → no load: Resistance load)*2	±16% or less (max. 5 kV at10 mA → no load: Resistance load)*2	N/A	15% or less (At Maximum rated load → no load converge to set value within 1 second)
Voltage waveform	Sine wave (5% or less distortion, unloaded)	N/A	Power waveform	Sine wave
Voltage frequency	50 Hz/60 Hz, ±0.2%	N/A	Power synchronization	50 Hz/60 Hz, ±0.2%
Output ripple voltage	N/A	6% of output voltage or less (at 5 kV DC, 10 mA, resistive load)	N/A	N/A
Output current	100 mA AC *1	10 mA DC (continuous)	N/A	20 mA AC
Voltmeter	Average rectified effective value display	Average display	Average rectified effective value display	True RMS
	Digital: 0.00 to 5.00 kV (full scale) Accuracy: ±1.5% f.s. Analog: 0 to 5 kV (full scale) Accuracy: ±5% f.s.		Digital: 0.00 to 5.00 kV (full scale) Accuracy: ±1.5% f.s. Analog: 0 to 5 kV (full scale) Accuracy: ±5% f.s.a	Accuracy: ±1.5% f.s.
Current measurement range	0.01 mA to 100.0 mA AC	0.01 mA to 10.0 mA DC	0.01 mA to 120.0 mA AC	0.01 mA to 20.0 mA AC
Indicated value range	10 or 100 mA	10 mA	2, 8, 32 or 120 mA	10 mA/20 mA
Measurement resolution	0.00 to 10.00 or 0.01 mA (10-mA range) 10.1 to 100.0 or 0.1 mA (100-mA range, AC only)		0.01 mA (2- or 8-mA range), 0.1 mA (32-mA range), 1 mA (120-mA range)	0.00 mA to 9.99 mA, 0.01 mA (10-mA range) 0.0 mA to 20.0 mA, 0.1 mA (20-mA range)
Current measurement accuracy	± (2% rdg. + 5 dgt.) common to each range *3		± (3% f.s. + 20 µA) for all ranges (at 5% power distortion or less)	±2% rdg. ±0.05 mA (10 mA range) ±2% rdg. ±0.5 mA (20 mA range)

*1. Time vs. Output Voltage (at 23˚C ambient)

Current Measurement Range	Max. Test Time	Standby Time
1 ≤ 60 mA	continuous	none
60 mA < 1 ≤ 100 mA	15 minutes	15 minutes

*2. Unloaded = 40 MΩ load (instrument input impedance)
*3. Plus scanner accuracy, when used.

■ Insulation Resistance Testing

	Model 3153	Model 3159	Model 3174
Test voltage	Output voltage: Positive polarity 50 to 1200 V DC Voltage adjustment method: Digital setting (1 V resolution) Output voltage accuracy: ±1.5% ±2 dgt. of setting level	Rated voltage: 500 or 1000 V DC Unloaded voltage: 1 to 1.2 times rated voltage	Rated voltage: 500 or 1000 V DC Unloaded voltage: 1 to 1.2 times rated voltage
Rated measurement current	1 mA	1 to 1.2 mA	1 to 1.2 mA
Short-circuit current	200 mA or less	4 to 5 mA (500 V) 2 to 3 mA (1000 V)	4 to 5 mA (500 V) 2 to 3 mA (1000 V)
Voltmeter	Average display Digital: 0 to 1200 V DC (full scale) Accuracy: ±1.5% rdg. ±2 dgt. Analog: 0 to 1200 V DC Accuracy: ±5% f.s. (5 kV full scale)	Average display Digital: 0 to 1200 V DC (f.s.)	Digital meter 0 to 1000 V DC (f.s.) Accuracy: ±30 V
		Analog: N/A	Analog: N/A
Measurement range/ accuracy	0.100 to 1.049 MΩ 1.05 to 10.49 MΩ*1 10.5 to 104.9 MΩ*1 105 to 9999 MΩ*1 Fundamental accuracy: ±4% rdg.*2	0.5 to 999 MΩ (500V)/±4% rdg. 1 to 999 MΩ (1000V)/±4% rdg. 1000 to 2000 MΩ /±8% rdg.	0.5 M to 999 MΩ (500 V), 1 MΩ to 999 MΩ (1000 V): ±4% rdg. 1000 MΩ to 2000 MΩ: ±8% rdg.

*1. Measurement range changes according to test voltage.
*2. Plus scanner accuracy, when used.
* Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year

■ Decision Function

	Model 3153	Model 3159	Model 3174
Decision method	Window comparison method (digital specification)		
Decision results	UPPER-FAIL: Measured current (insulation resistance value) exceeded the specified upper bound. PASS: Measured current (insulation resistance value) was between the specified upper and lower bounds during the specified time elapsed LOWER-FAIL: Measured current (insulation resistance value) was less than the specified lower bound		
Decision processing	For each decision result, output the display portion, the beeper sound, and EXT I/O signal		
Specification ranges	Voltage withstand testing: AC V: 0.1 to 100 mA (upper bound) / 0.1 to 99 mA (lower bound) DC V: 0.1 to 10 mA (upper bound) / 0.1 to 9.9 mA (lower bound) Insulation testing: 0.10 to 9999 MΩ (same upper/lower bounds)	Voltage withstand testing: 0.1 to 120 mA (upper bound) / 0.1 to 119 mA (lower bound) Insulation testing (Model 3159 only): 0.2 to 2000 MΩ (same upper/lower bounds)	Voltage withstand testing: 0.1 to 20 mA (upper bound) / 0.1 to 19.9 mA (lower bound) Insulation testing (Model 3159 only): 0.2 to 2000 MΩ (same upper/lower bounds)
Specification resolution	Voltage withstand testing: 0.1 mA (0.1 to 9.9 mA), 1 mA (10 to 100 mA) Insulation testing: 0.01 MΩ (0.10 to 9.99 MΩ), 0.1 MΩ (10.0 to 99.9 MΩ), 1 MΩ (100 to 9999 MΩ)	Voltage withstand testing: 0.1 mA (0.1 to 9.9 mA), 1 mA (10 to 120 mA) Insulation testing (Model 3159 only): 0.01 MΩ (0.2 to 2 MΩ), 0.1 MΩ (2.1 to 20 MΩ), 1 MΩ (21 to 200 MΩ), 10 MΩ (210 to 2000 MΩ)	Voltage withstand testing: 0.1 mA Insulation testing (Model 3159 only): 0.01 MΩ (0.2 to 2 MΩ), 0.1 MΩ (2.1 to 20 MΩ), 1 MΩ (21 to 200 MΩ), 10 MΩ (210 to 2000 MΩ)

■ Timers

	Model 3153	Model 3159	Model 3174
Timer section	Setting range: 0.3 to 999 s Setting resolution: 0.1 s (0.3 to 99.9 s), 1 s (100 to 999 s) Accuracy: ±0.5% of specified value	Setting range: 0.5 to 999 s Setting resolution/accuracy: 0.1 s (0.5 to 99.9 s), ±50 ms; 1 s (100 to 999 s) ±0.5 s	Setting range: 0.3 to 999 s Setting resolution/accuracy: 0.1 s (0.3 to 99.9 s), ±50 ms; 1 s (100 to 999 s) ±0.5 s
	Action: (At ON Setting) Displays the time that is counted down from the start (At OFF Setting) Display the time that has elapsed from the start		
Ramp timer (withstand test time)	Setting range: 0.1 to 99.9 s ramp-up and -down specified separately Setting resolution/accuracy: 0.1 s, ±0.5% of specified value	N/A	Setting range: 0.1 to 99.9 s, The ramp-up time and ramp-down time can be set individually. Setting resolution/accuracy: 0.1 s, ±50 ms
Delay timer (insulation resistance test time)	Setting range: 0.1 to 99.9 s Setting resolution/accuracy: 0.1 s, ±0.5% of specified value Action: specify a delay time after testing is set to begin to inhibit decisions during that time	Non-deterministic interval: 0.5 s (Mask time until determination begins during insulation resistance testing)	Setting range: 0.1 to 99.9 s Setting resolution/accuracy: 0.1 s, ±50 ms

■ Interfaces

	Model 3153	Model 3159	Model 3174
EXT I/O	Open-collector outputs, active low, max. 30V DC loaded voltage, all signal lines photocoupler-isolated		
EXT SW	START, STOP, SW.EN (panel terminal switch enabled), connection point inputs		
RS-232C	Start-stop synchronization, full duplex, 9600 or 19200 bps	Start-stop synchronization, full duplex, 9600 bps	Start-stop synchronization, full duplex, 9600 / 19200 bps
GP-IB	IEEE 488.2 (1987) compliant	N/A	

■ General Specifications

	Model 3153	Model 3159	Model 3174
Display	Fluorescent display tube (digital display), analog meter	Fluorescent display tube (digital display), analog meter	Fluorescent display tube (digital display)
Monitor functions	Output voltage, detected current, measured resistance		
Monitor period	2 times per second minimum		
Operating temperature range	0 to 40 ˚C, 80% RH maximum (no condensation)		
Storage temperature range	-10 to 50 ˚C, 90% RH maximum (no condensation)		
Temperature and humidity range for guaranteed accuracy	23 ± 5 ˚C, 80% RH maximum (no condensation) (after 10 minutes warm-up for 3153, or 5 minutes warm-up for 3159)		
Operating environment	Indoors, Pollution degree 2, Up to 2000 m (6562 ft.)		
Power supply voltage	100 to 240V AC (installed fuse depends on actual voltage, so specify supply voltage when ordering) 100 to 120V AC: installed fuse 250V T10AL 200 to 240V AC: installed fuse 250V T5AL	220V AC (3159-02) ~~120V AC (3159-01)~~...discontinued ~~230V AC (3159-03)~~...discontinued ~~240V AC (3159-04)~~...discontinued	100 to 240 V AC (Voltage fluctuations of ±10% from the rated supply voltage are taken into account.)
Power supply frequency	50 Hz/60 Hz		
Max. power consumption	1000 VA	800 VA	200 VA
Dimensions	Approx. 320 mm (12.60 in)W × 155 mm (6.10 in)H × 480 mm (18.9 in)D	Approsx 320 mm (12.60 in)W × 155 mm (6.10 in)H × 330 mm (12.99 in)D	Approx. 320 mm (12.60 in)W × 155 mm (6.10 in)H × 395 mm (15.55 in)D
Mass	Approx. 18 kg (634.9 oz)	Approx. 20.5 kg (723.1 oz) (3159-01), 21.5 kg (758.4 oz) (3159-02/-03/-04)	Approx. 15 kg (529.1 oz)
Accessories	H.V. Test lead 9615 (high voltage side and return, 1 each) ×1, Power cord ×1, Instruction manual ×1, Spare fuse ×1		H.V. Test lead 9615 (high voltage side and return, 1 each) ×1, Power cord ×1, Instruction manual ×1, Disconnection prevention plate ×1

Model No. (Order Code) **3153** (Insulation, AC/DC Withstanding Voltage)



CE

3 year Warranty

*The 9615 is bundled

Input/Output cords



H.V. TEST LEAD 9615
Red, Black each 1, 1.5 m (4.92 ft) length



REMOTE CONTROL BOX (SINGLE) 9613
For Start/Stop control, 1.5m (4.92 ft) cord length



REMOTE CONTROL BOX (DUAL) 9614
For Start/Stop control, 1.5m (4.92 ft) cord length

PC communication



SAFETY TEST DATA MANAGEMENT SOFTWARE 9267
For PC control application software



RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length



GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

Other



HIGH VOLTAGE SCANNER 3930
Automatic multipoint testing of high voltages

Model No. (Order Code) **3159-02** (For 220V power supplies only)



Not CE Marked

3 year Warranty

*The 9615 is bundled

Input/Output cords



H.V. TEST LEAD 9615
Red, Black each 1, 1.5 m (4.92 ft) length



REMOTE CONTROL BOX (SINGLE) 9613
For Start/Stop control, 1.5m (4.92 ft) cord length



REMOTE CONTROL BOX (DUAL) 9614
For Start/Stop control, 1.5m (4.92 ft) cord length

PC communication



SAFETY TEST DATA MANAGEMENT SOFTWARE 9267
For PC control application software



RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

Model No. (Order Code) **3174** (Insulation/Withstanding Voltage [AC])

Note: To perform contact checks, please purchase another High Voltage Test Lead 9615 set separately.



CE

3 year Warranty

*The 9615 is bundled

Input/Output cords



H.V. TEST LEAD 9615
Red, Black each 1, 1.5 m (4.92 ft) length



REMOTE CONTROL BOX (SINGLE) 9613
For Start/Stop control, 1.5m (4.92 ft) cord length



REMOTE CONTROL BOX (DUAL) 9614
For Start/Stop control, 1.5m (4.92 ft) cord length

PC communication



SAFETY TEST DATA MANAGEMENT SOFTWARE 9267
For PC control application software



RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

Model ST5520
INSULATION TESTER

- Rapidly assess in as fast as 50 ms
- Quick discharge of residual voltage
- Freely configurable test voltage
  -- Set from 25 V to 1000 V, 1 V resolution --
- Contact check function
  -- Prevents errors due to poor contact --
- Short-circuit check function
  -- Stops potentional defects from reaching the market --



CE

3 year Warranty

Basic Specifications

Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year

Testing voltage (measurement ranges)	25 V ≤ V < 100 V (2/20/200 MΩ), 100 V ≤ V < 500 V (2/20/200/2000 MΩ), 500 V ≤ V ≤ 1000 V (2/20/200/4000 MΩ)
Basic accuracy	±2 % rdg. ±5 dgt. 25 V ≤ V < 100 V [0 to 20 MΩ] 100 V ≤ V < 500 V [0 to 20 MΩ] 500 V ≤ V ≤ 1000 V [0 to 200 MΩ]
Measurement speed	Fast: 30 ms/time, Slow: 500 ms/time (selectable)
Memory capacity	up to 10 items (can be saved/loaded)

Model No. (Order Code) **ST5520** (Built-in external I/O output)
ST5520-01 (Built-in BCD output)

Note: The ST5520 and ST5520-01 cannot be operated alone. Please select and purchase the optional test leads to accommodate your application.

*Please contact your HIOKI distributor for extending the L2200 cable length

Input/Output cords



TEST LEAD L2200
70 cm (2.30ft) length, detachable large alligator clips or needle tips are bundled, CAT IV 600V, CAT III 1000V



CONNECTION CORD L9257
1.2 m (3.94 ft) length



SWITCHED PROBE 9299
80 cm (2.62 ft) length



OUTPUT CORD L9094
3.5 mm (0.14in) dia. mini plug to banana, 1.5m (4.92ft) length



CONVERSION ADAPTER 9199
Receiving side banana (female), output BNC (male)

PC communication



RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

Note: Company names and product names appearing in this catalog are trademarks or registered trademarks of various companies.

HIOKI
HIOKI E.E. CORPORATION

HEADQUARTERS
81 Koizumi,
Ueda, Nagano 386-1192 Japan
https://www.hioki.com/

Scan for all regional contact information

DISTRIBUTED BY

ASM®

ASM Automation Sensorik Messtechnik GmbH

Tel. +49 8123 986-0
info@asm-sensor.de
www.asm-sensor.de

Am Bleichbach 18 - 24
85452 Moosinning