

HIOKI

DIGITAL HiTESTER

3239 (4-terminal Ω function)

3238 (Advanced model)

3237 (Economically priced)

Field measuring instruments



Outstanding performance for production lines with a sampling rate of 3.3 ms

High-speed DMM

The DIGITAL HiTESTERs 3237, 3238, and 3239 can perform 3.3 ms high-speed sampling, and come equipped with a comparator, external input and output, and an RS-232C interface. These three high-performance DMMs can be used not only in laboratories, but in production lines that require the minimal tact time.

The 3237 is the basic model, and is equipped with the basic necessary functions. The 3238 is a high-precision, broadband model that also features current measurement terminals and a frequency measurement function. The 3239 includes the functions of the 3238 plus the 4-terminal resistance measurement function. All three units are designed with emphasis on measurement speed and safety.



ISO 9001
JMI-0216



ISO14001
JQA-E-90091

3.3 ms/sample

High-speed Performance and Reliability

Features

- Samples at rates of up to 300 samples/sec. (3.3 ms/sample)
- Comparator function provides high-speed pass/fail evaluation
- Equipped with external input and output for sequence control
- Usefull Save/Load function helps work go faster

The 3237, 3238 and 3239 are equipped with a variety of functions that help minimize tact time in production lines.

For details, see page 2.

■ Low power resistance measurement function prevents sample deterioration

The 3237, 3238 and 3239 use a low power Ω function to minimize sample degradation when measuring resistance.

With this function, open terminal voltage never goes over 0.45 V DC, and measurement current never surpasses 100 μ A DC.

For specifications, see pages 5 and 6.

■ Select from 3 types of units

The basic and economical **3237**

✓ DC V basic accuracy: $\pm 0.025\%$ rdg. ± 2 dgt.

		3237	3238	3239
DC V	DC voltage [5 ranges, 199.999 mV to 1000.00 V]	✓	✓	✓
AC V	AC voltage [4 ranges, 199.99 mV to 700.00 V]	✓	✓	✓
Ω	Resistance [7 ranges, 199.999 Ω to 100.000 M Ω]	✓	✓	✓
$\text{LP}\Omega$	Resistance LP [4 ranges, 199.99 Ω to 1999.99 M Ω]	✓	✓	✓
Continuity	Continuity check [A buzzer sounds when resistance is less than 50.00 Ω]	✓	✓	✓
Diode	Diode check [Anode-cathode voltage in the 1999.99 mV range]	✓	✓	✓
CLAMP	Current measurement by clamp sensor	✓	✓	✓
AC/DC A	AC/DC current [2 ranges, 199.999 mA and 1999.99 mA]		✓	✓
Hz	Frequency [5 ranges, 99.9999 Hz to 300.000 kHz]		✓	✓
Ω	Resistance [5 ranges, 199.999 Ω to 1999.99 k Ω]			✓
$\text{LP}\Omega$	Resistance LP [4 ranges, 199.99 Ω to 1999.99 M Ω]			✓

For clamp specifications, see page 4

For DIGITAL HiTESTER specifications, see pages 5 and 6

Sampling speed Values in the () show samples/second.

Frequency	FAST*	MEDIUM	SLOW
50 Hz	3.3 ± 1 ms (300)	130 ± 5 ms (8)	1,040 ± 50 ms (1)
60 Hz	3.3 ± 1 ms (300)	108 ± 5 ms (9)	1,080 ± 50 ms (1)

* Approximately 55 ms required for self-calibration at 30-minute intervals.
Does not apply at resistances higher than 2M Ω , or LP Ω higher than 200k Ω (see page 5).

For the 3238 and 3239's frequency function gate time, see page 5.

■ True RMS value measurement

Both the 3237 and 3238 use true RMS measurement for determination of distorted waveforms. In fact, HIOKI guarantees accuracy of the 3238 and 3239 for AC voltage of 10 Hz to 300 kHz, and AC current of 10 Hz to 30 kHz.

For specifications, see pages 5 and 6.

■ Interface supports full remote operation

Measurement can be automated by using a controller to operate the 3237 or 3238 through the GP-IB or RS-232C interface.

For details, see page 3.

The high-accuracy & multi-functional **3238**

✓ DC V basic accuracy: $\pm 0.01\%$ rdg. ± 2 dgt.

✓ Includes frequency measurement for AC and DC A

For 4-terminal resistance measurement **3239**

✓ DC V basic accuracy: $\pm 0.01\%$ rdg. ± 2 dgt.

✓ All the functions of the 3238, plus 4-terminal Ω measurement

■ Reliable resistance measurement

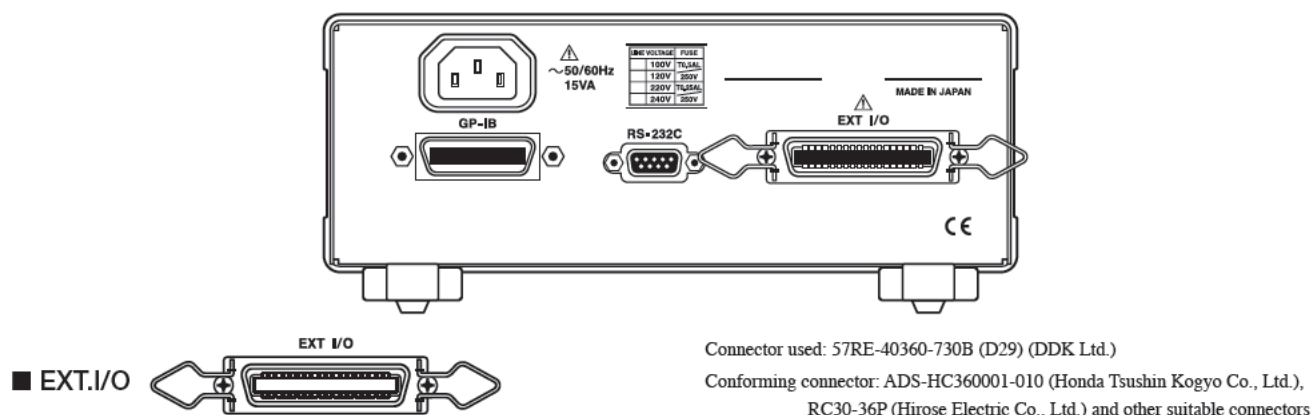
using the 4-terminal measurement method

Using 4-terminal resistance measurement, which is unaffected by variables such as measurement lead wiring resistance, the 3239 displays outstanding resistance measurement capabilities.

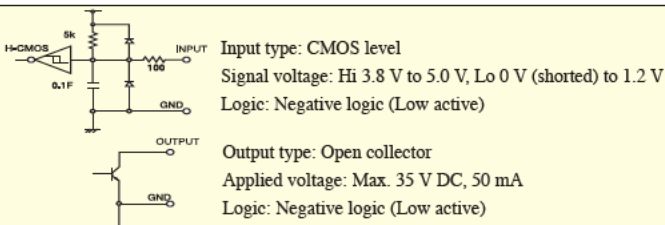


Minimizing tact time with sequence control

High-speed comparator and external input/output



Loading of saved settings from panel.....LOAD 0 to 4
Measurement start trigger input.....TRIG
Measurement end signal output.....EOC
Comparator output.....Hi, IN, Lo
Internal power supply +5 V (max. 50 mA).....INT. DC V
Internal GND.....INT. GND



● Comparator with external output

COMP

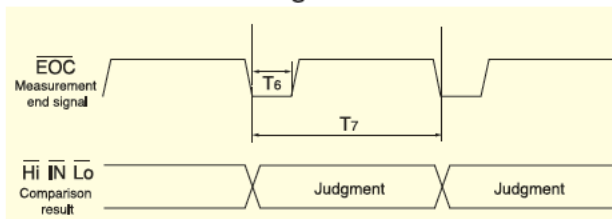
You can set the upper and lower limits, and display one of 3 results: Hi, IN or Lo. In addition to LED and buzzer results, open collector output results are provided through the external input/output terminals.

X: measurement value, H: Upper limit, L: Lower limit

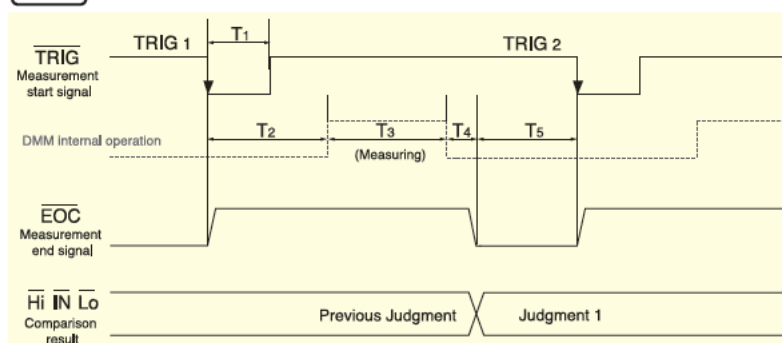
X > H.....Hi
H ≥ X ≥ L.....IN
L > X.....Lo



INT. TRIG With free running measurement



M.TRIG With external control



		Time		
		MIN.	TYP.	MAX.
T1	Measurement trigger pulse width	500 μs	...	...
T2	Trigger delay time	See below		
T3	Sampling time using external control	FAST	See the table at the top right of page 1.	
		MEDIUM		
		SLOW		
T4	Internal operation time	...	2.0 ms	...
T5	From the end of measurement until the next trigger	500 μs	...	...
T6	EOC Lo level time for free running measurement	FAST	...	1.7 ms
		MEDIUM	...	50 ms
		SLOW	...	500 ms
T7	Sampling time for free running measurement	FAST	See the table at the top right of page 1.	
		MEDIUM		
		SLOW		

■ Save/Load function for rapid response to various work situations

You can save and recall a maximum of 30 DMM setting conditions for various range and comparator values.



■ A trigger delay designed for measurement safety

The 3237, 3238 and 3239 are equipped with a trigger delay function that can be set to manual or automatic for the time period between trigger input and the display of the comparator result (see T2 in the figure above).

Manual settings: Designate periods in terms of millisecond intervals between 0.000 s and 9.999 s
Automatic settings:

	FAST	MEDIUM	SLOW
DC V	3 ms	3 ms	3 ms
AC V	500 ms	800 ms	1.5 s
Ω (200Ω to 200 kΩ)	3 ms	3 ms	3 ms



Automation of Line Inspection

Available interfaces

GP-IB



■ GP-IB (option -01 specifications)

Purpose: Remote control and measurement value output

Standards conformance : IEEE -488.1 1987

Reference standard : IEEE -488.2 1987

Transmission speed

(reference data)

Power line frequency: 60Hz

TRIG: EXT.Trig

Command: [:READ ?]

	FAST	MEDIUM	SLOW
Transmission speed	7.0 ms	108 ms	1,080 ms

Controller: PC-9801 RA (NEC)

OS: MS-DOS Ver. 3.30, N88-BASIC Ver. 6.0

Interface function:

SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, CO

User code : ASCII code

User connector : 24-pin IEEE488 interface bus connector

RS-232C



■ RS-232C (standard)

Purpose: Remote control and measurement value output

Transmission system : Asynchronous method Full duplex

Transmission speed : 9600 bps (fixed)

Data bit length : 8 bits

Stop bits : 1

Parity bits : None

Delimiter : CR+LF

Handshaking : Hardware

XON/XOFF : Not used

Connector : 9-pin D-sub connector

All functions except switching the power on and off can be completely remote controlled and measurement data collected via either the GP-IB or RS-232C interface

Please inquire regarding compatibility with the command sets of other manufacturers.

■ Output data to a printer (option)

When an RS-232C compatible **PRINTER 9442** is connected, you can print measurements by pressing the **[M.TRIG]** key if in manual trigger mode, or the **[ENT]** key if in internal trigger (free run) mode.

Item No.	1	VDC	141.457mV	Hi	Judgment
	2	VDC	10.216 V	IN	
	3	RES	10.8205kohm	IN	
	4	RES	0F kohm	LO	
	5	LPR	920.92 ohm	IN	
Measurement function	6	CONT	0.84 ohm	Hi	Measurement value
	7	D10D	572.33mV	IN	
	8	FREQ	32.7683kHz	IN	
	9	CDC	71.069mA	LO	
	10	CAC	1135.01 A	Hi	

■ Equipped with a foot switch for printer control

As an alternative to pressing the **[M.TRIG]** key or the **[ENT]** key, you can also connect a foot switch to the external I/O TRIG terminal. You can then initiate printing by stepping on the foot switch (closing the circuit).

PRINTER 9442



CONNECTOR CABLE 9444

Cord length
approx 1.5m



AC ADAPTER 9443



9443-02 (For the EU) 9443-01 (For Japan)

9443-03 (For the America)

Please specify appropriate model number suffix when ordering.

Printing method : Thermal serial dot matrix

Paper width : 112 mm

Printing speed : 52.5cps

Power supply : AC ADAPTER 9443 or supplied nickel-hydrate battery (capable of printing about 3000 lines on full charge from 9443)

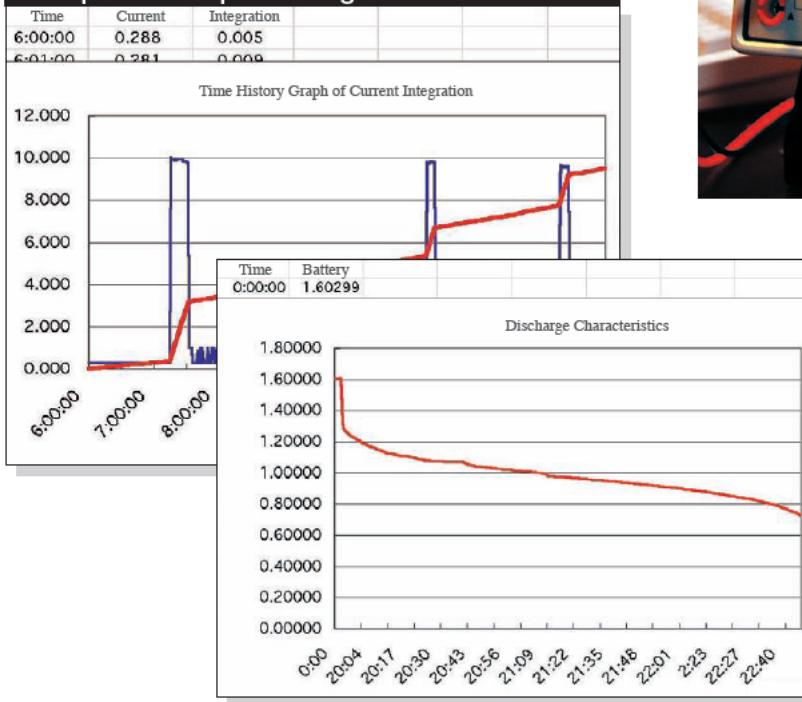
Dimensions and mass : Approx. 160W × 66.5H × 170D mm; approx. 580 g

When you purchase a **PRINTER 9442**, you must also purchase a **CONNECTION CABLE 9444** and a **AC ADAPTER 9443** to connect it to the DMM.

Efficient Evaluation Testing

PC measurement using the high accuracy and broad coverage of the 3238 and 3239

Example of data processing with Microsoft Excel



■ Highly accurate measurement with minimal drift

The unit uses self-regulation to suppress drift. Also, the DMM is ideal for collecting data over extended periods of time.

■ Using Excel for efficient data processing

The DMM supports fast data processing by allowing you to transfer data directly to a worksheet through either the GP-IB or RS-232C interface.

Consult your nearest HIOKI dealer for details on software

■ Supports large AC current measurement by clamp sensor

■ Easy setup ~CLAMP

Both the 3237, 3238 and 3239 can measure live line currents using an optional clamp sensor. Enter the name of the clamp sensor being used and display current values simply by selecting a range.

CLAMP ON SENSOR	9010-50	9018-50	9132
	 CE cord length 3m	 CE cord length 3m	 cord length 3m
Rated current	10/20/50/100/200/500 A AC		20/50/100/200/500/1000 A AC
Accuracy (23 °C ± 3 °C, 45 to 66 Hz)	3.0 % f.s.	1.5 % rdg. 0.1 % f.s.	3.0 % f.s. 0.5 mV
Frequency characteristics (deviation from the basic accuracy)	at 40 Hz to 1 kHz 6 % (10, 20 A range) 3 % (50 to 500 A range)	at 40 Hz to 3 kHz 1.0 % max.	at 40 Hz to 1 kHz 1.0 % max.
Max. permissible input (cont.) (45 to 66 Hz)	150 Arms (10 to 50 A range) 400 Arms (100, 200 A range) 650 Arms (500 A range), 1400 Arms (For 1 min.)		within 1000 Arms (cont.) 1500 Arms max. (for 2 min.)
Maximum rated voltage to earth	600 Vrms (850 Vpeak) insulated conductor		
Measurable conductor diameter	ø46 mm or 50X20 mm bus bar		ø55X80 mm bus bar
Dimensions and mass	Approx. 78W X 190H X 35D mm, 420g		Approx. 99W X 192H X 33D mm, 580g



Clamp sensor settings screen



From the menu's clamp sensor selection screen, select the name of the sensor with the cursor key and press the **ENT** key. Then, select the same range as you set for the sensor with the cursor key.

* The accuracy of the clamp sensors shown on the left (when used with the DMM) is calculated by taking: the difference in the AC V accuracy for the DMM (dgt.) × 10 (dgt.).
For the AC V accuracy of the DMM, see page 6.

In addition to the sensors described above, you can also connect the 3283, 3284, 3285 (requires the 9094) Clamp On HiTesters, and the 9277, 9278, 9279 (requires the 9555) DC Sensors.

■ 3237, 3238, 3239 common specifications (Accuracy at 23°C±5°C (73°F±9°F), 80% rh or less)

● DC voltage (DC V)

Range	Resolution	Full scale	Input impedance	Overload protection
200 mV	1 μ V	199.999mV	Greater than 100M Ω	1000 V DC 750 V AC However, less than 10 ⁷ V Hz
2000 mV	10 μ V	1999.99mV	Greater than 100M Ω	
20 V	100 μ V	19.9999 V	Approx. 11 M Ω	
200 V	1 mV	199.999 V	Approx. 10 M Ω	
1000 V	10 mV	1000.00 V	Approx. 10 M Ω	

● Resistance (Ω) 2-terminal measurement

Range	Resolution	Full scale	Current	Open terminal voltage	Overload protection
200 Ω	1 m Ω	199.999 Ω	Approx. 1 mA	6V DC max.	500Vpeak
2000 Ω	10 m Ω	1999.99 Ω	Approx. 1 mA	6V DC max.	
20 k Ω	100 m Ω	19.9999k Ω	Approx. 100 μ A	6V DC max.	
200 k Ω	1 Ω	199.999k Ω	Approx. 10 μ A	6V DC max.	
2000 k Ω	10 Ω	1999.99k Ω	Approx. 1 μ A	6V DC max.	
20 M Ω	100 Ω	19.9999M Ω	Approx. 100nA	6V DC max.	
100 M Ω	1 k Ω	100.000M Ω	Approx. 20nA	6V DC max.	

For fast sampling in the 20 M Ω range or higher.

Frequency	FAST*	MEDIUM	SLOW
50 Hz	20 $\pm$ 1 ms	170 $\pm$ 5 ms	1,360 $\pm$ 50 ms
60 Hz	16.7 $\pm$ 1 ms	142 $\pm$ 5 ms	1,420 $\pm$ 50 ms

* Approximately 55 ms required for self-calibration at 30-minute intervals.

For sampling at in the 2 M Ω range or the LP Ω 200 k Ω range or higher

Frequency	FAST*
50 Hz	20 $\pm$ 1 ms
60 Hz	16.7 $\pm$ 1 ms

● AC voltage (AC V)

Range	Resolution	Full scale	Input impedance	Overload protection
2000 mV	10 μ V	1999.99mV	Approx. 1 M Ω	600 V DC 750 V rms, 1000Vpeak However, less than 10 ⁷ V Hz
20 V	100 μ V	19.9999 V	Approx. 1 M Ω	
200 V	1 mV	199.999 V	Approx. 1 M Ω	
700 V	10 mV	750.00 V	Approx. 1 M Ω	

● Resistance (Ω) at Low Power function 2-terminal measurement

Range	Resolution	Full scale	Current	Open terminal voltage	Overload protection
2000 Ω	10 m Ω	1999.99 Ω	Approx. 100 μ A	0.45V DC max.	500Vpeak
20 k Ω	100 m Ω	19.9999k Ω	Approx. 10 μ A	0.45V DC max.	
200 k Ω	1 Ω	199.999k Ω	Approx. 1 μ A	0.45V DC max.	
2000 k Ω	10 Ω	1999.99k Ω	Approx. 100nA	0.45V DC max.	

● Continuity check

Range	Resolution	Full scale	Current	Open terminal voltage	Overload protection
2000 Ω	10 m Ω	1999.99 Ω	Approx. 100 μ A	0.45V DC max.	500 Vpeak

A built-in buzzer sounds when the resistance value is less than 50.00 Ω .

● Diode check

Range	Resolution	Full scale	Current	Open terminal voltage	Overload protection
2000 mV	10 μ V	1999.99mV	Approx. 1 mA	6V DC max.	500 Vpeak

■ 3238, 3239 specifications (Accuracy at 23°C±5°C (73°F±9°F), 80% rh or less)

● AC/DC current (A)

Range	Resolution	Full scale	Internal resistance	Overload protection
200 mA	1 μ A	199.999mA	Approx. 1 Ω	250V, 2A fuse
2000 mA	10 μ A	1999.99mA	Approx. 100 m Ω	

● DC current (DC A) Accuracy %, ppm=reading error, d=digit error

Range	Sampling			Thermal coefficient
	SLOW	MEDIUM	FAST	
200 mA	$\pm 0.1\% \pm 6d$	$\pm 0.1\% \pm 10d$	$\pm 0.1\% \pm 300d$	$\pm 100\text{ppm} \pm 0.6d$
2000 mA	$\pm 0.15\% \pm 6d$	$\pm 0.15\% \pm 10d$	$\pm 0.15\% \pm 300d$	$\pm 150\text{ppm} \pm 0.6d$

● AC current (AC A) 200mA range Accuracy %, ppm=reading error, d=digit error

Range	Frequency	Sampling			Thermal coefficient
		SLOW	MEDIUM	FAST	
All Ranges	10 Hz to 20 Hz	$\pm 1.0\% \pm 200d$	undefined	undefined	$\pm 0.1\% \pm 20d$
	20 Hz to 45 Hz	$\pm 0.4\% \pm 200d$	undefined	undefined	$\pm 0.6\% \pm 200d$
	45 Hz to 300 Hz	$\pm 0.3\% \pm 100d$	$\pm 0.5\% \pm 200d$	undefined	$\pm 0.4\% \pm 100d$
	300 Hz to 1 kHz	$\pm 0.3\% \pm 100d$	$\pm 0.4\% \pm 200d$	$\pm 0.4\% \pm 300d$	$\pm 0.6\% \pm 200d$
	1 kHz to 3 kHz	$\pm 0.3\% \pm 100d$	$\pm 0.4\% \pm 200d$	$\pm 0.4\% \pm 300d$	$\pm 0.6\% \pm 200d$
	3 kHz to 10 kHz	$\pm 0.5\% \pm 300d$	$\pm 0.5\% \pm 300d$	$\pm 0.5\% \pm 400d$	$\pm 1.2\% \pm 300d$
	10 kHz to 30 kHz	$\pm 1.0\% \pm 300d$	$\pm 1.0\% \pm 300d$	$\pm 1.0\% \pm 400d$	$\pm 0.1\% \pm 30d$

Specified input is 16 mA or higher

Additional error due to crest factor: 1<CF $\leq$: $\pm 200d$, 2<CF $\leq$ 3: $\pm 500d$, 3<CF: Outside the assured accuracy range

Specified input is 160 mA or higher

● Frequency (Hz) Source is AC V only and input level is higher than 8% of full scale

Range	Resolution	Full scale	Internal resistance	Min. measurement	Overload protection
100 Hz	0.1 mHz	99.9999 Hz	Approx. 1M Ω	10 Hz	600 V DC 750 V rms, 1000Vpeak However, less than 10 ⁷ V Hz
1 kHz	1 mHz	999.999 Hz	Approx. 1M Ω	10 Hz	
10 kHz	10 mHz	9.99999kHz	Approx. 1M Ω	10 Hz	
100 kHz	100mHz	99.9999kHz	Approx. 1M Ω	10 Hz	

● Frequency (Hz) Accuracy %, ppm=reading error, d=digit error

Range	For all gate times	Thermal coefficient
	Square-wave input between 10 Hz to 300 kHz, 10 V p-p.	
All Ranges	$\pm 0.015\% \pm 2d$	± 5 ppm

Frequency gate time

FAST	MEDIUM	SLOW
15 $\pm$ 6 ms	110 $\pm$ 10 ms	1,010 $\pm$ 20 ms

Measurement time: from gate time to the input signal period $\times 2$

■ 3239 specifications (Accuracy at 23°C±5°C (73°F±9°F), 80% rh or less)

● Resistance (Ω) 4-terminal measurement

Range	Resolution	Full scale	Current	Open terminal voltage	Overload protection
200 Ω	1 m Ω	199.999 Ω	Approx. 1 mA	6V DC max.	V, Ω terminal 500Vpeak
2000 Ω	10 m Ω	1999.99 Ω	Approx. 1 mA	6V DC max.	
20 k Ω	100 m Ω	19.9999k Ω	Approx. 100 μ A	6V DC max.	SENSE terminal 400Vpeak
200 k Ω	1 Ω	199.999k Ω	Approx. 10 μ A	6V DC max.	
2000 k Ω	10 Ω	1999.99k Ω	Approx. 1 μ A	6V DC max.	

● Resistance (Ω) at Low Power function 4-terminal measurement

Range	Resolution	Full scale	Current	Open terminal voltage	Overload protection
2000 Ω	10 m Ω	1999.99 Ω	Approx. 100 μ A	0.45V DC max.	V, Ω terminal 500Vpeak SENSE terminal 400Vpeak
20 k Ω	100 m Ω	19.9999k Ω	Approx. 10 μ A	0.45V DC max.	
200 k Ω	1 Ω	199.999k Ω	Approx. 1 μ A	0.45V DC max.	
2000 k Ω	10 Ω	1999.99k Ω	Approx. 100nA	0.45V DC max.	

● 3237 DC voltage (DC V) Accuracy %, ppm=reading error, d=digit error

Range	Sampling			Thermal coefficient	Sampling			Thermal coefficient
	SLOW	MEDIUM	FAST		SLOW	MEDIUM	FAST	
200 mV	$\pm 0.026\% \pm 6d$	$\pm 0.026\% \pm 10d$	$\pm 0.035\% \pm 300d$	$\pm 20\text{ppm} \pm 0.6d$	$\pm 0.012\% \pm 6d$	$\pm 0.012\% \pm 10d$	$\pm 0.02\% \pm 300d$	$\pm 12\text{ppm} \pm 0.6d$
2000mV	$\pm 0.025\% \pm 2d$	$\pm 0.025\% \pm 8d$	$\pm 0.03\% \pm 100d$	$\pm 15\text{ppm} \pm 0.2d$	$\pm 0.01\% \pm 2d$	$\pm 0.01\% \pm 8d$	$\pm 0.015\% \pm 100d$	$\pm 10\text{ppm} \pm 0.2d$
20 V	$\pm 0.028\% \pm 5d$	$\pm 0.028\% \pm 10d$	$\pm 0.035\% \pm 100d$	$\pm 20\text{ppm} \pm 0.5d$	$\pm 0.016\% \pm 5d$	$\pm 0.016\% \pm 10d$	$\pm 0.02\% \pm 100d$	$\pm 16\text{ppm} \pm 0.5d$
200 V	$\pm 0.028\% \pm 2d$	$\pm 0.028\% \pm 8d$	$\pm 0.035\% \pm 100d$	$\pm 20\text{ppm} \pm 0.2d$	$\pm 0.016\% \pm 2d$	$\pm 0.016\% \pm 8d$	$\pm 0.02\% \pm 100d$	$\pm 16\text{ppm} \pm 0.2d$
1000 V	$\pm 0.028\% \pm 2d$	$\pm 0.028\% \pm 8d$	$\pm 0.035\% \pm 100d$	$\pm 20\text{ppm} \pm 0.2d$	$\pm 0.016\% \pm 2d$	$\pm 0.016\% \pm 8d$	$\pm 0.02\% \pm 100d$	$\pm 16\text{ppm} \pm 0.2d$

CMRR (50/60Hz RI=1k Ω): SLOW 130dB, MEDIUM 90dB, FAST 20dB NMRR (50/60Hz): SLOW 70dB, MEDIUM 50dB, FAST 0dB

● 3238, 3239 DC voltage (DC V) Accuracy %, ppm=reading error, d=digit error

● 3237 AC voltage (AC V) Accuracy %, ppm=reading error, d=digit error

Range	Frequency	Sampling			Thermal coefficient	Sampling			Thermal coefficient
		SLOW	MEDIUM	FAST		SLOW	MEDIUM	FAST	
All Ranges	10 Hz to 20 Hz	$\pm 1.5\% \pm 200d$	undefined	undefined	$\pm 0.15\% \pm 20d$	$\pm 0.8\% \pm 200d$	undefined	undefined	$\pm 800\text{ppm} \pm 20d$
	20 Hz to 45 Hz	$\pm 0.5\% \pm 200d$	undefined	undefined	$\pm 500\text{ppm} \pm 20d$	$\pm 0.2\% \pm 200d$	undefined	undefined	$\pm 200\text{ppm} \pm 20d$
	45 Hz to 300 Hz	$\pm 0.2\% \pm 100d$	$\pm 0.5\% \pm 300d$	undefined	$\pm 200\text{ppm} \pm 10d$	$\pm 0.1\% \pm 100d$	$\pm 0.3\% \pm 200d$	undefined	$\pm 100\text{ppm} \pm 10d$
	300 Hz to 3 kHz	$\pm 0.2\% \pm 100d$	$\pm 0.2\% \pm 200d$	$\pm 0.2\% \pm 300d$	$\pm 200\text{ppm} \pm 10d$	$\pm 0.1\% \pm 100d$	$\pm 0.1\% \pm 200d$	$\pm 0.1\% \pm 300d$	$\pm 100\text{ppm} \pm 10d$
	3 kHz to 10 kHz	$\pm 0.3\% \pm 200d$	$\pm 0.3\% \pm 200d$	$\pm 0.3\% \pm 300d$	$\pm 300\text{ppm} \pm 20d$	$\pm 0.1\% \pm 100d$	$\pm 0.1\% \pm 200d$	$\pm 0.1\% \pm 300d$	$\pm 100\text{ppm} \pm 10d$
	10 kHz to 30 kHz	$\pm 1.5\% \pm 600d$	$\pm 1.5\% \pm 600d$	$\pm 1.5\% \pm 700d$	$\pm 0.15\% \pm 60d$	$\pm 0.3\% \pm 400d$	$\pm 0.3\% \pm 400d$	$\pm 0.3\% \pm 500d$	$\pm 300\text{ppm} \pm 40d$
	30 kHz to 50 kHz	undefined	undefined	undefined	undefined	$\pm 0.3\% \pm 400d$	$\pm 0.3\% \pm 400d$	$\pm 0.3\% \pm 500d$	$\pm 300\text{ppm} \pm 40d$
	50 kHz to 100kHz	undefined	undefined	undefined	undefined	$\pm 1.5\% \pm 1000d$	$\pm 1.5\% \pm 1000d$	$\pm 1.5\% \pm 1100d$	$\pm 0.15\% \pm 100d$
	100kHz to 300kHz	undefined	undefined	undefined	undefined	$\pm 5.0\% \pm 5000d$	$\pm 5.0\% \pm 5000d$	$\pm 5.0\% \pm 5000d$	$\pm 0.5\% \pm 500d$

The accuracy above is standard for inputs higher than 8% of full scale (higher than 160 V for a range of 750 V).

Additional error due to crest factor: 1<CF<2: $\pm 200d$, 2<CF<3: $\pm 0.2\% \text{rdg} \pm 500d$ (3237), $\pm 500d$ (3238, 3239), 3<CF: Outside the assured accuracy range

● 3237 Resistance (Ω) Accuracy %, ppm=reading error, d=digit error

Measure-ment	Range	Sampling			Thermal coefficient	Sampling			Thermal coefficient
		SLOW	MEDIUM	FAST		SLOW	MEDIUM	FAST	
2-terminal measurement	200 Ω	$\pm 0.05\% \pm 8d$	$\pm 0.05\% \pm 18d$	$\pm 0.05\% \pm 300d$	$\pm 50\text{ppm} \pm 0.8d$	$\pm 0.03\% \pm 8d$	$\pm 0.03\% \pm 18d$	$\pm 0.03\% \pm 300d$	$\pm 30\text{ppm} \pm 0.8d$
	2000 Ω	$\pm 0.05\% \pm 2d$	$\pm 0.05\% \pm 12d$	$\pm 0.05\% \pm 100d$	$\pm 50\text{ppm} \pm 0.2d$	$\pm 0.02\% \pm 2d$	$\pm 0.02\% \pm 12d$	$\pm 0.02\% \pm 100d$	$\pm 20\text{ppm} \pm 0.2d$
	20 k Ω	$\pm 0.05\% \pm 2d$	$\pm 0.05\% \pm 12d$	$\pm 0.05\% \pm 100d$	$\pm 50\text{ppm} \pm 0.2d$	$\pm 0.02\% \pm 2d$	$\pm 0.02\% \pm 12d$	$\pm 0.02\% \pm 100d$	$\pm 20\text{ppm} \pm 0.2d$
	200 k Ω	$\pm 0.05\% \pm 2d$	$\pm 0.05\% \pm 12d$	$\pm 0.05\% \pm 200d$	$\pm 50\text{ppm} \pm 0.2d$	$\pm 0.02\% \pm 2d$	$\pm 0.02\% \pm 12d$	$\pm 0.02\% \pm 200d$	$\pm 20\text{ppm} \pm 0.2d$
	2000 k Ω	$\pm 0.05\% \pm 2d$	$\pm 0.05\% \pm 12d$	$\pm 0.05\% \pm 200d$	$\pm 50\text{ppm} \pm 0.2d$	$\pm 0.03\% \pm 2d$	$\pm 0.03\% \pm 12d$	$\pm 0.03\% \pm 200d$	$\pm 30\text{ppm} \pm 0.2d$
	20 M Ω	$\pm 0.3\% \pm 4d$	$\pm 0.3\% \pm 20d$	$\pm 0.3\% \pm 200d$	$\pm 300\text{ppm} \pm 0.4d$	$\pm 0.2\% \pm 4d$	$\pm 0.2\% \pm 20d$	$\pm 0.2\% \pm 200d$	$\pm 200\text{ppm} \pm 0.4d$
	100 M Ω	$\pm 3.0\% \pm 10d$	$\pm 3.0\% \pm 50d$	$\pm 3.0\% \pm 500d$	$\pm 0.3\% \pm 1d$	$\pm 3.0\% \pm 10d$	$\pm 3.0\% \pm 50d$	$\pm 3.0\% \pm 500d$	$\pm 0.3\% \pm 1d$

After zero adjustment. When measuring high resistance, use a shielded cable such as the 9236 CONNECTION CORD (1.7m).

● 3237 Resistance (Ω) Accuracy at Low Power function

Measure-ment	Range	Sampling			Thermal coefficient	Sampling			Thermal coefficient
		SLOW	MEDIUM	FAST		SLOW	MEDIUM	FAST	
2-terminal measurement	2000 Ω	$\pm 0.05\% \pm 6d$	$\pm 0.05\% \pm 14d$	$\pm 0.05\% \pm 300d$	$\pm 50\text{ppm} \pm 0.6d$	$\pm 0.02\% \pm 6d$	$\pm 0.02\% \pm 14d$	$\pm 0.02\% \pm 300d$	$\pm 20\text{ppm} \pm 0.6d$
	20 k Ω	$\pm 0.05\% \pm 6d$	$\pm 0.05\% \pm 14d$	$\pm 0.05\% \pm 300d$	$\pm 50\text{ppm} \pm 0.6d$	$\pm 0.02\% \pm 6d$	$\pm 0.02\% \pm 14d$	$\pm 0.02\% \pm 300d$	$\pm 20\text{ppm} \pm 0.6d$
	200 k Ω	$\pm 0.05\% \pm 6d$	$\pm 0.05\% \pm 14d$	$\pm 0.05\% \pm 300d$	$\pm 50\text{ppm} \pm 0.6d$	$\pm 0.02\% \pm 6d$	$\pm 0.02\% \pm 14d$	$\pm 0.02\% \pm 300d$	$\pm 20\text{ppm} \pm 0.6d$
	2000 k Ω	$\pm 0.3\% \pm 6d$	$\pm 0.3\% \pm 20d$	$\pm 0.3\% \pm 500d$	$\pm 300\text{ppm} \pm 0.6d$	$\pm 0.2\% \pm 6d$	$\pm 0.2\% \pm 20d$	$\pm 0.2\% \pm 300d$	$\pm 200\text{ppm} \pm 0.6d$

After zero adjustment. When measuring high resistance, use a shielded cable such as the 9236 CONNECTION CORD (1.7m).

● 3237 Continuity check Accuracy %, ppm=reading error, d=digit error

Range	Sampling	Thermal coefficient	Sampling	Thermal coefficient
	FAST only		FAST only	
2000 Ω	±0.05 %±300d	±50ppm±0.6d	±0.02 %±300d	±20ppm±0.6d

● 3238, 3239 Continuity check Accuracy %, ppm=reading error, d=digit error

● 3237 Diode check Accuracy %, ppm=reading error, d=digit error

Range	Sampling			Thermal coefficient	Sampling			Thermal coefficient
	SLOW	MEDIUM	FAST		SLOW	MEDIUM	FAST	
2000 Ω	$\pm 0.025\% \pm 2d$	$\pm 0.025\% \pm 8d$	$\pm 0.03\% \pm 100d$	$\pm 15\text{ppm} \pm 0.2d$	$\pm 0.01\% \pm 2d$	$\pm 0.01\% \pm 8d$	$\pm 0.015\% \pm 100d$	$\pm 10\text{ppm} \pm 0.2d$

● 3238, 3239 Diode check Accuracy %, ppm=reading error, d=digit error

4-terminal measurement

● Resistance (Ω) Accuracy %, ppm=reading error, d=digit error

Measure-ment	Range	Sampling			Thermal coefficient	Sampling			Thermal coefficient
		SLOW	MEDIUM	FAST		SLOW	MEDIUM	FAST	
4-terminal measurement	200 Ω	$\pm 0.03\% \pm 8d$	$\pm 0.03\% \pm 18d$	$\pm 0.03\% \pm 300d$	$\pm 30\text{ppm} \pm 0.8d$	No range	No range	No range	No range
	2000 Ω	$\pm 0.02\% \pm 2d$	$\pm 0.02\% \pm 12d$	$\pm 0.02\% \pm 100d$	$\pm 20\text{ppm} \pm 0.2d$	$\pm 0.02\% \pm 6d$	$\pm 0.02\% \pm 14d$	$\pm 0.02\% \pm 300d$	$\pm 20\text{ppm} \pm 0.6d$
	20 k Ω	$\pm 0.02\% \pm 2d$	$\pm 0.02\% \pm 12d$	$\pm 0.02\% \pm 100d$	$\pm 20\text{ppm} \pm 0.2d$	$\pm 0.02\% \pm 6d$	$\pm 0.02\% \pm 14d$	$\pm 0.02\% \pm 300d$	$\pm 20\text{ppm} \pm 0.6d$
	200 k Ω	$\pm 0.02\% \pm 2d$	$\pm 0.02\% \pm 12d$	$\pm 0.02\% \pm 200d$	$\pm 20\text{ppm} \pm 0.2d$	$\pm 0.02\% \pm 6d$	$\pm 0.02\% \pm 14d$	$\pm 0.02\% \pm 300d$	$\pm 20\text{ppm} \pm 0.6d$
	2000 k Ω	$\pm 0.03\% \pm 2d$	$\pm 0.03\% \pm 12d$	$\pm 0.03\% \pm 200d$	$\pm 30\text{ppm} \pm 0.2d$	$\pm 0.2\% \pm 6d$	$\pm 0.2\% \pm 20d$	$\pm 0.2\% \pm 300d$	$\pm 200\text{ppm} \pm 0.6d$

4-terminal measurement

● Resistance (Ω) Accuracy at Low Power function

The accuracy quoted above is for a contact resistance of 100 Ω or less.

■ 3237, 3238, 3239 General Specifications

- **AC measurement:** True RMS value measurement
- **Crest factor:** 3.0 max.
- **Ancillary functions:** Comparator, Average (0 to 99 times), Zero Adjust, Trigger (the display changes when the trigger is activated), and the Save/Load functions. (Up to 30 types of setting conditions)
- **Interface:** External input/output, RS-232C and GP-IB (option -01 specifications)
- **Display:** LED max. 199999 (999999 for frequency)
- **Sampling rate** (see page 1): SLOW approx. 1 samples/s
MEDIUM approx. 8 to 9 samples/s
FAST approx. 300 samples/s (Does not apply at resistances higher than 2M Ω , or LP Ω higher than 200k Ω)
(self-calibration takes place for approximately 55 ms at 30-minute intervals for FAST sampling only.)
- **Range selection:** Auto and Manual
- **Applicable standards:** **Safety:** EN61010-1+A2, EN61010-2-031
Lo terminal: CAT I (500V), CAT II (300V)
Hi terminal: CAT I (1000V), CAT II (600V)
EMC: EN61326+A1 Class B, EN61000-3-2+A1+A2, EN61000-3-3
- **Ambient temperature of use:** 0 to 40 °C(32°F to 104°F) 80%RH (no condensation)
- **Storage temperature range:** -10 to 50°C(-14°F to 122°F) 70%RH (no condensation)
- **Power supply:** Select from AC 100 V/120 V/220 V/240 V, (50/60 Hz) specify when ordering
- **Maximum rated power:** 15 VA
- **Dimensions and mass:** Approx. 215 W×80 H×265 D mm, 2.6kg
Approx 8.5" W×3.5" H×10.4" D, 91.7 oz.

Economical Type

DIGITAL HiTESTER 3237
DIGITAL HiTESTER 3237-01 (with GP-IB)

Advanced Type

DIGITAL HiTESTER 3238
DIGITAL HiTESTER 3238-01 (with GP-IB)

4-terminal Ω function & Advanced Type

DIGITAL HiTESTER 3239
DIGITAL HiTESTER 3239-01 (with GP-IB)

cord length 65cm

TEST LEAD 9170-10 (Included)



Options

Clamp sensors

CLAMP ON PROBE 9010-50 (10/20/50/100/200/500A AC)
CLAMP ON PROBE 9018-50 (10/20/50/100/200/500A AC, Broadband type)
CLAMP ON PROBE 9132 (20/50/100/200/500/1000A AC)

For Clamp sensors specifications, see page 4.



Options

RS-232C cable

RS-232C CABLE 9637 (9pin-9pin, Reverse type/1.8m)
RS-232C CABLE 9638 (9pin-25pin, Reverse type/1.8m)

GP-IB cable

The specifications of the 3237, 3238 and 3239 are -01 specifications

GP-IB CABLE 9151-02 (2m)
GP-IB CABLE 9151-04 (4m)

Printer

PRINTER 9442
CONNECTOR CABLE 9444 (For 9442 printer)
AC ADAPTER 9443-01 (For 9442 printer, Japan)
AC ADAPTER 9443-02 (For 9442 printer, EU)
AC ADAPTER 9443-03 (For 9442 printer, America)
RECORDING PAPER 1196 (For printer, 10 rolls)



When you purchase a PRINTER 9442, you must also purchase a 9444 CONNECTOR CABLE and a AC ADAPTER 9443 to connect it to the DMM.

For printer specifications, see page 3.

4-Terminal Ω measurement probe for 3239

CLIP-TYPE LEAD 9287-10 (Approx. 85 cm between connectors, and 8 cm between probes)
CLIP-TYPE LEAD 9452 (Approx. 80 cm between connectors, and 20 cm between probes)
FOUR-TERMINAL LEAD 9453 (Approx. 80 cm between connectors, and 30 cm between probes)
PIN-TYPE LEAD 9461 (Approx. 40 cm between connectors, and 25 cm between probes)



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