

3½-DIGIT DIGITAL MULTIMETERS

Product Group
Catalog

This handy DMM combines superb portability with an unsurpassed range of functions to make it the perfect tool for a wide range of uses for everything from hobbies and electrical work to electronic equipment trouble-shooting... easy to use anywhere, by anyone. Market requirements for DMMs are diversifying fast, and HIOKI offers a wide range of models from standard types to special application designs. The HIOKI 3-1/2 DMM-the individualist's DMM.

(DMM WITH COMPARATOR)

3236 DIGITAL HiTESTER

(DMM)

3231⁻⁰¹₋₅₁ DIGITAL HiTESTER

3233 DIGITAL HiTESTER

3250_{series} DIGITAL HiTESTER

3200⁻⁰¹₋₅₁ DIGITAL HiTESTER

3216⁻⁰¹ DIGITAL HiTESTER

3218 PENCIL HiTESTER

3240 CARD HiTESTER

3242 DIGITAL HiTESTER

3234 PRINT HiTESTER



Field Measuring Instrument

⚠ WARNING



- In some cases, power lines may carry voltage spikes of several times the normal supply voltage.
- For reasons of safety, ordinary testers should not be used to measure power lines carrying more than 250V. When measuring such power lines, always use a tester with built-in overcurrent protection to guard against short circuits (for example, the 3008).
- When measuring currents on power lines, use a clamp-on tester that is designed for measuring live lines.

Note: The term "power line" refers to the entire electrical circuit providing power to factories, buildings, and industrial machines. However, it does not include electrical circuits in ordinary dwellings (lines protected by fuses or circuit breakers).



Provides both Hi/Lo and % settings
DMM plus comparator -

3236 DIGITAL HiTESTER



This bench-type digital multimeter features a built-in comparator to meet the need for a unit with the ability to quickly evaluate and select components on production and assembly lines.

The comparator can be set percentage of a baseline value.

Results can also be read from the meter's large, easy-to-read LCD panel. Easy-to-use design also features an AC/DC twin power supply system and a relative function that displays absolute variation from a previously measured reference value.

- **Comparator function**
 - Hi/Lo settings (–3199 to +3199)
 - Ref and % settings (shows percentage with respect to reference value, up to 300%)
- **Selectable auto/manual settings**
- **AC/DC twin power supply system**
- **Data output function**
- **Features comparator output connector (open collector output)**
- **Can be connected to 9200 digital printer**
- **Relative function**
- **Diode test and continuity test functions**
- **Equipped with 10A AC/DC terminal (fuse-protected)**

Twin power supply system

The 3236 can be used with either AC or DC power. The AC adapter (8.5V, 600mA) makes it possible to use the tester continuously, making it ideal for use on production lines.

Relative function

Equipped with a relative function that zeroes the display when a switch is pressed, after which values are displayed in relation to that measured present when the switch was pressed. This is very useful for checking differences between values measured and a reference value.

Comparator

Comparator function allows two different types of settings: upper and lower limits (HI and LO), or reference value and range (REF and %). Results are displayed by HIGH, IN, and LOW LEDs and by an audible signal (buzzer), and are output as an open collector signal.

● **HI/LO settings** can be made in the range from –3199 to +3199.

● **REF (reference) and % (percentage values)** can be set in the following ranges.

Setting ranges

Reference value (REF): –3199 to +3199

Range (%): 1 to 300 (+0001 to +0300)

Comparison values

Upper limit = REF + (|REF| × % ÷ 100)

Lower limit = REF – (|REF| × % ÷ 100)

Setting errors

The tester indicates invalid comparator settings as follows.

- By an discontinuous buzzing
- By lighting all the LEDs
- By turning off external outputs

Evaluation

Output resulting from comparator evaluations is based on the following rules.

Condition	Output
Display value > Upper limit	HIGH
Upper limit ≥ Display value ≥ Lower limit	IN
Lower limit > Display value	LOW

MANU/AUTO selection

The comparator has two modes of operation: manual (MANU) and automatic (AUTO).

● **MANU mode**

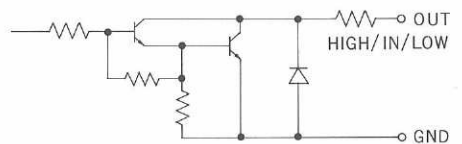
In the MANU mode, output by the LEDs, buzzer, and external output are ordinarily disabled. However, comparison results can be obtained from the external output by shorting the MANU terminal on the rear panel to GND. Output can then be disabled again by breaking the MANU-GND terminal connection.

● **AUTO mode**

Comparison is done continuously.

Evaluation results

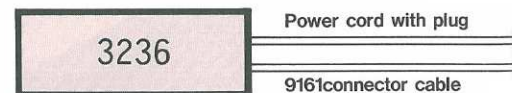
- LED display
- Buzzer — sounds continuously when IN range (can be disabled)
- Open collector outputs
 - HI, IN, or LO output from the corresponding comparator output terminal according to results of comparison. (Output is active Low.)



Dielectric strength: 35V

Maximum output current: 100 mA

Allows connection to a digital Printer



Using the 9200 digital printer (sold separately) with the 3236 makes it possible to record measurement data for storage.

The digital printer connects to the 3236 with the 9161 connection cable. By using a cord with a power plug, it can also supply power to the 3236

● The common side of the 3236 measurement system is connected to the data output ground.

Note 1) Continuity test results and diode data are not output to the 9200.

Note 2) When using the 9200 in the timer mode, set the interval to two seconds or more.

Two instruments in one package!



Measurement range (23°C ± 5°C, 80% R.H. max., no condensation, after relative function)

DC V	Range	300m/3/30/300/1000V
	Accuracy	±(0.35%rdg. + 2dgt.), ±(0.5%rdg. + 2dgt.)(300V), ±(0.6%rdg. + 2dgt.)(1000V)
	Input Resistance	100MΩ min.(300m), approx11MΩ (3V), approx10MΩ
AC V	Range	3/30/300/750V
	Accuracy	±(1.0%rdg. + 4dgt.)
	Input Resistance	Approx11MΩ (3V), approx10MΩ
DC A	Range	30m/10A * * Measurement time is max. 3m.
	Accuracy	±(1.0%rdg. + 2dgt.)(30mA), ±(1.2%rdg. + 2dgt.)
	Internal Resistance	Approx10Ω (30mA), 30mΩ max.(10A)
AC A	Range	30m/10A *
	Accuracy	±(1.2%rdg. + 4dgt.)(30mA), ±(1.5%rdg. + 4dgt.)(10A)
	Internal Resistance	Approx10Ω (30mA), 30mΩ max.(10A)
Ω	Range	300/3k/30k/300k/3000k/30MΩ
	Accuracy	±(0.4%rdg. + 2dgt.), ±(1.0%rdg. + 2dgt.)(3000kΩ), ±(2.0%rdg. + 2dgt.)(30MΩ)
	Open Terminal V	Approx1.5V (300Ω), approx0.65V ± 0.2V
LP Ω	Range	3k/30k/300k/3000k/30MΩ
	Accuracy	±(0.5%rdg. + 4dgt.), ±(1.0%rdg. + 4dgt.)(3000kΩ), ±(2.0%rdg. + 4dgt.)(30MΩ)
	Open Terminal V	0.45V max.
Continuity		2kΩ max.

Measurement accuracy is for normal (NORM) sampling rate (2.5 times/s). Measurement accuracy is 1.2 times with FAST sampling.

General Specifications

Measuring method: Double integration
 Display: Max. 3199 LCD.
 Polarity display: "—" is displayed automatically.
 Input over display: Displays "OF" or "—OF"
 (Except for 1000V DC, 750V DC, 10A DC/AC, and resistance ranges.)
 Sampling rate: NORM (2.5 times/s) and FAST (5 times/s)
 Range switching: Automatic or manual (manual only for current measurement)
 Operating environment: 0 to 40°C, 80% RH max
 Battery-low indication: "⏻" mark appears
 Power supply: SUM-3×4 or AC adaptor (8.5V, 600mA), continuous use 20h(when comparator is operating)
 Dimensions/weight: 58H × 215W × 200D mm, approx 950 g
 Accessories: 9170 test leads (1), 0.5 A fuse (non-arcing, 1), cord with power plug (for 9200, 1)

Optional Accessories

9200 Digital printer
 9161 Connector cable. (for 9200)
 9222 Recording paper (for 9200, 8.5m, 5 rolls)
 9090-03 Probes with Fuse

9200 Digital printer specifications

Printer: Thermal character printer
 Recording paper: 38mm×8.5m (approx. 2,200 lines long)
 Service life: 500,000 lines
 Printing method: Selectable between TIME and No.
 TIME mode: Automatic printing at preset intervals (15 steps: 1 to 30s, min. and 1 h.)
 No. mode: Manual print of data number 1 to 1000
 Cancel: Cancels immediately previous data item
 Graphing:
 (Automatic graphing): Automatic distribution graphing by dividing min. to max. into ten equal parts.
 (Rank width set graphing): Graphing by setting rank width and median value.
 Median value set: upper 3.5 digits
 Rank width set: 0.1 to 20%, ±5
 Rank: 0.1 to 10%, ±10 ranks
 Accessory functions: External control terminal supports setting of option units and decimal points (start, stop)

Data processing

Function	Mode	No.		TIME
		N ≤ 100	N > 100	
N=(Data count)		○	○	○
x=(Average)		○	○	○
MIN.=(Minimum)		○	○	○
MAX.=(Maximum)		○	○	○
σ _{n-1} =(Standard deviation)		○	○	○
σ _n =(Standard deviation)		○	○	○
GRAPH=(Graphic output)		○	○	○

Comparator: Upper and lower limit set (4.5 digits), 3-level (Hi, IN, Lo) output, LED, buzzer, open collector output, external control of output timing supported

Power supply: 100/120/220/240V AC (specify at order) ±10% (50/60Hz), power supply for 3233 possible
 Dimensions and weight: 147H×210W×48D(mm), 1.5kg.

Accessories: Power cord (1), 1A fuse (1), 9222 recording paper (1 roll)

```
00:00 1.332 ΩI TIME mode
00:05 1.332 ΩI operation
00:10 1.130 ΩL sample
00:15 1.529 ΩH
00:20 1.824 ΩH
00:25 1.435 ΩI
END
```

N = 6

\bar{x} = 1.43033 Ω

MIN = 1.130 Ω

(00:00:10)

MAX = 1.824 Ω

(00:00:20)

GRAPH #=5

1.0000J

1.0000J

1.0040J

1.0020J

1.0000J

0.9980J

0.9960J

0.9940J

0.9920J

0.9900J

Graph generation sample



Dynamic range is 160% wider than the 1999 model, and the display large 18mm characters. The characters are easy to read, and all functions and unit settings can be checked with a glance.

Specifications

Measuring method: Double integration
Display: Max. 3199 LCD.

18-mm-high display characters.

Range switching: Automatic and manual (manual-only for current and frequency ranges)

Input over display:

OF or -OF (Except for 1000 VDC, 750VAC, and 10A DC/AC ranges)
Alarm buzzer (Except for 1000 VDC, 750 VAC, 10A DC/AC and resistance ranges)

Polarity display: “-” is displayed automatically.

Battery-low indication:  mark appears

Sampling rate: 2.5 times/s

Frequency measurement max. input voltage:

3231

Item	Lower Limit		Upper Limit
	Sine Wave	Rectangular Wave	
40Hz-100Hz	300Vrms	2Vp-p	150VAC
100Hz-1kHz	10Vrms	2Vp-p	150VAC
1kHz-320kHz	2Vrms	3Vp-p	100VAC

3233

Item	Lower Limit		Upper Limit
	Sine Wave	Rectangular Wave	
30Hz-320kHz	500Vrms	600Vp-p	50VAC

Operating environment

0 to 40°C, 80% RH or less, no condensation.

Power supply: 3231 SUM3(AA) × 2

(Continuous use, approx. 500h).

3233 SUM3(AA) × 4

(Continuous use, approx. 250h)

Dimensions/weight:

3231 160H × 85W × 33Dmm • 330g

3233 73H × 175W × 200Dmm • 800g

3231-01 • 3233 DIGITAL HiTESTER



Easy-to-read 18mm characters

- Maximum display 3199
- Large-size 18mm character height
- Frequency measurement to 320kHz
- Display hold function
- Overvoltage protection to 250VAC (Ω, μA, mA)
- Conductivity test with audible tone
- Low-power ohm.
- Auto power-off (3231)
- Capacitor measurement to 32μF (3233)
- BCD output (3233)

Measurement range (23°C ± 5°C, 80% R.H. max., no condensation)

Item	3231-01, 3231-51	3233
DC V	Range	300m/3/30/300/1000V
	Accuracy	± 0.35%rdg. ± 2dgt. ± 0.5%rdg. ± 2dgt.(300V), ± 0.6%rdg. ± 2dgt.(1000V)
	Input Impedance	100MΩ < (3000mV), Approx. 11MΩ (3V), Approx. 10MΩ (30V <)
AC V	Range	3/30/300/750V
	Accuracy	± 1%rdg. ± 4dgt.
	Input Impedance	Approx. 11MΩ (3V), 10MΩ (30V <)
DC A	Range	300μ(3231only)/30m/300m/10A
	Accuracy	± 1%rdg. ± 2dgt.(300μ, 30m, 300mA), ± 1.2%rdg. ± 2dgt.(10A)
	Internal Resistance	Approx. 10Ω (30mA)
AC A	Range	300μ(3231only)/30m/300m/10A
	Accuracy	± 1.2%rdg. ± 4dgt.(300μ•30m•300mA), ± 1.5%rdg. ± 4dgt.(10A)
	Internal Resistance	Approx. 10Ω (30mA)
Ω	Range	300/3k/300k/3000k/30MΩ
	Accuracy	± 0.4%rdg. ± 2dgt.(300Ω to 300kΩ), ± 1%rdg. ± 2dgt.(3000kΩ)
	Open Circuit Voltage	0.65V ± 0.2V > (3kΩ <)
Hz	Range	300/3k/30k/300kHz
	Accuracy	± 0.15%rdg. ± 2dgt.(300Hz), ± 0.1%rdg. ± 1dgt.(3kHz <)
	Gate Time	10s(300Hz), 1s(1kHz), 0.1s(30k to 300kHz)
C	Range	—
	Frequency	3n 30n/300n/3μ 30μF
	Accuracy	1kHz(3V) 60Hz(3V) 10Hz(3V)
Accessories	—	± 1.5%rdg. ± 10dgt.
	9170 Test leads, 9145 Carrying case Fuse(0.5A, non arcing) 600V fuse (1A, 3231-51 provided)	9170 Test leads Fuse (0.5A, non arcing) Power cord (with power plug, for 9200)

3231-01 (with carrying case)

3231-51 (with 600V AC fuse and carrying case)

Optional Accessories

9014 DC30kV high voltage probe

9145-Carrying case

9090-03 Probes with fuse

Optional Accessories

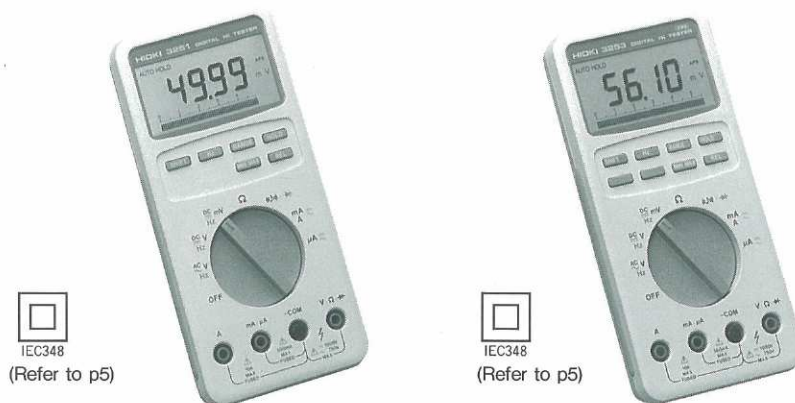
9014 DC30kV high voltage probe

9200 Digital printer (for 3233, refer to p2)

9161 Connector cable (for 3233-9200)

9222 Recording paper (for 9200, 8.5m, 5 rolls)

9090-03 Probes with fuse



The 3250 series puts safety first. Safety has been pursued from every aspect-technically and ergonomically. But that isn't all, of course. In addition to superior 3.5-digit DMM performance like DCV precision of $\pm 0.1\%$ and a minimum resolution of $10\mu V$, a comparator function, and maximum, minimum and average recorder functions.

3251·3252·3253 DIGITAL HiTESTER

High-performance-and-safety-oriented-DMM-

- Analog bar graph
 - High $10\mu V$ resolution
 - High-speed 4 times/s sampling
 - Relative function
 - Compatible with IEC 348
 - Dust-proof, drip-proof
 - Common V and Ω terminals
- 3252 DMM-with-Comparator**
 - Max.[5610] Count
 - With comparator
 - Other feature is the same as the 3251
 - 3253 True-RMS-Display**
 - High-accuracy of ACV $\pm 0.1\%$
 - Other feature is the same as the 3252

Measurement range ($23^{\circ}\text{C} \pm 5^{\circ}\text{C}$, 80% R.H. max., no condensation)

Item		3251	3252	3253	
DCV	Range	50m/500mV(10M Ω or > 1000M Ω selectable), 500m/5/50/500/1000V 11M Ω (5V), 10M Ω (50-1000V)			
	Accuracy	$\pm 0.7\%$ rdg. ± 10 dgt.(50mV) $\pm 0.3\%$ rdg. ± 2 dgt.(500m-500V) $\pm 0.5\%$ rdg. ± 2 dgt.(1000V)	$\pm 0.5\%$ rdg. ± 10 dgt.(50mV) $\pm 0.15\%$ rdg. ± 2 dgt.(500m-500V) $\pm 0.3\%$ rdg. ± 2 dgt.(1000V)	$\pm 0.5\%$ rdg. ± 10 dgt.(50mV) $\pm 0.1\%$ rdg. ± 2 dgt.(500m-500V) $\pm 0.3\%$ rdg. ± 2 dgt.(1000V)	
ACV	Range	500m/5/50/500/750V Approx. 11M Ω (500m-5V), Approx. 10M Ω (50-750V)			
	Accuracy	40~500Hz	$\pm 1.5\%$ rdg. ± 10 dgt.(500mV)	$\pm 1.5\%$ rdg. ± 10 dgt.(500mV)	$\pm 0.1\%$ rdg. ± 4 dgt.(500m-500V)
		500~2kHz	$\pm 2.0\%$ rdg. ± 10 dgt.(500mV)	$\pm 2.0\%$ rdg. ± 10 dgt.(500mV)	
		40~500Hz	$\pm 1.0\%$ rdg. ± 2 dgt.(5-500V)	$\pm 0.5\%$ rdg. ± 2 dgt. (5-500V)	$\pm 2.0\%$ rdg. ± 4 dgt.(5-500V)
		500~2kHz	$\pm 1.5\%$ rdg. ± 2 dgt.(5-500V)	$\pm 1.0\%$ rdg. ± 2 dgt. (5-500V)	
40~500Hz	$\pm 1.5\%$ rdg. ± 2 dgt.(750V)	$\pm 1.5\%$ rdg. ± 2 dgt.(750V)	$\pm 1.5\%$ rdg. ± 4 dgt.(750V)		
DCA	Range	500 μ /5000 μ A, 50m/500m/5/10A* 100 Ω >(500 μ /5000 μ A, 2 Ω >(50m/500mA), 0.1 Ω >(5/10A)			
	Accuracy	$\pm 0.5\%$ rdg. ± 4 dgt.(500 μ /500mA.) $\pm 0.5\%$ rdg. ± 2 dgt.(5000 μ /500mA) $\pm 1.0\%$ rdg. ± 4 dgt.(5A), $\pm 1.5\%$ rdg. ± 2 dgt.(10A)			
ACA	Range	500 μ /5000 μ A, 50m/500m/5/10A* 100 Ω >(500 μ /5000 μ A), 2 Ω >(50m/500mA), 0.1 Ω >(5/10A)			
	Accuracy	40~2kHz $\pm 2.0\%$ rdg. ± 4 dgt.(500 μ A), $\pm 1.5\%$ rdg. ± 2 dgt. (5000 μ /500mA), $\pm 1.5\%$ rdg. ± 4 dgt.(50m/5A) $\pm 2.0\%$ rdg. ± 2 dgt.(10A)			
Ω	Range	500/5k/50k/500k/5M/50M Ω			
	Accuracy	$\pm 1.0\%$ rdg. ± 4 dgt.(500 Ω)	$\pm 0.5\%$ rdg. ± 4 dgt.(500 Ω), $\pm 0.2\%$ rdg. ± 2 dgt.(5k to 5M Ω)		
		$\pm 0.5\%$ rdg. ± 2 dgt.(5 to 5M Ω) $\pm 1.5\%$ rdg. ± 2 dgt.(50M Ω)	$\pm 1.0\%$ rdg. ± 2 dgt.(5M Ω)		
Open Circuit Terminal	Max.0.3V				
Frequency		150/1500/15k/150k/400kHz($\pm 0.02\%$ rdg. ± 1 dgt.)*			

* The measurement time is max. 1m at 10A range.

Common Specifications

Continuity: Approx. 150 Ω or less, response time approx. 10ms or less

Diode check: 300 μ A constant current measurement

Measurement method: Triple integration

Display: Max.4999(3251), 5610(3252, 3253)

Range switching: Automatic or manual

Sampling rate: 4 times/s(DC, Ω , " ", " ", " ")
2.5 times/s(AC)
2 times/s(frequency)
20 times/s (bar graph)

Input over display: "OF" or "-OF"

Polarity display: "-" is displayed automatically

Fuse protection:

mA and μ A: 1A/600V fast-blow type

A: 10A/600V fast-blow type

Power supply: SUM-3(AA, 2)(about 2000h continuous use)

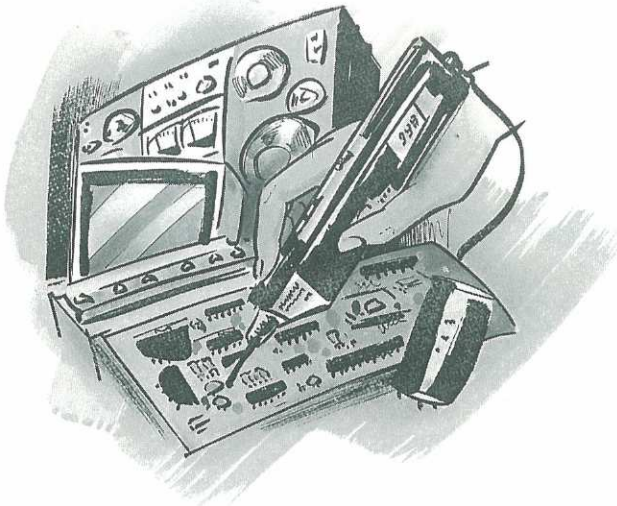
Dimensions/weight: 176H \times 84W \times 300Dmm approx. 330g

Accessories: 9170 test leads (1)

Optional Accessories

9367 Soft case





3200-01 DIGITAL HiTESTER

Stress on operability and safety

Design emphasizes ease in use and safety in this wide-range DMM... with an 20μA AC/DC range. The design is drop-proof, overload protected, dust resistant and protects you from shocks.

- Conformance to IEC348(3200-51)



3234 PRINT HiTESTER

Handy DMM with printer

- Max display of 3199
 - Synchronized operation
- Printer**
Printing Method: Thermal, serial dot
Printing Speed: 1.2s/line(approx.)
TIME Mode: Interval 10/30s/1/3/5/10/30min/1h(± 3s over daily precision)
- Clock**
Clock Type: 24-hour clock
Calendar: Automatically set

Common features

- Overvoltage protection up to 250V AC(Ω/continuity)
- Beeper continuity test.
- Low-power ohms enables in-circuit measurements of resistance.
- Diode check function.
- Safety plug, safety leads (3200, 3216)

General specifications

Display: Max. 1999 (3½ digit) LCD.
(except 3234)

Battery low indication: BATT mark appears

Sampling rate: Approx. 2 times/s

Input over indication: MSD "1" flashes

Operating temperature: 0 to 40°C,

23°C ± 5°C, 80% R.H. max., no condensation

Item	3200-01, 3200-51	3234	
DC V	Range	200m/2/20/200/1000V	300m/3/30/300/500V 10M Ω (30V <)
	Accuracy	± 0.35%rdg. ± 2dgt.(200mV) ± 0.5%rdg. ± 2dgt.(2/20/200V) ± 1.0%rdg. ± 2dgt.(1000V)	± 0.35%rdg. ± 2dgt.(300m/3V) Option ± 0.5%rdg. ± 2dgt.(30/300V) ± 0.7%rdg. ± 2dgt.(500V) 300mVDC, 100M Ω ± 0.35%rdg. ± 2dgt.
	Input Resistance	1000M < (200mV), 12M Ω (2V), 11M Ω (20V <)	3/30/300/500V
AC V	Range	2/20/200/750V	3/30/300/500V
	Accuracy	± 1%rdg. ± 4dgt. 40 to 1kHz (500Hz at 2V/750V) ± 2%rdg. ± 4dgt. 1k to 5kHz (1kHz //)	± 1%rdg. ± 4dgt. (40 to 500Hz)
	Input Impedance	Approx. 11M Ω (20V <)	10M Ω (30V <)
DC A	Range	20μ/200μ/20m/200m/10A*	300mA
	Accuracy	± 1.0%rdg. ± 2dgt. ± 1.2%rdg. ± 2dgt. (10A)	± 1%rdg. ± 2dgt.
	Internal Resistance	Approx. 1 Ω (200mA)	1 Ω
AC A	Range	20μ/200μ/20m/200m/10A*	300mA
	Accuracy	± 1.2%rdg. ± 4dgt.(40 to 1kHz) ± 1.5%rdg. ± 4dgt. (40 to 50Hz/20μA·10A)	± 1.2%rdg. ± 4dgt.
	Ω	Range	200/2k/20k/200k/2000k/20M Ω (LP Ω)
Ω	Accuracy	± 0.7%rdg. ± 2dgt. ± 1.0%rdg. ± 2dgt. (2000k Ω) ± 2.0%rdg. ± 2dgt. (20M Ω)	± 0.5%rdg. ± 2dgt. (300 to 300k Ω)
	Open Circuit Voltage	Approx. 0.45V	0.65V ± 0.2V/0.45V > at LP Ω
	LP Ω	○	○
Diode Check	○	—	
Continuity	○(1.6k to 15k Ω) >	—	
Range Switching	Auto (except current range) & manual	Automatic and manual	
Display Hold	○	—	
Power Supply	SUM-3(AA, 2) (Continuous use 500h)	Ni-Cd batteries (4.8V, 4) or AC adapter (9V-1A), LR-44 (for clock, 1)	
Dimensions	160H × 85W × 33Dmm · 310g	200H × 85W × 30Dmm · 400g	
Accessories	9170 Test leads(1) 0.5A fuse(non-arcing, 1) 600V fuse(for 3200-51, non-arcing)	9170 test leads(1), alligator clips (1), 0.5A Fuse(non-arcing, 1), 9227 recording paper (1 roll), AC adapter.	

* Measurement time is max. 3m at 10A range

- 3200-01 (with 9145 case)
- 3200-51 (with 600V fuse and 9145 case)

Optional Accessories

- 9038 DC 30kV high-voltage probe
- 9090-03 Probes with fuse
- 9145 Carrying case

Optional Accessories

- 9227 Recording paper (3m, 5 rolls)
- 9357 Carrying case
- 9090-03 Probes with fuse
- 9081 10A shunt

Conformance to IEC348 Safety Class II
The IEC (International Electrotechnical Commission) Publication 348 sets forth safety requirements for electronic measuring apparatus. The objectives of this standard are:

- To specify requirements for electronic measuring apparatus so as to ensure reasonable personal protection and protection of the surrounding area against damage;
 - To specify the test methods for showing compliance with these requirements.
- HIOKI places highest priority on protecting the safety of users, and as such HIOKI products are designed for conformance to this standard.


3216-01
DIGITAL HiTESTER
Simple Operation, Easy to Use

This digital tester is designed to be easy to use, providing all of the DMM functions you need with none of the trimmings. Operation is simple, and the design stresses safety.

● 10A DC-AC range


3218
PENCIL HiTESTER
With auto-range and data hold

In addition to being compact, this pencil-type tester comes with autorange and data hold functions for incredibly easy measurement of electrical and electronic circuitry.


3240
CARD HiTESTER
Card-size DMM

Only 8mm in thickness, this 60g card-size DMM comes with its own case. Use it as a novelty in various campaigns or sales promotions.


3242
DIGITAL HiTESTER
No battery replacement needed

This solar-powered tester never requires a battery change, and the test leads can be stored in the space provided behind the back cover.

● Full auto-ranging design.



3216-01	3218	3240	3242
200m/2/20/200/1000V	200m/2/20/200/500V	200m/2/20/200/500V	200m/2/20/200/500V
±0.5%rdg. ±4dgt. (200m/2V)	±2.0%rdg. ±4dgt. (200m)	±2.0%rdg. ±4dgt. (200mV)	±0.9%rdg. ±4dgt. (200mV)
±0.7%rdg. ±4dgt. (20/200V)	±0.7%rdg. ±4dgt. (2V)	±0.7%rdg. ±4dgt. (2V)	±0.7%rdg. ±4dgt. (2V)
±1.0%rdg. ±4dgt. (1000V)	±1.3%rdg. ±4dgt. (20V<)	±1.3%rdg. ±4dgt. (20V<)	±1.3%rdg. ±4dgt. (20V<)
1000MΩ <(200mV), 11MΩ	100MΩ <(200mV), 11MΩ	100MΩ <(200mV), 12MΩ, 11MΩ (20V<)	1000MΩ <(200mV), 12MΩ, 11MΩ (20V<)
2/20/200/750V	2/20/200/500V	2/20/200/500V	2/20/200/500V
±1.0%rdg. ±8dgt.(40to 500Hz) ±1.5%rdg. ±8dgt.(750V/40 to 500Hz)	±2.3%rdg. ±8dgt. (40 to 500Hz)	±2.3%rdg. ±8dgt. (40 to 500Hz)	±2.3%rdg. ±8dgt. (40 to 500Hz)
Approx. 12MΩ (2V), 11MΩ	12MΩ (2V), 11MΩ	12MΩ, 11MΩ (20V<)	12MΩ, 11MΩ (20V<)
200mA/10A*	—	—	—
±1.5%rdg. ±4dgt.	—	—	—
Approx. 1Ω (200mA)/15mΩ >(10A)	—	—	—
200mA/10A*	—	—	—
±2.2%rdg. ±8dgt.	—	—	—
200/2k/20k/200k/2000k/20MΩ	200/2k/20k/200k/2000k/20MΩ	200/2k/20k/200k/2000k/20MΩ	200/2k/20k/200k/2000k/20MΩ
±0.7%rdg. ±4dgt.	±2.0%rdg. ±4dgt.	±2.0%rdg. ±4dgt.	±2.0%rdg. ±4dgt.
±1.2%rdg. ±4dgt.(2000kΩ)	±5.0%rdg. ±4dgt.(20MΩ/1.8M to 10MΩ)	±5.0%rdg. ±4dgt.(1.8M to 10MΩ)	±2.0%rdg. ±4dgt.
±2.5%rdg. ±4dgt.(20MΩ)	±10%rdg. ±4dgt.(20MΩ/10.01M to 20.00MΩ)	±10%rdg. ±4dgt.(10.01M to 20.00MΩ)	±10%rdg. ±4dgt. (20MΩ)
0.45V>	0.45V>	0.45V>	0.46V>
○	○	○	○
○(1.5k to 15kΩ)>	○(1.5k to 15kΩ)>	○(1.5k to 15kΩ)>	○(1.5k to 15kΩ)>
Auto & manual	Auto	Auto	Auto
SUM-3(AA, 2) (Continuous use 400h)	LR44(4mW, 2) (Continuous use 80h)	LR-44(2) (Continuous use 80h)	Two NiCad cells (approx. 16 h continuous use after 8 h charging in bright sunlight.)
160H×85W×29Dmm·240g	37H×161W×19Dmm·60g	108H×54W×8Dmm·60g	120H×65W×18Dmm·110g
9170 Test leads 0.5A fuse (non-arcing)	Case	Case	Transparent vinyl case

● Optional Accessories

9038 DC 30kV high-voltage probe
9090-03 Probes with fuse
9145 Carrying case

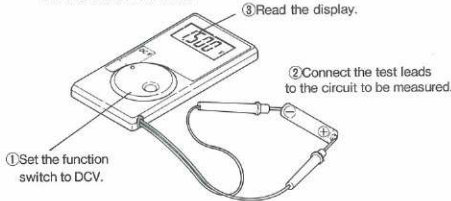
● Optional Accessories

(3218, 3240, 3242)
9081 10A shunt

How to use DMM

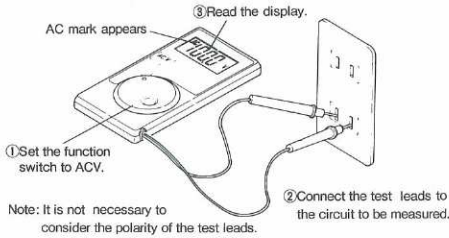
I. Measuring DC voltages

Note: "–" (minus sign) is displayed when the polarity of the test leads is reversed.



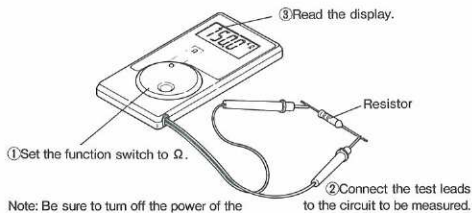
Use the test leads with the normal polarity when measuring a voltage that includes spike pulses (such as horizontal output signal of a TV set)

II. Measuring AC voltages



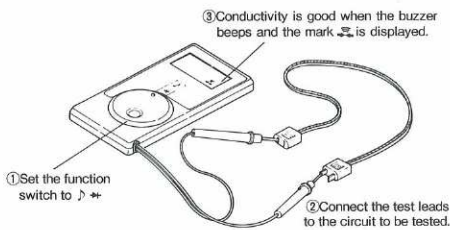
Note: It is not necessary to consider the polarity of the test leads.

III. Measuring Resistance

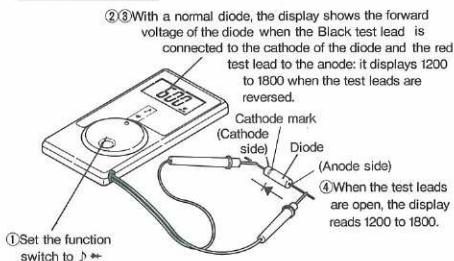


Note: Be sure to turn off the power of the circuit to be measured before connecting the leads.

IV. Conductivity Test



V. Diode Test



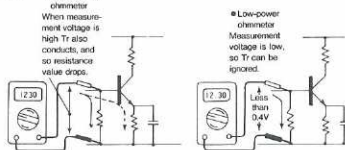
Digital Multimeter Q & A

Measuring volts in Ω range

Don't worry. Hioki DMM are designed to withstand one minute at 250VAC even in Ω/conductance or mA ranges. Even if you accidentally input an over voltage the internal circuitry will not be damaged.

High measurement voltage prevents circuit resistance measurement.

That's why electronic circuits with diodes and transistors use the low-power ohm measurement function. Resistance measurement is possible even when connected through low-power Ω (LP Ω) measurement. This measurement approach eliminates the effect of semiconductor direction, making in-circuit measurement possible.



How do you check for conductance?

Just listen for the tone. The conductance check can also be used to check diode polarity, sounding the tone in the diode operational direction.

How do you read accuracy? what are "rdg" and "dgt"?

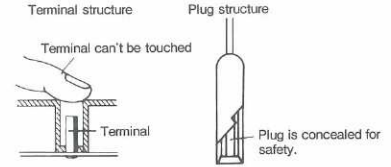
"rdg" stands for reading, or what the display shows you. "dgt" is the minimum unit of resolution of the meter itself, in other words, the unit "1" in the lowest column of the read-out.

Generally the accuracy is expressed as ± 1 dgt, based on the rounding off function of analog/digital conversion, but in fact the full-scale(fs) deviation is converted to dgt value for use.

What are safety plugs and safety leads?

The Hioki DMM stresses safety in every

design step. The metal parts of test leads and plugs cannot be touched.



Before you send it out for repairs...

- Check the following points first. Is there a \square mark on the display, at the left side? If there is, it means your batteries are low and have to be replaced.
- Is the fuse blown? The fuse is blown if the tone continues even when the test leads are open.

Accessories

Voltage probes

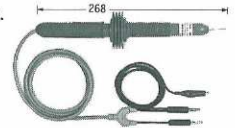
Designs offer insulation and dielectric strength to handle up through 30kV.

9014: Use with products with a 10MΩ input resistance. (For 3231, 3233)

9038: Use with products with 11MΩ or 12MΩ input resistance. (For 3200, 3216)

Both have a 1000:1 voltage ratio, allowing measurement of 1,000 times the displayed voltage.

Accuracy: $\pm 5\%$



Test leads

9170: For a variety of DMM. Supplied with tester unit.

9090-03: Test lead with fuse



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