

HIOKI

Field
Measuring
Instruments

1994

DIGITAL MULTIMETERS

Product Group
Catalog

3200⁻⁰¹/₋₅₁ DIGITAL HiTESTER

3218 PENCIL HiTESTER

3231⁻⁰¹/₋₅₁ DIGITAL HiTESTER

3233 DIGITAL HiTESTER

3234 PRINT HiTESTER

3235 DIGITAL HiTESTER

3236 DIGITAL HiTESTER


3240 CARD HiTESTER

3242 DIGITAL HiTESTER

3250^{series} DIGITAL HiTESTER

3255 DIGITAL HiTESTER

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 and the 3255)
- 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).

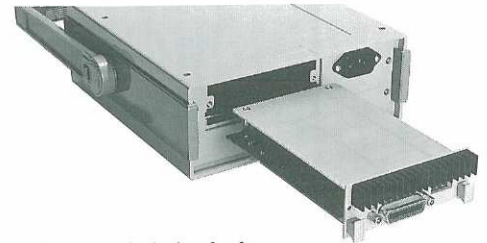


RMS **GP-IB**
9515 is installed

3235 DIGITAL HiTESTER

Wide display up to 29999 counts

- Max.29999 count
- True RMS measurement
- High-speed full auto-ranging
- Unit plug-in design (only one unit can be mounted)
 - GP-IB interface
 - Printer interface
 - Battery unit



Plug-in unit design for free selection of units.



9514 Digital printer

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

Range		Resolution	Accuracy	Input (internal Resistance)	Temperature coefficient	Notes
DC V	300mV	10 μV	±0.03% rdg. ±2 dgt.	1000MΩ <	(±0.005% rdg. ±0.2 dgt.)/°C	Noise filter ratio: CMRR 120dB NMRR 40dB Remainder: 4 dgt. Response time: Approx. 2 s (at fixed range)
	3 V	100 μV	±0.05% rdg. ±2 dgt.	Approx. 11MΩ		
	30 V	1mV	±0.05% rdg. ±2 dgt.	Approx. 10MΩ		
	300 V	10mV	±0.05% rdg. ±2 dgt.	Approx. 10MΩ		
	1000 V	100mV	±0.05% rdg. ±2 dgt.	Approx. 10MΩ		
AC V	3 V	100 μV	±0.4% rdg. ±30 dgt.	Approx. 11MΩ/100pF >(3V) Approx. 10MΩ/100pF >	(Measurement accuracy × 0.1)/°C	Crest factor: 3:1 for f.s. Remainder: 8 dgt.
	30 V	1mV	±0.4% rdg. ±30 dgt.			
	300 V	10mV	±0.4% rdg. ±30 dgt.			
	* 750 V	100mV	±1.0% rdg. ±30 dgt.			
DC A	300mA	10 μA	±0.5% rdg. ±2 dgt.	Approx. 1Ω	(Measurement accuracy × 0.1)/°C	Response time: Approx. 1.7 s
	1000mA	100 μA		Approx. 0.1Ω		
AC A	300mA	10 μA	±1.5% rdg. ±40 dgt.	Approx. 1Ω	(Measurement accuracy × 0.1)/°C	Crest factor: 3:1 for f.s. Response time: Approx. 2 s
	1000mA	100 μA		Approx. 0.1Ω		
Ω	300 Ω	10mΩ	±0.1% rdg. ±5 dgt.	Measurement current (max. value: 2.5mA)	(Measurement accuracy × 0.1)/°C	Open terminal voltage: Approx. 3V (300Ω) Approx. 1.2V (3k to 30MΩ) Response time: Approx. 1.5 s (300 to 300kΩ). Approx. 3 s (3000kΩ) Approx. 7 s (30MΩ)
	3 kΩ	100mΩ	±0.07% rdg. ±2 dgt.			
	30 kΩ	1 Ω	±0.07% rdg. ±2 dgt.			
	300 kΩ	10 Ω	±0.07% rdg. ±2 dgt.			
	3000 kΩ	100 Ω	±0.1% rdg. ±2 dgt.			
30MΩ	1 kΩ	±0.3% rdg. ±5 dgt.			(±0.02% rdg. ±0.2 dgt.)/°C (±0.05% rdg. ±1 dgt.)/°C	
Frequency	1000Hz	0.01 Hz	±0.02% rdg. ±2 dgt.	—	—	At 75% input of used AC V range. (manual) Gate time: 1 s
	10kHz	0.1 Hz				
	100kHz	1 Hz				
	300kHz	10 Hz				

* Measurement only 40 to 1kHz in the 750V range. Frequency characteristics of AC V range: 40 to 100kHz.

General specifications

Measurement method: Double integration
 Display: 5-digit (29999) LED (frequency range is 99999 display)
 Range switching: Automatic and manual input over display: OF display (excluding 1000V DC, 750V AC, 1000mA DC/AC ranges)
 Battery low display: \square mark appears at 7.1V ± 0.8V or less (with 9516 battery unit)
 Polarity display: Automatic switching, "—" display for minus input
 Sampling rate: 2 to 3 times/s

Dielectric strength: 500 V DC or AC peak, -COM terminal to case, and -COM terminal to AC line
 Accessory functions: Full range control, zero adjust, data hold, remote/local select
 Power supply: 100/120/200/220/240V (specify at order) AC ± 10%, 50/60Hz, or DC12V (9516 battery unit)
 Dimensions/weight: 80H × 218W × 240D mm (not including protrusions such as handles), approx. 2.2kg.
 Accessories: 9170 test leads (1), power cord (1), 0.5A fuse, 2A fuse.

Optional Accessories

9514 Digital printer (refer to p2)
 9515 GP-IB interface
 9516 Battery unit
 9222 Recording paper (8.5m, 5 rolls)
 9084 Carrying case
 9090-03 Probes with Fuse
 9151-02 GP-IB connector cable (2m)
 -04 GP-IB connector cable (4m)



3236 DIGITAL HiTESTER

DMM plus comparator-Two instruments in one package

- 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)

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

	Range	300m/3/30/300/1000V
DC V	Accuracy	±(0.35%rdg. + 2dgt.), ±(0.5%rdg. + 2dgt.)(300V), ±(0.6%rdg. + 2dgt.)(1000V)
	Input Resistance	100MΩ min.(300m), approx11MΩ (3V), approx10MΩ
	Range	3/30/300/750V
AC V	Accuracy	±(1.0%rdg. + 4dgt.)
	Input Resistance	Approx11MΩ (3V), approx10MΩ
	Range	30m/10A *
DC A	Accuracy	±(1.0%rdg. + 2dgt.)(30mA), ±(1.2%rdg. + 2dgt.)
	Internal Resistance	Approx10Ω (30mA), 30mΩ max.(10A)
	Range	30m/10A *
AC A	Accuracy	±(1.2%rdg. + 4dgt.)(30mA), ±(1.5%rdg. + 4dgt.)(10A)
	Internal Resistance	Approx10Ω (30mA), 30mΩ max.(10A)
	Range	300/3k/30k/300k/3000k/30MΩ
Ω	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
	Range	3k/30k/300k/3000k/30MΩ
LP Ω	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.

Printer specifications (9514, 9200)

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)

00:00	1.332 ΩI	TIME mode operation sample
00:05	1.332 ΩI	
00:10	1.130 ΩL	
00:15	1.529 ΩH	
00:20	1.824 ΩH	
00:25	1.435 ΩI	
END		
N =	6	GRAPH #=5
\bar{x} =	1.43033 Ω	
MIN =	1.130 Ω	
(00:00:10)		
MAX =	1.824 Ω	
(00:00:20)		

Graph generation sample



9200 Digital printer

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

General Specifications

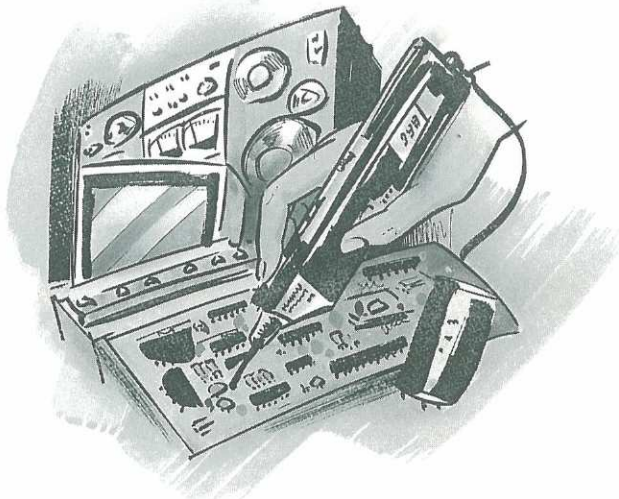
Measurement method: Double integration
Display: Max. 3199 LCD.
Range switching: Automatic or manual (manual only for current measurement)
Input over display: Displays "OF" or "-OF" (Except for 1000V DC, 750V DC, 10A DC/AC, and resistance ranges.)
Polarity display: "-" is displayed automatically.
Sampling rate: NORM (2.5 times/s) and FAST (5 times/s)
Operating environment: 0 to 40°C, 80% RH max.
Battery-low indication: "BAT" mark appears
Power supply: AA (R6P)×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

Data processing

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



3200-01 DIGITAL HiTESTER

Stress on operability and safety

Design emphasizes ease in use and safety in this wide-range DMM... with an $20\mu\text{A}$ 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($\pm 3\text{s}$ 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)

General specifications

Display: Max.1999 ($3\frac{1}{2}$ digit) LCD.
(except 3234, 3243)

Battery low indication: BATT mark appears

Sampling rate: Approx. 2 times/s,
approx. 2.5 to 4 times/s (3243)

Input over indication: MSD "1" flashes

Operating temperature: 0 to 40°C ,

Conformance to IEC348, IEC 1010

The IEC (International Electrotechnical Commission) Publication 348 sets forth safety requirements for electronic measuring apparatus and 1010 sets forth safety requirements for electric apparatus of measurement, control experiment. 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.

Measurement range ($23^\circ\text{C} \pm 5^\circ\text{C}$, 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	$\pm 0.35\%\text{rdg.} \pm 2\text{dgt.}$ (200mV) $\pm 0.5\%\text{rdg.} \pm 2\text{dgt.}$ (2/20/200V) $\pm 1.0\%\text{rdg.} \pm 2\text{dgt.}$ (1000V)	$\pm 0.35\%\text{rdg.} \pm 2\text{dgt.}$ (300m/3V) Option $\pm 0.5\%\text{rdg.} \pm 2\text{dgt.}$ (30/300V) $\pm 0.7\%\text{rdg.} \pm 2\text{dgt.}$ (500V) $\pm 0.35\%\text{rdg.} \pm 2\text{dgt.}$
	Input Resistance	1000M<(200mV), 11M Ω (2V), 11M Ω (20V<)	3/30/300/500V $\pm 2\text{dgt.}$
AC V	Range	2/20/200/750V	3/30/300/500V
	Accuracy	$\pm 1\%\text{rdg.} \pm 4\text{dgt.}$ 40 to 1kHz (500Hz at 2V/750V) $\pm 2\%\text{rdg.} \pm 4\text{dgt.}$ 1k to 5kHz (1kHz at 2V/750V)	$\pm 1\%\text{rdg.} \pm 4\text{dgt.}$ (40 to 500Hz)
	Input Impedance	Approx. 11M Ω (20V<)	10M Ω (30V<)
DCA	Range	20 μ /200 μ /20m/200m/10A*	300mA
	Accuracy	$\pm 1.0\%\text{rdg.} \pm 2\text{dgt.}$ $\pm 1.2\%\text{rdg.} \pm 2\text{dgt.}$ (10A)	$\pm 1\%\text{rdg.} \pm 2\text{dgt.}$
	Internal Resistance	Approx. 1 Ω (200mA)	1 Ω
ACA	Range	20 μ /200 μ /20m/200m/10A*	300mA
	Accuracy	$\pm 1.2\%\text{rdg.} \pm 4\text{dgt.}$ (40 to 1kHz) $\pm 1.5\%\text{rdg.} \pm 4\text{dgt.}$ (40 to 50Hz/20 μ A/10A)	$\pm 1.2\%\text{rdg.} \pm 4\text{dgt.}$
	Range	200/2k/20k/200k/2000k/20M Ω (LP Ω)	300/3k/300k/3000k/30M Ω
Ω	Accuracy	$\pm 0.7\%\text{rdg.} \pm 2\text{dgt.}$ $\pm 1.0\%\text{rdg.} \pm 2\text{dgt.}$ (2000k Ω) $\pm 2.0\%\text{rdg.} \pm 2\text{dgt.}$ (20M Ω)	$\pm 0.5\%\text{rdg.} \pm 2\text{dgt.}$ (300 to 300k Ω)
	Open Circuit Voltage	Approx. 0.45V	0.65V $\pm 0.2\text{V}$ /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	AA(R6P) $\times 2$ (Continuous use 500h)	Ni-Cd batteries (4.8V, 4) or AC adapter (9V-1A), LR-44 (for clock, 1)	
Dimensions	160H \times 85W \times 33Dmm \cdot 310g	200H \times 85W \times 30Dmm \cdot 400g	
Accessories	9170 Test leads(1)	9170 test leads(1), alligator clips (1), 0.5A	
	0.5A fuse(non-arcing, 1) 600V fuse(for 3200-51, non-arcing)	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

**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.

**3243****DIGITAL HiTESTER**

Safety pocket type DMM

- Conforms with IEC348 and IEC1010 (improved safety)
- Automatic AC/DC discrimination function.
- Wide display up to 3249 count.



3218	3240	3242	3243
200m/2/20/200/500V	200m/2/20/200/500V	200m/2/20/200/500V	320m/3.2/32/320/450V
± 2.0%rdg. ± 4dgt. (200m)	± 2.0%rdg. ± 4dgt. (200mV)	± 0.9%rdg. ± 4dgt. (200mV)	± 2.0%rdg. ± 4dgt. (320mV)
± 0.7%rdg. ± 4dgt. (2V)	± 0.7%rdg. ± 4dgt. (2V)	± 0.7%rdg. ± 4dgt. (2V)	± 0.7%rdg. ± 4dgt. (3.2V)
± 1.3%rdg. ± 4dgt. (20V<)	± 1.3%rdg. ± 4dgt. (20V<)	± 1.3%rdg. ± 4dgt. (20V<)	± 1.3%rdg. ± 4dgt.
100MΩ < (200mV), 11MΩ	100MΩ < (200mV), 12MΩ, 11MΩ (20V<)	100MΩ < (200mV), 12MΩ, 11MΩ (20V<)	100MΩ < (320mV), 11MΩ, 10MΩ (32V<)
2/20/200/500V	2/20/200/500V	2/20/200/500V	3.2/32/320/450V
± 2.3%rdg. ± 8dgt. (40 to 500Hz)	± 2.3%rdg. ± 8dgt. (40 to 500Hz)	± 2.3%rdg. ± 8dgt. (40 to 500Hz)	± 2.3%rdg. ± 8dgt. (50 to 500Hz)
12MΩ (2V), 11MΩ	12MΩ, 11MΩ (20V<)	12MΩ, 11MΩ (20V<)	11MΩ (3.2V), 10MΩ
—	—	—	Frequency (up to 50V)
—	—	—	Range: 3.2k/32k/320kHz
—	—	—	Accuracy: ± 0.1%rdg. ± 1dgt.
—	—	—	Clock functions(V.TIME):
—	—	—	1. Measuring the time between crossing an descending a 1V threshold value.
—	—	—	2. Stop watch function
200/2k/20k/200k/2000k/20MΩ	200/2k/20k/200k/2000k/20MΩ	200/2k/20k/200k/2000k/20MΩ	320/3.2k/32k/320k/3200k/32MΩ
± 2.0%rdg. ± 4dgt.	± 2.0%rdg. ± 4dgt.	± 2.0%rdg. ± 4dgt.	± 2.5%rdg. ± 6dgt. (320, 3200kΩ)
± 5.0%rdg. ± 4dgt. (20MΩ/1.8M to 10MΩ)	± 5.0%rdg. ± 4dgt. (1.8M to 10MΩ)	± 10%rdg. ± 4dgt. (20MΩ)	± 2.0%rdg. ± 6dgt. (3.2k-320kΩ)
± 10%rdg. ± 4dgt. (20MΩ/10.01M to 20.00MΩ)	± 10%rdg. ± 4dgt. (10.01M to 20.00MΩ)	—	± 10.0%rdg. ± 6dgt. (32MΩ)
0.45V>	0.45V>	0.46V>	1.7V> (320Ω), 0.45V>
○	○	○	×
—	○	○	○
○(1.5k to 15kΩ)>	○(1.5k to 15kΩ)>	○(1.5k to 15kΩ)>	Less than 250Ω
Auto	Auto	Auto	Auto
○	—	—	—
LR44(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.)	LR-44 (2) or SR-44 (2) (Continuous use 70h)
37H×161W×19Dmm·60g	108H×54W×8Dmm·60g	120H×65W×18Dmm·110g	120H×68W×19Dmm·100g
Case	Case	Transparent vinyl case	Soft case

● **Optional Accessories**

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

● **Optional Accessories**

(3218, 3240, 3242, 3243)
9081 10A shunt



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

Measurement 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 AA(R6P) × 2

(Continuous use, approx. 500h).

3233 AA(R6P) × 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	3n 30n/300n/3μ 30μF
	Frequency	1kHz(3V) 60Hz(3V) 10Hz(3V)
	Accuracy	± 1.5%rdg. ± 10dgt.
Accessories	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 $10\mu\text{V}$, 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 $10\mu\text{V}$ 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 DCV $\pm 0.1\%$
 - 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)
		500-2kHz	$\pm 2.0\%$ rdg. ± 10 dgt.(500mV)	$\pm 2.0\%$ rdg. ± 10 dgt.(500mV)
	Accuracy	40-500Hz	$\pm 1.0\%$ rdg. ± 2 dgt.(5-500V)	$\pm 0.5\%$ rdg. ± 2 dgt.(5-500V)
500-2kHz		$\pm 1.5\%$ rdg. ± 2 dgt.(5-500V)	$\pm 1.0\%$ rdg. ± 2 dgt.(5-500V)	
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. ± 2 dgt.(5 to 5M Ω) $\pm 1.5\%$ rdg. ± 2 dgt.(50M Ω)	$\pm 0.5\%$ rdg. ± 4 dgt.(500 Ω), $\pm 0.2\%$ rdg. ± 2 dgt.(5k to 5M 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: AA(R6P) \times 2 (about 2000h continuous use)
 Dimensions/weight: 176H \times 84W \times 300Dmm approx. 330g
 Accessories: 9170 test leads (1)

Optional Accessories

9367 Soft case





* IEC 348: International safety standard relating to electrical measurement equipment. The unit is designed to meet this standard in every detail, down to the voltage withstand test to which individual 3255 units are subjected.
 * IEC 1010: International safety standard relating to electrical measurement, control and laboratory equipment. The unit is designed to comply with this standard in every detail.



Combination with clamp on probe allows current measurement

3255

DIGITAL HiTESTER

Safe for use with industrial power lines.

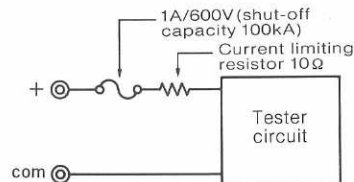
- Built-in current limiter and fuse capable of withstanding 600 V to prevent shortcircuit accidents.
- Improved safety standards: conformance to IEC 348 and IEC 1010.
- Automatic AC/DC discrimination function (V.Auto), plus fixed functions.
- Wide range: maximum reading 3249.
- Auto power saving function powers off after 30 minutes with no operation, to prolong battery life. (Function can be disabled.)
- Rugged construction.
- Two-terminal configuration eliminates the need for probe reconnections.
- Current measurement also possible by combination with clamp on probe.
- Industrial grade test leads for enhanced safety.

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

	Range	3.2/32/320/600V
DCV	Accuracy	± 0.5%rdg. ± 4dgt. (3.2V), ± 1.3%rdg. ± 4dgt.
	Input resistance	Approx. 11M Ω (3.2V), approx. 10M Ω
	Range	3.2/32/320/600V (measurement frequency range 50-500Hz)
ACV	Accuracy	± 2.0%rdg. ± 8dgt.
	Input resistance	Approx. 11M Ω (3.2V), approx. 10M Ω
	Range	320mV (approx. 10M Ω) (measurement frequency range 50-500Hz)
DC mV	Accuracy	± 0.5%rdg. ± 4dgt.
	Range	320mV (approx. 10M Ω) (measurement frequency range 50-500Hz)
AC mV	Accuracy	± 2.0%rdg. ± 8dgt.
	Range	320mV (approx. 10M Ω) (measurement frequency range 50-500Hz)
Ω	Accuracy	± 1.5%rdg. ± 6dgt. (320 Ω), ± 1.5%rdg. ± 4dgt., ± 10.0%rdg. ± 4dgt. (32M Ω)
	Range	320 (max. display 3149)/3.2k (max. display 3239)/32k/320k/3.2M/32M Ω
Continuity		± 2.5%rdg. ± 6dgt.
Diode test		± 5.0%rdg. ± 4dgt.

Fuse protection

As shown in the figure on the right, the 3255 includes a protective resistor (current limiting resistor) and 1A fuse (600V AC shut-off capacity 100kA), so that even if a short occurs in the circuit, the shorting current is limited by the resistor, and the fuse breaks the circuit safely. Fitting this protection resistor prevents very large short-circuit currents from flowing, and ensures safety by keeping arcing at the probe tips to a minimum.



Specifications

Measurement method: Double integration

Display: Max. 3249 LCD.

Range switching: Automatic or manual

Sampling rate: 2.5 times/s

Withstand voltage: 5.55 kV rms AC sine wave (50/60Hz for 1 minute)

input between terminals and body

Maximum load voltage: 600 V rms

Operating environment: 0 to 40°C, 80% R.H. maximum (no condensation)

Battery low indication: "BL" mark appears at 1.2 V ± 0.1 V or below.

Power supply: AAA (R03, 2) (continuous use approx. 400h on DC V range)

Power consumption: 5.0 mW typical (DC V range when battery voltage is 1.5V)

Dimensions/weight: 145H × 70W × 31Dmm; approx. 200g

Accessories: 9185 test leads (1), 9371 carrying case (1)

Safety standards: IEC 348 safety class II IEC 1010-1 over voltage category III

Dustproof and waterproof construction: IP54 (IEC529) equivalent (Unit should not be operated when wet.)

Optional Accessories

9008 clamp on probe (max. 500A AC)

9010 clamp on probe (max. 500A AC)

9132 clamp on probe (max. 1000A AC)

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