

DIGITAL MULTIMETER

# HIOKI

DIGITAL HI TESTER

3200·3210

3214·3216

3208

## A 3-1/2 Digit DMM Family to Handle Virtually Any Measurement Requirement



3200



3210



3216



3214

# The 3200 Features Designed-In Ease of Operation and a Full Complement of Measurement Features



## Six Reasons the 3200 Provides the Ultimate in Safety

- Designed to withstand a drop from 1m high
- Semi-dustproof
- Over-voltage protected up to 250VAC ( $\Omega$ ,  $\mu$ A and mA ranges)
- Over-voltage warning lamp ( $\Omega$  /  $\rightarrow$  ranges)
- Safety terminals and safety leads prevent accidents caused by inadvertent contact.
- Range switch and terminals laid out for safety.

### Over-Voltage Warning Lamp for $\Omega$ / $\rightarrow$ Ranges

If a measurement error results in an over-voltage condition, a neon lamp lights and current to the circuit is limited.

### Display Hold Function

Simply press this button to hold the displayed value, an extremely convenient in hard-to-read locations.

### Convenient Stand

Resistances can be measured in-circuit.

### Easy-to-Use Auto-Ranging (Except for Current)

Auto-ranging maintains the optimum range setting and may be overridden by manual ranging as well.

### Dropproof Design and Semi-Dustproof Construction

The 3200 can withstand a drop onto concrete from a height of 1m. Dust entering a multimeter case can cause shorting failures. To prevent this, the 3200 has been made semi-dustproof.

### Continuous Operation for 500 Hours on One Set of Batteries

Two Type AA 3V batteries enable 500 hours of continuous operation and a BATT mark warns of low batteries.

### Beeper Continuity Test

A beeper is provided for continuity testing and is used to indicate range switching, function switching and excessive input.



**Large (13mm) Liquid Crystal Display**  
An easy-to-read 13mm white LCD eliminates reading errors.

### Resolution to 10nA

The 3200 provides the first DC/AC 20 $\mu$ A ranges in a meter of this class and has achieved a resolution of 10nA.

### High Current Measurements

Measurements are possible up to 10A

### $\Omega$ , $\mu$ A and mA Ranges Protected up to 250VAC

A fuse using an arc suppressant enables even large shorted currents to be reliably broken, preventing accidents caused by shorts and protecting internal circuits and components as well. The 3200-50 which provides even more protection with its 1A/600VAC fuse is also available.

### Safety Layout

The function switch and terminals have been laid out in corresponding positions to prevent range setting errors. Safety test leads and terminals are used to further enhance safe operation.

## Measurement Ranges (At 23°C $\pm$ 5°C, 80% RH or less, after zero adjustment)

Range	Resolution	Accuracy	Remarks	Range	Resolution	Accuracy	Remarks
D 200mV	100 $\mu$ V	$\pm 0.35\%$ rdg. $\pm 1$ dgt.	Input resistance: 1000M $\Omega$ or greater	O H M S	200k $\Omega$	100 $\Omega$	$\pm 0.7\%$ rdg. $\pm 2$ dgt. Open-circuit voltage 0.45V
C 2V	1mV	$\pm 0.5\%$ rdg. $\pm 1$ dgt.	* Approx. 12M $\Omega$		2000k $\Omega$	1k $\Omega$	$\pm 1.0\%$ rdg. $\pm 2$ dgt. *
V 20V	10mV	"	* Approx. 11M $\Omega$		S 20M $\Omega$	10k $\Omega$	$\pm 2.0\%$ rdg. $\pm 2$ dgt. *
V 200V	0.1V	"	"	D 20 $\mu$ A	10nA	$\pm 1.0\%$ rdg. $\pm 1$ dgt.	Internal resistance approx. 10k $\Omega$
V 1000V	1V	$\pm 1.0\%$ rdg. $\pm 1$ dgt.	"	C 200 $\mu$ A	100nA	"	* Approx. 1k $\Omega$
A 2V	1mV	$\pm 1.0\%$ rdg. $\pm 4$ dgt.	* Approx. 1.2M 40Hz~500Hz	C 20mA	10 $\mu$ A	"	* Approx. 10 $\Omega$
C 20V	10mV	$\pm 2.0\%$ rdg. $\pm 4$ dgt.	* * 500Hz~1kHz	A 200mA	100 $\mu$ A	"	* Approx. 1 $\Omega$
V 200V	0.1V	$\pm 1.0\%$ rdg. $\pm 4$ dgt.	* Approx. 11M $\Omega$ , 40Hz~1kHz	A 10A	10mA	$\pm 1.2\%$ rdg. $\pm 1$ dgt.	* Approx. 15m $\Omega$ max.
V 750V	1V	$\pm 2.0\%$ rdg. $\pm 4$ dgt.	* * 1kHz~5kHz	A 20 $\mu$ A	10nA	$\pm 1.5\%$ rdg. $\pm 4$ dgt.	* Approx. 40~500Hz
		$\pm 1.0\%$ rdg. $\pm 4$ dgt.	* * 40Hz~1kHz	C 200 $\mu$ A	100nA	$\pm 1.2\%$ rdg. $\pm 4$ dgt.	* Approx. 40~1kHz
		$\pm 2.0\%$ rdg. $\pm 4$ dgt.	* * 1kHz~5kHz	C 20mA	10 $\mu$ A	"	* Approx. 10 $\Omega$ *
		$\pm 1.0\%$ rdg. $\pm 4$ dgt.	* * 40Hz~500Hz	A 200mA	100 $\mu$ A	"	* Approx. 1 $\Omega$ *
		$\pm 2.0\%$ rdg. $\pm 4$ dgt.	* * 500Hz~1kHz	A 10A	10mA	$\pm 1.5\%$ rdg. $\pm 4$ dgt.	* Approx. 15m $\Omega$ max., 40~500Hz
O H M S	200 $\Omega$	0.1 $\Omega$	$\pm 0.7\%$ rdg. $\pm 2$ dgt.				
	2k $\Omega$	1 $\Omega$	"				
	20k $\Omega$	10 $\Omega$	"				

## Specifications

Display: LCD with maximum display of 1999, automatic polarity switching, units and polarity  
 Range switching: Auto & manual  
 Input over indication: "1" digit flashes (except for DC 1000V, AC 750V, DC/AC 10A and a beeper sounds (except for DC 1000V, DC/AC 10A, AC 750V and OHM)  
 Battery low indicator: BATT mark appears  
 Sample rate: 2 times/s  
 Continuity test & diode Function  
 Operating temperature/humidity: 0°C~40°C, 80% RH max. (with no condensation)  
 Input protection: V $\rightarrow$ 1100V DC or DC + AC peak

3200;  $\Omega$ /A/continuity/ $\rightarrow$ AC 250V max. (0.5A fuse with arc suppressant)  
 3200-50;  $\Omega$ /A/continuity/ $\rightarrow$ AC 250V max. (1A fuse with arc suppressant)  
 10A; no protection  
 Power supply: Two AA batteries (500 hours continuous operation)  
 Dimensions and weight: 160H $\times$ 85W $\times$ 32.5D mm, 310g  
 Accessories: Test leads and fuse  
 Models: 3200 (Standard), 3200-01 (with case)  
 3200-50 (with 1A/600V fuse)  
 3200-51 (with 1A/600V fuse and case)  
 Options: 9145 Carrying Case, 9038 High-Voltage Probe

# Pencil-type DMM with a New Automatic Data Lock Function



The new 3214 is a pencil-type DMM with a new automatic data lock function.

Press the 3214's power switch while making measurements and release it to automatically turn its power off. Even with the power switched off, data is held for approximately 5 seconds, an extremely convenient feature for use in locations which make reading while measuring difficult. The auto power off function saves battery life as well.

- Automatic data lock function
- Full auto-ranging
- 200mV DC range ( $\pm 0.5\%$  of rdg)

- Resistance ranges cover the wide spread from 200 $\Omega$  to 20M $\Omega$ .
- Large easy-to-read display
- 1ms response in the continuity range.
- $\Omega$ /Continuity ranges are protected up to 250VAC



## General Specifications

Display: 3-1/2 digit white liquid crystal display, character height 8mm, maximum display 1999 with polarity  
 Range switching: Full auto-ranging  
 Input over indication: MSB (1) flashes (except for DC 500V and AC 500V)  
 Polarity indicator: Automatically switching ("—" only displayed)  
 Battery low indicator: BATT mark appears at 1.25V  $\pm$  0.1V or below  
 Sampling rate: 2 times/s  
 Operating temperature/humidity: 0°C~40°C, 80% RH max. (with no condensation)

Power supply: Two button-type batteries (LR-44) (Continuous operation for approximately 80h, typ.)  
 Power consumption: 4mW, typical  
 Withstanding voltage: 2kVAC for 1 minute (between input terminals and outer case)  
 Dimensions and weight: 165L $\times$ 29W $\times$ 17.5D mm approx. 55g  
 Accessories: 9172 Test Leads, Soft case  
 Options: 9171 Alligator Clip Test Leads  
 Input Protection  
 V: 750V DC or DC + ACpeak max. (for one minute)  
 $\Omega$ /Continuity: 250V AC/DC max. (for 1 minute)

## Measurement Ranges

(At 23°C  $\pm$  5°C, 80%RH or less, with no condensation)

Function	Range	Accuracy	Remarks
DC V	200 0mV	$\pm 0.5\%$ rdg. $\pm 4$ dgt.	1000M $\Omega$ min.
	2.000V	"	Approx. 12M $\Omega$
	20.00V	$\pm 0.7\%$ rdg. $\pm 4$ dgt.	Approx. 11M $\Omega$
	200.0V	"	"
	500V	$\pm 1.0\%$ rdg. $\pm 4$ dgt.	"
AC V	2.000V	$\pm 1.0\%$ rdg. $\pm 8$ dgt.	Approx. 12M $\Omega$ (40~500Hz)
	20.00V	"	Approx. 11M $\Omega$ ( " )
	200.0V	"	" ( " )
	500V	"	" ( " )
$\Omega$	200.0 $\Omega$	$\pm 0.7\%$ rdg. $\pm 4$ dgt.	Open-circuit voltage 0.45V max.
	2.000k $\Omega$	"	
	20.00k $\Omega$	"	
	200.0k $\Omega$	"	
	2000k $\Omega$	$\pm 1.2\%$ rdg. $\pm 4$ dgt.	
Continuity	1.5k~15k $\Omega$ max. (approx. 1ms response)		Open-circuit voltage approx. 1.5V
	Remaining digits	2dgt or less	

## 3200, 3210, 3214, 3216, 3208

Standard Packing (Double carton box)

Models	Sets	N.W. (kg)	G.W. (kg)	M <sup>3</sup> (m <sup>3</sup> )
3200, -50	30	13	15	0.10
3200-01, -51	30	16	18	0.10
3210	100	16	13	0.10
3214	100	16	13	0.10
3216	40	14	16	0.10
3216-01	30	16	18	0.10
3208	40	20	22	0.10

# Auto-Ranging Pocket DMM



With its slim-line design, the 3210 fits snugly into your vest pocket and is ideal for service and maintenance measurements.

- Measures merely 14mm thick.
- Auto-ranging
- Low-power ranges
- Continuity and diode check function
- Ω/A/Continuity ranges protected up to 250VAC.
- Large, easy-to-read display

### General Specifications

Display: 3 1/2-digit (1999) LCD, annunciators  
 Range switching: Full automatic and manual  
 Overrange indicator: MSD "1" flashes (excluding AC/DC 500V), beeper tone (excluding AC/DC 500V, Ohms)  
 Battery low indicator: "BATT" mark appears  
 Sampling rate: 2 times/s  
 Operating temperature/humidity: 0~40°C, < 80% RH (no condensation)  
 Power supply: Two LR-44 or SR-44 batteries  
 Withstanding voltage: AC 2kV for 1 min. between input terminal and case.  
 Dimensions/Weight: 150H×60W×14D mm / approx 120g

# 3210

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### Input protection

V : 750V DC or DC + AC peak  
 Ω/A/Continuity : 250V AC max.  
 Accessories: Test leads, Soft case, 0.5A (with arc suppressant)

### Measurement Ranges

(At 23°C ± 5°C, < 80%RH, no condensation)

Function	Range	Accuracy	Notes
DC V	200.0mV	±0.5% rdg. ±4dgt.	>1000MΩ
	2.000V	"	Approx. 12MΩ
	20.00V	"	Approx. 11MΩ
	200.0V	"	"
AC V	500V	±1.0% rdg. ±4dgt.	"
	2.000V	±0.8% rdg. ±8dgt.	Approx. 11MΩ (40~50Hz)
	20.00V	"	" ( " )
	200.0V	"	" ( " )
Ω	500V	±1.0% rdg. ±8dgt.	" ( " )
	200.0Ω	±0.7% rdg. ±4dgt.	Open-circuit voltage: 0.45V
	2.000kΩ	"	
	20.00kΩ	"	
200.0kΩ	"		
DC A	200.0mA	±1.2% rdg. ±4dgt.	Internal resistance, approx. 1Ω
	20.00mA	±1.5% rdg. ±8dgt.	
AC A	200.0mA	±1.5% rdg. ±8dgt.	Internal resistance, approx. 1Ω (40~500Hz)
	20.00mA	"	
Continuity	1.5k~<15kΩ (Approx. 1ms)	"	Open circuit voltage, approx. 1.5V
Diode test	±20%	"	"
Remaining digits		2dgt or less	

# Simple To Use and Designed for Safe Operation



A 3-1/2 Digit DMM Family To Handle Virtually Any Measurement Requirement

The 3216 provides all the basic DMM functions in a simple-to-use, safe package.

- Hi-current measurements up to 10A for both DC and AC.
- Ω/mA/continuity ranges are protected up to 250VAC.
- Auto-ranging (except for current) and manual ranging
- Beeper continuity test
- Low-power ohms enables in-circuit measurements of resistance.
- Safety terminals and test leads.

### General Specifications

Display: 3-1/2 digit liquid crystal, character height 12mm, max. display 1999  
 Range switching: Auto & manual  
 Input over indication: MSD (1) flashes (except for DC 1000V and AC 750V)  
 Beeper alarm (except for DC 1000V, AC 750V and Ω)  
 Battery low indicator: BATT mark appears  
 Sampling rate: 2 times/s  
 Operating temperature/humidity range: 0°C~40°C, 80% RH max. (with no condensation)  
 Power supply: Two AA batteries (enables continuous operation for 400 hr typ.)  
 Withstanding voltage: 3kVAC for one minute (between input terminals in outer case)  
 Dimensions and weight: Approx. 260H×85W×21D mm, approx. 240g  
 Accessories: 9170 Test Leads, 0.5A spare fuse (with arc suppressant)

# 3216

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Options: 9038 High-Voltage Probe, 9145 Carrying Case

### Input Protection

V: 1000V DC or DC + AC peak  
 Ω/Continuity/mA: 250V AC max., 0.5A fuse protection  
 10A: AC/DC 12A max. (for 1 minute)

### Measurement Ranges

(At 23°C ± 5°C, 80% RH or less, with no condensation)

Function	Range	Accuracy	Remarks
DC V	200.0mV	±0.5% rdg. ±4dgt.	1000MΩ min.
	2.000V	"	Approx. 12MΩ
	20.00V	±0.7% rdg. ±4dgt.	Approx. 11MΩ
	200.0V	"	"
AC V	1000V	±1.0% rdg. ±4dgt.	"
	2.000V	±1.0% rdg. ±8dgt.	Approx. 12MΩ (40~500Hz)
	20.00V	"	Approx. 11MΩ ( " )
	200.0V	"	" ( " )
Ω	750V	±1.5% rdg. ±8dgt.	" ( " )
	200.0Ω	±0.7% rdg. ±4dgt.	Open-circuit voltage 0.45V max.
	2.000kΩ	"	
	20.00kΩ	"	
200.0kΩ	"		
DC A	200.0mA	±1.2% rdg. ±4dgt.	Internal resistance approx. 1Ω
	20.00mA	±1.5% rdg. ±8dgt.	
AC A	200.0mA	±2.2% rdg. ±8dgt.	Approx. 1Ω (40~500Hz)
	10.00A	"	
Continuity	1.5k~15kΩ max. (approx. 1ms response)	"	Open-circuit voltage approx. 1.5V
Diode test	±20%	"	"
Remaining digits		2dgt or less	

**HIOKI E.E. CORPORATION**

DISTRIBUTED BY

HEAD OFFICE: P.O. Box 1, Sakaki, Nagano, 389-06 Japan.  
 Tx: 3327508 HIOKI J / Cable: HEWLOV, Ueda  
 Telephone: (0268) 82-3030

TOKYO OFFICE: 2-23-24 Shiba Nakata, Kawaguchi, Saitama 333.  
 Telephone: (0482) 61-2401

HIOKI-RCC, INC.: 198 Route 206 South Somerville, N.J. 08876 U.S.A.  
 Telephone: (201) 874-6484

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