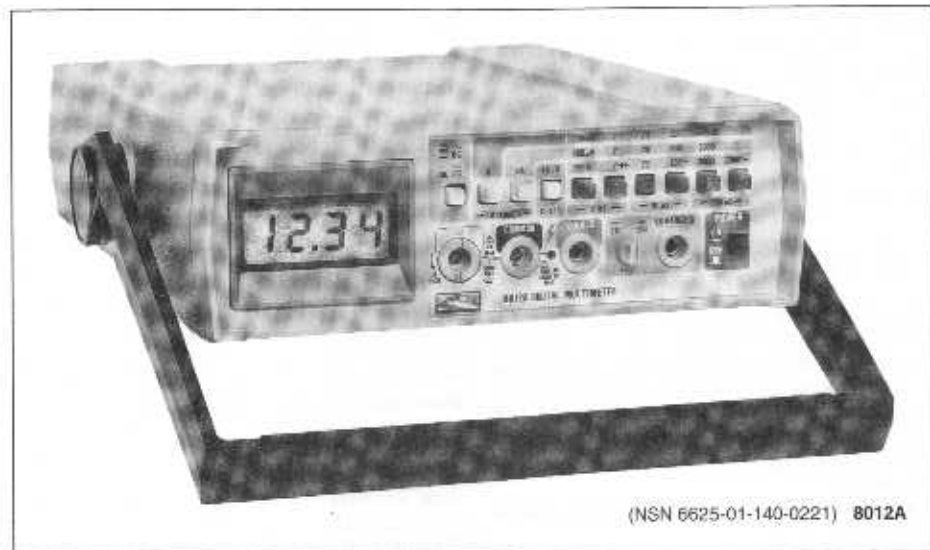


# Bench/Portable Multimeters

## 8010A & 8012A

Available through Distributors



(NSN 6625-01-140-0221) 8012A

### 8010A & 8012A, Bench/Portable Digital Multimeters

3½ digits (2000 counts)

Seven functions including conductance, diode test

0.1% basic dc accuracy

True-rms ac from 45 Hz to 50 kHz

10A range (8010A only); 2Ω and 20Ω range (8012A only)

Optional touch-hold probe (80T-H)

Extensive overload protection

Rechargeable-battery version available (-01)

Extended measurements with optional accessories

Factory Mutual approved

The 8010A and 8012A are 3½ digit portable/bench DMMs, that offer exceptional performance and features at a low cost. Measurement functions include: dc volts, true-rms ac volts, dc amps, true-rms ac amps, ohms, conductance, and diode test. The difference is that only the 8012A features two low-resistance ranges (2 ohms and 20 ohms) and only the 8010A features a 10A current range. Rechargeable-battery versions are available as Models 8010A-01 and 8012A-01. The 8010A and 8012A operate on ac line power only.

#### True-RMS

A Fluke-manufactured true-rms converter assures accurate measurements of non-sinusoidal voltage or current waveforms such as square-waves (crest factor of 1 to 1). This custom hybrid provides low noise and a wide bandwidth. Accuracy is specified to 50 kHz, but the typical -3 dB bandwidth is 200 kHz.

#### 10A Range (8010A Only)

The 8010A has a 10 ampere ac or dc current range for applications that require measuring more than 2 amperes.

#### Low Ohms (8012A Only)

The 8012A has two additional ranges of low resistance - 2 ohms and 20 ohms. Along with the conductance function, that gives you a resistance range of 0.001Ω to 10,000 MΩ! There are not many resistance measurements that the 8012A can't handle.

#### Overload Protection

When measuring resistance or conductance, up to 500 volts may be applied with no instrument damage. Voltage inputs can handle 1000V dc or peak ac and transients up to 6 kV. The 2A current input is protected with two in-series fuses - 2A/250V and 3A/600V. In normal overload situations,

only the common 2A/250V fuse will blow. The 3A/600V back-up fuse protects the DMM should the 2A/250V fuse ionize when accidentally attached to a source of more than 250 volts - like a 480-volt power line.

#### Extended Measurements

Optional accessories enable you to extend the measurement capabilities of the 8010A and 8012A. For example, measure current to 600A, r voltage to 500 MHz, voltage to 40 kV, and temperature to 1000°C (1832°F).

### Specifications

#### Technical Specifications

All accuracy specifications are for one year after purchase or recalibration when operated in a temperature range of 18°C to 28°C.

#### DC Voltage

**Ranges:** ±200 mV, 12V, ±20V, ±200V, ±1000V

**Resolution:** 100 μV on lowest range 1V on 1000V range

**Accuracy:** (±0.1% of reading + 1 digit) on all ranges

**Input Impedance:** 10 MΩ on all ranges

**Normal Mode Noise Rejection:** ≥60 dB at 50 Hz or 60 Hz

**Common Mode Noise Rejection:** ≥90 dB at dc, 50 Hz and 60 Hz with 1 kΩ unbalance

**Overload Protection:** To 1000V dc or peak ac on any range

**Response Time:** 1 second maximum

#### AC Voltage (True-RMS, AC Coupled)

Range	Resolution	Accuracy: ±(% of Reading + Digits)*				
		45 Hz	1 kHz	10 kHz	20 kHz	50 kHz
200 mV	100 μV			1.0%	5%	
2V	1 mV			±	±	
20V	10 mV	0.5% + 2		2	3	
200V	100 mV					
750V	1V	0.5% + 2		Not specified		

\*Accuracy applies from 5% to 100% of range.

**Useful Frequency Range:** Typically ±3 dB at 200 kHz

**Input Impedance:** 10 MΩ in parallel with <100 pF

**Common Mode Noise Rejection:** ≥60 dB at 50 Hz and 60 Hz with 1 kΩ unbalance

**Crest Factor:** Waveforms with peak/rms ratio of 1:1 to 3:1

**Overload Protection:** To 750V rms, 1000V peak, not to exceed 10' volt-hertz product (10 seconds maximum on 200 mV and 2V ranges)

**Response Time:** 2 seconds maximum

### Resistance

Range	Resolution	Accuracy: $\pm$ (% of Reading + Digits)	Full Scale Voltage	Max Test Current
25 $\Omega$	1 m $\Omega$	1.0% + 2	0.02V	10 mA
20 $\Omega$	10 m $\Omega$	0.5% + 2	0.2V	10 mA
<i>Note...above ranges in 8012A only</i>				
200 $\Omega$	0.1 $\Omega$	0.2% + 1	<0.25V	1.30 mA
2 k $\Omega$ *	1 $\Omega$		>1.0V	1.30 mA
20 k $\Omega$	10 $\Omega$		<0.25V	10.0 $\mu$ A
200 k $\Omega$ *	100 $\Omega$		<1.0V	35.0 $\mu$ A
2000 k $\Omega$	1 k $\Omega$	0.5% + 1	<0.25V	0.10 $\mu$ A
20 M $\Omega$ *	10 k $\Omega$		>1.5V	0.35 $\mu$ A

\*Diode test ranges

**Diode Test:** The three diode test ranges are marked with a diode symbol and have enough open circuit voltage to turn on silicon junctions allowing a diode test. The 2 k $\Omega$  range is preferred and is marked with the larger diode symbol. The non-diode test ranges will not turn on silicon junctions when making in-circuit resistance measurements.

**Open Circuit Voltage:** <3.5V on all ranges except <16V on 2 $\Omega$  and 20 $\Omega$  ranges

**Input Protection:** To 300V dc or rms on 2 $\Omega$  and 20 $\Omega$  ranges. 500V dc on all other ranges

**Response Time:** 1 second on all ranges except 2000 k $\Omega$  and 20 M $\Omega$  where time is 4 seconds, maximum

### Conductance

Conductance is the inverse of ohms (1/ $\Omega$ ) and is expressed in Siemens (S), formerly ohms

Range	Resolution	Accuracy: $\pm$ (% of Reading + Digits)	Full Scale Voltage	Max Test Current
2 mS	1 $\mu$ S	0.2% + 1	<3.5V	1.3 mA
20 $\mu$ S	10 nS	0.2% + 1	<1.0V	10 $\mu$ A
200 nS	0.1 nS	1.0% + 10	<1.0V	0.1 $\mu$ A

### Equivalent Resistance

2 mS Range: 500 $\Omega$  to 1 M $\Omega$

20  $\mu$ S Range: 50 k $\Omega$  to 100 M $\Omega$

200 nS Range: 5 M $\Omega$  to 10,000 M $\Omega$

**Input Protection:** To 500V dc or rms on all ranges

### DC Current

Range	Resolution	Accuracy: $\pm$ (% of Reading + Digits)	Burden Voltage
200 $\mu$ A	0.1 $\mu$ A	0.3% + 1	0.3V typ
2 mA	1 $\mu$ A		
20 mA	10 $\mu$ A		0.9V typ
200 mA	100 $\mu$ A		0.5V typ
2000 mA	1 mA	0.5% + 1	0.5V typ
10A*	10 mA		

\*This range in 8010A only

**Overload Protection:** 2A, 250V front panel fuse in series with 3A/600V front panel fuse, 10 Ampere range in 8010A not fused, 12A maximum

**Response Time:** 1 second maximum

### AC Current (True-RMS, AC Coupled)

Range	Accuracy: $\pm$ (% of Reading + Digits)*			Burden Voltage
	45 Hz	2 kHz	10 kHz	
200 $\mu$ A	1% + 2	2% + 2	0.3V typ	
2 mA				
20 mA				
200 mA				
2000 mA	1% + 2	Not specified	0.9V typ	
10A**			0.5V typ	

\*Applies from 5% to 100% of range

\*\*This range in 8010A only

**Crest Factor:** Waveforms with peak/rms ratio of 1:1 to 3:1

**Response Time:** 2 seconds maximum

**Other Specifications:** Same as for dc current

### General Specifications

**Display:** 3 1/2 digit (2000 counts), LCD, auto-zero, autopolarity

**Common Mode Voltage:** 500V dc or peak ac, maximum

**Touch and Hold:** Holds a voltage or resistance reading when the mA jack is momentarily shorted to COMMON. Accessory probe 80T-H is recommended.

**Temperature:** 0°C to +50°C, operating; -40°C to +60°C non-operating, except -40°C to +50°C with batteries

**Temperature Coefficient:** <0.1 times the applicable accuracy specification per °C, from 18°C to 0°C and 28°C to 50°C

**Relative Humidity:**  $\leq$ 70% to 50°C or  $\leq$ 90% to 35°C except for 2000 k $\Omega$ , 20 M $\Omega$ , and 200 nS ranges where it is  $\leq$ 80% to 35°C

**Safety:** IEC 348, Protection Class I when operated from supply mains or Protection Class II when operated from internal batteries, ANSI C39.5 Factory Mutual 3820 Approved, CSA 556B Certified.

**Power:** 90 to 132 ac or 200 to 264V ac, 50 or 60 Hz, 2W for standard models. With battery version (-01), voltage and frequency range is selectable with internal switches, 3.5W.

**Batteries:** Rechargeable NiCd batteries and recharge circuits installed in version -01. Recharge time approximately 14 hours. "BT" on display appears when approximately 1/2 hour of operation remains. Fifteen to thirty hours of operation typical of full charge, depending on functions used.

**Size:** 6 cm H x 22 cm W x 25 cm D (2.5 in H x 8.5 in W x 10 in D)

**Weight:** 1.08 kg (2.38 lb) for standard models, 1.42 kg (3.13 lb) for version -01 with batteries

### Ordering Information

#### Models

8010A DMM w/10A Range

8010A-01 DMM w/Batteries

8012A DMM w/2 $\Omega$  and 20 $\Omega$  Range

8012A-01 DMM w/Batteries

#### Included with Instrument

One-year product warranty, line cord, Instruction manual, Y8131 test leads, and Certificate of Calibration Practices.

#### Accessories (Also see Section 7)

M00-200-611 3 1/2" Rack Mount Kit, Offset

M00-200-612 3 1/2" Rack Mount Kit, Center

M00-200-613 3 1/2" Rack Mount Kit, Dual

#### Manual

8010A/8012A Instruction\*

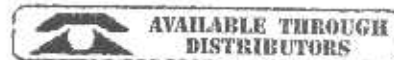
\*No charge with purchase of unit

### Customer Support Services

Also see Section 20.

#### Factory Warranty

One-year product warranty.



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