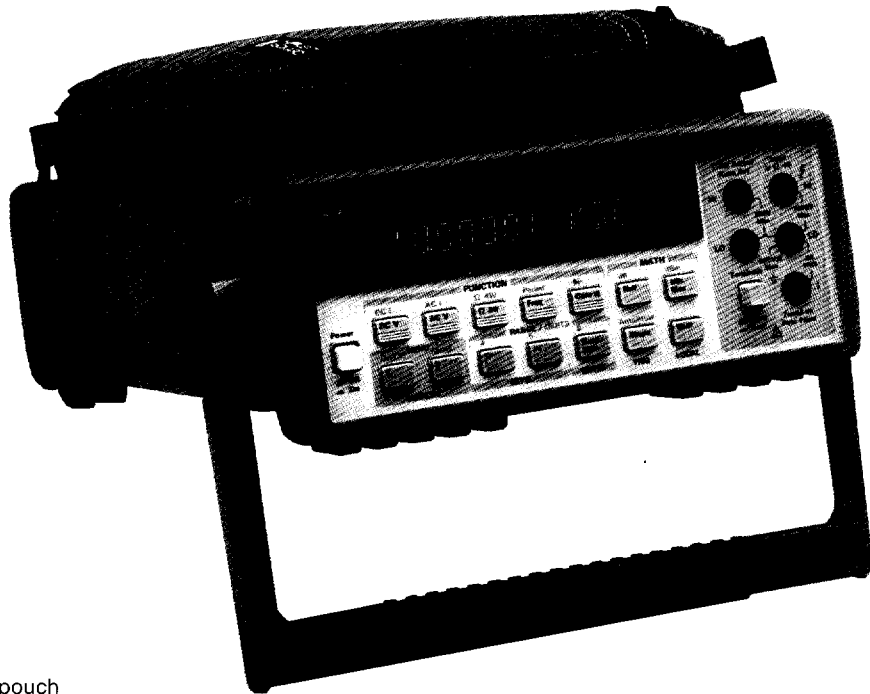


# DIGITAL MULTIMETERS/DIGITAL VOLTMETERS

## Low-Cost 6½-Digit Multimeter

HP 34401A

- 11 measurement functions
- 1000 V maximum input
- 15 ppm basic dc accuracy
- 1000 readings per second
- HP-IB and RS-232 standard
- 512-reading memory
- SCPI commands standard



HP 34401A with optional accessory pouch

### HP 34401A Digital Multimeter

The HP 34401A digital multimeter establishes a new price/performance standard by offering such features as 6½ digits of resolution, 1000 readings per second, and 15 ppm basic dc accuracy at a surprisingly affordable price. The HP 34401A has been designed for superior performance while providing the flexibility to meet both your present and future needs.

### Great Bench Performance

The clear, logical front panel of the HP 34401A allows you to easily select all primary measurement functions. Traditional "bench" functions, such as continuity and diode test, are included. Math functions, such as NULL, dB, dBm, limit test, and min/max/avg are easily selected. A simple menu scheme gives you access to powerful advanced features, such as the ability to store up to 512 readings in internal memory. Measurement results are displayed on a bright, high-visibility readout. A rugged case ensures survival even under the toughest conditions, and the optional accessory pouch makes it easy to pack up and go with the HP 34401A.

### Superior Performance in Your System

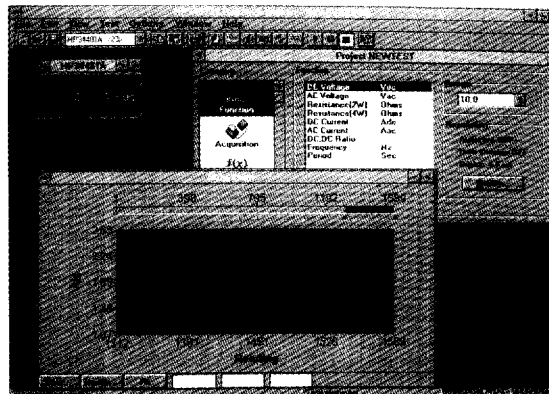
The HP 34401A can take up to 1000 readings per second, but throughput is more than just a set of measurements on a fixed range and function. The HP 34401A is designed to make up to 50 range/function changes per second; you won't have to wait for your multimeter to catch up with your test. Both HP-IB and RS-232 are standard, letting you select the interface that best meets your needs. The HP 34401A responds to three different command languages. It accepts SCPI commands (Standard Commands for Programmable Instruments), which ensures present and future compatibility. It also responds to commands for the HP 3478A and the Fluke 8840A, thereby protecting your software investment with backward compatibility. Drivers are also available for both National Instruments Labview and Hewlett-Packard's VEE software.

### Turn Your HP 34401A into a Measurement System with HP 34812A BenchLink/Meter Software

The HP 34401A is an exceptional digital multimeter, and you can make it even more valuable with the HP 34812A BenchLink/Meter software solution. HP 34812A BenchLink/Meter turns your PC and DMM into a powerful, easy-to-use single-channel data acquisition system.

One of the HP BenchLink family of PC/basic instrument connectivity solutions, HP BenchLink/Meter lets you combine your Windows-based PC and the 34401A DMM to easily configure, capture, and display measurement data. HP BenchLink lets you structure your entire test—measurement, acquisition parameters, time of test start, test limits, and more—from the PC, so you create the test environment you need. You'll have a variety of display and analysis formats available, including a strip chart mode, statistics, histograms, and an analysis window to let you zoom in on specific data points for a closer look. In addition, it's easy to transfer captured data to other Windows programs for more detailed analysis.

HP BenchLink/Meter supports both HP-IB and RS-232 transfers, and can be used with either HP-IB cards (HP 82335A/B or 82341A) or National Instruments GPIB cards (GPIB-PCII/IIA and AT-GPIB, both standard and TNT versions). HP BenchLink/Meter also supports the HP 53100 family of counters. HP BenchLink/Meter requires a 386 or 486 computer with 4MB of RAM, Windows 3.1, and at least 1.5 MB of disk space. The software comes on a 3.5-inch high-density disk, and includes a users' guide.



## Abbreviated Technical Specifications

### DC Voltage

#### Input Characteristics

Range	Maximum reading (6½ digits)	Resolution in digits			Input resistance
		6½	5½	4½	
100 mV	120.0000	100 nV	1 µV	10 µV	10 MΩ or > 10 GΩ
1 V	1.200000	1 µV	10 µV	100 µV	10 MΩ or > 10 GΩ
10 V	12.000000	10 µV	100 µV	1 mV	10 MΩ or > 10 GΩ
100 V	120.000000	100 µV	1 mV	10 mV	10 MΩ
1000 V	1050.0000	1 mV	10 mV	100 mV	10 MΩ

**Input Protection:** >1000 V on all ranges

**Measurement Accuracy:** ±(% of reading + % of range)

Range	24-Hour 23° C ± 1° C		90-Day 23° C ± 5° C		1-Year 23° C ± 5° C	
	6½	5½	6½	5½	6½	5½
100 mV	0.0030 + 0.0030	0.0040 + 0.0035	0.0050 + 0.0035			
1 V	0.0020 + 0.0006	0.0030 + 0.0007	0.0040 + 0.0007			
10 V	0.0015 + 0.0004	0.0020 + 0.0005	0.0035 + 0.0005			
100 V	0.0020 + 0.0006	0.0035 + 0.0006	0.0045 + 0.0006			
1000 V	0.0020 + 0.0006	0.0035 + 0.0010	0.0045 + 0.0010			

**Noise Rejection:** (50 or 60 Hz, 1 kΩ unbalance in LO lead)

DC CMRR: 140 dB

AC CMRR: 70 dB

Normal mode rejection (60 Hz/50 Hz) ±0.1%:

100 PLC (1.67 s/2.00 s): 70 dB

10 PLC (167 ms/200 ms): 70 dB

1 PLC (16.7 ms/20.0 ms): 60 dB

<1 PLC (3 ms or 800 ms): 0 dB

**Maximum Reading Rate:** (readings/s)

Power line frequency	Resolution in digits		
	6½	5½	4½
60 Hz	6	300	1000
50 Hz	5	300	1000

### AC Voltage (true rms)

#### Input Characteristics

Range	Maximum reading (6½ digits)	Resolution in digits		
		6½	5½	4½
100 mV	120.0000	100 nV	1 µV	10 µV
1 V	1.200000	1 µV	10 µV	100 µV
10 V	12.000000	10 µV	100 µV	1 mV
100 V	120.000000	100 µV	1 mV	10 mV
750 V	750.0000	1 mV	10 mV	100 mV

**Input Resistance:** 1 MΩ ±2%, in parallel with 100 pF

**Input Protection:** >750 V rms on all ranges

**Measurement Accuracy:** ±(% of reading + % of range); 1 year, 23° C ± 5° C

Frequency	Ranges	
	100 mV	1, 10, 100, 1000 V
3 to 5 Hz	1.00 + 0.04	1.00 + 0.03
5 to 10 Hz	0.35 + 0.04	0.35 + 0.03
10 Hz to 20 kHz	0.06 + 0.04	0.06 + 0.03
20 to 50 kHz	0.12 + 0.04	0.12 + 0.05
50 to 100 kHz	0.60 + 0.08	0.60 + 0.08
100 to 300 kHz	4.00 + 0.50	4.00 + 0.50

Note: -3 dB frequency typically >1 MHz

**Maximum Volt - Hz Product:** 8 × 10<sup>7</sup>

**Crest Factor:** Maximum of 5:1 at full scale

**Maximum Reading Rate:** 10 readings/s (50 readings/s with default delays defeated)

### Frequency or Period

**Range:** 3 Hz to 300 kHz (333 ms to 3.33 µs)

**1-Year Accuracy:** 0.01% (40 Hz to 300 kHz); 0.05% (3 to 40 Hz)

**Resolution:** 10 µHz to 1 Hz

**Other Measurement Functions:** Continuity, Diode Test, Ratio dc:dc, Limit Test

**Math Functions:** NULL, Min/Max/Avg, dB, dBm, Limit Test

**Memory:** 512-reading internal storage

**Standard Programming Languages:** SCPI, HP 3478A and Fluke 8840A/42A

**Accessories Included:** Test lead kit, Operators Manual, Service Manual, Test Report, and power cord.

### Resistance: (2-wire Ω, 4-wire Ω)

#### Input Characteristics

Range	Maximum reading (6½ digits)	Resolution in digits		
		6½	5½	4½
100 Ω	120.0000	100 µΩ	1 mΩ	10 mΩ
1 kΩ	1.200000	1 mΩ	10 mΩ	100 mΩ
10 kΩ	12.000000	10 mΩ	100 mΩ	1 Ω
100 kΩ	120.000000	100 mΩ	1 Ω	10 Ω
1 MΩ	1.20000000	1 Ω	10 Ω	100 Ω
10 MΩ	12.00000000	10 Ω	100 Ω	1 kΩ
100 MΩ	120.00000000	100 Ω	1 kΩ	10 kΩ

**Input Protection:** >1000 V on all ranges

**Measurement Accuracy:** ±(% of reading + % of range)

Specs are for 4-wire Ω or 2-wire Ω using Math Null

Range	24-Hour 23° C ± 1° C		90-Day 23° C ± 5° C		1-Year 23° C ± 5° C		Current source
	6½	5½	6½	5½	6½	5½	
100 Ω	0.0030 + 0.0030	0.0040 + 0.0035	0.0050 + 0.0035				1 mA
1 kΩ	0.0020 + 0.0005	0.0030 + 0.0007	0.0040 + 0.0007				1 mA
10 kΩ	0.0020 + 0.0005	0.0030 + 0.0007	0.0040 + 0.0007				100 µA
100 kΩ	0.0020 + 0.0005	0.0030 + 0.0007	0.0040 + 0.0007				10 µA
1 MΩ	0.002 + 0.001	0.003 + 0.001	0.004 + 0.001				5.0 µA
10 MΩ	0.015 + 0.001	0.020 + 0.001	0.040 + 0.001				500 nA
100 MΩ	0.300 + 0.010	0.800 + 0.010	0.800 + 0.010				500 nA*

\* Measurement is computed from 10 MΩ in parallel with input.

**Maximum Reading Rate:** Same as dcV

### DC Current

#### Input Characteristics

Range	Maximum reading (6½ digits)	Resolution in digits		
		6½	5½	4½
10 mA	12.000000	10 nA	100 nA	1 µA
100 mA	120.000000	100 nA	1 µA	10 µA
1 A	1.20000000	1 µA	10 µA	100 µA
3 A	3.00000000	10 µA	100 µA	1 mA

**Burden Voltage:** <2 V for 3 A input; <0.1 V for 10 mA input

**Input Protection:** Externally accessible 3 A 250 V fuse; Internal 7 A 500 V fuse

**Measurement Accuracy:** ±(% of reading + % of range)

Range	24-Hour 23° C ± 1° C		90-Day 23° C ± 5° C		1-Year 23° C ± 5° C		Shunt resistance
	6½	5½	6½	5½	6½	5½	
10 mA	0.005 + 0.010	0.030 - 0.020	0.050 + 0.020				5.0 Ω
100 mA	0.010 + 0.004	0.030 - 0.005	0.050 + 0.005				5.0 Ω
1 A	0.050 + 0.006	0.080 - 0.010	0.100 + 0.010				0.1 Ω
3 A	0.100 + 0.020	0.120 - 0.020	0.120 + 0.020				0.1 Ω

**Maximum Reading Rate:** Same as DCV

### AC Current (true rms)

**Measurement Accuracy:** ±(% of reading + % of range); 1 year, 23° C ± 5° C

Frequency	Ranges	
	1 A	3 A
3 to 5 Hz	1.00 + 0.04	1.10 + 0.06
5 to 10 Hz	0.30 + 0.04	0.35 + 0.06
10 Hz to 5 kHz	0.10 + 0.04	0.15 + 0.06

**Burden Voltage:** <1.5 V rms for 3 A input

**Input Protection:** Externally accessible 3 A 250 V fuse; Internal 7 A 500 V fuse

**Maximum Reading Rate:** Same as acV

### General Specifications

**Power:** 100/120/220/240V, ±10%

**Power Line Frequency:** 45 to 66 Hz, 360 to 440 Hz

**Power Consumption:** 25 VA peak (10 W average)

**Operating Environment:** 0° to 55° C, full accuracy to 80% RH, 30° C

**Storage Environment:** -40° C to 75° C

**Size:** 88.5 mm H × 212.6 mm W × 348.3 mm D (4 in × 8.5 in × 14 in)

**Weight:** Net, 3.6 kg (8.0 lb); shipping, 5.9 kg (13 lb)

**Safety:** Designed to UL-1244, IEC-348, CSA

**Warranty:** 3 years standard

**Computer Interface:** HP-IB and RS-232C standard

### Ordering Information

**HP 34401A** Multimeter

**Opt 908** Rack Mount Kit

**HP 34130A** Deluxe Test Lead Kit (unique to HP 34401A)

**HP 34812A** BenchLink/Meter Software

**HP 34161A** Accessory Pouch

☎ For off-the-shelf shipment, call 800-452-4844.

### Price

\$995 ☎

\$51

\$35

\$150 ☎

\$38 ☎