



Figure 1-1. Model 3440A Digital Voltmeter

Table 1-1a. Specifications (Basic Unit)

***Available Plug-in Units:**

- Model 3441A Range Selector
- Model 3442A Automatic Range Selector
- Model 3443A High Gain/Auto Range
- Model 3444A DC Multi-Function Unit
- Model 3445A AC/DC Range Unit
- Model 3446A AC/DC Remote Unit

*3440A requires a plug-in to operate.

Sample Rate: 5 samples per second to 1 per 5 seconds with storage during samples and "Hold." In "Hold," a sample may be initiated by applying a +10-volt pulse 20 μ s wide or greater (ac coupled), or by contact closure.

DC Isolation: Signal common may be floated up to 500 volts dc from chassis ground.

BCD Output:

Output: 4-line BCD* (1-2-2-4) 6 columns consisting of 4 digits of data, polarity/function and decimal.

*4-line BCD (1-2-4-8) available on special order.

Impedance: 120K maximum, each line.

"0" state level: -24 volts.

"1" state level: -1 volt.

Reference Levels:

Positive: approximately -2.5 volts, 330 ohms

source impedance.

Negative: approximately -27 volts, 920 ohms source impedance.

Print Command: Generated internally, hold-off level 12 vdc. Print level -2 vdc from 100 ohm source.

Hold-off Requirements: Anywhere from +6 volts to +15 volts max. from source impedance less than 2000 ohms. (Provided by -hp- 562A Digital Recorder.)

Power: 115 or 230 volts $\pm 10\%$, 50 to 1000 Hz 20-30 watts depending on plug-in used.

Weight: Net, 18 lbs. (8 kg.); Shipping, 29 lbs. (13 kg.).

Dimensions: 16-3/4" wide, 5-7/32" high, 13-1/4" deep (426 x 133 x 337 mm).

Accessories Available:

K01-3440A Plug-in Extender.

J74-562A/AR Digital Recorder for use with -hp- 3440A accepting 1-2-2-4 BCD code. (Floating Operation) Includes special printwheel, 6 BCD column boards, input connector assembly with cable.

J75-562A/AR, same as J74-562A/AR except for single character function symbol.

Table 1-1b. Specifications (with -hp- Model 3441A Plug-in Unit)

Voltage Range: 4-digit presentation of 9.999, 99.99, and 999.9 volts full scale with 5% overrange capability and overrange indication.

Voltage Accuracy: $\pm 0.05\%$ of reading ± 1 digit, including line voltage variations of $\pm 10\%$ from nominal. A front panel adjustment on the 3440A insures accuracy over the temperature range between +15°C and +40°C and $\pm 0.1\% \pm 1$ digit over the temperature range of 0°C to 15°C and 40°C to 50°C.

Voltmeter Input Impedance: Constant 10.2 megohms (to dc) all ranges.

Input Filter AC Rejection: 10, 100, and 1000 volt ranges: 30 db at 60 Hz, increasing at 12 db/octave.

Input Filter Characteristics:

Response Time: Less than 450 msec to a step function to 99.95% of final value.

Common Mode Rejection:

	10V Range	100V Range	1000V Range
DC	90 db	70 db	50 db
60~	70 db	50 db	30 db

Range Selection: Manual.

Polarity: Automatic indication.

SECTION I

GENERAL INFORMATION

1-1. INTRODUCTION.

1-2. The -hp- Model 3440A Digital Voltmeter displays positive or negative dc voltages to four significant figures from 0.001 volt to 1050.0 volts. A Plug-in unit must be installed in the front panel compartment of the Model 3440A for measurements. Six Plug-in units are presently available for use with the Model 3440A.

1-3. INSTRUMENT DESCRIPTION.

1-4. The Model 3440A Digital Voltmeter is designed to measure dc voltages from 1 millivolt to 1000 volts with an accuracy of $\pm 0.05\% \pm 1$ count for operating temperatures between $+15^{\circ}\text{C}$ and $+40^{\circ}\text{C}$. Accuracy is maintained for overrange voltages of 5% on all ranges, and polarity is automatically indicated. The last completed measurement is displayed until a new measurement cycle is completed. This display storage feature prevents flickering of the readout during the measurement cycle. Measurement sampling time is controlled by the front panel SAMPLE RATE control. Selection of range is controlled by the RANGE switch on the Plug-in unit (see Paragraph 1-6). Mode of operation is also controlled by Plug-in controls.

1-5. Solid state components in the Model 3440A reduce the power consumption and internal heat dissipation, and increase instrument ruggedness. Nearly all circuit components are mounted on plug-in etched circuit boards, allowing easier access for maintenance.

1-6. PLUG-IN UNITS.

1-7. A Plug-in unit is necessary for operation and is an integral part of the voltmeter circuit. Available Plug-ins are listed below. Table 1-2 is a comparison chart of the various Plug-ins.

- a. -hp- Model 3441A Range Selector provides manual selection of 10, 100 and 1000 volt range.

- b. -hp- Model 3442A Automatic Range Selector provides manual, automatic and remote selection of 10, 100 and 1000 volt range.
- c. -hp- Model 3443A High Gain/Auto Range Unit provides manual, automatic and remote selection of 100 and 1000 millivolt; 10, 100 and 1000 volt ranges.
- d. -hp- Model 3444A DC Multi-Function Unit provides a manual ranging dc voltmeter, dc milliammeter and ohmmeter. Five ranges are provided for each function. (Full scale voltage ranges from 100 millivolts to 1000 volts; full scale current ranges from 100 microamperes to 1000 milliamperes; and full scale resistance ranges from 1000 ohms to 10 megohms.
- e. -hp- Model 3445A AC/DC Range Unit provides manual, automatic, and remote selection of 10, 100, and 1000 volt ranges for both ac and dc voltages.
- f. -hp- Model 3446A AC/DC Remote Unit provides ac and dc measurements of 10 v, 100 v, and 1000 v full scale. Both range and function may be selected either manually or remotely.

1-9. INSTRUMENT AND MANUAL IDENTIFICATION.

1-10. Hewlett-Packard uses a two-section eight-digit serial number (000-00000). If the first three digits of the serial number on your instrument do not agree with those on the title page of this manual, change sheets supplied with the manual will define differences between your instrument and the Model 3440A described in this manual.

1-11. If the first three digits of the serial number are prefixed with an E or a G, your instrument was produced in Europe. An E000-00000 serial number indicates that the instrument was manufactured in England; a G000-00000 serial number indicates that the instrument was manufactured in Germany.

Table 1-2. Plug-in Function Chart

PLUG IN	AC VOLTS 10V TO 1000V	DC VOLTS 10V TO 1000V	DC VOLTS 100 MV TO 1000V	DC AMPS	OHMS	REMOTE FUNCTION	AUTO RANGING	FLOATING INPUT	PRINTER OUTPUT	REMOTE RANGING	REMOTE TRIGGERING
3441A	*	✓						✓	✓		✓
3442A	*	✓					✓	✓	✓	✓	✓
3443A	*		✓				✓	✓	✓	✓	✓
3444A	*		✓	✓	✓			✓	✓		✓
3445A	✓	✓					✓	✓	✓	✓	✓
3446A	✓	✓				✓		✓	✓	✓	✓

* TRUE RMS VOLTAGE MEASUREMENTS: 1MV TO 300VOLTS (10CPS TO 10MC) USING THE 34400A.