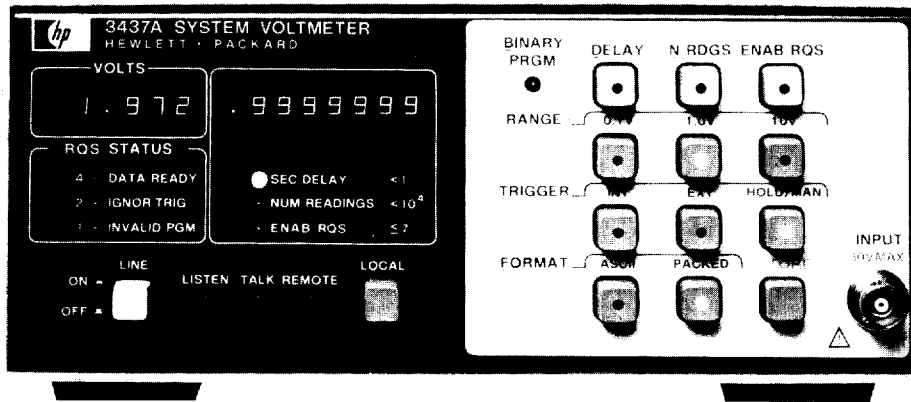


VOLTMETERS, DIGITAL & ANALOG

High Speed 3½ Digit System Voltmeter

Model 3437A

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HP 3437A

Description

The Hewlett-Packard 3437A System Voltmeter is designed for systems. It is a 3½-digit, high-speed dc voltmeter with sample and hold. The standard unit measures dc volts, provides trigger delay, burst reading capability and Hewlett-Packard Interface Bus (HP-IB).

There are three dc floating input ranges: 0.1 V, 1.0 V and 10.0 V full scale with a maximum display of "1998." Sample and Hold allow the HP 3437A to be an instantaneous reading voltmeter. The trigger delay can be set from 0.1 μs to 1.0 second and the number of readings can be set from 0 to 9999 readings.

Typical Operation

Example: set Delay to 1 ms and Number of Readings is set to 1000. The HP 3437A will now take 1000 readings spaced 1 ms apart from one trigger.

Data Output

All front panel switches are programmable from the HP-IB. Two data output formats are available: (1) ASCII output (Serial ASCII characters) and (2) packed output (two 8-bit bytes on the HP-IB to send the complete reading).

Applications

Waveform analysis—The HP 3437A can be used to analyze a wide variety of waveforms. The delay and burst reading capability allows frequency, positive or negative peak values, RMS value and harmonic distortion to be measured. The accuracy of these measurements is comparable to more traditional measurement techniques.

Transient signal analysis—The HP 3437A is capable of measuring transient signals because of the wide bandwidth input (>1 MHz), high measuring speed and sample-and-hold.

Fast AC measurements—Sinusoidal signals of known frequency can be measured in less than one cycle of the signal. Very low frequency measurements can be made more quickly than with conventional techniques.

High speed scanning: multiple input measurement applications can be satisfied with the HP 3437A and the HP 3497A Data Acquisition/Control Unit. Reading rates of up to 4800 channels/second can be attained.

Data-Sheeted Systems

The HP 3437A is a component of the HP 3054A Automatic Data Acquisition and Control System. The HP 3054A includes the HP 3437A for high speed measurements, the HP 3456A Digital Voltmeter for high accuracy measurements and the HP 3497A Data Acquisition/Control Unit for multiplexing and control outputs. The HP 3054A includes an extensive software package to support the HP 3437A when used for thermocouple measurements, high speed scanning, and waveform digitization.

Specifications

DC Volts

| Ranges | Max. Display | Overload Reading |
|--------|--------------|------------------|
| 10 V | ±19.98 | ±99.99 |
| 1 V | ±1.998 | ±9.999 |
| 0.1 V | ±1.998 | ±.9999 |

Ranging: manual or remote.

Performance

Static Accuracy (90 days, 23°C ±5°C)

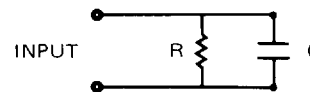
10 V range: ±(0.05% of reading + 1.6 counts).

Static Accuracy (1 year, 23°C +5°C) V range:

10 V range: ±(0.05% of reading + 2 counts).

Static accuracy temperature coefficient (0°C–50°C):
±(0.002% reading + 0.05 counts) / °C.

Input Characteristics



10 V range: R = 1 MΩ ±20%; C < 75 pF.

Maximum input voltage high to low on all ranges: < ±30 V peak.

Maximum voltage low to chassis: ±42 V peak.

Number of readings (N readings): 0 to 9,999.

Readings are not internally stored.

For N = 0 the HP 3437A operates in delay mode only.

Maximum reading rate (remote, N Rdgs. > 1, and a zero delay listener)

ASCII: 3600 readings/s.

Packed: 5700 readings/s.

Delay

N Rdgs. = 0 or 1

DELAY (setting): 0 to 0.999 999 9 sec. in 0.1 μs steps.

N Rdgs. > 1 (remote and a zero delay listener)

ASCII: 0.0002778 s ≤ DELAY ≤ 0.9999999 s.

PACKED: 0.0001754 s ≤ DELAY ≤ 0.9999999 s.

Minimum delay is a function of listener delay related by:

ASCII: 277.8 μs + listener delay.

PACKED: 175.4 μs + listener delay.

Accuracy (EXT. TRIG to DELAY OUT, 0°C to 50°C)

Delay offset: 100 ns ± 25 ns (with < 150 pF cable capacitance)

Delay accuracy: ±0.008% DELAY Setting + Delay offset.

Delay repeatability (jitter) for N Rdgs = 0 or 1

DELAY of 0 or 0.1 μs: 2 ns

DELAY of 0.2 μs to 50 ms: 10 ns + 0.0002% DELAY setting.

DELAY of > 50 ms: ±110 ns.

Input Bandwidth (3 dB)

1 V and 10 V range: 1.0 MHz.

Settling Time

10 V range: 10 V range with 10 V step input:

Reading settles to within 30 mV of final value in 7.5 μs or to within 200 mV of final value in 700 ns.

General

Operating temperature: 0 to 55°C.

Storage temperature: –40°C to 75°C.

Humidity range: < 95% R.H., 0°C to 40°C.

Power: 100 V, 120 V, 220 V, 240 V +5%, –10%, 48 Hz to 440 Hz line operation, < 42 VA.

Size: 88.9 mm H x 212.7 mm W x 527.1 mm D (3½" x 8⅜" x 20¾").

Weight: net, 5.6 kg (12 lb 4 oz). Shipping, 7.6 kg (16 lb 12 oz).

HP-IB Interface Functions: SH1, AH1, T5, L4, SR1, RL1, PP0, DC1, DT1, C0, E1

HP 3437A System Voltmeter

\$3000