

DIGITAL VOLTMETERS



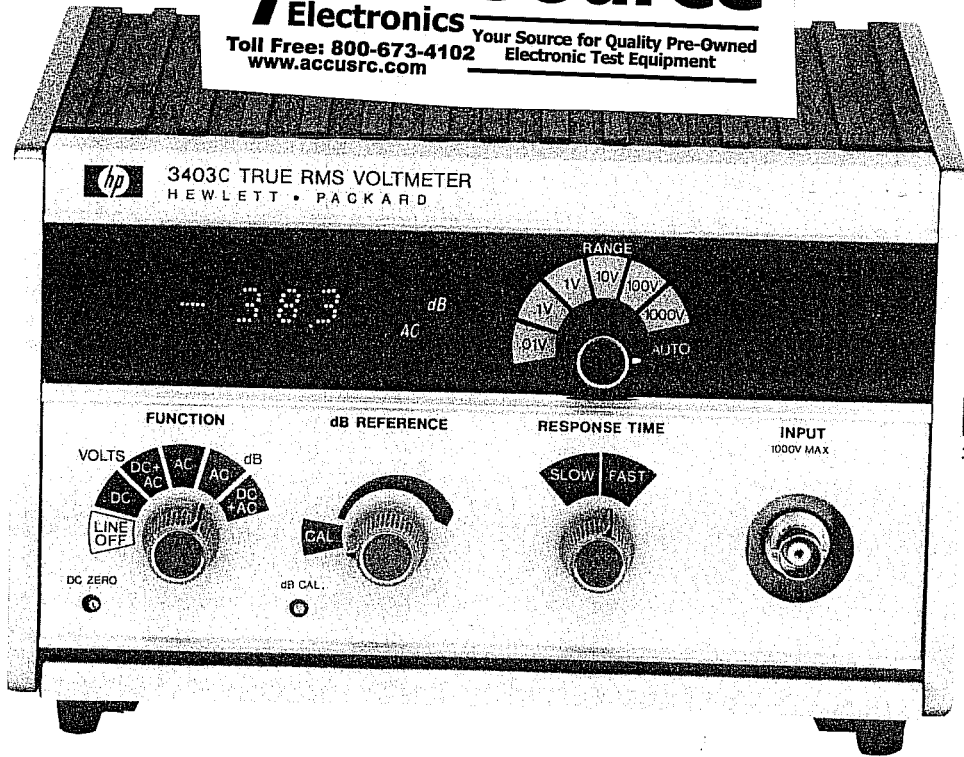
True RMS voltmeter
Model 3403C

- DC and 2 Hz to 100 MHz
- 3½ digit

AccuSource Electronics

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Description

The Model 3403C is usable from dc to 100 MHz. True rms is especially valuable for measurements of noise, multiplexed signals, modulated waves and signals with high harmonic content.

dB Display

The dB display option provides readings directly in dB, a major convenience to ac users. The dB reference to which the measurement is made is conveniently adjustable from the front panel to provide referenced dB measurements, or to provide a convenient means to offset the reading by as much as 13 dB for unreferenced measurements.

Specifications

Ranges

Full range display: 10.00 mV (ac only); 100.0 mV; 1.000 V; 10.00 V; 100.0 V; 1000 V.

Overrange: >90% on all ranges except as limited by max input voltage.

Ranging information: front panel annunciators indicate overrange (approximately 190% of full range), or underrange (approximately 17% of full range) conditions.

Performance

AC frequency range

Slow response: 2 Hz to 100 MHz.

Fast response: 25 Hz to 100 MHz.

Response time

Fast response: 1 s.

Slow response: 10 s.

Instrument reads final reading ±0.1% of input change in stated response time.

Display rate

Fast response: 4 readings per s.

Slow response: 2 readings per s.

$$\text{READING ACCURACY} = \pm(\% \text{ OF RANGE} + \% \text{ OF READING})^{**}$$

RANGE	% OF RANGE (VOLTS)			% OF READING (VOLTS)						
	DC	DC+AC	AC	DC	2 Hz	25 Hz	100 KHz	1 MHz	10 MHz	100 MHz
1000V	.3	.3	.3	.2	.4	.2	[Cross-hatched area]			
100V	.2	.2	.2	.2	.4*	.2				
10V	.2	.2	.2	.2	.4*	.2	.5	1	[Cross-hatched area]	
1V	.2	.2	.2	.2	.4*	.2	.5	1		
100mV	.6	.6	.2 40mV 4	.2	.4*	.2	.5	2	2.5	10
10mV			.2 4mV 4			.3	1.2	3	[Cross-hatched area]	

CAUTION: frequencies and ranges in this area may result in invalid readings without ranging indication.

* DC + AC function and slow response time only

** % of reading specification is representative of typical flatness.

Functions

DC: responds to dc component of input signal.
AC: responds to true rms value of ac coupled input signal.
AC+ DC: responds to true rms value of dc and ac input signal; reading is $\sqrt{(dc)^2 + (ac\ rms)^2}$
Temperature coefficient: $\pm(0.1 \times \text{reading accuracy}^*/^{\circ}C)$ outside the $25^{\circ}C \pm 5^{\circ}C$ temperature range.
*Data from accuracy charts.
Accuracy: 90 days ($25^{\circ}C + 5^{\circ}C$, $<95\% RH$), 17% of range to 190% of range).

Input characteristics

Input impedance: ($<10\ MHz$):
1 V to 1000 V range: $10\ M\Omega \pm 10\%$ shunted by $24\ pF \pm 10\%$.
10 mV and 100 mV range: $20\ M\Omega \pm 10\%$ shunted by $20\ pF \pm 10\%$.
10 MHz to 100 MHz: the following table gives maximum loading due to input shunt impedance across a terminated source.

System Impedance (source and load)	Frequency	
	10 MHz	100 MHz
50Ω	1%	10%
75Ω	2%	20%

Crest factor

2 Hz to 25 Hz	2:1 at full range input.
>25 Hz	10:1 at full range input.

Maximum input voltage

High to low: 1000 V rms, 1500 peak or $10^3\ V\text{-Hz}$ on any range. Maximum dc voltage in ac mode: 500 V dc.
Low to chassis: $\pm 500\ V$ dc, when floated with special banana to BNC adapter.

Options:

Autoranging (3403C option 001)

Automatic ranging: uprange at approximately 190% of full range; downranges at approximately 17% of full range.

Autorange time: fast response: 1 s per range change. Slow response: 10 s per range change.

Remote control + digital output + autoranging (3403C option 003): Provides remote control of all front panel functions, ranges, digital output and autoranging.

dB display (3403C option 006)

Measurement range: 108 dB ($-48\ dBV$ to $+60\ dBV$).


Calibrated dB reference: 0 dB = 1.000 V; reference level may be set for 0 dBm (600Ω) by adjusting front panel dB calibration adjustment.

Variable dB reference: reference level may be shifted downward from calibrated position $>13\ dB$.

dB recorder output: output voltage: 200 mV for 20 dB. Output resistance: $1\ k\Omega \pm 500\ \Omega$.
Accuracy: 90 days ($25^{\circ}C + 5^{\circ}C$, $<95\% RH$).

READING
 ACCURACY = $\pm(dB + \pm dB)**$

RANGE	dB		dB											
	AC	DC+AC	DC	2 Hz	25 Hz	100 KHz	1 MHz	10 MHz	100 MHz					
1000V	.15	.15	.02	.04*	.02									
100V	.15	.15	.02	.04*	.02					.1				
10V	.15	.15	.02	.04*	.02					.05	.1			
1V	.15	.15	.02	.04*	.02					.05	.1	.2	.5	1
100mV	.15	.15	.02	.04*	.02					.05	.2	.2	.5	1
10mV	.15				.03					.12	.3			

 CAUTION: frequencies and ranges in this area may result in invalid readings without ranging indication.

* DC + AC function and slow response time only

** specification is representative of typical flatness.

General

Operating conditions

Temperature range: $0^{\circ}C$ to $50^{\circ}C$.

Humidity: $<95\% RH$.

Recorder output

Output voltage: 1 V dc open circuit for full range input.

Output resistance: $1\ k\Omega \pm 10\%$.

Power: 115 V or $230\ V \pm 10\%$, 48 Hz to 440 Hz, 35 VA max. (including all options).

Input terminals: BNC front panel connector standard for low to high terminals; rear panel connector available by internally reversing position of ac converter module.

Weight: including all options: net, 5 kg (11 lb). Shipping, including all options: Net, 7.2 kg (16 lb).

Size: 127 mm H x 234.9 mm W x 196.8 mm D ($5'' \times 9\frac{1}{4}'' \times 7\frac{3}{4}''$).

Accessories furnished: floating adapter-banana to BNC.

3403C True RMS Voltmeter

Opt 001 autoranging **\$2975**

***Opt 003** remote control + digital output + autoranging add \$170

***Opt 006** dB display add \$370

***Options 003 and 006** are available only as factory installed options. add \$330