AC CALIBRATION SYSTEM

Precision source; to 1100 V; 10 Hz to 110 kHz

Models 745A & 746A

Description

The 745A AC Calibrator combined with the 746A High Voltage Amplifier, is a compact, calibrated ac source with a continuously-adjustable frequency output from 10 Hz to 110 kHz. The output can be varied from 0.1 mV to 1099.999 V in steps of 1 ppm of range over the entire frequency band.

The Model 745A provides the first six voltage ranges, 0.1 mV to 109.9999 V, while the combination of the 745A and 746A permits the expansion to 1099.999 V as a seventh range.

745A/746A Combined Specifications

(Refer to data sheet for complete specifications)

Ranges

Output voltage ranges: 7 ranges with 10% overrange as follows:

Range	Settability and Resolution
1 mV	0.100000 mV to 1.099999 mV in 1 nV steps
10 mV	1.00000 mV to 10.99999 mV in 10 nV steps
100 mV	10.0000 mV to 109.9999 mV in 100 nV steps
1 V	0.100000 V to 1.099999 V in 1 μV steps
10 V	1.00000 V to 10.99999 V in 10 μV steps
100 V	10.0000 V to 109.9999 V in 100 μV steps
1000 V	100.000 V to 1099.999 V in 1 mV steps

The output voltages from 100 μV to 110 V are available from 745A output terminals; voltages from 100 V to 1100 V are available from the 746A output cable.

Output frequency range: continuously adjustable from 10 Hz to 110 kHz in 4 decade ranges with 10% overlap.

Error measurement: 2 ranges with zero center dial; ±0.3%, ±3%. A zero range is provided to switch out the effects of the error measurement system.

Performance rating

Accuracy: accuracy holds for a 90-day period and is met after a 1-hr warmup period at 25°C ±5°C with <95% RH. This applies only to the 745A. 746A warmup time required is approximately 30 s.

Voltage: specifications are absolute, traceable to the National Bureau of Standards.

1 mV to 100 V ranges:

Frequency	Accuracy
50 Hz to 20 kHz	±(0.02% of setting +0.002% of range +10 μV)
20 Hz to 50 Hz 20 kHz to 110 kHz	±(0.05% of setting +0.005% of range +50 μV)
10 Hz to 20 Hz	±(0.2% of setting +0.005% of range +50 μV)

1000 V range:

Frequency	Accuracy
50 Hz to 20 kHz	±0.04% of setting
20 Hz to 50 Hz 20 kHz to 50 kHz	±0.08% of setting
50 kHz to 110 kHz	±0.15% of setting
10 Hz to 20 Hz	±(0.2% of setting +0.005% of range)

Frequency: ±(2% of setting +0.2% of end scale).

Error measurement: ±(0.5% of setting +0.5% of range).

Temperature coefficient

Voltage: 1 mV to 100 V ranges: ±0.0003% of setting per °C, 0°C to 55°C. 1000 V range: ±0.0005% of setting per °C, 0°C to 55°C.

Frequency: ±0.05% of end scale per °C, 0°C to 55°C. Derate accuracy specifications by this temperature coefficient for operation in temperature range of 0°C to 20°C and 30°C to 55°C.

Voltage stability: stability met after 1-hr warmup period at constant temperature with <95% RH.

1 mV to 100 V ranges

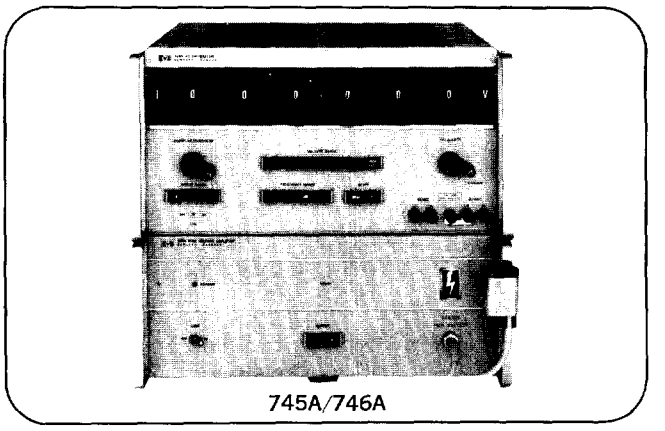
Long-term: ±0.01% of setting for 6 mo.

Short-term: ±0.005% of setting for 24 hr.

1000 V range

Long-term: 50 Hz to 20 kHz: ±0.01% of setting for 6 mo. 10 Hz to 50 Hz and 20 kHz to 110 kHz: ±0.02% of setting for 6 mo.

Short-term: ±0.005% of setting for 24 hr.



745A/746A

Output characteristics

Total distortion and noise: 0.05% of setting +10 μV over 100 kHz bandwidth on all ranges.

Load capability

1000 pF or 50 mA on 1 mV to 100 V ranges (50 mA allows 800 pF at 100 V, 100 kHz).

1000 pF or 63 mA on 1000 V range (63 mA allows 100 pF at 1000 V, 100 kHz).

Line regulation: ±0.001% of setting change in output voltage for 10% change in line voltage (included in accuracy spec).

General

Operating temperature: 0°C to 55°C.

Power: 745A: 115 V or 230 V ±10%, 48 Hz to 440 Hz, 115 VA max. 746A: 115 V or 230 V ±10%, 50 Hz to 60 Hz, 1 kVA max. 746A aux power output rated at 120 VA max.

Dimensions: 745A: 16¾" wide, 8¾" high, 18⅜" deep (425 x 221 x 467 mm). 746A: 16¾" wide, 7" high, 18¼" deep (425 x 177 x 464 mm).

Weight: 745A: net, 65 lbs (29,3 kg); shipping, 81 lbs (36,5 kg). 746A: net, 75 lbs (34 kg); shipping, 93 lbs (41,9 kg).

Accessories furnished

745A: rack mount kit; HP Part No. 5060-0630, 22-pin printed circuit board extender; HP Part No. 5060-0043, 15-pin printed circuit board extender; HP Part No. 5060-0031, 10-pin printed circuit board extender; HP Part No. 1251-0084 remote programming mating plug.

746A: accessory kit; HP Part No. 00746-84401; HP Part No. 1251-0485, remote right angle connector; HP Part No. 1450-0356, incandescent lamp; HP Part No. 4040-0427, extractor; HP Part No. 5040-0404, probe holder; HP Part No. 5060-0216, joining kit bracket; HP Part No. 5060-0630, 22-pin printed circuit board extender; 7H rack mounting kit; HP Part No. 00746-02701, foam filter.

Price: HP 745A, $4615; HP 746A, $2050.