POWER & NOISE FIGURE METERS

Thermocouple power meter

Model 436A

436A

HP-IB

436A Power Meter

The HP Model 436A Power Meter is a general purpose digital power meter intended for manual and automatic RF and microwave power measurements. It is compatible with the entire series of 8480 power sensors. Depending on which power sensor is used, the 436A can measure power from −70 dBm (100 pW) to +35 dBm (+3 W) at frequencies up to 18 GHz.

The logically organized and uncluttered front panel, and the convenience of push-button operation and digital display make the 436A both easy to interpret and easy to use in any application. The auto ranging capability allows for "hands-off" operation.

The 436A measures either absolute or relative power. It displays absolute power in either watts or dBm, while relative power is displayed in dB.

The 436A Power Meter also features optional programmability; both Hewlett-Packard Interface Bus (HP-IB) and BCD interfaces are available. These interfaces allow full remote control of all power meter functions (CAL function can be programmed to either 100 percent or the CAL factor which has been manually set on the front panel). These options may be added by the user at a later time.

Specifications

Frequency range: 100 kHz to 18 GHz (depending on Power Sensor used).

Power range

With 8481A, 8482A or 8483A sensors: 50 dB with 5 full scale ranges of 10 and 100 µW; 1, 10 and 100 mW. The display is also calibrated in dBm and dB from −20 dBm to +20 dBm full scale in 10-dB steps.

With 8481H or 8482H sensors: 45 dB with 5 full-scale ranges of 1, 10 and 100 mW; 1 and 3 watts. The display is also calibrated in dBm and dB from 0 dBm to +30 dBm full scale in 10-dB steps, and a 5-dB step from +30 dBm to +35 dBm.

With 8484A sensor: 50 dB with 5 full scale ranges of 1, 10, 100 nW; 1, 10 µW. The display is also calibrated in dBm and dB from −60 dBm to −20 dBm full scale in 10 dB steps.

Accuracy

Instrumentation

Watt mode: ±0.5% in ranges 1 through 4; ±1.0% in range 5.

dBm mode: ±0.02 dB ±0.001 dB/°C in range 1 through 4; ±0.04 dB ±0.001 dB/°C in range 5.

dB (REL) mode: ±0.02 dB±0.001 dB/°C in ranges 1 through 4; ±0.04 dB ±0.001 dB/°C in range 5.

Zero: automatic, operated by a front-panel switch.

Zero set: ±0.5% of full scale on most sensitive range, typical. ±1 count on other ranges.

Zero carry over: ±0.2% of full scale when zeroed on the most sensitive range.

Noise (typical at constant temperature over any one-minute interval):

With 8484A Sensor: 20 pW peak.

With 8481A, 8482A, 8483A Sensors: 40 nW peak.

With 8481H, 8482H Sensors: 4µW peak.

General

Zero drift: ±2% of full scale on most sensitive range (1 hour, typical at constant temperature).

Response time: (0 to 99% of reading):

Range 1	<10 seconds (most sensitive range)
Range 2	<1 second
Ranges 3 through 5	<100 msec

(Typical, measured at recorder output).

Power reference: internal 50 MHz oscillator with Type N female connector on front panel or rear panel (Option 003 only).

Power output: 1.0 mW. Factory set to ±0.7% traceable to the National Bureau of Standards.

Accuracy: ±1.2% worst case (±0.9% rms) for one year (0°C to 55°C).

Cal factor: 16-position switch normalizes meter reading to account for calibration factor. Range 85% to 100% in 1% steps.

Cal adjustment: front-panel adjustment provides capability to adjust gain in meter to match power sensor in use.

Recorder output: proportional to indicated power with 1 volt corresponding to full scale and 0.316 volts to −5 dB; 1 kΩ output impedance, BNC connector.

RF blanking: open collector TTL; low corresponds to blanking when auto-zero mode is engaged.

Display: digital display with four digits. 20% over-range capability on all ranges. Analog meter: uncalibrated peaking meter to see fast changes.

Power consumption: 100, 120, 220, or 240 V +5%, −10%, 48 to 440 Hz, less than 20 watts (less than 23 with Option 022 or 024).

Weight: net, 4.5 kg (10 lb). Shipping, 5.5 kg (12 lb).

Size: 134 H, 213 W, 279 mm D (5¼" × 8⅜" × 11").

Accessories furnished: 1.5 m (5 ft) cable for power sensor; 2.3 m (7.5 ft) power cable. Main plug shipped to match destination requirements.

Accessories available

To rack mount one 436A by itself order:

5061-0057 Rack Mount Adapter Kit and accessories

Options	Price
002: input connector placed on rear panel in parallel with front	add $25
003: input connector and reference oscillator output on rear panel only	add $10
009: 3 m (10 ft) cable for power sensor	add $30
010: 6.1 m (20 ft) cable for power sensor	add $55
011: 15.2 m (50 ft) cable for power sensor	add $105
012: 30.5 m (100 ft) cable for power sensor	add $155
013: 61 m (200 ft) cable for power sensor	add $260
022: digital input/output, fully compatible with HP Interface Bus (HP-IB)	add $400
024: digital input/output BCD Interface	add $300
5061-0057 Rack Mount Kit	$15
436A Power Meter	**$1975**