



HP 436A



- Ideal for ATE applications
- Dual power sensors
- Innovative ratio & difference measurements



HP 438A



### HP 436A Power Meter

The HP 436A Power Meter is a general-purpose digital power meter intended for manual and automatic radio-frequency (RF) and microwave-power measurements. It is compatible with the entire series of HP 8480 thermocouple and diode power sensors.

The HP 436A measures either absolute or relative power. It displays absolute power in either watts or dBm, and relative power in dB. The HP 436A offers intuitive and straightforward manual operation as well as optional HP-IB programmability (Option 022).

#### Specifications

**Frequency Range:** 100 kHz to 110 GHz, sensor dependent

**Power Range:** -70 to +44 dBm (100 pW to 25 W), sensor dependent

#### Accuracy

##### Instrumentation

**Watt mode:** ±0.5%

**dBm mode:** ±0.02 dB ±0.001 dB/°C

**dB (REL) mode<sup>1</sup>:** ±0.02 dB ±0.001 dB/°C

**Zero:** Automatic, operated via front panel switch

**Zero set:** ±0.5% of full scale on most sensitive range, typical

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

**Power reference:** Internal 50 MHz oscillator with Type-N female connector on front panel (or rear panel, Opt 003)

**Power output:** 1.0 mW. Factory set to ±0.7% traceable to the U.S. National Institute of Standards and Technology

**Accuracy:** ±1.2% worst case (±0.9% rss) for one year

#### Supplemental Characteristics

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

**Power Consumption:** 100, 120, 220, 240V (+5%, -10%), 48 to 66 Hz, and 360 to 440 Hz; <20 VA (<23 VA with Opt 022)

**HP-IB Function Codes:** AH1, C0, DC2, DT0, LE0, P0, RL2, SH1, SR0, T3, TE0

**Weight:** Net, 4.5 kg (10 lb); shipping, 5.5 kg (12 lb)

**Size:** 134 mm H × 213 mm W × 279 mm D (5.2 in × 8.4 in × 11.0 in)

#### Accessories

**Furnished:** HP 11730A, 1.5-m (5-ft) power sensor cable; 2.3-m (7.5-ft) power cable

**Available:** To select and substitute nonstandard lengths for power sensor cables, see page 178. HP 5061-9657 rackmount adapter kit (one HP 436A by itself).

#### Ordering Information

##### HP 436A Power Meter

**Price**

\$4,750

**Opt 003** Reference oscillator output on rear panel only \$50

-\$50

**Opt 004** Delete Power Sensor Cable

\$0

**Opt 022** Digital Input/Output, fully HP-IB compatible

+\$53

**Opt 908** Kit for rackmounting one HP 436A

+\$25

**Opt 910** Extra Operating and Service Manual (00436-90034)

+\$80

**Opt W30** Extended Repair Service (see page 624)

\$685

**Opt W32** Calibration Service (see page 624)

<sup>1</sup>Specifications for within range measurements. For range-to-range accuracy add ±0.02 dB.

### HP 438A Power Meter

The HP 438A Power Meter is a dual-channel power meter designed specifically for ATE systems. The compact front panel saves critical rack space, while the dual channel design allows simple and accurate measurements of the ratio and difference of power levels from two separate sensors. This meter is compatible with the HP 8480 Series of thermocouple and diode power sensors.

HP-IB capability is standard on the HP 438A. For U.S. Air Force Modular Automatic Test Equipment (MATE) system application, Option 700 provides the HP 438A with the internal capability to be controlled by the MATE Control Interface Intermediate Language (CIIL).

#### Specifications

**Frequency Range:** 100 kHz to 110 GHz, sensor dependent

**Power Range:** -70 to +44 dBm (100 pW to 25W), sensor dependent. Uses HP 8480 Series power sensors

#### Instrumentation Accuracy

**Single channel:** ±0.5% (watt mode) or ±0.02 dB (dBm mode)

**Dual channel:** ±1% (watt mode) or ±0.04 dB (dBm mode)

**Zeroing:** Automatic, ±0.5% of full scale on most sensitive range

#### Power Reference

**Power output:** 1.00 mW. Factory set to ±0.7%, traceable to the U.S. National Institute Standards and Technology

**Accuracy:** ±1.2% worst case (±0.9% rss) for 1 year

**Connector:** front panel Type-N female (also rear panel Opt 002)

#### Supplemental Characteristics

**Recorder Output:** Linearly proportional to indicated power in watts. One volt corresponds to full scale; 1 kΩ output impedance. BNC rear panel female connector

**Line Voltage:** 100, 120, 220, or 240 Vac +5% -10%. 100 and 120 volts, 48 to 66 Hz and 300 to 440Hz. 220 and 240 volts, 48 to 66 Hz only

**Power Requirements:** 65 VA, 35 watts, maximum

**HP-IB Interface Codes:** SH1, AH1, T5, TE0, L4, LE0, SR1, RL1, PP1, DC1, DT1, C0

**Weight:** Net, 5.9 kg (13 lb); shipping, 9.1 kg (20 lb)

**Size:** 89 mm H × 213 mm W × 418 mm D (3.5 in × 8.4 in × 16.8 in)

#### Accessories

**Furnished:** HP 11730A, 2 each, 1.5-meter (5-ft) power sensor cables. Power cable, 1 each, 2.4 meters (7.5 ft). Mains plug matches destination requirements.

**Available:** To select and substitute nonstandard lengths for power sensor cables, see page 178.

#### Ordering Information

##### HP 438A Dual Channel Power Meter

**Price**

\$5,350

**Opt 002** Rear Panel Sensor Connector (in parallel with front panel) and additional reference oscillator with rear panel output

+450

**Opt 700** Internal MATE Programming

+\$2,000

**Opt 004** Delete Power Sensor Cables

-\$100

**Opt 910** Additional Manual (00438-90015)

+\$25

**Opt W30** Extended Repair Service (see page 624)

+\$130

**Opt W32** Calibration Service (see page 624)

\$305

☎ For off-the-shelf shipment, call 800-452-4844.