

Model 1806

DUAL TYPE IV POWER METER

10 μ W to 30 mW

The Model 1806 Dual Type IV Power Meter is designed for use with bolometer elements to measure high frequency or microwave power. It also functions as a standard for the calibration of bolometer mounts, detectors, RF voltmeters, and for precision insertion loss measurements when used as part of the TEGAM System IIA Automatic Power Meter Calibration System.

The exclusive use of 100% dc substituted power eliminates the effect of ac components on the bridge circuit which has been shown to introduce a substantial error in the substituted power due to the short-term time constant of some bolometer elements. Substituted dc power levels ranging from 10 μ W to 30 mW can be measured to within $\pm 0.003\%$ which also makes this an ideal instrument for insertion loss measurements. Regardless of the application, all measurements can be made directly traceable to primary voltage and resistance standards.

The 1806 contains two Type IV Power Meters and two built-in temperature controllers for use with TEGAM Bolometer Mounts. The power meters are designed to bias either 100 or 200 ohm mounts and are thus compatible with System IIA, HP thermistor mounts, the Model 1110, 1111 and 1107 Series RF Transfer Standards (refer to applicable data sheets for mount specifications). Operating resistance for each power meter is selected by a front panel switch. Each power meter has a bolometer current meter and fault LED indicator which illuminates under any condition preventing loop balance. Terminals are provided for an external DVM, positive and negative bolometer, and voltage sense.

SPECIFICATIONS

RF (Substituted dc) POWER MEASUREMENT:

Typical Power Measurement Accuracy: $\pm 0.03\%$
+ 2 μ W when used with Fluke Model 8505A or 8506A Voltmeters
Range: 10 μ W to 25 mW
Substitution Bridge Accuracy: $\pm 0.003\%$

TEMPERATURE RANGE:

Operating: +10 to +40°C (+25° to 104°F)
Storage: -40 to +75°C (-67° to +167°F)

TEMPERATURE CONTROLLER:

Bias Power Temperature Sensitivity: 2 μ W/°C per hour
Ambient Temperature Dynamic Range: +12°C to +32°C
Mount Warm-Up Time: 2 hours nominal
Internal Temperature: +60°C nominal
Loop Gain: 80 dB minimum
Open Loop Frequency Response: 0.1 Hz
Warm-Up Drive (saturated): 15 V @ 200 mA minimum
Indicator: Voltmeter with marked operating range

CONNECTORS: Binding Post, standard 0.75" spacing for Banana plugs.

POWER REQUIREMENTS: 110/120/220/240 Vac ± 5 -10%, 48 to 62 Hz, 25 Watts

WEIGHT: Net: 16 lbs. (7.26 kg)

PHYSICAL DIMENSIONS:

Height: 147.2 mm (5.80 in)
Width: 433.1 mm (18.35 in)
Depth: 466.1 mm (17.05 in)

RACK MOUNTING: The Model 1806 can be mounted in any cabinet or rack designed according to EIA RS-310 and MIL-STD-189 using the Rack Adapter Kit (P/N 138-606).