10-watt A.F. Power Meter

- ☐ Frequency range: 20 Hz to 35 kHz
- ☐ Five power ranges: 1 mW to 10 watts full scale
- ☐ Impedance: 2·5Ω to 20 kΩ in 48 steps
- ☐ Balanced or unbalanced inputs
- ☐ Direct calibration in watts and dBm

This Audio Power Meter covers an exceptionally wide range of power and maintains its accuracy at both very high and very low frequencies

Power is measured by a temperature-compensated constant-resistance multi-range rectifier voltmeter, the required input impedance being obtained by the use of a tapped transformer and by a switched resistance-changing pad. Provision is made for measuring either balanced or un-balanced inputs.

The instrument is contained in a compact portable case, with the input terminals fitted in a recess in the case top; this protects the terminals from accidental mechanical damage. The lid of the recess may be swung back to support the instrument at a convenient viewing angle, while the sloping front panel hinges upward for ease of servicing.

Impedance selection

The Meter measures the power delivered by an audio-frequency source into a load provided by the instrument itself, and its excellence of performance over so wide a range of power, impedance and frequency is due primarily to two important points of design. Firstly, the patented feature—the use of a resistance network, forming an impedance-changing pad, to select the significant figures of the value of the input impedance; secondly, the use, for the decade multiplication of impedance, of a transformer using an English Electric wound-strip core of an isotropic magnetic alloy.

Centre-tapped input

There are five power measurement ranges, with calibration directly in watts or milli-watts and in decibels relative to 1 mW. The overall impedance range of 2·5 to 20,000Ω is in forty-eight steps arranged in two groups identified by the use of engraving in contrasting colours. The primary of the input (impedance-matching) transformer of low d.c. resistance, is isolated from the case and is provided with a centre tap for push-pull working; the centre tap also allows impedances down to 0·625Ω to be correctly terminated, but with some falling off in measurement accuracy.

RANGE

Power	0 to 10 watts in five ranges. Full-scale deflections are: 1, 10 and 100 mW, 1 and 10 watts.
Impedance	2·5 to 20,000Ω thus: 2·5, 3, 4, 5, 6, 8, 6·25, 7·5, 10, 12·5, 15, 20 with multipliers ×1, ×10, ×100, ×1000. Impedances of one-quarter the above—extending the range down to 0·625Ω—can be obtained by using the input centre tap, but with reduced accuracy. The impedance of the Power Meter falls when it is connected into a circuit carrying d.c. At 50 Hz, a drop of approximately 5% is produced by 60 mA at the 100Ω setting or 4 mA at 20 kΩ setting.

ACCURACY (at 1 kHz and 20°C)

Power	2½% of full scale up to half-scale deflection. 5% of the reading from half-scale to full-scale deflection.
Impedance	5%.

FREQUENCY CHARACTERISTIC

With all controls at approximately mid-setting the response of a typical Power Meter is, relative to indication at 1 kHz flat to within —0·5 dB from 50 Hz to 10 kHz; at 20 kHz the response is approx. 1 dB down. At other control settings, the maximum variation from the above is ±1 dB at 50 Hz and ±1·5 dB at 20 kHz. The instrument can be used over the extended frequency range, 20 Hz to 35 kHz, with reduced accuracy.

DIMENSIONS AND WEIGHT

Height	Width	Depth	Weight
11 in	7½ in	6¾ in	9 lb
28 cm	19 cm	17 cm	4·1 kg