

500-Watt R.F. Power Meter

Type TF 1205



- Power range: 10 to 500 W
- Impedance: 50Ω
- Compact, self-cooling, oil-filled unit



R 5597

DIRECT MEASUREMENT of powers up to 500 watts may be made at any frequency from d.c. to 500 Mc/s using the Marconi R.F. Power Meter Type TF 1205; an absorption-type instrument, it is completely self-contained and fully transportable.

The dissipative element is oil immersed and cooling of the finned outer casing is by free air convection. The design obviates the need for water or forced-air cooling and yet retains the advantages of compactness and a sealed construction.

The directly-calibrated meter indicates true mean power, irrespective of waveform. Intended for direct connection to a coaxial cable, the Power Meter has an input impedance of 50 ohms.

The TF 1205/S, a military version of this Power Meter, differing only in accessories, has the Joint-Service Reference No. CT 401.

APPLICATIONS

Power outputs of c.w., a.m., or pulse transmitters can be measured with the TF 1205. Its input socket has a peak voltage rating of 500 volts, making the instrument suitable for measurements on pulsed outputs with peak powers up to 5 kW. Since it correctly indicates the increase in mean power when amplitude modulation is applied to a c.w. carrier, modulation depth can be calculated.

SLAB LINE ASSEMBLY

The dissipative element in the TF 1205 Power Meter consists of a heavy-duty, high-stability resistor. This resistor has a tubular ceramic former with a conducting outer coating of cracked carbon and is mounted so that it forms the central conductor of a slab or parallel-plate line.

Efficient cooling of the load resistor is obtained by immersing the complete slabline assembly in a tank of transformer oil. Cooling fins, forming an integral part of the tank casting, provide a total surface area of over 20 square feet. By this means the overall temperature rise of the oil is restricted to approximately 30°C. Normal expansion of the oil is accommodated by means of a pair of neoprene rubber compensators, but, in the interests of safety, a spring-loaded pressure-relief valve is also fitted.

INDICATOR UNIT

The power-level measuring circuit comprises

a vacuum thermocouple, fed from a tap on the load resistor, and a moving-coil meter mounted in a separate indicator unit connected via a cable to the main assembly. The indicator unit can be attached by means of a clip to the top of the main assembly so that the meter is inclined at a convenient viewing angle; alternatively, it can be used remote from the main assembly up to the full 6 feet allowed by the connecting cable.

The thermocouple is well protected mechanically and is very robust electrically; it will, in fact, withstand overloads equivalent to 750 watts.

SPECIFICATION

Power range

10 to 500 watts.

Frequency range D.C. to 500 Mc/s.

Accuracy of power measurement

Within 5% of full-scale from d.c. to 150 Mc/s and within 7.5% of full-scale from 150 to at least 300 Mc/s; there is no abrupt change in performance above 300 Mc/s and the instrument can be used up to 500 Mc/s.

Input impedance

50 ohms.

V.S.W.R.

Better than 1.15 up to 250 Mc/s, and better than 1.35 up to 450 Mc/s.

Coolant

Shell 'Diala B' transformer oil; approx. 1.7 gallons.

Dimensions

	Height	Width	Depth
MAIN UNIT	r:		
	$22\frac{1}{2}$ in	13½ in	15‡ in
	(57 cm)	(34·5 cm)	(38·5 cm)
INDICATOR	R UNIT:		
	5½ in	$3\frac{3}{4}$ in	3 ³ / ₄ in
	(14 cm)	(9·5 cm)	(9·5 cm)

Weight

Combined weight of main and indicator units is approximately 65 lb (30 kg).

Accessories supplied

Coaxial Free Plug, Type N; for r.f. input socket.

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