



## 600 Mc/s Parametric Receiver Type S 2001

RECENT developments in parametric RF amplifiers have led to a very marked improvement in the sensitivity of radio receivers. Receiver (Parametric) Type S 2001 has been produced as a modification kit to enable Marconi Radars S 232/2, S 264 and S 264A to take full advantage of the new technique. In addition to the increase in maximum range, which is of the order of 40%, there is an overall improvement in the signal strength and probability of paint on all targets. Reliability and stability have been keynotes of the design of the receiver which matches the remainder of the equipment in these respects.

### Features

Large performance increase (up to 40%) for small capital outlay.

Reliable operation using variable-capacitance diodes.

Stable operation using simple temperature control.

Easy modification of existing equipment.

Remote measurement facilities retained.

### EQUIPMENT

The parametric receiver completely replaces the existing Receiver Unit 4764A which forms part of Receiver SR 305 (used in Radars S 232/2, S 264 and S 264/H) and part of Transmitter/receiver SR 100 (used in Radar S 264A and S 264A/H). Power Supply Unit (Receiver) 4765 is also replaced but Noise Generator 4763A is retained.

The unit consists of a single-bay cabinet containing the parametric RF amplifier, pump, mixer, IF head amplifier with swept gain controls, monitor IF amplifier and a power unit.

The parametric RF amplifier is of the up-converter type using variable-capacitance semi-conductor diodes. It changes both the

input radio frequency and the crystal-controlled local oscillator output to frequencies in the 10,000 Mc/s band by means of a 3 cm klystron pump. A conventional balanced crystal mixer is then used as a frequency changer from which the intermediate frequency (44.25 Mc/s) is derived. The gain of the RF amplifier is approximately 20 dB and the overall noise factor of the receiver is better than 2.5 dB. The improvement in radar performance is greater than is indicated by noise factor alone as the receiver is normally terminated by the SA 120 aerial system which has a noise temperature of 130°K. When measuring noise factor, the receiver is terminated by a resistance at room temperature of 290°K.

### Data Summary

**Signal input (radio frequency):** 580–615 Mc/s.

**Input impedance:** 50  $\Omega$ .

**Signal output (intermediate frequency):** 44.25 Mc/s.

**Output impedance:** 75  $\Omega$ .

**Overall noise factor:** Less than 2.5 dB.

**Pump frequency:** 9,200 Mc/s (nominal).

**Local oscillator input frequency:** 535–570 Mc/s.

**Sync. input (swept gain):** 40  $\mu$ s pulse.

**Swept gain:** Adjustable in amplitude and range.

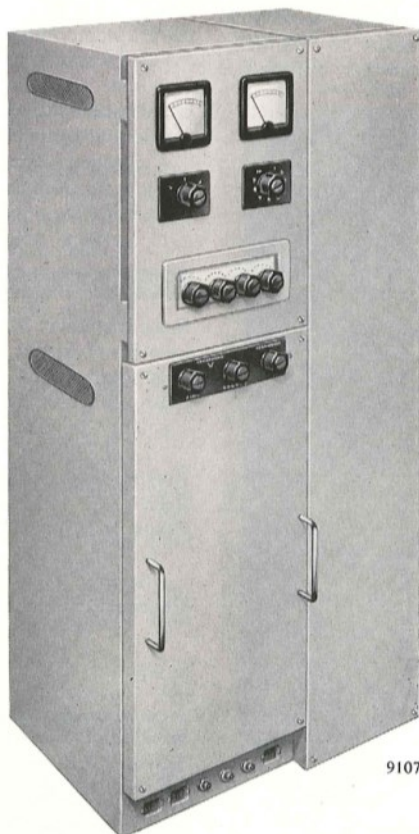
**Ambient temperature range:** –15°C to +52°C.

**Power supplies:** 220, 230 or 240 volts 45–65 c/s, single-phase, AC.

**Power consumption:** 120 W.

**Dimensions (approx.):**

Height	Width	Depth
40 in.	19 in.	10 in.
(102 cm)	(48 cm)	(25 cm)



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### Marconi

Marconi's Wireless Telegraph Company Limited  
Marconi House, Chelmsford, Essex  
Telephone: Chelmsford 3221 • Telex: 1953  
Telegrams: Expanse Chelmsford Telex