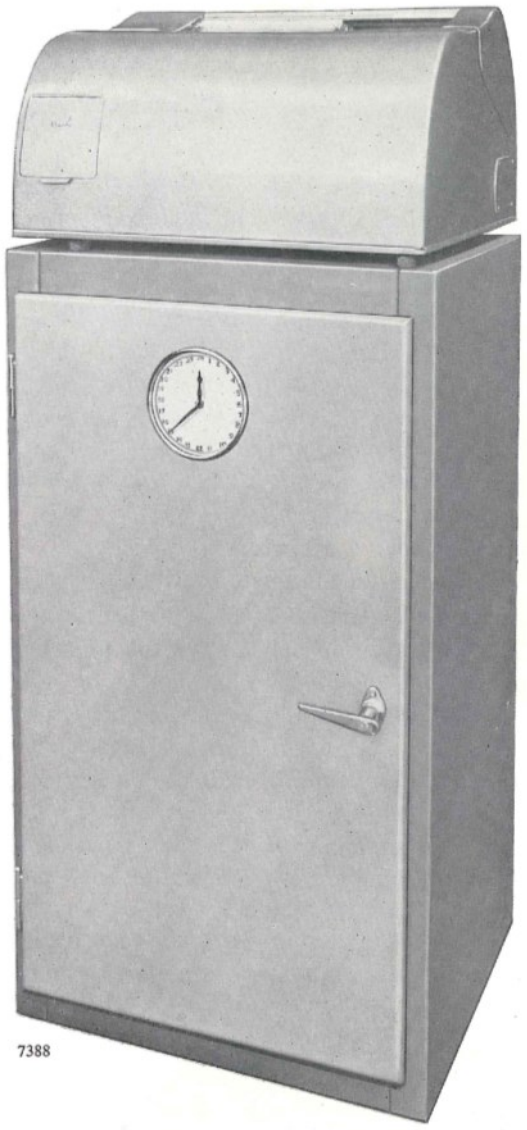
Automatic Telegraph Receiving Equipment *Type HRU51*

THE TYPE HRU 51 EQUIPMENT is a complete radio-teleprinter receiving equipment designed for continuous operation without the attention of technical staff (apart from initial setting-up and occasional maintenance visits). The equipment will give reception on any of three frequencies in sequence, according to a predetermined schedule. It is suitable for installation in offices such as those of Press agencies, newspapers, oil companies and other point-to-point users.

The equipment consists of two HF communication receivers Type HR 51 (see page 341) and a Recording Unit Type HU 12 (see page 349) housed, together with a power supply unit, in a compact floor-mounting metal cabinet. A Creed Type 54 Page Printer is mounted on top of the cabinet.

The two receivers allow double-diversity reception of frequency-shift or on-off telegraph transmissions in the HF band. A built-in clock unit provides for reception on each of three spot frequencies at pre-set times during the 24-hour cycle. Although the clock is mains-driven its accuracy is independent of the supply frequency and it will continue to keep time during extended interruptions of the mains supply.

Although primarily intended for diversity telegraph reception either of the receivers can be employed for non-diversity telephone reception.



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CIRCUITS

The pre-set RF tuned circuits of each receiver are triplicated, the tuned circuits required at any time being selected under control of the clock mechanism.

The basic receiver circuit is a double superheterodyne having intermediate frequencies of 2·6 Mc/s and 100 kc/s. One stage of signal-frequency amplification is used. A common crystal-controlled first oscillator feeds the first

mixer stages of both receivers, *via* buffer amplifiers. In each receiver signals at the first IF are taken from the first mixer through tuned circuits to the second mixer. A common crystal-controlled second oscillator is used to feed the second mixers in the two receivers. After amplification and detection an output signal with a mid-frequency of 2·5 kc/s is taken from each receiver to the recording unit.

In the recording unit each path signal is amplified, limited and applied to discriminators. The output of each discriminator is RC-coupled *via* a DC restorer to the grids of gating valves. These valves are controlled by a path selector which is fed from the input amplifiers. Thus only the gate which is fed with the stronger signal is allowed to conduct and pass its signal to the recording bridge. Here it is further limited, taken through a low-pass filter to remove noise, limited again and then used to key the push-pull DC output valves. The output signal is taken to the teleprinter.

DATA SUMMARY

Frequency range: 3–27·5 Mc/s. Three crystal-controlled pre-set channels available anywhere within the range.

Inputs: 75 Ω coaxial.

Sensitivity: To give 10 dB signal/noise ratio the input signal required (modulated 30% at 400 c/s) in series with 75 Ω is 1·6 μV up to 16 Mc/s and 3·2 μV above 16 Mc/s. The CW input signal required to give 20 dB signal/noise ratio is 0·8 μV up to 16 Mc/s and 1·6 μV above 16 Mc/s.

Noise factor: 6 dB below 16 Mc/s.
12 dB above 16 Mc/s.

Image signal protection:
94 dB at 3 Mc/s.
60 dB at 16 Mc/s.
43 dB at 27·5 Mc/s.

Selectivity (Second IF): 1·5 kc/s at 6 dB attenuation for telegraphy. 6 kc/s at 6 dB attenuation for telephony.

AGC: The output does not increase by more than 10 dB when the input is increased 60 dB.

Power supply: 100–120 V or 200–250 V, 40–60 c/s single-phase AC supply.

Power consumption: 225 W approx.

Approximate overall dimensions:

Height	Width	Depth	Weight
31 in.	23½ in.	23 in.	250 lb
(79 cm)	(60 cm)	(58 cm)	(114 kg)

Marconi

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