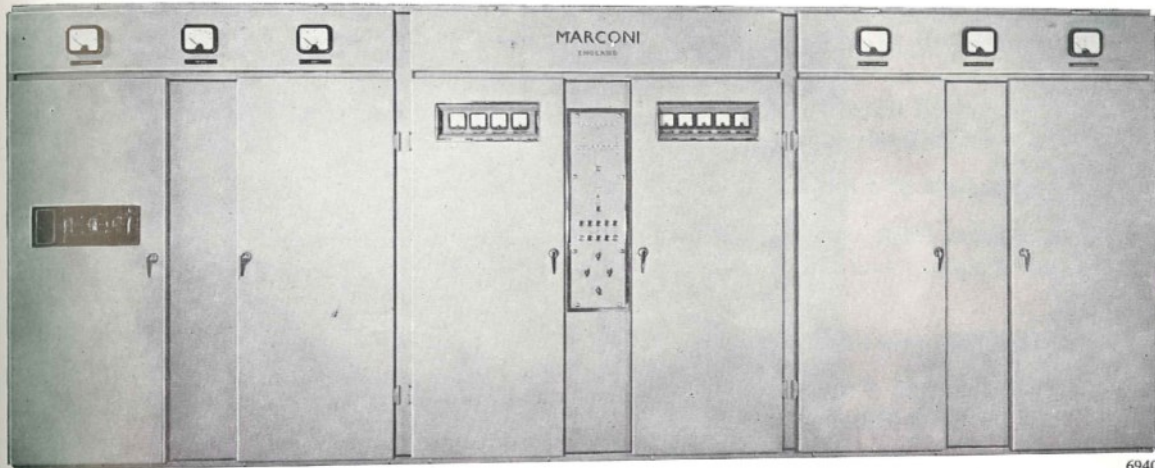




10 kW HF ISB Transmitter

Type HS41



6940

INTENDED FOR OPERATION on fixed services the Type HS 41 transmitter provides facilities for independent sideband and VF telegraph operation, or for telegraphy with CW on-off keying or frequency-shift keying. The equipment embodies many advanced design features and gives a high standard of performance whilst providing extensive control facilities.

A separate RF crystal drive source providing one of six predetermined frequencies (see page 321) is used with this transmitter.

The ISB drive equipment is separate from the transmitter proper and thus can be mounted in any convenient position. Facilities for monitoring the signal at various points in the transmitter may be provided in the ISB drive equipment. Suitable drive units are described on pages 315 and 317.

FEATURES

- Continuous tuning of power stages over the entire frequency range without change of components.
- Automatic selection of any one of six pre-set frequencies is provided for.
- Tuning may be effected either locally or by remote control.
- Air cooling throughout, with dust filtering.
- Envelope feedback reduces distortion to minimum.
- Double screening of power stages, resulting in reduction of indirect radiation and attendant decrease in noise due to cooling air.
- Compact assembly with ready access for servicing and fully comprehensive safety interlocking.

CIRCUITS

Drive is obtained from an external crystal oscillator and applied, *via* two harmonic generator stages, to a balanced mixer stage. The balanced mixer also accepts a 3.1 Mc/s modulated signal from the ISB drive equipment, or a 3.1 Mc/s keyed signal from the drive keying unit, and converts this to the radiated frequency. The mixer

is followed by three stages of RF amplification.

The output from the low-power stages is amplified by a tetrode stage comprising two valves in parallel, followed by a conventional tetrode stage. The final stage consists of a grounded-grid Class B linear amplifier. The final amplifier may be inductively coupled to a balanced feeder circuit or to an unbalanced coaxial feeder.

DATA SUMMARY

Nominal power output (to aerial feeder):

- 10–12 kW peak envelope power on ISB (A3b).
- 8–10 kW on CW on/off telegraphy (A1 and F2).
- 8–10 kW on FSK telegraphy (F1).
- 2.5–3 kW on DSB telephony (A3).

Frequency range: 4.0–27.5 Mc/s.

Output impedance: 190 Ω or 600 Ω balanced, or 75 Ω unbalanced, with 2:1 standing wave ratio.

Harmonic radiation: Less than 20 mW.

Noise level: Better than –60 dB relative to peak envelope power on ISB.

Non-linear distortion (ISB): Third order intermodulation product not greater than –36 dB relative to either of two equal testing zones for any power level up to full PEP.

Input level: Nominal 0.1 W from primary drive and 0.25 W from ISB or keyed telegraph drive (3.1 Mc/s).

Carrier compression: Less than 1.5 dB for any level of single-frequency signal up to –6 dB relative to peak sideband power.

Power supply: 380–415 V, three phase, 50 c/s AC mains, normally four-wire. Voltage regulation $\pm 6\%$, frequency tolerance $\pm 2\frac{1}{2}\%$. 60 c/s supply can be catered for.

Power consumption (at 0.95 power factor):

- CW mark 30 kW, space 16 kW.
- FSK 30 kW.
- ISB 25 kW with two-tone modulation.

Dimensions (overall):

Height	Width	Depth
8 ft 6 in.	17 ft 2 $\frac{3}{4}$ in.	3 ft 8 $\frac{3}{4}$ in.
(2.59 m)	(5.25 m)	(1.14 m)

Overall performance on ISB telephony using Type HD 51 and Type HD 21 drive equipment:

Frequency tolerance: 10 parts in 10^6 over the temperature range 10–40°C, ambient.

Frequency response: Level within ± 2 dB from 100–6000 c/s.

Overall performance on telegraphy using HD 20 Series drive equipment:

Frequency tolerance: 10 parts in 10^6 over the temperature range 10–40°C, ambient.

Keying speed: 200 bauds.

Keying potentials: ± 10 V into 2000 Ω .

Frequency shift: 200–1000 c/s.

Marconi

MARCONI'S WIRELESS TELEGRAPH COMPANY LIMITED

Marconi House, Chelmsford

Telephone: Chelmsford 3221. Telex: 1953. Telegrams: Expanse Chelmsford Telex