50 cm-band Radar Transmitter/Receiver (500 kW) Type SR 100

THE increasing demand for long-range weather-free performance in airway surveillance radar systems is very ably met in the popular 50 cm waveband by the Type SR 100. Incorporating the most advanced design techniques, its output of 500 kilowatts is a superior achievement in this band and enables a much more effective coverage than has been hitherto possible with this class of radar.

Of clean and compact design, ease of access for servicing and maintenance purposes is particularly emphasized.

Features

Crystal control eliminates the need for AFC.

Highly efficient MTI performance.

Klystron power stage provides high gain, without using a large number of valve stages.

Frequency stability conforms to latest CCIR proposals.

Comprehensive built-in metering and monitoring.

Full remote operation facilities available.

CONSTRUCTION

The complete transmitter/receiver is housed in a single four-bay cabinet. One half contains the HT and modulator circuits and in the other are the klystron and the receiving and monitoring equipment. Double doors at front and rear of the cabinet ensure easy access, while above the doors, mounted on facia panels, are the main meters, indicator lamps and control buttons. All main units are mounted on withdrawable runners to facilitate servicing.

CIRCUITS

Transmitter. This employs a three-cavity, air-cooled klystron power amplifier, driven at the radiated frequency.

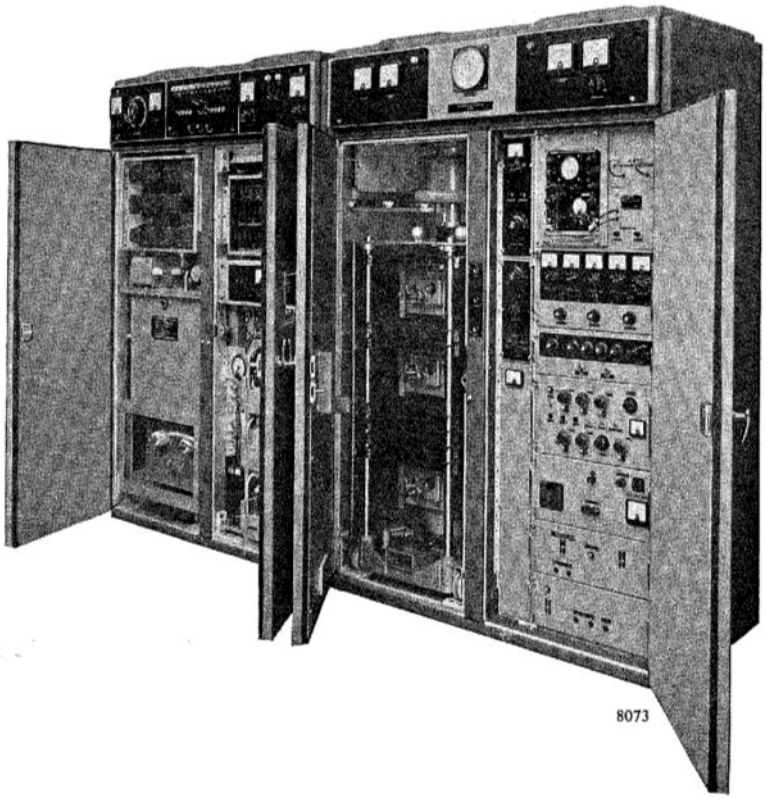
In the drive unit, a multiplied and amplified crystal oscillator frequency is mixed with a crystal-controlled reference frequency generated in the associated distribution unit. The upper sideband of the mixer output is multiplied, amplified and fed to the input cavity of the power klystron. Conventional HT modulation is used.

Receiver. Returning signals pass *via* the T/R switch through two RF amplifier stages to a mixer where they are combined with a crystal-controlled local oscillator signal and converted to an IF of 44·25 Mc/s. The mixer is followed by a head amplifier whose output is fed out to the radar distribution unit and thence to the displays. A separate monitoring output is included.

Control and monitoring. The switching sequence is initiated by push-buttons for either local or remote control, with a comprehensive lamp indicator system to show the operational state.

A 'three-shot' circuit protection device is incorporated, whereby the transmitter will shut down only in the event of a persistent fault. To assist fault-finding, self-locking lamp circuits are provided to indicate in which circuit a transient fault has occurred.

Waveform monitoring and metering facilities are incorporated.



8073

Data Summary

Radio frequency: 585–610 Mc/s.
Peak power output: 500 kW (nominal).
Pulse length: 3 or 4 μs.
Pulse recurrence frequency: 260–400 p.p.s. at 3 or 4 μs pulse length. 500–550 p.p.s. at 3 μs length only.
Receiver noise factor: Better than 8 dB.
Receiver IF: 44·25 Mc/s.
Power supplies: 380–440 V ($\pm$10%), 50 c/s, 3-phase. (230 V line to neutral.)
Dimensions:
Height 7 ft (213 cm)
Width 10 ft (305 cm)
Depth 2 ft 6 in. (76·2 cm)
Weight 4200 lb (1907 kg)

Marconi

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