



# S.H.F F.M 300-channel Radio Link Equipment MH 140 B Series

Designed and produced by Marconi Italiana, Genoa, Italy

THIS EQUIPMENT is intended for short haul wide-band systems designed to carry up to 300 telephone channels. The equipment is simple and reliable and has been designed with ease of maintenance in view.

The low number of valves and components used and the simplicity of the r.f. transmission circuit, which consists of one microwave klystron, greatly reduce the probability of failure.

A centralized control panel makes the day to day monitoring of meter readings, including power output and klystron operating frequency, a simple matter.

The channels may be duplicated for standby operation and systems having a number of channels in parallel with automatic change-over equipment to the standby channel may be provided.

## Features

Conforms to the requirements of the G.P.O. draft private user specification.

Klystron modulation gives high degree of linearity and low noise.

Simple electronics design ensures ease of maintenance and high reliability.

Full range of high gain parabolic aerials ensures optimum performance.

## EQUIPMENT

The transmitter, the receiver, the engineer's order wire, the change-over equipment and the supervisory equipment of a single channel terminal is housed in a single standard rack approximately 7 ft 6 in. high, 2 ft wide and 10 in. deep and weighs approx. 260 lb. Repeater stations are formed by connecting two terminal equipments back to back. Waveguide feeder is used to feed the aerials which range in size from 3 to 10 ft in diameter.

Engineers order wire and supervisory facilities are built in only if required.

**Transmitter.** The baseband signal to be transmitted is applied to the klystron repeller and superimposed on the bias voltage, causing frequency modulation of the carrier. The modulated radio signal is then passed through a directional coupler and ferrite circulator to the aerial.

A small amount of power from the coupler is applied to a wavemeter and a

crystal detector which serves to indicate power output.

**Receiver.** The signal from the aerial, through the circulator is applied to the receiver via a quarter wave five-cavity filter. The filter provides attenuation of the transmitter frequency in addition to that already obtained in the ferrite circulator.

The signal is converted to i.f. by means of a crystal mixer and klystron local oscillator, the frequency of which is automatically controlled. The i.f. signal is amplified, limited and applied to a discriminator which demodulates the signal to baseband.

**Monitoring facilities and test points.** The control panel is provided with two meters and the monitoring readings, including power output and frequencies of the klystrons, are all centralized. Each panel is provided with further test points to simplify setting up and the rectification of faults.

## Data Summary

**Frequency range:** 5925-8100 Mc/s.

**Modulation:** f.m.

**Channel deviation:** 200 kc/s r.m.s.

**Power requirements:** 220 V  $\pm$  5%, 50-60 c/s single phase a.c.

**Power consumption:** 600 VA.

**Transmitter power output:** Approx. 1 W.

**Modulation frequency range:** Multichannel; 60-1300 kc/s. E.O.W: 300 c/s-3400 c/s. Supervisory: 9-6-50-34 kc/s.

**Receiver noise factor:** Less than 12 dB.

**Intermediate frequency:** 70 Mc/s.

**I.F. bandwidth:** 20 Mc/s.

**Selectivity:** 50 dB,  $\pm$  29 Mc/s.

**Threshold:** -75 dBm.

**Input level:** -45 dBm per channel.

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

**Output level:** -15 dBm per channel.

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

**Dimensions:**

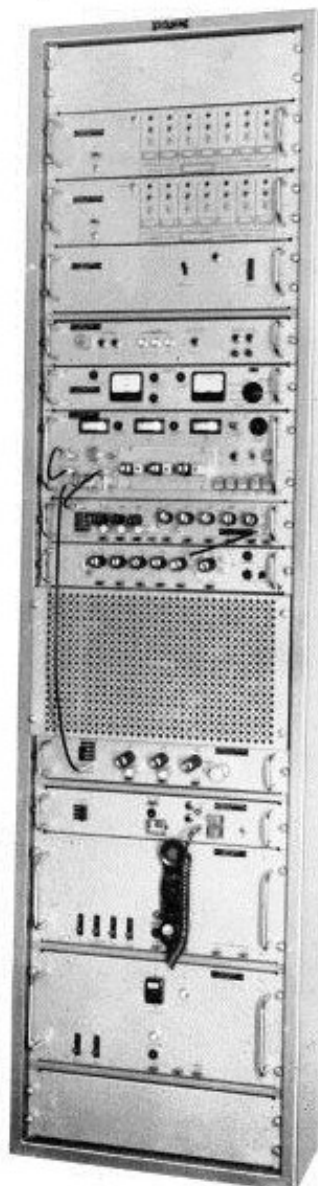
Height 7 ft 6 in. (155 cm)

Width 2 ft 1 in. (62 cm)

Depth 10 in. (35 cm)

Weight 260 lb (120 kg)

NOTE: S.H.F. aerials are described on page 392.



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