



400-Watt HF Channellised Transmitters *HC 100 Series*

THE LOW-POWER SERIES of channellised transmitters combine in one cabinet facilities for various types of transmission with simultaneous operation on more than one channel. For stations operating on several services simultaneously, such as airports, ships and headquarters main offices, where installation compactness is an important factor, the HC 100 series is unexcelled.

FEATURES

Simultaneous operation on four crystal-controlled channels. Facilities are provided for the following types of transmission:

Continuous wave telegraphy.

Tone telegraphy.

Frequency shift telegraphy.

Frequency modulated telegraphy.

Phase modulated telegraphy.

Telephony (high level modulation).

Unit construction employed. Selected RF, modulator or FSK units may simply be slid into the main cabinet to provide the desired transmission facilities.

Operation may be either local or remote.

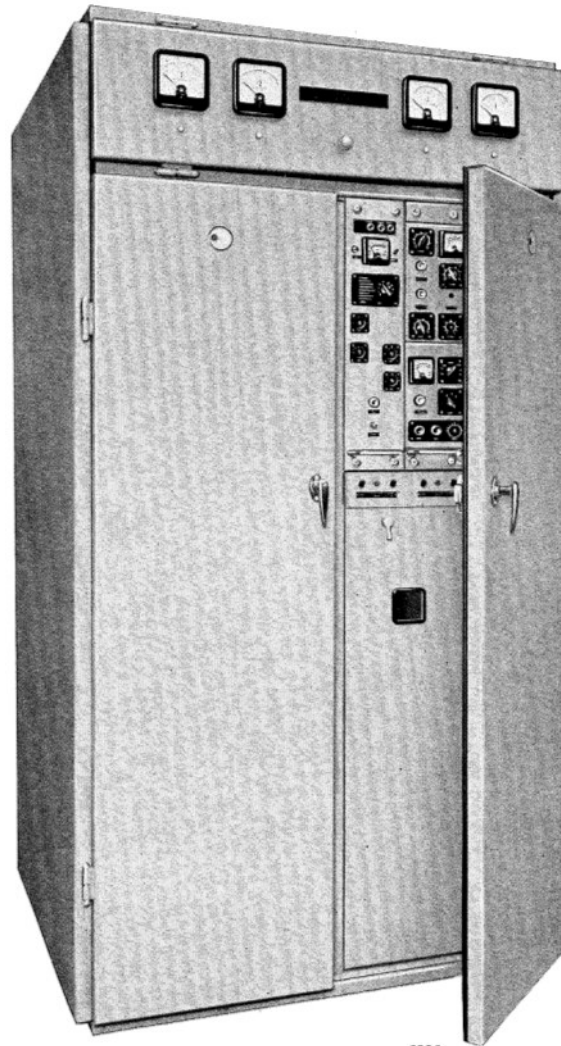
Independent switching of each working channel with instant selection of any pre-set service at the remote point.

Spare RF units may be carried to give a wider selection of operating frequencies.

GENERAL DESCRIPTION

The complete transmitter consists of a single cabinet in which selected RF units, modulators, phase modulators or FSK units, may be accommodated to provide the desired transmission facilities. Power supplies and control facilities are common to all arrangements and are permanently installed in the lower portion of the cabinet.

Where remote control is desired the various



switching operations are performed on small remote control units, one per RF channel, with switching operations arranged to select the different transmitter facilities and with circuits designed to suit the length of interconnecting

lines employed. The various units comprising the complete transmitter are each divided into sub-units to form circuit chains depending upon the function of each whole unit.

RF units. These consist of a crystal master oscillator followed by an isolator, two harmonic amplifier stages, a penultimate stage and a final amplifier working into the aerial circuit. These units are fitted with a high-speed relay for CW working.

Modulator unit. A modulator unit comprises the AF amplifying chain, the final stage working in Class B conditions and arranged for anode modulation of an RF stage. The modulator input may consist of a telephony input from microphone or telephone line at 600 Ω impedance or, alternatively, keyed tone can be obtained from an internal oscillator having a frequency of 1000 c/s to give tone telegraphy transmission.

FSK unit. FSK is obtained by a separate FSK drive unit, the output of which is fed into the harmonic amplifier stages of the transmitter. The

FSK drive consists of several sub-units; a fixed frequency crystal oscillator with a mixer or frequency changer unit and amplifier stages. It also incorporates a 300 c/s test oscillator for setting up and this oscillator can be used to produce anti-fading frequency modulated CW when working into the FSK unit through the reactance valve.

When keying is changed from FSK to CW the same oscillator and mixer are used as in the case of FSK, but a steady oscillator frequency is maintained, and the keying input is transferred to the FSK output amplifier to give ON/OFF CW operation. Where FSK is not fitted Ph.MCW may be produced by means of a separate phase modulator.

Power supply units. The power supply units include components and circuits for the production of anode, grid and filament voltages for all stages considered above. Switches, fuses, relays and circuits are incorporated for control of the various units and of the single-phase AC mains

DATA SUMMARY

Power rating (to aerial feeder): 400 W for all transmissions.

Frequency range: 1.6–27.5 Mc/s. Simultaneous operation on four spot frequencies.

Frequency stability: $\pm 0.003\%$.

RF harmonics: To comply with Atlantic City Standards.

Modulation: Up to 95% for tone telegraphy and telephony.

Scintillation: To comply with Atlantic City Standards.

AF input level: –20 dbm from 600 Ω line for full modulation.

Frequency response (telephony): ± 2 db from 250–3400 c/s.

Amplitude distortion (telephony): Not exceeding 6% for 80% modulation over 250–3400 c/s.

Noise level (telephony): –40 db with reference to full modulation.

Telegraph keying: Up to 160 bauds.

Power supply: 200–250 V ($\pm 5\%$), 50–60 c/s

($\pm 2\frac{1}{2}\%$), single-phase AC mains.

Power consumption (maximum): 7 kVA at 0.9 PF for 4 simultaneous FSK channels.

Overall dimensions:

Height 7 ft 2 in. (217 cm).

Width 4 ft (122 cm).

Depth 3 ft 9 in. (113 cm).

Weight 30 cwt approx. (1524 kg).

Transmitter types (channel arrangement):

Type	CW	Telephony or Tone Telegraphy	FSK
HC 101	4	–	–
102	–	2	–
103	–	–	4
104	3	–	1
105	2	1	–
106	2	–	2
107	1	1	1
108	1	–	3
109	–	1	2

Marconi

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