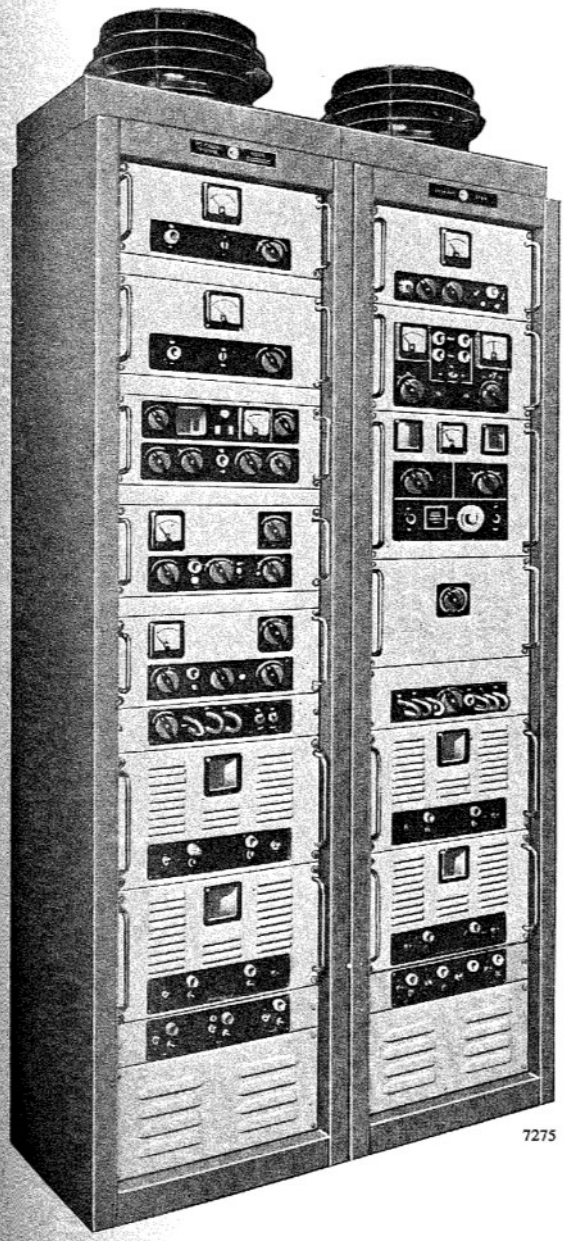
FSK Drive and Phasing Equipment
Type HD65



THE TYPE HD 65 is designed to drive a pair of FSK transmitters in parallel, operating on any spot frequency in the band 35 to 55 Mc/s. It incorporates a motor-driven phasing mechanism which enables the correct phase relationship of the outputs of the two transmitters to be maintained, either by an operator at the phasing cabinet or alternatively at a convenient distance away. By a suitable modification of the equipment this motor-driven phasing correction can be made automatic.

The drives and power supply equipment are completely duplicated and an automatic changeover mechanism operates in the event of RF failure from the drive, thus ensuring continuity of service.

CONSTRUCTION

The phase comparator device is a small monitor unit housed in a strong cast box and mounted close to the output feeders. It requires no mains supplies. Two feeder test lengths, one in the output of each transmitter, provide the RF voltages required by the phase comparator. The duplicated drive and power supply equipment is contained in two cabinets placed side by side. Each cabinet is composed of withdrawable, easily-accessible units and contains its own power supply apparatus. The cabinets are air cooled, a fan being incorporated in each. To enable continuity of service when a mains failure occurs, the whole system is wired in two sections, with two separate mains supplies to each cabinet.

A monitor unit is incorporated which enables the drive frequency to be monitored by means of a built-in oscillator and waveforms to be examined with a built-in cathode ray oscilloscope.

CIRCUIT

Drive. The two drive circuits consist of 3·1 Mc/s frequency shift keyed oscillators, the outputs of which are fed to their respective mixing systems where they can be raised to any frequency in the band 31·5 to 55 Mc/s.

Keying. Keying is performed at the 3·1 Mc/s stages. Each keying line is taken by way of DC amplifiers, limiters and filters to a reactance modulator which controls the drive frequency. The frequency shift effected is adjustable from ±2 kc/s to ±4·5 kc/s.

Separate keying units mixers and power supplies are provided for each of the two paths, HT being connected to the selected drive and mixer chain by a relay operated by the changeover mechanism.

Phasing. The drive frequency is fed into a hybrid having two outputs. These are fed to a motor-driven phase shifter, via a step phase shifter in one chain and an equalising link in the other chain. The motor-driven phase shifter is controlled either from the phasing cabinet or from a control position nearby and is a means of varying the relative phase of these two drive signals, one of which is fed to each of the two transmitters.

The phase comparator unit samples the outputs of the two transmitters and indicates any difference in phase between them. The operator can thus rectify this phase disparity by suitably adjusting the phase of the drive signal entering each transmitter.

The RF level of the chosen drive circuit is monitored by a crystal diode monitor before the signal is divided by the hybrid. These crystal diodes automatically change over to the standby drive chain in the event of RF failure.

DATA SUMMARY

Frequency range: Any spot frequency in the band 31·5 to 55 Mc/s.

Frequency tolerance: 5 parts in 10^6 for a temperature change of 10° over the range 10–40°C, ambient.

Frequency shift: Between ±2 kc/s and ±4·5 kc/s.

Shift stability: Within 1%.

Keying: Electronic keying, requiring ±10 V into 2000 Ω.

Keying speed: Normally 200 bauds, but higher speeds can be provided, if required, by modification to the keying circuit filter.

Output power: Two outputs each of 5 W from the phasing cabinet.

Output load impedance: Two outputs of 75 Ω coaxial feeder.

Power supply: 210–250 V 50–60 c/s AC.

Power consumption: 800 W approx.

Dimensions:

Height	Width	Depth	Weight
7 ft 0¼ in. (214 cm)	3 ft 11 in. (119 cm)	2 ft (51 cm)	14 cwt (712 kg)

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