

MST TRANSMITTER CONTROL AND MONITORING

THE MST control and monitoring system enables the station controller to start and stop transmitters, select aeri-als, patch between drives and transmitters and monitor transmitter outputs, all from the control room in the station. The system also provides state indication and visual and audible fault alarms. A compact, logical arrangement of controls and indications in horizontal rows, one per transmitter channel, simplifies operation and reduces the risk of human errors which might interrupt services.

Station Control and State Indication Equipment Type H 1800

IN the MST system, frequency changes are made simply by altering the frequencies of the synthesizer drives, H 1601 or 1602.

The H 1800 is a system of control modules which enable all other essential station controls and indications to be centralized near to the drives. The system fits compactly into a rack arrangement of small base area. The modules can be arranged in a variety of ways to suit any particular station requirement.

Features

Racking system easily assembled from kits of parts.

Plug-in modules are available to perform the following functions:

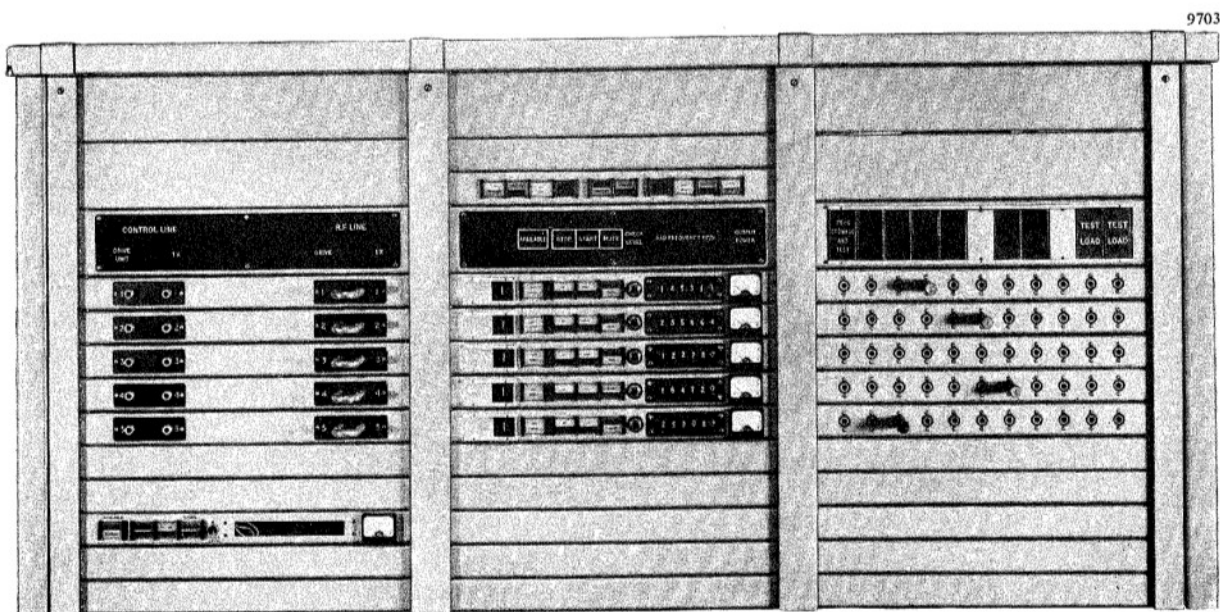
- (1) Patching drive and control lines to transmitters.
- (2) Controlling and indicating transmitter state.
- (3) Controlling and indicating aerial selections.
- (4) Controlling and indicating 1 Mc/s master-drive state.
- (5) Power supplies and fault indication.

Indications are by means of coloured lights, magnetically fixed labels, meters or engraved figures on rotating drums.

Both audible and visual alarms are given by the fault-indication systems.

EQUIPMENT

Patching modules. Control lines from the transmitter to the drive are required. These are interconnected by a standard jack system, using no cords under normal conditions. R.F. interconnection between drive and transmitter is done by U-links. Each patching module is mounted on the left of its transmitter control module.



Part of a Type H 1800 Station Control and State Indication Equipment

Transmitter control modules. These can be used to control either the H 1100 series or H 1200 transmitter. They provide the following control facilities and indications.

Controls: Transmitter on.
Transmitter off.
Check level.
Standby.

Indications: Transmitter number.
Drive in use.
Frequency in use (manual setting).
Transmitter available.
Aerial available.
Transmitter off.
H.T on and Transmitter tuned.
Tuning.
Standby.
Transmitter overload trip (lockout).
Aerial trip (feeder fault).
Transmitter output power (% nominal c.w. power).

Aerial-exchange control modules. These are used to actuate the pneumatic feeder exchange (H 1410). They are jack-strips, each with a capacity of 10 aerial out-lets. One is used per transmitter and they are mounted horizontally in the cabinet bay. Any number of bays may be stood side-by-side to give greater capacity if required.

Insertion of a cordless plug into any jack selects the aerial denoted by the caption label above it. A lamp, in the end of the plug, lights up to show that the feeder switch has operated. The first jack in any row is a test position for plug and lamp. Each module is mounted on the right of its transmitter control module, so that associated patching module, transmitter control module and aerial-exchange control module are all together in one line.

Miniature circuit-breaker panels. These are modules each of which incorporates 10 miniature circuit breakers, one breaker being used to protect each horizontal row of aerial-selection jacks. One or two of these modules can be mounted in one cabinet bay. The tripping of a breaker actuates the alarm system.

50-volt power supply module. One of these modules, together with a standby if required, may be mounted in each cabinet bay. A simple device enables the power supplies to be paralleled whilst protecting against the possibility of a fault in one short-circuiting the other.

Input, 220-250 volts, 45-65 c/s, a.c.

Power consumption, 200 VA max.

Power output, 50 volts d.c., 3 amp., (less than 5% ripple).

Mains isolator module. This module, which bears the mains on/off switch, is for use in the mains input to the 50-volt power supplies. One module can control two circuits.

Master oscillator system-control module.

This module affords control of the oscillator to be used in the primary drive (H 1605). There is also a control for muting the alarm.

There are indications of frequency error and output failure.

Cabinet bays. The mounting bays for these modules are 7 ft (213 cm) high, 1 ft 9 in. (53 cm) wide and 11 in. (28 cm) deep. The modules are fitted in with standard 19 in. (48 cm) rack fixings.

Transmitter Output Monitoring Equipment Type H 1606

The spectrum analyser is unrivalled as a means of checking the performance of h.f. transmitters. However, it is usually necessary to make critical adjustments to the spectrum analyser for each operating frequency and this is a serious disadvantage for non-technical staff or where time is short.

With the H 1606 monitoring equipment, only two operations are necessary to obtain a display, on the spectrum analyser, of the output of any transmitter. These operations are: (a) to select the desired transmitter by push-button, and (b) to set the decade controls on a built-in synthesizer to the transmitter radiated frequency. If the frequency is correct, the spectrum will be displayed at the centre of the screen. If no display appears, or if it is off-centre, this indicates a difference between the transmitted frequency and the setting of the synthesizer.

The frequency of any component in the spectrum may be accurately measured by adjusting the 1 kc/s and 100 c/s controls in the synthesizer to bring the required component to the centre of the screen. Thus it is possible to measure frequency shifts and to identify particular inter-modulation products. The level of an inter-modulation product may be measured on the spectrum analyser in the usual way.

The H 1606 operates by converting the transmitter radiated frequency to 3.1 Mc/s, the frequency at which the spectrum analyser is used. Additional outputs at 3.1 Mc/s are available, permitting the use of other test equipment designed for this frequency. The spectrum analyser may also be used in its tunable form for other purposes.

FEATURES

Unambiguous display of transmitter spectrum for all types of emission.

Provides cross-check on transmitter radiated frequency.

Simple measurement of frequency shift and inter-modulation products.

EQUIPMENT

The H 1606 consists of one cabinet which is normally equipped with the following units:

(a) Spectrum analyser, Marconi Instruments Type OA1094A.

(b) Frequency Synthesizer Type H 1500 (this is the same type of synthesizer as is used in the H 1600 and H 1601 drive equipment).

(c) R.F.-to-3.1 Mc/s converter.

The equipment requires a 1 Mc/s master frequency signal from the same source as is used to feed the drive equipment for the transmitters being monitored.

Data Summary

Monitoring frequency range: 2 to 27.5 Mc/s.

Capacity: Up to 48 transmitters may be selected by push-button.

1 Mc/s input level: 200 mW.

Monitoring r.f. signal input level: Minimum 20 mW.

Sweep width: From a few c/s to 30 kc/s continuously variable.

Sweep duration: 0.1 to 30 seconds in 6 ranges

Selectivity: 3 dB bandwidths of 6, 30 and 150 c/s, measures relative amplitudes up to 60 dB.

Power supply: 200-240 V, 45-65 c/s, a.c.

Power consumption: 250 VA.

Dimensions:

Height	Width	Depth
7 ft (213 cm)	2 ft 6 in. (76 cm)	2 ft 6 in. (76 cm)



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