



Programme Input Equipment

A COMPREHENSIVE SERIES of ancillary units has been designed as standard items of equipment to provide the programme input facilities commonly required by broadcasting administrations. These are all built on to 19 inch (48.3 cm) panels, suitably designed for rack or cabinet mounting, an arrangement that offers the following advantages:

1. Easy insertion and removal of units.
2. Arrangements are versatile and can be built up as required.
3. Units are fitted from front of rack or cabinet.
4. All connections easily made by means of plugs and sockets at the rear of the panels.
5. Components are readily accessible.
6. Plug-in amplifiers are used.
7. Where applicable, all panels incorporate line-listen-apparatus jack facilities.

Feed Meter Panel *Type BD537*

This unit is used to measure the feed currents to other panels in an assembly and mounts a 0-5 mA meter. A rotary switch extends this facility to as many as five circuits, these being connected to the meter panel by means of plugs and sockets at the rear. Panel height 5¼ in. (13.3 cm).

Peak Programme Meter Panel

Type BD543B (Designed in co-operation with the BBC)

A selection of any one of ten inputs is provided on this panel which permits visual monitoring of peak values of programme material. It incorporates its own power unit with associated main switch and panel indicator light. Jacks allow for aural monitoring and provide access to the circuits.

DATA SUMMARY

Scale range: 24 db in 4 db graduations.

Sensitivity: -8 dbm at half scale reading.

Frequency range: 20 to 20,000 c/s with an accuracy of ± 0.5 db.

Speed of registration: 4 millisecc. Fall Back Time: 3 sec.

Input impedance: 10,000 Ω , bridging.

Panel Height: 5¼ in. (13.3 cm).

VU Meter Panel *Type BD543*

The VU meter gives visual monitoring of the average values of programme material from any one of ten selected inputs. The panel mounts, in addition to the main meter, a variable attenuator and has three front-of-panel jacks to provide access to the circuits.

DATA SUMMARY

Scale range: -20 to +3 VU.

Sensitivity: +4 dbm for zero VU reading.

Frequency range: 25 to 16,000 c/s with an accuracy of ± 0.5 db.

Variable attenuator: 20 db in 2 db steps.

Speed of Registration: 0.3 sec. Fall back time: 0.3 sec. approx.

Input impedance: 7500 Ω .

Panel height: 5¼ in. (13.3 cm).

Line Amplifier and Jackfield Assembly *Type BD538*

This unit mounts two amplifiers *Type BD 528* (described on page 69), and a power supply unit. A five-position selector switch allows current measurements to be made by connecting individual valve stages to the feed meter panel, shunts being automatically brought into circuit when necessary. 'Line Listen' and 'Apparatus' jacks allow aural monitoring and circuit access.

Input and output connections are made by means of plugs and sockets at the rear, while the mains supply switch and indicator light are mounted on the front panel. The front panel is made in two sections, the top half of which is hinged to provide access to the two amplifier units

and the supply unit. All connections to these units are made by means of a GPO relay set, the jack and plug of which make contact when the unit is in position. It is a simple matter, therefore, to lift out a unit and replace it should this be necessary.

Panel height: 10½ in. (26.6 cm).

Power supplies: 200–250 V, 40–60 c/s single phase AC mains with a consumption of 35 VA.

Monitoring Loudspeaker Amplifier and Jackfield Assembly *Type BD 541*

This assembly mounts two monitoring amplifiers Type BD 516 (described on page 71) and a supply unit and is of the same construction as the Type BD 538 assembly. One amplifier is working and one spare.

Trap Valve Amplifier and Jackfield Assembly *Type BD 542*

Similar to the Type BD 541 panel this assembly utilises two trap valve amplifiers Type BD 522, providing four independent outputs and two inputs. The amplifiers are described on page 69.

Equaliser Panel *Type BD 539*

The equaliser panel is capable of terminating a maximum of ten lines and equalising any two of them for onward transmission. Two of the incoming lines, which are considered to be the main sources of programme signal, are connected to jacks and wired through to the two line transformers and equalisers. The remaining eight lines, intended as tie lines, telephone lines and emergency lines, are brought out to drop indicators fitted with jacks.

With the aid of patch cords it is possible to substitute any of the group of eight lines for the two main incoming lines. Bridging and terminating jacks following the equalisers also enable the corrected frequency response of the lines to be measured.

Panel height: 5¼ in. (13.3 cm).

Variable Line Equaliser Panel *Type BD 557*

This panel is intended for equalising unloaded 600 Ω or 150 Ω telephone lines not exceeding ten miles in length.

DATA SUMMARY

Source and load impedance: 150 Ω or 600 Ω.

Insertion loss: Between 3.5 and 42.5 db for 10 kc/s equalisation.

Between 6.5 and 59 db for 15 kc/s equalisation.

Maximum input level: +18 dbm with less than 1% distortion from 30 to 15,000 c/s.
+22 dbm with less than 1% distortion from 50 to 15,000 c/s.

Panel height: 5¼ in. (13.3 cm).

Line and Limiting Amplifier *Type BD 548*

The limiting amplifier is basically a high gain line amplifier, but it is capable of limiting output peaks to a particular value. The gain of the amplifier is set to suit the incoming signal level so that the 'line-up' level corresponding to 30% modulation of the transmitter, gives an output of +10 dbm. Any waveform peaks that would normally exceed +18 dbm are reduced immediately due to a sympathetic reduction of the amplifier gain. This state of reduced gain is maintained for a suitable delay period which is variable from approximately 0.1 to 8 secs. by means of a five position switch.

The amplifier and power units are fitted in the standard manner, the panel has a hinged top section and is of similar construction to the Type BD 538. A meter indicates the amount of gain reduction in the amplifier and switching facilities are incorporated for directly measuring the feeds to the stages by means of the Type BD 537 panel.

DATA SUMMARY

Input and output impedance: 600 Ω.

Frequency response: ± 2 db from 20 c/s to 18 kc/s.

Input line-up level: Variable between -40 and 0 dbm.

Output line-up level: +10 dbm.

Output (max. level): +18 dbm.

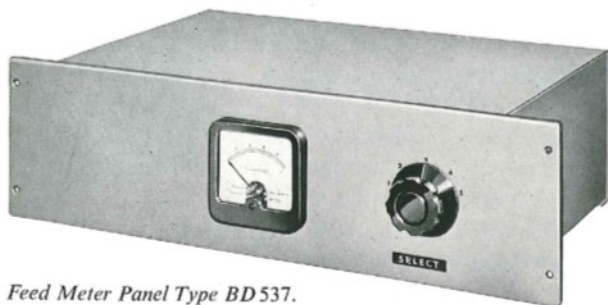
Gain: 50 db max.

Power supplies: 200–250 V, 40–60 c/s single phase AC mains.

Panel height: 10½ in. (26.6 cm).

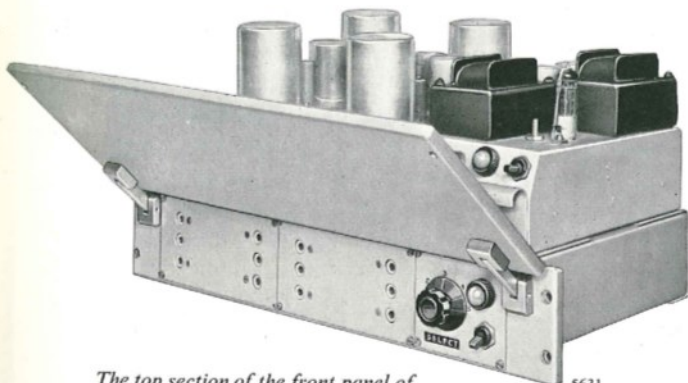
Four Channel Mixer Panel *Type BD 555*

This panel enables four individual input circuits to be controlled and combined to give an output at a desired level. Four bridged T faders with combining networks are fitted and warning lamps,



Feed Meter Panel Type BD 537.

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The top section of the front panel of the Type BD 538 assembly may be hinged forwards.

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VU Meter Panel Type BD 543.

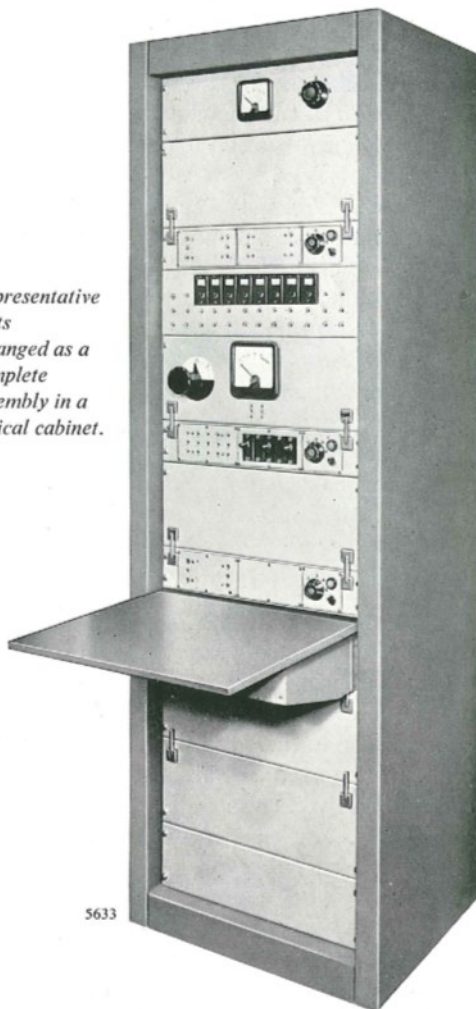
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Control Panel Type BD 540.

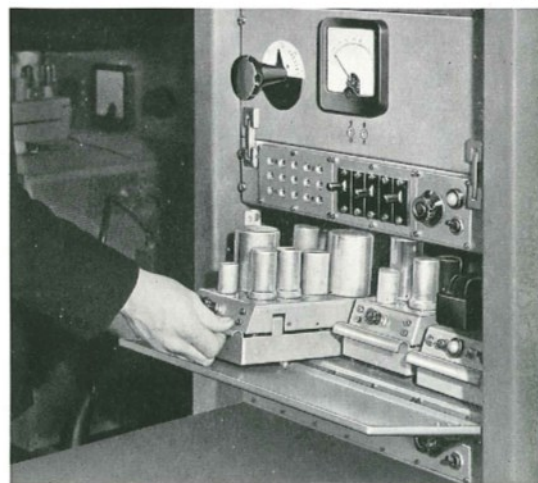
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Representative units arranged as a complete assembly in a typical cabinet.



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The plug-in amplifiers may be easily removed for servicing purposes.

operated by cams on the faders, give visual indication. Input and output impedances: 600 Ω .

Control Panel Type BD 540

The function of this panel is to select any one of three incoming lines and to control the final level of programme fed to the transmitter. Either of the two outgoing lines can be fed with the outgoing signal and changeover from one to the other is quick and simple. A monitor selector switch permits a comparison to be made between the signal being fed to the transmitter and the monitored transmitter output.

The controls consist of a main bridged T fader, a jackfield, three changeover keys, and a mains switch with associated indicator light. Either a VU meter or a peak programme meter with its corresponding power unit is also mounted on the panel. In the latter case a feed selector switch is provided.

Panel height: 10½ in. (26.6 cm).

AF Oscillator Assembly Type BD 550

Comprised essentially of either one or two AF oscillators Type BD 552 and an associated power unit, the assembly Type BD 550 is again of similar construction to the Type BD 538, the top section of the front panel being hinged. An AC voltmeter calibrated in volts and dbm (decibels referred to 1 mW) gives a check on the level of tone sent to line. The remaining controls are the selector switch, for switching feeds to the Type BD 537 panel, and the mains on-off switch with associated indicator lamp. Nine line listen and apparatus jacks allow additional access to the circuits.

Three output tones are available; two are derived from oscillators which can have any desired frequency, and the other is a signal at the mains frequency taken from the filament supply transformer.

A fast-operating relay can be included on the panel and used to key one of the tone sources from a master clock, thereby making the transmission of time signals possible. This is known as the Type BD 559 Time Signal Unit.

DATA SUMMARY

Output impedance: 600 Ω .

Output level: 1 mW.

A resistance network is provided to reduce the output to -60 dbm if required.

Operating frequencies: 1100, 1000, 900 or 400 c/s ($\pm 2\frac{1}{2}\%$).

50 c/s, or mains frequency.

to accuracy of mains, or in accordance with individual requirements.

Distortion (total): Less than 1%.


Power supplies: 200-250 V, 40-60 c/s single phase AC mains.

Panel height: 10½ in. (26.6 cm).

Typical Programme Input Equipment Rack Type BD 533 B

The Programme Input Equipment, Type BD 533B, is an arrangement of units, housed in a 6 ft rack, and suitable for use in conjunction with one broadcasting transmitter. In this equipment an equaliser panel Type BD 539 is provided for terminating a maximum of two programme lines and eight control lines. Two line transformers and semi-variable equaliser units are incorporated for use with the programme lines. The output of each equaliser unit is taken to a high quality line and limiting amplifier panel Type BD 548 which is complete with its own power supply unit and jackfield.

The output of these amplifiers is taken to a control panel Type BD 540, provision being made for accepting programmes from a local emergency studio equipped with a Control Console, Type BD 515 (see page 49). The maximum output from the control panel is approximately + 15 dbm in 600 Ω . Two switched outputs are provided so that the outgoing line to the transmitter may be duplicated if required. The equipment also incorporates a feed meter panel Type BD 537 and a monitoring amplifier panel Type BD 541. By means of the feed meter panel, the valve currents of the various amplifiers can easily be checked at the turn of a switch. The monitoring amplifier panel incorporates a monitoring loudspeaker amplifier, Type BD 516, complete with power supply unit, for checking the programme quality.



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