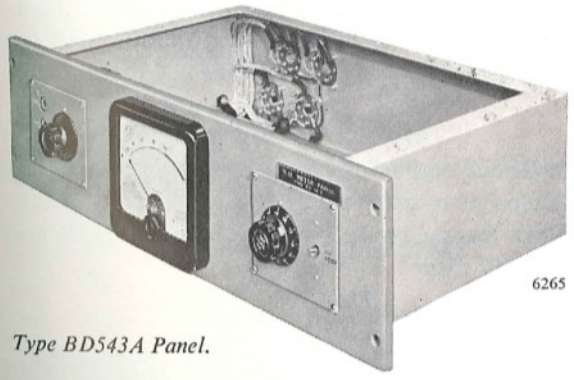
Programme Input Equipment

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.



6265

Type BD543A Panel.

VU Meter Panel *Type BD543A*

The VU meter gives visual monitoring of the average values of programme material from any one of eleven 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.

The VU meter Type BD 529 is also available separately.

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).

Peak Programme Meter Panel

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

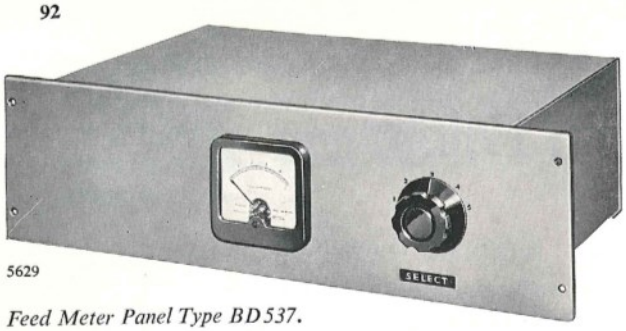
A selection of any one of eleven inputs is provided on this panel which permits visual monitoring of peak values of programme material. It incorporates its own power unit with associated mains switch and panel indicator light. Jacks allow for aural monitoring and provide access to the circuits.

DATA SUMMARY

Scale range: 26 dB in 4 dB graduations.
Sensitivity (max.): −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 millisec. Fall Back Time: 3 sec.
Input impedance: 10,000 Ω, bridging.
Panel height: 5¼ in. (13·3 cm).

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 six circuits, these being connected to the meter panel by means of plugs and sockets at the rear. Panel height 5¼ in. (13·3 cm).



5629

Feed Meter Panel Type BD 537.

Equaliser Panel *Type BD 539*

The equaliser panel Type BD 539 is capable of terminating a maximum of ten lines, which are normally fed through to sockets on the rear of the panel. Two of the incoming lines, which are considered to be main programme lines, are connected to line, apparatus and listen jacks, and wired *via* the two line transformers, equalisers and further jacks to output sockets. The remaining eight lines, intended as tie-lines, telephone lines and emergency lines, are bridged by 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 programme lines. The jacks which follow the equalisers enable the corrected frequency response of the lines to be checked.

Panel height: 5¼ in. (13·3 cm).

Line Amplifier and Jackfield Assembly *Type BD 538*

This unit mounts two amplifiers Type BD 528 (described on page 97), 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 connected across the meter. 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 type contact-strip, 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.

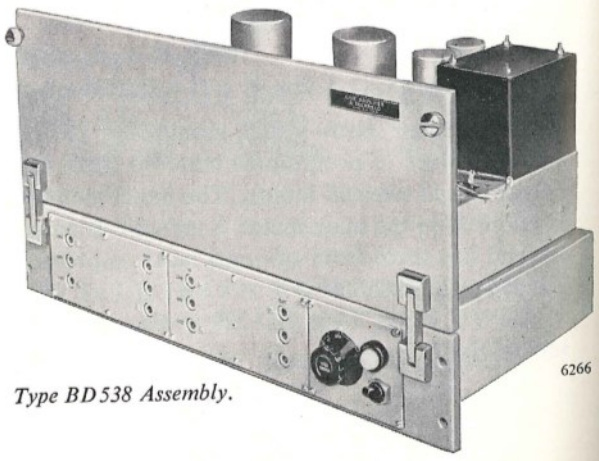
Line and Limiting Amplifier *Type BD 951A*

This comprises two limiting amplifiers and a power unit. Each amplifier 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 40% 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. The delay time may be switch-selected between 0·1 and 8 seconds. A degree of delay-time selection is automatically given by the circuit.

The amplifiers and power unit 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 in each amplifier indicates the amount of compression, the meters being visible through windows. 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 each channel.
Frequency response: ± 1 dB from 30 c/s to 15 kc/s.
Input line-up level: Variable between −10 and +10 dBm.



6266

Type BD 538 Assembly.

Output line-up level: 0 to +20 dBm.
Output (max. level): +20 dBm.
Gain: 40 dB max.
Power supplies: 200–250 V, 40–60 c/s single phase AC mains.
Panel height: 12¼ in. (31·1 cm).

Trap Valve Amplifier and Jackfield Assembly *Type BD 542*

Similar to the Type BD 538 panel this assembly utilises two trap valve amplifiers Type BD 522, providing four independent outputs and two inputs. The amplifiers are described on page 97.
Panel height: 10½ in. (26·6 cm).

Loudspeaker Amplifier Panel *Type 3376*

This unit occupies a panel 10½ in. (26·6 cm) high. It carries a Marconi-Leak amplifier Type TL12 with integral power supply unit and a loudspeaker-dim attenuator operated by a relay. A separate sequential switching unit is also incorporated which enables each of two inputs to be routed to one output, either manually or automatically, at a fixed interval of 4·5 secs.

DATA SUMMARY

Input impedance: 18 k Ω
Output impedance: 2, 8, 18 or 32 Ω
Max. gain: 16 dBm input gives 1 watt output.
Max. output: 12 W
Distortion: 0·1 % for 60 c/s 10 W output.
Frequency response: ±0·5 dB from 20 to 20,000 c/s.

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 equalisation up to 10 kc/s.
Between 6·5 and 59 dB for equalisation up to 15 kc/s.
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).

Control Panel *Type BD 540*

The function of the control panel Type BD 540 is to select any one of three incoming 600 Ω lines and to control the final level of programme fed to the transmitter. Line, apparatus and listen jacks are associated with each input and the output, and provision is made for either (*a*) balanced inputs and an unbalanced output, or (*b*) unbalanced inputs and a balanced output. The panel is fitted with a programme meter, which may be either a VU meter (panel Type BD 540A) or a peak programme meter (panel Type BD 540B), and a selector switch which bridges the meter across any one of the inputs, the output, or any one of six external points, connection to which is made *via* plugs on the rear of the panel.

Adjustment of programme level is made by a bridged-T fader, and, in the case of the Type BD 540A, a sensitivity control and attenuator for the VU meter are provided. The Type BD 540B, however, has a mains switch, indicator lamp and feed selector switch.

Panel height: 8¾ in. (22·2 cm).

AF Oscillator Assembly *Type BD 550*

Consisting 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) may be switched to give a check on the level of tone sent to line. The remaining controls are the feed switch, for use in connection with the Type BD 537 panel, and the mains on-off switch with associated indicator lamp. Line, listen and apparatus jacks allow access to the circuits and facilitate aural monitoring of the output.

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

A high-speed relay is 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.

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: Any two of the following: 1100, 1000, 900 or 400 c/s (±2½%).
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 BD533H*

The programme input equipment Type BD 533H is an arrangement of units housed in a 7 ft steel cabinet, and suitable for use in conjunction with a single transmitter, or paralleled transmitters requiring a single programme channel: other equipments in the BD 533 series cater for dual channel working, etc. The Type BD 533H provides up to four independent zero-level programme outputs, and three high-level monitoring outputs.

In this equipment an equaliser panel Type BD 539A is provided for terminating a maximum of two main programme lines and eight control lines, two line transformers and semi-fixed equaliser units being incorporated for use with the programme lines. The output of each equaliser unit is taken to a line amplifier Type BD 528 mounted in a panel Type BD 538A, and thence to a control panel Type BD 540A. The third input to the control panel can accept programme from a local emergency studio equipped with a control console Type BD 595 (see page 75), or from any zero level 600 Ω source such as the AF oscillator assembly Type BD 550. The output from the control panel passes *via* a pad giving 10 dB attenuation, and LF compensation, to the line and limiting amplifier Type BD 548A, and so *via* another 10 dB pad to the trap valve amplifier and jackfield assembly Type BD 542A.

Aural monitoring of the programme is provided by the monitoring amplifier panel Type BD 541B, its sequential switching unit Type BD 570 automatically switching the monitor amplifier input between one of the trap-valve amplifier outputs, and the output of a check radio receiver: this arrangement gives immediate comparison between the input and output of the transmitter. Facilities for over-riding manual switching of the monitor input are provided on the monitor assembly, and also at a selected remote location, visual indication of the source being monitored being provided at both places. A check on the programme level at various points is provided by the VU meter on the control panel, which may be switched to any one of the three inputs, or the output, of the control panel, to the output of the limiter panel, or to any one of the four outputs of the trap-valve amplifier assembly.

Line, apparatus and listen jacks are provided on the input and output circuit of the various panels and a jackfield incorporated in the cabinet extends this facility to the transmitter input lines, and the line from the check receiver. The feed meter panel Type BD 537A allows the valve currents on the various units to be checked. All programme and control line connections to the equipment are made on terminal blocks situated at the base of the cabinet, and are conveniently accessible from the rear. Mains power is fed to the various panels *via* plug and socket connections on a supply termination unit mounted inside the cabinet; this unit also carries the main power switch and fuses, and neon indicator lamps.

All connections to the individual panels are by plugs and sockets on the rear of the panel.

Marconi

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