



Band I and Band III Television Transmitters and Translators (3 or 50 W) Type B 6400 (BD 368A)

IN ANY national or regional television service there are inevitably several areas where, usually due to topographical conditions, the field strength is insufficient for the normal domestic receiver and aerial installation.

The Marconi translator equipment has been designed to provide, in a simple and inexpensive way, a normal television service in such areas, and consists essentially of frequency changing and amplifying equipment.

The power output is normally 3 W peak vision. A version incorporating an additional amplifier is also available giving 50 W vision output.

Features

Simple to install and automatic in operation. Unit construction permits additional amplifier to be added easily.

May be supplied as a translator or a transmitter or a combination of the two.

Common amplifiers are used for vision and sound channels.

Only one guard channel and no 'forbidden' channels.

Designed for unattended operation.

Mounted on 19-inch (48 cm) rack assembly not requiring back access.

Input and output arranged on any channels in the frequency bands, provided at least one channel separation exists.

EQUIPMENT

The equipment may be used as a repeater from an existing transmitter, or as a low-power transmitter. A combination of transmitter and repeater provides the facility of either relaying signals from a main transmitter or transmitting locally originated material as required.

Due to the vision signal being amplitude-modulated and the sound signal being frequency-modulated, common amplifiers are used for vision and sound without the deterioration caused by cross-modulation.

The equipment is normally housed in a standard 19-inch (48 cm) rack. If necessary, special cubicles for outdoor mounting can be supplied to suit requirements.

No dangerous voltages are accessible on the equipment when the unit covers are in position. Adequate overload protection is

provided, and most valve feeds can be fully metered from the front panel.

The use of generously rated, high-quality components throughout, ensures long life and high reliability. In addition, many of the valves used are of the special quality or 'ruggedized' variety.

Data Summary

TRANSLATOR

Frequency range: 41–88 Mc/s and 174–216 Mc/s. Editions as required.

Power output: 3 W or 50 W peak vision.

Type of transmission: A.M. vision, v.s.b., 525 or 625 lines, negative modulation. F.M. sound, ± 25 or ± 50 kc/s deviation.

Output impedance: 50 Ω unbalanced.

Carrier frequency stability: ± 5 kc/s relative to incoming signal, for 10°C temp. change.

Amplitude/frequency response: The received channel will be transmitted in the new channel within the following limits of attenuation related to vision carrier frequency: From -0.75 Mc/s to $+5.75$ Mc/s within $+0.5$ dB and -1 dB.

Aerial separation: Not less than 60 dB for 50 W version and 48 dB for 3 W version.

Input impedance: 50 Ω unbalanced.

Input level: 500 μ V peak vision within -6 and $+20$ dB.

Power supply: 100–120 V or 200–250 V ($\pm 5\%$), 48–62 c/s, single-phase a.c.

Power consumption: Approx. 330 W for 3 W output, 820 W for 50 W output.

TRANSMITTER

As above with following additional data.

Noise levels: Vision: 50 dB below the level corresponding to peak output. Sound: f.m., 60 dB below the level corresponding to ± 50 kc/s deviation; a.m., 50 dB below carrier level.

Sound pre-emphasis: Preset 0, 25, 50 or 75 μ s.

Inputs: Vision: 1 V p-p, picture positive into 75 Ω unbalanced. Sound: $+6$ dBm into 600 Ω balanced.

Power supply: 100–120 V or 200–250 V ($\pm 5\%$), 48–62 c/s, single-phase a.c.

Power consumption: Approximately 500 W for 3 W output, 970 W for 50 W output.

DIMENSIONS

Translator or transmitter

Height* 6 ft 0 $\frac{1}{2}$ in. (184 cm)

Width 1 ft 8 $\frac{1}{2}$ in. (52 cm)

Depth* 1 ft 1 in. (33 cm)

A 50 W translator.

Combined translator/transmitter
Height 6 ft 0 $\frac{1}{2}$ in. (184 cm)
Width 3 ft 5 in. (104 cm)
Depth* 1 ft 1 in. (33 cm)

* With 50 W amplifier: Height 6 ft 0 $\frac{1}{2}$ in. (184 cm); Depth 2 ft (61 cm).

Marconi

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Band II F.M. Broadcasting Translator (10W) Type B 6401 (BD 328)

IN any national or regional service there are inevitably several areas where, usually due to topographical conditions, the field strength is insufficient for the normal domestic receiver and aerial installation.

Type B 6401 Translator equipment has been designed to provide, in a simple and inexpensive way, a normal f.m. Broadcasting service in such areas, and consists essentially of frequency changing and amplifying equipment.

The received signal can be in any chosen channel in Band II, and the transmitted signal in any other chosen channel conditional only on separation between channels indicated in the specification.

Features

Ideal for filling in 'shadow areas' of existing transmissions.

Designed for unattended operation.

Simply installed. Designed for mounting in standard 19-inch (48 cm) racks.

EQUIPMENT

The equipment is constructed on three panels which are mounted on a 19-inch rack. One panel carries the aerial filter, the second panel carries the translator unit, and the third panel carries the power supply only.

CIRCUIT

The aerial filter has a band-pass characteristic and consists of five quarter wavelength resonant coaxial lines, connected in tandem by feeders of a quarter wavelength. Its attenuation characteristic is such as to allow the transmitted frequency to be within 1 Mc/s of the received frequency, for a separation between receiving and transmitting aerials of 40 dB. The filter is designed with an input and output impedance of 50 ohms.

The difference between received and transmitted frequencies can be reduced to 600 kc/s by the addition of suitable filters and greater separation between aerials.

The signal output from the aerial filter passes through a single-stage r.f. amplifier

and a further filter to the first mixer, where in conjunction with a crystal controlled heterodyne oscillator its frequency is changed to an i.f. of either 10.5 or 11.1 Mc/s.

The main amplification takes place on the i.f. amplifier which has four stages, the last two operating as limiters. For input levels below the limiting level the equipment is effectively muted.

The output signal from the i.f. amplifier passes to the second mixer, where the i.f. is changed to the required transmitting frequency. Two further r.f. amplifiers follow the second mixer to give an output of 10 W.

Both heterodyne oscillators are crystal-controlled, the crystals being housed in temperature-controlled ovens.

Data Summary

Power output: 10 W.

Power output variation: ± 1 dB over specified input variation range.

Frequency range: 87.5–108 Mc/s.

Working frequencies: To be specified by customer.

R.F. output impedance: 50 Ω unbalanced.

Centre frequency stability: ± 10 parts in 10^6 relative to stability of received signal.

Separation between input and output: 1 Mc/s minimum for 40 dB separation between receiving and transmitting aerials.

R.F. input impedance: 50 Ω unbalanced.

R.F. input level: 250 μ V -6 to $+20$ dB.

Received signal modulation system: Frequency modulation ± 25 to ± 75 kc/s, deviation.

Power consumption: Approx. 150 W.

Power supply:

100–125 V, 58–62 c/s, or
200–250 V, 48–52 c/s, single-phase a.c.
Maximum variation $\pm 5\%$.

Dimensions:

Height 2 ft 10 in. (86 cm)

Width 1 ft 8 $\frac{1}{2}$ in. (52 cm)

Depth* 1 ft 4 in. or 2 ft 3 in. (41 or 69 cm)

* Depends on method of mounting aerial filter.

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