BCD AUDIO

Broadcast Audio
Custom Manufacture
Design and Consultancy

DIGITAL TONE GENERATOR DTG-1

The DTG-1 is a portable, hand-held device which produces a variety of standard tones in AES-EBU format. The unit is ideal for testing AES-EBU systems within an installation, laboratory or service department.

Front panel of DTG-1

Rear panel of DTG-1

Power supply

The unit is powered from an internal 9V battery, or from an external DC power supply of 8–30V via a 2.5mm barrel connector.
A slider switch on the rear panel selects battery on/off.

Left hand switch

The left-hand switch selects MUTE, LEFT only, L+R RIGHT only, GLITS and SPECIAL. The LEFT, L+R and RIGHT settings allow signals at standard frequencies and levels to be selected from the right- hand switch.
These settings allow the left and right channels to be identified, and noise and crosstalk tests to be undertaken.

Right hand switch

The right-hand switch selects three frequencies at three different levels for the LEFT, L+R and RIGHT settings. These are shown on the inner scale. The 0dBFS tones provide precise peak levels, the -18dBFS is a standard line-up level, and the -48dBFS enables low-level distortion measurements to be made.

GLITS setting

In the GLITS setting, six alternative stereo ID sequences can be selected. (400Hz was added mid 2006)
Setting 1 is 400Hz and setting 2 is 1KHz BBC format.
Setting 3 is 400Hz and setting 4 is 1KHz EBU format.
Settings 5 and 6 are spare.
The EBU sequence of is -18dB continuous on RIGHT, and interrupted every three seconds for 0.25 seconds on LEFT. The BBC sequence is LEFT interrupting once and RIGHT interrupting twice for 0.25 seconds every four seconds.

Specials setting

In the SPECIAL setting, the right hand switch selects a number of different signals:
PHASE signal outputs a clipped 400Hz waveform that can be used for signal polarity tests.
NOISE produces white noise at -3dBFS, which is useful for checking Equalisers.
+EMPH outputs -18dBFS at 10kHz, with the emphasis flag asserted.
V FLAG output 0dBFS at 10kHz with the validity flag set.

Output

The output is transformer balanced via an XLR, at the internally produced 48kHz rate. If external Wordclock is connected via the BNC socket, the unit will synchronise to the external rate and the frequencies will scale accordingly. If a 44.1kHz Wordclock is connected the frequencies will be approximately 9% lower.

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More data overleaf

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Battery power consumption

Battery life with the output connected is approximately 15 hours; battery usage is therefore not recommended for normal use of this product.
The power consumption of the unit during Battery operation depends on usage:
Power consumption no load,
or no Wordclock input — 11mA
Power consumption with 110R load – 20mA
Power consumption with 110R load and Wordclock — 30mA

Status LED

Normally the status LED shows power-on. Under low battery conditions the LED is flashed slowly and the AES output is disabled. Under hardware fault conditions the LED is fast-flashed. Under gross hardware fault conditions the LED glows dimly.

Signal purity

1kHz and 10kHz frequencies generated to 24-bit.
Distortion better than 0.005% for these tones.
400Hz is generated to 16-bit resolution.
There is no left/right crosstalk in the unit.

Power requirements and Connector

External DC 8-30V @ 0.5W maximum.
Power supplied with 2.5mm barrel connector.
Inner = +ve, Outer = -ve
The -ve power input is connected to chassis.
Battery operation from PP3 battery

Recommended accessories

BCD-UK-PSU UK plug-top power supply
BCD-EU-PSU European version of above
BCD-US-PSU USA and Canadian version.
BCD971007 2U rack mount panel for four units
BCD971008 2U rack mount panel for two units

Specification – Outputs

AES-3 output on XLR3M
Transformer balanced, earth-free output
Output impedance 110R.
Output level 5V p-p nominal (external power)
Output level 3V p-p nominal (battery power)

Specification – Wordclock input

TTL Wordclock input on BNC connector
Frequency range 30kHz to 52kHz.
Output frequencies scale with Wordclock input.

Channel status information

Channel status information is transmitted in professional
mode, and relates to the front panel switch settings:
Normal mode — Professional flag, Audio, no emphasis
Emphasis mode — Emphasis flags asserted.
Validity mode — Validity bit is asserted.
Signal bits set to twin channel, 24-bit signal, not reference.
Frequency bits set to 48kHz on internal clock.
Frequency bits set to ‘unknown’ on external clock.

Alphanumeric source & destination information

Signal muted — ‘MUTE TONE’ is transmitted.
Phase check signal — ‘PHSE TONE’ is transmitted.
GLITS check signal — ‘GLIT TONE’ is transmitted.
For other settings the frequency is transmitted in the destination field and levels are transmitted in the source field.
The source field indicates 0dB<n>, -18dB<n> or -48dB<n>, where <n> is L,R, or M depending on whether the left, right or mono signal is being transmitted.
The destination field indicates 1kHz, 10kH or 400H depending on the frequency being transmitted.

Overall dimensions and finish

Heavy duty aluminium extrusion, plastic bezels
Height 52mm, width 94mm, depth 108mm
Weight 250g