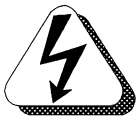
E101

OPERATORS MANUAL

CONTENTS

DRAWMER E101

Passive Equalizer



SAFETY CONSIDERATIONS

CAUTION - MAINS FUSE

TO REDUCE THE RISK OF FIRE REPLACE THE MAINS FUSE ONLY WITH THE SAME TYPE, WHICH MUST BE A CLASS 3, 230 VOLT, TIME DELAY TYPE, RATED AT 32mA WHERE THE MAINS INPUT VOLTAGE SWITCH IS SET TO 230 VOLTS AC. AND 63mA WHERE THE MAINS INPUT VOLTAGE IS 115 VOLTS AC. **ALL FUSES MUST COMPLY WITH BS EN 60127-2:1991, SHEET III.** THE FUSE BODY SIZE IS 20mm x 5mm.

CAUTION - MAINS CABLE

DO NOT ATTEMPT TO CHANGE OR TAMPER WITH THE SUPPLIED MAINS CABLE.

CAUTION - SERVICING

DO NOT PERFORM ANY SERVICING. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

INTRODUCTION

Equalisation is extensively used both to correct defects in the original sound and also to creatively modify sounds. In both these applications, it is not only the technical specification of the equaliser that is important, it is also essential that the equaliser sounds 'musical'. This may seem obvious, but the human ear can detect differences in the characteristics of individual equaliser designs that test equipment seems to be unable to quantify. It is for this reason that some older models of equaliser employing LC passive circuitry and/or tube amplification are so eagerly sought after and change hands for considerable sums of money. Some of these designs may be over twenty years old and yet they offer a subtle smoothness that modern I.C. circuitry has yet to equal.

Current equaliser designs tend to be active and rely on complex feedback arrangements around I.C. amplifiers and while this can lead to great flexibility and economy of cost, the sound is often described as 'harsh', 'clinical', 'hard' or 'unmusical'.

Research has shown that passive equalisers designed around inductor/capacitor circuits tend to have subjectively smooth, desirable sound characteristics and though they may not offer the same number of variable parameters as their modern counterparts, they are usually musically more acceptable in situations where drastic equalisation is not required.

The E101 is a four stage, single channel passive equaliser, followed by stage of makeup gain to compensate for the insertion loss of passive circuitry. Traditional inductor /capacitor /resistor circuits are employed in the filter design and a very low noise, solid state amplifier is used to provide the necessary gain. This, in our view, gives the best of both worlds; the smoothness of purely passive filtering combined with the low noise, low distortion amplification which can only be accomplished using recent technology. The format of the E101 offers a high degree of control at the extremes of the audio spectrum, where precise correction or subtle enhancement is often necessary.

Packaging conforms to the 1u rack mount format and is in all metal for structural strength and electrical screening.

INSTALLATION

Before powering up the unit for the first time, check that the mains selector is set correctly for the mains supply in your area. Operation of the E101 at the incorrect voltage could cause serious damage to the unit.

For safety reasons the E101 should always be earthed. In the event of fuse failure, replace only with one of the same type and current rating.

There are no user serviceable parts inside the unit and operation with the cover removed exposes the user to the risk of electric shock.

Low noise circuitry is used within the E101 but because of the high levels of gain in conjunction with the inductors in the E.Q., it is advisable to mount the unit away from powerful sources of electromagnetic interference such as power amplifiers, power lines and fluorescent lighting.

CONNECTIONS

Both balanced and unbalanced signals can be accommodated on either XLR or jack connectors.
For unbalanced operation, the unused signal terminal should be connected to the ground terminal.

The unit is designed to operate at nominal signal levels of +4dBu but is also suitable for use with semi-professional equipment operating at -10dBu, without any adjustment to the unit.

Mains power is provided via a standard IEC lead and rear panel connector and a mains power switch with associated status LED is located to the right of the front panel. Access to the mains fuse is from the rear panel as is the mains voltage selector.

CONTROLS

Because the E101 uses a passive equaliser circuit, separate filter sections are provided for cut and boost. This has the advantage of allowing the user to simultaneously add cut and boost at different frequencies. With all the cut and boost controls set to flat (fully anti-clockwise), the equaliser has unity gain.

There are four equaliser sections, two for the bass end of the audio spectrum and two for the treble. Frequency selection is by means of stepped rotary switches while the cut and boost controls are continuously variable.

BYPASS

Switches the EQ and make-up gain amplifier out of circuit.

BASS CUT

The Bass Cut section employs a shelving Hi-pass filter which may be switched to operate at:
20Hz, 30Hz, 60Hz or 100Hz. Up to 15dB of cut may be applied and this section is useful for attenuating frequencies below the useful range of the programme being processed or for reducing overall boominess. Maximum cut occurs when the Attenuate control is turned fully clockwise.

BASS BOOST

Again offering equalisation at 20Hz, 30Hz, 60Hz and 100Hz, the bass boost section offers a choice of Hi-pass shelving or peaking characteristics. In the 'Peak' switch position the 'Q' of the filter is 2.5. In the shelving mode of operation, the maximum boost is 13.5dB, whilst in the peaking mode, it is 16dB. Maximum boost occurs with the boost control fully clockwise.

TREBLE BOOST

The Treble Boost section comprises a variable 'Q' peaking filter operating at frequencies of 3kHz, 4kHz, 5kHz, 8kHz, 10kHz, 12kHz and 16kHz. The bandwidth control allows adjustment of 'Q' over the range 0.8 to 2.1 with the narrowest filter response occurring when 'Bandwidth' is set in the fully clockwise position. At maximum 'Q', up to 18dB of boost may be applied and at minimum 'Q', up to 12dB. Maximum boost occurs when the 'Boost' control is fully clockwise.

TREBLE CUT

This section has a shelving Lo-pass characteristic and may be switched to operate at 5kHz, 10kHz or 20kHz. A maximum of 18dB of cut may be applied, the maximum cut occurring when the 'Attenuate' control is fully clockwise. Apart from it's tonal applications, this section is useful for attenuating frequencies above the natural range of the programme being equalised which will also serve to attenuate any high frequency noise present in the source programme.

SPECIFICATIONS

Signal connections.....	balanced XLR and jack
Nominal Signal Level.....	+4dBu
Noise (EQ off).ref +4dBu....	-95dB unweighted (22Hz-22kHz)
Noise (EQ flat).ref +4dBu...	-92dB unweighted (22Hz-22kHz)
Distortion.....	100Hz - <0.02%
	1kHz - <0.025%
	10kHz - <0.04%
Equaliser type.....	LCR passive, four section.
Dimensions.....	482mm * 44mm * 176mm
	(Excluding knobs and connectors)
Weight.....	4Kg (packed)