LIMITER AMPLIFIER AM17/502

Introduction

The AM17/502 accepts 50-Hz or 60-Hz signals of various amplitudes and differing waveform and produces a 50-Hz or 60-Hz output which is substantially fixed in amplitude and sinusoidal in shape. The output can be adjusted, by a preset control, up to a maximum level of about +10 dB into 600 ohms.

The limiter amplifier is primarily intended for use in synchronising signal chains employed in controlling the transfer of sound from tape to sepmag film.

The unit is constructed on a CH1/18C chassis and requires a 24-volt d.c. supply.

Circuit Description

As shown in Fig. 1, the overall circuit consists of a trigger section and a filter section, corresponding to the two printed-wiring boards used in the unit.

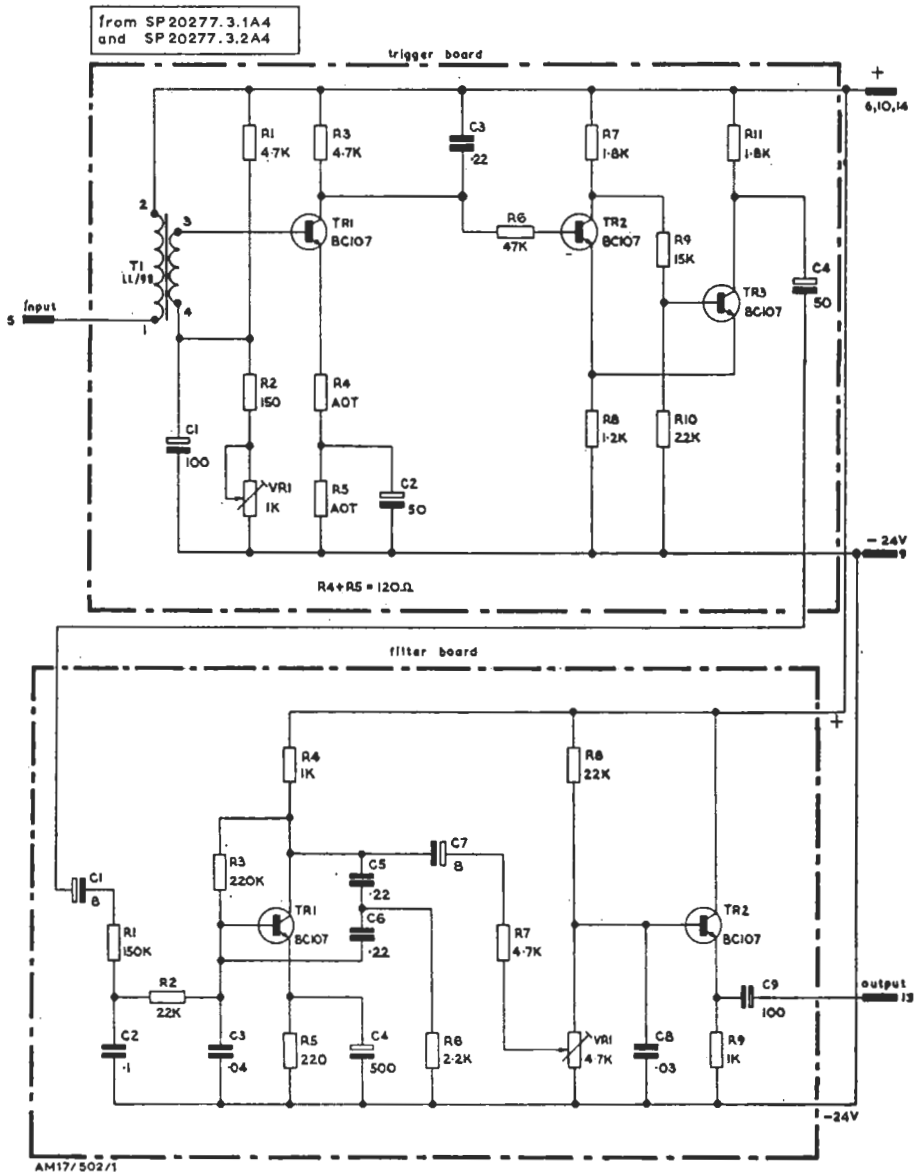

Fig. 1 Circuit of the Limiter Amplifier AM17/502

In the trigger section, a transformer-fed input amplifier TR1 drives a Schmitt trigger circuit TR2 and TR3. The variable resistor VR1 sets the bias on the base of TR1 and determines the standing d.c. input to TR2; it is adjusted to obtain a 1:1 mark-space ratio square-wave output from the Schmitt trigger as a result of a sine-wave input. The gain of TR1 is set by adjustment of the proportions of R4 and R5, which determine the extent to which the total emitter resistance formed by the two is bypassed by C2.

The filter section consists of a feedback amplifier, TR1, and an output amplifier, TR2. The high-pass filter in the feedback loop of TR1 and the coupling components are arranged to give this section of the circuit a frequency characteristic such that a 50-Hz or 60-Hz output from the trigger section is shaped into a sinusoidal waveform. The level obtained from TR2 is preset by VR1.

Setting Up

1. Apply a 50-Hz sine-wave signal to the unit from a source adjustable in output, e.g. a TS/10 Tone Source.
2. On the trigger board, adjust VR1 so that output is obtained from the unit, showing that the Schmitt trigger is functioning. Alternately reduce the 50-Hz input and readjust VR1 to maintain an output, until a stable output is unobtainable with a lower input.
3. Vary the relative proportions of R4 and R5, in series with the emitter of TR1 on the trigger board, and if necessary reset VR1 so that stable output is obtained with −15 dB input level from the tone source. (Better sensitivity than this should be obtainable but makes the unit more likely to respond to hum or other spurious inputs.)
4. On the filter board, adjust VR1 to obtain the required output from the unit. Typically, this should be about +8 dB into 600 ohms if the unit is to feed a Vortexion S120/200 amplifier driving a Westrex sepmag machine.

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