

INTERCOMMUNICATION AMPLIFIER AM5/5

**General Description**

This is a two-stage amplifier, designed for operation from d.c. relay-energising supplies of either 50 or 24 volts. The amplifier can deliver a maximum output signal amplitude of 15 or 6.5 volts, depending on the supply voltage; these outputs are produced by input-signal currents of approximately 225 and 100 microamperes, respectively. The gain-control circuit, which is external to the amplifier, must be designed to give the required input current when the available input signal is applied.

The amplifier forms a compact, aluminium-alloy-cased module constructed on a Painton 15-pin plug; up to ten can be bay-mounted in mating connectors on an un-coded 5½-in. mounting panel of standard width, specially designed by S.P.I.D. This panel can also accommodate fuseholders and the input transformers and output-coupling capacitors required for use in conjunction with the amplifiers.

**General Specification**

Supply voltage	Either 24 V or 50 V, d.c.
Total current	10—20 mA (with no input signal)
Input impedance	Cannot be quoted; see General Description
Voltage gain	Cannot be quoted because amplifier must be regarded as current-driven; see General Description. Sensitivity is approximately 0.066 V/μA
Output impedance	3 ohms
Test load	35 ohms in series with 500 μF (50-V working capacitor)
Frequency response	±2 dB between 100 Hz and 10 kHz (measured at output level of +20 dB)
Distortion (measured on 1-kHz signal)	24-V operation: less than 5 per cent and 1 per cent at

output levels of +14 dB and -20 dB, respectively. 50-V operation: less than 5 per cent and 1 per cent at output levels of +20 dB and -20 dB, respectively. Less than -75 dB

Noise volume

**Circuit Description**

The circuit, shown in Fig. 5.1, closely resembles the last two stages (TR4—TR8) of the Amplifier Type AM8/9, described in Section 8 of this Instruction.

The base-stabilising voltage-divider R1, R2 of TR1 is supplied from the output pin 11 of the connector, so that a proportion of the output signal is applied as negative feedback to the input of the first stage. The feedback is increased at frequencies above the useful range by C2, which shunts R2. This reduces the output and hence the power dissipated in TR4 and TR5 at these unwanted frequencies, thereby enabling a larger output to be obtained in the wanted frequency range.

When a 24-volt supply is used, less current flows in the TR1 collector circuit, and additional resistance is needed to maintain the same voltage difference between the bases of TR2 and TR3. This is the reason why a short-circuit across R3 is removed for 24-volt operation, as stated in Note 2 on Fig. 5.1. R4 is selected to obtain satisfactory operation from a 50-volt supply, and R3 is then adjusted to obtain satisfactory operation from a 24-volt supply.

**D.C. Readings**

These measurements, made with an AVO Model-8 test meter using the lowest usable range of the instrument, are given to assist in maintenance.

- TR1 emitter: 2 V
- TR5 emitter: 25.5 V

*See overleaf for Fig. 5.1*

Instruction S.10  
Section 5

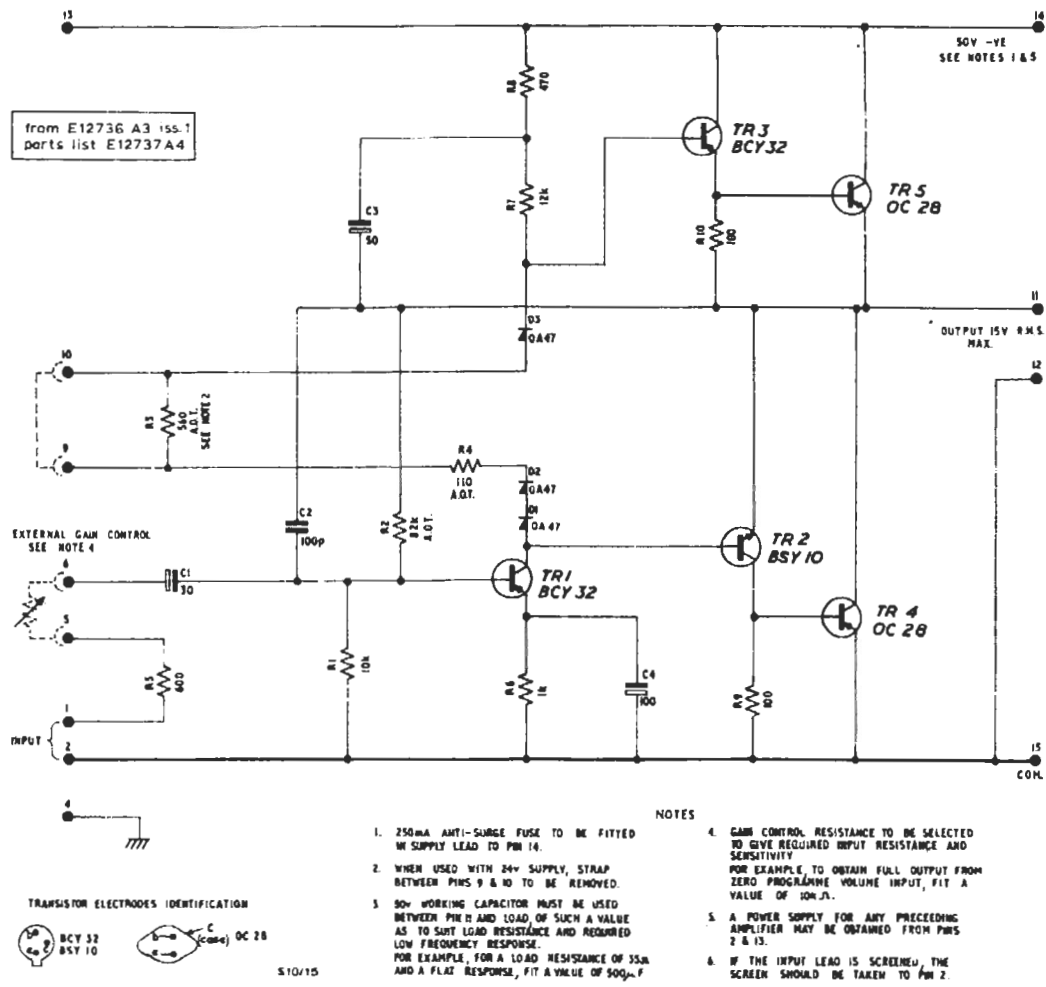


Fig. 5.1. Intercommunication Amplifier AM5/5: Circuit

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