INTERNAL LINE-SENDING AMPLIFIERS AM7/8 AND AM7/8A

See also NE1/7

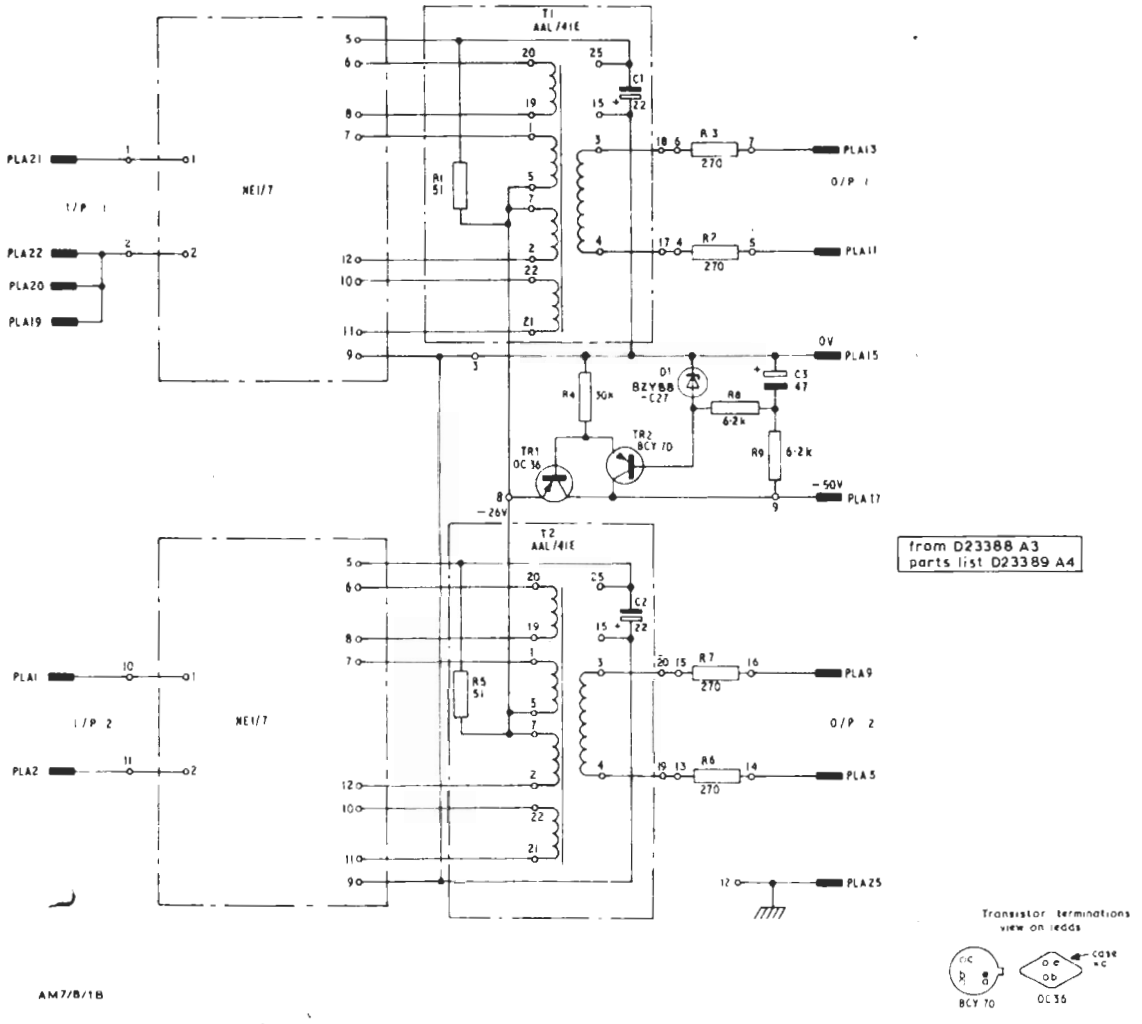

Fig. 1. Circuit of the AM7/8 and AM7/8A

General Description

The AM7/8 is a twin-channel a.f. unit intended for installation as a pair of output amplifiers, following added preset gain and balance controls, in tape reproducers converted for stereo. Each channel includes an amplifier network NE1/7.

The AM7/8 is designed as an internal line-sending amplifier, but the maximum output programme volume of +12 dB into 600 ohms permits use where tape machine outputs are mixed in 600-ohm networks and the required programme volume is +6 dB.

The unit requires a 50-volt negative supply and can accept the voltage variations and ripple normally present on station 50-volt supplies such as are fed to tape machines for their remote control circuits.

The AM7/8 is superseded by the AM7/8A, which is identical electrically but differs slightly mechanically. Each is assembled on a standard ISEP board for insertion on guide rails at 5·8-inch centres. The overall dimensions of the AM7/8 are 2·8 by 5·5 inches by 7·5 inches long; the AM7/8A has an added projection to form a handle and is about 8 inches long.

Circuit Description (Fig. 1)

The circuit of the AM7/8 and AM7/8A includes an NE1/7 amplifier network in each channel, feeding loads through AAL/41E output transformers.

The output impedance of each channel is nominally 60 ohms or 600 ohms, depending on whether straps are fitted to short-circuit the 270-ohm resistors in series with each of the terminals of the output transformer secondaries. On a unit, the resistors and straps are connected between points marked 4 and 5, 6 and 7, 13 and 14, and 15 and 16, situated between the two NE1/7 boards.

A series regulator circuit provides a stabilised 26-volt supply for both NE1/7 boards from an external d.c. source of nominally −50 volts.

General Specification

This specification applies to each channel. Except where otherwise stated, the output impedance is set at 60 ohms, the gain is at maximum (R6 in the NE1/7 being made 910 ohms) and the load is 600 ohms.

Voltage Gain — Measured with output level 0 dB and output impedance 60 ohms. Tolerance ±0·5 dB

R6 in NE1/7 (Ohms)	*Gain (dB)*
910	44·8
2,000	39·5
4,000	34·8
10,000	30·1
o.c.	23·8

Making the output impedance 600 ohms reduces gain by about 5 dB.

Frequency Response — With input from a 5-kilohm source and output at 0 dB level:

100 Hz to 10 kHz, ±0·15 dB.
25 Hz to 20 kHz, ±1 dB.

Output Impedance — 60 ohms nominal, when output series resistors are short-circuited, or 600 ohms nominal, when output resistors are in circuit.

Input Impedance — Greater than 40 kilohms, unbalanced.

Source and Load Impedances — Normally 5 kilohms or less and 600 ohms or more, respectively, but stability is not conditional on any values.

Total Harmonic Distortion (5-kilohm source) — Not more than 0·1% at 1 kHz with output at 0 dB.

Not more than 0·5% at 1 kHz with output at +20 dB.

	Serious distortion should not be seen on an oscilloscope below an output level of +22 dB.
Noise	With 300 ohms resistance alone across a channel input, less noise output than −68 dB should be measured for an indication at '6' on an ATM/1 (using the T.P.M. mode and high input impedance). The indicated variations should be less than 1 dB.
Crosstalk	With one channel operating at +20 dB output, from 25 Hz to 20 kHz, and with 300 ohms resistance alone across the other channel input, less crosstalk output than −60 dB is obtained from the second channel.
Supply Required	−50 volts, 130 mA.
Connector	ISEP 25-pole. Code pins 3, 7 and 23.
Weight	2 lb.

Maintenance Notes

With an external supply of −50 volts, the internal stabilised supply, measured between points 3 and 8 on the main board, should be 26·0 ±1·5 volts. The stabilised voltage measured should not alter by more than ±0·1 volt if the external supply is reduced to −46 volts or raised to −60 volts.

The current drawn by a unit from a supply of −50 volts should not exceed 135 mA.

The positive supply rail in the unit is isolated and may require local capacitive decoupling to the framework of the equipment in which it is installed if impulsive interference is encountered.

As an aid to fault finding the input impedance of either channel may be checked, and should be 56 ±16 kilohms. With the output resistors short-circuited, the output impedance of either channel should be between 50 and 86 ohms.

To check those parts of the *General Specification* which require the unit to be fed from a 5,000-ohm source, a 600-ohm generator with an added series resistor may be used.

References

1. Designs Department Specification 3.488(69).
2. Designs Department Technical Memorandum 3.99(69).

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