

AUDIENCE MIXER PANEL PA8/295

Introduction

The audience mixer panel PA8/295 is a module in the Type-D range of sound equipment. It provides individual volume controls for mixing the outputs of eight audience microphones. It has also a public address volume control which may be used as an extension control from, for example, a PA8/261 main control panel. The panel PA8/295 is similar to the PA8/268A, which it supersedes, but it has two additional microphone channels, and it does not have a master mixer control

The equipment is mounted in a chassis which is identical in external dimensions to the CH1/35 and fits the same nesting box. The dimensions are 16½ by 2½ by 9 inches (41 by 5.7 by 22.9 mm).

General Description

Mounted on the front panel are nine 5-kilohm carbon-track log-law variable resistors, the lowest being the P.A. control. The remainder of the components, including three AM5/7 amplifiers, are mounted on a printed circuit board. On the rear of the chassis there is a fuseholder for the 100-mA fuse in the amplifier supply circuit.

Circuit Description (Fig. 1)

The eight microphone inputs are taken to an r.f. suppression filter, input transformer and volume control, and paralleled in two groups of four to the inputs of the amplifiers 1 and 2. The outputs of the amplifiers are paralleled and the combined signals are further amplified by the third AM5/7.

Test Procedure

Apparatus Required

- Low Distortion Oscillator
- A.C. Test Meter ATM/1
- Oscilloscope
- Filter FL1/14
- Amplifiers AM7/2A, AM7/4
- 24-volt Power Supply

Distortion Test Set

- Repeating Coil
- Balanced 60-ohm Load
- Variable Capacitor
- One Resistor 5 ohms ±2 per cent
- Two Resistors 1000 ohms ±2 per cent
- Eight Resistors 300 ohms ±2 per cent
- Avometer Model 8

Operating Conditions

Input Level	-80 dB to -20 dB
Maximum Output	+10 dB (into 1-kilohm load)
Maximum Gain	26 dB
Input Impedance	160 ohms (with all channels faded up)
Output Impedance	100 ohms
Current Consumption	39 ±3 mA from 24 volts

Tests

Set up the circuit as in Fig. 2. Make all measurements using the high impedance input of the test meter except where otherwise stated.

Gain and Frequency Response

1. Connect C, D to PLA(L) 1, 9 and terminate the remaining seven inputs with 300-ohm resistors.
2. Turn all microphone controls fully clockwise.
3. Adjust the level of 1-kHz tone at A, B to be -60 dB. The level measured at the output, PLC(L) 1, 9 should be -43 ±1 dB.
4. Turn the volume control R1 to position 4. The level measured at the output should be -64 ±2 dB.
5. Reset the volume control to maximum. Apply tone of 20 Hz and 20 kHz at a level at A, B of

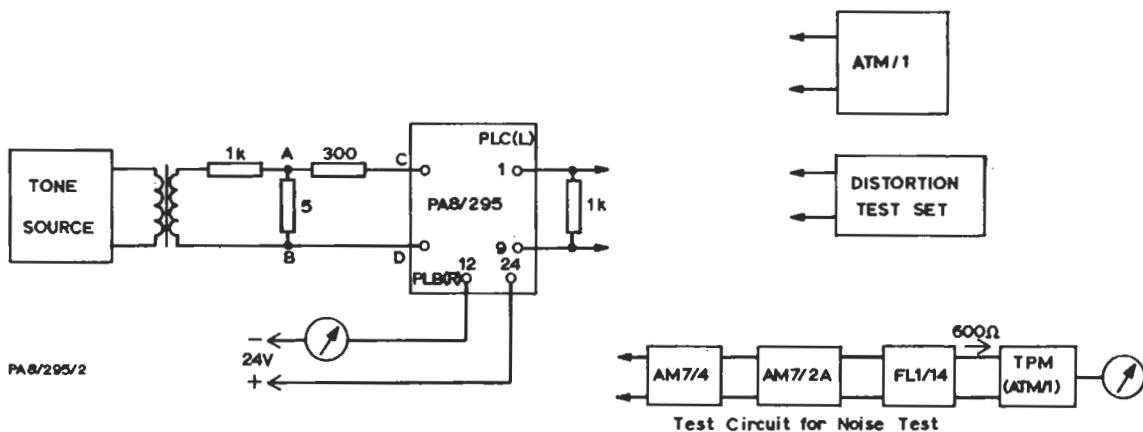
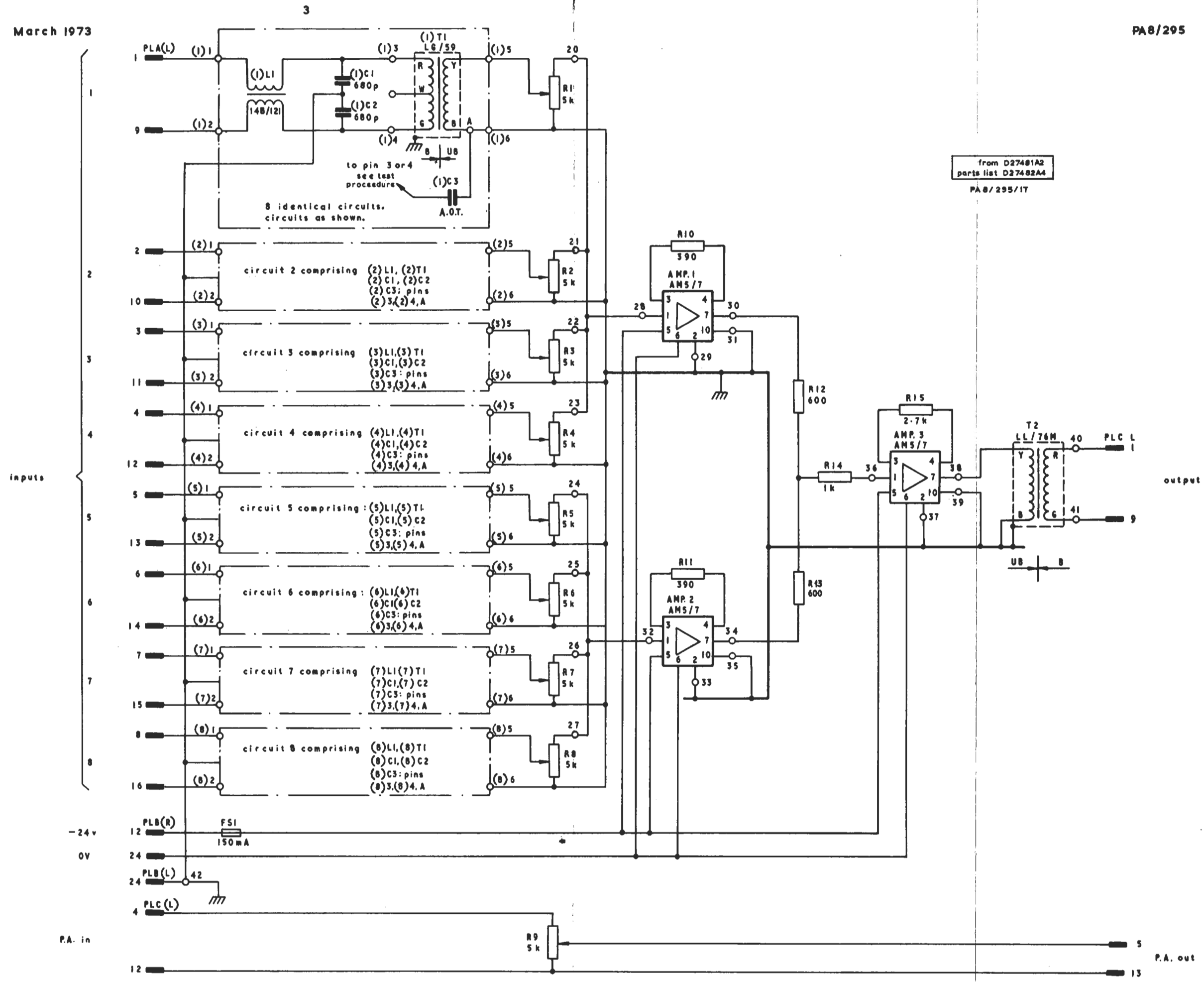


Fig. 2. Test Circuit for PA8/295



from D27481A2
parts list D27482A4
PA8/295/IT

Fig. 1. Circuit of PA8/295

-60 dB. The output level relative to that of tone at 1 kHz should be:-

20 Hz	±2 dB
20 kHz	±0.4 dB

- Repeat the procedure with C, D connected to PLA(L) 2, 10 : 3, 11 : 4, 12 : 5, 13 : 6, 14 : 7, 15 : 8, 16 in turn. Terminate all unused inputs with 300 ohms.

Maximum Output

- Remove the 5 ohm resistor from A, B and connect C, D to PLA(L) 1, 9. Connect the oscilloscope to PLC(L) 1, 9.
- Increase the level of 1-kHz tone until the waveform viewed on the oscilloscope just begins to clip. The output level should be not less than +12 dB.
- Connect C, D to PLA(L) 5, 13 and repeat the test.

Breakthrough

With the 5-ohm resistor removed from AB, CD connected to PLA(L) 1, 9 and the volume control at maximum, apply tone at 10 kHz and adjust the level at the output to be +10 dB. Turn the volume control to minimum. The output level should be less than -70 dB. Repeat the test with CD connected to each input in turn.

Distortion

With the 5-ohm resistor removed, CD connected to PLA(L) 1, 9 and all volume controls at maximum, apply 1-kHz tone to give a level at the output of +10 dB. The total harmonic distortion measured at the output should not exceed 0.1%. Repeat the test with CD connected to PLA(L) 5, 13.

Noise

- Connect the circuit for the noise test shown in

Fig. 2. Replace the 5-ohm resistor. Connect C, D to PLA(L) 1, 9, terminate all other inputs with 300-ohm resistors, and set all controls to maximum. Adjust the level of 1 kHz tone across A, B to be -60 dB.

- Adjust the gain of the AM7/4 to give a TPM reading of 0 dB.
- Disconnect the 1000-ohm source resistor at A, and adjust the TPM setting to give a noise reading of 5. The setting should be more negative than -48 dB and the meter should be steady within 1 dB.

Phase Test

With an asymmetric waveform applied to each input in turn check with an oscilloscope that the output is in phase with the input.

Microphone Input Balancing

- Set up the test circuit given in Fig. 3. The balanced 600-ohm load is connected to each input in turn, and 10-kHz tone at zero level is applied between the centre point of the load and chassis earth.
- Connect the variable capacitor between the pin marked (1) 4 and the nearest pin marked A. (These pins are shown in Fig. 1, circuit 1.)
- Adjust the capacitor to give minimum output measured with the ATM/1 or oscilloscope across PLC(L) 1, 9.
- If a minimum output cannot be achieved, connect the capacitor between pins (1) 3 and A and repeat the procedure.
- Measure the capacitance of the capacitor and fit a polystyrene capacitor of the nearest preferred value between the appropriate tags.
- Repeat for the remaining input transformers.

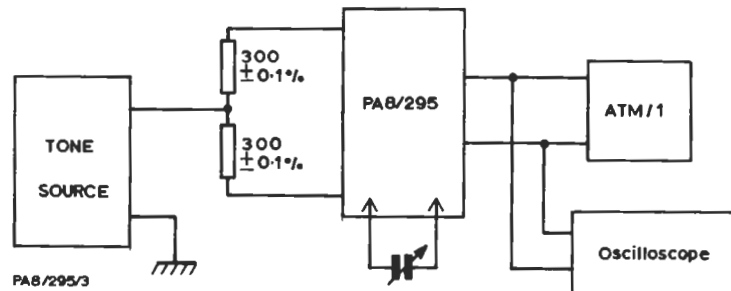


Fig. 3. Input Balance Test Circuit for PA8/295

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