

MISCELLANEOUS MONITORING PANEL PA8/321**Introduction**

The PA8/321, which supersedes the PA8/273, is one of a group of Type-D panels providing monitoring and other facilities in a sound desk. It carries the amplifiers for clean feed and prehear listening, and some of the talkback circuits operated from keys on the talkback panel PA8/284, in addition to loudspeaker and P.P.M. selection and control circuits.

The equipment is mounted in a chassis CH1/37D having overall dimensions of 7 by 6¾ by 10½ inches.

General Description

The controls on the front panel, from left to right, have the following functions.

Top Row

- (a) Two-position studio loudspeaker cutoff key, KE.
- (b) Two dummy keys.
- (c) Two-position cubicle headphone key, KF, for normal or prehear monitoring.
- (d) Three-position key KC to select normal, desk, or line output to the cubicle monitoring circuit.

Second Row

- (a) 11-position studio loudspeaker programme selection switch.
- (b) Miscellaneous loudspeaker volume control (PU/6R/1).
- (c) 11-position miscellaneous loudspeaker programme selection switch.

Third Row

- (a) 11-position cubicle loudspeaker programme selection switch.
- (b) Cubicle loudspeaker volume control (PU/6R/1).
- (c) 11-position auxiliary P.P.M. selection switch.

Fourth Row

- (a) Three-position key KA to switch the cubicle loudspeaker to tape output, selection switch or local output.
- (b) Two three-position keys KB, KH to select an output from four tape sources for connection via the above key to the cubicle loudspeaker.
- (c) Two-position cubicle loudspeaker dim key KD.
- (d) Two-position key KG to connect the auxiliary P.P.M. either to the P.P.M. selection switch or to prehear.

Inside the chassis are two sub-assemblies. One carries the relays associated with the monitoring and talkback circuits, which in order from the top are EDQ, SLS, OSTB, LSO, CDM. The other sub-assembly carries three amplifiers AM9/8 and their input and output transformers. The amplifiers viewed from the front from left to right are, Nos. 1, 2, and 3, and the three transformers between amplifiers 1 and 2 from the front are, T2, T3, T1, and between amplifiers 2 and 3 are T6, T4, T5. A fuseholder fitted with a 150-mA fuse is mounted on the back of the chassis.

Continued overleaf

Circuit Description (Fig. 1)

The function of the panel is to receive talkback, prehear and programme from a number of points and distribute them to the studio, cubicle and outside source monitoring points.

The clean feed input from the main module is raised in level from -25 to 0 dB by amplifier No. 1 and passed to the studio headphones.

The talkback input is distributed by the operation of relays energised by the talkback keys on the panel PA8/284. The circuits of these keys operate as follows:

- (a) The studio talkback key connects talkback to the CF & TB studio headphone point by operating relay STB, and this relay also connects talkback to a further studio outlet, and to the studio loudspeaker over contacts of relay SLS. On transmission the SLS relay circuit is broken unless all microphones are faded down.
- (b) The outside source master talkback key connects talkback to the outside source control or cue line by energising relay OSTB. There is also a direct connection for talkback to the outside source.

Prehear is taken from the two outputs on the main module. The one controlled by the volume control on the main module is raised in level by amplifier 2 to 0 dB and taken via key KF to the cubicle desk headphones. This circuit may also be used for tape editing by the operation of relay EDQ from the tape editing key. A connection to the output side of amplifier 2 is provided for a prehear source from the outside source telephone panel.

The uncontrolled output from the main module is used for measurement purposes. It is amplified by amplifier 3 and is connected to the auxiliary P.P.M. by the operation of key KG.

Programme from the studio programme selection switch may be connected to the studio headphones and outside source control and cue lines when talkback is not in use, and to the studio loudspeaker when relay SLS is made. Operation of the three-position key KA connects the cubicle loudspeaker to the local output (point 11), to the cubicle programme selection switch, or to one of four tape machines chosen by key KB or KH. There is a volume control PU/6R/1, and a dim key which operates relay CDM.

The miscellaneous loudspeaker may be connected to any of the sources selected by the 11-position switch SA, and this circuit also has a volume control PU/6R/1. Similarly, level measurements may be made on the sources connected to the 11-position switch SD, by the auxiliary P.P.M.

The three-position key KC operates relays in the switch unit UN1/89 which interrupt the normal cubicle monitoring circuit to allow either the desk output (relay MND) or the line output (relay MNL) to be monitored, for example when line-up tone is connected.

Test Schedule

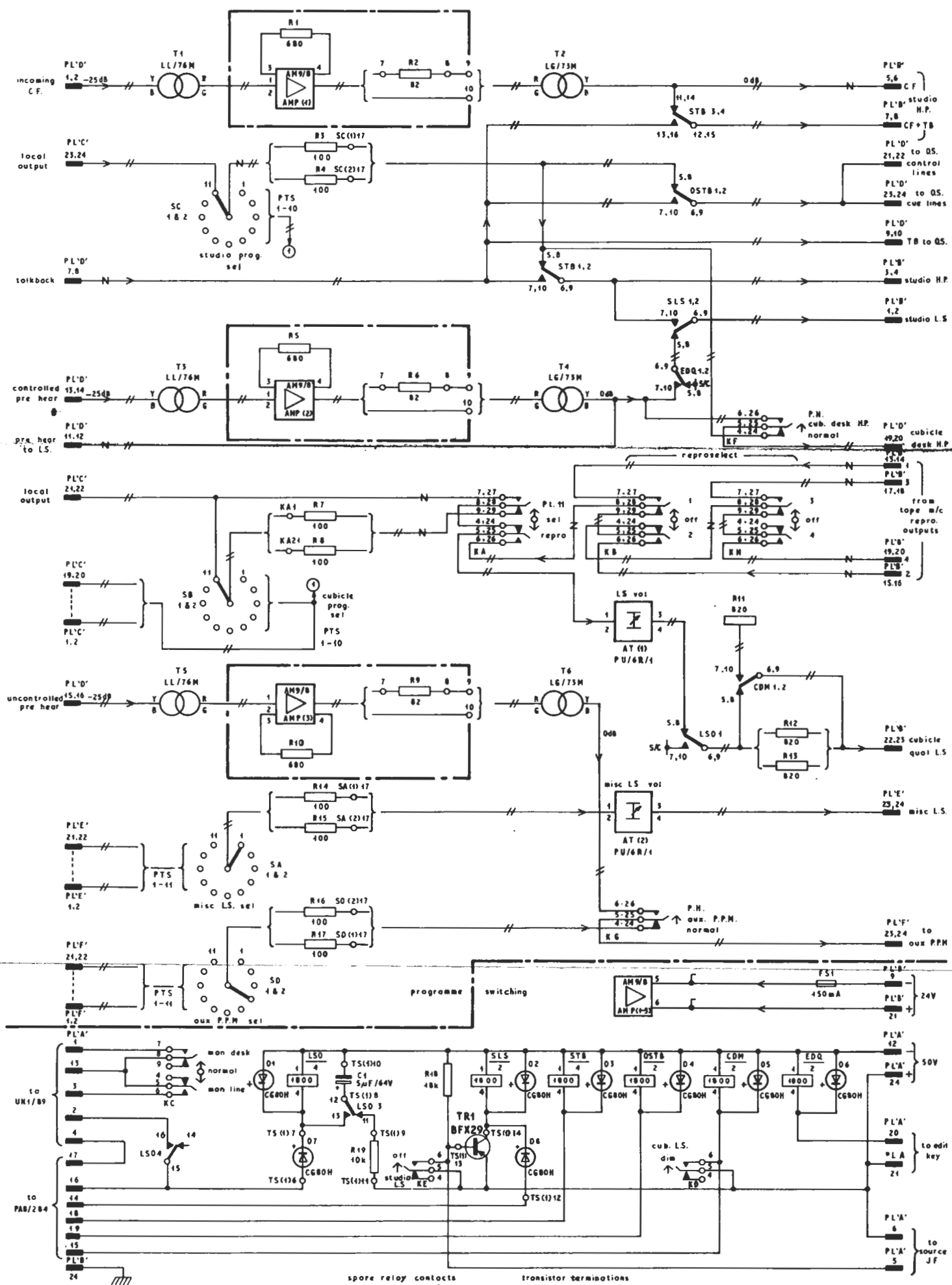
Apparatus Required

- Tone Source TS/10
- Amplifier Detector ATM/1
- 24-volt Stabilised Power Supplier
- 50-volt Stabilised Power Supplier
- 600-ohm Resistor

Circuit Tests

Connect the 24-volt supply to B9 (negative) and B21 (positive). Connect the 50-volt supply to A12 (negative) and A24 (positive).

1. (a) Apply 1-kHz tone from a 300-ohm source at -25 dB to D1-D2.
 - (b) Check that the output from B5-B6 into a high impedance is between 0 and $+2$ dB.
 - (c) Check that the same output is obtained from B7-B8.
 - (d) Check that operation of relay STB by connecting A18-A24 cuts tone on B7-B8.
2. Transfer the -25 dB tone to D15-D16. Check that operation of the *Aux. P.P.M.* key to the *P.H.* condition puts tone at between 0 and $+2$ dB on F23-F24.
 3. (a) Apply zero-level tone to C23-C24.
 - (b) With the *Studio Programme Select* switch on point 11, check that tone at zero level appears at the following:
 - D19-D20 (cubicle headphone key at normal)
 - D21-D22, D23-D24, B1-B2, B3-B4.
 - (c) Check that the output on B1-B2 is cut when relay SLS is operated by:
 - (i) connecting A5-A6,
 - (ii) placing the *Studio Loudspeaker* key in the *Off* position.
 - (d) With the *Studio Loudspeaker* key in the *Off* position, check that the tone appears on B1-B2 when A14-A24 are connected together.
 4. (a) Apply zero-level tone to D7-D8.
 - (b) When relay STB is operated by joining A18-A24, check that tone at zero level appears at the following points with the *Studio Loudspeaker* key in the *On* position:
 - B7-B8, B1-B2, B3-B4.
 - (c) When relay OSTB is operated by joining A19-A24, check that tone at zero level appears at D23-D14.
5. (a) Apply tone from a 300-ohm source at -25 dB to D13-D14.
 - (b) Check that the output from D11-D12 into a high impedance is between 0 and $+2$ dB.
 - (c) Check that operation of the *Cubicle Desk H.P.* key to *P.H.* connects this tone to D19-D20.
 - (d) Check that operation of relay EDQ by connecting A20-A21 puts tone on B1-B2 when the *Studio Loudspeaker* key is in the *Off* position.



NOTES:
 1. - indicates two resistors 240 kΩ each in series across programme pair with centre point connected to frame earth.
 2. Amps 1,2,3 have 680 Ω resistors between pins 3,4. 87 Ω resistors between pins 7,8. S/C denotes short circuit.
 3. spare relay contacts

EDQ3 SLS4 OSTB4 CDM5
 EDQ4 SLS4 OSTB4 CDM4

from D27113 A2 parts list D27114 A4

Fig. 1. Circuit of PA8/321

6. (a) Apply zero-level tone to C21-C22.
- (b) Check that, with the cubicle loudspeaker volume control at maximum, and the cubicle select key on point 11, the tone is found on B22-B23 at a level of between -2.5 and -0.5 dB. If relay CDM is operated by joining A15-A24 or by operating the cubicle loudspeaker *Dim* key, the level found should be between -15 and -13 dB. If the loudspeaker volume control is turned to minimum and CDM is not operated, the output should be between -27 and -24.4 dB. Check also that connection of A16-A24 cuts the tone.
- (c) Check that with the cubicle loudspeaker volume control at maximum, the cubicle select key at *Sel.* and the cubicle programme select switch at point 11 the tone is found on B22-B23 at a level of between -2.5 and -0.5 dB.
7. With the cubicle loudspeaker volume control at maximum and the cubicle select key on *Repro*, apply tone at zero level to B13-B14, B15-B16, B17-B18 and B19-B20 in turn. Check that tone appears at B22-B23 with the following positions of the two repro keys:
8. Apply zero-level tone to E1-E2, E3-E4 and so on up to E21-E22 in turn. This tone should appear at E23-E24 with the miscellaneous loudspeaker volume control at maximum, for positions 1 to 11 of the miscellaneous loudspeaker select switch. The level should be between -2.5 dB and -0.5 dB. With the volume control in the minimum position the level should be between -27 and -25 dB.
9. Apply zero-level tone to F1-F2, F3-F4 and so on up to F21-F22 in turn. This tone should appear at F23-F24 for positions 1 to 11 of the auxiliary P.P.M. select switch when the auxiliary P.P.M. key is in the normal position.
10. Apply zero-level tone to C1-C2, C3-C4 and so on up to C19-C20 in turn and check that this tone appears on D23-D24 for positions 1 to 10 of the studio programme select switch. The tone should also appear on B22-B23 for positions 1 to 10 of the cubicle programme select switch with the cubicle select key at *Sel.* The level will depend on the setting of the cubicle loudspeaker control.

<i>Key 1-2</i>	<i>Key 3-4</i>
1	off
2	off
off	3
off	4

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