

Smart Research Ltd.

Electronics for the real world

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PUP Audio boards: Service/Test notes

Note: See also 'PUP ident.pdf' diagram showing component designators for a pair of channels.

Programmable Audio Preamp: Audio circuit board used in Smart Research UP4 Mic Amplifier. (four channels are used)

CMRR:

Normally, the CMRR figure for a PUP channel is -60dB or below the input value. Due to the design, this standing figure should only vary slightly depending on gain setting. Whether the input is 30volts or -20dB the CMRR should read around -60dB. The performance is decided by four resistors per output leg (eight per channel) and if these are further trimmed the CMRR can be increased. To do so, touch 1206 size 750k resistors across each in turn until the desired improvement is seen, then solder the trimming resistor(s) in place as required. Referring to the centre of the component designator diagram, for the pin 2 output the CMRR resistors are R26,37,94 and 96, and for pin 3 they are R23,24,25 and 95. These are either 1K8 or 3K6, so the parallel value of 750K acts to vary the values slightly. These numbers are repeated for the second channel of a pair.

Fuses:

Each channel has individual power protection: either wire fuses, fusible resistors, normal resistor, or resettable fuses. The following list applies:

+18v Audio: R2 (2R2 fusible resistor)
-18v Audio: R4 (2R2 fusible resistor)
+18v Audio Output: FS1 (100mA resettable)
-18v Audio Output: FS2 (100mA resettable)
+18v Relays: R6 (500mA resettable)
+48v Phantom power: R12 (220R resistor)
+5v Logic: R8 (2R2 fusible resistor)

Test Points:

The Amplifier can be thought of as having three by-phase stages. Each centres around a dual op-amp. Therefore, signal problems can be localised by checking the 3 pairs of op-amp outputs as follows:

Input stage, IC3 p1/7. (positive/negative signal)
Muting stage, IC8 p1/7.
Output stage, IC13 p1/7.