

OUTPUT BOARD CALLIBRATION
FOR REVISION 1B8,1B9 & 1B10 CARDS

1. From shell type "kstart SPACE -c SPACE /k2/kmondiaq" <return>
OR "wsdiag" <return>
2. Type "a" for audio calibration programme <return>
For each card Leave 5 mins. for temperature to stabilise.

The following points 3 through to 7 are for 1B8, 1B9 and 1B10 revisions.
See Document at the end of this procedure for variations.

3. Using multimeter : +ve lead connected to junction of R68 & pin 7 J1,2B
and -ve lead connected to junction of R63 & pin 1 J1,2A. Adjust for zero
millivolts on bottom pot "A".
4. Using multimeter : +ve lead on 0v and -ve lead connected to junction of
R63 & pin 1 J1,2A.. Adjust for zero millivolts on top pot "A".
5. Using multimeter : +ve lead connected to junction of R27 & pin 7 J3,4B
and -ve lead connected to junction of R26 & pin 1 D5A. Adjust for zero
millivolts on bottom pot "B".
6. Using multimeter : +ve lead on 0v and -ve lead connected to junction of
R26 & pin 1 D5A. Adjust for zero millivolts on top pot "B".
7. Using multimeter : -ve lead on 0v and +ve lead on centre of RV8, adjust
for a reading of zero millivolts (+ / - 10mV). Repeat for RV7, RV6,
RV5, RV4, RV3, RV2, RV1.

Note: The Neutrik has a 20 Hz to 20kHz filter if test device has a 30kHz filter
some noise and distortion measurements may be higher. Do not use any
filter when doing frequency response tests.

THE FOLLOWING SHOULD BE FIRST DONE READING A OUT ONLY.

8. Select "Step 1" of audiocal, adjust output level as seen on "Neutrik" to 25.0 dBu, for CHA using the gain pot RV13 (*RV14 for B out*).
Note: B channel in *italics* .
9. Select "Step 2" of audiocal you should see an output of typically 13.0 dBu, press "LEVEL REL" then "SET REF" on "NEUTRIK".
Displays 0.00 dBr.
10. Select "Step 3". Adjust top pot "A" ("*B*") to peak reading, typically 8.8 dBr (21.8 dBu).
11. Select "Step 4". Adjust bottom pot "A" ("*B*") for a reading of -2dBr (11.0 dBu).
12. Recheck "10". Continue to recheck "10" and "11" until correct levels have been achieved.
13. Select "Step 5" adjust top pot "A" ("*B*") for -20 dBr (-7.0 dBu).
14. Select "Step 6" adjust bottom pot "A" ("*B*") for 1dBr (14.0 dBu)
15. Select CHB output. Return "NEUTRIK" to dBu reading and follow procedure from points 8 to 14 for channel B. Note B channel pots in *italics* .
IMPORTANT: dBr and dBu are very different and levels must be checked with their correct reference. Use dBu in () if test device does not have a relative set function.

16. FOR CHANNEL A ONLY

Select "Step 7", select the "THD" function using dB as measurement unit and the 20Hz to 20kHz filter on the "NEUTRIK". Freq select on EXT. Set the "NEUTRIK" output for 15kHz and a level of 19dBu. Using the modified test clip inject the output of the "NEUTRIK" into pin 2 of IC G12,13 via the 4K7. Slightly adjust the output of the "NEUTRIK" for an output reading of +19dBu.

(Test clip has a 4K7 resistor connected to pin 2 for channel A and to pin 13 for channel B)

17. Connect input of "NEUTRIK" to pin 1 J11, and at R102 analogue ground. Adjust pot RV7 & RV8 for maximum -ve reading in THD mode, adjust the pot with maximum effect first. The reading should be typically -78dBu.

18. Connect input of "NEUTRIK" to pin 7 J11, and at R102 analogue ground. Adjust pot RV6 & RV5 for maximum -ve reading in THD mode. Adjust the pot with maximum effect first. The reading should be typically -74 dBu or better.

19. Set 2kHz -> 20kHz sweep and observe output from filter. Select measurement unit to THD+N % Set sweep mode to Freq. THD+N should start at .01% and move to .035% at 8kHz returning to .01% at 18kHz. If a sweep function is not available do spot checks of frequencies between 2kHz and 18kHz.

20. FOR CHANNEL B ONLY

Select "Step 7", select the "THD" function using dB as measurement unit and the (20Hz to 20kHz) filter on the "NEUTRIK". Freq select on EXT. Set the "NEUTRIK" output for 15kHz and a level of 19dBu. Using the modified test clip inject the output of the "NEUTRIK" into pin 13 of IC G12,13 via the 4K7. Slightly adjust the output of the "NEUTRIK" for an output of +19dBu.

(Test clip has a 4K7 resistor connected to pin 2 for channel A and to pin 13 for channel B)

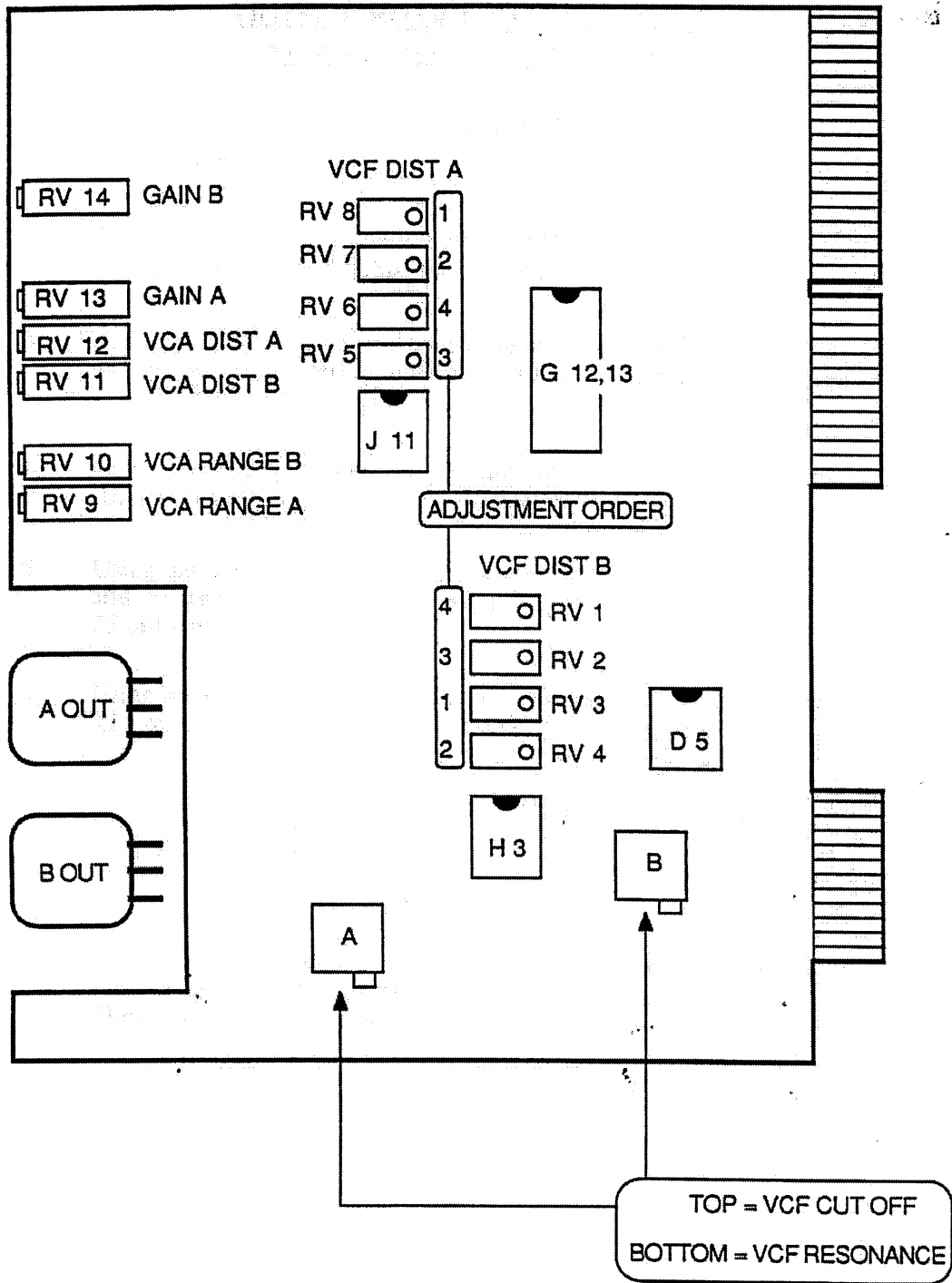
21. Connect input of "NEUTRIK" to pin 7 H3, and at R102 analogue ground. Adjust pot RV3 & RV4 for maximum -ve reading in THD mode, adjust the pot with maximum effect first. The reading should be typically -78dBu.
22. Connect input of "NEUTRIK" to pin 1 H3, and at R102 analogue ground. Adjust pot RV1 & RV2 for maximum -ve reading in THD mode. Adjust the pot with maximum effect first. The reading should be typically -74 dBu or better.
23. Set 2kHz -> 20kHz sweep and observe output from filter. Select measurement unit to THD+N % Set sweep mode to Freq. THD+N should start at .01% and move to .035% at 8kHz returning to .01% at 18kHz. If a sweep function is not available do spot checks of frequencies between 2kHz and 18kHz.
24. Disconnect test clip.
25. Select "Step 8" connect output XLR's to "NEUTRIK" inputs, Check for +25dBu at output channel A and B. adjust RV12 on CHA out for minimum THD reading. Adjust RV11 on CHB for minimum THD reading, i.e., max -ve reading at 1 kHz. (.03% THD+N at 1kHz)
26. Select "REL LEVEL" on "NEUTRIK" then "SET REF" Meter will read 0.00 dBr (25.0 dBu).
27. Select "Step 9", Adjust RV9 on Channel A to maximum negative reading, typically -90dBr, then readjust to -75dBr (-50bBu). Repeat procedure on Channel B using RV10.
28. Select "Step 10", observe that reading is -88 dBr (-65dbu) or better. CHECK BOTH CHANNEL A AND CHANNEL B.
29. Select "Step 11", observe reading of 0.00 dBr (25.0 dBu). CHECK BOTH CHANNEL A AND CHANNEL B.

30. Select "Step 12", observe a reading of -70dBr (-57.0 dBu) or better for channel A and channel B.
31. Select "Step 13", observe a reading of 0.00dBr (25.0 dBu) for both channel A and channel B.
32. Select "Step 14", observe a reading of -95dBr (-73dBu) or better, for channel A and for channel B. Check filter is ON.
33. Select "Step 15", Deselect 20Hz to 20KHz filter. Press "set" key on to break from Audiocal type "r SPACE 3", then press "return", then type "S SPACE 48000" and press "return". Type "g" then "return", you are now running "Step 15" with a sample rate of "48K" and resonance of "3". Use up / down arrows on keyboard to get to a frequency of "1 kHz". Zero the display using "Level Rel" and "SET REF" then step from 20 Hz to 20 kHz using up key and check response on "Level" setting. On channel A and Channel B. -1.5dBr at 20Hz, 0dBr at 1kHz, -2.5dBr at 20kHz +/- 2.0dB
34. To carry out distortion checks for OUTPUT A and OUTPUT B at frequencies between 20Hz to 20kHz. Return Audiocal to step 1 by typing "q" return and then "a" return. Select filter and use the arrow up and arrow down keys to change the frequency.

Typical Figures are: Better than or equal to:

| Full level | | | Step 16 | output level -14dB |
|------------|-------|-----|---------|--------------------|
| FREQ | THD+N | -dB | THD+N | -dB |
| 20Hz | .02% | -70 | .045% | -65 |
| 50Hz | .02% | -70 | .040% | -65 |
| 100Hz | .02% | -70 | .040% | -65 |
| 200Hz | .02% | -70 | .045% | -65 |
| 500Hz | .02% | -70 | .045% | -65 |
| 1000Hz | .03% | -70 | .045% | -65 |
| 2000Hz | .04% | -65 | .060% | -63 |
| 5000Hz | .105% | -60 | .095% | -60 |
| 10000Hz | .250% | -55 | .180% | -54 |
| 18000Hz | .350% | -50 | .350 | -50 |

AUDIO CARD LAYOUT FOR CMI-331 REV 1B.8, 1B9 and 1B10



OUTPUT BOARD CALIBRATION
FOR REVISION 1B7.2 CARDS

1. From shell type "kstart SPACE -c SPACE /k2/kmondiag" <return>
OR "wsdiag" <return>
2. Type "a" for audio calibration programme <return>
For each card Leave 5 mins. for temperature to stabilise.
3. Using multimeter : +ve lead connected to junction of R68 & pin 7 J1,2B
and -ve lead connected to junction of R63 & pin 1 J1,2A. Adjust for 20 to
25 millivolts on bottom pot "A".
4. Using multimeter : +ve lead on 0v and -ve lead connected to junction of
R63 & pin 1 J1,2A.. Adjust for -72 millivolts on top pot "C".
5. Using multimeter : +ve lead connected to junction of R27 & pin 7 J3,4B
and -ve lead connected to junction of R26 & pin 1 D5A. Adjust for 20 to
25 millivolts on bottom pot "B".
6. Using multimeter : +ve lead on 0v and -ve lead connected to junction of
R26 & pin 1 D5A. Adjust for -72 millivolts on top pot "D".
7. Using multimeter : -ve lead on 0v and +ve lead on centre of RV8, adjust
for a reading of zero millivolts (+ / - 10mV). Repeat for RV7, RV6,
RV5, RV4, RV3, RV2, RV1.

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10. Select "Step 3". Adjust top pot "C" ("*D*") to peak reading, typically 8.8 dBr (21.8 dBu).
11. Select "Step 4". Adjust bottom pot "A" ("*B*") for a reading of -2dBr (11.0 dBu).
12. Recheck "10". Continue to recheck "10" and "11" until correct levels have been achieved.
13. Select "Step 5" adjust top pot "C" ("*D*") for -20 dBr (-7.0 dBu).
14. Select "Step 6" adjust bottom pot "A" ("*B*") for 1dBr (14.0 dBu)
15. Select CHB output. Return "NEUTRIK" to dBu reading and follow procedure from points 8 to 14 for channel B. Note B channel pots in *italics*.

IMPORTANT: dBr and dBu are very different and levels must be checked with their correct reference. Use dBu in () if test device does not have a relative set function.

AUDIO CARD LAYOUT FOR CMI-331 UP TO REV 1B7.2

