K&K Audio

RAKK dac
Mark III

Raleigh Audio

Passive Differential Output Stage

Assembly and Installation Manual

Version 1.0

Kit version

Use this manual with: RAKK dac Mark III Passive Differential Output Stage, 2009 version.

Required Tools and Supplies

35 to 50 Watt soldering iron
Diagonal cutting pliers
Wire stripper
Solder

Warnings and Cautions

Caution – Use only solder that is intended for electrical circuits. Do not use acid or corrosive flux of any kind.

Support

RAKK dac and its associated components are produced through the joint cooperation of K&K Audio and Raleigh Audio. You may contact us with questions on constructing this kit by sending an e-mail message to david@raleighaudio.com or kevin@kandkaudio.com

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Assembly Instructions

Before you start, read through the instructions completely to the end. Inventory the kit contents to become familiar with the parts and to make sure you have everything.

In the following steps you will populate the PC board. All of the components are mounted on the top of the board, which has the components labeled with white silkscreen.

1. Insert a 3.01KΩ (marked on body) resistor in locations R1 and R2.

    Solder and trim the leads.

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2. Insert an LL1674 transformer in one location.

    Solder all of the leads.

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3. Insert an LL1674 transformer in the other location.

    Solder all of the leads.

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Check that all leads are soldered and that there are no “solder bridges” that connect things that should not be connected.

Installation Instructions

We have found that the vast majority of problems experienced with the RAKK dac and its associated components are traced back to incorrect installation, particularly ground loops and faulty grounding. Do not trust your intuition—rather, follow these instructions—we know that they work.

The board is designed such that it may be physically mounted to the RAKK dac, however you may choose to mount it
separately. These instructions assume that the output board is mounted to the RAKK dac.

In the following steps all wires should be soldered.

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1. Mount the output board on the RAKK dac with four standoffs and screws. The solder side of the output board should be adjacent to the component side of the RAKK dac and the output signal pads (R-, R+, L-, L+) should be aligned.

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2. Connect the four output signal pads on the RAKK dac to the respective pads on the output board with pieces of solid wire.

   Solder and trim both ends.

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3. Connect a wire from the "**Ref**" pad on the output board to the "**REF**" pad on the RAKK dac. This is the pad between the R– and L+ pads.

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4. Wire your right output jack.

If you are using RCA jacks, connect the center pin of the right output jack to the right **"+"** pad on the board. Connect the shell of the RCA jack to the **"–"** pad.

If you are using XLR jacks, connect pin 2 of the right output jack to the right pad **"2"** on the board. Connect pin 3 of the XLR jack to pad **"3"**.

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5. Wire your left output jack.

If you are using RCA jacks, connect the center pin of the left output jack to the left **"+"** pad on the board. Connect the shell of the RCA jack to the **"–"** pad.

If you are using XLR jacks, connect pin 2 of the left output jack to the left pad **"2"** on the board. Connect pin 3 of the XLR jack to pad **"3"**.

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6. If you are using XLR jacks, connect a wire from pin 1 of each jack to the system chassis.

You may want to add a volume control to the output board. To do so, connect a 10K potentiometer between pads **"+"** and **"–"** for each channel. Connect the low side of the potentiometer to pad **"–"** and the wiper to pad **"+"**. The low side of the potentiometer is that which is connected to the wiper when the potentiometer is turned maximum counter-clockwise. You will notice that the maximum volume will be slightly less than without a potentiometer present. If this is a problem you can increase the maximum volume by replacing R1 and R2 with 4.32K Mills resistors.

If you are experiencing hum and are using RCA jacks, you may find that the hum is reduced or eliminated by grounding the shells of the RCA jacks. To do so, install the two **"Gnd Jumpers"** on the output board and connect a wire between the **"Chassis"** pad on the output board and the system chassis at the point where the Mains safety ground is connected to the chassis.

Parts List

Designator	Part	Description	Qty
R1, R2	Resistor, 3.01K	Mills, Brown, value marked on body	2
T1, T2	Transformer	Lundahl LL1674	2
	PC board		1

Document version history

Version	Description
1.0	Original document