

K&K Audio

RAKK dac

Mark III

Raleigh Audio

USB to I2S Converter

Installation Manual

Kit version

Use this manual with RAKK USB to I2S v 1.1, which is marked on the board.

Required Tools and Supplies

35 to 50 Watt soldering iron
Diagonal cutting pliers
Long-nose 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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Introduction

The USB to I2S converter is intended to be used in conjunction with the RAKK dac Mark III digital board or other DAC that has an I2S input. It uses an isolated 12V power input so it may be powered from the same power supply as the RAKK dac without impeding the performance of the RAKK dac.

For the best performance possible, the USB interface must be isolated from the circuitry in the DAC that it is attached to. We have chosen to provide an isolated I2S interface on the RAK dac Mark III for this purpose. If you are interfacing to a DAC that does not have an isolated I2S interface, then there is a possibility of a ground loop in the system which may cause noise: for example buzzes or hums.

The board is provided completely assembled, ready for installation.

I2S Interface

The I2S interface is galvanically isolated from the circuitry and ground on the RAKK dac board. Therefore all six wires must be connected for proper operation. The interface is implemented with a standard 3.3V logic family and is designed to operate into standard 3.3V or 5V logic families.

Specifications:

Absolute minimum load impedance = 200Ω

Nominal output pulse amplitude = 3.0V

Installation Instructions

The RAKK USB to I2S board is designed to be mounted to the RAKK dac Mark III board. These instructions assume that the USB to I2S board will be used with the RAKK dac Mark III.

1. Complete the assembly of the RAKK dac Mark III.

2. Mount the USB to I2S board on the RAKK dac such that the I2S interface pads are co-located. Use four standoffs and screws.

3. Install six short wires between the I2S interface pads on the two boards. Observe polarity—the pads are aligned and labeled.

4. Mount the two boards in their location and secure them in place.

5. Install the internal USB cable, if used.

6. Install a twisted pair of wires from the +12V and Ground pads on the USB board to the 12V power supply. Observe polarity.

Document version history

Version	Description
1.1	Original document