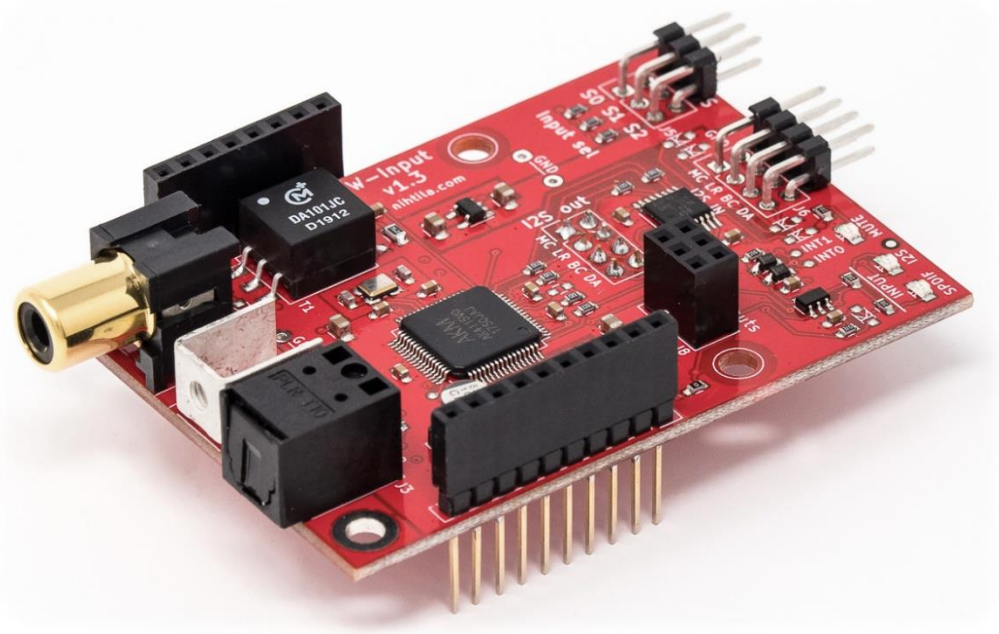
NIHTILA.COM
DIY. AUDIO. ELECTRONICS.

W-Input

S/PDIF digital audio input board with I2S output



FEATURES

- Two S/PDIF inputs and I2S passthrough
- Possibiltiy to add two more S/PDIF inputs, including AES/EBU (XLR)
- Up to 192 kHz / 24-bit S/PDIF audio
- I2S output

INPUTS

- Two on-board S/PDIF inputs
  - Coaxial RCA (isolated)
  - Toslink
- Two more S/PDIF inputs with addon
  - Coaxial RCA and Toslink, or
  - AES/EBU XLR and Toslink
- On-board I2S input (passthrough)
  - E.g. for external USB to I2S board
  - Can be any sample rate

OUTPUT

- I2S output (W-Input is I2S Master)
  - MCLK – Master clock (output)
  - LRCK – Word clock (output)
  - BCLK – Bit clock (output)
  - Data – Audio data (output)

APPLICATIONS

- Digital input selector in high performance Hifi DAC
- Use in DIY DAC system:
  - In Wee DAC system with W-DAC, additional baseboards and addons
  - With any compatible I2S DAC

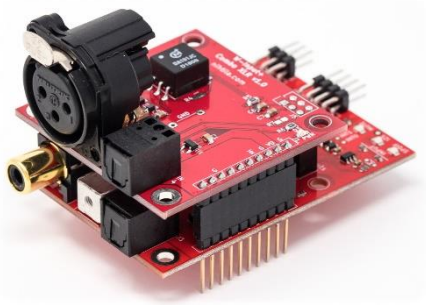
W-Input is a compact digital audio input board supporting up to four S/PDIF inputs with up to 192 kHz / 24-bit audio. In addition, fifth input is a direct I2S passthrough supporting any sample rate. This allows for using external I2S source, such as USB to I2S module.

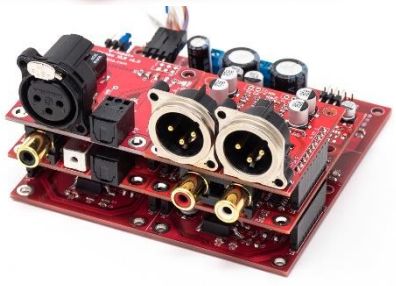
There are two on-board S/PDIF inputs: one galvanically isolated coaxial RCA and one optical Toslink. In addition, two more inputs can be added using one of the two addon boards available:

- W-Input+ Combo for 1x RCA and 1x Toslink
- W-Input+ Combo XLR for 1x AES/EBU XLR and 1x Toslink

W-Input is part of Wee DAC system and designed to be stacked with W-DAC and other Wee DAC boards. However, any compatible I2S DAC can be used. See nihtila.com for more information.

Below are photos of W-Input with W-Input+ Combo XLR addon, and in more extensive Wee DAC system.





NIHTILA.COM
DIY. AUDIO. ELECTRONICS.

HARDWARE DETAILS

- AKM AK4115VQ S/PDIF receiver
- Electrical inputs galvanically isolated
- 4-layer PCB
- Design and performance evaluated by comprehensive measurements and with very high-performance DAC

SYSTEM REQUIREMENTS

- I2S Slave device, such as DAC
  - Data, Bit clock, Word clock
  - Master clock
  - 3.3 V logic level
- Power supply:
  - 5 V digital, 20 mA
- For easy system integration use Wee DAC baseboards and addon boards

INFORMATION AND CONTACT

- http://nihtila.com for general up to date information and shop
- Youtube for videos
- Follow Twitter (@nihtilacom)
- Contact (http://nihtila.com/contact/)

DOCUMENT VERSION

v1.3A.0 (03/2020) for board v1.3A

Configuration and settings

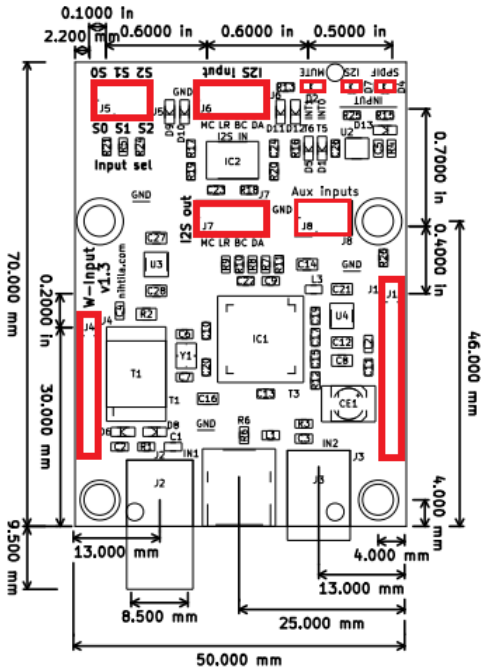
W-Input uses AK4115VQ in HW-mode so no other configuration than input selection is required. Input is selected with jumper links (or external control signals) on J5; see table below.

When either SPDIF or I2S LED is on, the board is powered up.

When the SPDIF LED is on and the Mute LED is off, S/PDIF receiver is locked in incoming S/PDIF stream. If the Mute LED is on, the receiver is unlocked.

When I2S input is selected, the I2S LED is on. Also, AK4115VQ is powered off and Mute is off. The I2S input is then directly routed to the I2S output.

For more details refer to nihtila.com and AK4115VQ datasheet.



I2S pinheaders J6 (I2S input) and J7 (I2S output) have following signals:

- MC – Master clock
- LR – Word clock
- BC – Bit clock
- DA – Data

In J6 all of these are inputs and in J7 all are outputs.

Input selection J5.

S2	S1	S0	Selected Input
open	open	open	IN1 (Coaxial RCA)
open	open	close	IN2 (Optical Toslink)
open	close	open	IN3 on W-Input+ Addon (Optical Toslink)
open	close	close	IN4 on W-Input+ Addon (Coaxial or AES/EBU)
close	don't care		I2S input/passthrough

Supplies and pins on edge connectors J4 and J1.

Only signals used in this board are shown.

J4 Pin	Description
G (1)	Ground
G (3)	Ground
G (6)	Ground

J1 Pin	Description
G (1)	Ground
VD (2)	Digital supply, 5 V
G (3)	Ground
M (4)	Mute signal (output to W-DAC)
G (8)	Ground