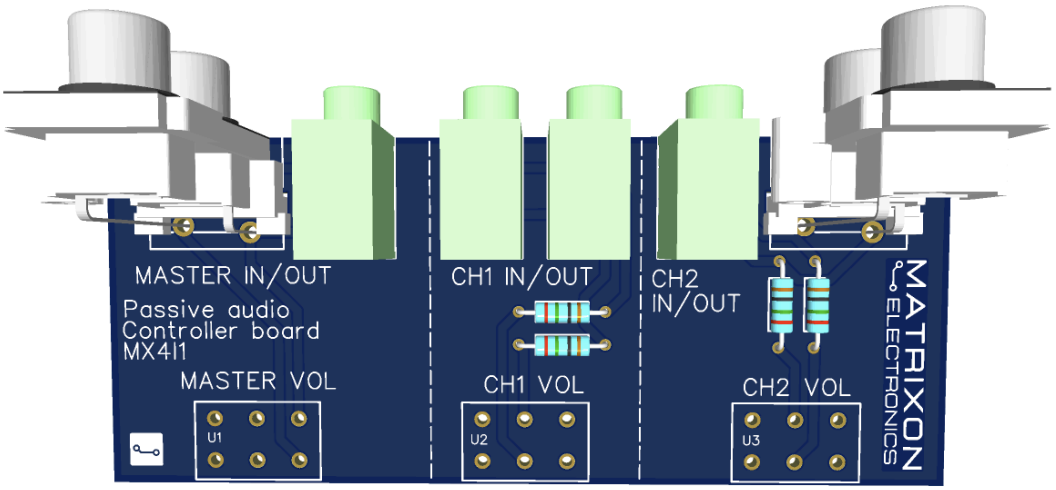
MATRIXON ELECTRONICS

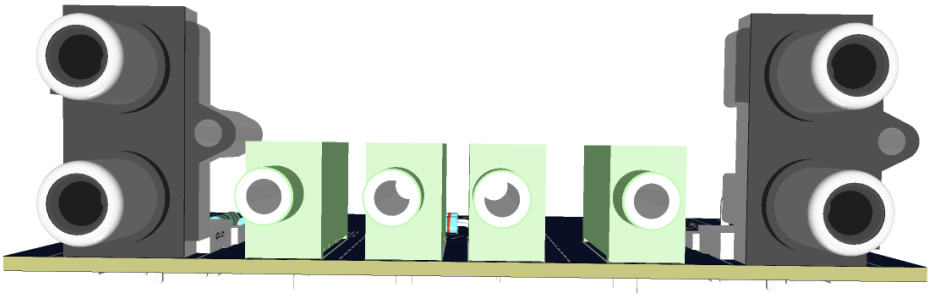
Passive Audio Controller Board

MX411

Product Datasheet

A compact passive stereo audio splitter and mixer that routes one input to two outputs or combines two inputs into one output. Features dual B100K volume controls for independent channel adjustment - no external power required. Ideal for DIY audio, amplifier setups, and studio routing.





Version: Rev 1.0
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Overview

The MX4I1 - Passive Audio Controller Board is a compact, power-free audio routing module designed for both splitting and mixing stereo line-level audio signals. It features three independent B100K stereo potentiometers (Master, CH1, CH2), RCA connectors, and 3.5mm stereo jacks for maximum compatibility.

The board supports two modes:
Case 1: Splitter Mode - Master input distributed to CH1 and CH2
Case 2: Mixer Mode - CH1 and CH2 combined into Master output

Each channel includes series 100Ω isolation resistors on Left and Right, protecting sources from loading issues during passive mixing.
Perfect for home audio, DIY projects, amplifiers, audio routing panels, and field audio setups.

Features

- Fully passive operation, no power required
- 3× B100K stereo potentiometers (Master, CH1, CH2)
- 4× 3.5mm TRS female jacks
- 2× RCA stereo ports (Master & CH2)
- Stereo Left/Right isolation resistors (100 Ω) on CH1 and CH2
- Supports passive splitting and passive mixing
- Independent level control on all three channels
- Low-noise routing with clean ground reference
- Works with any line-level audio source
- Compact PCB with mounting points
- Ideal for DIY audio, custom sound systems, and studio patching

Applications

- Line-level stereo signal splitting
- Passive stereo signal mixing (2-in to 1-out)
- Multi-device audio distribution
- Volume control before amplifier inputs
- Routing console for hobby electronics projects
- Home audio setups / sub-mixing
- Portable DJ / podcast splitters
- Line-level noise-free patch panel

Purchase Link

Download the Gerber files here: MX4I1 - Passive Audio Controller Board

Functional Description

All the ports act as IN or OUT depending on the use cases.

Master Channel

- Includes 1× B100K stereo pot for master volume
- Includes 1× 3.5 mm stereo jack
- Includes 1× RCA stereo port

CH1 Channel

- Includes 2× 3.5 mm stereo female jacks
- Controlled by 1× B100K stereo pot
- Operates as input or output depending on mode

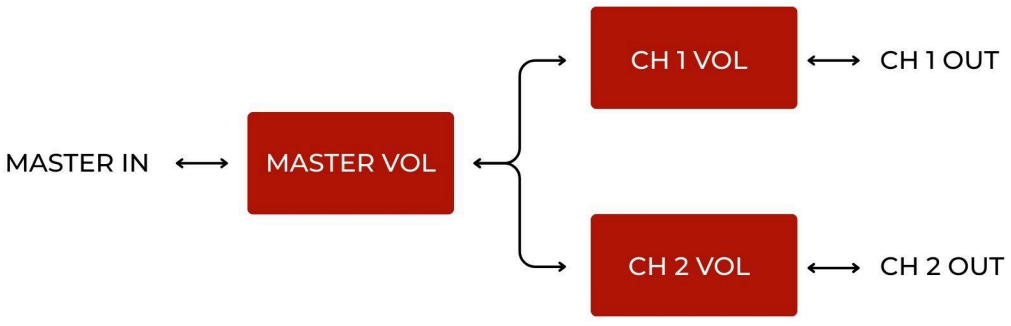
CH2 Channel

- Includes 1× 3.5 mm stereo female jack
- Includes 1× RCA stereo port
- Volume controlled by 1× B100K stereo pot

Passive Splitter Mode

Master to **CH1 / CH2**

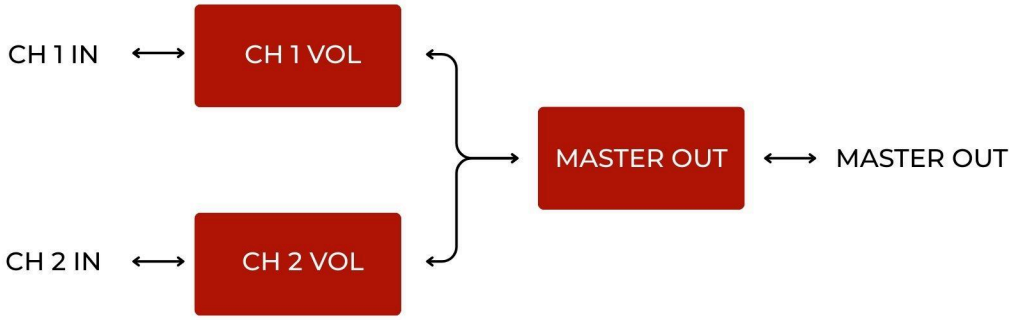
- Master signal is controlled via Master VOL
- CH1 and CH2 receive the same source
- Volume of each channel is independent
- No loading issues due to series resistors



Passive Mixer Mode

CH1 + CH2 to **Master**

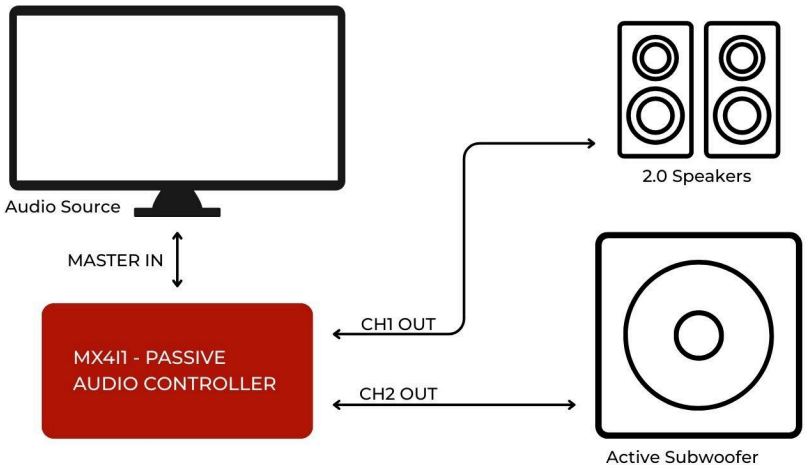
- CH1 and CH2 signals enter through their jacks
- 100 Ω resistors prevent direct shorting between sources
- Master outputs combined/mixed audio
- Master pot controls final output level



Example Application

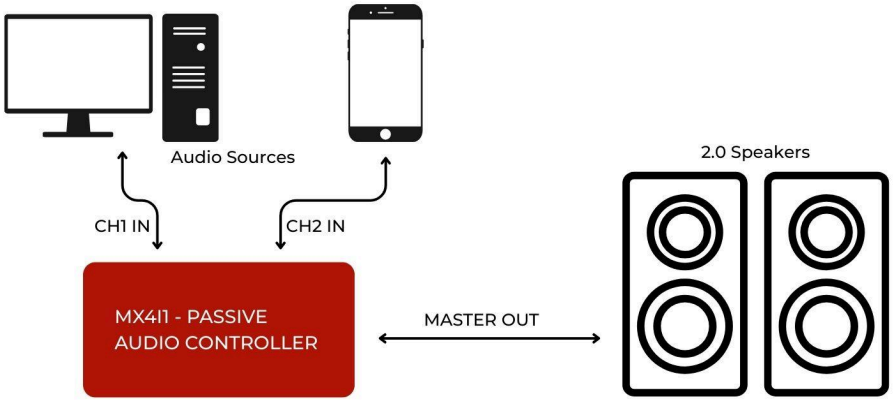
Splitter Mode

You can use the MX4I1 - Passive Audio Controller in Splitter Mode to feed audio to both your active subwoofer and stereo speakers from a single audio source (PC, TV, DAC, phone, etc).



Mixer Mode

Combine two audio sources (Example: PC + Phone) into a single mixed output for speakers, headphones, streaming setup, etc.



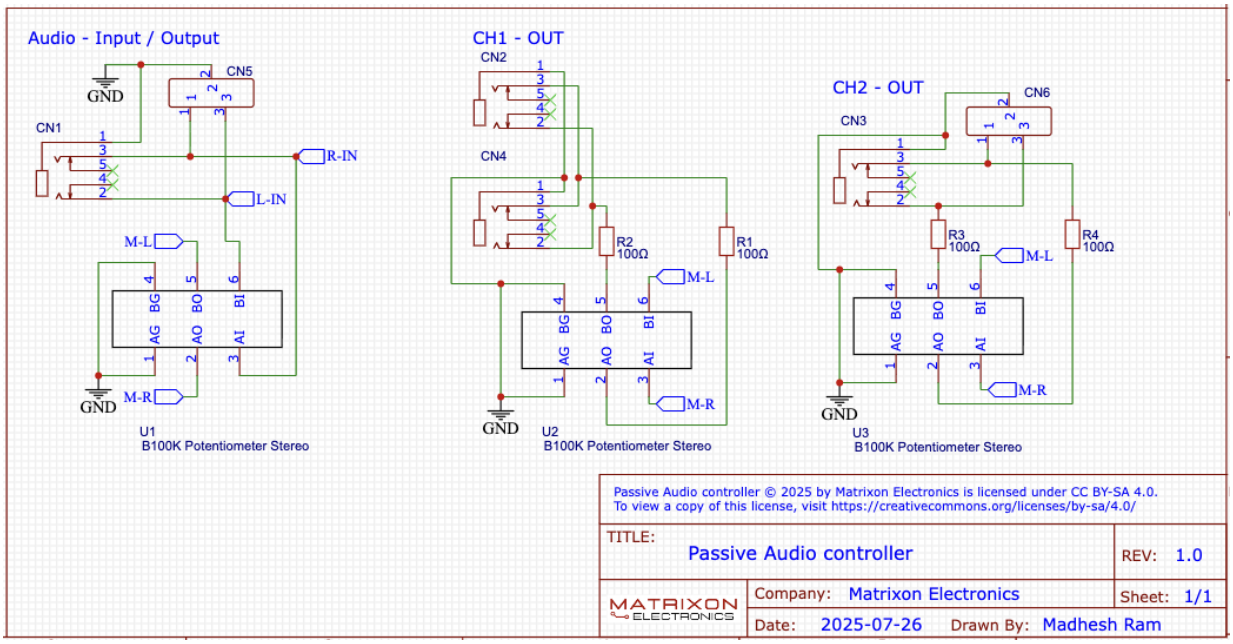
Technical Specifications

Parameter	Value
Operation	Passive (No power required)
Channels	Master, CH1, CH2
Audio Type	Stereo (L / R)
Potentiometers	3× B100K Stereo (Master, CH1, CH2)
Connectors	4× 3.5mm TRS jacks, 2× RCA stereo
Series Isolation Resistors	100 Ω (CH1 L/R, CH2 L/R)

PCB Layout & Dimension

Parameter	Value
Board Size	42mm x 100mm
Layers	2
Components Placement	Top layer (Single side)

Schematics



Revision History

Date	Version	Modify Content
30/11/2025	Rev 1.0	New