

## Connector board for MCU and class D audio amplifier



### Features

- Connector board for MCU board AEK-MCU-C1MLIT1
- Connector board for Class D audio amp AEK-AUD-D903V1
- It hosts an L9616 CAN transceiver
- It hosts a level translator to adjust I2S test pin from audio board to a compatible level for MCU
- Separated board with two potentiometers with 5V compliant sliders included
- RoHS compliant
- Included in the AutoDevKit™ initiative

### Description

The **AEK-CON-C1D9031** is a connector board dedicated to bridge **AEK-AUD-D903V1** board hosting **FDA903D** automotive digital class D power amplifier and **AEK-MCU-C1MLIT1** board hosting a **SPC582B** Chorus family automotive MCU with 1MB flash. On the board there are two main female strip connectors: a 19x2 one is used for **AEK-MCU-C1MLIT1** while the 20x2 is used for the **AEK-AUD-D903V1**. An additional 15x2 male strip J2 is used to connect the **AEK-MCU-C1MLIT1** and **AEK-AUD-D903V1**. It is mandatory to fill the connector with all jumpers, except for the position 19-20 (I2S Test).

A regulator and a level translator are employed to adjust level of a debug signal coming from the audio amp for current monitoring during play. This signal is called I2S test and it is digital and synchronized with the audio data sent through the I2S interface.

To make the system a potential audio sub-module, a CAN transceiver has been added employing L9616. This allows to sent audio commands to the MCU through CAN interface. A 6-pin male connector is available on the board for this purpose.

The last 4-pin plug of the board is dedicated to connect a separate board with two potentiometers actuated with sliders. The values of the potentiometers are fed to the MCU ADCs (analog-to-digital converters) compatible with 5V levels. One potentiometer could be employed to control the volume while the second one is used to accelerate the sound played.

Traditionally, the audio sub-module is used for typical automotive infotainment applications. Recently, the Electric Vehicle Warning Sounds (AVAS) system has become a new growing application for automotive audio. This system is required by new vehicles to alert pedestrians of the presence of electric powered vehicles that are generating much less noise. Warning sounds may be driver triggered (like a horn) or automatic mimicking engine sounds.

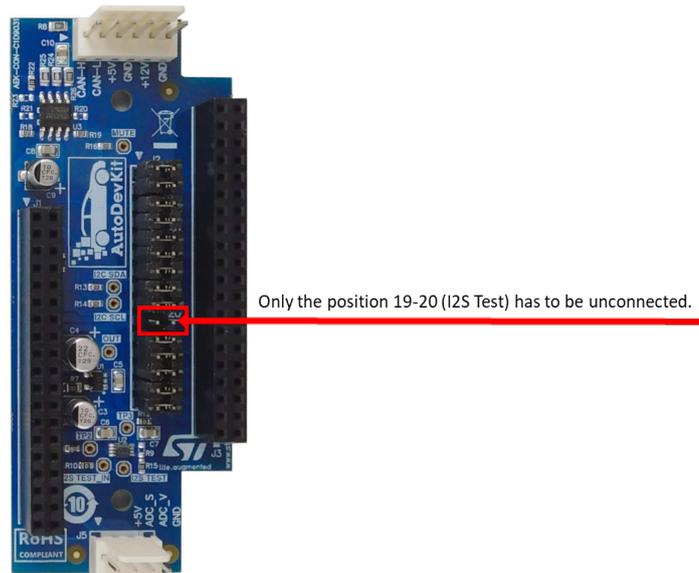
The speed slider can be employed to modify the played sound to simulate a change of the engine rpm. From 2021 according to government regulations, the vehicle must make a continuous noise level of at least 56 dBA (within 2 meters) if the car is going 20 km/h (12 mph) or slower, and a maximum of 75 dBA. The combination of **AEK-AUD-D903V1** with **AEK-MCU-C1MLIT1** through **AEK-CON-C1D9031** offers a viable low-cost solution for entry-level AVAS systems. The CAN interface allows remote control of several audio sub-modules that can be placed around the vehicle.

Product summary	
Connector board for MCU and class D audio amplifier	<b>AEK-CON-C1D9031</b>
MCU discovery board for SPC5 Chorus 1M automotive microcontroller	<b>AEK-MCU-C1MLIT1</b>
AutoDevKit library plugin for SPC5-STUDIO	<b>STSW-AUTODEVKIT</b>

# 1 Jumper configurations and schematic diagrams

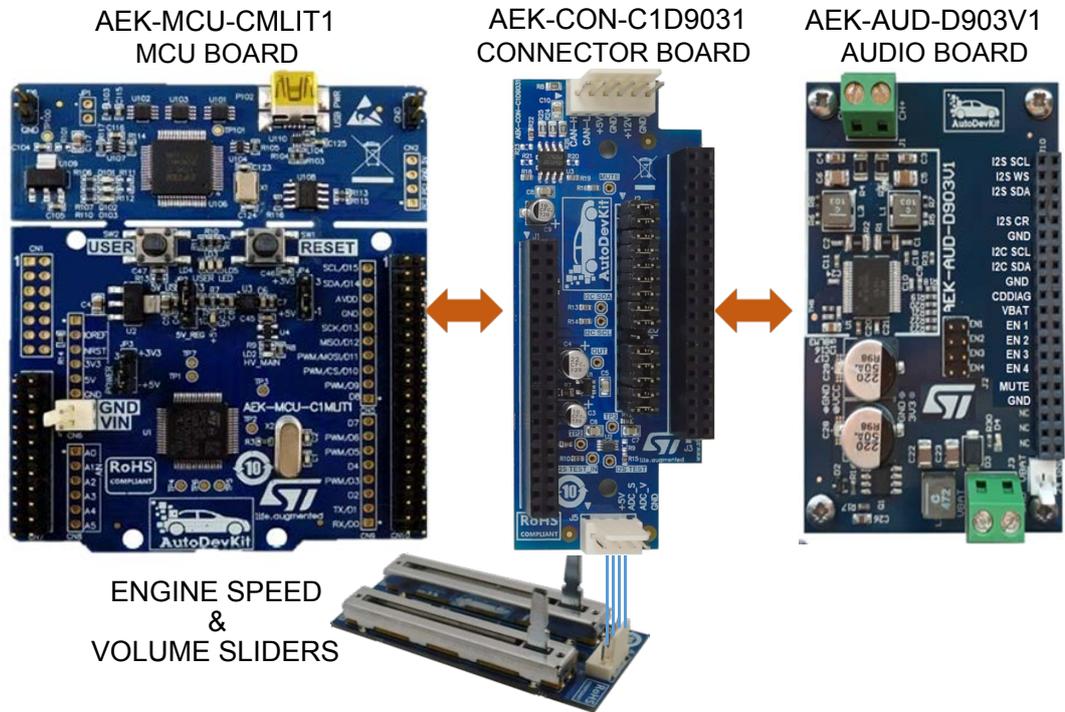
## 1.1 Jumper configurations

Figure 1. AEK-CON-C1D9031 configuration



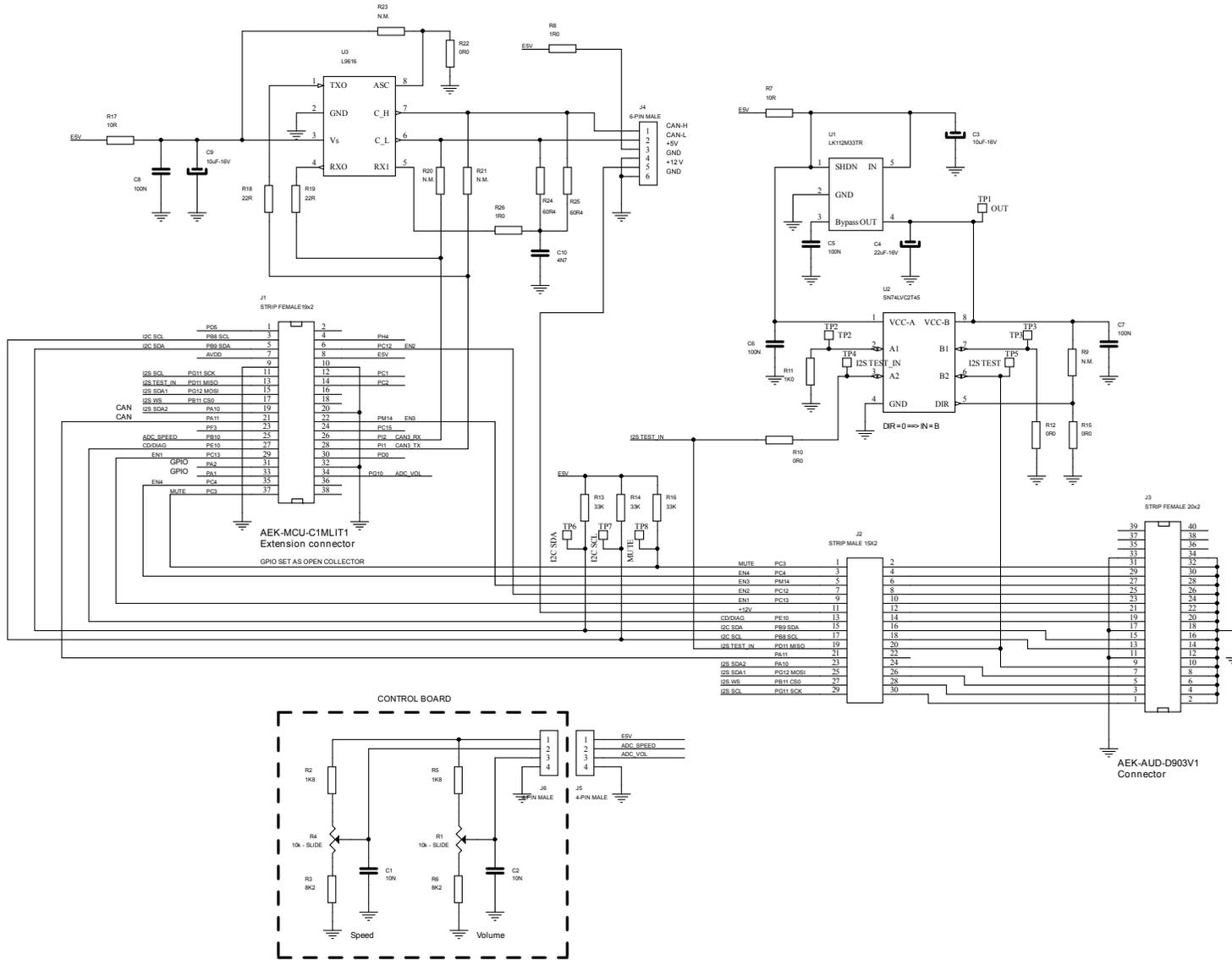
Note: It is mandatory to fill the connector with all jumpers, except for the position 19-20 (I2S Test) as showed in the Figure 1. AEK-CON-C1D9031 configuration.

**Figure 2. System configuration for a low-cost automotive audio solution**



# 1.2 Schematic diagrams

Figure 3. Schematic diagram



## Revision history

**Table 1. Document revision history**

Date	Version	Changes
14-Jul-2020	1	Initial release.

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