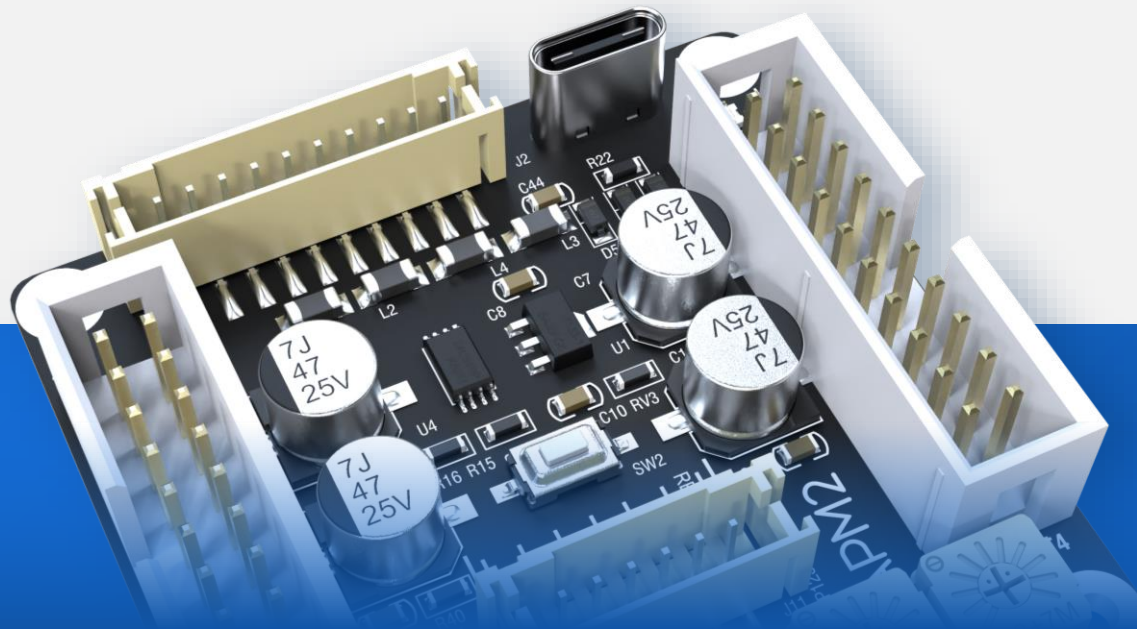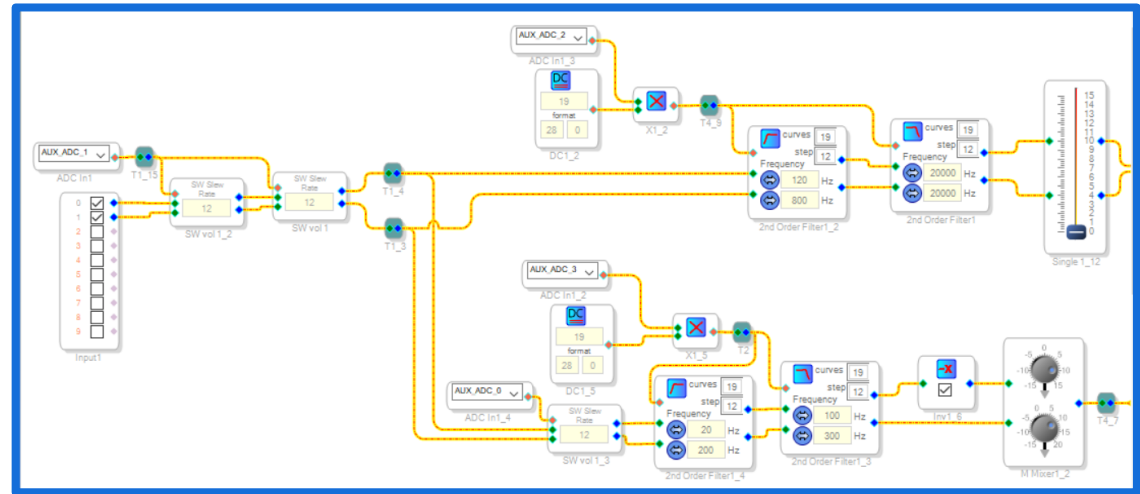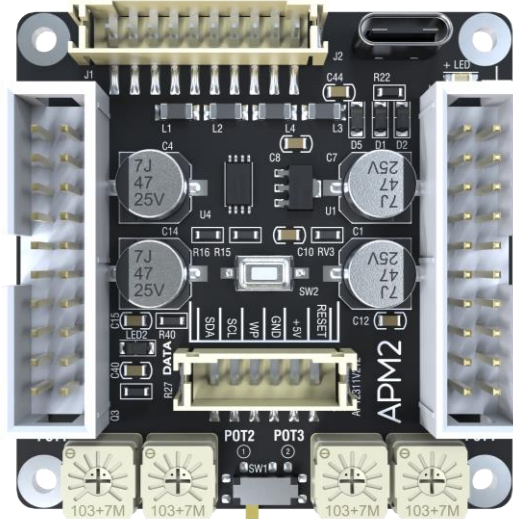# " The Correspondence of APM2 Hardware & DSP Program
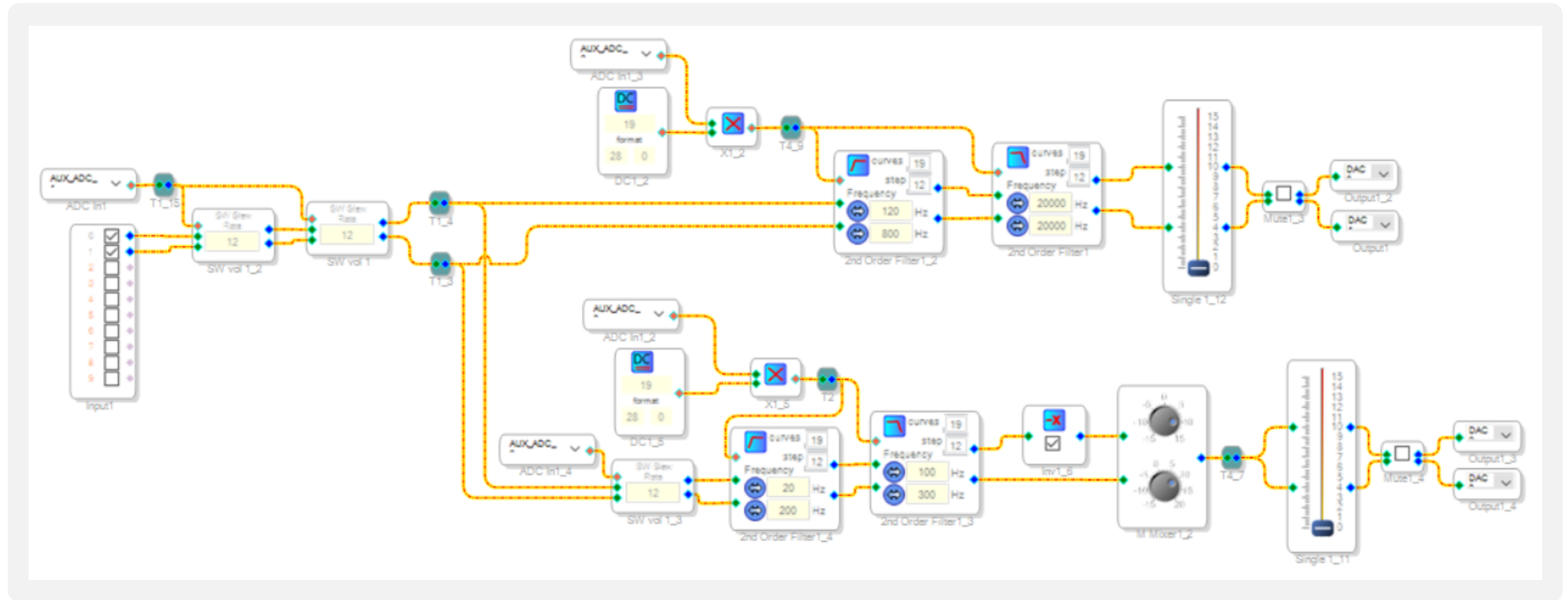
Overview

APM2 is the kernel board based on ADAU1701 DSP, which can provide 2-in, 3-out after connection with the interface extension board APM3, suitable for audio 2.1 system and digital crossover applications. Thanks to the integrated debug port, APM2 supports programming through SigmaStudio, which improves the flexibility and expandability. You can program APM2 with original USBi, or WONDOM in-circuit programmer – ICP series.

For customers convenient connection and operation, we developed APM2 with various hardware resources like audio input, output and control, on the basis of ADAU1701's resources. We need to know the correspondence relationship of APM2 hardware and DSP software, along with the remaining available resources of ADAU1701 for better further development of APM2.
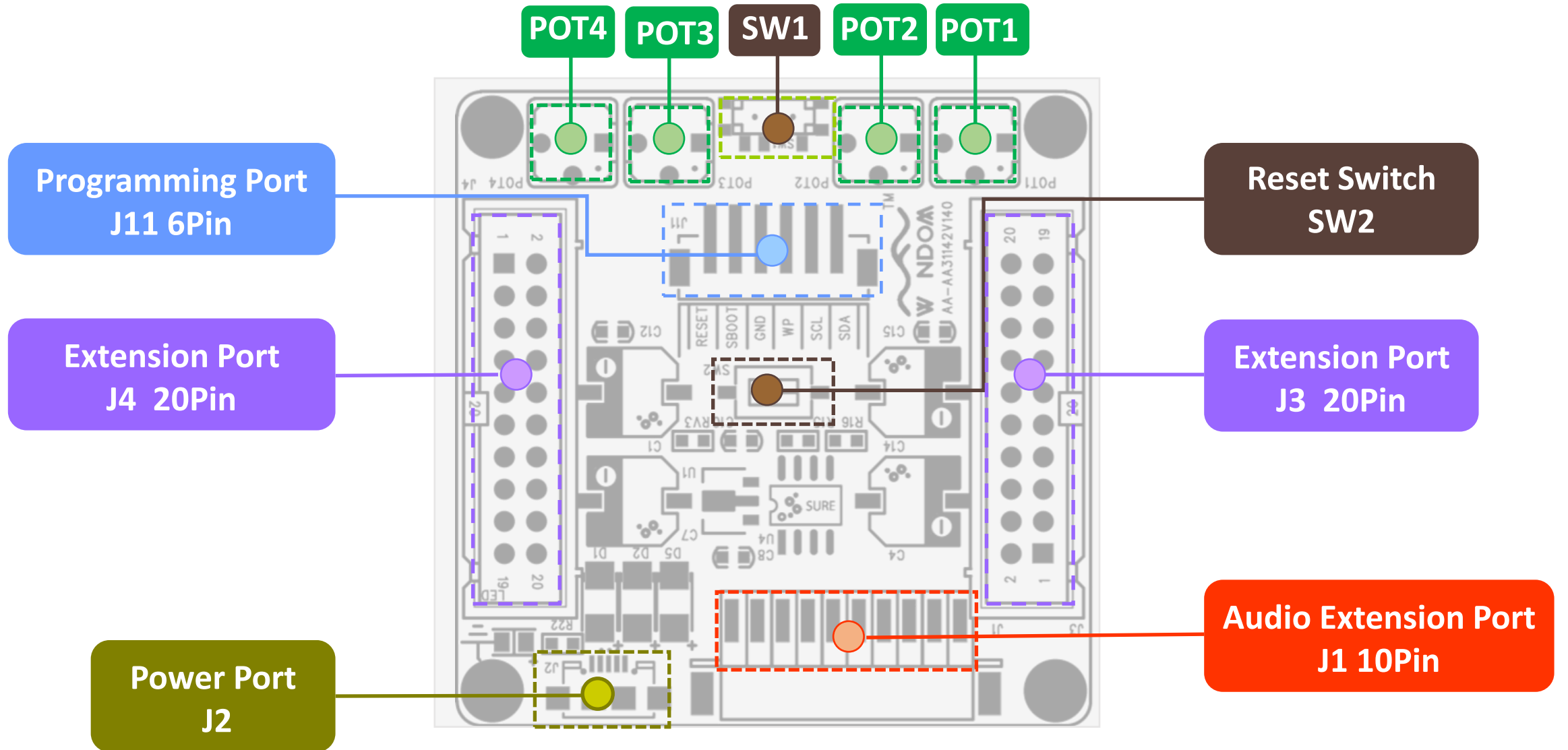
Correspondence Relationship

To make it easier and clearer for your understanding, we will make use of the open-sourced demo program to explain the correspondence relationship of APM2 hardware and ADAU1701 program. You can download the program HERE.

APM2 Interfaces

POT4 POT3 SW1 POT2 POT1

Programming Port J11 6Pin

Extension Port J4 20Pin

Power Port J2

Reset Switch SW2

Extension Port J3 20Pin
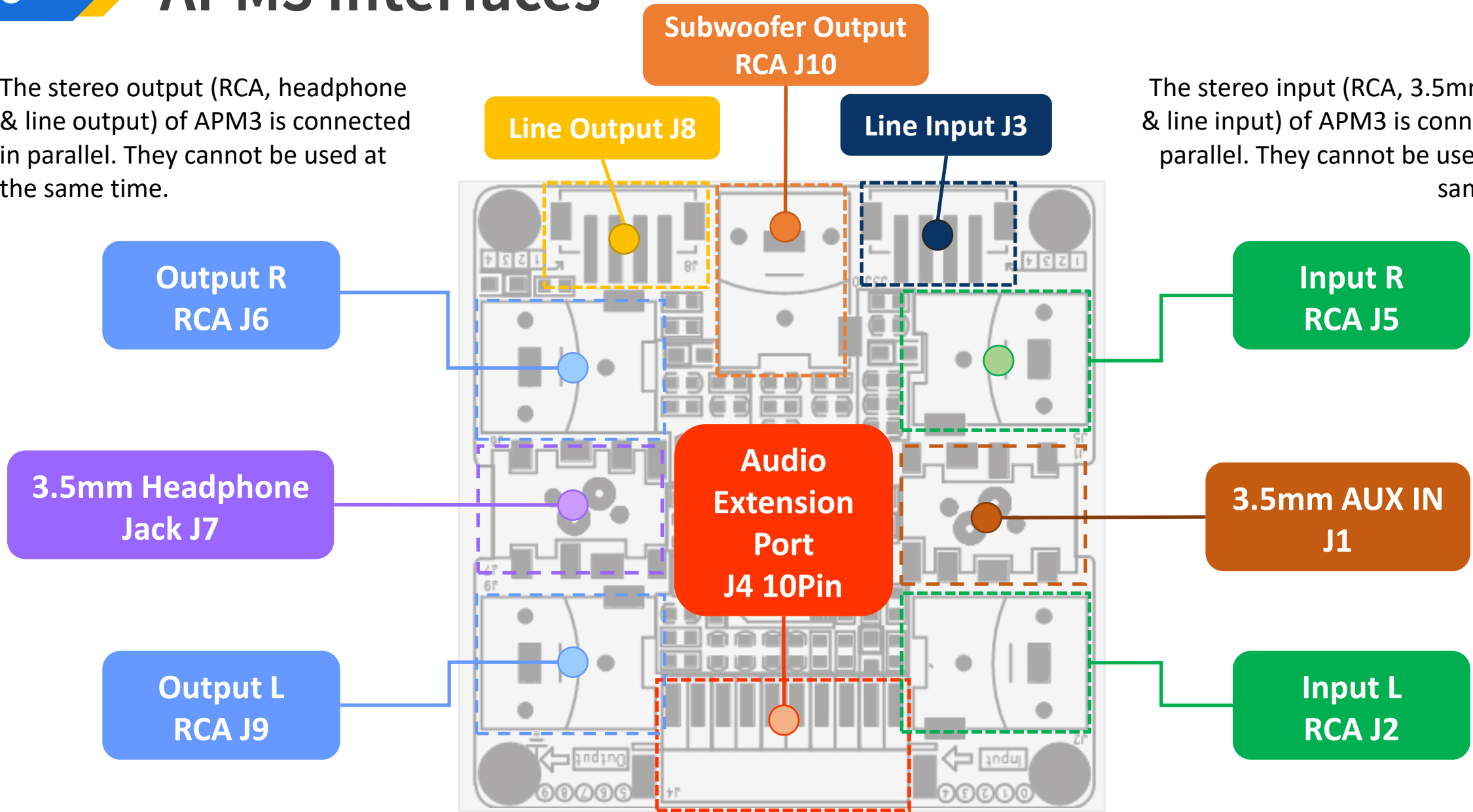
Audio Extension Port J1 10Pin

APM3 Interfaces

The stereo output (RCA, headphone & line output) of APM3 is connected in parallel. They cannot be used at the same time.

The stereo input (RCA, 3.5mm aux in & line input) of APM3 is connected in parallel. They cannot be used at the same time.

Subwoofer Output RCA J10

Line Output J8

Line Input J3

Output R RCA J6

Input R RCA J5

3.5mm Headphone Jack J7

Audio Extension Port J4 10Pin

3.5mm AUX IN J1

Output L RCA J9
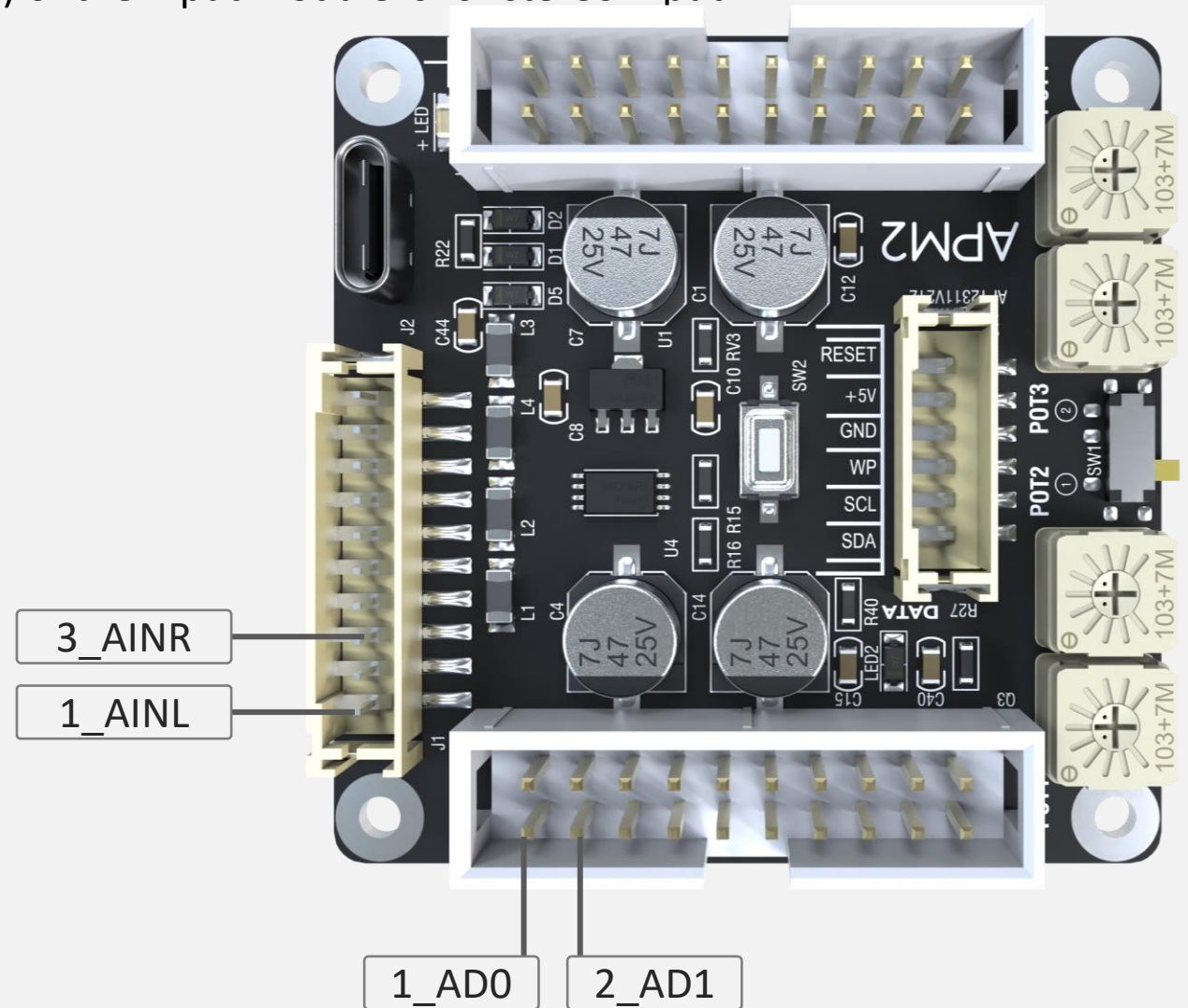
Input L RCA J2

Audio Input

APM2 supports stereo analog input, which in hardware is pin 1 (AINL) & pin 3 (AINR) of J1, and pin 1 (AD0) & pin 2 (AD1).

In the demo program, the 0 (ADC_IN0) and 1(ADC_IN1) of the input module is for stereo input.
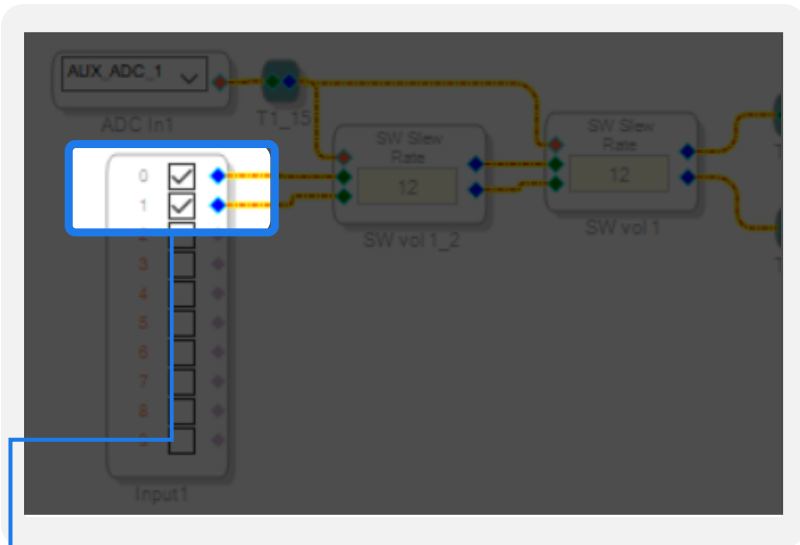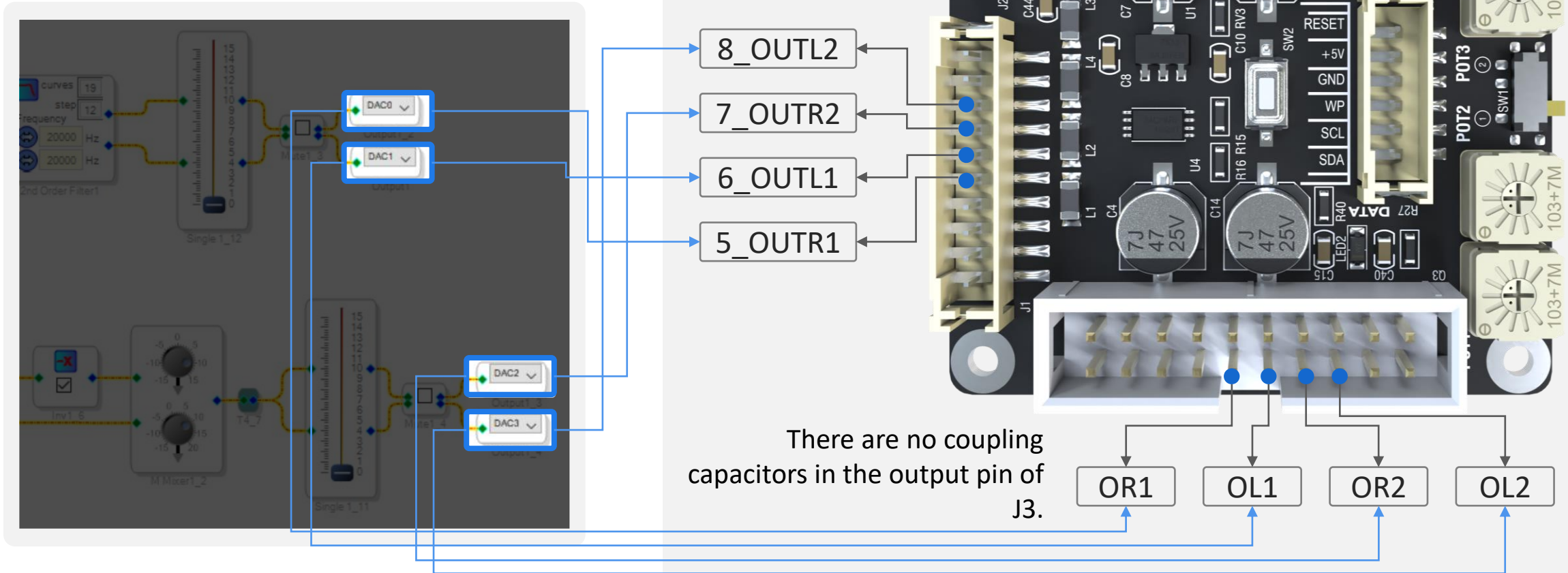

Analog Input

0 (ADC_IN0) and 1 (ADC_IN1) of the input module is for analog input.
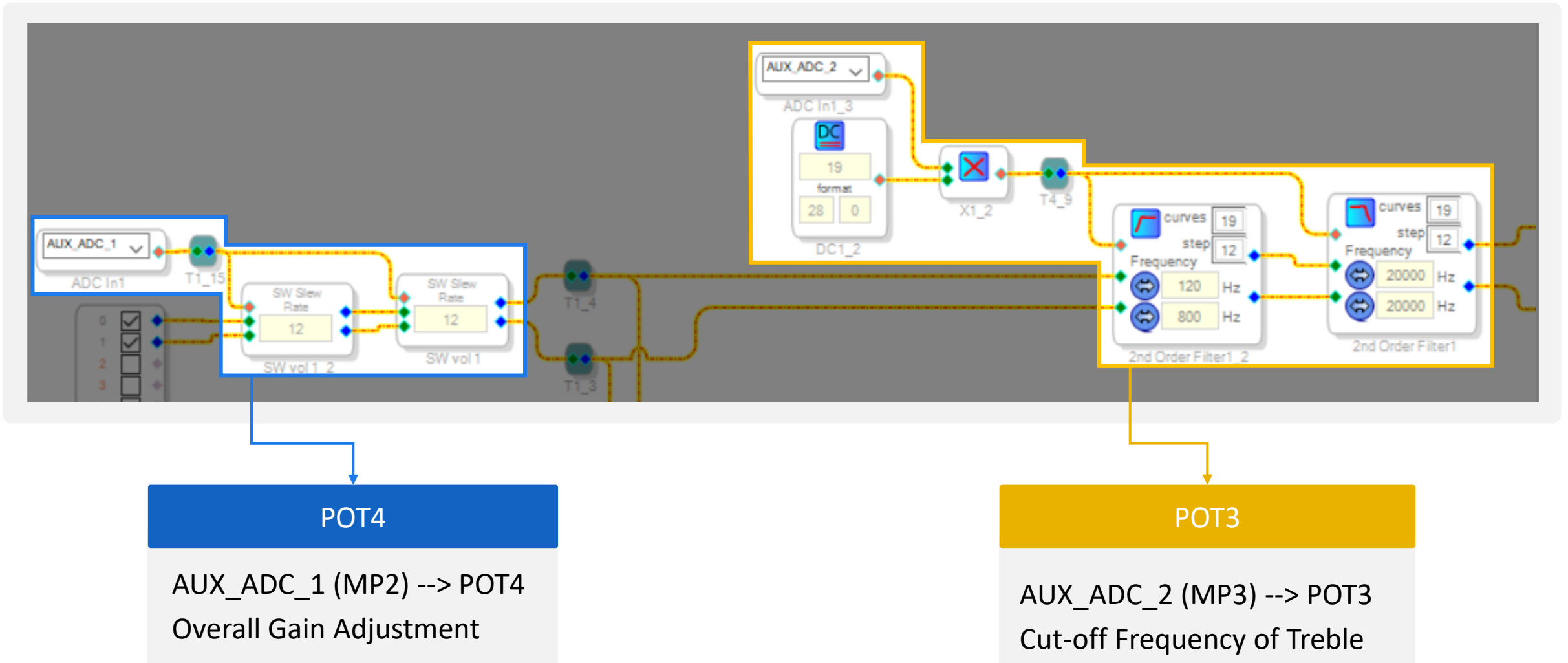
3_AINR

1_AINL

1_AD0

2_AD1

Audio Output

APM2 supports 2-in, 4-out. The output in hardware is pin 5, 6, 7, 8 (OUTR1, OUTL1, OUTR2, OUTL2) of J1 and OR1, OL1, OR2, OL2 pin of J3, which is separately corresponded to DAC0, DAC1, DAC2, DAC3 output module in the program. APM3 interface extension board only supports 2-in, 3-out.

8_OUTL2

7_OUTR2

6_OUTL1

5_OUTR1

There are no coupling capacitors in the output pin of J3.

OR1   OL1   OR2   OL2

Potentiometers

There are four on-board potentiometers on APM3, which can be used to adjust the gain and cut-off frequency of audio system. The mapping relationship is as follows.

POT4

AUX_ADC_1 (MP2) --> POT4

Overall Gain Adjustment

POT3

AUX_ADC_2 (MP3) --> POT3

Cut-off Frequency of Treble

Potentiometers

There are four on-board potentiometers on APM3, which can be used to adjust the gain and cut-off frequency of audio system. The mapping relationship is as follows.
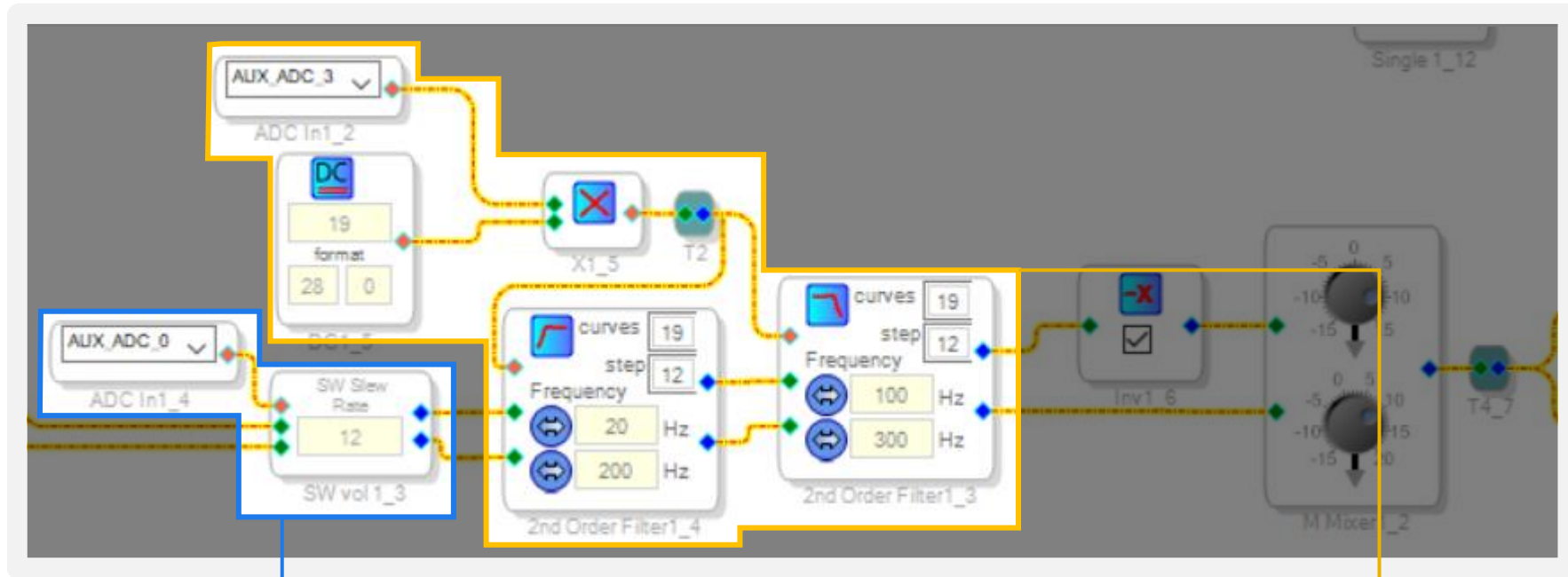
POT1

AUX_ADC_0 (MP9) --> POT1

Bass Gain Adjustment

POT2
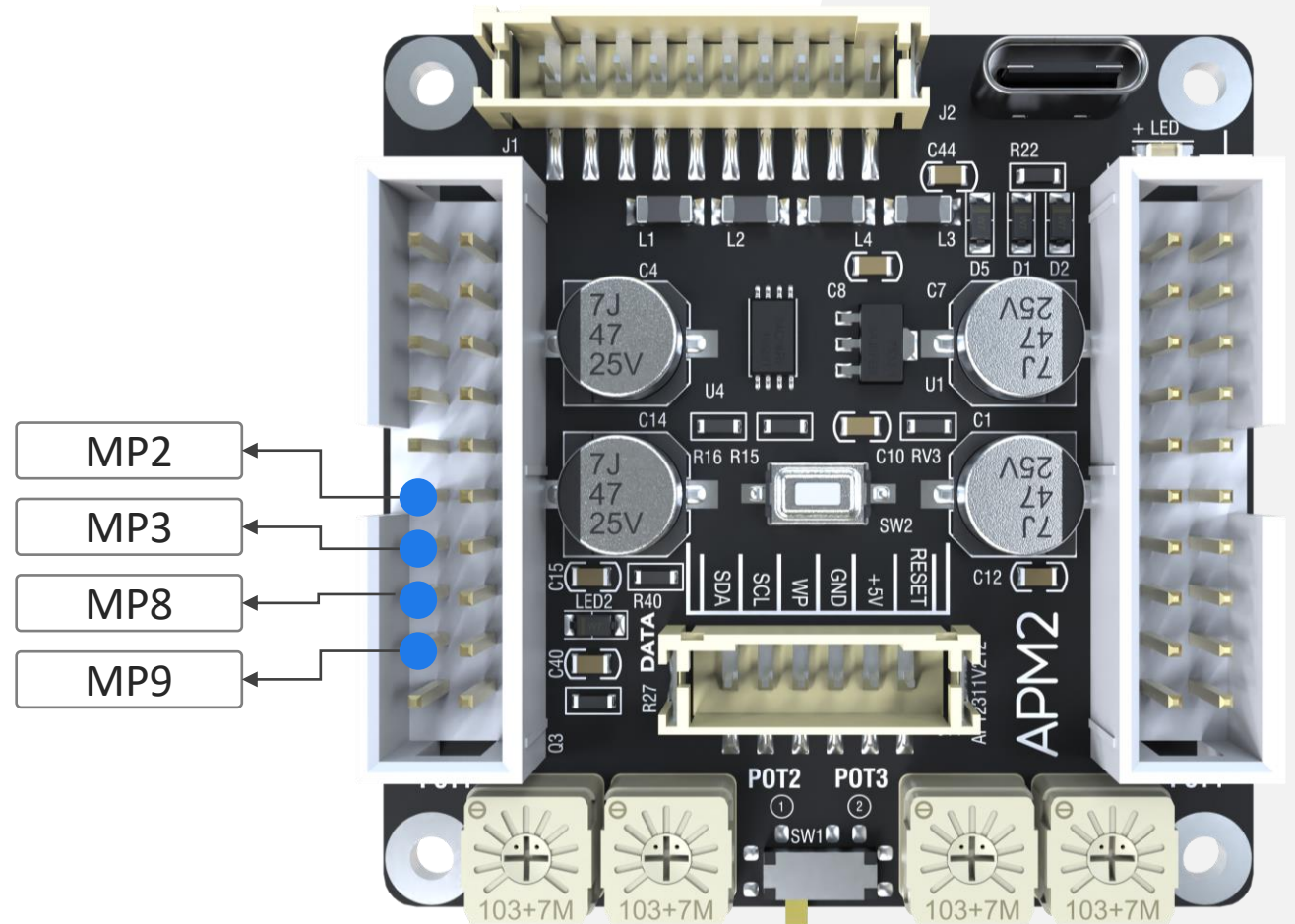
AUX_ADC_3 (MP8) --> POT2

Cut-off Frequency of Bass

Potentiometers

If you want external potentiometers, you can lead out MP2, MP3, MP8, MP9 of J3.

Lead out +3.3V, GND and corresponding pin of the potentiometer for an external control.

Please note, if you want to adjust audio parameters through the external potentiometers, you need to set the on-board potentiometers at the maximum value at first.
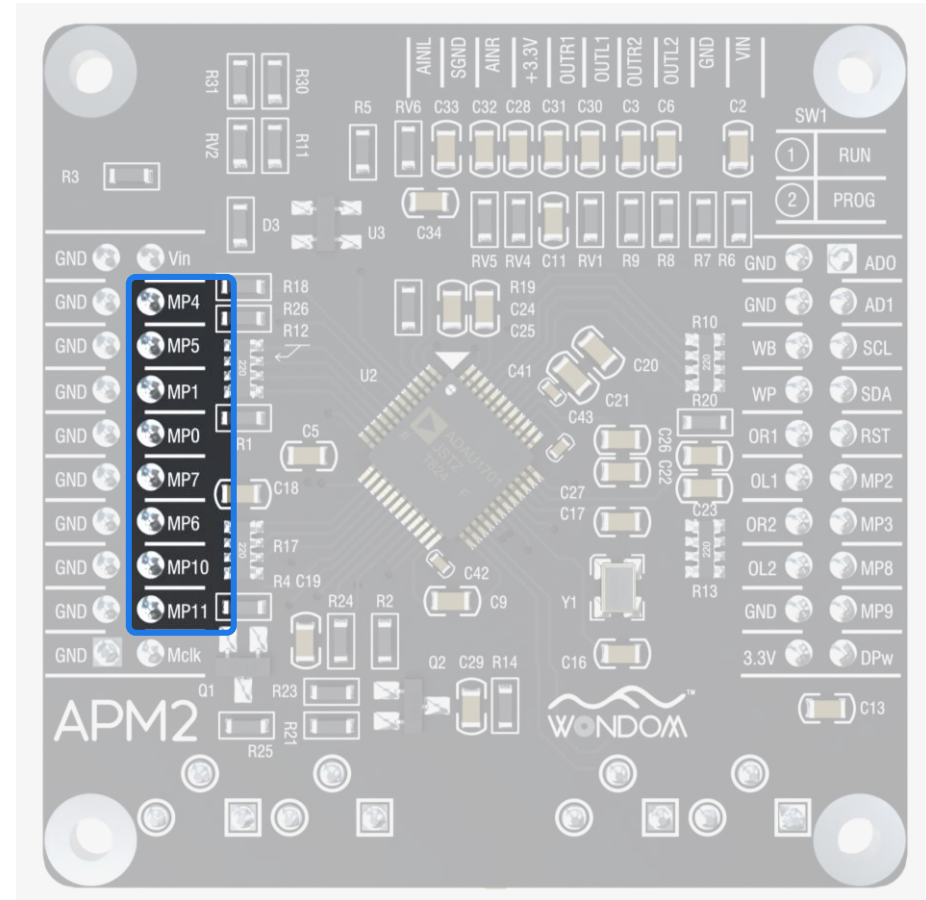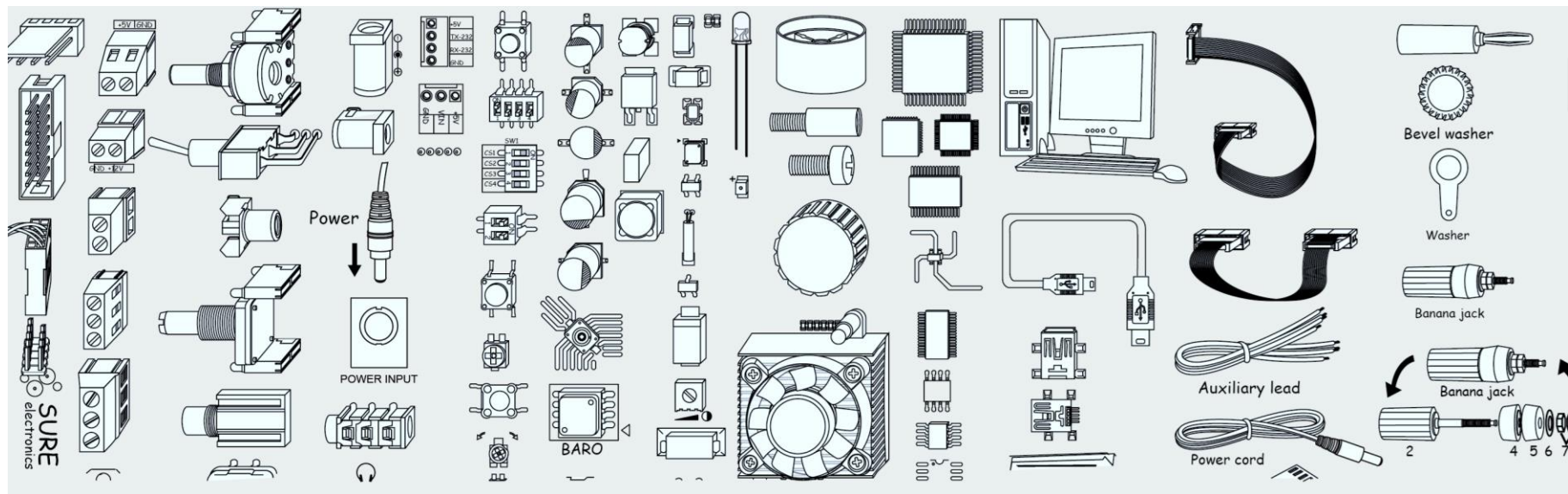
Extension Port

MP2, MP3, MP8 & MP9 are for potentiometers。

There are two 20-pin extension ports on APM3. 。 MP0, MP1, MP4-MP7, MP10 and MP11 are still available for further development.

SURE electronics

3F, Building F6, No. 9, Weidi Road, Xianlin, Qixia Dist., Nanjing, China
Tel: +86-025-85260046
Web: store.sure-electronics.com
Email: info@sure-electronics.com
Skype: sureelectronics

WeChat

Website

YouTube

Online Shop