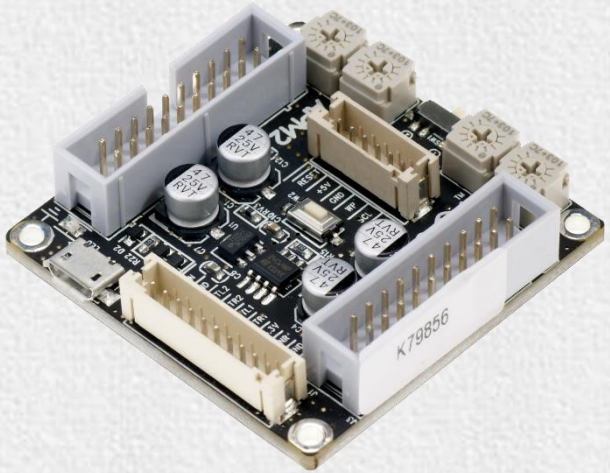
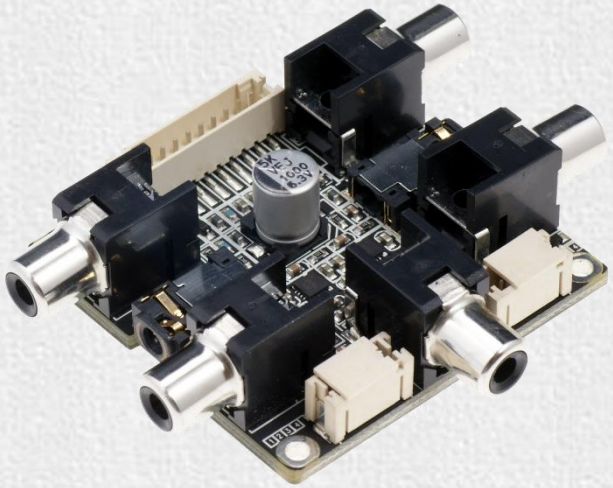
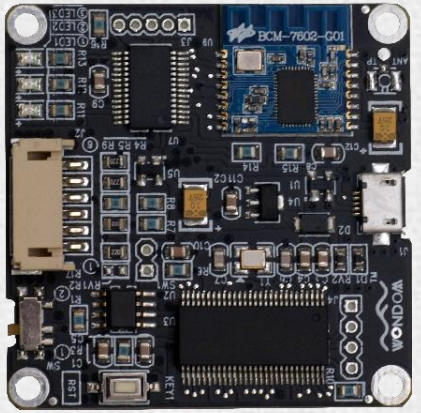
How to Program APM2 with WONDOM In-Circuit Programmer?





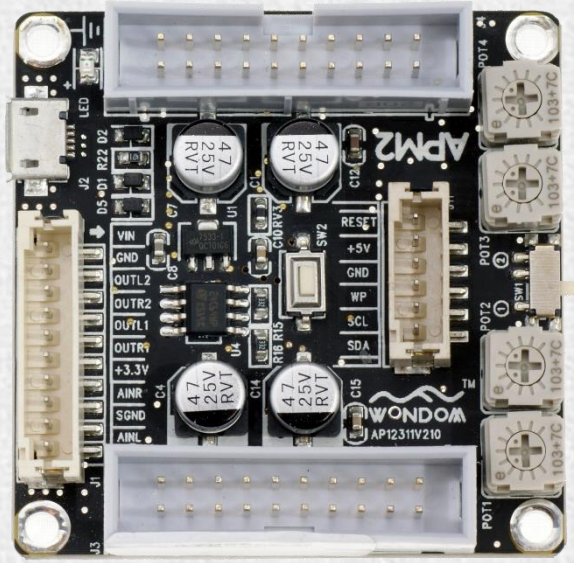


VIDEO TUTORIAL

Overview

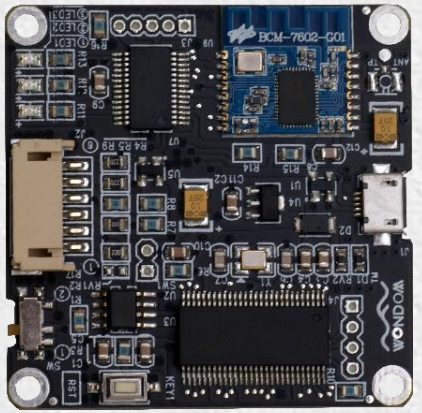
The APM series is a complete audio system with control interfaces and signal processing. The applications range from active louderspeaker concepts (digital 3 way 3 unit, 2 way 2 unit crossover, bass enhancement, etc.) to realizing the tansformation from 2.0 to 2.1. With four potentiometers, customers can get the default functions to adjust the gain, cut-off frequency of bass and treble.

With integrated debug port for SigmaStudio, customers can pre-program with WONDOM ICP1, ICP3 or the original Analog USBi to get more functions which includes equalization, crossover, bass enhancement, multiband dynamics processing, delay compensation, etc.



In-Circuit Programmer – ICP3

WONDOM provides our own programming board named In-circuit Programmer with BLE Bluetooth for APP control - ICP3, which is the gospel for customer preferring simple style. It can be connected directly to DSP Kernel Board by a 6 pin cable without a pinboard. The APM can be controlled by WONDOM ICP3. On-board self-boot EEPROM is included in ICP3 for operating the board independently with the Analog Devices, Inc., SigmaStudio™ software. With Bluetooth integrated, customers can control APM1 through APP (Miumax) on their hand.



In-circuit Programmer
with BLE Bluetooth for APP control - ICP3

The programming package contents include

- ✓ In-circuit Programmer with BLE Bluetooth for APP control - ICP3
- ✓ A 6-pin cable

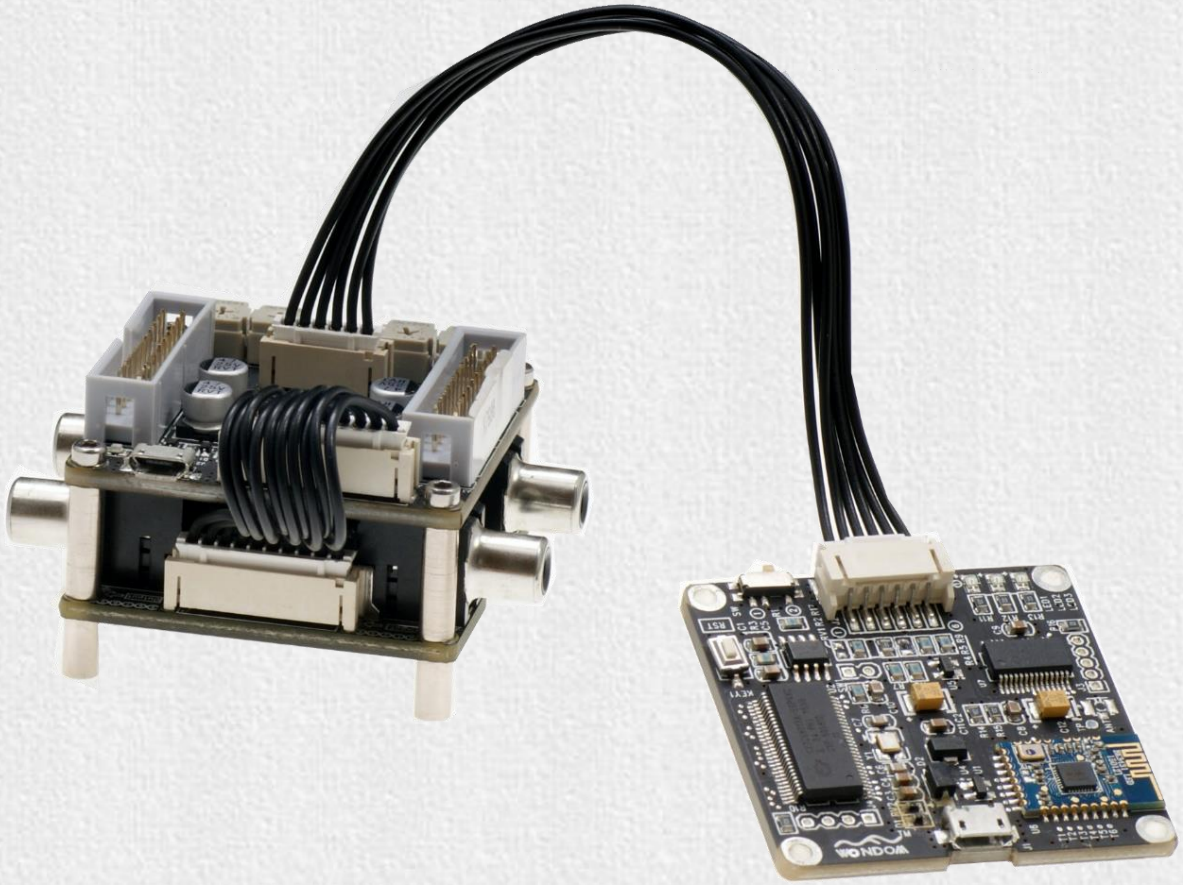
6 pin cable

This kit cost $24.9.

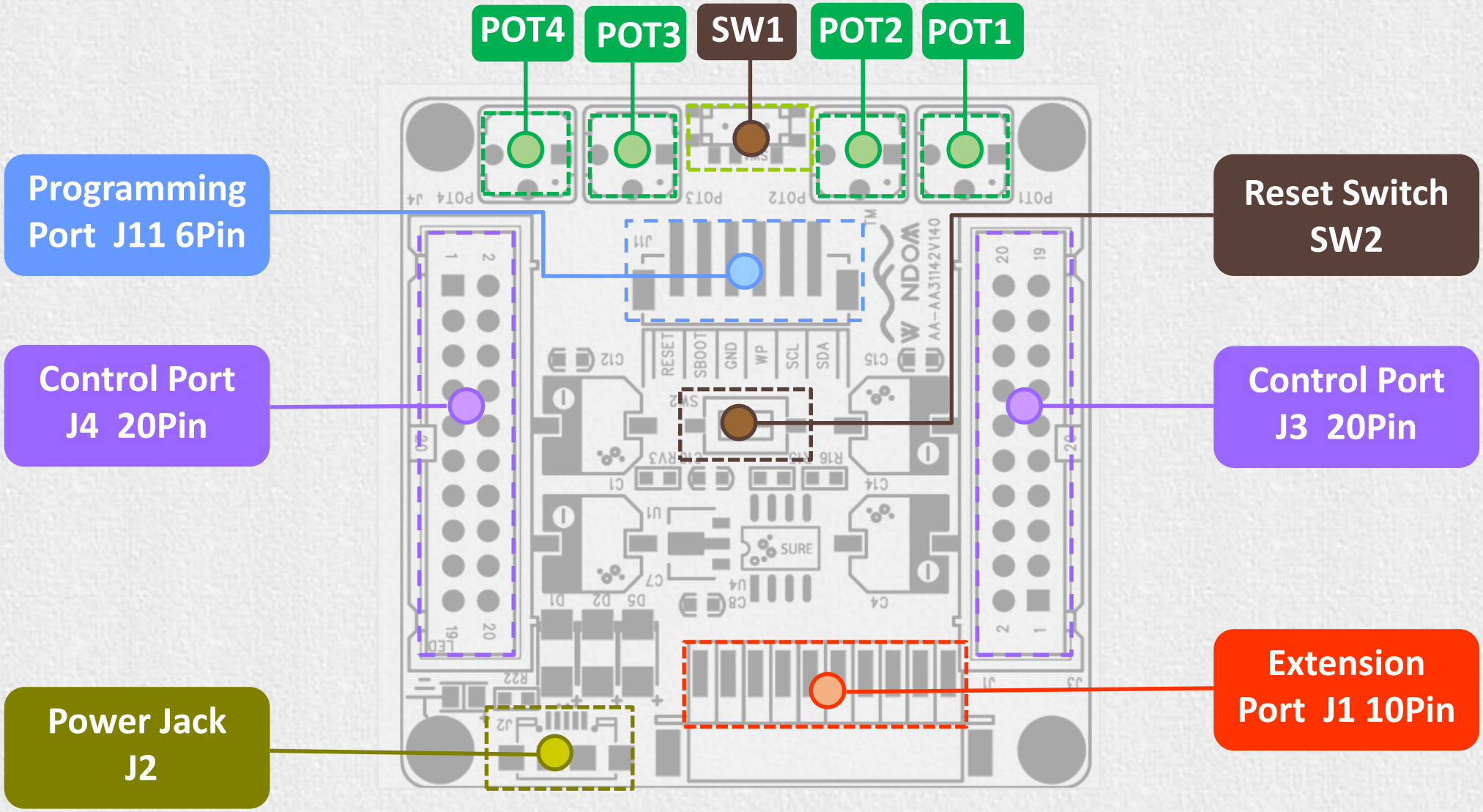
Quick Start

To quickly get started with the Digital Signal Processor APM2, Extension Kit APM3 and In-Circuit Programmer, do the following steps: install the SigmaStuido software, plug in the ICP3, connect with APM2, power up the board, connect the audio cables, and program as follows:

Click HERE to watch video.

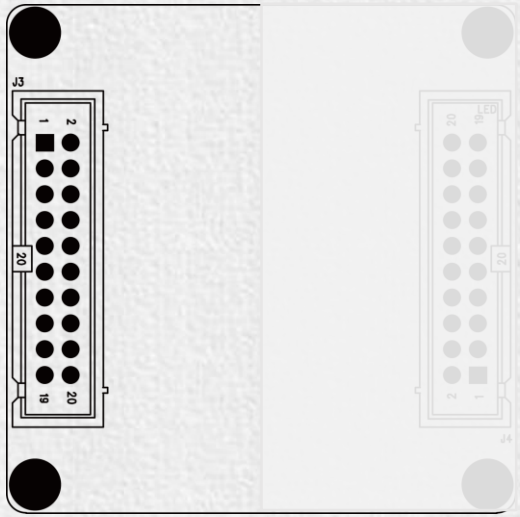


DSP Interfaces



PIN Definition

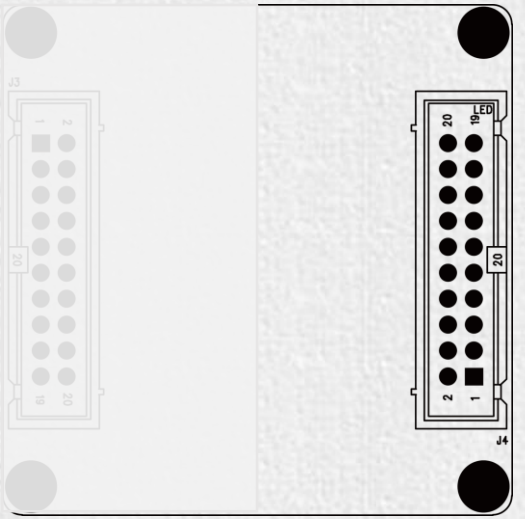
J3



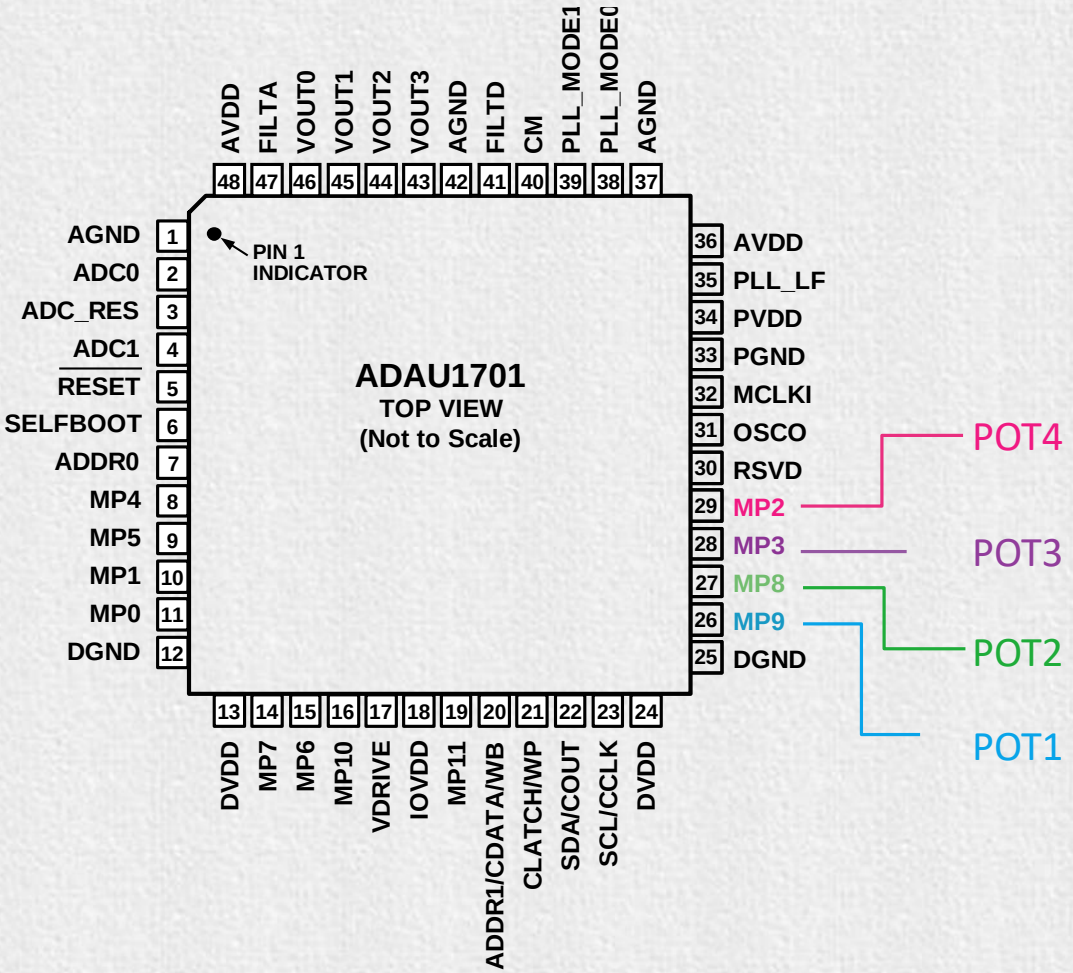
PIN	Description	PIN	Description
■AD0	Analog Audio Input 0	GND	Ground Pin
AD1	Analog Audio Input 1	GND	Ground Pin
SCL	I^2C Clock	WB	EEPROM Write Back Trigger
SDA	I^2C Data	WP	Self-Boot EEPROM Write Protect
RST	Active Low Reset Input	DAC0	Digital to Analog Converter 0
MP2	Serial Input Port Data 2	DAC1	Digital to Analog Converter 1
MP3	Serial Input Port Data 3	DAC2	Digital to Analog Converter 2
MP8	Serial Output Port Data 2	DAC3	Digital to Analog Converter 3
MP9	Serial Output Port Data 3	GND	Ground Pin
DPW	Digital Power Supply Output	+3.3V	Power Supply (out)

J4

PIN	Description	PIN	Description
VIN	Extra Power Supply Input	GND	Ground Pin
MP4	Serial Input Port LRCLK	GND	Ground Pin
MP5	Serial Input Port BCLK	GND	Ground Pin
MP1	Serial Input Port Data1	GND	Ground Pin
MP0	Serial Input Port Data0	GND	Ground Pin
MP7	Serial Output Port Data1	GND	Ground Pin
MP6	Serial Output Port Data0	GND	Ground Pin
MP10	Serial Output Port LRCLK	GND	Ground Pin
MP11	Serial Output Port BCLK	GND	Ground Pin
MCLK	Master Clock Input	GND■	Ground Pin



PIN Definition



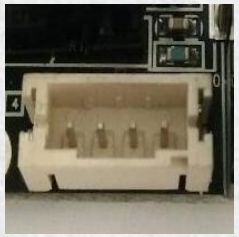
The corresponence between four potentiometers and for pins on ADAU1701 is shown in the figure.

POT1: Gain of bass POT2: Cut-off frequency of bass

POT3: Cut-off frequency of treble POT4: Gain of treble

Tips





1

Input

The interface extension kit provides three sound channels of audio input but it could not be used at the same time.

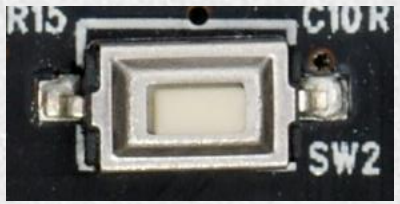
2

Potentiometer

The cut-off frequency and gain could be modified through the potentiometer.

POT1: Gain of bass POT2: Cut-off frequency of bass

POT3: Cut-off frequency of treble POT4: Gain of treble



3

Switch

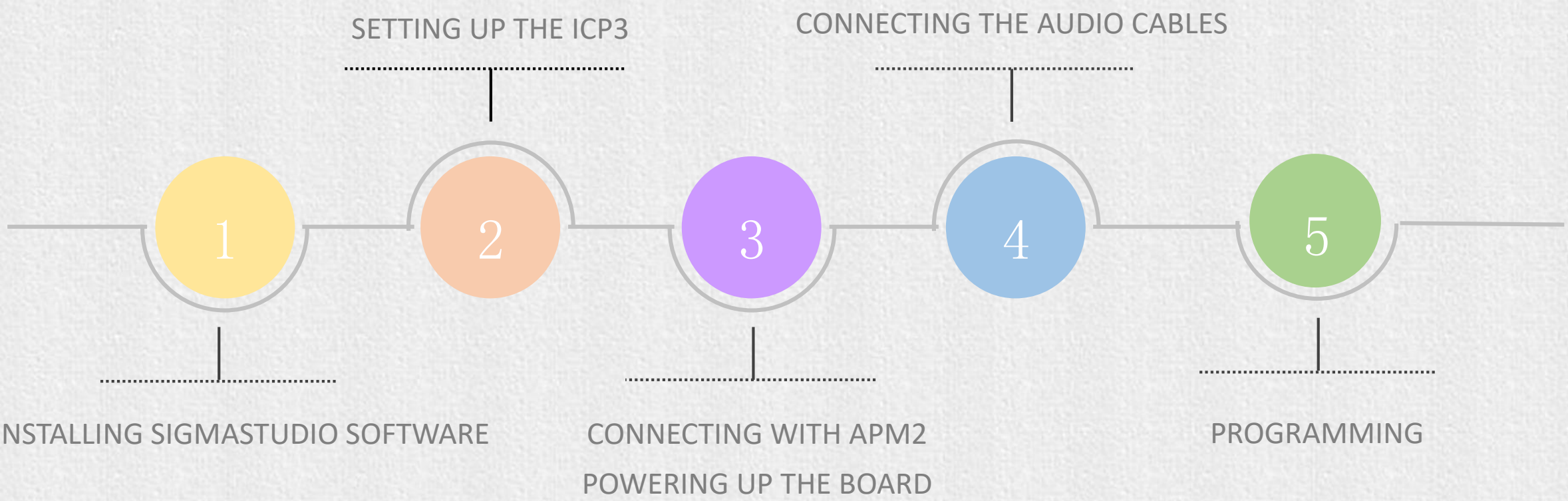
SW1: Make sure SW1 on DSP is set at ① when playing music.

SW2: When the system has faults, the SW2 works as reset button.

Setting of SW1 on DSP

①	**RUN**
②	PROGRAM

How to programme



Installing Sigmastudio software

1.Open the provided zip file and extract the files to your computer. Alternately, insert the SigmaStudio CD into the PC optical drive and select the SigmaStudio folder.

2.Install Microsoft . NET Framework version 2.0, if it has not been previously installed. To do so, double-click “dotnetfx.exe”.

3.Double-click “setup.exe” and following the prompts. A computer restart is not required.

Setting up the hardware

1. Compile the needed program in advance.

2. Set the SW of ICP3 at ①* and connect the ICP3 to the computer with a USB cable.

3. Select “USBi” from the list on the left and drag it to the blank area on the right. Repeat the action to move “ADAU1701” and “E2Prom” to the right.

4. Please notice whether the ICP3 can be recognized by the computer, if the underpainting of the “USB” turn green, it represents the ICP3 is recognized, otherwise it will ture orrange and you should reconnect the ICP3 until it turn green. See figure 1.

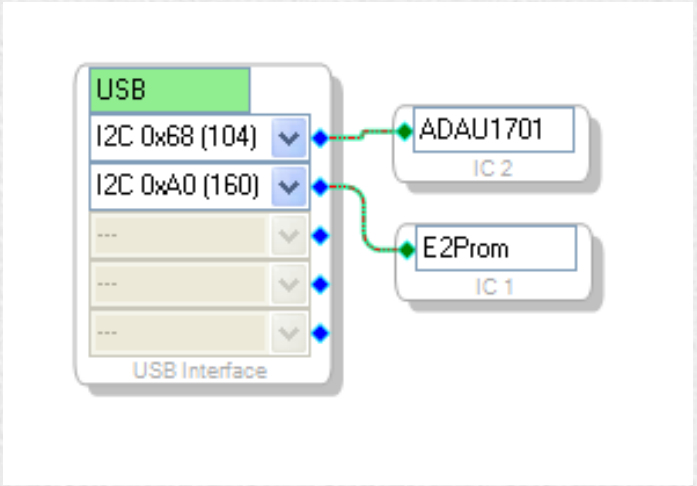
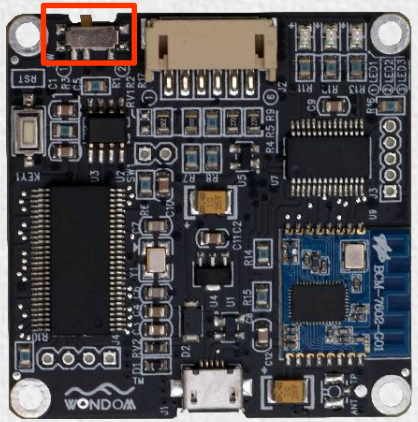


Figure 1

*Note：
Customers can realize program with SigmaStudio or APP control of audio system with ICP3 because of the integrated Bluetooth. We provide a switch on ICP3 for customers to switch between program and remote control mode.

SW



Setting of SW

①	**PROGRAM**
②	REMOTE

Powering up the board

Plug in the ICP3 into the programming port on APM2 and power up the board.

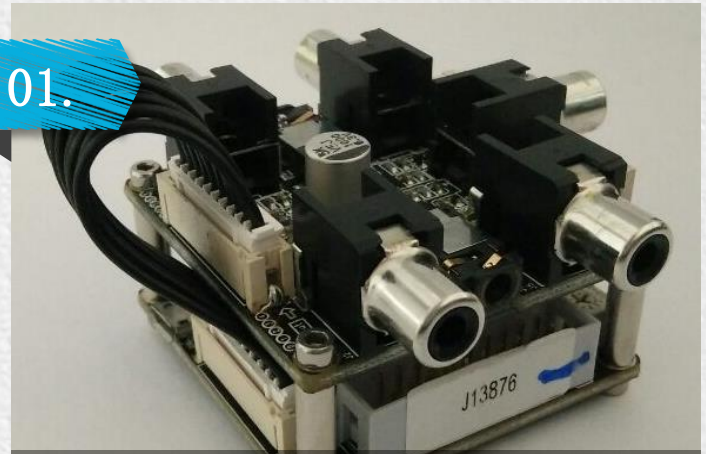
1. Power of Kernel Board:
The DSP Kernel Board (APM2) could be powered by:
1) 5V micro USB through micro USB charging port (J2)
2) External 5-12V DC Supply through Vin control port (J3/J4)
3) External 3.3V DC Supply through +3.3V control port (J3/J4)

2. Power of Extension Kit:
The Extension Kit (APM3) is powered by the Kernel Board (APM2)

3. Power of IC Programmer:
WONDOM IC Programmer could be powered by:
1) 5V micro USB through micro USB charging port (J1)
2) External 5V DC Supply from DSP Kernel Board (APM2)

Connecting Audio Cables

01.



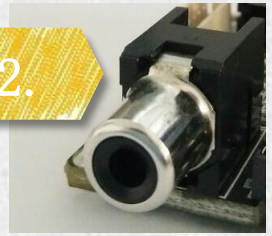
Connection

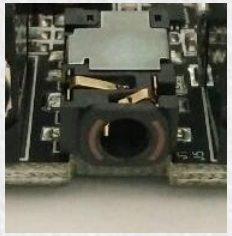
Use the 10 pin to 10 pin cornoid to connect DSP with interface extension kit for playing music.

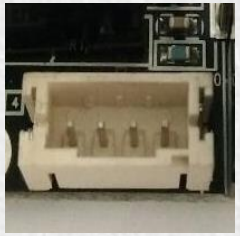
This interface extension kit provides three methods of audio input:

- ✓ RCA
- ✓ 3.5mm Aux
- ✓ PH-4PIN-2MM

02.



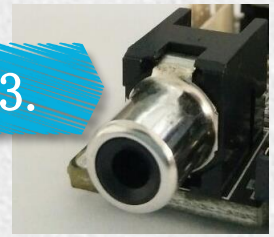


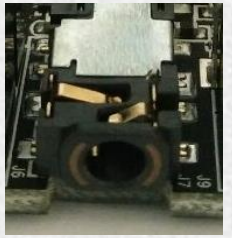


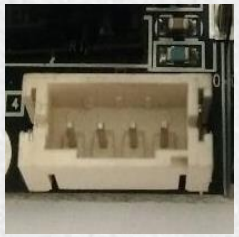
RCA 3.5mm Aux PH-4PIN-2MM

Input

03.







RCA 3.5mm Headphone PH-4PIN-2MM

Output

This interface extension kit provides three channels of audio output:

- ✓ RCA
- ✓ 3.5mm Headphone
- ✓ PH-4PIN-2MM

Programming

1.Click the “Link Compile Connect” (see figure 2) and you will find “Ready: Compiled” in the lower right corner of your computer.

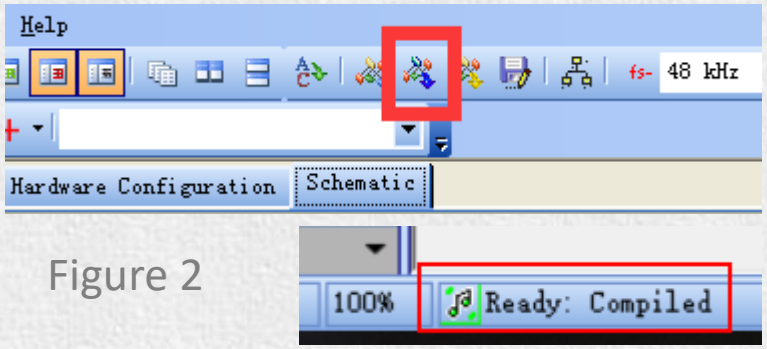


Figure 2

2.Click the “Link Compile Download” (see figure 3) and you will find “Active: Compiled” in the lower right corner of your computer.

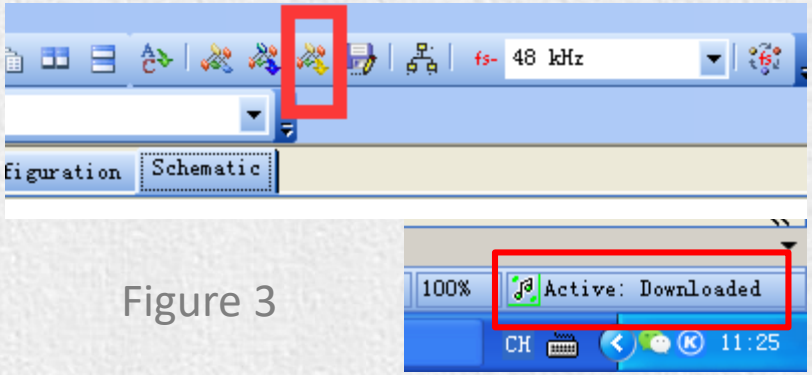


Figure 3

3. Make sure the SW of ICP3 is at ①, and right-click the “ADAU1701” and select “Write Latest Compilation to E2PBOM” to download the program (see figure 4), then you will see a window, choose the “I2C” on the right and click “OK” (see figure 5).

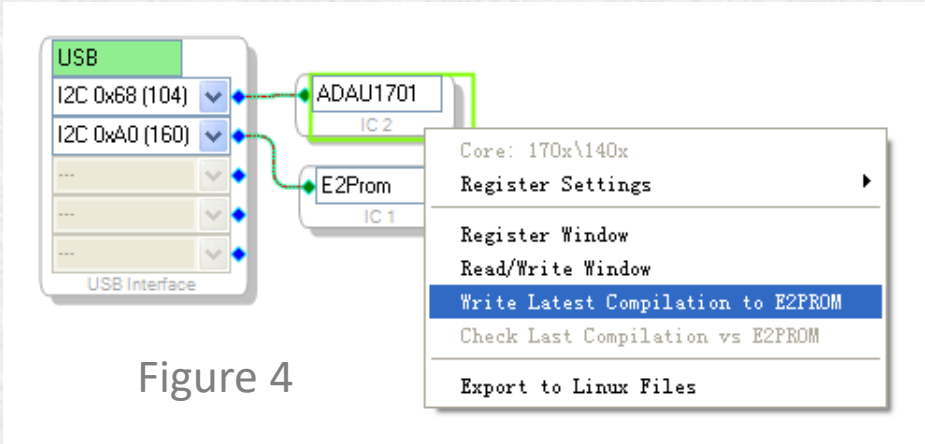
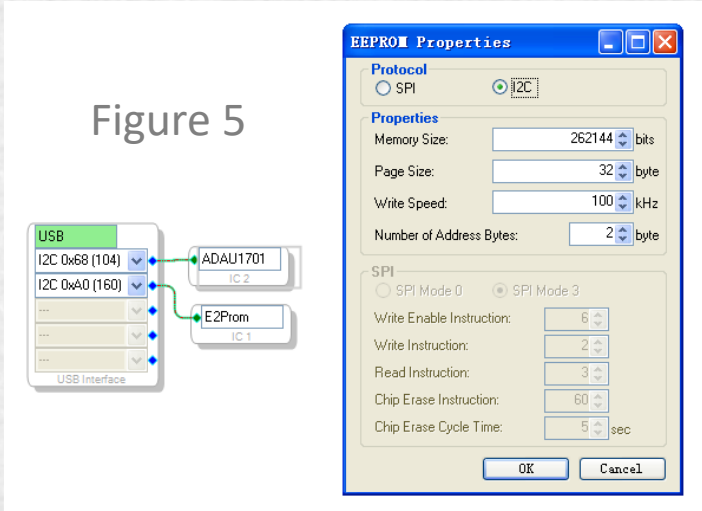


Figure 4

Figure 5



How to realize APP control

CONNECT APM2 WITH ICP3

SET SW ON ICP3 AT ②

1 2 3 4 5

DOWNLOAD APP “Miumax”

POWER UP THE SYSTEM AND PLAY MUSIC

CONTROL SYSTEM AFTER CONNECTED

Note: Please take reference to <How to realize APP control with WONDOM ICP3.pdf>

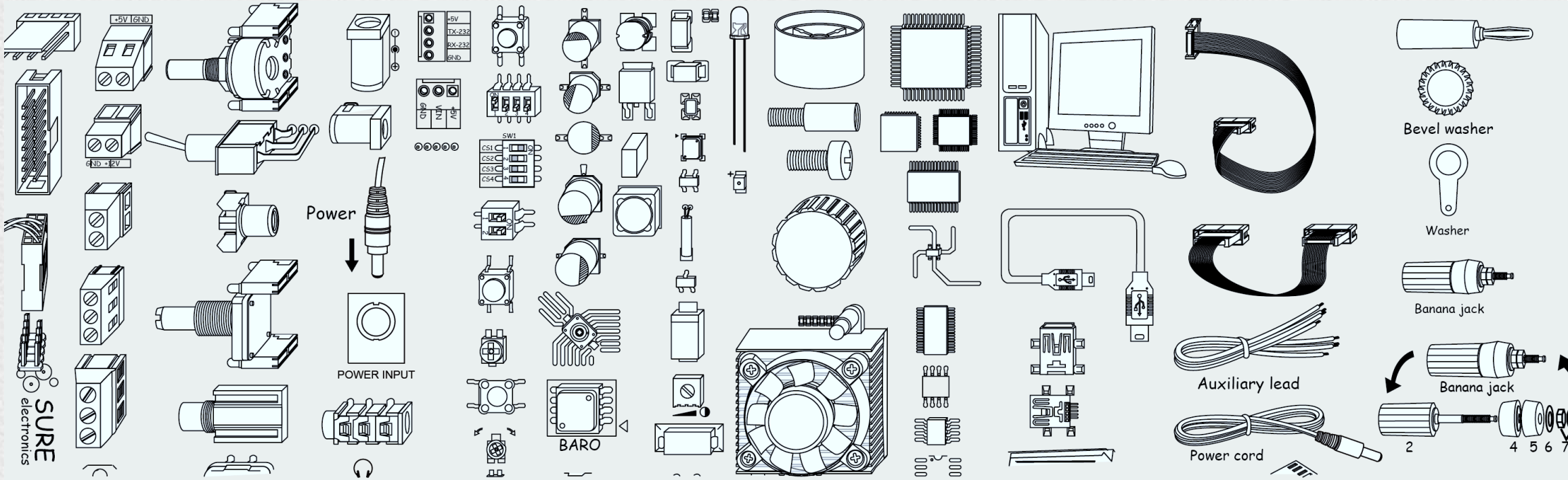
“Miumax” APP

Android

iOS

TROUBLE SHOOTING

TROUBLE	HOW TO SOLVE
Cannot writing the program into DSP successfully	➢ Make sure the ICP3 be recognized by PC ➢ Make sure the SW of ICP3 is at ① (PROGRAM)
DSP cannot work normally (cannot play music) under powering condition when connected with ICP3	➢ Power on again ➢ Press the SW2 switch on DSP at first, then press the RST (KEY1) switch on ICP3 ➢ Make sure the SW1 on DSP is set at ① (RUN)
ICP3 cannot be recognized by PC	➢ Make sure the Micro USB cable is of good quality and support data communication ➢ Make sure ICP3 is not connected to controlled device (APM2) when connected to PC
APP control failure	➢ The SW on ICP3 is set at ② (REMOTE) ➢ Relaunch the APP ➢ Do not press the SW2 on APM2 when using APP control



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