# WONDOM ICP1 User Guide

IN-CIRCUIT PROGRAMMER FOR ADAU1701 DIGITAL SIGNAL - ICP1

By Sure Electronics Co., Ltd.

# Overview

WONDOM ICP1 is an in-circuit programmer for customer programming of WONDOM products.

On-board self-boot EEPROM is included in ICP1 for operating the board independently of the Analog Devices, Inc., SigmaStudio™ software.

The package includes:
✓ IN-CIRCUIT PROGRAMMER FOR ADAU1701 DIGITAL SIGNAL - ICP1 x 1
✓ 6-pin cable x 1

| Functions | Required Tools | Applicable Products |
|---|---|---|
| Programming | Analog Devices, Inc., SigmaStudio™ | JAB3<br>APM2 |

# Product List

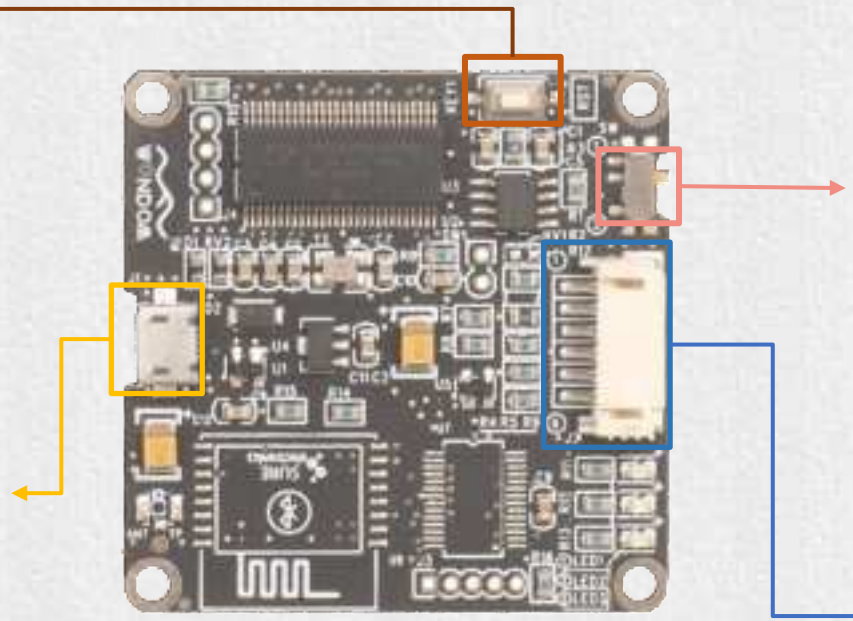
| Model | SKU | Description | Basic Cables Included |
|---|---|---|---|
| ICP1 | DB-DP11219 | In-circuit Programmer for ADAU1701 Digital Signal | 6Pin cable x 1 |
| ICP3 | DB-DP11224 | WONDOM In-circuit Programmer with BLE Bluetooth for APP control | 6Pin cable x 1 |
| ICP5 | DB-DP11226 | In-circuit Programmer with UART for PC UI Control & BLE for APP Control | 6Pin cable x 1 |
| APM2 | AA-AP23122 | ADAU1701 Audio Digital Signal Processor Kernel Board | - |
| APM3 | AA-AA11428 | ADAU1701 Audio Digital Signal Processor Interface Extension Kit | 10Pin cable x 1 |
| JAB3-1100 | AA-JA31181 | 1x 100 Watt Class D Audio Amplifier Board with Audio DSP - JAB3-1100 | Power cable x 1<br>Speaker cable x 1<br>3.5mm AUX IN cable x 1 |
| JAB3-160 | AA-JA31211 | 1 x 60 Watt Class D Audio Amplifier Board with Audio DSP - JAB3-160 | |
| JAB3-250 | AA-JA32172 | 2 x 50 Watt Class D Audio Amplifier Board with Audio DSP - JAB3-250 | |
| JAB3-230 | AA-JA32473 | 2 x 30 Watt Class D Audio Amplifier Board with Audio DSP - JAB3-230 | |

Notes:
- Represents no basic cable

# Interface Definition

In this document, we will mainly give instructions on the following applications:

1) How to achieve programming of APM2 / JAB3 with WONDOM ICP1
2) How to realize APP control of APM2 / JAB3 with WONDOM ICP1



**KEY1**
Reset

**SW**
When programming, please make sure SW at ① (PROGRAM)

**Micro USB Port**
1) DC5V power supply
2) Communication with computer

**Programming Port**
For connection with applicable products with a 6-pin cable

# Open Source Files
# for PROGRAMMING

| Products | Function | File | Version | Download |
|---|---|---|---|---|
| APM2 | Demonstration of Signal Flow Chart | APM2_SigmaStudio.dspproj | - | Download |
| JAB3 - Mono | Demonstration of Signal Flow Chart | JAB3_SigmaStudio_MONO.dspproj | - | Download |
| JAB3 - Stereo | Demonstration of Signal Flow Chart | JAB3_SigmaStudio_STEREO.dspproj | - | Download |

Note: All the "Demonstration of Signal Flow Chart" files are just for signal flow chart demonstration and customers can not use them as running programming.

# How to achieve programming of APM2/JAB3 with WONDOM ICP1?

**ICP1**

IN-CIRCUIT PROGRAMMER FOR ADAU1701

DIGITAL SIGNAL - ICP1

# Checklist

Before starting, please make sure you have the following items on hand.

1 WONDOM APM2+Extension Kit (APM3)/JAB3


+

OR


2 WONDOM ICP1 with a 6-pin cable


3 Analog Devices, Inc. SigmaStudio™


4 Accessories

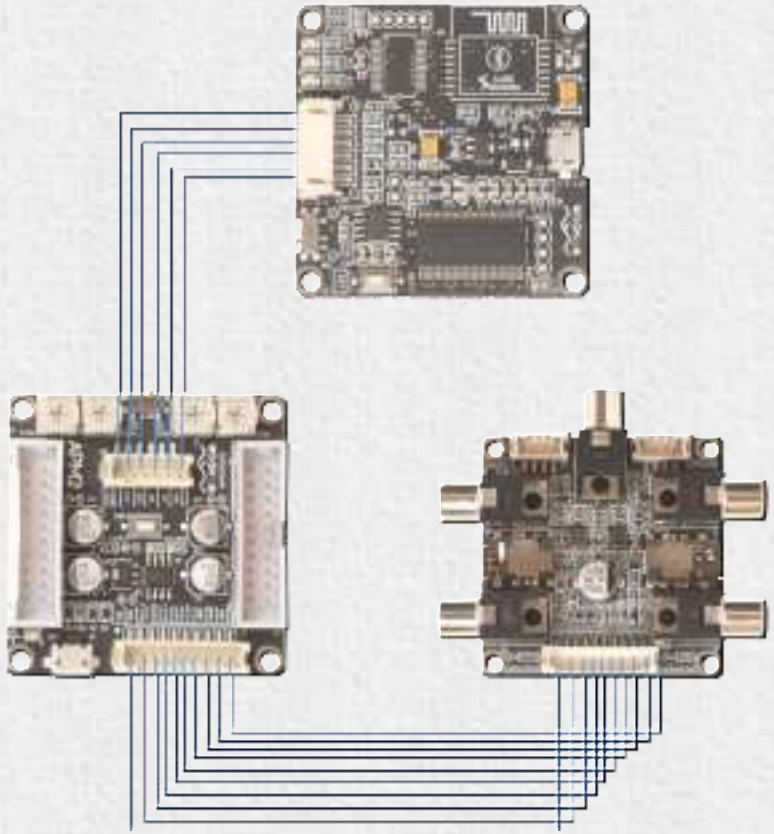
Speakers
Cables
Phone
…

# Quick Start

To quickly get started with the programming of WONDOM APM2 or JAB3 via ICP1, do the following steps:

1) Install the SigmaStuido software
2) Connect ICP1 to computer
3) Connect audio cables of APM2/JAB3
4) Power up the audio system
5) Connect ICP1 with APM2/JAB3
6) Program

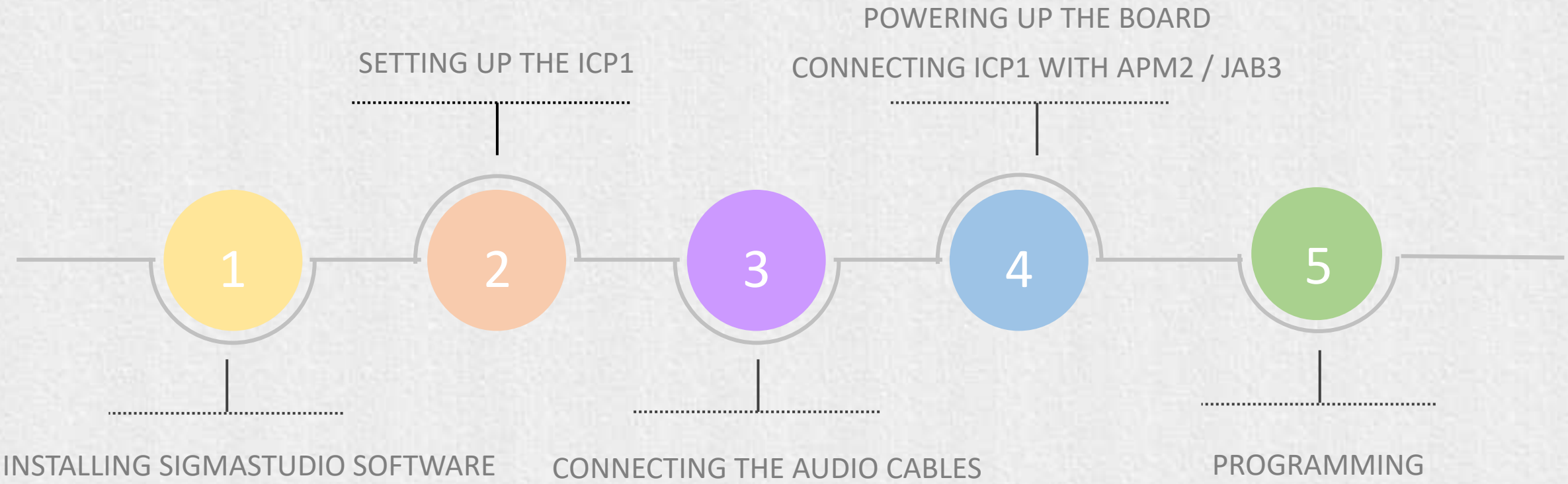
Click HERE to watch video.



Since the most steps of programming APM2 and JAB3 are the same, we will take APM2 as an example to show you how to operate. If there is difference or points to note, we wil mark out with red words.

# How to program

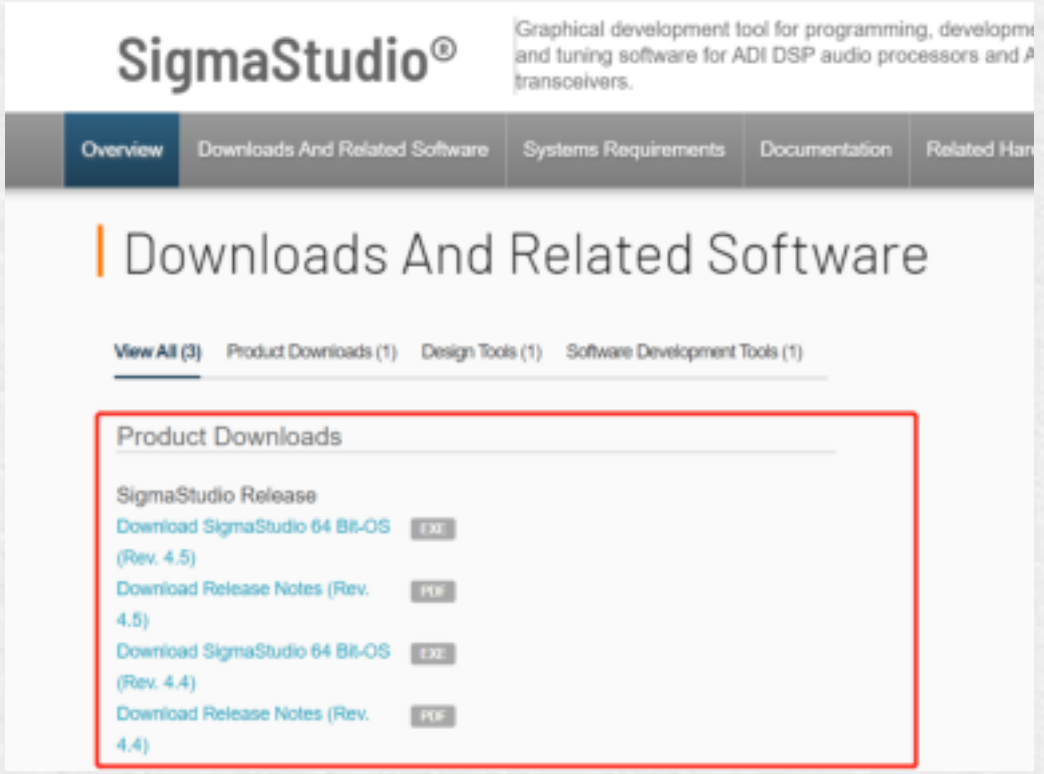
Be sure to follow these connection steps.



# Installing Sigmastudio software

Download the installation package for SigmaStudio software in the Analog.com. Download address is as follows. Click the EXE file and finish installation according to the prompts.

https://www.analog.com/en/design-center/evaluation-hardware-and-software/software/ss_sigst_02.html#software-overview



# Setting up the hardware

1. Compile  the needed program in advance.

2. Set the SW of ICP1 at ① (PROGRAM)* and connect the ICP1 to the computer with a USB cable.
Do not connect ICP1 with target products (APM2/JAB3) now.

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 note whether the ICP1 can be recognized by the computer, if the underpainting of the “USB” turn green, it represents the ICP1 is recognized, otherwise it will ture orrange and you should reconnect the ICP1 until it turn green. See figure 1.

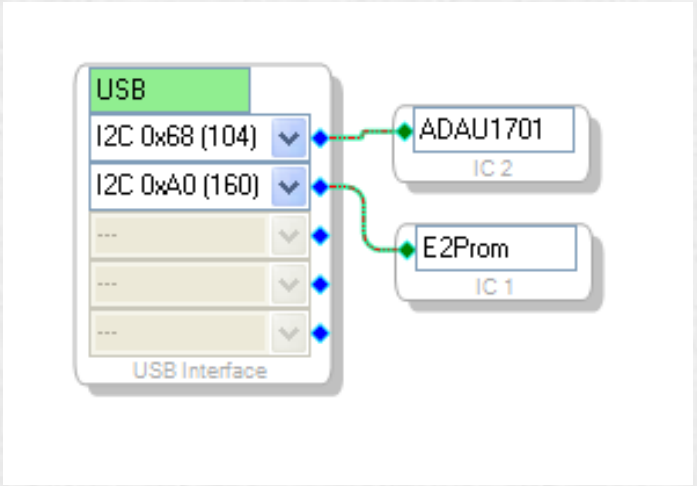
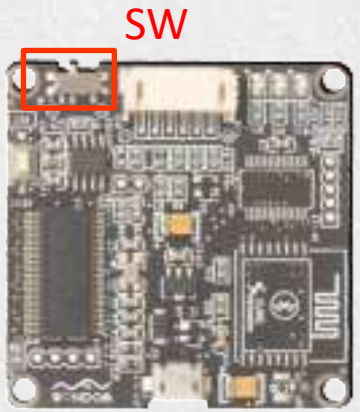



Figure 1

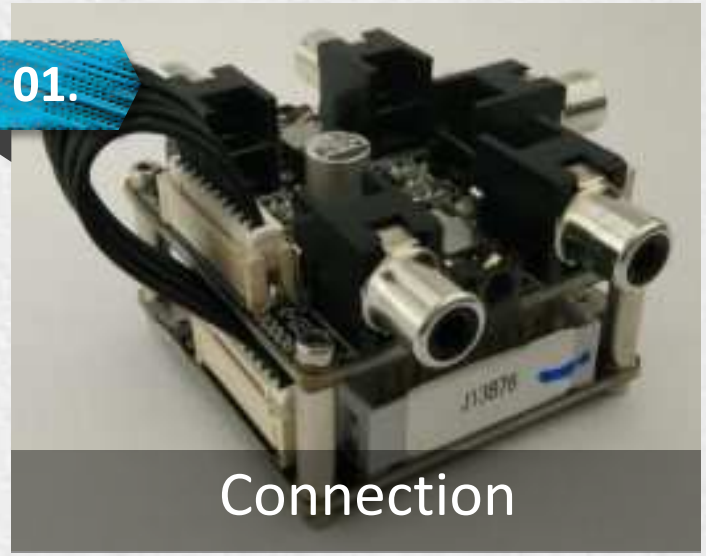



SW Setting

① PROGRAM

# Connecting Audio Cables

01.



Connection

Use the 10 pin to 10 pin cornoid to connect APM2 with interface extension kit (APM3) for playing music.

This interface extension kit (APM3) 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 (APM3) provides three channels of audio output:

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

# Powering up the board

Make sure the SW1 of APM2 is set at ① (RUN). (Skip this step when programming JAB3)

Power up the APM2.

1. Power of APM2:
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)

Input audio signal to JAB3 and make sure the two LEDs on JAB3 are on before connecting ICP1 with JAB3. Skip this step when programming APM2.

Connect ICP1 with APM3 through 6-pin cable.

# Programming

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

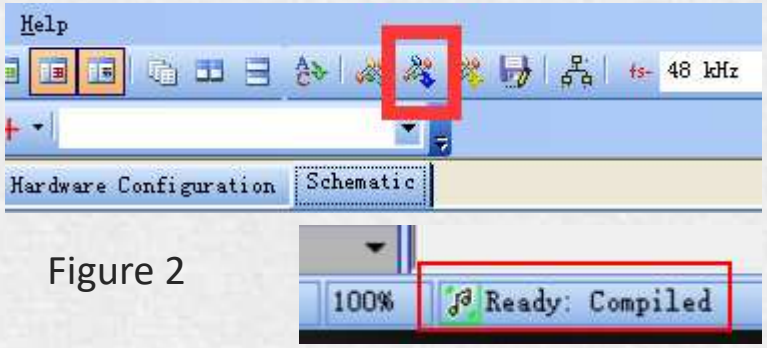



Figure 2

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

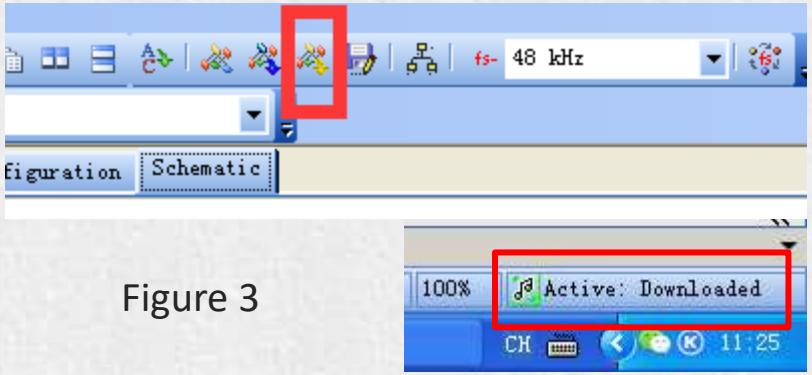



Figure 3

3. Make sure the SW of ICP1 is at ① (PROGRAM) and the SW1 of APM2 is at ① (RUN), 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).

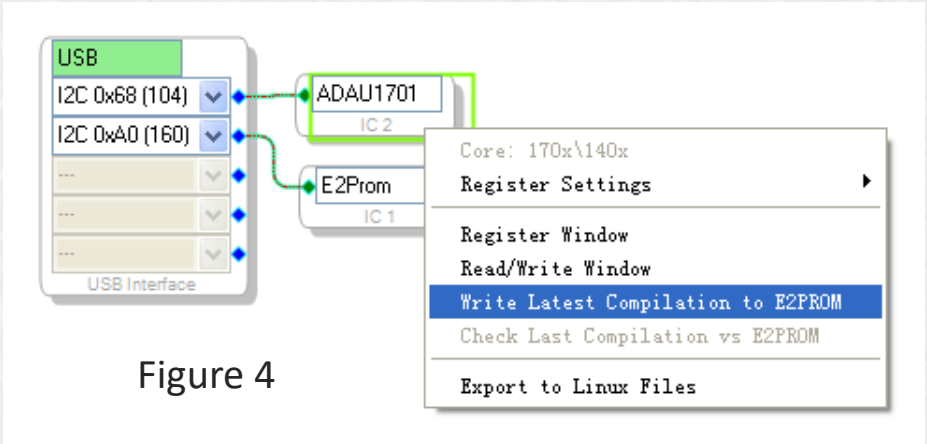
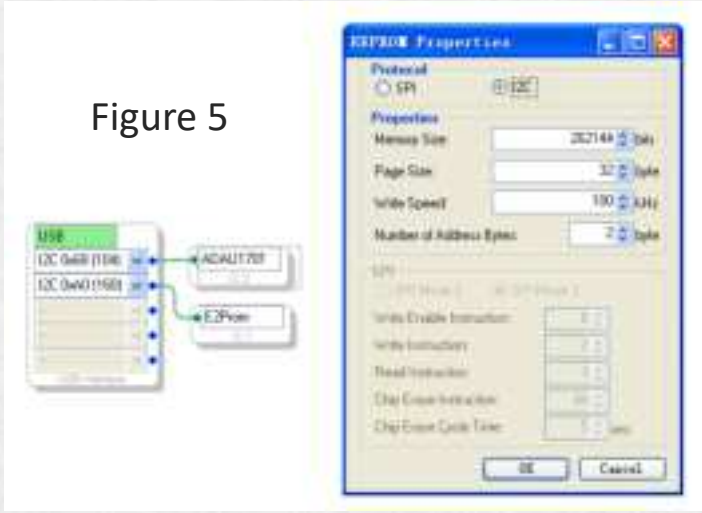



Figure 4

Figure 5



# Original Firmware Restore

1. Right click the “E2Prom” (see Figure 6) and click ‘Read/Write Window’. You will see the following interface (Figure 7).


Figure 6


Figure 7

2. Click ‘Click here to browse for file’ and select firmware file (Figure 8). Then click ‘Display File’ like Figure 9.


Figure 8

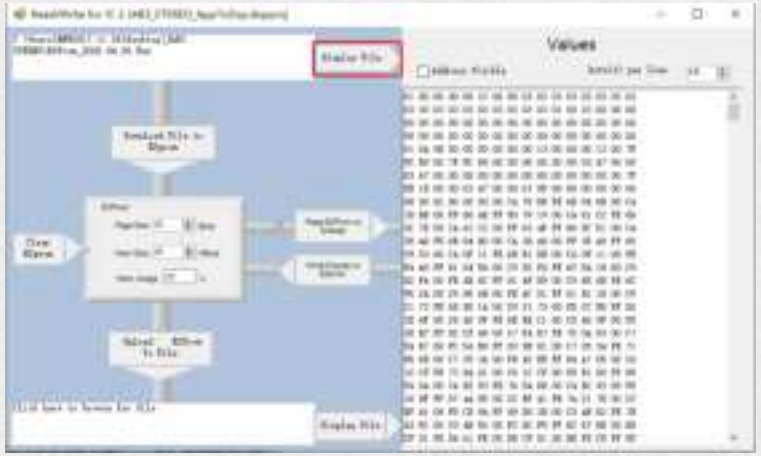



Figure 9

# Original Firmware Restore

3. Click ‘Write Display to E2prom’ then click ‘OK’ of the prompt box (Figure 10).

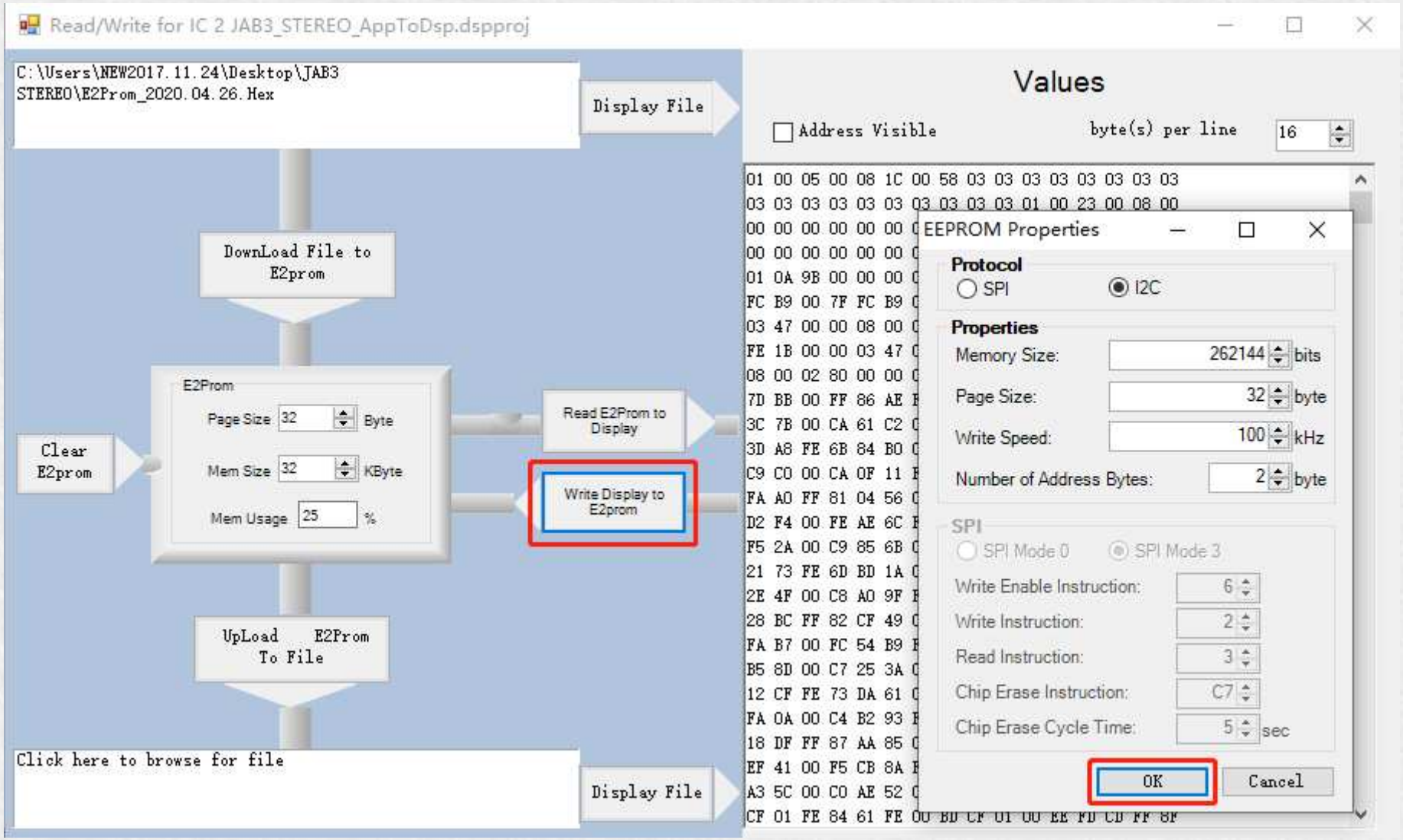



Figure 10

# TROUBLE SHOOTING

| TROUBLE | HOW TO SOLVE |
| --- | --- |
| ICP1 cannot be recognized by PC | ➢ Make sure the Micro USB cable is of good quality and supports data communication<br>➢ Make sure ICP1 is not connected to controlled device (APM2) when connected to PC |
| Cannot writing the program into APM2 successfully | ➢ Make sure the ICP1 be recognized by PC<br>➢ Make sure the SW of ICP1 is at ① (PROGRAM) and the SW1 on APM2 is set at ① (RUN) |
| Cannot writing the program into JAB3 successfully | ➢ Make sure JAB3 is given audio signal and the two LEDs are on<br>➢ Make sure the ICP1 be recognized by PC<br>➢ Make sure the SW of ICP1 is at ① (PROGRAM) |
| APM2 / JAB3 cannot work normally (cannot play music) under powering condition when connected with ICP1 | ➢ Make sure the connection steps are correct and check the input/output cables<br>➢ Disconnect with ICP1 and re-power APM2<br>➢ Make sure the SW1 on APM2 is set at ① (RUN) (Not applicable to JAB3) |