



K20W Sound Writer

USER GUIDE

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Introduction

The K20W Sound Writer Programmer is designed to support the following IC:

- **K161004 (10 sec, 4 I/O OTP chip)**
- **K162104 (21 sec, 4 I/O OTP chip)**
- **K164208 (42 sec, 8 I/O OTP chip)**
- **K208511 (85 sec, 11 I/O OTP chip)**
- **K2N341N (341 sec, 15 I/O OTP chip)**

This development system serves two main functions:

Compiler – to create a DAT file from user's sound files

Writer – to program the DAT file into the voice chip

The **Compiler** is used to combine the edited sound files into the chip to form the desired Voice Group and to define the playback functions of each Voice Group by selecting different Options and Trigger Modes of each individual Voice Group.

The **Writer** is used to program the voice data into the voice chips that resulted from the Compiler Function. The Writer must be connected to the PC to use the program.

System Requirement

This program only works with Windows XP and a computer with USB connector.

Installation

Installing the USB driver

If this is the first time using this program, after connecting the USB cable to the computer, you will be asked to install the USB driver. Follow the instructions on the screen to install the USB driver.

Installing the Software

Create a new folder on your computer. Copy the K20W_Vxxx_yyyymmddttt.ZIP to the folder, where "xxx" represents the version number and "yyymmddttt" represents the date and time of the software. Unzip the file into the folder.



Writer Board Connection

- 1) Connect the USB cable from the writer board to the computer. The computer will display a new hardware is found message. The installation will begin automatically.
- 2) If there are too many USB devices connected to your computer at the same time, the current supply from USB may not be sufficient to support the Writer. In this case, an external 5V DC adapter with at least 1A capacity should be connected separately to the power jack (center positive) of the Writer.
- 3) The power LED will be turned ON
- 4) The BUSY LED will be turned ON

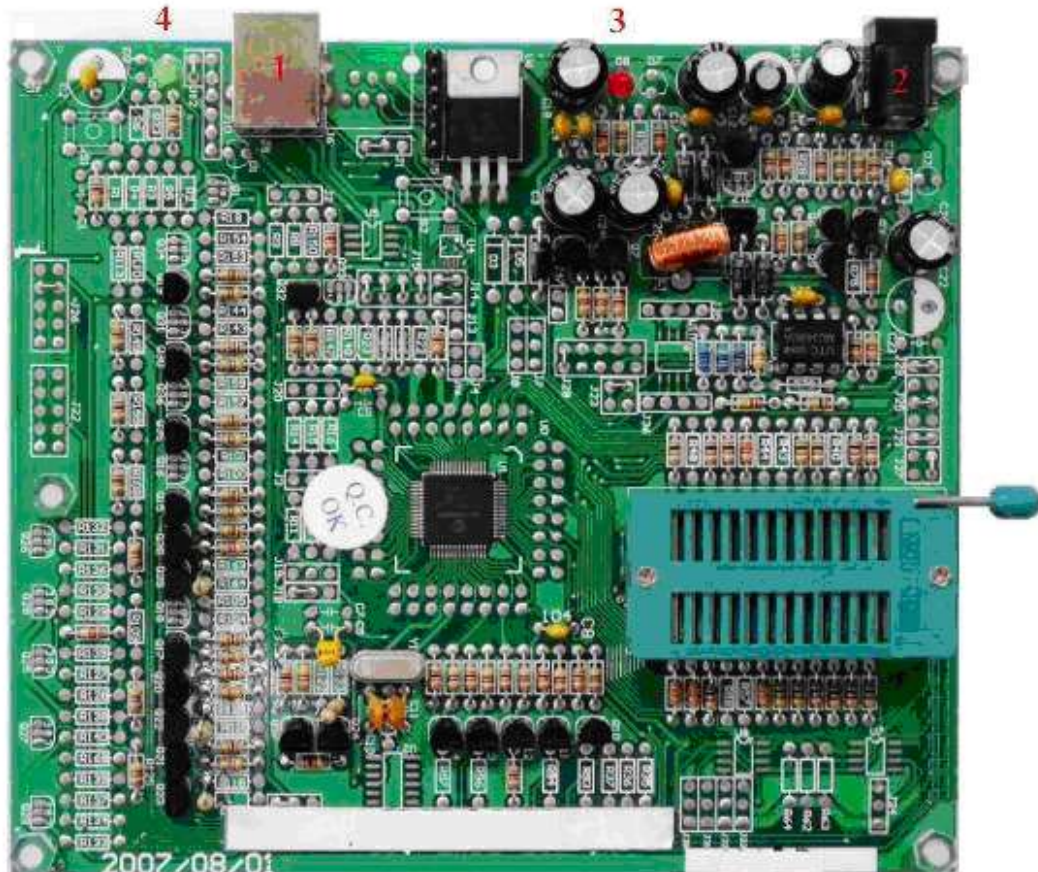


Fig. 1

Running the Software

Double click the file **K20W.EXE** to launch the software. The software will start and check the firmware version on the Writer Programmer board. The following Window will be displayed (Fig. 2).

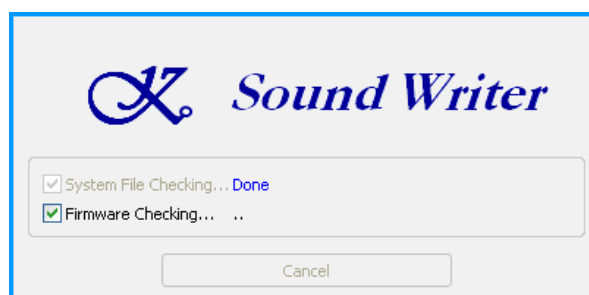


Fig. 2



Update Firmware

If the firmware version is correct, the program starts automatically. If the Firmware version is not correct, it will display a firmware update window to automatically update the firmware (Fig. 3).

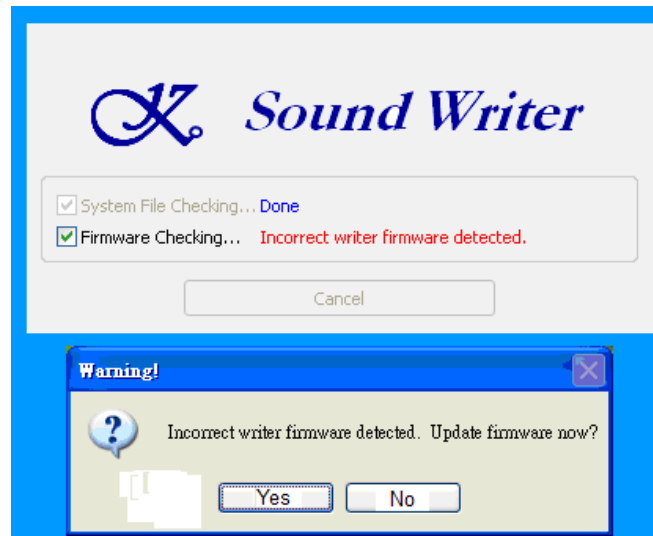


Fig. 3

Press Y to continue. Then a warning window as shown in Fig. 4 will be displayed as a reminder to not disconnect the USB cable during the firmware update. Otherwise, the Writer Programmer board will be damaged permanently. Press OK to begin the update process.

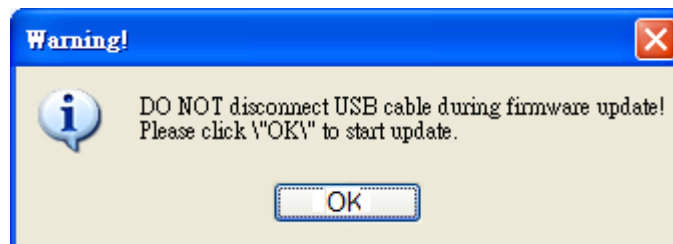


Fig. 4

In case of firmware update failure, an error message window as shown in Fig. 5 will be displayed. If this happens, press Cancel and connect the Writer Programmer board to another USB port of the computer and try to start the program again. Some USB ports of the computer may not have enough power for the firmware update to perform.

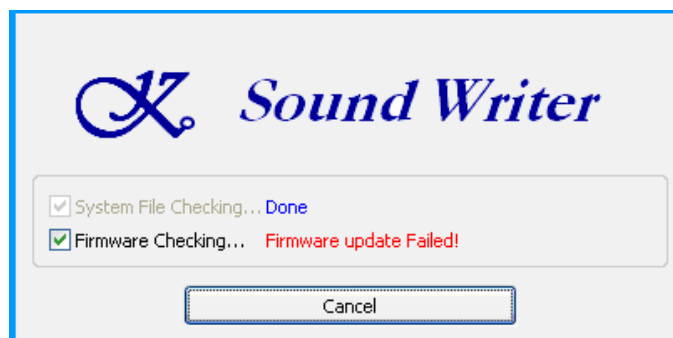


Fig. 5

If the firmware update is completed successfully, the software starts automatically.



Compiler Window

When the K20W USB Sound Writer is launched, the Compiler Window is displayed. The Compiler Window consists of the following areas:

- **Device Selection:** to select which voice chip to be used
- **Trigger Selection:** to determine how the chip to be triggered
- **Voice Output Type:** to select the type of voice output, VOUT or COUT
- **VOUT Volume:** VOUT volume can be selected in some of the voice chip
- **Pin Status Display:** shows the pins status
- **File Display Area:** displays a list of sound files used
- **Voice Group Listing:** shows the available voice groups and the trigger options
- **Function Buttons:** to perform the specific functions
- **Memory Usage:** displays in percentage how much memory is used

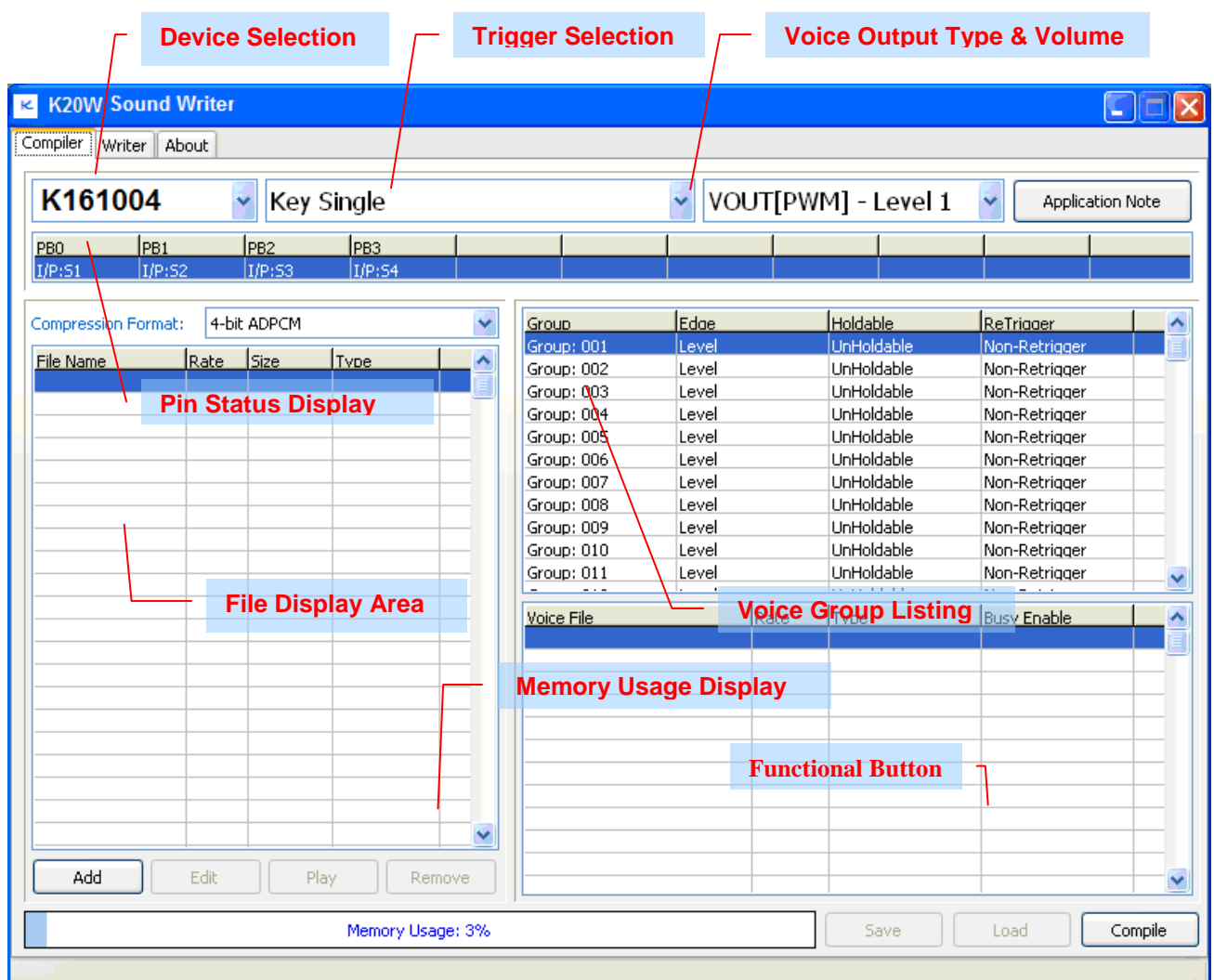


Fig. 6

Voice data and user selectable options must be set up and combined together to create a DAT file for programming into the voice chip. The following procedures describe step by step how to compile the voice data and select the options to produce the DAT file for programming.



Step 1 – Select Device

- Click the pulldown list to show a list of devices and select the device you want to work on.

Step 2 – Select Trigger Mode

- Select the type of Trigger Mode you want. For more information, see [Trigger Options](#) or Triggering examples.

Step 3 – Select Voice Playback Volume Type

- Select VOUT(PWM) for PWM playback from the Pin VOUT1 and VOUT2, or COUT(DAC) for DAC playback from the Pin VOUT2. This option is louder.

The screenshot shows the K20W Sound Writer software interface. At the top, there are tabs for 'Compiler', 'Writer', and 'About'. Below the tabs, there are three pulldown menus: 'K161004', 'Key Single', and 'VOUT[PWM] - Level 1'. To the right of these is an 'Application Note' button. Below the pulldowns is a table with columns 'PB0', 'PB1', 'PB2', 'PB3' and rows 'I/P:S1', 'I/P:S2', 'I/P:S3', 'I/P:S4'. The main area is divided into several sections. On the left, there is a 'Compression Format' pulldown set to '4-bit ADPCM'. Below it is a table with columns 'File Name', 'Rate', 'Size', and 'Type'. The table contains rows for '8K.wav', '9K.wav', '10.wav', and 'Mute: 1 m5'. On the right, there is a table with columns 'Group', 'Edge', 'Holdable', and 'ReTrigger'. The table contains rows for 'Group: 001' through 'Group: 008'. Below this is another table with columns 'Voice File', 'Rate', 'Type', and 'Busv Enable'. The table contains rows for '8K.wav', '9K.wav', '10.wav', 'Mute: 1 m5', '10.wav', '9K.wav', and '8K.wav'. At the bottom, there are buttons for 'Add', 'Edit', 'Play', and 'Remove'. At the very bottom, there is a 'Memory Usage: 66%' indicator and buttons for 'Save', 'Load', and 'Compile'. Red callout boxes with numbers 1 through 11 point to various elements in the interface.

1. Select Device

2. Select Trigger Mode

3. Select Voice Output Type and volume

4. Select Compression Type

5. Add Sound file and Silence

5b. Double click the sound filename to add to the highlighted voice group

6. Select Compress or Not compress

7. Double click to add sound to voice group

8. Double to set the Voice Group options

9. Double to enable or disable BUSY output

10. Open Application Notes

11. Compile and create the DAT file

Fig. 7

Step 4 – Select Voice Compress Type

- Click the pulldown list to select the compress type for the input sound file. Lower bit compression such as 4-bit ADPCM, takes less memory space to store the sound file. However, the sound quality is better with higher bit compression.



Step 5 – Add Sound files and Silence

- Click the “Add” button to add sound files or mute sections or silence in ms. The mute sections or silence will not occupy any memory
- The sound file must be a “wav” file with **8-bit Mono format**. It is recommended to use GOLDWAVE, COOLEEDIT or SOUND FORGE for sound editing.
- The percentage of the memory used is displayed on the Usage bar below the Add button.
- To remove a file, right click on the file name and then select the “Remove” button.
- To playback a sound file, highlight the file name and click the “Play” button.

Step 6 – Edit the Silence and Voice settings

- Click the Edit button to change the setting of Mute or sound file setting
- For Mute section, set the length of Mute
- For sound file, select compression or not compression

Step 7 – Add Sound file or Silence to Voice Group

- Highlight the Voice Group you want to edit.
- Double click the sound file name to add the sound file to the highlighted Voice Group.

Note: You can add any number of sound files. Sound files can be added more than one time and it will not increase the memory usage. Any combination of sound files, silence sections are also allowed.

Step 8 – Set Voice Group Trigger Options

- Double click the Voice Group to set up the Trigger mode of the Voice Group.

Step 9 – Set BUSY, Remove Sound File, Change Sound File order

- Double click on the sound file name will enable or disable the BUSY output.
- Right-click to display a menu to remove or change the order of sound file.

Step 10 – Open the Application Note Document

- Click on the “Application Note” button to open the detailed document about the functions you have selected. You need to have a PDF reader installed on your computer to open this document.

Step 11 – To Generate the DAT file for Programming

- Click on the “Compile” button to create the DAT.



Writer Window

After finishing the DAT file is created, you can program the DAT file onto the voice chip you have selected. Click the “Writer” tab to display the Writer Window. The following functions are available:

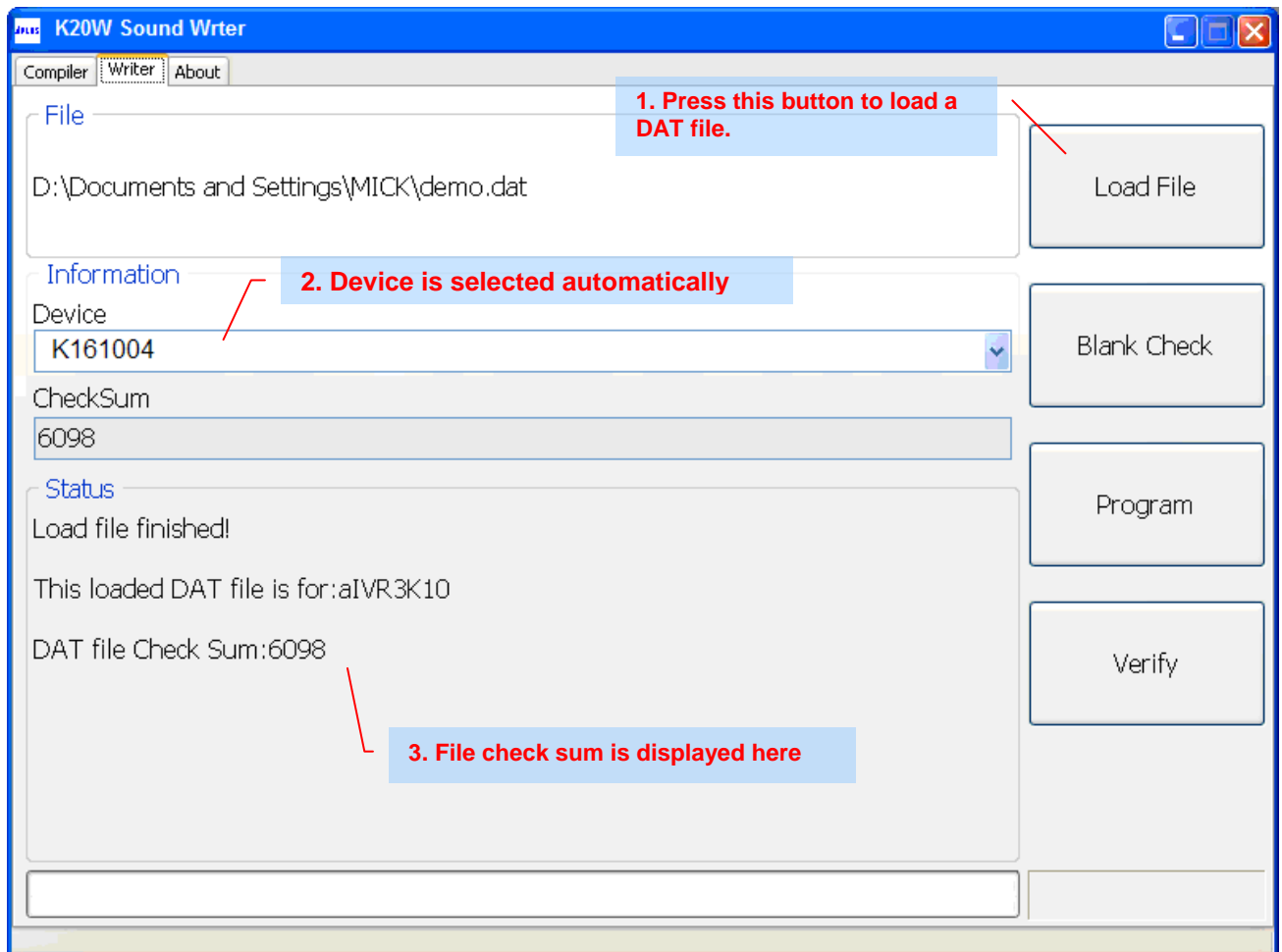


Fig. 8

- **Load File:** To load the DAT file from the computer (Fig. 8) After loading DAT file, the correct voice IC will be selected automatically and displayed in the Device list box. The DAT file check sum is also displayed. If the DAT is corrupted, it will have incorrect check sum and will not be loaded.
- **Blank Check:** To Blank check the inserted voice chip (Fig. 9 to 10) If the Device list box does not show the voice chip you want, click the pull down list and select the voice chip. See “Inserting Voice IC section” on how to insert the IC on the Writer). Press the “Blank” button to start the blank check.
- **Program:** After blank checking, press the “Program” button to start programming.
- **Verify:** Press the “Verify” button to Verify the data stored in the voice chip.



Note:

1. Once the voice chip is programmed, it cannot be re-programmed.
2. The Green status bar will move from left to right to indicate the operation is in progress.
3. If the operation is completed and passed, the result is displayed in Blue on the Status bar.

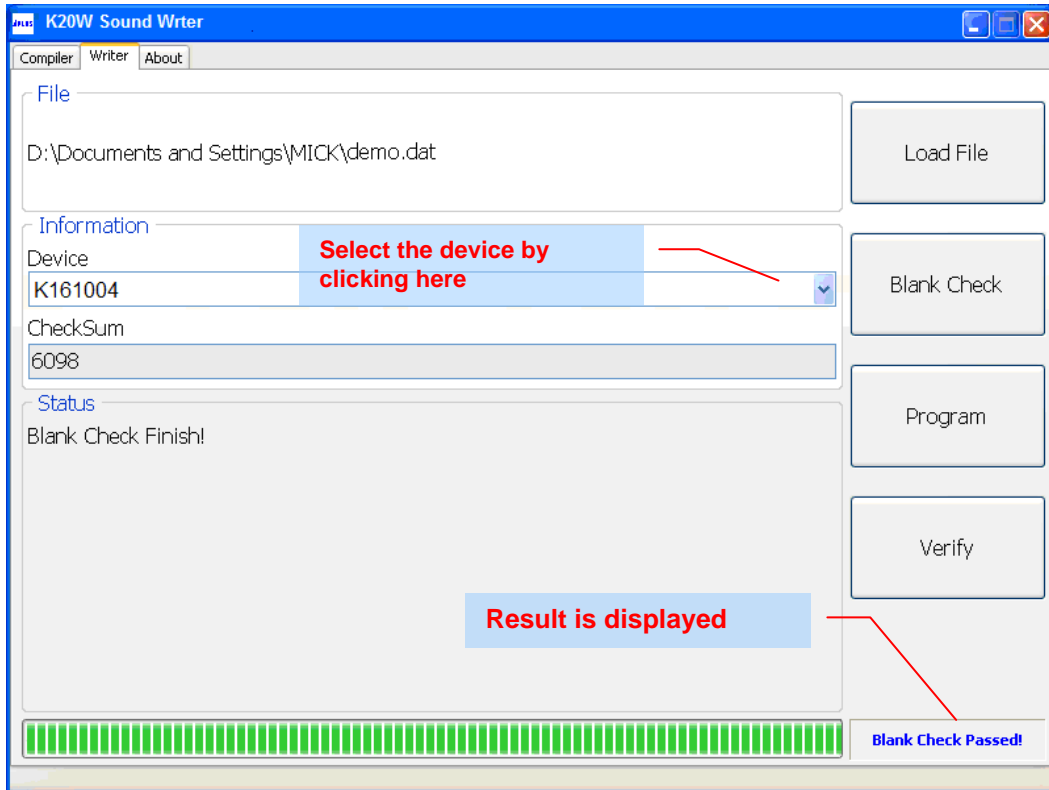


Fig. 9

4. If the operation is completed and failed, the result is displayed in Red on the Status bar.

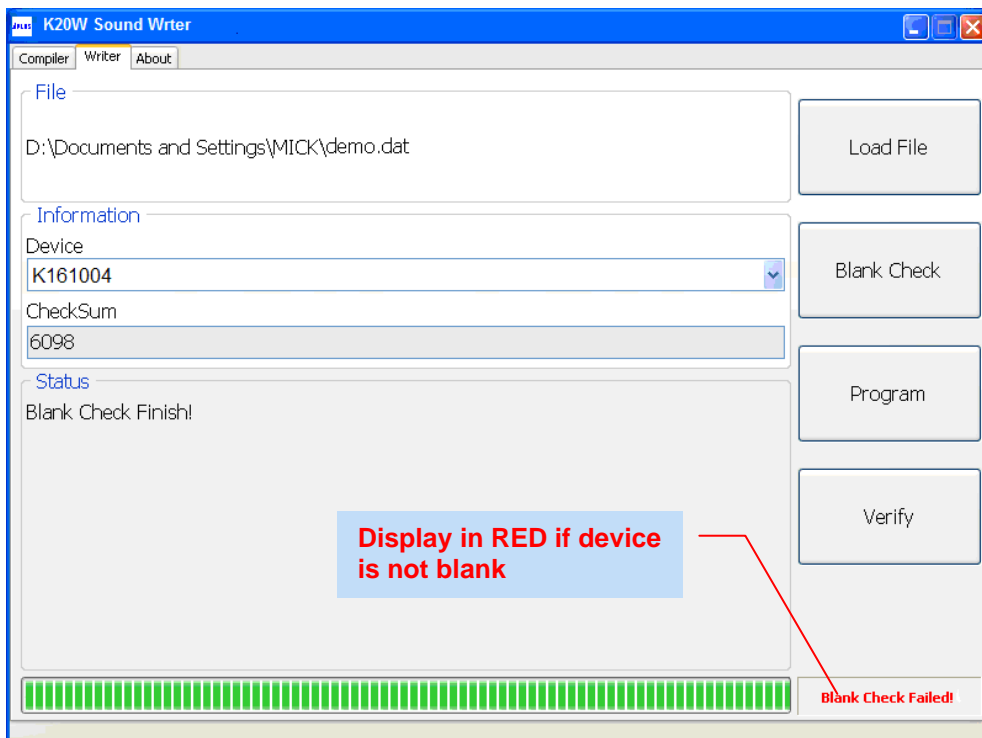


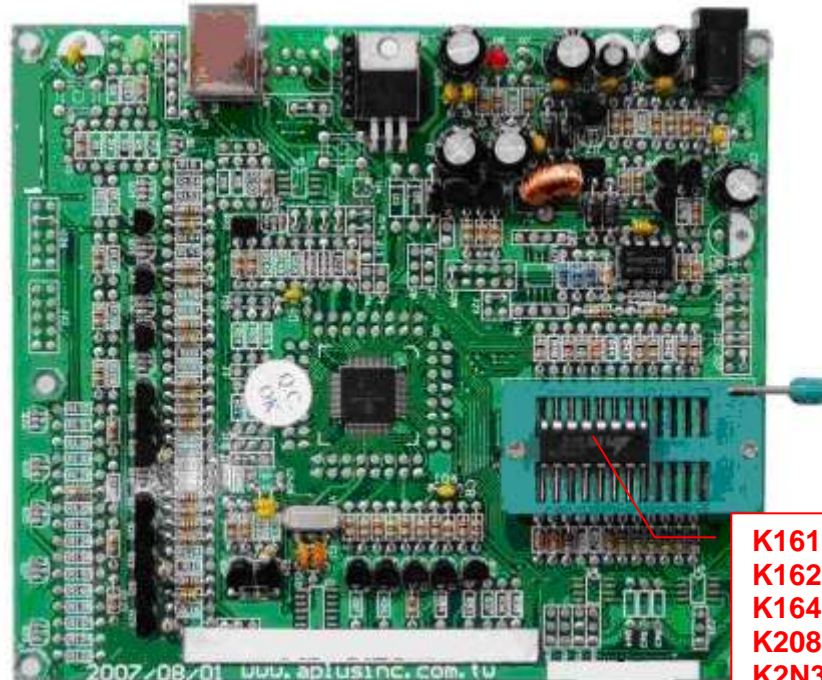
Fig. 10



Inserting Devices onto the Writer

DIP package devices

- Device should be inserted align to the bottom of the 24-pin textool socket.



K161004 - 16DIP
K162104 - 16DIP
K164208 - 16DIP
K208511 - 20DIP
K2N341N - 20DIP
K2N341N - 24DIP

SOP Package

- Additional SOP adapter should be used and align to bottom of the 24-pin textool socket.



Adapter 16S-D2 for
K161004/2104 /4208 SOP

K161004 - 16SOP
K162104 - 16SOP
K164208 - 16SOP

