

aP89W20

VOICE OTP DEVELOPMENT SYSTEM

USER GUIDE

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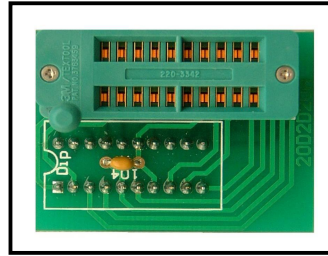
Introduction

aP89W20 Voice OTP Development System is designed to support Aplus' aP89 series Voice OTP chips. It supports the following devices:

- **aP89042 (42 sec OTP chip)**
- **aP89021 (21 sec OTP chip)**
- **aP89010 (10 sec OTP chip)**

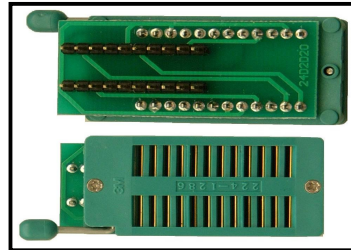
The following aP89 A-series 5V version OTP devices with an additional 20-pin to 20-pin adaptor (part number **20D2D20A**):

- **aP8942A (42 sec 5V Vdd OTP chip)**
- **aP8921A (21 sec 5V Vdd OTP chip)**
- **aP8910A (10 sec 5V Vdd OTP chip)**



And, the following long duration, 24-pin devices with an additional 24-pin to 20-pin adaptor (part number **24D2D20**):

- **aP89085 (85 sec OTP chip)**
- **aP89170 (170 sec OTP chip)**
- **aP89341 (341 sec OTP chip)**



Please refer to the last section in this User Guide for how to insert different devices onto the programmer.

This development system serves two main functions:

- **Compiler**
- **Writer**

The **Compiler** is used to combine edited voice file into the chip to form the desired Voice Group and to define the playback functions of each Voice Group by selecting the Whole Chip Option or the Trigger Options of individual Voice Group.

The **Writer** is used to program the voice data into the OTP devices processed by the Compiler Function. A Writer Board connected to the PC is required.

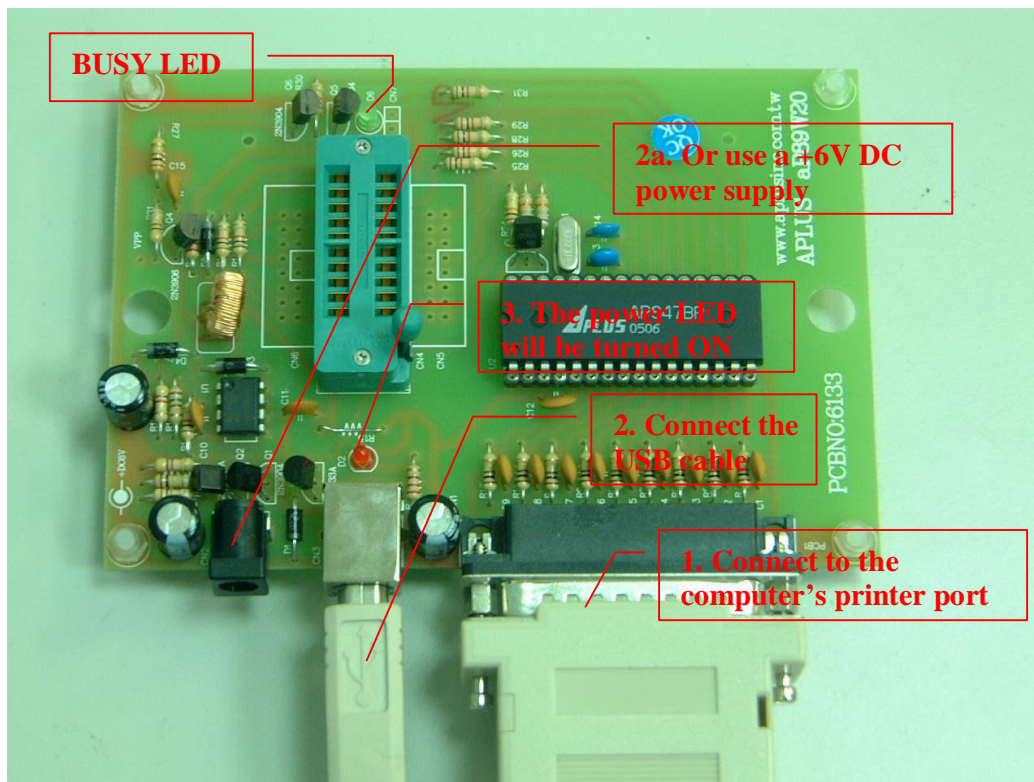
Installation

Hardware Installation

In this version of aP89W20, there is no need to specify the setting of the computer's printer port. That means no matter what the printer port setting is, the aP89W20 hardware will work fine. Either EPP or ECP mode can be used.

Writer Board Connection

- 1) Connect the printer port of the computer to the writer port.
- 2) Connect the USB cable OR a DC +6V power supply, the power indicator LED should be lightened.



The USB is used for supplying DC power to the programmer. It does not serve for data nor control functions.

If the computer's USB ports are already connected to many USB devices, it will happen that the USB port does not have enough current output to drive the aP89W20 programmer. In this situation, an external DC +6V power supply should be used instead of the USB.

Note that Either USB or external power supply should be connected. **Never connect both USB and external power supply at the same time to the aP89W20. Otherwise, the USB maybe damaged.**

PC BIOS Setting

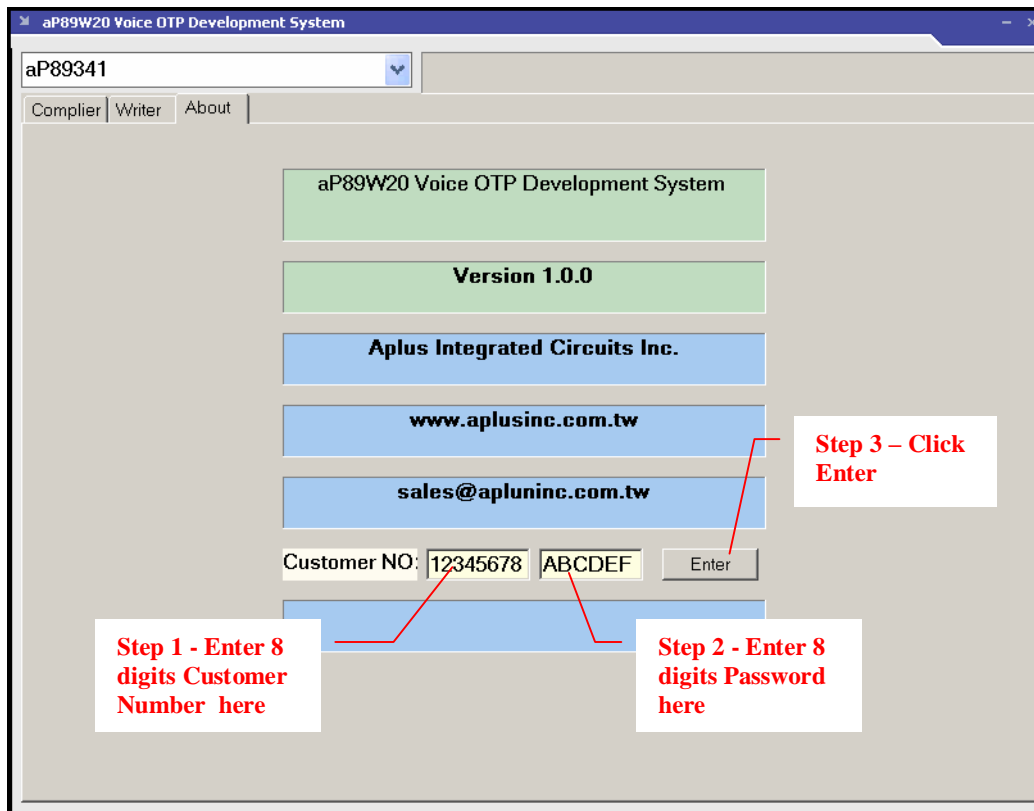
Make sure the printer port is set to enable. Once enable, no matter which more, e.g. Normal mode, ECP or EPP mode can be used.

Software Installation & Registration

Create a new folder in your computer's Hard Drive. Copy the .ZIP archive file, aP89W20_XXX.ZIP to the directory, where "XXX" represents the version number of the software. Unzip the file and double click the **INSTALL.EXE** to install the required software drivers for the first time you install this program.

Double click the file **aP89W20.EXE** to launch the software. At that time, the **BUSY LED** will be flash several times. This indicates the application software can detect the hardware connected at the printer port.

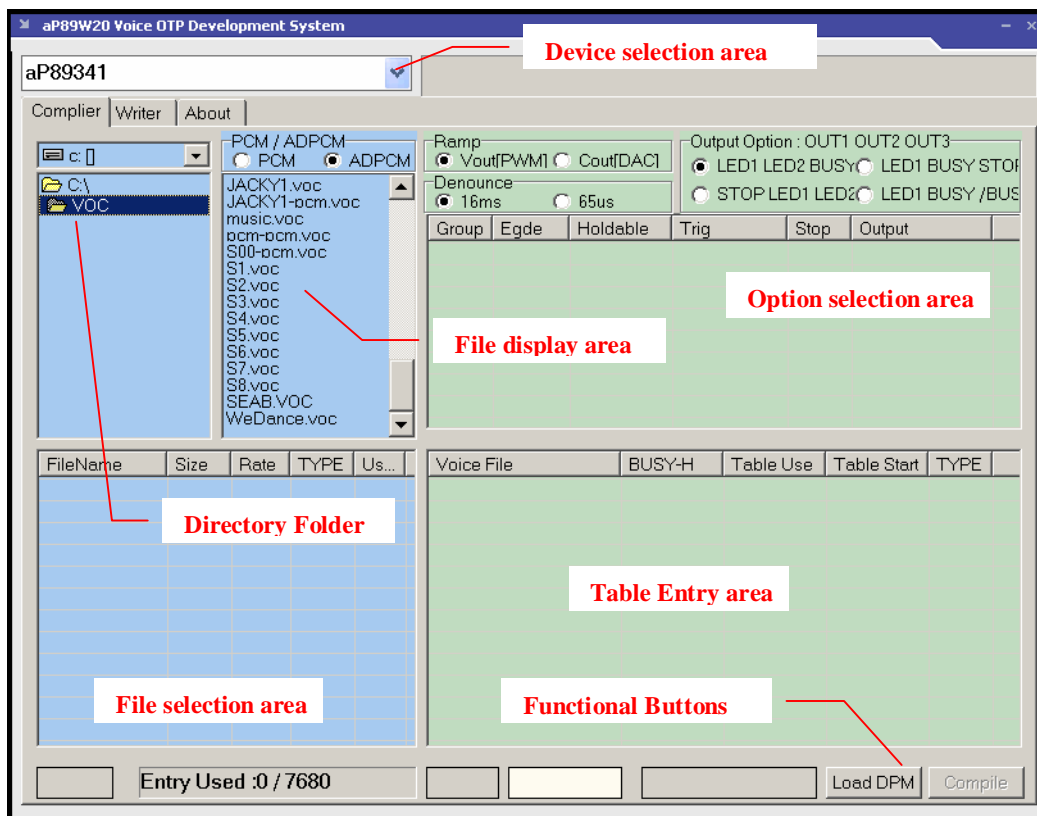
Click the **About** tab and you will see two empty boxes near the bottom of the window. Enter the registration number provided and click the **Enter** button on the left to finish the registration. Successful registration will enable all functions provided by the software. Otherwise, you cannot save your finished work and cannot program the OTP devices.



Compiler

When the aP89 Voice OTP Development System is launched, the Compiler Window is displayed. The Compiler Window consists of the following areas:

- **Directory Folder** area: display the current directory path
- **File Display** area: display a list of voice files in the current directory
- **Option Selection** area: show the user selected options
- **File Selection** area: show the selected voice files
- **Table Entry** area: show the combination of voice files in each Voice Group
- **Device Selection** area: allow user to select which OTP chip to be used
- **Function Buttons**: to perform the specific functions



Voice data and user selectable options must be set up and combined together to form a DPM file before it can be programmed into the Voice OTP device. The following procedures describe step by step how to compile the voice data and options to produce the DPM file for programmed into the chip.

Step 1 – Select Device

- click the “down arrow” to show device names and select the device you want to work on.
- Note that chose **aP89042** for aP8942A, **aP89021** for aP8921A and **aP89010** for aP8910A.

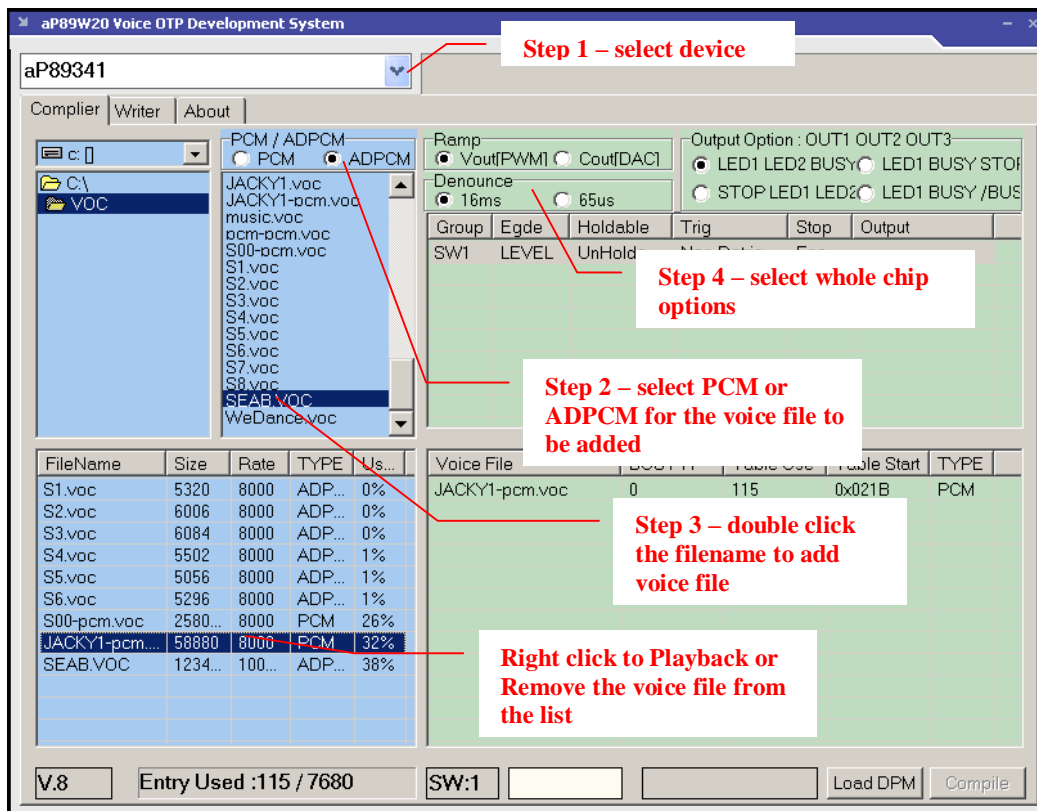
Step 2 – Adding Voice Files

- set the coding format, “ADPCM” or “PCM”, for the input voice file
- click the “down arrow” to select the Hard Drive
- double click the “Folder” where your edited Voice Files are located
- a list of file with “.VOC” or “.WAV” file extension is displayed in the File Display area. **The voice file must be saved as 8-bit Mono format.**
- double click the Voice File you want to add
- the selected Voice File will be displayed in the File Selection area
- right click the Voice File, you can playback or remove the selected file

Step 3 – Selecting the Whole Chip options

- Select the Audio Output and Trigger Mode by **clicking** the small dots besides.

Tips: When you connect the speaker or buzzer directly to the VOUT1 or VOUT2 pins, the Ramp Disable (Vout[PWM]) option should be selected. On the other hand, if you connect the speaker through a transistor to the COUT pin, the Ramp Enable (Cout[DAC]) option should be selected.



Step 4 – Selecting the Individual Voice Group Options

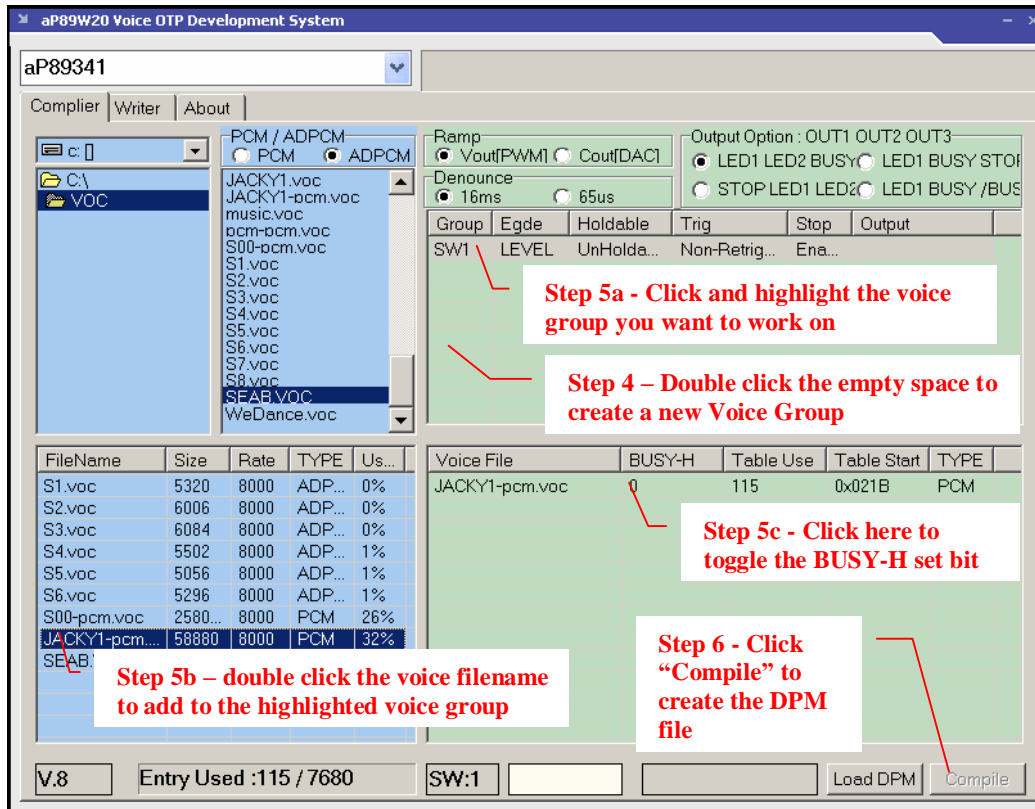
- Each Voice Group can have its own triggering and output setting options.
- double click the empty space in the Group Option Selection area, a details list of available options will be displayed
- click on the small dot besides the option name to select the desired option
- click the “OK” button when finished
- click the “Cancel” button to cancel the current selection

Step 5 – Adding Voice Files to form Voice Group

- click to highlight the Voice Group you want to work on
- double click the selected voice file in the Selected File Display area, the voice file will be added into the Table Entry area
- double click on the number bit below the BUSY-H column to set or reset the busy-high output for this particular voice selection in the Group. “1” to set the busy-high output and “0” to reset the busy-high output.
- right click on the voice file allows you to remove the selected voice file
- right click on the Voice Group allows you to playback or remove the group

Step 6 – Generation of the DPM file for Device Programming

Press the “Compile” button to generate the .DPM file for OTP programming.



Writing OTP device

After finishing DPM file generation, you can program the OTP device. Click the “Write” tab to enter the OTP programming section. There are the following functions:

- **Load File:** load the DPM file from Hard Disk
After loading DPM file, the Voice Groups and selected options are displayed. The load function will also detect the checksum stored in the DPM file and compare with the checksum calculated from the DPM file contents. If they are different, the DPM file cannot be loaded.
- **Blank Check:** the OTP device inserted on the writer board will be checked whether it is blank and hence available for programming.
- **Verify:** pressing this button will cause the writer to check the contents inside the OTP device against the loaded DPM file.
- **Write OTP:** the load DPM file will be programmed into the OTP inserted in the writer board

There is a “Security” check box, in which, when it is checked, the device will be security protected. A security protected device cannot be used as a Master chip for used in our OTP copier for mass production.

The ap89W20.INI file

There is chance that the PC printer port is running in a too fast speed that the aP89W20 writer cannot catch up with it. In this case, the Writer OTP result will be less than 100% match.

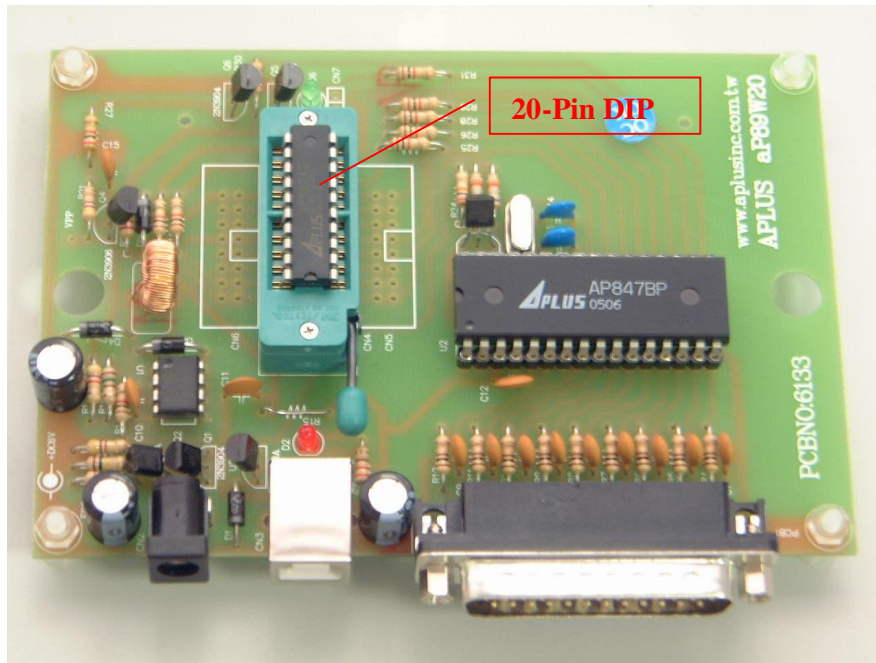
When this situation happens, user can change the delay time setting by editing the SPPTimer parameter defined in the ap89W20.INI file:

```
SPPTimer=3
```

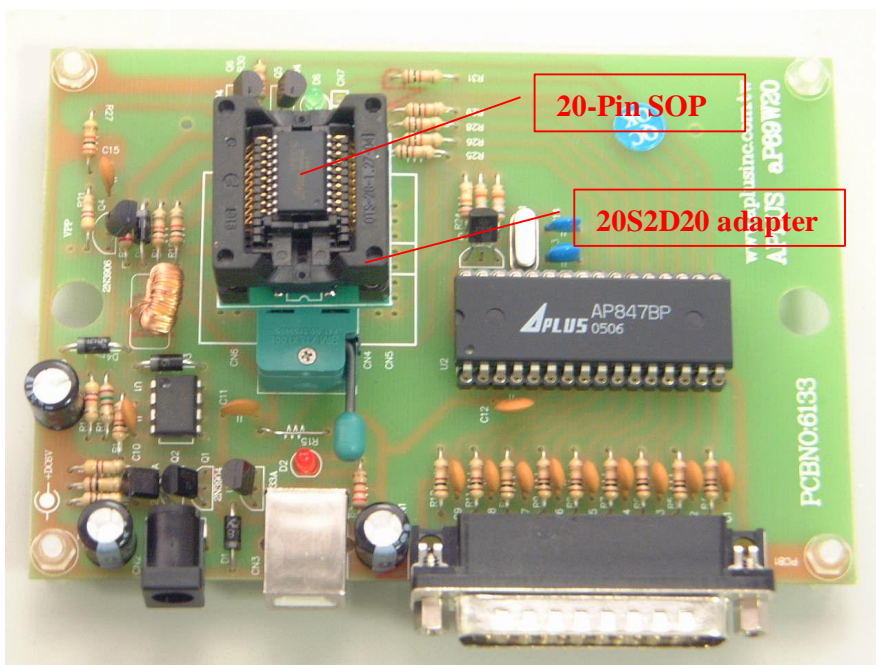
The ap89W20.INI file can be opened and edited by any text editor software. The default value is 3. The maximum value is 10.

Inserting Devices onto the Programmer Hardware

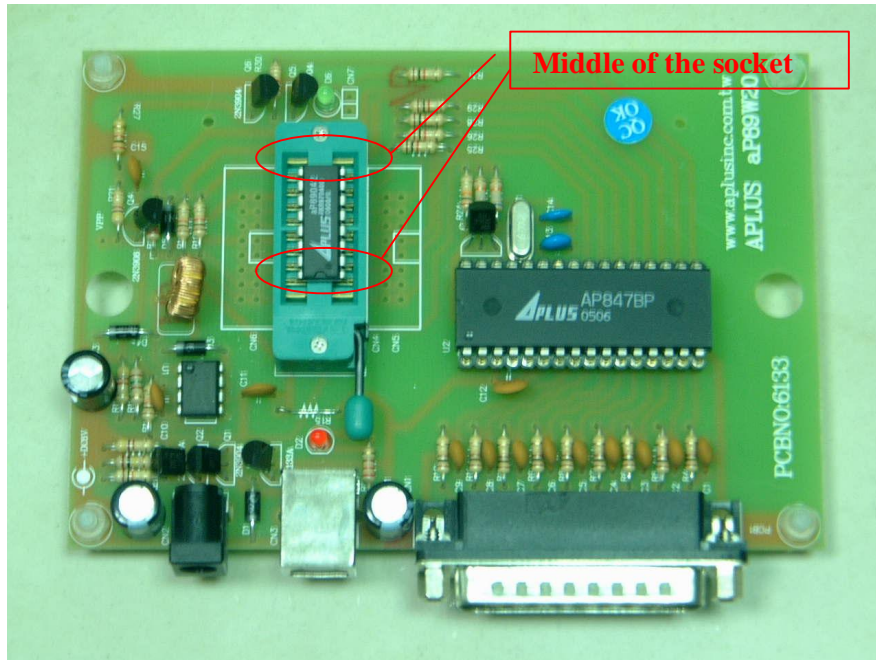
- aP89042 (20-Pin DIP package)



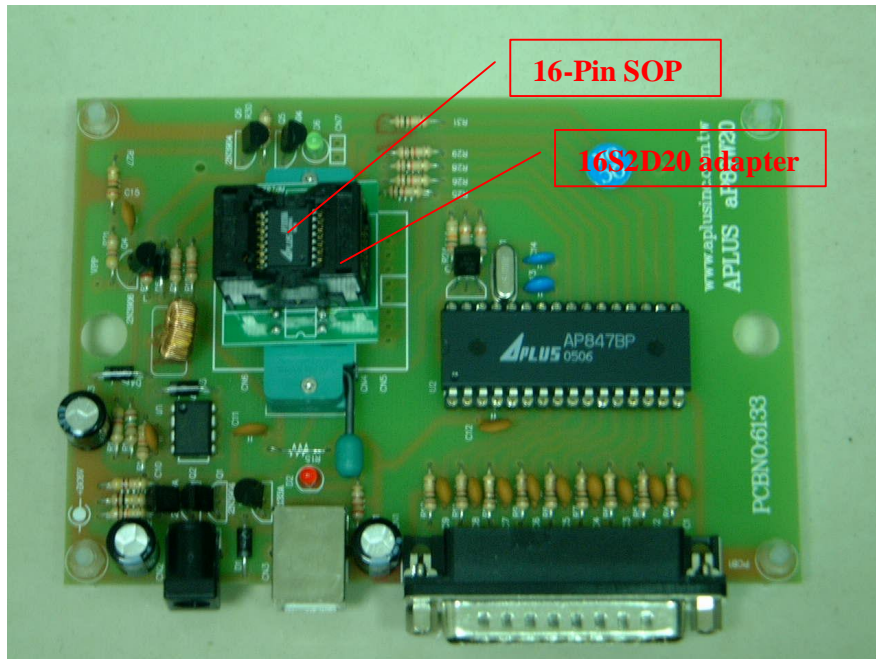
- aP89042 (20-Pin SOP package)
- Part no. "20S2D20" 20-Pin SOP to 20-Pin DIP adapter should be used.



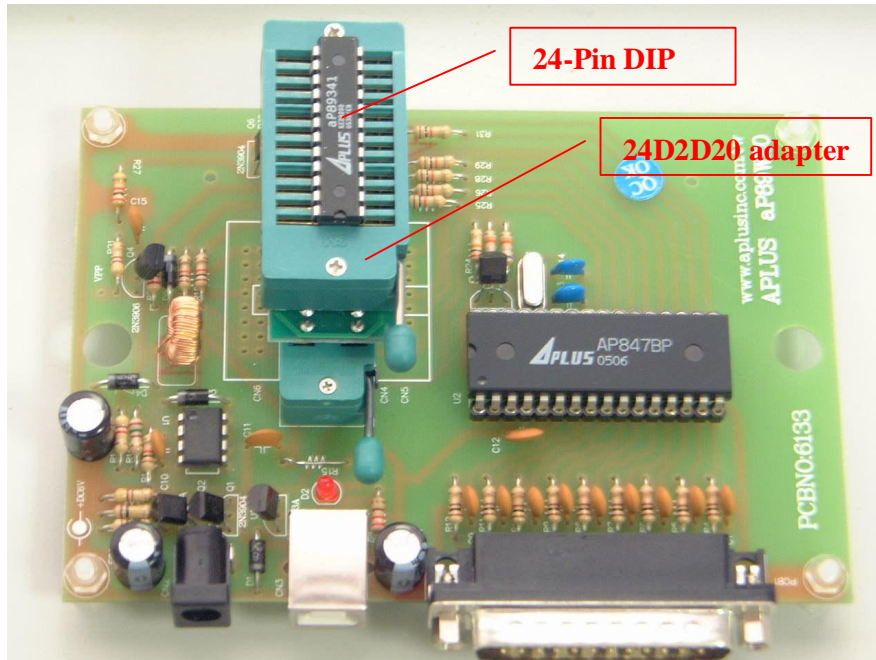
- **aP89021/aP89010 (16-Pin DIP package)**
- Device should be inserted to the middle of the textool socket.



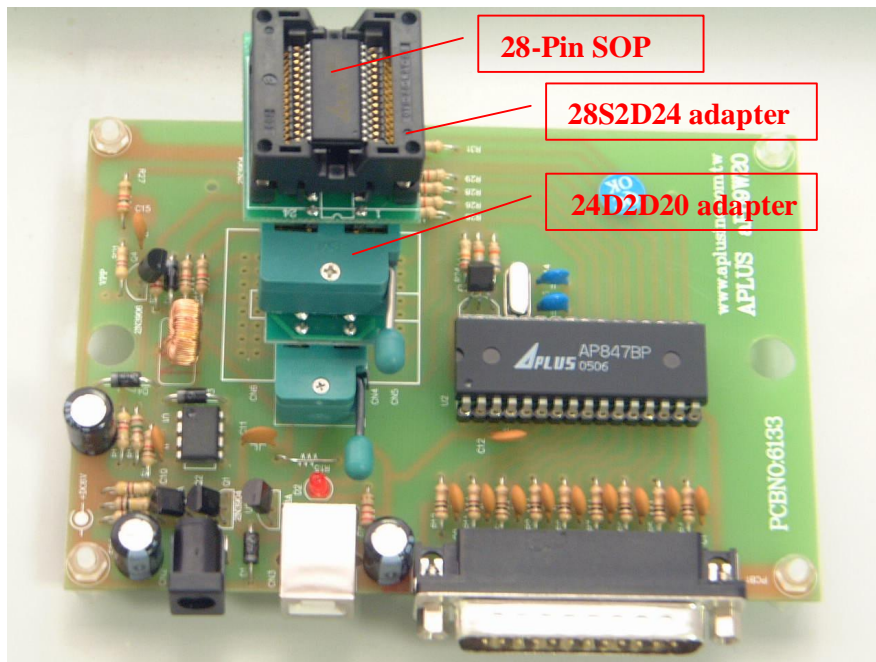
- **aP89021/aP89010 (16-Pin SOP package)**
- Part no. "16S2D20" 16-Pin SOP to 20Pin DIP adapter should be used.



- **aP89341 / 170 / 085 (24-Pin DIP package)**
- Part no. “24D2D20” 24-Pin DIP to 20-Pin DIP adapter should be used.



- **aP89341 / 170 / 085 (28-Pin SOP package)**
- An additional adapter, Part no. “28S2D24” 28-Pin SOP to 24-Pin DIP, should be used.



- **aP8942A / 21A / 10A (20 or 16-Pin DIP package)**
- An additional adapter, Part no. “20D2D20A” 20-Pin DIP to 20-Pin DIP A-Version, should be used.

