

How to use Unique key in Dediware

Version 2.2



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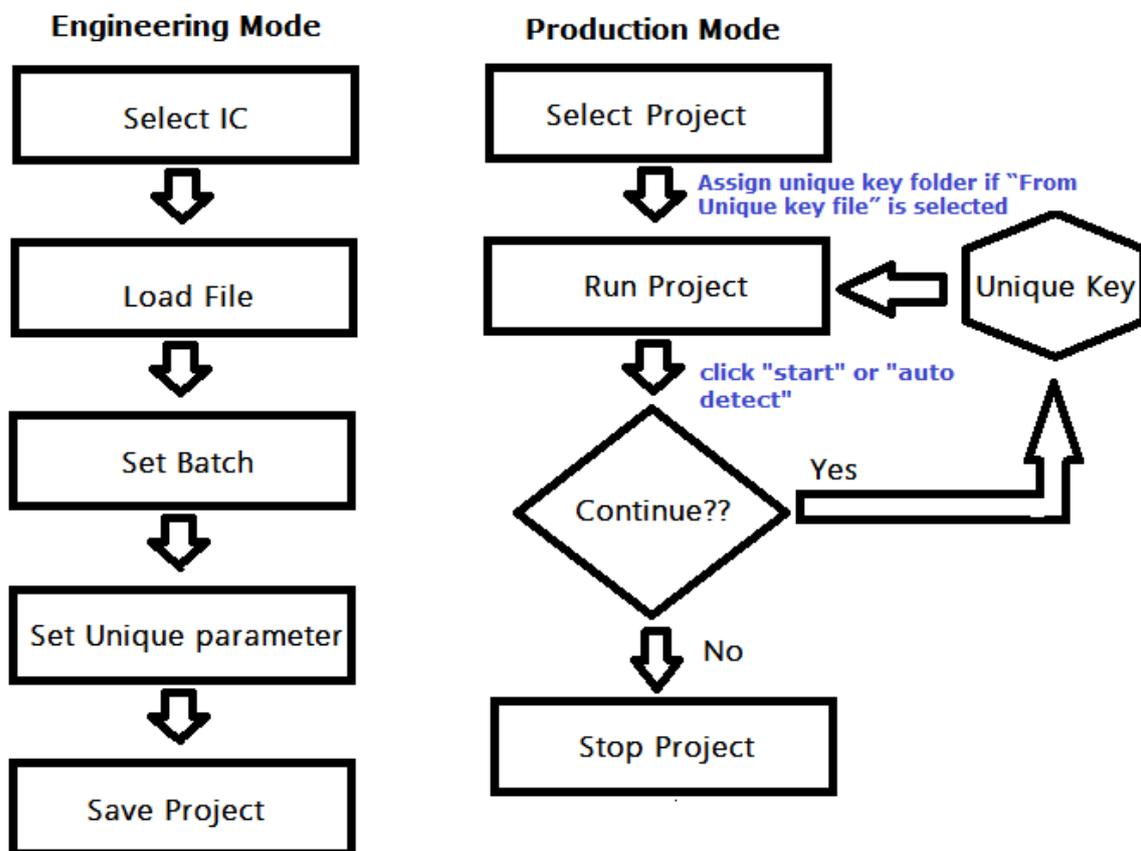
I. Description

This application note illustrates the setting of Unique key in Dediware. There are three ways to program the key to the chips. Learn more about DediProg products and how to use them.

✘ **The Unique key only supported in the USB Mode (connect to PC) because the key is produced by the software (Dediware).**

II. Preparation before Setting

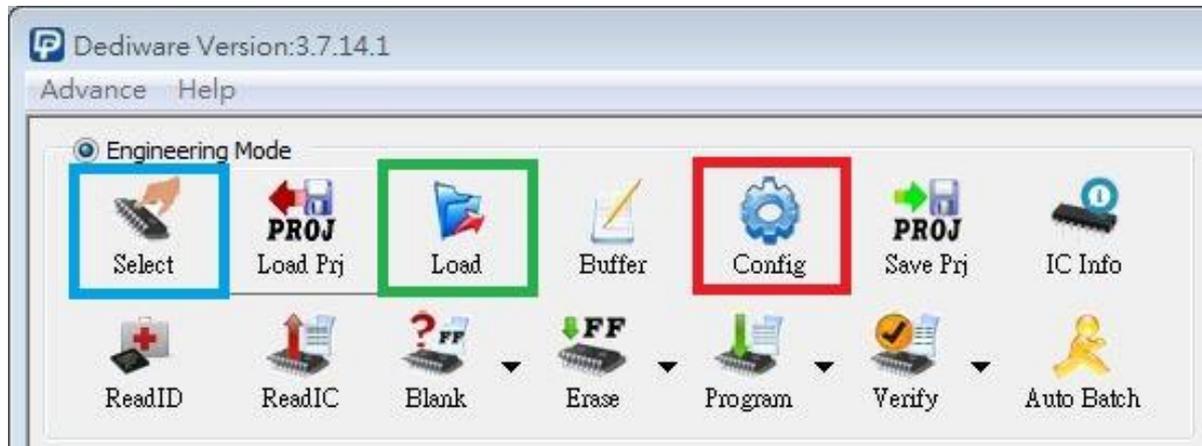
The following figure shows the process of programming the Unique key:



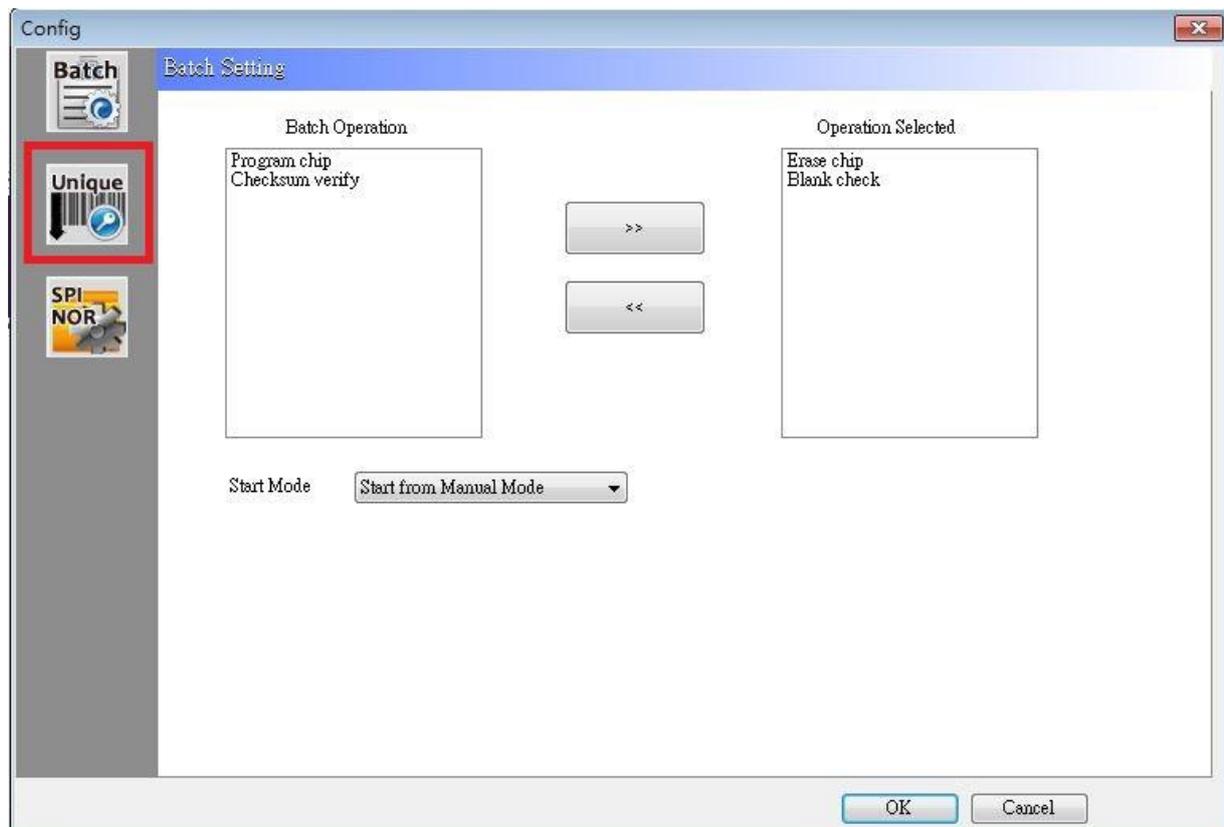
Users can complete most of the settings in Engineering Mode. However, only Production Mode provides programming function.

Step 1: Select the chip and the programming file

First, start Dediware and select the chip's part number (Framed in blue) and load the programming file (Framed in green), and then you can find the **Unique** key icon in "Config" (Framed in red):

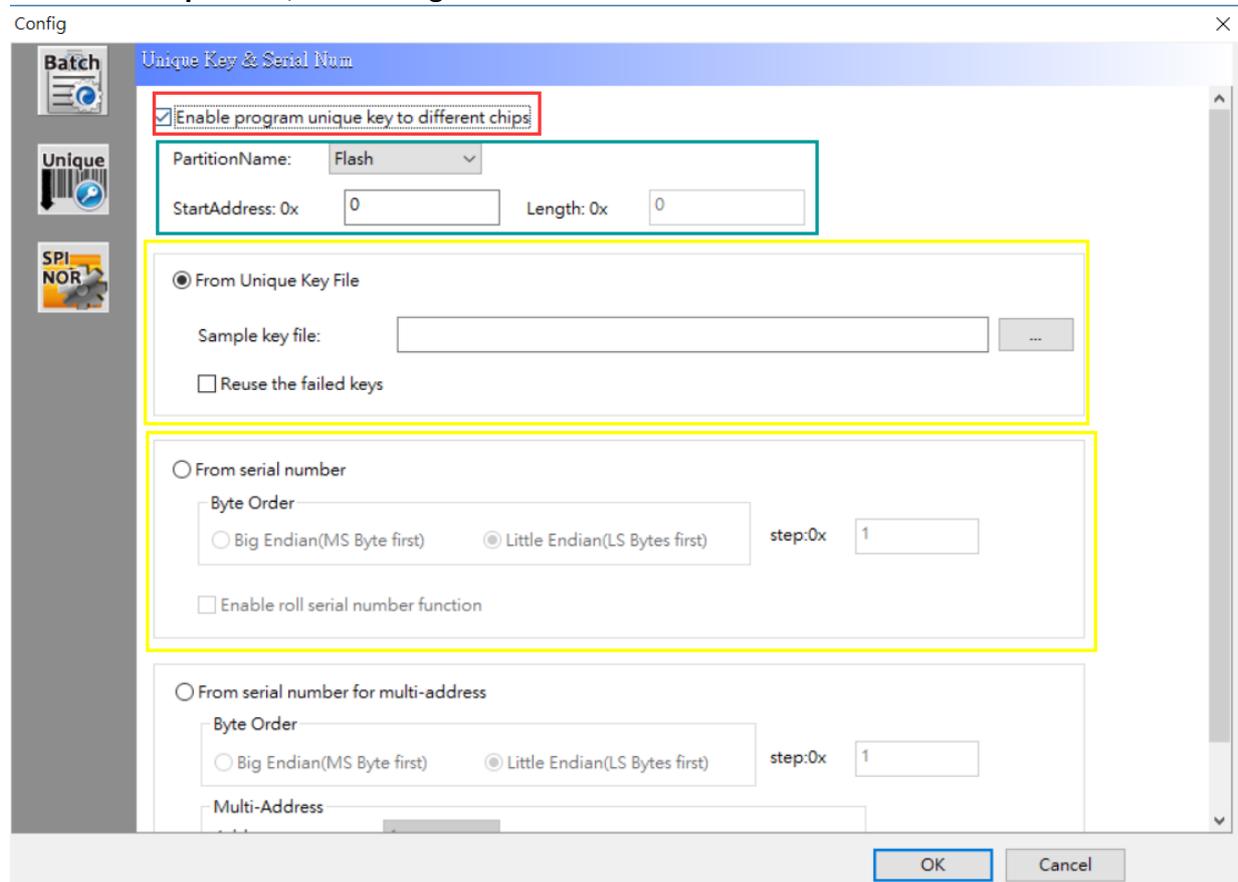


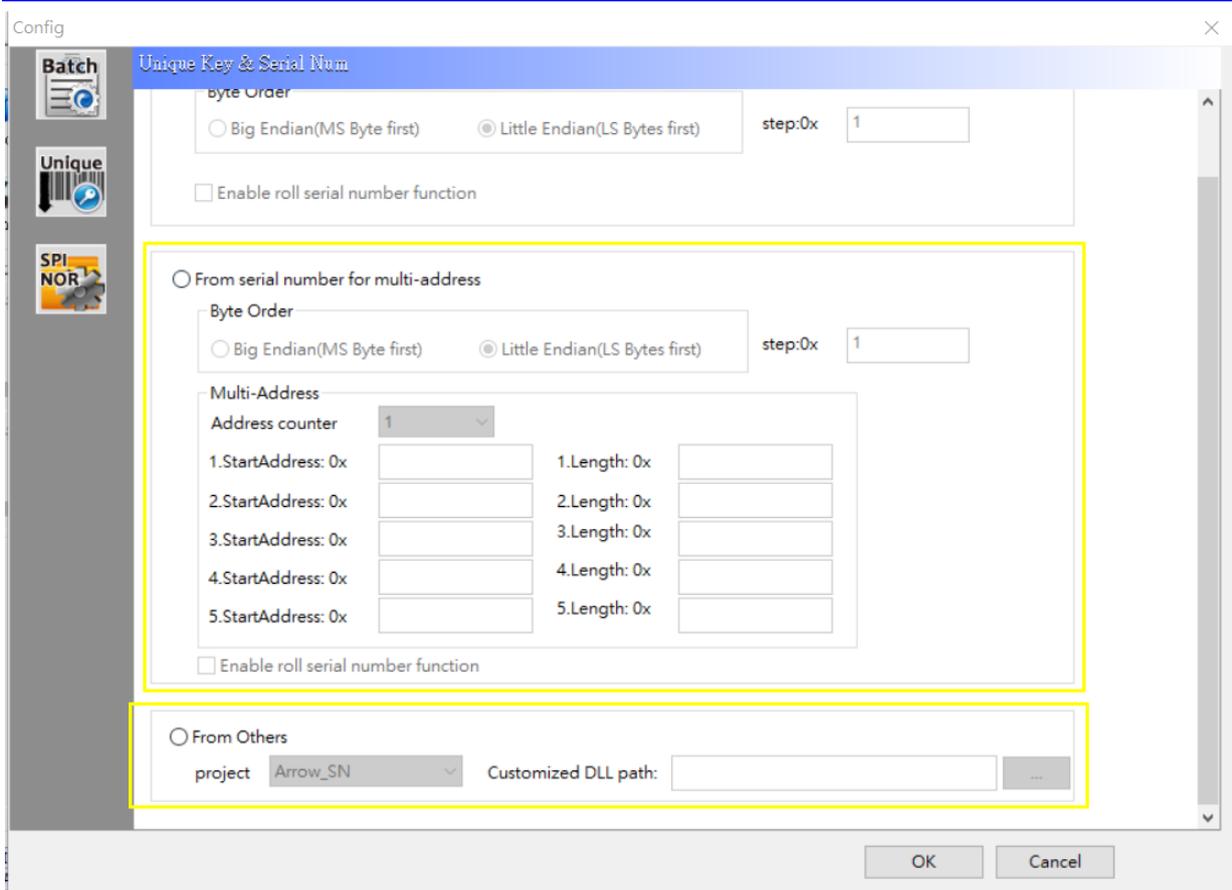
After setting the batch operation, click the "Unique key" icon (Framed in red):



Step 2: Unique key set up window

Click the **Unique** icon, the settings will show as below:





(Framed in red)

- **Enable program unique key to different chips:** The Unique key will be activated automatically in production mode.

(Framed in green)

- **Partition Name:** Assign the partition for programming.
- **Start Address:** Assign the start address for programming (Hex).
- **Length:** The length of Unique key.

(Framed in yellow)

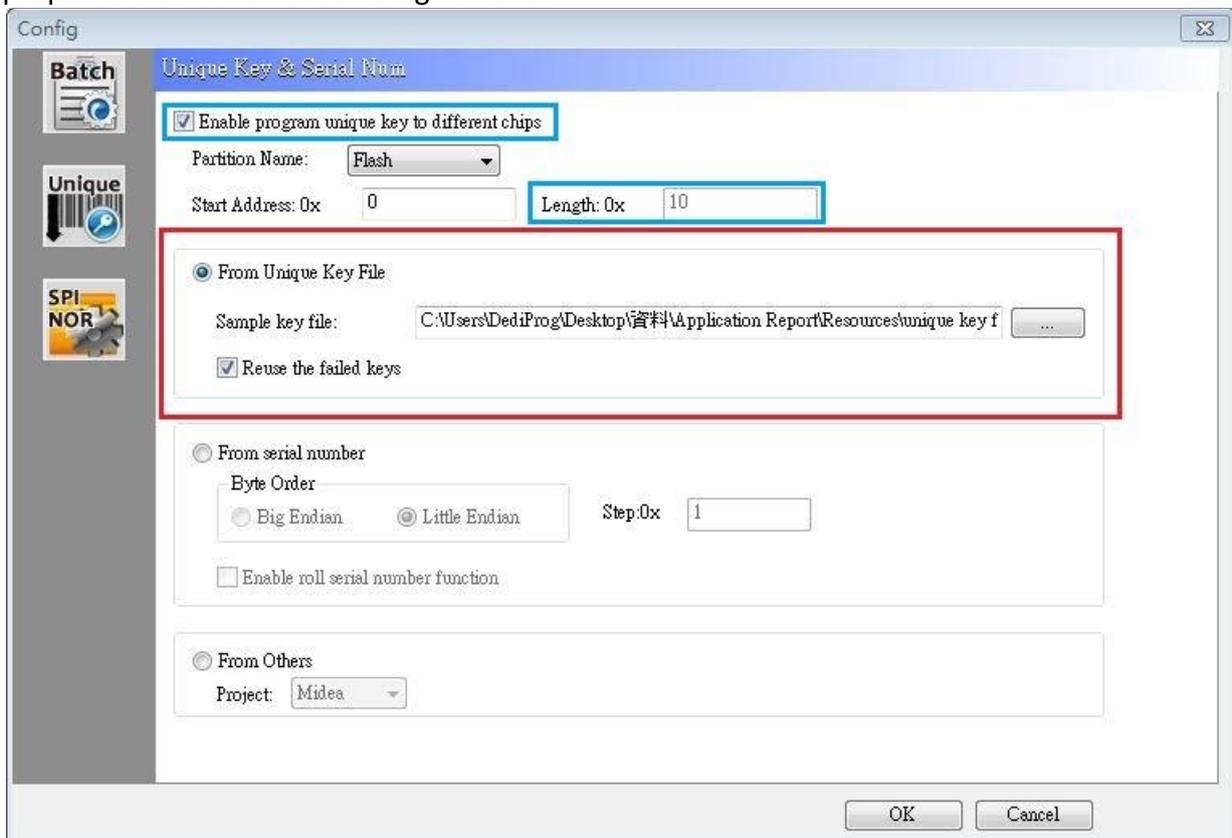
- **From Unique key file: Load the serial numbers file to program**
 - Sample key file: Read the length of key after loading the file.
 - Reuse the failed keys: Reuse the key that has failed.
- **From serial number: Given random key from Dediware automatically**
 - Byte Order: Select the order of the key numbers by Big Endian or Little Endian.
 - Step: The cumulative value of the serial number. The default is 1, ex:0000, 0001, 0002...etc.
 - Enable roll serial number function: If the number exceeds the setting range, then it will start from the first number again.
- **From serial number for multi-address: Given random key from Dediware automatically**
 - Byte Order: Select the order of the key numbers by Big Endian or Little Endian.
 - Step: The cumulative value of the serial number. The default is 1, ex:0000, 0001, 0002...etc.
 - Multi-Address:

- ◆ Address counter: Set up to 5 groups of Unique keys
- ◆ Start Address: Assign the start address for programming (Hex).
- ◆ Length: The length of Unique key
- Enable roll serial number function: If the number exceeds the setting range, then it will start from the first number again.
- **From Others: This selection is only for specific customers. (We will not introduce this use in this note.)**

III. From the Unique Key File

Step 1: Choose the File, the Partition, and the Address

After selecting “Enable program unique key to different chips”, choose a **Sample key file**, the purpose is to determine the length of file:



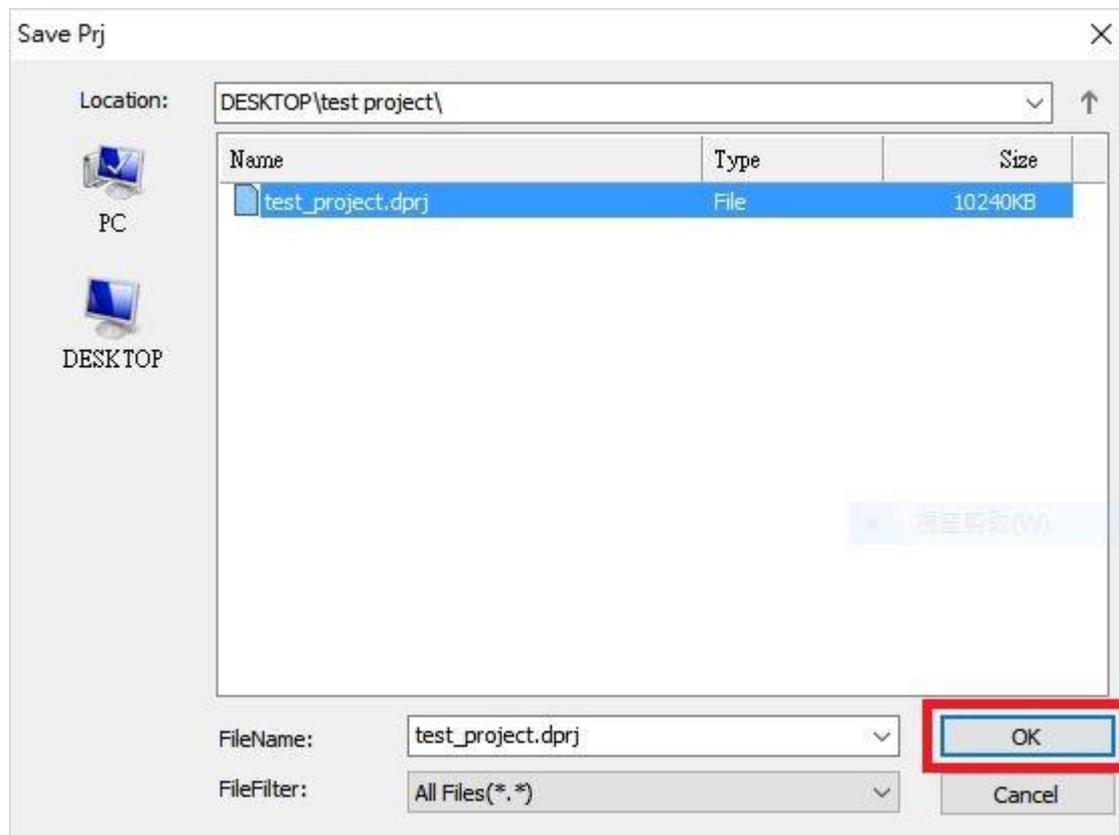
As the figure above, the Length of the key is shown by Dediware automatically. Choose the “Partition name” of the key that you want to program and set the “Start Address” (Hex).

“Reuse the failed keys” decides the location of the keys that have failed. If it is selected, then the failed key will be reused; if it is not selected, then the failed key will move to the “Failed” folder.

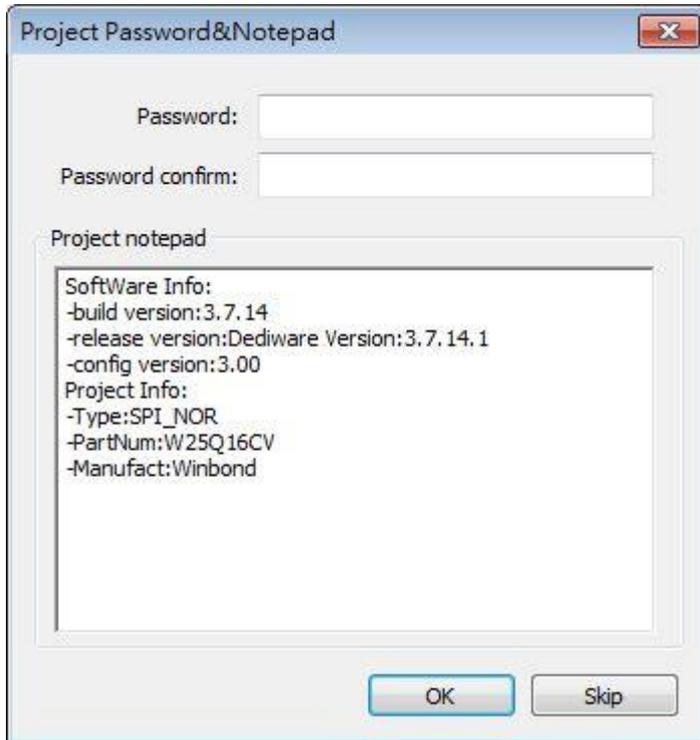
Click “OK” to save the settings.

Step 2: Save your project and run in Production Mode

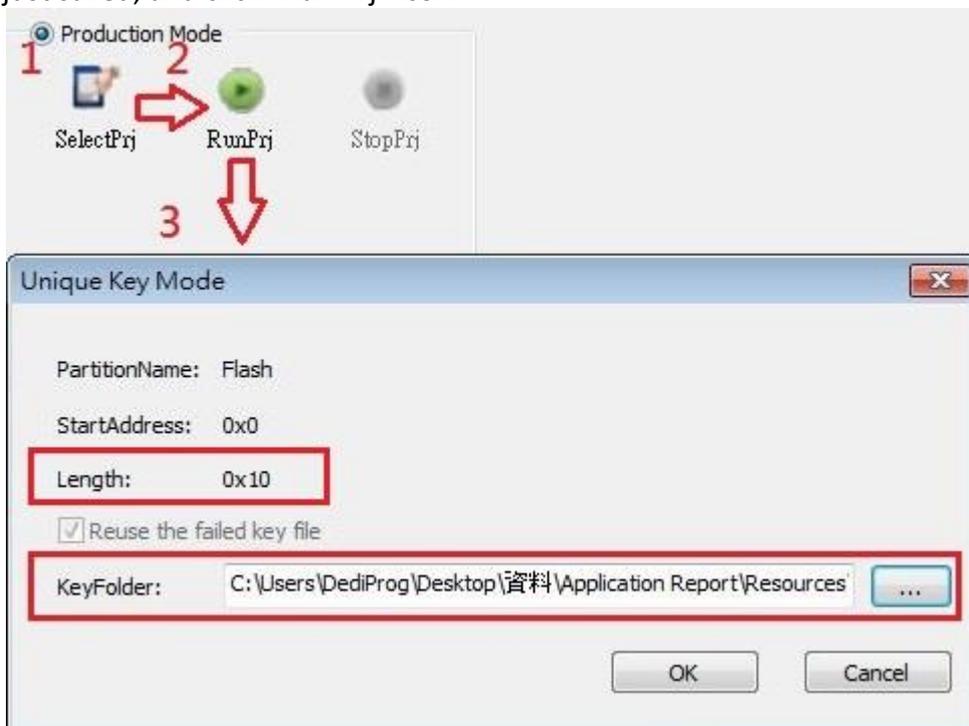
Save the project (Framed in red) after step 1.



Please click **OK** after editing the password or the note; if not, please click “Skip”.



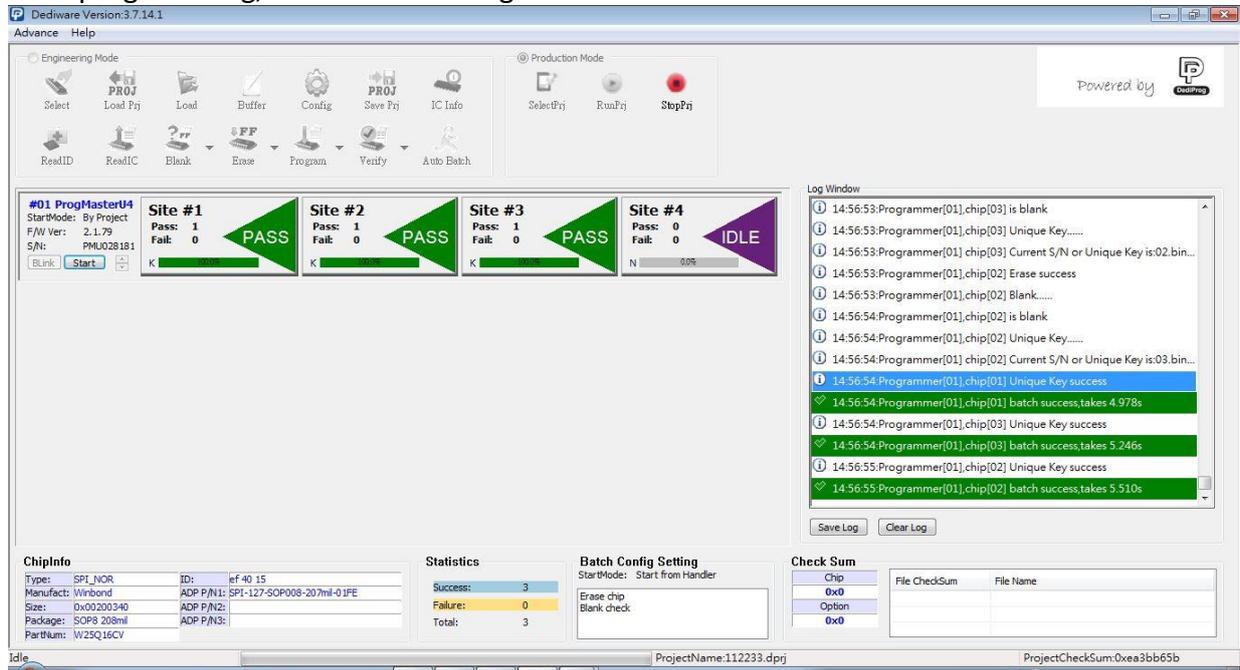
After saving the project, please switch to Production Mode, select the project that you have just saved, and click “Run Prj” icon.



The Key Length and the KeyFolder address must be the same as the Key file that you need to program, click “OK” to start programming.

Step 3: Key Check in Engineering Mode

After programming, the icon will change to PASS as below.



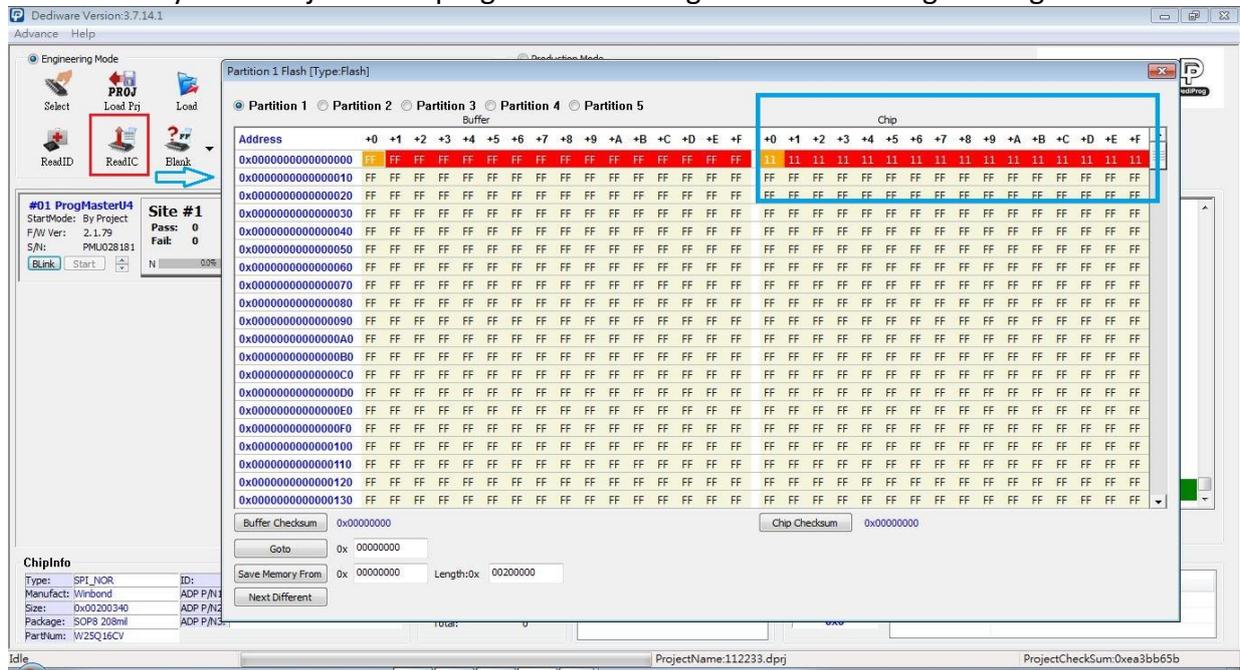
The screenshot shows the Dediware software interface in Engineering Mode. The top toolbar includes icons for Select, Load Proj, Load, Buffer, Config, Save Proj, IC Info, ReadID, ReadIC, Blank, Erase, Program, Verify, and Auto Batch. The main workspace displays four sites: Site #1, Site #2, Site #3, and Site #4. Sites 1, 2, and 3 are marked with a green 'PASS' icon, while Site #4 is marked with a purple 'IDLE' icon. A log window on the right shows the following entries:

```

14-56:53:Programmer[01],chip[03] is blank
14-56:53:Programmer[01],chip[03] Unique Key.....
14-56:53:Programmer[01],chip[03] Current S/N or Unique Key is:02.bin...
14-56:53:Programmer[01],chip[02] Erase success
14-56:53:Programmer[01],chip[02] Blank.....
14-56:54:Programmer[01],chip[02] is blank
14-56:54:Programmer[01],chip[02] Unique Key.....
14-56:54:Programmer[01] chip[02] Current S/N or Unique Key is:03.bin...
14-56:54:Programmer[01],chip[01] Unique Key success
14-56:54:Programmer[01],chip[01] batch success,takes 4.978s
14-56:54:Programmer[01],chip[03] Unique Key success
14-56:54:Programmer[01],chip[03] batch success,takes 5.246s
14-56:55:Programmer[01],chip[02] Unique Key success
14-56:55:Programmer[01],chip[02] batch success,takes 5.510s
  
```

Below the site status, there are sections for ChipInfo, Statistics, Batch Config Setting, and Check Sum. The Statistics section shows 3 successes and 0 failures. The Check Sum section shows File CheckSum 0x0 and File Name.

Check the key that has just been programmed through “Read IC” in Engineering Mode.

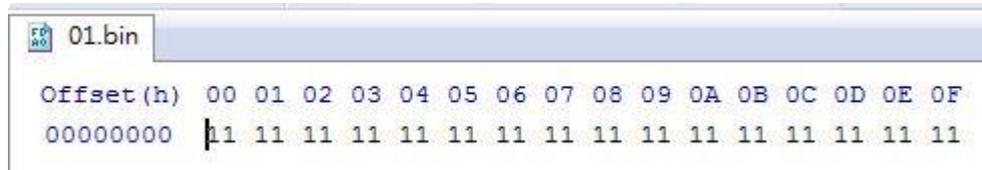


The screenshot shows the Dediware software interface in Engineering Mode. The 'ReadIC' icon in the toolbar is highlighted with a red box. The main workspace displays the 'Partition 1 Flash [Type:Flash]' window. The 'ReadIC' function is active, and the 'Chip' data is displayed in a table format. A blue box highlights the unique key value '11' in the chip data.

Address	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
0x0000000000000000	FF															
0x0000000000000010	FF															
0x0000000000000020	FF															
0x0000000000000030	FF															
0x0000000000000040	FF															
0x0000000000000050	FF															
0x0000000000000060	FF															
0x0000000000000070	FF															
0x0000000000000080	FF															
0x0000000000000090	FF															
0x00000000000000A0	FF															
0x00000000000000B0	FF															
0x00000000000000C0	FF															
0x00000000000000D0	FF															
0x00000000000000E0	FF															
0x00000000000000F0	FF															
0x0000000000000100	FF															
0x0000000000000110	FF															
0x0000000000000120	FF															
0x0000000000000130	FF															

The 'Chip Checksum' is shown as 0x00000000. The 'Buffer Checksum' is also 0x00000000. The 'Goto' field is set to 0x 00000000. The 'Save Memory From' field is set to 0x 00000000 with a length of 0x 00200000.

As the figure above, it shows the key that has been programmed correctly and is identical to the original file (shown as below).



```
01.bin
Offset(h) 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F
00000000 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
```

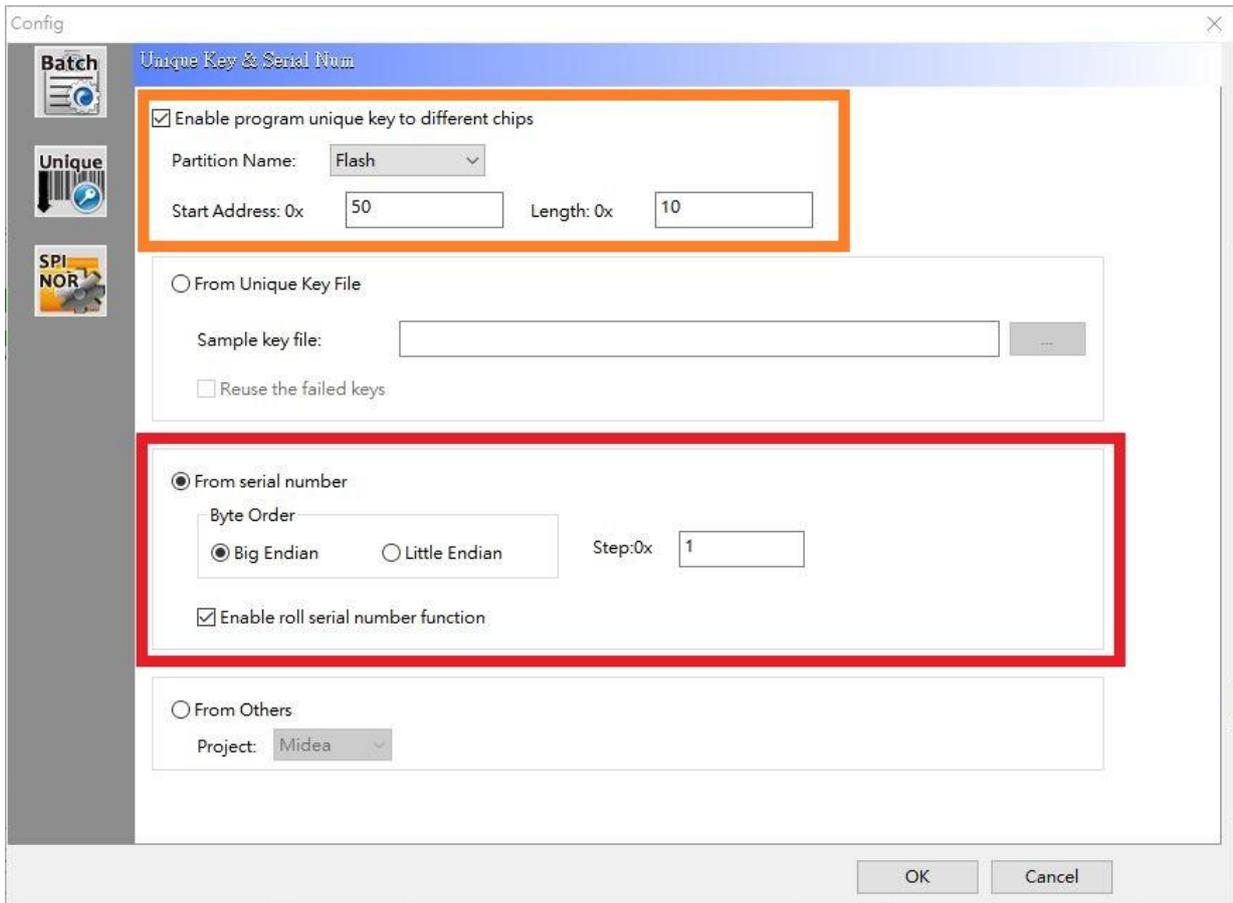
Remark:

1. Please arrange the order of the Key File names from the smallest to the largest. Ex:01, 02, 03...
2. Dediware will create three folders, including "Used", "Failed" and "uc-log".
"Used" is for the key that has passed.
"Failed" is for the key that has failed.
"uc-log" is for the log file.
3. Unique Key length must be in 0x00 ~ 0x100000.

IV. From the Serial Number

Step 1: Choose the Partition and set up the Address and key length, and then set the Byte Order and the Steps.

Select “Enable program unique key to different chips”; set the starting address for programming serial number and the numbers’ length, and then select “From serial number”.

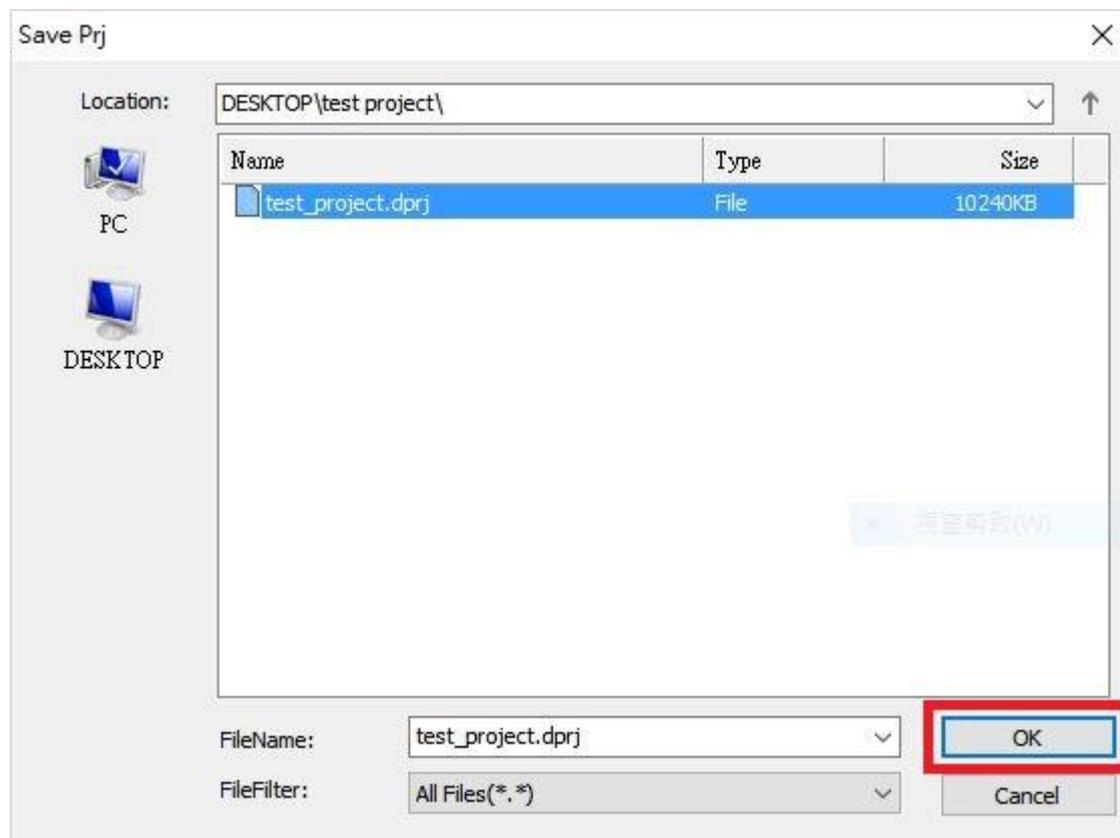


The Byte Order is the direction of the serial number:

- “Big Endian” means the lowest byte list from the highest address bit;
- “Little Endian” means the highest byte list from the lowest address bit.
- “Step” represents the value between each byte (Hex).
- “Enable roll serial number function” means it will reuse the used keys when it is out of range. After finishing with the settings, please click “OK”.

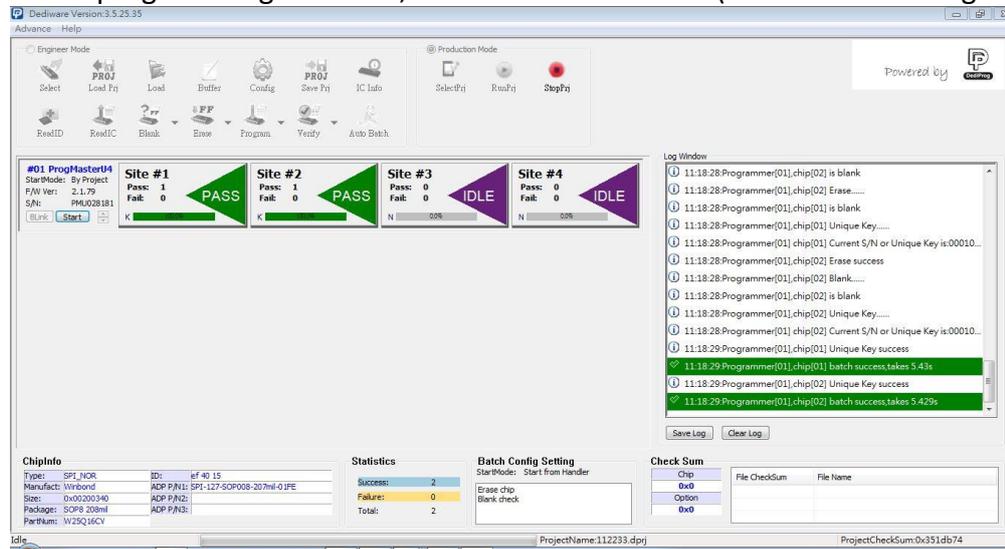
Step 2: Save your project and run in Production Mode

Remember to save the project (Framed in red) after step 1.



Step 3: Key check in Engineering Mode

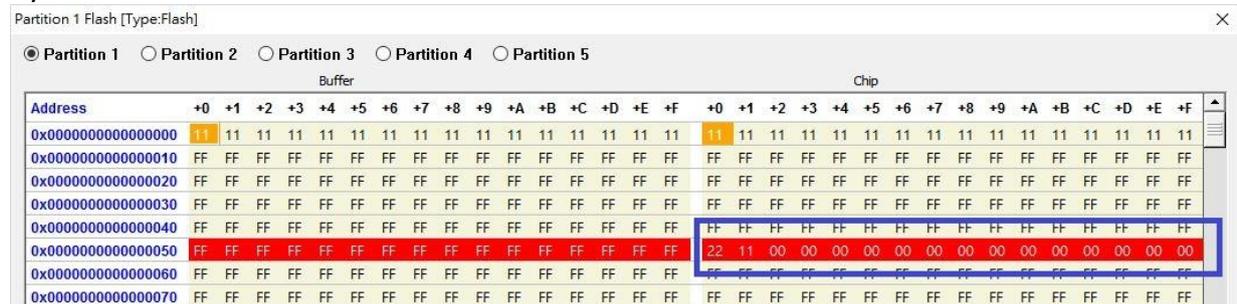
When programming succeeds, the icon will turn PASS (Shown as below figure).



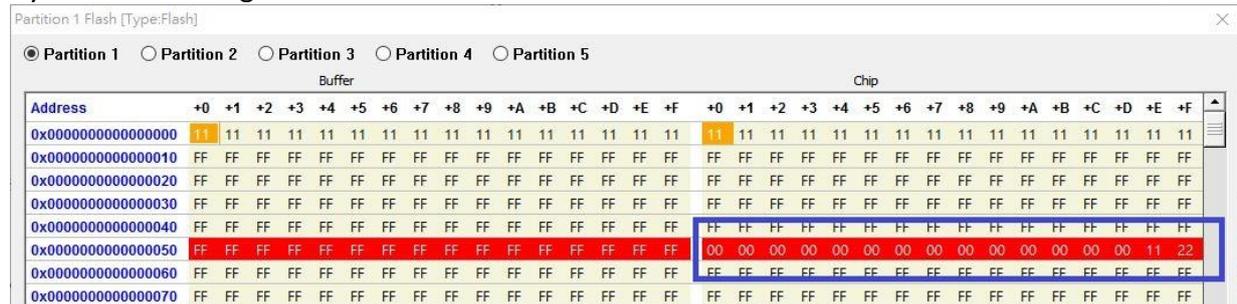
Next, check the key through “Read IC” in Engineering Mode.

As the figure below, the window shows the key has been programmed correctly.

By the order of Little Endian:



By the order of Big Endian:



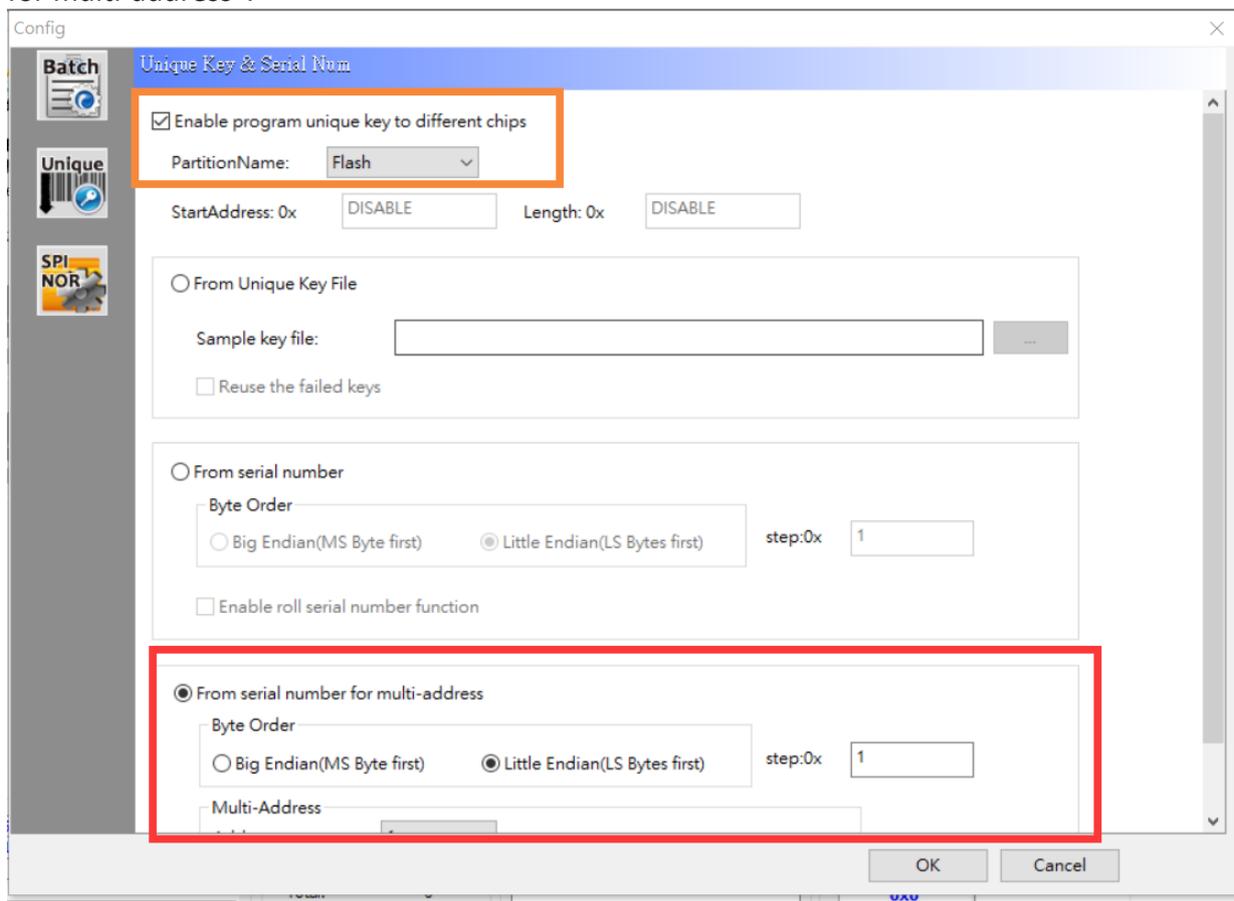
Remark:

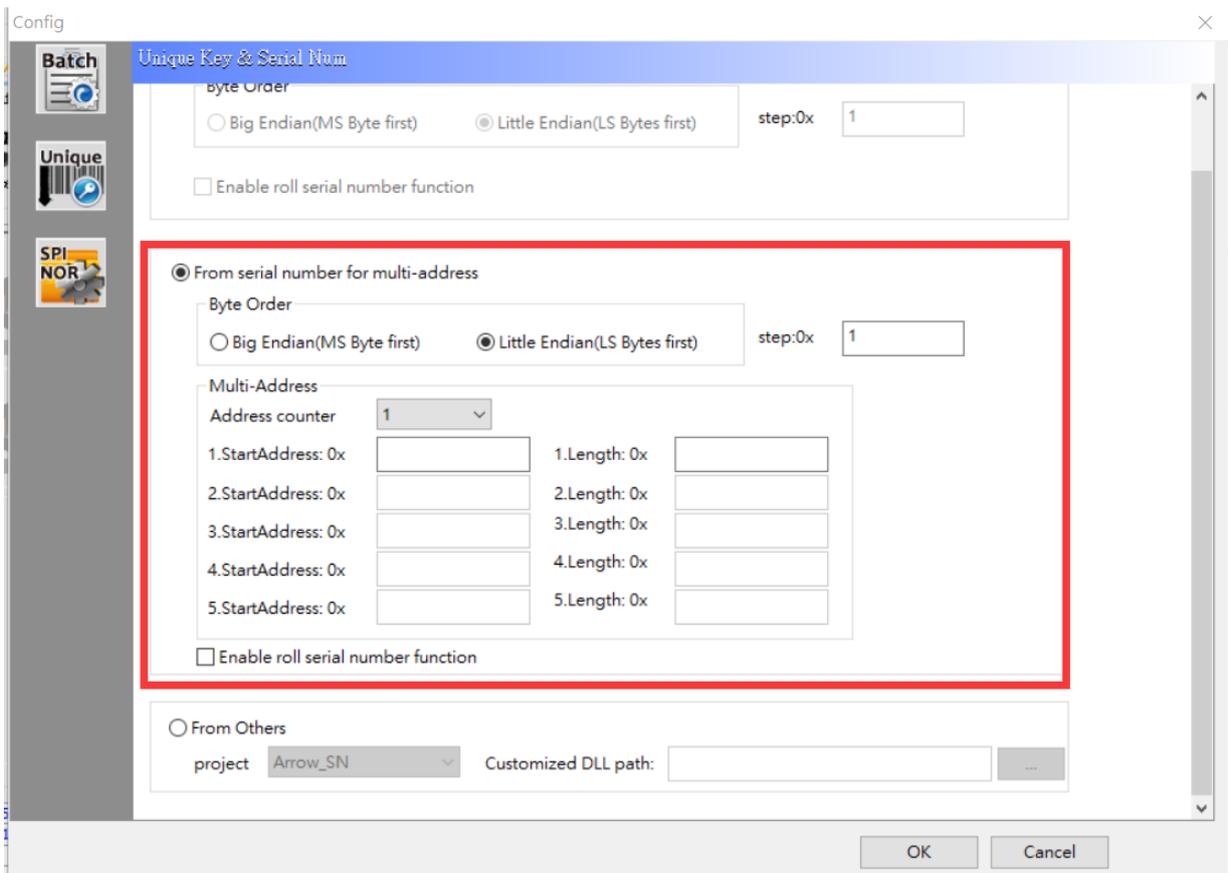
1. Please make sure the “Start Address” is blank, since the serial number will overwrite the existing file.
2. Serial number length must be less than 0x10 (16 bytes).

V. From the Serial Number for Multi-address

Step 1: Choose the Partition

Select “Enable program unique key to different chips”, and then select “From serial number for multi-address”.





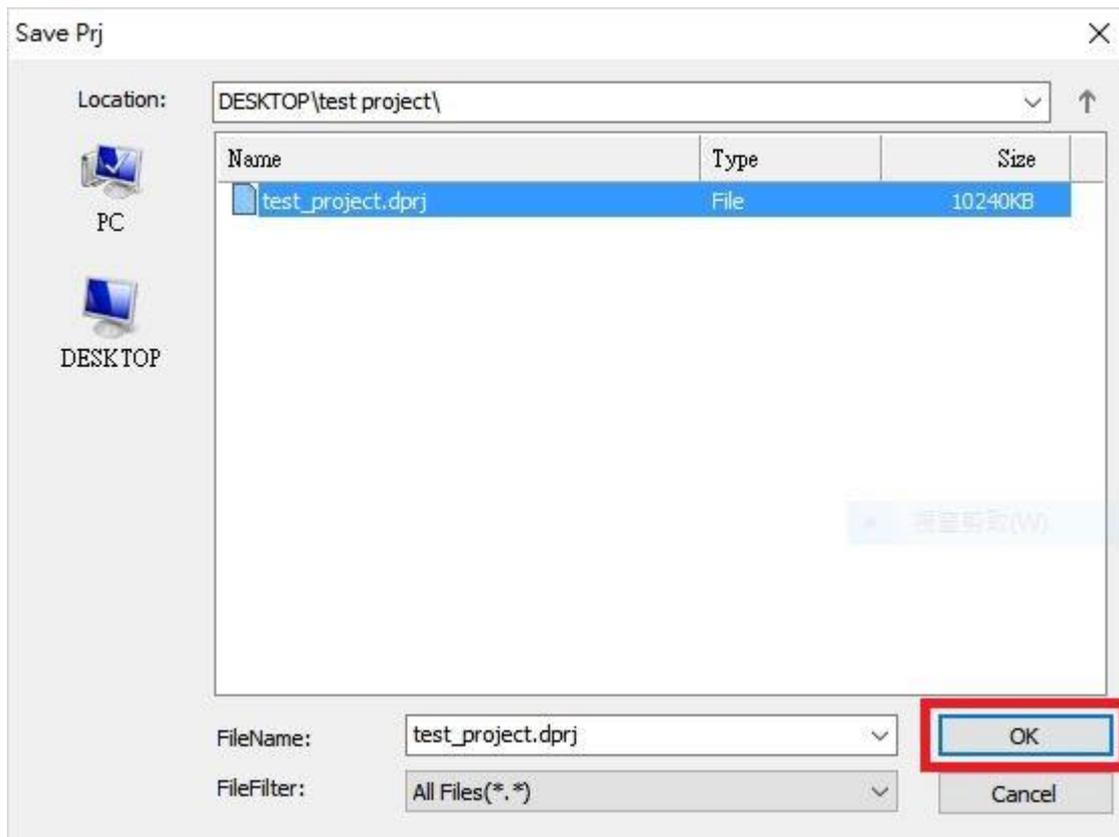
The Byte Order is the direction of the serial number:

- “Big Endian” means the lowest byte list from the highest address bit.
- “Little Endian” means the highest byte list from the lowest address bit.
- “Step” represents the value between each byte (Hex).
- “Multi-Address” means set the starting address for programming serial number and the numbers’ length. (Set up to 5 groups of Unique keys.)
- “Enable roll serial number function” means it will reuse the used keys when it is out of range. After finishing with the settings, please click “OK”.

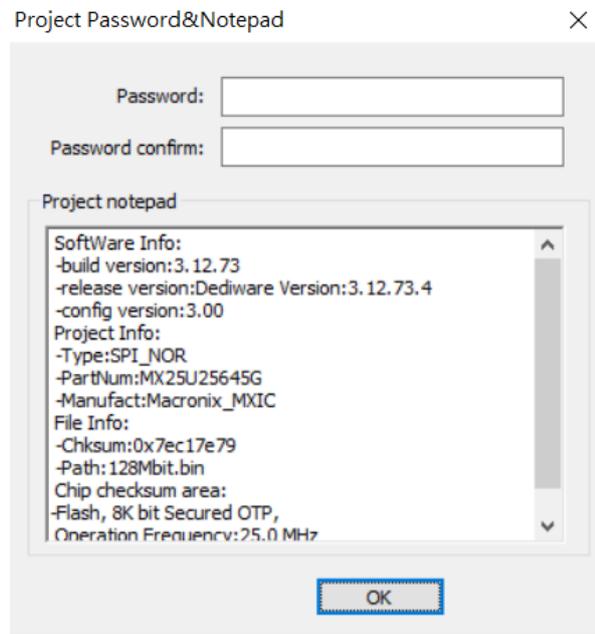
Step 2: Save your project and run in Production Mode

Remember to save the project (**Framed in red**) after step 1.

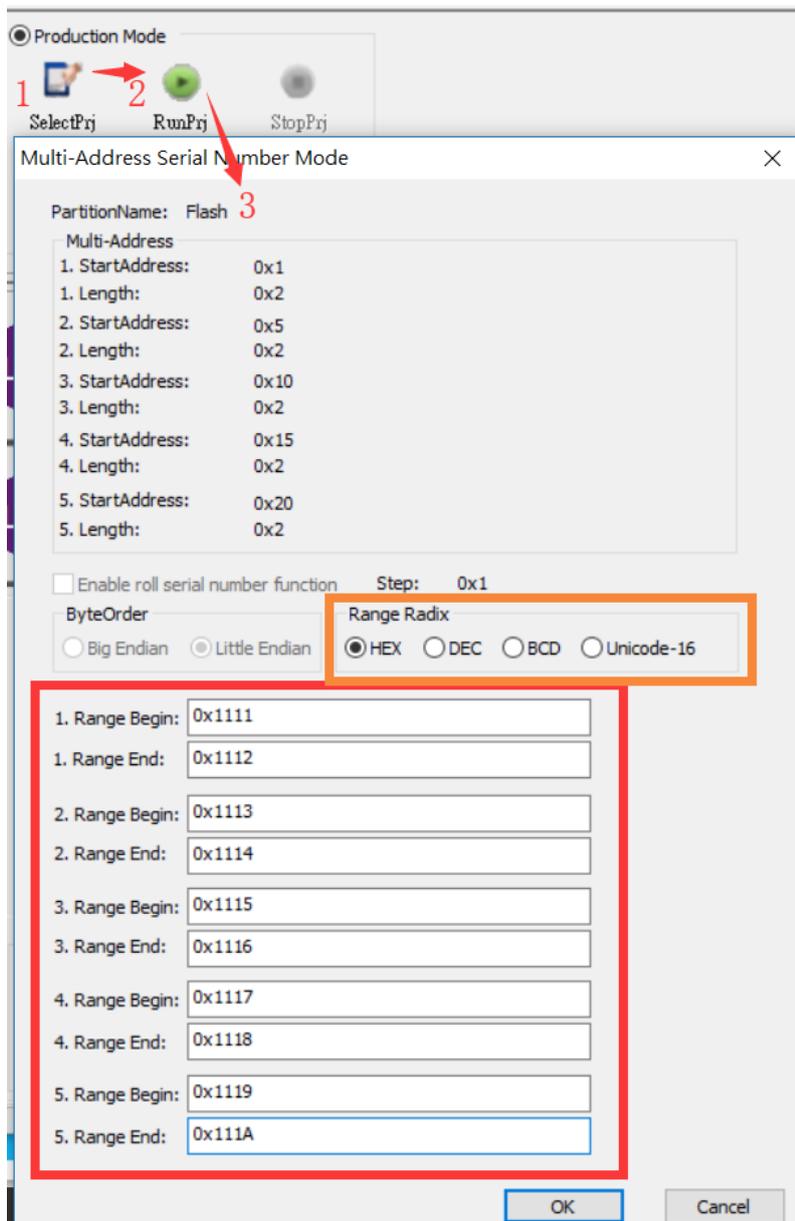




Please click **OK** after editing the password or the note; if not, please click “Skip”.



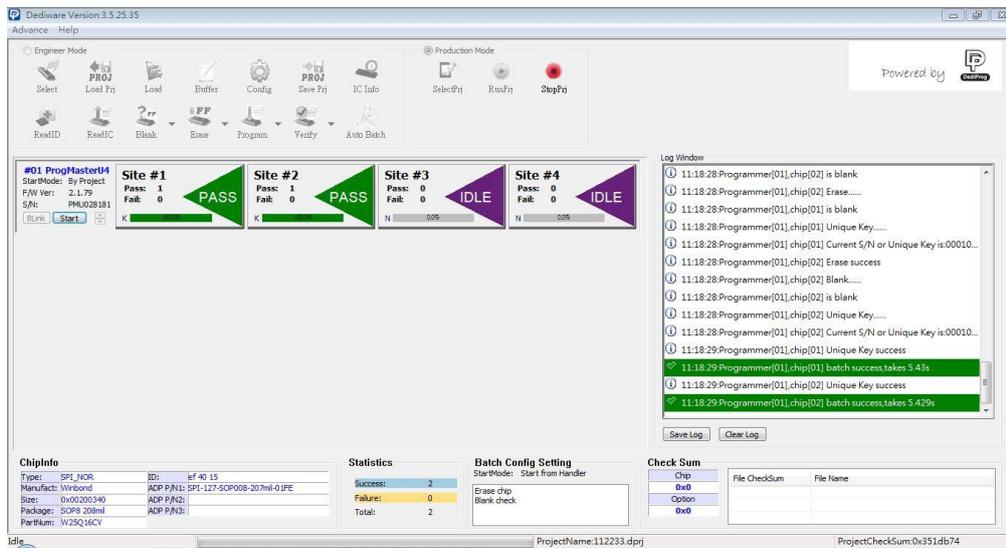
After saving, please switch to Production Mode to select the project that you just saved, and then click “Run Prj”.



There are three kinds of Range Radix: HEX, DEC, BCD and Unicode-16. Select the one that you need and set the Range for the serial number. Click “OK” to start programming.

Step 3: Key check in Engineering Mode

When programming succeeded, the icon will turn PASS (Shown as the below figure).



Next, check the key through “Read IC” in Engineering Mode.
As the figure below, the window shows the key was programmed correctly.

By the order of Little Endian:

Partition 1 Flash [Type:Flash]

Partition 1 Partition 2 Partition 3 Partition 4 Partition 5

Address	Buffer															Chip															
	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E
0x0000000000000000	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
0x0000000000000010	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	
0x0000000000000020	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	
0x0000000000000030	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	
0x0000000000000040	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	
0x0000000000000050	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	22	11	00	00	00	00	00	00	00	00	00	00	00	00	00	
0x0000000000000060	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	
0x0000000000000070	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	

By the order of Big Endian:

Partition 1 Flash [Type:Flash]

Partition 1 Partition 2 Partition 3 Partition 4 Partition 5

Address	Buffer															Chip															
	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E
0x0000000000000000	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
0x0000000000000010	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	
0x0000000000000020	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	
0x0000000000000030	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	
0x0000000000000040	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	
0x0000000000000050	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	00	00	00	00	00	00	00	00	00	00	00	00	00	00	11	22
0x0000000000000060	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	
0x0000000000000070	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	

Remark:

1. Please make sure the “Start Address” is blank, since the serial number will overwrite the existing file.
2. Serial number length must be less than 0x10 (16 bytes).

VI. Revision History

Date	Version	Changes
MM/DD/YYYY	1.0	Initial release.
01/30/2016	2.0	Re-edit, and add more figure.
08/11/2016	2.1	Renew some images and add more remarks.
06/12/2019	2.2	Add "From serial number for multi-address" feature

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