



**PDK3S-P-002**  
**Program Writer**  
*User Manual*

*Version 0.04 – October 30, 2018*

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**Revision History:**

Revision	Date	Description	Revision page
0.01	2011/10/12	1 <sup>st</sup> version	-
0.02	2017/06/13	1. Support for update of writing IC 2. Update Connector position and corresponding Standard Product Model description table 3. Update LCD display picture 4. Update common abnormal message form 5. Update the description of Rolling Code function 6. Add description of Buzzer's abnormal sound	5 10,11 12,13 19 15,16 18
0.03	2018/05/14	1. Amend the address and telephone of PADAUK Technology company 2. Update Connector position and corresponding Standard Product Model description form	- 10,11
0.04	2018/10/30	1. Amend Section 2.1 2. Amend Chapter6 3. Add Chapter 7	10 19

First of all, thank you for choosing our FPPA™ multi-core parallel processing series products, please read this PDK3S-P-002 Program Writer user manual patiently.

- The PDK3S-P-002 Program Writer launched by PADAUK Technology supports the series of IC and alone mode at the following address:

<http://www.padauk.com.tw/en/technical/index.aspx?kind=27>

## 1. Introductions

- Program Writer and its accessories, as shown in the picture.



- You can download the latest version of the Program Writer application software at the following address: <http://www.padauk.com.tw/en/technical/index.aspx?kind=27> . Or by <http://www.padauk.com.tw/> → technology application → technology development tool → Program Writer
- After download the application software, please unzip and install it. You can use it when completed the connection of the Program Writer and your computer.
- Or download the program you needed to PDK3S-P-002. Unplug the USB cable and restart the Program Writer. Alone writing mode is about to start.

## 2. Writing Description

### 2.1. Steps

**Notice!** Before write the program to IC, please make sure the program has been correct simulated in the emulator.

#### STEP 1 :

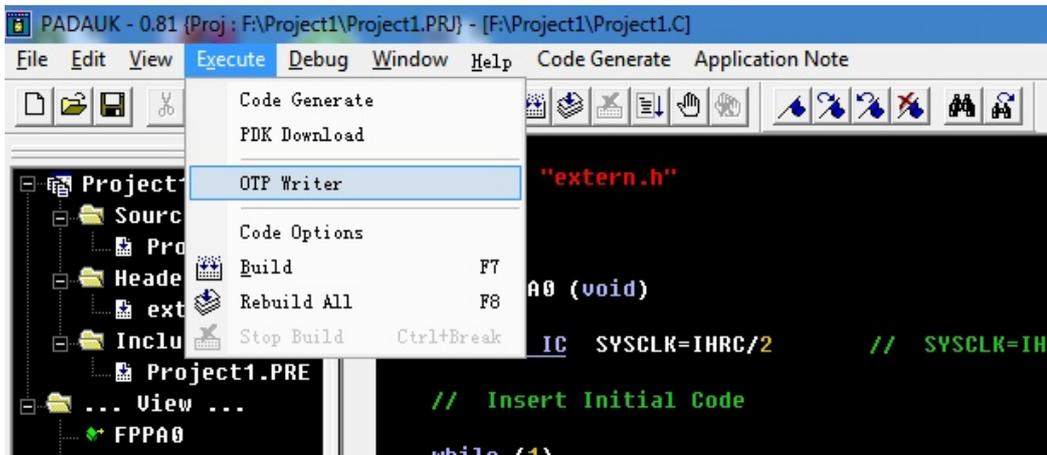
Before using the Program Writer, make sure the Writer is powered and connected with your computer's USB interface.

#### SETP 2 :

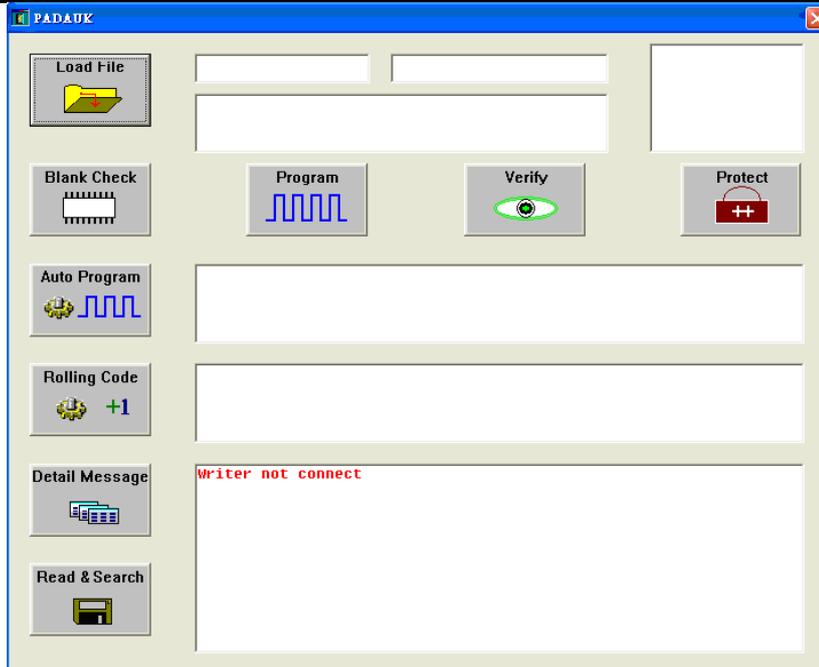
Before executing the tool, please turn on the Program Writer's power switch;



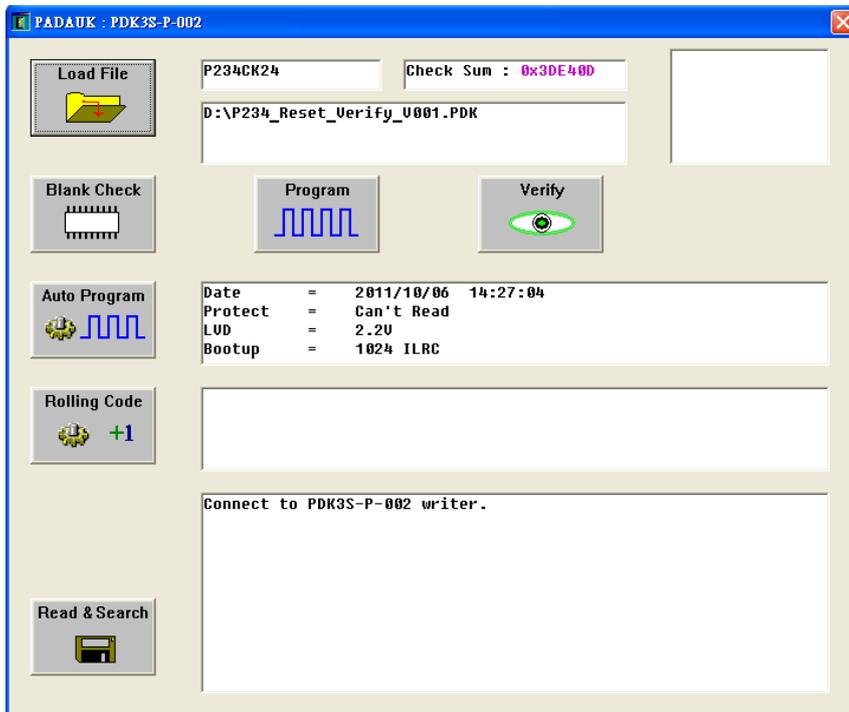
- A. Select the 『OTP writer』 of 『Execute』 from the FPPA IDE tool menu. The program writing window, as shown in the following picture.



- If the writer power switch has not been turned on at the beginning, the message 'Writer not connect' will appear in the following window.

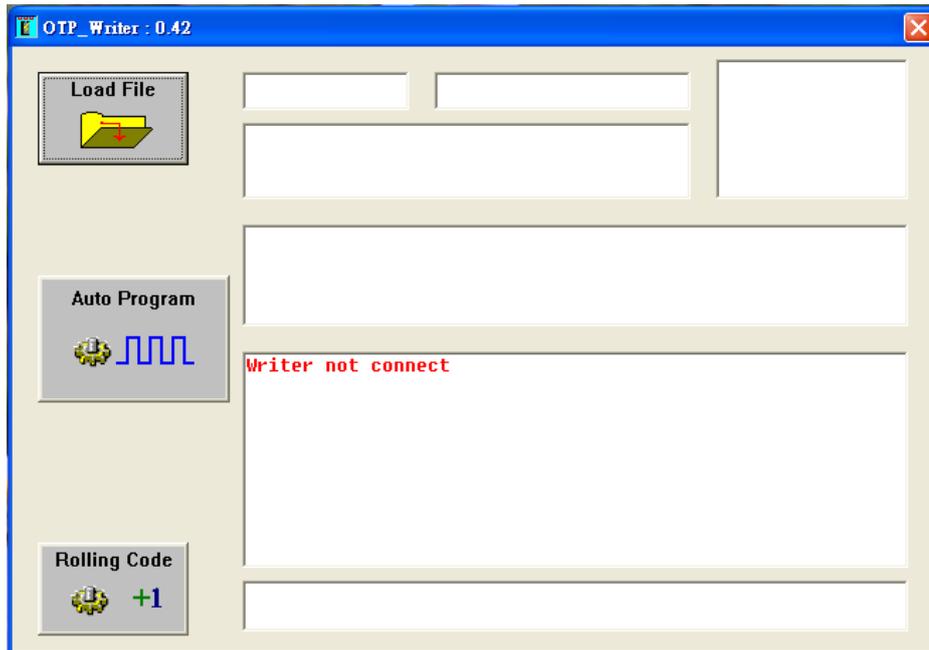


- When the 『OTP writer』 opened successfully, the message 'Connect to PDK3S-P-002 writer.' will appear in the following window.

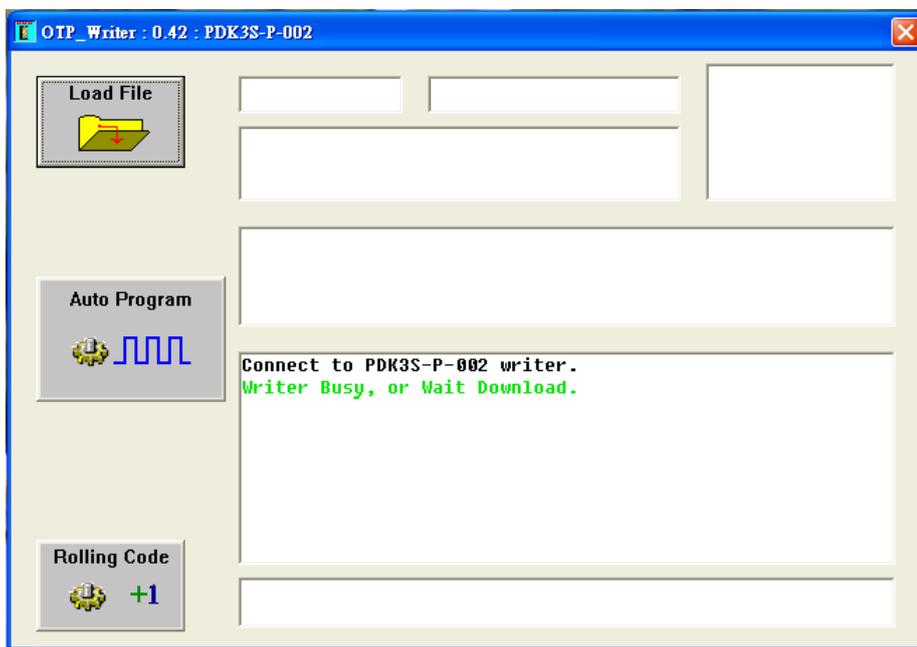


B. Executing from OTP Writer tool

- If the writer power switch has not been turned on at the beginning, the message 'Writer not connect' will appear in the following window.

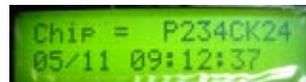
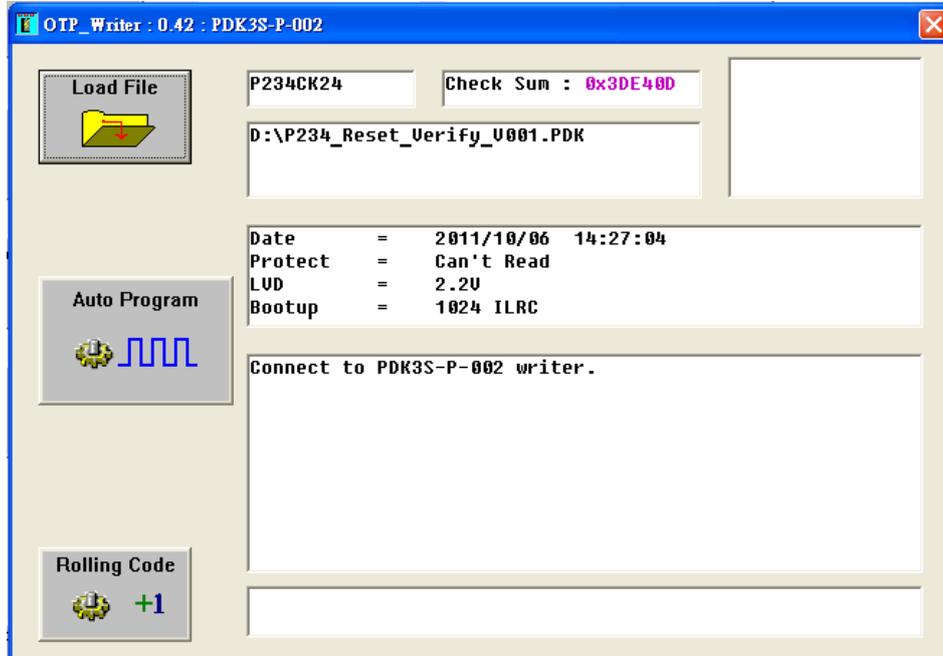


- After the 『OTP writer』 is opened successfully, the message 'Connect to PDK3S-P-002 writer.' will appear in the following window.

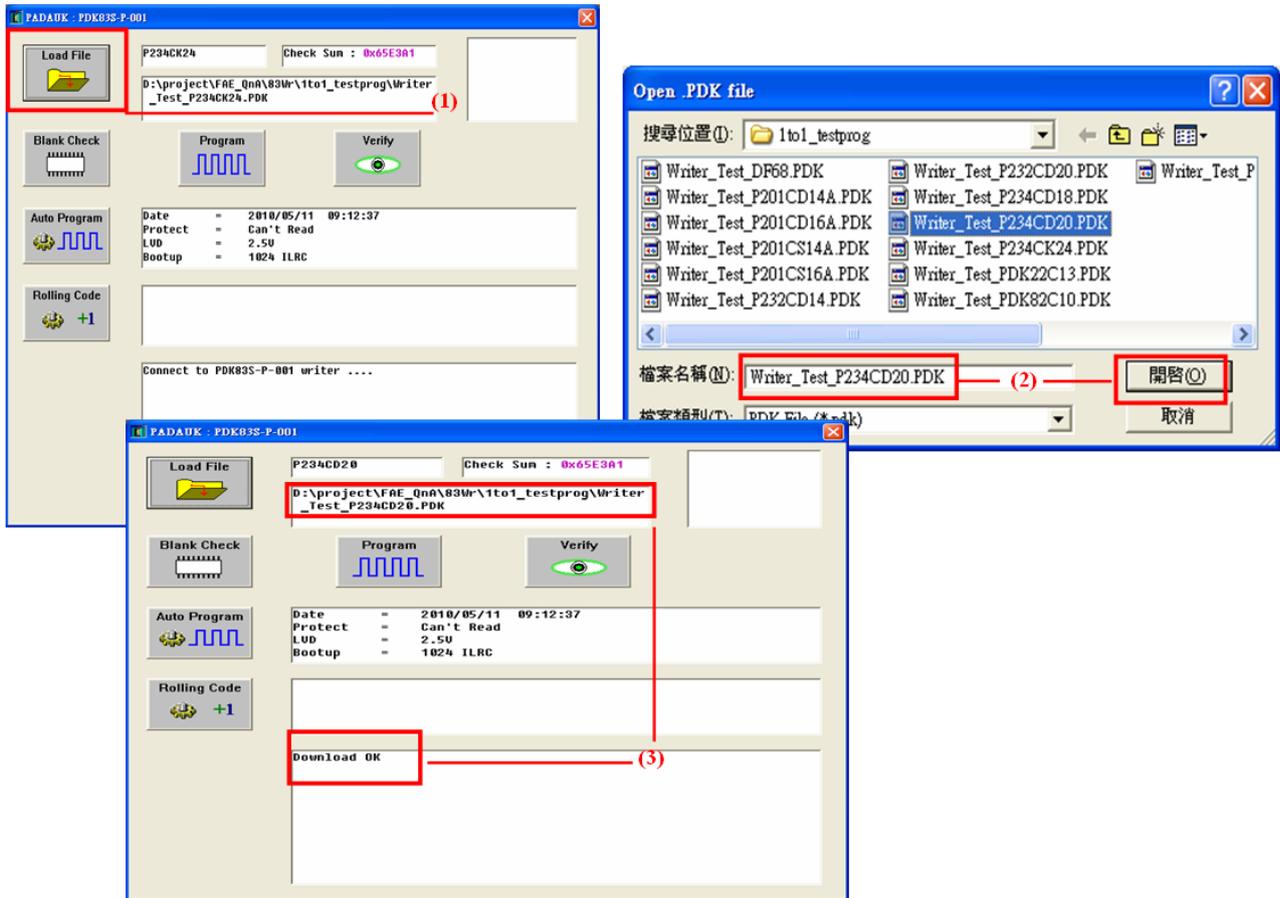


## STEP3 :

If the Program Writer has been used, the information about the last stored file will be displayed on the screen and the LCM correspondingly.



- Information on the LCM (as shown at the right picture)
  - The first line will display sequentially the filename, IC name and Check Sum value, just like the information shown in the program window.
  - The second line will display sequentially the date of the file, encryption setting and so on. Also like the information shown in the middle of the program window.
- The first line information on the LCM is the most important information. Please check them carefully before writing IC in alone mode.
- You can rerun 『Load File 』 and select the .PDK file. After that, the file will be downloaded to the Writer again.
- The procedure of downloading as follows, please refer to the following pictures.
  - (1) Open Load File window.
  - (2) Choose the file.
  - (3) Download OK.

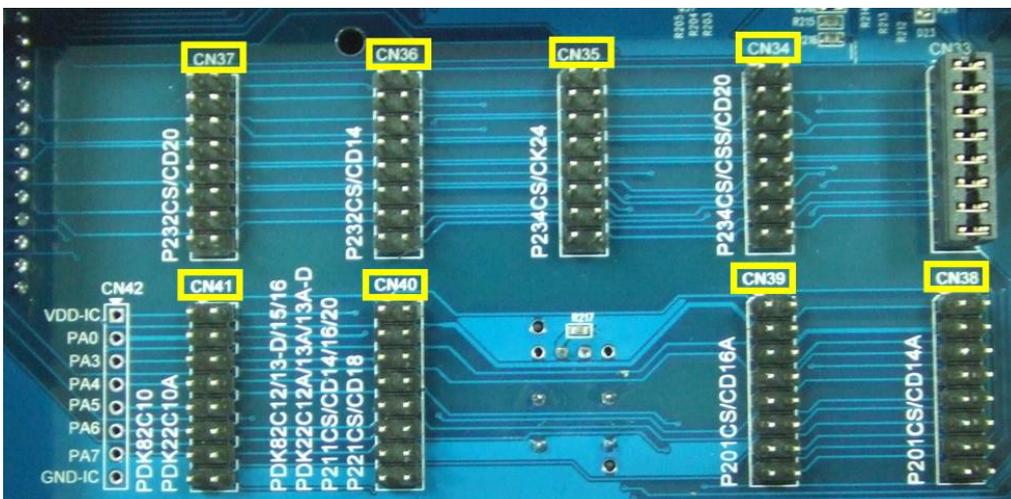


- After download OK, you can choose computer or Writer to write. There is no difference between them.

#### STEP 4 :

Before writing, you should adjust the Jumper position and connect the corresponding interface according to the needed IC type.

- Please turn off the Writer first.
- Next, unscrew the backboard and you will see eight sets of Connector.

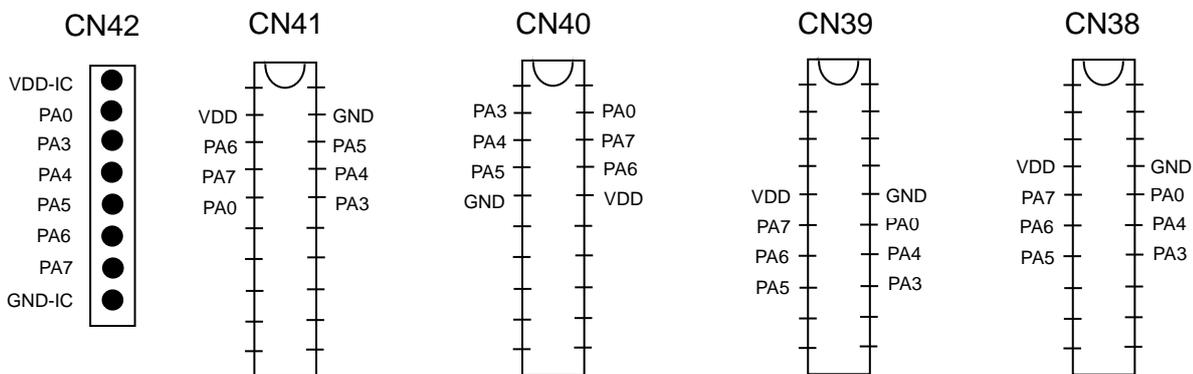


- Please refer to PCB board labels to get the corresponding IC interface number. Adjust the corresponding Jumper position of the needed IC according to the label and finish the connection. (**Notice! Users could write IC properly only when one of the 8sets of interfaces connected at the same time. Improper setting will damage the IC and Writer.**)

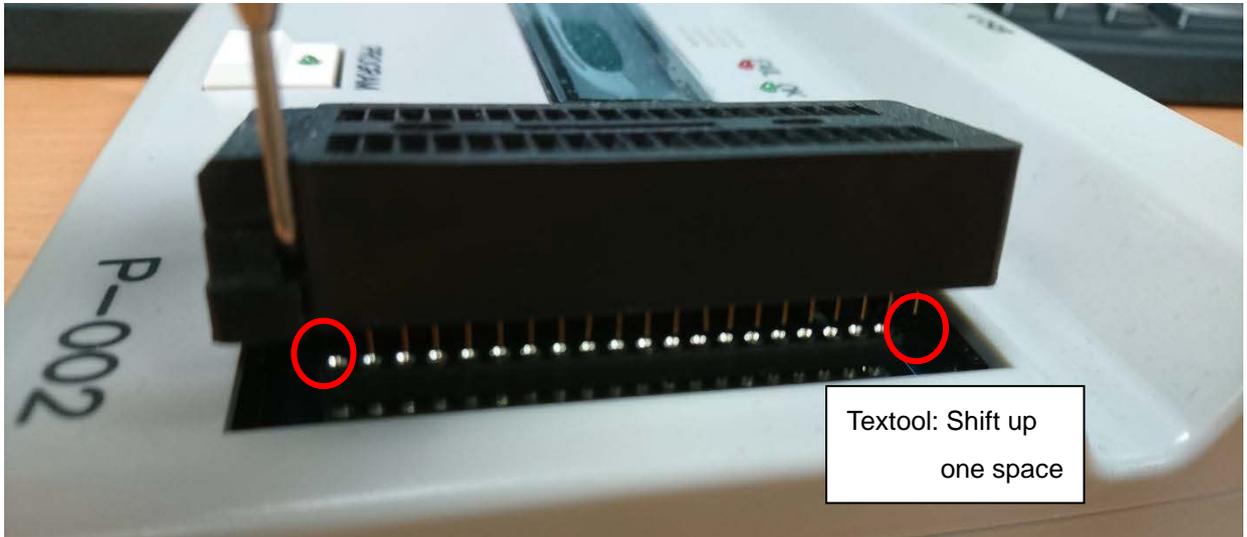
✧ The description of each Connector's (CN: Connector) position and its corresponding PADAUK standard products type as follows ( **NEW ICs refer to its datasheet please**):

Connector #	PADAUK Product No.
CN33	Reserved
CN34	Example: P234CS20, P234CSS20, P234CD20, PMC234-20
CN35	Example: P234CS24, P234CK24, PMC234-24, PMC234-28( <b>shift up one space from the top</b> )
CN36	Example: P232CS14, P232CD14, PMC232-14
CN37	Example: P232CS20, P232CD20, PMC232-20
CN38	Example: P201CS14A, P201CD14A, PMC251, PMC153 <b>The following IC need be shifted down three spaces from the top:</b> PMC131, PMx150x, PMC156, PMS156, PMS132, PMS133/134-S14, S16A
CN39	Example: P201CS16A, P201CD16A, PMS154x
CN40	Example: PDK82C12, PDK82C13-D, PDK82C15, PDK82C16 PDK22C12A, PDK22C13A, PDK22C13A-D P211CS14, P211CD14, P211CS16, P211CS20, P211CD20 P221CS18, P221CD18, PMC271, PMC156, PMC166
CN41	Example: PDK82C10, PDK22C10A

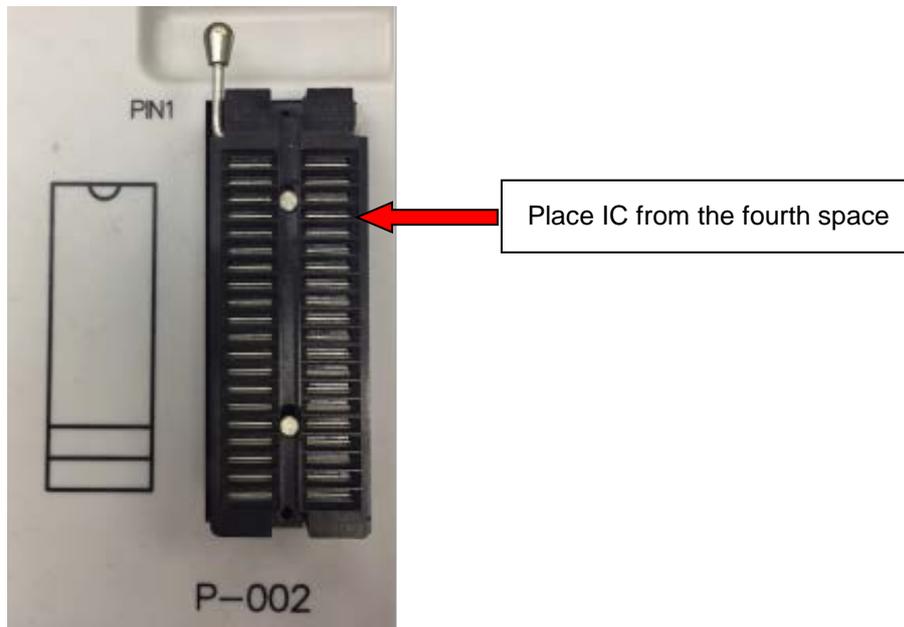
✧ The following are four examples for the location of the most widely used IC pin with jumper interface:



- ◆ Shift up one space from the top: As shown in the following picture.



- ◆ Shift down three spaces from the top: Place the IC from the fourth space of Textool. As shown in the following picture:

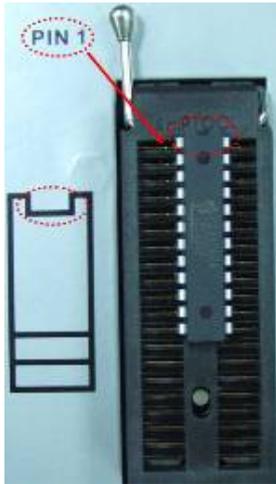


- Restart the Writer.

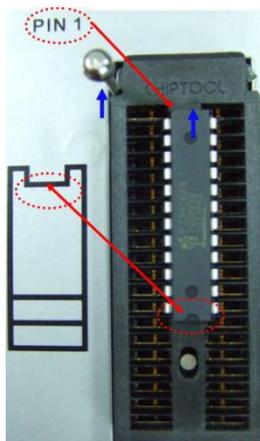
## STEP 5 :

Place the needed IC in the top of Textool, the left side label of Textool represents the direction of the IC notch. In addition, the upper left corner of Textool also marked the PIN 1 position. Please follow the direction to place IC seriously.

- After placing IC correctly, 'IC ready' appeared on the LCM .Picture as follows:



- Note: Buzzer will emit beep while IC is placed and then removed without any actions to prompt you that the IC has not completed any action rather than has problem.
- If IC is not placed correctly, LCM will display the information of the problematic Pin. Please check the direction and position of IC's placement seriously and make sure it is fixed. Picture as follows:



- Note: If the package type of needed IC is not DIP, please buy Socket Connecting Board (as Socket thereafter) and clamp it in the Textool tightly. Pay attention to the first pin position (please refer to: Appendix).

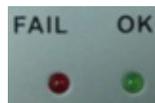
## STEP 6 :

You can start to write after you've done the above five steps perfectly.

- Click on 『Auto Program』 to write PDK file to the IC. 『Auto Program』 will complete all functions automatically, including Blank Check, Program and Verify. If required, the calibration of IHRCR and encryption will be completed automatically.
- The function of 『Auto Program』 can also execute after you press on the PROGRAM button. All writing states are shown on the LCM, but not be updated synchronously into the computer program window.
- During writing, the green LED on the PROGRAM button (Pic.1) will remain on. When writing is completed, observing the red and green LED of the Writer (Pic. 2). The red LED on indicates Writing failed, and the green LED on indicates Writing succeeded. After removed IC, the flashing LED instead of constant bright LED indicating that the IC has been removed.



(Pic.1)



(Pic. 2)

- All the writing information would be displayed on the LCM. The first line displays the present count of IC writing including the number of 'OK' and 'NG', the second line displays the present writing status and only the final information is 'IC O. K.' means successful writing.



## 2.2. Description of writing results

After finishing all steps:

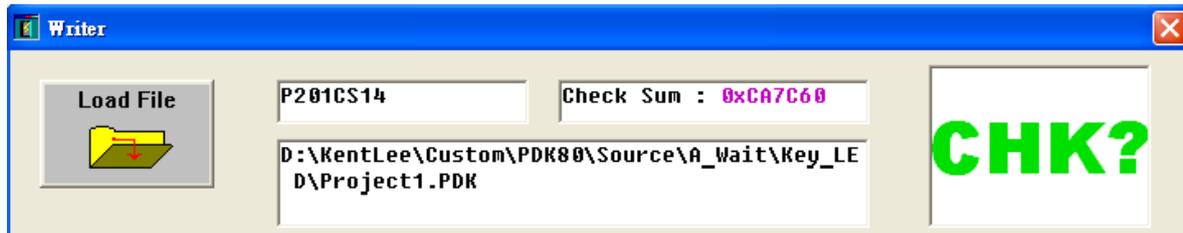
- ✧ A blue 'pass' will appear in the dialog window, indicating successful writing; As shown in the following picture :



OK

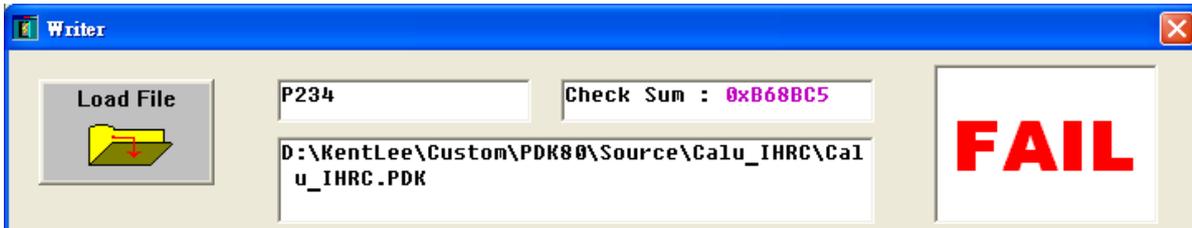
- ✓ At the same time, the green LED on  means successful writing.
- ✓ At the same time, 'IC OK' will appear on LCM.

✧ If green flashing 'CHK?' appeared on dialog window, it indicates the Writer cannot identify the IC and unable to write. As shown in the following picture:



- ✓ That may because the placement of IC or Socket is not correct, please check and place the IC or Socket again.

✧ If red flashing 'FAIL' appeared on dialog window, it indicates there are some problems during writing. As shown in the following picture



FAIL

- ✓ At the same time, the red LED on  warning writing failed.
- ✓ At the same time, there is information appeared on LCM. Please refer to chapter 6 to learn about it.
- ✓ And the Buzzer emits 'beep' for alerting.

## 3. Rolling Code

### 3.1. The form of Rolling Code

PDK3S-P002 could also support rolling code. All you have to do is to set the initial value and the incremental value of Rolling Code. Every time write an IC successfully, the Rolling Code value will add the incremental value automatically.

\* Note: The two forms of Rolling Code setting are internal Roll\_Code and external Roll\_Code.

Rolling Code form	Description	Features
Internal Roll_Code	Fixed address. Length setting depends on program. Rolling Code mode software setting.	Easy to use
External Roll_Code	Customer personalize Rolling Code length / position / roll code mode	Special usage and more complex

### 3.2. Steps of internal Roll\_Code setting

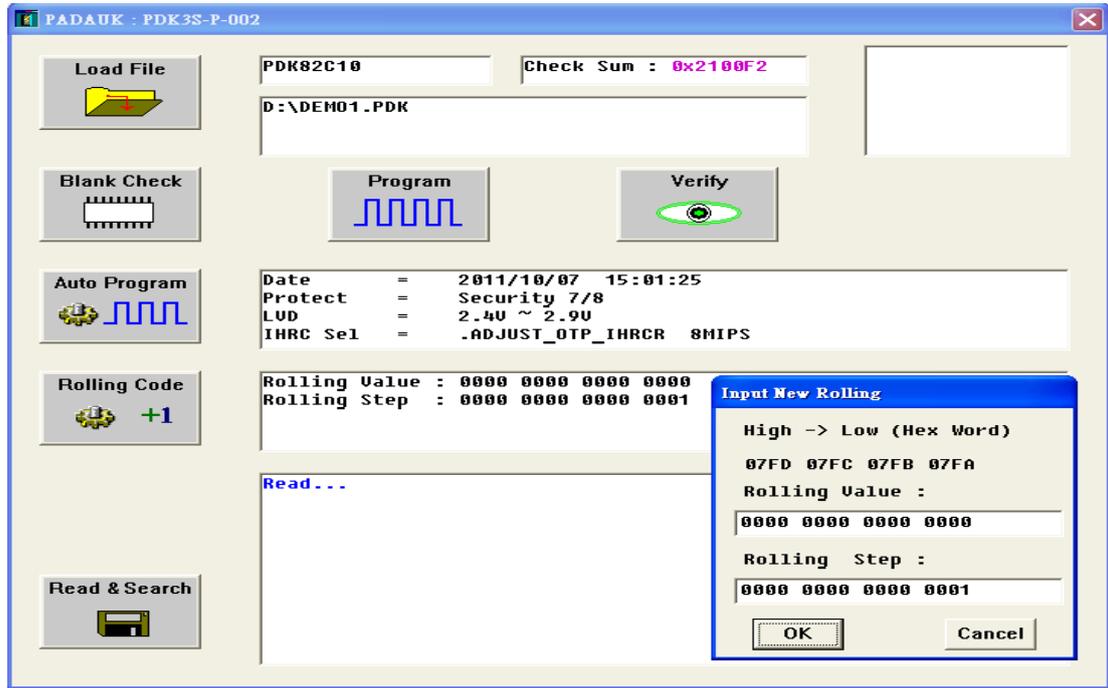
1. Setting support for Rolling Code in your .PDK file first.
2. After opening 『Programmer』 successfully, you should download .PDK file.
3. In the execution window, you can set the initial value and the incremental value of Rolling Code in the menu of 『Rolling Code』; Rolling Code value will automatically add the incremental value after write an IC successfully.

Fill the initial value in the Rolling Value of the pop-up Input New Rolling window and fill the incremental value in the Rolling Step. Click on 『OK』 after that.

4. The maximum value Rolling Code supported will be different considering the difference of the IC and instructions of Look up Table:

Look up Table Instruction	Rolling Code Range
Yes	2 ~ 5 Word
No	2 ~ 4 Byte

5. PDK 3 S-P-002 Program Writer has the function of alone Rolling Code writing.



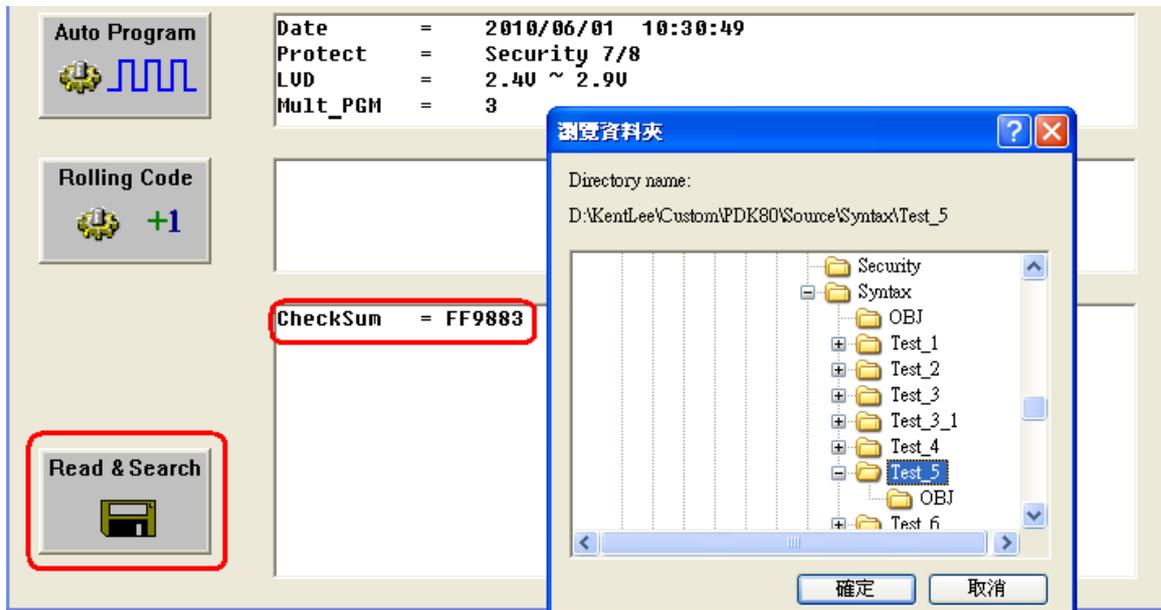
- ✓ In the Rolling Code dialog box, the information '07FD 07FC 07FB 07FA' represents the actual address of Rolling Code in OTP.
- ✓ Each time you execute 'Load File', the original recorded Rolling Code value will be cleared and you should update the record by yourself.
- ✓ Alone writing by using Writer's button, the information will not be conveyed to PC. If give PC and Writer orders in turn, LCM's display and PC's display will be out of sync. Please avoid it.

## 4. Read & Search

In some occasions that need confirm the statues or contents of IC, PDK3S-P-002 Program Writer also provides read back and search functions.

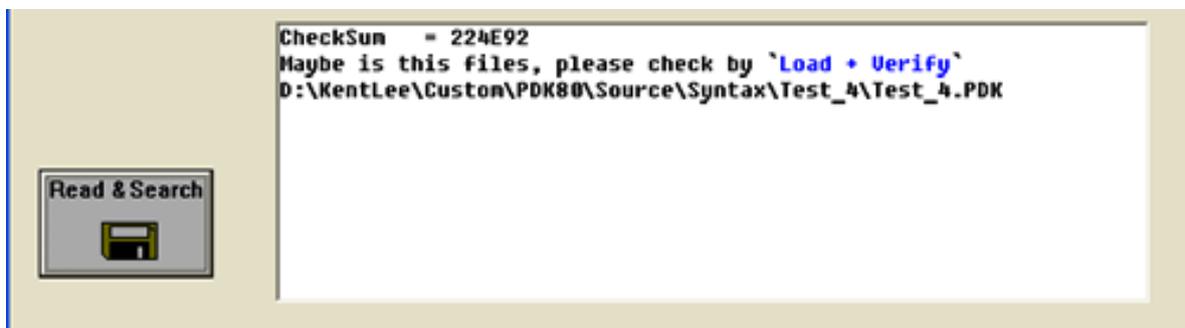
### Steps :

1. Place IC in Writer correctly.
2. Click on 『Read & Search』, you can see IC Check Sum value in the window(as the contents marked in red in the following picture).
3. At the same time, a dialog box Browse for Folder will appear. Click on 『OK』 after you select a directory and the software start to find all possible .PDK file.



4. Notice !: As for P234 / P232 / P201A series of IC, you cannot make sure the program's content is identical easily on account of it use the latest encryption method. We recommend you download the .PDK file found in step 3 first by using 『Load File』, and then click on 『verify』 to reconfirm. (Please look at the picture below.)

- ✓ 'OTP Verify OK' means find the right file.
- ✓ 'Data isn't Match' means the file you found is not correspond to Checksum .Please find correct .PDK file in other directory and repeat step 4 for verification.



## 5. Version Update

When a newer version appeared, you can see follow picture in the program window which indicates the version need to be updated and click on OK.

**Notice!! When you update version, please must remove IC first for avoiding unnecessary dangerous.**



## 6. Information's Exclusion and Resolution

- The Writer checks IC's placement each 0.1 second. Short appearance of xxx → xxxFail is normal circumstances when you just placed the IC.
- Common Buzzer's abnormal sounds/LCD's abnormal information and their descriptions, exclusions and solutions as follow table:

Buzzer sound	Descriptions	Exclusions and solutions
1 s beep	Writing failure	Check IC ,exclude the possible situation
8 s beep	The IC writing signal has been interrupted abnormally during writing; IC has been removed; IC forced out by Semi-automatic Writing Handler.	Check the writing time setting of Semi-automatic Writing Handler

LCD Module information	Description	Exclusion and resolution
Not the IC	Misplaced IC	Check IC type
IC not blank	IC's content is not blank	Replace IC and write
IC verify fail	IC verify failed	Replace IC and write
IC not work	IC cannot work	Replace IC and write
IC not match	IC CheckSum is different	Replace IC and write
Check ROM fail	IC ROM check failed	

H/W Sign fail	Poor on-line signal	Check contact condition
Cable fail	Poor on-line signal	Check contact condition
Not the H/W Ver	IC VDD-GND need to connect capacitor	Check contact condition of IC VDD-GND capacitor
H/W Power fail H/W Current fail VPP Power fail	Writer is not powered well or IC has questions	Replace IC and write (Remain the IC and records. Count the frequency of that phenomenon)
H/W VDD keep H-1 H/W VDD keep H-2 H/W VDD keep H-3 H/W VD 5V fail H/W VDD 7V5 fail H/W VDD 5V fail H/W VP 8V fail H/W VP 12V fail	Writer may behave abnormally	Contact to FAE
DC too low DC too high	Too low power voltage Too high power voltage	Check the correction of DC power

## 7. Special notes for Programming Writing

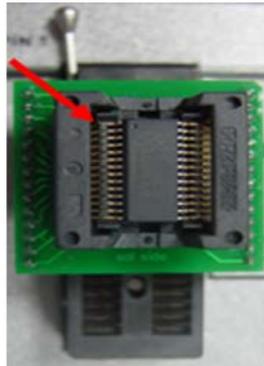
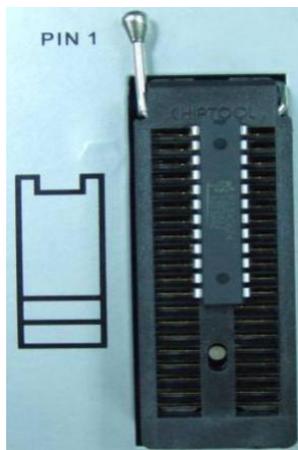
- (1) When programming, VPP may be higher than 11V, and VDD maximum supply current is not over 20mA.
- (2) VDD may be higher than 7.5V for PDKxx/P2xx series ICs; for other series ICs, VDD may be higher than 6.5V.
- (3) The voltage of other program pins (except GND) is the same as VDD.

If you have On-board writing or Multi-Chip (ex: MOS, EEPROM, and 2.4G), be sure to pay attention to above notification.

## Appendix

### 【Appendix I】 Socket

- If the package is DIP, you can put the IC in Textool directly and clamp it. Socket is not needed here. As shown in the left picture:



SOP 300mil



SOP 150mil



SSOP



MSOP

- If the package is not DIP, please buy the Socket which can switch SOP/SSOP/MSOP and so on to DIP.
- Put the Socket in Textool and clamp it. Please notice the **red arrow** noted first pin position. As shown in the right picture.

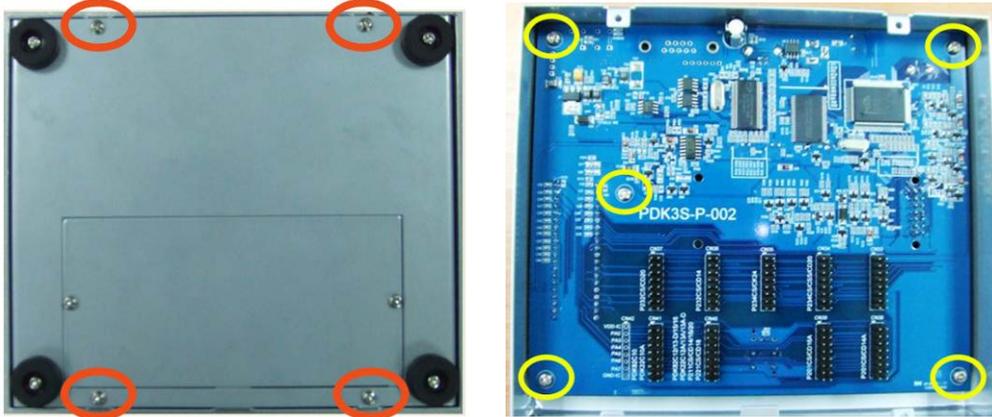
If you have any questions in usage, please contact with our agent nearby or contact with us by [fae@padauk.com.tw](mailto:fae@padauk.com.tw).

## 【Appendix II】 Connection of Semi-Automatic Writing Handler

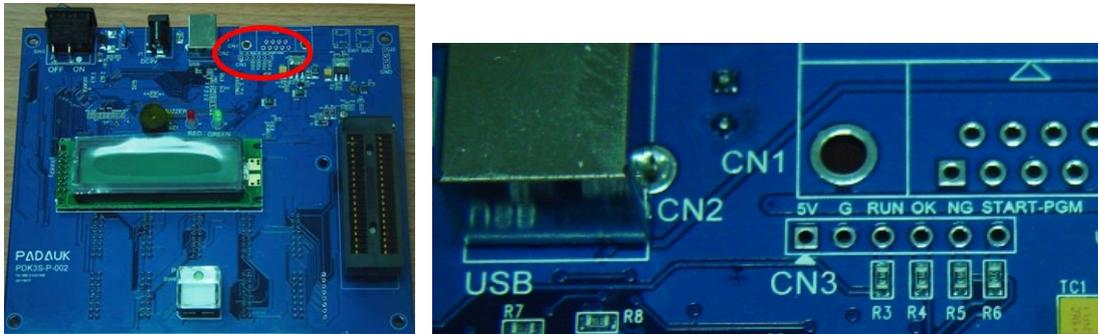
If you know how to use external Semi-Automatic Writing Handler, you can connect signal cable by the follow steps:

Step 1: Unlock 4 screws in the back and take down the back (as shown in the left picture).

Step 2: Unlock 5 screws of PCB board and take down PCB board (as shown in the right picture).



Step 3: The signal wires' connecting port in the front face of PCB board is CN3 (as shown in following pictures).



Description of exclusive signs of Semi-automatic Writing Handler which reserved in PDK3S-P-002 as follows:

PCB board signs	Description	Attribute	Corresponding position on PDK3S-P-002
5 V	Power 5V		
G	Ground (GND/Ground)		
RUN	Writer is writing IC(or called Busy)	High active	LED indicator of the PROGRAM button
OK	Write IC successfully	High Active	The green LED indicator which means OK
NG	Writer failed to write IC	High Active	The red LED indicator which means Fail
START - PGM	Semi-automatic Writing Handler send information to notify Writer to start writing (Program)	Low Active	PROGRAM button

Step 4: After welding the signal wires, you can let the wires go through the opening of top cover.



Step 5: Fix PCB board.

Step 6: Fix the back cover.

Step 7: Connect the other end with the port of Semi-automatic Writing Handler.

If you have any question in usage, please contact with our agent nearby or contact with us by [fae@padauk.com.tw](mailto:fae@padauk.com.tw).