

5S-P-003 Program Writer User Manual

Version 0.07 - Oct. 14, 2022

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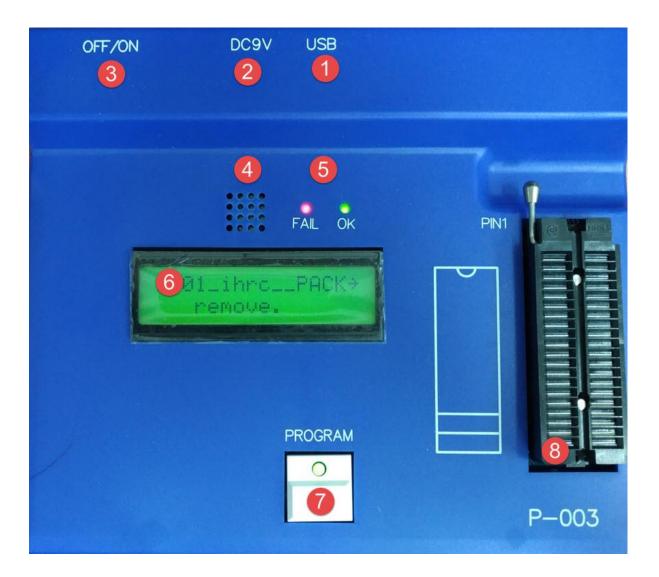
Revision History:

Revision	Date	Description
0.00	2016/07/20	1 st version
0.01	2016/08/15	Modify explanation of making the Connecting Board
0.02	2016/09/13	 Update typesetting Add explanation of 4.1 JUMPER
0.03	2017/06/13	1. Add new description of Buzzer sound
0.04	2017/11/24	 Update partial pictures Amend 2.6 Read & Search Add section 2.7 Convert PDK Amend chapter 4 Update the LCM signal table of chapter 7 Add 8.2 On-line writing
0.05	2018/03/19	 Update the address and telephone number of PADAUK Technology co., Ltd. Update Partial pictures Add description of O/S check or Blank check Update and add the description of MTP On-line (On-board) writing
0.06	2018/10/30	 Add section 9.3 Special notes of voltage while On-board or Multi-Chip-IC writing (OTP / MTP)
0.07	2022/10/14	 Update pictures and contents of accessories Update the To Package operation UI picture and add the command option Update LCDM display picture content Update UI picture of on-board writing Supplementary instructions for Manual update Update picture of semi-automatic writing connection



1. About 5S-P-003 Writer

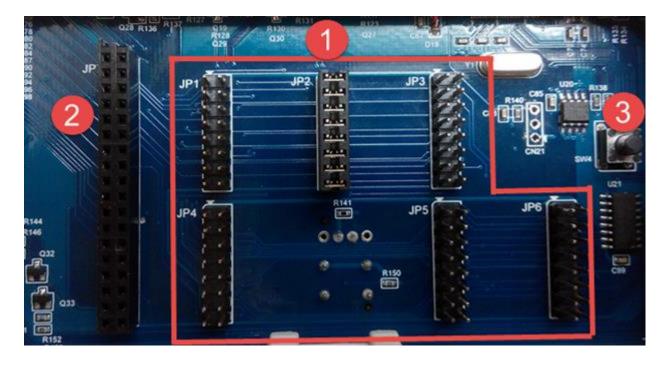
1.1. The front



- (1) USB interface: Connect to PC.
- (2) Power interface: Please use the exclusive power converter of Program Writer accessories. (Do not use other power converters to avoid damaging the Program Writer)
- (3) Power Switch: OFF/ON.
- (4) Buzzer: Be used as alarm while failed to write.
- (5) LED (OK & NG) lamp: Display the result of writing.
- (6) LCM displayer: Display the information and result of writing.
- (7) Program button: Start writing.
- (8) Textool: Suitable for DIP package (available for 28 PIN at most).



1.2. The back



- (1) JUMPER (JP1~JP16): Different IC or package would coordinate with different JUMPER position. Please refer to chapter 4.
- (2) JUMPER (JP7): When it comes to non-standard or unusual package, you need to use JP7 to transform relevant information. About Connecting Board making, please refer to chapter 5.
- (3) Forced update mode button: Forcing update the current version, please refer to section 3.1

1.3. The side face



- (1) USB interface: Connect to PC.
- (2) Power interface: Please use the exclusive power converter of Program Writer. (Do not use other power converters to avoid damaging the Program Writer)
- (3) Power Switch: OFF/ON.
- (4) Semi-automatic writing connection port: About the connection method, please refer to chapter 6.



1.4. Accessories of Program Writer



- (1) The exclusive power converter.
- (2) The USB cable.
- (3) 150G adapter plate.

1.5. Writing application software and User Manual

You can download the latest version of the application software at the following address (including the latest version of the Program Writer)

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

Or enter the home page of <u>www.paduak.com.tw</u>, obtain latest Program Writer version from <u>home page ></u> <u>technology application > technology development tool > Program Writer</u>. Please refer to the chapter 3.



2. Functional Description

(A) Engineering type

		编辑(E)	检视(V)	执行(X)	除错(D)	窗口(W)	1 *	助()
		X B		程序	产生器			E)
		00 12		114	RT Contro	5		-
				0.756.7	100 - 10 - 10 - 10 - 10 - 10 - 10 - 10			
		iect2 f	iles		tKey			#i
-		ource F	Y	PD	K Downlo	ad		
		Proje		刻詞	諸			
		eader F		~	L A L	1975 - C		10
FPPA IDE		exter			de Optior	15		1
		nclude	files	建建	Ĩ		F7	
		PMS13	1.INC	🔮 建音	防真		F8	
						oution:	1	
		Fruje	CLZ.FME	K Sto	р вила	Ctrl+Br	eax	
PADAUK : 5S-P-003	0.95V1]					×		
	Alternative Contractor							
Load File	PMS134	Che	ck Sum : 0xFD!	996				
Load File								
Load File		Che \Admin\Desktop\Pr						
Load File								
Blank Check	C:\Users			t1.PDK				
Blank Check	C:\Users	\Admin\Desktop\Pr	roject1\Projec	t1.PDK				
Blank Check	C:\Users	\Admin\Desktop\Pr	roject1\Projec Verify	t1.PDK				
Blank Check	C:\Users	Admin\Desktop\Pr	roject1\Projec Verify	t1.PDK				
Blank Check	C:\Users	\Admin\Desktop\Pr	roject1\Projec Verify	t1.PDK	mU			
Blank Check	C:\Users	Admin\Desktop\Pr	verify Verify 15:15:08 UDD	t1.PDK				
Blank Check	C:\Users' Date	Admin\Desktop\Pr	verify Verify 15:15:08 UDD	t1.PDK				
Blank Check	C:\Users' Date	Admin\Desktop\Pr	verify Verify 15:15:08 UDD	t1.PDK				
Blank Check	C:\Users' Date	Admin\Desktop\Pr	verify Verify 15:15:08 UDD	t1.PDK				
Blank Check	C:\Users' Date	Admin\Desktop\Pr	verify Verify 15:15:08 UDD	t1.PDK				
Blank Check	C:\Users' Date	Admin\Desktop\Pr	verify Verify 15:15:08 UDD	t1.PDK				
Blank Check	Date Syscik LUR Connect	Admin\Desktop\Pr Convert = 2022/09/22 1 = 16 HHz/4 = 2.5U	Verify Verify 15:15:08 UDD Protect	t1.PDK				
Blank Check	Date SYSCLK LUR Connect Serial :	Admin\Desktop\Pr Convert = 2022/09/22 1 = 16 HHz/4 = 2.50 to 5S-P-803 write 0x6510	Verify Verify 15:15:08 UDD Protect	t1.PDK				
Blank Check	Date SyscLR LUR Connect Serial : Cortex Ju	Admin\Desktop\Pr Convert 2022/09/22 1 = 16 HHz/4 = 2.50 to 5S-P-003 write 8x6510 mp :	roject1\Projec Verify 15:15:08 UDD Protect	t1.PDK = 3300 = Secu				
Blank Check	C:\Users'	Admin\Desktop\Pr Convert = 2022/09/22 = = 16 HHz/4 = 2.5U to 5S-P-003 write 0x6510 mp : : JF7 JF7	roject1\Projec Verify 15:15:08 VDD Protect Protect s24/V2 \$20/H2	t1.PDK - 3300 - Secu 4: JP7 0: JP7	rity 7/8			
Blank Check	Date Syscience Connect Serial : Check Ju Bis28/D24: Bis106:	Admin\Desktop\Pr Convert = 2022/09/22 1 = 16 HHz/4 = 2.50 to 5S-P-003 write 0x6510 np : JP7 JP2 / IC Shift	roject1\Projec Verify 15:15:08 UDD Protect 15:23/42 15:23/162 4 12:21/62	t1.PDK = 3380 = Secu 4: JP7 9: JP7 JP2 /				
Biank Check	C:\Users'	Admin\Desktop\Pr Convert = 2022/09/22 = = 16 HH2/4 = 2.5U to 5S-P-003 write 8x651D ap : : JF7 JF2 / IC Shift JF7	**************************************	+: JP7 927 927 927	rity 7/8			
Blank Check	Date Syscience Connect Serial : Check Ju Bis28/D24: Bis106:	Admin\Desktop\Pr Convert = 2022/09/22 1 = 16 HHz/4 = 2.50 to 5S-P-003 write 0x6510 np : JP7 JP2 / IC Shift	**************************************	t1.PDK = 3380 = Secu 4: JP7 9: JP7 JP2 /	rity 7/8			

(B) Simple type

Load File	PHS134 C:\Users\Admin\Desktop\P t1.PDK	um : 0xFD5996 roject1\Projec
Auto Program	Date = 2022/09/22 SYSCLK = 16 HHz/4 LVR = 2.50 Connect to 5S-P-003 writ Serial : 0x6510	UDD = 3300 mU Protect = Security 7/8
	Check Jump : IS28/D28: JP7 IS26A: JP7 IS16A: JP2 / IC Shift I1J16A: JP7 IS14: JP2 / IC Shift IAN10: JP7	S16B: JP7

No matter simple type or engineering type, they have the equal corresponding function.



2.1. Steps of loading File

- (1) Load PDK file from PC to Program Writer.
- (2) Related information of PDK file would be displayed after loading successfully. (i.e. Check Sum, file name ...)

```
PMS134
                     Check Sum : 0xFD5996
C:\Users\Admin\Desktop\Project1\Project1.PDK
Date
            2022/09/22 15:15:08
SYSCLK
         =
            16 MHz/4
                               VDD
                                         =
                                            3300 mV
LVR
         =
            2.50
                               Protect =
                                           Security 7/8
```

(3) After loading successfully, the JUMPER position and IC placement would be prompted.

```
Download OK
Check Jump
            -
S28/D28: JP7
                                S24/Y24: JP7
2J24:
          JP7
                                 S20/H20: JP7
          JP2 / IC Shift 4
                                           JP2 / IC Shift 4
S16A:
                                 2J16A:
 11J16A:
          JP7
                                 S16B:
                                           JP7
          JP2 / IC Shift 4
S14:
                                M10:
                                           JP7
4N10:
          JP7
                                S08:
                                           JP7
U 06 :
          JP7
```

(4) The LCM also displays the messages and prompts synchronously.



- (5) Users could also unplug the USB cable and write in alone mode after the file loaded successfully.
- (6) Users should make sure that JUMPER & IC had been put in the correct position before starting "Blank Check _____ Verify ____ Read & Search ___ and "Auto Program __ actions.
- (7) About JUMPER & IC placement position, please refer to 『JUMPER Description』.
- (8) When JUMPER & IC have been placed, the Program Writer's LCM displays "IC ready".





2.2. Blank Check

Check whether the IC content is blank or not.

2.3. Verify

Check whether the IC and the .PDK file have the same content.

2.4. Auto Program

Start writing automatically.

- It is equal to press the Program Writer's PROGRAM button.
- The actions include: Programmable check \rightarrow Program \rightarrow Verify \rightarrow Protect and so on.
- When write successfully, the Program Writer displays $\[\[\] <<< \] IC O.K. >>> \[\] on the LCM. \]$
- Examples of writing (including the position of JUMPER and IC placement).

Take the follow PDK file and IC for examples.

File	IC	Jumper	IC Shift	Note
Project1.PDK	PMS134-S16A	JP2	4	

PADAUK : 5S-P-003	[0.95V1]				×	
Load File	PMS134	Check S	um : ØxFD59	96		
	C:\Users\Admi	n\Desktop\Proje	ct1\Project	1.PDK		
Blank Check		ert	Verify			
Auto Program		022/09/22 15:1 6 MHz/4 .5U	5:08 UDD Protect	= 3300 mV = Security 7	/8	
Rolling Code						
	Serial : 0x65 Check Jump : #S28/D28: JP7 #2J24: JP7		\$24/¥24 \$28/H28	: JP7		
Read & Search	1J16A: JP7	/ IC Shift 4	12J16A: 1516B: 1010: 1508:	JP2 / IC Shi JP7 JP7 JP7 JP7	ft 4	
Open .PDK file						
戈范围(I): 🚺 Pr	oject1	• +	E 💣 💷 🔻			
弥 OBJ	^	修改日期 2022/9/22		类型 文件夹	大小	
Project1.PDK Project1_S16A.PD	2	2022/9/22 2022/9/22		PDK 文件 PDK 文件	9 KB 9 KB	
						7开(0)
名(N): Proje	ctl					1)1(0)



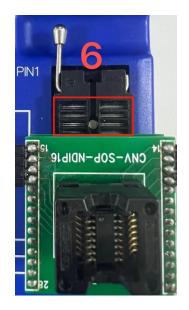
- (1) Click on ^[] Load File ^[]
- (2) Choose JP2_83K.PDK, click on 『打开』

			1		
Load File	PMS134		Check St	um : 0xFD599	6
	C:\Users\Ad	dmin\Deskt	op\Projec	t1\Project1	.PDK
lank Check	Co	onvert		Verify	
to Program		2022/09/			
anu	SYSCLK = LUR =	16 MHz/J 2.5V	•	VDD Protect	= 3300 mV = Security 7/8
			•		
olling Code			•		
olling Code			•		
olling Code			•		
olling Code		2.50			
olling Code	LUR =	2.5U 3	•		
olling Code	LUR =	2.50 3 K	•	Protect	= Security 7/8
olling Code	Download Of Check Jump 1528/028:	2.50 3 K JP7		Protect	= Security 7/8
olling Code	LUR = Download Of Check Junp #S28/D28: #2.124:	2.50 3 K : JP7 JP7		Protect	JP7 JP7
olling Code	LUR = Download Of Check Jump S28/D28: . S26/C	2.50 3 K : JP7 JP7 JP2 / IC S		Protect	JP7 JP7 JP2 JP2 JP2 JP2 JP2 JP2 JP2 JP2 JP2 JP2
ad & Search	LUR = Download 01 Check Junp 1224: 1224: 11166: 11166: 11166:	2.50 3 K JP7 JP7 JP2 / IC S JP7	Shift 4	Protect S24/Y24: S26/H20: 2J16A: S16B:	JP7 JP7 JP2 / IC Shift 4 JP7
olling Code () +1	LUR = Download Of Check Jump S28/D28: . S26/C	2.50 3 K JP7 JP7 JP2 / IC S JP2 / IC S	Shift 4	Protect S24/Y24: S26/H20: 2J16A: S16B:	JP7 JP7 JP7 JP2 / IC Shift 4 JP7 JP7

Project1.PDK remove. 4

- (3) Confirm Download OK (notice the message)
- (4) Confirm the information displayed on LCM.









(5) Insert JUMPER into JP2 according to the information of (3) or (4).

(6) Place IC according to the information of (3) or (4). ^C IC Shift: 4 - means shift four blank space from the top.

(7) Make sure the information $\[\]$ IC Ready $\[\]$ displayed on LCM.

Load File	PMS134	Check Sum : 0xFD5996	
	C:\Users\Admin\D	esktop\Project1\Project1.PDK	PASS
Blank Check	Convert	Verify	9
Auto Program	Date = 2022 SYSCLK = 16 M LUR = 2.50		00 mV curity 7/8
Rolling Code			
	IC Program OK		
Read & Search			



(8) Click on ^r Auto Program ₁ to start writing.

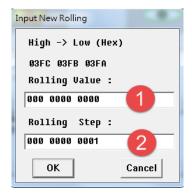
(9) Make sure the writing result is 『PASS』

(10) Make sure the information $\[\] <<< \] IC O.K. >>> \[\] \]$ displayed on LCM.

2.5. Rolling Code

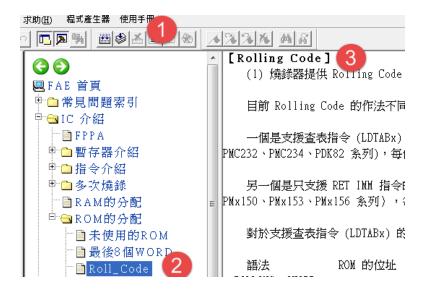
Start the relevant settings about Rolling Code, settings include:

- (1) Initial value.
- (2) Incremental value.



- This function only valid while the Rolling Code grammar has been set in the loading PDK file
- Please refer to the IDE User Manual to learn about the ways of setting Rolling Code.





- (1) Click on $\[\]$ Application Note $\[\]$
- (2) Click on $\[\]$ IC introduction $\] \rightarrow \[\]$ ROM distribution $\] \rightarrow \[\]$ Roll_Code $\]$.
- (3) Look up the ways of Rolling Code.

2.6. Read & Search

Search for PC's PDK file which has the same CHECK-SUM.

2.7. Convert PDK

- (1) Confirm the PDK file is the one need to convert.
- (2) Start converting PDK file.

3. Version Update

You can download the latest version of the application software and Manual (including the latest version of the Program Writer) at the following address:

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

Or by www.paduak.com.tw website home page > technology application > technology development tool > Program Writer obtains.

After download the application software, you can install it. Then, you should make sure the Program Writer is connected to PC when update its version. Besides, the Program Writer will update automatically at the first execution.



3.1. Automatic update

While execute the application software, the auto-updating application software including the Program Writer version.

PADAUK Developer Studio [0. 1 Please remove all OTP from the writer. Loss Writer F/W, or F/W version is not match. You must download now. Type: F/W	PADAUK: 55-P-003 (07
Uer: 8.01 (normal)	Blank Check Conver PDK Verify
89 %	Auto Program Polling Code (3) +1
Verify 4	Connect to 55-P-003 writer. Serial : 207030754239
32 %	

- (1) The prompting of Program Writer version update
- (3) Download the new version in Program Writer.
- (4) Verify the new version.
- (5) Connect to PC automatically after finish

NOTICE: Please update manually if there is no auto- update when the first time to execute the application software.

3.2. Manual update

Manual mandatory updates are recommended when service calls occur for burner P003Bx LCDM.

(1) Shut down and hold the forced update mode button (SW3) on the back of the writer.





(2) Turn on the power supply, release the SW3 key, enter the Boot loader mode, FAIL light and OK light on at the same time, the LCM displays the following information:



(3) Execute the writing application software and force the update of the writer version contained in the application software. Click OK and the software will automatically Download and Verify.

	C:\Users\Admin\D	esktop\Project1\Pr	oject1.PDK	
Blank Check	Convert		Verify	
	PADAUK Developer Studio	[0.95V1]	×)
uto Program	Ok	·F/W, or F/W vers	ion is not match.	7/8
Rolling Code	You must do Type: F/W Ver : 4.03t	ownload now. o (G4-P003)		
	USB Connect			
ead & Search				



4. JUMPER Description

4.1. Examples

After PDK file is loaded to Program Writer, the window displays the IC's information concerning Jumper position and the number of needed spaces. As shown in the following picture: (Take PMS154B as an example)

Detail Message	Connect to 5S-P-003 writer. Serial : 2073336d4e4e
	Check Jump :
	16PIN: JP2
	■14PIN: JP2 / IC Shift 1
Read & Search	10PIN: JP2 / IC Shift 3
	■ 8PIN: JP2 / IC Shift 4
	■ 6PIN: JP7 (SOT23-6)
	■16PIN: JP7 (QFN-16)

 SOP16/DIP16 standard package: Jumper is placed in "JP2" position which on the back of Writer and IC is placed in Textool (no shifts). As shown in the following pictures:





 $X \rightarrow [no shifts]$

• SOP14 standard package: Jumper is placed in "JP2" position which on the back of Writer; IC is placed from the second space of Textool. As shown in the following pictures:





Shift $1 \rightarrow [$ Shift one space from the top]

Note: As for non-standard and unusual IC package, need be connected to JP7 through Connecting Board. Please refer to ^C Connecting Board Making to learn about Connecting Board.



5. Connecting Board Making Description

JP7 can support various customizing package pin based on Connecting Board.

The making and rules of the Connecting Board as follows:

- (1) Define the information of package pin in program.
- (2) Make the Connecting Board.
- (3) For developed PDK files, adding the information of package pin please refer to section 5.5.

5.1. Define the data of exclusive use packaged pin

Define the data of exclusive use packaged pin in program. Here is grammar:

.writer package, (A total of thirteen sets of values)

For example: .writer package 16, 5, 11, 9, 10, 8, 7, 6, 14, 0x00F0, 0x00F4, 0, 0x04

Grammar instruction

Group Count	Name	Introduction	Remarks
1	Pin Count	(the number of pin)	Up to 28 pins
2	VDD	VDD pin number	
3	PA0	PA0 pin number	Note 1
4	PA3	PA3 pin number	
5	PA4	PA4 pin number	
6	PA5	PA5pin number	
7	PA6	PA6 pin number	
8	PA7	PA7 pin number	Note 1
9	GND	GND pin number	
10	Mask1	Package the left pin mask value, each bit represents a pin BIT0→1st pin, BIT2→2nd pin, BITn (n=013) 0/1: bypass/ O/S test Set 0:this pin not do O/S test Set 1:this pin do O/S test	Note 2
11	Mask2	Package the right pin mask value, each bit represents a pin; BIT0→m pin, BIT2→ (m-1)pin, BITn (n=013) 0/1: bypass/ O/S test Set 0:this pin not do O/S test Set 1:this pin do O/S test	m: The number of pin Note 2
12	Shift	IC is corresponding to the blank space number need to shift from the top of SOCKET.	
13	Option	Option Description	Bit2: Write on board Bit4: VDD/VPP swap Others: Reserved

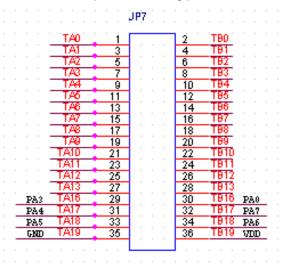


Note 1: If the pin does not exist, fill in 32 representing NC (no connect)

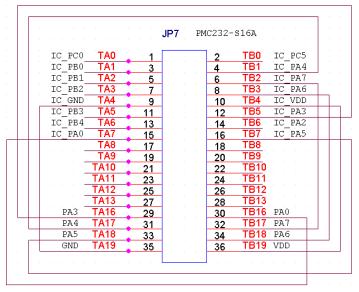
Note 2: If the pin does not exist or cannot do O/S test (i.e. Special multi-chip package pin), set the corresponding bit value to zero.

5.2. Connecting Board making

The JP7 last 8 pins are writing pins, as shown in the following figure:



While making a Connecting Board, please decide the IC placement position (generally assumed that the first pin of IC is aligned with the upper left first pin of the Socket.) and connect the last 8 pins of Connecting Board with the corresponding pin of IC, as shown in the following figure:



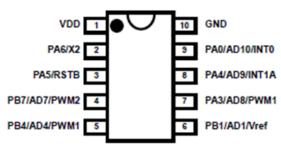


5.3. Case 1

Take PMx131 MSOP-10 for example:

IC	Package	Jumper	IC Shift	Note
DMy121	MSOP10	ID7		Please connect JP7 with
FIVIX 131	IVISOF IU	JP7		Connecting Board.(Note1)

The PMx131 MSOP-10 package as follows:



PMC130 (MSOP10-118mil)

1. You can use the following instruction to define the exclusive package pin:

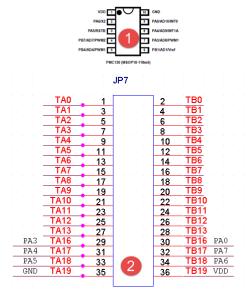
.writer package 10, 1, 9, 7, 8, 3, 2, 32, 10, 0x003F, 0x003F, 4, 0x04

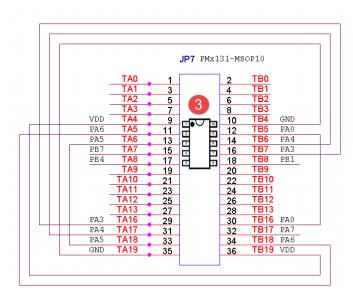
Group count	Name	Description	Value	Remarks
1	Pin Count	The number of package pin	10	
2	VDD	VDD pin serial number	1	
3	PA0	PA0 pin serial number	9	
4	PA3	PA3pin serial number	7	
5	PA4	PA4pin serial number	8	
6	PA5	PA5pin serial number	3	
7	PA6	PA6 pin serial number	2	
8	PA7	PA7 pin serial number	32	32 indicates that PA7 does not exist
9	GND	GND pin serial number	10	
10	Mask1	Package the left pin mask value	0x003F	All pin should test O/S.
11	Mask2	Package the right pin mask value	0x003F	All pin should test O/S.
12	Shift	The blank space IC need to be shifted	4	IC first pin align to the upper left fifth pin of Socket
13	Option	Option Description	0x04	Bit2: Write on board Bit4: VDD/VPP swap Others: Reserved

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2. Make the Connecting Board





- (1) Confirm the package pin of PMx131 MSOP-10
- (2) Confirm the JP7 pin in the back of Writer

TA16-PA3	TB16-PA0
TA17-PA4	TB17-PA7
TA18-PA5	TB18-PA6
TA19-GND	TB19-VDD

(3) Put IC in SOCKET →put IC from the fifth space of SOCKET

According to the data below, connecting[®] VDD \GND \PA0 \PA3 \PA4 \PA6 \PA7 _with IC's corresponding pins.

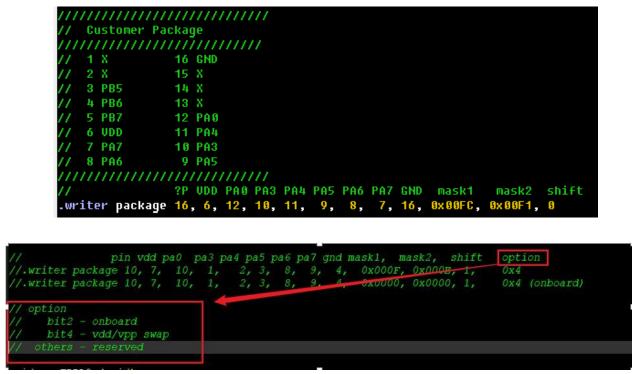
- TA16 (PA3) -----TB7(IC-PA3)
- TA17 (PA4) -----TB6(IC-PA4)
- TA18 (PA5) -----TA6(IC-PA5)
- TA19 (GND) -----TB4(IC-GND)
- TB16 (PA0) -----TB5(IC-PA0)
- TB17 (PA7) -----NC
- TB18 (PA6) -----TA5(IC-PA6)
- TB19 (VDD) -----TA4(IC-VDD)

NOTICE: If the thirteenth group number (shift) is changed to 0, it means that the first pin of IC aligns the upper left first pin of Socket, at the same time all connection of corresponding IC pins have to be changed.



5.4. Case 2 (Customized package pin)

Customized package pins are shown in the following picture:



1. You can use the following instruction to define the exclusive package pin:

Group Count	Name	Description	Value	Remark
1	Pin Count	the number of pin	16	
2	VDD	VDD pin serial number	6	
3	PA0	PA0pin serial number	12	
4	PA3	PA3pin serial number	10	
5	PA4	PA4 pin serial number	11	
6	PA5	PA5 pin serial number	9	
7	PA6	PA6 serial number	8	
8	PA7	PA7 pin serial number	7	
9	GND	GND pin serial number	16	
10	Mask1	Package the left pin mask value	0x00FC	Bypass pin 1, 2.
11	Mask2	Package the right pin mask value	0x00F1	Bypass pin 15, 14, 13
12	Shift	The blank space IC need to be shifted	0	The first pin of IC aligns the upper left first pin of Socket
13	Option	Option Description	0x04	Bit2: Write on board Bit4: VDD/VPP swap Others: Reserved



			JP7	客制封導	支腳位	
x x x x	TA0			2	TB0	GND
· · ^ · ·	TA1	3			TB1	X
PB5	TA2	5 5		- <u>4</u> 6	TB2	x ·
PB6	TA3	7		8	TB3	· ·
PB7	TA4	9		10	TB4	PAO
VDD	TA5	11		12	TB5	PA4
PA7	TA6	13		14	TB6	PA3
PAG	TA7	15		16	TB7	PA5
	TA8	17		18	TB8	
	TA9	19	· · · ·	20	TB9	
	TA10	21		22	TB10	
	TA11	23		24	TB11	
	TA12	25		26	TB12	
	TA13	27		28	TB13	
PA3	TA16	29		30	TB16	PAO
PA4	TA17	31		32	TB17	PA7
 PA5	TA18	33		34	TB18	PA6
GND	TA19	35		36	TB19	VDD

- (1) Confirm the package pins.
- (2) Confirm the JP7 pins on the back of Writer (TA16~TA19, TB16~TB19).

TA16-PA3	TB16-PA0
TA17-PA4	TB17-PA7
TA18-PA5	TB18-PA6
TA19-GND	TB19-VDD

(3) Put IC in the SOCKET \rightarrow put IC from the top of Socket (no space).

According to the following table ,complete the connection between $\[\]VDD \\ \] GND \\ \] PA3 \\ \] PA4 \\ \] PA6 \\ \] PA7 \\ \] and IC's corresponding pins.$

TA16 (PA3) -----TB6(IC-PA3)

- TA17 (PA4) -----TB7(IC-PA4)
- TA18 (PA5) -----TA6(IC-PA5)
- TA19 (GND) -----TB0(IC-GND)
- TB16 (PA0) -----TB4(IC-PA0)
- TB17 (PA7) -----TA6(IC-PA7)
- TB18 (PA6) -----TA7(IC-PA6)
- TB19 (VDD) -----TA5(IC-VDD)



5.5. The way to add package pin information to PDK file

For the developed PDK file, the way to add package pin information as follows:

PADAUK : 5S-P-003 [0	0.95V1]	×		
Load File	PHS134 Check Sun : 0xFD5996 C:\Users\Admin\Desktop\Project1\Project1.PDK			
Blank Check	Convert Verify	~	Convert Tool	×
Auto Program	Date = 2022/09/22 15:15:08 SYSCLK = 16 HHz/4 UDD = 3300 m LVR = 2.50 Protect = Securi	nU ity 7/8	To Package	MTP Key Trim
Rolling Code			To New IC	Writer Limit
🤹 +1	Connect to 55-P-003 writer.		Other Func	2
	Serial : 0x651D			
	Check Jump: \$\$28/D28: JP7 \$\$24/Y24: JP7 \$\$224/Y24: JP7 \$\$20/H28: JP7		Repair Writer	
Read & Search	US16A: JP2 / IC Shift 4 U2J16A: JP2 / IC U1J16A: JP7 US16B: JP7	C Shift 4		
	S14: JP2 / IC Shift 4 MM10: JP7			
	■4N10: JP7 ■S08: JP7 ■U06: JP7		Check IC	
	1			

IC	PMS134	•	₩ 0/S	Any _	- 1	28	Any –	₩ 0/S
Package	S28/D28	-	Ø/S	VDD _	2	27	GND -	₩ 0/S
i uckuge			₩ 0/S	Any	3	26	Any -	₩ 0/S
JUMPER	7		⊽ 0/S	Any _	- 4	25	Any -	₩ 0/S
IC Shift	0		⊡ 0/S	Any _	5	24	Any -	₩ 0/S
0/S Mask-L	3FFF		₩ 0/S	Any	- 6	23	Any -	₩ 0/S
	larre		₩ 0/S	PA6	- 7	22	PA4 -	₩ 0/S
0/S Mask-R	3FFF		⊽ 0/S	Any _	- 8	21	Any –	₩ 0/S
- 0/S Test Se	lect		₽ 0/S	PA5	9	<mark>20</mark>	PA3 –	₽ 0/S
Enable			⊡ 0/S	Any _	10	19	Any –	₩ 0/S
C Only Pr	ogram PIN		⊡ 0/S	Any _	- 11	18	Any –	₩ 0/S
🗆 On-board	Program		₩ 0/S	Any _	12	17	Any –	₩ 0/S
			₩ 0/S	Any _	13	16	Any 👻	₩ 0/S
			₩ 0/S	Any _	14	15	Any 🔻	₩ 0/S
		ок	1	6.	ncel			

- (1) Click on Convert PDK
- (2) Choose $\[\]$ To Package $\]$
- (3) Insert the information of package pin, please refer to section 5.1 for format.
- (4) Click on <code>[OK]</code>
- (5) Confirm again.
- (6) Save as a new file.



5.6. The description of package setting details

Package JUMPER [IC Shift [O/S Mask-L [I PIN Iram PIN	10 되 10 되 10 되 10 되 10 되 10 되 10 되 10 되	S VDD S Any S Any S Any S Any S PA6 S Any S PA5 S Any S Any S Any S Any S Any S Any	 1 2 3 4 5 6 7 8 9 10 11 12 13 	27 26 25 24 23 22 21 20 19 18 17	Any GND GND Any Any Any Any PA4 PA4 PA3 Any	지 이 지 이 지 이 지 이 지 이 지 이 지 이 지 이 지 이 지 이
Package JUMPER [IC Shift [O/S Mask-L [O/S Mask-R [O/S Test Sele © Enable Al © Only Prog	User define PMS134 7 0 3FFF 3FFF ct t PIN Iram PIN rogram	10 되 10 되 10 되 10 되 10 되 10 되 10 되 10 되	S VDD S Any S Any S Any S Any S PA6 S Any S PA5 S Any S Any S Any S Any S Any S Any	2 3 4 5 6 7 8 9 10 11 12 13	27 26 25 24 23 22 21 20 19 18 17	GND × Any × Any × Any × Any × PA4 × Any × Any × Any × Any ×	이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이
Package JUMPER IC Shift O/S Mask-L O/S Mask-R O/S Test Sele © Enable Al © Only Prog	PMS134 7 0 3FFF ct I PIN yram PIN rogram	(0 되 (0 되 (0 되 (0 되 (0 되 (0 되 (0 되 (0 되	IS Any IS Any IS Any IS Any IS PA6 IS Any IS PA5 IS Any IS Any IS Any IS Any IS Any	* 3 * 4 * 5 * 6 * 7 * 8 * 9 * 10 * 11 * 12 * 13	26 25 24 23 21 20 19 18 17	Any × Any × Any × Any × PA4 × Any × PA3 × Any × Any ×	강이 되 강이 되 강이 되 강이 되 강이 되 강이 되 강이 되 강이 되
JUMPER [IC Shift [O/S Mask-L [O/S Mask-R [O/S Test Sele © Enable Al C Only Prog	7 0 3FFF 3FFF ct I PIN Iram PIN	(0 되 (0 되 (0 되 (0 되 (0 되 (0 되 (0 되 (0 되	rs Any rs Any rs Any rs PA6 rs Any rs PA5 rs Any rs Any rs Any rs Any rs Any	▼ 4 ▼ 5 ▼ 6 ▼ 7 ▼ 8 ▼ 9 ▼ 10 ▼ 11 ▼ 12 ▼ 13	25 24 23 21 20 19 18 17	Any × Any × Any × PA4 × Any × PA3 × Any × Any ×	경이 되 강이 되 강이 되 강이 되 강이 되 강이 되 강이 되 강이 되 강
IC Shift [O/S Mask-L [O/S Mask-R [O/S Test Sele @ Enable Al C Only Prog	0 3FFF ct I PIN yram PIN	(0 되 (0 되 (0 되 (0 되 (0 되 (0 되 (0 되 (0 되	IS Any IS Any IS PA6 IS Any IS PA5 IS Any IS Any IS Any IS Any IS Any	> 5 > 6 > 7 > 8 > 9 > 10 > 11 > 12 > 13	24 23 22 21 20 19 18 17	Any × Any × PA4 × Any × PA3 × Any × Any ×	강이 되 강이 되 강이 되 강이 되 강이 되 강이 되 강이 되 강이 되
O/S Mask-L O/S Mask-R O/S Test Sele C Enable Al C Only Prog	3FFF 3FFF I PIN Iram PIN	(0 되 (0 되 (0 되 (0 되 (0 되 (0 되 (0 되	 Any PA6 PA5 PA5 PA5 Any Any Any Any Any Any Any Any Any 	 ↓ 6 ↓ 7 ⊁ 8 ↓ 9 ↓ 10 ↓ 11 ↓ 12 ↓ 13 	23 22 21 20 19 18 17	Any × PA4 × Any × PA3 × Any × Any ×	310 되 310 되 310 되 310 되 310 되 310 되 310 되
O/S Mask-R	3FFF ct I PIN ıram PIN rogram	(0 되 (0 되 (0 되 (0 되 (0 되 (0 되	S PA6 S Any S PA5 S Any S Any S Any S Any S Any	7 8 9 10 11 12 13	22 21 20 19 18 17	PA4 × Any × PA3 × Any × Any × Any ×	810 되 810 되 810 되 810 되 810 되 810 되
O/S Test Sele © Enable Al © Only Prog	ct I PIN ıram PIN rogram	(0 되 (0 되 (0 되 (0 되 (0 되 (0 되	PA5 PA5 PA5 PS Any PS Any PS Any PS Any	▼ 8 ▼ 9 ▼ 10 ▼ 11 ▼ 12 ▼ 13	21 20 19 18 17	Any × PA3 × Any × Any ×	강(0 되 2\0 되 2\0 되 2\0 되 2\0 되
O/S Test Sele © Enable Al © Only Prog	ct I PIN ıram PIN rogram	(0 되 (0 되 (0 되 (0 되 (0 되	rs PA5 rs Any rs Any rs Any rs Any rs Any	9 10 11 12 13	20 19 18 17	PA3 + Any + Any + Any +	810 되 810 되 810 되 810 되
 € Enable Al C Only Prog 	I PIN ıram PIN rogram	(0 되 (0 되 (0 되 (0 되	rs Any rs Any rs Any rs Any rs Any	→ 10 → 11 → 12 → 13	19 18 17	Any - Any - Any -	이S 되 이S 되 이S 되
C Only Prog	rogram	10 되 10 되 10 되	rs Any rs Any rs Any	11 12 12 13	18 17	Any – Any –	이 지 이 지
	rogram	(0 되 (0 되	S Any S Any	· 12 · 13	17	Any –	⊽ 0/S
Г On-board P		₩ 0/	'S Any	□ 12 □ 13			
	OF		-	=	16	Any -	⊽ 0/S
	01	0 🕅	S Any	1			
	01			_ 14	15	Any –	⊽ 0/S
ckage Setting						20	
		4	5	6			
IC	User define				16	Any -	이 되 이 되 이 되
Package	User set		-	- 2	15	Any -	R 0/S
JUMPER	7 PIN 16) 및) 및) 및		- 3 - 4	14 13	GND -	8\0 되 8\0 되
IC Shift	0		1	- 5	12	PA6 •	₩ 0/S
0/S Mask-L	OOFF)/S Any	→ 6	11	PA5 +	₩ 0/S
		ب		• 7	10	Any •	⊡ 0/S
0/S Mask-R	OOFF	v v		• 8	9	Any •	⊽ 0/S
O/S Test Sel	ect	ত আ)/S Any	- O	0	Any -	₽ 0/S
Enable A	II PIN	ত আ			0	Any -	₩ 0/S
C Only Pro	gram PIN		· · ·		0	Any -	₩ 0/S
Con-board F	rogram		· · ·	<u> </u>	0	Any -	₩ 0/S
		ত আ		- 0	0	Any -	₩ 0/S
				0	0	Any -	₩ 0/S
			27	- 63 - 18 -			



- (1) IC Type: Specify the supported IC type.
- (2) Package: Set PIN Count. Only when the IC type is 'User define', users could set PIN Count freely via PIN, the input range is 6~28.
- (3) IC Shift: Set the space needed shift when you place IC in socket; Input range is 0 ~10, default value is 0.
- (4) O/S check: Check the pin whether need O/S test or not, tick the pin that need Open/Short test.
- (5) Settings of writing pin: Set writing pin , non-writing pin choose ^[] Any ^[] . All writing pin must be specified.
- (6) Pin number: Automatic change by the pin count.

(Writing pins are represented by red; pins which are not been written are represented by blue; others are represented by gray.)

(7) O/S Test Select : Select the pin need to do Open/Short Test.

Enable All PIN: Check all pin.

Only Program PIN: Only check writing pin.

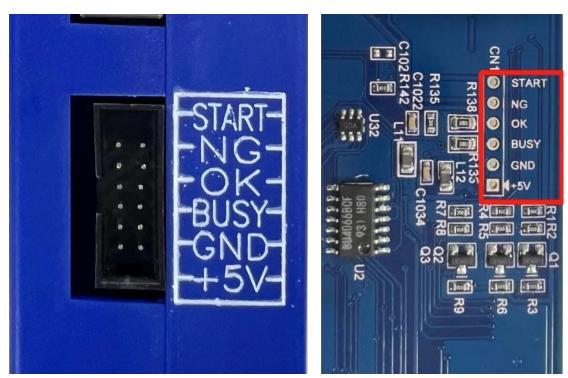
Disable All Pin: No check.

6. Semi-automatic Writing Handler Connection Description

Pin	Name	Attribute	Descriptions
1	5V		Power D+5V
2	GND		Ground
3	BUSY	OUTPUT / High Active	Notify Semi-automatic Writing Handler, the Writer is writing IC
4	ОК	OUTPUT / High Active	Notify Semi-automatic Writing Handler, the IC has been written successfully
5	NG	OUTPUT / High Active	Notify Semi-automatic Writing Handler, the IC has been written failed
6	START PROGRAM	INPUT / Low Active Active time >200ms	Semi-automatic Writing Handler send information to notify Writer start to write.

CN1 - Semi-automatic Writing Handler connection port.





External picture

Internal picture



7. Set O/S Test and Blank Check

This chapter explains how to set writer which only do chips' O / S test or blank check. Steps as follows:

PADAUK : 5S-P-003 [0.	95V1]	\times		
Load File	PHS134 Check Sum : 0xFD5996 C:\Users\Admin\Desktop\Project1\Project1.PDK			
Blank Check	Convert 1			
Auto Program	Date = 2022/09/22 15:15:08 SYSCLK = 16 MHz/4 UDD = 3300 m LUR = 2.5U Protect = Securi	NU Lty 7/8		
Rolling Code				
	USB Connect			
Read & Search				
PADAUK ; 5S-P-003 [0.1	95V1]	×		
Load File	PMS134 Check Sum : 0xFD5996			
	C:\Users\Admin\Desktop\Project1\Project1.PDK			
Blank Check	Convert Verify Convert Tool X			
Auto Program	Date To Package MTP Key Trim SYSCL 3300 mU LUR To New IC Writer Limit	y 7/8		
Rolling Code	Other Func			
	USB Connect 2			
Read & Search				
What do you war	it? X	Dialog	2 D	×
0/S-1	est 🔪 Verify PDK 🔶			
Blank-(IC	PMS134	• <mark>4</mark>
МТР-Е	rase 3	Generate	0/S Test	
On-board	Program		5 Next	6 Cancel
Need B	ank IC) Next	



1		La construction de la constructi		
ad File PMS1	34	Check Sum : Øx	FF7FFF	
C:\P	ADAUK_Tool\0.95	V1\Demo\Dummy\Du	mmy.PDK	
nk Check	Convert		erify	L.
Program Date	= 2022/09	/22 16:40:34		
Mrit	er = BLANK	3		
Writ	er = BLANK]		
Writ	er = BLÂNK]		
ing Code	er = BLÂNK]		
	er = BLANK]		
ing Code	er <u>= BLANK</u>]	_	
ing Code	e r = BLANK 10ad OK]		
ing Code	Load OK]		
ing Code	Load OK k Jump :]		
ing Code	load OK k Jump : /D28: JP7		/Y24: JP7	
ing Code + +1 Down Checi \$288 #2J2	Load OK k Jump : /D28: JP7 4: JP7	S20	/H20: JP7	
ing Code	Load OK k Junp : /D28: JP7 4: JP7 A: JP2 / IC	Shift 4 12J1	/H20: JP7 6A: JP2 / I	IC Shift 4
ing Code +1 Down Checi S28 2J2 S16 1 & Search	Load OK k Jump : /D28: JP7 4: JP7 A: JP2 / IC 56: JP7	\$28 Shift 4 \$16 \$16	/H20: JP7 6A: JP2 / J B: JP7	IC Shift 4
I & Search	Load OK k Jump : /D28: JP7 4: JP7 A: JP2 / IC 56: JP7	\$20 Shift 4 \$231 \$16 Shift 4 \$100 Shift 4 \$100	/H20: JP7 6A: JP2 / J B: JP7	IC Shift 4

- (1) Click on Convert PDK
- (2) Click on 『Check IC』
- (3) Choose $\[\]$ Set O/S-Test $\]$ or $\[\]$ Set Blank-Check $\]$ to go to the menu.
- (4) Choose IC type (i.e. PMS134).
- (5) Click on $\[\] Next_{\]}$ to go to next step.
- (6) Or click on $\[Cancel] \]$.
- (7) Enter package setting. Please refer to section 5.6 to get relative descriptions. Click on ^rOK_a after complete setting.
- (8) Automatically download the configuration file to the Writer.

After complete the above steps, users can cooperate with semi-automatic equipment just do chips' O/S tests or blank checks.

NOTICE: Blank Check including O/S test.



8. Writer LCM Information and Buzzer Sound Table

• Writer LCM information:

LCM information	Descriptions	Exclusions and Solutions
Wait : Load File	.PDK file was not loaded	Load .PDK file after connect to USB
No support	Writing files is not supported	
remove.	IC has been removed	
IC ready.	IC is prepared	
<<< IC O.K. >>>	Check empty, verify or writing	
	complete	
Insert:JP?	Failed to detect JUMPER	Please recheck JUPMER
IC O/S test fail	IC Open/Short test failed	
O/S: P? Open		Please replace IC or remove and put it again or
O/S: P? Short		check Jumper, connecting board and
O/S: P? Leak		settings again.
O/S: Fail		settings again.
Leak test fail	IO test fail (PMS150G only)	Please replace IC
IC Shift:?	Tips IC placement	
Do Check	IC is being checked	
Do Erase	IC is being erased (MTP only)	
Do Program	IC is being written	
Do Verify	IC is being verified	
Do Adjust IHRC	IC is being adjusted	
Do Protect	IC is being protected	
Find a diff. IC.	IC model does not match the	Please replace IC
	writing file	
IC not match.	IC's content does not match	Please replace IC
Over program cnt	Write failed, more than written	Please replace IC
IC Over Current	Writing failed, over current occurred	Please replace IC
Over PGM limit	Exceeded writable limit of writer	Reload the .PDK file
IC not work(xx)	Writing failed, unable to work	Please replace IC
IC Invalid	IC identify failed	Please replace IC
IC Ver mismatch	IC/PDK identify failed	Please replace IC or update IDE
IC Erase fail.	Erase failed	Please replace IC
IC Blank	Blank IC	
IC not blank.	Not blank IC	Please replace IC
IC verify fail.	IC verify fail	Please replace IC
Loss PC Rolling.	Rolling code synchronously	USB reconnect, writing software
	failed	re-execution
lose trim data	Invalid IC correction value	Please replace IC
Loss IC pkg info	Invalid packing definition	Please check the package definition
		in the source code



Ver not match.	IC version does not match	Please update the latest writer version	
Service Call Hold reboot-SW and Repower on	Writing procedure failure	Press SW3 on the back cover, after power on again, connect IDE software update writer	
E00: SYS-PWR NG	Power self-test failed	Please contact FAE	
VPP Power fail VDD Power fail	Failed to increase writing voltage	Please replace IC, if this continues to occur, please contact FAE	
Board/IDE ver. mismatch(xxx"	Burning self-test failed	Please contact FAE	

• Buzzer sound table :

Buzzer sound	Introduction	Exclusion and Solutions
1 long beep	Writing failed	Check IC and exclude the possible situation
Continuous short beep (about 6sec)	The IC writing signal has been interrupted abnormally; IC has been removed; IC has been forced out by Semi-automatic Writing Handler	Checking the settings of Semi-automatic Writing Handler writing time
5 consecutive short beeps every 5 seconds	Press and hold the writing button continuously but not release it	Check whether the burning button is stuck



9. Appendix Descriptions

9.1 The difference between 5S-P-003 and 3S-P-002

Project	5S-P-003	3S-P-002	Notes
All pin do O/S test	support	nonsupport	
Writing time	acceleration		note1
PDK loading time	acceleration		note1
Jumper naming	JPx	CNxx	note2
LCM prompts jumper / IC position	support	nonsupport	
Phase out IC (ex: P232/P234)	nonsupport	support	

Note 1: IC acceleration ratio is related to IC type.

Note 2: Please refer to the relevant table to learn about the connection between Jumper(JPx)and IC type/package.

9.2 The difference between 5S-P-003 and 5S-P-003Bx

- (1) Enhance the power input range
- (2) Improvement of antistatic interference capability
- (3) When writing some chips, the PA5 and VDD of the writer Jump need to be exchanged (*swap*).

9.2 Special notes of MTP On-board writing

MTP series enable to support On-board writing.

Take PFS154 as an example (please refer to PFS154 data sheet to learn about other MTP chip writing wire) There are five wires of on-board writing, one clock wire ICPCK and one data wire ICPDA, and three other power wires are VDD, GND and writing voltage VPP. In the follow wiring table of on-board writing, the table may be resistor or capacitor, and the conditions of wiring circuit as follows:

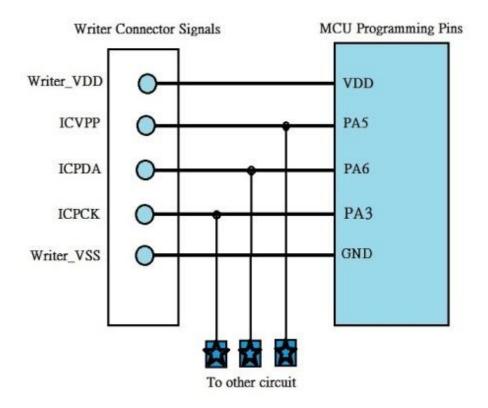
PIN	Resistance	Capacitance	
		Capacitance must be less than or	
V _{DD} / GND		equal to 0.1 UF	
	Resistance must bigger than or	Capacitance must be less than or	
PA3 / PA5 / PA6	equal to 10KΩ	equal to 220pF	

At the same time, set O/S test to writing pin particularly according to section 5.5.



Notice:

- (1) The voltage is as high as 8V (PA5/VPP) when writing. Please confirm the peripheral parts could withstand the voltage.
- (2) VDD cannot be limited to 5.0V or below to 5.0 V. If must connect 5.1V Zener diodes to VDD, please select [®] On-board Program ^a on the writer interface



The ticking steps of MTP On-board VDD limitation:

- (1) Click on $\ensuremath{\,^{\ensuremath{\mathbb{C}}}}$ Convert PDK $_{\ensuremath{\mathbb{I}}}$
- (2) Click on $\ {\Bbb F}$ To Package $_$
- (3) Click on $\,\,{}^{\mathbb{F}}\,$ MTP On-board VDD limitation $_{\mathbb{J}}\,$



IC	PFS154	▼ □ 0/S	Any	- 1	16	Any -	
Package	S16/D16	□ 0/S	Any	- 2	15	Any -	□ 0,
гаскаус	1310/010	└ □ 0/S	Any	- 3	14	Any -	□ 0,
JUMPER	2	⊏ o/s	Any	▼ 4.	13	Any -	□ 0
IC Shift	0	₩ 0/S	VDD	- 5	12	GND 👻	₩ 0
0/S Mask-L	0000	⊏ 0/S	Any	÷ 6	11	Any -	□ 0,
	0000	☑ 0/S	PA6	~ 7	10	Any –	□ 0,
0/S Mask-R	0090	₽ 0/S	PA5	- 8	9	PA3 -	⊡ 0
-0/S Test Se	lect	₩ 0/S	Any	* 0	0	Any –	№ 0,
C Enable	All PIN	₽ 0/S	Any	<u> </u>	0	Any –	0 1
Only Press	ogram PIN	₩ 0/S	Any	<u> </u>	0	Any –	<u>ا</u> کا
🔽 On-board	Program	₩ 0/S	Any	* 0	0	Any –	0 🕅
		₩ 0/S	Any	y 0	0	Any 👻	₩ 0,
		☑ 0/S	Any	* 0	0	Any –	0 🕅

9.3 Special notes of voltage while On-board or Multi-Chip-IC writing (OTP / MTP)

- (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 (Each chip will be different, please refer to the specification of the chip used).
- (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. Please follow the instruction in Section 9.2, especial for MTP voltage limitation.