

HY-Programmer User's Manual



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1. Programming Window

1.1 Interface Setup

Click "Options", a window will appear. Click the interface setup, as shown in Figure 1.

🔯 HYIDE - Mode:[Edit	¥2.80 Chip = H¥ - 11P13	(4K) ICE	Inteface = USB Project =
File Edit Search View	Assemble&Run Programmer Opti	ons Windows	Revision History
	<u> </u>		Click Experience Lui
له	1	L	
-	M Interface Setup		
Interface Setup⊷	Interface Setup Buil	d Options	
	Int Setup	CE Test	1
	Register	Calibration	1
	Chip Select 11P13 (4)		Select Chip↩
	Language English Hardware Interface		Select Language+
	(• Interface Mode USB		USB Interface⊬
	IDE Mode		
	 emulate and Deb Programmer 	bug	Select Programmer⊷
	Program Memory Select		
	RAM 62256	<u> </u>	
	Close		l

Figure 1

Chip Select \rightarrow Choose the specific programming IC part no. If programmed IC differs from the

selected IC, Blank Check, Program and Verify will fail.

Language \rightarrow Choose operation interface language, like Chinese or English. Hardware Interface \rightarrow USB interface or Parallel Port interface is selectable. IDE Mode \rightarrow Program choosing.

When interface setup finished, click "Build Options" to select programming configuration. As described in Figure 2.

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Figure 1

Generate Files \rightarrow Choose generated file after assembly

Stack Option → Choose whether to reset when stack overflow or stack full after OTP program operation.

No Use Area Fill \rightarrow Fill up 00 or FF in unused program space after assembly.

ProgramKey Func. Settings \rightarrow Choose blank function is on or off when using program key under offline programming.

Smart Compiler \rightarrow Choose whether to simplify assembly.

Enable Program Times \rightarrow Choose whether to enable download program times.

Input Program Times → Input download program times (Maximum: 2147483646. Minimum: 1).

After assembly finished, click "ICE Test" to evaluate test voltage as Figure 3 described (Connect IDE and insert 9V power before clicking "Option").







VPP voltage while programming: 5.6<VPP<6.6. VDD voltage while programming: 2.7<VPP<3.6.

Click "OSC Calibration" for starting Software/Hardware Calibration. Please note this function only can work on the programmer "HY10000-WK05" with the software, HYCON-IDE V.3.0 and future updated version.

Finally, click "Close" after the interface setup is done. All configured arguments will be recorded. If the configuration is opened next time, default value will be written in automatically and the selected programming IC part no. will be shown in topic window as Figure 4 described.





1.2 Operation Procedures



Figure 4

Open \rightarrow Open the programmed source code main file.

Open Project \rightarrow Open the saved project.

Save Project \rightarrow Save the finished project.

*Note: The original "Download file to Flash Memory" function has been cancelled.

HYCON-IDE 3.0 no longer supports Hex File download function. If users would like to download the Hex File, please download it by HY-Hex Loader software and follow the guidance of user manual.



1.2.1 Open File and Assembly

	S HyIDE100 - Mode:[Edit] v1.08 Chip = HY - 11P13 (4K) ICE Inteface = USB Project =	
	File Edit Search View Assemble&Run Programmer Options Windows Help	
	Edit	
	SPICNT:接收到SPI的数量 SPICNT:接收到SPI的数量 SPICNT=0 ⇒> SPIBUF的Bit7=1讀,SPIBUF的Bit7=0寫 SPICNT=1 ⇒> SPIBUF=指定RAM Address 的 Low byte> FSROL SPICNT=2 ⇒> SPIBUF=指定RAM Address 的 High byte> FSROH SPICNT>2 ⇒> 對指定RAM Address 進行讀寫動作 SPICNT不可超過 255 當CS PIN 由1轉0 或由0轉1 會清除 SPICNT	
	org 0000h jmp ProBegin nop jmp 0 org 0004h Include Interrupt.asm	
	ProBegin: include SysIni.asm	
	mvl 0E0h mvf SPIINDEXL,F,ACCE ;	
lay Main _I ram File	mvl lh ;番號 <	
]	E:\CYPRESS\IDELCH\Application\OnlyADC\Test14\OnlyADCl4.hex	= 0x2946

Figure 5

Open source code main file and it will be displayed as the assembly file. If the displayed name differs from main file, points the mouse to the specific file and presses mouse right key. Set this file as the assembly main file as shown in Figure 7.



🗞 Edit		
Main.ine KitchForl1P13.asm		
<pre>SPICNT:接收到SPI的數量 SPICNT:接收到SPI的數量 SPICNT=0 -> SPIBUF的Bit 7 = 1 讀, SPIBUF的Bit SPICNT = 1 -> SPIBUF = 指定RAM Address 的 Lo SPICNT = 2 -> SPIBUF = 指定RAM Address 的 Hi SPICNT > 2 -> 對指定RAM Address 進行讀寫動 SPICNT不可超過 255 CS PIN 由1轉0 或 由0轉1 會清除 SPICNT</pre>	Bit 7 = 0 寫 ow byte> FSR0L gh byte> FSR0H 作	
org 0000h jmp ProBegin nop jmp 0 org 0004h Include Interrupt.asm		
ProBegin: include SysIni.asm	file: KitchFor11P13.asm	Set Program Main File
mvl 0E0h mvf SPIINDEXL,F,ACCE ; mvl 13h ;識別碼 mvf 0F5h,F,ACCE mvl 1h ;番號	fyle: Mam.mc Set Bookmark Goto Bookmark Closs file Ctrl+F4 Set Main File	
1:1 Modified		

Figure 6

Assembles Source Code and download the file to programmer or IDE Flash Memory, as Figure 8 illustrated.







Figure 8



S Message	Successful downloaded to programmer or IDE Flash Memory
C:\Program Files\HyIDE\HyIDE\DemoCode\KitchenS <mark>ca</mark> le\KitchFor1TP13.hex Download OK Program Times Download OK !! <	Represent enable program times
Program Times Function Enable ***** Program Times = 1000	Display this program's programmable times

Figure 9

- 1. When using USB interface, the assembly finished program code will be loaded into programmer or Flash Memory of IDE for mass production programming.
- 2. Before downloading code to programmer Flash Memory, system may require to enter into password. This function enables users to monitor the code from PC to programmer Flash Memory. Please note that password can only include 6 digits (ASCII Code). In order to protect the code that users developed, the password must be entered before downloading the code into programmer. If the password entering step is cancelled during downloading procedure, it means that the code will not be allowable to be read from programmer.

Furthermore, once you set the password, it will be the operating password of the programmer. This password has to be entered before you read the code. Please memorize your password to ensure the code can be read in the future.

In addition, every time a new code is downloaded; the programmer will ask you to enter a new password afresh.

- 3. If there is enabled program times in the assembly option, information column will display the programming times as shown in Figure 10.
- 4. After assembling completed, Hex filename and Checksum will be displayed in underneath section, as Figure 11 illustrated.





1.2.2 Download Hex File to Programmer or IDE Flash Memory

HYCON-IDE 3.0 no longer supports Hex File download function. If users would like to download the Hex File, please download it by HY-Hex Loader software and follow the guidance of user manual.



1.2.3 Read the Code from Flash Memory

The function of "Read from Flash Memory" helps users to ascertain whether the code of programmer Flash Memory is the same with Download Code. The Password entered must in accordance with the Download Password, so the data will be revealed, as Figure 13 shown.

File	Edit	Search	View	Assemble&Ru
N	ew(N)			Ctrl+N
0	pen(O))		Ctrl+O
Se	we(S)			Ctrl+S
Sa	we As			
Sa	we All			
C	loœ Fi	le		
C	lose Al	1		- 1
0	pen Pr	oject		
Sa	we Pro	ject		
R	ead Fro	om Flash i	Memor	у
E	ait(Q)			Ctrl+Q
_				
8 I	inter	Passwor	d	
***	***			
	вок		Ca	ancel

📀 Ртод	ram Memo	лу											
	0	1	2	3	4	5	6	7	8	9	A	в	C /
000	78DC	0000	7 FFD	0000	D00F	FOFF	D010	FOFE	D011	F0FD	D012	F0FC	в
001	7801	8226	BC26	78A9	8C26	D03B	F0D4	D03A	F0D5	D039	F0D6	64D4	1
002	66AA	64D6	1CB1	66AB	82D2	BEAB	7809	92D2	26A9	26AA	26AB	0601	1
003	6EAB	7848	0604	66ED	0600	66EC	64EC	18A9	64ED	1CAA	A82B	783E	0
004	06FF	66A9	64D4	1001	66AF	64D5	1401	66B0	64D6	1400	66B1	0600	P
005	66AA	6401	12AF	6401	16B0	6400	16B1	0600	AE01	06FF	16A9	36AA	7
006	F0E8	0606	D007	F002	D007	F002	D007	F002	3629	7FF8	D0D6	F002	Г
007	0603	882B	52A9	52B1	52B0	52AF	3629	7 F F9	86D2	7827	B6D2	781B	0
008	0104	A02B	7801	7813	000C	F0D7	0607	D0D4	F001	D0D5	F001	D0D6	F
009	FOAF	D0D5	F0B0	D0D6	F0B1	86D2	780A	84D2	A2D2	94D2	D0D6	FOAE	Ľ
00A	96D2	DOAF	F0F2	D0B0	F0F3	D0B1	F0F6	882B	56F2	56F3	56F6	8EF6	P
00B	780A	64C5	66A9	882B	AEB1	982B	52F6	52F3	52F2	36A9	7FF8	92A8	9
00C	6EA7	32A7	6EAD	32AD	0011	3B29	06F0	6929	7807	0D29	6F2D	332D	6
00D	B426	7801	8426	0003	D0FD	F011	D0FC	F012	D0FF	FOOF	D0FE	F010	0
00E	665E	0617	662D	000C	F080	0680	0C01	3629	7 FFD	000C	F100	0680	0
00F	6632	0606	66C5	0630	666D	0600	666F	0600	666E	06FF	6670	0C72	0
010	6675	06FF	6677	C000	F79D	C000	F7AC	0C2B	0CF0	06FB	66B7	0601	6
011	66B6	98A8	C000	F99D	B82B	7801	78CA	88A8	0CB6	0604	6697	0697	6
012	6682	0601	6683	0602	6684	0010	C000	F612	D0C2	F095	D0C3	F096	Г
013	0692	6681	0698	6682	0603	6683	0603	6684	0601	6685	0010	C000	F
014	D098	F09C	60BE	010F	0709	6422	10BA	6695	0600	14BB	6696	D0C2	F
015	F094	0692	6680	0695	6681	0697	6682	0603	6683	0602	6684	C000	F
016	6681	0692	6682	0605	6683	0602	6684	0603	6685	C000	F652	D092	F
017	F0A0	060A	6695	0692	6680	0695	6681	0696	6682	0603	6683	0601	6
018	F652	D096	F0D0	D097	F0D1	D098	F0A1	0C92	0C93	0C94	0C95	D0BC	F
<													>

Figure 11





1.3 PC Online OTP Programming



Blank Check, Programming, Verify and Read Commands can be implemented when the programmed file being successfully loaded into programmer or IDE Flash Memory. On the contrary those commands will not be activated if the download failed.

🗞 Message	OTP Chip does not
Chip ID Error!! Program Chip ID = 0x0043 -	match with the
	selected IC
Figure 14	
OTP online	
E:\CYPRESS\IDELCM\TestDemo\TestDemoboard.asm Body on board	Checksum = 0xD0C0
Figure 15	
OTP missing	
D:\CYPRESS\IDE-Tenx\HY-PC\IDETEST\11p13-128test\KitchFor11P13.hex Body not on board Checksum = 0x4	SAC

Figure 16

Make sure the selected programming IC part number is the same with the OTP part number in the topic window as Figure 1 described. When programmer executes Blank Check, Programming and Verify commands, Program will check whether the IC part number and OTP programming part number are identical. If the part number is different, the data will not be written into OTP and an error message will be displayed in information column as Figure 16Figure 14described.

If users intend to find out whether the part number is correct before programming, point the cursor to "IC Connection Status Display" and click the mouse left key. If the selected IC is correct, a message will show up as Figure 17. If it is incorrect, the message will be displayed as Figure 18. If



"Enable Program Times" has been marked up, the spare program times will display in the message column as illustrated Figure 19Figure 17.



1.3.1 Blank Check

The internal code of Blank ICs that have yet been programmed is 0xFFFF. The purpose of checking the IC is to make sure the OTP address content is 0xFFFF.

If the IC selection is correct and the content is empty, a message will appear as

🗞 Message	
Chip Blank OK	
SBM Blank OK	

Figure 18

If the IC selection is incorrect or the content is not empty, a message will show up as Figure 21 described.

	-
💸 Message	
Chip Blank Fail	

Figure 19

1.3.2 Program 🎴

The purpose of programming is to write Compiler accomplished program into IC OTP. When programming is completed and the IC is assembled as finished goods, programmer can operate the program as users commanded.

Program the downloaded or assembly finished Hex file (displayed at the bottom of the column) in the selected IC and verify the correctness of the programming content (please refer to Chapter 1.2.1 or 1.2.2 for programming procedures).

If the selected IC is correct and the programming succeeds, message will appear at the information column as Figure 22 illustrated. If "Enable Program Times" is ticked up, the enable program times will minus 1 and the program times left will be revealed in the message column.





Figure 20

If the IC selection is incorrect or the programming fails, a message will show up as Figure 23.



Figure 21

1.3.3 Verify 🏪

The purpose to verify programming IC is to compare if the program written into IC OTP equals to the program downloaded to programmer or IDE Flash Memory.

Verify programming IC content consistency with the downloaded or assembled Hex file (displayed at the bottom of the column). If the IC is protected by program, this verification is ineffective or the comparison failed.

If IC selection and program verification is success, a message will appear as Figure 24.

💸 Message
Verify Chip OK
Verify SBM OK
-



If IC selection is incorrect or the program verification miscarries, a message will pop up as Figure 25.

🗞 Message	
Verify Chip Fail	
Error at 0×0000H	

Figure 23

1.3.4 Read

The purpose to read the IC is to verify the consistency of OTP Checksum and programmed Hex file. To read IC content, the procedures are illustrated as Figure 26. Its content will reveal at "Display Code" window.

	() E	IyIDE	100 -	Mode	:[Edit]	v1.08	Chip	= HY -	11P14	(8K) I	CE Intef	iace = U	SB Ртој	iect =		
	File	Edit	Searc	h Vie	w Asse	mble&Ru	m Progra	ummer I	Options	Windows	Help					
				102	.4.	~	44. 1		- Byz n	n Buz	De. 3					
		<u>j</u>	1	011	- UJ	1000	ana j		- <u>*</u>			F				
												\mathbf{i}				
OTF	Р Тур	e														
		🐼 P1	ogram	Memor	y				1						ſ	
			0		1	2	3	4	5	6	7	8	9	А	В	c
A			10		-	12	00	0000	7FFE	0C01	3629	7FFD	000A	642A	660F	6611
😵 Mes	rage						80	D082	F012	D081	F010	D000	F085	D083	F08C	D080
OTP C	hip i	s 11F	P14					1605	368C	7FF8	3A82	3A81	3684	7FE9	000A	C81D
Read (Chec	ksuп	n = 0x	<pre>xFFFF</pre>	=		29	7ffd	000C	F086	D081	F012	0601	5229	6406	1C01
							2B	0601	5229	1601	3685	7ffd	000A	642A	660F	6611
			\mathbf{i}				85	CFB1	6483	0708	D022	F08C	D080	F010	6483	882B
							01	3629	7FFD	700D	000C	F086	D081	F012	D084	F08D
		Ch	iecksi	um			0 E	000C	F086	D081	F012	D084	F08D	0601	5229	6406
							10	6485	5601	3629	7 FFD	368C	7FCF	000A	668D	D010
							10	648D	0708	D022	F083	882B	648D	5606	3629	7ffd
							10	D081	F012	3683	7801	000A	3C8D	0000	6684	C806
							03	1000	A629	6600	0630	1000	AE29	6600	000A	668D
							80	648D	0C02	3629	7 FFD	D080	F010	648D	0708	D022
							8D	5202	3629	7 FFD	D080	F010	D081	F012	3683	7801
		00E	D	081	F012	C806	C200	F0E2	D081	F012	C200	F0CE	0603	A605	1A05	0630
		00F	0(000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
		< -)													>



1.3.5 AUTO ³

Auto integrates Blank Check, Program and Verify function. If user selects Auto, it will first check whether the IC is blank, then to program and verify.

After the execution succeeded, a message will be displayed as Figure 27 displayed. If the option, "Enable Program Times" is ticked up, the program permitted times will reduce 1 and the program times left will be shown in the message column.

🗞 Message
Chip Blank OK
SBM Blank OK
Program Chip OK
Program SBM OK
Verify Chip OK
Verify SBM OK
Program Times Left 99999997

Figure 25

If any function fails, the whole process will stop and display an error message in the message column.

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1.4 Offline Programming

1.4.1 Program Description

As the development process evolves to mass-production, the programmer can be used alone when programming on the production line. It is not necessary to connect the programmer to the PC.

000000 P3 J3 U6 J1 0000 P5
P4 LCM
Information Blank Program Error OK State State



J1 \rightarrow DC Jack, 9V input.

*Notice: the case is 9V; the core is Ground (VSS).

- U6 \rightarrow USB port, users use this port to connect to PC.
- $J3 \rightarrow IDE$ port, connecting HY-ICE.
- $P3 \rightarrow Program PIN$ output. PIN and OTP is connected.

Output pin from left to right is VSS, VDD, SDO, SDI, SCK and VPP.

 $P5 \rightarrow Extend programming port.$

Output pin from left to right is Green LED, Red LED, Blank Check Button, and Programming Button. For detailed connecting circuit, please refer to Figure 29 and the definition can be referred to Figure 30.







T1.5

 $L1 \rightarrow$ Success message light display, green LED.

PT1.1

 $L2 \rightarrow$ Error message light display, red LED.

S1 \rightarrow Program button, for offline program operation.

S2 \rightarrow Blank Check button, for offline operation.

S3 \rightarrow Information button.

To implement offline operation, Hex file must be firstly downloaded to programmer Flash Memory.

S2 Button can check if the IC is blank.

S1 Button is programming button. Its procedures are: Blank Check \rightarrow Program \rightarrow Verify. If "Program Protection" of "Assemble Option" is ticked up before downloading data to Flash Memory, program protection will be executed after Verify completed. If "Program Protection" is not ticked up, it will stop after Verify accomplished.

If any failure or error happened during execution procedures, L2 Red LED will be lightened up. On the contrary, L2 Green LED will be lighted up if success.



*Notice 1: Under offline programming, the programming status can be determined by checking LCM. If check sum has been shown on LCM and LCM has stop working, the programming procedure is completed. (This issue has been corrected on HY10000-WK02B) *Notice 2: When programming function is implemented, make sure 9V adapter is connected before connecting USB line. Do not plug out 9V Adapter whist PC operating, or else it may result in PC crash.

1.4.2 Program Times Restriction

The menu of "Assemble Option" in interface setup has an option of "Enable Program Times" as described Figure 2. This option restricts the permitted program times of download program.

This is a safety mechanism that restrains the permitted program times, preventing it from over-programming on the production line.

After ticking up "Enable Program Times", key in the program times in the column below "Input Program Times" (maximum is 99999999, minimum is 1). This argument will be written into EEPROM of the programmer after the compiler programmed file is downloaded to Flash Memory. Afterwards, the enabled program times will reduce 1 each time when programming completed. If the value reduced to 0, the programming action may not be executed. At this time, an error signal (Red LED) will be lighted up but Blank Check still operates normally.



1.5 Information Button

Press Information button, displaying HYCON IDE message



- > Press Information button again, displaying Program Counter Times message
 - 1. If Program Counter Times is enabled.



2. If Program Counter Times is disabled.

Information 1 : Wait for 1 second	Program Disable	Counter
-----------------------------------	--------------------	---------

> Press Information button again, displaying VDD and VPP voltage.



> Press Information button again, OTP ID and Flash stored ID.

Information 3:
$$\rightarrow$$
 Wait for
1 second \rightarrow $(OTP ID = 0043)$ $(Flash ID = 0043)$

- > Press Information button again, displaying error message.
 - 1. If there is no error message.



Saved in Flash Memory Checksum

2. If there is error message.





Display current error message

- Press Information button again, displaying if the blank function is enforced when using program key
 - 1. If the blank function is on.

5:	Program Key Fun.	
Wait for 1 second	B+P+V	
	Biblank Piprogram Viverify	
n is off	B.blaink, F.program, V.verny	
5:)	Program Key Fun.	
Wait for	P+V	
	5 Wait for 1 second n is off. Wait for 1 second	5: Wait for 1 second Wait for 1 second B+P+V B:blank, P:program, V:verify n is off. 5: Wait for Program Key Fun. P+V

P:program, V:verify



1.6 Error Message

> VDD Error

> VPP Error

> OTP ID Error

Ē	r	r	o	r		3	
C	h	i	P		Ι	D	ERROR

Blank Fail

Ē	r	r	0	r	4							
В	1	a	n	k	F	a	i	1	ļ			

Program Fail

E	r	r	0	r		5							
P	r	0	9	r	ā	M	F	a	i	1	ļ		

Verify Fail

Ē	r	r	0	r		6							
Ų	e	r	i	f	ч		F	<u>a</u>	i	1	!		

Protect Fail

Er	'n	0	r		7							
Pr	<u>`0</u>	t	e	C	t.	F	a	i	1	!		

Program Counter left zero

Ē	r	r	0	r		8					Þ	r	o	g
ŀ	a	m		<u>C</u>	0	u	n	t	e	r			Ø	



2. Revision History

Major differences are stated thereinafter:

Version	Page	Revision Summary
V01	ALL	First edition
V02	8	Add the description of password.
	15-16	Add the description of P5-Extend programming port.
V03	3-5	Update the figures and add the description of "OSC Calibration".
V04	17-18	Add a note for attention when offline programming.
V05	ALL	Add the description of blank check function and related information
		Delete the description of downloading hex file to programmer from HYIDE.