HOPE5000 User Guide

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Chapter 1 Software Introduction

General Description

The HOPE5000 is a software designed by Holtek for programming MCUs, which must be used together with Holtek's Writer (e.g. e-WriterPro, e-WriterPro2, etc.). The software is connected to the writer via a USB cable to transmit the related programming data.

Software Download

Download the HOPE5000 software from the Holtek website: <u>https://www.holtek.com.</u>

Software Installation

Execute the installing program "HOPE5000 Setup.exe":

Setup - HOPE5000 version 1.0.0	100		2
Select Destination Location			F
Where should HOPE5000 be installed?			(10 ³)
Setup will install HOPE5000 into the following fo	lder.		
To continue, click Next. If you would like to select a difference of the se	rent folder, click	Browse.	
		elensen.	(11) (11)
At least 47.0 MB of free disk space is required.			

Then following the instructions to install until the installation is completed.



System Requirement

The software can be executed on the Microsoft Windows. The operating environment requirement is that the original version of Microsoft Windows has been installed (Windows 10 and above).

Chapter 2 Function Introduction

This chapter will describe the HOPE5000 software interfaces and functions.

File

In the file function page, users can execute the open, save and save as operations to the programming file (the programming file should be generated by the MCU development tool software).

File Name IC File Path HT66F002.mtp HT66F002 d\User%charlotte\Documents\HTK_Project(HT68F002_Te	
File Name IC File Path HT68F002.mtp HT68F002 d\Users\charlotte\Documents\HTK_Project\HT68F002_Te	
File Name IC File Path HT68F002 mtp HT68F002 d\Users\charlotte\Documents\HTK_Project\HT68F002_Te	
HT68F002.mtp HT68F002 d\Users\charlotte\Documents\HTK_Project\HT68F002_Te	
HT66FM5240.mtp HT66FM5240 d:\Users\charlotte\Documents\HTK_Project\HT66FM5240	
HT67F2452.MTP HT67F2452 d\Users\charlotte\Documents\HTK_Project\HT67F2452	_
HT68F002_mtp HT68F002 d\Users\charlotte\Documents\HTK_Project\HT68F002_Te	-
HT66F4640.MTP HT66F4640 d\Users\charlotte\Documents\HTK_Project\HT66F4640	
HT66F3184.MTP HT66F3184 d\Users\charlotte\Documents\HTK_Project\HT66F3184	
HT66F2630.MTP HT66F2630 d\Users\charlotte\Documents\HTK_Project\HT66F2630	
HT68F0017.MTP HT68F0017 d\Users\charlotte\Documents\HTK_Project\HT68F0017	
HT45F9160_AP.MTP HT45F9160 d\Users\charlotte\Documents\HTK_Project\HT45F9160\H	
HT66F302 MTP HT66F302 d\Users\charlotte\Documents\HTK_Project\HT66F302	_

1. Open:

Open the file to be programmed, or click the programming file recorded in the Recent file directly.

2. Save:

Save the opened programming file (It is usually used to store the smart programming settings).

3. Save as:

Save as the opened programming file as a new programming file.

Programming

In the programming function page, users can execute the Program, Erase, Blank Check, Verify, Lock and Read MCU operations. In addition, on the left side of this page information such as programming file information, writer settings and execution results will be displayed, on the right side, data to be programmed to the MCU also will be displayed, and the version information of the software and hardware will be displayed at the bottom.



1. Program:

Program the opened programming file to the MCU.

2. Erase:

Erase the data in the MCU to make a blank MCU. (The OTP type MCUs are not supported in this operation).

3. Blank Check:

Check whether the connected MCU is empty.

4. Verify:

Check whether the data in the programming file is the same as that the MCU in the writer.

5. Lock:

Lock the MCU to prevent the programmed data in the MCU from being read out. This function is used to protect the MCU data.

6. Read:

Read the programmed data in the MCU and display it on the software interface.

Smart Programming

In the smart programming page, users are allowed to execute a customization for the writer programming operation settings. The smart programming page contains five function buttons.

HOPE5000					— —
File Programmi	ing Smart Programming	Setting Help			
HT68F002.mtp Proje	× + ct Information	Operation	Program	Data	Option
MCU Checksum Range	HT68F002 Program+Option+Data	e Erase	All	All	Al
Checksum Verify Code	78FFH 04D3H	Blank Check			
Progra	mming Settings	Program	All	All	All
Programmer Advanced settings	e-WriterPro2(6655)	Verify			
	Output	lock	All		
Writer Connected The writer is prepare Prepare complete Writer will use 5.0 (HIRC)	aring I Vvoltage to Programming V voltage to trim 8.00000MHz	Add Operation			

1. Quick Config

Configure the Program, Verify and Lock operations directly.

2. Reset All

Restore all the settings on the Smart Programming UI to the default settings.

3. Set Writer

Download the programming settings in the writer.

4. Auto

Execute the programming operations set on the Smart Programming UI (The download settings must be executed before using this function).

5. Save Config

Save all the settings on the Smart Programming UI in the programming file.

The smart programming detailed settings are described in Chapter 4.

Setting

The Setting page allows users to configure the Writer and the MCU.

HOPE5000			
File Programm	ing Smart Programming	Setting Help	
HT68F002.mtp	× +		
Proje	ect Information	Program Data	
MCU	HT68F002	0000: 0275 0709 1931 0907 12 31 32 71 57 15 71 0008: 0337 015 055 017 055 17 0057 0009: 13 50 17 57 15 71 10 0008: 0337 015 0537 1055 017 05 17 05 17 16 17 15 17 16 17 17 16 17 16 17 16	
Checksum Range	Program+Option+Data	0018: 0192 0051 0297 3570 0327 0331 0255 0355 0018: 95 79 17 57 01 51 75 79 0020: 0537 0109 000F 1079 0307 0537 0935 0095	
Checksum	78FFH	0020: 0/92 LABE 095/ 035/ 091 0055 3/F/ 09/9 0030: 0550 0953 0573 0109 0793 0795 3970 0D97	
Verify Code	04D3H	0040: 0110 0309 0517 0417 0617 0412 053 0048: 0518 0146 0F31 01FF 0F5D 0519 3573 2109	
Progra	imming Settings	00501 0134 0747 047 0747 0940 0740 0979 0058: 0578 0786 0867 0957 0755 0097 0797 0989	
Programmer	e-WriterPro2(6655)	0066: 1056 0560 0570 0570 0580 1580 0571 0575 0070: 0315 0510 0570 0551 1228 0512 0531 0070: 0315 0518 0719 0518 0713 3581 0558 0558	
Advanced settings	8SOP-A	0080: UBAX 0535 5355 5275 1227 0546 0425 1727 0080: UBAZ 0825 0325 0321 2853 0920 0573 0793 0088: 1705 3101 1531 0195 3107 0807 0302 1579	
	Output	0090: 3753 3899 0395 0709 3FBD 0297 0538 0797 0098: 1531 01C5 01F5 0325 0581 0185 1525 16C3 0096 0C45 0C47 0467 1076 1276 1273 1285 1987	
Writer Connected The writer is prep Prepare complete Writer will use 5.5 Writer will use 5.0 (HIRC) Downloading Aut Complete and ok	H H V voltage to Programming IV voltage to trim 8.0000MHz to Command	OAAA OFTA OBS OBS </td <td></td>	

1. Writer

- i. F/W Update: Update the firmware of the writer.
- ii. Buzzer Setting: Set the buzzer volume produced by the writer.
- iii. Reset Writer: Clear all programmed file information on the writer.
- iv. Without prompt when the F/W is updated: After this option is selected, when the Smart Programming Setting is being downloaded or the MCU is being operated, if the software detects that the writer F/W needs to be updated, it will update the F/W without generating a prompt to users.

Here the setting items are different according to the writer type selected by users (e-WriterPro or e-WriterPro2, etc.).

- 2. Advanced Setting
 - i. Read the locked IC's information: Used to obtain the locked MCU's checksum and verify code.
 - ii. Modify the programming data: Allow users to modify the programming file original data.
 - iii. Start the identifier code: Allow users to program a user-defined data to the MCU as its identification or other purposes.

Help

HOPE5000			- 0	×
File Programmi	ng Smart Programming	Setting Help Dout		
HT68F002.mtp	× +			
Proje	ct Information	Program Data		
мси	HT68F002	0000: 0289 0275 0709 1931 0791 0953 0FFD 3311 0000: 12 31 43 27 17 57 15 71 0008: 0337 0175 0317 3591 0571 0953 0179 0357 0008: 57 13 50 91 73 75 37 10 0010: 0938 0017 0537 1571 0372 0852 0252 0532		
Checksum Range	Program+Option+Data	0018: 0192 0CB1 0257 3570 0327 0931 02BB 0735 0018: 95 79 17 57 01 51 75 79 0020: 0537 0109 0007 1079 0307 0537 0935 0095 0095 0095 0095 0095 0095 0095		
Checksum	78FFH	0030: 0505 0553 0573 0109 0793 0795 3970 0097 0038: 0379 0967 0670 0757 2109 1209 1419 0731		
Verify Code	04D3H	0040: 0110 3099 0517 0417 0617 0471 0A12 0B3B 0048: 051B 0146 0F31 01FF 0F5D 0519 3573 2109		
Progra	mming Settings	0050: 0158 0747 0847 0747 0840 0745 0745 0746 07979 0058: 0878 078C 08CF 0957 0795 0097 079F 0989 0060: 0500 09C0 0870 068C 0656 0155 0721 0379		
Programmer	e-WriterPro2(6655)	0068: 1056 0153 1551 0CCF 0CB5 132B 0312 0531 0070: 031B 0B1B 0719 0C1B 0715 35B1 0B5E 05BA		
Advanced settings	8SOP-A	0078: 088.033 333 3275 1217 0848 0423 1727 0080: 0882 0825 0325 0325 0321 2853 0920 0573 0793 0088: 1705 3101 1531 0195 3107 0807 1579		
	Output	0090: 3753 3899 0395 0709 3FED 0297 0538 0797 0098: 1531 01C5 01F5 0325 0581 0185 1525 16C3		
Writer Connected The writer is prepare Prepare complete Writer will use 5.5' Writer will use 5.0' (HIRC) Downloading Aut Complete and ok	aring f V voltage to Programming V voltage to trim 8.0000MHz o Command	00A0: 0C46 0C4C 0C4C 10C4C 10		
Version : V1.0.0	DRV : 20230907-0919 FW	e-WriterPro2.0002		

Other settings can be implemented here.

1. Language

The UI language can be switched to Simplified Chinese, Traditional Chinese and English.

2. Option Viewer:

Preview the advanced information of the programming file. The premise is that the HT-IDE3000 has been installed.

3. User Guide:

View the software and the relevant instructions for the writer.

4. About:

Show the version information of the software and hardware.

Advanced Function

Open the Multiple File Function

The HOPE5000 supports multiple programming files to be opened simultaneously, click the button "+" to open a new programming file.

HOPE5000					
File Programmi Og C Program Eras	ng Smart Programming	Setting Help			
HT68F002.mtp	× +	Program		Data	
i i i oje					>
Checksum Range	Program+Option+Data	↑ → 本機 > 文件 > HTK_Project > HT66FM	5240	✓ ひ 児母HT60	5FM5240
Checksum	78FFH	組合管理 ▼ 新増資料夾		1	🔟 🔞
Verify Code	04D3H	□ 本機 名稱 ^	修改日期	類型 大小	
Progra	mming Settings	3D 物件 日T66FM5240.mtp 玉幸	2023/10/16 下午 01:34	4 MTP 檔案 9 KB	I.
Programmer	e-WriterPro2(6655)				
Advanced settings	8SOP-A	♪ 音樂			
	Output				
Writer Connected		■ 影片 ▲ 本機磁碟 (C) ● 新増磁碟區 (C) ■ 新増磁碟區 (C) ■ 新増磁碟區 (C) →			
		福霖名稱(N):		→ MTP Files(*.MT 開啟(O)	P) ~ 取消

After more than two programming files have been opened successfully, users can switch them between different programming files.

HOPE5000											<u></u>	>
File Programmi	ing Smart Program	ning Se	etting Help									
0		EN										
		-2	=2	=7								
rogram Eras	e Blank Check	Verify	Lock	Read								
iogram Lius	bianceneek	renny	LOCK	ricau								
												_
HT68F002.mtp	× HT66FM5240.mtp	× +										
								E.				
Proje	ct Information	_		F	rogram					Data		
MCU	HT66FM5240		0000: 1	23F 66F0 6F7 31A 3241 55A	5 DE78 7214 3 4 65A4 7753 1	155 3462 7653 378 4A53 6918	~	0000:	FF FF FF FF FF F	FF FF FF		
			0010: 1	20 1100 211) 121A 6868 1 2 1A35 5435 1	212 040C 5253		0010:	FF FF FF FF FF	FF FF FF		
Checksum Range	Program+Option+Data		0020: 3	855 1100 201	0 1A11 C2C3 0	4C1 CC44 1218		0020:	FF FF FF FF F	FF FF FF		
Checksum	2D8AH		0028: 0	JIA 1298 234 AA1 2000 232	3 0011 0291 3 1 2B21 8870 3	1098 2012 2093 1402 0120 1232		0028:	FF FF FF FF FF	FF FF FF		
1000 A 11			0038: 4	124 1432 535	7 3594 6439 6	729 5791 5719		0038:	FF FF FF FF FF	FF FF FF		
Verify Code	C405H		0040: 5	579 3517 957	1 9571 9571 9	710 9617 697		1				
Progra	mming Sottings		0050: 0	175 6170 967	1 0576 0167 (07A 7174 70B						
riogra	inning seconds		0060: C	2C 3C64 C7C	5 48C8 CC1C 0	SC5 C1C2 1A12						
Programmer	e-WriterPro2(6655)		0068: 8	A81 A828 811 328 A474 172	1 1A77 3147 3 2 2212 B421 I	198 A471 8273 1584 8368 7854						
Advanced settings	ICB		0078: 8	B7 B987 BB0	0 56BB 67B3 4	B5B 1825 18A						
Advanced sectings	ICF		0088: 7	920 0000 994 997 9A77 AB7	7 A7B7 A779	979 7977 9C7						
	Output		0090: 9	79C 7797 979	£ E797 9E79 E	797 9797 9791						
-	output		00A0: 7	5B6 5B6B 655	6 B656 1151 F	C16 1ABA B941						
			00A8: 7	942 11BA B21	8 AB26 1A12 (818 08A1 02F1						
			0080: 9	179 0719 20B	A 4721 1156 S	681 6898 AB40						
			0000: 4	AD A095 A09	5 7099 792A F	198 7987 943		1				
			0008: 7	79 CC76 916	9 A77A 9A79	949 6969 6892						
			00D0: 9	593 9995 959	5 7959 7979 *	597 7959 7979		1				
			OOD8: B	BA 4695 193	5 1269 5106 3	016 BBAB ABA4						
			00E0: 1	61 5151 F12	5 3255 1F51 J	6F6 F742 FF8:		1				
			00E8: 1	99 70F7 B17	9 5709 1579 1	B15 7093 9573		Ê.				
			00F0: 7	979 790C 907	5 1975 3770 9	370 9100 0709						
			UUF8: 7	197 9707 979	/ 9793 7947 9	079 7953 2501		1				
			0100: 1	10 3317 157	1 /390 13/5 0	1201 2230 1281 1311 2/31 0395	2 .	E				
			0100: 9	SST URDD CBD	1 1010 01/D L	197 1920 17D						

Chapter 3 Programming MCU

This chapter will describe the detailed steps from how to open a programming file to actually programming an MCU.

Load Programming File

Execute the "HOPE5000.exe" to enter the file function page first, then click the button "Open" to select the programming file to be loaded. Finally open the file.

B HOPE5000		- 🗆 X
File Programming Smart Programming Setting Help		
Recent File ← + ↑ , ≠# + ☆# → HTCProject → HT68F002_Test	× 0 の 復毎HT69F002_Test	
 任会管理 ● 新潮賞和求 年後 第 20 時年 第 1 HTOSER002.mkp 日 1 HTOSER002.mkp 第 1 時期 第 5 月 9 日 9 月 9 月<!--</th--><th>○ 「読書・「□ ● 「読品目録」 「読品」 2023/10/16 下午 03:01 MTP 写展 3 KB</th><th></th>	○ 「読書・「□ ● 「読品目録」 「読品」 2023/10/16 下午 03:01 MTP 写展 3 KB	
H 編案名頃(N):	(MTP Files(* MTP) ジ 開設(の) 取消	

The programming file that has been loaded successfully will be recorded in the "Recent File". To open this file again in the future, users can directly use the mouse to double-click the programming file to load.

HOPE	5000					(<u>***</u>)	o x
File	Programming	Smart Programming	Setting Hel	p			
P	ל 🖾						
Ope	n Save	Save As					
_							
	Recent	File					
		File Name		IC.	File Path		
		HT68F002.mtp		HT68F002	d:\Users\charlotte\Documents\HTK_Project\HT68F002_Te		
		HT67F2452.MTP		HT67F2452	d:\Users\charlotte\Documents\HTK_Project\HT67F2452		
		HT66F0186.MTP		HT66F0186	d:\Users\charlotte\Documents\HTK_Project\HT66F0186		
		HT66FM5240.mtp		HT66FM5240	d:\Users\charlotte\Documents\HTK_Project\HT66FM5240		
		HT66F4640.MTP		HT66F4640	d:\Users\charlotte\Documents\HTK_Project\HT66F4640	40	
		HT66F3184.MTP		HT66F3184	d:\Users\charlotte\Documents\HTK_Project\HT66F3184		
		HT66F2630.MTP		HT66F2630	d:\Users\charlotte\Documents\HTK_Project\HT66F2630		
		HT68F0017.MTP		HT68F0017	d:\Users\charlotte\Documents\HTK_Project\HT68F0017		
		HT45F9160_AP.MTP		HT45F9160	d:\Users\charlotte\Documents\HTK_Project\HT45F9160\H		
	-	HT66F302.MTP		HT66F302	d:\Users\charlotte\Documents\HTK_Project\HT66F302		
	-						

After the programming file has been opened successfully, the interface will switch to the programming function page. The page will display the MCU name, Checksum, Verify Code and related programming information of the programming file.



Programming Settings

Use a USB cable to connect the computer to the Writer (e.g. e-WriterPro2), and the corresponding information will be displayed on the "Programming Settings" and "Output" sections.

HOPE5000			— — >
File Programmi rogram Eras	ng Smart Programm	ing Setting Help	
HT68F002.mtp	× +		
Proje	ct Information	Program Data	
MCU	HT68F002	0000: 0289 0275 0709 1931 0791 0953 0FFD 3311 0000: 12 31 43 27 17 57 15 71 0008: 0337 0175 0317 3591 0571 0953 0179 0357 ^ 0008: 57 13 50 91 73 75 37 10 0008: 57 13 50 91 73 75 37 10 0008: 57 13 50 91 73 75 37 10 0008: 57 13 50 91 73 75 37 10 0008: 57 13 50 91 73 75 37 10 0008: 57 13 50 91 73 75 37 10 0008: 57 13 50 91 73 75 37 10 0008: 57 13 50 91 73 75 37 10 0008: 57 13 50 91 73 75 37 10 0008: 57 13 50 91 73 75 37 10 0008: 57 13 50 91 73 75 37 10 0008: 57 13 50 91 73 75 37 10 0008: 57 13 50 91 73 75 37 10 0008: 57 10008: 57 10008: 57 10008: 57 10008: 57 10008: 57 10008: 57 10008: 57 10008: 57 10008: 57 10008: 57 10008: 57 10008: 57 10008: 57 10008: 57 10008: 57 10008: 57 10008:	
Checksum Range	Program+Option+Data	0010: 053 001 053 151 051 0652 0650 0532 0010: 95 17 55 15 71 76 51 70 0018: 0192 0CB1 0257 3570 0327 0931 02BB 0735 0018: 95 79 17 57 01 51 75 79 0020: 0537 0109 0007 1079 0307 0935 0095 0018: 95 79 17 57 01 51 75 79	
Checksum	7EC9H	0028: 0792 1ABB 0957 0357 0931 0035 37E7 0979 0030: 0505 0953 0573 0109 0793 0795 3970 0D97	
Verify Code	AAF2H	0038: 0379 0967 0670 0757 2109 1209 1209 1219 0731 0040: 0110 3099 0517 0417 0617 0471 0412 0838 0049: 0518 0146 0731 01FF 0FF 0519 3573 2100	
Progra	mming Settings	0050: 013& 0747 04A7 07A7 0B4C 074C 0744 0979 0058: 0B7B 07BC 0BCF 0957 0795 0097 079F 09B9	
Programmer	e-WriterPro2(6655)	0068: 1056 0510 0970 0697 0696 0558 0721 0579 0068: 1056 0153 1551 0CCF 0CB5 132B 0312 0531 0070: 031B 0B1B 0719 0C1B 0715 35B1 0B5B 05BA	
Advanced settings	8SOP-A	0078: 088A 0333 3333 3275 1217 0848 0423 1727 0080: 08A2 0825 0325 0321 2853 0920 0573 0793	
	Output	0088: 1705 3101 1531 0195 3107 0807 0502 1579 0090: 3753 389 0395 0709 3750 0287 0538 0797 0098: 1531 01C5 01F5 0325 0581 0185 1525 16C3	
Writer Connected		0058: 0971 0057 588 0058 1158 0158 0158 0158 022 0850 0058: 0957 0057 588 0058 1159 0158 0052 0850 0058: 0955 0050 0850 0501 0551 0558 0158 0052 0853 0058: 0955 0050 0850 0510 0541 0558 0151 0052 0557 0056: 1570 0355 0151 0951 0477 3788 00585 2477 0050: 2058 0158 0151 0477 3788 00585 2477 0050: 2058 0158 0151 0451 0477 3788 00585 2477 0050: 2058 0158 0151 0451 0477 3788 00585 2477 0050: 2058 0177 0477 0458 0110 0584 1857 0050: 0477 0477 0477 0458 0110 0584 1857 0050: 0477 0477 0477 0478 0458 04510 0458 0514 0057: 1256 0550 0110 0456 0158 0451 0130 1855 00576: 0355 0110 0450 0000 0000 0000 0000 0000 0106: 0000 0000 0000 0000 0000 0000 0000	

On the "Programming Settings" side, it shows the current connected writer type and ID. Then click "Advanced settings" to set according to how the MCU is actually connected to the writer.

HOPE5000				- 🗆 X
File Programm Program Eras	se Blank Check	ning Setting He Verify Lock	Read	
HT68F002.mtp	× +			
Proje	ect Information		Program	Data
MCU	HT68F002	0000: 0008: 0010:	0288 0275 0709 1931 0791 0953 0FFD 3311 00000: 12 31 0337 0175 0317 3593 0571 0953 0179 0357 0050 0008: 57 13 0338 0017 0537 1571 0372 08BC 0253 0532 0010: 95 17 042 0CFD 0257 3570 0372 0381 0258 0735 0010: 95 17	43 27 17 57 15 71 50 91 73 75 37 10 53 15 71 78 51 70 77 57 01 51 75 79
Checksum Range Checksum	Program+Option+Data 7EC9H	2 0020: 0028: 0030:	0837 0108 000F 1079 0307 0837 0835 0095 0792 1ABB 0957 0357 0931 0035 37F7 0979 0805 0854 0573 0109 0793 0795 3970 0D97	
Verify Code	AAF2H	0040:	03/9 0807 08/0 0/37 2109 1209 1219 1419 0/31 0110 3099 0517 0417 0617 0471 0412 0835 0518 0146 0F51 01FF 0F5D 0519 3573 2109	
Progra	mming Settings	0058:	0578 0787 0867 0787 0860 0787 0797 0979 0878 0780 0867 0977 0795 0979 0795 0989 0500 0900 0970 0690 0656 0155 0721 0379	
Programmer	e-WriterPro2(6655)	0068:	1056 0153 1551 0CCF 0CB5 132B 0312 0531 031B 0B1B 0719 0C1B 0715 35B1 0B5B 05BA	
Advanced settings	8SOP-A	Select Package	850P-A 9425 1727 8507-A 907 0302 1579	
	Output	Convert To DIP	No 297 0538 0797 185 1525 16C3	
Writer Connected		File Position	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	

The "File Position" function is only available when a writer has been selected that supports multiple files. This function is further explained in the next section.

Download Multiple File Function

If the writer selected by the user has multiple file function (e.g. e-WriterPro2), when the programming setting is executed, the "File Position" setting will then pop up. This function allows users to store up to 30 programming files simultaneously in the same writer (the file position number starts from 0 to 29).

Progra	mming Settings	0058:	0B7B 07BC 0BCF 09 0500 09C0 0970 06	957 0795 0 957 0656 0
Programmer	e-WriterPro2(6655)	0068:	1056 0153 1551 00 031B 0B1B 0719 00	CCF 0CB5 1 C1B 0715 3
Advanced settings	8SOP-A	Select Package	8SOP-A	V
	Output	Convert To DIP	No	
Writer Connected		File Position	5 ESKT16NSOPC	
Version : V1.0.0	DRV : 20230907-0919	FW	нолон	

After all settings are completed and the programming data is downloaded to the writer, users can switch between different programming file positions on the writer directly. Note that when updating the firmware on a writer that supports multiple files, for the programming files that have been downloaded to the writer, it may become unusable after the writer firmware is updated. (For example, when updating the writer firmware from a new version to an older version, it may occur that the writer cannot use the programming file position of the downloaded new MCU).

Executing the Programming Operation

After setting the writer, users can click the function button on the programming page to operate the MCU directly.

Program

Click "Program" button first, this function can program the data of the programming file to the MCU.

HOPE5000			- 🗆 >
File Programmi	e Blank Check	ing Setting Help	
HT68F002 .mtp	× +		
Proje	ct Information	Program Data	
мси	HT68F002	0000: 0289 0275 0709 1931 0791 0953 0FFD 3311 0000: 12 31 43 27 17 57 15 0008: 0337 0175 0317 3591 0571 0953 0179 0357 10008: 57 13 50 91 73 75 37 0010: 0959 0017 0571 1571 0372 0850 0352 0010 0517 51 15 71 75 15	71 10 70
Checksum Range	Program+Option+Data	0018: 0192 0251 0257 3570 0327 0931 0288 0735 0018: 95 79 17 57 01 51 78 0020: 0537 0109 000F 1079 0307 0537 0935 0095 0018: 95 79 17 57 01 51 78	79
Checksum	78FFH	0028: 0792 1ABE 0957 037 0931 0035 37F7 0979 0030: 0505 0953 0573 0109 0793 0795 3970 0D97 0038: 0379 0967 0670 0757 2109 1209 1419 0731	
Verify Code	04D3H	0040: 0110 3099 0517 0417 0617 0471 0A12 0B3B 0048: 051B 0146 0F31 01FF 0F5D 0519 3573 2109	
Progra	mming Settings	0058: 0570 0770 0870 0775 0097 0795 0989 0058: 0578 078C 08CF 0957 0795 0097 0795 0989 0060: 0500 0970 0697 0656 0155 0721 0379	
Programmer	e-WriterPro2(6655)	0068: 1056 0153 1551 0CCF 0CB5 132B 0312 0531 0070: 031B 081B 0719 0C1B 0715 3581 0858 058A	
Advanced settings	8SOP-A	0080: 0BA2 0B25 0322 232 121 0540 0423 1121 0080: 0BA2 0B25 0322 253 0320 0573 0793 0088: 1705 3101 1531 0195 3107 0B07 0302 1579	
	Output	0090: 3753 3899 0395 0709 3FBD 0297 0538 0797 0098: 1531 01C5 01F5 0325 0551 0185 1525 16C3	
Prepare complete Writer will use 5.5' Writer will use 5.0' (HIRC) Erase all Complete and ok RC Trim Complete and ok	H V voltage to Programming V voltage to trim 8.0000MI	ta 00000 00000 0000 0000 0000 0000 0000	

Verify

After the MCU has been programmed, click the "Verify" function to verify whether the data in the MCU is consistent with the programming file.

HOPE5000			×
File Programmi Program Eras	ng Smart Programmi	g Setting Help	
HT68F002.mtp	× +		
Proje	ct Information	Program Data	
MCU	HT68F002	0000: 0289 0275 0709 1931 0791 0953 0FFD 3311 0008: 0337 0175 0317 3591 0571 0953 0179 0357 ^ 0008: 57 13 50 91 73 75 37 10	
Checksum Range	Program+Option+Data	0018: 0192 0251 027 037 032 0250 0351 025 0352 0018: 95 17 53 15 17 75 15 70 0018: 0192 0251 0370 0327 0931 0258 0735 0018: 95 79 17 57 01 51 75 79 0020: 0537 0109 0009 1079 0307 0357 0035 0095	
Checksum	78FFH	0028: 0792 1ABB 0957 0357 0931 0035 37F7 0979 0030: 0505 0953 0573 0109 0793 0795 3970 0D97	
Verify Code	04D3H	0038: 0379 0967 0670 0757 2109 1209 1419 0731 0040: 0110 3099 0517 0417 0617 0471 0412 0838 0040: 0516 046 0783 0175 0750 0519 3573 2109	
Progra	mming Settings	0050: 013A 0747 04A7 07A7 0B4C 074C 0744 0979 0058: 0B7B 07BC 0BCE 0957 0795 0097 0795 09B9	
Programmer	e-WriterPro2(6655)	0068: 1056 0153 1551 05C7 0C85 0155 0721 0379 0068: 1056 0153 1551 05CF 0C85 132B 0312 0531 0070: 0318 0818 0719 0C18 0715 3581 0858 0558	
Advanced settings	8SOP-A	0078: 0BBA 0333 3333 3275 1217 0B4B 0423 1727 0080: 0BA2 0B25 0325 0321 2B53 0920 0573 0793	
	Output	0090: 3753 3899 0395 070 3FBD 0297 0538 0797 0090: 3753 3899 0395 0709 3FBD 0297 0538 0797	
Writer will use 5.0 (HIRC) Erase all Complete and ok RC Trim Complete and ok Programming all Complete and ok Verify all Complete and ok	V voltage to trim 8.0000MHz	0280: 024: 024: 0	

Lock

Click "Lock" to lock the MCU. This operation can prevent the data in the MCU from being read out and protect the MCU programmed data.



The locked MCU will not be executed such as blank check and verify.

HOPE5000			— — »
File Programmi	ing Smart Program	ming Setting Help	
	2 3		
rogram Eras	e Blank Check	Verify Lock Read	
, e		·	
	_		
HT68F002.mtp	\times +		
Droio	at Information	Program Data	
Proje	cumormation	0000+ 0289 0275 0709 1831 0791 0953 0FFD 3311 0000+ 12 31 43 27 17 57 15 71	
MCU	HT68F002	0008: 0337 0175 0317 3591 0571 0953 0179 0357 ^ 0008: 57 13 50 91 73 75 37 10 0010: 0938 0017 0537 1531 0372 0986 0253 0532 0010: 95 17 53 15 71 78 51 70	
Checksum Range	Program+Option+Data	0018: 0192 0CB1 0257 3570 0327 0931 02BB 0735 0018: 95 79 17 57 01 51 75 79	
50 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -		0020: 0537 0109 000F 1079 0307 0537 0935 0095 0028: 0792 1ABB 0957 0357 0931 0035 37F7 0979	
Checksum	78FFH	0030: 0505 0953 0573 0109 0793 0795 3970 0D97 0099- 0379 0457 0570 0357 2109 1209 140 0731	
Verify Code	04D3H	0040: 0110 3099 0517 0417 0617 0471 0A12 0B3B	
-		0048: 051B 0146 0F31 01FF 0F5D 0519 3573 2109 0050: 013A 0747 04A7 07A7 0B4C 074C 0744 0979	
Progra	mming Settings	0058: 0B7B 07BC 0BCF 0957 0795 0097 079F 09B9	
Programmer	a-WriterPro2(6655)	0068: 1056 0153 1551 0CCF 0CB5 132B 0312 0531	
riogrammer	e-wiiterFI02(0055)	0070: 031B 0B1B 0719 0C1B 0715 35B1 0B5B 05BA	
Advanced settings	8SOP-A	0080: 0BA2 0B25 0325 0321 2B53 0920 0573 0793	
-		0088: 1705 3101 1531 0195 3107 0807 0302 1579	
	Output	0098: 1531 01C5 01F5 0325 0551 0185 1525 16C3	
somprete ana ort		0040: 0040 0040 0041 0461 1040 1031 0316 1987	
RC Inm		00B0: 093B 0665 06FB 0B59 06B9 0BA6 06BA 062D	
Complete and ok		0088: 0BCB 0DBD 0BD2 0561 0BDB 0916 2DB6 0B63	
Complete and els	1	00C0: 091B 0B56 0A69 0999 2365 0316 0832 0357	
Varifical		00C8: 1570 0335 0151 0951 0477 37AB 08BB 2477	
Complete and ok		00D8: 2053 0100 2222 2014 2013 0002 1037 0175	
Lockall		00ED: 0777 0777 0777 026B 3566 1002 0ABB 0B14	
Complete and ok		00E8: 2956 3166 31B6 3256 091A 0156 0BBD 0C1B	
Blank all		00F0: 1256 359C 021B 06C6 0516 2591 0103 01B5	
Chip is Locked		00F8: 003B 0661 0060 05B2 3000 0000 0000 0000	

Erase

Click "Erase" to clear the data in the MCU and make a blank MCU. (The OTP type MCUs are not supported in this operation).



Blank Check

After the erase has been completed, click "Blank Check" function to check whether the MCU has been cleared successfully (that is, whether the MCU is empty).



Read

The read function can read back the programming data in the MCU and display it on the software interface.



Since the erase operation has been executed, the MCU programming information at this time is displayed as an empty state.

Chapter 4 Offline Programming Function

By setting the smart programming function, users are allowed to execute the preset programming operations on the MCU when the writer is not connected to the computer. This chapter will introduce how to use the smart programming function to set the writer offline programming function.

Smart Programming Function Configuration

Enter the "Smart Programming" function page, click the button "+" to add a new operation.



There are seven functions as shown in this interface, such as "Erase", "Blank Check", "Program", "Verify", "User Specified Data", "Lock" and "Counter", users are allowed to combine these programming operations freely.

Programming Operations Configuration

Now try to add the operations of "Erase", "Blank Check", "Program", "Verify" and "Lock" in sequence.



To remove a programming operation that has already been set, click the button "-" in front of the operation to delete. In addition, the HOPE5000 also provides a one-click setting function for quick setting, which will automatically configure the operations of program, verify and lock after clicking. To delete all smart programming settings, click "Reset All" to clear all settings.

Set Writer and Auto Programming

After the smart programming setting is completed, click the button "Set Writer" to download all settings to the writer.

le Programmi	ng Smart Programming	Setting Help			
Proje	× +	Operation	Program	Data	Option
MCU Checksum Range	HT68F002 Program+Option+Data	Erase	All	All	All
Checksum Verify Code	78FFH 04D3H	Blank Check			
Progra	mming Settings	Program			All 🗸
Programmer dvanced settings	e-WriterPro2(6655)	Verify			
	Output	Lock	All	All	
Writer Connected The writer is prepare Prepare complete Writer will use 5.0' Writer will use 5.0' (HIRC)	nring V voltage to Programming V voltage to trim 8.0000MHz	+ Add Operation	<u>_</u>	(dm)	

After setting, click the button "Auto", the writer will execute the smart programming operation set by the user.

HOPE5000	Catting Liele			
Q Config Reset All Set Writer	Save Config			
HT68F002.mtp × + Project Information	Operation	Program	Data	Option
MCU HT68F002 Checksum Range Program+Option+Data	Erase	All	All	All
Checksum 78FFH Verify Code 04D3H	Blank Check			
Programming Settings	Program	All	All	All
Programmer e-WriterPro2(6655) Advanced settings 8SOP-A	Verify			
Output	Cock	All 🗸	All	
Writer Connected The writer is preparing Prepare complete! Writer will use 5 SV voltage to Programming Writer will use 5 OV voltage to trim 8.0000MHz (HIRC) Auto Complete and ok	Add Operation			
Version : V1.0.0 DRV : 20230907-0919 FW :	e-WriterPro2 0002			

Offline Programming Usage

For offline programming function which means to operate the writer without connecting it to a PC, it is necessary to complete the smart programming setting on the HOPE5000, then connect to the writer and click "Set Writer". After pressing the red programming key on the writer, users can execute the smart programming operation. Take the e-WriterPro2 as an example.



Advanced Function

For the applications, if user need to execute erase, program or lock certain data blocks on the MCU, this goal can be achieved by the "Partial Erase", "Partial Programming", "Partial Lock" and "Programming User Specified Data" of the smart programming functions.

Partial Erase

The partial erase function is carried out in a page format (the page size of each MCU is not the same). The following is an example of erasing the 0th Page of the Program Memory.

- Step 1: Enter the "Smart Programming" interface, click "Add Operation" to add the Erase function.
- Step 2: For the erase setting, change the Program setting to "Range" and click the rear setting button.

HT68F002.HRp	× +	í.	Operation	Desarra	Data	Outline
Prop	ect information		operation	riogram	Usta	option
Nuu hachum Banas	Propose	•	Erase	Range 兴 🖸	An -	A8 🗸
roscouum sange	Program+Dgtion+Data					******
Chebisum	0804	0	S.			
verity code	t teren		Add Operation			
Progra	amming Settings					
Programmer	e-WrberPro2(6655)					
Programmer Avenced settings	r e-WitterPro2(6655)					
Programmer	e-Write-Pro2(9855) KDP Output					

Step 3: In the "Partial Erase" setting interface, it will display all page settings that can be erased in this MCU. Click "Page 0" and the Program Memory on the left will show the range to be erased in red.



Step 4: Click "OK" to complete the setting, and click "Set Writer" and "Auto" on the Smart Programming interface to erase Page 0 of the Program Memory.

Partial Programming

The partial programming function is carried out in a page format (the page size of each MCU is not the same). Add a programming operation on the Smart Programming interface before setting.



The subsequent setting method is the same as the Partial Erase. Refer to the "Partial Erase" setting in the previous section.

Partial Lock

The Partial Lock function needs to lock several pages at a time (each MCU setting is not the same). Take the Program Memory Page $0 \sim 1$ (2 Pages) to be locked as an example.

Step 1: Add a "Lock" operation on the smart programming interface, change the Program setting to "Range" and click the rear setting button.

Step 2: In the "Partial Lock" setting interface, it will display the MCU partial lock settings. Click the button "0~1" and the Program Memory on the left will show the locked range in red.



Step 3: Click "OK" to complete the setting, and click "Set Writer" and "Auto" on the smart programming interface to execute the lock operation to Program Memory Page 0~1.

User Specified Data

The user specified data function allows users to write specific values at specified positions in the Program Memory and EEPROM. The following will introduce how to write a user specified value in the Program Memory. First add a user specified operation on the smart programming interface, and then change the Program setting to "Use" and click the rear setting button.

ick Config Re	set All Set Writer Auto	Save Config			
Proje	ct Information	Operation	Program	Data	Option
MCU Checksum Bange	HT68F002	e Erase	All	All	
Checksum	78FFH	Program			
Verify Code	04D3H	Verify			All
Programmer	e-WriterPro2(6655)	veniy			
dvanced settings	8SOP-A	User Specified Data	Use 🗸 🔅	Not Use	
	Output				
Writer Connected		+ Add Operation			

The user specified data can be used in two methods:

1. Expression:

To program each MCU by the writer, the user specified value will be increased (or decreased) by N automatically. Assume that users want to program the digital 74565 at the start address F00H in the Program Memory, and then increment it by 1, the setting is shown as follows:

3	8																		×
uick Cc			F	rogra	m					Left	Group: 1	2						ок	
HT68	0000: 0008: 0010:	0289 0 0337 0 0938 0	275 070 175 031 017 053	9 1931 7 3591 7 1571	0791 0571 0372	0953 0953 0BBC	0FFD 0179 0253	3311 0357 0532	^	×	Orde	r P/	ACK	Off	fset	Length	Check Empty	Source	e
	0018: 0020: 0028:	0192 0 0537 0 0792 1	CB1 025 109 000 ABB 095	7 3570 F 1079 7 0351	0327	0931 0537 0035	0288 0935 3757	0735 0095 0979			1	BCD-Byte		F00	н	3 0	Yes 🗸	Expression	
_	0030:	0505 0 0379 0	953 057 967 067	3 0109 0 0757	0793	0795 1209	3970 1419	0D97 0731								Settin	g		
Charle	0040: 0048: 0050:	0110 3 051B 0 013A 0	099 051 146 0F3 747 04A	7 0417 1 01FH 7 07A7	0617 0F5D 0B4C	0471 0519 074C	0A12 3573 0744	0B3B 2109 0979				Increase	$\overline{\mathbf{v}}$	1		N(See	ed)= 74565		
Check	0058:	0B7B 0 0500 0	7BC 0BC 9C0 097	F 0957 0 0690	0795	0097 0155	079F 0721	09B9 0379									14303		
	0068: 0070: 0078:	1056 0 031B 0 0BBA 0	153 155 B1B 071 333 333	1 OCCE 9 OC1E 3 3275	0CB5 0715 1217	132B 35B1 0B4B	0312 0B5B 0423	0531 05BA 1727		Ð	Add S	etting							
	0080:	0BA2 0 1705 3	B25 032	5 0321 1 0195	2B53 3107	0920 0B07	0573	0793 1579											
	0090: : 0090	3753 3 1531 0 0C46 0	899 039 1C5 01F C1C 04C	5 0709 5 0325 1 0460	05B1 17CC	01B5 1C31	053B 1525 0316	16C3 1987											
Advanc	00A8: 00B0:	097A 0 093B 0	0B7 368 665 06F	3 0B3E B 0B59	013B 06B9	01B4 0BA6	0982 06BA	0BC2 062D											
Advanc	0000:	091B 0 1570 0	BB6 0A6	2 0561 9 0999 1 0951	2365 0477	0916 0316 37AB	0832 0888	0863											
_	00D0: 00D8:	2093 0 2BBF 1	1BB 222 537 0BB	2 2B7# 3 0172	0273 0B53	0BB2 0910	1437 0B9A	0179 1B3F											
Write	00E0: 00E8: 00F0:	0777 0 2956 3 1256 3	777 077 166 31B 59C 021	7 026E 6 3256 B 06C6	3566 091A 0516	1002 0156 2591	0ABB 0BBD 0103	0B14 0C1B 01B5											
	00F8: 0100:	003B 0 0000 0	661 006 000 000	0 05B2 0 0000	3000	0000	0000	0000											
	0108: 0110: 0118:	0000 0	000 000	0 0000	0000	0000	0000	0000											
	0120:0128:	0000 0	000 000 000 000	0 0000	0000	0000	0000	0000											

The PACK settings provide four different forms for the programming values. Taking the programming data of 74565(12345H) as an example:

Program ROM Address Form	F00H	F01H	F02H
Binary-Byte	0045	0023	0001
BCD-Byte	0065	0045	0007
Binary-Word	2345	0001	0000
BCD-Word	4565	0007	0000

The PACK type settings are selected by user.

Add another two points:

- i. If the length is not set enough, the part with a length longer than that will be discarded.
- ii. Note that the program does not detect an "N+1" overflow or an "N-1" underflow.
- 2. Preload File:

Each time the writer programs an MCU, the user specified data will jump to the next record in the configuration file. Assume that users have three data records in the SN.txt file.

12345H

111110000B

47219

Then according to the setting of SN.txt file to program the serial number from the start address F00H of the Program Memory. The source setting is changed to "Preload File", and click "Open File" to select the SN.txt position.



After the file has been opened successfully, the following preview window will be displayed:

	ew		×
1:	012345h		
2:	0001F0h		
3:	00B873h		
St	tart Index	1	ОК

Click the button "OK" to complete the setting of loading values from the file. In addition, the file format also supports ".BIN" - binary file. For example, if the data in a .BIN file is: 12 34 56 78 9A BC CD and the specified data length is 3 bytes. Then the 1st record of data is 563412H, the 2nd record of data is BC9A78H, the 3rd record of data is 0000CDH (fill in 0 for the insufficient part of 3 bytes).

After the user specified data setting is completed, click "OK" to complete the setting, and then click "Set Writer" and "Auto" on the smart programming interface to program the user specified data into the Program Memory.

Counter

The counter function allows users to set the maximum times of the offline programming. When the programming operation limit is reached, it is necessary to re-download the programming data, otherwise it will not be able to continue the offline programming operation.

The counter function is set as follows:

Step 1: Enter the "Smart Programming" interface, click "Add Operation" to add the counter function.

Step 2: Modify the counter (default to 100, the minimum programming times is 1).



There are two points to note when using the counter function. First, this function should be configured with the programming function, and should not be used independently. Second, it needs to be used with a writer that supports the counter function (e.g. e-WriterPro2).

After the counter function setting is completed, click the "Set Writer" on the smart programming interface to complete the counter function setting.

Chapter 5 HOPE5000 Supported Writer

Currently, the HOPE5000 supports the writers of e-WriterPro, e-WriterPro2 and Gang-

Writer00-8. The hardware functions are compared as follows.

Writer Item	e-WriterPro	e-WriterPro2	Gang-Writer00-8
Multiple file function	Not supported	Supported (30)	Not supported
Supported MCU types	MTP & OTP MCU	MTP & OTP MCU	Only support MTP MCU
Supported programming methods	e-Socket & ICP ((e-CON12A) and ICP(e-CON12C))	e-Socket & ICP (only have a ICP, the slot is on top of CN2)	Only support ICP
The number of MCUs that can be programmed at one time	1	1	A module board can be programmed a maximum of 4 MCUs, and a base board can be connected to a maximum of 4 modules, therefore a maximum of 16 MCUs can be programmed at one time
Online – auto programming function	Supported	Supported	Not supported
Buzzer volume	Set by software	Set by LCD with ADJ and Set keys	The base board is set by LCD with ADJ and Set keys
LCD brightness	Cannot be adjusted	Set by LCD with ADJ and Set keys	The base board is set by LCD with ADJ and Set keys
The language of the message	English only	Support English, Simplified Chinese and Traditional Chinese, set by LCD with ADJ and SET keys	Support English, Simplified Chinese and Traditional Chinese, the base board is set by LCD with ADJ and Set keys

Chapter 6 e-WriterPro Introduction

Introduction

The e-WriterPro is a writer designed for programming the Holtek all series of MCUs. The writer can be used to write program or data to all the OTP/Flash MCUs designed by Holtek. The writer's special features are in its small, light and handy palm size outline. Installation is simple and is easy to use.

This writer supports an online programming mode that needs to connect with a PC and an offline programming mode that does not require a PC connection. In the offline mode, after downloading the programming data to the writer using the HOPE5000 on a PC, the writer can be operated without a PC connection. In the online mode, a USB cable is required to connect to the PC and the writer after which the writer can be operated using the HOPE5000.

As Holtek provides different MCU package types, different programming sockets, i.g. e-Socket, are also supplied for programming different MCU package types.

Installation

System Requirement

To use the writer the following device and system are required:

• Power: Use the power adapter included in the product box in Offline Mode, as shown in the table below.

Writer Connector	e-WriterPro	Remark
USB Connector	Supported	Using a power adapter with 5V output voltage and at least 500mA output current. It is suggested to use the power adapter supplied by Holtek.

- Correct programming socket
- PC with a USB port for online mode
- HOPE5000 software for online mode

Note: Programming sockets are consumables, it is suggested to maintain and update them regularly.

Package Contents



Item	Content Name	Count
1	e-WriterPro	1
2	USB Cable	1
3	5V USB Power Adapter	1
4	1.5m Ground Wire	1
5	Flat-Cable double-head 2×6 Pin Connector (25cm)	1
6	Screws (with G15 ground terminal)	1
7	Important Information Card	1

Hardware Installation

Connect the e-WriterPro to the PC USB port using the USB cable.



Hardware Configuration

The name of each writer hardware section and detail explanation are shown in the following figure.



Item	Explanation
Programming Adapter	Programming Pins
Connector	

ОК	Normal Status LED
Ready/Busy	Ready or Busy Status LED
Fail	Fail Status LED
Programming Key	Offline Mode Programming Key
USB Connector	Connect to PC via USB cable (online mode) or Connect to 5V power adapter (offline mode)
LCD	Displays information and to set the writer functions
Function Key	Switch LED pages and to set the writer functions
CN3 Connector	External control signal interface, refer to Appendix A
Ground Connector	Connector for ground wire

Chapter 7 e-WriterPro2 Introduction

Introduction

The e-WriterPro2 is a writer designed for programming the Holtek all series of MCUs. The writer can be used to write program or data to all the OTP/Flash MCUs designed by Holtek. The writer's special features are in its small, light and handy palm size outline. Installation is simple and is easy to use.

This writer supports an online programming mode that needs to connect with a PC and an offline programming mode that does not require a PC connection. In the offline mode, after downloading the programming data to the writer using the HOPE5000 on a PC, the writer can be operated without a PC connection. In the online mode, a USB cable is required to connect to the PC and the writer after which the writer can be operated using the HOPE5000.

As Holtek provides different MCU package types, different programming sockets, i.g. e-Socket, are also supplied for programming different MCU package types.

Installation

System Requirement

To use the writer the following device and system are required:

- Power: Use the power adapter included in the product box in offline mode
- Correct programming socket
- PC with a USB port for online mode
- HOPE5000 software for online mode

Note: Programming sockets are consumables, it is suggested to maintain and update them regularly.
Package Contents



Item	Content Name	Count
1	e-WriterPro2	1
2	USB 2.0 TYPE-A to Type-C 1.8M USB Cable	1
3	5V USB Power Adapter	1
4	ICP lines 2×6 Pin Connector (30cm)	1

Hardware Installation

Connect the e-WriterPro2 to the PC USB port using the USB cable.



Hardware Configuration

The name of each writer hardware section is shown in the following figure (e-WriterPro2). The following table explains each item.



Item	Explanation
Programming	Programming Pins
Adapter	
Connector	
OK	Normal Status LED
Ready/Busy	Ready or Busy Status LED
Fail	Fail Status LED
Programming	Offline Mode Programming Key
Key	
USB	Connect to PC via USB cable (online mode) or
Connector	Connect to 5V power adapter (offline mode)
LCD	Displays information and to set the writer functions

Function Key	Switch LED pages and to set the writer functions
CN3 Connector	External control signal interface, refer to Appendix A
Ground Connector	Connector for ground wire

LCD Display Introduction

The LCD display information has a total of 8 pages, including 6 pages of programming file information and 2 pages of setting information. Refer to the following description for details.



Display Page	Description
Programming file information page	Display the programming file information, including MCU type, package, file name and checksum etc.
Programming file selection setting page	Used to select the file to be programmed. The icon "02" indicates the current selected programming file number. Users can select the file by clicking the "Set" and "Adj." keys.
Writer setting page	Used to set the LCD brightness, the buzzer sound size and the display language selection.

First Page

The display information is shown in the following figure.



Second Page

The display information is shown in the following figure.



Offline programming setting operation

The status of Writer Trim IRC, including HIRC, MIRC and LIRC, as well as the size of each IRC and the Trim voltage. It is not displayed when a Writer Trim is not required.

Third Page

The display information is shown in the following figure.

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Fourth Page

The display information is shown in the following figure.



Fifth Page

The display information is shown in the following figure.



Sixth Page

The display information is shown in the following figure. This page is used to display the life and counter of the programming adapter.



Programming File Selection Setting Page



The display information is shown in the following figure.

Click the button "Set" to enter the setting mode, then click the button "Adj." and move down to select the programming file. Clicking the button "Adj." moves to which programming file, the font color of the MCU type and file name of the programming file will be changed to Turkish blue. The files are selected in the order from 00 to 29. The specific setting is shown as follows.



When clicking the "Adj." key moves to the file to be selected, press the "Set" key to select the file. Switch to the first page on the LCD, and the information on pages 1 to 6 is changed to the information about the newly selected file.



Writer Setting Page

The display information is shown in the following figure.



Press the "Set" key to enter the setting page. After the selection is completed, press the "Adj." key to switch to the next item, as shown in the following table.

Item	Description	Note
Screen brightness setting	There are five levels, which can be selected by the "Set" key	
Buzzer volume setting	There are four levels, which can be selected by the "Set" key	
Language setting	There are three options, English, Simplified Chinese and Traditional Chinese, which can be selected by the "Set" key	
Exit	Press the "Set" key and the page returns to the first page	

Chapter 8 Gang-Writer00-8 Introduce

The Gang-Writer00-8 main components are the G-ICPM00040 and G-ICPB00540. The G-ICPM00040 which is also known as the programming module, includes 4 programming units, namely ICP1~ICP4. This is used together with the G-ICPB00540 which is the Base Board. Together they can implement a powerful means of programming 8 Holtek 8-bit Flash MCUs in parallel to meet the high efficiency requirements for volume production.

Main Features

- Supports Holtek 8-bit Flash MCU programming
- Uses the HOPE5000 software
- Programming files are downloaded to the programing module
- Supports programming module firmware online one-click quick update
- Compact size (166×75×23mm) for usage convenience with fixture
- Supports up to 8 sites parallel programming
- 2/4/6/8 sites parallel programming available
- Supports module extension to achieve up to 12/16 sites parallel programming
- Multiple programming status indicator interfaces (LED + LCM + BUZZER + Machine)
- Supports offline programming mode

Hardware Introduction







G-ICPM00040 - Programming Module



G-ICPB00540 - Base Board

Programming Module Independent Operation

Online Programming Mode

In this mode, only the ICP1 unit works. Connect the programming module to a PC using a USB cable and open the software. The ICP1-RUN LED will be illuminated indicating that it is in the online programming mode, as shown in the following figure. For online programming specific operations together with the HOPE5000, refer to the corresponding descriptions below. Note that the online programming does not support the smart programming function.



Programming Module

Offline Programming Mode

• Offline Programming Data Download

Connect the programming module to a PC via a USB cable. After the module has successfully connected, open the desired file and download it, as shown in the following Figure. Refer to the description below for the specific software operation procedures. When the offline data download has successfully completed, the STATUS LED will remain on.



Offline Programming Data Download – Single Module

• Offline Programming

After a 5V/3A power is connected, the STATUS LED will remain on. At this time, the hardware will verify the offline data first, and the STATUS will flash once after the verification is completed (during the hardware verifies the offline data, the START key is disabled). After the offline data verification is completed, pressing the START key to implement programming. The programming states can be observed by the corresponding LEDs.



Offline Programming – Single Module

• Programming Mode Selection

Either 2 or 4 site parallel programming can be selected using the OPTION S/W settings according to the actual requirements, as shown in the following Figure and Table. With regard to 6 or 8 site parallel programming description, refer to <u>Programming Mode Selection</u>.



OPTION S/W

Switch1	Switch2	Site Settings
OFF	OFF	Enable the ICP1~ICP4 programming – factory default
ON	OFF	Enable the ICP1 and ICP2 programming
OFF	ON	Enable the ICP3 and ICP4 programming
ON	ON	Enable the ICP1 and ICP3 programming

OPTION S/W Site Settings

Using the Programming Module together with the Base

Board

In the offline programming mode, using the programming module together with the base board can implement 2/4/6/8 sites parallel programming in the standard mode or 12/16 site parallel programming in the extension mode. To implement programming module offline data download, connect the programming module to the PC via a USB cable directly. It is not necessary to remove it from the base board. When the programming module is used together with the base board, the START key on the programming module is invalid.

Base Board F/W Update

The hardware connection is shown in the following figure. Using HOPE5000 to implement F/W update. Refer to <u>Chapter 2 Function Description</u> for details.



Base Board Connected to the PC via a USB Cable

Offline Programming Mode

• Offline Programming Data Download

The hardware connection is shown in the following figure and the specific operation steps are the same as <u>Offline Programming Mode – Offline Programming Data</u> <u>Download</u>.



Offline Programming Data Download - Module & Base Board

• Offline Programming

After the offline programming data has been downloaded successfully, remove the USB cable from the PC. Connect a 5V/3A power to the programming module after which then the STATUS indicator of each programming module will be on. At this time, the hardware will verify the offline data first, and the STATUS will flash once after the verification is completed (during the hardware verifies the offline data, the START key is disabled). After the offline data verification is completed, pressing the START key to start programming after which the programming results can be obtained by observing the LED indicator on the corresponding programming module.



Offline Programming – Module & Base Board

Programming Mode Selection

Standard Mode

2, 4, 6 or 8 site parallel programming can be selected by the OPTION S/W settings, as shown in the following figure.



Programming Mode Selection – Standard Mode

Extension Mode

In offline programming mode, if the base board works together with 4 programming modules, up to 16 Holtek 8-bit Flash MCUs or 32-Bit MCUs can be programmed in parallel, as shown in the following figure.





Programming Mode Selection – Extension Mode

Base Board LCM Display Introduction

The LCM can display 5 pages of information, including 4 pages of programming file information and 1 page of setting page information, as shown in the following figure.

First Page

The display information is shown in the following figure.



Second Page

The display information is shown in the following figure.



Third Page



The display information is shown in the following figure.

Fourth Page

The display information is shown in the following figure.



Press the "ADJ" key to enter the setting page and press the "ADJ" key to select. After the selection is finished, press the "SET" key to switch to the next item, as shown in the following table.

Item	Description	Note
Screen brightness setting	There are five levels, which can be selected	
	by the "Set" key	
Buzzer volume setting	There are four levels, which can be selected	
	by the "Set" key	
Language setting	There are three options, English, Simplified	

	Chinese and Traditional Chinese, which can	
	be selected by the "Set" key	
Exit	Press the "Set" key and the page returns to	
	the first page	

Fifth Page

The display information is shown in the following figure.



Considerations

- Regarding the power supply (5V/3A) and the programming lines, it is strongly recommended to use the original accessories included in the product.
- Each separate programming channel (ICPx) provides a current of only 150mA.
- The online programming mode does not support smart programming, namely auto programming. As shown in the following Figure, the auto programming button is disabled with a grey colour.

MCU HT661/2530A Option MCU HT661/2530A MCU HT661/2530A Checksum S100-H Verify Code 9703H Programming Settings Verify Programming (CP	Proie	et Information		Operation	Program	Data	Ontion
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Smart Programming Mode Setting

Chapter 9 Writer Usage

Preparation before Programming

Before programming the MCU, use the development tools (HT-IDE3000) to generate an MCU programming file (.OTP/.MTP/.PND...etc). Then, connect the writer to the PC and execute the HOPE5000 software. Follow the steps below to execute MCU programming and complete the programming process.

Case. 1 – Using External Digital Signals to Control e-

WriterPro/e-WriterPro2 Programming

The following describes two methods of using external digital signals to control the e-WriterPro/e-WriterPro2 programming. These two methods are connecting a button to the e-WriterPro/e-WriterPro2 and using digital signal to control e-WriterPro/e-WriterPro2 programming". These two methods are the same as pushing the red programming key on the e-WriterPro/e-WriterPro2, however the second method can also obtain the programming result.

Method 1 – Connect an external button

Connect a button to the Pin2/Pin4 of the e-WriterPro/e-WriterPro2 CN3 connector directly, as shown in the following figure. Diagram:



e-WriterPro/e-WriterPro2 Side View



Method 2 - Digital Signal Control

The operation for using digital signals to control the e-WriterPro/e-WriterPro2 programming is: connect using the method as shown in the following figure and input the control signal timing.

1) Hardware Connection Diagram



- ※ If the programming result is required, refer to Appendix A "e-WriterPro/e-WriterPro2 CN3 Pin Definitions" to connect to the corresponding BIN1~BIN7 pins. Then follow Step 4 of the following "Usage & Control Signal Timing" section to obtain the programming result.
- 2) Usage & Control Signal Timing

Control Signal Timing diagram



T1: e-WriterPro/e-WriterPro2 "External Trigger" low pulse, 10ms < T1 < 500ms T2: e-WriterPro/e-WriterPro2 "End Of Program" low pulse, 12ms < T2 < 100ms

The usage is shown as follows:

- 1) Input a low pulse on the EXTG pin to start programming as shown by T1 in above figure. This operation is the same as pushing the red programming key on the e-WriterPro/e-WriterPro2.
- 2) Then the EOP pin can be polled continuously. If a low pulse is detected, as shown by T2 in above figure, this means that the programming is finished.
- 3) During the EOP low pulse as shown by T2 in above figure, check the status of BIN1~BIN7 to obtain the programming result. For example, if BIN1 is low during T2, this means Program OK. However if BIN4 is low during T2, this means Program Fail because the device is not blank.

Case. 2 – Using External Digital Signals to Control Gang-

Writer00-8 Programming

• External Key Interface



External Key Interface Explanatory Chart

PIN1: GND	PIN2: The external key can enable the SLOT1~SLOT4
	programming at the same time.

PIN3: GND	PIN4: The external key can enable the SLOT1 and SLOT3
	programming at the same time.
PIN5: GND	PIN6: The external key can enable the SLOT2 and SLOT4
	programming at the same time.

Note: The PIN4 or PIN6 can be used to enable different SLOT programming modules and program different files at the same time.

External Key Interface Pins

• Control Machine Interface



Control Machine Interface Explanatory Chart

Item	Pin	Functional Description	Signal Direction
1	TVDD	External VDD signal	÷
2	OUT1	BUSY: Programming busy signal	\rightarrow
3	OUT2	PASS: Programming successful signal	<i>></i>
4	OUT3	FAIL: Programming failed signal	÷
5	OUT4	NC	÷
6	IN1	START: Programming trigger signal	÷
7	IN2	NC	÷
8	TGND	External GND signal	÷

Note: The above interface pins are electrically isolated using opticalcoupler components. The TVDD ranges from 3.3V to 7V.

Control Machine Interface Pins

- 1. When the device is powered on and no executed programming, the START is high, and the BUSY, PASS, and FAIL are high.
- The START pin sends a low level of Tstart length to trigger the program, 50ms<=Tstart<=80ms.
- 3、When the program is started, the BUSY pin changes to low.
- 4、When the BUSY pin is high, PASS or FAIL changes to low, the program process is end.
 - When the BUSY pin is set to high and PASS is set to low, the program is successful.
 - When the BUSY pin is set to high and FAIL is set to low, the program is failed.



Successful Programming Waveform



Failed Programming Waveform

Case. 3 – Using the e-WriterPro In-circuit Programing

Function

The following steps show how to use the e-WriterPro to implement in-circuit programming – ICP.

• Step 1

The Dupont thread is used to connect the target board with the connector CN1 on the e-WriterPro. For more information about the connection method, refer to the Appendix B "e-WriterPro ICP Pin Definitions and ICP Considerations". • Step 2

Execute the HOPE5000 and open the programming file (.OTP/.MTP/.PND). Then execute "Program", "Erase", "Check Blank", "Verify" operations, etc.

• Step 3

Before downloading, the window as shown in the following figure will appear. Then the ICP(e-CON12A) or ICP(e-CON12C) package type should be selected.

Regarding the package selection, refer to the Appendix B - e-WriterPro ICP Pin Definitions and ICP Considerations. If the required package type is not shown, upgrade the HOPE5000 to the latest version.



• Step 4

After the download has finished, the "Erase", "Program" and "Verify" operations, etc., can be executed.

Case. 4 – Using the e-WriterPro2 In-circuit Programing

Function

The following steps show how to use the e-WriterPro2 to implement in-circuit programming – ICP.

• Step 1

Use the ICP cable as supplied with the e-WriterPro2 and <u>shown in Figure in the</u> <u>package contents of Chapter 7</u>. It is used to connect the target board with the connector CN2 on the e-WriterPro2. For more information about the connection method, refer to the Appendix E "e-WriterPro2 ICP Pin Definitions and ICP Considerations".

• Step 2

Execute the HOPE5000 and open the programming file (.MTP/.OTP). Then execute "Program", "Erase", "Check Blank", "Verify" operations, etc.

• Step 3

Before downloading, the window as shown in the following figure will appear. Then the ICP package type should be selected.

Regarding the package selection, refer to the Appendix E - e-WriterPro2 ICP Pin Definitions and ICP Considerations. If the required package type is not shown, upgrade the HOPE5000 to the latest version.



• Step 4

After the download has finished, the "Erase", "Program" and "Verify" operations, etc., can be executed.

Appendix

Appendix A e-WriterPro/e-WriterPro2 CN3 Pin Definitions

CN3	15 16	13 14	11 12	9 10	7	5 6	3 4	1 2	<u> </u>	USB	
	10							8			

CN3									
Pin	Name	Definition	Direction						
1	EXPWI/ USBPWO	External Power Input/ USB Power Output	_						
2	GND	Ground							
3	EOP	End Of Program	e-WriterPro/e-WriterPro2→						
4	EXTG	External Trigger	e-WriterPro/e-WriterPro2←						
5	BIN2	IC is locked	e-WriterPro/e-WriterPro2→						
6	BIN1	Check ID/Blank Check/Program/Verify/Erase OK	e-WriterPro/e-WriterPro2→						
7	BIN7	Lock IC failed	e-WriterPro/e-WriterPro2→						
8		N/A							
9	BIN4	IC is not blank	e-WriterPro/e-WriterPro2→						
10	BIN3	Check ID failed (for OTP MCUs)/Erase failed (for Flash MCUs)	e-WriterPro/e-WriterPro2→						
11	BIN6	Verify failed	e-WriterPro/e-WriterPro2→						
12	BIN5	Program failed	e-WriterPro/e-WriterPro2→						
13		N/A							
14	SDA	I ² C SDA (Reserved)	e-WriterPro/e-WriterPro2≒						
15		N/A							
16	SCL	I ² C SCL (Reserved)	e-WriterPro/e-WriterPro2→						

Appendix B e-WriterPro ICP Pin Definitions and ICP

Considerations

1. e-WriterPro ICP Pin Definitions

ICP-2A

ICP-2B

ICP-2C

The following table lists all kinds of ICP packages and the corresponding pin definitions. The following two steps introduce how to obtain the required pin definition.

Step 1. Obtain the ICP type for the MCU being used:

(Refer to the Holtek website: Home \rightarrow Products \rightarrow General Purpose 8-Bit MCU \rightarrow Find the corresponding MCU according to the different categories of MCUs \rightarrow Development Tools)

HT66F302/H	T66F303	20M						
() inte	-	Discontinis	😥 Docement				School Lines	
🔠 Development 1	Toots							
Product Number	15.6 Type	ICE Part No	Programming Timing	ICP Type		KPCK	OCDIOA	OCDIEK
HT00F303 2	a Line	a-Laik - HT90V303	Flash Type-It	10430	4	1912	(1940)	3942
				1202	10.1			

	1 0 1	J 1
ICP Type	ICP Package on HOPE5000	ICP Pin Definition Link
ICP-1A	ICP(e-CON12B)	ICP-1A
ICP-1B	ICP(e-CON12B)	<u>ICP-1B</u>
ICP-1C	ICP(e-CON12B)	ICP-1C
ICP-1D	ICP(e-CON12B)	ICP-1D
ICP-1E	ICP(e-CON12B)	<u>ICP-1E</u>
ICP-1F	ICP (e-CON12B)	ICP-1F

ICP(e-CON12C)

ICP(e-CON12C)

ICP(e-CON12C)

ICP-2A

ICP-2B

ICP-2C

Step 2. Obtain the ICP package and pin definitions of each ICP type from this table.

1) ICP-1A



2) ICP-1B



3) ICP-1C





5) ICP-1E



7) ICP-2A



9 7

531

CN1

6 4 2

VSS

VSS

1.Close to Target Board or PHM 2.All Capacitor 220pF

Target board

or Programming Handler Machine

9) ICP-2C



% The actual pin location of the ICPDA and ICPCK pins in different MCUs may be different. Refer to the related chapter of the corresponding MCU datasheet.

2. e-WriterPro ICP Programming Considerations



Appendix C e-WriterPro/e-WriterPro2 LED Status

Description

The writer supplies three LEDs to represent the programming results by LED light status.

The status of each LED is: ON: LED is turned on OFF: LED is turned off Fast Flash: LED flashes for each 0.2s Middle Flash: LED flashes for each 0.5s Slow Flash: LED flashes for each 0.8s

The following table lists the definitions of various flashing states of each LED light

ļ	1	g	h	t.	

Blue LED	Yellow LED	Red LED	Description								
(OK)	(Ready/Busy)	(Fail)	Description								
During Writer Power On											
ON	ON ON		Check the writer when the writer								
			powers on.								
OFF	OFF	Fast Flash	The writer is failure.								
OFF	Slow Flash	OFF	The writer is OK.								
During Norma	l Operation										
OFF	OFF	Fast Flash	The writer is failure.								
Middle Flash	OFF	OFF	The programming operation is								
			being executed (Busy).								
Slow Flash	OFF	OFF	Operation is OK or the writer is								
			standby.								
OFF	OFF	Fast Flash	Operation has failed.								
Appendix D Writer Messages

Most errors occurred on the writer result from the incorrect operation of the hardware. In the first instance take note of the following points:

- Check that the writer is properly connected connect to the PC for the online mode or to a power adapter for the offline mode.
- Check that the programming adapter type is correct.
- Check that the IC is properly located in the programming adapter and the bar is pulled down and the IC type is correct.
- Try a different IC to check if the problem still occurs.
- For the problem still occurs, reboot the PC, power on the writer and try again.

The following are the writer error messages and their explanations:

- Chip ID is Mismatched
 - → The IC type put on the writer is different from that in the opened file. Ensure that the IC put on the writer is correct.
- Chip is not Blank
 - \rightarrow The IC has been programmed.
- Program Error
 - → Error occurred during programming.
- Verify Error
 - \rightarrow The data in the IC is different from the data in the writer.
- Lock IC Error
 - \rightarrow Error occurred when locking the IC.
- Read Error
 - \rightarrow Error occurred when reading the IC.
- Writer User Data Error
 - → Examination of the programming data failed when the writer powers on. Download the programming data again.
- Smart Programming has not been set yet
 - → No auto programming operations have been set therefore no offline programming is possible. Enter the Smart Programming Setting window to set auto programming operations.
- Erase Error
 - \rightarrow Error occurred when erasing the IC.
- Download to Writer Error
 - \rightarrow Error occurred when downloading the programming file from the PC to

the writer.

• Upload to PC Error

 \rightarrow Error occurred when uploading the programming file from the writer to the PC.

- Polling Code Data Exceeded
 - \rightarrow The polling code data has exceeded. Set the polling code data again.
- Program Error (Trim HIRC Fail)

→ The HIRC trim error occurred during programming. Check whether the programming pins ICPCK and ICPDA have connected a capacitor larger than 220pF or a large load component and check whether the VDD power (5V or 3V) is stable.

• Writer Flash Timeout

 \rightarrow The writer flash does not respond during downloading. Download the data again. If the problem occurs again, contact an agent for further help.

• Writer F/W is too old

→ The F/W version of the writer is too old to use with this version of the HOPE5000. Contact with an agent to update the F/W.

• Chip is Locked

→ The IC is locked. No programming operation can be executed except for "Erase".

• Test Flash Error

 \rightarrow A writer hardware error occurred during downloading. Download the data again. If the problem occurs again, contact an agent for further help.

• The address in the IC where the user specified data to be written is not empty

 \rightarrow Check if the IC is empty or if the user specified data setting is correct.

• Enter Programming Mode Error

 \rightarrow Error occurred when entering the programming mode. Check if the IC is correct.

• Data Checksum Error

→ Data check error occurred when uploading or downloading. Download the data again.

• Writer System Data Error

→ Examination of the system data failed when the writer powers on. Download the programming data again.

• Hardware (Flash) Error

 \rightarrow Examination of the writer hardware failed when powers on. Contact an agent or Holtek for further help.

• Hardware (Power) Error

 \rightarrow Hardware error occurred during programming. Check if the IC and the programming adapter are correct and properly placed. If the problem occurs again, contact an agent or Holtek for further help.

• Power Error! Please Re-power on the Writer

 \rightarrow Error occurred on the writer power. Power on the writer and try again.

- Timeout
 - \rightarrow Writer has timed out, power on the writer again.
- Writer is Busy
 - \rightarrow Writer is busy, power on the writer again.

Appendix E e-WriterPro2 ICP Pin Definitions

e-WriterPro2 ICP pin definitions:



Appendix F Gang-Writer00-8 LED Status Description

LED Indicator	Power On Status	Programming Process Status	Programming Complete Status						
Online Programming									
STATUS	On	Off	On (programming successful)						
			Off (programming failed)						
ICP1-RUN	On (ICP1 connection is successful)	Flash (mode1)	On						
	failed)								
ICP1-OK/FAIL	Off	Off	Off (programming successful)						
			FAIL LED flash						
			(mode4: Programming failed)						
Offline Program	ming								
STATUS	On (the programming operation can be implemented after flashing once)	Off	On (programming successful)						
	Flash (mode2) (offline programming data error) Flash (mode3) (power error)	-	Off (programming failed)						
ICPx-RUN	Off	Flash (mode1)	Off						
x=1,2,3,4									
ICPx-OK/FAIL x=1,2,3,4	Off	Off	OK LED will remain on 3s (programming successful)						
			FAIL LED flash (mode3: Power error) (mode4: Programming failed)						

LED Status Definition

Note: The STATUS indicator is off during the offline programming download process and is on after the download has completed successfully.

• LED Flash Status Definition:



Appendix G Gang-Writer00-8 Module Board Interface Pin

Introduce

• 20PIN(5PIN × 4 ICP) PHB Connector



20PIN(5PIN \times 4 ICP) PHB Connector

1	m co	*6	55 55			-	M. C.		3
VDD1	ICPDA1	ICPCK1	RST1	GND1	GND3	RST3	ICPCK3	ICPDA3	VDD3
VDD2	ICPDA2	ICPCK2	RST2	GND2	GND4	RST4	ICPCK4	ICPDA4	VDD4
2									4

20PIN PHB Connector (8-Bit Flash MCU Program)

									3
VDD1	SWDI01	SWCLK1	RST1	GND1	GND3	RST3	SWCLK3	SWDIO3	VDD3
VDD2	SWDIO2	SWCLK2	RST2	GND2	GND4	RST4	SWCLK4	SWDIO4	VDD4
2									4

20PIN PHB Connector (32-Bit MCU Program)



* Note: It must be connected to the VDD or other power supply according to application requirements.

20PIN (5PIN×4ICP) PHB Connector & Holtek MCU ICP Connection