iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

Secure Starter Kit User Manual V2.2

No. : TDUMC)2- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2
		Content	
1. INTRO	DUCTION TO	D STARTERKIT	
1.1 H	ARDWARE APPE		
1.2 BL	OCK DIAGRAM		
2. START	ERKIT SOFTV	VARE	
2.1 Sc	OFTWARE INSTA	LLER	
2.2 St		WARE UPDATE	
2.2.1	Updating F	Firmware via StarterKit Launcher	
2.2.2		mware via StarterKit GUI	
2.2.3	Update Fir	mware via Batch	13
2.3 Sc	OFTWARE REMO	0VAL	
2.4 Sc	OFTWARE START	۲UP	10
2.5 St	ARTERKIT LAUI	NCHER	10
		IENT	
		Q7515	
4.1 St		ware Function Description (SQ7101/SQ7103/S	-
4.1.1		ntroduction	
4.1.2		Main Screen	
4.1.3	-		
4.1.4		evice	
		SQ719X	
5.1.1		ntroduction	
5.1.2		nitialization	
5.1.3		Main Screen	
		WARE FUNCTION DESCRIPTION (HQS600x)	
6.1.1		ntroduction	
6.1.2			
		ARE SETTINGS PRECAUTIONS FOR PROTOTYPI	
LHANGE	113 I OKY		7

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

1. Introduction to StarterKit

1.1 Hardware Appearance

The Secure Starter Kit is powered by the USB port. Plug the Starter Kit into the USB port and turn the PWR switch to the ON position. When the connection to the computer is successful, the power indicator light will be on (green light). After the software starts, it will scan the currently connected IC devices.



Figure 1 iMQ Secure Starter Kit appearance (with Socket version)

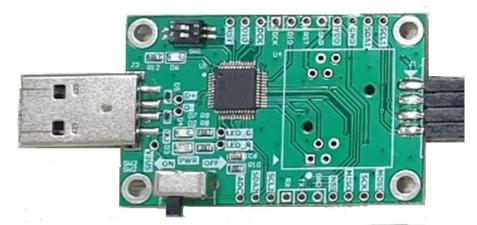


Figure 2 iMQ Secure Starter Kit appearance (no Socket version, used with EVB, for SQ75 series)

Note: Developed for SQ75 series. Please refer to the hardware setting precautions Appendix A.

If developing the IC placed on the Socket, the PWR power switch should be switch to the OFF position before replacing the IC. After the IC is replace, turn the PWR power switch to the ON position again to avoid IC failure caused by live wire operation.

Page: 3/77

i	MQ Technology Inc.			
I	No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2	

The IC replacement process placed in the socket is as follows

- Turn the PWR power switch to the OFF position to turn off the power. 1.
- 2. Replace the next IC.
- Turn the PWR power switch to the ON position to turn on the power. 3.

1.2 Block Diagram

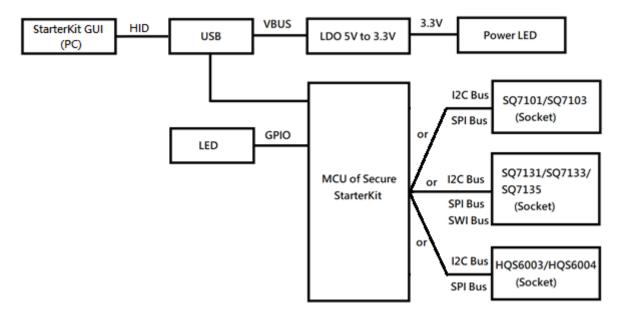
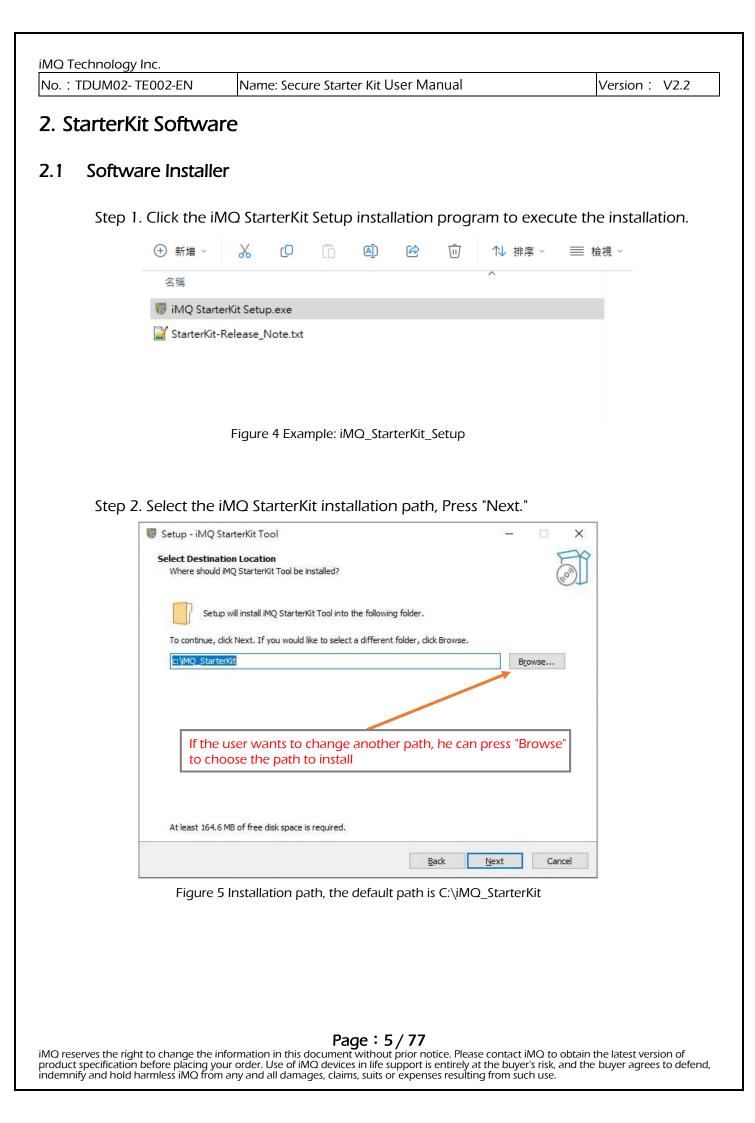


Figure 3 iMO Starter Kit Block Diagram



iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

Step 3. After ticking Create a desktop shortcut, Press "Next."

Setup - iMQ StarterKit Tool	55 <u>-</u>	-	×
Select Additional Tasks			F
Which additional tasks should be performed?			(10m)
Select the additional tasks you would like Setup to perform while installing Next.	iMQ StarterKit Too	l <mark>, t</mark> hen <mark>d</mark> ick	
Additional shortcuts:			
Create a desktop shortcut			

Figure 6 Checkbox to create a desktop shortcut

Step 4. This page will reconfirm the installation path and whether to create a shortcut icon. If there is no problem, press "Install" to install.

🐻 Setup - iMQ StarterKit Tool	53 <u>—</u>		×
Ready to Install Setup is now ready to begin installing iMQ StarterKit Tool on your computer.			- Coo
Click Install to continue with the installation, or click Back if you want to review or char Destination location: c: VMQ_StarterKit Additional tasks: Additional shortcuts: Create a desktop shortcut	nge any set	tings.	^
< Back	Install	>	ancel

Figure 7 Re-confirm the installation data

Step 5. This page is a reminder to uninstall original installation.

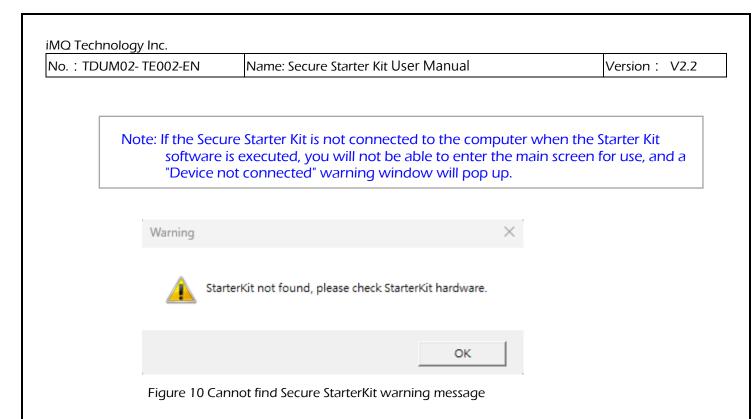
🐻 Setup - iMQ StarterKit	_		×
Installing Please wait while Setup installs iMQ StarterKit on your computer.			(IIO)
Confirmation		×	
Uninstall the previous version at path c: \iMQ\StarterKit Yes No			
		Ca	ancel

Figure 8 Uninstall confirmation

Step 6. Press "Finish" to complete the installation.

🐻 Setup - iMQ StarterKit Tool	- D X
	Completing the iMQ StarterKit Tool Setup Wizard
	Setup has finished installing iMQ StarterKit Tool on your computer. The application may be launched by selecting the installed shortcuts.
	Click Finish to exit Setup.
FR	aunch iMQ StarterKit Tool
(,01)	
	to start the Starter Kit the installation is complete, e to untick it.
	Einish

Figure 9 Checkbox to launch iMQ StarterKit Tool



2.2 StarterKit Firmware Update

Updates to StarterKit FW are not always necessary. Only needs to be updated when the FW version changes (Updated information will be described in the release note).

Before installation, you must connect your PC to the StarterKit using a USB cable and power on the StarterKit.

There are three ways to update StarterKit FW:

2.2.1 Updating Firmware via StarterKit Launcher

1. If the firmware version detected by StarterKit Launcher is newer than the firmwareversion detected in StarterKit, a message box will pop up to confirm whether the user wants to update StarterKit FW.

	2
The newest version V1.2(2	0240412) is newer than
the StarterKit version V1.1(20240219) detected
It is recommended to updat	te.
Don't show this	message again
Update	Cancel
Update	Cancel

Figure 11 StarterKit Launcher FW update confirmation message box

2. There are two options

a) Press "Update" button to update StarterKit FW.

ST-MCU FW Update Progress(FW Ver.:V1.2(20240412))	×

Figure 12 StarterKit Launcher FW update progress bar

b) Press "Cancel" button to skip FW update.

Page: 9/77

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

3. Check the CheckBox "Don't show this message agin", and it will disable the StarterKit launcher from checking the StarterKit firmware version on subsequent launches. After that, the firmware update confirmation message box will not pop up until the next time you install or import a newer version of firmware.

2.2.2 Update Firmware via StarterKit GUI

There are two menu items of StarterKit firmware update

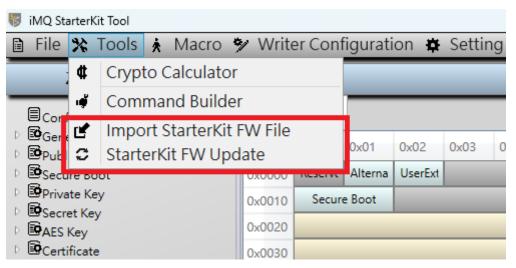


Figure 13 StarterKit GUI firmware update related menu items.

1. Click "Import StarterKit FW file" to select the StarterKit FW hex file for update

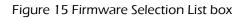
🖗 Import StarterKit FW File					>
← → ~ ↑ 칠 > 本機 >	本機磁碟 (C:) > iMQ > StarterKit > Firmware		~ C	搜尋 Firmware	م
組合管理 ▼ 新増資料夾				≣ ▪	
🚞 pl	名稱 ^	修改日期	類型	大小	
📁 pt-BR	늘 log	2024/8/30 下午 04:09	檔案資料夾		
> 💼 ref	SQ7131_StarterKit_FW20240919A35a1	2024/9/19 下午 05:53	HEX 檔案	237 KB	
Tu I	SQ7131_StarterKit_FW20240920A35A1	2024/9/20 下午 02:15	HEX 檔案	237 KB	
tr	StarterKit_FW_V1.2(20240412).hex	2024/4/17 下午 04:15	HEX 檔案	237 KB	
🚞 zh-Hans					
📩 zh-Hant					
🚞 Zone					
> 🚞 Firmware					
> 🛅 Tools					
> 😑 InnoSetuni Inicode 6.2					
檔案名稱(N): Sta	rterKit_FW_V1.2(20240412).hex		~	hex files (*.*)	~
				開啟(O)	取満

Figure 14 Import StarterKit FW File Dialog

2. After importing StarterKit FW, a firmware selection list box will pop up and focus on the imported item. You can change the selection as needed.

Page: 10/77

o. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2
Firmware Selecti	on List x	
	Kit_FW20240919A35a1Test.hex	
StarterKit_FW_V	/1.2(20240412).hex	
	Ok	



3. Click the "OK" button and a confirmation message box will pop up. Depending on the selected firmware and PCBA build-in firmware version, the message box will display the appropriate confirmation message [same or newer or older version or other (filename without version or date information)].

selected file StarterKitFW_	V1.2(20240412).hex is the same as
StarterKit version detected.	
Update	Cancel
	StarterKit version detected.

Figure 16 StarterKit GUI FW update confirmation message box - 1

The selected file StarterKitFW_V	/1.2(20240412).hex is newer than
the StarterKit version V1.1(2024	0219) detected.
It is recommended to update.	
Lindata	Cancol
Update	Cancel

Figure 17 StarterKit GUI FW update confirmation message box - 2

Page: 11/77

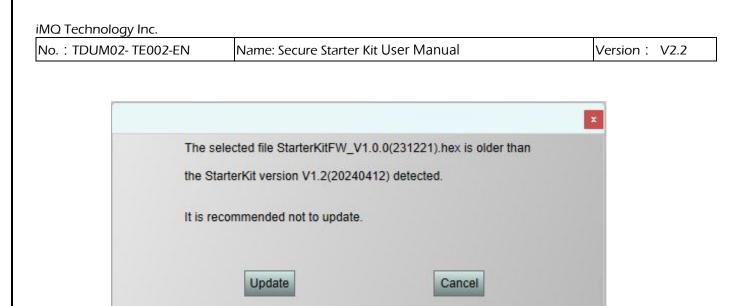


Figure 18 StarterKit GUI FW update confirmation message box - 3

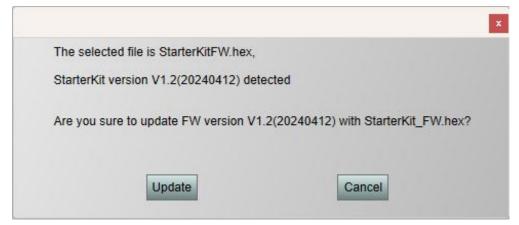


Figure 19 StarterKit GUI FW update confirmation message box - 4

4. There are two options

a) Press "Update" button to update StarterKit FW.



Figure 20 StarterKit GUI FW update progress bar

- b) Press "Cancel" button to skip FW update.
- 5. After the update is completed, the update success message dialog box will pop up and the StarterKit tool will be forced to restart.

Page: 12/77



Figure 21 Update success message dialog box

6. After the StarterKit tool restarts, you can view the newly updated StarterKit FW version in the system information window.

System Information						
Device State	Lock	State	System St	atus		
	Syster	m Status				
Kit Name		iMQ StarterKit Tool				
- Version		V4.3.00				
- FW Version		V1.2(20240412)				
- PCBA Version		V4.0				
- Device Name	•	SQ7133				
- Device Proto	col	SPI(1MHz)				
- Device Revisi	ion	0001 (0104 0000	0000		

Figure 22 The newly updated StarterKit FW version in the system information window.

7. If you click the submenu item "StarterKit FW Update", the procedure is the same as the submenu item "Import StarterKit FW File" except for the first step of importing FW file (Figure 13) is not included.

2.2.3 Update Firmware via Batch

The steps are as follows:

- 1. Change Windows directory to c:\iMQ\StarterKit\Firmware (This is the standard installed firmware path. Different installation directory will have different firmware path.).
- 2. Execute the batch file update.bat.
- 3. After the batch run, the following message will displayed in the DOS prompt window. You can see StarterKit FW original version and updated version in the message.

Page: 13/77

iMQ Technology Inc.

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

Version: V2.2

C:\WINDOWS\s	system32\cmd. × + v			-	×
	Vendor Name: iMQ Tech				I
	Product Name: iMQ Star Serial Number: 0A81325B				
17.00.20.600.	[StarterKit Information	Cummows/1			
	Vendor Name:	iMQ Tech.			
	Product Name:	iMQ StarterKit			
	Serial Number:	0A81325B3630			
17:00:24:723:	StarterKit FW version	: V1.1(20240227)	Original Version		
17:00:24:749:	StarterKit PCB versio				
17:00:24:782:	Go Boot.				
	imq_dfu : V1.0				
17:00:25:972:					
	iMQ DFU found.				
	Get_IMQ_DFU_Information				
	[iMQ DFU Information Su				
	Vendor Name:	ricky.tsai@imqtech.com			
	Product Name: Serial Number:	IMQ_DFU MARK-I 0A4732453630			
	Version Number:	V00.30			
17:00:26:000:		Force Boot			
17:00:26:000:		0x3201			
	Flash start addr	0x08008000			
	Flash max size:	96.0 KBytes			
17:00:26:001:		128 Bytes			
17:00:26:001:					
17:00:26:001:	Open hex file.				
17:00:26:096:	hexStartAddr = 0x080080	00			
17:00:26:096:	hexEndAddr = 0x0801D100				



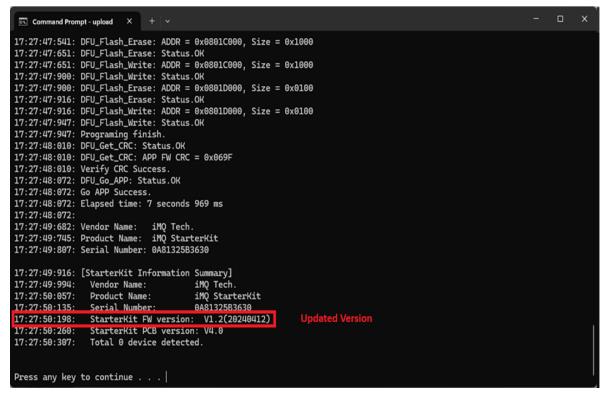


Figure 24 FW update successful message

Page: 14/77

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

2.3 Software Removal

To completely remove the installed iMO StarterKit, you can remove it according to the normal removal process or follow the steps below:

Step 1. Click to execute uninst000.exe from the installation directory

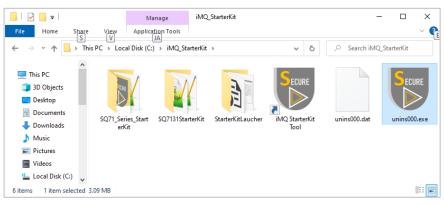


Figure 25 Installation directory

Step 2. Confirm whether you want to remove the StarterKit software



Figure 26 Confirm to uninstall StarterKit

Step 3. Successful removal



Figure 27 Uninstall successful message

Page: 15/77

2.4 Software Startup

Step 1. Connect the Secure Starter Kit to the computer via USB.Step 2. Execute iMQ Starter Kit software programDouble-click the iMQ StarterKit Tool shortcut icon to start software.



Figure 28 iMQ StarterKit Tool shortcut icon

2.5 StarterKit Launcher

When different devices on the Starter Kit Socket are equipped with different interfaces, the launcher will detect and display the currently connected device and interface information in the list. The user selects the device and clicks "Select Device" to enter the main screen.

Se	elect a Dev	ice			
ų	SQ7101	I2C	Socket	(0xc8)	

Figure 29 Using the Secure Starter Kit, and Socket is SQ7101 (I2C) device.

ect a Dev	ice		_
SQ7103	SPI	Socket	

Figure 30 Using the Secure Starter Kit, and Socket is SQ7103 (SPI) device.

Page: 16/77

: TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version : V2.
🐻 iMQ Starter Kit Launcher	×	
Select a Device		

Figure 31 Use the Secure Starter Kit to configure or read the Security Processor with SQ7515 EVB

🐻 iN	iMQ StarterKit Launcher				
Se	elect a Devi	ice			
1.	SQ7131	I2C	Socket	(0xc8)	
	2.	Sele	ct Device		

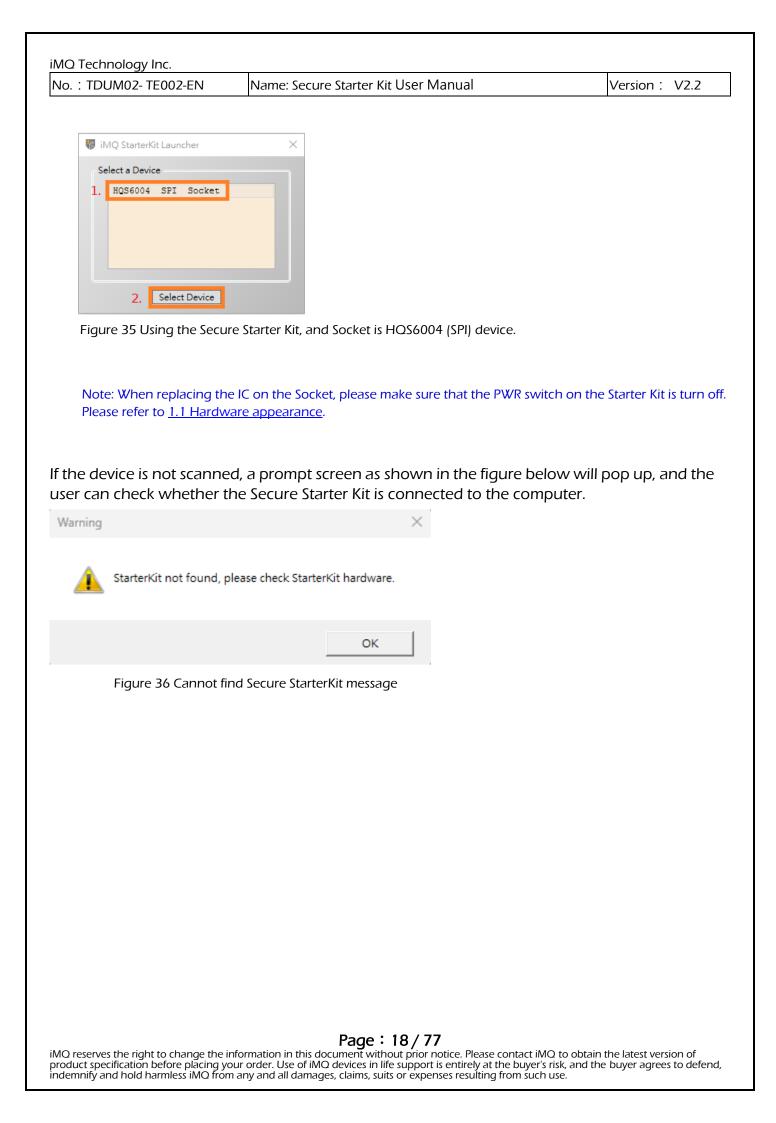
Figure 32 Using the Secure Starter Kit, and Socket is SQ7131 (I2C) device.

🐻 il	MQ StarterKit	Launcher	×
Se	elect a Device		
1.	SQ7133 S	SPI Socket	
	_		
	2.	Select Device	

Figure 33 Using the Secure Starter Kit, and Socket is SO7133 (SPI) device.

🐻 if	MQ StarterKit Launcher	×
Se	elect a Device	
1.	SQ7135 SWI Socket	
	2. Select Device	

Figure 34 Using the Secure Starter Kit, and Socket is SQ7135 (SWI) device.



3. System Requirement

Before using the Security Starter Kit, prepare the following items and confirm your computer's system specifications.

- Windows 10 OS, Microsoft.NET Framework 4.8 (inclusive) or above.
- Secure Starter Kit (Hardware)
- iMO Starter Kit Setup Software installation package

Note : Microsoft.NET Framework 4.8 Official Download

4. SQ7101/SQ7103/SQ7515

4.1 StarterKit Software Function Description (SQ7101/SQ7103/SQ7515)

The function description in this chapter applies to support symmetric encryption algorithm products. (e.g. SQ7101, SQ7103, SQ7515)

4.1.1 Software Introduction

The user interface is divided into two windows. The first is the main screen, all build command, sending commands, opening the Memory window, toolbox (Tool), transfer records, etc. are all executed and displayed in this window; The second is the memory window, it must be opened from the main screen to be displayed, and its function is to configure the memory.

4.1.2 StarterKit Main Screen

The main screen is divided into four parts, namely:

- 1. Build Command: Including command packet block, send packet information block, receive return packet information block and execute command button.
- 2. Menu Bar: Menus for File, Memory, Tool, and About.
- 3. Status Bar: Displays the connected device, its communication protocols and device addresses.
- 4. Log: Record the time and content of command transmission and received messages.

Page: 19/77

TDUM02- TE0	02-EN Name: Secu	ure Starter Kit User Manual	Version: V2
File Memory	Tool About		Menu Bar
Command Command	Packet • Build Cc Nonce (0x01)	ommand Log	Status Bar Log
Mode	0x01 Random Nonce	• 17:18:38	9
Zero	0000	Nonce (0x01) comm	and sent:
Zero	0000		0000 0000 0000 0000 0000
InSeed		0000 F5EF 17:18:38 Received: 14 00 A5A5 A5A5 A5	5A5 A5A5 A5A5 A5A5 A5A5
Send Deta		A5A5 8790	
Count	15		
Packet	0101 0000 0000 0000 0000 000 0000	00 0000 0000	
CRC16	F5EF		
Response	Details		
Count	14		
Code	00		
Packet	A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A	45A5 A5A5 ^	
CRC16	8790		

Figure 37 SQ710x StarterKit main screen

4.1.2.1 Build Command

The Build Command area is divided into three blocks, namely: command packet block, send detail block, response details block and execute button.

- 1. Command packet block: It is used to select commands, modes, parameters and other settings. Commands are drop-down menus, and there are many commands to choose. The parameters will change according to the command selected by the user.
- **2. Execute button:** After pressing "Execute", the command and parameter in the command packet block will be executed.
- **3. Send details block:** Display the data length, content and CRC check code of the transmitted packet.
- **4. Response details block:** Display the data length, return code, content and CRC check code of the received packet.

Note 1: All fields are expressed in hexadecimal Note 2: The gray background field is read-only information, user cannot modify it; the white background field, it means user can input or sele**Command**

Change fields by command

Page: 20/77

iMQ Technology Inc.

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

	command P	acket • Command packet block
Command	Command	Encrypt (0x06) •
	Mode	0x00 ·
Change fields by	EKeyID	0000
	Count	0010
command	Data	0000 0000 0000 0000 0000 0000 0000 0000
	Send Details	Send details block
Length	Count	19
Content	Packet	0600 0000 0010 0000 0000 0000 0000 0000
CRC check code	CRC16	E9E0
Response Packet:	Response De	etails Response details block
Length	Count	
Return code	Code	
Content	Packet	
CRC check code	CRC16	
		Execute Execute button

Figure 38 SQ710x Build Command area

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

4.1.2.2 Main Menu

MQ SQ71_Series_Si Memory			• Main menu
Command	Packet		I2C Socket (0xC8)
Command	Nonce (0x01)	-	Log
Mode	0x01 Random Nonce	•	17:18:38
Zero	0000		Nonce (0x01) command sent:
Zero	0000		15 0101 0000 0000 0000 0000 0000 0000 0
InSeed	0000 0000 0000 0000 0000 0000		0000 F5EF 17:18:38 Received:
Send Detai	ls		14 00 A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A5
Count	15		A3A3 0790
Packet	0101 0000 0000 0000 0000 0000 0000 000		
CRC16	F5EF		
Response [Details		
Count	14		
Code	00		
Packet	A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A	^	
CRC16	8790		
	Execute		Clear log

Figure 39 SQ710x Main menu

There are menus for File, Memory, Tool, and about on the menu bar, as shown in the figure below:

1. File sub menu: Click File, press Exit to close the main screen and memory window.

iMQ SQ71_Series_StarterKit	2 <u>—</u> 2	×
File Memory Tool About		
Exit		

File\Exit

Figure 40 SQ710x File sub menu

2. Memory sub menu: Click Memory, it will pop up memory window after the reading is completed.

Note 1: Do not remove the Secure Starter Kit from the computer while the reading is in progress.

Note 2: The memory window will be explained in the following chapter $\lceil 4.1.3 \text{ Memory} \rfloor$

iMQ SQ71_Series_St			- □ >
Command	Packet		I2C Socket (0xC8)
Command	AES (0x0F)	-	Log
Mode	0x00	v	
LKeyID	0000		
Zero	0000		
Data	0000 0000 0000 0000 0000 0000 0000 0000 000	0 0000 ading Memory	
Send Detai	ls F	Reading Men	nory
Count	19	Please wai	
Packet	0F00 0000 0000 0000 0000 0000 0000 000		
CRC16	C49A		
Response [Details		-
Count			
Code			
Packet			
CRC16			
	Execute		Clear log

Figure 41 SQ710x Memory sub menu

Figure 41 SQ710x Memory sub menu

3. Tool sub menu: Click Tool, and then select XOR to open the XOR calculation. Tool XOR

🐻 iMQ SQ71_Series_S	StarterKit			-	×
File Memory	Tool About	t			
	XOR		Ctrl+R		
Command	Program	Device	Ctrl+P	I2C Socket (0xC8)	

Figure 42 SQ710x Tool sub menu/XOR

Note 1: When Data1 and Data2 have different lengths, the effective calculation length will be based on the shorter Data length.

Note 2: XOR calculation tool for hexadecimal calculation.

Page: 23/77

iMQ Technology Inc.					
No. : TDUM02- TE002-EN	Name: Secure Sta	rter Kit User Man	ual	Version :	V2.2
Click Tool, and then select Pro Tool\Program	ogram Device	to open the Pr	ogram Device windo	W.	
iMQ SQ71_Series_StarterKit File Memory Tool About			- 🗆 X		
XOR Ctrl+R Commanc Program Device Ctrl+P	12	C Socket (0xC8)			
		enu/Program Dev	vice		
Note 3: The program device win	ndow will be expla	ained in the follow	ving chapter [「] <u>4.1.4 Prog</u>	ram Device	L
4. About sub menu: Clinhardware versions in		ew software, fir	mware, and Secure S	itarterKit	
iMQ SQ71_Series_StarterKit File Memory Tool About				- 0	×
	Figure 44 SQ7 1	10x: SQ710x Abou	it sub menu		
http://www.imqtech.com	B About	↓ es_StarterKit V3.2 (20221121)	1	×	
Software version Firmware version PCBA Hardware version	FW Ver : PCBA Ver :	20210709			
	http://www.	nformation, please . <u>imqtech.com</u> .imqtech.com.cn	visit our website.		
	Figure 45 SQ71	10x SQ710x Abou	t dialog		

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

4.1.2.3 Status Bar

The communication protocol and device address of the device connected to StarterKit will be displayed on the status bar. As shown in the figure below, the communication protocol is I2C, and the device I2C address is 0xC8.

- Note 1: The communication protocol and device address displayed on the status bar are the same as the slave device selected by the user before entering the main screen.
- Note 2: After entering the main screen, if you change the communication address of the device, you must re-plug the Secure Starter Kit and restart the Starter Kit program, the new device address will take effect.

Command	Packet	I2C Socket (0xC8)	Status bar
Command Mode	Nonce (0x01) • 0x01 Random Nonce •	Log	
Zero Zero	0000 0000	17:18:38 Nonce (0x01) comma	nd sent: 000 0000 0000 0000 0000
InSeed	0000 0000 0000 0000 0000 0000	0000 F5EF 17:18:38 Received:	
Send Detai	ls		A5 A5A5 A5A5 A5A5 A5A5
Count	15	A5A5 8790	
Packet	0101 0000 0000 0000 0000 0000 0000 000		
CRC16	F5EF		
Response [Details	-	
Count	14		
Code	00		
Packet	A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A		
CRC16	8790		

Figure 46 SQ710x Status bar

Page: 25/77

iMQ Technology Inc.			
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2	

If the slave device is a SPI device (such as SQ7103), the status bar will display "SPI Socket."

MQ SQ71_Series_Si e Memory				
Command			SPI Socket	Status bar
Command	AES (0x0F)	•	Log	
Mode	0x00	w		
LKeyID	0000			
Zero	0000			
Data	0000 0000 0000 0000 0000 0000 0000 0000			
end Detai	ls 19			
Packet	0F00 0000 0000 0000 0000 0000 0000 000			
CRC16	C49A			
Response [Details			
Count				
Code		2		
Packet				
CRC16				
	Execute			Clear log

Figure 47 SQ710x Status bar (SPI device)

iMQ Technology Inc.

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

4.1.2.4 Log

This area records the time and content of command sending and receiving packet messages.

Command	Packet		I2C Socket (0xC8)
Command	Nonce (0x01)	-	Log
Mode	0x01 Random Nonce	*	17:18:38
Zero	0000		Nonce (0x01) command sent:
Zero	0000		15 0101 0000 0000 0000 0000 0000 0000 0
InSeed	0000 0000 0000 0000 0000 0000		0000 F5EF 17:18:38 Received:
Send Detai	ls		14 00 A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A5
Count	15		A5A5 8790
Packet	0101 0000 0000 0000 0000 0000 0000 000	00	
CRC16	F5EF		
Response I	Details		
Count	14		
Code	00		Log area
Packet	A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A	~	
CRC16	8790		

Figure 48 SQ710x Log area

Note 1: If there are too many logs, users can click the "Clear Logs" button to clear the logs. Note: After the log is cleared, it cannot be restored!

iMQ Technology Inc. No. : TDUM02- TE002-EN Name: Secure Starter Kit User Manual Version: V2.2

4.1.2.5 AES-256 Support

Support AES-256 key, AES-256 option appears on some Command windows item, check to enable/disable the support for AES-256 key.

iMQ SQ71_Series_S						
e Memory	Tool About					
Command	Packet	☑ AES-256				
Command	EncWrite (0x05)					
Mode	0x00					
Address	0000					
Count	0020					
Data	0000 0000 0000 000	00 0000 0000 0000 0000 00 0000 0000 00				
Send Detai	and a second sec					
Count	39					
Packet	0500 0000 0020 0000 <td< td=""></td<>					
CRC16	C105					
Response [Details					
Count						
Code						
Packet						
CRC16						
	Execute					

Figure 49 SO710x Enable AES-256

To enable AES-256, you must first set Byte-4 of the key configuration in the Memory page, and select "Yes" for the AES256 field.

lo. : TDUM02- TEC	002-EN		Nan	ne: Se	cure	Starte	er Kit l	Jser	Man	ual			Version :	V2.2
Memory													I X	
File Reload Data														
- Counter 7 ^		Confi	guratio	on Add	Iress R	ange:	1000 ~	• 11BF			Key 0 Configu	iration		
- Counter 8		00	01	02	03	04	05	06	07	^	Address	1044		
- Counter 9	1000	00	01	00	03	00	00	00	00		Value	FE		
– Counter A – Counter B	1008	38	5E	18	42	47	28	19	55		AES256	Yes	-	
- Counter B	1010	00	01	10	10	10	0A	FF	FF					
- Counter D	1018	00	EE	01	FF	FF	FF	FF	FF					
- Counter E	1020	FF	FF	FF	C8	C7	FF	FF	FF					
- Counter F	1028	FF	FF	FF	FF	FF	55	FF	FF					
-Key 0	1030	FF	FF	FF	FF	FF	FF	55	FF					
-Key 1	1038	FF	FF	FF	FF	FF	FF	FF	55					
-Key 2	1040	E9	DE	00	FF	FF	FF	FF	FF					
- Key 3	1048	E9	DE	10	FF	FF	FF	FF	FF					
-Key 4	1050	E9	DE	20	FF	FF	FF	FF	FF					
- Key 5	1058	E9	DE	30	FF	FF	FF	FF	FF					
Key 6	1060	E9	DE	40	FF	FF	FF	FF	FF					
- Key 7	1068	E9	DE	50	FF	FF	FF	FF	FF					
- Key 8	1070	E9	DE	60	FF	FF	FF	FF	FF					
- Key 9	1078	E9	DE	70	FF	FF	FF	FF	FF					
- Key A	1080	E9	DE	80 90	FF	FF	FF	FF	FF	~	Update			

Figure 50 SQ710x Memory: AES256 field selected as "Yes"

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

4.1.3 Memory

Click "Memory", and the memory window will pop up after the reading is completed. Note: Do not remove the Secure Starter Kit from the computer while the reading is in progress.

Command	Packet		2C Socket (0xC8)		
Command	AES (0x0F)	•	Log		
Mode	0x00	Ψ.			
LKeyID	0000				
Zero	0000				
Data	0000 0000 0000 0000 0000 0000 0000 0000	201			
end Detai		Memory	,		
Count	19 >>	wart			
Packet	0F00 0000 0000 0000 0000 000 000 000 00				
CRC16	C49A				
lesponse [Details				
Count					
Code					
Packet					
CRC16					

Figure 51 SQ710x Click Memory on the main menu

iMQ Technology Inc. No. : TDUM02- TE002-EN Name: Secure Starter Kit User Manual Version: V2.2

The memory window can be divided into memory configuration block, configuration menu block and menu bar, which will be explained in the following chapters.

e Reload Data											Menu b	bar
Configuration Counter Zone		Config	guratio	on Add	lress R	ange:	1000 ~	[,] 11BF			UID	
Small Zone		00	01	02	03	04	05	06	07	^	Address	Value
User Zone	1000	00	01	00	03	00	00	00	00		1000	00
User Zone	1008	38	5E	18	42	47	28	19	55		1001	01
	1010	00	01	10	10	10	0A	FF	FF		1002	00
	1018	00	EE	01	FF	FF	FF	FF	FF		1003	03
	1020	FF	FF	FF	C9	C7	FF	FF	FF		1004	00
	1028	FF	FF	FF	FF	FF	55	FF	FF		1005	00
	1030	FF	FF	FF	FF	FF	FF	55	FF		1006	00
	1038	FF	FF	FF	FF	FF	FF	FF	55		1007	00
	1040	E9	DE	00	FF	FF	FF	FF	FF			
	1048	E9	DE	10	FF	FF	FF	FF	FF			
	1050	E9	DE	20	FF	FF	FF	FF	FF			
	1058	E9	DE	30	FF	FF	FF	FF	FF		Configu	iration
	1060	E9	DE	40	FF	FF	FF	FF	FF		Connige	aration
	1068	E9	DE	50	FF	FF	FF	FF	FF		menu b	block
	1070	E9	DE	60	FF	FF	FF	FF	FF		inclu c	
	1078	E9	DE	70	FF	FF	FF	FF	FF			
	1080	E9	DE	80	FF	FF	FF	FF	FF			
Memory co	1088	F9	DF	90	FF	FF	FF	FF	FF	~		

Figure 52 SQ710x Memory window

4.1.3.1 Memory Configuration

The left side displays each memory zone that can be viewed, and the user can select to view. The memory data of the zone is displayed in the middle field (expressed in hexadecimal).

- Note 1: If the user wants to modify the configuration, first select the memory address to be modified, and then modify it in the configuration menu displayed on the far right.
- Note 2: If the field has a gray background, it means read-only (Read-only) information, and the user cannot change its settings.

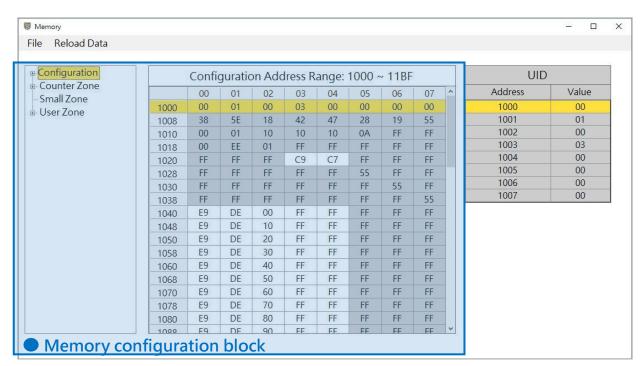


Figure 53 SQ710x Memory: Memory configuration block

Page: 32/77

4.1.3.2 Configuration Menu

The configuration menu is divided into configuration zone and other zones.

- Configuration: Set the configuration of chip, key, user area and counter.
- Other zones: User Zone, Counter Zone and Small Zone.

4.1.3.2.1 Configuration Update

After selecting the address to be modified in the memory configuration block, the configuration menu corresponding to the address will be displayed. The following steps take configuring Key 0 as an example.

Step 1. At memory configuration block (the leftmost field) select Configuration\Key 0.

Step 2. At memory configuration block (middle field) select the address to modify the configuration.

Key 0 configuration address is 0x1040.

Step 3. Configure in the configuration menu

Click the configuration field, and the options available for configuration will be listed, and user can configure according to your needs.

Step 4. Confirm update configuration

After pressing "Update", the newly configured options will be written to Device, and the new configuration values will be displayed on Value.

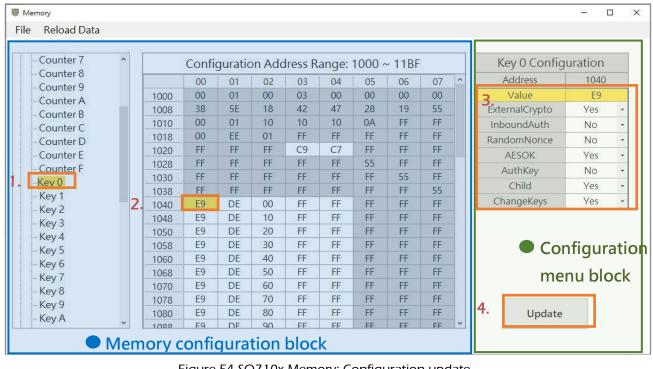


Figure 54 SQ710x Memory: Configuration update

Page: 33/77

iMQ Technology Inc.			
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version : N	V2.2

4.1.3.2.2 Other zones update

After selecting the address to be modified in the memory configuration block, a continuous section will be automatically selected, and the value of the continuous section will be displayed on the right configuration menu. The user double-clicks the Value field in the configuration menu, and the window for updating the value will pop up. The window shows the starting address of the continuous zone and all the values of the zone, and the value can be modified directly. After modification, click the "Update" button to write to the device. The following steps take modifying the data of User Zone00 as an example.

Step 1. At memory configuration block (the leftmost field) select User Zone \User Zone 00.

Step 2. At memory configuration block (middle field) select the address to modify the configuration.

User Zone address is 0x0000~0x00FF, a total of 256 bytes.

Step 3. Double-click the Value field to be modified in the configuration menu.

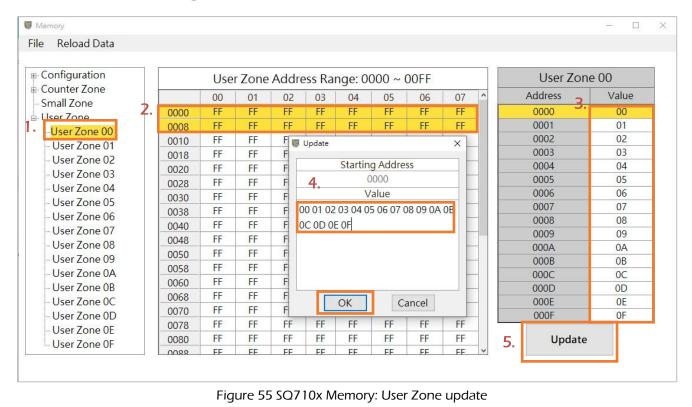
Click the Value field to modify the configuration, and the window for updating the value will pop up.

Step 4. Enter new value in the update value window

After pressing "OK", the new value update is displayed in the configuration menu.

Step 5. Confirm update configuration

After pressing "Update", the new value will be written to Device.



Page: 34 / 77

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

4.1.3.3 Menu Bar

There are File and Reload Data menus on the memory menu, as shown in the figure below:

Reload Data											Mer	nu bar
onfiguration		Config	guratio	on Add	lress R	ange:	1000 ~	~ <mark>11</mark> BF			UID)
ounter Zone mall Zone		00	01	02	03	04	05	06	07	^	Address	Value
ser Zone	1000	00	01	00	03	00	00	00	00		1000	00
Set Zone	1008	38	5E	18	42	47	28	19	55		1001	01
	1010	00	01	10	10	10	0A	FF	FF		1002	00
	1018	00	EE	01	FF	FF	FF	FF	FF		1003	03
	1020	FF	FF	FF	C9	C7	FF	FF	FF		1004	00
	1028	FF	FF	FF	FF	FF	55	FF	FF		1005	00
	1030	FF	FF	FF	FF	FF	FF	55	FF		1006	00
	1038	FF	FF	FF	FF	FF	FF	FF	55		1007	00
	1040	E9	DE	00	FF	FF	FF	FF	FF			
	1048	E9	DE	10	FF	FF	FF	FF	FF			
	1050	E9	DE	20	FF	FF	FF	FF	FF			
	1058	E9	DE	30	FF	FF	FF	FF	FF			
	1060	E9	DE	40	FF	FF	FF	FF	FF			
	1068	E9	DE	50	FF	FF	FF	FF	FF			
	1070	E9	DE	60	FF	FF	FF	FF	FF			
	1078	E9	DE	70	FF	FF	FF	FF	FF			
	1080	E9	DE	80	FF	FF	FF	FF	FF			
	1088	F9	DE	90	FF	FF	FF	FF	FF	~		

Figure 56 SQ710x Memory: Menu bar

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

4.1.3.3.1 File Sub Menu

Click File to export or import the data of the device memory block.

a. Export file

Can export device memory configuration data.

Step 1. At menu select File\ Export Data

The export file format is .Json format.

	🐻 Merr	iory	
	File	Reload D	ata
۱.	Б	port file	Ctrl+S
	In	nport file	Ctrl+L

Figure 57 SQ710x Memory: File sub menu/Export file

Step 2. After selecting the save path, press Save

You can chooses the save path, use the default file name or name it yourself.

🐻 Save As					×
← → ~ ↑ 📙 « SWriter → SecureWriter → TestDummyFil	e v	S	,⊂ Sea	rch TestDummyFile	
Organize 🔻 New folder				== -	?
This PC	^			Date modified	
3D Objects	No items match your	search.			
E Desktop					
Documents					
b Music					
E Pictures					
Videos					
Local Dist C+) × <					>
File name: SQ710x_Data.json					~
Save as type: (*.json)					~
A Hide Folders			<u>S</u> av	e Cance	e l

Figure 58 SQ710x Memory: Export file dialog

Note: The default export file name is SQ710x_Data.json, and user can name it.

Step 3. After exporting the data, the Export Finish message box will pop up, press OK.



Figure 59 SQ710x Memory: Export finish message

b. Import Data

Can import previously exported configuration data.

Step 1. At menu select File\Import Data

The import file format is .Json format.

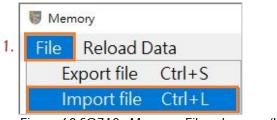


Figure 60 SQ710x Memory: File sub menu/Import file



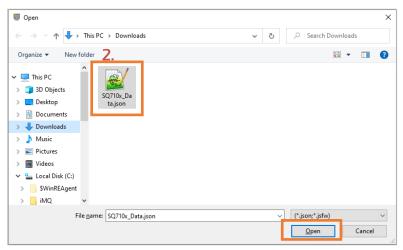


Figure 61 SQ710x Memory: Import file dialog

Page: 37 / 77

Step 3. Pop up display memory zone list for user to select the zone to import

The user can choose to import a single zone or all zones. In the following example, after selecting "All", press OK to import the data of all zones.

All	iguration	
127	nter Zone	
Smal	l Zone	
User	Zone	

Figure 62 SQ710x Memory: Select import data dialog

Step 4. After importing the data, the Import Finish message box will pop up, press OK.

i. <mark>.</mark>	×
Finish	
ОК	
]

Figure 63 SQ710x Memory: Import data finish message

Note: After the import is finished and press OK, it will automatically execute reload data.

lo. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2
c. Reload Data		
Reload device all	memory configuration data and display on so	creen.
Step 1. At Menu d	lick Reload Data.	
	vice all memory configuration data.	

Wemory		X
File Reload Data		
	Figure 64 SQ710x Memory: Reload Data sub menu item	

Step 2. Wait for the reload to complete

Note 1: Do not remove the Secure Starter Kit from the computer while the data is being read.

- Note 2: After modifying any configuration on the memory window, you must press "Reload Data", and the data on the window will display the updated value.
- Note 3: The shortcut key for the "Reload Data" button is "Ctrl+r"

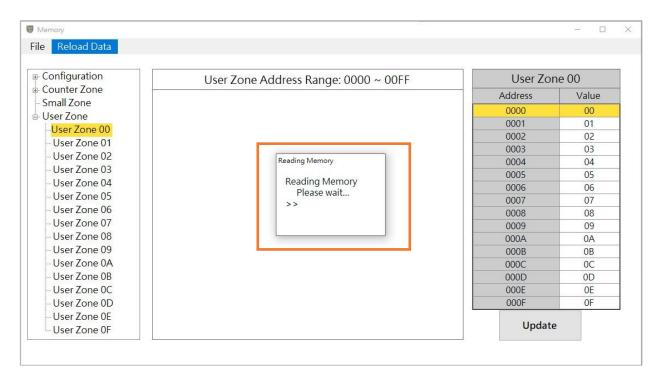


Figure 65 SQ710x Memory: Reloading memory dialog

Page: 39/77

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

4.1.4 Program Device

After clicking Tool\Program Device, the program device window will pop up. This function can only program Socket devices.

iMQ SQ71_Series_St					7120	×
File Memory	Tool About XOR Ctrl+R					
Command	Program Device Ctrl+P		I2C Socket (0xC8)			
Command	AES (0x0F)	-	Log			
Mode	0x00	*	-			
LKeyID	0000					
Zero	0000					
Data	0000 0000 0000 0000 0000 0000 0000 0	0000				
Send Detail			-			
Count	19					
Packet	0F00 0000 0000 0000 0000 0000 0000 000	0000				
CRC16	C49A					
Response D	Details		-			
Count						
Code						
Packet						
CRC16						
	Execute		Clear	log		

Figure 66 SQ710x StarterKit Tool sub menu/Program Device

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

The program device window can be divided into memory configuration, function options, menu bar, and log window are described in the following sections.

File										N	/len	u ba	r				
	Configurat	ion	User	Zone	S	m <mark>all</mark> Zo	ne	Cou	nter Zo								
	Address	00	01	02	03	04	05	06	07	08	09	0A	OB	0C	0D	OE	OF /
	▶ 1000	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01
	1010	00	01	10	10	10	OA	FF	FF	00	EE	01	FF	FF	FF	FF	FF
	1020	FF	FF	FF	C9	C7	FF	FF	FF	FF	FF	FF	FF	FF	55	FF	FF
	1030	FF	FF	FF	FF	FF	FF	55	FF	FF	FF	FF	FF	FF	FF	FF	55
	1040	E9	DE	00	FF	FF	FF	FF	FF	E9	DE	10	FF	FF	FF	FF	FF
Function	1050	E9	DE	20	FF	FF	FF	FF	FF	E9	DE	30	FF	FF	FF	FF	FF
runction	1060	E9	DE	40	FF	FF	FF	FF	FF	E9	DE	50	FF	FF	FF	FF	FF
options	1070	E9	DE	60	FF	FF	FF	FF	FF	E9	DE	70	FF	FF	FF	FF	FF
options	1080	E9	DE	80	FF	FF	FF	FF	FF	E9	DE	90	FF	FF	FF	FF	FF
	1090	E9	DE	A0	FF	FF	FF	FF	FF	E9	DE	B0	FF	FF	FF	FF	FF
	10A0	E9	DE	CO	FF	FF	FF	FF	FF	E9	DE	DO	FF	FF	FF	FF	FF
	10B0	E9	DE	ΕO	FF	FF	FF	FF	FF	E9	DE	FO	FF	FF	FF	FF	FF
Lock Configuration	10C0	00	00	OF	55	FF	FF	FF	FF	00	01	1F	55	FF	FF	FF	FF
Lock Key Memory	10D0	00	02	2F	55	FF	FF	FF	FF	00	03	ЗF	55	FF	FF	FF	FF
	10E0	00	04	4F	55	FF	FF	FF	FF	00	05	5F	55	FF	FF	FF	FF
Lock SmallZone	10F0	00	06	6F	55	FF	FF	FF	FF	00	07	7F	55	FF	FF	FF	FF
	1100	00	08	0F	EE	FF	FF	FF	FF	00	09	9F	55	FF	FF	FF	FF
Program	111 N	lem	orv	cont	figu	ratio	on	FF	FF	00	0B	BF	55	FF	FF	FF	FF
	112	CIII	U y	com	ngu	iuu		FF	FF	00	OD	DF	55	FF	FF	FF	FF
	1130	00	0E	EF	55	FF	FF	FF	FF	00	OF	FF	55	FF	FF	FF	FF
	1140	01	00	FF	FF	FF	FF	FF	FF	01	11	FF	FF	FF	FF	FF	FF
Export log	L	og w	vindo	w													

Figure 67 SQ710x Program Device window

4.1.4.1 Memory Configuration

The Tab Page displays each memory zone that can be viewed. After the user clicks, it will switch to the corresponding memory zone page. The value of the memory zone is displayed in the middle field (expressed in hexadecimal).

4.1.4.1.1 Configuration

This page can set the configuration of chip, key, user zone and counter zone. User can directly click on the field to edit, but if the field background is gray, it means read-only information. The configuration address range is 0x1000 ~ 0x11BF.

Page: 41/77

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

Version: V2.2

File																	
	Configura	tion	User	Zone	S	mall Zo	ne	Cou	nter Zo	ne	Key						
	Address	00	01	02	03	04	05	06	07	08	09	0A	OB	0C	0D	OE	OF /
	▶ 1000	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01
	1010	00	01	10	10	10	0A	FF	FF	00	EE	01	FF	FF	FF	FF	FF
	1020	FF	FF	FF	C9	C7	FF	FF	FF	FF	FF	FF	FF	FF	55	FF	FF
	1030	FF	FF	FF	FF	FF	FF	55	FF	FF	FF	FF	FF	FF	FF	FF	55
	1040	E9	DE	00	FF	FF	FF	FF	FF	E9	DE	10	FF	FF	FF	FF	FF
	1050	E9	DE	20	FF	FF	FF	FF	FF	E9	DE	30	FF	FF	FF	FF	FF
	1060	E9	DE	40	FF	FF	FF	FF	FF	E9	DE	50	FF	FF	FF	FF	FF
	1070	E9	DE	60	FF	FF	FF	FF	FF	E9	DE	70	FF	FF	FF	FF	FF
	1080	E9	DE	80	FF	FF	FF	FF	FF	E9	DE	90	FF	FF	FF	FF	FF
	1090	E9	DE	AO	FF	FF	FF	FF	FF	E9	DE	BO	FF	FF	FF	FF	FF
	10A0	E9	DE	C0	FF	FF	FF	FF	FF	E9	DE	DO	FF	FF	FF	FF	FF
	10B0	E9	DE	ΕO	FF	FF	FF	FF	FF	E9	DE	FO	FF	FF	FF	FF	FF
Lock Configuration	10C0	00	00	OF	55	FF	FF	FF	FF	00	01	lF	55	FF	FF	FF	FF
	10D0	00	02	2F	55	FF	FF	FF	FF	00	03	ЗF	55	FF	FF	FF	FF
Lock Key Memory	10E0	00	04	4F	55	FF	FF	FF	FF	00	05	5F	55	FF	FF	FF	FF
Lock SmallZone	10F0	00	06	6F	55	FF	FF	FF	FF	00	07	7F	55	FF	FF	FF	FF
	1100	00	08	8F	55	FF	FF	FF	FF	00	09	9F	55	FF	FF	FF	FF
Program		~			5	FF	FF	FF	FF	00	0B	BF	55	FF	FF	FF	FF
riogram		nfigu	irati	on	5	FF	FF	FF	FF	00	OD	DF	55	FF	FF	FF	FF
	1150		01		ن ن	FF	FF	FF	FF	00	0F	FF	55	FF	FF	FF	FF
	1140	01	00	FF	FF	FF	FF	FF	FF	01	11	FF	FF	FF	FF	FF	FF
Export log																	
Clear log																	

Figure 68 SQ710x Program Device: Configuration Zone

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

4.1.4.1.2 User Zone

This page can edit the content of the User Zone; users can directly click on the field to edit. The User Zone address range is 0x0000 ~ 0x00FF.

	(Configurati	on	User	Zone	S	mall Zo	ne	Cou	nter Zo	ne	Key						
		Address	00	01	02	03	04	05	06	07	08	09	0A	OB	0C	0D	OE	0F
	•	0000	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		0010	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		0020	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		0030	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		0040	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		0050	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		0060	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		0070	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		0080	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		0090	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		00A0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		00B0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
] Lock Configuration		0000	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Lock Key Memory		00D0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
AC MERICAN AND PARTY A CONTRACT AND PARTY		00E0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
] Lock SmallZone		00F0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Program		Use	r Zoi	ne														
Export log																		

Figure 69 SQ710x Program Device: User Zone

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

4.1.4.1.3 Small Zone

This page can edit the content of the Small Zone; users can directly click on the field to edit. The Small Zone address range is 0x1300 ~ 0x15FF.

Address OO OI O2 O3 O4 O5 O7 O8 O9 OA OB OC OD OE 1300 FF		Configurati	on	User	Zone	S	mall Zo	ne	Cou	nter Zo	ne	Key						
▶ 1300 EF FF				01	02	0.2	04	05	06	07	00		0.4	0.0	00	00	05	OF
1310 FF <																		FF
1320 FF <		1.																FF
1340 FF <		1320	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF		FF	FF
1350 FF <		1330	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		1340	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		1350	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		1360	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1390 FF <		1370	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
13A0 FF <		1380	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1380 FF <		1390	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
13C0 FF <		13A0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
13D0 FF <		13B0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
13D0 FF <	Lock Configuration	13C0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
I 13E0 FF		13D0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Program 1400 FF FF	Lock Key Memory	13E0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Program 1400 FF FF	Lock SmallZone	13F0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Small Zone FF FF		1400	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
SITIAII ZOTIC FF	Program	1 ***					FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
1440 FF	Flogram	Sma	all Zo	one			FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		1					FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Export log		1440	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Export log																		
	Export log																	

Figure 70 SQ710x Program Device: Small Zone

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

4.1.4.1.4 Counter Zone

This page can edit the content of the Counter Zone; users can directly click on the field to edit. The Counter Zone address range is 0x1200 ~ 0x127F.

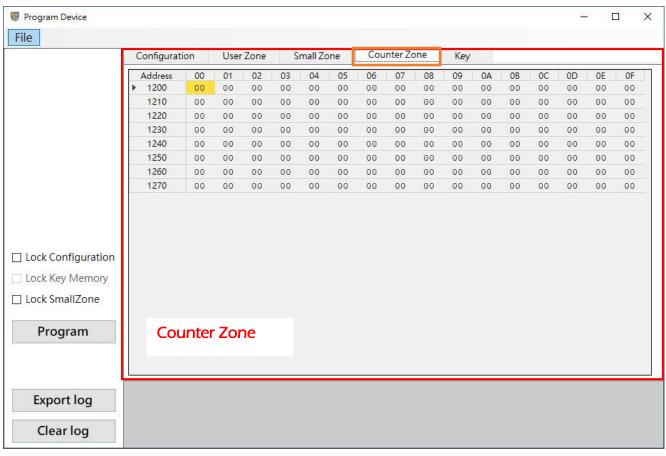


Figure 71 SQ710x Program Device: Counter Zone

Page: 45/77

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

4.1.4.1.5 Key

This page can edit the content of the Key; users can directly click on the field to edit.

The Key address range is 0xF200 ~ 0xF2FF.

The function of each field is described as follows:

- 1. Selected: When checked, it means that the key is enabled and the key can be edited. The key will be written when program.
- 2. AES256: When checked, it means to enable AES256, and the Key Value can input a value of 256 Bits. (If the AES256 enabled, the memory location of the next key will be used when writing to the IC, so when this field is checked, the content of the next key will be closed and the user cannot edit it.)
- **3.** Key Generator: You can use this function to randomly generate Key Value or reset it. a. Select the target Key.

b. Generate the Key Value of the target Key as a random number. (It can only be clicked when the target Key is enabled)

c. Reset the Key Value of the target Key to all 0xFF (It can only be clicked when the target Key is enabled).

	Configura	tion User Z	one Small Z	Zone	Counter Zor	ne	Key			<u>3.</u>		
	KeylD	Selected	2AES256			Key V	alue			Key	Genera	tor
	► 0			FFFF	FFFF FFFF	FFFF B	FFF FFF	F FFFF	FFFF	а.		~
	1			FFFF	FFFF FFFF	FFFF F	FFFF FFF	F FFFF	FFFF	b.	Randon	n
	2			FFFF	FFFF FFFF	FFFF B	FFFF FFF	F FFFF	FFFF		Andon	
	3			FFFF	FFFF FFFF	FFFF B	FFF FFF	F FFFF	FFFF	c.	Reset	
	4			FFFF	FFFF FFFF	FFFF B	FFFF FFF	F FFFF	FFFF			
	5			FFFF	FFFF FFFF	FFFF B	FFFF FFF	F FFFF	FFFF			
	6			FFFF	FFFF FFFF	FFFF B	FFFF FFF	F FFFF	FFFF			
	7			FFFF	FFFF FFFF	FFFF B	FFFF FFF	F FFFF	FFFF			
	8			FFFF	FFFF FFFF	FFFF F	FFFF FFF	F FFFF	FFFF			
	9			FFFF	FFFF FFFF	FFFF B	FFFF FFF	F FFFF	FFFF			
	10			FFFF	FFFF FFFF	FFFF B	FFFF FFF	F FFFF	FFFF			
Lock Configuration	11			FFFF	FFFF FFFF	FFFF B	FFFF FFF	F FFFF	FFFF			
LOCK COnfiguration	12			FFFF	FFFF FFFF	FFFF B	FFFF FFF	F FFFF	FFFF			
Lock Key Memory	13			FFFF	FFFF FFFF	FFFF B	FFF FFF	F FFFF	FFFF			
Lock SmallZone	14			FFFF	FFFF FFFF	FFFF B	FFFF FFF	F FFFF	FFFF			
LOCK SITIAIIZOTIE	15			FFFF	FFFF FFFF	FFFF F	FFFF FFF	F FFFF	FFFF	-		
Program		-										
		Key										
ŝ												_
Export log												
Clear log												

Page: 46/77

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

Version: V2.2

4.1.4.2 Function Options

	C	Configurati	on	User	Zone	S	mall Zo	ne	Cou	nter Zo	one	Key						
		Address	00	01	02	03	04	05	06	07	08	09	0A	OB	0C	0D	OE	OF 🔺
	۲.	1000	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01
		1010	00	01	10	10	10	OA	FF	FF	00	EE	01	FF	FF	FF	FF	FF
		1020	FF	FF	FF	C9	C7	FF	FF	FF	FF	FF	FF	FF	FF	55	FF	FF
Function		1030	FF	FF	FF	FF	FF	FF	55	FF	FF	FF	FF	FF	FF	FF	FF	55
		1040	E9	DE	00	FF	FF	FF	FF	FF	E9	DE	10	FF	FF	FF	FF	FF
options		1050	E9	DE	20	FF	FF	FF	FF	FF	E9	DE	30	FF	FF	FF	FF	FF
		1060	E9	DE	40	FF	FF	FF	FF	FF	E9	DE	50	FF	FF	FF	FF	FF
		1070	E9	DE	60	FF	FF	FF	FF	FF	E9	DE	70	FF	FF	FF	FF	FF
		1080	E9	DE	80	FF	FF	FF	FF	FF	E9	DE	90	FF	FF	FF	FF	FF
		1090	E9	DE	AO	FF	FF	FF	FF	FF	E9	DE	BO	FF	FF	FF	FF	FF
		10A0	E9	DE	C0	FF	FF	FF	FF	FF	E9	DE	DO	FF	FF	FF	FF	FF
		10B0	E9	DE	ΕO	FF	FF	FF	FF	FF	E9	DE	FO	FF	FF	FF	FF	FF
Lock Configuration		10C0	00	00	OF	55	FF	FF	FF	FF	00	01	lF	55	FF	FF	FF	FF
Lash Karaka		10D0	00	02	2F	55	FF	FF	FF	FF	00	03	ЗF	55	FF	FF	FF	FF
Lock Key Memory		10E0	00	04	4F	55	FF	FF	FF	FF	00	05	5F	55	FF	FF	FF	FF
Lock SmallZone		10F0	00	06	6F	55	FF	FF	FF	FF	00	07	7 F	55	FF	FF	FF	FF
		1100	00	08	8F	55	FF	FF	FF	FF	00	09	9F	55	FF	FF	FF	FF
2 Program		1110	00	0A	AF	55	FF	FF	FF	FF	00	0B	BF	55	FF	FF	FF	FF
Z. Hogram		1120	00	0C	CF	55	FF	FF	FF	FF	00	OD	DF	55	FF	FF	FF	FF
		1130	00	0E	EF	55	FF	FF	FF	FF	00	OF	FF	55	FF	FF	FF	FF
		1140	01	00	FF	FF	FF	FF	FF	FF	01	11	FF	FF	FF	FF	FF	FF v
3. Export log																		

Figure 73 SQ710x Program Device: Function Options

Function options are divided into 4 parts: :

- 1. Lock options: User can select the memory zone to be locked. After the program is completed, it will be locked according to the checked items.
- **a.** Lock Configuration: Configuration zone can no longer be written after locking, you can only use Block Read command to read.
- **b.** Lock Key Memory: Key Memory Key memory can no longer be written after locking. (Lock Configuration must be locked before Lock Key Memory.)
- c. Lock Small Zone: Small zone can no longer be written after locking, you can only use Block Read command to read.

Page: 47 / 77

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

2. **Program:** After the user clicks, a confirmation window will pop up, and the program process will start after clicking "Yes."

	(Configurati	on	User	Zone	S	m <mark>all</mark> Zo	ne	Cou	nter Zo	ne	Key						
		Address	00	01	02	03	04	05	06	07	08	09	0A	OB	0C	0D	OE	OF /
	•	1000	00	01	00	03	00	00	00	00	38	5E	18	42	47	28	19	55
		1010	00	01	10	10	10	OA	FF	FF	00	EE	01	FF	FF	FF	FF	FF
		1020	FF	FF	FF	C9	C7	FF	FF	FF	FF	FF	FF	FF	FF	55	FF	FF
		1030	FF	FF	FF	FF	FF	FF	55	FF	FF	FF	FF	FF	FF	FF	FF	55
		1040	E9	DE	00	FF	FF	FF	FF	FF	E9	DE	10	FF	FF	FF	FF	FF
		1050	E9	DE	20	नन	त्रज	मम	नन	मन	E9	DE	30	FF	FF	FF	FF	FF
		1060	E9	DE	17 W.	arning				>	< 29	DE	50	FF	FF	FF	FF	FF
		1070	E9	DE							E9	DE	70	FF	FF	FF	FF	FF
		1080	E9	DE		Thic	بم الزير	ase a	Idata		E9	DE	90	FF	FF	FF	FF	FF
		1090	E9	DE				t to co		5 C C C C C C C C C C C C C C C C C C C	E9	DE	B0	FF	FF	FF	FF	FF
		10A0	E9	DE	U U		I Wall		munu	e:	E9	DE	DO	FF	FF	FF	FF	FF
		10B0	E9	DE							E9	DE	FO	FF	FF	FF	FF	FF
Lock Configuration		10C0	00	00		Don't s	how thi	s messa	ige aga	in	po	01	lF	55	FF	FF	FF	FF
		10D0	00	02		V	~~		NIG		po	03	ЗF	55	FF	FF	FF	FF
Lock Key Memory		10E0	00	04		Y	es		No		po	05	5F	55	FF	FF	FF	FF
Lock SmallZone		10F0	00	06	10	55	2 2	2.2	2.2	2.2	00	07	7F	55	FF	FF	FF	FF
		1100	00	08	8F	55	FF	FF	FF	FF	00	09	9F	55	FF	FF	FF	FF
Program		1110	00	OA	AF	55	FF	FF	FF	FF	00	0B	BF	55	FF	FF	FF	FF
Flogram		1120	00	0C	CF	55	FF	FF	FF	FF	00	OD	DF	55	FF	FF	FF	FF
		1130	00	0E	EF	55	FF	FF	FF	FF	00	OF	FF	55	FF	FF	FF	FF
		1140	01	00	FF	FF	FF	FF	FF	FF	01	11	FF	FF	FF	FF	FF	FF

Figure 74 SQ710x Program Device: Program confirm message box

The program process is as follows:

a. Check if the Socket device exists, when the device does not exist, an error window will be displayed and the programming will stop.

3 31 5 51		FF	FF	10.10	
5 51				FF	FF
	:	FF	FF	FF	FF
7 71	55	FF	FF	FF	FF
9 <mark>9</mark> 1	55	FF	FF	FF	FF
B BI	55	FF	FF	FF	FF
D DI	55	FF	FF	FF	FF
F FI	55	FF	FF	FF	FF
1 F1	F FF	FF	FF	FF	FF 🗸
	B BI D DI F FI	B BF 55 D DF 55 F FF 55	B BF 55 FF D DF 55 FF F FF 55 FF	B BF 55 FF FF D DF 55 FF FF F FF 55 FF FF	B BF 55 FF FF FF D DF 55 FF FF FF F FF 55 FF FF FF

Figure 75 SQ710x Program Device: Socket device not detected message box

b. Check that the communication mode of the device matches the configuration settings. If there is a mismatch, an error window will be displayed and the programming will stop.

Page: 48/77

: TDL	JM02-	TE0	02-EN Name: Secure Starte	r Kit l	Jser	Man	ual				Version : V2
1000	00	00		01	11	55		F F		11	_
10D0	00	02	🐻 Program Error 🛛 🗙 🕹	03	3F	55	FF	FF	FF	FF	
10E0	00	04		05	5F	55	FF	FF	FF	FF	
10F0	00	06	Communication mode not match	07	7 F	55	FF	FF	FF	FF	
100 00 08 Device : I2C		09	9F	55	FF	FF	FF	FF			
1110	00	AO	Configuration : SPI	0B	BF	55	FF	FF	FF	FF	
1120	00	0C		0D	DF	55	FF	FF	FF	FF	
1130	00	0E	OK	OF	FF	55	FF	FF	FF	FF	
1140	01	00		11	FF	FF	FF	FF	FF	FF	v
k Device munications ce : 12C	100000000000000000000000000000000000000		ication Mode Fail Iatch		14						^

Figure 76 SQ710x Program Device: Communication mode not match message box

c. Check if the device is locked. When the Configuration is locked, an error window will be displayed and the programming will stop. When only the Small zone is locked, ask the user whether to continue programming other parts except the Small zone.

10D0	00	02	🐻 Program Error 🛛 🗙 🗙	03	3F	55	FF	FF	FF	FF	
		02		100			and the second	r r	E E		
10E0	00	04		05	5F	55	FF	FF	FF	FF	
10F0	00	06	Configuration,Small zone are	07	7 F	55	FF	FF	FF	FF	
1100	00	08	locked	09	9F	55	FF	FF	FF	FF	
1110	00	OA	IOCKEU	OB	BF	55	FF	FF	FF	FF	
1120	00	0C		OD	DF	55	FF	FF	FF	FF	
1130	00	OE	OK	OF	FF	55	FF	FF	FF	FF	
1140	01	00		11	FF	FF	FF	FF	FF	FF	
jram Star ck Device figuratior	Exist, Co		ation Mode, Lock Status <mark>Fail</mark> locked								



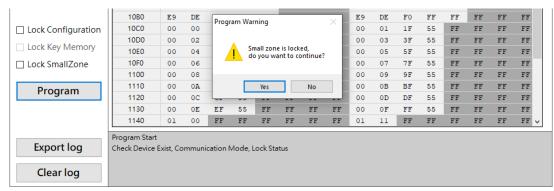


Figure 78 SQ710x Program Device: Small zone locked, continue dialog.

Page: 49/77

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

d. Check whether the enable status of Key AES256 matches the setting in Configuration, if there is a mismatch, an error window will be displayed and the programming will stop.

ł	KeylD	Selected	AES256				Ke	Value				Key Generato
	0				2.2.2.2			FFFF FFFF	2.2.2.2		7,7,7,7	
	1											Random
	2			FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	Decet
	3			FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	Reset
	4			FFFF	FFFF	FFFF	FFF	FFFF	FFFF	FFFF	FFFF	
	5	\checkmark		FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	
	6	\checkmark		FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	
	7	\checkmark		FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	
	8			FFFF FFFF	FFFF FFFF	20202		FFFFF FFFFF			70707070	
	9											
	10			FFFF	FFFF			FFFF	FFFF	FFFF	FFFF	
	11		Program Error				× FI	FFFF	FFFF	FFFF	FFFF	
	12						FI	FFFF	FFFF	FFFF	FFFF	
	13		AES mode	e not r	natch	c	FI	FFFF	FFFF	FFFF	FFFF	
	14		Key 0	0,08,1	4		FI	FFFF FFFFF	FFFF FFFF	FFFF FFFF		
	15			ЭК			48					
he			nication Mode, Lock St 00.08.14	atus, Key	Config	uration	Fi	ail				

Figure 79 SQ710x Program Device: AES mode not match message box

- e. Write Key AES256 settings to Key configuration memory.
- f. Write Key Value.
- g. Write Counter Zone, Small Zone and User Zone.
- h. Finally, write Configuration.
- i. Check whether the user has checked the Lock options, and lock according to the lock options.
- j. Program is complete.

/rite Small Zo /rite User Zo /rite Configu	ne D	one	Done									
1140 /rite Counter	01 Zone	00 Done			11	FF	FF	FF	FF	FF	FF	~
1130	00	OE	OK		OF	FF	55	FF	FF	FF	FF	ŝ
1120	00	0C			0D	DF	55	FF	FF	FF	FF	
1110	00	OA			0B	BF	55	FF	FF	FF	FF	
1100	00	80	Program Done		09	9F	55	FF	FF	FF	FF	
10F0	00	06			07	7 F	55	FF	FF	FF	FF	
10E0	00	04			05	5F	55	FF	FF	FF	FF	
10D0	00	02	🐻 Program	×	03	3F	55	FF	FF	FF	FF	
1000	00	00			01	ΤĽ	22	P P	11	L L	L L	

Figure 80 SQ710x Program Device: Progarm Done message box

Page: 50/77

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

3. Export log: Users can click this button to export the content of the Log Window into a .log file.

	1130 1140	00	0E 00	EF FF	55 FF	FF FF	FF FF	FF FF	FF FF	00 01	0F 11	FF FF	55 FF	FF FF	FF FF	FF FF	FF FF V
Export log																	
Clear log																	
										-							

Figure 81 SQ710x Program Device:Export log

Select the save path and file name, the default file name is "Log_YYMMDD.log" (YYMMDD is the current date)

- → ✓ ↑ 🔤 ≪ iMQ_StarterKit → SQ71_Series_St	5		Ū.		arch log	
Organize 🔻 New folder					2	 •
 This PC 3D Objects Desktop Documents Downloads Music Pictures 		Date modif natch your		Ту	pe	Size
Videos						
# Local Disk (C) Y Sile name: File name: Log_230601.log Save as type: Log File(*.log)						

Figure 82 SQ710x Program Device: Export log dialog

4. Clear log: Users can click this button to clear the content of the Log Window.

	1130 1140	00	0E 00	EF FF	55 FF	FF FF	FF FF	FF FF	FF FF	00 01	0F 11	FF FF	55 FF	FF FF	FF FF	FF FF	FF FF V
Export log																	
Clear log																	

Figure 83 SQ710x Program Device: Clear Log

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

4.1.4.3 Menu Bar

There is a File menu on the menu bar, as shown in the figure below:

File												Me	nu	bar			
Export Data Ctr	+S	ration	User	Zone	S	mall Zo	ne	Cou	nter Zo	ne	Key						
Import Data	•	s 00	01	02	03	04	05	06	07	08	09	0A	OB	0C	0D	0E	OF
	▶ 1000	00	01	00	03	00	00	00	00	38	5E	18	42	47	28	19	55
	1010	00	01	10	10	10	0A	FF	FF	00	EE	01	FF	FF	FF	FF	FF
	1020	FF	FF	FF	C9	C7	FF	FF	FF	FF	FF	FF	FF	FF	55	FF	FF
	1030	FF	FF	FF	FF	FF	FF	55	FF	FF	FF	FF	FF	FF	FF	FF	55
	1040	E9	DE	00	FF	FF	FF	FF	FF	E9	DE	10	FF	FF	FF	FF	FF
	1050	E9	DE	20	FF	FF	FF	FF	FF	E9	DE	30	FF	FF	FF	FF	FF
	1060	E9	DE	40	FF	FF	FF	FF	FF	E9	DE	50	FF	FF	FF	FF	FF
	1070	E9	DE	60	FF	FF	FF	FF	FF	E9	DE	70	FF	FF	FF	FF	FF
	1080	E9	DE	80	FF	FF	FF	FF	FF	E9	DE	90	FF	FF	FF	FF	FF
	1090	E9	DE	AO	FF	FF	FF	FF	FF	E9	DE	B0	FF	FF	FF	FF	FF
	10A0	E9	DE	CO	FF	FF	FF	FF	FF	E9	DE	DO	FF	FF	FF	FF	FF
	10B0	E9	DE	EO	FF	FF	FF	FF	FF	E9	DE	FO	FF	FF	FF	FF	FF
] Lock Configuration	1000	00	00	OF	55	FF	FF	FF	FF	00	01	lF	55	FF	FF	FF	FF
Lask Kay Mamany	10D0	00	02	2F	55	FF	FF	FF	FF	00	03	ЗF	55	FF	FF	FF	FF
Lock Key Memory	10E0	00	04	4F	55	FF	FF	FF	FF	00	05	5F	55	FF	FF	FF	FF
Lock SmallZone	10F0	00	06	6F	55	FF	FF	FF	FF	00	07	7F	55	FF	FF	FF	FF
	1100	00	08	8F	55	FF	FF	FF	FF	00	09	9F	55	FF	FF	FF	FF
Program	1110	00	0A	AF	55	FF	FF	FF	FF	00	0B	BF	55	FF	FF	FF	FF
riogram	1120	00	0C	CF	55	FF	FF	FF	FF	00	0D	DF	55	FF	FF	FF	FF
	1130	00	0E	EF	55	FF	FF	FF	FF	00	OF	FF	55	FF	FF	FF	FF
	1140	01	00	FF	FF	FF	FF	FF	FF	01	11	FF	FF	FF	FF	FF	FF
Export log																	
Clear log																	

Figure 84 SQ710x Program Device: Menu bar

iMQ Technology Inc.			
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2	

1. Export Data

After clicking Export Data, all the data in the memory configuration (Configuration, User Zone, Small Zone, Counter Zone and Key Value) can be exported into a file in .Json format (The file extension is .jsfw).

🐻 Program Device	
File	
Export Data	Ctrl+S
Import Data	

Figure 85 SQ710x Program Device: File menu/Export Data

Select the save path and file name, the default file name is "SQ710x_YYMMDD.jsfw" (YYMMDD is the current date)

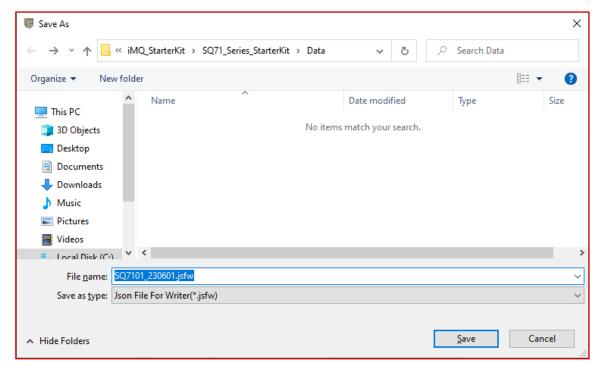


Figure 86 SQ710x Program Device: Export Data dialog

	ta	2.7
Ex	port Data Done	à
	ОК	

Figure 87 SQ710x Program Device: Export data done message box

Page: 53/77

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

2. Import Data

After clicking Import Data, select the source of the memory configuration data to be imported.

a. Socket Device: Import memory configuration data from the currently connected Socket Device.

Program Device				
File				
Export Data Ct	rl+S	uration	User Zone	Small Zone
Import Data	•	Soc	ket Device	Ctrl+K
	▶ 1000	On	Board Device	Ctrl+B
	1010	File		Ctrl+L

Figure 88 SQ710x Program Device: File menu/Import Data/Socket Device

b. On Board Device: Import memory configuration data from the On Board Device (This feature is currently not supported, it is reserved to be enabled in the future).

rl+S	uration	User Zone	Small Zone
•	Soc	ket Device	Ctrl+K
▶ 1000	On	Board Device	Ctrl+B
1010	File		Ctrl+L
	► ► 100	Soc Soc 1000 On	Socket Device On Board Device

Figure 89 SQ710x Program Device: File menu/Import Data/On Board Device

c. File: From the previously exported .Json format file (The file extension is .json/.jsfw) Import data.

Program Device					
File Export Data Cti	r <mark>l+</mark> S		uration	User Zone	Small Zone
Import Data		•	Soc	ket Device	Ctrl+K
	Þ	100	On	Board Device	Ctrl+B
	-	101	File		Ctrl+L

Figure 90 SQ710x Program Device: File menu/Import Data/File

Page: 54/77

b. : TDUM02- TE002-EN		Name: Secure Starter Kit User	Manual			Version :	V2.2
🐻 Open						×	
\leftrightarrow \rightarrow \checkmark \uparrow	< iMQ	_StarterKit > SQ71_Series_StarterKit > Data	~	Ō			
Organize 🔻 New	folder					- 🔳 😧	
	^	Name	Date mod	fied	Туре	Size	
This PC		📓 SQ7101_230601.jsfw	6/1/2023 5	:57 PM	JSFW File	11	
Desktop							
Documents							
Downloads							
Music							
Pictures							
🚪 Videos							
🏪 Local Disk (C:)							
\$WinREAgent							
iMQ.	~ <					>	
		ne: SQ7101_230601.jsfw			Json File(*.json;*.js	fw) 🗸	

Figure 91 SQ710x Program Device: Import file dialog

Import 🕼	Data - File	~
	Import File Done	•
	ОК	

Figure 92 SQ710x Program Device: Import file done message

If the import data fails to be read, an error message will be displayed, and the address where the error occurred and related information will be recorded in the Log Window. In addition, the fields that failed to be read will be displayed in red fonts for users to identify and modify.

: TDUM02- TE002-	EN	Nan	ne: Se	ecure	Star	ter Ki	it Use	er Ma	anua	I					Versi	on :	V2.
Program Device							1.05			0.5				1]
File																	
The	Configurat	ion	User	Zone	S	mall Zo	ne	Cour	nter Zo	ne	Key						
	Address	00	01	02	03	04	05	06	07	08	09	0A	OB	0C	0D	OE	OF
	▶ 0000	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	0010	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	0020	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	0030	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	0040	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	0050	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF.	FF
	0060	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	0070	FF	FF	tin 🐻	nport D	ata - So	cket De	evice		×	FF	FF	FF	FF	FF	FF	FF
	0080	FF	FF								FF	FF	FF	FF	FF	FF	FF
	0090	FF	FF		D	l				-	FF	FF	FF	FF	FF	FF	FF
	00A0 00B0	FF	FF		В	IOCK I	kead	Error!		-	FF	FF	FF	FF	FF	FF	FF
	0000	FF	FF							-	FF	FF	FF	FF	FF	FF	FF
Lock Configuration	0000	FF	FF				ОК			-	FF	FF	FF	FF	FF	FF	FF
Lock Key Memory	00E0						UK				FF	07.70					FF
				नन	नन	FF	नन	नन	नन	77							FF
Lock SmallZone	00E0 00F0	FF	FF FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF FF	FF FF	FF FF	
Program																	
Export log	Import Socket Send: 0A 10	0B 01 C8	8 09 10		0 00 10	91 D4											
	Received: 00	04 04 9	1.4F														

Figure 93 SQ710x Program Device: Import Data: Block Read Error message box

iMQ Technology Inc.			
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.	2

4.1.4.4 Log Window

Log Window will automatically record the operation status, programming status and error information. User can use the mouse to select, copy, select all, or clear the contents of the Log Window or use the Export log button to export the Log file, or use the Clear log button to clear the contents of the Log Window

Export Data Ctr	r +S ura	tion	User	Zone	S	mall Zo	ne	Cou	nter Zo	ne	Key						
Import Data	۰ ss	00	01	02	03	04	05	06	07	08	09	0A	OB	0C	0D	0E	OF A
	▶ 1000	00	01	00	03	00	00	00	00	38	5E	18	42	47	28	19	55
	1010	00	01	10	10	10	ΟA	FF	FF	00	EE	01	FF	FF	FF	FF	FF
	1020	FF	FF	FF	C9	C7	FF	FF	FF	FF	FF	FF	FF	FF	55	FF	FF
	1030	FF	FF	FF	FF	FF	FF	55	FF	FF	FF	FF	FF	FF	FF	FF	55
	1040	E9	DE	00	FF	FF	FF	FF	FF	E 9	DE	10	FF	FF	FF	FF	FF
	1050	E9	DE	20	FF	FF	FF	FF	FF	E9	DE	30	FF	FF	FF	FF	FF
	1060	E9	DE	40	FF	FF	FF	FF	FF	E 9	DE	50	FF	FF	FF	FF	FF
	1070	E9	DE	60	FF	FF	FF	FF	FF	E9	DE	70	FF	FF	FF	FF	FF
	1080	E9	DE	80	FF	FF	FF	FF	FF	E9	DE	90	FF	FF	FF	FF	FF
	1090	E9	DE	AO	FF	FF	FF	FF	FF	E9	DE	B 0	FF	FF	FF	FF	FF
	10A0	E9	DE	CO	FF	FF	FF	FF	FF	E 9	DE	DO	FF	FF	FF	FF	FF
	10B0	E9	DE	EO	FF	FF	FF	FF	FF	E9	DE	FO	FF	FF	FF	FF	FF
Lock Configuration	10C0	00	00	OF	55	FF	FF	FF	FF	00	01	1F	55	FF	FF	FF	FF
Lock Key Memory	10D0	00	02	2F	55	FF	FF	FF	FF	00	03	ЗF	55	FF	FF	FF	FF
	10E0	00	04	4F	55	FF	FF	FF	FF	00	05	5F	55	FF	FF	FF	FF
Lock SmallZone	10F0	00	06	6F	55	FF	FF	FF	FF	00	07	7F	55	FF	FF	FF	FF
	1100	00	08	8F	55	FF	FF	FF	FF	00	09	9F	55	FF	FF	FF	FF
Program	<mark>1110</mark>	00	0A	AF	55	FF	FF	FF	FF	00	0B	BF	55	FF	FF	FF	FF
riogram	1120	00	00	CF	55	FF	FF	FF	FF	00	0D	DF	55	FF	FF	FF	FF
	1130	00	0E	EF	55	FF	FF	FF	FF	00	OF	FF	55	FF	FF	FF	FF
	1140	01	00	FF	FF	FF	FF	FF	FF	01	11	FF	FF	FF	FF	FF	FF 🗸
Export log			indo														
Clear log		g Wi	nuo	vv													

	riogram bone		
	Program Done		
Clear log	Write Configuration Zone	Clear	
	Write User Zone Done	Select All	Ctrl+A
1			
Export log	Write Small Zone Done	Сору	Ctrl+C
	Write Counter Zone Done		

Figure 95 SQ710x Program Device: Copy contents of Log Window

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

5. SQ713x/SQ713xS/SQ719x

5.1 StarterKit Software Function Description

5.1.1 Software Introduction

SQ713x/SQ713xS/SQ719x device[x= 1:I2C, 3:SPI, 5:SWI(SQ713x only)] is a hardware-based key storage with a secure hardware accelerator that can implement AES/ECC encryption functions, SHA hash algorithm, ECDH key exchange, ECDSA digital signature, and TRNG.

The Starter Kit program is a Windows program for learning how to configure, access memory, test commands, security test, and lock areas for the EVB board.

5.1.2 StarterKit initialization

It will take some time to initialize the StarterKit HW and StarterKit GUI runtime environments. If an error or problem occurs, an error or warning message box may appear.

5.1.2.1 The Program Re-Entry Warning

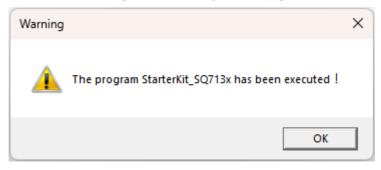


Figure 96 Warning message 1

When you see this message during initialization, the root cause is that the program is already running and resident in memory

5.1.2.2 StarterKit Not Found Warning

Warning		×
<u> </u>	StarterKit not found, do you want to continue?	
	Yes No	

Figure 97 Warning message 2

Page: 58/77

No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2
When you see this messa	ge during initialization, the root cause could	be
No power		
DIP switch error		
USB disconnection		
PCBA failure		

5.1.2.3 Device Is Not Responding Warning

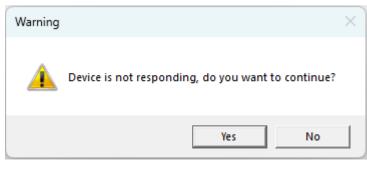


Figure 98 Warning message 3

When you see this message during initialization, the root cause could be

There is no chip on the StarterKit

Chip failure

PCBA failure

5.1.2.4 StarterKit Cannot Be Initiated Error



Figure 99 Error message 1

When you see this message during the initialization process, the root cause is that the program was installed incorrectly. You must reinstall the program.

5.1.2.5 Device Boot Failure

Page: 59/77

lo. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version : V2.2
Error	×	
Device boot failure.		
ОК		

Figure 100 Error message 2

When you see this message during the initialization process, the root cause is that the device firmware is not functioning properly during boot up time and you must re-update the device firmware or contact FAE for support.

5.1.3 StarterKit Main Screen

Zone Navigator		Zone View	Zone Configuration
figuration	Configuration		Configuration
nguration seral Data	Contract Contractor		Alti2CAddr FF
slic Key	0x00 0x01 0x02 0x03 0x04		UserExtra 00
ure Boot ate Key	0x0000 Reserve Alterna UserExt	Reserved ChipOptions Default LockVa LockCo Secure	ChipOptions 1600 0E
ate Key ret Key	0x0010 Secure Boot	Reserved	Defi2CAddr Cf
Key	0x0020	SlotConfig	LockValue 00
ificate	0x0030	SlotConfig	LockConfig 00
rotection Key	0x0040	SlotConfig	Secure Boot 89C8 C3
	0x0050	SlotConfig	
	0x0050	SlotConfig	
	0x0070	SlotConfig	
	0x0080 SlotC	Config KeyConfig	
	0x0090	KeyConfig	
	0x00x00	KeyConfig	
	0x0080	KeyConfig	
	0x0000	KeyConfig	
	0x0000	KeyConfig	
	0x00E0	KeyConfig	
	0x00F0 KeyConfig	Reserved	
	Show Labels		Save Zone
		Log Window	System Information
	3 0023 0013 0013 0013 0013 0013 0014 0014 001	0059 0079 0067 0027 0020 0027 0020 C62C	Device State Lock State System Status
Time: 50.26ms			
Data: 0500 2333 6D2 Time: 50.26ms (2), Mode(0x80)> 109	156:11) 9 1#		Device State
Data: 0500 2333 6D2 Time: 50.26me 02), Mode(0x80)> [09 Data: 0702 8000 C07 Data: 0500 2333 6D2	156:11) 9 86 3 0010 0020 0027 0021 0027 0021 0011 0021 0007	0027 0027 0027 0027 0027 0027 0028	Device State Info Bytes 0000 0001
Data: 0500 2333 6D2 Time: 50.24me (2), Mode(0xH0)> [05 Data: 0702 8000 C07 Data: 0500 2333 6D2 Time: 39,78me (2), Mode(0x20)> [05	9 86 3 0010 0020 0027 0021 0027 0021 0011 0021 0007 *56:121	0027 0027 0027 0027 0027 0027 8085	
Data: 0500 2333 6D2 Time: 30.26mm (2), Mode (0x80)> [09 Data: 0702 3000 C07 Data: 0500 2333 6D2 Time: 39.75mm (2), Mode (0x80)> [05 Data: 0702 8000 E05 Data: 0500 2333 6D2	9 86 3 0010 0020 0027 0021 0027 0021 0011 0021 0007 *56:121		Info Bytes 0000 0001
Data: 0500 2333 6D2 Time: 50.26me 30.8006 (0x80)> [05 Data: 0702 8000 C07 Data: 0500 2333 6D2 Time: 38.75me 21, Mode (0x80)> [05 Data: 0702 8000 E05 Data: 0500 2333 6D2 Time: 51.65me	9.86 3 0010 0020 0027 0021 0027 0021 0011 0021 0007 156:12] 10 C4 3 0027 0027 0027 0027 0027 0027 0027 002		Info Bytes 0000 0001 InternalKey/SlotD 9
Data: 0500 2333 602 Time: 50.26ms (2), Mode(0x80)> [05 Data: 0500 2333 602 Time: 38.75ms (2), Mode(0x80)> [05 Data: 0500 2333 602 Time: 51.65ms (2), Mode(0x80)> [05 Data: 0500 2333 602 Time: 51.65ms (2), Mode(0x80)> [05 Data: 0500 2333 602 Data: 0500 2333 602	9.86 3 0010 0020 0027 0021 0027 0021 0011 0021 0007 158612] 10 04 3 0027 0027 0027 0027 0027 0027 0027 002	0027 FFFF FFFF FFFF FFFF FFFF 4/81	Info Bytes 0000 0001 InternalKey SlotD 0 InternalKey NoMacFlag False
Data: 0500 2333 6D2 Time: 50.246ms 02), Mode(0x50)> [05 Data: 0702 8000 C07 Data: 0500 2333 6D2 Time: 39,75ms 21, Mode(0x50)> [05 Data: 0702 8000 025 Data: 0702 8000 025 Data: 0500 2333 6D2 Time: 51.63ms Data: 0500 2333 6D2 Time: 3500 2333 6D2 Time: 3500 2333 6D2	9.86 3 0010 0020 0027 0021 0027 0021 0011 0021 0007 156:12] D C4 3 0027 0027 0027 0027 0027 0027 0027 002	0027 FFFF FFFF FFFF FFFF FFFF 4/81	Inter Bytes 0000 0001 Intermality Studies Tag Intermality Studies Tag Intermality Genolog Data Raise Intermality Genolog Data Raise
Data: 0500 2333 6D2 Time: 50.24ms 21, Mode (0x80)> [05 Data: 0702 8000 C07 Data: 0500 2333 6D2 Time: 39,75ms 21, Mode (0x80)> [05 Data: 0500 2333 6D2 Time: 51.65ms 22], Mode (0x80)> [05 Data: 0500 2800 003	9.86 3 0010 0020 0027 0021 0027 0021 0011 0021 0007 156:12] D C4 3 0027 0027 0027 0027 0027 0027 0027 002	0027 FFFF FFFF FFFF FFFF FFFF 4/81	Inter Bytes 0000 0001 International State Control Cont
Data: 0500 2333 6D2 Time: 50.246ms 02), Mode(0x50)> [05 Data: 0702 8000 C07 Data: 0500 2333 6D2 Time: 39,75ms 21, Mode(0x50)> [05 Data: 0702 8000 025 Data: 0702 8000 025 Data: 0500 2333 6D2 Time: 51.63ms Data: 0500 2333 6D2 Time: 3500 2333 6D2 Time: 3500 2333 6D2	9 46 9 000 0020 0027 0021 0021 0021 0021 0051 55010 9 0027 0027 0027 0027 0027 0027 0027 002	0027 FFFF FFFF FFFF FFFF FFFF 4/81	Inde Bytes 0000 0001 Internetifiery SlotDL 2 Internetifiery SlotDL 71.1 m Internetifiery Generalization 71.2 m

Figure 101 Main screen

5.1.3.1 Main Menu

Main menu includes seven main items, File; Tools; Macro; Writer Configuration; Setting; View; Help.

🗈 Eile 🛠 Tools 🗼 Macro 🌮 Writer Configuration 🛱 Setting 🐻 View 🕐 Help

Figure 102 Main menu

5.1.3.1.1 File

File item includes 5 sub items, Export/Import Zone; Export/Import Log; Exit.

Page: 60/77

iMQ Technology Inc.															
No.	: TDUM02- TE002	-EN	Name: S	Jame: Secure Starter Kit User Manual									Version :	V2.2	
·															
🖹 File 🛠 Tools 🗼 Macro 🧚 Writer Configuration 🏶 Setting 🗟 View 🕜 Help															
5	Export Zone														
62	Import Zone	_	Slot26	[0x24]	_	_	_	_	_	_	_	_			
🛃 Export Log			310130	[UX24]		_	_	_	_	_	_				
i.co	Import Log		- A	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0xl			
-]	Exit		0x0000		FF	FF									
	LAIL		0x0010	FF	FF	FF	FF	FF	FF	FF	FF	FF			



Export/Import Zone: Export/Import the byte data of the current area to/from a Json file in the zone view window.

Export/Import Log: Export/Import the text data of the current area to/from a Json file in the log window.

Exit: Exit the program immediately.

5.1.3.1.2 Tools

Tools item includes two sub items, Crypto Calculator; Command Builder; Import StarterKit FW File and StarterKit FW Update.

	File	*	Tools 🔅	Macro	*	Writer C	onfig	guratio	n 🖨 S	Setting	💩 Vie	ew 🕜	Help
		¢	Crypto	Calculato	or								
-	Command Builder								_	_	_	_	_
Þ	Conf Gene	Ľ	Import	StarterKi	t FW	File	-						
Þ	Publ	C	Starter	Kit FW Up	date	9		0x01	0x02	0x03	0x04	0x05	0x06

Figure 104 Tools sub menu

Crypto calculator: This function can perform trial calculations on cryptographic functions.

NO TDOINIO2-TL	002-EN	Name: Secure Starter Kit User Manual	Version: V2.2
Cryptor Calculator			
ES ECDH ECDSA MISC SH	IA KDF		
AES-128 AES-256 AES-GFM			
Function Encrypt	O Dec	ypt	
Input.		Byte-Count	
Key: 0000 0000 0000 0	000 0000 0000 0000 000	0	
Output:			
Company.			
Execute	Input 👄 C	utput	
Execute	Input <> C	utput	
Execute	input ⇔ C	utput	

Figure 105 Cryptor Calculator

Command builder: This function can communicate and test commands with SQ713x/SQ713xS/SQ719x device through USB HID protocol (Refer to SQ713x/SQ713xS/SQ719x Datasheet for command usage).

o. : TDUMC	2- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.
ommand Builder		×	
12	Command Pack	et	
ommand Raw			
Command	AES(0x51)	*	
Mode	0x00 Encrypt 16/Int	ernal Key 🗸	
SlotID DIN			
DIN			
	Send Details		
Length			
Command			
CRC16			
	Response Detai	ls	
Length		1	
Status			
Rsp Len			
CRC16			
Rsp Len			
Packet			
CRC16			
Execute	Clear Details Expor	t Macro Import Macro	

Figure 106 Command Builder

Click Execute button to execute the command

Click Clear Details button to clear the content of Send Details/Response Details.

Click Export Macro button to export the command to be a Json file as a macro.

Click Import Macro button to import an existed macro file to compose the command.

Import StarterKit FW File and StarterKit FW Update: (Refer to 2.2)

5.1.3.1.3 Macro

Macro item includes two sub items, Generate Macro by Log; Run Macro.

🗎 File 🛠 Tools	×	Macro	*	Writer Configuration	\$	Setting	8	View	0	Help
Zone Navi	Ť	Gener	ate	Macro by Log						
		Run M			-	_	-	-	-	_

Figure 107 Macro sub menu

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

Generate Macro by Log: This function generate a Json file as a macro from the contents of the log window.

Run Macro: This function loads a macro file and executes its instructions in sequence.

5.1.3.1.4 Writer Configuration

Writer Configuration item includes a sub item, Writer Configuration Utility (SQ713xS does not support).

🖹 File 🛠 Tools 🗼 Macro	🌮 Writer Configuration 🏼 🕏 Setting 🚦	🕏 View 🕜 Help
Zone Navigator	Writer Configuration Utility	

Figure 108 Writer Configuration sub menu

Writer Configuration Utility: This function is a utility for one time chip configuration. (How to configure, please refer to SQ713x/SQ719x Datasheet)

Configuration Zone tab list the modifiable parameters in configuration zone.

Writer Configuration Utility			×
output v	Progra	m Device Export Writer Configuration	Import Writer Configuration
Configuration Zone Slot/Key Configuration Data Slot Edit/Write			
Serial Interface			
● I2C ○ SPI ○ SWI			
Default I2C Address: 0x C8			
Secure Boot			
 Opt1(89 C8 C3) 			
Opt2(89 C8 CB)			
L			
User Extra: 0x FF			

Figure 109 Writer Configuration Utility/Configuration Zone

Click "Program Device" button to start programming the connected device. Click "Export Writer Configuration" button to export the configuration data to a Json file. Click "Import Writer Configuration" button to import the configuration data from a Json file.

Page: 64/77

iMQ Technology Inc.			
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2	

Slot/Key Configuration tab list the slot options, most of them can be changed. Except option2 of slot1 is persistent latched, all other option2 are locked and the lockable of option1 are opposite.

output			Program Device Export Writer Configure	ation Import Writer Configuration
Configuration Zone Slot/Key Con	nfiguration Da	ta Slot Edit/Write		and any arriver configuration
		Option 1	Option 2	
	Slot 0	Slot.0x2080, Key.0x0007 No write , No read		
	Slot 1	Slot:0x8085, Key:0x0058 Primary. Permanent, Ext Sign, ECDH	Slot:0x8085, Key:0x1058 Persistent Latched	
	Slot 2	Slot:0x8082, Key:0x0058 Permanent, Int Sign		
	Slot 3	 Slot.0xa085, Key:0x0078 Updatable, Ext Sign, ECDH, Lockable 	Slot:0x8085, Key:0x0058 Locked	
	Slot 4	 Slot.0xa085, Key:0x0078 Updatable, Ext Sign, ECDH, Lockable 	Slot:0x8085, Key:0x0058 Locked	
	Slot 5	 Slot:0xa085, Key:0x0078 Updatable, Ext Sign, ECDH, Lockable 	Slot:0x8085, Key:0x0058 Locked	
	Slot 6	 Slot:0xa085, Key:0x0078 Updatable, Ext Sign, ECDH, Lockable 	Slot:0x8085, Key:0x0058 Locked	
	Slot 7	 Slot.0xa085, Key:0x0078 Updatable, Ext Sign, ECDH, Lockable 	Slot:0x8085, Key:0x0058 Locked	
		Slot 0x408f, Key:0x0023 No Read, Encrypted write , Lockable, AES key-128	Slot:0x808f, Key:0x0003 Locked, AES key-128	
	Slot 8	 Slot.0x408f, Key:0x0024 No Read, Encrypted write , Lockable, AES key-256 	Slot:0x808f, Key:0x0004 Locked, AES key-256	
		Slot 0x408f, Key:0x0023 No Read, Encrypted write , Lockable, AES key-128	Slot:0x808f, Key:0x0003 Locked, AES key-128	
	Slot 9	 Slot:0x408f, Key:0x0024 No Read, Encrypted write , Lockable, AES key-256 	 Slot:0x808f, Key:0x0004 Locked, AES key-256 	
		 Slot.0x408f, Key:0x0023 No Read, Encrypted write , Lockable, AES key-128 	Slot:0x808f, Key:0x0003 Locked, AES key-128	
	Slot 10	Slot:0x408f, Key:0x0024 No Read, Encrypted write , Lockable, AES key-256	 Slot:0x808f, Key:0x0004 Locked, AES key-256 	

Figure 110 Writer Configuration Utility/SlotKey Configuration

Data Slot Edit/Write tab provides a user interface to edit slot data and check the slots to write. In left navigator window, click on the item to read the associated data and update the slot contents on the right data grid window. The user can edit the data in the data grid. When the user ticks the checkbox of the item, it means that the slot data will be written to the device when the device is programmed.

iMQ reserves the right to change the information in this document without prior notice. Please contact iMQ to obtain the latest version of product specification before placing your order. Use of iMQ devices in life support is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless iMQ from any and all damages, claims, suits or expenses resulting from such use.

Page: 65/77

No. : TDUM02- TE002-EN	Nam	ne: S	Sec	ure	Sta	rter	· Kit	t Us	ser	Ma	nua	al					Version :	V2.
Writer Configuration Utility							_		-				_			×		
v v						Prog	ram De	evice	Exp	ort Writ	ter Conf	iguratio	n	Import	Writer C	Configuration		
Configuration Zone Slot/Key Configuration Data Slot Edit/Write							1											
🔺 🔳 📴 General Data	Slot32[0x20]	Parent	Public I	Key-384	or Gene	eral Da	ta											
Slot36[0x24]	0x00	0x01	0x02	0x03	0x04	0×05	0x06	0x07	0×08	0×09	0x0A	0×0B	0x0C	0x0D	0×0E	0x0F		
B Siot37[0x25] Siot38[0x26]	0x0000 FF	FF	FF	FF		FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF		
Slot39[0x27]	0x0010 FF 0x0020 FF	FF	FF	FF		FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF		
Slot40[0x28]	0x0020 FF	FF	FF	FF			FF	FF	FF	FF	FF	FF	FF	FF	FF	FF		
✓ ■ Slot41[0x29] □ ■ Slot42[0x2A]	0x0040 FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF		
Slot43[0x2B]	0x0050 FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF		
Slot44[0x2C]	5															5		
□																		
Slot40(0/2E) Slot47(0/2E)																		
Slot48[0x30]																		
Slot49[0x31] Slot50[0x32]																		
Slot50(0X32) Slot51(0X33)																		
Stot52(0x34)				D														
BPublic Key				60														
 Biot24[0x18]: Signer Public Key-256 Slot26[0x1A]: Parent Public Key-256 or General Data 																		
Slot27[0x1B]: Validated Public Key-256																		
Slot30[0x1E]: Signer Public Key-384																		
✓ Skot32[0x20]: Parent Public Key-384 or General Data ✓ Skot33[0x21]: Validated Public Key-384																		
Besecure Boot																		
🗉 🔲 📴 Private Key																		
E Becret Key																		
BARS Key																		
E BCertificate																		

Figure 111 Writer Configuration Utility/Data Slot EditWrite

Due to the limitation of one time configuration, if the user tries to program the device on the same chip for the second time, the message "The configuration zone is locked and device programming cannot be performed!" will appear and stop the programming process immediately.

Writer Configuration Utility	-																	
config1 v Configuration Zone Slot/Key Configuration								Progra	am Devi	се	Expor	rt Writer	r Config	uration	In	nport W	riter Co	nfiguratio
Comparator Control Comparator Co		Slot36 0x0000 0x0010	0x00 FF	0x01 FF FF	0x02 FF FF	0x03 FF FF	0x04 FF FF	0x05 FF FF	0x06 FF FF	0x07 FF FF	0x08 FF FF	0x09 FF FF	0x0A FF FF	0x0B FF FF	0x0C FF FF	0x0D FF FF	0x0E FF FF	0x0F FF FF
		Warning	The cor perform	nfigurat ned!	ion zon	e is lock	ed and	device p	orogram	ming ca	innot be 確定	×		3				
												_						

Figure 112 Programming device twice inhibition message

5.1.3.1.5 Setting

Setting item includes a sub item, I/O Setting.

No. : TDUM02- TE002-EN	Name: Secure Starter Kit U	Jser Manual			Version: V2.2
🗈 File 🛠 Tools 🗼 Macro 🐓	Writer Configuration	Setting	🔓 View	🕑 Help	
Zone Navigator		G I/O Set	ting		

I/O Setting: This function can adjust the I/O frequency at runtime.

Depending on the interface between the host and the chip, one of the following three I/O setting dialog boxes will pop up.

I/O Setting	x
Socket I2C Speed	
• 100KHz	
O 400KHz	
○ 1MHz	

Figure 114 I2C I/O Setting

I/O Setting	×
Socket SPI Speed	
IMHz	
○ 2MHz	
⊖ 4MHz	
O 8MHz	
O 10MHz	

Figure 115 SPI I/O Setting

/O Setting	x
SWI does not support I/O setting	

Figure 116 SWI does not support I/O Setting

No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2
5.1.3.1.6 View		
View item includes a sub	item, Restore Default Layout.	
🖹 File 🛠 Tools 🗼 Macro 🎐	Writer Configuration 🗱 Setting 🔀 View 🕑 Help	_
Zone Navigator	Restore Default Layou	ut
	Figure 117 View sub menu	
Restore Default Layout: E their default values.	xecuting this function will reset the height and	width of all screens to
5.1.3.1.7 Help Help item includes a sub i		

E File 🛠 Tools 🎍 Macro 🛠 Writer Configuration 🖨 Setting

🗎 File 🛠 Tools 🗼 Macro 🕈	' Writer Configuration 🏶 Setting 👪 View	Help
Zone Navigator		About

Figure 118 Help sub menu

About item displays a dialog to show the product and company information.



Figure 119 About dialog

5.1.3.2 Main Windows

This program includes five main windows: zone navigator, zone view, zone configuration, system information and log window.

5.1.3.2.1 Zone Navigator Window

Zone navigator window collects zone slots in tree view for user to search and select a zone slot easily.

Page: 68/77

lo. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version : V2.2
Zone Navigator		
Configuration General Data General Data Public Key Slot24(0x18): Signer Public Key-256 Slot26(0x1A): Parent Public Key-256 Slot26(0x1A): Parent Public Key-384 Slot30(0x1E): Signer Public Key-384 Slot32(0x20): Parent Public Key-384 Slot33(0x21): Validated Public Key-384 Slot33(0x21): Validated Public Key-384 Slot33(0x21): Validated Public Key-384 Slot33(0x22): Secure Boot Public Key-384 Slot35(0x22): Secure Boot Public Key Slot35(0x22): Secure Boot Digest Slot35(0x22): Secure Boot Digest Slot35(0x22): Secure Boot Digest Slot35(0x22): Secure Boot Digest Slot35(0x02): Internal Sign Private Key Slot01(0x04): Secondary Private Key Slot05(0x05): Secondary Private Key Slot05(0x05): Secondary Private Key Slot05(0x05): Secondary Private Key Slot02(0x07): Secondary Private Key Slot02(0x08): Secret Key0 Slot09(0x08): Secret Key0 Slot10(0x08): Secret Key2 Slot11(0x08): Secret Key3 Slot11(0x08): Secret	or General Data 256 or General Data 384 y-256 y-384 ey 0 1 1 2 3	

Figure 120 Zone navigator window

5.1.3.2.2 Zone View Window

Zone view window displays the selected slot zone data, some of them are editable and savable, some of them are not editable and non-savable (please refer to the datasheet definition). It can also export/import data to/from secondary storage. Configuration zone has two types of views, one is label view and the other is data grid view, it can export only.

10. : T	DU	M0	2- T	E00	2-E	N		Ν	lam	e: S	ecu	ire S	Star	ter	Kit l	Manual	Version :
											Zoi	ne Vie	ew				
Slot24[0x18]: Signe	r Publi	c Key-2	56													
0x00	0x01	0x02	2 0x03		0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0×0E	0x0F		
x0000 FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF		
0010 FF	FF	FF	FF	FF	FF	FF	FF	FF	FF		FF	FF	FF	FF	FF		
x0020 FF x0030 FF	FF	FF	FF	FF	FF	FF	FF	FF	FF			FF	FF	FF	FF		
										1							

Figure 121 Editable and savable data grid view

Click the "Save Zone" button to save the data grid's data to the relevant slot.

	Zone V											ne Vie	w		
Slot20[0x14]	Private	e Key0-	384 (Ri	ead Fail	- Resp	onse C	ode: 0x	E1, Slot	Acces	s Permis	sion De	eny)			
0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x0000 00		00	00	00		00	00	00	00	00	00	00	00	00	00
0x0010 00			00			00	00	00	00	00	00	00			00
0x0020 00			00			00	00	00	00	00	00	00			00
0x0030 00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

Figure 122 Non-editable and non-savable data grid view

5.1.3.2.3 Configuration Label View

User can click on any label to switch to the data grid view and the cursor will focus on the corresponding cell of the label.

No.	: TDL	IM02	2- TE0()2-Eľ	N	Ν	lam	e: Secur	e St	arte	r Kit	Us
	_							Zone	View			
Config	uration											
	0x00 0x01		0x03 0x0	C. C	0x06	0x07 0x08	0x09	A CONTRACT CONTRACTOR	0x0C	0x0D	0x0E	0x0F
	Reserve Alter	_	t	Re	served			ChipOptions	Defaul	It LockVa	LockCo	Secure
0010	Secure Boot			_		SlotConfig	leserved					_
0020						SlotConfig						_
0040						SlotConfig						_
0050						SlotConfig			_		_	
0060						SlotConfig						
x0070						SlotConfig						
×0080			9	SlotConfig					Key	Config		_
k0090		_		_	_	KeyConfig	_		_	_	_	_
(00A0		_			_	KeyConfig			_	_	_	_
00B0						KeyConfig KeyConfig						
00000						KeyConfig						
00E0				-		KeyConfig						
00F0	Ki	eyConfig					R	eserved				

Figure 123 Configuration label view

5.1.3.2.4 Configuration Data Grid View

When the cursor focuses on any cell in the data grid, the label next to the "Show Label" button displays the data grid byte offset, the label name, and the byte index within the label. Click "Show Labels" button can switch back to Configuration Label View.

Config	uration															
	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x000x	00	FF	16	00	OE	C8	00	00	89							
0x0010	C8	C3	FF													
0×0020	20	80	80	85	80	82	A0	85								
0x0030	40	8F	40	8F	40	8F	40	8F	OF	8F	OF	8F	OF	8F	OF	8F
0x0040	OF	8F	OF	8F	OF	8F	OF	8F	80	87	A0	85	OF	8F	OF	OF
0x0050	OF	OF	OF	OF	OF	OF	1F	04	OF							
0x0060	OF	OF	1F	0A	OF	OF	8F	9F	OF							
0x0070	OF	OF	OF	OF	OF	OF	OF	OF	OF	OF	OF	OF	OF	OF	OF	OF
0x0080	OF	OF	OF	OF	OF	OF	OF	OF	OF	OF	00	07	00	58	00	58
0x0090	00	78	00	78	00	78	00	78	00	78	00	23	00	23	00	23
0x00A0	00	23	00	13	00	13	00	13	00	13	00	13	00	14	00	14
0x00B0	00	14	00	59	00	79	00	67	00	27	00	20	00	27	00	20
0x00C0	00	10	00	20	00	27	00	21	00	27	00	21	00	11	00	21
0x00D0	00	07	00	27	00	27	00	27	00	27	00	27	00	27	00	27
0x00E0	00	27	00	27	00	27	00	27	00	27	00	27	00	27	00	27
0x00F0	00	27	00	27	FF											

Figure 124 Configuration data grid view

5.1.3.2.5 Zone Configuration Window

Zone configuration window displays the selected zone slot configuration.

Zone configuration of Configuration Zone:

No. : TDUM	02- TE002-EN	Name: Secure Starter Kit User Manual	Version : V2.2
	Zone Configurat	ion	
	Configuration		
AltI2CAddr	FF		
UserExtra	00		
ChipOptions	1600 OE		
Defl2CAddr	C8		
LockValue	00		
LockConfig	00		
Secure Boot	89C8 C3		

Figure 125 Zone configuration window (Configuration zone)

	Zone Configuration
	Slot36[0x24]
Key Validated	False
locked	True
Slo	ot Configuration
Byte Value	OFOF
WriteConfig	0000b
WriteKey	15
sSecret	False
NoMac	False
ReadKey	15
Ke	y Configuration
Byte Value	0027
PersistentDisable	False
ReqRandom	False
ockable	True
PubInfo	False
Private	False
КеуТуре	7

Zone configuration of Data/Key Slot Zone:

Figure 126 Zone configuration window (Slot zone)

The button **c**an be dragged and clicked to switch the configuration area between data grid mode and description mode, data grid mode contains relevant configuration information of the current data zone, the description mode contains relevant description of the current data zone.

Page : 72 / 77

lo. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2
		I
Zone Configuration		
Slot46[0x2E]		
General Data		
Valid Commands: (Slot Lockable) GenDig: Data Source Lock: SlotLock MAC Read: Clear Text Write: Clear Text Valid Commands: (Permanent Locked) GenDig: Data Source MAC Read: Clear Text		

Figure 127 Zone description of Data/Key Slot Zone

5.1.3.2.6 System information window

The Device Status tab of the System Information window displays the current status of the device.

	Syst	em	Information						
Device State	Lock Sta	te	te System Status						
	C	Devic	e State						
Info Bytes		000	00 0001						
InternalKey.Slot	D	0							
InternalKey.NoN	/lacFlag	Fal	lse						
InternalKey.Gen	KeyData	False							
InternalKey.Gen	DigData	False							
InternalKey.Sou	rceFlag	False							
InternalKey.Valio	ł	False							
InternalKey.Priva	ateKey	False							
Configuration Z	one State	Tru	ie						

Figure 128 System information window/Device state

Lock state tab of the System Information window displays configuration zone lock state and data zone lock state

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2
	·	•

	Syster	n Information					
Device State	Lock State	System Status					
	Lo	ck State					
Configuration Z	one Locked	True					
Data Zones Loc	ked	True					

Figure 129 System information window/Lock state

System status tab of the System Information window displays system and device information.

System Information				
c State	System Status			
System Status				
iMQ S	tarterKit Tool			
V4.3.	00			
V1.2(20240412)				
V4.0				
SQ713	3			
SPI (1	MHz)			
0001 0104 0000 0000				
	C State Syster iMQ St V4.3.0 V1.2(2 V4.0 SQ7132 SPI(11	System Status System Status iMQ StarterKit Tool V4.3.00 V1.2(20240412) V4.0 SQ7133 SPI(1MHz)		

Figure 130 System information window/System status

5.1.3.2.7 Log window

Log window displays communication log data.



Figure 131 Log window

Click "Clear Log" button to clear the content of Log Window.

Device connection status: Green light on indicates successful device connection; red light on indicates device connection failure.

Page: 74 / 77

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

6. HQS600x Appendix A: Hardware settings precautions for prototyping SQ7515

To develop general functions and Security Processor for SQ7515, the following hardware is required:

- Starter Kit (Left)
- SQ7515 EVB (Middle)
- MQ-Link (Right)

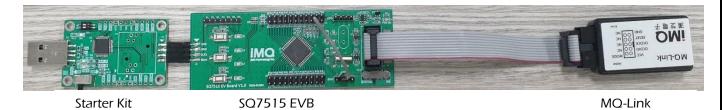


Figure 146 SQ7515 hardware settings

A.1 Security Processor application development for SQ7515

- 1. Confirm that P42 (reset) and GND on the SQ7515 EVB is shorted (EVB V1.1 uses Jumper to complete).
- 2. Confirm that the slide switch on the SQ7515 EVB switch to the system setting.
- 3. Use MQ-link to connect SQ7515 EVB for power supply, and connect the other side of MQ-link to PC as power source (Before this step, the EVB is power off).
- 4. The Starter kit is connected to the SQ7515 EVB, and the other end of the Starter kit is connected to the PC.
- 5. Open the GUI software on the PC and start setting the Security processor key or Config.

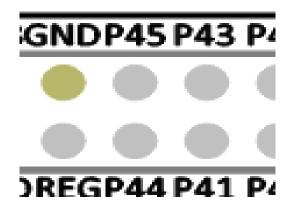


Figure 147 EVBV 1.1 Add a Reset grounding jumper

Page: 75/77

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.2

A.2 Host Processor application development for SQ7515 (using IDE)

- 1. Confirm that P42 (reset) and GND on the SQ7515 EVB is open (EVB V1.1 uses Jumper to complete).
- 2. Confirm that the slide switch on the SQ7515 EVB switch to the IDE setting.
- 3. Connect the MQ-link to the SQ7515 EVB, and connect the other side of the MQ-link to the PC.
- 4. Open the IDE software and develop the application.

Note 1: If you want to execute the StarterKit GUI to develop the Security Processor after executing the IDE first,

the system must be powered on again(according to the setting in A.1).

Note 2: For IDE software function description, please refer to "MQ-LINK User Manual."

Page: 76/77

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

Change history

Version	Approved Date	Description	
V2.2	2025/06/09	 Modify the figure to reflect the correct version number and message 	
V2.1	2025/01/07	 Modify figure description of chapter 5 and chapter 6 Adding uninstall previous version before installation in section in section 2.1 Added firmware update in section 2.2 Update the menu item's figures as the icon changes. 	
V2.0	2024/10/1	 Add figure 10~21. Add 2.2.1, 2.2.2, 2.2.3 for StarterKit firmware update 	
V1.9	2024/01/29	 Update figure 18, 19 Add 2.2 StarterKit firmware update 	
V1.8	2023/12/12	 Update SQ713x for screen shot change Update HQS600x for screen shot change Add Programming device twice inhibition message figure 92 	
V1.7	2023/11/01	 Reorganize the structure of the manual and move common parts to earlier chapters (CH1, CH2, CH3) Renumber figures Change some pictures 	
V1.6	2023/10/17	 Added SQ713x user manual in CH2; HQS600x user manual in CH3 Rearrange chapter numbers for SQ710x in CH1 	
V1.5	2022/11/23	 "SQ71 Series Secure Starter Kit User Manual" rename to "Secure Starter Kit User Manual" "CH3 StarterKit software installation" updated "CH4.2.1 Build Command" updated "CH4.2.2 Menu bar" updated 	
V1.0	2021/01/15	First release	