No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

Version: V2.0

Secure Starter Kit **User Manual** V2.0

Page: 1/78 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.

iMQ Tech	nnology Inc.		
No. : TD	UM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0
		Content	
1 IN	TRODUCTION TO	STARTER KIT	
1.1			
1.2			
2 ST.	ARTER KIT SOFTX	/ARE	
2.1	Software Instal	LER	10
2.2		VARE UPDATE	13
2.3	Software Remov	'AL	14
2.4	Software Startu	IP	16
2.5	Starter Kit Laun	CHER	16
3 SY:	STEM REQUIREME	NT	19
4 ST.	ARTER KIT SOFTW	ARE FUNCTION DESCRIPTION (SQ7101	l/SQ7103/SQ7515) 19
4.1	SOFTWARE INTROE	DUCTION	19
4.2	STARTER KIT MAIN	SCREEN	19
4.2	2.1 Build Comm	and	20
4.2	2.2 Main Menu		22
4.2	2.3 Status Bar		25
4.2	- 5		
4.2	-	oport	
4.3	-		
4.3	-	nfiguration	
4.3	•	on Menu	
	-	tion Update	
		nes Update	
4.3			
		lenu	
4.4			
4.4	•	nfiguration	
	_	tion	
		e	
		one	
4.4		otions	
4.4	-		
4.4		v	
	-	ARE FUNCTION DESCRIPTION (SQ713)	

Page: 2/78 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.

iMQ Tec	hnology l	nc.		
No. : TE	DUM02- TE	E002-EN	Name: Secure Starter Kit User Manual	Version: V2.0
5.1	Cortiv		UCTION	FO
5.1			Screen	
			SCREEN	
	-			
	5.2.1.2			
			nfiguration	
		-		
		-		
			gator Window	
			window	
	-		tion Label View	
		-	tion Data Grid View	
			iguration Window	
			ormation Window	
		-)w	
			ARE FUNCTION DESCRIPTION (HQS600	
6.1			UCTION	•
6.2	START	ER KIT MAIN	Screen	71
6.2	2.1 Mair	n Menu		71
(6.2.1.1	File		
(6.2.1.2	Tools		
	6.2.1.3	Macro		73
	6.2.1.4	Setting		73
	6.2.1.5	Help		74
6.2	2.2 Mair	n Windows.		74
(6.2.2.1	Log Windo	w	74
(6.2.2.2	Log Windo	w	75
APPEN	IDIX A:	HARDWAR	E SETTINGS PRECAUTIONS FOR PROTO	TYPING \$Q751576
CHAN	GE HIST	ORY		
Figure	1 iMQ S	ecure Starte	Kit appearance (with Socket version)	
-			^r Kit appearance (no Socket version, used w	
-			ck Diagram	
-	-		rterKit_Setup_V3.3	
Figure	5 Installa	ation path, t	he default path is C:\iMO_StarterKit	

Page: 3/78 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.

iMQ Technology Inc. No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version : V2.0
NO IDUMUZ- IEUUZ-EN	Name. secure starter Kit Oser Manual	version . vz.u
Figure 6 Checkbox to cre	ate a desktop shortcut	11
Figure 7 Reconfirm the in	stallation data	11
Figure 8 Checkbox to lau	nch iMQ StarterKit Tool	
Figure 9 Cannot find Secu	ure StarterKit warning message	
Figure 10 firmware upda	te message	
Figure 11 firmware succe	ssfully update message	14
Figure 12 Installation dire	ectory	14
Figure 13 Confirm to unit	nstall StarterKit	
Figure 14 Uninstall succe	ssful message	
Figure 15 iMQ StarterKit	Fool shortcut icon	
Figure 16 Using the Secu	re Starter Kit, and Socket is SQ7101 (I2C) devic	ce16
Figure 17 Using the Secu	re Starter Kit, and Socket is SQ7103 (SPI) devic	ce16
Figure 18 Use the Secure	Starter Kit to configure or read the Security Pr	rocessor with SQ7515
EVB		
Figure 19 Using the Secu	re Starter Kit, and Socket is SQ7131 (I2C) devic	ce17
Figure 20 Using the Secu	re Starter Kit, and Socket is SQ7133 (SPI) devic	ce17
Figure 21 Using the Secu	re Starter Kit, and Socket is SQ7135 (SWI) devi	ice18
Figure 22 Using the Secu	re Starter Kit, and Socket is HQS6004 (SPI) dev	vice18
Figure 23 Cannot find Se	cure StarterKit message	
Figure 24 SQ710x Starter	Kit main screen	
Figure 25 SQ710x Build C	Command area	
Figure 26 SQ710x Main r	nenu	
	b menu	
Figure 28 SQ710x Memo	ry sub menu	
Figure 29 SQ710x Tool su	ıb menu/XOR	
Figure 30 SQ710x Tool su	ub menu/Program Device	
Figure 31 SQ710x: SQ710	0x About sub menu	
Figure 32 SQ710x SQ710	x About dialog	
Figure 33 SQ710x Status	bar	
Figure 34 SQ710x Status	bar (SPI device)	
Figure 35 SQ710x Log ar	еа	
Figure 36 SQ710x Enable	e AES-256	
Figure 37 SQ710x Memo	ry: AES256 field selected as "Yes"	
	lemory on the main menu	
Figure 39 SQ710x Memo	ry window	
-	ry: Memory configuration block	
-	ry: Configuration update	

Page: 4/78 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.

iMQ Technology Inc. No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0
	User Zone update	
	Menu bar	
Figure 44 SQ710x Memory:	File sub menu/Export file	36
	Export file dialog	
	Export finish message	
Figure 47 SQ710x Memory:	File sub menu/Import file	
-	Import file dialog	
Figure 49 SQ710x Memory:	Select import data dialog	
Figure 50 SQ710x Memory:	Import data finish message	
Figure 51 SQ710x Memory:	Reload Data sub menu item	
Figure 52 SQ710x Memory:	Reloading memory dialog	
Figure 53 SQ710x Starter Kit	Tool sub menu/Program Device	40
Figure 54 SQ710x Program I	Device window	41
Figure 55 SQ710x Program I	Device: Configuration Zone	42
Figure 56 SQ710x Program I	Device: User Zone	43
Figure 57 SQ710x Program I	Device: Small Zone	44
Figure 58 SQ710x Program I	Device: Counter Zone	45
Figure 59 SQ710x Program I	Device: Key Zone	46
Figure 60 SQ710x Program I	Device: Function Options	47
Figure 61 SQ710x Program I	Device: Program confirm message box	48
Figure 62 SQ710x Program I	Device: Socket device not detected message box	48
Figure 63 SQ710x Program I	Device: Communication mode not match message	box49
Figure 64 SQ710x Program I	Device: Zone Locked message box	49
Figure 65 SQ710x Program I	Device: Small zone locked, continue dialog	49
Figure 66 SQ710x Program I	Device: AES mode not match message box	50
Figure 67 SQ710x Program I	Device: Progarm Done message box	
Figure 68 SQ710x Program I	Device:Export log	51
Figure 69 SQ710x Program I	Device: Export log dialog	51
Figure 70 SQ710x Program I	Device: Clear Log	51
Figure 71 SQ710x Program I	Device: Menu bar	
Figure 72 SQ710x Program I	Device: File menu/Export Data	53
Figure 73 SQ710x Program I	Device: Export Data dialog	53
	Device: Export data done message box	
	Device: File menu/Import Data/Socket Device	
5 5	Device: File menu/Import Data/On Board Device	
	Device: File menu/Import Data/File	
	Device: Import file dialog	

Page: 5/78 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.

No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0
Figure 79 SQ710x Progra	m Device: Import file done message	
	m Device: Import Data: Block Read Error messa	
	m Device: Log Window	-
5	m Device: Copy contents of Log Window	
	creen	
	nenu	
-	o menu	
Figure 86 SQ713x Tools s	ub menu	
	r Calculator	
	and Builder	
	sub menu	
Figure 90 SQ713x Writer	Configuration sub menu	61
Figure 91 SQ713x Writer	Configuration Utility/Configuration Zone	61
Figure 92 SQ713x Writer	Configuration Utility/SlotKey Configuration	
Figure 93 SQ713x Writer	Configuration Utility/Data Slot EditWrite	
Figure 94 SQ713x Progra	mming device twice inhibition message	
Figure 95 SQ713x Setting	sub menu	64
Figure 96 SQ713x I2C I/O	Setting	64
Figure 97 SQ713x SPI I/O	Setting	64
Figure 98 SQ713x SWI do	es not support I/O Setting	64
Figure 99 SQ713x View si	ub menu	64
Figure 100 SQ713x Help s	sub menu	65
Figure 101 SQ713x Abou	t dialog	65
Figure 102 SQ713x Zone	navigator window	65
Figure 103 SQ713x Editat	ole and savable data grid view	66
Figure 104 SQ713x Non-e	editable and non-savable data grid view	66
Figure 105 SQ713x Config	guration label view	67
Figure 106 SQ713x Config	guration data grid view	
Figure 107 SQ713x Zone	configuration window (Configuration zone)	68
Figure 108 SQ713x Zone	configuration window (Slot zone)	68
Figure 109 SQ713x Zone	description of Data/Key Slot Zone	
Figure 110 SQ713x Syster	m information window/Device state	
Figure 111 SQ713x Syster	n information window/Lock state	69
Figure 112 SQ713x Syster	m information window/System status	
Figure 113 SQ713x Log w	vindow	
Figure 114 HQS600x Maii	n screen	71
Figure 115 HQS600x Maii	n menu	

Page: 6/78 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.

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0
Figure 116 HQS600x File su	ıb-menu	72
Figure 117 HQS600x Tools	sub-menu	
Figure 118 HQS600x Crypto	o calculator	
Figure 119 HQS600x Comn	nand builder	
Figure 120 HQS600x Macro	sub-menu	
Figure 121 HQS600x Settin	g sub-menu	
Figure 122 HQS600x I2C I/0	O Setting	
Figure 123 HQS600x SPI I/C	D Setting	
Figure 124 HQS600x Helps	ub-menu	
Figure 125 HQS600x Abou	t dialog	
Figure 126 HQS600x Syster	n information/System status	
Figure 127 HQS600x Log w	/indow	
Figure 128 SQ7515 hardwa	are settings	
Figure 129 EVBV 1.1 Add a	Reset grounding jumper	

No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

1 Introduction to Starter Kit

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 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)

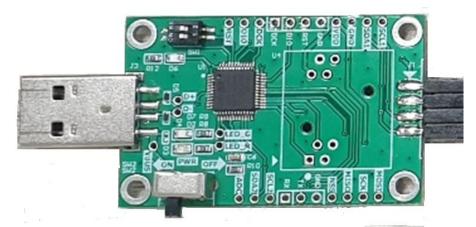


Figure 2 iMO Secure Starter Kit appearance (no Socket version, used with EVB, for SQ75 series)

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

OFF position before replacing the IC. After the IC is replace, turn the PWR power switch

to ON position again to avoid IC failure caused by live wire operation.

Page: 8/78 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.

iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0

The IC replacement process placed in the socket is as follows

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

1.2 Block Diagram

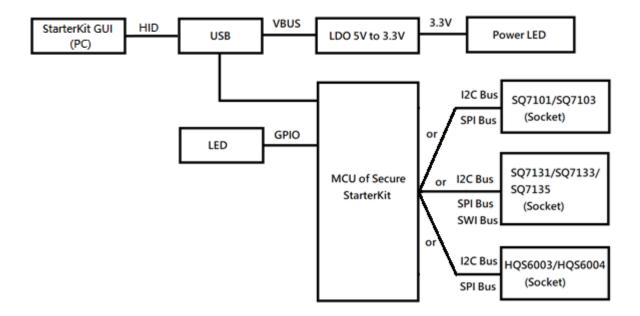


Figure 3 iMO Starter Kit Block Diagram

Page: 9/78 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.

2 Starter Kit Software

2.1 Software Installer

Step 1. Click the iMQ StarterKit Setup installation program to execute the installation.

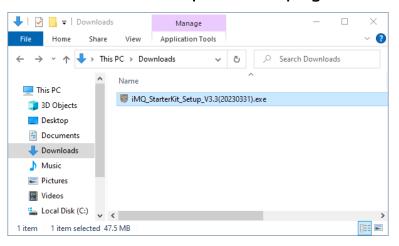


Figure 4 Example: iMO_StarterKit_Setup_V3.3

Step 2. Select the iMQ StarterKit installation path, Press "Next".

Setup - iMQ StarterKit Tool			
Select Destination Location			F
Where should iMQ StarterKit Tool be installed?			00
Setup will install iMQ StarterKit Tool into the following folder.			
To continue, dick Next. If you would like to select a different folder, dick Bro	owse.		
c:\iMQ_StarterKit		Browse	
If the user wants to change another path, he	e can press	"Brows	
	e can press	"Brows	
If the user wants to change another path, he	e can press	"Brows	

Figure 5 Installation path, the default path is C:\iMQ_StarterKit

Page: 10/78 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.

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

🐻 Setup - iMQ StarterKit Tool	83 <u>.</u>		×
Select Additional Tasks Which additional tasks should be performed?			T
Select the additional tasks you would like Setup to perform while installing iMQ Starterk Next.	it Tool, <mark>t</mark> he	en <mark>d</mark> ick	
Additional shortcuts:			
Create a desktop shortcut			
Back	Next	6.	incel

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.

leady to Install				
Setup is now ready to begin installing iMQ St	tarterKit Tool on you	r computer.		(
Click Install to continue with the installation,	or click Back if you v	ant to review or	change any set	ttings.
Destination location: c:\jiMQ_StarterKit				^
Additional tasks: Additional shortcuts: Create a desktop shortcut				
<				>
		2		-

Page: 11/78 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.

Step 5. Press "Finish" to complete the installation.

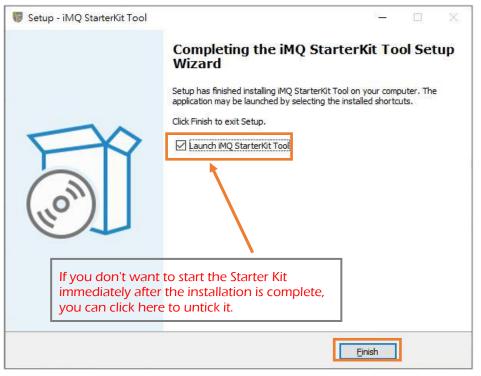


Figure 8 Checkbox to launch iMO StarterKit Tool

Note: If the Secure Starter Kit is not connected to the computer when the Starter Kit software is executed, you will not be able to enter the main screen for use, and a "Device not connected" warning window will pop up.



Figure 9 Cannot find Secure StarterKit warning message

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2.2 Starter Kit Firmware Update

The update of firmware is not always necessary. It is only necessary to update firmware when firmware version is updated (Updated information will be described in the release note).

The installation steps are as follows:

Step 1. Connect your PC to the StarterKit using a USB cable

Step2. Power on StarterKit

Step3. Change Windows directory to c:\iMQ\Firmware

Step4. Execute update.bat

C:\Windows\system32\cmd.exe × П Tech. ame: Product Name: iMQ StarterKit 25:38:967: Serial Number: 177339793238 7:25:39:086: [StarterKit Information Summary] 7:25:39:174: Vendor Name: iMQ Tech. 7:25:39:238: Product Name: iMQ StarterKit 7:25:39:323: Serial Number: 177339793238 7:25:39:409: StarterKit FW version: V1.0.0(231221) 7:25:39:472: StarterKit PCB version: V4.0 25:39:080: [Starten] :25:39:174: Vendor :25:39:238: Produc :25:39:323: Serial :25:39:409: Starte :25:39:472: Starte :25:39:545: Go Boot. :25:40:846: imq_dfu : V1.0 :25:40:847: :25:40:847: :25:40:881: Get IMQ DFU Information: Status.OK :25:40:881: Get IMQ DFU Information Summary] :25:40:882: Vendor Name: IMQ DFU MARK-I :25:40:882: Product Name: IMQ DFU MARK-I :25:40:882: Serial Number: 175139423238 :25:40:882: Serial Number: V00.30 :25:40:882: Mode: Force Boot :25:40:882: Chip ID: 0x3201 :25:40:882: Flash start addr 0x08008000 :25:40:882: Flash max size: 96.0 KBytes :25:40:883: Flash page size: 128 Bytes :40:883: Open hex file. hexStartAddr = 0x08008000 hexEndAddr = 0x0801CD80 40:883: 40:981:

Figure 10 firmware update message

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Step5. Update successfully

C:\Windows\system32\cmd.exe	_	×
17:25:48:149: DFU_Flash_Erase: Status.OK 17:25:48:152: DFU_Flash_Write: ADDR = 0x0801B000, Size = 0x1000		^
17:25:48:387: DFU_Flash_Write: Status.OK 17:25:48:387: DFU_Flash_Erase: ADDR = 0x0801C000, Size = 0x0D80 17:25:48:496: DFU Flash Erase: Status.OK		
17:25:48:497: DFU_Flash_Write: ADDR = 0x0801C000, Size = 0x0D80 17:25:48:698: DFU_Flash_Write: Status.0K		
17:25:48:698: Programing finish. 17:25:48:762: DFU_Get_CRC: Status.OK		
17:25:48:762: DFU_Get_CRC: APP FW CRC = 0xABE7 17:25:48:764: Verify CRC Success. 17:25:48:824: DFU Go APP: Status.OK		
17:25:48:824: Go APP Success. 17:25:48:825: Elapsed time: 7 seconds 978 ms		
17:25:48:826: 17:25:50:013: Vendor Name: iMQ Tech. 17:25:50:117: Product Name: iMQ StarterKit 17:25:50:289: Serial Number: 177339793238		
17:25:50:445: [StarterKit Information Summary] 17:25:50:563: Vendor Name: iMQ Tech. 17:25:50:663: Product Name: iMQ StarterKit 17:25:50:803: Serial Number: 177339793238 17:25:50:930: StarterKit FW version: V1.0.0(231221)		
17:25:51:030: StarterKit PCB version: V4.0 17:25:51:123: Total O device detected.		
Press any key to continue 🗖		~

Figure 11 firmware successfully update message

2.3 Software Removal

Completely remove the installed iMQ 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

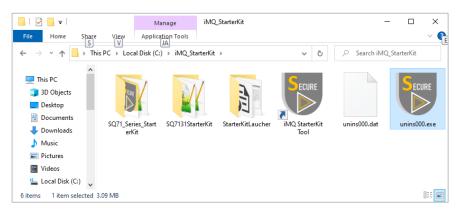


Figure 12 Installation directory

Page: 14/78 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.

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



Figure 13 Confirm to uninstall StarterKit

Step 3. Successful removal

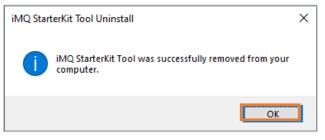


Figure 14 Uninstall successful message

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No. : TDUM02- TE002-EN

Name: Secure Starter Kit User Manual

2.4 Software Startup

Step 1. Connect the Secure Starter Kit to the computer via USB.

Step 2. Execute iMO StarterKit software program

Double-click the iMQ StarterKit Tool shortcut icon to start software.



Figure 15 iMO StarterKit Tool shortcut icon

2.5 Starter Kit 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	lect a Dev	ice			
,	SQ7101	I2C	Socket	(0xc8)	

Figure 16 Using the Secure Starter Kit, and Socket is SQ7101 (I2C) device.

507103	SPI	Socket

Figure 17 Using the Secure Starter Kit, and Socket is SQ7103 (SPI) device.

Page: 16/78 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.

. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0
[🐻 iMQ Starter Kit Launcher 🛛 🗙	
	Select a Device	
	SQ7515	

Figure 18 Use the Secure Starter Kit to configure or read the Security Processor with SQ7515 EVB

🐻 iMQ StarterKit Launcher							
Select a Device							
1.	SQ7131	I2C	Socket	(0xc8)			
	2.	Sele	ct Device				

Figure 19 Using the Secure Starter Kit, and Socket is SQ7131 (I2C) device.

🐻 iMQ StarterKit Launcher							
Select a Device							
1.	SQ7133 SPI Socket						
	2. Select Device						

Figure 20 Using the Secure Starter Kit, and Socket is SQ7133 (SPI) device.

Page: 17/78 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.

No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0
	iMQ StarterKit Launcher X	
1.	Select a Device	

Figure 21 Using the Secure Starter Kit, and Socket is SQ7135 (SWI) device.

🐻 iN	/IQ StarterKi	t Laun	cher	\times
Se	elect a Devic	e		
1.	HQS6004	SPI	Socket	
	2.	Selec	t Device	

Figure 22 Using the Secure Starter Kit, and Socket is HQS6004 (SPI) device.

Note: When replacing the IC on the Socket, please make sure that the PWR switch on the Starter Kit is turn off. Please refer to 1.1 Hardware Appearance

If the device is not scanned, a prompt screen as shown in the figure below will pop up, and the user can check whether the Secure Starter Kit is connected to the computer.

Warning	×
<u>^</u>	Cannot find Secure StarterKit. Please check USB connection
	OK

Figure 23 Cannot find Secure StarterKit message

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No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0

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

Starter Kit Software Function Description (SQ7101/SQ7103/SQ7515) 4

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

4.1 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.

4.2 Starter Kit 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.

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0UM02- TE00	D2-EN Name: Secure Starter K	it User Manual	Version : V
File Memory		•	– 🗆 × Menu Bar
Command	Packet Build Command	I2C OnBoard (0xC8)	Status Bar
Command	Nonce (0x01) .	Log	Log
Mode	0x01 Random Nonce •	17:18:38	LUY
Zero	0000	Nonce (0x01) command sent:	
Zero	0000	15 0101 0000 0000 0000 0000	0000 0000 0000
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		
CRC16	F5EF		
Response	Details		
Count	14		
Code	00		
Packet	A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A		
CRC16	8790		

Figure 24 SQ710x Starter Kit main screen

4.2.1 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.

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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 select it.

Note 3 : If the IC is in deep sleep mode and has not been woken up, it will ignore any command received through I2C or SPI and return NAK, and the IC will return to the operation mode. When the Host receives the NAK, it has to resend the command to execute.

	Command	Packet
Command	Command	Encrypt (0x06) •
	Mode	0x00 ·
Change fields by	EKeyID	0000
	Count	0010
command		0000 0000 0000 0000 0000 0000 0000
	Data	
Send packet :		
-	Send Detail	s Send details block
Length	Count	19
Content		0600 0000 0010 0000 0000 0000 0000 0000
Content	Packet	0000 0000 0000
CRC check code	CRC16	F9F0
	Chero	1310
Response packet :	Response D	etails Response details block
Length	Count	
Return code	Code	
Content	Packet	
CRC check code	CRC16	
		Execute Execute button

Figure 25 SQ710x Build Command area

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iMQ Technology Inc. No. : TDUM02- TE002	2-EN Nan	Name: Secure Starter Kit User Manual			Version: V2.0
4.2.2 Mai	n Menu				
🐻 iMQ SQ71_Ser	es_StarterKit				- 🗆 X
File Memory	/ Tool About				Main menu
Comma	nd Packet			I2C Socket (0xC8)	
Comman	d Nonce (0x01)		-	Log	
Mode	0x01 Random No	once	•	17:18:38	11.
7	0000				

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 Deta	ails	14 00 A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A5
Count	15	A5A5 8790
Packet	0101 0000 0000 0000 0000 0000 0000 0000 0000	
CRC16	F5EF	
Response	Details	
Count	14	
Code	00	
Packet	A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A	Ĵ

Figure 26 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. File\Exit



Figure 27 SQ710x File sub menu

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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 $\lceil \frac{4.1.3 \text{ Memory}}{4.1.3 \text{ Memory}} \rfloor$

ommand	Packet		I2C Socket (0xC8)	
Command	AES (0x0F)	-	Log	
Mode	0x00	Υ.		ľ
LKe <mark>y</mark> ID	0000			
Zero	0000			
Data	0000 0000 0000 0000 0000 0000 00	00 0000		
end Detai		eading Memory Reading Mem	ory	
Count	19	Please wait	- I	
Packet	0F00 0000 0000 0000 0000 0000 0 0000 0000 0000			
CRC16	C49A			
esponse l	Details			
Count				
Code				
Packet				

Figure 28 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	itarterKit			×
File Memory	Tool Abou	t		
	XOR	► Ctrl+R		
Command	Program	Device Ctrl+P	I2C Socket (0xC8)	



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.

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	then select Program Device to open the Pr am	ogram Device Window
Image: File interview Image: File interview	OL About	– 🗆 X
Command	XOR Ctrl+R Program Device ⊾Ctrl+P I2C Socket (0xC8)	
	Figure 30 SQ710x Tool sub menu/Program	
Note 3: The program de	evice window will be explained in the following cha	apter ' <u>4.1.4 Program Devi</u> d
 About sub-menu: hardware versions in 	: Click About to view software, firmware, a nformation.	nd Secure Starter Kit
iMQ SQ71_Series_StarterKit	n	- 0
File Memory Tool About		
	V About	×
	SQ71_Series_StarterKit	
Software version	SW Ver: V3.2 (20221121) FW Ver: 20210709	
Firmware version	PCBA Ver: V3.0	
PCBA Hardware version	Copyright © 2022 iMQ Technology Inc.	
	For more information, please visit our website	е.
	http://www.imgtech.com http://www.imgtech.com.cn	
	Figure 32 SQ710x SQ710x About dialog	

4.2.3 Status Bar

The communication protocol and device address of the device connected to Starter Kit 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	120	Socket (0xC8)	Status bar
Command	Nonce (0x01)	• Lo	pg	
Mode	0x01 Random Nonce		- 17:18:38	
Zero	0000		once (0x01) comm	and sent.
Zero	0000			0000 0000 0000 0000 0000
InSeed	0000 0000 0000 0000 0000 0000		000 F5EF 17:18:38 eceived:	
Send Detai	ls			5A5 A5A5 A5A5 A5A5 A5A5
Count	15	A	5A5 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 33 SQ710x Status bar

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If the slave device is a SPI device (such as SO7103), the status bar will display "SPI Socket".

iMQ SQ71_Series_St e <mark>Memory</mark> ⁻					_0	
Command			SPI Socket	Statu	s bar	_
Command	AES (0x0F)	•	Log			
Mode	0x00					ľ
LKeyID	0000					
Zero	0000					
Data	0000 0000 0000 0000 0000 0000 0000 0000	5°.				
Send Detail	ls 19					
Packet	OF00 0000 0000 0000 0000 0000 0000 0000					
CRC16	C49A					
Response E	Details					
Count						
Code		2				
Packet						
CRC16						
	Execute			Clear log		

Figure 34 SQ710x Status bar (SPI device)

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: TDUM02-	TE002-EN Name: Secure Starter Kit	User Manual	Version: V2.0
4.2.4 This a messa ^{IMQ SQ71} _Series_Si e Memory	area records the time and content ages.	of command sending and	receiving pack
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	
InSeed	0000 0000 0000 0000 0000 0000	0000 F5EF 17:18:38 Received:	
Send Detai	ls	14 00 A5A5 A5A5 A5A5 A5A5 A	A5A5 A5A5 A5A5
Count	15	A5A5 8790	
Packet	0101 0000 0000 0000 0000 0000 0000 000		
CRC16	F5EF		
Response [Details		
Count	14		
Code	00		Log area
Packet	A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A5 A5A		

Figure 35 SQ710x Log area

Ш

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!

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4.2.5 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.

Command	Packet	☑ AES-256	
Command	EncWrite (0x05)		
Mode	0x00		
Address	0000		
Count	0020		
Data	0000 0000 0000 0		00
Send Detai Count	Is 39		
Packet	0000 0000 0000 0		00
CRC16	C105		
	Details		
Response L			
Response [Count			
•			
Count			

Figure 36 SQ710x 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.

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iMQ Technology Inc. No. : TDUM02- TE002-EN Name: Secure Starter Kit User Manual Version: V2.0 🐻 Memory X File Reload Data Counter 7 Key 0 Configuration Configuration Address Range: 1000 ~ 11BF Counter 8 00 01 02 03 04 05 07 ^ Address 1044 06 Counter 9 00 03 00 00 Value 1000 00 01 00 00 FE Counter A 1008 38 5E 18 42 47 28 19 55 AES256 Counter B 00 01 10 10 10 0A FF FF 1010 Counter C 1018 00 EE 01 FF FF FF FF FF Counter D FF FF FF C8 C7 FF FF FF 1020 Counter E FF FF FF FF FF 55 FF FF 1028 Counter F FF FF FF FF FF FF 55 FF 1030 Key 0 FF FF FF FF FF FF FF 55 1038 Key 1 FF 1040 E9 DE 00 FF FF FF FF Key 2 E9 DE 10 FF FF FF FF FF 1048 Key 3 E9 FF FF DE FF FF FF 20 1050 Key 4 1058 E9 DE 30 FF FF FF FF FF Key 5 E9 DE 40 FF FF FF FF FF 1060 Key 6 1068 E9 DE 50 FF FF FF FF FF Key 7 E9 DE 60 FF FF FF FF FF 1070 Key 8 E9 FF FF FF FF FF DE 70 1078 Key 9 1080 E9 DE 80 FF FF FF FF FF Update Key A 1088 F9 DF 90 FF FF FF FF FF

Figure 37 SQ710x Memory: AES256 field selected as "Yes"

4.3 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		I2C Socket (0xC8)
Command	AES (0x0F)	÷	
Mode	0x00	*	Log
LKeyID	0000	10 m	
Zero	0000		
Data	0000 0000 0000 0000 0000 0000 0	000 0000 Reading Memory	
end Detail	ls and the second se	Reading Men	mory
Count	19	Please wai	ait
Packet	0F00 0000 0000 0000 0000 000 000 0 0 0		
CRC16	C49A		
Response E	Details		-
Count			
Code			
Packet			
CRC16			

Figure 38 SQ710x Click Memory on the main menu

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Version: V2.0

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

ile Reload Data											Menu k	bar
Configuration		Confi	guratio	on Ado	lress R	ange:	1000 ~	~ 11BF			UID)
- Counter Zone 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	uration
	1060	E9	DE	40	FF	FF	FF	FF	FF			aration
	1068	E9	DE	50	FF	FF	FF	FF	FF		menu k	block
	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			
Memory c	1022	F9	DF	90	FF	FF	FF	FF	FF	~		

Figure 39 SQ710x Memory window

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4.3.1 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.

Configuration		Configuration Address Range: 1000 ~ 11BF										UID		
Counter Zone		00	01	02	03	04	05	06	07	^	Address	Value		
- User Zone	1000	00	01	00	03	00	00	00	00		1000	00		
The Osel 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 40 SQ710x Memory: Memory configuration block

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4.3.2 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.

4.3.2.1 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.

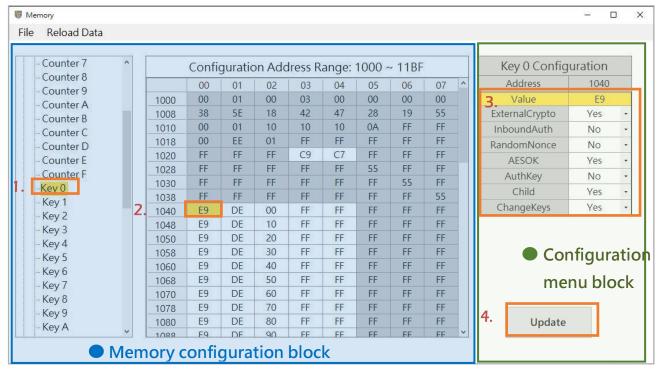


Figure 41 SQ710x Memory: Configuration update

Page: 33/78

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4.3.2.2 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.

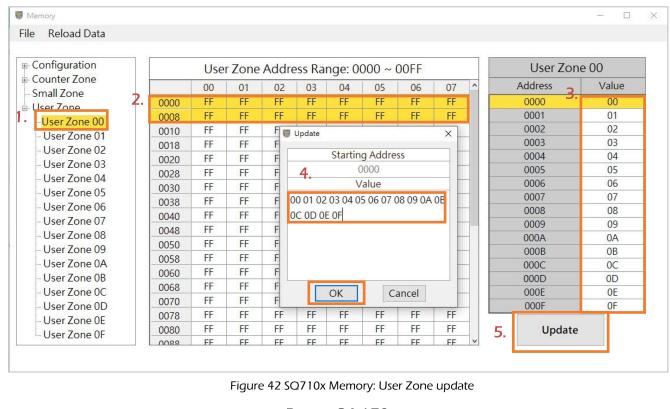
Click the Value field to modify the configuration, and the window for updating the value will pop up.

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 / 78

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4.3.3 Menu Bar

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

Reload Data										Mer	nu bar	
nfiguration unter Zone		Configuration Address Range: 1000 ~ 11BF							UID			
all Zone		00	01	02	03	04	05	06	07	^	Address	Value
User Zone	1000	00	01	00	03	00	00	00	00		1000	00
ei 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 43 SQ710x Memory: Menu bar

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4.3.3.1 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.

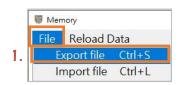


Figure 44 SQ710x Memory: File sub menu/Export file

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 → Te	estDummyFile	ٽ ~	,∕⊂ Sea	rch TestDummyFile	
Organize 👻 New folder					2
A Name	^			Date modified	
3D Objects	No items n	natch your search			
E Desktop					
🗎 Documents					
🖶 Downloads					
b Music					
E Pictures					
Videos 🛛					
Local Dis2C) × <					>
File name: SQ710x_Data.json					~
Save as <u>t</u> ype: (*.json)					~
∧ Hide Folders			<u>S</u> av	e Cance	

Figure 45 SQ710x Memory: Export file dialog

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

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

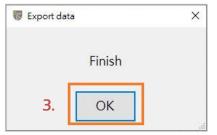


Figure 46 SQ710x Memory: Export finish message

b. Import Data

Can import previously exported configuration data.

Step 1. At menu select File\Import Data

The import file format is .Json format.

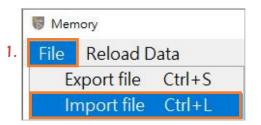


Figure 47 SQ710x Memory: File sub menu/Import file

Step 2. After selecting the .json/.jsfw file to be loaded, click "Open"

 ← → · ↑ ↓ This PC > Downloads · Č ✓ Conganize · New folder 2. ✓ Inis PC ③ 3D Objects > ③ 3D Objects > ④ Documents > ↓ Downloads > ↓ Music > Pictures > Videos · ⑤ Local Disk (C:) > ⑤ WinREAgent > Mug ✓ File game: SQ710x_Datajson · ("tjson;".jsfw) · ✓ 	🐻 Open				×
 This PC 3D Objects Desktop Documents Vownloads Music Pictures Videos Local Disk (C:) SWinREAgent MQ 	\leftrightarrow \rightarrow \checkmark \bigstar This PC \Rightarrow Downloads	ٽ ~		Search Downloads	
> 3D Objects > Desktop > Documents > Downloads > Music > Pictures > Videos ✓ Local Disk (C:) > MQ	Organize - New folder 2.				?
	3D Objects Desktop Documents Documents Downloads Discurrents Discurrents <t< td=""><td></td><td></td><td></td><td></td></t<>				
<u>O</u> pen Cancel			~		_

Figure 48 SQ710x Memory: Import file dialog

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Step 3. Popup 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.

	guration	
	ter Zone	
	Zone	
User 2	Lone	

Figure 49 SQ710x Memory: Select import data dialog

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

🐻 Import Dat	a	×
	Finish	
4.	ОК	
L		

Figure 50 SQ710x Memory: Import data finish message

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

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c. Reload Data				
Reload device all me	mory configuration data and display on screen.			
Step 1. At Menu clicl	k Reload Data			
•	mory configuration data.			
	5 5			
Vernory				X
File Reload Data				×

Step 2. Wait for the reload to complete

Note 1: Do not remove the Secure Starter Kit from the computer while the data is 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"

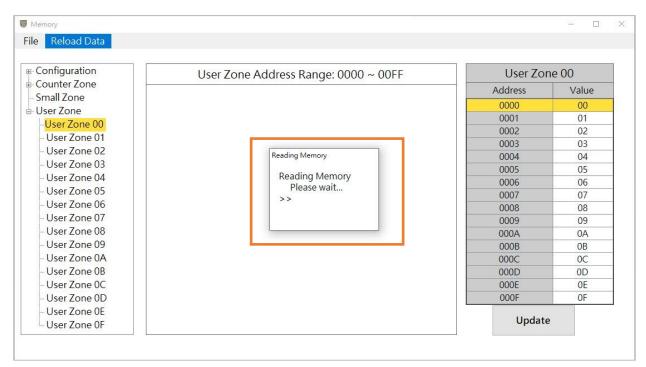


Figure 52 SQ710x Memory: Reloading memory dialog

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4.4 Program Device

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

MQ SQ71_Series_S		- 0	
e Memory	Tool About		
	XOR Ctrl+R Program Device Ctrl+P		
Command	Program Device Cur+P	I2C Socket (0xC8)	
Command	AES (0x0F)	- Log	
Mode	0x00	*	
LKeyID	0000		
Zero	0000		
Data	0000 0000 0000 0000 0000 0000 0000 0000		
Send Detai Count	ils 19		
Packet	0F00 0000 0000 0000 0000 0000 0000 000		
CRC16	C49A		
Response	Details		
Count			
Code			
Packet			
CRC16			
	Execute	Clear log	

Figure 53 SQ710x Starter Kit Tool sub menu/Program Device

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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	lenu	bai	·				
	Config	uration	User	r Zone	S	mall Zo	ne	Cou	nter Zo	ne	Key						
	Addre	ss 00	01	02	03	04	05	06	07	08	09	0A	OB	0 C	0D	OE	OF A
	▶ 1000		00	00	00	00	00	00	00	00	00	00	00	00	00	00	01
	1010	1.000	01	10	10	10	0A	FF	FF	00	EE	01	FF	FF	FF	FF	FF
	1020	Contraction of the local division of the loc	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	4	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
options	1060	2 T	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
	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	BO	FF	FF	FF	FF	FF
	10A0		DE	C0	FF	FF	FF	FF	FF	E9	DE	DO	FF	FF	FF	FF	FF
	10B0) <u>E</u> 9	DE	ΕO	FF	FF	FF	FF	FF	E9	DE	FO	FF	FF	FF	FF	FF
Lock Configuration	1000		00	OF	55	FF	FF	FF	FF	00	01	1F	55	FF	FF	FF	FF
Lock Key Memory	10D0	00 00	02	2F	55	FF	FF	FF	FF	00	03	ЗF	55	FF	FF	FF	FF
	10E0	00 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		0.9	05	EE	FF	FF	FF	FF	00	09	9F	55	FF	FF	FF	FF
Program	111	Memo	ory c	onfi	gura	ition		FF	FF	00	0B	BF	55	FF	FF	FF	FF
	112.			-				FF	FF	00	OD	DF	55	FF	FF	FF	FF
	1130		0E	EF	55	FF	FF	FF	FF	00	OF	FF	55	FF	FF	FF	FF
	1140	0 01	00	FF	FF	FF	FF	FF	FF	01	11	FF	FF	FF	FF	FF	FF 🗸
Export log		Log v	/indo	w													

Figure 54 SQ710x Program Device window

4.4.1 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).

4.4.1.1 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.

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File	6-	<i>c v</i>							-		2008 P							
	Co	onfigurati	on	User	Jser Zone		mall Zo	ne	Cou	nter Zo	ne	Key						
		ddress	00	01	02	03	04	05	06	07	08	09	0A	OB	0C	0D	OE	OF /
	- 112)	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	A0	FF	FF	FF	FF	FF	E9	DE	B0	FF	FF	FF	FF	FF
	1	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	-	1000	00	00	OF	55	FF	FF	FF	FF	00	01	lF	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	7 F	55	FF	FF	FF	FF
		1100	00	08	8F	55	FF	FF	FF	FF	00	09	9F	55	FF	FF	FF	FF
Program	-	Con	fiau	rati	<u>_</u>	5	FF	FF	FF	FF	00	0B	BF	55	FF	FF	FF	FF
		Con	ngu	Idu	on	5	FF	FF	FF	FF	00	OD	DF	55	FF	FF	FF	FF
		1130	00	~		5	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																		

Figure 55 SQ710x Program Device: Configuration Zone

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4.4.1.2 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.

	C	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	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	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
Look Kou Momony		00D0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Lock Key Memory		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 56 SQ710x Program Device: User Zone

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4.4.1.3 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.

File	_					_												
	(Configurati	ion	User	Zone	SI	mall Zo	ne	Cou	nter Zo	ne	Key						
		Address	00	01	02	03	04	05	06	07	08	09	0A	OB	0 C	0D	OE	OF /
		1300	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		1310	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		1320	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		1330	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		1340	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		1350	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		1360	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		1370	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		1380	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		1390	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		13A0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		13B0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Lock Configuration		13C0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Lock Key Memory		13D0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		13E0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Lock SmallZone		13F0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		1400	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Program		Sm	all Zo	ono			FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
				JUE			FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		1.1.10					FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
		1440	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Export log																		

Figure 57 SQ710x Program Device: Small Zone

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4.4.1.4 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.

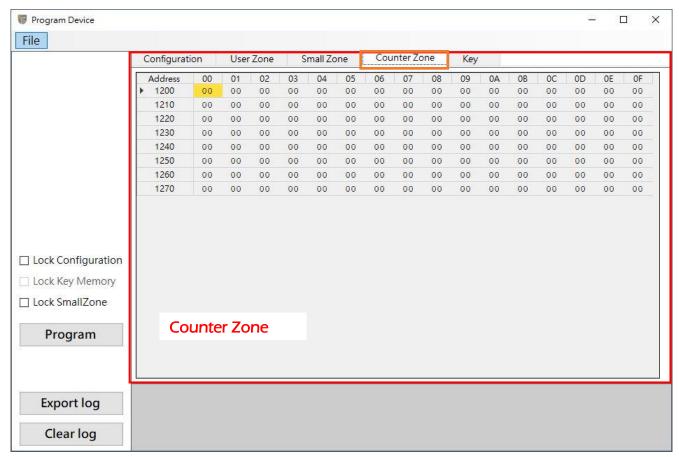


Figure 58 SQ710x Program Device: Counter Zone

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4.4.1.5 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	Zone Small 2	Zone	Counter Zor	ne	Key				-	
	KeylD	Selected	2. AES256			Key Y	Value				ey Genera	ator
	▶ 0			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF	a.L		~
	1			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF	b	Rando	m
	2			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF			
	3			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF	C.	Reset	t
	4			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF	1		
	5			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF	<u> </u>		
	6			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF			
	7			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF			
	8			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF			
	9			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF			
	10			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF			
] Lock Configuration	11			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF			
J LOCK COnfiguration	12			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF			
Lock Key Memory	13			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF			
] Lock SmallZone	14			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF			
	15			FFF	F FFFF FFFF	FFFF	FFFF FFFF	FFFF	FFFF	-		
Program	к	ey										
Export log	4									J		
Clear log	1											

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Name: Secure Starter Kit User Manual

Version: V2.0

4.4.2 Function Options

	Configurat	ion	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	OA	FF	FF	00	EE	01	FF	FF	FF	FF	FF
Function	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
options	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	A0	FF	FF	FF	FF	FF	E9	DE	BO	FF	FF	FF	FF	FF
1.	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
Leek Key Memory	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
- 12	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. Hogium	1120	00	00	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 60 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.

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

	Config	juration		User	Zone	S	m <mark>all</mark> Zo	ne	Cou	nter Zo	ne	Key						
	Addr	ess (0	01	02	03	04	05	06	07	08	09	0A	OB	0C	0D	OE	OF /
	▶ 100	0 0	0	01	00	03	00	00	00	00	38	5E	18	42	47	28	19	55
	101	0 0	0	01	10	10	10	OA	FF	FF	00	EE	01	FF	FF	FF	FF	FF
	102	0 H	F	FF	FF	C9	C7	FF	FF	FF	FF	FF	FF	FF	FF	55	FF	FF
	103	0 H	F	FF	FF	FF	FF	FF	55	FF	FF	FF	FF	FF	FF	FF	FF	55
	104	0 E	9	DE	00	FF	FF	FF	FF	FF	E9	DE	10	FF	FF	FF	FF	FF
	105	0 E	9	DE	20	ਸਸ	त्रज	ਸ਼ਸ	সম	त्रत्र	E9	DE	30	FF	FF	FF	FF	FF
	106	0 E	9	DE	5 W.	arning				>	< 29	DE	50	FF	FF	FF	FF	FF
	107	0 E	9	DE							E9	DE	70	FF	FF	FF	FF	FF
	108	0 E	9	DE		Thic	م الأس		ll data		29	DE	90	FF	FF	FF	FF	FF
	109	0 E	9	DE						- C	E9	DE	B0	FF	FF	FF	FF	FF
	104	.0 E	9	DE	ú	o you	wan		ontinu	ler	E9	DE	DO	FF	FF	FF	FF	FF
	108	0 E	9	DE							E9	DE	FO	FF	FF	FF	FF	FF
Lock Configuration	100	0 0	0	00		Don't s	how thi	s messa	nge aga	in	po	01	1F	55	FF	FF	FF	FF
	100	0 0	0	02		N		Г	NIC		po	03	ЗF	55	FF	FF	FF	FF
Lock Key Memory	108	0 0	0	04		Y	es		No		po	05	5F	55	FF	FF	FF	FF
Lock SmallZone	10F	0 0	0	06	10	55	2.2	2.2	2.2	2.2	00	07	7F	55	FF	FF	FF	FF
	110	0 0	0	08	8F	55	FF	FF	FF	FF	00	09	9F	55	FF	FF	FF	FF
Program	111	0 0	0	0A	AF	55	FF	FF	FF	FF	00	0B	BF	55	FF	FF	FF	FF
Program	112	0 0	0	0C	CF	55	FF	FF	FF	FF	00	OD	DF	55	FF	FF	FF	FF
	113	0 0	0	0E	EF	55	FF	FF	FF	FF	00	OF	FF	55	FF	FF	FF	FF
		0 0	1	00	FF	FF	FF	FF	FF	FF	01	11	FF	FF	FF	FF	FF	FF

Figure 61 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.

1000 00 02 03 3F 33 FF FF FF FF 10E0 00 04 10F0 00 06 1100 00 08 Socket Device is not detected 05 5F 55 FF FF FF FF 1110 00 00 00 00 00 00 00 00 9F 55 FF	1000	00	00		01	11	55	2.2	P P	11	r r	
10F0 00 06 1100 00 08 1110 00 0A 1110 00 0A 1110 00 0A 1110 00 0C 1130 00 0C 1140 01 00 007 FF 55 FF FF FF FF 008 BF 555 FF FF FF FF FF 010 00 0C 0K 0F FF 55 FF FF FF FF 0140 01 00 0C 0F FF 55 FF FF FF FF 007 0F FF 55 FF	10D0	00	02	Program Error X	03	ЗF	55	FF	FF	FF	FF	
1100 00 08 1110 00 0A 1110 00 0A 1120 00 0C 1130 00 0C 1140 01 00 00gram Start eck Device Exist Fail	10E0	00	04		05	5F	55	FF	FF	FF	FF	
1100 <	10F0	00	06		07	7F	55	FF	FF	FF	FF	1
1120 00 0C 1130 00 0E 1130 01 00 01 01 00	1100	00	08	Socket Device is not detected	09	9F	55	FF	FF	FF	FF	
1130 00 0E 1140 01 00 orgram Start Fail	1110	00	0A		0B	BF	55	FF	FF	FF	FF	
1140 01 00 11 FF	1120	00	0C		OD	DF	55	FF	FF	FF	FF	
ogram Start eck Device Exist Fail	1130	00	0E	OK	OF	FF	55	FF	FF	FF	FF	
eck Device Exist Fail	1140	01	00		11	FF	FF	FF	FF	FF	FF	4
sket Device is not detected	gram Start eck Device	t Exist	Fail									Ī

Figure 62 SQ710x Program Device: Socket device not detected message box

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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.

	00	00		01	11	20	2 2	r r	11	L L	
10D0	00	02	🗑 Program Error 🛛 🗙 🗙	03	ЗF	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	
1100	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	0F	FF	55	FF	FF	FF	FF	
1140	01	00		11	FF	FF	FF	FF	FF	FF	¥

Figure 63 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.

TUCU	00	00		101	11	20	L L	L L	11	L L
10D0	00	02	Program Error X	03	3F	55	FF	FF	FF	FF
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	IOCKEG	OB	BF	55	FF	FF	FF	FF
1120	00	0C		OD	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

Figure 64 SQ710x Program Device: Zone Locked message box

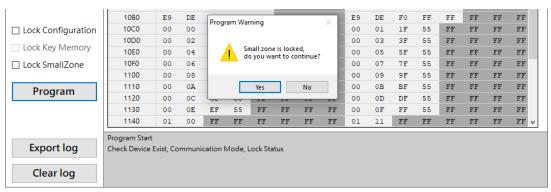


Figure 65 SQ710x Program Device: Small zone locked, continue dialog.

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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.

KeylD	Selected	AES256				Ken	Value				Key Generator
Reyib			FFFF		FFFF		FFFF	FFFF	FFFF	FFFF	~
0	\checkmark						FFFF			2222	
1											Random
2			FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	Reset
3			FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	Reset
4			FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	
5			FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	
6			FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	
7			FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	
8			FFFF	FFFF FFFF	FFFF		FFFF	Coloradore.	FFFF	0.0.000	
9											
10			FFFF	FFFF	FFFF	FFF	FFFF	FFFF	FFFF	FFFF	
11		🐻 Program Error				×FF	FFFF	FFFF	FFFF	FFFF	
12						FF	FFFF	FFFF	FFFF	FFFF	
13		AFS mode	e not r	natch		FF	FFFF	FFFF	FFFF	FFFF	
14			0,08,1			FF	FFFF	FFFF FFFF	FFFF	FFFF	
15											
ogram Sta	t	(OK			.4					

Figure 66 SQ710x Program Device: AES mode not match message box

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

3F 5F 7F 9F BF	55 55 55 55	FF FF FF	FF FF FF	FF FF FF	FF FF	
7F 9F	55	FF				
9F		2.9-17/-5	FF	FF		and the second se
	55	10000		E E	FF	
DF		FF	FF	FF	FF	
DE	55	FF	FF	FF	FF	
DF	55	FF	FF	FF	FF	
FF	55	FF	FF	FF	FF	
FF	FF	FF	FF	FF	FF	~
	FF	FF 55	FF 55 FF	FF 55 FF FF	FF 55 FF FF FF	FF 55 FF FF FF FF

Figure 67 SQ710x Program Device: Progarm Done message box

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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 68 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)

🐻 Save As					×
← → ✓ ↑	→ log ~	۹ ۵	Search log		
Organize 🔻 New folder					?
A Name	Date mod	lified	Туре		Size
This PC	No items match you	ir search.			
Desktop					
Documents					
🖊 Downloads					
b Music					
E Pictures					
Videos					
# Local Disk (C)					>
File <u>n</u> ame: Log_230601.log					~
Save as type: Log File(*.log)					~
∧ Hide Folders			<u>S</u> ave	Cano	el

Figure 69 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 70 SQ710x Program Device: Clear Log

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4.4.3 Menu Bar

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

File													Me	enu	bar			
	·l+S	ļr	ation	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	OE	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	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		10C0	00	00	OF	55	FF	FF	FF	FF	00	01	1F	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		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	OD	DF	55	FF	FF	FF	FF
		1130	00	0E	EF	55	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 71 SQ710x Program Device: Menu bar

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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).

17835	ogram Device		
File			
	Export Data	Ctrl+S	
	Import Data		

Figure 72 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)

🐻 Save As			×
← → ∽ ↑ 📙 « iMQ_StarterKit → SQ71_Series_StarterKit →	Data v さ	🔎 Search Data	
Organize 🔻 New folder			::: • ?
 ▲ Name ▲ Name ▲ Dobjects ▲ Documents ▲ Downloads ▲ Music ▲ Pictures 	Date modified	Туре	Size
Videos			
= Local Disk (C·)			>
File name: SQ7101_230601.jsfw			~
Save as type: Json File For Writer(*.jsfw)			~
∧ Hide Folders		Save	Cancel

Figure 73 SQ710x Program Device: Export Data dialog

Export Data Done	×
ОК	

Figure 74 SQ710x Program Device: Export data done message box

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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				
ile Export Data Ct	rl+S	uration	User Zone	Small Zone
Import Data	٠	Soc	ket Device	Ctrl+K
	▶ 1000	On	Board Device	Ctrl+B
	1010	File		Ctrl+L

Figure 75 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.)

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

Figure 76 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 C	trl+S		uration	User Zone	Small Zone
Import Data		•	Soc	ket Device	Ctrl+K
	•	100	On	Board Device	Ctrl+B
		101	File		Ctrl+L

Figure 77 SQ710x Program Device: File menu/Import Data/File

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TDUM02- TE002-EN	Name: Secure Starter Kit User	Manual		Version: V2
🐻 Open				×
← → ∽ 📙 « iM	Q_StarterKit > SQ71_Series_StarterKit > Data	ن	Search Data	
Organize 🔻 New folde	:r			
A	Name	Date modified	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 🗸	<			>
Eile er	ame: SQ7101_230601.jsfw	ول	on File(*.json;*.jsfv	a ~

Figure 78 SQ710x Program Device: Import file dialog

🐻 Import Data - File	×
Import File Don	e
ОК	

Figure 79 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, and the fields that failed to be read will be displayed in red fonts for users to identify and modify.

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Program Device																	
			0														
							0.57							55			1
rile																	-
-	Configurat	ion	User	Zone	S	mall Zo	ne	Cou	nter Zo	ne	Key						
1	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	🛛 🐻 İm	nport D	ata - So	ocket De	evice		×	FF	FF	FF	FF	FF	FF	FF
	0080	FF	FF								FF	FF	FF	FF	FF	FF	FF
	0090	FF	FF					_			FF	FF	FF	FF	FF	FF	FF
	00A0	FF	FF		В	lock H	Read	Error!			FF	FF	FF	FF	FF	FF	FF
	0080	FF	FF							-	FF	FF	FF	FF	FF	FF	FF
Lock Configuration	0000	FF	FF				OK				FF	FF	FF	FF	FF	FF	FF
Lock Key Memory	00D0 00E0	FF	FF				OK				FF	FF	FF	FF	FF	FF	FF
Lock SmallZone	00E0	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF FF	FF	FF	FF	FF	FF
	0010								**								
Program																	
iii																	
L		D :	D 1	F 1	_				_								_
Export log	Mport Socker Send: 0A 10 Received: 00	0B 01 C8	3 09 10		0 00 10	91 D4											
	RWConfig Er			ne speci	fied use	er zone	is not n	ermitte	d due te	o the co	nfigura	tion.					

Figure 80 SQ710x Program Device: Import Data: Block Read Error message box

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4.4.4 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 Ctrl	+S µrati	on	User	Zone	S	mall Zo	ne	Cou	nter Zo	ne	Key						
Import Data	► ss	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	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	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	A0	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
	1080	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	3F	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	1110	00	AO	AF	55	FF	FF	FF	FF	00	OB	BF	55	FF	FF	FF	FF
	1120	00	00	CF	55	FF	FF	FF	FF	00	0D	DF	55	FF	FF	FF	FF
	1130 1140	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		g Wi	ndo	\ A Z													
Clear log	LU	9	nuo	••													

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

Figure 82 SQ710x Program Device: Copy contents of Log Window

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iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0

5 Starter Kit Software Function Description (SQ713x) 5.1 Software Introduction

SQ713x (x= 1:I2C, 3:SPI, 5:SWI) 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 SQ713x 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.

5.2 Starter Kit Main Screen

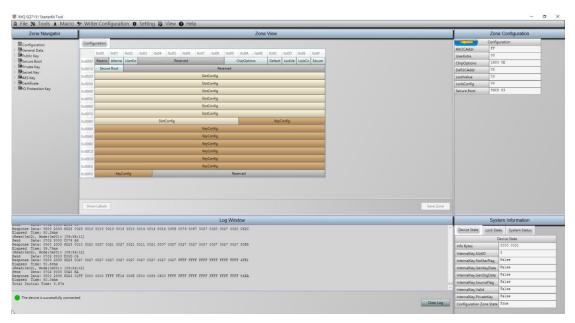


Figure 83 SQ713x Main screen

5.2.1 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 84 SQ713x Main menu

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iMQ Technology Inc.		
No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0
5.2.1.1 File		

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

	File 🛠 Tools	λN	lacro	*	Writer Configuration	₽	Setting	ð	View	0	Help
5	Export Zone										
E.	Import Zone										
2	Export Log										
i.	Import Log										
•]	Exit										

Figure 85 SQ713x File sub menu

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.

5.2.1.2 Tools

Tools item includes two sub items, Crypto Calculator; Command Builder.

	File	*	Tools	×	Macro) 🎾	Wr	iter	Configu	ration	\$ Setting	6	View	0	Help
_		#	Cryp	to C	Calcula	tor		Г							
		🧳 Command Builder													

Figure 86 SQ713x Tools sub menu

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

	rypto Calculator	1			×
	H ECDSA SHA KDF MISC	About			
AES-128	AES-256 AES-GFM				
	Function Encrypt	O Decrypt			
Input:			Byte-Count		
Key:	0000 0000 0000 0000 00	00 0000 0000 0000			
Output:					
	Execute	Input <-> Output			

Figure 87 SQ713x Cryptor Calculator

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No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0

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

ommand Builder	
100	Command Packet
command Raw	
Command	AES (0x51)
Mode	0x00 Encrypt 16/Internal Key
SlotID	
DIN	
	Send Details
Length	
Command	
CRC16	
	Response Details
Length	
Status	
Rsp Len	
CRC16	
Rsp Len	
Packet	
CRC16	
Execute	Clear Details Export Macro Import Macro

Figure 88 SQ713x 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.

5.2.1.3 Macro

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

🗎 File 🛠 Tools	×	Macro	✤ Writer Configuration	₽	Setting	8	View	0	Help
	Ť	Gener	ate Macro by Log						
	퓻	Run M	lacro						

Figure 89 SQ713x Macro sub menu

Generate Macro by Log: This function generate a Json file as a macro from the

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contents of the log window.

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

5.2.1.4 Writer Configuration

Writer Configuration item includes a sub item, Writer Configuration Utility.

🗎 File 🛠 Tools 🗼 Macro	✤ Writer Configuration	🛱 Setting 🗟 View 🕜 Help
	🐏 Writer Configuration	n Utility

Figure 90 SQ713x Writer Configuration sub menu

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

Configuration Zone tab list the modifiable parameters in configuration zone.

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

Figure 91 SQ713x 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.

Slot/Key Configuration tab list the slot options, most of them can be changed.

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Except option2 of slot1 is persistent latched, all other option2 are locked and the lockable of option1 are opposite.

Vriter Configuratio	in Utility			
utput	v		Program Device Exp	ort Writer Configuration Import Writer Configuration
Configuration Zone	Slot/Key Configuration	Data Slot Edit/Write		
		Option 1	Option	2
	Slo	0 Slot:0x2080, Key:0x0007 No write , No read		
	Slo	1 Slot:0x8085, Key:0x0058 Primary. Permanent, Ext Sign, ECDH	 Slot:0x8085, Key: Persistent Latche 	
	Slo	2 Slot:0x8082, Key:0x0058 Permanent, Int Sign		
	Slo	3 Slot:0xa085, Key:0x0078 Updatable, Ext Sign, ECDH, Lockable	Slot.0x8085, Key: Locked	0x0058
	Slo	4 Slot:0xa085, Key:0x0078 Updatable, Ext Sign, ECDH, Lockable	 Slot.0x8085, Key: Locked 	0x0058
	Slo	 Slot:0xa085, Key:0x0078 Updatable, Ext Sign, ECDH, Lockable 	Slot.0x8085, Key: Locked	0x0058
	Slo	6 Slot:0xa085, Key:0x0078 Updatable, Ext Sign, ECDH, Lockable	Slot.0x8085, Key: Locked	0x0058
	Slo	7 Slot.0xa085, Key:0x0078 Updatable, Ext Sign, ECDH, Lockable	 Slot.0x8085, Key. Locked 	0x0058
		 Slot:0x408f, Key:0x0023 No Read, Encrypted write , Lockable, AES key-12 	8 Slot:0x808f, Key: Locked, AES key-	
	Slo	8 Slot:0x408f, Key:0x0024 No Read, Encrypted write , Lockable, AES key-256	6 Slot.0x808f, Key: Locked, AES key-	
		 Slot:0x408f, Key:0x0023 No Read, Encrypted write , Lockable, AES key-12 	8 Slot:0x808f, Key: Locked, AES key:	
	Slo	9 Slot:0x408f, Key:0x0024 No Read, Encrypted write , Lockable, AES key-256	6 Slot:0x808f, Key: Locked, AES key-	
		 Slot:0x408f, Key:0x0023 No Read, Encrypted write , Lockable, AES key-12 	8 Slot.0x808f, Key: Locked, AES key-	
	Slo	10 Slot:0x408f, Key:0x0024 No Read, Encrypted write , Lockable, AES key-25	6 Slot:0x808f, Key: Locked, AES key-	

Figure 92 SQ713x 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.

o. : TDUM02	- TE002-EN	Name: Secure St	arter Kit L	lsei	ſМ	anı	Jal							'	Ver	sior	: ר	V2
	Writer Configuration	Utility																
	output	v						Pro	gram C	evice	Exp	oort Writ	ter Cont	figuratio	n	Import	Writer	Configura
	Configuration Zone	Slot/Key Configuration Data Slot Edit/Wri	te															
	4 🔳 📴 General Da	a	Slot32[0x20]	Parent	Public	Key-38	4 or Ger	neral Da	ata									
	Slot36[[x24]	0x00	0x01	0x02	0×03	0x04	0x05	0x06	0x07	0×08	0×09	0x0A	0×0B	0x0C	0x0D	0x0E	0x0F
	Slot37		0x0000 FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
			0x0010 FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	Stot39(0x27]	0x0020 FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	✓	/x28j hv291	0x0030 FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
			0x0040 FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	Slot43		0x0050 FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	□	h:2F] h:30] h:31] h:32] h:33] h:33] h:34] h:18]: Signer Public Key-256 h:14]: Parent Public Key-256 h:15]: Signer Public Key-256 h:15]: Signer Public Key-384 h:20]: Parent Public Key-384 h:21]: Validated Public Key-384 h:23]: Validated Public Key-384 h:24]: Validated Public Key-384 h:25]: Validated Public Key-384				[2												

Figure 93 SQ713x 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.

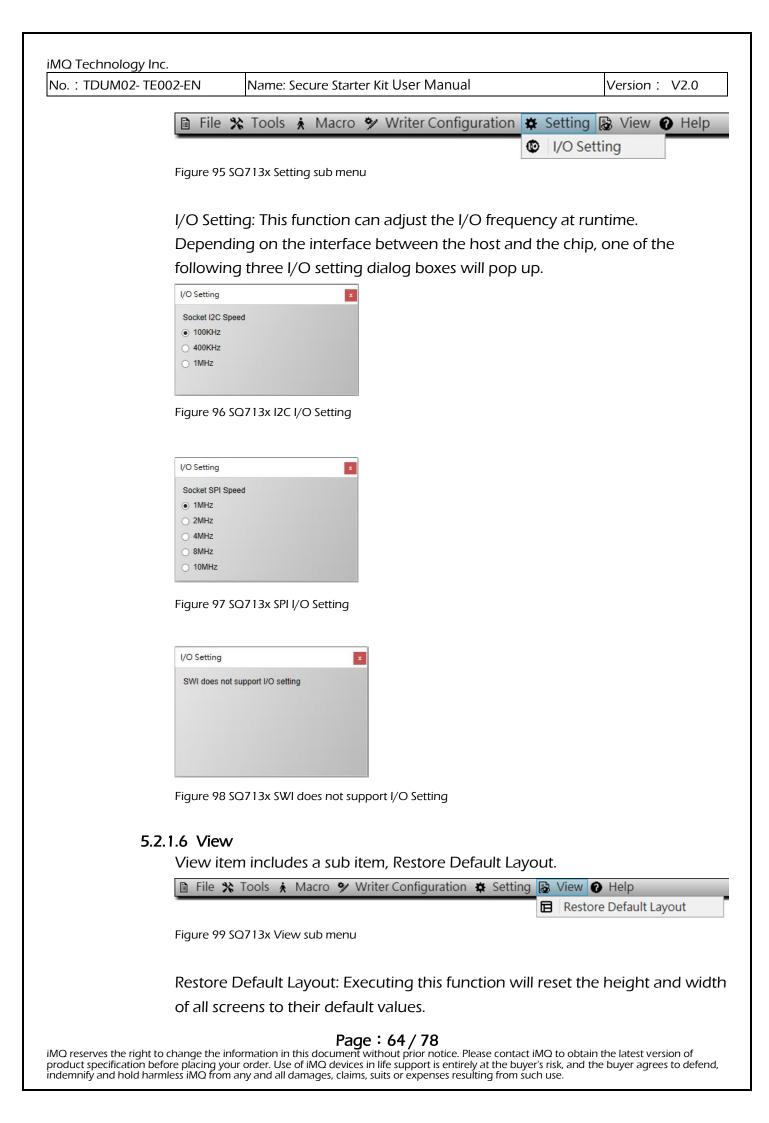
j.	~							Progra	am Devi	ce	Expor	t Writer	Configu	ration	In	nport W	riter Co	nfiguratio
Configuration Zone Stot/Key Configuratio	Data Slot Edit/Write	Slot36[0 0×0000 F 0×0010 F	0×00 F	0x01 FF FF	0x02 FF FF	0x03 FF FF	0x04 FF FF	0x05 FF FF	0x06 FF FF	0x07 FF FF	0x08 FF FF	0x09 FF FF	0x0A FF FF	0x0B FF FF	0x0C FF FF	0x0D FF FF	0x0E FF FF	0x0F FF FF
c		Warning	he con erform	figurat ied!	ion zon	e is lock	ed and o	device p	program	ming ca	nnot be	×		\$				
											確定			3				

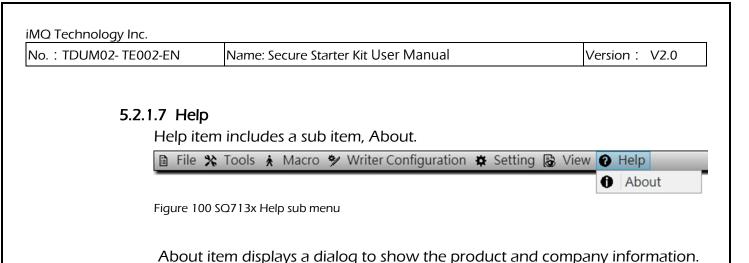
Figure 94 SQ713x Programming device twice inhibition message

5.2.1.5 Setting

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

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Figure 101 SQ713x About dialog

5.2.2 Main Windows

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

5.2.2.1 Zone Navigator Window

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

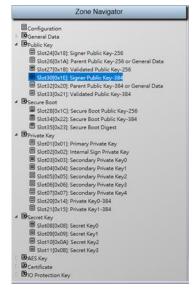


Figure 102 SQ713x Zone navigator window

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5.2.2.2 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.

											Zo	ne Vie	W		
Slot24[0x18]	: Signer	Public	Key-25	6				1							
0x00	0x01	0x02					0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D		0x0F
0x0000 FF	FF	FF	FF		FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
0x0010 FF	FF	FF	FF	FF	FF	FF		FF	FF		FF	FF		FF	FF
0x0020 FF	FF	FF	FF	FF	FF	FF		FF	FF		FF	FF	FF		
0x0030 FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
Show Lab	els														

Figure 103 SQ713x Editable and savable data grid view

											Zor	ne Vie	w		
Slot20[0x14]:	Private	e Key0-	384 (R	ead Fail	- Resp	onse C	ode: 0xi	E1, Slot	Access	Permis	ision De	eny)			
🦼 0x00															
		00	00	00		00	00	00	00	00		00	00		00
		00	00			00		00	00			00			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
Show Labe	ls														

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

Figure 104 SQ713x Non-editable and non-savable data grid view

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No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0

5.2.2.3 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.

												Zor	e Viev	N		
Config	uration															
	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0	C 0x0D	0x0E	0x0F
0x0000	Reserve	Alterna	UserExt			Res	served				ChipOptio	ons	Def	ault LockV	a LockCo	Secure
0x0010	Securi	Boot							Res	erved						
0x0020								Slot	Config							
0x0030								Slot	Config							
0x0040								Slot	Config							
0x0050	_								Config							
0x0060									Config							
0x0070								Slot	Config		_					
0x0080	_				Slot	Config	_		_					KeyConfig	_	
0x0090	_		_	_				100	Config				_			
0x00x0	_	_	_	_	_	_		20000	Config				_		_	_
0x00B0	-								Config						_	
0x00C0			_	_					Config	_	_	-				_
0x00D0	_								Config					_		_
0x00E0					1			Key	Config						_	_
0x00F0		KeyCo	onfig	_						Res	served					

Figure 105 SQ713x Configuration label view

5.2.2.4 Configuration Data Grid View

When the cursor is focused 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.

_	_															
	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0×0000		FF	16	00	0E	C8	00	00	89							
0x0010		СВ	FF	FF	FF	FF	FF	FF								
0x0020		80	80	85	80	82	A0	85	A0	85	A0	85	A0	85	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	A 0	85	OF	8F	OF	OF
0x0050	OF	OF	OF	OF	OF	OF	1F	04	OF	OF	OF	OF	OF	OF	OF	0F
0x0060	OF	OF	1F	0A	OF	OF	8F	9F	OF	OF	OF	OF	OF	OF	OF	OF
0x0070	OF	OF	OF	OF	0F	OF	OF	OF	OF	OF	OF	OF	OF	OF	OF	OF
0x0080	OF	00	07	10	58	00	58									
0x0090	00	78	00	78	00	78	00	78	00	78	00	23	00	23	00	23
0x00A0	00	24	00	14	00	13	00	13	00	13	00	13	00	13	00	13
0x00B0	00	13	00	59	00	79	00	67	00	27	00	20	00	27	00	20
0x00C0		10	00	20	00	27	00	21	00	27	00	21	00	11	00	21
0x00D0		07	00	27	00	27	00	27	00	27	00	27	00	27	00	27
0×00E0		27	00	27	00	27	00	27	00	27	00	27	00	27	00	27
0x00F0		27	00	27	FF	FF	FF	FF	FF	FF						

Figure 106 SQ713x Configuration data grid view

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5.2.2.5 Zone Configuration Window

Zone configuration window displays the selected zone slot configuration. Zone configuration of Configuration Zone:

	Zone Configuration	1
	Configuration	
AltI2CAddr	FF	
UserExtra	00	
ChipOptions	1600 OE	
Defl2CAddr	C8	
LockValue	00	
LockConfig	00	
Secure Boot	89C8 C3	

Figure 107 SQ713x Zone configuration window (Configuration zone)

	Slot36[0x24]	
Key Validated	False	
Locked	True	
SI	ot Configuration	
Byte Value	OFOF	
WriteConfig	0000Ъ	
WriteKey	15	
IsSecret	False	
NoMac	False	
ReadKey	15	
K	ey Configuration	
Byte Value	0027	
PersistentDisable	False	
ReqRandom	False	
Lockable	True	
PubInfo	False	
Private	False	
КеуТуре	7	

Zone configuration of Data/Key Slot Zone:

Figure 108 SQ713x 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.

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No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0
	Zone Configuration	
	Slot46[0x2E]	
General Data		
Valid Commands: GenDig: Data Soc Lock: Solid.ock MAC Read: Clear Text Write: Clear Text Valid Commands: GenDig: Data Soc MAC Read: Clear Text	(Permanent Locked)	

Figure 109 SQ713x Zone description of Data/Key Slot Zone

5.2.2.6 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	System Status	
	0	Devid	e State	
Info Bytes		000	00 0001	
InternalKey.Slot	ID	0		
InternalKey.NoMacFlag		Fal	lse	
InternalKey.GenKeyData		Fal	lse	
InternalKey.Gen	DigData	Fal	lse	
InternalKey.Sou	rceFlag	Fal	Lse	
InternalKey.Valid		Fal	lse	
InternalKey.Priv	ateKey	Fal	lse	
Configuration Z	one State	Tru	1e	

Figure 110 SQ713x System information window/Device state

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

	Sys	em Informatio
Device State	Lock State	System Status
Configuration Zo	one Locked	True
Data Zones Lock	ed	True

Figure 111 SQ713x System information window/Lock state

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

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No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0
	•	
S	ystem Information	
Device State Lock	State System Status	
	System Status	
Kit Name	iMQ SQ7131 StarterKit Tool	
- Version	V1.16	
- FW Version	V0.9.12(231211)	
	V4.0	
- PCBA Version		
T COR VEISION	SPI (10MHz)	

Figure 112 SQ713x System information window/System status

5.2.2.7 Log Window

Log window displays communication log data.

Log Window	
Ender, 0702 0003 0003 0027 0027 0027 0027 0027	~
Hanged Time: 51.63m	
Read(0x02), Mode(0x80)> [09:56:12]	
end Data: 0702 8000 00A0 EA	
esponse Data: 0500 2333 6D23 01FF 0000 0000 FFFF FF16 000E C800 0089 C8C3 FFFF FFFF FFFF FFFF FFFF FFFF FFFF	
lapsed Time: 50.04ms	
otal Initial Time: 5.978	
Read(0x02), Mode(0x12)>[10:102:15] end Data: 07021224 007C 91	
End Data: 0502 1224 0070 51 Emponen Data: 0500 2333 6D23 B263 CDA6 06B1 8C9E 8E70 9010 2C41 351A E251 4931 3307 5300 0000 00A1 00A3 FBD1 4B87	
lapsed Time: 105.06ms	
Read(0x02), Mode(0x12)> [10:02:15]	
and Data: 0702 1224 007C 91	
raponae Data: 0500 2333 6D23 B263 CDA6 06B1 8C9E 8E70 9010 2C41 351A E251 4931 3307 5300 0000 00A1 00A3 FBD1 4B87	
lapsed Time: 43.91ms	
The device is successfully connected	
	Clear Log

Figure 113 SQ713x 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.

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No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0

Starter Kit Software Function Description (HQS600x) 6 6.1 Software Introduction

HQS600x is a hardware-based key storage with a secure hardware accelerator that can implement SHA hash algorithm, and TRNG.

> The HQS600x Starter Kit program is a Windows program for learning how to test commands for the EVB board.

6.2 Starter Kit Main Screen

IMQ HQS6003 StarterKit Tool			- 0
🗈 File 🛠 Tools 🗼 Macro 🏘 Setting 🕑 Help			
	Log Window	1	System Information
Info(0x30), Mode(0x00)> [14:16:26] end Data: 0730 0000 027A 73		System Status	
sponse Data: 0500 0A86 260k 4851 5336 3030 33ED k7 apsed Time: 38.03ms			System Status
nfo(0x30), Mode(0x02)> [14:16:26] nd Data: 0730 0200 0034 51		Kit Name	1MQ HQ56003 StarterHit Tool
ponse Data: 0500 0757 8507 0000 0001 66F9 psed Time: 12.72ms		- Version	V1.21
to(0x30), Mode(0x02)> [14116:27] 5 Data: 0730 0200 0034 51		- FW Version	V1.0.0(231221)
		- PCBA Version	V4.0
paed Time: 15.85ms ad(0x02), Mode(0x80)> [14:16:27]		- Device Protoco	12C(0xC8, 100RHz)
d Data: 0702 8000 00A0 EA ponse Data: 0504 00EB A8		- Device Revision	
mpane Ludi 1960 dine dina kisa solo ooo ooo Tisa gala kata taala kata kata kata kata kata			
The device is successfully connected		Clear Log	

Figure 114 HQS600x Main screen

6.2.1 Main Menu

Main menu includes five main items, File; Tools; Macro; Setting; Help.



Figure 115 HQS600x Main menu

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No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0
6.2.1.1 File		
🗎 File 🛠	Tools 🗼 N	
Export	log	

Lines. Import Log - Exit

Figure 116 HQS600x File sub-menu

File item includes three sub-items, Export/Import Log; Exit.

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.

6.2.1.2 Tools

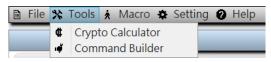


Figure 117 HQS600x Tools sub-menu

Tools item includes two sub-items, Crypto Calculator; Command Builder. Crypto calculator: This function can perform trial calculations on cryptographic functions.

	ypto Calculator			71	×
	AES-256 AES-GFM	About			
	Function Encrypt	 Decrypt 			
Input:			Byte-Count:		
Key:	0000 0000 0000 0000 0	000 0000 0000 0000			
Output:					
	Execute	Input <-> Outpu			

Figure 118 HQS600x Crypto calculator

Command builder: This function can communicate and test commands with HQS600x through USB HID protocol. (Refer to HQS600x Datasheet for command usage)

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Command Builder Command Raw Command Raw Command Tacket Command Cache Tacket Cache Tacket Cache Clear Details	Command Build		
Command Packet Command Infc (0x30) Mode 0x00 Revision Param Command Co	Command Build		
Command Tarfo (0x30) Mode 0x00 Revision Paran Length Command Command Command Command Command Command Command Command Response Details Length Status Status Ray Len Ray Len Packet Packet		Command Desket	
Command Info(0x30) Mode 0x00 Revision Param Implement Length Command CRC16 Response Details Length Status Rsp Len CRC16 Packet Packet		Command Packet	
Mode Dx00 Revision Param Send Details Length Command CRC16 Response Details Length Status Rsp Len CRC16 Rsp Len Packet Packet	Command Raw		
Param Send Details Length Command CRC16 Response Details Length Status Rsp Len CRC16 Packet Packet	Command	Info(0x30) ~	
Send Details Length Command CRC16 Response Details Status Rsp Len CRC16 Rsp Len CRC16 Rsp Len CRC16 CRC16	Mode	0x00 Revision v	
Length Command CRC16 Length Status Rsp Len CRC16 Rsp Len Packet Packet	Param		
Command CRC16 Length Status Rsp Len CRC16 Packet CRC16		Send Details	
CRC16 Response Details Length Status Rsp Len CRC16 Rsp Len Packet CRC16	Length		
Response Details Length Status Rsp Len CRC16 Packet CRC16	Command		
Length Status CRC16 CRC1	CRC16		
Status Rsp Len CRC16 Rsp Len Packet CRC16		Response Details	
Rsp Len Rsp Len Packet CRC16	Length		
CRC16 Rsp Len Packet CRC16	Status		
Rsp Len Packet CRC16	Rsp Len		
Packet CRC16	CRC16		
CRC16	Rsp Len		
	Packet		
Execute Clear Details Export Macro Import Macro	CRC16		
	Execute	Clear Details Export Macro Import Macro	

Figure 119 HQS600x Command builder

6.2.1.3 Macro

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

🗎 File 🛠 Tools	🖈 Macro	🗴 🌣 Setting 🕑 Help			
	Generate Macro by Log				
	🛠 Run	Run Macro			

Figure 120 HQS600x Macro sub-menu

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.

6.2.1.4 Setting

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

	File	*	Tools	¥	Macro	\$	Setting	🛛 Help	
-						٢	I/O Set	ting	

Figure 121 HQS600x Setting sub-menu

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

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No. : TDUM02- TE002-EN	Name: Secure Starter Kit User Manual	Version: V2.0
Depen	ling on the interface between the best	and the chip one of the
Depend	ling on the interface between the host	and the chip, one of the
followir	ng three I/O setting dialog boxes will p	op up.
I/O Setting	x	
Socket I2C S	peed	
● 100KHz		
O 400KHz		
O 1MHz		
Eiguro 12	2 HOS600x 12C 1/O Sotting	
Figure 12	2 HQS600x I2C I/O Setting	

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

Figure 123 HQS600x SPI I/O Setting

6.2.1.5 Help

Help item includes a sub-item, About.



Figure 124 HQS600x Help sub-menu

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



Figure 125 HQS600x About dialog

6.2.2 Main Windows

6.2.2.1 Log Window

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

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lo. : TDUM02- TE002-EN		Name: Secure Starter Kit	User Manual	Version: V2.0
		System Information		
Sy	stem Status			
		System Status		
Kitl	Name	iMQ HQS6004 StarterKit Tool		
- \	Version	V1.16		
- F	FW Version	V0.9.12(231211)		
- F	PCBA Version	V4.0		
- [Device Protocol	SPI(10MHz)		
- [Device Revision	0100 0002 0000 0000		

Figure 126 HQS600x System information/System status

6.2.2.2 Log Window

Log window displays communication log data.



Figure 127 HQS600x 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.

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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)



Starter Kit

SQ7515 EVB

Figure 128 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.

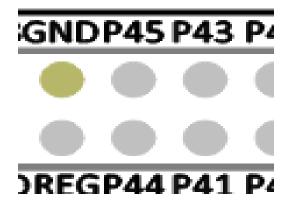


Figure 129 EVBV 1.1 Add a Reset grounding jumper

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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.

Note1: 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)

Note2: For IDE software function description, please refer to "MO-LINK User Manual".

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Name: Secure Starter Kit User Manual

Change history

Version	Approved Date	Description	
V2.0	2024/02/20	 Re-organize bullet in Ch4/Ch5/Ch6 Type error correction Update figure 10, 11, 87, 106, 114, 118 	
V1.9	2024/02/02	 Update figure 10, 11 Add 2.2 Starter Kit firmware update 	
V1.8	2024/01/04	 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 Starter Kit software installation" updated "CH4.2.1 Build Command" updated "CH4.2.2 Menu bar" updated 	
V1.0	2021/01/15	· · · · · · · · · · · · · · · · · · ·	

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