Programming Instruction

1. Connection

Programming method: Use two lines SWD programming method, which need to connect four wires as below :

GND RST(RESET) SWDIO SCLK



IO Pin Array



After connecting the four Pin wires per above diagram, power on the devices and then start programming.

If use stboard own stlink function to program, please make sure to remove the jumper cap marked as below picture , thus preventing the firmware to mistakenly programmed to the MCU on stboard.



- 2. Use software to programme
- (1) Download the STVP software from the official website links as below , install and open it

https://www.st.com/content/st_com/en/products/development-tools/software-development-tools/stm32-software-development-tools/stm32-programmers/stvp-stm32.html #sw-tools-scroll



(2) Select "New" to programme

M no project - STVP				
<u>File Edit</u> Pr <u>oj</u> ect <u>Configure</u> <u>R</u> ead <u>P</u> rogram	<u>V</u> erify Er <u>a</u> se <u>B</u> lank-Check V <u>i</u> ew <u>H</u> elp			
New	- 40 40 40 40 30 40 40 40 40 40 40 40 40 40 40	2		
Open [0x80000 Save	FF FF FF FF	Select active		
No File Edit Not prog: Close	FF	✓Sector U ✓Sector 1		
Memory cl	FF	Sector 2		
OTP HEN 1 G:\hyd git prj\\1.stp	FF	✓Sector 3 ✓Sector 4		
No File 08000080 FF FF FF	FF	Sector 5		
Memory checksu 080000A0 FF FF FF	FF	✓Sector 6 ✓Sector 7		
OPTION BYTE : 08000000 FF FF FF	FF	✓Sector 8		
No File 080000E0 FF FF FF Not programmed 080000E0 FF FF FF	FF	✓Sector 9 ✓Sector 10		
Option byte 0: 080000F0 FF FF FF Option byte 1: 08000100 FF FF FF	FF	Sector 11		
Option byte 2: 08000110 FF FF FF 08000120 FF FF FF	FF	Sector 12		
Option byte 4: = 08000130 FF FF FF	FF	Sector 14		
Option byte 5: 08000150 FF FF FF	FF	Sector 15		
Option byte 7: 08000160 FF FF FF Option byte 8: 08000170 FF FF FF	FF	✓Sector 15 ✓Sector 17		
Option byte 9: 08000180 FF FF FF	FF	▼Sector 18		
Option byte 10 080001A0 FF FF FF	FF	Sector 19		
Option byte 12 080001B0 FF FF FF Memory checksu 080001C0 FF FF FF	FF	Sector 20		
080001D0 FF FF FF	FF	✔Sector 22		
PROGRAM MEMORY OTP	MEMORY) OPTION BYTE /	✓Sector 23 👻		
Hardware configuration set to <st-link and="" in="" on="" plugged="" protocol="" stm32l43xxb="" swd="" usb="" with="">. Blank check before programming (when available) is OFF Verify after programming is ON. Clear memory before loading a file is ON.</st-link>				

(3). Select programming method "SWD", and choose "STM32L051X8"



(4). Open app_programmemory (hex file)



(5). Start programming

0	LoRa親写党明.docx - Microsoft Word				
9	M project [1212.stp] - STVP				
1	Eile Edit Project Configure Read Program Verify Grase Blank-Check View Help	AaB			
彩	🖬 📾 🏟 STH32L Ctri+P	标题			
	CONFIGURATION (CONFIGURATION) Memory Sectors if any) DF 00 00 00 8 p Memory Sectors if any) Mardware: ST-L Programming mc Device name: S Port: USB O 00 00 00 00 00 00 00 00 00 00 00 8 F 91 00 00 88 D0 00 00 00 8 D1 00 00 08 D1 00 00 08 PROGRAM MENOI (0x8000000 - 0 File: 20180129 D6000010 18000040 O 00 00 00 00 00 00 00 00 00 00 00 00 00	ſ			
	Benory Checksu G0000000 E7 00 00 08 E7 00 00 08 E7 00 00 00 00 00 00 00 00 00 00 00 00 00				
	Image: Second for the field of the				
<pre>X Erase device memory before programming (when available) is OFF Display a popup window when an error occurs is ON. Log activity is OFF Hardware configuration set to (ST-LINK on USB with STM32L051x8 plugged in and SWD protocol). Blank check before programming (when available) is OFF Verify after programming is ON. Clear memory before loading a file is ON. Erase device memory before programming (when available) is OFF Display a popup window when an error occurs is ON. Log activity is OFF > Loading file C:\Users\administrator\Desktop\20180129ABP.hex in PROGRAM MEMORY area < File successfully loaded. File Checksum 0x5194D1</pre>					
	Program the current tab or active sectors 🕼 <0x8000000> ST-LINK STM32L051x8 SWD 🥢				

(6). It will prompt as below after programming successfully.

W project [1212.stp] - S	AV15					
<u><u>File</u> <u>E</u>dit Pr<u>oj</u>ect <u>C</u>o</u>	nfigure <u>R</u> ead <u>P</u> rogram <u>V</u> erify Er <u>a</u> se <u>B</u> lank-Check View <u>H</u> elp					
🛛 🖬 😂 😫 🛱 🖆	🚓 STM32L051x8 💽 🏘 🏘 🦣 🦛 🦣 🏘					
FileName: 1212 FileName: 1212 CONFIGURATIO Hardware: ST-I Programming mc Device name: S Port: USB PROGRAM MEMO [0x8000000 - 0 File: 20180129 Programmed Memory checksu DATA MEMORY = [0x8080000 - 0 No File Not programmed Memory checksu OPTION BYTE : Not programmed Mot programmed Mot programmed Option byte 0: Option byte 1: Option byte 3: Option byte 4: Option byte 5:	Decodence 70 19 00 20 00	▲ 				
× Verify after pr	ogramming is ON	*				
Clear memory be Erase device me Display a popup Log activity is > Loading file < File successf > Programming < PROGRAM MEMOR > Verifying FRO -> Reset done < PROGRAM MEMOR	<pre>Clicitar memory before loading a file is ON. Erase device memory before programming (when available) is OFF Display a popup window when an error occurs is ON. Log activity is OFF > Loading file C:\Users\Administrator\Desktop\20180129ABP.hex in PROGRAM MEMORY area < File successfully loaded. File Checksum 0x5194D1 > Programming PROGRAM MEMORY area < PROGRAM MEMORY programming completed. > Verifying PROGRAM MEMORY area **> Reset done. device Running</pre>					
Ready	@ <0x8000000> ST-LINK STM32L051x8 S	WD //				

(7). Switch to "DATA MEMORY"

M project [1.stp] - STV	0		
<u>File Edit Project Co</u>	nfigure <u>R</u> ead <u>P</u> rogram <u>V</u> erify Er <u>a</u> se <u>B</u> lank-Checl	k V <u>i</u> ew <u>H</u> elp	
	2 STH321051-8 - A A A A		
		·	
PROJECT			
FileName: 1.stp	08080020 00 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	
CONFIGURATION:			
Hardware: ST-LIN	03080050 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 0	
Device name: STM	03020070 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00	
Port: USB			
PROGRAM MEMORY	030800A0 00 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00	
[0x8000000 - 0x8 File: R100H RFTE			
File: R207_F10H1	080800D0 00 00 00 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	
File: R809A_F10H File: R809A F10H	020200F0 00 00 00 00 00 00 00 00 00		
File: R809A_F10H	08080100 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 0	
Memory checksum:	03030120 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00	
DATA NENORY at			
[0x8080000 - 0x8	03080150 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00	
No File Not programmed			
Menory checksum:		00 00 00 00 00 00 00 00	
OPTION BYTE st.	080801A0 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00	
No File		00 00 00 00 00 00 00 00 00 00 00 00 00 0	
Option byte 0: A	030:01D0 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00	
Option byte 1: 0			
Option byte 3: 0	08080200 00 00 00 00 00 00 00 00 00		
Option byte 4: 0 Option byte 5: 0			
Memory checksum:	08080230 00 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	
	08080260 00 00 00 00 00 00 00 00 00 00 00 00 0	00 00 00 00 00 00 00 00 00 00 00 00 00 0	
	08080280 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00	
	08080290 00 00 00 00 00 00 00 00 00 00 00 00 0		
	03080280 00 00 00 00 00 00 00 00 00		
	080802D0 00 00 00 00 00 00 00 00 00 00		
	080802E0 00 00 00 00 00 00 00 00 00 00 00 00 0	00 00 00 00 00 00 00 00	
	08080310 00 00 00 00 00 00 00 00 00 00 00 00 0	00 00 00 00 00 00 00 00 00 00 00 00 00 0	
	08080330 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00	
K III)	PROGRAM MEMOR A DATA MEMORY OPTION BYTE /		

(8). Open the "datamemory-hex" file as below picture.

It Project Configur Image: Configur	re kead Program yenty Figs gancel STH32L051x8	Area View Heip Image: Area			
Image: Second					
T: e 1.stp URATION: s 5T-LIN ming acde name: STM SSB M MEMORY 1000 - 0x5 1001 FRTE 207.F10H 1809A F10H 1809A F10H 1809A F10H 1809A F10H 1809A F10H 1809A F10H 000 - 0x5					
209A_F10H 2809A_F10H 2809A_F10H granned checksum: EMORY_st. 0000 - 0x8	000000000000000000000000000000000000	- ← m ↔ m +			
granned checksum: EMORY st. 1000 - 0x8	 約 打开 查找范围 (L): 重 桌面 		AVIIIIISUOV		
EMORY st.	查找范围 (I): ■ 桌面		Autoritisti di u		
000 - 0x8		A STUESH	Autimistrator		
granned 080 checksum: 080 BYTE st. 080	80 80 80 80 80 80 80 80 90 90 90 90 90 90 90 90 90 90 90 90 90	 系统文件夹 网络 系统文件夹 	 系統文件夹 arm 文件夹 		
granned 080 byte 0: A 080 byte 1: 0 byte 2: 7 byte 3: 0	FREERTOS_STM32L051 文件夹	Rola串口升级程序 文件夹	serial_port_utility_latest 文件夹	Е	
byte 4: 0 byte 5: 0 checksum: 0:00	stm32L081 文件夹	STM32L431_TEST 文件夹	Z830K Tool V1.0.0.3 文件夹		
080 080 080	逐动激活 _{文件类}	R718N1_AS923_F12H02 HEX 文件 178 KB	2_2019 NLPP-CFG.hex HEX 文件 412 KB	-	
080	文件名(M): NLPP-CFG. hex			打开回	
080	文件类型(I): Intel HEX Files (* hex	9	<u>•</u>	取消	
080 080 080 080 080	802F0 00	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$			
	byte 0: A 000 byte 1: 0 000 byte 2: 7 000 byte 3: 0 000 byte 4: 0 000 byte 4: 0 000 checksum: 000 000 000 000 000 000 000 000 000 00	yyte 0: A A A Cell FREERTOS,STM32L051 文件未 Y Y Cell S Cell S	Dyte 0:0 PREERTOS_STM32L051 Rolm用口分級程序 文件未 Dyte 2:0 0	byte 0: 0 A BCIA FREERTOS_STM32L051 Rola#Dff%/B/B* serial_port_utility_latest byte 0: 0 CARA CARA CARA CARA CARA Serial_port_utility_latest byte 0: 0 CARA Stm32L081 CARA CARA <td>Dyte 1:0 byte 2:0 byte 2:0 byte 2:0 byte 2:0 byte 3:0 checkaum FREERTOS_STM32L051 Rola#L7H%相響序 文は先 Serial_port_utility_latest 文は先 byte 3:0 byte 3:0 checkaum imm21081 checkaum imm21002019 checkaum imm21002019 checkaum imm21002019 checkaum imm21000 checkaum imm21002019 checkaum imm21000 checkaum imm210000 checkaum imm210000 checkaum imm210000 checkaum imm210000 checkaum imm2100000 checkaum</td>	Dyte 1:0 byte 2:0 byte 2:0 byte 2:0 byte 2:0 byte 3:0 checkaum FREERTOS_STM32L051 Rola#L7H%相響序 文は先 Serial_port_utility_latest 文は先 byte 3:0 byte 3:0 checkaum imm21081 checkaum imm21002019 checkaum imm21002019 checkaum imm21002019 checkaum imm21000 checkaum imm21002019 checkaum imm21000 checkaum imm210000 checkaum imm210000 checkaum imm210000 checkaum imm210000 checkaum imm2100000 checkaum

(9). Select "Current tab" under " Program" directory and start program "data memory". It will prompt after programming successfully.

W project [Lstp] - STVP						
File Edit Project Configure Rea <mark>f Program Verify Erase Blank-Check View H</mark> elp						
🔒 🔒 🔒	STN32LI A Current tab Ctrl+P			-		*
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<u> </u>		_ 0	0 00	00	00	
PROJECT	08080010 All tabs (on active sectors if any)	0	0 00	00	00	
FileName: 1.stp	08080020 An tabs (on active sectors in any)	0	0 00	00	00	
-	08080030 00 00 00 00 00 00 00 00 00 00 00 0	0 00	0 00	00	00	
CONFIGURATION:	08080040 00 00 00 00 00 00 00 00 00 00 00 0	0 0	0 00	00	00	
Hardware: ST-LIN	08080050 00 00 00 00 00 00 00 00 00 00 00 0	0 0	0 00	00	00	
Programming mode	08080060 00 00 00 00 00 00 00 00 00 00 00 0	0 0	0 00	00	00	
Device name: STM	08080070 00 00 00 00 00 00 00 00 00 00 00 0	0 0	0 00	00	00	
Port: USB		10 0	0 00	00	00	
		10 0	0 00	00	00	
PROGRAM MEMORY	USUSUCAU UU U	10 0	0 00	00	00	
[0x8000000 - 0x8		0 00	0 00	00	00	
File: R100H_RFTE			0 00	00	00	
File: R207_F10H1		0 0	0 00	00	00	
File: R809A_F10H		0 0	0 00	00	00	
File: R809A_F10H			0 00	00	00	
File: R809A_F10H			0 00	00	00	
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No File	08080160 00 00 00 00 00 00 00 00 00 00 00 0	0 0	0 00	00	00	
Not programmed	08080170 00 00 00 00 00 00 00 00 00 00 00 0	0 0	0 00	00	00	
Memory checksum	08080180 00 00 00 00 00 00 00 00 00 00 00 0	0 0	0 00	00	00	
	08080190 00 00 00 00 00 00 00 00 00 00 00 0	0 00	0 00	00	00	
OPTION BYTE st.	080801A0 00 00 00 00 00 00 00 00 00 00 00 0	0 00	0 00	00	00	
No File		10 0	0 00	UU	00	
Not programmed		0 00	0 00	00	00	
Option byte 0: A			0 00	00	00	
Option byte 1: 0		0 0	0 00	00	00	
Option byte 2: 7			0 00	00	00	
Option byte 3: 0		10 0	0 00	00	00	
Option byte 4: 0		10 0	0 00	00	00	
Option byte 5: 0		10 0	0 00	00	00	
nemory checksum.	08080240 00 00 00 00 00 00 00 00 00 00 00 0	0 0	0 00	00	00	
	08080250 00 00 00 00 00 00 00 00 00 00 00 0	0 00	0 00	00	00	
	08080260 00 00 00 00 00 00 00 00 00 00 00 0	0 0	0 00	00	00	
	08080270 00 00 00 00 00 00 00 00 00 00 00 0	0 0	0 00	00	00	
	08080280 00 00 00 00 00 00 00 00 00 00 00 0	0 00	0 00	00	00	
	08080290 00 00 00 00 00 00 00 00 00 00 00 0	0 0	0 00	00	00	
	USUSUZAU UU U	10 0	0 00	00	00	
		0 01	0 00	00	00	
			0 00	00	00	
		10 0	0 00	00	00	
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	08080310 00 00 00 00 00 00 00 00 00 00 00 00 0	00 0	0 00	00	00	
	08080320 00 00 00 00 00 00 00 00 00 00 00 00 0	0 00	0 00	00	00	
	08080330 00 00 00 00 00 00 00 00 00 00 00 0	0 00	0 00	00	00	
4 m b	DEOGRAM MEMORY) DATA HENORY (OPTION BYTE /	_	_	_	_	
	I UPROGRAM MEMORY OPTION BYTE /					
			-	11		

(10). Restore to factory default after programming , then power on the device , it will run with the new firmware.