

JH-7110 DevKit USB Flash Tool User Guide

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Legal Statements

Important legal notice before reading this documentation.

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Contact Us

Address: Room 502, Building 2, No. 61 Shengxia Rd., China (Shanghai) Pilot Free Trade Zone, Shanghai, 201203, China Room 502, Building 2, No. 61 Shengxia Rd., China (Shanghai) Pilot Free Trade Zone, Shanghai, 201203, China

Website: http://www.starfivetech.com http://www.starfivetech.com

Email: sales@starfivetech.com(sales) , support@starfivetech.com(support)

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Preface

About this guide and technical support information.

About this document

This document mainly introduces how to use JH-7110 DevKit flash tool.

Revision History

Table 0-1 Revision History

Version	Released	Revision
1.0	2024/01/04	The First Official Release.

Notes and notices

The following notes and notices might appear in this guide:

• 🚺 Tip:

Suggests how to apply the information in a topic or step.

Note:

Explains a special case or expands on an important point.

Important:

Points out critical information concerning a topic or step.

CAUTION:

Indicates that an action or step can cause loss of data, security problems, or performance issues.

Warning:

Indicates that an action or step can result in physical harm or cause damage to hardware.

1. Overview

JH-7110 DevKit flash tool enables users to:

- Update the file of SPL and U-boot in QSPI Flash.
- Update the file of SPL, U-boot, Kernel, and sdcard.img in EMMC.



Note:

- QSPI Flash can only support updating SPL and U-Boot.
- EMMC supports updating the entire sdcard.img.

2. Preparation

Make sure you perform the following before using the flash tool:

- 1. Prepare the items listed in the <u>Prerequisite (on page 8)</u>.
- 2. Install driver as described in Installing Driver (on page 8).

Prerequisite

Environment: Windows 10 and above.

Required Hardware:

- JH-7110 DevKit
- USB to Serial Converter
- Type-C cable (USB to Type-C)
- 12 V/5 A power adapter

Installing Driver

To install driver, perform the following steps:

1. Download and unzip the file, <u>UsbFlashTool_<Version>-Windows</u>.



Note:

<Version> is the version number of the flash tool. For example, V2.6.

2. Set the boot mode to UART (RGPIO_1, RGPIO_0: 1, 1), then connect the cables as described in the following figure:

Figure 2-1 Wiring



Tip:

Refer to this link to set the boot mode as UART.

3. Open the file, UsbFlashTool_<Version>-Windows.



Note:

<Version> is the version number of the flash tool. For example, V2.6.

4. Check if serial port settings (SerialPort, Baudrate, DataBit, StopBit) are correct .

Figure 2-2 Serial Po	ort Settings	
Serial Setting	5	
SerialPort	COM4	\sim
Baudrate	115200	\sim
DataBit	8 bit	\sim
ParityBit	none	~
C	4.11	
StopBit	1 Dit	~
StreemControl	Dobe	~
Streamcontrol	none	~

| 2 - Preparation

5. Select **Firmware** under file type and select **Flash** under memory type, and then choose the file of usbprog-devkit-<*Date*>.out and click **Load**.



Note:

<Date> indicates the update time. For example, 230801.

Figure 2-3 Select Frimware File

			- 0 .
sic Professional			
/ile Path D:/documents/UsbF]	lashTool/USB_tools/UsbFlashTool_V2.6-Windows/up	odate/usbprog-devkit-230801.out	File Select Load Reset
File Type		Serial Setting	
Firmware SPL	O II-Boot	SerialPort COM22	· · · · ·
) Kernel	○ Allinone	Baudrate 115200	~
emory Type		DataBit 8 bit	~
) flash	O EMMC	ParituRit	
B Device			
erdor ID	0x0559	Stoppit 1 bit	`
roduct ID	0x7110	✓ StreamControl none	· · · · · · · · · · · · · · · · · · ·
en Serial <id=0x1dd07e697e0, nding file: D:/documents/Us</id=0x1dd07e697e0, 	open=Trus>(port='COM22', baudrate=115200, byte bFlashTool/VSB_toolz/VsbFlashTool_V2.6=Windows/	esize=8, parity='N', stopbits=1, timeout=None, xonxoff=Fals /update/usbprog-devkit=230801.out, 201288 bytes	e, rtsots≃Felse, dsrdtr≃Felse)
en Serial (i=40%1d&D7e697e0, nding file: D:/documents/Vs	open=Trus>(port='COME2', baudrate=115200, byte břlashTool/USB_tools/UsbFlashTool_V2.6-Windows/	esize=8, purity="M", stopbits=1, timeout=None, xonxoff=Fals /update/usbprog-devkit=230001.out, 201288 bytes	e, rtsots=False, dsrdtr=False)

6. Open Device Manager and you will see **StarFive JH7110 Device**. If the device does not appear in the Device Manager, make sure your USB cable connection is correct (only when the device appears that you can install the driver).

Figure 2-4 Device Manager



7. Open zadig-2.5.exe in the folder UsbFlashTool_<Version>-Windows, click Options > List All Devices, choose StarFive JH7110 Device and click Install Driver.

Result:		
Figure 2-5 Install Driver		
🗾 Zadig		– 🗆 X
Device Options Help		
StarFive JH7110 Device		✓ ☐ Edit
Driver (NONE) USB ID 0559 7110 WCID ²	WinUSB (v6.1.7600.16385)	More Information WinUSB (libusb) libusb-win32 libusbK WinUSB (Microsoft)
1 device found.		Zadig 2.5.730

The installation is successful.

8. Reboot JH-7110 DevKit and UsbFlashTool_<Version>-Windows.



Note:

</ r>



Note:

Driver installation is only required for the first use.

3. Using JH-7110 DevKit Flash Tool

This chapter introduce two sections to use VisionFive 2 flash tool:

- Basic Mode (on page 13)
- Professional Mode (on page 18)

3.1. Basic Mode

To use the VisionFive 2 flash tool in basic mode, follow the steps below:

Important:

- **Firmware** should be burned at first; If there is a problem when burning, you can power off and restart, and reset again.
- Make sure you select the correct memory type.
- Kernel and Allinone can only burn into EMMC.
- The file path can be customized in basic mode while in professional mode, files should be under update directory.

1. Burn Firmware:

- a. Select Firmware under file type.
- b. Select Flash under memory type.
- c. Select the file of usbprog-devkit-<Date>.out by clicking File Select.

Note:

<Date> indicates the update time. For example, 230801.

d. Click Load.

Figure 3-1 Select Firmware File

VisionFive2 usb flash tool						- 🗆	×
Basic Professional							
\mathbf{p}_{1} (1,, \mathbf{r}_{2})(1, \mathbf{r}_{1} , \mathbf{r}_{2} , \mathbf{r}_{3}) (1, \mathbf{r}_{3})]_/r_bp]br] 100 c_m!_]		000001				
File Path	_tools/USDFI&Shicol_V2.0-#1hdo	ws/update/uspprog-devkit-	230001. out		File Select	Load Reset	
File Type			Serial Settin	ng			
Firmware			SerialPort	C0M22		~	
O SPL	O U-Boot		Baudrata	115200			
Memory Type			baum are	113200		·	
FI ASH	C FAMIC		DataBit	8 bit		~	
C THEN			ParityBit	none		~	
USB Device			StopBit	1 bit		~	
Verdor ID Product ID	0x0559	~	StreamControl	none		~	
1100001 15	OX1110	•					
Log							_
bmAttributes : OxcO Self Powe bMaxPower : OxC (O mA)	ered						^
INTERFACE O: Vendor Specific bLength : 0x9 (9 bytes))						
bDescriptorType : Ox4 Interfac bInterfaceNumber : Ox0	e						
bAlternateSetting : OxO bNumEndpoints : Ox2							
bInterfaceClass : 0xff Vendor Sj bInterfaceSubClass : 0x0	pecific						
bInterfaceProtocol : 0x0							
ENDPOINT 0x81: Bulk IN							
bLength : 0x7 (7 bytes, bDescriptorType : 0x5 Endpoint)						
bEndpointAddress : 0x81 IN							
bmAttributes : Ox2 Bulk wWayPackatSiza : Oy200 (512 but)	ar)						
bInterval : 0x1	es/						
ENDPOINT 0x2: Bulk OUT	<u>\</u>						
blescriptorType : 0x7 (7 bytes)	,						
bEndpointAddress 0x2 OUT							
bmAttributes : Ux2 Bulk wMaxPacketSize : 0x200 (512 but)	(20						
bInterval : 0x1	,						
Complete							~

2. Burn SPL:

- a. Select **SPL** under file type.
- b. Select Flash under memory mode.
- c. Select u-boot-spl.bin.normal.out by clicking File Select.
- d. Click Load.

visionrivez usb hash tool			-	
asic Professional				
File Path D:/SDK/DVK-SDK/JH7	110_DVK_515_v5.10.1-release=2023=12=07/u=boot=sp	pl. bin. normal. out	File Select Load Re	set
File Type		-Serial Setti	ng	
) Firmware				
SPL	O M-Boot	SerialPort	COM22	
) Kernel	O Allinone	Baudrate	115200	
Innony Tymo				
nemory type		DataBit	8 bit	
🖲 FLASH	O EMMC	ParityBit	none	
JSB Device		C	4.1%	
/erdor ID	0x0559	Stoppit	1 bit	
roduct ID	0x7110	✓ StreamContro	l none	
g				
<pre>compared reaching and a second a</pre>	02	or/a ooot sja. Jin normal out		
tart to receive image file.				
ne image file is received suc	cessfully, start to update in storage device.			
Interstation of the state of the state of the state of the state of the				
mage type: SPL nage size: 0x22d6b emory type: FLASH emory addr: 0x000000 vokup memory addr: 0x000000	000000000 9000200000			

3. Burn U-Boot:

- a. Select **U-Boot** under file type.
- b. Select Flash under memory type.
- c. Select devkits_fw_payload.img by clicking File Select.
- d. Click Load.

			- 0
sic Professional			
7ile Path D:/SDK/DVK-SDK/JH71	110_DVK_515_v5.10.1-release=2023=12=07/devkits_f	fw_payload ing File Select Lt	ad Reset
File Type		Serial Setting	
🔿 Firmware			
O SPL	U-Boot	SerialPort COM22	
🔿 Kernel	O Allinone	Baudrate 115200	
Memory Time			
		DataBit 8 bit	
FLASH	O EMMC	ParityBit none	
USB Device		StopBit 1 bit	
/erdor ID	0x0559	×	
roduct ID	0x7110	V StreamControl none	
¢			
ackup memory addr: 0x000000	0000200000 ****************************		
<pre>************************************</pre>	0x2246b 0K 0x2246b 0K JD D:/SDK/DVK-SDK/[H7110_DVK_515_v5.10_1-release-2	D23-12-07/devkitz fw payload img	
Lamin settion Lash varas: offset Du0, size Lash writs: offset Du0, size torage device updating SUCCEE omplete cogram FLASH: 0x100000:UB007, j equast Du1 return 36 peed 7.360153782171 MB/s squest Ox2 return 0	Duz2486 DK Duz2486 DK D D:/SDK/DVK-SDK/DH7110_DVK_515_v5.10.1-velease-20	123-12-07/dewkitz_fw_payload ing	
<pre>************************************</pre>	0x2246b 0K 0x2246b 0K 3D D:/SDK/DVK-SDK/JH7110_DVK_515_v5.10.1-γelease=20	023-12-07/devkits_fw_peyload_img	

4. Burn Kernel:

- a. Select **Kernel** under file type.
- b. Select EMMC under memory type.
- c. Select starfive-devkits-vfat.part by clicking File Select.
- d. Click Load.

VisionFive2 usb flash tool				- 0
asic Professional				
File Path D:/SDK/DVK-SDK/JH711	0_DVK_515_v5.10.1-release=2023=12=07/starfive	-devkits-vfat. part	File Select Los	id Reset
File Type		Serial Settin	ng	
🔘 Firmware				
⊖ SPL	O V-Boot	SerialPort	C0M22	
🖲 Kernel	O Allinone	Baudrate	115200	
Jamanu Tuma				
Remory Type		DataBit	8 bit	
) flash	EMMC	DiDia		
		Taritypit	none	
JSB Device		StopBit	1 bit	
/erdor ID	0x0559	~		
Product ID	0x7110	✓ StreamControl	1 none	
og				
Image size: 0x12400000 nemory upd : EMMC Nemory addr: 0x00000000 NAMESTIC States : 0X 398016 blocks written: 0K Storage device updating SUCCEED Complete	00900000			
program EMMC:0x800000:KERNEL, D: request 0x1 return 36 speed 6.867922624474015 MB/s request 0x2 return 0	/SDK/DVK-SDK/JH7110_DVK_515_v5.10.1-velease-2	2023–12–07/stærfive-devkits-vfat. pe	urt .	
Start to receive image file. The image file is received succe *************	ssfully, start to update in storage device.			
mage type: KERNEL				
mage size. 0x12400000 emory type: EMMC				
nemory addr: 0x00000000	00800000			
598016 blocks erased: OK				
980016 blocks written: UK				
Storage device updating SUCCEED				

- 5. Burn sdcard.img:
 - a. Select **Allinone** under file type.
 - b. Select EMMC under memory type.
 - c. Select sdcard.img by clicking Select File.
 - d. Click Load.

Figure 3-5 Burn sdcard.img

VisionFive2 usb flash tool				-	
asic Professional					
File Path D:/SDK/DVK-SDK/JH711	10_DVK_515_v5. 10. 1-release-2023-12-07/sdoc	ard. ing		File Select Load	Reset
File Type		Serial Settin	ng		
○ Firmware	_	SerialPort	C0M22		~
O SPL	U-Boot				
() Kernel	Allinone	Baudrate	115200		\sim
Memory Type		DataBit	8 bit		~
⊖ flash	• EMMC	ParityBit	none		\sim
USB Device		StopBit	1 bit		~
Verdor ID	0x0559	×			
Product ID	0x7110	✓ StreamLontrol	1 none		~
og					
image type: ALL-IH-OU image size: 0x1200500 memory type: EMMC memory addr: 0x0000000 Streamed and the size of the	E 0 222000000				Î
100% ########### 839M/839M [02:: speed 5.680948925055154 MB/s request 0x2 return 0	20<00:00, 5.96MB/s]				
The interventer image file. The intege file is received succ- image type: ALL-TM-ONE image size: 0x0 nemory adar: 0x0000000 *****************************	essfully, start to update in storage devi ********* E D32005000 *******	re.			

Result:

You will see the output Complete, which indicates that the image is burnt successfully.

3.2. Professional Mode

To use the VisionFive 2 flash tool in professional mode, follow the steps below:

Important:

- All files need to burn should be placed under update directory.
- The system can automatically recognize burning keywords:
 - The keyword of Firmware Load: usbprog
 - The keyword of SPL Load: spl
 - The keyword of UBOOT Load: payload
 - The keyword of **EMMC Load**: img
- There are 2 usbprog files, one for VisionFive 2, the other for JH-7110 DevKit. Please make sure only one usbprog file under update directory.

1. Click Firmware Load, and Firmware will be automatically burnt.

Figure 3-6 Burn Firmware

VisionFive2 usb flash tool			_		×
Basic Professional					
File Path D:\documents\VsbFlashTool\VSB_tools	s\UsbFlashTool_V2.6-Windows\update\usbprog-devkit-	230801. out			
File Type		Serial Settin	6		
Firmw	are Load	SerialPort	C0M22		~
SPL	. Load	Baudrate	115200	,	~
0500	T Load	DataBit	8 hit	,	~
EMM	C Load	PaultuRit			
ISB Davice	eset	naritybri	10110		×
Verdor ID	0x0559 ~	StopBit	1 bit		~
Product ID	0x7110 ~	StreamControl	none	`	~
Log					
baktributes Oxed Self Powered MadFover 0x00 (0 mA) INTERFACE 0: Vendor Specific bLangth 0x00 (0 mA) Distribution (0 ma) blassing intropyse blassing intropyse blattriacelass 0x00 blattriacelass 0x10 blassing 0x00 blattriacelass 0x10 blassing 0x00 blattriacelass 0x10 blassing 0x00 blattriacelass 0x10 blassing 0x00 blassing 0x00 blassi	io			7	~

2. Click **SPL Load**, and u-boot-spl.bin.normal.out will be automatically burnt into Flash.

Figure	3-7	Burn	SPL
--------	-----	------	-----

/isionFive2 usb flash tool				- 0
sic Professional				
ile Path D:\documents\UsbF	lashTool\USB_tools\UsbFlashTool_V2.6-Windows	:\update\u-boot-spl. bin. normal. out		
File Type		Serial Setti	ng	
	Firmware Load	Suri JBurk	C00050	
	SPL Load	Serialfort	60062	~
	UBOOT Load	Baudrate	115200	~
	EMMC Load	DataBit	8 bit	~
	Reset	ParityBit	none	~
JSB Device		StopBit	1 bit	~
/erdor ID	0x0559	×		
roduct ID	0x7110		1 none	×
<pre>upest 0.1 return 36 eed 5.45945462069556 MB/s quest 0.2 return 0 VRITS, version:230801-be336 R clk 2133MHz ash initialization SUCCEED me initialization SUCCEED In bind to EP81</pre>	0002			
Out bind to EP2 art to receive image file. e image file is received su	nnneccfully, start to undate in storage devi			
**************************************	0000020000			
"L main section Lash erase: offset 0x0, size Lash write: offset 0x0, size	≥ 0x22d6b 0K • 0x22d6b 0K ren			

3. Click UBOOT Load, and devkits_fw_payload.img will be automatically burnt into Flash.

Figure	3-8	Burn	UBOOT
--------	-----	------	-------

VisionFive2 usb flash tool			-	×
Basic Professional				
				 _
File Path U:\documents\UsbFlashTool\USB_tools	\UsbflashTool_V2.6=Windows\update\devkits_tw_payl	oad. 1mg		
File Type		-Serial Settin	ŝ	
Firmwa	re Load	SerialPort	C0M22	\sim
SPL	Load	Baudrate	115200	~
ENMC	Load	DataBit	8 bit	~
Re	set	ParityBit	none	~
USB Device		StopBit	1 bit	~
Verdor ID	0x0559 ~	StreamControl	none	~
Product ID	0x7110 ~			
Log				
memory addr: 0x0000000000000000 backup memory addr: 0x000000000000000000				^
**************************************	*****			
flash write: offset OxO, size Ox22d6b OK Storage device updating SUCCEED				
Complete	ןוד]ואס א].ואר.וד]וד] אס משונין			
request 0x1 return 36 speed 6.567419562142691 MB/s	lashroor(obb_coors(oshrashroor_rz.o windows(apus	ite(devitis_1*_p	syruan Img	
request 0x2 return 0				
The image file is received successfully, start	to update in storage device.			
**************************************	*****			
memory type: FLASH memory addr: 0x000000000100000				
**************************************	*****			
Storage device updating SUCCEED Complete				
				~

4. Click EMMC Load, and sdcard.img will be automatically burnt into EMMC.

Figure 3-9 Burn EMMC

VisionFivez usb hash tool				
Basic Professional				
File Path D:\documents\UsbFlas	thTool\USB_tools\UsbFlashTool_V2.6-Windo	rs/update/sdcard.img		
File Type		Serial Settin	ng	
	Firmware Load	SerialPort	C0M22	~
	SPL Load	Bandrate	115200	~
	UBOOT Load			-
	ENNC Load	DataBit	8 bit	~
	Reset	ParityBit	none	~
USB Device		StopBit	1 bit	~
Verdor ID	0x0559	✓ StreamControl	1 none	~
Froduct 1D	0x/110	~		
log				
image type: ALL-TN-OR image size: Ox12005000 memory type: EMMC memory addr: Ox0000000 Statistics: Statistics: Statistics: S59864 blocks written: OK S59864 blocks written: OK S50rage dwvice updating SUCCEED request Ox1 return 36	8 3 220000000			
100% ########## 839M/839M [02:: speed 5.365463394276576 MB/s request 0x2 return 0 Start to receive image file.	29<00:00, 5.63MB/x]			
The image file is received suco image type: ALL-TM-ON memory type: EMMC memory addr: 0x0000000 *****************************	essfully, start to update in storage dev ******** 2 332005000 *******	ice.		

Result:

You will see the output Complete, which indicates that the image is burnt successfully.