

ED-HMI3020-101C Application Guide

EDA Technology Co., LTD

March 2024

Contact Us

Thank you very much for purchasing and using our products, and we will serve you wholeheartedly.

As one of the global design partners of Raspberry Pi, we are committed to providing hardware solutions for IOT, industrial control, automation, green energy and artificial intelligence based on Raspberry Pi technology platform.

You can contact us in the following ways:

EDA Technology Co., LTD

Address: Building 29, No.1661 Jialuo Highway, Jiading District, Shanghai Mail: <u>sales@edatec.cn</u> Phone: +86-18217351262

Website: https://www.edatec.cn

Technical Support:

Mail: <u>support@edatec.cn</u>

Phone: +86-18627838895

Wechat: zzw_1998-

Copyright Statement

ED-HMI3020-101C and its related intellectual property rights are owned by EDA Technology Co.,LTD.

EDA Technology Co.,LTD owns the copyright of this document and reserves all rights. Without the written permission of EDA Technology Co.,LTD, no part of this document may be modified, distributed or copied in any way or form.

Disclaimer

EDA Technology Co.,LTD does not guarantee that the information in this manual is up to date, correct, complete or of high quality. EDA Technology Co.,LTD also does not guarantee the further use of this information. If the material or nonmaterial related losses are caused by using or not using the information in this manual, or by using incorrect or incomplete information, as long as it is not proved that it is the intention or negligence of EDA Technology Co.,LTD, the liability claim for EDA Technology Co.,LTD can be exempted. EDA Technology Co.,LTD expressly reserves the right to modify or supplement the contents or part of this manual without special notice.

Foreword

Related Manuals

All kinds of product documents contained in the product are shown in the following table, and users can choose to view the corresponding documents according to their needs.

Documents Instruction				
	This document introduces the product features, software and			
ED UNI2020 1010 Detechant	hardware specifications, dimensions and ordering code of			
ED-HMI3020-101C Datasneet	ED-HMI3020-101C to help users understand the overall system			
	parameters of the products.			
	This document introduces the appearance, installation, startup			
ED-HMI3020-101C User Manual	and configuration of ED-HMI3020-101C to help users use the			
	product better.			
	This document introduces downloading OS file, flashing to SD			
ED-HMI3020-101C Application Guide	card, Firmware Update, and Configuring booting from SSD of ED-			
	HMI3020-101C to help users use the product better.			

Users can visit the following website for more information:

https://www.edatec.cn

Reader Scope

This manual is applicable to the following readers:

- Mechanical Engineer
- Electrical Engineer
- Software Engineer
- System Engineer

Related Agreement

Symbolic Convention

Symbolic	Instruction
	Prompt symbols, indicating important features or operations.
	Notice symbols, which may cause personal injury, system damage, or signal interruption/loss.
4	Warning symbols, which may cause great harm to people.

Safety Instructions

- This product should be used in an environment that meets the requirements of design specifications, otherwise it may cause failure, and functional abnormality or component damage caused by non-compliance with relevant regulations are not within the product quality assurance scope.
- Our company will not bear any legal responsibility for personal safety accidents and property losses caused by illegal operation of products.
- Please do not modify the equipment without permission, which may cause equipment failure.
- When installing equipment, it is necessary to fix the equipment to prevent it from falling.
- If the equipment is equipped with an antenna, please keep a distance of at least 20cm from the equipment during use.
- Do not use liquid cleaning equipment, and keep away from liquids and flammable materials.
- This product is only supported for indoor use.

For	eword		i
	Related M	anuals	i
	Reader So	ope	i
	Related Ag	greement	ii
	Symb	olic Convention	ii
Sat	fety Instructi	ons	iii
1	Installing ()S	1-1
	1.1 D	ownloading OS File	
	1.2 F	lashing to SD Card	
2	Firmware	Jpdate	
3	Configurin	g booting from SSD (optional)	
	3.1 F	lashing to SSD	
	3.1.1	Flashing through an SSD box	
	3.1.2	Flashing on ED-HMI3020-101C	
	3.2 S	etting BOOT_ORDER	3-11

Content

1 Installing OS

This chapter introduces how to download OS file and flash to SD card.

- ✓ Downloading OS File
- ✓ Flashing to SD Card

1.1 Downloading OS File

If the operating system is damaged during use, you need to re-download the latest version of OS file and flash to SD card. The download path is: <u>ED-HMI3020-101C/raspios</u>.

1.2 Flashing to SD Card

ED-HMI3020-101C starts the system from the SD card by default. If you want to use the latest OS, you need flash OS to the SD card. It is recommended to use the Raspberry Pi tool, and the download path is as follows:

Raspberry Pi Imager: https://downloads.raspberrypi.org/imager/imager_latest.exe

Preparation:

- The download and installation of Raspberry Pi Imager tool to the computer has been completed.
- A card reader has been prepared.
- The OS file has been obtained.
- The SD card of ED-HMI3020-101C has been obtained.

NOTE:

Please turn off the power before inserting or removing the SD card.

a) Find the location of the SD card, as shown in red mark of figure below.



b) Hold the SD card and pull it out.



Steps:

The steps are described using Windows system as an example.

- 1. Insert the SD card into the card reader, and then insert the card reader into the USB port of PC.
- 2. Open **Raspberry Pi Imager**, select "CHOOSE OS" and select "Use Custom " in the pop-up pane.

Operating System	X	
Thin clients, digital signage and 3D printing operating systems	>	
Freemium and paid-for OS Freemium and paid-for operating systems	>	
 Misc utility images Bootloader EEPROM configuration, etc. 	>	
Erase Format card as FAT32		
Use custom Select a custom .img from your computer		
	 Operating System Thin clients, digital signage and 3D printing operating systems Freemium and paid-for OS Freemium and paid-for operating systems Misc utility images Bootloader EEPROM configuration, etc. Erase Format card as FAT32 Use custom Select a custom .img from your computer 	Operating System X Thin clients, digital signage and 3D printing operating systems > Freemium and paid-for OS > Freemium and paid-for operating systems > Misc utility images > Bootloader EEPROM configuration, etc. > Erase Format card as FAT32 Use custom Select a custom .img from your computer

- 3. According to the prompt, select the downloaded OS file under the user-defined path and return to the main page.
- 4. Click "CHOOSE STORAGE", select the SD card of ED-HMI3020-101C in the "Storage" pane, and return to the main page.



5. Click "NEXT", select "NO " in the pop-up "Use OS customization?" pane.

Use OS customisation? X Would you like to apply OS customisation settings? EDIT SETTINGS YES NO	rry Pi	
Would you like to apply OS customisation settings? EDIT SETTINGS NO, CLEAR SETTINGS YES NO	Use OS customisation? X	
EDIT SETTINGS NO, CLEAR SETTINGS YES NO	Vould you like to apply OS customisation settings?	
	NO, CLEAR SETTINGS YES NO	
NEXT	NEXT	

6. Select "YES" in the pop-up "Warning" pane to start writing the image.

👸 Ra		
Raspberry Pi Device	Operating System 2024-01-10-ED-IPC3020_RASPIOS-BOOKW	Storage NS128GSSD510
	Writing 46%	
	Writing 46%	CANCEL WRITE

7. After the OS writing is completed, the file will be verified.

🥳 Ra	👹 Raspberry Pi					
Raspberry Pi Device	Operating System 2024-01-10-ED-IPC3020_RASPIOS-BOOKW	Storage NS128GSSD510 (BOOTFS, ROO				
	Verifying 34%	CANCEL VERIFY				

- 8. After the verification is completed, click "CONTINUE" in the pop-up "Write Successful" box.
- 9. Close **Raspberry Pi Imager**, remove the card reader.
- 10. Insert the SD card into ED-HMI3020-101C, and power on again.



2 Firmware Update

After the system starting normally, you can execute the following commands in the command pane to upgrade the firmware and optimize the software functions.

sudo apt update

sudo apt upgrade

3 Configuring booting from SSD (optional)

This chapter introduces the steps to configure booting from SSD.

- ✓ Flashing to SSD
- ✓ Setting BOOT_ORDER

3.1 Flashing to SSD

ED-HMI3020-101C supports optional SSD. If users need to boot the system from SSD, they need to flash the image to SSD before using.

If there is an SD card in ED-HMI3020-101C, the system will boot from the SD card by default.

3.1.1 Flashing through an SSD box

You can flash to SSD through an SSD box on a windows PC. It is recommended to use the Raspberry Pi tool and the download path is as follows:

Raspberry Pi Imager : https://downloads.raspberrypi.org/imager/imager_latest.exe

Preparation:

• An SSD box has been prepared.



- The device case has been opened and the SSD has been removed. For detailed operations, please refer to Section 2.3 and 2.4 of "ED-HMI3020-101C User Manual".
- The download and installation of Raspberry Pi Imager tool to the computer has been completed.
- The OS file has been obtained, and the download path is: <u>ED-HMI3020-101C/raspios</u>.

Steps:

The steps are described using Windows system as an example.

- 1. Install the SSD into the SSD box.
- 2. Connect the USB port of SSD box to PC, then make sure the SSD can be displayed on the PC.

TIP:

If the SSD cannot be displayed on the PC, you can format the SSD first.

3. Open **Raspberry Pi Imager**, select "CHOOSE OS" and select "Use Custom " in the pop-up pane.



- 4. According to the prompt, select the downloaded OS file under the user-defined path and return to the main page.
- 5. Click "CHOOSE STORAGE", select the SSD of ED-HMI3020-101C in the "Storage" pane, and return to the main page.



6. Click "NEXT", select "NO " in the pop-up "Use OS customization?" pane.

Raspberry Pi	
Use OS customisation?	x
Would you like to apply OS customisation settings? EDIT SETTINGS NO, CLEAR SETTINGS YES NO	
	NEXT

7. Select "YES" in the pop-up "Warning" pane to start writing the image.

👹 Raspberry Pi				
Raspberry Pi Device	Operating System	Storage		
	Writing 46%	CANCEL WRITE		

8. After the OS writing is completed, the file will be verified.

🐺 Raspberry Pi					
Operating System	Storage NS128GSSD510 (BOOTFS, ROO				
Verifying 34%	CANCEL VERIFY				
	Operating System 11-10-ED-IPC3020_RASPIOS-BOOKW_ Verifying 34%				

- 9. After the verification is completed, click "CONTINUE" in the pop-up "Write Successful" box.
- 10. Close the Raspberry Pi Imager and remove the SSD box.
- 11. Remove the SSD from the SSD box, install the SSD to PCBA and close the device case (For detailed operations, please refer to Section 2.5 and 2.7 of "ED-HMI3020-101C User Manual").

3.1.2 Flashing on ED-HMI3020-101C

Preparation:

- ED-HMI3020-101C has been booted from SD card, and ED-HMI3020-101C contains an SSD.
- The OS file has been obtained, and the download path is: <u>ED-HMI3020-101C/raspios</u>.

Steps:

The steps are described using Windows system as an example.

- 1. Unzip the downloaded OS file (".zip" file), obtain the ".img" file, and store it in an specified directory of local PC, such as Desktop.
- 2. Use the SCP command on Windows PC to copy the OS file (.img) to ED-HMI3020-101C.
 - a) Enter Windows+R to open the run pane, enter cmd, and press Enter to open the command pane.
 - b) Execute the following command to copy the OS file (.img) to the pi directory of ED-

HMI3020-101C.

scp "Desktop\2024-01-10-ed-HMI3020-101C_raspios-bookworm-arm64_stable.img" pi@192.168.168.155:~

C:\Users\gmei>scp "Desktop\2024-01-11-ed-hmi3020-101c_raspios-bookworm-arm64_stable.img" pi@192.168.168.155:~

- Desktop\2024-01-10-ed-HMI3020-101C_raspios-bookworm-arm64_stable.img: Indicating the storage path of ".img" file on windows PC.
- **Pi**: Indicating the storage path of ".img" file on ED-HMI3020-101C (the path where the ".img" file is stored after copying is completed).
- 192.168.168.155: The IP address of ED-HMI3020-101C
- 3. After the copy is completed, view the ".img" file in the pi directory of ED-HMI3020-101C.

			pi			
File Edit View Sort Go	Tools					
	\leftrightarrow 1	/home/pi				
🔒 Home Folder					, the	
🚐 Filesystem Root				· 👛 -	Intillie	
▼ /	Bookshelf	Desktop	Documents	Downloads	Music	Pictures
▶ bin			0			
▶ boot	Public	Templates	Videos	2024-01-11-		
▶ <mark>a</mark> dev	1 dono	remplates		ed-		
▶ etc				hmi3020-1		
▼ home						
👻 👝 pi						
Bookshelf						
📼 Desktop						
T Documents						

	Raspberry Pi Ima	ager v1.8.3	~ ^ X
🍑 Rasp	berry Pi		
Raspberry Pi Device CHOOSE DEVICE	Operating System CHOOSE OS	Storage CHOOSE STORAGE	

5. Click "CHOOSE DEVICE", select "Raspberry Pi 5" in the pop-up "Raspberry Pi Device" pane.

	Raspberry Pi Imager v1.8.3		× ^
	Raspberry Pi Device	x	
	No filtering		
	Show every possible image		
	Raspberry Pi 5		
100	The latest Raspberry Pi, Raspberry Pi 5		
	Raspberry Pi 4		
C.S.	Models B, 400, and Compute Modules 4, 4S		
	Raspberry Pi Zero 2 W		
SP	The Raspberry Pi Zero 2 W		

6. Click "CHOOSE OS", select "Use Custom " in the pop-up "Operating System" pane.

	Raspberry Pi Imager v1.8.3	~	~ ×
1	Operating System	x	
[Thin clients, digital signage and 3D printing operating systems	>	
[Freemium and paid-for OS Freemium and paid-for operating systems	>	
2	Misc utility images Bootloader EEPROM configuration, etc.	>	
Ī	Format card as FAT32		
	Use custom Select a custom .img from your computer		

7. According to the prompt, select the downloaded OS file in "Select image" pane, and return to the main page.

	Select image			× ^ × ×
Look in:]/home/pi · ←	\rightarrow	1 🗋	: =
Computer	Name	Size	Туре	Dat
🛅 pi	🛅 Desktop		Folder	29/
	🛅 Documents		Folder	29/
	🛅 Downloads		Folder	29/
	E Music		Folder	29/
	E Pictures		Folder	29/
	E Public		Folder	29/
	🛅 Templates		Folder	29/
	🛅 Videos		Folder	29/
	2024-01-11-ed-hmiarm64_stable.img	5.34	GiB img File	29/
	4	_		•
File name: 1	11-ed-hmi3020-101c_raspios-bookworm-arm	64_stał	ole.img	Open
Files of type: In	mage files (*.img *.zip *.iso *.gz *.xz *.zst)		• C	ancel
A DESCRIPTION OF THE OWNER OF THE				

- 8. Click "Open" to return to the main page.
- 9. Click "CHOOSE STORAGE", select the SSD of ED-HMI3020-101C in the "Storage" pane, and return to the main page.

	Raspberry Pi Imager v1.8.3	~ ^ X
	Storage	x
NS128GS	SSD510 - 128.0 GB	
	,	
Ra		

- 10. Click "NEXT" and select "NO" in the pop-up "Use OS customization?".
- 11. Select "YES" in the pop-up "Warning".

12. Enter password (raspberry) in the pop-up "Authenticate", and then click "Authenticate" to start writing the OS.

	Raspberry Pi Imager v1.8	3.3	~ ^	×
👸 Ra	aspberry Pi			
Raspberry Pi Devic	e Operating System 2024-01-10-ED-IPC3020_RASPIOS-BOOKW	Storage NS128GSSD510		

13. After the OS writing is completed, the file will be verified.

	Raspberry Pi Imager v1	.8.3 🗸 🗸	×
🤴 Ra	aspberry Pi		
Raspberry Pi Devic	e Operating System 2024-01-10-ED-IPC3020_RASPIOS-BOOKW	Storage NS128GSSD510 (BOOTFS, ROO	
	Verifying 34%	CANCEL VERIFY	

- 14. After the verification is completed, input password (raspberry) in the pop-up "Authenticate", and then click "Authenticate".
- 15. In the pop-up "Write Successful" prompt box, click "CONTINUE", then close Raspberry Pi Imager.

3.2 Setting BOOT_ORDER

If ED-HMI3020-101C contains an SD card, the system will boot from the SD card by default. If you want to set booting from SSD, you need to configure BOOT_ORDER property, which sets booting from SSD by default when no SD card is inserted). The parameters of BOOT_ORDER property are stored in "rpi-eeprom-config" file.

Preparation:

- It is confirmed that ED-HMI3020-101C contains SSD.
- ED-HMI3020-101C has been booted from SD card and desktop is displayed normally.

Steps:

1. Execute the following command in the command pane to view the BOOT_ORDER property in the "rpi-eeprom-config" file.

rpi-eeprom-config



"BOOT_ORDER" in the figure indicates the sequence parameter for booting, and setting the parameter value to 0xf41 indicates booting from the SD card.

 Execute the following command to open the "rpi-eeprom-config" file, and set the value of "BOOT_ORDER" to 0xf461 (0xf461 means that if the SD card is not inserted, it will boot from SSD; if the SD card is inserted, it will boot from SD card.), then add the parameter "PCIE_PROBE=1".

sudo -E rpi-eeprom-config --edit



If you want to boot from SSD, it is recommended to set the BOOT_ORDER to 0xf461.

					pi@ra	spberry	/pi: ~					~	^	×
File	Edit	Tabs	Help											
GNU	nano	7.2			/tmp/tmpb	ru4rli	6/boot.	conf	*					1
[all]														
B00T_	UART=:	1												
POWER	_0FF_	DN_HALT	Γ=0											
BOOT_	ORDER	=0xf461	L											
PCIE	PROBE	=1												
					C Deed	4 14-								
AC US	1.0	0.0	Isita Out	01.0	[Read	4 L10	es]	AT	Evenute	0.0	Looot	ion		
AY EX	it.		Road Filo	AN	Poplace		sto	A 1	luctify	AC	Go To	LOU	00	
	τu	R	teau File		кертасе	AU Pa	ste	"J	JUSCITY	~/	00 10	CTI	ne	

- 3. Input Ctrl+X to exit editing mode.
- 4. Input Y to save the file, then press Enter to exit to the main page of command pane.
- 5. Power off ED-HMI3020-101C and pull out the SD card.
- 6. Power on ED-HMI3020-101C to restart the device.