



# SURENOO DSI DISPLAY for RaspBerry Pi

## SDSR040A\_720720 LCD MODULE USER MANUAL

Please click the following image to buy the sample



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Surenoo DSI Display Selection Guide



## Feature

- 4.0-inch DSI round display with 10-point capacitive touch control.
- IPS display panel with a hardware resolution of 720×720.
- Up to 6H hardness toughened glass panel.
- Optical bonding technology for clearer imaging.
- Support Pi5/4B/CM4/3B+/3A+/3B/CM3+/CM3.
- Directly drive LCD via Raspberry Pi's DSI interface, refresh rate up to 60Hz.
- When working with Raspberry Pi, support Bookworm/Bullseye/Buster.
- Adjustable Brightness Via Software.

## Hardware Connection

### >> Working with Pi 4B/3B+/3B/3A+

1. Connect the DSI connector of the display to the DSI connector on the Raspberry Pi board with a 15PIN FPC cable.
2. Install the Raspberry Pi with its back facing downwards onto the display board, and connect it to the 5V power supply and I2C communication via the 4-pin header.

### >> Working with Pi5/CM4/CM3+/CM3

1. Use the "DSI-Cable-12cm" ribbon cable to connect the LCD screen's DSI interface to the Raspberry Pi's 22PIN DSI1 interface.
2. Install the Raspberry Pi with its back facing downwards onto the display board, and connect it to the 5V power supply and I2C communication via the 4-pin header.

The installation effect is as follows:



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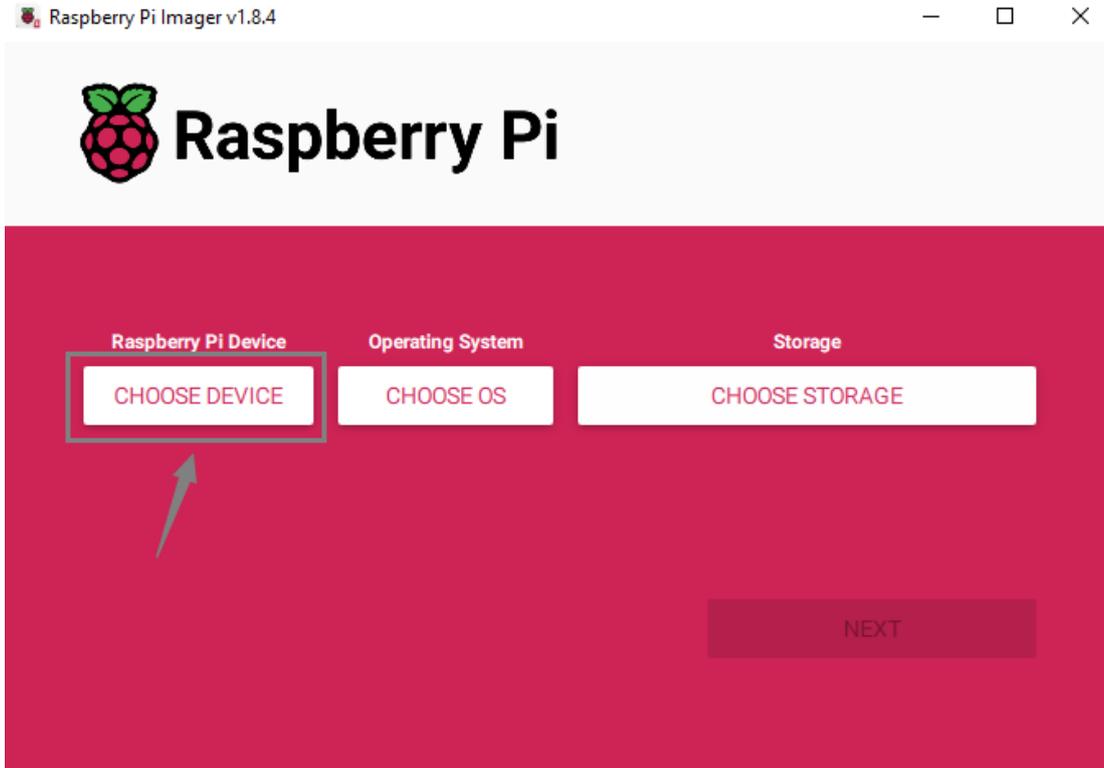




## Software Setting

### >> For Bookworm and Bullseye System

1. Insert the TF card into the PC, download and use [Raspberry Pi Imager](#) to program the corresponding image.



2. After programming the image, open the "config.txt" file located in the root directory of the TF card. Add the following code at the end of config.txt, save the file, and safely eject the TF card.

Note: As Pi 5/CM4/CM3+/CM3 has two MIPI DSI interfaces, please ensure to use the correct DSI interface and command. DSI1 is recommended by default.

```
dtoverlay=vc4-kms-v3d
#DSI1 Use
dtoverlay=vc4-kms-dsi-waveshare-panel,4_0_inchC
#DSI0 Use
#dtoverlay=vc4-kms-dsi-waveshare-panel,4_0_inchC,dsi0
```

3. Insert the TF card into the Raspberry Pi, power on the Raspberry Pi, and wait for a few seconds. After the system boots up, you should be able to enter the display interface and the LCD should touch normally.



**Surenoo**  
Display  
>> For Buster System

### Method 1: Install Driver Manually

1. Download the latest image from the Raspberry Pi website, download the compressed file to the PC, and then unzip it to get the ".img" file.
2. Connect the TF card to the PC, and format the TF card with the SDFormatter.
3. Open Win32DiskImager, choose the system image prepared in the first step, and click 'Write' to program the system image.
4. After programming, connect the TF card to the Raspberry Pi, boot the Raspberry Pi, and then log in to the terminal of the Raspberry Pi (you can connect the Raspberry Pi to an HDMI display or log in remotely with ssh).

```
#Step 1: Download and enter the Waveshare-DSI-LCD driver folder.
git clone https://github.com/waveshare/Waveshare-DSI-LCD
cd Waveshare-DSI-LCD

#Step 2: Enter uname --all in the terminal to check the kernel version and type cd to the corresponding file directory
#For 6.1.21, run the following command.
cd 6.1.21

#Step 3: Please check the system bits you are currently using, enter the 32 directory for a 32-bit system, and enter the 64 directory is for a 64-bit system.
cd 32
#cd 64

#Step 4: Enter your corresponding model command to install the driver, pay attention to the selection of the I2C DIP switch
#4inch DSI LCD (C) 720×720 driver:
sudo bash ./WS_xinchDSI_MAIN.sh 40C I2C0

#Step 5: Wait for a few seconds, when the driver installation is finished and no error is prompted, reboot and load the DSI driver for normal use.
sudo reboot
```

#Note: The above steps need to ensure that the Raspberry Pi can be connected to the Internet properly.

5. After the system reboots, it can display and be touched normally.

### Method 2: Program the Pre-install Image

1. Select your corresponding Raspberry Pi version image, download and decompress it as ".img" file.

Raspberry Pi 4B/CM4 version download: [Surenoo DSI LCD - Pi4 pre-install image](#)

Raspberry Pi 3B/3B+/CM3 version download: [Surenoo DSI LCD - Pi3 pre-install image](#)

2. Connect the TF card to the PC, and format the TF card with [SDFormatter](#).
3. Open [Win32DiskImager](#), choose the system image prepared in the first step, and click "write" to program the system image.



4. After writing, open the config.txt file in the TF card root directory. Add the following code under [all], save, and then safely remove the TF card.

```
dtoverlay=WS_xinchDSI_Screen,SCREEN_type=9,I2C_bus=10  
dtoverlay=WS_xinchDSI_Touch,I2C_bus=10
```

5. Insert the TF card into the Raspberry Pi, boot it, and then it can display and be touched normally after about 30 seconds.

## Buster System Notices

1. Update the system and run the following commands:

```
sudo apt-get update  
sudo apt-get full-upgrade
```

Note: After updating the system, some driver files installed before may be covered, and you need to install the driver again so that it can display normally.

2. Replace the main board.

If the driver installed was for the Raspberry Pi 4 Model B and the user decides to change the mainboard, for example, change to the Raspberry Pi 3 Model B+, it may result in the display screen not showing properly.

This is because the Pi 4 and Pi 3 require loading different driver files. To ensure proper display functionality on the new mainboard, the user needs to reinstall the drivers according to the instructions.

## >> Backlight Control

Surenoo provides the corresponding demo for the application (only supports Bookworm and Bullseye systems). Users can install it by the following commands:

```
wget https://files.waveshare.com/upload/f/f4/Brightness.zip  
  
unzip Brightness.zip  
  
cd Brightness  
  
sudo chmod +x install.sh  
  
./install.sh
```

After installation, you can open it: Menu ->> Accessories ->> Brightness:





In addition, you can also input the following commands to control the backlight brightness in the terminal:

```
echo X | sudo tee /sys/class/backlight/*/brightness
```

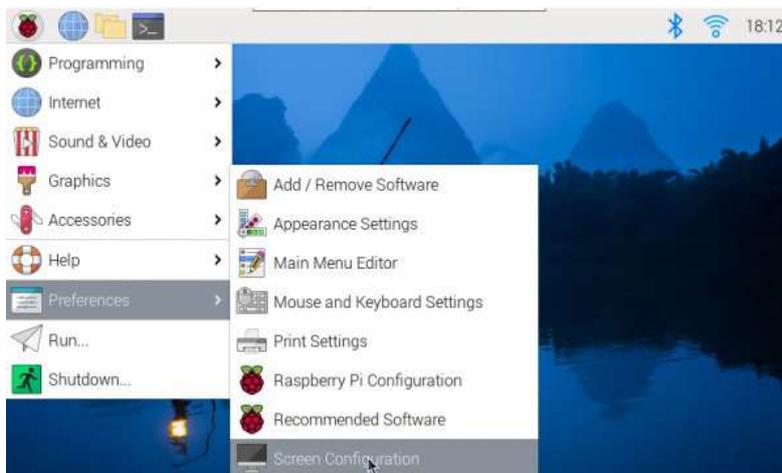
X indicates any number from 0 to 255. 0 means the backlight is the darkest, and 255 means the backlight is the brightest. For example:

```
echo 100 | sudo tee /sys/class/backlight/*/brightness  
echo 0 | sudo tee /sys/class/backlight/*/brightness  
echo 255 | sudo tee /sys/class/backlight/*/brightness
```

## >> Bookworm Display Rotation

### GUI interface rotation

1. Open the "Screen Configuration" application;

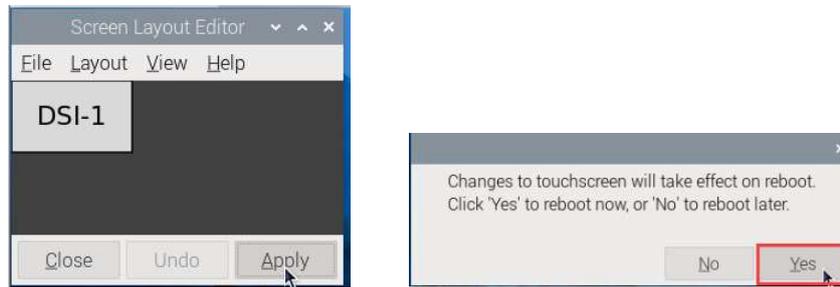


2. Go to "Screen" -> "DSI-1" -> "Touchscreen" and check "6-0038 generic ft5x06(79)"





3. Click "Apply" and close the current window. Restart according to the pop-up prompt, and then touch screen select Done.



4. Go to "Screen" -> "DSI-1" -> "Orientation", check the direction you need to rotate, and finally click "Apply" to complete the display and touch synchronous rotation.



**Note:** Only the Bookworm system supports the above synchronization rotation method. For the Bullseye and Butser systems, manual separate settings for touch rotation are required after displaying the rotation.

► lite version display rotation

1. Need to modify the /boot/cmdline.txt file:

```
sudo nano /boot/cmdline.txt
```

2. At the beginning of the cmdline.txt file, add the command for displaying the rotation angle: (Please note, this command needs to be on the same line, with each command separated by a space.)

```
video=DSI-1:800x480M@60,rotate=90
```

Change the display rotation angle by modifying the rotate value to 90, 180, or 270.

3. Save and restart

```
sudo reboot
```



► **Bullseye/Buster Display Rotation**

1. Open "Screen Configuration" application:
2. "Screen"->"DSI-1"->"Orientation", select the rotation direction, and then click on "Apply" to complete the display rotation.



► **Bullseye/Buster Touch Rotation**

```

sudo nano /boot/config.txt

#Change the command for the touch rotation angle at the end of the config.txt file, reboot it to take effect (the command for 0° touch
direction exists by default)

#0°:

dtoverlay=WS_xinchDSI_Touch,invertedx,swappedxy

#90°:

dtoverlay=WS_xinchDSI_Touch,invertedx,invertedy

#180°:

dtoverlay=WS_xinchDSI_Touch,invertedy,swappedxy

#270°:

dtoverlay=WS_xinchDSI_Touch
    
```

► **lite Version Rotation**

```

sudo nano /boot/cmdline.txt

#Add the command to display the rotation angle at the beginning of the cmdline.txt file, save and reboot to take effect

#Display rotates 90°

video=DSI-1:720x720M@60,rotate=90

#Display rotates 180°

video=DSI-1:720x720M@60,rotate=180

#Display rotates 270°

video=DSI-1:720x720M@60,rotate=270
    
```



### ► Sleep Mode

Run the following commands on the Raspberry Pi terminal, and the screen can enter the sleep mode:

```
xset dpms force off
```

### ► Disable Touching

At the end of the config.txt file, add the following commands corresponding to disabling touch (the config file is located in the root directory of the TF card, and can also be accessed through the command: `sudo nano /boot/config.txt`):

```
disable_touchscreen=1
```

Note: After adding the command, it needs to be restarted to take effect.

## FAQ

**Question:** How to replace the logo image of Raspberry Pi Booting?

**Answer:** Replace the image in this directory `/usr/share/plymouth/themes/pix/splash.png` with the custom image.