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Raspberry Pi 1.54inch LCD-Retropie-Display configuration tutorial (fbcp-9341)

User guide

Official image version：
retropie-buster-4.7-xxxx.img
Board version：Raspberry Ri Zero/Zero 2/3B/4B/CM4

Raspberry Pi have updated their official image to bullseye version, We have tested the fbcp-ili9341 driver from
https://github.com/juj/fbcp-ili9341 still can not support the bullseye image.
Retropie still is buster,the fbcp-ili9341 driver can work at Retropie-4.7.
But we can not make sure whether the fbcp-ili9341 will support the updated bullseye Retropie In the future.

The 1.54 inch LCD Hat can run 60fps with the fbcp-ili9341 driver

sudo nano /boot/config.txt
Add this code
hdmi_force_hotplug=1

```
[pi4]
# Enable DRM VC4 V3D driver on top of the dispmanx display stack
dtoverlay=vc4-fkms-v3d
max_framebuffers=2

[all]
#dtoverlay=vc4-fkms-v3d
overscan_scale=1

hdmi_force_hotplug=1
```

Then reboot

Download fbcp-ili9341 to your pi
git clone https://github.com/juj/fbcp-ili9341.git
(Make sure that you download fbcp-ili9341 under path /home/pi/)
cd fbcp-ili9341
sudo mkdir build
cd build

```
pi@retropie:~ $ cd fbcp-ili9341
pi@retropie:~/fbcp-ili9341 $ mkdir build
pi@retropie:~/fbcp-ili9341 $ cd build
pi@retropie:~/fbcp-ili9341/build $ cmake -DWAVESHARE_ST7789VW_HAT=ON -DGPIO_TFT_DATA_CONTROL=22 -DGPIO_TFT_RESET_PIN=27 -DSPI_BUS_CLOCK_DIVISOR=6 -DSTATISTICS=number ..
```

sudo cmake -DWAVESHARE_ST7789VW_HAT=ON -DGPIO_TFT_DATA_CONTROL=22 -DGPIO_TFT_RESET_PIN=27 -DSPI_BUS_CLOCK_DIVISOR=6 -DSTATISTICS=number ..
If all work well，you will get this following picture

```
-- Scaling source image to view. If the HDMI resolution does not match the S
dering, or alternatively pass -DDISPLAY_CROPPED_INSTEAD_OF_SCALING=ON to cro
-- Preserving aspect ratio when scaling source image to the SPI display, int
creen if you do not care about aspect ratio)
-- SPI_BUS_CLOCK_DIVISOR set to 6. Try setting this to a higher value (must
DSPI_BUS_CLOCK_DIVISOR=40
-- USE_DMA_TRANSFERS enabled, this improves performance. Try running CMake w
-- Targeting WaveShare 240x240 1.3inch IPS LCD Hat with ST7789VW controller
-- Configuring done
-- Generating done
-- Build files have been written to: /home/pi/fbcp-ili9341/build
```

sudo make -j
If all work well，you will get this following picture

Raspberry Pi G...ro
2W/2B/3B+/4B...nch
touchscreen

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```
pi@retropie:~/fbcp-ili9341/build $ make -j
Scanning dependencies of target fbcp-ili9341
[  4%] Building CXX object CMakeFiles/fbcp-ili9341.dir/display.cpp.o
[  9%] Building CXX object CMakeFiles/fbcp-ili9341.dir/diff.cpp.o
[ 14%] Building CXX object CMakeFiles/fbcp-ili9341.dir/dma.cpp.o
[ 19%] Building CXX object CMakeFiles/fbcp-ili9341.dir/fbcp-ili9341.cpp.o
[ 23%] Building CXX object CMakeFiles/fbcp-ili9341.dir/hx8357d.cpp.o
[ 28%] Building CXX object CMakeFiles/fbcp-ili9341.dir/gpu.cpp.o
[ 42%] Building CXX object CMakeFiles/fbcp-ili9341.dir/mailbox.cpp.o
[ 38%] Building CXX object CMakeFiles/fbcp-ili9341.dir/ili9341.cpp.o
[ 47%] Building CXX object CMakeFiles/fbcp-ili9341.dir/keyboard.cpp.o
[ 71%] Building CXX object CMakeFiles/fbcp-ili9341.dir/mpi3501.cpp.o
[ 52%] Building CXX object CMakeFiles/fbcp-ili9341.dir/mem_alloc.cpp.o
[ 57%] Building CXX object CMakeFiles/fbcp-ili9341.dir/low_battery.cpp.o
[ 61%] Building CXX object CMakeFiles/fbcp-ili9341.dir/mz61581.cpp.o
[ 33%] Building CXX object CMakeFiles/fbcp-ili9341.dir/ili9486.cpp.o
[ 66%] Building CXX object CMakeFiles/fbcp-ili9341.dir/ili9488.cpp.o
[ 76%] Building CXX object CMakeFiles/fbcp-ili9341.dir/spi.cpp.o
[ 80%] Building CXX object CMakeFiles/fbcp-ili9341.dir/st7735r.cpp.o
[ 95%] Building CXX object CMakeFiles/fbcp-ili9341.dir/ssd1351.cpp.o
[ 85%] Building CXX object CMakeFiles/fbcp-ili9341.dir/text.cpp.o
[ 90%] Building CXX object CMakeFiles/fbcp-ili9341.dir/statistics.cpp.o
[100%] Linking CXX executable fbcp-ili9341
[100%] Built target fbcp-ili9341
```

Run the display driver using：

sudo ./fbcp-ili9341

Then your LCD will display well, but the Fontsize is too small

Change the LCD display resolution

sudo nano /boot/config.txt

Add the following code
hdmi_group=2
hdmi_mode=1
hdmi_mode=87
hdmi_cvt 480 480 60 6 0 0 0
display_rotate=0
avoid_warnings=1

```
overscan_scale=1

hdmi_force_hotplug=1
hdmi_group=2
hdmi_mode=1
hdmi_mode=87
hdmi_cvt 480 480 60 6 0 0 0
display_rotate=0
avoid_warnings=1
```

Make fbcp-ili9341 work automatically when your Pi boot

sudo nano /etc/rc.local

Add the following code

sudo /home/pi/fbcp-ili9341/build/fbcp-ili9341 &

```
printf "My IP address is %s\n" "$_IP"
fi

sudo /home/pi/fbcp-ili9341/build/fbcp-ili9341 &

exit 0
```

sudo reboot

After your Pi reboot,Your LCD will display well

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