

Data Sheet

17.78 cm (7") 800 x 480 Touchscreen for Raspberry Pi®

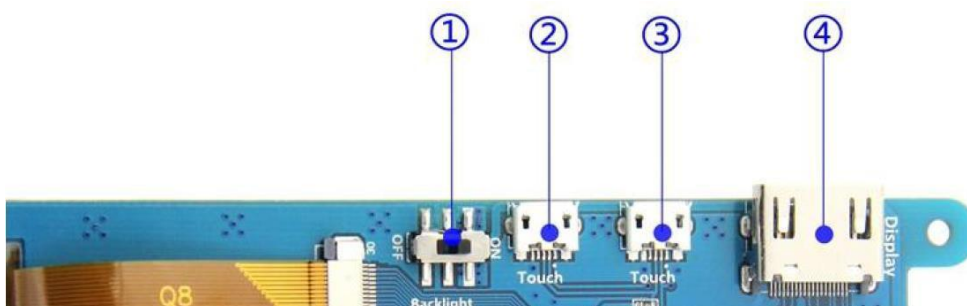


Screw hole diameter: 3 mm.



- Operating temperature: -20 to +60 °C
- Storage temperature: -30 to 70 °C

Hardware Description



- ① Backlight power switch: Controls the backlight turned on and off to save power
- ②③ USB Touch / Power supply connector: For power supply and touch output, the functions of the both are the same, can just use one of them
- ④ HDMI interface: For connecting motherboard and LCD monitor to HDMI transmission.

Data Sheet

How to calibrate the touch screen

1. Install Xinput

You need to install the LCD driver first before this Step,
follow the document <How to install the LCD driver (En).pdf>

```
cd /boot
cd LCD-show
sudo dpkg -i -B xinput-calibrator_0.7.5-1_armhf.deb
```

```
pi@raspberrypi:~ $ cd /boot
pi@raspberrypi:/boot $ cd LCD-show
pi@raspberrypi:/boot/LCD-show $ sudo dpkg -i -B xinput-calibrator_0.7.5-1_armhf.deb
Selecting previously unselected package xinput-calibrator.
(Reading database ... 120289 files and directories currently installed.)
Preparing to unpack xinput-calibrator_0.7.5-1_armhf.deb ...
Unpacking xinput-calibrator (0.7.5-1) ...
Setting up xinput-calibrator (0.7.5-1) ...
Processing triggers for gnome-menus (3.13.3-6) ...
Processing triggers for desktop-file-utils (0.22-1) ...
Processing triggers for mime-support (3.58) ...
Processing triggers for man-db (2.7.0.2-5) ...
```

2. execute the command of the touch calibration:

```
DISPLAY=:0.0 xinput_calibrator
```

The screen will pop up touch calibration display, and now use the touch pen click successively four calibration points to complete the calibration.

New touch parameters would be shown after the calibration, as follows:

```
pi@raspberrypi:~/LCD-show $ DISPLAY=:0.0 xinput_calibrator
Calibrating EVDEV driver for "ADS7846 Touchscreen" id=6
current calibration values (from XInput): min_x=535, max_x=3860 and min_y=254, max_y=3859
Doing dynamic recalibration:
Setting new calibration data: 517, 3849, 257, 3859

--> Making the calibration permanent <--
copy the snippet below into '/etc/X11/xorg.conf.d/99-calibration.conf'
Section "InputClass"
    Identifier      "Calibration"
    MatchProduct    "ADS7846 Touchscreen"
    Option "Calibration" "517 3849 257 3859"
EndSection
```

3. modify the touch parameters after calibration and save

```
sudo nano /etc/X11/xorg.conf.d/99-calibration.conf
```

As following:

Data Sheet

```
pi@raspberrypi: /boot/LCD-show
GNU nano 2.2.6
Section "InputClass"
    Identifier      "calibration"
    MatchProduct    "ADS7846 Touchscreen"
    Option "Calibration" "517 3849 257 3859"
    Option "SwapAxes" "0"
EndSection
```

Note: Only the resistive touch screen needs to be calibrated, 7" and 10.1" capacitive touch screen do not need to do calibration as this page.

How to install Soft Keyboard

This installation tutorial uses "2016-05-27-raspbian-jessie" version for testing. If use wheezy or earlier image, then the step5 and step6 have different file paths, pls refer to the virtual-keyboard official installation tutorial for specification.

Official reference address (English)

<http://ozzmaker.com/virtual-keyboard-for-the-raspberry-pi/>

1. install the necessary files

```
sudo apt-get update
sudo apt-get install libfakekey-dev libpng-dev autoconf libxft-dev libtool automake -y
```

2. install the matchbox-keyboard

```
git clone https://github.com/mwilliams03/matchbox-keyboard.git
cd matchbox-keyboard
./autogen.sh
```

(Note: "./ autogen.sh" execution takes a few minutes, and would show as follows after running correctly; if it doesn't show as follows, then need to check to see if there are error Popup Window prompt)

```
Matchbox-keyboard 0.2
=====

prefix:                /usr/local
source code location:  .
compiler:              gcc

Building with Debug:    no
Building with Cairo:    no
Building Gtk widget:    no
Building Examples:      no
Building GTK+ Input Method: no
Building panel applet:  no
```

Data Sheet

Continue:

```
sudo make
sudo make install
```

3. install the shared data library for matchbox-keyboard

```
sudo apt-get install libmatchbox1 -y
```

As following:

```
pi@raspberrypi:~$ sudo apt-get install libmatchbox1
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  libxsettings-client0
The following NEW packages will be installed:
  libmatchbox1 libxsettings-client0
0 upgraded, 2 newly installed, 0 to remove and 55 not upgraded.
Need to get 57.6 kB of archives.
After this operation, 126 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://mirrors.raspbian.org/raspbian/ jessie/main libxsettings-client0 armhf 0.17-6 [10,124 B]
Get:2 http://mirrors.raspbian.org/raspbian/ jessie/main libmatchbox1 armhf 1.9-0ss0-1.1 [40.5 kB]
Fetched 57.6 kB in 1s (34.7 kB/s)
Selecting previously unselected package libxsettings-client0.
(Reading database ... 100776 files and directories currently installed.)
Preparing to unpack .../libxsettings-client0_0.17-6_armhf.deb ...
Unpacking libxsettings-client0 (0.17-6) ...
Selecting previously unselected package libmatchbox1:armhf.
Preparing to unpack .../libmatchbox1_1.9-0ss0-1.1_armhf.deb ...
Unpacking libmatchbox1:armhf (1.9-0ss0-1.1) ...
Setting up libxsettings-client0 (0.17-6) ...
Setting up libmatchbox1:armhf (1.9-0ss0-1.1) ...
Processing triggers for libc-bin (2.19-18deb8ud) ...
```

4. Create a virtual keyboard startup script

```
sudo nano /usr/bin/toggle-matchbox-keyboard.sh
```

Paste the following, press ctrl + x and y, to save then exit

```
#!/bin/bash
#This script toggle the virtual keyboard
PID=`pidof matchbox-keyboard`
if [ ! -e $PID ]; then
killall matchbox-keyboard
else
matchbox-keyboard -s 50 extended&
fi
```

Add executable permission for the script above

```
sudo chmod +x /usr/bin/toggle-matchbox-keyboard.sh
```

5. Add script above to Start menu

```
sudo nano /usr/share/applications/toggle-matchbox-keyboard.desktop
```

Paste the following content, press ctrl + x and y, to save then exit

```
[Desktop Entry]
Name=Toggle Matchbox Keyboard
```

Data Sheet

```
Comment=Toggle Matchbox Keyboard
Exec=toggle-matchbox-keyboard.sh
Type=Application
Icon=matchbox-keyboard.png
Categories=Panel;Utility;MB
X-MB-INPUT-MECHANSIM=True
```

6, create an icon on the taskbar (Note that in this step, must be "pi" user privileges, if you use administrator privileges, will not find the file)

```
nano ~/.config/lxpanel/LXDE-pi/panels/panel
```

7, find the resembles similar to the following command (default content may be different in different Raspberry Pi versions)

```
Plugin {
type=launchbar
Config {
    Button {
        id=/usr/share/applications/lxde-x-www-browser.desktop
    }
    Button {
        id=/usr/share/raspi-ui-overrides/applications/pcmanfm.desktop
    }
    Button {
        id=/usr/share/raspi-ui-overrides/applications/lxterminal.desktop
    }
    Button {
        id=/usr/share/applications/wolfram-mathematica.desktop
    }
    Button {
        id=/usr/share/applications/wolfram-language.desktop
    }
}
}
```

Add the following code to add a icon item

```
Button {
id=toggle-matchbox-keyboard.desktop
}
```

Data Sheet

After modifying, would show as below:

```
Plugin {
  type=space
  Config {
    Size=8
  }
}
Plugin {
  type=launcher
  Config {
    Button {
      id=toggle-matchbox-keyboard.desktop
    }
    Button {
      id=/usr/share/applications/lxde-x-www-browser.desktop
    }
    Button {
      id=/usr/share/raspi-ui-overrides/applications/pcmanfm.desktop
    }
    Button {
      id=/usr/share/raspi-ui-overrides/applications/lxterminal.desktop
    }
    Button {
      id=/usr/share/applications/wolfram-mathematica.desktop
    }
    Button {
      id=/usr/share/applications/wolfram-language.desktop
    }
  }
}
Plugin {
  type=space
  Config {
    Size=8
  }
}
```

8, after modifying, run the following command and re-start the system; you will see a virtual keyboard icon in taskbar on the screen normally.

```
sudo reboot
```

P.S. Log into via SSH to see how to change the size of the virtual keyboard

```
DISPLAY=:0.0 matchbox-keyboard -s 50 extended
```

```
DISPLAY=:0.0 matchbox-keyboard -s 100 extended
```

Data Sheet

Raspberry Pi LCD

Driver installation instruction

(method1: online installation)

This manual is applicable to all series of Raspberry Pi LCD, Raspberry Pi board should be connected to Internet during the installation.

Step 1, Install Raspbian official image

- 1) Download the latest Raspbian Image from the official website: <https://www.raspberrypi.org/downloads/>
- 2) Format TF card by SDFormatter
- 3) Burn the official image into TF card by using Win32DiskImager.

Step 2, obtain the LCD driver

Log onto the Raspberry Pi users system to command line (The initial user name: pi Password: raspberry)

Get the newest driver from GitHub(Raspberry Pi LCD should be connected to internet)

```
git clone https://github.com/goodtft/LCD-show.git
chmod -R 755 LCD-show
cd LCD-show/
```

Step 3, install LCD driver

the corresponding execution for the use of 2.4" LCD Raspberry Pi:

```
sudo ./LCD24-show
```

the corresponding execution for the use of 2.8" LCD Raspberry Pi:

```
sudo ./LCD28-show
```

the corresponding execution for the use of 3.2" LCD Raspberry Pi:

```
sudo ./LCD32-show
```

the corresponding execution for the use of 3.5" LCD Raspberry Pi:

```
sudo ./LCD35-show
```

the corresponding execution for the use of 3.97" LCD Raspberry Pi:

```
sudo ./LCD397-show
```

the corresponding execution for the use of 4.3" LCD Raspberry Pi:

```
sudo ./LCD43-show
```

the corresponding execution for the use of 5.0" LCD Raspberry Pi:

```
sudo ./LCD5-show
```

the corresponding execution for the use of 7.0" LCD version B 800*400:

Data Sheet

```
sudo ./LCD7B-show
```

the corresponding execution for the use of 7.0" LCD version C 1024*600:

```
sudo ./LCD7C-show
```

the corresponding execution to switch back to Traditional HDMI display.

```
sudo ./LCD-hdmi
```

Wait for a moment after executing the above command, then you can use the corresponding raspberry LCD.

Raspberry Pi LCD

Driver installation instruction

(method2: offline)

This manual is applicable to all series of Raspberry Pi LCD; if you already have the driver installation CD, can just use it offline.

Step 1, Install Raspbian official image

- 1) Download the latest Raspbian Image from the official website: <https://www.raspberrypi.org/downloads/>
- 2) Format TF card by SDFormatter
- 3) Burn the official image into TF card by using Win32DiskImager.

Step 2, obtain the LCD driver

Extract from the companion CD or ask for it from the seller;

Copy the LCD-show-160701.tar.gz drive to the Raspberry Pi system root directory (Suggestion: copy flash driver directly to TF card after completion of Step 1, or copy by SFTP or other methods for remote copy). Unzip and extract drive files as the following command:

```
cd /boot
sudo tar zxvf LCD-show-160701.tar.gz
cd LCD-show/
```

Step 3, install LCD driver

the corresponding execution for the use of 2.4" LCD Raspberry Pi:

```
sudo ./LCD24-show
```

the corresponding execution for the use of 2.8" LCD Raspberry Pi:

```
sudo ./LCD28-show
```

the corresponding execution for the use of 3.2" LCD Raspberry Pi:

```
sudo ./LCD32-show
```

the corresponding execution for the use of 3.5" LCD Raspberry Pi:

```
sudo ./LCD35-show
```

Data Sheet

the corresponding execution for the use of 3.97" LCD Raspberry Pi:

```
sudo ./LCD397-show
```

the corresponding execution for the use of 4.3" LCD Raspberry Pi:

```
sudo ./LCD43-show
```

the corresponding execution for the use of 5.0" LCD Raspberry Pi:

```
sudo ./LCD5-show
```

the corresponding execution for the use of 7.0" LCD version B 800*400:

```
sudo ./LCD7B-show
```

the corresponding execution for the use of 7.0" LCD version C 1024*600:

```
sudo ./LCD7C-show
```

the corresponding execution to switch back to Traditional HDMI display.

```
sudo ./LCD-hdmi
```

Wait for a moment after executing the above command, then you can use the corresponding raspberry LCD.

How to modify the display orientation

1. GPIO interface type LCD rotating display method:

Suitable for GPIO interface type LCD (2.4" 2.8" 3.2" 3.5").

Run command at Terminal:

```
sudo nano /boot/config.txt
```

if you are using 2.4", 2.8" or 3.2", then find line "dtoverlay=tft9341" and add

rotate parameter value as format following :

```
dtoverlay=tft9341:rotate=value
```

if it is LCD 3.5", then find line "dtoverlay=tft35a" and add rotate parameter value as

format following :

```
dtoverlay=tft35a:rotate=value
```

Take LCD 3.5" as example:

To rotate 0 degrees (vertical screen display), the corresponding parameter value:

```
dtoverlay=tft35a:rotate=0
```

To rotate 90 degrees (horizontal screen display), the corresponding parameter value:

```
dtoverlay=tft35a:rotate=90
```

To rotate 180 degrees (vertical screen display), the corresponding parameter value:

```
dtoverlay=tft35a:rotate=180
```

To rotate 270 degrees (horizontal screen display), the corresponding parameter value:

Data Sheet

```
dtoverlay=tft35a:rotate=270
```

Press Ctrl + X, choose Y, save and exit; and re-start to achieve..

2, HDMI Interface type LCD rotating display method:

Suitable for HDMI Interface type LCD (such as a 3.97", 4.3", 5", 7" version B, 7" version C, 10.1")

Run command at Terminal:

```
sudo nano /boot/config.txt
```

Find "display rotate" parameter; if not have it, then add it.

Meanings of the parameters for display rotate show as in the table below

display_rotate	result
0	no rotation
1	rotate 90 degrees clockwise
2	rotate 180 degrees clockwise
3	rotate 270 degrees clockwise
0x10000	horizontal flip
0x20000	vertical flip

To rotate 0 degrees, the corresponding parameter value:

```
display_rotate=0
```

To rotate 90 degrees, the corresponding parameter value:

```
display_rotate=1
```

To rotate 180 degrees, the corresponding parameter value:

```
display_rotate=2
```

To rotate 270 degrees, the corresponding parameter value:

```
display_rotate=3
```

To flip the display horizontally, the corresponding parameter value:

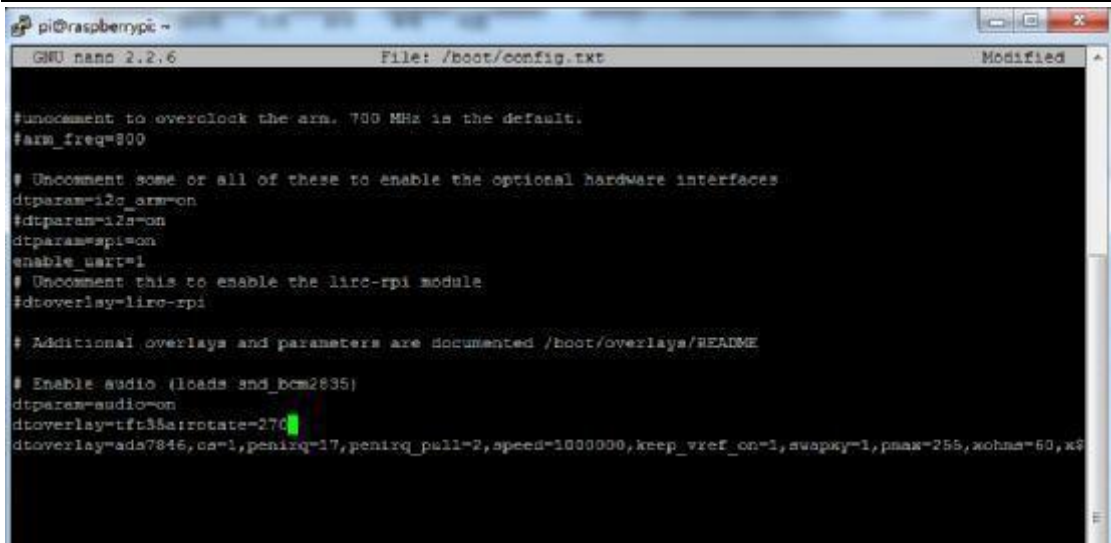
```
display_rotate=0x10000
```

To flip the display vertically, the corresponding parameter value:

```
display_rotate=0x20000
```

Press the key Ctrl + X, choose Y, save and exit.

Data Sheet



```

pi@raspberrypi ~
GNU nano 2.2.6 File: /boot/config.txt Modified
# Uncomment to overclock the arm. 700 MHz is the default.
#arm_freq=800

# Uncomment some or all of these to enable the optional hardware interfaces
dtparam=i2s_0=on
#dtparam=i2s=on
dtparam=spi=on
enable_uart=1
# Uncomment this to enable the lirc-rpi module
#dtoverlay=lirc-rpi

# Additional overlays and parameters are documented /boot/overlays/README

# Enable audio (loads snd_bcm2835)
dtparam=audio=on
dtoverlay=tft35a:rotate=270
dtoverlay=ads7846,cs=1,penirq=17,penirq_pull=2,speed=1000000,keep_vref_on=1,swapxy=1,pmax=255,xohms=60,x9

```

3, modify the touch parameters

After display direction changes, still need to do the touch settings by modifying the "99-calibration.conf" file. Execute command:

```
sudo nano /etc/X11/xorg.conf.d/99-calibration.conf
```

Take 5" HDMI LCD as example:

The default parameter is 0 degrees, that is "display_rotate = 0", correspondingly the touch calibration parameters are:

```

Section "InputClass"
    Identifier "calibration"
    MatchProduct "ADS7846 Touchscreen"
    Option "Calibration" "140 3951261 3998 "
    Option "SwapAxes" "0"
EndSection

```

To rotate the display 90degrees, that is "display_rotate = 1", the touch parameters should be revised correspondingly as follows:

```

Section "InputClass"
    Identifier "calibration"
    MatchProduct "ADS7846 Touchscreen"
    Option "Calibration" "2613998 3951 140"
    Option "SwapAxes" "1"
EndSection

```

To rotate the display 180degrees, that is "display_rotate = 2", the touch parameters should be revised correspondingly as follows:

```

Section "InputClass"
    Identifier "calibration"

```

Item no.: 2147389



Data Sheet

```
MatchProduct "ADS7846 Touchscreen"  
Option "Calibration" "3951140 3998261"  
Option "SwapAxes" "0"  
EndSection
```

To rotate the display 270degrees, that is "display_rotate = 3", the touch parameters should be revised correspondingly as follows:

```
Section "InputClass"  
    Identifier "calibration"  
MatchProduct "ADS7846 Touchscreen"  
Option "Calibration" "3998261 1403951"  
Option "SwapAxes" "1"  
EndSection/
```

After the modification, re-start to see the effect of the modification

```
sudo reboot
```