eses 3,5" TFT LCD dotykový shield pro Raspberry PI

1. POPIS

Display Shield navržený pro Raspberry PI model b / b+ / 2 je ideální alternativou pro HDMI monitor.

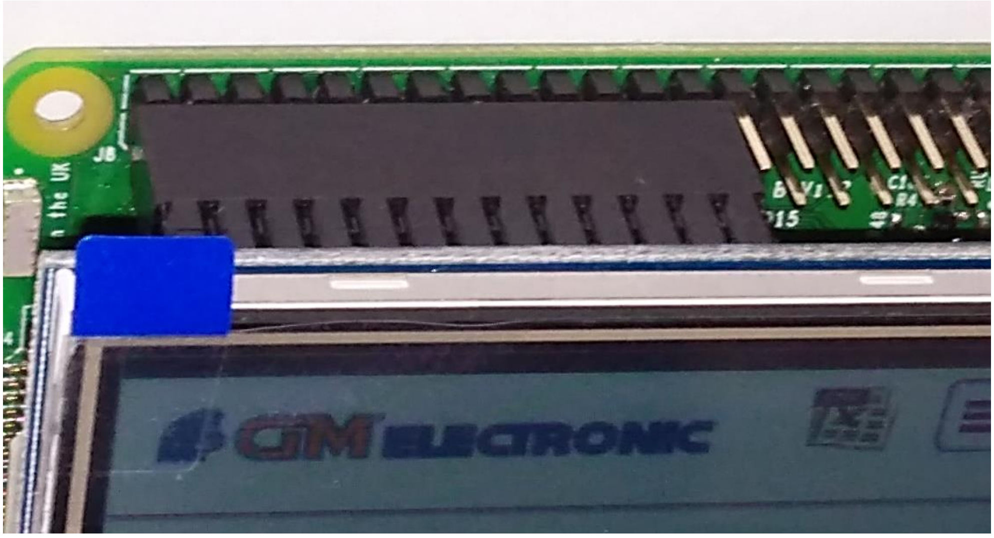
Velice slušné rozlišení 320 x 480 px, barevný s dotykovou odporovou vrstvou. Instalace na Raspbian během několika minut.

2. SPECIFIKACE

Napájení	3,3 VDC	**Displej**	3,5‟ TFT
Komunikační sběrnice	SPI	**Rozlišení**	320 x 480
Kompatibilita SW	Raspbian a podobné	**Rozměry (cm)**	8,5 x 5,5 x 1,7
Kompatibilita HW	PI model b / b+ / 2	**Hmotnost**	51,1 g

3. ZAPOJENÍ

Tento shield nevyžaduje žádné externí zapojení, pouze vsuňte modul do vývojového kitu Raspbery.



4. JEDNODUCHÝ NÁVOD NA INSTALACI

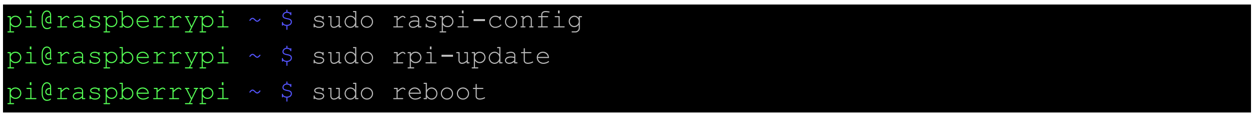
PiScreen Driver Install Instructions

Bellow you will instructions for installing the appropriate drivers for PiScreen on a Raspberry Pi running Raspbian. These have been tested on all models of the Raspberry Pi. (including the Pi 2)

These instructions are based on a vanilla install of 2015-05-05-raspbian-wheezy.img. They should work for almost all versions of Raspian. If installing drivers onto an existing Raspbian image, **Please Bakup All Data** or make a copy of your SD Card.

1. Initial Config of a New Raspberry Pi Install

After booting your Raspberry Pi for the first time on 2015-02-16-raspbian-wheezy.img, we will need to perform the normal tasks of setting up our Raspberry Pi. E.g expand filesystem, enable SSH, overclocking, etc…



```
pi@raspberrypi ~ $ sudo raspi-config
pi@raspberrypi ~ $ sudo rpi-update
pi@raspberrypi ~ $ sudo reboot
```

2. Update

We now want to update our software and OS;

```
pi@raspberrypi ~ $ sudo apt-get update
pi@raspberrypi ~ $ sudo apt-get upgrade
pi@raspberrypi ~ $ sudo reboot
```

3. Enable PiScreen Drivers

Open /boot/config.txt

```
pi@raspberrypi ~ $ sudo nano /boot/config.txt
```

For PiScreen 1;
Add this line to the bottom

```
dtoverlay=piscreen,speed=16000000,rotate=90
```

(*You can try and go at a higher speed on the SPI, which will increase FPS. look for the value of 16000000 above and change it to 24000000 or even 32000000.If you are noticing funny colors after the change, then decrease the speed*)

For PiScreen 2;
Add this line to the bottom

```
dtoverlay=piscreen2r
```

Now reboot

```
pi@raspberrypi ~ $ sudo reboot
```

Once your Raspberry Pi comes back up, PiScreen should change from white to black.

4. Perform a quick test

We will use fbi to display an image.

```
pi@raspberrypi ~ $ sudo apt-get install fbi
pi@raspberrypi ~ $ wget http://ozzmaker.com/piscreen/image-test.gif
pi@raspberrypi ~ $ sudo fbi -noverbose -T 1 -a -d /dev/fb1 image-test.gif
```

If the image doesnt look right, try chaning the speed in step 5 from speed=16000000 to speed=8000000.

5. Extra step for Jessie

By default, Jessie will automatically load X out the HDMI port which will then blank out PiScreen which will make it look like it isnt working.

If you want X to automatically load onto PiScreen. Open up the framebuffer conf file;

```
pi@raspberrypi ~ $ sudo nano /usr/share/X11/xorg.conf.d/99-fbturbo.conf
```

Change the below line;
`Option "fbdev" "/dev/fb0"`
to
`Option "fbdev" "/dev/fb1"`

Or, if you would like to disable X from starting automatically, just run `sudo raspi-config` and look for the option to disable it.

Enable Console on PiScreen

To move the console from the HDMI/RCA to PiScreen you have to updated /boot/cmdline.txt

1. Backup cmdline.txt

```
pi@raspberrypi ~ $ cp /boot/cmdline.txt ~/cmdline.txt
```

2. Update cmdline.txt

```
pi@raspberrypi ~ $ sudo nano /boot/cmdline.txt
```

Add the text below to the end of the first line. *Not on a new line as this will not work.*
`Rotate` will rotate the console on PiScreen. Rotate can be 0, 1, 2 or 3.

```
fbcon=map:10 fbcon=rotate:2 fbcon=font:ProFont6x11
```

3. Reboot

Reboot for the changes to take effect.

```
pi@raspberrypi ~ $ sudo reboot
```

Calibrating Console

First, we need to find out what file handle is used for the touchscreen on the PiScreen.

```
pi@raspberrypi ~ $ ls -l /dev/input/event*
```

A file handle is created for each input device currently connected and can change depending on what is connected and how many input devices are connected.
If you have a keyboard and mouse connected, there should be 3 files. One for the keyboard, one for the mouse and the last one for the touchscreen. If you have just a keyboard connected, there would be two. One for the keyboard and one for the touchscreen.
To see what file handle is used for the touchscreen, view the file below.

```
pi@raspberrypi ~ $ cat /proc/bus/input/devices
```

Look for **ADS7846 Touchscreen** and within the same section you should see **H: Handlers=** followed by an event*number*. This will tell you what file under /dev/input/ is used for the touchscreen.

Going forward, use the input event number associated to your touchscreen in the commands below.

ts_lib is used to calibrate the touche screen for console use. ts_lib also includes some other tools to test your touchscreen.

```
pi@raspberrypi ~ $ sudo apt-get install libts-bin
```

Now run the ts_calibrate utility, while setting the framebuffer device and touchscreen device variables;

```
pi@raspberrypi ~ $ sudo TSLIB_FBDEVICE=/dev/fb1
TSLIB_TSDEVICE=/dev/input/event0 ts_calibrate
```

ts_lib also includes a test utility to test your touchscreen;

```
pi@raspberrypi ~ $ sudo TSLIB_FBDEVICE=/dev/fb1
TSLIB_TSDEVICE=/dev/input/event0 ts_test
```

Running ts_print will output the coordinates of the touchscreen when pressed;

```
pi@raspberrypi ~ $ sudo TSLIB_FBDEVICE=/dev/fb1
TSLIB_TSDEVICE=/dev/input/event0 ts_print
```

To view raw events of the input system, E.g. touschscreen input, we can use evtest.

```
pi@raspberrypi ~ $ sudo apt-get install evtest
```

Run evtest with;

```
pi@raspberrypi ~ $ evtest /dev/input/event0
```

Console Blanking

By default, the console will blank out after 30 mins.
This can be changed by editing the value

```
BLANK_TIME=30
```

in /etc/kbd/config.

Setting this value to ‘0’ will disabling blanking.

Once you have enabled the console on PiScreen, you should head over to here to learn how to enable X Windows on your PiScreen.