3.5 inch Raspberry Pi LCD Display with Touchscreen Module

1. Introduction

The 3.5 inch touch screen module is designed especially for Raspberry Pi. It transmits data though GPIO, SPI (Serial Peripheral Interface) on the P1 interface. The CPLD on the display module controls display content according to the data transmitted from the SPI interface.

Specification：
● Easy to setup and use
● Physical Resolution: 480x320 pixels，16bit，65K color
● 3.5 inch resistive touch screen
● LCD Display transmits data through SPI (clock maximum speed: 125Mhz)
● Touch panel transmits data through SPI (clock maximum speed: 16Mhz)
● No external power supply needed
● Built-in EEPROM storage unit
● Open source Linux driver

This display module is built with a high speed CPLD chip (EPM3032)，a SPI interfaced 4-wire resistive touch screen control chip "XPT2046" (compatible with TSC2046, ADS7846)，and an I2C interfaced EEPROM memory storage unit (AT24C02).

Touch panel driver reference:
\linux-rpi-3.6.y\drivers\input\touchscreen\ads7846.c

The I2C interface chip (AT24C02）address is: 0xA0

2. Diagram
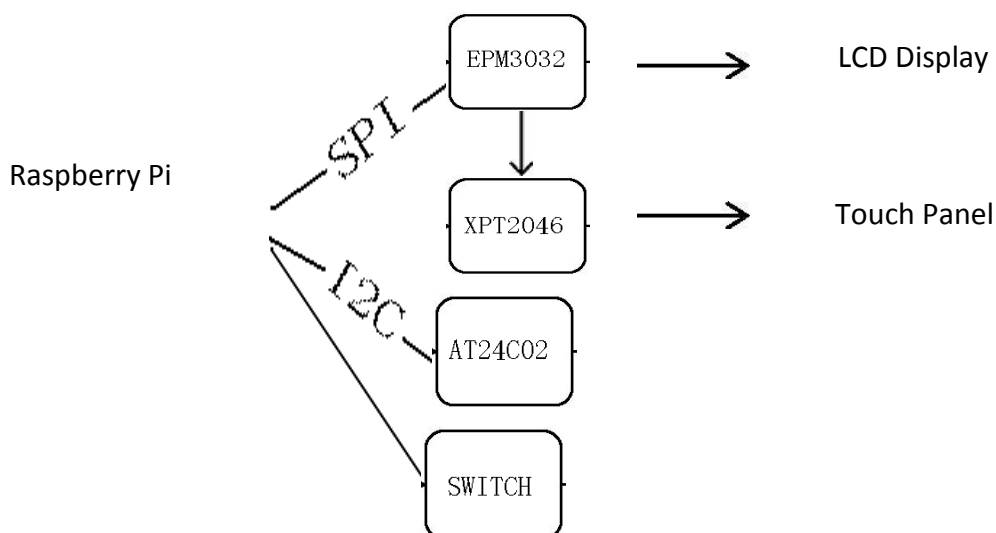
3. Pin Definition

Raspberry Pi	P1 Interface	Display Module
1	3V3 Power	
2	5V Power	
3	GPIO-0(IIC SDA)	AT24C02 SDA (data pin)
4	5V Power	
5	GPIO-1(IIC SCL)	AT24C02 SCL (clock pin)
6	GND	
7	GPIO-4	XPT2046 IRQ (touch Interrupt)
8	GPIO-14	
9	GND	
10	GPIO-15	LCD RST (display reset)
11	GPIO-17	
12	GPIO-18(PWM)	LCD PWM (brightness adjustment)
13	GPIO-21	
14	GND	
15	GPIO-22	SWITCH ON/OFF
16	GPIO-23	
17	3V3 Power	
18	GPIO-24	
19	GPIO-10(SPI MOSI)	LCD/TP MOSI
20	GND	
21	GPIO-9 (SPI MISO)	LCD/TP MISO
22	GPIO-25	LCD RS (display chip selection)
23	GPIO-11 (SPI SCLK)	LCD/TP SCLK SPI (bus clock)
24	GPIO-8 (SPI CE0)	LCD CS (display chip selection)
25	GND	
26	GPIO-7 (SPI CE1)	TP CS (touch panel chip selection)

4. Installation

For first time use, follow the instructions below:

1- Put the driver zip file (mzl350i-pi-ext.zip) copy to your SD memory card using a memory card reader or transfer the zip file to your raspberry pi directly by using the SSH, and then unzip the file under the /home/pi directory。

2- Configure the config.txt file
Go to the 'boot' file content，use the 'nano' tool to configure config.txt, input the commends below：

sudo nano config.txt

and then find the lines:
uncomment to force a console size. By default it will be display's size minus
overscan.

change
#framebuffer_width=1280
#framebuffer_height=720
to：
framebuffer_width=480
framebuffer_height=320

*(Besides the physical resolution 480*320, you may also change the resolution to 960*640 as your preference)*

3- Go to the unzipped file directory, entre command:
cd /home/pi/mzl350i-pi-ext/src
make

4- Copy the autorun script file lcd, automated start file under the directory, to /etc/init.d directory and make it executable.   Enter command：
sudo cp lcd /etc/init.d
sudo chmod 755 /etc/init.d/lcd

5- Set the display driver run on startup, go to /etc/init.d enter command：
sudo update-rc.d lcd defaults

6- Reboot，enter command：
sudo reboot