LCD8000-70T
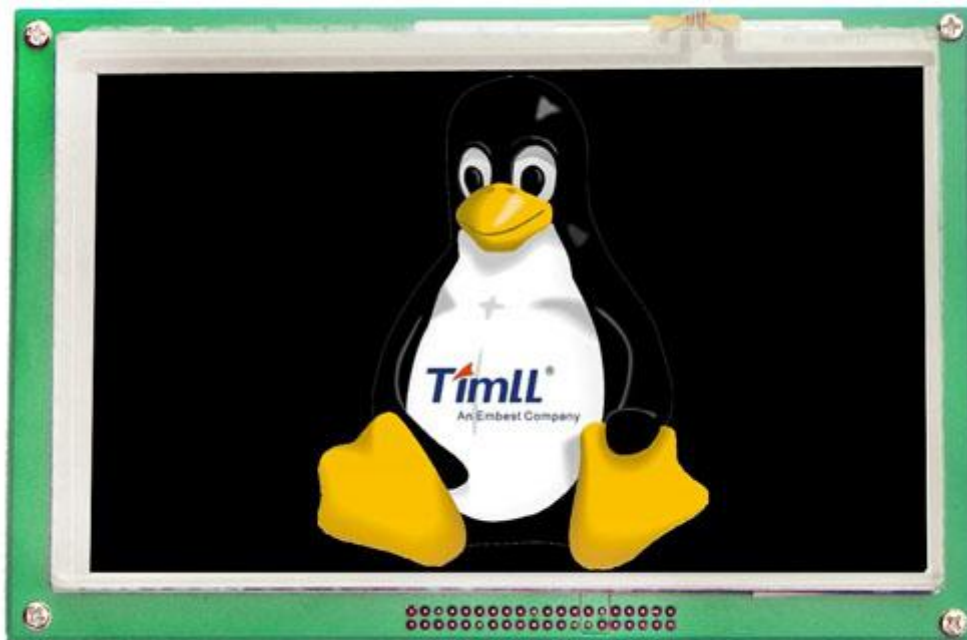# User Manual

(For use with RIoTboard)

Embest Technology

Table of Contents

Hardware/Software Requirements

The following preparations are required to use LCD8000-70T with RIoTboard.

1. Hardware Requirements

- RIoTboard Evaluation Board*1

- 5V Power Adapter*1

- LCD8000-70T LCD Module*1

- UART8000-U Cable*1

- LCD-Ex Expansion Board*1

2. Software Requirements

- OS: RIoTboard Linux or Android

- Version: Linux SVN2591 or higher; Android SVN2597 or higher

- Download Address: http://www.embest-tech.com/shop/star/riotboard.html

Note:
Please refer to RIoTboard User Manual for image update.

Configurations under Ubuntu

1） Connecting LCD8000-70T to RIoTboard needs the help of LCD-Ex expansion

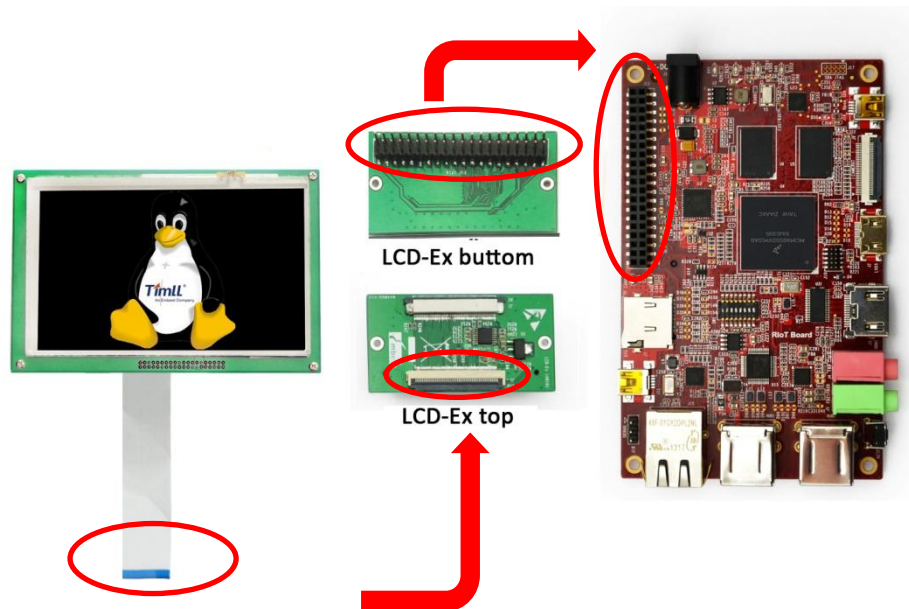board as shown blow;

Figure 1 Hardware Connection 1

Note:

  The blue stripe at the end of 50-pin FPC cable should be facing upward when connecting

the LCD module to LCD-Ex expansion board.

  LCD8000-70T does not support hot plugging.

2） Use an UART8000-U cable to connect RIoTboard to a PC, and then connect a 5V power adapter to the RIoTboard (but not to mains power yet) as shown below;
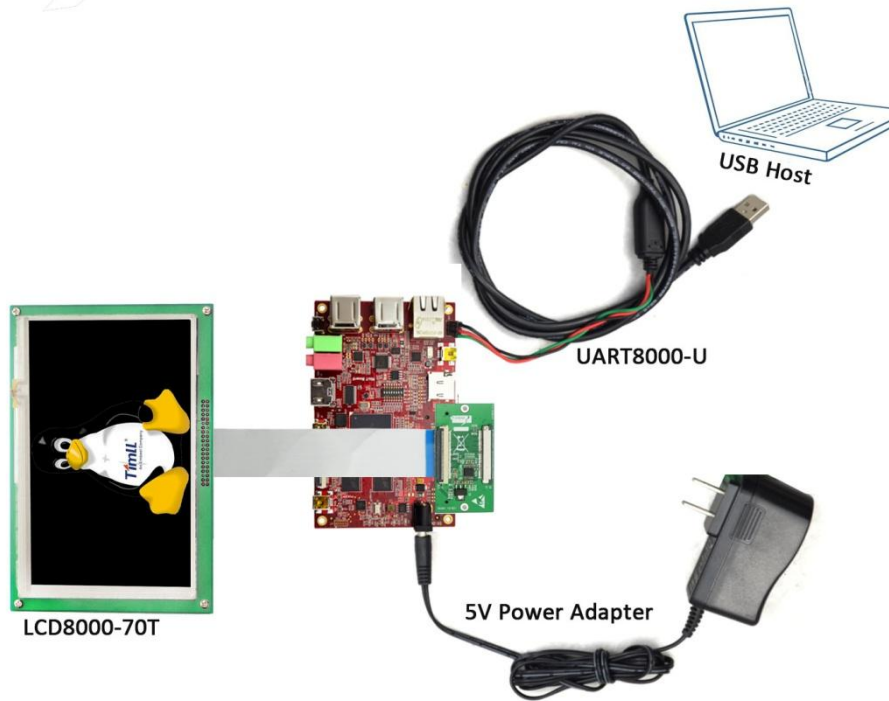

Figure 2 Hardware Connection 2

3） Power on the board to boot the system and press any key on PC's keyboard to enter u-boot when you see "**Hit any key to stop autoboot**" in your terminal window.

Table 1 Information in Terminal Window

U-Boot 2009.08-dirty (Oct 17 2013 - 17:08:06)
CPU: Freescale i.MX6 family TO1.1 at 792 MHz
Thermal sensor with ratio = 201
Temperature: 42 C, calibration data 0x5f55765f
mx6q pll1: 792MHz
mx6q pll2: 528MHz
mx6q pll3: 480MHz
mx6q pll8: 50MHz
ipg clock   : 66000000Hz
ipg per clock : 66000000Hz
uart clock   : 80000000Hz
cspi clock   : 60000000Hz

```
ahb clock     : 132000000Hz
axi clock     : 198000000Hz
emi_slow clock: 99000000Hz
ddr clock     : 396000000Hz
usdhc1 clock  : 198000000Hz
usdhc2 clock  : 198000000Hz
usdhc3 clock  : 198000000Hz
usdhc4 clock  : 198000000Hz
nfc clock     : 24000000Hz
Board: i.MX6DL/Solo-SABRESD: unknown-board Board: 0x61011 [POR ]
Boot Device: MMC
I2C:    ready
DRAM:    1 GB
MMC:    FSL_USDHC: 0,FSL_USDHC: 1,FSL_USDHC: 2,FSL_USDHC: 3
In:     serial
Out:    serial
Err:    serial
Net:    got MAC address from IIM: 00:00:00:00:00:00
----enet_board_init: phy reset
FEC0 [PRIME]
Hit any key to stop autoboot:   0 (press any key to enter uboot)
MX6Solo RIoTboard U-Boot >
```

4） Execute the following instructions under u-boot mode to set display mode;

- MX6Solo RIoTboard U-Boot > **setenv bootargs console=ttymxc1,115200 init=/init**

  nosmp video=mxcfb0:dev=lcd,7inch_LCD,if=RGB565 video=mxcfb1:off

  fbmem=10M vmalloc=400M androidboot.console=ttymxc1

  androidboot.hardware=freescale calibration

- MX6Solo RIoTboard U-Boot > **saveenv**

5） Execute the following instruction to remove Synaptics driver under Ubuntu system of RIoTboard;

- root@linaro-ubuntu-desktop:~# **sudo apt-get remove xserver-xorg-input-synaptics**

6） Execute the following instructions to install tslilb;

- root@linaro-ubuntu-desktop:~# **sudo apt-get install xserver-xorg-input-tslib libts-bin**

(Internet connection is required)

In additional, you can download ubuntu-touchscreen.zip from Embest website to install tslib. On unzipping, copy to U-disk and connect U-disk to RIoTboard. Then execute the following instructions:

- root@linaro-ubuntu-**desktop**:~# **dpkg -i libts-bin_1.0-9_armel.deb**

- root@linaro-ubuntu-**desktop**:~# **dpkg -i xserver-xorg-input-tslib_0.0.6-7_armel.deb**

7） Reboot RIoTboard and then execute the following instructions;

- root@linaro-ubuntu-desktop:~# **TSLIB_TSDEVICE=/dev/input/event0**

- root@linaro-ubuntu-desktop:~# **TSLIB_CONFFILE=/etc/ts.conf**

- root@linaro-ubuntu-desktop:~# **export TSLIB_TSDEVICE TSLIB_CONFFILE**

- root@linaro-ubuntu-desktop:~# **ts_calibrate** (finish calibration by following the instructions on the LCD)

- root@linaro-ubuntu-desktop:~# **sync**

Reboot RIoTboard again; The touch screen will work properly.

Configurations under Android

1） Repeat the first four steps in section "Configurations under Ubuntu";

2） Follow the instructions on the LCD to calibrate the touch screen and then enter Android system.

Note:

📖 If a LCD8000-43T module has been used under the Android system, the following instructions need to be executed under the system before you replace it with a LCD8000-70T module;

· root@RIoTboard_6solo:/ # **rm /data/system/calibration**

· root@RIoTboard_6solo:/ #**sync**

☐ The LCD module will work properly after rebooting RIoTboard and finishing screen calibration.

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