CUBIEBOARD
http://cubieboard.org

CubieBoard2-20151211-EMMC linux usuage introduce V1.0

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1. Preface

Cubieboard2-20151211-EMMC is called CB2-EMMC for short. Compared with Cubieboard2-20150909-Nand , it change the NAND FLASH to EMMC FLASH, and add RTC,Microphone. About how to distinguish cubieboard2 version, refer:
http://dl.cubieboard.org/model/CubieBoard2/How%20To%20Distinguish%20Your%20CubieBoard2%20Version%20.pdf

1.1. Writing purpose

This document mainly introduced usage of CB2-EMMC linux system .

1.2. Using object

CB2-EMMC linux system and most of Cubieboard1、Cubieboard2、CubieTruck、Cubieboard4 Cubieboard5 inux system, include lubuntu (linaro desktop,linaro server)and cubieez(debian-desktop) are applicable.

2. Ethernet

2.1. Connected to the Ethernet

Ethernet configuration of all cubieboard are settings for the DHCP by default .Make sure the the router or switches has no problem .Only need connecting Ethernet cable before plug power supply ,the system can get the IP automatically.If not connecting Ethernet cable or get out the cable when running system ,just plug the cable ,wait a few seconds ,the system will automatically connect the Ethernet.
Sometimes maybe need to use following command :

$sudo dhclient eth0

2.2. Gigabit network

CB2-EMMC cann't support gigabit network. Cubietruck and Cubieboard4 can gigabit network

2.3. Static IP

Because the DHCP setting ,the IP maybe will change afert reboot.

$sudo vi /etc/network/interface

Add the following content：

```
auto lo eth0
allow-hotplug eth0
iface lo inet loopback
iface eth0 inet static

address 192.168.1.x
gateway 192.168.1.1
netmask 255.255.255.0
network 192.168.1.0
broadcast 192.168.1.255
```

```
# interfaces(5) file used by ifup(8) and ifdown(8)
auto lo eth0
allow-hotplug eth0
iface lo inet loopback
iface eth0 inet static

address 192.168.1.88
gateway 192.168.1.1
netmask 255.255.255.0
network 192.168.1.0
broadcast 192.168.1.255
```

"x" change to IP you need ,ensure there is no IP conflict within LAN.Save and exit ,reboot the system .

3. Display

3.1. HDMI

CB2-EMMC only have HDMI displayed output interface. resolution is 720p50 by default .To modify the resolution for 1080p60

if system is in the emmc, type
#mount /dev/mmcblk0p1 /mnt

#cd /mnt

#bin2fex script.bin sys_config.fex

If the system is in the TF card， type

#mount /dev/mmcblk1p1 /mnt

#cd /mnt

#bin2fex script.bin sys_config.fex

vi sys_config.fex

"screen0_output_mode=4"change to "screen0_output_mode=10" , meaning 1080p60 , save and exit.

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```
;-----------------------------------------------------------------------
;disp init configuration
;
;disp_mode          (0:screen0<screen0,fb0> 1:screen1<screen1,fb0> 2:two_diff_screen_diff_contents<screen0,screen1,fb0,fb1>
;                    3:two_same_screen_diff_contets<screen0,screen1,fb0> 4:two_diff_screen_same_contents<screen0,screen1,fb0>)
;screenx_output_type (0:none; 1:lcd; 2:tv; 3:hdmi; 4:vga)
;screenx_output_mode (used for tv/hdmi output, 0:480i 1:576i 2:480p 3:576p 4:720p50 5:720p60 6:1080i50 7:1080i60 8:1080p24 9:1080p50 10:1080p60 11:pal 14:ntsc)
;screenx_output_mode (used for vga output, 0:1680*1050 1:1440*900 2:1360*768 3:1280*1024 4:1024*768 5:800*600 6:640*480 10:1920*1080 11:1280*720)
;fbx format          (1:RGB655 3:RGB565 8:RGB556 7:ARGB1555 8:RGBA5551 9:RGB888 10:ARGB8888 12:ARGB4444)
;fbx pixel sequence  (0:ARGB 1:BGRA 2:ABGR 3:RGBA) --- 0 for linux, 2 for android
;lcd0_bright         (lcd0 init bright,the range:[0,256],default:197
;lcd1_bright         (lcd1 init bright,the range:[0,256],default:197
;-----------------------------------------------------------------------
[disp_init]
disp_init_enable      = 1
disp_mode             = 0

screen0_output_type   = 3
screen0_output_mode   = 4

screen1_output_type   = 0
screen1_output_mode   = 4

fb0_width = 1024
fb0_height = 768
fb0_framebuffer_num   = 2
fb0_format            = 10
fb0_pixel_sequence    = 0
fb0_scaler_mode_enable = 1

fb1_width = 1024
fb1_height = 768
fb1_framebuffer_num   = 2
fb1_format            = 10
fb1_pixel_sequence    = 0
fb1_scaler_mode_enable = 0
```

#cd /mnt

#fex2bin sys_config.fex script.bin

#cd ~

#umount /mnt

#reboot

Reboot the system ,the modification will effective.

3.2. VGA

CB2-EMMC can use Breadboard http://docs.cubieboard.org/addons#cubie_breadboard to extends VGA displayed output，but need to modify the file script.bin

If the system in the emmc， type
#mount /dev/mmcblk0p1 /mnt

#cd /mnt

#bin2fex script.bin sys_config.fex

If the system in the TF card， type

#mount /dev/mmcblk1p1 /mnt

Website:http://cubieboard.org/
Email: support@cubietech.com   7

#cd /mnt

#bin2fex script.bin sys_config.fex

vi sys_config.fex

"screen0_output_type=3"change to "screen0_output_type=4"，meaning VGA display ，save and exit.

```
;------------------------------------------------------------------------
;disp init configuration
;
;disp_mode          (0:screen0<screen0,fb0> 1:screen1<screen1,fb0> 2:two_diff_screen_diff_contents<screen0,screen1,fb0,fb1>
;                    3:two_same_screen_diff_contets<screen0,screen1,fb0> 4:two_diff_screen_same_contents<screen0,screen1,fb0>)
;screenx_output_type (0:none; 1:lcd; 2:tv; 3:hdmi; 4:vga)
;screenx_output_mode (used for tv/hdmi output, 0:480i 1:576i 2:480p 3:576p 4:720p50 5:720p60 6:1080i50 7:1080i60 8:1080p24 9:1080p50 10:1080p60 11:pal 14:ntsc)
;screenx_output_mode (used for vga output, 0:1680*1050 1:1440*900 2:1360*768 3:1280*1024 4:1024*768 5:800*600 6:640*480 10:1920*1080 11:1280*720)
;fbx format          (4:RGB655 5:RGB565 6:RGB556 7:ARGB1555 8:RGBA5551 9:RGB888 10:ARGB8888 12:ARGB4444)
;fbx pixel sequence  (0:ARGB 1:BGRA 2:ABGR 3:RGBA) --- 0 for linux, 2 for android
;lcd0_bright         (lcd0 init bright,the range:[0,256],default:197
;lcd1_bright         (lcd1 init bright,the range:[0,256],default:197
;------------------------------------------------------------------------
[disp_init]
disp_init_enable      = 1
disp_mode             = 0

screen0_output_type   = 3
screen0_output_mode   = 4

screen1_output_type   = 0
screen1_output_mode   = 4

fb0_width = 1024
fb0_height = 768
fb0_framebuffer_num    = 2
fb0_format             = 10
fb0_pixel_sequence     = 0
fb0_scaler_mode_enable = 1

fb1_width = 1024
fb1_height = 768
fb1_framebuffer_num    = 2
fb1_format             = 10
fb1_pixel_sequence     = 0
fb1_scaler_mode_enable = 0
```

#cd /mnt

#fex2bin sys_config.fex script.bin

#cd ~

#umount /mnt

#reboot

Reboot the system ,the modification will effective.

4. TF CARD

TF card is mainly as the system boot card and memory card .

4.1. System boot card

Refer to the SDK guide.

4.2. Memory card

Using a new 8G TF card as example

1. To find the device node,TF card plug in the card slot, in the terminal ,type
#fdisk -l

If you are using ordinary user ,add "sudo " at the head of the command
$sudo fdisk -l

```
root@cubieboard2:~# fdisk -l

Disk /dev/mmcblk0: 7838 MB, 7838105600 bytes
1 heads, 16 sectors/track, 956800 cylinders, total 15308800 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

        Device Boot      Start         End      Blocks   Id  System
/dev/mmcblk0p1             2032       32767       15368   83  Linux
/dev/mmcblk0p2            32768    15308799     7638016   83  Linux

Disk /dev/mmcblk0boot1: 4 MB, 4194304 bytes
4 heads, 16 sectors/track, 128 cylinders, total 8192 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

Disk /dev/mmcblk0boot1 doesn't contain a valid partition table

Disk /dev/mmcblk0boot0: 4 MB, 4194304 bytes
4 heads, 16 sectors/track, 128 cylinders, total 8192 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

Disk /dev/mmcblk0boot0 doesn't contain a valid partition table

Disk /dev/mmcblk1: 8011 MB, 8011120640 bytes
4 heads, 16 sectors/track, 244480 cylinders, total 15646720 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

        Device Boot      Start         End      Blocks   Id  System
/dev/mmcblk1p1             2048       28671       13312   83  Linux
/dev/mmcblk1p2            28672     1987295      979312   83  Linux
```

There is some card information in the red box ,prove the system has identify card ."/dev/mmcblk1"
is device node. The capacity of card   is 8G. TF card has two partition .
There is some EMMC information outside the red box .Can be seen that the size of EMMC is
8G,and has divided several partitions.

2. The best you format the new card before use it .In the terminal type
#mkfs.vfat -I /dev/mmcblk1

The card have formatted as VFAT format that can be recognized by Windows system ,convenient be operated data .The operation format the card as FAT format can be do in the windows system use a card reader .

The operation will damage data ,if the card hav used ,you can ignore this chapter .If hav no special need,don't need to divided partitions.

3. Mount device .
#mount /dev/mmcblk1 /mnt
#df

```
root@cubieboard2:~# mount /dev/mmcblk1p1  /mnt/
root@cubieboard2:~#
root@cubieboard2:~# df
Filesystem     1K-blocks    Used Available Use% Mounted on
/dev/root        7518056 1714300   5421856  25% /
devtmpfs          390268       4    390264   1% /dev
none                   4       0         4   0% /sys/fs/cgroup
none               97736     284     97452   1% /run
none                5120       0      5120   0% /run/lock
none              488680       0    488680   0% /run/shm
none              102400       4    102396   1% /run/user
/dev/mmcblk0p1     14877    4956      9153  36% /media/linaro/3aa18a21-99f8-412a-98b8-604d08609ab6
/dev/mmcblk1p1     12887    4606      7616  38% /mnt
/dev/mmcblk1p2    963880  741984    172932  82% /media/linaro/70163ae3-ca5a-4e34-ad1f-64c4968a6df2
root@cubieboard2:~#
```

If has no the wrong log ,prove mount successfully.The hardpoint can be read and write data now.

4. Unmount device .
#umount /mnt

5. USB

We often use the USB device include U disk , mouse and keyboard.

5.1. U disk

1. To find the device node,insert the USB disk,in the terminal ,type
#fdisk -l

If you are using ordinary user ,add "sudo " at the head of the command
$sudo fdisk -l

```
Disk /dev/sda: 8040 MB, 8040480256 bytes
136 heads, 53 sectors/track, 2178 cylinders, total 15704063 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1   *     1244928     15704062     7229567+   c  W95 FAT32 (LBA)
```

There is some U disk information in the log ,prove the system has recognized U disk."/dev/sda" is device node.Can be seen that U disk has been divide the sda1partition.

2. Mount the first partition .

#mount /dev/sda1 /mnt
#df

```
root@cubieboard2:~# mount /dev/sda1 /mnt
root@cubieboard2:~#
root@cubieboard2:~#
root@cubieboard2:~#
root@cubieboard2:~# df
Filesystem      1K-blocks      Used Available Use% Mounted on
rootfs           15300564    840112  13683212   6% /
/dev/root        15300564    840112  13683212   6% /
devtmpfs           406648         0    406648   0% /dev
tmpfs              131072       172    130900   1% /run
tmpfs                5120         0      5120   0% /run/lock
tmpfs              131072         0    131072   0% /run/shm
tmpfs             1048576         4   1048572   1% /tmp
/dev/root        15300564    840112  13683212   6% /var/log.hdd
ramlog-tmpfs       262144      2488    259656   1% /var/log
/dev/sda1         7215440   5886852   1328588  82% /mnt
root@cubieboard2:~#
```

 If has no the wrong log ,prove mount successfully.The hardpoint can be read and write data now.

3. Unmount device.

#umount /mnt

 5.2. Mouse and keyboard

CB2-EMMC support most USB mouse and keyboard.If appear garbled words , you can modify the keyboard configuration according to the following link.

http://docs.cubieboard.org/tutorials/common/set_keyboard_language

5.3. USB camera

Connect with display monitor , and enter system desktop, insert the USB disk into the usb port.Use pre-loaded software "mplayer" to display the image .

$sudo apt-get install mplayer
$mplayer tv://

or use software "luvcview"

$sudo apt-get install luvcview
$luvcview -s 1080x720
Can be modified according to the resolution .

6. SATA

Access to the 2.5 inches HDD ,if the HDD make a sound ,prove it is power supply shortage , need to check the power adapter current more than 2A.

Access to the 3.5 inches HDD,need extra power supply 12V to hard disk .Refer to http://cubieboard.org/2013/09/24/how-to-support-3-5-inch-hdd-on-cubieboard/

Some linux version having the executable script "/root/sata-install.sh" which can format SATA hard disk,and copy the rootfs to hard disk .Because the rootfs in the hard disk,the storage space become larger and boot time become fast start-up.

Note : The script will do formatting operation

7. Audio

7.1. EARPHONE

The default audio ouput is the earphone . Can run the following commands to test the audio voice, also can use the player to test this.

#speaker-test -t wav

7.2. HDMI

1. Modify "/etc/asound.conf", switch the sound for HDMI output.
vi /etc/asound.conf

```
pcm.!default {
    type hw
    card 0
    device 0
  }
  ctl.!default {
    type hw
    card 0
  }
```

above all "card 0 "shoulde be changed to " card 1", and then reboot systerm.
#reboot

2. Using command "speaker-test" to test earphone voice. You can also using player such as mplayer to test this.

#speaker-test -t wav

7.3. MICIN

CB2-EMMC onboard a microphone to support recording voice.

1. Audio card switch to codec.
vi /etc/asound.conf

```
  pcm.!default {
     type hw
     card 0
     device 0
   }
   ctl.!default {
     type hw
     card 0
   }
```

2. The recording commands:
#arecord -vv -t wav -f S16_LE -c 2 -d 10 -r 24000 ./record.wav

3. Play the recording voice:

#aplay record.wav

8. WIFI

CB2-EMMC has no WIFI hardware module,but can insert a USB wireless network card to board to connect the WIFI.

Use MERCURY MW150US 150M mini USB wireless network card as example

1. Loading WIFI driver.

When insert network card to board,system automatically loading WIFI driver.

In /lib/modules/3.4.79/kernel/drivers/net/wireless can see that many driver ofwireless network card, pay attention to the using network card whether has driver.

```
root@cubieboard2:/lib/modules/3.4.79/kernel/drivers/net/wireless# ls
at76c50x-usb.ko   libertas      rndis_wlan.ko   rtl818x    wl1251
ath               libertas_tf   rt2x00          rtl8192cu  wl12xx
hostap            mwifiex       rtl8188eu       rtl8723as  zd1201.ko
iwmc3200wifi      p54           rtl8189es       rtxx7x     zd1211rw
root@cubieboard2:/lib/modules/3.4.79/kernel/drivers/net/wireless#
```

2．Modify the network configuration file .
$sudo vi /etc/network/interfaces   (Add the following content)

auto wlan0
iface wlan0 inet dhcp
pre-up ip link set wlan0 up
pre-up iwconfig wlan0 essid your-ssid-here
wpa-ssid your-ssid-here
wpa-psk your-passwd-here

note:
your-ssid-here: wifi name
your-passwd-here： password

3．Disconnect the ethernet cable and reboot the systerm .If can't get the IP after reboot ,
#ifconfig wlan0 down
#ifconfig wlan0 up
#/etc/init.d/networking restart
Note ： If wireless network card is the corresponding wlan1 ,replace wlan0 for wlan1.

9. OTG

9.1. Flash

Emmc image can not be flashed into CB2-EMMC by OTG.

9.2. Host function

Using a extend data cable ,OTG port can be expanded into a USB port ,used for connect
mouse、 keyboard、 U disk .

9.3. Device function

Using a OTG cable ,connect the OTG port and USB port of PC host ,can mount the storage partition on PC host like the U disk ,achieve read and write data . The default mount the first partition of storage partition ,can change the partition you want to mount .

To mount U disk or HDD ,type :

#rmmod g_mass_storage

#modprobe g_mass_storage file=/dev/sda1 removable=yes stall=0

To mount partition 2 of emmc flash ,type :

#rmmod g_mass_storage

#modprobe g_mass_storage file=/dev/mmcblk0p2 removable=yes stall=0

Note :

1)When mount the /dev/mmcblk1p2 or /dev/mmcblk0p2 on PC host ,should insert the OTG cable before execute the command ,Otherwise will damage the rootfs (file system in / dev/mmcblk1p2 or /dev/mmcblk0p2),lead to fail mount operation .Mount the first partition （/dev/mmcblk1p1 or / dev/mmcblk0p1 has no such problem.

2)To mount the storage partition on the Windows ,the storage partition should be formatting format that can be recognized by Windows system .

3)Don't execute the command : modprobe g_mass_storage file=/dev/* removable=y stall=0

which will damage the rootfs system .

4)When OTG cable be inserted the board ,it is maybe appear didn't reflect possible case in PC host .Keep inserting OTG cable ,use above command to unload the driver and reload the driver to solve the problem .Or try to dial the plug cable once or twice.

9.4. Power supply

Using a OTG cable ,connet the OTG port and USB port of PC host ,can play a role of temporary power supply .The current of USB port only a few hundred ma ,which mayby cause the system not stable and power supply shortage .So it is no recommend use OTG port power supply .

10.Buttons

10.1.PWER button

Long press PWER button more than 6s when system is running can cause power outages.
Long press PWER button more than 1s when system is shutdown can cause power on boot
system.pmu1_para" configuration define the PWER button power outages and boot time in
"sys_config.fex".

10.2.REST button

Press, hardware immediately restart.

10.3.FEL button

Reserved.

11.IR

The IR driver has been loading by default . Tpye ：
keybinder /dev/input/event0

Press the infrared remote controler,print as the figure below：

```
root@cubieboard2:~# keybinder /dev/input/event0
Reading key input from /dev/input/event0 (sunxi-ir)
Loaded config items
Keycode 85 pressed
Keycode 85 pressed
```

By above may know,the keycode of pressed key is "85".Know the keycode ,you can use it to
execute the command .For example :

#echo "85,shutdown -h now" >>/etc/keybinder.conf

The keycode of the key is "85", command is "shutdown -h now",or directly modify the
"/etc/keybinder.conf" ,add several configuration in it .Press the keys ,can execute the command.

12.LED

12.1.Blue LED

Trigger of blue led is defined as "heartbeat",used for indicator system is running .
cat /sys/class/leds/blue\:ph21\:led2/trigger

none battery-charging-or-full battery-charging battery-full battery-charging-blink-full-solid ac-online usb-online mmc0 timer [heartbeat] backlight gpio cpu0 cpu1 default-on

Turn off LED

#echo none > /sys/class/leds/blue\:ph21\:led2/trigger

#echo 0 > /sys/class/leds/blue\:ph21\:led2/brightness

Turn on LED
#echo none > /sys/class/leds/blue\:ph21\:led2/trigger

#echo 1 > /sys/class/leds/blue\:ph21\:led2/brightness

12.2.Green LED

Trigger of greed led is defined as "none" and normally on .Users can custom.

#cat /sys/class/leds/green\:ph20\:led1/trigger

[none] battery-charging-or-full battery-charging battery-full battery-charging-blink-full-solid ac-online usb-online mmc0 timer heartbeat backlight gpio cpu0 cpu1 default-on

Turn off LED

echo none > /sys/class/leds/green\:ph20\:led1/trigger

echo 0 > /sys/class/leds/green\:ph20\:led1/brightness

Turn on LED

#echo none > /sys/class/leds/green\:ph20\:led1/trigger

#echo 1 > /sys/class/leds/green\:ph20\:led1/brightness

Other trigger： "timer "(timing flashing)、"mmc0"（flashing once when insert the TF card)
、"battery-charging"、" battery-full " and so on .

Warning :the modification will change to the default configuration after the reboot ,you can write the above command into "/etc/init.d/rcS " ,or modify "leds_para" section in the file name "sys_config.fex ".

12.RTC

If connect the Ethernet ,the system time updates automaticly.Sometimes you need update system time manually :
Change to 11 o 'clock 11 minutes 11 seconds
#date -s 11:11:11

Change the date on November 11, 2011
#date -s 20111111

Make sure the battery has 2.5 V voltage at least,reboot or shutdown by use command ,the system time updates to hardware time   automaticly .After power outages , it can't updates .So you will find the hardware time is old after boot .

Common commands :
Check the hardware time
#hwclock --show

Set the hardware time
#hwclock --set --date="11/11/14 11:11"

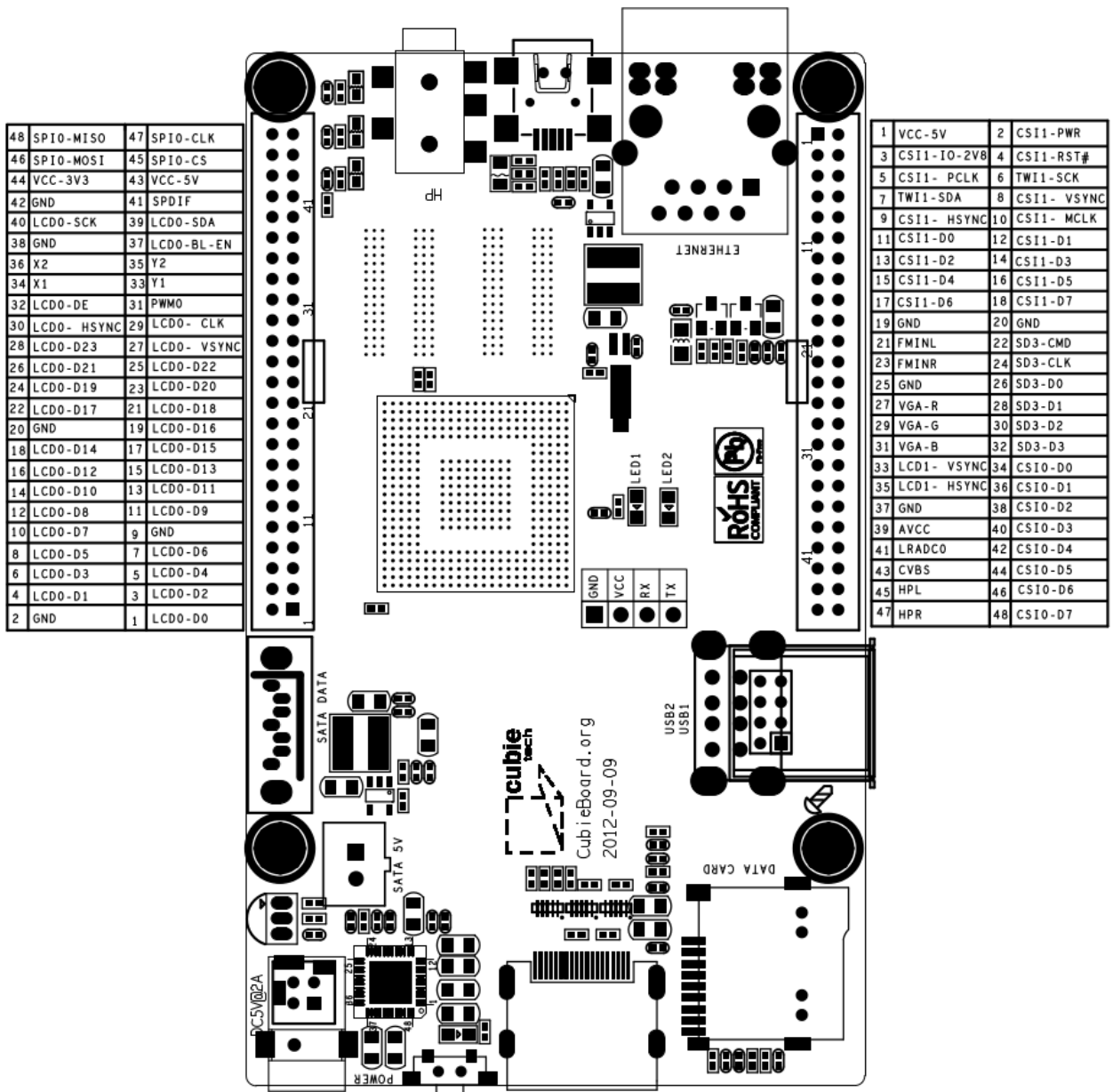The hardware clock and system clock synchronization
hwclock --hctosys

The system clock and hardware clock synchronization
hwclock --systohc

13.Extern PIN

http://docs.cubieboard.org/cubieboard1_and_cubieboard2_gpio_pin

48	SPIO-MISO	47	SPIO-CLK
46	SPIO-MOSI	45	SPIO-CS
44	VCC-3V3	43	VCC-5V
42	GND	41	SPDIF
40	LCD0-SCK	39	LCD0-SDA
38	GND	37	LCD0-BL-EN
36	X2	35	Y2
34	X1	33	Y1
32	LCD0-DE	31	PWM0
30	LCD0-HSYNC	29	LCD0-CLK
28	LCD0-D23	27	LCD0-VSYNC
26	LCD0-D21	25	LCD0-D22
24	LCD0-D19	23	LCD0-D20
22	LCD0-D17	21	LCD0-D18
20	GND	19	LCD0-D16
18	LCD0-D14	17	LCD0-D15
16	LCD0-D12	15	LCD0-D13
14	LCD0-D10	13	LCD0-D11
12	LCD0-D8	11	LCD0-D9
10	LCD0-D7	9	GND
8	LCD0-D5	7	LCD0-D6
6	LCD0-D3	5	LCD0-D4
4	LCD0-D1	3	LCD0-D2
2	GND	1	LCD0-D0

1	VCC-5V	2	CSI1-PWR
3	CSI1-IO-2V8	4	CSI1-RST#
5	CSI1-PCLK	6	TWI1-SCK
7	TWI1-SDA	8	CSI1-VSYNC
9	CSI1-HSYNC	10	CSI1-MCLK
11	CSI1-D0	12	CSI1-D1
13	CSI1-D2	14	CSI1-D3
15	CSI1-D4	16	CSI1-D5
17	CSI1-D6	18	CSI1-D7
19	GND	20	GND
21	FMINL	22	SD3-CMD
23	FMINR	24	SD3-CLK
25	GND	26	SD3-D0
27	VGA-R	28	SD3-D1
29	VGA-G	30	SD3-D2
31	VGA-B	32	SD3-D3
33	LCD1-VSYNC	34	CSI0-D0
35	LCD1-HSYNC	36	CSI0-D1
37	GND	38	CSI0-D2
39	AVCC	40	CSI0-D3
41	LRADC0	42	CSI0-D4
43	CVBS	44	CSI0-D5
45	HPL	46	CSI0-D6
47	HPR	48	CSI0-D7

U14 (Next to SATA connector)

Website:http://cubieboard.org/

Email: support@cubietech.com

SPI0

48	PI13 (SPI0-MISO/UART6-RX/EINT25)	47	PI11 (SPI0-CLK/UART5-RX/EINT23)
46	PI12 (SPI0-MOSI/UART6-TX/EINT24)	45	PI10 (SPI0-CS/UART5-TX/EINT22)

LCD

44	3.3V (nc in 2012-08-08)	43	VCC-5V
42	Ground	41	SPDIF
40	PB10 (LCD0-SCK/LCD-PIO1)	39	PB11 (LCD0-SDA/LCD-PIO2)
38	Ground	37	PH7 (LCD0-BL-EN/LCD-PIO0/UART5-RX/EINT7)
36	XN_TP (TP-X2)	35	YN_TP (TP-Y2)
34	XP_TP (TP-X1)	33	YP_TP (TP-Y1)
32	PD25 (LCDDE)	31	PB2 (PWM0)
30	PD26 (LCDHSYNC)-VGA-HSYNC	29	PD24 (LCDCLK)
28	PD23 (LCDD23)	27	PD27 (LCDVSYNC)-VGA-VSYNC
26	PD21 (LCDD21)	25	PD22 (LCDD22)
24	PD19 (LCDD19/LVDS1N3)	23	PD20 (LCDD20)
22	PD17 (LCDD17/LVDS1NC)	21	PD18 (LCDD18/LVDS1P3)
20	Ground	19	PD16 (LCDD16/LVDS1PC)
18	PD14 (LCDD14/LVDS1P2)	17	PD15 (LCDD15/LVDS1N2)
16	PD12 (LCDD12/LVDS1P1)	15	PD13 (LCDD13/LVDS1N1)
14	PD10 (LCDD10/LVDS1P0)	13	PD11 (LCDD11/LVDS1N0)
12	PD8 (LCDD8/LVDS0P3)	11	PD9 (LCDD9/LVDS0N3)
10	PD7 (LCDD7/LVDS0NC)	9	Ground
8	PD5 (LCDD5/LVDS0N2)	7	PD6 (LCDD6/LVDS0PC)
6	PD3 (LCDD3/LVDS0N1)	5	PD4 (LCDD4/LNVS0P2)
4	PD1 (LCDD1/LVDS0N0)	3	PD2 (LCDD2/LVDS0P1)
2	Ground	1	PD0 (LCDD0/LVDSP0)

U15 (Between Ethernet port and USB ports)
CSI1/TS

1	VCC-5V	2	PH15 (CSI1-PWR/EINT15)
3	CSI1-IO-2V8	4	PH14 (CSI1-RST#/EINT14)
5	PG0 (CSI1-PCLK/SDC1-CMD)	6	PB18 (TWI1-SCK)
7	PB19 (TWI1-SDA)	8	PG3 (CSI1-VSYNC/SDC1-D1)
9	PG2 (CSI1-HSYNC/SDC1-D0)	10	PG1 (CSI1-MCLK/SDC1-CLK)
11	PG4 (CSI1-D0/SDC1-D2)	12	PG5 (CSI1-D1/SDC1-D3)
13	PG6 (CSI1-D2/UART3-TX)	14	PG7 (CSI1-D3/UART3-RX
15	PG8 (CSI1-D4/UART3-RTS)	16	PG9 (CSI1-D5/UART3-CTS)
17	PG10 (CSI1-D6/UART4-TX)	18	PG11 (CSI1-D7/UART4-RX)
19	Ground	20	Ground
Analog		**SDIO3**	
21	FMINL	22	PI4 (SDC3-CMD)
23	FMINR	24	PI5 (SDC3-CLK)
25	Ground	26	PI6 (SDC3-D0)
27	VGA-R	28	PI7 (SDC3-D1)
29	VGA-G	30	PI8 (SDC3-D2)
31	VGA-B	32	PI9 (SDC3-D3)
		CSI0/TS	
33	LCD1-VSYNC	34	PE4 (CSI0-D0)
35	LCD1-HSYNC	36	PE5 (CSI0-D1)
37	Ground	38	PE6 (CSI0-D2)
39	AVCC	40	PE7 (CSI0-D3)
41	LRADC0	42	PE8 (CSI0-D4)
43	CVBS	44	PE9 (CSI0-D5)
45	HPL	46	PE10 (CSI0-D6)
47	HPR	48	PE11 (CSI0-D7)