

TI Omap3530 (Beagle) Digital Instrument Cluster Instructions#

Required Hardware#

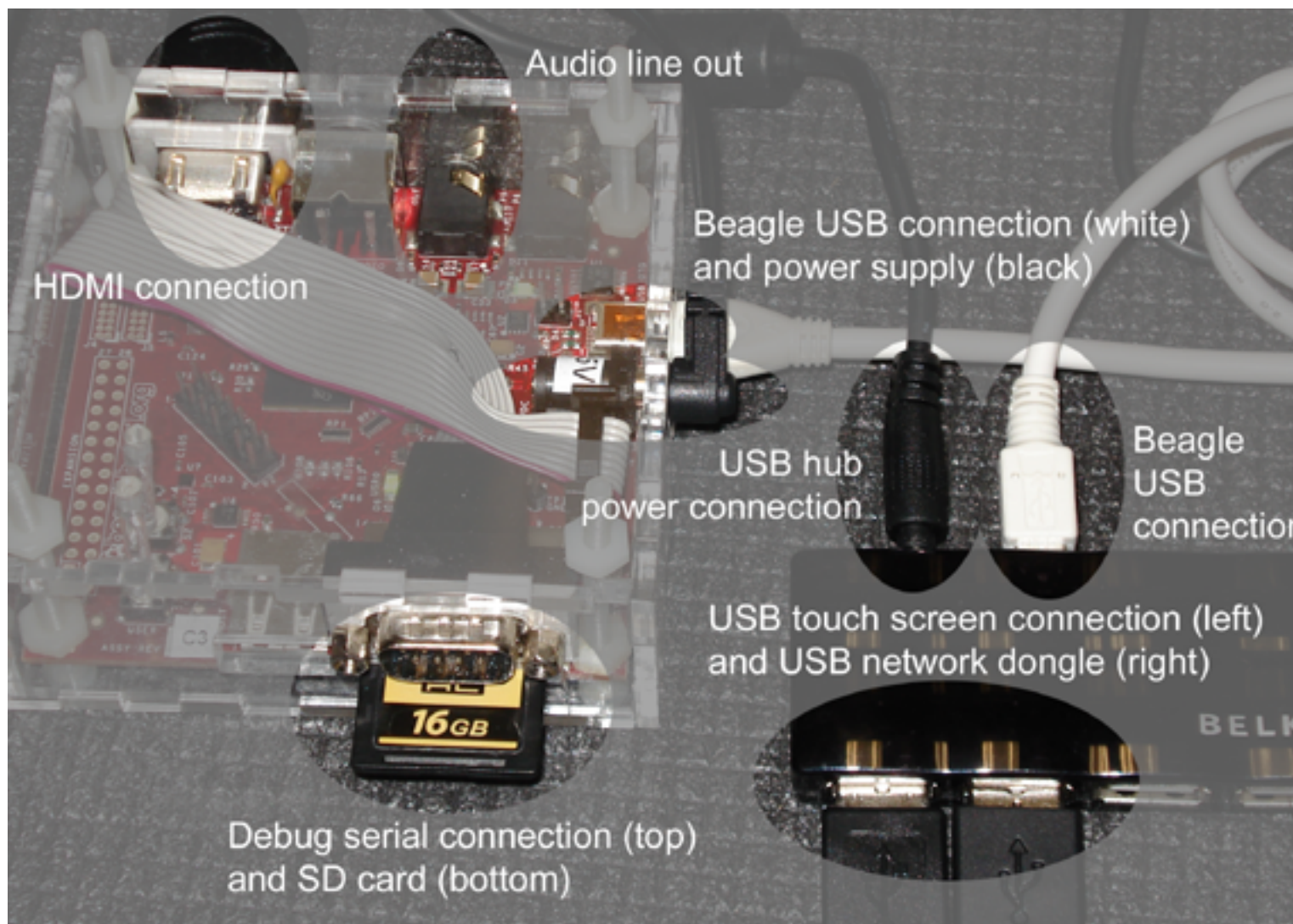
- TI Omap3530 Rev C board
- FAT16 formatted SD card
- ASIX compliant USB network dongle
 - We currently use the [Linksys 300M](#)
- Power supply
- Powered USB 2.0 hub, connected via the OTG connector
- USB keyboard or USB keypad with numlock, connected to the hub
- Wide screen HDMI compliant display capable of displaying 1280x720 (720p)
 - The following displays have been verified
 - Dell ST2410b
 - Dell 2407WFPb
 - Dell 2007FPb
 - Viewsonic VP2030b
 - The wide screen format displays look superior as they preserve the aspect ratio of the Digital Instrument Cluster.
- Serial connector on the board for debugging
- Null modem cable

Connections

- Serial port settings are 115200, 8,N, 1.
- The network cable must be connected to the USB network dongle prior to starting the board. An IP will be obtained from the DHCP server.
- In order to interact with the Cluster you will need to connect a usb keyboard or keypad. This will need to be connected to the powered USB hub. The NUMLOCK will need to be depressed in order to use the keypad.

Connecting the OMAP 3530 Beagle board#

You can refer to the image below when you connecting the beagle board.



Close up of OMAP 3530 Beagle board connections

Boot methods#

Here are two methods to boot the Digital Instrument Cluster demonstration.

1. Load the demonstration from an SD card with u-boot.
2. Load the demonstration via the QNX IPL (fastboot)

Loading the Digital Instrument Cluster from an SD Card with u-boot#

To load the IFS on the SD card:

1. Format your SD card using the FAT16 filesystem.
2. Copy the .ifs linked below to the root of the SD card as 'beagle.ifs'

If this is the first time you have used the board, you will need to program u-boot to automatically load it on start up:

1. Boot the OMAP3530 board.
2. When uboot has started, enter the following commands:
 - # setenv bootdelay 1
 - This command sets a one second boot delay.

- # setenv bootcmd 'mmc init 1;fatload mmc 1 0x80200000 *beagle.ifs*;go 0x80200000'
 - where *beagle.ifs* is the OMAP 3530 (Beagle) IFS file downloaded from location below.
 - Note: Newer boards use 'mmcinit' rather than 'mmc init 1' substitute this in the bootcmd variable in this instance.
- # saveenv

3. The boot sequence is now saved and will execute when you restart the board.

Starting the Board#

After you have loaded the .ifs on the SD card, you can start the board:

1. Press and hold the **S1** or **user** button while the board is booting in order to enable USB.
2. The Digital Instrument Cluster will now be displayed on the screen

Loading the Digital Instrument Cluster with the QNX IPL#

Note: Using this boot method will overwrite u-boot. In order to restore u-boot you will need to follow the methods described on [this](#) page.

To load the IFS & IPL on the SD card:

1. Format your SD card using the FAT16 filesystem.
2. Copy the .ifs linked below to the root of the SD card as 'beagle.ifs'
3. Copy the IPL linked below to the root of the SD card.

To overwrite u-boot with the QNX IPL

- Boot the OMAP3530 board.
- When uboot has started, type the following commands
 - # mmcinit
 - Note: Older boards use 'mmc init 1' rather than 'mmcinit' substitute this command in this instance.
 - These commands will transfer the IPL from the SD card and overwrite u-boot
 1. # mw.b 80000000 ff 40000
 2. # fatload mmc 0 80000000 nand-ipl-omap3530beagle.bin
 3. # nand erase 0 40000
 4. # nandeccl hw
 5. # nand write.i 80000000 0 40000
 - These commands will transfer the .ifs to nand in order to be loaded by the QNX IPL
 1. # mw.b 80000000 ff 600000
 2. # fatload mmc 0 80000000 beagle.ifs
 3. # nand erase 80000 600000
 4. # nandeccl hw
 5. # nand write.i 80000000 80000 600000

Starting the Board#

After you have loaded the QNX IPL & the .ifs into nand you can start the board: The Digital Instrument Cluster will be displayed shortly after pressing the power button

Note: Currently there are two variations of the QNX IPL.

- nand-ipl-omap3530beagle_user_button_override.bin

- This IPL will present the standard QNX IPL boot menu allowing you to download an image via serial, load the image from flash, update the image in flash or update the IPL. **When the user button is depressed as the board is starting.**
 - nand-ipl-omap3530beagle_fastboot.bin
 - This IPL will immediately load the image in nand at address 0x84000008. Pressing the user button will have no impact. **Note: In order to update this IPL or .ifs image you will need to restore u-boot.**
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Operating the demonstration#

- Once you have started the demonstration you can use the following keys to interact with the demonstration
 - 4 – Gadget flip (Clock, weather, Flickr & Word of the Day)
 - 5 – Day/Night swap
 - 6 – Metric/Imperial swap
 - 7 – Gauge reset
 - This will reset the gauges back to the original state.
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File releases#

You can find the latest content [here](#).

- Note: The same .ifs file is used for both the QNX IPL & u-boot loading methods.