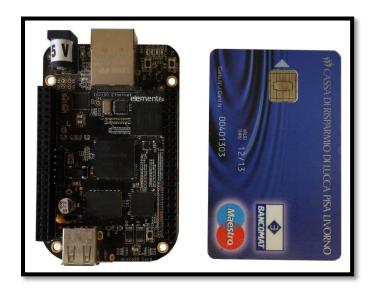
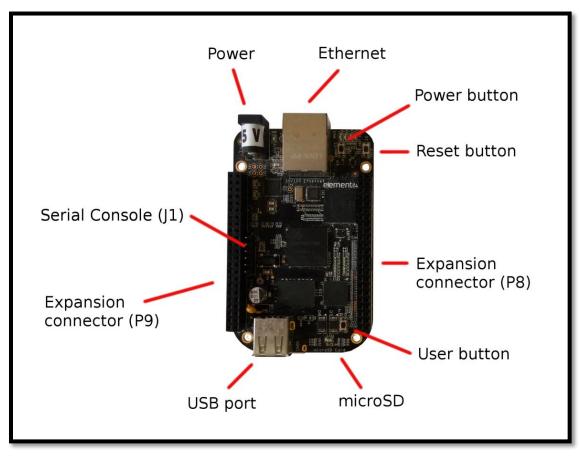
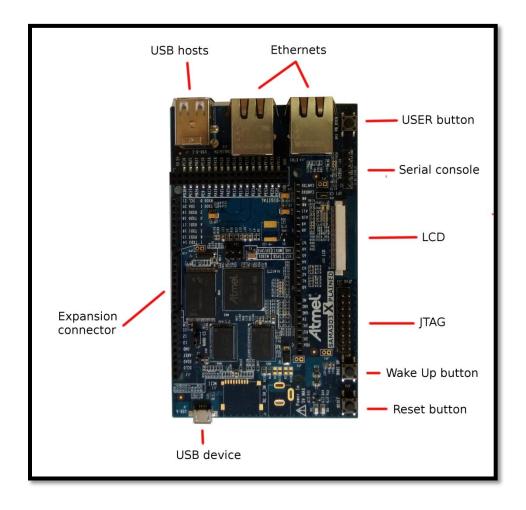
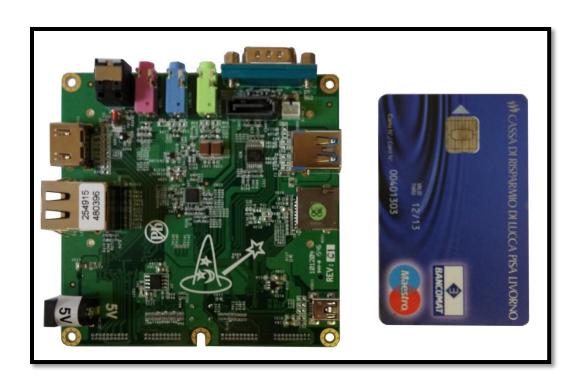
Chapter 1: Installing the Developing System



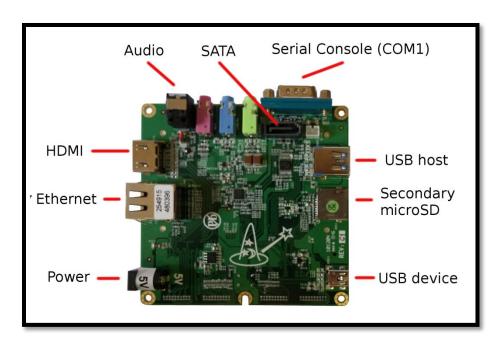


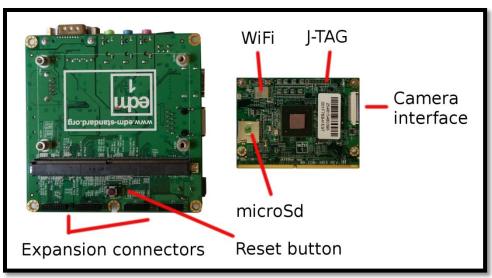


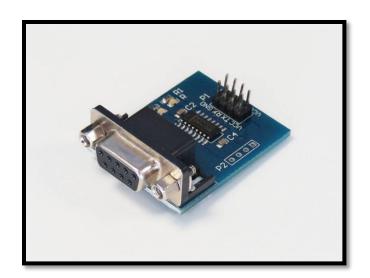


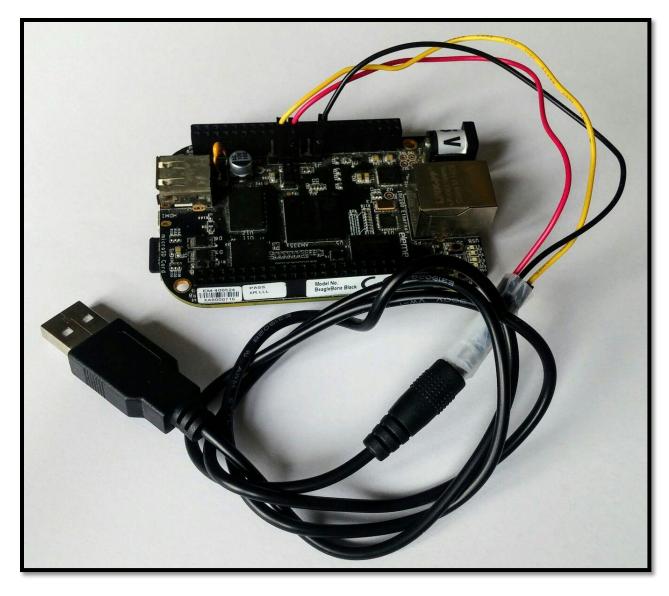


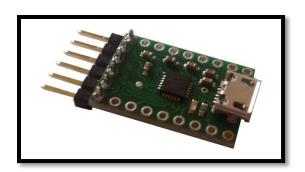


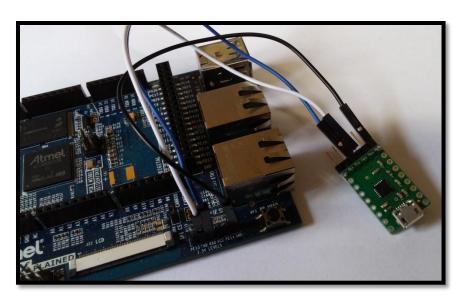


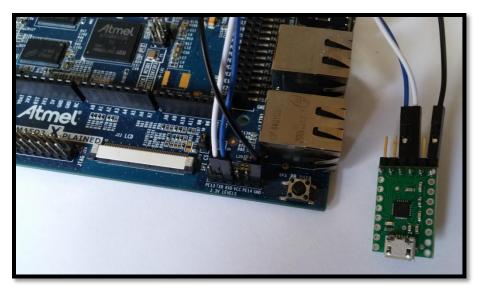




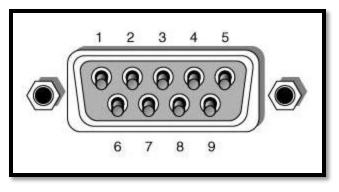


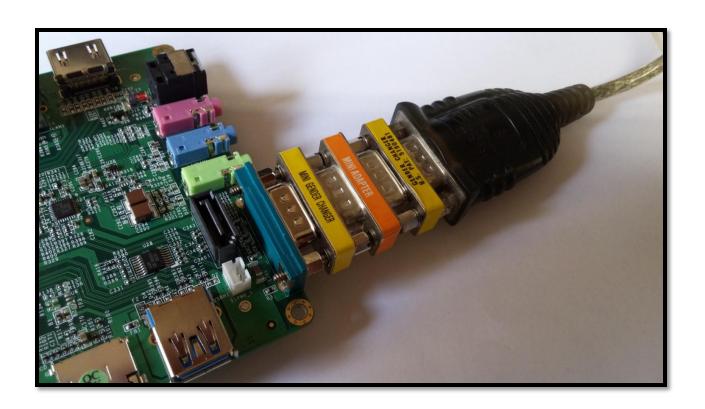




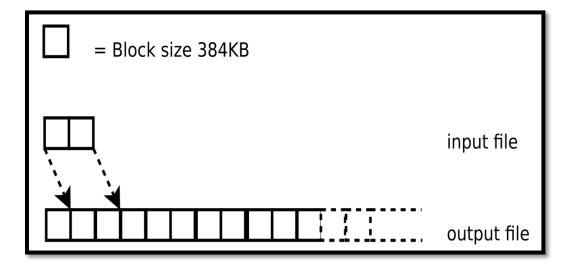


```
config - Linux/arm 4.4.6 Kernel Configuration
                           USB Gadget Support
   Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty
   submenus ----). Highlighted letters are hotkeys. Pressing <Y>
   includes, <N> excludes, <N> modularizes features. Press <Esc><Esc> to
   exit, <?> for Help, </> for Search. Legend: [*] built-in []
       --- USB Gadget Support
            Debugging messages (DEVELOPMENT)
            Debugging information files (DEVELOPMENT)
            Debugging information files in debugfs (DEVELOPMENT)
            Maximum VBUS Power usage (2-500 mA)
       (2)
       (2)
            Number of storage pipeline buffers
            USB Peripheral Controller --->
      ⋖№
            USB Gadget Drivers
      < >
              USB functions configurable through configfs
      <M⊳
              Gadget Zero (DEVELOPMENT)
      < >
              Audio Gadget
      <₩>
              Ethernet Gadget (with CDC Ethernet support)
                RNDIS support
       [*]
                Ethernet Emulation Model (EEM) support
       < >
              Network Control Model (NCM) support
      dM⊳
              Gadget Filesystem
              Function Filesystem
      <\P>
                 Include configuration with CDC ECM (Ethernet)
                 Include configuration with RNDIS (Ethernet)
       [*]
                 Include 'pure' configuration
      <₩>
              Mass Storage Gadget
      <₩>
              Serial Gadget (with CDC ACM and CDC OBEX support)
              MIDI Gadget
      < >
      ⋖№
              Printer Gadget
      <₩>
              CDC Composite Device (Ethernet and ACM)
      dM⊳
              CDC Composite Device (ACM and mass storage)
      <₩>
              Multifunction Composite Gadget
       [*]
                 RNDIS + CDC Serial + Storage configuration
       [*]
                 CDC Ethernet + CDC Serial + Storage configuration
      d/b
              HID Gadget
               EHCI Debug Device Gadget
              USB Webcam Gadget
         <Select>
                     < Exit >
                                 < Help >
                                             < Save >
                                                         < Load >
```





Chapter 2: Managing the System Console



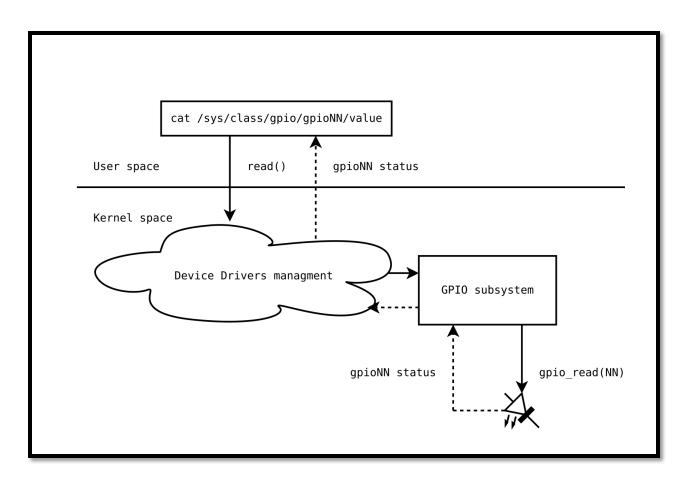
```
Actions Undo Package Resolver Search Options Views Help
C-T: Menu ?: Help q: Quit u: Update g: Preview/Download/Install/Remove Pkgs aptitude 0.7.4
--- New Packages (23459)
--- Installed Packages (2294)
--- Not Installed Packages (57315)
--- Obsolete and Locally Created Packages (79)
--- Virtual Packages (10950)
--- Tasks (53360)

These packages have been added to Ubuntu since the last time you cleared the list of "new" packages (choose "Forget new packages" from the Actions menu to empty this list).

This group contains 23459 packages.
```

Chapter 3: C Compiler, Device Drivers, and Useful Developing Techniques

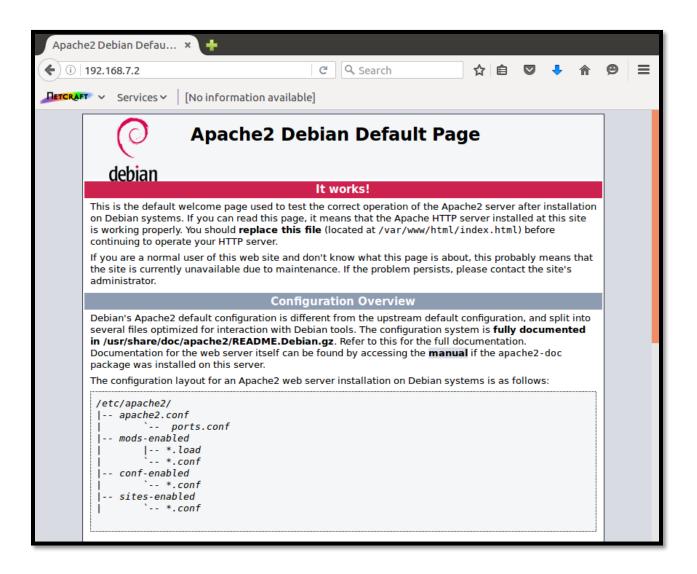
```
Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus --->). Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in []
      --- LED Support
<*> LED Class Support
                LED Flash Class Support
              *** LED drivers **
              LED Support for Broadcom BCM6328
              LED Support for Broadcom BCM6358
              LCD Backlight driver for LM3530
              LED support for LM3642 Chip
            LED driver for PCA9532 dimmer
              LED Support for GPIO connected LEDs
LED Support for N.S. LP3944 (Fun Light) I2C chip
         <Select>
                          < Exit >
                                           < Help >
                                                             < Save >
                                                                              < Load >
```

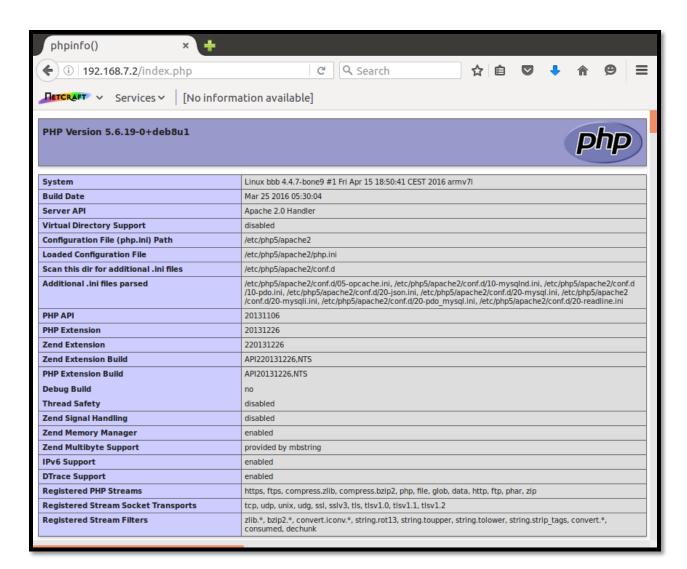


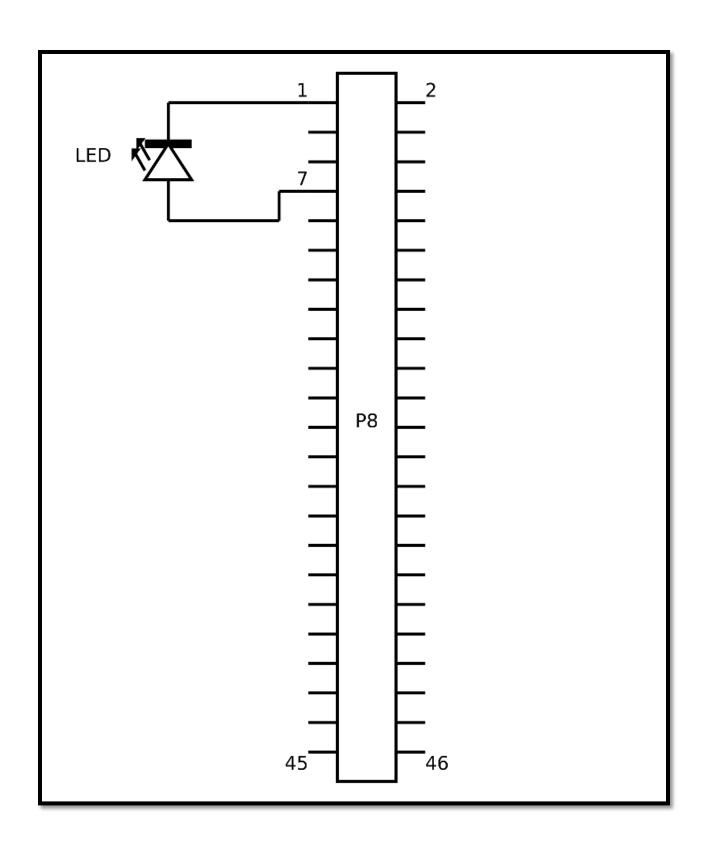
```
onfig - Linux/arm 4.4.7 Kernel Configuration
Networking support > Networking options —
                                            Networking options
   Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus ----). Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in [ ]
                       IP: equal cost multipath
                       IP: verbose route monitoring
                    IP: kernel level autoconfiguration
                       IP: DHCP support
                       IP: BOOTP support
                    IP: RARP support
IP: tunneling
                    IP: GRE demultiplexer
                    IP: GRE tunnels over IP
IP: broadcast GRE over IP
                    IP: multicast routing
             <Select>
                                 < Exit >
                                                     < Help >
                                                                         < Save >
                                                                                              < Load >
```

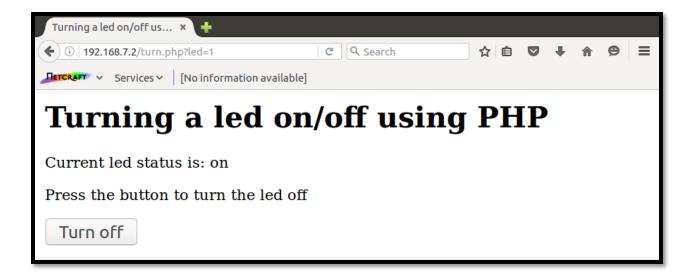
```
config - Linux/arm 4.4.7 Kernel Configuration
                                     Network File Systems
    Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus --->). Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc> to exit, <?> for Help, </>> for Search. Legend: [*] built-in []
         --- Network File Systems
                 NFS client support
NFS client support for NFS version 2
         <*>
         <*>
                    NFS client support for NFS version 3
         [*]
                      NFS client support for the NFSv3 ACL protocol extension
                  NFS client support for NFS version 4
                    Provide swap over NFS support
                 NFS client support for NFSv4.1
          [*] NFS client support for NFSv4.2
(kernel.org) NFSv4.1 Implementation ID Domain
                    NFSv4.1 client support for migration
            <Select>
                         < Exit > < Help > < Save >
                                                                                < Load >
```

Chapter 4: Quick Programming with Scripts and System Daemons



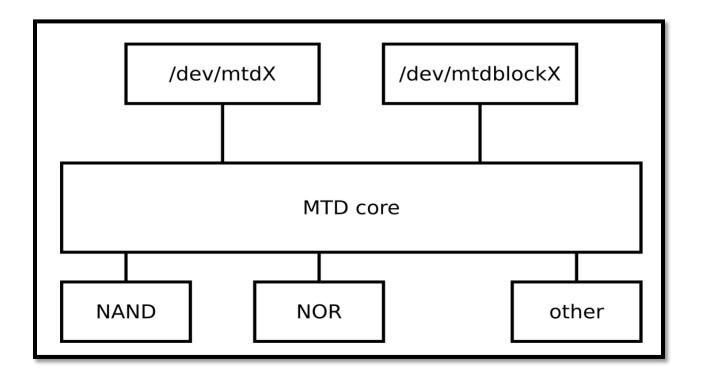


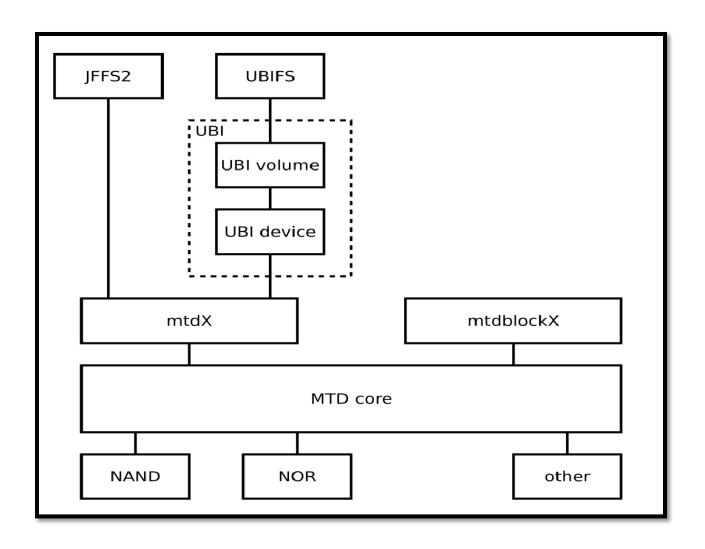




```
http://192....8080/?led=1 ×
( 192.168.7.2:8080/?led=1
                                C Q Search
                                                   ☆ 自 ▽ ↓
METCRAFT ∨ Services ∨ [No information available]
CLIENT VALUES
client address -> ('192.168.7.1', 41254) (192.168.7.1)
command -> GET
path -> /?led=1
real path -> t/
query -> led=1
request version -> HTTP/1.1
SERVER VALUES
server version -> BaseHTTP/0.3
sys version -> Python/2.7.9
protocol version -> HTTP/1.0
HEADERS RECEIVED
accept -> text/html,application/xhtml+xml,application/xml;q=0.9,*
/*; q=0.8
accept-encoding -> gzip, deflate
accept-language -> it,en-US;q=0.7,en;q=0.3
connection -> keep-alive
host -> 192.168.7.2:8080
user-agent -> Mozilla/5.0 (X11; Ubuntu; Linux x86 64; rv:46.0)
Gecko/20100101 Firefox/46.0
```

Chapter 5: Setting Up an Embedded OS





```
config - OpenWrt Configuration
                                           OpenWrt Configuration
    Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus --->). Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc> to exit, <?> for Help, </>> for Search. Legend: [*] built-in []
           Target System (Atmel AT91) --->
Subtarget (SAMA5D3 (Cortex-A5)) --->
Target Profile (Atmel AT91SAMA5D3XPLAINED) --->
                  Target Images --->
                 Global build settings --->
                 Advanced configuration options (for developers) (NEW) ----
Build the OpenWrt Image Builder (NEW)
                 Build the OpenWrt SDK (NEW)
                 Package the OpenWrt-based Toolchain (NEW)
            [ ] Image configuration (NEW) --->
                 Base system --->
Boot Loaders ----
Development --->
Firmware --->
                 Kernel modules --->
                 Languages --->
Libraries --->
                 Network --->
                 Utilities --->
              <Select>
                               < Exit > < Help > < Save > < Load >
```

```
A flexible and lightweight web server
Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus ----).
Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in [ ] excluded
<M> module < > module capable
       --- lighttpd...... A flexible and lightweight web server
           SSL support
           < >
           lighttpd-mod-accesslog...... Access logging module
           < 5
           <*>
       < >
           lighttpd-mod-evasive. Evasive module
lighttpd-mod-evhost. Exnhanced Virtual-Hosting module
lighttpd-mod-expire. Expire module
lighttpd-mod-extforward. Extract client module
lighttpd-mod-fastcgi. FastCGI module
       < >
       < >
       <*>
           lighttpd-mod-flv_streaming...... FLV streaming module
       < >
           < >
           lighttpd-mod-proxy..... Proxy module
           < >
           lighttpd-mod-webdav..... WebDAV module
           <Select>
                  < Exit > < Help >
                                < Save >
                                       < Load >
```

```
onfig - OpenWrt Configuration
 Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus ----).
 Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in [ ] excluded
 <M> module < > module capable
           ..... PHP5 Hypertext preprocessor
              PHP5 LIBXML support (NEW)
          (NEW)
           (NEW)
                                                                       (NEW)
           (NEW)

      < > php5-mod-pgsql
      PostgreSQL shared module

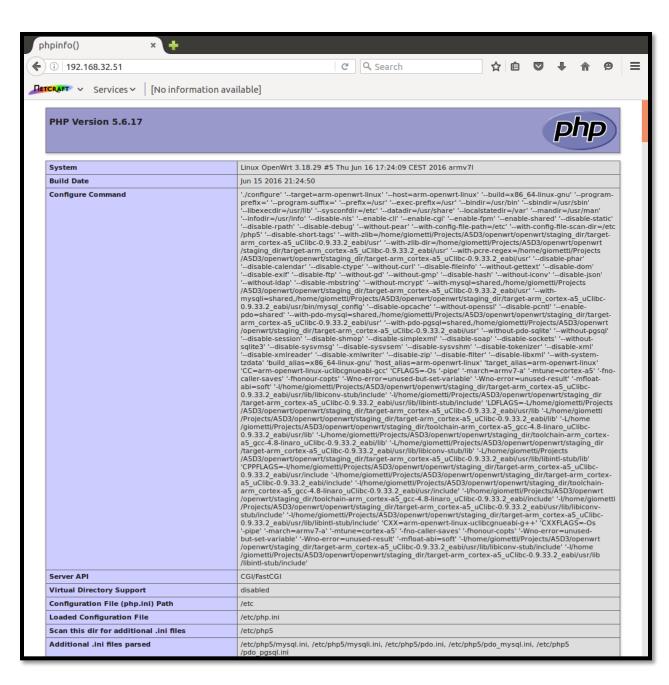
      < > php5-mod-session
      Session shared module

      < > php5-mod-shmop
      Shared Memory shared module

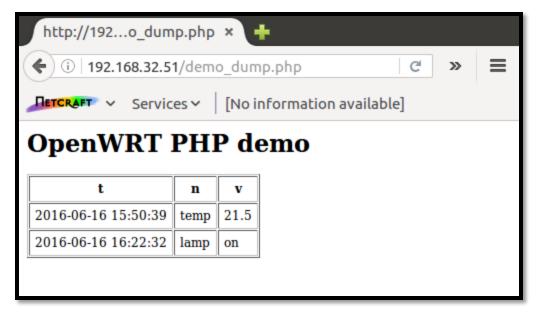
      < > php5-mod-simplexml
      SimpleXML shared module

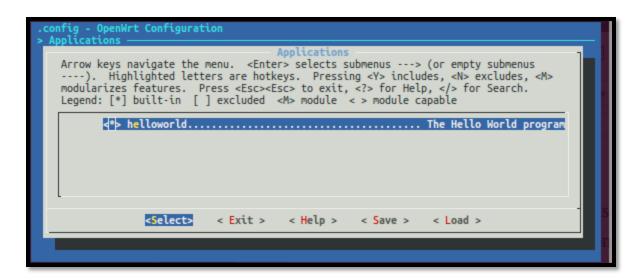
      < > php5-mod-soap
      SOAP shared module

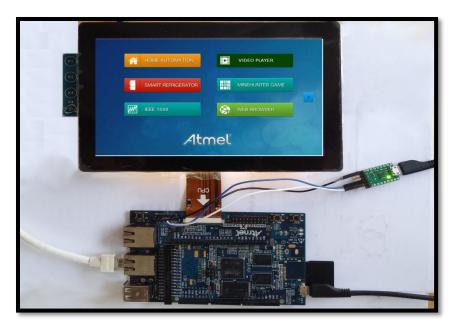
                                                                       (NEW)
                                                                       (NFW)
                                                                       (NEW)
           < > php5-mod-sysvmsg...
< > php5-mod-sysvsem...
System V shared memory shared module (NEW)
< > php5-mod-sysvshm...
System V semaphore shared module (NEW)
< > php5-mod-tokenizer...
Tokenizer shared module (NEW)
```



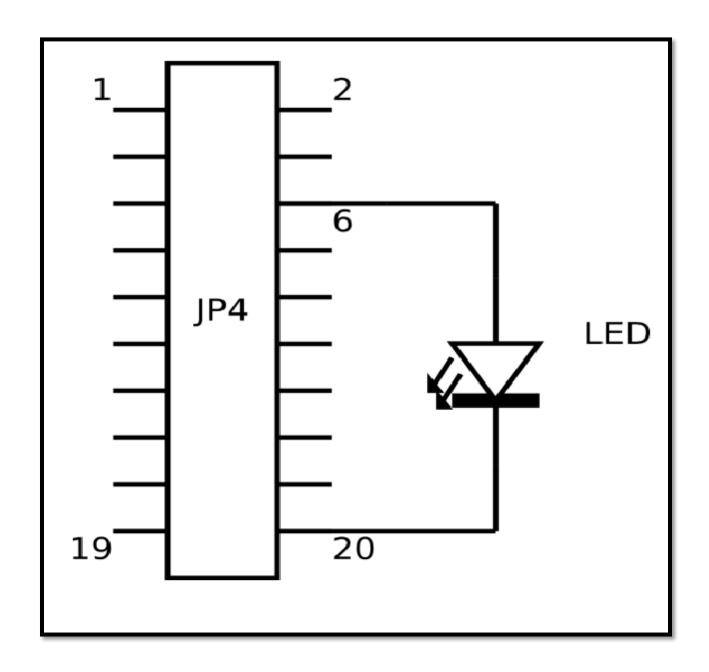


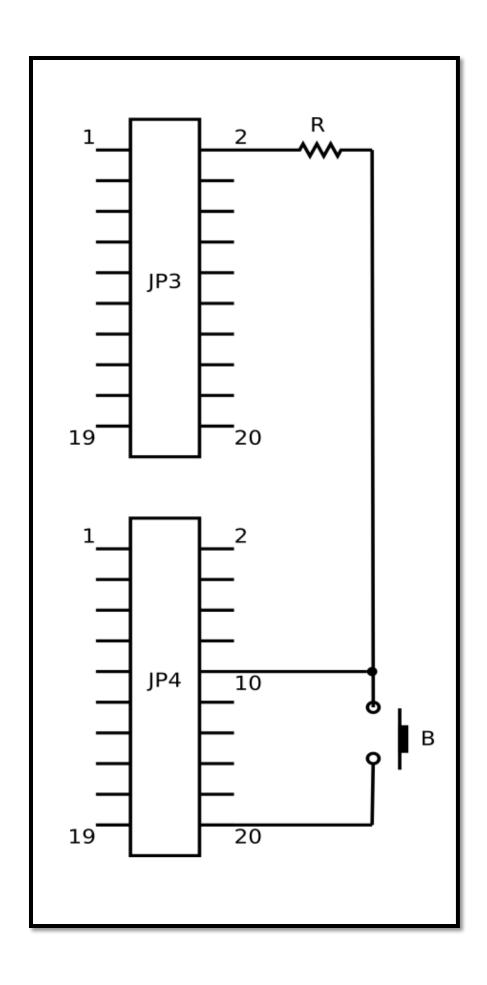




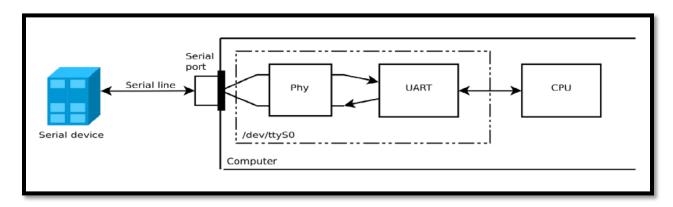


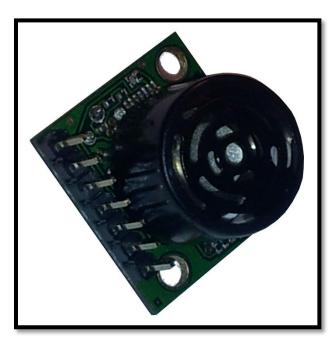
Chapter 6: General Purposes Input Output signals – GPIO

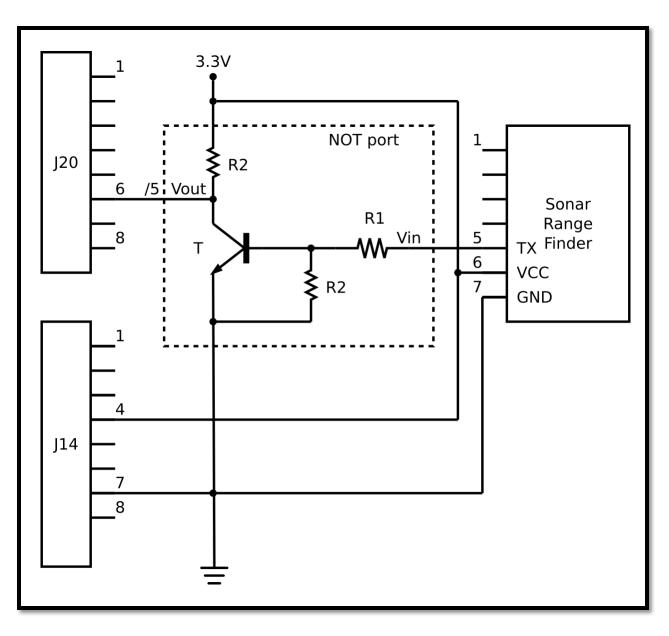




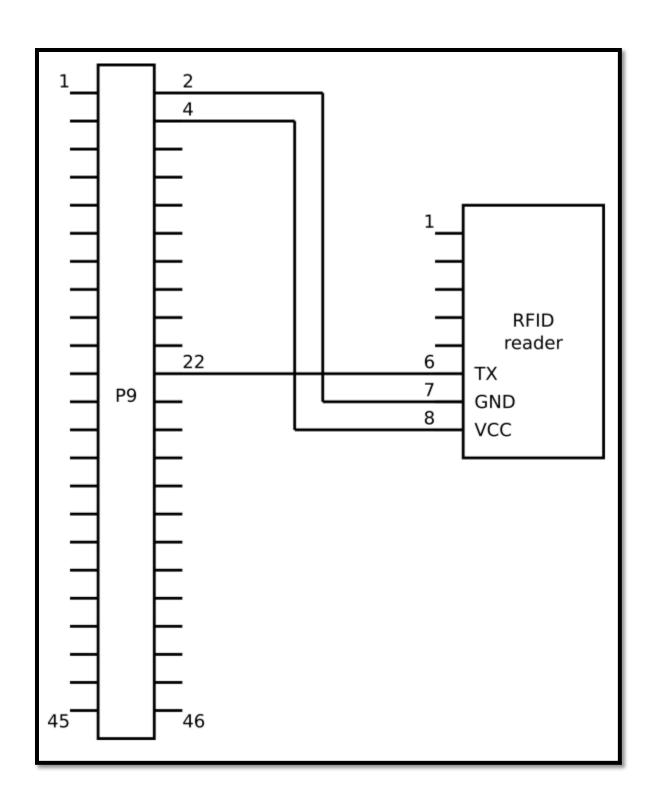
Chapter 7: Serial Ports and TTY Devices - TTY

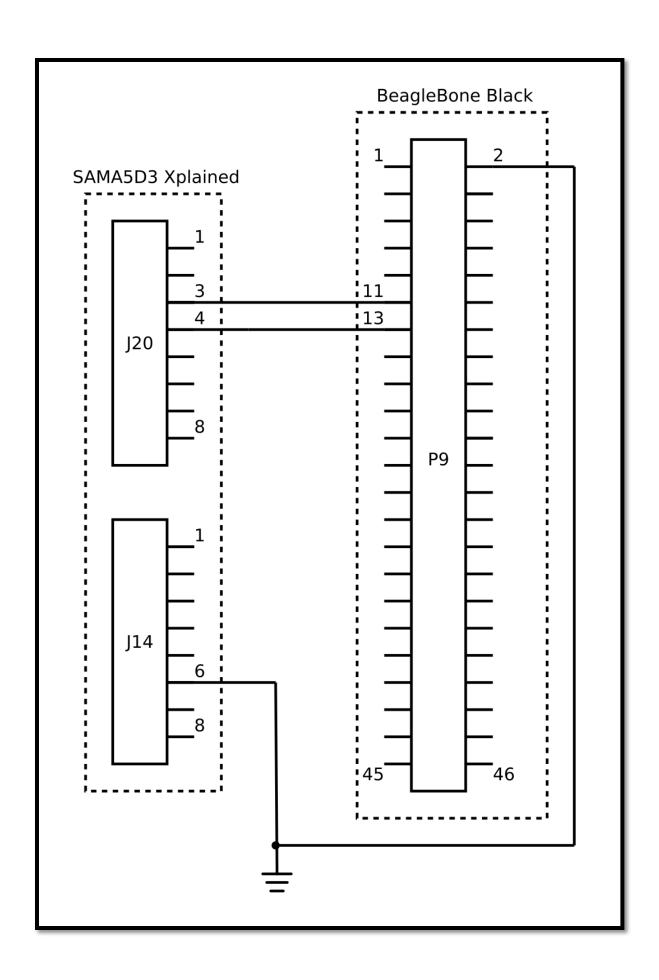












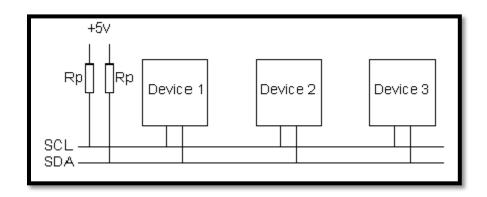
Chapter 8: Universal Serial Bus - USB

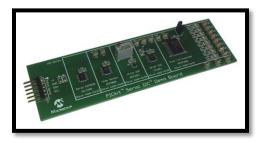


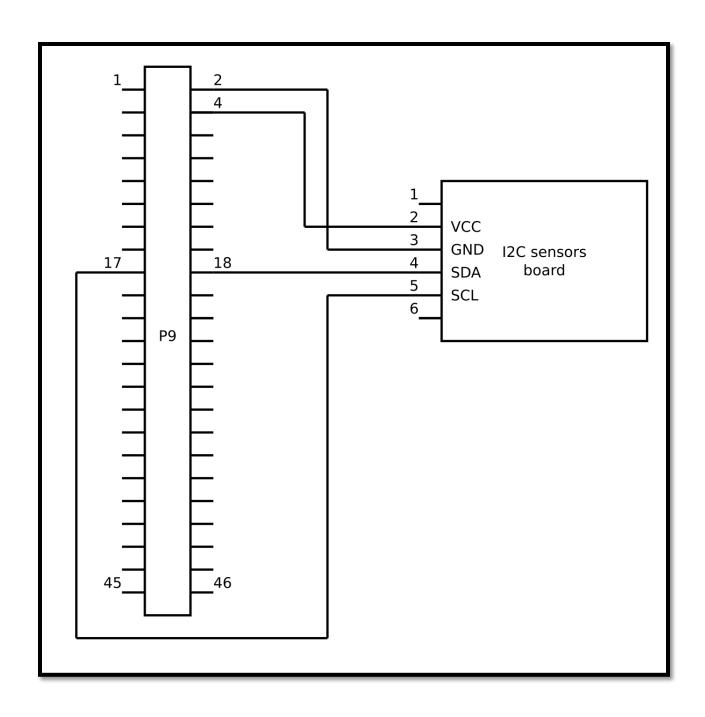


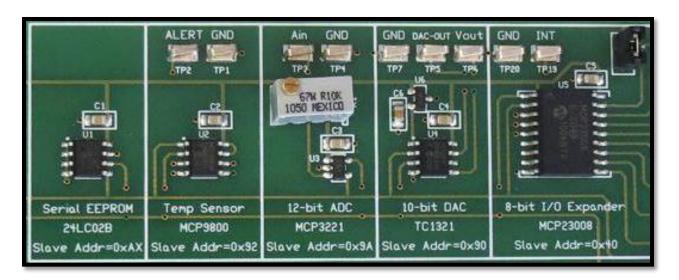
```
config - Linux/arm 4.4.7 Kernel Configuration
                              USB Gadget Suppor
  Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus ----). Highlighted letters are hotkeys. Pressing <Y>
  includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to
  exit, <?> for Help, </> for Search. Legend: [*] built-in [ ]
       --- USB Gadget Support
              Debugging messages (DEVELOPMENT)
              Debugging information files (DEVELOPMENT)
              Debugging information files in debugfs (DEVELOPMENT)
       (500) Maximum VBUS Power usage (2-500 mA)
             Number of storage pipeline buffers
       (2)
             USB Peripheral Controller
       <M>
             USB Gadget Drivers
       <M>
               USB functions configurable through configfs
                  Generic serial bulk in/out
                  Abstract Control Model (CDC ACM)
                  Object Exchange Model (CDC OBEX)
Network Control Model (CDC NCM)
                  Ethernet Control Model (CDC ECM)
Ethernet Control Model (CDC ECM) subset
                  Ethernet Emulation Model (EEM)
                  Phonet protocol
                  Mass storage
                  Loopback and sourcesink function (for testing)
                  Function filesystem (FunctionFS)
                  Audio Class 1.0
                  Audio Class 2.0
                  MIDI function
                  HID function
                  USB Webcam function
                  Printer function
       <M>
                Gadget Zero (DEVELOPMENT)
       [*]
                 HNP Test Device
       <M>
                Audio Gadget
                  UAC 1.0 (Legacy)
                Ethernet Gadget (with CDC Ethernet support)
       <M>
                  RNDIS support
       i*i
                  Ethernet Emulation Model (EEM) support
       <M>
                Network Control Model (NCM) support
                Gadget Filesystem
       <M>
       <M>
                Function Filesystem
                  Include configuration with CDC ECM (Ethernet)
                  Include configuration with RNDIS (Ethernet)
       ۲ŧ۱
               Include 'pure' configuration
Mass Storage Gadget
       <M>
       <M>
                USB Gadget Target Fabric Module
       <M>
                Serial Gadget (with CDC ACM and CDC OBEX support)
       <M>
                MIDI Gadget
       <M>
                Printer Gadget
                CDC Composite Device (Ethernet and ACM)
       <M>
       <M>
                Nokia composite gadget
                CDC Composite Device (ACM and mass storage)
       <M>
       <M>
                Multifunction Composite Gadget
       [*]
[*]
                  RNDIS + CDC Serial + Storage configuration
                  CDC Ethernet + CDC Serial + Storage configuration
       <M>
                HID Gadget
                EHCI Debug Device Gadget
       < >
       <M>
                USB Webcam Gadget
```

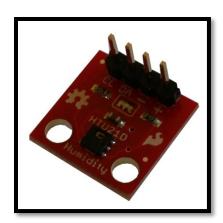
Chapter 9: Inter-Integrated Circuits - I2C

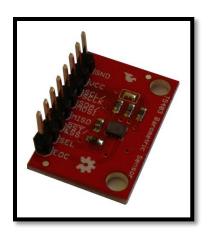


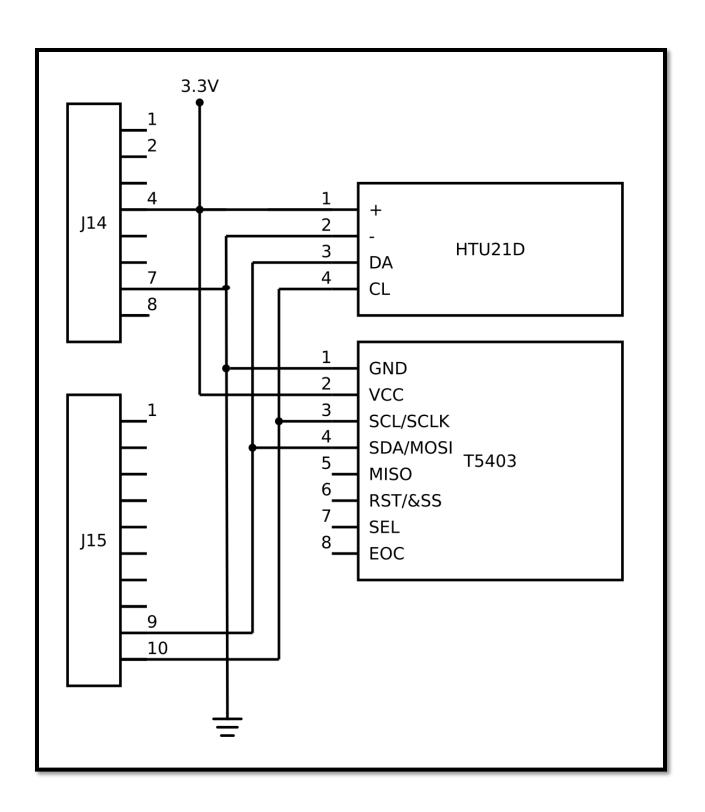


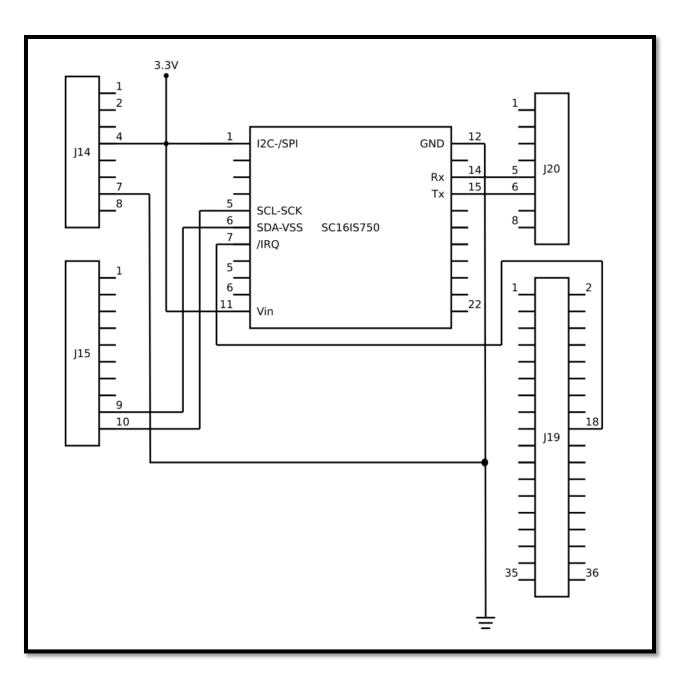




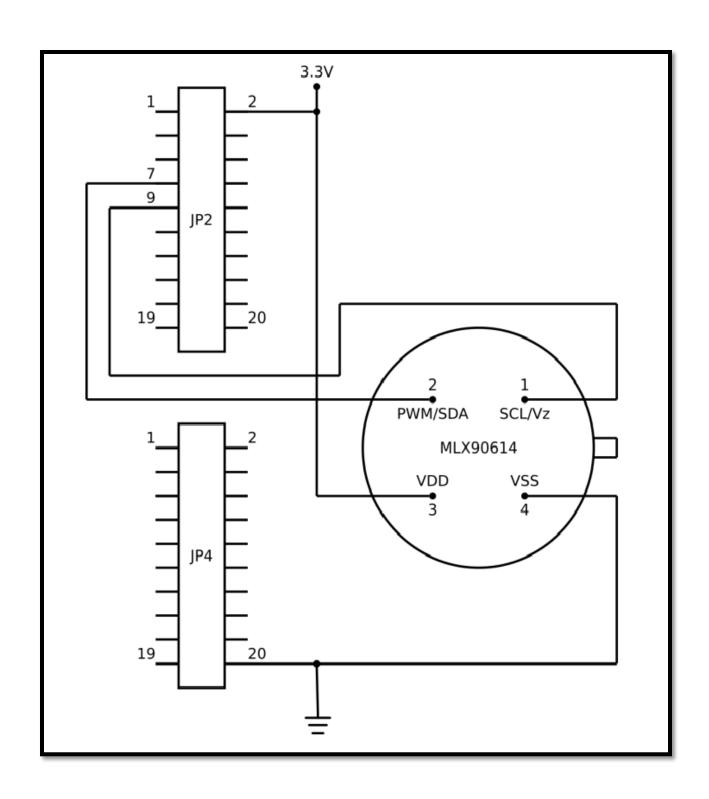




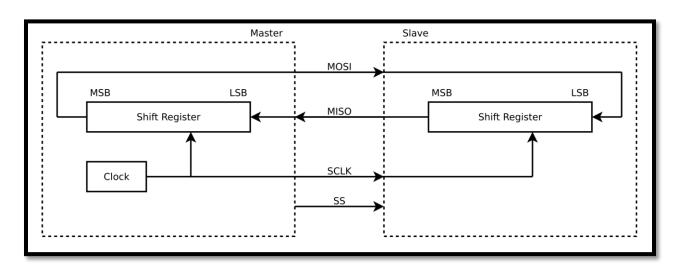


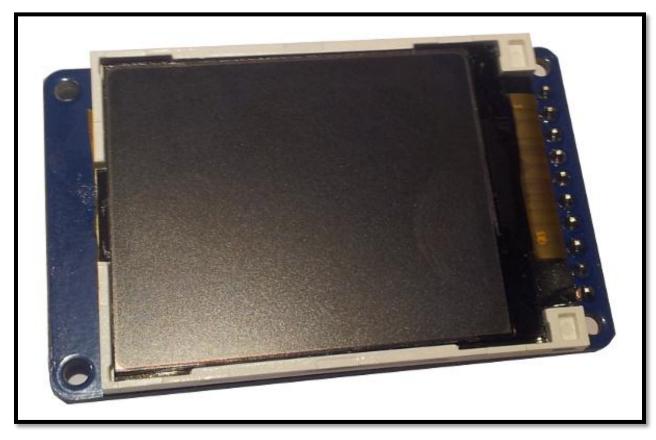


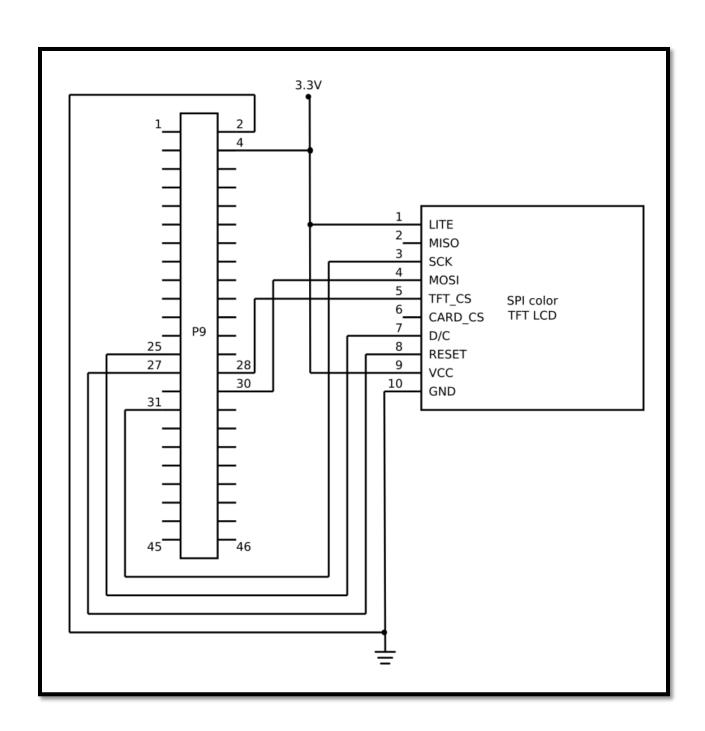




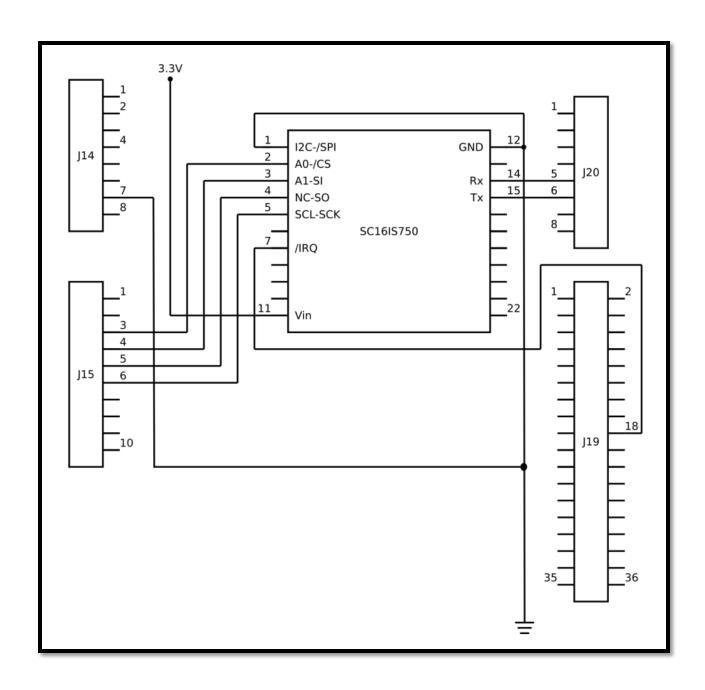
Chapter 10: Serial Peripheral Interface - SPI

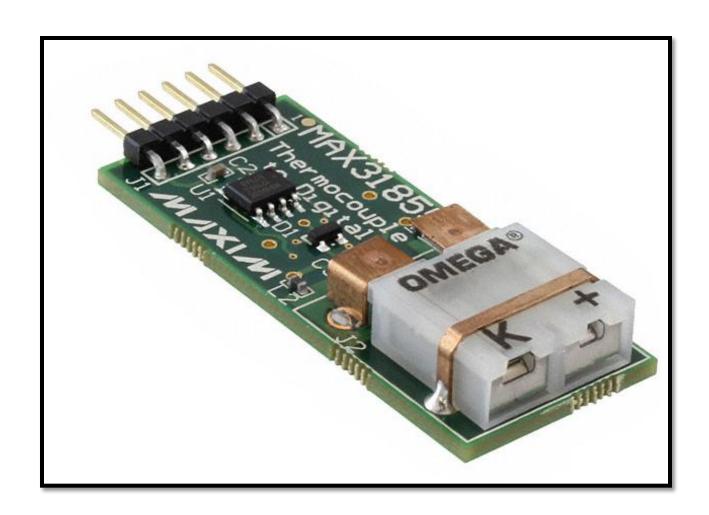


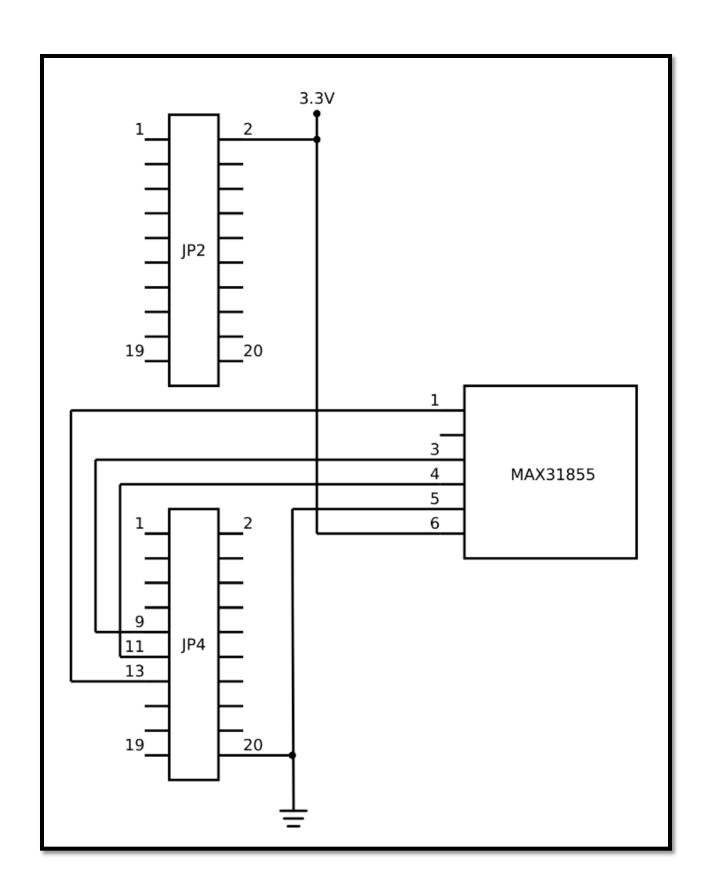


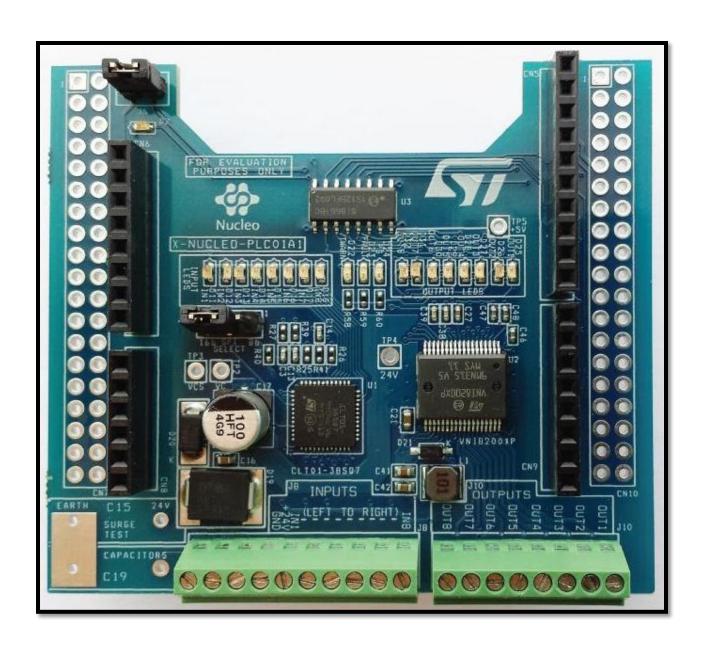


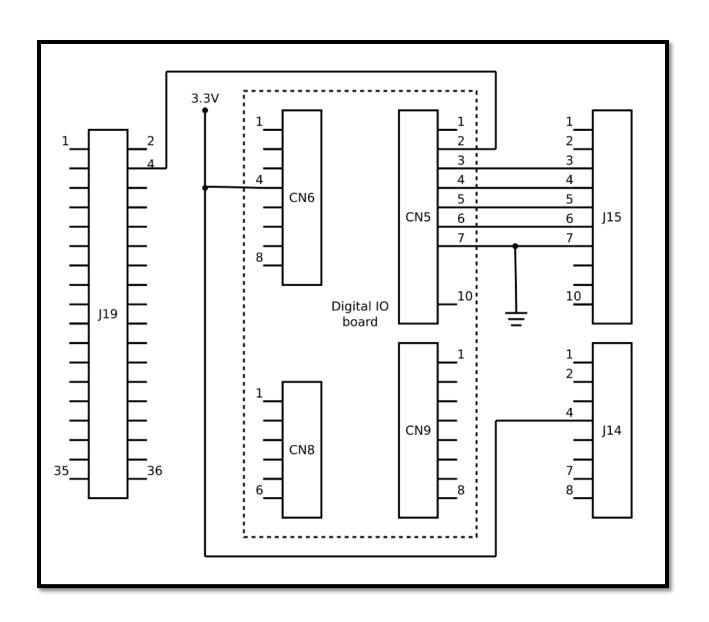




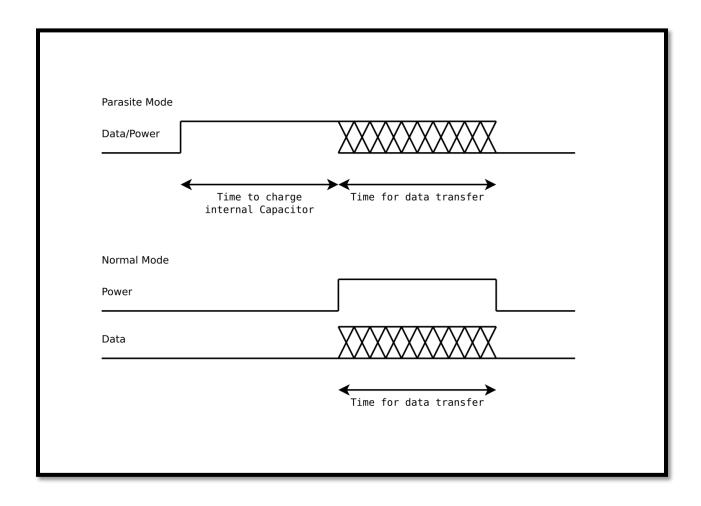


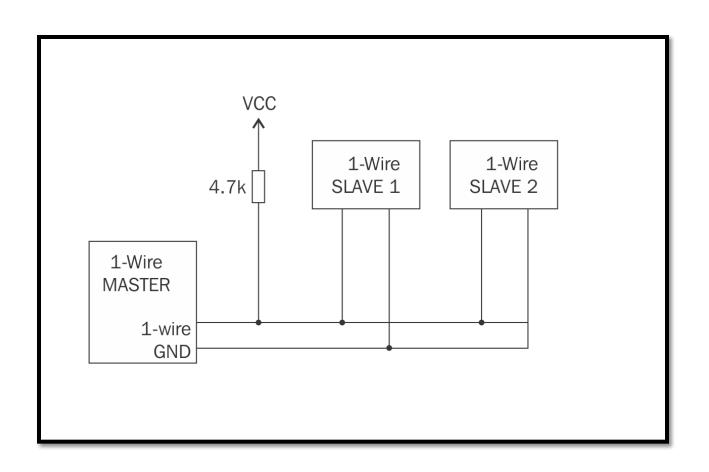




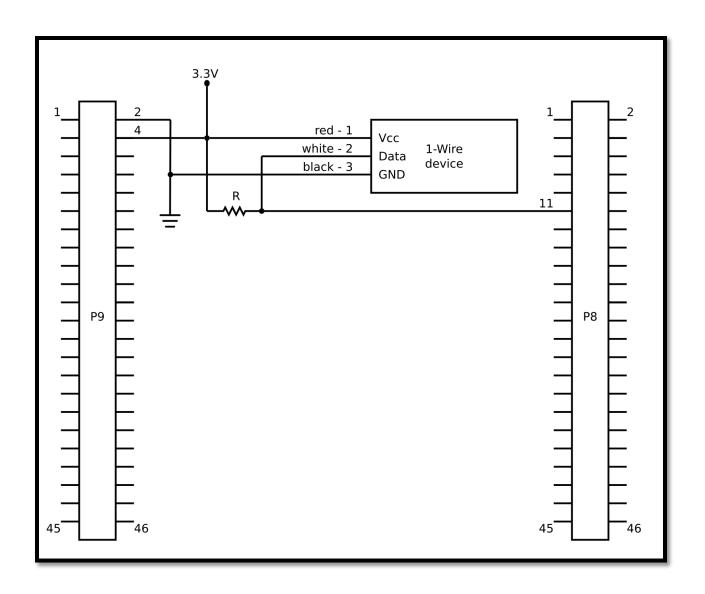


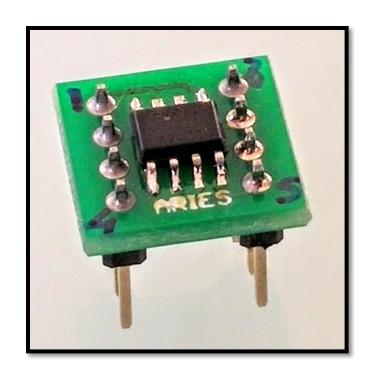
Chapter 11: 1-Wire - W1

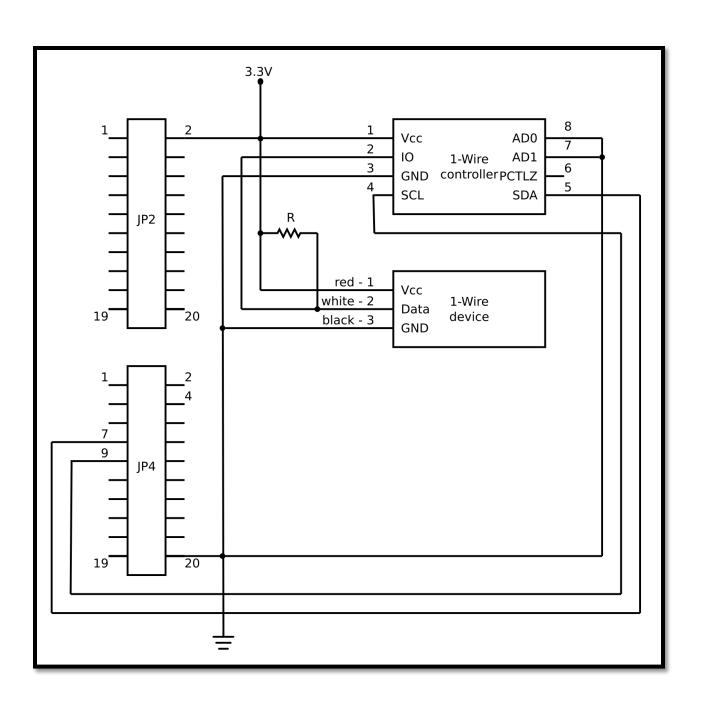




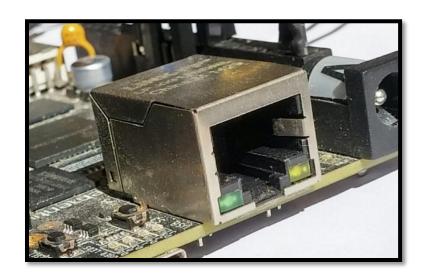








Chapter 12: Ethernet Network Device - ETH





Chapter 13: Wireless Network Device - WLAN

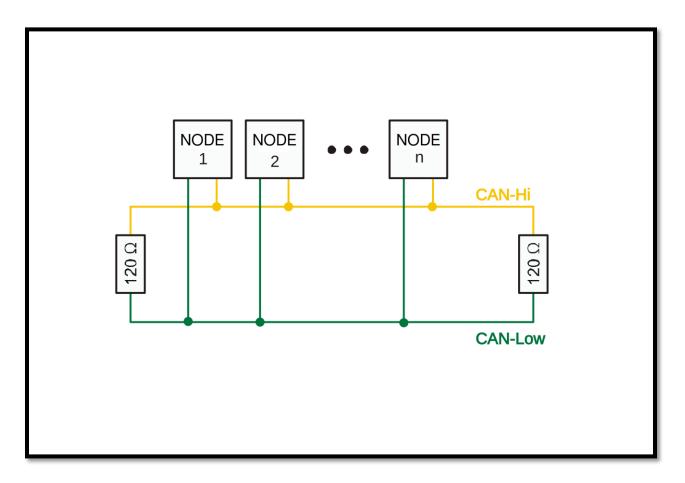


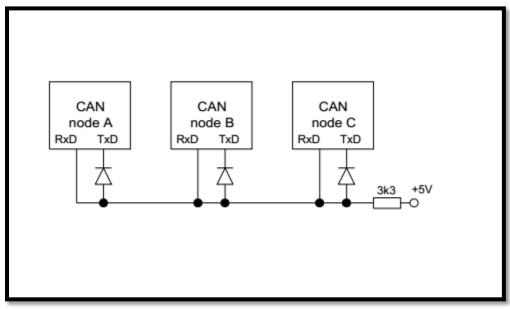


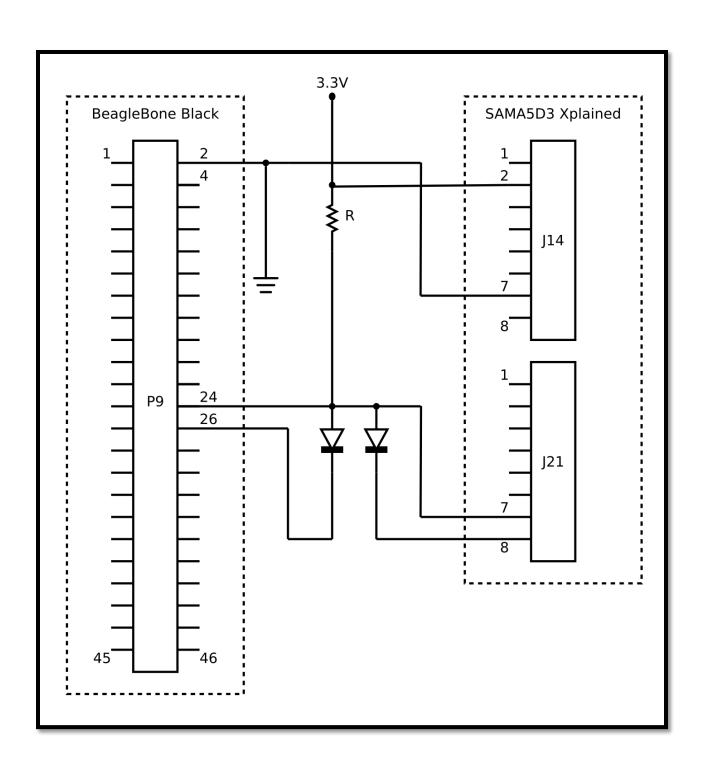


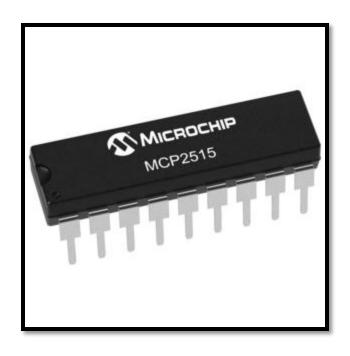


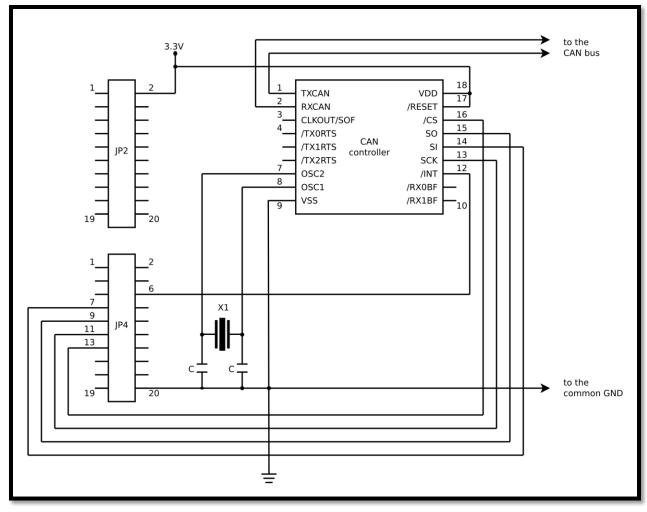
Chapter 14: Controller Area Network - CAN

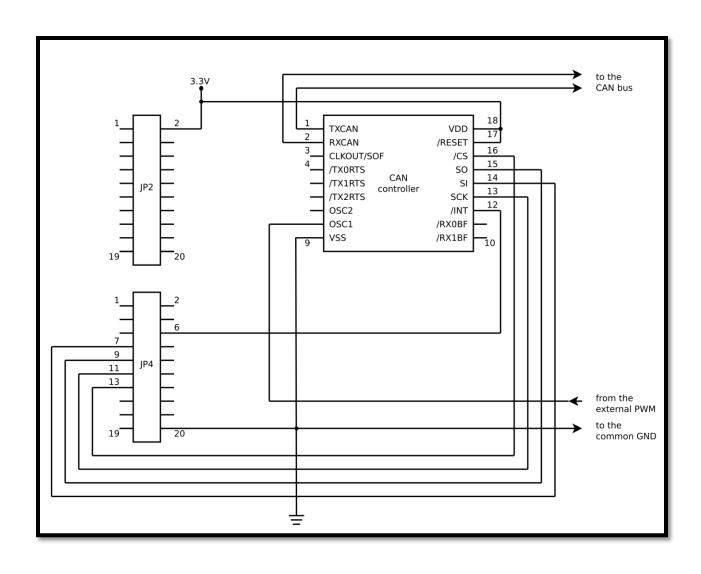




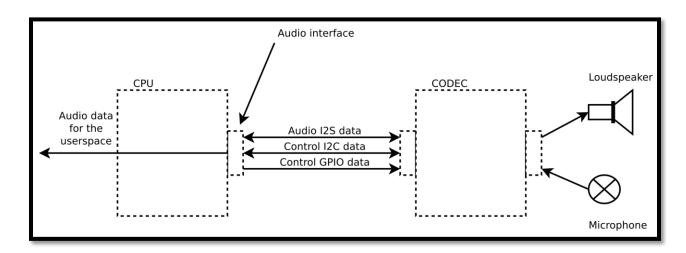


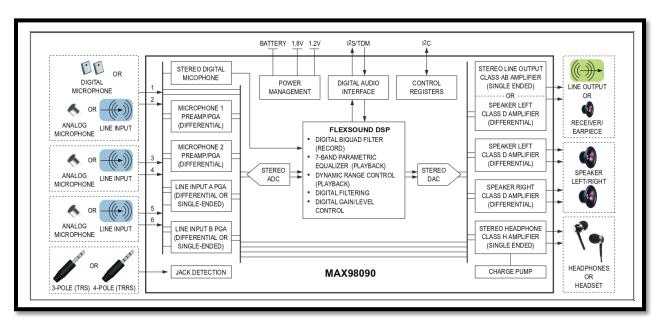


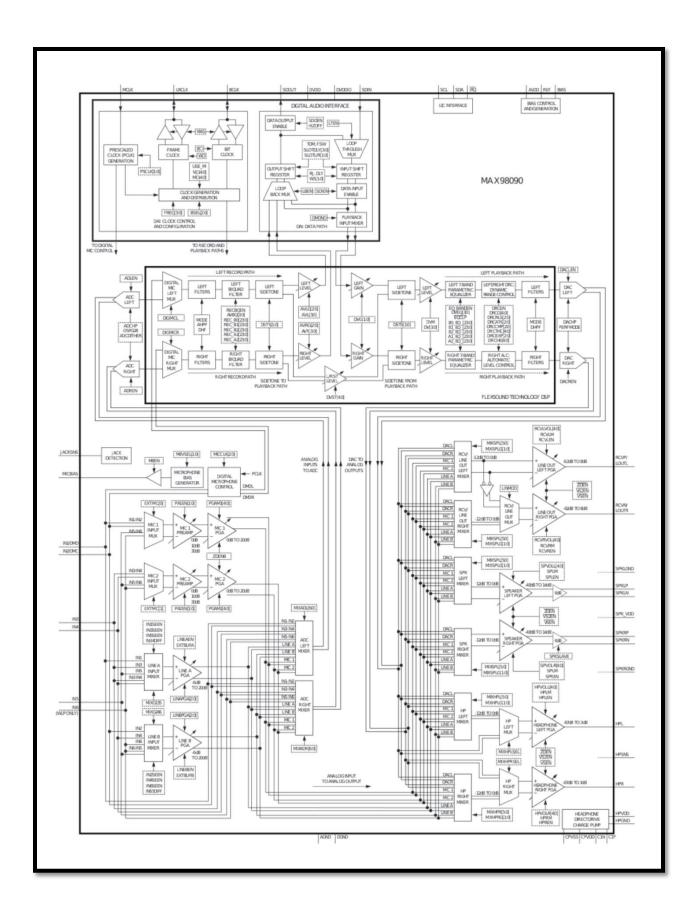


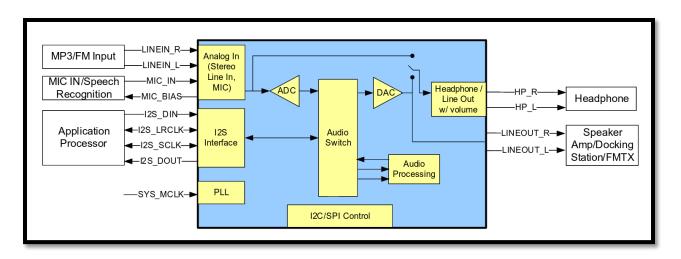


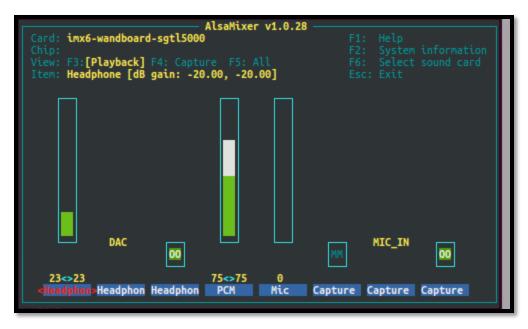
Chapter 15: Sound Devices - SND

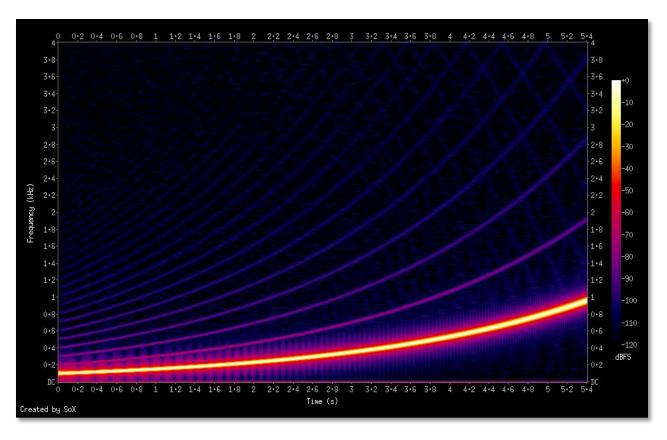


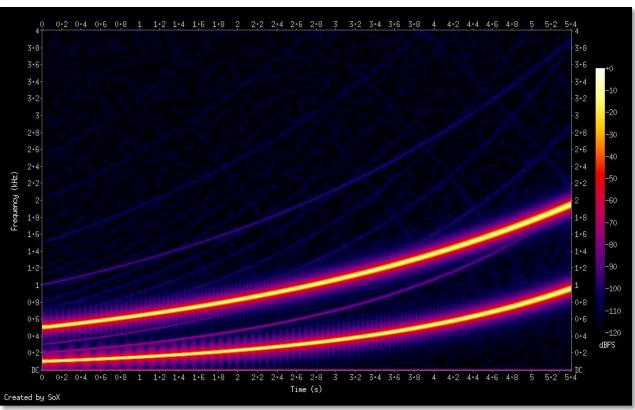


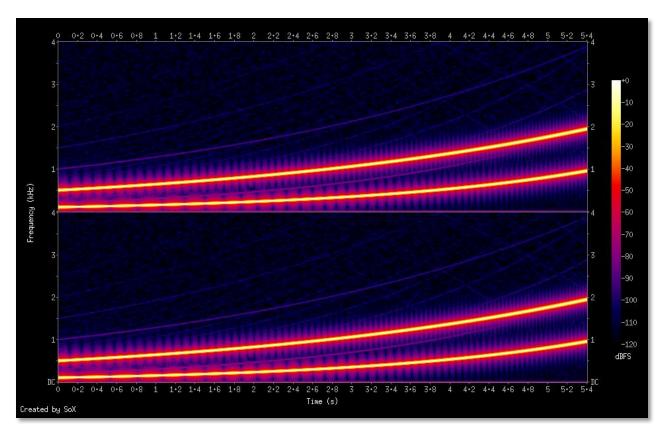


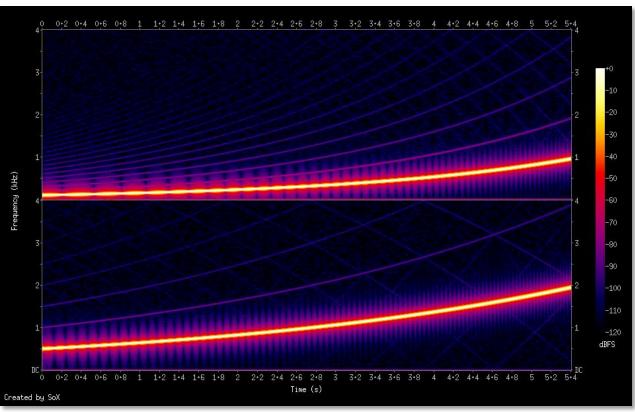


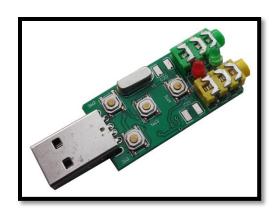


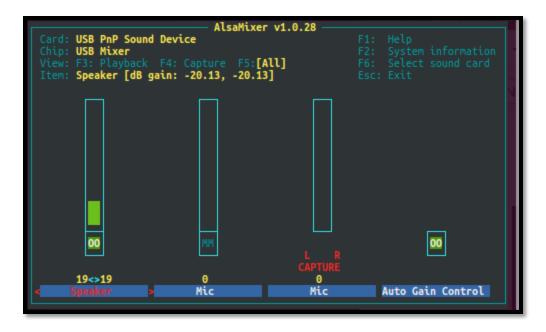




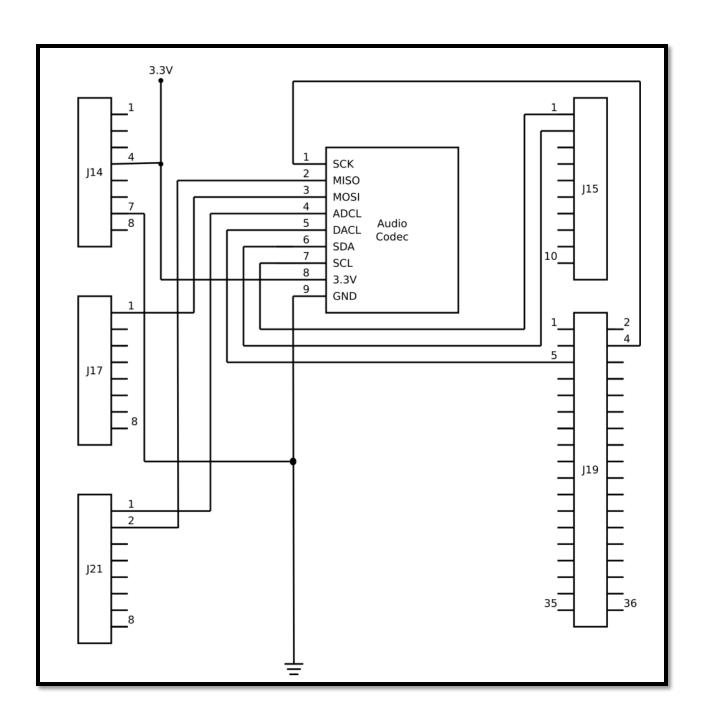


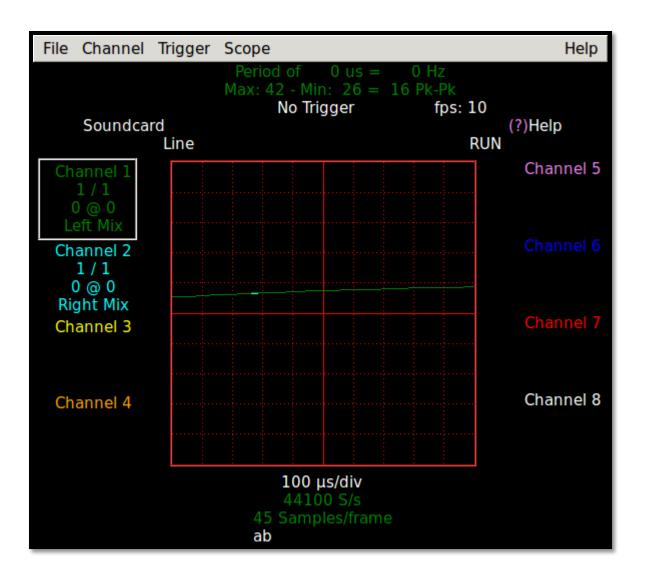


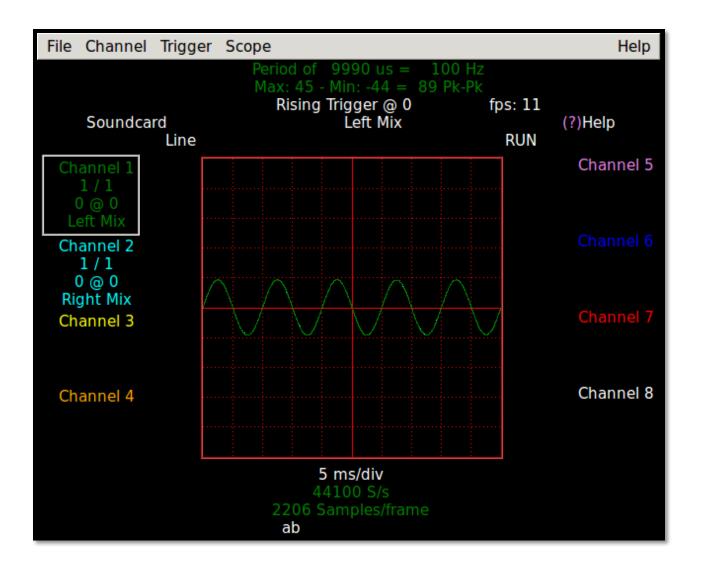


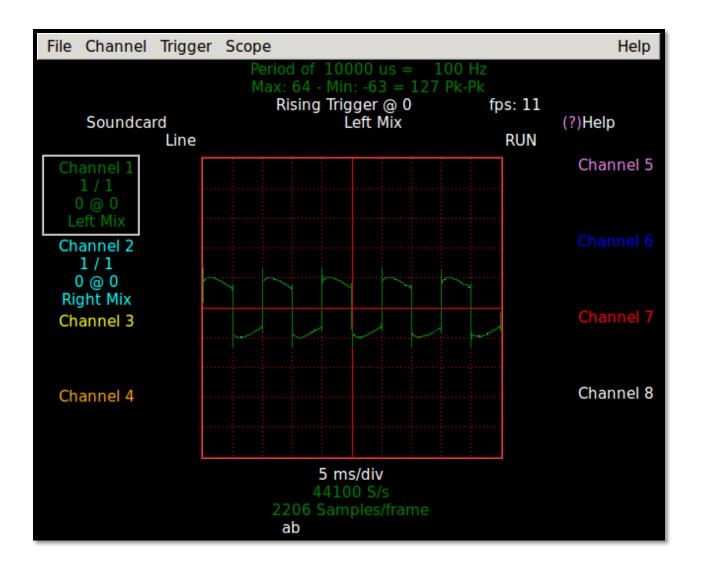




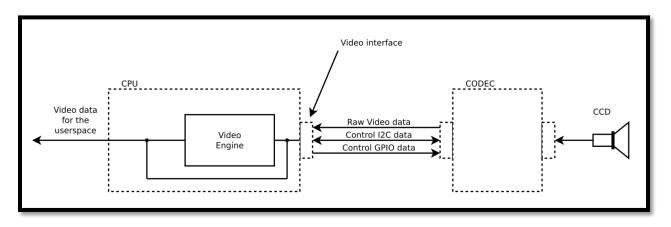


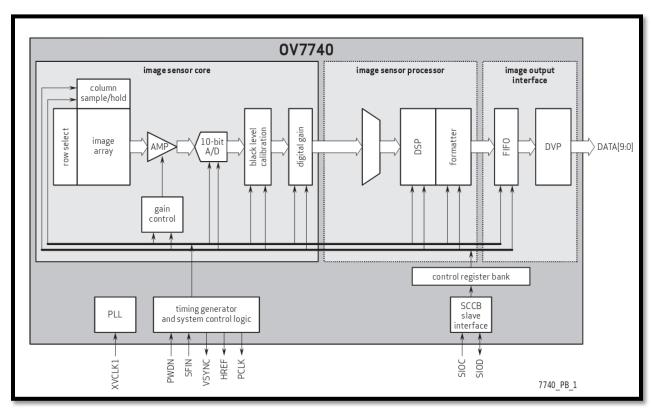


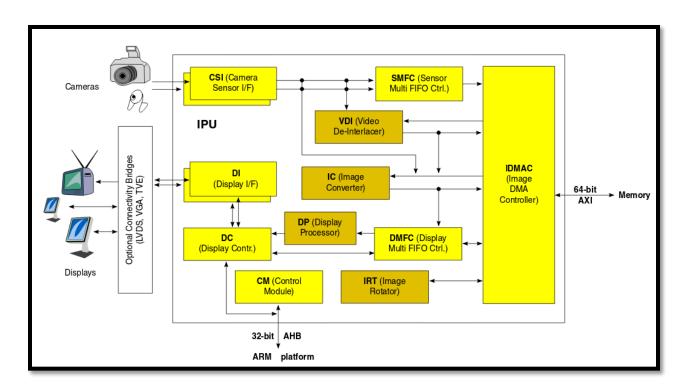


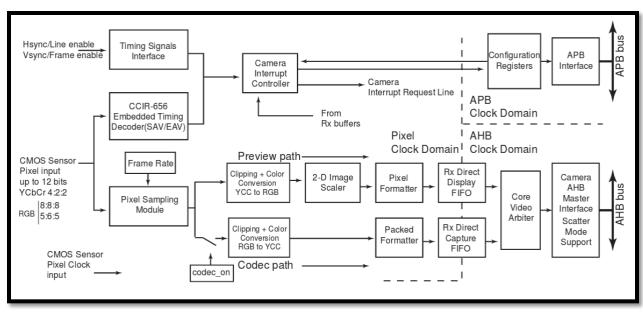


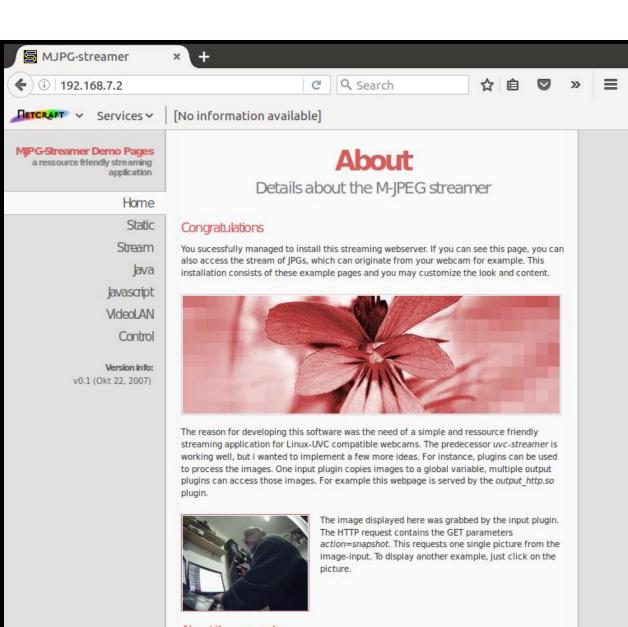
Chapter 16: Video devices - V4L











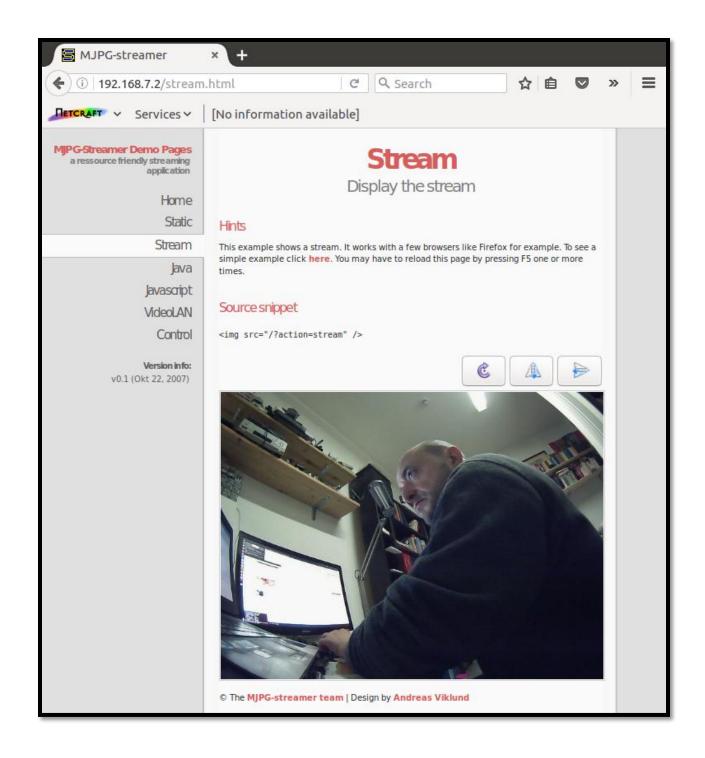
About the examples

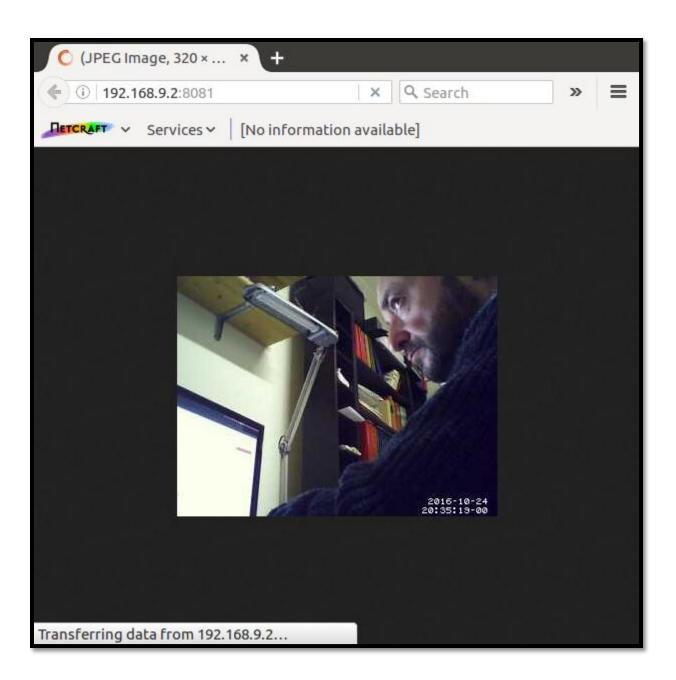
To view the stream with any browser you may try the javascript or java subpages. Firefox is able to display the M-JPEG-stream directly.

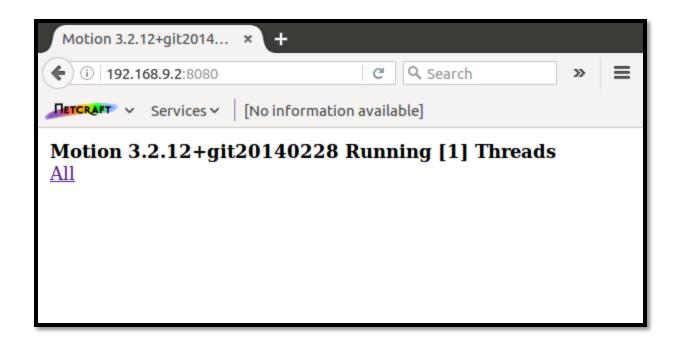
About this server

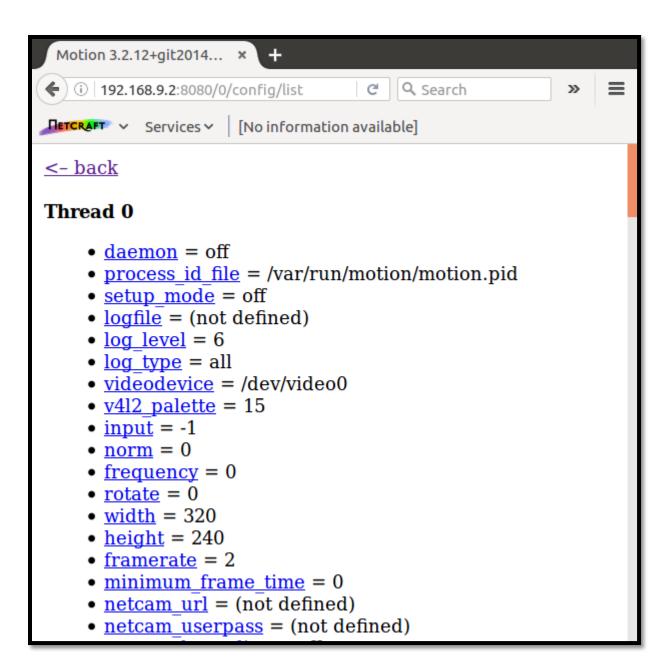
This server is running a software written for the MJPG-streamer project. The MJPG-streamer developers can not be made responsible for installations of this software.

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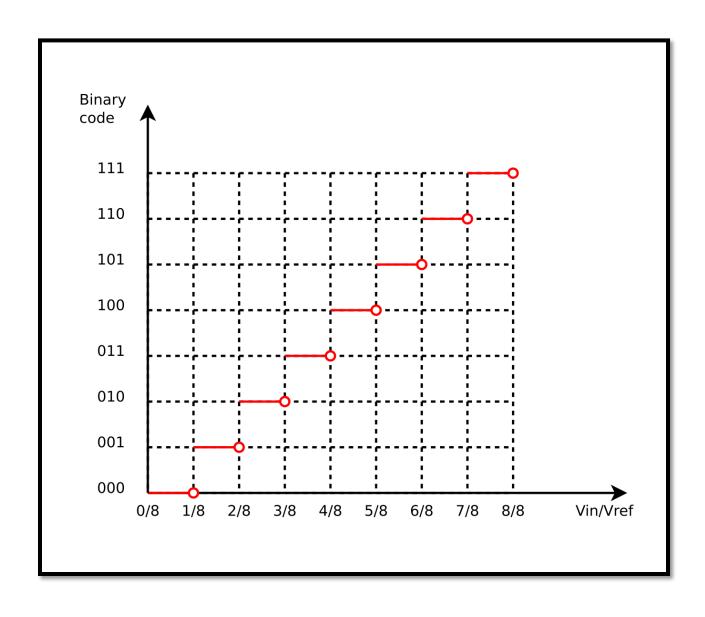




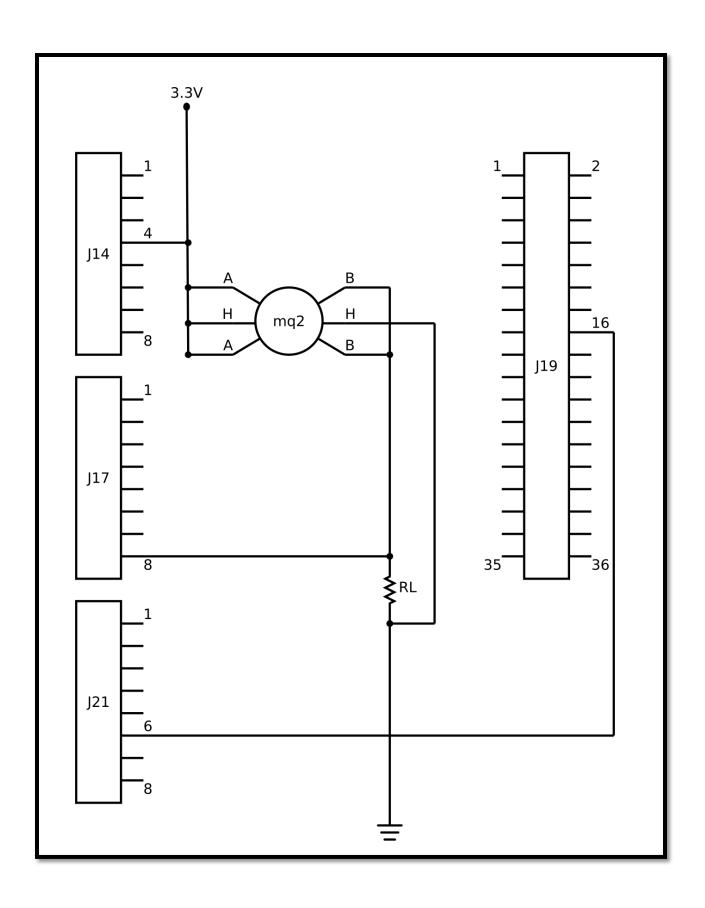


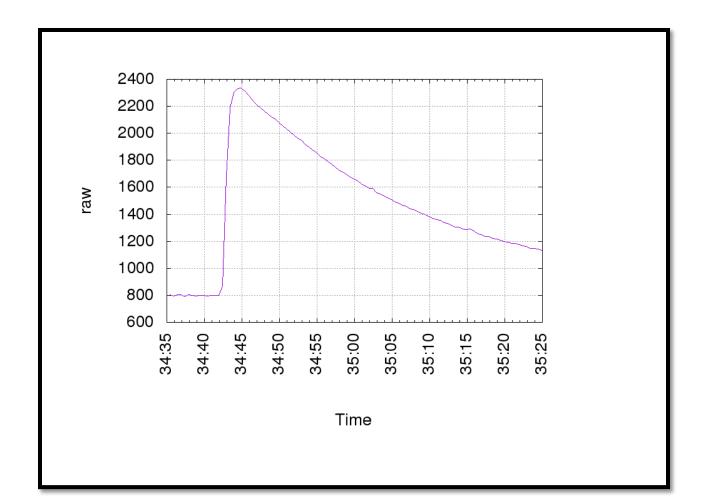


Chapter 17: Analog-to-Digital Converters - ADC

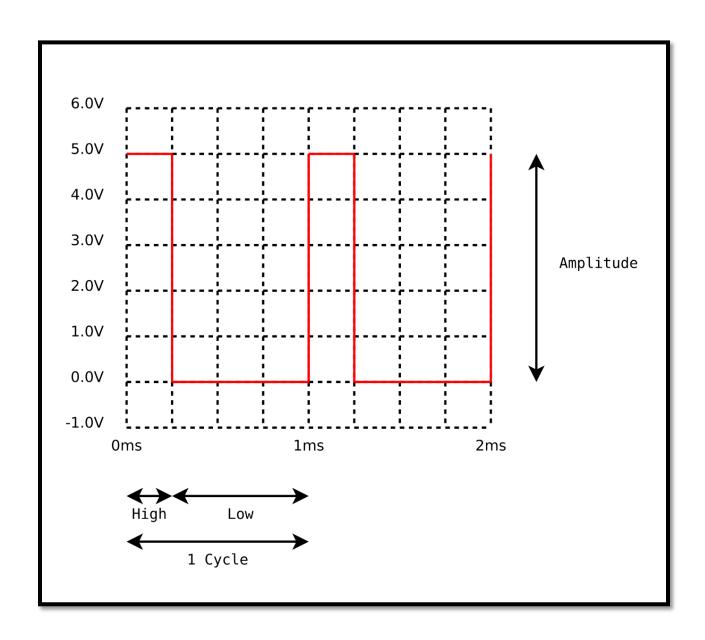


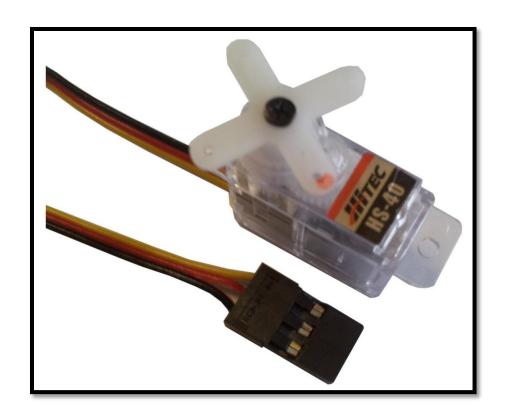


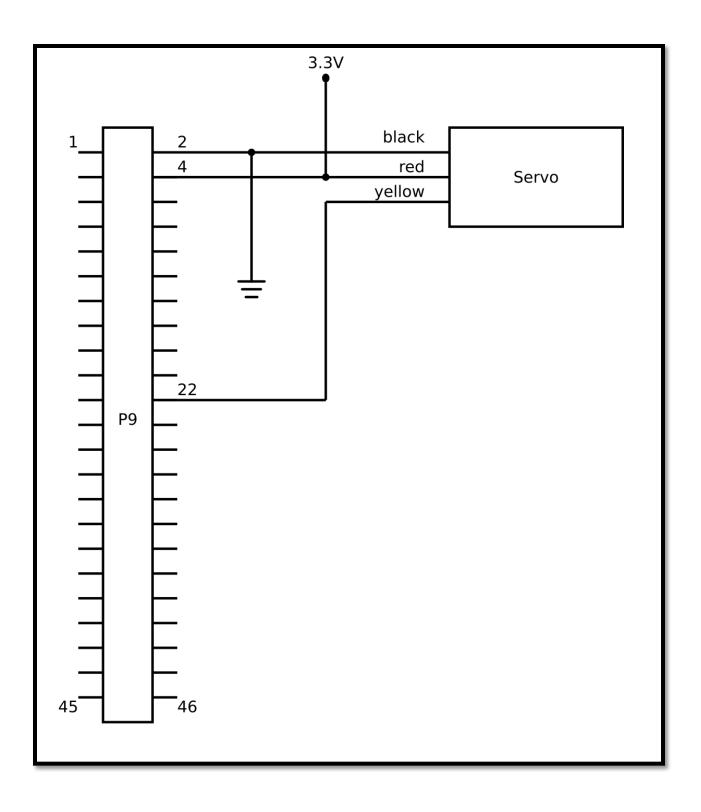




Chapter 18: Pulse-Width Modulation - PWM







Chapter 19: Miscellaneous Devices

