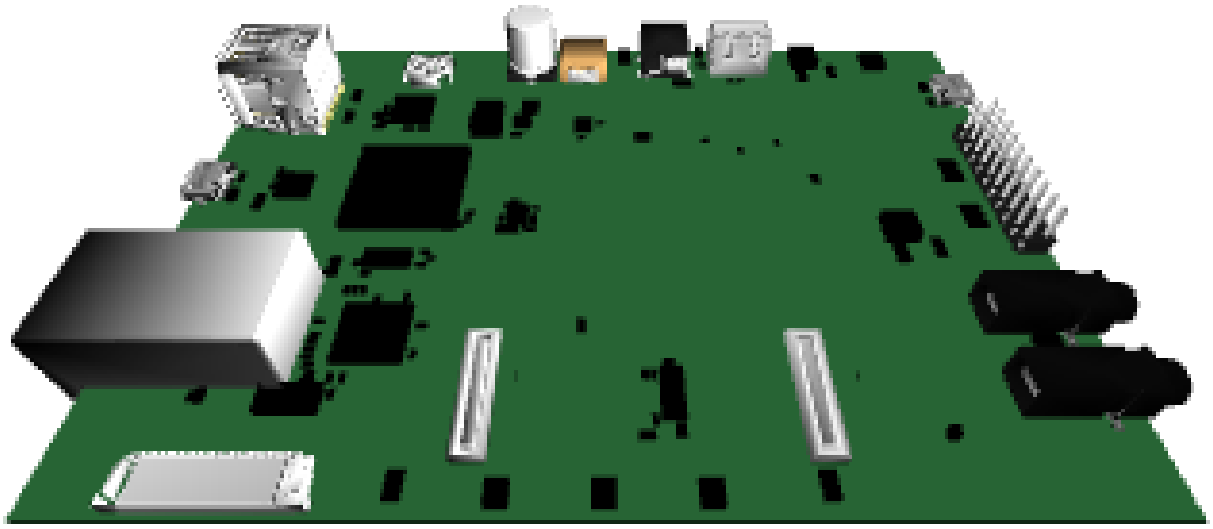
Garret 50C



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Board Description

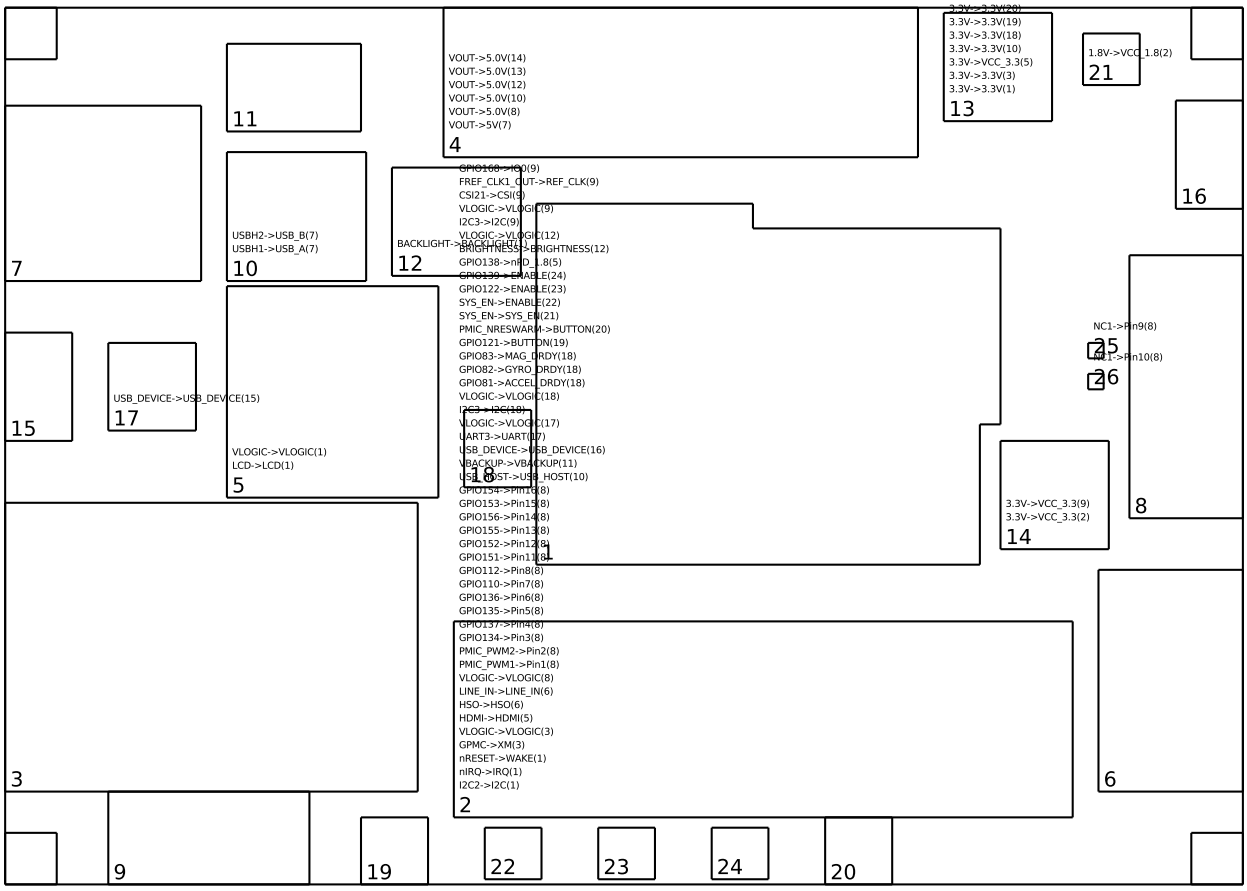
An DuoVero COM based expansion board, with support for 5.0” Newhaven Capacitive multi-touch screen (screen sold separately) with Ethernet, USB and audio.

Board Dimensions

12.0cm x 8.5cm

Contents

1 Modules on Board



1.1 LCD Display

1.1.1 5.0” Flip-Side Connector For Newhaven Capacitive Multi-Touch Screen (v6) (1)

A 5.0 inch LCD and a capacitive touch screen connector, mounted on the flipside, that connects to HDMI to Parallel Converter (5)

1.2 COM Connectors

1.2.1 Gumstix - DuoVero COM Connector (v19) (2)

DuoVero COMs are powered by a dual-core ARM Cortex-A9 with 1GB RAM, booting from an on-board uSD card slot.

The DuoVero COM connector provides power and signal transmission for the Gumstix DuoVero series of COMs

Requires:

- VCC_3.3 from 3.3V/1.5A Regulator (14)

- VCC_1.8 from 1.8V/0.6A Regulator (21)

The DuoVero connector provides the following outputs:

- GPMC to 10/100BASE-T (3)
- CSI21 to COM to CSI2 Connector (9)
- VBACKUP to CoinCell Backup (11)
- nRESET to 5.0” Flip-Side Connector For Newhaven Capacitive Multi-Touch Screen (1)
- PMIC_PWM1 to 20-Pin Male Header (8)
- GPIO152 to 20-Pin Male Header (8)
- GPIO153 to 20-Pin Male Header (8)
- PMIC_NRESWARM to Flip-side Tactile Switch (20)
- GPIO151 to 20-Pin Male Header (8)
- GPIO156 to 20-Pin Male Header (8)
- GPIO154 to 20-Pin Male Header (8)
- GPIO155 to 20-Pin Male Header (8)
- HSO to Dual Audio (in / out) (6)
- UART3 to USB-UART (17)
- GPIO134 to 20-Pin Male Header (8)
- GPIO135 to 20-Pin Male Header (8)
- GPIO136 to 20-Pin Male Header (8)
- GPIO137 to 20-Pin Male Header (8)
- GPIO112 to 20-Pin Male Header (8)
- GPIO139 to Flip-side Red LED (24)
- GPIO110 to 20-Pin Male Header (8)
- GPIO122 to Flip-side Blue LED (23)
- nIRQ to 5.0” Flip-Side Connector For Newhaven Capacitive Multi-Touch Screen (1)
- HDMI to HDMI to Parallel Converter (5)
- PMIC_PWM2 to 20-Pin Male Header (8)
- SYS_EN to:
  - 1.8V/0.6A Regulator (21)
  - Flip-side Green LED (22)
- FREF_CLK1_OUT to COM to CSI2 Connector (9)
- USB_HOST to 3-Port USB Hub (10)

- VLOGIC to:
  - 10/100BASE-T (3)
  - 20-Pin Male Header (8)
  - USB-UART (17)
  - 9-Axis IMU (18)
  - Backlight Controller (12)
  - COM to CSI2 Connector (9)
- LINE_IN to Dual Audio (in / out) (6)
- I2C2 to 5.0” Flip-Side Connector For Newhaven Capacitive Multi-Touch Screen (1)
- I2C3 to:
  - 9-Axis IMU (18)
  - COM to CSI2 Connector (9)
- GPIO138 to HDMI to Parallel Converter (5)
- BRIGHTNESS to Backlight Controller (12)
- GPIO168 to COM to CSI2 Connector (9)
- USB_DEVICE to Micro-B Jack (16)
- GPIO121 to Flip-side Tactile Switch (19)
- GPIO83 to 9-Axis IMU (18)
- GPIO82 to 9-Axis IMU (18)
- GPIO81 to 9-Axis IMU (18)

1.3 Network

1.3.1 10/100BASE-T (v10) (3)

This design offers a 10/100 Base-T Ethernet connection to GPMC on Gumstix - DuoVero COM Connector (2).

1.4 Power

1.4.1 Battery & Barrel Power Supply (v1) (4)

This module is able provides 5V 5A DC power to circuit board.

This power jack provides 5V to the following modules:

- Dual Stacked USB Type A (7)
- 20-Pin Male Header (8)
- 3-Port USB Hub (10)

- Backlight Controller (12)
- 3.3V/1.5A Regulator (13)
- 3.3V/1.5A Regulator (14)

1.4.2 CoinCell Backup (v3) (11)

The 6.8mm coin cell battery holder offers a short-term backup power option for your design.

This battery is connected to VBACKUP on Gumstix - DuoVero COM Connector (2).

1.4.3 Backlight Controller (v4) (12)

The backlight controller regulates the intensity of illumination on LCD touch displays

Converts BRIGHTNESS from Gumstix - DuoVero COM Connector (2) to BACKLIGHT on 5.0” Flip-Side Connector For Newhaven Capacitive Multi-Touch Screen (1)

1.4.4 3.3V/1.5A Regulator (v9) (13)

This DC to DC step down regulator provides a 3.3V DC output at 1.5A needed by certain components on this board. It is capable of accepting an input voltage between 3.1 to 16V DC. Currently, its input is 5V from Battery & Barrel Power Supply (4).

This regulator provides 3.3V to:

- 5.0” Flip-Side Connector For Newhaven Capacitive Multi-Touch Screen (1)
- 10/100BASE-T (3)
- HDMI to Parallel Converter (5)
- 3-Port USB Hub (10)
- 9-Axis IMU (18)
- Flip-side Tactile Switch (19)
- Flip-side Tactile Switch (20)
- 1.8V/0.6A Regulator (21)
- Flip-side Green LED (22)
- Flip-side Blue LED (23)
- Flip-side Red LED (24)

1.4.5 3.3V/1.5A Regulator (v9) (14)

This DC to DC step down regulator provides a 3.3V DC output at 1.5A needed by certain components on this board. It is capable of accepting an input voltage between 3.1 to 16V DC. Currently, its input is 5V from Battery & Barrel Power Supply (4).

This regulator provides 3.3V to:

- Gumstix - DuoVero COM Connector (2)
- COM to CSI2 Connector (9)

1.4.6 1.8V/0.6A Regulator (v6) (21)

This DC-DC regulator has an integrated inductor and tiny footprint. It provides power to modules that need a 1.8V input.

It recieves 3.3V from 3.3V/1.5A Regulator (13). A SYS_EN signal is provided by .

The following modules receive 1.8V DC from this regulator:

- Gumstix - DuoVero COM Connector (2)

1.5 Connectivity

1.5.1 HDMI to Parallel Converter (v3) (5)

This module connects and converts 5.0” Flip-Side Connector For Newhaven Capacitive Multi-Touch Screen (1) to HDMI on Gumstix - DuoVero COM Connector (2)

1.5.2 USB-UART (v14) (17)

Also known as an FTDI, this USB to UART converter allows a USB connection to the board to behave as a virtual RS232 serial connection. It offers direct and complete access to the system from a development machine.

This USB to UART converter connects a host machine from Micro-B Jack (15) to UART3 on Gumstix - DuoVero COM Connector (2).

1.6 Audio

1.6.1 Dual Audio (in / out) (v9) (6)

These two standard 3-position 3.5mm audio jacks offer stereo line input and stereo audio output. They are connected to Gumstix - DuoVero COM Connector (2).

1.7 USB

1.7.1 Dual Stacked USB Type A (v6) (7)

A dual type-A USB host stacked vertically that allows you to connect USB devices to the board.

It is connected to:

- USBH1 on 3-Port USB Hub (10)
- USBH2 on 3-Port USB Hub (10)

1.7.2 3-Port USB Hub (v10) (10)

This USB hub offers three interfaces for USB ports from USB_HOST on Gumstix - DuoVero COM Connector (2).

This hub is connected to the following USB ports:

- Dual Stacked USB Type A (7)
- Dual Stacked USB Type A (7)

1.7.3 Micro-B Jack (v8) (15)

A USB micro-B port allows your design to connect as a USB device to a USB host.

This module is connected to USB_DEVICE on USB-UART (17).

1.7.4 Micro-B Jack (v8) (16)

A USB micro-B port allows your design to connect as a USB device to a USB host.

This module is connected to USB_DEVICE on Gumstix - DuoVero COM Connector (2).

1.8 Headers

1.8.1 20-Pin Male Header (v8) (8)

A header offering up to 20 pins for various GPIO or PWM signals of your choice.

This module has the following connections:

- VOUT from Battery & Barrel Power Supply (4)
- GPIO154 from Gumstix - DuoVero COM Connector (2)
- GPIO153 from Gumstix - DuoVero COM Connector (2)
- GPIO156 from Gumstix - DuoVero COM Connector (2)
- GPIO155 from Gumstix - DuoVero COM Connector (2)

- GPIO152 from Gumstix - DuoVero COM Connector (2)
- GPIO151 from Gumstix - DuoVero COM Connector (2)
- NC1 from NC (26)
- NC1 from NC (25)
- GPIO112 from Gumstix - DuoVero COM Connector (2)
- VLOGIC from Gumstix - DuoVero COM Connector (2)
- GPIO134 from Gumstix - DuoVero COM Connector (2)
- PMIC_PWM2 from Gumstix - DuoVero COM Connector (2)
- PMIC_PWM1 from Gumstix - DuoVero COM Connector (2)
- GPIO110 from Gumstix - DuoVero COM Connector (2)
- GPIO136 from Gumstix - DuoVero COM Connector (2)
- GPIO135 from Gumstix - DuoVero COM Connector (2)
- GPIO137 from Gumstix - DuoVero COM Connector (2)

1.8.2 COM to CSI2 Connector (v6) (9)

The CSI connector is compatible with Raspberry Pi family cameras.

The CSI port is connected to CSI21 on Gumstix - DuoVero COM Connector (2).

I2C communication is connected to I2C3 on Gumstix - DuoVero COM Connector (2).

REF_CLK is provided by FREF_CLK1_OUT on Gumstix - DuoVero COM Connector (2).

1.8.3 NC (v6) (25)

Implemented as a test pad.

1.8.4 NC (v6) (26)

Implemented as a test pad.

1.9 Sensors

1.9.1 9-Axis IMU (v16) (18)

This module provides 3-axis acceleration, 3-axis rotational rates and 3-axis magnetic field information. It is connected via a SPI bus. Data-ready pins are provided.

Its I2C bus is connected to I2C3 on Gumstix - DuoVero COM Connector (2)

It has the following data ready signals:

- ACCEL_DRDY to GPIO81 on Gumstix - DuoVero COM Connector (2)
- GYRO_DRDY to GPIO82 on Gumstix - DuoVero COM Connector (2)
- MAG_DRDY to GPIO83 on Gumstix - DuoVero COM Connector (2)

1.10 IO

1.10.1 Flip-side Tactile Switch (v4) (19)

This 4.9 sq. mm light touch switch provides a user input for the signal on . It can be found on the flip-side of the board.

1.10.2 Flip-side Tactile Switch (v4) (20)

This 4.9 sq. mm light touch switch provides a user input for the signal on . It can be found on the flip-side of the board.

1.10.3 Flip-side Green LED (v3) (22)

This 1608 standard size green LED, placed on the backside, provides an indicator for the signal SYS_EN on Gumstix - DuoVero COM Connector (2).

1.10.4 Flip-side Blue LED (v3) (23)

This 1608 standard size blue LED, placed on the backside, provides an indicator for the signal GPIO122 on Gumstix - DuoVero COM Connector (2).

1.10.5 Flip-side Red LED (v5) (24)

This 1608 standard size red LED, placed on the backside, provides an indicator for the signal GPIO139 on Gumstix - DuoVero COM Connector (2).

1.11 Mechanical

1.11.1 Mounting Hole (2.2mm)

A #0 mounting hole for securing the board with mounting pins.

1.11.2 Mounting Hole (2.2mm)

A #0 mounting hole for securing the board with mounting pins.

1.11.3 Mounting Hole (2.2mm)

A #0 mounting hole for securing the board with mounting pins.

1.11.4 Mounting Hole (2.2mm)

A #0 mounting hole for securing the board with mounting pins.

2 Module Connections Graph

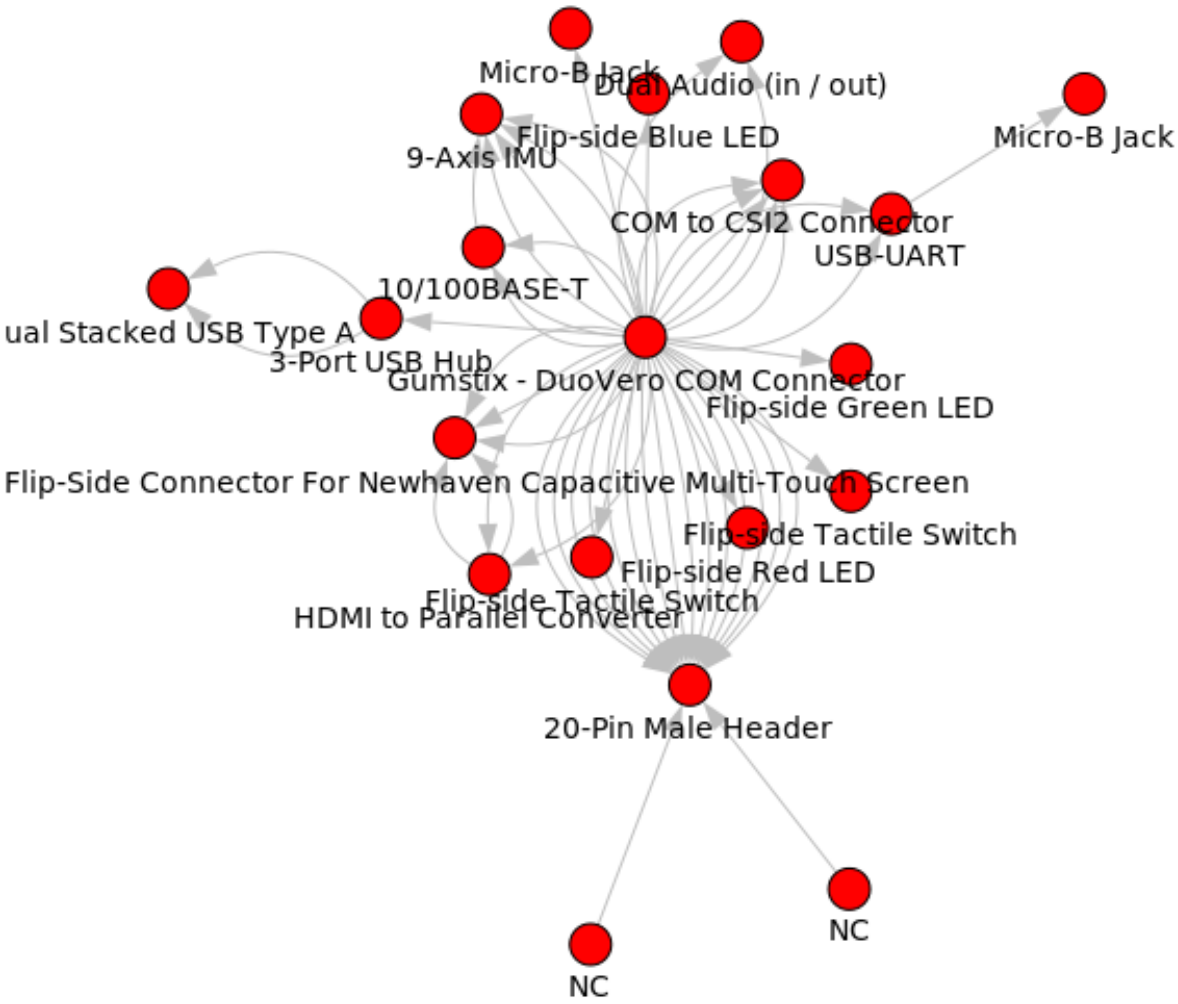
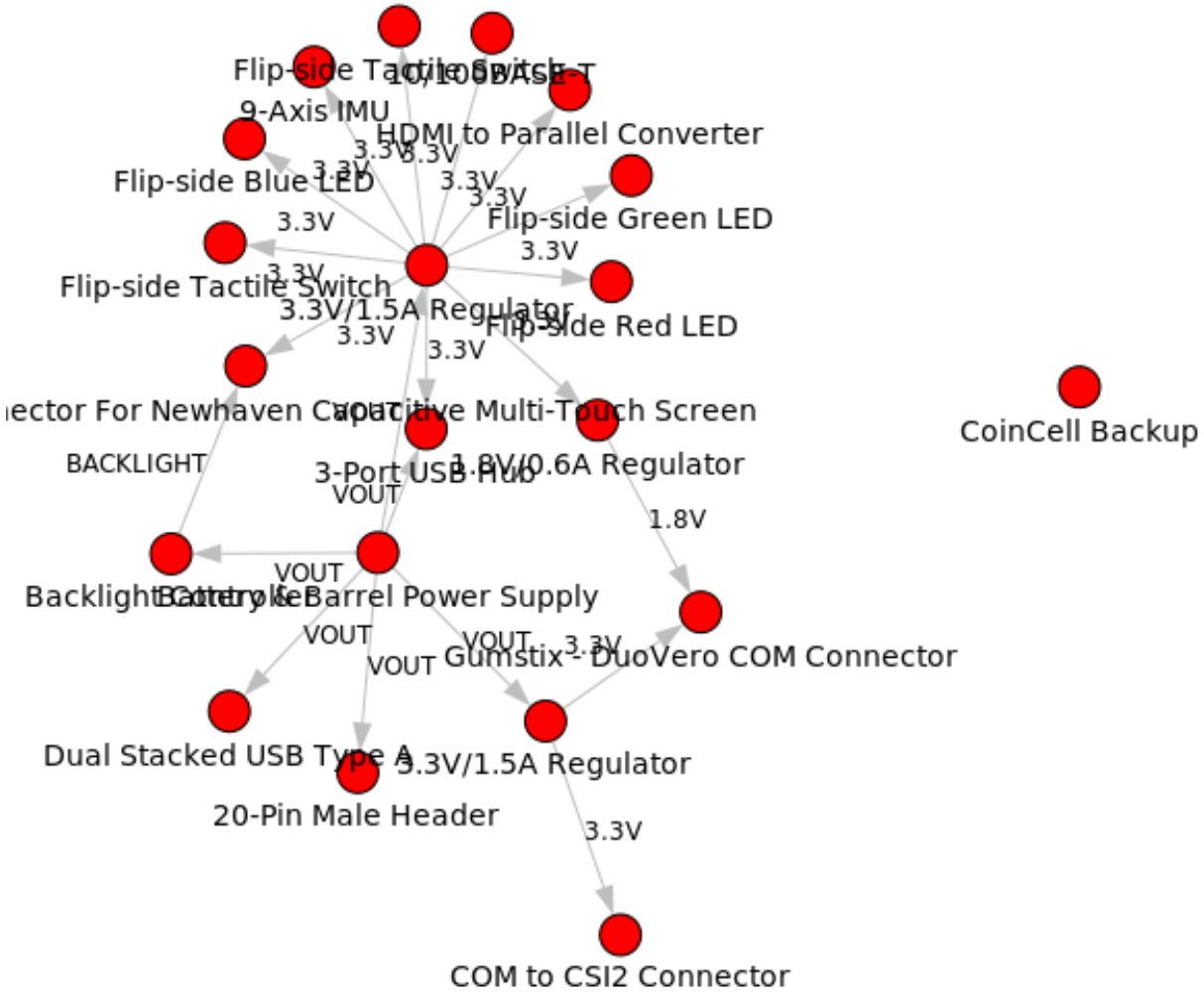


Figure 1: excludes power modules

3 Module Power Graph



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