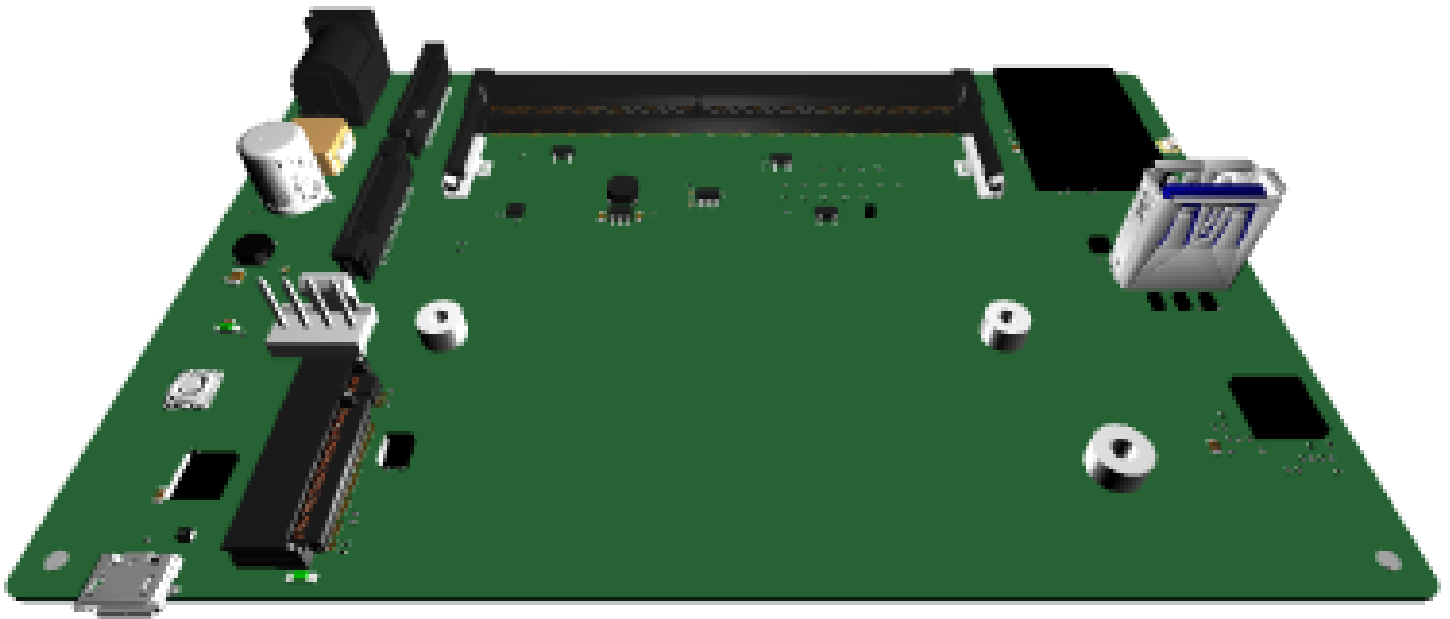


Jetson Nano WiFi SSD



This board was designed and built by Geppetto

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No Minimum Order

Automated Supply Chain

Reduce Cost and Errors

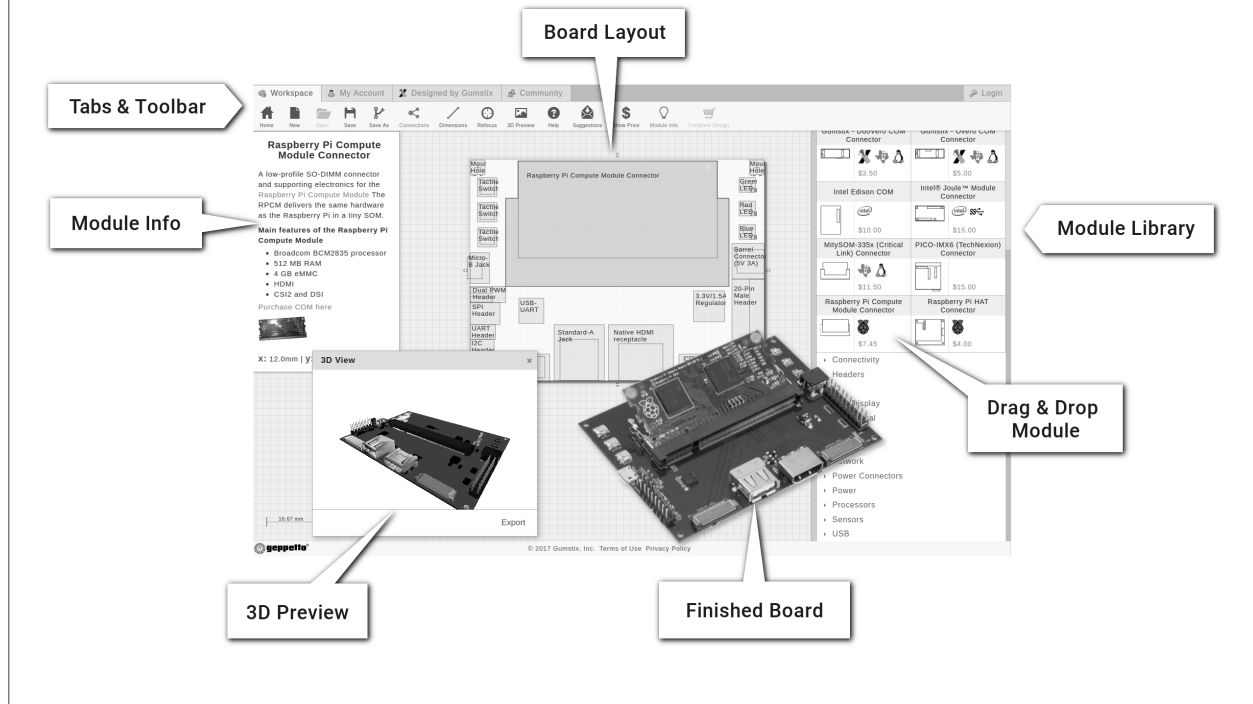


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Thanks for using Geppetto to design this board!

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Board Description

Uses NVIDIA Jetson Nano COM Connector as its COM/processor.

Functional modules include:

4-Pin 5V Computer Fan

USB Micro-B Jack

USB-UART

Raspberry Pi Camera Connector

Raspberry Pi Camera Connector

USB 3.0 Standard-A Jack (Vertical)

4-Port USB 3.0 Hub

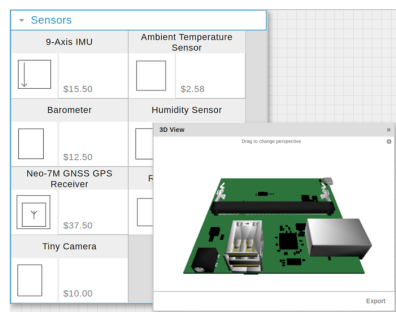
FN-Link RTL8822BU USB WiFi+BT

Powered by a Barrel Connector (20V 3A).

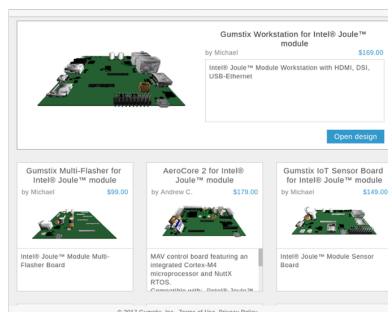
Board Dimensions

13cm x 8.5cm

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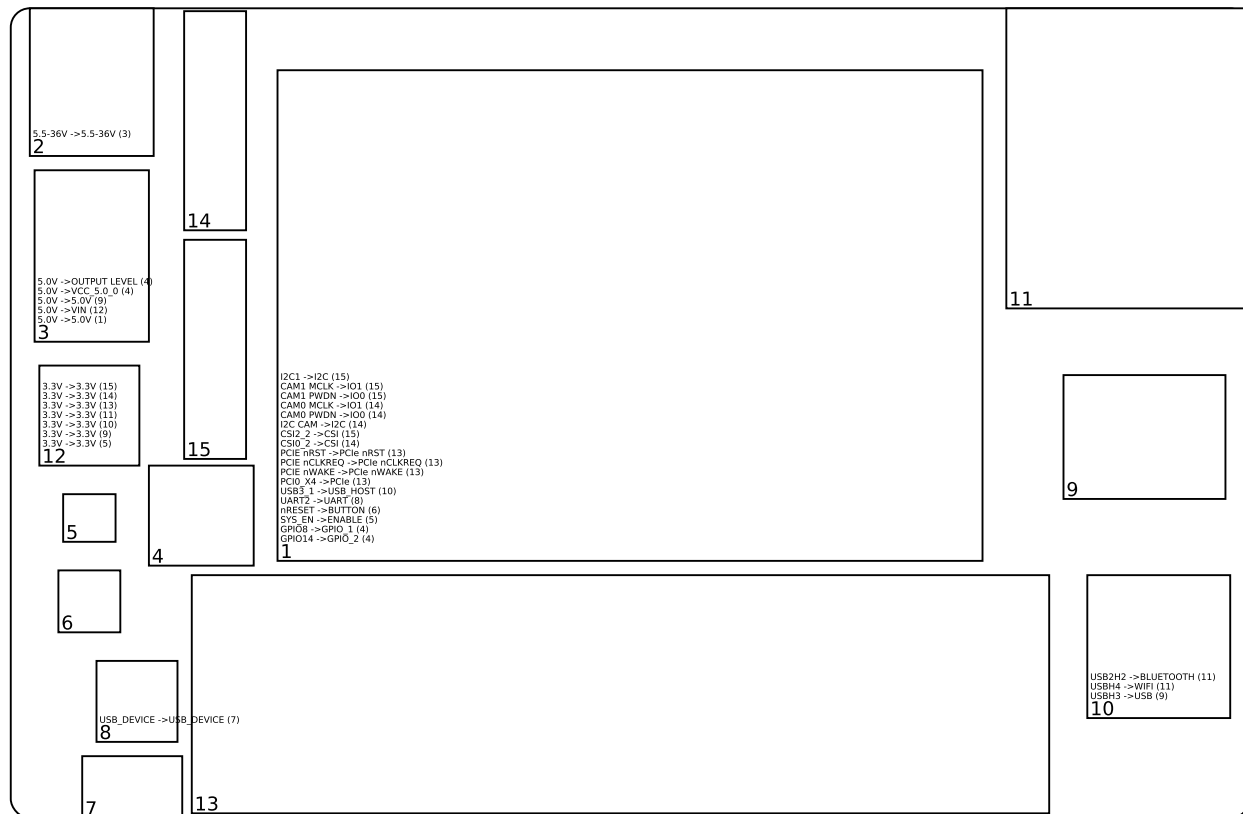
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1 Modules on Board



1.1 COM Connectors

1.1.1 NVIDIA Jetson Nano COM Connector (v5) (1)

The NVIDIA Jetson Nano brings Artificial Intelligence to devices at the edge. Bringing this powerful system to smaller devices allows for advanced robotics, intelligent cameras and complex data analysis, all without needing a connection to the internet.

Check out the full capabilities at <https://developer.nvidia.com/embedded-computing>

The NVIDIA® Jetson™ module connector receives:

- 5.0V from 5V/5A Regulator (3)

The NVIDIA® Jetson™ module connector provides the following outputs:

- GPIO14 to 4-Pin 5V Computer Fan (4)
- GPIO8 to 4-Pin 5V Computer Fan (4)
- SYS_EN to Top-side LED (5)
- nRESET to Tactile Switch (6)

- UART2 to USB-UART (8)
- USB3_1 to 4-Port USB 3.0 Hub (10)
- PCI0_X4 to M.2 Key M Connector (13)
- PCIE nWAKE to M.2 Key M Connector (13)
- PCIE nCLKREQ to M.2 Key M Connector (13)
- PCIE nRST to M.2 Key M Connector (13)
- CSI0_2 to Raspberry Pi Vertical Camera Connector (14)
- CSI2_2 to Raspberry Pi Vertical Camera Connector (15)
- I2C CAM to Raspberry Pi Vertical Camera Connector (14)
- CAM0 PWDN to Raspberry Pi Vertical Camera Connector (14)
- CAM0 MCLK to Raspberry Pi Vertical Camera Connector (14)
- CAM1 PWDN to Raspberry Pi Vertical Camera Connector (15)
- CAM1 MCLK to Raspberry Pi Vertical Camera Connector (15)
- I2C1 to Raspberry Pi Vertical Camera Connector (15)

1.2 Power Connectors

1.2.1 Barrel Connector (20V 3A) (v7) (2)

This power jack is compatible with Gumstix 20V/3A DC power adapter using a barrel connector.

This power jack provides 12V to the following modules:

- 5V/5A Regulator (3)

1.3 Power

1.3.1 5V/5A Regulator (v14) (3)

Takes 5.5 - 36V input from Barrel Connector (20V 3A) (2) and provides up to 5A at 5V to:

- NVIDIA Jetson Nano COM Connector (1)
- 3.3V/1.5A Regulator (12)
- USB 3.0 Standard-A Jack (Vertical) (9)
- 4-Pin 5V Computer Fan (4)
- 4-Pin 5V Computer Fan (4)

1.3.2 3.3V/1.5A Regulator (v20) (12)

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 and output is controlled by the TI TPS6211 buck regulator.

It receives VIN from 5V/5A Regulator (3).

The datasheet for the TPS6211 regulator is available at:

<http://www.ti.com/lit/ds/symlink/tps62110.pdf>

This regulator provides 3.3V to:

- Top-side LED (5)
- USB 3.0 Standard-A Jack (Vertical) (9)
- 4-Port USB 3.0 Hub (10)
- FN-Link RTL8822BU USB WiFi+BT (11)
- M.2 Key M Connector (13)
- Raspberry Pi Vertical Camera Connector (14)
- Raspberry Pi Vertical Camera Connector (15)

1.4 Custom Modules

1.4.1 4-Pin 5V Computer Fan (v2) (4)

The 4-pin header module offers up to 4 pins that can be used at the customer's discretion. It is commonly used for standard computer fans.

https://www.molex.com/pdm_docs/sd/470531000_sd.pdf

This module has the following connections:

- GPIO_2 to GPIO14 from NVIDIA Jetson Nano COM Connector (1)
- GPIO_1 to GPIO8 from NVIDIA Jetson Nano COM Connector (1)
- VCC_5.0_0 to 5.0V from 5V/5A Regulator (3)
- OUTPUT LEVEL to 5.0V from 5V/5A Regulator (3)

1.5 Lights and Switches

1.5.1 Top-side LED (v9) (5)

The top-side LED module contains a 1608 standard size LED of a user-selected color, mounted on the top side of a Geppetto board.

The LED is active-high on SYS_EN from NVIDIA Jetson Nano COM Connector (1).

1.5.2 Tactile Switch (v22) (6)

This 4.9 sq. mm pull-down touch switch provides a user input for the signal nRESET on NVIDIA Jetson Nano COM Connector (1).

1.6 USB

1.6.1 USB Micro-B Jack (v19) (7)

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

This module is connected to USB_DEVICE on USB-UART (8).

This module does not supply power.

1.6.2 USB 3.0 Standard-A Jack (Vertical) (v11) (9)

A standard A USB 3.0 host port that allows you to connect USB devices to the board, oriented vertically. This port is connected to USBH3 on 4-Port USB 3.0 Hub (10).

1.6.3 4-Port USB 3.0 Hub (v15) (10)

This USB hub offers four interfaces for USB 3.0 or USB 2.0 ports from USB3_1 on NVIDIA Jetson Nano COM Connector (1).

1.7 Converters

1.7.1 USB-UART (v21) (8)

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 by way of the FTDI FT232RQ USB – UART IC.

Technical documentation for the FT232RQ is available at:

http://www.ftdichip.com/Support/Documents/DataSheets/ICs/DS_FT232R.pdf

This USB to UART converter connects a host machine from USB Micro-B Jack (7) to UART2 on NVIDIA Jetson Nano COM Connector (1).

1.8 Network and Wireless

1.8.1 FN-Link RTL8822BU USB WiFi+BT (v2) (11)

The 6222D-UUB WiFi/BT module from Fn-Link is a total solution for a combination of WiFi + BT technologies and possess following specs. It has Highly integrated wireless local area network(WLAN) system-on-chip (SOC) for 5 GHZ 802.11ac, or 2.4G/5G 802.11n WLAN applications. The module features Dual-stream spatial multiplexing up to 867 Mbps data rate. It supports 20/40MHz at 2.4GHz and

supports 20/40/80MHz at 5GHz. It has USB interface for WLAN and Bluetooth. It supports Bluetooth V4.2+HS, BLE and be backwards compatible with Bluetooth 1.2, 2.X+ enhance data rate. The Bluetooth is classified for class1 and class2 power level transmissions. The supply voltage range of the module is 3.15V-3.45V.

The datasheet for the 6222D-UUB module is available from Fn-Link at:

<https://www.fn-link.com/uploadfile/2018/0530/20180530045842272.pdf>

The module connects to the following buses:

- WIFI to USBH4 on 4-Port USB 3.0 Hub (10)
- BLUETOOTH to USB2H2 on 4-Port USB 3.0 Hub (10)
-

1.9 Connectors (Signal)

1.9.1 M.2 Key M Connector (v1) (13)

The a M.2, Key M Mini-PCIe Expansion slot includes interface options for PCIe (x1, X2, or X4) for SSD's.

The M.2 Key M Connector module receives the following inputs:

- PCIe from NVIDIA Jetson Nano COM Connector (1)
- PCIe nWAKE from NVIDIA Jetson Nano COM Connector (1)
- PCIe nCLKREQ from NVIDIA Jetson Nano COM Connector (1)
- PCIe nRST from NVIDIA Jetson Nano COM Connector (1)
- 3.3V from 3.3V/1.5A Regulator (12)

1.9.2 Raspberry Pi Vertical Camera Connector (v3) (14)

The Raspberry Pi Vertical camera connector module is a 15-pin ribbon connector that exposes a 2-lane MIPI camera system to an external high-resolution camera module.

The CSI port is connected to CSI0.2 on NVIDIA Jetson Nano COM Connector (1).

I2C communication is connected to I2C CAM on NVIDIA Jetson Nano COM Connector (1).

GPIO inputs IO0 and IO1 are provided by CAM0 PWDN on NVIDIA Jetson Nano COM Connector (1) and CAM0 MCLK on NVIDIA Jetson Nano COM Connector (1), respectively.

1.9.3 Raspberry Pi Vertical Camera Connector (v3) (15)

The Raspberry Pi Vertical camera connector module is a 15-pin ribbon connector that exposes a 2-lane MIPI camera system to an external high-resolution camera module.

The CSI port is connected to CSI2.2 on NVIDIA Jetson Nano COM Connector (1).

I2C communication is connected to I2C1 on NVIDIA Jetson Nano COM Connector (1).

GPIO inputs IO0 and IO1 are provided by CAM1 PWDN on NVIDIA Jetson Nano COM Connector (1) and CAM1 MCLK on NVIDIA Jetson Nano COM Connector (1), respectively.

2 Module Connections Graph

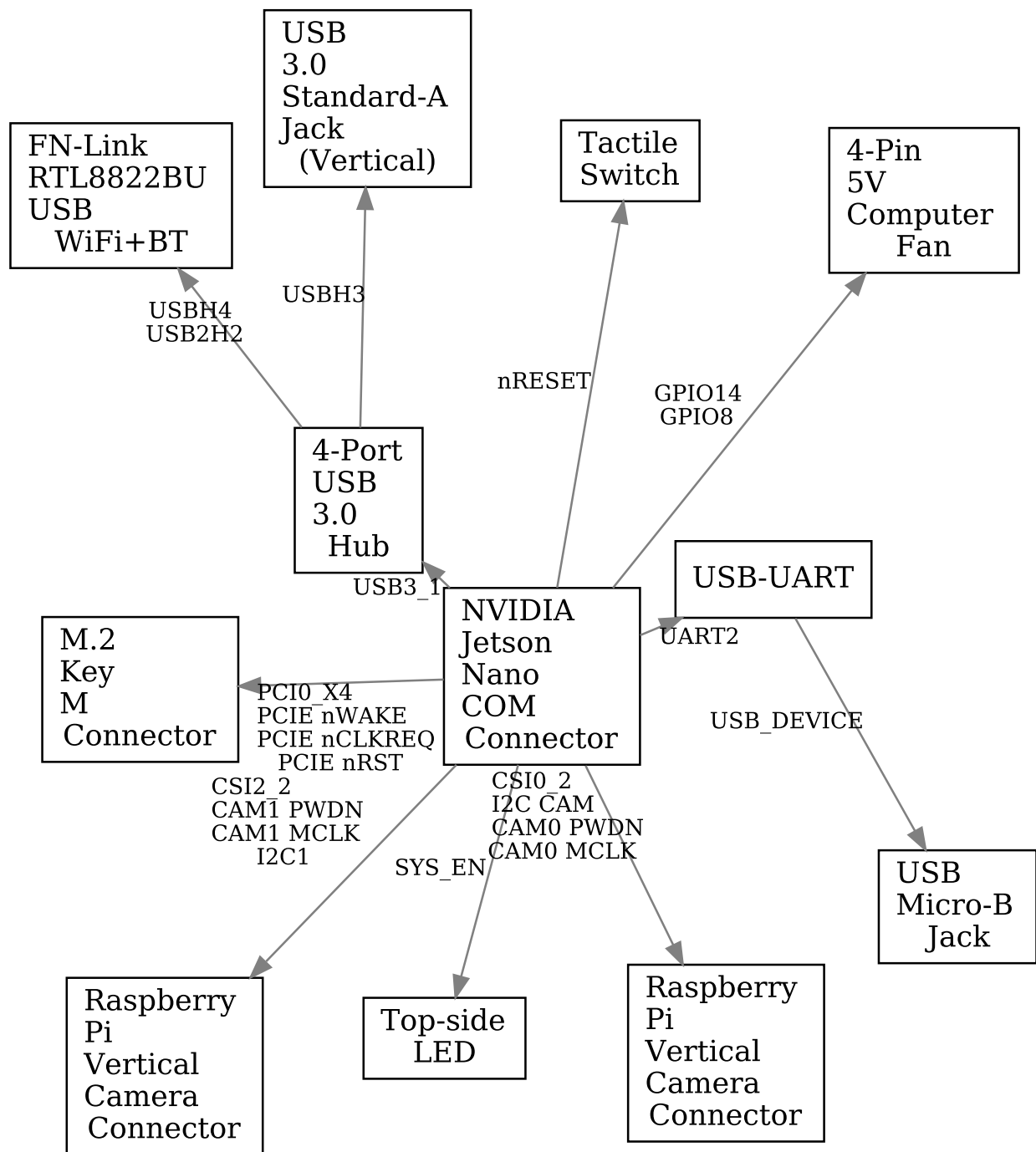


Figure 1: excludes power modules

3 Module Power Graph

