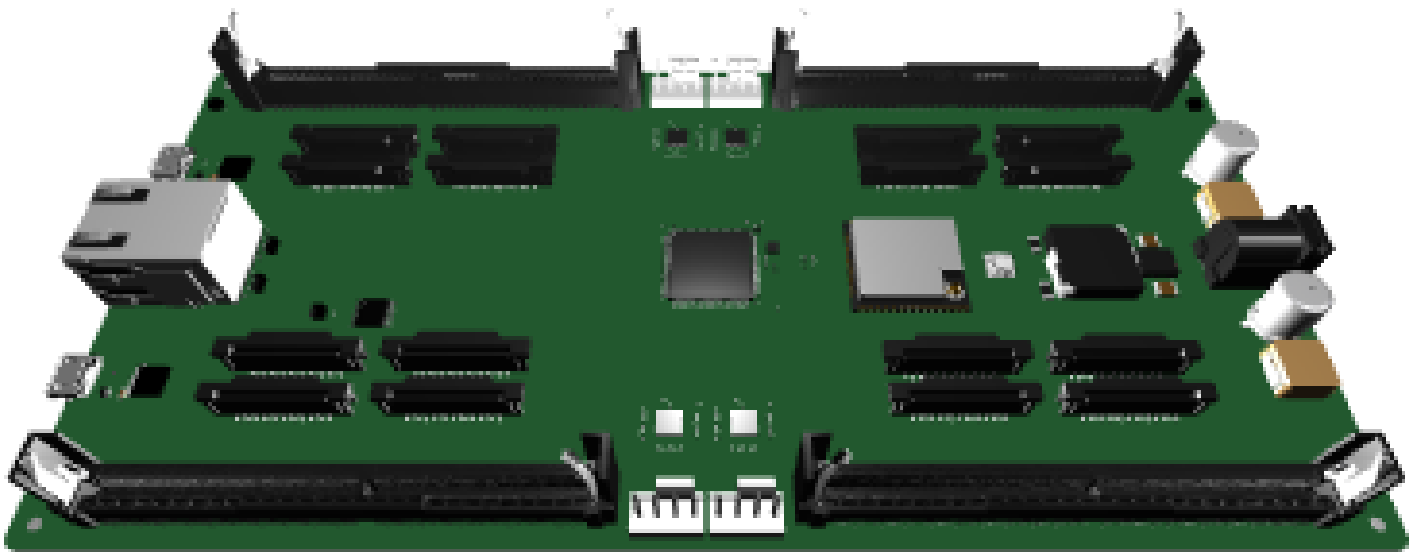


NVIDIA Jetson Camera Board



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No Minimum Order

Automated Supply Chain

Reduce Cost and Errors

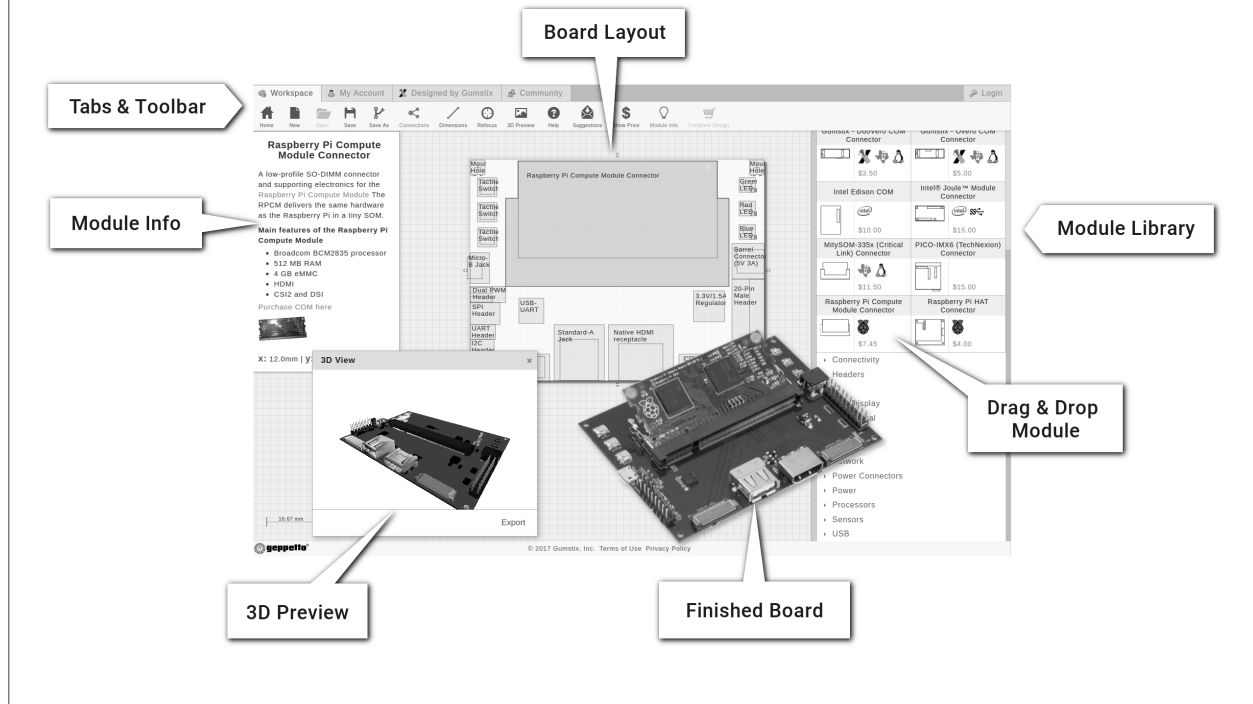


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Board Description

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

Functional modules include:

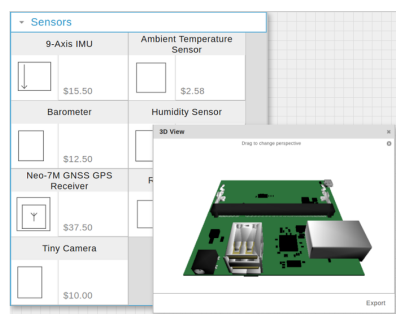
- RMII Bridge
- 5-Port Gigabit Switch
- Analog Devices ADG709 4-Channel Mux
- Ethernet Connector
- USB Micro-B Jack
- USB Micro-B Jack
- USB-UART
- USB-UART
- UART Bridge
- UART Bridge

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

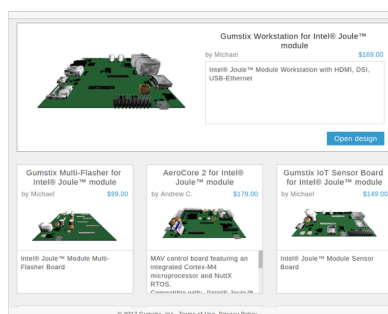
Board Dimensions

19.5cm x 9.5cm

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1.1.1 RMII Bridge (v1) (1)

- RMII_1 from 5-Port Gigabit Switch (2)
- RMII_2 from Espressif ESP32-WROOM-32U (3)

The datasheet is available at https://www.analog.com/media/en/technical-documentation/data-sheets/ADG708_709.pdf

- 3.3V from 3.3V/8.0A Regulator (12)

- UART3 to UART Bridge (20)
- UART2 to UART Bridge (21)
- UART1 to UART Bridge (22)
- UART4 to UART Bridge (23)
- UART to UART Mux (2 input) (24)

1.1.3 USB-UART (v21) (16)

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 (14) to UART DOWN-LOAD on Espressif ESP32-WROOM-32U (3).

1.1.4 USB-UART (v21) (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 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 (15) to UART on UART Mux (2 input) (24).

1.1.5 UART Bridge (v14) (20)

A UART-UART bridge interfaces two modules with UART lines (e.g., interfacing two processors).

This UART bridge connects UART2 on NVIDIA Jetson Nano COM Vertical Connector (4) to UART3 on Analog Devices ADG709 4-Channel Mux (8).

1.1.6 UART Bridge (v14) (21)

A UART-UART bridge interfaces two modules with UART lines (e.g., interfacing two processors).

This UART bridge connects UART2 on NVIDIA Jetson Nano COM Vertical Connector (5) to UART2 on Analog Devices ADG709 4-Channel Mux (8).

1.1.7 UART Bridge (v14) (22)

A UART-UART bridge interfaces two modules with UART lines (e.g., interfacing two processors).

This UART bridge connects UART2 on NVIDIA Jetson Nano COM Vertical Connector (7) to UART1 on Analog Devices ADG709 4-Channel Mux (8).

1.1.8 UART Bridge (v14) (23)

A UART-UART bridge interfaces two modules with UART lines (e.g., interfacing two processors).

This UART bridge connects UART2 on NVIDIA Jetson Nano COM Vertical Connector (6) to UART4 on Analog Devices ADG709 4-Channel Mux (8).

1.1.9 UART Mux (2 input) (v4) (24)

A bidirectional 2 x SPDT switch connects two UART interfaces (RX/TX only) to a single UART peripheral. A SELECT line is used to control which UART is output, by default UART1 is selected.

This UART switch connects UART on Analog Devices ADG709 4-Channel Mux (8) or UART2 on Espressif ESP32-WROOM-32U (3) to UART on USB-UART (17).

The output is controlled by NC2 on NC (25).

1.1.10 TI TCA9548A I2C Switch (v1) (26) — I2C Switch - 2

The TI TCA9548A I2C Switch module offers up to 8 muxed I2C buses from a single I2C host.

<http://www.ti.com/lit/ds/symlink/tca9548a.pdf>

This module has the following upstream connections:

- I2C to I2C CAM from NVIDIA Jetson Nano COM Vertical Connector (5)
- 3.3V to 3.3V from 3.3V/8.0A Regulator (12)
- OUTPUT VOLTAGE to 3.3V from 3.3V/8.0A Regulator (12)

The TI TCA9548A I2C Switch provides the following outputs:

- I2C0 to Raspberry Pi Vertical Camera Connector (34)
- I2C1 to Raspberry Pi Vertical Camera Connector (35)
- I2C2 to Raspberry Pi Vertical Camera Connector (37)
- I2C3 to Raspberry Pi Vertical Camera Connector (36)

1.1.11 TI TCA9548A I2C Switch (v1) (27) — I2C Switch - 3

The TI TCA9548A I2C Switch module offers up to 8 muxed I2C buses from a single I2C host.

<http://www.ti.com/lit/ds/symlink/tca9548a.pdf>

This module has the following upstream connections:

- I2C to I2C CAM from NVIDIA Jetson Nano COM Vertical Connector (4)
- 3.3V to 3.3V from 3.3V/8.0A Regulator (12)
- OUTPUT VOLTAGE to 3.3V from 3.3V/8.0A Regulator (12)

The TI TCA9548A I2C Switch provides the following outputs:

- I2C0 to Raspberry Pi Vertical Camera Connector (38)

- I2C1 to Raspberry Pi Vertical Camera Connector (39)
- I2C2 to Raspberry Pi Vertical Camera Connector (41)
- I2C3 to Raspberry Pi Vertical Camera Connector (40)

1.1.12 TI TCA9548A I2C Switch (v1) (28) — I2C Switch - 4

The TI TCA9548A I2C Switch module offers up to 8 muxed I2C buses from a single I2C host.

<http://www.ti.com/lit/ds/symlink/tca9548a.pdf>

This module has the following upstream connections:

- I2C to I2C CAM from NVIDIA Jetson Nano COM Vertical Connector (6)
- 3.3V to 3.3V from 3.3V/8.0A Regulator (12)
- OUTPUT VOLTAGE to 3.3V from 3.3V/8.0A Regulator (12)

The TI TCA9548A I2C Switch provides the following outputs:

- I2C0 to Raspberry Pi Vertical Camera Connector (45)
- I2C1 to Raspberry Pi Vertical Camera Connector (44)
- I2C2 to Raspberry Pi Vertical Camera Connector (42)
- I2C3 to Raspberry Pi Vertical Camera Connector (43)

1.1.13 TI TCA9548A I2C Switch (v1) (29) — I2C Switch - 1

The TI TCA9548A I2C Switch module offers up to 8 muxed I2C buses from a single I2C host.

<http://www.ti.com/lit/ds/symlink/tca9548a.pdf>

This module has the following upstream connections:

- I2C to I2C CAM from NVIDIA Jetson Nano COM Vertical Connector (7)
- 3.3V to 3.3V from 3.3V/8.0A Regulator (12)
- OUTPUT VOLTAGE to 3.3V from 3.3V/8.0A Regulator (12)

The TI TCA9548A I2C Switch provides the following outputs:

- I2C0 to Raspberry Pi Vertical Camera Connector (32)
- I2C1 to Raspberry Pi Vertical Camera Connector (33)
- I2C2 to Raspberry Pi Vertical Camera Connector (31)
- I2C3 to Raspberry Pi Vertical Camera Connector (30)

1.2 Network and Wireless

1.2.1 5-Port Gigabit Switch (v20) (2)

This module is a 5-Port Gigabit Switch. It has 5 ports that incorporate 10/100/1000 Mbps PHYs and 2 ports that can be configured as SGMII, RGMII, MII or RMII.

For technical data on the KSZ9897, download the datasheet at:

It receives 3.3V from 3.3V/8.0A Regulator (12).

SPI from Espressif ESP32-WROOM-32U (3).

RESET from Espressif ESP32-WROOM-32U (3).

<http://ww1.microchip.com/downloads/en/DeviceDoc/00002330B.pdf>

The 5-Port Gigabit Switch provides the following outputs:

- RMII1 to RMII Bridge (1)
- ETH1 to Ethernet PHY Bridge (56)
- ETH2 to Ethernet Connector (13)
- ETH3 to Ethernet PHY Bridge (57)
- ETH4 to Ethernet PHY Bridge (54)
- ETH5 to Ethernet PHY Bridge (55)

1.2.2 Ethernet Connector (v5) (13)

This module offers a 10/100 Base-T or 1000 Base-T Ethernet connection.

The module provides ethernet to

ETH2 on 5-Port Gigabit Switch (2)

1.3 Processors

1.3.1 Espressif ESP32-WROOM-32U (v4) (3)

ESP32-WROOM-32D and ESP32-WROOM-32U are powerful, generic Wi-Fi+BT+BLE MCU modules that target a wide variety of applications, ranging from low-power sensor networks to the most demanding tasks, such as voice encoding, music streaming and MP3 decoding.

3.3V operation. Requires:

- EN from NC (19)
- 3.3V from 3.3V/8.0A Regulator (12)

Provides:

- RMII to RMII Bridge (1)
- HSPI to 5-Port Gigabit Switch (2)
- GPIO4 to 5-Port Gigabit Switch (2)
- UART2 to UART Mux (2 input) (24)
- UART DOWNLOAD to USB-UART (16)

1.4 COM Connectors

1.4.1 NVIDIA Jetson Nano COM Vertical Connector (v1) (4) — Nano - #3

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 (10)

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

- UART2 to UART Bridge (20)
- I2C CAM to TI TCA9548A I2C Switch (27)
- CAM1 PWDN to Raspberry Pi Vertical Camera Connector (38)
- CAM1 MCLK to Raspberry Pi Vertical Camera Connector (38)
- CAM0 PWDN to Raspberry Pi Vertical Camera Connector (39)
- CAM0 MCLK to Raspberry Pi Vertical Camera Connector (39)
- 1000BaseT to Ethernet PHY Bridge (56)
- GPIO14 to 4-Pin 5V Computer Fan (59)
- GPIO8 to 4-Pin 5V Computer Fan (59)
- CSI0.2 to Raspberry Pi Vertical Camera Connector (38)
- CSI2.2 to Raspberry Pi Vertical Camera Connector (39)
- CSI3.2 to Raspberry Pi Vertical Camera Connector (41)
- CSI4.2 to Raspberry Pi Vertical Camera Connector (40)

1.4.2 NVIDIA Jetson Nano COM Vertical Connector (v1) (5) — Nano - #2

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 (10)

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

- UART2 to UART Bridge (21)
- I2C CAM to TI TCA9548A I2C Switch (26)
- CAM0 PWDN to Raspberry Pi Vertical Camera Connector (35)
- CAM0 MCLK to Raspberry Pi Vertical Camera Connector (35)
- CAM1 PWDN to Raspberry Pi Vertical Camera Connector (34)
- CAM1 MCLK to Raspberry Pi Vertical Camera Connector (34)
- 1000BaseT to Ethernet PHY Bridge (55)
- GPIO14 to 4-Pin 5V Computer Fan (58)
- GPIO8 to 4-Pin 5V Computer Fan (58)
- CSI0.2 to Raspberry Pi Vertical Camera Connector (34)
- CSI2.2 to Raspberry Pi Vertical Camera Connector (35)
- CSI3.2 to Raspberry Pi Vertical Camera Connector (37)
- CSI4.2 to Raspberry Pi Vertical Camera Connector (36)

1.4.3 NVIDIA Jetson Nano COM Vertical Connector (v1) (6) — Nano - #4

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 (11)

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

- UART2 to UART Bridge (23)
- I2C CAM to TI TCA9548A I2C Switch (28)

- CAM0 PWDN to Raspberry Pi Vertical Camera Connector (43)
- CAM0 MCLK to Raspberry Pi Vertical Camera Connector (43)
- CAM1 PWDN to Raspberry Pi Vertical Camera Connector (42)
- CAM1 MCLK to Raspberry Pi Vertical Camera Connector (42)
- 1000BaseT to Ethernet PHY Bridge (57)
- GPIO14 to 4-Pin 5V Computer Fan (60)
- GPIO8 to 4-Pin 5V Computer Fan (60)
- CSI0.2 to Raspberry Pi Vertical Camera Connector (45)
- CSI2.2 to Raspberry Pi Vertical Camera Connector (44)
- CSI3.2 to Raspberry Pi Vertical Camera Connector (42)
- CSI4.2 to Raspberry Pi Vertical Camera Connector (43)

1.4.4 NVIDIA Jetson Nano COM Vertical Connector (v1) (7) — Nano - #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 (11)

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

- UART2 to UART Bridge (22)
- I2C CAM to TI TCA9548A I2C Switch (29)
- CAM0 PWDN to Raspberry Pi Vertical Camera Connector (30)
- CAM0 MCLK to Raspberry Pi Vertical Camera Connector (30)
- CAM1 PWDN to Raspberry Pi Vertical Camera Connector (31)
- CAM1 MCLK to Raspberry Pi Vertical Camera Connector (31)
- 1000BaseT to Ethernet PHY Bridge (54)
- GPIO14 to 4-Pin 5V Computer Fan (61)
- GPIO8 to 4-Pin 5V Computer Fan (61)
- CSI0.2 to Raspberry Pi Vertical Camera Connector (32)
- CSI2.2 to Raspberry Pi Vertical Camera Connector (33)
- CSI3.2 to Raspberry Pi Vertical Camera Connector (31)
- CSI4.2 to Raspberry Pi Vertical Camera Connector (30)

1.5 Power Connectors

1.5.1 Barrel Connector (20V 3A) (v7) (9)

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 (10)
- 5V/5A Regulator (11)

1.6 Power

1.6.1 5V/5A Regulator (v14) (10)

Takes 5.5 - 36V input from Barrel Connector (20V 3A) (9) and provides up to 5A at 5V to:

- NVIDIA Jetson Nano COM Vertical Connector (4)
- NVIDIA Jetson Nano COM Vertical Connector (5)
- 4-Pin 5V Computer Fan (58)
- 4-Pin 5V Computer Fan (59)
- 4-Pin 5V Computer Fan (59)
- 4-Pin 5V Computer Fan (60)
- 4-Pin 5V Computer Fan (60)
- 4-Pin 5V Computer Fan (61)
- 4-Pin 5V Computer Fan (61)
- 4-Pin 5V Computer Fan (58)

1.6.2 5V/5A Regulator (v14) (11)

Takes 5.5 - 36V input from Barrel Connector (20V 3A) (9) and provides up to 5A at 5V to:

- NVIDIA Jetson Nano COM Vertical Connector (6)
- NVIDIA Jetson Nano COM Vertical Connector (7)
- 3.3V/8.0A Regulator (12)

1.6.3 3.3V/8.0A Regulator (v11) (12)

This DC to DC buck converter provides a 3.3V DC output at 8A needed by certain components on this board. It is capable of accepting an input voltage between 1.5V to 22V DC and output is controlled by the TI TPS53318 buck regulator.

It receives VIN from 5V/5A Regulator (11).

The datasheet for the TPS53318 regulator is available at:

<http://www.ti.com/lit/ds/symlink/tps53318.pdf>

This regulator provides 3.3V to:

- 5-Port Gigabit Switch (2)
- Espressif ESP32-WROOM-32U (3)
- Analog Devices ADG709 4-Channel Mux (8)
- Ethernet Connector (13)
- TI TCA9548A I2C Switch (26)
- TI TCA9548A I2C Switch (29)
- TI TCA9548A I2C Switch (27)
- TI TCA9548A I2C Switch (28)
- TI TCA9548A I2C Switch (29)
- TI TCA9548A I2C Switch (26)
- TI TCA9548A I2C Switch (27)
- TI TCA9548A I2C Switch (28)
- Raspberry Pi Vertical Camera Connector (30)
- Raspberry Pi Vertical Camera Connector (31)
- Raspberry Pi Vertical Camera Connector (32)
- Raspberry Pi Vertical Camera Connector (33)
- Raspberry Pi Vertical Camera Connector (35)
- Raspberry Pi Vertical Camera Connector (34)
- Raspberry Pi Vertical Camera Connector (37)
- Raspberry Pi Vertical Camera Connector (36)
- Raspberry Pi Vertical Camera Connector (39)
- Raspberry Pi Vertical Camera Connector (38)
- Raspberry Pi Vertical Camera Connector (40)
- Raspberry Pi Vertical Camera Connector (41)
- Raspberry Pi Vertical Camera Connector (42)

- Raspberry Pi Vertical Camera Connector (43)
- Raspberry Pi Vertical Camera Connector (44)
- Raspberry Pi Vertical Camera Connector (45)

1.7 USB

1.7.1 USB Micro-B Jack (v18) (14)

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 (16).

This module does not supply power.

1.7.2 USB Micro-B Jack (v18) (15)

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 (17).

This module does not supply power.

1.8 Lights and Switches

1.8.1 Tactile Switch (v22) (18)

This 4.9 sq. mm pull-down touch switch provides a user input for the signal NC2 on NC (19).

1.9 Headers

1.9.1 NC (v17) (19)

No connection

1.9.2 NC (v17) (25)

No connection

1.9.3 NC (v17) (46)

No connection

1.9.4 NC (v17) (47)

No connection

1.9.5 NC (v17) (48)

No connection

1.9.6 NC (v17) (49)

No connection

1.9.7 NC (v17) (50)

No connection

1.9.8 NC (v17) (51)

No connection

1.9.9 NC (v17) (52)

No connection

1.9.10 NC (v17) (53)

No connection

1.10 Connectors (Signal)**1.10.1 Raspberry Pi Vertical Camera Connector (v3) (30) — CAM - 1.4**

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 CSI4.2 on NVIDIA Jetson Nano COM Vertical Connector (7).

I2C communication is connected to I2C3 on TI TCA9548A I2C Switch (29).

GPIO inputs IO0 and IO1 are provided by CAM0 PWDN on NVIDIA Jetson Nano COM Vertical Connector (7) and CAM0 MCLK on NVIDIA Jetson Nano COM Vertical Connector (7), respectively.

1.10.2 Raspberry Pi Vertical Camera Connector (v3) (31) — CAM - 1.3

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 CSI3.2 on NVIDIA Jetson Nano COM Vertical Connector (7).

I2C communication is connected to I2C2 on TI TCA9548A I2C Switch (29).

GPIO inputs IO0 and IO1 are provided by CAM1 PWDN on NVIDIA Jetson Nano COM Vertical Connector (7) and CAM1 MCLK on NVIDIA Jetson Nano COM Vertical Connector (7), respectively.

1.10.3 Raspberry Pi Vertical Camera Connector (v3) (32) — CAM - 1.1

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 Vertical Connector (7).

I2C communication is connected to I2C0 on TI TCA9548A I2C Switch (29).

GPIO inputs IO0 and IO1 are provided by NC2 on NC (47) and CLK on NC (47), respectively.

1.10.4 Raspberry Pi Vertical Camera Connector (v3) (33) — CAM - 1.2

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 Vertical Connector (7).

I2C communication is connected to I2C1 on TI TCA9548A I2C Switch (29).

GPIO inputs IO0 and IO1 are provided by NC2 on NC (46) and CLK on NC (46), respectively.

1.10.5 Raspberry Pi Vertical Camera Connector (v3) (34) — CAM - 2.1

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 Vertical Connector (5).

I2C communication is connected to I2C0 on TI TCA9548A I2C Switch (26).

GPIO inputs IO0 and IO1 are provided by CAM1 PWDN on NVIDIA Jetson Nano COM Vertical Connector (5) and CAM1 MCLK on NVIDIA Jetson Nano COM Vertical Connector (5), respectively.

1.10.6 Raspberry Pi Vertical Camera Connector (v3) (35) — CAM - 2.2

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 Vertical Connector (5).

I2C communication is connected to I2C1 on TI TCA9548A I2C Switch (26).

GPIO inputs IO0 and IO1 are provided by CAM0 PWDN on NVIDIA Jetson Nano COM Vertical Connector (5) and CAM0 MCLK on NVIDIA Jetson Nano COM Vertical Connector (5), respectively.

1.10.7 Raspberry Pi Vertical Camera Connector (v3) (36) — CAM - 2.4

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 CSI4.2 on NVIDIA Jetson Nano COM Vertical Connector (5).

I2C communication is connected to I2C3 on TI TCA9548A I2C Switch (26).

GPIO inputs IO0 and IO1 are provided by NC2 on NC (48) and CLK on NC (48), respectively.

1.10.8 Raspberry Pi Vertical Camera Connector (v3) (37) — CAM - 2.3

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 CSI3.2 on NVIDIA Jetson Nano COM Vertical Connector (5).

I2C communication is connected to I2C2 on TI TCA9548A I2C Switch (26).

GPIO inputs IO0 and IO1 are provided by NC2 on NC (49) and CLK on NC (49), respectively.

1.10.9 Raspberry Pi Vertical Camera Connector (v3) (38) — CAM - 3.1

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 Vertical Connector (4).

I2C communication is connected to I2C0 on TI TCA9548A I2C Switch (27).

GPIO inputs IO0 and IO1 are provided by CAM1 PWDN on NVIDIA Jetson Nano COM Vertical Connector (4) and CAM1 MCLK on NVIDIA Jetson Nano COM Vertical Connector (4), respectively.

1.10.10 Raspberry Pi Vertical Camera Connector (v3) (39) — CAM - 3.2

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 Vertical Connector (4).

I2C communication is connected to I2C1 on TI TCA9548A I2C Switch (27).

GPIO inputs IO0 and IO1 are provided by CAM0 PWDN on NVIDIA Jetson Nano COM Vertical Connector (4) and CAM0 MCLK on NVIDIA Jetson Nano COM Vertical Connector (4), respectively.

1.10.11 Raspberry Pi Vertical Camera Connector (v3) (40) — CAM - 3.4

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 CSI4.2 on NVIDIA Jetson Nano COM Vertical Connector (4).

I2C communication is connected to I2C3 on TI TCA9548A I2C Switch (27).

GPIO inputs IO0 and IO1 are provided by NC2 on NC (50) and CLK on NC (50), respectively.

1.10.12 Raspberry Pi Vertical Camera Connector (v3) (41) — CAM - 3.3

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 CSI3.2 on NVIDIA Jetson Nano COM Vertical Connector (4).

I2C communication is connected to I2C2 on TI TCA9548A I2C Switch (27).

GPIO inputs IO0 and IO1 are provided by NC2 on NC (51) and CLK on NC (51), respectively.

1.10.13 Raspberry Pi Vertical Camera Connector (v3) (42) — CAM - 4.3

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 CSI3.2 on NVIDIA Jetson Nano COM Vertical Connector (6).

I2C communication is connected to I2C2 on TI TCA9548A I2C Switch (28).

GPIO inputs IO0 and IO1 are provided by CAM1 PWDN on NVIDIA Jetson Nano COM Vertical Connector (6) and CAM1 MCLK on NVIDIA Jetson Nano COM Vertical Connector (6), respectively.

1.10.14 Raspberry Pi Vertical Camera Connector (v3) (43) — CAM - 4.4

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 CSI4.2 on NVIDIA Jetson Nano COM Vertical Connector (6).

I2C communication is connected to I2C3 on TI TCA9548A I2C Switch (28).

GPIO inputs IO0 and IO1 are provided by CAM0 PWDN on NVIDIA Jetson Nano COM Vertical Connector (6) and CAM0 MCLK on NVIDIA Jetson Nano COM Vertical Connector (6), respectively.

1.10.15 Raspberry Pi Vertical Camera Connector (v3) (44) — CAM - 4.2

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 Vertical Connector (6).

I2C communication is connected to I2C1 on TI TCA9548A I2C Switch (28).

GPIO inputs IO0 and IO1 are provided by NC2 on NC (52) and CLK on NC (52), respectively.

1.10.16 Raspberry Pi Vertical Camera Connector (v3) (45) — CAM - 4.1

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 Vertical Connector (6).

I2C communication is connected to I2C0 on TI TCA9548A I2C Switch (28).

GPIO inputs IO0 and IO1 are provided by NC2 on NC (53) and CLK on NC (53), respectively.

1.10.17 Ethernet PHY Bridge (v2) (54)

The Ethernet PHY Bridge connects 5-Port Gigabit Switch (2) to NVIDIA Jetson Nano COM Vertical Connector (7)

1.10.18 Ethernet PHY Bridge (v2) (55)

The Ethernet PHY Bridge connects 5-Port Gigabit Switch (2) to NVIDIA Jetson Nano COM Vertical Connector (5)

1.10.19 Ethernet PHY Bridge (v2) (56)

The Ethernet PHY Bridge connects 5-Port Gigabit Switch (2) to NVIDIA Jetson Nano COM Vertical Connector (4)

1.10.20 Ethernet PHY Bridge (v2) (57)

The Ethernet PHY Bridge connects 5-Port Gigabit Switch (2) to NVIDIA Jetson Nano COM Vertical Connector (6)

1.11 Custom Modules

1.11.1 4-Pin 5V Computer Fan (v2) (58)

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 Vertical Connector (5)
- GPIO_1 to GPIO8 from NVIDIA Jetson Nano COM Vertical Connector (5)
- VCC.5.0_0 to 5.0V from 5V/5A Regulator (10)
- OUTPUT LEVEL to 5.0V from 5V/5A Regulator (10)

1.11.2 4-Pin 5V Computer Fan (v2) (59)

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 Vertical Connector (4)
- GPIO_1 to GPIO8 from NVIDIA Jetson Nano COM Vertical Connector (4)
- VCC_5.0_0 to 5.0V from 5V/5A Regulator (10)
- OUTPUT LEVEL to 5.0V from 5V/5A Regulator (10)

1.11.3 4-Pin 5V Computer Fan (v2) (60)

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 Vertical Connector (6)
- GPIO_1 to GPIO8 from NVIDIA Jetson Nano COM Vertical Connector (6)
- VCC_5.0_0 to 5.0V from 5V/5A Regulator (10)
- OUTPUT LEVEL to 5.0V from 5V/5A Regulator (10)

1.11.4 4-Pin 5V Computer Fan (v2) (61)

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 Vertical Connector (7)
- GPIO_1 to GPIO8 from NVIDIA Jetson Nano COM Vertical Connector (7)
- VCC_5.0_0 to 5.0V from 5V/5A Regulator (10)
- OUTPUT LEVEL to 5.0V from 5V/5A Regulator (10)

The diagram illustrates a multi-camera IoT system architecture. It features four Nano nodes (#1, #2, #3, #4) as central processing units, each connected to a variety of peripherals and other Nano nodes.

- Nano #1:** Connected to CAM 1.1, CAM 1.2, CAM 1.3, CAM 1.4, I2C Switch 1, Ethernet PHY Bridge, and a 4-Pin 5V Computer Fan. It also has connections for NC2 CLK and CAM0 PWDN/CAM0 MCLK/CSI4_2.
- Nano #2:** Connected to CAM 2.1, CAM 2.2, CAM 2.3, CAM 2.4, I2C Switch 2, Ethernet PHY Bridge, and a 4-Pin 5V Computer Fan. It also has connections for NC2 CLK and CAM0 PWDN/CAM0 MCLK/CSI0_2.
- Nano #3:** Connected to CAM 3.1, CAM 3.2, CAM 3.3, CAM 3.4, I2C Switch 3, Ethernet PHY Bridge, and a 4-Pin 5V Computer Fan. It also has connections for NC2 CLK and CAM0 PWDN/CAM0 MCLK/CSI2_2.
- Nano #4:** Connected to CAM 4.1, CAM 4.2, CAM 4.3, CAM 4.4, I2C Switch 4, Ethernet PHY Bridge, and a 4-Pin 5V Computer Fan. It also has connections for NC2 CLK and CAM0 PWDN/CAM0 MCLK/CSI4_2.

Other components and connections include:

- Inter-Nano Connections:** Nano #1 and #2 are connected via Ethernet (1000BaseT) and UART (UART2, UART3). Nano #2 and #3 are connected via UART (UART2, UART3). Nano #3 and #4 are connected via Ethernet (1000BaseT) and UART (UART2, UART3).
- Peripherals:** Each Nano node is connected to a 4-Pin 5V Computer Fan. Nano #1 and #2 are connected to a 4-Pin 5V Computer Fan. Nano #3 and #4 are connected to a 4-Pin 5V Computer Fan. Nano #1 and #2 are connected to a 4-Pin 5V Computer Fan. Nano #3 and #4 are connected to a 4-Pin 5V Computer Fan.
- Other Components:** The system includes a 5-Port Gigabit Switch, an Analog Devices ADG709 4-Channel Mux, an Espressif ESP32-WROOM-32U, a USB-UART module, a USB Micro-B Jack, a Tactile Switch, and various NC (Not Connected) pins.

Built in Geppetto
No engineering required.
Delivered in 15 days.

3 Module Power Graph

