Gumstix Pi Conduit LoRa Gateway

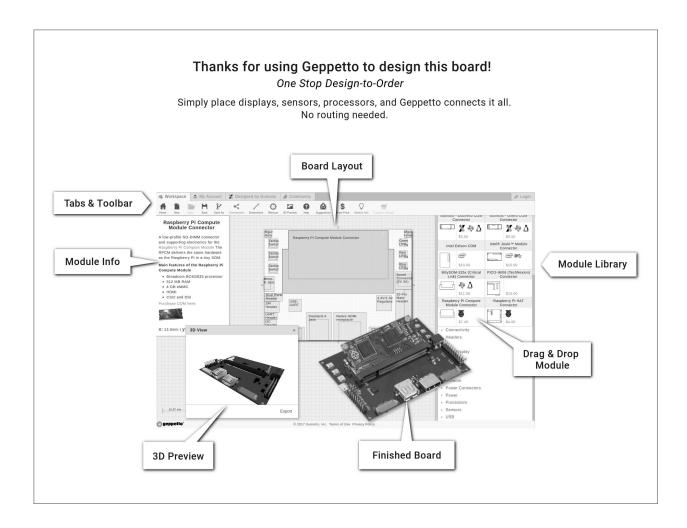


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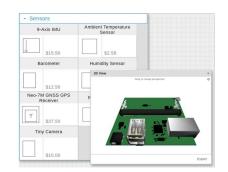
Board Description

RPi Compute LoRa Gateway

Board Dimensions

8cm x 9.5cm

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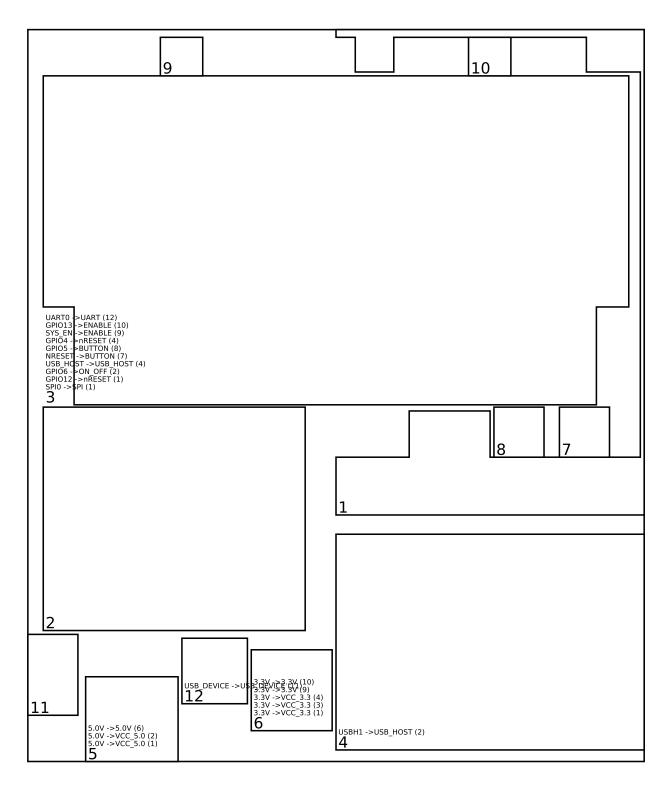
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1 Modules on Board





1.1 Network and Wireless

1.1.1 LoRa Gateway and Concentrator Module (v3) (1)

LoRa Gateway

Its !RESET bus is connected to GPIO12 on Raspberry Pi Compute Module Connector (3)

1.1.2 NimbeLink Skywire Modem (v4) (2)

The NimbeLink Skywire LTE modem module connects to the cellular network using the Telit LE910 chipset.

The modem connects to the following buses:

- USB Host from USB-Ethernet Module with Hub (4)
- Enable signal from Raspberry Pi Compute Module Connector (3)

1.1.3 USB-Ethernet Module with Hub (v5) (4)

This module offers a 10/100 Base-T Ethernet connection, as well as a 2-port USB hub via USB connection to USB_HOST on Raspberry Pi Compute Module Connector (3). The Microchip LAN9512 integrated USB hub and 10/100 ethernet controller provides up- and down-stream hi-speed USB 2.0 PHYs and 10/100BASE-T MAC and PHY.

For technical data for the LAN9512 download the datasheet at:

http://ww1.microchip.com/downloads/en/DeviceDoc/9512.pdf

The module's USB hub also provides a USB_HOST connection to:

- USB_HOST on NimbeLink Skywire Modem (2)
- on

1.2 COM Connectors

1.2.1 Raspberry Pi Compute Module Connector (v20) (3)

The **R**aspberry **P**i **C**ompute **M**odule (**RPCM**) connector is a SODIMM socket powering the RPCM and providing the module's function to Geppetto designs. The RPCM COM connector is pin-compatible with 3 variants of the module: RPCM1, RPCM3 and RPCM3L.

Module features:

	RPCM1	RPCM3	RPCM3L
SoC	BCM2835	BCM2837	BCM2837
CPU Clock	700MHz	1.0GHz	1.0GHz
Cores	1x32-bit	4x64-bit	4 <i>x</i> 64-bit
DDR2 RAM	512 MB	1.0 GB	1.0 GB
eMMC	4 GB	4 GB	N/A



More technical details for the RPCM modules can be found at:

https://www.raspberrypi.org/documentation/hardware/computemodule/datasheet.md It requires:

• VCC_3.3 from 3.3V/1.5A Regulator (6)

The Geppetto Pi Compute connector provides the following outputs:

- SPI0 to LoRa Gateway and Concentrator Module (1)
- VLOGIC to:
 - LoRa Gateway and Concentrator Module (1)
 - NimbeLink Skywire Modem (2)
 - Tactile Switch (7)
 - Tactile Switch (8)
 - USB-UART (12)
- GPIO12 to LoRa Gateway and Concentrator Module (1)
- GPIO6 to NimbeLink Skywire Modem (2)
- USB_HOST to USB-Ethernet Module with Hub (4)
- NRESET to Tactile Switch (7)
- GPIO5 to Tactile Switch (8)
- GPIO4 to USB-Ethernet Module with Hub (4)
- SYS_EN to Top-side LED (9)
- GPIO13 to Top-side LED (10)
- UART0 to USB-UART (12)

1.3 Power Connectors

1.3.1 Barrel Connector (5V 3A) (v10) (5)

This power jack is compatible with Gumstix 5V/3.5A DC power adapter using a 4.0mm x 1.7mm barrel connector. It provides more current than a standard 5V DC power supply, suitable for use with multiprocessor designs.

This power jack provides 5V to the following modules:

- LoRa Gateway and Concentrator Module (1)
- NimbeLink Skywire Modem (2)
- 3.3V/1.5A Regulator (6)



1.4 Power

1.4.1 3.3V/1.5A Regulator (v14) (6)

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 recieves 5.0V from Barrel Connector (5V 3A) (5).

The dataheet for the TPS6211 regulator is available at:

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

This regulator provides 3.3V to:

- LoRa Gateway and Concentrator Module (1)
- Raspberry Pi Compute Module Connector (3)
- USB-Ethernet Module with Hub (4)
- Top-side LED (9)
- Top-side LED (10)

1.5 Lights and Switches

1.5.1 Tactile Switch (v18) (7)

This 4.9 sq. mm pull-down touch switch provides a user input for the signal NRESET on Raspberry Pi Compute Module Connector (3).

1.5.2 Tactile Switch (v18) (8)

This 4.9 sq. mm pull-down touch switch provides a user input for the signal GPIO5 on Raspberry Pi Compute Module Connector (3).

1.5.3 Top-side LED (v5) (9)

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 Raspberry Pi Compute Module Connector (3).

1.5.4 Top-side LED (v5) (10)

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 GPIO13 from Raspberry Pi Compute Module Connector (3).



1.6 USB

1.6.1 Micro-B Jack (v12) (11)

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 (12).

This module does not supply power.

1.7 Converters

1.7.1 USB-UART (v19) (12)

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 Micro-B Jack (11) to UART0 on Raspberry Pi Compute Module Connector (3).



2 Module Connections Graph

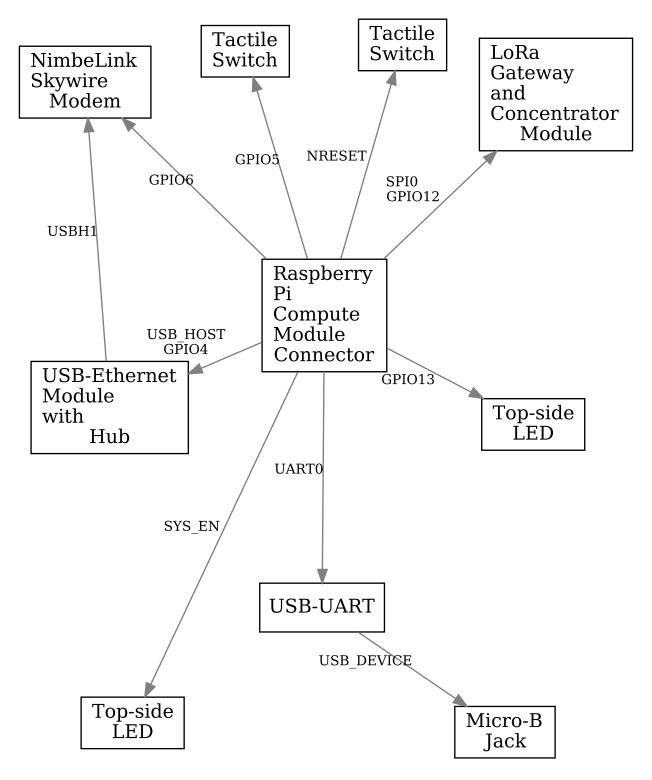


Figure 1: excludes power modules



3 Module Power Graph

