Overo Conduit LoRa Gateway

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Board Description

Overo LoRa Gateway

Board Dimensions

6cm x 6.65cm
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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 IRESET bus is connected to GPIO21 on Gumstix - Overo COM Connector (4).

1.1.2 10/100BASE-T (v11) (6)

This design offers a 10/100 Base-T Ethernet connection. The PHY and MAC layers are provided by the SMSC LAN9221 10/100 ethernet controller.

The datasheet for the SMSC LAN9221 controller is available from Microchip at:


The 10/100BASE-T module provides ethernet to XM on Gumstix - Overo COM Connector (4).

1.2 Power Connectors

1.2.1 Barrel Connector (5V 3A) (v10) (2)

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 multi-processor designs.

This power jack provides 5V to the following modules:

- LoRa Gateway and Concentrator Module (1)
- 3.3V/1.5A Regulator (3)

1.3 Power

1.3.1 3.3V/1.5A Regulator (v14) (3)

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 5.0V from Barrel Connector (5V 3A) (2).

The datasheet for the TPS6211 regulator is available at:


This regulator provides 3.3V to:

- LoRa Gateway and Concentrator Module (1)
- Gumstix - Overo COM Connector (4)
- 1.8V/0.6A Regulator (5)
- 10/100BASE-T (6)
- Top-side LED (9)
- Top-side LED (10)
1.3.2 1.8V/0.6A Regulator (v9) (5)

This DC-DC regulator has an integrated inductor and tiny footprint. The Enpirion EP5368QI provides power to modules that require a 1.8V input.

It receives 3.3V from 3.3V/1.5A Regulator (3). A SYS_EN signal is provided by Gumstix - Overo COM Connector (4).

The following modules receive 1.8V DC from this regulator:

- Gumstix - Overo COM Connector (4)

1.4 COM Connectors

1.4.1 Gumstix - Overo COM Connector (v36) (4)

Each of these two 70-pin connectors (Kyocera Series 5602) accepts signals from computers-on-module in the Overo series; a total of 140 possible signals that can be interfaced using these connectors, such as GPIO, ADC, PWM, LCD, audio I/O, and HDMI, as well as USB, I2C, SPI, and other serial buses.

Documentation for Overo COMs can be found at: https://goo.gl/eE9UKj

Gumstix Developer Center:

http://www.gumstix.org

The Overo COM connector receives the following inputs:

- 3.3V from 3.3V/1.5A Regulator (3)
- 1.8V from 1.8V/0.6A Regulator (5)

The Overo COM connector provides the following outputs:

- SPI1 to LoRa Gateway and Concentrator Module (1)
- VLOGIC to:
  - LoRa Gateway and Concentrator Module (1)
  - 10/100BASE-T (6)
  - Tactile Switch (8)
  - Tactile Switch (7)
  - USB-UART (11)
- GPIO21 to LoRa Gateway and Concentrator Module (1)
- SYS_EN to:
  - 1.8V/0.6A Regulator (5)
  - Top-side LED (9)
- XM to 10/100BASE-T (6)
- GPIO22 to 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 RESET on Gumstix - Overo COM Connector (4).

1.5.2 Tactile Switch (v18) (8)

This 4.9 sq. mm pull-down touch switch provides a user input for the signal GPIO23 on Gumstix - Overo COM Connector (4).

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 Gumstix - Overo COM Connector (4).

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 GPIO22 from Gumstix - Overo COM Connector (4).

1.6 Converters

1.6.1 USB-UART (v19) (11)

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:


This USB to UART converter connects a host machine from Micro-B Jack (12) to UART3 on Gumstix - Overo COM Connector (4).
1.7 USB

1.7.1 Micro-B Jack (v12) (12)

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 (11). This module does not supply power.
2 Module Connections Graph

Figure 1: excludes power modules
### 3 Module Power Graph

![Power Graph Diagram]

- **Barrel Connector (5V 3A)**
  - 5.0V: 2363mW
  - 5.0V: 3300mW
- **3.3V/1.5A Regulator**
  - 3.3V: 10mW
  - 3.3V: 23mW
  - 3.3V: 660mW
  - 3.3V: 33mW
  - 3.3V: 33mW
- **LoRa Gateway and Concentrator Module**
  - 3.3V: 1320mW
- **1.8V/0.6A Regulator**
  - 1.8V: 18mW
- **10/100BASE-T**
- **Top-side LED**
- **Top-side LED**

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**Overo Conduit LoRa Gateway**

Revised January 16, 2018

*Built in Geppetto*

No engineering required. Delivered in 15 days.