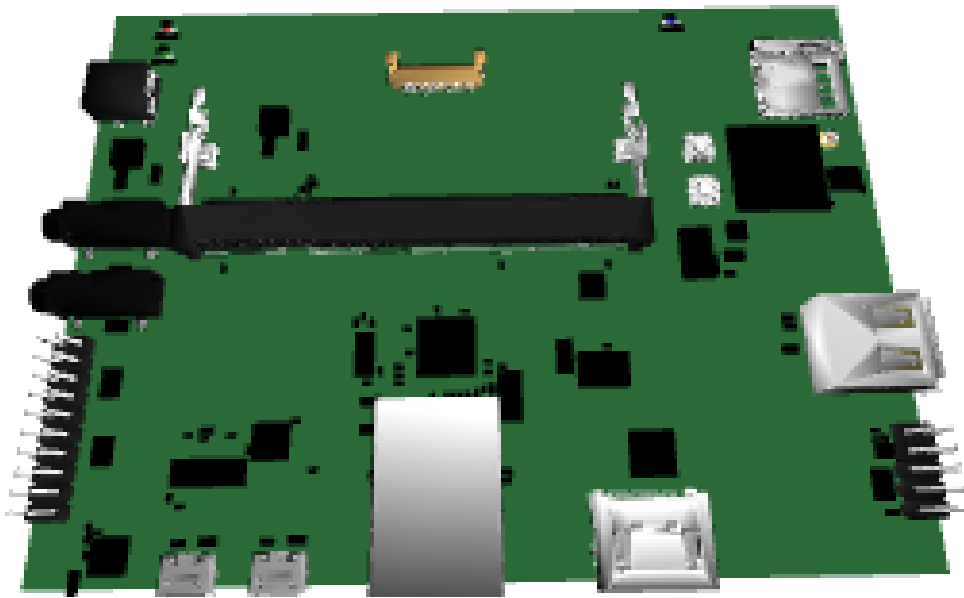


# Toradex Colibri Development Board



**gumstix**<sup>®</sup>

dream, design, deliver™

Made with  
**geppetto**<sup>™</sup>

Gumstix, Inc. shall have no liability of any kind, express or implied, arising out of the use of the Information in this document, including direct, indirect, special or consequential damages.

Gumstix, Inc. may have patents, patent applications, trademarks, copyrights, trade secrets or other intellectual property rights pertaining to Gumstix products described in this document (collectively "Gumstix Intellectual Property").

Except as expressly provided in any written license or agreement from Gumstix, Inc., this document and the information contained therein does not create any license to Gumstix's Intellectual Property.

The Information contained herein is subject to change without notice. Revisions may be issued regarding changes and/or additions.

Copyright © 2016, Gumstix, Inc. All rights reserved.

## Board Description

Toradex Colibri (iMX6) development board which includes HDMI, 4.3" resistive touch screen, ethernet, USB Host, USB OTG, audio in/out, bootable uSD card, real-time clock and GPIO inputs and outputs.

## Board Dimensions

12.35cm x 9.0cm



# Contents

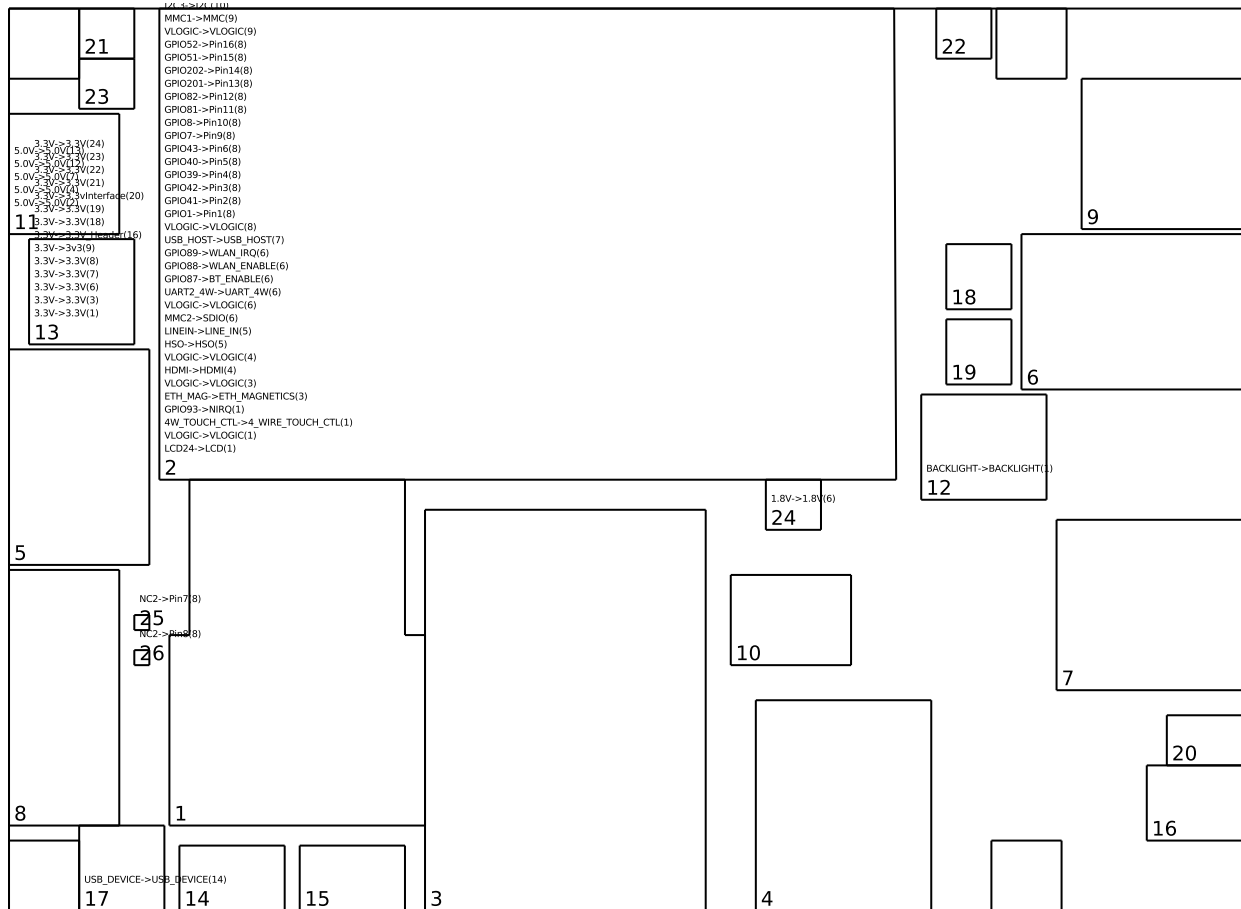
<b>1</b>	<b>Modules on Board</b>	<b>1</b>
1.1	LCD Display	1
1.1.1	4.3" Flip-Side Connector For Newhaven Resistive Touchscreen (v7) (1)	1
1.2	COM Connectors	1
1.2.1	Colibri iMX6 (Toradex) Connector (v8) (2)	1
1.3	Network	3
1.3.1	10/100BASE-T (v10) (3)	3
1.3.2	TI WiLink8 (v14) (6)	3
1.4	Monitors	4
1.4.1	Native HDMI receptacle (v7) (4)	4
1.5	Audio	4
1.5.1	Dual Audio (in / out) (v9) (5)	4
1.6	USB	4
1.6.1	Standard-A Jack (v8) (7)	4
1.6.2	Micro-B Jack (v8) (14)	4
1.6.3	Micro-B Jack (v8) (15)	4
1.7	Headers	4
1.7.1	20-Pin Male Header (v10) (8)	4
1.7.2	SPI Header (v11) (16)	5
1.7.3	I2C Header (v12) (20)	5
1.8	Memory	5
1.8.1	microSD slot (v5) (9)	5
1.9	Power	6
1.9.1	Real Time Clock (v8) (10)	6
1.9.2	Backlight Controller (v4) (12)	6
1.9.3	3.3V/1.5A Regulator (v9) (13)	6
1.9.4	1.8V/0.6A Regulator (v6) (24)	7
1.10	Power Connectors	7
1.10.1	Barrel Connector (5V 3A) (v6) (11)	7
1.11	Connectivity	7
1.11.1	USB-UART (v14) (17)	7
1.12	Mechanical	7
1.12.1	Mounting Hole (3.5mm)	7



1.12.2 Mounting Hole (3.5mm) . . . . .	8
1.12.3 Mounting Hole (3.5mm) . . . . .	8
1.12.4 Mounting Hole (3.5mm) . . . . .	8
1.13 IO . . . . .	8
1.13.1 Tactile Switch (v9) (18) . . . . .	8
1.13.2 Tactile Switch (v9) (19) . . . . .	8
1.13.3 Red LED (v11) (21) . . . . .	8
1.13.4 Blue LED (v14) (22) . . . . .	8
1.13.5 Green LED (v13) (23) . . . . .	8
<b>2 Module Connections Graph</b>	<b>9</b>
<b>3 Module Power Graph</b>	<b>10</b>



# 1 Modules on Board



## 1.1 LCD Display

### 1.1.1 4.3" Flip-Side Connector For Newhaven Resistive Touchscreen (v7) (1)

A 4.3 inch resistive LCD connector, mounted on the flipside, that connects to Colibri iMX6 (Toradex) Connector (2)

## 1.2 COM Connectors

### 1.2.1 Colibri iMX6 (Toradex) Connector (v8) (2)

The Colibri i.MX6 SODIMM connector breaks out the Toradex Colibri i.MX6 COM for use on Geppetto boards.

The module is connected to the following inputs:

- 5.0V from Barrel Connector (5V 3A) (11)

The Colibri connector provides the following outputs:



- MMC2 to TI WiLink8 (6)
- MMC1 to microSD slot (9)
- USB\_CLIENT to Micro-B Jack (15)
- LCD24 to 4.3" Flip-Side Connector For Newhaven Resistive Touchscreen (1)
- UART2\_4W to TI WiLink8 (6)
- GPIO43 to 20-Pin Male Header (8)
- GPIO42 to 20-Pin Male Header (8)
- GPIO41 to 20-Pin Male Header (8)
- GPIO40 to 20-Pin Male Header (8)
- 4W\_TOUCH\_CTL to 4.3" Flip-Side Connector For Newhaven Resistive Touchscreen (1)
- USB\_HOST to Standard-A Jack (7)
- GPIO7 to 20-Pin Male Header (8)
- SPI to SPI Header (16)
- GPIO202 to 20-Pin Male Header (8)
- GPIO8 to 20-Pin Male Header (8)
- GPIO201 to 20-Pin Male Header (8)
- HSO to Dual Audio (in / out) (5)
- UART1 to USB-UART (17)
- LINEIN to Dual Audio (in / out) (5)
- LCD\_BL\_CTL to Backlight Controller (12)
- NRESET to Tactile Switch (18)
- GPIO35 to Blue LED (22)
- GPIO91 to SPI Header (16)
- GPIO93 to 4.3" Flip-Side Connector For Newhaven Resistive Touchscreen (1)
- HDMI to Native HDMI receptacle (4)
- SYS\_EN to:
  - Green LED (23)
  - 1.8V/0.6A Regulator (24)
- GPIO51 to 20-Pin Male Header (8)
- GPIO52 to 20-Pin Male Header (8)
- GPIO39 to 20-Pin Male Header (8)
- VLOGIC to:
  - 4.3" Flip-Side Connector For Newhaven Resistive Touchscreen (1)



- 10/100BASE-T (3)
- Native HDMI receptacle (4)
- TI WiLink8 (6)
- 20-Pin Male Header (8)
- microSD slot (9)
- Real Time Clock (10)
- Backlight Controller (12)
- SPI Header (16)
- USB-UART (17)
- I2C Header (20)
- GPIO36 to Tactile Switch (19)
- GPIO1 to 20-Pin Male Header (8)
- GPIO34 to Red LED (21)
- I2C3 to:
  - Real Time Clock (10)
  - I2C Header (20)
- GPIO89 to TI WiLink8 (6)
- GPIO88 to TI WiLink8 (6)
- ETH\_MAG to 10/100BASE-T (3)
- GPIO82 to 20-Pin Male Header (8)
- GPIO81 to 20-Pin Male Header (8)
- GPIO87 to TI WiLink8 (6)

## 1.3 Network

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

This design offers a 10/100 Base-T Ethernet connection to ETH\_MAG on Colibri iMX6 (Toradex) Connector (2).

### 1.3.2 TI WiLink8 (v14) (6)

The TI Wilink8 module includes BT4.1 and 802.11(a/b/g/n) signals on one antenna.

The module connects to the following buses:

- SDIO from Colibri iMX6 (Toradex) Connector (2) for 802.11 traffic.
- 4-wire UART from Colibri iMX6 (Toradex) Connector (2) for BT traffic.
- WiFi Enable from Colibri iMX6 (Toradex) Connector (2).





- WiFi IRQ from Colibri iMX6 (Toradex) Connector (2).
- BT Enable from Colibri iMX6 (Toradex) Connector (2).

To function, the clock on the SDIO bus from Colibri iMX6 (Toradex) Connector (2) must be run at 32.768kHz which is provided by a dedicated crystal.

## 1.4 Monitors

### 1.4.1 Native HDMI receptacle (v7) (4)

The HDMI connector provides HDMI video and audio signals to an external display and speakers.

This display's high definition video input is connected to HDMI on Colibri iMX6 (Toradex) Connector (2).

## 1.5 Audio

### 1.5.1 Dual Audio (in / out) (v9) (5)

These two standard 3-position 3.5mm audio jacks offer stereo line input and stereo audio output. They are connected to Colibri iMX6 (Toradex) Connector (2).

## 1.6 USB

### 1.6.1 Standard-A Jack (v8) (7)

A standard A USB host port that allows you to connect USB devices to the board. This port is connected to USB\_HOST on Colibri iMX6 (Toradex) Connector (2).

### 1.6.2 Micro-B Jack (v8) (14)

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).

### 1.6.3 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\_CLIENT on Colibri iMX6 (Toradex) Connector (2).

## 1.7 Headers

### 1.7.1 20-Pin Male Header (v10) (8)

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



To output signals at a custom voltage, a zero ohm resistor can be depopulated and an external reference provided.

This module has the following connections:

- Pin16 to GPIO52 from Colibri iMX6 (Toradex) Connector (2)
- Pin15 to GPIO51 from Colibri iMX6 (Toradex) Connector (2)
- Pin14 to GPIO202 from Colibri iMX6 (Toradex) Connector (2)
- Pin13 to GPIO201 from Colibri iMX6 (Toradex) Connector (2)
- Pin12 to GPIO82 from Colibri iMX6 (Toradex) Connector (2)
- Pin11 to GPIO81 from Colibri iMX6 (Toradex) Connector (2)
- Pin10 to GPIO8 from Colibri iMX6 (Toradex) Connector (2)
- Pin9 to GPIO7 from Colibri iMX6 (Toradex) Connector (2)
- Pin8 to NC2 from NC (26)
- Pin3 to GPIO42 from Colibri iMX6 (Toradex) Connector (2)
- Pin2 to GPIO41 from Colibri iMX6 (Toradex) Connector (2)
- Pin1 to GPIO1 from Colibri iMX6 (Toradex) Connector (2)
- Pin7 to NC2 from NC (25)
- Pin6 to GPIO43 from Colibri iMX6 (Toradex) Connector (2)
- Pin5 to GPIO40 from Colibri iMX6 (Toradex) Connector (2)
- Pin4 to GPIO39 from Colibri iMX6 (Toradex) Connector (2)

### 1.7.2 SPI Header (v11) (16)

This header breaks out SPI on Colibri iMX6 (Toradex) Connector (2) .

### 1.7.3 I2C Header (v12) (20)

This header breaks out I2C3 on Colibri iMX6 (Toradex) Connector (2) .

Implemented as a test pad. Implemented as a test pad.

## 1.8 Memory

### 1.8.1 microSD slot (v5) (9)

A Micro SD card slot provides memory to MMC1 on Colibri iMX6 (Toradex) Connector (2).



## 1.9 Power

### 1.9.1 Real Time Clock (v8) (10)

This real-time clock backup is powered by a coin cell battery.

This module is connected to I2C3 on Colibri iMX6 (Toradex) Connector (2).

### 1.9.2 Backlight Controller (v4) (12)

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

Converts LCD.BL\_CTL from Colibri iMX6 (Toradex) Connector (2) to BACKLIGHT on 4.3" Flip-Side Connector For Newhaven Resistive Touchscreen (1)

### 1.9.3 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 Barrel Connector (5V 3A) (11).

This regulator provides 3.3V to:

- 4.3" Flip-Side Connector For Newhaven Resistive Touchscreen (1)
- 10/100BASE-T (3)
- TI WiLink8 (6)
- Standard-A Jack (7)
- 20-Pin Male Header (8)
- microSD slot (9)
- SPI Header (16)
- Tactile Switch (18)
- Tactile Switch (19)
- I2C Header (20)
- Red LED (21)
- Blue LED (22)
- Green LED (23)
- 1.8V/0.6A Regulator (24)



### 1.9.4 1.8V/0.6A Regulator (v6) (24)

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

- 3.3V from 3.3V/1.5A Regulator (13)
- SYS\_EN from Colibri iMX6 (Toradex) Connector (2)

The following modules receive 1.8V DC from this regulator:

- TI WiLink8 (6)

## 1.10 Power Connectors

### 1.10.1 Barrel Connector (5V 3A) (v6) (11)

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:

- Colibri iMX6 (Toradex) Connector (2)
- Native HDMI receptacle (4)
- Standard-A Jack (7)
- Backlight Controller (12)
- 3.3V/1.5A Regulator (13)

## 1.11 Connectivity

### 1.11.1 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 (14) to UART1 on Colibri iMX6 (Toradex) Connector (2).

## 1.12 Mechanical

### 1.12.1 Mounting Hole (3.5mm)

A #0 3.5mm mounting hole for securing the board with screws.



### 1.12.2 Mounting Hole (3.5mm)

A #0 3.5mm mounting hole for securing the board with screws.

### 1.12.3 Mounting Hole (3.5mm)

A #0 3.5mm mounting hole for securing the board with screws.

### 1.12.4 Mounting Hole (3.5mm)

A #0 3.5mm mounting hole for securing the board with screws.

## 1.13 IO

### 1.13.1 Tactile Switch (v9) (18)

This 4.9 sq. mm light touch switch provides a user input for the signal NRESET on Colibri iMX6 (Toradex) Connector (2).

### 1.13.2 Tactile Switch (v9) (19)

This 4.9 sq. mm light touch switch provides a user input for the signal GPIO36 on Colibri iMX6 (Toradex) Connector (2).

### 1.13.3 Red LED (v11) (21)

This 1608 standard size red LED provides an indicator for the signal GPIO34 on Colibri iMX6 (Toradex) Connector (2).

### 1.13.4 Blue LED (v14) (22)

This 1608 standard size blue LED provides an indicator for the signal GPIO35 on Colibri iMX6 (Toradex) Connector (2).

### 1.13.5 Green LED (v13) (23)

This 1608 standard size green LED provides an indicator for the signal SYS\_EN on Colibri iMX6 (Toradex) Connector (2).



## 2 Module Connections Graph

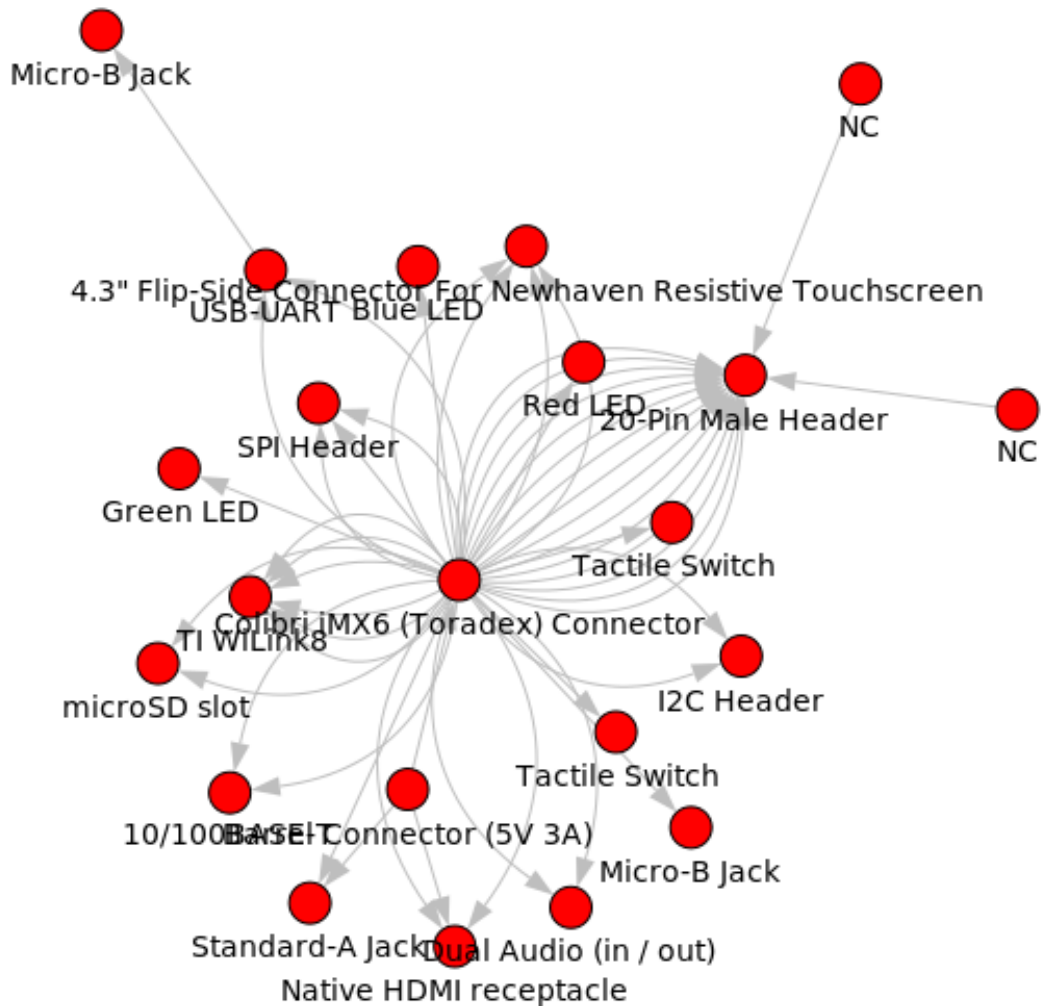


Figure 1: excludes power modules



### 3 Module Power Graph

