

Colibri Evaluation Board Datasheet



**Revision History**

| Date | Doc. Rev. | Colibri Evalboard Version | Changes |
|----------|-----------|---------------------------|--|
| 13-05-05 | Rev. 1.0 | V1.00b / V1.10 | Initial release |
| 18-05-05 | Rev. 1.1 | V1.00b / V1.10 | Added dimension-drawing Added power supply chapter |
| 11-04-06 | Rev. 2.0 | V2.1b | Changed references, New pinout for the JTAG connector, New connectors for CIF, generic display, spare and generic touch screen, Reset. |
| 07-03-07 | Rev.2.1 | V2.1b | CAN connector type corrected |
| 29-03-10 | Rev.2.2 | V2.1b | Renamed GPIOs with SODIMM |
| 24-10-11 | Rev.2.3 | V2.1b | Added Jumper description to connector locations picture Added new disclaimer |
| 05-10-12 | Rev. 2.4 | All V2.1 versions | Corrected Male to Female for X21 |



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1. Introduction

The Colibri Evaluation Board is designed to be a flexible development environment to explore the functionality and performance of the Intel XScale® based Colibri modules.

Besides the user interfaces it provides numerous communication channels as well as a configurable jumper area to hook up the Colibri GPIOs to the desired function. To facilitate interfacing to custom hardware the Colibri EvalBoard provides the buffered CPU bus on a separate connector.

1.1. Features

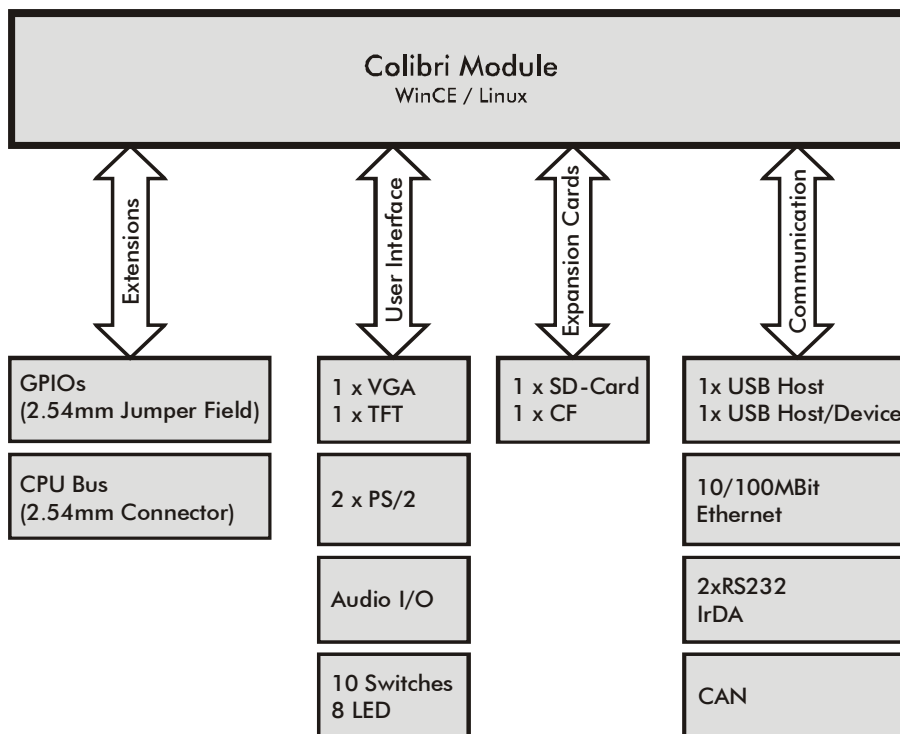


Fig. 1: Evaluation Board Block Diagram

1.1.1 User Interface

The Colibri Evaluation Board provides an analog VGA connector to attach a standard computer monitor.

LCDs can also be connected through the digital LCD port. Since there is no standard connector for LCD panels, users usually need to build their own connector interface which attaches to the generic display header provided by the Evaluation Board. But there is also a dedicated connector for the LG.Philips LB064V02-A1 TFT (6.4", 640x480, 6 Bit) integrated on the board.

Keyboard and mouse can be attached through PS/2 connectors or the USB port.

Furthermore the Colibri EvalBoard provides switches, buttons and LEDs for simple user interaction.

Audio input and output is available on standard jacks.

1.1.2 Communication

The most commonly used communication functions are fully implemented on the Evaluation Board: 10/100Mb Ethernet, USB Host and Client, two RS232 channels, one IrDA serial port and a CAN interface. For all these communication channels the industry standard connectors are provided on-board.

The Camera Interface provides a easy way for interfacing CMOS and CCD sensors.



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A CompactFlash and a SDCard/MMC socket can be used to add storage devices or additional functions to the system.

1.1.3 GPIO Usage Area

The GPIO Usage connectors build a patch panel that offers the flexibility to map the Colibri's GPIOs to the desired function.

This enables the user to

- change the factory set mapping of Colibri GPIOs to Evaluation Board functions.
- disconnect a Colibri GPIO from the standard function on the Evaluation Board, and instead connect it to an external extension hardware

1.1.4 CPU Bus

The entire 16-/32-Bit bus of the Colibri PXAxxx is buffered with 5V tolerant inputs and accessible through an extension connector. This offers the user the possibility to add custom hardware directly to the CPU bus. The extension connector also provides a supply on both the 3.3V and 5V rails.

1.1.5 Power Supply

The Evaluation Board has a wide input voltage range of 7-24V DC.

The on-board power supply is capable of providing the following supply rails.

5V / 5A (25W)
3.3V / 5A (16.5W)

The supply is protected against reverse input voltage polarity and short circuits, limiting the maximum current to about 5A . However the protection diode in the input voltage path is thermally not designed to carry that high current, especially at low input voltages. If your application dissipates more than 20W, please consider one of the following:

- Work with a high input voltage, close to 24V
- Add a heat-sink to the polarity protection diode
- Short the polarity protection diode with a wire (removes the reverse polarity protection!)

1.2. Reference Documents

1.2.1 Colibri

- Marvell PXAxxx based Single Board Computer Colibri Datasheet and Migration Guide:

<http://www.toradex.com>

1.2.2 SJA1000 CAN Controller

- NXP SJA1000 Datasheet and Application Note AN97076:

<http://www.nxp.com>

2. Installation

Follow these steps for a jump start with the EvalBoard:

1. If not already done, insert a Colibri Module in the SODIMM socket M2 on the EvalBoard
2. Plug in a VGA monitor on the corresponding connector X24, a keyboard and a mouse on the PS/2 interfaces X27



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3. Connect an external power supply to the board by the X1 connector (7-24V, 3W min, depending on your peripherals)
4. Turn on the external power supply
5. Push down the power button S1 on the EvalBoard

Now the preinstalled operating system will boot.

For a detailed documentation of the software as well as for the newest bootloader and software images please refer to the Colibri Web site:

www.toradex.com

3. Evaluation Board Physical Drawings

3.1. Connector Locations

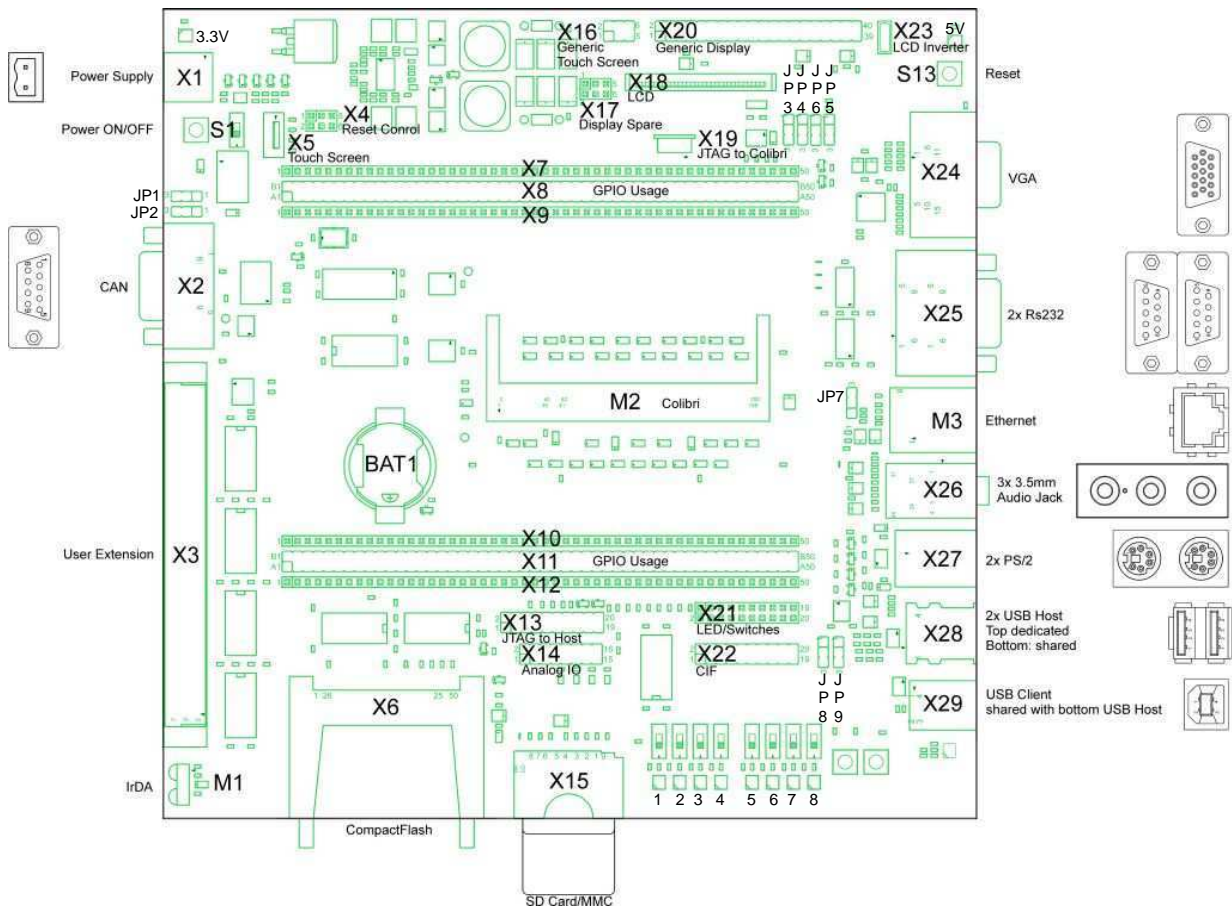


Fig. 2: Evaluation Board Layout: Top View

The following list details the connector and their functions:



| Reference Designator | Name |
|----------------------|------------------------------|
| X1 | Power Supply |
| X2 | CAN |
| X3 | User Extension |
| X4 | Reset Control |
| X5 | Touch Screen |
| X6 | CompactFlash |
| X7 | Function Tap |
| X8 | Jumper Array |
| X9 | SODIMM Usage |
| X10 | SODIMM Usage |
| X11 | Jumper Array |
| X12 | Function Tap |
| X13 | JTAG to Host |
| X14 | Analog IO |
| X15 | SDCard/MMC |
| X16 | Generic Touch Screen |
| X17 | Display Spare |
| X18 | LCD (LG.Philips LB064V02-A1) |
| X19 | JTAG to Colibri |
| X20 | Generic Display |
| X21 | LED/Switches |
| X22 | CIF |
| X23 | LCD Inverter |
| X24 | VGA |
| X25 | 2x RS232 |
| X26 | 3x Audio Jack |
| X27 | 2x PS/2 stacked |
| X28 | 2x USB Host (bottom: shared) |
| X29 | USB Client (shared) |
| M1 | IrDA |
| M2 | Colibri SODIMM |
| M3 | Ethernet |

List of the connectors



3.2. Mechanical Drawing

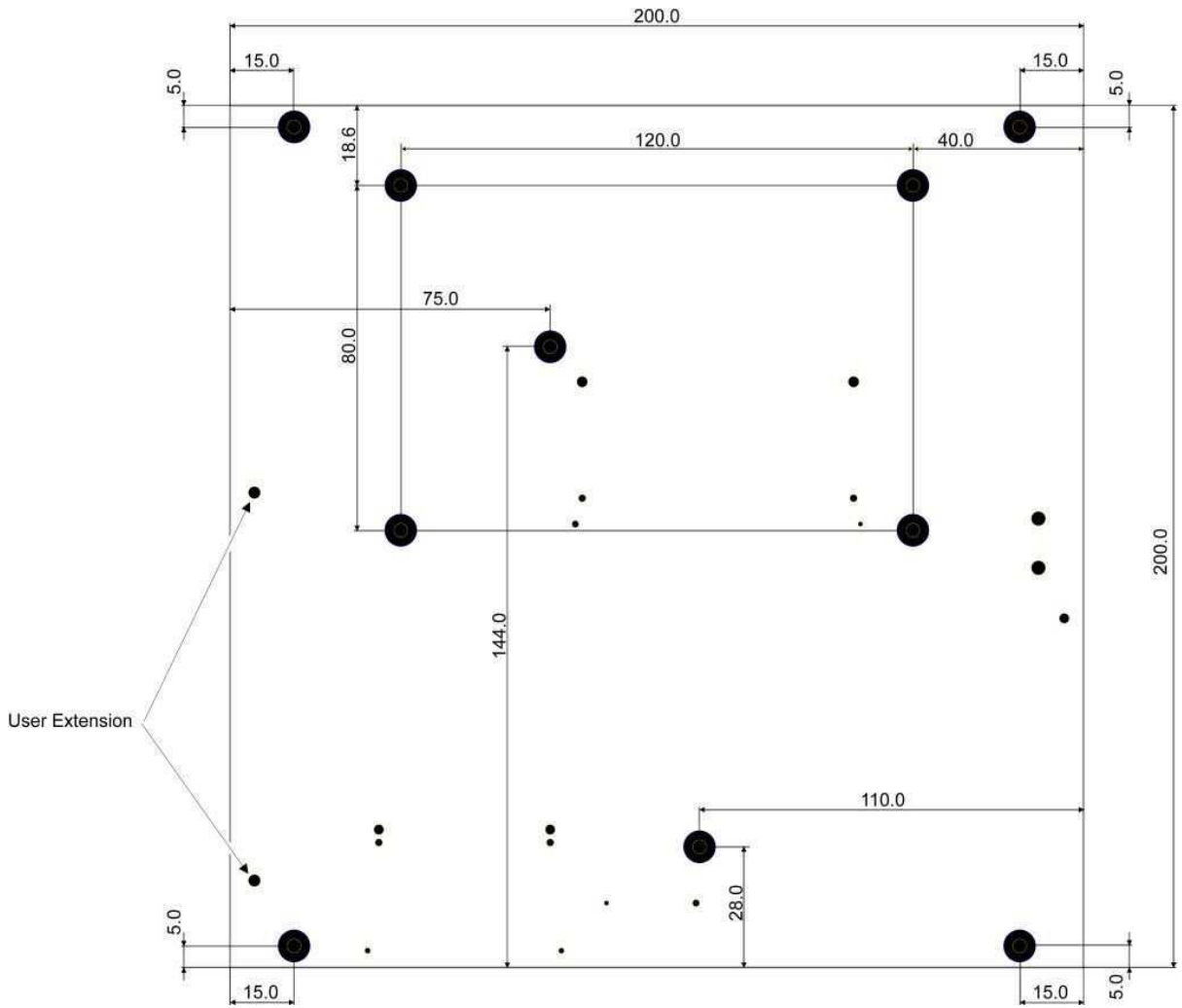


Fig. 3: Mounting Hole Positions



4. Evaluation Board Connectors

4.1. Colibri Module

4.1.1 Colibri Module (M2)

Type: SODIMM 200 Socket

Manufacturer tyco electronics-1473005-1

For the pinout of the Colibri modules please refer to the Colibri Datasheets and Migration Guide for which a link is listed in chapter 1.2.1.

Please note, that not all Colibri modules provide the same features (e.g.: the PXA300 does not have audio and touch-screen functionality).

4.2. Display

The connectors X23 and X18 are implemented to directly support the TFT LCD LB064V02-A1 manufactured by LG.Philips (6.4", 640x480, 6 Bit).

Almost any TFT or STN display can be connected to the LCD port of the Colibri module by simply wiring the necessary signals from connectors X16 and X20 (which provide standard 2.54mm pitch) to the Display.

The generic display connector X20 provides four spare signals which are connected one-to-one to the Display Spare connector X17. Depending on the display utilized they may be used to implement an SPI channel to the LCD or functions like horizontal / vertical display mode switching.

Display parameters can be set by using WinCE utilities provided by Toradex. For details please refer to: <http://www.toradex.com>

4.2.1 LCD Inverter (X23)

Part number: Molex 53047-0510 FFC or AUK FH05D

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------------|---------|-----------------|
| 1 | BL_+5V | PWR | +5V | |
| 2 | BL_GND | PWR | | |
| 3 | BL_ON | O | +3V3 | 100k to GND |
| 4 | BL_GND | PWR | | |
| 5 | NC | Not connected | | |

4.2.2 LCD LG.Philips LB064V02-A1 (X18)

Part number: Molex 52030-3010 or AUK FPA30DZAL

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| 1 | GND | PWR | | |
| 2 | LCD_+3V3 | PWR | | |
| 3 | LCD_+3V3 | PWR | | |
| 4 | GND | PWR | | |
| 5 | L_PCLK | O | +3V3 | |
| 6 | L_BIAS | O | +3V3 | |
| 7 | L_FCLK | O | +3V3 | |
| 8 | L_LCLK | O | +3V3 | |
| 9 | GND | PWR | PWR | |
| 10 | LDD[12] | O | +3V3 | |
| 11 | LDD[13] | O | +3V3 | |
| 12 | LDD[14] | O | +3V3 | |
| 13 | LDD[15] | O | +3V3 | |
| 14 | LDD[16] | O | +3V3 | |



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| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| 15 | LDD[17] | O | +3V3 | |
| 16 | GND | PWR | | |
| 17 | LDD[6] | O | +3V3 | |
| 18 | LDD[7] | O | +3V3 | |
| 19 | LDD[8] | O | +3V3 | |
| 20 | LDD[9] | O | +3V3 | |
| 21 | LDD[10] | O | +3V3 | |
| 22 | LDD[11] | O | +3V3 | |
| 23 | GND | PWR | | |
| 24 | LDD[0] | O | +3V3 | |
| 25 | LDD[1] | O | +3V3 | |
| 26 | LDD[2] | O | +3V3 | |
| 27 | LDD[3] | O | +3V3 | |
| 28 | LDD[4] | O | +3V3 | |
| 29 | LDD[5] | O | +3V3 | |
| 30 | GND | PWR | | |

4.2.3 Generic Display (X20)

Part number: JVE 21B22564-40S10B-01G

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|-------------------------|-----------------|
| 1 | GND | PWR | | |
| 2 | L_PCLK | OI | +3V3 | |
| 3 | L_LCLK | O | +3V3 | |
| 4 | L_FCLK | O | +3V3 | |
| 5 | GND | PWR | PWR | |
| 6 | LDD[12] | O | +3V3 | |
| 7 | LDD[13] | O | +3V3 | |
| 8 | LDD[14] | O | +3V3 | |
| 9 | LDD[15] | O | +3V3 | |
| 10 | LDD[16] | O | +3V3 | |
| 11 | LDD[17] | O | +3V3 | |
| 12 | GND | PWR | | |
| 13 | LDD[6] | O | +3V3 | |
| 14 | LDD[7] | O | +3V3 | |
| 15 | LDD[8] | O | +3V3 | |
| 16 | LDD[9] | O | +3V3 | |
| 17 | LDD[10] | O | +3V3 | |
| 18 | LDD[11] | O | +3V3 | |
| 19 | GND | PWR | | |
| 20 | LDD[0] | O | +3V3 | |
| 21 | LDD[1] | O | +3V3 | |
| 22 | LDD[2] | O | +3V3 | |
| 23 | LDD[3] | O | +3V3 | |
| 24 | LDD[4] | O | +3V3 | |
| 25 | LDD[5] | O | +3V3 | |
| 26 | GND | PWR | | |
| 27 | L_BIAS | I | +3V3 | |
| 28 | +V_DISPLAY | PWR | JP4 selects +3V3 or +5V | |
| 29 | +V_DISPLAY | PWR | JP4 selects +3V3 or +5V | |
| 30 | R/L | O | JP6 selects +3V3 or GND | 100k to +3V3 |
| 31 | U/D | O | JP5 selects +3V3 or GND | 100k to +3V3 |
| 32 | GND | PWR | | |
| 33 | DISP_SPARE1 | IO | | |
| 34 | DISP_SPARE2 | IO | | |
| 35 | DISP_SPARE3 | IO | | |



| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| 36 | DISP_SPARE4 | IO | | |
| 37 | BL_ON | O | +3V3 | |
| 38 | BL_GND | PWR | | |
| 39 | BL_+5V | PWR | +5V | |
| 40 | BL_GND | PWR | | |

4.2.4 Display Spare (X17)

Part number: JVE P8562-06S10-01G

| Pin Nr. | Signal Name | IO Type | IO Type | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| 1 | DISP_SPARE1 | IO | | DISP_SPARE1 |
| 2 | DISP_SPARE2 | IO | | DISP_SPARE2 |
| 3 | DISP_SPARE3 | IO | | DISP_SPARE3 |
| 4 | DISP_SPARE4 | IO | | DISP_SPARE4 |
| 5 | GND | PWR | | |
| 6 | GND | PWR | | |

4.2.5 Touch-Screen (X5)

Part number: Molex 3951-3043/44 or AUK FPB04DZAR

| Pin Nr. | Signal Name | IO Type | IO Type | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| 1 | TSPX | O | +3V3 | |
| 2 | TSPY | O | +3V3 | |
| 3 | TSMX | O | +3V3 | |
| 4 | TSMY | O | +3V3 | |

4.2.6 Generic Touch-Screen (X16)

Part number: JVE 21B22564-06S10B-01G

| Pin Nr. | Signal Name | IO Type | IO Type | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| 1 | GND | PWR | | |
| 2 | TSMY | O | +3V3 | |
| 3 | TSMX | O | +3V3 | |
| 4 | TSPY | O | +3V3 | |
| 5 | TSPX | O | +3V3 | |
| 6 | GND | PWR | | |

4.2.7 VGA (X24)

Type: High Density DSUB15

| Pin Nr. | Signal Name |
|---------|-------------|
| 1 | VGA_RED |
| 2 | VGA_GREEN |
| 3 | VGA_BLUE |
| 4 | NC |
| 5 | VGA_AGND |
| 6 | VGA_AGND |
| 7 | VGA_AGND |
| 8 | VGA_AGND |
| 9 | VGA_AGND |
| 10 | VGA_AGND |
| 11 | NC |
| 12 | NC |
| 13 | L_LCLK |
| 14 | L_FCLK |
| 15 | NC |



4.3. PS/2

4.3.1 2xPS/2 (X27)

Type: 2xPS/2 stacked

| Pin Nr. | Signal Name |
|---------|-------------|
| A1 | 5V_DDCSDA2 |
| A2 | NC |
| A3 | GND |
| A5 | VCC_PS2 |
| A6 | 5V_DDCSCL2 |
| A8 | NC |
| B1 | 5V_DDCSDA1 |
| B2 | NC |
| B3 | GND |
| B5 | VCC_PS2 |
| B6 | 5V_DDCSCL1 |
| B8 | NC |

4.4. LEDs / Switches

The signals of these functions are solely mapped to the connector X21. There they can be hooked up to the GPIO Usage connectors or to additional custom specific hardware.

Please note that the buttons and switches are not debounced.

4.4.1 LED/Switches (X21)

Type: 2x10Pin Header Female, 2.54mm

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| 1 | SWITCH1 | O | +3V3 | 100k to GND |
| 2 | LED1 | I | +3V3 | 100k to GND |
| 3 | SWITCH2 | O | +3V3 | 100k to GND |
| 4 | LED2 | I | +3V3 | 100k to GND |
| 5 | SWITCH3 | O | +3V3 | 100k to GND |
| 6 | LED3 | I | +3V3 | 100k to GND |
| 7 | SWITCH5 | O | +3V3 | 100k to GND |
| 8 | LED4 | I | +3V3 | 100k to GND |
| 9 | SWITCH5 | O | +3V3 | 100k to GND |
| 10 | LED5 | I | +3V3 | 100k to GND |
| 11 | SWITCH6 | O | +3V3 | 100k to GND |
| 12 | LED6 | I | +3V3 | 100k to GND |
| 13 | SWITCH7 | O | +3V3 | 100k to GND |
| 14 | LED7 | I | +3V3 | 100k to GND |
| 15 | SWITCH8 | O | +3V3 | 100k to GND |
| 16 | LED8 | I | +3V3 | 100k to GND |
| 17 | BUTTON1 | O | | 100k to GND |
| 18 | +3V3 | PWR | +3V3 | |
| 19 | BUTTON2 | O | | 100k to GND |
| 20 | GND | PWR | +3V3 | |



4.5. Audio

The stacked connector offers standard jacks for active loudspeakers or headphones, for line-in and microphone input.

4.5.1 3xAudio Jack (X26)

Type: 3 x 3.5mm Jack stacked

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------------|---------|-----------------|
| 1 | NC | Not connected | | |
| 2 | NC | Not connected | | |
| 3 | MIC_IN | I | +3V3 | |
| 4 | MIC_IN | I | +3V3 | |
| 5 | AUDIO_AGND | PWR | | |
| 21 | HEADPHONE_R | O | +3V3 | |
| 22 | HEADPHONE_R | O | +3V3 | |
| 23 | HEADPHONE_L | O | +3V3 | |
| 24 | HEADPHONE_L | O | +3V3 | |
| 31 | LINEIN_R | I | +3V3 | |
| 32 | LINEIN_R | I | +3V3 | |
| 33 | LINEIN_L | I | +3V3 | |
| 34 | LINEIN_L | I | +3V3 | |

4.6. USB

The EvalBoard offers a dedicated USB Host as well as a shared USB Host / Client. The configuration of the shared USB channel is selected through the Jumpers setting JP8 and JP9:

| JP8, 9 | Active |
|--------|-----------------------|
| 1 - 2 | USB Host |
| 2 - 3 | USB Client |
| 1-2-3 | Detection by Software |

4.6.1 2xUSB Host (X28)

Type: 2 x USB-Host stacked

| Pin Nr. | Signal Name |
|---------|-------------|
| A1 | USB_AVCC |
| A2 | USBH1_NEXT |
| A3 | USBH1_PEXT |
| A4 | GND |
| B1 | USB_AVCC |
| B2 | USBH2_NEXT |
| B3 | USBH2_PEXT |
| B4 | GND |

4.6.2 USB Client (X29)

Type: USB Client

| Pin Nr. | Signal Name |
|---------|--------------|
| 1 | EXT_USB_AVCC |
| 2 | USBC_NEXT |
| 3 | USBC_PEXT |
| 4 | GND |



4.7. RS232

4.7.1 2xRS232 (X25)

Type: 2 x DSUB9 Male stacked

| Pin Nr. | Signal Name |
|---------|---------------|
| A1 | UART_BT_U_DCD |
| A2 | UART_BT_U_RXD |
| A3 | UART_BT_U_TXD |
| A4 | UART_BT_U_DTR |
| A5 | GND |
| A6 | UART_BT_U_DSR |
| A7 | UART_BT_U_RTS |
| A8 | UART_BT_U_CTS |
| A9 | UART_BT_U_RI |
| B1 | UART_FF_L_DCD |
| B2 | UART_FF_L_RXD |
| B3 | UART_FF_L_TXD |
| B4 | UART_FF_L_DTR |
| B5 | GND |
| B6 | UART_FF_L_DSR |
| B7 | UART_FF_L_RTS |
| B8 | UART_FF_L_CTS |
| B9 | UART_FF_L_RI |

4.8. Ethernet

On the EvalBoard there is an RJ45 connector with integrated magnetic for 10/100Mb assembled. With Jumper JP7 different Ethernet controllers can be configured:

| JP7 | Active |
|-------|---------|
| 1 - 2 | DM9000E |
| 2 - 3 | DM9000A |

4.8.1 Ethernet (M3)

Type: RJ-45

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------------|---------|-----------------|
| 1 | TX0+ | O | +3V3 | 50R to ETH_AVCC |
| 2 | TX0- | O | +3V3 | 50R to ETH_AVCC |
| 3 | ETH_AVCC | PWR | | |
| 4 | NC | Not connected | | |
| 5 | NC | Not connected | | |
| 6 | ETH_AGND | PWR | | |
| 7 | RXI+ | I | +3V3 | |
| 8 | RXI- | I | +3V3 | |
| 9 | +3V3 | PWR | | |
| 10 | LINK_AKT | I | +3V3 | |
| 11 | SPEED100 | I | +3V3 | |
| 12 | +3V3 | PWR | | |
| 13 | SHIELD | | | |
| 14 | SHIELD | | | |



4.9. CIF

The quick capture interface (CIF) on connector X22 is intended for applications requiring image capture capability from CMOS or CDD image sensors. The Colibri CIF supports a wide variety of operating modes, data widths, formats, and clocking schemes. For details please see the PXAxxx datasheet.

Please note that most of the signals available on the CIF connector X22 are configured as alternate functions when using the factory settings (e.g. jumper settings and the Toradex supplied WinCE image). Therefore the user is responsible to first remap these default functions to other pins (by changing the default jumper settings as well as modifying the driver configuration in Software).

Type: 2x10Pin Header Male, 2.54mm

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|------------------------|---------|---------|-----------------|
| 1 | +3V3 | PWR | | |
| 2 | +3V3 | PWR | | |
| 3 | CIF_MCLK / SODIMM[75] | IO | +3V3 | |
| 4 | CIF_PCLK / SODIMM[96] | IO | +3V3 | |
| 5 | CIF_LV / SODIMM[94] | IO | +3V3 | |
| 6 | CIF_FV / SODIMM[81] | IO | +3V3 | |
| 7 | CIF_DD0 / SODIMM[71] | IO | +3V3 | |
| 8 | CIF_DD1 / SODIMM[98] | IO | +3V3 | |
| 9 | CIF_DD2 / SODIMM[101] | IO | +3V3 | |
| 10 | CIF_DD3 / SODIMM[103] | IO | +3V3 | |
| 11 | CIF_DD4 / SODIMM[79] | IO | +3V3 | |
| 12 | CIF_DD5 / SODIMM[97] | IO | +3V3 | |
| 13 | CIF_DD6 / SODIMM[67] | IO | +3V3 | |
| 14 | CIF_DD7 / SODIMM[59] | IO | +3V3 | |
| 15 | I2C_CLK / SODIMM[196] | IO | +3V3 | 4k7 to +3V3 |
| 16 | I2C_DATA / SODIMM[194] | IO | +3V3 | 4k7 to +3V3 |
| 17 | CIF_DD8 / SODIMM[85] | IO | +3V3 | |
| 18 | CIF_DD9 / SODIMM[65] | IO | +3V3 | |
| 19 | GND | PWR | | |
| 20 | GND | PWR | | |

4.10. CAN

In order to implement CAN the Colibri EvalBoard uses the Philips SAJ1000 controller. Its CAN port is electrically isolated from the system power supply.

The CAN connector provides an additional feature: the user can optionally connect the isolated power supply to connector pins in order to provide power to external CAN nodes.

| JP1, 2. | Power on X2 |
|---------|-------------|
| 1 - 2 | No |
| 2 - 3 | Yes |

4.10.1 CAN (X2)

Type: DSUB9 Male

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------------|---------|-----------------|
| 1 | NC | Not connected | | |
| 2 | CAN_L | IO | +5V | |
| 3 | CAN_GND | PWR | | |
| 4 | NC | Not connected | | |
| 5 | NC | Not connected | | |
| 6 | CAN_PGND | PWR | | |
| 7 | CAN_H | IO | +5V | |
| 8 | NC | Not connected | | |
| 9 | CAN_V+ | PWR | +5V | |



4.11. Card slots

The hardware supported card detect function is implemented, but not the write protect feature.

4.11.1 CompactFlash (X6)

Type: CF-Socket

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------------|---------|-----------------|
| 1 | GND | PWR | | |
| 2 | CF_D[3] | IO | +3V3 | |
| 3 | CF_D[4] | IO | +3V3 | |
| 4 | CF_D[5] | IO | +3V3 | |
| 5 | CF_D[6] | IO | +3V3 | |
| 6 | CF_D[7] | IO | +3V3 | |
| 7 | PCE1 | O | +3V3 | |
| 8 | CF_A[10] | O | +3V3 | |
| 9 | POE | O | +3V3 | |
| 10 | CF_A[9] | O | +3V3 | |
| 11 | CF_A[8] | O | +3V3 | |
| 12 | CF_A[7] | O | +3V3 | |
| 13 | +3V3S | PWR | | |
| 14 | CF_A[6] | O | +3V3 | |
| 15 | CF_A[5] | O | +3V3 | |
| 16 | CF_A[4] | O | +3V3 | |
| 17 | CF_A[3] | O | +3V3 | |
| 18 | CF_A[2] | O | +3V3 | |
| 19 | CF_A[1] | O | +3V3 | |
| 20 | CF_A[0] | O | +3V3 | |
| 21 | CF_D[0] | IO | +3V3 | |
| 22 | CF_D[1] | IO | +3V3 | |
| 23 | CF_D[2] | IO | +3V3 | |
| 24 | PIOIS16 | I | +3V3 | 100k to +3V3 |
| 25 | CD1 | I | +3V3 | 100k to +3V3 |
| 26 | CD2 | I | +3V3 | 100k to +3V3 |
| 27 | CF_D[11] | IO | +3V3 | |
| 28 | DF_D[12] | IO | +3V3 | |
| 29 | CF_D[13] | IO | +3V3 | |
| 30 | CF_D[14] | IO | +3V3 | |
| 31 | CF_D[15] | IO | +3V3 | |
| 32 | PCE2 | I | +3V3 | |
| 33 | NC | Not connected | | |
| 34 | PIOR | O | +3V3 | |
| 35 | PIOW | O | +3V3 | |
| 36 | CF_WE | O | +3V3 | |
| 37 | PRDY | I | +3V3 | 100k to +3V3 |
| 38 | +3V3S | PWR | | |
| 39 | NC | Not connected | | |
| 40 | NC | Not connected | | |
| 41 | PRST | O | +3V3 | |
| 42 | PWAIT | I | +3V3 | 100k to +3V3 |
| 43 | NC | Not connected | | |
| 44 | PREG | O | +3V3 | |
| 45 | PBVD2 | I | +3V3 | 100k to +3V3 |
| 46 | PBVD1 | I | +3V3 | 100k to +3V3 |
| 47 | CF_D[8] | IO | +3V3 | |
| 48 | CF_D[9] | IO | +3V3 | |
| 49 | CF_D[10] | IO | +3V3 | |
| 50 | GND | PWR | | |



4.11.2 SD Card / MMC (X15)

Type: SDIO-Socket

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| 1 | MMDAT[3] | IO | +3V3 | 68k to +3V3 |
| 2 | MMCMD | I | +3V3 | 33k to +3V3 |
| 3 | GND | PWR | | |
| 4 | +3V3 | PWR | | |
| 5 | MMCLK | I | +3V3 | |
| 6 | GND | PWR | | |
| 7 | MMDAT[0] | IO | +3V3 | 68k to +3V3 |
| 8 | MMDAT[1] | IO | +3V3 | 68k to +3V3 |
| 9 | MMDAT[2] | IO | +3V3 | 68k to +3V3 |

4.12. GPIO Usage

The GPIO Usage connectors offer the flexibility to map the GPIOs of the Colibri module to either the on-board function or to additional external hardware.

The factory setting is a straight through jumper setting, meaning that the X8-A row is connected straight to the X8-B row. The same setting is set up for the other connector X11.

In order to allow easy wiring other than the factory settings all these signals residing on a male header are available on a female connector in parallel.

To allocate the SODIMM with the referring GPIOs please refer to the Migration Guide for which a link is listed in chapter 1.2.1

4.12.1 GPIO 1 Male (X8 Row A)

Type: 2x50Pin Male, 2.54mm

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| A1 | +3V3 | PWR | +3V3 | |
| A2 | SODIMM[28] | IO | +3V3 | |
| A3 | SODIMM[30] | IO | +3V3 | |
| A4 | SODIMM[32] | IO | +3V3 | |
| A5 | SODIMM[34] | IO | +3V3 | |
| A6 | SODIMM[36] | IO | +3V3 | |
| A7 | SODIMM[38] | IO | +3V3 | |
| A8 | GND | PWR | +3V3 | |
| A9 | SODIMM[44] | IO | +3V3 | |
| A10 | SODIMM[46] | IO | +3V3 | |
| A11 | SODIMM[48] | IO | +3V3 | |
| A12 | SODIMM[50] | IO | +3V3 | |
| A13 | SODIMM[52] | IO | +3V3 | |
| A14 | SODIMM[54] | IO | +3V3 | |
| A15 | +3V3 | PWR | +3V3 | |
| A16 | SODIMM[56] | IO | +3V3 | |
| A17 | SODIMM[58] | IO | +3V3 | |
| A18 | SODIMM[60] | IO | +3V3 | |
| A19 | SODIMM[62] | IO | +3V3 | |
| A20 | SODIMM[64] | IO | +3V3 | |
| A21 | SODIMM[66] | IO | +3V3 | |
| A22 | GND | PWR | +3V3 | |
| A23 | SODIMM[68] | IO | +3V3 | |
| A24 | SODIMM[70] | IO | +3V3 | |
| A25 | SODIMM[72] | IO | +3V3 | |
| A26 | SODIMM[74] | IO | +3V3 | |
| A27 | SODIMM[76] | IO | +3V3 | |
| A28 | SODIMM[78] | IO | +3V3 | |
| A29 | +3V3 | PWR | +3V3 | |
| A30 | SODIMM[80] | IO | +3V3 | |
| A31 | SODIMM[82] | IO | +3V3 | |
| A32 | SODIMM[86] | IO | +3V3 | |
| A33 | SODIMM[88] | IO | +3V3 | |
| A34 | SODIMM[90] | IO | +3V3 | |
| A35 | SODIMM[92] | IO | +3V3 | |



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| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| A36 | GND | PWR | +3V3 | |
| A37 | SODIMM[94] | IO | +3V3 | |
| A38 | SODIMM[96] | IO | +3V3 | |
| A39 | SODIMM[98] | IO | +3V3 | |
| A40 | SODIMM[100] | IO | +3V3 | |
| A41 | SODIMM[102] | IO | +3V3 | |
| A42 | SODIMM[104] | IO | +3V3 | |
| A43 | +3V3 | PWR | +3V3 | |
| A44 | SODIMM[106] | IO | +3V3 | |
| A45 | SODIMM[190] | IO | +3V3 | |
| A46 | SODIMM[192] | IO | +3V3 | |
| A47 | SODIMM[194] | IO | +3V3 | |
| A48 | SODIMM[196] | IO | +3V3 | |
| A49 | GND | PWR | +3V3 | |
| A50 | GND | PWR | +3V3 | |

4.12.2 GPIO 1 Female (X9)

Type: 1x50Pin Female, 2.54mm

Pinout identical to X8 Pins A1 to A50

4.12.3 Function 1 Male (X8 Row B)

Type: 2x50Pin Male, 2.54mm

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-------------------|
| B1 | +3V3 | PWR | | |
| B2 | PWM[2] | O | +3V3 | RC-filter (3.3ms) |
| B3 | PWM[0] | O | +3V3 | RC-filter (3.3ms) |
| B4 | BT_CTS | I | +3V3 | |
| B5 | BT_RTS | O | +3V3 | |
| B6 | BT_RXD | I | +3V3 | |
| B7 | BT_TXD | O | +3V3 | |
| B8 | GND | PWR | | |
| B9 | L_BIAS | O | +3V3 | |
| B10 | LDD[7] | O | +3V3 | |
| B11 | LDD[9] | O | +3V3 | |
| B12 | LDD[11] | O | +3V3 | |
| B13 | LDD[12] | O | +3V3 | |
| B14 | LDD[13] | O | OLV | |
| B15 | +3V3 | PWR | | |
| B16 | L_PCLK | O | +3V3 | |
| B17 | LDD[3] | O | +3V3 | |
| B18 | LDD[2] | O | +3V3 | |
| B19 | LDD[8] | O | +3V3 | |
| B20 | LDD[15] | O | +3V3 | |
| B21 | LDD[14] | O | +3V3 | |
| B22 | GND | PWR | | |
| B23 | L-LCLK | O | +3V3 | |
| B24 | LDD[1] | O | +3V3 | |
| B25 | LDD[5] | O | +3V3 | |
| B26 | LDD[10] | O | +3V3 | |
| B27 | LDD[0] | O | +3V3 | |
| B28 | LDD[4] | O | +3V3 | |
| B29 | +3V3 | PWR | | |
| B30 | LDD[6] | O | +3V3 | |
| B31 | L_FCLK | O | +3V3 | |
| B32 | SSPFRM | IO | +3V3 | |
| B33 | SSPCLK | IO | +3V3 | |
| B34 | SSPRXD | I | +3V3 | |
| B35 | SSPTXD | O | +3V3 | |
| B36 | GND | PWR | | |
| B37 | PCE1 | O | +3V3 | |
| B38 | PCE2 | O | +3V3 | |
| B39 | PREG | O | +3V3 | |
| B40 | PSKTSEL | I | +3V3 | 100k to +3V3 |
| B41 | PWAIT | I | +3V3 | 100k to +3V3 |



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| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| B42 | PIOIS16 | I | +3V3 | 100k to +3V3 |
| B43 | +3V3 | PWR | | |
| B44 | nEXT_CS[2] | O | +3V3 | 100k to +3V3 |
| B45 | MMCMD | IO | +3V3 | 33k to +3V3 |
| B46 | MMDAT[0] | IO | +3V3 | 68k to +3V3 |
| B47 | I2C_DATA | IO | +3V3 | 4k7 to +3V3 |
| B48 | I2C_CLK | IO | +3V3 | 4k7 to +3V3 |
| B49 | GND | PWR | | |
| B50 | GND | PWR | | |

4.12.4 Function 1 Female (X7)

Type: 1x50Pin Female, 2.54mm

Pinout identical to X8 Pins B1 to B50

4.12.5 Function 2 Male (X11 Row A)

Type: 2x50Pin Male

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-------------------|
| A1 | +3V3 | PWR | | |
| A2 | STD_RXD | I | +3V3 | |
| A3 | STD_TXD | O | +3V3 | |
| A4 | FF_DTR | O | +3V3 | |
| A5 | FF_CTS | I | +3V3 | |
| A6 | FF_RTS | O | +3V3 | |
| A7 | FF_DSR | I | +3V3 | |
| A8 | GND | PWR | | |
| A9 | FF_DCD | I | +3V3 | |
| A10 | FF_RXD | I | +3V3 | |
| A11 | FF_TXD | O | +3V3 | |
| A12 | FF_RI | I | +3V3 | |
| A13 | MMCD | I | +3V3 | 10k to +3V3 |
| A14 | PRDY | I | +3V3 | 100k to +3V3 |
| A15 | +3V3 | PWR | | |
| A16 | MMCLK | O | +3V3 | |
| A17 | MMDAT[1] | IO | +3V3 | 68k to +3V3 |
| A18 | MMDAT[2] | IO | +3V3 | 68k to +3V3 |
| A19 | MMDAT[3] | IO | +3V3 | 68k to +3V3 |
| A20 | SDA1 | IO | +3V3 | 4k7 to +3V3p |
| A21 | LDD[16] | O | +3V3 | |
| A22 | GND | PWR | | |
| A23 | PWM[3] | O | +3V3 | RC-filter (3.3ms) |
| A24 | LDD[17] | O | +3V3 | |
| A25 | SCL1 | IO | +3V3 | 4k7 to +3V3 |
| A26 | SDA2 | IO | +3V3 | 4k7 to +3V3 |
| A27 | PWM[1] | O | +3V3 | RC-filter (3.3ms) |
| A28 | SCL2 | IO | +3V3 | 4k7 to +3V3 |
| A29 | +3V3 | PWR | | |
| A30 | BL_ON | O | +3V3 | 100k to GND |
| A31 | CAN_INT | IO | +3V3 | 4k7 to +3V3 |
| A32 | PRST | O | +3V3 | |
| A33 | PBVD2 | I | +3V3 | 100k to +3V3 |
| A34 | PBVD1 | I | +3V3 | 100k to +3V3 |
| A35 | PCD | I | +3V3 | |
| A36 | GND | PWR | | |
| A37 | nPPEN | O | +3V3 | 2k2 to +3V3 |
| A38 | POE | O | +3V3 | |
| A39 | PIOW | O | +3V3 | |
| A40 | PIOR | O | +3V3 | |
| A41 | nCAN_CS | O | +3V3 | 100k to +3V3 |
| A42 | nEXT_CS[1] | O | +3V3 | 100k to +3V3 |
| A43 | nEXT_CS[0] | O | +3V3 | 100k to +3V3 |
| A44 | EXT_IO[2] | IO | +3V3 | |
| A45 | USBH_PEN | O | +3V3 | 100k to +3V3 |
| A46 | USBH_OC | I | +3V3 | 100k to +3V3 |
| A47 | EXT_IO[1] | IO | +3V3 | |



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| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| A48 | EXT_IO[0] | IO | +3V3 | |
| A49 | USBC_DET | I | +3V3 | 320k to GND |
| A50 | GND | PWR | | |

4.12.6 Function 2 Female (X12)

Type: 1x50Pin Female, 2.54mm

Pinout identical to X11 Pins A1 to A50

4.12.7 GPIO 2 Male (X11 Row B)

Type: 2x50Pin Male, 2.54mm

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| B1 | +3V3 | PWR | | |
| B2 | SODIMM[19] | IO | +3V3 | |
| B3 | SODIMM[21] | IO | +3V3 | |
| B4 | SODIMM[23] | IO | +3V3 | |
| B5 | SODIMM[25] | IO | +3V3 | |
| B6 | SODIMM[27] | IO | +3V3 | |
| B7 | SODIMM[29] | IO | +3V3 | |
| B8 | GND | PWR | | |
| B9 | SODIMM[31] | IO | +3V3 | |
| B10 | SODIMM[33] | IO | +3V3 | |
| B11 | SODIMM[35] | IO | +3V3 | |
| B12 | SODIMM[37] | IO | +3V3 | |
| B13 | SODIMM[43] | IO | +3V3 | |
| B14 | SODIMM[45] | IO | +3V3 | |
| B15 | +3V3 | PWR | | |
| B16 | SODIMM[47] | IO | +3V3 | |
| B17 | SODIMM[49] | IO | +3V3 | |
| B18 | SODIMM[51] | IO | +3V3 | |
| B19 | SODIMM[53] | IO | +3V3 | |
| B20 | SODIMM[55] | IO | +3V3 | |
| B21 | SODIMM[57] | IO | +3V3 | |
| B22 | GND | PWR | | |
| B23 | SODIMM[59] | IO | +3V3 | |
| B24 | SODIMM[61] | IO | +3V3 | |
| B25 | SODIMM[63] | IO | +3V3 | |
| B26 | SODIMM[65] | IO | +3V3 | |
| B27 | SODIMM[67] | IO | +3V3 | |
| B28 | SODIMM[69] | IO | +3V3 | |
| B29 | +3V3 | PWR | | |
| B30 | SODIMM[71] | IO | +3V3 | |
| B31 | SODIMM[73] | IO | +3V3 | |
| B32 | SODIMM[75] | IO | +3V3 | |
| B33 | SODIMM[77] | IO | +3V3 | |
| B34 | SODIMM[79] | IO | +3V3 | |
| B35 | SODIMM[81] | IO | +3V3 | |
| B36 | GND | PWR | | |
| B37 | SODIMM[85] | IO | +3V3 | |
| B38 | SODIMM[97] | IO | +3V3 | |
| B39 | SODIMM[101] | IO | +3V3 | |
| B40 | SODIMM[103] | IO | +3V3 | |
| B41 | SODIMM[105] | IO | +3V3 | |
| B42 | SODIMM[107] | IO | +3V3 | |
| B43 | +3V3 | PWR | | |
| B44 | SODIMM[127] | IO | +3V3 | |
| B45 | SODIMM[129] | IO | +3V3 | |
| B46 | SODIMM[131] | IO | +3V3 | |
| B47 | SODIMM[133] | IO | +3V3 | |
| B48 | SODIMM[135] | IO | +3V3 | |
| B49 | SODIMM[137] | IO | +3V3 | |
| B50 | GND | PWR | | |



4.12.8 GPIO 2 Female (X10)

Type: 1x50Pin Female, 2.54mm

Pinout identical to X11 Pins B1 to B50

4.13. User Extension

The User extension connector provides the buffered CPU bus (5V tolerant) and a power supply for additional external Hardware.

4.13.1 User Extension (X3)

Type: DIN41612 96Pin Female

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| A1 | B_D[0] | IO | +3V3 | |
| A2 | B_D[3] | IO | +3V3 | |
| A3 | B_D[5] | IO | +3V3 | |
| A4 | B_D[8] | IO | +3V3 | |
| A5 | B_D[11] | IO | +3V3 | |
| A6 | B_D[13] | IO | +3V3 | |
| A7 | B_D[16] | IO | +3V3 | |
| A8 | B_D[19] | IO | +3V3 | |
| A9 | B_D[21] | IO | +3V3 | |
| A10 | B_D[24] | IO | +3V3 | |
| A11 | B_D[27] | IO | +3V3 | |
| A12 | B_D[29] | IO | +3V3 | |
| A13 | +3V3 | PWR | +3V3 | |
| A14 | B_A[0] | O | +3V3 | |
| A15 | B_A[3] | O | +3V3 | |
| A16 | B_A[6] | O | +3V3 | |
| A17 | B_A[8] | O | +3V3 | |
| A18 | B_A[11] | O | +3V3 | |
| A19 | B_A[14] | O | +3V3 | |
| A20 | B_A[16] | O | +3V3 | |
| A21 | B_A[19] | O | +3V3 | |
| A22 | B_A[22] | O | +3V3 | |
| A23 | B_A[24] | O | +3V3 | |
| A24 | B_DQM1 | O | +3V3 | |
| A25 | +5V | PWR | +5V | |
| A26 | B_nWE | I | +3V3 | |
| A27 | nEXT_CS[0] | I | +3V3 | 100k to +3V3 |
| A28 | RDnWR | I | +3V3 | |
| A29 | I2C_DATA | IO | +3V3 | 4k7 to +3V3 |
| A30 | SSPFRM | IO | +3V3 | |
| A31 | nPWE | I | +3V3 | |
| A32 | EXT_IO[1] | I | +3V3 | |
| B1 | B_D[1] | IO | +3V3 | |
| B2 | GND | PWR | | |
| B3 | B_D[6] | IO | +3V3 | |
| B4 | B_D[9] | IO | +3V3 | |
| B5 | +3V3 | PWR | | |
| B6 | B_D[14] | IO | +3V3 | |
| B7 | B_D[17] | IO | +3V3 | |
| B8 | +3V3 | PWR | | |
| B9 | B_D[22] | IO | +3V3 | |
| B10 | B_D[25] | IO | +3V3 | |
| B11 | +3V3 | PWR | | |
| B12 | B_D[30] | IO | +3V3 | |
| B13 | GND | PWR | | |
| B14 | B_A[1] | O | +3V3 | |
| B15 | B_A[4] | O | +3V3 | |
| B16 | GND | PWR | | |
| B17 | B_A[9] | O | +3V3 | |
| B18 | B_A[12] | O | +3V3 | |
| B19 | +5V | PWR | | |
| B20 | B_A[17] | O | +3V3 | |



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| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| B21 | B_A[20] | O | +3V3 | |
| B22 | GND | PWR | | |
| B23 | B_A[25] | O | +3V3 | |
| B24 | B_DQM2 | O | +3V3 | |
| B25 | GND | PWR | | |
| B26 | nEXT_CS[1] | IO | +3V3 | 100k to +3V3 |
| B27 | GND | PWR | | |
| B28 | RDY | IO | +3V3 | |
| B29 | +5V | PWR | | |
| B30 | SSPTXD | O | +3V3 | |
| B31 | GND | PWR | | |
| B32 | nRESET_OUT | O | +3V3 | |
| C1 | B_D[2] | IO | +3V3 | |
| C2 | B_D[4] | IO | +3V3 | |
| C3 | B_D[7] | IO | +3V3 | |
| C4 | B_D[10] | IO | +3V3 | |
| C5 | B_D[12] | IO | +3V3 | |
| C6 | B_D[15] | IO | +3V3 | |
| C7 | B_D[18] | IO | +3V3 | |
| C8 | B_D[20] | IO | +3V3 | |
| C9 | B_D[23] | IO | +3V3 | |
| C10 | B_D[26] | IO | +3V3 | |
| C11 | B_D[28] | IO | +3V3 | |
| C12 | B_D[31] | IO | +3V3 | |
| C13 | +3V3 | PWR | | |
| C14 | B_A[2] | O | +3V3 | |
| C15 | B_A[5] | O | +3V3 | |
| C16 | B_A[7] | O | +3V3 | |
| C17 | B_A[10] | O | +3V3 | |
| C18 | B_A[13] | O | +3V3 | |
| C19 | B_A[15] | O | +3V3 | |
| C20 | B_A[18] | O | +3V3 | |
| C21 | B_A[21] | O | +3V3 | |
| C22 | B_A[23] | O | +3V3 | |
| C23 | B_DQM0 | O | +3V3 | |
| C24 | B_DQM3 | O | +3V3 | |
| C25 | +5V | PWR | | |
| C26 | B_nOE | O | +3V3 | |
| C27 | nEXT_CS[2] | IO | +3V3 | 100k to +3V3 |
| C28 | I2C_CLK | IO | +3V3 | 4k7 to +3V3 |
| C29 | SSPCLK | IO | +3V3 | |
| C30 | SSPRXD | I | +3V3 | |
| C31 | EXT_IO[0] | IO | +3V3 | |
| C32 | EXT_IO[2] | IO | +3V3 | |

4.14. Analog IO

The analog outputs are implemented as pulse width modulate signals feeding a discrete RC filters with a time constant of 3.3ms.

The analog inputs are directly connected to the GPIO Usage area.

4.14.1 Analog IO (X14)

Type: 2x8Pin Header Male, 2.54mm

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|---------------|---------|---------|-------------------|
| 1 | ANALOG_IN[0] | I | +3V3 | |
| 2 | AUDIO_AGND | PWR | | |
| 3 | ANALOG_IN[1] | I | +3V3 | |
| 4 | AUDIO_AGND | PWR | | |
| 5 | ANALOG_IN[2] | I | +3V3 | |
| 6 | AUDIO_AGND | PWR | | |
| 7 | ANALOG_IN[3] | I | +3V3 | |
| 8 | AUDIO_AGND | PWR | | |
| 9 | ANALOG_OUT[0] | O | +3V3 | RC-filter (3.3ms) |



| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|---------------|---------|---------|-------------------|
| 10 | GND | PWR | | |
| 11 | ANALOG_OUT[1] | O | +3V3 | RC-filter (3.3ms) |
| 12 | GND | PWR | | |
| 13 | ANALOG_OUT[2] | O | +3V3 | RC-filter (3.3ms) |
| 14 | GND | PWR | | |
| 15 | ANALOG_OUT[3] | O | +3V3 | RC-filter (3.3ms) |
| 16 | GND | PWR | | |

4.15. Reset

The Reset connector X4 provides the Reset and Power Button control signals to be accessed by external logic.

Type: 2 x 3Pin Header Male, 2.54mm

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|-------------|---------|---------|-----------------|
| 1 | PWRBTN1 | IO | +Vin | PU to Vin |
| 2 | PWRBTN1 | IO | +Vin | PU to Vin |
| 3 | GND | PWR | | |
| 4 | GND | PWR | | |
| 5 | FORCE_OFF | I | 20V max | 100k auf GND |
| 6 | ResetN | IO | +3V3 | Pu to +3V3 |

4.16. JTAG

The EvalBoard provides a buffering function of the JTAG signals running from the development platform to the Colibri Module. Connector X19 is used to interface with a flexible flat cable to the identical Colibri JTAG connector, X13 interfaces to the development platform.

4.16.1 JTAG to Colibri (X19)

While inserting the Colibri module into the EvalBoard please pay attention how you connect the 8 pin FCC cable which is used for the JTAG connection between the EvalBoard and the Colibri:

First plug in FCC cable into connector X2 of Colibri module (so the blue colored supporting tape of the FCC cable is opposite to the Colibri PCB), second plug the Colibri module into the Evalboard, and finally plug the FCC cable into connector X19 of EvalBoard (the blue colored supporting tape of the FCC cable is facing towards the Evalboard PCB).

When you are done the FCC cable is twisted by 180° when plugged in on both sides.

Part number: Molex 52745-0896

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|---------------|---------|---------|-----------------|
| 1 | +3V3 | PWR | | - |
| 2 | GND | PWR | | - |
| 3 | BUFJTAG_TMS | O | +3V3 | - |
| 4 | BUFJTAG_nTRST | O | +3V3 | - |
| 5 | BUFJTAG_TCK | O | +3V3 | - |
| 6 | BUFFJTAG_TDO | I | +3V3 | - |
| 7 | BUFFJTAG_TDI | O | +3V3 | - |
| 8 | JTAG_RSTOUT# | O | +3V3 | - |



4.16.2 JTAG to Host (X13)

Type: 2x10Pin Header Male, 2.54mm

| Pin Nr. | Signal Name | IO Type | Voltage | Pullup/Pulldown |
|---------|----------------|---------------|---------|-----------------|
| 1 | +3V3 | PWR | | |
| 2 | +3V3 | PWR | | |
| 3 | JTAG_nTRST | I | +3V3 | 100k to GND |
| 4 | GND | PWR | | |
| 5 | JTAG_TDI | I | +3V3 | 100k to GND |
| 6 | GND | PWR | | |
| 7 | JTAG_TMS | I | +3V3 | 100k to GND |
| 8 | GND | PWR | | |
| 9 | JTAG_TCK | I | +3V3 | 100k to GND |
| 10 | GND | PWR | | |
| 11 | NC | Not connected | | |
| 12 | GND | PWR | | |
| 13 | BUFJTAG_TDO | I | +3V3 | |
| 14 | GND | PWR | | |
| 15 | JTAG_SYSRESET# | I | +3V3 | |
| 16 | GND | PWR | | |
| 17 | NC | Not connected | | |
| 18 | GND | PWR | | |
| 19 | NC | Not connected | | |
| 20 | GND | PWR | | |



5. Default signal mapping

The table below lists the default mapping (factory setting). Every row of the table shows the mapping of a Colibri pin to the function or connector on the Evaluation Board.

Legend:

| | |
|---------------------|--|
| Signal name: | GPIO number on the Colibri module |
| X8 Row A, X11 Row B | Pin number on the patch panel connector X7/X16, Colibri side (one end of the jumper) |
| X8 Row B, X11 Row A | Pin number on the patch panel connector X7/X16, Evaluation Board side (the other end of the jumper) |
| External Connector | if the signal is available on an external connector the Connector's pin number is listed here |
| Conn. Type | lists, if a signal is level shifted between the patch panel connector X8/X11 and the external connector |
| Internal Function | if a signal is not directly accessible on an external connector, but is used to control an on-board function, the function is listed here. For any details please refer to the schematics of the Evaluation Board. |
| Function | Description of the signal |

5.1. GPIO 1 mapping

| Colibri Side of the Patch Panel | | Evaluation Board Side of the Patch Panel | | | | |
|---------------------------------|----------|--|---------------|-------------------|--------------------|-----------------------|
| Signal Name | X8 Row A | X8 Row B | Conn. Type | Internal function | External Connector | Function |
| SODIMM[28] | 2 | 2 | | Analog I/O | | Analog Out2 |
| SODIMM[30] | 3 | 3 | | Analog I/O | | Analog Out0 |
| SODIMM[32] | 4 | 4 | Level shifted | | X25-A8 | UART_BT_CTS |
| SODIMM[34] | 5 | 5 | Level shifted | | X25-A7 | UART_BT_RTS |
| SODIMM[36] | 6 | 6 | Level shifted | | X25-A2 | UART_BT_RXD |
| SODIMM[38] | 7 | 7 | Level shifted | | X25-A3 | UART_BT_TXD |
| SODIMM[44] | 9 | 9 | | VGA | X18-6 | L_BIAS |
| SODIMM[46] | 10 | 10 | | VGA | X18-18 | LCD_Green3 / LDD[7] |
| SODIMM[48] | 11 | 11 | | VGA | X18-20 | LCD_Green5 / LDD[9] |
| SODIMM[50] | 12 | 12 | | VGA | X18-22 | LCD_Green7 / /LDD[11] |
| SODIMM[52] | 13 | 13 | | VGA | X18-10 | LCD_Red2 / LDD[12] |
| SODIMM[54] | 14 | 14 | | VGA | X18-11 | LCD_Red3 / LDD[13] |
| SODIMM[56] | 16 | 16 | | VGA | X18-5 | LCD_L_PCLK |
| SODIMM[58] | 17 | 17 | | VGA | X18-27 | LCD_Blue5 / LDD[3] |
| SODIMM[60] | 18 | 18 | | VGA | X18-26 | LCD_Blue4 / LDD[2] |
| SODIMM[62] | 19 | 19 | | VGA | X18-19 | LCD_Green4 / LDD[8] |
| SODIMM[64] | 20 | 20 | | VGA | X18-13 | LCD_Red5 / LDD[15] |
| SODIMM[66] | 21 | 21 | | VGA | X18-12 | LCD_Red4 / LDD[14] |
| SODIMM[68] | 23 | 23 | | VGA | X18-8 | LCD_L-LCLK |
| SODIMM[70] | 24 | 24 | | VGA | X18-25 | LCD_Blue3 / LDD[1] |
| SODIMM[72] | 25 | 25 | | VGA | X18-29 | LCD_Blue7 / LDD[5] |
| SODIMM[74] | 26 | 26 | | VGA | X18-21 | LCD_Green6 / LDD[10] |
| SODIMM[76] | 27 | 27 | | VGA | X18-24 | LCD_Blue2 / LDD[0] |
| SODIMM[78] | 28 | 28 | | VGA | X18-28 | LCD_Blue6 / LDD[4] |
| SODIMM[80] | 30 | 30 | | VGA | X18-17 | LCD_Green2 / LDD[6] |
| SODIMM[82] | 31 | 31 | | VGA | X18-7 | LCD_L_FCLK |
| SODIMM[86] | 32 | 32 | | | X3-A30 | SSPFRM |
| SODIMM[88] | 33 | 33 | | | X3-C29 | SSPCLK |
| SODIMM[90] | 34 | 34 | | | X3-C30 | SSPRXD |
| SODIMM[92] | 35 | 35 | | | X3-B30 | SSPTXD |
| SODIMM[94] | 37 | 37 | | | X6-7 | CF_PCE1 |
| SODIMM[96] | 38 | 38 | | | X6-32 | CF_PCE2 |
| SODIMM[98] | 39 | 39 | | | X6-44 | CF_PREG |



Colibri Evalboard Datasheet

| Colibri Side of the Patch Panel | | Evaluation Board Side of the Patch Panel | | | | |
|---------------------------------|----------|--|------------|-------------------|--------------------|------------------------|
| Signal Name | X8 Row A | X8 Row B | Conn. Type | Internal function | External Connector | Function |
| SODIMM[100] | 40 | 40 | | CF | | CF_PSKTSEL |
| SODIMM[102] | 41 | 41 | | | X6-42 | CF_PWAIT |
| SODIMM[104] | 42 | 42 | | | X6-24 | CF_PIOIS16 |
| SODIMM[106] | 44 | 44 | | | X3-C27 | External Chip Select 2 |
| SODIMM[190] | 45 | 45 | | | X15-2 | MMCMD |
| SODIMM[192] | 46 | 46 | | | X15-7 | MMDAT[0] |
| SODIMM[194] | 47 | 47 | | | X3-A29 | I2C_Data |
| SODIMM[196] | 48 | 48 | | | X3-C28 | I2C_Clock |

5.2. GPIO 2 mapping

| Colibri Side of the Patch Panel | | Evaluation Board Side of the Patch Panel | | | | |
|---------------------------------|-----------|--|---------------|-------------------|--------------------|------------------------------|
| Signal Name | X11 Row B | X11 Row A | Conn. Type | Internal function | External Connector | Function |
| SODIMM[19] | 2 | 2 | | | M1-4 | IrDA-RXD |
| SODIMM[21] | 3 | 3 | | | M1-3 | IrDA-TXD |
| SODIMM[23] | 4 | 4 | Level shifted | | X25-B4 | UART_FF_DTR |
| SODIMM[25] | 5 | 5 | Level shifted | | X25-B8 | UART_FF_CTS |
| SODIMM[27] | 6 | 6 | Level shifted | | X25-B7 | UART_FF_RTS |
| SODIMM[29] | 7 | 7 | Level shifted | | X25-B6 | UART_FF_DSR |
| SODIMM[31] | 9 | 9 | Level shifted | | X25-B1 | UART_FF_DCD |
| SODIMM[33] | 10 | 10 | Level shifted | | X25-B2 | UART_FF_RXD |
| SODIMM[35] | 11 | 11 | Level shifted | | X25-B3 | UART_FF_TXD |
| SODIMM[37] | 12 | 12 | Level shifted | | X25-B9 | UART_FF_RI |
| SODIMM[43] | 13 | 13 | | | X15-10 | SDIO-Card Detect |
| SODIMM[45] | 14 | 14 | | | X6-37 | CF_Ready |
| SODIMM[47] | 16 | 16 | | | X15-5 | SDIO-Clock |
| SODIMM[49] | 17 | 17 | | | X15-8 | SDIO-DAT[1] |
| SODIMM[51] | 18 | 18 | | | X15-9 | SDIO-DAT[2] |
| SODIMM[53] | 19 | 19 | | | X15-1 | SDIO-DAT[3] |
| SODIMM[55] | 20 | 20 | Level shifted | | X27-B1 | PS2Top-Data |
| SODIMM[57] | 21 | 21 | | VGA | X18-14 | LCD_Red6 / LDD[16] |
| SODIMM[59] | 23 | 23 | | Analog I/O | | Analog Out3 |
| SODIMM[61] | 24 | 24 | | VGA | X18-15 | LCD_Red7 / LDD[17] |
| SODIMM[63] | 25 | 25 | Level shifted | | X27-B6 | PS2Top-Clock |
| SODIMM[65] | 26 | 26 | Level shifted | | X27-A1 | PS2Bottom-Data |
| SODIMM[67] | 27 | 27 | | Analog I/O | | Analog Out 1 |
| SODIMM[69] | 28 | 28 | Level shifted | | X27-A6 | PS2Bottom-Clock |
| SODIMM[71] | 30 | 30 | | | X23-3 | LCD Backlight On |
| SODIMM[73] | 31 | 31 | | CAN | | CAN Interrupt |
| SODIMM[75] | 32 | 32 | | | X6-41 | CF_Reset |
| SODIMM[77] | 33 | 33 | | | X6-45 | CF Battery Voltage Detect 2 |
| SODIMM[79] | 34 | 34 | | | X6-46 | CF Battery Voltage Detect 1 |
| SODIMM[81] | 35 | 35 | | CF | | CF-Card Detect |
| SODIMM[85] | 37 | 37 | | CF | | CF_Power Enable |
| SODIMM[97] | 38 | 38 | | | X6-9 | CF Output enable |
| SODIMM[101] | 39 | 39 | | | X6-35 | CF IO Write Strobe |
| SODIMM[103] | 40 | 40 | | | X6-34 | CF IO Read Strobe |
| SODIMM[105] | 41 | 41 | | CAN | | CAN_Chip Select |
| SODIMM[107] | 42 | 42 | | | X3-B26 | External Chip Select 1 |
| +3V3 | 43 | 43 | | | X3-A27 | External Chip Select 0(*) |
| SODIMM[127] | 44 | 44 | | | X3-C32 | External IO 2 |
| SODIMM[129] | 45 | 45 | | USB Host | | USB Host Power Enable |
| SODIMM[131] | 46 | 46 | | USB Host | | USB Host Overcurrent Control |
| SODIMM[133] | 47 | 47 | | | X3-A32 | External IO 1 |
| SODIMM[135] | 48 | 48 | | | X3-C31 | External IO 0 |
| SODIMM[137] | 49 | 49 | Level shifted | | X29-1 | USB Client Detect |

(*)Please note that if X11 pin 43 is jumpered then pin X3-A27 on the extension connector is not available as the external chip select function, but just static high insted. For details, please refer to the schematics.



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