

# Iris V1.1

## Datasheet



## Revision History

Date	Doc. Rev.	Iris Version	Changes
25-Sept-15	Rev. 1.0	V1.1	Initial Release: Datasheet has been updated to new format. Please note: FF UART has been renamed to UART-A, BT UART to UART-B and STD UART to UART-C.
07-July-16	Rev. 1.1	V1.1	Section 2.2, Hardware Architecture Block Diagram: Updated block diagram (fig 1).
04-Aug-16	Rev. 1.2	V1.1	Section 2.2, Hardware Architecture Block Diagram: Updated block diagram (fig 1).
30-Sept-16	Rev. 1.3	V1.1	Section 2.2, Hardware Architecture Block Diagram: Updated block diagram (fig 1).
07-Feb-17	Rev. 1.4	V1.1	Section 1.1, Reference Documents: Updated web-links. Section 3.7.2, Unified Interface Display Connector (X3): Updated web-links. Section 3.10.2, Battery Holder (BAT1): Added note regarding battery holder spring contact issue. Section 7, Design data: Updated web-links.
11-Nov-18	Rev. 1.5	V1.1	Section 2.3.1, Top Side Connectors: Updated figure 2.
02-May-19	Rev. 1.6	V1.1	Updated 3.7 with correct graphic and information.

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## 1. Introduction

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Iris is a carrier board for the Colibri family of computer-on-modules. Iris supports all modules in the Colibri product family, and includes support for the additional/enhanced functionality available on the latest products in Colibri family.

### 1.1. Reference Documents

For detailed technical information about the suitable computer modules, please refer to the sections below:

#### 1.1.1 Colibri Computer Modules

An overview of the Colibri product family:

<https://www.toradex.com/computer-on-modules/colibri-arm-family>

#### 1.1.2 Synchronous DC/DC Buck Converter

<http://www.ti.com/product/tps51120>

#### 1.1.3 USB, Current Limiter, Power Distribution Switches

<http://www.ti.com/product/tps2042b>

#### 1.1.4 LVDS Transmitter

[http://www.thine.co.jp/en/products/num\\_details/THC63LVD827.html](http://www.thine.co.jp/en/products/num_details/THC63LVD827.html)

#### 1.1.5 Video DAC, Parallel RGB to VGA

<http://www.analog.com/en/products/digital-to-analog-converters/da-converters/adv7125.html>

## 2. Features

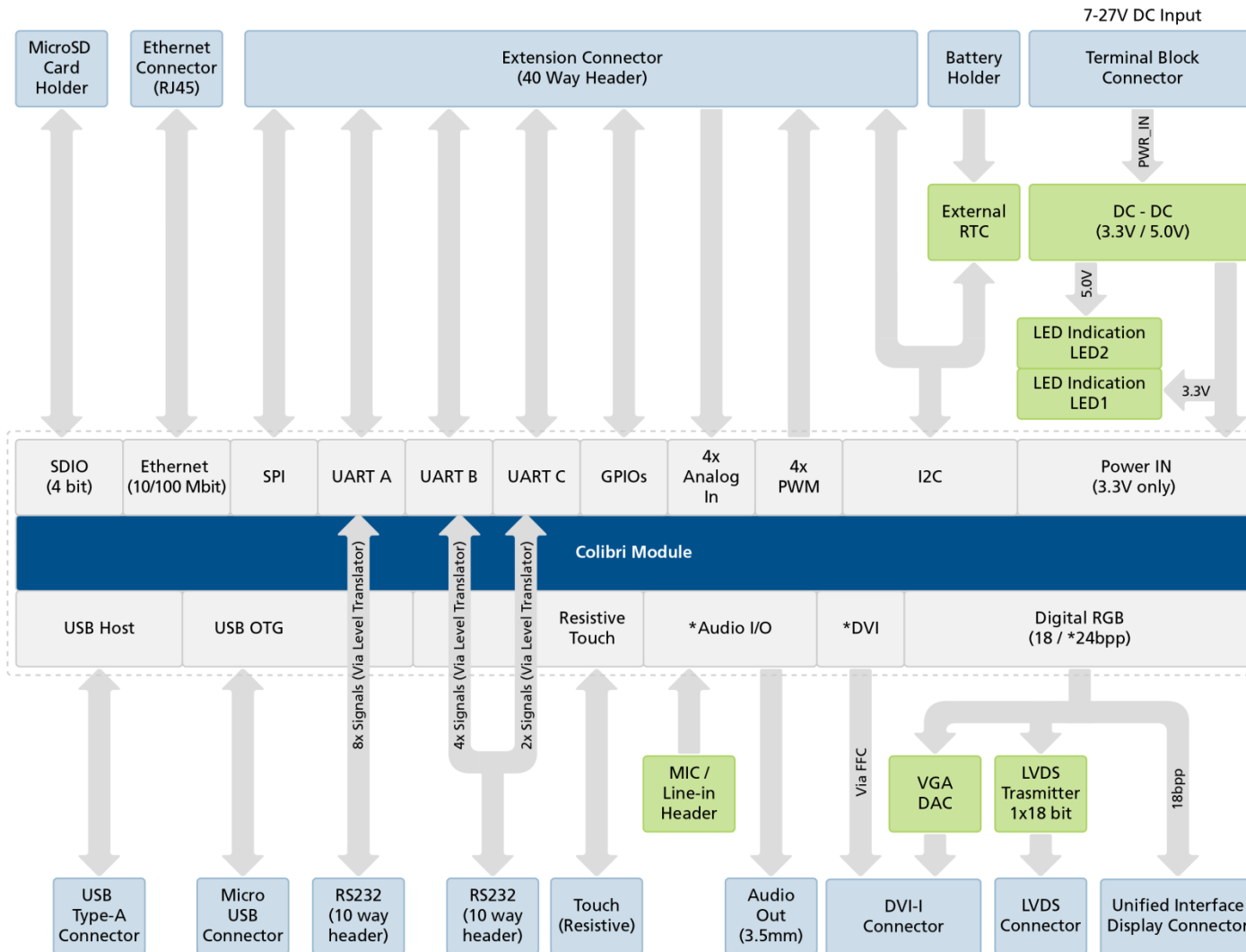
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### 2.1. Overview

Iris carrier board provides the following features and communication interfaces:

- USB Type-A and OTG Micro-AB connectors for host and host/client
- RJ45 Ethernet
- Micro SD card slot
- Digital (TDMS) and Analog (VGA) interfaces on a single DVI-I connector
- LVDS interface
- Digital RGB interface
- Resistive touch screen connector
- Capacitive touch connector
- Audio out on 3.5mm stereo jack
- Microphone In and Line-In on audio header
- SSP, I2C, 4 ADCs, 4 PWMs and 8 GPIOs on extension header
- UART-A/B/C available with TTL and RS-232 level
- Real-time clock with battery backup
- Resistive touch screen connector

## 2.2. Hardware Architecture Block Diagram

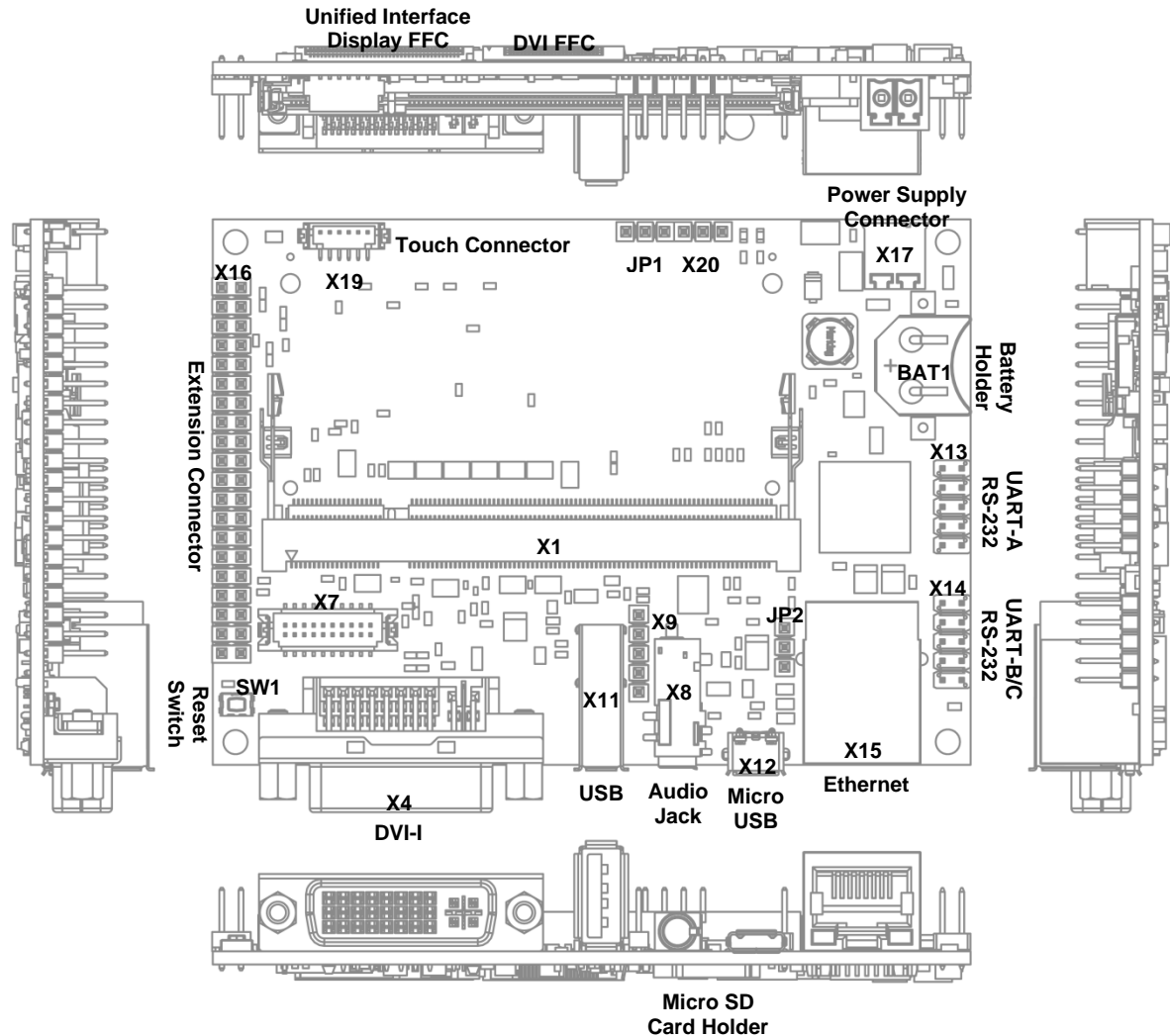


\* This is a module-specific feature and may not be supported by all the computer-on-modules in the Colibri family. For more details, refer to the datasheet of Colibri computer-on-modules.

**Fig.1 Iris Carrier Board Hardware Architecture**

## 2.3. Physical Drawings

### 2.3.1 Top Side Connectors: Physical Drawing



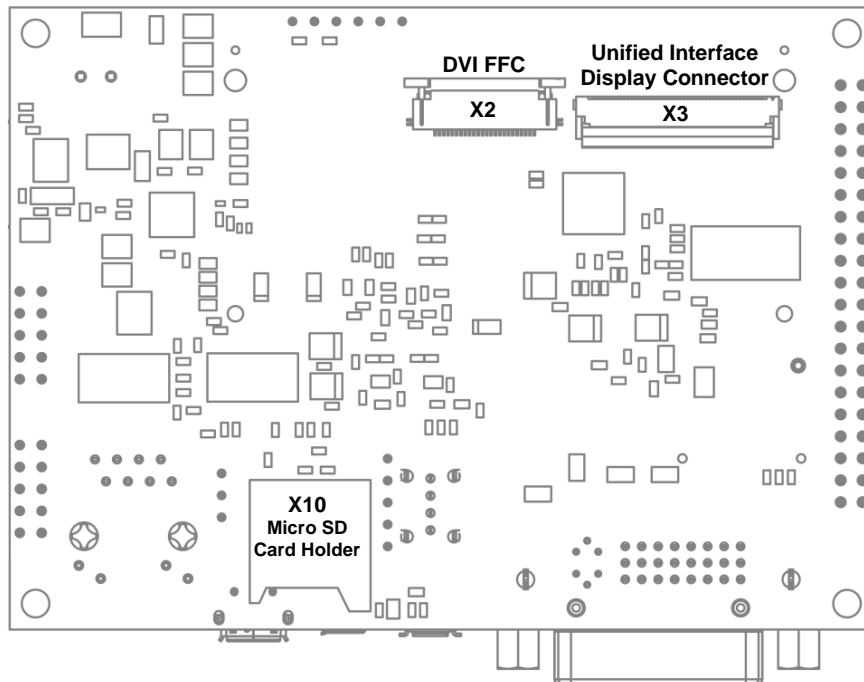
**Fig. 2 Iris Carrier Board Connectors – Top Side**

Ref.	Description	Remarks
X1	Colibri SODIMM connector	
X4	DVI-I connector	
X7	LVDS connector	
X8	Audio Jack	
X9	Audio header	
X11	USB Host	
X12	USB Host/Client	
X13	UART-A RS-232 header	
X14	UART-B/C RS-232 header	
X15	Ethernet connector	
X16	Extension connector	
X17	Power Supply connector	
X19	Touch connector	



X20	Power Out header	Not populated
BAT1	12mm Battery holder	Supported batteries: BR1216, CR1216, BR1220, CL1220, CR1220, BR1225
SW1	Reset Button	
JP1	Boot Mode header	Not populated
JP2	Central Tab jumper	

### 2.3.2 Bottom Side Connectors: Physical Drawing



**Fig. 3 Iris Carrier Board Connectors – Bottom Side**

Ref.	Description	Remarks
X2	DVI FFC connector	
X3	Unified Interface Display Connector	
X10	Micro SD Card Holder	

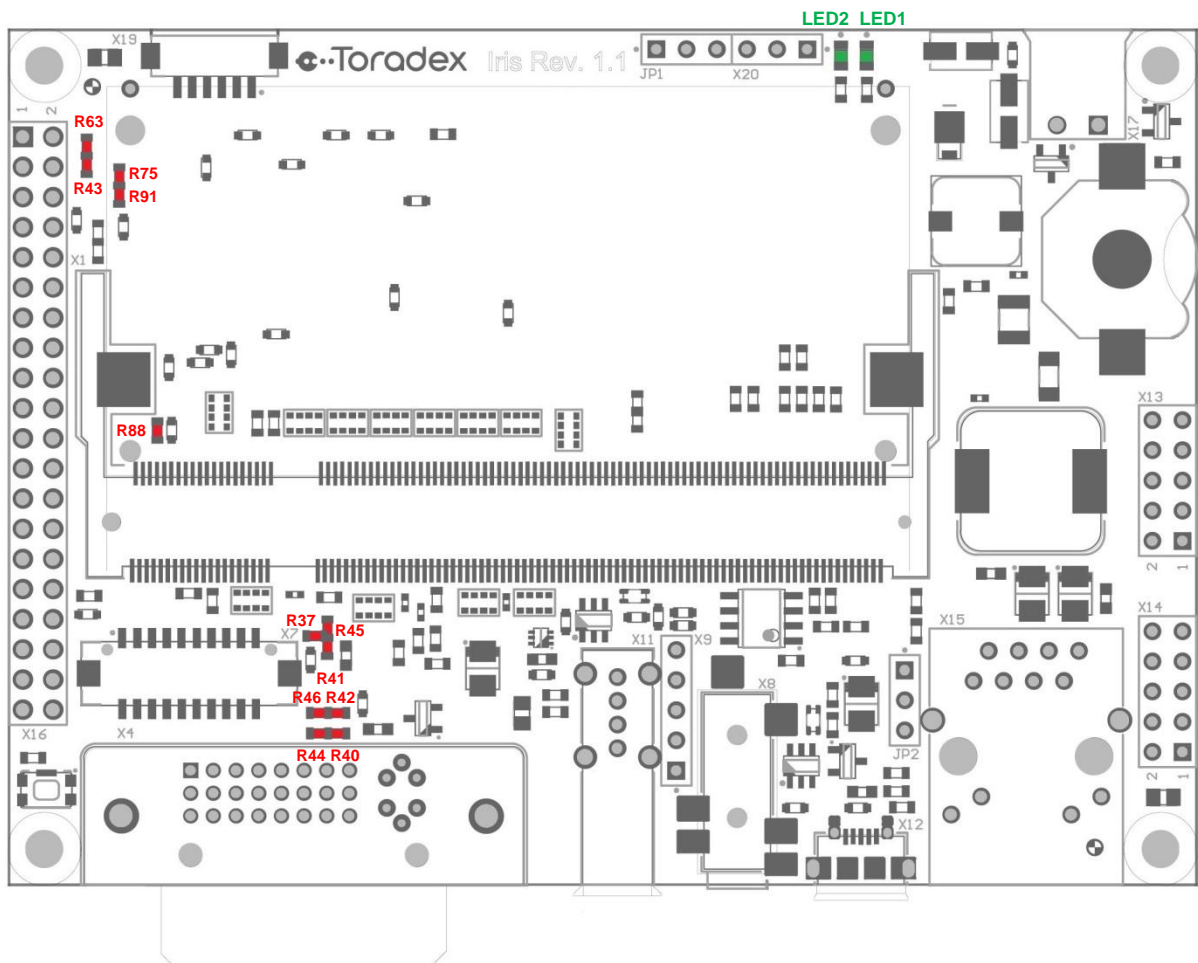
## 2.4. Assembly Options

This section marks/highlights the components on the Iris carrier board that can be used to configure different features and functional options.

**WARNING:**

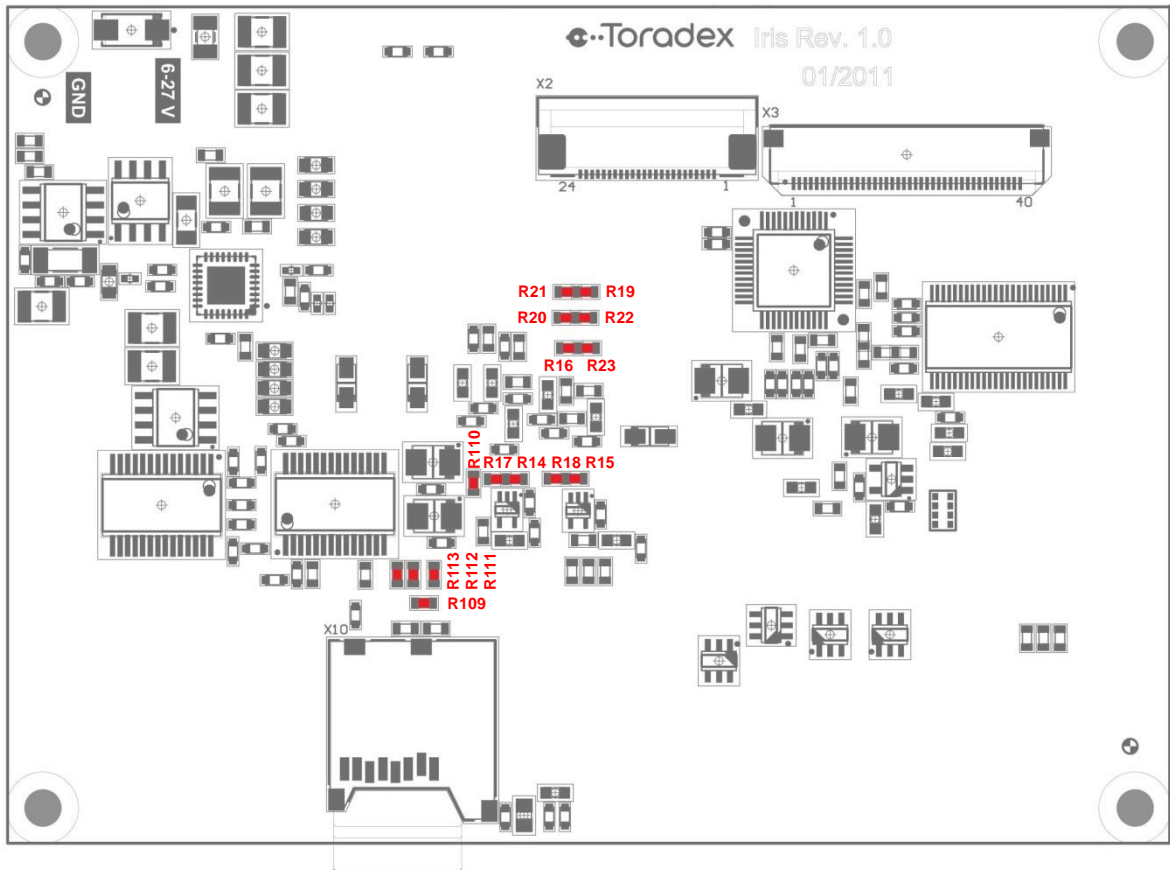
- Changing the PCB assembly voids the product warranty.
- Toradex doesn't take any responsibility for malfunction or damages caused by changing any assembly option.

### 2.4.1 Iris Assembly Options – Top Side



**Fig.4 Iris Carrier Board Assembly Options – Top Side**

### 2.4.2 Iris Assembly Options – Bottom Side



**Fig.5 Iris Carrier Board Assembly Options – Bottom Side**

## 3. Interface Description

### 3.1. Colibri Computer-On-Module

#### 3.1.1 Colibri SODIMM Connector (X1)

Type: SODIMM 200 Socket

Manufacturer: Tyco Electronics-1473005-1

Refer to the [Colibri datasheets](#) for pin-out assignment details of the Colibri modules.

#### 3.1.2 Boot Mode header (JP1)

This is an unpopulated 2.54mm (pitch) pin which provides the signals required to boot the Colibri T20 and T30 module into recovery mode (this is not functional on all other Colibri modules e.g. PXAxxx or VFxx).

Connector type: 1x3 Pin Header Male, 2.54mm, Not assembled

Pin	Signal Name	Remarks
1	RECOVERY	By shorting the pin 1-2 the Colibri will boot in Recovery boot mode.
2	GND	
3	SD_BOOT	By shorting the pin 2-3 the Colibri will boot in SD boot mode.

The following table describes the assembly options available on the Iris carrier board with respect to the SD Boot (only with Colibri T20):

Solution Selected	Assembly Options	Assembled Components on Iris V1.1	PCB Side
SD Boot Mode	Assemble 100R resistors R109, R111, R112 and R113.		Bottom

Please refer to figure 5 in [Section 2.4, Assembly Options](#) for the position of the resistors.

### 3.2. Power Supply

Iris carrier board has a wide input voltage range of 6-27V DC. The supply is protected against reverse input voltage polarity and short circuits.

The on-board power supply provides the following supplies (maximum power).

5V / 3.5A	(17.5W)
3.3V / 2.5A	(8.25W)

#### 3.2.1 Terminal Block Power Supply Connector (X17)

Connector type: Tyco 284512-2

Pin	Description	Voltage / range
1	GND_IN	
2	PWR_IN	6 – 27V

#### 3.2.2 Power Out Header (X20)

Connector type: 1x3 Pin Header Male, 2.54mm, Not assembled

Pin	Description	Voltage / range
1	+5V	
2	GND	
3	+3.3V	

### 3.3. Indications

There are two LEDs on the top side of the PCB; they are tuned on if the power supply circuit is correctly providing 3.3 and 5V power rails.

Ref.	Description
LED1	3.3V
LED2	5V

Please refer to the figure 4 in [Section 2.4, Assembly Options](#) for the position of the LEDs.

### 3.4. Ethernet

#### 3.4.1 Ethernet Connector (X15)

Connector type: RJ-45, Pulse J00-0065NL

Pin	Signal Name	SODIMM Pin Number	I/O Type	Voltage	Pull-up/Pull-down
1	ETH_TX0_P	189	O	+3.3V	50R to ETH_AVCC
2	ETH_TX0_N	187	O	+3.3V	50R to ETH_AVCC
3	ETH_RXI_P	195	I	+3.3V	
4	ETH_AVCC (CT_TXD)		PWR		
5	ETH_AGND (CT_RXD)		PWR		
6	ETH_RXI_N	193	I	+3.3V	
7	NC				
8	SHIELD				
9	+3.3V		PWR		
10	ETH_LINK_ACT	183	I	+3.3V	
11	ETH_SPEED	185	I	+3.3V	
12	+3.3V		PWR		
S1	SHIELD				
S2	SHIELD				

#### 3.4.2 Central Tab Jumper (JP2)

Jumper JP2 should be configured based upon the Ethernet controller which is present on the installed Colibri module.

Header pin pitch: 2.54 mm

Jumper position	Description
1-2	Use this configuration for DM9000E on PXA270
2-3	Use this configuration for DM9000A/ASIX on other modules

Please refer to the figure 4 in [Section 2.4, Assembly Options](#) for the position of the Jumper (JP2).

### 3.5. USB Interface

#### 3.5.1 USB Host (X11)

The Iris carrier board features 1x USB 2.0 host interface using a USB 2.0 type-A connector X11. The USB interface supports USB 2.0 high-speed and can operate at a maximum of 480 Mbit/s, depending on the Colibri module being used.

Connector type: FCI 73725-0110BLF

Pin	Signal Name	SODIMM Pin Number	I/O Type	Voltage	Pull-up/Pull-down
1	VCC_USB1		PWR	+5V	
2	USBH_N	141	I/O		15K to GND
3	USBH_P	139	I/O		15K to GND
4	GND		PWR		
S1	SHIELD				
S2	SHIELD				

#### 3.5.2 USB Host/Client (X12)

The Iris carrier board features 1x USB host/client interface using a Micro AB type USB connector X12.

Connector type: Molex 47589-0001

Pin	Signal Name	SODIMM Pin Number	I/O Type	Voltage	Pull-up/Pull-down
1	VCC_USB2		PWR	+5V	
2	USBC_N	145	I/O		15K to GND
3	USBC_P	143	I/O		15K to GND
4	USB ID				
5	GND		PWR		
S1	SHIELD				
S2	SHIELD				
S3	SHIELD				
S4	SHIELD				

### 3.6. SD/MMC Interface

#### 3.6.1 Micro SD Card Holder (X10)

Connector type: Amphenol 101-00581-59

Pin	Signal Name	SODIMM Pin Number	I/O Type	Voltage	Pull-up/Pull-down
1	MM_DAT_2	51	I/O	+3.3V	68K to +3.3V
2	MM_DAT_3	53	I/O	+3.3V	68K to +3.3V
3	MM_CMD	190	I	+3.3V	33K to +3.3V
4	+3.3V		PWR	+3.3V	
5	MM_CLK	47	I	+3.3V	
6	GND		PWR		
7	MM_DAT_0	192	I/O	+3.3V	68K to +3.3V
8	MM_DAT_1	49	I/O	+3.3V	68K to +3.3V
CD1/2	MM_CD	43			
S1	SHIELD				
S2	SHIELD				

### 3.7. Display Interface

Iris carrier board provides many options for connecting LCD panels and monitors, with the following three interfaces supported:

- 18 bit digital RGB
- LVDS
- DVI-I (Digital TDMS and Analog VGA)

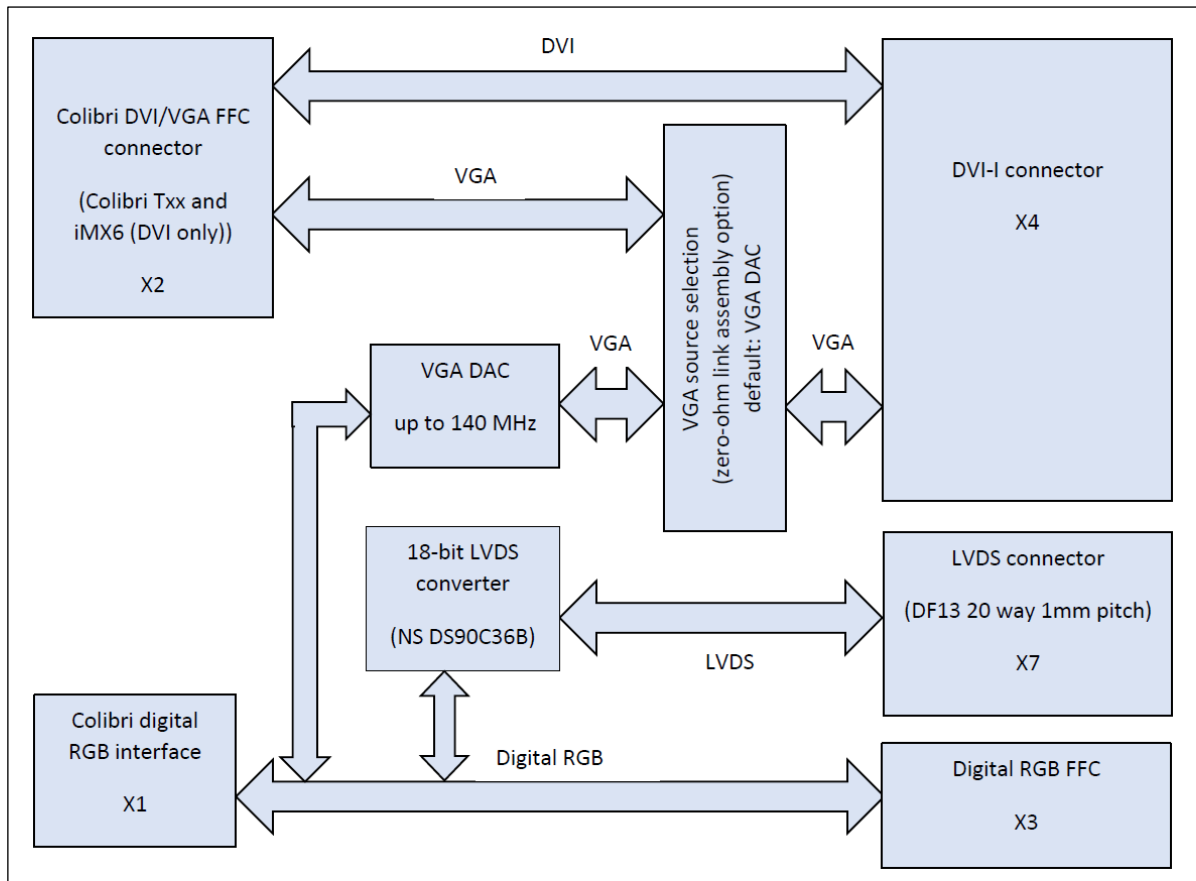


Fig.5 Display Interface Architecture

The combination of display interfaces which are available are dependent upon the Colibri module which is installed:

- The Colibri Txx can drive two independent displays on the following combination of display interfaces (A driver for VGA on X2 is only available for WinCE):

- o DVI and RGB
- o DVI and VGA (on X2)
- o RGB and VGA (on X2)

- The Colibri iMX6 can drive two independent displays on the following combination of display interfaces:

- o DVI and RGB

- The Colibri iMX6ULL, iMX7, PXAxxx, VFxx are able to drive single display on the following display interface:

- o RGB

The Iris carrier board creates LVDS and VGA signals from the Colibri's RGB signals.

It is possible to select, using an assembly option, whether the VGA output from the Colibri T20 FFC or VGA DAC (generated from the RGB interface) is connected to the analogue VGA of the DVI-I interface.

The default configuration connects the output of the on-board VGA DAC to the DVI-I connector.



The following table describes the assembly options available on the Iris carrier board with respect to the DVI-I Interface:

Solution Selected	Assembly Options	Assembled Components on Iris V1.1	PCB Side
Use the RGB to VGA DAC signals	Assemble resistors R14, R15, R16, R19, and R20. Disassemble resistors R17, R18, R21, R22, and R23.	R14, R15, R16, R19, R20	Bottom
Use the Colibri T20 FFC VGA signals	Assemble resistors R17, R18, R21, R22, and R23. Disassemble resistors R14, R15, R16, R19, and R20.	R14, R15, R16, R19, R20	Bottom

Please refer to figure 5 in [Section 2.4, Assembly Options](#) for the position of the resistors.

**Note:**

- Assembly options for the selection of VGA output apply only to Colibri T20 (only WinCE).

### 3.7.1 DVI FFC connector (X2)

Connector type: Molex 52435-2471

Pin	Signal Name	SODIMM Pin Number	I/O Type	Voltage	Pull-up/Pull-down
1	GND		PWR		
2	TMDS_CLK_P		I	+3.3V	
3	TMDS_CLK_N		I	+3.3V	
4	GND		PWR		
5	TMDS_DATA0_P		I	+3.3V	
6	TMDS_DATA0_N		I	+3.3V	
7	GND		PWR		
8	TMDS_DATA1_P		I	+3.3V	
9	TMDS_DATA1_N		I	+3.3V	
10	GND		PWR		
11	TMDS_DATA2_P		I	+3.3V	
12	TMDS_DATA2_N		I	+3.3V	
13	NC				
14	HOTPLUG_DETECT		O	+3.3V	
15	DDC_CLK		I	+5V	1.8K to +5V
16	DDC_DATA		I	+5V	1.8K to +5V
17	GND		PWR		
18	CRT_RED		I	+3.3V	
19	GND		PWR		
20	CRT_GREEN		I	+3.3V	
21	GND		PWR		
22	CRT_BLUE		I	+3.3V	
23	CRT_VSYNC		I	+3.3V	
24	CRT_HSYNC		I	+3.3V	

### 3.7.2 Unified Interface Display Connector (X3)

Iris carrier board provides a digital RGB interface port (18-bpp) to interface with the LCD panels using a 40-way, Unified Interface Display connector (X3). It also includes a 4-wire resistive touch screen interface on the same FFC connector.

The Unified Interface Display connector (X7) is compatible with the EDT Unified TFT Interface. A variety of LCD panels with integrated touch support for evaluation purposes are available at the Toradex Webshop.

For customers looking for capacitive touch display solution, Iris carrier boards are fully compatible with the Toradex Capacitive Multi-Touch Display solution. Please refer to the following developer page link for more details:

- <http://developer.toradex.com/products/capacitive-multi-touch-display>

For more TFT display solutions, refer to the following developer webpage articles:

- <http://developer.toradex.com/knowledge-base/supported-displays>
- <http://developer.toradex.com/knowledge-base/tianma-rgb-display-adapter-board>
- <http://developer.toradex.com/knowledge-base/generic-rgb-display-adapter-board>

Connector type: Omron XF2M-4015-1A

Pin	Signal Name	Color Mapping 18bpp	SODIMM Number	I/O Type	Voltage	Pull-up/ Pull-down
1	GND			PWR		
2	GND			PWR		
3	+3.3V			PWR	+3.3V	
4	+3.3V			PWR	+3.3V	
5	BL_ON		71	O	+3.3V	
6	PWM_A		59	O	+3.3V	
7	RESET_OUT#		87	O	+3.3V	
8	LCD_D_5	BLUE 5	72	O	+3.3V	
9	LCD_D_4	BLUE 4	78	O	+3.3V	
10	LCD_D_3	BLUE 3	58	O	+3.3V	
11	LCD_D_2	BLUE 2	60	O	+3.3V	
12	LCD_D_1	BLUE 1	70	O	+3.3V	
13	LCD_D_0	BLUE 0	76	O	+3.3V	
14	GND			PWR		
15	LCD_D_11	GREEN 5	50	O	+3.3V	
16	LCD_D_10	GREEN 4	74	O	+3.3V	
17	LCD_D_9	GREEN 3	48	O	+3.3V	
18	LCD_D_8	GREEN 2	62	O	+3.3V	
19	LCD_D_7	GREEN 1	46	O	+3.3V	
20	LCD_D_6	GREEN 0	80	O	+3.3V	
21	GND			PWR		
22	LCD_D_17	RED 5	61	O	+3.3V	
23	LCD_D_16	RED 4	57	O	+3.3V	
24	LCD_D_15	RED 3	64	O	+3.3V	
25	LCD_D_14	RED 2	66	O	+3.3V	
26	LCD_D_13	RED 1	54	O	+3.3V	
27	LCD_D_12	RED 0	52	O	+3.3V	
28	LCD_PCLK_WR		56	O	+3.3V	

Pin	Signal Name	Color Mapping 18bpp	SODIMM Number	I/O Type	Voltage	Pull-up/ Pull-down
29	GND			PWR		
30	LCD_LCLK_A0		68	O	+3.3V	
31	LCD_FCLK_RD		82	O	+3.3V	
32	LCD_BIAS		44	O	+3.3V	
33	Connected to 3.3V or GND via assembly option. The default assembly is GND			O	+3.3V/GND	
34	Connected to 3.3V or GND via assembly option. The default assembly is GND			O	+3.3V/GND	
35	GND			PWR		
36	+3.3V			PWR	+3.3V	
37	TOUCH_TSPY		18	O	+3.3V	
38	TOUCH_TSMX		16	O	+3.3V	
39	TOUCH_TSMY		20	O	+3.3V	
40	TOUCH_TSPX		14	O	+3.3V	

The following table describes the assembly options available on the Iris carrier board with respect to the Unified Interface Display:

Solution Selected	Assembly Options	Assembled Components on Iris V1.1	PCB Side
Unified Interface Display , Rotate display	Assemble appropriate 0R resistors R43, R63, R75, and R91. Refer to LCD TFT datasheet for configuration details.	R63, R91	Bottom

Please refer to figure 5 in [Section 2.4, Assembly Options](#) for the position of the resistors.

### 3.7.3 DVI-I Connector (X4)

Connector type: Molex 74320-1004

Pin	Signal Name	Description	I/O Type	Voltage	Pull-up/Pull-down
1	TMDS_DATA2_N	The negative DVI output number 2	O		
2	TMDS_DATA2_P	The positive DVI output number 2	O		
3	GND		PWR		
4	NC	Not connected			
5	NC	Not connected			
6	DDC_CLK	DVI EDID Clock signal	O	+5V	
7	DDC_DATA	DVI EDID Data signal	I/O	+5V	
8	CRT_VSYNC		O	+5V	
9	TMDS_DATA1_N	The negative DVI output number 1	O		
10	TMDS_DATA1_P	The positive DVI output number 1	O		
11	GND				
12	NC	Not connected			
13	NC	Not connected			
14	+5V		PWR	+5V	
15	GND		PWR		
16	HOTPLUG_DETECT	DVI Hot Plug signal	I		
17	TMDS_DATA0_N	The negative DVI output number 0	O		

Pin	Signal Name	Description	I/O Type	Voltage	Pull-up/Pull-down
18	TMDS_DATA0_P	The positive DVI output number 0	O		
19	GND		PWR		
20	NC	Not connected			
21	NC	Not connected			
22	GND		PWR		
23	TMDS_CLK_P	The positive DVI Clock signal	O		
24	TMDS_CLK_N	The negative DVI Clock signal	O		
C1	CRT_RED		O		
C2	CRT_GREEN		O		
C3	CRT_BLUE		O		
C4	CRT_HSYNC		O		
C5	AGND		PWR		

### 3.7.4 LVDS Connector (X7)

Connector type: Hirose DF13A-20DP-1.25V(56)

Pin	Signal Name	Description	I/O Type	Voltage	Pull-up/Pull-down
1	LVDS_5V	5V power supply pin	PWR	+5V	
2	LVDS_3.3V	3.3V power supply pin	PWR	+3.3V	
3	GND		PWR		
4	SEL1	Connected to LVDS_3.3V or GND via assembly option. The default assembly is GND			
5	LVDS_OUT0_N	The negative LVDS output number 0	O		
6	GND		PWR		
7	LVDS_OUT0_P	The positive LVDS output number 0	O		
8	LVDS_OUT1_N	The negative LVDS output number 1	O		
9	GND		PWR		
10	LVDS_OUT1_P	The positive LVDS output number 1	O		
11	LVDS_OUT2_N	The negative LVDS output number 2	O		
12	GND		PWR		
13	LVDS_OUT2_P	The positive LVDS output number 2	O		
14	LVDS_CLK_N	The negative LVDS clock signal	O		
15	GND		PWR		
16	LVDS_CLK_P	The positive LVDS clock signal	O		
17	BL_ON	Back Light control signal	O		
18	GND		PWR		
19	SEL2	Connected to LVDS_5V, LVDS_3.3V or GND via assembly option. The default assembly is 5V			
20	SEL3	Connected to LVDS_3.3V or GND via assembly option. The default assembly is LVDS_3.3V			

The following table describes the assembly options available on the Iris carrier board with respect to the LVDS Interface:

Solution Selected	Assembly Options	Assembled Components on Iris V1.1	PCB Side
SEL1 Configuration	Assemble appropriate 0R resistor - R40 or R44.	R44	Top
SEL2 Configuration	Assemble appropriate 0R resistor - R37 or 41 or R45.	R37	Top
SEL3 Configuration	Assemble appropriate 0R resistor - R42 or R46.	R42	Top

Please refer to figure 4 in [Section 2.4, Assembly Options](#) for the position of the resistors.

**Note:**

- Please use the pins 1 and 2 as power supply pins (max 0.9A) and the SEL1, SEL2, SEL3 as setting pins.

### 3.8. Audio Interface

#### 3.8.1 Audio Jack (X8)

Connector type: CUI SJ-43516-SMT

Pin	Signal Name	SODIMM Pin Number	I/O Type	Voltage	Pull-up/Pull-down
1	Audio AGND		PWR		
2	Headphone L	15	O		
3	Headphone R	17	O		
4	Not connected				
5	Headphone L	15	O		
6	Headphone R	17	O		

#### 3.8.2 Audio Header (X9)

Connector type: 1x5 Pin Header Male, 2.54mm

Pin	Signal Name	SODIMM Pin Number	I/O Type	Voltage	Pull-up/Pull-down
1	Audio AVCC		PWR	+3.3V	
2	Microphone In	1	I		
3	Line-In R	7	I		
4	Line-In L	5	I		
5	Audio AGND		PWR		

### 3.9. Digital and Analog I/O Interface

#### 3.9.1 UART-A RS-232 header (X13)

The Full Function (FF) UART-A RS-232 connector is a 10 way (2 rows x 5 way) 2.54mm pitch header capable of being connected to an industry standard DTK/INTEL 10 way IDC to 9 way D-type male connector.

Connector type: 2x5 Pin Header Male, 2.54mm

Pin	Signal Name	SODIMM Pin Number	I/O Type	Voltage	Pull-up/Pull-down
1	RS232_A_DCD		I		
2	RS232_A_DSR		I		
3	RS232_A_RXD		I		
4	RS232_A_RTS		O		
5	RS232_A_TXD		O		
6	RS232_A_CTS		I		
7	RS232_A_DTR		O		
8	RS232_A_RI		I		
9	GND		PWR		
10	NC				

#### 3.9.2 UART-B/C RS-232 header (X14)

Connector type: 2x5 Pin Header Male, 2.54mm

Pin	Signal Name	SODIMM Pin Number	I/O Type	Voltage	Pull-up/Pull-down
1	RS232_C_RXD		I		
2	NC				
3	RS232_B_RXD		I		
4	RS232_B_RTS		O		
5	RS232_B_TXD		O		
6	RS232_B_CTS		I		
7	RS232_C_TXD		O		
8	NC				
9	GND		PWR		
10	NC				

#### Remarks:

- The RS232 serial transceivers can be shut down via two GPIOs which have been connected to the ForceOFF# pin. This is needed in order to use the UART signals that are on the extension connector at TTL logic level. The following table shows the SODIMM pin assignment of the GPIOs reserved for this purpose:

SODIMM Pin Number	Header	Signal Level → Header Status	Signal Level → Header Status
102	X13	Logic Low → Disabled	Logic High → Enabled
104	X14	Logic Low → Disabled	Logic High → Enabled

### 3.9.3 Extension Connector (X16)

Connector type: 2x20 Pin Header Male, 2.54mm

Pin	Signal Name	SODIMM Pin Number	I/O Type	Voltage	Pull-up/Pull-down
1	RESET_EXT#	26	I	+3.3V	
2	GND		PWR		
3	GND		PWR		
4	RESET_OUT#	87	O	+3.3V	
5	I2C_SDA	194	I/O	+3.3V	4.7K to 3.3V
6	I2C_SCL	196	I/O	+3.3V	4.7K to 3.3V
7	GND		PWR		
8	SSPSCLK	88	I/O	+3.3V	
9	SSPFRM	86	I/O	+3.3V	
10	SSPRXD	90	I	+3.3V	
11	SSPTXD	92	O	+3.3V	
12	+5V		PWR	+5V	
13	SODIMM_98 (GPIO)	98	I/O	+3.3V	
14	SODIMM_133 (GPIO)	133	I/O	+3.3V	
15	SODIMM_103 (GPIO)	103	I/O	+3.3V	
16	SODIMM_101 (GPIO)	101	I/O	+3.3V	
17	SODIMM_97 (GPIO)	97	I/O	+3.3V	
18	SODIMM_85 (GPIO)	85	I/O	+3.3V	
19	SODIMM_79 (GPIO)	79	I/O	+3.3V	
20	SODIMM_45 (GPIO)	45	I/O	+3.3V	
21	GND		PWR		
22	ANALOG_IN3 <a href="#">(Refer Note 1)</a>	2	I	+3.3V	
23	ANALOG_IN2	4	I	+3.3V	
24	ANALOG_IN1	6	I	+3.3V	
25	ANALOG_IN0	8	I	+3.3V	
26	AUDIO_AGND		PWR		
27	UART_A_TXD	35	O	+3.3V	
28	UART_A_RXD	33	I	+3.3V	
29	UART_B_CTS	32	I	+3.3V	
30	UART_B_RTS	34	O	+3.3V	
31	UART_B_RXD	36	I	+3.3V	
32	UART_B_TXD	38	O	+3.3V	
33	+3.3V		PWR	+3.3V	
34	UART_C_RXD	19	I	+3.3V	
35	UART_C_TXD	21	O	+3.3V	
36	GND		PWR		
37	PWM_A <a href="#">(Refer Note 2)</a>	59	O	+3.3V	
38	PWM_B	28	O	+3.3V	
39	PWM_C	30	O	+3.3V	
40	PWM_D <a href="#">(Refer Note 3)</a>	67	O	+3.3V	

The following table describes the assembly options available on the Iris carrier board with respect to the Analog-In Interface:

Solution Selected	Assembly Options	Assembled Components on Iris V1.1	PCB Side
ANALOG_IN3	Disassemble the resistor R88	R88	Top
PWM_D for PXA3XX modules	Assemble the resistor R110		Bottom

**Note 1:**

- The signal ANALOG\_IN3 is also used as the TOUCH\_WIPER signal for the Touch (X19) and the RGB connector (X3). For this reason a populated 0ohm resistor (R88) has been placed between the signals ANALOG\_IN3 and TOUCH\_WIPER. This resistor can be removed in the event the fourth analog signal is required and the TOUCH\_WIPER signal (for 5 wire resistive touch screen panels) is not.

**Note 2:**

- The PWM\_A signal has also been routed to the RGB display connector (X3) to provide backlight brightness control for connected LCD displays; for this reason a populated zero ohm resistor (R84) has been placed before connector X16.

**Note 3:**

- Since the Colibri PXA3XX does not support the PWM\_D signal, pin 152 of the SODIMM connector has been connected to the PWM\_D line through a not assembled 0ohm resistor (R110).

Please refer to figure 4 and 5 in [Section 2.4, Assembly Options](#) for the position of the resistors.

### 3.9.4 Touch Connector (X19)

Connector type: Hirose DF13C-6P-1.25V(51)

Pin	Signal Name	SODIMM Pin Number	I/O Type	Voltage	Remarks
1	GND		PWR		
2	TOUCH_TSMY	20	I	+3.3V	
3	TOUCH_TSPY	18	I	+3.3V	
4	TOUCH_TSMX	16	I	+3.3V	
5	TOUCH_TSPX	14	I	+3.3V	
6	TOUCH_WIPER	2	I	+3.3V	Shared with ANALOG_IN3, <a href="#">(Refer Note 1)</a>

**Remarks:**

- For further information about the 5-wire resistive touch interface, please refer to our developer site:  
<http://developer.toradex.com/knowledge-base/5-wire-resistive-touch-interface>



### 3.10. Real-Time Clock (RTC)

#### 3.10.1 External RTC

The Iris carrier board uses the STMicroelectronics, M41T0M6 chip as external RTC.

#### 3.10.2 Battery Holder (BAT1)

A 12 mm (diameter) coin cell/battery should be used with the Battery Holder (BAT1). Coin cell can be used to provide power backup to the external RTC circuits when external power supply is not available. The following type of batteries is supported: BR1216, CR1216, BR1220, CL1220, CR1220, BR1225.

Connector type: KEYSTONE-3000

Pin	Description	Voltage
1	VCC_BAT	+3.0V
2	GND	

**Note:**

The spring contact on the top side of the battery holder sets/bends based on the battery thickness. In case a thicker battery (like BR1225, 2.5mm thickness) is inserted first, the spring contact will set and later if the battery is replaced by a thinner battery (like BR1220, 2.0mm thickness). The battery holder will not hold the replacement battery firmly.

Customers are advised to not to use thinner battery after using the thicker battery with the battery holder (BAT1).

## 4. Electrical Characteristics

### 4.1. Electrical Specifications

Symbol	Description	Voltage	Min	Typ	Max	Unit
PWR_IN_V	Main power supply voltage		6	24	27	V
PWR_IN_I	Main power supply current		0		6	A
V_BACKUP	Optional RTC battery voltage		2.3	3	3.6	V
I_(+5V)	Total current for external devices at power rail: X16 Pin 12 X20 Pin 1 USB connectors / USB header	+5V			2.5	A
I_(+3.3V)	Total current for external devices at power rail: X16 Pin 33 X20 Pin 3	+3.3V			1.5	A
I_Pin(X16)	Current for the single power pin 33 of connector X16	+3.3V		0.5	1.5	A
I_Pin(X20)	Current for the single power pin 3 of connector X20	+3.3V		1.0	1.5	A
I_Pin(X11)	Current for a single power pin of connector X11	+5V			0.5	A
I_Pin(X12)	Current for a single power pin of connector X12	+5V			0.5	A
I_Pin(X16)	Current for the single power pin 12 of connector X16	+5V		1.0	2.5	A
I_Pin(X20)	Current for the single power pin 1 of connector X20	+5V		1.0	2.5	A

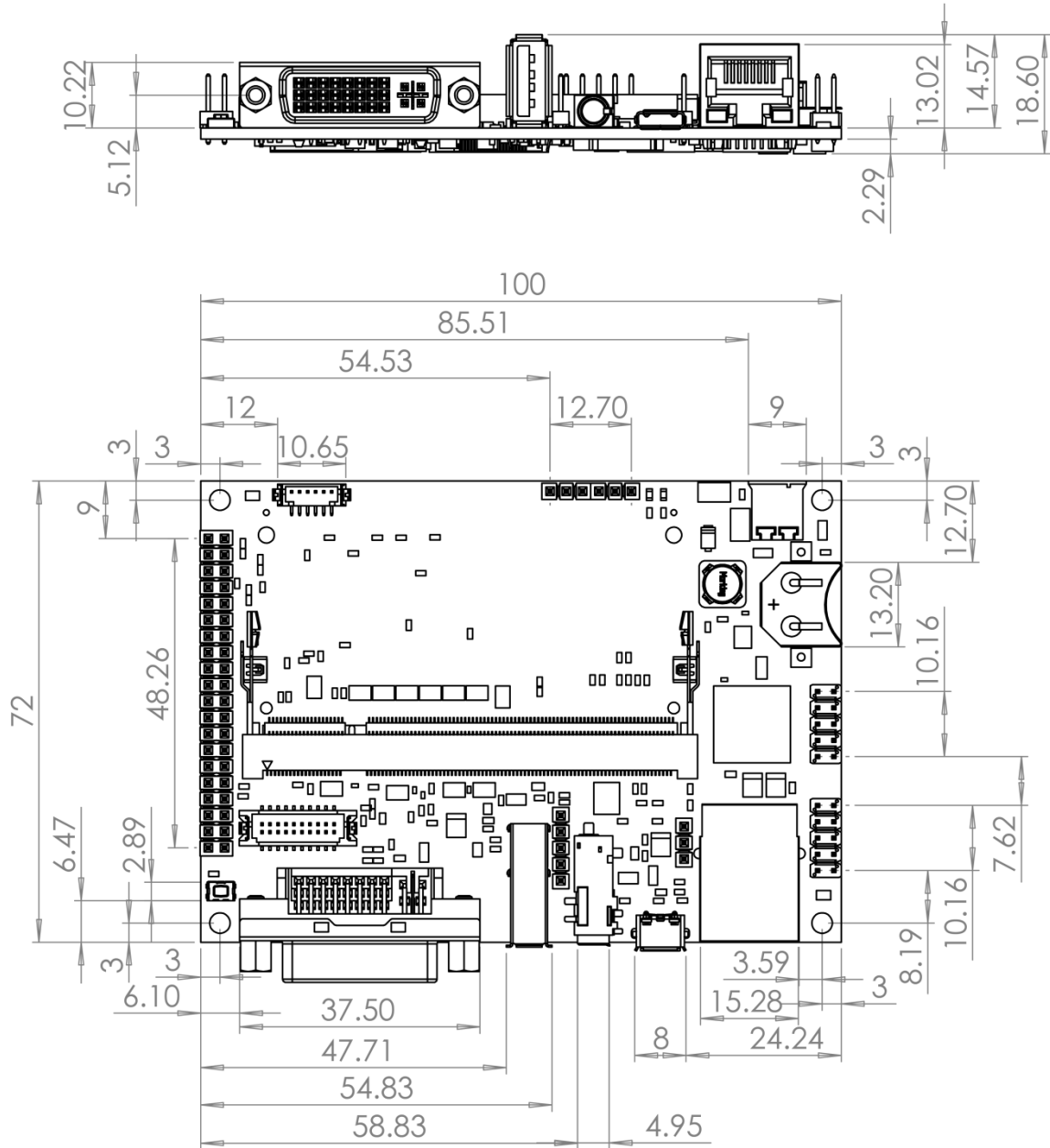
## 5. Temperature Range

### 5.1. Operating Temperature Range

- - 10 to 70 °C
- - 20 to 85 °C (the LVDS picture quality might be lower at this range)]

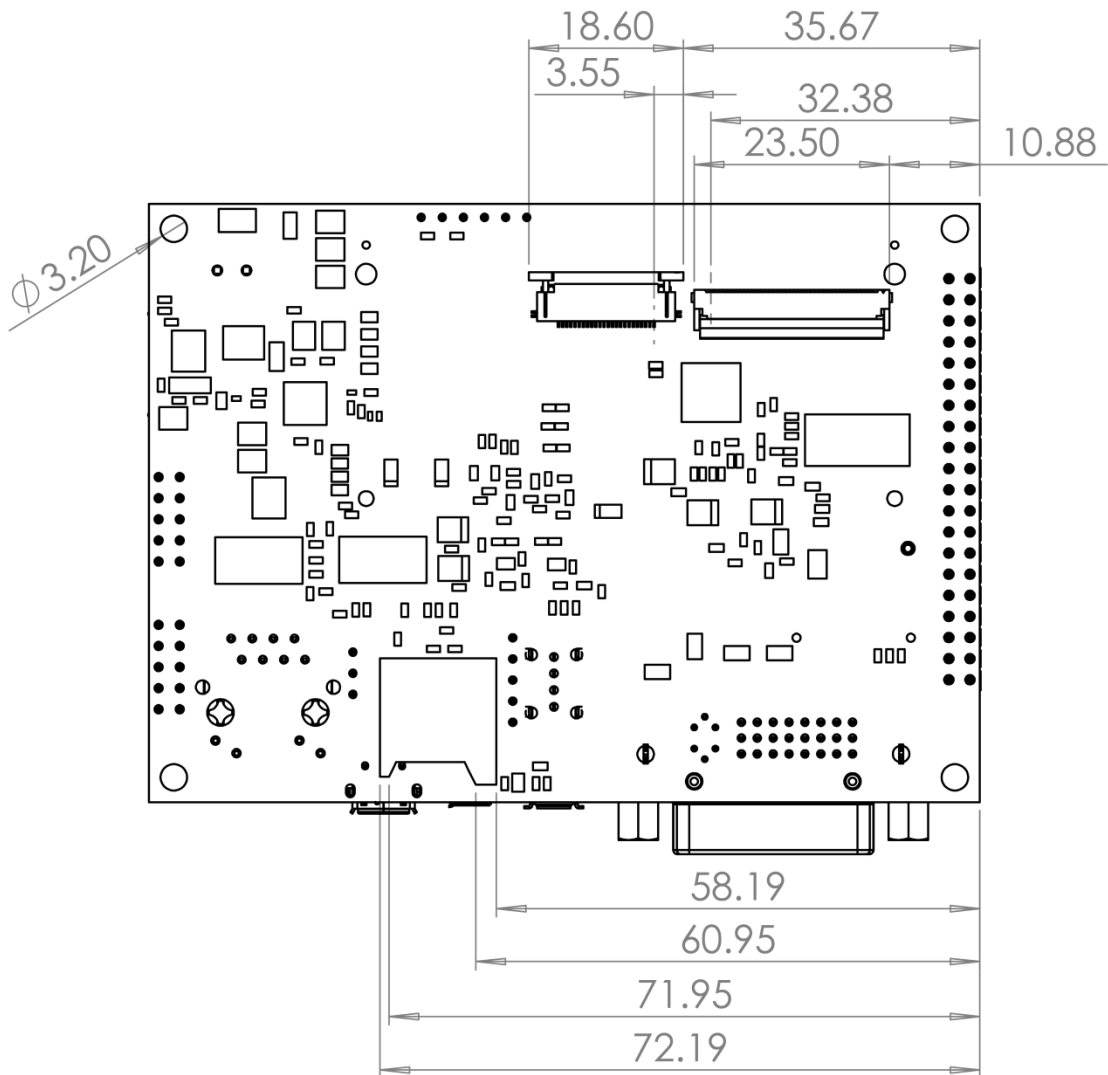
## 6. Mechanical Data

### 6.1. Iris Dimensions – Top Side



**Fig.7 Iris Dimensions – Top Side, all dimensions are in millimetres (mm)**

## 6.2. Iris Dimensions – Bottom Side



**Fig.7 Iris Dimensions – Bottom Side, all dimensions are in millimetres (mm)**

## 7. Design Data

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The design data for Toradex carrier boards are freely available in the Altium Designer format. The design data includes schematics, layout, and component libraries.

To download the carrier board design data, please use the web-link below:

<http://developer.toradex.com/carrier-board-design>

## 8. Product Compliance

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Up-to-date information about product compliance such as RoHS, CE, UL-94, Conflict Mineral, REACH etc. can be found on our website at: <http://www.toradex.com/support/product-compliance>

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