ConnectCore® for i.MX6 SBC

Hardware Reference Manual

Revision history—90001499

Revision	Date	Description
E	June 2017	Modified regulatory and certification information as required by RED (Radio Equipment Directive).
F	July 2017	Add RGB values to parallel display interface chart.
G	April 2018	Update boot mode resistor configuration table.
H	April 2019	Add Brazilian regulatory information.
J	October 2019	Add XBee socket note.
K	July 2020	Modify XBee socket connection details; add link to variants page.

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Include the document title and part number (ConnectCore® for i.MX6 SBC Hardware Reference Manual, 90001499 K) in the subject line of your email.

Contents

Specifications

Regulatory information

About this guide

This guide provides information about the Digi ConnectCore 6 embedded core module family.

Additional resources

For additional information, see the most recent NXP i.MX6 processor reference manual and related documentation at: http://www.nxp.com/products/microcontrollers-and- processors/arm-processors/i.mx-applications-processors/i.mx-6-processors:IMX6X_SERIES.

ConnectCore 6 SBC overview

Introduction

The ConnectCore 6 SBC is a Pico-ITX board featuring the Digi ConnectCore 6 module that integrates an NXP i.MX6 application processor, DDR3 DRAM memory, eMMC memory, WLAN/Bluetooth module, power management IC for optimized power consumption applications and a programmable microcontroller assistant for supporting additional interfaces.

The ConnectCore 6 SBC provides a selection of I/O interfaces including two USB 2.0 ports, one micro USB OTG connector, micro SD card slot, HDMI, audio jack for stereo audio output and a gigabit Ethernet port. All these connectors together with the main power connector are located on the front edge of the board making them easily accessible if the board is assembled into an enclosure.

The ConnectCore 6 SBC also provides several multimedia connectors including two LVDS displays, MIPI CSI-2 camera, MIPI DSI display, two 8-bit parallel cameras and a 24-bit parallel display.

Additional on board connectors provide support for SATA interface, JTAG, SWD, and console debug ports, a coin cell connector to supply the RTC, and expansion connectors for USB, two CAN ports, I2C, SPI, three UART ports, twelve GPIOs and audio input and output.

The board provides a mini-PCIe socket for connecting full or half size PCI express mini cards. A micro-SIM card is connected to the mini PCIe slot making the ConnectCore 6 SBC ready for a mini PCIe cellular card.

The ConnectCore 6 SBC also has a connector for a Digi XBee module.

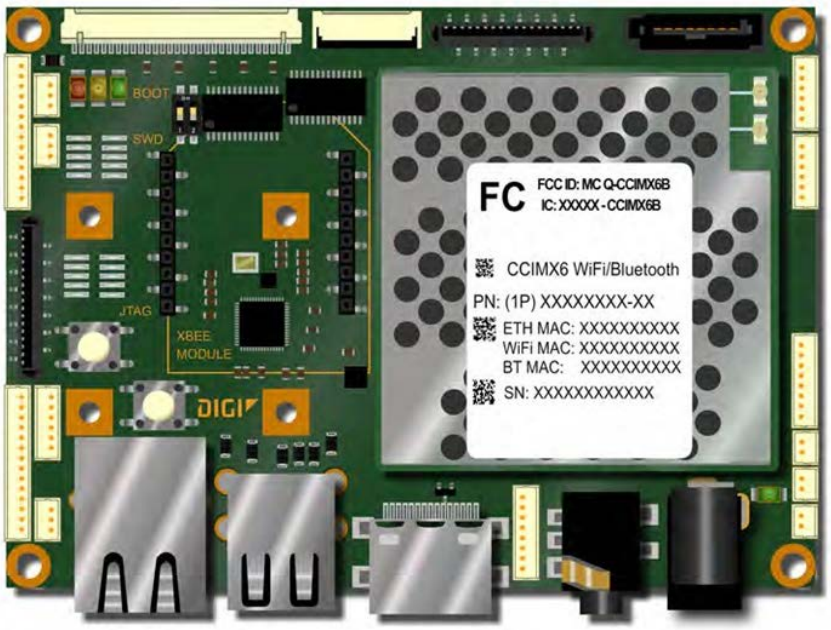
The board is powered from a single 5V DC supply. Two expansion connectors with 5V and 3.3V are provided to supply external circuitry. An overvoltage circuit protects the board from input voltages up to 12V.

Features and functionality

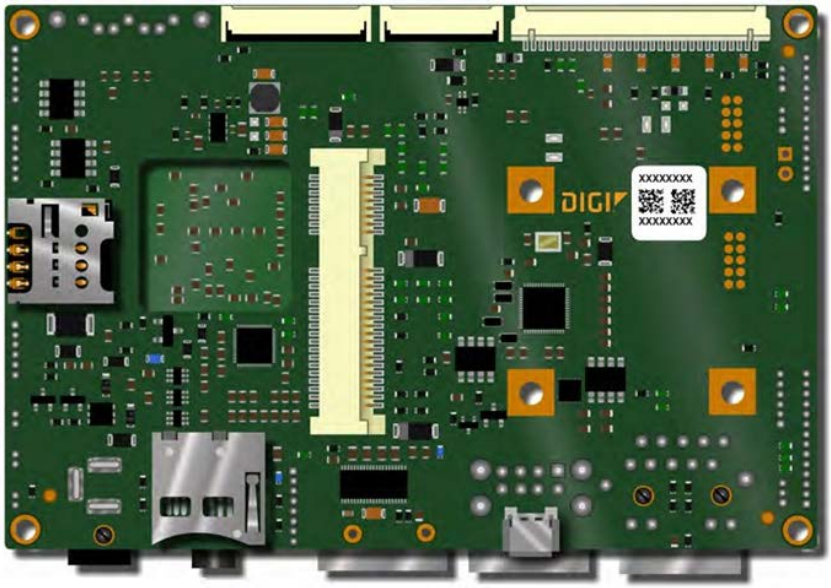
- ConnectCore 6 module
  - i.MX6 single/dual/quad ARM Cortex-A9 cores operating at speeds of up to 1.2GHz
  - 64-bit DDR3-1066 memory interface with a density up to 2Gbytes
  - 8-bit eMMC support
  - Optional IEEE802.11a/b/g/n WLAN and Bluetooth 4.0
- Power from a fix 5VDC power supply, +/- 5%
  - +5V load switch
  - External 3.3V power supply connected to PCIe minicard socket
- Overvoltage protection circuit
- Boot source configuration (eMMC, microSD, SATA)
- Coin-cell connector to supply the on module RTC
- Power button and reset button
- Power LED to show the status of the main supply
- 5V supply connector to supply external devices
- 3.3V supply connector to supply external devices
- Debug
  - Standard IEEE 1149.1 JTAG interface
  - Single Wired Debug (SWD) interface for the microcontroller assistant (MCA)
  - Console serial port

- Storage
  - SATA interface
  - microSD card slot
- Multimedia
  - Two LVDS interfaces supporting 4 differential data pairs each
  - 24-bit parallel LCD interface
  - HDMI 1.4 interface
  - MIPI DSI display
  - MIPI CSI-2 camera
  - Two 8-bit parallel camera interfaces
  - AC97 audio CODEC with stereo headphone jack
- Communication
  - Gigabit Ethernet interface
  - Mini PCIe slot supporting full size and half size mini PCIe cards
  - microSIM card slot connected to the mini PCIe slot
  - USB OTG with micro AB USB connector
  - Two USB Host 2.0 with stacked USB A type connector
  - XBee socket for Digi XBee THT modules
- Expansion
  - One USB Host 2.0 port
  - Two CAN ports
  - Three UART ports (one TTL level and two RS-232)
  - SPI
  - I2C
  - Audio connector with MIC, LINE-IN and LINE-OUT
  - GPIO connector with 4 analog inputs and 8 digital GPIO signals
  - Power connector with reset and power signals
- User interface
  - Three user LEDs (green, yellow, red)
- Dimensions
  - Pico-ITX form factor, 100mm x 72mm

Placement - top side



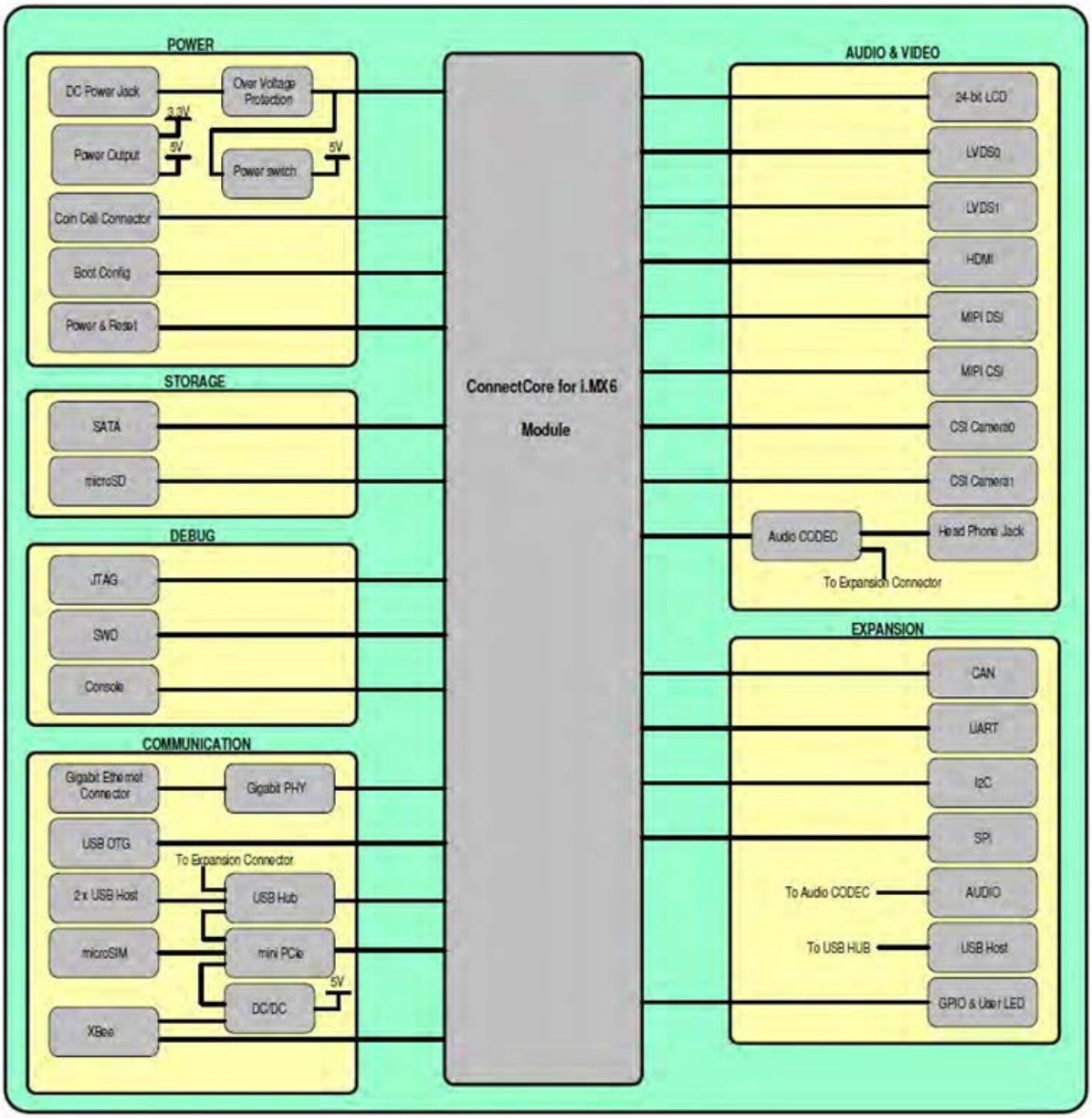
Placement - bottom side



SBC block diagram

The figure below shows the block diagram of the ConnectCore 6 SBC.

ConnectCore for i.MX6 Single Board Computer

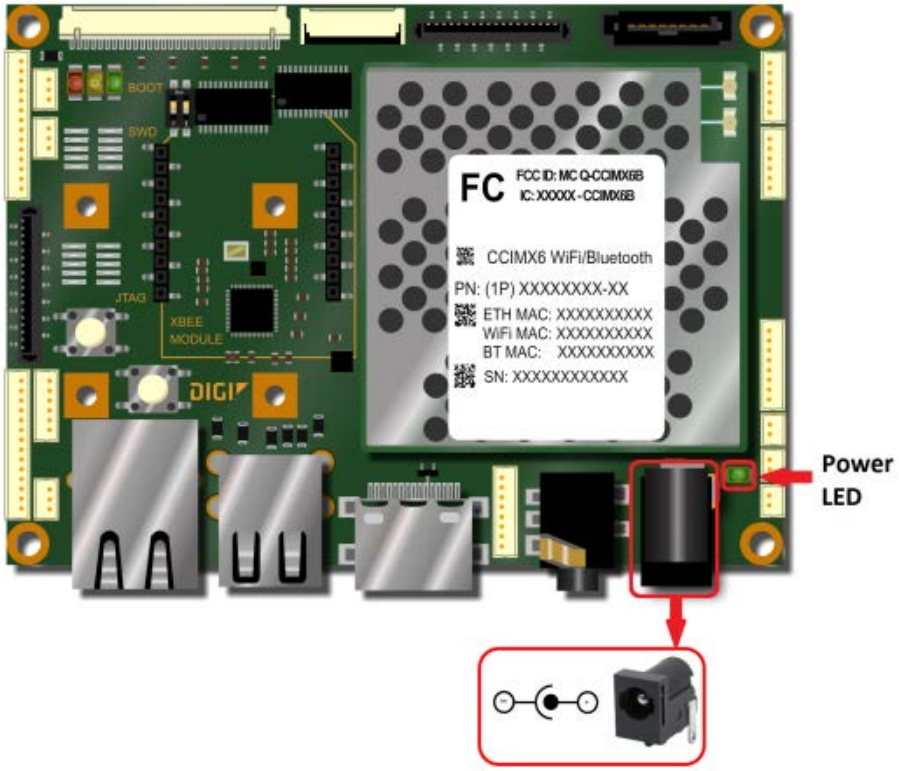


Variants

See the Digi ConnectCore 6 product page for a list of variants.

ConnectCore 6 SBC interfaces

DC-in connector



The ConnectCore 6 SBC has a +5V DC-In power connector (J1) to provide power to the system. A DC-Jack connector is used to connect the DC-In power supply.

Power LED

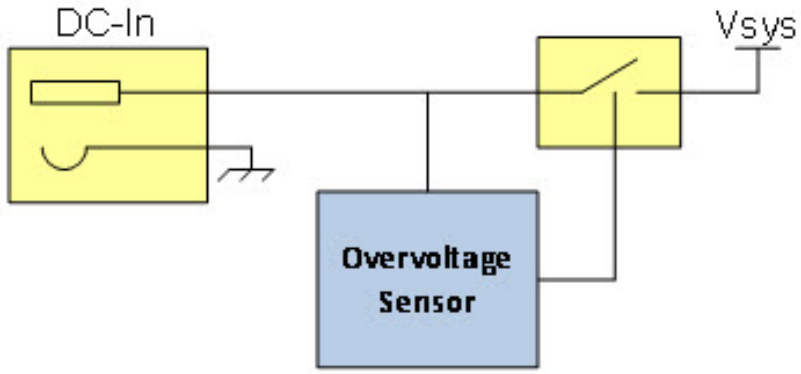
A green LED near the power connector shows the status of the power input. This LED is ON when a valid power supply is present. If the power supply voltage is higher than 5.5V the overvoltage protection circuit will block the power supply input and the power LED will turn off.

LED	Signal	Note
POWER	VSYS	Green LED

Overvoltage protection

An overvoltage protection circuit is implemented on the ConnectCore 6 SBC. If the voltage value of the DC-In supply signal is higher than 5.5V the supply input is disconnected of the system.

CAUTION! The maximum input voltage of the ConnectCore 6 SBC should never exceed the 12 VDC. Voltages over this limit may cause permanent damage to the board.

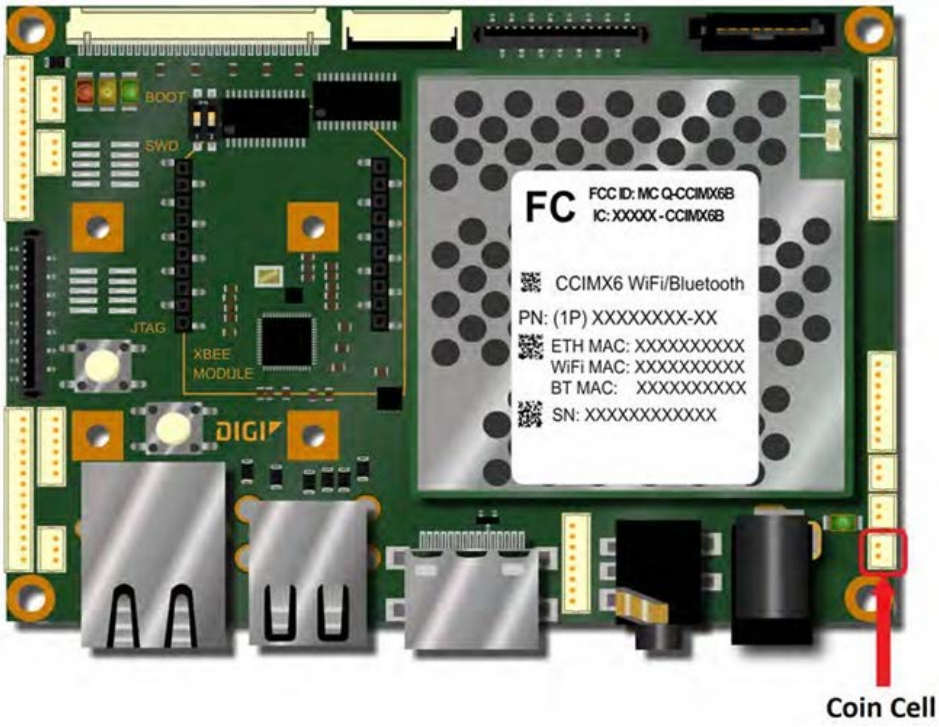


5V load switch

The ConnectCore 6 SBC has several interfaces that have to be powered from a 5V supply. This supply comes from a Load switch, whose input comes directly from the DC Power Jack showed above. The SIP32401A is a slew rate controlled load switch designed for 1.1V to 5.5V operation. The SIP32401A features a low voltage control logic interface which is commanded by the PWR_EN signal (PMIC_GPIO7). On low power mode this load switch will be disabled. The following table lists the interfaces of the ConnectCore 6 SBC that are sourced from the Load switch.

Interface	Comments
LVDS0	Supply for the backlight of the LVDS0 display
LVDS1	Supply for the backlight of the LVDS1 display
HDMI	Supply for the HDMI display
Parallel display	Supply for the parallel display
5V power connector	Supply for external circuitry

SBC coin cell connector



The ConnectCore 6 SBC provides a 2-pin, 1.25mm pitch straight connector for connecting an external coin cell or super capacitor to power the RTC interface when the main supply is off. If higher voltage is present on the main supply, it will be used as a power source for the RTC.

The following table shows the pinout of the coin cell connector.

Pin	Signal	Comments
1	VCC_LICELL	Power supply for RTC
2	GND	Ground

There are three types of components that can be connected to this connector: lithium coin cells (primary cell: non-rechargeable), lithium coin cells (secondary cell: rechargeable), and supercaps.

CAUTION! When a primary lithium coin cell is connected, the PMIC backup battery charger must be turned off and this pin is used strictly as an input. It is hazardous to attempt to charge primary lithium cells as they may vent or explode.

Secondary lithium coin cells are only made available directly to manufacturers of equipment that could use them. Manufacturers are normally required to design products to prevent users from gaining access to this part. This is because there is a danger to the user if by replacing it, they fit a primary type (the only sort that they are likely to be able to source) into the charging circuit. When a secondary lithium coin cell is used, both the charging current and the termination voltage are programmable. When a supercap is used, both the charge current and termination voltage should be set to the maximum values.

The advantage of using a primary lithium coin cell is that the energy density usually allows years of service since the self- discharge rate is low. The advantage of using a secondary lithium coin cell is that the self-discharge rate is usually sufficient to allow a few months of support for the RTC before it must be recharged. The advantage of the supercap is that it is intrinsically safe and can out-last the primary lithium coin cell option. However, the self discharge rate is high, meaning that a 1F capacitor at 25° C is likely to support the RTC for approximately five to ten days.

A programmable constant charge current charger with a programmable top-off charging voltage is provided for charging of secondary lithium-manganese coin cell batteries and super capacitors. Charging current is programmable from 100uA to 6mA. Termination voltage is programmable from +1.1 to +3.1V.

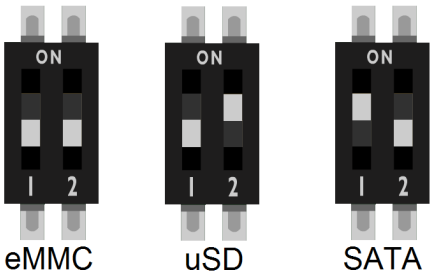
The minimum voltage of the coin cell supply is +2V. The maximum voltage of the coin cell supply is +3.6V.

Note Connector part number: MOLEX 53047-0210

SBC boot configuration

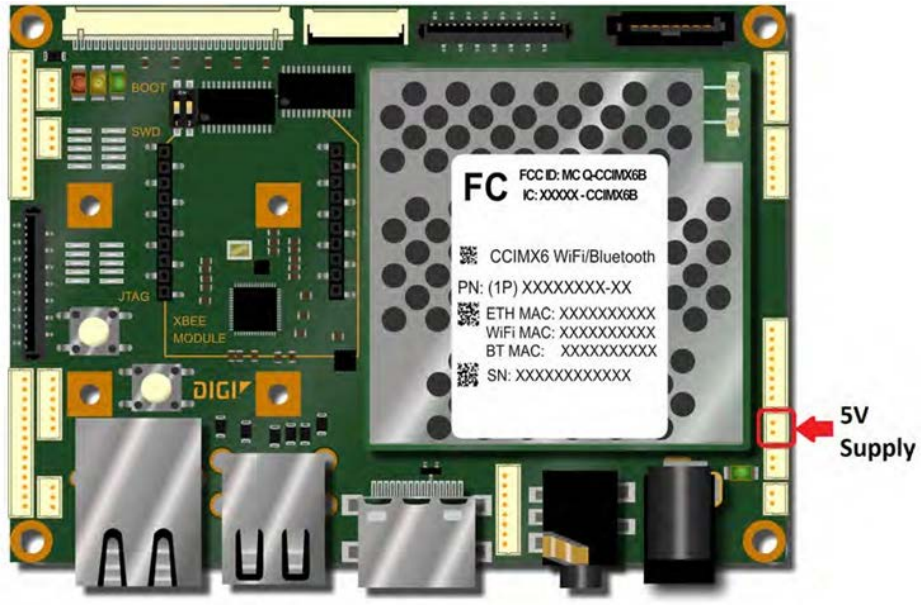
SBC boot source switches

The ConnectCore 6 SBC provides the following switches to configure the boot source.



Pos1	Pos2	Comments
Off	Off	Boot from eMMC
Off	On	Boot from microSD
On	Off	Boot from SATA
On	On	Reserved

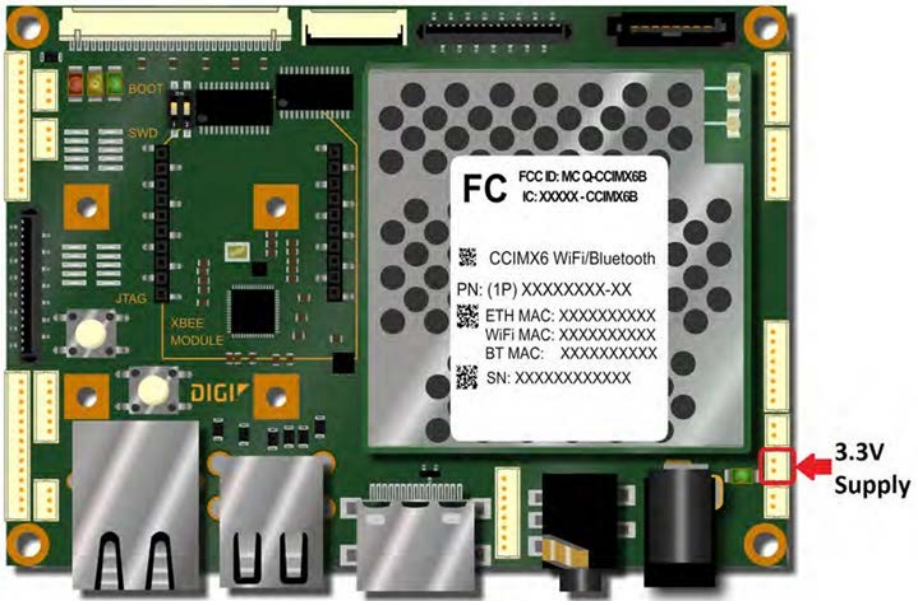
5V supply connector



The ConnectCore 6 SBC provides a 2-pin, 1.25mm pitch straight connector with a regulated 5V supply for powering external circuitry. The 5V supply is generated on the on-board 5V regulator and it is also used on the ConnectCore 6 SBC on the USB, displays and camera interfaces. The maximum current available on the 5V connector is 1A.

Note Connector part number: MOLEX 53047-0210

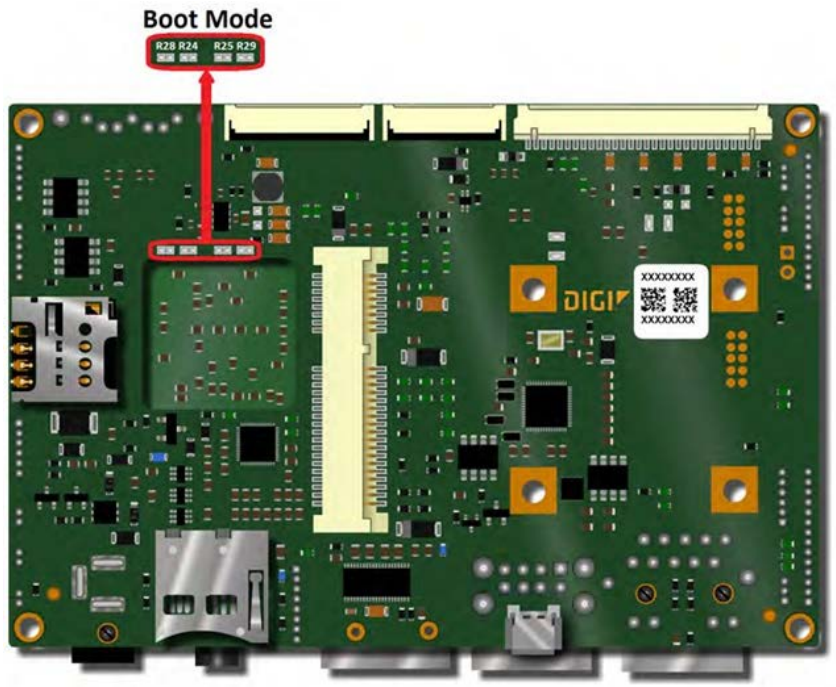
3.3V supply connector



The ConnectCore 6 SBC provides a 2-pin, 1.25mm pitch straight connector with a regulated 3.3V supply for powering external circuitry. The 3.3V supply is generated on a buck regulator of the ConnectCore 6 module and it is used to power several interfaces on the ConnectCore 6 module and on the ConnectCore 6 SBC. The maximum current available on the 3.3V connector is 1A.

Note Connector part number: MOLEX 53047-0210

Boot mode



ConnectCore 6 SBC provides four resistors to configure the boot mode. These resistors are used to override the boot mode configuration selected on the ConnectCore 6 module. By default these four resistors are not populated and the ConnectCore 6 SBC will boot with the default boot mode selected on the module.

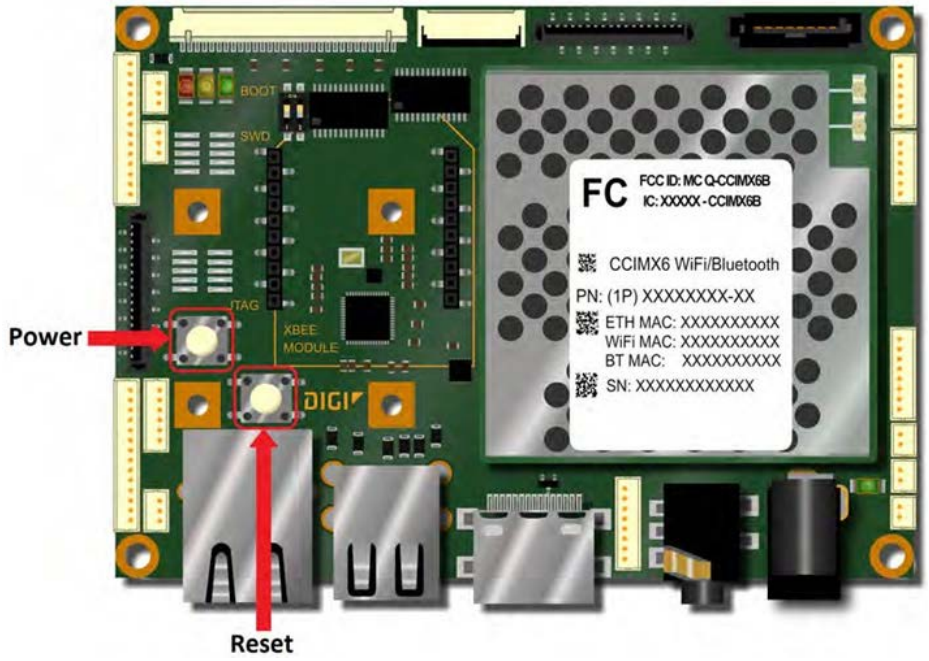
The following table shows the resistors configuration for the different boot modes.

R24	R25	R28	R29	Boot mode
Not populated	Not populated	Not populated	Not populated	Module default boot mode
Not populated	Not populated	Populated	Populated	Boot from fuses
Populated	Not populated	Not populated	Populated	Serial downloader
Not populated	Populated	Populated	Not populated	Boot from board settings

Note If no resistors are populated (default configuration on the SBC) internal 10K resistors on the SOM will select the boot mode "Boot from board settings".

Note A different resistor configuration than the ones listed on the table might prevent the ConnectCore 6 SBC from booting.

Power and reset functions



The ConnectCore 6 SBC provides a **Power** button that supports the following functionality:

Function	Description
Power On	Short press when the board is OFF.
Power Off	Long press for 10 seconds when the board is ON or in SLEEP mode.
Wake-up	Short press when the board is in SLEEP mode.
Sleep	Short press when the board is ON.

The ConnectCore 6 SBC provides a **Reset** button, used to reset the ConnectCore 6 module. When the reset button is pressed the main power supply is disconnected, powering off all the circuitry on the board.

5V supply connector

The ConnectCore 6UL provides a 2-pin, 1.25 mm pitch straight connector with a regulated 5V supply for powering external circuitry. The 5V supply is generated on the on-board 5V regulator, which is also used internally in the ConnectCore 6UL SBC for powering interfaces such as the displays (LCD and LVDS) and the USB VBUS.

The following table shows the pinout of the 5V supply connector.

Pin	Signal name	Description
1	5V	5V power line
2	GND	

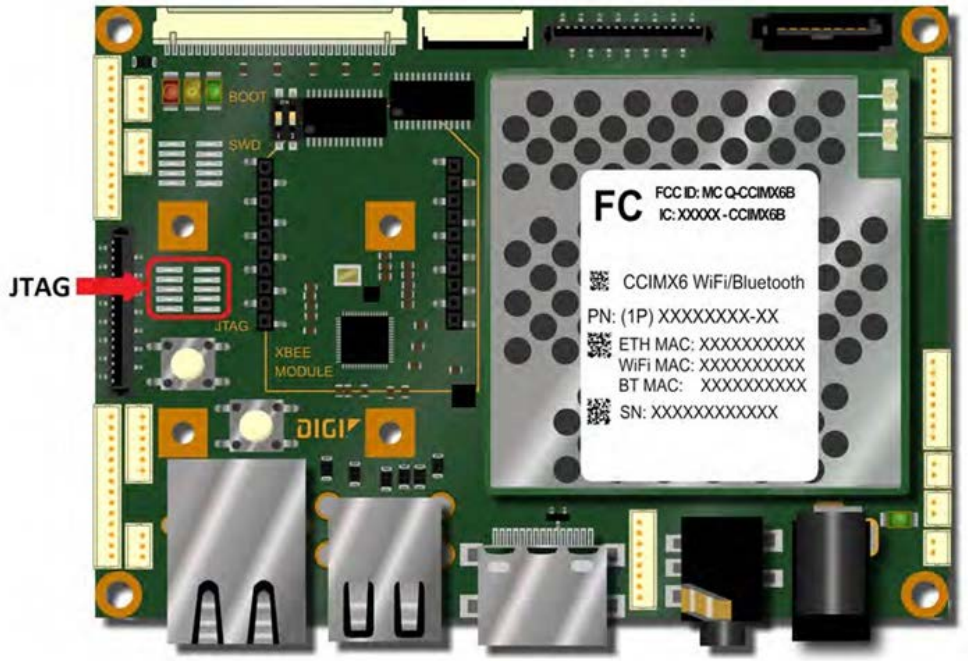
3.3V supply connector

The ConnectCore 6UL provides a 2-pin, 1.25 mm pitch straight connector with a regulated 3.3V supply for powering external circuitry. The 3.3V supply is generated on a buck regulator of the ConnectCore 6UL PMIC (3V3_EXT power domain), which is also used internally for powering many interfaces of the ConnectCore 6UL SBC carrier board.

The following table shows the pinout of the 3.3V supply connector.

Pin	Signal name	Description
1	3V3	3.3V power line
2	GND	

JTAG



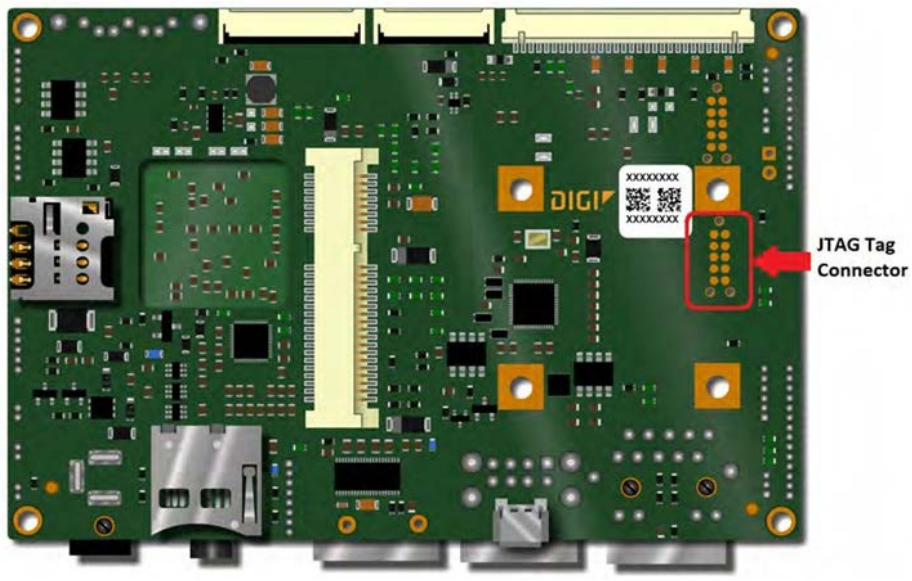
The ConnectCore 6 SBC provides two options for accessing the i.MX6 JTAG Debug port. The first one is a 2x5, 1.27 mm pitch pin header footprint on the top side of the board. The following table shows the pinout of the JTAG connector.

Pin	Signal	Comments
1	3.3V	Supply voltage of the JTAG interface
2	JTAG_TMS	Test mode state signal
3	GND	
4	JTAG_TCK	Test clock signal

Pin	Signal	Comments
5	GND	
6	JTAG_TDO	Test data output signal
7	-	
8	JTAG_TDI	Test data input signal
9	GND	
10	POR_N	Board reset/CPU reset

Note By default, the connector is not populated.

The second option is the Tag Connect footprint placed on the bottom side of the board. This Tag Connect is compliant with the ARM 10-pin standard. The JTAG Tag Connect is highlighted in the following picture.



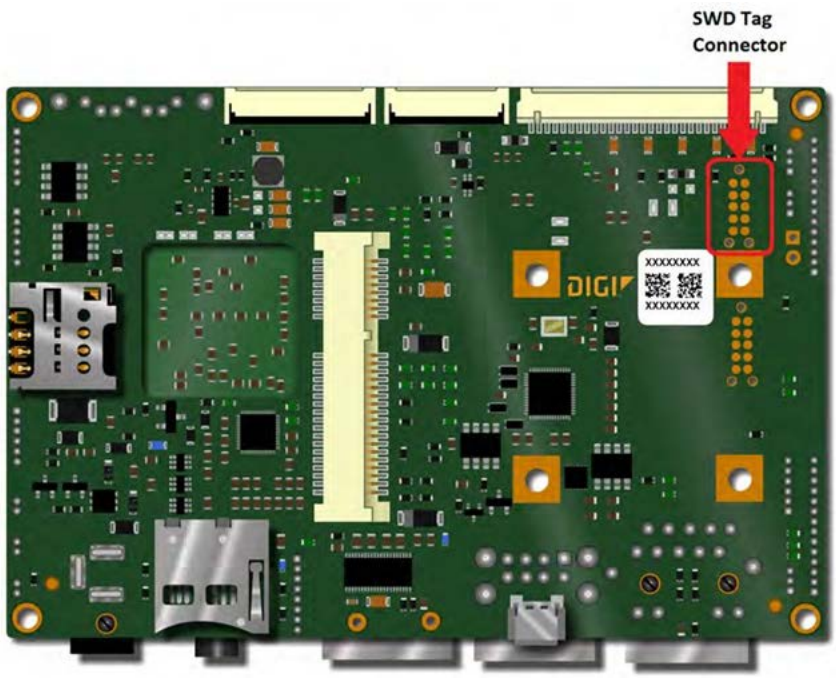
Note You can use Tag-Connect's TC2050-IDC-NL "No Legs" Plug-of-Nails™ cable (part number: TC2050-IDC-NL) to make direct contact with the pads.

SWD

The ConnectCore 6 SBC provides two options for programming and debugging the Kinetis microcontroller assistant of the ConnectCore 6 module. The first one is a 2x5, 1.27 mm pitch pin header footprint on the top side of the board. The following table shows the pinout of the SWD connector.

Pin	Signal	Comments
1	VLDO_MCA	Supply voltage of the Kinetis MCA
2	SWD_DIO	SWD bidirectional data pin
3	GND	
4	SWD_CLK	SWD clock signal
5	GND	
6	-	
7	-	
8	-	
9	GND	
10	MCA_RESET_N	Reset signal for Kinetis MCA

The second option is the Tag Connect footprint placed on the bottom side of the board. This Tag connector is compliant with the ARM 10-pin standard. The SWD Tag Connect is highlighted in the following picture.



Note You can use Tag-Connect's TC2050-IDC-NL "No Legs" Plug-of-Nails™ cable (part number: TC2050-IDC-NL) to make direct contact with the pads.

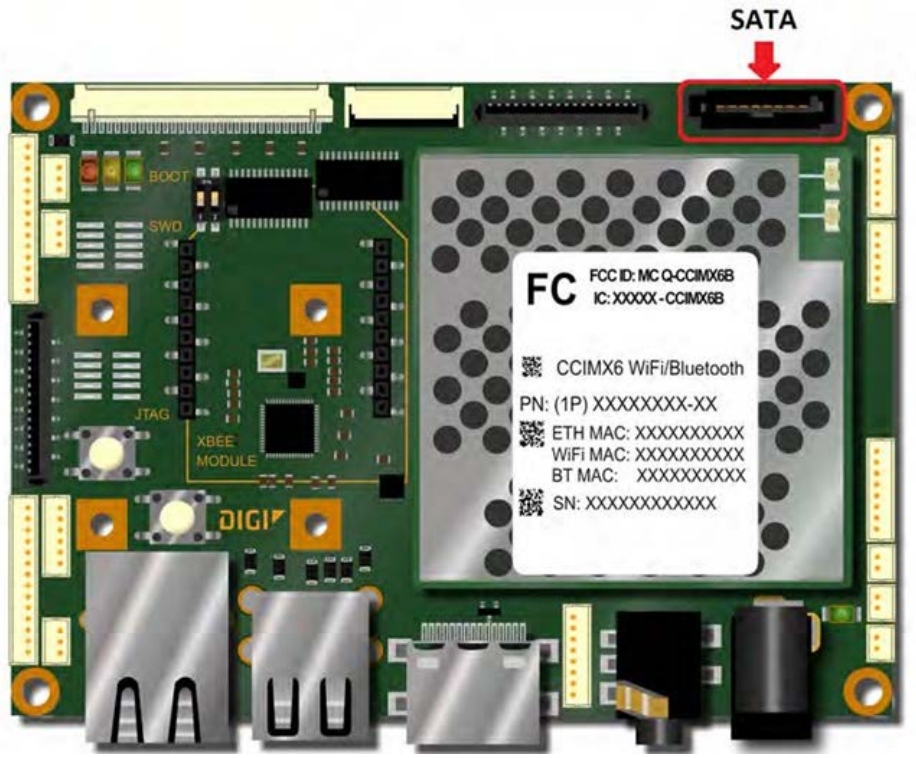
SBC console port

The ConnectCore 6 SBC provides a 3-pin, 1.25mm pitch connector for the debug console port. The UART4 port of the ConnectCore 6 module acts as a console port. An RS-232 transceiver is used on the SBC to convert the port to standard RS-232 levels. The following table shows the pinout of the console connector.

Pin	Signal	Comments
1	CONSOLE_TX	RS-232 transmission line
2	CONSOLE_RX	RS-232 reception line
3	GND	

Note Connector part number: MOLEX 53047-0310

SATA

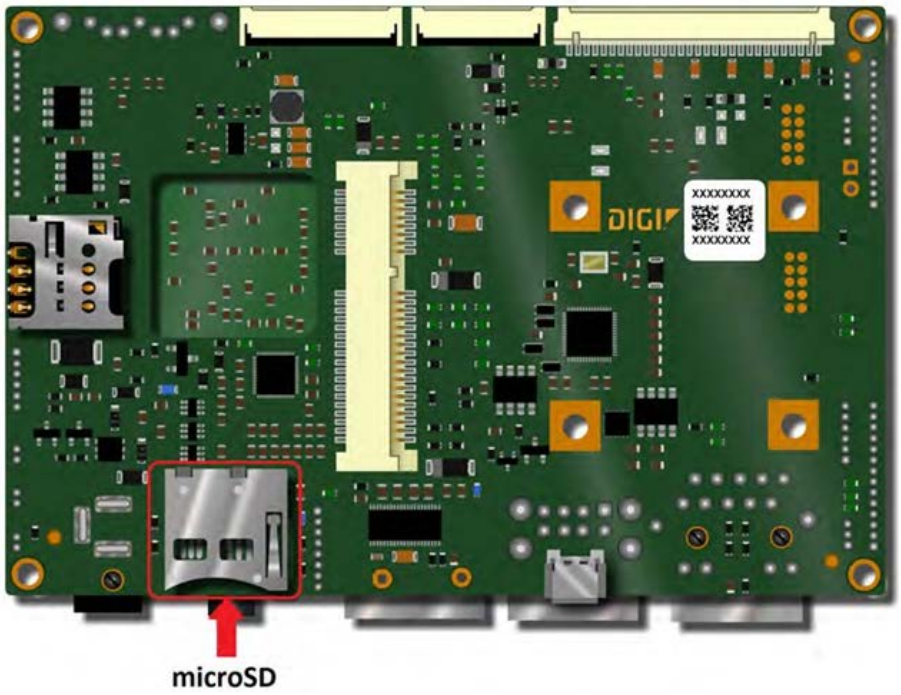


The ConnectCore 6 SBC provides access to the SATA interface on the ConnectCore 6 module using a vertical SATA standard connector.

The table below provides the pinout of the SATA connector.

Pin	Signal	Comments
1	GND	
2	SATA_TXP	SATA transmission pair positive line
3	SATA_TXN	SATA transmission pair negative line
4	GND	
5	SATA_RXN	SATA reception pair negative line
6	SATA_RXP	SATA reception pair positive line
7	GND	

microSD

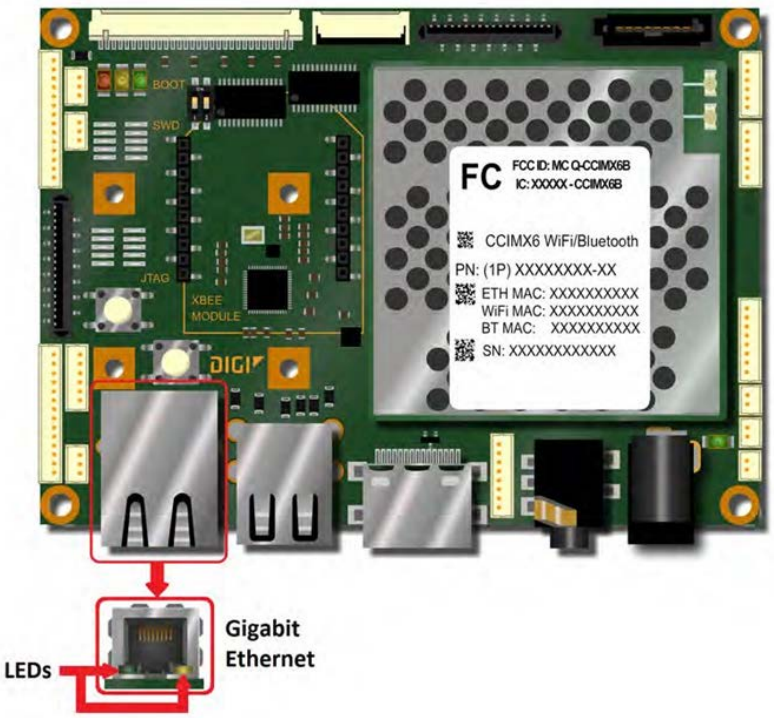


The ConnectCore 6 SBC provides a microSD connector on the bottom side. This interface is connected to the USDHC2 controller of the i.MX6 CPU.

The microSD connector does not provide a card detect pin. A hot insertion or removal of the microSD card is not detected by the ConnectCore 6 module. The following table shows the pinout of the microSD connector.

Pin	Signal	Comments
1	SD2_DATA2	
2	SD2_DATA3	
3	SD2_CMD	
4	3.3V	
5	SD2_CLK	
6	GND	
7	SD2_DATA0	
8	SD2_DATA1	

Gigabit Ethernet

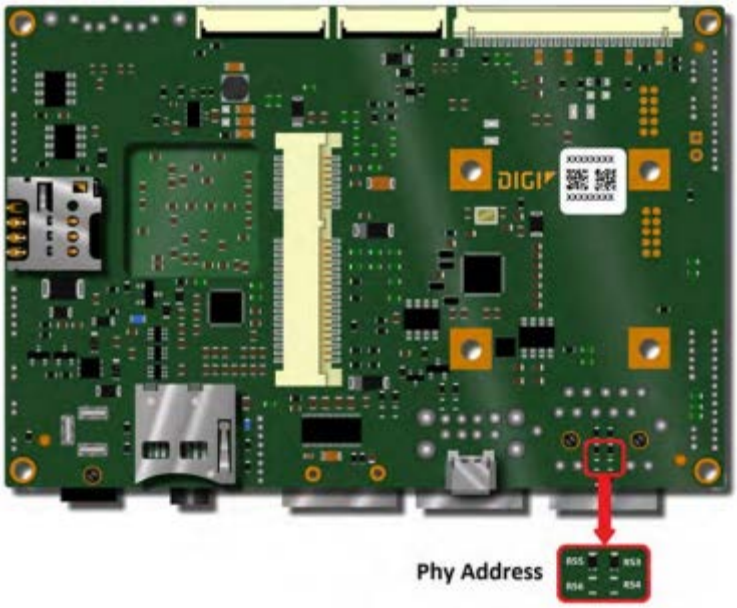


The ConnectCore 6 SBC provides a 10Base-T/100Base-Tx/1000Base-T Ethernet interface and uses a Micrel KSZ9031 gigabit Ethernet PHY. The Ethernet PHY is connected to the RGMII interface of the ConnectCore 6 module. One GPIO signal of the i.MX6 CPU is used to reset the Ethernet PHY (GPIO1_25) and another is used as interrupt input from the PHY (GPIO1_28).

The board provides a gigabit RJ-45 connector with integrated 1:1 transformer and link/activity LEDs. The following table shows the pinout of the gigabit connector.

Pin	Signal	Comments
1	TRP1+	Transmit and receive pair 1 data +
2	TRP1-	Transmit and receive pair 1 data -
3	TRP2+	Transmit and receive pair 2 data +
4	TRP2-	Transmit and receive pair 2 data -
5	TRP3+	Transmit and receive pair 3 data +
6	TRP3-	Transmit and receive pair 3 data -
7	TRP4+	Transmit and receive pair 4 data +
8	TRP4-	Transmit and receive pair 4 data -

Gigabit Ethernet PHY address



The ConnectCore 6 SBC has a gigabit PHY for the Ethernet interface. The address of the gigabit PHY can be configured with four configuration resistors. The default address for the gigabit PHY is 0x0. The following table shows the different gigabit PHY address configurations.

R53	R54	R55	R56	PHY Address
Not populated	Populated	Not populated	Populated	0x0
Populated	Not populated	Not populated	Populated	0x1
Not populated	Populated	Populated	Not populated	0x2
Populated	Not populated	Populated	Not populated	0x3

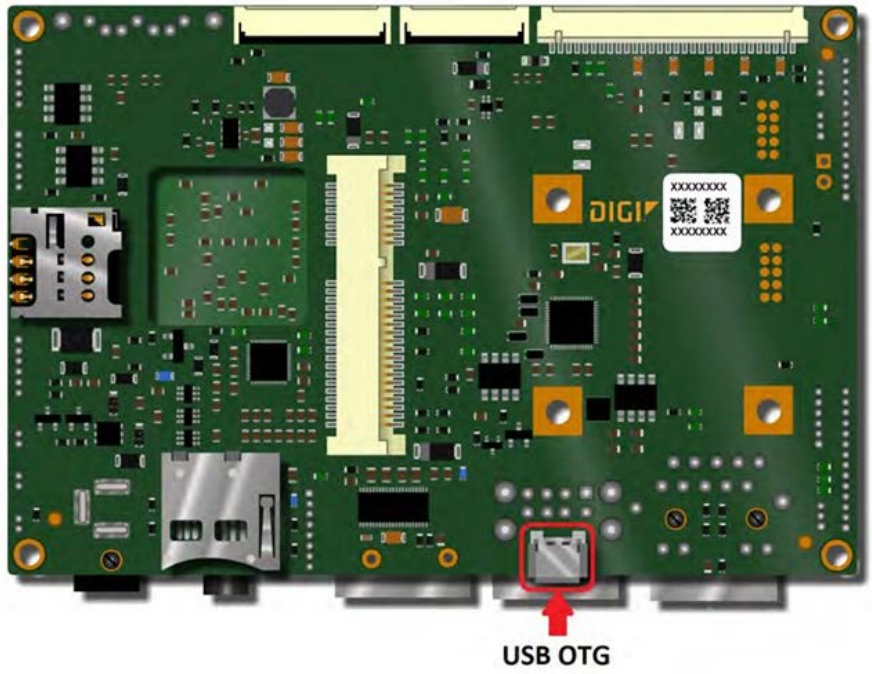
Gigabit Ethernet LEDs

The gigabit Ethernet PHY has two outputs to indicate the link and activity status of the port. These outputs are connected to a green LED and to a yellow LED, integrated on the Ethernet connector. The following table shows the link/activity status indicated by the two LEDs.

Yellow LED	Green LED	Link/Activity Status
OFF	OFF	Link off
ON	OFF	1000 Link/No activity
Blinking	OFF	1000 Link/Activity (Rx,Tx)
OFF	ON	100 link/No activity

Yellow LED	Green LED	Link/Activity Status
OFF	Blinking	100 Link/Activity (Rx, Tx)
ON	ON	10 Link/No activity
Blinking	Blinking	10 Link/Activity (Rx, Tx)

USB OTG



The ConnectCore 6 SBC provides a micro-AB type receptacle for a USB OTG connection. This interface can operate in Host mode and Device (peripheral) mode.

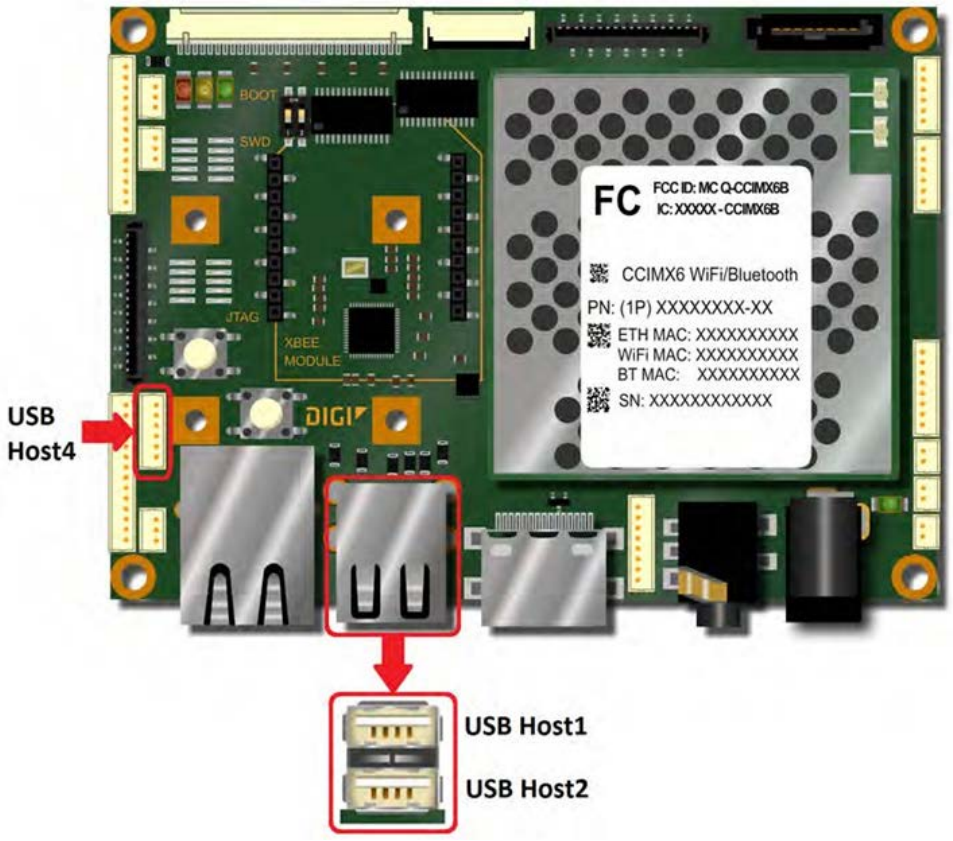
High speed, Full speed and Low speed connections are supported in Host mode. High speed and Full speed connections are supported in peripheral mode.

When the interface is configured in Host mode, a 5V supply is connected to pin 1 (VBUS) of the USB connector.

The following table shows the pinout of the USB OTG connector.

Pin	Signal	Comments
1	VBus	5V output on host mode
2	USB_DN	
3	USB_DP	
4	USB_ID	GND for host and floating for device
5	GND	

USB host



The ConnectCore 6 SBC has a 4-port USB HUB that provides four USB Host interfaces. Two USB Host interfaces are connected to a stackable dual USB A-type connector located on the front of the board. The USB Host3 port is connected to the PCI express mini card connector. The USB Host4 port is connected to a 6-pin, 1.25mm pitch expansion connector. All the USB ports can operate at high speed, full speed and low speed.

The following table shows the pinout of the dual stackable USB Host connector.

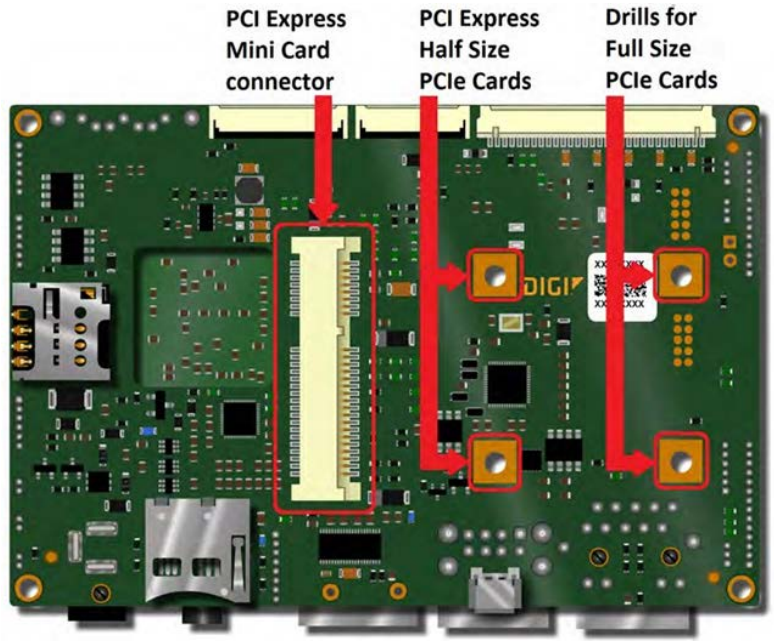
Pin	Signal	Comments
1	USBH1_VBUS	+5V
2	USBH1_DN	
3	USBH1_DP	
4	GND	
5	USBH2_VBUS	+5V
6	USBH2_DN	
7	USBH2_DP	
8	GND	

The following table shows the pinout of the USB expansion connector (J32).

Pin	Signal	Comments
1	+5V	
2	USBH4_DP	
3	USBH4_DN	
4	USBH4_OC_N	Over current input (low level active)
5	USBH4_PWR_EN	Power enable output
6	GND	

Note Connector part number: MOLEX 53047-0610

PCI express mini card



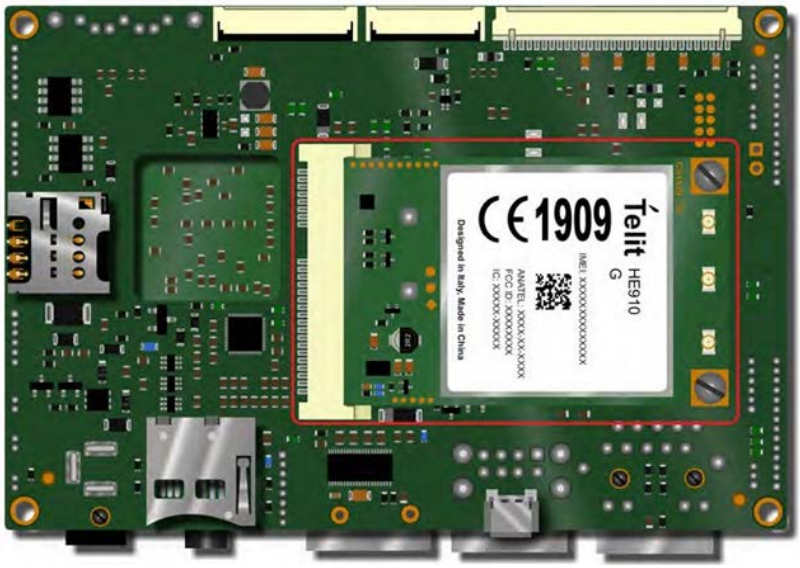
The ConnectCore 6 SBC provides a Mini PCI Express connector with the following interfaces:

- PCIe transmission differential data pair
- PCIe reception differential data pair
- PCIe clock differential data pair
- I2C3
- USB Host port (USBH3)
- GPIO signal (GPIO_7_7) for the open drain, low level PCIe wake-up signal
- GPIO signal (GPIO_1_4) for the low level PCIe disable signal
- GPIO signal (GPIO_7_8) for the low level PCIe reset signal
- SIM interface
- +1.5VDC and +3.3VDC supplies

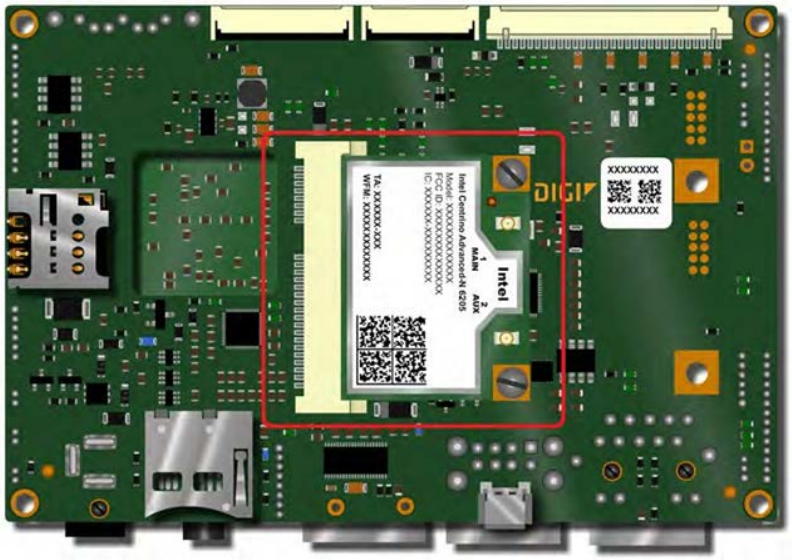
The ConnectCore 6 SBC has four 2.6mm metalized drills: two for the half size and two for the full size mechanization. These drills have a 5.8mm x 5.8mm area without parts or routes for the screws and nuts. Two M2.5 nuts, two M2.5 screws, two 4mm M2.5 spacers, and two M2.5 washers are needed to install a PCI express mini card on the ConnectCore 6 SBC.

The 3.3 V power supply of the PCI Express interface comes from the MP2316 regulator. This device features an adjustable regulator from 0.6 V from inputs within 4V and 19V. The MP2316's input comes directly from the DC Power Jack, offering at its output a maximum 3 A current. This regulator can be commanded by the PCIe_VCC_EN signal (i.MX6 GPIO6_IO10). On low power mode, this device will be disabled.

The following picture shows the ConnectCore 6 SBC with a full size PCI express mini card assembled.



The following picture shows the ConnectCore 6 SBC with a half size PCI express mini card assembled.



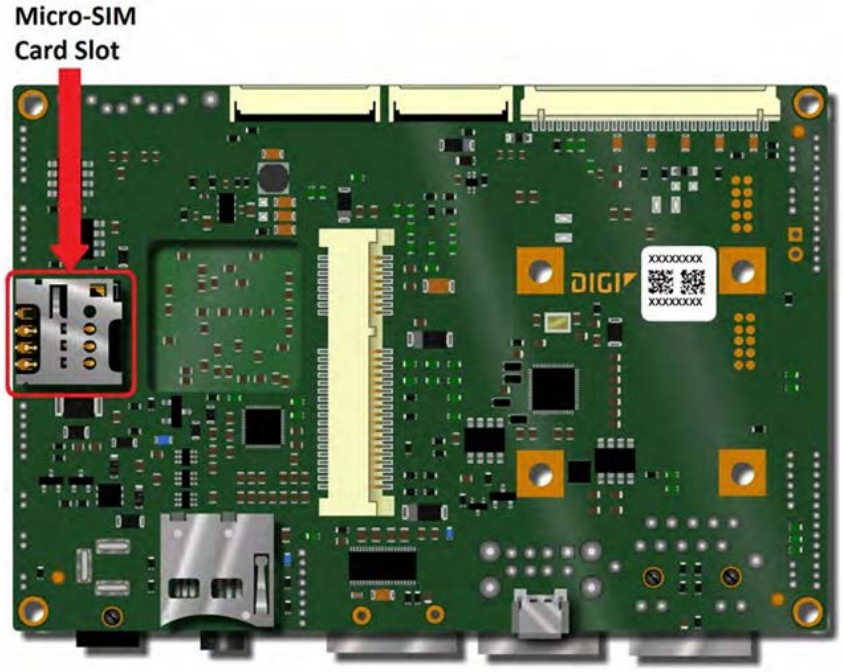
The following table shows the pinout of the PCI express mini card connector.

Pin	Signal	Comments
1	PCIE_WAKE_N	Connected to i.MX6 GPIO_7_7
2	+3.3V	
3	-	
4	GND	

Pin	Signal	Comments
5	-	
6	1.5V	
7	-	
8	PCIE_UIM_PWR	Power supply for SIM card
9	GND	
10	PCIE_UIM_DATA	Data for SIM card
11	PCIE_CLK_N	
12	PCIE_UIM_CLK	Clock for SIM card
13	PCIE_CLK_P	
14	PCI_UIM_RESET	Reset signal for SIM card
15	GND	
16	PCIE_UIM_VPP	Power supply for SIM programming
17	-	
18	GND	
19	-	
20	PCIE_DIS_N	Connected to i.MX6GPIO_1_4
21	GND	
22	PCIE_RESET_N	Connected to i.MX6GPIO_7_8
23	PCIE_RX_N	
24	+3.3V	
25	PCIE_RX_P	
26	GND	
27	GND	
28	+1.5V	
29	GND	
30	I2C3_SCL	
31	PCIE_TX_N	
32	I2C3_SDA	
33	PCIE_TX_P	
34	GND	

Pin	Signal	Comments
35	GND	
36	USBH3_DN	
37	GND	
38	USBH3_DP	
39	+3.3V	
40	-	
41	+3.3V	
42	-	
43	GND	
44	-	
45	-	
46	-	
47	-	
48	+1.5V	
49	-	
50	GND	
51	-	
52	+3.3V	

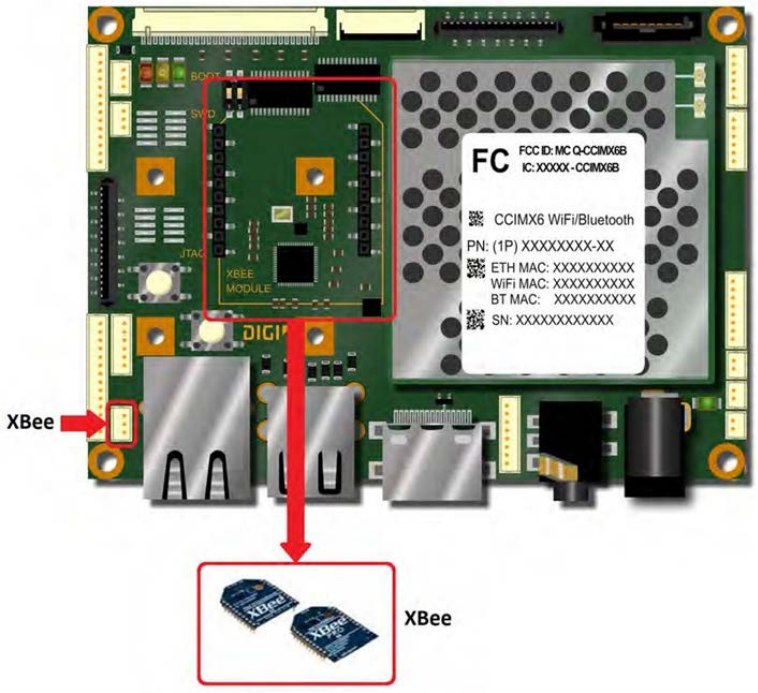
SBC micro-SIM card slot



The ConnectCore 6 SBC provides a micro-SIM card slot located on the bottom side of the board. The SIM interface is connected to the PCIe mini card connector enabling a cellular communication when a cellular module is installed in the Mini Card connector. The pinout of the SIM card slot is shown below.

Pin	Signal	Comments
1	PCIE_UIM_PWR	Power supply for SIM card
2	PCI_UIM_RST	Reset signal for SIM card
3	PCIE_UIM_CLK	Clock signal for SIM
4	-	
5	GND	
6	PCIE_UIM_VPP	Power supply for SIM programming
7	PCIE_UIM_DATA	Data signal for SIM card
8	-	

XBee



The ConnecCore 6 SBC provides two 10-pin, 2mm pitch connectors to connect a Digi XBee/XBee Pro module. The XBee identification and association signals are connected to a 3-pin, 1.25mm pitch expansion connector.

The UART5 port of the ConnectCore 6 module is used to communicate with the XBee module. This UART port is also connected to the UART expansion connector. Only one of the two UART5 interfaces (XBee or Expansion) can be used at a time.

USB Host port 4 coming from the on-board USB Hub is connected to the XBee module socket. This port allows to support USB capable XBee modules. USB Host port 4 is shared between XBee socket and dedicated USB extension header (J32). Only one of the two location can be used at a time.

Three GPIO signals of the ConnectCore 6 module are used to reset the XBee, and control the status of the XBee module.

The pinout of the XBee module connectors is shown below.

Pin	Signal	Comments
1	PCIe_VCC	Dedicated DC/DC regulator(U23 - MP2316)
2	UART5_RX	XBee Data Out
3	UART5_TX	
4	-	
5	XBEE_RESET_N	Reset signal connected to GPIO_3_28
6	-	

Pin	Signal	Comments
7	USBH4_D_P	Support for USB-capable XBee modules
8	USBH4_D_N	Support for USB-capable XBee modules
9	XBEE_SLEEP_RQ	Sleep request signal connected to GPIO_3_29
10	GND	
11	-	
12	UART5_RTS_N	
13	XBEE_ON/SLEEP_N	Status signal connected GPIO_3_27
14	-	
15	XBEE_ASSOC	Association signal connected to expansion connector
16	UART5_CTS_N	
17	-	
18	-	
19	-	
20	XBEE_IDENT	Ident input signal connected to expansion connector

The pinout of the XBee expansion connectors are shown below.

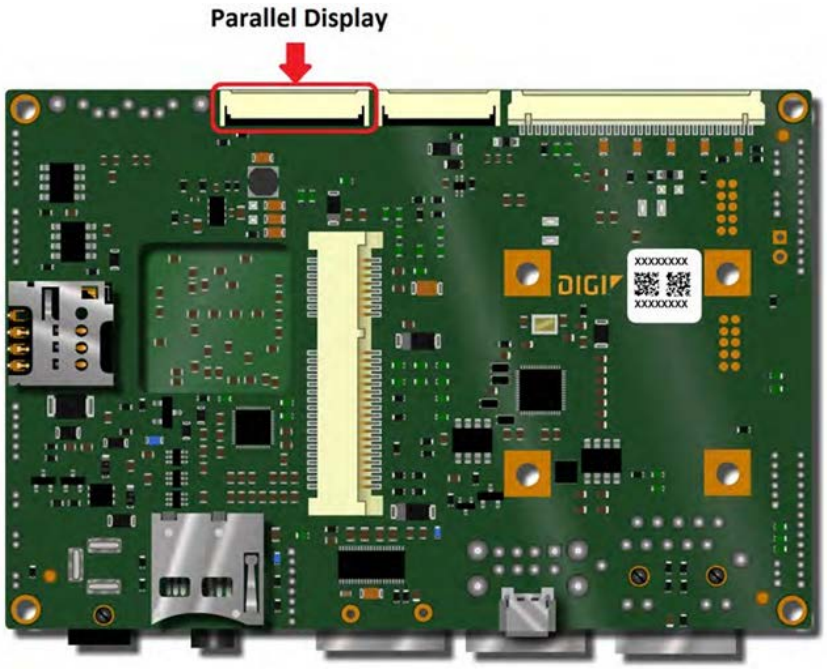
Pin	Signal	Comments
1	XBEE_IDENT	XBee ident input signal
2	XBEE_ASSOC	XBee association output signal
3	GND	XBee Data In

CAUTION! The XBee socket is powered through an external DC/DC regulator(U23 - MP2316). The purpose of this external regulator is to provide higher current than using 3V3 supply coming from the ConnectCore 6 module. **Disabling this regulator doesn't guarantee that the XBee socket is fully disconnected from the module.** In fact, some current travels through the I/Os to the module even after the regulator is disabled.

If your design requires fully disconnecting the XBee socket from the ConnectCore 6 module, Digi recommends you use bus switches for all I/Os connected to the XBee socket.

CAUTION! Do not expose any XBee socket pins to 5V unless it is specifically allowed by the XBee model.

Parallel display



The ConnectCore 6 SBC provides a 24-bit RGB LCD interface connected to a 40-pin, 0.5mm pitch, FFC connector. Backlight control signal, I2C port and interrupt line for a touch screen panel are available on the parallel LCD connector. The connector has 3.3V supply for the LCD display and a 5V supply for the LED backlight.

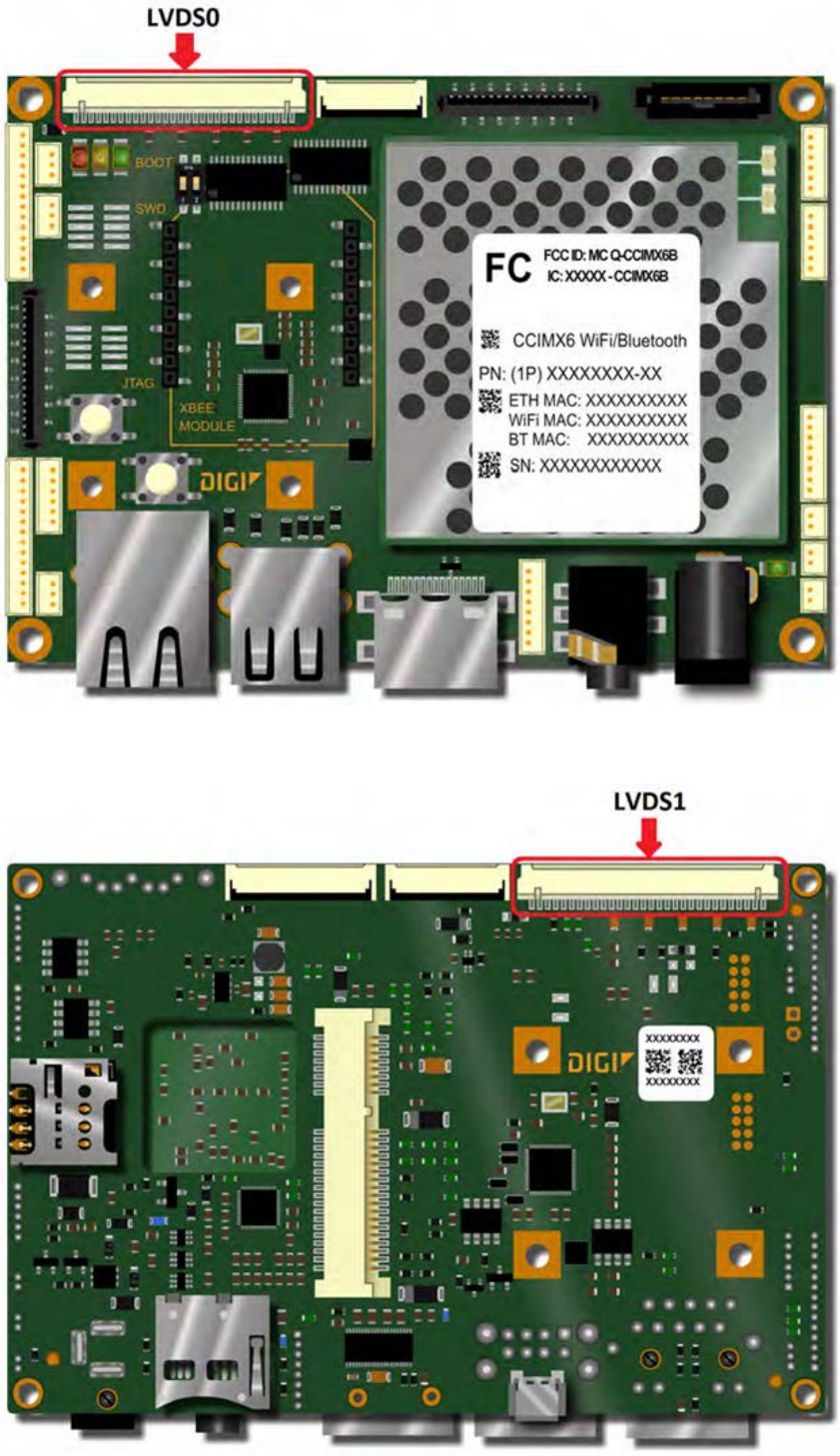
The pinout of the parallel display connectors is shown below.

Pin	Signal name	Description	18-bit (RGB)	24-bit (RGB)	Comments
1	GND	Ground			
2	DISP0_ DAT0	Display data line 0	B[0]	B[0]	
3	DISP0_ DAT1	Display data line 1	B[1]	B[1]	
4	DISP0_ DAT2	Display data line 2	B[2]	B[2]	
5	DISP0_ DAT3	Display data line 3	B[3]	B[3]	
6	DISP0_ DAT4	Display data line 4	B[4]	B[4]	
7	DISP0_ DAT5	Display data line 5	B[5]	B[5]	

Pin	Signal name	Description	18-bit (RGB)	24-bit (RGB)	Comments
8	DISP0_ DAT6	Display data line 6	G[0]	B[6]	
9	DISP0_ DAT7	Display data line 7	G[1]	B[7]	
10	DISP0_ DAT8	Display data line 8	G[2]	G[0]	
11	DISP0_ DAT9	Display data line 9	G[3]	G[1]	
12	DISP0_ DAT10	Display data line 10	G[4]	G[2]	
13	DISP0_ DAT11	Display data line 11	G[5]	G[3]	
14	DISP0_ DAT12	Display data line 12	R[0]	G[4]	
15	DISP0_ DAT13	Display data line 13	R[1]	G[5]	
16	DISP0_ DAT14	Display data line 14	R[2]	G[6]	
17	DISP0_ DAT15	Display data line 15	R[3]	G[7]	
18	DISP0_ DAT16	Display data line 16	R[4]	R[0]	
19	DISP0_ DAT17	Display data line 17	R[5]	R[1]	
20	DISP0_ DAT18	Display data line 18	-	R[2]	
21	DISP0_ DAT19	Display data line 19	-	R[3]	
22	DISP0_ DAT20	Display data line 20	-	R[4]	
23	DISP0_ DAT21	Display data line 21	-	R[5]	
24	DISP0_ DAT22	Display data line 22	-	R[6]	
25	DISP0_ DAT23	Display data line 23	-	R[7]	

Pin	Signal name	Description	18-bit (RGB)	24-bit (RGB)	Comments
26	GND	Ground			
27	DISP0_CLK	Display clock line			Clock signal for the LCD
28	GND	Ground			
29	DISP0_ HSYNC	Horizontal sync line			
30	DISP0_ VSYNC	Vertical sync line			
31	DISP0_ DRDY	Data validation/blank, data enable			
32	DISP0_ CONTRAST	Contrast line			Contrast signal connected to DI0_PIN14 on i.MX6
33	I2C3_SCL	I2C clock line			
34	I2C3_SDA	I2C data line			
35	DISP0_IRQ_ N	Interrupt line			Low level interrupt signal from display
36	GND	Ground			
37	3V3	3,3V power rail			Supply for LCD
38	3V3	3,3V power rail			Supply for LCD
39	5V	5V power rail			Supply for backlight LEDs
40	5V	5V power rail			Supply for backlight LEDs

LVDS



The ConnectCore 6 SBC provides two LVDS interfaces.

The interface LVDS0 is connected to a 20-pin, 1.25mm pitch Hirose DF14 connector. This connector provides access to the following LVDS capabilities:

- 4 LVDS0 differential data pairs
- 1 LVDS0 differential clock pair
- Interrupt signal (GPIO_7_11) with 10K pull-up resistors for touch screen
- PWM output (PMIC_GPIO11) to control the backlight contrast
- I2C3
- +3.3VDC and +5VDC supplies

The following table shows the pinout of the LVDS0 connector.

Pin	Signal	Comments
1	+3.3V	
2	LVDS0 TX0 N	Transmission pair 0 data -
3	LVDS0 TX0 P	Transmission pair 0 data +
4	GND	
5	LVDS0 TX1 N	Transmission pair 1 data -
6	LVDS0 TX1 P	Transmission pair 1 data +
7	GND	
8	LVDS0 TX2 N	Transmission pair 2 data -
9	LVDS0 TX2 P	Transmission pair 2 data +
10	GND	
11	LVDS0 CLK N	Transmission pair clock -
12	LVDS0 CLK P	Transmission pair clock +
13	GND	
14	LVDS0 TX3 N	Transmission pair 3 data -
15	LVDS0 TX3 P	Transmission pair 3 data +
16	LVDS0 CONTRAST	PMIC GPIO11
17	I2C3 SCL	
18	I2C3 SDA	
19	LVDS0 IRQ N	Connected to i.MX6 GPIO 7 11
20	+5V	

The interface LVDS1 is connected to a 20-pin, 1.25mm pitch Hirose DF14 connector. This connector provides access to the following LVDS capabilities:

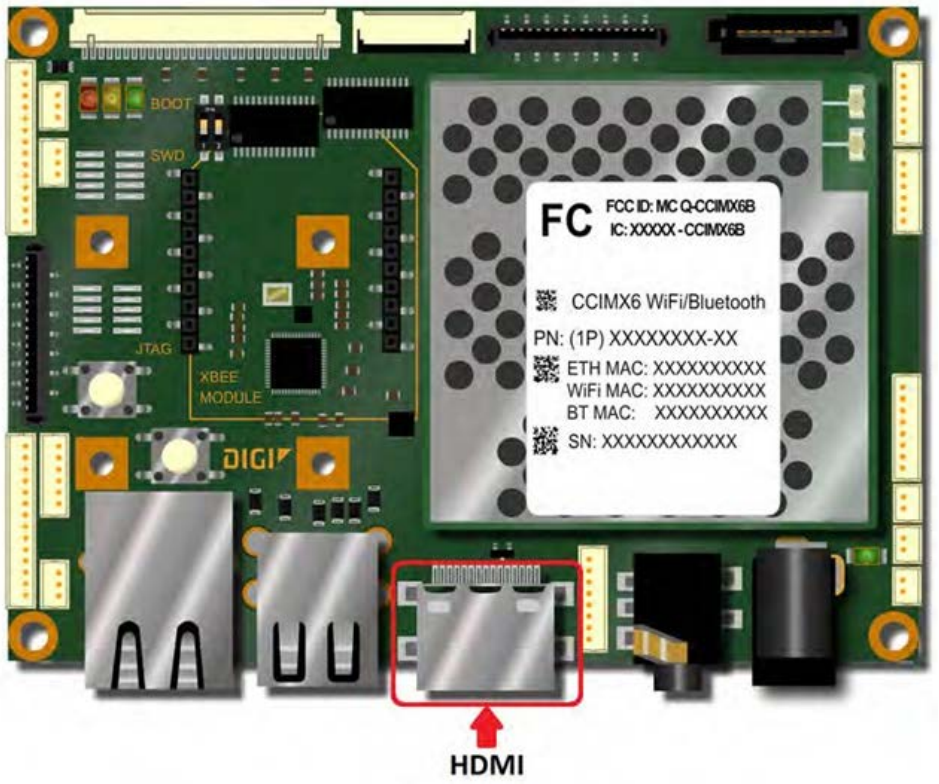
- 4 LVDS1 differential data pairs
- 1 LVDS1 differential clock pair
- Interrupt signal (GPIO_3_23) with 10K pull-up resistors for touch screen

- PWM output (PMIC_GPIO15) to control the backlight contrast
- I2C3
- +3.3VDC and +5VDC supplies

The table below shows the pinout of the LVDS1 expansion connector.

Pin	Signal	Comments
1	+3.3V	
2	LVDS1 TX0 N	Transmission pair 0 data -
3	LVDS1 TX0 P	Transmission pair 0 data +
4	GND	
5	LVDS1 TX1 N	Transmission pair 1 data -
6	LVDS1 TX1 P	Transmission pair 1 data +
7	GND	
8	LVDS1 TX2 N	Transmission pair 2 data -
9	LVDS1 TX2 P	Transmission pair 2 data +
10	GND	
11	LVDS1 CLK N	Transmission pair clock -
12	LVDS1 CLK P	Transmission pair clock +
13	GND	
14	LVDS1 TX3 N	Transmission pair 3 data -
15	LVDS1 TX3 P	Transmission pair 3 data +
16	LVDS1 CONTRAST	PMIC GPIO11
17	I2C3 SCL	
18	I2C3 SDA	
19	LVDS1 IRQ N	Connected to i.MX6 GPIO3_23
20	+5V	

HDMI



The ConnectCore 6 module provides an HDMI 1.4a compatible interface. The interface includes the HDMI controller and PHY. Video resolutions up to 1080p at 120Hz HDTV are supported. All audio formats as specified by the HDMI Specification 1.4 are supported. Hot plug/unplug detection is also supported.

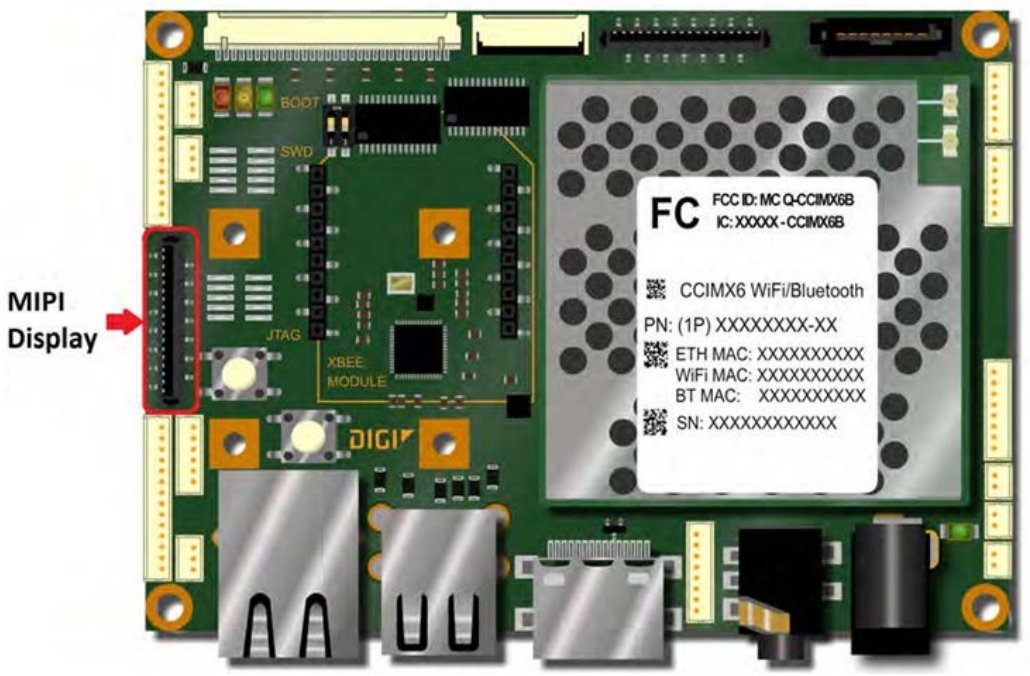
The ConnectCore 6 SBC board provides an HDMI connector for a standard HDMI cable. The HDMI interface includes ESD, overcurrent and backdrive protection.

The table below shows the pinout of the HDMI connector.

Pin	Signal	Comments
1	HDMI_TX2_P+	Transmission pair 2 data +
2	GND	Data2 shield
3	HDMI_TX2_N -	Transmission pair 2 data -
4	HDMI_TX1_P +	Transmission pair 1 data +
5	GND	Data1 shield
6	HDMI_TX1_N -	Transmission pair 1 data -
7	HDMI_TX0_P +	Transmission pair 0 data +
8	GND	Data0 shield

Pin	Signal	Comments
9	HDMI_TX0_N -	Transmission pair 0 data -
10	HDMI_TXC_P +	Transmission pair clock +
11	GND	Clock shield
12	HDMI_TXC_N -	Transmission pair clock -
13	HDMI_CEC	Consumer Electric Control
14	NC	Reserved
15	HDMI_SCL	I2C SCL
16	HDMI_SDA	I2C SDA
17	GND	DDC/CEC Ground
18	+5V	5V supply (50mA max)
19	HOTPLUG_DET	Hot Plug Detection

MIPI display



The ConnectCore 6 SBC provides a MIPI display serial interface (MIPI_DSI) compliant with the MIPI DSI specification. A MIPI D-PHY is included on the module, allowing direct connections between the module and a MIPI DSI compliant display.

The MIPI DSI interface is connected to a 15-pin, 1mm pitch, FCC connector on the top side of the ConnectCore 6 SBC. This connector provides access to the following signals:

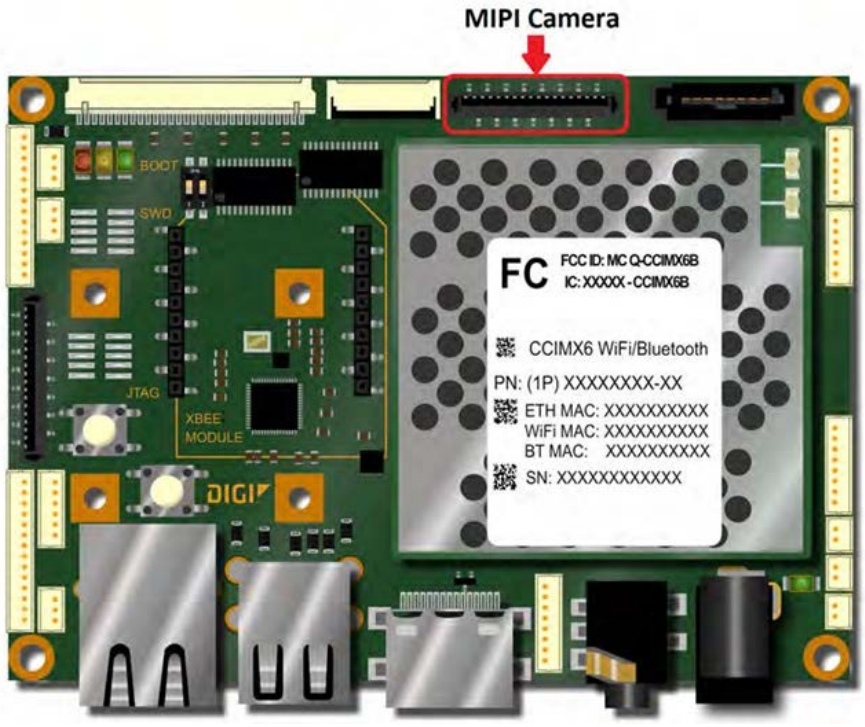
- 2 MIPI DSI differential data pairs
- 1 MIPI DSI differential clock pair
- I2C3
- +3.3VDC

The table below shows the pinout of the MIPI display connector.

Pin	Signal	Comments
1	+3.3V	
2	+3.3V	
3	GND	
4	I2C3_SDA	
5	I2C3_SCL	
6	GND	

Pin	Signal	Comments
7	DSI_D0_P	MIPI Display pair 0 data+
8	DSI_D0_N	MIPI Display pair 0 data-
9	GND	
10	DSI_CLK_P	MIPI Display pair clock+
11	DSI_CLK_N	MIPI Display pair clock-
12	GND	
13	DSI_D1_P	MIPI Display pair 1 data+
14	DSI_D1_N	MIPI Display pair 1 data-
15	GND	

MIPI camera



The ConnectCore 6 SBC provides a MIPI camera serial interface (MIPI CSI) compliant with the MIPI CSI-2 specification. A MIPI D-PHY is included on the module, allowing direct connections between the module and a MIPI CSI-2 compliant camera sensor.

The MIPI CSI interface is connected to a 15-pin, 1mm pitch, FCC connector on the top side of the ConnectCore 6 SBC. This connector provides access to the following signals:

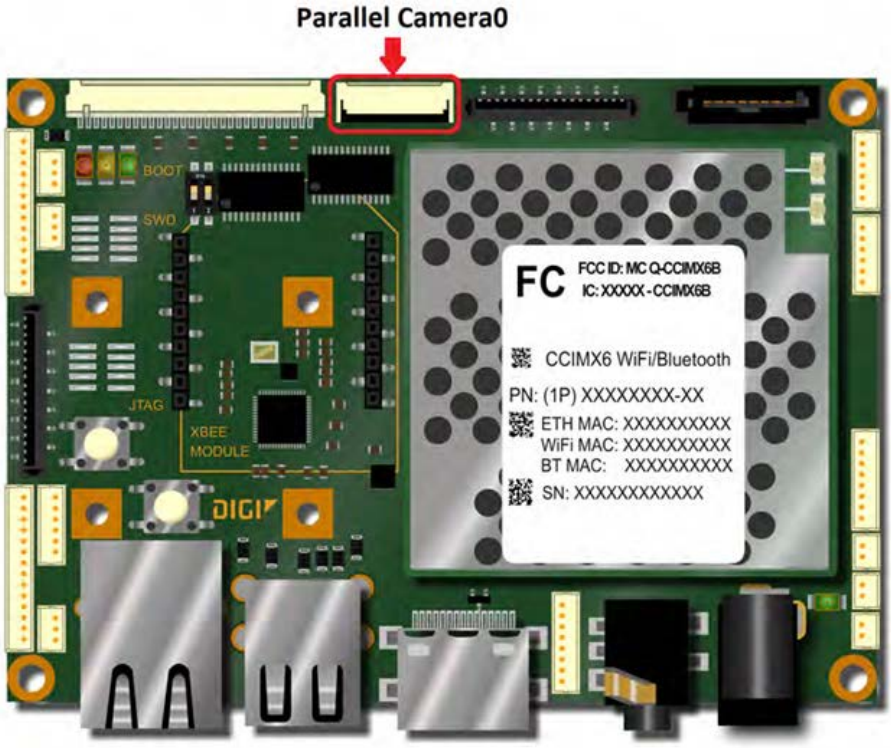
- 2 MIPI CSI differential data pairs
- 1 MIPI CSI differential clock pair
- MIPI Camera Reset signal (GPIO7_6)
- I2C3
- +3.3VDC

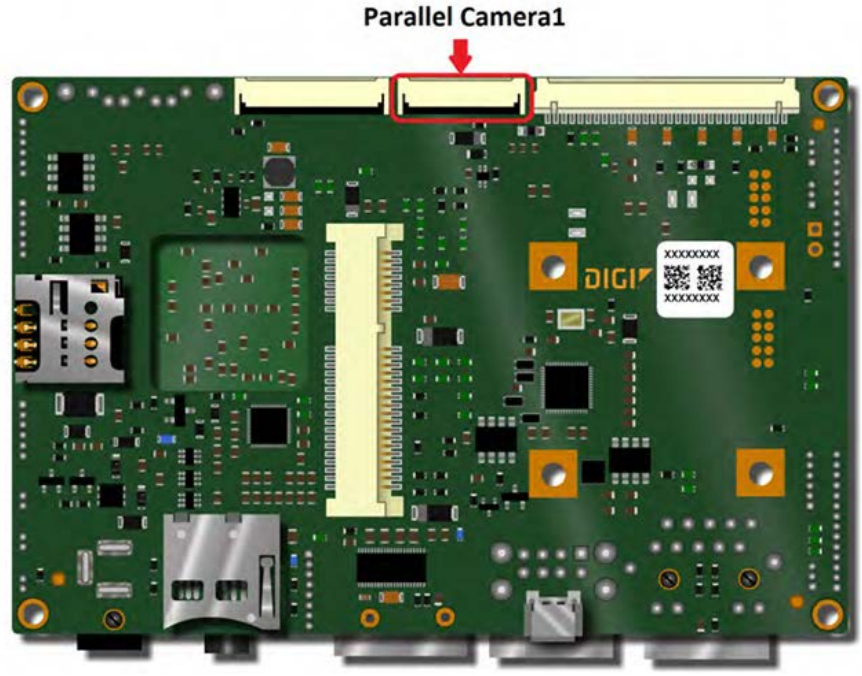
The table below shows the pinout of the MIPI CSI connector.

Pin	Signal	Comments
1	+3.3V	
2	I2C3_SDA	
3	I2C3_SCL	
4	-	

Pin	Signal	Comments
5	CSI_RESET_N	Connected to i.MX6 GPIO_7_6
6	GND	
7	CSI_CLK_P	MIPI CSI pair clock+
8	CSI_CLK_N	MIPI CSI pair clock -
9	GND	
10	CSI_D1_P	MIPI CSI pair 1 data+
11	CSI_D1_N	MIPI CSI pair 1 data-
12	GND	
13	CSI_D0_P	MIPI CSI pair 0 data+
14	CSI_D0_N	MIPI CSI pair 0 data-
15	GND	

Parallel camera





The ConnectCore 6 SBC provides two parallel camera sensor interfaces (CSI). Both interfaces are composed of an 8-bit data bus, a master clock generated by the i.MX6 CPU and three synchronization signals (PIXCLK, HSYNV and VSYNC) generated by the camera sensor.

The first parallel camera interface is connected to a 20-pin FFC connector. This connector provides access to the following signals:

- 8-bit data bus (CSI0_D12 to CSI0_D19)
- Master clock (CSI0_MCLK)
- Pixel clock (CSI0_PIXCLK)
- Horizontal synchronization (CSI0_HSYNC)
- Vertical synchronization (CSI0_VSYNC)
- Camera reset signal (CSI0_RESET_N) connected to GPIO5_0 on the i.MX6 CPU
- I2C3
- GPIO signal (GPIO_5_20)

The table below shows the pinout of the CSI0 connector.

Pin	Signal	Comments
1	GND	
2	CSI0_DAT12	Lowest significant data bit
3	CSI0_DAT13	
4	CSI0_DAT14	
5	CSI0_DAT15	
6	CSI0_DAT16	
7	CSI0_DAT17	
8	CSI0_DAT18	
9	CSI0_DAT19	Highest significant data bit
10	GND	
11	CSI0_MCLK	
12	CSI0_PIXCLK	
13	CSI0_HSYNC	
14	CSI0_VSYNC	
15	CSI0_GPIO	
16	CSI0_RESET_N	
17	GND	
18	I2C3_SCL	
19	I2C3_SDA	
20	3.3V	

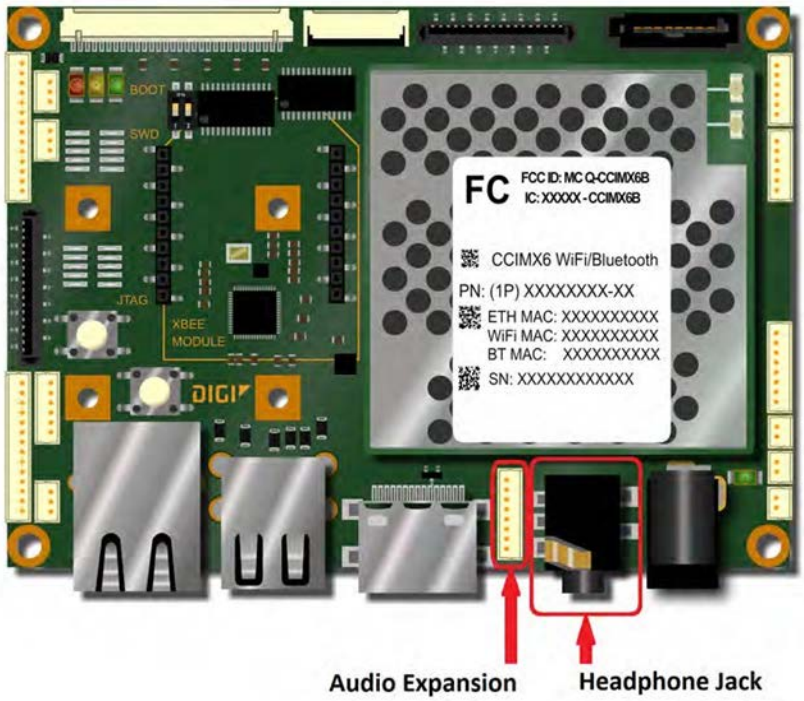
The second parallel camera interface is connected to a 20-pin, 0.5mm pitch, FCC connector located on the bottom side of the board. This connector provides access to the following signals:

- 8-bit data bus (CSI1_D12 to CSI1_D19)
- Master clock (CSI1_MCLK)
- Pixel clock (CSI1_PIXCLK)
- Horizontal synchronization (CSI1_HSYNC)
- Vertical synchronization (CSI1_VSYNC)
- Camera reset signal (CSI1_RESET_N) connected to GPIO3_15 on the i.MX6 CPU
- I2C3
- GPIO signal (GPIO5_2)

The table below shows the pinout of the CSI1 connector.

Pin	Signal	Comments
1	GND	
2	CSI1_DAT12	Lowest significant data bit
3	CSI1_DAT13	
4	CSI1_DAT14	
5	CSI1_DAT15	
6	CSI1_DAT16	
7	CSI1_DAT17	
8	CSI1_DAT18	
9	CSI1_DAT19	Highest significant data bit
10	GND	
11	CSI1_MCLK	
12	CSI1_PIXCLK	
13	CSI1_HSYNC	
14	CSI1_VSYNC	
15	CSI1_GPIO	
16	CSI1_RESET_N	
17	GND	
18	I2C3_SCL	
19	I2C3_SDA	
20	3.3V	

Audio



The ConnectCore 6 SBC provides an audio interface with headphone, line-out, line-in, and microphone signals. The NXP SGTL5000 audio codec is used on the SBC to generate all the audio signals.

The headphone audio signal is connected to a stereo audio jack. The signal GPIO2_0 of the i.MX6 is connected to the audio jack for the headphone detector functionality. When a headphone is connected to the audio jack, the line-out channel will be muted and the CODEC will route the audio output to the headphone. If a headphone is not connected the audio CODEC will connect the audio output to the line-out channel.

To improve the power consumption during low power modes, the ConnectCore 6 SBC provides a circuit to switch off the power supply of the audio codec. This switch is controlled with the GPIO2_25 of the i.MX6 processor. When the GPIO2_25 is at high level the audio codec is powered. When the GPIO2_25 is at low level the audio codec is not powered.

The table below shows the pinout of the headphone audio jack.

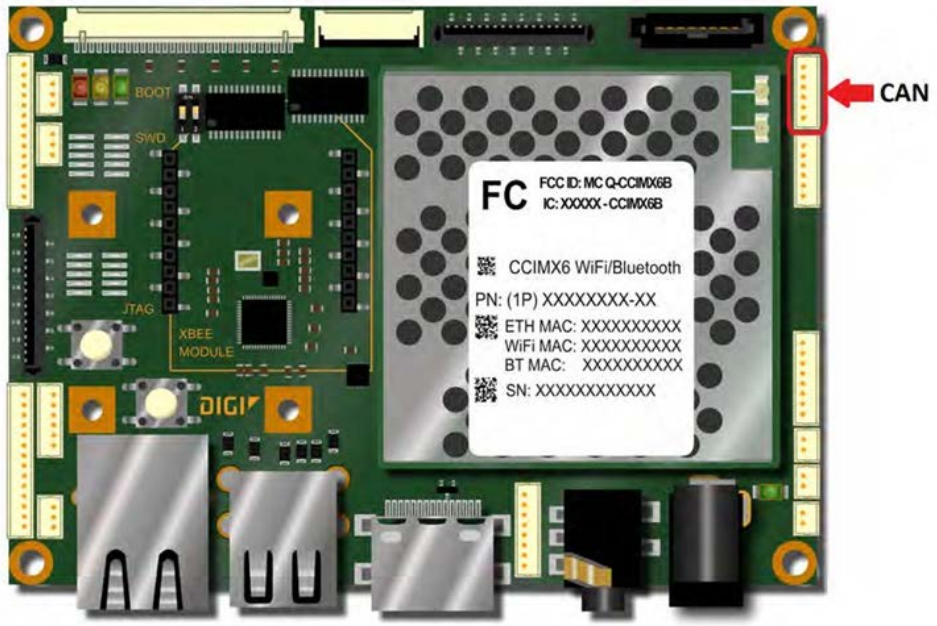
Pin	Signal	Comments
1	GND	
2	HP_R	Right headphone channel
3	HP_L	Left headphone channel
4	-	
5	HP_DET	Headphone detection

The line in, line out and microphone audio signals are available on an 8-pin, 1.25mm pitch expansion connector (J26). The table below shows the pinout of the audio expansion connector.

Pin	Signal	Comments
1	MIC_BIAS	
2	MIC_IN	
3	LINE_IN_R	
4	LINE_IN_L	
5	GND	
6	LINE_OUT_R	
7	LINE_OUT_L	
8	GND	

Note Connector part number: MOLEX 53047-0810

CAN



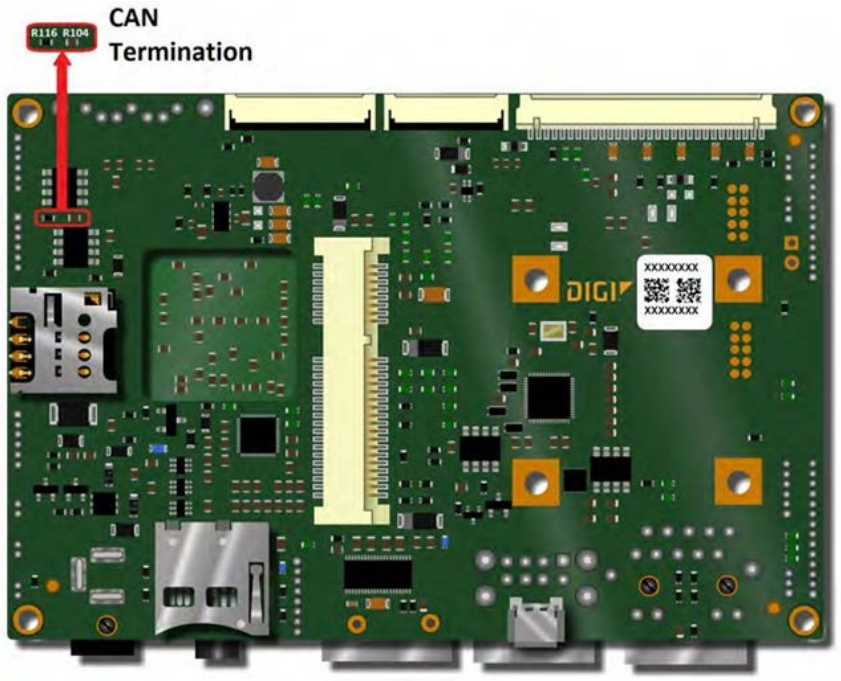
The ConnectCore 6 SBC provides two CAN bus ports compatible with the CAN 2.0B protocol. Two CAN transceivers are used on the SBC to provide transmit and receive capability between the differential CAN bus and the CAN controller of the i.MX6 CPU. These transceivers allow signal rates up to 1Mbps. The i.MX6 signals GPIO_1_2 and GPIO_1_5 are used to put the CAN1 and CAN2 transceivers on low-power standby mode.

The two CAN ports are available on a 6-pin, 1.25mm pitch expansion connector. The table below shows the pinout of the CAN expansion connector.

Pin	Signal
1	CAN1_L
2	CAN1_H
3	GND
4	CAN2_L
5	CAN2_H
6	GND

Note Connector part number: MOLEX 53047-0610

CAN termination resistors



The ConnectCore 6 SBC provides two 120W termination resistors on the CAN interfaces. By default these two resistors are populated.

Resistor	Description
R104	CAN1 termination resistor
R116	CAN2 termination resistor

UART

The ConnectCore 6 SBC provides access to three UART interfaces on a 14-pin, 1.25mm pitch UART expansion connector. This connector provides access to the following interfaces:

- UART1: 4 wire, RS-232 level UART
- UART3: 4 wire, RS-232 level UART
- UART5: 4 wire, TTL UART shared with XBee interface

These three UART interfaces have software flow control lines (RTS and CTS). UART1 and UART3 have RS-232 levels and they are configured in DTE mode (CTS input and RTS output). The UART5 interface has TTL levels and it is configured in DCE mode (CTS output and RTS input).

The table below shows the pinout of the UART expansion connector.

Pin	Signal	Comments
1	RS-232_1_TX	
2	RS-232_1_RX	
3	RS-232_1_RTS_N	Output from i.MX6
4	RS-232_1_CTS_N	Input to i.MX6
5	3.3V	
6	RS-232_3_TX	
7	RS-232_3_RX	
8	RS-232_3_RTS_N	Output from i.MX6
9	RS-232_3_CTS_N	Input to i.MX6

Pin	Signal	Comments
10	GND	
11	UART5_TX	
12	UART5_RX	
13	UART5_RTS_N	Output from i.MX6
14	UART5_CTS_N	Input to i.MX6

Note Connector part number: MOLEX 53047-1410

I2C

The ConnectCore 6 SBC provides access to the I2C3 interface of the i.MX6 CPU. Two 2K2 pull-up resistors to 3.3V are connected to the I2C3 lines on the SBC.

The I2C3 port is used on the ConnectCore 6 SBC on several interfaces. The following table shows the interfaces connected to the I2C3 bus and their default I2C addresses.

Interface	Speed (Kbps)	Address (7-bit)	Comment
HDMI EDID	100	0x50	Read only accesses
MIPI Camera	-	-	Address depends on the camera used
MIPI Display	-	-	Address depends on the display used
CSI0 Camera	-	-	Address depends on the camera used
CSI1 Camera	-	-	Address depends on the display used
PCIe mini card	-	-	Address depends on the camera used
LVDS0 touch			Address depends on the touch used
LVDS1 touch			Address depends on the touch used
DIsplay0 touch			Address depends on the touch used
Audio CODEC	400	0x0A	Address of SGTL5000
I2C expansion	-	-	Address depends on the device connected

The I2C3 port is connected to a 6-pin, 1.25mm pitch expansion connector. This connector provides access to the following signals:

- I2C3 port
- Interrupt signal connected to GPIO_6_15
- GPIO_6_16 signal

The table below shows the pinout of the I2C expansion connector.

Pin	Signal	Comments
1	I2C3_SCL	
2	I2C3_SDA	
3	3V3	
4	I2C3_IRQ_N	10K pull-up to 3.3V on the SBC
5	I2C3_GPIO	
6	GND	

Note Connector part number: MOLEX 53047-0610

SPI

The ConnectCore 6 SBC provides an SPI interface, accessible through an 8-pin, 1.25mm pitch expansion connector. This connector provides access to the following signals:

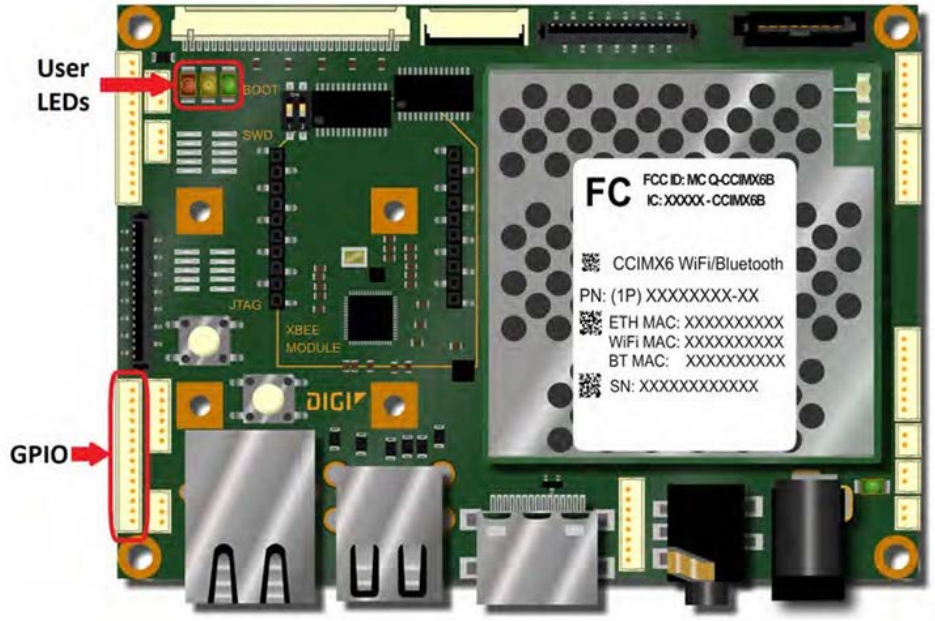
- SPI1 interface
- One slave select signal (SPI_SS0)
- GPIO_4_10. This signal can be used as interrupt input or as SPI_SS1.

The table below shows the pinout of the SPI expansion connector.

Pin	Signal	Comments
1	3V3	
2	SP1_CLK	
3	SP1_MISO	
4	SP1_MOSI	
5	SP1_SS0	
6	SP1_SS1	
7	SP1_IRQ_N	10k pull-up resistor to 3V3 on SBC
8	GND	

Note Connector part number: MOLEX 53047-0810

GPIO and user LEDs



The table below shows the default GPIO assignment done on the ConnectCore 6 SBC.

Signal Name	GPIO
AUD_HP_DET	GPIO_2_0
CAN1_STBY	GPIO_1_2
CAN2_STBY	GPIO_1_5
CSI_RESET_N	GPIO_7_6
CSI0_GPIO	GPIO_5_20
CSI0_RESET_N	GPIO_5_0
CSI1_RESET_N	GPIO_3_15
DISP0_IRQ_N	GPIO_2_1
DSI_IRQ_N	GPIO_2_27
DSI_PWR_EN	GPIO_6_31
DSI_RESET_N	GPIO_3_26
EXP_GPIO_3	GPIO_2_24
EXP_GPIO_4	GPIO_2_28
EXP_GPIO_5	GPIO_2_29

Signal Name	GPIO
EXP_GPIO_6	GPIO_7_13
EXP_GPIO_7	GPIO_4_5
EXP_I2C_GPIO	GPIO_6_16
EXP_I2C_IRQ_N	GPIO_6_15
EXT_GPIO_0	GPIO_2_5
EXT_GPIO_1	GPIO_2_6
EXT_GPIO_2	GPIO_2_7
LVDS0_IRQ_N	GPIO_7_11
LVDS1_IRQ_N	GPIO_3_23
PCIE_DIS_N	GPIO_1_4
PCIE_RESET_N	GPIO_7_8
PCIE_WAKE_N	GPIO_7_7
PWR_EN	PMIC_GPIO7
RGMII_INT_N	GPIO_1_28
RGMII_RESET_N	GPIO_1_25
SPI1_IRQ_N	GPIO_4_10
USB_HUB_RESET_N	GPIO_3_10
USER_LED0	GPIO_2_2
USER_LED1	GPIO_2_3
USER_LED2	GPIO_2_4
XBEE_ON/SLEEP_N	GPIO_3_27
XBEE_RESET_N	GPIO_3_28
XBEE_SLEEP_RQ	GPIO_3_29

The ConnectCore 6 SBC provides a 14-pin, 1.25mm pitch expansion connector with eight digital GPIO signals of the i.MX6 CPU and four digital/analog configurable GPIO signals from the Kinetis MCA. The following table shows the pinout of the expansion GPIO connector.

Pin	Signal	Comments
1	TOUCH_X1/PMIC_ ADCIN1	By default, PMIC_ADCIN1 is connected to this pin over a 0R resistor.
2	TOUCH_X2/PMIC_ ADCIN2	By default, PMIC_ADCIN2 is connected to this pin over a 0R resistor.

Pin	Signal	Comments
3	TOUCH_Y1/PMIC_ ADCIN3	By default, PMIC_ADCIN3 is connected to this pin over a 0R resistor.
4	TOUCH_Y2	MCA_IO9
5	3.3V	
6	EXP_GPIO_0	
7	EXP_GPIO_1	
8	EXP_GPIO_2	
9	EXP_GPIO_3	
10	EXP_GPIO_4	
11	EXP_GPIO_5	
12	EXP_GPIO_6	
13	EXP_GPIO_7	
14	GND	

Note The maximum voltage level of the analog input is 2.5V. The maximum voltage level of the digital Input output signals is 3.3V.

Connector part number: MOLEX 53047-1410

The ConnectCore 6 SBC provides three user LEDs controlled with three GPIO signal. The color of each user LED is different. The following table shows the GPIO associated with each user LED.

LED	Signal	Comments
USER_LED0	GPIO_2_2	Red LED
USER_LED1	GPIO_2_3	Yellow LED
USER_LED2	GPIO_2_4	Green LED

Specifications

Electrical specifications

The following table shows the voltage range of the input supplies of the ConnectCore 6 SBC.

Supply voltages

Signal	Description	Min.	Typ.	Max.	Unit
DC-In	Main DC supply	4.75	5	5.5	V
VCC_LICELL	Supply for RTC	2.0	3.0	5	V

The following table shows the voltage and current specification of the supply signals generated on the ConnectCore 6 SBC.

Signal	Voltage	Current
PCIe_VCC	3.3V	3000mA
5V	5V	2400mA

Note 3.3V is generated for PCIe minicard. 5V is generated through the load switch (U7).

Note Voltage at the output of the load switch (U7) depends on the current going through the switch. A fixed 5V cannot be guaranteed.

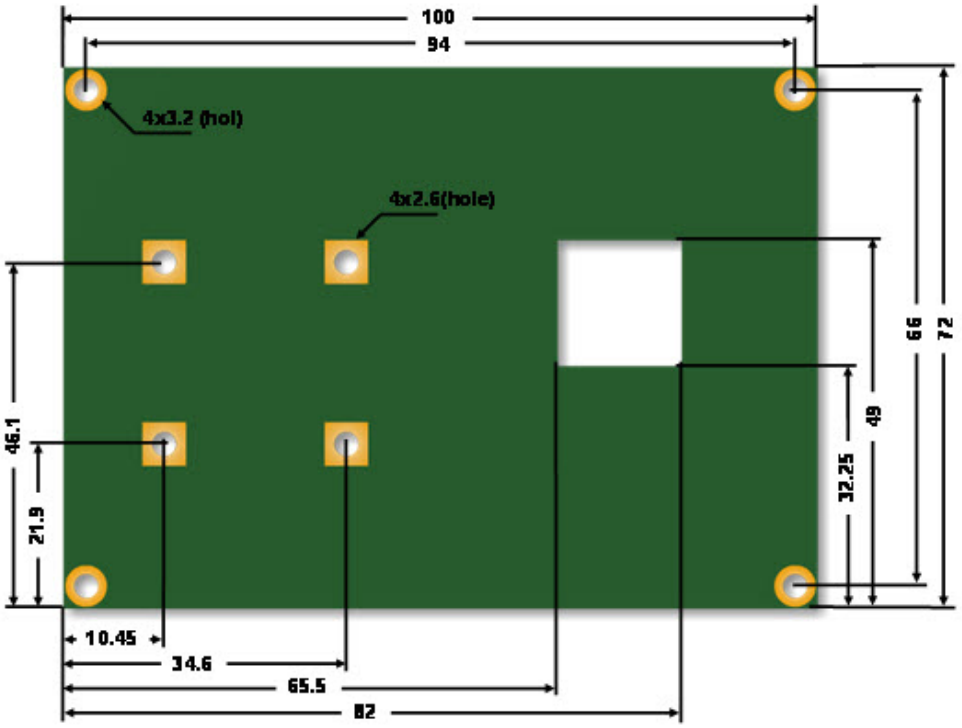
Mechanical specifications

The ConnectCore 6 SBC is a 100mm x 72mm pico-ITX board.

Four 3.2mm drills are located on the four corners of the PCB for assembling the board into an enclosure. These drills have a 5.5mm round metalized area for the screws and nuts.

The board has four 2.6mm drills to assemble a half size or a full size PCI express mini card module. These drills have a 5.8mm x 5.8mm square metalized area for the screws and nuts.

There must be a recess in the board to accommodate the components on the bottom side of the SOM. All dimensions on the following pictures are in millimeters.



The maximum component height on the top side of the ConnectCore 6 SBC is 15.6mm. The maximum component height on the bottom side of the ConnectCore 6 SBC is 6.8mm.

Environmental specifications

The operating temperatures defined for the ConnectCore 6 SBC depend on the ConnectCore 6 module variant.

Specification	Operating Temperature
Industrial	-40° C to +85° C
Commercial	0° C to +70° C

WLAN specifications

For a complete WLAN specification please refer to the *ConnectCore for i.MX6 Hardware Reference Manual* at www.digi.com/resources/documentation/DigiDocs/PDFs/90001394.pdf.

Bluetooth specifications

For a complete Bluetooth specification please refer to the *ConnectCore for i.MX6 Hardware Reference Manual* at www.digi.com/resources/documentation/DigiDocs/PDFs/90001394.pdf.

Regulatory information

Maximum power and frequency specifications

Note The following maximum power and frequency values are for the ConnectCore 6 system on module.

Maximum power	Frequencies
17.5 mW	13 overlapping channels each 22 MHz wide and spaced at 5 MHz. Centered at 2.412 to 2.472 MHz.
62.4 mW	165 overlapping channels each 22 or 40 MHz wide and spaced at 5 MHz. Centered at 5180 to 5825 MHz.

Europe

Declarations of Conformity

Digi has issued Declarations of Conformity for the ConnectCore 6 SBC concerning emissions, EMC, and safety. For more information, see http://www.digi.com/resources/certifications.

Important note

Digi customers assume full responsibility for learning and meeting the required guidelines for each country in their distribution market. Refer to the radio regulatory agency in the desired countries of operation for more information.

CE mark

The ConnectCore 6 SBC is certified for use in several European countries. For information, visit www.digi.com/resources/certifications.

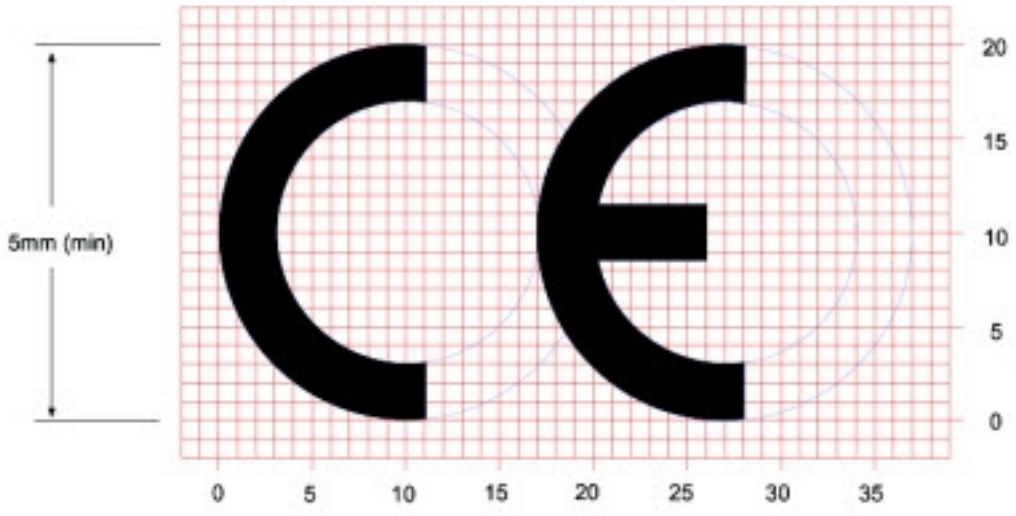
If the ConnectCore 6 SBC is incorporated into a product, the manufacturer must ensure compliance of the final product with articles 3.1a and 3.1b of the RE Directive (Radio Equipment Directive). A Declaration of Conformity must be issued for each of these standards and kept on file as described in the RE Directive (Radio Equipment Directive).

Furthermore, the manufacturer must maintain a copy of the ConnectCore 6 SBC user manual documentation and ensure the final product does not exceed the specified power ratings, antenna specifications, and/or installation requirements as specified in the user manual. If any of these specifications are exceeded in the final product, a submission must be made to a notified body for compliance testing to all required standards.

OEM labeling requirements

The CE marking must be affixed to a visible location on the OEM product.

CE labeling requirements



The CE mark shall consist of the initials “CE” taking the following form:

- If the CE marking is reduced or enlarged, the proportions given in the above graduated drawing must be respected.
- The CE marking must have a height of at least 5mm except where this is not possible on account of the nature of the apparatus.
- The CE marking must be affixed visibly, legibly, and indelibly.

Brazil

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.

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