



*ConnectCore™ Wi-i.MX51  
Hardware Reference*

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# Using this Guide

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This guide provides information about the Digi ConnectCore Wi-i.MX51 embedded core module.

## Conventions Used in this Guide

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This table describes the typographic conventions used in this guide:

This convention	Is used for
<i>italic type</i>	Emphasis, new terms, variables, and document titles.
monospaced type	Filenames, pathnames, and code examples.

## Digi Information

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### Document Updates

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Please always check the product specific section on the Digi support website for the most current revision of this document: [www.digiembedded.com/support](http://www.digiembedded.com/support).

### Contact Information

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Mail	Digi International 1101 Bren Road East Minnetonka, MN 55343 U.S.A
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Telephone (U.S.)	(952) 912-3444 or (877) 912-3444
Telephone (other locations)	+1 (952) 912-3444 or (877) 912-3444

# 1. About the Module

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The network-enabled ConnectCore Wi-i.MX51 is a highly integrated and future-proof System-on-Module (SOM) solution based on the new Freescale® i.MX51 application processor with a high-performance ARM® Cortex-A8® core, powerful multimedia options, and a complete set of peripherals.

The module combines the fast integration, reliability and design flexibility of an off-the-shelf SOM with complete out-of-the-box software development support for platforms such as Microsoft® Windows® Embedded CE 6.0 and Digi® Embedded Linux®.

With industry-leading performance and key features like a dual-display interface and a hardware encryption engine, the module is the ideal choice for a broad range of target markets including medical, digital signage, security/access control, retail, industrial/building automation, transportation and more.

Complete and cost-efficient Digi JumpStart Kits® for Microsoft Windows Embedded CE 6.0 and Digi Embedded Linux allow immediate and professional embedded product development with dramatically reduced design risk and time-to-market.

## Features and Functionality

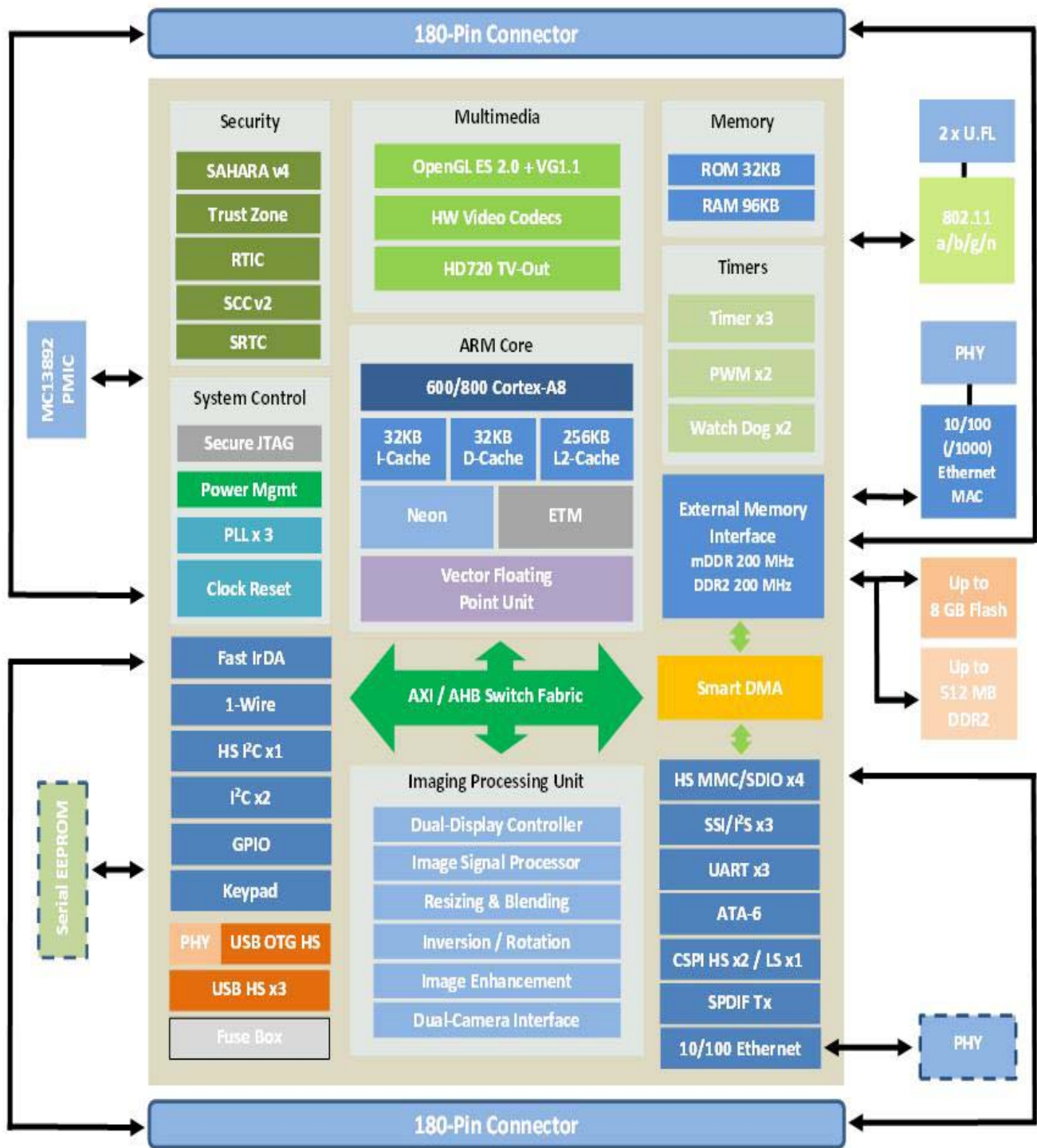
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- High-end, low-power 32-bit System-on-Module
- 600/800/1000MHz ARM Cortex-A8 core
  - 32kByte L1 instruction and 32kByte L1 data cache
  - 256kByte L2 cache
  - NEON co-processor
  - Non-pipelined Vector Floating Point (VFP)
- SLC and MLC NAND flash support on module
- Up to 512 MB 32-bit/200 MHz DDR2 memory
- Debug interfaces
  - JTAG
  - ETM/ETB
- RTC
- Security co-processor
  - Encryption (AES, DES, 3DES and RC4)
  - Hashing algorithms (MD5, SHA-1, SHA-224 and SHA-256)
- Timer
- Watchdog

- Up to 3 UART ports
- SPI Master and slave (up to 25Mbps in master mode)
- I<sup>2</sup>C (up to 400kbps) and HS-I<sup>2</sup>C (up to 3.4Mbps)
- Memory card interface
  - SD/SDIO - 1 and 4-bits (up to 200Mbps)
  - MMC - 1, 4 and 8-bits (up to 416Mbps)
  - Clock frequency between 32kHz and 52MHz
- USB
  - Up to 3x USB 2.0 High-Speed USB Host ports
  - One USB 2.0 On-The-Go USB port (with integrated PHY on module)
- 1-wire
- Keypad 6x4
- 2xPWM
- Up to 4x 10-bit ADC channels
- Multimedia
  - 2x Camera ports
  - 2x Display ports
  - TV output
  - 4-bit touch screen
- SPDIF output
- 3xI2S/AC97/SSI
- On-module 10/100/(1000)Mbit Ethernet controller
- Option for second on-module 10/100Mbit Ethernet interface (connected to CPU Ethernet MAC)
- Pre-certified 802.11a/b/g/n wireless LAN interface 2x U.FL connectors
- On-chip hardware encryption accelerator
- Powerful dual-display and multimedia capabilities
- Industrial operating temperature available
- Low-emission design with FCC Class B certification
- Complete Microsoft Windows Embedded CE 6.0 Linux platform support with full BSP source code

## Block Diagram

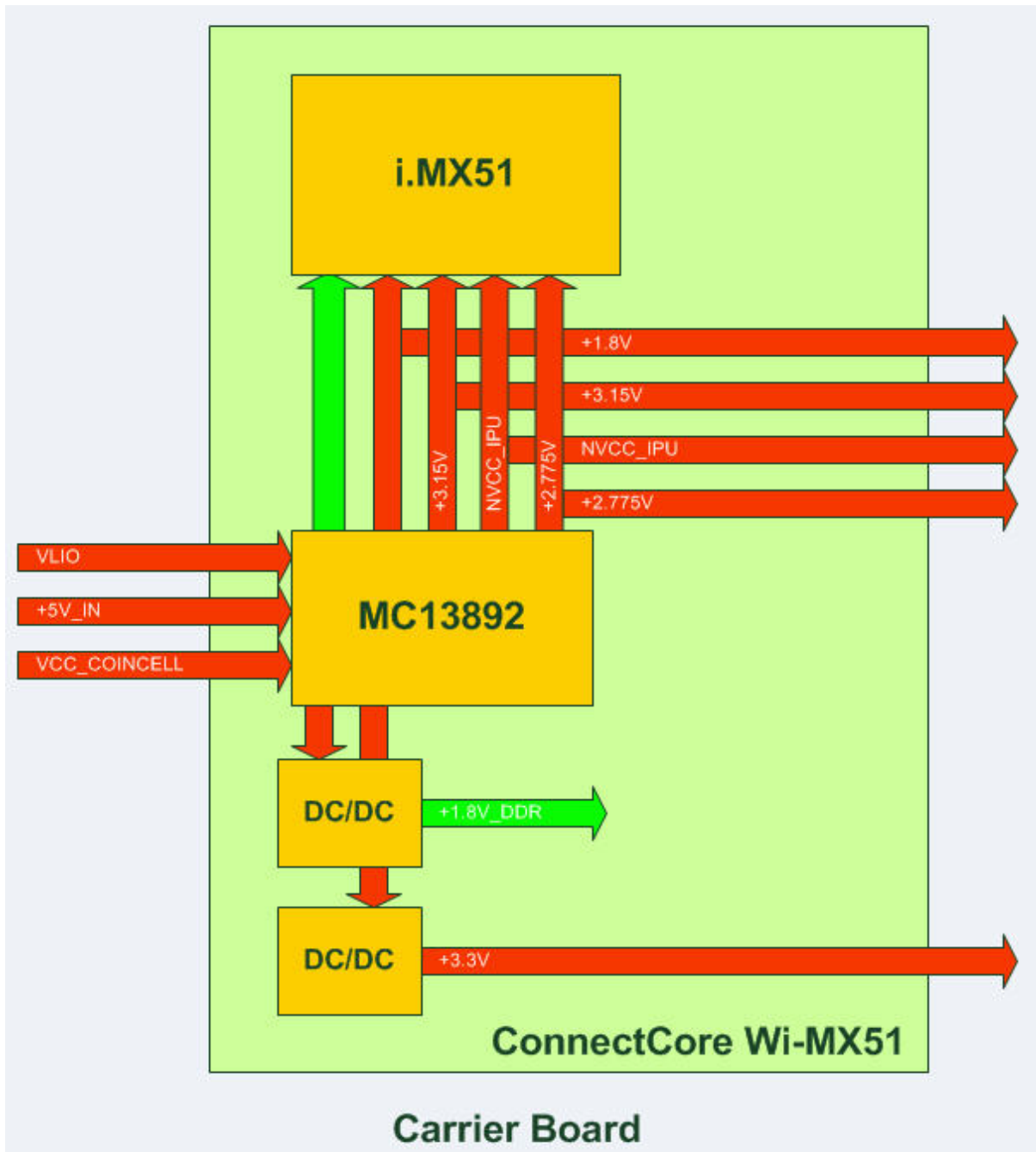
The ConnectCore Wi-i.MX51 block diagram is shown below:



## Power

### Power Supply

The ConnectCore Wi-i.MX51 power supply architecture is described below:



The ConnectCore Wi-i.MX51 is powered through VLIO pins (connector J1.47/J1.49/J1.51). These pins are connected directly to Freescale MC13892 BATT pin. The voltage on VLIO must be between 3.0V and 4.8V.



The module has another input supply: +5V\_IN (J1.48/J1.50/J1.52). This supply is connected to the charger input pin of MC13892. This supply is not required for the module to be functional.

Finally, the last input voltage is VCC\_COINCELL. This supply is required to power the MC13892's internal RTC.

From VLIO supply, the module is generating several power supplies. Some of these are for internal usages (displayed in green on the diagram above) and some others are also routed to the module connectors (+1.8V, +3.15V, +2.775V, +3.3V and NVCC\_IPU).

The +3.3V supply coming down from the module is used also on the module for powering the WLAN module, both Ethernet controllers and Ethernet PHY; depending on the amount of current required on the carrier board.

NVCC\_IPU is configured on the module to provide +2.775V.

## Connector Pinning

### Connector J1

Pin #	Level	Type	Description	Comments
1	+2.775V		CSII_D8/GPIO3_12	
2	+2.775V		CSII_D9/GPIO3_13	
3	+2.775V		CSII_D10	
4	+2.775V		CSII_D11	
5	+2.775V		CSII_D12	
6	+2.775V		CSII_D13	
7	+2.775V		CSII_D14	
8	+2.775V		CSII_D15	
9	+2.775V		CSII_D16	
10	+2.775V		CSII_D17	
11	+2.775V		CSII_D18	
12	+2.775V		CSII_D19	
13	+2.775V		CSII_VSYNC/GPIO3_14	
14	+2.775V		CSII_HSYNC/GPIO3_15	
15	+2.775V		CSII_PIXCLK	
16	+2.775V		CSII_MCLK	
17		POWER	GND	
18		POWER	GNF	

Pin #	Level	Type	Description	Comments
19	+3.3V		Reserved (WLAN_TDO)	
20	+3.3V		Reserved (WLAN_TCK)	
21	+3.3V		Reserved (WLAN_TDI)	
22	+3.3V		Reserved (WLAN_TMS)	
23	+3.3V		WLAN_LED	
24	+3.3V		Reserved (RS_BT_PRIORITY)	
25	+3.3V		Reserved (RS_WLAN_ACTIVE)	
26	+3.3V		Reserved (BT_ACTIVE)	
27			Reserved	
28			Reserved (WLAN_DISABLE#)	
29			Reserved	
30			Reserved	
31			Reserved	
32			Reserved	
33		POWER	+2.775V	
34			Reserved	
35		POWER	+2.775V	
36		POWER	NVCC_IPU (+2.775V)	
37	+2.775V		MC13892_GPO1	
38		POWER	NVCC_IPU (+2.775V)	
39	+1.5V		PMIC_PWRON1	
40	+3.3V		PMIC_STDBY_REQ	
41	+1.2V		PMIC_INT_REQ	
42			PWRGTDRV1	
43			CHRGLED	
44			PWRGTDRV2	
45			CHRGSE1#	
46		POWER	VCC_COINCELL	
47		POWER	VLIO	
48		POWER	+5V_IN	
49		POWER	VLIO	
50		POWER	+5V_IN	
51		POWER	VLIO	
52		POWER	+5V_IN	
53			ETH1_TX+	

Pin #	Level	Type	Description	Comments
54			ETH1_RX+	
55			ETH1_TX-	
56			ETH1_RX-	
57		POWER	GND	
58			ETH1_LINK	
59	+2.775V		DISPB2_SER_DIN/GPIO3_5	
60			ETH1_ACTIVITY	
61	+2.775V		DISPB2_SER_RS/GPIO3_8	
62	+2.775V		DISPB2_SER_DIO/GPIO3_6	
63	+2.775V		DISP2_DAT0/MII_RDATA[3]/ GPIO	
64	+2.775V		DISPB2_SER_CLK_GPIO3_7	
65	+2.775V		DISP2_DAT2	
66	+2.775V		DISP2_DAT1/MII_RX_ER/	
67	+2.775V		DISP2_DAT4	
68	+2.775V		DISP2_DAT3	
69	+2.775V		DISP2_DAT6/MII_TDATA[1]/ GPIO_19	
70	+2.775V		DISP2_DAT5	
71	+2.775V		DISP2_DAT8/MII_TDATA[3]/ GPIO1_30	
72	+2.775V		DISP2_DAT7/MII_TDATA[2]/ GPIO1_29	
73	+2.775V		DISP2_DAT10/MII_COL	
74	+2.775V		DISP2_DAT9/MII_TX_EN/ GPIO1_31	
75	+2.775V		DISP2_DAT12/MII_RX_DV	
76	+2.775V		DISP2_DAT11/MII_RX_CLK/ GPIO1_10	
77	+2.775V		DISP2_DAT14.MII_RDATA[0]	
78	+2.775V		DISP2_DAT13/MII_TX_CLK	
79	+2.775V		DI2_PIN2/MII_MDC	
80	+2.775V		DISP2_DAT15/MII_TDATA[0]	
81	+2.775V		DI2_PIN4/MII_CRS/	
82		POWER	GND	
83			IOR	
84	+2.775V		DI2_DISP_CLK/MII_RDATA[1]	
85			IOR_BACK	

Pin #	Level	Type	Description	Comments
86	+2.775V		DI2_PIN3/MII_MDIO/	
87			IOB	
88			IOG	
89			IOB_BACK	
90			IOG_BACK	
91	+1.8V		JTAG_TCK	
92	+1.8V		JTAG_TRST#	
93	+1.8V		JTAG_TMS	
94	+1.8V		JTAG_MOD#	
95	+1.8V		JTAG_TDI	
96	+1.8V		JTAG_DE#	
97	+1.8V		JTAG_TDO	
98	+1.8V		RESET_IN#	
99	+1.8V		POR#	
100		POWER	+1.8V	
101		POWER	GND	
102		POWER	GND	
103			ETH2_TX+/ETH2_DA+	
104			ETH2_RX+/ETH2_DB+	
105			ETH2_TX-/ETH2_DA-	
106			ETH2_RX-/ETH2_DB-	
107			Reserved (ETH2_DC+)	
108			Reserved (ETH2_DD+)	
109			Reserved (ETH2_DC-)	
110			Reserved (ETH2_DD-)	
111			ETH2_ACTIVITY#	
112			ETH2_LINK#	
113	+1.8V		EIM_CS0/GPIO2_25	
114	+1.8V		EIM_CS1/GPIO2_26	
115	+1.8V		EIM_CS2/GPIO2_27	
116	+1.8V		EIM_CS3/GPIO2_28	
117	+1.8V		EIM_CS4/GPIO2_29	
118	+1.8V		EIM_CS5/ETH2_CS#/GPIO2_30	
119	+1.8V		EIM_DTACK/GPIO2_31	
120	+1.8V		EIM_LBA/GPIO3_1	

Pin #	Level	Type	Description	Comments
121	+1.8V		EIM_DA0	
122	+1.8V		EIM_DA1	
123	+1.8V		EIM_DA2	
124	+1.8V		EIM_DA3	
125		POWER	GND	
126	+1.8V		EIM_DA5	
127	+1.8V		EIM_DA4	
128	+1.8V		EIM_DA7	
129	+1.8V		EIM_DA6	
130		POWER	GND	
131	+1.8V		EIM_DA8	
132	+1.8V		DIM_DA9	
133	+1.8V		EIM_DA10	
134	+1.8V		EIM_DA11	
135		POWER	GND	
136	+1.8V		EIM_DA13	
137	+1.8V		EIM_DA12	
138	+1.8V		EIM_DA15	
139	+1.8V		EIM_DA14	
140		POWER	GND	
141	+1.8V		EIM_D16/GPIO2_0	
142	+1.8V		EIM_D17/GPIO2_1	
143	+1.8V		EIM_D18/GPIO2_2	
144	+1.8V		EIM_D19/GPIO2_3	
145		POWER	+3.15V	
146	+1.8V		EIM_D21/GPIO2_5	
147	+1.8V		EIM_D20/GPIO2_4	
148	+1.8V		EIM_D23/GPIO2_7	
149	+1.8V		EIM_D22/GPIO2_6	
150		POWER	GND	
151	+1.8V		EIM_D24/GPIO2_8	
152	+1.8V		EIM_D25	
153	+1.8V		EIM_D26	
154	+1.8V		EIM_D27	
155		POWER	GND	

Pin #	Level	Type	Description	Comments
156	+1.8V		EIM_D29	
157	+1.8V		EIM_D28	
158	+1.8V		EIM_D31	
159	+1.8V		EIM_D30	
160	+1.8V		EIM_A17/GPIO2_10	
161	+1.8V		EIM_A16/GPIO2_11	
162	+1.8V		EIM_A19/GPIO2_13	
163	+1.8V		EIM_A18/GPIO2_12	
164	+1.8V		EIM_A21/GPIO2_15	
165	+1.8V		EIM_A20/GPIO2_14	
166	+1.8V		EIM_A23/GPIO2_17	
167	+1.8V		EIM_A22/GPIO2_16	
168	+1.8V		EIM_A25/GPIO2_19	
169	+1.8V		EIM_A24/GPIO2_18	
170	+1.8V		EIM_A27/GPIO2_21	
171	+1.8V		EIM_A26/GPIO2_20	
172	+1.8V		EIM_OE#/GPIO2_24	
173	+1.8V		EIM_EB0	
174	+1.8V		EIM_RW#	
175	+1.8V		EIM_EB1	
176	+1.8V		EIM_CRE/GPIO3_2	
177	+1.8V		EIM_EB2/GPIO2_22	
178	+1.8V		EIM_WAIT	
179	+1.8V		EIM_EB3/GPIO2_23	
180	+1.8V		EIM_BCLK	

### Connector J2

Pin #	Level	Type	Description	Comments
1	+2.775V		DISP1_DAT0	
2	+2.775V		DISP1_DAT1	
3	+2.775V		DISP1_DAT2	
4	+2.775V		DISP1_DAT3	
5	+2.775V		DISP1_DAT4	
6	+2.775V		DISP1_DAT5	

Pin #	Level	Type	Description	Comments
7	+2.775V		DISP1_DAT6	
8	+2.775V		DISP1_DAT7	
9	+2.775V		DISP1_DAT8	
10	+2.775V		DISP1_DAT9	
11	+2.775V		DISP1_DAT10	
12	+2.775V		DISP1_DAT11	
13	+2.775V		DISP1_DAT12	
14	+2.775V		DISP1_DAT13	
15	+2.775V		DISP1_DAT14	
16	+2.775V		DISP1_DAT15	
17	+2.775V		DISP1_DAT16	
18	+2.775V		DISP1_DAT17	
19	+2.775V		DISP1_DAT18	
20	+2.775V		DISP1_DAT19	
21	+2.775V		DISP1_DAT20	
22	+2.775V		DISP1_DAT21	
23	+2.775V		DISP1_DAT22/DISP2_DAT16	
24	+2.775V		DISP1_DAT23/DISP2_DAT17	
25	+2.775V		DI1_PIN2/DISP1_HSYNC	
26		POWER	GDN	
27	+2.775V		DI1_PIN11/GPIO3_0	
28	+2.775V		DI1_DISP_CLK	
29	+2.775V		DI1_PIN13/GPIO3_2	
30	+2.775V		DI1_PIN3	
31	+2.775V		DI1_PIN15	
32	+2.775V		DI1_PIN12/GPIO3_1	
33	+2.775V		DI_GP2	
34	+2.775V		DI_GP1	
35	+2.775V		DI_GP4/MII_RDATA[2]	
36	+2.775V		DI_GP3/MII_TX_ER	
37	+2.775V		DI1_D1_CS/GPIO3_4	
38	+2.775V		DI1_D0_CS/GPIO3_3	
39			TOUCH_X1	
40			ADIN5	
41			TOUCH_X2	

Pin #	Level	Type	Description	Comments
42			ADIN6	
43			TOUCH_Y1	
44			ADIN7	
45			TOUCH_Y2	
46			ADC_GND	
47		POWER	GND	
48			ADTRIG	
49		POWER	SWBST	
50			LEDKP	
51			LEDR	
52			LEDAD	
53			LEDG	
54			LEDMD	
55			LEDB	
56			VSWLED	
57	+2.775V		CSI2_D12/GPIO4_9	
58	+2.775V		CSI2_D13/GPIO4_10	
59	+2.775V		CSI2_D14	
60	+2.775V		CSI2_D15	
61	+2.775V		CSI2_D16	
62	+2.775V		CSI2_D17	
63	+2.775V		CSI2_D18/GPIO4_11	
64	+2.775V		CSI2_D19/GPIO4_12	
65	+2.775V		CSII_VSYNC/GPIO4_13	
66	+2.775V		CSI2_HSYNC/GPIO4_14	
67	+2.775V		CSI2_PIXCLK_GPIO4_15	
68		POWER	GND	
69		POWER	GND	
70			USB_OTG_ID	
71			USB_OTG_DP	
72			USB_OTG_VBUS	
73			USB_OTG_DN	
74	+2.775V		GPIO1_8/USB_PWR	
75		POWER	GND	
76	+2.775V		GPIO1_2/PWM1/I2C2_SCL	



Pin #	Level	Type	Description	Comments
77	+2.775V		GPIO1_7/MMA7455LR_INT1	
78	+2.775V		GPIO1_3/PWM2/I2C2_SCL	
79	+2.775V		GPIO1_6/MMA7455LR_INT2	
80			CLK32K_PER	
81		POWER	GND	
82		POWER	GND	
83			CKIH1	
84			CKIH2	
85	+3.15V		SD2_DATA0	
86	+3.15V		SD2_CLK	
87	+3.15V		SD2_DATA1	
88	+3.15V		SD2_CMD	
89	+3.15V		SD2_DATA2	
90	+2.775V		KEY_COL0	
91	+3.15V		SD2_DATA3	
92	+2.775V		KEY_COL1	
93	+2.775V		KEY_ROW0	
94	+2.775V		KEY_COL2	
95	+2.775V		KEY_ROW1	
96	+2.775V		KEY_COL3	
97	+2.775V		KEY_ROW2	
98	+2.775V		KEY_COL5/UART1_DCD#/ UART3_CTS#/I2C2_SDA	
99	+2.775V		KEY_ROW3	
100	+2.775V		GPIO1_0/SD1_CD#	
101	+2.775V		KEY_COL4/ UART1_RI#UART3_RTS#I2C2_SCL	
102	+2.775V		GPIO1_1/SD1_WP#	
103	+2.775V		OWIRE_LINE/GPIO1_24/ SPDIF_OUT1	
104	+3.15V		SD1_DATA0/AUD5_TXD/SPI_SS1	
105	+3.15V		SD1_CMD/AUD5_RXFS/SPI_MOSI	
106	+3.15V		SD1_DATA1/AUD5_RXD	
107	+3.15V		SD1_CLK/AUD5_RXC/SPI_SCLK	
108	+3.15V		SD1_DATA2/AUD5_TXC	
109	+2.775V		WDOG1#/GPIO1_4	

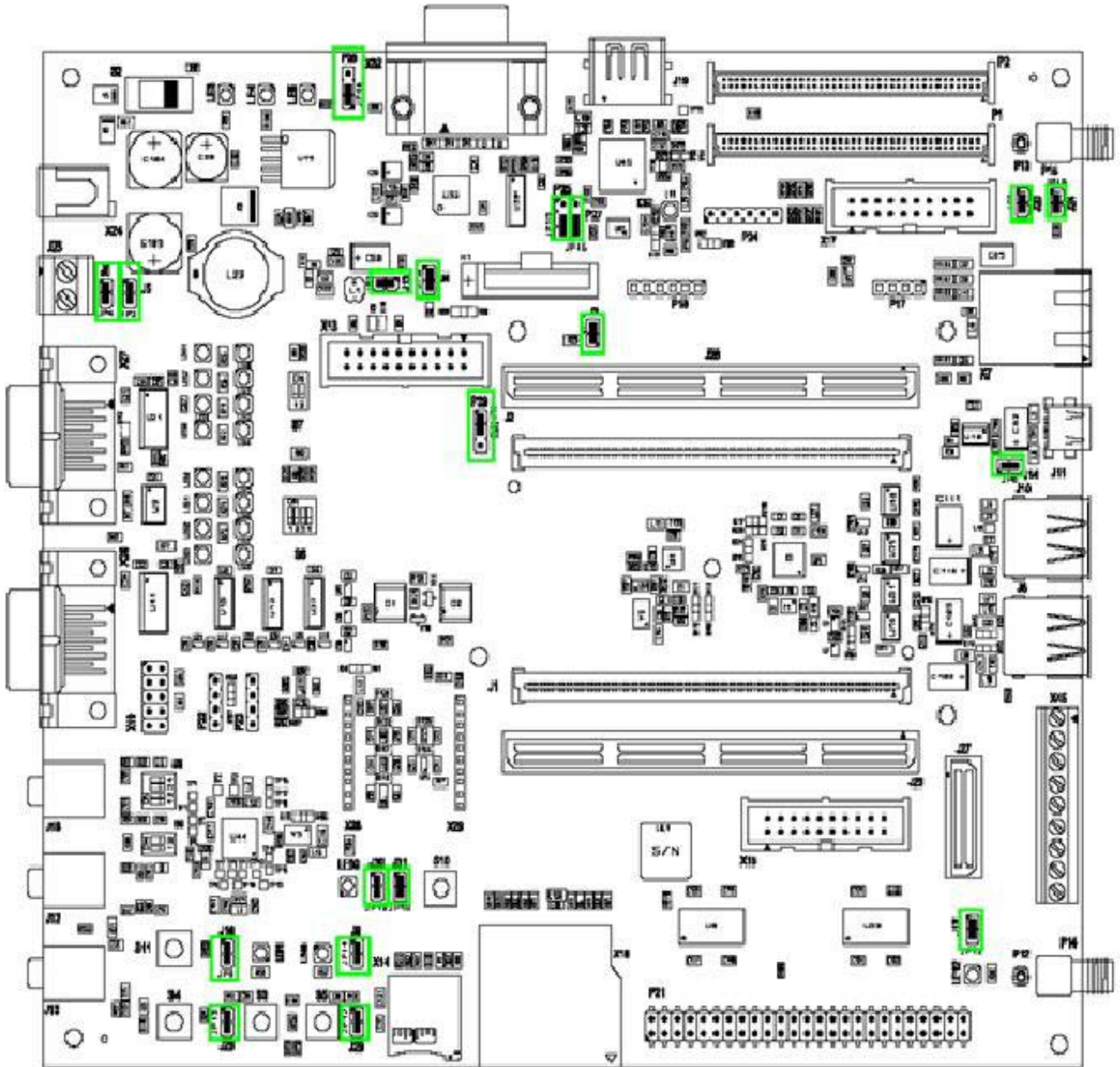
Pin #	Level	Type	Description	Comments
110	+3.15V		SD1_DATA3/AUD5_TXFS/SPI_SS1	
111	+2.775V		CSPI1_MOSI/I2C1_SDA/GPIO4_22	
112	+2.775V		CSPI1_SS0/PMIC/AUD4_TXC/ GPIO4_24	
113	+2.775V		CSPI1_MISO/AUD4_RXD/ GPIO4_23	
114	+2.775V		CSPI1_SS1/AUD4_TXD/GPIO4_25	
115	+2.775V		CSPI1_SCLK/I2C1_SCL/GPIO4_27	
116	+2.775V		CSPI1_RDY/AUD4_TXFS/ GPIO4_26	
117	+2.775V		UART1_RXD/GPIO4_28	
118	+2.775V		UART1_RTS#/GPIO4_30	
119	+2.775V		UART1_TXD/PWM2/GPIO4_29	
120	+2.775V		UART1_CTS#/GPIO4_31	
121	+2.775V		UART2_RXD/GPIO1_20	
122	+2.775V		UART3_RXD/UART1_DTR#/ GPIO1_22	
123	+2.775V		UART2_TXD/GPIO1_21	
124	+2.775V		UART3_TXD/UART1_DSR#/ GPIO1_23	
125	+2.775V		USBH1_DATA2/ UART2_TXD_GPIO1_13	
126		POWER	GND	
127	+2.775V		USBH1_DATA4/CSPI_SS0/ GPIO1_15	
128	+2.775V		USBH1_DATA0/UART2_CTS#/ GPIO1_11	
129	+2.775V		USBH1_DATA6/CSPI_SS2/ GPIO1_17	
130	+2.775V		USBH1_DATA1/UART2_RXD/ GPIO1_12	
131	+2.775V		USBH1_DIR/SPI_MOSI/I2C2_SDA/ GPIO1_26	
132	+2.775V		USBH1_DATA3/UART2_RTS#/ GPIO1_14	
133	+2.775V		USBH1_STP/SPI_RDY/ UART3_RXD/GPIO1-27	
134	+2.775V		USBH1_DATA5/UART2_RTS#/ GPIO1_14	
135	+2.775V		USBH1_NXT/SPI_MISO/ UART3_TXD/GPIO1_28	

Pin #	Level	Type	Description	Comments
136	+2.775V		USBH1_DATA7/CSPI_SS3/GPIO1-18	
137	+2.775V		AUD3_BB_TXD/UART3_TXD/ GPIO4_18	
138	+2.775V		USBH1_CLK/SPI_SCLK/I2C2_SCL/ UART3_CTS#/GPIO1_25	
139	+2.775V		AUD3_BB_RXD/UART3_RXD/ GPIO4_19	
140	+1.8V		HS_I2C_SCL/GPIO4_16	
141	+2.775V		AUD3_BB_CK/GPIO4_20	
142	+1.8V		HS_I2C_SDA/GPIO4_17	
143		POWER	+3.3V	
144	+2.775V		AUD3_BB_FS/UART3_TXD/ GPIO4_21	
145	+3.15V		NANDF_D0/PATA_D0/ SD4_DATA7/GPIO4_8	
146		POWER	+3.3V	
147	+3.15V		NANDF_D2/PATA_D2/ SD4_DATA5/GPIO4_6	
148	+3.15V		NANDF_D1/PATA_D1/ SD4_DATA6/GPIO4_7	
149	+3.15V		NANDF_D4/PATA_D4/SD4_CD#/ GPIO4_4	
150	+3.15V		NANDF_D3/PATA_D3/ SD4_DATA4/GPIO4_5	
151	+3.15V		NANDF_D6/PATA_D6/SD4_LCTL/ GPIO4_2	
152	+3.15V		NANDF_D5/PATA_D5/SD4_WP#/ GPIO4_3	
153	+3.15V		NANDF_D8/PATA_D8/GPIO4_0/ SD3_DATA0	
154	+3.15V		NANDF_D7/PATA_D7/GPIO4_1	
155	+3.15V		NANDF_D10/PATA_D10/ GPIO3_30/SD3_DATA2	
156	+3.15V		NANDF_D9/PATA_D9/GPIO3_31/ SD3_DATA1	
157	+3.15V		NANDF_D12/PATA_D12/ GPIO3_28/SD3_DATA4	
158	+3.15V		NANDF_D11/PATA_D11/ GPIO3_29/SD3_DATA3	
159	+3.15V		NANDF_D14/PATA_D14/ GPIO3_26/SD3_DATA6	
160	+3.15V		NANDF_D13/PATA_D13/ GPIO3_27/SD3/DATA5	

Pin #	Level	Type	Description	Comments
161	+3.15V		NANDF_CS0#/GPIO3_16	
162	+3.15V		NANDF_D15/PATA_D15/ GPIO3_25/SD3_DATA7	
163	+3.15V		NANDF_CS2#/PATA_CS0#/ GPIO3_18/SD4_CLK	
164	+3.15V		NANDF_CS1#/GPIO3_17	
165	+3.15V		NANDF_CS4#/PATA_DA0/ GPIO3_20/SD4_DATA1	
166	+3.15V		NANDF_CS3#/PATA_CS1#/ GPIO3_19/SD4_DATA0	
167	+3.15V		NANDF_CS6#/PATA_DA2/ GPIO3_22/SD4_DATA3	
168	+3.15V		NANDF_CS5#/PATA_DA1/ GPIO3_21/SD4_DATA2	
169	+3.15V		NANDF_RDY_INT/GPIO3_24/ SD3_CMD	
170	+3.15V		NANDF_CS7#/GPIO3_23/SD3_CLK	
171	+3.15V		NANDF_WE#/PATA_DIOW/ SD3_DATA0/GPIO3_3	
172	+3.15V		GPIO_NAND/PATA_INTRQ/ GPIO3_12	
173	+3.15V		NANDF_ALE/PATA_BUFFER_EN/ GPIO3_5	
174	+3.15V		NANDF_RE#/PATA_DIOR/ SD3_DATA1/GPIO3_4	
175	+3.15V		NANDF_WP#/PATA_DMACK/ SD3_DATA2/GPIO3_7	
176	+3.15V		NANDF_CLE/PATA_RESET#/ GPIO3_6	
177	+3.15V		NANDF_RB1/PATA_IORDY/ GPIO3_9	
178	+3.15V		NANDF_RB0/PATA_DMARQ/ SD3_DATA3/GPIO3_8	
179	+3.15V		NANDF_RB3/SPI2_MISO/ GPIO3_11	
180	+3.15V		NANDF_RB2/SPI2_SCLK/ GPIO3_10	

# 2. About the Development Board

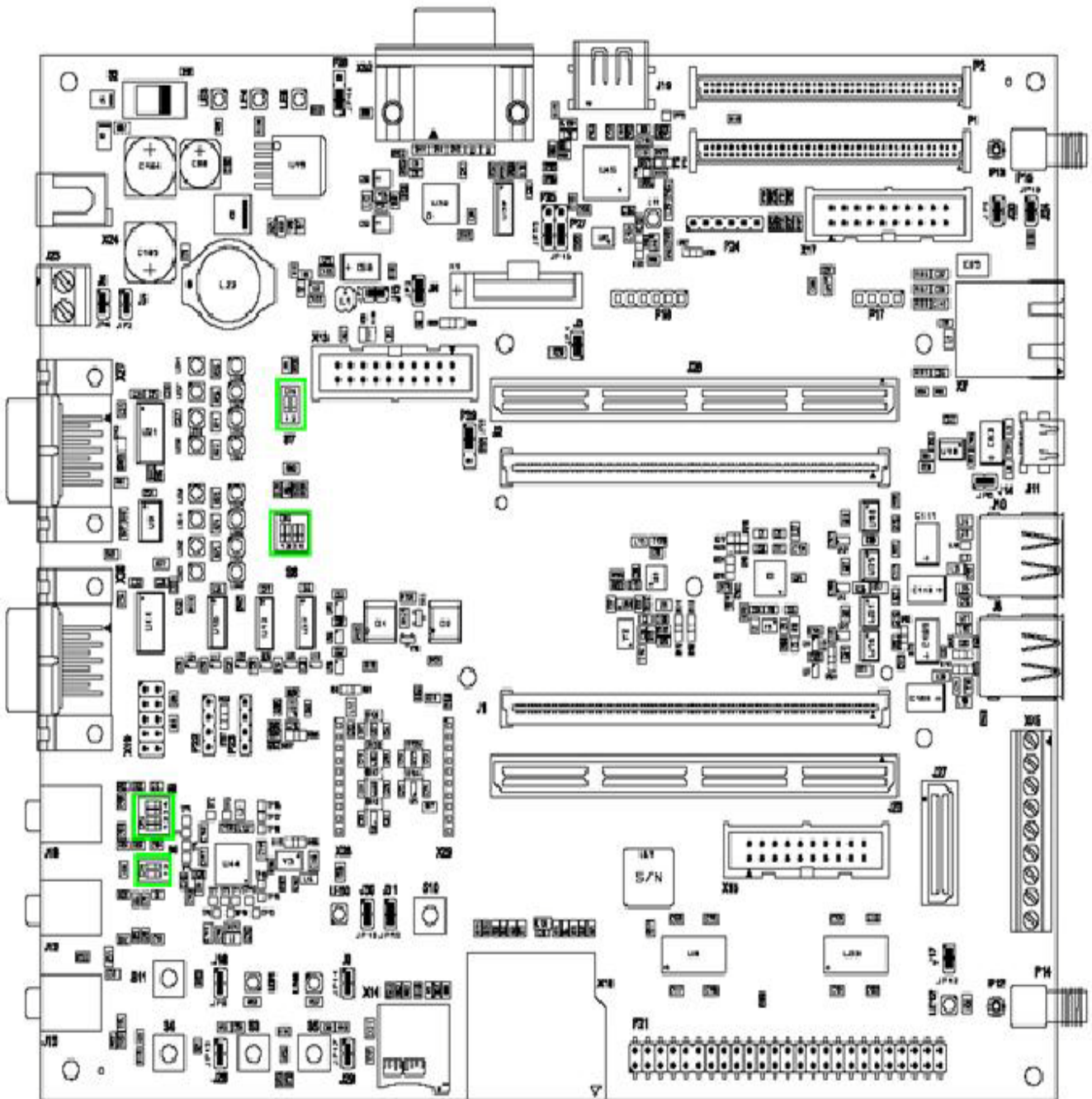
## Jumper Settings



Jumper	Name	Description	Settings
J3	COINCELL BATT	Supplies the real time clock with 3V backup power from the coin cell battery	Closed = battery backup enabled (DEFAULT) Open = battery backup disabled
J4	JTAG MODE	Select between boundary scan and debug mode	Closed = boundary scan Open = ARM debug (DEFAULT)
J5	VLIO DC/DC	This jumper allows disconnecting VLIO coming from the 9-30V DC/DC converter	Closed = VLIO from 9-30V DC/DC connected (DEFAULT) Open = VLIO from 9-30V DC/DC disconnected
J6	VLIO BATT	This jumper allows disconnecting VLIO coming from the external Lithium battery connector (J23)	Closed = VLIO from battery connector J23 connected (DEFAULT) Open = VLIO from battery connector J23 disconnected
J9	USER LED 2	User LED2 enable/disable	Closed = USER LED2 enabled (DEFAULT) Open = USER LED2 disabled
J13	+5 ENABLE	This jumper allows to enable/disable the +5V DC/DC converter (U2)	Closed = +5V DC/DC converter enabled (DEFAULT) Open = +5V DC/DC converter disabled
J14	USB OTG VBUS	Connect/disconnect the external charge pump controller on USB OTG VBUS pin	Closed = charge-pump connected to USB OTG VBUS (DEFAULT) Open = charge-pump disconnected from USB OTG VBUS
J16	USER LED 1	User LED1 enable/disable	Closed = USER LED1 enabled (DEFAULT) Open = USER LED1 disabled
J17	WLAN DISABLE	Disable the WLAN interface on the module (if present). On ConnectCore Wi-i.MX51 this signal is not used. It is a legacy signal.	Closed = WLAN disabled Open = WLAN enabled (DEFAULT)
J20	TOUCH SELECT LCD 1	This jumper allows to select if the touch interface used on LCD1 is coming from the module touch controller - or is generated by a touch controller located on the LCD board.	Closed = TOUCH on LCD board Open = TOUCH from ConnectCore module (DEFAULT)
J24	TOUCH SELECT LCD 2	This jumper allows to select if the touch interface used on LCD2 is coming from the module touch controller - or is generated by a touch controller located on the LCD board.	Closed = TOUCH on LCD board Open = TOUCH from ConnectCore module (DEFAULT)
J28	USER BUTTON 1	UserBUTTON1 enable/disable	Closed = USER BUTTON1 enabled (DEFAULT) Open = USER BUTTON1 disabled
J29	USER BUTTON 2	UserBUTTON2 enable/disable	Closed = USER BUTTON2 enabled (DEFAULT) Open = USER BUTTON2 disabled
J30	XBEE DOUT	Connect/disconnect the XBEE DOUT signal from the ConnectCore module. This is required when using UART3/TTL header.	Closed = XBEE DOUT connected Open = XBEE DOUT disconnected (DEFAULT)
J31	XBEE CTS#	Connect/disconnect the XBEE CTS# signal from the ConnectCore module. This is required when using UART3/TTL header.	Closed = XBEE CTS# connected Open = XBEE CTS# disconnected (DEFAULT)

Jumper	Name	Description	Settings
P28	+5V SELECTION	This 3-pin jumper allows to select the source of the +5V power supply. The on-board +5V DC/DC is limited to 1.2A. We are supplying 5 USB ports with it (4xUSB HOST + 1xUSB OTG). To supply all USB ports with 500mA, an external power supply is required.	<p>1-2 = +5V generated from on-board DC/DC converter (U2) (DEFAULT)</p>  <p>2-3 = connect an external +5V power supply (P28.2 = +5V/P28.3 = GND)</p> 
P25/P27	HDCP EEPROM	These 3-pin jumpers allow the connection of a 24LC64 EEPROM to either the ConnectCore module or HDMI controller.	<p>1-2 = EEPROM connected to ConnectCore module (DEFAULT)</p>  <p>Open = VLIO from battery connector J23 disconnected</p> 

## Switch Settings





**Switch S6-UART1 (MEI):**

Jumper	Name	Description	Settings
S6.1	RS232#/RS485		On = (DEFAULT) RS232 transceiver enabled RS422/485 transceivers disabled Off = RS232 transceiver disabled RS422/485 transceivers enabled
S6.2	Auto Power Down	Auto Power Down is not supported on this board. This signal is only accessible to permit the user to completely disable the MEI interface for using signals for other purposes. To disable the MEI interface go in RS232 mode (S6.1 = ON) and activate Auto Power Down (S6.2 = ON). Be sure that no cable is connected to DB9 connector.	On = Auto Power Down enabled Off = Auto Power Down disabled (DEFAULT)
S6.3	4WIRE#/2WIRE		On = 2 wire interface (RS422/RS485) Off = 4 wire interface (RS422) (DEFAULT)
S6.4	TERMINATON		On = Termination on Off = No termination (DEFAULT)

**Switch S7-UART2 (CONSOLE):**

Jumper	Name	Description	Settings
S7.1	Auto Power Down		On = Auto Power Down enabled Off = Auto Power Down disabled (DEFAULT)
S7.2	RS232		On = RS232 transceiver disabled Off = RS232 transceiver enabled (DEFAULT)

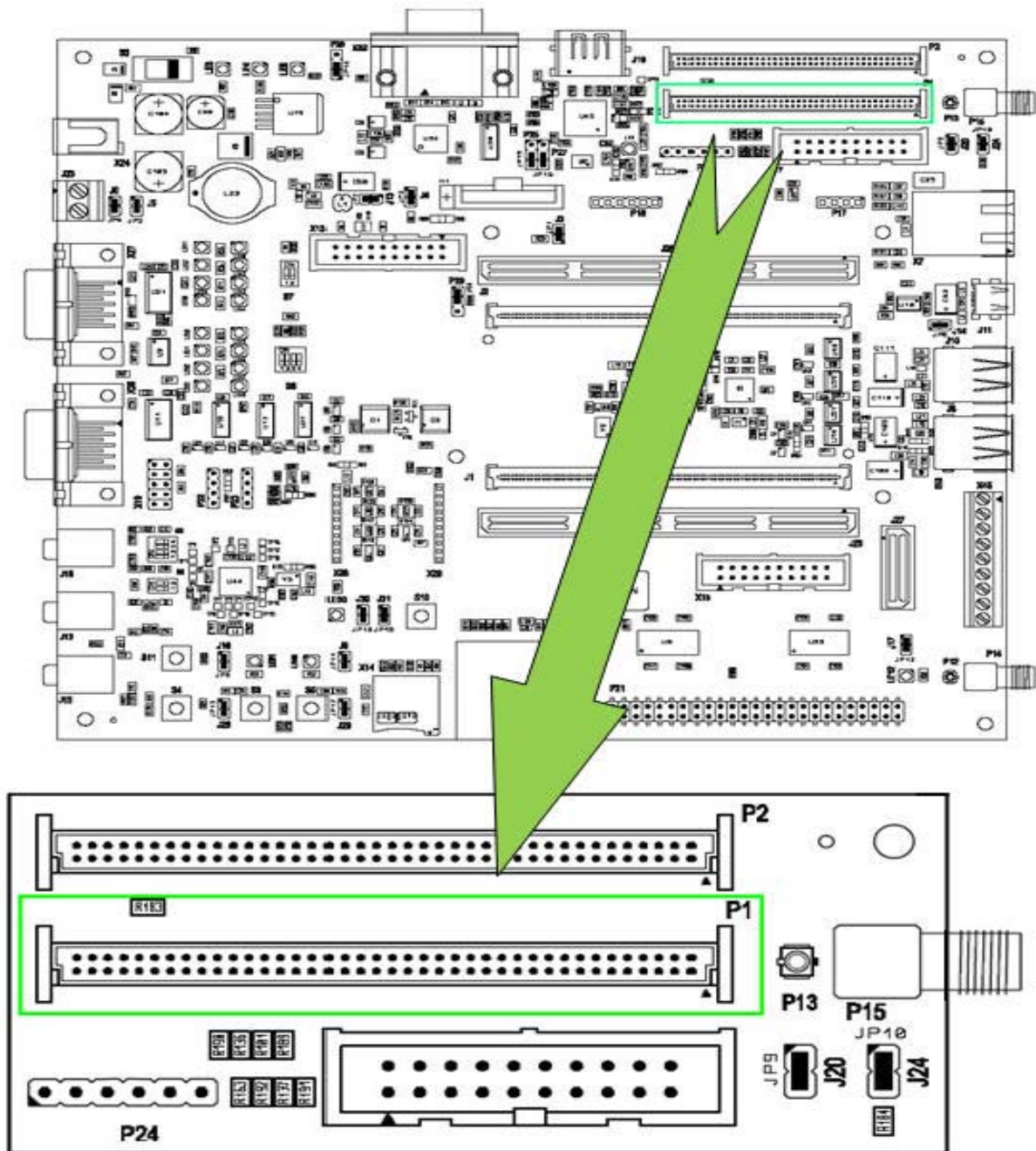
**Switch S8-AUDIO:**

Jumper	Name	Description	Settings
S8.1	LINE OUT MODE	For LINE OUT mode, S8.1 = ON and all other switches OFF. For CAPLESS mode, S8.1 = OFF and all other switches ON.	On = Line Out Mode Off = Capless Mode (DEFAULT)
S8.2		See S8.1	
S8.3		See S8.1	
S8.4		See S8.1	

**Switch S9 - AUDIO:**

Jumper	Name	Description	Settings
S9.1	HP Detect		On = HP detect disconnected Off = HP detect connected (DEFAULT)
S9.2	Not Used		On = N/A Off = N/A

**LCD1 Interface**

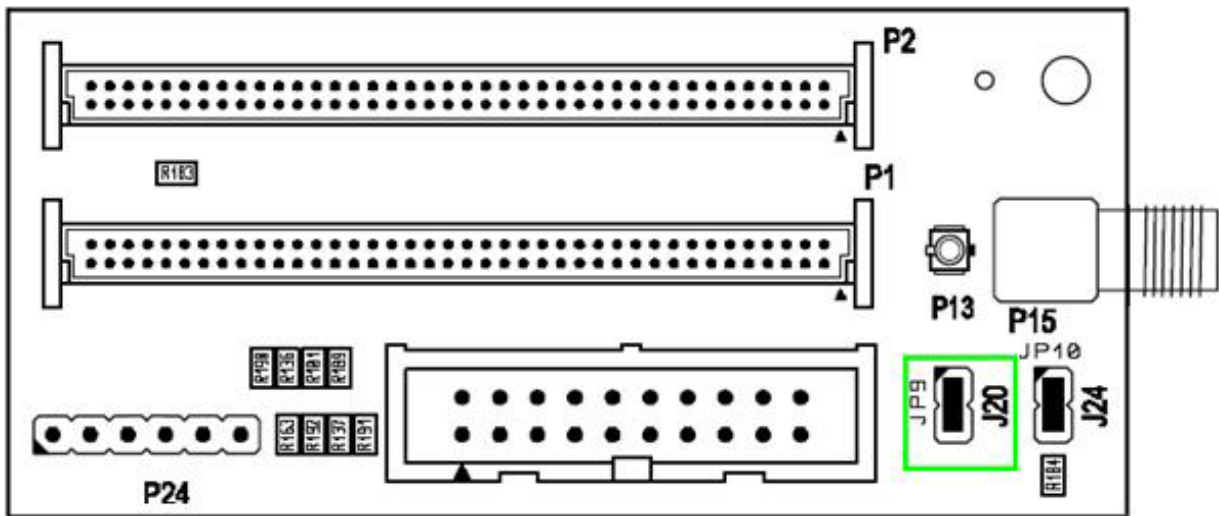


Pin #	Level	Type	Description	Comments
1	+2.775V		DISP1_DAT16	LCD_R0
2	+2.775V		DISP1_DAT17	LCD_R1
3	+2.775V		DISP1_DAT18	LCD_R2
4	+2.775V		DISP1_DAT19	LCD_R3
5	+2.775V		DISP1_DAT20	LCD_R4
6	+2.775V		DISP1_DAT21	LCD_R5
7	+2.775V		DISP1_DAT22/DISP2_DAT16	LCD_R6
8	+2.775V		DISP1_DAT23/DISP2_DAT17	LCD_R7
9	+2.775V		NC	LCD_R8
10	+2.775V		NC	LCD_R9
11	+2.775V		NC	LCD_R10
12	+2.775V		NC	LCD_R11
13		POWER	GND	
14		POWER	GND	
15	+2.775V		DISP1_DAT8	LCD_G0
16	+2.775V		DISP1_DAT9	LCD_G1
17	+2.775V		DISP1_DAT10	LCD_G2
18	+2.775V		DISP1_DAT11	LCD_G3
19	+2.775V		DISP1_DAT12	LCD_G4
20	+2.775V		DISP1_DAT13	LCD_G5
21	+2.775V		DISP1_DAT14	LCD_G6
22	+2.775V		DISP1_DAT15	LCD_G7
23	+2.775V		NC	LCD_G8
24	+2.775V		NC	LCD_G9
25	+2.775V		NC	LCD_G10
26	+2.775V		NC	LCD_G11
27		POWER	GND	
28		POWER	GND	
29	+2.775V		DISP1_DAT0	LCD_B0
30	+2.775V		DISP1_DAT1	LCD_B1
31	+2.775V		DISP1_DAT2	LCD_B2
32	+2.775V		DISP1_DAT3	LCD_B3
33	+2.775V		DISP1_DAT4	LCD_B4
34	+2.775V		DISP1_DAT5	LCD_B5

Pin #	Level	Type	Description	Comments
35	+2.775V		DISP1_DAT6	LCD_B6
36	+2.775V		DISP1_DAT7	LCD_B7
37	+2.775V		NC	LCD_B8
38	+2.775V		NC	LCD_B9
39	+2.775V		NC	LCD_B10
40	+2.775V		NC	LCD_B11
41		POWER	GND	
42		POWER	GND	
43	+2.775V		DI1_PIN15/DISP1_DRDY	LCD_BIAS
44	+2.775V		DI1_DISP_CLK	LCD_PCLK
45	+2.775V		DI1_PIN11/GPIO3_0/DISP1_PWREN#	LCD_PWREN#
46		POWER	GND	
47	+2.775V		DI1_PIN3/DISP1_VSYNC	LCD_VSYNC
48	+2.775V		DI1_PIN2/DISP1_HSYNC	LCD_HSYNC
49			Reserved	
50			Reserved	
51			Reserved	
52			Reserved	
53			Reserved	
54			Reserved	
55		POWER	GND	
56		POWER	GND	
57		ANALOG	TOUCH_X1	TSXP
58		ANALOG	TOUCH_Y1	TSYP
59		ANALOG	TOUCH_X2	TSXM
60		ANALOG	TOUCH_Y2	TSYM
61	+2.775V		GPIO1_3/PWM2/I2C2_SDA	I2C_SDA
62	+2.775V		GPIO1_2/PWM1/I2C2_SCL	I2C_SCL
63	+2.775V		DI1_D1_CS/GPIO3_4	SPI_SS0#
64	+2.775V		CSPI1_SCLK/I2C1_SDA/GPIO4_27	SPI_CLK
65	+2.775V		CSPI1_MOS/I2C1_SDA/GPIO4_22	SPI_MOSI
66	+2.775V		CSPI1_MOS/AUD4_RXD/GPIO4_23	SPI_MISO
67	+2.775V		POR#	RESET_OUT#
68	+2.775V		LCD1_TCH_INT/TCH_EXT#	TOUCH_INT/TOUCH_EXT#
69	+2.775V		DI1_PIN12/GPIO3_1	GPIO1

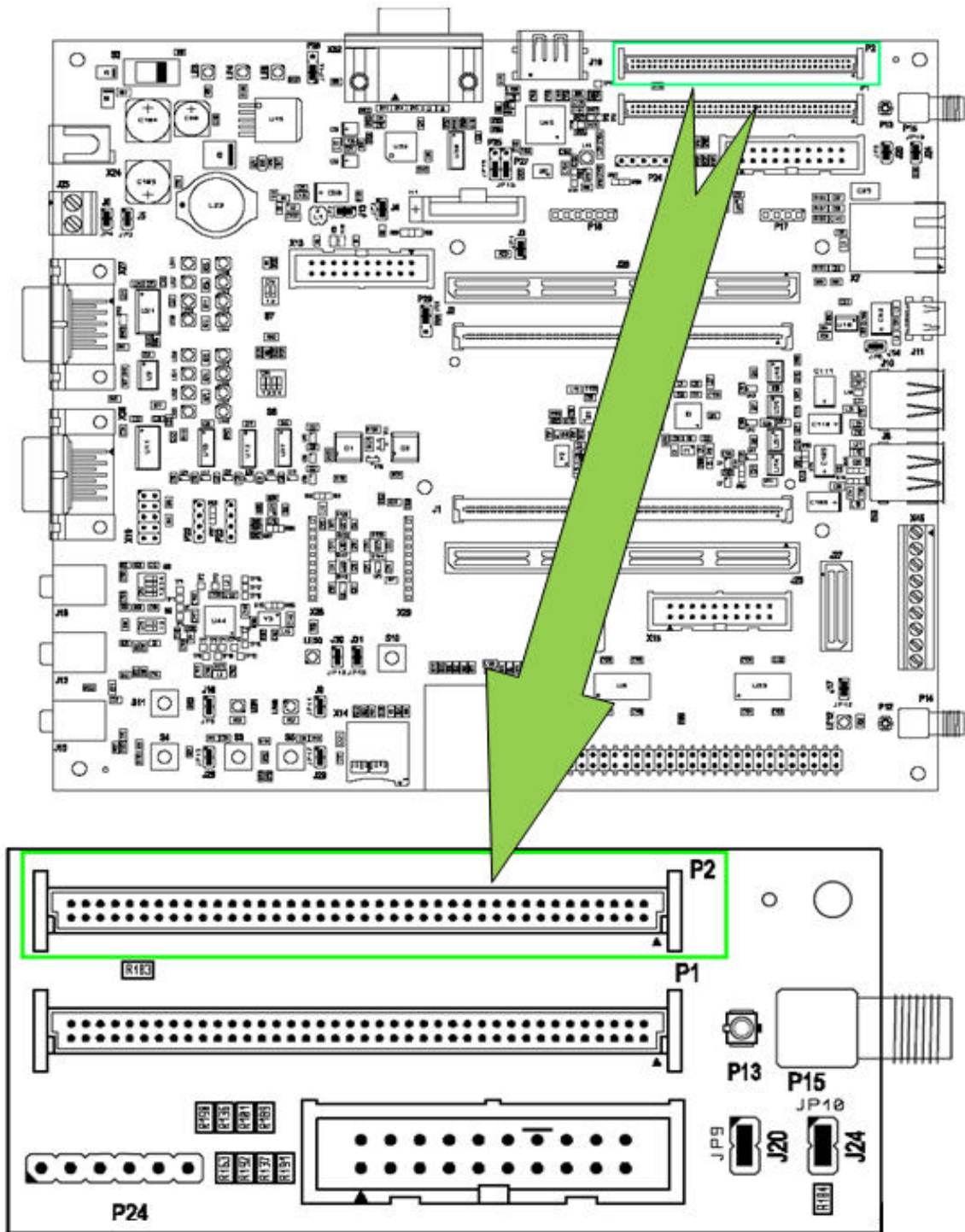
Pin #	Level	Type	Description	Comments
70	+2.775V		DI1_PIN13/GPIO3_2	GPIO2
71	+2.775V		DI1_D0_CS/GPIO3_3/LCD1_PENIRQ	PENIRQ#
72		POWER	GND	Generated on JumpStart Board
73		POWER	+3.3V	
74		POWER	+3.3V	
75		POWER	+9-30V	
76		POWER	+9-30V	
77		POWER	+9-30V	
78		POWER	+9-30V	
79			VSWLED	LED_BCK+
80			LEDMD	LED_BCK-

### Jumper J20



Jumper	Name	Description	Settings
J20	TOUCH SELECT	This jumper allows to select if the touch interface used on LCD1 is coming from the module touch controller - or is generated by a touch controller located on the LCD board.	Closed = TOUCH on LCD board Open = TOUCH from ConnectCore module (DEFAULT)

## LDC 2 Interface



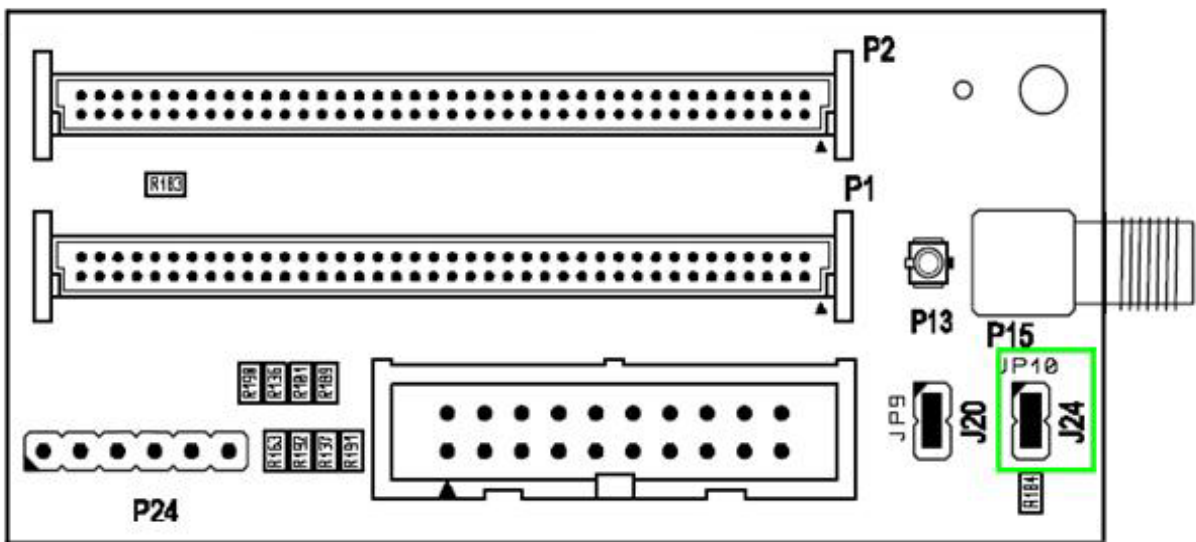
Pin #	Level	Type	Description	Comments
1	+2.775V		DISP2_DATA12/MII_RX_DV/USBH3_DATA4	LCD_R0
2	+2.775V		DISP2_DATA13/MII_TX_CLK/USBH3_DATA5	LCD_R1
3	+2.775V		DISP2_DATA14/MII_RXD0/USBH3_DATA6	LCD_R2
4	+2.775V		DISP2_DATA15/MII_TXD0/USBH3_DATA7	LCD_R3
5	+2.775V		DISP1_DAT22/DISP2_DAT16	LCD_R4
6	+2.775V		DISP1_DAT23/DISP2_DAT17	LCD_R5
7	+2.775V		NC	LCD_R6
8	+2.775V		NC	LCD_R7
9	+2.775V		NC	LCD_R8
10	+2.775V		NC	LCD_R9
11	+2.775V		NC	LCD_R10
12	+2.775V		NC	LCD_R11
13		POWER	GND	
14		POWER	GND	
15	+2.775V		DISP2_DATA6/MII_TXD1/USBH3_STP	LCD_G0
16	+2.775V		DISP2_DATA7/MII_TXD2/USBH3_NXT	LCD_G1
17	+2.775V		DISP2_DATA8/MII_TXD3/USBH3_DATA0	LCD_G2
18	+2.775V		DISP2_DATA9/MII_TXEN_USBH3_DATA1	LCD_G3
19	+2.775V		DISP2_DATA10/MII_COL/USBH3_DATA2	LCD_G4
20	+2.775V		DISP2_DATA11/MII_RX_CLK/USBH3_DATA3	LCD_G5
21	+2.775V		NC	LCD_G6
22	+2.775V		NC	LCD_G7
23	+2.775V		NC	LCD_G8
24	+2.775V		NC	LCD_G9
25	+2.775V		NC	LCD_G10
26	+2.775V		NC	LCD_G11
27		POWER	GND	
28		POWER	GND	
29	+2.775V		DISP2_DATA0/MII_RXD3/USBH3_CLK	LCD_B0
30	+2.775V		DISP2_DATA1/MII_RX_ER/USBH3_DIR	LCD_B1
31	+2.775V		DISP2_DATA2	LCD_B2
32	+2.775V		DISP2_DATA3	LCD_B3
33	+2.775V		DISP2_DATA4	LCD_B4
34	+2.775V		DISP2_DATA5	LCD_B5

Pin #	Level	Type	Description	Comments
35	+2.775V		NC	LCD_B6
36	+2.775V		NC	LCD_B7
37	+2.775V		NC	LCD_B8
38	+2.775V		NC	LCD_B9
39	+2.775V		NC	LCD_B10
40	+2.775V		NC	LCD_B11
41		POWER	GND	
42		POWER	GND	
43	+2.775V		DI_GP4/MII_RXD2/DISP2_DRDY	LCD_BIAS
44	+2.775V		DI2_DISP_CLK/MII_RXD1	LCD_PCLK
45	+2.775V		DI2_PIN4/MII_CRS/DISP2_PWREN	LCD_PWREN#
46		POWER	GND	
47	+2.775V		DI2_PIN3/MII_MDIO/DISP2_VSYNC	LCD_VSYNC
48	+2.775V		DI2_PIN2/MII_MDC/DISP2_HSYNC	LCD_HSYNC
49			Reserved	
50			Reserved	
51			Reserved	
52			Reserved	
53			Reserved	
54			Reserved	
55		POWER	GND	
56		POWER	GND	
57		ANALOG	TOUCH_X1	TSXP
58		ANALOG	TOUCH_Y1	TSYP
59		ANALOG	TOUCH_X2	TSXM
60		ANALOG	TOUCH_Y2	TSYM
61	+2.775V		GPIO1_3/PWM2/I2C2_SDA	I2C_SDA
62	+2.775V		GPIO1_2/PWM1/I2C2_SCL	I2C_SCL
63	+2.775V		CSPI1_RDY/AUD4_TXFS/GPIO4_26	SPI_SS0#
64	+2.775V		CSPI1_SCLK/I2C1_SDA/GPIO4-27	SPI_CLK
65	+2.775V		CSPI1_MOS/I2C1_SDA/GPIO4_22	SPI_MOSI
66	+2.775V		CSPI1_MOS/AUD4_RXD/GPIO4_23	SPI_MISO
67	+2.775V		POR#	RESET_OUT#
68	+2.775V		LCD2_TCH_INT/TCH_EXT#	TOUCH_INT/TOUCH_EXT#
69	+2.775V		DI_GP1	GPIO1



Pin #	Level	Type	Description	Comments
70	+2.775V		DI1_PIN13/GPIO3_2	GPIO2
71	+2.775V		DI_GP3/MII_TX_ER/LCD2_PENIRQ#	PENIRQ#
72		POWER	GND	Generated on JumpStart Board
73		POWER	+3.3V	
74		POWER	+3.3V	
75		POWER	+9-30V	
76		POWER	+9-30V	
77		POWER	+9-30V	
78		POWER	+9-30V	
79			VSWLED	LED_BCK+
80			LEDMD	LED_BCK-

### Jumper J24



Jumper	Name	Description	Settings
J24	TOUCH SELECT	This jumper allows to select if the touch interface used on LCD2 is coming from the module touch controller - or is generated by a touch controller located on the LCD board.	Closed = TOUCH on LCD board Open = TOUCH from ConnectCore module (DEFAULT)

# Appendix A: Specifications

This appendix provides specifications for the modules and the development board.

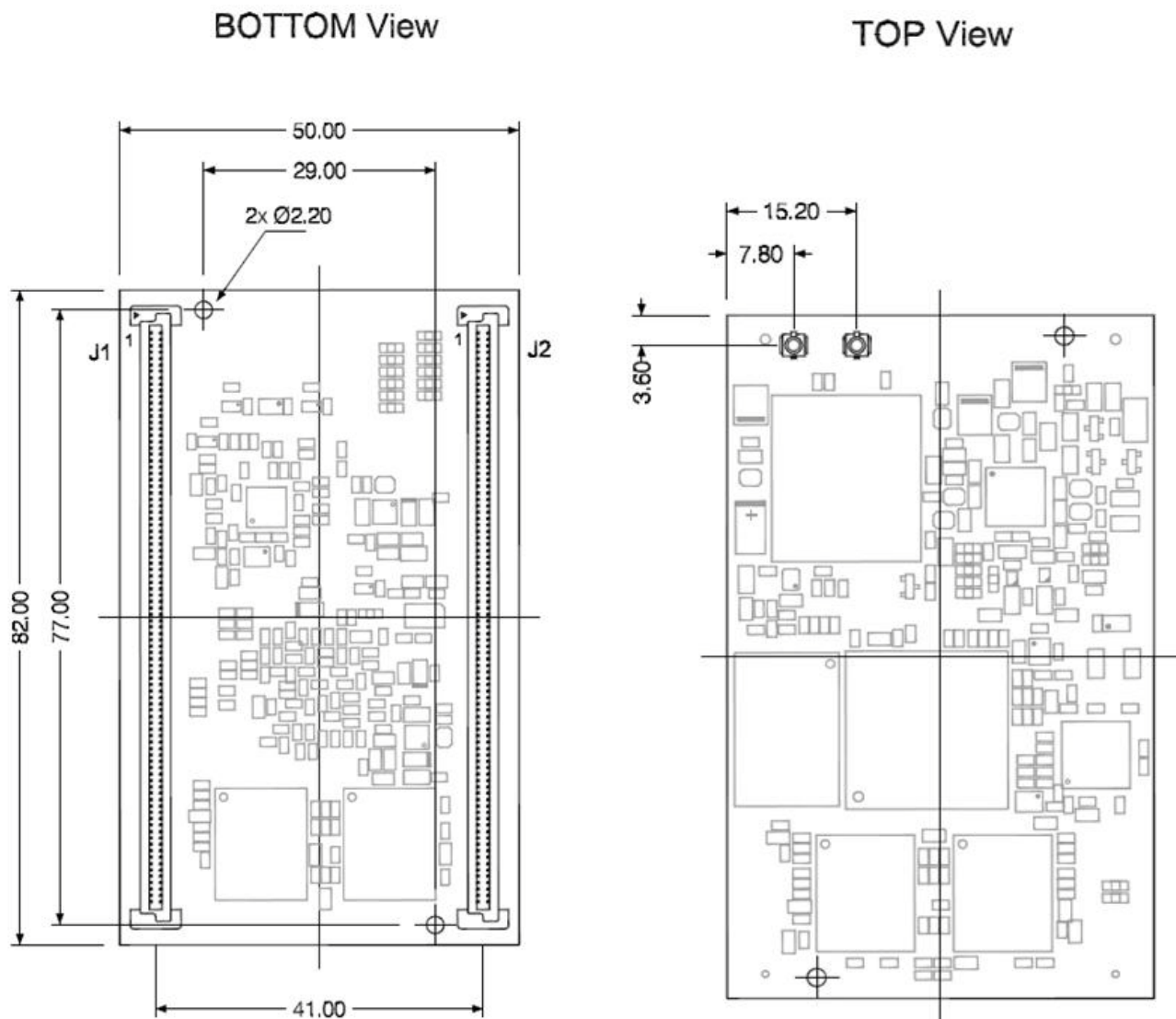
## Mechanical specifications

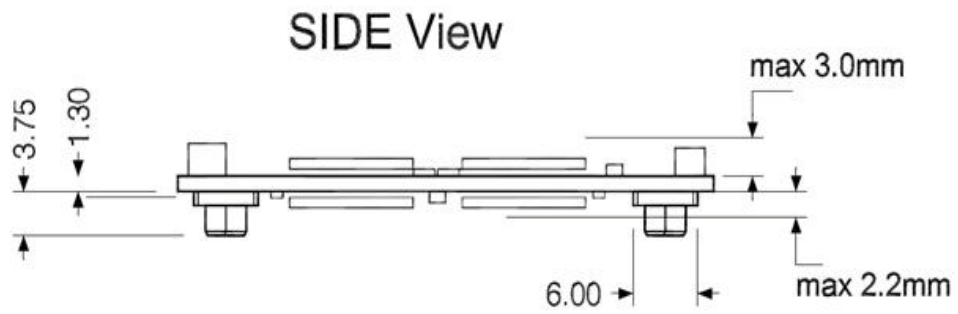
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### ConnectCore Wi-i.MX51

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Below are the mechanical dimensions of the ConnectCore Wi-i.MX51 Module.





## Connectors

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- The connector used on the module is: FCI Bergstack 61082-181409LF.
- The connector used on the carrier board is: FCI Bergstack 61083-184409LF.