

Two 2 x 10 pin headers, X15 and X17, are provided on the development board for connecting two Digi camera application kits (optional) or customer specific hardware.

- X15 connector for camera 1
- X17 connector for camera 2

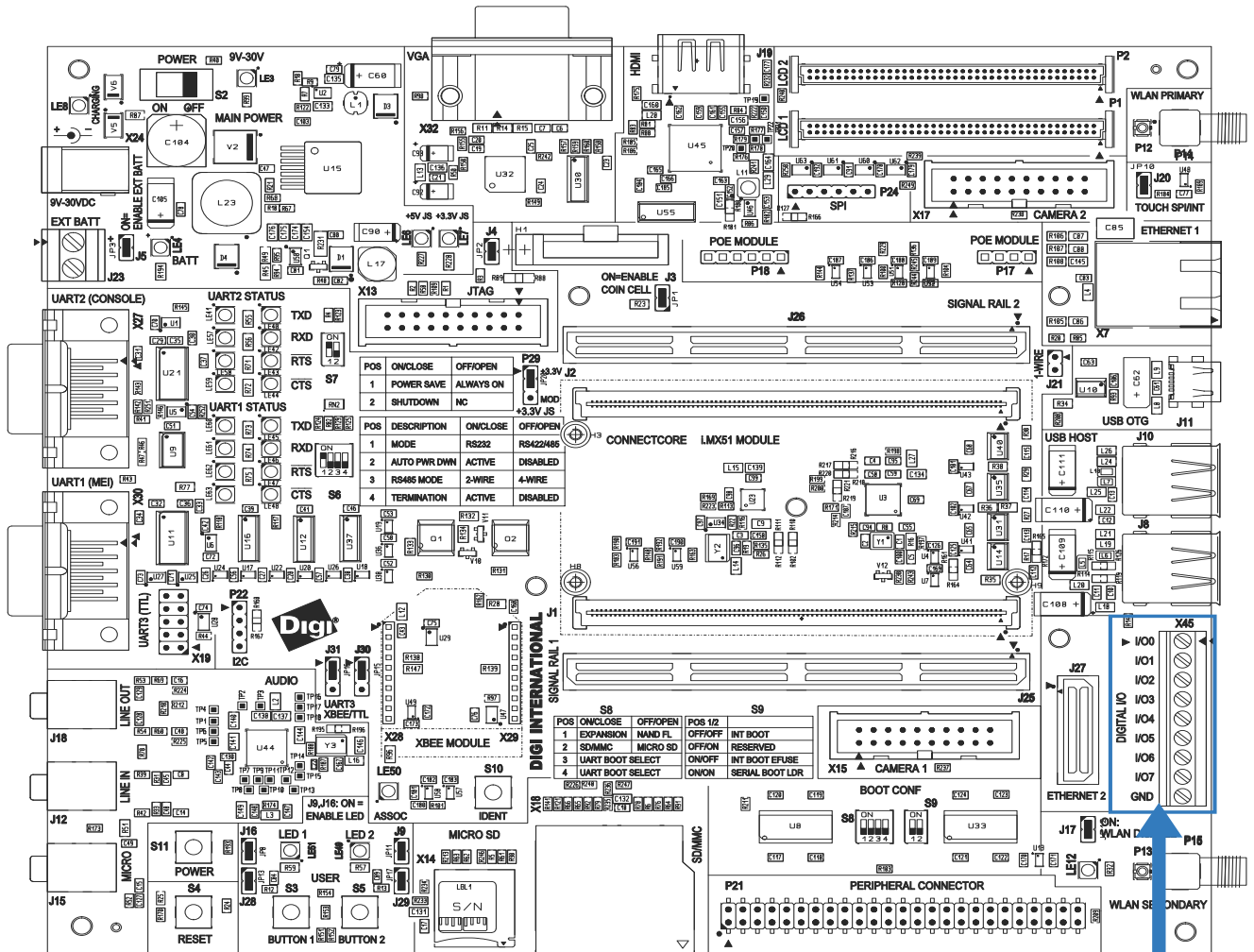
X15 Pinout

Pin	Signal	Pin	Signal
1	+2.775V	2	GND
3	CSI1_D12	4	CSI1_D13
5	CSI1_D14	6	CSI1_D15
7	CSI1_D16	8	CSI1_D17
9	CSI1_D18	10	CSI1_D19
11	CSI1_MCLK	12	CSI1_PIXCLK
13	CSI1_HSYNC/GPIO3_15	14	CSI1_VSYNC/GPIO3_14
15	GPIO1_2/I2C2_SCL	16	GPIO1_3/I2C2_SDA
17	CSI1_D10	18	CAMRESET1#/GPIO3_13/CSI1_D19
19	GND	20	CSI1_D11

X17 Pinout

Pin	Signal	Pin	Signal
1	+2.775V	2	GND
3	CSI2_D12/GPIO4_9	4	CSI2_D13/GPIO4_10
5	CSI2_D14	6	CSI2_D15
7	CSI2_D16	8	CSI2_D17
9	CSI2_D18/GPIO4_11	10	CSI2_D19/GPIO4_12
11	CSI1_MCLK	12	CSI2_PIXCLK/GPIO4_15
13	CSI2_HSYNC/GPIO4_14	14	CSI2_VSYNC/GPIO4_13
15	GPIO1_2/I2SC2_SCL	16	GPIO1_3/I2C2_SDA
17	-	18	CAMRESET2#/GPIO3_7
19	GND	20	-

Digital IO Interface



Digital I/O Connector, X45

Digital I/O Connector, X45

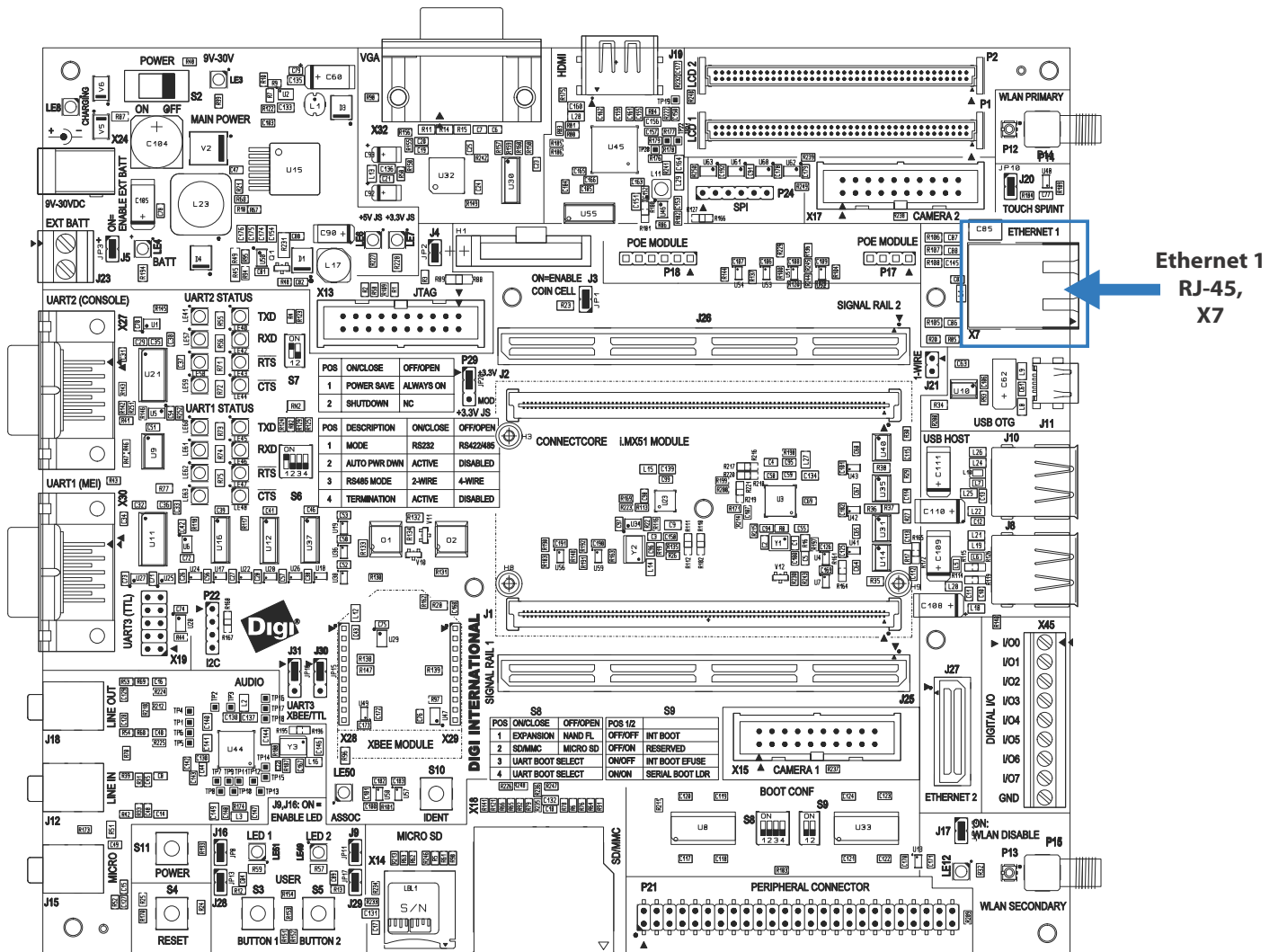
The development board provides a 3.81mm green terminal block, X45, for accessing eight on chip digital GPIOs of the i.MX51 CPU.

Pin	Signal	Voltage Level
1	GPIO3_11/SPI2_MISO/NANDF_RB3	+3.15V
2	GPIO3_18/NANDF_CS2#	+3.15V
3	GPIO3_9/SPI2_RDY/USER_LED2/NANDF_RB1	+3.15V
4	GPIO3_10/SPI2_SCLK/USER_LED1/NANDF_RB2	+3.15V
5	GPIO3_20/NANDF_CS4#	+3.15V
6	GPIO3_21/NANDF_CS5#	+3.15V
7	GPIO3_22/NANDF_CS6#	+3.15V
8	GPIO3_6/DISP2_SER_DIO/USER_KEY1	+2.775
9	GND	0V

On the development board, GPIO3_6 is connected to USER_KEY1. When using this signal as digital I/O, the USER_KEY1 should not be used.

Note: The digital I/O interface is not protected against ESD, over voltage or inverse polarity. Care must be taken when using these signals.

Ethernet 1 Interface



The development board provides one 8-wire RJ-45 jack with integrated 1:1 transformers and link/activity LEDs for the Ethernet 1 interface. This interface is attached to the Fast Ethernet controller (FEC) of the i.MX51. The ConnectCore for i.MX51 module provides a 10/100 Ethernet PHY chip for this interface.

The Ethernet 1 RJ-45 connector also supports 802.3af (PoE).

Ethernet 1, RJ-45 Connector X7

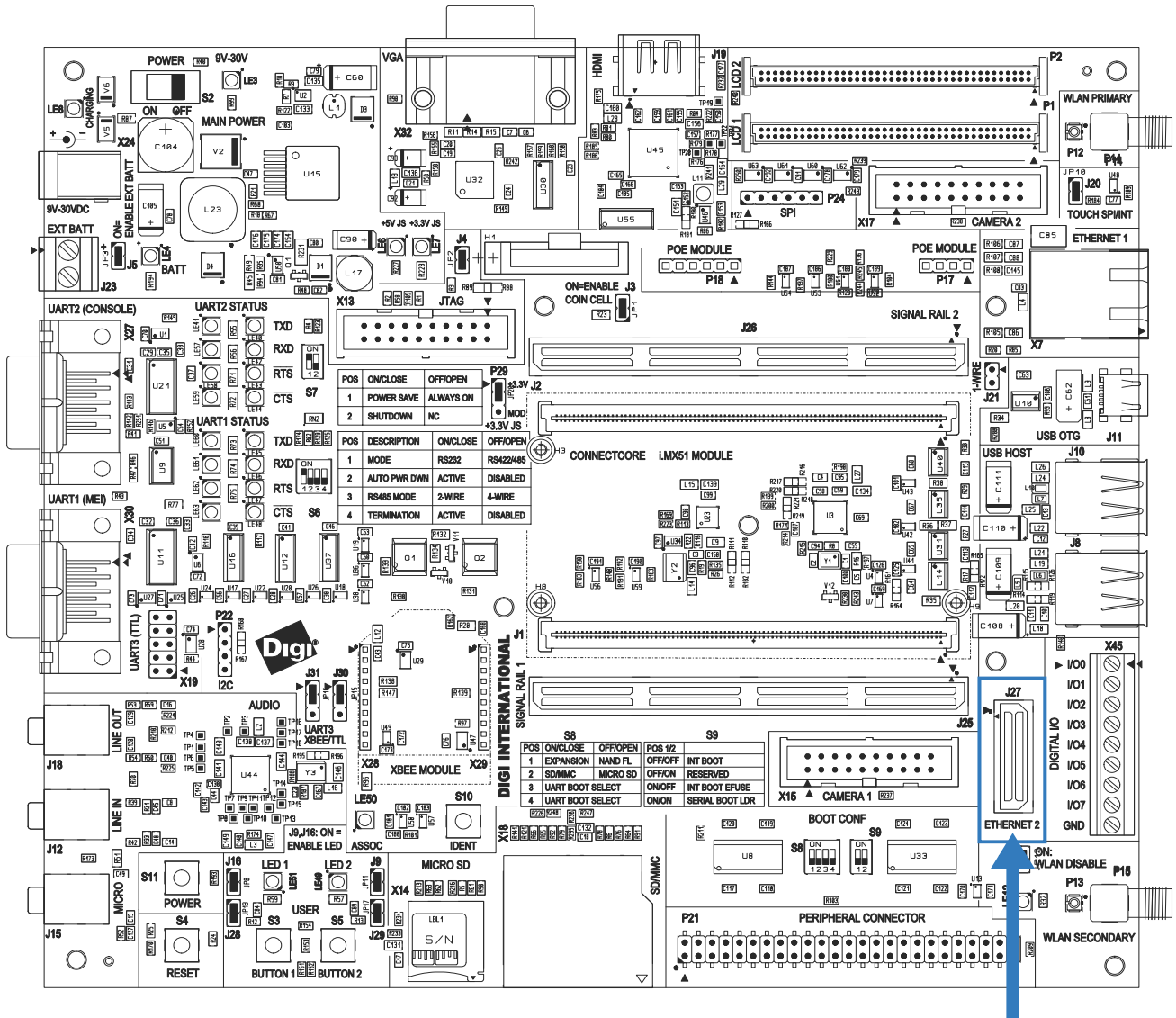
The table below shows the pinout of the Ethernet 1 RJ-45 connector.

Pin	Signal	802.3af End-Span (mode A)	802.3ad Mid-Span (mode B)	Description
1	TXD+	Negative V_{Port}		Transmit data+
2	TXD-	Negative V_{Port}		Trandmit data-
3	RXD+	Positive V_{Port}		Receive data+
4	EPWR+		Positive V_{Port}	Power from switch+
5	EPWR+		Positive V_{Port}	Power from switch+
6	RXD-	Positive V_{Port}		Receive data-
7	EPWR-		Negative V_{Port}	Power from switch-
8	EPWR-		Negative V_{portP}	Power from switch-

The table below shows the description of the Ethernet 1 LEDs.

LED	Description
Yellow	Network activity (speed): <ul style="list-style-type: none"> - Flashing - indicates network traffic - Off - no network traffic
Green	Network link: <ul style="list-style-type: none"> - On - indicates an active network link - Off - no network link present

Ethernet 2 Interface



Ethernet 2 Connector, J27

The development board provides a 2x20 expansion connector for connecting an optional Digi Ethernet adapter board (100M_ETHADPT) or customer specific setup. The Ethernet 2 interface is provided by an optional on-module Ethernet MAC/PHY.

Note: The ConnectCore for i.MX51 modules included in the development kits are supporting the Ethernet 2 interface.

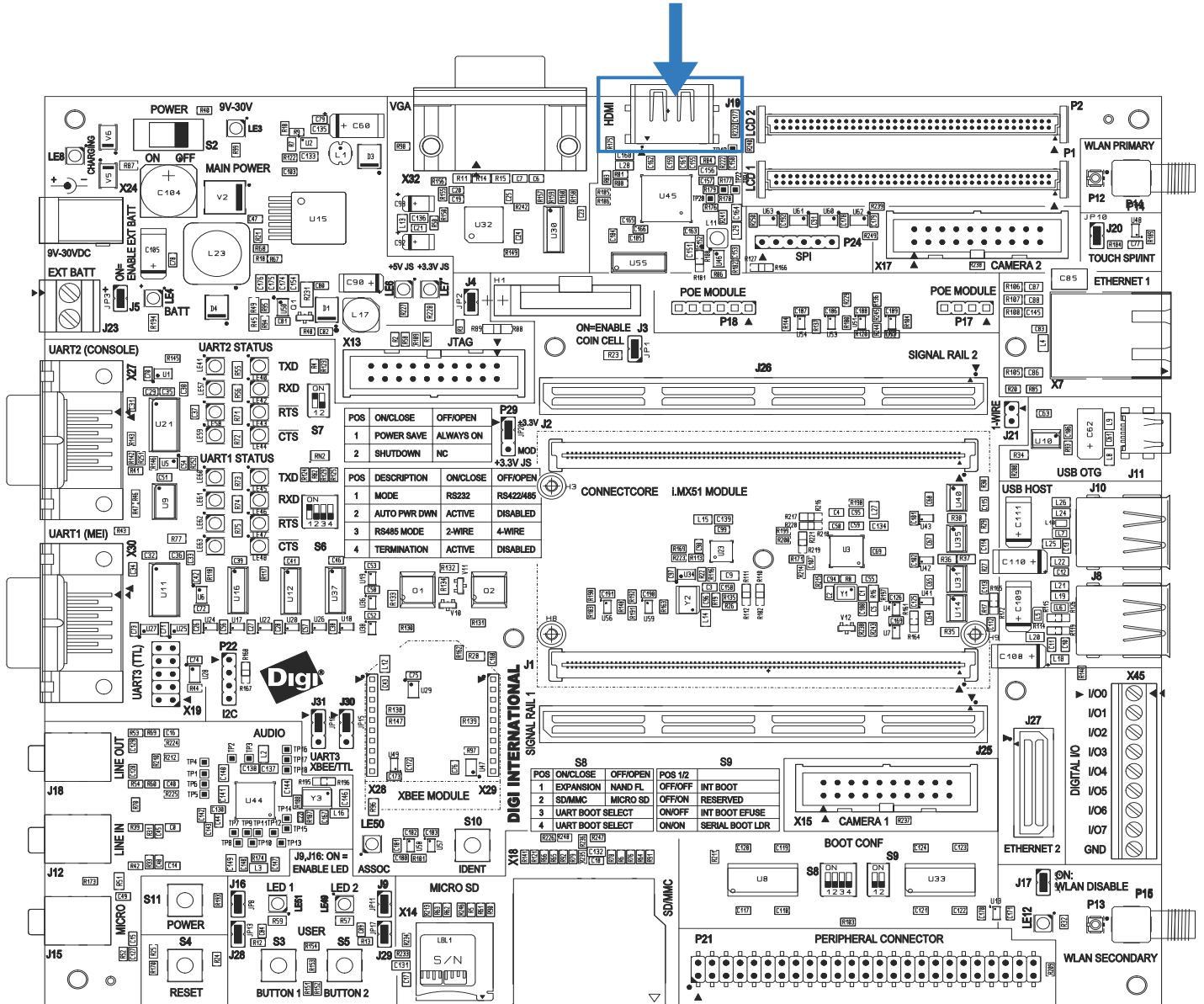
Ethernet 2, Connector J17

The table below shows the pinout of the Ethernet 2 expansion connector.

Pin	Signal	Pin	Signal
1	GND	2	GND
3	ETH2_TX+	4	ETH2_RX+
5	ETH2_TX-	6	ETH2_RX-
7	GND	8	GND
9	Reserved (ETH2_DC+)	10	Reserved (ETH2_DD+)
11	Reserved (ETH2_DC-)	12	Reserved (ETH2_DD-)
13	GND	14	GND
15	ETH2_ACTIVITY#	16	ETH2_LINK#
17	-	18	-
19	-	20	-
21	-	22	-
23	-	24	-
25	-	26	-
27	-	28	-
29	-	30	-
31	-	32	-
33	-	34	-
35	-	36	-
37	-	38	-
39	-	40	-

HDMI Interface

HDMI Connector, J19



The development board provides an HDMI interface connected to the display interface 1 of the ConnectCore for 1.MX51 CPU. An Analog Devices AD9389 HDMI transmitter is used in the development board. This HDMI transmitter is controlled through the I²C port 2 of the ConnectCore for 1.MX51.

The I²C device address of the HDMI transmitter is the following:

Interface	I ² C Address (7 bits)
HDMI transmitter (AD9389)2	0 x 39

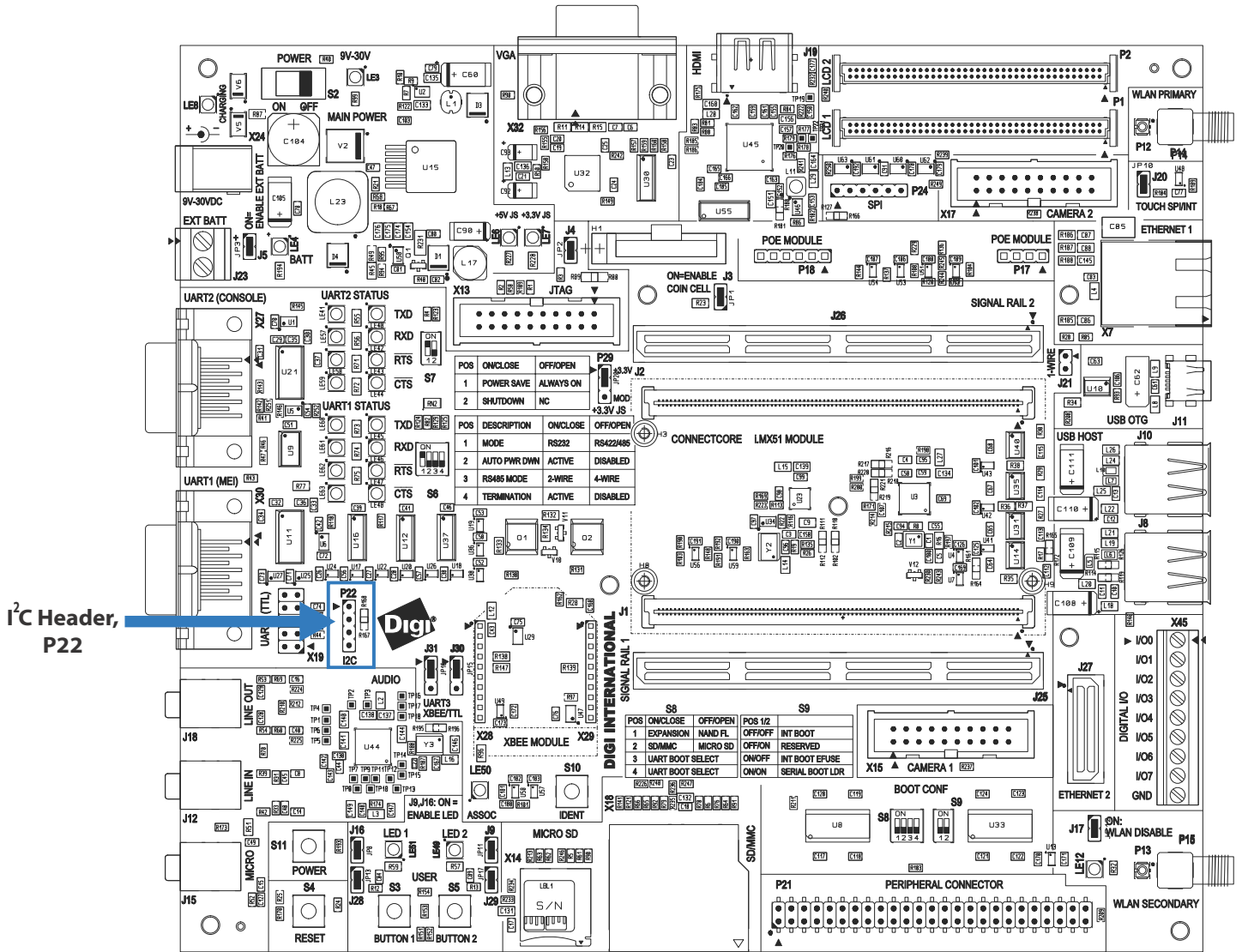
HDMI Connector, J19

The development board provides an HDMI connector, J19. The HDMI interface is connected to the Display 1 interface of the ConnectCore for 1.MX51 CPU.

The table below shows the pinout of the HDMI connector:

Pin	Signal
1	HDMI_TX2+
2	GND
3	HDMI_TX2-
4	HDMI_TX1+
5	GND
6	HDMI_TX1-
7	HDMI_TX0+
8	GND
9	HDMI_TX0-
10	HDMI_TXC+
11	GND
12	HDMI_TXC-
13	NC
14	NC
15	HDMI_SCL
16	HDMI_SDA
17	GND
18	+5V
19	HOTPLUG_DET

I²C Interface



I²C Header, P22

Pin header P22 provides access to the i.MX51 I²C port 2 interface.

The I²C port 2 is connected to the following headers/interfaces on the development board.

Interface	I ² C Address (7 bits)
I ² C Header	-
Camera 1	0 x5 C (Digi CC-ACC-MT9V111)
Camera 2	0 x4 8 (Digi CC-ACC-MT9V111)
HDMI Transmitter	0 x 39
LCD 1	-
LCD 2	-
Audio CODEC	0 x 1A
Peripheral connector	-

I²C port 2 is connected to the following interfaces of the ConnectCore for 1.MX51 module:

Interface	I ² C Address (7 bits)
Accelerometer (MMA7455L)	0 x 31D

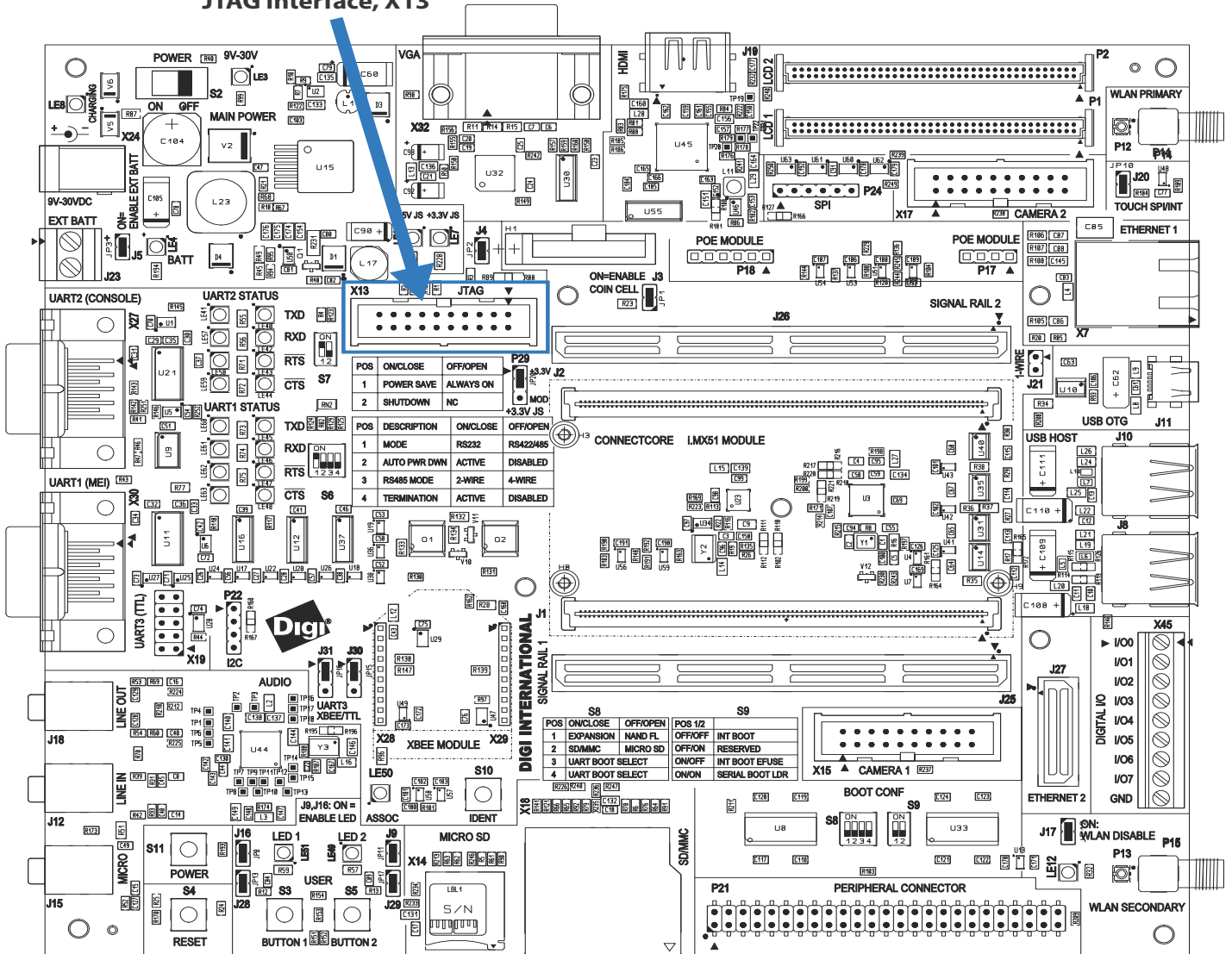
The table below provides the pinout of connector P22:

Pin	Function	Defaults to
1	I ² C_SDA	GPIO1_3
2	+2.775V	
3	I ² _SCL	GPIO1_2
4	GND	

By default, this interface is configured to operate in GPIO mode.

JTAG Interface

JTAG Interface, X13



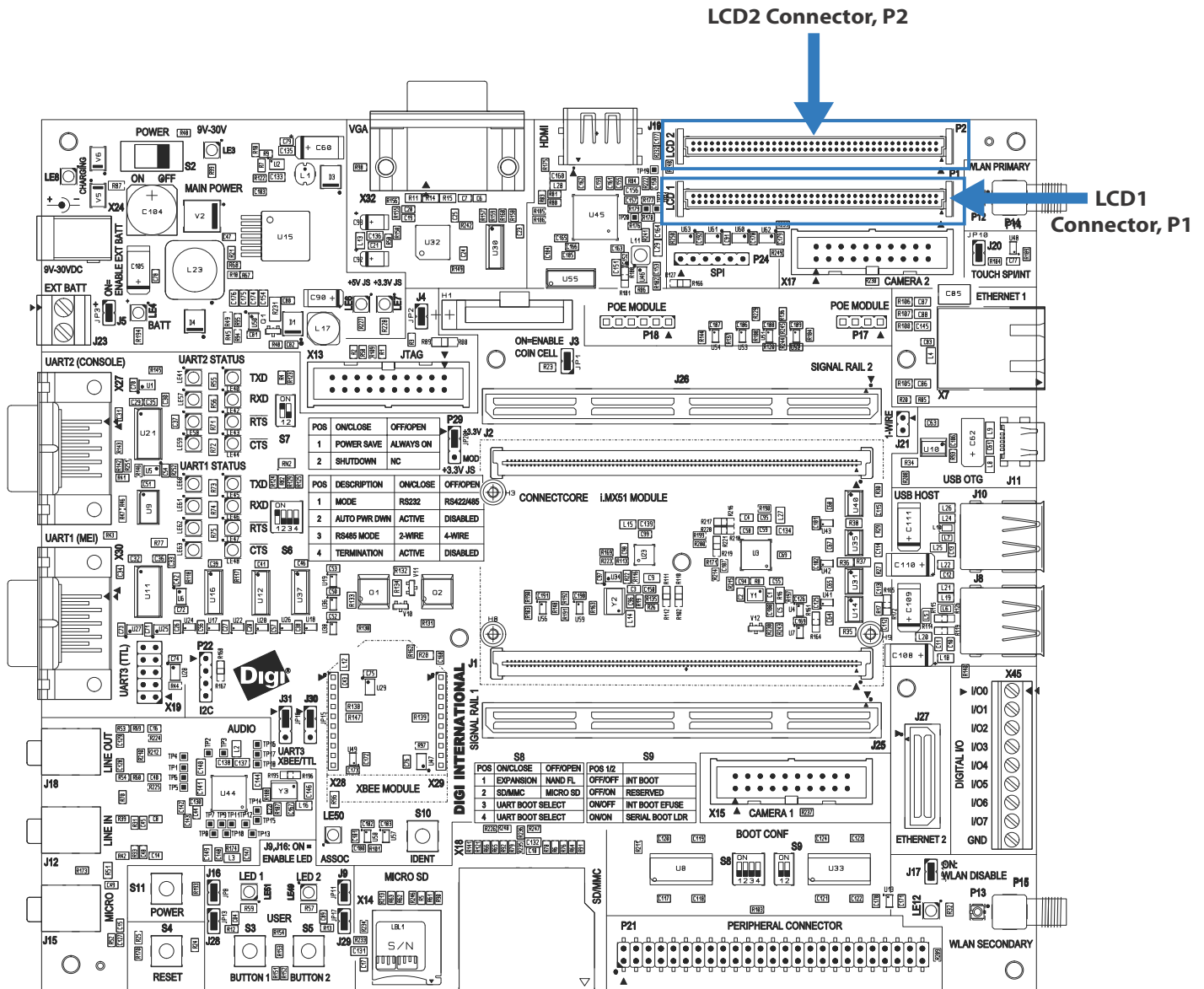
Standard JTAG ARM Connector, X13

The standard JTAG ARM connector is a 20-pin header and can be used to connect development tools (ICS) such as Ronetix PEEDI or other.

Pin	Function	Pin	Function
1	+1.8V	2	+3.3V
3	JTAG_TRST#	4	GND
5	JTAG_TDI	6	GND
7	JTAG_TMS	8	GND
9	JTAG_TCK	10	GND
11	Reserved (RTCK)	12	GND
13	JTAG_TDO	14	GND
15	JTAG_RESET#	16	GND
17	JTAG_DE#	18	GND
19	GND	20	GND

Note: In order to enable ETM functionality, Digi offers an optional ETM adapter board (sold separately, Digi P/N CC-ACC-MX51-ETM). Please contact us.

LCD Interfaces



The development board provides two 2x40 pin, 1.27mm connectors for accessing a Digi-provided LCD application boards (CC-ACC0LCDW-70) or a user defined LCD application board.

- P1 : corresponds to i.MX51 display interface 1
- P2 : corresponds to i.MX51 display interface 2

LCD 1 Connector, P1

This connector provides access to the following capabilities:

- 18-bit (RGB x 8bit) LCD
- SPI bus for a touch screen controller
- Touch screen (on-module, shared with LCD2)
- Interrupt input for touch screen
- I²C bus
- 2 x GPIO
- +3.3VDC supply and a 9-30VDC supply

P1 Pinout

The table below shows the pinout of the LCD1 connector, P1:

Pin	Function	Pin	Function
1	LCD1_DATA16 (R0)	2	LCD1_DATA17 (R1)
3	LCD1_DATA12 (R2)	4	LCD1_DATA13 (R3)
5	LCD1_DATA14 (R4)	6	LCD1_DATA215(R5)
7	LCD1_DATA16 (R6)	8	LCD1_DATA17 (R7)
9	-	10	-
11	-	12	-
13	GND	14	GND
15	LCD1_DATA10 (G0)	16	LCD1_DATA11 (G1)
17	LCD1_DATA6 (G2)	18	LCD1_DATA7 (G3)
19	LCD1_DATA8 (G4)	20	LCD1_DATA9 (G5)
21	LCD1_DATA10 (G6)	22	LCD1_DATA11 (G7)
23	-	24	-
25	-	26	-
27	GND	28	GND
29	LCD1_DATA4 (B0)	30	LCD1_DATA5 (B1)
31	LCD1_DATA0 (B2)	32	LCD1_DATA1 (B3)
33	LCD1_DATA2 (B4)	34	LCD1_DATA3 (B5)
35	LCD1_DATA4 (B6)	36	LCD1_DATA75(B7)
37	-	38	-

Pin	Function	Pin	Function
39	-	40	-
41	GND	42	GND
43	LCD1_BIAS	44	LCD1_PCLK
45	LCD1_PWREN#	46	GND
47	LCD1_VSYNC	48	LCD1_HSYNC
49	-	50	-
51	-	52	-
53	-	54	-
55	GND	56	GND
57	TOUCH_X1	58	TOUCH_Y1
59	TOUCH_X2	60	TOUCH_Y2
61	I ² C ² _SDA	62	I ² C ² _SCL
63	LCD_SPI_SS#	64	SPI1_CLK
65	SPI1_MOSI	66	SPI1_MISO
67	RESET#	68	LCD1_TOUCH_INT/EXT#
69	LCD1_GPIO1	70	LCD1_GPIO2
71	LCD_PENIRQ	72	GND
73	+3.3V	74	+3.3V
75	+9-30V	76	+9-30V
77	+9-30V	78	+9-30V
79	-	80	-

LCD 2 Connector, P2

This connector provides access to the following capabilities:

- 18-bit (RGB x 8bit) LCD
- SPI bus for a touch screen controller
- Touch screen (on-module, shared with LCD1)
- Interrupt input for touch screen
- I²C bus
- 2 x GPIO
- +3.3VDC supply and a 9-30VDC supply

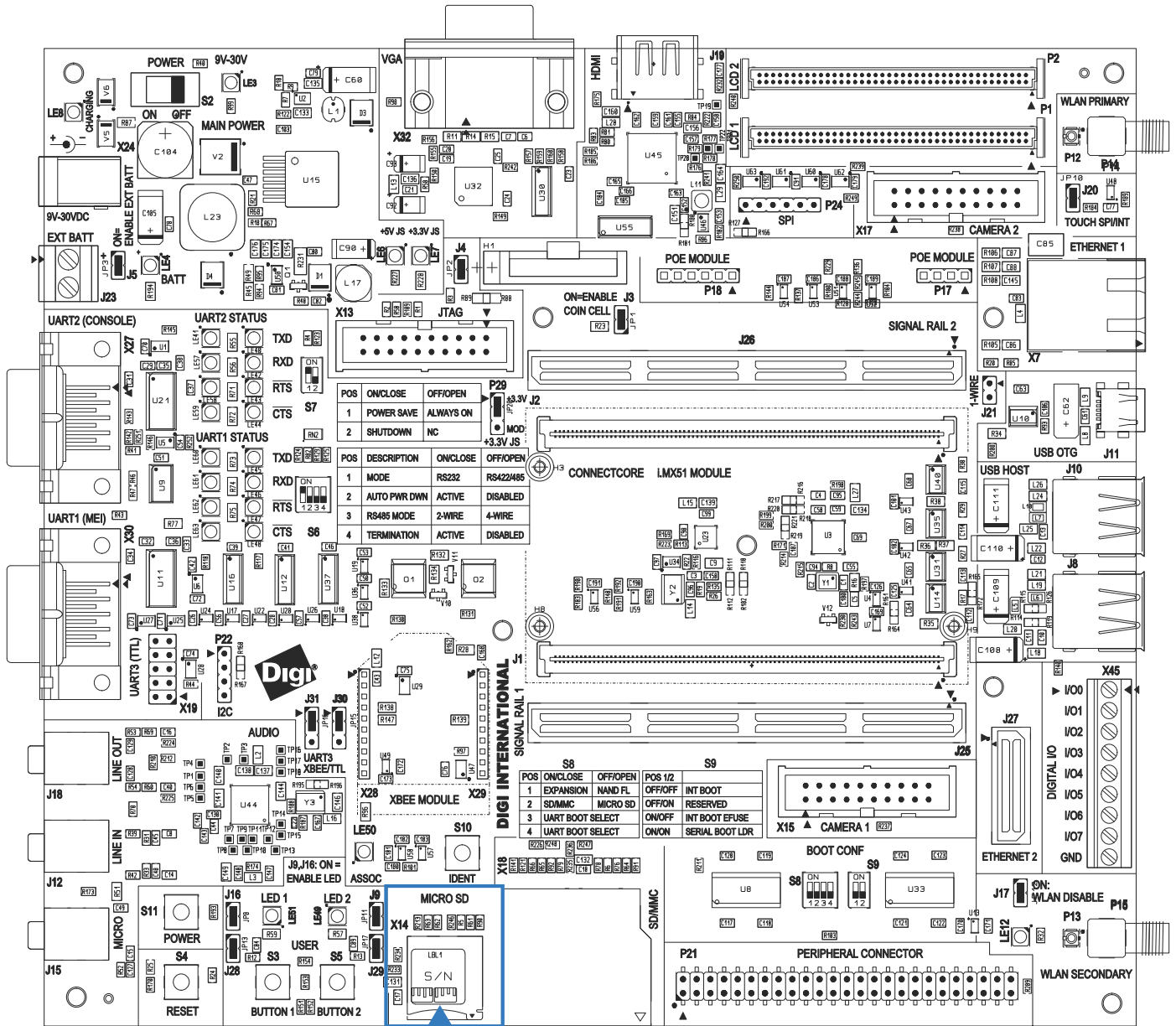
P2 Pinout

The table below shows the pinout of the LCD2 connector, P2:

Pin	Function	Pin	Function
1	LCD2_DATA16 (R0)	2	LCD2_DATA17 (R1)
3	LCD2_DATA12 (R2)	4	LCD2_DATA13 (R3)
5	LCD2_DATA14 (R4)	6	LCD2_DATA15 (R5)
7	LCD2_DATA16 (R6)	8	LCD2_DATA17 (R7)
9	-	10	-
11	-	12	-
13	GND	14	GND
15	LCD2_DATA10 (G0)	16	LCD2_DATA11 (G1)
17	LCD2_DATA6 (G2)	18	LCD2_DATA7 (G3)
19	LCD2_DATA8 (G4)	20	LCD2_DATA9 (G5)
21	LCD2_DATA10 (G6)	22	LCD2_DATA11 (G7)
23	-	24	-
25	-	26	-
27	GND	28	GND
29	LCD2_DATA4 (B0)	30	LCD2_DATA5 (B1)
31	LCD2_DATA0 (B2)	32	LCD2_DATA1 (B3)
33	LCD2_DATA2 (B4)	34	LCD2_DATA3 (B5)
35	LCD2_DATA4 (B6)	36	LCD2_DATA5 (B7)
37	-	38	-

Pin	Function	Pin	Function
39	-	40	-
41	GND	42	GND
43	LCD2_BIAS	44	LCD2_PCLK
45	LCD2_PWREN#	46	GND
47	LCD2_VSYNC	48	LCD2_HSYNC
49	-	50	-
51	-	52	-
53	-	54	-
55	GND	56	GND
57	TOUCH_X1	58	TOUCH_Y1
59	TOUCH_X2	60	TOUCH_Y2
61	I ² C ² _SDA	62	I ² C ² _SCL
63	LCD_SPI_SS#	64	SPI1_CLK
65	SPI1_MOSI	66	SPI1_MISO
67	RESET#	68	LCD2_TOUCH_INT/EXT#
69	LCD2_GPIO1	70	LCD2_GPIO2
71	LCD_PENIRQ	72	GND
73	+3.3V	74	+3.3V
75	+9-30V	76	+9-30V
77	+9-30V	78	+9-30V
79	LED_BCK+	80	LED_BCK-

MicroSD™ Card Interface



MicroSD Connector, X14

MicroSD™ Connector, X14

The development board provides one MicroSD™ card connector, X14. This interface is connected to the enhanced Secured Digital Host controller 1 (eSDHC1) of the i.MX51 CPU.

The MicroSD™ connector used on the development board does not provide a card detect pin (pin-9 and pin-10 are connected to chassis). A hot-plug insertion or removal is not possible with this connector.

The following table shows the pinout of the MicroSD™ connector:

Pin	Signal
1	SD_SATA2
2	SD_DATA3
3	SD_CMD
4	+3.3V
5	SD_CLK
6	GND
7	SD_DATA0
8	SD_DATA1
9	SD_CD (Connected to chassis)
10	SD_CD (Connected to chassis)