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ACEX-4600-EDK

EDK Standard I/O Connector Break-Out Board

USER'S MANUAL

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IMPORTANT SAFETY CONSIDERATIONS

It is very important for the user to consider the possible adverse effects of power, wiring, component, sensor, or software failures in designing any type of control or monitoring system. This is especially important where economic property loss or human life is involved. It is important that the user employ satisfactory overall system design. It is agreed between the Buyer and Acromag, that this is the Buyer's responsibility.

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1.0 General Information

The ACEX-4600-EDK is an engineering development kit to be used with the ACEX-4620/ACEX-4610 Type 6 COM Express Carrier boards. It provides access to all Type 6 COM Express peripherals via industry-standard connectors.

Key Features

- Provides access to peripherals of Type 6 COM Express CPU through standard connectors.
  - 3 HDMI ports
  - 3 DisplayPort connectors (multiplexed with HDMI)
  - 1 VGA connector
  - Audio (One Line in and One Line out)
  - 2 RS-232/485 Serial Communication ports
  - 1 Gigabit Ethernet LAN port from CPU
  - 1 Gigabit Ethernet LAN port from carrier
  - PCIe x4 connection through x16 connector
  - 4 USB 3.0 ports
  - 2 USB 2.0 ports
- Supports the use of two 2.5" SATA drives.
- Provides connections to Rear I/O signals from PMC/XMC expansion cards located on the ACEX-46xx carrier using standard high-speed connectors.
- Allows the system to be powered by a lab bench power supply or an external power adapter.

Introduction

The ACEX-4600-EDK is intended to be used as a development platform for designing a COM Express system tailored to the user's specific needs. By providing industry-standard connectors for the COM Express I/O signals, the ACEX-4600-EDK allows the user to design and test a system around a COM Express CPU module without the need for a specialized carrier. It also provides standard connections to interface with the PMC/XMC slots on the ACEX-4620/ACEX-4610 carrier boards.

2.0 Ordering Information

ACEX-4600-EDK	Standalone Engineering Development board for ACEX-46xx Carriers
ACEX-4620-DLS	Engineering Lab System which includes EDK board, Double-wide ACEX-4620 carrier board, power supply, and mounting plate with cooling fans.
ACEX-4610-DLS	Engineering Lab System which includes EDK board, Single-wide ACEX-4610 carrier board, power supply, and mounting plate with cooling fans.

3.0 Preparation For Use

Unpacking and Inspection

Upon receipt of this product, inspect the shipping carton for evidence of mishandling during transit. If the shipping carton is badly damaged or water stained, request that the carrier's agent be present when the carton is opened.



If the carrier's agent is absent when the carton is opened and the contents of the carton are damaged, keep the carton and packing material for the agent's inspection.

For repairs to a product damaged in shipment, refer to the Acromag Service Policy to obtain return instructions. It is suggested that salvageable shipping cartons and packing material be saved for future use in the event the product must be shipped.

This board is physically protected with packing material and electrically protected with an anti-static bag during shipment. It is recommended that the board be visually inspected for evidence of mishandling prior to applying power.

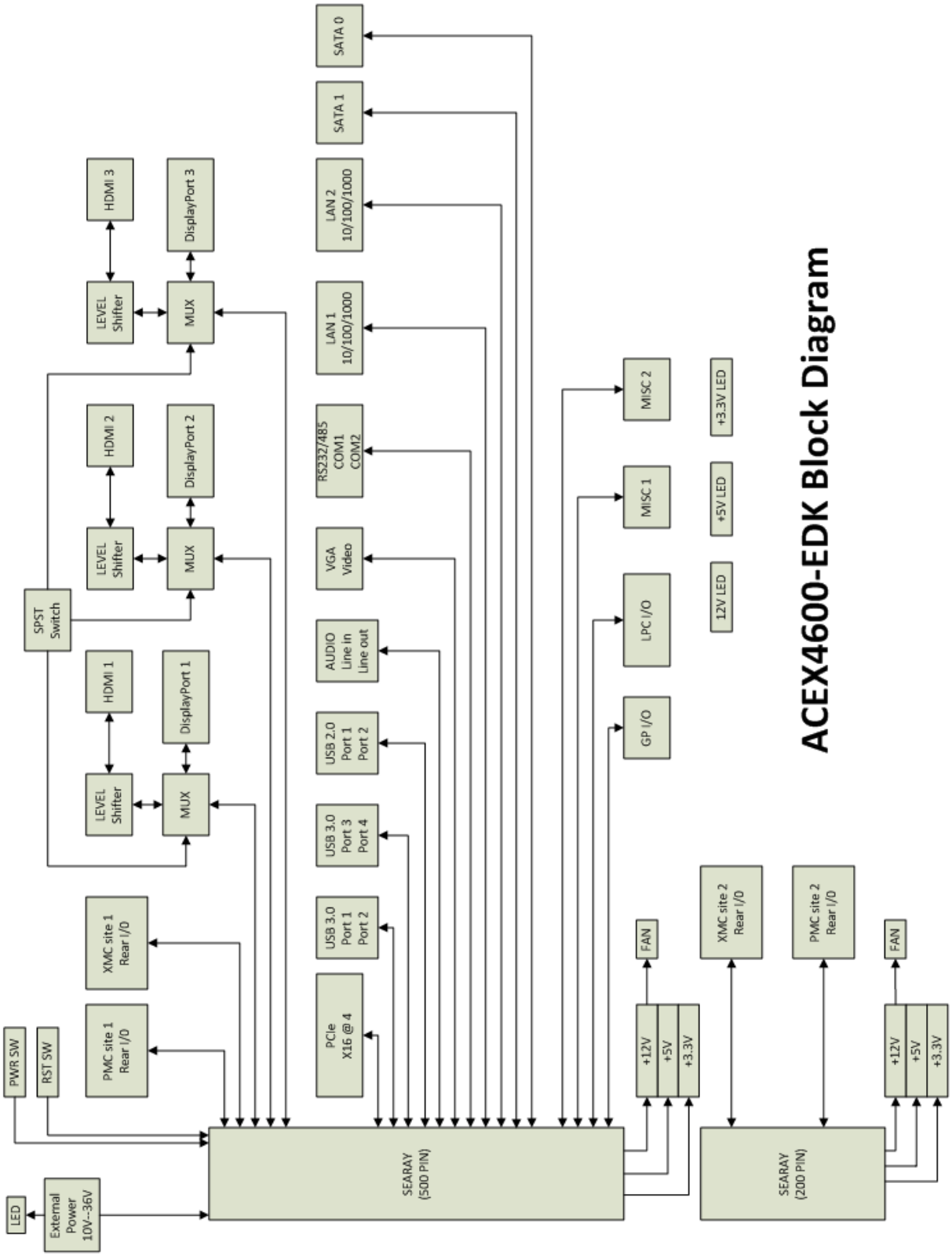
The board utilizes static sensitive components and should only be handled at a static-safe workstation.

IMPORTANT: Adequate air circulation must be provided to prevent a temperature rise above the maximum operating temperature.

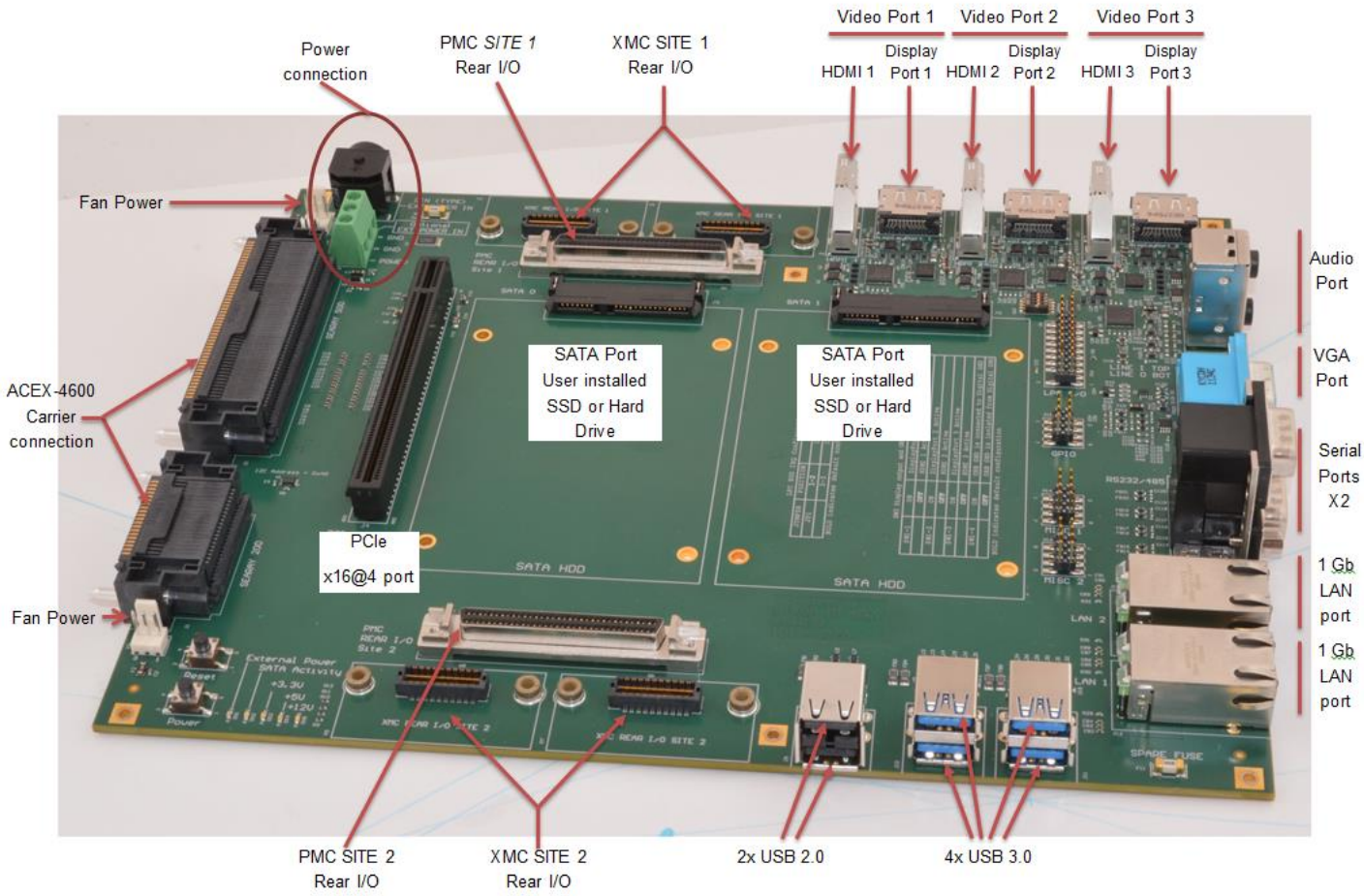
Adequate air circulation must be provided to prevent a temperature rise above the maximum operating temperature and to prolong the life of the electronics.

If the installation is in an industrial environment and the board is exposed to environmental air, careful consideration should be given to air-filtering.

4.0 Operational Block Diagram



5.0 Board Layout



The ACEX-4600-EDK has two high-speed SEARAY connectors that are shown on the left side of the board in the picture above. The larger of the two is a 500-pin connector that can interface with both Acromag COM Express carrier models (ACEX-4620/ACEX-4610). The carrier passes the peripheral signals from the COM Express CPU through this connector along with the PMC/XMC Site 1 Rear I/O signals, if applicable. Refer to the manual for the XCOM-6400 COM Express CPU Module for more information regarding the COM Express CPU peripherals.

The smaller SEARAY connector is a 200-pin connector that is used to interface with the ACEX-4620 double-wide COM Express Carrier. The ACEX-4620 carrier passes the PMC/XMC Site 2 Rear I/O signals through this connector to the high-speed connectors shown at the bottom of the board in the diagram above. The single-wide ACEX-4610 carrier does not contain a second PMC/XMC Site and therefore does not make a connection with the 200-pin SEARAY connector.

The COM Express CPU peripherals that are passed along the 500-pin SEARAY connector are brought out to standard I/O connectors. For video, the ACEX-4600-EDK supports the following three display configurations:

ACEX-4600-EDK Valid Three-Display Configurations

Display 1	Display 2	Display 3	Maximum Display Resolution		
			Display 1	Display 2	Display 3
HDMI	HDMI	DisplayPort	4096x2304 @ 24 Hz 2560x1600 @ 60 Hz		3840x2160 @ 60 Hz
DisplayPort	DisplayPort	DisplayPort	3840x2160 @ 60 Hz		
VGA	DisplayPort	HDMI	1920x1200 @ 60 Hz	3840x2160 @ 60 Hz	4096x2304 @ 24 Hz 2560x1600 @ 60 Hz

Notes:

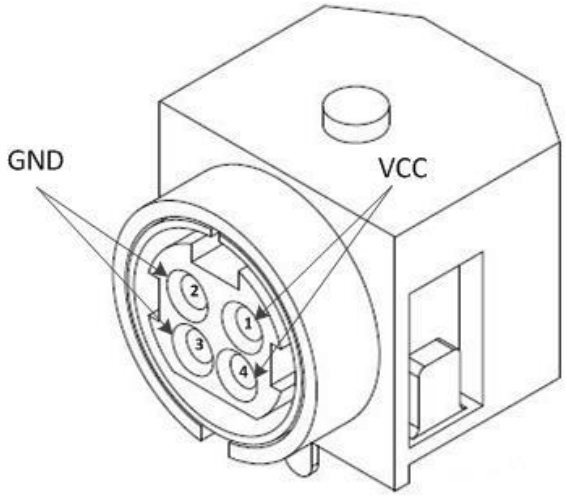
1.) Requires support of two channel DDR3L/DDR3L-RS 1600 MT/s configuration for driving three simultaneous 3840x2160 @60 Hz display resolutions.
2.) DisplayPort resolutions in the above table are supported for four lanes with link data rate HBR2.

Any 3 displays can be supported simultaneously using the following rules:

- Max of 2 HDMIs
- Any 3 DisplayPort
- One VGA

The ACEX-4600-EDK board contains 3 HDMI connectors, 3 DisplayPort connectors, Line-in and Line-out audio connectors, a VGA connector, 2 Serial Port connectors, 2 Ethernet connectors, 4 USB 3.0 connectors, and 2 USB 2.0 connectors. There are also high speed connectors that provide access to the Rear I/O of the two PMC/XMC sites, if applicable. The board contains a PCIe x16 connector that supports up to 4 lanes. There are 2 SATA ports that allow for the use of SSD or Hard Drive devices. For more information regarding the COM Express CPU peripherals, refer to the XCOM-6400 manual. The board also contains 3 standard fan power headers that allow for the use of cooling fans for the system.

The ACEX-4600-EDK provides the carrier board with 10-36VDC which in turn powers the rest of the system. The user has two options for providing this power. The first is through a standard R7B 4-pin DIN connector. The figure below shows the pinout for this type of connector. Pins 1 and 4 correspond to the 10-36V supply and pins 2 and 3 correspond to digital ground. There are two available power supply models that can be purchased separately for use with the R7B connector. The **5028-562** model is a 160W power supply that provides 24V at 6.67A to the system. The **5028-563** model is a 220W power supply that provides 24V at 9.2A to the system. The higher power model, **5028-563**, is necessary when the PMC/XMC slots on the carrier are being used to ensure sufficient power to the mezzanine cards.



J3 – R7B Power Connector

The second option for providing power is through a 3-pin terminal block and the use of a lab bench supply. The connections for the terminal block are shown in the table below as well as on the board in silkscreen.

Pin	Signal
1	10-36 VDC Power
2	Ground
3	Ground

There is an inline fuse located on the input power to protect the circuitry from an overcurrent event. In the event of a blown fuse, there is a spare fuse located on the lower right side of the board to allow for easy repair.

CAUTION: POWER MUST NOT BE SUPPLIED TO BOTH CONNECTORS SIMULTANEOUSLY.

6.0 Connectors

200 – Pin SEARAY Connector – J1

Signal Name	Description	Searay Pin
VCC_5V_IN	5V Input Voltage	A1
J24_RIO3_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO3+"	A2
J24_RIO3_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO3-"	A3
J24_RIO7_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO7+"	A4
J24_RIO7_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO7-"	A5
J24_RIO10_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO10+"	A6
J24_RIO10_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO10-"	A7
J24_RIO14_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO14+"	A8
J24_RIO14_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO14-"	A9
J24_RIO17_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO17+"	A10
J24_RIO17_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO17-"	A11
J24_RIO21_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO21+"	A12
J24_RIO21_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO21-"	A13
J24_RIO24_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO24+"	A14
J24_RIO24_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO24-"	A15
J24_RIO28_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO28+"	A16
J24_RIO28_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO28-"	A17
J24_RIO31_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO31+"	A18
J24_RIO31_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO31-"	A19
EXT_PWR_OUT	External Output Power	A20
J24_RIO1_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO1+"	B1
J24_RIO1_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO1-"	B2
J24_RIO5_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO5+"	B3
J24_RIO5_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO5-"	B4
J24_RIO8_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO8+"	B5
J24_RIO8_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO8-"	B6
J24_RIO12_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO12+"	B7
J24_RIO12_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO12-"	B8
J24_RIO15_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO15+"	B9
J24_RIO15_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO15-"	B10
J24_RIO19_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO19+"	B11
J24_RIO19_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO19-"	B12
J24_RIO22_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO22+"	B13
J24_RIO22_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO22-"	B14
J24_RIO26_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO26+"	B15
J24_RIO26_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO26-"	B16
J24_RIO29_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO29+"	B17

J24_RIO29_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO29-"	B18
RSVD	Reserved	B19
EXT_PWR_OUT	External Output Power	B20
VCC_3.3V_IN	3.3V Input Voltage	C1
J24_RIO2_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO2+"	C2
J24_RIO2_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO2-"	C3
J24_RIO6_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO6+"	C4
J24_RIO6_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO6-"	C5
J24_RIO9_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO9+"	C6
J24_RIO9_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO9-"	C7
J24_RIO13_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO13+"	C8
J24_RIO13_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO13-"	C9
J24_RIO16_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO16+"	C10
J24_RIO16_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO16-"	C11
J24_RIO20_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO20+"	C12
J24_RIO20_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO20-"	C13
J24_RIO23_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO23+"	C14
J24_RIO23_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO23-"	C15
J24_RIO27_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO27+"	C16
J24_RIO27_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO27-"	C17
J24_RIO30_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO30+"	C18
J24_RIO30_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO30-"	C19
VCC_12V_IN	12V Input Voltage	C20
J24_RIO0_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO0+"	D1
J24_RIO0_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO0-"	D2
J24_RIO4_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO4+"	D3
J24_RIO4_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO4-"	D4
J26_SIO4_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO4+"	D5
J26_SIO4_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO4-"	D6
J24_RIO11_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO11+"	D7
J24_RIO11_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO11-"	D8
J26_SIO8_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO8+"	D9
J26_SIO8_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO8-"	D10
J24_RIO18_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO18+"	D11
J24_RIO18_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO18-"	D12
J26_SIO12_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO12+"	D13
J26_SIO12_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO12-"	D14
J24_RIO25_P	PMC Site 2 Rear I/O Differential Pair "J24_RIO25+"	D15
J24_RIO25_N	PMC Site 2 Rear I/O Differential Pair "J24_RIO25-"	D16
J26_SIO16_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO16+"	D17
J26_SIO16_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO16-"	D18

RSVD	Reserved	D19
VCC_12V_IN	12V Input Voltage	D20
VCC_3.3V_IN	3.3V Input Voltage	E1
J26_SIO1_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO1+"	E2
J26_SIO1_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO1-"	E3
J26_SIO3_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO3+"	E4
J26_SIO3_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO3-"	E5
J26_SIO5_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO5+"	E6
J26_SIO5_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO5-"	E7
J26_SIO7_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO7+"	E8
J26_SIO7_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO7-"	E9
J26_SIO9_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO9+"	E10
J26_SIO9_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO9-"	E11
J26_SIO11_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO11+"	E12
J26_SIO11_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO11-"	E13
J26_SIO13_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO13+"	E14
J26_SIO13_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO13-"	E15
J26_SIO15_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO15+"	E16
J26_SIO15_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO15-"	E17
J26_SIO17_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO17+"	E18
J26_SIO17_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO17-"	E19
VCC_5V_IN	5V Input Voltage	E20
J26_SIO0_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO0+"	F1
J26_SIO0_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO0-"	F2
GND	Ground	F3
GND	Ground	F4
J26_SIO2_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO2+"	F5
J26_SIO2_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO2-"	F6
GND	Ground	F7
GND	Ground	F8
J26_SIO6_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO6+"	F9
J26_SIO6_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO6-"	F10
GND	Ground	F11
GND	Ground	F12
J26_SIO10_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO10+"	F13
J26_SIO10_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO10-"	F14
GND	Ground	F15
GND	Ground	F16
J26_SIO14_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO14+"	F17
J26_SIO14_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO14-"	F18
J26_SIO18_P	XMC Site 2 Rear I/O Differential Pair "J26_SIO18+"	F19

J26_SIO18_N	XMC Site 2 Rear I/O Differential Pair "J26_SIO18-"	F20
GND	Ground	G1
GND	Ground	G2
J26_DP17_N	XMC Site 2 Rear I/O Differential Pair "J26_DP17-"	G3
J26_DP17_P	XMC Site 2 Rear I/O Differential Pair "J26_DP17+"	G4
GND	Ground	G5
GND	Ground	G6
J26_DP13_N	XMC Site 2 Rear I/O Differential Pair "J26_DP13-"	G7
J26_DP13_P	XMC Site 2 Rear I/O Differential Pair "J26_DP13+"	G8
GND	Ground	G9
GND	Ground	G10
J26_DP09_N	XMC Site 2 Rear I/O Differential Pair "J26_DP09-"	G11
J26_DP09_P	XMC Site 2 Rear I/O Differential Pair "J26_DP09+"	G12
GND	Ground	G13
GND	Ground	G14
J26_DP05_N	XMC Site 2 Rear I/O Differential Pair "J26_DP05-"	G15
J26_DP05_P	XMC Site 2 Rear I/O Differential Pair "J26_DP05+"	G16
GND	Ground	G17
GND	Ground	G18
J26_DP01_N	XMC Site 2 Rear I/O Differential Pair "J26_DP01-"	G19
J26_DP01_P	XMC Site 2 Rear I/O Differential Pair "J26_DP01+"	G20
J26_DP19_N	XMC Site 2 Rear I/O Differential Pair "J26_DP19-"	H1
J26_DP19_P	XMC Site 2 Rear I/O Differential Pair "J26_DP19+"	H2
GND	Ground	H3
GND	Ground	H4
J26_DP15_N	XMC Site 2 Rear I/O Differential Pair "J26_DP15-"	H5
J26_DP15_P	XMC Site 2 Rear I/O Differential Pair "J26_DP15+"	H6
GND	Ground	H7
GND	Ground	H8
J26_DP11_N	XMC Site 2 Rear I/O Differential Pair "J26_DP11-"	H9
J26_DP11_P	XMC Site 2 Rear I/O Differential Pair "J26_DP11+"	H10
GND	Ground	H11
GND	Ground	H12
J26_DP07_N	XMC Site 2 Rear I/O Differential Pair "J26_DP07-"	H13
J26_DP07_P	XMC Site 2 Rear I/O Differential Pair "J26_DP07+"	H14
GND	Ground	H15
GND	Ground	H16
J26_DP03_N	XMC Site 2 Rear I/O Differential Pair "J26_DP03-"	H17
J26_DP03_P	XMC Site 2 Rear I/O Differential Pair "J26_DP03+"	H18
GND	Ground	H19
GND	Ground	H20

GND	Ground	J1
GND	Ground	J2
J26_DP16_N	XMC Site 2 Rear I/O Differential Pair "J26_DP16-"	J3
J26_DP16_P	XMC Site 2 Rear I/O Differential Pair "J26_DP16+"	J4
GND	Ground	J5
GND	Ground	J6
J26_DP12_N	XMC Site 2 Rear I/O Differential Pair "J26_DP12-"	J7
J26_DP12_P	XMC Site 2 Rear I/O Differential Pair "J26_DP12+"	J8
GND	Ground	J9
GND	Ground	J10
J26_DP08_N	XMC Site 2 Rear I/O Differential Pair "J26_DP08-"	J11
J26_DP08_P	XMC Site 2 Rear I/O Differential Pair "J26_DP08+"	J12
GND	Ground	J13
GND	Ground	J14
J26_DP04_N	XMC Site 2 Rear I/O Differential Pair "J26_DP04-"	J15
J26_DP04_P	XMC Site 2 Rear I/O Differential Pair "J26_DP04+"	J16
GND	Ground	J17
GND	Ground	J18
J26_DP00_N	XMC Site 2 Rear I/O Differential Pair "J26_DP00-"	J19
J26_DP00_P	XMC Site 2 Rear I/O Differential Pair "J26_DP00+"	J20
J26_DP18_N	XMC Site 2 Rear I/O Differential Pair "J26_DP18-"	K1
J26_DP18_P	XMC Site 2 Rear I/O Differential Pair "J26_DP18+"	K2
GND	Ground	K3
GND	Ground	K4
J26_DP14_N	XMC Site 2 Rear I/O Differential Pair "J26_DP14-"	K5
J26_DP14_P	XMC Site 2 Rear I/O Differential Pair "J26_DP14+"	K6
GND	Ground	K7
GND	Ground	K8
J26_DP10_N	XMC Site 2 Rear I/O Differential Pair "J26_DP10-"	K9
J26_DP10_P	XMC Site 2 Rear I/O Differential Pair "J26_DP10+"	K10
GND	Ground	K11
GND	Ground	K12
J26_DP06_N	XMC Site 2 Rear I/O Differential Pair "J26_DP06-"	K13
J26_DP06_P	XMC Site 2 Rear I/O Differential Pair "J26_DP06+"	K14
GND	Ground	K15
GND	Ground	K16
J26_DP02_N	XMC Site 2 Rear I/O Differential Pair "J26_DP02-"	K17
J26_DP02_P	XMC Site 2 Rear I/O Differential Pair "J26_DP02+"	K18
GND	Ground	K19
GND	Ground	K20

500 – Pin SEARAY Connector – J2

Signal Name	Description	Searay Pin
GND	Ground	A1
J14_RIO19_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO19-"	A2
J14_RIO19_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO19+"	A3
J14_RIO24_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO24+"	A4
J14_RIO24_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO24-"	A5
J14_RIO20_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO20-"	A6
J14_RIO20_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO20+"	A7
J14_RIO21_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO21-"	A8
J14_RIO21_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO21+"	A9
J14_RIO23_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO23+"	A10
J14_RIO23_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO23-"	A11
J14_RIO25_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO25+"	A12
J14_RIO25_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO25-"	A13
J14_RIO27_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO27+"	A14
J14_RIO27_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO27-"	A15
J14_RIO29_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO29+"	A16
J14_RIO29_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO29-"	A17
J14_RIO31_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO31+"	A18
J14_RIO31_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO31-"	A19
VCC_12V_IN	12V Input Voltage	A20
USB0_+5V	USB0 Positive 5V from Carrier	A21
FAN_TACH	CPU Fan Tach Input	A22
FAN_PWM	CPU Fan Speed Control	A23
PLT_RST#	Platform Reset Signal	A24
USB3_+5V	USB3 Positive 5V from Carrier	A25
EDP_HPD	eDP Hot Plug Detect	A26
EDP_BKLTCTL	eDP Backlight Brightness Control	A27
EDP_BKLTEN	eDP Backlight Enable	A28
USB4_+5V	USB4 Positive 5V from Carrier	A29
EXT_PWR_OUT	External Output Power	A30
EXT_PWR_OUT	External Output Power	A31
EXT_PWR_OUT	External Output Power	A32
EXT_PWR_OUT	External Output Power	A33
EXT_PWR_OUT	External Output Power	A34
EXT_PWR_OUT	External Output Power	A35
EXT_PWR_OUT	External Output Power	A36
EXT_PWR_OUT	External Output Power	A37
EXT_PWR_OUT	External Output Power	A38
EXT_PWR_OUT	External Output Power	A39

VCC_5V_IN	5V Input Voltage	A40
GND	Ground	A41
LINE-OUT_L	Left Channel Audio Line Out from CODEC on Carrier	A42
AUDIO_GND	AUDIO_GND connected to Digital GND near CODEC on Carrier	A43
LINE-IN_R	Right Channel Audio Line In from CODEC on Carrier	A44
LINE-IN_L	Left Channel Audio Line In from CODEC on Carrier	A45
GND	Ground	A46
GBE0_MDI3_P	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 3 Positive	A47
GBE0_MDI3_N	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 3 Negative	A48
GBE1_MDI3_P	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 3 Positive	A49
GBE1_MDI3_N	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 3 Negative	A50
J14_RIO18_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO18-"	B1
J14_RIO18_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO18+"	B2
J14_RIO14_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO14+"	B3
J14_RIO14_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO14-"	B4
J14_RIO7_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO7-"	B5
J14_RIO7_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO7+"	B6
J14_RIO10_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO10-"	B7
J14_RIO10_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO10+"	B8
J14_RIO6_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO6-"	B9
J14_RIO6_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO6+"	B10
J14_RIO17_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO17+"	B11
J14_RIO17_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO17-"	B12
J14_RIO22_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO22+"	B13
J14_RIO22_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO22-"	B14
J14_RIO26_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO26+"	B15
J14_RIO26_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO26-"	B16
J14_RIO8_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO8+"	B17
J14_RIO8_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO8-"	B18
GPI_2	General Purpose Input 2	B19
GPI_3	General Purpose Input 3	B20
USB0_P	USB0 Differential Pair - "USB0+"	B21
USB0_N	USB0 Differential Pair - "USB0-"	B22
GPO_0	General Purpose Output 0	B23
GPO_1	General Purpose Output 1	B24
USB3_P	USB3 Differential Pair - "USB3+"	B25
USB3_N	USB3 Differential Pair - "USB3-"	B26
GND	Ground	B27
GND	Ground	B28
USB4_P	USB4 Differential Pair - "USB4+"	B29
USB4_N	USB4 Differential Pair - "USB4-"	B30

USB5_+5V	USB5 Positive 5V from Carrier	B31
DPC_AUX_SEL	Digital Display Interface 2 - AUX Function Select	B32
UART_TX0_P	General Purpose Serial Port 0 from Carrier Transmitter Positive	B33
UART_TX0_N	General Purpose Serial Port 0 from Carrier Transmitter Negative	B34
UART_RX0_P	General Purpose Serial Port 0 from Carrier Receiver Positive	B35
UART_RX0_N	General Purpose Serial Port 0 from Carrier Receiver Negative	B36
UART_TX1_P	General Purpose Serial Port 1 from Carrier Transmitter Positive	B37
UART_TX1_N	General Purpose Serial Port 1 from Carrier Transmitter Negative	B38
UART_RX1_P	General Purpose Serial Port 1 from Carrier Receiver Positive	B39
UART_RX1_N	General Purpose Serial Port 1 from Carrier Receiver Negative	B40
VCC_3.3V_IN	3.3V Input Voltage	B41
LINE-OUT_R	Right Channel Audio Line Out from CODEC on Carrier	B42
VGA_BLU	Analog Video Output Blue	B43
VGA_RED	Analog Video Output Red	B44
VGA_GRN	Analog Video Output Green	B45
GND	Ground	B46
GBE0_MDI2_P	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 2 Positive	B47
GBE0_MDI2_N	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 2 Negative	B48
GBE1_MDI2_P	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 2 Positive	B49
GBE1_MDI2_N	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 2 Negative	B50
WDTO	Watchdog Timer Output	C1
J14_RIO13_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO13-"	C2
J14_RIO13_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO13+"	C3
J14_RIO9_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO9-"	C4
J14_RIO9_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO9+"	C5
J14_RIO5_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO5-"	C6
J14_RIO5_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO5+"	C7
J14_RIO1_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO1-"	C8
J14_RIO1_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO1+"	C9
J14_RIO2_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO2-"	C10
J14_RIO2_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO2+"	C11
J14_RIO28_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO28+"	C12
J14_RIO28_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO28-"	C13
J14_RIO12_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO12-"	C14
J14_RIO12_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO12+"	C15
J14_RIO4_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO4+"	C16
J14_RIO4_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO4-"	C17
J14_RIO30_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO30+"	C18
J14_RIO30_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO30-"	C19
GPI_1	General Purpose Input 1	C20
USB1_+5V	USB1 Positive 5V from Carrier	C21

EDP_VDDEN	eDP Power Enable	C22
EDP_TX3_N	eDP Differential Pair 3 Negative	C23
EDP_TX3_P	eDP Differential Pair 3 Positive	C24
GND	Ground	C25
GND	Ground	C26
DPC_TX3_N	Digital Display Interface 2 - Output Differential Pair 3 Negative	C27
DPC_TX3_P	Digital Display Interface 2 - Output Differential Pair 3 Positive	C28
GND	Ground	C29
GND	Ground	C30
USB5_P	USB5 Differential Pair - "USB5+"	C31
USB5_N	USB5 Differential Pair - "USB5-"	C32
DPC_HPD	Digital Display Interface 2 - Hot Plug Detect	C33
THRMTRIP3#	Output Signal Indicating CPU Entered Thermal Shutdown	C34
SPKR	Audio Enunciator Output - PC Beep Signal	C35
BATLOW#	Low Battery Indicator for External Battery	C36
SUS_STAT#	Imminent Suspend Operation Indicator - Notifies LPC Devices	C37
VCC_5V_IN	5V Input Voltage	C38
VCC_5V_IN	5V Input Voltage	C39
SATA_ACT#	ATA (Parallel and Serial) or SAS Activity Indicator Signal	C40
VCC_3.3V_IN	3.3V Input Voltage	C41
GND	Ground	C42
GND	Ground	C43
GND	Ground	C44
GND	Ground	C45
VGA_I2C_DAT	Display Data Channel (DDC) Data Line	C46
GBE0_MDI1_P	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 1 Positive	C47
GBE0_MDI1_N	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 1 Negative	C48
GBE1_MDI1_P	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 1 Positive	C49
GBE1_MDI1_N	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 1 Negative	C50
J14_RIO15_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO15-"	D1
J14_RIO15_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO15+"	D2
J14_RIO11_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO11-"	D3
J14_RIO11_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO11+"	D4
J16_SIO1_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO1-"	D5
J16_SIO1_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO1+"	D6
J14_RIO3_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO3-"	D7
J14_RIO3_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO3+"	D8
J16_SIO8_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO8+"	D9
J16_SIO8_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO8-"	D10
J14_RIO16_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO16-"	D11
J14_RIO16_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO16+"	D12

J16_SIO12_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO12+"	D13
J16_SIO12_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO12-"	D14
J14_RIO0_N	PMC Site 1 Rear I/O Differential Pair "J14_RIO0-"	D15
J14_RIO0_P	PMC Site 1 Rear I/O Differential Pair "J14_RIO0+"	D16
J16_SIO16_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO16+"	D17
J16_SIO16_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO16-"	D18
GPI_0	General Purpose Input 0	D19
GPO_3	General Purpose Output 3	D20
USB1_P	USB1 Differential Pair - "USB1+"	D21
USB1_N	USB1 Differential Pair - "USB1-"	D22
GND	Ground	D23
GND	Ground	D24
EDP_TX1_N	eDP Differential Pair 1 Negative	D25
EDP_TX1_P	eDP Differential Pair 1 Positive	D26
GND	Ground	D27
GND	Ground	D28
DPC_TX0_N	Digital Display Interface 2 - Output Differential Pair 0 Negative	D29
DPC_TX0_P	Digital Display Interface 2 - Output Differential Pair 0 Positive	D30
GND	Ground	D31
GND	Ground	D32
DPD_AUX_SEL	Digital Display Interface 3 - AUX Function Select	D33
DPD_HPD	Digital Display Interface 3 - Hot Plug Detect	D34
COM_THRM#	Off-Module Temp Sensor Input Signal Indicating Over-Temp Condition	D35
DPB_AUX_SEL	Digital Display Interface 1 - AUX Function Select	D36
DPB_HPD	Digital Display Interface 1 - Hot Plug Detect	D37
SLP_S5#	Output Signal Indicating Soft Off State	D38
SLP_S4#	Output Signal Indicating Suspend to Disk State	D39
SLP_S3#	Output Signal Indicating Suspend to RAM State	D40
LPC_DRQ1#	LPC Serial DMA Request Signal 1	D41
LPC_DRQ0#	LPC Serial DMA Request Signal 0	D42
VCC_3.3V_IN	3.3V Input Voltage	D43
VGA_VSYNC	VGA Output Vertical Sync	D44
VGA_HSYNC	VGA Output Horizontal Sync	D45
VGA_I2C_CK	Display Data Channel (DDC) Clock Line	D46
GBE0_MDI0_P	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 0 Positive	D47
GBE0_MDI0_N	Gigabit Ethernet Controller 0 from Module - MDI Differential Pair 0 Negative	D48
GBE1_MDI0_P	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 0 Positive	D49
GBE1_MDI0_N	Gigabit Ethernet Controller 1 from Carrier - MDI Differential Pair 0 Negative	D50
SYSRST#	System Reset Signal	E1
J16_SIO2_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO2-"	E2
J16_SIO2_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO2+"	E3

J16_SIO3_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO3+"	E4
J16_SIO3_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO3-"	E5
J16_DP16_N	XMC Site 1 Rear I/O Differential Pair "J16_DP16-"	E6
J16_DP16_P	XMC Site 1 Rear I/O Differential Pair "J16_DP16+"	E7
J16_DP19_P	XMC Site 1 Rear I/O Differential Pair "J16_DP19+"	E8
J16_DP19_N	XMC Site 1 Rear I/O Differential Pair "J16_DP19-"	E9
J16_SIO9_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO9+"	E10
J16_SIO9_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO9-"	E11
J16_SIO0_GCLK_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO0+"	E12
J16_SIO0_GCLK_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO0-"	E13
J16_SIO13_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO13+"	E14
J16_SIO13_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO13-"	E15
J16_SIO15_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO15+"	E16
J16_SIO15_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO15-"	E17
J16_SIO17_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO17+"	E18
J16_SIO17_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO17-"	E19
GPO_2	General Purpose Output 2	E20
USB2_+5V	USB2 Positive 5V from Carrier	E21
GND	Ground	E22
EDP_TX0_N	eDP Differential Pair 0 Negative	E23
EDP_TX0_P	eDP Differential Pair 0 Positive	E24
GND	Ground	E25
GND	Ground	E26
DPC_TX2_N	Differential Pair - "DDI2_PAIR2-"	E27
DPC_TX2_P	Differential Pair - "DDI2_PAIR2+"	E28
GND	Ground	E29
GND	Ground	E30
DPC_CTRL_AUX_N	Digital Display Interface 2 - DVI/HDMI/DP AUX Control Negative	E31
DPC_CTRL_AUX_P	Digital Display Interface 2 - DVI/HDMI/DP AUX Control Positive	E32
GND	Ground	E33
GND	Ground	E34
I2C_DAT	General Purpose I2C Port Data I/O Line	E35
I2C_CLK	General Purpose I2C Port Clock Output	E36
GND	Ground	E37
GND	Ground	E38
SMB_DATA	System Management Bus Bidirectional Data Line	E39
SMB_CLK	System Management Bus Bidirectional Clock Line	E40
SMB_ALERT#	System Management Bus Alert Signal	E41
LPC_SERIRQ	LPC Serial Interrupt Signal	E42
LPC_FRAME#	LPC Frame Signal - LPC Cycle Start Indicator	E43
VCC_3.3V_IN	3.3V Input Voltage	E44

LPC_AD1	LPC Multiplexed Address - Command and Data Bus 1	E45
LPC_AD0	LPC Multiplexed Address - Command and Data Bus 0	E46
GBE0_L1000#	Gigabit Ethernet Controller 0 from Module - 1000 Mb/s Link Indicator	E47
GBE1_1V9	External 1.9V Reference Voltage from Carrier for Gigabit Ethernet Controller 1	E48
GBE0_LINK#	Gigabit Ethernet Controller 0 from Module - Link Indicator	E49
GBE1_LINK#	Gigabit Ethernet Controller 1 from Carrier - Link Indicator	E50
J16_DP17_N	XMC Site 1 Rear I/O Differential Pair "J16_DP17-"	F1
J16_DP17_P	XMC Site 1 Rear I/O Differential Pair "J16_DP17+"	F2
GND	Ground	F3
GND	Ground	F4
J16_DP11_N	XMC Site 1 Rear I/O Differential Pair "J16_DP11-"	F5
J16_DP11_P	XMC Site 1 Rear I/O Differential Pair "J16_DP11+"	F6
GND	Ground	F7
GND	Ground	F8
J16_DP07_N	XMC Site 1 Rear I/O Differential Pair "J16_DP07-"	F9
J16_DP07_P	XMC Site 1 Rear I/O Differential Pair "J16_DP07+"	F10
GND	Ground	F11
GND	Ground	F12
J16_SIO10_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO10+"	F13
J16_SIO10_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO10-"	F14
GND	Ground	F15
GND	Ground	F16
J16_DP02_N	XMC Site 1 Rear I/O Differential Pair "J16_DP02-"	F17
J16_DP02_P	XMC Site 1 Rear I/O Differential Pair "J16_DP02+"	F18
J16_DP00_N	XMC Site 1 Rear I/O Differential Pair "J16_DP00-"	F19
J16_DP00_P	XMC Site 1 Rear I/O Differential Pair "J16_DP00+"	F20
USB2_P	USB2 Differential Pair - "USB2+"	F21
USB2_N	USB2 Differential Pair - "USB2-"	F22
GND	Ground	F23
GND	Ground	F24
EDP_TX2_N	eDP Differential Pair 2 Negative	F25
EDP_TX2_P	eDP Differential Pair 2 Positive	F26
GND	Ground	F27
GND	Ground	F28
DPC_TX1_N	Digital Display Interface 2 - Output Differential Pair 1 Negative	F29
DPC_TX1_P	Digital Display Interface 2 - Output Differential Pair 1 Positive	F30
GND	Ground	F31
GND	Ground	F32
DPD_CTRL_AUX_N	Digital Display Interface 3 - DVI/HDMI/DP AUX Control Negative	F33
DPD_CTRL_AUX_P	Digital Display Interface 3 - DVI/HDMI/DP AUX Control Positive	F34
GND	Ground	F35

GND	Ground	F36
DPB_CTRL_AUX_N	Digital Display Interface 1 - DVI/HDMI/DP AUX Control Negative	F37
DPB_CTRL_AUX_P	Digital Display Interface 1 - DVI/HDMI/DP AUX Control Positive	F38
GND	Ground	F39
GND	Ground	F40
PWRBTN#	Power Button Input Signal	F41
LPC_CLK	LPC Clock Output - 33MHz Nominal	F42
GND	Ground	F43
GND	Ground	F44
LPC_AD3	LPC Multiplexed Address - Command and Data Bus 3	F45
LPC_AD2	LPC Multiplexed Address - Command and Data Bus 2	F46
GND	Ground	F47
GND	Ground	F48
GBE0_ACT#	Gigabit Ethernet Controller 0 from Module - Activity Indicator	F49
GBE1_ACT#	Gigabit Ethernet Controller 1 from Carrier - Activity Indicator	F50
GND	Ground	G1
GND	Ground	G2
J16_SIO5_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO5+"	G3
J16_SIO5_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO5-"	G4
GND	Ground	G5
GND	Ground	G6
J16_DP08_N	XMC Site 1 Rear I/O Differential Pair "J16_DP08-"	G7
J16_DP08_P	XMC Site 1 Rear I/O Differential Pair "J16_DP08+"	G8
GND	Ground	G9
GND	Ground	G10
J16_DP09_N	XMC Site 1 Rear I/O Differential Pair "J16_DP09-"	G11
J16_DP09_P	XMC Site 1 Rear I/O Differential Pair "J16_DP09+"	G12
GND	Ground	G13
GND	Ground	G14
J16_DP05_N	XMC Site 1 Rear I/O Differential Pair "J16_DP05-"	G15
J16_DP05_P	XMC Site 1 Rear I/O Differential Pair "J16_DP05+"	G16
GND	Ground	G17
GND	Ground	G18
J16_DP01_N	XMC Site 1 Rear I/O Differential Pair "J16_DP01-"	G19
J16_DP01_P	XMC Site 1 Rear I/O Differential Pair "J16_DP01+"	G20
WAKE1#	General Purpose Wake Signal	G21
WAKE0#	PCI Express Wake Signal	G22
PCIE0_RX_N	PCI Express Lane 0 Receive Differential Pair Negative	G23
PCIE0_RX_P	PCI Express Lane 0 Receive Differential Pair Positive	G24
GND	Ground	G25
GND	Ground	G26

PCIE2_RX_N	PCI Express Lane 2 Receive Differential Pair Negative	G27
PCIE2_RX_P	PCI Express Lane 2 Receive Differential Pair Positive	G28
GND	Ground	G29
GND	Ground	G30
DPD_TX3_N	Digital Display Interface 3 - Output Differential Pair 3 Negative	G31
DPD_TX3_P	Digital Display Interface 3 - Output Differential Pair 3 Positive	G32
GND	Ground	G33
GND	Ground	G34
DPB_TX3_N	Digital Display Interface 1 - Output Differential Pair 3 Negative	G35
DPB_TX3_P	Digital Display Interface 1 - Output Differential Pair 3 Positive	G36
GND	Ground	G37
GND	Ground	G38
SATA1_RX_N	SATA1 Receive Differential Pair Negative	G39
SATA1_RX_P	SATA1 Receive Differential Pair Positive	G40
GND	Ground	G41
GND	Ground	G42
USB3_SSRX_P	USB3 USB 3.0 SuperSpeed Receive Positive	G43
USB3_SSRX_N	USB3 USB 3.0 SuperSpeed Receive Negative	G44
GND	Ground	G45
GND	Ground	G46
USB1_SSRX_P	USB1 USB 3.0 SuperSpeed Receive Positive	G47
USB1_SSRX_N	USB1 USB 3.0 SuperSpeed Receive Negative	G48
GND	Ground	G49
GND	Ground	G50
J16_DP15_N	XMC Site 1 Rear I/O Differential Pair "J16_DP15-"	H1
J16_DP15_P	XMC Site 1 Rear I/O Differential Pair "J16_DP15+"	H2
GND	Ground	H3
GND	Ground	H4
J16_DP13_N	XMC Site 1 Rear I/O Differential Pair "J16_DP13-"	H5
J16_DP13_P	XMC Site 1 Rear I/O Differential Pair "J16_DP13+"	H6
GND	Ground	H7
GND	Ground	H8
J16_SIO11_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO11+"	H9
J16_SIO11_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO11-"	H10
GND	Ground	H11
GND	Ground	H12
J16_DP04_N	XMC Site 1 Rear I/O Differential Pair "J16_DP04-"	H13
J16_DP04_P	XMC Site 1 Rear I/O Differential Pair "J16_DP04+"	H14
GND	Ground	H15
GND	Ground	H16
J16_SIO6_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO6-"	H17

J16_SIO6_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO6+"	H18
GND	Ground	H19
GND	Ground	H20
EDP_AUX_N	eDP AUX Signal Negative	H21
EDP_AUX_P	eDP AUX Signal Positive	H22
GND	Ground	H23
GND	Ground	H24
PCIE0_TX_N	PCI Express Lane 0 Transmit Differential Pair Negative	H25
PCIE0_TX_P	PCI Express Lane 0 Transmit Differential Pair Positive	H26
GND	Ground	H27
GND	Ground	H28
PCIE2_TX_N	PCI Express Lane 2 Transmit Differential Pair Negative	H29
PCIE2_TX_P	PCI Express Lane 2 Transmit Differential Pair Positive	H30
GND	Ground	H31
GND	Ground	H32
DPD_TX0_N	Digital Display Interface 3 - Output Differential Pair 0 Negative	H33
DPD_TX0_P	Digital Display Interface 3 - Output Differential Pair 0 Positive	H34
GND	Ground	H35
GND	Ground	H36
DPB_TX0_N	Digital Display Interface 1 - Output Differential Pair 0 Negative	H37
DPB_TX0_P	Digital Display Interface 1 - Output Differential Pair 0 Positive	H38
GND	Ground	H39
GND	Ground	H40
SATA1_TX_N	SATA1 Transmit Differential Pair Negative	H41
SATA1_TX_P	SATA1 Transmit Differential Pair Positive	H42
GND	Ground	H43
GND	Ground	H44
USB3_SSTX_P	USB3 USB 3.0 SuperSpeed Transmit Positive	H45
USB3_SSTX_N	USB3 USB 3.0 SuperSpeed Transmit Negative	H46
GND	Ground	H47
GND	Ground	H48
USB1_SSTX_P	USB1 USB 3.0 SuperSpeed Transmit Positive	H49
USB1_SSTX_N	USB1 USB 3.0 SuperSpeed Transmit Negative	H50
GND	Ground	J1
GND	Ground	J2
J16_SIO7_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO7+"	J3
J16_SIO7_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO7-"	J4
GND	Ground	J5
GND	Ground	J6
J16_SIO4_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO4+"	J7
J16_SIO4_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO4-"	J8

GND	Ground	J9
GND	Ground	J10
J16_DP06_N	XMC Site 1 Rear I/O Differential Pair "J16_DP06-"	J11
J16_DP06_P	XMC Site 1 Rear I/O Differential Pair "J16_DP06+"	J12
GND	Ground	J13
GND	Ground	J14
J16_DP03_N	XMC Site 1 Rear I/O Differential Pair "J16_DP03-"	J15
J16_DP03_P	XMC Site 1 Rear I/O Differential Pair "J16_DP03+"	J16
GND	Ground	J17
GND	Ground	J18
J16_DP12_N	XMC Site 1 Rear I/O Differential Pair "J16_DP12-"	J19
J16_DP12_P	XMC Site 1 Rear I/O Differential Pair "J16_DP12+"	J20
GND	Ground	J21
GND	Ground	J22
PCIE1_RX_N	PCI Express Lane 1 Receive Differential Pair Negative	J23
PCIE1_RX_P	PCI Express Lane 1 Receive Differential Pair Positive	J24
GND	Ground	J25
GND	Ground	J26
PCIE3_RX_N	PCI Express Lane 3 Receive Differential Pair Negative	J27
PCIE3_RX_P	PCI Express Lane 3 Receive Differential Pair Positive	J28
GND	Ground	J29
GND	Ground	J30
DPD_TX2_N	Digital Display Interface 3 - Output Differential Pair 2 Negative	J31
DPD_TX2_P	Digital Display Interface 3 - Output Differential Pair 2 Positive	J32
GND	Ground	J33
GND	Ground	J35
DPB_TX2_N	Digital Display Interface 1 - Output Differential Pair 2 Negative	J35
DPB_TX2_P	Digital Display Interface 1 - Output Differential Pair 2 Positive	J36
GND	Ground	J37
GND	Ground	J38
SATA0_RX_N	SATA0 Receive Differential Pair Negative	J39
SATA0_RX_P	SATA0 Receive Differential Pair Positive	J40
GND	Ground	J41
GND	Ground	J42
USB2_SSRX_P	USB2 USB 3.0 SuperSpeed Receive Positive	J43
USB2_SSRX_N	USB2 USB 3.0 SuperSpeed Receive Negative	J44
GND	Ground	J45
GND	Ground	J46
USB0_SSRX_P	USB0 USB 3.0 SuperSpeed Receive Positive	J47
USB0_SSRX_N	USB0 USB 3.0 SuperSpeed Receive Negative	J48
GND	Ground	J49

GND	Ground	J50
J16_DP18_N	XMC Site 1 Rear I/O Differential Pair "J16_DP18-"	K1
J16_DP18_P	XMC Site 1 Rear I/O Differential Pair "J16_DP18+"	K2
GND	Ground	K3
GND	Ground	K4
J16_DP14_N	XMC Site 1 Rear I/O Differential Pair "J16_DP14-"	K5
J16_DP14_P	XMC Site 1 Rear I/O Differential Pair "J16_DP14+"	K6
GND	Ground	K7
GND	Ground	K8
J16_DP10_N	XMC Site 1 Rear I/O Differential Pair "J16_DP10-"	K9
J16_DP10_P	XMC Site 1 Rear I/O Differential Pair "J16_DP10+"	K10
GND	Ground	K11
GND	Ground	K12
J16_SIO14_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO14+"	K13
J16_SIO14_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO14-"	K14
GND	Ground	K15
GND	Ground	K16
J16_SIO18_GCLK_P	XMC Site 1 Rear I/O Differential Pair "J16_SIO18+"	K17
J16_SIO18_GCLK_N	XMC Site 1 Rear I/O Differential Pair "J16_SIO18-"	K18
GND	Ground	K19
GND	Ground	K20
CLK_PEG_N	PCIe/PEG Reference Clock Output Negative	K21
CLK_PEG_P	PCIe/PEG Reference Clock Output Positive	K22
GND	Ground	K23
GND	Ground	K24
PCIE1_TX_P	PCI Express Lane 1 Transmit Differential Pair Positive	K25
PCIE1_TX_N	PCI Express Lane 1 Transmit Differential Pair Negative	K26
GND	Ground	K27
GND	Ground	K28
PCIE3_TX_N	PCI Express Lane 3 Transmit Differential Pair Negative	K29
PCIE3_TX_P	PCI Express Lane 3 Transmit Differential Pair Positive	K30
GND	Ground	K31
GND	Ground	K32
DPD_TX1_N	Digital Display Interface 3 - Output Differential Pair 1 Negative	K33
DPD_TX1_P	Digital Display Interface 3 - Output Differential Pair 1 Positive	K34
GND	Ground	K35
GND	Ground	K36
DPB_TX1_N	Digital Display Interface 1 - Output Differential Pair 1 Negative	K37
DPB_TX1_P	Digital Display Interface 1 - Output Differential Pair 1 Positive	K38
GND	Ground	K39
GND	Ground	K40

SATA0_TX_N	SATA0 Transmit Differential Pair Negative	K41
SATA0_TX_P	SATA0 Transmit Differential Pair Positive	K42
GND	Ground	K43
GND	Ground	K44
USB2_SSTX_P	USB2 USB 3.0 SuperSpeed Transmit Positive	K45
USB2_SSTX_N	USB2 USB 3.0 SuperSpeed Transmit Negative	K46
GND	Ground	K47
GND	Ground	K48
USB0_SSTX_P	USB0 USB 3.0 SuperSpeed Transmit Positive	K49
USB0_SSTX_N	USB0 USB 3.0 SuperSpeed Transmit Negative	K50

DisplayPort 1 Connector – P10

Pin Number	Description
1	DPB_LANE0_P
2	GND
3	DPB_LANE0_N
4	DPB_LANE1_P
5	GND
6	DPB_LANE1_N
7	DPB_LANE2_P
8	GND
9	DPB_LANE2_N
10	DPB_LANE3_P
11	GND
12	DPB_LANE3_N
13	Config1 (GND)
14	Config2 (GND)
15	DPB_AUX_CH_P
16	GND
17	DPB_AUX_CH_N
18	DPB_HPD
19	PWR_RTN (GND)
20	DPB_PWR

DisplayPort 2 Connector – P12

Pin Number	Description
1	DPC_LANE0_P
2	GND
3	DPC_LANE0_N
4	DPC_LANE1_P
5	GND
6	DPC_LANE1_N
7	DPC_LANE2_P
8	GND
9	DPC_LANE2_N
10	DPC_LANE3_P
11	GND
12	DPC_LANE3_N
13	Config1 (GND)
14	Config2 (GND)
15	DPC_AUX_CH_P
16	GND
17	DPC_AUX_CH_N
18	DPC_HPD
19	PWR_RTN (GND)
20	DPC_PWR

DisplayPort 3 Connector – P18

Pin Number	Description
1	DPD_LANE0_P
2	GND
3	DPD_LANE0_N
4	DPD_LANE1_P
5	GND
6	DPD_LANE1_N
7	DPD_LANE2_P
8	GND
9	DPD_LANE2_N
10	DPD_LANE3_P
11	GND
12	DPD_LANE3_N
13	Config1 (GND)
14	Config2 (GND)
15	DPD_AUX_CH_P
16	GND
17	DPD_AUX_CH_N
18	DPD_HPD
19	PWR_RTN (GND)
20	DPD_PWR

HDMI 1 Connector – P9

Pin Number	Description
1	DPB_TMDS_D2_P
2	GND
3	DPB_TMDS_D2_N
4	DPB_TMDS_D1_P
5	GND
6	DPB_TMDS_D1_N
7	DPB_TMDS_D0_P
8	GND
9	DPB_TMDS_D0_N
10	DPB_TMDS_CLK_P
11	GND
12	DPB_TMDS_CLK_N
13	NC
14	NC
15	DPB_SERIAL_CLK
16	DPB_SERIAL_DATA
17	GND
18	DPB_HDMI_PWR
19	DPB_TMDS_HPD

HDMI 2 Connector – P11

Pin Number	Description
1	DPC_TMDS_D2_P
2	GND
3	DPC_TMDS_D2_N
4	DPC_TMDS_D1_P
5	GND
6	DPC_TMDS_D1_N
7	DPC_TMDS_D0_P
8	GND
9	DPC_TMDS_D0_N
10	DPC_TMDS_CLK_P
11	GND
12	DPC_TMDS_CLK_N
13	NC
14	NC
15	DPC_SERIAL_CLK
16	DPC_SERIAL_DATA
17	GND
18	DPC_HDMI_PWR
19	DPC_TMDS_HPD

HDMI 3 Connector – P17

Pin Number	Description
1	DPD_TMDS_D2_P
2	GND
3	DPD_TMDS_D2_N
4	DPD_TMDS_D1_P
5	GND
6	DPD_TMDS_D1_N
7	DPD_TMDS_D0_P
8	GND
9	DPD_TMDS_D0_N
10	DPD_TMDS_CLK_P
11	GND
12	DPD_TMDS_CLK_N
13	NC
14	NC
15	DPD_SERIAL_CLK
16	DPD_SERIAL_DATA
17	GND
18	DPD_HDMI_PWR
19	DPD_TMDS_HPD

COM 1 RS-232/485 Connector – P19A (Bottom)

Pin Number	Description
1	NC
2	UART_RX0_P
3	UART_TX0_P
4	UART_TX0_N
5	GND
6	UART_RX0_N
7	NC
8	NC
9	NC

COM 2 RS-232/485 Connector – P19B (Top)

Pin Number	Description
1	NC
2	UART_RX1_P
3	UART_TX1_P
4	UART_TX1_N
5	GND
6	UART_RX1_N
7	NC
8	NC
9	NC

VGA Connector – J14

Pin Number	Description
1	VGA_RED
2	VGA_GRN
3	VGA_BLU
4	NC
5	GND
6	RGND
7	GGND
8	BGND
9	+5V PWR
10	SGND
11	NC
12	VGA_I2C_DAT
13	VGA_HSYNC
14	VGA_VSYNC
15	VGA_I2C_CLK

XMC Rear I/O Site 1 Connector – P6

Pin Number	Description
1	J16_DPO0_P
2	J16_DPO10_P
3	J16_DPO0_N
4	J16_DPO10_N
5	J16_DPO1_P
6	J16_DPO11_P
7	J16_DPO1_N
8	J16_DPO11_N
9	J16_DPO2_P
10	J16_DPO12_P
11	J16_DPO2_N
12	J16_DPO12_N
13	J16_DPO3_P
14	J16_DPO13_P
15	J16_DPO3_N
16	J16_DPO13_N
17	J16_DPO8_P
18	J16_DPO9_P
19	J16_DPO8_N
20	J16_DPO9_N
21	J16_SIO0_GCLK_P
22	J16_SIO1_P
23	J16_SIO0_GCLK_N
24	J16_SIO1_N
25	J16_SIO2_P
26	J16_SIO3_P
27	J16_SIO2_N
28	J16_SIO3_N
29	J16_SIO4_P
30	J16_SIO5_P
31	J16_SIO4_N
32	J16_SIO5_N
33	J16_SIO6_P
34	J16_SIO7_P
35	J16_SIO6_N
36	J16_SIO7_N
37	J16_SIO8_P
38	J16_SIO9_P
39	J16_SIO8_N
40	J16_SIO9_N

XMC Rear I/O Site 1 Connector – P8

Pin Number	Description
1	J16_DP04_P
2	J16_DP14_P
3	J16_DP04_N
4	J16_DP14_N
5	J16_DP05_P
6	J16_DP15_P
7	J16_DP05_N
8	J16_DP15_N
9	J16_DP06_P
10	J16_DP16_P
11	J16_DP06_N
12	J16_DP16_N
13	J16_DP07_P
14	J16_DP17_P
15	J16_DP07_N
16	J16_DP17_N
*17 (see note)	J16_DP18_N / J16_DP18_P
18	J16_DP19_P
*19 (see Note)	J16_DP18_P / J16_DP18_N
20	J16_DP19_N
21	J16_SIO10_P
22	J16_SIO11_P
23	J16_SIO10_N
24	J16_SIO11_N
25	J16_SIO12_P
26	J16_SIO13_P
27	J16_SIO12_N
28	J16_SIO13_N
29	J16_SIO14_P
30	J16_SIO15_P
31	J16_SIO14_N
32	J16_SIO15_N
33	J16_SIO16_P
34	J16_SIO18_GCLK_P
35	J16_SIO16_N
36	J16_SIO18_GCLK_N
37	J16_SIO17_P
38	NC
39	J16_SIO17_N
40	NC

Note:
* Pin 17 and Pin 19 signals are swapped on ACEX-4600-EDK Rev. B. The signal name shown in red is for future revisions (Rev. C and above).

XMC Rear I/O Site 2 Connector – P5

Pin Number	Description
1	J26_DPO0_P
2	J26_DPO10_P
3	J26_DPO0_N
4	J26_DPO10_N
5	J26_DPO1_P
6	J26_DPO11_P
7	J26_DPO1_N
8	J26_DPO11_N
9	J26_DPO2_P
10	J26_DPO12_P
11	J26_DPO2_N
12	J26_DPO12_N
13	J26_DPO3_P
14	J26_DPO13_P
15	J26_DPO3_N
16	J26_DPO13_N
17	J26_DPO8_P
18	J26_DPO9_P
19	J26_DPO8_N
20	J26_DPO9_N
21	J26_SIO0_GCLK_P
22	J26_SIO1_P
23	J26_SIO0_GCLK_N
24	J26_SIO1_N
25	J26_SIO2_P
26	J26_SIO3_P
27	J26_SIO2_N
28	J26_SIO3_N
29	J26_SIO4_P
30	J26_SIO5_P
31	J26_SIO4_N
32	J26_SIO5_N
33	J26_SIO6_P
34	J26_SIO7_P
35	J26_SIO6_N
36	J26_SIO7_N
37	J26_SIO8_P
38	J26_SIO9_P
39	J26_SIO8_N
40	J26_SIO9_N

XMC Rear I/O Site 1 Connector – P7

Pin Number	Description
1	J26_DP04_P
2	J26_DP14_P
3	J26_DP04_N
4	J26_DP14_N
5	J26_DP05_P
6	J26_DP15_P
7	J26_DP05_N
8	J26_DP15_N
9	J26_DP06_P
10	J26_DP16_P
11	J26_DP06_N
12	J26_DP16_N
13	J26_DP07_P
14	J26_DP17_P
15	J26_DP07_N
16	J26_DP17_N
*17 (See Note)	J26_DP18_N / J26_DP18_P
18	J26_DP19_P
*19 (See Note)	J26_DP18_P / J26_DP18_N
20	J26_DP19_N
21	J26_SIO10_P
22	J26_SIO11_P
23	J26_SIO10_N
24	J26_SIO11_N
25	J26_SIO12_P
26	J26_SIO13_P
27	J26_SIO12_N
28	J26_SIO13_N
29	J26_SIO14_P
30	J26_SIO15_P
31	J26_SIO14_N
32	J26_SIO15_N
33	J26_SIO16_P
34	J26_SIO18_GCLK_P
35	J26_SIO16_N
36	J26_SIO18_GCLK_N
37	J26_SIO17_P
38	NC
39	J26_SIO17_N
40	NC

Note:
* Pin 17 and Pin 19 signals are swapped on ACEX-4600-EDK Rev. B. The signal name shown in red is for future revisions (Rev. C and above).

PMC Rear I/O Site 1 Connector – J7

Pin Number	Description	Pin Number	Description
1	J14_RIO0_P	35	J14_RIO0_N
2	J14_RIO1_P	36	J14_RIO1_N
3	J14_RIO2_P	37	J14_RIO2_N
4	J14_RIO3_P	38	J14_RIO3_N
5	J14_RIO4_P	39	J14_RIO4_N
6	J14_RIO5_P	40	J14_RIO5_N
7	J14_RIO6_P	41	J14_RIO6_N
8	J14_RIO7_P	42	14_RIO7_N
9	J14_RIO8_P	43	J14_RIO8_N
10	J14_RIO9_P	44	J14_RIO9_N
11	J14_RIO10_P	45	J14_RIO10_N
12	GND	46	GND
13	J14_RIO11_P	47	J14_RIO11_N
14	J14_RIO12_P	48	J14_RIO12_N
15	J14_RIO13_P	49	J14_RIO13_N
16	J14_RIO14_P	50	J14_RIO14_N
17	J14_RIO15_P	51	J14_RIO15_N
18	J14_RIO16_P	52	J14_RIO16_N
19	J14_RIO17_P	53	J14_RIO17_N
20	J14_RIO18_P	54	J14_RIO18_N
21	J14_RIO19_P	55	J14_RIO19_N
22	J14_RIO20_P	56	J14_RIO20_N
23	GND	57	GND
24	J14_RIO21_P	58	J14_RIO21_N
25	J14_RIO22_P	59	J14_RIO22_N
26	J14_RIO23_P	60	J14_RIO23_N
27	J14_RIO24_P	61	J14_RIO24_N
28	J14_RIO25_P	62	J14_RIO25_N
29	J14_RIO26_P	63	J14_RIO26_N
30	J14_RIO27_P	64	J14_RIO27_N
31	J14_RIO28_P	65	J14_RIO28_N
32	J14_RIO29_P	66	J14_RIO29_N
33	J14_RIO30_P	67	J14_RIO30_N
34	J14_RIO31_P	68	J14_RIO31_N

PMC Rear I/O Site 2 Connector – J6

Pin Number	Description	Pin Number	Description
1	J24_RIO0_P	35	J24_RIO0_N
2	J24_RIO1_P	36	J24_RIO1_N
3	J24_RIO2_P	37	J24_RIO2_N
4	J24_RIO3_P	38	J24_RIO3_N
5	J24_RIO4_P	39	J24_RIO4_N
6	J24_RIO5_P	40	J24_RIO5_N
7	J24_RIO6_P	41	J24_RIO6_N
8	J24_RIO7_P	42	J24_RIO7_N
9	J24_RIO8_P	43	J24_RIO8_N
10	J24_RIO9_P	44	J24_RIO9_N
11	J24_RIO10_P	45	J24_RIO10_N
12	GND	46	GND
13	J24_RIO11_P	47	J24_RIO11_N
14	J24_RIO12_P	48	J24_RIO12_N
15	J24_RIO13_P	49	J24_RIO13_N
16	J24_RIO14_P	50	J24_RIO14_N
17	J24_RIO15_P	51	J24_RIO15_N
18	J24_RIO16_P	52	J24_RIO16_N
19	J24_RIO17_P	53	J24_RIO17_N
20	J24_RIO18_P	54	J24_RIO18_N
21	J24_RIO19_P	55	J24_RIO19_N
22	J24_RIO20_P	56	J24_RIO20_N
23	GND	57	GND
24	J24_RIO21_P	58	J24_RIO21_N
25	J24_RIO22_P	59	J24_RIO22_N
26	J24_RIO23_P	60	J24_RIO23_N
27	J24_RIO24_P	61	J24_RIO24_N
28	J24_RIO25_P	62	J24_RIO25_N
29	J24_RIO26_P	63	J24_RIO26_N
30	J24_RIO27_P	64	J24_RIO27_N
31	J24_RIO28_P	65	J24_RIO28_N
32	J24_RIO29_P	66	J24_RIO29_N
33	J24_RIO30_P	67	J24_RIO30_N
34	J24_RIO31_P	68	J24_RIO31_N

PCIe x16 @ x4 Connector – J4

Pin Number	Description	Pin Number	Description
A1	GND	B1	+12V
A2	+12V	B2	+12V
A3	+12V	B3	+12V
A4	GND	B4	GND
A5	NC	B5	NC
A6	NC	B6	NC
A7	NC	B7	GND
A8	NC	B8	+3.3V
A9	+3.3V	B9	NC
A10	+3.3V	B10	+3.3V
A11	PLT_RST#	B11	WAKE#
A12	GND	B12	NC
A13	CLK_PEG_P	B13	GND
A14	CLK_PEG_N	B14	PCIE0_TX_P
A15	GND	B15	PCIE0_TX_N
A16	PCIE0_RX_P	B16	GND
A17	PCIE0_RX_N	B17	NC
A18	GND	B18	GND
A19	NC	B19	PCIE1_TX_P
A20	GND	B20	PCIE1_TX_N
A21	PCIE1_RX_P	B21	GND
A22	PCIE1_RX_N	B22	GND
A23	GND	B23	PCIE2_TX_P
A24	GND	B24	PCIE2_TX_N
A25	PCIE2_RX_P	B25	GND
A26	PCIE2_RX_N	B26	GND
A27	GND	B27	PCIE3_TX_P
A28	GND	B28	PCIE3_TX_N
A29	PCIE3_RX_P	B29	GND
A30	PCIE3_RX_N	B30	NC

Note: Only top 4 lanes are connected. All other pin's A31-A32 & B30-B82 are NC with the exception of grounds.

Dual USB 2.0 Port 1 & 2 Connector – J9

Pin Number	Description
1	USB4_+5V
2	USB4_N
3	USB4_P
4	GND
5	USB5_+5V
6	USB5_N
7	USB5_P
8	GND

Dual USB 3.0 Port 1 & 2 Connector – J11 (See note, page 53)

Pin Number	Description
1	USB0_+5V
2	USB0_N
3	USB0_P
4	GND
5	USB0_SSRX_N
6	USB0_SSRX_P
7	GND
8	USB0_SSTX_N
9	USB0_SSTX_P
10	USB1_+5V
11	USB1_N
12	USB1_P
13	GND
14	USB1_SSRX_N
15	USB1_SSRX_P
16	GND
17	USB1_SSTX_N
18	USB1_SSTX_P

Dual USB 3.0 Port 3 & 4 Connector – J10 (See note, page 53)

Pin Number	Description
1	USB2_+5V
2	USB2_N
3	USB2_P
4	GND
5	USB2_SSRX_N
6	USB2_SSRX_P
7	GND
8	USB2_SSTX_N
9	USB2_SSTX_P
10	USB3_+5V
11	USB3_N
12	USB3_P
13	GND
14	USB3_SSRX_N
15	USB3_SSRX_P
16	GND
17	USB3_SSTX_N
18	USB3_SSTX_P

SATA 0 Connector – J5

Signal

Pin Number	Description
1	GND
2	SATA0_TX+
3	SATA0_TX-
4	GND
5	SATA0_RX-
6	SATA0_RX+
7	GND

Power

Pin Number	Description
8	+3.3V
9	+3.3V
10	+3.3V
11	GND
12	GND
13	GND
14	+5V
15	+5V
16	+5V
17	GND
18	NC
19	GND
20	+12V
21	+12V
22	+12V

SATA 1 Connector – J8

Signal

Pin Number	Description
1	GND
2	SATA1_TX+
3	SATA1_TX-
4	GND
5	SATA1_RX-
6	SATA1_RX+
7	GND

Power

Pin Number	Description
8	+3.3V
9	+3.3V
10	+3.3V
11	GND
12	GND
13	GND
14	+5V
15	+5V
16	+5V
17	GND
18	NC
19	GND
20	+12V
21	+12V
22	+12V

LAN 1 Connector – J12

Pin Number	Description
1	GND
2	LAN_MDI2_N
3	LAN_MDI2_P
4	LAN_MDI1_P
5	LAN_MDI1_N
6	GND
7	GND
8	LAN_MDI3_P
9	LAN_MDI3_N
10	LAN_MDI0_N
11	LAN_MDI0_P
12	GND
13	LAN_LINK#
14	+3.3V
15	+3.3V
16	LAN_ACT#

LAN 2 Connector – J13

Pin Number	Description
1	GND
2	LAN1_MDI2_N
3	LAN1_MDI2_P
4	LAN1_MDI1_P
5	LAN1_MDI1_N
6	GND
7	GND
8	LAN1_MDI3_P
9	LAN1_MDI3_N
10	LAN1_MDI0_N
11	LAN1_MDI0_P
12	GND
13	LAN1_LINK#
14	+3.3V
15	+3.3V
16	LAN1_ACT#

Dual Audio (Line In/ Line Out) Connector – J15

Pin Number	Description
5U	AUDIO_GND
1U	LINE_IN_R
4U	LINE_IN_L
5L	AUDIO_GND
1L	LINE_OUT_L
4L	LINE_OUT_R

Line IN = TOP
Line OUT = Bottom

GPIO Header – P15

Pin Number	Description
1	GPI_0
2	GPO_0
3	GPI_1
4	GPO_1
5	GPI_2
6	GPO_2
7	GPI_3
8	GPO_3

LPC Bus Header – P16

Pin Number	Description
1	LPC_CLK
2	GND
3	LPC_FRAME#
4	NC
5	PLT_RST#
6	+5V
7	LPC_AD3
8	LPC_AD2
9	+3.3V
10	LPC_AD1
11	LPC_AD0
12	GND
13	Reserved
14	Reserved
15	+3.3V
16	LPC_SERIRQ
17	GND
18	NC
19	SUS_STAT
20	DRQ Jumper

Miscellaneous I/O Header 1 – P14

Pin Number	Description
1	EDP_VDDEN
2	THRMTRIP3#
3	EDP_BKLTCTL
4	COM_THRM#
5	EDP_BKLTEN
6	WDT0
7	Reserved
8	BATLOW#

Miscellaneous I/O Header 2 – P13

Pin Number	Description
1	SLP_S5#
2	WAKE1#
3	SLP_S4#
4	EXCD0_PERST#
5	SLP_S3#
6	EXCD0_CPPE#
7	NC
8	SPKR

Fan Power – P2

Pin Number	Description
1	GND
2	+12V
3	NC

Fan Power – P3

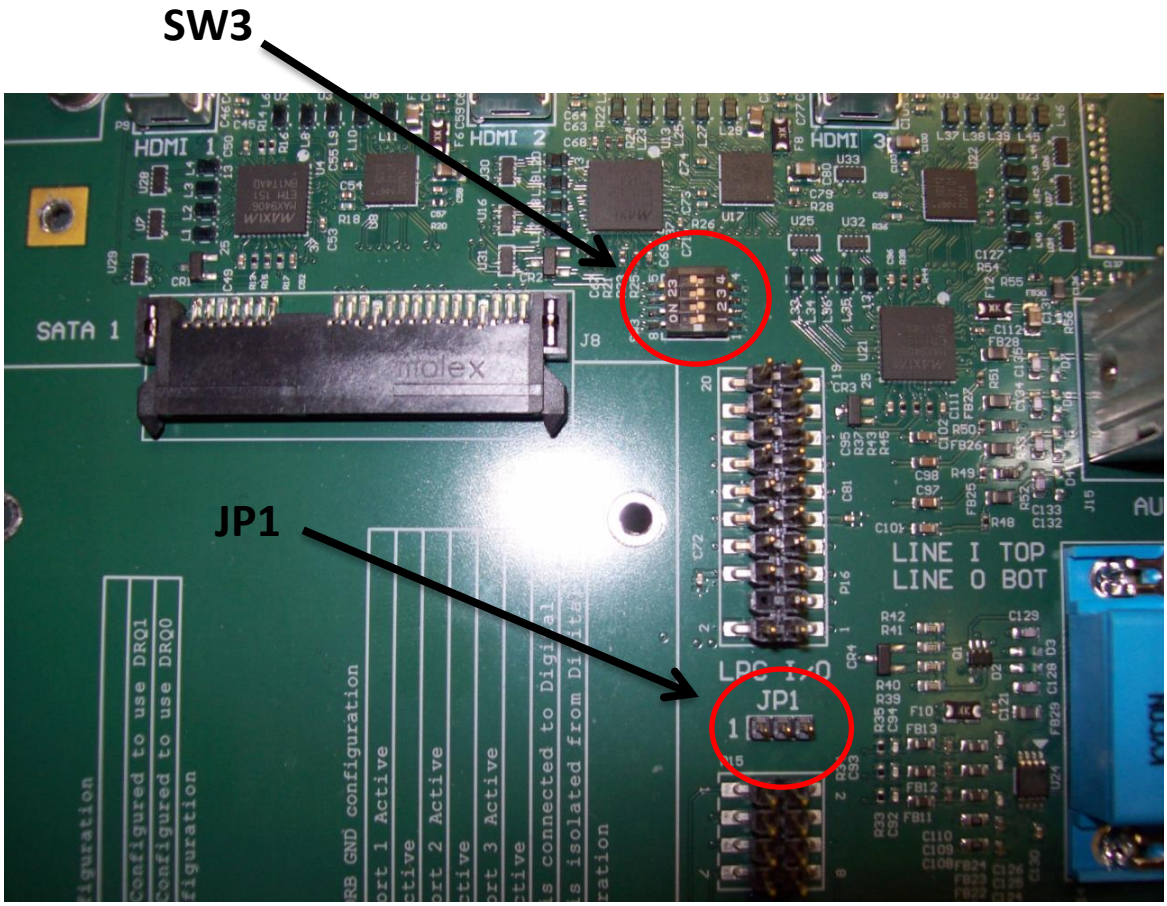
Pin Number	Description
1	GND
2	+12V
3	NC

7.0 Jumpers / Switch Settings

The following describes the ACEX-4600-EDK jumpers and switches with their default positions and functions.

JP1 (LPC Bus IRQ Configuration)	**1-2 (default)**	**(LPC_DRQ1)** Configured to use DRQ1
	2-3	**(LPC_DRQ0)** Configured to use DRQ0

SW3 (Display Output and ORB_GND configuration)	SW3-1	ON	DisplayPort 1 Active
		OFF	HDMI 1 Active
	SW3-2	ON	DisplayPort 2 Active
		OFF	HDMI 2 Active
	SW3-3	ON	DisplayPort 3 Active
		OFF	HDMI 3 Active
	SW3-4	ON	ORB_GND is connected to Digital GND
		OFF	ORB_GND is isolated from Digital GND



8.0 Handling

Modules should be handled in ESD-safe work areas in order to prevent damage to sensitive components from electrostatic discharges. These areas must be designed and maintained to prevent ESD damage.

ESD Safe Work Area Guidelines

1. Module should be handled at properly designated work areas only.
2. Designated ESD safe work areas must be checked periodically to ensure their continued safety from ESD. The areas should be monitored for the following:
    a. Proper grounding methods.
    b. Static dissipation of work surfaces.
    c. Static dissipation of floor surfaces.
    d. Operation of ion blowers and ion air guns.
3. Designated work areas must be kept free of static generating materials such as Styrofoam, vinyl, plastic, fabrics or any other static generating materials.
4. Work areas must be kept clean and neat in order to prevent contamination of the work area.
5. Modules should be handled by the edges. Avoid touching the component leads.

    NOTE: *When not installed in a system, modules must be enclosed in shielded bags or boxes. There are three types of ESD protective enclosure materials this module was shipped in an approved ESD bag.*
6. Whenever handling the module the operator must be properly grounded by one of the following:
    a. Wearing a wrist strap connected to earth ground.
    b. Wearing heel grounders and have both feet on a static dissipative floor surface.
7. Stacking of modules should be avoided to prevent physical damage.

9.0 Service and Repair

Service and Repair Assistance

Surface-Mounted Technology (SMT) boards are generally difficult to repair. It is highly recommended that a non-functioning board be returned to Acromag for repair. The board can be damaged unless special SMT repair and service tools are used. Further, Acromag has automated test equipment that thoroughly checks the performance of each board.

Please refer to Acromag's Service Policy Bulletin or contact Acromag for complete details on how to obtain parts and repair.

Preliminary Service Procedure

Before beginning repair, be sure that all of the procedures in section **Error! Reference source not found.Error! Reference source not fo und.** have been followed. Also, refer to the documentation of your carrier board to verify that it is correctly configured. Verify that there are no blown fuses. Replacement of the carrier and/or IP with one that is known to work correctly is a good technique to isolate a faulty board.

CAUTION: POWER MUST BE TURNED OFF BEFORE REMOVING OR INSERTING BOARDS

Where to Get Help

If you continue to have problems, your next step should be to visit the Acromag worldwide web site at http://www.acromag.com. Our web site contains the most up-to-date product and software information.

Go to the "Support" tab to access:

- Application Notes
- Frequently Asked Questions (FAQ's)
- Product Knowledge Base
- Tutorials
- Software Updates/Drivers

An email question can also be submitted from within the Knowledge Base or directly from the "Contact Us" tab.

Acromag's application engineers can also be contacted directly for technical assistance via telephone or FAX through the numbers listed below. When needed, complete repair services are also available.

Phone: 248-295-0310
Fax: 248-624-9234
Email: solutions@acromag.com

10.0 Specifications

Physical

Height	68.58 mm (2.700 in)
Width	125 mm (4.921 in)
Board Thickness	2.36 mm (0.093 in)
Unit Weight:	6.20oz (0.1757Kg)

Power Requirements

Minimum Input Voltage +10V DC
Maximum Input Voltage +36V DC

Note: The maximum current supplied to the Carrier/Module cannot exceed 15 Amps.

Environmental

Operating Temperature

Model	*Operating Temperature*
ACEX-4600-EDK **ACEX-4620-DLS** **ACEX-4610-DLS**	***-40℃ to 85℃***

Relative Humidity: 5-95% Non-Condensing.
Storage Temperature: -55°C to 100°C.

Revision History

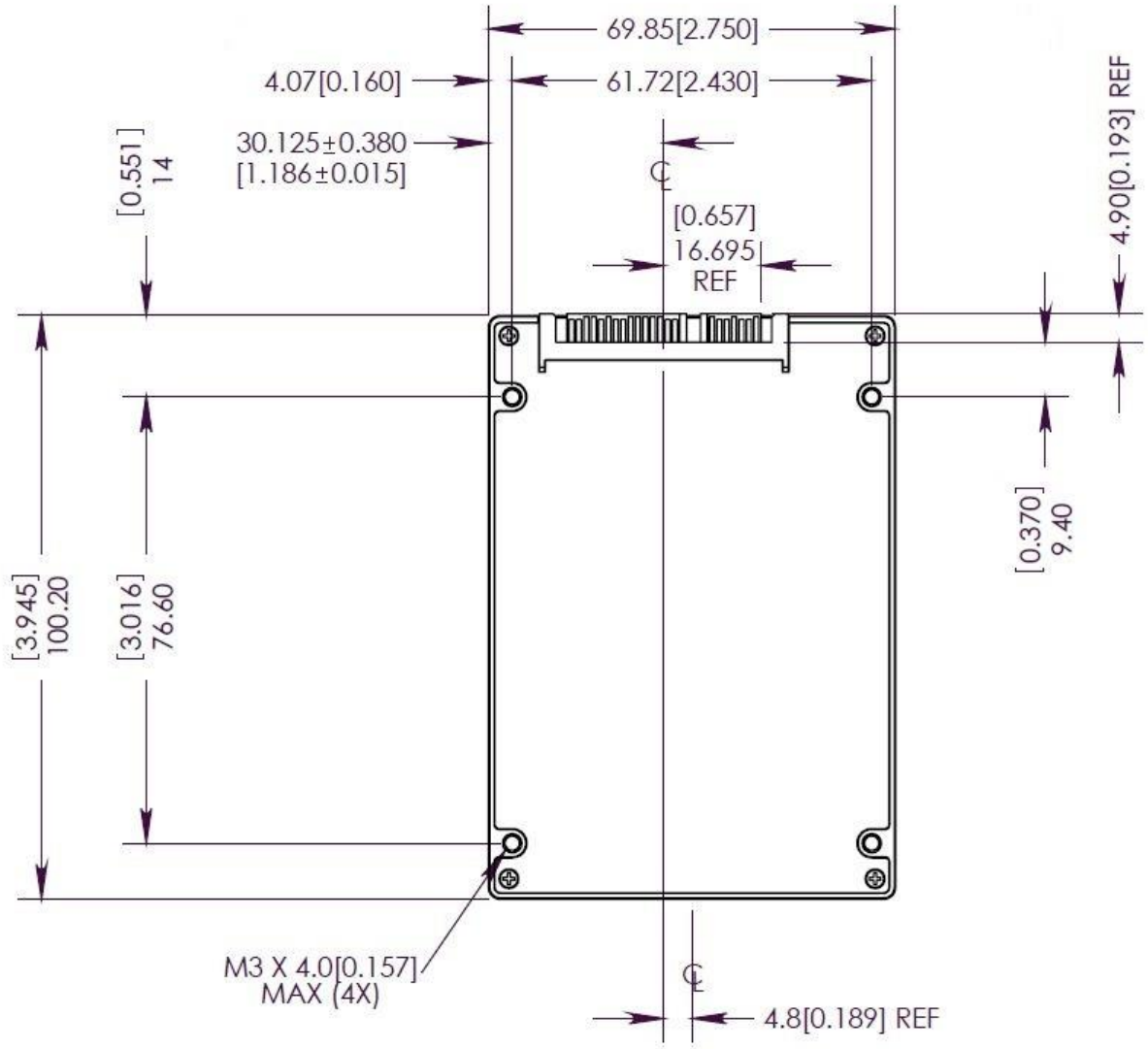
The following table shows the revision history for this document:

Release Date	Version	EGR/DOC	Description of Revision
03 JAN 14	A	MDW/ARP	Initial Acromag release.
18 JUN 14	B	PDG/ARP	Added note for USB 3.0.
07 JAN 15	C	MDW/ARP	Updated ordering information and minor details.
21 NOV 19	D	PDG/MJO	Correct Audio Pin List, L and R out were swapped

Appendix

Drive Compatibility

The ACEX-4600-EDK supports all 2.5" SATA Drives which include SAS, Solid state Drive and rotating media type Drives. The ACEX-4600-EDK also supports Serial ATA II features, including 3.0 Gbps SATA II transfer speeds.



2.5" SATA HDD Mechanical

USB 3.0 Data Rate

Signal conditioning is required to achieve the best data rate. The USB 3.0 signal trace lengths on the EDK are longer than USB 3.0 specification allows for optimal data rate. For best performance use a USB 3.0 Hub with re-drivers.

Certificate of Volatility

Certificate of Volatility				
Acromag Model ACEX-4600-EDK ACEX-4620-DLS ACEX-4610-DLS	Manufacturer: Acromag, Inc. 30765 Wixom Rd Wixom, MI 48393			
Volatile Memory				
Does this product contain Volatile memory (i.e. Memory of whose contents are lost when power is removed) □ Yes ■ No				
Type (SRAM, SDRAM, etc.)	Size:	User Modifiable □ Yes □ No	Function:	Process to Sanitize:
Type (SRAM, SDRAM, etc.)	Size:	User Modifiable □ Yes □ No	Function:	Process to Sanitize:
Non-Volatile Memory				
Does this product contain Non-Volatile memory (i.e. Memory of whose contents is retained when power is removed) □ Yes ■ No				
Type (EEPROM, Flash, etc.)	Size:	User Modifiable □ Yes □ No	Function:	Process to Sanitize:
Type (EEPROM, Flash, etc.)	Size:	User Modifiable □ Yes □ No	Function:	Process to Sanitize:
Type (EEPROM, Flash, etc.)	Size:	User Modifiable □ Yes □ No	Function:	Process to Sanitize:
Other capabilities: Does device contain media storage capabilities: □ Yes ■ No If yes explain Is this device capable of wireless transmission: □ Yes ■ No If yes explain				
Acromag Representative				
Name: Joseph Primeau	Title: Dir. of Sales and Marketing	Email: solutions@acromag.com	Office Phone: 248-624-1541	Office Fax: 248-624-9234

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