

IP315

Backplane for PICMG 1.3

User's Manual

Version 1.0
(JAN 2020)



Copyright

© 2019 IBASE Technology, Inc. All rights reserved.

No part of this publication may be reproduced, copied, stored in a retrieval system, translated into any language or transmitted in any form or by any means, electronic, mechanical, photocopying, or otherwise, without the prior written consent of IBASE Technology, Inc. (hereinafter referred to as “IBASE”).

Disclaimer

IBASE reserves the right to make changes and improvements to the products described in this document without prior notice. Every effort has been made to ensure the information in the document is correct; however, IBASE does not guarantee this document is error-free.

IBASE assumes no liability for incidental or consequential damages arising from misapplication or inability to use the product or the information contained herein, nor for any infringements of rights of third parties, which may result from its use.

Trademarks

All the trademarks, registrations and brands mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective owners.

Compliance



In a domestic environment, this product may cause radio interference in which case users may be required to take adequate measures.



This product has been tested and found to comply with the limits for a Class A device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications.

WEEE



This product must not be disposed of as normal household waste, in accordance with the EU directive of for waste electrical and electronic equipment (WEEE - 2012/19/EU). Instead, it should be disposed of by returning it to a municipal recycling collection point. Check local regulations for disposal of electronic products.

Green IBASE



This product is compliant with the current RoHS restrictions and prohibits use of the following substances in concentrations exceeding 0.1% by weight (1000 ppm) except for cadmium, limited to 0.01% by weight (100 ppm).

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent chromium (Cr6+)
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ether (PBDE)

Important Safety Information

Carefully read the precautions before using the board.

Environmental conditions:

- Use this product in environments with ambient temperatures between -20°C and 70°C .
- Do not leave this product in an environment where the storage temperature may be below -40°C or above 90°C . To prevent from damages, the product must be used in a controlled environment.

Care for your iBASE products:

- Before cleaning the PCB, unplug all cables and remove the battery.
- Clean the PCB with a circuit board cleaner, degreaser, or use cotton swabs and alcohol.
- Vacuum the dust with a computer vacuum cleaner to prevent the fan from being clogged.



WARNING

Attention during use:

- Do not use this product near water.
- Do not spill water or any other liquids on this product.
- Do not place heavy objects on the top of this product.

Anti-static precautions

- Wear an anti-static wrist strap to avoid electrostatic discharge.
- Place the PCB on an anti-static kit or mat.
- Hold the edges of PCB when handling.
- Touch the edges of non-metallic components of the product instead of the surface of the PCB.
- Ground yourself by touching a grounded conductor or a grounded bit of metal frequently to discharge any static.



CAUTION

Danger of explosion if the internal lithium-ion battery is replaced by an incorrect type. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions or recycle them at a local recycling facility or battery collection point.

Warranty Policy

- **IBASE standard products:**

24-month (2-year) warranty from the date of shipment. If the date of shipment cannot be ascertained, the product serial numbers can be used to determine the approximate shipping date.

- **3rd-party parts:**

12-month (1-year) warranty from delivery for the 3rd-party parts that are not manufactured by IBASE, such as CPU, CPU cooler, memory, storage devices, power adapter, panel and touchscreen.

- * PRODUCTS, HOWEVER, THAT FAIL DUE TO MISUSE, ACCIDENT, IMPROPER INSTALLATION OR UNAUTHORIZED REPAIR SHALL BE TREATED AS OUT OF WARRANTY AND CUSTOMERS SHALL BE BILLED FOR REPAIR AND SHIPPING CHARGES.

Technical Support & Services

1. Visit the IBASE website at www.ibase.com.tw to find the latest information about the product.
2. If you need any further assistance from your distributor or sales representative, prepare the following information of your product and elaborate upon the problem.
 - Product model name
 - Product serial number
 - Detailed description of the problem
 - The error messages in text or in screenshots if there is any
 - The arrangement of the peripherals
 - Software in use (such as OS and application software, including the version numbers)
3. If repair service is required, you can download the RMA form at <http://www.ibase.com.tw/english/Supports/RMAService/>. Fill out the form and contact your distributor or sales representative.

Table of Contents

Chapter 1	General Information	1
1.1	Introduction	2
1.2	Features	2
1.3	Specifications	3
1.4	Overview	錯誤! 尚未定義書籤。
1.5	Dimensions	5
Chapter 2	Hardware Configuration	6
2.1	Setting the Jumpers	7
2.2	Connector Locations on IP315	8
2.3	Jumpers Quick Reference	9
2.3.1	USB 2.0 Connector (USB1,USB2).....	9
2.3.2	ATX Power ON Pin Header (J3)	9
2.3.3	Reset Pin Header (J4).....	9
2.4	Connectors Quick Reference.....	11
2.4.1	ATX Power Connector (J1).....	11
2.4.2	ATX 12V Power Connector (ATX_12V_2X1)	12
2.4.3	System Fan Power Connector (FAN1,FAN2)	12
2.4.4	SHB Express™ Connector Pinout(BP_CONNA1, BP_CONNB1, BP_CONNC1,BP_CONND1).....	12
2.4.5	PCI Routing (PCI1,PCI2,PCI3,PCI4)	14

This page is intentionally left blank.

Chapter 1

General Information

The information provided in this chapter includes:

- Features
- Specifications
- Board Picture
- Board Dimensions

1.1 Introduction

IP315 is a Backplane for PICMG 1.3 CPU module. Measuring 310 mm x 327 mm (12.2" x 12.9"), it provides expansion slots connectors including one PICMG 1.3 slot, one PCIe(16x) slot (x8 signal), two PCIe(8x) slot (x4 signal), four PCIe(4x) slot (x1 signal), four PCI slot, two USB 2.0, and two SATA3.0.

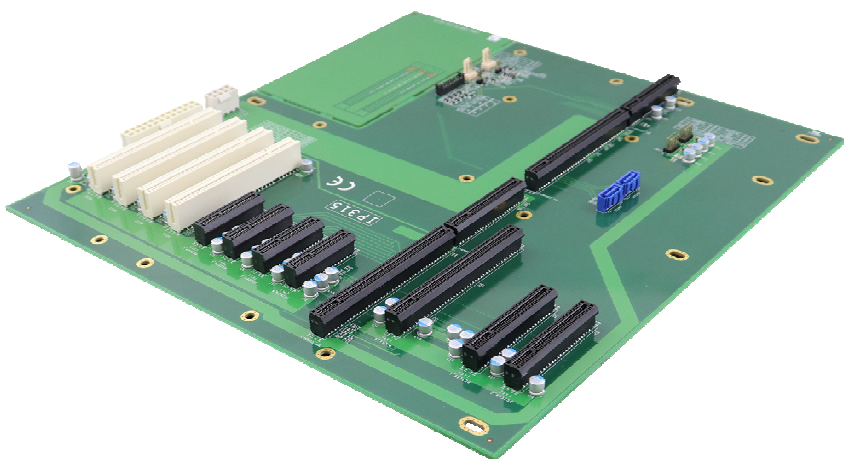


Photo of IP315

1.2 Features

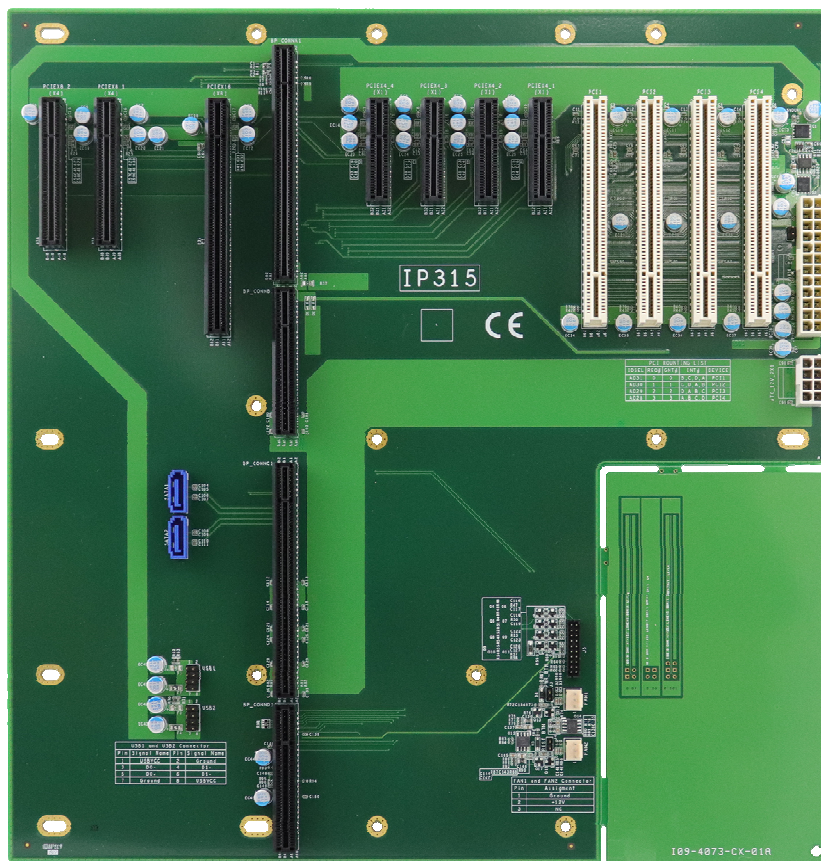
- 1 x PICMG 1.3 slot
- 1 x PCIe(16x) slot (x8 signal)
- 2 x PCIe(8x) slot (x4 signal)
- 4 x PCIe(4x) slot (x1 signal)
- 4 x PCI slot
- 2 x USB 2.0 (2x 4-pin header)
- 2 x SATA3.0,

1.3 Specifications

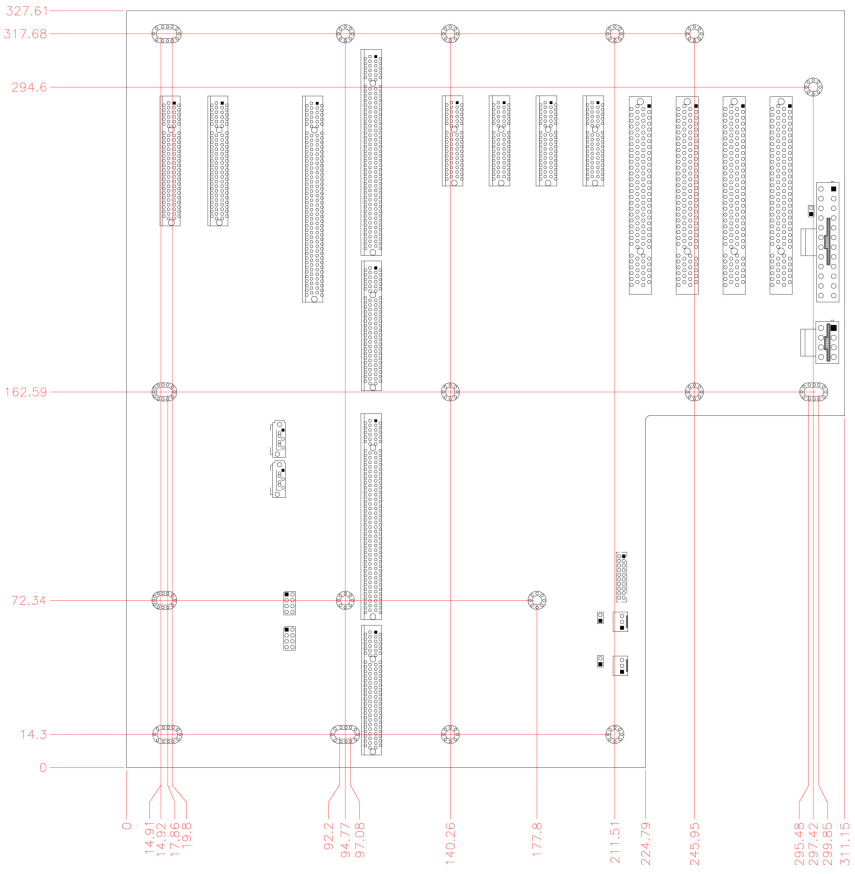
Product Name	IP315
Form Factor	Backplane for PICMG 1.3 CPU Card
Onboard Slots	<ul style="list-style-type: none"> - PICMG 1.3 slot x 1 - PCIe(16x) slot x 1 (x8 signal) - PCIe(8x) slot x 2 (x4 signal) - PCIe(4x) slot x 4 (x1 signal) - PCI slot x 4
Onboard header/Connector	<ul style="list-style-type: none"> - 2x 4-pin header x 2 for USB 2.0 ports*4 - 2x 10 pins box header x 1 (Reserved) - 2x SATA3.0 connector - 2x 4-pin box header
Power Connector	24-pin ATX power connector x1 8pin power connector x 1(for 12V) 3-pin type fan connector x 2
Operating Temperature	0°C ~ 60°C (32°F ~140°F)
Others	Validated with IB995
RoHS2.0	Yes
PCB Layer	4 Layers
Board Size	310mm x 327mm (12.2" x 12.9")

1.4 Board Picture

Top View



1.5 Dimensions



Chapter 2

Hardware Configuration

This section provides information on jumper settings and connectors on the board in order to set up a workable system.

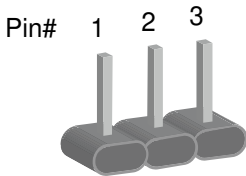
- Jumper and connector locations
- Jumper settings and information of connectors

2.1 Setting the Jumpers

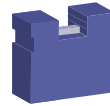
Set up and configure your board by using jumpers for various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your use.

2.2.1 How to Set Jumpers

Jumpers are short-length conductors consisting of several metal pins with a non-conductive base mounted on the circuit board. Jumper caps are used to have the functions and features enabled or disabled. If a jumper has 3 pins, you can connect either PIN1 to PIN2 or PIN2 to PIN3 by shorting.

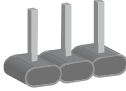
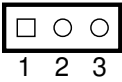
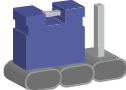
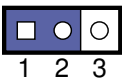
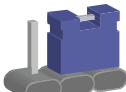
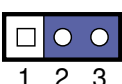


A 3-pin jumper



A jumper cap

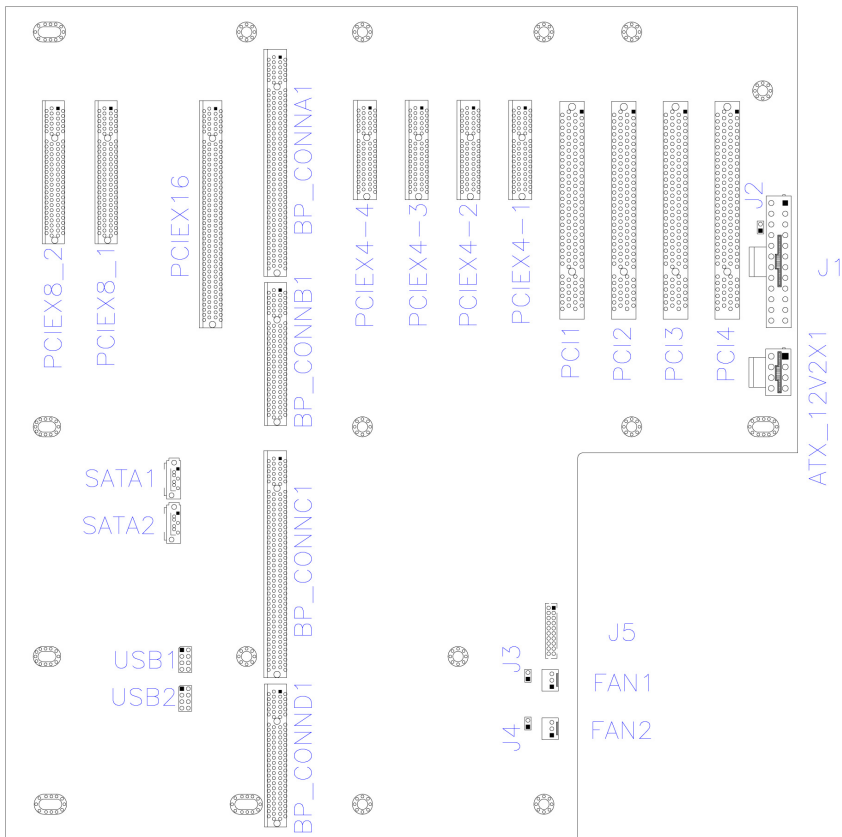
Refer to the illustration below to set jumpers.

Pin closed	Oblique view	Schematic illustration
Open		
1-2		
2-3		

When two pins of a jumper are encased in a jumper cap, this jumper is **closed**, i.e. turned **On**.

When a jumper cap is removed from two jumper pins, this jumper is **open**, i.e. turned **Off**.

2.2 Connector Locations on IP315



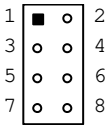
Board diagram of IP315

2.3 Jumpers Quick Reference

Function	Jumper Name
USB 2.0 Connector	USB1,USB2
ATX Power ON Pin Header	J3
Reset Pin Header	J4

2.3.1 USB 2.0 Connector (USB1, USB2)

Pin	Signal Name	Pin	Signal Name
1	VCC	2	Ground
3	D0-	4	D1+
5	D0+	6	D1-
7	Ground	8	VCC



2.3.2 ATX Power ON Pin Header (J3)



The 2 pins make an “ATX Power Supply On/Off Switch” for the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will power off the system.

2.3.3 Reset Pin Header (J4)

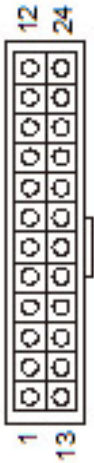


The reset switch allows you to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.

2.4 Connectors Quick Reference

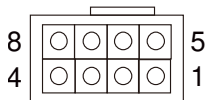
Function	Connector Name
ATX Power Connector	J1
ATX 12V Power Connector	ATX_12V_2X1
System Fan Power Connector	FAN1,FAN2
SHB Express™ Connector Pinout	BP_CONNA1, BP_CONNB1, BP_CONNC1, BP_CONND1
PCI Routing	(PCI1,PCI2,PCI3,PCI4)

2.4.1 ATX Power Connector (J1)



Pin	Signal Name	Pin	Signal Name
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	Ground	15	Ground
4	+5V	16	PS-ON
5	Ground	17	Ground
6	+5V	18	Ground
7	Ground	19	Ground
8	Power good	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	3.3V	24	Ground

2.4.2 ATX 12V Power Connector (ATX_12V_2X1)



Pin	Signal Name	Pin	Signal Name
1	Ground	5	+12V
2	Ground	6	+12V
3	Ground	7	+12V
4	Ground	8	+12V

2.4.3 System Fan Power Connector (FAN1, FAN2)



Pin	Signal Name	Pin	Signal Name
1	Ground	3	NC
2	+12V		

2.4.4 SHB Express™ Connector Pinout(BP_CONNA1, BP_CONNB1, BP_CONNC1,BP_CONND1)

x16 PCIe Connector A			x8 PCIe Connector B			x16 PCIe Connector C			x8 PCIe Connector D		
Pin	Side B	Side A	Pin	Side B	Side A	Pin	Side B	Side A	Pin	Side B	Side A
1	SMCLK	SMDAT	1	+5Vaux	+5Vaux	1	1USB0P	GND	1	1INTB#	INTA#
2	GND	GND	2	GND	RSVD	2	USB0N	GND	2	INTD#	INTC#
3	TDI(NC)	TCK(NC)	3	a_PETp8 GND	a_PETp8 GND	3	GND	USB1P	3	GND	VIO(NC)
4	TDO(NC)	TMS(NC)	4	a_PETn8 GND	a_PETn8 GND	4	GND	USB1N	4	REQ3#	GNT3#
5	TRST#(NC)	WAKE#	5	GND	a_PERp8	5	USB2P	GND	5	REQ2#	GNT2#
6	PWRBT#	PME#(NC)	6	GND	a_PERn8	6	USB2N	GND	6	PCI_RST#	GNT1#
7	PWRGD	PSON#	7	a_PETp9	GND	7	GND	USB3P	7	REQ1#	GNT0#
8	SHB_RS T#	PERST#	8	a_PETn9	GND	8	GND	USB3N	8	REQ0#	SERR#
9	CFG0	CFG1(NC)	9	GND	a_PERp9	9	USBOC0#	GND	9	SDONE	+3.3V
10	CFG2	CFG3	10	GND	a_PERn9	10	GND	USBOC1#	10	GND	CLKFI(NC)
11	RSVD	GND	11	RSVD	GND	11	USBOC2#	GND	11	CLKFO (NC)	GND
12	GND	RSVD	12	GND	RSVD	12	GND	USBOC3#	12	CLKC	CLKD
13	b_PETp0	GND	13	a_PETp10 GND	a_PETp10 GND	13	SATAHT0 P	GND	13	GND	+3.3V
14	b_PETn0	GND	14	a_PETn10 GND	a_PETn10 GND	14	SATAHT0 N_GND	SATAHT0 N_GND	14	CLKA	CLKB
15	GND	b_PERp0	15	GND	a_PERp10	15	GND	SATAHR0 P	15	+3.3V	GND

16	GND	b_PERn0	16	GND	a_PERn10	16	GND	SATAHR0 N	16	AD31	PME#
17	b_PETp1	GND	17	a_PETp1 1_GND	a_PETp11 GND	17	SATAHT1 P	GND	17	AD29	+3.3V
18	b_PETn1	GND	18	a_PETn1 1_GND	a_PETn11 GND	18	SATAHT1 N_GND	SATAHT1 N_GND	18	M66EN	AD30
19	GND	b_PERp1	19	GND	a_PERp11	19	GND	SATAHR1 P	19	AD27	AD28
20	GND	b_PERn1	20	GND	a_PERn11	20	GND	SATAHR1 N	20	AD25	GND
21	b_PETp2	GND	21	a_PETp1 2_GND	a_PETp12 GND	21	a_MDI0p (NC)	GND	21	GND	AD26
22	b_PETn2	GND	22	a_PETn1 2_GND	a_PETn12 GND	22	a_MDI0n (NC)	GND	22	C/BE3#	AD24
23	GND	b_PERp2	23	GND	a_PERp12	23	GND	a_MDI1p (NC)	23	AD23	+3.3V
24	GND	b_PERn2	24	GND	a_PERn12	24	GND	a_MDI1n (NC)	24	GND	AD22
25	b_PETp3	GND	25	a_PETp1 3_GND	a_PETp13 GND	25	a_MDI2p (NC)	GND	25	AD21	AD20
26	b_PETn3	GND	26	a_PETn1 3_GND	a_PETn13 GND	26	a_MDI2n (NC)	GND	26	AD19	PCIXCAP
27	GND	b_PERp3	27	GND	a_PERp13	27	GND	a_MDI3p (NC)	27	+5V	AD18
28	GND	b_PERn3	28	GND	a_PERn13	28	GND	a_MDI3n (NC)	28	AD17	AD16
29	REFCLK 0+	GND	29	a_PETp1 4_GND	a_PETp14 GND	29	IPMB_CL (NC)	GND	29	C/BE2#	GND
30	REFCLK 0-	GND	30	a_PETn1 4_GND	a_PETn14 GND	30	IPMB_DA (NC)	GND	30	GND	FRAME#
31	GND	REFCLK1+	31	GND	a_PERp14	31	GA0(NC)	GA1(NC)	31	IRDY#	TRDY#
32	RSVD-G	REFCLK1-	32	GND	a_PERn14	32	GA2(NC)	GA4(NC)	32	DEVSEL#	+5V
33	REFCLK 2+	GND	33	a_PETp1 5_GND	a_PETp15 GND	33	GA3(NC)	GA5(NC)	33	LOCK#	STOP#
34	REFCLK 2-	GND	34	a_PETn1 5_GND	a_PETn15 GND	34	b_MDI0p (NC)	GND	34	PERR#	GND
35	GND	REFCLK3+	35	GND	a_PERp15	35	b_MDI0n (NC)	GND	35	GND	C/BE1#
36	RSVD-G	REFCLK3-	36	GND	a_PERn15	36	GND	b_MDI1p (NC)	36	PAR	AD14
37	REFCLK 4+	GND	37	RSVD	GND	37	GND	b_MDI1n (NC)	37	SB0#	GND
38	REFCLK 4-	GND	38	RSVD	RSVD	38	b_MDI2p (NC)	GND	38	GND	AD12
39	GND	REFCLK5+	39	GND	GND	39	b_MDI2n (NC)	GND	39	AD15	AD10
40	RSVD-G	REFCLK5-	40	GND	GND	40	GND	b_MDI3p (NC)	40	AD13	GND
41	REFCLK 6+	GND	41	GND	GND	41	GND	b_MDI3n (NC)	41	GND	AD09
42	REFCLK 6-	GND	42	GND	GND	42	+3.3V	+3.3V	42	AD11	C/BE0#
43	GND	REFCLK7+ (NC)	43	GND	GND	43	+3.3V	+3.3V	43	AD08	GND
44	GND	REFCLK7- (NC)	44	+12V	+12V	44	+3.3V	+3.3V	44	GND	AD06
45	a_PETp0	GND	45	+12V	+12V	45	+3.3V	+3.3V	45	AD07	AD05
46	a_PETn0	GND	46	+12V	+12V	46	+3.3V	+3.3V	46	AD04	GND
47	GND	a_PERp0	47	+12V	+12V	47	+3.3V	+3.3V	47	GND	AD02
48	GND	a_PERn0	48	+12V	+12V	48	+3.3V	+3.3V	48	AD03	AD01
49	a_PETp1	GND	49	+12V	+12V	49	+3.3V	+3.3V	49	AD00	GND
50	a_PETn1	GND				50	+3.3V	+3.3V			
51	GND	a_PERp1				51	GND	GND			
52	GND	a_PERn1				52	GND	GND			
53	a_PETp2	GND				53	GND	GND			

54	a_PETn2	GND				54	GND	GND		
55	GND	a_PERp2				55	GND	GND		
56	GND	a_PERn2				56	GND	GND		
57	a_PETp3	GND				57	GND	GND		
58	a_PETn3	GND				58	GND	GND		
59	GND	a_PERp3				59	+5V	+5V		
60	GND	a_PERn				60	+5V	+5V		
61	a_PETp4	GND				61	+5V	+5V		
62	a_PETn4	GND				62	+5V	+5V		
63	GND	a_PERp4				63	GND	GND		
64	GND	a_PERn4				64	GND	GND		
65	a_PETp5	GND				65	GND	GND		
66	a_PETn5	GND				66	GND	GND		
67	GND	a_PERp5				67	GND	GND		
68	GND	a_PERn5				68	GND	GND		
69	a_PETp6	GND				69	GND	GND		
70	a_PETn6	GND				70	GND	GND		
71	GND	a_PERp6				71	GND	GND		
72	GND	a_PERn6				72	GND	GND		
73	a_PETp7	GND				73	+12V	+12V		
74	a_PETn7	GND				74	+12V	+12V		
75	GND	a_PERp7				75	+12V	+12V		
76	GND	a_PERn7				76	+12V	+12V		
77	RSVD	GND				77	+12V	+12V		
78	+3.3V	+3.3V				78	+12V	+12V		
79	+3.3V	+3.3V				79	+12V	+12V		
80	+3.3V	+3.3V				80	+12V	+12V		
81	+3.3V	+3.3V				81	+12V	+12V		
82	+3.3Vaux	+3.3Vaux				82	+12V	+12V		

2.4.5 PCI Routing (PCI1, PCI2, PCI3, PCI4)

PCI Routing List				
IDSEL	REQ#	GNT#	INT#	Device
AD31	0	0	B,C,D,A	PCI1
AD30	1	1	C,D,A,B	PCI2
AD29	2	2	D,A,B,C	PCI3
AD28	3	3	A,B,C,D	PCI4