Active Extenders

PCI532/PCI332

PCIX6432/PCIX6466-3

PMC2PCI-64

Hot Swap PCI Bus Extender Boards

PCI

User Manual

Revision 6.1

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INTRODUCTION

These PCI Active Extender boards allow HOT SWAPPING or LIVE INSERTION of Unit-Under-Test into PCI bus. The PCI extender series supports the entire range of the PCI bus (32-bit, 64-bit, 3.3V, 5V, 66 Mhz and even PCI Mezzanine). The “HOT SWAPPING” feature of these extenders eliminates the need for turning the PC Off and On and repeated rebooting. This feature speeds up rework, characterization and test of Unit-Under-Test in the development phase as well as production test. The elimination of the repeated power cycling also helps prolong the system life and the hard disc operation. These Active Extenders use a new CMOS technology for switching the signals On and Off (known as "Quick Switch"). These switches have a very fast propagation delay, typically about 250 picoseconds, resulting in no timing degradation between the bus and the Unit- Under-Test. The switches are also bidirectional allowing the entire address range to be supported for both target and master type operation.

These Active Extender boards isolate all signals and voltages to the Unit-Under-Test, when the On-Off switch is in the Off position. All voltages are ramped down and ramped up during the power down and power up in order to eliminate any spikes. During the power down the signals to the bus become isolated as soon as the main supply, +5V, reaches down to +3.0V. During the power up the signals stay isolated until the main voltage is at least +3.0V.

These Active Extenders also allow for voltage margin testing of the Unit-Under-Test by allowing external power supplies to replace the bus supplies as inputs to the Unit-Under-Test.

An on-board current-to-voltage converters allow measurement of the current drawn by the UUT at any time, using just a voltmeter at the appropriate test points.

INSTALLATION

To install the Active Extender board, make sure to turn the PC power off. Insert the Active Extender in any available slot and secure it's bracket to the main chassis. You are now ready to use your new extender board.

NOTE: If you are planning to use an external I/O signal to control the board, the On-Off switch must be in the Off position and the dip switch must be in the CLOSED (ON) position.

OPERATION

ON-OFF

To insert or remove any Unit-Under-Test into and out of the Active Extender, make sure that the Active Extender is turned Off, if the PC power is to stay On. There are two ways to turn the Active Extender power On and Off. 1) The mechanical toggle switch. 2) External control signal connected to JP3.

External control can be used if remote controlling is desired for turning the power On and Off. Leave the mechanical switch in the Off position, then use a CMOS or TTL level signal to control turning the power On via JP3. The left connector of JP3 is ground and the right connector is the control signal. A Low level, less than 1.5V , will turn the switch ON.

Software control is also possible using the external control with a custom interfacing between the parallel port and the board. Consult the factory if you need additional help for implementing this feature.

NOTE: During the power Off, all signals become isolated between the bus and the Unit-Under-Test when the +5V to the Unit-Under-Test becomes less than 3.0V.

NOTE: If you are running a software that relies on a response from the Unit-Under-Test, do not turn off the Active Extender board unless the handshaking has taken place, Otherwise you may experience a system hang-up. It may be a good practice to stop the software from running, before isolating the power and the signals to the Unit-Under-Test.

POWER-ON RESET

Each time the Active Extender board is turned Off and then On, reset signal will be generated from the extender to the Unit-Under-Test automatically. The duration of this reset is 200 milliseconds. The reset to the Unit-Under-Test is also activated every time there is a reset from the bus.

BANK SWITCHES

In a normal operation, the bank switches should be left in the closed position. In this case when the power to the extender is turned on, all of the bus signals will be active to and from the Unit-Under-Test. However, when there is a problem with the signals from the Unit-Under-Test, the signals can be activated in a smaller group.

NOTE: The bank switch number 1 controls U1, bank switch 2 controls U2, ... , and the final bank switch 8 controls U8. For 64 bit extenders, switch 9 controls the ICs U12 and U13 (all 64 bit signals on the B side) and switch 10 controls ICs U14 and U15 (all 64 bit signals on the A side). For the signal names and grouping by the U number see the section on the auxiliary pinout.

CURRENT MEASUREMENT

When using the PCI532, the user can measure the +5V current being drawn by the Unit-Under-Test, by just connecting a voltmeter to J3.

When using the PMC2PCI and PCIX6432 (Rev. C and below), the user can measure the +5V current being drawn by the UUT using a voltmeter at J3, the current draw for the +12V can be measured by using a voltage meter at J4 and the current draw for the +3.3V can be measured using voltmeter at J5.

When using the PCIX6432 (Rev. D or higher), the user can measure the current draw on the +5V using a voltmeter between J3.1 and J3.2. To measure the current draw on the +3.3V measure using a voltmeter between J3.1 and J3.3, and the measure the current draw on the +12V, measure using a voltmeter between J3.1 and J3.4.

Every Volt read by the meter represents One Amp. So if the voltmeter reads 0.35, it represents that the Unit-Under-Test is drawing 350 milliamps of current from +5V supply.

NOTE: If the VIO and +5V are on the same plane on your board, you need to remove JP10 jumper, located on the extender board, in order to get an accurate current measurement.

CURRENT LIMIT CIRCUITRY

Red LEDs, when illuminated, indicate a short or a very low voltage at the output for their corresponding voltages. Green LEDs when illuminated, indicate voltages at their corresponding outputs. In the case of the +5V short from the Unit-Under-Test, the Active Extender will automatically switch the current limit down to about 200 milliamps and will continue to deliver this current for troubleshooting purposes. On the PCIX-6432 and PMC2PCI boards this feature is extended to cover the +12V and +3.3V as well. In the case of shorts or excessive current draw for the other voltages the resetable fuses will open up until the problem is corrected.

The current limit value for the +5V is set to 5 Amps with JP8 not installed and 1 Amp with JP8 installed.

CURRENT LIMIT ADJUSTMENTS

FOR PCI532/PCI332

To increase the +5v current limit you must reduce the gain of the current measurement circuitry. Perform the following reworks:

- To change the current limit to 7.5A install a 200k Resistor on top of R19 and R22, this will cause the current measurement circuit gain to be reduced by a factor 0.66 (I.e. 1 volt will represent 1.5 A current draw.)

- To change the current limit to 10A install a 100k Resistor on top of R19 and R22, this will cause the current measurement circuit gain to be reduced by a factor 0.50 (I.e. 1 volt will represent 2 A current draw.)

To increase the +3.3v current limit you must place an additional fuse across F4 which will increase the current limit to 2A.

FOR PCIX6432/PCIX6466-3 (Rev. C and below)

To increase the +5v current limit you must cut the trace between the pads of R23 and perform the following reworks:

- To change the current limit to 8A install a 10k resistor at location R22 and a 6.2k resistor at location R23. This does not affect the current measurement reading.

- To change the current limit to 10A install a 10k resistor at location R22 and R23. This does not affect the current measurement reading.

To increase the +3.3v current limit must supply the +3.3v from the mother board or an external power supply, and reduce the gain of the current measurement circuitry. Perform the following rework:

- To change the current limit to 5A install a 100k Resistor on top of R33 and R34, this will cause the current measurement circuit gain to be reduced by a factor 0.50 (I.e. 1 volt will represent 2 A current draw.)

FOR PCIX6432/PCIX6466-3 (Rev. D and above)

To increase the +5v current limit you must remove R23 and perform the following reworks:

- To change the current limit to 8A install a 10k resistor at location R22 and a 6.2k resistor at location R23. This does not affect the current measurement reading.

- To change the current limit to 10A install a 10k resistor at location R22 and R23. This does not affect the current measurement reading.

To increase the +3.3v current limit must supply the +3.3v from the mother board or an external power supply, and reduce the gain of the current measurement circuitry. Perform the following rework:

- To change the current limit to 5A remove resistor installed at R60, install a 40K resistor, This does not affect the current measurement reading.

FOR PMC2PCI-64

To increase the +5v current limit you must remove the resistor at R29 and perform the following reworks:

- To change the current limit to 8A install a 10k resistor at location R30 and a 6.2k resistor at location R29. This does not affect the current measurement reading.

- To change the current limit to 10A install a 10k resistor at location R30 and R29. This does not affect the current measurement reading.

To increase the +3.3v current limit you must supply the +3.3v from the mother board or an external power supply, and reduce the gain of the current measurement circuitry. Perform the following reworks:

- To change the current limit to 5A install a 100k Resistor on top of R39 and R38, this will cause the current measurement circuit gain to be reduced by a factor 0.50 (I.e. 1 volt will represent 2 A current draw.)

PMC BUS MODE SIGNALS

The 4 bus mode signals for the PMC bus are selectable on the PMC2PCI-64 extender board. These signals BUSMODE1, BUSMODE2, BUSMODE3 and BUSMODE4 are connected to 3 push-on jumpers JPN2, JPN3 and JPN4 respectively. These jumpers are pulled up to VCC with a 10K resistor each. If the jumper is not in place the signal will go HI, and if the jumper is in place the signal will be grounded and represents a LOW.

BUSMODE1 is an output signal, represented by an LED which indicates when this output is low, asserted. When the PMC card asserts this output the LED will illuminate.

For the PMC2PCI-64, the signals PRSNT1# and PRSNT2# on the PCI bus side of the extender board, are hard wired to represent 25 Watts of power requirement, PRSNT1# = GND and PRSNT2# = OPEN.

EXTERNAL POWER SUPPLY

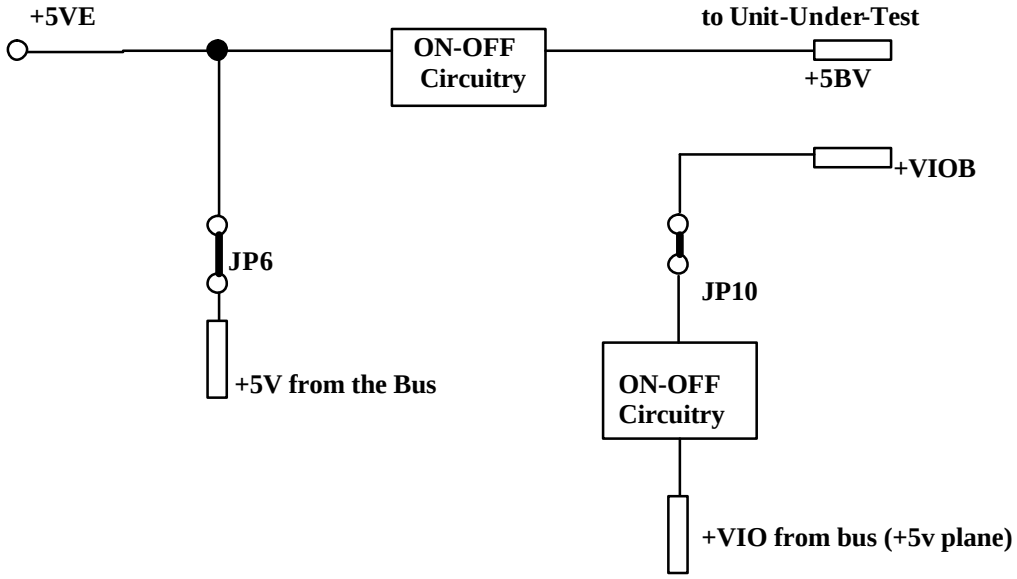
On the PCI532/332 the terminal VINEX is used and J6 terminal is used on other cards for the external power supply input. <u>However remember never to connect any supply to these inputs so long as you have JP4, JP5, JP6 and JP7 installed.</u>

In case you want to use the external supply as an input you must remove these 4 jumpers in order not to cause any conflict with the bus voltages. These jumpers are, however, independent from each other.

For instance if you would want to bring in only a +5V from the external supply and continue to use the bus voltages for +12V, -12V, and +3.3V, you would only need to remove JP6. The list below identifies which jumper is for which supply:

JP4 = +12V, Next to Q5 pin 3 (left side of the board).
JP5 = -12V, Next to Q7 pin 3 (left side of the board).
JP6 = +5V, Next to Q6 pin 3, also JP10 for +VIO, if connected to +5V on your board.
JP7 = +3.3V, Next to Q9 pin 3.

The following diagram indicates the interconnection of the Unit-Under-Test voltages to bus voltages and the external voltages:



As you can see, there will be a conflict in case the external supply is connected while the jumper is still in place. This circuit is repeated for each of the 4 voltages.

If you are using external power supplies do not forget to connect the Ground (GND) signals. If your external power supply outputs are not isolated, make sure the ground of the PC (containing the extender board) and the ground of the power supply are at the same voltage level with respect to a common point, before connecting the GND signal.

Note: Be sure to remove JP10 if the VIO and +5V on your board are on the same voltage plane.

PCI HOT SWAP UTILITIES

The purpose of the utilities is to provide the user with the knowledge and application of Hot Swap utility software and extender cards for purposes of swapping PCI cards while the system power stays on. These utilities will allow the user to perform various functions with the Catalyst Enterprises, PCI Active extenders. The software allows the user to read, save and reload the configuration space data and allow the user to control the power of to the UUT during testing via the test program. For more information see the Hot Swapping PCI Cards document, located on our web site http://www.catalyst-ent.com under the documents page.

5V=>3V TRANSITION

The PCIX6432/PCIX6466-3 and PMC2PCI-64 Active Extender cards are capable of translating the incoming 5-volt signals to 3.3 volts for the UUT without any timing degradation. Therefore cards or components needing 3-volt environment can be tested or operated on a 5-volt system using these extender cards.

If JP9 (PCIX6432/PCIX6466-3) or JPX (PMC2PCI-64) is installed the UUT signals will be the same as the bus signals, most likely 5V. If not installed the signals to the UUT will be translated down to 3.3V.

To use this feature with the PCI532, performing the follow reworks:

- Remove R32
- Install a 191 Ohm resistor at R32

3.3V INPUT

The PCIX6432/PCIX6466-3 Active Extender cards have an on-board 3.3 volt regulator (PCIX6432 Rev C and higher).

JP7 selects the source of the 3.3V to the UUT.

JP7 1-2	3.3V from the on-board regulator.
JP7 2-3	3.3V from the system bus.
JP7 no shunts	3.3V from the external supply.

TABLES

LED TABLE

LED Purpose	PCI532/PCI332	PCIX6432/PCIX6466-3	PMC2PCI-64
+5V Present	D1	D12	D1
+12V Present	D3	D11	D3
-12V Present	D5	D9	D5
VIO Present	D7	D18	D7
+3.3V Present	D12	D13	D12
+12V Problem	D4	D15	D4
-12V Problem	D6	D10	D6
VIO Problem	D8	N/A	D8
+5V Problem	D9	D16	D9
+3.3V Problem	D11	D14	D11
BUS MODE 1	N/A	N/A	D20

JUMPER TABLE

JUMPER Function	PCI532/PCI332	PCIX6432/PCIX6466-3	PMC2PCI-64
Isolate +5V	JP6	JP6	JP6
Isolate +12V	JP4	JP4	JP4
Isolate +3.3V	JP7	JP7 (Change source)*	JP7
Isolate –12V	JP5	JP5	JP5
Isolate VIO	JP10	JP10	JP10
Change +5V Current Limit to 1A	JP8	JP8	JP8
+5V Current Measurement	J3	J3	J3
+12V Current Measurement	N/A	J4	J4
+3.3V Current Measurement	N/A	J5	J5
External Control	JP3	JP3	JP3
5V=> 3V Signal Level Conversion	N/A	JP9	JPX
BUS MODE	N/A	N/A	JPN2, JPN3, JPN4
AUX3.3	N/A	JP12	N/A
PME	N/A	JP11	N/A

AUXILIARY POWER CONNECTOR PIN-OUT

PCI532 and PCI332 power connector for the external power supply is different than the one used for PMC2PCI and PCIX-6432. The PCI532 connector is marked as indicated, but the other connectors are intended for use with ribbon cable and are not marked on the board. The following pin-out can be used if the user wants to arrange his own interface. Please note that each signals is divided and placed symmetrically on both sides of the connector, this will allow the connector to be plugged in either direction and make proper connection.

SIGNAL	PIN		SIGNAL
+5EV	1	2	+5EV
+5EV	3	4	+5EV
+5VS	5	6	+3VS
+3EV	7	8	+3EV
+12VS	9	10	-12EV
N.U.	11	12	SW
-12EV	13	14	+12EV
SW	15	16	N.U.
-12EV	17	18	+12VS
+3EV	19	20	+3EV
+3VS	21	22	+5VS
+5EV	23	24	+5EV
+5EV	25	26	+5EV

The EV signals are the voltage signals, remember not to bring in any external voltages until you reconfigure the jumpers for external supply mode. The VS signals are sense signals for compensating any voltage lose in the cable. The SW is an open collector signal and it is the sane as the switch or jumper JP3 to turn the board on and off.

SPECIFICATIONS: PCI532 & PCI332

Bus:
PCI-532, 32-bit PCI, 5V and universal.
PCI-332, 32-bit PCI, 3V and universal.

Voltages:

Inputs	From PC bus or the external input, configurable by jumpers per voltage.
Input Requirement	5V @ 20 mA, +/- 12V @ 50 mA
Output Ratings	+5V, Jumper selectable to 5 Amp or 1 Amp limit, higher than 5 Amp current limit can be accommodated per user request. +3.3V, +VIO and +/- 12V at 1 Amp.
Drop Across the Switches	40 millivolts drop for every 1 Amp drawn for +5V, +3.3V and +VIO 30 millivolts drop for every 1 Amp drawn for -12V. 30 millivolts drop for every 100 milliampere drawn for +12V

Propagation Delay:
Less than 500 pico-seconds from the PC bus to the UUT.
The switch propagation delay is rated at only 250 pico-seconds.

Controls:

On-Off	SPST switch on-board or the external logic input (system parallel port).
Bus Signals	Bus signals can be turned on all at once or selectively groups of 10 via the dip switch or an external I/O control.

Outputs:

J3	+5V current draw by the UUT can be measured at a two-point terminal, J3, by a voltmeter. Each volt represents 1 Amp.
JP1	JP1-1 to JP1-59, all odd pins on the B side, 100 mil centers.
JP1	JP1-2 to JP1-60, all even pins on the B side, 100 mil centers.
JP2	JP2-1 to JP2-59, all odd pins on the A side, 100 mil centers.
JP2	JP2-2 to JP2-60, all even pins on the A side, 100 mil centers.

NOTE: **The signals at JP1 and JP2 are active when the extender power is on and tri-Stated when the power is off.**

Mechanical Dimensions:

Height	1.6 inches; This dimension is kept less than 2 inches to assure this product is in compliance with PCI Rev. 2 specifications.
Length	9.6 inches

SPECIFICATIONS: PCIX6432-5, PCIX6466-3

Bus:	PCIX6432-5; PCI, 32-bit or 64-bit, 5 Volt and Universal, 33 Mhz. PCIX6466-3; PCI, 32-bit or 64-bit, 3 Volt and Universal, 66 Mhz.
Voltages:	
Inputs	From PC bus, an external power supply, configurable by jumpers.
Input Requirements	5V @ 20 mA, +/- 12V @ 50 mA
Output Ratings	+5V, Jumper selectable to 5 Amp or 1 Amp limit. +3.3V at 2.5 Amp. +/- 12V at 1 Amp.
Drop Across the Switches	40 millivolts drop for every 1 Amp drawn for +5V, +3.3V and +VIO. 30 millivolts drop for every 1 Amp drawn for -12V. 30 millivolts drop for every 100 milliampere drawn for +12V.
Propagation Delay:	Less than 500 pico-seconds from the PC bus to the UUT. The switch propagation delay is rated at only 250 pico-seconds.
Controls:	
On-Off	SPST switch on-board or external logic input
Bus Signals	Bus signals can be turned on all at once or selectively in groups, via the dip switch or an external I/O control.
Outputs:	
J3.2 (J3 for Rev C and below)	+5V current measurement, each Volt represents 1 Amp.
J3.4 (J4 for Rev C and below)	+12V current measurement, each Volt represents 1 Amp.
J3.3 (J5 for Rev C and below)	+3.3V current measurement, each Volt represents 1 Amp.
JP1	JP1-1 to JP1-32, all pins on the B side, 64-bit extension, 100 mil centers.
JP2	JP2-1 to JP2-32, all pins on the A side, 64-bit extension, 100 mil centers.
JP13	JP13-1 to JP13-62, all pins on the B side, 32-bit main bus, 100 mil centers.
JP14	JP14-1 to JP14-62, all pins on the A side, 32-bit main bus, 100 mil centers.

NOTE: The signals at JP1, JP2, JP3 and JP4 are active when the extender power is on, and tri-stated when the power is off.

Mechanical Dimensions:

Height	1.6 inches
Length	9.6 inches

SPECIFICATIONS: PMC2PCI-64

Input Bus: PCI, 32 or 64-bit.

Output Bus: PMC, PCI Mezzanine cards, 32 or 64-bit.

Voltage:

Inputs	5V @ 20 mA, +/- 12V @ 50 mA
Output Ratings	+5V, Jumper selectable to 5 Amp or 1 Amp limit. +3.3V at 2.5 Amp. +/- 12V at 1 Amp.
Drop Across the Switches	40 millivolts drop for every 1 Amp drawn for +5V, +3.3V and +VIO 30 millivolts drop for every 1 Amp drawn for -12V. 30 millivolts drop for every 100 milliampere drawn for +12V.
Propagation Delay:	Less than 500 picoseconds from the system bus to the Mezzanine board.

Controls:

On-Off	SPST switch on-board or the external logic input.
Bus Signals	Bus signals can be turned on all at once or selectively in groups, via the dip switch or an external I/O control.

Outputs:

J3	+5V current measurement, each Volt represents 1 Amp.
J4	+12V current measurement, each Volt represents 1 Amp.
J5	+3.3V current measurement, each Volt represents 1 Amp.
JP14	JP14-1 to JP14-32, all pins on the B side, 64-bit extension.
JP13	JP13-1 to JP13-32, all pins on the A side, 64-bit extension.
JP1	JP1-1 to JP1-62, all pins on the B side, 32-bit main bus.
JP2	JP2-1 to JP2-62, all pins on the A side, 32-bit main bus.

NOTE: The signals at JP1, JP2, JP13 and JP14 are active when the extender power is on and tri-stated when the power is off.

Mechanical Dimensions:

Height	2.2 inches
Length	9.6 inches

AUXILIARY PINOUT
MAIN, 32 BIT SIGNALS

JP2 FOR SIDE A

Controlling Switch	Signal Name	Header Pin	Header Pin	Signal Name	Controlling Switch
N/A	+12BV	2	1	TRST#B	S2-5
S2-5	TDIB	4	3	TMSB	S2-5
S2-5	INTA#B	6	5	+5BV	N/A
N/A	+5BV	8	7	INTC#B	S2-5
N/A	+VIOB	10	9	RES71B	S2-5
N/A		12	11	RES73B	S2-1
S2-5	RES76B	14	13		N/A
N/A	+VIOB	16	15	RST#B	N/A
N/A	GND	18	17	GNT#B	S2-6
S2-6	AD30B	20	19	RES81B	S2-6
S2-6	AD28B	22	21	+3.3VB	N/A
N/A	GND	24	23	AD26B	S2-6
S2-6	IDSELB	26	25	AD24B	S2-6
S2-6	AD22B	28	27	+3.3VB	N/A
N/A	GND	30	29	AD20B	S2-6
S2-7	AD16B	32	31	AD18B	S2-7
S2-7	FRAME#B	34	33	+3.3VB	N/A
S2-7	TRDY#B	36	35	GND	N/A
S2-7	STOP#B	38	37	GND	N/A
S2-7	SDONEB	40	39	+3.3VB	N/A
N/A	GND	42	41	SBO#B	S2-7
S2-7	AD15B	44	43	PARB	S2-8
S2-8	AD13B	46	45	+3.3VB	N/A
N/A	GND	48	47	AD11B	S2-8
N/A		50	49	AD09B	S2-8
S2-8	CBE0#B	52	51		N/A
S2-8	AD06B	54	53	+3.3VB	N/A
N/A	GND	56	55	AD04B	S2-8
S2-8	AD00B	58	57	AD02B	S2-8
S2-8	REQ64#B	60	59	+VIOB	N/A
N/A	+5BV	62	61	+5VB	N/A

TABLE 1

JP1 FOR SIDE B

Controlling Switch	Signal Name	Header Pin	Header Pin	Signal Name	Controlling Switch
S2-1	TCKB	2	1	-12BV	N/A
S2-1	TDOB	4	3	GND	N/A
N/A	+5BV	6	5	+5BV	N/A
S2-1	INTD#B	8	7	INTB#B	S2-1
S2-1	RES10B	10	9	PRSNT1#B	S2-1
N/A		12	11	PRSNT2#B	S2-1
S2-1	RES14B	14	13		N/A
S2-1	CLKB	16	15	GND	N/A
S2-2	REQ#B	18	17	GND	N/A
S2-2	AD31B	20	19	+VIOB	N/A
N/A	GND	22	21	AD29B	S2-2
S2-2	AD25B	24	23	AD27B	S2-2
S2-2	CBE3#B	26	25	+3.3VB	N/A
N/A	GND	28	27	AD23B	S2-2
S2-2	AD19B	30	29	AD21B	S2-2
S2-3	AD17B	32	31	+3.3VB	N/A
N/A	GND	34	33	CBE2#B	S2-3
N/A	+3.3VB	36	35	IRDY#B	S2-3
N/A	GND	38	37	DEVSEL#B	S2-3
S2-3	PERR#B	40	39	LOCK#B	S2-3
S2-3	SERR#B	42	41	+3.3VB	N/A
S2-3	CBE1#B	44	43	+3.3VB	N/A
N/A	GND	46	45	AD14B	S2-3
S2-4	AD10B	48	47	AD12B	S2-4
N/A		50	49	M66ENB	S2-4
S2-4	AD08	52	51		N/A
N/A	+3.3VB	54	53	AD07B	S2-4
S2-4	AD03B	56	55	AD05B	S2-4
S2-4	AD01B	58	57	GND	N/A
S2-4	ACK64#B	60	59	+VIOB	N/A
N/A	+5BV	62	61	+5VB	N/A

TABLE 2

EXTENSION, 64 BIT SIGNALS

JP13 FOR SIDE B

Controlling Switch	Signal Name	Header Pin	Header Pin	Signal Name	Controlling Switch
S2-9	RES1B	1	2	GND	N/A
S2-9	CBE6#B	3	4	CBE4#B	S2-9
N/A	GND	5	6	AD63B	S2-9
S2-9	AD61B	7	8	+VIOB	N/A
S2-9	AD59B	9	10	AD57B	S2-9
N/A	GND	11	12	AD55B	S2-9
S2-9	AD53B	13	14	GND	N/A
S2-9	AD51B	15	16	AD49B	S2-9
N/A	+VIOB	17	18	AD47B	S2-9
S2-9	AD45B	19	20	GND	N/A
S2-9	AD43B	21	22	AD41B	S2-9
N/A	GND	23	24	AD39B	S2-9
S2-9	AD37B	25	26	+VIOB	N/A
S2-9	AD35B	27	28	AD33B	S2-9
N/A	GND	29	30	RES2B	S2-9
N/A		31	32	GND	N/A

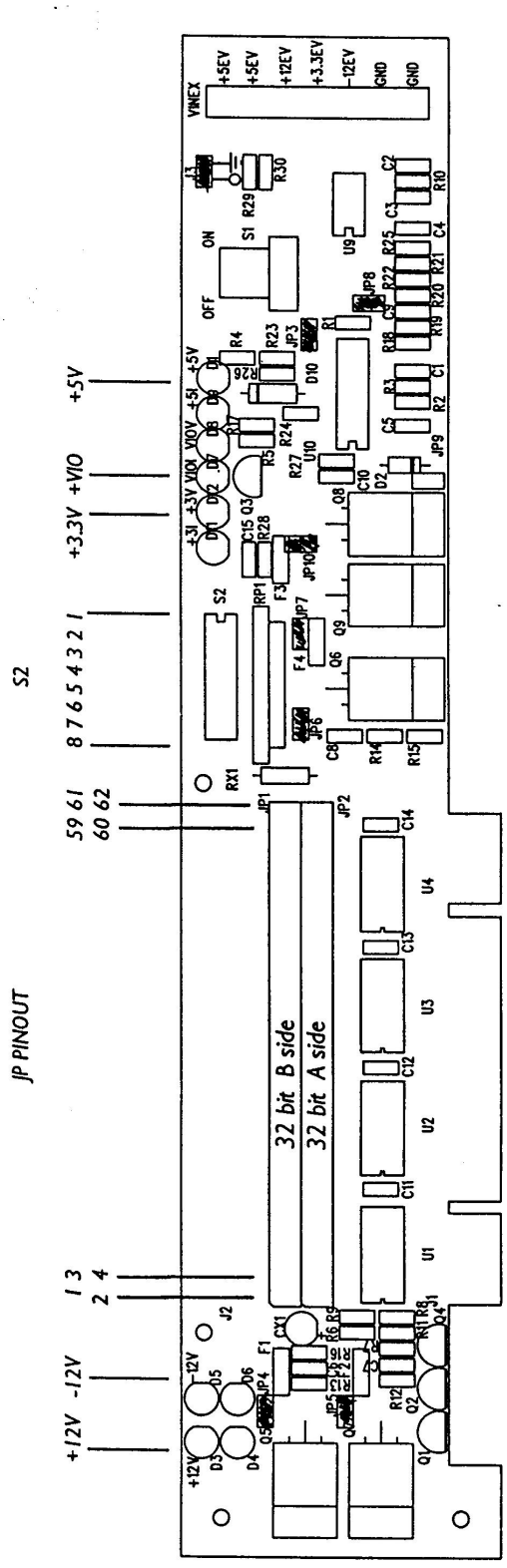
TABLE 3

JP14 FOR SIDE A

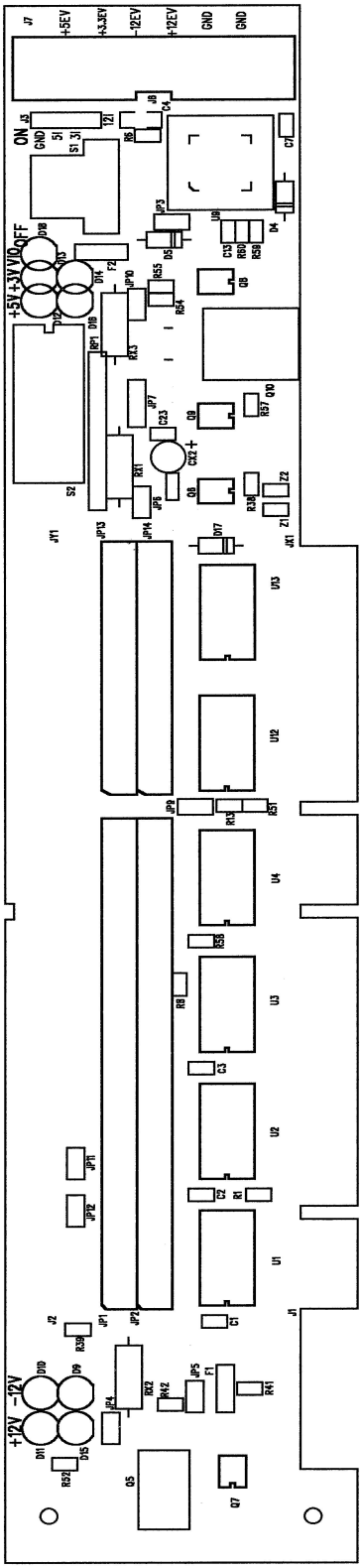
Controlling Switch	Signal Name	Header Pin	Header Pin	Signal Name	Controlling Switch
N/A	GND	1	2	CBE7#B	S2-10
S2-10	CBE5#B	3	4	+VIOB	N/A
S2-10	PAR64B	5	6	AD52B	S2-10
N/A	GND	7	8	AD60B	S2-10
S2-10	AD58B	9	10	GND	N/A
S2-10	AD56B	11	12	AD54B	S2-10
N/A	+VIOB	13	14	AD52B	S2-10
S2-10	AD50B	15	16	GND	N/A
S2-10	AD48B	17	18	AD46B	S2-10
N/A	GND	19	20	AD44B	S2-10
S2-10	AD42B	21	22	+VIOB	N/A
S2-10	AD40B	23	24	AD38B	S2-10
N/A	GND	25	26	AD36B	S2-10
S2-10	AD34B	27	28	GND	N/A
S2-10	AD32B	29	30	RES5B	S2-10
N/A	GND	31	32		N/A

TABLE 4

BOARD LAYOUT, PCI532 & PCI332



BOARD LAYOUT, PCIX6432-5 & PCIX6466-3



BOARD LAYOUT, PMC2PCI-64