

# **PCIX64**

## **PCI Bus Isolation Extender**

### **User's Manual**

**Rev E**

### **PREFACE**

PCIX64 is a 64 bit Peripheral Component Interconnect (PCI) bus isolation extender. It allows PCI adapter boards to be added or removed from the PCI system bus without having to power down the system. It offers time and labor cost savings in product development and production board testing. It also serves to protect the motherboard from being damaged during testing.

Operation of the PCIX64 extender can be controlled by on-board toggle switch or by external TTL input signal. User is required to provide initialization routines to restore the state of the board under test during successive testing.

#### **Product Options:**

- T for additional connector at right angle (on A side of the board).
- H for additional header pins at right angle (on B side of the board).
- 5 for 5V VIO version.
- 3 for 3.3V VIO version.
- W for WOL option.

#### **Related Products:**

PCISX8	PCI 64 bit wearout extender
PCIEX8	PCI 64 bit extender
PCI-A64PSC	PCI 64 bit riser card
PCITX8	PCI 64 bit right angle extender
PCIFLEX64	PCI 64 bit flexible extender

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**Product Specifications:**

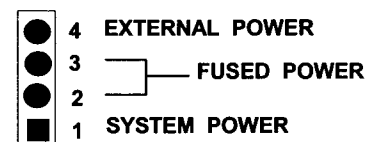
Bus:	PCI (Peripheral Component Connect) 64 bit bus.
Power:	+5V with 4.0 amp slow blow plug fuse. +3.3V with 4.0 amp slow blow plug fuse. +VIO with 4.0 amp slow blow plug fuse. +12V with 1.6 amp slow blow plug fuse. -12V with 1.6 amp slow blow plug fuse. Plus short circuit sensing logic on +5, +3.3 and +12V.
Control:	Single toggle switch or external TTL controls.
Signal Delay:	Less than 500 picosecond (250 picosecond max. through the buffer).
Environment:	0-60 degree C (operating and storage).
Dimension:	Length 9.25 inches; Height 2.3 inches; Width 0.6 inches ( dimension not including the mounting bracket).

**Product Features:**

- Total power and signal isolation.
- No disturbance to the system bus during bus isolation and reconnection.
- Less than 500ps signal delay (isolation buffer + trace delay).
- Minimum voltage drop.
- Single switch operation or external TTL control signals.
- Allows external input voltage margin and current measurement.
- Over voltage and over current protection on power lines.
- Pluggable fuse allows easy replacement and change to other types and values of fuses.
- System power on, green LED indicator.
- Isolated power on, green LED indicators.
- Short circuit sensing on +5, +3.3 and +12V with auto power shut off.
- Reset pulse generation during power on.
- Flashing operating red status LED.
- Two-tone adjustable volume speaker for board status.
- Jumper select 66 MHz, PCIX66, PCIX100 and PCIX133 operations.
- Supports low cost wearout extender.
- Optional WOL support.
- Optional header pins for logic analyzer hook up.
- Optional connector at right angle.
- Quality multilayer construction.

**PCIX64 OPERATING INSTRUCTIONS**

1. Insert the extender into a PCI expansion slot on a PCI motherboard. Secure the extender to the system enclosure by the mounting bracket.
2. Without the UUT, power up the system. The green PWR LED should light to show that power is on.
3. Test the extender by switching the SW1 switch up and down. The red LED should be flashing with SW1 in the up position, indicating bus connection. The speaker should buzz approximately once per second, and the 4 isolated power LEDs should come on. Adjust the volume of the speaker via the trim pot by the speaker.
4. **Add or remove UUTs to the extender, only when the SW1 switch is in the down position, the RED LED is not flashing, the 4 isolated power LEDs are off and the speaker is not buzzing once per second (bus isolated state).**
5. Run necessary test to the Unit Under Test (UUT) with SW1 switch in the up position.
6. To make current measurement without the fuse, remove the corresponding plug fuse and place an ampere meter across pin 1 and pin 3 of the fuse socket pins. To make measurement with the fuse, insert fuse at pin 2 and pin 4 of the socket pins, and connect the ampere meter across pin 1 and pin 4 of the fuse socket pins.
7. To make voltage margin test without the fuse, remove the corresponding plug fuse and connect external voltages to pin 3 of the socket pin and connect external ground to system ground. To make voltage margin with the fuse; move fuse to pin 2 and pin 4 of the socket pins and connect external power to header pins directly on top of the fuse (see detail in Voltage Margin section).
8. The green LEDs at the upper left-hand corner indicate the status of the isolated power. If not lit, check the corresponding fuses and replace them accordingly.
9. To remove the UUT from the extender, one should be careful not to lift the extender with it. Keep the extender down with one hand while removing the UUT with another hand, and make sure the extender is turned off.
10. **See Board re-initialization section for required SW for repeated testing operation.**

**FUSE and PIN HEADER DEFINITION****Fuse Socket**

F5	+5V	F3	+3.3V	FVIO	VIO
F12	+12V	F-12	-12V		

**External Power Input**

W9.1	+5V	W10.1	+3.3V	W3.1	VIO
W6.1	+12V	W7.1	-12V		

Pin 1 of W9, W10, W3, W6 and W7 jumpers are connected directly to Pin 4 of F5, F3, FVIO, F12 and F-12 fuse sockets.

**Low isolated voltage detection jumper**

LV5	isolated +5V	LV3	isolated +3.3V
LV12	isolated +12V		

Remove the LV jumpers to disable detection of low isolated voltage.

**W2, Speaker Jumper**

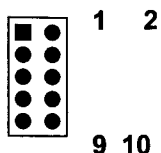
Jumper Out / In - Disable / Enable (default) buzzer.

To adjust the volume of the speaker, turn the trim pot by the speaker. In short circuit condition., the speaker will generate a loud continuous sound regardless of the W2 jumper.

**X1, X0, UUT Bus Speed Selection Jumper**

The bus speed to the UUT is selected by the X1 and X0 jumpers.

11 = 66 MHz. 10 = X100 MHz, 01 = X66 MHz, 00 = X133 MHz.

**W1 Pin Headers**

1	#Power_Control (Internal, Low enable)
2	+5V
3	#Signa_Control (External Input, Low enable)
4	Key
5	#Power_Control (External Input, Low enable)
6	Gnd
7	Gnd
8	Power_Control (External Input, High enable)
9	LED-
10	LED+ (5V at 12ma)

See *LOCAL and EXTERNAL CONTROL* section (page 11 to 12) for description and use of the W1 header Pins.

**W15, Board Present Jumper**

Pin 1-2 For UUT power consumption of 7.5W or 15W (default).

Pin 2-3 For UUT power consumption of 25W.

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**W13 and W14, PCIX jumpers**

Jumper In/Out - PCIX is disabled / enabled (default).

**W11 and W12, M66EN jumpers**

Jumper In/Out - M66EN is disabled / enabled (default).

**W4, REQ64# Jumper**

Jumper In/Out - REQ64# is disabled / enabled (default).

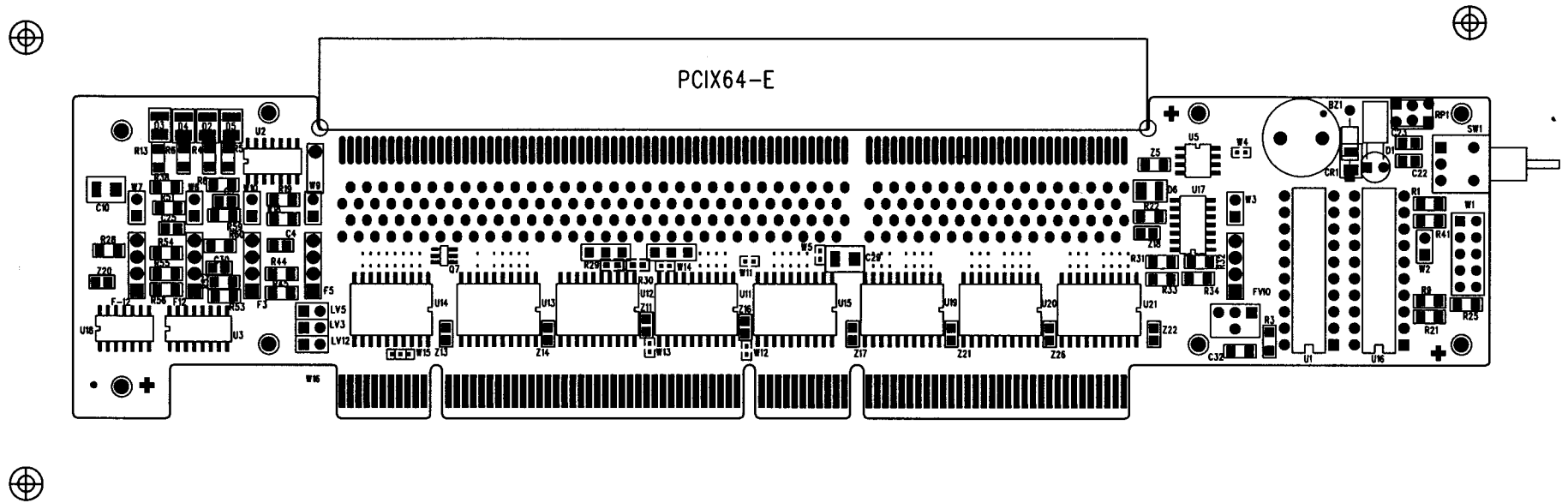
**W5, ACK64# Jumper**

Jumper In/Out - ACK64# is disabled / enabled (default).

**S1 and S2, WOL Option Jumpers**

Pin 1-2 For WOL option support.

Pin 2-3 For No WOL support (default).



COMPONENT SIDE B



## THEORY OF OPERATION

The Bus Isolation Extender provides bus signals and power isolation, between the system motherboard and the unit under test (UUT). The signals are isolated using state of the art analog switches that allows bi-directional signal flow. When the analog switches are turned on, the bus signals are connected. The analog switch provides no signal "buffering". This means, the bus signals are not reconditioned at TTL levels, nor are they redriven by any active amplifier. Any AC/DC signal loading on the UUT will have a direct effect on the signal lines of the system motherboard. The analog switch introduces less than 250 picoseconds delay to the signals.

The power isolation is implemented using MOSFETs. The MOSFETs are biased to allow slow ramping up of current, through the Bus Isolation Extender to the UUT without causing a power surge or glitch to the system power. When the extender is turned on, a delay of approximately 24ms is introduced to allow the power lines on the UUT to reach within 15% of the rated voltage. The logic will then turn on the analog switches, to connect the bus signals. When the Bus Isolation Extender is switched off, or if the voltage drops below 15%, the logic on the extender board will disconnect the bus signals and shut down the power immediately.

In normal operation, the signal buffers are connected about 24ms after power on, and the reset signal is deserted after another 6ms. During system cold boot or anytime the system issues a reset while the bus is connected, the extender will pass that reset pulse to the UUT, without disconnect or reconnect. In addition, each time the extender is turn off and then back on, the on-board logic will issue the RST# and REQ64# signals to the UUT.

The PCIX64 can be used in a 32 bit PCI slot or a 32 bit PCI card can also be inserted on top of the PCIX64. In these two situations, and in some system, the REQ64# and/or the ACK64# signals may need to be disabled. To disable the ACK64#, user may cut the copper default at W4 and add a 22K ohm SMD0402 size resistor between pin 1 and pin 2 of the Q8 IC. To disable the ACK64#, user may cut the copper default at W5.

When the power and the signals are completely connected between the UUT and the system bus, an on-board red LED will blink about twice a second. The speaker will also buzz about once a second.

If a short circuit condition occurs, or if the isolated +5, +3.3 and +12 volts do not reach the operating voltage, within 24ms after the extender is turned on, the on-board logic will shut off the extender. The speaker will generate a loud continuous tone, and the red LED will be turned off. User will need to switch the extender off, to reset the short circuit logic. The short circuit logic can be disabled, for troubleshooting or in situations where the system's motherboard does not provide one of the voltages, such as the 3.3V. Removing the individual jumper at LV5, LV3, and LV12 location, will disable the sensing of the +5V, +3.3V and +12V respectively.

The UUT should be inserted or removed from the extender, only when the extender is switched off, the red LED is not blinking and the speaker is not buzzing. ***Serious damages to the system, extender and the UUT could happen if the UUT is inserted or removed while the bus is still connected.***

## LOCAL and EXTERNAL CONTROL

The Bus Isolation Extender has a unique external control feature. This feature is very useful in the production environment and can be easily implemented in many ways. It allows external toggle switch or TTL logic inputs to control the operation of the extender. When used with proper software, this feature helps to automate the test process, without requiring manual switching by the operator. The external control feature is accessible through the W1 header, located near the on-board toggle switch. The header is keyed for a ribbon type connector interface. The 2X5 header has the pins defined on page 7, under W1 Pin headers.

## ON-BOARD TOGGLE SWITCH OPERATION

The on-board toggle switch operation is the default operation mode, as configured by the factory. This configuration allows single toggle switch operation, without any external connection. A jumper is installed between pin 1 and pin 3 of the W1 header. It requires an operator manually toggle the switch up, for bus connection and toggle it down, for bus isolation. When the switch is toggled up, both the power and the signals are connected by the on-board logic.

### EXTERNAL TOGGLE SWITCH OPERATION

An external toggle switch can be connected between pin 5 and pin 6 of the W1 header to simulate the on-board toggle switch. In this configuration, the on-board toggle switch should be turned off (down position) and the jumper remains in pin 1 and pin 3 of W1 header. The external switch can be mounted anywhere outside the chassis, for easier access. An external LED can also be connected through pin 9 and pin 10 of the W1 header. This will enable it to provide a status, outside the chassis. A blinking LED is recommended instead of regular LED. **The on-board LED and the toggle switch do not need to be removed** in this mode of operation.

### EXTERNAL LOGIC CONTROL OPERATION

The Bus Isolation Extender can also be controlled by external TTL compatible signals. If the jumper remains on pin 1 and pin 3 of W1 header, a single TTL low control line, connecting to pin 5 or a TTL high signal to pin 8 of W1 header, can control both the power and signal isolation and connection. If the jumper on pin 1 and pin 3 of W1 header is removed, then two TTL control lines can be used to control the bus signals and the power separately. The TTL control line that connects to pin 5 or pin 8, will control the power. The TTL control line that connects to pin 3 will control the signal. The TTL control lines can come from any digital output source, such as the output pins of the parallel printer port, in the CPU system. If the external TTL control lines are from sources outside the same CPU system, the ground pins on pin 6 or pin 7, of the W1 header should be connected to the signal ground, of the external sources. The power control should be asserted first, then followed by the signal control.

Notice that pin 5 allows a TTL low signal to power up the extender, while pin 8 allows a TTL high signal to power up the extender. For a system that requires the extender to be powered up from cold start, the user can choose from available sources of either an initial high or an initial low signal to bring the extender up. The on-board toggle switch needs to be at off(down) position, when external TTL signals are used to control the extender.

There is a drawing on the Adex's web site showing how a 2X5 ribbon cable can be used to connect the system parallel port to the W1 header for external control under SW.

### CURRENT MEASUREMENT and VOLTAGE MARGIN

The PCIX64 Bus Isolation Extender is provided with pluggable slow blow fuses. Three 4.0 amp fuses are used for the +5V, +3.3V and VIO and two 1.6 amp fuses are used for the +12V, and -12V. In addition, a short circuit sensing logic is built-in to protect the system. The short circuit logic will sense shorts on +5V, +3.3V and +12V and automatically shut off the extender. The shorts can occur accidentally during test, or may already exist on the UUT. In short circuit condition, the speaker will generate a loud continuous tone to alert the user. In normal condition, the speaker will buzz once a second and the red LED will blink twice a second, to alert the user that the Bus Isolation Extender is powered up and the bus is connected.

User can perform voltage margin to the UUT by connecting external power to location W3, W9, W10, W6, W7 (see pin definition on page 6) and by moving the pluggable fuses from position 1-3 to 2-4 location (see pin definition on page 6). When external power are applied through the fuses, the current are still controlled by the MOSFETs, which regulate the ramping of the voltages. The on-board logic still uses the power from the motherboard and is not affected by the external power.

Removing the fuse and connecting an ampere meter across the fuse socket pins can perform current measurement. Use socket pins 1-3 or 1-2 for current measurement from the motherboard and pin 2-4 or 3-4 for current measurement from the external power. The leads of the ampere meter should be kept as short as possible. This will avoid excessive voltage drop, which could cause the on-board short circuit logic to activate or malfunction of the UUT.

User could remove the fuses of the unused power, such as the +12V and the -12V fuses to prevent unnecessary accidental damage. By doing this, the corresponding low voltage sensing logic should also be disabled (see details in the Theory of Operation section and pin definition on page 6).



## TROUBLESHOOTING AND SELF SERVICE

Since one of the primary uses of the Bus Isolation Extender is to protect the system's motherboard from being damaged by the UUT, it is common for the Bus Isolation Extender to be damaged during operation. This is especially true in a production environment. Our experience has shown, two of the most common problems associated with the Extenders are blown fuses and blown buffer ICs. Such failures are usually caused by:

1. Users tend to accidentally pull the UUT while the bus is still connected. This happens mostly when the user is not yet used to the procedure, and occasionally forgets to switch the extender off, while removing the UUT. One must observe the red LED to make sure it is not blinking, or listen to the speaker, before adding or removing the UUT. Otherwise the user will cause the fuses and the buffer ICs to blow, especially, the one that has signals next to the power pins. This is caused by the UUT being removed at an angle, which shorts the power pins to the nearby signal pins.
2. The extender is lifted or wiggled side to side, while the UUT is being removed or added. This will happen if the extender is not tied down firmly. It is very important for the user to find an appropriate way to hold down the extenders, using brackets or fixtures in an open or closed chassis environment. Since the Bus Isolation Extender is still connected to the system bus, it will cause sparking in both power and signal pins. This will most likely damage the buffer ICs.
3. Shorted power to signal pins or signal to signal pins on the UUT. This condition will usually cause a current overload to the buffer IC and damage it. **Do not test the failed UUT on the Bus Isolation Extender again until the cause is corrected.**
4. Extender connector pins are damaged or not making good contact due to wearout or rough handling. We strongly recommend the use of Wearout Extender such as the PCISX8, especially in the production environment.

We recommend the following steps for the user's self troubleshooting and field testing, before returning the extender for factory service.

1. Check the extender connector pins for any physical damage and correct them if possible.
2. Check the fuses for continuity and if need be, replaced them.
3. Check for all isolated power to ground short.
4. Visually inspect the buffer ICs for physical cracks, burn marks, etc. When the buffer IC is damaged, it will usually smoke while the bus is being connected. Sparking or ESD could cause the damage from previous operation. Replace the damaged buffer ICs and try again.
5. Check the extender power up sequence, without the UUT on top of the extender. To isolate whether the problem is in the extender itself, or with the UUT, make sure the buzzer and the red LED is operating properly.

Our experience has shown that, the buffer ICs at four corners, are most likely to be damaged in the operation, due to its proximity to the voltage pins.

Adex Electronics, will assist its customers over the phone, to locate the damaged components and recommend further actions. Adex Electronics, can also provide the components as spare parts to the customers. Each bus isolation extender is provided with a bag of spare parts, to include 2 fuses of each type and 2 buffer ICs, for on-site repair. For further service information, latest parts list and updates, please refer to our Service section, at our web site: <http://www.adexelec.com>.

## BOARD RE-INITIALIZATION

Bus Isolation Extender isolates power and bus signals between the UUT and the motherboard. Each time the toggle switch is turned off, the power to the UUT is lost. Therefore, the information in the configuration registers and memory, on the UUT will also be lost. For the next UUT to be tested, the UUT will need to be reinitialized, after the powers are reconnected. User will need to develop an initialization routine to restore the information back to the UUT, before running the test. It can be done in a batch file, where the initialization routine is placed, before the test routine. The initialization routine can search for a previous saved configuration file and use it to reinitialize the UUT. The test software should display the test results and messages. This will tell the operator when to remove and add another board for test, and how to restart the test. A sample **re-initialization program (AXINIT01.EXE)** is available on our Website under our Software section. **The extender itself does not require any software to operate, it is totally hardware controlled.**

Every time the Bus Isolation Extender is powered back on, the on-board logic will generate a reset signal to the UUT, during reconnection. For manual toggle switch operation, the user should wait until the red LED is blinking, before reinitialization. In an automated system, the initialization software should sense the **LED-signal (at W1.9)** at logic low state for at least twice contiguously to confirm the bus is reconnected, before re-initializing the adapter board. During disconnect, the user should wait for the red LED to stop blinking, before removing the UUT. In a software control operation, the LED- should be sensed high at least twice contiguously before putting out messages to remove the adapter board.

The AXINIT.exe program is written in assembly code for the MS-DOS. The source code is available on the Adex's web site. User may download the source code and may modify it and recompile it for other Operating Systems.

## MOUNTING OF BUS ISOLATION EXTENDER

The Bus Isolation Extender incorporates very fast CMOS buffers for isolation of bus signals, between the UUT and the motherboard. These CMOS buffers are extremely sensitive to voltage spikes and can be easily damaged by Electrostatic Discharge (ESD) or any sparking due to intermittent contacts. It is necessary for users in the production environment to mount the Bus Isolation Extender, firmly against a common platform where the motherboard is mounted. For in chassis testing, a fixture or a bracket should be developed to hold the Bus Isolation Extender down to the chassis. For an out of chassis environment, the user should tie the motherboard and the Bus Isolation Extender down, against a common platform. Whatever fixture or bracket design is used, one should not allow the Bus Isolation Extender to be lifted with the UUT. Also, the extender should not be wiggled side to side.

User should exercise ESD precautions in handling the Bus Isolation Extender. Please do not touch the on-board components, unless the hands are totally discharged. The static discharge can easily damage the components. Simply touching the system chassis first before handling the Bus Isolation extender can discharge the hands or body. When transporting or storing the Bus Isolation Extender, it must be enclosed in an anti-static bag.

## Appendix

### **USING PARALLEL PORT as EXTERNAL TTL CONTROL**

The following information on the PC/AT parallel ports is provided for users, who wish to use the parallel port pins as the TTL control lines to the Bus Isolation Extenders.

**1st Parallel Port:** Data Register = 378; Status Register = 379;  
Control Register = 37A; IRQ = 7

**2nd Parallel Port:** Data Register = 278; Status Register = 279;  
Control Register = 27A; IRQ = 5

**Data Register:** Bit 0 - 7 = Data Bit 0 - 7

**Status Register:**

Bit 7 = /BUSY  
Bit 6 = /ACK  
Bit 5 = PE  
Bit 4 = SLCT  
Bit 3 = /ERROR  
Bit 2 = N/A  
Bit 1 = N/A  
Bit 0 = N/A

**Control Register:**

Bit 7 = N/A  
Bit 6 = N/A  
Bit 5 = N/A  
Bit 4 = IRQ\_ENABLE  
Bit 3 = SLCT\_IN  
Bit 2 = /INIT  
Bit 1 = AUTO\_FEED  
Bit 0 = STROBE

**The female 25 pin parallel port pin outs:**

1	/STROBE	(output)	14	/AUTO_FEED	(output)
2	Data 0	(I/O)	15	/ERROR	(Input)
3	Data 1	(I/O)	16	/INIT	(output)
4	Data 2	(I/O)	17	/SLCT_IN	(output)
5	Data 3	(I/O)	18	Gnd	
6	Data 4	(I/O)	19	Gnd	
7	Data 5	(I/O)	20	Gnd	
8	Data 6	(I/O)	21	Gnd	
9	Data 7	(I/O)	22	Gnd	
10	/ACK	(Input)	23	Gnd	
11	BUSY	(Input)	24	Gnd	
12	PE	(Input)	25	Gnd	
13	SLCT	(Input)			

**Note:**

1. /STROBE, BUSY, /AUTO\_FEED, /SLCT\_IN are inverted by Hardware (logic 1 in software will appear as low at pin).
2. During power up, parallel port pins /STROBE, /AUTO\_FEED, /SLCT\_IN are reset to logic high; and /INIT is reset to logic low. After BIOS initialization, /INIT is toggled to high and /SLCT\_IN is toggled to low.
3. Depending on the sequence of the BIOS initialization in each CPU system, one can use any of the signal pins (low or high) to bring the extender up during cold boot. In some systems, an extra soft reboot by Ctrl Alt Del, after the first power up, may be necessary to get the plug and play boards to be recognized by BIOS.
4. The LED- pin on the W1 header on the Bus Isolation Extender could be connected to the SLCT pin, on the parallel port (pin 13) as status input. The LED- at low, will indicate successful bus connection and at high, indicates no signal connection. The #Power\_Control at pin 1 of the W1 header can also be used as a positive indication of cable connection and power connection. It may also be connected to the BUSY pin, of the printer port.
5. Some CPU systems may relocate the parallel port I/O addresses or may use 3BC-3BF as the 1st parallel port I/O addresses. One may verify the I/O addresses by looking at memory location, 0:408, ROM BIOS data areas, using the DOS debug command.
6. For detail operation using the parallel port as the TTL control for the PCIX64 extender, please visit the FAQ section of our web pages at <http://www.adexelec.com>. There are cabling information between the PC's parallel port and the W1 header and some simple examples of the controlling software.

**PCI BUS PINOUT**

COMPONENT SIDE B	PIN NO.	SOLDER SIDE A
-12V	01	TRST#
TCK	02	+12V
GND	03	TMS
TDO	04	TDI
+5V	05	+5V
+5V	06	INTA#
INTB#	07	INTC#
INTD#	08	+5V
PRSNT1#	09	Reserved
Reserved	10	+VIO
PRSNT2#	11	Reserved
KEYWAY(3.3V)	12	KEYWAY(3.3V)
KEYWAY(3.3V)	13	KEYWAY(3.3V)
Reserved	14	3.3Vaux / Reserved
GND	15	RST#
CLK	16	+VIO
GND	17	GNT#
REQ#	18	GND
+VIO	19	PME# / Reserved
AD[31]	20	AD[30]
AD[29]	21	+3.3V
GND	22	AD[28]
AD[27]	23	AD[26]
AD[25]	24	GND
+3.3V	25	AD[24]
C/BE[3]#	26	IDSEL
AD[23]	27	+3.3V
GND	28	AD[22]
AD[21]	29	AD[20]
AD[19]	30	GND
+3.3V	31	AD[18]

Note: +VIO is +3.3V in PCIX64-3 version.  
+VIO is +5V in PCIX64-5 version.

**PCI BUS PINOUT**

COMPONENT SIDE B	PIN NO	SOLDER SIDE A
AD[17]	32	AD[16]
C/BE[2]#	33	+3.3V
GND	34	FRAME#
IRDY#	35	GND
+3.3V	36	TRDY#
DEVSEL#	37	GND
PCIX / GND	38	STOP#
LOCK#	39	+3.3V
PERR#	40	SDONE
+3.3V	41	SBO#
SERR#	42	GND
+3.3V	43	PAR
C/BE[1]#	44	AD[15]
AD[14]	45	+3.3V
GND	46	AD[13]
AD[12]	47	AD[11]
AD[10]	48	GND
M66EN / GND	49	AD[09]
KEYWAY(5V)	50	KEYWAY(5V)
KEYWAY(5V)	51	KEYWAY(5V)
AD[08]	52	C/BE[0]#
AD[07]	53	+3.3V
+3.3V	54	AD[06]
AD[05]	55	AD[04]
AD[03]	56	GND
GND	57	AD[02]
AD[01]	58	AD[00]
+VIO	59	+VIO
ACK64#	60	REQ64#
+5V	61	+5V
+5V	62	+5V

Note: +VIO is +3.3V in PCIX64-3 version.  
 +VIO is +5V in PCIX64-5 version.

**PCI BUS PINOUT**

COMPONENT SIDE B	PIN NO	SOLDER SIDE A
RSVD	63	GND
GND	64	C/BE7#
C/BE6#	65	C/BE5#
C/BE4#	66	+VIO
GND	67	PAR64
AD63	68	AD62
AD61	69	GND
+VIO	70	AD60
AD59	71	AD58
AD57	72	GND
GND	73	AD56
AD55	74	AD54
AD53	75	+VIO
GND	76	AD52
-AD51	77	AD50
AD49	78	GND
+VIO	79	AD48
AD47	80	AD46
AD45	81	GND
GND	82	AD44
AD43	83	AD42
AD41	84	+VIO
GND	85	AD40
AD39	86	AD38
AD37	87	GND
+VIO	88	AD36
AD35	89	AD34
AD33	90	GND
GND	91	AD32
RSVD	92	RSVD
RSVD	93	GND
GND	94	RSVD

Note: +VIO is +3.3V in PCIX64-3 version.  
 +VIO is +5V in PCIX64-5 version.

**WARRANTY**

Adex Electronics, Inc. warrants this product against defects in material and workmanship for a period of 90 days, from the date of purchase. During the warranty period, Adex Electronics, Inc. will repair or replace this product at no charge. This warranty does not apply if the product has been damaged by accident, abuse, misuse or misapplication, nor as a result of service or modification made by others.

Adex Electronics, Inc. is not responsible for incidental or consequential damages resulting from use of this product. This includes damages to property and personal injury. The information in this manual has been carefully checked and is believed to be accurate. However, if there are any inaccuracies in this manual, Adex Electronics, Inc. assumes no responsibility for any damages resulting from any omission or defects in this manual.

**Caution! Handle and store this product in an electrostatic safe environment. ESD could damage this product.**

Adex Electronics, Inc. reserves the right to make changes in future product design, without reservation and without notification to its users.

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