# User guide for PI7C21P100 Reference Board
By Robert Bautista

Introduction

The Pericom PI7C21P100 PCI-X bridge evaluation board demonstrates the bridge and allows testing of key features either before or during design / layout stages. The PI7C21P100 PCI-X Bridge complies with PCI-X Addendum to the Local Bus Specification Revision 1.0a, as well as PCI Local Bus Specification Revision 2.2, PCI-to PCI Bridge Architecture Specification Revision 1.1 and PCI Power Management Interface Specification Revision 1.1.

Quick start (*photo of PI7C21P100 reference board*)

The numbers on the photo correspond to the text explanation on the right:
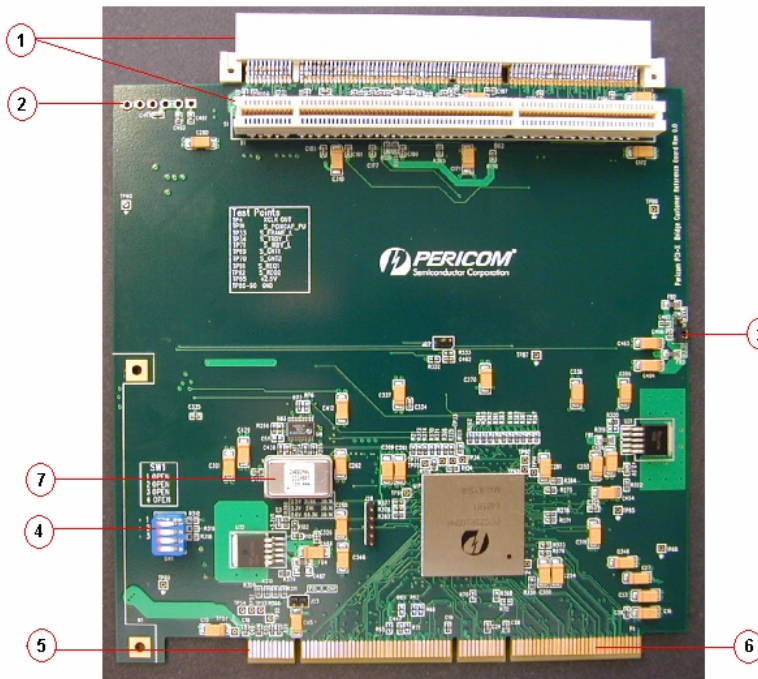
1) One standard and one straddle mount PCI-X connector.
2) Auxiliary power connector. (No need to connect external power in most applications). External power is required if exceeds 25W.
3) Secondary VIO Voltage Select to the slot can be set to either 3.3V or 5V.
   (Secondary VIO Voltage Select to the slot is set to 3.3V by default)
4) Switch to set bus speed and drive mode
5) Pin 1 on the golden PCI-X edge connector faces left when looking down on the component (bridge IC).
6) Universal Edge Connector can be connected into a 3.3V slot or a 5V slot
7) PCI-X Secondary bus is set to 133MHz by default. (133MHz oscillator chip included)

Components and Jumper Reference
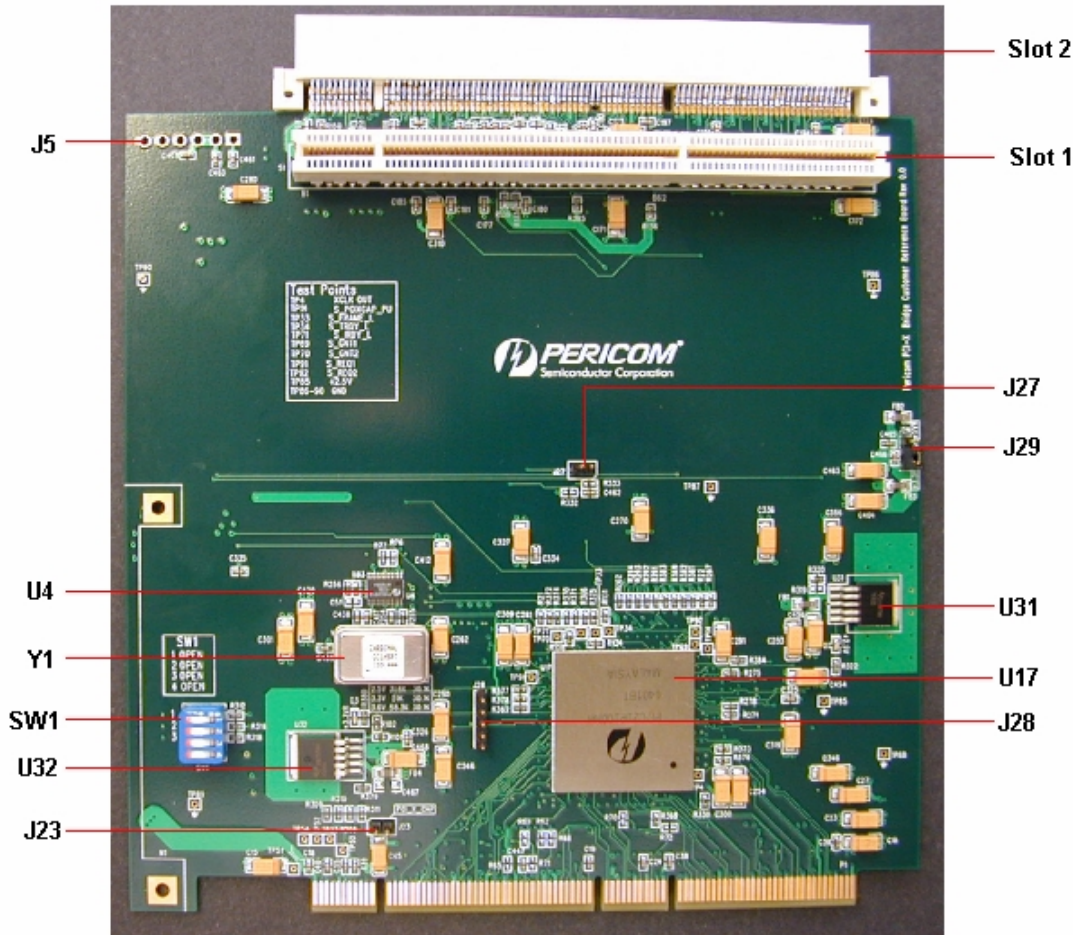
U4   PI6C2510-133EL Clock Buffer
U17 Pericom 7C21P100 PCI-X Bridge
U31 Voltage Regulator
U32 Voltage Regulator

Y1   Oscillator Socket

SW1 Speed option and drive mode selection

J5   Auxiliary power connector
J23 P_PCIXCAP
J27 S_PCIXCAP
J28 JTAG
J29 Secondary VIO Voltage Select to the Slot

TABLES:
a) A table on the front shows the default setting for SW1.
b) Table of tests points TP4, TP13, TP33, TP34, TP69, TP70, TP71, TP85, TP91, TP92 and TP86 …TP90.

Switch Settings

SW1	Signal	Default	Full Description
1	S_SEL 100	Off	**"Off"** = 133MHz, **"On"** = 100MHz (Secondary bus speed in PCI-X mode)
2	S_DRVR	On	"**On"** Use alternate output impedance, **"Off"** Use default impedance. **Note:** See Driver Impedance Selection Table
3	P_DRVR	On	"**On"** Use alternate output impedance, **"Off"** Use default impedance. **Note:** See Driver Impedance Selection Table
4	NO CONNECT	Off	Not Used

Note: Off = Low   On = High

Driver Impedance Selection Table

Primary Bus Mode	Default Driver Mode (P_DRVR is "OFF")	Driver Mode if (P_DRVR is ON")	Secondary Bus Mode	Default Driver Mode (S_DRVR is "OFF")	Driver Mode if (S_DRVR is "ON")
Conventional PCI	20 ohm	40 ohm	Conventional PCI	20 ohm	40 ohm
PCI-X 66	20 ohm	40 ohm	PCI-X 66	20 ohm	40 ohm
PCI-X 100	20 ohm	40 ohm	PCI-X 100	20 ohm	40 ohm
PCI-X 133	40 ohm	20 ohm	PCI-X 133	40 ohm	20 ohm

Jumper Settings

Jumper	Signal	Default	Full Description
J23	P_PCIXCAP	NC	**"NC"** Primary is PCI-X capable, **"C"** Primary is PCI mode.
J27	S_PCIXCAP	NC	**"NC"** Secondary is PCI-X capable, **"C"** Secondary is PCI mode.
J28	JTAG	NC	JTAG connector is not used
J29	Secondary VIO Voltage Select to the Slot	Pin 1-2	**"Pin 1-2"** Secondary VIO voltage select to the slot is set to 3.3V, **"Pin 2-3"** Secondary VIO voltage select to the slot is set to 5V.

Note: "NC"   Not Connected   "C"   Connected

Before Powering the Board

a) **Speed selection:**

Using the oscillator socket (Y1), seat the oscillator chip into the socket for the speed setting of the secondary bus based upon

the input primary bus speed. The board will not function without the oscillator.

e.g. To operate the secondary bus at 100MHz, seat the 100MHz oscillator chip into the oscillator socket (Y1).

Seat the board into a PCI-X slot on the main system board.

Looking from the front of the motherboard, the small lip on our reference board points to the back of the motherboard, and

the component side with the PI7C21P100 bridge chip is on the left hand side. Normally you won't need to connect power to

the reference board through header J5, unless you are cascading bridges. Otherwise the motherboard PCI-X connector is

adequate to powering the board with a few add-in cards.

c) **Connect any PCI/PCI-X cards desired on the secondary PCI-X bus**. For all PCI-X connectors on our reference board, when looking down onto the bridge IC, pin 1 is on the right side of the board. This also applies to the top mounted "straddle" connector. Putting in any cards backwards will short 5V to ground through the PCI-X connector. Also each PCI-X connector has "A1", "B1", "A94", "B94" at the 4 corners of each slot, as a reminder where pin 1 is on each connector.

At this point, the Pericom PI7C21P100 reference board is ready for you to use.

Test Points Description

These allow convenient sampling of signals by logic analyzer or oscilloscope:

TP4	XCLK OUT	**TP86**	GND
TP14	S_PCIXCAP_PU	**TP87**	GND
TP33	S_FRAME_L	**TP88**	GND
TP34	S_TRDY_L	**TP89**	GND
TP69	S_GNT1 – GNT to 1st slot	**TP90**	GND
TP70	S_GNT2 – GNT to 2nd slot		
TP71	S_IRDY_L		
TP85	+2.5V		
TP91	S_REQ1		
TP92	S_REQ2		

Technical Support: http://www.pericom.com/support