PLX Technology

The Leading Supplier of Standard I/O Interconnect Silicon

PRODUCT GUIDE/LINECARD
VERSION 2.0, 2004

PLX Technology, Inc. (*www.plxtech.com*), is the leading supplier of standard I/O interconnect silicon to the communications, server, storage, embedded-control, and consumer industries.

Offering the industry's most extensive I/O interconnect product line, PLX has a solution for your every need. Our FastLane™ PCI and PCI-X bridges, PCI I/O Accelerators, and HyperTransport™ Bridges enable our customers to lay the groundwork for future solutions by offering complementary features and software compatibility.

Our extensive product line offers customers a myriad of migratory solutions from 32-bit 33/66MHz; 64-bit 33/66MHz; 64-bit 133MHz and beyond.

PLX® has added to its portfolio new high performance switches and bridges based on the PCI Express™ architecture.

And, PLX offers a family of industry leading, high performance, low power USB 2.0 peripheral controllers.

The PLX solution includes a complete combination of high-performance silicon, hardware and software design tools, and partnerships. These innovative solutions are designed to enable our customers to develop systems with industry-leading performance, scalability and reliability.

Furthermore, the combination of PLX product features; supporting development tools and partnerships, allow customers to bring their designs to market faster.

PLX has been developing I/O interconnect products since 1986.

PLX is publicly traded (NASDAQ: PLXT) and headquartered in Sunnyvale, CA, USA. PLX's European operations are based in the United Kingdom; its Asian operations in China and Japan.

PLX TECHNOLOGY®
THE I/O INTERCONNECT SOLUTION

USB 2.0

Device Controllers

PLX Technology offers a complete line of USB 2.0 Device Controller Solutions. Our products emphasize superior performance, strict compliance to industry standards, and dramatic power savings. This product line features diverse, programmable interfaces to gluelessly connect to various applications. Our PCI based reference design kits offer easy PC based development with many application, driver, and firmware examples, supporting Windows, Linux, and WinCE. PLX's USB products are used extensively in Printers, Wireless Ethernet Devices, Portable Media Players, Digital Camcorders, and Test Instruments.

NetChip USB Technology

NET2890
Full Speed USB Controller

- Ideal for USB Full Speed applications like test equipment, MP3 players, and PC peripherals
- 8 Bit Asynchronous Local Bus Interface
- 4 fully programmable user endpoints
- Dedicated 128Byte FIFO on each endpoint to allow multiple full-size data packet transfer
- One of the industry's fastest Full Speed Device controllers: Read/Write cycle time of 67ns
- External DMA Interface
- Supports Isochronous, Control, Bulk, and Interrupt transfers

NET2270
Hi-Speed USB Controller

- Ideal for use in high data rate applications like printers, networking equipment, and set top boxes
- Configurable 8 / 16 bit asynchronous local bus connects gluelessly to most CPUs and DMA controllers
- Support for simultaneous CPU I/O access and external DMA Bursts
- 3 fully programmable user endpoints
- 3.5K of buffer space for sustained data transfers
- Local clock output for reduced parts count

NET2272
Hi-Speed USB Controller

- Low power makes it ideally suited for portable devices like handheld media players
- Dynamic Virtual Endpoint Technology™ enables systems with high endpoint requirements like Multi-Function Printers
- High Bandwidth Isochronous support facilitates USB Video Class devices like digital cameras and camcorders
- Configurable 8 / 16 bit asynchronous local bus connects gluelessly to most CPUs and DMA controllers

NET2280
PCI USB Hi-Speed Controller

- PCI 33Mhz / 32bit Master / Target Interface
- Plug into existing PCI based systems to instantly add a High Speed USB 2.0 Device Port
- PCI Host Option for simple PCI to USB Conversions
- Straightforward PC Card to ExpressCard™ Conversions
- 8051 CPU @ 60Mhz
- 8K of Shared Random Access memory accessible from USB Host and PCI
- 4 DMA Controllers with Scatter Gather Descriptor capability
- USB Auto-Enumeration
- Dedicated Endpoints for USB initiated PCI Master Cycles

USB 2.0

PLX USB 2.0 Device Controller Overview

	NET2890	NET2270	NET2272	NET2280
Description	USB Full Speed Controller	USB 2.0 Hi-Speed Controller	USB 2.0 Hi-Speed Controller	PCI to USB 2.0 Hi-Speed Controller
Sustained Performance	Up to 1MB/sec	Up to 24MB/sec	Up to 40MB/sec	Up to 40MB/sec
Interface	8 bit Asynchronous Local Bus	Configurable 8/16 bit Asynchronous Local Bus	Configurable 8/16 bit Asynchronous Local Bus	PCI 2.3 Compliant 33Mhz / 32 Bits
User Endpoints	4 Programmable Endpoints	3 Programmable Endpoints	30 Virtual Endpoints	6 Programmable Endpoints 5 Dedicated Endpoints
DMA	Supports External DMA Controllers	External 16-bit DMA and Split bus DMA support	External 16-bit DMA and Split bus DMA support	4 built in DMA controllers with scatter gather capability
High Bandwidth Isochronous	N/A	No	Yes, up to 24.6 MB/sec*	Yes, up to 24.6 MB/sec*
Active Power	198mW	471mW	148mW	260mW
Suspended Power	33uW	1.98mW	0.6uW	0.75mW
Package	7mm x 7mm 48 pin TQFP	10mm x 10mm 64 pin TQFP	10mm x 10mm 64 pin TQFP	14mm x 14mm 120 pin TQFP
USB Certification	USB 2.0 Full Speed Certified	USB 2.0 Hi-Speed Certified	USB 2.0 Hi-Speed Certified	USB 2.0 Hi-Speed Certified

*USB 2.0 Maximum Isochronous Bandwidth

Development Environment and Support

Hardware	Software
■ PCI Adapter Card Form Factor plugs directly into a PC for Windows based development	■ Windows, Linux, and WinCE Firmware APIs for abstracting all hardware elements
■ Turns the PC into a USB 2.0 Device	■ USB Mass Storage Class Support
■ Develop your software on a proven platform before your hardware is ready	■ USB Printer Class Support
■ Schematics, BOM, and Gerber files	■ Sample device side source code for use in custom configurations
■ Schematic and Layout Review	■ Reference firmware and USB Host side drivers with source code
	■ Host side applications for test and debug

PEX 8111
PCI Express-to-PCI Bridge

The World's Smallest PCI Express Bridge

The PLX Technology PEX 8111 is a high performance bridge that enables designers to migrate legacy PCI bus interfaces to the new advanced serial PCI Express architecture. The tiny BGA package and low power consumption make it the ideal bridge for applications with limited board space and power budget.

This 2-port device is equipped with an integrated PCI Express PHY that provides a x1 link at 2.5 Gbps. Supporting standard PCI Express signaling compliant to the 1.0a specification, the integrated PHY delivers the high bandwidth at low pin count (4-pins) using LVDS technology.

The single parallel bus segment supports the latest PCI bus protocol. With a 32-bit wide parallel data path running at 33MHz, the standard PCI interface accommodates a broad range of legacy applications.

Reverse Bridging

The PEX 8111 can be configured to support either forward or reverse bridging operation as defined by the PCI Express-to-PCI/PCI-X Bridge Specification 1.0. As a reverse bridge, the PEX 8111 allows conventional PCI CPU subsystems to configure and control downstream PCI Express devices. The PEX 8111 includes provisions for reverse bridging such as reverse configuration and interrupt handling.

Note: PEX 8111 is available in a standard and a lead free package.

Interfaces	Description
PCI Express Link Width	Single link of x1
PCI Express Lane Speed	2.5 Gbps TX and RX lanes
PCI Express Port	1.0a, polarity inversion
PCI Bus Type	PCI r3.0, 32-bit, 33MHz
Electrical Characteristics	**Description**
Core Voltage	1.5V
SerDes reference	1.5V
PCI I/O	3.3V (5V tolerant)
Packaging	**Description**
Package Type	144-ball, Plastic BGA 161-ball, fine-pitch, Plastic BGA
Package Size	13mm x 13mm 10mm x 10mm (fine-pitch)
Operating Temperature Range	Commercial Grade 0° to +70° C
Power Dissipation	0.3 W Maximum
Features	**Description**
Bridge Modes	Forward and Reverse
PCI Arbitration	Up to four (4) external master devices
JTAG	Yes
EEPROM	Yes
GPIO	Four (4)
Rapid Development Kit	PEX 8111RDK Forward and Reverse

PEX 8114

PCI Express-to-PCI/PCI-X Bridge

The most flexible, high performance PCI Express Bridge

The PLX Technology PEX 8114 is a high performance bridge that enables designers to migrate legacy PCI and PCI-X bus interfaces to the new advanced serial PCI Express.

This 2-port device is equipped with a standard but flexible PCI Express PHY that scales to provide up to one Gigabyte per second of maximum throughput per transmit and receive direction. Supporting standard PCI Express signaling compliant to the 1.0a specification, the integrated PHY delivers the highest bandwidth at the lowest possible pin count (16-pins) using LVDS technology. The advanced PCI Express interface also supports Automatic Lane Reversal, End-to-end CRC, Data Poisoning and Link Training.

The single parallel bus segment supports the advanced PCI-X protocol. With a 64-bit wide parallel data path running at 133MHz, the standard PCI-X interface can reach a matching bandwidth of one Gigabyte per second. For legacy PCI applications, the bus segment also supports conventional PCI bus protocols.

Reverse Bridging

The PEX 8114 can be configured to support either forward or reverse bridging operation as defined by the PCI Express-to-PCI/PCI-X Bridge Specification 1.0. As a reverse bridge, the PEX 8114 allows conventional PCI/PCI-X CPU subsystems to configure and control downstream PCI Express devices. The PEX 8114 includes provisions for reverse bridging such as reverse configuration, root functions, interrupt handling, and advanced error reporting.

Non-Transparent Bridging

The PEX 8114 can also be configured as a non-transparent bridge, allowing distinct processor and memory domains to exist on both primary and secondary sides of the device. Non-Transparent Bridging can be used for intelligent adapter designs as well as in dual or multi-host environments.

Note: PEX 8114 is available in a standard and a lead free package.

Interfaces	Description
PCI Express Link Width	Single link of x4, x2 or x1
PCI Express Lane Speed	2.5 Gbps TX and RX lanes
PCI Express Port	1.0a, lane reversal, polarity reversal
PCI/PCI-X Bus Type	PCI-X, 64-bit, 133/100/66 MHz PCI, 64-bit, 66/50/33/25 MHz PCI r2.3
Electrical Characteristics	**Description**
Core Voltage	1.0V
SerDes reference	1.5V
PCI/PCI-X I/O	3.3V
Packaging	**Description**
Package Type	256-ball, Plastic BGA
Package Size	17mm x 17mm
Operating Temperature Range	Industrial Grade -40° to +85° C
Power Dissipation	2W Maximum, no heat sink
Features	**Description**
Bridge Modes	Forward and Reverse
Transparency Modes	Forward Transparent, Forward Non-Transparent and Reverse Transparent
PCI/PCI-X Arbitration	Up to 4 external master devices
JTAG	Yes - 1149.1/1149.6
EEPROM	Yes
Secondary PCI/PCI-X Clock Outputs	Four (4)
Rapid Development Kit	PEX 8114RDK Forward and Reverse

PEX 8532 & PEX 8516
Versatile PCI Express Switches

The most flexible, feature-rich, non-blocking PCI Express Switches

The PLX Technology PEX 8532 and PEX 8516 are high performance, multipurpose, highly configurable switches compliant with most recent version of the PCI Express specification, version 1.0a. The PEX 8532/16 products can be used as **fan-out**, **aggregation**, or **peer-to-peer** switches, and are equally well-suited to **fabric backplane** and **intelligent I/O** module applications. Operation and port widths of both the switches can be configured through upstream software or through an optional EEPROM.

Flexible Port Configurations

The PEX 8532/16 offer highly configurable ports. There are a maximum of 8 ports (4 for PEX 8516) that can be configured to any legal width from x1 to x16 (x8 max for PEX 8516). The PEX 8532/16 support a large number of port configurations. For example, in a fan-out application one may configure the upstream port as x8 and the downstream ports as six x4 ports; two x8 & two x4 ports; three x8 ports; or any other combination that does not exceed the maximum number of lanes or ports. For a peer-to-peer application all eight ports can be configured as x4 or x2, or a combination of the two. In a port aggregation application four x2 or x4 ports can be configured for aggregation into one x8 or x16 port. *If you can think of a legal configuration within the lane and port count, you can configure the PEX 8532/16 to offer it.*

End-to-end Packet Integrity

The PEX family provides end-to-end CRC protection (ECRC) and Poison bit support to enable designs that require guaranteed error-free packets. These features are optional in the PCI Express specification, but PLX provides them across its entire PEX product line.

Non-Transparent Bridging

The PEX 8532/16 product family supports full non-transparent bridging functionality to allow implementation of multi-host systems and intelligent I/O modules in applications such as communications, storage, and blade servers.

Two Virtual Channels

The PEX 8532/16 products support 2 full-featured Virtual Channels (VCs) and a full 8 Traffic Classes (TCs). In addition, the devices offer user-selectable Virtual Channel arbitration algorithms to enable fine tuning of the Quality of Service (QoS) required for a specific application.

Low Power with Granular SerDes Control

The PEX 8532/16 provide low power capability that is fully compliant with the PCI Express power management specification. In addition, the SerDes physical links can be configured for low, typical or high power or turned off when unused for even lower power.

Hot Plug for High Availability

Each downstream port of PEX 8532/16 includes a Standard Hot Plug Controller that acts as a master to manage I/O module hot-plug events. The upstream port is a fully compliant hot-plug client, allowing it to be used on hot-pluggable adapter cards, backplanes and fabric modules.

Note: PEX 8532 and PEX 8516 are available in standard and lead free packages.

Interfaces	
PCI Express Ports	PEX 8532: 32 lanes with 8 configurable ports PEX 8516: 16 lanes with 4 configurable ports
PCI Express Lane Speed	2.5 Gbps per lane (per LVDS pair)
PCI Express Port	1.0a, lane reversal, polarity reversal
Electrical Characteristics	
Core Voltage	1.0V
SerDes reference	1.5V
Hot-plug & I/O	3.3V
PEX 8532	
Package Type	680 ball, Plastic BGA
Package Size	35mm x 35mm
Operating Temperature Range	-40° to +85° C
Power Dissipation	6.5 Watts, 1 m/s airflow and heat-sink required
EEPROM	Yes (optional)
Strapping for port configuration	Yes
PEX 8516	
Package Type	312 ball, Plastic BGA
Package Size	27mm x 27mm
Operating Temperature Range	-40° to +85° C
Power Dissipation	3.5 watts with no heat-sink, no air-flow
EEPROM	Yes (optional)
Strapping for port configuration	Yes
Development Tools	
PEX8532RDK	Hardware, SW drivers, API, GUI and design guide

PLX FastLane™ PCI and PCI-X Bridges

Get in the FastLane with the PCI 6000 Series

The PLX FastLane PCI 6000 series has the industry's broadest set of PCI-to-PCI bridges. These bridges allow more devices to be attached to the PCI bus, and provide the ability to include intelligent adapters on a PCI bus. In addition, these bridges allow PCI buses of different speeds to be part of the same subsystem.

The PLX FastLane PCI and PCI-X family of interconnect devices include PCI-to-PCI and PCI-X to PCI-X bridging devices, offering system designers several distinct features along with vastly improved I/O performance. The PLX FastLane PCI 6000 series of PCI-to-PCI bridging products provides designers with support for the entire range of current PCI bus widths and speeds, including 32-bit, 33MHz; 64-bit, 66MHz; and the latest 64-bit, 133MHz PCI-X variety of the standard.

The FastLane PCI 6000 product line is distinguished by featuring the lowest power, highest performance and smallest footprints in the industry. The line includes features such as the ability to clock the PCI bus segments asynchronously to one another and to operate the parts in either transparent or true non-transparent mode. This is crucial when the same module is designed to be used as a host or a peripheral in a system. In addition, all PLX FastLane PCI 6000 series bridges are 5V-tolerant.

These products were designed to provide high-performance interconnect for servers, storage, telecommunications, networking, and embedded applications. Like all PLX interconnect chips, the PCI 6000 series products are supported by PLX's comprehensive reference design tools and the industry-recognized PLX support infrastructure.

P-to-P Bridge Rapid Development Kits (RDK)

The PLX FastLane PCI 6000RDK series includes PCI 6000 series devices on evaluation boards along with documentation to facilitate rapid development of systems using PLX FastLane PCI 6000 series PCI-to-PCI bridges.

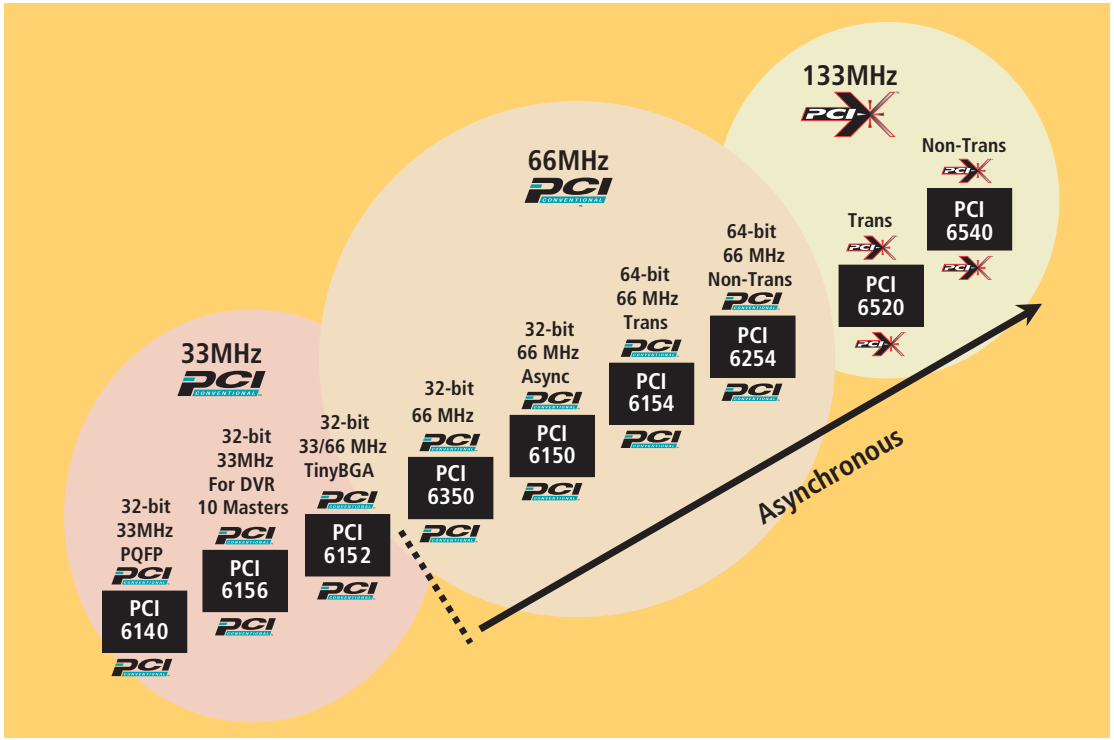
Table 1. FastLane PCI 6000 Series

FastLane Bridges PCI 6000 Series and PCI-X Bridges	PCI 6140-AA33PC	PCI 6150-BB66BC PCI 6150-BB66PC	PCI 6152-CC33BC PCI 6152-CC33PC	PCI 6152-CC66BC	PCI 6156-DA33PC	PCI 6350-AA66BC PCI 6350-AA66PC	PCI 6154-BB66BC	PCI 6254-BB66BC	PCI 6520-XX	PCI 6540-XX
PCI Bus Type	32-bit 33MHz PCI	32-bit 66MHz PCI	32-bit 33MHz PCI	32-bit 66MHz PCI	32-bit 33MHz PCI	32-bit 66MHz PCI	64-bit 66MHz PCI	64-bit 66MHz	64-bit 133MHz PCI-X	64-bit 133MHz PCI-X
PCI Local Bus Support	Rev. 2.1 compliant	Rev. 2.3 compliant	Rev. 2.2 compliant	Rev. 2.2 compliant	Rev. 2.2 compliant	Rev. 3.0 compliant	Rev. 2.3 compliant	Rev. 2.3 compliant	Rev. 3.0 compliant	Rev. 3.0 compliant
3.3V and 5V Tolerant I/O	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Asynchronous Operation	No	25MHz to 66MHz	No	No	No	33MHz to 66MHz	25MHz to 66MHz	25MHz to 66MHz	25MHz to 133MHz	25MHz to 133MHz
Power Dissipation	200mW	1.8W	300mW	300mW	300mW		2.0W	2.0W	2.4W	2.4W
GPIO Interface	No	Four GPIO Pins	Four GPIO Pins	Four GPIO Pins		Four GPIO Pins	Four GPIO Pins	16 GPIO Pins	8 GPIO Pins	16 GPIO Pins
Transparency Modes	Transparent only	Transparent only	Transparent only	Transparent only	Transparent only	Transparent only	Transparent only	Transparent, Non-Transparent and Universal modes	Transparent only	Transparent, Non-Transparent and Universal modes
CompactPCI Compatible Hot Swap	Friendly	Rev 2.0 with PI=1	Friendly	Friendly	Friendly	Friendly	Rev 2.0 with PI=1	Rev 2.0 with PI=1	Rev 2.0 with PI=1	Rev 2.0 with PI=1
Data FIFO	No	1KB FIFO	No	No	No	192 byte	1KB FIFO	1KB FIFO	10KB FIFO	10KB FIFO
# of Bus Masters on Secondary Bus	Up to 4	Up to 9	Up to 4	Up to 4	Up to 10	Up to 9	Up to 9	Up to 9	Up to 8	Up to 8
Retry Architecture	Standard	Standard	Performance Optimized	Performance Optimized	Performance Optimized	standard	Standard	Standard	Standard	Standard
Programmable Flow-Thru	No	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes
Programmable Prefetch	No	Up to 4KB	No	No	No	Up to 2KB	Up to 4KB	Up to 4KB	Up to 4KB	Up to 4KB
Zero wait state burst	Up to 1KB	Up to 1KB	Up to 1KB	Up to 1KB	Up to 1KB	Up to 4KB	Up to 1KB	Up to 1KB	Up to 4KB	Up to 4KB
EEPROM support	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vital Product Data Registers	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
D3 Wakeup Power Mgmt	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Secondary Clock Outputs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
JTAG Support	No	IEEE 1149.1 compliant	No	No	No	IEEE 1149.1 compliant	IEEE 1149.1 compliant	IEEE 1149.1 compliant	IEEE 1149.1 compliant	IEEE 1149.1 compliant
Packaging	PQFP-128	BGA-256 PQFP-208	Tiny BGA-160 PQFP-160	Tiny BGA-160	PQFP-208	BGA-256 PQFP-208	PBGA-304	PBGA-365	PBGA-380	PBGA-380
Package Size	23mm x 17mm	17mm x 17mm 31mm x 31mm	15mm x 15mm 32mm x 32mm	15mm x 15mm No PQFP	31mm x 31mm	17mm x 17mm 31mm x 31mm	31mm x 31mm	31mm x 31mm	27mm x 27mm	27mm x 27mm
Rapid Development Kit	PCI 6140RDK	PCI 6150RDK	PCI 6152RDK	PCI 6152RDK	PCI 6156RDK	PCI 6350RDK	PCI 6154RDK	PCI 6254RDK	PCI 6520RDK	PCI 6540RDK

PLX FastLane™ PCI and PCI-X Bridges

P-to-P Bridge FastLane™ Rapid Development Kits (RDKs)

	PCI 6140RDK	PCI 6152RDK	PCI 6156RDK	PCI 6150RDK	PCI 6350RDK	PCI 6154RDK	PCI 6254RDK	PCI6520RDK	PCI 6540RDK
Frequency on Primary MHz	33MHz	33MHz	33MHz	25MHz - 66MHz	25 MHz -66MHz	25MHz - 66MHz	25MHz - 66MHz	33MHz - 133MHz	34MHz - 133MHz
Frequency on Secondary MHz	33MHz	33MHz	33MHz	25MHz - 66MHz	25 MHz -66MHz	25MHz - 66MHz	25MHz - 66MHz	33MHz - 133MHz	34MHz - 133 MHz
PCI rev compliance	r2.1	r2.2	r2.2	r2.3	r3.0	r2.3	r2.3	r3.0	r3.0
Number of PCI slots on secondary	5	4	10	4	4	5	5	4	4
Asynchronous Mode	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
EEPROM	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Optional BNC Connector/ Oscillator for secondary side	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Software support	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes



PLX Bridges

PLX *FastLane* Bridges vs. Industry-Standards

Standard Bridge	Bridge Type	Fast Lane Bridge Part Number	PKG-PINS	Fast Track Bridge® Advantages
21150-BC	32-bit / 66 MHz transparent	PCI 6150-BB66PC	PQFP-208	• Asynchronous operation • Performance-optimized retry • EEPROM Support
GD21150-AC	32-bit / 66 MHz transparent	PCI 6150-BB66BC	PBGA-256	• Asynchronous operation • Performance-optimized retry • EEPROM Support
21152-BB	32-bit / 33 MHz transparent	PCI 6152-CC33PC	PQFP-160	• 66 MHz version available from PLX • 15x15mm Tiny BGA version available from PLX • Lower power dissipation; • Performance-optimized retry • EEPROM Support
21154-BE	64-bit / 66 MHz transparent	PCI 6154-BB66BC	PBGA-304	• Asynchronous operation • Performance-optimized retry • EEPROM Support • 5V Tolerant I/O, EEPROM
21554-AA*	64-bit / 66 MHz transparent	PCI 6254-BB66BC	PBGA-365	• Discontinued by original vendor; supported by PLX
21555-BA*	64-bit / 66 MHz non-transparent	PCI 6254-BB66BC	PBGA-365	• PCI Rev. 2.3 Compliant

* Functionally compatible

PLX *FastLane* Bridges Advantages

- Better Performance than Common P-to-P Bridges
  - Large Buffer Sizes
  - Larger Prefetch Sizes
  - Smart Prefetch
  - Performance-Optimized Retry Architecture
  - Programmable Flow-Through
- Enhanced Compatibility
  - Asynchronous Clocking
  - Smaller Packages, Smaller Footprint BGA Versions
  - Lower Power Consumption
  - 5V Tolerant I/O
- Broad tools and customer service support

FastLane Bridges Unique Features

- Non-Transparency
  - Benefit: Allows dual processor designs
  - Better performance, better data availability
- Universal Mode for CompactPCI
  - Allows a card to be system and peripheral card
  - Lowers inventory costs
- CompactPCI Hot-Swap Friendly
  - Simplifies hot swap designs
- EEPROM Support
  - Allows bridge configuration without driver support
- Smallest Packages
- Lowest Power Consumption

PowerDrive HT7520

HyperTransport Tunnel-to-Dual PCI-X Bridge

The Most Scalable, Highest Performance HyperTransport Interconnect Bridge

Ever increasing CPU bus clock speeds, coupled with faster peripheral devices, have engendered I/O bottlenecks in high-speed, networked applications such as switches, routers and storage servers. The HyperTransport technology is a fast, non-proprietary, point-to-point link that offers the speed necessary for these advanced systems.

PLX Technology has developed the PowerDrive™ HT7520, a HyperTransport Tunnel-to-Dual PCI-X bridge that interfaces HyperTransport-based devices to PCI-based peripherals. The HT7520 offers flexible connectivity and high performance, enabling today's high-speed embedded systems.

Scalability

PowerDrive devices provide maximum scalability through an onboard bi-directional HyperTransport tunnel interface. The tunnel enables daisy chaining of up to 31 other HyperTransport devices on a single bus. The PowerDrive device couples a HyperTransport tunnel with two PCI-X bridges. The PCI-X bridge provides a connection between HyperTransport based processors and PCI based peripherals. Together, the two PCI-X bridges enable support for connectivity of up to 10 PCI masters. As a result, PowerDrive enables higher capacity systems via connections to multiple PCI-X devices and HyperTransport peripherals.

High Performance

PowerDrive devices significantly increase performance over PCI-only based systems. The HyperTransport Tunnel has a 16-bit interface (Side A) and an 8-bit interface (Side B). PowerDrive also offers a full, 800MHz DDR clock rate. As a result, Side A of the tunnel provides a maximum bandwidth of 6.4 GB/s, a 48X speed up over standard PCI. Side B provides a maximum of 3.2 GB/s, giving a 24X speed up. These high-speed interfaces provide fast peripheral accesses to/from memory.

Performance is also maximized through the PCI-X bridges. Each 64-bit wide bridge is capable of a maximum speed of 133 MHz. In PCI-X mode, 133-, 100- and 66MHz transfer rates are supported. In PCI mode, each bridge supports 66-and 33MHz transfer rates. For optimum performance networks, PowerDrive does not require the highest speed device to be slowed down to the performance of the slowest peripheral. Instead, the PowerDrive device allows high-speed loads to operate on a separate bridge, enabling high-speed traffic to run full tilt. A high bandwidth tunnel and multiple high-speed bridges are the enablers for high-performance embedded applications.

PowerDrive HT7520

Interfaces	
Tunnel Bus Type	HyperTransport
HyperTransport bus speeds	200, 400, 600 and 800 MHz
Maximum Bandwidth	6.4 GB/s
Link Widths	Side A, up to 16-bits; Side B, up to 8-bits
PCI Bus Type	PCI-X, 64-bit, 133/100/66 MHz PCI, 64-bit, 66/33 MHz PCI r2.2
PCI Hot-Plug	Revision 1.1 Compliant
PCI Standard Hot-Plug Controller (SHPC)	Revision 1.0 Compliant
Electrical Characteristics	
Core Voltage	1.8V
PCI-X Bus Voltage	3.3V
HT Link Signaling Voltage	1.2V LVDS
5V PCI	-
Packaging	
Package Size/Type	829-pin, 37.5 x 37.5, OBGA
Operating Temperature Range	0° to +85° C
Control	
PCI Power Management	✓ Revision 1.1
Nandtree support	✓
PCI Arbiter	✓

PCI I/O Accelerators

PLX offers two types of I/O Accelerators: Targets (Table 1) and Masters (Table 2).

PCI Target I/O Accelerators support Direct Slave operation, PCI bus master devices to access memory and other slave devices on a local bus. They have broad application in adapters and embedded peripheral functions that are controlled from the PCI bus.

PCI Bus Master I/O Accelerators support Direct Slave operation, plus they add support for Direct Master operation, allowing processor/local bus master devices to access memory and other devices on the PCI bus, and they support DMA, allowing masters on either bus to direct the chip to perform data transfers. Mastering devices also provide intelligent messaging units for system control. They have broad application in intelligent peripheral devices and embedded hosts.

Table 1. PCI Target I/O Accelerators

Interfaces	PCI 9052	PCI 9030-AA60PI PCI 9030-AA60BI
PCI Bus Type	32-bit, 33MHz PCI r2.1	32-bit, 33MHz PCI r2.2
Local Bus Type(s)	C: Generic, 28-bit Address, 32-bit Data, non-muxed J: Generic, 28-bit Address, 32-bit Data, muxed I: ISA compatible	C: Generic, 28-bit Address, 32-bit Data, non-muxed J: Generic, 28-bit Address, 32-bit Data, muxed
Maximum Local Bus Speed	40MHz	60MHz
Core Voltage	5V	3.3V
I/O Ring Voltage	5V	3.3V
3.3V PCI and Local Bus	-	✓
5V PCI and Local Bus	✓	✓ (Tolerant)
PICMG 2.1 Hot Swap Support	r1.0 Hot Swap Capable	r2.0 Hot Swap Silicon Programming Interface 0 (PI=0) Bias Voltage/Early Power
Package Size/Type(s) [pin/ball count, external dimensions (mm), pin/ball pitch (mm), package type]	160-pin, 31.2x31.2, 0.65 PQFP	176-pin, 26x26, 0.5 PQFP 180-pin, 12x12, 0.8 µBGA
Industrial Temperature Range Operation	✓	✓
Control		
PCI Power Management	-	✓ (Revision 1.1)
PCI r2.2 VPD Support	-	✓
Serial EEPROM Support	1-Kbit, 3-wire devices with sequential read support	2-Kbit, 4-Kbit, 3-wire devices with sequential read support
JTAG Boundary Scan	-	✓
Register Compatibility	Backward compatible with PCI 9050	Backward compatible with PCI 9050
Data Transfer		
Direct Slave Address Spaces	4 General-Purpose 1 Expansion ROM	4 General-Purpose 1 Expansion ROM
Direct Slave Read FIFO Depth	8 Lwords (32 bytes)	16 Lwords (64 bytes)
Direct Slave Write FIFO Depth	16 Lwords (64 bytes)	32 Lwords (128 bytes)
PCI r2.1 Deferred Read Support	✓	✓
Programmable READY# Time Out	-	✓
Programmable Pre-Fetch Counter	✓	✓
Big Endian/Little Endian Conversion	✓	✓

Note: "-" means the product feature is not supported for that device.

PCI I/O Accelerators

Table 2. PCI Bus Master I/O Accelerators

Interfaces	PCI 9080-3	PCI 9054-AC50PI PCI 9054-AC50BI	PCI 9056-BA66BI	PCI 9656-BA66BI
PCI Bus Type	32-bit, 33MHz PCI r2.1	32-bit, 33MHz PCI r2.2	32-bit, 66MHz PCI r2.2	64-bit, 66MHz PCI r2.2
Local Bus Types(s)	C: Generic, 32-bit Address, 32-bit Data, non-muxed J: Generic, 32-bit Address, 32-bit Data, muxed S: Generic, 32-bit Address, 16-bit Data, muxed	C: Generic, 32-bit Address, 32-bit Data, non-muxed J: Generic, 32-bit Address, 32-bit Data, muxed M: PowerPC™ PowerQUICC™, 32-bit Address, 32-bit Data, non-muxed	C: Generic, 32-bit Address, 32-bit Data, non-muxed J: Generic, 32-bit Address, 32-bit Data, muxed M: PowerPC™ PowerQUICC™, 32-bit Address, 32-bit Data, non-muxed	C: Generic, 32-bit Address, 32-bit Data, non-muxed J: Generic, 32-bit Address, 32-bit Data, muxed M: PowerPC™ PowerQUICC™, 32-bit Address, 32-bit Data, non-muxed
Maximum Local Bus Speed	40MHz	50MHz	66MHz	66MHz
Core Voltage	5V	3.3V	2.5V	2.5V
I/O Ring Voltage	5V or 3.3V PCI, 5V only Local Bus	3.3V	3.3V	3.3V
3.3V PCI and Local Bus	Only PCI and only if 3.3V source to PCI	✓	✓	✓
5V PCI and Local Bus	✓ (For local Bus) ✓ (For PCI Bus only if 5V source to PCI)	✓ (Tolerant)	✓ (Tolerant)	✓ (Tolerant)
PICMG 2.1 Hot Swap Support	r1.0 Hot Swap Capable	r2.0 Hot Swap Silicon Programming Interface 0 (PI=0)	r2.0 Hot Swap Silicon Programming Interface 0 (PI=0) Bias Voltage/Early Power Support Initially Not Respond	r2.0 Hot Swap Silicon Programming Interface 0 (PI=0) Bias Voltage/Early Power Support 64-bit Initialization Initially Not Respond
Package Size/Type(s) [pin/ball count, dimensions, pin/ball pitch, package type]	208-pin, 30.6mm x 30.6mm, .5mm PQFP	176-pin, 26mm x 26mm, .5mm PQFP 225-ball, 27mm x 27mm, 1.5mm PBGA	256-ball, 17mm x 17mm, 1.0mm FPBGA	272-ball, 27mm x 27mm, 1.27mm PBGA
Industrial Temperature Range Operation	✓	✓	✓	✓
Control				
Mailbox Registers	Eight 32-bit	Eight 32-bit	Eight 32-bit	Eight 32-bit
Doorbell Registers	Two 32-bit	Two 32-bit	Two 32-bit	Two 32-bit
I_2O Messaging Unit	✓ (Revision 1.5)	✓ (Revision 1.5)	✓ (Revision 1.5)	✓ (Revision 1.5)
PCI Arbiter	-	-	✓ (7 external masters)	✓ (7 external masters)
PCI Type 0/1 Configuration Support	✓	✓	✓	✓
PCI Power Management	-	✓ (Revision 1.1)	✓ (Revision 1.1)	✓ (Revision 1.1)
$D3_{COLD}$ PME Generation	-	-	✓	✓
PCI r2.2 VPD Support	-	✓	✓	✓
Serial EEPROM Support	1-Kbit, 2-Kbit, 4-Kbit, 3-wire devices with sequential read support	2-Kbit, 4-Kbit, 3-wire devices with sequential read support	2-Kbit, 4-Kbit, 3-wire devices with sequential read support	2-Kbit, 4-Kbit, 3-wire devices with read support
JTAG Boundary Scan	-	-	✓	✓
Register Compatibility	Backward compatible with PCI 9060	Backward compatible with PCI 9080	Backward compatible with PCI 9054	Backward compatible with PCI 9054
Direct Slave Address Spaces	2 General-Purpose 1 Expansion ROM	2 General-Purpose 1 Expansion ROM	2 General-Purpose 1 Expansion ROM	2 General-Purpose 1 Expansion ROM

Note: "-" means the product feature is not supported for that device.

PCI I/O Accelerators

Table 2. PCI Bus Master I/O Accelerators (continued)

Data Transfer	PCI-9080-3	PCI 9054-AC50PI PCI 9054-AC50BI	PCI 9056-BA66BI	PCI 9656-BA66BI
Direct Slave Read FIFO Depth	16 Lwords (64 bytes)	16 Lwords (64 bytes)	32 Lwords (128 bytes)	16 Qwords (128 bytes)
Direct Slave Write FIFO Depth	32 Lwords (128 bytes)	32 Lwords (128 bytes)	64 Lwords (256 bytes)	32 Qwords (256 bytes)
PCI r2.1 Delayed Read Support	✓	✓	✓	✓
Programmable READY# Time Out	-	-	✓	✓
Direct Master Address Spaces	1	1	1	1
Direct Master Read FIFO Depth	16 Lwords (64 bytes)	16 Lwords (64 bytes)	32 Lword (128 bytes)	16 Qwords (128 bytes)
Direct Master Write FIFO Depth	32 Lwords (128 bytes)	32 Lwords (128 bytes)	64 Lwords (256 bytes)	32 Qwords (256 bytes)
DMA Channels	2	2	2	2
DMA Channel 0 FIFO Depth	32 Lwords (128 bytes) Bi-directional	32 Lwords (128 bytes) Bi-directional	64 Lwords (256 bytes) Bi-directional	32 Qwords (256 bytes) Bi-directional
DMA Channel 1 FIFO Depth	16 Lwords (64 bytes) Bi-directional	16 Lwords (64 bytes) Bi-directional	64 Lwords (256 bytes) Bi-directional	32 Qwords (256 bytes) Bi-directional
DMA Demand Mode H/W Control	✓	✓ (Channel 0 Only)	✓	✓
DMA EOT Mode H/W Control	✓	✓	✓	✓
DMA Block Mode	✓	✓	✓	✓
DMA Scatter/Gather Mode	✓	✓	✓	✓
DMA Ring Management Mode	-	-	✓	✓
Programmable Pre-Fetch Counter	✓	✓	✓	✓
Dual Address Cycle Generation	-	✓	✓	✓
Big Endian/Little Endian Conversion	✓	✓	✓	✓

Note: "-" means the product feature is not supported for that device.

Application Notes

Application Notes from PLX Technology provide in-depth information of how to connect industry leading CPUs and DSPs to PLX devices. All Application Notes are available on the PLX website in the Toolboxes for each respective PLX product.

PCI I/O Accelerator Rapid Development Kits

Rapid Development Kits (RDK) are comprehensive PCI development tool packages, which includes the PLX PCI HDK CD-ROM (see below), PCI SDK software CD-ROM, and a PCI or CompactPCI Reference Board.

	PCI 9052	PCI 9030		PCI 9054			PCI 9056		PCI 9656	
Part Number	**PCI 9052 RDK-LITE**	**CompactPCI 9030RDK-LITE**	**PCI 9030 RDK-LITE**	**CompactPCI 9054RDK-860**	**PCI 9054 RDK-860**	**PCI 9054 RDK-LITE**	**CompactPCI 9056RDK-860**	**PCI 9056 RDK-LITE**	**CompactPCI 9656RDK-860**	**PCI 9656 RDK-LITE**
PCI Compliance	PCI r2.1 32bit, 33MHz	PICMG 2.0 r2.1 PICMG 2.1 r1.0 32bit, 33MHz	PCI r2.2 32bit, 33MHz	PICMG 2.0 r2.1 PICMG 2.1 r1.0 32bit, 33MHz	PCI r2.2 32bit, 33MHz	PCI r2.2 32bit, 33MHz	PICMG 2.0 r3.0 PICMG 2.1 r2.0 32bit, 66MHz	PCI r2.2 32bit, 66MHz	PICMG 2.0 r3.0 PICMG 2.1 r2.0 64bit, 66Mhz	PCI r2.2 64bit, 66Mhz
Local Bus	Non-muxed 28-bit Address 32-bit Data 40MHz generic (C) Configurable to muxed (J)	Non-muxed 28-bit Address 32-bit Data 60MHz generic (C) Configurable to muxed (J)	Non-muxed 28-bit Address 32-bit Data 60MHz generic (C) Configurable to muxed (J)	32-bit Address 32-bit Data 50MHz PowerQUICC (M)	32-bit Address 32-bit Data 50MHz PowerQUICC (M)	Non-muxed 32-bit Address 32-bit Data 50MHz generic (C) Configurable to muxed (J)	32-bit Address 32-bit Data 50MHz PowerQUICC (M)	Non-muxed 32-bit Address 32-bit Data 50MHz generic (C) Configurable to muxed (J)	32-bit Address 32-bit Data 66Mhz PowerQUICC (M)	Non-muxed 32-bit Address 32-bit Data 66Mhz generic (C) Configurable to muxed (J)
CPU	-	User provided Footprints available on board	User provided Footprints available on board	Motorola MPC860 PowerQUICC	Motorola MPC860 PowerQUICC	User provided Footprints available on board	Motorola MPC860T PowerQUICC	User provided Footprints available on board	Motorola MPC860T PowerQUICC	User provided Footprints available on board
SDRAM	-	-	-	32 Mbytes (8M x 32)	32 Mbytes (8M x 32)	Footprints available on Board	64 Mbytes (16M x 32)	-	64 Mbytes (16M x 32)	-
SRAM	128 Kbytes (32K x 32)	16 Kbytes (8K x 16)	16 Kbytes (8K x 16)	512 Kbytes (128K x 32)	-	128 Kbytes (32K x 32)	512 Kbytes (128K x 32)	512 Kbytes (128K x 32)	512 Kbytes (128K x 32)	128 Kbytes (32K x 32)
Boot ROM Flash	Socket available on board	Socket available on board	Socket available on board	512 Kbytes (512K x 8)	512 Kbytes (512K x 8)	Socket available on board	512 Kbytes (512K x 8) plus 8Mbytes (8M x 8)	Socket available on board	512 Kbytes (512K x 8) plus 8Mbytes (8M x 8)	Socket available on board
Communication Port(s)	-	RS-232 Serial	RS-232 Serial	RS-232 Serial	RS-232 Serial	RS-232 Serial	RS-232 Serial (2), 10/100 Mbit Ethernet	RS-232 Serial	RS-232 Serial (2), 10/100 Mbit Ethernet	RS-232 Serial
Debug Port(s)	-	-	-	BDM	BDM	-	BDM	-	BDM	-
Software Included	PCI SDK	PCI SDK	PCI SDK	PCI SDK	PCI SDK	PCI SDK	PCI SDK	PCI SDK	PCI SDK	PCI SDK
PLX Option Module (POM) Connector	-	✓	✓	✓	-	✓	✓	✓	✓	✓

Note: "-" means the product feature is not supported for that device.

Hardware Development Kit CD-ROM Collection v3.1

The PCI Hardware Development Kit (HDK) CD-ROM Collection v3.1 is a comprehensive assortment of PLX hardware tools. It includes the contents of the above product HDKs on a single CD-ROM, plus all current Application Notes and the OrCAD Capture Symbol Library. It contains complete hardware design information including OrCAD Schematics, Gerber Layout Files, OrCAD layout source files, Bill of Materials (BOM), Hardware Reference Manuals, Verilog source code (where applicable), PLX chip Data Books, and Product Briefs.

PCI Software Development Kit (SDK)

PLX's PCI SDK 4.2 is an invaluable tool for PCI software developers. The following table details its extensive software components. The PCI SDK 4.2 CD-ROM also contains complete documentation in PDF form, including the PCI SDK User's Manual, PCI SDK Programmer's Reference Manual.

SDK 4.2 Software Component	Supported Chips															Supported Rapid Development Kits									
	PCI 6140	PCI 6152	PCI 6156♦	PCI 6150	PCI 6350♦	PCI 6154	PCI 6254	PCI 6520	PCI 6540	PCI 9052	PCI 9030	PCI 9080	PCI 9054	PCI 9056	PCI 9656	PCI 9052RDK-LITE	PCI 9030RDK-LITE	CompactPCI 9030RDK-LITE	PCI 9054RDK-LITE	PCI 9054RDK-860	CompactPCI 9054RDK-860	PCI 9056RDK-LITE	CompactPCI 9056RDK-860	PCI 9656RDK-LITE	CompactPCI 9656RDK-860
Windows Applications																									
PLXMon™ Support *Interactive Windows-Based GUI*	✓	✓	♦	✓	♦	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PLXMon Performance Measure	♦*	♦*	♦*	♦*	♦*	♦*	♦*	♦*	♦*	✓	✓	✓	✓	✓	✓										
PCI Software Development Support																									
C/C++ API Library Object & Source Files w/Plug-in For Visual Basic Support *Create PCI Executables In Both Debug and Final Release Forms*	✓	✓	♦	✓	♦	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Source code Using PCI API library, Non-transparent mode, etc.	♦	♦	♦	♦	♦	♦	♦	♦	✓																
Source Code Examples Using PCI API Library *Direct Slave Transfer, Interrupt Event Handling, Scatter/Gather DMA, and more*										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Windows 98/ME Support Executables and Source Code	♦	♦	♦	♦	♦	♦	♦	♦	♦																
Windows 98/Me/XP/2000 Driver Executables & Source Code *WDM-Compliant*										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Windows 2000/XP Support Executables and Source Code	✓	✓	♦	✓	♦	✓	✓	✓																	
Windows NT Driver Executable and Source Code	✓	✓	♦	✓	♦	✓	✓	✓	✓																
Windows NT Driver Executable & Source Code *Windows NT-Compliant*										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Linux Driver Executable and Source code	✓	✓	♦	✓	♦	✓	✓	✓	✓																
Linux Driver Executable & Source Code *Kernel 2.4 Compliant*										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VxWorks Driver Executable & Source Code *VxWorks v5.4 Compliant*														✓	✓							✓	✓	✓	✓
Local Bus Software Development Support																									
C/C++ API Library Object Files & Source Code *Create Local Bus Executables*													✓	✓	✓					✓	✓		✓		✓
Source Code Examples Using Local Bus API Library *Direct Master Transfer, Block Mode DMA, & Scatter/Gather DMA, and more*													✓	✓	✓					✓	✓		✓		✓
Back-End Monitor Executable & Source Code *Enables Local Bus Communication With PCI Application via the RDK Serial Port*													✓	✓	✓					✓	✓		✓		✓
PLX Board Support Package (BSP) Executable & Source Code *Generic Local Bus Software Environment*													✓	✓	✓					✓	✓		✓		✓
VxWorks BSP Executable & Source Code For RDK *VxWorks-Compliant Local Bus Software Environment*													✓	✓	✓					✓	✓		✓		✓

♦*Available in SDK 4.3 (Q4, 2004)*

**PLX Performance Measure Tool can be used to estimate performance on the PCI 6000 series in conjunction with the CopmactPCI 9056RDK-860 and CompactPCI 9656RDK-860 DMA boards. Available in SDK 4.3 (Q4, 2004).*

PLX Partners

PLX Partners offer products and services that work hand-in-hand to give you a complete embedded development solution. Our partner solutions enable you to add features to your products that can set you apart from your competition. We invite you to learn more about our partner's products by visiting their web site.

Third Party Development Tools

Real-Time Operating Systems

Partner	OS Name	PCI 9052	PCI 9030	PCI 9054	PCI 9056	PCI 9656
Precise Software Technologies (613) 596 2251 www.psti.com	MQX			✓	◆	◆
WindRiver Systems (800) 545 9463 www.wrs.com	VxWorks			✓	◆	◆
	pSOS			✓		

High Availability Tools

Partner	Tool Name	PCI 9052	PCI 9030	PCI 9054	PCI 9056	PCI 9656
Jungo, Ltd. (877) 514 0537 www.jungo.com	GO-Hot Swap	✓	✓	✓	✓	✓
PCI Automation (925) 755 9602 www.pcisystems.com	PC-MIP CompactPCI Boards	✓	✓	✓	✓	✓

Device Driver Development

Partner	Tool Name	PCI 9052	PCI 9030	PCI 9054	PCI 9056	PCI 9656
Jungo, Ltd. (877) 514 0537 www.jungo.com	WinDriver Development Tool Kit for Windows, VxWorks, Linux, Solaris	✓	✓	✓	✓	✓

Simulation Models

Partner	Tool Name	PCI 9052	PCI 9030*	PCI 9054*	PCI 9056*	PCI 9656*
Synopsys (800) 348 6335 www.synopsys.com	Verilog Simulation Models		✓			

* Note: PLX provides verilog and VHDL simulation models for these chips.

Complementary Silicon

Partner	Processor
Motorola (800) 521 6274 www.motorola.com	Coldfire, PowerQUICC, PowerQUICC II

Note: Product availability is defined as follows: ✓ Available now. ◆ Development in progress.
For current status, visit the PLX Partner Program web site at www.plxtech.com/partners.

Software Development & Debugging Tools

Partner	Tool Name	PCI 9052	PCI 9030	PCI 9054	PCI 9056	PCI 9656
Softronics +61 500 505059 www.softronx.com	Ice Pack Debugging Tool				◆	

Analyzer Tools

Partner	Tool Name	PCI 9052	PCI 9030	PCI 9054	PCI 9056	PCI 9656
Computer Bus Tools (805) 376 6040 www.bustools.com	CompactPCI/PCI Bus Analyzers/Exercisers	✓	✓	✓	✓	✓
Tateno Dennou (Japan) 0428 77 7000 www.dsp-tdi.com	Catalyst PCI/CompactPCI Analyzers	✓	✓	✓	✓	✓

Reference Boards & Supporting Hardware

Partner	Tool Name	PCI 9052	PCI 9030	PCI 9054	PCI 9056	PCI 9656
H+K Messysteme GmbH (Europe) +49 80 6576 2846 www.pci-tools.com	PCI-Proto Lab/PLX Rapid Development Kit		◆	✓		
DAWIN Technology 02 529 2826 www.dawintech.co.kr	Maple and Summit Reference Design Kit			✓		
Softronics +61 500 505059 www.softronix.com	62-PCI64 - PCI Board for TI DSP Development				◆	◆
Technobox (856) 778 5512 www.technobox.com	PMC Development Tools and Adapters	✓	✓	✓	✓	✓

Backplane and Chassis

Partner	Tool Name	PCI 9052	PCI 9030	PCI 9054	PCI 9056	PCI 9656
Kaparel (519) 725 0101 www.kaparel.com	CompactPCI Backplanes / CompactPCI Bridge Modules	✓	✓	✓	✓	✓

Note: Product availability is defined as follows: ✓ Available now. ◆ Development in progress.
For current status, visit the PLX Partner Program web site at www.plxtech.com/partners.

Consulting Services

Partner	Specialization
Axtend Technologies (440) 519 9700 www.axtend.com	Embedded hardware and software development in Communications, Networking, Industrial Control, Data Acquisition
CeSigma +33 49437 2323 pro.wanadoo.fr/cesigma.com	Designs custom PCI and cPCI real time and physics dedicated systems and boards
Dynamic Engineering (831) 336 8891 www.dyneng.com	Mezzanine Products Solution Center, specializing in providing mezzanine board solutions to Industrial and Embedded computing designers
Excelerant Software Services (973) 401 0040 www.excelerantsoftware.com	Full Service Device Driver, (DSP), Firmware & CT Media Development Organization
General Standards (256) 880 8787 www.generalstandards.com	Custom and Standard High Performance Serial, Digital, and Analog I/O Boards
Intelligraphics (972) 479 1770 www.intelligraphics.com	Intelligraphics provides professional device driver and system-level software development services
iO Engineering (763) 682 6254 www.ioengineering.com	High speed digital, FPGA design, device drivers and software applications
K.I. Technology +81 45 949 5331 www.kitech.co.jp	Embedded systems for test, prototype, and development of specialty functions, i.e. image processing technology
MEV (Europe) 0161 477 1898 www.mev.co.uk	Extensive experience developing PCI hardware and device drivers
MPC Data Limited (Europe) +44 1225 868228 www.mpc-data.co.uk	A bespoke software house, specializing in low-level systems software and embedded firmware
Ontash & Ermac (201) 265 2189 www.ontash.com	Provider of logic and layout design consultation for major telecommunications companies
Orchid Technologies (978) 461 2000 www.orchid-tech.com	Specializes in the design and production of high technology electronic products
SBC Designs (256) 704 4650 www.sbcdesigns.com	Custom electronics design firm with expertise in developing PCI, CPCI, PICMG, and PMC designs, or unique form factors for special applications
Tateno Dennou (Japan) 0428 77 7000 www.dsp-tdi.com	Sells various PCI and DSP related products and tools
The PTR Group (703) 858 4723 www.theptrgroup.com	Software and firmware development services utilizing RTOS solutions

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