Dynamic Engineering

PCI Product Line

Complete product data and manuals are available on our website.

http://www.dyneng.com/pci.html

Dynamic Engineering enjoys a sterling reputation as a result of providing quality products and excellent service for over 20 years.

Dynamic Engineering is the Embedded Solution Center. We specialize in providing embedded solutions to integrators and designers. Dynamic Engineering is an expert with mezzanine modules (cPCI, custom, IndustryPack, PCI-104, PCIeXpress, PCI, PMC, VME). System engineers can mix and match different functions under different system architectures.

System designers can port solutions between different architectures quickly and easily with mezzanine designs and modular software.

Solutions offered include Custom Design, Analog I/O, Digital I/O, Serial I/O, Control, Bus Interface, Robotics, Telephony, Networking and more.
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PCI Carrier / Adapter Cards

**PCI2PMC**

1/2 Length Passive Adapter Mount PMC in PCI Slot 32/64 Bit  
http://www.dyneng.com/pci2pmc.html

PCI to PMC adapter/converter card provides the ability to install a PMC card into a standard or half length PCI slot.

The PCI2PMC has a PMC card slot mounted to a universal 1/2 length PCI card. Suitable for 32 bit or 64 bit data with 33 or 66 MHz bus operation. The PMC user IO connector Pn4 is brought out to two connectors for access (DIN IDC and SCSI II). The PMC front panel connector is mounted though the PCI mounting bracket.

For superior performance the PCI2PMC has a cooling cutout for increased airflow to the PMC. A cut-out is preferred over a fan mounted to the PMC adapter for several reasons including: many components are not shielded against close proximity electro-magnetic fields and the reduction in MTBF that an additional mechanical device represents.

**PCIBPMC**

1/2 Length Bridge Based Adapter Mount PMC in PCI Slot  
http://www.dyneng.com/pciBpmc.html

The PCIBPMC adapter card provides the ability to install a PMC card into a standard PCI slot. PCI to PMC adapter/carrier card with optional Ethernet and/or Serial Ports and an optional Fan. Features: independent signal levels on each side of the bridge, built in 3.3V supply 32/33 or 64/66 MHz PCI clocks. The bridge insures that multiple PCIBPMC cards can be installed onto the same PCI bus stub. For superior performance the PCIBPMC has a cooling cutout for increased airflow to the PMC.

**PCIBPMCET**

Industrial Temperature Range PMC Bridge for PCI Bus System  
http://www.dyneng.com/pciBpmcet.html

PCIBPMCET is a universal voltage 1/2 length PCI card. This design is robust with extended temperature components, controlled impedance, PCI compliant routing, matched length differentially routed IO, zero bus stub options for high speed Ethernet and Serial ports, heavy power planes with decoupling for the PMC voltages, and more. For high power applications “zero slot fans”™ are available. With the PCIBPMCET adapter converter card all you have to do is install your PMC onto the adapter, and plug into the PCI slot. PCIBPMCET is compatible with both 64 and 32 bit PCI slots. The PMC slot can be programmed to use 3.3 or 5V for VIO. The bridge provides plug and play operation.

**PCIBPMCx1**

1/2 Length Bridge Based PCI/PCI-X Adapter Install PMC in PCI Slot  
http://www.dyneng.com/pciBpmcx1.html

The PCI / PCI-X bridge PMC 1 slot adapter/carrier converter card provides the ability to install one PMC card into a standard PCI/PCI-X slot.

The PMC card slot can be programmed for 3.3 or 5V operation by the user, and the primary PCI bus implementation is universal voltage. Suitable for PCI or PCI-X operation with 32 bit or 64 bit data and 33, 66, 100 or 133 MHz. clock.

The PMC user IO connector Pn4 is available on a SCSI II connector. The Pn4 user IO is routed differentially with matched length and impedance control to the SCSI connector. The PCI bus is interconnected to the PMC via a 64 bit 133 MHz capable bridge.
Embedded applications frequently require real time processing coupled with special purpose IO, as found in the PCIBPMCx2.

With two slots; a PrPMC can be matched with another PMC to make a high bandwidth processing node. The PrPMC can communicate with the host for set-up, and then use the local bus to control and transfer data with the special purpose IO card. For example the PMC-BiSerial-III-HW1 provides 32 channels of Manchester encoded IO, and when matched with a PrPMC can control or monitor a large system in real time.

Provides the ability to install two PMC cards into a standard PCI/PCI-X slot. The PCIBPMCx2 has two PMC card slots mounted to a universal voltage PCI card. Suitable for PCI or PCI-X operation with 32 bit or 64 bit data and 33, 66, 100 or 133 MHz. clock. The PCIBPMCx2 is a Non Transparent Bridge.

Facilitate use of PC104 or PCI104 in a Standard PC

Provides the ability to install a PC104p or PCI-104 card into a standard PCI slot. Two slots to choose from. Mount a PC/104p card in a PCI slot with component side up for debugging or down for production. PC2PC/104p shown in production mode.

For new PC104p and PCI-104 designs the PCIBPC104pET can decrease your time to market by allowing your engineers to debug in a PC. A PC will provide better tools and visibility into the hardware. PCIBPC104pET adapter / carrier converter card provides the ability to install 1-4 PC104p or PCI-104 cards into a standard PCI slot. PCIBPC104pET has a PC104p and PCI-104 compatible stack position mounted to a universal voltage shorter than 1/2 length PCI card. The PC104p position is stackable with all 4 active positions usable. Additional non-PCI cards can also be added. PCI power is routed to the PC104p stack with heavy planes allowing enough current to cover the PC104p specification. Interrupts are routed to the PCI connector. Request and Grant lines are handled by the bridge locally and back to the host on the PCI bus to allow for bus master operation. The design is robust with extended temperature components, controlled impedance, PCI compliant routing, heavy power planes with decoupling for the PC104p voltages, and more.

With the PCIBPC104pET (PCI Bridge PC104p/PCI-104 Extended Temperature) all you have to do is install your PC104p onto the adapter, and plug into the PCI slot. PCIBPC104pET is compatible with 32 bit PCI slots. The PC104p positions can be programmed to use 3.3 or 5V for VIO. The bridge provides plug and play operation.
PCI3IP  
**PCI Carrier with 3 IndustryPack® Slots**


Why pay for slots you are not using? Use the PCI3IP for embedded control and your favorite IP modules.

The PCI3IP is a half size PCI card with 3 IP module slots. The IP modules have independent clock selection (8/32 MHz), interrupt, bus error timer, and full support for IO, ID, Mem and Int accesses. Two of the slots can be used for a double wide IP. FAST® technology provides an integrated PCI to IP bus interface. The integrated interface features automatic 32 bit PCI conversion to 16 bit IP module. LEDs are provided on the IP power levels, IP acknowledge, and an additional 6 under user control. An 8 position dip-switch is provided for board identification and other user purposes such as configuration control and to facilitate debugging. Fused filtered power for each IP module. The PCI3IP is easy to use and has an engineering kit available to speed your integration to success. The PCI3IP XP/2000 drivers are available to support your hardware with a software-to-software interface. The drivers come with a generic IP driver to use with IPs that do not have an IP level driver available. IP level drivers written for the PCI3IP will also work with other Dynamic Engineering carriers including the PCI5IP, cPCI2IP, PC/104p-4IP and our other planned carriers. Linux Drivers also available.

PCI5IP  
**PCI Carrier with 5 IndustryPack® Slots**


Use the PCI5IP for embedded control and your favorite IP modules when you need more than 3 in a slot.

The PCI5IP is a full size PCI card with 5 IP module slots. The IP modules have independent clock selection (8/32 MHz), interrupt, bus error timer, and full support for IO, ID, Mem and Int accesses. Two pairs of two slots can be used for a doublewide and 32 bit IPs. FAST® technology provides an integrated PCI to IP bus interface. The integrated interface features automatic 32 bit PCI conversion to 16 bit IP module. LEDs are provided on the IP power levels, IP acknowledge, and an additional 8 under user control. An 8 position dip-switch is provided for board identification and other user purposes. Fused filtered power for each IP module.

The PCI5IP is now revision C for the PROM. The new features include Byte and Word Swapping, Bus error status for each slot independently, and 32 IP support. The PCI5IP is easy to use and has an engineering kit available to speed your integration to success. WindowsXP/2000 and Linux drivers are available to support your hardware with a software-to-software interface. The drivers come with a generic IP driver to use with IPs that do not have an IP level driver available. IP level drivers written for the PCI5IP will also work with other Dynamic Engineering carriers including the PCI3IP, cPCI2IP, PC/104p-4IP and our other planned carriers.

PCI2cPCI-32  
**Install a cPCI Board into a PCI Slot – 32 Bit**

http://www.dyneng.com/pci.html#PCI2cPCI-32

Install a cPCI board into a PCI slot. This adapter supports 32-bit cPCI boards.

PCI2cPCI-64  
**Install a cPCI Board into a PCI Slot – 64 Bit**

http://www.dyneng.com/pci.html#PCI2cPCI-64

This adapter supports 64bit cPCI cards.
PCI Product Line

PMC2PCI  Install a PCI Card into a PMC Slot  
http://www.dyneng.com/pmc2pci.html
Save development time by using a PCI card in a PMC slot.

The PMC2PCI (PMC to PCI) adapter / carrier converter card provides the ability to install a PCI card into a standard PMC slot. The PMC2PCI has two PCI card slots mounted to a PMC card. One slot can be used at a time with the choice of 3V or 5V IO and 32 or 64 MHz PCI clocks. This board has an on-board power supply which can source up to 10A at 3.3V with bypass.

Hardware Development Products

DESWCB  SpaceWire Breakout Board  
http://www.dyneng.com/deswcb.html
SpaceWire is becoming a common interface, and is finding its way into embedded and distributed systems. With rack mounted systems rear IO is frequently utilized. In some situations custom cabling is required. The Dynamic Engineering SpaceWire Connector board helps with the transition from custom cabling to SpaceWire standard cabling.

The DESWCB provides a space efficient, low cost method of interconnecting the custom electronics to the rest of the sensors, IO, machinery etc. Each Dynamic Engineering SpaceWire Connector Board can handle up to 28 SpaceWire connections. When ordering please specify the number of connector positions that you want to have filled.

HDEterm68  68 Position SCSI II/III Adapter to Terminal Strip Breakout w/ DinRail Option  
http://www.dyneng.com/ HDEterm68.html
Two SCSI II compatible connectors interconnected with a 68 position terminal block. The SCSI connectors are connected to the screw terminals and to each other 1:1. The "in" SCSI connector is connected to the screw terminals and then to the "out" connector. Test point positions and land patterns are provided to support loop-back testing and special termination requirements.

HDEcabl68  68 pin SCSI II/III Cable  
http://www.dyneng.com/HDEcabl68.html
SCSI compliant cable with either latch block or screw terminal retention. Cables are stocked in the 3 and 6-foot lengths. Custom lengths and connectors available.

HDEterm100  Terminal Breakout Block D100 Connectors and Screw Terminals  
http://www.dyneng.com/ HDEterm100.html
The terminal provides an easy way to get from a high density SCSI connector to discrete wires. For example with the PCI-Altera-485 design a standard D100 cable can be used to connect the PCI-Altera-485 to the HDEterm100 and then to the system wiring via the terminal strips provided. The HDEterm100 provides a space efficient, low cost method of interconnecting the control electronics to the rest of the sensors, IO, machinery etc.
HDEcabl100  
100 Pin LVDS SCSI II/III Cable

http://www.dyneng.com/HDEcabl100.html

The high density 100 pin LVDS SCSI II/III connector is being used for purposes in addition to SCSI interfaces because of board and front panel space limitations. The HDEcabl100 provides a SCSI compliant cable with either latch block or screw terminal retention. The cables are stocked in the 3 and 6 foot lengths and are available in custom lengths to OEM customers. HDEcabl100 matches the HDEterm100 and PCI-Altera-485.

DINterm64  
64 Position Ribbon Cable to Terminal Block Breakout

http://www.dyneng.com/DINterm64.html

Ribbon cable headers are commonly used with VME compatible hardware. Ribbon cable is difficult to connect to other hardware, especially if multiple destinations are involved. The DINterm64 converts from 64 pin ribbon cable to a 64 pin terminal strip. Discrete wires are easily connected with the screw locks on the terminal strip.

The DINterm64 provides a space efficient, low cost method of interconnecting the control electronics to the rest of the sensors, IO, machinery etc. The ribbon cable connector is routed 1:1 to the screw terminal connector.

DINribn64  
64 Position Ribbon Cable with Strain Relief

http://www.dyneng.com/HDEcabl100.html

The DINribn64 cable set is designed to interconnect devices using 64 connection DIN connectors. Rows A and C are utilized. Many Dynamic Engineering products have this connector system as well as products from third parties for VME systems. Utilize the DINribn64 cable to connect the DINterm64 to the PCIBPMC, PCIBPMCX2, PCI2PMC etc. A snap together breakout system with DIN rail capability is created with these components. You can also use the DINribn64 to interconnect your rear IO VME hardware to the DINterm64 or other breakout device.

Dynamic Engineering can adapt the DINterm64 to meet your needs. The base configuration has 64 screw terminals tied to the DINribn64 compatible connector. The screw terminals can be removed and alternate connectors added. Please contact Dynamic Engineering with your modification requests. The DINribn64 comes in a 36 inch length standard.

LVDS_Cable  
100 Pin LVDS 050 MDR High Speed Cable

http://www.dyneng.com/lvds_cable.html

100 position, .050 MDR/MDR for high speed digital data transmission systems. Matches LVDS 8R and 8T connector.
**PCI Test**

**DESWBO**

Spacewire Breakout design with Power Adapter


With DESWBO - Dynamic Engineering SpaceWire BreakOut - Spacewire can be interconnected and monitored. DESWBO has two 9-pin MDM connectors to facilitate in-line monitoring of both sides of a SpaceWire link. DESWBO is designed to detect and decode bit sequences. Signals are issued indicating what types of characters are passing between nodes as well as the contents of data and timecode characters. A running count of flow control credits for each node is calculated by the DESWBO by monitoring FCTs and N-character occurrences. LED and testpoint based user interface. Stand-alone operation. Power Supply included. Cables available.

**PCI Bus Interface**

**PCI_LVDS_8R**

8 Channels LVDS Input Digital Filtering & Storage


PCI-LVDS-8R is a PCI card with 8 channels. Capture 8 channels of serialized LVDS [TIA/EIA-644] input into 512 Mb of SDRAM. The channels are organized into two groups of 4. Each SDRAM controller arbitrates between the 4 requesting FIFO’s to move data into the SDRAM without allowing FIFO overruns. The data is read from the Input FIFO by the Latch Xilinx and either written to the SDRAM or the Output FIFO.

The Address Generator controls the Latch Xilinx and the SDRAM. The data from the output FIFO can be read with standard target accesses or as a DMA stream. The memory is programmable for size per channel and location. The data to capture is programmable for pattern and quantity. Any number of channels can be active at the same time. The 8R is tested after a 24 hr burn-in at 120°F with 250 loops of full memory all channel data transfer [64 M per channel] and then again at 40°F. Two power configurations are available – on-board regulator or backplane supplied 3.3V. The default configuration is 3.3V. Please specify 5V operation when required.
PCI_LVDS_8T

8 Channels LVDS Output features “Scatter Gather” DMA
http://www.dyneng.com/pci_lvds_8T.html
Transmit 8 channels of serialized LVDS [TIA/EIA-644].

The 8 channels are programmable with the ability to enable the channels of interest, the size of the memory allocated to each channel, the method of transmission and the synchronization of each transmission. Each channel is supported with independent FIFO memory at strategic locations to allow full speed operation and the use of the banked SDRAM.9 Xilinx devices, FIFOs, and 512 Mb of SDRAM support transmitting data to the outputs. DMA transfers support storing of the data to the SDRAM memory. A direct output channel from host memory mode is supported. Multiple looping capabilities are supported including continuous, looped, and expanded. The data to transmit is programmable for location, quantity, and loop count. Several built in loop options including initial pattern, looped pattern followed by ending pattern. Any number of channels can be active at the same time. Each channel can be programmed independently. The base model 8T uses 14 of the 21 bits for the data and control. The 8T is tested after a 24 hr burn-in at 120°F with 250 loops of full memory all channel data transfer [64 M per channel] and then again at 40°F. Two power configurations are available – on-board regulator or backplane supplied 3.3V. The default configuration is 3.3V. Please specify 5V operation when required.

PCI-SpaceWire

PMC compatible Spacewire Interface ECSS-E-ST-50-12C
http://www.dyneng.com/pci_SpaceWire.html
Utilize SpaceWire to communicate with the European Space Agency and NASA equipment utilizing the ECSS-E-ST-50-12C specification. SpaceWire is configured using routers to create a hierarchical point-to-point system with high speed parallel paths.

PCI SpaceWire implements SpaceWire in a convenient PCI format. With PCI you four channels fit on the PCI Bezel. The SpaceWire specification calls for LVDS signaling and a specific 9 pin micro-D connector. You can connect the PCI-SpaceWire to other SpaceWire compliant devices without electrical interface issues. FIFO memories and programmable interrupts off-load the CPU from most of the management other implementations require. The FIFO access is optimized for the PCI bus further reducing overhead by speeding up the data transfer. On the IO side the PCI SpaceWire has independent and interconnected channel functions. All channels can operate at maximum rate in parallel.

PCI-ASCB-D

PCI Bridge based PMC Carrier with Dual Redundant ASCB-D Function
http://www.dyneng.com/pci_ascb.html
Gain the ability to install one PMC card into a standard PCI slot while providing dual redundant ASCB-D (Avionics Standard Communications Bus.)

ASCB-D is a specialized version of 10-BaseT using the same definitions for the preamble, post-amble, CRC, and inter-packet timing. The ASCB-D design is done within an FPGA to allow for other applications. The current design is Dual Port RAM based with circular buffers implemented to transfer data from the local CPU to the IO port and vice-versa. The PMC position is intended for a local processor (PrPMC) or additional IO.
PCI User Design

PCI_Algtera 485
Load your own Altera Program 20K400 or Other Footprint
http://www.dyneng.com/pci_altera_485.html

PCI_Algtera LVDS
PCI Card with 20K400 or other Footprint Compatible Device
http://www.dyneng.com/pci_altera_485.html

The PCI-Altera design is for the advanced user who wants to implement their Altera design. PCI_Algtera_485 comes with everything you need to easily load your Altera program into the 20K400E. Fantastic for development, simulation, special purpose interfaces, multiple serial and / or parallel channels.

Larger Altera parts are available with the same footprint allowing an upgrade path should one be necessary. The design comes with basic features built-in and the specific features ready for you.

The PLX 9054 and Xilinx take care of the PCI interface for initial loading of the Altera, and DMA transfer of data into and out of the FIFOs. The Altera controls 40 programmable RS-485 or LVDS and 12 TTL IO. Each of the RS-485/LVDS channels is programmable for direction, termination and function. The 12 TTL IO can be inputs or outputs. Eight Cypress 22393 PLLs support the Altera providing the ability to synthesize multiple reference rates. The only thing missing is your input in the form of a state-machine, simulated system, asynchronous or synchronous data processing, etc.

Our Engineering kit comes complete with the Altera pin definitions, reference Altera design, Windows2000/XP® Driver, front panel breakout and cable. The driver comes with a generic Altera driver that can be used to control your specific implementation. Custom Altera level drivers are available. The driver also comes with a reference user application that runs the Dynamic Engineering ATP for the PCI-Altera. The user application can be used as a reference for your software effort, inspiring confidence that your hardware and software are properly installed.

PCI_ECL
High Speed DMA Supported ECL IO 20 Output 12 TTL
http://www.dyneng.com/pci_serial_ecl.html

Differential ECL / NECL is still the interface of choice for high speed in noisy environments. PCI-ECL is a general purpose design with ECL IO and a high speed Xilinx Virtex II Pro to control it.

The ECL IO is carefully routed to provide 100 ohm differential impedance and matched length from the pin edge on the D100 connector to the Xilinx [BGA] Ball. All of the TX and RX are matched to allow for high speed designs with tight timing requirements. The top ECL input bit is tied to a clock capable input pin on the Xilinx to allow for an external reference clock. Some of the ECL features include: Xilinx support by a programmable PLL, customer selected oscillator position is supplied, 20 inputs and 20 outputs, the state-machine can be programmed to use any number of the IO, an external FIFO is used to store data from reception or for transmission, the Internal FIFO is to support DMA. The PCI ECL also supports Multi-board operation. The reprogrammable FLASH memory stores the Xilinx design file. The JTAG header is used to load the FLASH using the Xilinx standard IMPACT® software and parallel download cable. Customizable for NECL and/or PECL.
PCI Product Line

PCI Simulator

**PCI-Harpoon**

28V Optically Coupled Inputs Multi-Functional Board

http://www.dyneng.com/pci_harpoon.html

Provides a means to test the rest of the equipment without requiring the real [expensive] asset. In addition the PCI-Harpoon can provide status and direct software control of the system.

PCI-Harpoon is a multi-functional board with capabilities for isolated measurement and control. Full length PCI board with ports organized into 4 channels per board. Optical Isolation is used to allow for different ground potentials between the PCI-Harpoon and the connected equipment. 5 - 28V DC inputs are provided per channel. The limit resistor on each channel can be changed to provide alternate reference voltages. The base design has direct register read status for each input. The FPGA can be updated to provide filtering, and/or operation in conjunction with the outputs using a state-machine.

Embedded Solutions featuring IndustryPack®

Embedded Solutions from Dynamic Engineering are available in IndustryPack® and PMC platforms, all usable within the PCI platform.

**PCI-BiSerial**

General Purpose TTL Programmable Serial RS485

http://www.dyneng.com/industrypack.html#ipbiserial

Available in many IO and build options to meet your specific requirements. In general the IP Biserial board provides bi-directional serial IO at rates up to 10 Mhz. Separate highly programmable send and receive state machines and memories. IndustryPack compatible with 8 or 32 Mhz. bus operation. Drivers available in Windows and Linux.

**PCI-Xilinx**

User Programmable Xilinx Based Module

http://www.dyneng.com/industrypack.html#ipbiserial

Order IP-Xilinx if you want to do your own development. A stock IP-Bserial board will be shipped with a blank PROM for the Xilinx. Purchase the IP-Xilinx-Kit to support your efforts. The standard Xilinx device is a spartan30-4 - plenty of room for your custom project.

**PCI-OctalSerial**

Multiple Channel State-Machine Applications

http://www.dyneng.com/ip-octalserial.html

8 FIFO supported differential IO channels and a large programmable Xilinx FPGA to support custom state-machine implementations. Up to 40 MHz IO.

**PCI-Pulse**

4 Programmable Pulse Generators TTL or 422

http://www.dyneng.com/ip_pulse.html

4 programmable pulse generators. TTL or RS422 / RS485 compatible outputs. Programmable pulse - nS to seconds. Programmable count or free running.
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<td>Provides 48 programmable TTL IO or 24 - RS422 / RS485 compatible differential pairs. 5 mixed combinations available. Filtered or direct input. Programmable interrupt from each IO [TTL or differential]. 2 counter timers. Waveform generator.</td>
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<td>High Voltage IP Compatible card with 48 programmable IO. 40 mA sink. Low side switch. Open collector interface. Interrupt generator on each input channel. Filtered or direct input. The IndustryPack compatible IP-Parallel-HV design can handle up to 30V external signals. The standard card configuration is a 6.5V reference and the ability to supply an external reference. Other voltages are available. Use the IP Parallel HV for your control, avionics and robotics applications. Perfect for your embedded control applications.</td>
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<td>The IndustryPack compatible IP-QuadUART design integrates a quad UART onto an IndustryPack module. The UART (16C854) features 128 byte FIFOs for RX and TX ports on each channel. The UART is supported by an advanced IP module interface implemented within a Xilinx FPGA.</td>
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<td>The UART is a character based interface [8 bits]. The IndustryPack interface has several features which optimize performance. Words can be written to the IP-QuadUART-485 and the data will be converted to bytes before being sent to the UART. The IP interface will latch the data allowing the host computer to be released while the data is being moved to the UART. The early release allows pipelined operation and increased performance. When the IP-QuadUART-485 is mounted to a carrier which supports 32 bit operations the effect can be enhanced.</td>
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<td>The IP-OptoISO-16 is an IndustryPack Module with 16 optically controlled FETs [switch]. Each FET acts as a single pole normally open photovoltaic relay. The solid state approach has several advantages including bounce free operation, low on resistance, long life, fast switching, and higher reliability when compared to relays. The design utilizes a Xilinx FPGA to provide the IP interface - IDPROM, Bus interface, registers, and control for the FETs. Each optical switch has a separate bit in the control register to allow for independent operation.</td>
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PCI-CF  Compact FLASH Adapter

http://www.dyneng.com/ip_cfl.html
Converting between the IP Module bus and the IDE bus used for FLASH memory modules and other PC Card compatible designs. The IP-CF acts as an adapter, converter, carrier, or bridge between the IP bus and your PC Card hardware. The IP-CF comes with a 256 Mb CompactFLASH card.

PCI-429  Connect your Avionics up to 8 RX 4 TX ARINC 429 Channels

http://www.dyneng.com/ip429.html
ARINC 429 is robust featuring Manchester encoding and enough voltage swing to provide excellent noise immunity and reasonable throughput rates. ARINC 429 is the interface of choice for critical applications; for example aircraft instrumentation and control. There are many devices supporting the 429 bus - printers, instrumentation, sensors and more. IP-429 makes it easy to gain access to the ARINC 429 bus. Just connect; program a few registers and then use like an IO device. The IP-429 is currently supported with the Dynamic Engineering Carrier software drivers for Linux and Windows® via the generic interface.

PCI-1553  1553 Single and Dual Redundant BC, RT & Monitor Capabilities

http://www.dyneng.com/ip_1553.html
MIL-STD-1553 is robust featuring Manchester encoding and enough voltage swing to provide excellent noise immunity and reasonable throughput rates. MIL-STD-1553 is the interface of choice for critical applications; for example aircraft instrumentation and control. There are many devices supporting the 1553 bus - navigation devices, instrumentation, sensors and more. IP-1553 makes it easy to gain access to the MIL-STD-1553 bus. Just connect; program a few registers and then use like an IO device. IP-1553 is currently supported with the Dynamic Engineering Carrier software drivers for Linux and Windows®. Use an existing IP slot within your chassis or combine with a carrier to make PCI-1553, PC104p-1553, VME-1553 or cPCI-1553.

PCI-CAN  2 CAN (Controller Area Network) Channels Isolation or Direct Coupled

http://www.dyneng.com/ip_can.html
Now you can talk to your car and other CAN compatible network devices using the IP-CAN. Two channels with Isolation or direct coupled, on board termination or cable based, 8 or 32 MHz IP operation, up to 1 MHz CAN bus operation, and an industry standard CAN bus controller. IP-CAN is currently supported with the Dynamic Engineering Carrier software drivers for Linux and Windows®. Use an existing IP slot within your chassis or combine with a carrier to make PCI-CAN, PC104p-CAN, VME-CAN or cPCI-CAN.

PCI-Crypto  KYK – 13 Interface

http://www.dyneng.com/ip_crypto.shtml
A special version of the IP-Parallel-HV. The basic design features are retained and an interface to a KYK-13 is provided. The original KYK-13 interface uses the 6.5V reference output, a transfer request output, and 3 inputs for clock, data and switch. The outputs for the general purpose section are reduced to 23 in number. The inputs are all available through the filter or after processing by the KYK-13 interface.
Embedded Solutions featuring PMC

Embedded Solutions from Dynamic Engineering are available in IndustryPack® and PMC platforms, all usable within the PCI platform.

**PCI-Crypto-Tape**
Interconnect an IP-Crypto & IP-Tape from the Carrier to the PCI
http://www.dyneng.com/cable_assem_crypto_tape.html
Interconnect an IP-Crypto & IP-Tape from the carrier to the PCI Bezel.

**PCI-Biserial-III**
Spartan III Based PMC Biserial RS485 LVDS PLL + More
http://www.dyneng.com/pmc_biserial_III.html
The PMC BiSerial III is recommended for new designs. More than 7 customized versions and counting. The most recent version has 8 full or half duplex operation 10 MHz capable UART channels each with DMA support. New with the Spartan III are internal memories. With the Spartan III 1500 and larger devices 32 1Kx16 FIFOs can be configured making for multiple channels with internal memory support when the full size FIFOs are not required.

**PCI-Biserial-III-Trans**
Conduction Cooled Transformer Coupled Spartan III Based Design
http://www.dyneng.com/pmc_biserial_III_trans.html
The PMC BiSerial family has been updated to include a conduction cooled version with transformer coupling. The PMC-BiSerial-III-TRANS has 8 channels, each fully programmable and capable of operating independently or in concert with the other IO. The BiSerial III features completely isolated FIFOs with 32 bit ports for increased adaptability and performance. Half-Duplex, Full-Duplex, serial and parallel systems can be configured with software and VHDL. The denser, faster FPGA will implement the most complex state-machines. The components are rated for the industrial extended temperature range. Conformal coating is available.

**PCI-Parallel-TTL**
64 Independently Programmable Digital IO with FIFO’s & DMA
http://www.dyneng.com/pmc_parallel_ttl.html
The PMC compatible PMC-Parallel-TTL has 64 independent digital IO. The high density makes efficient use of precious PMC slot resources. The IO is available for system connection both through the front panel and via the rear [Pn4] connector. A high density 68 pin SCSI III front panel connector provides the front panel IO. The rear panel IO has a PIM and PIM Carrier available for rear panel wiring options. The HDEterm68 can be used as a breakout for the front or rear panel IO. The HDEcabl68 provides a convenient cable. The pin definitions are consistent with the PMC Parallel IO card to enable users of the PMC Parallel IO to migrate to the PMC Parallel TTL quickly and easily.
## PCI Product Line

### PCI-Parallel-IO

**64 Independent IO in one PMC Slot**

The PMC compatible PMC-Parallel-IO has 64 independent digital IO. The high density makes efficient use of precious PMC slot resources. The IO is available for system connection both through the front panel and via the rear [Pn4] connector. A high density 68 pin SCSI III front panel connector provides the front panel IO. The rear panel IO has a PIM and PIM Carrier available for rear panel wiring options. The HDEterm68 can be used as a breakout for the front or rear panel IO. The HDEcabl68 provides a convenient cable.

### PCI-Parallel-485

**32 Independent RS485 IO up to 34 Differential IO in 1 Card**

A simple point and shoot interface makes it easy to add up to 34 differential IO to your system with the PMC Parallel 485. The PMC compatible PMC-Parallel-485 design adds 32 [RS-485 /RS-422/LVDS] differential IO lines to one slot of your carrier board. 2 additional differential pairs are available for a clock & clock enable. The signals can be used to capture data with an external reference or programmed to be references for the rest of the system. Many standard features and ease of VHDL updating make PMC Parallel 485 a versatile design.

### PCI-Serial

**Synch/ Async Serial Protocols, UART and SCC**

The PMC-Serial is capable of providing multiple serial protocols, both synchronous and asynchronous with a wide range of baud rates. The PMC-Serial has up to 8 UART channels, and two SCC channels. The protocol processors are complemented with a variety of IO which can be selected as a build option. RS-232, RS-485, RS-422, and RS-423 are supported. Two enhanced hysteresis MIL STD 188-114A receivers, and two open drain active low output drivers are also provided. The PMC-Serial also has a wide range of IO drivers and receivers to interface with. The SCC and UART IO are tied to the Xilinx and then back to the IO to allow for programmable options and ease of customization.

### PCI-Wizard

**Ultra High Speed Bidirectional P2P Transmission System**

The PMC-Wizard is intended for use in ultra high-speed bidirectional point-to-point data transmission systems. The primary application is to provide very high-speed I/O data channels for point-to-point baseband data transmission over controlled impedance media of approximately 50 Ω. The maximum rate and distance of data transfer is dependent upon the attenuation characteristics of the media, and the noise coupling to the environment. PMC-Wizard can also be used to replace parallel data transmission architectures by providing a reduction in the number of traces, connector terminals, and transmit / receive terminals.

### PCI-XM

**User Programmable w/ Virtex FPGA & Transition Module Position**

The PMC-XM is intended for use in situations where the user wants to control the design. PMC-XM has two FPGA devices built in. The first device takes care of the PCI interface, DMA etc. The second device [Virtex XC4VSX35-10] is for the user application. The Transition Module [XM] is attached to the Virtex device. The Virtex is further supported by a 1M x 36 QDR SRAM, PLL, Digital Temperature Sensor, and connections to the PMC Pn4 connector. Four LEDs are supplied to the Virtex to provide design status, debugging support and other user purposes.