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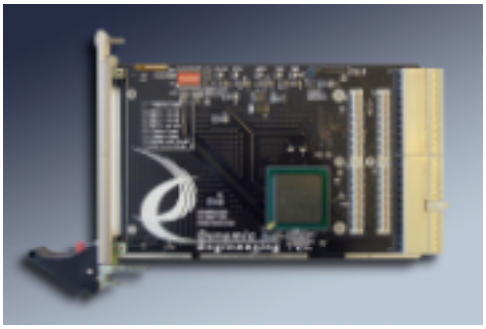
Est. 1988

User Manual

CPCIBPMC3U64

cPCI 3U 4HP 1 Slot PMC Compatible Carrier



Revision B
Corresponding Hardware: Revision B
Fab number10-2004-1202

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cPCIBPMC
cPCI and PMC Compatible Carrier

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Manual Revision B. Revised 4/10/06

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Product Description

PCIBPMC is part of the Dynamic Engineering cPCI and PMC Compatible family of modular I/O components. The cPCIBPMC3U64 adapts one PMC to one cPCI slot.

Special features:

- Universal cPCI 3U.
- LED on PMC Busmode "Present"
- LED on plus 12V
- LED on minus 12V
- LED on plus 5V
- LED on plus 3.3V
- User selectable secondary VIO.
- 32 or 64 bit operation on either bus
- 66 or 33 MHz operation. With 66 MHz. primary bus speed the secondary bus can be 66 or 33 MHz. Secondary bus can not be at a higher rate than the primary bus.
- Front panel connector access through cPCI bracket
- Ethernet, Serial and I2C busses available on reserved J2 pins
- JTAG programming support

The cPCIBPMC3U64 is ready to use with the default settings. Just install the PMC onto the cPCIBPMC3U64 and then into the system. There are a few settings which can optimize performance.

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Shunt Setting

Select the appropriate VIO for your PMC. A PMC can be 3.3V or 5V or "universal". Please select the 3.3 or 5V VIO choice with the shunt **J9**. The Voltage choices are marked. Install the shunt for 3.3V operation; open for 5V operation.

The VIO plane is a reference for the IO level. The specification does not prohibit larger current consumption from these pins. The cPCIBPMC design utilizes a MOSFET to control the 5V or 3.3V rails onto the VIO plane. Max consumption on the VIO rail is 3A. The maximum power draw of a PMC is 7.5W leaving a large safety factor. The factory setting is 3.3V on the secondary VIO rail.

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DipSwitch Settings

Please note that the switch numbering and '1' and '0' definitions are per the silk screen.

Select the "green power" clock setting. With the new revision of the bridge [Intel 21154] the secondary clock can be set to be driven low or continue to operate when in the power down state. With the **DIP switch 1** set to '0' the clock will be driven low during power down, and with the switch '1' the clock will always be driven. The factory setting is '1'. **BPCCE** is the signal controlled with switch 1.

Select the Bridge capability to run at 66 MHz. The bridge is 66 MHz capable and should be selected to operate in that mode with **DIP switch 2** in the '0' position. With switch 2 '1' switch 4 should also be '1'. **CONFIG66** is the signal controlled with switch number 2. The factory setting is '0'.

Select the secondary side [PMC] PCI bus frequency. The options are to use the PCI bus speed [primary] or to force 33 MHz on the secondary side. The PMC to be installed must be 66 MHz compliant to use the 66 MHz secondary side option. The speed is controlled with the **DIP switch #3** position. '0' = 66 MHz capable secondary side. '1' = 33 MHz. **SM66EN** is the signal name controlled by the switch. The factory setting is '0'.
The SM66EN signal is also routed to the PMC connector pin M66EN. If the PMC uses the M66EN as an input then the dipswitch can be used to control the frequency. If the PMC uses the M66EN pin as a control, then the Switch may have no effect. For example if the switch is in the '0' position and the PMC is selecting M66EN = '0' then the PMC will "win" and the signal will be at the 33 MHz setting. Both the dipswitch and the PMC M66EN have to be enabled for 66 MHz operation. *Please note that the '1' and '0' of the dipswitch are "human" interface not electrical interface*.

Select the primary PCI bus speed. With **DIP switch 4** = '0' = backplane termination = 66 MHz capable. '1' = force 33 Mhz. Operation. If the rest of the cards installed on the same PCI segment and the segment itself are 66 MHz capable then the PCI primary speed will be 66 MHz. If any device on the segment is set to 33 MHz only then the entire segment will operate at 33 MHz. We recommend enabling the 66 MHz operation and using the bridge to switch to 33 MHz for the PMC. **P_M66EN** is the signal controlled by the switch. If P_M66EN is detected low then SM66EN is forced low by the bridge independent of the switch setting. The factory setting is '0'.
The remaining 4 switch positions can be read in from the bridge via the configuration space registers. The switch bits 8-5 correspond to the GPIO bits 0-3. The bits can be used for any purpose – Card numbering etc. The GPIO bits are also connected to a test point strip. If the GPIO bits are to be used as outputs be sure that the corresponding switch is in the '0' position. The factory setting is '0000'

Interrupts from the PMC are connected from the PMC to the primary PCI bus. INTA through INTD are mapped directly to the primary bus segment. The IDSEL is AD20

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[secondary PCI].

The PCI reserved signals are routed to the PMC reserved pins in accordance with the PMC specification to allow for future signal definitions or special user signaling.

Reserved Pins Routing

Jn2 pins 64 are pull-ed up to 3.3 with 10KΩ. Pin 60 is open. This configuration works with most Monarch capable PMCs. Please contact Dynamic Engineering if you need alternate settings.

Jumper and switch options are clearly marked in the component side silk screen.

Options

Dynamic Engineering offers two versions of the cPCIxPMC design.

cPCI2PMC is a passive implementation. The cPCI connections on the cPCI2PMC are longer and can limit the number of cards or adapters on a particular bus segment. The passive design has "0" delay between the primary PCI bus and the PMC. The VIO and bus speed definitions are common to the primary PCI bus and PMC.

cPCIBPMC is bridged, isolating the PMC from the cPCI bus. cPCI connections are specification compliant on the cPCIBPMC. cPCIBPMC can be used in multiple slots on the same PCI bus segment. The bridged design has pipeline delays between the primary and PMC buses. The bridged design has independent VIO definitions between the PMC and the primary bus.

In addition to the basic bridged or not bridged versions there are options for Ethernet, Serial ports, and I2C.

Some PMCs support Ethernet connections over the Pn4 connector with pins specified by the PICMG standard 2.15. cPCIBPMC supports Ethernet capable cards with an optional optional connections to the J2 connector.

Some PMCs support serial channels on Pn4 with pins specified by by PICMG standard 2.15. cPCIBPMC supports serial capable cards with optional connections to J2.

In addition the cPCIBPMC has options for I2C signal routing. The signals are routed from Jn1 to J2.

All optional signals can be isolated or added with resistor packs located to create short stubs when the signals are not in use.

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PMC Module Backplane IO Interface Pin Assignment

The figure below gives the pin assignments for the PMC Module IO Interface – from Pn4 to the cPCIBPMC3U64-J2 connectors. Also see the User Manual for your PMC board for more information.

CPCI J2			Pn4	
A19	A21	E0TRDOP/E0TRD2P	1	2
B19	B21	E0TRD0N/E0TRD2N	3	4
			5	6
D19	D21	E0TRD1P/E0TRD3P	7	8
E19	E21	E0TRD1N/E0TRD3N	9	10
			11	12
A16	A18	E1TRD0P/E1TRD2P	13	14
B16	B18	E1TRD0N/E1TRD2N	15	16
			17	18
D15	D17	E1TRD1P/E1TRD3P	19	20
E15	E17	E1TRD1N/E1TRD3N	21	22
			23	24
			25	26
	C1	TXD0	27	28
	B2	TXD1	29	30
			31	32
	C3	RXD0	33	34
	B4	RXD1	35	36
			37	38
			39	40
			41	42
			43	44
			45	46
			47	48
			49	50
			51	52
D1		TXD2	53	54
D3		TXD3	55	56
			57	58
E1		RXD2	59	60
E3		RXD3	61	62
			63	64

FIGURE 1 CPCIBPMC3U64 PN4 INTERFACE STANDARD

The I2C connections are
from Pn1-41 = I2C-CLK to J2-A3
Pn1-42 = I2C-DTA to J2-A2

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Applications Guide

Interfacing

Some general interfacing guidelines are presented below. Do not hesitate to contact the factory if you need more assistance.

Installation
The PMC is mounted to the cPCIBPMC prior to installation within the chassis. For best results: with the cPCI bracket installed, install the PMC at an angle so that the PMC front panel bezel penetrates the PCI bracket then rotate down to mate with the PMC [PnX] connectors.

There are four mounting locations. Two into the PMC mounting bezel, and two for the standoffs near the PMC bus connectors.

Start-up
Make sure that the "system" can see your hardware before trying to access it. Many BIOS will display the PCI devices found at boot up on a "splash screen" with the VendorID and CardId for the PMC installed and an interrupt level. If the information is not available from the BIOS then a third party PCI device cataloging tool will be helpful

Watch the system grounds. All electrically connected equipment should have a fail-safe common ground that is large enough to handle all current loads without affecting noise immunity. Power supplies and power consuming loads should all have their own ground wires back to a common point.

Power all system power supplies from one switch. Connecting external voltage to the PCIBPMC when it is not powered can damage it, as well as the rest of the host system. This problem may be avoided by turning all power supplies on and off at the same time. This applies more to the PMC installed into the cPCIBPMC than the cPCIBPMC itself, and it is smart system design when it can be achieved.

Construction and Reliability

The cPCIBPMC is constructed out of 0.062 inch thick high temp FR4 material.

Surface mounted components are used. The connectors are SMT for the PMC bus and through hole [compression fit] for the cPCI. The PMC Module connectors are keyed and shrouded with Gold plated pins on both plugs and receptacles. They are rated at 1 Amp per pin, 100 insertion cycles minimum. These connectors make consistent, correct insertion easy and reliable.

The PMC Module is secured against the carrier with the PMC connectors. It is recommended, for enhanced security against vibration, that the PMC mounting

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screws are installed. The screws are supplied with the PMC from the OEM. Dynamic Engineering has screws, standoffs, blank bezels and other PMC hardware available at a reasonable cost if your PMC was not shipped with some of the required attachment hardware or if it has been misplaced.

Thermal Considerations

If the PMC installed has a large heat dissipation; forced air cooling is recommended.

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Warranty and Repair

Please refer to the warranty page on our website for the current warranty offered and options.

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

Service Policy

Before returning a product for repair, verify as well as possible that the suspected unit is at fault. Then call the Customer Service Department for a RETURN MATERIAL AUTHORIZATION (RMA) number. Carefully package the unit, in the original shipping carton if this is available, and ship prepaid and insured with the RMA number clearly written on the outside of the package. Include a return address and the telephone number of a technical contact. For out-of-warranty repairs, a purchase order for repair charges must accompany the return. Dynamic Engineering will not be responsible for damages due to improper packaging of returned items. For service on Dynamic Engineering Products not purchased directly from Dynamic Engineering contact your reseller. Products returned to Dynamic Engineering for repair by other than the original customer will be treated as out-of-warranty.

Out of Warranty Repairs

Out of warranty repairs will be billed on a material and labor basis. The current minimum repair charge is $100. Customer approval will be obtained before repairing any item if the repair charges will exceed one half of the quantity one list price for that unit. Return transportation and insurance will be billed as part of the repair and is in addition to the minimum charge.

For Service Contact:

Customer Service Department
Dynamic Engineering
435 Park Dr.
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Specifications

Logic Interfaces:	PCI Interface 33/32 <–> 66/64
Access types:	PCI bus accesses
CLK rates supported:	33 or 66 MHz PCI clock rates
Software Interface:	transparent Bridge. 21154 registers in configuration space
Initialization:	Selections for VIO, primary and secondary clock rates
Interface:	PMC front bezel via cPCI bracket. Additional optional Ethernet, Serial and I2C connections via J2.
Dimensions:	3U 4HP
Construction:	High Temp FR4 Multi-Layer Printed Circuit, Through Hole and Surface Mount Components.

Order Information

standard temperature range 0-70°C

cPCIBPMC3U64	3U 4HP cPCI card with PMC position http://www.dyneng.com/cpciBpmc.html
cPCIBPMC3U64-ENET	3U 4HP cPCI card with PMC position and RP Ethernet, Serial and I2C connections http://www.dyneng.com/cpciBpmc.html

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