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User Manual

cPCIBPMC3U32

cPCI 3U 4HP 1 Slot PMC Compatible Carrier

Current model with optional fan shown

Manual Revision 01p2 6/9/22
Corresponding Hardware: Revision 01
Fab number: 10-2020-0601

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cPCI and PMC Compatible Carrier

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Connection of incompatible hardware is likely to cause serious damage.

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Product Description

cPCIBPMC3U32 is part of the Dynamic Engineering cPCI and PMC Compatible family of modular I/O components. cPCIBPMC3U32 adapts one PMC to one cPCI slot.

The cPCIBPMC3U32 has a “sister” product for 6U applications – cPCIBPMC6UET. The 3U version has a 32 bit PCI interface definition and can work in a 64 bit environment. The 6U card has both the 32/64 PCI capability, and rear panel IO. -RIO is an option with cPCIBPMC3U32.

Voltages are monitored and the associated LEDs illuminated when the corresponding voltages are within tolerance.

5V and 3.3V power planes are filtered through an LC network. 1A per pin on the 3.3 and 5V planes [more than 10A each], plus 1A+ on the +/- 12V connections.

Special features:

- Universal cPCI 3U 4HP.
- Extended temperature range [-40 +85C] components
  LED names within quotes:
- LED on PMC Busmode “LPMC”
- LED on plus 12V “L12V”
- LED on minus 12V “LM12V”
- LED on plus 5V “L5V”
- LED on plus 3.3V “L3P3V”
- User selectable secondary VIO.
- 32 bit operation on PCI bus
- 66 or 33 MHz operation. With 66 MHz. primary bus speed the secondary bus can be 66 or 33 MHz.
- Front panel connector access through cPCI bracket
- JTAG programming support option
- GPIO header option

The cPCIBPMC3U32 is ready to use with the default settings. Just install the PMC onto the cPCIBPMC3U32 and then into the system. There are a few settings to optimize performance.

DIP SWITCH Settings

Please note that the switch numbering and 'CLOSED' and '0PEN' definitions are per the silk-screen. Closed corresponds to '0' and open to '1'.

SW1 DIP SWITCH Settings

DIPSWITCH #1 [SW1 table on silk-screen]
Switch #1 selects the secondary side VIO [**SVIO**]. When the switch = 'open' 3.3V is selected for the secondary side. When 'closed' is selected 5V is the VIO definition. The VIO plane is a reference for the IO level. The specification does not prohibit larger current consumption from these pins. The cPCIBPMC3U32 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 factory setting is 'Open'.

Switch #2 SM66EN signal is also routed to the PMC connector pin M66EN. If the PMC uses the M66EN as an input the dipswitch can be used to control the frequency. If the PMC uses the M66EN pin as a control, the Switch may have no effect. For example, if the switch is in the 'open' position and the PMC is selecting M66EN = '0' 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.
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Switch #3 Config66 is controlled with this switch. Closed selects 33 MHz and open selects 66 MHz capable.

Switch #4 Spare

Switch #5 Spare

Switch #6 selects **PMC IDSEL** range. 'Closed' selects the lower range using AD16 . 'Open' selects the upper range using AD20 The factory setting is 'Closed'.

Switch #7 selects **PMC Monarch Mode**. For prPMCs using the Monarch Mode pin, closing the switch will cause the Monarch Pin [64] at the PMC to be tied through a 1KΩ resistor to ground. With the switch open the Monarch pin is tied to 3.3V through 4.7KΩ. The factory setting is 'Closed'.

Switch #8 is spare

Interrupts

Interrupts from the PMCs are connected from the PMC to the primary PCI bus. INTA - INTD are mapped directly to the primary bus segment.

Options

Dynamic Engineering offers options to the cPCIBPMC3U32 design.

When -RIO is added to the part number the rear IO option is installed. J2 provides the cPCI connection and Jn4 provides the PMC connection. The routing is controlled impedance, and matched length. Routed as differential parts with 100 ohm impedance for each pair.

Other Signals

PME is pulled up with a 10K ohm resistor to 3.3V.

Reset Out on PMC position is open.

JTAG support is available. The JTAG header position is clearly marked in the silk screen. The header is frequently not used and is not installed unless requested. Please contact Dynamic Engineering for this option.

The Bridge supports a GPIO function. A header position is available with the positions clearly marked in the silk-screen. The header is installed by request. Please contact Dynamic Engineering for this option. The 4 bits are terminated with 4.7KΩ to 3.3V.

Options

Dynamic Engineering offers multiple 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. This design is versatile with PCI 32, PCI 64, rear IO versions and a slot zero configuration.

cPCIBPMC3U32 is bridged, isolating the PMC from the cPCI bus. cPCI connections are specification compliant on cPCIBPMC3U32. cPCIBPMC3U32

can be used in multiple positions 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. An additional 6U 2 PMC position variant is also available.

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

PMC Module Backplane IO Interface Pin Assignment

The figure below gives the pin assignments for the PMC Module IO Interface – from Pn4 to the cPCIBPMC3U32-J2 connectors. Also see the User Manual for your PMC board for more information.

(cPCI) J2		(PMC) Jn4	
D13	E13	3	1
B13	C13	4	2
A12	A13	7	5
D12	E12	8	6
B12	C12	11	9
D11	E11	12	10
B11	C11	15	13
A10	A11	16	14
D10	E10	19	17
B10	C10	20	18
D9	E9	23	21
B9	C9	24	22
A8	A9	27	25
D8	E8	28	26
B8	C8	31	29
D7	E7	32	30
B7	C7	35	33
A6	A7	36	34
D6	E6	39	37
B6	C6	40	38
D5	E5	43	41
B5	C5	44	42
A4	A5	47	45
D4	E4	48	46
B4	C4	51	49
D3	E3	52	50
B3	C3	55	53
A2	A3	56	54
D2	E2	59	57
B2	C2	60	58
D1	E1	63	61
B1	C1	64	62

FIGURE 1 CPCIBPMC3U32 PN4 INTERFACE STANDARD

J2.D13 ⇔ Jn4.3
J2.E13 ⇔ Jn4.1

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 cPCIBPMC3U32 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 cPCI bracket then rotate down to mate with the PMC [Pn/Jn] connectors.

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

Start-up

A third party PCI device cataloging tool will be helpful to check that the VendorID and CardID are “seen” by the OS.

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 cPCIBPMC3U32 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 cPCIBPMC3U32 than the cPCIBPMC3U32 itself, and it is smart system design when it can be achieved.

Construction and Reliability

The cPCIBPMC3U32 is constructed out of 0.062 high temp ROHS compliant material. Gold has been used for plating rather than Tin for improved performance over time.

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 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 with the “FAN” option is recommended.

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.

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Out of warranty repairs will be billed on a material and labor basis. 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:

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Specifications

Logic Interfaces:	PCI 32 Interface 33/66
Access types:	PCI bus accesses
CLK rates supported:	33 or 66 MHz PCI clock rates
Software Interface:	transparent Bridge.
Initialization:	Selections for VIO, primary and secondary clock rates
Interface:	PMC front bezel via cPCI bracket. Rear IO option.
Dimensions:	3U 4HP
Construction:	High Temp ROHS compliant Multi-Layer Printed Circuit board, Through Hole and Surface Mount Components. ROHS processing available by adding –ROHS to part number.

Order Information

standard temperature range –40 ⇔ +85ºC

cPCIBPMC3U32	3U 4HP cPCI card with PMC position https://www.dyneng.com/cPCIBPMC3U32.html
-VIO3	Force PMC side PCI bus to be 3.3V
-FAN	Add a fan to cool the mounted PMC. ~5 CFM, “Zero Slot” type
-FANRz	Add a fan to cool the mounted PMC. ~5 CFM, “Zero Slot” type. Mounted in reverse to pull air from the PMC side and blow to the rear
-FANR	Add a fan to cool the mounted PMC. ~8 CFM, full height fan will interfere with next cPCI position.
-RIO	Add J2 and Jn4 connectors to provide rear IO.
-ROHS	Add for ROHS processing.
-CC	Conformal Coating is available as an option.
-JTAG	Add JTAG header to assembly
-GPIO	Add GPIO header to assembly