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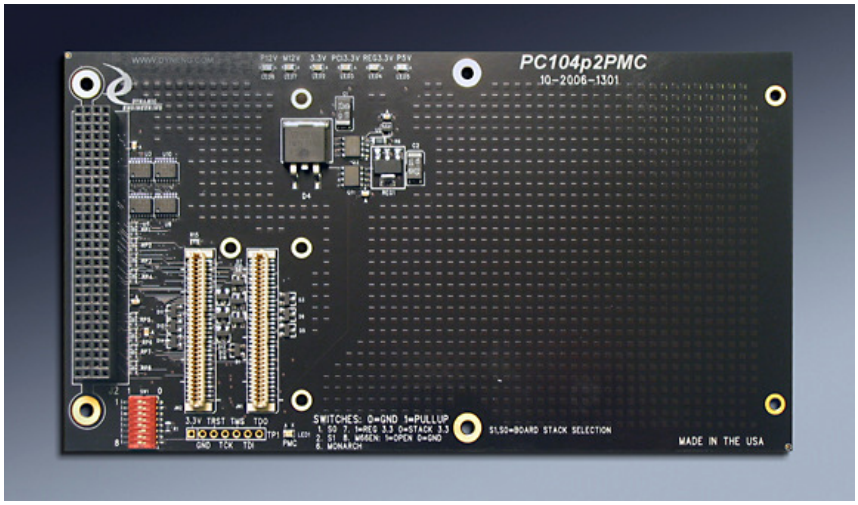
Est. 1988

User Manual

PC104p2PMC

Alternate Name: PCI1042PMC

Adapt a 32 bit PMC module to PC104p or PCI-104 stacks



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Corresponding Hardware: Revision A/B
10-2006-1301

PC104p2PMC

PC/104p – PCI-104 Module

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This product has been designed to operate with PC/104p or PCI-104 Module stacks and compatible user-provided equipment. Connection of incompatible hardware is likely to cause serious damage.

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Table of Contents

Product Description

The PC104p2PMC is part of the PC/104p Module family of modular I/O components by Dynamic Engineering. The PC104p2PMC provides a method to adapt a PMC device into a PC104p or PCI-104 stack.

The hardware has connectors for the PC104 PCI bus and PMC. The connectors are interconnected with traces. The combination of the installed PMC and adapter will have longer trace lengths and an extra connector in the path compared to standard PC104 or PMC implementations.

Building on years of experience with other PMC and PCI adapters the traces are conditioned with a combination of series resistors and clamping DIODEs to insure stable operation.

A DIP Switch is provided to make configuration easy. If you forget to read the manual it is ok as the information is right in the silk-screen. The 1,0 positions of the switch are marked and the definitions for each switch [used] are provided. Expanded definitions follow.

The PMC will use Idsel, Clk, Interrupts, Req and Gnt from the standard PMC locations. To adapt to the PC104 environment multiplexers are installed to route the proper stack position signals to the PMC. The stack position is programmable with the DIP Switch. [Switch positions **2,1**. 00 = stack position 0, 01 => 1, 10 => 2, and 11 => 3]

DipSwitch positions **3,4 and 5** are unused.

Some PMC's can operate in a "monarch" mode and require pin 64 on Jn2 to be pulled or grounded for proper operation. A 10KΩ resistor is used to pull-up the pin and the switch is used to ground through a 1KΩ resistor. With the switch **[6]** closed a "0" is supplied to the monarch pin and with the switch open a "1" is supplied. A resistor is used to allow the installed PMC to override the setting if desired.

Some PMC's require 3.3 and some PC104 stacks don't provide that power rail. A small regulator provides up to 1500 mA converted from the 5V rail to provide 3.3 in cases where the system does not. The system 3.3V or the on-board 3.3V can be selected with the dip switch **[7].** Closed selects stack power and open selects regulator power.

The speed of the PCI bus can be controlled with the M66EN signal. The signal is ganged together and the slowest device controls the speed. The installed PMC will likely ground this signal to force to 33 MHz. If the installed PMC can operate at 33 or 66 and the user wants to force to 33 switch **[8]** can be closed. Most PC104 system CPUs operate at 33 which will render the switch redundant.

LEDs are provided for ±12V, +5V, and stack, regulator and selected +3.3V, and PMC installed [Busmode]

VIO is set by the stack. The PC104p2PMC carrier is passive and does not change the VIO or PCI voltage definitions. The power supply may provide a method of changing between 3.3 and 5V for VIO. The PC104pPWR12 and PC104pPWR28 designs provide this option.

The PC104p2PMC conforms to the PC/104p standard in the sense of PCI connections, basic dimensions at the PCI connector. This guarantees compatibility with multiple PC/104p boards. The width of the PMC is greater than the width of standard PC104 modules [and the PC104 specification]. The PC104p2PMC has been extended in the direction of the ISA connector to allow for the PMC to be properly mounted.

Most PMC's have a mounted height of 10 MM above the surface of the PC104 card plus the thickness of the PMC card and any components that may be on the rear. In many cases the PMC thickness will be less than the stacking height of the PC104 stack allowing multiple PMC's to be installed in parallel. [10mm + .062] .4557" to rear surface of PMC card from PC104 component side.

The ISA bus will not be connected through the PC104p2PMC which means that the carriers should be located at the far side of the stack in systems that use ISA to allow those connections to happen "under" the adapted PMC's.

An optional JTAG header is available for connecting to the installed PMC. Some PMC's allow reprogramming of FLASH or other functions. Many clients do not need this feature. Add –JTAG to your ordered part number to get this feature.

Programming

The PC104p2PMC adapter is passive and does not affect the PMC connection through the PCI bus within the PC104 stack. Just “plug and play” as you normally would for your installed stack hardware with a PCI connection. Normally a driver for the OS in use will be required to access the hardware. If you are installing one of our Dynamic Engineering PMC’s we can assist with Windows or Linux drivers.

Register Definitions

The PMC register definitions are unaffected by the PC104p2PMC adapter. Use the offsets defined for the PMC plus the PCI addresses defined by enumeration to control the PMC hardware.

Interrupts

Interrupts are supported by the PC104p2PMC carrier in the sense that the interrupt request from the PMC is routed to A or B or C or D based on the slot programming. The use and causes of the interrupt are dependent on the installed PMC.

Applications Guide

Interfacing

The pin-out tables are omitted from this manual because the IO from the PMC will be through the PMC Bezel connector. Please refer to the PMC manual for signal definitions.

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

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.

We provide the components. You provide the system. Safety and reliability can be achieved only by careful planning and practice. Inputs can be damaged by static discharge, or by applying voltages outside of the PMC devices rated voltages.

Construction and Reliability

PC/104p Modules were conceived and engineered for rugged industrial environments. The PC/104p2PMC is constructed out of 0.062 inch thick high temp FR4 material.

Through hole and surface mounting of components are used. IC sockets use screw machine pins. High insertion and removal forces are required, which assists in the retention of components. If the application requires unusually high reliability or is in an environment subject to high vibration, the user may solder the corner pins of each socketed IC into the socket, using a grounded soldering iron.

The PC/104p device is secured into the stack with high insertion force pins and four screws attached to the 4 stand-offs. The four screws provide significant protection against shock, vibration, and incomplete insertion.

The PC/104p Module provides a low temperature coefficient of 1.7 W/^{o}C for uniform heat. This is based upon the temperature coefficient of the base FR4 material of 0.31 W/m-^{o}C, and taking into account the thickness and area of the PC/104p. The coefficient means that if 1.7 Watts are applied uniformly on the component side, then the temperature difference between the component side and solder side is one degree Celsius.

Thermal Considerations

The PC104p2PMC design consists of mainly passive circuits with low power dissipation. If the on board regulator is used then the 5-3.3 drop for the amount of current used will be generated as heat. The regulator is well connected [thermally and electrically] to the internal planes. The power dissipation due to internal circuitry is very low. It is possible to create a higher power profile if the installed PMC is “power hungry”. Consider forced air cooling based on the PMC’s power dissipation.

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 $130. 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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Order Information

PC104p2PMC	PC/104p, PCI-104 Module with PMC position
-JTAG	Add JTAG header
-ROHS	Add ROHS process

Specifications

Host Interface:	PC/104p - 32 bit PCI bus, 33/66 MHz
Wait States:	passive design – none added to installed PMC access.
Interrupt:	Interrupts supported based on PMC capabilities. Interrupts routed based on stack position
DMA:	PMC Request and Grant signals routed based on stack position to support DMA. Also see interrupt support.
Onboard Options:	All Options are DIP Switch Programmable
CLK, IDSEL:	Routed to PMC based on stack position
Dimensions:	modified PC/104p Module.
Construction:	High temp FR4 Multi-Layer Printed Circuit, Through Hole and Surface Mount Components. Programmable parts are socketed.
Temperature Coefficient:	1.7 W/^{o}C for uniform heat across PC/104p
Power:	Depends on installed PMC.
3.3V	Local 3.3V regulator with 1500 mA capability can be selected or stack 3.3V.