

The PBP-14P4 backplane is fully PICMG Rev 2.1 compliant. It is a member of PBP's PCI product family and is intended to support all PICMG compliant boards on the market.

Introduction

Traditional PC is outstanding with the all-in-one facility, in which processor seat, chipset, memory sockets, ISA/PCI slots, device and power connectors are accommodated over a single PCB. This would absolutely draw the limitation line on multiple peripheral cards adoption as well as the timing needed for board replacement in the event of system failure. The new generation industrial PC has made a new platform with a combination of two parts – SBC and backplane.

Different from traditional motherboards, industrial PC features on easily removable SBC as the working board that has PICMG or ISA form factor so that users may easily apply or remove the SBC from the system. Reducing the system down time is obviously visible. Backplane is hence designed with PICMG slots to hold the SBC as a system. Some backplanes also have ISA/PCI slots to hold ISA/PCI peripheral cards. This design has been proved successful to provide far more PCI slots than traditional motherboard could ever holds (4 PCI slots) to meet the requirement of current technology and market demands, especially in CTI market.

As a matter of fact, with the needs from industrial PC users moving on, applications with SBC and backplane have been fully required and are currently leading the industrial PC market.

Design Philosophy

Our backplane is designed to meet customer's demand. Better power distribution, thick PCB with more ruggedness, and user-friendly designed are the key design routes. We hold the remind to produce backplane of trustable quality throughout the design phases, and this is how our backplane is made and presented.

In order to keep good power filtering and avoid fire explosion, Electrolytic capacitor and Ceramic capacitor are used to replace traditional Tantalum capacitor. All our backplane models have 4 layers with separate power layer and ground layer to reduce power noise. Assorted connectors, including keyboard connectors and power connectors, are provided for easy installation and expansion. All backplanes models are made to meet industrial grade environment requirement (temperature, humidity, etc.).

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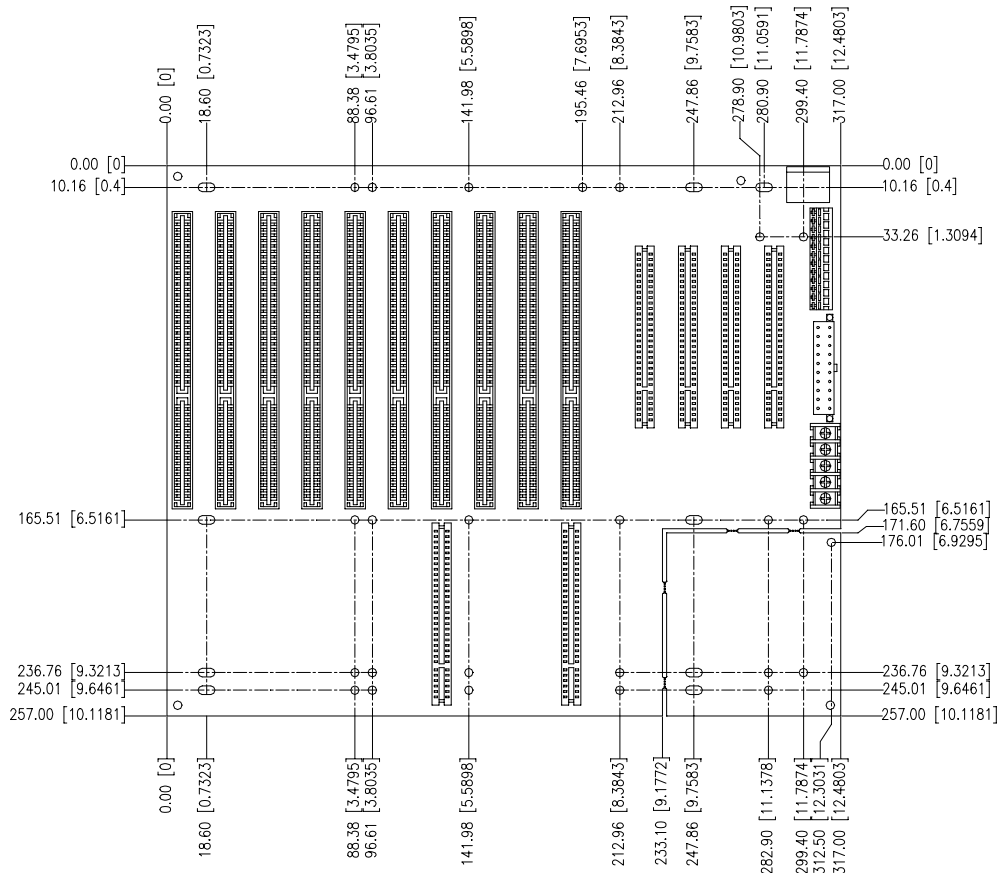
Product Features

Connector	<ul style="list-style-type: none"> ◆ Two PCI/ISA slots for the CPU board ◆ Eight ISA slots for full-sized ISA boards ◆ Four 5V 32-bit PCI slots for full-sized boards on the Primary bus. The ID Select of these slots are configurable through jumpers ◆ One AT standard power connector: 12 pins, 5A max. per pin for +5V, -5V, +12V, -12V voltages and Ground ◆ One ATX standard power connector: 20 pins, 5A max. per pin for +5V, -5V, +12V, -12V, +3.3V, +5VSB voltages, Ground and Power Good signal ◆ One ATX control connector to distribute signals coming from the CPU boards onto connector for soft on/off and ATX power supply ◆ Pairs of headers for local connection of a keyboard, fan power and Power LED ◆ One Keyboard DIN connector
PCB	<ul style="list-style-type: none"> ◆ The Printed Circuit Board's (PCB) overall dimension is 257mm x 317mm (10.12"x12.48") and total thickness is 1.6mm (4 layers). ◆ Mounting holes are provided and are located to conform to the baby AT form factor. Mounting holes are connected to Signal Ground internally. ◆ Operating Temperature : 0°C ~ 55°C ◆ Storage Temperature : -20°C ~ 75°C
Standard	<ul style="list-style-type: none"> ◆ PCI- conforms to PICMG rev. 2.1 specification ◆ ISA- conforms to IEEE P996 specification

Routing Table

	<i>PPCI1</i>	<i>PPCI2</i>	<i>PPCI3</i>	<i>PPCI4</i>
<i>IDSEL</i>	AD31	AD30	AD29	AD28
<i>PIN A6</i>	B	C	D	A
<i>PIN B7</i>	C	D	A	B
<i>PIN A7</i>	D	A	B	C
<i>PIN B8</i>	A	B	C	D

Board Drawing



Jumpers and Connectors

JUMPER/ CONNECTOR	DESCRIPTION
PCI A,B ISA 7, 10	PICMG connectors
PCI1-4	32-BIT PCI BUS connectors (primary)
KB1, KB2, KB3	Keyboard connector
CN1, CN2	Fan connector
CN3	Power extension pins
CN4	ATX P/S control connector
CN5	P8/P9 power connector
CN6	Power extension terminal block
CN7	ATX power connector

🔌 Pin Assignment

CN5 (P8 / P9)	
PIN	NAME
1	NC
2	+5V
3	+12V
4	-12V
5	GND
6	GND
7	GND
8	GND
9	-5V
10	+5V
11	+5V
12	+5V

CN7 (ATX)			
PIN	NAME	PIN	NAME
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PS-ON
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	PWR-OK	18	-5V
9	5V STB	19	+5V
10	+12V	20	+5V

CN6 (Power Extension)	
PIN	NAME
1	GND
2	+12V @ 5A
3	+5V @ 5A
4	-12V @ 0.5A
5	-5V @ 0.5A

CN3	
PIN	NAME
1	+12V
2	GND
3	GND
4	+5V

CN4 (For ATX PSU only)	
PIN	NAME
1	PW-OK
2	5VSB
3	PS-ON
4	GND

KB1, KB2 and KB3	
PIN	NAME
1	CLK
2	DATA
3	NC
4	GND (Via SBC)
5	+5V (Via SBC)

CN1, CN2 (Fan)	
PIN	NAME
1	+12V
2	GND

***Note:** If you are using a non-ATX featured SBC board with ATX power supply, you can turn the ATX power supply into AT type by adding an on-off switch over pin 3 and 4. By default, pin 3 and 4 is short to trigger the ATX power supply to ON status.

🔌 Installation Guide

SBC

Apply only one full-sized SBC over PICMG slot or half-sized SBC over ISA slot. Apply your ISA/PCI cards over ISA/PCI slots (**Fig. 1**).

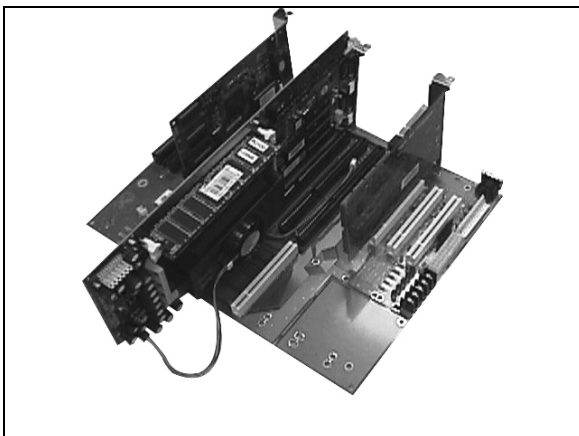


Fig. 1

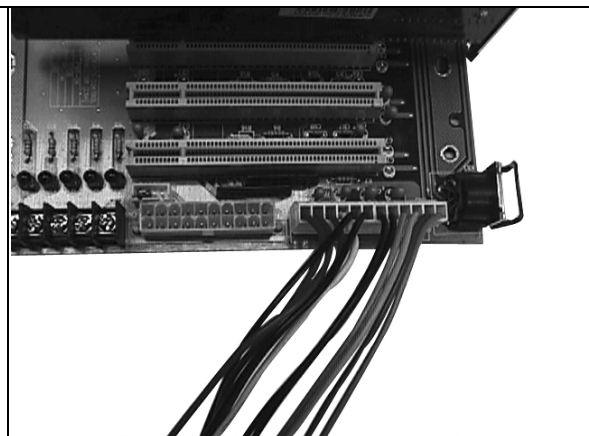


Fig. 2

Power Supply

1. If you use AT power supply, please apply the P8/P9 connector over CN5 (**Fig. 2**). If you use ATX power supply, please apply the 20-pin ATX power connector over CN4 (**Fig. 3**). Besides, you need to apply one 4-pin ATX power control cable between your SBC and backplane over the 4-pin header CN7. (A toggle switch is required over your SBC for this application, **Fig. 4**).

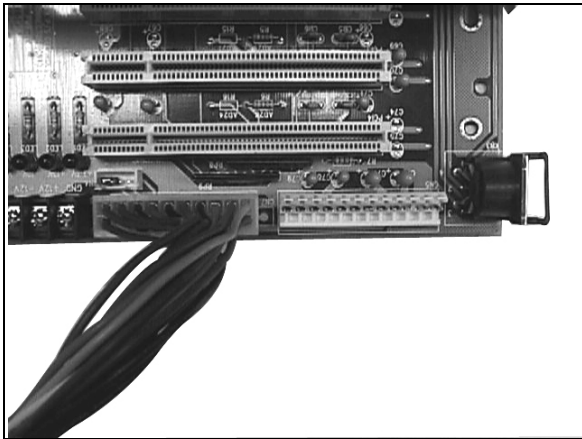


Fig. 3

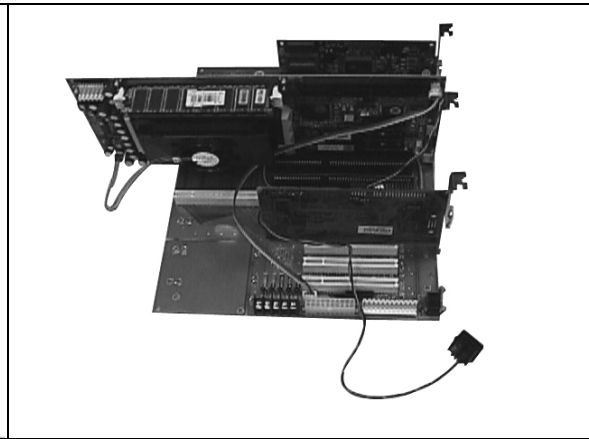


Fig. 4

2. If you use ATX power supply, you may also apply a jumper over pin-3 and pin-4 of CN7. In this application, the 4-pin ATX power control cable is not required, and your ATX power supply will then act as an AT power supply (**Fig. 5**).

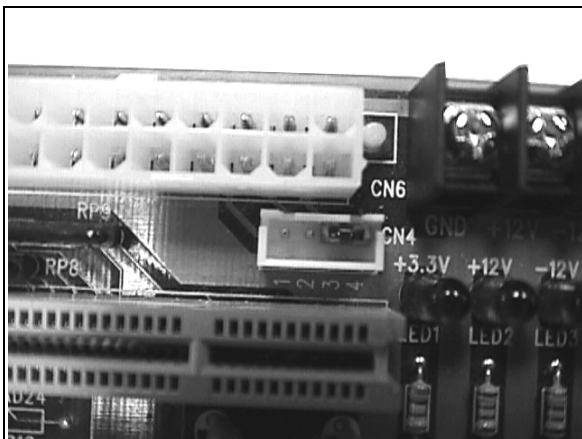


Fig. 5

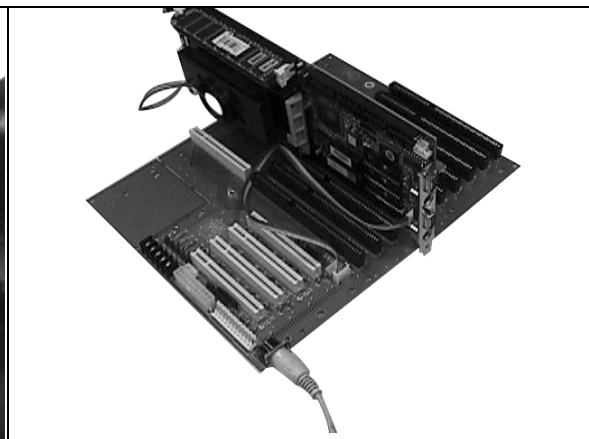


Fig. 6

Keyboard

1. If you use a standard PC/AT keyboard, please apply a 5-pin keyboard control cable between your SBC and backplane over the 5-pin shrouded header KB1 or KB2. This will enable KB3 (DIN connector) (**Fig. 6**).

2. If you use a PS/2 keyboard, simply apply them over the PS/2 connector on your SBC. In this application, the 5-pin keyboard control connector is not required (**Fig. 7**).

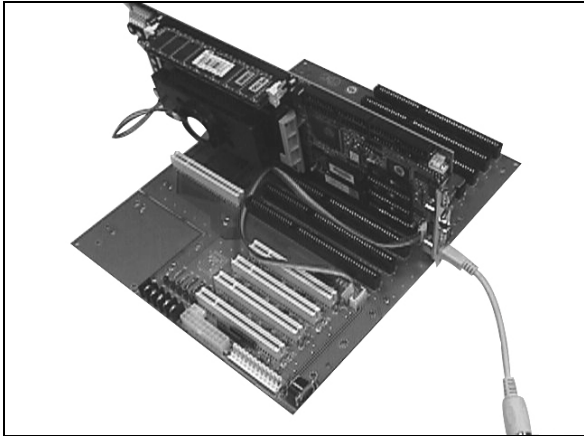


Fig. 7

Chassis

Make sure the copper lifting stands are placed below all the mounting holes of your backplane.

Fan

CN1, CN2 are fan connectors. Please refer to the pin assignment table for proper connection.