



**APC-PMC  
PCI Bus PMC Carrier**

**USER'S MANUAL**

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## TABLE OF CONTENTS

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### IMPORTANT SAFETY CONSIDERATIONS

You must consider the possible negative effects of power, wiring, component, sensor, or software failure in the design of any type of control or monitoring system. This is very important where property loss or human life is involved. It is important that you perform satisfactory overall system design and it is agreed between you and Acromag, that this is your responsibility.

## 1.0 General Information

KEY FEATURES.....	3
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## 2.0 PREPARATION FOR USE

UNPACKING AND INSPECTION.....	3
CARD CAGE CONSIDERATIONS.....	3
Rear I/O Connector.....	4
Non-Isolation Considerations.....	4
PCI Bus Connectors.....	5

## 3.0 SERVICE AND REPAIR

SERVICE AND REPAIR ASSISTANCE.....	7
PRELIMINARY SERVICE PROCEDURE.....	7
WHERE TO GET HELP.....	7

## 4.0 SPECIFICATIONS

PHYSICAL.....	8
ENVIRONMENTAL.....	8
PCI LOCAL BUS INTERFACE.....	8

## DRAWINGS

4502-032 APC-PMC Connector Diagram.....	9
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The APC-PMC is a PCI bus PMC module carrier designed for the 32-bit PCI bus. The carrier enables the use of PCI mezzanine I/O modules in a standard PCI computer system. The carrier card acts as an adapter to route PCI bus signals between the PCI bus of your PC and the J1 and J2 connectors of a PMC module card.

PMC modules with rear I/O are routed to rows A and C of a 64 pin DIN 41 612 signal connector on the APC-PMC card.

PMC modules with front I/O can be accessed through the PCI card face plate.

Upon receipt of this product, inspect the shipping carton for evidence of mishandling during transit. If the shipping carton is badly damaged or water stained, request that the carrier's agent be present when the carton is opened. If the carrier's agent is absent when the carton is opened and the contents of the carton are damaged, keep the carton and packing material for the agent's inspection.

For repairs to a product damaged in shipment, refer to the Acromag Service Policy to obtain return instructions. It is suggested that salvageable shipping cartons and packing material be saved for future use in the event the product must be shipped.

This board is physically protected with packing material and electrically protected with an anti-static bag during shipment. However, it is recommended that the board be visually inspected for evidence of mishandling prior to applying power.

Refer to the specifications for loading and power requirements. Be sure that the system power supplies are able to accommodate the power requirements of the system boards, plus the installed Acromag board, within the voltage tolerances specified.

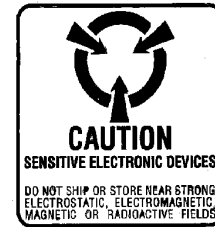
Adequate air circulation must be provided to prevent a temperature rise above the maximum operating temperature and to prolong the life of the electronics. If the installation is in an industrial environment and the board is exposed to environmental air, careful consideration should be given to air-filtering.

Remove power from the system before installing board, cables, termination panels, and field wiring.

## 1.0 GENERAL INFORMATION

## 2.0 PREPARATION FOR USE

### UNPACKING AND INSPECTION



**WARNING:** This board utilizes static sensitive components and should only be handled at a static-safe workstation.

### CARD CAGE CONSIDERATIONS

**IMPORTANT:** Adequate air circulation must be provided to prevent a temperature rise above the maximum operating temperature.

**Rear I/O Connector**

The P2 rear connector provides 64 field I/O interface connections to the J4 connector of the PMC module. The P2 connector is a 64-pin DIN 41 612 male connector (Harting 09 09 164 6922 or equivalent) using rows A and C.

**Table 2.1:** Board Field I/O Pin Connections

P2 Row A Pin	J4 Pin	P2 Row C Pin	J4 Pin
1	1	65	2
2	3	66	4
3	5	67	6
4	7	68	8
5	9	69	10
6	11	70	12
7	13	71	14
8	15	72	16
9	17	73	18
10	19	74	20
11	21	75	22
12	23	76	24
13	25	77	26
14	27	78	28
15	29	79	30
16	31	80	32
17	33	81	34
18	35	82	36
19	37	83	38
20	39	84	40
21	41	85	42
22	43	86	44
23	45	87	46
24	47	88	48
25	49	89	50
26	51	90	52
27	53	91	54
28	55	92	56
29	57	93	58
30	59	94	60
31	61	95	62
32	63	96	64

**Non-Isolation Considerations**

The board is non-isolated, since there is electrical continuity between the PCI bus and PMC module grounds. As such, the field I/O connections are not isolated from the system. Care should be taken in designing installations without isolation to avoid noise pickup and ground loops caused by multiple ground connections.

Table 2.2 indicates the pin assignments of the PCI bus signals at the card edge (P1) connector. The connector pins are designated by a letter and a number. The letter indicates which side of the connector the pin contact is on. "B" is the component side of the board while "A" is the solder side. Connector "gold finger" numbers increase with distance from the bracket end of the printed circuit board. Table 2.2 also lists the P1 signals and to which PMC J1 or J2 pins they are routed. Five volt and 3.3 volt power and ground connections between the P1, J1, and J2 connector are routed on power and ground planes.

## PCI Bus Connectors

**Table 2.2: PCI Bus P1 Connections**

**Bracket End ↑**

Signal	P1 to J1 or J2 Pins	P1 to J1 or J2 Pins	Signal
-12V	B01 / J1-2	A01 / J2-2	TRST#
TCK	B02 / J1-1	A02 / J2-1	+12V
Ground	B03 / J1-3	A03 / J2-3	TMS
TDO	B04 / J2-4	A04 / J2-5	TDI
+5V	B05 / J1-8	A05 / J1-30	+5V
+5V	B06 / 5V Plane	A06 / J1-4	INTA#
INTB#	B07 / J1-5	A07 / J1-6	INTC#
INTD#	B08 / J1-9	A08 / 5V Plane	+5V
PRSNT1#	B09 (Pulled Low)	A09 / J2-8	Reserved 1
Reserved 2	B10 / J2-9	A10 / VIO 40 mil Trace	+VIO
PRSNT2#	B11 (Pulled Low)	A11 / J2-10	Reserved 3
+3.3V KEYWAY			+3.3V KEYWAY
+3.3V KEYWAY			+3.3V KEYWAY
Reserved 4	B14 / J1-10	A14 (No Connect)	3.2Vaux
Ground	B15 / Ground Plane	A15 / J2 13	RST#
CLK	B16 / J1-13	A16 / VIO Plane	+VIO
Ground	B17 / Ground Plane	A17 / J1-16	GNT#
REQ#	B18 / J1-17	A18 / Ground Plane	Ground
+VIO	B19 / 40 mil Trace	A19 / J2-17	PME#
AD[31]	B20 / J1-20	A20 / J2-19	AD[30]
AD[29]	B21 / J2-20	A21 3.3V Plane	+3.3V
Ground	B22 / Ground Plane	A22 / J1-21	AD[28]
AD[27]	B23 / J1-22	A23 / J2-22	AD[26]
AD[25]	B24 / J1-23	A24 / Ground Plane	Ground
+3.3V	B25 3.3V Plane	A25 / J2-23	AD[24]
C/BE[3]#	B26 / J1-26	A26 / J2-25	IDSEL
AD[23]	B27 / J2-26	A27 3.3V Plane	+3.3V
Ground	B28 / Ground Plane	A28 / J1-27	AD[22]
AD[21]	B29 / J1-28	A29 / J2-28	AD[20]
AD[19]	B30 / J1-29	A30 / Ground Plane	Ground
+3.3V	B31 3.3V Plane	A31 / J2-29	AD[18]
AD[17]	B32 / J1-32	A32 / J-31	AD[16]
C/BE[2]#	B33 / J2-32	A33 3.3V Plane	+3.3V
Ground	B34 / Ground Plane	A34 / J1-33	FRAME#
IRDY#	B35 / J1-36	A35 / Ground Plane	Ground
+3.3V	B36 3.3V Plane	A36 / J2-35	TRDY#
DEVSEL#	B37 / J1-37	A37 / Ground Plane	Ground
PCIXCAP	B38 / Ground Plane	A38 / J2-38	STOP#
LOCK#	B39 / J1-40	A39 3.3V Plane	+3.3V
PERR#	B40 / J2-39	A40 / J1-41	SMBCLK
+3.3V	B41 3.3V Plane	A41 / J1-42	SMBDAT
SERR#	B42 / J2-42	A42 / Ground Plane	Ground
+3.3V	B43 3.3V Plane	A43 / J1-43	PAR
C/BE[1]#	B44 / J2-43	A44 / J1-46	AD[15]
AD[14]	B45 / J2-45	A45 3.3V Plane	+3.3V
Ground	B46 / Ground Plane	A46 / J2-46	AD[13]
AD[12]	B47 / J1-47	A47 / J1-48	AD[11]
AD[10]	B48 / J2-48	A48 / Ground Plane	Ground
Ground	B49 / Ground Plane	A49 / J1-49	AD[09]

Signal	P1 to J1 or J2 Pins	P1 to J1 or J2 Pins	Signal
5V KEYWAY			5V KEYWAY
5V KEYWAY			5V KEYWAY
AD[08]	B52 / J2-49	A52 / J1-52	C/BE[0]#
AD[07]	B53 / J2-51	A53 3.3V Plane	+3.3V
+3.3V	B54 3.3V Plane	A54 / J1-53	AD[06]
AD[05]	B55 / J1-54	A55 / J1-55	AD[04]
AD[03]	B56 / J1-58	A56 / Ground Plane	Ground
Ground	B57 / Ground Plane	A57 / J1-59	AD[02]
AD[01]	B58 / J1-60	A58 / J1-61	AD[00]
+VIO	B59 / 40 mil Trace	A59 / 40 mil Trace	+VIO
ACK64#	B60 / J2-61	A60 / J1-64	REQ64#
+5V	B61 5V Plane	A61 5V Plane	+5V
+5V	B62 5V Plane	A62 5V Plane	+5V

(#) s used to indicate an active-low signal.

## 3.0 SERVICE AND REPAIR

### SERVICE AND REPAIR ASSISTANCE

### PRELIMINARY SERVICE PROCEDURE

**CAUTION:** POWER MUST BE TURNED OFF BEFORE REMOVING OR INSERTING BOARDS

### WHERE TO GET HELP

**www.acromag.com**

Surface-Mounted Technology (SMT) boards are generally difficult to repair. It is highly recommended that a non-functioning board be returned to Acromag for repair. The board can be easily damaged unless special SMT repair and service tools are used. Further, Acromag has automated test equipment that thoroughly checks the performance of each board. When a board is first produced and when any repair is made, it is tested, placed in a burn-in room at elevated temperature, and retested before shipment.

Please refer to Acromag's Service Policy Bulletin or contact Acromag for complete details on how to obtain parts and repair.

Before beginning repair, be sure that all of the procedures in Section 2, Preparation For Use, have been followed. Also, refer to the documentation of your PMC module to verify that it is correctly configured. Replacement of the board with one that is known to work correctly is a good technique to isolate a faulty board.

If you continue to have problems, your next step should be to visit the Acromag worldwide web site at <http://www.acromag.com>. Our web site contains the most up-to-date product and software information.

Choose "Bus Board Products" then go to the "Support" tab in the Acromag banner to access:

- Application Notes
- Frequently Asked Questions (FAQ's)
- Knowledge Base
- Tutorials
- Software Updates/Drivers

An email question can also be submitted from within the Knowledge Base or directly from the "Contact Us" tab.

Acromag's application engineers can also be contacted directly for technical assistance via telephone or FAX through the numbers listed at the

bottom of this page. When needed, complete repair services are also available.

**4.0  
SPECIFICATIONS**

Length	6.6 inches (167.64 mm)
Height	4.2 inches (106.68 mm)
Board Thickness	0.063 inches (1.6 mm)

**PHYSICAL**

- **P1 (PCI Bus)** PCI Specification 2.3 5V/3.3V board card edge finger spacing.
- **J1 and J2** PMC PCI bus connectors interface to P1 connector. J1 and J2 are Molex 71439-0164 or equivalent.
- **P2** Rear I/O connector with 64 pins of rows A and C interfaces to J4 of PMC module (DIN 41 612 Harting 09 03 164 6922 or equivalent).
- **J4** PMC Rear I/O interfaces to P2 connector (Molex 71439-0164 or equivalent).

**Connectors**

**Operating Temperature:** -40°C to +85°C  
**Relative Humidity:** 5-95% Non-Condensing.  
**Storage Temperature:** -55°C to 125°C.

**ENVIRONMENTAL**

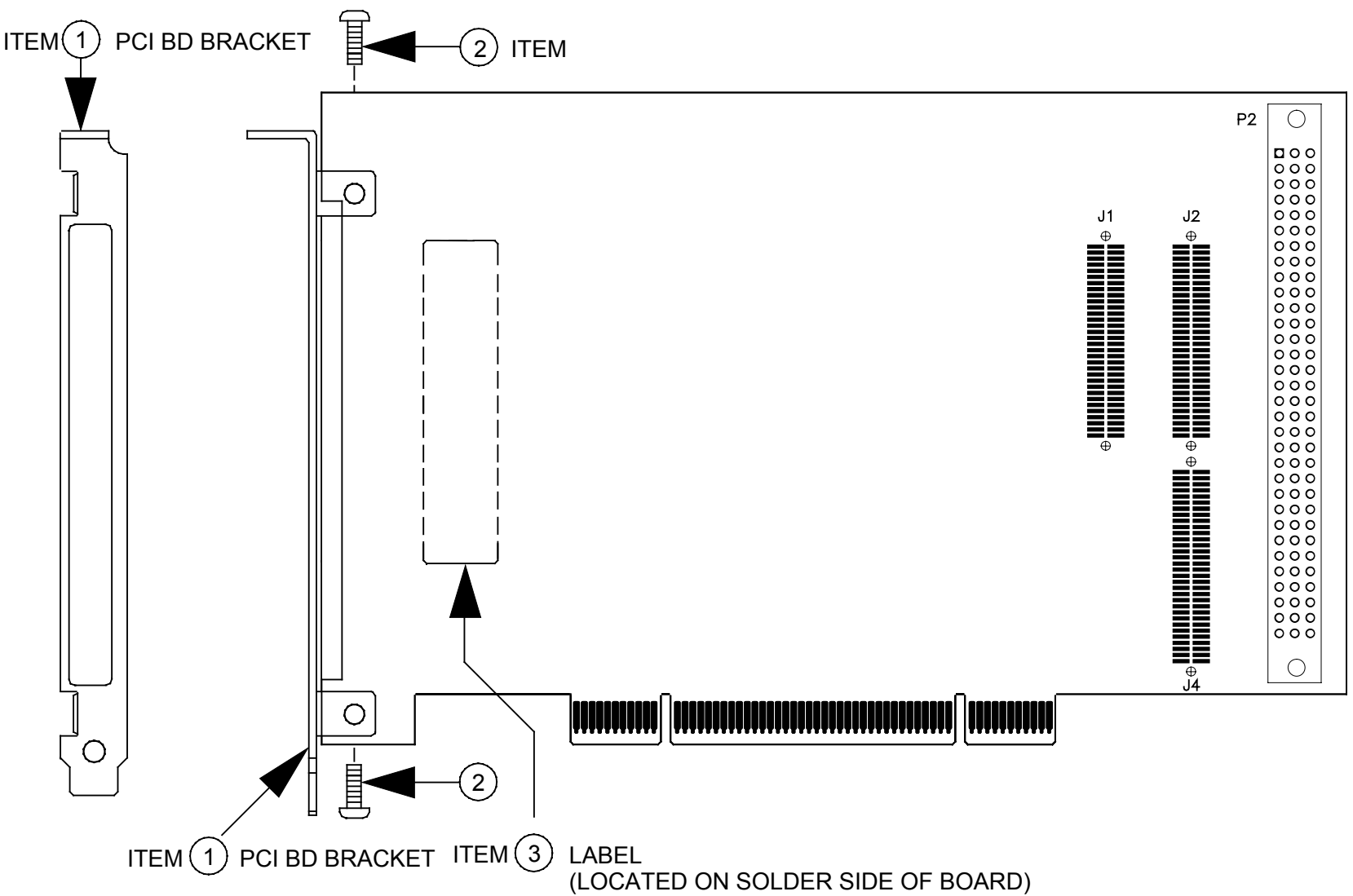
**Non-Isolated:** PCI bus and field commons have a direct electrical connection.

**PCI Local Bus Interface**

**PMC Compatibility:** Pin assignment conform to PCI Bus Specification, Revision 2.3 and PMC Specification, P1386.1

**Signaling:** 5V or 3.3V as required by the PMC module.

**PCI Bus Clock:** This product is not guaranteed to function with a PCI bus clock frequency greater than 33MHz.

**4502-032**