PCI Express Products

Non-intelligent carrier cards for XMC, PMC, Industry Pack and AcroPacks®
Experience counts — especially when engineering the right embedded solution. And with more than 60 years experience, Acromag can help you reduce your costs and increase your productivity.

**Acromag: The I/O Leader**

Acromag is focused on developing embedded computing solutions that provide the best long term value in the industry. Compare and you will find that Acromag offers an unmatched balance of price, performance, and features.

**60+ Years of I/O Experience**

With over 60 years of industrial I/O design experience, Acromag stands alone in the high-performance bus-board market. Developing VMEbus I/O boards since 1984, we combine our process control expertise with extensive experience in embedded computing. This background gives us unrivaled insight to many unique concerns when interfacing computer systems to various sensors and controllers in a wide range of applications. Acromag processor, FPGA, and I/O products are commonly used in these industries:

- military/defense
- transportation
- semiconductors
- communication
- aerospace
- manufacturing
- scientific
- research labs

**Quality You Can Count On**

We take every measure to guarantee dependable operation with ISO9001 and AS9100 certified quality management. State-of-the-art manufacturing with industrial-grade components adds extra ruggedness. Advanced inspection and testing further ensure that Acromag I/O performs at or beyond their rated specs.

**Technical Support**

Drawing on a wealth of embedded I/O experience, our sales engineers are well qualified to support you in the use of our products in your end-applications. We take pride in our highly experienced staff that excels at after-sale technical support.

**Global Representation**

Great care has been put into building a team of highly skilled representatives and distributors. They are located around the world to service your needs.

**Online Ordering**

Find full documentation and pricing information online. You can get quotes and even order directly on our website.

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### Description

**Model:** APCe7010E-LF

The AcroPack® product line updates our popular Industry Pack I/O modules with a PCIe interface format. This tech-refresh design offers a compact size, low-cost I/O, the same functionality and memory map of the existing Industry Pack modules.

This board interfaces one AcroPack mezzanine module to a PCI Express bus on a PC-based computer system.

Select I/O modules from Acromag’s offering or use most third-party mPCIe compliant modules.

### Key Features & Benefits

- One AcroPack or mini-PCIe module slot
- PCI Express compliant
- Plug-and-play carrier configuration and interrupt support
- Fused +1.5V, +3.3V, +5V, +12V, and -12V DC power is provided. A fuse is present on each supply line serving each AcroPack module.
- Front panel 50-pin CHAMP 0.8mm connectors for field I/O signals
- Optional isolated power supplies. Support for Acro Packs requiring ±12 Volt isolated power.
- Extended temperature range
- DIP switch card identification
- Standard 14-pin Xilinx JTAG programming header
- Software development tools for VxWorks®, Linux®, and Windows® environments.
Performance Specifications

■ PCI Express Bus Compliance
This device meets or exceeds all written PCI Express specifications per revision 2.1.
The host port consists of one PCIe lane, each of the mini PCIe sites have one lane each.

■ I/O Interface
Front I/O
Connector: 50-pin 0.8 mm Champ cable connection.
Pin assignments are defined by the installed AcroPack or mini PCIe module.
The field side connector of the AcroPack I/O module mates to a Samtec SS5-50-3.00-L-D-K-TR socket connector P2 on the carrier board.
Gold plating in the connection area, M2.5 screws and spacers provide excellent connection integrity and stability for harsh environments.

■ Ease of Use
A standard 14-pin Xilinx JTAG programming header is provided for programming and debugging the FPGA on some AcroPack modules.

■ Physical
Physical Configuration
PCIe x1 low-profile
Length: 5.158 inches (131.01 mm).
Height: 2.711 inches (68.86 mm).
Includes standard and low-profile brackets.

■ Environmental
Operating temperature
-40 to +85°C
Storage temperature
-55 to +125°C
Relative humidity
5 to 95% non-condensing
Power
+3.3 Volts (±10%): 0.95mA typical
+12 Volts (±5%): 25mA Typical
The APc7010E-LF has one DC/DC converters to provide the power supply voltages to the AcroPack modules that are not present at the host interface. The +1.5 Volt supply is sourced from the +3.3 Volt host power. The +5 Volt and -12 Volt supply is sourced from +12 Volt host power.

Ordering Information

Carrier Card
APc7010E-LF: AcroPack carrier card for AcroPack or mPCIe modules, one module slot.
See Acromag.com/AcroPacks for a full list of I/O modules.

Accessories
5028-372: Round cable, shielded, SCSI-2 to CHAMP.
0.8mm, 2 meters long.
5028-378: Termination panel, SCSI-2 connector, 50 screw terminals
5028-619: Cable, 50-pin CHAMP to pigtail, 36 inches long
5028-620: Cable, 50-pin CHAMP to pigtail, 70 inches long

Software (see software documentation for details)
APSW-API-VXW: VxWorks software support package
APSW-API-WIN: Windows DLL driver software support pkg
APSW-API-LNX: Linux® support (website download only)
AcroPack® Carriers

APCe7022  PCI Express Carrier Cards for AcroPack® Modules

Two AcroPack or mini-PCIe mezzanine module slots  ◆  Non-Intelligent carrier card  ◆  PCIe x4 interface

Model
APCe7022E-LF

Description
The AcroPack® product line updates our popular Industry Pack I/O modules with a PCIe interface format. This tech-refresh design offers a compact size, low-cost I/O, the same functionality and memory map of the existing Industry Pack modules. This board interfaces two AcroPack mezzanine modules to a PCI Express bus on a PC-based computer system.

Two AcroPack module slots give you the freedom to mix a variety of I/O functions (A/D, D/A, digital in, digital out, serial I/O, etc.) on a single board. Or, combine modules of the same type for almost one hundred channels on a single card. Either way, the APCe7022 saves your precious card slots and reduces your costs.

Select I/O modules from Acromag’s offering or use most third-party mPCIe compliant modules.

Key Features & Benefits
- Two AcroPack or mini-PCIe module slots support any combination of I/O functions
- PCI Express compliant
- Plug-and-play carrier configuration and interrupt support
- Fused +1.5V, +3.3V, +5V, +12V, and -12V DC power is provided. A fuse is present on each supply line serving each AcroPack module.
- Front panel 68-pin CHAMP 0.8mm connectors for field I/O signals
- Extended temperature range
- DIP switch card identification
- Standard 14-pin Xilinx JTAG programming header
- Software development tools for VxWorks®, Linux®, and Windows® environments.

Order I/O modules separately

Tel 248-295-0310  Fax 248-624-9234  solutions@acromag.com  www.acromag.com  30765 Wixom Rd, Wixom, MI 48393  USA
AcroPack® Carriers

Performance Specifications

■ PCI Express Bus Compliance
This device meets or exceeds all written PCI Express specifications per revision 2.1.
Includes a PCIe Gen 2 switch to expand the single host PCIe port to two ports, one to each device (AcroPack or mini-PCIe).
The host port consists of four PCIe lanes, each of the mini-PCIe sites have one lane each.

■ I/O Interface
Connectors
P1 (PCIe Bus): PCIe V2.1 x4 lane (PCIe Gen 2 Switch).
J3 (Carrier Field I/O): 68-pin, stacked, CHAMP (TE Connectivity 5787962).
P2, 3 (AcroPack Field I/O): 100-pin socket (Samtec SS5-50-3.00-L-D-K-RT).
J1, 2 (Mini-PCIe): 52-pin socket (TE Connectivity 1759547-1).
P6 (JTAG): 14-pin header (Molex 87832-1420).

Gold plating in the connection area, M2.5 screws and spacers provide excellent connection integrity and stability for harsh environments.

■ Ease of Use
A unique carrier and site number can be set for each AcroPack site by a DIP switch. This provides the capability to distinguish a particular AcroPack module from others when multiple instances of the same module are used in a system.
A standard 14-pin Xilinx JTAG programming header is provided for programming and debugging the FPGA on some AcroPack modules. The JTAG ports of the two AcroPack modules are daisy-chained.

■ Physical
Physical Configuration
PCIe x4 lane.
Length: 6.3 inches (160.02 mm).
Height: 4.375 inches (111.12 mm).

■ Environmental
Operating temperature
-40 to +85°C with 200 LFM airflow.
Storage temperature
-55 to +125°C.
Relative humidity
5 to 95% non-condensing.
Power
+3.3 Volts (±5%): 0.5 A typical.
+12 Volts (±8%): 27mA Typical.
The APCe7022E-LF has three DC/DC converters to provide the power supply voltages to the AcroPack modules that are not present at the host interface. The +1.5 Volt supply is sourced from the +3.3 Volt host power. The +5 Volt and -12 Volt supply is sourced from +12 Volt host power.

Carrier Card
APCe7022E-LF: AcroPack carrier card for AcroPack or mPCIe modules, plus extended temperature range.
See Acromag.com/AcroPacks for a full list of I/O modules.

Accessories
5025-288: Termination panel, DIN-rail mountable, SCSI-3 connector, 68 screw terminals.
5028-420: Round cable, shielded, male SCSI-3 connector to 68-pin CHAMP. 0.8mm, 2 meters long.
5028-615: Cable, 68-pin CHAMP to pigtail, 36 inches long.
5028-616: Cable, 68-pin CHAMP to pigtail, 70 inches long.

Software (see software documentation for details)
APSW-API-VXW: VxWorks software support package.
APSW-API-WIN: Windows DLL driver software support pkg.
APSW-API-LNX: Linux® support (website download only).

Ordering Information
Carrier Card
APCe7022E-LF: AcroPack carrier card for AcroPack or mPCIe modules, plus extended temperature range.
See Acromag.com/AcroPacks for a full list of I/O modules.

Accessories
5025-288: Termination panel, DIN-rail mountable, SCSI-3 connector, 68 screw terminals.
5028-420: Round cable, shielded, male SCSI-3 connector to 68-pin CHAMP. 0.8mm, 2 meters long.
5028-615: Cable, 68-pin CHAMP to pigtail, 36 inches long.
5028-616: Cable, 68-pin CHAMP to pigtail, 70 inches long.

Software (see software documentation for details)
APSW-API-VXW: VxWorks software support package.
APSW-API-WIN: Windows DLL driver software support pkg.
APSW-API-LNX: Linux® support (website download only).
AcroPack® Carriers

APCe7040 PCI Express Carrier Cards for AcroPack® Modules

Four AcroPack or mini-PCIe mezzanine module slots  ◆ Non-Intelligent carrier card  ◆ PCIe x4 interface

Description

Model: APCe7040E-LF
The AcroPack® product line updates our popular Industry Pack I/O modules with a PCIe interface format. This tech-refresh design offers a compact size, low-cost I/O, the same functionality and memory map of the existing Industry Pack modules.

This board interfaces four AcroPack mezzanine modules to a PCI Express bus on a PC-based computer system. It is designed to provide isolation between the AcroPack field I/O signals and the host when used with an isolated AcroPack module.

Four AcroPack module slots give you the freedom to mix a variety of I/O functions (A/D, D/A, digital in, digital out, serial I/O, FPGA, etc.) on a single board. Or, combine modules of the same type for almost two hundred channels on a single card. Either way, the APCe7040 saves your precious card slots and reduces your costs.

Select I/O modules from Acromag’s offering or use most third-party mPCIe compliant modules.

Key Features & Benefits

- Four AcroPack or mini-PCIe module slots support any combination of I/O functions
- PCI Express 2.1 compliant
- Plug-and-play carrier configuration and interrupt support
- Fused +1.5V, +3.3V, +5V, +12V, and -12V DC power is provided. A fuse is present on each supply line serving each AcroPack module.
- Front panel 68-pin VHDC1 CHAMP 0.8 connectors for field I/O signals
- Optional isolated power supplies. Support for AcroPacks requiring ±12 V isolated power.
- Extended temperature range
- DIP switch card identification
- Standard 14-pin Xilinx JTAG programming header
- Software development tools for VxWorks®, Linux®, and Windows® environments.
### Performance Specifications

■ **PCI Express Bus Compliance**

This device meets or exceeds all written PCI Express specifications per revision 2.1.

Includes a PCIe Gen 2 switch to expand the single host PCIe port to four ports, one to each device (AcroPack or mini-PCIe).

The host port consists of four PCIe lanes, each of the mini-PCIe sites have one lane each.

■ **I/O Interface**

Front I/O

Connector: Four 68-pin CHAMP cable connections.

Pin assignments are defined by the installed AcroPack module.

The field side connector of the AcroPack I/O module mates to a Samtec SS5-50-3.00-L-D-K-TR socket connector P2 on the carrier board.

Gold plating in the connection area, M2.5 screws and spacers provide excellent connection integrity and stability for harsh environments.

■ **Ease of Use**

A unique carrier and site number can be set for each AcroPack site by a DIP switch. This provides the capability to distinguish a particular AcroPack module from others when multiple instances of the same module are used in a system.

A standard 14-pin Xilinx JTAG programming header is provided for programming and debugging the FPGA on some AcroPack modules. The JTAG ports of the four AcroPack modules are daisy-chained.

■ **Physical**

**Physical Configuration**

PCIe x4 lane.

Length: 12.283 inches (312.0 mm).

Height: 4.375 inches (111.12 mm).

■ **Environmental**

**Operating temperature**

-40 to +85°C.

**Storage temperature**

-55 to +125°C.

**Relative humidity**

5 to 95% non-condensing.

**Power**

+3.3 Volts (±10%): 0.383mA typical.

+12 Volts (±5%): 0.175mA typical.

The APCe7040E-LF has four DC/DC converters to provide the power supply voltages to the AcroPack modules that are not present at the host interface. The +1.5 Volt supply is sourced from the +3.3 Volt host power. The +5 Volt, +3.3 Volt and -12 Volt supply is sourced from +12 Volt host power.

### Ordering Information

**Carrier Card**

APCe7040E-LF: AcroPack carrier card for AcroPack or mini-PCIe modules, four module slots.

See Acromag.com/AcroPacks for a full list of I/O modules.

**Accessories**

5028-420: Round cable, shielded, male SCSI-3 connector to 68-pin CHAMP: 0.8mm, 2 meters long.

5025-288: Termination panel, DIN-rail mountable, SCSI-3 connector, 68 screw terminals.

5028-615: Cable, 68-pin CHAMP to pigtail, 36 inches long.

5028-616: Cable, 68-pin CHAMP to pigtail, 70 inches long.

**Software** (see software documentation for details)

APSW-API-VXW: VxWorks software support package.

APSW-API-WIN: Windows DLL driver software support pkg.

APSW-API-LNX: Linux® support (website download only).
Industry Pack Module Carriers

APCe8650 PCI Express Carrier Cards for Industry Pack Modules

Description
This board interfaces standard Industry Pack (IP) mezzanine modules to a PCI Express bus on a PC-based computer system.

Four IP module slots give you the freedom to mix a variety of I/O functions (A/D, D/A, digital in, digital out, serial I/O, etc.) on a single board. Or, combine modules of the same type for hundreds of channels on a single card. Either way, the APCe8650 saves your precious card slots and reduces your costs.

Select I/O modules from Acromag’s offering of more than forty models or use any third-party ANSI/VITA 4 compliant IP modules.

Key Features & Benefits
- Four IP module slots (ANSI/VITA 4 mezzanine) support any combination of I/O functions
- Board resides in memory space
- Supports IP’s I/O, ID, INT, and MEM spaces
- Plug-and-play carrier configuration and interrupt support
- Two interrupt channels per IP module
- Supervisory circuit reset generation
- Individually filtered and fused power
- Full IP module register and data access for convenient configuration or control of the I/O modules through software
- Non-volatile ID register to identify carrier
- Software development tools for VxWorks, Linux, and Windows environments

Acromag offers more than 40 IP modules to perform analog I/O, digital I/O, serial communication, CAN bus, Mil Std-1553, and configurable FPGA functions.
Industry Pack Module Carriers

APCe8650  PCI Express Carrier Cards for Industry Pack Modules

Performance Specifications

- **IP Module Compliance**
  Meets or exceeds all written IP specifications per ANSI/VITA 4-1995 for 8MHz or 32MHz operation. Supports Type I and Type II ID space formats.

- **Electrical/mechanical interface**
  Supports four single-size IP modules (A-D).
  IP module I/O space, ID space, INT, and MEM space supported.

- **IP module I/O space**
  16 and 8-bit; supports 128 byte values per IP module.

- **IP module ID space**
  16 and 8-bit; supports Type I 32 bytes per IP (consecutive even byte addresses) and Type II 32 words per IP via D16 data transfers.

- **IP module memory space**
  16 and 8-bit; supports up to 8M bytes of memory space per IP module.

- **Interrupts**
  Supports two interrupt requests per IP and interrupt acknowledge cycles via access to IP INT space.

- **PCI Express Bus Compliance**
  This device meets or exceeds all written PCI local bus specifications per rev. 1.1 dated March 28, 2005.

  - **System base address**
    This board operates in PCI memory space. It requires 256 bytes for mapping the PCI configuration registers and 64M bytes for IP module ID, I/O, INT and memory space.

  - **Data transfer bus**
    Slave with 32, 16, and 8-bit data transfer operation. 32-bit read or write accessesimplemented as two 16-bit transfers to IP modules.

  - **Interrupts (PCI bus INTA# interrupt signal)**
    Up to two requests sourced from each IP mapped to INTA#. Interrupt vectors come from IP modules via access to IP module INT space.

  - **Physical**
    Physical Configuration
    PCIe x1 lane
    Length: 12.283 inches (312.0 mm)
    Height: 4.380 inches (111.25 mm)
    Board thickness: 0.062 inches (1.59 mm)
    Max. height under IP modules: 0.110 in. (2.80 mm).

  - **Connectors**
    A-D (carrier field I/O): 50-pin male header.
    Power: Auxiliary +12V power

- **Environmental**
  Operating temperature
  0 to 70°C (APCe8650)
  or -40 to 85°C (APCe8650E model).

  - **Storage temperature**
    -55 to 100°C.

  - **Relative humidity**
    5 to 95% non-condensing.

  - **Power**
    +3.3 Volts (±10%): 190mA, typical; 220mA max.
    +12 Volts (±5%): 130mA, typical; 150mA max.

  - **All IP module power is derived from the +12V power supply. +5V, +12V, and –12V are supplied to IP modules. The +12V power can be supplied from the PCIe bus or optionally from either of two auxiliary power connectors.**

  - **MTBF**
    Contact the factory.

Ordering Information

- **Carrier Card**
  APCe8650
  PCI Express carrier card for Industry Pack modules

  - **APCe8650E**
    Same as APCe8650 plus extended temperature range

- **Accessories**
  5025-550-x
  Flat ribbon cable, non-shielded, 50-pin connector at both ends. Specify x = length, in feet (12ft. max.)

  - **5025-551-x**
    Flat ribbon cable, shielded, 50-pin connector at both ends. Specify x = length, in feet (12ft. max.)

  - **5025-552**
    Termination panel, DIN rail-mount, 50 screw terminals, 50-pin ribbon cable connector

Industry Pack Modules

See [www.acromag.com](http://www.acromag.com) for more information.

Software Development Tools

See [www.acromag.com](http://www.acromag.com) for more information.

- **IPSW-API-VXW**
  VxWorks® software support package

- **IPSW-API-WIN32**
  32-bit Windows® DLL driver software support package

- **IPSW-API-WIN64**
  64-bit Windows® DLL driver software support package

- **IPSW-LINUX**
  Linux® support (website download only)
PMC Module Carriers

APCe8670 PCI Express Carrier Card for PMC Modules

Description
Acromag’s APCe8670 carrier card interfaces a PMC mezzanine module to a PCI Express bus in a PC-based desktop computer system.

The APCe8670 is a PCIe bus adapter board that allows a PC (PCIe bus master) to control and communicate with the hosted PMC module. It simply acts as an adapter to route signals between the system’s PCIe bus and the PMC module connectors.

The I/O signals are accessible via rear connectors and though the front mounting bracket. Cables are available to connect the carrier’s rear I/O to a front panel connector in an adjacent slot.

Select PMC modules from Acromag’s offering of high-performance FPGA and I/O solutions or use any third-party ANSI/VITA 20 compliant mezzanine modules.

Key Features & Benefits
- One PMC module slot
- 4-lane PCI Express interface
- PCI-X interface supports 32/64-bit addressing, 32/64-bit data bus at up to 100MHz operation
- Carrier routes 32 differential pairs to rear connector for LVDS I/O from the PMC module
- JTAG connector supports Xilinx programmer for use with hosted FPGA modules
- Cooling fan
- Auxilliary power connection for 12V source
- Diagnostic LEDs indicate communication speed
PMC/XMC Module Carriers

APCe8670  PCI Express Carrier Card for PMC Modules

Performance Specifications

- **PMC Compliance**
  
  PMC Module
  
  Conforms to CMC/PMC Specification, P1386.1.

- **PCI/X Bridge**
  
  Compliant to the following specifications:
  
  - PCI Express Base Specification (Rev. 1.1)
  - PCI Express-to-PCI/PCI-X Bridge Specification (Rev. 1.0)
  - PCI-to-PCI Bridge Specification (Rev. 1.2)
  - PCI Local Bus Specification (Rev. 3.0)
  - PCI-X Addendum to PCI Local Bus Specification (Rev. 2.0, mode 1 only)
  - PCI Bus Power Management Interface Specification (Rev. 1.2)

  **Addressing**
  
  32/64-bit.

  **Data bus**
  
  32/64-bit.

  **Interface**
  
  Supports up to 100MHz operation.

- **PCI Express Interface**
  
  PCI Express interface
  
  4 lane, Gen 1 capable.

  **PCIe bus compliance**
  
  This device meets or exceeds all written PCI Express specifications per revision 1.1 dated March 28, 2005.

- **I/O Interface**
  
  **Rear I/O (J6)**
  
  Connector: MD68 (internal SCSI), male.

  32 LVDS pairs routed from the PMC P4 connector.

- **Environmental**
  
  **Operating temperature**
  
  0 to 70°C.

  **Storage temperature**
  
  -55 to 125°C.

  **Relative humidity**
  
  5 to 95% non-condensing.

  **Power**
  
  The carrier provides +3.3V, +5V, +12V and -12V power to the PMC module. The +12V power source is jumper-selectable from the PCIe bus +12V supply or the PCIe graphics power connector. DC/DC converters generate a +5V or -12V supply from the +12V source.

  +3.3V (±10%): 0mA.
  +12V (±5%): ??mA, typical with fan operating.

  Currents specified are for the carrier board only. For the total current required from each supply, add the PMC module currents.

  **MTBF**
  
  Contact the factory.

- **Physical**
  
  **Dimensions**
  
  Length: 9.342 inches (237.3 mm).

  Height: 4.376 inches (111.2 mm).

  Width: Occupies two slots with fan installed (fan is mounted on solder side, height is 10 mm). Occupies one slot with fan removed.

  Board thickness: 0.062 inches (1.59 mm).

  **Connectors**
  
  J1, J2, J3: PMC PCI-X signals.

  J4: PMC user signals (rear I/O).

  J5: Auxiliary power connector (PCIe graphics).

  J6: Board-to-board connection of J4 user signals.

  JP1: Power source select jumper.

  JP2: JTAG I/O voltage select jumper.

  P1: PCI Express V1.1 x4 lanes card edge.

  P3: Fan power.

  P4: JTAG (Xilinx programming adapter).

Ordering Information

- **Carrier Cards**
  
  APCe8670

  PCI Express carrier card for PMC modules

- **Accessories**
  
  5025-913

  CS Electronics internal SCSI cable with PCI bracket-mounted HD68 female connector. Brings the PMC J4 rear I/O signals to back panel of the PC.

- **PMC Modules**
  
  See www.acromag.com for more information.
**XMC Module Carriers**

**APCe8675 PCI Express Carrier Card for XMC Modules**

**Description**

Acromag's APCe8675 carrier card interfaces an XMC mezzanine module to a PCI Express bus in a PC-based desktop computer system. The APCe8675 is a PCIe bus adapter board that allows a PC (PCIe bus master) to control and communicate with the hosted XMC module. It simply acts as an adapter to route signals between the system's PCIe bus and the XMC module connector.

The I/O signals are accessible via rear connectors and though the front mounting bracket. To simplify wiring, Acromag offers cables to connect the carrier's rear I/O signals to other carrier cards in adjacent slots. Cables are also available to connect the carrier's rear I/O to a front panel connector in an adjacent slot.

Select XMC modules from Acromag's offering of high-performance FPGA and I/O solutions or use any third-party ANSI/VITA 42 compliant mezzanine modules.

**Key Features & Benefits**

- One XMC module slot
- 8-lane PCI Express interface
- Cooling fan
- Supports high-speed serial interface between neighboring cards using protocols such as XAUI or Aurora
- Routes 32 differential pairs to rear connector for LVDS I/O from the XMC module
- JTAG programming connector supports Xilinx programmer for use in with hosted FPGA modules
- Auxiliary power connection for 12V source
XMC Module Carriers

APCe8675  PCI Express Carrier Card for XMC Modules

Performance Specifications

■ XMC Compliance
XMC Module
Complies with ANSI/VITA 42.0-2008.

■ I/O Interface
Serial Rear I/O (P2, P3)
Connector: Samtec QSH-DP 0.50 mm Q Pairs® high
speed ground plane socket strip, differential pair.
These ports provide the ability to connect to left and
right neighbor carrier cards using high speed serial
protocols such as XAUI or Aurora.
Supports up to five transmit and five receive high
speed (5Gb/s) differential pairs or five LVDS pairs when
used with Samtec QPairs® High Speed Twinax cables.
Rear I/O (J1)
Connector: MD68 (internal SCSI), male.
32 LVDS pairs routed from the XMC P4 connector.

■ PCI Express Interface
PCI Express interface
8 lane, Gen 1 capable.
PCIe bus compliance
This device meets or exceeds all written PCI Express
specifications per revision 1.1 dated March 28, 2005.

■ Environmental
Operating temperature
0 to 70°C.
Storage temperature
-55 to 125°C.
Relative humidity
5 to 95% non-condensing.

■ Power
The carrier provides +3.3V, +12V and -12V power to
the XMC module. The +12V power source is jumper-
selectable from the PCIe bus +12V supply or the PCIe
graphics power connector. The DC/DC converter
generates a -12V supply from the +12V source.
+3.3V (±10%): 0mA.
+12V (±5%): 270mA, typical with fan operating.
Currents specified are for the carrier board only. For
the total current required from each supply, add the
XMC module currents.

■ Environmental
Operating temperature
0 to 70°C.
Storage temperature
-55 to 125°C.
Relative humidity
5 to 95% non-condensing.

■ Physical
Dimensions
Length: 12.283 inches (312.0 mm).
Height: 4.200 inches (106.68 mm).
Width: Occupies two slots with fan installed (fan is
mounted on solder side, height is 10 mm). Occupies
one slot with fan removed.
Board thickness: 0.062 inches (1.59 mm).

Connectors
J1: Board-to-board connection of J14 user signals.
J2: Power source select jumper.
J3: Auxiliary power connector (PCIe graphics).
J4: JTAG I/O voltage select jumper.
J14, J16: XMC user signals (rear I/O).
J15: XMC PCIe signals.
P1: PCI Express V1.1 x8 lanes card edge.
P2: PCIe bus compliance
P3: Board-to-board connection of J16 user signals.
P4: Fan power.
P5: JTAG (Xilinx programming adapter).

■ Approvals
CE marked, FCC Part 15, Class A

Carrier Cards
APCe8675
PCI Express carrier card for XMC modules

Accessories
5025-917
Samtec Q Pairs® high speed twinax cable for board-to-
board connections. 3 inches long, 20 differential pairs.
Connects carrier cards in adjacent slots between P2 or
P3 connectors. High-speed serial signals originate from
XMC J16 rear I/O.

5025-913
CS Electronics internal SCSI cable with PCI bracket-
mounted HD68 female connector. Brings the XMC J14
rear I/O signals to back panel of the PC.

XMC Modules
See www.acromag.com for more information.

Ordering Information

Carrier Cards
APCe8675
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CS Electronics internal SCSI cable with PCI bracket-
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rear I/O signals to back panel of the PC.
Simplify interfacing between Acromag I/O boards and your software

**Description**

**IPSW-API-LNX**
Support for Industry Pack modules and carriers

**PCISW-API-LNX**
Support for PC/CompactPCI boards and PMC modules

**APSW-API-LNX**
Support for AcroPack® modules and carriers

**Application Programming Interface (API)**
Acromag’s software development tools greatly simplify the interface between the I/O boards and your software application program. The Linux libraries are supplied as “C” source code. These libraries provide easy-to-use function routines that quickly integrate with your application. Function routines are ready for use “as-is,” but they are also easily customized for your unique application.

**Demonstration Program**
This powerful program lets you fully exercise the libraries and your hardware before running the actual application. These diagnostics will save you hours troubleshooting and debugging your applications. You can set addresses, set up registers, read real-world inputs, or drive outputs. The demonstration program steps you through the exact functions that are called in your application.

**Key Features & Benefits**

- Easy installation procedure
- Readme files with step-by-step instructions
- Programming tools for most Acromag I/O boards (excludes serial I/O and VME products)
- Demonstration program
- Downloadable at no charge from the Acromag website
- Source code provided to ensure maximum flexibility in implementing your driver
- Verify operation of your I/O modules and carrier cards with a demonstration program to ensure proper hardware operation before attaching your application

**Ordering Information**

NOTE: This unsupported software is available ONLY by download from Acromag's website.

**IPSW-API-LNX**
Linux example libraries for Industry Pack modules and CompactPCI carrier cards

**PCISW-API-LNX**
Linux example libraries for PCI, CompactPCI, and PMC modules.

**APSW-API-LNX**
Linux example libraries for AcroPack® modules and carriers.

This free software utility is available for download from Acromag’s website.
Support Software

**VxWorks® Libraries**  I/O Function Routines

Supports any CPU target with quick modification  ◆  API easily convertible for any operating system

**Description**

*Application Programming Interface (API)*

Acromag's software development tools greatly simplify the interface between the I/O boards and your software application program. VxWorks libraries are supplied as "C" source code. These libraries provide easy-to-use function routines that quickly integrate with your application. Function routines are ready for use "as-is," but they are also easily customized for your unique application.

This powerful program lets you fully exercise the libraries and your hardware before running the actual application. These diagnostics will save you hours troubleshooting and debugging your applications. You can set addresses, set up registers, read real-world inputs, or drive outputs. The demonstration program steps you through the exact functions that are called in your application.

**Target any CPU**

Acromag provides direct support for VxWorks when using PowerPC, x86 and 68000 CPU boards. The VxWorks C Library includes support for x86 PCI, MV167 and MV2700 CPU boards. Each library contains detailed information on integrating with the CPU’s Board Support Package (BSP). The libraries also include instructions for implementing this software with other manufacturer's CPU board BSPs. Use with Industry Pack carriers from third-party board vendors is also supported.

The IPSW-API-VXW library package offers support for Acromag carriers. Other carriers are compatible, but require some minor modifications. Acromag uses a very innovative modular programming technique. This allows new carrier files to be created without affecting any of the complex IP module files or interrupt service routines.

**User-Friendly Licensing**

Acromag's VxWorks software libraries are provided with a full site license. This allows anyone at your location to use this software without any additional charges. Additionally, no run-time license is required either.

The VxWorks software libraries include support for the full family of boards or modules, not just certain models unless otherwise noted.

**Key Features & Benefits**

- Easy installation procedure
- Readme files with step-by-step instructions
- Quickly creates libraries
- Targeted support for Power PC, x86, and 68000 series CPUs
- Supports any CPU target with quick modification
- API easily convertible for any operating system
- Source code provided to ensure maximum flexibility in implementing your application
- Ability to verify operation of your modules and carriers with a demonstration program to ensure proper hardware operation before attaching your application

**Ordering Information**

- **APSW-API-VXW**
  VxWorks software support package for AcroPack modules and carriers

- **IPSW-A7VME-VXW**
  VxWorks software support package for Acromag VME SBC Series XVME6500 and XVME6700 when used with Industry Pack modules

- **IPSW-API-VXW**
  VxWorks software support package for Industry Pack modules and carriers

- **PMCSW-API-VXW**
  VxWorks software support package for PMC, PCI, and CompactPCI products (supports all Acromag PMC modules and PCI or cPCI boards except IP carriers)

Tel 248-295-0310  ■  Fax 248-624-9234  ■  solutions@acromag.com  ■  www.acromag.com  ■  30765 Wixom Rd, Wixom, MI 48393 USA

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Software Support

PCISW-API-WIN  PCI Driver Software for Windows® Operating Systems

For Windows 10 / 8 / 7 / Vista  ■ Supports Acromag XMC, PMC, PCI, CompactPCI cards  ■ Includes DLLs

Description
Application Programming Interface
Acromag's software development tools greatly simplify the interface between the I/O boards and your Windows-based application program. This package provides DLL driver level support for Acromag's complete line of PMC, XMC, PCI and cPCI products. In addition, "C" source demonstration programs provide easy-to-use tools to test the operation of the module.

Demonstration Programs
Powered programs let you fully exercise your hardware before developing the actual application. These diagnostics will save you hours troubleshooting and debugging your applications. You can set addresses, set up registers, read real-world inputs, or drive outputs. The demonstration programs step you through the exact functions that are called in your application.

Key Features & Benefits
■ Easy installation procedure
■ Documentation with step-by-step instructions
■ Support for all active Acromag I/O PMC, XMC, PCI and CompactPCI boards and all Acromag FPGA PMC, XMC, PCI and CompactPCI boards except PMC CX family Virtex-II boards.
■ Support for 32-bit and 64-bit systems
■ Demonstration Programs
■ Driver level support for desktop and embedded Windows level programming environments
■ Compatible with Windows Embedded Standard applications
■ Verifies operation of your I/O boards with a demonstration program to ensure proper hardware performance before attaching your application

Ordering Information
■ Software
For more information, see www.acromag.com.
PCISW-API-WIN 32 or 64-bit Windows driver software package with DLLs and demonstration programs for PMC, XMC, PCI, and cPCI products. Supplied on CD-ROM.

NOTE: For Industry Pack module and carrier card support software, please refer to IPSW-API-WIN.

User-Friendly Licensing
Acromag's PCI Windows driver software is provided with a full site license. This allows anyone at your location to use this software without any additional charges. No run-time license is required.
Each package supports all active PCI-based (PMC, XMC, PCI, CompactPCI) products. You do not need to order additional software for different models within the family. (does not support PMC CX family Virtex-II boards)

Operating Systems
Windows® Embedded Standard
Microsoft® Visual Studio®
Visit us on the web! Acromag.com

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- Subscribe to our monthly e-newsletter

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