**APCe7040 PCI Express Carrier Cards for AcroPack® Modules**

**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.

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

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**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 mPCIe 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).

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