PI-41000-4G
Digital Acquisition Card

Features:

- Acquires Data @ 320 MB/sec
- 4 GiB RAM Buffer
- Up to 90 MB/sec DMA Transfer
- Two 16-bit Input Channels or One 32-bit Channel
- Arm up to 8 boards synchronously

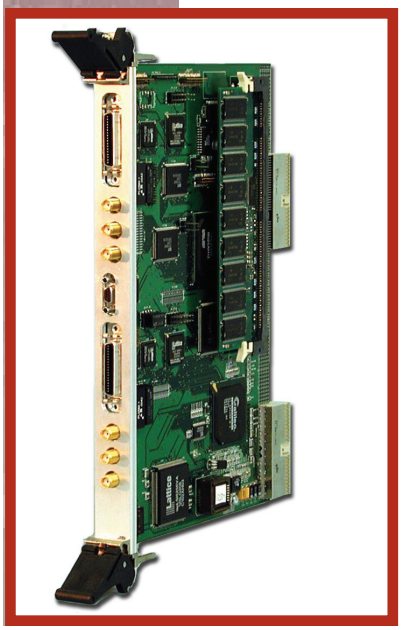
Applications:

- Testing Imaging Devices (CMOS, CCD, or IR FPA)
- Synchronous Data Capture

Introduction:
The PI-41000-4G is a CompactPCI instrument card which allows the user to capture up to 32 bits of digital data into an on-board memory at clock rates up to 120 MHz (single channel) or 80 MHz (dual channel). The card will capture at full rate until the on-board RAM buffer is full. The PI-41000 is available with 4 GiB of RAM.

The inputs are software configurable to provide one 32-bit wide channel, one 16-bit wide channel with double depth, or two 16-bit channels.

Each digital data channel requires three timing signals, (frame sync, line sync and pixel clock) to organize the data capture. When operating in two-channel mode, clocks from channel A can be used to provide timing to channel B. For wider words or multiple channels, multiple boards can be used in parallel and armed synchronously. The synchronous arming feature can also be deactivated in software, permitting each card to acquire asynchronously.



Memory Storage:
The PI-41000 Digital Acquisition Board is designed primarily for image capture from the PI-3105 Data Acquisition System or from imaging devices and imaging systems with digital outputs. Pixels are stored at 16-bit words. When equipped with 4 GiB the card can store up to 2.0 GiPixels, with up to 65,536 pixels per side.

Large memories onboard the acquisition cards decouple the data acquisition from the PCI bus, allowing for data acquisition at rates far higher than the bandwidth of PCI. Data acquisition is continuous and un-interrupted, regardless of the loading on the PCI bus or operating system. The PI-41000 Digital Acquisition Card also requires no horizontal or vertical blanking intervals, allowing collection of every pixel from your device, including reference rows and columns and from devices that integrate during readout.

Data Acquisition and Inputs:
The input levels for both data and clocks are LVDS via two 40 pin micro header connectors. Auxiliary timing inputs are available with TTL thresholds and SMA connectors. The SMA timing inputs are terminated with 50 Ω.

Optional Multiplexing:
The PI-41000 can work in conjunction with the PI-3100-USBM AIM w/Multiplexer to provide additional data acquisition channels. One multiplexer output may be connected to each of the two inputs on the PI-41000, providing for up to 8 channels of synchronous data capture. Acquisition memory and bandwidth on each board is shared among all active channels, and channels can be activated or deactivated in software.

Synchronizing Multiple Acquisition Cards:
Up to 8 PI-41000 data acquisition cards can be “slaved” together for synchronous data capture via the external Arm connector. In this mode, one card (the “Master” card) provides the arm signal to enable data capture on each slave card. Along with the optional multiplexer boards, systems can be configured to provide up to 32 channels of synchronous acquisition at up to 2.5 GB/sec with up to 32 GB of on-board RAM.

Data Transfer and Software
The PI-41000 uses DMA to transfer the captured data to from the on-board memory to the Host CPU for processing and display.

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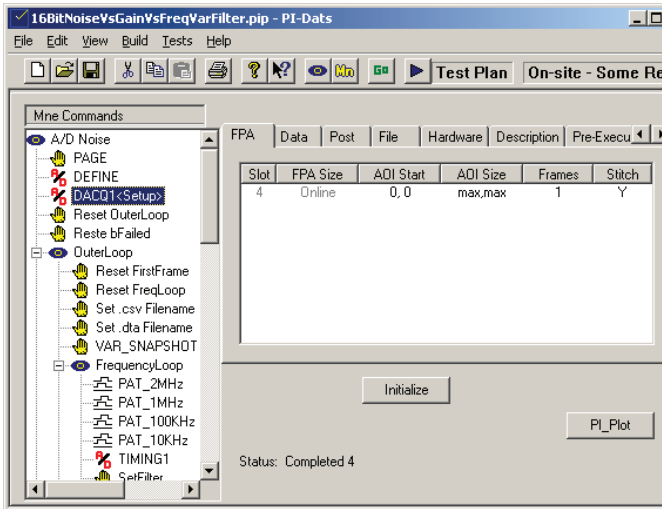
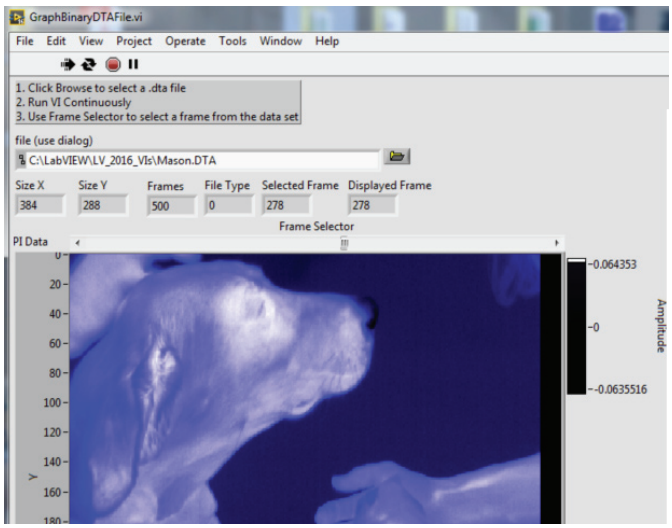
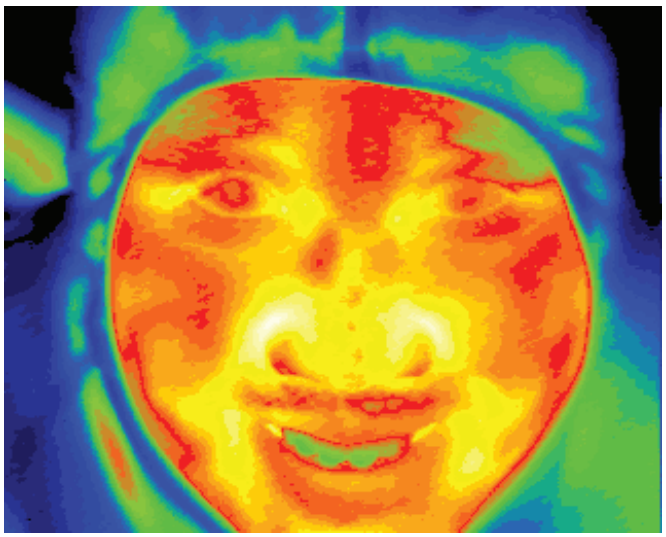
Software:
The PI-41000 is supported by Pulse Instruments' PI-Controller and PI-DATS software running under Windows 7/64-bit. PI-PLOT software is included for real-time visualization of the acquired data, including a unique "stitching" engine that can re-assemble 2-32 acquired data channels into a single image, plus an open-ended DLL interface for image correction and transformation functions such as non-uniformity correction (NUC) and bad pixel replacement.

A DLL is supplied with full documentation of the command-set and data format to facilitate integration with LabVIEW or other 3rd-party software.







Specifications:

Power Consumption:

Power Supply	Min	Typical	Max.
5.0 V +/- 5%		1.2 Amps	
3.3 V +/- 5%		3.3 Amps	

Mechanical:

- Size 6U Eurocard, One card slot
- Dimensions 6.30" x 9.18" (160.00 mm x 233.35 mm)
- LVDS Input Connectors, AMP #104069-6
- External Clock Connectors, SMA
- Arm Connector, SMA
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Ordering Information:

- PI-41000-4G, Dual Channel Digital Acquisition Card with 4GiB of RAM

Contact Pulse Instruments Sales at (310) 515-5330 or by email at sales@pulseinstruments.com

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