FEATURES

- High-speed USB 2.0 Multifunction DAQ
- Sustained sampling rates up to 500kHz
- 16-bit or 12-bit resolution A/D converter
- Flexible, software configured functionality
- Up to 128 differential analog inputs
- 18 input ranges, 9 unipolar and 9 bipolar per 8 channel programmable
- Multiple, factory installed, signal conditioning
- Autocal and oversampling for real-time accurate data
- A/D Starts via software, timer, or external trigger
- 2 x 16-bit analog outputs; 4kHz update rate
- 16 high-current digital I/O lines
- 16-bit programmable counter/timer
- Rugged gold-zinc plated steel enclosure with DIN-Rail and panel mounting provisions

FACTORY OPTIONS

- Signal conditioning
  - Uni, bipolar ranges of 1mV, 5mV, 10mV, 20mV, 50mV
  - RC filters
  - 4-20mA or 10-50mA current inputs
  - RTD measurement
  - Bridge completion
  - Thermocouple w/ break detect and CJC temp sensor
  - Voltage divider
  - +10V sensor excitation
- Extended Temperature Operation -40 to +85 C

FUNCTIONAL DESCRIPTION

The DAQ-PACK Series is an ideal solution for adding portable, easy-to-install high-speed analog and digital I/O capabilities to any computer with a USB port. The system is plug-and-play allowing a quick connection whenever you need additional I/O on the convenience of a USB port. The unit is a high-speed USB 2.0 device, offering the highest speed available on the USB 2.0 bus.

The DAQ-PACK is a 16-bit resolution A/D system capable of sampling speeds up to 500kHz for its 128 differential analog inputs. It performs signal conditioning such as RC filtering, current inputs, RTD measurement, bridge completion, thermocouple w/ break detect, voltage dividers, small signal inputs, and sensor excitation voltage supply. Groups of 8 channels can be jumper/software configured to accept 18 different input ranges. A unique, real-time internal calibration system allows the card to continually compensate for offset/gain errors giving a more accurate reading. Additional features include 2 x 16-bit analog outputs, 16 digital I/O lines, and a programmable 16-bit counter.

This small, compact, multifunction I/O system provides the user with everything needed to start acquiring, measuring, analyzing and monitoring in a variety of applications. The DAQ-PACK data acquisition system can be used in many current real-world applications such as embedded equipment monitoring, precision PC-based and portable environmental measurements, and mobile data acquisition. The system is PC/104 sized and designed to be used in rugged industrial environments but is small enough to fit nicely onto any desk or testing station.

ACCESSORIES

The DAQ-PACK is available with optional cable assemblies and screw terminal boards for easy-to-use, out of the box connectivity.

<table>
<thead>
<tr>
<th>ACCESSORIES</th>
<th>ADAP25M</th>
<th>ADAP37M</th>
<th>CAB37MF-xx</th>
<th>STB-37</th>
<th>CAB25MF-xx</th>
<th>STB-25</th>
<th>DIN-SNAP</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>DB25 male screw terminal for digital I/O</td>
<td>DB37 male screw terminal for analog I/O</td>
<td>37-pin M to F ribbon cable for analog I/O</td>
<td>Screw terminal board, standoff or DIN-SNAP</td>
<td>25-pin male to female ribbon cable for DIO</td>
<td>Screw terminal board</td>
<td>SNAP-TRACK DIN-Rail STB mount</td>
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<td>Quantity:</td>
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<td>2-8</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1-4</td>
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</tbody>
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SOFTWARE

The module utilizes a high-speed custom function driver optimized for a maximum data throughput of 1MBps that is 50-100 times faster than the USB human interface device (HID) driver used by many competing products. This approach maximizes the full functionality of the hardware along with capitalizing the advantage of high-speed USB 2.0. The DAQ-PACK is supported for use in most USB supported operating systems and includes a free Linux (including Mac OS X) and Windows compatible software package. This package contains sample programs and source code in Visual Basic, Delphi and Visual C++ for Windows. Third party support includes a Windows standard DLL interface usable from the most popular application programs, and includes example LabVIEW VIs. Embedded OS support include Windows Xpe.
PRIMARY SPECIFICATIONS (full specs in DAQ-PACK manual)

Analog Inputs
- Successive approximation
- Resolution: 16-bit or 12-bit
- Sampling rate: 100k - 500ksps, depending on model
- Channels: Up to 128 differential
- Uni, Bipolar(±) ranges: 100mV, 200mV, 400mV, 500mV, 1V, 2V, 2.5V, 5V, 10V
- Signal conditioning: Uni-, bipolar ranges of 1mV, 5mV, 10mV, 20mV, 50mV
- RC filters
- 4-20mA or 10-50mA current inputs
- RTD measurement
- Bridge completion
- Thermocouple w/ break detect
- Voltage divider
- +10V sensor excitation

Calibration Hardware
- "16-, 12-A" versions: Two on-board ref's + calibrated real-time output
- "16-E" version: Two on-board references
- "12-xxx" version: Two on-board references
- "12-xxxE" version: None
- System Calibration: Program provided to calibrate entire system
- Accuracy: Uncalibrated 0.094% Full-Scale (FS), Calibrated(1) 0.0015% FS
- Input impedance: 1MΩ
- A/D Start Sources: Software, Timer, External Start Trigger
- Channel Oversamp.: 0-255 consecutive samples/channel
- Overvoltage prot.: -60dB @ 500kHz

Analog Outputs
- 2
- Type / Resolution: Single-ended, 16-bit
- Uni, Bipolar(±) Ranges: 5V, 10V (factory installed)
- Conv. / Settling: 4kHz / 4us typ, 7us max; ¼-¾ scale to ±2LSBs
- Drive Current: ±25mA per channel
- Drive Output Current (Analog): 16 inputs or outputs in groups of 8 (pulled-up)
- Logic Low: 0V(min) to 0.8V(max) ±20µA
- Logic High: 0V(max) to 5.5V(max) ±220µA
- Output Volts/Current: Logic Low: 0V(min) to 0.55V(max) 64mA sink
- Logic High: 2V(min) to 5V(max) 32mA source

Counter/Timer
- 82C54 programmable interval counter
- Available Counters: CTR0 (CTR1, CTR2 dedicated to A/D starts)
- Input Frequency: 10MHz (max)
- Counter size: 16-bit
- Clock: Internal 10MHz or Externally supplied

Environmental
- Operating Temp.: 0° to +70°C, optional -40° to +85°C
- Storage Temp.: -40° to +105°C
- Humidity: 5% to 90% RH, without condensation
- Enclosure Dimensions (L x W x H) in inches: -32 (channels) 4.680 x 3.660 x 2.820
- -64 4.680 x 3.660 x 3.260
- -96 4.680 x 3.660 x 3.950
- -128 4.680 x 3.660 x 4.640
- Power Required: +5V at 320mA typical, +15V at 39mA
- -15V at 21mA typical (per AIMUX-32 board)

ORDERING GUIDE
See ordering guide document for list of model numbers (Power supply included with DPK order)

Model Options
- Signal conditioning
  - High-gain may be specified per 8-channel group
  - RC filters, specify values or filter parameters
  - +20mA or 10-50mA current inputs
  - +10V sensor excitation
  - RTD’s
  - Bridge completion, specify bridge type and values
  - Junction temperature diodes
  - Thermocouple inputs with CJC temp sensor
- Break-detection
- Voltage divider, specify attenuation level and source impedance
- Extended Temperature Operation: -40° to +85°C

Optional Accessories
- DIN-CLIP: Sturdy DIN-Rail mounting clip
- DAQ-M-PLATE: Gold-zinc plated panel mounting
- ADAP37M: Screw terminal board (no ribbon cable needed)
- ADAP25M: Screw terminal board (no ribbon cable needed)
- CAB37MF-xx: Screw terminal board (requires ribbon cable)
- CAB25MF-xx: 25-pin M to F ribbon cable for digital I/O
- STB-25: Screw terminal board (requires ribbon cable)