

## 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






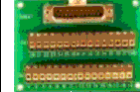

The DAQ-PACK Series is an ideal solution for adding portable, easy-to-install high-speed analog and digital I/O capabilities to any computer with a USB port. The system is plug-and-play allowing a quick connection whenever you need additional I/O on the convenience of a USB port. The unit is a high-speed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

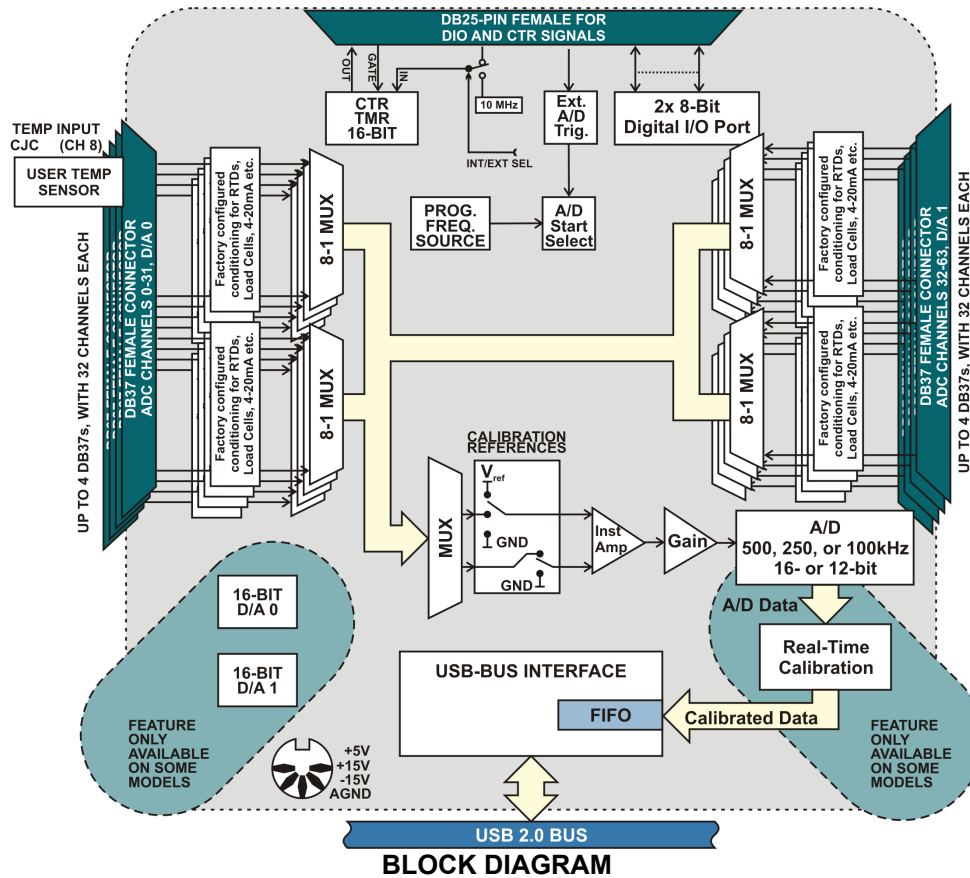
The DAQ-PACK is available with optional cable assemblies and screw terminal boards for easy-to-use, out of the box connectivity.

ADAP25M	ADAP37M	CAB37MF-xx	STB-37	CAB25MF-xx	STB-25	DIN-SNAP
DB25 male screw terminal for digital I/O	DB37 male screw terminal for analog I/O	37-pin M to F ribbon cable for analog I/O	Screw terminal board, standoffs or DIN-SNAP	25-pin male to female ribbon cable for DIO	Screw terminal board	SNAP-TRACK DIN-RAIL STB mount
Quantity: 1	Quantity: 2-8	Quantity: 2-8	Quantity: 2-8	Quantity: 1	Quantity: 1	Quantity: 1-4
						

## 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.

# DAQ-PACK SERIES DATASHEET



**BLOCK DIAGRAM**

## PRIMARY SPECIFICATIONS (full specs in DAQ-PACK manual)

<b>Analog Inputs</b>	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 refs + 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 <sup>(1)</sup> 0.0015% FS

Input impedance	1MΩ
A/D Start Sources	Software, Timer, External Start Trigger
Channel Oversamp.	0-255 consecutive samples/channel
Overvoltage prot.	-40 to +55V
Crosstalk	-60dB @ 500kHz

<sup>(1)</sup> For best accuracy, one must calibrate to their own standard.

<b>Analog Outputs</b>	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

<b>Digital I/O</b>	16 inputs or outputs in groups of 8 (pulled-up)
Input volts/current	Logic low: 0V(min) to 0.8V(max) ±20μA
	Logic high: 2V(min) to 5V(max) ±20μA
Output volts/current	Logic low: 0V(min) to 0.55V(max) 64mA sink
	Logic high: 2V(min) to 5V(max) 32mA source

<b>Counter/Timer</b>	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

<b>Environmental</b>	
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
  - 4-20mA 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	37-pin M to F ribbon cable for analog I/O
STB-37	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)