

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
- 64 single-ended or 32 differential analog inputs
- 8 input ranges, 4 unipolar and 4 bipolar; per 4 channel programmable
- 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
- I/O via two DB37F and one DB25F connectors
- Rugged gold-zinc plated steel enclosure has connector pin assignments, signal names and arrangements
- Power drawn from USB port in most applications



FACTORY OPTIONS

- Hi gain version (for thermocouple and other low level measurements)
- Reference junction sensor w/two 37-pin terminal blocks
- Extended Temperature Operation -40 to +85 C
- OEM version (no enclosure) w/USB/104 form-factor

FUNCTIONAL DESCRIPTION

The DAQ-PACK M Series is a highly integrated multi-function data acquisition and control solution interfaced via USB. The unit is a USB 2.0 high-speed device, offering the highest speed currently available on the USB 2.0 bus.






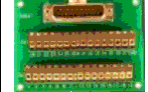
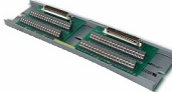
Available with a 16- or 12-bit analog to digital converter, the unit is capable of sustained sampling speeds up to 500kHz (divided equally by the total number of channels configured for use) for the 64 single-ended or 32 differential analog inputs. Groups of four channels at a time can be software configured for different 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. The counter can be configured in a variety of modes and has the ability to use external signals to trigger and control the scanning of its analog inputs.

This small, compact, multifunction data acquisition unit provides the user with the solid foundation that is needed to start acquiring, measuring, analyzing and monitoring in a variety of applications. The DAQ-PACK M Series can be used in many real-world applications such as embedded equipment monitoring, precision PC-based and portable environmental measurements, and mobile data acquisition.

The DAQ-PACK M Series is designed to be used in rugged industrial environments but is small enough to fit nicely onto any desk or testing station. The compact enclosure is silk-screened with diagrammatic connector pin identification and pin assignments to easily reference and make all signal connections.

ACCESSORIES

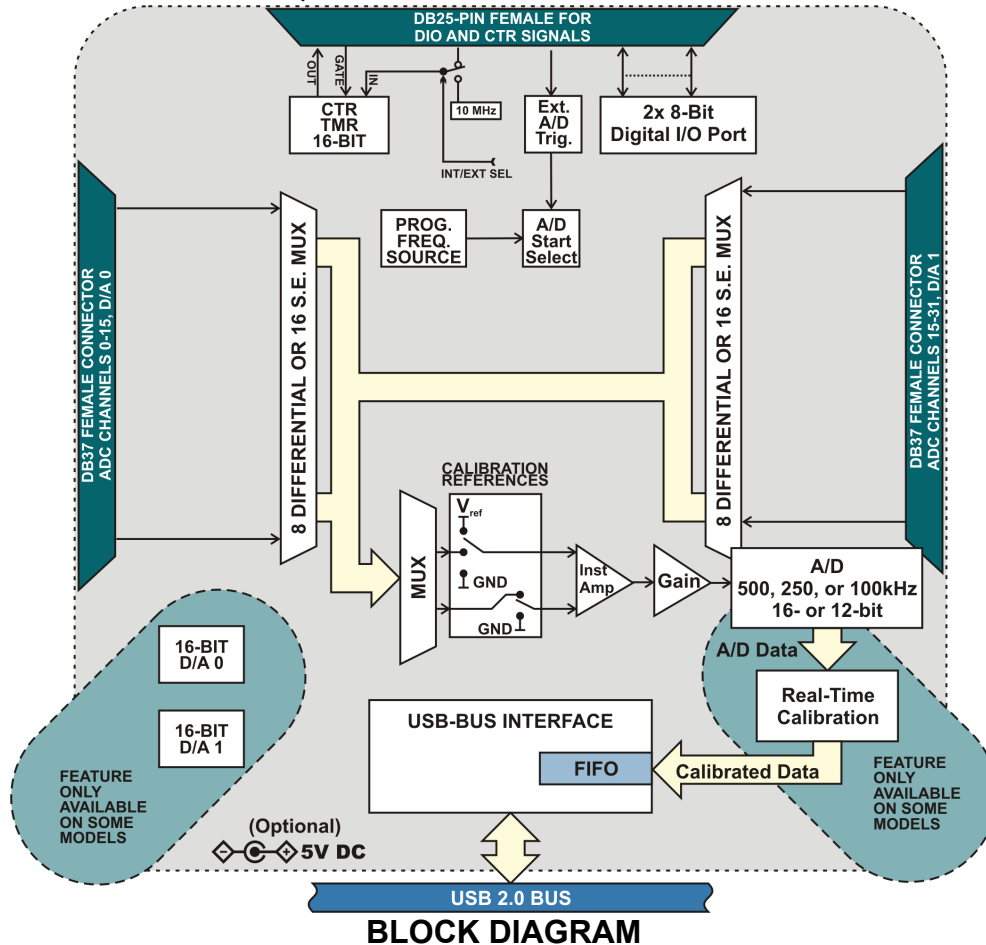
The DAQ-PACK M Series is available with optional cables and screw terminal boards for easy-to-use, out of the box connectivity.

ADAP25M	ADAP37M	CAB37MF-xx	STB-37	CAB25MF-xx	STB-25	DIN-SNAP(-6)
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	Quantity: 2	Quantity: 2	Quantity: 1	Quantity: 1	Quantity: 1 each
						

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 M Series 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 M SERIES DATASHEET



BLOCK DIAGRAM

PRIMARY SPECIFICATIONS (full specs in DAQ-PACK manual)

Analog Inputs	Successive approximation
Resolution	16-bit or 12-bit
Sampling rate	100k – 500ksp/s, depending on model
Number of channels	64 single-ended or 32 differential
Unipolar ranges	0-1V, 0-2V, 0-5V, 0-10V
Bipolar ranges	±1V, ±2V, ±5V, ±10V
Calibration Hardware	
“16-, 12-64MA”	Two on-board ref’s + cal’d real-time output
“16-64ME” version	Two on-board references
“12-64M” version	Two on-board references
“12-64ME” 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 Oversampling	0-255 consecutive samples/channel
Overvoltage prot.	-40 to +55V
Crosstalk	-60dB @ 500kHz
⁽¹⁾ For best accuracy, one must calibrate to their own standard.	
Analog Outputs	2
Type / Resolution	Single-ended, 16-bit
Uni., Bipolar Ranges	0-5V, 0-10V, ±5V, ±10V (factory installed)
Conv. / Settling	4kHz / 4us typ., 7us max; ¼ - ¾ scale ±2LSBs
Drive Current:	±25mA per channel
Digital I/O	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
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	4.680" x 3.660" x 2.820"
Power Required	+5V at 320mA typical

ORDERING GUIDE

DPK-AIO16-64MA	16-Bit, 500kHz, w/Adv. Cal HW, 2 analog outs
DPK-AI16-64MA	as above but with no analog outputs
DPK-AIO16-64ME	16-Bit, 250kHz, w/Std. Cal HW, 2 analog outs
DPK-AI16-64ME	as above but with no analog outputs
DPK-AIO12-64MA	12-Bit, 500kHz, w/Adv. Cal HW, 2 analog outs
DPK-AI12-64MA	as above but with no analog outputs
DPK-AIO12-64M	12-Bit, 250kHz, w/Std Cal HW, 2 analog outs
DPK-AI12-64M	as above but with no analog outputs
DPK-AIO12-64ME	12-Bit, 100kHz, w/2 analog outputs
DPK-AI12-64ME	as above but with no analog outputs

Model Options

• -HG	High Gain (required for t/c measurement)
• -MTC	T/C ref. sensor with two DB37 terminal blocks
• -T	Ext. Temperature Operation (-40° to +85°C)

Optional Accessories

USB-PWR-5V-2A	External Power Adaptor
DIN-CLIP	Sturdy DIN-Rail mounting clip
DAQ-M-PLATE	Gold-zinc plated panel mounting
ADAP25M	DB25 male screw terminal for digital I/O
ADAP37M	DB37 male screw terminal for analog I/O
CAB37MF-xx	37-pin M to F ribbon cable for analog I/O
STB-37	Screw terminal board, standoffs or DIN-SNAP
CAB25MF-xx	25-pin male to female ribbon cable for DIO
STB-25	Screw terminal board
DIN-SNAP(-6)	SNAP-TRACK DIN-RAIL STB mount