

16/32 Channel Signal Conditioning System with 16-Bit ADC and Network Connectivity for In-Vehicle Testing

Complete Data Acquisition System in a Ultra-Compact Chassis

DAQ500 Series

Specifications contained within this data sheet are subject to change without notice.

Features

- 16/32 Differential input analog channels with signal conditioning
- 2 Additional Digital I/O / counter channels
- 10 BaseT Ethernet connectivity to your PC or laptop for setup, data display and processing
- Wireless Ethernet available
- 16-bit analog-to-digital converter resolution
- Aggregate sampling rate of up to 32k samples/second (1k sample/channel/second with all channels active) via Ethernet, up to 50k samples/second to CompactFlash™
- Simple user interface allows for 2 mouse clicks to data collection and storage
- Local data storage via CompactFlash™ module
- Auto-configuration on power-up for stand-alone applications
- External trigger and sample clock inputs are provided

Typical Applications

- In-vehicle testing - Automotive testing
 - Aircraft engine testing
 - Motorcycle/ATV testing
 - Boat/Marine engine testing
- Tests using low-level sensors (thermocouples, etc.)
- Tests using high-level sensors (battery voltage, steering/throttle position, shock travel, etc.)

General Description

The *DAQ500 Series* are complete 16 or 32-channel multiplexed signal conditioning systems with a 16-bit resolution ADC and 10 BaseT Ethernet connectivity to a PC or laptop for setup, data display and processing. The ultra-compact 57.5mm (2.26") high, 112mm (4.41") wide, 220 mm (8.66") deep fully enclosed chassis weigh just 1.09kg (2.4lbs), making them suitable for in-vehicle applications. The *DAQ500 Series* chassis can be powered from DC voltage sources ranging from 10-18 volts. Power consumption is 10 watts for typical configurations, 30 watts maximum. Local data storage is available via a CompactFlash™ module. Auto configuration on power-up provides stand-alone capability and along with the simple user interface makes data collection and storage a two-mouse click process.

The signal conditioning consists of 16 or 32 multiplexed differential input analog channels that can be configured with fixed 2-pole filters and fixed gains of 1/3 to 100. Filter options are available in a 1,2,5 progression from 10Hz to 1kHz. Filters and gain are configured in 8-channel groups. Input voltage ranges up to ± 30 volts are supported. Channel inputs have over-voltage protection to 70 volts peak-to-peak. End-to-end channel calibration is accomplished by configuring the input multiplexers via software to receive a reference voltage provided by an internal calibrator.

Two channels of TTL level digital I/O are provided. These channels can alternately be configured as counter inputs. External sample clock and trigger inputs are provided as well. The internal sample clock can be programmed via software for sample rates from 0.0625Hz to 50kHz.

Signal conditioning channels are connected via a 44-contact "D" connector (two 44-contact "D" connectors for 32-channel option). Digital I/O channels are connected via a 15-contact "D" connector.

Included *VersaDAQ* software manages and controls *DAQ500 Series* operations including setup, data acquisition, and data recording. *VersaDAQ* runs on a PC/laptop and connects to a *DAQ500 Series* chassis via the 10 BaseT Ethernet Connection. *VersaDAQ's* simple but powerful user interface configures channels, sample rate, record mode, calibration, and all other *DAQ500 Series* functionality with a few mouse clicks and pull-down menus.

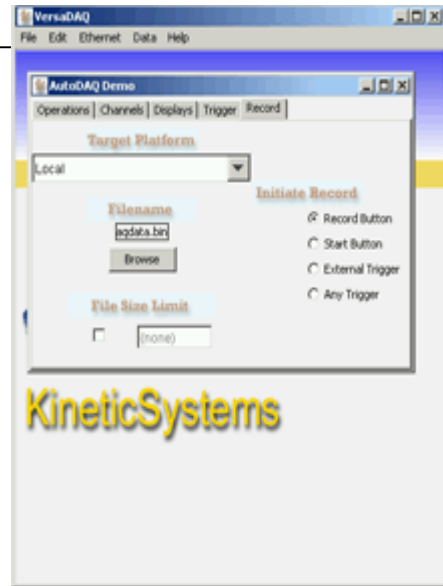
DAQ500 Series (Continued)

Item	Specification
Number of channels	<p>DAQ-516: 16 differential analog input channels, 2 digital in/counter channels 15 differential analog input channels if channel 16 is configured as an isothermal reference.</p> <p>DAQ-532: 32 differential analog input channels, 2 digital in/counter channels 30 differential analog inputs if channels 16 and 32 are configured as an isothermal reference.</p>
Analog Inputs Input range Common mode: Differential: Input protection Input impedance	<p>± 10.48 V standard, ± 30 V optional ± 10.48 V standard, ± 30 V optional ± 35 V $1\text{M}\Omega$</p>
Digital/Counter Inputs Counter frequency measurement range: External Trigger:	<p>2 single-ended TTL-level inputs that can be used as counters or external trigger to start a scan</p> <p>0.8 Hz to 100kHz (12 MHz clock) TTL-level low true pulse (1 second minimum pulse width)</p>
Sample Clock Out	Single-ended TTL-level
Available gain ranges (fixed gain in groups of eight channels)	1/3, 1, 2, 5, 10, 20, 50, 100
Available filter ranges (fixed cutoff in groups of eight channels)	2 pole RC, 10Hz to 1kHz in a 1,2,5 progression
Aggregate Sampling Rate	32k sample/second (1k sample/ channel/ second with all channels active) via Ethernet, up to 50kHz samples/second recording to CompactFlash
Resolution	16-bit, monotonic over operating range
Accuracy, referred to input, after automatic calibration	0.025% of reading \pm 0.012% of full scale (for gains of 1 – 100)
DC Power Requirements DAQ-516 DAQ-532	<p>10-18VDC (12VDC nominal), 10 watts for typical configurations, 30 watts maximum 10-18VDC (12VDC nominal), 17 watts for typical configurations, 30 watts maximum</p>
Chassis Dimensions DAQ-516 DAQ-532	<p>57.5mm (2.26") high, 112mm (4.41") wide, 220mm (8.66") deep 67.7mm (2.67") high, 112mm (4.41") wide, 220mm (8.66") deep</p>
Weight DAQ-516 DAQ-532	<p>1.09kg (2.4lbs) 1.13kg (2.5lbs)</p>

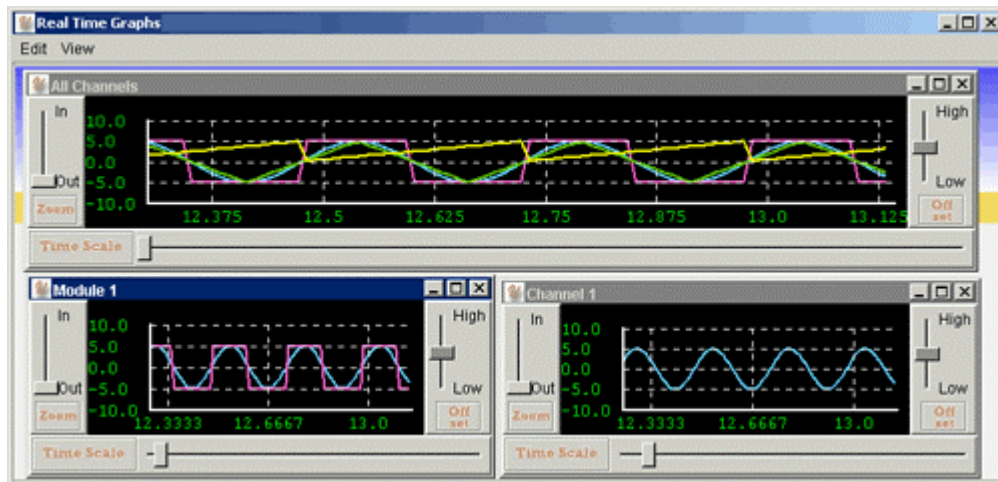
DAQ500 Series (Continued)



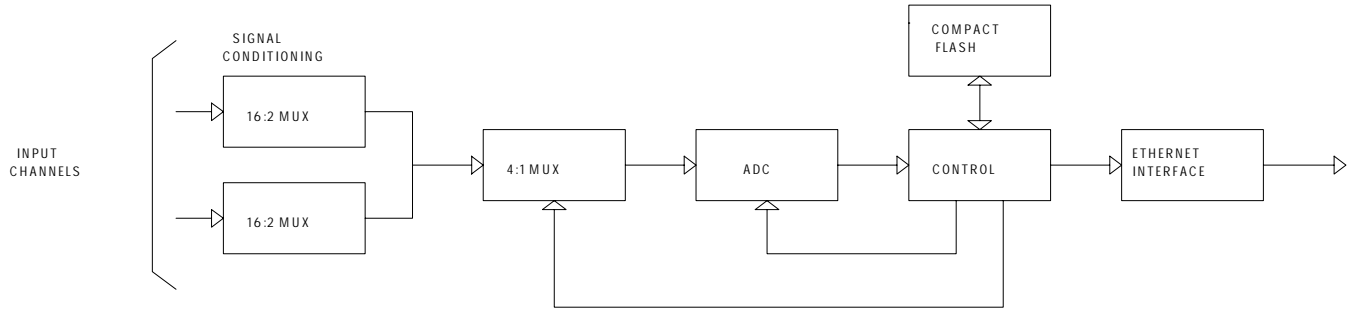
Configuring DAQ500 Series Channels



Configure Data Record parameters



Monitoring Live Data Real-time Graphs



Ordering Information

Select a *DAQ500 Series* Signal Conditioning Chassis and either one 16-channel signal conditioning/Mux card (for DAQ516) or two 16-channel signal conditioning/Mux cards (for DAQ532) from the table below.

DAQ516-AA11 16-Channel Signal Conditioning Chassis with 16-Bit ADC

DAQ532-AA11 32-Channel Signal Conditioning Chassis with 16-Bit ADC

Total Number of Channels	Group A Channels 1-8 Channels 17-24		Group B Channels 9-16 (DAQ 516 and DAQ 532 chassis) Channels 25-32 (DAQ 532 chassis only)	
	Filter (Hz)	Gain	Filter (Hz)	Gain
x ↓	Fxx ↓	Gxx ↓	Fxx ↓	Gxx ↓
16 Chan = 1	10Hz = 11	Gain of 1/3 = .3	10Hz = 11	Gain of 1/3 = .3
32 Chan = 2	20Hz = 21	Gain of 1 = 01	20Hz = 21	Gain of 1 = 01
	50Hz = 51	Gain of 2 = 02	50Hz = 51	Gain of 2 = 02
	100Hz = 12	Gain of 5 = 05	100Hz = 12	Gain of 5 = 05
	200Hz = 22	Gain of 10 = 11	200Hz = 22	Gain of 10 = 11
	500Hz = 52	Gain of 20 = 21	500Hz = 52	Gain of 20 = 21
	1000Hz = 13	Gain of 50 = 51	1000Hz = 13	Gain of 50 = 51
	No Filter = 00	Gain of 100 = 12	No Filter = 00	Gain of 100 = 12

Part Number Examples for Signal Conditioning Cards:

1F11G12F00G01 = 16-Channel Signal Conditioning/Mux Card (channels 1-16 for DAQ516 or DAQ532 chassis)
 Group A channels 1-8 configured for 10Hz filter, gain of 100
 Group B channels 9-16 configured for no filter, gain of 1

2F12G.3F21G02 = 16-Channel Signal Conditioning /Mux Card (channels 17-32 for DAQ532 chassis only)
 Group A channels 17-24 configured for 100Hz filter, gain of 1/3
 Group B channels 25-32 configured for 20Hz filter, gain of 2

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