DAQ500 Series

16/32-Channel Signal Conditioning System

INSTRUCTION MANUAL

July 17, 2003

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DAQ 500 Series

UNPACKING

At KineticSystems, static precautions are observed during production, test, and packaging of systems and components. This includes using static proof mats and wrist straps. Please observe these same precautions whenever possible when unpacking and handling the unit. In particular, exposed pins on the 44 position D-subminiature front panel connector(s) should not be touched without taking anti-static precautions.

The *DAQ-500* series signal conditioning systems are shipped in an anti-static bag within a foam-packing container. Carefully remove the unit from its static-proof bag. Included in the packing container along with the *DAQ-500* series system are the following items:

1	2.5mm I.D., 5.5mm O.D. DC power plug with attached 2 meter unterminated DC power cable.
1	44-contact high density D subminiature receptacle with backshell kit (solder cup termination) *Note: 2 connectors are provided with the *DAQ-532*. Also, an AD592 temperature transducer is provided to serve as an isothermal reference if required.
1	15-contact high density D subminiature plug connector with backshell kit (solder cup termination).
1	CompactFlash memory card (256MB standard).
4	Metric hex head stainless steel mounting screws, size M4 - 0.70mm pitch x 12mm long.
4	Metric stainless steel hex nuts, size M4 - 0.70mm pitch 7.0mm across flats.
4	Metric stainless steel lock washers, size M4.

CHASSIS MOUNTING

The *DAQ-500* series system chassis comes with attached Metric hex head stainless steel mounting screws (size M4 x 12mm) that can be used to secure the chassis to a flat surface. The screws can be adjusted within the t-grooves across the length of the chassis to accommodate a range mounting surface widths. The center-to-center

spacing of the t-grooves is 86.88mm (3.42 inches). If the mounting screws will not be used, they can be removed from the t-grooves by removing the chassis front panel. *Be sure to observe proper anti-static precautions when removing the front panel.* To remove the chassis front panel, first remove the hex head mounting posts from the 44-contact D subminiature front panel connector(s). Then remove the four Phillips-head screws that secure the front panel to the *DAQ-500* series chassis. Loosen the M4 hex nuts and slide the mounting bolts from the t-grooves. Reassemble the front panel to the chassis.

HARDWARE SETUP

1	Insert the CompactFlash memory card into the *DAQ-500* series system front panel CompactFlash slot. The CompactFlash card should be inserted with the arrow on the label facing the right-hand side of the slot. ***The DAQ-500 series system should have the power turned off when installing or removing the CompactFlash memory card***
2	Analog signals are brought into the *DAQ-500* series system via the 44 contact high-density D subminiature front panel connector(s). Solder analog input signal wires to the appropriate solder cup contacts. Reference the pin description diagram in the connector section of this manual. Note that an AD592 temperature transducer will be soldered at the factory to pins 33 and 34 of the 44-contact high-density connector(s) to serve as a cold junction reference if any channels are configured for thermocouples. Attach the backshell kit to the connector body to provide strain relief and shield termination. The recommended cable type for analog signals is 24-28AWG twisted pair wire with an overall shield such as Madison Wire and Cable Part No. 50SDK00130.
3	Digital Input signals, external trigger, sample clock and counter inputs are terminated to the 15-contact high density D subminiature front panel connector. If these signals will be used, solder the signal wires to the appropriate solder cup contacts. Reference the pin description diagram in the connector section of this manual.
4	Connect the unterminated end of the DC power input cable to a stable DC power source of 10-18 volts (12 volts nominal).
5	Connect the 10 BaseT Ethernet port on the *DAQ-500* series front panel to a host computer with *VersaDAQ* software installed. ***The***

	Ethernet port should be connected before DC power to the DAQ-500 series system is switched on. See the software portion of this manual for software configuration.
6	After all the hardware connections have been made, move the power switch located on the rear panel of the *DAQ-500* system chassis to the "ON" position. The *DAQ-500* system will run a series of diagnostic tests after switching on power that will take approximately 12 seconds to complete. The "Arm" LED on the system front panel will flash three times upon completion of these tests, indicating that the system is ready to be configured via the *VersaDAQ* software.

FRONT PANEL INFORMATION

LEDs

There are eight LEDs (light-emitting diodes) on the DAQ-500 series system front panel that give visual indication of the operational status of the unit. The function associated with each LED is as follows:

"W" (Write CompactFlash) – This green LED is illuminated when CompactFlash memory is being written.

"R" (Read CompactFlash)- This yellow LED is illuminated when CompactFlash memory is being read.

"Act" (ADC active)- This green LED is illuminated when the *DAQ-500* series system ADC (analog-to-digital converter) is actively sampling data.

"Bsy" (Data Busy)- This green LED is illuminated when data transfers are occurring.

"Cal" (Calibration enabled)- This green LED is illuminated when an internal calibration is enabled.

"Bsy" (Signal conditioner busy)- This green LED is illuminated when the *DAQ-500* series signal conditioner's setup registers are being accessed.

"Arm" (ADC Armed)- This green LED is illuminated when the *DAQ-500* series system is armed and awaiting an external trigger signal to begin taking data. This

LED will also flash three times approximately 12 seconds after the DAQ-500 series system power is switched on.

“Alm” (Alarm)- This red LED is illuminated when an alarm has been set due to a fault condition.

Reset Button

When depressed, the front panel reset button will reset the *DAQ-500* series system Ethernet IP address to the default address of 192.92.103.180. The reset button must be held in until the “Arm” (arm) LED flashes three times to perform a valid reset.

Connectors

Analog signals are brought into the *DAQ-500* series system via the 44-contact high density D subminiature front panel connector(s). The DAQ-516 16-channel signal conditioning system has one 44-contact connector and the DAQ-532 32-channel signal conditioning system has two 44-contact connectors. Digital Input signal, external trigger, sample clock and counter inputs are terminated to the 15-contact high density D subminiature front panel connector. For a definition of the pins on these connectors refer to Figures 1 and 2 on the following pages.

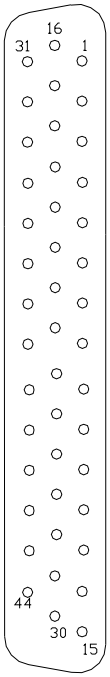

FIGURE 1 – 44-Contact D Subminiature Front Panel Connector(s)

Table 1 - 44-Contact Front Panel Connector (Channels 1-16)

Pin #	Description	Pin #	Description
1	Ch 1 Positive Input	23	Ch 8 Negative Input
2	Ch 2 Positive Input	24	Ch 9 Negative Input
3	Ch 3 Positive Input	25	Ch 10 Negative Input
4	Ch 4 Positive Input	26	Ch 11 Negative Input
5	Ch 5 Positive Input	27	Ch 12 Negative Input
6	Ch 6 Positive Input	28	Ch 13 Negative Input
7	Ch 7 Positive Input	29	Ch 14 Negative Input
8	Ch 8 Positive Input	30	Ch 15 Negative Input
9	Ch 9 Positive Input	31	Ch 16 Positive Input
10	Ch 10 Positive Input	32	Ch 16 Negative Input
11	Ch 11 Positive Input	33	Reserved
12	Ch 12 Positive Input	34	Reserved
13	Ch 13 Positive Input	35	Cal Out Positive
14	Ch 14 Positive Input	36	Cal Out Negative
15	Ch 15 Positive Input	37	Ground
16	Ch 1 Negative Input	38	Ground
17	Ch 2 Negative Input	39	Ground
18	Ch 3 Negative Input	40	Ground
19	Ch 4 Negative Input	41	Ground
20	Ch 5 Negative Input	42	Ground
21	Ch 6 Negative Input	43	Ground
22	Ch 7 Negative Input	44	Ground

Table 2 - 44-Contact Front Panel Connector
(Channels 17-32, DAQ-532 Only)

Pin #	**Description**	**Pin #**	Description
1	Ch 17 Positive Input	23	Ch 24 Negative Input
2	Ch 18 Positive Input	24	Ch 25 Negative Input
3	Ch 19 Positive Input	25	Ch 26 Negative Input
4	Ch 20 Positive Input	26	Ch 27 Negative Input
5	Ch 21 Positive Input	27	Ch 28 Negative Input
6	Ch 22 Positive Input	28	Ch 29 Negative Input
7	Ch 23 Positive Input	29	Ch 30 Negative Input
8	Ch 24 Positive Input	30	Ch 31 Negative Input
9	Ch 25 Positive Input	31	Ch 32 Positive Input
10	Ch 26 Positive Input	32	Ch 32 Negative Input
11	Ch 27 Positive Input	33	Reserved for isothermal reference
12	Ch 28 Positive Input	34	Reserved for isothermal reference
13	Ch 29 Positive Input	35	Cal Out Positive
14	Ch 30 Positive Input	36	Cal Out Negative
15	Ch 31 Positive Input	37	Ground
16	Ch 17 Negative Input	38	Ground
17	Ch 18 Negative Input	39	Ground
18	Ch 19 Negative Input	40	Ground
19	Ch 20 Negative Input	41	Ground
20	Ch 21 Negative Input	42	Ground
21	Ch 22 Negative Input	43	Ground
22	Ch 23 Negative Input	44	Ground

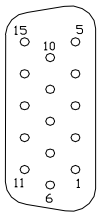

FIGURE 2 – 15-Contact D Subminiature Front Panel Connector

Table 3 - 15-Contact Front Panel Connector

Pin #	**Description**	**Pin #**	Description
1	Reserved	9	Reserved
2	Reserved	10	Not Used
3	Sample Clock Out	11	Not Used
4	Digital/ Counter Input 1	12	Not Used
5	Digital/ Counter Input 0	13	Digital Ground
6	Reserved	14	Digital Ground
7	Reserved	15	Digital Ground
8	Reserved		