Hardware Installation Guide

ACQ16PCI

16 Channel Data Acquisition PCI Card

1   Installation Notes

The ACQ16PCI Card is a complex multilayer, full length PCI Card. Special care should be taken in handling the ACQ16PCI, and avoid undue flexing of the PCB. The card is susceptible to damage by ESD and improper power connections.

1.1   Ensure ESD precautions are taken before opening card from packaging.

1.2   This card only fits in full length PCI Bus slots.

1.3   This card requires both 3.3V @ 0.5A and 5V @ 2.5A per board from motherboard/backplane

1.4   Ensure proper ESD precautions are taken during installation.
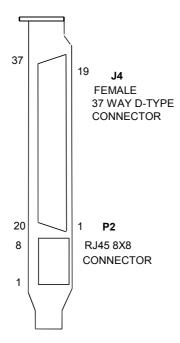

<u>**Warning**</u>

The ACQ16PCI analog input signal range is +/- 2.5V. Always ensure that signals are within this range as damage can occur to the board. Protection accessories are available to protect the board from damage due to signals out with this range. Contact D-TACQ for details.

2   Connectors

It is common practice for customers to manufacture their own cables and termination units, to fit in with their own sensor requirements. The following section explains each connector configuration.

D-TACQ Solutions supply a standard range of cable and termination accessories, and can also produce custom solutions.

2.1   Analog I/O Connector J4

2.2 Analog I/O Connector J4 on Front Panel

Pin No.	Signal	Pin No.	Signal
1	Analog In 1+	20	Analog In 1-
2	Analog In 2+	21	Analog In 2-
3	Analog In 3+	22	Analog In 3-
4	Analog In 4+	23	Analog In 4-
5	Analog In 5+	24	Analog In 5-
6	Analog In 6+	25	Analog In 6-
7	Analog In 7+	26	Analog In 7-
8	Analog In 8+	27	Analog In 8-
9	Analog In 9+	28	Analog In 9-
10	Analog In 10+	29	Analog In 10-
11	Analog In 11+	30	Analog In 11-
12	Analog In 12+	31	Analog In 12-
13	Analog In 13+	32	Analog In 13-
14	Analog In 14+	33	Analog In 14-
15	Analog In 15+	34	Analog In 15-
16	Analog In 16+	35	Analog In 16-
17	0VA	36	0VA
18	+5VA	37	0VA
19	-5VA		

Matching connector type is 37 way male D-type with 4-40 screw. Cable can be ribbon or sheathed wire pairs. The latter is preferable.

WARNING

The +5VA, -5VA and 0VA are for test purposes only. Customer must be aware of their existence, and to avoid connecting in any custom cabling.

2.3 Front Panel RJ45 connector P2

P2 Connector RJ45 is used for external clock and triggers.

AI=Analog In

Pin No.	Description	Default Usage
1	Digital I/O 3	Not Used
2	Digital I/O 1	Not Used
3	Digital I/O 2	AI Trigger
4	+5V	Not Used
5	0V	
6	Digital I/O 0	AI Clock
7	+5V	Not Used
8	0V	

For short runs (less than 300mm) a standard Ethernet/CAT5 cable can be used. For longer runs a special cable should be made up to utilize the twisted pairs of standard CAT5 cable, but wired to connector pins as follows:-

Pin No.	Usage	Wire
1	Not Used	Orange
2	Not Used	Green
3	AI Trigger	Blue
4	+5V	Green / White
5	0V	Orange / White
6	AI Clock	Brown
7	+5V	Blue / White
8	0V	Brown / White

2.4 Multi board synchronization J1

High Speed Digital I/O is used in an ACQ16PCI multi board system to enable clocks and triggers to be passed between ACQ16PCI boards in the same chassis. The appropriate ribbon cable is supplied by D-TACQ Solutions Ltd as required. It is a standard 20 way Ribbon cable with the following pin out.

Pin No.	Signal	Pin No.	Signal
1	Digital I/O 0 - AI Clock	2	0V
3	Digital I/O 2 - AI Trigger	4	0V
5	Digital I/O 1 - Not Used	6	0V
7	Digital I/O 3 - Not Used	8	0V
9	Digital I/O 4 – Not Used	10	0V
11	Digital I/O 5– Not Used	12	0V
13	Digital I/O 6– Not Used	14	0V
15	Digital I/O 7– Not Used	16	0V
17	Digital I/O 8– Not Used	18	0V
19	Digital I/O 9– Not Used	20	0V

2.5 Digital 1/O Connector J2

J2 Connector is used for general I/O interface. It provides for a proprietary Data/Address Bus and a 16 bit general purpose I/O bus. It also duplicates the High Speed I/O from J1 within the general purpose I/O Bus.

Pin No.	Signal	Pin No.	Signal
1	DIG I/O DATA 0	35	DIG I/O DATA 1
2	DIG I/O DATA 2	36	DIG I/O DATA 3
3	0VD	37	DIG I/O DATA 4
4	DIG I/O DATA 5	38	DIG I/O DATA 6
5	DIG I/O DATA 7	39	0VD
6	+5V	40	+3V3
7	DIG I/O DATA 8	41	DIG I/O DATA 9
8	DIG I/O DATA 10	42	DIG I/O DATA 11
9	0VD	43	DIG I/O DATA 12
10	DIG I/O DATA 13	44	DIG I/O DATA 14
11	DIG I/O DATA 15	45	0VD
12	+5V	46	+3V3
13	DIG I/O ADDR 8	47	DIG I/O ADDR 9
14	DIG I/O ADDR 2	48	DIG I/O ADDR 3
15	0VD	49	DIG I/O ADDR 4
16	DIG I/O ADDR 5	50	DIG I/O ADDR 6
17	DIG I/O ADDR 7	51	0VD
18	+5V	52	+3V3
19	Digital I/O 0	53	Digital I/O 1
20	Digital I/O 2	54	Digital I/O 0
21	0VD	55	Digital I/O 4
22	Digital I/O 5	56	Digital I/O 6
23	Digital I/O 7	57	0VD
24	+5V	58	+3V3
25	Digital I/O 8	59	Digital I/O 9
26	Digital I/O 10	60	Digital I/O 11
27	0VD	61	Digital I/O 12
28	Digital I/O 13	62	Digital I/O 14
29	Digital I/O 15	63	0VD
30	RS232 IN	64	0VD
31	RS232 OUT	65	0VD
32	XIORBn	66	0VD
33	XIOWBn	67	0VD
34	XCS2Bn	68	0VD

Current onboard is Thomas & Betts 311-068072E 68 way box header type. Use matching or equivalent connector with 68 ribbon cable.