

PCI/PCI Express® Smart DAQ Solutions

DAQ-2000/DAQe-2000 Series

	Simultaneous Sampling DAQ Cards				Analog Output Cards	
Model Name	DAQ-2010/DAQe-2010	DAQ-2016/DAQe-2016	DAQ-2005/DAQe-2005	DAQ-2006/DAQe-2006	DAQ-2501/DAQe-2501	DAQ-2502/DAQe-2502
Bus Type	PCI ⁽¹⁾ /PCI Express®	PCI ⁽¹⁾ /PCI Express®	PCI ⁽¹⁾ /PCI Express®	PCI ⁽¹⁾ /PCI Express®	PCI ⁽¹⁾ /PCI Express®	PCI ⁽¹⁾ /PCI Express®
Bus-mastering DMA	Scatter-gather	Scatter-gather	Scatter-gather	Scatter-gather	Scatter-gather	Scatter-gather
Auto Calibration	●	●	●	●	●	●
Analog Input						
Analog Inputs	4 DI	4 DI	4 DI	4 DI	8 SE	4 SE
Max. Sampling Rates (S/s)	2 M	800 k	500 k	250 k	400 k	400 k
Simultaneous Sampling	●	●	●	●	-	-
AD Resolution (bits)	14	16	16	16	14	14
FIFO Size (samples)	8 k	512	512	512	1 k	1 k
Channel gain Queue	-	-	-	-	-	-
Bipolar Input Ranges (V)	±10 V, ±5 V, ±2.5 V, ±1.25 V	±10 V, ±5 V, ±2.5 V, ±1.25 V	±10 V, ±5 V, ±2.5 V, ±1.25 V	±10 V, ±5 V, ±2.5 V, ±1.25 V	±10 V	±10 V
Unipolar Input Ranges (V)	0-10 V, 0-5 V, 0-2.5 V, 0-1.25 V	0-10 V, 0-5 V, 0-2.5 V, 0-1.25 V	0-10 V, 0-5 V, 0-2.5 V, 0-1.25 V	0-10 V, 0-5 V, 0-2.5 V, 0-1.25 V	0-10 V	0-10 V
Analog Output						
Voltage Outputs	2 + AWG ⁽²⁾	2 + AWG ⁽²⁾	2 + AWG ⁽²⁾	2 + AWG ⁽²⁾	4 + AWG ⁽²⁾	8 + AWG ⁽²⁾
Update Rate (S/s)	1 M	1 M	1 M	1 M	1 M	1 M
Simultaneous Update	●	●	●	●	●	●
DA Resolution (bits)	12	12	12	12	12	12
FIFO Size (samples)	2 k	2 k	2 k	2 k	8 k	16 k
Settling Time	3 μs	3 μs	3 μs	3 μs	3 μs	3 μs
Analog Output Ranges	±10 V, ±EXTREF, 0-10 V, 0-EXTREF	±10 V, ±EXTREF, 0-10 V, 0-EXTREF	±10 V, ±EXTREF, 0-10 V, 0-EXTREF	±10 V, ±EXTREF, 0-10 V, 0-EXTREF	±10 V, ±EXTREF, 0-10 V, 0-EXTREF	±10 V, ±EXTREF, 0-10 V, 0-EXTREF
Digital I/O, Timer/Counter, and External Trigger						
Digital I/O	24-bit 8255 PIO	24-bit 8255 PIO	24-bit 8255 PIO	24-bit 8255 PIO	24-bit 8255 PIO	24-bit 8255 PIO
Timer/Counter	16-bit x2	16-bit x2	16-bit x2	16-bit x2	16-bit x2	16-bit x2
Analog Trigger	●	●	●	●	●	●
Digital Trigger	●	●	●	●	●	●

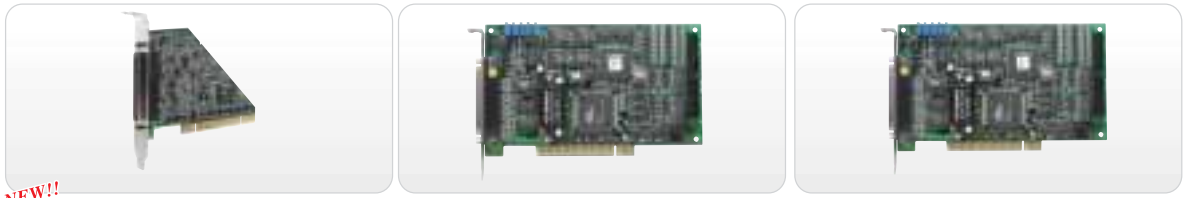
	Multi-Function DAQ Cards					
Model Name	DAQ-2204/DAQe-2204	DAQ-2205/DAQe-2205	DAQ-2206/DAQe-2206	DAQ-2213/DAQe-2213	DAQ-2214/DAQe-2214	DAQ-2208/DAQe-2208
Bus Type	PCI ⁽¹⁾ /PCI Express®	PCI ⁽¹⁾ /PCI Express®	PCI ⁽¹⁾ /PCI Express®	PCI ⁽¹⁾ /PCI Express®	PCI ⁽¹⁾ /PCI Express®	PCI ⁽¹⁾ /PCI Express®
Bus-mastering DMA	Scatter-gather	Scatter-gather	Scatter-gather	Scatter-gather	Scatter-gather	Scatter-gather
Auto Calibration	●	●	●	●	●	●
Analog Input						
Analog Inputs	64 SE/32 DI	64 SE/32 DI	64 SE/32 DI	16 SE/8 DI	16 SE/8 DI	96 SE/48 DI
Max. Sampling Rates (S/s)	3 M	500 k	250 k	250 k	250 k	3 M
Simultaneous Sampling	-	-	-	-	-	-
AD Resolution (bits)	12	16	16	16	16	12
FIFO Size (samples)	1 k	1 k	1 k	1 k	1 k	1 k
Channel gain Queue	512	512	512	512	512	1024
Bipolar Input Ranges (V)	±10 V, ±5 V, ±2.5 V, ±2 V, ±1.25 V, ±1 V, ±0.5 V, ±0.25 V, ±0.2 V, ±0.05 V	±10 V, ±5 V, ±2.5 V, ±1.25 V	±10 V, ±5 V, ±2.5 V, ±1.25 V	±10 V, ±5 V, ±2.5 V, ±1.25 V	±10 V, ±5 V, ±2.5 V, ±1.25 V	±10 V, ±5 V, ±2.5 V, ±2 V, ±1.25 V, ±1 V, ±0.5 V, ±0.25 V, ±0.2 V, ±0.05 V
Unipolar Input Ranges (V)	0-10 V, 0-5 V, 0-4 V, 0-2.5 V, 0-2 V, 0-1 V, 0-0.5 V, 0-0.4 V, 0-0.1 V	0-10 V, 0-5 V, 0-2.5 V, 0-1.25 V	0-10 V, 0-5 V, 0-2.5 V, 0-1.25 V	0-10 V, 0-5 V, 0-2.5 V, 0-1.25 V	0-10 V, 0-5 V, 0-2.5 V, 0-1.25 V	0-10 V, 0-5 V, 0-4 V, 0-2.5 V, 0-2 V, 0-1 V, 0-0.5 V, 0-0.4 V, 0-0.1 V
Analog Output						
Voltage Outputs	2 + AWG ⁽²⁾	2 + AWG ⁽²⁾	2 + AWG ⁽²⁾	-	2 + AWG ⁽²⁾	-
Update Rate (S/s)	1 M	1 M	1 M	-	1 M	-
Simultaneous Update	●	●	●	-	●	-
DA Resolution (bits)	12	12	12	-	12	-
FIFO Size (samples)	1 k	1 k	1 k	-	1 k	-
Settling Time	3 μs	3 μs	3 μs	-	3 μs	-
Analog Output Ranges	±10 V, ±EXTREF, 0-10 V, 0-EXTREF	±10 V, ±EXTREF, 0-10 V, 0-EXTREF	±10 V, ±EXTREF, 0-10 V, 0-EXTREF	-	±10 V, ±EXTREF, 0-10 V, 0-EXTREF	-
Digital I/O, Timer/Counter, and External Trigger						
Digital I/O	24-bit 8255 PIO	24-bit 8255 PIO	24-bit 8255 PIO	24-bit 8255 PIO	24-bit 8255 PIO	24-bit 8255 PIO
Timer/Counter	16-bit x2	16-bit x2	16-bit x2	16-bit x2	16-bit x2	-
Analog Trigger	●	●	●	●	●	●
Digital Trigger	●	●	●	●	●	●

Legend:
● Supported – Not available

Note:
(1) Support 3.3 V/ 5 V PCI (2) Analog outputs with hardware-based arbitrary waveform generation.

PCI Multi-Function DAQ Cards

Multi-Function DAQ Cards



Model Name	PCI-9221	PCI-9114(A)-DG	PCI-9114(A)-HG
3.3 V or 5 V PCI	3.3 V/5 V	5 V	5 V
Bus-mastering DMA	●	–	–
Auto Calibration	●	–	–
Analog Input			
Analog Inputs	16 SE/8 DI	32 SE/16 DI	32 SE/16 DI
Max. Sampling Rates (S/s)	250 k	250 k (PCI-9114A-DG) 100 k (PCI-9114DG)	250 k (PCI-9114A-HG) 100 k (PCI-9114HG)
AD Resolution (bits)	16	16	16
FIFO Size (samples)	1 k	1 k	1 k
Channel gain Queue	●	–	–
Bipolar Input Ranges (V)	±5 V, ±1 V, ±0.5 V, ±0.2 V	±10 V, ±5 V, ±2.5 V, ±1.25 V	±10 V, ±1 V, ±0.1 V
Unipolar Input Ranges (V)	–	–	–
Analog Output			
Voltage Outputs	2	–	–
Update Rate (S/s)	Static	–	–
DA Resolution (bits)	16	–	–
Settling Time	Static	–	–
Analog Output Ranges	±5 V	–	–
Digital I/O, Timer/Counter, and External Trigger			
Digital I/O	8 DI, 4 DO ⁽³⁾	16 DI, 16 DO (Isolated)	16 DI, 16 DO (Isolated)
Timer/Counter	32-bit x 2	16-bit	16-bit
Analog Trigger	–	–	–
Digital Trigger	●	●	●

Multi-Function DAQ Cards

Analog Input Cards



Model Name	PCI-9112/LPCI-9112	PCI-9111DG/HR	PCI-9118DG/L, HR/L	PCI-9118HG/L
3.3 V or 5 V PCI	3.3 V/5 V ⁽²⁾	5 V	5 V	5 V
Bus-mastering DMA	●	–	●	●
Auto Calibration	–	–	–	–
Analog Input				
Analog Inputs	16 SE/8 DI	16 SE	16 SE/8 DI	16 SE/8 DI
Max. Sampling Rates (S/s)	110 k	100 k	333 k (PCI-9118DG/L) 100 k (PCI-9118HR/L)	333 k
AD Resolution (bits)	12	12 (PCI-9111DG) 16 (PCI-9111HR)	12 (PCI-9118DG/L) 16 (PCI-9118HR/L)	12
FIFO Size (samples)	8	1 k	1 k	1 k
Channel gain Queue	–	–	256	256
Bipolar Input Ranges (V)	±10 V, ±5 V, ±2.5 V, ±1.25 V, ±0.625 V	±10 V, ±5 V, ±2.5 V, ±1.25 V, ±0.625 V	±5 V, ±2.5 V, ±1.25 V, ±0.625 V	±5 V, ±0.5 V, ±0.05 V
Unipolar Input Ranges (V)	0-10 V, 0-5 V, 0-2.5 V, 0-1.25 V	–	0-10 V, 0-5 V, 0-2.5 V, 0-1.25 V	0-10 V, 0-1 V, 0-0.1 V
Analog Output				
Voltage Outputs	2	1	–	–
Update Rate (S/s)	33 k ⁽¹⁾	33 k ⁽¹⁾	–	–
DA Resolution (bits)	12	12	–	–
Settling Time	30 μs	30 μs	–	–
Analog Output Ranges	0-5 V, 0-10 V, 0-EXTREF	±10 V, 0-10 V	–	–
Digital I/O, Timer/Counter, and External Trigger				
Digital I/O	16 DI, 16 DO	16 DI, 16 DO	4 DI, 4 DO	4 DI, 4 DO
Timer/Counter	16-bit	–	–	–
Analog Trigger	–	–	–	–
Digital Trigger	●	●	●	●

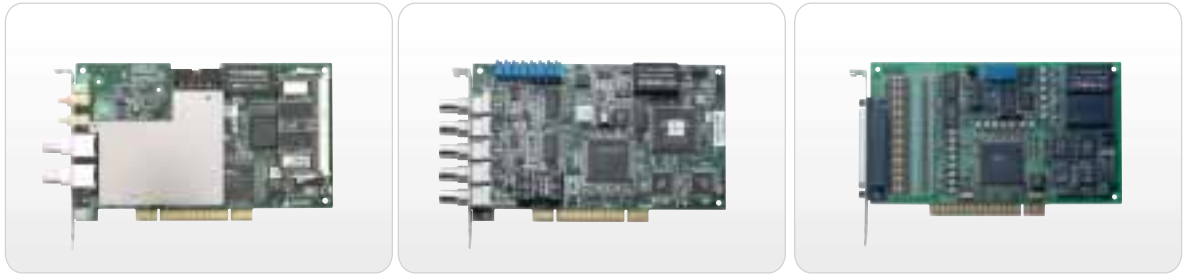
Legend:
● Supported – Not available

Note:
(1) Actual maximum update rate is dependent on system performance.
(3) Programmable Function I/O

(2) The PCI-9112 supports a 5 V PCI bus, and the LPCI-9112 supports a 3.3 V or 5 V PCI bus.

PCI AI/AO Cards

Analog Input Cards



Model Name	PCI-9820	PCI-9812(A) / PCI-9810	PCI-9113A
3.3 V or 5 V PCI	3.3 V/5 V	3.3 V/5 V	5 V
Bus-mastering DMA	Scatter-gather	●	–
Auto Calibration	●	–	–
Analog Input			
Analog Inputs	2 SE	4	32 SE/ 16 DI
Max. Sampling Rate (S/s)	130 M	20 M	100 k (Isolated)
Simultaneous Sampling	●	●	–
AD Resolution (bits)	14	12 (PCI-9812) / 10 (PCI-9810)	12
FIFO Size (samples)	256 M (SDRAM) ⁽¹⁾	32 k (PCI-9810/9812) / 128 k (PCI-9812A)	1 k
Channel gain Queue	–	–	–
Bipolar Input Ranges	±5 V, ±1 V	±5 V, ±1 V	±10 V, ±5 V, ±1 V, ±0.5 V, ±0.1 V, ±0.05 V
Unipolar Input Ranges	–	–	0-10 V, 0-1 V, 0-0.1 V
Digital I/O, Timer/Counter, and External Trigger			
Digital I/O	–	3 DI	–
Timer/Counter	–	–	–
Analog Trigger	●	●	–
Digital Trigger	●	●	–

Analog Output Cards



Model Name	PCI-6216V	PCI-6208V	PCI-6208A	PCI-6308V	PCI-6308A
3.3 V or 5 V PCI	5 V	5 V	5 V	3.3 V/5 V	3.3 V/5 V
Bus-mastering DMA	–	–	–	–	–
Auto Calibration	–	–	–	–	–
Analog Output					
Voltage Outputs	16	8	8	8	8
Current Outputs	–	–	8	–	8
Update Rate (S/s)	454 k ⁽²⁾	454 k ⁽²⁾	454 k ⁽²⁾	250 k (Isolated) ⁽²⁾	250 k (Isolated) ⁽²⁾
Simultaneous Update	–	–	–	●	●
DA Resolution (bits)	16	16	16	12	12
FIFO Size (samples)	–	–	–	–	–
Settling Time	2 μs	2 μs	17 μs	16 μs	17 μs
Voltage Output Ranges	±10 V	±10 V	±10 V	±10 V, 0-10 V, 0-EXTREF0	±10 V, 0-10 V, 0-EXTREF
Current Output Ranges	–	–	0-20 mA, 4-20 mA, 5-25 mA	–	0-20 mA, 4-20 mA, 5-25 mA
Digital I/O, Timer/Counter, and External Trigger					
Digital I/O	4 DI, 4 DO	4 DI, 4 DO	4 DI, 4 DO	4 DI, 4 DO (Isolated)	4 DI, 4 DO (Isolated)
Timer/Counter	–	–	–	–	–
Analog Trigger	–	–	–	–	–
Digital Trigger	–	–	–	–	–

Legend:
 ● Supported – Not available

Notes: (1) Supports 144-pin SODIMM SDRAM modules, up to 256 M-sample storage size
 (2) Actual maximum update rate is dependent on system performance.

PCI DIO Cards

Digital I/O Modules									
Model Name	PCI-7250 PCI-7251	LPCI-7250	PCI-7260 PCI-7256	PCI-7258	PCI-8554	PCI-7442	PCI-7443	PCI-7444	PCI-7432 PCI-7433 PCI-7434
3.3 V or 5 V PCI	5 V	3.3 V/5 V	3.3 V/5 V	3.3 V/5 V	5 V	3.3 V/5 V	3.3 V/5 V	3.3 V/5 V	5 V
Form Factor	PCI	Low-Profile PCI	PCI	PCI	PCI	PCI	PCI	PCI	PCI
Bus-mastering DMA	-	-	-	-	-	-	-	-	-
Isolation	●	●	●	●	-	●	●	●	●
Dedicated Inputs									
No. of Channels	8	8	8/16 + COS ⁽²⁾	2	8	64 + COS ⁽²⁾	128 + COS ⁽²⁾	-	32 / 64 / -
Max. Sampling Rate (Hz) ⁽¹⁾	10 k	10 k	10 k	10 k	500 k	10 k	10 k	-	10 k / 10 k / -
Logic Standard	V _{IH} =5-24 V V _{IL} =0-1.5 V	V _{IH} =5-24 V V _{IL} =0-1.5 V	V _{IH} =10-24 V V _{IL} =0-2 V	V _{IH} =5-24 V V _{IL} =0-1.5 V	5 V/TTL	V _{IH} =5-28 V V _{IL} =0-1.5 V	V _{IH} =5-28 V V _{IL} =0-1.5 V	-	V _{IH} =5-24 V; V _{IL} =0-1.5 V V _{IH} =5-24 V; V _{IL} =0-1.5 V
Dedicated Outputs									
No. of Channels	8	8	8/16	32	8	64	-	128	32 / - / 64
Max. Update Rate (Hz) ⁽¹⁾	-	-	-	-	500 k	10 k	-	10 k	10 k / - / 10 k
Relay Operate/Release Time	8 ms/8 ms	8 ms/8 ms	10 ms/10 ms 3 ms/3 ms	0.23 ms/0.04 ms	-	-	-	-	-
Output Type	Relay	Relay	Relay	PhotoMos Relay	5 V/TTL	Power MOSFET	-	Power MOSFET	Darlington - Darlington
Timer/Counter									
Timer/Counter	-	-	-	-	10, 16-bit	-	-	-	-

Digital I/O Modules									
Model Name	PCI-7300A	PCI-7200	LPCI-7200S	PCI-7230	LPCI-7230	PCI-7233 PCI-7233H	PCI-7234P PCI-7234	PCI-7296 PCI-7248 PCI-7224	PCI-7396 PCI-7348
3.3 V or 5 V PCI	5 V	5 V	3.3 V/5 V	5 V	3.3 V/5 V	5 V	5 V	5 V	5 V
Form Factor	PCI	PCI	Low-Profile PCI	PCI	Low-Profile PCI	PCI	PCI	PCI	PCI
Bus-mastering DMA	●	●	●	-	-	-	-	-	-
Isolation	-	-	-	●	●	●	●	-	-
High-Speed Digital I/O									
No. of Channels	2 x 16-bit DIO	32 DI, 32 DO	32 DI, 32 DO	-	-	-	-	4/2/1 x 24-bit 8255 PIO 500 k ⁽¹⁾	96/48 DIO + COS ⁽²⁾ 500 k ⁽¹⁾
Transfer Rate (Byte/s)	80 M	12 M	12 M	-	-	-	-	-	-
FIFO size (words)	32 k	-	-	-	-	-	-	-	-
Logic Standard	5 V/TTL	5 V/TTL	5 V/TTL	-	-	-	-	5 V/TTL	5 V/TTL
Handshaking Transfer	●	●	●	-	-	-	-	-	-
Dedicated Inputs									
No. of Channels	4	-	-	16	16	32 + COS ⁽²⁾	-	-	-
Max. Sampling Rate (Hz) ⁽¹⁾	500 k	-	-	10 k	10 k	10 k	-	-	-
Logic Standard	5 V/TTL	-	-	V _{IH} =5-24 V V _{IL} =0-1.5 V	V _{IH} =5-24 V V _{IL} =0-1.5 V	V _{IH} =5-24 V V _{IL} =0-1.5 V	-	-	-
Dedicated Outputs									
No. of Channels	4	-	-	16	16	-	32	-	-
Max. Update Rate (Hz) ⁽¹⁾	500 k	-	-	10 k	10 k	-	10 k	-	-
Output Type	5 V/TTL	-	-	Darlington	Darlington	-	Darlington ⁽³⁾	-	-
Timer/Counter									
Timer/Counter	-	-	-	-	-	-	-	-	-

Legend: ● Supported – Not available

Notes: (1) Actual maximum update rate is dependent on system performance.

(2) Change-Of-State detection

(3) The PCI-7234P's outputs provide Darlington source drivers.