

# PCI-7442/7443/7444

## High-density 128-CH Isolated DIO/DI/DO Cards



PCI-7442



PCI-7443



PCI-7444

### Introduction

Responding to the industry's need for high-density digital input/output modules, the ADLINK PCI-744X DIO card series delivers up to 128 opto-isolated channels for a wide range of demanding PCI-based applications.

The PCI-744X card series comes with 64 (PCI-7442) or 128 (PCI-7443) opto-isolated digital inputs and 64 (PCI-7442) or 128 (PCI-7444) opto-isolated digital outputs. With a 1250 V<sub>RMS</sub> (excluding cables) channel-to-system isolation protection, these cards are shielded from damage caused by accidental contact with external voltage while promoting simple ground connections. All input channels are identical non-polarity with each line isolated and suited to collect digital inputs even at high-noise environments. Featuring a Change-of-State (COS) interrupt function, the PCI-7442/PCI-7443 instantly generates an interrupt request to the PCI controller when it detects a sharp change in the logical state of any of its digital inputs.

For easy identification in systems with multiple DIO cards installed, the cards are also equipped with a board ID design that enables fast and convenient card detection and troubleshooting.

### Specifications

#### Isolated Digital Input

- Number of channels
  - 64 (PCI-7442)
  - 128 (PCI-7443)
- Maximum input range: 28 V, non-polarity
- Digital logic levels: 0 V to 28 V, non-polarity
  - Input high voltage: 5 V to 28 V
  - Input low voltage: 0 V to 1.5 V
- Input resistance: 4.7 kΩ @ 0.5 W
- ESD protection CKT switch (forward)
- Isolation voltage: 1250 V<sub>RMS</sub> channel-to-system
- Interrupt sources: 64/128-channel Change-of-State (COS)
- Data transfer: programmed I/O

#### Isolated Digital Output

- Number of channels:
  - 64 (PCI-7442)
  - 128 (PCI-7444)
- Output type: open drain Power MOSFET driver
- Output range: 5 V to 40 V
- Sink current: 250 mA for all channel @ 100% duty (300 mA max.)
- Isolation voltage: 1250 V<sub>RMS</sub> channel-to-system
- Data transfer: programmed I/O

#### Isolation +5 V Power Supply (PCI-7442/7444 only)

- Output Voltage: +5 V
- Output Current: 100 mA max. (@ 40°C)

#### Safety Functions (PCI-7442/7444 only)

- Programmable power-up DO status
- Watchdog timer
  - Base clock available: 10 MHz, fixed
  - Counter width: 32-bit

#### General Specifications

- I/O connector: 68-pin Dual port VHDCI female
- Operating temperature: 0°C to 60°C
- Storage temperature: -20°C to 80°C
- Relative humidity: 5% to 95%, non-condensing
- Power requirements

Device	+5 V
PCI-7442	800 mA typical
PCI-7443	550 mA typical
PCI-7444	800 mA typical

- Dimension: 175 mm x 107 mm

### Terminal Boards

#### DIN-68S-01

Terminal Board with One 68-pin SCSI-II Connector and DIN-Rail Mounting (Cables are not included. For information on mating cables, refer to Section 12, Accessories.)

### Cable

#### ACL-10568D

Dual-68-Pin Head to Two 68-Pin SCSI-VHDCI Cable

#### ACL-10568F

68-Pin SCSI-VHDCI Flat Cable

### Ordering Information

- **PCI-7442**  
64-CH Isolated DI and 64-CH Isolated DO card
- **PCI-7443**  
128-CH Isolated DI card
- **PCI-7444**  
128-CH Isolated DO card

### Features

- Supports universal 32-bit 3.3 V and 5 V PCI bus, Plug-and-Play
- High-density, opto-isolated digital input and/or digital output
  - PCI-7442: 64-CH digital input and 64-CH digital output
  - PCI-7443: 128-CH digital input
  - PCI-7444: 128-CH digital output
- 1250 V<sub>RMS</sub> isolation voltage
- Programmable Change-of-State (COS) detection for all digital input channels
- Voltage protection of up to 28 V for isolated input
- Dry contact input (PCI-7442 only)
- Up to 300 mA high-output driving capability for all output channels
- 250 mA sink current on isolated output channels
- Digital output status read back function
- Digital output value retained after hot system reset
- Programmable power-up DO initial status
- Programmable safety DO status functions when WDT interruption occurs
- Watchdog timer counter prevents system crashes (PCI-7442/PCI-7444 only)
- 32-CH programmable TTL I/O function
- Board ID feature
- Operating Systems
  - Windows Vista/XP/2000/2003
  - Linux
- Recommended Software
  - AD-Logger
  - VB.NET/VC.NET/VB/VC++/BCB/Delphi
  - DAQBench
- Driver Support
  - DAQPilot for Windows
  - DAQPilot for LabVIEW™
  - DAQ-MTLB for MATLAB®
  - PCIS-DASK for Windows
  - PCIS-DASK/X for Linux

Pin Assignment

PCI-7442

CN2B			CN2A		
V5V	B68	B34	V5V	IDO_0	A1 A35 IDO_8
IGND	B67	B33	IGND	IDO_1	A2 A36 IDO_9
IGND	B66	B32	IGND	IDO_2	A3 A37 IDO_10
IGND	B65	B31	IGND	IDO_3	A4 A38 IDO_11
IGND	B64	B30	IGND	IDO_4	A5 A39 IDO_12
IGND	B63	B29	IGND	IDO_5	A6 A40 IDO_13
IGND	B62	B28	IGND	IDO_6	A7 A41 IDO_14
IGND	B61	B27	IGND	IDO_7	A8 A42 IDO_15
VDD8	B60	B26	VDD7	VDD1	A9 A43 VDD2
IDO_63	B59	B25	IGND	IGND	A10 A44
IDO_62	B58	B24	IGND	IGND	A11 A45
IDO_61	B57	B23	IGND	IGND	A12 A46
IDO_60	B56	B22	IGND	IGND	A13 A47
IDO_59	B55	B21	IGND	IGND	A14 A48
IDO_58	B54	B20	IGND	IGND	A15 A49
IDO_57	B53	B19	IGND	IGND	A16 A50
IDO_56	B52	B18	IGND	IGND	A17 A51
N/C	B51	B17	N/C	IDO_16	A18 A52 IDO_24
IGND	B50	B16	IGND	IDO_17	A19 A53 IDO_25
IGND	B49	B15	IGND	IDO_18	A20 A54 IDO_26
IGND	B48	B14	IGND	IDO_19	A21 A55 IDO_27
IGND	B47	B13	IGND	IDO_20	A22 A56 IDO_28
IGND	B46	B12	IGND	IDO_21	A23 A57 IDO_29
IGND	B45	B11	IGND	IDO_22	A24 A58 IDO_30
IGND	B44	B10	IGND	IDO_23	A25 A59 IDO_31
VDD6	B43	B9	VDD5	VDD3	A26 A60 VDD4
IDO_47	B42	B8	IGND	IGND	A27 A61
IDO_46	B41	B7	IGND	IGND	A28 A62
IDO_45	B40	B6	IGND	IGND	A29 A63
IDO_44	B39	B5	IGND	IGND	A30 A64
IDO_43	B38	B4	IGND	IGND	A31 A65
IDO_42	B37	B3	IGND	IGND	A32 A66
IDO_41	B36	B2	IGND	IGND	A33 A67
IDO_40	B35	B1	IGND	IGND	A34 A68

CN1B

CN1A

N/C	B68	B34	N/C	IDL_0	A1 A35 IDL_8
COM8	B67	B33	COM7	IDL_1	A2 A36 IDL_9
COM8	B66	B32	COM7	IDL_2	A3 A37 IDL_10
COM8	B65	B31	COM7	IDL_3	A4 A38 IDL_11
COM8	B64	B30	COM7	IDL_4	A5 A39 IDL_12
COM8	B63	B29	COM7	IDL_5	A6 A40 IDL_13
COM8	B62	B28	COM7	IDL_6	A7 A41 IDL_14
COM8	B61	B27	COM7	IDL_7	A8 A42 IDL_15
COM8	B60	B26	COM7	COM1	A9 A43 COM2
IDL_63	B59	B25	IDL_55	COM1	A10 A44 COM2
IDL_62	B58	B24	IDL_54	COM1	A11 A45 COM2
IDL_61	B57	B23	IDL_53	COM1	A12 A46 COM2
IDL_60	B56	B22	IDL_52	COM1	A13 A47 COM2
IDL_59	B55	B21	IDL_51	COM1	A14 A48 COM2
IDL_58	B54	B20	IDL_50	COM1	A15 A49 COM2
IDL_57	B53	B19	IDL_49	COM1	A16 A50 COM2
IDL_56	B52	B18	IDL_48	N/C	A17 A51 N/C
N/C	B51	B17	N/C	IDL_16	A18 A52 IDL_24
COM6	B50	B16	COM5	IDL_17	A19 A53 IDL_25
COM6	B49	B15	COM5	IDL_18	A20 A54 IDL_26
COM6	B48	B14	COM5	IDL_19	A21 A55 IDL_27
COM6	B47	B13	COM5	IDL_20	A22 A56 IDL_28
COM6	B46	B12	COM5	IDL_21	A23 A57 IDL_29
COM6	B45	B11	COM5	IDL_22	A24 A58 IDL_30
COM6	B44	B10	COM5	IDL_23	A25 A59 IDL_31
COM6	B43	B9	COM5	COM3	A26 A60 COM4
IDL_47	B42	B8	IDL_39	COM3	A27 A61 COM4
IDL_46	B41	B7	IDL_38	COM3	A28 A62 COM4
IDL_45	B40	B6	IDL_37	COM3	A29 A63 COM4
IDL_44	B39	B5	IDL_36	COM3	A30 A64 COM4
IDL_43	B38	B4	IDL_35	COM3	A31 A65 COM4
IDL_42	B37	B3	IDL_34	COM3	A32 A66 COM4
IDL_41	B36	B2	IDL_33	COM3	A33 A67 COM4
IDL_40	B35	B1	IDL_32	N/C	A34 A68 N/C

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CN2B			CN2A		
N/C	B68	B34	N/C	IDL_64	A1 A35 IDL_72
COM16	B67	B33	COM15	IDL_65	A2 A36 IDL_73
COM16	B66	B32	COM15	IDL_66	A3 A37 IDL_74
COM16	B65	B31	COM15	IDL_67	A4 A38 IDL_75
COM16	B64	B30	COM15	IDL_68	A5 A39 IDL_76
COM16	B63	B29	COM15	IDL_69	A6 A40 IDL_77
COM16	B62	B28	COM15	IDL_70	A7 A41 IDL_78
COM16	B61	B27	COM15	IDL_71	A8 A42 IDL_79
COM16	B60	B26	COM15	COM9	A9 A43 COM10
IDL_127	B59	B25	IDL_119	COM9	A10 A44 COM10
IDL_126	B58	B24	IDL_118	COM9	A11 A45 COM10
IDL_125	B57	B23	IDL_117	COM9	A12 A46 COM10
IDL_124	B56	B22	IDL_116	COM9	A13 A47 COM10
IDL_123	B55	B21	IDL_115	COM9	A14 A48 COM10
IDL_122	B54	B20	IDL_114	COM9	A15 A49 COM10
IDL_121	B53	B19	IDL_113	COM9	A16 A50 COM10
IDL_120	B52	B18	IDL_112	N/C	A17 A51 N/C
N/C	B51	B17	N/C	IDL_80	A18 A52 IDL_88
COM14	B50	B16	COM13	IDL_81	A19 A53 IDL_89
COM14	B49	B15	COM13	IDL_82	A20 A54 IDL_90
COM14	B48	B14	COM13	IDL_83	A21 A55 IDL_91
COM14	B47	B13	COM13	IDL_84	A22 A56 IDL_92
COM14	B46	B12	COM13	IDL_85	A23 A57 IDL_93
COM14	B45	B11	COM13	IDL_86	A24 A58 IDL_94
COM14	B44	B10	COM13	IDL_87	A25 A59 IDL_95
COM14	B43	B9	COM13	COM11	A26 A60 COM12
IDL_111	B42	B8	IDL_103	COM11	A27 A61 COM12
IDL_110	B41	B7	IDL_102	COM11	A28 A62 COM12
IDL_109	B40	B6	IDL_101	COM11	A29 A63 COM12
IDL_108	B39	B5	IDL_100	COM11	A30 A64 COM12
IDL_107	B38	B4	IDL_99	COM11	A31 A65 COM12
IDL_106	B37	B3	IDL_98	COM11	A32 A66 COM12
IDL_105	B36	B2	IDL_97	COM11	A33 A67 COM12
IDL_104	B35	B1	IDL_96	N/C	A34 A68 N/C

CN1B

CN1A

N/C	B68	B34	N/C	IDL_0	A1 A35 IDL_8
COM8	B67	B33	COM7	IDL_1	A2 A36 IDL_9
COM8	B66	B32	COM7	IDL_2	A3 A37 IDL_10
COM8	B65	B31	COM7	IDL_3	A4 A38 IDL_11
COM8	B64	B30	COM7	IDL_4	A5 A39 IDL_12
COM8	B63	B29	COM7	IDL_5	A6 A40 IDL_13
COM8	B62	B28	COM7	IDL_6	A7 A41 IDL_14
COM8	B61	B27	COM7	IDL_7	A8 A42 IDL_15
COM8	B60	B26	COM7	COM1	A9 A43 COM2
IDL_63	B59	B25	IDL_55	COM1	A10 A44 COM2
IDL_62	B58	B24	IDL_54	COM1	A11 A45 COM2
IDL_61	B57	B23	IDL_53	COM1	A12 A46 COM2
IDL_60	B56	B22	IDL_52	COM1	A13 A47 COM2
IDL_59	B55	B21	IDL_51	COM1	A14 A48 COM2
IDL_58	B54	B20	IDL_50	COM1	A15 A49 COM2
IDL_57	B53	B19	IDL_49	COM1	A16 A50 COM2
IDL_56	B52	B18	IDL_48	N/C	A17 A51 N/C
N/C	B51	B17	N/C	IDL_16	A18 A52 IDL_24
COM6	B50	B16	COM5	IDL_17	A19 A53 IDL_25
COM6	B49	B15	COM5	IDL_18	A20 A54 IDL_26
COM6	B48	B14	COM5	IDL_19	A21 A55 IDL_27
COM6	B47	B13	COM5	IDL_20	A22 A56 IDL_28
COM6	B46	B12	COM5	IDL_21	A23 A57 IDL_29
COM6	B45	B11	COM5	IDL_22	A24 A58 IDL_30
COM6	B44	B10	COM5	IDL_23	A25 A59 IDL_31
COM6	B43	B9	COM5	COM3	A26 A60 COM4
IDL_47	B42	B8	IDL_39	COM3	A27 A61 COM4
IDL_46	B41	B7	IDL_38	COM3	A28 A62 COM4
IDL_45	B40	B6	IDL_37	COM3	A29 A63 COM4
IDL_44	B39	B5	IDL_36	COM3	A30 A64 COM4
IDL_43	B38	B4	IDL_35	COM3	A31 A65 COM4
IDL_42	B37	B3	IDL_34	COM3	A32 A66 COM4
IDL_41	B36	B2	IDL_33	COM3	A33 A67 COM4
IDL_40	B35	B1	IDL_32	N/C	A34 A68 N/C

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CN2B			CN2A		
V5V	B68	B34	V5V	IDO_64	A1 A35 IDO_72
IGND	B67	B33	IGND	IDO_65	A2 A36 IDO_73
IGND	B66	B32	IGND	IDO_66	A3 A37 IDO_74
IGND	B65	B31	IGND	IDO_67	A4 A38 IDO_75
IGND	B64	B30	IGND	IDO_68	A5 A39 IDO_76
IGND	B63	B29	IGND	IDO_69	A6 A40 IDO_77
IGND	B62	B28	IGND	IDO_70	A7 A41 IDO_78
IGND	B61	B27	IGND	IDO_71	A8 A42 IDO_79
VDD16	B60	B26	VDD15	VDD9	A9 A43 VDD10
IDO_127	B59	B25	IGND	IGND	A10 A44
IDO_126	B58	B24	IGND	IGND	A11 A45
IDO_125	B57	B23	IGND	IGND	A12 A46
IDO_124	B56	B22	IGND	IGND	A13 A47
IDO_123	B55	B21	IGND	IGND	A14 A48
IDO_122	B54	B20	IGND	IGND	A15 A49
IDO_121	B53	B19	IGND	IGND	A16 A50
IDO_120	B52	B18	IGND	IGND	A17 A51
N/C	B51	B17	N/C	IDO_80	A18 A52 IDO_88
IGND	B50	B16	IGND	IDO_81	A19 A53 IDO_89
IGND	B49	B15	IGND	IDO_82	A20 A54 IDO_90
IGND	B48	B14	IGND	IDO_83	A21 A55 IDO_91
IGND	B47	B13	IGND	IDO_84	A22 A56 IDO_92
IGND	B46	B12	IGND	IDO_85	A23 A57 IDO_93
IGND	B45	B11	IGND	IDO_86	A24 A58 IDO_94
IGND	B44	B10	IGND	IDO_87	A25 A59 IDO_95
VDD14	B43	B9	VDD13	VDD11	A26 A60 VDD12
IDO_111	B42	B8	IDO_103	IGND	A27 A61
IDO_110	B41	B7	IDO_102	IGND	A28 A62
IDO_109	B40	B6	IDO_101	IGND	A29 A63
IDO_108	B39	B5	IDO_100	IGND	A30 A64
IDO_107	B38	B4	IDO_99	IGND	A31 A65
IDO_106	B37	B3	IDO_98	IGND	A32 A66
IDO_105	B36	B2	IDO_97	IGND	A33 A67
IDO_104	B35	B1	IDO_96	N/C	A34 A68 N/C

CN1B

CN1A

N/C	B68	B34	N/C	IDO_0	A1 A35 IDO_8
IGND	B67	B33	IGND	IDO_1	A2 A36 IDO_9
IGND	B66	B32	IGND	IDO_2	A3 A37 IDO_10
IGND	B65	B31	IGND	IDO_3	A4 A38 IDO_11
IGND	B64	B30	IGND	IDO_4	A5 A39 IDO_12
IGND	B63	B29	IGND	IDO_5	A6 A40 IDO_13
IGND	B62	B28	IGND	IDO_6	A7 A41 IDO_14
IGND	B61	B27	IGND	IDO_7	A8 A42 IDO_15
VDD8	B60	B26	VDD7	VDD1	A9 A43 VDD2
IDO_63	B59	B25	IDO_55	IGND	A10 A44
IDO_62	B58	B24	IDO_54	IGND	A11 A45
IDO_61	B57	B23	IDO_53	IGND	A12 A46
IDO_60	B56	B22	IDO_52	IGND	A13 A47
IDO_59	B55	B21	IDO_51	IGND	A14 A48
IDO_58	B54	B20	IDO_50	IGND	A15 A49
IDO_57	B53	B19	IDO_49	IGND	A16 A50
IDO_56	B52	B18	IDO_48	N/C	A17 A51 N/C
N/C	B51	B17	N/C	IDO_16	A18 A52 IDO_24
IGND	B50	B16	IGND	IDO_17	A19 A53 IDO_25
IGND	B49	B15	IGND	IDO_18	A20 A54 IDO_26
IGND	B48	B14	IGND	IDO_19	A21 A55 IDO_27
IGND	B47	B13	IGND	IDO_20	A22 A56 IDO_28
IGND	B46	B12	IGND	IDO_21	A23 A57 IDO_29
IGND	B45	B11	IGND	IDO_22	A24 A58 IDO_30
IGND	B44	B10	IGND	IDO_23	A25 A59 IDO_31
VDD6	B43	B9	VDD5	VDD3	A26 A60 VDD4
IDO_47	B42	B8	IDO_39	IGND	A27 A61
IDO_46	B41	B7	IDO_38	IGND	A28 A62
IDO_45	B40	B6	IDO_37	IGND	A29 A63
IDO_44	B39	B5	IDO_36	IGND	A30 A64
IDO_43	B38	B4	IDO_35	IGND	A31 A65
IDO_42	B37	B3	IDO_34	IGND	A32 A66
IDO_41	B36	B2	IDO_33	IGND	A33 A67
IDO_40	B35	B1	IDO_32	N/C	A34 A68 N/C