

PCIE-1760

8-channel Isolated Digital Input and 8-channel Relay Output Card

Packing List

Before installation, please make sure that you have received the following:

- PCIE-1760 card
- Driver CD
- Quick Start User Manual

If anything is missing or damaged, contact your distributor or sales representative immediately.

User Manual

For more detailed information on this product, please refer to the PCIE-1760 User Manual on the CD-ROM (PDF format).

Declaration of Conformity

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause interference in which case the user is required to correct interference at his own expense.

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

Overview

The Advantech PCIE-1760 is a 8-channel isolated digital input and 8-channel relay output card for the PCI Express bus. The PCIE-1760's isolated digital input channels are ideal for digital input in noisy environments or with floating potentials. Each isolated digital input supports both dry contact and wet contact, designated by jumper settings. PCIE-1760 relays can serve as ON/OFF control devices or small power switches. For easy monitoring, each relay is equipped with one green LED to reflect its ON/OFF status. Moreover, PCIE-1760 also offers counter input and PWM input/output channels.

Notes

For more information on this and other Advantech products, please visit our websites at:

<http://www.advantech.com/eAutomation>

For technical support and service:

<http://www.advantech.com/support/>

This startup manual is for PCIE-1760

Part No.2003E76000

1st Edition

January 2013

Specifications

Isolated Digital Input

- Input Channels: 8
- Input Voltage: Logic 0: 3 V max.
(0 V_{DC} min.)
Logic 1: 10 V min.
(30 V_{DC} max.)
- Input Current: 10 V_{DC} @ 2.97 mA
12 V_{DC} @ 3.18 mA
24 V_{DC} @ 6.71 mA
30 V_{DC} @ 9.73 mA
- Interrupt Capable Channel: 1 (IDIO)
- Isolation Protection: 2,500 V_{DC}
- Overvoltage Protection: 70 V_{DC}
- ESD Protection: 2,000 V_{DC}
- Opto-Isolator Response: 60 μs
- Counter Input Channels: 2*
- Counter Input Frequency Range: up to 1 kHz

*: Counter input channel shares some pinouts from isolated digital channels

Relay Output

- Output Channels: 8
- Relay Type: Channel 0 ~ 1: single-pole double-throw (SPDT, Form C)
Channel 2 ~ 7: single-pole single-throw (SPST)
- Output Type: Channel 0 ~ 1: Normal-Open (NO) and Normal-Close (NC)
Channel 2 ~ 7: Normal-Open (NO) or Normal-Close (NC), selectable by jumper
- Contact Rating: 125 V_{AC} @ 0.5 A, 30 V_{DC} @ 1 A
- Operate/Release Time: 5 ms/3.5 ms (maximum)
- Life Expectancy (Electrical): 200,000 @ 0.5 A, 120 V_{AC}
500,000 @ 1.0 A, 30 V_{DC}

PWM Output

- Output Channels: 2
- Output Type: 5V/TTL or Isolated DO (selectable by jumper)
- Output Range (TTL): Logic 0: < 0.8 V_{DC}
Logic 1: (5 ± 0.5) V_{DC}
- Output Range (Isolated DO): 5 - 40 V_{DC}
- Output Frequency: up to 1 kHz
- Isolation Protection: 2500 V_{DC}

General

- Bus Type: PCI Express V1.0
- I/O Connector Type: 37-pin D-Sub female
- Dimensions: 167.7 mm x 100 mm
(6.6" x 3.9")
- Power Consumption: +3.3 V @ 390 mA,
+12 V @ 30 mA (typical)
+3.3 V @ 490 mA,
+12 V @ 60 mA (max)
- Operation Temperature: 0 ~ 60°C (32 ~ 140°F)
- Storage Temperature: -25 ~ 85°C (-4 ~ 185°F)
- Relative Humidity: 5 ~ 95% (non-condensing)
- Certification: CE certified

Hardware Installation

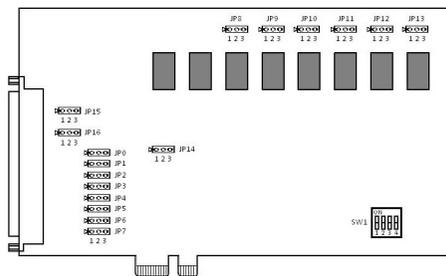
1. Turn off your computer and unplug the power cord and cables. **TURN OFF** your computer before installing or removing any components on the computer.
2. Remove the cover of your computer.
3. Remove the slot cover on the back panel of your computer.
4. Touch the metal part on the surface of your computer to neutralize the static electricity that might be on your body.
5. Insert the PCIE-1760 card into a PCI Express slot. Hold the card only by its edges and carefully align it with the slot. Insert the card firmly into place. Use of excessive force must be avoided; otherwise, the card might be damaged.
6. Fasten the bracket of the PCI Express card on the back panel rail of the computer with screws.
7. Connect appropriate accessories (37-pin cable, wiring terminals, etc. if necessary) to the PCI Express card.
8. Replace the cover of your computer chassis. Re-connect the cables you removed in step 2.
9. Plug in the power cord and turn on the computer.

Pin Assignments

Description of pin use:

	IGND	1	20	IDI 7+
IDI _n + (n=0~7):	IDI 7-	2	21	IDI 6+/ GATE 1+
Isolated digital input +	IDI 6-/ GATE 1-	3	22	IDI 5+
IDI _n - (n=0~7):	IDI 5-	4	23	IDI 4+/ CLK 1+
Isolated digital input -	IDI 4-/ CLK 1-	5	24	IDI 3+
PWM _n (n=0~1):	IDI 3-	6	25	IDI 2+/ GATE 0+
Isolated or TTL digital output (for PWM)	IDI 2-/ GATE 0-	7	26	IDI 1+
Rn_OUT (n=2~7):	IDI 1-	8	27	IDI 0+ / CLK 0+
Normally Open/Closed pin of Relay output	IDI 0- / CLK 0-	9	28	PWM1
Rn_NO (n=0~1):	PWM0	10	29	R4_OUT
Normally Open pin of Relay output	R7_OUT	11	30	R3_OUT
Rn_NC (n=0~1):	R6_OUT	12	31	R2_OUT
Normally Close pin of Relay output	R5_OUT	13	32	R1_NO
Rn_COM (n=0~7):	R7_COM	14	33	R1_NC
Common pin of Relay output	R6_COM	15	34	R1_COM
GATE _n + (n=0~1):	R5_COM	16	35	R0_NO
Counter n gate input +	R4_COM	17	36	R0_NC
GATE _n - (n=0~1):	R3_COM	18	37	R0_COM
Counter n gate input -	R2_COM	19		
CLK _n + (n=0~1):				
Counter n clock input +				
CLK _n - (n=0~1):				
Counter n clock input -				

Switch and Jumper Settings



Jumper No.	Operation	Function Description
JP0	1, 2 pin short	Set DI channel 0 as Dry Contact (default)
	2, 3 pin short	Set DI channel 0 as Wet Contact
JP1	1, 2 pin short	Set DI channel 1 as Dry Contact (default)
	2, 3 pin short	Set DI channel 1 as Wet Contact
JP2	1, 2 pin short	Set DI channel 2 as Dry Contact (default)
	2, 3 pin short	Set DI channel 2 as Wet Contact
JP3	1, 2 pin short	Set DI channel 3 as Dry Contact (default)
	2, 3 pin short	Set DI channel 3 as Wet Contact
JP4	1, 2 pin short	Set DI channel 4 as Dry Contact (default)
	2, 3 pin short	Set DI channel 4 as Wet Contact
JP5	1, 2 pin short	Set DI channel 5 as Dry Contact (default)
	2, 3 pin short	Set DI channel 5 as Wet Contact
JP6	1, 2 pin short	Set DI channel 6 as Dry Contact (default)
	2, 3 pin short	Set DI channel 6 as Wet Contact
JP7	1, 2 pin short	Set DI channel 7 as Dry Contact (default)
	2, 3 pin short	Set DI channel 7 as Wet Contact
JP8	1, 2 pin short	Set relay channel 2 as Normal Open (default)
	2, 3 pin short	Set relay channel 2 as Normal Close
JP9	1, 2 pin short	Set relay channel 3 as Normal Open (default)
	2, 3 pin short	Set relay channel 3 as Normal Close
JP10	1, 2 pin short	Set relay channel 4 as Normal Open (default)
	2, 3 pin short	Set relay channel 4 as Normal Close
JP11	1, 2 pin short	Set relay channel 5 as Normal Open (default)
	2, 3 pin short	Set relay channel 5 as Normal Close
JP12	1, 2 pin short	Set relay channel 6 as Normal Open (default)
	2, 3 pin short	Set relay channel 6 as Normal Close
JP13	1, 2 pin short	Set relay channel 7 as Normal Open (default)
	2, 3 pin short	Set relay channel 7 as Normal Close
JP14	1, 2 pin short	Output channels will keep last status after system resets
	2, 3 pin short	Output channels will set their values to Low after system resets (default)
JP15	1, 2 pin short	Set PWM output channel 0 voltage level to isolated DO (5-40 V _{DC})
	2, 3 pin short	Set PWM output channel 0 voltage level to 5V/TTL compatible (default)
JP16	1, 2 pin short	Set PWM output channel 1 voltage level to isolated DO (5-40 V _{DC})
	2, 3 pin short	Set PWM output channel 1 voltage level to 5V/TTL compatible (default)

Board ID Settings

Board ID setting(SW1)

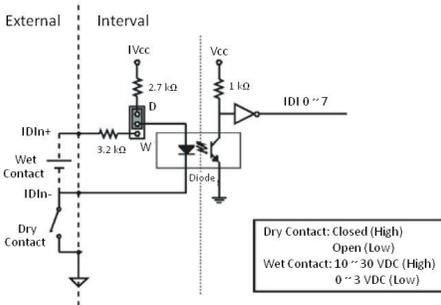
ID3	ID2	ID1	ID0	Board ID
1	1	1	1	0
1	1	1	0	1
1	1	0	1	2
1	1	0	0	3
1	0	1	1	4
1	0	1	0	5
1	0	0	1	6
1	0	0	0	7
0	1	1	1	8
0	1	1	0	9
0	1	0	1	10
0	1	0	0	11
0	0	1	1	12
0	0	1	0	13
0	0	0	1	14
0	0	0	0	15

Note: On: 1, Off: 0

Connections

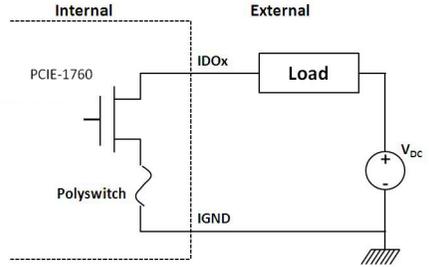
Isolated Digital Input

Each of the 8 isolated digital input channels accepts either dry contact or $10 \sim 30 V_{DC}$ wet contact inputs as determined by the corresponding jumper settings. Dry contact capability allows an input channel to respond to changes in an external circuit (e.g., the closing of a switch in the external circuit) when no voltage is present in the external circuit. The figure below shows the internal and external circuitry, with both wet and dry contact components connected as an input source for one of the PCIE-1760's isolated digital input channels.



Isolated Digital Output

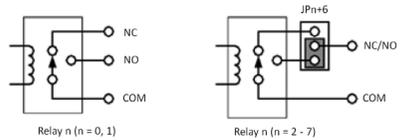
Each of isolated output channels comes equipped with a MOS-FET and a polyswitch (for current protection) for using with inductive loads. If an external voltage ($5 \sim 40 V_{DC}$) is applied to an isolated output channel, the current will flow from the external voltage source to the card. Please note that the current through each IDO channel should not exceed 500 mA.



Note *: When an inductance load is connected, the maximum output voltage will be 24 V.

Relay Output

Of the total eight relays, two relays (Channel 0 and 1) are single-pole double-throw (SPDT, Form C) and six relays (Channel 2 to Channel 7) are single-pole single-throw (SPST), which can be set as either normally open (NO) or normally closed (NC) via jumper settings. The following figure illustrates the structures and connections of the relay outputs.



TTL Digital Output

The two isolated output pins for PCIE-1760 can also be configured as TTL digital output using JP15 and JP16. The following figure shows connections to exchange digital signals with other TTL devices.

