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Find the *Advantech PCL-733* at our website: ***Click HERE***

PCL-733

32-channel Isolated
Digital Input Card

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CHAPTER 1

General Information

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Introduction

The PCL-733 has 32 isolated, bidirectional digital input channels, which provide 2,500 V of protection. The PCL-733 offers two PC interrupts with jumper-selectable IRQ. Each input channel corresponds to a bit in a PC I/O port, making the PCL-733 very easy to program.

Features

- 32 isolated, bidirectional digital input channels
- High-voltage isolation (2,500 V_{DC})
- Interrupt capacity
- D-type connectors for isolated input channels

Applications

- Industrial On/Off control
- Contact closure monitoring
- Switch status sensing
- BCD interfacing
- Digital input control
- Industrial and lab automation

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Specifications

- **Input voltage:** 5 to 24 V_{DC}
- **Input resistance:** 1.2 KW @ 0.5 W
- **Isolation voltage:** 2,500 V_{DC}
- **Throughput:** 10 KHz max.
- **Interrupt level:** 2, 3, 5, 7, 10, 11, 12, 15
- **Interrupt source:** Isolated input channel 0 and channel 16
- **Register format:**

BASE+0	Isolated DI0-DI7
BASE+1	Isolated DI8-DI15
BASE+2	Isolated DI16-DI23
BASE+3	Isolated DI24-DI31

- **Dimensions:** 185 mm x 100 mm
- **Connectors:** DB-37 connector for isolated digital input
- **Power consumption:** +5 V: 320 mA typical, 500 mA maximum

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CHAPTER 2

Installation

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Initial Inspection

We carefully inspected the PCL-733 both mechanically and electrically before shipment. It should be free of marks and in perfect order on receipt.

As you unpack the PCL-733, check it for signs of shipping damage (damaged box, scratches, dents, etc.). If it is damaged or fails to meet specifications, notify our service department or your local sales representative immediately. Also, call the carrier immediately and retain the shipping carton and packing material for inspection by the carrier. We will then make arrangements to repair or replace the unit.

Discharge any static electricity on your body before you touch the board by touching the back of the system unit (grounded metal).

Remove the PCL-733 card from its protective packaging by grasping the rear metal panel. Handle the card only by its edges to avoid static electric discharge which could damage its integrated circuits. Keep the antistatic package. Whenever you remove the card from the PC, please store the card in this package for protection.

You should also avoid contact with materials that hold static electricity such as plastic, vinyl and styrofoam.

Switch and Jumper Settings

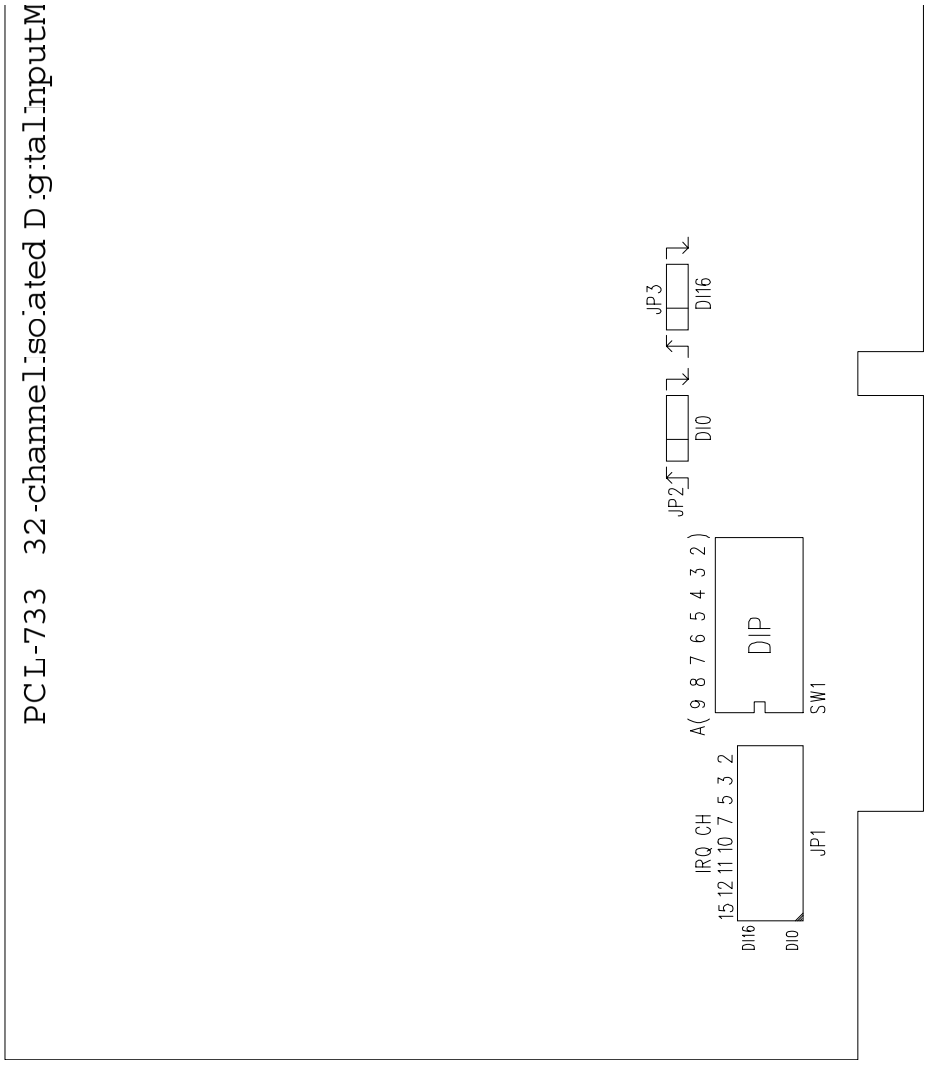
The PCL-733 has one function switch and three jumpers. The table below lists their functions. The following sections tell how to configure the card.

PCL-733 connector, jumper, and switch functions

	Function
CN1	Isolated input
JP1	Interrupt level
JP2	Interrupt trigger for DI0
JP3	Interrupt trigger for DI16
SW1	Card base address

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Locating Switches and Jumpers



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Base address selection (SW1)

You control the PCL-733's operation by reading data to the PC's I/O (input/output) port addresses. The PCL-733 requires four consecutive address locations. Switch SW1 sets the card's base (beginning) address. Valid base addresses range from Hex 200 to Hex 3F0. Other devices in your system may, however, be using some of these addresses.

We set the PCL-733 for a base address of Hex 300 at the factory. If you need to adjust it to some other address range, set switch SW1 as shown in the following table:

Card I/O addresses (SW1)

Range (hex)	Switch position							
	1	2	3	4	5	6	7	8
200 - 203	○	●	●	●	●	●	●	●
204 - 207	○	●	●	●	●	●	●	○
˙								
*300 - 303	○	○	●	●	●	●	●	●
˙								
3F0 - 3F3	○	○	○	○	○	○	●	●

○ = Off ● = On * = default

Note: Switches 1-8 control the PC bus address lines as shown below:

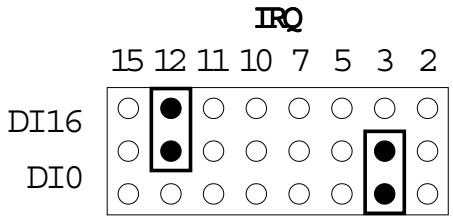
Switch	1	2	3	4	5	6	7	8
Line	A9	A8	A7	A6	A5	A4	A3	A2

Appendix A provides a PC I/O port address map to help you avoid the I/O addresses for standard PC devices.

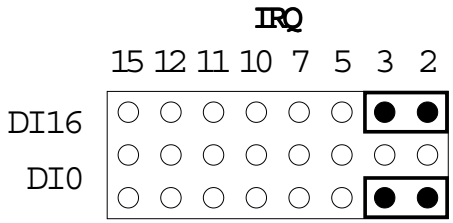
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Interrupt level (JP1)

Jumper JP1 selects the interrupt levels for channel 0 and channel 16.



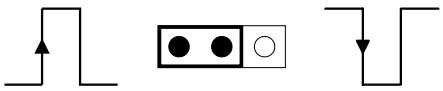
To disable one or both of the interrupts, simply remove the jumper clips, which you may store in the jumper so they don't get lost. See below:



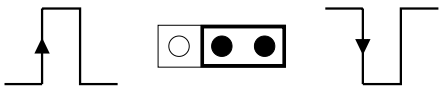
Interrupt triggering (JP2, JP3)

Jumpers JP2 and JP3 select the trigger edge (rising or falling) on which DI0 and DI16, respectively, will trigger an interrupt. Default jumper settings appear below:

JP2: Rising Edge Interrupt Triggering on DI0



JP3: Falling Edge Interrupt Triggering on DI16



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Hardware Installation

Warning! *TURN OFF your PC power supply whenever you install or remove the PCL-733 or connect and disconnect cables.*

1. Turn the computer off. Turn the power off to any peripheral devices such as printers and monitors.
2. Disconnect the power cord and any other cables from the back of the computer.
3. Remove the system unit cover (see the user's guide for your chassis if necessary).
4. Locate the expansion slots at the rear of the unit and choose any unused slot.
5. Remove the screw that secures the expansion slot cover to the system unit. Save the screw to secure the interface card retaining bracket.
6. Carefully grasp the upper edge of the PCL-733 card. Align the hole in the retaining bracket with the hole on top of the expansion slot and align the gold striped edge connector with the expansion slot socket. Press the board firmly into the socket.
7. Secure the PCL-733 using the screw you removed in step 5.
8. Attach any accessories to the PCL-733.
9. Replace the system unit cover. Connect the cables you removed in step 2. Turn the computer power on.

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CHAPTER 3

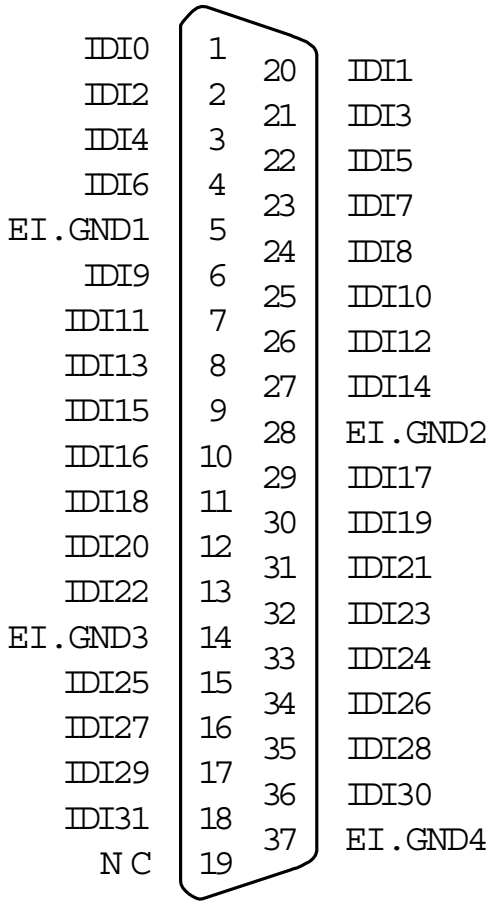
Signal Connections and Register Format

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Connector Pin Assignments

The DB-37 connector is accessible from the card bracket.

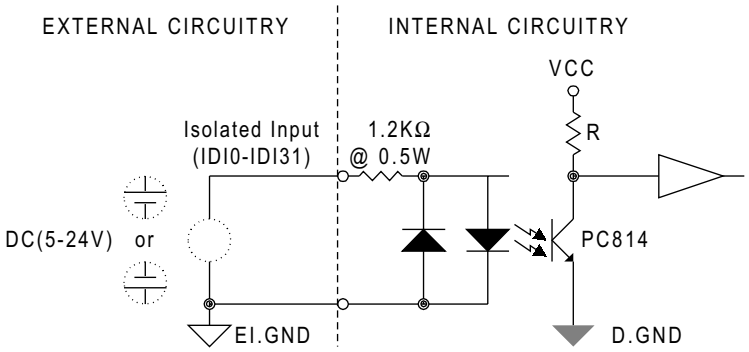
Abbreviations	
IDI	Isolated digital input
EI.GND	External ground for isolated input
NC	No connection



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Isolated Input

The PCL-733 has 32 isolated digital inputs, which accept 5-24 V and have a resistance of 1.2 kW . Every 8 inputs share one external ground (EI.GND) . The following figure shows how to connect an external input source to the card's isolated inputs:



Register Format

Programming the PCL-733 is extremely simple. Each I/O channel corresponds to a bit in the card's registers. To read an input port, you simply read from the register.

The card requires four I/O register addresses. The address of each register is specified as an offset from the card's base address. For example, BASE+0 is the card's base address and BASE+2 is the base address + two bytes. If the card's base address is 300h, the register's address is 302h. See Chapter 2 for information on setting the card's base address.

Writing any value to BASE+0 or BASE+2 will clear the interrupt flag of DI0 or DI16, respectively, enabling the next interrupt to be generated.

Register assignments

Address	Write	Read
BASE+0	Clear DI0 INT	IDI bits 0-7
BASE+1	N/A	IDI bits 8-15
BASE+2	Clear DI16 INT	IDI bits 16-23
BASE+3	N/A	IDI bits 24-31

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APPENDIX A

PC I/O Port Address Map

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PC I/O port address map

Range (hex)	Function
000 - 1FF	Base system
200	Reserved
201	Game control
202 - 277	Reserved
278 - 27F	LPT2: (2nd printer port)
280 - 2F7	Reserved
2F8 - 2FF	COM2:
300 - 377	Reserved
378 - 37F	LPT1: (1st printer port)
380 - 3AF	Reserved
3B0 - 3BF	Mono Display/Print adapter
3C0 - 3CF	Reserved
3D0 - 3DF	Color/Graphics
3E0 - 3EF	Reserved
3F0 - 3F7	Floppy disk drive
3F8 - 3FF	COM1:

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