

PCI2323

User's Manual



Beijing ART Technology Development Co., Ltd.

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Chapter 1 Overview

PCI2323 is an opto-isolator input and relay output board, mainly used for industrial control and related fields.

Unpacking Checklist

Check the shipping carton for any damage. If the shipping carton and contents are damaged, notify the local dealer or sales for a replacement. Retain the shipping carton and packing material for inspection by the dealer.

Check for the following items in the package. If there are any missing items, contact your local dealer or sales.

- PCI2323 Data Acquisition Board
- ART Disk
 - a) user's manual (pdf)
 - b) drive
 - c) catalog
- Warranty Card

FEATURES

Digital Input

- 16 channel opto-isolated inputs
- Maximum Input Range: 24V no polarity
- Digital Logic Level:
 - Input high voltage: 5 ~ 24V
 - Input low voltage: 0 ~ 2V
- Input Impedance: 2.4k Ω @ 0.5W
- Isolation Voltage: 3000Vrms
- Digital input with on-board low-pass filter
- Interrupt Source: digital changes the state (COS) interrupt, digital input (channel 0 and 1)

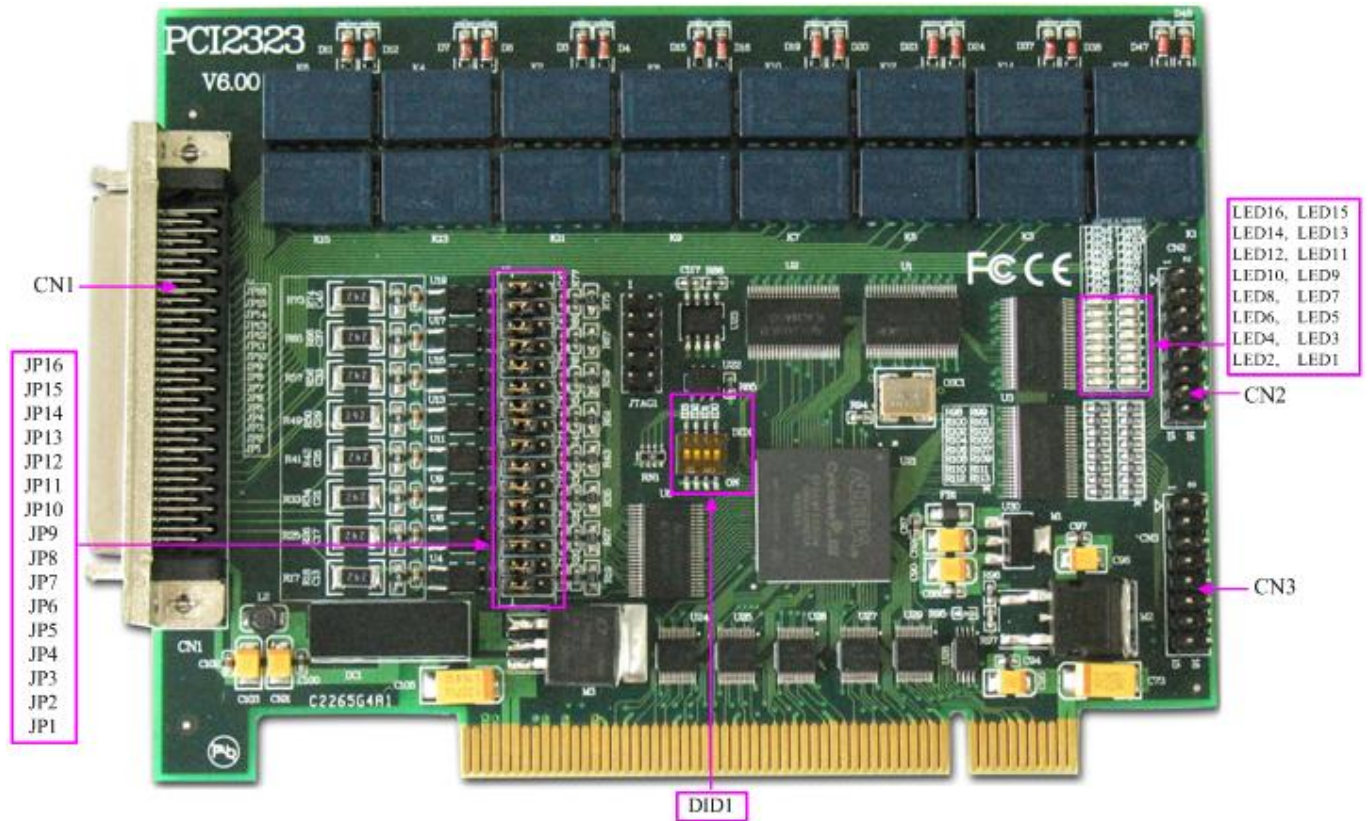
Digital Output

- 16 channel isolated relay outputs
- Relay Type: 16 SPDT, latching relay if power-down
- Isolation Voltage: 1500Vrms
- Contact capacity:
 - AC: 125V, 0.5A
 - DC: 30V, 1A
- Breakdown Voltage: 1000Vrms
- Contact Resistance: 50m Ω
- Relay On / Off Time:
 - Pick-up Time: 3ms
 - Release Time: 3ms
- On-board relay status LED indicator, and external LED connection terminal

Board Dimension: 136mm (L)*100mm (W)

Chapter 2 Components Layout Diagram and a Brief Description

2.1 The Main Component Layout Diagram



2.2 Interface Description

Please refer to the first section of the main component layout diagram, to understand the general function of the following main components.

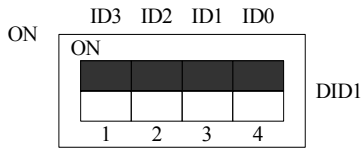
2.2.1 Signal Connector

CN1: signal input and output connector
 CN2, CN3: external LED connection terminal

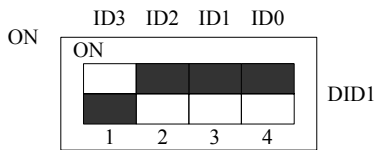
2.2.2 Physical ID of DIP Switch

DID1: Set physical ID number. When the PC is installed more than one PCI2323 , you can use the DIP switch to set a physical ID number for each board, which makes it very convenient for users to distinguish and visit each board in the progress of the hardware configuration and software programming. The following four-place numbers are expressed by

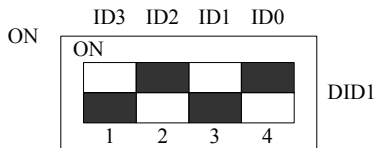
the binary system: When DIP switch points to "ON", that means "1", and when it points to the other side, that means "0." As they are shown in the following diagrams: place "ID3" is the high bit."ID0" is the low bit, and the black part in the diagram represents the location of the switch. (Test software of the company often use the logic ID management equipments and at this moment the physical ID DIP switch is invalid. If you want to use more than one kind of the equipments in one and the same system at the same time, please use the physical ID as much as possible.).



The above chart shows "1111", so it means that the physical ID is 15.



The above chart shows "0111", so it means that the physical ID is 7.



The above chart shows "0101", so it means that the physical ID is 5.

ID3	ID2	ID1	ID0	Physical ID (Hex)	Physical ID (Dec)
OFF (0)	OFF (0)	OFF (0)	OFF (0)	0	0
OFF (0)	OFF (0)	OFF (0)	ON (1)	1	1
OFF (0)	OFF (0)	ON (1)	OFF (0)	2	2
OFF (0)	OFF (0)	ON (1)	ON (1)	3	3
OFF (0)	ON (1)	OFF (0)	OFF (0)	4	4
OFF (0)	ON (1)	OFF (0)	ON (1)	5	5
OFF (0)	ON (1)	ON (1)	OFF (0)	6	6
OFF (0)	ON (1)	ON (1)	ON (1)	7	7
ON (1)	OFF (0)	OFF (0)	OFF (0)	8	8
ON (1)	OFF (0)	OFF (0)	ON (1)	9	9
ON (1)	OFF (0)	ON (1)	OFF (0)	A	10
ON (1)	OFF (0)	ON (1)	ON (1)	B	11
ON (1)	ON (1)	OFF (0)	OFF (0)	C	12
ON (1)	ON (1)	OFF (0)	ON (1)	D	13
ON (1)	ON (1)	ON (1)	OFF (0)	E	14
ON (1)	ON (1)	ON (1)	ON (1)	F	15

2.2.3 Status Indicator



LED1 ~ LED16: 16 channel digital signal outputs state indicators. On for normally open, and off for normally closed.

P1, P2: external LED connection terminal

2.2.7 Jumper

JP1 ~ JP16: DI0 ~ DI15 digital input low-pass filter selection.

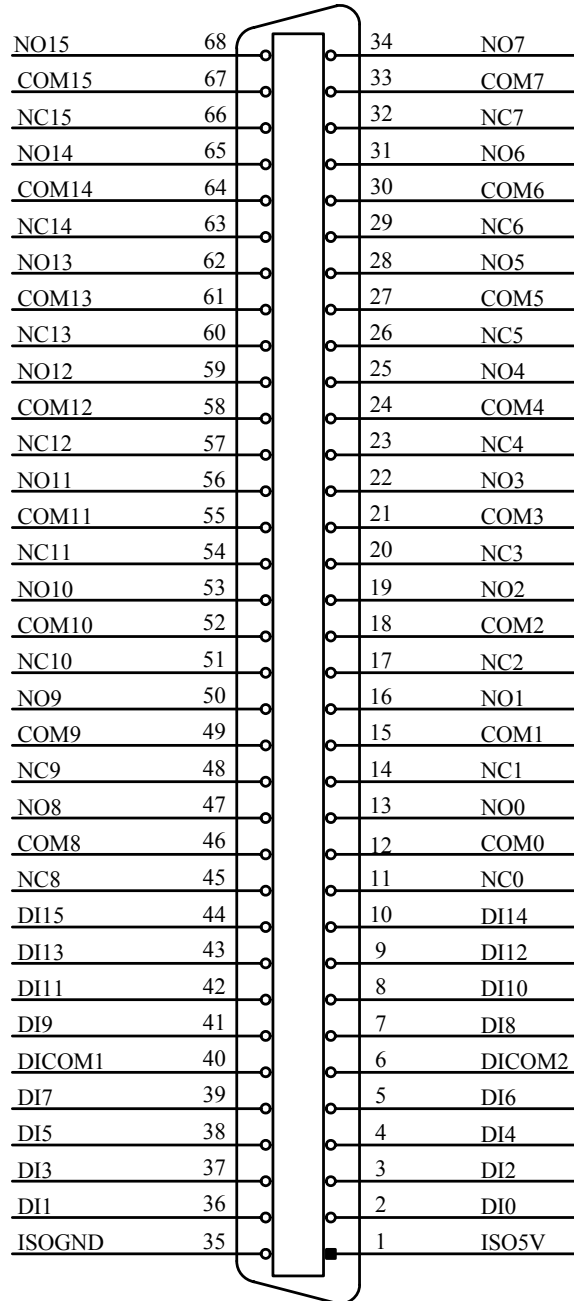
Low-pass Filter Selection	JP1(DI0)
	JP2(DI1)
	JP3(DI2)
	JP4(DI3)
	JP5(DI4)
	JP6(DI5)
	JP7(DI6)
	JP8(DI7)
	JP9(DI8)
	JP10(DI9)
	JP11(DI10)
	JP12(DI11)
	JP13(DI12)
	JP14(DI13)
	JP15(DI14)
	JP16(DI15)

Low-pass filter	
Unfiltered	

Chapter 3 Signal Connectors

3.1 The Definition of DI/DO Connectors

CN1: 68- pin definition



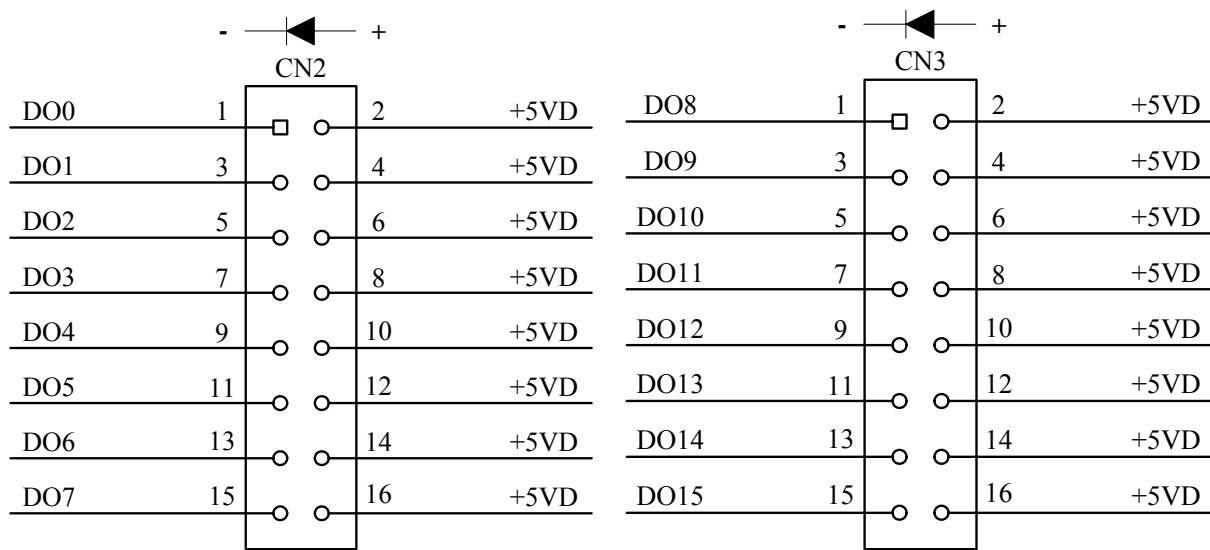
Pin definition

Signal Name	Type	Definition
NO1~NO15	Output	Relay normal open pins
COM1~COM15	Input	Relay common pins

NC0~NC15	Output	Relay normal closed pins
DI0~DI7	Input	Digital input
DICOM1	Input	Digital input common port (0-7)
DI8~DI15	Input	Digital input
DICOM2	Input	Digital input common port (8-15)
ISO5V	Output	+5V power output
ISOGND	GND	+5V power reference ground.

3.2 Digital Signal Output LED Connector

16- pin P1, P2 definition



Pin definition

Signal Name	Type	Definition
DO0~DO15	Output	16-ch external LED connection terminal
+5V	PWR	+5V power, the positive side of the on-board external LED

The PCI2323 card is designed with 16 LEDs, each indicating the operation status of the 16 relays. In addition, there are also 16 external LED connectors available for users' to use. Utilizing the external LEDs connecting to CN1 or CN2, users can have a visual status of each relay.

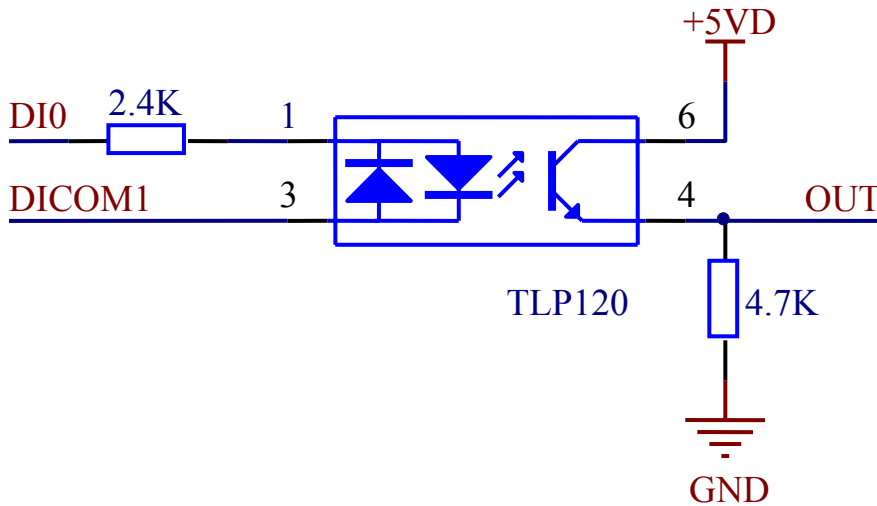
Take CN2 for example, when using the positive and negative side of the diode are connected to 2-pin and 1-pin, then the digital output DO0 status indicator is external connection.

Chapter 4 Connection Ways for Input and Output

4.1 Input Principle and wiring

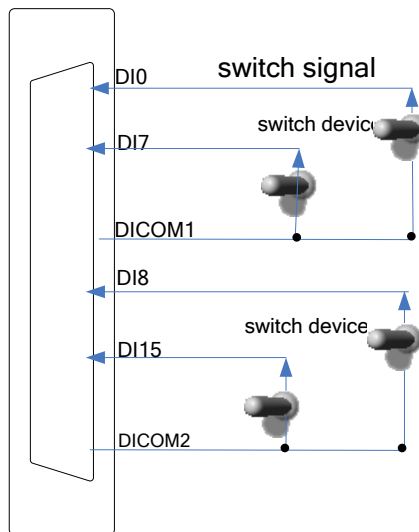
The voltage of the isolated digital input is from 0 to 24V, no polarity, input impedance is 2.4KΩ, the input common terminal can be connected to ground or the power side.

Take DI0 for example, the isolated digital input connection as shown below, the other channels are the same as DI0.



When DICOM1 is connected to the ground, DI0 input high-level, the optocoupler turns on, the output signal OUT is high-level, and when DI0 input low-level, the optocoupler does not turn on, the output signal OUT is low-level. When DICOM1 is connected with the positive terminal of power supply, DI0 input low-level, the optocoupler turns on, the output signal OUT is high-level, and when DI0 input high-level, the optocoupler does not turn on, the output signal OUT is low-level.

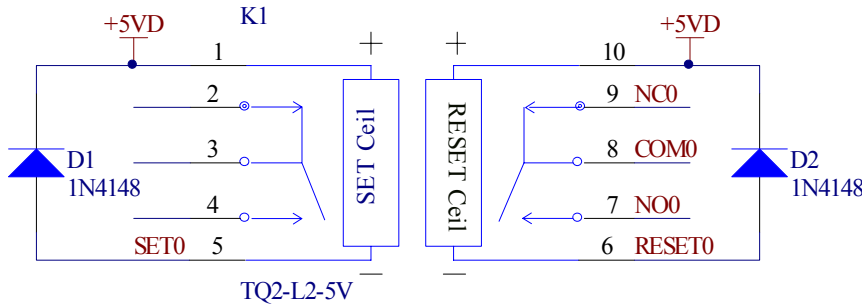
DI connection as follows



4.2 Output Wiring

PCI2323 output signal is optical coupling SPST, NO0~NO15 are 16 relay normal open output, NC0 ~ NC15 are 16 relay Normal closed output, COM0~COM15 are public contact.

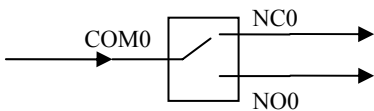
Take 0 channel for example:



When select 0 relay to on, the internal switch of the relay is disconnected from the NC0 side, and pick-up to the NO0 side, the COM0 connects with the NO0. When select 0 relay to off, the internal switch of the relay is disconnected from the NO0 side and pick-up to the NC0 side, the COM0 connects with the NC0.

When the system is power-down, the internal switch status unchanged, latched relay output, but when the system re-power, the relay resets to pick-up to the NC0 side, shown as above.

Relay output connection as follows



4.3 Interrupt

There are four sources of interrupt signals: COS interrupt, DI0 interrupt, DI1 interrupt, DI0 and DI1 interrupt, and we can select the interrupt source by the software.

4.3.1 COS Interrupt

COS: the logic level of the input signal from low-level to high-level or from high-level to low-level, COS detection circuit can detect the change of the level edge, effective to all 16 input channels. COS interrupt valid input channel can be selected by the software, when the logic level of any channel is selected is changing, COS detection circuit will send a interrupt signal.

4.3.2 DI0 Interrupt

When DI0 has the rising edge, it will create an interrupt signal.

4.3.3 DI1 Interrupt

When DI1 has the rising edge, it will create an interrupt signal.

4.3.4 DI0 and DI1 Interrupt

When DI0 and DI1 have the rising edge at the same time, it will create an interrupt signal.

Chapter 5 Notes and Warranty Policy

5.1 Notes

In our products' packing, user can find a user manual, a PCI2323 module and a quality guarantee card. Users must keep quality guarantee card carefully, if the products have some problems and need repairing, please send products together with quality guarantee card to ART, we will provide good after-sale service and solve the problem as quickly as we can.

When using PCI2323, in order to prevent the IC (chip) from electrostatic harm, please do not touch IC (chip) in the front panel of PCI2323 module.

5.2 Warranty Policy

Thank you for choosing ART. To understand your rights and enjoy all the after-sales services we offer, please read the following carefully.

1. Before using ART's products please read the user manual and follow the instructions exactly. When sending in damaged products for repair, please attach an RMA application form which can be downloaded from: www.art-control.com.
2. All ART products come with a limited two-year warranty:
 - The warranty period starts on the day the product is shipped from ART's factory
 - For products containing storage devices (hard drives, flash cards, etc.), please back up your data before sending them for repair. ART is not responsible for any loss of data.
 - Please ensure the use of properly licensed software with our systems. ART does not condone the use of pirated software and will not service systems using such software. ART will not be held legally responsible for products shipped with unlicensed software installed by the user.
3. Our repair service is not covered by ART's guarantee in the following situations:
 - Damage caused by not following instructions in the User's Manual.
 - Damage caused by carelessness on the user's part during product transportation.
 - Damage caused by unsuitable storage environments (i.e. high temperatures, high humidity, or volatile chemicals).
 - Damage from improper repair by unauthorized ART technicians.
 - Products with altered and/or damaged serial numbers are not entitled to our service.
4. Customers are responsible for shipping costs to transport damaged products to our company or sales office.
5. To ensure the speed and quality of product repair, please download an RMA application form from our company website.

Products Rapid Installation and Self-check

Rapid Installation

Product-driven procedure is the operating system adaptive installation mode. After inserting the disc, you can select the appropriate board type on the pop-up interface, click the button **【driver installation】** ; or select CD-ROM drive in Resource Explorer, locate the product catalog and enter into the APP folder, and implement Setup.exe file. After the installation, pop-up CD-ROM, shut off your computer, insert the PCI card. If it is a USB product, it can be directly inserted into the device. When the system prompts that it finds a new hardware, you do not specify a drive path, the operating system can automatically look up it from the system directory, and then you can complete the installation.

Self-check

At this moment, there should be installation information of the installed device in the Device Manager (when the device does not work, you can check this item.). Open "Start -> Programs -> ART Demonstration Monitoring and Control System -> Corresponding Board -> Advanced Testing Presentation System", the program is a standard testing procedure. Based on the specification of Pin definition, connect the signal acquisition data and test whether AD is normal or not. Connect the input pins to the corresponding output pins and use the testing procedure to test whether the switch is normal or not.

Delete Wrong Installation

When you select the wrong drive, or viruses lead to driver error, you can carry out the following operations: In Resource Explorer, open CD-ROM drive, run Others-> SUPPORT-> PCI.bat procedures, and delete the hardware information that relevant to our boards, and then carry out the process of section I all over again, we can complete the new installation.