

**PCLD-8751/8761/8762**

**48-Channel Isolated D/I  
and Relay Board**

**User Manual**

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Part No. 2003876200

1st Edition

Printed in Taiwan

August 2006

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- Description of your software (OS, version, software, etc.)
- A complete description of the problem
- The exact wording of any error messages

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## **Introduction**

This chapter introduces PCLD-8751, PCLD-8761, and PCLD-8762.

Sections include:

- General Information
- Features

# Chapter 1 Introduction

## 1.1 General Information

---

PCLD-8751, PCLD-8761 and PCLD-8762 are daughter boards that feature 48 isolated digital input/relay output channels. They can only be used by Advantech's TTL DI/O cards with a 68-pin SCSI connector (PCI-1751 and PCI-1753 series).

In addition to onboard screw terminals for easy wiring, each channel is equipped with an LED to indicate the status. If the input voltage level is high or the output channel is activated, the LED will be lit, otherwise the LED is off. You may configure the channels to work in either positive logic mode or negative logic mode by setting the onboard jumpers.

## 1.2 Features

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- Works with Advantech TTL DI/O cards equipped with 48 digital input/output channels on SCSI 68-pin cable connectors
- 48 opto-isolated digital input/ relay output channels
- Detachable screw terminal for easy wiring
- LEDs indicate input/output logic status

**Table 1.1: PCLD-8751/8761/8762 Channel Information**

Module	PCLD-8751	PCLD-8761	PCLD-8762
Isolated DI Channels	48	24	N/A
Relay Output Channels	N/A	24	48



## **Installation**

This chapter show how to install and configure PCLD-8751, PCLD-8761 & PCLD-8762.

Sections include:

- Initial Inspection
- Connectors and Jumpers

# Chapter 2 Installation

## 2.1 Initial Inspection

---

PCLD-8751, PCLD-8761 & PCLD-8762 are thoroughly inspected before being shipped. Before installing the board, make sure that everything has been included in the package. You should also inspect the board for any defects or damage that may have occurred during shipping. If you find anything missing, defective or damaged, contact your dealer immediately.

### 2.1.1 Caution!



The board should be handled by the edges only. Static electric discharge can damage the integrated circuits on the board

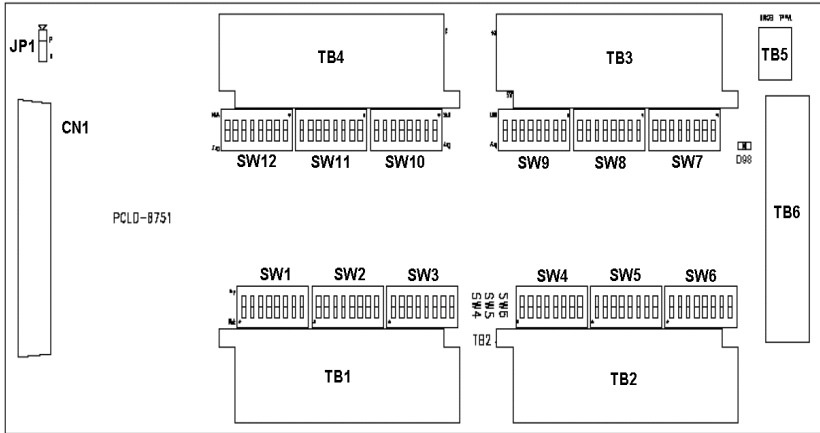
### Packing List

- 1 \* PCLD-8751, PCLD-8761 or PCLD-8762.
- 1 \* User Manual

Remove the board from its protective packaging. Keep the packaging, since it may be used to return the card if it needs repairs. The packaging may also be used if the card is to be stored for any length of time.

## 2.2 Connectors and Jumpers

### 2.2.1 PCLD-8751 (48-Ch Isolated Digital Input Board)



## CN1: SCSI 68-pin Connector

PA00	1	35	PA10
PA01	2	36	PA11
PA02	3	37	PA12
PA03	4	38	PA13
PA04	5	39	PA14
PA05	6	40	PA15
PA06	7	41	PA16
PA07	8	42	PA17
X	9	43	X
PB00	10	44	PB10
PB01	11	45	PB11
PB02	12	46	PB12
PB03	13	47	PB13
PB04	14	48	PB14
PB05	15	49	PB15
PB06	16	50	PB16
PB07	17	51	PB17
X	18	52	X
PC00	19	53	PC10
PC01	20	54	PC11
PC02	21	55	PC12
PC03	22	56	PC13
PC04	23	57	PC14
PC05	24	58	PC15
PC06	25	59	PC16
PC07	26	60	PC17
GND	27	61	X
X	28	62	X
X	29	63	X
X	30	64	X
X	31	65	X
X	32	66	X
X	33	67	X
X	34	68	X

## TB1/TB2/TB3/TB4: Wiring Terminal Block

TB1		TB2		TB3		TB4	
Name	Pin	Name	Pin	Name	Pin	Name	Pin
PA00	1+,1-	PB04	13+,13-	PA10	25+,25-	PB14	37+,37-
PA01	2+,2-	PB05	14+,14-	PA11	26+,26-	PB15	38+,38-
PA02	3+,3-	PB06	15+,15-	PA12	27+,27-	PB16	39+,39-
PA03	4+,4-	PB07	16+,16-	PA13	28+,28-	PB17	40+,40-
PA04	5+,5-	PC00	17+,17-	PA14	29+,29-	PC10	41+,41-
PA05	6+,6-	PC01	18+,18-	PA15	30+,30-	PC11	42+,42-
PA06	7+,7-	PC02	19+,19-	PA16	31+,31-	PC12	43+,43-
PA07	8+,8-	PC03	20+,20-	PA17	32+,32-	PC13	44+,44-
PB00	9+,9-	PC04	21+,21-	PB10	33+,33-	PC14	45+,45-
PB01	10+,10-	PC05	22+,22-	PB11	34+,34-	PC15	46+,46-
PB02	11+,11-	PC06	23+,23-	PB12	35+,35-	PC16	47+,47-
PB03	12+,12-	PC07	24+,24-	PB13	36+,36-	PC17	48+,48-

### TB5: External Power Source Connector

External power source connector for Dry contact mode isolation input channels. When using Dry contact input mode, it is necessary to provide external power through TB5. The voltage range is +5V ~ 30V DC.

### TB6: Reserved for the Counter Function on PCI-1751/PCI-1751U

### SW1~SW12: Wet/Dry Contact Selection

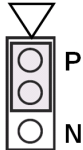
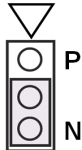
SW1 ~ SW12 are used to switch the input channels as “Wet Contact” or “Dry Contact”. The factory settings of the switches are in “Off” position, and the input channels are in Wet contact mode.

You can set each input channel as Dry contact mode by setting the switch to the “On” position. Following is the mapping table of the DIP switch and the input channels.

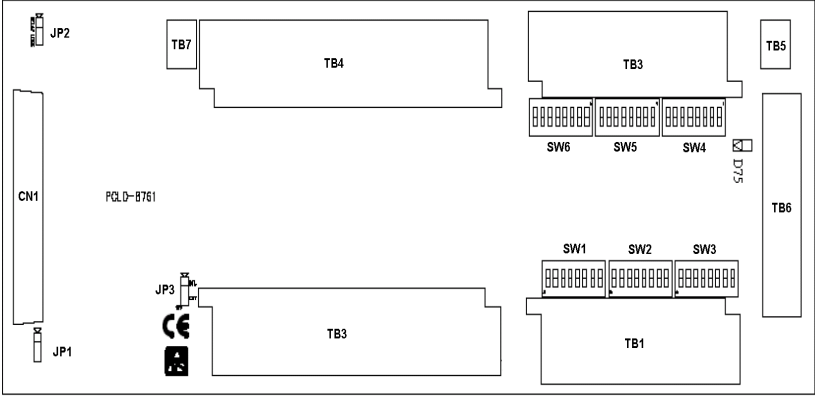
	No.1	No.2	No.3	No.3
<b>SW1</b>	PA00	PA01	PA02	PA03
<b>SW2</b>	PA04	PA05	PA06	PA07
<b>SW3</b>	PB00	PB01	PB02	PB03
<b>SW4</b>	PB04	PB05	PB06	PB07
<b>SW5</b>	PC00	PC01	PC02	PC03
<b>SW6</b>	PC04	PC05	PC06	PC07
<b>SW7</b>	PA10	PA11	PA12	PA13
<b>SW8</b>	PA14	PA15	PA16	PA17
<b>SW9</b>	PB10	PB11	PB12	PB13
<b>SW10</b>	PB14	PB15	PB16	PB17
<b>SW11</b>	PC10	PC11	PC12	PC13
<b>SW12</b>	PC14	PC15	PC16	PC17

### JP1: Logic Control Isolated Digital Input Channels

The control logic is positive when pin1 and pin2 of JP1 are shorted. If pin2 and pin3 of JP1 are shorted, then the control logic becomes negative. The factory setting is positive control logic. (Also see Chapter 3.2)

	JP1	
<b>Jumper Setting</b>		
<b>Description</b>	Positive control logic. (Default setting)	Negative control logic.

### 2.2.2 PCLD-8761 (24-Ch Isolated DI and 24-Ch Relay Output Board)



## CN1: SCSI 68-pin Connector

PA00	1	35	PA10
PA01	2	36	PA11
PA02	3	37	PA12
PA03	4	38	PA13
PA04	5	39	PA14
PA05	6	40	PA15
PA06	7	41	PA16
PA07	8	42	PA17
X	9	43	X
PB00	10	44	PB10
PB01	11	45	PB11
PB02	12	46	PB12
PB03	13	47	PB13
PB04	14	48	PB14
PB05	15	49	PB15
PB06	16	50	PB16
PB07	17	51	PB17
X	18	52	X
PC00	19	53	PC10
PC01	20	54	PC11
PC02	21	55	PC12
PC03	22	56	PC13
PC04	23	57	PC14
PC05	24	58	PC15
PC06	25	59	PC16
PC07	26	60	PC17
GND	27	61	X
X	28	62	X
X	29	63	X
X	30	64	X
X	31	65	X
X	32	66	X
X	33	67	X
X	34	68	X



## TB1/TB2/TB3/TB4: Wiring Terminal Block

TB1		TB2		TB3		TB4	
Name	Pin	Name	Pin	Name	Pin	Name	Pin
PA00	1+,1-	PB04	13+, 13-	PA10	25COM,25 NC,25NO	PB14	37COM,37 NC,37NO
PA01	2+,2-	PB05	14+, 14-	PA11	26COM,26 NC,26NO	PB15	38COM,38 NC,38NO
PA02	3+,3-	PB06	15+, 15-	PA12	27COM,27 NC,27NO	PB16	39COM,39 NC,39NO
PA03	4+,4-	PB07	16+, 16-	PA13	28COM,28 NC,28NO	PB17	40COM,40 NC,40NO
PA04	5+,5-	PC00	17+, 17-	PA14	29COM,29 NC,29NO	PC10	41COM,41 NC,41NO
PA05	6+,6-	PC01	18+, 18-	PA15	30COM,30 NC,30NO	PC11	42COM,42 NC,42NO
PA06	7+,7-	PC02	19+, 19-	PA16	31COM,31 NC,31NO	PC12	43COM,43 NC,43NO
PA07	8+,8-	PC03	20+, 20-	PA17	32COM,32 NC,32NO	PC13	44COM,44 NC,44NO
PB00	9+,9-	PC04	21+, 21-	PB10	33COM,33 NC,33NO	PC14	45COM,45 NC,45NO
PB01	10+,1 0-	PC05	22+, 22-	PB11	34COM,34 NC,34NO	PC15	46COM,46 NC,46NO
PB02	11+,1 1-	PC06	23+, 23-	PB12	35COM,35 NC,35NO	PC16	47COM,47 NC,47NO
PB03	12+,1 2-	PC07	24+, 24-	PB13	36COM,36 NC,36NO	PC17	48COM,48 NC,48NO

### TB5: External Connector for Dry Contact Isolated DI Channels

External power source connector for Dry contact mode isolation input channels. When using Dry contact input mode, it is necessary to provide external power through TB5. The voltage range is +5V ~ 30V DC.

### TB6: Reserved for the Counter Function on PCI-1751/PCI-1751U

### TB7: External Power Source Connector

PCLD-8761's driving power can be set as external by JP3, and the input voltage range is DC +7 ~ +30V.

### SW1~SW6: Wet/Dry Contact Selection



SW1 ~ SW12 are used to switch the input channels as “Wet Contact” or “Dry Contact”. The factory settings of the switches are in “Off” position, and the input channels are in Wet contact mode.

You can set each input channel as Dry contact mode by setting the switch to the “On” position. Following is the mapping table of the DIP switch and the input channels.

	No.1	No.2	No.3	No.3
<b>SW1</b>	PA00	PA01	PA02	PA03
<b>SW2</b>	PA04	PA05	PA06	PA07
<b>SW3</b>	PB00	PB01	PB02	PB03
<b>SW4</b>	PB04	PB05	PB06	PB07
<b>SW5</b>	PC00	PC01	PC02	PC03
<b>SW6</b>	PC04	PC05	PC06	PC07

### JP1/JP2: Logic Control for Isolated Input & Relay Output Channels

The control logic of isolated digital input and relay output channels can be set separately. The control logic is positive when pin1 and pin2 are shorted. If pin2 and pin3 are shorted, then the control logic becomes negative. The factory setting is positive control logic. (Also see Chapter 3.2)

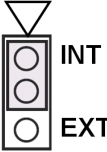
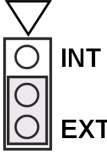
	JP1 (Isolated DI)/ JP2 (Relay Output)	
<b>Jumper Setting</b>		
<b>Description</b>	Positive control logic. (Default setting)	Negative control logic.

### JP3: Relay Driving Power Source Selection

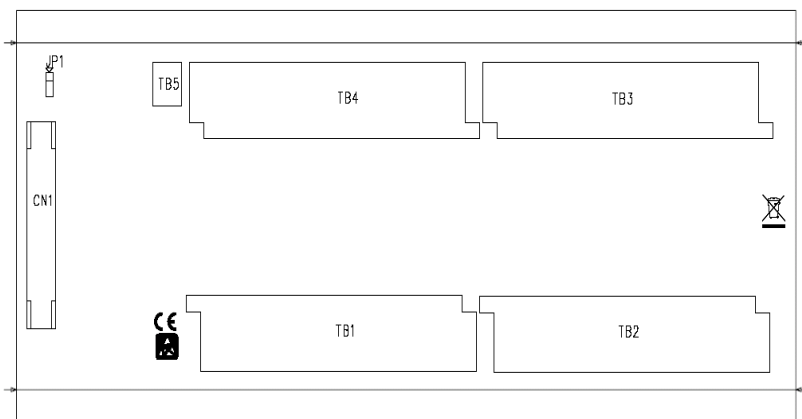
It is necessary to provide +5 V as the relay channels driving power source. And the power source can be selected as internal or external by JP3.

The default setting of JP3 is an internal power source, which means +5V is provided from the PC. However, you can also select an external power source by shorting pin2 and pin3 of JP3.

The external power source is provided through TB7. Since there is a transformer on the circuit, the voltage range of external power should be within DC +7V ~ +30V.

		JP3	
<b>Jumper Setting</b>			
<b>Description</b>	Internal power source (Default setting)	External power source	

## 2.2.3 PCLD-8762 (48-Channel Relay Output Board)



## CN1: SCSI 68-pin Connector

PA00	1	35	PA10
PA01	2	36	PA11
PA02	3	37	PA12
PA03	4	38	PA13
PA04	5	39	PA14
PA05	6	40	PA15
PA06	7	41	PA16
PA07	8	42	PA17
X	9	43	X
PB00	10	44	PB10
PB01	11	45	PB11
PB02	12	46	PB12
PB03	13	47	PB13
PB04	14	48	PB14
PB05	15	49	PB15
PB06	16	50	PB16
PB07	17	51	PB17
X	18	52	X
PC00	19	53	PC10
PC01	20	54	PC11
PC02	21	55	PC12
PC03	22	56	PC13
PC04	23	57	PC14
PC05	24	58	PC15
PC06	25	59	PC16
PC07	26	60	PC17
GND	27	61	X
X	28	62	X
X	29	63	X
X	30	64	X
X	31	65	X
X	32	66	X
X	33	67	X
X	34	68	X

## TB1/TB2/TB3/TB4: Wiring Terminal Block

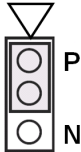
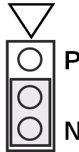
TB1		TB2		TB3		TB4	
Name	Pin	Name	Pin	Name	Pin	Name	Pin
PA00	1COM,1N C,1NO	PB04	13COM,13 NC,13NO	PA10	25COM,25 NC,25NO	PB14	37COM,37 NC,37NO
PA01	2COM,2N C,2NO	PB05	14COM,14 NC,14NO	PA11	26COM,26 NC,26NO	PB15	38COM,38 NC,38NO
PA02	3COM,3N C,3NO	PB06	15COM,15 NC,52NO	PA12	27COM,27 NC,27NO	PB16	39COM,39 NC,39NO
PA03	4COM,4N C,4NO	PB07	16COM,16 NC,16NO	PA13	28COM,28 NC,28NO	PB17	40COM,40 NC,40NO
PA04	5COM,5N C,5NO	PC00	17COM,17 NC,17NO	PA14	29COM,29 NC,29NO	PC10	41COM,41 NC,41NO
PA05	6COM,6N C,6NO	PC01	18COM,18 NC,18NO	PA15	30COM,30 NC,30NO	PC11	42COM,42 NC,42NO
PA06	7COM,7N C,7NO	PC02	19COM,19 NC,19NO	PA16	31COM,31 NC,31NO	PC12	43COM,43 NC,43NO
PA07	8COM,8N C,8NO	PC03	20COM,20 NC,20NO	PA17	32COM,32 NC,32NO	PC13	44COM,44 NC,44NO
PB00	9COM,9N C,9NO	PC04	21COM,21 NC,21NO	PB10	33COM,33 NC,33NO	PC14	45COM,45 NC,45NO
PB01	10COM,10 NC,10NO	PC05	22COM,22 NC,22NO	PB11	34COM,34 NC,34NO	PC15	46COM,46 NC,46NO
PB02	11COM,11 NC,11NO	PC06	23COM,23 NC23NO	PB12	35COM,35 NC,35NO	PC16	47COM,47 NC,47NO
PB03	12COM,12 NC,12NO	PC07	24COM,24 NC,24NO	PB13	36COM,36 NC,36NO	PC17	48COM,48 NC,48NO

## TB5: External Power Source Connector

PCLD-8762 requires an external driving power source and the voltage range of the power source should be within DC +7V ~ +30V.

## JP1: Logic Control for Relay Output Channels

The control logic is positive when pin1 and pin2 of JP1 are shorted. If pin2 and pin3 of JP1 are shorted, then the control logic becomes negative. The factory setting is positive control logic. (Also see Chapter 3.2)

JP1		
<b>Jumper Setting</b>		
	<b>Description</b>	Positive control logic. (Default setting)

## **Operations**

This chapter has information for operating PCLD-8751, PCLD-8761 & PCLD-8762.

Sections include:

- Power Source Selection
- Control Logic
- Wiring

# Chapter 3 Operations

## 3.1 Power Source Selection

---

PCLD-8751, PCLD-8761, and PCLD-8762 require a +5V power supply for correct operation. When using the SCSI 68-pin connector, PCLD-8751 and PCLD-8761 can be powered directly from the PCI bus by connecting CN1 to any Advantech PC-LabCard product. It is also possible to connect external supplies to PCLD-8761 by connecting an external power supply to terminal TB7. It is recommended to use an external power source when more than 8 relay channels are operated. Correct connections are shown in section 2.2. However, the external power supply is required for PCLD-8762 in any circumstance to ensure normal functions.

## 3.2 Control Logic

---

The preferred control logic can be defined by setting the on-board jumper JP1 (PCLD-8751, PCLD-8761, and PCLD-8762) and JP2 (PCLD-8761). The default setting is positive logic, which means logic "1" = device activated. For input channels, when the inputs are activated, the DI channels will be TTL "1". And for DO channels, the relay will operate for a TTL high (+5V) on the input (common contact connected to NO contact). The relay will release for a TTL low on the input (common contact connected to NC contact).

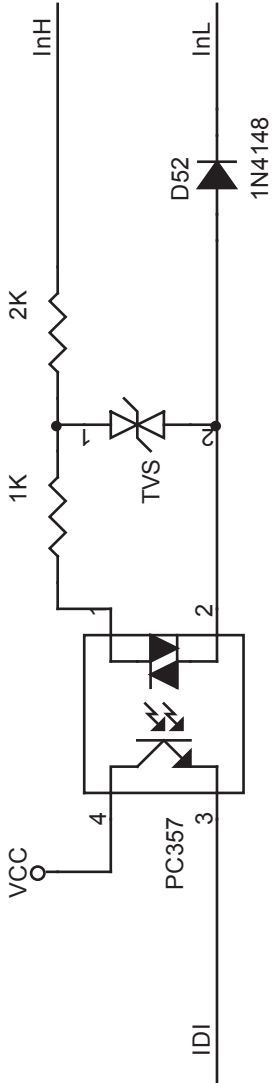
On the other hand, when the jumper was set as negative logic, which means logic "0" = device activated. For input channels, the relay will operate for a TTL low (0V) on the input (common contact connected to NO contact). The relay will release for a TTL high on the input (common contact connected to NC contact).



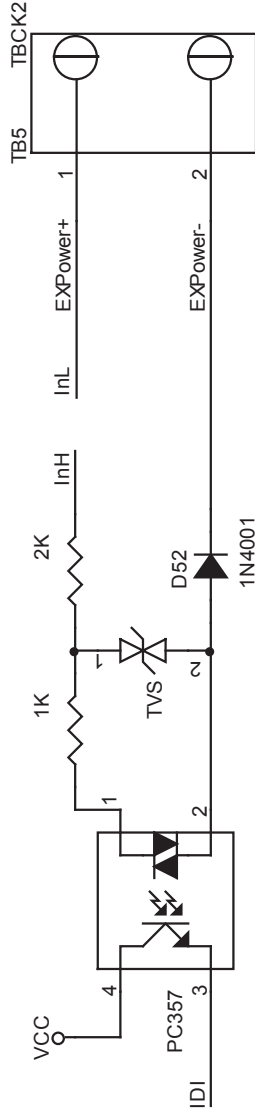
### 3.3 Wiring

#### 3.3.1 Isolated DI

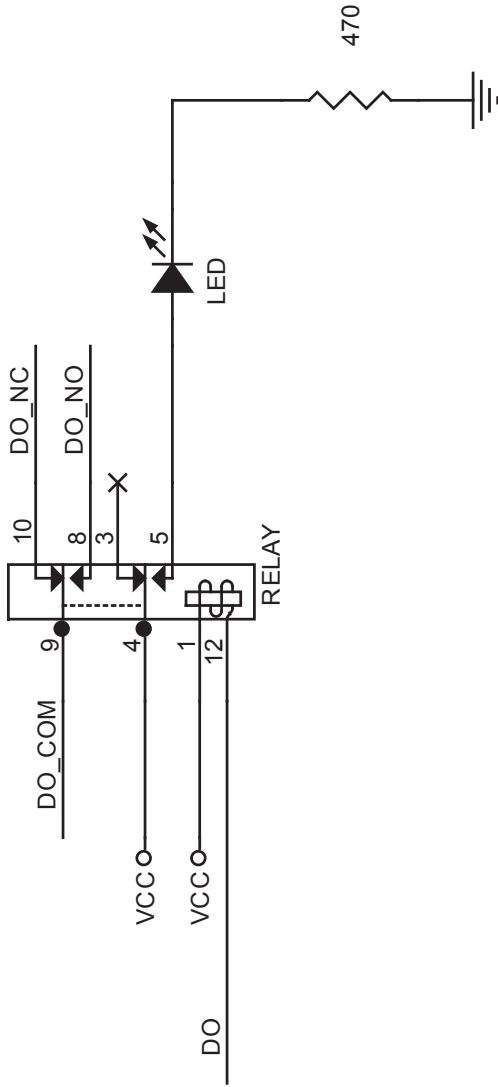
Wet Contact



Dry Contact



# Relay



APPENDIX  
**A**

**Specifications**

# Appendix A Specifications

## A.1 Isolated Digital Input

<b>Channels</b>	PCLD-8751	48
	PCLD-8761	24
<b>Isolation Voltage</b>	2500 VDC	
<b>Input Range (Wet Contact)</b>	VIH(max.)	30V
	VIH(min.)	4V
	VIL(max.)	1V
<b>Input Range (Dry Contact)</b>	External Power	DV +5~30V
	VIH	Shout
	VIL	Open

## A.2 Relay Output

<b>Number of Output Channel</b>	PCLD-8761	24
	PCLD-8762	48
<b>Relay Type</b>	Form C (SPDT)	
<b>Contact Rating (resistive)</b>	0.25A@250V <sub>AC</sub> , 2A@30V <sub>DC</sub>	
<b>Max. Switching Power</b>	62.5VA, 60W	
<b>Max. Switching Voltage</b>	250V <sub>AC</sub> , 220V <sub>DC</sub>	
<b>Max. Switching Current</b>	5A	
<b>Min. Switching Voltage</b>	100μV	
<b>Breakdown Voltage</b>	<b>Between Coil and Contacts</b>	1500V <sub>AC</sub> min. (1 minute)
	<b>Between Open Contacts</b>	1000V <sub>AC</sub> min. (1 minute)
	<b>Between Adjacent Contacts</b>	1000V <sub>AC</sub> min. (1 minute)
<b>Operate/Release Time</b>	typ. 3 / 2 ms, max. 5 / 4 ms	
<b>Resistance</b>	Contact: 50 mΩ max. @ 10mA/20mV Insulation: 1 GΩ min. @ 500V <sub>DC</sub>	
<b>Life Expectancy</b>	<b>Mechanical</b>	10 <sup>8</sup> cycles typ.
	<b>Electrical</b>	5 x 10 <sup>7</sup> cycles typ. @ 10mA/12V 2 x 10 <sup>5</sup> cycles typ. @ 2000mA/30V

## A.3 General

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<b>Dimensions</b>	PCLD-8751	255 x 121mm
	PCLD-8761	285 x 121mm
	PCLD-8762	285 x 121mm
<b>Power Consumption</b>	PCLD-8751	Max. +5 V @ < 0.6 A
	PCLD-8761	Max. +5 V @ < 1.6 A
	PCLD-8762	Max.+7V @ 1.8A +30V @ 0.45A
<b>Screw Terminal</b>	Accepts #14 to #24 AWG wires	

