Digital Output Board with independently common Relay-Isolation for PCI
RRY-16C(PCI)H

Digital Output Board with Relay-Isolation for PCI
RRY-32(PCI)H

with Driver Library [API-PAC(W32)]

The < RRY-16C(PCI)H > and < RRY-32(PCI)H > are PCI bus-compliant interface boards that output signals to lead relay contacts.
The < RRY-16C(PCI)H > provides up to 16 relay outputs.
The < RRY-32(PCI)H > provides up to 32 relay outputs.
Using the bundled driver library [API-PAC(W32)], you can create Windows application software for this board in your favorite programming language supporting Win32 API functions, such as Visual Basic or Visual C/C++.

Features

◆ RRY-16C(PCI)H Features
- Up to 16 reed relays with independently make contact output
- High-capacity output rating designed to be a maximum of 125 VAC/30 VDC, 2 A per channel

◆ RRY-32(PCI)H Features
- 32 reed relays with a single make contact are implemented. These relays are classified into four groups, each group (eight relays) sharing a minus common pin.
- Output ratings are designed for a maximum of 100VAC/100VDC and 500 mA per channel, a maximum of 1A for each group (one group of eight channels share a minus common). Relay contactor rating is 10VA(10W) maximum.
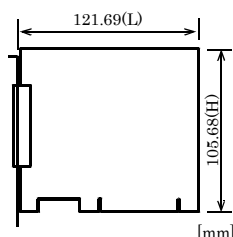
Specification

■ RRY-16C(PCI)H

Items		Specifications
No. of Output Channels		16 channels
Output Format		Reed Relay (1a, make) Output
Relay Contact Spec.	Max. Operating Voltage	125V (AC), 30V (DC)
	Max. Carry Current	2A (Max.)
	Contact resistance (Initial state)	30mΩ or less
	Operating time (At the time of ON)	Within 7ms
	Recovery time (At the time of OFF)	Within 6ms
	Mechanical Life Expectancy	20,000,000 operations min or more Switching times：180/min
	Electrical lifetime	100,000 operations min or more Switching times：20/min
	Relay Type	PCN-105D3MHZ
I/O Addresses		8 bits x 32 ports boundary
Max. board count in One System		16 boards including this board
Power Consumption		5 VDC 550mA (Max.)
Operating Condition		0 - 50°C, 10 - 90%RH (No condensation)
PCI Bus Specification		32bit, 33MHz, Universal key shapes supported *1
Dimension(mm)		121.69(L) x 105.68(H)
Weight		150g

*1 This board requires +5V power supply from expansion slots (it does not operate in the environment of only +3.3V power supply).
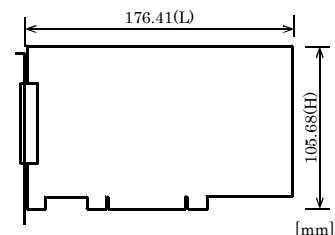
Board Dimensions

121.69(L)

105.68(H)

[mm]

The standard outside dimension (L) is the distance from the end of the board to the outer surface of the slot cover.

■ RRY-32(PCI)H

Items		Specifications
No. of Output Channels		32 channels
Output Format		Reed Relay (1a, make) Output
Relay Contact Spec.	Max. Operating Power	10VA(AC), 10W(DC)
	Max. Operating Voltage	100V(AC), 100V(DC)
	Max. Carry Current	0.5A(Max.)
	Contact resistance	100mΩ or less
	Response Time	Within 1ms
	Mechanical Life Expectancy	200,000,000 operations min or more
	Relay Type	MSG-105AK1 (or equivalent to it)
I/O Address		8 bits x 32 ports boundary
Max. board count in One System		16 boards including this board
Power Consumption		5 VDC 1050mA (Max.)
Operating Condition		0 - 50°C, 10 - 90%RH (No condensation)
PCI Bus Specification		32bit, 33MHz, Universal key shapes supported *1
Dimension(mm)		176.41(L) x 105.68(H)
Weight		150g

*1 This board requires +5V power supply from expansion slots (it does not operate in the environment of only +3.3V power supply).

Board Dimensions

176.41(L)

105.68(H)

[mm]

The standard outside dimension (L) is the distance from the end of the board to the outer surface of the slot cover.

Support Software

You should use CONTEC support software according to your purpose and development environment.

■ Driver Library API-PAC(W32) (Bundled)

API-PAC(W32) is the library software that provides the commands for CONTEC hardware products in the form of Windows standard Win32 API functions (DLL). It makes it easy to create high-speed application software taking advantage of the CONTEC hardware using various programming languages that support Win32 API functions, such as Visual Basic and Visual C/C++.

It can also be used by the installed diagnosis program to check hardware operations.

CONTEC provides download services to supply the updated drivers and differential files.

For details, read Help on the bundled CD-ROM or visit the CONTEC's Web site.

< Operating environment >

OS	Windows XP, 2000, NT, Me, 98, etc..
Adaptation language	Visual C/C++, Visual Basic, Delphi, Builder, etc..
Others	Each piece of library software requires 50 MB of free hard disk space.

■ Linux version of analog I/O driver API-DIO(LNX) (Supplied: Stored on the API-PAC(W32) CD-ROM)

This driver is used to control CONTEC digital I/O boards (PC Cards) from within Linux.

You can control CONTEC I/O boards easily using the shared library used by gcc and Kylix, the device driver (module) for each kernel version, and the board (PC Card) configuration program (config).

CONTEC provides download services to supply the updated drivers and differential files.

For details, read Help on the bundled CD-ROM or visit the CONTEC's Web site.

< Operating environment >

OS	RedHatLinux, TurboLinux, etc.. (For details on supported distributions, refer to Help available after installation.)
Adaptation language	gcc, Kylix, etc..
Others	Requires 3 MB of free hard disk space.

■ Data acquisition VI library for LabVIEW VI-DAQ (Free download)

This is a VI library to use in National Instruments LabVIEW.

VI-DAQ is created with a function form similar to that of LabVIEW's Data Acquisition VI, allowing you to use various devices without complicated settings.

See http://www.contec.com/vidaq/ for details and download of VI-DAQ.

Cable & Connector

◆ Cable & Connector (Option)

Flat cable with both-ends 37-pin D-SUB connector
: PCB37P-1.5 (1.5m)
: PCB37P-3 (3m)
: PCB37P-5 (5m)

Shield cable with both-ends 37-pin D-SUB connector
: PCB37PS-0.5P (0.5m)
: PCB37PS-1.5P (1.5m)
: PCB37PS-3P (3m)
: PCB37PS-5P (5m)

Flat cable with one-ends 37-Pin D-SUB connector
: PCA37P-1.5 (1.5m)
: PCA37P-3 (3m)
: PCA37P-5 (5m)

Shield cable with one-end 37-pin D-SUB connector
: PCA37PS-0.5P (0.5m)
: PCA37PS-1.5P (1.5m)
: PCA37PS-3P (3m)
: PCA37PS-5P (5m)

37pin D-SUB(male) connector Five-piece set : CN5-D37M

▼ CAUTION

The maximum current rate of each flat cable line (PCB37P-* and PCA37P-*) is 1 A; and the maximum current rate of each shield cable line (PCB37PS-*P and PCA37PS-*P) is 0.4 A.

Should the boards be connected to devices that require larger current value than the above rates, you should prepare connecting cables yourself, instead of ordering our option cables.

Accessories

◆ Accessories (Option)

Screw terminal	: EPD-37A *1
Screw terminal (Screw Up type)	: EPD-37 *1
Terminal unit for solderless terminal (M3)	: DTP-3(PC)
Terminal unit for leads	: DTP-4(PC)

*1   Optional cable PCB37P or PCB37PS is required separately.

* Check the CONTEC's Web site for more information on these options.
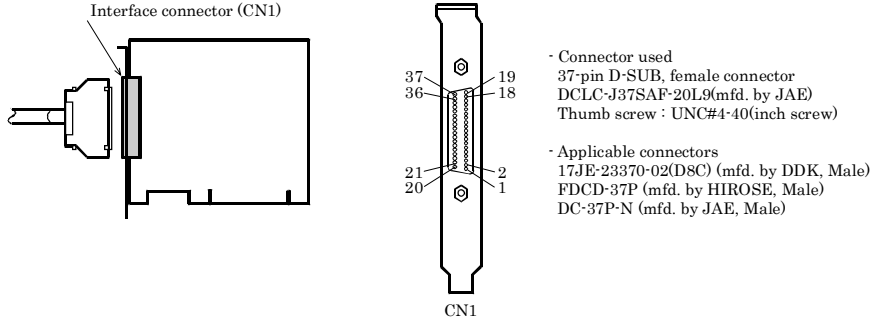
Product Configuration List

- Board (One of the following)
   [RRY-16C(PCI)H or RRY-32(PCI)H] ... 1
- First step guide ... 1
- CD-ROM*1 [API-PAC(W32)] ... 1
*1   The CD-ROM contains the driver software and User's Guide (this guide).
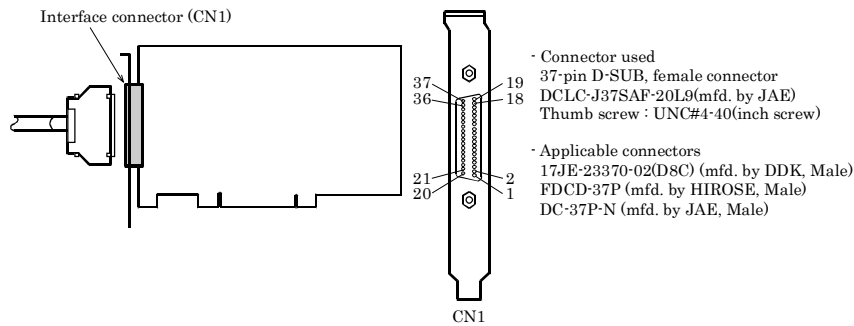
Using the On-board Connectors

◆ **Connecting a Device to Connector**

To connect an external device to the board, plug the cable from the device into the interface connector shown below.

■ **Connecting an Interface Connector and Connectors That Can Be Used**

Interface connector (CN1)

```
37  19
36  18

21   2
20   1
```
CN1

- Connector used
  37-pin D-SUB, female connector
  DCLC-J37SAF-20L9(mfd. by JAE)
  Thumb screw : UNC#4-40(inch screw)

- Applicable connectors
  17JE-23370-02(D8C) (mfd. by DDK, Male)
  FDCD-37P (mfd. by HIROSE, Male)
  DC-37P-N (mfd. by JAE, Male)

■ **Connecting an Interface Connector and Connectors That Can Be Used**

Interface connector (CN1)

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  FDCD-37P (mfd. by HIROSE, Male)
  DC-37P-N (mfd. by JAE, Male)

◆ **Connector Pin Assignment**

■ **Pin Assignments of RRY-16C(PCI)H Interface Connector**

	N.C.	37	19	N.C.
Common of O-17	N 17	36	18	N.C.
Common of O-16	N 16	35	17	O-17
Common of O-15	N 15	34	16	O-16
Common of O-14	N 14	33	15	O-15
Common of O-13	N 13	32	14	O-14
Common of O-12	N 12	31	13	O-13
Common of O-11	N 11	30	12	O-12
Common of O-10	N 10	29	11	O-11
Common of O-07	N 07	28	10	O-10
Common of O-06	N 06	27	9	O-07
Common of O-05	N 05	26	8	O-06
Common of O-04	N 04	25	7	O-05
Common of O-03	N 03	24	6	O-04
Common of O-02	N 02	23	5	O-03
Common of O-01	N 01	22	4	O-02
Common of O-00	N 00	21	3	O-01
	N.C.	20	2	O-00
			1	N.C.

+1 Output Port (pins 10–18)
+0 Output Port (pins 1–9)

■ **Pin Assignments of RRY-32(PCI)H Interface Connector**

Common of +3 Port	N3	37	19	N.C.	
	O-37	36	18	N1	Common of +1 Port
	O-36	35	17	O-17	
	O-35	34	16	O-16	
	O-34	33	15	O-15	
+3 Output Port	O-33	32	14	O-14	+1 Output Port
	O-32	31	13	O-13	
	O-31	30	12	O-12	
	O-30	29	11	O-11	
	O-27	28	10	O-10	
	O-26	27	9	O-07	
	O-25	26	8	O-06	
+2 Output Port	O-24	25	7	O-05	+0 Output Port
	O-23	24	6	O-04	
	O-22	23	5	O-03	
	O-21	22	4	O-02	
	O-20	21	3	O-01	
Common of +2 Port	N2	20	2	O-00	
			1	N0	Common of +0 Port

Output Signal Connection

Figure 3.5 and figure 3.6 shows the output circuit at the interface section of the board. The signal output section uses a relay contact method to send signals to the external device.
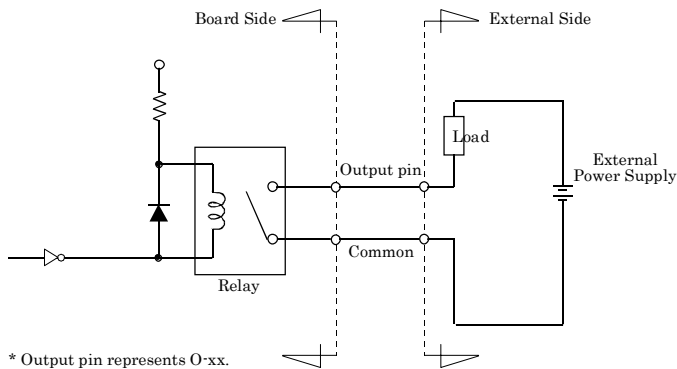
◆ **Output Circuit**

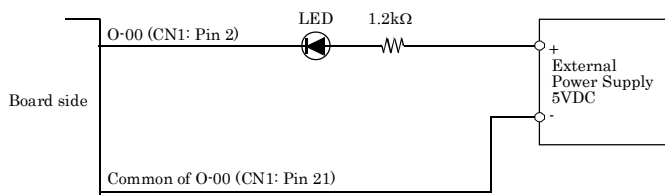■ **RRY-16C(PCI)H**
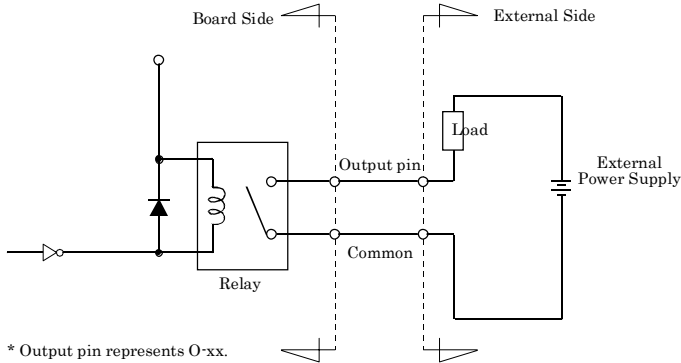
* Output pin represents O-xx.

■ **RRY-32(PCI)H**

* Output pin represents O-xx.

▼ **CAUTION**

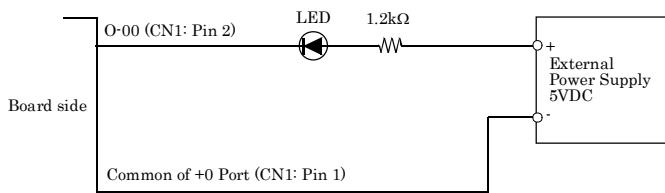When the PC is turned on, all outputs are reset to OFF.

◆ **Connection to the LED**

■ **RRY-16C(PCI)H**

Output a "1" to a bit will light the LED that is connected to the related relay output. On the other hand, output a "0" to the bit will switch the LED off.
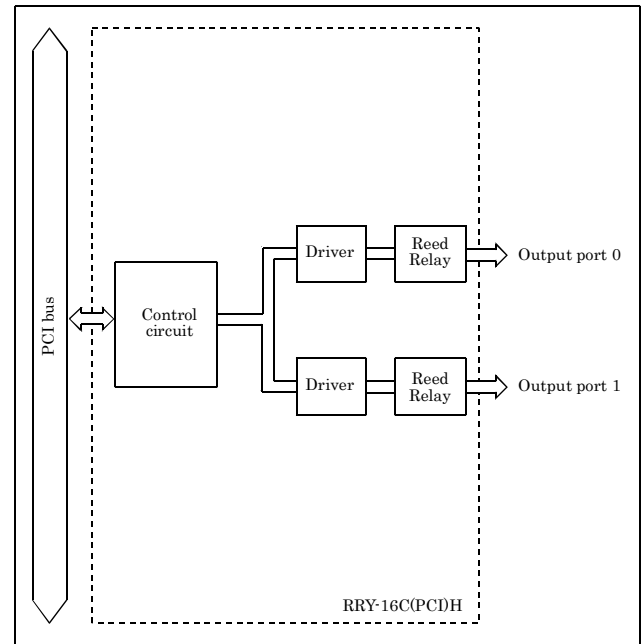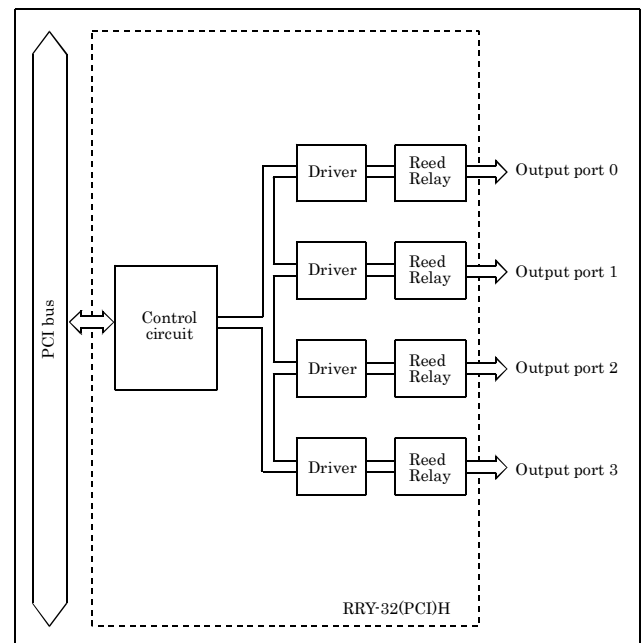
■ **RRY-32(PCI)H**

Output a "1" to a bit will light the LED that is connected to the related relay output. On the other hand, output a "0" to the bit will switch the LED off.

Block Diagram

■ **RRY-16C(PCI)H**

■ **RRY-32(PCI)H**

Difference from RRY-16C(PCI) and RRY-32(PCI)

RRY-16C(PCI)H and RRY-32(PCI)H are partially enhanced version of the conventional products of RRY-16C(PCI) and RRY-32(PCI) and they are upper compatible with RRY-16C(PCI) and RRY-32(PCI).

So you can use the same operating procedures as RRY-16C(PCI) and RRY-32(PCI).

There are some differences in specifications as shown below.

■ RRY-16C(PCI)H

	RRY-16C(PCI)	RRY-16C(PCI)H
I/O address	8 bits x 4 ports boundary	8 bits x 32 ports boundary
Power consumption	5VDC 700mA (Max.)	5VDC 550mA (Max.)
PCI bus specification	32bit, 33MHz, 5V	32bit, 33MHz, Universal key shapes supported (Supply 5V to the 5V pin)
Dimension (mm)	121.69(L) x 106.68(H)	121.69(L) x 105.68(H)

■ RRY-32(PCI)H

	RRY-32(PCI)	RRY-32(PCI)H
I/O address	8 bits x 4 ports boundary	8 bits x 32 ports boundary
Power consumption	5VDC 1200mA (Max.)	5VDC 1050mA (Max.)
PCI bus specification	32bit, 33MHz, 5V	32bit, 33MHz, Universal key shapes supported (Supply 5V to the 5V pin)
Dimension (mm)	176.41(L) x 106.68(H)	176.41(L) x 105.68(H)

The specification, color, and design of a product may be changed without a preliminary announcement.