cPCI-RY02

(4x50 Matrix)
User's Manual

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1. Product Specification

The cPCI-RY02 product is used in conjunction with the Relay Control System, and can control 4x50 (200 total) relays. Connected to the backplane, it is a stable product for industrial use. [Figure 1-1] shows cPCI-RY02 board.

[Figure 1-1. cPCI-RY02 Board]

The basic function of the board is to receive the control signal from the CPU (control) board, transmit the control signal to the relay board through the backplane local bus, and control the relay output through the FPGA, which is used for external device control and inspection.

The basic specifications of the board are shown in [Table 1-1].

[Table 1. RELAY Board]

Mechanical characteristics	
General	3U Compact-PCI Form-factor 2mm Hard-metric Compact PCI J1 connection
Size	160 x 100 Euro-card standard
Connection	Compact PCI local connection MDR 100PIN RELAY OUTPUT
Electrical characteristics	
General	3.3V Operation 1.2V FPGA core Power, Max 6A
Interface	Back plane Local bus interface +5V/+3.3V compatible operation
FPGA	Xilinx Spartan II XC3S200AN

2. Board Installation

2.1 cPCI-RY02 Board Connection
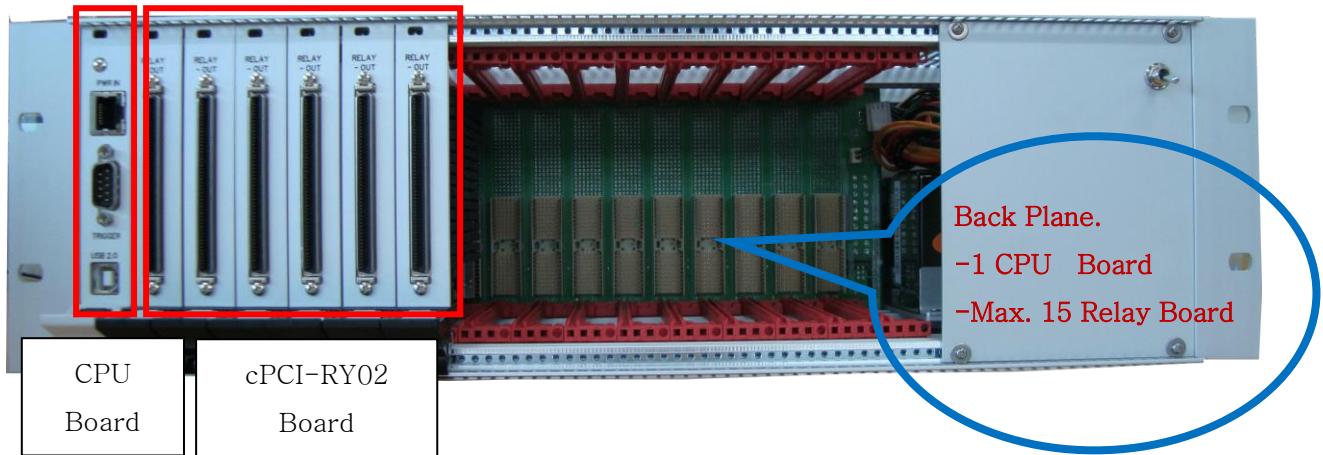
[Fig 2-1. Relay System]

⇨   The cPCI-RY02 board is connected to the backplane and used through the control board.

3. Product Description

Briefly describes each function of the board. Please refer to the parts specifications for detailed functions.

3.1 cPCI-RY02 Board
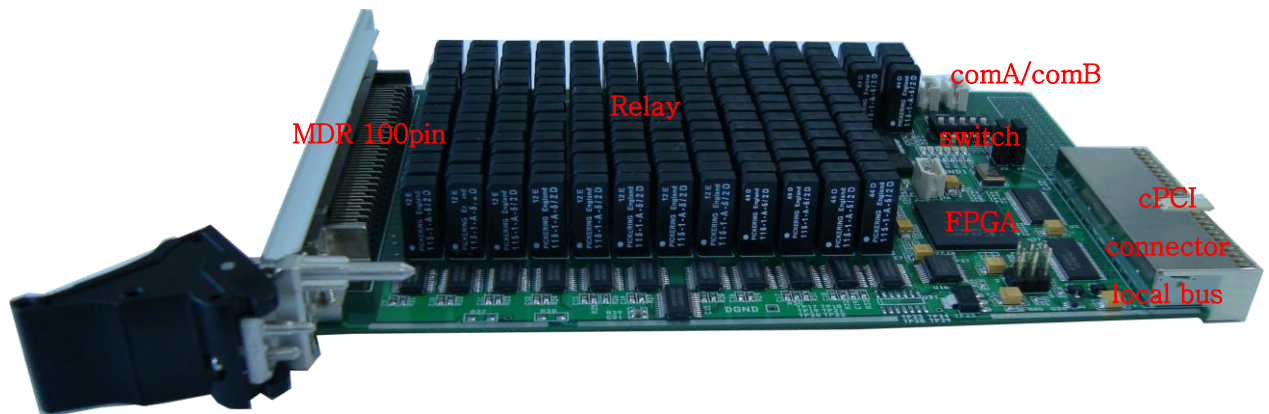
[Figure 3-1. RELAY Board]

FPGA   : Data communication and relay control with local bus interface.

Switch : Relay board address setup

3.2 Function Description

3.2.1 Relay Board MDR 100pin connection (4(Com) x 50(OUT))
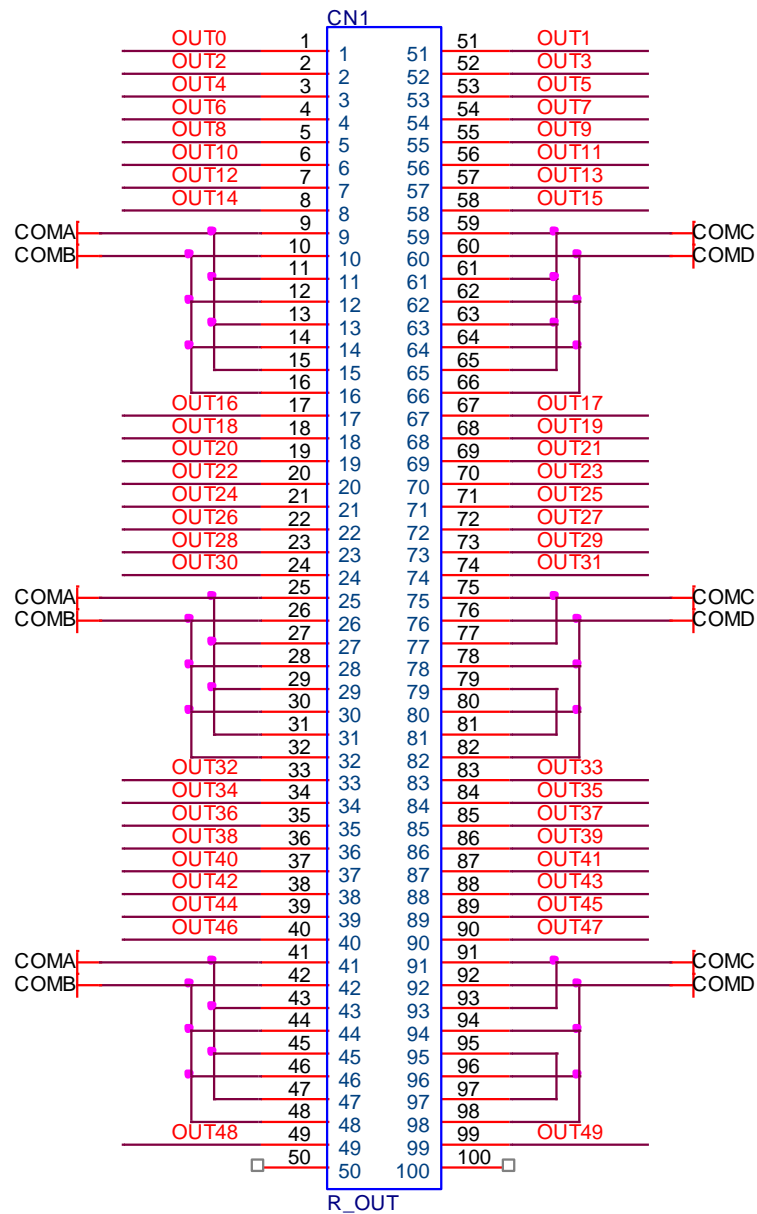
Com No.	MDR Pin Out
A	9,11,13,15,25,27,29,31,41,43,45,47
B	10,12,14,16,26,28,30,32,42,44,46,48
C	59,61,63,65,75,77,91,93
D	60,62,64,66,76,78,80,82,92,94,96,98

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3.2.2 MDR 100Pin Number
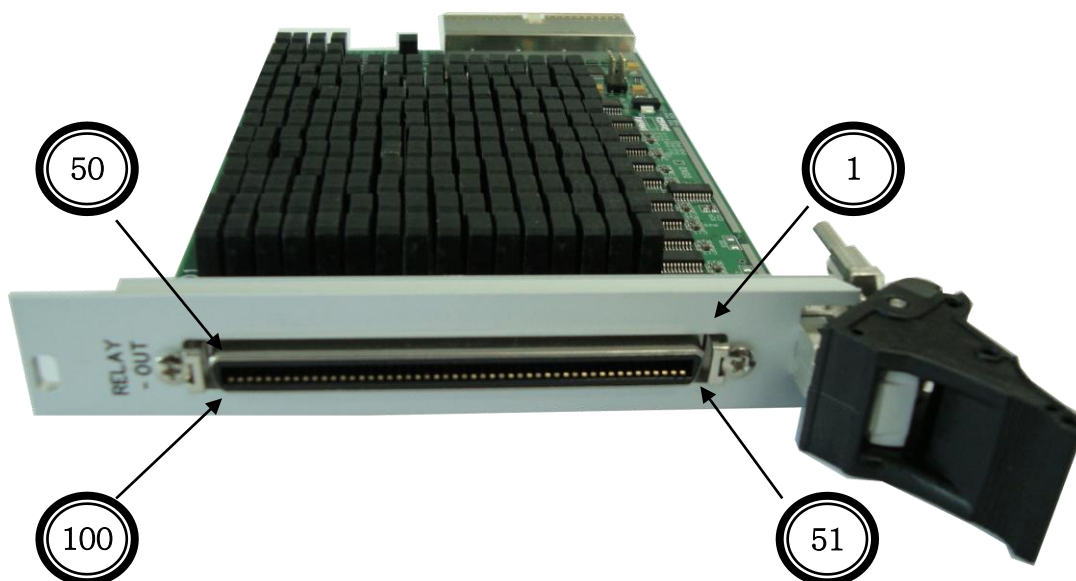
3.2.3 4x50 Matrix Structyre (ComX Vs Relay number)

[Table 2. OUT port Vs Relay Number]

OUT No.	MDR Pin No.	ComA	ComB	ComC	ComD
OUT0	1	Ry1	Ry2	Ry3	Ry4
OUT1	51	Ry5	Ry6	Ry7	Ry8
OUT2	2	Ry9	Ry10	Ry11	Ry12
OUT3	52	Ry13	Ry14	Ry15	Ry16
OUT4	3	Ry17	Ry18	Ry19	Ry20
OUT5	53	Ry21	Ry22	Ry23	Ry24
OUT6	4	Ry25	Ry26	Ry27	Ry28
OUT7	54	Ry29	Ry30	Ry31	Ry32
OUT8	5	Ry33	Ry34	Ry35	Ry36
OUT9	55	Ry37	Ry38	Ry39	Ry40
OUT10	6	Ry41	Ry42	Ry43	Ry44
OUT11	56	Ry45	Ry46	Ry47	Ry48
OUT12	7	Ry49	Ry50	Ry51	Ry52
OUT13	57	Ry53	Ry54	Ry55	Ry56
OUT14	8	Ry57	Ry58	Ry59	Ry60
OUT15	58	Ry61	Ry62	Ry63	Ry64
OUT16	17	Ry65	Ry66	Ry67	Ry68

| OUT17	67	Ry69	Ry70	Ry71	Ry72
OUT18	18	Ry73	Ry74	Ry75	Ry76
OUT19	68	Ry77	Ry78	Ry79	Ry80
OUT20	19	Ry81	Ry82	Ry83	Ry84
OUT21	69	Ry85	Ry86	Ry87	Ry88
OUT22	20	Ry89	Ry90	Ry91	Ry92
OUT23	70	Ry93	Ry94	Ry95	Ry96
OUT24	21	Ry97	Ry98	Ry99	Ry100
OUT25	71	Ry101	Ry102	Ry103	Ry104
OUT26	22	Ry105	Ry106	Ry107	Ry108
OUT27	72	Ry109	Ry110	Ry111	Ry112
OUT28	23	Ry113	Ry114	Ry115	Ry116
OUT29	73	Ry117	Ry118	Ry119	Ry120
OUT30	24	Ry121	Ry122	Ry123	Ry124
OUT31	74	Ry125	Ry126	Ry127	Ry128
OUT32	33	Ry129	Ry130	Ry131	Ry132
OUT33	83	Ry133	Ry134	Ry135	Ry136
OUT34	34	Ry137	Ry138	Ry139	Ry140
OUT35	84	Ry141	Ry142	Ry143	Ry144
OUT36	35	Ry145	Ry146	Ry147	Ry148
OUT37	85	Ry149	Ry150	Ry151	Ry152
OUT38	36	Ry153	Ry154	Ry155	Ry156
OUT39	86	Ry157	Ry158	Ry159	Ry160
OUT40	37	Ry161	Ry162	Ry163	Ry164
OUT41	87	Ry165	Ry166	Ry167	Ry168
OUT42	38	Ry169	Ry170	Ry171	Ry172
OUT43	88	Ry173	Ry174	Ry175	Ry176
OUT44	39	Ry177	Ry178	Ry179	Ry180
OUT45	89	Ry181	Ry182	Ry183	Ry184
OUT46	40	Ry185	Ry186	Ry187	Ry188
OUT47	90	Ry189	Ry190	Ry191	Ry192
OUT48	49	Ry193	Ry194	Ry195	Ry196
OUT49	99	Ry197	Ry198	Ry199	Ry200

3.2.4   Relay Board Address switch Setup
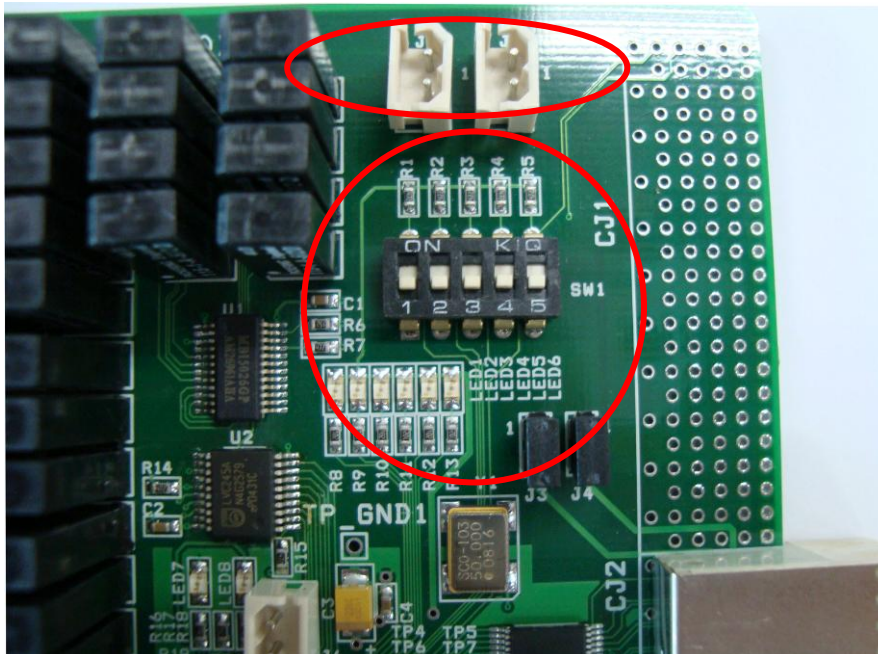
Up to 15 relay boards can be installed in the Relay System, and each board number can be set to "SW1".

*The 3rd switch of SW1 is for inspection and should not be used by general users.

[Table 3. Relay board Address switch Setup]

Board Address	SW1	SW2	SW4	SW5
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON

3.2.5   Relay Board Commlon-line Connector
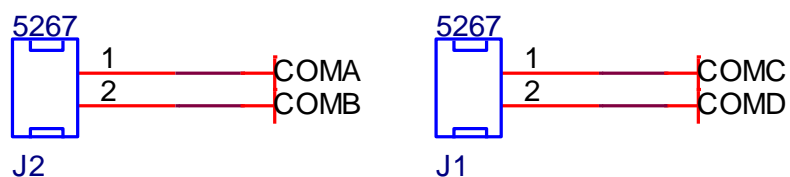
COMA and COMB can be connected in common with the RJ45 connector of the CPU board.

Appendix

A.1 General Specification

Specification	
General	• 256Mb SDRAM x 2 • 16Mb　Flash
Interface	• +3.3V Single Power operation Max 300mA under
Functions	• PCI specification v2.2 compliant
Software	
Supported OS	Windows 2000 SP4/ Windows XP SP1 Over
API	Interface with Application through client DLL
Sample Software	Test Sample software for evaluation

References

1. PCI System Architecture

-- MindShare Inc.

2. PCI Local Bus Specification

-- PCI-SIG

3. AN201 How to build application using API

-- DAQ system