

History List

- 12/05/2013 REV03
Modify CIO2 define for CIO108-4I4O & CIO108-8O
Modify product option code
Modify OEM option list.
- 09/11/2013 REV02
Delete 5A Power Relay & description
PCB Dimension modify to 77mm*35mm
- 05/30/2013 REV:01 First Version

Model list:

CIO108-4I4O-12V : 4 Digital Input (3.3V~12V) + 4 Digital Output (2 Power Relay + 2 SSR)
DO0 , DO1 : SSR
DO2 , DO3 : Power Relay

Option code list:

CIO108-AB-V

A = "4I": 4 Digital Input.

B = "4O": 4 Digital Output.

V = DI Input max voltage, "12V":3.3V~12V, "24V":6V~24V, "48V":36V~48V,

"M": Mix OEN request

OEM Option list:

(1)All Digital Input voltage can select up to 24V or 48V, default is 3.3V to 12V.

(2)Digital Output can select to DO0 – DO3: SSR or Power Relay

DO4 – DO5: Optocoupler

DO6 – DO7: SSR

Power Relay Contact rating : DC 30V / 3A max , AC 125V / 3A max

SSR Contact rating : DC 60V / 2A max , AC 60V / 2A max

Optocoupler Contact rating : DC 60V / 50mA max

Specification:

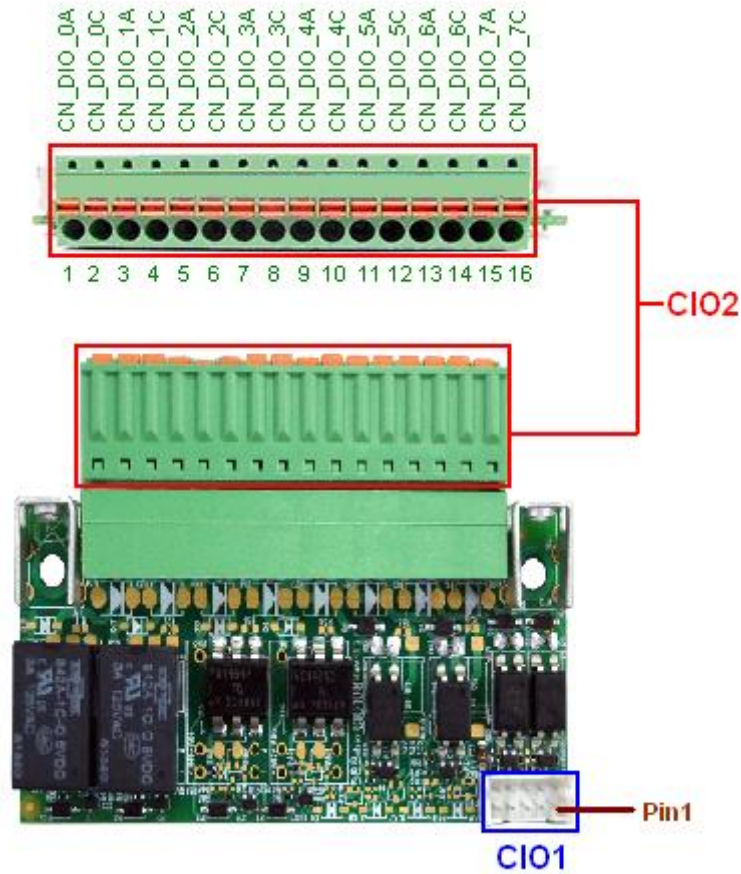
- Support 8 ports Digital Input, Support 8 ports Digital Output or 4DI+4DO
- Optocoupler for Digital Input Isolation board
- Power Relay or State Relay (SSR) or Optocoupler for Digital Output Isolation

Application:

- SSR : Instrumentation, Security, Industrial controls
- Power Relay : Automatic..

Connector:

1. CIO1 : One 2*5 (2.0mm) wafer to Main Board
2. CIO2 : One 16pin (3.5mm) TB (Terminal Block) connector



1. Wafer to Main Board

C101 : 8 Digital Input, 2 x 5 (2.0 mm) wafer

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MB_DI-0	2	MB_DI-7
3	MB_DI-1	4	MB_DI-6
5	MB_DI-2	6	MB_DI-5
7	MB_DI-3	8	MB_DI-4
9	GND	10	+5V

Note : 1. C101 connector DI signal from Main board DI/O connector

2. Input signal level is TTL / CMOS
3. Logic 0 : Input low Voltage (VIL): **+0.8V max**
4. Logic 1 : Input Hi Voltage (VIH): **+2.0V min**

C101 : 8 Digital Output, 2 x 5 (2.0 mm) wafer

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MB_DO-4	2	MB_DO-3
3	MB_DO-5	4	MB_DO-2
5	MB_DO-6	6	MB_DO-1
7	MB_DO-7	8	MB_DO-0
9	GND	10	+5V

Note : 1. C101 connector DO signal from Main board DI/O connector

2. Output signal level is TTL.
3. Logic 0 : Output Voltage (VOL): **+0.8V max**
4. Logic 1 : Output Voltage (VOH): **+2.0V min**

C101 : 4 Digital Input + 4 Digital Output, 2 x 5 (2.0 mm) wafer

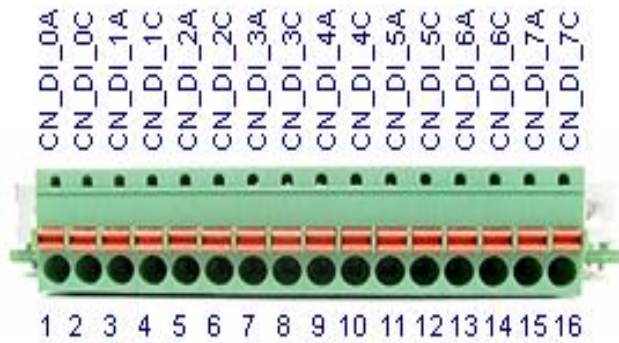
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
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1	MB_DI-0	2	MB_DO-3
3	MB_DI-1	4	MB_DO-2
5	MB_DI-2	6	MB_DO-1
7	MB_DI-3	8	MB_DO-0
9	GND	10	+5V

Note : 1. CIO1 connector DI/DO signal from Main board DI/O connector

2. TB connector to external control

CIO2 : Isolator Input TB connector, 16pin (3.5mm) wafer



PIN NO.	DESCRIPTION
1	ISO_DI-0A
2	ISO_DI-0C
3	ISO_DI-1A
4	ISO_DI-1C
5	ISO_DI-2A
6	ISO_DI-2C
7	ISO_DI-3A
8	ISO_DI-3C
9	ISO_DI-4A
10	ISO_DI-4C
11	ISO_DI-5A
12	ISO_DI-5C
13	ISO_DI-6A
14	ISO_DI-6C
15	ISO_DI-7A
16	ISO_DI-7C

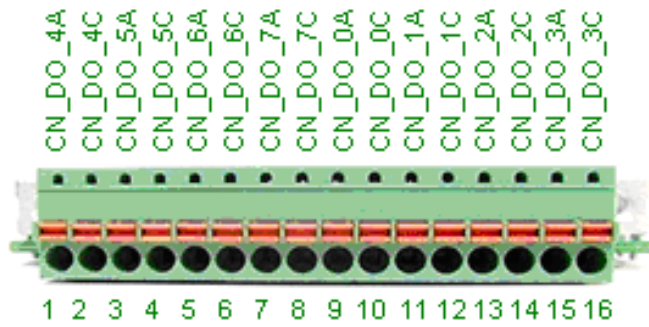
Note : 1. When **CIO1** is 8Digital Input, please refer to this connector pin define.

2. Input from CIO2 pin 0A (**Anode +**) and 0C (**Cathode -**) through Optocoupler Internal LED transfer to Photo Transistor into CIO1 to Main board.

3. When ISO_DI_A and ISO_DI_C is active to "Hi" CIO1 MB_DI active Hi

4. When ISO_DI_A and ISO_DI_C is active to "Low" CIO1 MB_DI active Low

CIO2 : Isolator Output TB connector, 16pin (3.5mm) wafer

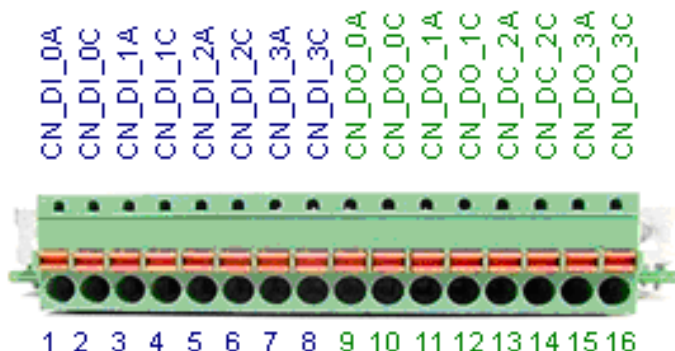


PIN NO.	DESCRIPTION
1	ISO_DO-4A
2	ISO_DO-4C
3	ISO_DO-5A
4	ISO_DO-5C
5	ISO_DO-6A
6	ISO_DO-6C
7	ISO_DO-7A
8	ISO_DO-7C
9	ISO_DO-0A
10	ISO_DO-0C
11	ISO_DO-1A
12	ISO_DO-1C
13	ISO_DO-2A
14	ISO_DO-2C
15	ISO_DO-3A
16	ISO_DO-3C

Note : 1. When CIO1 is 8Digital Output, please refer to this connector pin define.

2. Input from Main board CIO connector to CIO1 pin MB_DO
Through **Power Relay** or **SSR** or **Optocoupler** transfer to CIO2 pin on / off
3. When MB_DO Low to Hi , ISO_DO_A and ISO_DO_C active to on
4. When MB_DO Hi to Low , ISO_DO_A and ISO_DO_C active to off
5. Port 1/2 & 3/4 can select to **Optocoupler** only
6. Port 5/6 & 7/8 can select to **SSR**
7. Port 9/10, 11/12, 13/14, 15/16 can select to **Power Relay** or **SSR**

CIO2 : Isolator Input & Output TB connector, 16pin (3.5mm) wafer



PIN NO.	DESCRIPTION
1	ISO_DI-0A
2	ISO_DI-0C
3	ISO_DI-1A
4	ISO_DI-1C
5	ISO_DI-2A
6	ISO_DI-2C
7	ISO_DI-3A
8	ISO_DI-3C
9	ISO_DO-0A
10	ISO_DO-0C
11	ISO_DO-1A
12	ISO_DO-1C
13	ISO_DO-2A
14	ISO_DO-2C
15	ISO_DO-3A
16	ISO_DO-3C

Note : 1. When CIO1 is 4Digital Input + 4Digital Output, please refer to this connector pin define..

2. Input form CIO2 pin 0A (Anode +) and 0C (Cathode -) through Optocoupler Internal LED transfer to Photo Transistor into CIO1 to Main board.

3. When ISO_DI_A and ISO_DI_C is active to “Hi” CIO1 MB_DI active Hi

4. When ISO_DI_A and ISO_DI_C is active to “Low” CIO1 MB_DI active Low

5. Input form Main board CIO connector to CIO1 pin MB_DO

Through **Power Relay** or **SSR** or **Optocoupler** transfer to CIO2 pin on / off

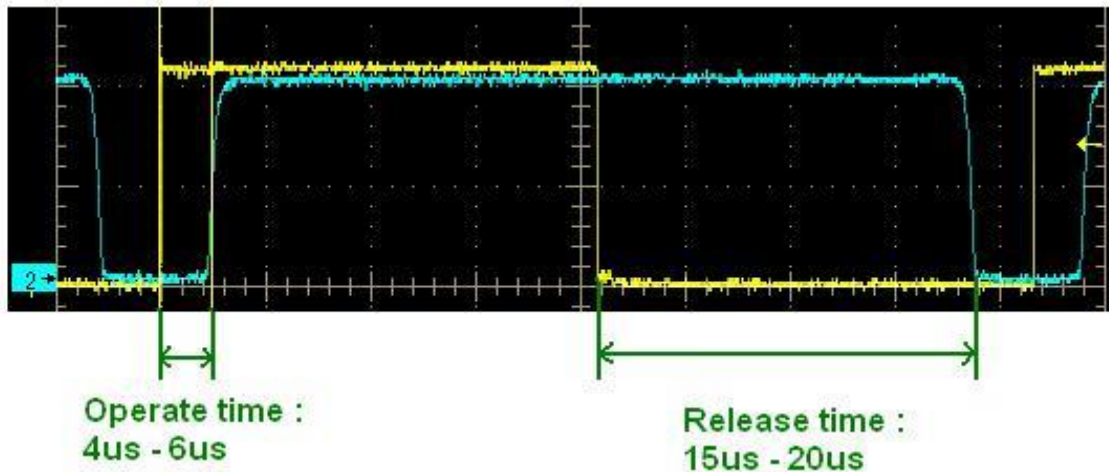
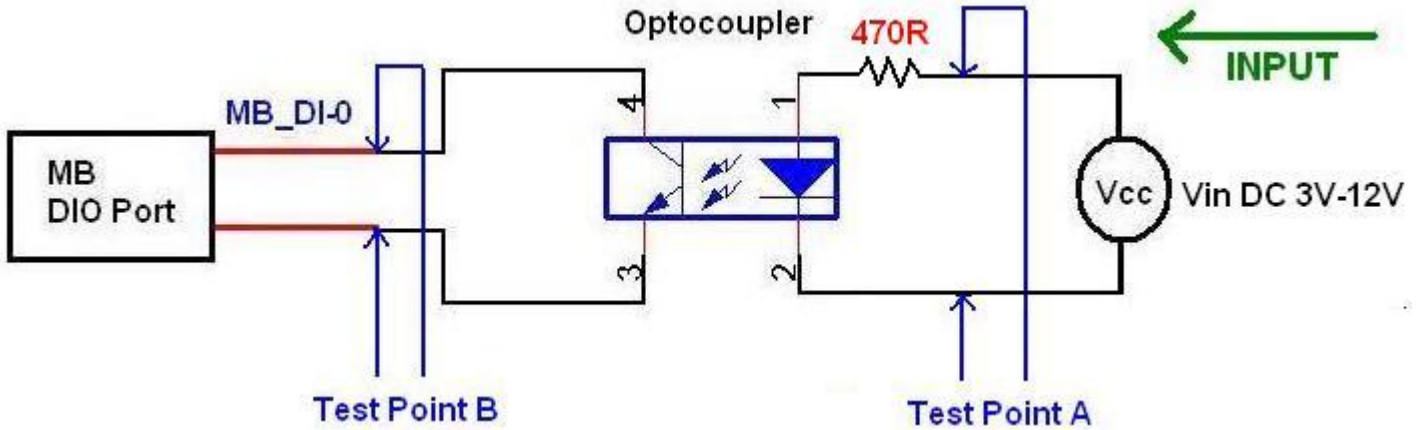
6. When MB_DO Low to Hi , ISO_DO_A and ISO_DO_C active to on

7. When MB_DO Hi to Low , ISO_DO_A and ISO_DO_C active to off

8. Port 9/10, 11/12, 13/14, 15/16 can select to **Power Relay or **SSR****

● Application circuit for DI

Optocoupler



Note : Active delay time **20us max** (Test point A **ON** to Test Point B **ON**)

Release delay time **20us max** (Test point A **OFF** to Test Point B **OFF**)

Component specification

Digital Input (C1O1 Side Digital Input)

Channels : 4CH or 8CH

Compatibility : 3.3V/TTL

Input Voltage : Logic 0 : +0.8V max

Logic 1 : +2.0V min

Isolated Digital Input (C1O2 Side Digital Input)

Input current:

Rated current : 5mA

Max current : 50mA, for isolated input.

(1)Condition1: 470R (Default)

Input voltage : Up to DC 12V

Input high voltage : +3.3V to +12V+5% max

Input low voltage : 0V to +2V max

(2)Condition2 : 1.65K

Input voltage : Up to DC 24V

Input high voltage : +6V to +24V+5% max

Input low voltage : 0V to +5V max

(3)Condition3 : 15K

Input voltage : Up to DC 48V

Input high voltage : +36V to +48V+5% max

Input low voltage : 0V to +35V max

Isolation Protection : 5000Vrms at 1 minute

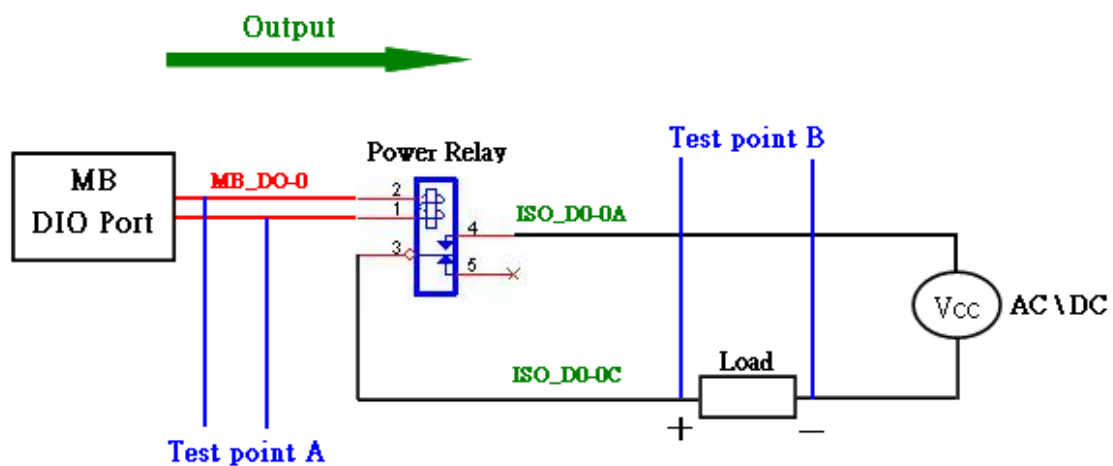
Switch speed : under 30KHz

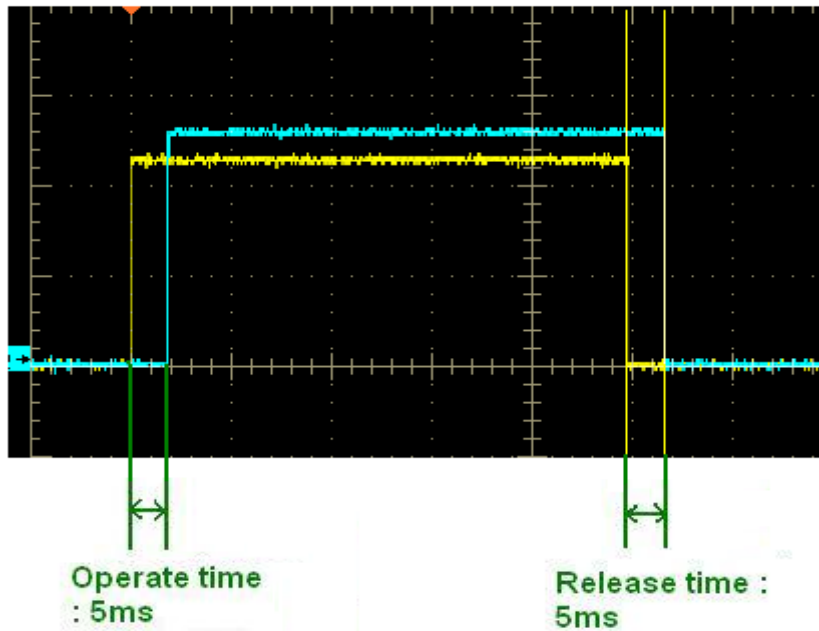
Opto-Isolator Response: Operate time : 20us max

Release time : 20us max

● **Application circuit for DO**

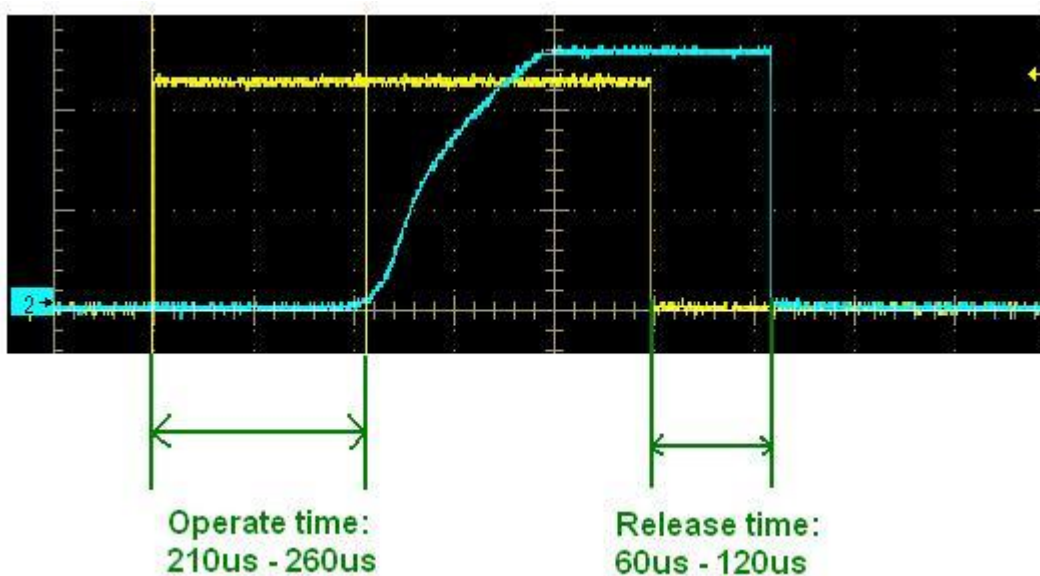
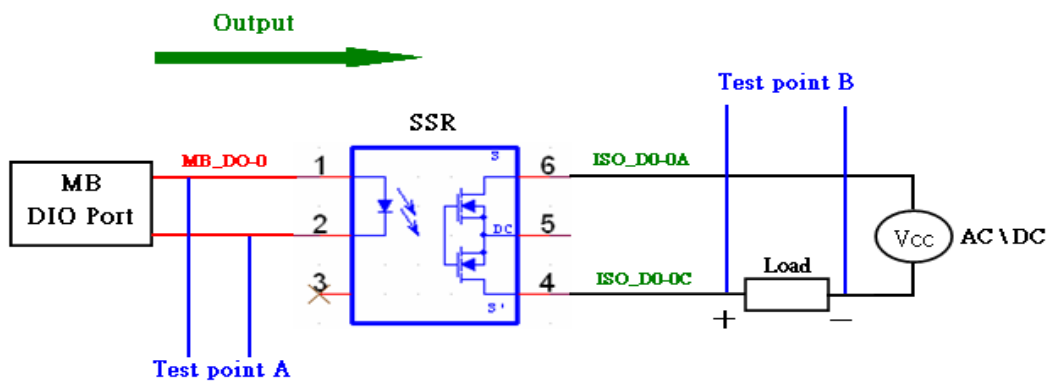
(1)Power Relay





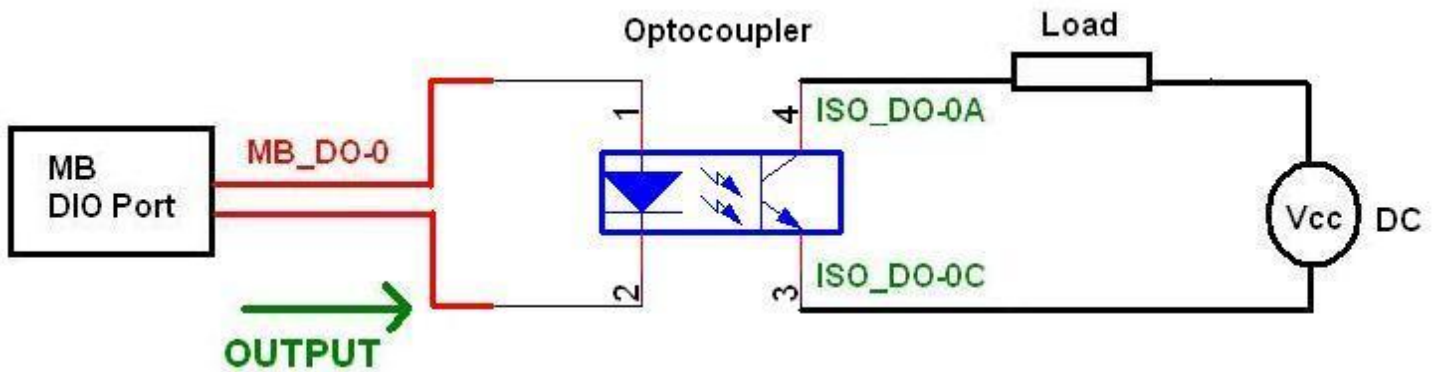
Note : Active delay time = **10ms max** (Test point A **ON** to Test Point B **ON**)
 Release delay time = **5ms max** (Test point A **OFF** to Test Point B **OFF**)

(2)SSR (Solid State Relay)



Note : Active delay time = **550us max** (Test point A **ON** to Test Point B **ON**)
Release delay time = **200us max** (Test point A **OFF** to Test Point B **OFF**)

(3) Optocoupler



Note : For Operate time & Release time, please refer to DI application.

Component specification

Digital Output (**CIO1 Side Digital output**)

Channels : 4CH or 8CH

Compatibility : 5V/TTL

Output Voltage : Logic 0 : +0.8V max

Logic 1 : +2.0V min

(1) Power Relay

Isolated Digital Output (**CIO2 Side Digital output**)

Contact rating : DC 30V / 3A max , AC 125V / 3A max

Insulation resistance : 100M Ω min. (DC 500V)

Breakdown voltage : AC 1000V , 50/60 Hz for 1 minute

Contact resistance : 100m Ω max

Switch speed : under 200Hz

Operate time : 10 ms max.

Release time : 5 ms max.

Life expectancy : Mechanical : 10,000,000 operations (frequency 18,000 operations/hr)

Electrical : 100,000 operations (frequency 1,800 operations/hr)

(2) SSR(Solid State Relay)

Isolated Digital Output (**CIO2 Side Digital output**)

Contact rating : DC 60V / 2A max , AC 60V / 2A max

Peak current : 3.6A at 10ms.

Insulation resistance : 1T Ω min. (DC 500V)

Isolation test voltage : 5300Vrms at 1sec

Switch speed : under 1KHz

Operate time : 300us max.

Release time : 200us max.

(3) Optocoupler

Isolated Digital Output (**CIO2 Side Digital output**)

Contact rating : DC 60V / 50mA max

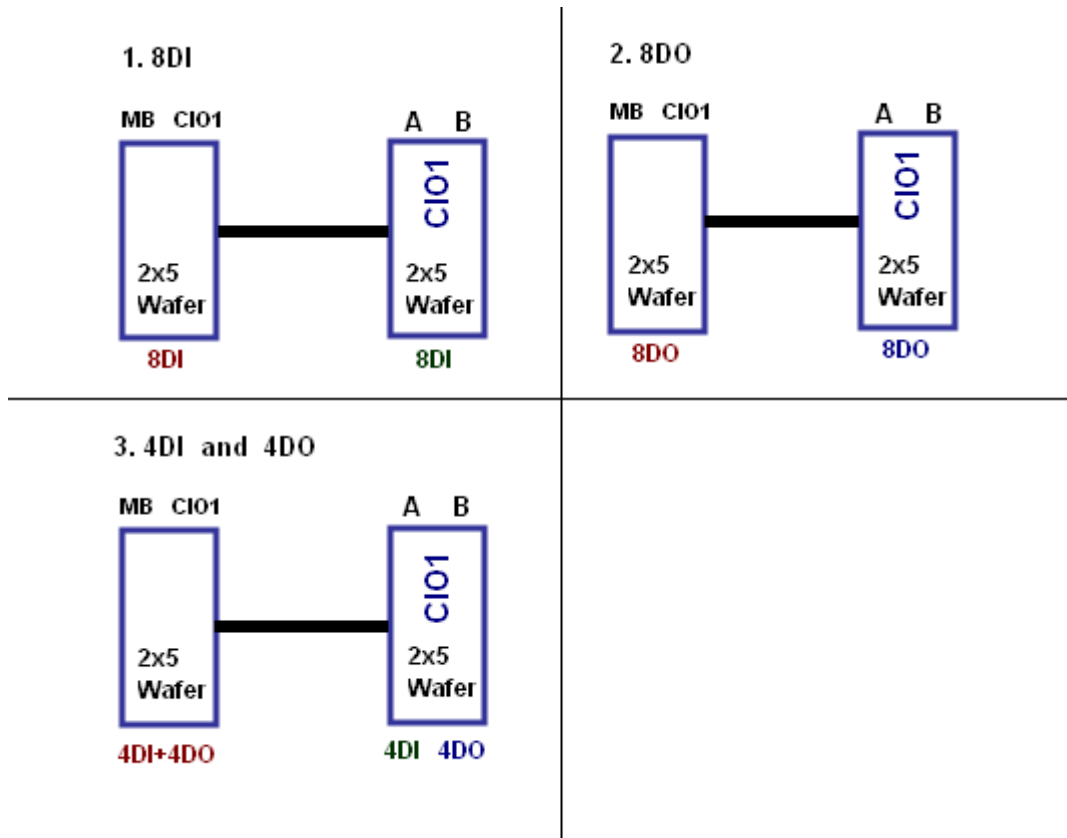
Isolation Protection : 5000Vrms at 1 minute

Switch speed : under 30KHz

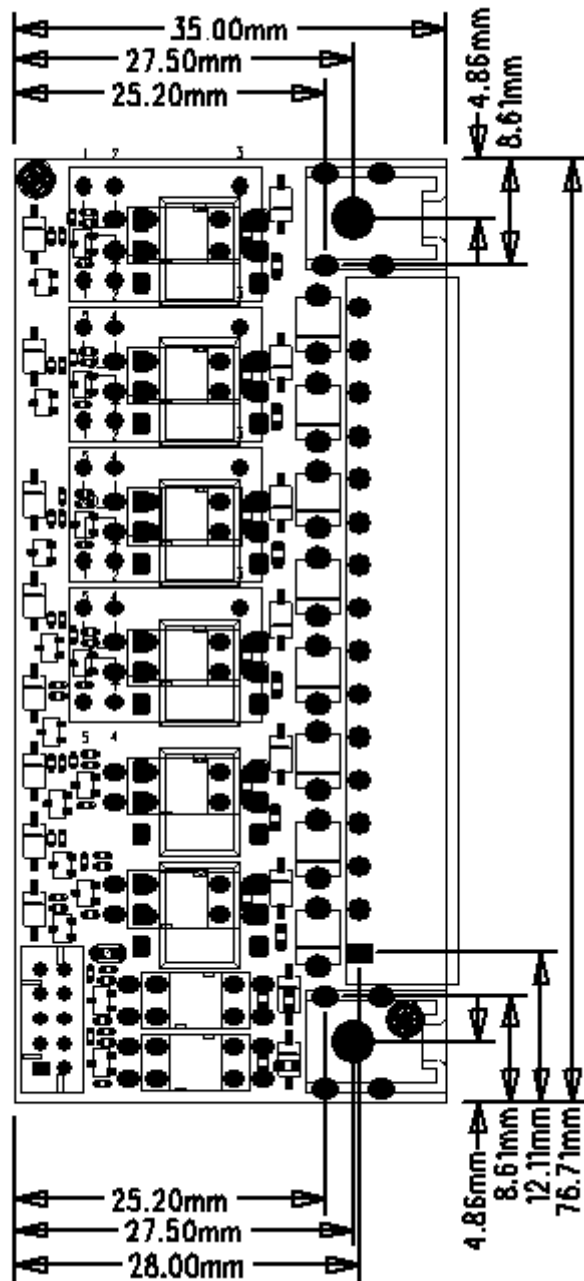
Operate time : 20us max.

Release time : 20us max.

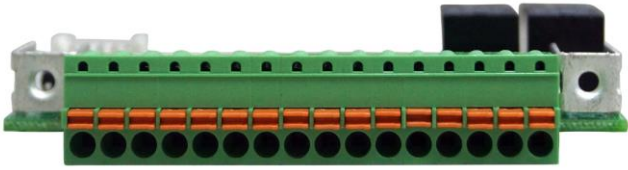
● Configuration when connect to LEX SBC



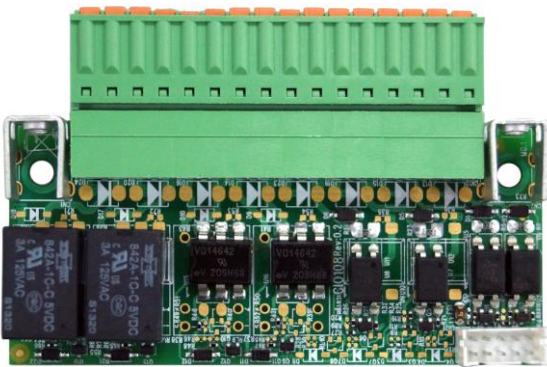
PCB: 2 Layers, Dimension – 77mm x 35mm



Front Side Photo



Top Side Photo



CIO108-4140

Bottom Side Photo:

