DIO3248A
Digital I/O Card

User's Manual (V1.1)

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Correction record

Version	Record
V1.0	New
V1.0->V1.1	DIO3248DIN(N)→ADP3248DIN(N)

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Notes on hardware installation

Please follow step by step as you are installing the control cards.

1. Be sure your system is power off.
2. Be sure your external power supply for the wiring board is power off.
3. Plug your control card in slot, and make sure the golden fingers are put in right contacts.
4. Fasten the screw to fix the card.
5. Connect the cable between the card and wiring board.
6. Connect the external power supply for the wiring board.
7. Recheck everything is OK before system power on.
8. External power on.

Congratulation! You have it.

For more detail of step by step installation guide, please refer the file “installation.pdf “ on the CD come with the product or register as a member of our user’s club at:

http://automation.com.tw/

to download the complementary documents.

1. Difference between the DIO3248 and DIO3248A

DIO3248A is direct replacement of older version DIO3248. You do not need to re-install the driver or make any hardware change, if you replace the new DIO3248A for old DIO3248. **But we recommend you to use new driver for new design; the new driver, we provide new function convention and it will be easier to update to new DIO3248B which has more power functions than the old DIO3248.**

2. Forward

Thank you for your selection of DIO3248A 48 inputs and 16 outputs DIGITAL I/O card for IBM compatible industrial PC. In the field of industrial control, digital I/O is generally controlled under a microprocessor and owing to their specific consideration of industrial environment, it is quite different from the laboratory requirement.

This card is a FPGA based design and our experience in the noise immunity makes this card very stable in the noisy environment and you don't worry about computer down by external noise. We wish the card that will be helpful to your project.

Other DIO series products:

DIO9201 16 channel input and 16 channel output isolated digital I/O card (ISA bus)
DIO2232 32 channel input and 32 channel output isolated digital I/O card (ISA bus)
DIO3206 48 channel TTL digital I/O Card (PCI bus)
DIO3208B 8 channel input and 8 channel relay output isolated digital I/O card (PCI bus)
DIO3216B 16 channel input and 16 channel output isolated digital I/O card (PCI bus)
DIO3217 16 channel input and 16 channel output isolated digital I/O card (PCI bus) with multifunction timer/counter
DIO3232A 32 channel input and 32 channel output isolated digital I/O card (PCI bus)
DIO3232B advanced 32 channel input and 32 channel output isolated digital I/O card (PCI bus)
DIO3248B advanced 48 channel input and 16 channel output isolated digital I/O card (PCI bus)
DIO3264A 64 channel input isolated digital I/O card (PCI bus)
DIO3264B advanced 64 channel input isolated digital I/O card (PCI bus)
DIO3265 64 channel output isolated digital I/O card (PCI bus) with 16 TTL IO
DIO4264 64 TTL digital I/O PC-104 Module
DIO6208 8 channel input and 8 channel relay output isolated digital I/O PCI-104 Module
DIO6216 16 channel input and 16 channel relay output isolated digital I/O PCI-104 Module

Any comment is welcome,
please visit our website
http://www.automation.com.tw/
http://www.automation-js.com/ for the up to date information.

3. Features

2.1 PCI plug and play function with card ID for 16 identical cards

2.2 48 inputs and 16 outputs are photo-coupler isolated

2.3 Build-in input de-bounce circuit

2.4 Accept external interrupt at IN0, IN1

wiring board

2.5 LEDs for corresponding status indication

2.6 8 digits per I/O group with Green LED at first digit

2.7 Power MOS type output for high speed DC load

4. Specifications

4.1 DIO3248A Main card

Digital input

4.1.1 Input channel — 48 ea of ON/OFF switching

4.1.2 Rated input voltage — DC 24V

4.1.3 Input "ON" state — 2.8V(max) 4.5mA(min)

4.1.4 Input "OFF" state — 8V(min) 3mA(max)

4.1.5 Switching speed — 10K (limit by photo-coupler speed or by debounce circuit)

Digital output

4.1.6 Output channel — 16 ea of ON/OFF switching

4.1.7 Output capacity — POWER MOS output:
1A continuous@120Vdc(NMOS max), @ 24Vdc (PMOS max)
Relay output: 3A continuous@250Vac(max)

General

4.1.8 Card ID — 4 bits

4.1.9 Insulation resistance — 100M Ohm (min) at 1000Vdc

4.1.10 Isolation voltage — 2500Vac 1Min

4.1.11 PCI bus data width — 32 bits

4.1.12 I/O connector — 68 pin female SCSI II connector

4.1.13 Wiring board — 1 with round cable hook to main card

4.1.14 External supply — DC 24±4V

4.1.15 Operation temperature — 0 to 70° C

4.1.16 Storage temperature — -20° to 80° C

4.1.17 Operation humidity — RH5~95%, non-condensed

4.1.18 Dimension — 159(W) * 106(H) mm, 6.3(W) * 4.2(H)in

4.2 DIN rail mounted wiring board

ADP3248DIN Din rail mounted wiring board

4.2.1 External supply —DC 24V±4V

4.2.2 Input status indicator — 48LED, 8 digit per group with Green LED at first digit

4.2.3 Output status indicator — 16 LED, 8 digit per group with Green LED at first digit

4.2.4 Power indicator — Red LED

4.2.5 Terminal — every 4 has one common terminal.
(Different “common” for different positive power terminal)

4.2.6 Output capacity —POWER MOS output, 1A continuous、120Vdc (NMOS max) 、 24Vdc (PMOS max) ；
Relay output, 3A continuous、250Vac(max)

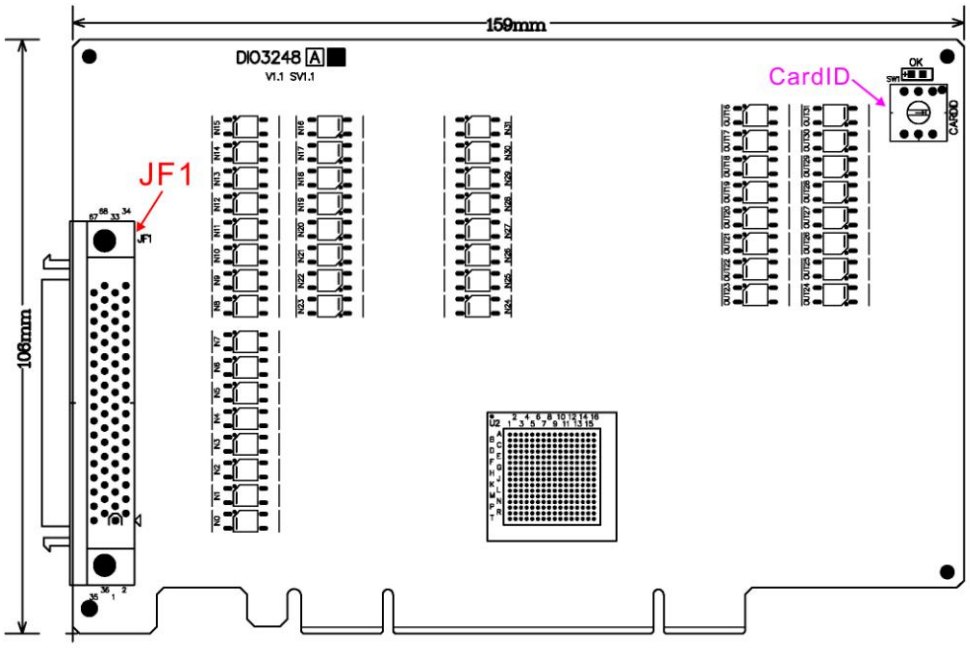
4.2.7 Operation temperature — 0 to 70° C

4.2.8 Operation humidity — RH5~95%, non-condensed

4.2.9 Dimension — ADP3248DIN(N) : 121(W) * 159(L) * 47(H)mm
4.8(W)*6.3(L)*1.9(H)in
DIO3248DIN(R) / (P) : 121(W) * 159(L) * 45(H)mm
4.8(W)*6.3(L)*1.8(H)in

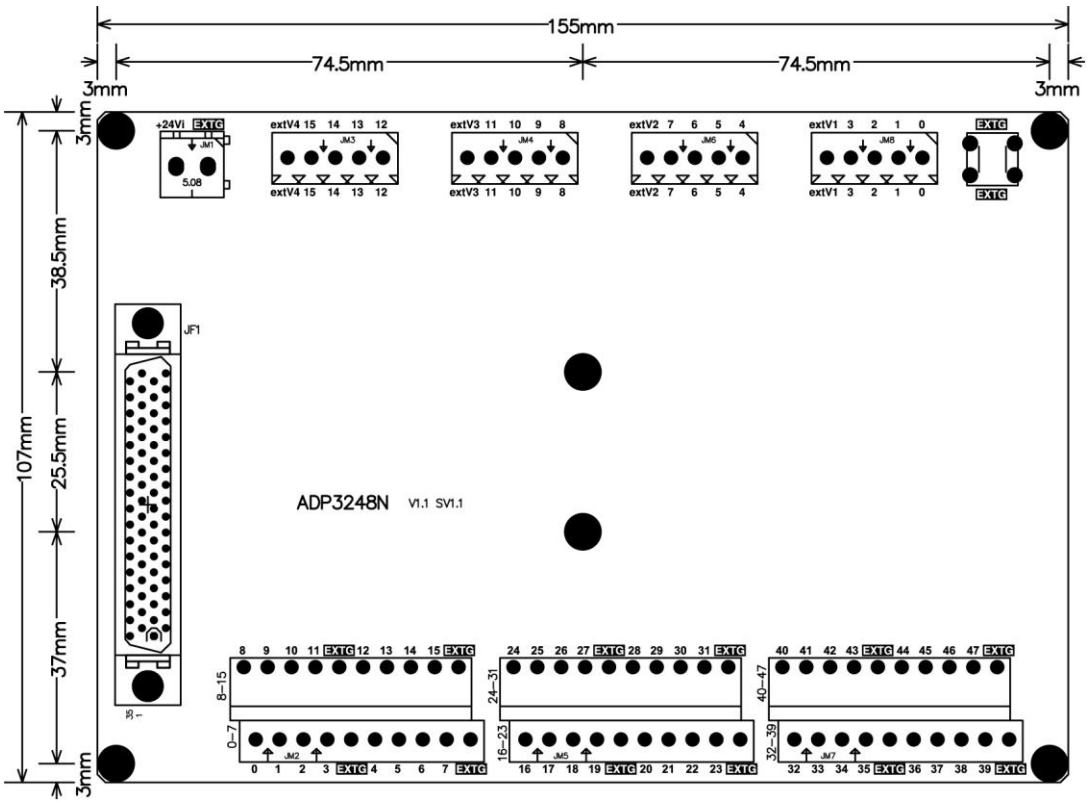
5. Layout and dimensions

5.1 DIO3248A Main card



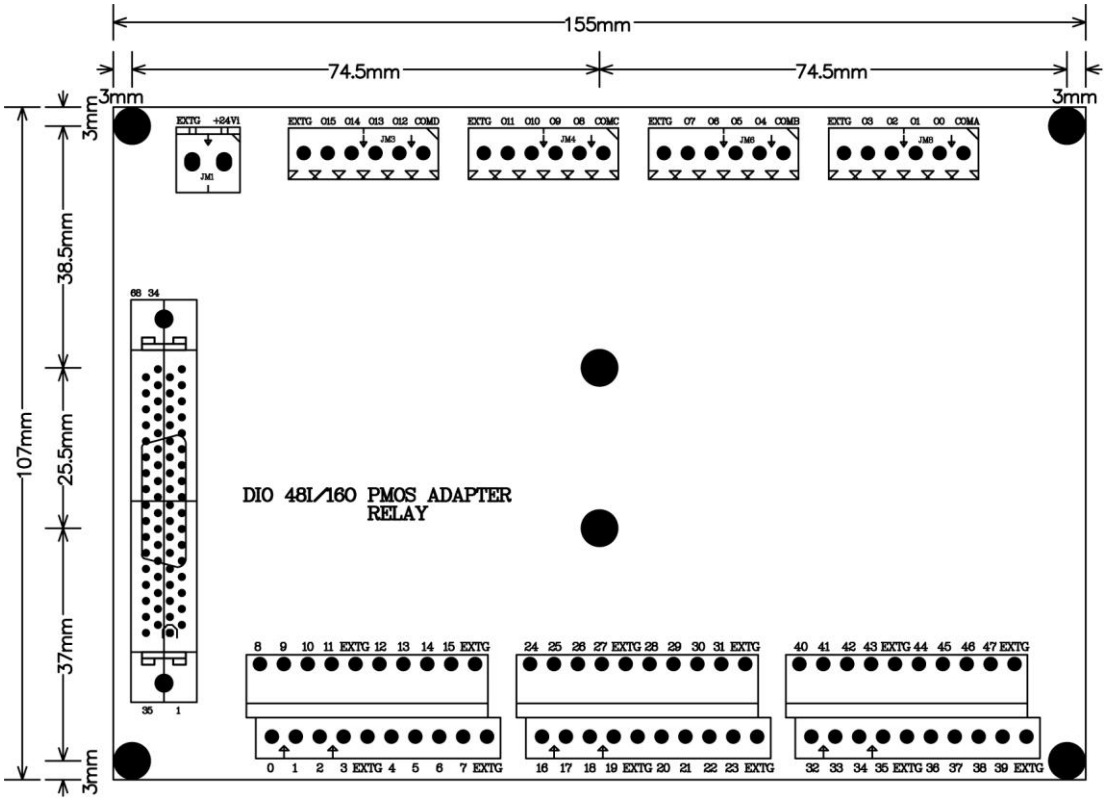
*dimension in bare board

5.2 ADP3248DIN(N) Din rail mounted wiring board



*dimension in bare board

5.3 DIO3248DIN(P)/(R)Din rail mounted wiring board



*dimension in bare board

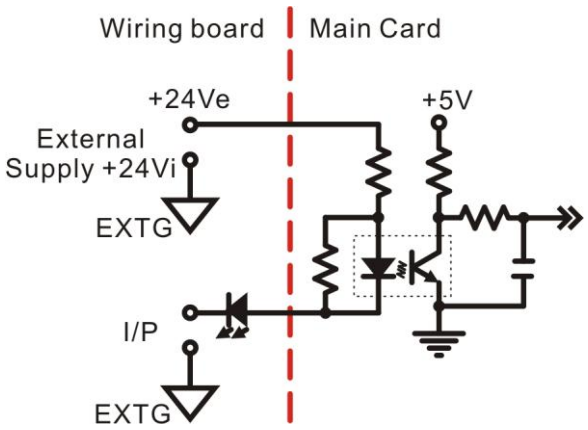
6. Pin definitions

6.1 JF1 Assignment / Definitions

PIN	Descriptions	PIN	Descriptions
1	IN0 [External Input 0]	35	IN1 [External Input 1]
2	IN2 [External Input 2]	36	IN3 [External Input 3]
3	IN4 [External Input 4]	37	IN5 [External Input 5]
4	IN6 [External Input 6]	38	IN7 [External Input 7]
5	IN8 [External Input 8]	39	IN9 [External Input 9]
6	IN10 [External Input 10]	40	IN11 [External Input 11]
7	IN12 [External Input 12]	41	IN13 [External Input 13]
8	IN14 [External Input 14]	42	IN15 [External Input 15]
9	IN16 [External Input 16]	43	IN17 [External Input 17]
10	IN18 [External Input 18]	44	IN19 [External Input 19]
11	IN20 [External Input 20]	45	IN21 [External Input 21]
12	IN22 [External Input 22]	46	IN23 [External Input 23]
13	IN24 [External Input 24]	47	IN25 [External Input 25]
14	IN26 [External Input 26]	48	IN27 [External Input 27]
15	IN28 [External Input 28]	49	IN29 [External Input 29]
16	IN30 [External Input 30]	50	IN31 [External Input 31]
17	IN32 [External Input 32]	51	IN33 [External Input 33]
18	IN34 [External Input 34]	52	IN35 [External Input 35]
19	IN36 [External Input 36]	53	IN37 [External Input 37]
20	IN38 [External Input 38]	54	IN39 [External Input 39]
21	IN40 [External Input 40]	55	IN41 [External Input 41]
22	IN42 [External Input 42]	56	IN43 [External Input 43]
23	IN44 [External Input 44]	57	IN45 [External Input 45]
24	IN46 [External Input 46]	58	IN47 [External Input 47]
25	OUT0 [External Output 0]	59	OUT1 [External Output 1]
26	OUT2 [External Output 2]	60	OUT3 [External Output 3]
27	OUT4 [External Output 4]	61	OUT5 [External Output 5]
28	OUT6 [External Output 6]	62	OUT7 [External Output 7]
29	OUT8 [External Output 8]	63	OUT9 [External Output 9]
30	OUT10 [External Output 10]	64	OUT11 [External Output 11]
31	OUT12 [External Output 12]	65	OUT13 [External Output 13]
32	OUT14 [External Output 14]	66	OUT15 [External Output 15]
33	+24V [External DC24V power]	67	+24V [External DC24V power]
34	+24V [External DC24V power]	68	+24V [External DC24V power]

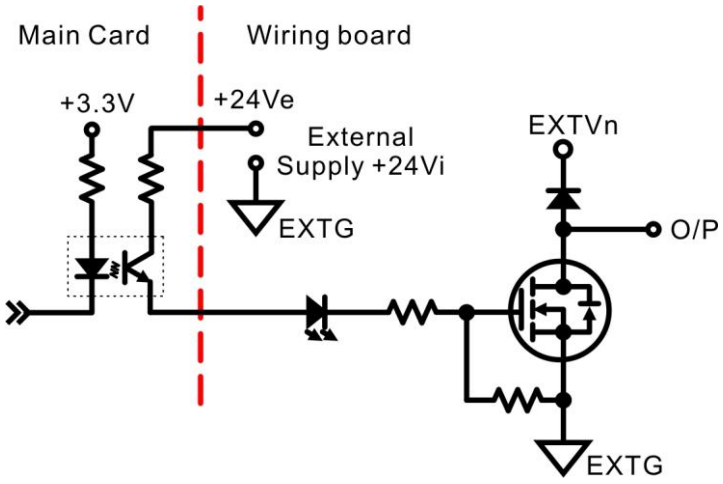
7. I/O interface diagram

7.1 Input diagram

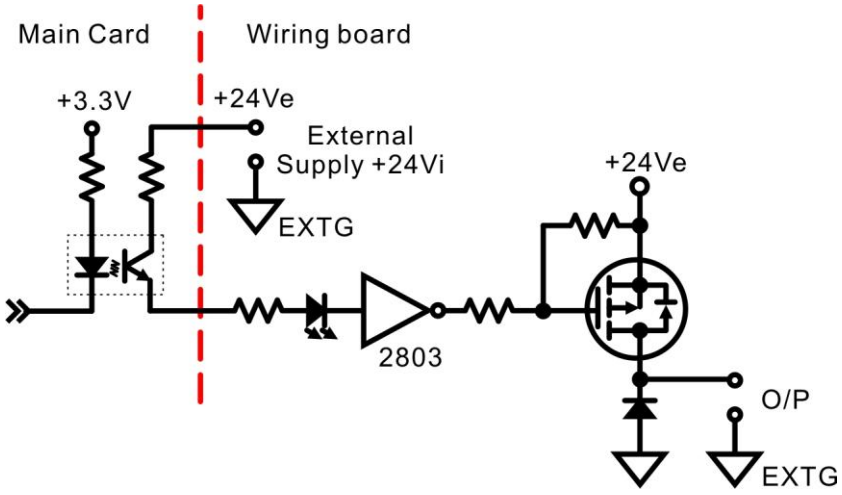


7.2 Output diagram

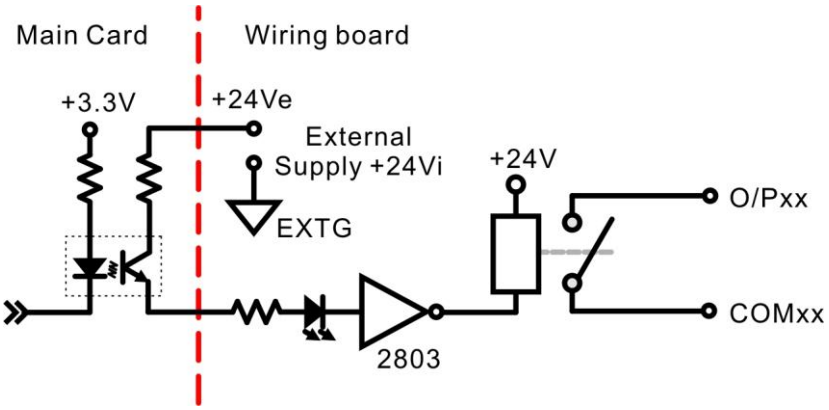
Type 1 output : NMOS



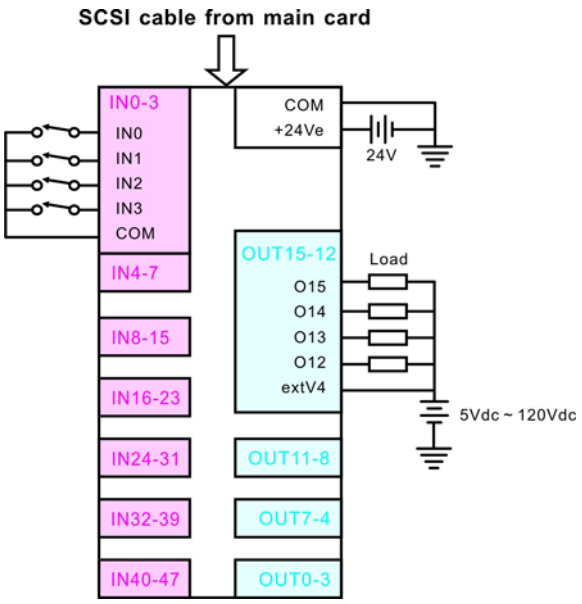
Type 2 output : PMOS



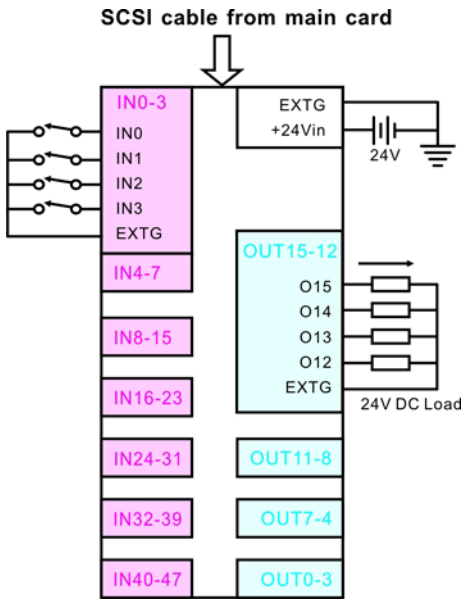
Type 3 output : RELAY



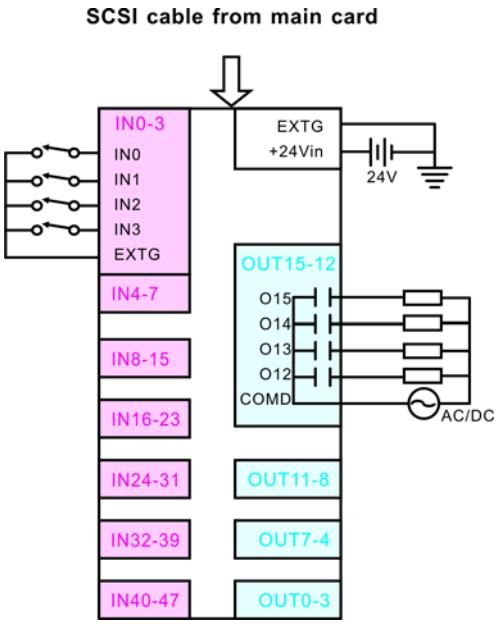
8. External wiring diagram



wiring board with NMOS output



wiring board with PMOS output



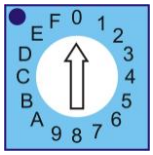
wiring board with Relay output

9. Hardware settings

9.1 Card ID setting

Since PCI cards have plug and play function, the card ID is required for programmer to identify which card he/she will control without knowing the physical address assigned by the Windows. The rotary switch is used for distinguishing the 16 identical cards.

The following example sets the card ID at 0.



10. Applications

- Accept：

  P.B./M.S./EMG./Contact- Start/Stop/Limit switch/sensor

  Interlock/selective Sw.- Proximity switch

  Aux. contact of transducer/detector

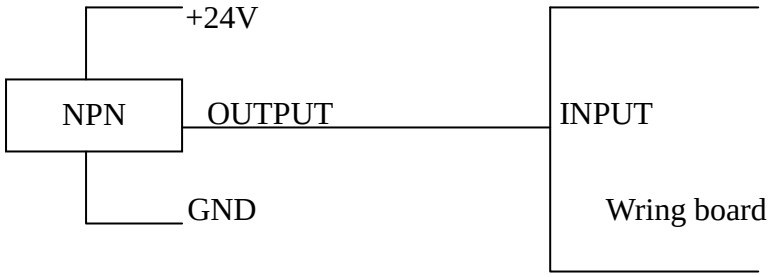
- As I/O of S/W PLC Controller

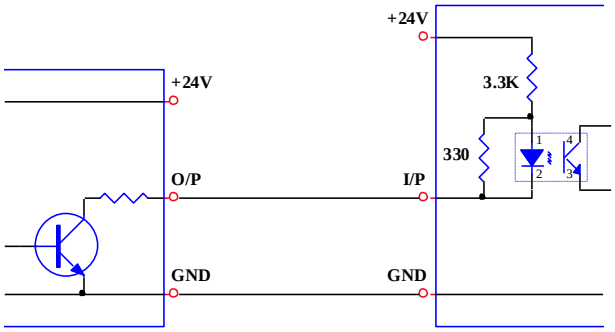
  Power MOS type output: drive high speed DC load

11. Application note

11.1 Tip for using NPN type proximity switch

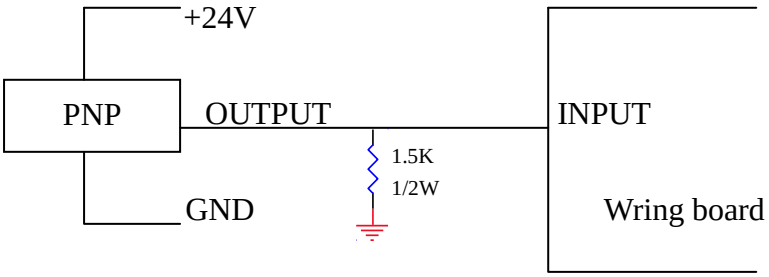
The NPN type proximity sensor can directly connect to input of wring board.

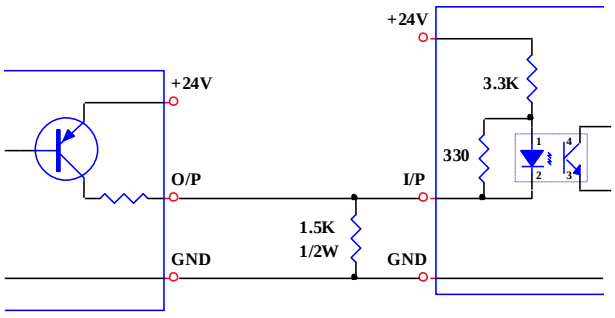




11.2 Tip for using PNP type proximity switch

The PNP type proximity sensor need extra pull down resister connect to input of wring board.





12. Ordering information

PRODUCT	DESCRIPTIONS
DIO3248A	64-channel Digital I/O Card for 48 DI and 16 D0 Photo-coupler isolated
ADP3248DIN(N)	DIN rail mounted wiring board for 48 input and 16 power NMOS output
DIO3248DIN(P)	DIN rail mounted wiring board for 48 input and 16 power PMOS output
DIO3248DIN(R)	DIN rail mounted wiring board for 48 input and 16 Relay output
M266868150	68-pin SCSI II cable 1.5M
M266868300	68-pin SCSI II cable 3.0M