DIO3232A

Digital I/O Card

User's Manual (V1.2)

健昇科技股份有限公司

JS AUTOMATION CORP.

新北市汐止區中興路 100 號 6 樓

6F., No.100, Zhongxing Rd.,

Xizhi Dist., New Taipei City, Taiwan

TEL：+886-2-2647-6936

FAX：+886-2-2647-6940

http://www.automation.com.tw

http://www.automation-js.com/

E-mail：control.cards@automation.com.tw

Correction record

Version	Record
1.0	New
1.0->1.1	1. Add Chapt. 1 Difference between the DIO3232 and DIO3232A
	2. Realignment of specification
1.1->1.2	1. Add ADP3232ADIN(N) Din rail mounted wiring board (V1.3)
	2 Add ADP3232ADIN(P) Din rail mounted wiring board (V1.3)
	3. Add ADP3232ADIN(R) Din rail mounted wiring board (V1.2)
	4. Modify JF1 Assignment / Definitions

Contents

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 DIO3232 and DIO3232A

DIO3232A is direct replacement of older version DIO3232. You do not need to re-install the driver or make any hardware change, if you replace the new DIO3232A for old DIO3232. **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 DIO3232B which has more power functions than the old DIO3232.**

2. Forward

Thank you for your selection of JAC's product DIO3232A 32 inputs and 32 outputs DIGITAL I/O card for 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
DIO3232B advanced 32 channel input and 32 channel output isolated digital I/O card (PCI bus)
DIO3248A 48 channel input and 16 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 32 inputs and 32 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 DIO3232A Main card

Digital input

4.1.1 Input channel — 32 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 — 32 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

ADP3232DIN/ADP3232ADIN Din rail mounted wiring board

4.2.1 External supply — DC 24V±4V

4.2.2 Input status indicator — 32 LED, 8 digit per group with Green LED at first digit

4.2.3 Output status indicator — 32 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 — NMOS : 1A continuous@120Vdc
PMOS: 1A continuous@24Vdc
Relay : 3A continuous@250Vac(max)

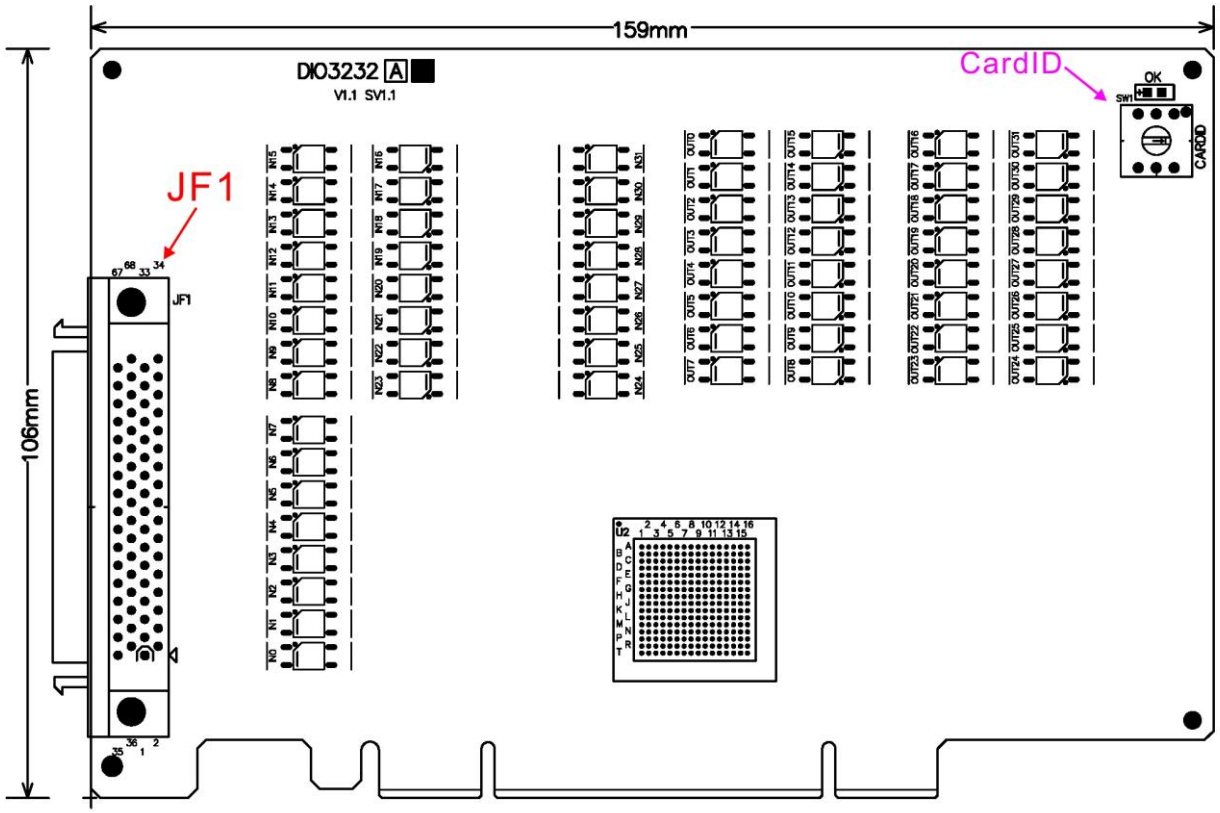
4.2.7 Operation temperature — 0 to 70° C

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

4.2.9 Dimension — ADP3232DIN(N)/ADP3232ADIN(N) : 121(W) * 159(L) * 47(H)mm
4.8(W)*6.3(L)*1.9(H)in
ADP3232DIN(P)/ADP3232ADIN(P) : 121(W) * 159(L) * 45(H)mm
4.8(W)*6.3(L)*1.8(H)in
ADP3232DIN(R)/ADP3232ADIN(R) : 121(W) * 204(L) * 45(H)mm
4.8(W)*8.1(L)*1.8(H)in

5. Layout and dimensions

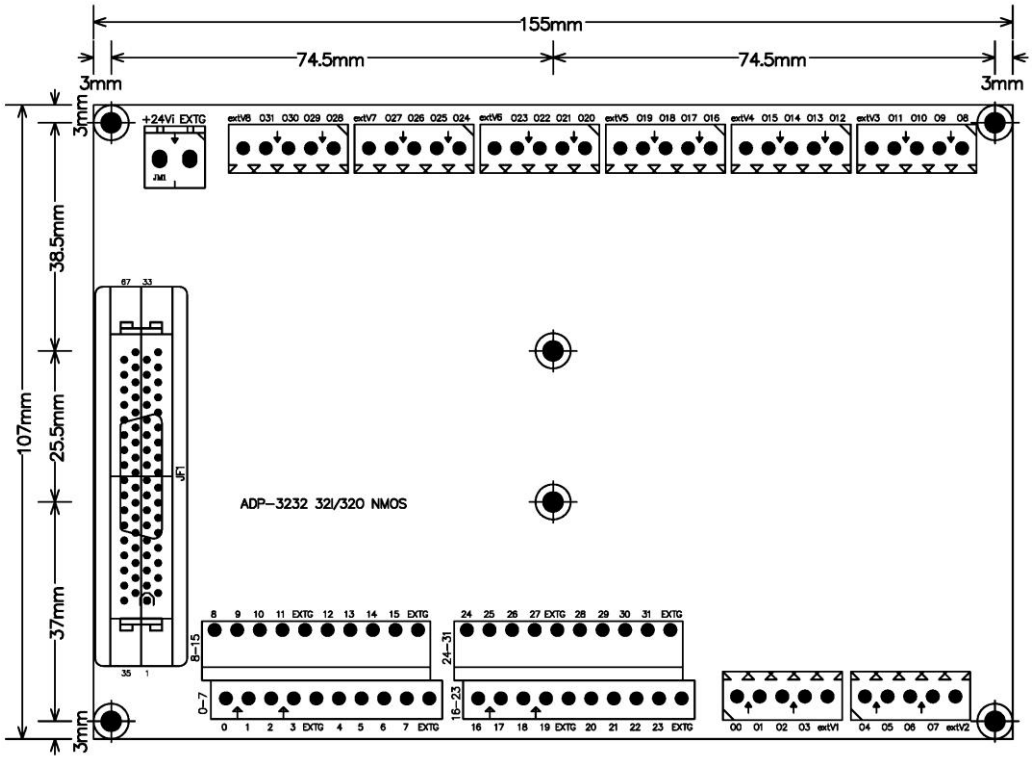
5.1 DIO3232A Main card



*dimension in bare board

5.2 ADP3232DIN(N) Din rail mounted wiring board

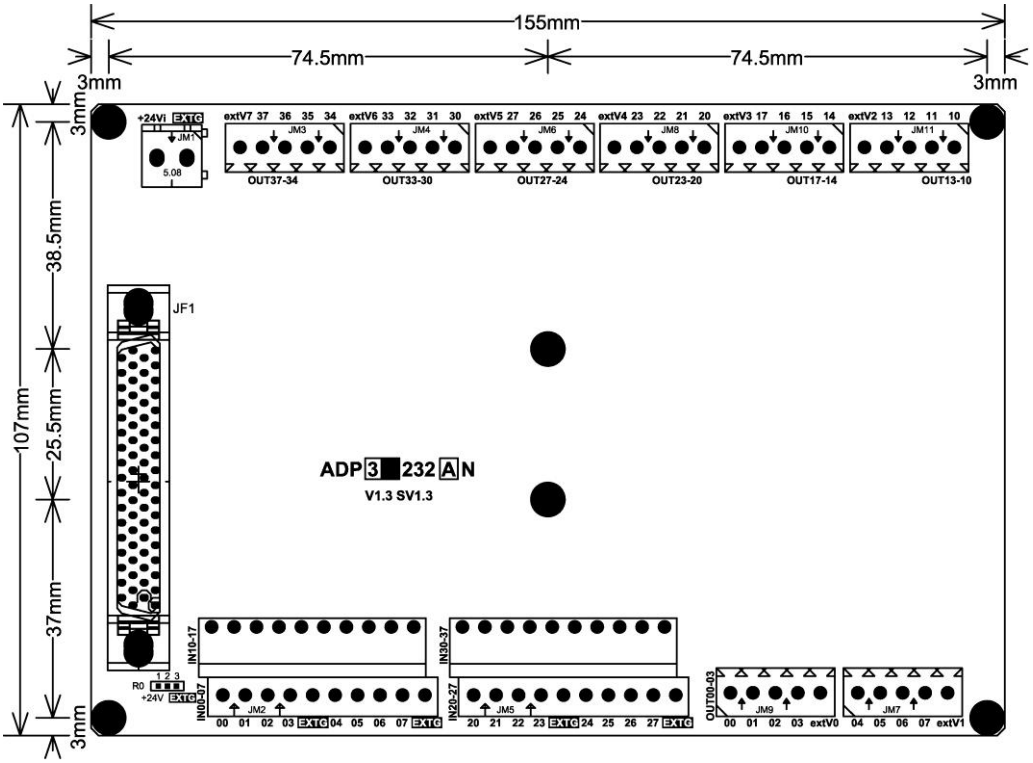
Note: The I/O pints are enumerated from 0 to 31 without port designation.



*dimension in bare board

5.3 ADP3232ADIN(N) Din rail mounted wiring board (V1.3)

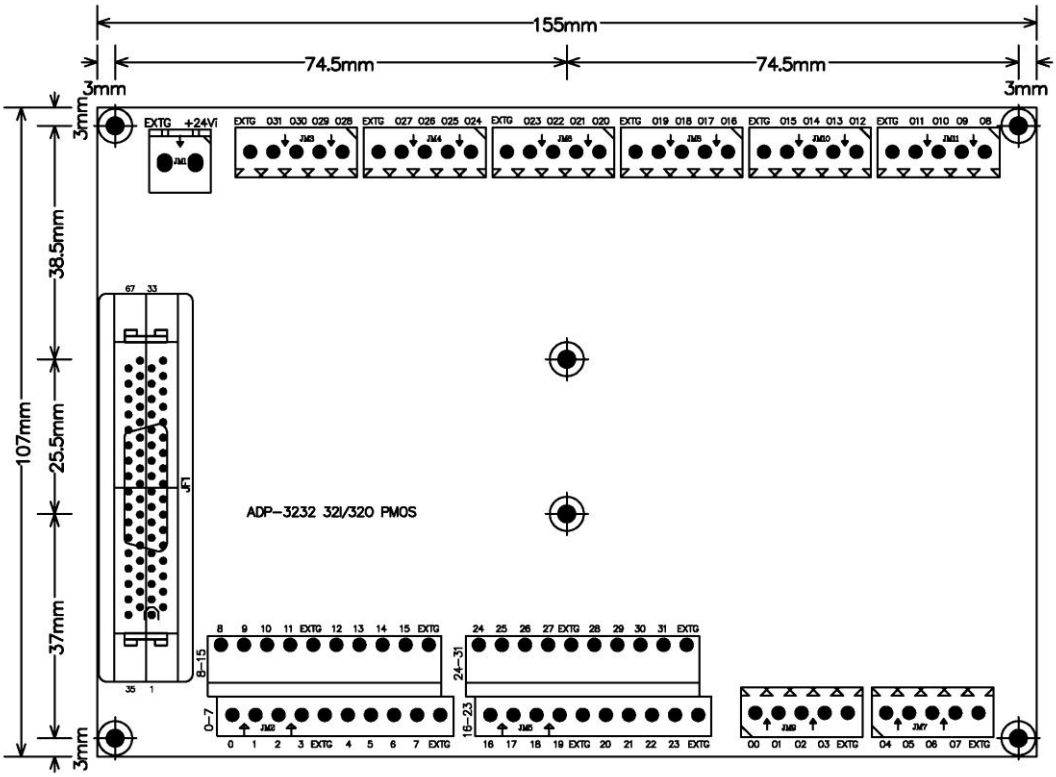
Note: The I/O pints are enumerated from 00 to 37 with first digit as port designation.



*dimension in bare board

5.4 ADP3232DIN(P) Din rail mounted wiring board

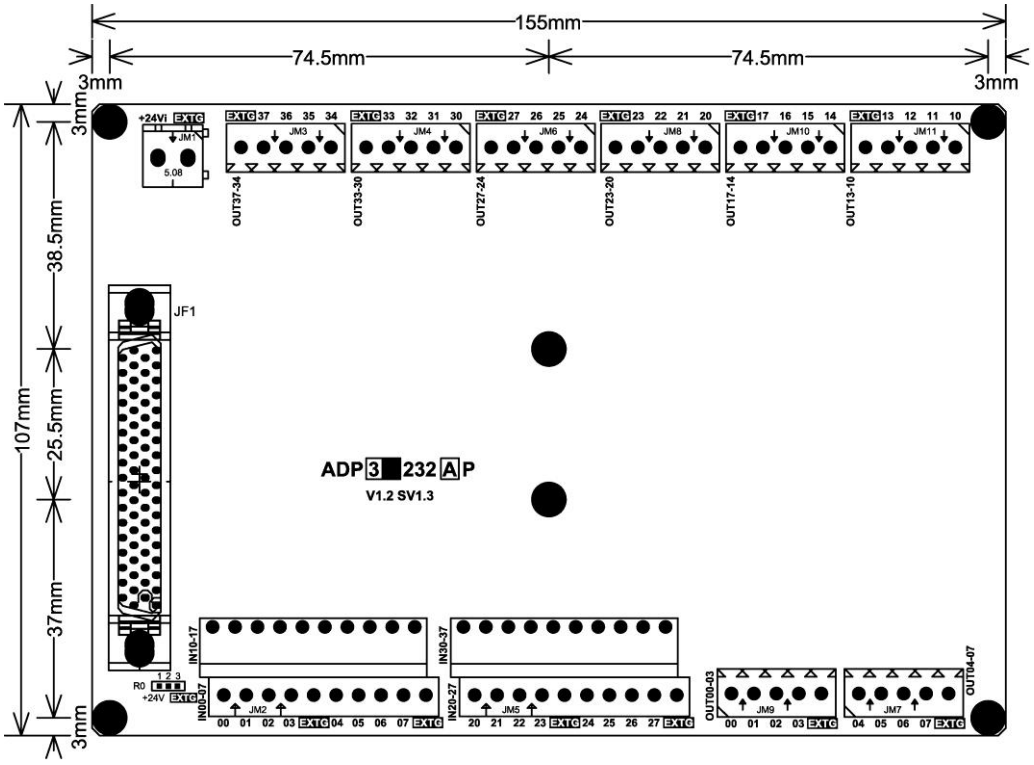
Note: The I/O pints are enumerated from 0 to 31 without port designation.



*dimension in bare board

5.5 ADP3232ADIN(P) Din rail mounted wiring board (V1.3)

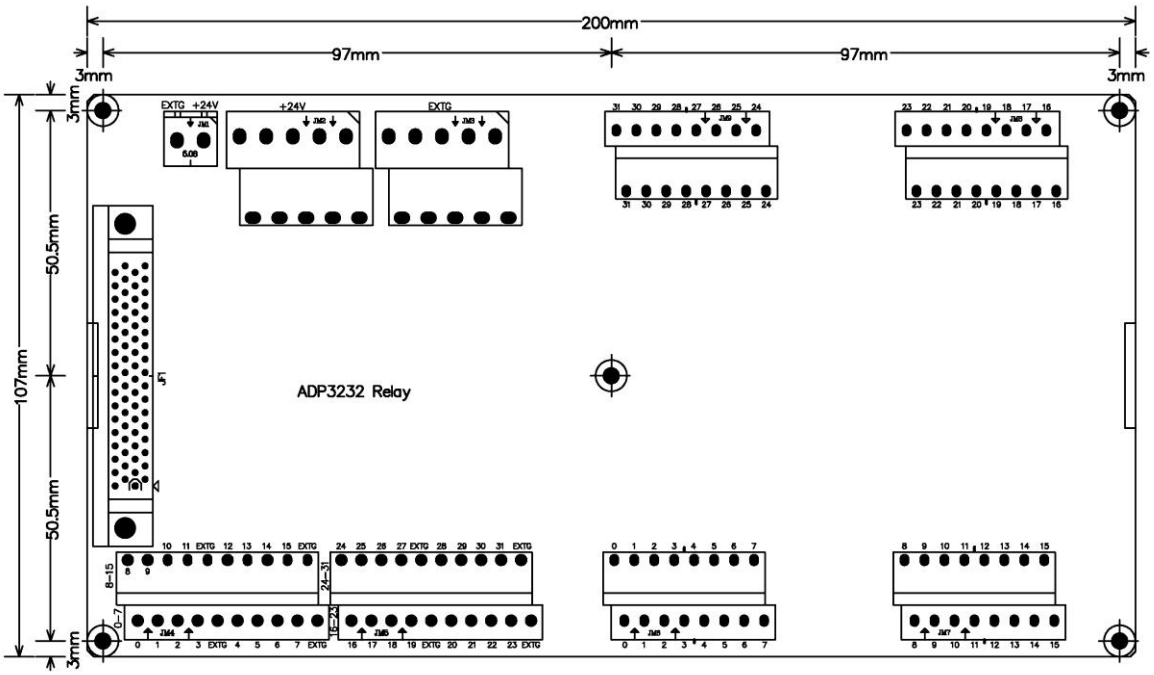
Note: The I/O pints are enumerated from 00 to 37 with first digit as port designation.



*dimension in bare board

5.6 ADP3232DIN(R) Din rail mounted wiring board

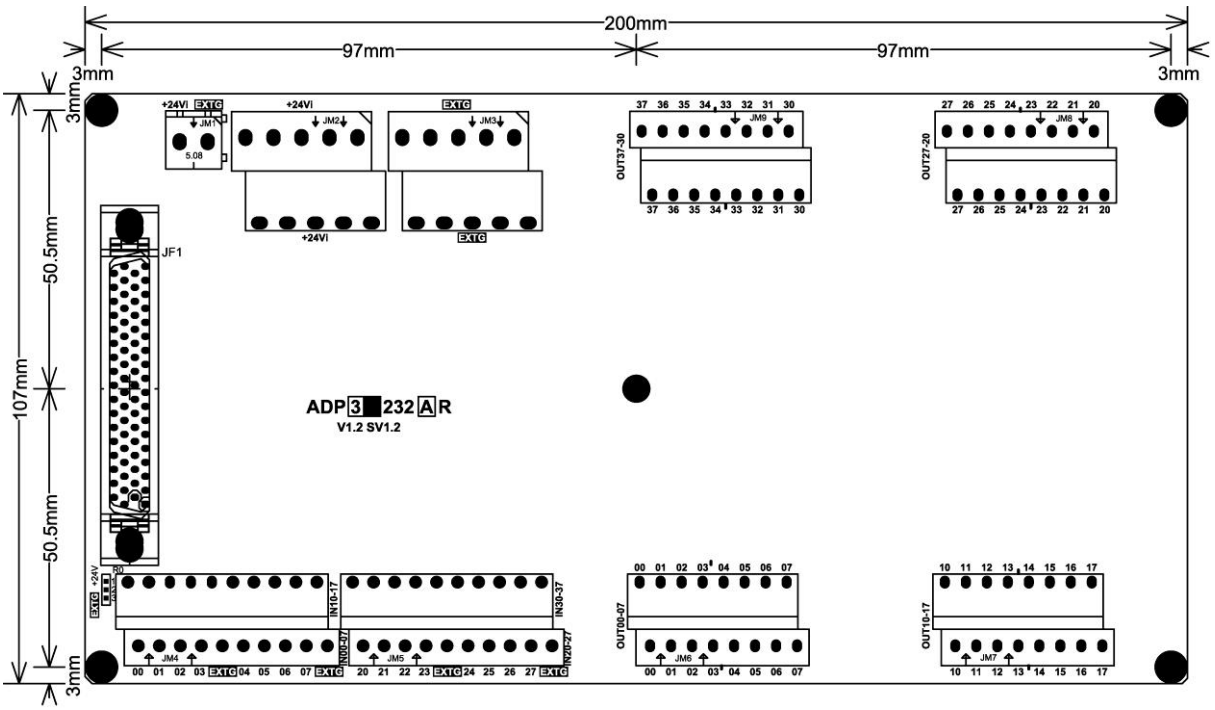
Note: The I/O pints are enumerated from 0 to 31 without port designation.



*dimension in bare board

5.7 ADP3232ADIN(R) Din rail mounted wiring board (V1.2)

Note: The I/O pints are enumerated from 00 to 37 with first digit as port designation.



*dimension in bare board

6. Pin definitions

6.1 JF1 Assignment / Definitions

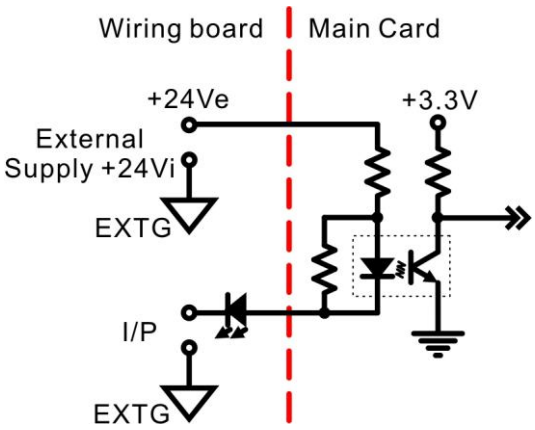
PIN	Descriptions		PIN	Descriptions
68	+24V[External DC24V power]		34	+24V[External DC24V power]
67	+24V[External DC24V power]		33	+24V[External DC24V power]
66	OUT37[External Output 37]		32	OUT36[External Output 36]
65	OUT35[External Output 35]		31	OUT34[External Output 34]
64	OUT33[External Output 33]		30	OUT32[External Output 32]
63	OUT31[External Output 31]		29	OUT30[External Output 30]
62	OUT27[External Output 27]		28	OUT26[External Output 26]
61	OUT25[External Output 25]		27	OUT24[External Output 24]
60	OUT23[External Output 23]		26	OUT22[External Output 22]
59	OUT21[External Output 21]		25	OUT20[External Output 20]
58	OUT17[External Output 17]		24	OUT16[External Output 16]
57	OUT15[External Output 15]		23	OUT14[External Output 14]
56	OUT13[External Output 13]		22	OUT12[External Output 12]
55	OUT11[External Output 11]		21	OUT10[External Output 10]
54	OUT07[External Output 07]		20	OUT06[External Output 06]
53	OUT05[External Output 05]		19	OUT04[External Output 04]
52	OUT03[External Output 03]		18	OUT02[External Output 02]
51	OUT01[External Output 01]		17	OUT00[External Output 00]
50	IN37[External Input 37]		16	IN36[External Input 36]
49	IN35[External Input 35]		15	IN34[External Input 34]
48	IN33[External Input 33]		14	IN32[External Input 32]
47	IN31[External Input 31]		13	IN30[External Input 30]
46	IN27[External Input 27]		12	IN26[External Input 26]
45	IN25[External Input 25]		11	IN24[External Input 24]
44	IN23[External Input 23]		10	IN22[External Input 22]
43	IN21[External Input 21]		9	IN20[External Input 20]
42	IN17[External Input 17]		8	IN16[External Input 16]
41	IN15[External Input 15]		7	IN14[External Input 14]
40	IN13[External Input 13]		6	IN12[External Input 12]
39	IN11[External Input 11]		5	IN10[External Input 10]
38	IN07[External Input 07]		4	IN06[External Input 06]
37	IN05[External Input 05]		3	IN04[External Input 04]
36	IN03[External Input 03]		2	IN02[External Input 02]
35	IN01[External Input 01]		1	IN00[External Input 00]

wiring board I/O point designation cross reference

port	wiring board (ADP3232DIN)	wiring board (ADP3232ADIN)
0	0 ~ 7	00 ~ 07
1	8 ~ 15	10 ~ 17
2	16 ~ 23	20 ~ 27
3	23~ 31	30 ~ 37

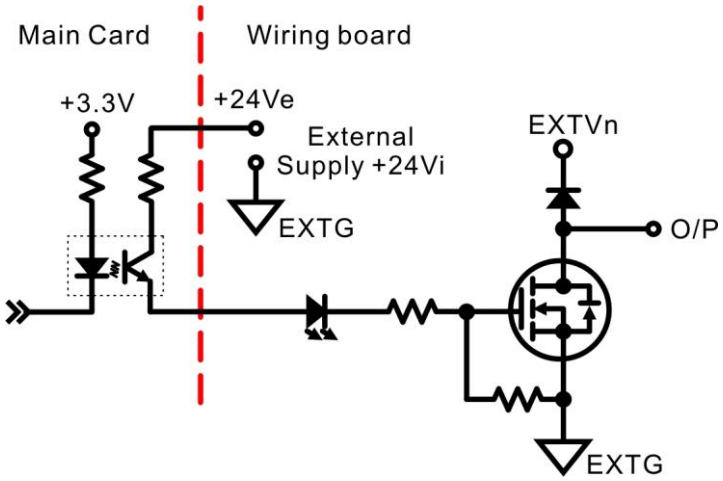
7. I/O interface diagram

7.1 Input diagram

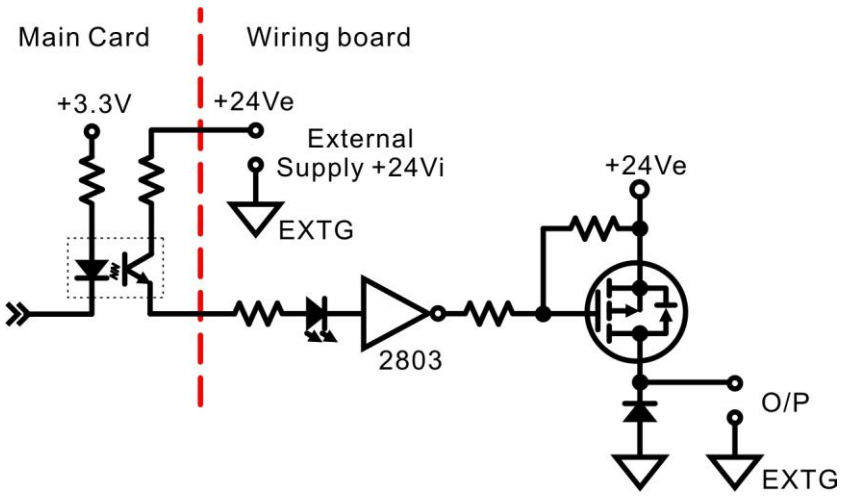


7.2 Output diagram

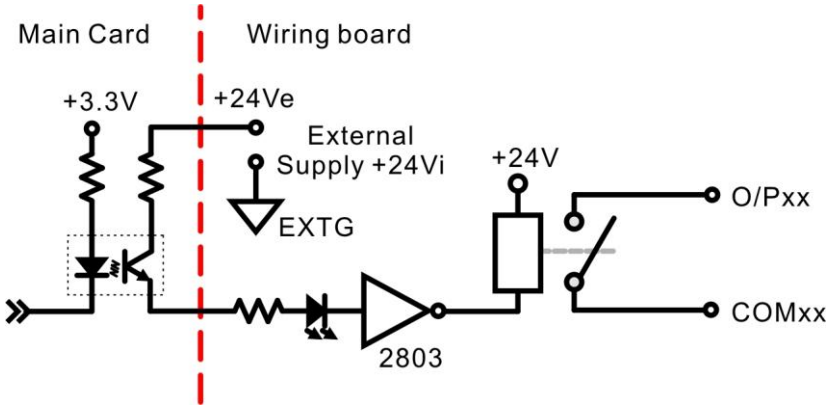
Type 1 output : NMOS



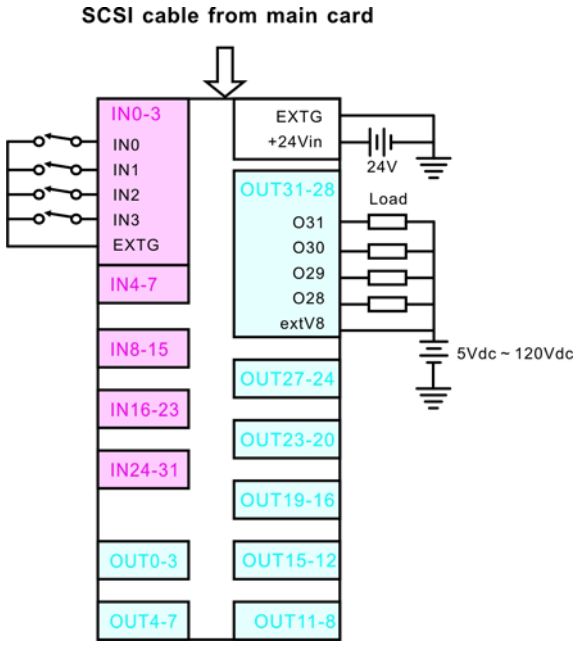
Type 2 output : PMOS



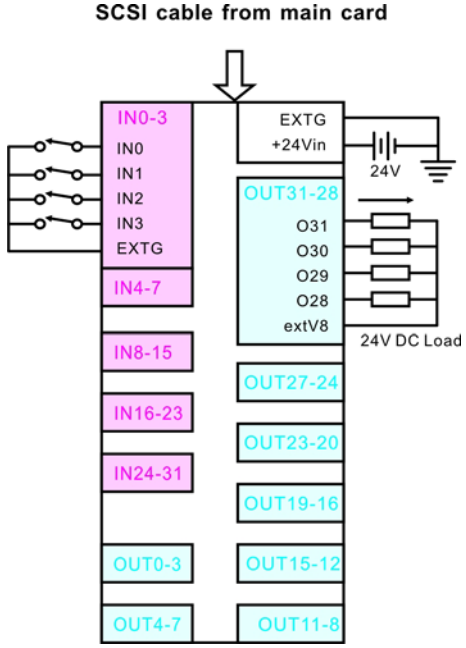
Type 3 output : RELAY



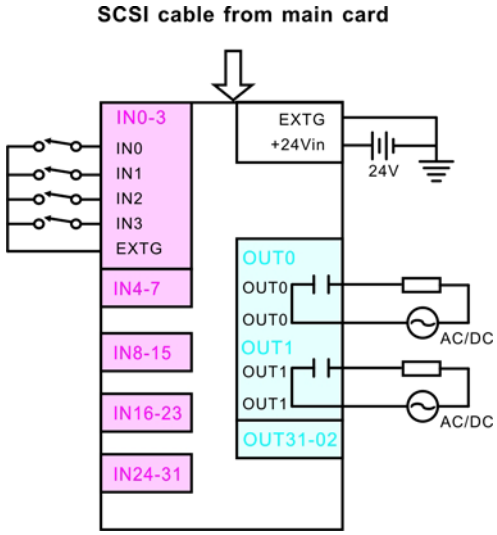
8. External wiring diagram



ADP3232DIN wiring board with NMOS output

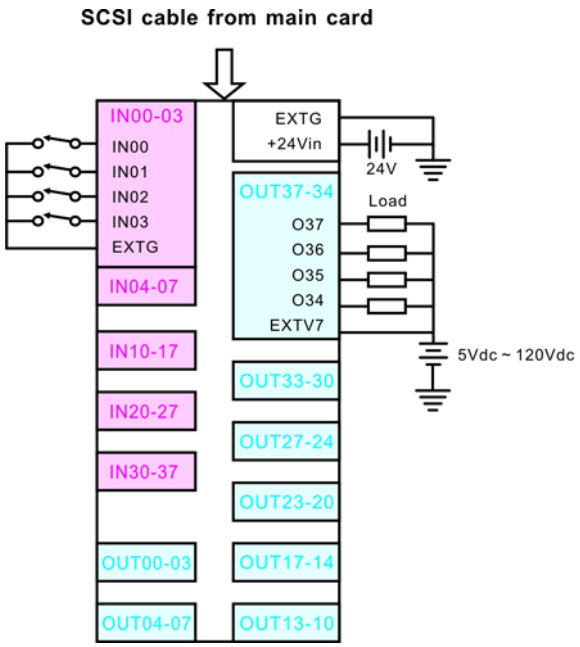


ADP3232DIN wiring board with PMOS output

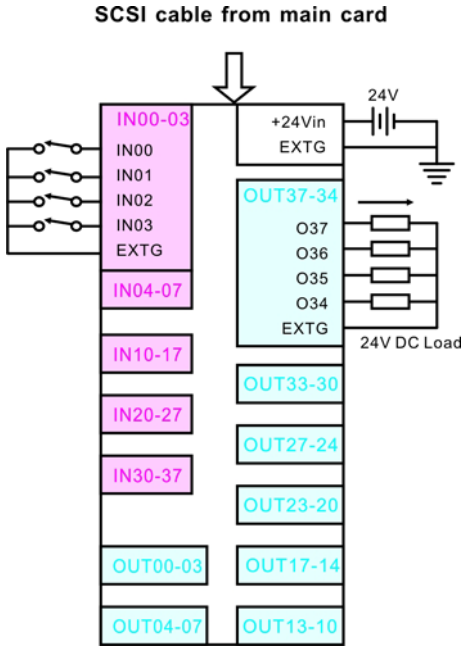


ADP3232DIN wiring board with Relay output

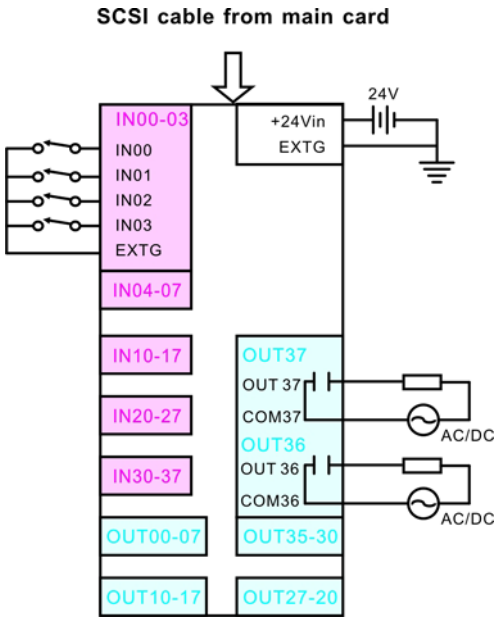
Note: The ADP3232ADIN wiring board I/O pints are enumerated from 00 to 37 with first digit as port designation.



ADP3232ADIN wiring board with NMOS output



ADP3232ADIN wiring board with PMOS output



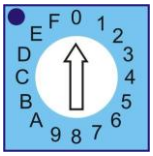
ADP3232ADIN wiring board with Relay output

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.



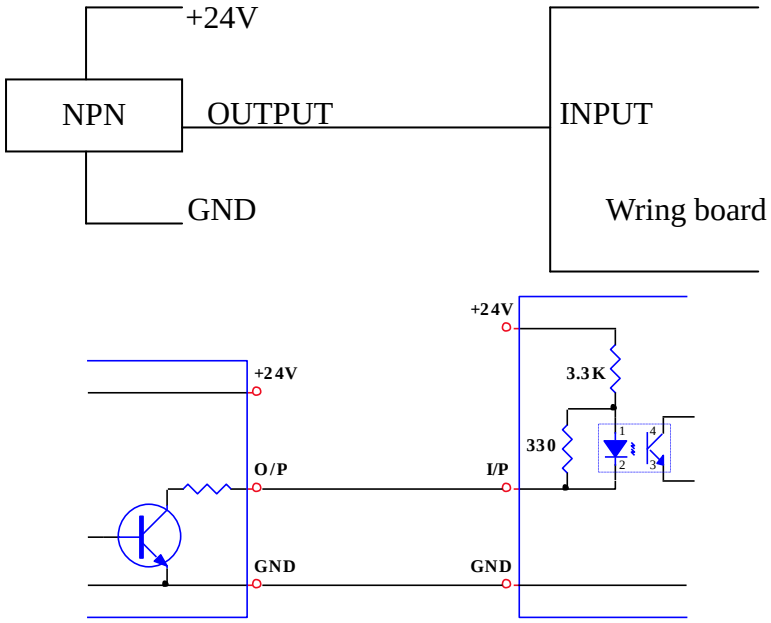
10. Applications

- 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

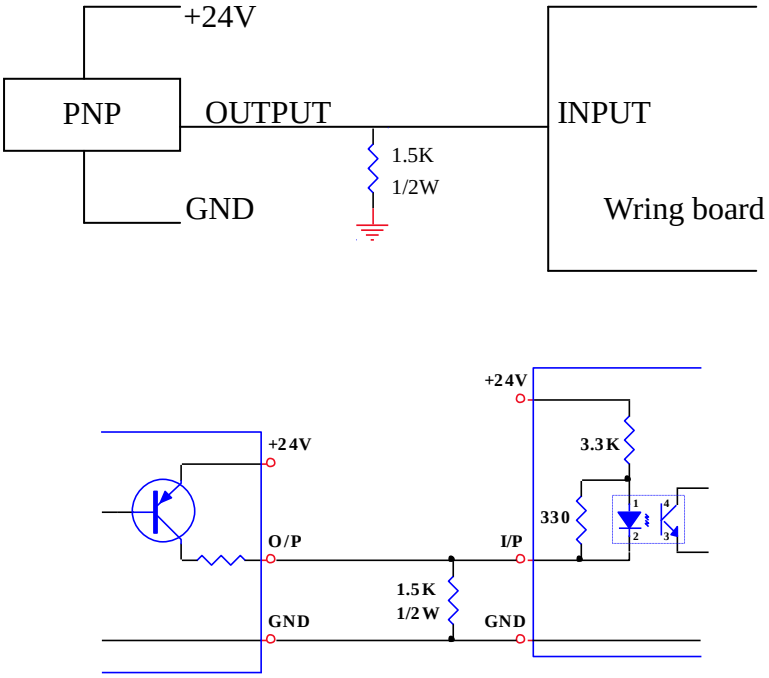
11.1 Tip for using NPN type proximity switch

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
DIO3232A	64-channel Digital I/O Card for 32 DI and 32 DO Photo-coupler isolated
ADP3232DIN(N)	DIN rail mounted wiring board for 32 input and 32 power NMOS output (To be phase out, please select new model ADP3232ADIN(N))
ADP3232DIN(P)	DIN rail mounted wiring board for 32 input and 32 power PMOS output (To be phase out, please select new model ADP3232ADIN(P))
ADP3232DIN(R)	DIN rail mounted wiring board for 32 input and 32 power RELAY output (To be phase out, please select new model ADP3232ADIN(R))
ADP3232ADIN(N)	DIN rail mounted wiring board for 32 input and 32 power NMOS output
ADP3232ADIN(P)	DIN rail mounted wiring board for 32 input and 32 power PMOS output
ADP3232ADIN(R)	DIN rail mounted wiring board for 32 input and 32 power RELAY output
M266868150	68 pin SCSI II cable 1.5M
M266868300	68 pin SCSI II cable 3.0M