

AIO6328/AIO6328A
PCI-104
Analog I/O and digital I/O Card

User's Manual (V1.0)

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Correction record

Version	Record
1.0	New

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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 socket, and select the right CardID and CLK. (The bottom layer of stack please select CardID=0, CLK=0)
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.

Warning:

Some computer BIOS has “Auto detect DIMM/PCI clock” option, be sure to switch to “DISABLE” else in some cases the PCI add on cards will not be detected by windows at cold start.

1. **Forward**

Thank you for your selection of JAC's product AIO6328 8 analog inputs and 2 analog outputs ANALOG I/O card with extra photo isolated 8 digital input and 8 digital output for PCI-104 embedded system. AIO6328 is a 12bit (AIO6328A 16bit) resolution in the analog input port for 0~5V, 0~10V, -5V~+5V and -10V ~+10V ranges, the analog output is 13 bit (AIO6328A 17bit) resolution for -10V~+10V.

Other analog i/o card:

AIO3310/1/2 8/16/24 single/differential 12 bit analog input, 16 TTL I/O card (PCI bus)

AIO3315/A 12 /16 bit Analog I/O and Digital I/O Card (PCI bus)

AIO3320/3321 isolated 8 12 bit A/D, isolated 8/16 16 bit D/A with 16 isolated digital I/O (PCI bus)

AIO3322/3323 Isolated Analog I/O Card, 12bit AI x8 with triggered data acquisition, 16 bit AO x 8/16 and 16 isolated digital I/O and 2 32bit multi function timer/counter (include bracket kit for digital I/O and AO) (PCI bus)

AIO3382 Analog I/O Card, 8 AI 2 AO, 16 TTL , 2 multi- function timer/counter card (Include bracket kit for TTL I/O) (PCI bus)

AIO3382A/B Analog I/O Card, 8 AI 2 AO, 16 TTL , 2 multi- function timer/counter card (2 current source/ sink AO)(Include bracket kit for TTL I/O) (PCI bus)

AIO3384 Analog I/O Card, 8 AI 4 AO, 16 TTL , 2 multi- function timer/counter card (Include bracket kit for TTL I/O) (PCI bus)

AIO3384AA/BB Analog I/O Card, 8 AI 4 AO, 16 TTL , 2 multi- function timer/counter card (4 current source / sink AO)(Include bracket kit for TTL I/O) (PCI bus)

AIO3384AB Analog I/O Card, 8 AI 4 AO, 16 TTL , 2 multi-function timer/counter card (2 current source AO , 2 current sink AO)(Include bracket kit for TTL I/O) (PCI bus)

Any comment is welcome,

please visit our website

<http://www.automation.com.tw/>

<http://www.automation-js.com/> for the up to date information.

2. **Features**

2.1 Main card

Analog Input Block

- 2.1.1 Single end 8 channel or differential 4 channels
- 2.1.2 Dynamic range selection: 0~5V, -5V~+5V, 0~10V, -10V ~ +10V
- 2.1.3 Software configurable Single end, differential or mixed
- 2.1.4 High common mode voltage for differential input
- 2.1.5 Resolution: 12 bit, (option 16 bit, AIO6328A)

Analog Output Block

- 2.1.6 2 channel DA for -10V ~ +10V
- 2.1.7 Extended resolution: 13 bit, (option 17 bit, AIO6328A)

DIO block

- 2.1.8 8 isolated DI and 8 isolated DO channels
- 2.1.9 High voltage isolation on all isolated channel (2500 Vac)
- 2.1.10 Programmable digital filter at 100Hz,200Hz,1KHz and no de-bounce for input
- 2.1.11 No output transition during start-up
- 2.1.12 Output status read back
- 2.1.13 External triggered interrupt (on IN00~IN07)
- 2.1.14 Keep output state after hot reset (jumper selectable)

Timer Block

- 2.1.15 32 bit timer based on 1us time base
- 2.1.16 Time up interrupt

3. **Specifications**

3.1 AIO6328 Main card

Analog Input Block

- 3.1.1 Channel: single end 8 channel(max), differential 4 channel(max)
- 3.1.2 Range: 0~5V, -5V~+5V, 0~10V, -10V ~ +10V
- 3.1.3 Type: single end, differential or mixed
- 3.1.4 Common mode voltage: up to 10V
- 3.1.5 Resolution: 12 bit, (option 16 bit, AIO6328A)
- 3.1.6 Acquisition time: 10us

Analog Output Block

- 3.1.7 Channel: 2 channel DA
- 3.1.8 Range: -10V ~ +10V
- 3.1.9 Resolution: 13 bit, (option 17 bit, AIO6328A)

Digital I/O Section

- 3.1.10 Input : 8 photo-isolated
- 3.1.11 ON state : 2.8Vdc(max) 4.5mA(min)
- 3.1.12 OFF state : 8Vdc(min) 3mA(max)
- 3.1.13 Input debounce time: software selectable 100Hz,200Hz,1KHz, no debounce.
- 3.1.14 Switching speed : limited by photo coupler speed.
- 3.1.15 Interrupt: at IN00~IN07
- 3.1.16 Output : 8 photo-isolated
- 3.1.17 Output range : Open collector 0 ~ 45 Vdc (on card)

3.1.18 Output rating (with wiring board) :

3A @250Vac, 30Vdc (Relay)

1A @ 24Vdc (PMOS)

2A @ 240Vac (SSR)

3.1.19 Sink current : 500mA(peak) per channel (on card)

3.1.20 Switching speed : 20KHz(max)(MOS out only)

Main Card General

3.1.21 Card ID : 0~3

3.1.22 Insulation resistance : 100M Ohm (min) at 1000Vdc

3.1.23 Isolation voltage : 2500Vac 1Min (digital block only)

3.1.24 Connector : One 20-pin male flat-cable connector

One slim type 26-pin male flat-cable connector

3.1.25 Operation temperature : 0 to +70 degree C

3.1.26 Storage temperature : -20 to +80 degree C

3.1.27 Operation humidity : 5~95% RH, non-condensing

3.1.28 Dimensions : 90(W)*96(H)mm , 3.6(W)* 3.8(H)in

3.2 Din rail mounted wiring board

ADP9201DIN Din rail mounted wiring board for DIO

- 3.2.1 External Supply : DC 24V \pm 4V
- 3.2.2 Input : 8 with LED indicator
- 3.2.3 Output : ADP9201DIN(R) : 8 relays (3A @250Vac, 3A @30Vdc) with LED indicator
ADP9201DIN(S) : 8 SSR (2A @240Vac) with LED indicator
ADP9201DIN(P) : 8 PMOS (Source 1A @24Vdc) with LED indicator
- 3.2.4 Connector: One 20-pin male flat-cable connector
- 3.2.5 Operation Temperature: 0 to +70 degree C
- 3.2.6 Operation Humidity: RH5~95%, non-condensing
- 3.2.7 Dimension: ADP9201DIN(R) / (P) : 86(W) * 103(L) *45(H)mm;
3.4(W)*4.1(L)*1.8(H)in
ADP9201DIN(S) : 86(W) * 103(L) *50(H)mm
3.4(W)*4.1(L)*2.0(H)in

JS51053 Dummy type wiring board for DIO

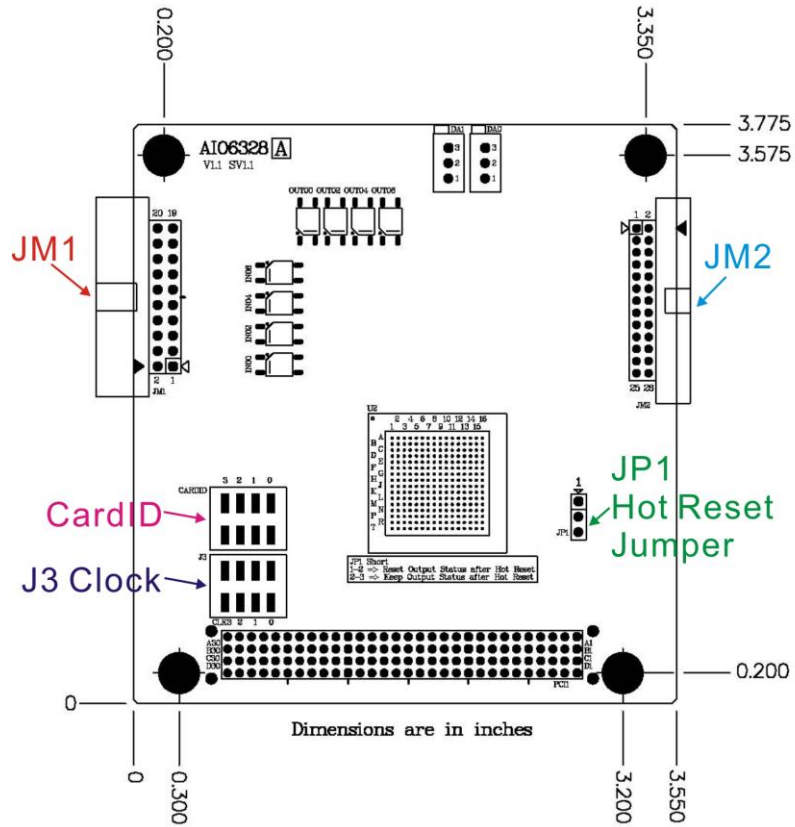
- 3.2.8 Connection cable — 20P flat cable to connect main and wiring board
- 3.2.9 Dimension — 86(W)*79(L)*52(H)mm , 3.4(W)*3.2(L)*2.1(H)in

JS510501 Dummy wiring board for AD/DA

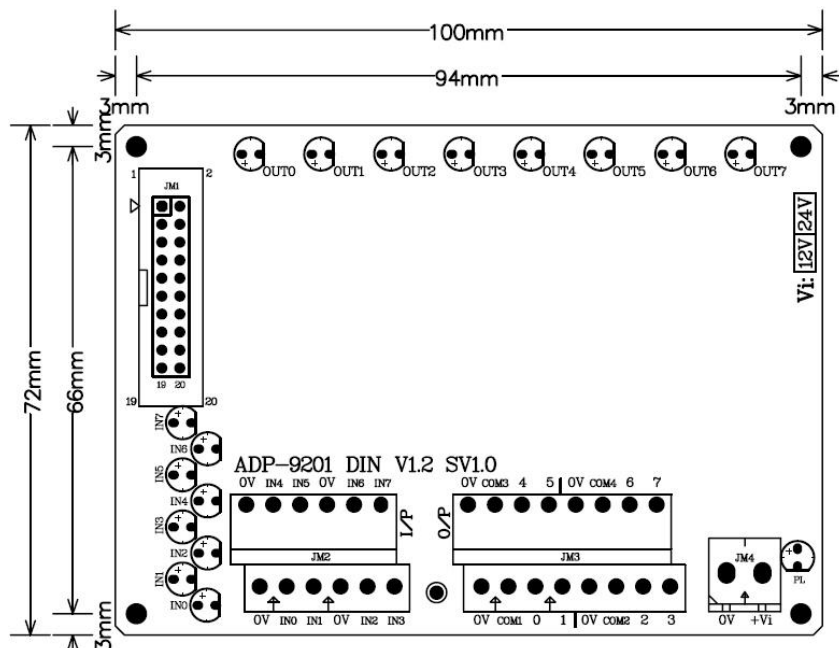
- 3.2.10 On board Connector — Female D type 25 pin
- 3.2.11 Dimension — 86(W)*79(L)*52(H)mm , 3.4(W)*3.2(L)*2.1(H)in

4. Layout and dimensions

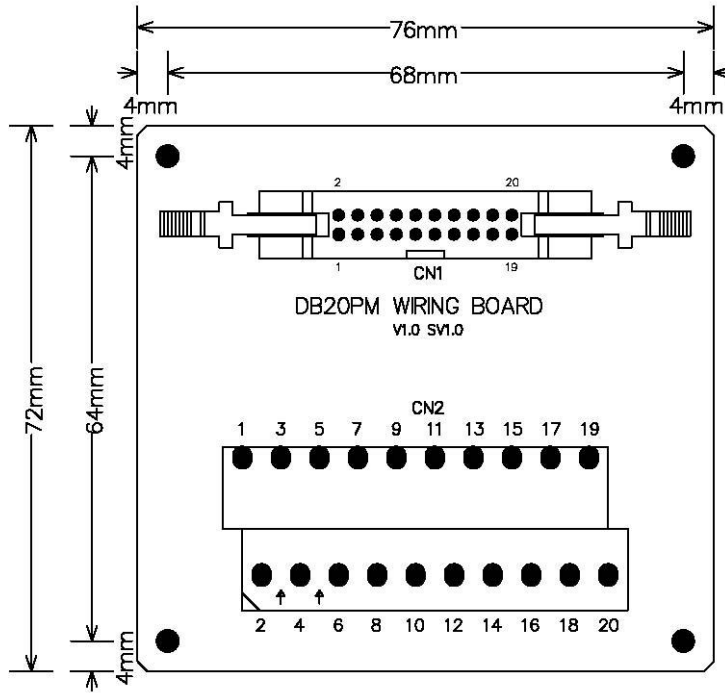
4.1 AIO6328 Main card



4.2 ADP9201DIN Din rail mounted wiring board



4.3 JS51053 for JM1 20PM Din rail mounted dummy wiring board



5. PIN definitions

5.1 AIO6328 JM1 PIN definitions

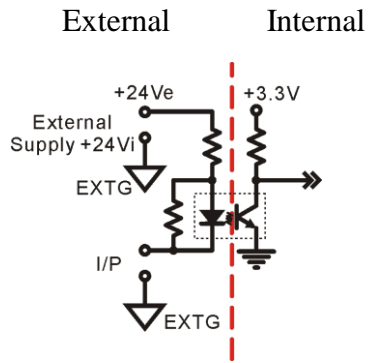
PIN	Descriptions		PIN	Descriptions
1	EXT_IN00		2	EXT_OUT00
3	EXT_IN01		4	EXT_OUT01
5	EXT_IN02	EXT_IN00	6	EXT_OUT02
7	EXT_IN03	EXT_IN01	8	EXT_OUT03
9	EXT_IN04	EXT_IN02	10	EXT_OUT04
11	EXT_IN05	EXT_IN03	12	EXT_OUT05
13	EXT_IN06	EXT_IN04	14	EXT_OUT06
15	EXT_IN07	EXT_IN05	16	EXT_OUT07
17	EXTG	EXT_IN06	18	EXTG
19	+24Ve	EXT_IN07	20	+24Ve
		EXTG		
		EXT +24Vin		

5.2 AIO6328 JM2 PIN definitions

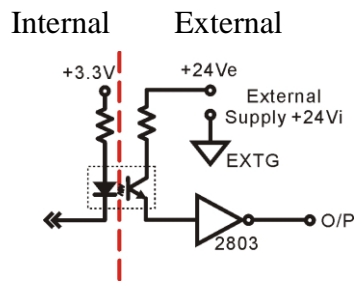
PIN	Descriptions		PIN	Descriptions
14	AGND (analog ground)		1	AI00 (analog input)
15	AGND	AGND	2	AI01
16	AGND	AGND	3	AI02
17	AGND	AGND	4	AI03
18	AGND	AGND	5	AI04
19	AGND	AGND	6	AI05
20	AGND	AGND	7	AI06
21	AGND	AGND	8	AI07
22	AGND	AGND	9	NC
23	AGND	AGND	10	NC
24	AGND	AGND	11	NC
25	AGND	AGND	12	DA0 (analog output)
			13	DA1

6. I/O interface diagram

6.1 Input diagram



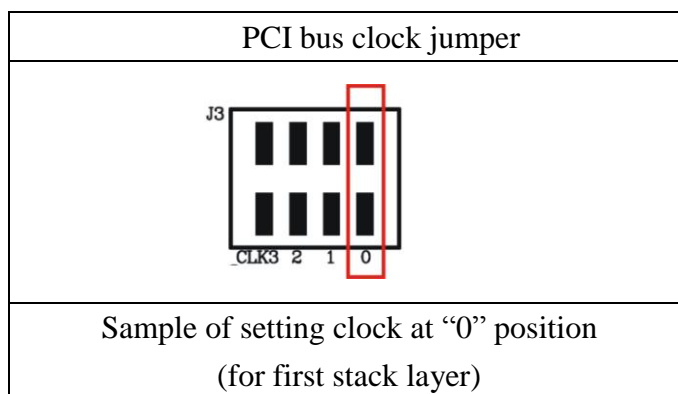
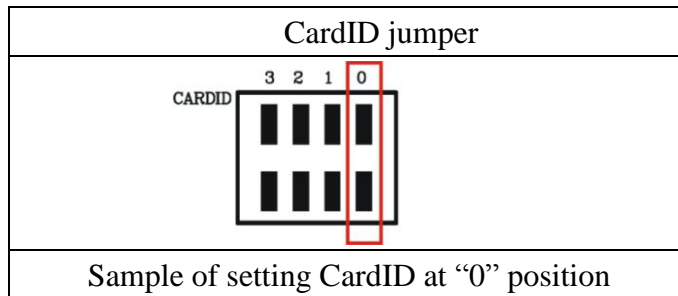
6.2 Output diagram (On main card)



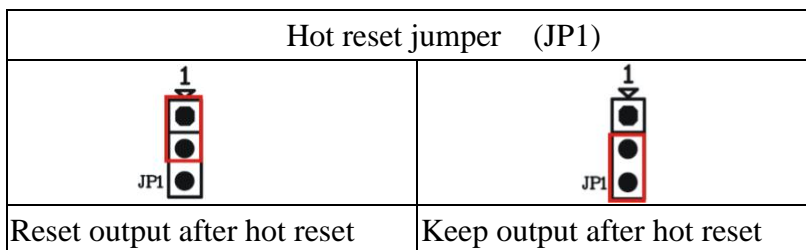
7. Hardware settings

7.1 CARD ID setting

Please refer the section 4.1 for CardID setting, you can jump to any of the 4 positions according to the stack layer of the card. The bottom layer (closest to the CPU board) should jump to 0 and select CLKS to 0. Next to the bottom should jump to CardID=1 and CLKS also to 1,...



7.2 Jumper setting



8. Applications

8.1 Analog input section:

For measurement of analog signal such as:

- temperature
- voltage
- current
- flow
- light
-

Note: The analog signal should be pre-processed to the acceptable range of the card.

8.2 Analog output section:

For control or signal generation such as:

- inverter speed
- servo motor speed
- wave generation
- valve control
- light control
-

8.3 Digital section:

For the control of digital I/O:

- switch input
- relay control
- trigger output
- ...

8.4 Timer section:

- event counting
- periodic interrupt source
- duration counter

9. **Ordering information**

<u>PRODUCT</u>	<u>DESCRIPTIONS</u>
AIO6328	12 bit Analog I/O and Digital I/O PCI-104 Module
AIO6328A	16 bit Analog I/O and Digital I/O PCI-104 Module
JS51053	DIN rail mounted dummy wiring board (for JM1)
ADP9201DIN(R)	DIN rail mounted wiring board with 16 I/O LED indicators and relay output for 8 DI, 8DO
ADP9201DIN(S)	DIN rail mounted wiring board with 16 I/O LED indicators and SSR output for 8 DI, 8DO
ADP9201DIN(P)	DIN rail mounted wiring board with 16 I/O LED indicators and PMOS output for 8 DI, 8DO
M23207	20-pin flat cable 1.5 M (for JM1)
M23209	20-pin flat cable 3.0 M (for JM1)
JS510501	DIN rail mounted dummy wiring board (for JM2)
M23405	Bracket and flat cable of 25p D-type male connector (for JM2)
M270325X4	D type 25p male-female extension cable 1.5M
M270325X4S	D type 25p male-female extension cable 1.5M,shielding
M270325X0	D type 25p male-female extension cable 3.0M
M270325X0S	D type 25p male-female extension cable 3.0M,shielding