

ZAIO Analog Expansion Module Hardware Manual

Version 1.1

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ECI controller software involved in details as well as the introduction and routines of each instruction, please refer to ZBASIC software manual.

Information contained in this manual is only for reference. Due to improvements in design and functions and other aspects, Zmotion Technology reserves the final interpretation! Subject to change without notice!



Pay attention to safety when debug the machine! Be sure to design effective safety devices in the machine, and add the error handling procedures in software. Zmotion has no obligation or responsibility for the loss.

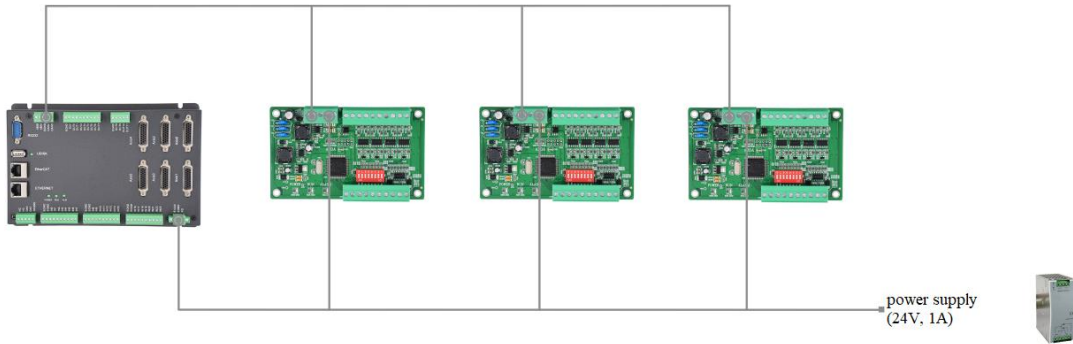
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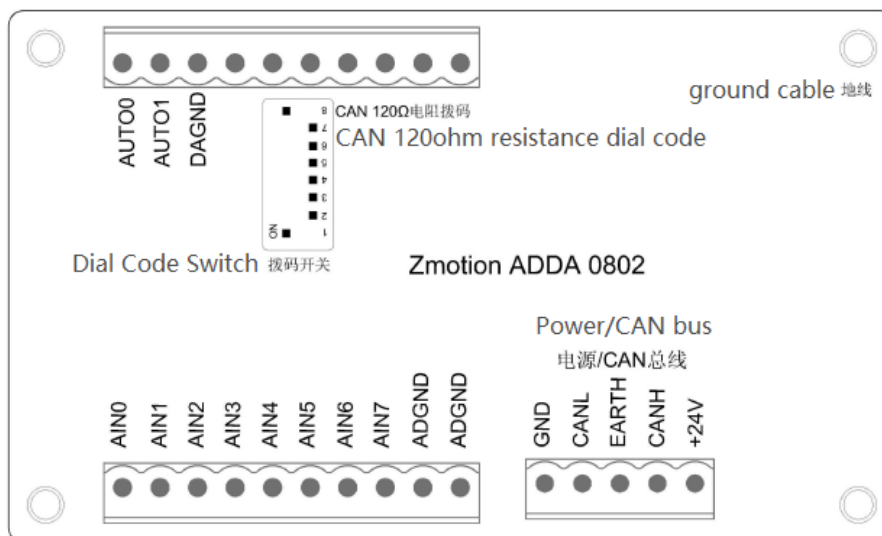
Chapter I Control Card Introduction

ZMC is the abbreviation of motion controller model launched by ZMOTION technology. Zmotion motion controllers can be applied in all kinds of online or offline occasions.

ZAIO expansion module is used for ZMC and ECI, when AIO and other resources are not enough, an expansion module is needed. And controller can link with multi expansion modules at the same time, and expansion modules are distinguished through dial code. The resource of expansion module can be accessed by program on controller through IO number.



1.1. ZAIO0802 Terminal




- ZAIO0802 has 8 AD inputs and 2 DA outputs, 0-10V voltage type.


1.1.1. Power Interface

Pin No.	Name	Description
1	GND	Internal power ground
2	CANL	CAN differential data -
3	EARTH/SHIELD	Shield
4	CANH	CAN differential data +
5	+24V	Internal power 24V input

 ZAIO0802 Module uses single power.

 Relative GND of both parties in the CAN bus communication must be connected or the main power supply of the controller and the main power supply of the expansion module are the same power supply. When the controller and the expansion module are powered by different power supplies: the main control power ground of the controller should be connected to the GND of the power supply of the expansion module, otherwise the CAN may be burned out.



 The expansion module with an 8-bit DIP switch (the hardware version above V1.3) integrates a 120Ω resistance between CANL and CANH. It is controlled by DIP 8. When dialing ON, the resistance is connected. When multiple expansion modules are connected on the CAN bus, it is only necessary to dial DIP 8 of the last expansion module to ON. There is no need to connect a 120Ω resistor outside the terminal.

1.1.2. AD Analog Input Signal

PIN	Name	Description
1	ADGND	AD power ground
2	ADGND	AD power ground
3	AIN 7	Analog input channel 7
4	AIN 6	Analog input channel 6
5	AIN 5	Analog input channel 5
6	AIN 4	Analog input channel 4
7	AIN 3	Analog input channel 3
8	AIN 2	Analog input channel 2
9	AIN 1	Analog input channel 1
10	AIN 0	Analog input channel 0

1.1.3. DA Analog Output Signal

PIN	Name	Description
1		
2		
3		
4		
5		
6		
7		
8	DAGND	Analog power ground
9	DA 1	Analog output channel 1
10	DA 0	Analog output channel 0

1.1.4. AD, DA DIP Switch Definition

PIN	Name	Description
1	ID 0	CAN address dial code
2	ID 1	CAN address dial code
3	ID 2	CAN address dial code
4	ID 3	CAN address dial code
5	ID 4	CAN speed dial code
6	ID 5	CAN speed dial code
7	SPEC	Special function dial code
8	DAGND	Analog power ground

There are all 8 dial codes on IO board above V1.3 hardware version, 1-4 are dialed to set CAN address, 5 and 6 set CAN speed, 7 means reserved and 8 means 120Ω resistor DIP. When dialing ON, the resistor is connected. Old version IO boards don't have DIP 7 and DIP 8, which means a 120Ω resistance is needed to connect externally.



The expansion module with an 8-bit DIP switch (the hardware version above V1.3) integrates a 120Ω resistance between CANL and CANH. It is controlled by DIP 8. When dialing ON, the resistance is connected. When multiple expansion modules are connected on the CAN bus, it is only necessary to dial DIP 8 of the last expansion module to ON. There is no need to connect a 120Ω resistor outside the terminal.

When each bit is dialed to OFF, the relative value is 0, when ON is related to 1. The combination value = dial code 4 × 8 + dial code 3 × 4 + dial code 2 × 2 + dial code 1. Controller sets IO port range of relative IO board according to CAN dial code address. (Relative IO start number can be seen through controller status in ZDevelop software)

1.1.4.1.Dial 1-4 to select CAN address, analog AD and DA numbers distribution form

Combination Value	AD Start Number	AD End Number	DA Start Number	DA End Number
0	8	15	4	7
1	16	23	8	11
2	24	31	12	15
3	32	39	16	19
4	40	47	20	23
5	48	55	24	27
6	56	63	28	31
7	64	71	32	35
8	72	79	36	39
9	80	87	40	43
10	88	95	44	47
11	96	103	48	51
12	104	111	52	55
13	112	119	56	59
14	120	127	60	63
15	128	135	64	67



When AD/DA number range of controller or expansion module repeat, only one range is valid. It is recommended to adjust DIP to avoid repeating.

1.1.4.2. Dial 5-6 to select CAN speed

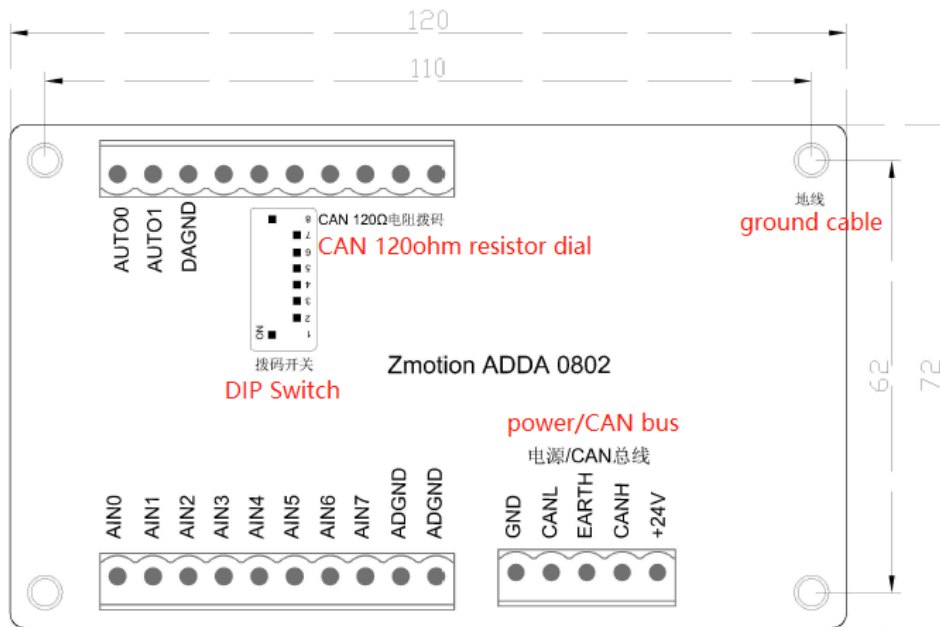
Combination value	Description
0	Speed 500KBPS
1	Speed 250KBPS
2	Speed 125KBPS
3	Speed 1MBPS

Chapter II Common Problems

Problem	Suggestion
Expansion module can't be connected, and the alarm light is ON.	<ul style="list-style-type: none">✚ Check whether 120Ω resistor of the last expansion module is dialed ON or not✚ Check whether several expansion modules use the same ID.

Chapter III Hardware Installation

4.1 ZAIO0802 Installation Size



- Unit: mm
- mounting hole diameter 4.5mm
- height: 35mm