ZIO bus expansion card Hardware Manual

Version 1.1

Copyright statement

Involving ECI controller software and the introduction of details and routines of each instruction, refer to ZBASIC software manual.

Information contained in this manual is for informational purposes only. Due to improvements in design and function and other reasons, is moving the company reserves the final interpretation of this information! Subject to change without notice!

Debug the machine pay attention to safety! Be sure to design the machine in effective safety devices, and add error handling procedures in software, or loss caused by the positive movement has no obligation or responsibility responsible.

table of Contents

Chapter 1 Introduction

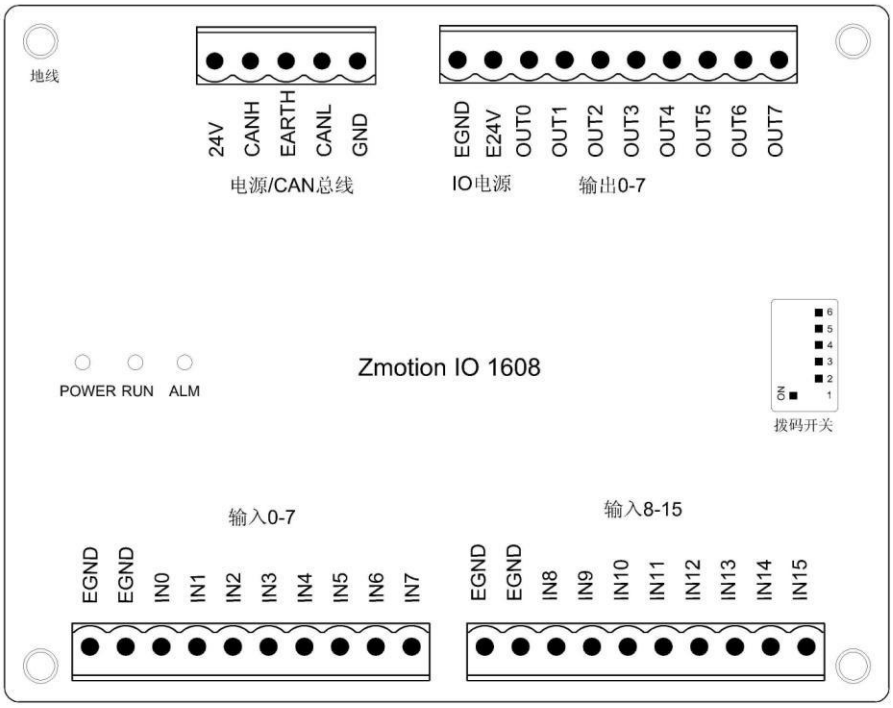
ZMC is referred ZMotion motion controller, ECI is short for Ethernet motion control card. ZMotion motion controller may be used in various applications require the operating online or offline.

ZIO expansion module is an extension module ZMC ECI and use, when IO insufficient resources, the need to increase the expansion module, the controller can simultaneously connect the plurality of extension modules, extension modules distinguished by DIP, the controller program simply by IO number to access to resources on the expansion module.

Chapter II Expansion Module

ZIO expansion cards dual power supply, ECI / ZMC single power supply portion of the controller, when the expansion card to two supply common way.

2.1ZIO1608



ZIO1608 with 16 general-purpose input ports, eight general purpose output ports.

ZIO1608 with a CAN bus interface is connected to the main controller.

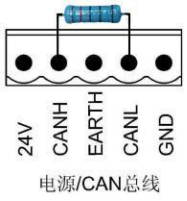
2.1.1 Power / CAN interface signals:

Pin No.	name	Explanation
1	GND	An internal power ground
2	CANL	CAN differential data -
3	EARTH / SHIELD	Safety ground / shield
4	CANH	CAN differential data +
5	+ 24V	An internal power source 24V input

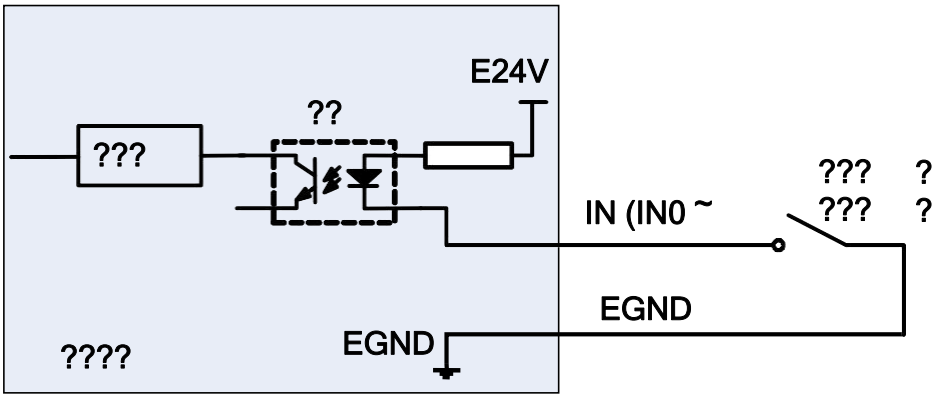
Please internal power supply 24V and an external IO power source 24V separate power supply, in particular in the field of electromagnetic interference serious cases, must be used two 24V power supply, or a providing two isolated power supply 24V output; when through the serial port connecting the touch screen, a power supply using a touch screen providing an internal power supply 24V.

A plurality of link controllers on the CAN bus, CANH and CANL necessary on both sides of the end most of the controller 120 and then

Ohm resistor.



2.1.2 Universal input signals:



2.1.2.1 enter 0-7:

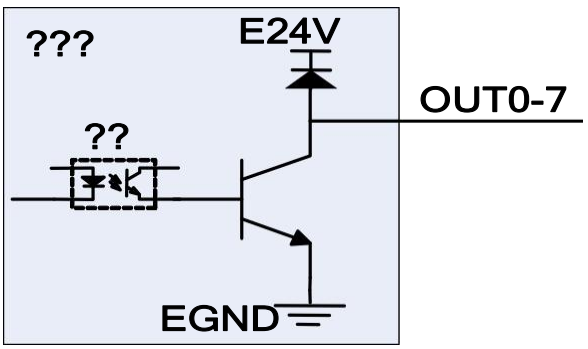
Pin No.	name	Explanation

1	EGND	IO power ground
2	EGND	IO power ground
3	IN0	Enter 0
4	IN1	Input 1
5	IN2	Input 2
6	IN3	Input 3
7	IN4	Input 4
8	IN5	Input 5
9	IN6	Input 6
10	IN7	Input 7

2.1.2.2 enter 8-15:

Pin No.	name	Explanation
1	EGND	IO power ground
2	EGND	IO power ground
3	IN8	Enter 8
4	IN9	Input 9
5	IN10	Enter 10
6	IN11	Enter 11
7	IN12	Enter 12
8	IN13	Enter 13
9	IN14	Enter 14
10	IN15	Enter 15

2.1.3 Output / IO power signal



The output circuit

Pin No.	name	Explanation
1	OUT7	Output 7
2	OUT6	Output 6
3	OUT5	Output 5
4	OUT4	Output 4
5	OUT3	Output 3
6	OUT2	Output 2
7	OUT1	Output 1
8	OUT0	Output 0
9	E24V	IO power supply is, the input power
10	EGND	IO power ground

Please put the case of internal and external IO power supply 24V 24V power supply separately, especially on-site electromagnetic interference serious.

2.1.4 The switch definition

IO board DIP a total of six, the first four addresses for CAN, CAN speed setting 2 later.

Dip each Corresponding to the value OFF 0, corresponding to 1, the combined value DIP = DIP 4 × 8 + 3 × 4 + 2 × 2 + DIP DIP 1 ON, the controller sets the corresponding IO board according to the CAN address DIP IO port range. (IO can be used to reveal the starting number by viewing the status window control software ZDevelop)

2.1.4.1 DIP 1-4 Select CAN Address:

Combined value	Starting IO Number	End IO Number
0	16	31
1	32	47
2	48	63
3	64	79
4	80	95
5	96	111
6	112	127
7	128	143
8	144	159
9	160	175
10	176	191
11	192	207

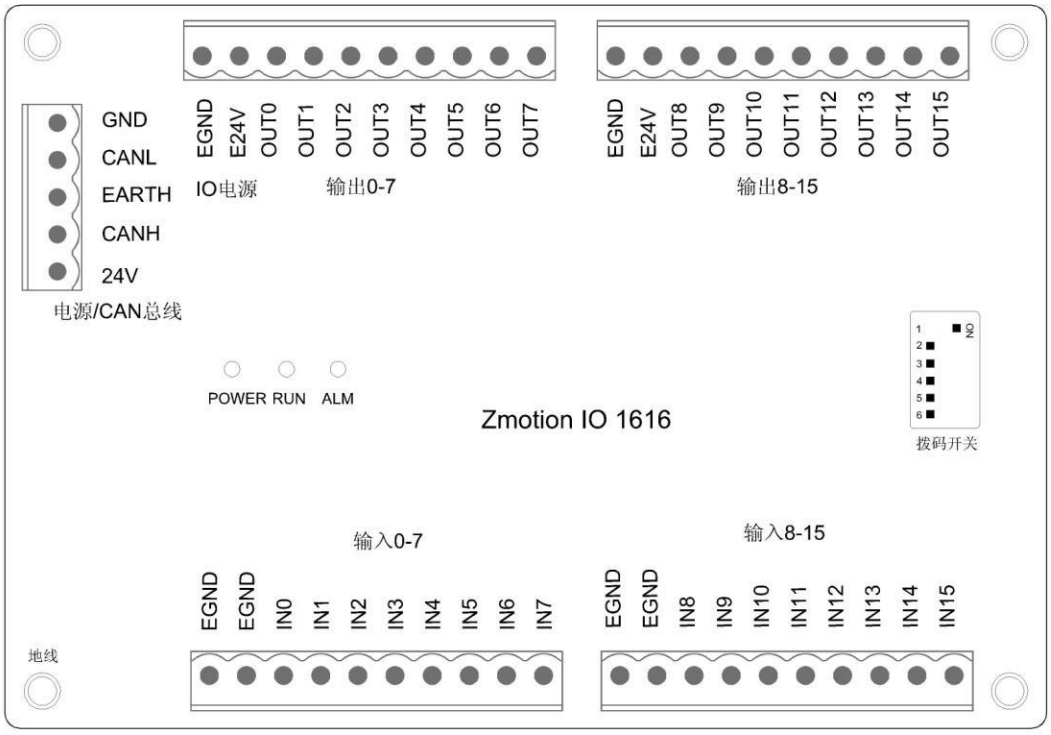
12	208	223
13	224	239
14	240	255
15	256	271

When the IO controller or expansion module number range was repeated, only one valid. The proposed re-dial code number not make repeat.

2.1.4.2 Speed selection CAN DIP 5-6:

Combined value	Explanation
0	Speed 500KBPS
1	Speed 250KBPS
2	Speed 125KBPS
3	Speed 1MBPS

2.2ZIO1616



ZIO1616 with universal input port 16, 16 general purpose output.
ZIO1616 with a CAN bus interface is connected to the main controller.

 OUT0-7 external interface to the external power supply 24V 24V OUT8-15 interface may only be used to enter a.

2.2.1. Output 0-7

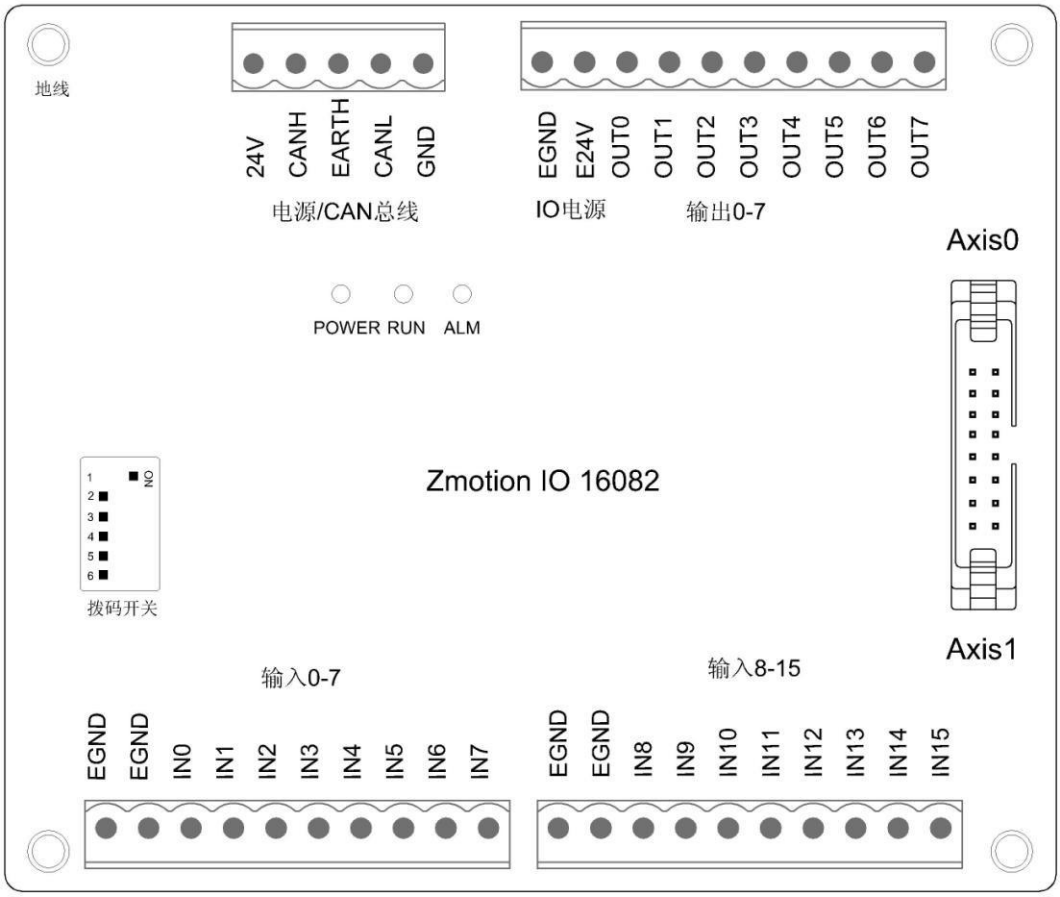
Pin No.	name	Explanation
1	OUT7	Output 7
2	OUT6	Output 6
3	OUT5	Output 5
4	OUT4	Output 4
5	OUT3	Output 3
6	OUT2	Output 2
7	OUT1	Output 1
8	OUT0	Output 0
9	E24V	IO power supply is, the input power
10	EGND	IO power ground

2.2.2 Output 8-15

Pin No.	name	Explanation
1	OUT15	Output 15
2	OUT14	Output 14
3	OUT13	Output 13
4	OUT12	Output 12
5	OUT11	Output 11
6	OUT10	Output 10
7	OUT9	Output 9
8	OUT8	Output 8
9	E24V	IO power supply is, the input power
10	EGND	IO power ground

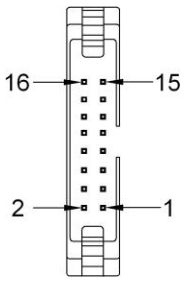
2.2.3 Other See ZIO1608

2.3ZIO160802



ZIO160802 with 16 general-purpose input ports, eight general purpose output ports.
ZIO160802 with a CAN bus interface is connected to the main controller.
ZIO160802 Opposite the two expansion shafts ZI01608 increased, Other ZI01608 identical.

2.3.1. Axis interface signals:



Each terminal signal interface with two axes, can be arranged as a stepping axis or shaft encoder.

Pin No.	Pulse output mode name	Encoder By Name
1	PUL1 + (Differential Pulse +)	EA1 is + (+ Differential Encoder)

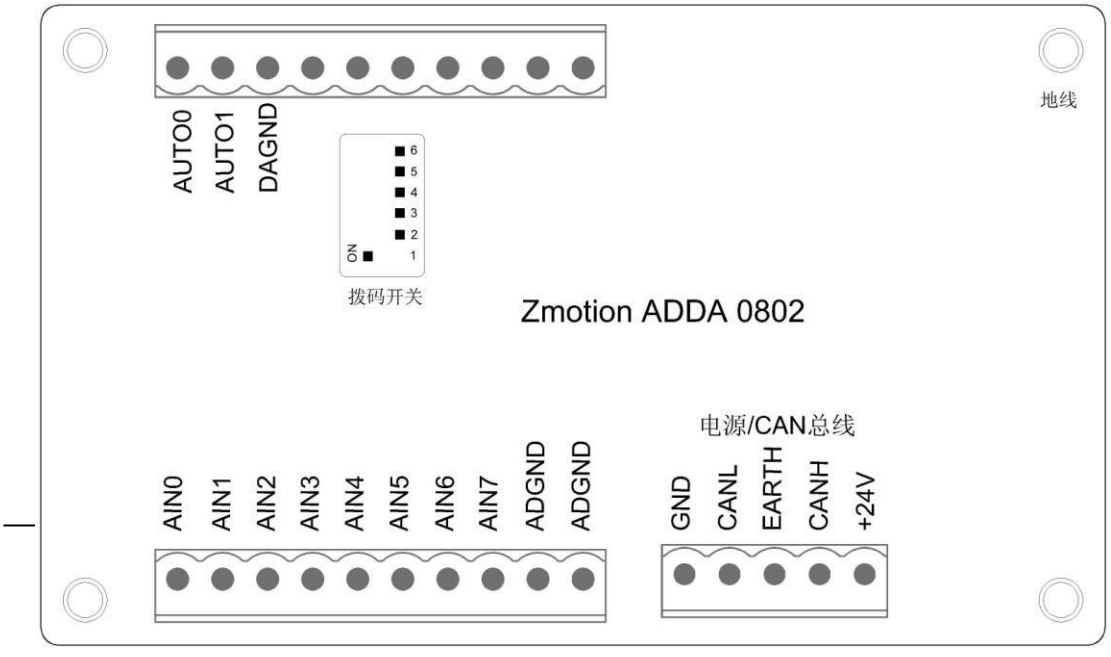
2	PUL1- (Differential Pulse -)	EA1- (Differential Encoder -)
3	DIR1 + (+ direction difference)	+ EBl (Differential Encoder +)

4	DIR1- (differential direction -)	EB1- (Differential Encoder -)
5	Internal 0V	Internal 0V
6		EZ1 + (+ Differential Encoder)
7		EZ1- (Differential Encoder -)
8	Internal + 5V power supply	Internal + 5V power supply
9	PUL0 + (Differential Pulse +)	EA0 + (+ Differential Encoder)
10	PUL0- (Differential Pulse -)	EA0- (Differential Encoder -)
11	DIR0 + (+ direction difference)	EB0 + (+ Differential Encoder)
12	DIR0- (differential direction -)	EB0- (Differential Encoder -)
13	Internal 0V	Internal 0V
14		EZ0 + (+ Differential Encoder)
15		EZ0- (Differential Encoder -)
16	Internal + 5V power supply	Internal + 5V power supply

2.3.1.1 Wiring

See shaft wiring ECI212.

2.4 ZAIO0802



ZAIO0802 AD with 8 inputs, 2 outputs DA.

2.4.1 Power / CAN interface signals:

Pin No.	name	Explanation
1	GND	An internal power ground
2	CANL	CAN differential data -
3	EARTH / SHIELD	Safety ground / shield
4	CANH	CAN differential data +
5	+ 24V	An internal power source 24V input

Please internal power supply 24V and an external IO power source 24V separate power supply, in particular in the field of electromagnetic interference serious cases, must be used two 24V power supply, or a providing two isolated power supply 24V output; when through the serial port connecting the touch screen, a power supply using a touch screen providing an internal power supply 24V.

A plurality of link controllers on the CAN bus, CANH and CANL necessary on both sides of the end most of the controller 120 and then

Ohm resistor.

2.4.2 AD analog input signal:

Pin No.	name	Explanation
1	ADGND	Power to AD
2	ADGND	Power to AD
3	AIN7	Analog input channels 7
4	AIN6	Analog input channels 6
5	AIN5	Analog input channel 5
6	AIN4	Analog input channels 4
7	AIN3	Analog input channel 3
8	AIN2	Analog input channels 2
9	AIN1	Analog input channels 1
10	AIN0	Analog input

		channel 0

2.4.3 DA analog output signals:

Pin No.	name	Explanation
1		
2		
3		
4		
5		
6		
7		

8	DAGND	Analog Ground
9	DA1	Analog output channels 1
10	DA0	Analog output channels 0

2.4.4 The switch definition

IO board DIP a total of six, the first four addresses for CAN, CAN speed setting 2 later.

Dip each Corresponding to the value OFF 0, corresponding to 1, the combined value DIP = DIP 4 × 8 + 3 × 4 + 2 × 2 + DIP DIP 1 ON, the controller sets the corresponding IO board according to the CAN address DIP IO port range. (IO can be used to reveal the starting number by viewing the status window control software ZDevelop)

2.4.4.1 DIP 1-4 Select CAN Address:

Combined value	No starting AD	End AD No.	Starting DA No.	End DA No.
0	8	15	4	7
1	16	twenty three	8	11
2	twenty four	31	12	15
3	32	39	16	19
4	40	47	20	twenty three
5	48	55	twenty four	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 the controller or the expansion module AD / DA number range is repeated, there is only one valid. No such adjustment is recommended DIP not repeated.

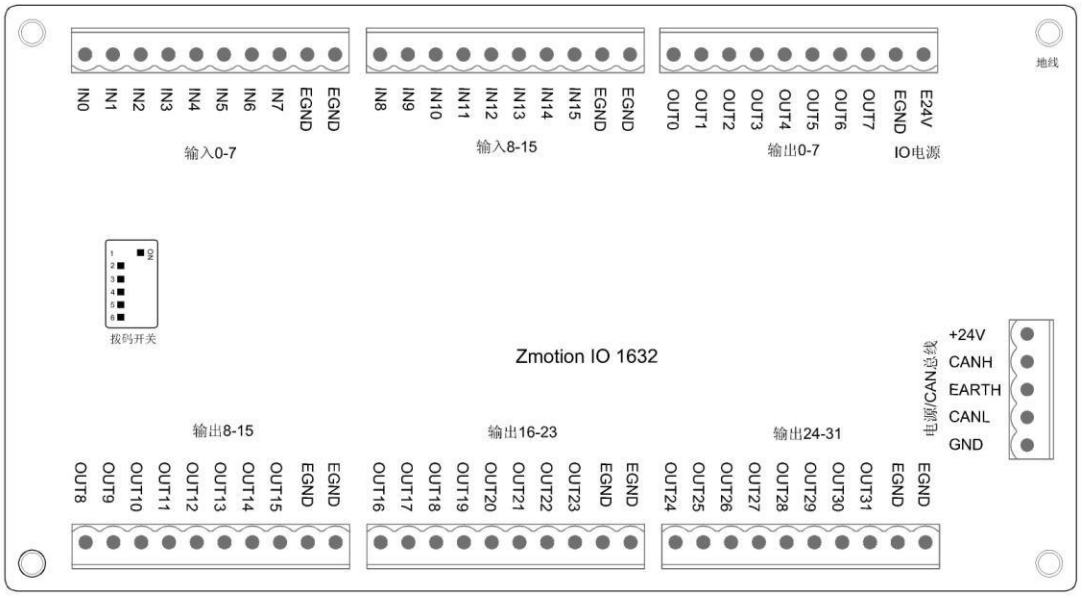
2.4.4.2 Speed selection CAN DIP 5-6:

Combined	Explanation

value	
0	Speed 500KBPS
1	Speed 250KBPS
2	Speed 125KBPS

3	Speed 1MBPS

2.5ZIO1632



ZIO1632 with 16 general-purpose input port, an output port 32 general purpose.
ZIO1632 with a CAN bus interface is connected to the main controller.

2.5.1 Output 0-7

Pin No.	name	Explanation
1	E24V	IO power supply is, the input power
2	EGND	IO power ground
3	OUT7	Output 7
4	OUT6	Output 6
5	OUT5	Output 5
6	OUT4	Output 4
7	OUT3	Output 3
8	OUT2	Output 2
9	OUT1	Output 1
10	OUT0	Output 0

2.5.2 Output 8-15

Pin No.	name	Explanation
1	OUT8	Output 8
2	OUT9	Output 9
3	OUT10	Output 10
4	OUT11	Output 11
5	OUT12	Output 12
6	OUT13	Output 13
7	OUT14	Output 14
8	OUT15	Output 15
9	EGND	IO power ground
10	EGND	IO power ground

2.5.3 Output 16-23

Pin No.	name	Explanation
1	OUT16	Output 16
2	OUT17	Output 17
3	OUT18	Output 18
4	OUT19	Output 19
5	OUT20	Output 20
6	OUT21	Output 21
7	OUT22	Output 22
8	OUT23	Output 23
9	EGND	IO power ground
10	EGND	IO power ground

2.5.4 Output 24-31

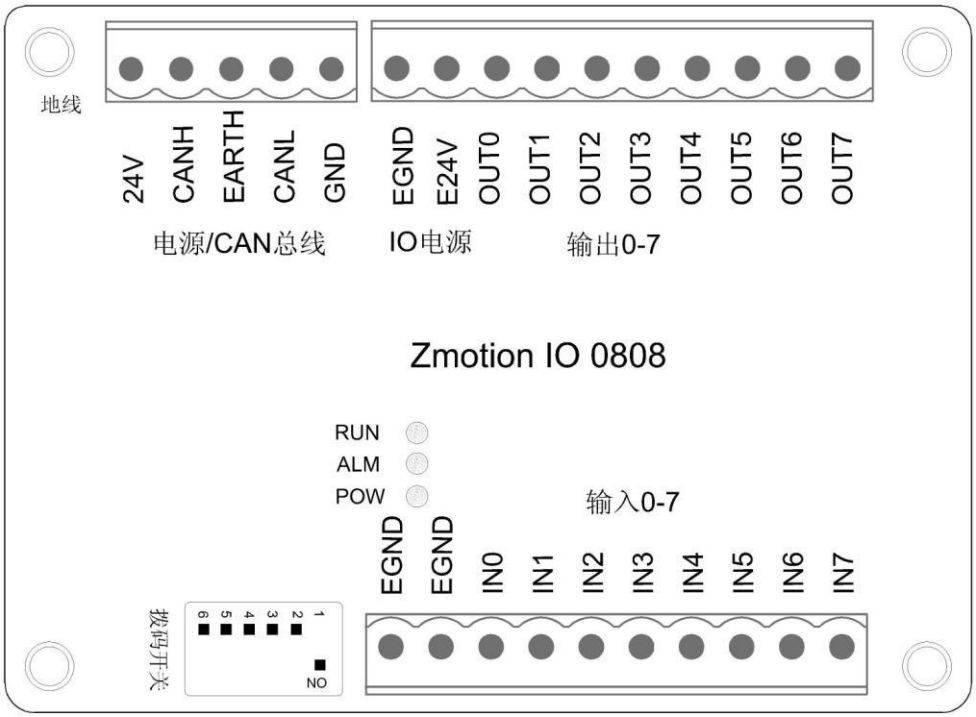
Pin No.	name	Explanation
1	OUT24	Output 24
2	OUT25	Output 25
3	OUT26	Output 26
4	OUT27	Output 27
5	OUT28	Output 28
6	OUT29	Output 29
7	OUT30	Output 30
8	OUT31	Output 31

9	EGND	IO power ground

10	EGND	IO power ground

2.5.5 Other See ZIO1608

2.6ZIO0808



ZIO0808 with eight general purpose input ports, eight general purpose output ports. ZIO0808 with a CAN bus interface is connected to the main controller.

2.6.1 Output 0-7

Pin No.	name	Explanation
1	OUT7	Output 7
2	OUT6	Output 6
3	OUT5	Output 5
4	OUT4	Output 4
5	OUT3	Output 3
6	OUT2	Output 2
7	OUT1	Output 1
8	OUT0	Output 0
9	E24V	IO power supply is, the input power

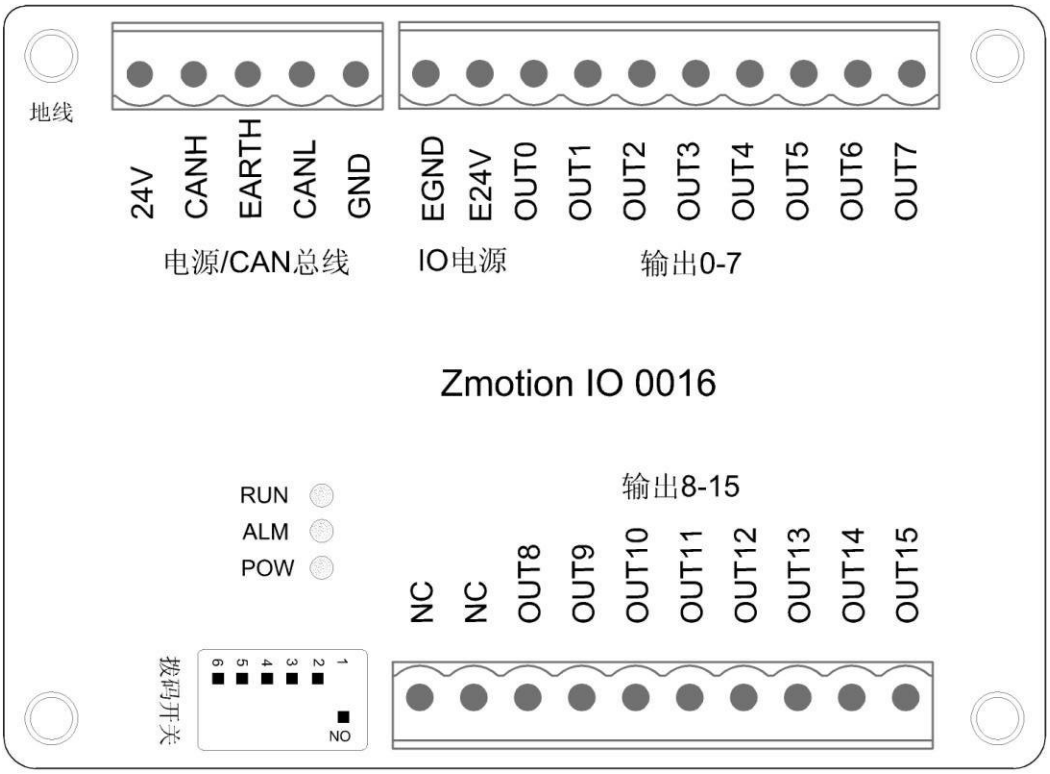
10	EGND	IO power ground

2.6.2 Enter 0-7

Pin No.	name	Explanation
1	EGND	IO power ground
2	EGND	IO power ground
3	IN0	Enter 0
4	IN1	Input 1
5	IN2	Input 2
6	IN3	Input 3
7	IN4	Input 4
8	IN5	Input 5
9	IN6	Input 6
10	IN7	Input 7

2.6.3 Other See ZIO1608

2.7ZIO0016



ZIO0016 with 16 general purpose output ports.
ZIO0016 with a CAN bus interface is connected to the main controller.

2.7.1 Output 0-7

Pin No.	name	Explanation
1	OUT7	Output 7
2	OUT6	Output 6
3	OUT5	Output 5
4	OUT4	Output 4
5	OUT3	Output 3
6	OUT2	Output 2
7	OUT1	Output 1
8	OUT0	Output 0
9	E24V	IO power supply is, the input power
10	EGND	IO power ground

2.7.2 Output 8-15

Pin No.	name	Explanation
1	NC	spare
2	NC	spare
3	OUT8	Output 8
4	OUT9	Output 9
5	OUT10	Output 10
6	OUT11	Output 11
7	OUT12	Output 12
8	OUT13	Output 13
9	OUT14	Output 14
10	OUT15	Output 15

2.7.3 See other ZIO1608

Chapter III Frequently Asked Questions

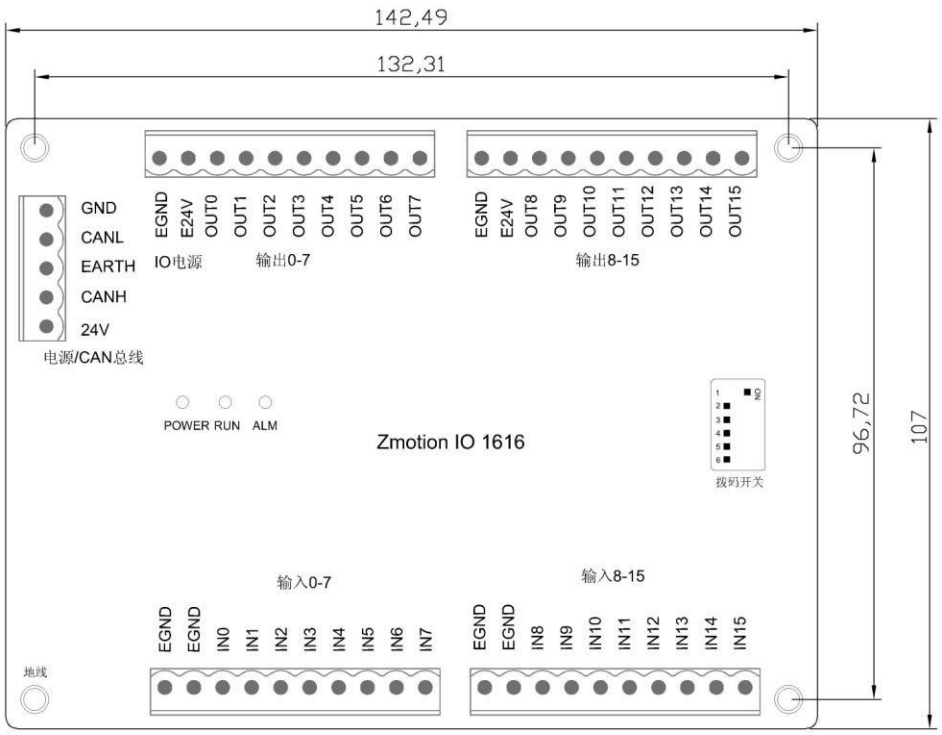
prob lem	Problem- solving advice
Motor does not rotate.	ATYPE are configured correctly confirm the controller; Checkout input pulse and pulse transmission mode driver matches; confirm whether the limit hardware, software limit,ALM signal function; it can be tested, and whether the pulse count was observed with normal testing software;
The controller work normally, the pulse sent out normally, but the motor does not rotate.	Check the connection between the drive and the motor are correct, of the connections between the driver and the controller good contact. Ensure that the drive is working properly, no alarm occurs.
The motor may rotate, but not working properly.	Check deceleration and speed setting exceeds the equipment limit; Check the output pulse frequency exceeds a limit drive receiver; Check controller and the drive is properly grounded,

	interference measures are good; limiting resistor and direction pulse signal output terminal optical isolation circuit used is too large, too small operating current.
It can control the motor, but the motor appears Oscillation or overshoot.	Drive parameters may be incorrectly set, the drive parameters checked; Application software acceleration and deceleration time and speed of movement is unreasonable.
It can control the motor, but the work back Origin positioning allowed.	Origin signal switch is working properly; Origin signal is subject to interference.
Limit signal does not work.	The limit sensor is not working properly;

	Limit sensor signal interference;
Not connected expansion module, the expansion module Warning lights.	Check whether there is an ohmic resistor 120 mounted at both ends; Check for a plurality of extension modules use the same's ID.
Input signal is not detected	Check whether or IO power supply; Check the signal level is matched with the input port. Check whether the input ID matches the ID IO board.
When the output operation does not respond	Check whether or IO power supply; IO board also for IO supply. Check the output port number matches the ID IO board.

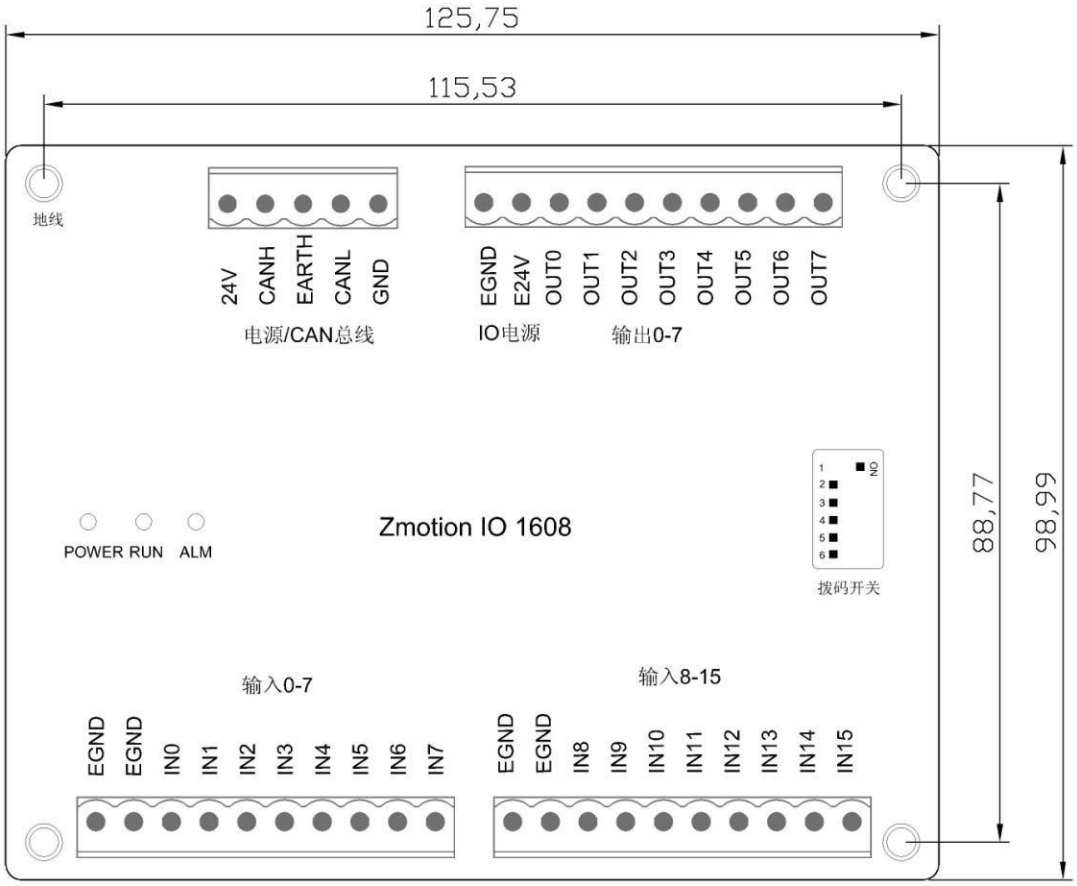
The fourth chapter Hardware Installation

4.1 ZIO1616 installation



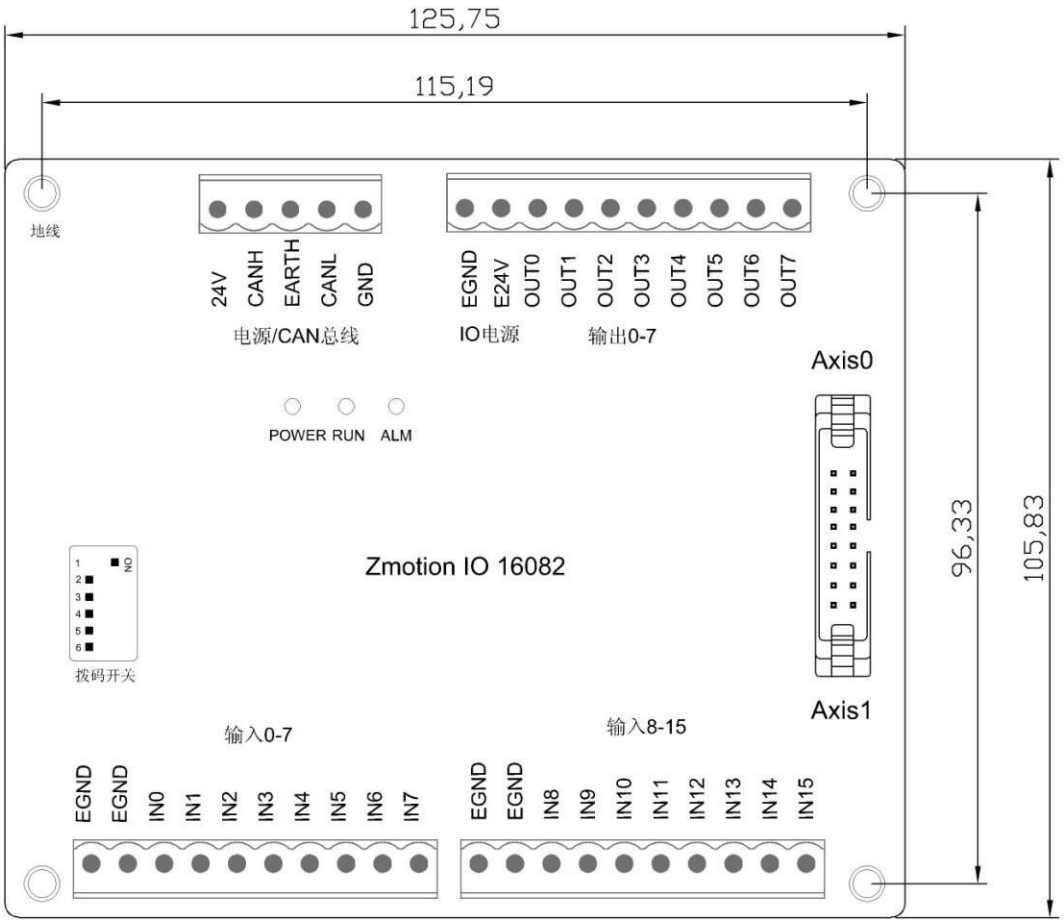
Unit: mm

4.2 ZIO1608 installation



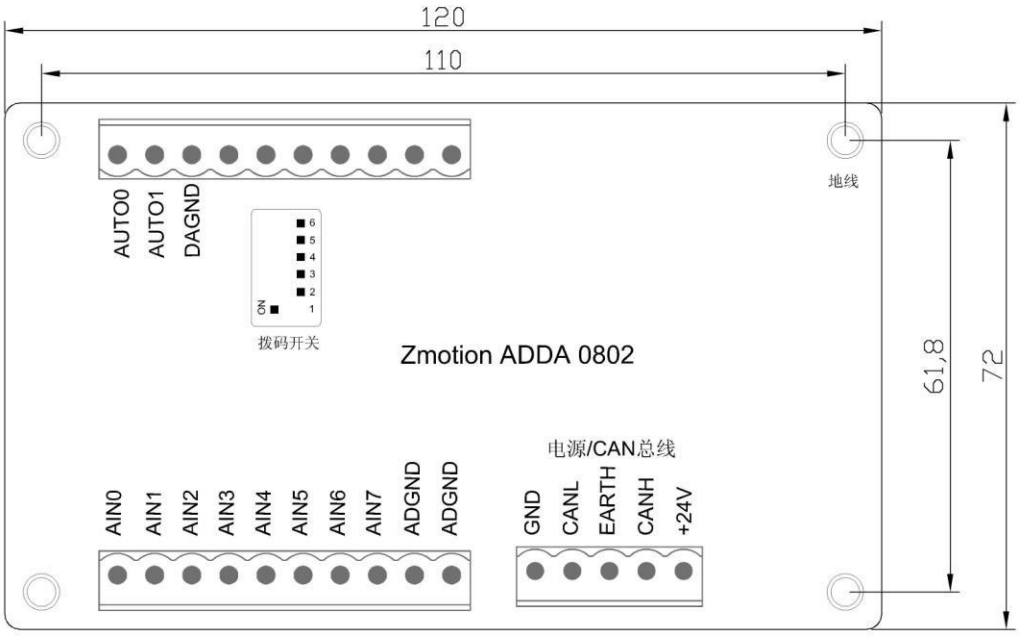
Unit: mm

4.3ZIO160802 installation


125,75
115,19
地线
24V
CANH
EARTH
CANL
GND
电源/CAN总线
EGND
E24V
OUT0
OUT1
OUT2
OUT3
OUT4
OUT5
OUT6
OUT7
IO电源
输出0-7
Axis0
POWER RUN ALM
Zmotion IO 16082
96,33
105,83
拨码开关
Axis1
输入0-7
输入8-15
EGND
EGND
IN0
IN1
IN2
IN3
IN4
IN5
IN6
IN7
EGND
EGND
IN8
IN9
IN10
IN11
IN12
IN13
IN14
IN15

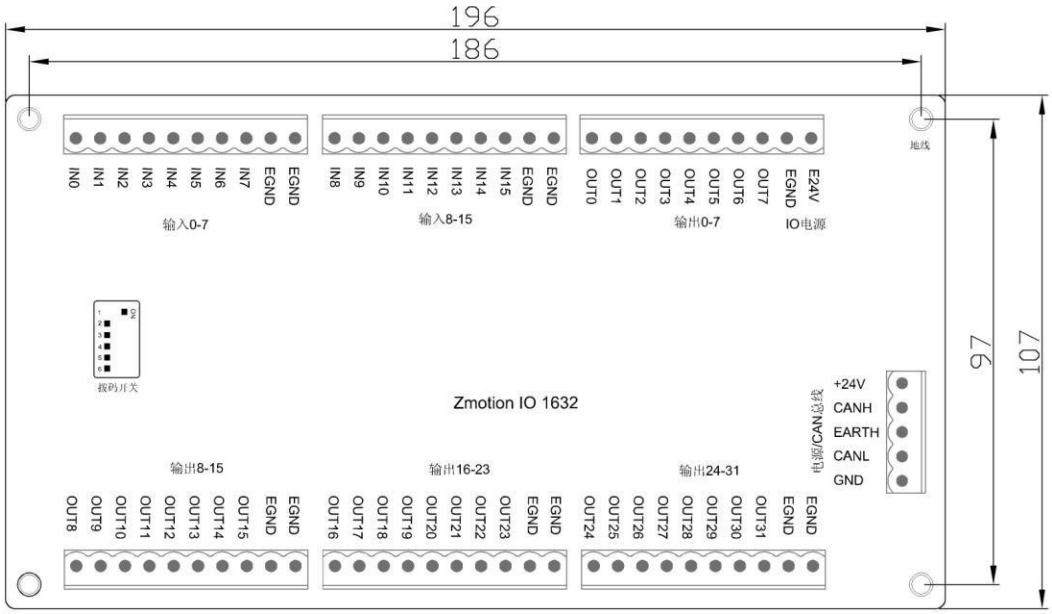
Unit: mm

4.4ZAIO0802



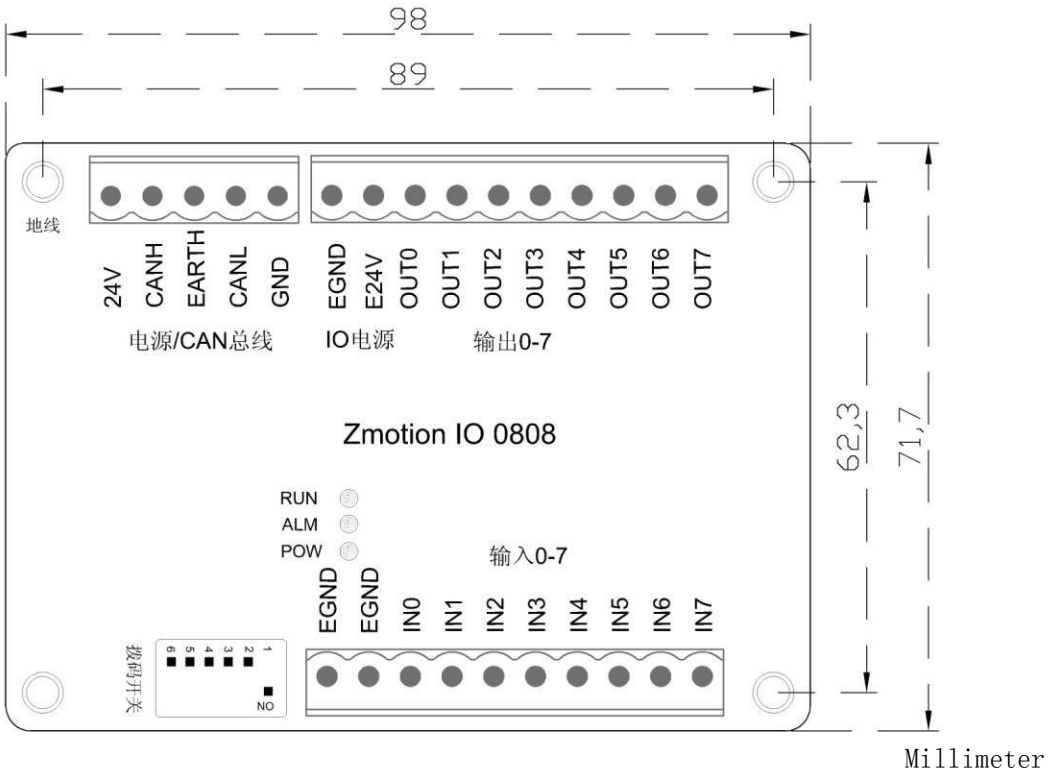
Unit: mm

4.5ZIO1632



Unit: mm

4.6ZIO0808



4.7ZIO0016