ECI2000 network control 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.

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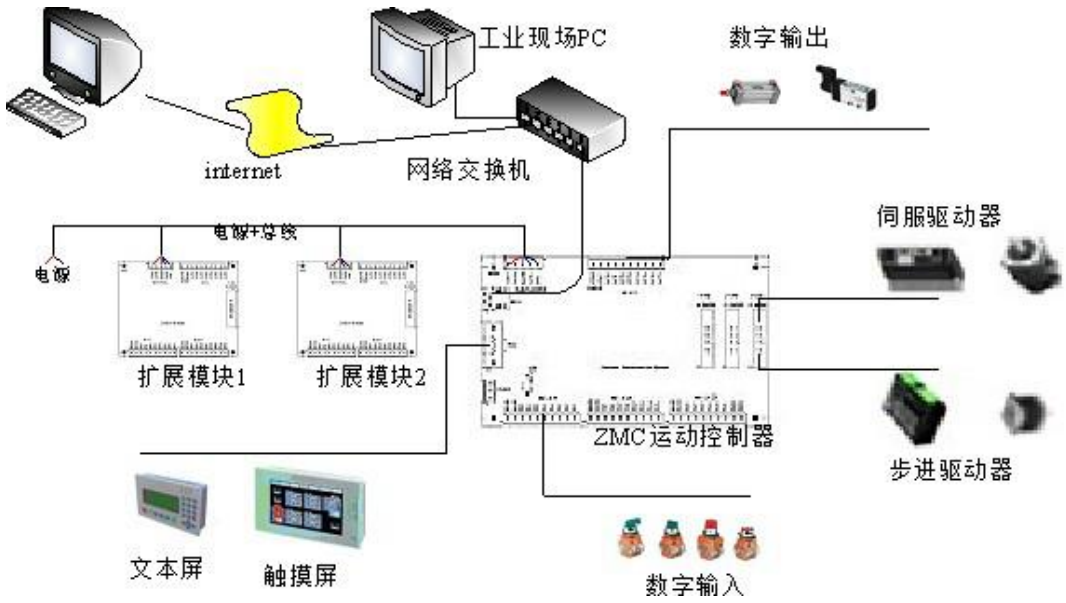
Chapter one control card Introduction

ECI is a positive movement technology introduced motion control card network model for short.

ECI2000 series control card supports up to 12-axis linear interpolation, arc interpolation any, space, circular, helical interpolation, electronic cam, electronic gear, follow the synchronization, the virtual axis, robot instructions and the like; optimized network communication protocol real-time motion control.

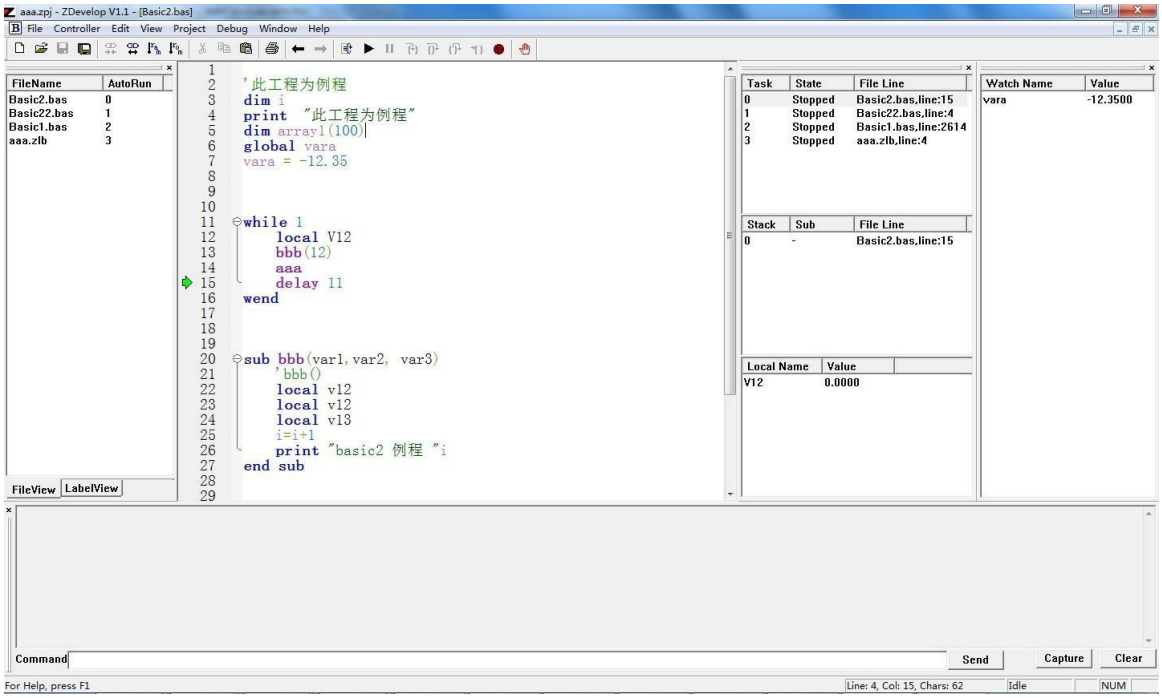
1.1 Connection Configuration



Typical connection configuration of FIG.

ECI motion control card supports Ethernet network, and communication interface 232 is connected to the computer, the computer's operating instructions received, each extension module can be connected via a CAN summary, thereby extending input and output points or axes of motion
(CAN bus ends and then need 120 ohm resistor).

1.2 Installation and programming



ZDevelop development environment

ECI control card by ZDevelop development environment to debug, ZDevelop is a very convenient programming, compiling, and debugging environment. ZDevelop can establish a connection through the serial port Ethernet controller.

Program should be used VC, VB, VS, C ++ Builder, C #, and other software development. When debugging canZDevelop software while connected to the controller, you need a dynamic library zmotion.dll program is running.

1.3 Features

- Up 12 axis motion control.
- Output Pulse mode: the direction / pulse or double pulse.
- Support encoder position measurement, the handwheel may be configured to input mode.
- Each maximum output pulse frequency axis 10MHz
- by CAN bus,Scales up to 512 isolated input or output port.
- Positive and negative limit axis signal port / port origin signal can be arbitrarily configured as any input port.
- Output maximum output current up 300mA, can directly drive portions

of the electromagnetic valve.

- RS232 interface, Ethernet interface.
- Support up 12 axis linear interpolation, any circular interpolation, helical interpolation.
- Support electronic cam, electronic gear, latched position, following the synchronization, functions of the virtual shaft.
- stand by ZBasic multi-file multi-task programming.

- Encryption means a variety of programs to protect customers' intellectual property.

Chapter Hardware Description

2.1 ECI2000 model specifications

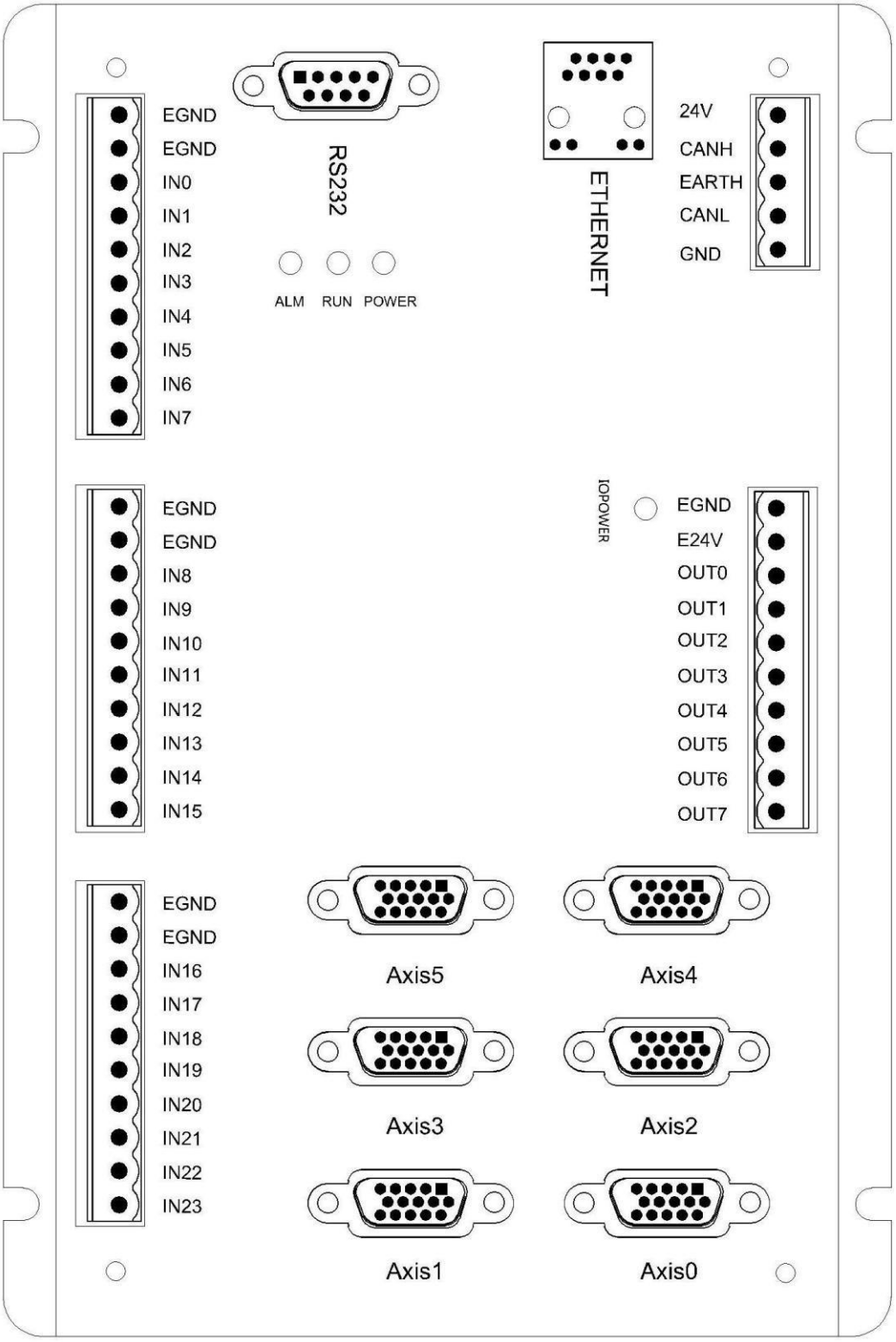
	ECI2400	ECI2600
Basic axes	4	6
Extend the maximum number of axes	12	12
Basic axis type	Pulse / encoder	
Internal IO number	24 + i into an 8 + i (8 with overcurrent protection) (i is the number of axes)	
The maximum number of expansion IO	256 into 256	
Extended up to AD / DA	Road 125 AD, 64 DA Road	
Pulse-digit	32	
The encoder-digit	32	
Velocity Acceleration digit	32	
Maximum pulse rate	10Mhz	
Each axis motion buffered data	128	
An array of space	1600	
Program Space	4KByte	
Flash space	128KByte	
power input	24V DC input (the power consumption 10W, no cooling fan), IO24V input.	
Communication Interface	RS232, Ethernet, CAN	
Dimensions	201 * 134mm	

2.1.1 Ordering Information:

model	Specification Description

ECI2400	4-axis, the movement point, electronic cam, interpolation is not supported.
ECI2402	4-axis, the movement point, electronic cam, linear interpolation.
ECI2406	4-axis, the movement point, electronic cam, linear interpolation, arc interpolation.
ECI2408	4-axis, the movement point, electronic cam, linear interpolation, arc interpolation, interpolation continuous motion, the robot instruction.
ECI2600	6-axis, the movement point, electronic cam, interpolation is not supported.
ECI2602	6-axis, the movement point, electronic cam, linear interpolation.
ECI2606	6-axis, the movement point, electronic cam, linear interpolation, arc interpolation.
ECI2608	6-axis, the movement point, electronic cam, linear interpolation, arc interpolation, interpolation continuous motion, the robot instruction.

2.2 ECI2000 wiring



ECI2000 having up to 6 axes, each axis with a separate encoder, up to 12 virtual axis, the virtual axis may extend out through the extension module.

ECI2000 board 24 comes universal input ports, eight general purpose output,

ECI2000 with an RS232 serial port, an Ethernet interface.

ECI2000 with a CAN bus interface, supports connected by ZCAN protocol extension.

2.2.1 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

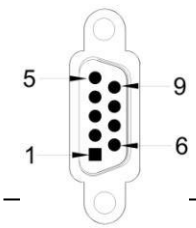
Please internal power supply 24V and an external IO power source 24V separate power supply, in particular in the field of electromagnetic interference serious cases, must be used two 24V power supply, or a providing two isolated power supply 24V output; when through the serial port connecting the touch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

For communications quality, use shielded twisted pair cable, a ground shield layer, a controller and expansion modules use the same internal power supply.

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.

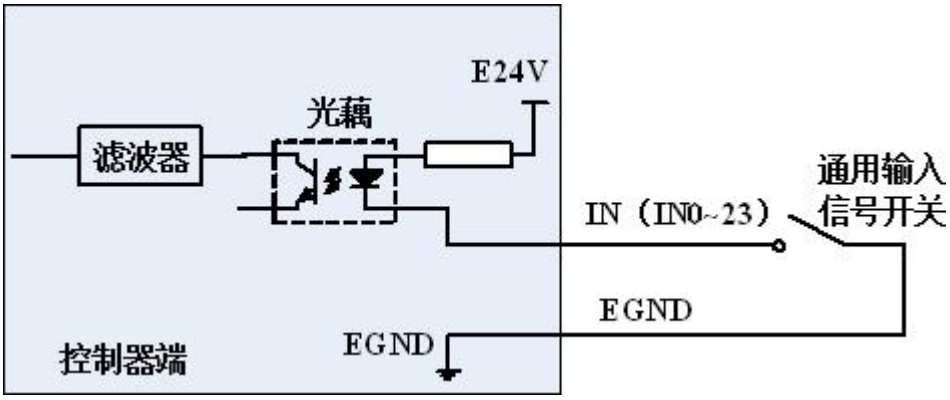
2.2.2 RS232 interface signals:



Pin No.	name	Explanation
2	RXD	Receiving data pin
3	TXD	Send data pin
5	GND	Power Ground
9	DC5V	5V power supply output, the power supply can be used to screen text

Connected to the PC requires a double crossover cable is female.

2.2.3 Universal input signals:



2.2.4. Input 0-7:

Pin No.	name	Explanation
1	EGND	IO power ground
2	EGND	IO power ground
3	IN0	0 input (Latch A)
4	IN1	An input (Latch B)
5	IN2	Input 2
6	IN3	Input 3
7	IN4	Input 4
8	IN5	Input 5
9	IN6	Input 6
10	IN7	Input 7

Input 1 Input 0 and simultaneously the latch having a latch input A and input B function.

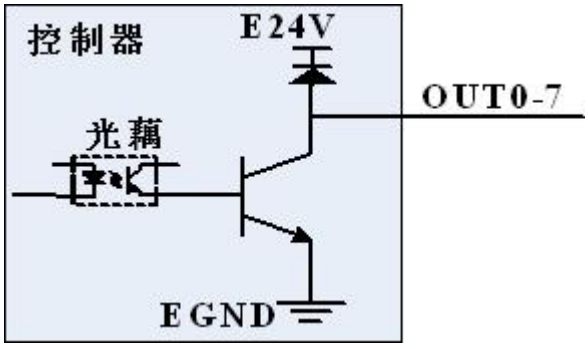
2.2.5 Input 8-15:

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

2.2.6 Input 16-23:

Pin No.	name	Explanation
1	EGND	IO power ground
2	EGND	IO power ground
3	IN16	Enter 16
4	IN17	Enter 17
5	IN18	Enter 18
6	IN19	Enter 19
7	IN20	Enter 20
8	IN21	Enter 21
9	IN22	Enter 22
10	IN23	Enter 23

2.2.7 Output / IO power signals:



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

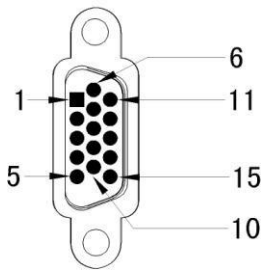
Please put the case of internal and external IO power supply 24V 24V power supply separately, especially on-site electromagnetic interference serious.

2.2.8 Axis interface signals:

Each terminal signal interface with two axes, a 0V and + 5V output, can supply 5V encoder. Shaft before use, to configure the shaft by use ATYPE parameters.

Alarm input shaft and an output enable input and output simultaneously as universal.

ECI2400 only axis 0-3.



Pin No.	name	description
1	PUL +	Differential Pulse +
2	DIR +	Direction differential +
3	GND	Internal 0V
4	EA +	Encoder Phase A +
5	EB +	Encoder Phase B +
6	EZ +	Encoder Z phase +

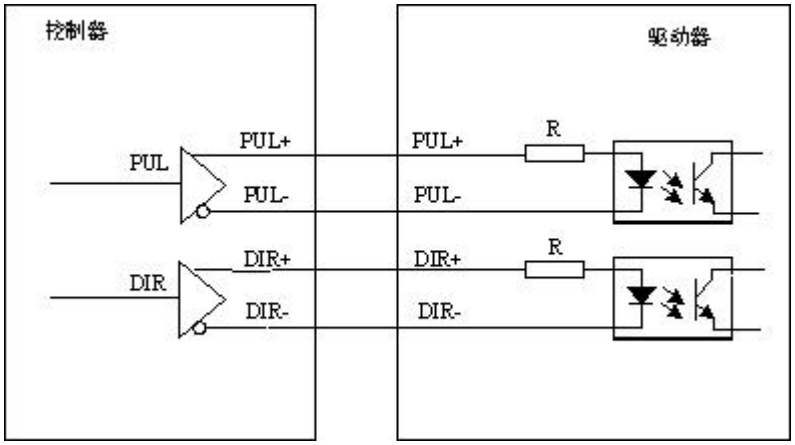
7	ALM (IN24-29)	Alarm Input (requires configuration, As a general-purpose input)

8	EGND	Externally
9	PUL-	Differential Pulse -
10	DIR-	Direction differential -
11	5V	Internal 5V
12	EA-	Encoder Phase A -
13	EB-	Encoder Phase B -
14	EZ-	Encoder Phase Z -
15	SERVON (OUT8-13)	Axis enabled (can be used as general-purpose input Out, no current amplification)

2.2.9 Wiring

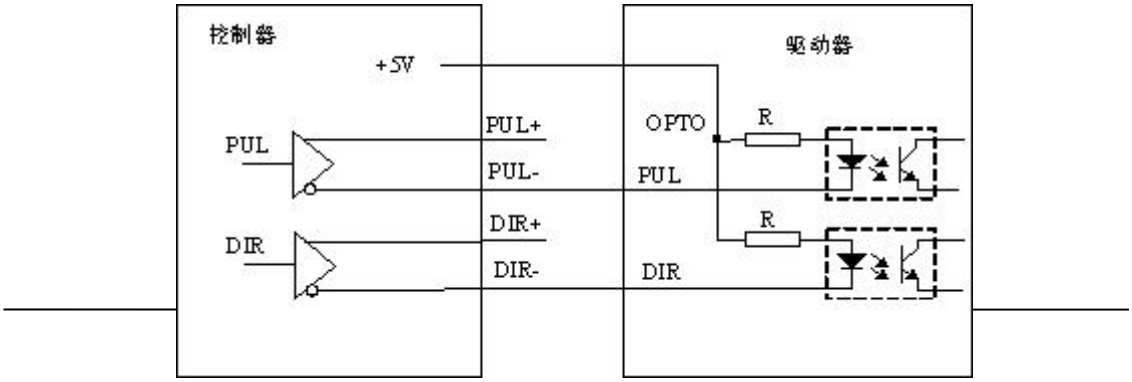
The portion of the servo drive optical coupling is not isolated, this time must GND and the GND of the drive, the vast majority of the drive encoder not opto-coupler, when connected to the encoder, to be connected to GND.

When connected to the AC servo stepwise manner recommended differentially

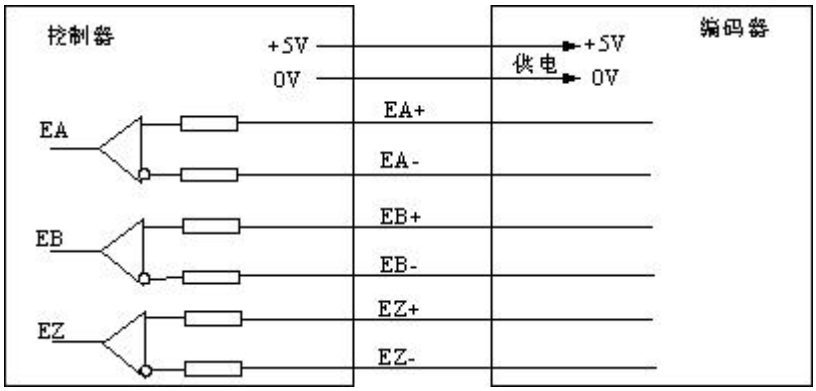


connected, anti-interference.

Differential Connection



Single-ended connection



Encoder connection

The vast majority drive encoder interface is not opto-coupler, must GND (0V) connected.

Chapter III Expansion Module

See "ZIO Expansion Card Hardware Manual"

Chapter IV Frequently Asked Questions

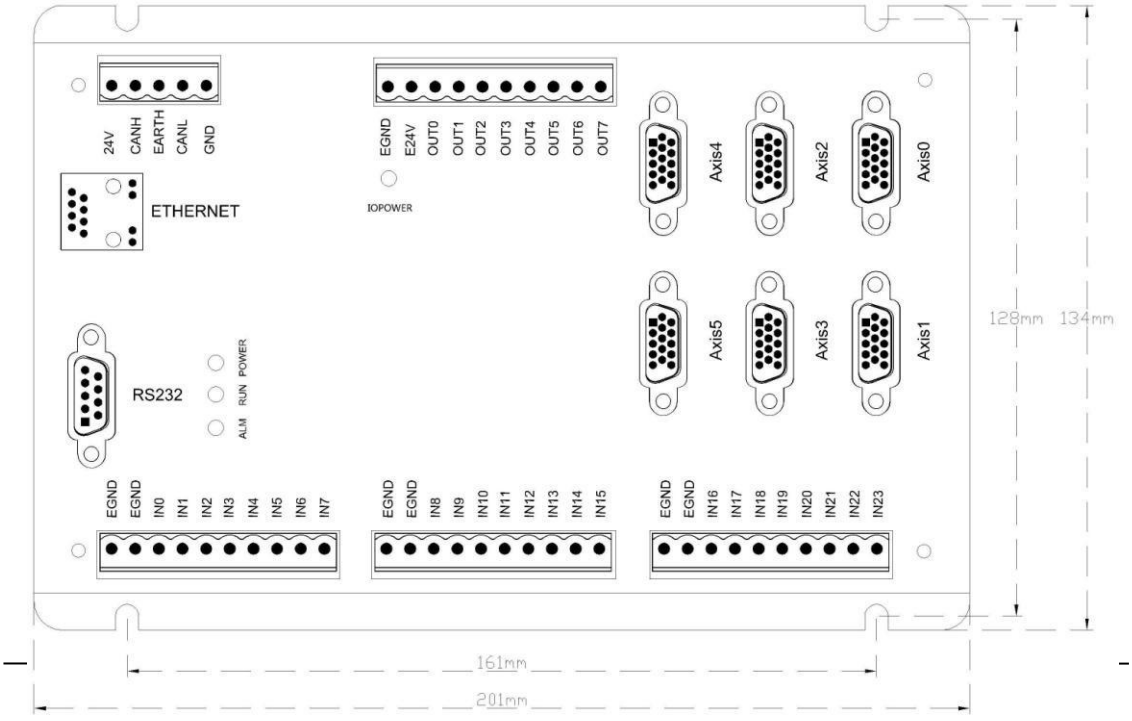
prob lem	Problem- solving advice
Motor does not rotate.	ATYPE are configured correctly confirm the controller; Checkout input pulse and pulse transmission mode driver matches; confirm whether the limit hardware, software limit,ALM signal function; it can be tested, and whether the pulse count was observed with normal testing software; Check whether the program which constantly calls CANCEL stop, the user can be stopped Process re-test.
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.

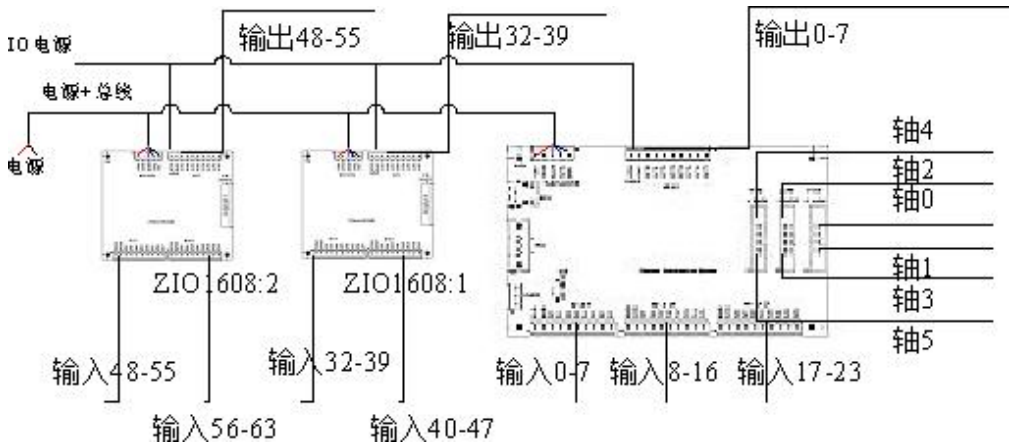
It can control the motor, but the work back Origin positioning allowed.	Origin signal switch is working properly; Origin signal is subject to interference.
Limit signal does not work.	The limit sensor is not working properly; Limit sensor signal interference;
Not connected expansion module, the expansion 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.

Chapter V Hardware Installation

5.1 ECI2000 installation



5.2 Referring to FIG wiring



Please put the case of internal and external IO power supply 24V 24V power supply separately, especially on-site electromagnetic interference serious, One of the two 24V power supply, or a power supply provides two isolated output 24V; when the touch screen is connected through a serial port, using an internal power supply 24V is provided a touch screen.