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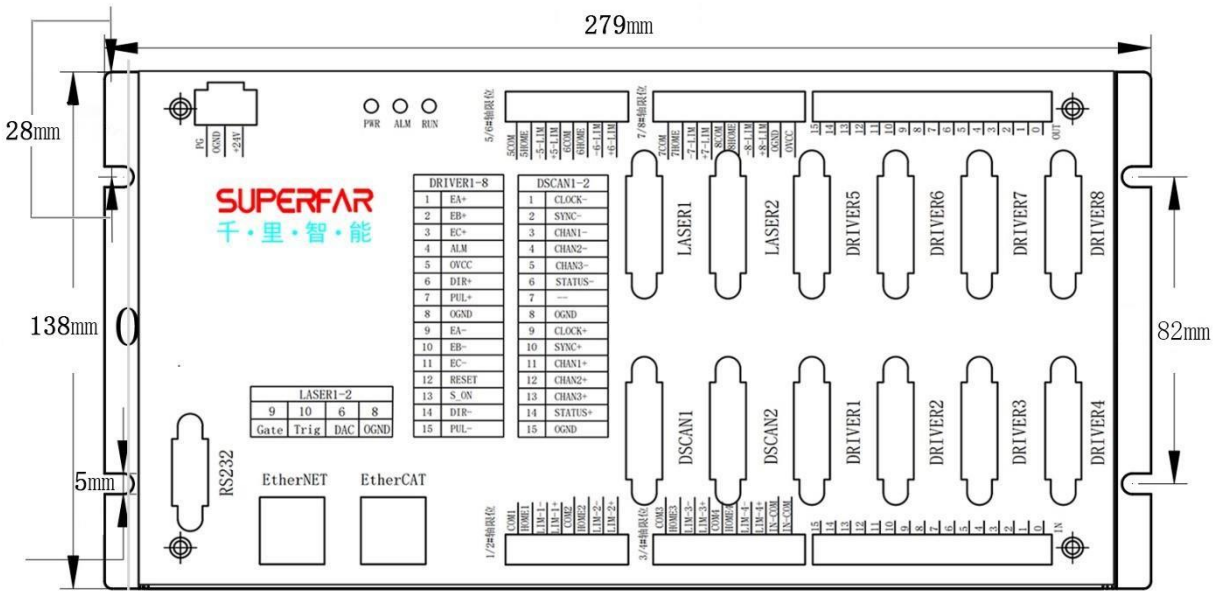
Platform mirror linkage card QLS-822-V1.9

Hardware User Manual

V250512

catalogue

I. Introduction to the platform mirror linkage card



The QLS-822 control card is a high-end platform Zhenjing linkage card independently developed by Qianli Intelligence. It features powerful CPU computing and is primarily used in platforms with multi-axis motion, Zhenjing, and laser processing applications to achieve platform-Zhenjing linkage. This significantly enhances processing efficiency, such as in 3D printing, PCB/FPC, fingerprint recognition chips, camera modules, and other laser precision cutting, large-scale PCB marking, and wafer marking.

Using dual-core ARM CPU calculation, super computing power, very short servo cycle, suitable for high speed, high precision digital control; configuration of large memory, can process a large amount of data at one time, very suitable for the vibration mirror control system with large data throughput;

Using 100/1000M Ethernet, no need to install drivers, the control system can run independently, not affected by the fault of the industrial computer, machine tool equipment system motion is more stable;

Supports the XY2-100 data transmission protocol, which uses 16-bit resolution digital signal for communication between the board card and the galvanometer scanning system, so as to achieve synchronous output of laser and scanning system and realize high precision and repeatable laser processing.

Main interface description:

1. Power supply: 24V power supply, it is recommended to be powered by independent power supply/isolated from input and output;
2. Status indicator: indicates whether the power supply of the controller is normal, whether there is an alarm, and whether the system is normal;
3. 16 path input /16 path output: the input is compatible with NPN and PNP types, high and low levels can be switched through the common terminal, the output is a Darlington tube, low level is effective, and the load capacity is strong;
4. 2 independent DSCAN galvanometer control ports: support galvanometer control of XY2-100 protocol, 16bit high resolution, delay accuracy can reach 1us, support synchronous and asynchronous collaborative working mechanism;
5. 2 LASER standard laser interface: 5V TTL Gate and Trig signals to control CO2, ultraviolet, green light, picosecond and other general lasers;
6. 8 motion axis control and independent limit interface: support 8 points with encoder axis, interpolation and other motion control, support linear motor, servo motor, stepper motor, etc.; 8 axis independent positive, negative, origin limit signal, compatible with NPN, PNP type photoelectric switch;
7. 1 EtherNET network port: Gigabit network port, which can be connected to the uppercomputerquicklyandstably,andcanrunoffline;

8.1EtherCATport:expandaxiscontrolandIOthroughEtherCATbus;

9.It has 2 channels of 16-bit ±10V analog signal input/output, capable of collecting analog signals such as temperature, liquid level, and optical power meter. It can also output analog signals to control lasers that require analog quantity control for power.

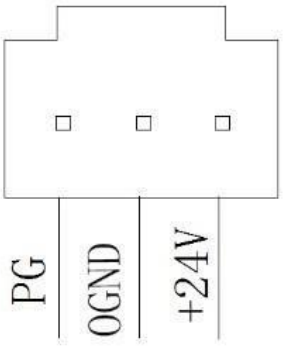
10.2Lightsourcecontrolinterface,usedtoadjustthebrightnessofthelight source;

11.1 A RS232 serial port: supports communication extension to the touch screen or other devices.

2. Hardware interface description

Warning: Do not plug or unplug the board with power on! Otherwise, the board may be damaged! The loss caused by this is borne by the user!

1. 24V power input

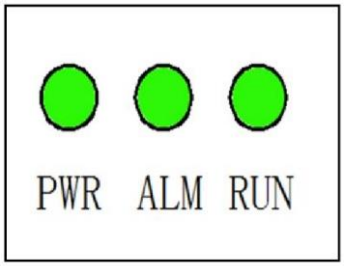


The power supply 24V current is not less than 3A, please pay attention to the direction and order!

Suggestion: Use a separate 24V power supply to ensure that the board power supply is isolated from input and output.

Pin	Name	Explain
1	+24V	+24V input, current greater than 2A
2	OGND	+24V input ground
3	PG	The shell is large (it is recommended not to connect)

2. status lamp

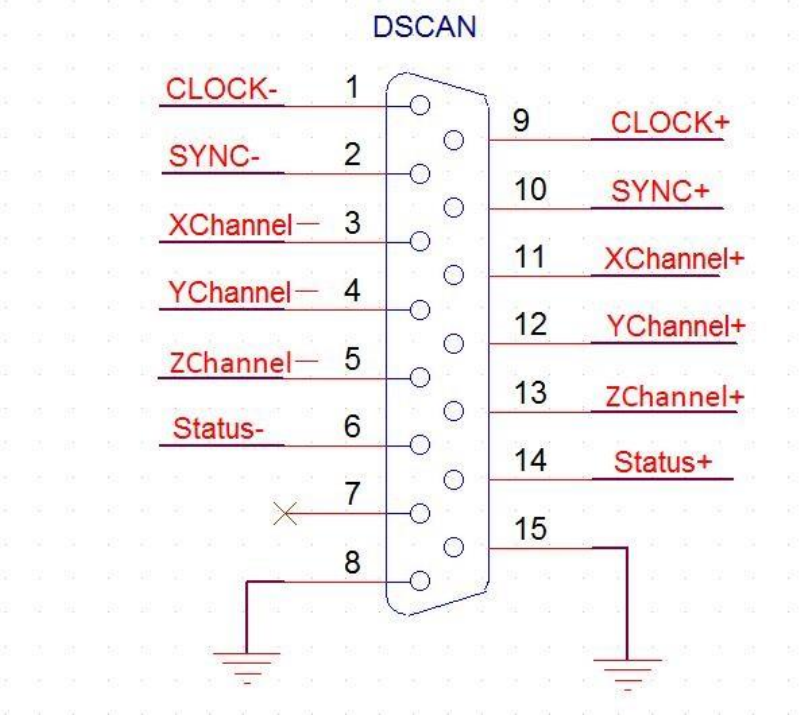


PWR: 24V power supply state, if the green light is always on, the power supply is normal; if not, please check the 24V power supply signal

ALM: alarm signal light, this light does not indicate no fault, but indicates system fault

RUN: Run the signal light. After power on, it will flash for about 20s. If the system starts normally, it will flash; otherwise, there is a fault

3. Zoom control port (DSCAN1 and DSCAN2)

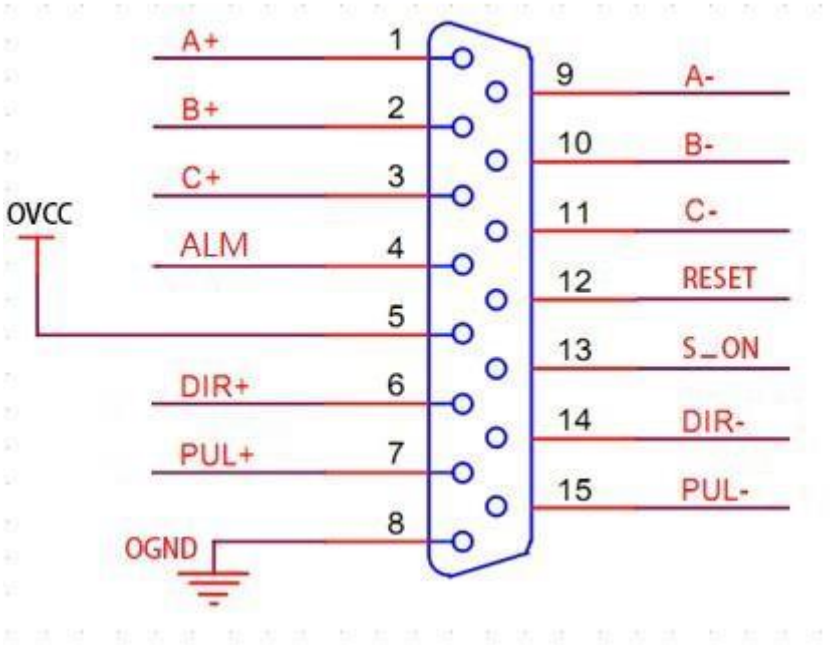


Pin	Name	Explain
1、9	CLK— / CLK+	Clock signal- / Clock signal +
2、10	SYNC— / SYNC+	Synchronization signal- / Synchronization signal +
3、11	XChannel— / XChannel+	Chimney X signal- / Chimney X signal +
4、12	YChannel— / YChannel+	Chin Y signal- / Chin Y signal +
5、13	ZChannel- / Zchannel+	Chimney Z signal- / Chimney Z signal +
6、14	Status- / Status+	Output in mirror state (usually not connected)
7	Continue to have	
8、15	OGND	Grounding feet

Note: Please use shielded twisted pair, and ground the shield layer at one end. Please refer to the later galvanometer wiring diagram.

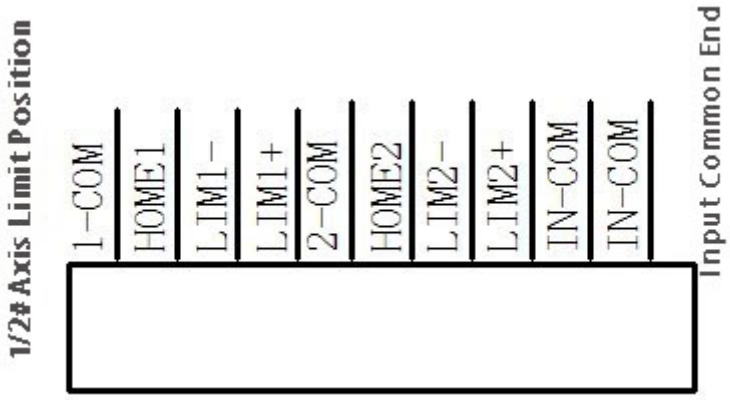
At the DSCAN end, the shielding layer is connected to 8 or 15 feet to enhance the anti-interference ability of the ZOOM signal.

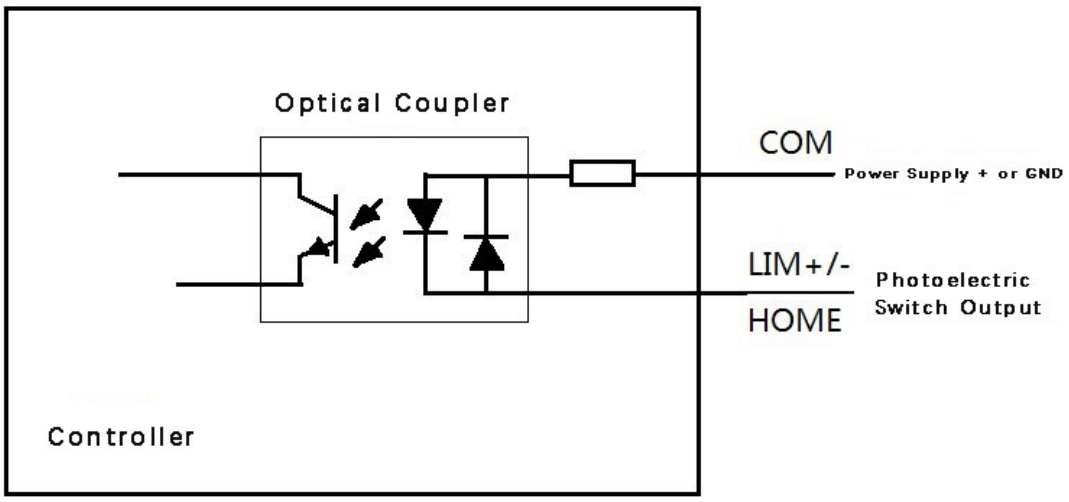
4. Motor control port (Driver1-8)



Pin	Name	Explain
1、9	1A+/1A-	Encoder 1A+/encoder 1A-
2、10	1B+/1B-	Encoder 1B+/Encoder 1B-
3、11	1C+/1C-	Encoder 1C+/Encoder 1C-
4	ALM	Drive alarm input signal
5	OVCC	External isolation 24V power output
6、14	1DIR+/1DIR-	Pulse direction signal output
7、15	1PUL+/1PUL-	Pulse signal output
8	OGND	Grounding feet
12	RESET	Reset signal
13	S-ON	Driver enables signal output (low level effective)

5. Extreme signal ports (1-4)



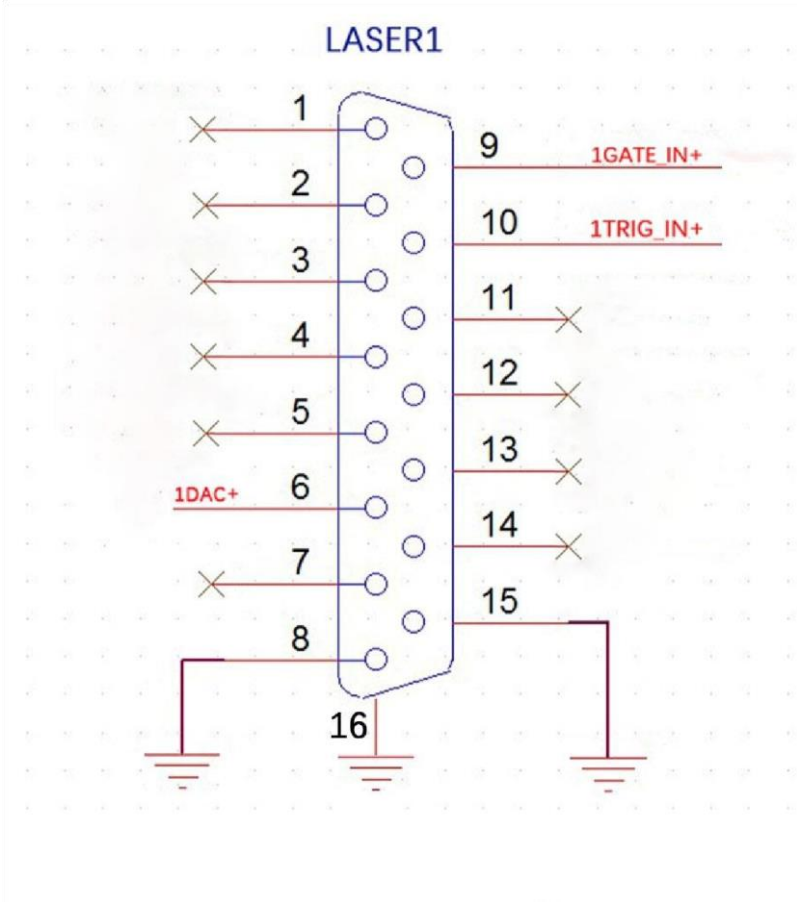


Pin	Name	Explain
1	LIM-1+	Positive limit signal
2	LIM-1-	Negative limit limit signal
3	HOME1	Zero point limit signal
4	1-COM	1 The axis limit shares a common end

Note: The number in the name is the axis number;

Compatible with PNP and NPN types of photoelectric switches by using the COM public terminal as a level reference.

6. LASER1/2 Laser control port

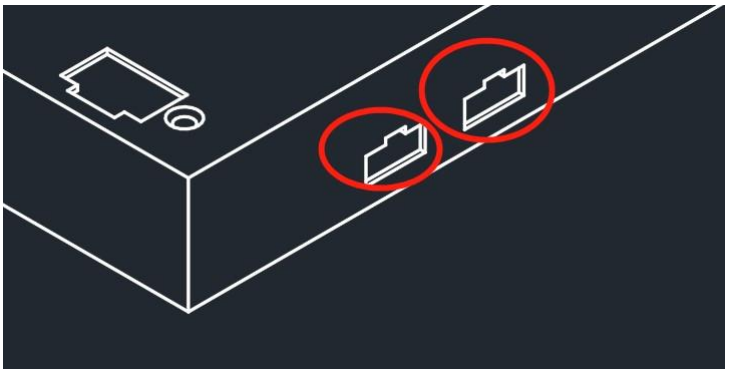


Pin	Meaning	Explain
6	DAC+	Analog output
8、15	OGND	Formacircuitwith6,9and10
9	Laser Gate+	Gate signal, high level is valid
10	Laser Trig+	The trig signal is valid at high level

Note: The laser control signals Gate and Trig are both 5V TTL signals.

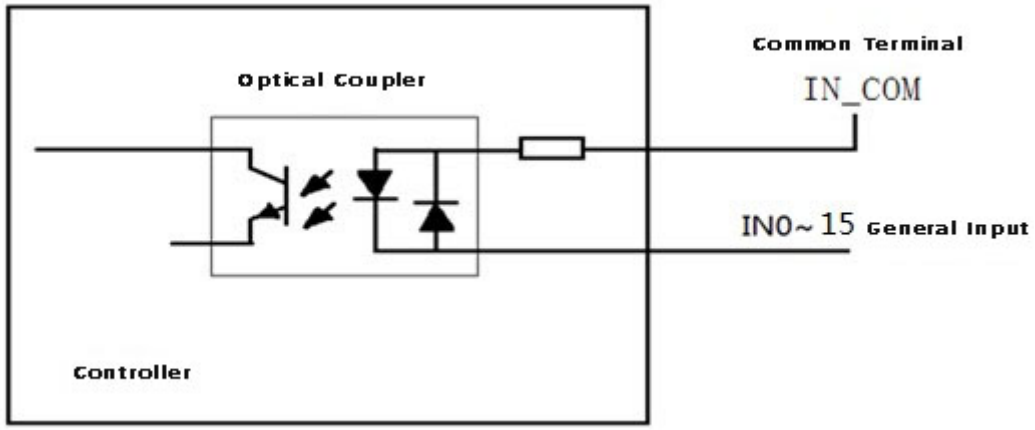
No analog output is provided by default.
If analogoutput is required,
please indicate it when order-
ing.

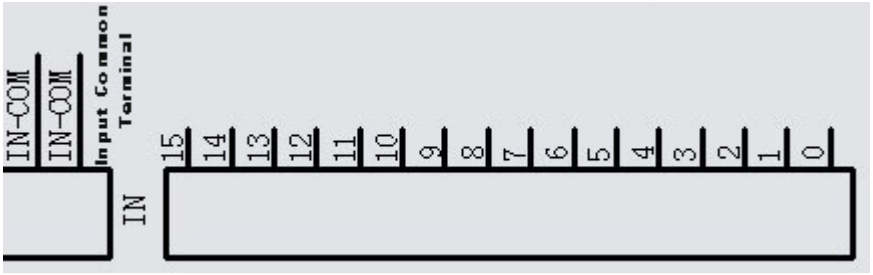
7. Light source control interface



Adjust the brightness of the light source by software command

8. Input port

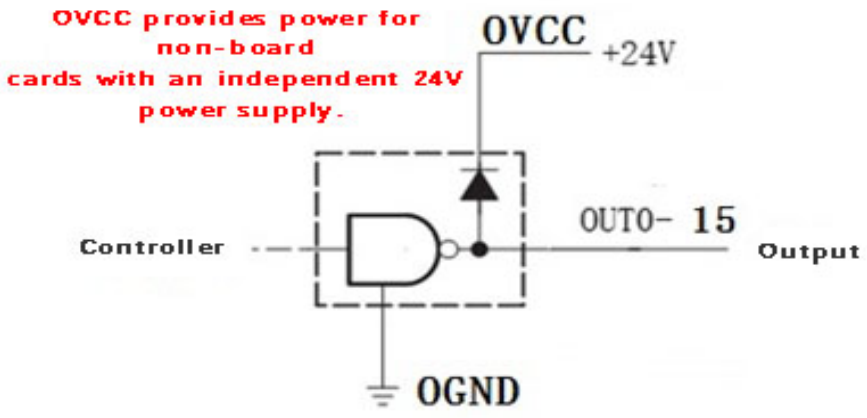




Pin	Name	Explain
0-15	IN0-15	Input signal 0 to signal 15

Note: High and low levels are switched by IN-COM to P24V or N24V as reference levels.

9. output port

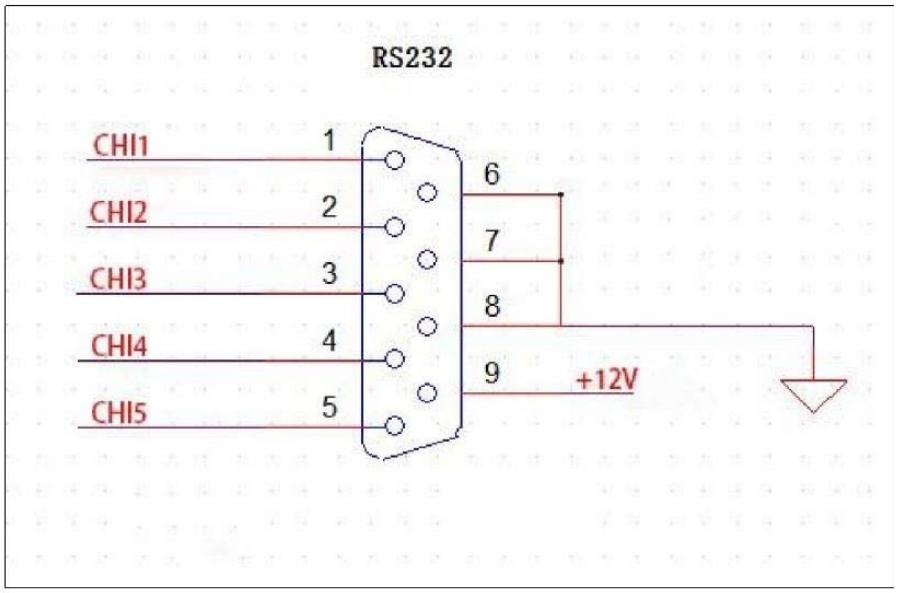


NPN Darlington Transistor

Pin	Name	Explain
0-9	OUT0-9	Output signal 0 to signal 9, low level is valid
OVCC	Power is positive	P24V
OGND	The power supply is negative	N24V

Note: The output is an NPN Darlington tube output, with low-level active. The load can directly drive three-color lights, solenoid valves up to 1A, etc. It is recommended to use a separate 24V power supply for the OVCC and OGND, ensuring that the board's power supply is isolated from the output. The OVCC for the output is calculated based on the output current; the higher the output current, the greater the required OVCC supply current.

10. RS232 and analog input ports



Tubing feet	name	Introduction
1	CHI1	Emulator volume input 1
2	CHI2	Emulator volume input 2
3	CHI3	Emulator volume input 3
4	CHI4	Emulator volume input 4
5	**CHI5**	Emulator volume input 5
6、7、8	OGND	Ground footing
9	**+12V**	Output 12 V voltage to power the power meter

Note: By default there is no analog input and the amount of analog input is required. Please specify when ordering.

11. EtherNET Network Port

According to TCP/IP protocol, the real-time data is transmitted safely, reliably and quickly with the upper computer software;

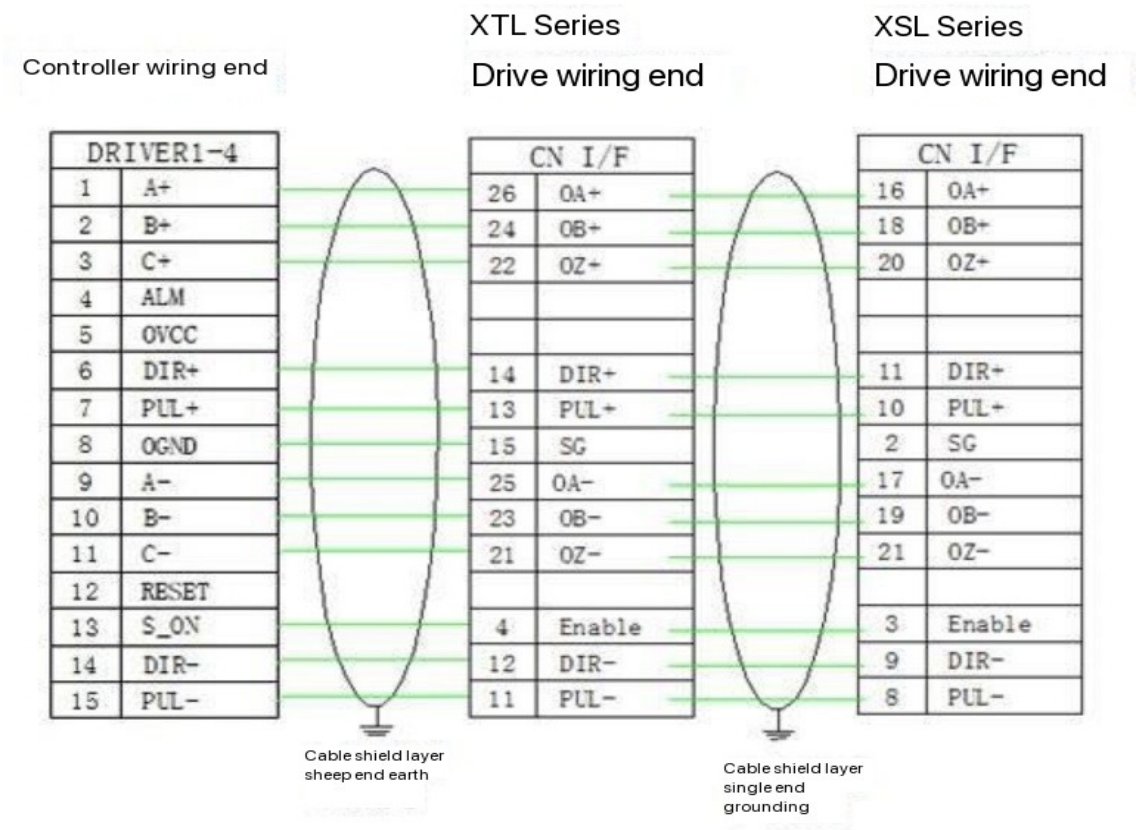
The default IP address of this controller is: 192.6.6.6

12. EtherCAT Expansion port

Supports EtherCAT protocol to extend axis control or IO

3. Typical wiring diagram reference

1. Wiring reference for Copley XTL and XSL series drives:

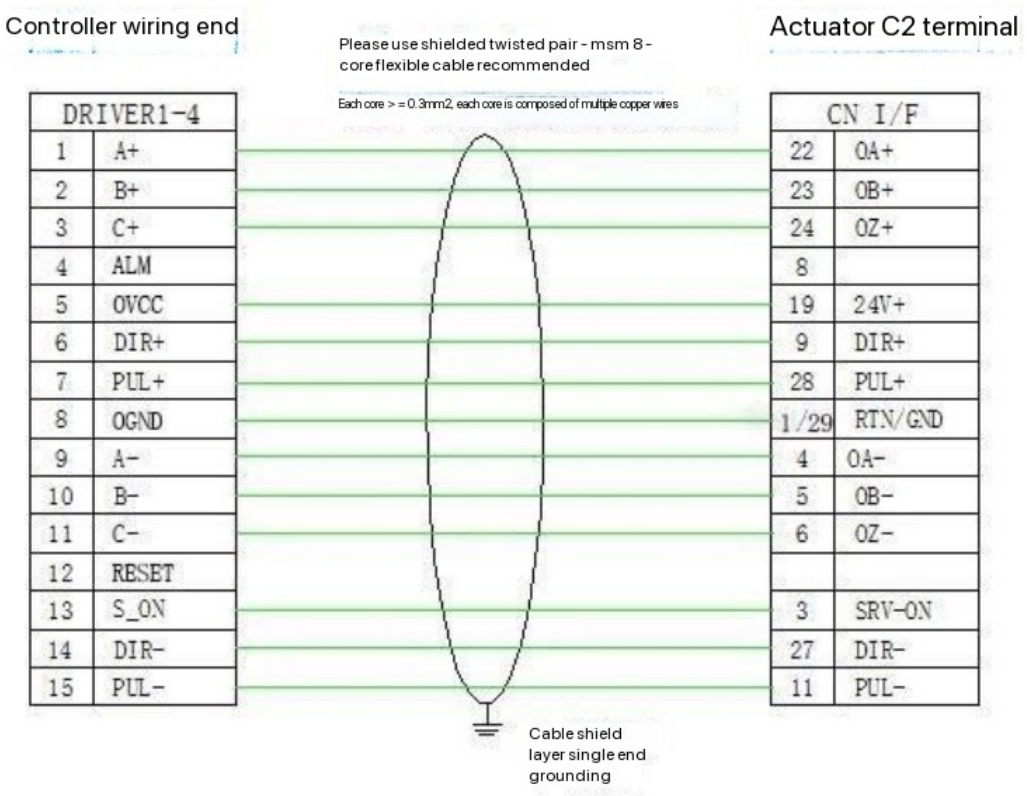


Please use shielded twisted pair

It is recommended to use Mismi 8 core flexible cable

Each core is greater than or equal to 0.3mm2, and each core is composed of multiple copper wires

2. Connect to Servotronix CDHD-0062AAP1 for reference

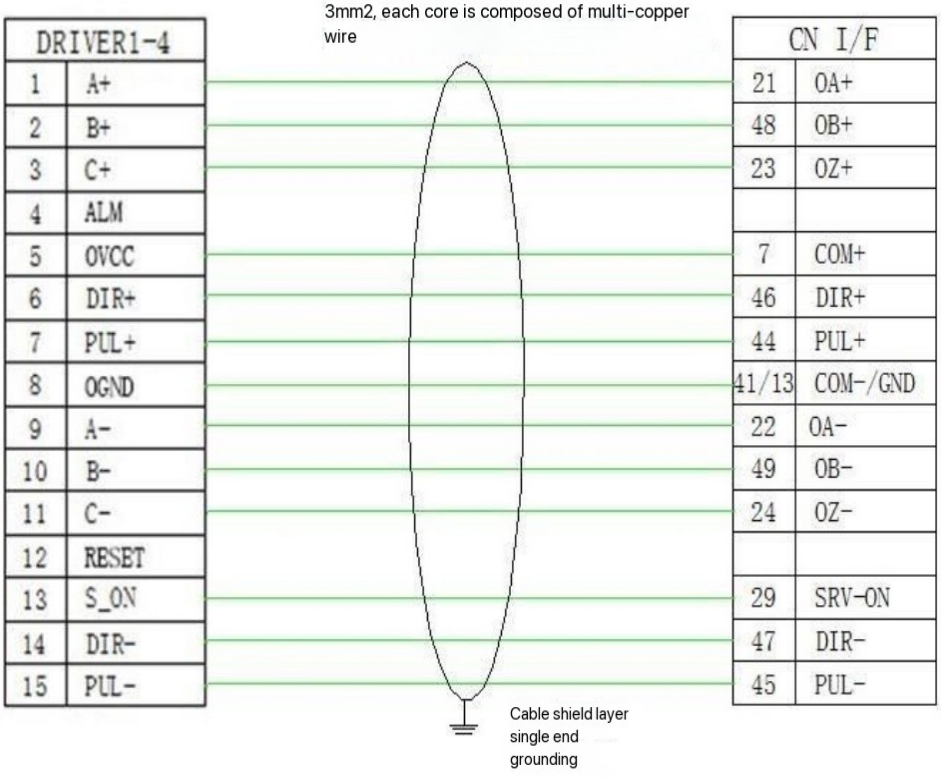


3. Wiring reference for Panasonic MSDA series drives

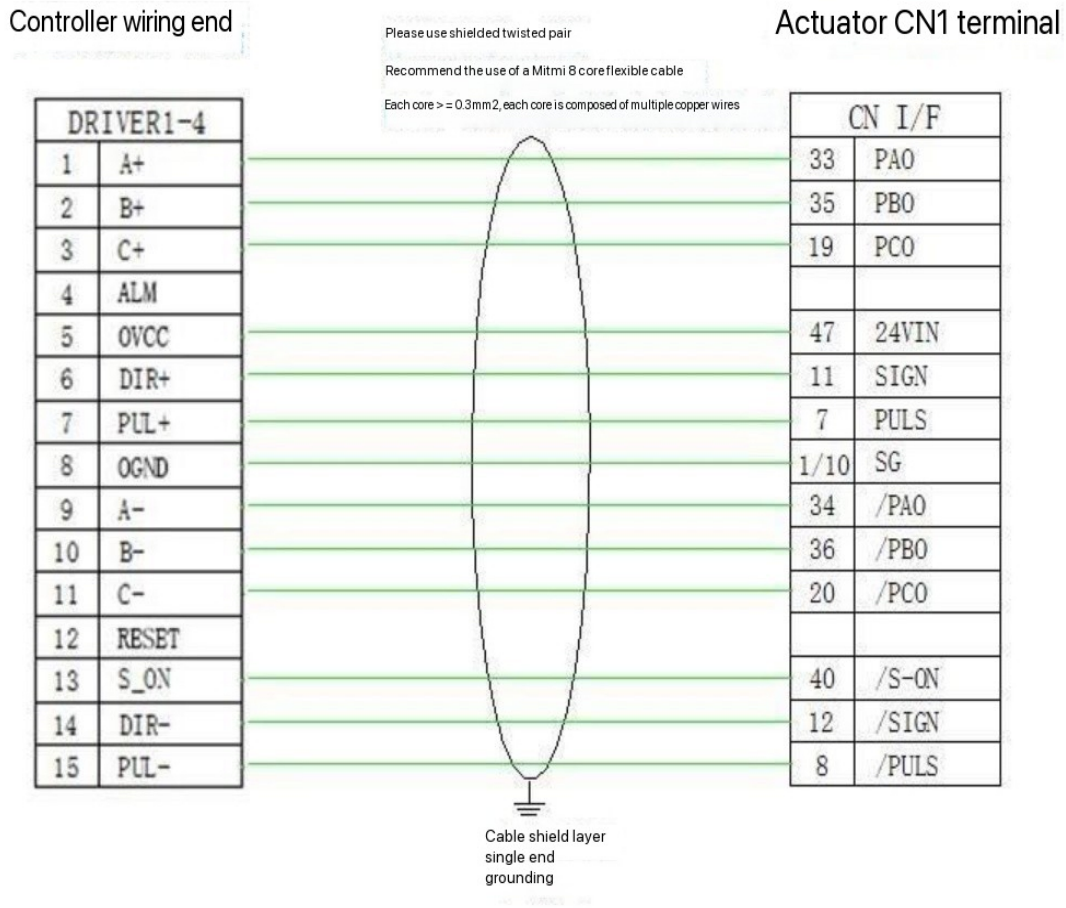
Controller wiring end

Drive wiring end

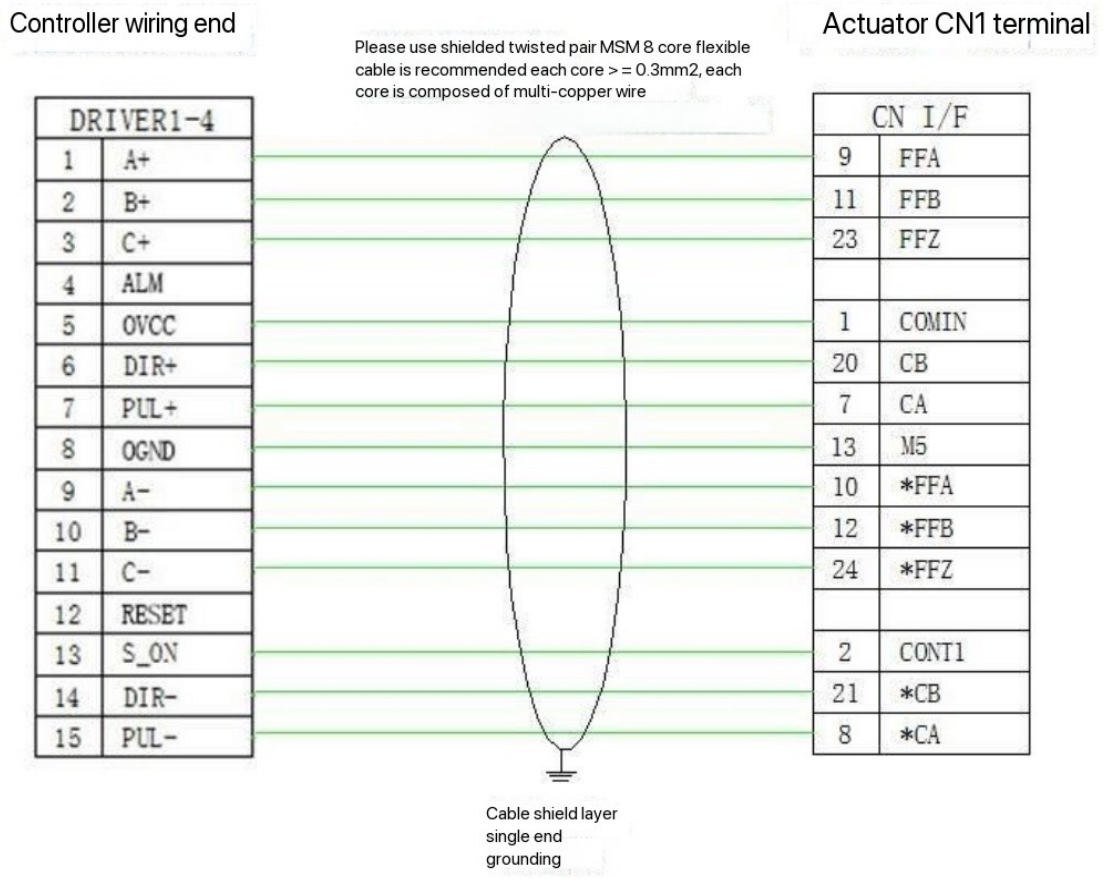
Please use shielded twisted pair MSM 8 core flexible cable is recommended each core > = 0. 3mm2, each core is composed of multi-copper wire



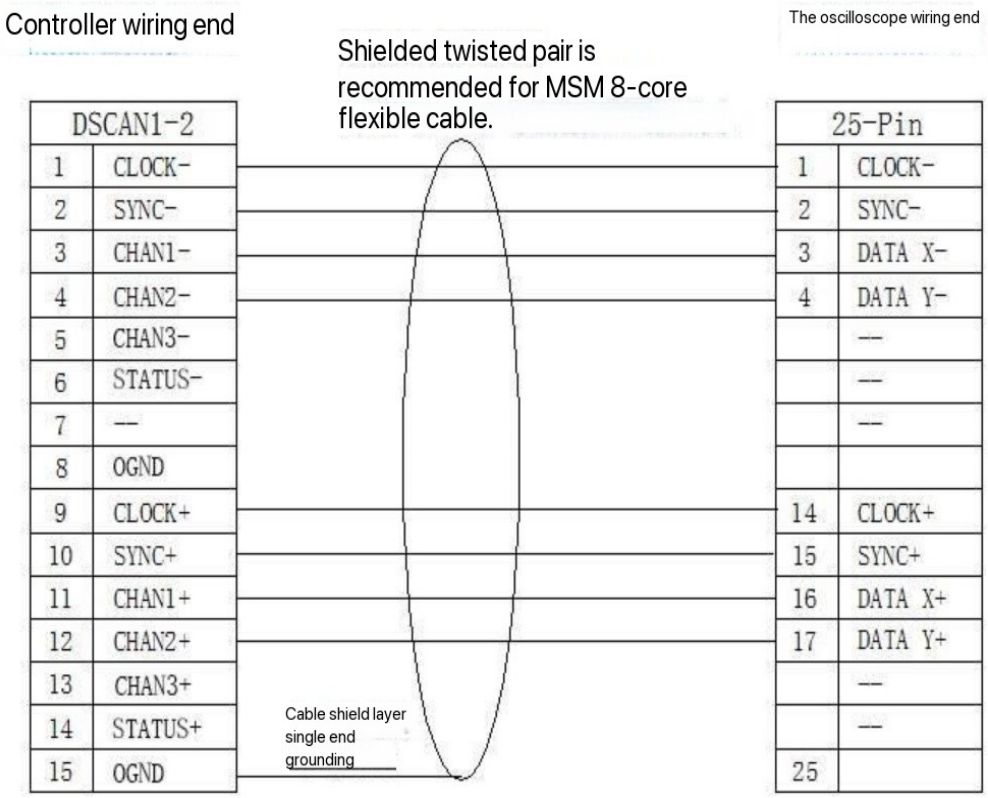
4. Wiring reference for Yaskawa Σ-7S driver SGDS7-2R8A



5. Wiring reference for Fuji Alpha5 Smart series drives



6. Refer to the wiring reference of the SCANLAB/CTI XY2-100 protocol mirror



Iv. Common problems and treatment

4.1All indicators are not on

First, use a multimeter to measure the 24V plug of the board to confirm that there is 24V voltage; after confirmation, if the PWR power indicator light is still not on, the fuse on the board may be burned. Please contact our after-sales engineer and open the cover for replacement under his guidance or authorization.

4.2The computer cannot connect to the board

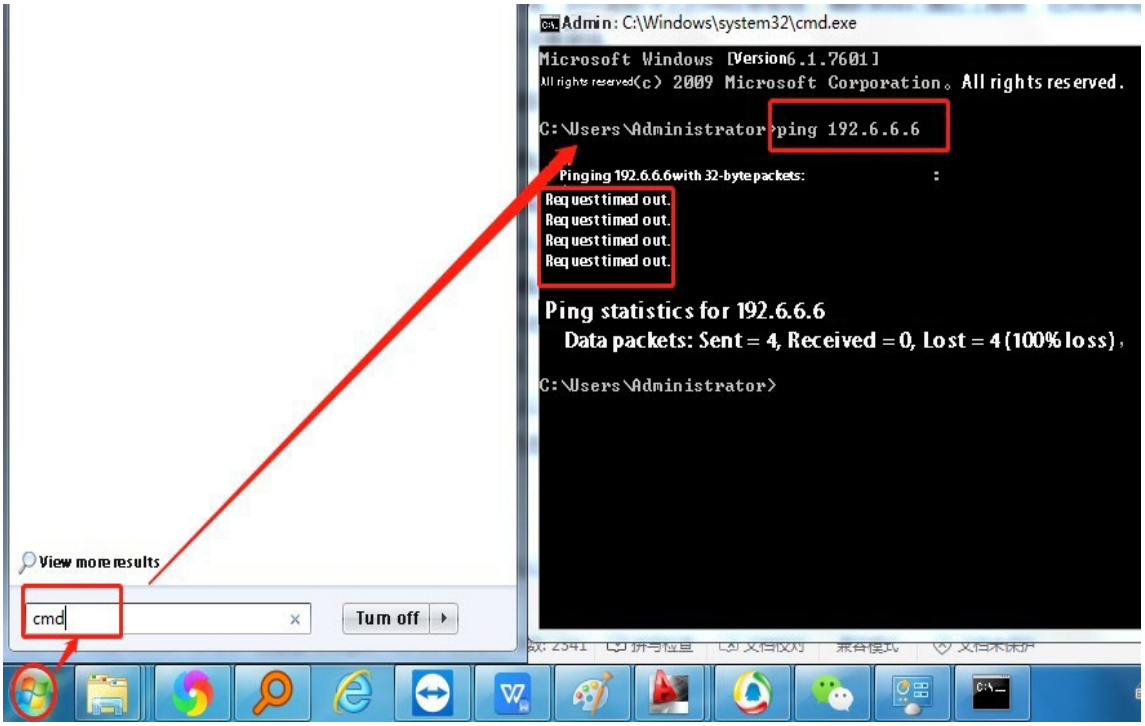
(1) Please confirm that the network cable is correctly connected to the EtherNET port of the board and the computer network port, please connect correctly;

(2) Be sure to use industrial 6 class network cable;

(3) Please confirm that the computer IP address is set correctly. Please set it correctly. Generally, it is recommended to set: IP address:
192.6.6.20 Subnet mask: 255.255.255.0, default gateway: not selected;

(4) Confirm that the PWR light is on, the ALM light is off, and the RUN light is flashing on the board. If the PWR is not on, refer to the first step for handling; if the ALM light is on, there is a fault, please contact our after-sales engineer for handling; if
If the RUN light does not flash, please wait for about 20s and observe again. If it still does not flash, please contact our after-sales engineer for handling;

If the above states are correct but still cannot be connected, please use the ping command on your computer to test whether the network communication is normal: click Start-> Search for programs and files, enter cmd, press Enter-> enter ping 192.6.6.6, press Enter



If the network is not accessible, please contact our after-sales engineer for handling.