

CL-D1008E Closed-Loop Stepper Drive User Manual



HARDWARE-CNC

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I. Mounting

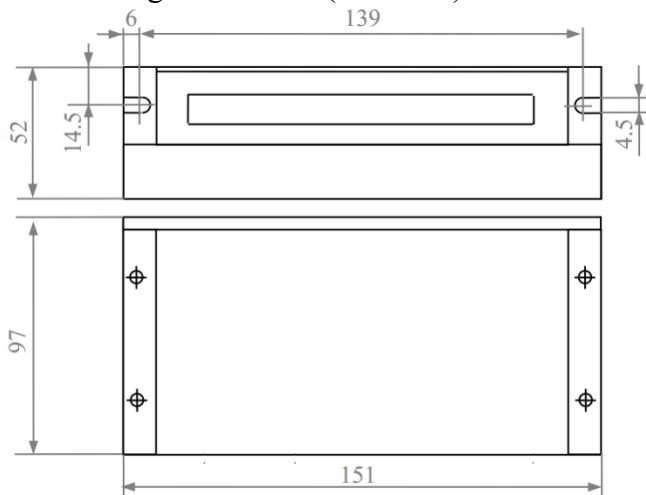
1. Electrical indexes

- Voltage input range: AC: 20V~70V/DC: 30V~100V (above 48V recommended)
- Max. output current: 6A
- Pulse form: pulse + direction, CW/CCW (software adjustment required)
- Logic input current: 10~20mA
- Pulse response frequency: 0~200kHz
- Insulation resistance: 500M

2. Environmental indexes

- Storage temperature: -20°C~80°C
- Operating temperature: 0°C~55°C
- Operating humidity: 90%RH (without condensation)
- Vibration frequency: < 0.5G (4.9m/s²), 10Hz~60Hz (non-continuous operation)

3. Mounting dimensions (unit: mm)



II. Wiring

1. Description of drive terminals

1) Power terminal definition

No.	Symbol	Function definition
1	A+	Motor power cable terminal See the label on the motor for the wire colors
2	A-	
3	B+	
4	B-	
5	AC	Power input terminal AC: 24V~70V DC: 36V~100V (above 48V recommended)
6	AC	

2) Drive control

terminal definition

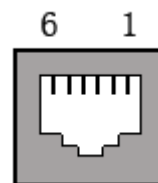
Pin	Symbol	Description	Pin	Symbol	Description
1	PUL+	Pulse input positive	6	ENA-	Enabling input, negative
2	PUL-	Pulse input negative	7	Pend+	Positioning completion, positive
3	DIR+	Direction input, positive	8	Pend-	Positioning completion, negative
4	DIR-	Direction input, negative	9	ALM+	Alarm output, positive
5	ENA+	Enabling input, positive	10	ALM-	Alarm output, negative

3) Driver encoder terminal definition

Pin	Symbol	Color	Description
1	EB+	Yellow	Encoder B signal, positive
2	EB-	Green	Encoder B signal, negative
3	EA+	Black	Encoder A signal, positive
4	EA-	Blue	Encoder A signal, negative
5	VCC	Red	Encoder+5V input
6	EGND	White	Encoder power ground

4) Drive communication terminal definition

Pin	Symbol	Remarks
1	NC	Undefined
2	GND	Signal ground
3	TXD	RS232 sending terminal
4	RXD	RS232 receiving terminal
5	GND	Signal ground
6	+5V	Power supply, positive



5) Connection mode for drive-computer communication cables

Computer terminal (9-pin female)		Driver side (6-pin RJ)
3 TXD		4 RXD
2 RXD		3 TXD
5 GND		5 GND

2. Control port wiring mode

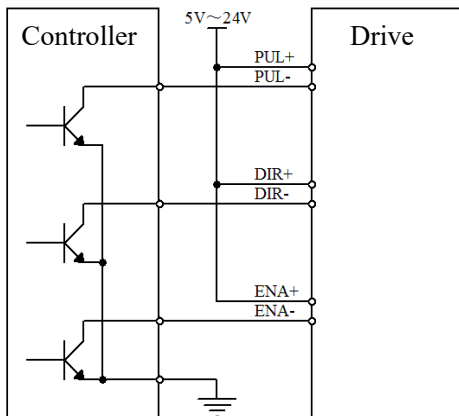


Fig. 2 Common anode connection method of input port

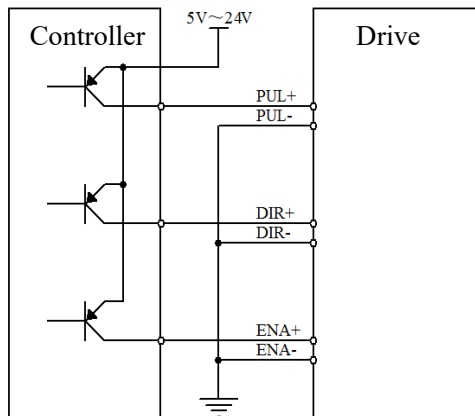


Fig. 3 Common cathode connection method of input port

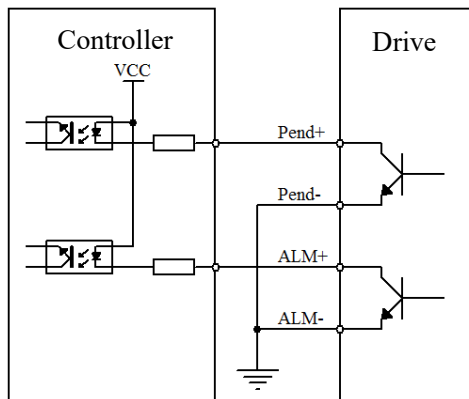


Fig. 4 Common cathode connection method of output port

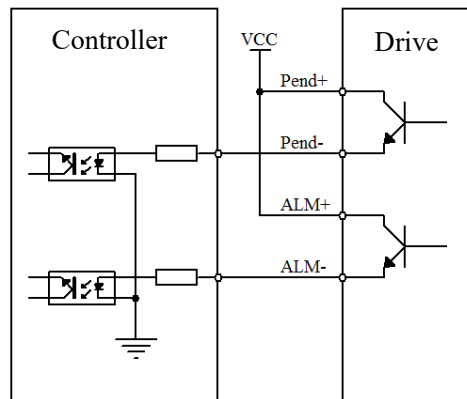


Fig. 5 Common anode connection method of output port

3. Control signal sequence diagram

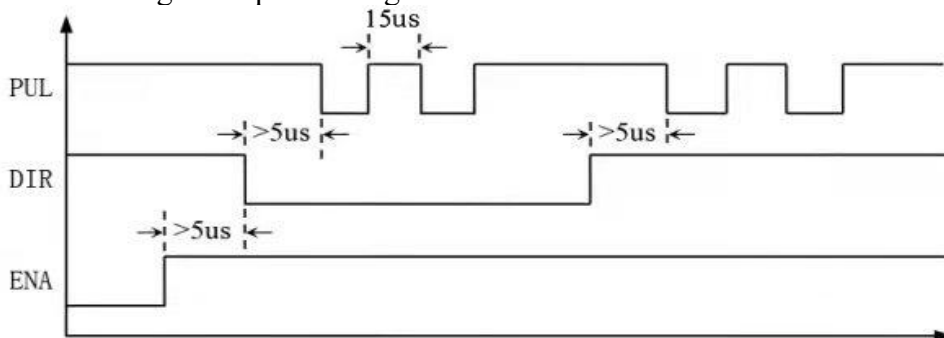


Fig. 5 Control signal sequence diagram

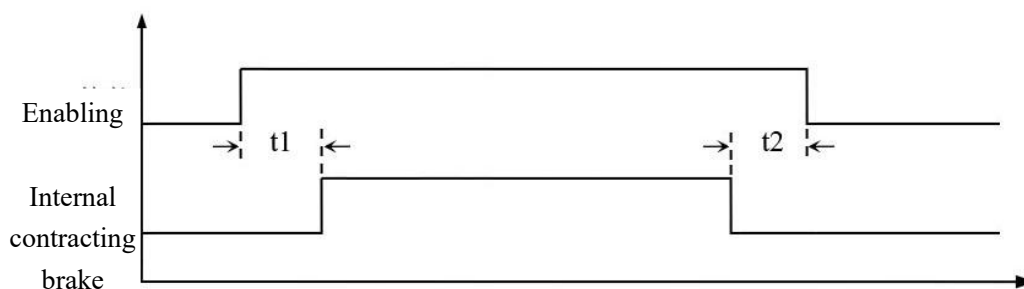


Fig. 6 Signal control sequence diagram of internal contracting brake

Note: t1: 500ms; t2: 500ms

III. Setting of dialing switch

The current of this drive series is set automatically, so it is unnecessary to set it manually. The corresponding functions of the dialing switch are as follows:

- SW1~SW4: For setting the drive subdivision (see the subdivision table shown on the drive housing for details.
Effective after restart);
- SW5: For setting motor running direction (effective after restart);
- SW6: current self-regulation mode switch (effective after restart);
- SW7: Operating mode selection (effective after restart);
- SW8: Pulse edge selection (effective after restart);

IV. Parameter Setting

Common parameters are shown in the following table:

No.	Parameter name	Default value	Parameter range	Function description
PA-000	Proportionality factor of current loop	2000	50~8000	The higher this set parameter is, the quicker the current loop responds, however, a too high parameter will cause severe vibration and noise of the motor.
PA-001	Integral coefficient of current loop	200	0~1000	The lower this set parameter is, the more accurate the current is, however, a too low parameter will cause severe vibration and noise of the motor.
PA-002	Position loop ratio	2200	100~5000	The higher this set parameter is, the quicker the position responds, and the higher the motor rigidity is, however, a too high set value may cause the position overshoot and wobble.
PA-003	Position loop feedforward	122	0~200	
PA-004	Velocity loop ratio	200	10~2000	
PA-005	Default level ppr setting	400	200~51200	Any subdivision setting. SW1~SW4 should be dialed to ON
PA-006	Number of feedback pulses per revolution of dial	4000	4000~65535	Number of feedback pulses per revolution of encoder, unchangeable
PA-007	Position out-of-tolerance alarm threshold	4000	0~65535	Position deviation alarm limit. An alarm will be triggered if this limit value is exceeded

PA-008	Acceleration feedforward coefficient	6	0~100	
PA-009	Open loop current percentage	40	0~100	Open loop running current
PA-010	Max. output current percentage	100	1~100	
PA-011	Integral coefficient of velocity loop	50	0~5000	
PA-012	Input pulse filtering level	2	0~5	
PA-013	Effective enabling level setting	1	0~1	Enabling port level setting, effective at default high level
PA-014	Resistance state setting of Output Port 1	1	0~1	For changing the output state of the drive output terminal
PA-015	Standby current percentage	25	0~100	Drive current ratio during stand-by time
PA-016	Wobble elimination delay	60	0~32767	
PA-017	Pulse mode selection	0	0~1	0: Pulse direction control mode 1: Dual-pulse control mode

Note: The parameters can be adjusted through the additional debugging board or upper PC debugging software.

V. Alarm processing

Alarm Type	Fault description	Fault handling
Flashing once every 5 seconds	Overcurrent alarm	1. Motor power line short circuit or motor fault; 2. Too high set current loop parameter of the drive; 3. If there is no error for the above two points, it may be an internal fault of the drive, so a factory detection is needed.
Flashing twice every 5 seconds	Overvoltage alarm	1. Too high power or unstable supply voltage, check the output voltage of the transformer for being normal; 2. Internal fault of drive, sent it back to the factory for maintenance.
Flashing thrice every 5 seconds or flashing 7 times every 5 seconds	Encoder fault	1. The encoder line is disconnected or subject to loose contact. 2. The input circuit of the drive encoder is damaged.
	Overload alarm	The motor is stalled, or the load is heavy.
	Excessive position deviation	1. The phase sequence of the motor power line is reversed. Check the phase sequence according to the label on the motor; 2. This fault can be caused by loose, poor-contact or broken motor power line or encoder line, try a spare cable if provided; 3. Too low PA_007 setting, causing an alarm, reset the parameter.