DL6 series
fully functional linear drive servo driver

High positioning accuracy

Reliable operation

Newly debugging serial port

Fully functional

High dynamic response

Efficient tuning

Gantry function

Product features

High dynamic response

■ 3.5kHz speed loop response bandwidth. Synchronization period 250μs. High dynamic response improves production efficiency.

■ Advanced control algorithms provide the optimal solution for achieving fast and flexible results in fast positioning systems.

Speed loop

Gain（dB）

3,5kHz

-3

-10

Frequency（Hz）   2200   3500
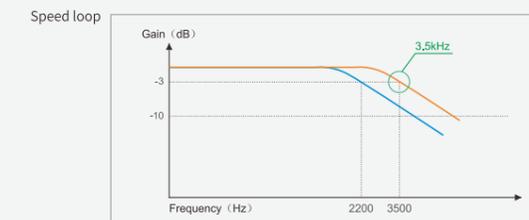
Suppress vibration, Efficient tuning

Resonance suppression

■ The resonance suppression control algorithm can effectively shorten the tuning time, eliminate mechanical resonance, and make path tracking smooth and accurate.

■ Resonance frequency automatic inspection, with stronger usability.

■ The accuracy of vibration frequency recognition has been improved by 50%.

■ The resonance frequency analysis time is reduced by 50%.

Resonance suppression **OFF**   Resonance suppression **ON**

— Feedback speed
— Torque command

Mechanical end vibration suppression

■ By using advanced control algorithms, vibration and noise suppression of mechanical ends can be achieved. Effectively solve the vibration at the end of the cantilever beam mechanism, shorten the tuning time, and improve product accuracy.

No mechanical end vibration suppression function

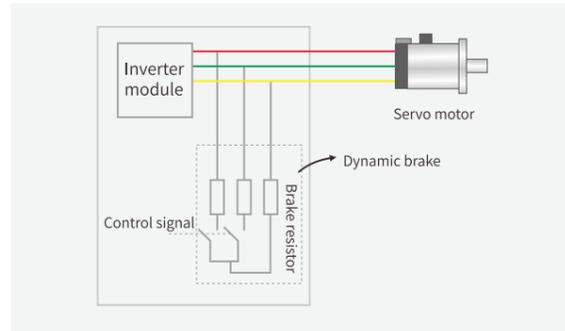Enable mechanical end vibration suppression function

Fully functional

■ The DL6 series is equipped with long line drive, frequency division output, position comparison output, probe function, motor temperature sampling and other functions.

Long line drive

Frequency division output

Position comparison output

Probe function

Motor temperature sampling
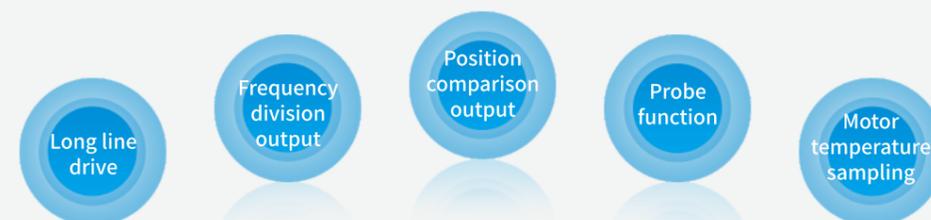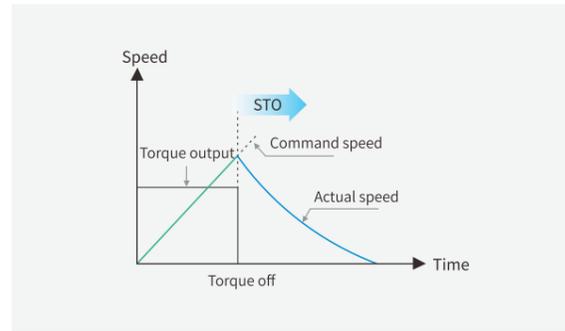
■ Reliable operation

Dynamic braking

◆ When there is a power outage or alarm during the operation of the motor, the servo will be turned off, and the three-phase circuit of the motor will be short circuited. The servo motor will quickly stop, thus protecting the safety of people and machines.

Multiple protection functions

◆ Support multiple protection functions, such as ground short circuit protection, P- overcurrent protection, etc., with ultra-low failure rate, users can use it with more peace of mind.

· Ground short circuit protection
· P- overcurrent protection

STO function

◆ Support STO. When the safety torque function is enabled, the internal hardware circuit of the driver will trigger, forcibly shutting down the power transistor of the driver, causing the motor to stop running and protecting personal and equipment safety.
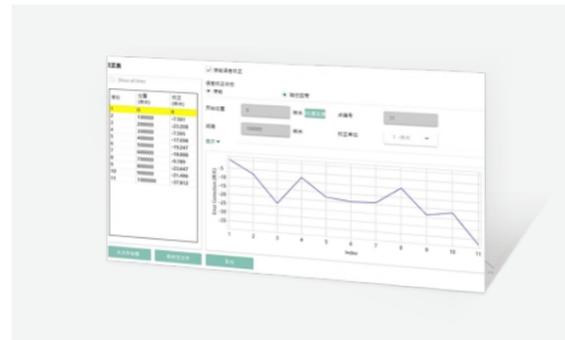

■ Higher positioning accuracy

◆ The positioning accuracy compensation function helps achieve higher absolute positioning accuracy.

■ Equipped with a brand new upper computer debugging serial port

◆ Standard Type-C debugging port.

■ Gantry function

◆ Introducing a new gantry synchronization algorithm, the two axes are highly synchronized during motion, ensuring high response and synchronization performance even at high speed.

Naming rule

DL 6 □ - 2 □□□ - GS
① ② ③ ④ ⑤ ⑥

①	Symbol	Product name
	DL	Linear drive servo driver

②	Symbol	Product series
	6	6 series

③	Symbol	Product type
	Default	Standard

④	Symbol	Rated input voltage
	2	AC220V
	4	AC380V

⑤	Symbol	Rated output current
	003	2.8A
	006	6A

⑥	Symbol	Special function
	Default	Standard type
	GS	Gantry synchronization

Driver model list

Current / Series	DL6 series
2.8A	DL6-2003
2.8A	DL6-2003-GS
6A	DL6-2006
6A	DL6-2006-GS

Driver specification list

Function	Driver specification list			
	Position control	Speed control	Torque control	Bus control
DL6 series	●	●	●	●

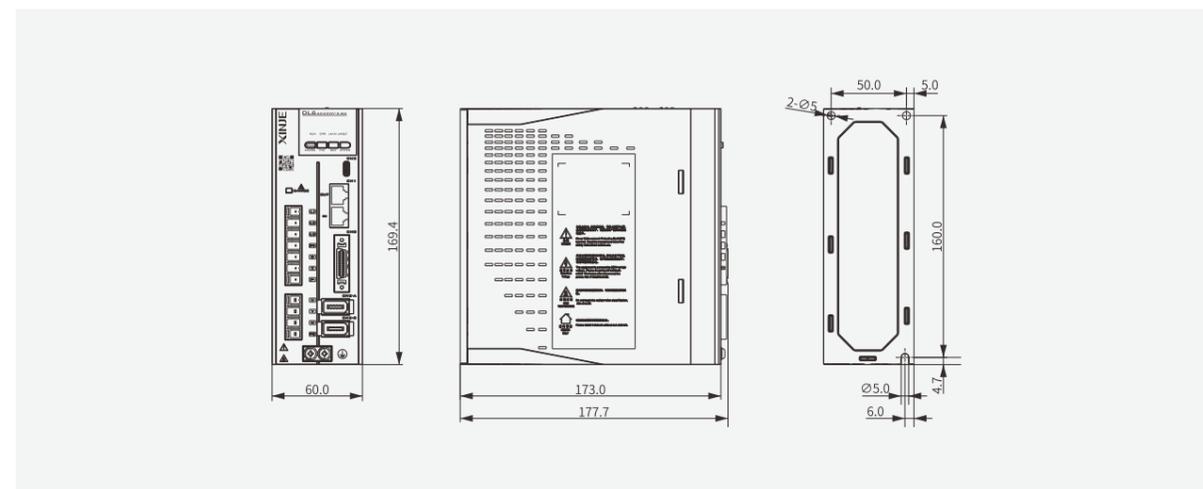| Function	Control method								
	Pulse	Long line drive	Analog input	External displacement sensor	ABZ differential feedback	USB Type-C	RS485	SI input	SO output
DL6 series	●	●		●	●	●		7	6

Technical specification

Item		DL6 series linear drive servo driver
Basic specification	Input current	Single phase/three-phase AC200~240V, 50Hz/60Hz
	Encoder feedback	ABZ incremental encoder, absolute Biss-c encoder
	Control method	Three phase full wave rectification IPM, PWM control, sine wave current drive mode
	Control mode	Position mode, speed mode, torque mode
	Using environment — Ambient temperature	Operation:-10℃~40℃ (no condensation)/Storage:-2℃ ~60℃ (no condensation)
	Ambient humidity	Operation/storage: below 90% RH (no condensation)
	Vibration/impact resistance	$4.9m/s^2$ / $19.6m/s^2$
	Installation site	A place without dust, dry, vibration, or corrosive substances
	Installation method	Vertical or horizontal installation
	Function — Protection function	Overvoltage, undervoltage, overheating, overcurrent, overload, overspeed, analog input abnormality, excessive position deviation, output short circuit, encoder abnormality, regeneration abnormality protection, overtravel protection, oscillation protection, phase loss protection, etc
	Dynamic brake	Standard configured
	Communication function	EtherCAT bus communication
	Braking resistor	Built-in braking resistor, external braking resistor available
	Display and operation	5-digit LED indicator light, power indicator light, 4 buttons operation
I/O signal	Digital input	7 channels input
		Two channels of high-speed SI support probe function
	Digital output	6 channels digital output (two of the SO terminals are in differential form)
		Positioning completed, servo ready, alarm output, speed reached, rotation detection, torque limit output, same speed detection, brake release output

Outline dimension

(unit：mm)

Port distribution

⑥ CN4: gantry synchronization
⑦ CN5: STO port
⑤ CN3: type-c upper computer debugging port
③ CN1: EtherCAT port
② CN0: I/O signal
① Main circuit terminals
④ CN2: encoder port
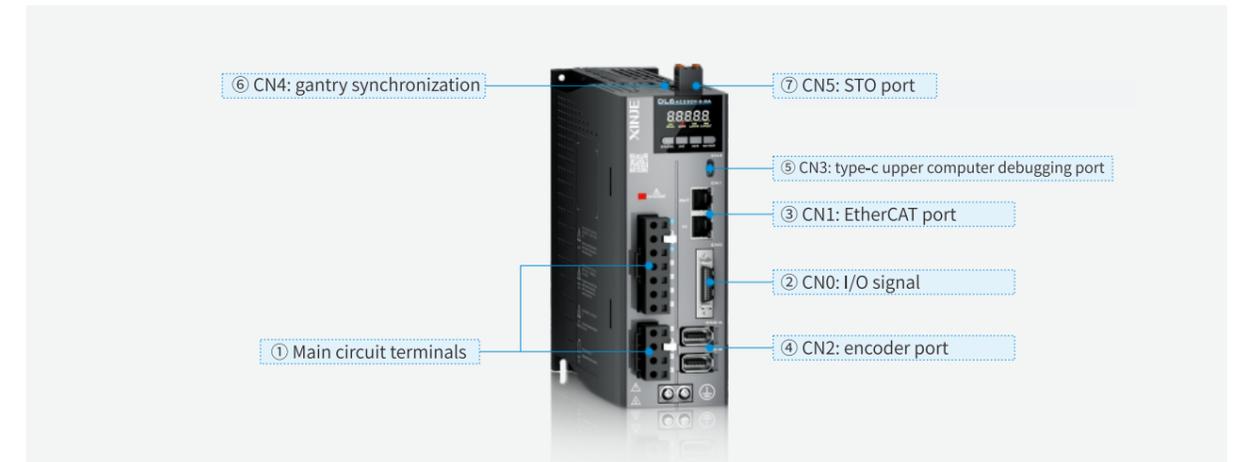
① Main circuit terminals

Terminal	Function	Explanation
L1，L2，L3	Main circuit power input terminal	Single phase/three-phase AC200~240V, 50/60Hz (If single phase power supply is used, please connect L1/L3, otherwise it will affect parameter memory when power of)
P+，D，C	Use built-in braking resistor	Short circuit P+ and D terminals, disconnect P+ and C
	Use external braking resistor	Connect the braking resistor to the P+ and C terminals, and disconnect the P+ and D short-circuit wires: set P0-25=power value, P0-26=resistance value
P+，P-	Bus terminal	Real time voltage of the busbar can be measured, please be aware of the danger
U，V，W，PE	Motor connection terminal	Connect to the motor
⏚	Grounding terminal	The ground wire is on the heat sink. Please confirm a good grounding before powering on

② CN0

No.	Name	Explanation	No.	Name	Explanation
1	+24V	+24V	14	SI3	Ordinary input terminal 3
2	SI4	Ordinary input terminal 4	15	SI5	Ordinary input terminal 5
3	SI6	Ordinary input terminal 6	16	SI7	Ordinary input terminal 7
4	COM	Output common terminal	17	SO3	Ordinary output terminal 3
5	SO4	Ordinary output terminal 4	18	SO1	High speed output terminal 1
6	SO2	High speed output terminal 2	19	DO_24V	High speed output +24V power supply
7	OA+	Encoder frequency division output OA+	20	OA-	Encoder frequency division output OA-
8	OB+	Encoder frequency division output OB+	21	OB-	Encoder frequency division output OB-
9	OZ+	Encoder frequency division output OZ+	22	OZ-	Encoder frequency division output OZ-
10	P+5V	Pulse +5V	23	P-	Pulse-
11	D+5V	Direction +5V	24	D-	Direction-
12	SI1	High speed input terminal 1	25	SI2	High speed input terminal 2
13	P+/D+24V	Pulse/direction +24V	26	GND	Frequency division output ground

③ CN1

No.	Name	No.	Name
1	TX A+	9	TX B+
2	TX A-	10	TX B-
3	RX A+	11	RX B+
4	-	12	-
5	-	13	-
6	RX A-	14	RX B-
7	-	15	-
8	-	16	-

④ CN2（CN2-A）

No.	Definition	No.	Definition
1	Power supply	6	Incremental encoder B- Biss-C encoder DATA-
2	GND	7	Incremental encoder Z+
3	Incremental encoder A+ Biss-C encoder CLK+	8	Incremental encoder Z-
4	Incremental encoder A- Biss-C encoder CLK	9	Motor temperature+
5	Incremental encoder B+ Biss-C encoder DATA+	10	Motor temperature-

（CN2-B）

No.	Definition	No.	Definition
1	Power supply	6	-
2	GND	7	Rotary encoder A
3	Hall U+	8	Rotary encoder B
4	Hall V+	9	-
5	Hall W+	10	-

⑤ CN3

No.	Definition	No.	Definition
A1	GND	B1	GND
A4	USB-VBUS	B4	USB-VBUS
A6	USB-D+	B6	USB-D+
A7	USB-D-	B7	USB-D-
A9	USB-VBUS	B9	USB-VBUS
A12	GND	B12	GND

⑥ CN4

Name		Explanation
1		TX A+
2		TX A-
3		RX A+
4		-
5		-
6		RX A-
7		-
8		-

⑦ CN5

No.	Name	Explanation	No.	Name	Explanation
1	EDM+	EDM output+	4	EDM-	EDM output-
2	24V	24V output	5	COM	Public ground
3	STO1	STO1 circuit input	6	STO2	STO2 circuit input