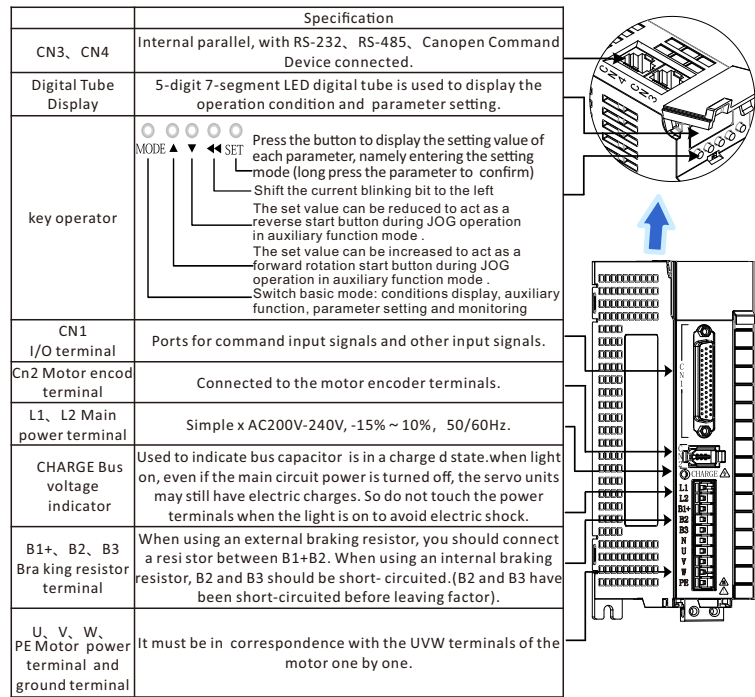


User Manual for E6 Series Servo Driver

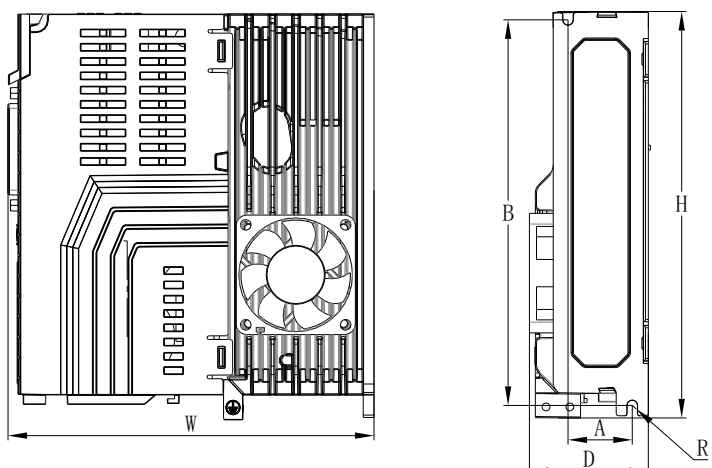
Driver Parts Name



Braking resistor related specifications

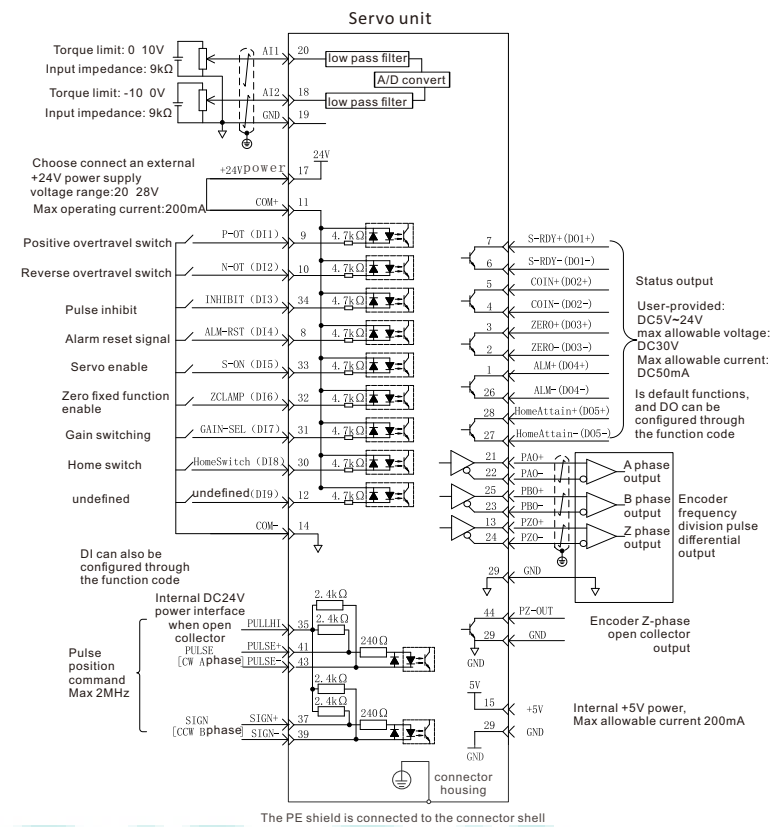
Model Type	Built-in braking resistor specifications		Min. Allowed Resistance (Ω)	Max. Braking Energy Absorbed by Capacitor (J)
	Resistance (Ω)	Power(W)		
Single phase 220V	E6-200RS	-	50	9
	E6-400RS	-	45	18
	E6-750RS	50	50	26
	E6-1000RS	50	50	26

Product Specification

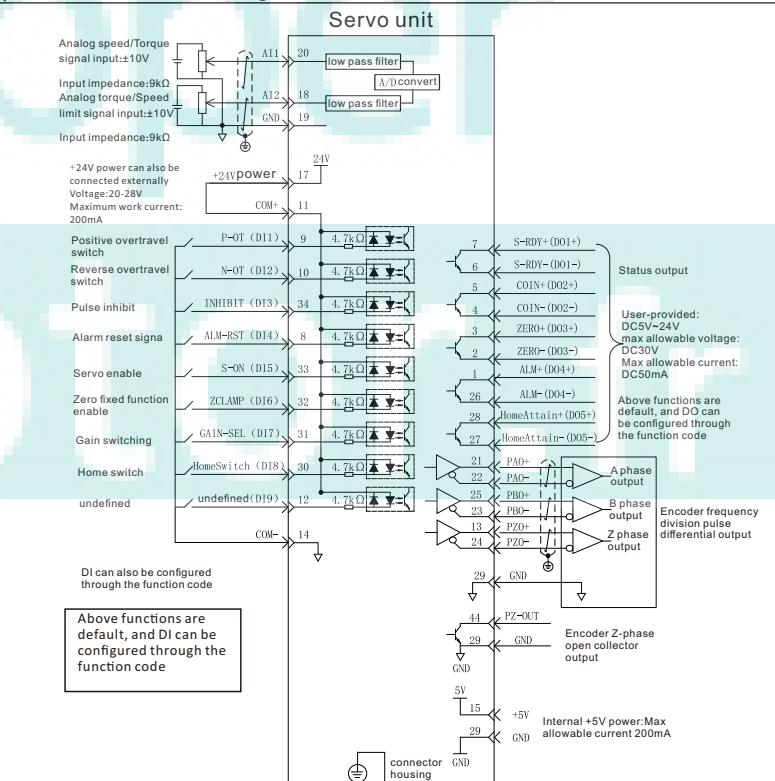


Item	Specification				
	E6 Series	200RS	400RS	750RS	1000RS
Dimension	A(mm)	27			
	B(mm)	162			
	W(mm)	154			
	H(mm)	171			
	D(mm)	51			
	R(mm)	2			
	W(kg)	0.9			
Basic Specifications	Input Power	Single phase AC200V-240V, -15%~10%, 50/60Hz			
	Temperature	Ambient Temperature	0+55°C(from 45°C~to 55°C,keep average load rate within 80%) no freezing		
		Preservation of Ambient Temperature	-20~65°C		
	Humidity	Ambient Humidity	below 20~85%RH (no condensation)		
		Preservation of Ambient Humidity	below 20~85%RH (no condensation)		
	Use and Preservation of Ambient Air	indoor (no direct sunlight), no corrosive gas, flammable gas, oil mist, dust			
	Altitude	below 1000m			
	Vibration	below 5.8m/s ² (0.6G) 10~60Hz(do not use continuously at resonance frequency)			
	Dielectric Withstand Voltage	AC1500V between primary and FG for 1 minute			
	Control Method	three-phase PWM converter sine wave drive			
Encoder Feedback	17bit、23bit (functions as a multi-turn absolute encoder after adding a battery)				
Control Signal	Input	9-way input (DC24V optocoupler isolation) function switching according to the control mode			
	Output	5-way output (DC24V optocoupler isolation, open collector output) switching according to the control mode function			
	Input	2-way input (optocoupler isolation, RS-422 differential, open collector output)			
	Output	4-way output (A/B/Z phase RS-422 differential; Z phase open collector output)			
	RS232 RS-485 CAN	for PC communication (for "Servostudio" connection) for host remote control communication (1:n) CANOPEN bus communication			
Regenerative Functions	Connect regenerative resistor internally or externally pay attention to modifying internal parameters				
	Control Modes	6 control modes:speed control,position control,torque control,torque/speed control, speed/position control,torque/position,torque/speed/position mixed control			
Control Input	Alarm reset, proportional action switching, zero fixed function enabling, forward drive prohibited, reverse drive prohibited, external torque limit for forward rotation, external torque limit for reverse rotation, forward jog, reverse jog, forward reset switch, reverse reset switch, origin switch, emergency stop, servo enabling, gain switching				
Control Output	Servo ready, motor rotating, zero speed signal, speed arrival, position arrival, positioning approach signal, torque limit, speed limit, brake output, warning, servo failure, alarm code (3-digit output)				
Position Control	Maximum command pulse frequency	The maximum low speed is 500Kpps, and the pulse width cannot be lower than 1μs; Open collector: maximum 200Kpps, pulse width not less than 2.5μs			
	Input pulse signal form	Differential input; open collector			
	Input pulse signal mode	pulse+direction, right angle phase difference (phase A+phase B), CW+CCW pulse			
	Command pulse frequency division and multiplication (Electronic gear ratio setting)	0.1048576 < B/A < 419430.4			
Pulse output	Command filter	Smooth filter, FIR filter			
	Output pulse form	Phase A and B: differential output Z-phase: differential output or open collector output			
	Frequency division ratio	Arbitrary frequency division			
	Output pulse function	Encoder position pulse and position pulse command (settable)			
Speed Control	Control Input	Servo ON, alarm reset, reverse speed command, zero speed clamping, internal command selection input 1, internal command selection input 2, internal command selection input 3, internal command selection input 4, forward external torque limit input, reverse external torque limit input, emergency stop			
	Control Output	Alarm status, servo ready, brake release, output during torque limit, output during speed limit, speed reached, speed coincidence, motor rotation output, zero speed signal output			
Torque Control	Control Input	Servo ON, alarm reset, torque command reverse, zero speed clamp			
	Control Output	Alarm status, servo preparation, brake release, torque limit, speed limit output, emergency stop			
Similarities	Torque Command Input	(Factory default setting, range can be set by function code)			
	Speed Limit Function	Positive and negative internal speed limit P03.27, P03.28			
	Speed Observer Function	Yes			
Functions	Vibration Control function	Yes			
	Adaptive Notch Filter	Yes			
	Auto adjustment function	Yes			
	Encoder output frequency division and multiplication	Yes			
	Internal location planning function	Yes			
Adjustment/Function Setting	Use the upper computer to set the software "Servostudio" to adjust				
Protective function	Over voltage, abnormal power supply, over current, overload, abnormal encoder, overspeed, excessive position deviation, abnormal parameters, etc.				

Location Mode Wiring

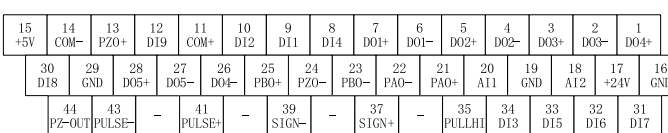


Speed/Torque Control Mode Block Diagram

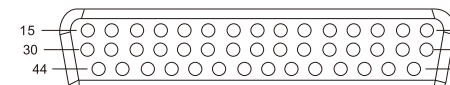


The PE shield is connected to the connector shell.

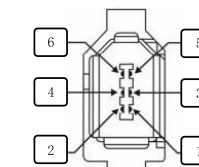
CN1 Terminal arrangement description



Model type show



CN2 Illustration of the terminal arrangement of the absolute encoder

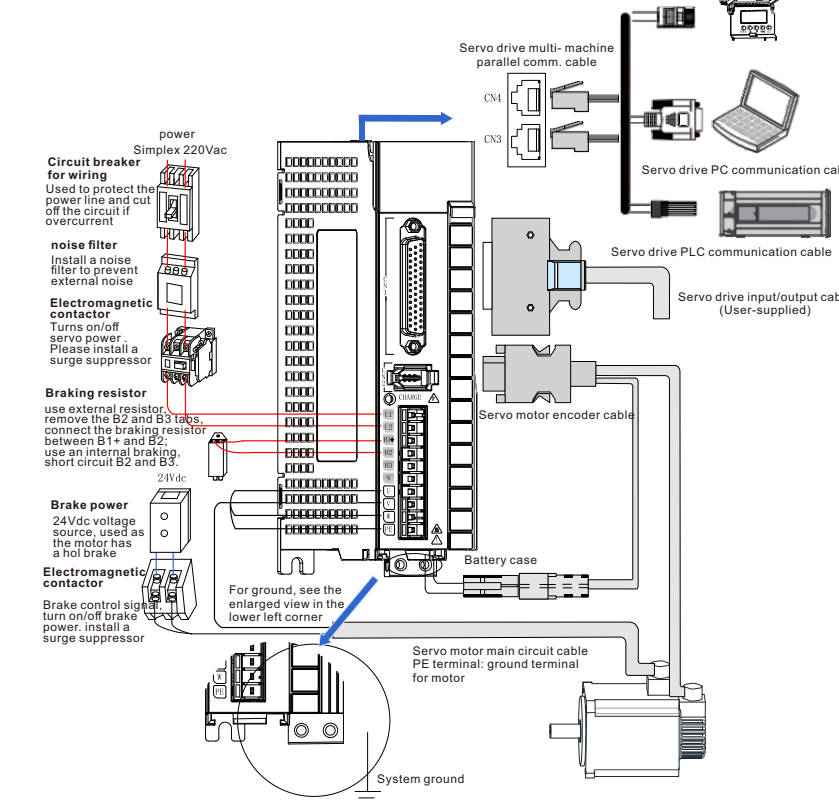


Terminal	Name	Function
1	+5V	PG power+5V
3	-	-
5	PS+	S+ phase
2	OV	Signal
4	-	-
6	PS-	S-phase

CN3, CN4 Illustration of terminal arrangement

Pin	Definition	Description	Terminal Pinout
1	CANH	CAN comm. port	8
2	CANL		
3	CGND	CAN comm. port	7
4	RS485+	RS485 comm. port	6
5	RS485-		
6	RS232-TXD	RS232 Sending end, connected with the receiving end of the host computer	5
7	RS232-RXD	RS232 The receiver is connected to the transmitter of the host computer	4
8	GND	Ground	3
Shell	PE	Ground shield	2

Servo System Wiring



Please pay attention to the power supply capacity when connecting external control power supply or 24Vdc power supply, especially when supplying power to several drives or multiple brakes at the same time, insufficient power supply capacity will lead to insufficient supply current and failure of the drive or the brake. The braking power supply is a 24V DC voltage source. The power should refer to the motor model and meet the braking power requirements.

System wiring precautions:

- When connecting an external braking resistor, please remove the short-circuit wire between terminals B2 and B3 of the servo drive before connecting. Pay attention to modify the internal parameters.
- CN3 and CN4 define exactly the same communication interface for the two pins, which can be used arbitrarily between the two.
- In single-phase 220V wiring, the main circuit terminals are L1 and L2, and the reserved terminals should not be connected.

P02 Group Basic control parameters

Function code	Name	Unit	Factory setting	Effective way	Setting way	Related patterns
P02_00	Control Mode Selection	-	1	Effective immediately	Stop setting	-
P02_01	Absolute value system selection	-	0	Power up again	Stop setting	ALL
P02_02	rotating direction selection	-	0	Power up again	Stop setting	PST
P02_03	Output pulse phase	-	0	Power up again	Stop setting	PST
P02_05	stop model at S-ON off	-	0	Effective immediately	Stop setting	PST
P02_06	Fault No.2 Stop Mode Selection	-	0	Effective immediately	Stop setting	PST
P02_07	Choice of Overhaul Mode	-	1	Effective immediately	Stop setting	PST
P02_08	Fault No.1 Stop Mode Selection	-	0	Effective immediately	Stop setting	PST
P02_09	delay from brake output ON to command received	ms	250	Effective immediately	Run settings	PS
P02_10	delay from brake output OFF to motor de-energized in static state	ms	150	Effective immediately	Run settings	PS
P02_11	motor speed threshold at brake output OFF in rotating state	rpm	30	Effective immediately	Run settings	PS
P02_12	Rotate state, motor does not power to lock output Off delay	ms	500	Effective immediately	Run settings	PS
P02_15	LED Warning Display Select	-	0	Effective immediately	Run settings	PST
P02_18	Servo Enable (S-ON) Filter time constant	ms	0	Effective immediately	Run settings	PST
P02_21	Brake resistance minimum allowed by driver	Ω	-	-	Display	PST
P02_22	Built-in Brake Resistance Power	W	-	-	Display	PST
P02_23	Built-in brake resistance	Ω	-	-	Display	PST

Table with 7 columns: Function code, Name, Unit, Factory setting, Effective way, Setting way, Related patterns. Rows include Resistance heat dissipation factor, Brake resistance settings, External brake resistance power, etc.

P05 Group Position control parameters

Table with 7 columns: Function code, Name, Unit, Factory setting, Effective way, Setting method, Related patterns. Rows include Location instruction source, Pulse instruction input terminal selection, Number of position instructions per rotation of motor, etc.

P06 Group Speed control parameters

Table with 7 columns: Function code, Name, Unit, Factory setting, Effective way, Setting way, Related patterns. Rows include A Source of Main Speed Instruction, Auxiliary Speed Instruction B Source, Speed Instruction Selection, etc.

P07 Group Torque control parameters

Torque instruction 100% corresponding to motor rated torque.

Table with 7 columns: Function code, Name, Unit, Factory setting, Effective way, Setting way, Related patterns. Rows include A source of master torque instruction, Auxiliary torque instruction B source, Torque Directive Selection, etc.

P08 Group Gain class parameters

Table with 7 columns: Function code, Name, Unit, Factory setting, Effective way, Setting method, Related patterns. Rows include speed gain, Speed loop integral time constant, Position loop gain, etc.

P09 Group Self-adjusting parameters

Table with 7 columns: Function code, Name, Unit, Factory setting, Effective way, Setting method, Related patterns. Rows include Self adjustment mode selection, Rigid grade selection, Adaptive Trap Mode Selection, etc.

P0B Group Monitoring parameters

Table with 7 columns: Function code, Name, Unit, Factory setting, Effective way, Setting method, Related patterns. Rows include Actual motor speed, Speed instruction, Internal torque instruction, etc.

Troubleshooting

Table with 2 columns: Display, Fault name. Rows include PO2 and above group parameters are abnormal, Programmable logic configuration failure, Motor blocked, etc.

Table with 2 columns: Display, Fault name. Rows include Brake closed abnormally, Brake opened abnormally, Motor blocked, Radiator overheated, etc.

MODBUS Communication Protocol

The function codes of servo driver can be divided into 16bits and 32bits in length. Through MODBUS RTU protocol, the data of function code can be read and written.

Table with 2 columns: Operation, Command code. Rows include Read 16/32 bits function codes, Write 16 bits function codes, Write 32 bits function codes.

Read Function Code: 0*03

In MODBUS RTU protocol, command code, 0*03, should be adopted when 16 bits and 32 bits function codes are read.

Request Frame Format:

Table with 2 columns: Field, Value. Rows include START, ADDR, CMD, DATA[0], DATA[1], DATA[2], DATA[3], CRCL, CRCH, END.

Response frame format:

Table with 2 columns: Field, Value. Rows include START, ADDR, CMD, DATA[0], DATA[1], DATA[2], DATA[3], CRCL, CRCH, END.

Write 16 Bits Function Code: 0*06

Stop using 0*06 to do the writing operation on 32 bits function code, or unexpected mistake will happen.

Request Frame Format:

Table with 2 columns: Field, Value. Rows include START, ADDR, CMD, DATA[0], DATA[1], DATA[2], DATA[3], CRCL, CRCH, END.

Response frame format:

Table with 2 columns: Field, Value. Rows include START, ADDR, CMD, DATA[0], DATA[1], DATA[2], DATA[3], CRCL, CRCH, END.

Write 32 Bits Function Code: 0*10

Stop using 0*06 to do the writing operation on 32 bits function code, or unexpected mistake will happen.

Request Frame Format:

Table with 2 columns: Field, Value. Rows include START, ADDR, CMD, DATA[0], DATA[1], DATA[2], DATA[3], DATA[4], DATA[5], DATA[6], DATA[7], DATA[8], CRCL, CRCH, END.

Response frame format:

Table with 2 columns: Field, Value. Rows include START, ADDR, CMD, DATA[0], DATA[1], DATA[2], DATA[3], DATA[4], DATA[5], DATA[6], DATA[7], DATA[8], CRCL, CRCH, END.