



High-performance asynchronous servo drive **EAS200**



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About Encom



Company Brief introduction

Shenzhen Encom Electric Technologies CO.,LTD. is a hi-tech private enterprise for development, production and sales of variable frequency,Servo controller, PLC and so on speed regulating products in field of electrical driving and industrial automation.Established by Overseas Returnees Mr.Shen and a group of experts in 2004. Encom move locations three times for continuing development and expansion. Located in high and new science & technology area Shenzhen,China which with government key support. She has passed ISO9001:2000 quality control system approval and gotten CE approval for our products. Won the National Innovation Fund,Shenzhen strategic emerging industries Fund,Inverter top ten brands,Shenzhen High-tech research subsidies, Product Innovation Award,The most investment value Award and so on.She is a national high-tech enterprise,Shenzhen software enterprises,Shenzhen Software Association member,an important member of several industry organizations.



EAS200 high-performance asynchronous servo drive features

Impeccable and flexible software functions

- (1) Adopting advanced vector control theory and integrating intelligent control technique to control 3PH asynchronous motor in servo mode.
- (2) Adopted Double-CPU system with independent vector arithmetic processor and high-speed data processing performance.
- (3) Soft servo technology (Fully digital technology).
- (4) Built-in multi-speed function.
- (5) Flexible I/O terminal function, the function of each I/O terminal can be customized.
- (6) Velocity and position control function.

Advanced and reliable hardware

- (1) Dedicated 32 bits Dual-CPU control motor in fully digital mode.
- (2) Integrated encoder signal conversion circuit, no need extra PG card.
- (3) Pulse frequency division output terminal available.
- (4) Abundant programmable I/O terminal.
- (5) Current, Velocity and position closed-loop system.
- (6) All series built-in braking unit.

Comprehensive and accurate control function

- (1) Velocity control precision $\pm 0.1\%$, Requition range: 1:5000.
- (2) Position control precision: ± 1 pulse.
- (3) Constant torque output under motor rated speed, Constant power output over the rated speed.
- (4) Large torque output at low speed, zero speed torque hold functionn.
- (5) Large overload capacity, 250% rated torque for 20s.
- (6) Synchronous controlling function for many drive and motor operating in synchronous mode or follow control.
- (7) Reliable protection functions and fault indications.

Abundant I/O and communication ports.

- (1) RS485 port for the controlling and state monitoring from Upper computer (PC,PLC and so on).
- (2) Programmable digital input and output, 8 DI and 5 DO.
- (3) Two analog inputs (-10V~+10V/0~10V/4~20mA).
- (4) Pulse instruction input port, 3 Pulse instruction type available (Pulse & direction, CCW/CW and orthogonal pulse) .
- (5) Differential input and open-collector input available.
- (6) External PG port extendible to consist of full closed-loop control.

Extensive applications for adopting AC asynchronous servo motor.

- (1) Servo drive control the position, velocity and accelerated velocity of servo motor with high precision.
- (2) Adopting AC asynchronous servo motor has advantages as follows: Simple construction, Reliable and durable, high cost-effective, Maintenance friendly and so on.

Servo drive appearance and parts explanation

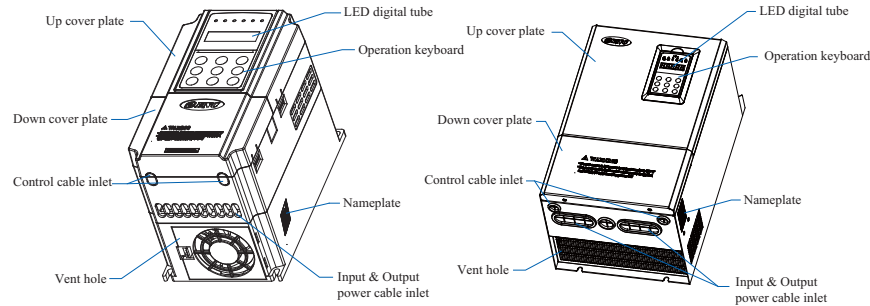


Fig.1 EAS200 series plastic structure appearance

Fig.2 EAS200 series metal plate structure appearance

Outer Size

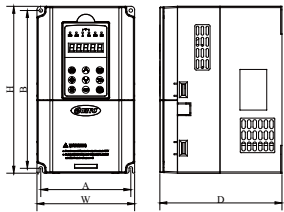


Fig.3 Plastic structure outside view

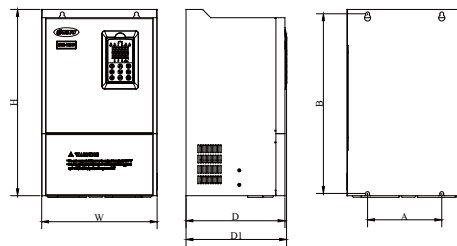


Fig.4 Metal plate structure outside view

Table 1. Servo drive mounting size

Drive type	A (mm)	B (mm)	W (mm)	H (mm)	D (mm)	D1 (mm)	Fix Hole (mm)	Fig.No.
EAS200-4T0022								
EAS200-4T0037	129	227	140	240	175	-	5	Fig.3
EAS200-4T0055								
EAS200-4T0075	165	281	180	304	189	-	6	Fig.3
EAS200-4T0110								
EAS200-4T0150	180	382	250	398	210	214	9	Fig.4
EAS200-4T0185								
EAS200-4T0220	180	434	280	450	240	244	9	Fig.4
EAS200-4T0300								
EAS200-4T0370	190	504.5	290	530	250	254	9	Fig.4

Drive technic index and spec.

Item		Item description	
Input	Rated Volt. Rated Fre.	3PH 380V Grade:3PH 380V 50Hz/60Hz	
	Allowed volt. Range	320V ~ 460V	
	Voltage	380V grade: 0 ~ 380V	
Output	Frequency	0Hz ~ 250Hz	
	Overload capacity	250% of rated torque for 20s	
	Control mode	Sine wave digital vector control(with PG).	
Control performance	Operation mode	Velocity control operation and Position control operation	
	Speed regulation range	1 : 5000	
	Start-up torque	0Hz 200% rated torque	
	Velocity control precision	±0.1% rated synchronous speed	
	Position control precision	±1 Pulse	
	Freq. resolution	Analog setup	0.1Hz
		Digital setup	0.01Hz
		External Pulse	0.1Hz
	Accelerated and retarded velocity control	0.05 ~ 3000Hz/s available	
	Brake	Dynamic braking	Built-in braking unit, braking resistance connect outside
JOG control		Jog Freq. range : 0.00Hz ~ Upper limit Freq.	
Multi-speed operation		Each speed selected by terminal.	
Running function	Running command setup channel	Operation keyboard, control terminal and communication port.	
	Running frequency setup channel	Digital setup, analog setup and pulse setup.	
	Pulse frequency division output	Differential signal from motor encoder output	
	Programmable digital Input	8 DI	
	Programmable digital output	5DO (4 open-collector output and 1 relay output)	
	Programmable pulse input	There are Pulse & Direction,CW/CCW and Orthogonal pulse three types pulse instruction for choose, Differential input and open-collector input available.	
	Analog input	Two analog signal input, 4 ~ 20mA and 0 ~ 10V optional for AI1, -10V ~ +10V and 4 ~ 20mA optional for AI2.	
Operation keyboard	Analog output	Two analog outputs, 4 ~ 20mA and 0 ~ 10V optional, AO1 and AO2 can be regard as output that relating to Setup Freq. and motor current.	
	RS485 communication	MODBUS protocol, 1200, 2400, 4800, 9600, 19200, 38400, 57600BPS,7 types baud rate for choose.	
	LED Display	Parameters display	
Environment	Protection function	Protection of over-current,over-voltage, overheat, overload and PG detection etc.	
	PG Spec.	Line driver type encoder, over 512C/T, Standard configuration :2500C/T	
Structure	Application site	Indoor, there is no bare to sunlight, no dust, corrosive and flammable gas, vapor, water drop and salt etc.	
	Altitude	Under 1000 meter, please derating use when over 1000 meter	
	Environment temperature	-10 C ~ +40 C (Derating use or increasing radiating when it within 40 C ~ 50 C)	
	Environment humidity	Lower than 95% RH, no drop condense	
	Vibration	Less than 5.9 m/s²(0.6g)	
Structure	Storage temperature	-40 C ~ +70 C	
	Protection level	IP20	
	Cooling mode	Forced air cooling	
Installation mode	Wall hanging		

Note:The above information just for reference,please refer to the manual for more details.We reserve our right to notice you if any change.

Applications

Adopt to machine tool, plastic machine, hoist machine, elevator control, petrification and metallurgy etc. industry flexible and widely with velocity control, position control and synchronous control mode.

Velocity control

Control features

- ★ Speed regulation range 1: 5000
- ★ Velocity control precision $\pm 0.1\%$
- ★ Frequency resolution: 0.01Hz
- ★ Accelerated and retarded velocity controllable
- ★ Constant torque output below rated speed.

Applications

- ★ High-speed spindle, lathe spindle
- ★ The feeding of vertical boring & milling machine and DC-VBM
- ★ The feeding of planomiller and double housing planer.
- ★ Plastic film blowing machine



Position control

Control features

- ★ Position control precision : ± 1 pulse
- ★ Start & stop curve optimizable , retarded velocity adjustable for position control.

Applications

- ★ Shearing machine, After shearing machine.
- ★ Bag machine.
- ★ Satellite antenna automatic tracking servo system.

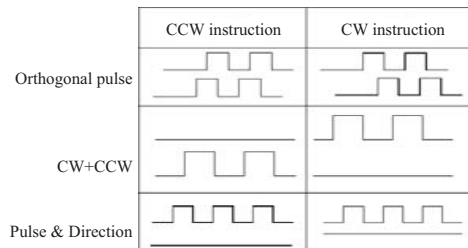
Synchronous control

Control features

- ★ Realizing synchronous operation of velocity and position by the synchronous controlling of master & slave and external PG.
- ★ Master & slave synchronous control: Regard the PG signal from master drive and motor as instruction of some other slave drives and motors, Slave goes after master with synchronous operation.
- ★ External PG synchronous control: Regard external PG signal as instruction of all servo drive and motor to realize multi-machine synchronous operation.
- ★ Electronic gear function available, ratio can be setup by parameters.

Applications

- ★ Railway vehicle maintenance lifting machine.
- ★ Construction elevator and lift.
- ★ NC Drilling.



Instruction pulse type for position control

Connection and debugging

Wiring of main circuit terminals

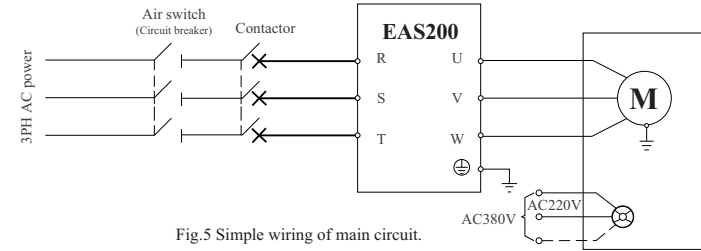


Fig.5 Simple wiring of main circuit.

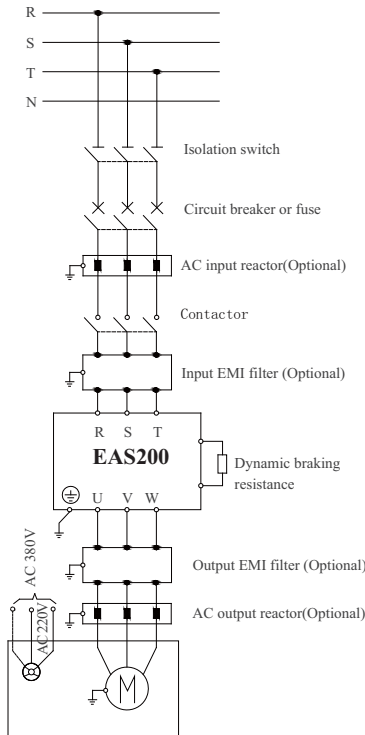


Fig.6 Connection of drive and optional components.

- (1) Breaking device like isolation switch must install between power grid and drive to keep personal safety under repairing and the requirements of compulsory power off.
- (2) There must be over-current protection breaker or fuse in the power supply circuit of drive to avoid failure expanding when the second device failure.
- (3) AC input reactor
When strong high harmonics between drive and power supply occurs which cannot meet system requirements or input side power factor need to improve, ac input reactor is needed.
- (4) Connector use to power supply control only, cannot to control the start and stop of drive.
- (5) Input side EMI filter
The high frequency transduction interference and radio-frequency interference from drive power line can be restrained by adding input EMI filter.
- (6) Output side EMI filter
Choosing optional EMI filter to restrain radio-frequency interference and wire leakage current at output side of drive.
- (7) AC output reactor
Installing ac output reactor is suggested to avoid motor insulation damage, oversize current leakage and drive frequent protection when the motor cable between drive and motor over 50m. Voltage drop issues of ac output reactor must be considered. Please increase the power supply voltage or derating using the motor to avoid burning the motor.
- (8) Safety ground wire
Drive and motor must be earth ground connection and the ground resistance must less than 10Ω.
The connection wire should select as shorter and thicker as possible, it should follow the standard as below:
For 7.5KW motor and below: copper wire diameter no less than 3.5mm²;
11 ~ 15KW motor: Over 8mm²copper wire;
18.5 ~ 37KW motor: Over 14mm²copper wire.

➤ Main circuit input and output terminal description

Table 2. Main circuit input and output terminal description

Adapted type	Main circuit terminal	Terminal name	Function description
EAS200-4T0022 ~ EAS200-4T0110		R、S、T	3PH AC input terminal ,connecting to power supply
		(+)	DC BUS Positive terminal
		PB	Reserve terminal for connection of braking resistance
		(-)	DC BUS Negative terminal
		(+)、PB	Braking resistance extendable
		U、V、W	3PH AC output terminal, connecting to motor
			Grounding terminal
EAS200-4T0150		R、S、T	3PH AC input terminal ,connecting to power supply
		(+)	DC BUS Positive terminal
		PB	Reserve terminal for connection of braking resistance
		(-)	DC BUS Negative terminal
		(+)、PB	Braking resistance extendable
		U、V、W	3PH AC output terminal, connecting to motor
			Grounding terminal
EAS200-4T0185 ~ EAS200-4T0300		R、S、T	3PH AC input terminal ,connecting to power supply
		PB	Reserve terminal for connection of braking resistance
		(+)	DC BUS Positive terminal
		(-)	DC BUS Negative terminal
		(+)、PB	Braking resistance extendable
		U、V、W	3PH AC output terminal, connecting to motor
			Grounding terminal
EAS200-4T0370		R、S、T	3PH AC input terminal ,connecting to power supply
		PB	Reserve terminal for connection of braking resistance
		(+)	DC BUS Positive terminal
		(-)	DC BUS Negative terminal
		(+)、PB	Braking resistance extendable
		U、V、W	3PH AC output terminal, connecting to motor
			Grounding terminal

➤ Basic running wiring diagram

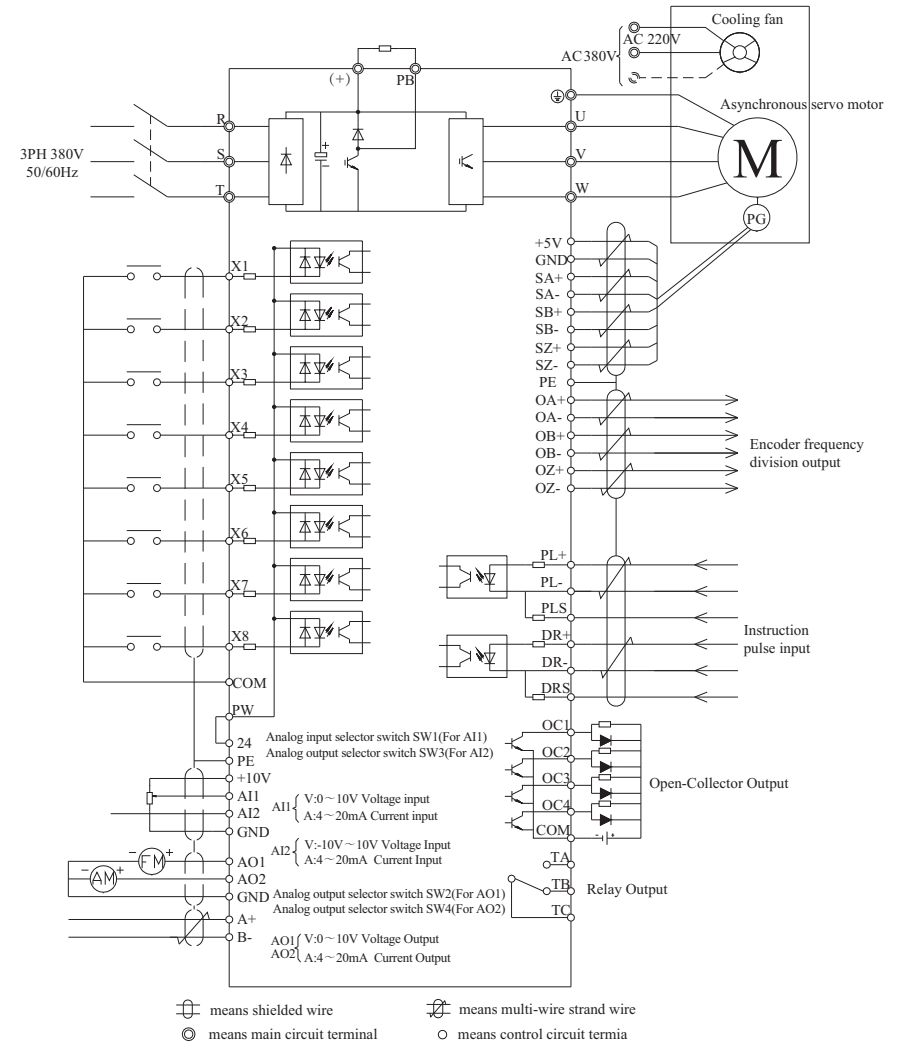


Fig.7 Basic Wiring diagram

➤ Dynamic braking resistance selection

Our company provides braking resistance accessory (Power winding resistance) for choose, Outside view and dimensions as below:

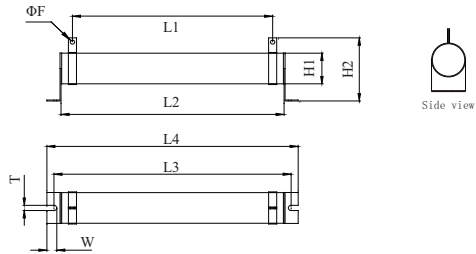


Fig.8 Power winding resistance outline dimensional drawing.

Table 3: Power Winding resistance Dimensions

Power	L1±4	L2±4	L3±4	L4±4	H1±1	H2±4	F±0.5	W±1	T±0.5
500W130RJ	298	330	356	374	50	98	6.5	13	6.5
750W80RJ	328	360	395	422	70	135	6.5	24	8.5
1100W60RJ	328	360	395	422	70	135	6.5	24	8.5
1500W50RJ	328	360	395	422	70	135	6.5	24	8.5
2000W40RJ	398	430	463	492	70	135	6.5	24	8.5
2000W32RJ	398	430	463	492	70	135	6.5	24	8.5

Unit: mm

Please refer to the table below for the selection of Dynamic braking resistance.

Depending on actual requirements, customer can choose difference resistance value and power.

Power can be larger but the resistance value should not less than the min. resistance value.

Table 4: Dynamic Braking Resistance Specifications.

Type	Min. resistance value	Spec. for Dynamic Braking Resistance (200% Braking torque and 10% braking Ratio)
EAS200-4T0022	80Ω	130Ω/500W
EAS200-4T0037	60Ω	80Ω/750W
EAS200-4T0055	60Ω	60Ω/1100W
EAS200-4T0075	32Ω	50Ω/1500W
EAS200-4T0110	20Ω	32Ω/2000W
EAS200-4T0150	16Ω	40Ω/2000W*2
EAS200-4T0185	16Ω	40Ω/2000W*2
EAS200-4T0220	16Ω	50Ω/1500W*3
EAS200-4T0300	16Ω	50Ω/1500W*3
EAS200-4T0370	11Ω	50Ω/1500W*4

Product Accessory

Motor encoder wire and Dynamic Braking Resistance needed for consisting of the system. Our company can provide accessories in Table 5. You can also configured them yourselves as your actual requirements. Power cable and power cable for motor fans configured by customer.

Table 5 Accessory

Accessory Name	Accessory Description
Motor Encoder wire 1	5M Encoder wire with Air plug (Fig. 9)
Motor Encoder wire 2	5M Encoder wire with Air plug (Fig. 10)
Power winding Resistance	Refer to Table 4 for specifications, Fig. 8 and Table 3 for Dimensions.

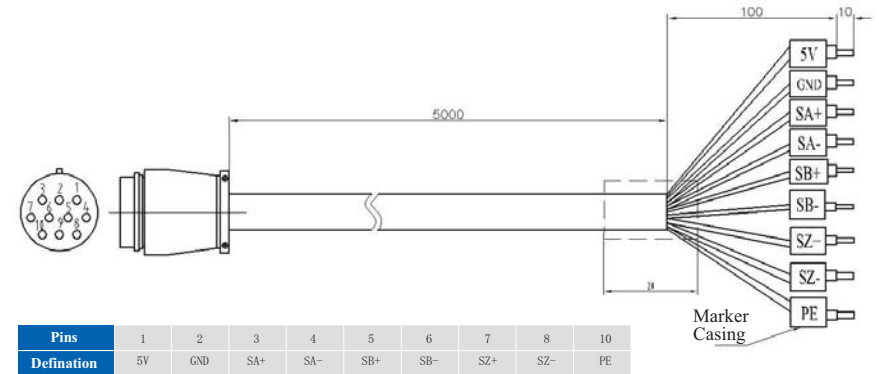


Fig.9 Motor Encoder cable 1

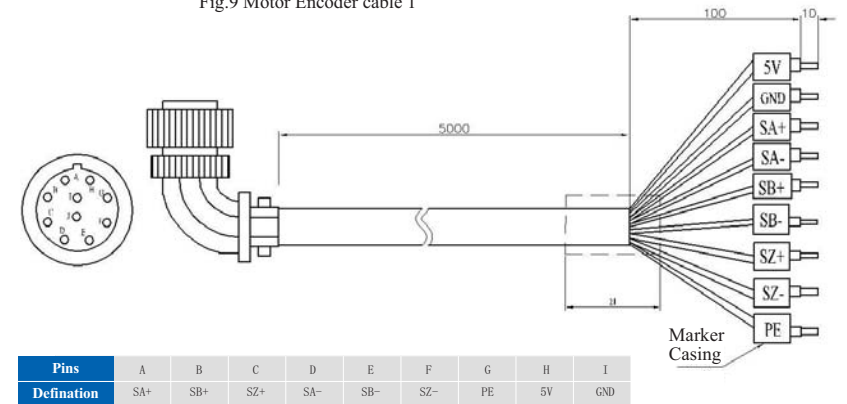


Fig.10 Motor Encoder cable 2.