

ESTUN



ETS

All Digital AC Servo Systems





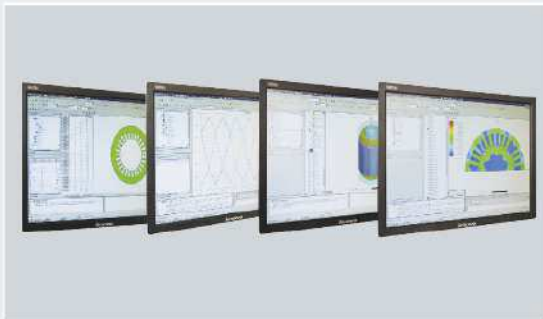
Corporate Information

As a national top AC servo system research, development and production base, Estun Automation is devoted to R&D, manufacturing and sales of high-end products in the realm of motion control. We are holding completely self-owned IPR technology of our AC servo systems which can be applied in CNC machine, textile machine, packing machine, printing machine, electronics manufacturing equipment, industrial robot, manipulator, wood-working machine, robotization production line, electro-hydraulic hybrid-driven and fully electrical injection moulding machine, etc. Now, Estun has established long-term strategic partnership with many prestigious machine manufacturers and becomes their first cooperation option for motion control products in both domestic and international market.

Platform Strength

As a manufacturer of AC servo systems and motion control systems, Estun Automation Technology Co., Ltd. owns advanced R&D platform and testing equipment. The platform and equipment have offered solid foundation for further technological research and development in AC servo products and motion control systems and it created a good environment to build a high level R&D team. As one of the few domestic manufactures with above mentioned R&D capabilities and testing equipments, Estun becomes the most competitive company in the field of AC servo system and motion control total solutions.

Technological R&D



RMxpert Finite element analysis software Maxwell 2D/3D, (ANSYS company, USA)



Whole set of EMI scanner (Detectus AB company, Sweden) & Anti-interference developing system (Agilent company, USA)



The world's most advanced servo drive and motor testing system and analysis software (MAGTROL company, Switzerland)



The latest multi-function and high precision electric power analyzer for AC servo system (Newtons4th Ltd, UK; YOKOGAWA, Japan)

Production Equipment



SMT Production Line



Servo Drive Assembling Line



Servo Motor Production Line



Servo Motor Testing System



Automatic Laser Welding



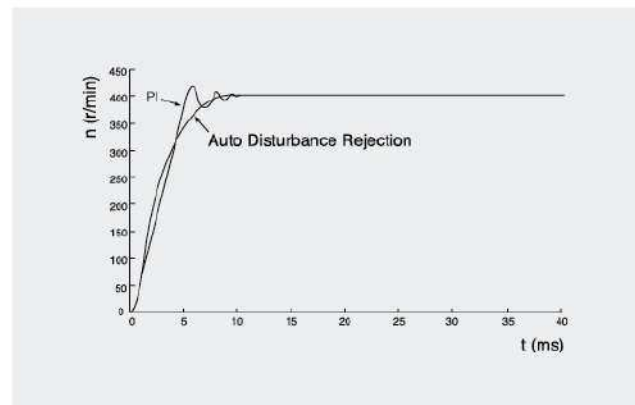
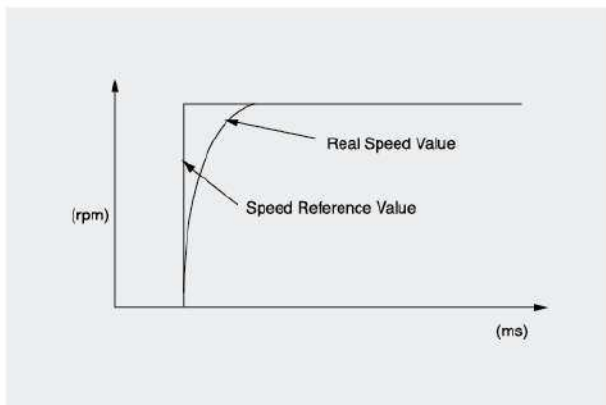
Automatic Wiring

Multi-axis Control

Using one drive driving multi-axis motors at the same time, ETS servo drives make full use of the processing chip resources, and greatly reduce the installation space. Compared with several sets of single axis servo drive unit, it is highly cost-effective. Particularly in the requirements of multi-axis synchronization, ETS servo drives can achieve better performance than several sets of single axis servo drive unit.



High Performance



Using the industrial grade intelligent power modules and the most updated high speed DSP, ETS servo drives assure 3 times overload capacity and the control requirements of high speed, high precision. Using current and acceleration feedforward control, instruction smoothing and inertia identification technique, ETS servo drives offer high precision fast response, and monitor real-time overload inertia to adjust gain anytime for better control.

Flexibility

ETS servo drive can control up to 3 axes based on customer needs. And each axis can equip servo motor from 200W to 1.0kW. The interfaces are more user-friendly and easy to use.

Communication Interface

Standard CAN bus interfaces are available in ETS servo drives, which make it easy to get integrated into a distributed control system. Based on Modbus protocols of RS232/RS485 interfaces, the host can be connected up to 32 servo drives for network control. Besides, the host can also communicate with PLC, DCS, intelligent instruments, touch screens, etc., and the centralized monitoring is implemented.

Single Axis Positioning Function

The 16-node single axis positioning function is built inside ETS servo drives, and a touch screen can be connected directly to the RS-232/RS-485 interface of the servo drives. Thus, the cost goes down since an intermediate PLC unit is eliminated. With the touch screen, user may program easily every node's position, speed, acceleration and deceleration time, latency time, start point and stop point. Moreover, the above information can be transmitted to the servo drive via RS-232/RS-485 interface. User may select to program absolute values or incremental values and select cycle run or not. User may also use reference point search function and program the go and back speed for reference point search. In addition, it's also available to use external signals for step changes. Actually users may customize application programs to meet different demands on different occasions.

ESView Communication Software

With special PC softwares available, following functions are achieved:

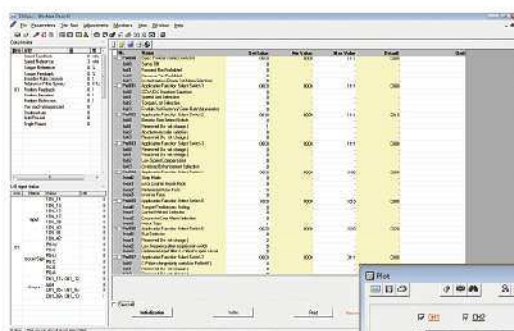
- Parameter management

Fast and convenient operations to parameters of both axes are available, such as editing, transmission, comparison and initialization.
- Monitoring

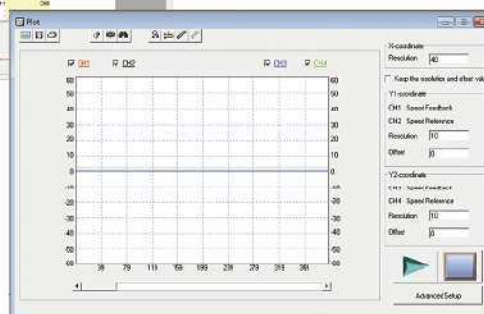
Real time monitoring I/O signals of both axes, current and history alarm records, system status.
- Real time sampling

Real time sampling the curves of position, speed and current facilitates the adjustment and analysis.
- Adjusting

Fast adjustment of gains is available.
Simple test is available when there's no position or speed reference input.



Parameter Management Interface



Sampling Diagram

Specification Description

ETS-10 10 A P C - CAN

ETS Model Servo Drive Rated Output Power Rated Output Power Power Voltage Control Style Encoder Interface Communication

Sign	Specification	Sign	Specification	Sign	Specification	Sign	Specification
A	200VAC	P	Position Control	C	Wire-saving Encoder (2500P/R)	CAN	Both Canopen and pulse control mode

Notes: Each axis of ETS servo drive equips 200W, 400W, 750W, 1.0kW servo motor, and assures three times overload capacity.

ETS-10 10 10 A P C - CAN

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Notes: Each axis of ETS servo drive equips 200W, 400W, 750W, 1.0kW servo motor, and assures three times overload capacity.

Technical Specification and Model of Servo Drives

Servo Drive Model			ETS-1010APC-CAN / ETS-101010APC-CAN		
			C axis	B axis	A axis
Power Supply	Main Circuit	Three Phase AC200V~230V +10% -15% (50/60Hz)			
	Control Circuit	Single Phase AC200V~230V +10% -15% (50/60Hz)			
Control Method		SVPWM			
Feedback		Incremental encoder (2500P/R)			
Operating Conditions	Ambient / Storage Temperature	0~55°C / -20~85°C			
	Ambient / Storage Humidity	Below 90%RH (Non-condensing)			
	Vibration / Impact Resistance	4.9m/s ² / 19.6m/s ²			
Configuration		Base Mounted			
Speed Control	Set Speed Reference	Rotation Direction Selection	Switch the direction by /P-CON		
		Speed Selection	Speed 1 to 7 selection		
	Function	Soft Start Setting	0 to 10s (can be set individually for acceleration and deceleration)		
Position Control	Reference Pulse	Type	Sign+pulse train, CCW+CW pulse train, or 90° phase difference 2-phase pulse (phase A + phase B)		
		Form	Non-insulated line driver (+5V level), open collector		
		Frequency	x1 multiplier: 4Mpps x2 multiplier: 2Mpps x4 multiplier: 1Mpps Open collector: 200kpps Frequencies drop when the duties have errors.		
	Set Position Reference	Position Setting	Can set 16 position reference		
I/O Signals	Encoder Output Pulses		Phase A, phaseB, phase C: line driver output The number of dividing pulse: Any setting ratio is available		
	Sequence Input	Number of Channels	8 channels		
		Function	Signal allocations and positive/negative logics can be modified: Servo ON (/S-ON), P control (/P-CON), alarm reset (/ALM-RST), clear error pulse (/CLR), forward run prohibited (P-OT), reverse run prohibited (N-OT), forward torque limit (/P-CL), reverse torque limit (/N-CL)		
	Sequence Output	Number of Channels	4 channels		
		Function	Signal allocations and positive/negative logics can be modified: Positioning completion (/COIN), speed agree detection (/V-CMP), motor rotation detection (/TGON), servo ready (/S-RDY), torque limit detection (/CLT), brake interlock (/BK), encoder C pulse (/PGC), over travel signal (/OT), Overtravel Return-to-Zero Complete(HOME), Servo Enabled motor Excitation()		
Built-in Function	Dynamic Brake Functions(DB)		Operate during main power OFF, servo alarm, servo OFF or overtravel		
	Protective Functions		Overcurrent, overvoltage, low voltage, overload, regeneration error, overspeed, etc.		
	Utility Functions		Alarm trace back, JOG operation, Inertia detections, etc.		
	Communications		RS-485 communication port, MODBUS protocol; CAN communication port, CANopen protocol;		
	Display Functions		Chargex1, Powerx1, 7-segment LEDx5, Pushbuttonsx5 Axis LEDx3		

Model Comparison Table & Cable Models Table

Servo Drive	Servo Motor	Power Cable Model	Encoder Cable Model	Communication Cable Model
ETS-1010APC-CAN ETS-101010APC-CAN A axis/B axis/C axis	EMJ-02APA□□	PDM-JB18 PDM-JE18(Optional)	BMP-JB24 BMP-JE24(Optional)	PSC-CC24
	EMJ-04APB□□			
	EMJ-08APB□□			
	EMJ-10APB□□	PDM-GA16	BMP-GA24	
	EMG-10APA□□			
	EML-10APA□□	PDM-GA16-XX-II PDMB-GA14-XX-II (With Brake)	PMP-GA24-XX-II	
	EMG-10APB□□			
EML-10APB□□				

EMJ

Model Servo Motor

Features

- Medium inertia
- Peak torque up to 300% of rated torque
- Various models (200W~1.0kW, brake optional)
- Speed up to 4500r/min
- Equipped with wire-saving encoder (2500P/R)

Application

- SMM (surface mounting machine)
- PCB punch machine
- Robot arm
- Handling machinery
- Foodstuff processing machinery
- Textile machinery



Specification Description

EMJ - 08 A P B 1 1 - WR

EMJ Model
Servo Motor

Rated Output
Power

Power
Voltage

Encoder

Designing
Sequence

Shaft End

Option Parts

Connector

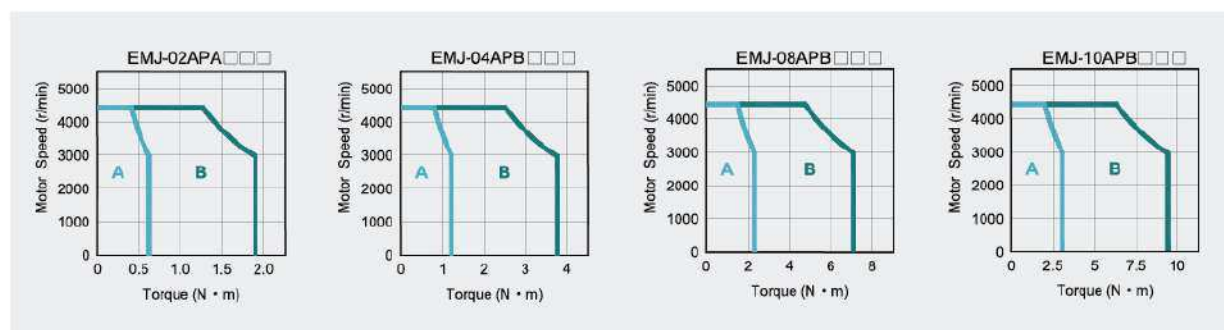
Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.	
02	0.2kW	A	200VAC	P	Incremental Wire-saving Type: 2500P/R	A, Designing B Sequence	1	Flat, Without Keys	1	None	WR	Water proof Connector (Incremental Wire-saving Type: 2500P/R)
04	0.4kW						2	Flat, With Keys, With Screw Thread	2	With Oil Seal		
08	0.75kW							3	With Brake (DC24V)			
10	1.0kW							4	With Oil Seal, With Brake (DC24V)			

Rated Value and Specification

Voltage		200VAC			
Servo Motor Model	EMJ-	02APA□□□	04APB□□□	08APB□□□	10APB□□□
Rated Output Power	kW	0.2	0.4	0.75	1.0
Rated Torque	N.m	0.64	1.27	2.39	3.18
Instantaneous Peak Torque	N.m	1.91	3.82	7.16	9.55
Rated Current	Arms	1.4	2.8	4.0	5.3
Instantaneous Max Current	Arms	4.2	8.4	12.0	15.9
Rated Speed	r/min	3000			
Max. Speed	r/min	4500			
Rotor Moment of Inertia	X10 ⁻⁴ kg·m ²	0.19 (0.23)	0.31 (0.35)	1.35 (1.47)	1.74 (1.87)
Brake Rated Voltage		DC24V±10%			
Brake Rated Power	W	7.2		11.5	
Brake Holding Torque	N.m	1.3		3.2	
Encoder		Wire-saving Incremental Encoder (2500P/R)			
Insulation Class		F			
Ambient Temperature		0 to +40°C (no freezing)			
Ambient Humidity		20 to 80% RH (non-condensing)			
Vibration		49m/s ²			
Enclosure		Totally Enclosed, Self-cooled, IP65 (Except for shaft opening, when not equipped with oil seal; Except for connectors, when not equipped with waterproof connectors.)			

Note: The values in parentheses are for servo motors with holding brakes.

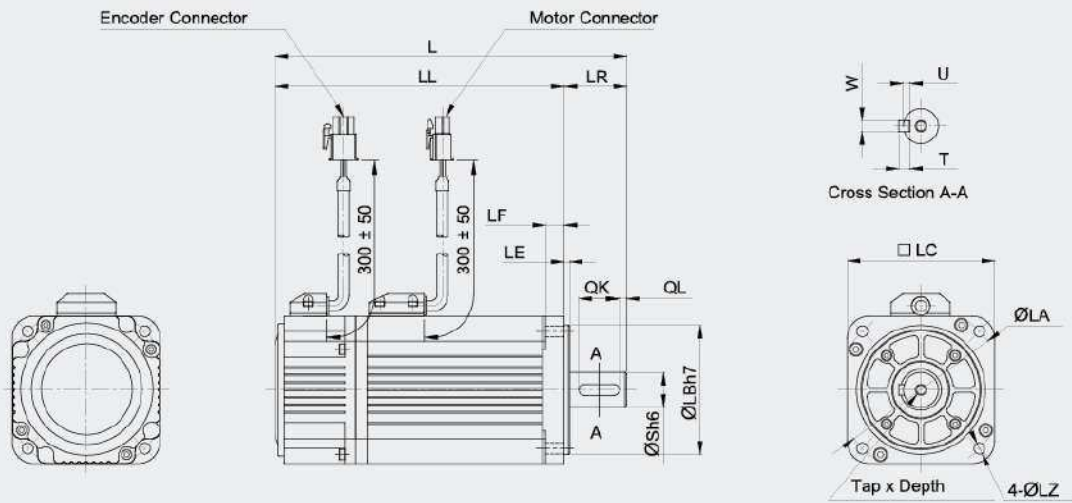
Torque-Speed Feature



A: Continuous Working Area B: Repeatedly Working Area

Dimension

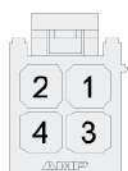
Unit: mm



Model EMJ-	L	LL	Flange Side							S	Tap×Depth	Key				
			LR	LE	LF	LC	LA	LB	LZ			QK	QL	W	T	U
02AP□□□	141(181)	111(151)	30	3	6	60	70	50	5.5	14	M5×10L	16	4	5	5	3
04AP□□□	161(201)	131(171)	30	3	6	60	70	50	5.5	14	M5×10L	16	4	5	5	3
08AP□□□	173(216)	138(181)	35	3	9	81	90	70	6	19	M6×15L	22	4	6	6	3.5
10AP□□□	191(234)	156(199)	35	3	9	81	90	70	6	19	M6×15L	22	4	6	6	3.5

Note: The dimensions in parentheses are for servo motors with holding brakes.

Motor Connector Specification for EMJ-02/04/08/10AP□□□



- Plug: 172167-1(AMP)
- Pin: 170360-1(AMP)

Pin No.	Signal
1	U
2	V
3	W
4	FG

Brake Connector Specification for EMJ-02/04/08/10AP□□□

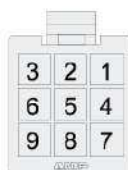


- Plug: 172165-1(AMP)
- Pin: 170360-1(AMP)

Pin No.	Signal
1	B1
2	B2

Encoder Connector Specification for EMJ-02/04/08/10AP□□□

- Plug: 172169-1(AMP)
- Pin: 170359-3(AMP)



Pin No.	Signal
1	A+
2	B+
3	C+
4	A-
5	B-
6	C-
7	PG5V
8	PG0V
9	FG

Encoder Connector Specification for EMJ-02/04/08/10AP□□□-Waterproof(option)
Incremental Encoder(Wire-saving)

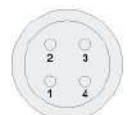
- Plug: CGRSD-9BFMA-SL8001



Pin No.	Signal
1	A+
2	B-
3	C+
4	A-
5	B-
6	C-
7	PG5V
8	PG0V
9	FG

Motor Connector Specification for EMJ-02/04/08/10AP□□□-Waterproof (option)

- Plug: CGRSB-4BFMA-SL8001



Pin No.	Signal
1	U
2	V
3	W
4	FG

Brake Connector Specification for EMJ-02/04/08/10AP□□□-Waterproof(option)

- Plug: CGRSB-2BFMA-SL8001



Pin No.	Signal
1	B1
2	B2

Features

- Drives the feed shaft of various machineries
- Equipped with wire-saving encoder (2500P/R)
- Standard configuration is IP65

Application

- Machine tool
- Handling machinery
- Foodstuff processing machinery
- Textile machinery



Specification Description

EMG-10

EMG Model Servo Motor

A

Rated Output Power

P

Encoder

A

Designing Sequence

1

Shaft End

1

Option Parts

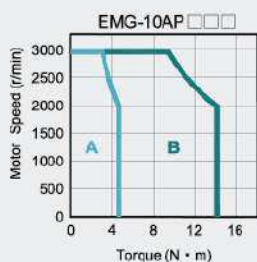
Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.
10	1.0kW	A	200VAC	P	Incremental Wire-saving Type:2500P/R	A,B	Designing Sequence	1	Flat, Without Keys	1	None
								2	Flat, With Keys With Screw Thread	2	With Oil Seal
										3	With Brake (DC24V)
										4	With Oil Seal, With Brake (DC24V)

Rated Value and Specification

Voltage		200VAC
Servo Motor Model	EMG-	10APA□□
Rated Output Power	kW	1.0
Rated Torque	N.m	4.78
Instantaneous Peak Torque	N.m	14.3
Rated Current	Arms	6.0
Instantaneous Max. Current	Arms	18.0
Rated Speed	r/min	2000
Max. Speed	r/min	3000
Rotor Moment of Inertia	X10 ⁻⁴ kg·m ²	10.0 (10.6)
Brake Rated Voltage		DC24V±10%
Brake Rated Power	W	19
Brake Holding Torque	N.m	10
Encoder		Wire-saving Incremental Encoder (2500P/R)
Insulation Class		F
Ambient Temperature		0 to + 40°C (No freezing)
Ambient Humidity		20 to 80% RH (Non-condensing)
Vibration		24.5m/s ²
Enclosure		Totally Enclosed, Self-cooled, IP65 (Except for shaft opening, when not equipped with oil seal.)

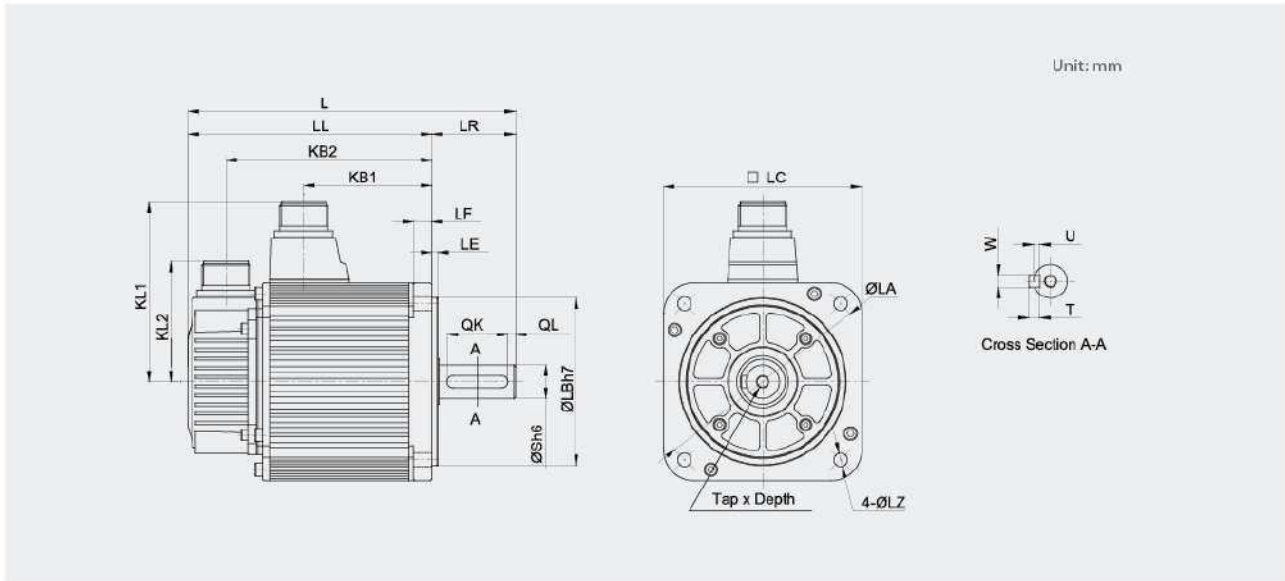
Note: The values in parentheses are for servo motors with holding brakes.

Torque-Speed Feature



A: Continuous Working Area
 B: Repeatedly Working Area

EMG Dimension



Model EMG-	L	LL	KB1	KB2	KL1	KL2	Dimension							S	TapxDepth	Key				
							LR	LE	LF	LC	LA	LB	LZ			QK	QL	W	T	U
10APA□□	215(269.5)	160(214.5)	84	135(189.5)	118	79	55	4	12	130	145	110	9	22	M6x20L	40	5	8	7	4

Note: The dimensions in parentheses are for servo motors with holding brakes.

Motor Connector Specification



- Receptacle:
HMS3102A20-4P (LC=130)
HMS3102A22-22P (LC=180)
- Plug:
HMS3108B20-4S (LC=130)
HMS3108B22-22S (LC=180)
- Cable Clamp:
HMS3057-12A

Pin No.	Signal
A	U
B	V
C	W
D	FG

Brake Connector Specification



- Receptacle:
HMS3102A10SL-3P
- Plug:
HMS3106A10SL-3S
- Cable Clamp:
HMS3057-4A

Pin No.	Signal
A	B1
B	B2
C	-

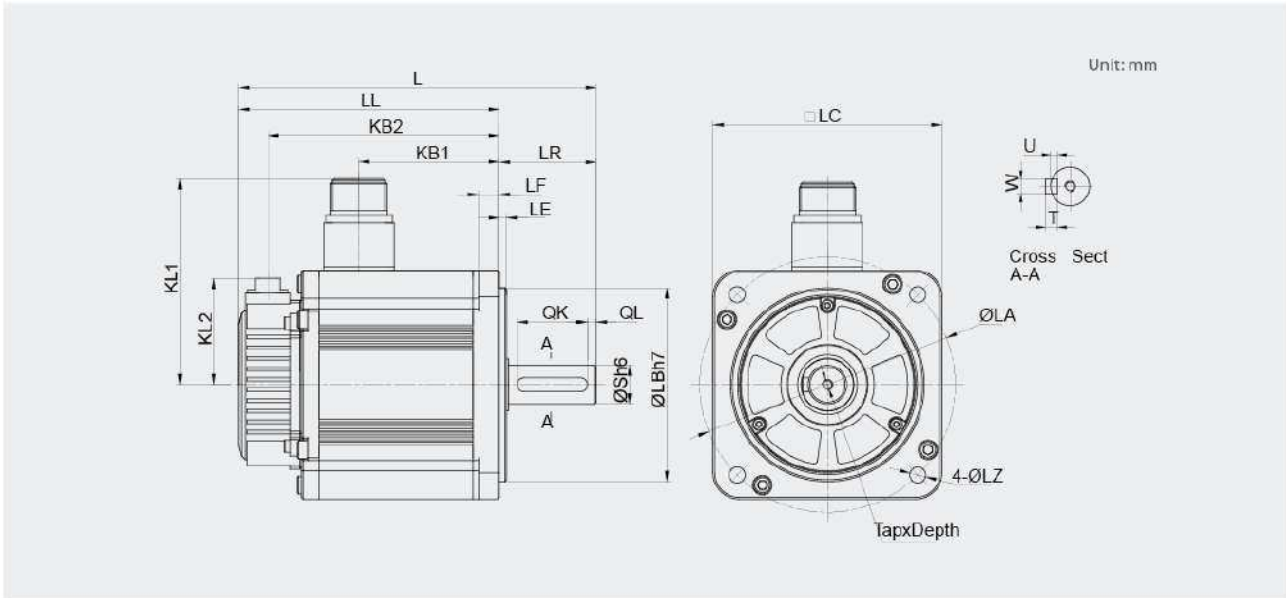
Encoder Connector Specification

- Receptacle:
HMS3102A20-29P
- Plug:
HMS3108B20-29S
- Cable Clamp:
HMS3057-12A



Incremental Encoder(Wire-saving)

Pin No.	Signal
A	A+
B	A-
C	B+
D	B-
E	C+
F	C-
G	PG0V
H	FG5V
J	FG

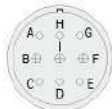


Model EMG-	L	LL	KB1	KB2	KL1	KL2	Dimension							S	TapxDepth	Key				
							LR	LE	LF	LC	LA	LB	LZ			QK	QL	W	T	U
10APB□□	203(245.5)	148(190.5)	80(103.2)	131.5(174)	117	60.5	55	4	12	130	145	110	9	22	M6×20L	40	5	8	7	4

Note: The dimensions in parentheses are for servo motors with holding brakes.

Motor Connector Specification

- Receptacle:
HMS3102E20-18P
- Plug:
HMS3106AE20-18S



Pin No.	Signal
A	-
B	U
C	FG
D	FG
E	-
F	W
★G	B1
★H	B2
I	V

★ Note: There are no B1, B2 signals in motor without brake.

Encoder Connector Specification

- Receptacle:
M-CAN-CM1002-10P
- Plug:
M-CAN-CM1008-10S



Wire-saving Incremental Encoder

Pin No.	Signal
1	A+
2	A-
3	B+
4	B-
5	C+
6	C-
7	PG0V
8	PG5V
10	FG

Features

- Drive the feed shaft of various machineries
- Equipped with wire-saving encoder (2500P/R)
- Standard configuration is IP65

Application

- Machine tool
- Handling machinery
- Foodstuff processing machinery
- Textile machinery



Specification Description

EML-10

EML Model Servo Motor

A

Rated Output Power

P

Power Voltage

A

Encoder

Designing Sequence

1

Shaft End

1

Option Parts

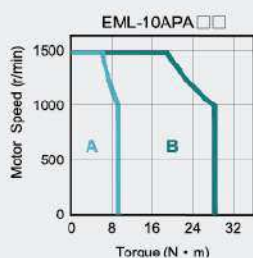
Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.
10	1.0kW	A	200VAC	P	Incremental Wire-saving Type: 2500P/R	A,B	Designing Sequence	1	Flat, Without Keys	1	None
								2	Flat, With Keys With Screw Thread	2	With Oil Seal
										3	With Brake (DC24V)
										4	With Oil Seal, With Brake (DC24V)

Rated Value and Specification

Voltage		200VAC
Servo Motor Model	EML-	10APA□□
Rated Output Power	kW	1.0
Rated Torque	N.m	9.55
Instantaneous Peak Torque	N.m	28.7
Rated Current	Arms	6.0
Instantaneous Max. Current	Arms	18.0
Rated Speed	r/min	1000
Max. Speed	r/min	1500
Rotor Moment of Inertia	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	19.0 (19.6)
Brake Rated Voltage		DC24V \pm 10%
Brake Rated Power	W	19
Brake Holding Torque	N.m	10
Encoder		Wire-saving Incremental Encoder (2500P/R)
Insulation Class		F
Ambient Temperature		0 to + 40°C (No freezing)
Ambient Humidity		20 to 80% RH (Non-condensing)
Vibration		24.5m/s ²
Enclosure		Totally Enclosed, Self-cooled, IP65 (Except for shaft opening, when not equipped with oil seal.)

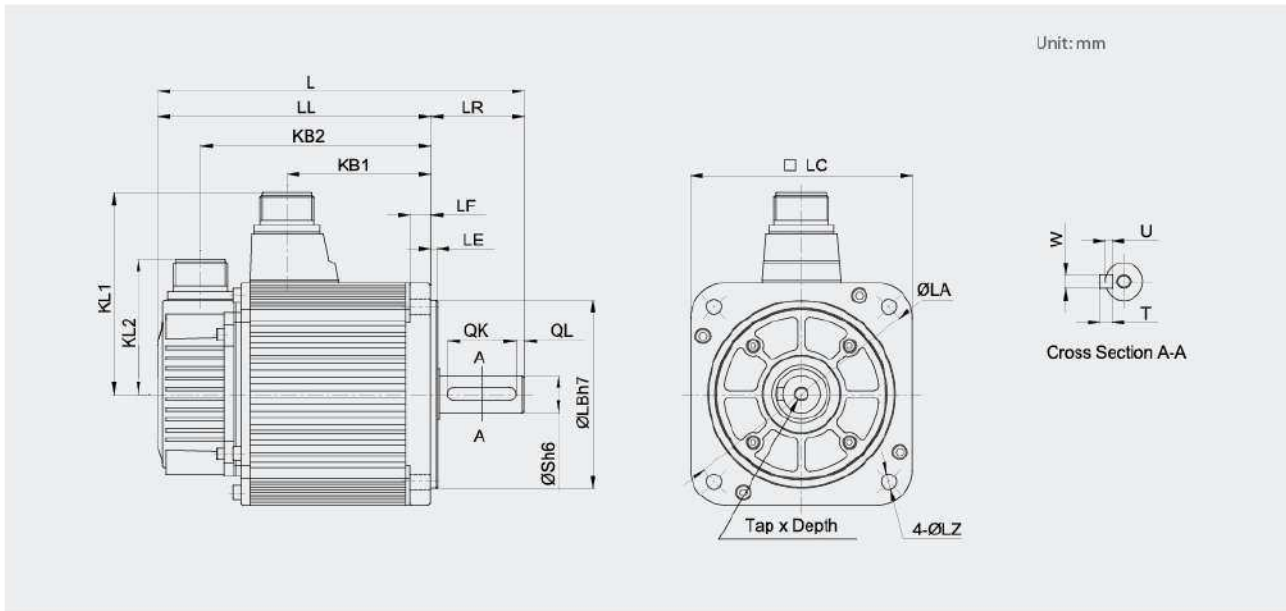
Note: The values in parentheses are for servo motors with holding brakes.

Torque-Speed Feature



A: Continuous Working Area
B: Repeatedly Working Area

EML Dimension



Model EML-	L	LL	KB1	KB2	KL1	KL2	Dimension							S	TapxDepth	Key				
							LR	LE	LF	LC	LA	LB	LZ			QK	QL	W	T	U
10APA□□	265(319.5)	210(264.5)	134	185(239.5)	118	79	55	4	12	130	145	110	9	22	M6x20L	40	5	8	7	4

Note: The dimensions in parentheses are for servo motors with holding brakes.

Motor Connector Specification

- Receptacle:
HMS3102A20-4P (LC=130)
HMS3102A22-22P (LC=180)
- Plug:
HMS3108B20-4S (LC=130)
HMS3108B22-22S (LC=180)
- Cable Clamp:
HMS3057-12A



Pin No.	Signal
A	U
B	V
C	W
D	FG

Brake Connector Specification

- Receptacle:
HMS3102A10SL-3P
- Plug:
HMS3106A10SL-3S
- Cable Clamp:
HMS3057-4A



Pin No.	Signal
A	B1
B	B2
C	-

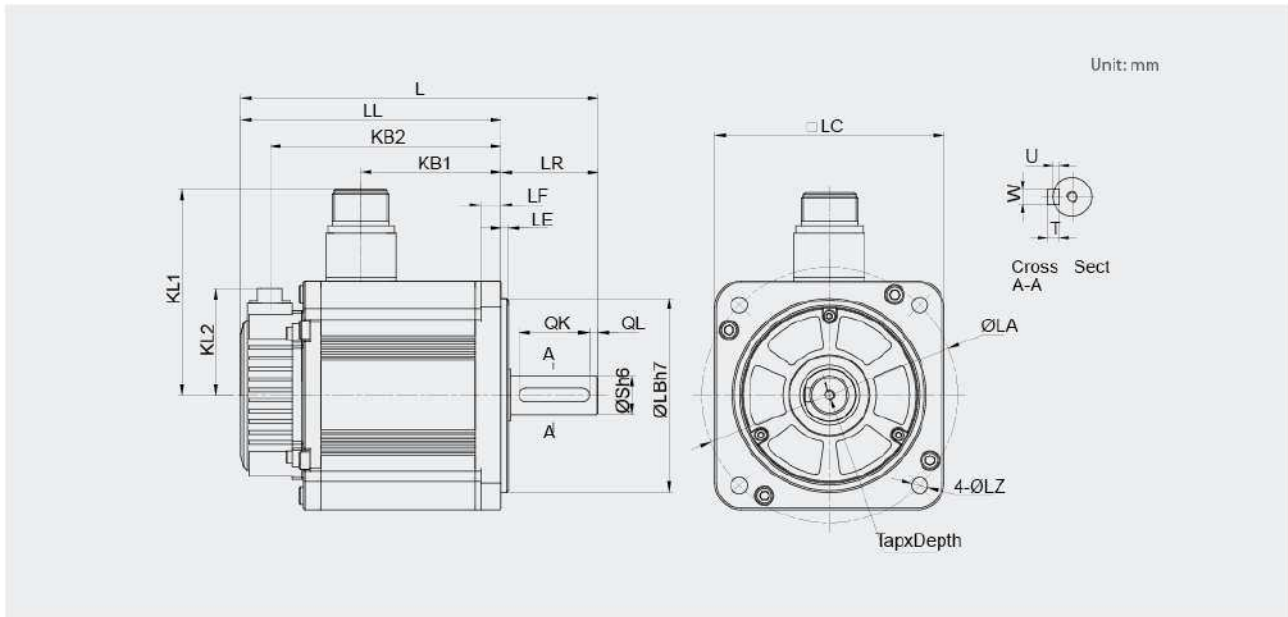
Encoder Connector Specification

- Receptacle:
HMS3102A20-29P
- Plug:
HMS3108B20-29S
- Cable Clamp:
HMS3057-12A



Incremental Encoder(Wire-saving)

Pin No.	Signal
A	A+
B	A-
C	B+
D	B-
E	C+
F	C-
G	PG0V
H	PG5V
J	FG

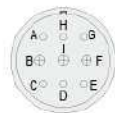


Model EML-	L	LL	KB1	KB2	KL1	KL2	Dimension							S	TapxDepth	Key				
							LR	LE	LF	LC	LA	LB	LZ			QK	QL	W	T	U
10APB□□	247(289.5)	192(234.5)	124(147.2)	175.5(218)	117	60.5	55	4	12	130	145	110	9	22	M6x20L	40	5	8	7	4

Note: The dimensions in parentheses are for servo motors with holding brakes.

Motor Connector Specification

- Receptacle:
HMS3102E20-18P
- Plug:
HMS3106AE20-18S



Pin No.	Signal
A	-
B	U
C	FG
D	FG
E	-
F	W
★G	B1
★H	B2
I	V

★ Note: There are no B1, B2 signals in motor without brake.

Encoder Connector Specification

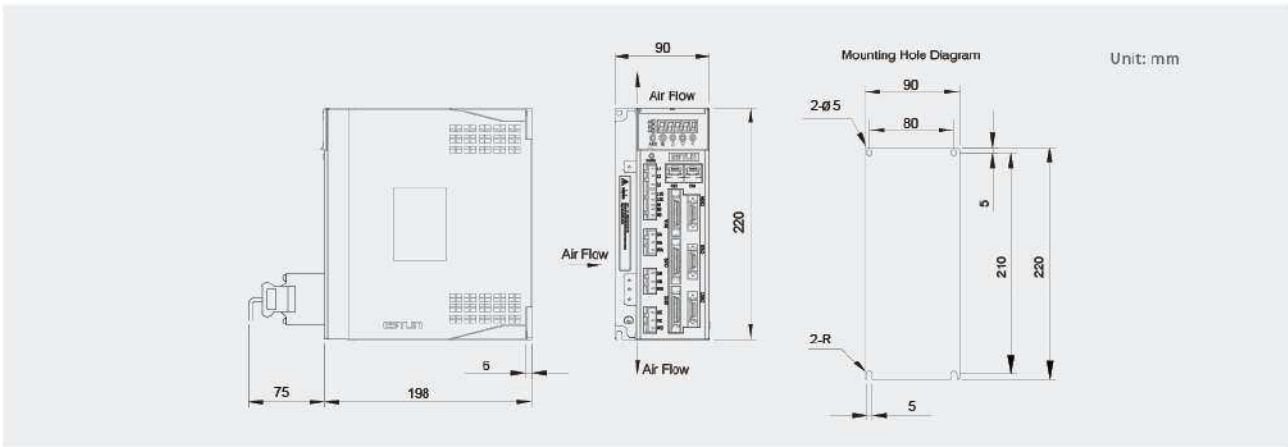
- Receptacle:
M-CAN-CM1002-10P
- Plug:
M-CAN-CM1008-10S



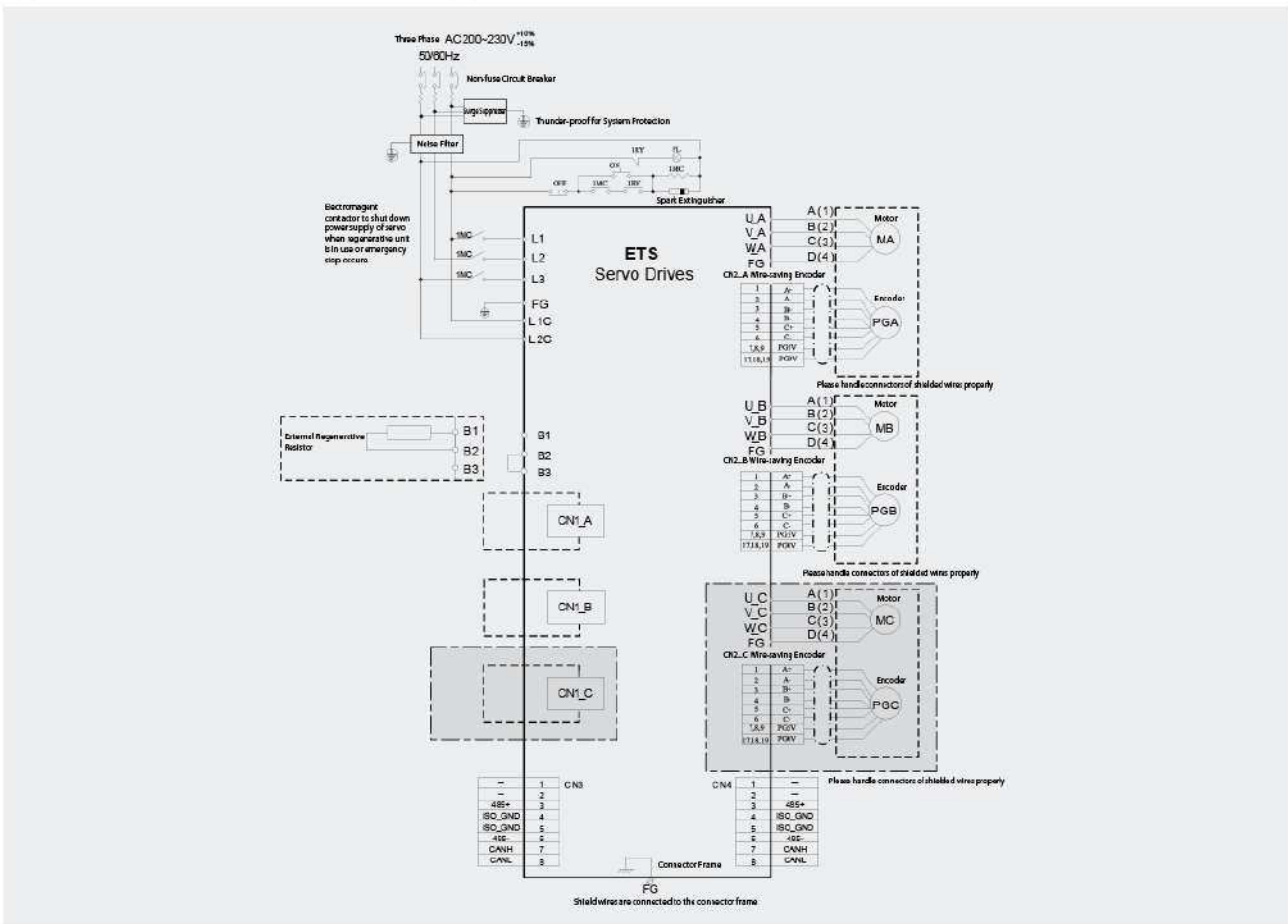
Wire-saving Incremental Encoder

Pin No.	Signal
1	A+
2	A-
3	B+
4	B-
5	C+
6	C-
7	PGOV
8	PG5V
10	FG

ETS Dimension

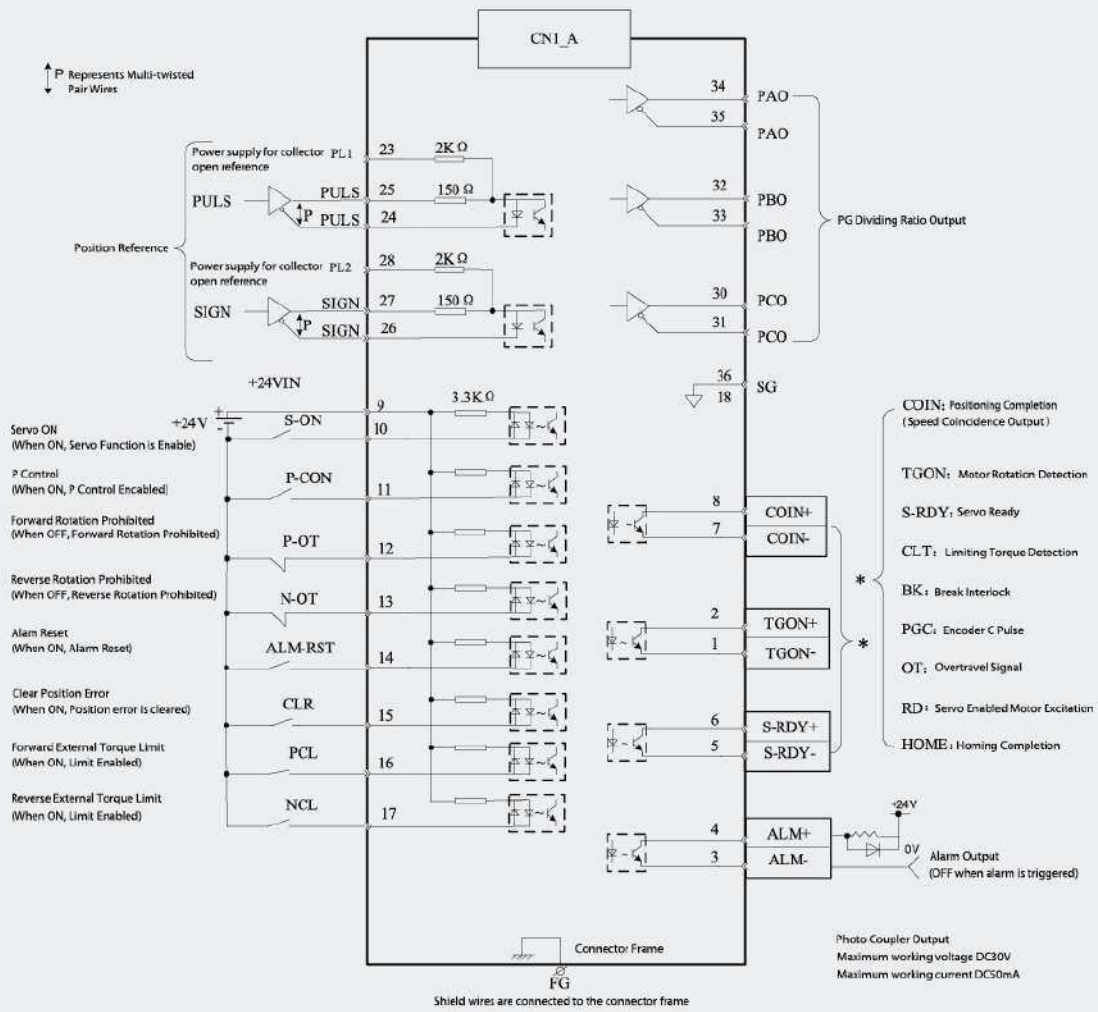


ETS Connection Example



Note: ETS two-axis servo drive is not include the gray part.

ETS Connection Example



Note: The wirings of CN1_A, CN1_B, CN1_C are the same.