

ESTUN



ProNet

All Digital AC Servo Systems





ESTUN
埃斯顿自动技术有限公司

ESTUN
埃斯顿自动化

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.

Service Network

Hotline

400-025-3336



First-class service guarantee

- Headquartered in Nanjing with rich experience in product design and manufacturing process control, possessing a first-class modern production base
- Offices in Guangdong, Fujian, Zhejiang, Jiangsu, Shandong, Hubei, Chongqing, Anhui, Henan, Shanxi, and Liaoning
- 38 nationwide warranty stations and 2 international repair centers in Poland and USA
- More than 130 authorized domestic and international agencies and system integrators

Professional sales and service teams offer a quick response to customers' needs.

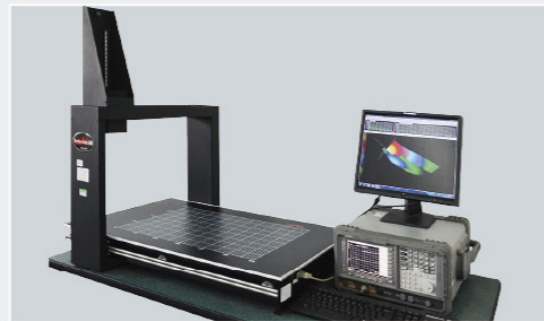
Platform Strength

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



RMxprt 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

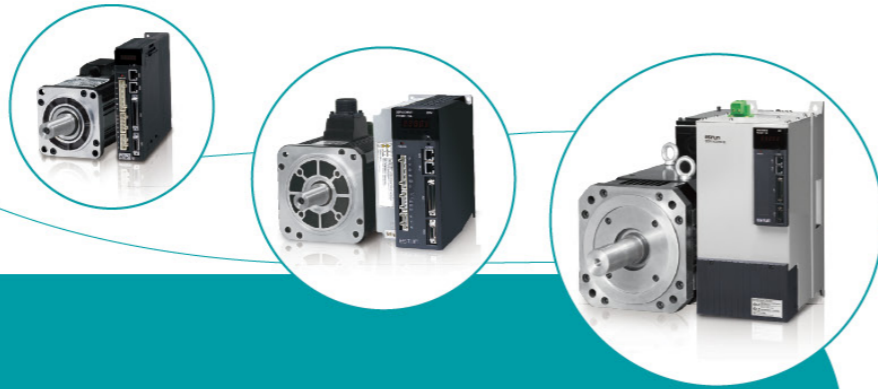


Automatic Wiring

General Introduction

ProNet Series AC Servo System

Features



- Various models, wide power range : 50W~22kW
- Multiple feedback options : 17bits / 20bits serials encoder, resolver
- Power supply: single phase/three phase 100VAC, single phase/three phase 200VAC, three phase 400VAC
- Various communication options: Modbus, CANopen, EtherCAT, POWERLINK, PROFIBUS
- Frequency response 1.6kHz
- Current feed-forward and acceleration feed-forward function
- Online real time load inertia inspecting and auto-tuning function
- Common DC Bus
- Low frequency vibration suppression function
- High performance under low rigid environment
- Dynamic electronic gear ratio switching function
- Homing function available under position control mode
- UL certified and CE certified

Typical Application

- Machine tools (Metal forming, CNC router, Laser cutting, Water jet, Wood processing)
- Textile machine (Warping machine, Warp knitting machine, Rapier loom, Air jet, Water jet machine, Quilter machine, Dyeing machine)
- Packing machine (Vertical packing machine, Pillow packing machine, Sealing packing machine, Liquid packing machine)
- Printing machine (Photogravure press, Lithographic press, Relief printing machine)
- Electronics manufacturing equipment (Sorting machine, Chip mounter, Winding machine, Die-cutting machine, Lithium battery production line)
- Industrial robot, manipulator
- Hybrid, Die-casting machine, Injection molding machine, Plastic extruding machine



ProNet Series

- Various voltage input: 100V, 200V, 400V
- Power supply: 50W~22kW
- 17 /20 bit Serial encoder / Resolver
- Standard: CANopen
Options: EtherCAT
- Used in high precision automation, high speed bus communication

Model Comparison Table

Series	Voltage	Series	Servo Motor	Servo Drive
EMJ 3000r/min	Single-phase 200VAC	0.05kW	EMJ-A5ASA2□	PRONET-A5AMA/PRONET-A5AEA-EC
		0.1kW	EMJ-01ASA2□	PRONET-01AMA/PRONET-01AEA-EC
		0.2kW	EMJ-02ASA2□	PRONET-02AMA/PRONET-02AEA-EC
			EMJ-02AFA2□-TP	PRONET-02AMF/PRONET-02AEF-EC
		0.4kW	EMJ-04ASA2□	PRONET-04AMA/PRONET-04AEA-EC
			EMJ-04ASH2□	PRONET-04AMA/PRONET-04AEA-EC
	Three-phase 200VAC	0.75kW	EMJ-08ASB2□	PRONET-08AMA/PRONET-08AEA-EC
			EMJ-08AFB2□-TP	PRONET-08AMF/PRONET-08AEF-EC
		1kW	EMJ-10ASB2□	PRONET-10AMA/PRONET-10AEA-EC
			EMJ-10AFB2□-TP	PRONET-10AMF/PRONET-10AEF-EC
EMG 2000r/min	Three-phase 200VAC	1kW	EMG-10ASB2□	PRONET-10AMA/PRONET-10AEA-EC
			EMG-10AFB2□	PRONET-10AMF/PRONET-10AEF-EC
		1.5kW	EMG-15ASB2□	PRONET-15AMA/PRONET-15AEA-EC
			EMG-15AFB2□	PRONET-15AMF/PRONET-15AEF-EC
		2kW	EMG-20ASB2□	PRONET-20AMA/PRONET-20AEA-EC
			EMG-20AFB2□	PRONET-20AMF/PRONET-20AEF-EC
	3kW	EMG-30ASA2□	PRONET-30AMA/PRONET-30AEA-EC	
		EMG-30AFA2□	PRONET-30AMF	
	5kW	EMG-50ASA2□	PRONET-50AMA/PRONET-50AEA-EC	
		EMG-50AFA2□	PRONET-50AMF	
	Three-phase 400VAC	1kW	EMG-10DSB2□	PRONET-10DMA/PRONET-10DEA-EC
		1.5kW	EMG-15DSB2□	PRONET-15DMA/PRONET-15DEA-EC
		2kW	EMG-20DSB2□	PRONET-20DMA/PRONET-20DEA-EC
		3kW	EMG-30DSA2□	PRONET-30DMA/PRONET-30DEA-EC
EML 1000r/min	Three-phase 200VAC	1kW	EML-10ASB2□	PRONET-10AMA/PRONET-10AEA-EC
			EML-10AFB2□	PRONET-10AMF/PRONET-10AEF-EC
		2kW	EML-20ASA2□	PRONET-20AMA/PRONET-20AEA-EC
			EML-20AFA2□	PRONET-20AMF/PRONET-20AEF-EC
	3kW	EML-30ASA2□	PRONET-30AMA/PRONET-30AEA-EC	
		EML-30AFA2□	PRONET-30AMF	
	4kW	EML-40ASA2□	PRONET-50AMA/PRONET-50AEA-EC	
		EML-40AFA2□	PRONET-50AMF	
	Three-phase 400VAC	1kW	EML-10DSB2□	PRONET-10DMA/PRONET-10DEA-EC
		2kW	EML-20DSA2□	PRONET-20DMA/PRONET-20DEA-EC
3kW		EML-30DSA2□	PRONET-30DMA/PRONET-30DEA-EC	
4kW		EML-40DSA2□	PRONET-50DMA/PRONET-50DEA-EC	
EMB 1500r/min	Three-phase 400VAC	7.5kW	EMB-75DSA2□	PRONET-70DMA/PRONET-70DEA-EC
				PRONET-75DMA/PRONET-75DEA-EC
			EMB-75DRA2□	PRONET-70DMB PRONET-75DMB
		11kW	EMB-1ADSA2□	PRONET-1ADMA/PRONET-1ADEA-EC
			EMB-1ADRA2□	PRONET-1ADMB
		15kW	EMB-1EDSA2□	PRONET-1EDMA/PRONET-1EDEA-EC
	EMB-1EDRA2□		PRONET-1EDMB	
	22kW	EMB-2BDSA22	PRONET-2BDMA/PRONET-2BDEA-EC	
		EMB-2BDRA22	PRONET-2BDMB	

Servo Drive Specification

Specification Description

ProNet – 10 A E A – EC
 ProNet Servo Drive Rated Power Power Voltage Control Style Encoder Interface Function Module

Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.
A5	0.05kW	A	200VAC	M	Speed Control, Torque Control, Position Control	A	17 Bits Serial Encoder	None	CANOpen
01	0.1kW	D	400VAC					-EC	EtherCAT
02	0.2kW	B	100VAC						
04	0.4kW			E	Speed Control, Torque Control, Position Control (Support Extended Function)	F	20 Bits Serial Encoder		
08	0.75kW					B	Resolver		
10	1.0kW								
15	1.5kW								
20	2.0kW								
25	2.5kW								
30	3.0kW								
40	4.0kW								
50	5.0kW								
70	7.0kW								
75	7.5kW								
1A	11kW								
1E	15kW								
2B	22kW								

Notes: ProNet-04/10/20AEA-EUL have completed UL508C. File NO. is E365853



Ratings

Servo Drive Model	ProNet-	A5A	01A	02A	04A	08A	10A	10D	15A	15D	20A	20D	30A	30D	50A	50D	70D	75D	1AD	1ED	2BD
Applicable Servo Motors Model	EMJ-	A5A	01A	02A	04A	08A	10A	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EMG-	-	-	-	-	-	10A	10D	15A	15D	20A	20D	30A	30D	50A	50D	-	-	-	-	-
	EML-	-	-	-	-	-	10A	10D	-	-	20A	20D	30A	30D	40A	40D	-	-	-	-	-
	EMB-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75D	75D	1AD	1ED	2BD
Continuous Output Current(Arms)		1.0	1.1	1.4	2.8	4.0	6.0	3.2	9.0	5.0	12.0	6.4	18.0	9.0	28.0	15.0	18.0	18.0	28.0	38.0	55.0
Max. Output Current(Arms)		3.0	3.3	4.2	8.4	12.0	18.0	9.6	28.0	15.0	42.0	19.2	46.0	27.0	64.0	45.0	46.0	56.0	70.0	84.0	134.0
Main Input Power Supply Capacity(kVA)		0.2	0.3	0.5	0.9	1.3	1.8	1.8	2.5	2.8	3.5	3.5	4.5	5.0	7.5	8.2	12.0	12.0	18.0	22.0	32.0
DC24V Power Supply Capacity(W)		-	-	-	-	-	-	30.0	-	30.0	-	30.0	-	45.0	-	45.0	45.0	-	-	-	-

Specification

Items		Specification	
Input Power Supply	Main Circuit	100V Single-phase 100 to 120VAC 50/60Hz (0.2kW-0.75kW)	
		200V Single-phase 200 to 230VAC 50/60Hz (0.05kW-0.4kW) Three-phase 200 to 230VAC 50/60Hz (0.75kW-5.0kW)	
			400V Three-phase 380 to 440VAC 50/60Hz (1.0kW-22kW)
	Control Circuit	100V Single-phase 100 to 120VAC 50/60Hz (0.2kW-0.75kW)	
		200V Single-phase 200 to 230VAC 50/60Hz (0.05kW-5.0kW)	
		400V 24VDC (1.0kW-7.0kW) Single-phase 380 to 440VAC 50/60Hz (7.5kW-22kW)	
Control Method		SVPWM Control	
Feedback		Serial Encoder: 131072P/R /1048576P/R Resolver	
Operating Conditions	Ambient / Storage Temperature		Ambient Temperature: 0 to +55°C, Storage Temperature: -25 to +85°C
	Ambient / Storage Humidity		5%~95% (no condensation)
	Elevation		1000m or less
	Vibration / Impact Resistance		Vibration Resistance: 4.9m/s ² , Impact Resistance: 19.6m/s ²
Configuration		Base-mounted	
Performance	Speed Control Range		1:5000
	Speed Regulation	Load Regulation	0 to 100% load: ±0.01% max. (at rated speed)
		Voltage Regulation	Rated voltage, ±10%: 0% (at rated speed)
		Temperature Regulation	25±25°C: ±0.1% max. (at rated speed)
Torque Control	Analog Input	Reference Voltage	±10VDC at rated torque (variable setting range: ±0 to 10VDC) Max. input voltage: ±12V
		Input Impedance	About 10MΩ min.
		Circuit Time Constant	10μs

Items		Specification	
Speed Control	Analog Input	Reference Voltage	±10VDC at rated torque (variable setting range: ±0 to 10VDC) Max. input voltage: ±12V
		Input Impedance	About 10MΩ min.
		Circuit Time Constant	10μs
	Set Speed Reference	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
	Set Position Reference	Frequency	x1 multiplier: 4Mpps x2 multiplier: 2Mpps x4 multiplier: 1Mpps Open collector: 200kpps Frequencies drop when the duties have errors
		Position Setting	Can set 16 position reference
I/O Signals	Encoder Output Pulse		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		Servo alarm (ALM) 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)	
Others	Regenerative Processing Functions		0.75kW to 7.5kW: built-in regenerative resistor; 11kW to 22kW: External regenerative resistor
	Protective Functions		Overcurrent, overvoltage, low voltage, overload, regeneration error, overspeed, etc.
	Utility Functions		Alarm trace back, JOG operation, Inertia detections, etc.
	Display Functions		CHARGE (red), POWER (green), 7-segment LEDx5 (Built-in digital operator function)
	Communications		RS-485 communication port, MODBUS protocol ; CAN communication port, CANopen protocol; EtherCAT communication module, CiA402 protocol;

Communication

EtherCAT



- Integrated EtherCAT Module
- High communication speed
- Precise multiple axis synchronous control
- Revolution of traditional field bus control

Items	Specifications
Communication standard	IEC 61158 Type12, IEC 61800-7 CiA402 Drive Profile
Physical layer	100BASE-TX (IEEE802.3)
Bus connection	CN4 (RJ45): EtherCAT Signal IN CN5 (RJ45): EtherCAT Signal OUT
Cable	Class-5 twisted pair cable
Communication distance	Node space: within 100 meters
SyncManager	SM0: output mailbox, SM1: input mailbox SM2: output process data, SM3: input process data
FMMU	FMMU0: mapping to process data (RxPDO) Receiving area FMMU1: mapping to process data (TxPDO) Transmitting area FMMU2: mapping to mailbox status
EtherCAT Commands (Data Link Layer)	APRD, FPRD, BRD, LRD, APWR, FPWR, BWR, LWR, ARMW, FRMW Note: APRW, FPRW, BRW, LRW Commands are not supported
PDO data	Dynamic PDO mapping
Mailbox (CoE)	Emergency event, SDO request, response, SDO information Note: do not support TxPDO/RxPDO and remote TxPDO/RxPDO
Differential clock (DC)	Free-run, DC mode (set active in configuration) Supported DC period: 250us - 8ms
SII	256 bytes (read - only)
LED Indicator	EtherCAT System indicator (SYS) x1 EtherCAT Run indicator (RUN) x1 EtherCAT Error indicator (ERR) x1
CiA402 Drive Profile	Homing mode, Profile position mode, Interpolated position mode Profile velocity mode, Cyclic synchronous position mode

CANopen



Standard CAN bus interfaces are available in ProNet series servo drives, which makes it easy to get integrated into a distributed control system.

Items	Specifications
Communication standard	CiA-DS301 CiA402 Drive Profile
Physical layer	ISO 11898-2 CiA 303-1
Bus connection	CN3 (RJ45): Signal IN CN4 (RJ45): Signal OUT
Cable	Twisted pair cable
Baud rate	50Kbps, 100Kbps, 125Kbps, 250Kbps, 500Kbps, 1Mbps
COB	SDO, PDO, SYNC, EMCY, NMT, Heartbeat
Communication mode	Homing mode, speed control mode, position control mode, position interpolation mode
PDO data	Dynamic PDO mapping, 2 sending PDO, 2 receiving PDO

Modbus

Modbus

ProNet series servo drives provide the Modbus communication function with RS-485 interface, which can be used to easily set parameters or to perform monitoring operations and so on.

Items	Specifications
Communication standard	Modbus
Physical layer	RS-485 transmission
Bus connection	CN3 (RJ45): Signal IN CN4 (RJ45): Signal OUT
Cable	Twisted pair cable
Baud rate	4800bps, 9600bps, 19200bps
Communication Mode	ASCII, RTU

Servo Motor Specification

EMJ Model

Features

- Medium inertia
- Peak torque up to 300% of rated torque
- Various models (0.05kW~1.0kW, with brake, etc.)
- Mounted with 17/20bits serial encoder

Application

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



Specification Description

EMJ - 08 A F B 2 4 - TP

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.		
A5	0.05kW	A	200VAC	F	20 bit Incremental Encoder 1048576P/R	A, B, H	Designing Sequence	2	Flat, With Keys, With Screw Thread	2	With Oil Seal	None	7 Pin Connector
01	0.1kW	B	100VAC							4	With Oil Seal, With Brake (DC24V)	-TP	10 Pin Connector
02	0.2kW			S	17 bit Absolute Encoder: 131072P/R								
04	0.4kW												
08	0.75kW												
10	1.0kW												

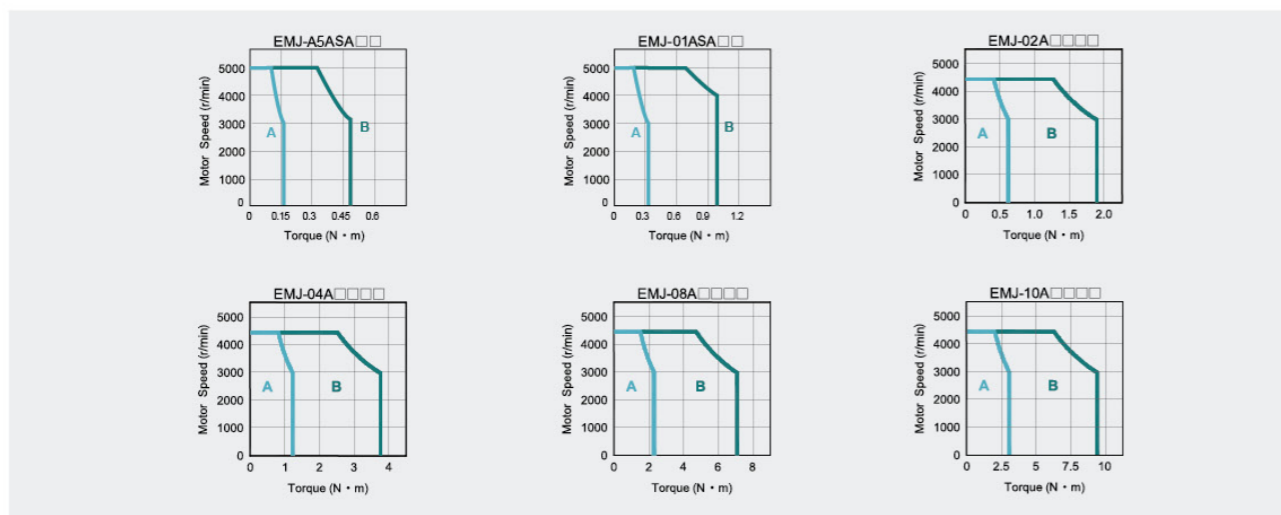
Notes: EMJ-04/08/10A□□□□-UL have completed UL1004-6. File NO. IS E365853.

Rated Value and Specification

Voltage		100VAC/200VAC						
Servo Motor Model	EMJ-	A5ASA□□	01ASA□□	02ASA□□ 02AFA□□-TP	04ASA□□ 04AFB□□-TP	04A□H□□ 04AFH□□-TP	08ASB□□ 08AFB□□-TP	10ASB 10AFB□□-TP
Rated Output Power	kW	0.05	0.1	0.2	0.4		0.75	1.0
Rated Torque	N·m	0.16	0.32	0.64	1.27		2.39	3.18
Instantaneous Peak Torque	N·m	0.48	0.96	1.91	3.82		7.16	9.55
Rated Current	Arms	0.6	1.1	1.4	2.8		4.0	5.3
Instantaneous Max Current	Arms	1.7	3.0	4.2	8.4		12.0	15.9
Rated Speed	r/min	3000						
Max. Speed	r/min	5000			4500			
Rotor Moment of Inertia	$\times 10^{-4} \text{kg}\cdot\text{m}^2$	0.019 (0.05)	0.035 (0.052)	0.19 (0.23)	0.31 (0.35)	0.7 (0.74)	1.35 (1.47)	1.74 (1.87)
Brake Rated Voltage		DC24V±10%						
Brake Rated Power	W	6.096			7.2		11.5	
Brake Holding Torque	N·m	0.3			1.3		3.2	
Encoder		17 bit Absolute Encoder 131072 P/R		20 bit Incremental Encoder 1048576P/R 17 bit Absolute Encoder 131072 P/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

EMG Model

Features

- Be used to drive the feed shaft of various machinery
- Various models (1.0kW~5.0kW, with brake, etc.)
- Mounted with 17/20bits serial encoder
- Standard configuration is IP65

Application

- Machine tools
- Handling machinery
- Food processing machinery
- Textile machinery



Specification Description

EMG-10	A	F	B	2	4
EMG Model Servo Motor	Rated Output Power	Power Voltage	Encoder	Designing Sequence	Shaft End Option Parts

Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.	
10	1.0kW	A	200VAC	F	20 bit Incremental : Encoder 1048576P/R	A,B Designing Sequence	2	Flat, With Keys With Screw Thread	2	With Oil Seal
15	1.5kW	D	400VAC	S	17 bit Absolute Encoder: 131072P/R			4	With Oil Seal, With Brake (DC24V)	
20	2.0kW									
30	3.0kW									
50	5.0kW									

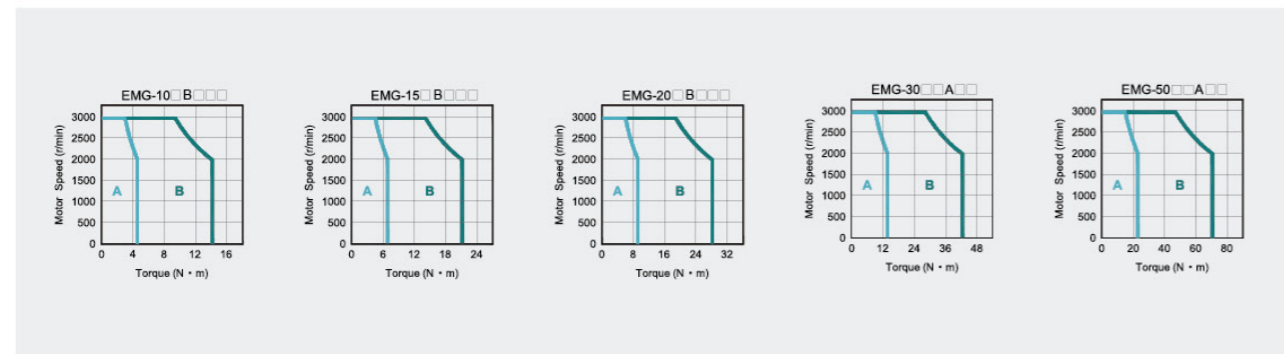
Notes: EMG-10/15/20A□□□□-UL have completed UL1004-6. File NO. is E365853.

Rated Value and Specification

Voltage		200VAC / 400VAC									
Servo Motor Model	EMG-	10A□B□□	10D□B□□	15A□B□□	15D□B□□	20A□B□□	20D□B□□	30A□A□□	30D□A□□	50A□A□□	50D□A□□
Rated Output Power	KW	1.0	1.0	1.5	1.5	2.0	2.0	3.0	3.0	5.0	5.0
Rated Torque	N·m	4.78	4.78	7.16	7.16	9.55	9.55	14.3	14.3	23.9	23.9
Instantaneous Peak Torque	N·m	14.3	14.3	21.5	21.5	28.7	28.7	43.0	43.0	71.6	71.6
Rated Current	Arms	5.8	3.0	8.2	4.3	11.3	5.7	18.0	8.8	28.0	15.0
Instantaneous Max. Current	Arms	17.4	9.0	24.6	12.9	33.9	17.1	54.0	26.4	84.0	45.0
Rated Speed	r/min	2000									
Max. Speed	r/min	3000									
Rotor Moment of Inertia	×10 ⁻⁴ kg·m ²	13.2(14.3)		18.4(19.5)		23.5(24.6)		41.3 (44.5)		65.7 (68.9)	
Brake Rated Voltage		DC24V±10%									
Brake Rated Power	W	19.5						35			
Brake Holding Torque	N·m	12						40			
Encoder		20 bit Incremental Encoder 1048576P/R 17 bit Absolute Encoder 131072 P/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 Model

Features

- Be used to drive the feed shaft of various machinery
- Various models (1.0kW~4.0kW, with brake, etc.)
- Mounted with 17/20bits serial encoder
- Standard configuration is IP65

Application

- Machine tools
- Handling machinery
- Food processing machinery
- Textile machinery



Specification Description

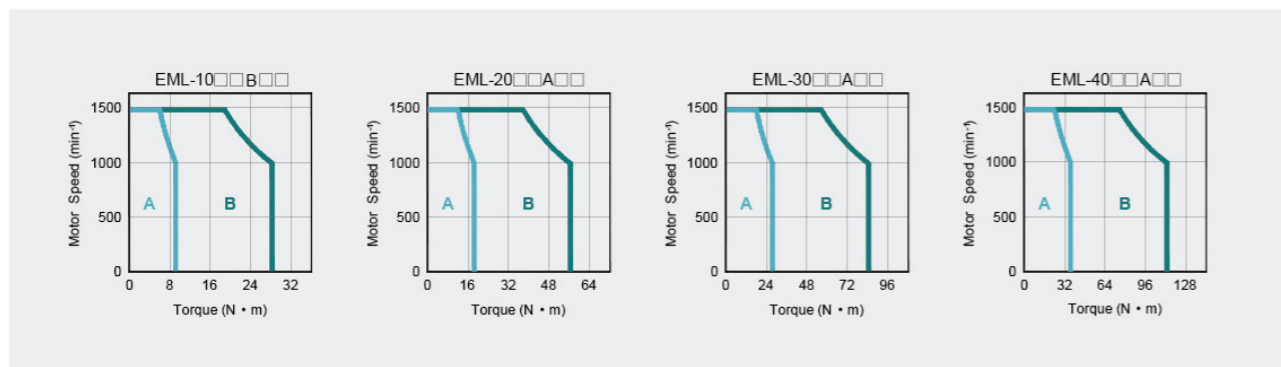
EML-10		A		F		B		2		4	
EML Model Servo Motor		Rated Output Power		Power Voltage		Encoder		Designing Sequence		Shaft End	
Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.
10	1.0kW	A	200VAC	F	20 bit Incremental : Encoder 1048576P/R	A,B	Designing Sequence	2	Flat, With Keys With Screw Thread	2	With Oil Seal
20	2.0kW	D	400VAC	S	17 bit Absolute Encoder: 131072P/R					4	With Oil Seal, With Brake (DC24V)
30	3.0kW										
40	4.0kW										

Rated Value and Specification

Voltage		200VAC / 400VAC							
Servo Motor Model	EML-	10A□B□□	10D□B□□	20A□A□□	20D□A□□	30A□A□□	30D□A□□	40A□A□□	40D□A□□
Rated Output Power	kW	1.0		2.0		3.0		4.0	
Rated Torque	N.m	9.55		19.1		28.7		38.2	
Instantaneous Peak Torque	N.m	28.7		57.3		86.0		114.6	
Rated Current	Arms	5.5	2.8	12.0	6.2	18.0	9.0	24.0	12.2
Instantaneous Max. Current	Arms	16.5	8.4	36.0	18.6	54.0	27.0	72.0	36.6
Rated Speed	r/min	1000							
Max. Speed	r/min	1500							
Rotor Moment of Inertia	$\times 10^4 \text{kg}\cdot\text{m}^2$	23.5(24.6)		53.5 (56.7)		77.8 (81.0)		102.2 (105.4)	
Brake Rated Voltage		DC24V \pm 10%							
Brake Rated Power	W	19.5				35			
Brake Holding Torque	N.m	12				40			
Encoder		20 bit Incremental Encoder 1048576P/R 17 bit Absolute Encoder 131072 P/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

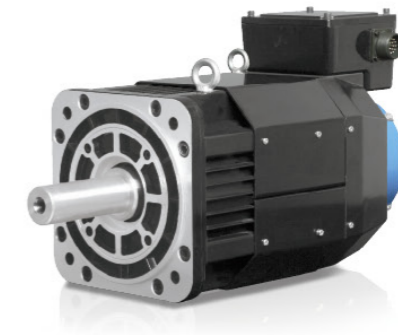
EMB Model

Features

- Power supply voltage: 400V
- Driving of feed shafts for various machinery
- Various models (7.5kW~22kW, with brake, etc.)
- Mounted with 17 bits absolute encoder, resolver is optional
- Temperature sensor

Application

- Machine tools
- Handling machinery
- Food processing machinery
- Textile machinery



Specification Description

EMB-1 E D S A 2 4

EMB Model Servo Motor Rated Output Power Power Voltage Encoder Designing Sequence Shaft End Option Parts

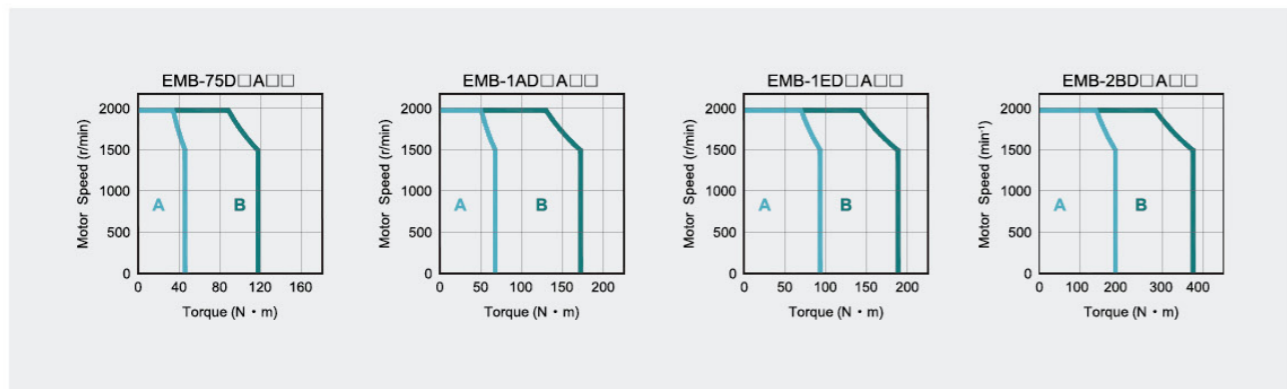
Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.	Sign	Spec.
75	7.5kW	D	400VAC	S	17 bit Absolute Encoder: 131072P/R	A	Designing Sequence	2	Flat, With Keys With Screw Thread
1A	11.0kW			R	Resolver			4	With Oil Seal, With Brake (DC24V)
1E	15.0kW								
2B	22.0kW								

Rated Value and Specification

Voltage		400VAC			
Servo Motor Model	EMB-	75D□A□□	1AD□A□□	1ED□A□□	2BD□A□□
Rated Output Power	kW	7.5	11.0	15.0	22.0
Rated Torque	N·m	47.8	70.0	95.5	140.0
Instantaneous Peak Torque	N·m	143.4	175	191	350
Rated Current	Arms	18.0	28.0	38.0	52.0
Instantaneous Max. Current	Arms	56.0	70.0	84.0	130
Rated Speed	r/min	1500			
Max. Speed	r/min	2000			
Rotor Moment of Inertia	$\times 10^{-4} \text{kg} \cdot \text{m}^2$	186.2 (193.6)	271.6 (278.9)	338.8 (346.1)	576.62
Brake Rated Voltage		DC24V±10%			
Brake Rated Power	W	90			
Brake Holding Torque	N·m	100			
Encoder		Absolute Encoder: 131072P/R Resolver			
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, Forced-air Cooling, IP44 (Except for shaft opening, when not equipped with oil seal.) IP20 for cooling fan			

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

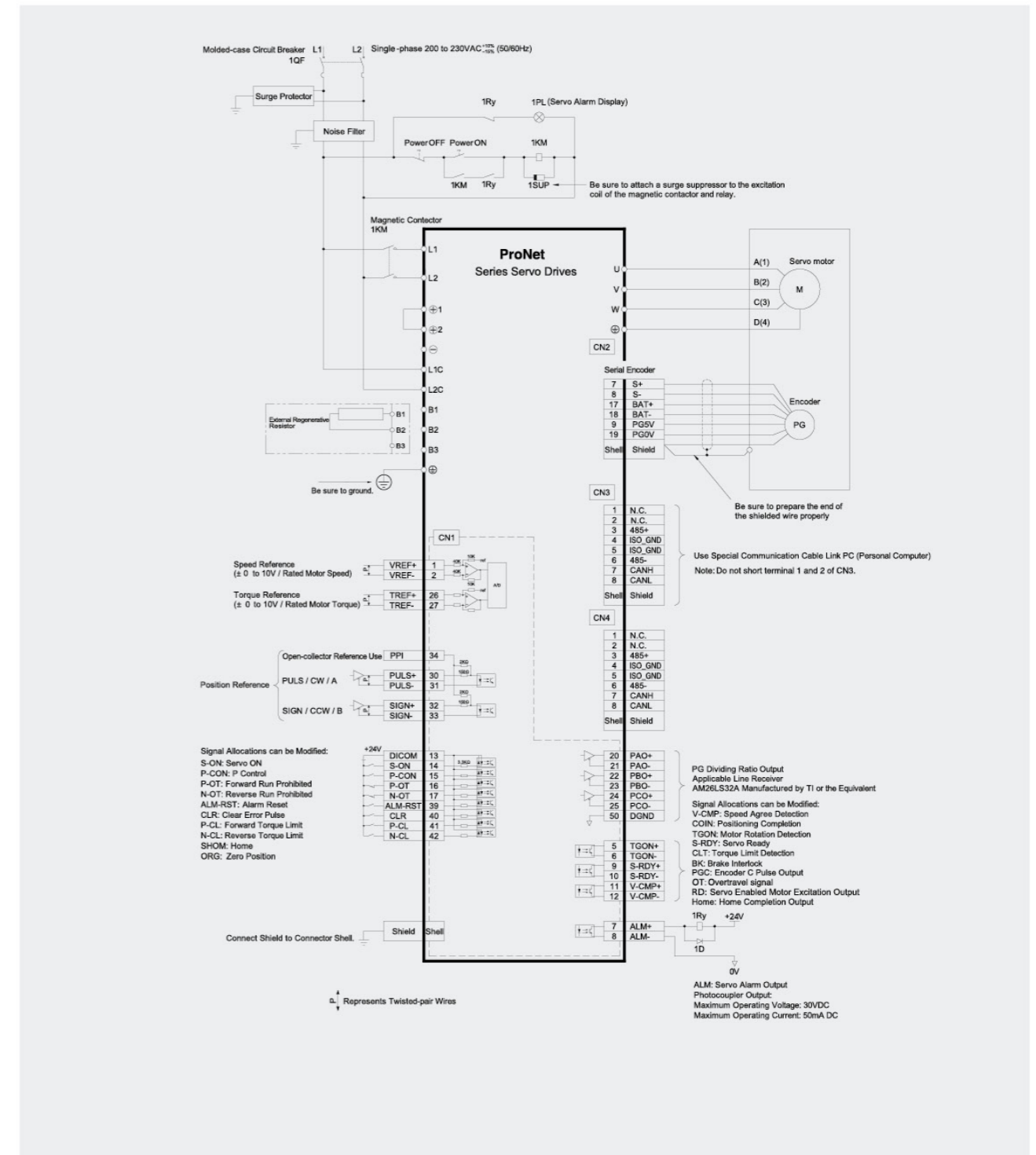
Torque-Speed Feature



A: Continuous Working Area B: Repeatedly Working Area

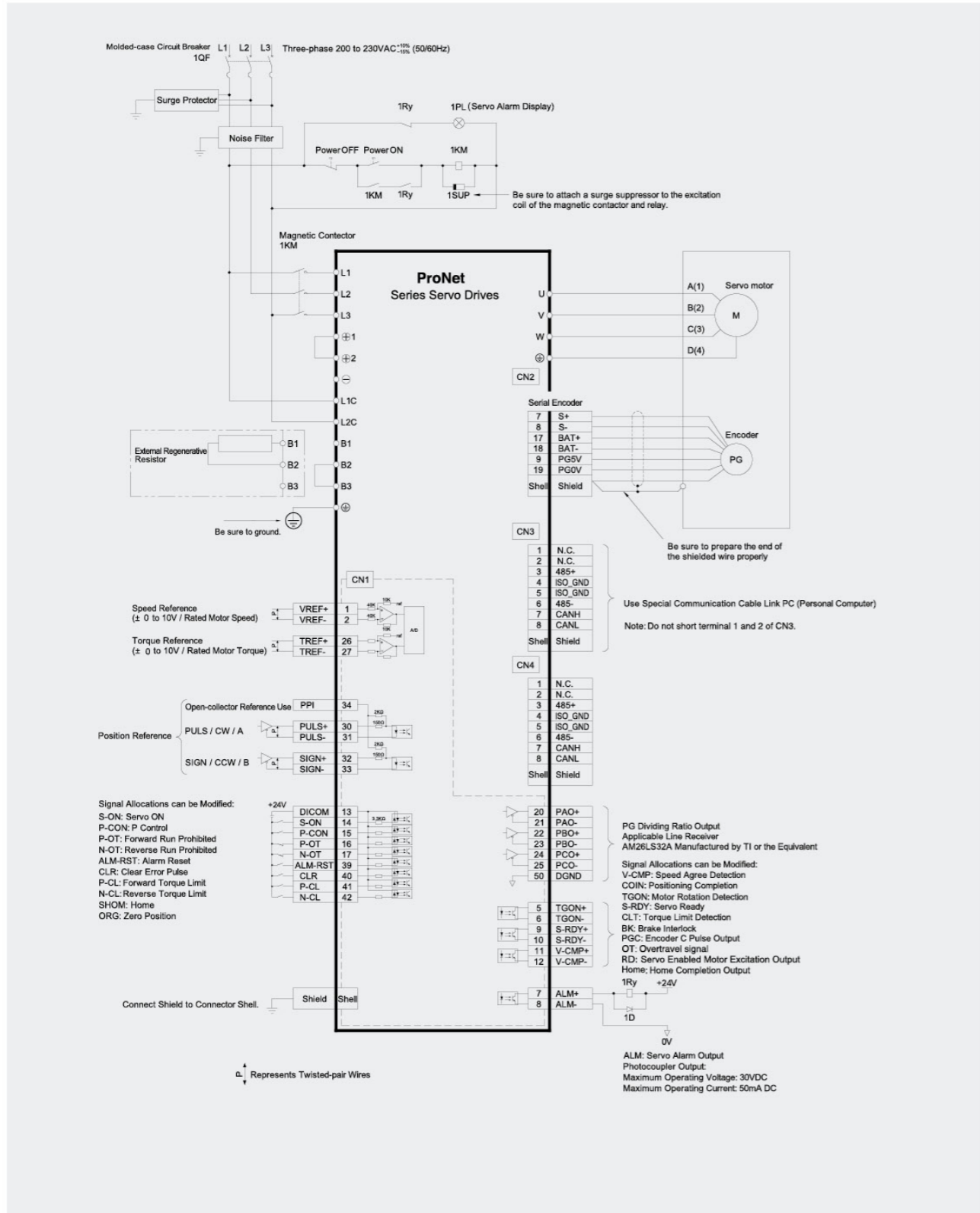
Connection

Single-phase 200VAC (ProNet-A5AM to ProNet-04AM)

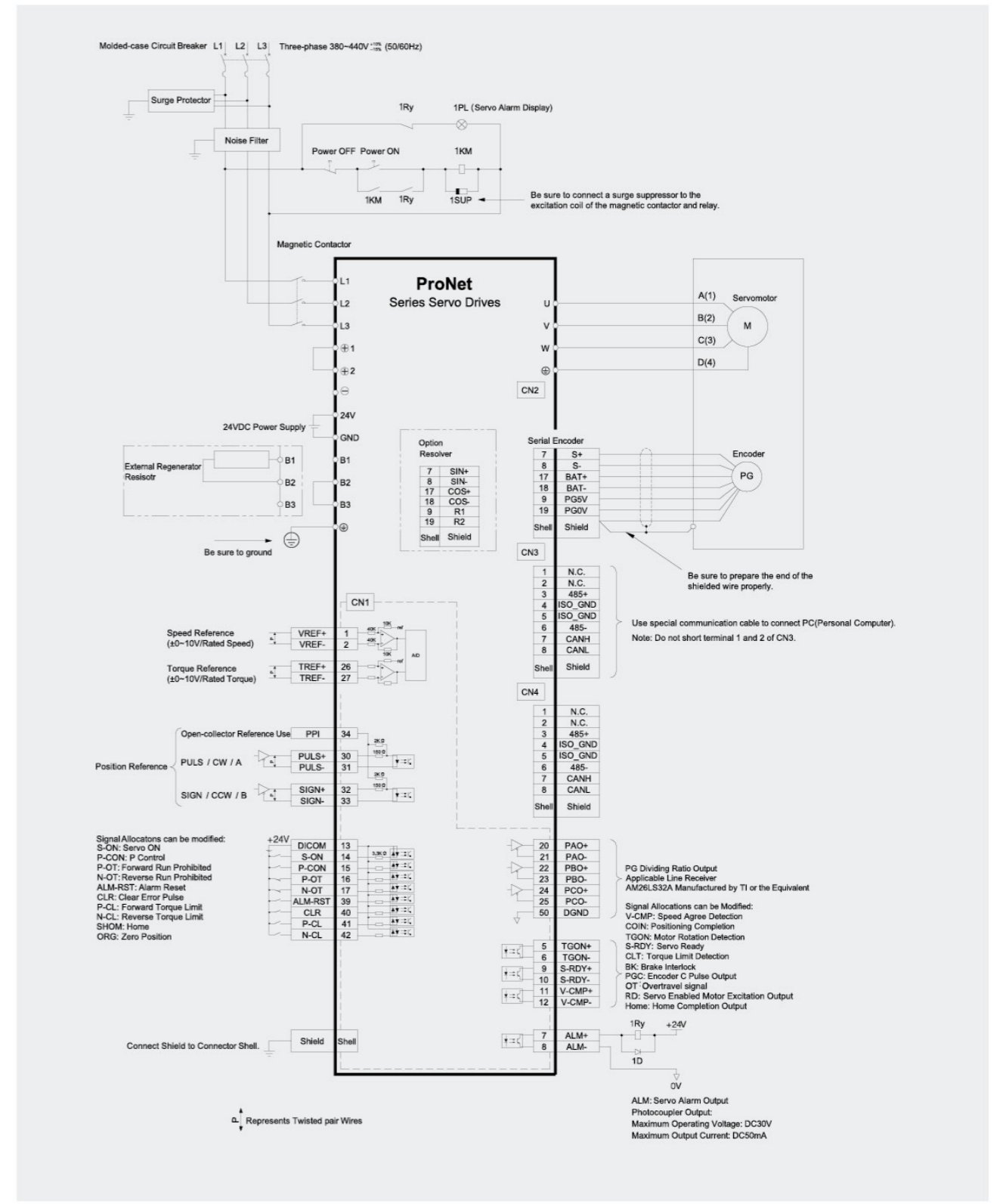


Notes: ① External regenerative resistor is provided by customer, the model of ASQ60W50ΩKGO resistor is recommended.
② Change Pn521 from "1" to "0" when using the external regenerative resistor.

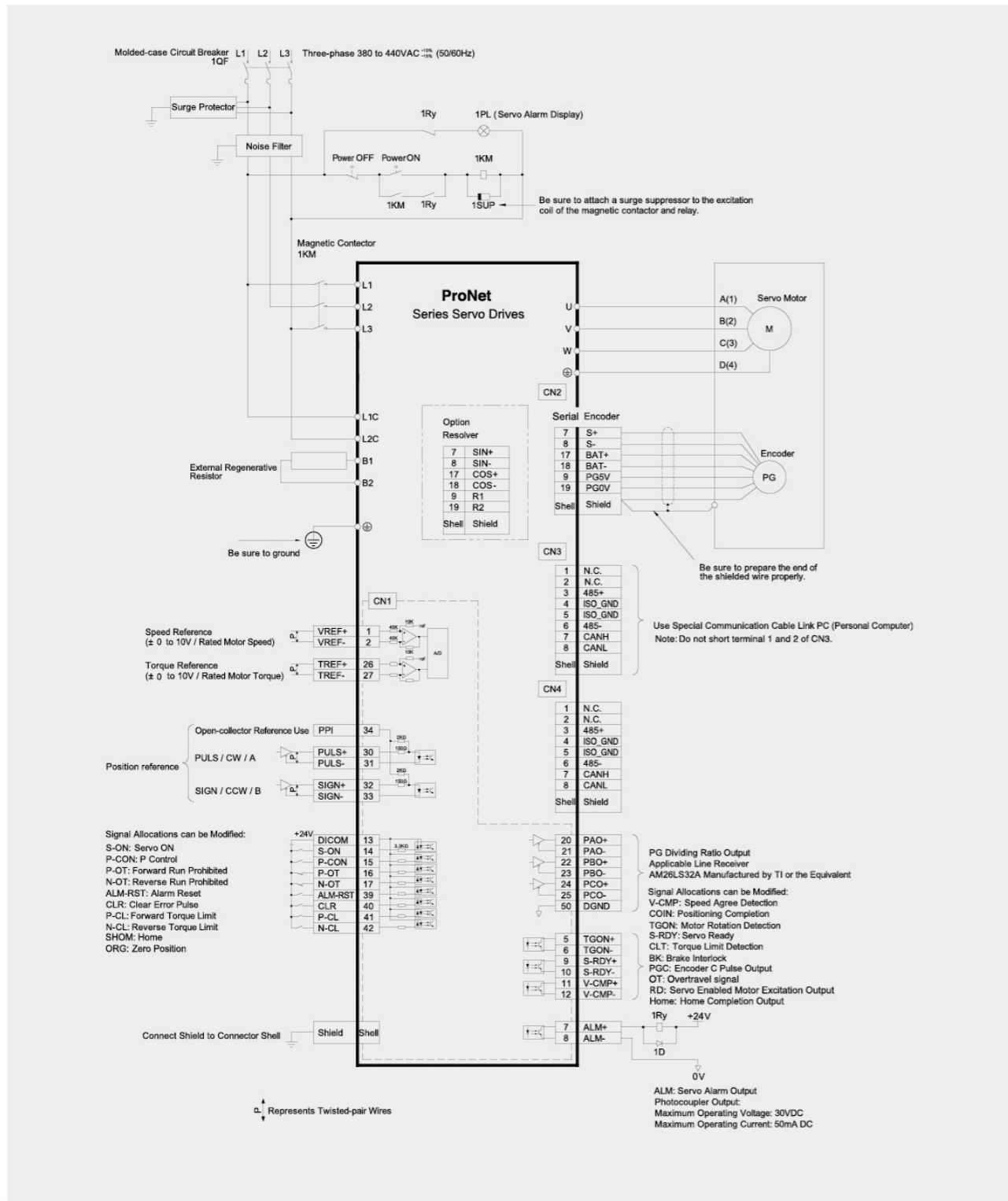
Three-phase 200VAC (ProNet-08AM to 50AM)



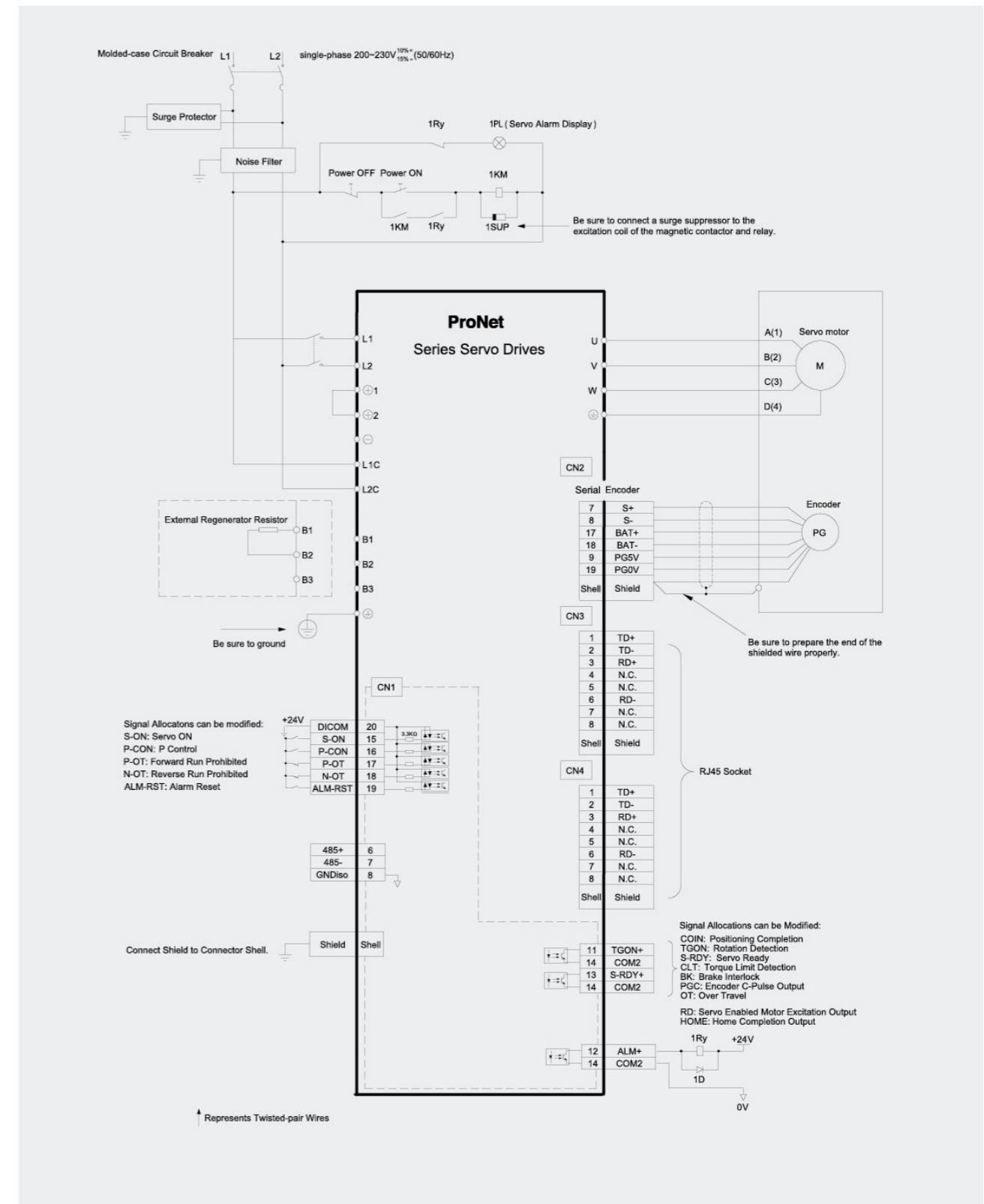
Three-phase 400VAC (ProNet-10DM to ProNet-70DM)



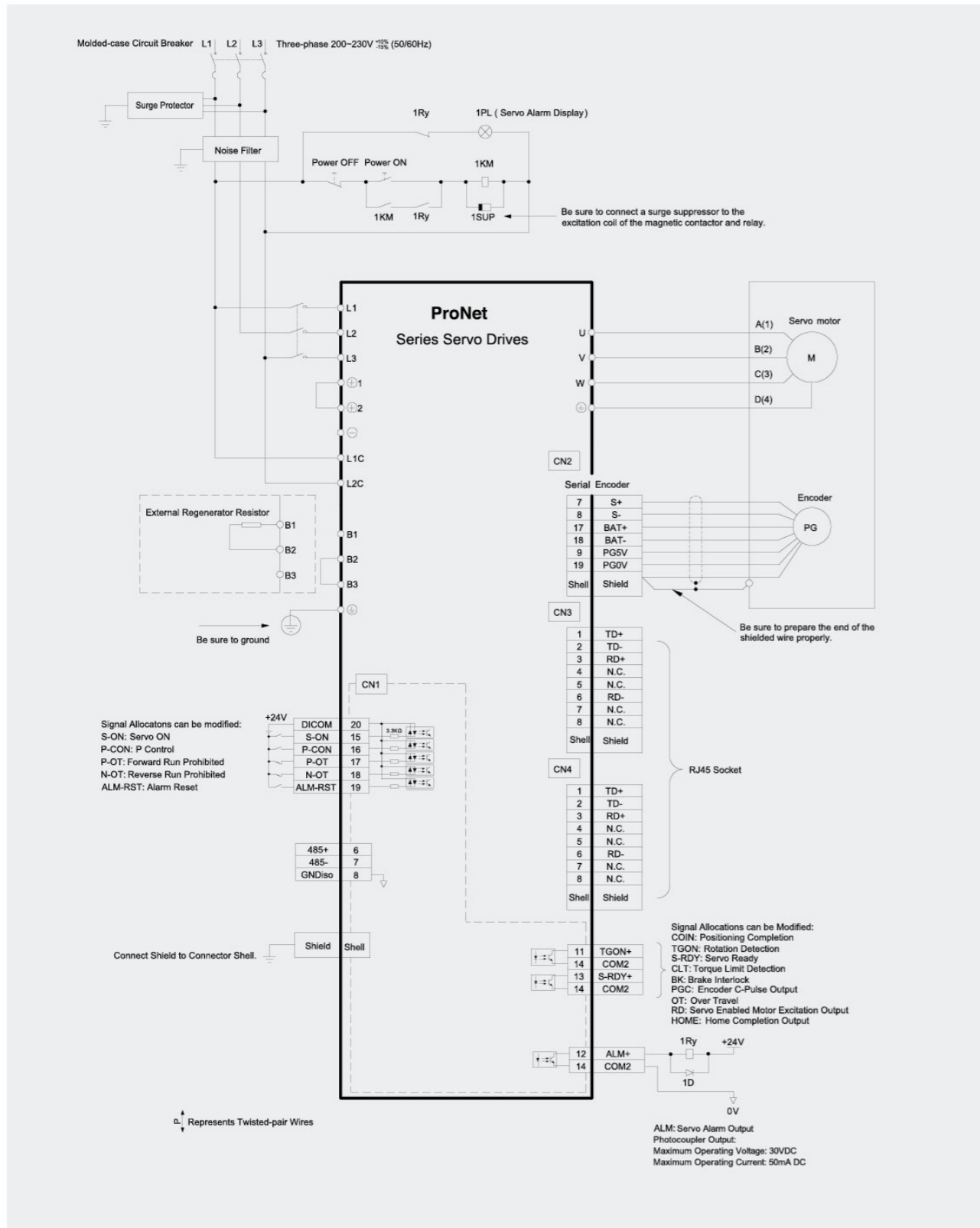
Three-phase 400VAC (ProNet-75DM to 2BDM)



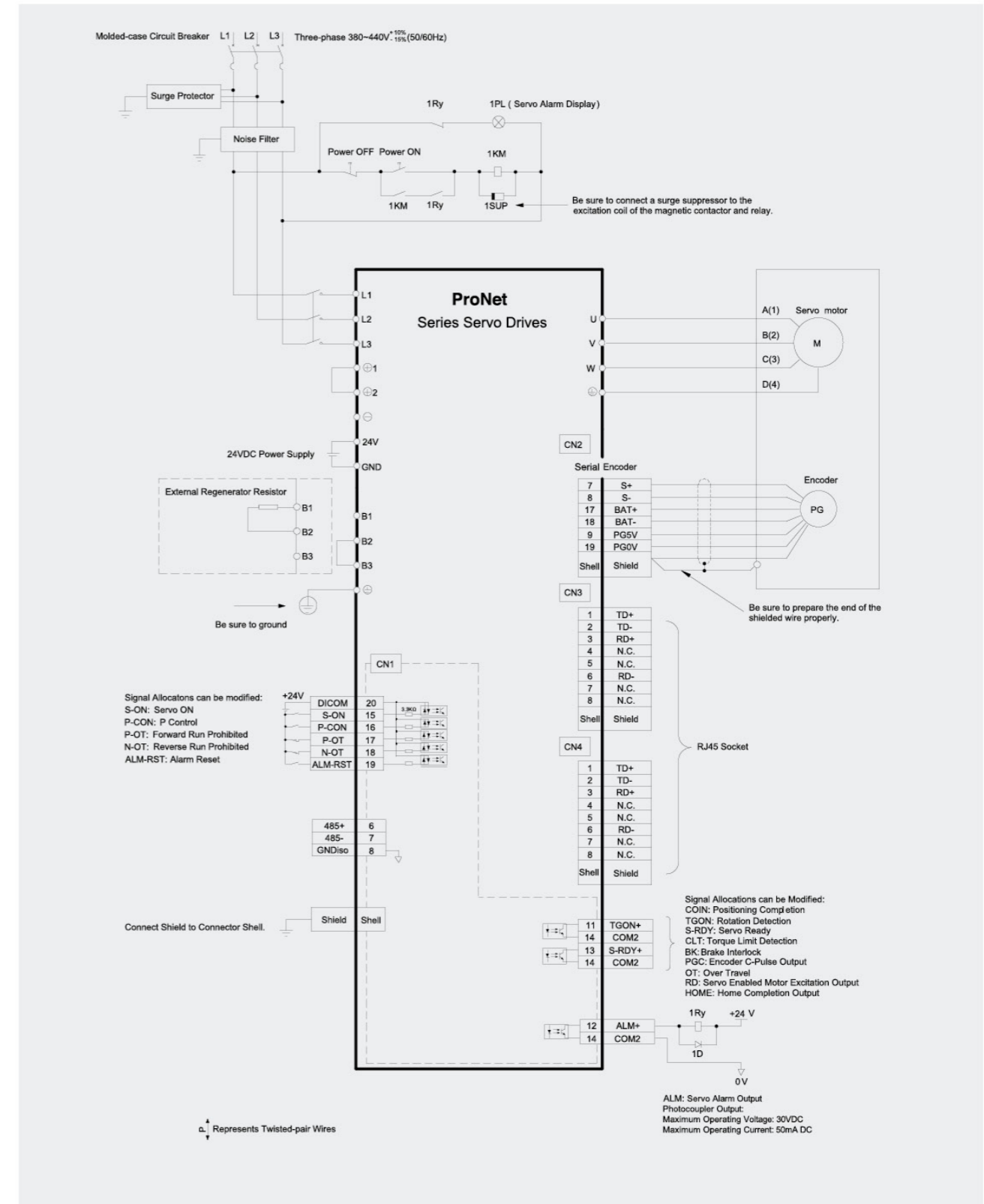
Single-phase 200VAC (ProNet-A5AE□-EC to ProNet-04AE□-EC)



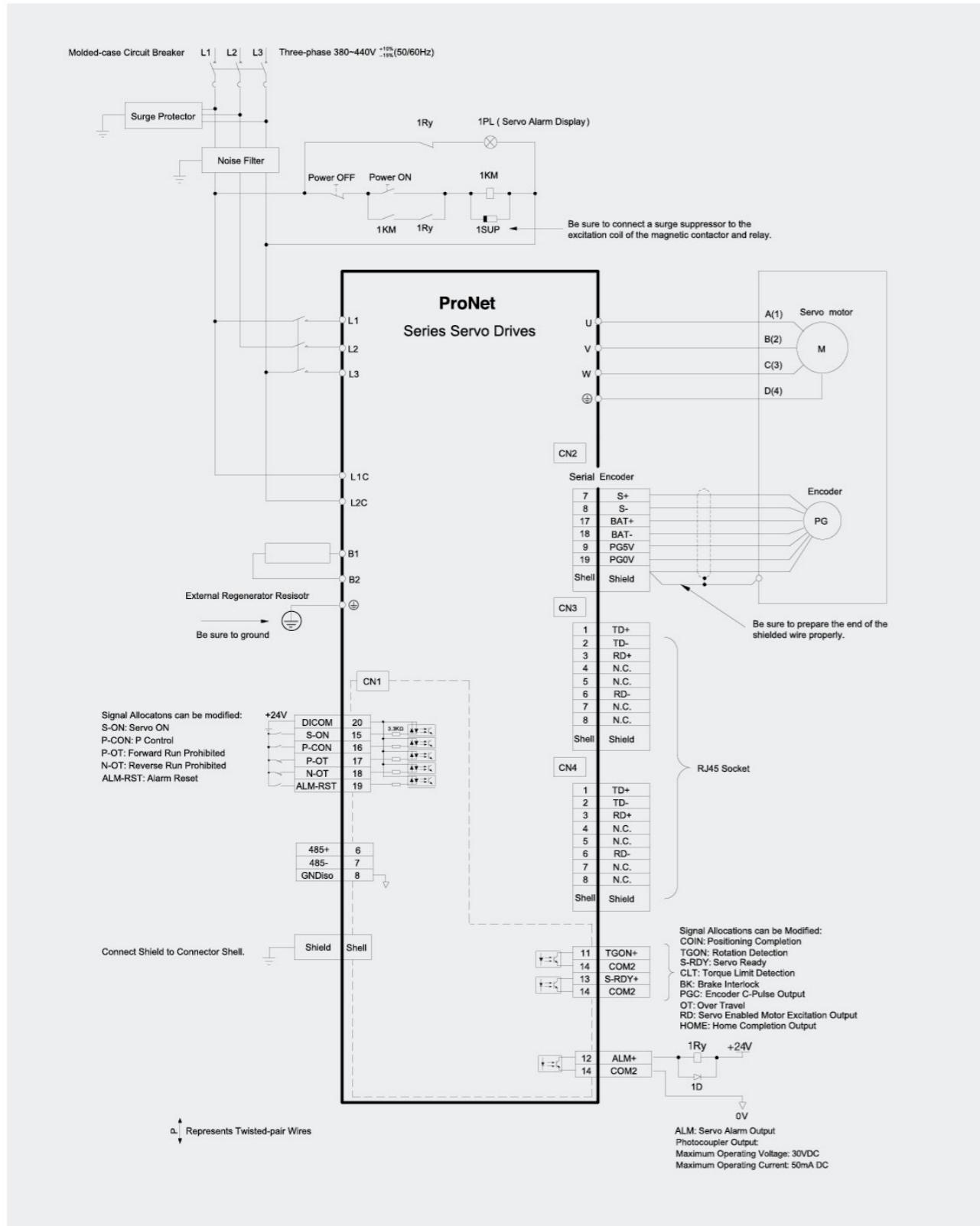
Three-phase 200VAC (ProNet-08AE□-EC to ProNet-50AE□-EC)



Three-phase 400VAC (ProNet-10DE□-EC to ProNet-70DE□-EC)



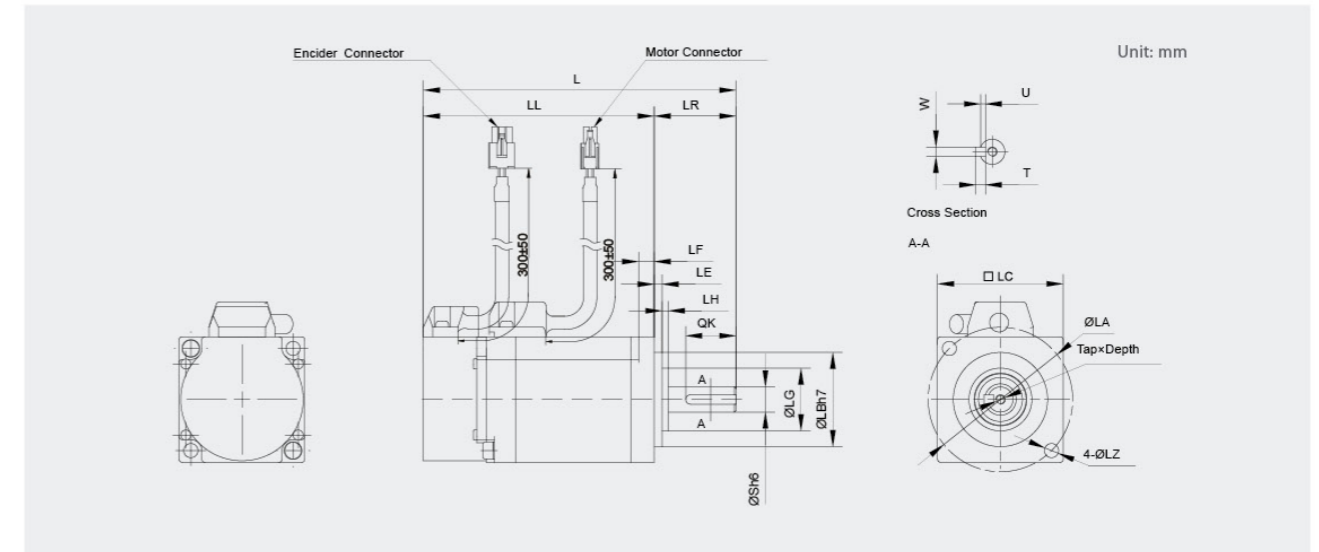
Three-phase 400VAC (ProNet-75DEA-EC to ProNet-2BDEA-EC)



Dimension

Servo Drive

EMJ Dimension



Model EMJ-	L	LL	Dimension									S	Tap×Depth	Key			
			LR	LH	LG	LE	LF	LC	LA	LB	LZ			QK	W	T	U
A5ASA	84.5(120.1)	59.5(95.1)	25	2	20	2.5	5	40	46	30	4.5	8	M3×10L	16	3	3	1.8
01ASA	98.5(134.1)	73.5(109.1)	25	2	20	2.5	5	40	46	30	4.5	8	M3×10L	16	3	3	1.8

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

Motor Connector Specification for EMJ-A5/01ASA

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



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



Brake Connector Specification for EMJ-A5/01ASA

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

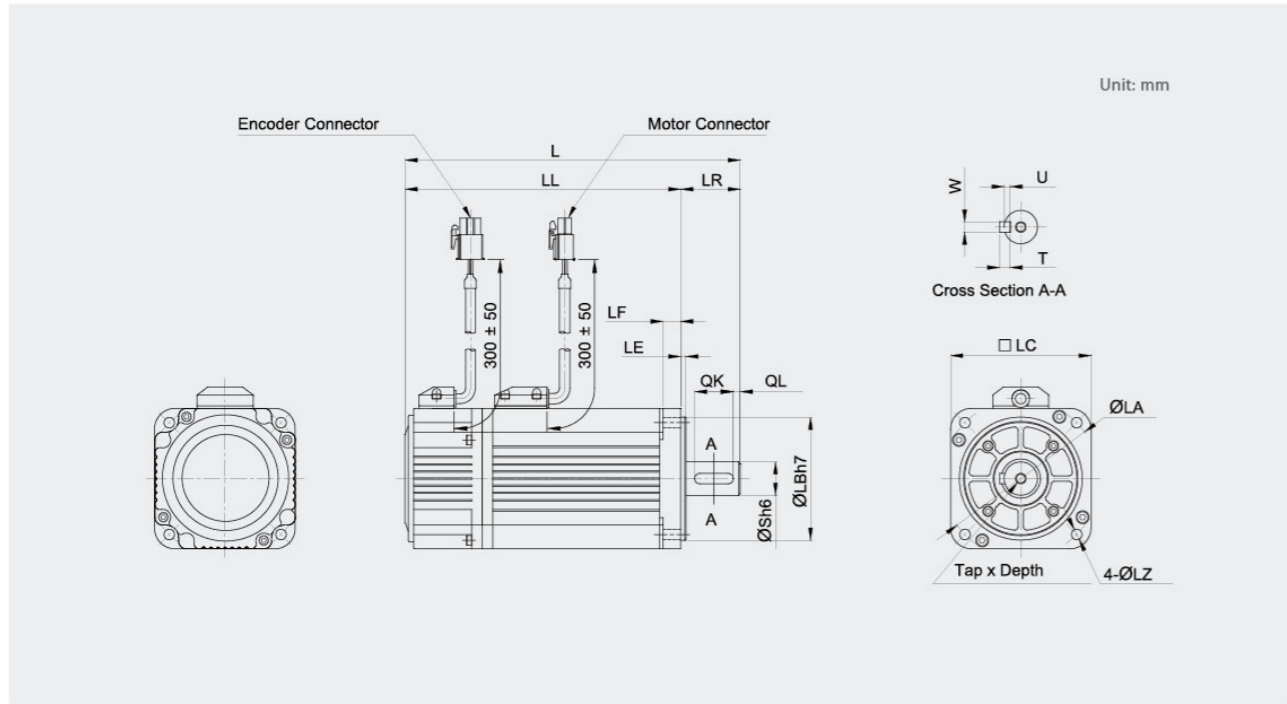
Pin No.	Signal
1	U
2	V
3	W
4	FG
5	BK
6	BK

Encoder Connector Specification for EMJ-A5/01ASA

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



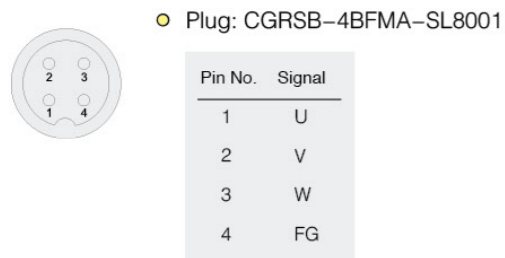
Pin No.	Signal	Pin No.	Signal
1	S+	6	PG5V
2	S-	7	PG0V
3	BAT+	8	BAT-
4	-	9	FG
5	-		



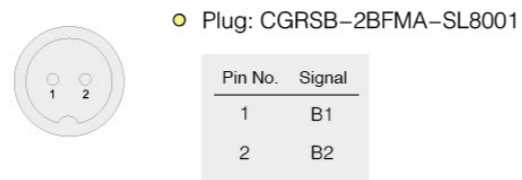
Model EMJ-	L	LL	Dimension							S	Tap x Depth	Key				
			LR	LE	LF	LC	LA	LB	LZ			QK	QL	W	T	U
02ASA	154(194)	124(164)	30	3	6	60	70	50	5.5	14	M5x10L	16	5	5	3	
02AFA	142(182)	112(152)														
04AFB	161(201)	131(171)														
04ASA	174(214)	144(184)														
04AFH	172(212)	142(182)														
04ASH	182(222)	152(192)	35	9	80	90	70	7	19	M6x15L	22	6	6	3.5		
08AFB	173(216)	138(181)														
08ASB	186(229)	151(194)														
10AFB	191(234)	156(199)														
10ASB	204(247)	169(212)														

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

Motor Connector Specification for EMJ-02/04/08/10AS/F



Brake Connector Specification for EMJ-02/04/08/10AS



Encoder Connector Specification for EMJ-02/04/08/10AS

- Plug: CGRSD-7BFMA-SL8001

Absolute Encoder

Pin No.	Signal
1	S+
2	S-
★3	BAT+
★4	BAT-
5	PG5V
6	PG0V
7	FG

★ Note : There are no BAT+, BAT- signal in single-turn absolute encoder.

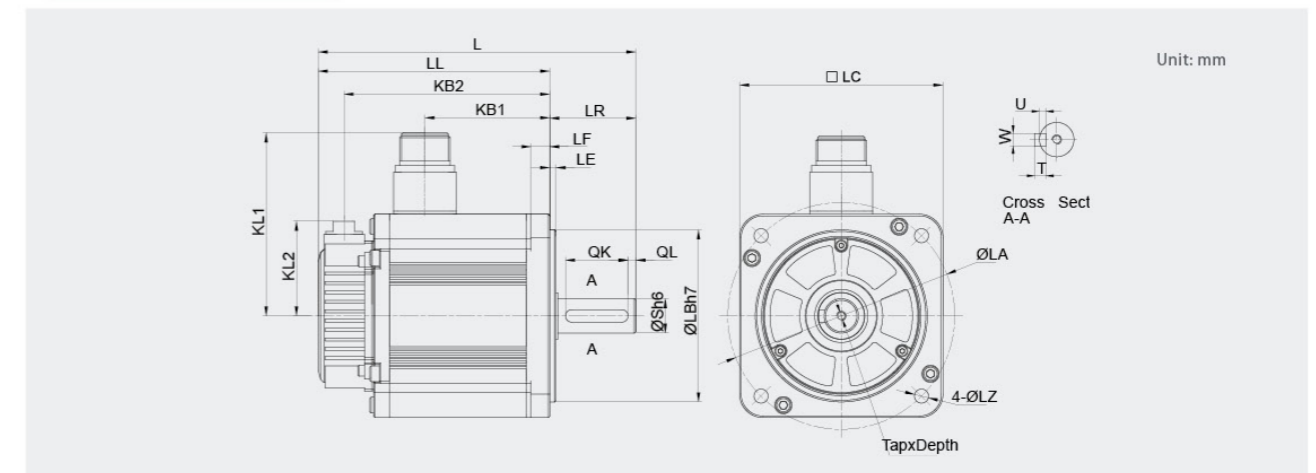
Encoder Connector Specification for EMJ-02/04/08/10AF□□□-TP

- Plug: 220103311-01 (CHOGORI)

Incremental Encoder

Pin No.	Signal
1	S+
2	FG
3	-
4	-
5	FG
6	PG5V
7	PG0V
8	FG
9	S-
10	-

EMG Dimension

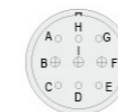


Model EMG-	L	LL	KB1	KB2	KL1	KL2	Dimension							S	Tap x Depth	Key				
							LR	LE	LF	LC	LA	LB	LZ			QK	QL	W	T	U
10□□B	203(245.5)	148(190.5)	80(103.2)	131.5(174)	117	60.5	55	4	12	130	145	110	9	22	M6x20L	40	5	8	7	4
15□□B	225(267.5)	170(212.5)	102(125.2)	153.5(196)	117	60.5	55	4	12	130	145	110	9	22	M6x20L	40	5	8	7	4
20□□B	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 dimension 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.

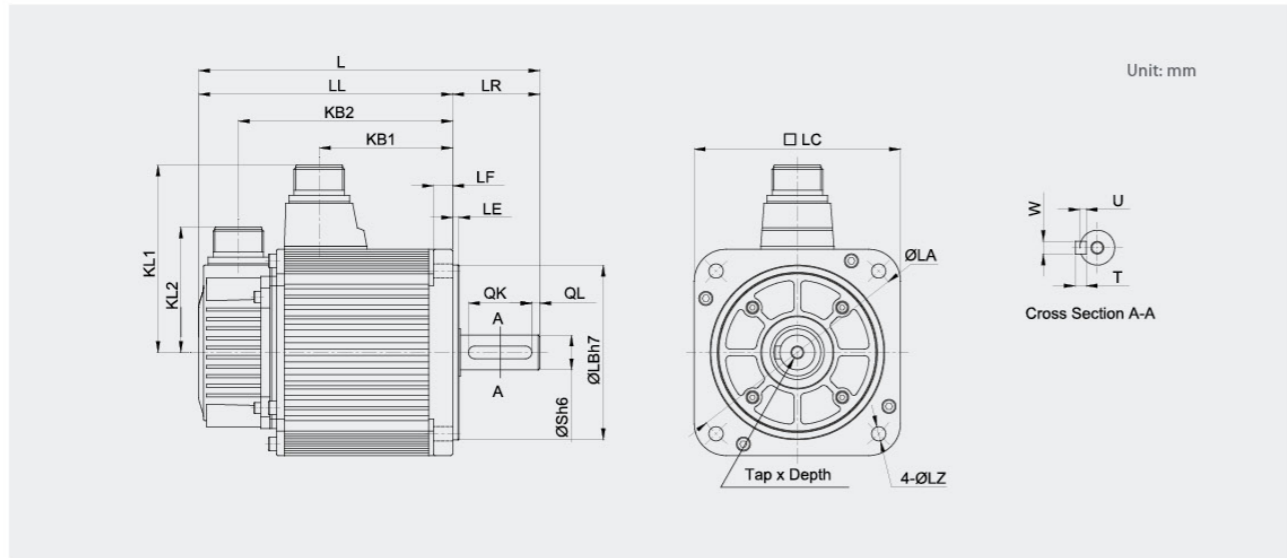
Encoder Connector Specification

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



Pin No.	Signal
1	S+
2	S-
★3	BAT+
★4	BAT-
7	PG0V
8	PG5V
10	FG

★ Note : There are no BAT+, BAT- signal in incremental /single-turn absolute encoder.



Model EMG-	L	LL	KB1	KB2	KL1	KL2	Dimension						S	Tap x Depth	Key					
							LR	LE	LF	LC	LA	LB			LZ	QK	QL	W	T	U
30□□A	307(378)	228(299)	143	203(274)	140	79	79	3.2	18	180	200	114.3	13.5	35	M8x16L	55	6	10	8	5
50□□A	357(428)	278(349)	183	253(324)	140	79	79	3.2	18	180	200	114.3	13.5	35	M8x16L	55	6	10	8	5

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

Motor Connector Specification

- Receptacle: MS3102A22-22P (LC=180)
- Plug: MS3108B22-22S (LC=180)
- Cable Clamp: MS3057-12A



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

Brake Connector Specification

- Receptacle: MS3102A10SL-3P
- Plug: MS3106A10SL-3S
- Cable Clamp: MS3057-4A



Pin No.	Signal
A	B1
B	B2
C	-

Encoder Connector Specification

- Receptacle: MS3102A20-29P
- Plug: MS3108B20-29S
- Cable Clamp: MS3057-12A

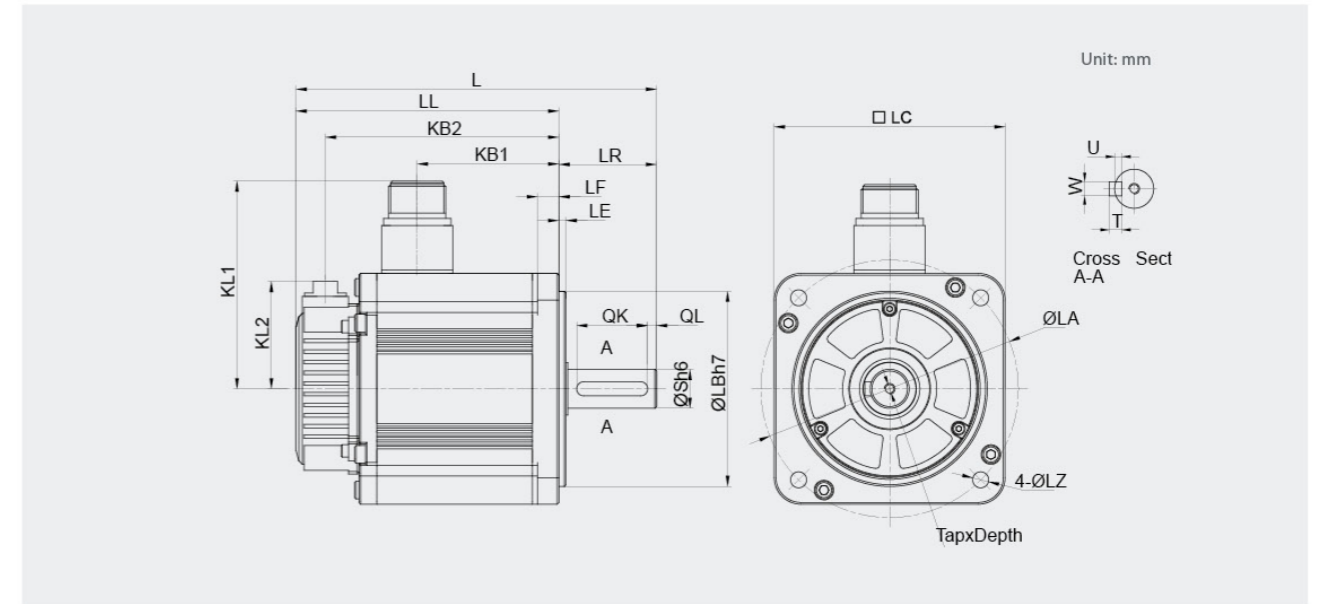


Incremental/Absolute Encoder

Pin No.	Signal
K	S+
L	S-
★T	BAT+
★S	BAT-
H	PG5V
G	PG0V
J	FG

★ Note : There are no BAT+, BAT- signal in incremental/single-turn absolute encoder.

EML Dimension

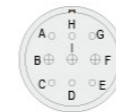


Model EML-	L	LL	KB1	KB2	KL1	KL2	Flange side						S	Tap x Depth	Key					
							LR	LE	LF	LC	LA	LB			LZ	QK	QL	W	T	U
10□□B	247(289.5)	192(234.5)	124(147.2)	175.5(218)	117	60.5	55	4	12	130	145	110	9	22	M6x20L	40	5	8	7	4

Note: The dimension 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

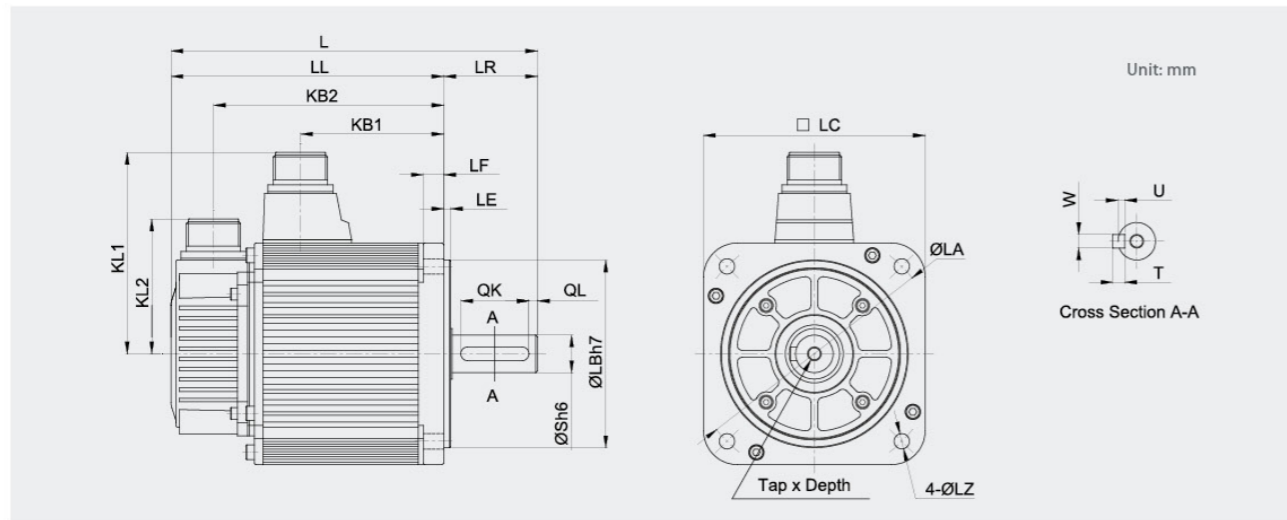
- Receptacle: M-CAN-CM1002-10P
- Plug: M-CAN-CM1008-10S



Incremental/Absolute Encoder

Pin No.	Signal
1	S+
2	S-
★3	BAT+
★4	BAT-
7	PG0V
8	PG5V
10	FG

★ Note : There are no BAT+, BAT- signal in incremental/single-turn absolute encoder.

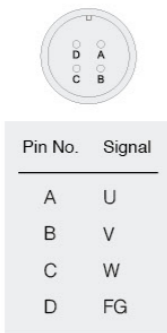


Model EML-	L	LL	KB1	KB2	KL1	KL2	Flange side							S	Tap x Depth	Key				
							LR	LE	LF	LC	LA	LB	LZ			QK	QL	W	T	U
20□□A	332(401)	253(322)	168	228(245)	140	79	79	3.2	18	180	200	114.3	13.5	35	M8x16L	55	6	10	8	5
30□□A	372(443)	293(364)	208	268(287)	140	79	79	3.2	18	180	200	114.3	13.5	35	M8x16L	55	6	10	8	5
40□□A	412(478)	333(399)	243	308(322)	140	79	79	3.2	18	180	200	114.3	13.5	35	M8x16L	55	6	10	8	5

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

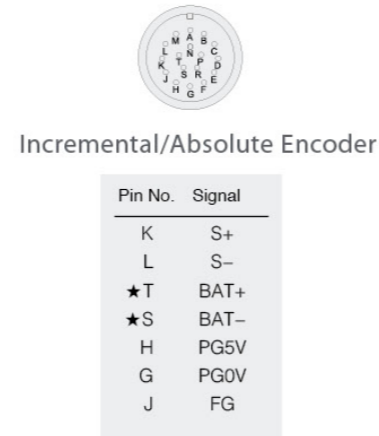
Motor Connector Specification

- Receptacle: MS3102A22-22P (LC=180)
- Plug: MS3108B22-22S (LC=180)
- Cable Clamp: MS3057-12A



Encoder Connector Specification

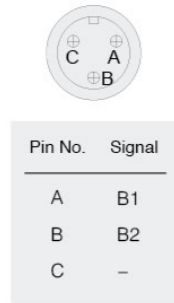
- Receptacle: MS3102A20-29P
- Plug: MS3108B20-29S
- Cable Clamp: MS3057-12A



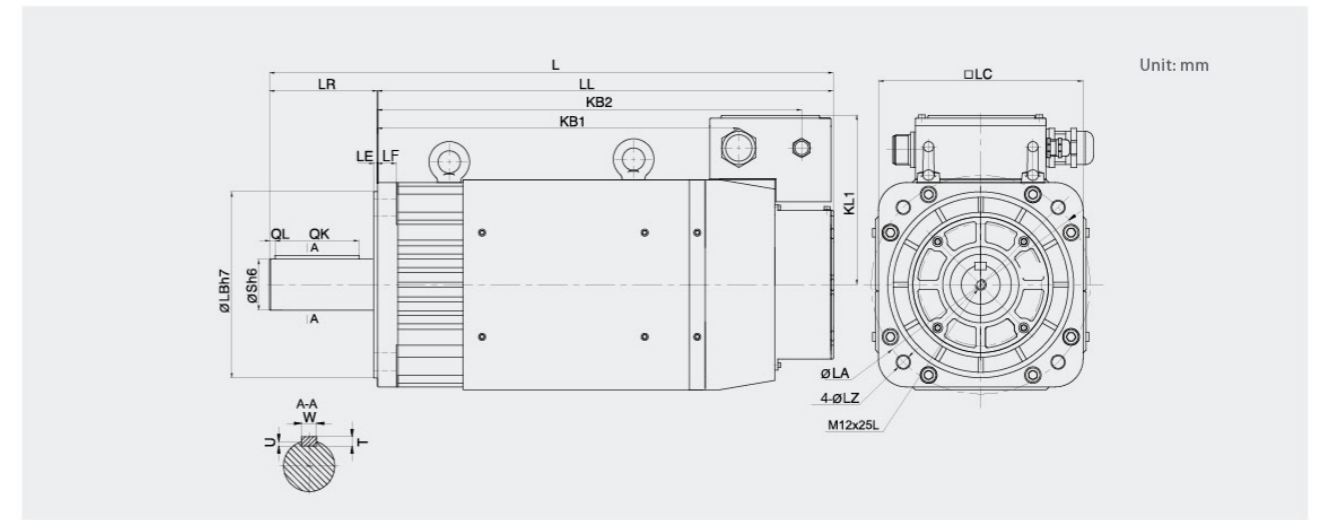
★ Note : There are no BAT+, BAT- signal in incremental/ single-turn absolute encoder.

Brake Connector Specification

- Receptacle: MS3102A10SL-3P
- Plug: MS3106A10SL-3S
- Cable Clamp: MS3057-4A



EMB Dimension



Model EMB-	L	LL	KB2	KB1	KL1	Dimension							S	Tap x Depth	Key				
						LR	LE	LF	LC	LA	LB	LZ			QK	QL	W	T	U
75D□□	530 (625)	414 (509)	366 (461)	302 (397)	184	116	4	20	220	235	200	13.5	42	M16x32L	90	6	12	8	5
1AD□□	580 (675)	464 (559)	416 (511)	352 (447)	184	116	4	20	220	235	200	13.5	42	M16x32L	90	6	12	8	5
1ED□□	615 (710)	499 (594)	451 (546)	387 (482)	184	116	4	20	220	235	200	13.5	55	M20x40L	90	6	16	10	6
2BD□□	720	572	523	432	250	145	5	30	280	300	250	19	60	M12x25L	128	6	18	11	7

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

Encoder Connector Specification

- Receptacle: MS3102A20-29P
- Plug: MS3108B20-29S
- Cable Clamp: MS3057-12A



Absolute Encoder

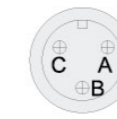
Pin No.	Signal
K	S+
L	S-
T	BAT+
S	BAT-
H	PG5V
G	PG0V
J	FG

Resolver

Pin No.	Signal
K	SIN+
L	SIN-
T	COS+
S	COS-
H	R1
G	R2
J	FG
N	Sensor1
R	Sensor2

Brake Connector Specification

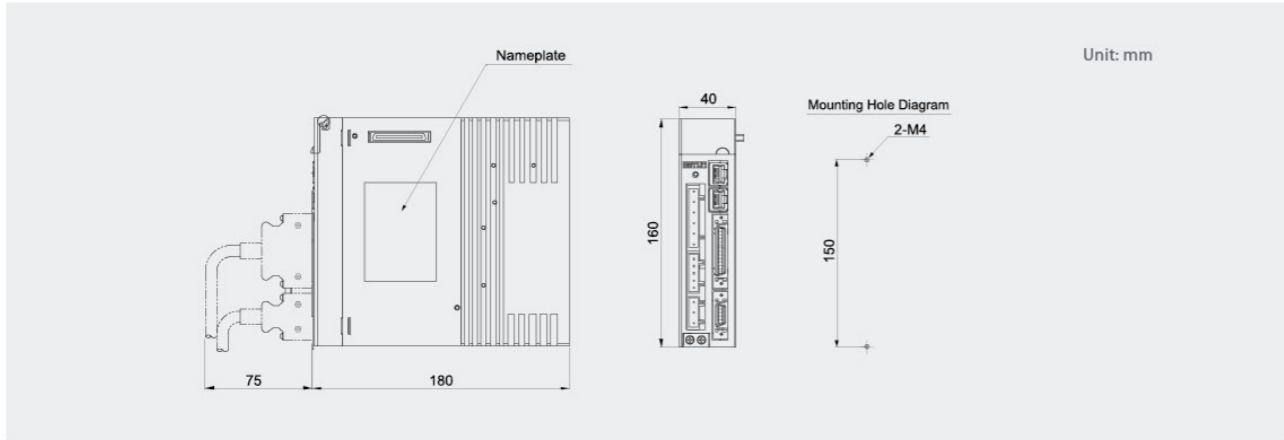
- Receptacle: MS3102A10SL-3P
- Plug: MS3106A10SL-3S
- Cable Clamp: MS3057-4A



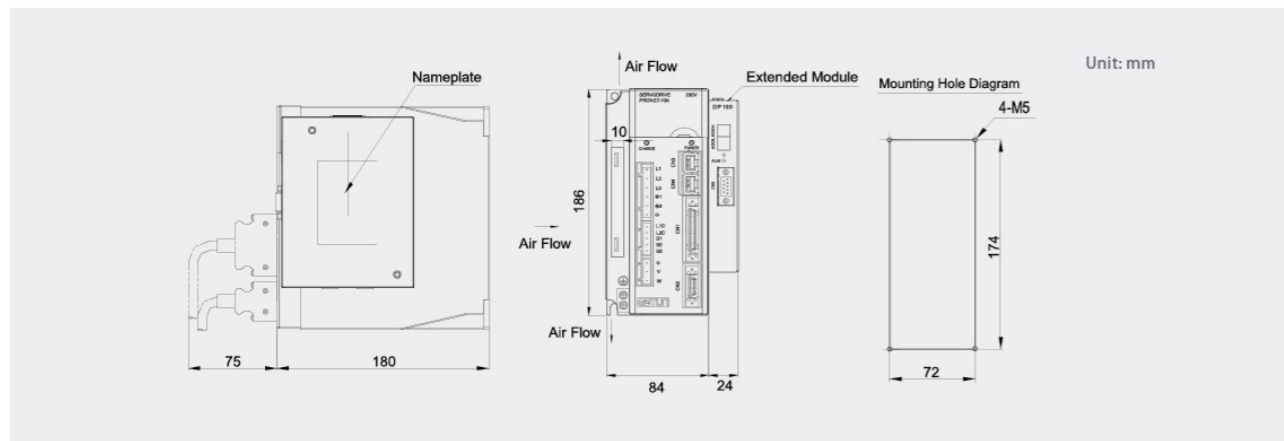
Pin No.	Signal
A	B1
B	B2
C	-

Servo Drive

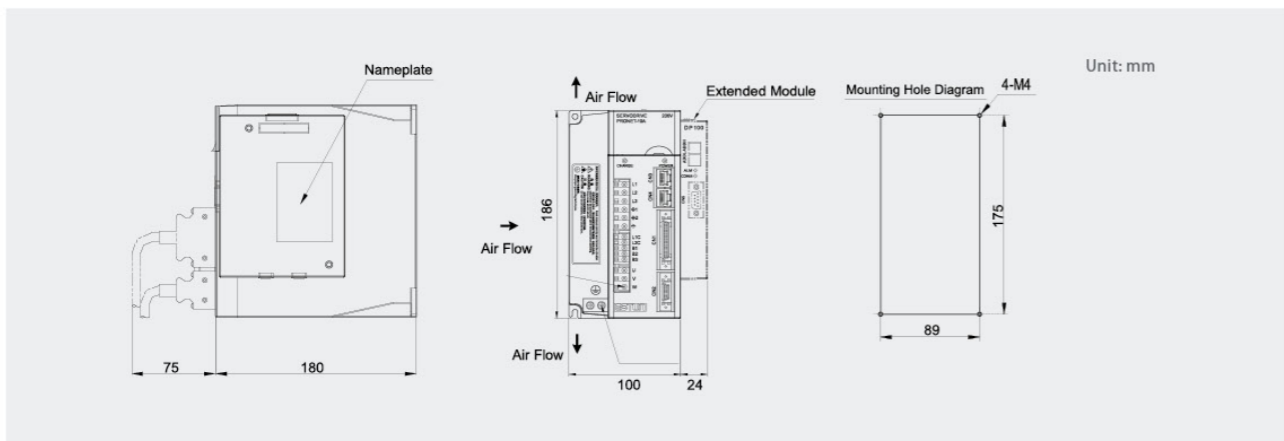
ProNet-A5A/01A/02A/04A



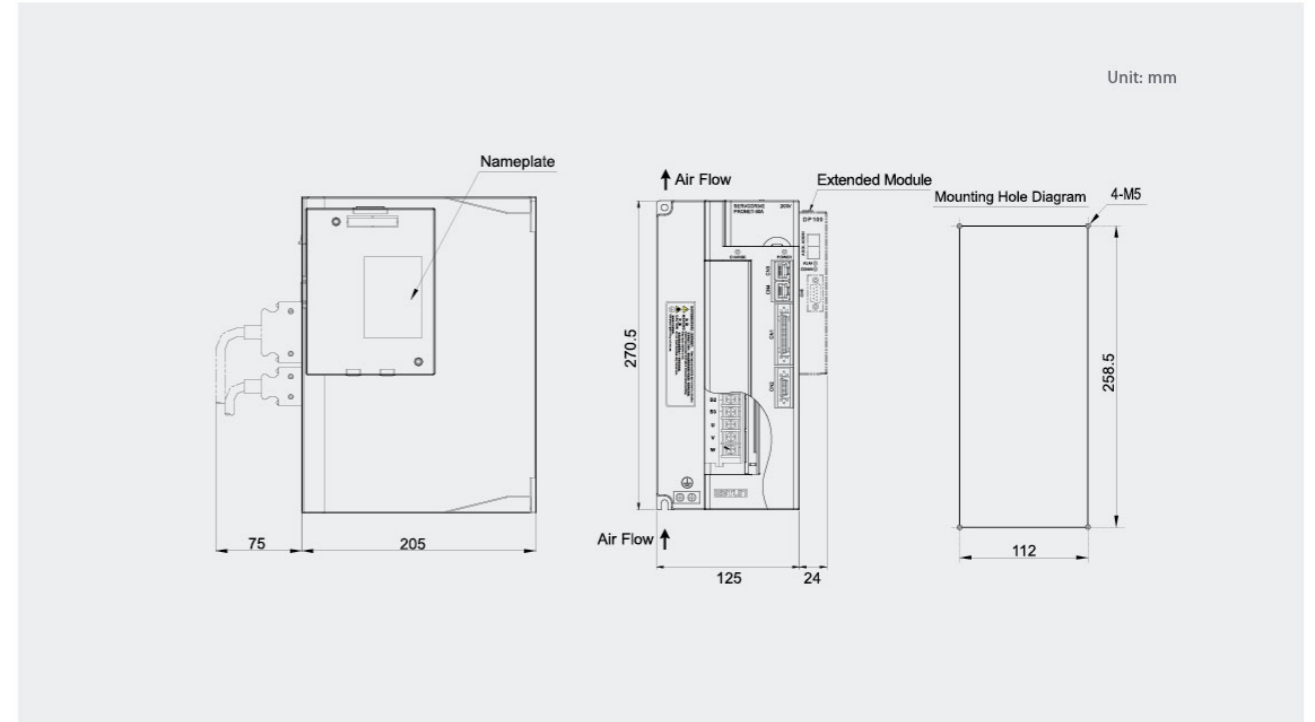
ProNet-08A/10A



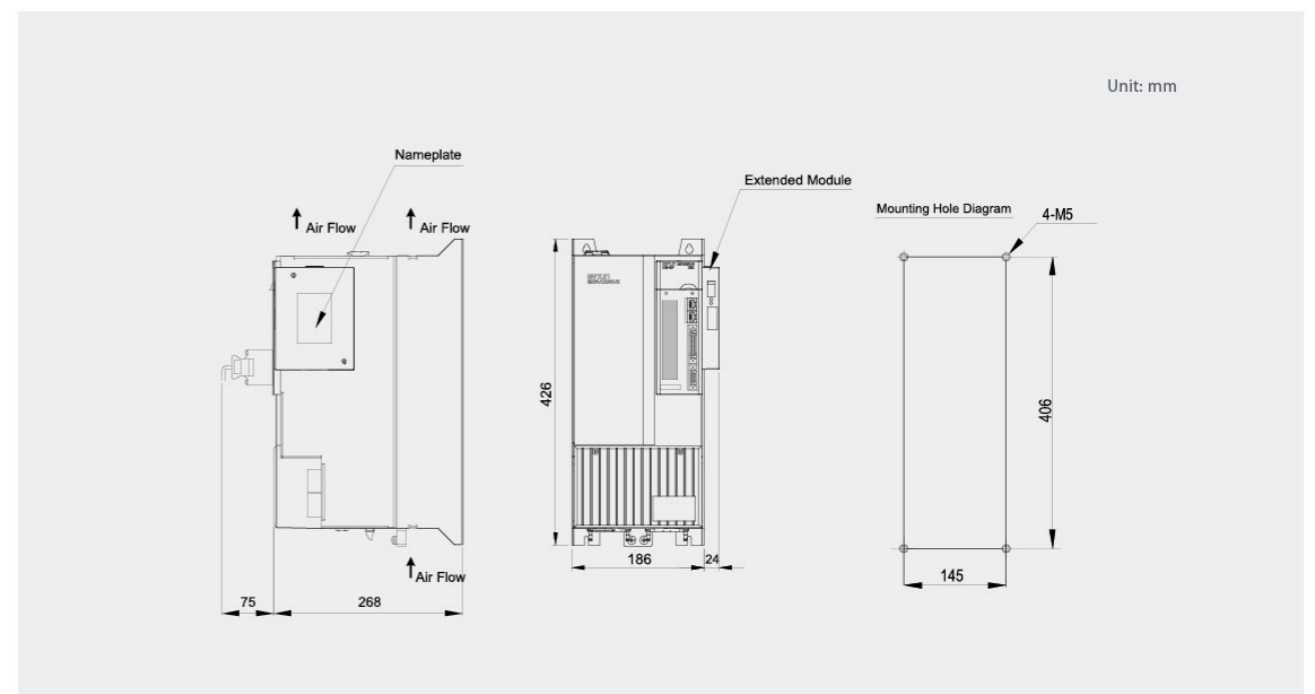
ProNet-10D/15A/15D/20A/20D



ProNet-30A/30D/50A/50D/70D



ProNet-75D/1AD/1ED/2BD



Accessories

Selecting Cables

Name	Servo Motor Model	Cable Model	Specifications
Serial Encoder Cables	EMJ-A5ASA EMJ-01ASA	PAP-JB24-XX	
	EMJ-02ASA EMJ-04AS□ EMJ-08ASB EMJ-10ASB	PAP-JE24-XX	
	EMJ-02AFA2□-TP EMJ-04AF□2□-TP EMJ-08AFB2□-TP EMJ-10AFB2□-TP	PSP-JK24-XX	
	EMG-□□□FB EML-10□FB	PSP-GA24-II-XX	
	EMG-□□AFA EML-□□AFA	PSP-GA24-XX	
	EMG-□□□SB EML-10□SB	PAP-GA24-II-XX	
	EMG-□□□SA EML-□□□SA EMB-□□□SA	PAP-GA24-XX	
Resolver Cables	EMB-□□DRA	PRP-BA24-XX	
Power Cables	EMJ-A5ASA22 EMJ-01ASA22	PDM-JB18-XX	
	EMJ-A5ASA24 EMJ-01ASA24	PDMB-JB18-XX	
	EMJ-02A EMJ-04A EMJ-08A EMJ-10A	PDM-JE18-XX	
	EMG-10□□B22 EMG-15□□B22 EMG-20□□B22 EML-10□□B22	PDM-GA14-II-XX	
	EMG-10□□B24 EMG-15□□B24 EMG-20□□B24 EML-10□□B24	PDMB-GA14-II-XX	
	EML-20	PDM-GD14-XX	
	EML-30 EML-40 EMG-30 EMG-50	PDM-GD12-XX	

Notes: ① Single-turn absolute servo motor can be used as incremental servo motor(do not use multi-turn information). The encoder cable do not need battery.
 ② -XX means encoder cable length. Optional 1.5m, 3m, 5m, 8m, 10m, 12m, 15m, 20m length or customized to meet your need.

Selecting Peripheral Devices

Servo Drive (ProNet)	Main Circuit Voltage	Specifications for Internal Regenerative Resistor	Min.Allowable Resistance	Min. Rated Input Current for Three-phase Filters	Min. Rated Current for Circuit Breaker
ProNet-A5A	200-230VAC	50Ω/60W External connection	25Ω	—	5A
ProNet-01A	200-230VAC	50Ω/60W External connection	25Ω	—	5A
ProNet-02A	200-230VAC	50Ω/60W External connection	25Ω	—	10A
ProNet-04A	200-230VAC	50Ω/60W External connection	25Ω	—	10A
ProNet-08A	200-230VAC	50Ω/60W	25Ω	—	25A
ProNet-10A	200-230VAC	50Ω/60W	25Ω	—	25A
ProNet-15A	200-230VAC	40Ω/80W	25Ω	—	35A
ProNet-20A	200-230VAC	40Ω/80W	25Ω	—	55A
ProNet-30A	200-230VAC	10Ω/300W	10Ω	27A	70A
ProNet-50A	200-230VAC	10Ω/300W	10Ω	42A	100A
ProNet-10D	380-440VAC	200Ω/80W	50Ω	—	12A
ProNet-15D	380-440VAC	200Ω/80W	50Ω	—	20A
ProNet-20D	380-440VAC	200Ω/80W	40Ω	—	24A
ProNet-30D	380-440VAC	40Ω/300W	35Ω	14A	33A
ProNet-50D	380-440VAC	40Ω/300W	20Ω	23A	55A
ProNet-70D	380-440VAC	40Ω/300W	20Ω	27A	60A
ProNet-75D	380-440VAC	40Ω/300W	20Ω	27A	60A
ProNet-1AD	380-440VAC	20Ω/1.5KW External connection	17Ω	42A	80A
ProNet-1ED	380-440VAC	20Ω/1.5KW External connection	12Ω	57A	120A
ProNet-2BD	380-440VAC	10Ω/3KW =2×20Ω/1.5KW External parallel connection	8Ω	82A	160A



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ESTUN AUTOMATION TECHNOLOGY CO.,LTD

ADD: 16 Shuige Road, Jiangning Development Zone,
Nanjing 211106, P.R.China

TEL: +86-25-58328505/8507

FAX: +86-25-58328504

<http://www.estun.com>

E-mail: export@estun.com

Local sales dealer:



Version: ProNet-1703
Specifications subject to change without notice.