

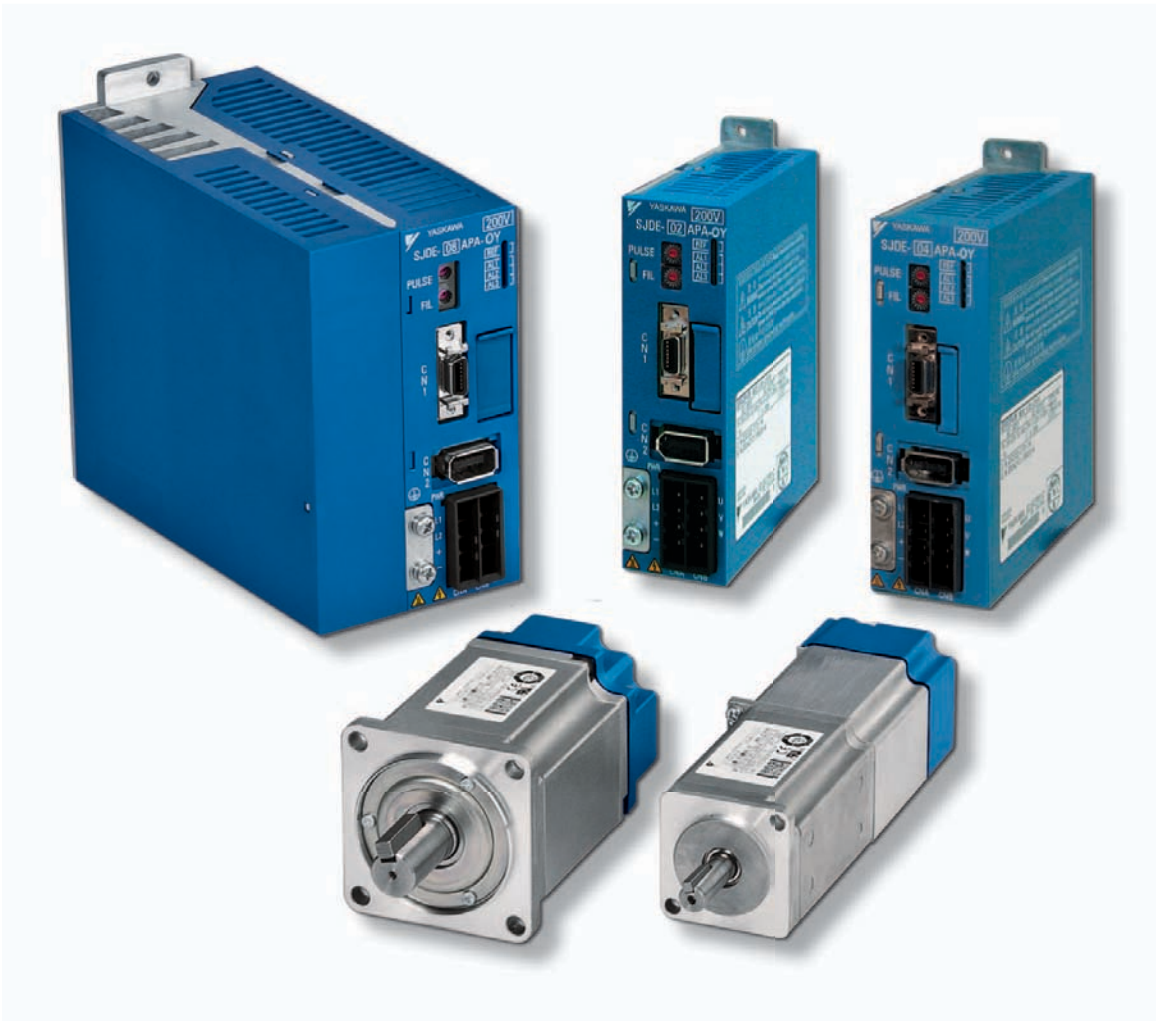
Junma Series Servo



 **YASKAWA™**

SJME Servo Motor
SJDE SERVOPACK
Pulse Reference Control

New Servo Concept: Junma



Junma uses the world's premier servo technology to provide unmatched performance with a quick and efficient setup.

This totally new plug and play design concept requires no parameter settings or gain adjustments.

Adaptive tuning and vibration suppression functionality simplify machine commissioning while maintaining steady high-precision positioning and optimum efficiency.

Junma's ready-to-use features for high-speed, high-torque, and high-precision operation are ready to work for you.



Junma Features

- ▶ **Attain optimum servo performance without time consuming setup:**
 - Connect and go! Matched motor and amplifier sets simplify setup
 - System parameters are set on system power-up
 - Machine load inertia is calculated automatically
 - Tuning gains are adjusted dynamically, even when the load changes
 - Mechanical vibrations are suppressed with the turn of a rotary switch

- ▶ **Input voltage: 120 or 240 VAC (single phase)**

- ▶ **Feedback resolution: 65,536 pulses/rev**

- ▶ **Control input: pulse and direction**

- ▶ **High torque output at speeds up to 4500 RPM**

- ▶ **Advanced control functionality:**
 - Adaptive tuning
 - Vibration suppression
 - Jogging
 - Homing to marker pulse
 - Electronic gearing
 - Torque limiting
 - Position complete output

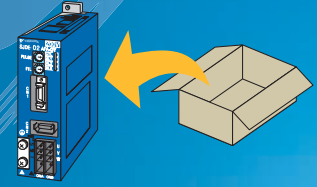
- ▶ **JunmaWin software diagnostic tools:**
 - Alarm history
 - Troubleshooting wizard
 - Extensive monitoring capability

- ▶ **Conforms to international standards:**

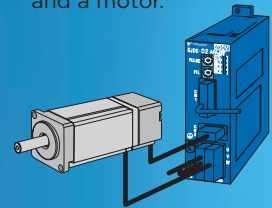


FAST & EASY SETUP

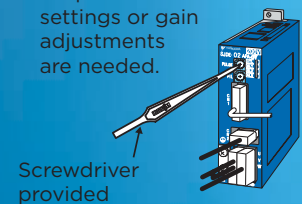
- 1 Unpacking**
Remove the servo amplifier from the box.



- 2 Installation and Wiring**
Connect the cables for the power supply, signal lines, and a motor.

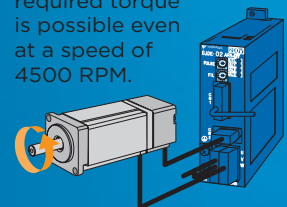


- 3 Reference Pulse Setting**
Select the reference pulse switch for your controller. No parameter settings or gain adjustments are needed.



Screwdriver provided

- 4 Setup completion**
The motor is ready to run with the reference from the controller. The required torque is possible even at a speed of 4500 RPM.



Ratings and Specifications

Junma Servo Motors

Voltage		100/200 VAC			
Servo motor Model SJME-□□A		01	02	04	08
Applicable Servo Amplifier	SJDE-□□A	01	02	04	08
Rated output *1	W	100	200	400	750
Rated torque *1, *2	Nm	0.318	0.637	1.27	2.39
Instantaneous peak torque *1	Nm	0.955	1.91	3.82	7.16
Rated current *1	A_{rms}	0.84	1.1	2.0	3.7
Instantaneous max. current *1	A_{rms}	2.5	3.3	6.0	11.1
Rated speed *1	RPM	3000 (for 200V models) ³			
Max. speed *1	RPM	4500 (for 200V models) ³			
Torque constant	Nm/A_{rms}	0.413	0.645	0.682	0.699
Rotor moment of inertia	$kg \cdot m^2$	0.0634×10^{-4}	0.330×10^{-4}	0.603×10^{-4}	1.50×10^{-4}
Rated power rate *1	kW/s	16.0	12.3	26.7	38.1
Rated angular acceleration *1	rad/s^2	50200	19300	21100	15900
Time rating	Continuous				
Thermal class	B				
Vibration class	15 μ m or below				
Withstand voltage	1500 VAC for one minute				
Insulation resistance	500 VDC, 10 M Ω min.				
Enclosure	Totally enclosed, self-cooled, IP55 (excluding shaft opening and connectors)				
Impact resistance	Impact acceleration: 490 m/s^2 in three directions - vertical, side to side, and front to back. Impact occurrences: 2				
Vibration resistance	Vibration acceleration: 49 m/s^2 in three directions - vertical, side to side, and front to back.				

*1 These items and speed/torque characteristics quoted in combination with a SJDE servo amplifier are at an armature winding temperature of 100 °C. Other values are at 20 °C.

*2 The rated torques listed here are the values for the continuous allowable torque at 40 °C with an aluminium heatsink (250 mm x 250 mm x 6 mm) attached.

*3 Refer to the Speed/Torque Characteristics for rated speed and maximum speed for 100V models.

Holding Brake Specifications

Servo motor Model SJME-□□A	01	02	04	08
Rated voltage	24VDC \pm 10%			
Holding brake moment of inertia* $kg \cdot m^2 \times 10^{-4}$	0.0075	0.064		0.171
Capacity W	6	6.9		7.7
Minimum holding torque (Static friction torque) Nm	0.318	1.27		2.39
Coil resistance Ω (at 20 °C)	96	83		75
Rated current A (at 20 °C)	0.25	0.29		0.32
Brake release time ms	80 max.			
Rise time for holding torque ms	100 max.			

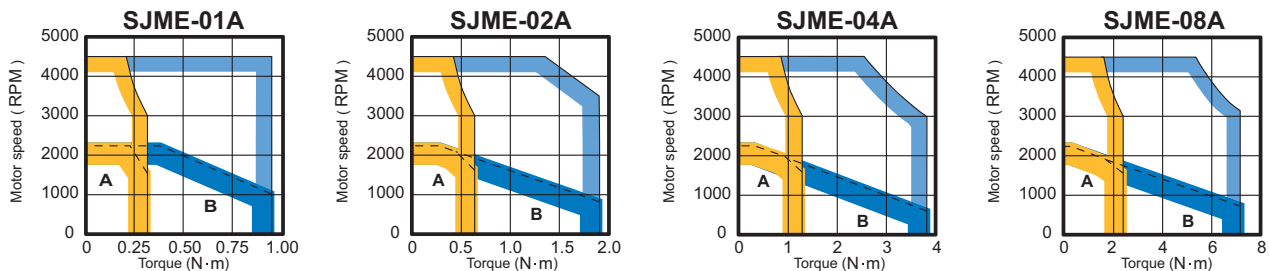
* To obtain the motor moment of inertia with a brake, add the holding brake moment of inertia to the rotor moment of inertia. The rated power rate and angular acceleration of the motor will change according to the motor moment of inertia.

Notes:

1 The holding brake is only used to hold the load and cannot be used to stop the servo motor.

2 Do not use the holding brake when the servo is on. Failure to observe this caution may result in an overload of the servo amplifier or a decrease of brake life.

Speed/Torque Characteristics



A: Continuous Duty Zone B: Intermittent Duty Zone

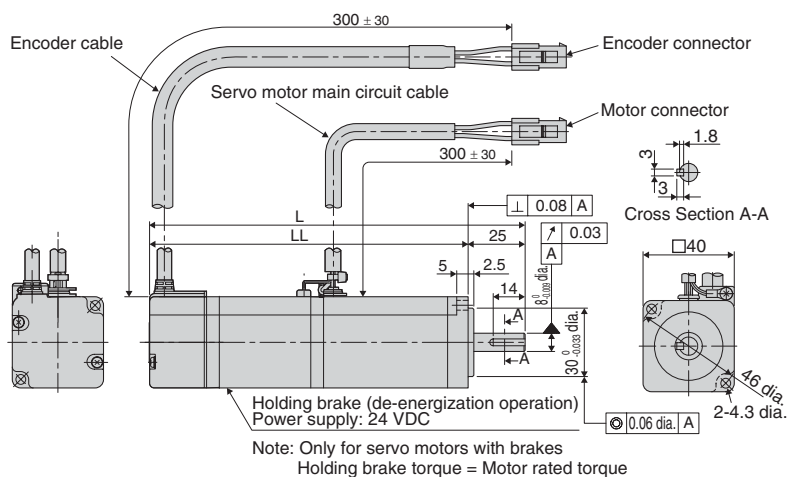
Note: Solid lines show the torque/speed characteristics of the servo motor at 200V and the broken lines show them at 100V.



Dimensions

Units: mm

100 W



Motor Connector Specifications

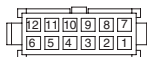


Pin	No brake		With brake	
	Description	Color	Description	Color
1	Phase U	Red	Phase U	Red
2	Phase V	White	Phase V	White
3	Phase W	Blue	Phase W	Blue
4	FG	Green/ Yellow	FG	Green/ Yellow
5	-	-	Brake	Red
6	-	-	Brake	Black

Plug: 5559-06P-210
Terminal (No.1 to 3, 5, 6): 5558T (reel) or 5558TL (bagged)
Grounding Pin (No.4): 30490-2002 (reel) or 30490-2012 (bagged)
(Manufactured by: Molex Japan Co., Ltd)

Type SJME-	L	LL	Approx. mass (kg)
01AMB41	119	94	0.5
01AMB4C	164	139	0.8

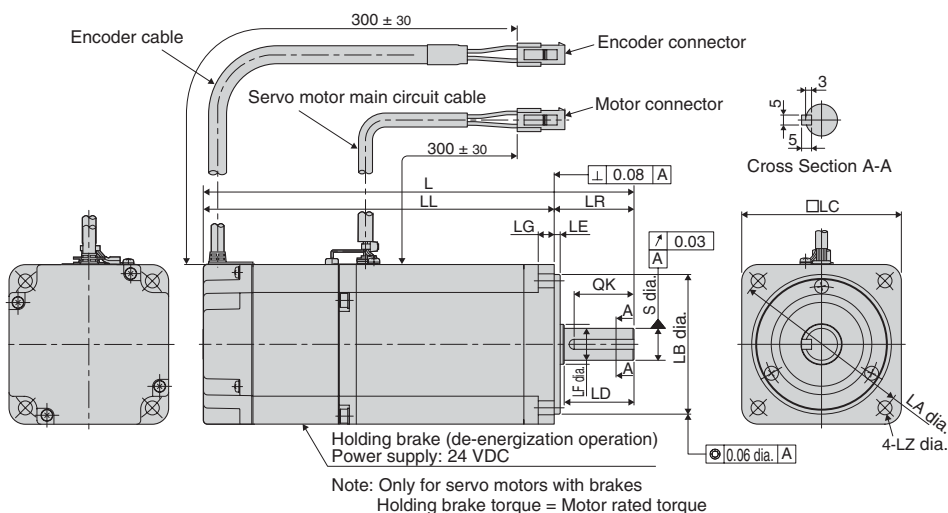
Encoder Connector Specifications



Pin	Description	Color
1	PG 5V	Red
2	PG 0V (GND)	Black
3	Phase A+	Blue
4	Phase A-	Blue/White
5	Phase B+	Yellow
6	Phase B-	Yellow/White
7	Phase /Z	Purple
8	Phase U	Gray
9	Phase V	Green
10	Phase W	Orange
11	-	-
12	FG	Shield

Plug: 5559-12P-210
Terminal: 5558T2 (reel) or 5558T2L (bagged)
(Manufactured by: Molex Japan Co., Ltd)

200 W to 750 W



Type SJME-	L	LL	LR	LG	LE	S	LB	LC	LD	LF	LA	LZ	QK	Approx. mass (kg)
02AMB41	125.5	95.5												0.9
02AMB4C	165.5	135.5												1.5
04AMB41	148.5	118.5	30	6	3	14° -0.011	50° -0.039	60			70	5.5	20	1.3
04AMB4C	188.5	158.5												1.9
08AMB41	173	133	40	8	3	16° -0.011	70° -0.046	80	35	20	90	7	30	2.6
08AMB4C	216	176												3.5

Ratings and Specifications

Junma SERVOPACKS

Servo Amplifier Model SJDE-□-OY		O1APA	O2APA	O4APA	O8APA
Max. applicable servo motor capacity	W	100	200	400	750
Continuous output current	A _{rms}	0.84	1.1	2.0	3.7
Instantaneous max. output current	A _{rms}	2.5	3.3	6.0	11.1
Input power supply (for main circuit and control circuit)	Voltage	Single-phase 100 to 115 VAC, +10 to -15% ; Single-phase 200 to 230 VAC, +10 to -15%			
	Frequency	50/60Hz ± 5%			
	Voltage frequency capacity at rated output	kVA	0.40	0.75	1.2
Power loss at rated output	W	14	16	24	35
Input control method	Capacitor-input type, single-phase full-wave rectification with resistance to prevent inrush current				
Output control method	PWM control, sine wave power driven system				
Feedback	Incremental encoder				
Allowable load inertia*1	kg•m ²	0.6 x 10 ⁻⁴	3 x 10 ⁻⁴	5 x 10 ⁻⁴	10 x 10 ⁻⁴
I/O signals	Input signal for reference (designated pulse type and pulse resolution with PULSE switch)	Pulse type	Select one of the following settings: 1. CCW + CW pulse train 2. Sign + pulse train 3. CCW + CW pulse train (negative logic) 4. Sign + pulse train (negative logic)		
		Pulse resolution	Select one of the following settings: 1. 1000 pulses/rev (open collector/line driver) 75kpps max. 2. 2500 pulses/rev (open collector/line driver) 187.5kpps max. 3. 5000 pulses/rev (line driver) 375kpps max. 4. 10000 pulses/rev (line driver) 750kpps max.		
	Clear input signal	Clears the positioning error at the rising edge of the pulse			
	Servo ON input signal	Turns the servo motor on or off			
	Alarm output signal	OFF if an alarm occurs			
	Brake output signal	External signal to control brakes. Turn ON to release the brake.			
	Position completed output signal	ON if the current position is equal to the reference position ±10 pulses			
Origin output signal	ON if the motor is at the origin (width: 1/500 rev)				
Built-in functions	Dynamic brake (DB)	Operated at main power OFF, servo alarm, servo OFF (OFF after motor stops; ON if the motor power is off)			
	Regenerative processing	Optional (if the regenerative energy is too large, install a regenerative unit)			
	Protection*2	Speed errors, overload, encoder errors, voltage errors, overcurrents, disablement of the built-in cooling fan, system errors			
	Display	Five LED indicators (PWR, REF, AL1, AL2, AL3)			
	Reference filter	Select one of eight levels with FIL switch			
Cooling method	Forced cooling (built-in fan)				
Operating temperature	0°C to +55°C				
Operating humidity	90% RH or less (no condensation)				
Storage temperature	-20°C to +70°C				
Storage humidity	90% RH or less (no condensation)				
Installation site	Free of corrosive gases; Free of dust and iron powder; Clean and dry				
Altitude	1000m or below				
Vibration resistance	4.9m/s ²				
Shock resistance	19.6m/s ²				
Operating conditions	Installation category (overvoltage category): II; Pollution degree: 2 Protection class: IP1X (EN50178)				

*1 Be sure to use the motor within the allowable load moment of inertia. The motor will become unstable if the load moment of inertia exceeds the allowable value.

*2 The ground protection circuit is designed for ground fault inside the motor windings while the motor is running. Therefore, it may not protect the system under the following cases:

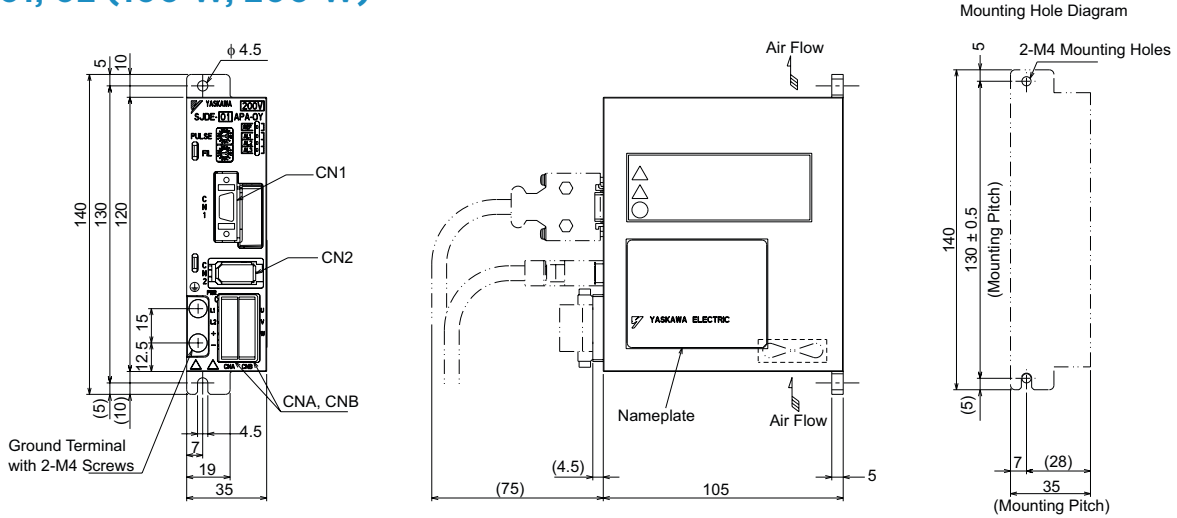
- A low-resistance ground fault occurs in the main circuit cable or in the connector of the cable for the servo motor.
- The power supply is turned on during a ground fault.



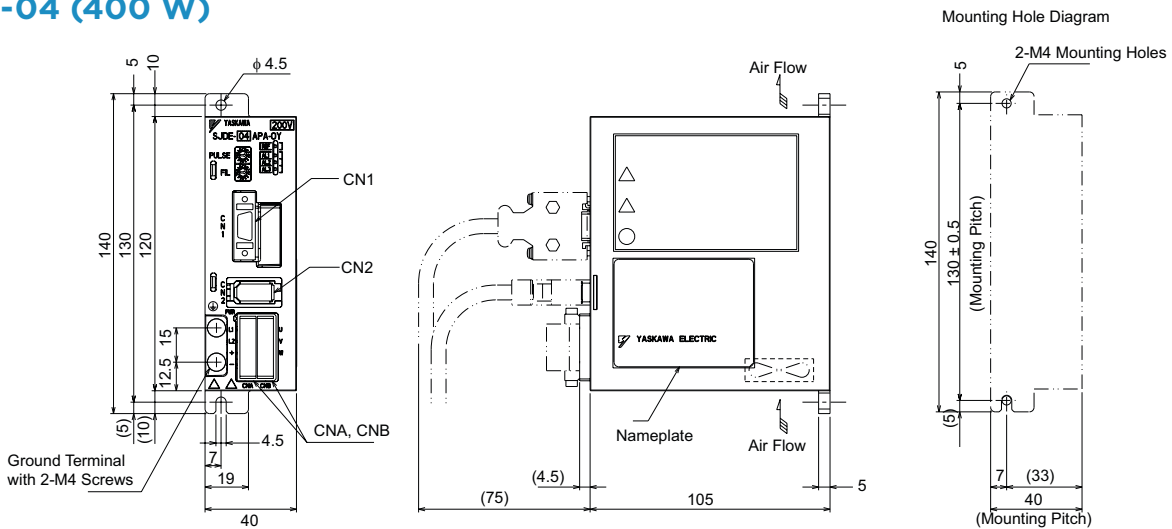
Dimensions

Units: mm

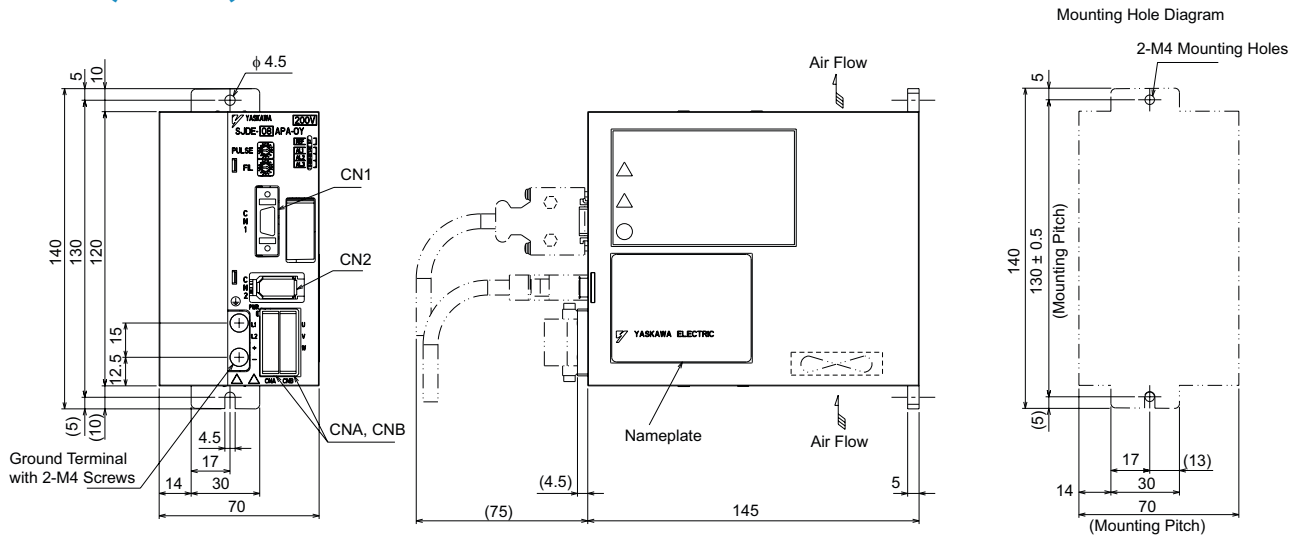
SJDE-01, 02 (100 W, 200 W)



SJDE-04 (400 W)

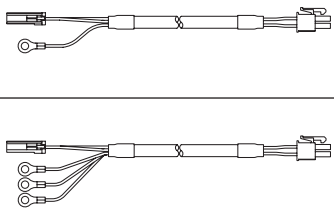


SJDE-08 (750 W)

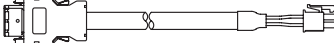


Cable/Connector Selection






Power Cables

Specifications		Model	Appearance	
Servo Motor Main Circuit Cables with Connectors at Both Ends	Without holding brake	3 m	JZSP-CHM000-03	
		5 m	JZSP-CHM000-05	
		10 m	JZSP-CHM000-10	
		15 m	JZSP-CHM000-15	
		20 m	JZSP-CHM000-20	
	With holding brake	3 m	JZSP-CHM030-03	
		5 m	JZSP-CHM030-05	
		10 m	JZSP-CHM030-10	
		15 m	JZSP-CHM030-15	
		20 m	JZSP-CHM030-20	

Encoder Cables

Specifications	Model	Appearance	
Encoder Cables with Connectors at Both Ends (shielded)	3 m	JZSP-CHP800-03	
	5 m	JZSP-CHP800-05	
	10 m	JZSP-CHP800-10	
	15 m	JZSP-CHP800-15	
	20 m	JZSP-CHP800-20	

Connectors for Power and Encoder

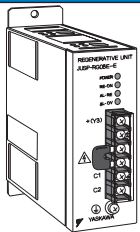
Specifications	Type	Model	Appearance	
Connector Kits for Servo Motor Main Circuit Cable ^{*1}	Servo motor side	Crimp Type	JZSP-CHM9-1 ^{*2}	
	Servo amplifier side (CNB)	Spring Type	JZSP-CHM9-2 ^{*3}	
Power Supply and Regenerative Unit Connector Kits	Servo amplifier side (CNA)	Spring Type	JZSP-CHG9-1 ^{*3}	
Encoder Cable Connector Kits ^{*1}	Servo motor side	Crimp Type	JZSP-CHP9-1 ^{*2}	
	Servo amplifier side (CN2)	Soldered Type	JZSP-CHP9-3	

*1 Sold separately. If making cable assemblies, these connectors are necessary.

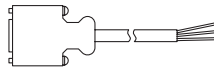
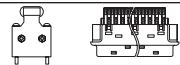
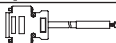
*2 Crimping tool required.

*3 With tool (lever for wiring).

Regenerative Unit

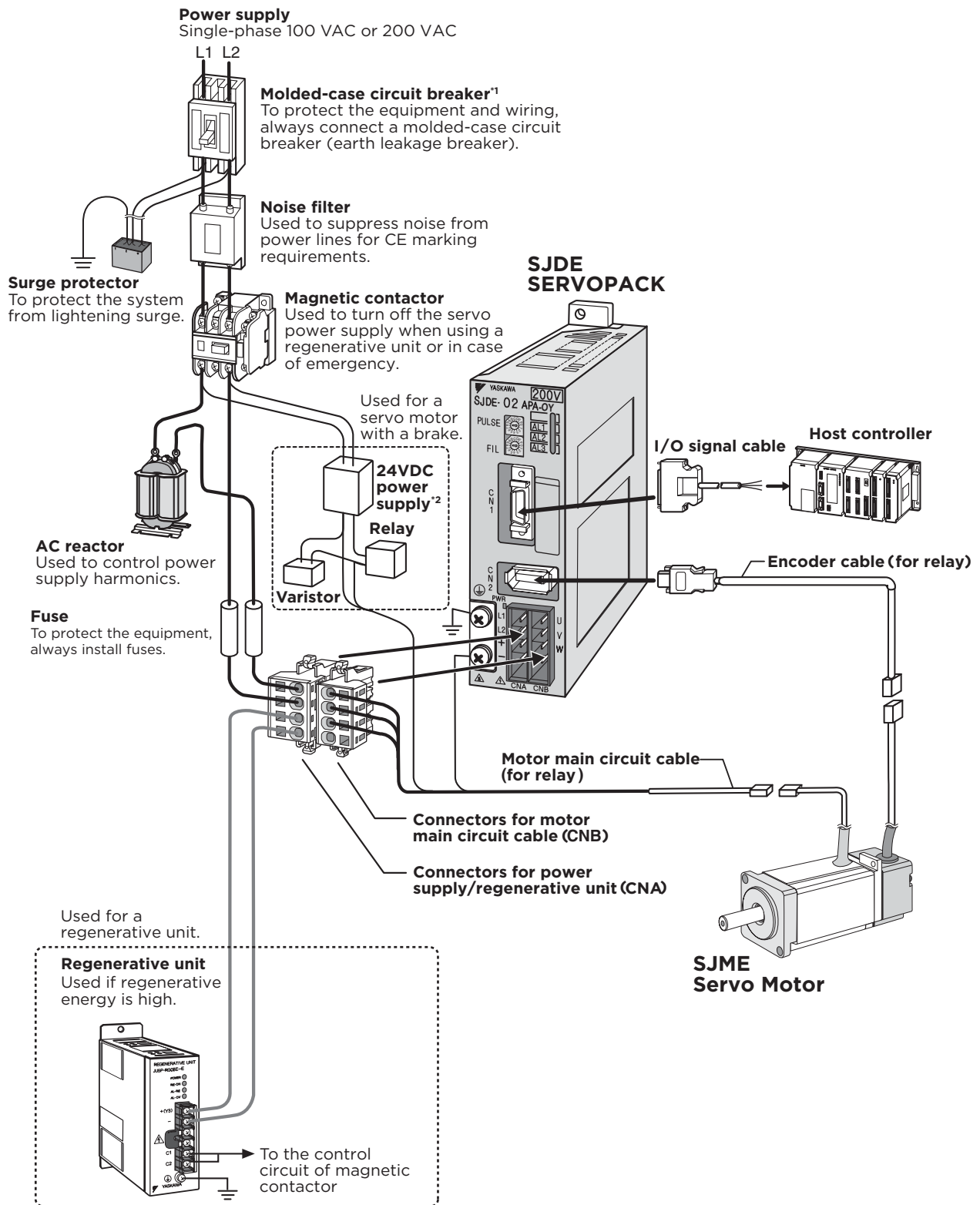
Description	Specifications	Model	Appearance
Regenerative Unit for Servo Amplifier (CNA)	Resistance: 50 Ω	JZSP-RG08E-E	
	Allowable Regenerative Energy: 12 W		
	Regenerative Voltage: 380 VDC		
	Regenerative Current: 8 ADC		
	Error Detection: Disconnection of regenerative resistance, failure of regenerative transistor, or overvoltage		
	Alarm Output: NC contact (opens when an error is detected). Contact specifications: 250 VAC, 1.5 A (inductive load)		

Signal and Communication Cables

Name	Type	Length	Model	Appearance	
I/O Signal Cables		1 m	JZSP-CHI003-01		
		2 m	JZSP-CHI003-02		
		3 m	JZSP-CHI003-03		
I/O Signal Connector Kits ^{*1}	For Servo amplifier CN1	Soldered Type	-	JZSP-CHI9-1	
Cable for Personal Computer		2 m	JZSP-CPS00-02		
PC Communication Board (Required for Setup with JunmaWin Software)			JZSP-JC001-1		

*1: Sold separately. If making cable assemblies, these connectors are necessary.

System Configuration Diagram



*1: Install a ground fault interrupter to protect against both overloads and short circuits, or install a ground fault interrupter for ground fault protection and a molded case circuit breaker.

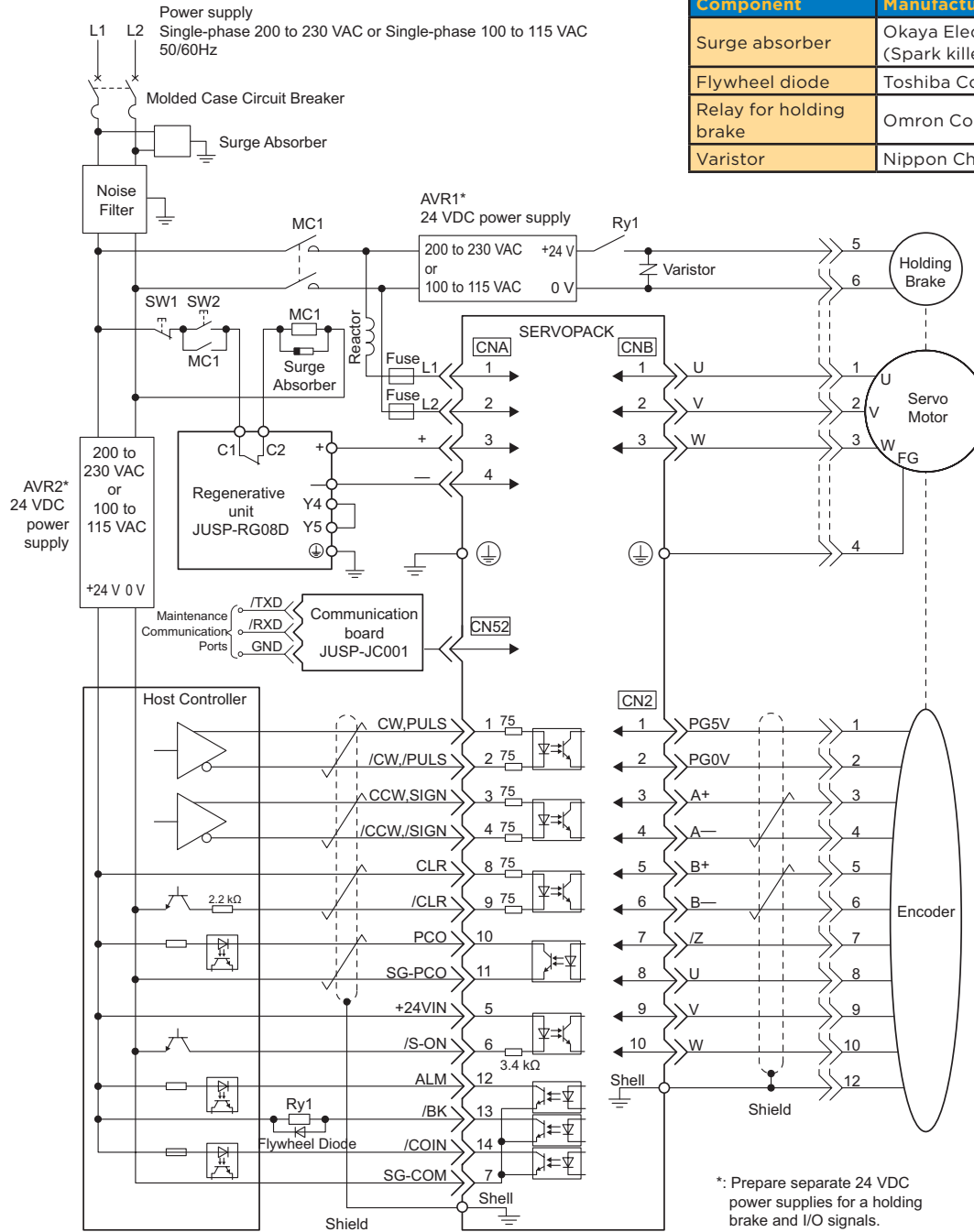
*2: Prepare a 24VDC power supply for holding brake and I/O signals.

Connection Diagram

SJDE SERVOPACK

Manufacturers of Components

Component	Manufacturer	Model
Surge absorber	Okaya Electric Industries Co., Ltd. (Spark killer)	CRE-50500
Flywheel diode	Toshiba Corp.	1NH42
Relay for holding brake	Omron Corp.	MY series
Varistor	Nippon Chemi-Con Corp.	TNR7V121K



Notes: 1 AVR1: 24 VDC power supply for holding brake
 SW1: Power off switch
 MC1: Magnetic contactor

AVR2: 24 VDC power supply for I/O signals
 SW2: Power on switch
 Ry1: Relay for holding brake

- 2 The ground fault protection circuit is designed for ground fault inside the motor windings while the motor is running. Therefore, it may not protect the system under the following cases.
- A low-resistance ground fault occurs in the main circuit cable or in the connector of the cable for the servo motor.
 - The power supply is turned on during a ground fault.

To make your system even safer, install a ground fault interrupter for overloads and short circuits, or install a molded-case circuit breaker combined with a ground fault interrupter for ground faults.

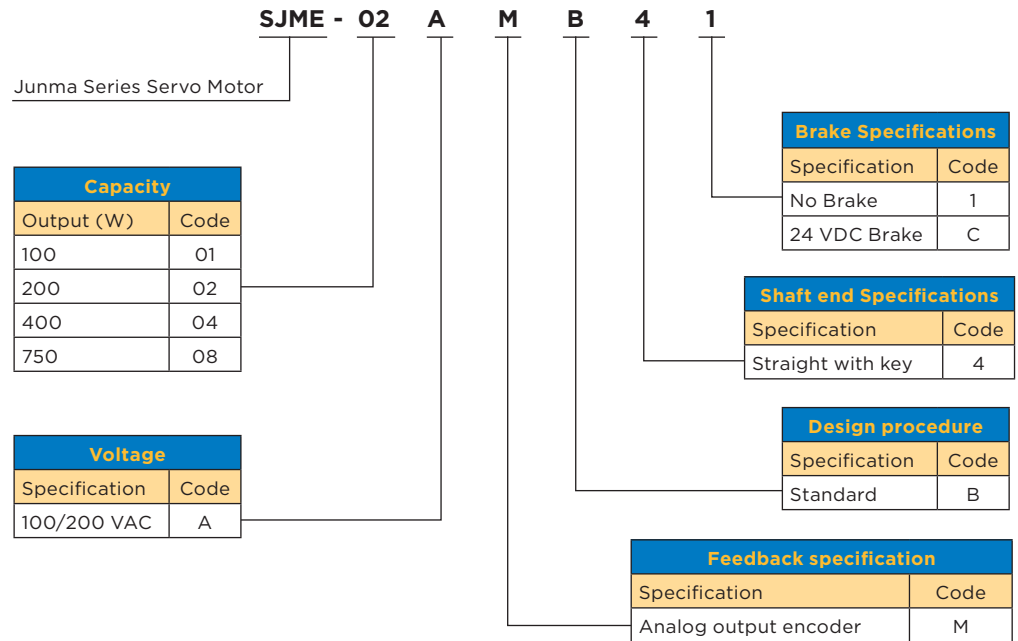


Model Number Designations



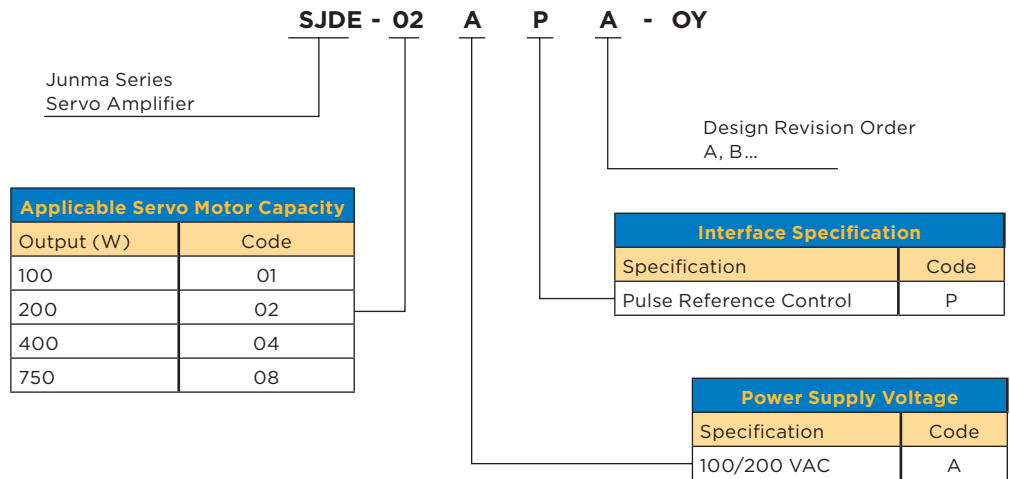
Junma Servo Motor
3,000 rpm - 4,500 rpm
(100 - 750 W)

Servo Motor Model Designation



Junma Servo Amplifier

Servo Amplifier Model Designation





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