

**MOONS'**  
*moving in better ways*

# M5 6S AC SERVO SYSTEM



# M5 6S SERIES

## High Performance AC Servo System

Drive Specification		Motor Specification	
Supply Voltage	Rated Current (Arms)	Frame Size (mm)	Rated Power
220VAC	1.8, 3, 4.5, 6, 10, 13	40, 60, 80, 100, 130	50W ~ 2.5kW
400VAC	13, 17, 21, 26	100, 130, 180	850W ~ 7.5kW



## Application

M56S Servo System is widely used in solar processing equipment, battery processing equipment, semiconductor equipment, medical equipment, industrial robots and custom equipment etc.



## Standard



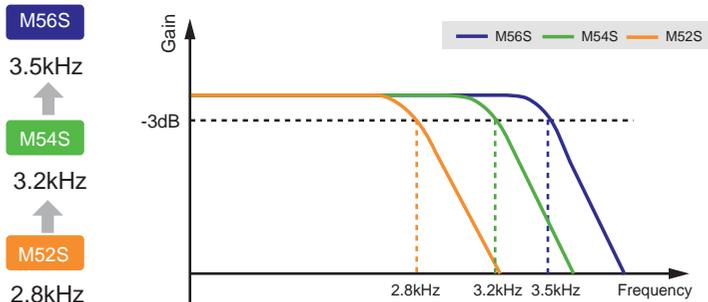
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## Superior Performance

### High Response Frequency

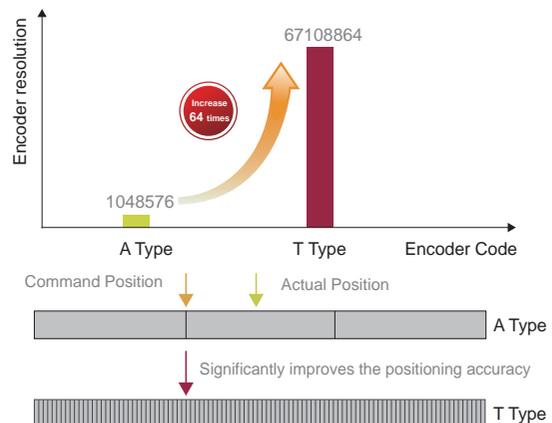
Based on advanced motion control algorithms, the velocity loop bandwidth is up to 3.5kHz, faster command tracking and shorter setting time.



### High Precision Positioning

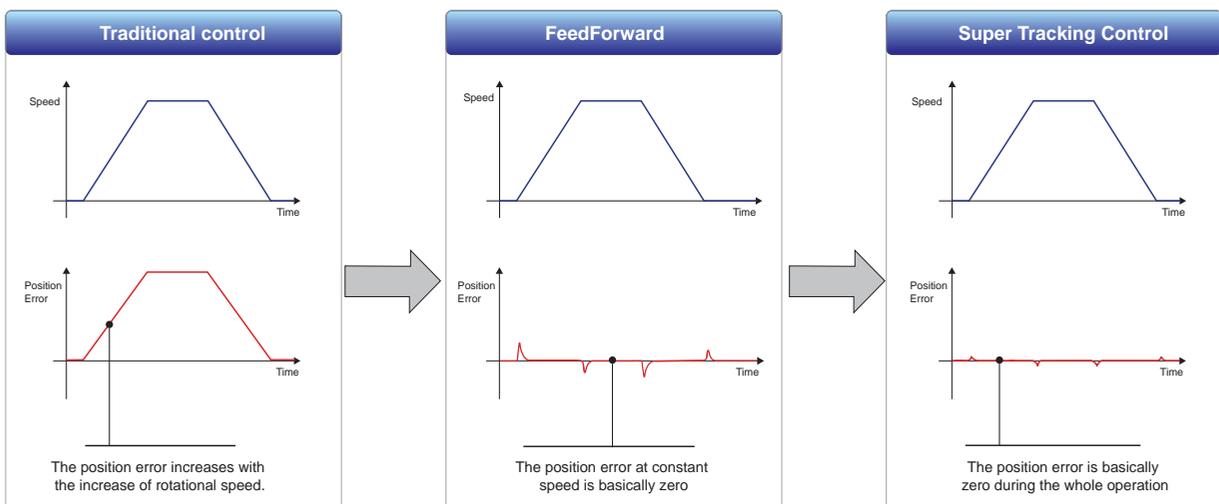
The low cogging torque motor is equipped with high-resolution absolute encoder and built-in high-precision position control algorithm, which makes the servo system run more smoothly and with higher accuracy, and significantly improves the positioning accuracy of the equipment.

- 26-bit Multi-turn Absolute Optical Encoder**
  - ◆ High resolution, up to 67,108,864 divisions per revolution
  - ◆ Optional battery backup for 16-bit multi-turn
- 21-bit Multi-turn Absolute Magnetic Encoder**
  - ◆ High resolution, up to 2,097,152 divisions per revolution
  - ◆ Optional battery backup for 16-bit multi-turn
  - ◆ Strong vibration resistance
  - ◆ Resistant to dust and oil stains
  - ◆ Anti condensation



### Super Command Tracking

The super tracking control function enables the motor to run smoothly, where the following error is basically zero at both constant speeds and acceleration/deceleration.



# Easy Set-up

The M56S servo system is delicately designed to achieve high efficiency in wiring, commissioning, and maintenance of your system.

## Unpacking

## Wiring

## Tuning

## Commissioning

## Easy wiring



## Easy tuning

- High speed USB communication between Luna software and drive
- The drive automatically recognizes motors with smart encoder
- Both auto-tuning and tuning-less adjustment function are available
- Stable and smooth operation without complicated gain settings

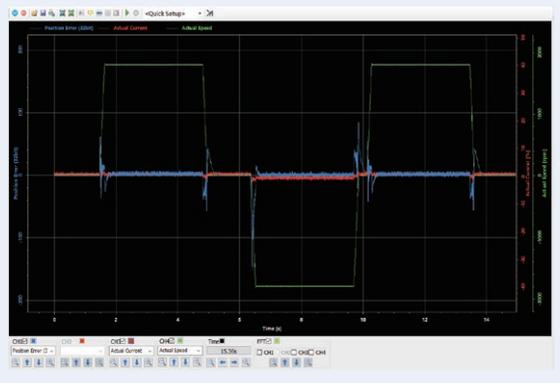
## Friendly software

### • Operating Status Monitor

The screenshot shows a software interface with several sections:

- Digital I/O:** Includes Digital Input (X1-X8) and Digital Output (Y1-Y8).
- Analog I/O:** Shows Analog Input (Ain 1, Ain 2) and Analog Output (Aout 1, Aout 2).
- Parameter:** Lists DC Bus Voltage (24.0 V), Drive Temperature (39.5°C), Actual Current (0.5%), Actual Speed (0.000 rpm), Pulse Counter, Command Position, Encoder Position, and Def Encoder Position.
- Alarm:** Lists various faults like Position Error, Drive Overtemp, Internal Voltage, Over Voltage, Low Voltage, Over-Current, Bad Encoder, and Blank Equipment.
- Warnings:** Lists warnings like J-Limit, N-Limit, Bad FRGA, Velocity Limit, Over Voltage, IC Bad Encoder, Regen Fault, Motor Overtemp, Encoder HT Error, Homed, E-CAT Comm Error, Emergency Stop, Abs. Encoder Battery, Abs. Position Last Warning, Abs. Position Over-flow, and Homing Phase Error.
- Register:** A table with columns for Bit, Data Register, and Value.

### • Real-time Oscilloscope

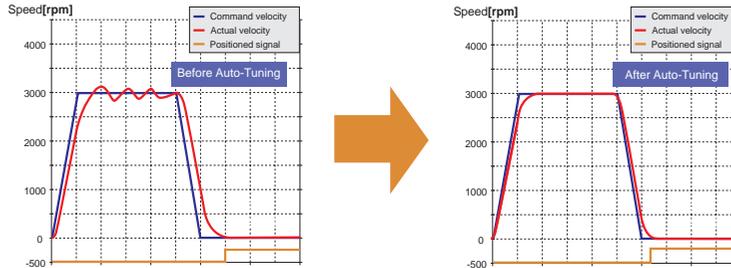


# Easy Tuning

## Auto-tuning

The real-time auto-tuning algorithm can automatically identify the load inertia (ratio), tune control gains and enable mechanical resonance suppression function. The auto-tuning function can greatly shorten system tuning time, and responsiveness as well as production efficiency.

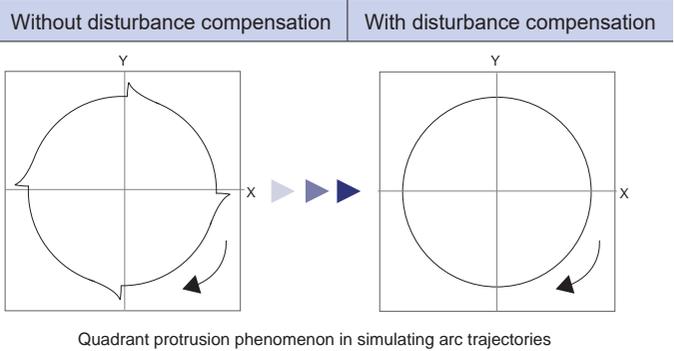
- ◆ Not be constrained by load types and drive control mode.
- ◆ High robustness with the guaranteed system stability margin.



## Disturbance Compensation Control

The disturbance compensation can effectively suppress the phenomenon of overquadrant bulge caused by the different friction of the mechanism and the influence of load change, and improve the tracking accuracy in multi-axis synchronous control.

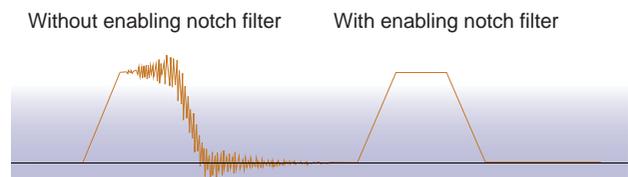
For example, the accuracy of arc trajectory in the interpolation control of XY mechanism can be improved.



## Notch Filters

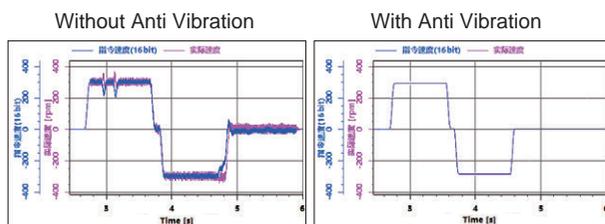
The M56S series provides 4 notch filters to suppress mechanical resonance in the system. The setting frequency range is 100~4000Hz.

- ◆ 2 sets of notch filters with automatically mechanical resonance frequency searching and setting.
- ◆ 2 sets of notch filters with manually frequency setting after analyzing the phenomena by Mechanical Analysis Tool.



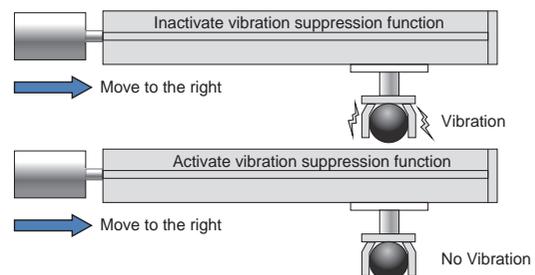
## Medium Frequency Vibration Suppression

The Anti Vibration control function in M56S series can effectively suppress the medium-frequency vibration that range is 100~1000Hz.



## End-effector Vibration Suppression

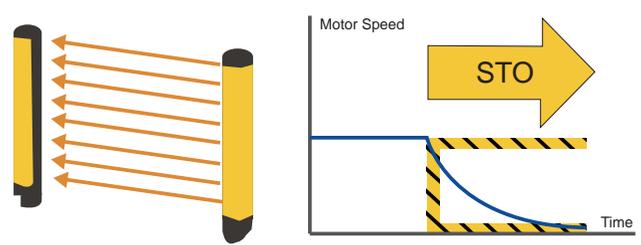
The end-effector vibration will lead to longer settling time, which results in decreased machine precision and production efficiency. M56S series can suppress such type of vibration to shorten the settling time as well as increase the control precision and equipment productivity.



# Reliable Operation

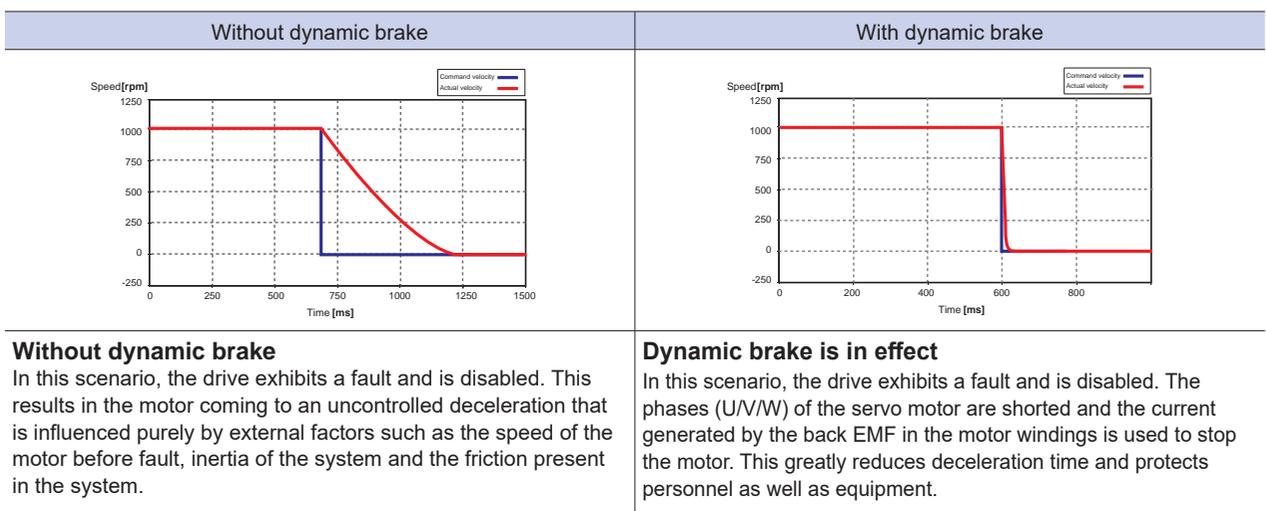
## STO Functional Safety

While the STO function is enabled, the drive's hardware circuitry automatically forces all power transistors off to cut off the power of the motor. This function is meant to protect personnel as well as equipment in emergency situations. M56S series drive meets UL61800-5-2(SIL 3), IEC61508(SIL 3), ISO 13849-1(PL e).



## Dynamic Brake

The dynamic brake function can be used to quickly stop the motor rotation when a fault occurs at either the motor or the drive. The dynamic brake function is implemented by the short-circuit of all phase windings of the motor, which brings the motor to a stop at the highest deceleration so as to protect personnel and equipment effectively.



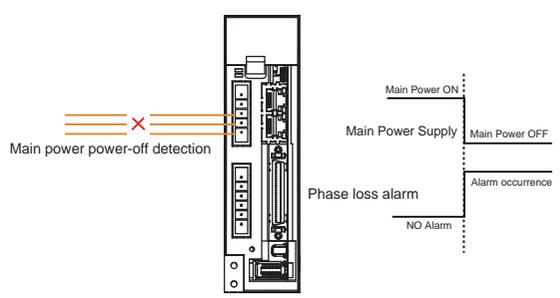
## Built-in Regenerative Resistor

Almost all the M56S drives have built-in regenerative absorbing resistor, it can consume the regenerative energy when the motor decelerates rapidly to ensure the servo system operates normally in this situation. No additional regenerative resistor is required for most applications.



## Main Power Power-off & Phase Loss Detection

The M56S servo drives monitor main power, a fault will occur if the main power power-off or main power phase loss. This serves as an added protection measure against damage that might result from these issues.



## New Motor Features

### Various Product Lineup

- ◆ Power Rating: 50W ~ 7.5kW
- ◆ Frame Size: 40/60/80/100/130/180mm
- ◆ Low / Medium / High Inertia Servo Motor



### Low, Medium, High Inertia Servo Motor

The SM3 series of servo motors offers a variety of rotor inertia options. Selecting the appropriate motor from the SM3 series contributes to achieving an optimal inertia ratio between the load and the motor, which is crucial for improved mechanical performance.

Low inertia motor	Medium inertia motor	High inertia motor
Suitable for most of applications ◆ Low inertia load ◆ High acceleration and deceleration ◆ Quick and frequent starting and stopping	Suitable for applications with low mechanical stiffness ◆ Belt and synchronous belt load ◆ Stability improvement during high-speed operation	Suitable for large inertia load ◆ Large inertia belt load ◆ Turntable with a large moment of inertia ◆ Low speed and high torque

### Various Encoder Motor

The SM3 series of servo motors can be outfitted with a range of encoders tailored to different applications. Selecting the appropriate encoder motor is pivotal in enhancing equipment performance and optimizing system costs.

#### 26-bit Single/Multi-turn Absolute Optical Encoder

- ◆ High resolution, up to 67,108,864 divisions per revolution
- ◆ Optional battery backup for 16-bit multi-turn

#### 21-bit Single/Multi-turn Absolute Magnetic Encoder

- ◆ High resolution, up to 2,097,152 divisions per revolution
- ◆ Optional battery backup for 16-bit multi-turn
- ◆ Strong vibration resistance
- ◆ Resistant to dust and oil stains
- ◆ Anti condensation

#### 17-bit Battery-less Single/Multi-turn Absolute Encoder

- ◆ High resolution, up to 131,072 divisions per revolution
- ◆ Battery-less for 16-bit multi-turn
- ◆ Reduced maintenance and costs due to lack of battery



## Smaller Size and Higher Efficiency

The servo motor incorporates a new structure and magnetic circuit design, resulting in a smaller size and higher power density. Additionally, the electromagnetic scheme has been optimized to enhance the efficiency of the servo motor and reduce heat generation.



## IP67

The SM3 series of servo motors are designed to have IP67 protection against dust and water. (except the shaft through hole of the motor mounting face)

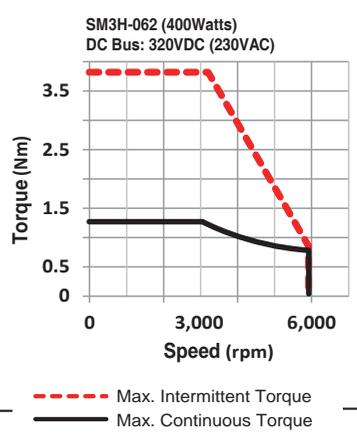
If the mounting face of the motor needs to meet the IP67 protection level, please install the oil seal.



Note: The installation of oil seal will bring extra torque loss. It is recommended to reduce the rating of motors with oil seals by 10%.

## High Speed Motor with 350% of Rated Torque

- ◆ The maximum speed of SM3 series servo motor is up to 6000rpm.
- ◆ 350% peak torque is conducive to providing higher acceleration and deceleration, leading to better manufacture efficiency and capacity.



## Various of Control Mode

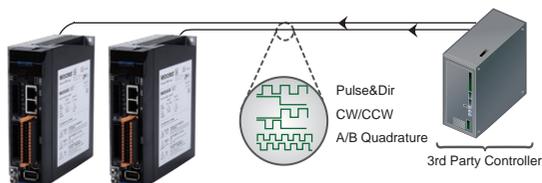
### Digital Pulse Position Modes

Support STEP/DIR, CW/CCW pulse and A/B quadrature pulse.

**Low-speed Open Collector Pulse Input:** 500kHz, 24VDC

**Low-speed Differential Input:** 500kHz, 5VDC

**High-speed Differential Input:** 4MHz, 5VDC

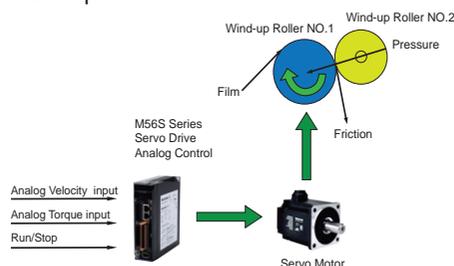


### Analog Input / Output Control Modes

Certain models have two analog inputs and two analog outputs.

-10V ~ +10V analog inputs can be used for analog velocity and analog torque control.

-10V ~ +10V analog outputs can be used to monitor the speed and torque of motor.



### Built-in Software PLC — Q Program

Q Programmer is MOONS' own single-axis motion control software based on SCL commands. It can be used to create sophisticated and functional programs that can be saved to a drive's nonvolatile memory, and then run stand-alone, or without a permanent connection to the host. Q drives offer a high level of flexibility and functionality to the machine designer and system integrator.

Features:

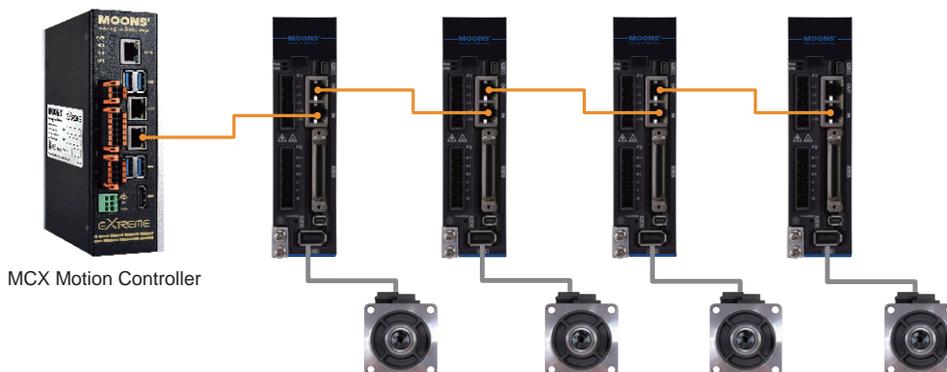
- Motion control commands (relative position, absolute position, homing mode, etc.)
- Multi-tasking
- Conditional Processing (external I/O, internal command)
- Math Calculation (+, -, \*, /, &, or)
- Data register manipulation
- Logic motion commands (loop, call functions)

Line	Label	Cmd	Param1	Param2	Comment
1		MT	1		Turn ON Multi-Tasking
2		DL	3		Turn OFF limits
3		PF	2000		Set Position Fault limit
4		CC	2		Set continuous current to 50%
5		CP	2		Also set peak current to same
6		DI	4000		Make distance positive for CW
7		JM	1		Set Jog mode to positioning
8		J5	1		Set Jog speed to 1 rev/sec
9		JA	10		Set Jog accel to 10 rev/sec/sec
10		CJ			Start jogging
11	Label2	TR	x	100	Test Reg "X" against 100
12		QJ	G	#Label1	Jump if greater than
13		TR	x	-100	Test Reg "X" against -100
14		QJ	G	#Label2	Jump if greater than
15	Label1	SM	M		Stop move with max accel (AM)
16		WM			Wait for stop to complete
17		EP	0		Set encoder position to zero
18		VE	1		Set Velocity to 1 rev/sec
19		DI	-8000		Set home offset distance (CCW)
20		FL			Do a Relative move
21		WM			Wait for move to complete
22		SP	0		Set absolute position to zero
23		AX			Clear any faults just in case
24		WT	0.1		Wait 0.1 seconds
25		ME			Enable servo drive
26		CC	2.5		Set current to normal
27		CP	5		Set peak current to normal
28		MT	0		Disable Multi-Tasking
...	...	...	...	...	...

### Field Bus Control

M56S servo system support various of industrial field bus options such as EtherCAT, CANopen, Modbus/RTU, Modbus/TCP, EtherNet/IP and Profinet.

EtherCAT® is a registered trademark, licensed by Beckhoff Automation GmbH.



# Various of Field Bus

## EtherCAT



### High Speed, High Efficiency

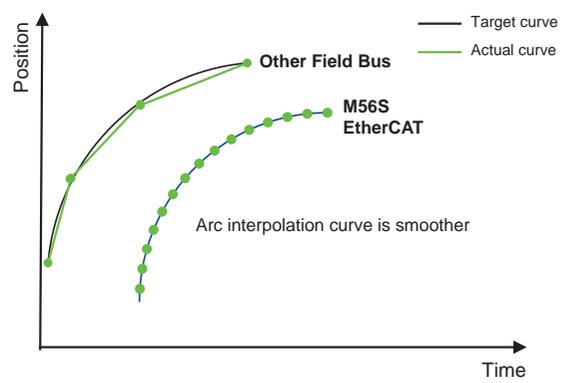
Full duplex, communication baud rate 100Mbps. Support CoE(CiA 402 protocol), VoE (Vendor over EtherCAT) Support PP, PV, TQ, CSP, CSV, CST, HM mode and full closed-loop mode.

Combine with MOONS' EtherCAT stepper series product, we can meet all your motion demands.



### High Performance

The synchronous cycle of M56S series EtherCAT products is up to 250μs, which technically makes the position command subdivision smaller, and the equipment movement smoother.



## CANopen



Standard CAN bus interface is available in M56S series servo drives, which makes it easy to get integrated to the industrial field bus.

Features	Specification
Physical Layer Standard	CiA 303-1 Cabling and connector pin assignment
Communication Protocol	CiA 301 Application Layer and Communication Profile CiA 402 Device Profile Drives and Motion Control
Bus Connector	RJ45
Communication Rate	12.5Kbps, 20Kbps, 50Kbps, 125Kbps, 250Kbps, 500Kbps, 800Kbps, 1Mbps
Message Type	SDO, PDO, SYNC, EMCY, NMT, Heartbeat
Control Mode	Profile Position, Profile Velocity, Profile Torque, Homing Mode, Q Program
PDO Data	4 RxPDOs, 4 TxPDOs
Support Axis	Up to 112 axis

## Modbus



M56S series servo drive supports Modbus communication protocol, it provides an easy motion control platform for modifying drive parameters, and monitor the status of the servo drive.

Features	Specification
Physical Layer Standard	RS-485, Ethernet
Communication Protocol	Modbus/RTU, Modbus/TCP
Bus Connector	RJ45
Communication Rate	RS-485: 9600bps, 19200bps, 38400bps, 57600bps, 115200bps Ethernet: 10/100Mbps
Control Mode	Position Mode, Velocity Mode, Torque Mode, Homing Mode, Q Program
Support Axis	Modbus/RTU: Up to 32 axis Modbus/TCP: The number of axes supported on the Ethernet depends on the network configuration

## EtherNet/IP



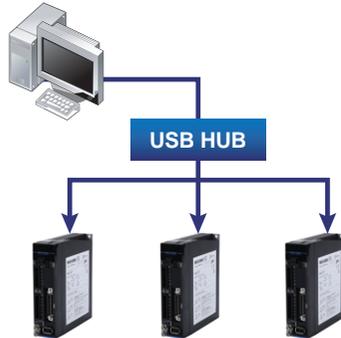
EtherNet/IP is an industrial Ethernet protocol based on Ethernet and TCP/IP. The M56S series of servo drives provides motion control solutions based on EtherNet/IP communication protocols.

Features	Specification
Physical Layer Standard	Ethernet
Communication Protocol	EtherNet/IP
Bus Connector	RJ45
Communication Rate	Ethernet: 10/100Mbps
Control Mode	Position Mode, Velocity Mode, Torque Mode, Homing Mode, Q Program
Support Axis	The number of axes supported on the Ethernet depends on the network configuration.

## Friendly Software

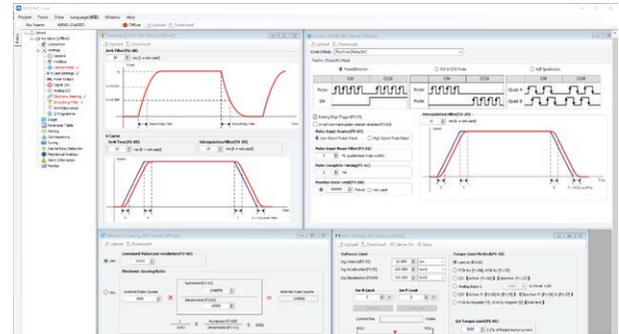
### USB Multi-axis Tuning

Based on USB communication, it can realize multi-axis tuning, simple and convenient.



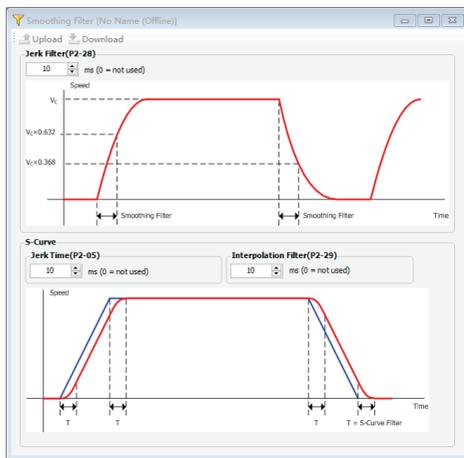
### Tree Structure

Newly designed tree-structure software, multi-window display, clear function classification.



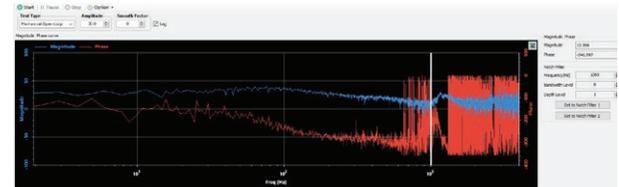
### Graphical Setting Interface

The setting interface adopts a simple and clear graphical interface, which can intuitively set the required functions.



### Mechanical Analysis

Quickly diagnose the frequency characteristics of mechanical equipment and draw a Bode diagram. It can be used to detect the resonance point and frequency response characteristics of the machine, and quickly set the notch filter.



### Powerful Oscilloscope Function

- Real-time data curve display
- Up to 4 channels with 16bit data per channel and 8kHz sampling rate
- Up to 2 channels with 32bit data per channel and 8kHz sampling rate
- In the selected cursor area, display the maximum value, minimum value, root mean square, etc.
- Customizing trigger conditions
- Monitoring the operation status of the drive and the digital inputs and outputs



## General Specifications

### Safety Certification

M56 series products are designed to meet the following standards.



		Drive	Motor
Europe	EMC	EN 61800-3	EN 60034-1
			EN 61000-6-2
			EN 61000-6-4
	LVD	EN 61800-5-1	EN 60034-1
			EN 60034-5
Function Safety (STO)		UL61800-5-2(SIL 3)	
		IEC61508(SIL 3)	
		ISO13849-1(PL e)	
UL Standard		UL 61800-5-1	UL 1004-1
			UL 1004-6
		File No.E332730	File No.E525873
CSA Standard		C22.2 No.274.13	CSA C22.2 No.100

**Note:** The 3kW and above servo products are currently undergoing UL certification.

### Motor General Specifications

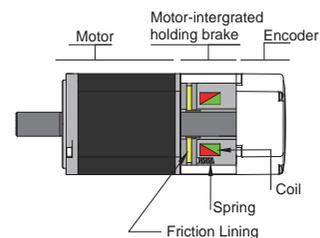
Insulation class	Class F (155°C)	Ambient temperature	Working temperature: 0°C ~ 40°C Storage temperature: -20°C ~ 60°C
Protection level	IP67 ( Except transfixion part of shaft )	Humidity	Storage and usage: 20 ~ 85%RH ( no condensation )
Installation conditions	Indoor installation, avoiding direct sunlight, corrosive and flammable gas	Altitude	Derating is not required for altitudes not higher than 1000m Derating 1% for every additional 100m for altitudes between 1000m and 2000m
Vibration	Under 49m/s <sup>2</sup> , 10 ~ 60Hz(Do not use continuously at resonance frequency)		

### Brake Specifications

Motor brake is used to prevent motor from rotating by power off the servo system. The most common way of use is in vertical application, when the motor is disabled or powered off, in order to prevent the displacement of the mechanical mechanism driven by the motor due to gravity and other reasons, the servo motor with brake needs to be used.

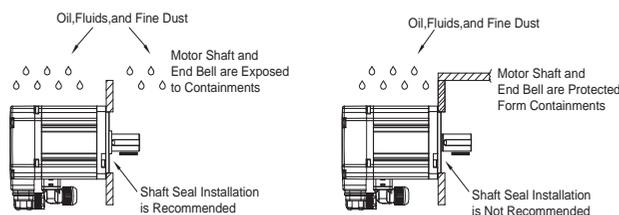
When the brake is powered on, the armature is retracted, the brake pad is released, and the motor can operate normally. When the brake is powered off, the armature is released, the brake pad is locked, and the motor can't rotate.

Frame	40mm	60mm	80mm	100mm	130mm	180mm
Static Friction Torque (Nm)	0.32	1.5	3.2	8.0	18.5	60
Rated Voltage (VDC)	24					
Power Waste (W @ 20°C)	6.3	7.2	9.6	14.4	24.3	52
Current (A)	0.26	0.3	0.4	0.6	1.05	2.16
Braking Time	< 70ms (Standard air gap, at 20°C)					
Release Time	< 25ms					
Release Voltage	18.5VDC max. (at 20°C)					



### Shaft Seal

Industrial oil seals can block contaminants (oils, impurities) to extend the life of the motor. The oil seal will produce a certain resistance to the motor shaft, about 10% torque will be lost.



## Featured Function Application

### Full Closed-loop Control

The M56S series allows users to use an external encoder. This encoder is used along with the motor encoder to increase positioning accuracy during operation. Using two encoders in this manner is known as full closed-loop operation and can greatly increase servo responsiveness and reliability.



### More Functions

Position / Velocity / Torque Control
Support position control, velocity control and torque control. <ul style="list-style-type: none"> <li>Position control supports pulse, internal position or communication command for positioning.</li> <li>Velocity control supports analog, internal multi-segments velocity or communication commands.</li> <li>Torque control supports analog, internal torque or communication commands.</li> </ul>
Control Mode Switching
Position control, speed control, and torque control can be switched using an external digital input. The RD and RF types of drive can switch between 2 control modes.
Gain Switching Function
The gain during operation and stop can be automatically switched under certain conditions. Or freely switch between the two sets of gains via digital input.
Internal Multi-segment Velocity Function
Velocity control is possible with digital inputs. 8 segments of velocity can be saved in the drive, and the corresponding internal velocity control commands can be selected via digital inputs.
Pulse Input Inhibit Function
When the pulse inhibit input signal is valid, the drive ignores the external pulse command and the motor decelerates to stop.
Internal Software Position Limit
In absolute value systems, the software position limit can be set to protect the device without the external limit sensor.

Configurable Input and Output
<ul style="list-style-type: none"> <li>The input functions can be assigned to any of the digital input by parameters.</li> <li>The output functions can be assigned to any of the digital output by parameters.</li> </ul>
Encoder Feedback Output
<ul style="list-style-type: none"> <li>The motor encoder feedback and the second encoder feedback are output in A/B/Z pulse mode, and the pulse division output is supported.</li> <li>Support for pulse command By-pass output.</li> </ul>
Analog Input
Support 2 analog voltage inputs for analog velocity control and torque control.
Analog Monitor output
2 analog output, real-time voltage output the command or actual speed, command or actual torque, or the actual position error of the motor.
Zero Speed Clamp Function
In the velocity control mode, when the zero speed clamp signal is valid, when the actual speed is less than the zero speed threshold value, the servo motor enters the zero position lock state. At this time, the internal position loop of the drive is activated, and even if the external force rotates the motor, it also returns to the clamping position.
Stop Mode Setting
When the drive servo off or fault, the stop type(free run, reduce speed, dynamic brake ) and the status after stopping can be selected.
Moving Command Smoothing Filter
The command smoothing function filters the position command and the speed command, which makes the servo motor run smoother even if the command is abrupt.

## Drive Part Numbering

# M56S - 2 3A0 R F - \*\*\*

- ① M56S Series
- ② Supply Voltage \*1
  - 2 --- Single/Three-Phase 220VAC
  - 3 --- Three-Phase 400VAC
- ④ Function Type
- ⑤ Model Type
- ⑥ Customization

\*1 Line to Line Voltage  
 \*2 Use Single/Three-Phase 220VAC input  
 \*3 Available for single-phase while the motor power is under 1.5kW

### ③ Current

Supply Voltage	Current	Rated Current A(rms)	Peak Current A(rms)	Rated Power
*2 2	1A8	1.8	5.4	200W
	3A0	3	12	400W
	4A5	4.5	15	750W
	6A0	6	21	1.0kW
	10A	10	30	1.5kW
	13A	13	45	2.5kW
*3 3	6A0	6	18	1.5kW
	13A	13	40	3.0kW
	17A	17	42.5	5.0kW
	21A	21	52.5	6.0kW
	26A	26	65	7.5kW

## Control Function Type

### Servo Drive

#### -R RS-485

### RS-485

- ◆ Support Modbus/RTU
- ◆ Pulse Control
- ◆ Analog Control
- ◆ 2 Analog Inputs\*1
- ◆ 2 Analog Outputs\*1
- ◆ Position, Velocity, Torque Control
- ◆ Encoder feedback output
- ◆ Built-in Q program control function
- ◆ Full Closed Loop Control\*2
- ◆ Support STO(SIL3)\*2
- ◆ Dynamic Brake\*2
- ◆ USB(Configuration)

#### -EC EtherCAT

### EtherCAT

- ◆ EtherCAT
- ◆ 2 Analog Inputs\*1
- ◆ 2 Analog Outputs\*1
- ◆ Positon, Velocity, Torque Control
- ◆ Built-in Q program control function
- ◆ Full Closed Loop Control\*2
- ◆ Support STO(SIL3)\*2
- ◆ Dynamic Brake\*2
- ◆ USB(Configuration)

#### -C CANopen

### CANopen

- ◆ CiA 301 & CiA 402 protocols
- ◆ 2 Analog Inputs\*1
- ◆ 2 Analog Outputs\*1
- ◆ Positon, Velocity, Torque Control
- ◆ Built-in Q program control function
- ◆ Full Closed Loop Control\*2
- ◆ Support STO(SIL3)\*2
- ◆ Dynamic Brake\*2
- ◆ USB(Configuration)

#### -IP EtherNet/IP

### EtherNet/IP

- ◆ EtherNet/IP
- ◆ Modbus/TCP
- ◆ 2 Analog Inputs\*1
- ◆ 2 Analog Outputs\*1
- ◆ Positon, Velocity, Torque Control
- ◆ Built-in Q program control function
- ◆ Full Closed Loop Control\*2
- ◆ Support STO(SIL3)\*2
- ◆ Dynamic Brake\*2
- ◆ USB(Configuration)

#### -PN Profinet

### PROFINET

- ◆ Support Profinet protocols
- ◆ 2 Analog Inputs\*1
- ◆ 2 Analog Outputs\*1
- ◆ Positon, Velocity, Torque Control
- ◆ Built-in Q program control function
- ◆ Full Closed Loop Control\*2
- ◆ Support STO(SIL3)\*2
- ◆ Dynamic Brake\*2
- ◆ USB(Configuration)

Coming soon...

\*1\*2 Certain models don't support this function. Please refer to the drive list on page 16 for details.

## Servo Drive Table

Function Type		-R—RS-485		-EC—EtherCAT		-C—CANopen		-IP—EtherNet/IP		-PN—Profinet	
											
Model Type		F	D	X	N	X	N	X	N	X	N
Control Mode	Position Mode	●	●	●	●	●	●	●	●	●	●
	Velocity Mode	●	●	●	●	●	●	●	●	●	●
	Torque Mode	●	●	●	●	●	●	●	●	●	●
	Q Program	●	●	●	●	●	●	●	●	●	●
	Full Closed-loop Control	●		●		●		●		●	
Interface	5V Pulse Inputs	●	●								
	24V Pulse Inputs	●	●								
	2 Analog Inputs	●	●	●		●		●		●	
	2 Analog outputs	●		●		●		●		●	
	10 inputs/6 outputs (Digital)	●	●								
	8 inputs/4 outputs (Digital)			●	●	●	●	●	●	●	●
	Encoder Feedback Output	●	●								
	Second Encoder Input	●		●		●		●		●	
Comm Port	USB (Configuration)	●	●	●	●	●	●	●	●	●	●
	RS-485	●	●								
	EtherCAT			●	●						
	CANopen					●	●				
	EtherNet/IP							●	●		
	Modbus TCP							●	●		
	Profinet									●	●
Safety Function	Dynamic Brake	●		●		●		●		●	
	STO	●		●		●		●		●	

 Short delivery time

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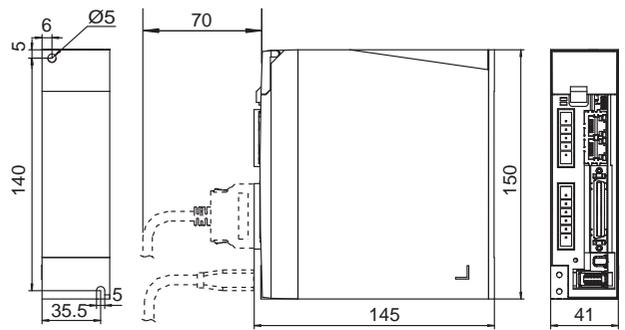
Drive Specification

Motor Specification

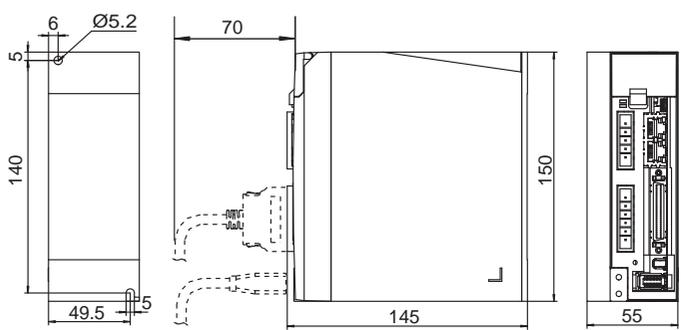
Accessories

Drive Mechanical Dimensions (Unit: mm)

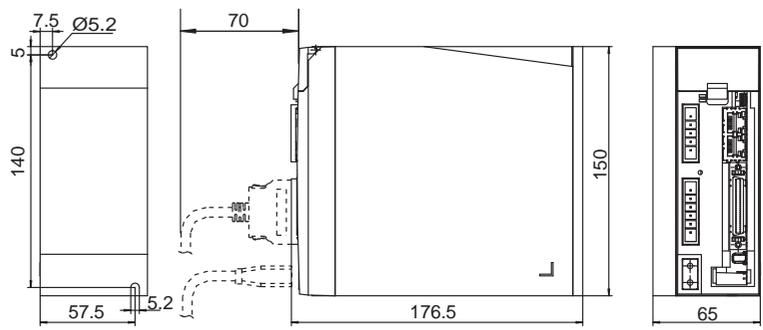
□ M56S-21A8 ■◆ (200W)



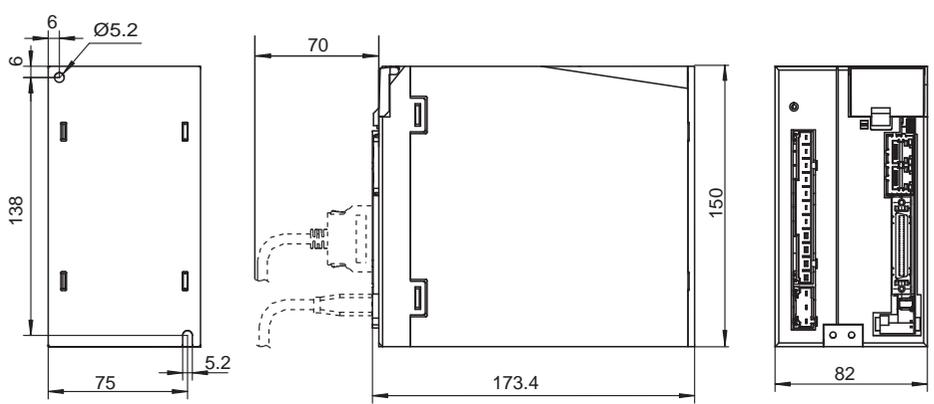
□ M56S-23A0 ■◆ (400W)



□ M56S-24A5 ■◆ (750W)



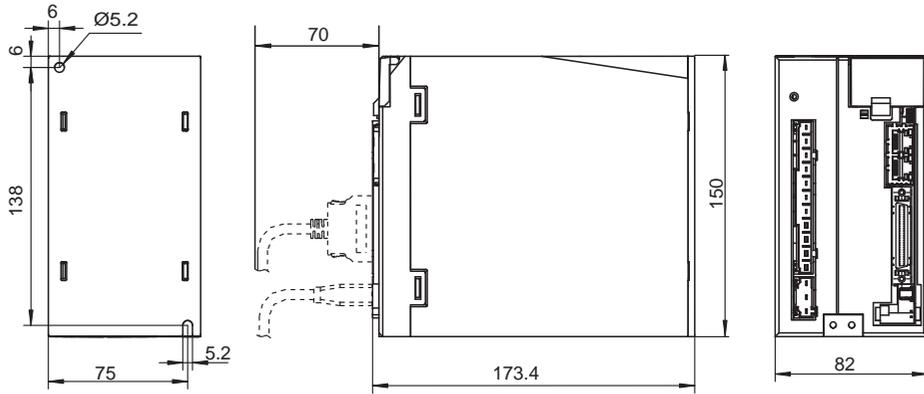
□ M56S-26A0 ■◆ (1.0kW)  
 M56S-210A ■◆ (1.5kW)  
 M56S-213A ■◆ (2.5kW)



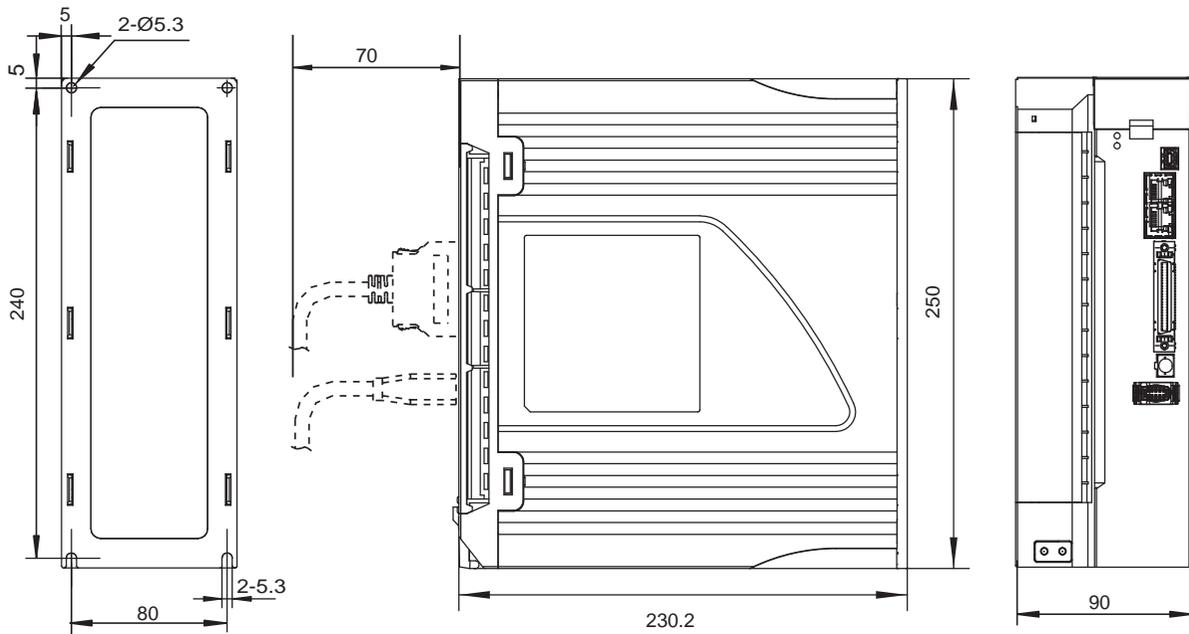
■ : Function Type ◆ : Model Type

Drive Mechanical Dimensions(Unit: mm)

- M56S-36A0 ■◆ (1.5kW)
- M56S-313A ■◆ (3.0kW)



- M56S-317A ■◆ (5.0kW)
- M56S-321A ■◆ (6.0kW)
- M56S-326A ■◆ (7.5kW)



■ : Function Type    ◆ : Model Type

## Motor Part Numbering

**SM3 L - 13 2 A X N U V - \*\*\***

Servo Motor  
SM3 Series

Inertia Type	
L	Low Inertia
M	Medium Inertia
H	High Inertia

Frame Size	
04	40mm
06	60mm
08	80mm
10	100mm
13	130mm
18	180mm

Motor Length	
1	1 Stack
2	2 Stacks
3	3 Stacks
4	4 Stacks
5	5 Stacks

Voltage	
A	220VAC
Y	400VAC

Custom Code

Shaft	
N	Circular shaft without oil seal
V	Keyway without oil seal
K	Keyway with installed oil seal

Connector & Rear Cover Type	
D	Direct-mount with sealed plastic connector, metal rear cover
P	Direct-mount with sealed plastic connector, standard rear cover
U	Direct-mount with sealed metal straight connector, standard rear cover

Brake	
N	No brake
B	With brake(24VDC)

Encoder	
T <sup>1</sup>	26-bit Multi-turn Absolute Optical Encoder
X	21-bit Multi-turn Absolute Magnetic Encoder
B	17-bit Battery-less Multi-turn Absolute Encoder

Note: \*1 For 100/130/180mm frame size motor, the encoder resolution is 23-bit.

## Motor Products Table

Rated Power	Low Inertia		Medium Inertia		High Inertia		
	Frame Size	Rated Speed (Max.Speed)	Frame Size	Rated Speed (Max. Speed)	Frame Size	Rated Speed (Max. Speed)	
W	mm	rpm	mm	rpm	mm	rpm	
50					40	3000 (6000)	
100	40	3000 (6000)			40		
200	60				60		
400	60				60		
750	80				80		
850						130	1500 (3000)
1000	80						
1000	100		130	2000 (3000)			
1300						130	
1500	100		130				
1800						130	
2000	100		130				
2500	100						
2900					180		
3000			130				
4400					180		
5500					180		
7500					180		

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Frame Size (mm)	Inertia Type	Winding Voltage (VAC)	Rated Power (watts)	Rated Torque (N·m)	Peak Torque (N·m)	Rated Speed (rpm)	Max. Speed (rpm)	Rated Current A(rms)	Peak Current A(rms)	Matching Servo Motor					
										26-bit Multi-turn Absolute Optical Encoder	23-bit Multi-turn Absolute Optical Encoder	21-bit Multi-turn Absolute Magnetic Encoder			
40	High	220	50	0.16	0.64	3000	6000	1.4	4.8	SM3H-041AT □ P △	—	SM3H-041AX □ P △			
	Low			100	0.32			1.28	1.2	5.9	SM3L-042AT □ D △	—	SM3L-042AX □ D △		
	High		0.32		1.28			1.4	5.7	SM3H-042AT □ P △	—	SM3H-042AX □ P △			
60	Low		200	0.64	1.9			1.5	5.4	SM3L-061AT □ P △	—	SM3L-061AX □ P △			
	High				0.64			2.24	1.7	5.9	SM3H-061AT □ P △	—	SM3H-061AX □ P △		
	Low		400	1.27	3.8			2.8	10	SM3L-062AT □ P △	—	SM3L-062AX □ P △			
		4.44			2.8			9.8	SM3H-062AT □ P △	—	SM3H-062AX □ P △				
80	Low	750	2.4	6.7	4.5			14	SM3L-083AT □ P △	—	SM3L-083AX □ P △				
	High			2.4	8.4			4.5	16.7	SM3H-083AT □ P △	—	SM3H-083AX □ P △			
	Low		1000	3.2	9.6			5.6	19	SM3L-084AT □ P △	—	SM3L-084AX □ P △			
100	Low	220	1000	3.2	9.6			2000	3000	6000	6.0	21	—	SM3L-102AT □ U △	SM3L-102AX □ U △
			1500	4.9	14.7					5700	9.6	36.5	—	SM3L-103AT □ U △	SM3L-103AX □ U △
			2000	6.4	19.2	5600	12.7			44	—	SM3L-104AT □ U △	SM3L-104AX □ U △		
			2500	8	24	5600	13			45	—	SM3L-105AT □ U △	SM3L-105AX □ U △		
	High	400	1000	3.2	9.6	6000	3.8			14	—	SM3L-102YT □ U △	SM3L-102YX □ U △		
			1500	4.9	14.7		5.7			21	—	SM3L-103YT □ U △	SM3L-103YX □ U △		
			2000	6.4	19.2		7.4			25.5	—	SM3L-104YT □ U △	SM3L-104YX □ U △		
			2500	8	24		7.7			26	—	SM3L-105YT □ U △	SM3L-105YX □ U △		
130	Medium	220	1000	4.77	14.3	2000	3000	5.4	16.9	—	SM3M-132AT □ U △	SM3M-132AX □ U △			
			1500	7.16	21.5			8.5	26	—	SM3M-133AT □ U △	SM3M-133AX □ U △			
			2000	9.55	28.6			11	32.7	—	SM3M-134AT □ U △	SM3M-134AX □ U △			
		400	1000	4.77	14.3			3.3	10	—	SM3M-132YT □ U △	SM3M-132YX □ U △			
			1500	7.16	21.5			5.1	16	—	SM3M-133YT □ U △	SM3M-133YX □ U △			
			2000	9.55	28.6			6.5	18.6	—	SM3M-134YT □ U △	SM3M-134YX □ U △			
	High	220	850	5.39	16.2	1500	3000	10.5	30	—	SM3M-135YT □ M △	SM3M-135YX □ M △			
			1300	8.34	25			6	19	—	SM3H-132AT □ U △	SM3H-132AX □ U △			
			1800	11.5	34.5			9.6	29.6	—	SM3H-133AT □ U △	SM3H-133AX □ U △			
		400	850	5.39	16.2			13	45	—	SM3H-134AT □ U △	SM3H-134AX □ U △			
1300	8.34		25	3.6	11	—	SM3H-132YT □ U △	SM3H-132YX □ U △							
180	High	400	2900	18.5	55.5	1500	3000	5.8	17.5	—	SM3H-133YT □ U △	SM3H-133YX □ U △			
			4400	28	84			8.1	23.2	—	SM3H-134YT □ U △	SM3H-134YX □ U △			
			5500	35	105			10.5	35.5	—	SM3H-182YT □ U △	—			
			7500	48	120			16.7	54.7	—	SM3H-183YT □ U △	—			
				20.9	70			—	SM3H-184YT □ U △	—					
25.2	73.4	—	SM3H-185YT □ U △	—											

□ : Brake Options △ : Oil Seal Options Please refer to the numbering system of servo motor on page 19.

◆ : Model Type Please refer to the numbering system of servo drive on page 15.

		Matching Servo Drive				
	17-bit Battery-less Multi-turn Absolute Encoder	-R RS-485	-EC EtherCAT	-C CANopen	-IP EtherNet/IP	-PN Profinet
	SM3L-042AB □ D △	M56S-21A8R ◆	M56S-21A8EC ◆	M56S-21A8C ◆	M56S-21A8IP ◆	M56S-21A8PN ◆
	SM3L-061AB □ D △					
	SM3L-062AB □ D △	M56S-23A0R ◆	M56S-23A0EC ◆	M56S-23A0C ◆	M56S-23A0IP ◆	M56S-23A0PN ◆
	SM3L-083AB □ D △	M56S-24A5R ◆	M56S-24A5EC ◆	M56S-24A5C ◆	M56S-24A5IP ◆	M56S-24A5PN ◆
	SM3L-084AB □ D △	M56S-26A0RF	M56S-26A0ECX	M56S-26A0CX	M56S-26A0IPX	M56S-26A0PNX
	—	M56S-210ARF	M56S-210AECX	M56S-210ACX	M56S-210AIPX	M56S-210APNX
	—	M56S-213ARF	M56S-213AECX	M56S-213ACX	M56S-213AIPX	M56S-213APNX
	—	M56S-36A0RF	M56S-36A0ECX	M56S-36A0CX	M56S-36A0IPX	M56S-36A0PNX
	—	M56S-313ARF	M56S-313AECX	M56S-313ACX	M56S-313AIPX	M56S-313APNX
	—	M56S-26A0RF	M56S-26A0ECX	M56S-26A0CX	M56S-26A0IPX	M56S-26A0PNX
	—	M56S-210ARF	M56S-210AECX	M56S-210ACX	M56S-210AIPX	M56S-210APNX
	—	M56S-213ARF	M56S-213AECX	M56S-213ACX	M56S-213AIPX	M56S-213APNX
	—	M56S-36A0RF	M56S-36A0ECX	M56S-36A0CX	M56S-36A0IPX	M56S-36A0PNX
	—	M56S-313ARF	M56S-313AECX	M56S-313ACX	M56S-313AIPX	M56S-313APNX
	—	M56S-26A0RF	M56S-26A0ECX	M56S-26A0CX	M56S-26A0IPX	M56S-26A0PNX
	—	M56S-210ARF	M56S-210AECX	M56S-210ACX	M56S-210AIPX	M56S-210APNX
	—	M56S-213ARF	M56S-213AECX	M56S-213ACX	M56S-213AIPX	M56S-213APNX
	—	M56S-36A0RF	M56S-36A0ECX	M56S-36A0CX	M56S-36A0IPX	M56S-36A0PNX
	—	M56S-313ARF	M56S-313AECX	M56S-313ACX	M56S-313AIPX	M56S-313APNX
	—	M56S-317ARF	M56S-317AECX	M56S-317ACX	M56S-317AIPX	M56S-317APNX
	—	M56S-321ARF	M56S-321AECX	M56S-321ACX	M56S-321AIPX	M56S-321APNX
	—	M56S-326ARF	M56S-326AECX	M56S-326ACX	M56S-326AIPX	M56S-326APNX

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## Drive Specification

### -R—RS-485 Type 220VAC Specification

Input Power	M56S-21A8 ■◆	Main Circuit	Single / Three-phase, AC200 ~ 240V ± 10%, 50/60Hz						
	M56S-23A0 ■◆		Control Circuit	Single-phase, AC200 ~ 240V ± 10%, 50/60Hz					
	M56S-24A5 ■◆	Main Circuit		Three-phase, AC200 ~ 240V ± 10%, 50/60Hz					
	M56S-26A0RF		Control Circuit	Single-phase, AC200 ~ 240V ± 10%, 50/60Hz					
M56S-210ARF	Control Circuit	Single-phase, AC200 ~ 240V ± 10%, 50/60Hz							
M56S-213ARF		Control Circuit	Single-phase, AC200 ~ 240V ± 10%, 50/60Hz						
Withstand Voltage			Primary to earth: withstand 1500 VAC, 1 min, (Leakage current: 20 mA)						
Environment	Temperature		<ul style="list-style-type: none"> <li>Ambient temperature: 0°C ~ 55°C (If the ambient temperature of servo drive is higher than 45°C, please install the drive in a well-ventilated location)</li> <li>Storage temperature: -20°C ~ 65°C</li> </ul>						
	Humidity		Both operating and storage : 10 ~ 85%RH or less						
	Altitude		Derating is not required for altitudes not higher than 1000m Derating 1% for every additional 100m for altitudes between 1000m and 2000m						
	Vibration		9.8m/s <sup>2</sup> or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)						
Motor Encoder Feedback			<ul style="list-style-type: none"> <li>26-bit multi-turn absolute optical encoder</li> <li>21-bit multi-turn absolute magnetic encoder</li> <li>17-bit battery-less multi-turn absolute encoder</li> </ul>						
Secondary Encoder Feedback*1			A/B/Z phase signal differential input						
I/O	Digital Signal	Input	10 Configurable optically isolate digital general inputs, 24VDC, 20mA						
		Output	6 Configurable optically isolate digital general outputs, Max. 30VDC, 100mA						
	Analog Signal	Input	2 Analog inputs, -10 ~ +10V, 12bit						
		Output*2	2 Analog outputs, -10 ~ +10V, Max.10mA						
	Pulse Signal	Input	2 Pulse Inputs (Optocoupler input, Line Receiver input): <ul style="list-style-type: none"> <li>Optocoupler input: 5 ~ 24V, minimum pulse width 1μs, max. pulse frequency 500KHz</li> <li>Line Receiver input: 5V differential signal, minimum pulse width 0.125μs, max. pulse frequency 4MHz</li> </ul>						
		Output	4 Outputs(3 Line Driver outputs, 1 open collector output) <ul style="list-style-type: none"> <li>Line Driver output: Encoder A/B/Z feedback output</li> <li>Open collector output: Encoder Z phase</li> </ul>						
Comm Port	USB		Connection with PC for configuration						
	RS-485		Modbus/RTU Communication protocol						
Front Panel			4 keys (MODE, UP, DOWN, SET) 5 - digital LED Display						
Regeneration Resistor			<ul style="list-style-type: none"> <li>-F Type Built-in regenerative resistor</li> <li>-D Type only 750W built-in regenerative resistor</li> <li>All models can be equipped with external regenerative resistors</li> </ul>						
Control Mode			1. Pulse Position Mode 2. Analog Velocity Mode 3. Analog Torque Mode 4. Internal Position Mode 5. Internal Torque Mode 6. Internal Velocity Mode 7. Command Torque Mode 8. Full Closed Loop Control Mode*3 9.Q programs that are pre-stored in the drive can also be started by digital input or command The control mode from 1 to 7 can be switched by digital input						
Control Input Signal			Servo-ON, Alarm Reset, CW/CCW Limit, Control Mode Select, Gain Select, Clear Position Error, Zero Speed Clamp, Command and Velocity input Direction control, Command and Torque input Direction control, Emergency Stop, Homing Switch, Torque Limit, Speed Limit, Pulse Inhibit, Multi-velocity Switch, Start Q Program, General Purpose Input						
Control Output Signal			Warning Output, Fault Output, Servo Ready, Velocity Reached, Torque Reached, Position Reached, Servo-on Status, Brake Release, Dynamic Position Error Following, Positioning Complete, Zero Speed Detected, Velocity Coincidence, Torque Coincidence, Velocity limit, Torque limit, Homing Finished, Soft Limit CW/CCW, General Purpose Output						
Protection			Over Current, Over Voltage, Under Voltage, Over Temperature, Bad Encoder Feedback, Over Load, Over Speed, Position Error, STO, CW/CCW Limit, Full Closed-loop Hybrid Deviation Fault, Main Power Phase Loss						
Dynamic Brake			-F Built-in						
STO			-F Built-in						
Weight			<table border="0"> <tr> <td>M56S-21A8 ■◆ : 0.8Kg</td> <td>M56S-26A0RF: 1.9Kg</td> </tr> <tr> <td>M56S-23A0 ■◆ : 1.1Kg</td> <td>M56S-210ARF: 1.9Kg</td> </tr> <tr> <td>M56S-24A5 ■◆ : 1.6Kg</td> <td>M56S-213ARF: 1.9Kg</td> </tr> </table>	M56S-21A8 ■◆ : 0.8Kg	M56S-26A0RF: 1.9Kg	M56S-23A0 ■◆ : 1.1Kg	M56S-210ARF: 1.9Kg	M56S-24A5 ■◆ : 1.6Kg	M56S-213ARF: 1.9Kg
M56S-21A8 ■◆ : 0.8Kg	M56S-26A0RF: 1.9Kg								
M56S-23A0 ■◆ : 1.1Kg	M56S-210ARF: 1.9Kg								
M56S-24A5 ■◆ : 1.6Kg	M56S-213ARF: 1.9Kg								

**Note:** \*1, \*2, \*3 -RD models don't support this function, please refer to page16 Servo Drive Table.

■ : Control Function Type ◆ : Model Type

## Drive Specification

### -R—RS-485 Type 400VAC Specification

Input Power	M56S-36A0RF M56S-313ARF	Main Circuit	Three-phase, AC380 ~ 440V ± 10%, 50/60Hz
	M56S-317ARF M56S-321ARF M56S-326ARF	Control Circuit	Single-phase, AC380 ~ 440V ± 10%, 50/60Hz
Withstand Voltage			Primary to earth: withstand 1800 VAC, 1 min. (Leakage current: 20 mA)
Environment	Temperature		<ul style="list-style-type: none"> <li>Ambient temperature: 0°C ~ 55°C (If the ambient temperature of servo drive is higher than 45°C, please install the drive in a well-ventilated location)</li> <li>Storage temperature: -20°C ~ 65°C</li> </ul>
	Humidity		Both operating and storage: 10 ~ 85%RH or less
	Altitude		Derating is not required for altitudes not higher than 1000m Derating 1% for every additional 100m for altitudes between 1000m and 2000m
	Vibration		9.8m/s <sup>2</sup> or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)
Motor Encoder Feedback			<ul style="list-style-type: none"> <li>23-bit multi-turn absolute optical encoder</li> <li>21-bit multi-turn absolute magnetic encoder</li> </ul>
Secondary Encoder Feedback			A/B/Z phase signal differential input
I/O	Digital Signal	Input	10 Configurable optically isolate digital general inputs, 24VDC, 20mA
		Output	6 Configurable optically isolate digital general outputs, Max. 30VDC, 100mA
	Analog Signal	Input	2 Analog inputs, -10 ~ +10V, 12bit
		Output	2 Analog outputs, -10 ~ +10V, Max. 10mA
	Pulse Signal	Input	2 Pulse Inputs (Optocoupler input, Line Receiver input): <ul style="list-style-type: none"> <li>Optocoupler input: 5 ~ 24V, minimum pulse width 1μs, max. pulse frequency 500KHz</li> <li>Line Receiver input: 5V differential signal, minimum pulse width 0.125μs, max. pulse frequency 4MHz</li> </ul>
		Output	4 Outputs(3 Line Driver outputs, 1 open collector output) <ul style="list-style-type: none"> <li>Line Driver output: Encoder A/B/Z feedback output</li> <li>Open collector output: Encoder Z phase</li> </ul>
Comm Port	USB		Connection with PC for configuration
	RS-485		Modbus/RTU Communication protocol
Front Panel			4 keys (MODE, UP, DOWN, SET) 5 - digital LED Display
Regeneration Resistor			Built-in regenerative resistor (All models can be equipped with external regenerative resistors)
Control Mode			1. Pulse Position Mode 2. Analog Velocity Mode 3. Analog Torque Mode 4. Internal Position Mode 5. Internal Torque Mode 6. Internal Velocity Mode 7. Command Torque Mode 8. Full Closed Loop Control Mode 9.Q programs that are pre-stored in the drive can also be started by digital input or command The control mode from 1 to 7 can be switched by digital input
Control Input Signal			Servo-ON, Alarm Reset, CW/CCW Limit, Control Mode Select, Gain Select, Clear Position Error, Zero Speed Clamp, Command and Velocity input Direction control, Command and Torque input Direction control, Emergency Stop, Homing Switch, Torque Limit, Speed Limit, Pulse Inhibit, Multi-velocity Switch, Start Q Program, General Purpose Input
Control Output Signal			Warning Output, Fault Output, Servo Ready, Velocity Reached, Torque Reached, Position Reached, Servo-on Status, Brake Release, Dynamic Position Error Following, Positioning Complete, Zero Speed Detected, Velocity Coincidence, Torque Coincidence, Velocity limit, Torque limit, Homing Finished, Soft Limit CW/CCW, General Purpose Output
Protection			Over Current, Over Voltage, Under Voltage, Over Temperature, Bad Encoder Feedback, Over Load, Over Speed, Position Error, STO, CW/CCW Limit, Full Closed-loop Hybrid Deviation Fault, Main Power Phase Loss
Dynamic Brake			Built-in
STO			Built-in
Weight			M56S-36A0RF: 1.9Kg      M56S-321ARF: 3.8Kg M56S-313ARF: 1.9Kg      M56S-326ARF: 3.8Kg M56S-317ARF: 3.8Kg

Features

Numbering Information  
Drive

Drive Overview

Numbering Information  
Motor

Servo Drive and  
Motor Matching List

Drive Specification

Motor Specification

Accessories

## Drive Specification

-EC—EtherCAT Type    -C—CANopen Type  
220VAC Specification

Input Power	M56S-21A8 ■◆	Main Circuit	Single / Three-phase, AC200 ~ 240V ± 10%, 50/60Hz
	M56S-23A0 ■◆		
	M56S-24A5 ■◆	Control Circuit	Single-phase, AC200 ~ 240V ± 10%, 50/60Hz
	M56S-26A0 ■ X		
	M56S-210A ■ X	Main Circuit	Three-phase, AC200 ~ 240V ± 10%, 50/60Hz
	M56S-213A ■ X	Control Circuit	Single-phase, AC200 ~ 240V ± 10%, 50/60Hz
Withstand Voltage			Primary to earth: withstand 1500 VAC, 1 min, (Leakage current: 20 mA)
Environment	Temperature		<ul style="list-style-type: none"> <li>● Ambient temperature: 0°C ~ 55°C (If the ambient temperature of servo drive is higher than 45°C, please install the drive in a well-ventilated location)</li> <li>● Storage temperature: -20°C ~ 65°C</li> </ul>
	Humidity		Both operating and storage: 10 ~ 85%RH or less
	Altitude		Derating is not required for altitudes not higher than 1000m Derating 1% for every additional 100m for altitudes between 1000m and 2000m
	Vibration		9.8m/s <sup>2</sup> or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)
Motor Encoder Feedback			<ul style="list-style-type: none"> <li>● 26-bit multi-turn absolute optical encoder</li> <li>● 21-bit multi-turn absolute magnetic encoder</li> <li>● 17-bit battery-less multi-turn absolute encoder</li> </ul>
Secondary Encoder Feedback *1			A/B/Z phase signal differential input
I/O	Digital Signal	Input	8 Configurable optically isolate digital general inputs, 24VDC, 20mA
		Output	4 Configurable optically isolate digital general outputs, Max. 30VDC, 100mA
	Analog Signal	Input	2 Analog inputs, -10 ~ +10V, 12bit
		Output *2	2 Analog outputs, -10 ~ +10V, Max.10mA
Comm Port	USB		Connection with PC for configuration
	EtherCAT		-EC Control Function Type: EtherCAT Communication
	CANopen		-C Control Function Type: CANopen Communication
Front Panel			4 keys (MODE, UP, DOWN, SET) 5 - digital LED Display
Regeneration Resistor			<ul style="list-style-type: none"> <li>● -X Type regenerative resistor</li> <li>● -N Type only 750W built-in regenerative resistor</li> <li>● All models can be equipped with external regenerative resistors</li> </ul>
Control Mode			-EC Control Function Type: CoE(Complies with CiA402 standard), Support PP, PV, TQ, CSP, CSV, CST and HM mode, Full Closed Loop Control Mode *3, Q programs that are pre-stored in the drive can also be started by command  -C Control Function Type: Complies with CiA402 standard, Support PP, PV, TQ and HM mode, Full Closed Loop Control Mode *3, Q programs that are pre-stored in the drive can also be started by command
Control Input Signal			Alarm Reset, CW/CCW Limit, Gain Select, Zero Speed Clamp, Emergency Stop, CW/CCW Torque Limit, Speed Limit, General Purpose Input
Control Output Signal			Warning Output, Fault Output, Servo Ready, Velocity Reached, Torque Reached, Position Reached, Servo-on Status, Brake Release, Dynamic Position Error Following, Positioning Complete, Zero Speed Detected, Velocity Coincidence, Torque Coincidence, Velocity limit, Torque limit, Homing Finished, Soft Limit CW/CCW, General Purpose Output
Protection			Over Current, Over Voltage, Under Voltage, Over Temperature, Bad Encoder Feedback, Over Load, Over Speed, Position Error, STO, CW/CCW Limit, Full Closed-loop Hybrid Deviation Fault, Main Power Phase Loss
Dynamic Brake			-X Built-in
STO			-X Built-in
Weight			M56S-21A8 ■◆ : 0.8Kg                      M56S-26A0 ■ X: 1.9Kg M56S-23A0 ■◆ : 1.1Kg                      M56S-210A ■ X: 1.9Kg M56S-24A5 ■◆ : 1.6Kg                      M56S-213A ■ X: 1.9Kg

**Note:** \*1, \*2, \*3 Certain models don't support this function, please refer to page16 Servo Drive Table.  
 ■ : Control Function Type    ◆ : Model Type

## Drive Specification

-EC—EtherCAT Type -C—CANopen Type  
400VAC Specification

Input Power	M56S-36A0 ■ X M56S-313A ■ X M56S-317A ■ X M56S-321A ■ X M56S-326A ■ X	Main Circuit	Three-phase, AC380 ~ 440V ± 10%, 50/60Hz
		Control Circuit	Single-phase, AC380 ~ 440V ± 10%, 50/60Hz
Withstand Voltage		Primary to earth: withstand 1800 VAC, 1 min, (Leakage current: 20 mA)	
Environment	Temperature		<ul style="list-style-type: none"> <li>● Ambient temperature: 0°C ~ 55°C (If the ambient temperature of servo drive is higher than 45°C, please install the drive in a well-ventilated location)</li> <li>● Storage temperature: -20°C ~ 65°C</li> </ul>
	Humidity		Both operating and storage: 10 ~ 85%RH or less
	Altitude		Derating is not required for altitudes not higher than 1000m Derating 1% for every additional 100m for altitudes between 1000m and 2000m
	Vibration		9.8m/s <sup>2</sup> or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)
Motor Encoder Feedback		<ul style="list-style-type: none"> <li>● 23-bit multi-turn absolute optical encoder</li> <li>● 21-bit multi-turn absolute magnetic encoder</li> </ul>	
Secondary Encoder Feedback		A/B/Z phase signal differential input	
I/O	Digital Signal	Input	8 Configurable optically isolate digital general inputs, 24VDC, 20mA
		Output	4 Configurable optically isolate digital general outputs, Max. 30VDC, 100mA
	Analog Signal	Input	2 Analog inputs, -10 ~ +10V, 12bit
		Output	2 Analog outputs, -10 ~ +10V, Max.10mA
Comm Port	USB		Connection with PC for configuration
	EtherCAT		-EC Control Function Type: EtherCAT Communication
	CANopen		-C Control Function Type: CANopen Communication
Front Panel		4 keys (MODE, UP, DOWN, SET) 5 - digital LED Display	
Regeneration Resistor		Built-in regenerative resistor (All models can be equipped with external regenerative resistors)	
Control Mode		-EC Control Function Type: CoE(Complies with CiA402 standard), Support PP, PV, TQ, CSP, CSV, CST and HM mode, Full Closed Loop Control Mode, Q programs that are pre-stored in the drive can also be started by command -C Control Function Type: Complies with CiA402 standard, Support PP, PV, TQ and HM mode, Full Closed Loop Control Mode, Q programs that are pre-stored in the drive can also be started by command	
Control Input Signal		Alarm Reset, CW/CCW Limit, Gain Select, Zero Speed Clamp, Emergency Stop, CW/CCW Torque Limit, Speed Limit, General Purpose Input	
Control Output Signal		Warning Output, Fault Output, Servo Ready, Velocity Reached, Torque Reached, Position Reached, Servo-on Status, Brake Release, Dynamic Position Error Following, Positioning Complete, Zero Speed Detected, Velocity Coincidence, Torque Coincidence, Velocity limit, Torque limit, Homing Finished, Soft Limit CW/CCW, General Purpose Output	
Protection		Over Current, Over Voltage, Under Voltage, Over Temperature, Bad Encoder Feedback, Over Load, Over Speed, Position Error, STO, CW/CCW Limit, Full Closed-loop Hybrid Deviation Fault, Main Power Phase Loss	
Dynamic Brake		Built-in	
STO		Built-in	
Weight		M56S-36A0 ■ X: 1.9Kg      M56S-321A ■ X: 3.8Kg M56S-313A ■ X: 1.9Kg      M56S-326A ■ X: 3.8Kg M56S-317A ■ X: 3.8Kg	

**Note:** ■ : Control Function Type

## Drive Specification

-IP—EtherNet/IP Type -PN—Profinet Type  
220VAC Specification

Input Power	M56S-21A8 ■◆	Main Circuit	Single / Three-phase, AC200 ~ 240V ± 10%, 50/60Hz						
	M56S-23A0 ■◆		Control Circuit	Single-phase, AC200 ~ 240V ± 10%, 50/60Hz					
	M56S-24A5 ■◆	Main Circuit		Three-phase, AC200 ~ 240V ± 10%, 50/60Hz					
	M56S-26A0 ■ X			Control Circuit	Single-phase, AC200 ~ 240V ± 10%, 50/60Hz				
	M56S-210A ■ X	Control Circuit	Single-phase, AC200 ~ 240V ± 10%, 50/60Hz						
M56S-213A ■ X									
Withstand Voltage			Primary to earth: withstand 1500 VAC, 1 min, (Leakage current: 20 mA)						
Environment	Temperature		<ul style="list-style-type: none"> <li>Ambient temperature: 0°C ~ 55°C (If the ambient temperature of servo drive is higher than 45°C, please install the drive in a well-ventilated location)</li> <li>Storage temperature: -20°C ~ 65°C</li> </ul>						
	Humidity		Both operating and storage: 10 ~ 85%RH or less						
	Altitude		Derating is not required for altitudes not higher than 1000m Derating 1% for every additional 100m for altitudes between 1000m and 2000m						
	Vibration		9.8m/s <sup>2</sup> or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)						
Motor Encoder Feedback			<ul style="list-style-type: none"> <li>26-bit multi-turn absolute optical encoder</li> <li>21-bit multi-turn absolute magnetic encoder</li> <li>17-bit battery-less multi-turn absolute encoder</li> </ul>						
Secondary Encoder Feedback* <sup>1</sup>			A/B/Z phase signal differential input						
I/O	Digital Signal	Input	8 Configurable optically isolate digital general inputs, 24VDC, 20mA						
		Output	4 Configurable optically isolate digital general outputs, Max. 30VDC, 100mA						
	Analog Signal	Input	2 Analog inputs, -10 ~ +10V, 12bit						
		Output* <sup>2</sup>	2 Analog outputs, -10 ~ +10V, Max.10mA						
Comm Port	USB		Connection with PC for configuration						
	EtherNet/IP		-IP Control Function Type: EtherNet/IP、Modbus TCP Communication						
	Profinet		-PN Control Function Type: Profinet Communication						
Front Panel			4 keys (MODE, UP, DOWN, SET) 5 - digital LED Display						
Regeneration Resistor			<ul style="list-style-type: none"> <li>-X Type regenerative resistor</li> <li>-N Type only 750W built-in regenerative resistor</li> <li>All models can be equipped with external regenerative resistors</li> </ul>						
Control Mode			1. Position Mode 2. Velocity Mode 3.orque Mode 4. Full Closed Loop Control Mode* <sup>3</sup> , 5.The pre-stored Q program in the drive can also be started by command						
Control Input Signal			Alarm Reset, CW/CCW Limit, Gain Select, Zero Speed Clamp, Emergency Stop, CW/CCW Torque Limit, Speed Limit, General Purpose Input						
Control Output Signal			Warning Output, Fault Output, Servo Ready, Velocity Reached, Torque Reached, Position Reached, Servo-on Status, Brake Release, Dynamic Position Error Following, Positioning Complete, Zero Speed Detected, Velocity Coincidence, Torque Coincidence, Velocity limit, Torque limit, Homing Finished, Soft Limit CW/CCW, General Purpose Output						
Protection			Over Current, Over Voltage, Under Voltage, Over Temperature, Bad Encoder Feedback, Over Load, Over Speed, Positon Error, STO, CW/CCW Limit, Full Closed-loop Hybrid Deviation Fault, Main Power Phase Loss						
Dynamic Brake			-X Built-in						
STO			-X Built-in						
Weight			<table style="width: 100%; border: none;"> <tr> <td>M56S-21A8 ■◆ : 0.8Kg</td> <td>M56S-26A0 ■ X: 1.9Kg</td> </tr> <tr> <td>M56S-23A0 ■◆ : 1.1Kg</td> <td>M56S-210A ■ X: 1.9Kg</td> </tr> <tr> <td>M56S-24A5 ■◆ : 1.6Kg</td> <td>M56S-213A ■ X: 1.9Kg</td> </tr> </table>	M56S-21A8 ■◆ : 0.8Kg	M56S-26A0 ■ X: 1.9Kg	M56S-23A0 ■◆ : 1.1Kg	M56S-210A ■ X: 1.9Kg	M56S-24A5 ■◆ : 1.6Kg	M56S-213A ■ X: 1.9Kg
M56S-21A8 ■◆ : 0.8Kg	M56S-26A0 ■ X: 1.9Kg								
M56S-23A0 ■◆ : 1.1Kg	M56S-210A ■ X: 1.9Kg								
M56S-24A5 ■◆ : 1.6Kg	M56S-213A ■ X: 1.9Kg								

**Note:** \*1, \*2, \*3 Certain models don't support this function, please refer to page16 Servo Drive Table.

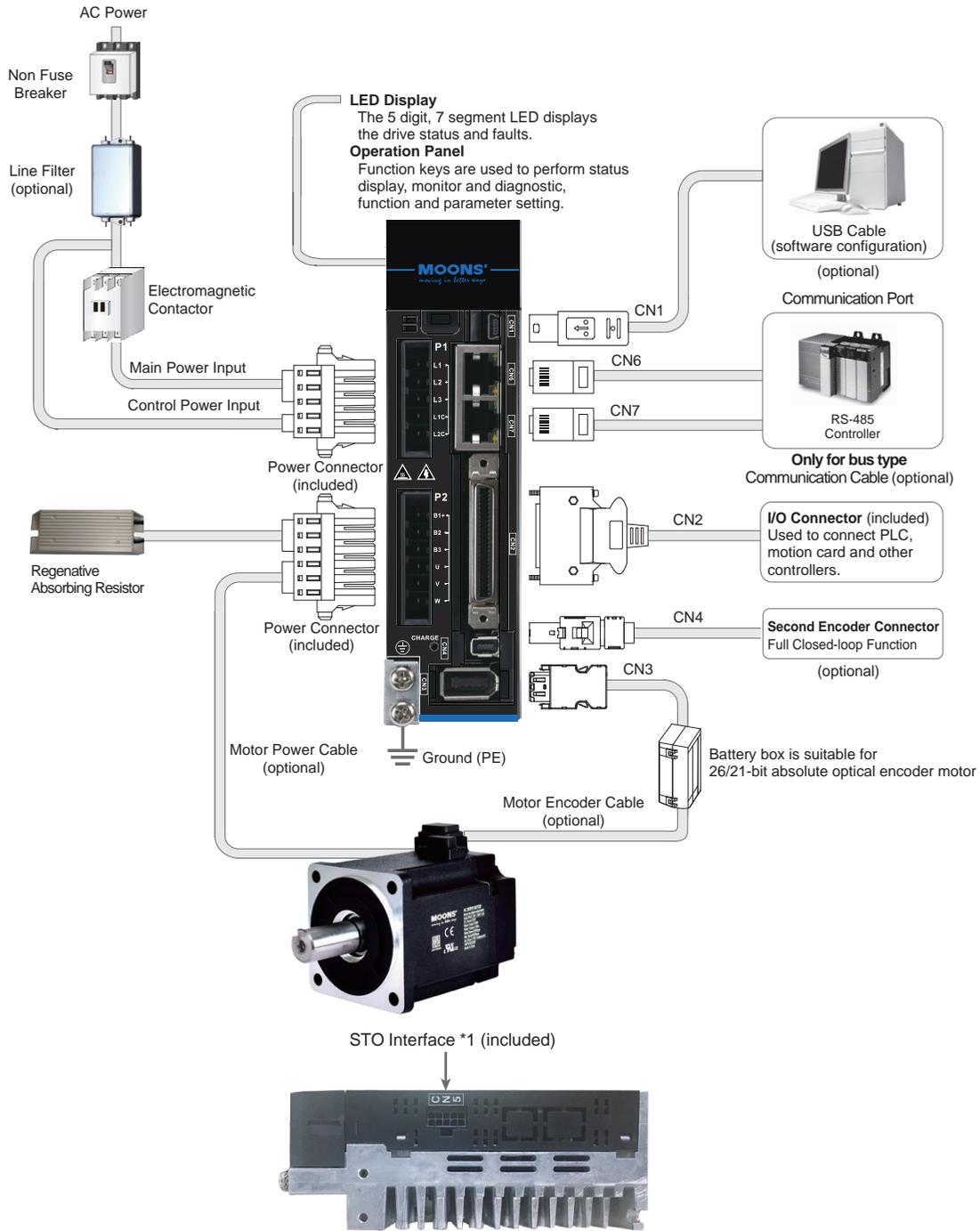
■ : Control Function Type ◆ : Model Type

## Drive Specification

-IP—EtherNet/IP Type    -PN—Profinet Type  
400VAC Specification

Input Power	M56S-36A0 ■ X M56S-313A ■ X M56S-317A ■ X M56S-321A ■ X M56S-326A ■ X	Main Circuit	Three-phase, AC380 ~ 440V ± 10%, 50/60Hz
		Control Circuit	Single-phase, AC380 ~ 440V ± 10%, 50/60Hz
Withstand Voltage		Primary to earth: withstand 1800 VAC, 1 min, (Leakage current: 20 mA)	
Environment	Temperature		<ul style="list-style-type: none"> <li>● Ambient temperature: 0°C ~ 55°C (If the ambient temperature of servo drive is higher than 45°C, please install the drive in a well-ventilated location)</li> <li>● Storage temperature: -20°C ~ 65°C</li> </ul>
	Humidity		Both operating and storage: 10 ~ 85%RH or less
	Altitude		Derating is not required for altitudes not higher than 1000m Derating 1% for every additional 100m for altitudes between 1000m and 2000m
	Vibration		9.8m/s <sup>2</sup> or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)
Motor Encoder Feedback		<ul style="list-style-type: none"> <li>● 23-bit multi-turn absolute optical encoder</li> <li>● 21-bit multi-turn absolute magnetic encoder</li> </ul>	
Secondary Encoder Feedback		A/B/Z phase signal differential input	
I/O	Digital Signal	Input	8 Configurable optically isolate digital general inputs, 24VDC, 20mA
		Output	4 Configurable optically isolate digital general outputs, Max. 30VDC, 100mA
	Analog Signal	Input	2 Analog inputs, -10 ~ +10V, 12bit
		Output	2 Analog outputs, -10 ~ +10V, Max.10mA
Comm Port	USB		Connection with PC for configuration
	EtherNet/IP		-IP Control Function Type: EtherNet/IP, Modbus TCP Communication
	Profinet		-PN Control Function Type: Profinet Communication
Front Panel		4 keys (MODE, UP, DOWN, SET) 5 - digital LED Display	
Regeneration Resistor		Built-in regenerative resistor (All models can be equipped with external regenerative resistors)	
Control Mode		1. Position Mode 2. Velocity Mode 3. orque Mode 4. Full Closed Loop Control Mode, 5.The pre-stored Q program in the drive can also be started by command	
Control Input Signal		Alarm Reset, CW/CCW Limit, Gain Select, Zero Speed Clamp, Emergency Stop, CW/CCW Torque Limit, Speed Limit, General Purpose Input	
Control Output Signal		Warning Output, Fault Output, Servo Ready, Velocity Reached, Torque Reached, Position Reached, Servo-on Status, Brake Release, Dynamic Position Error Following, Positioning Complete, Zero Speed Detected, Velocity Coincidence, Torque Coincidence, Velocity limit, Torque limit, Homing Finished, Soft Limit CW/CCW, General Purpose Output	
Protection		Over Current, Over Voltage, Under Voltage, Over Temperature, Bad Encoder Feedback, Over Load, Over Speed, Positon Error, STO, CW/CCW Limit, Full Closed-loop Hybrid Deviation Fault, Main Power Phase Loss	
Dynamic Brake		Built-in	
STO		Built-in	
Weight		M56S-36A0 ■ X: 1.9Kg M56S-313A ■ X: 1.9Kg M56S-317A ■ X: 3.8Kg	M56S-321A ■ X: 3.8Kg M56S-326A ■ X: 3.8Kg

**Note:** ■ : Control Function Type

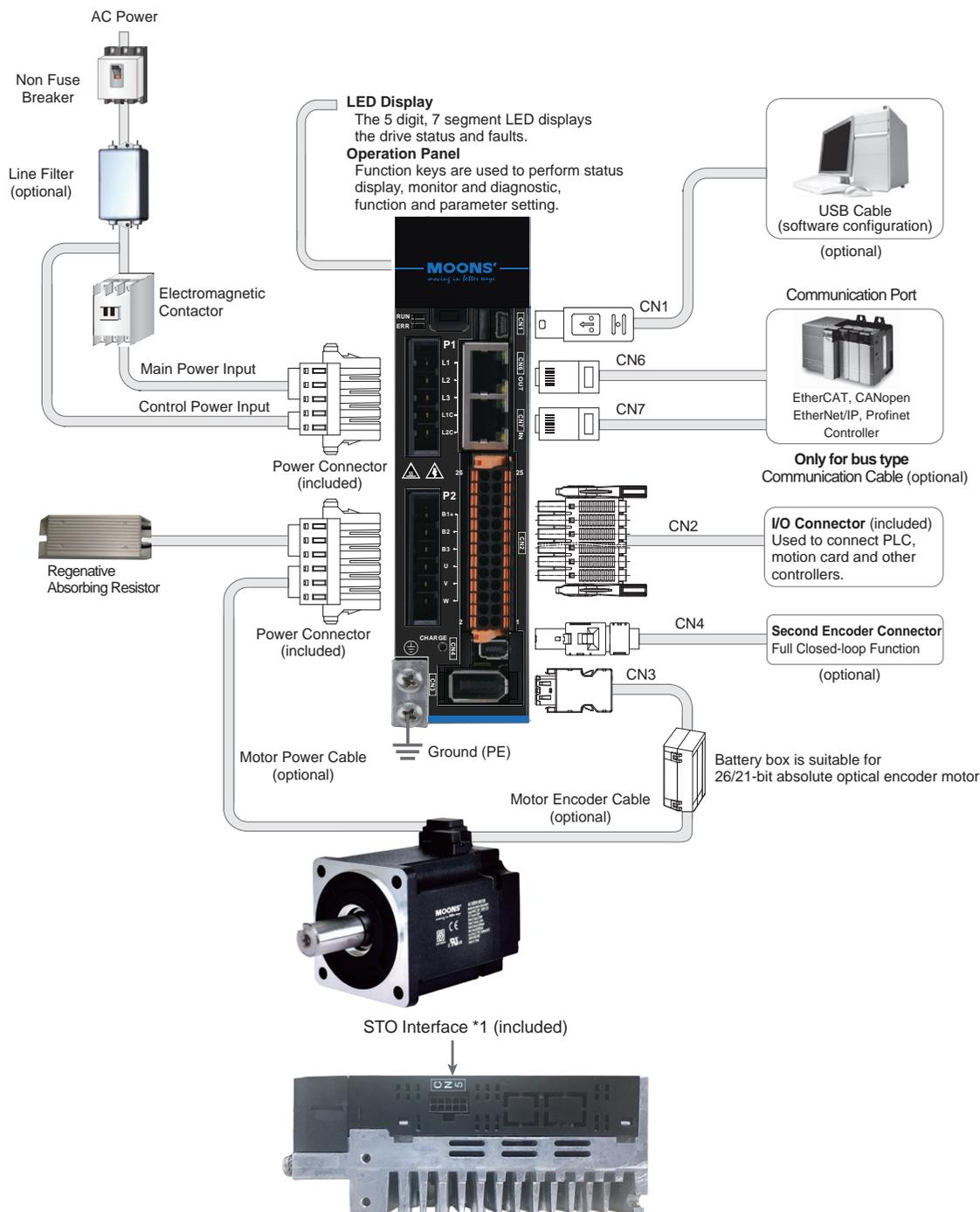


Note: \*1 Certain models don't support this function, please refer to page 16.

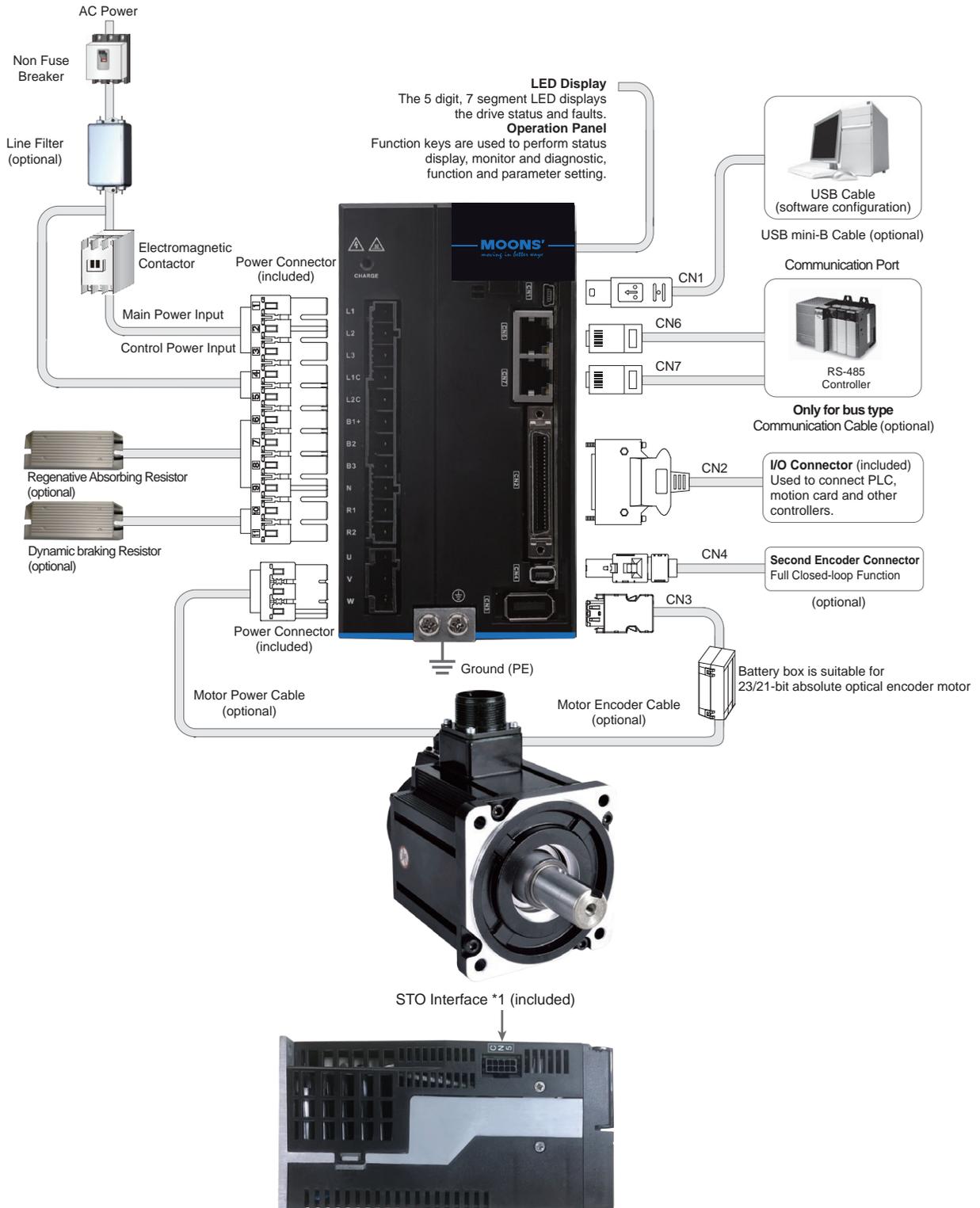
# System Configuration

## Push-in Spring I/O Connector Model Type: X, N

## 200/400/750W Type



Note: \*1 Certain models don't support this function, please refer to page 16.



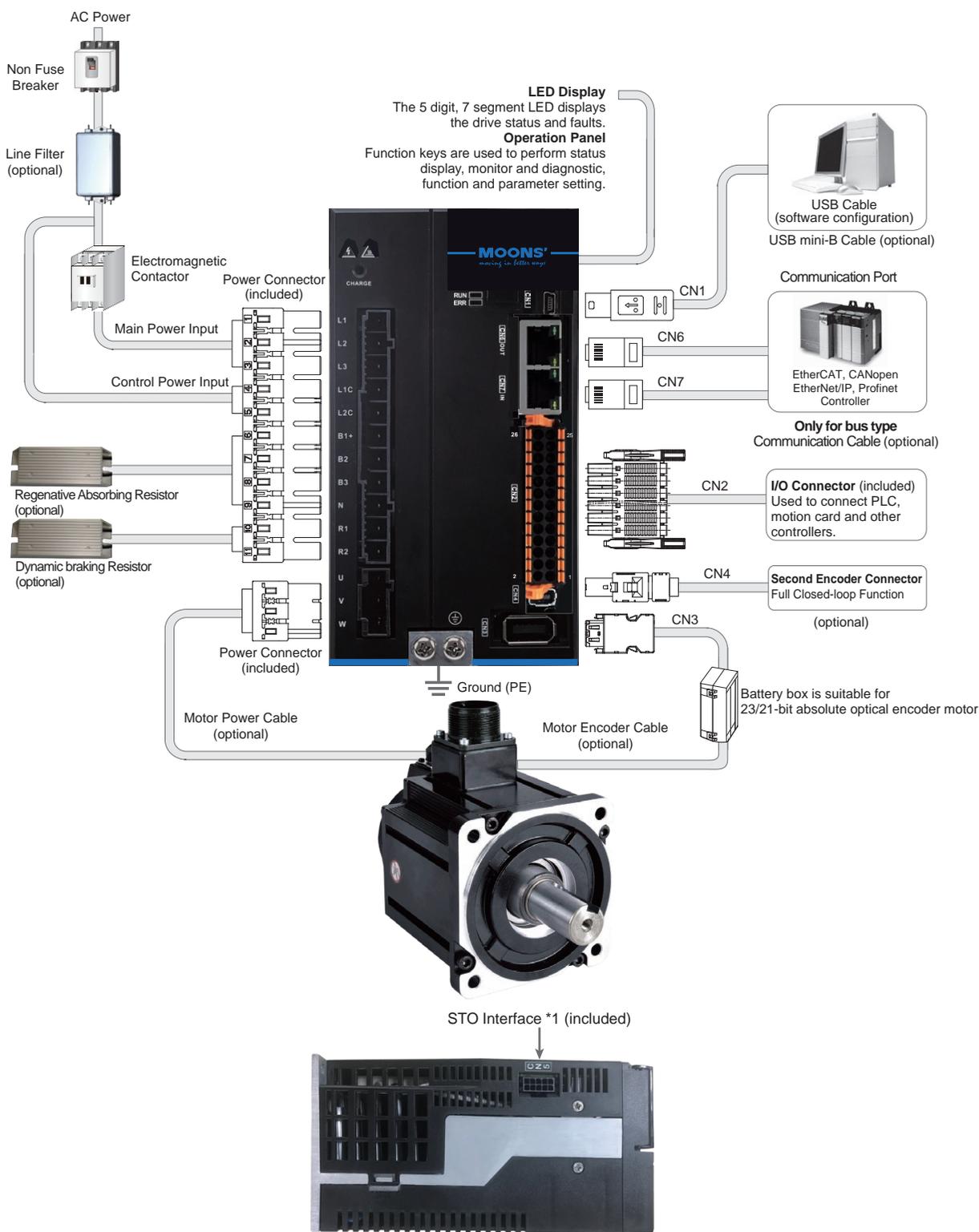
Note: \*1 Certain models don't support this function, please refer to page 16.

- Features
- Drive Numbering Information
- Drive Overview
- Motor Numbering Information
- Servo Drive and Motor Matching List
- Drive Specification
- Motor Specification
- Accessories

# System Configuration

## Push-in Spring I/O Connector Model Type: X

1.0/1.5/2.0/3.0kW Type



# System Configuration

High Density I/O Connector  
Model Type: F

5.0/6.0/7.5kW Type

Features

Drive  
Numbering Information

Drive Overview

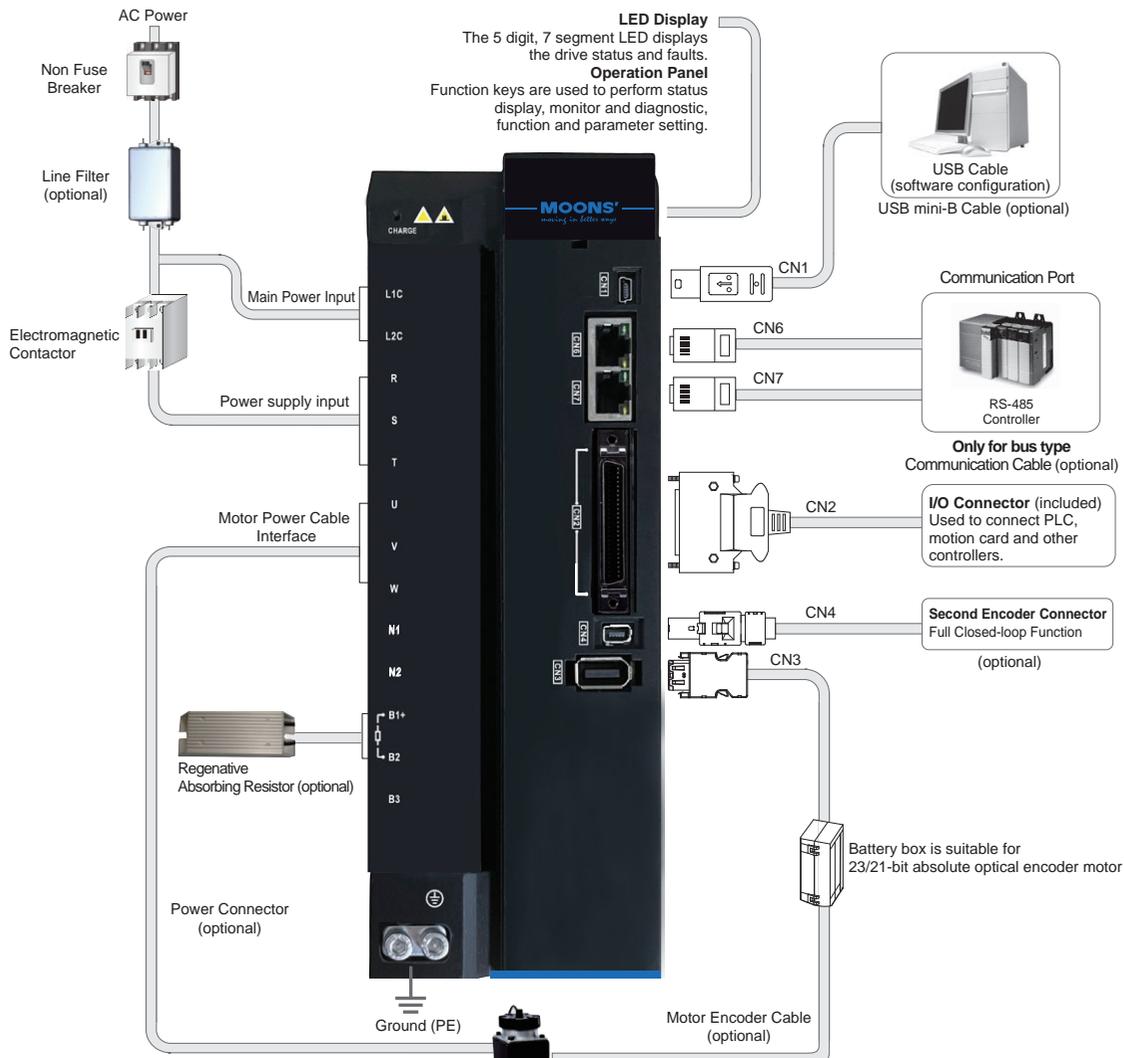
Motor  
Numbering Information

Servo Drive and  
Motor Matching List

Drive Specification

Motor Specification

Accessories



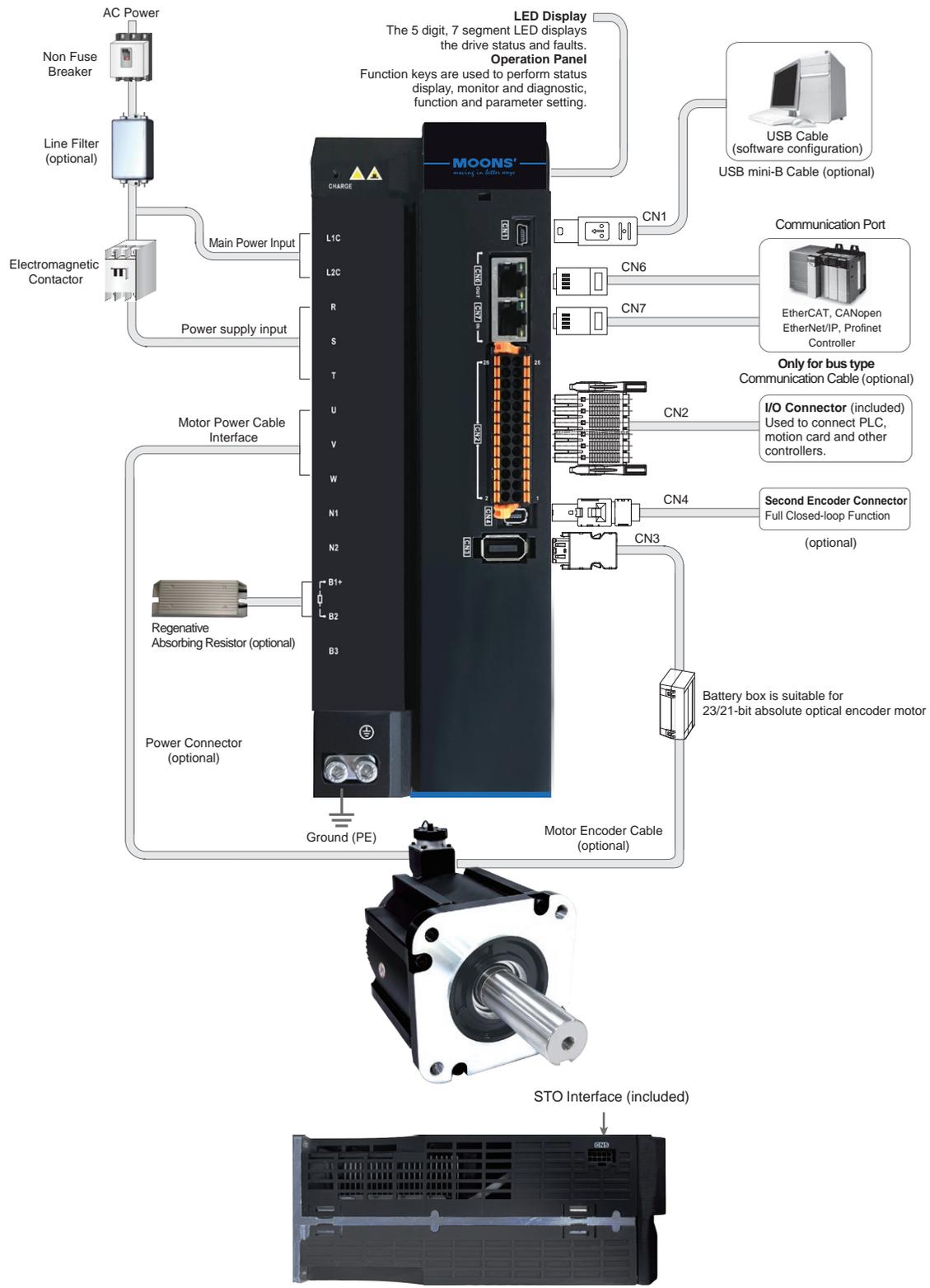
STO Interface (included)



**System Configuration**

**Push-in Spring I/O Connector**  
Model Type: X

5.0/6.0/7.5kW Type





## Motor Specification

40mm High Inertia 220VAC Winding

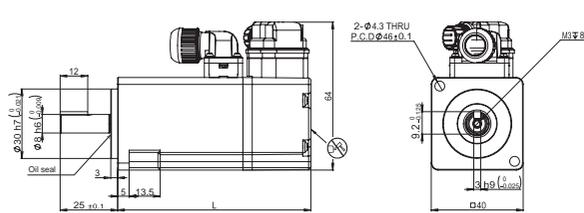
### Specification

Type*		SM3H - 041A <input type="checkbox"/> <input type="checkbox"/> P <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	SM3H - 042A <input type="checkbox"/> <input type="checkbox"/> P <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Rated Output Power	watts	50	100
Rated Speed	rpm	3000	3000
Max.Speed	rpm	6000	6000
Rated Torque	N·m	0.16	0.32
Peak Torque	N·m	0.64	1.28
Rated Current	A (rms)	1.4	1.4
Peak Current	A (rms)	4.8	5.7
Voltage Constant ± 5%	V (rms) / K rpm	9.24	14.8
Torque Constant ± 5%	N·m / A (rms)	0.277	0.277
Rotor Inertia	Kg·m <sup>2</sup>	0.0383 × 10 <sup>-4</sup>	0.0702 × 10 <sup>-4</sup>
Rotor Inertia - With Brake	Kg·m <sup>2</sup>	0.0395 × 10 <sup>-4</sup>	0.0724 × 10 <sup>-4</sup>
Shaft Load - Axial	N (max.)	50	50
Shaft Load - Radial (End of Shaft)	N (max.)	60	60
Weight	Kg	0.31	0.42
Weight - With Brake	Kg	0.55	0.66

\*  Encoder Options;  Brake Options;  Oil Seal Options

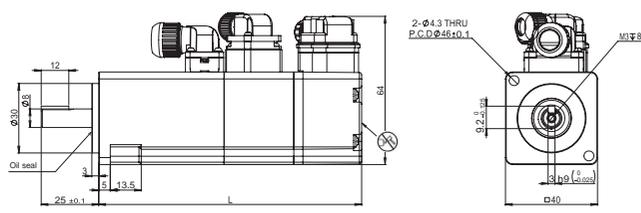
### Dimensions (Unit: mm)

#### 1) Without Brake



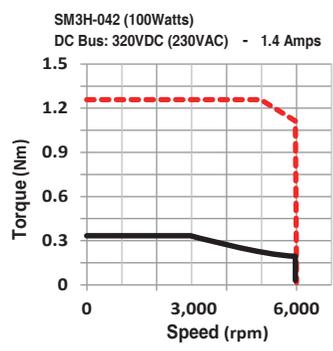
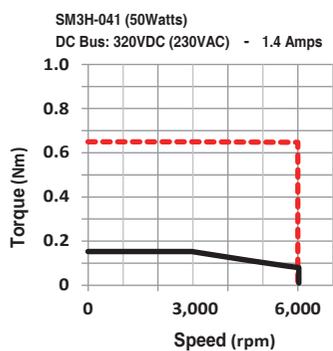
Without Brake	L
SM3H-041A <input type="checkbox"/> NP <input type="checkbox"/> <input type="checkbox"/>	70
SM3H-042A <input type="checkbox"/> NP <input type="checkbox"/> <input type="checkbox"/>	84

#### 2) With Brake



With Brake	L
SM3H-041A <input type="checkbox"/> BP <input type="checkbox"/> <input type="checkbox"/>	100.3
SM3H-042A <input type="checkbox"/> BP <input type="checkbox"/> <input type="checkbox"/>	114.3

### Torque Curves



----- Max. Intermittent Torque  
 ————— Max. Continuous Torque

# Motor Specification

□ 60mm  
Low Inertia 220VAC Winding

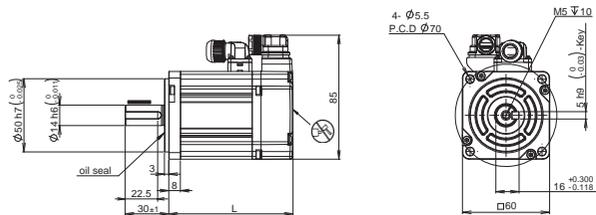
## □ Specification

Type*		SM3L - 061A ◇ □ P △	SM3L - 062A ◇ □ P △
Rated Output Power	watts	200	400
Rated Speed	rpm	3000	3000
Max.Speed	rpm	6000	6000
Rated Torque	N·m	0.64	1.27
Peak Torque	N·m	1.9	3.8
Rated Current	A (rms)	1.5	2.8
Peak Current	A (rms)	5.4	10
Voltage Constant ± 5%	V (rms) / K rpm	26.5	28.3
Torque Constant ± 5%	N·m / A (rms)	0.427	0.454
Rotor Inertia	Kg·m <sup>2</sup>	0.152 × 10 <sup>-4</sup>	0.237 × 10 <sup>-4</sup>
Rotor Inertia - With Brake	Kg·m <sup>2</sup>	0.182 × 10 <sup>-4</sup>	0.268 × 10 <sup>-4</sup>
Shaft Load - Axial	N (max.)	70	70
Shaft Load - Radial (End of Shaft)	N (max.)	200	240
Weight	Kg	0.85	1.2
Weight - With Brake	Kg	1.3	1.7

\* ◇ Encoder Options; □ Brake Options; △ Oil Seal Options

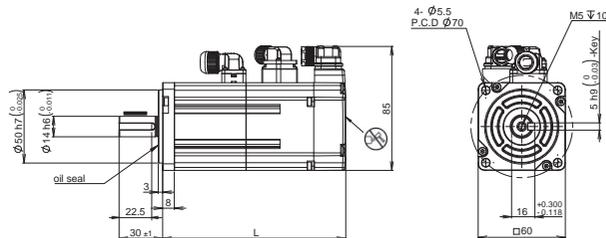
## □ Dimensions (Unit: mm)

### 1) Without Brake



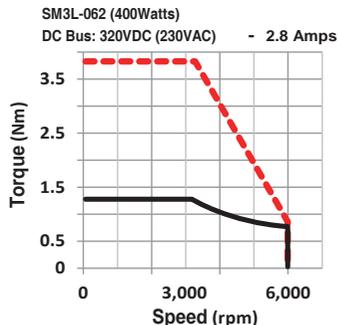
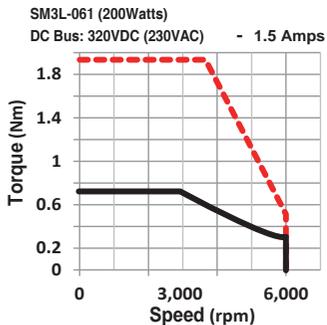
Without Brake	L
SM3L - 061A ◇ NP △	84.5
SM3L - 061ABND △	85.5
SM3L - 062A ◇ NP △	103
SM3L - 062ABND △	104

### 2) With Brake



With Brake	L
SM3L - 061A ◇ BP △	125
SM3L - 061ABBD △	126
SM3L - 062A ◇ BP △	143.5
SM3L - 062ABBD △	144.5

## □ Torque Curves



----- Max. Intermittent Torque  
————— Max. Continuous Torque

# Motor Specification

□ 60mm High Inertia 220VAC Winding

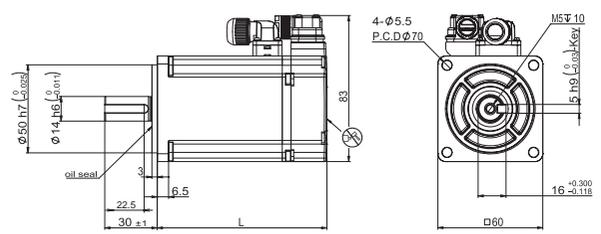
## □ Specification

Type*		SM3H - 061A ◇ □ P △	SM3H - 062A ◇ □ P △
Rated Output Power	watts	200	400
Rated Speed	rpm	3000	3000
Max.Speed	rpm	6000	6000
Rated Torque	N·m	0.64	1.27
Peak Torque	N·m	2.24	4.445
Rated Current	A (rms)	1.7	2.8
Peak Current	A (rms)	5.9	9.8
Voltage Constant ± 5%	V (rms) / K rpm	24.3	28.9
Torque Constant ± 5%	N·m / A (rms)	0.376	0.423
Rotor Inertia	Kg·m <sup>2</sup>	0.31 × 10 <sup>-4</sup>	0.566 × 10 <sup>-4</sup>
Rotor Inertia - With Brake	Kg·m <sup>2</sup>	0.32 × 10 <sup>-4</sup>	0.62 × 10 <sup>-4</sup>
Shaft Load - Axial	N (max.)	70	70
Shaft Load - Radial (End of Shaft)	N (max.)	200	240
Weight	Kg	0.79	1.2
Weight - With Brake	Kg	1.15	1.5

\* ◇ Encoder Options; □ Brake Options; △ Oil Seal Options

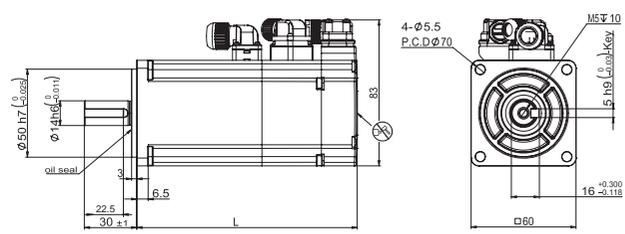
## □ Dimensions (Unit: mm)

### 1) Without Brake



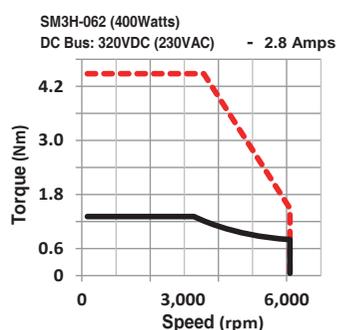
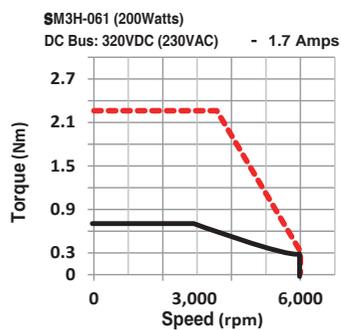
Without Brake	L
SM3H-061A ◇ NP △	77
SM3H-062A ◇ NP △	97

### 2) With Brake



With Brake	L
SM3H-061A ◇ BP △	106
SM3H-062A ◇ BP △	126

## □ Torque Curves



----- Max. Intermittent Torque  
 ————— Max. Continuous Torque

## Motor Specification

□ 80mm  
Low Inertia 220VAC Winding

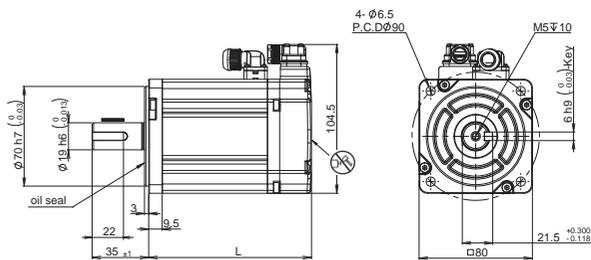
### □ Specification

Type*		SM3L - 083A ◇ □ P △	SM3L - 084A ◇ □ P △
Rated Output Power	watts	750	1000
Rated Speed	rpm	3000	3000
Max.Speed	rpm	6000	6000
Rated Torque	N·m	2.4	3.2
Peak Torque	N·m	6.7	9.6
Rated Current	A (rms)	4.5	5.6
Peak Current	A (rms)	14	19
Voltage Constant ± 5%	V (rms) / K rpm	33.9	36.65
Torque Constant ± 5%	N·m / A (rms)	0.533	0.63
Rotor Inertia	Kg·m <sup>2</sup>	0.829 × 10 <sup>-4</sup>	1.01 × 10 <sup>-4</sup>
Rotor Inertia - With Brake	Kg·m <sup>2</sup>	0.961 × 10 <sup>-4</sup>	1.12 × 10 <sup>-4</sup>
Shaft Load - Axial	N (max.)	90	90
Shaft Load - Radial (End of Shaft)	N (max.)	270	270
Weight	Kg	2.29	2.77
Weight - With Brake	Kg	3.1	3.62

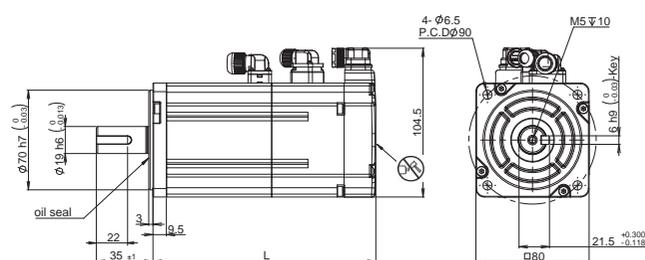
\* ◇ Encoder Options; □ Brake Options; △ Oil Seal Options

### □ Dimensions (Unit: mm)

#### 1) Without Brake



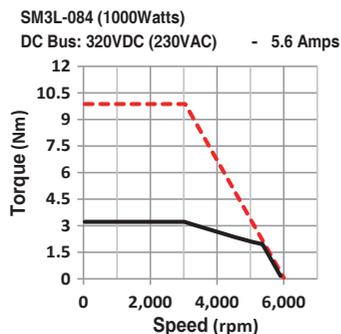
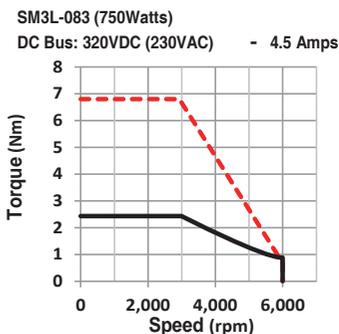
#### 2) With Brake



Without Brake	L
SM3L-083A ◇ NP △	115
SM3L-083ABND △	115
SM3L-084A ◇ NP △	129
SM3L-084ABND △	129

With Brake	L
SM3L-083A ◇ BP △	157
SM3L-083ABBD △	157.5
SM3L-084A ◇ BP △	171
SM3L-084ABBD △	171.5

### □ Torque Curves



----- Max. Intermittent Torque  
————— Max. Continuous Torque



# Motor Specification

100mm Low Inertia 220VAC Winding

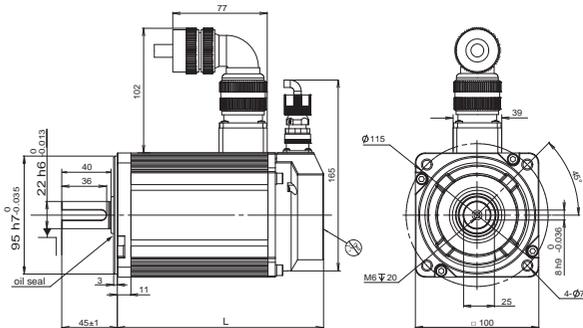
## Specification

Type*		SM3L - 102A <input type="checkbox"/> <input type="checkbox"/> U <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	SM3L - 103A <input type="checkbox"/> <input type="checkbox"/> U <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	SM3L - 104A <input type="checkbox"/> <input type="checkbox"/> U <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	SM3L - 105A <input type="checkbox"/> <input type="checkbox"/> U <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Rated Output Power	watts	1000	1500	2000	2500
Rated Speed	rpm	3000	3000	3000	3000
Max.Speed	rpm	6000	5700	5600	5600
Rated Torque	N·m	3.2	4.9	6.4	8
Peak Torque	N·m	9.6	14.7	19.2	24
Rated Current	A (rms)	6.0	9.6	12.7	13
Peak Current	A (rms)	21	36.5	44	45
Voltage Constant ± 5%	V (rms) / K rpm	33	34.1	34.3	37.4
Torque Constant ± 5%	N·m / A (rms)	0.543	0.563	0.565	0.61
Rotor Inertia	Kg·m <sup>2</sup>	1.79 × 10 <sup>-4</sup>	2.37 × 10 <sup>-4</sup>	2.98 × 10 <sup>-4</sup>	3.68 × 10 <sup>-4</sup>
Rotor Inertia - With Brake	Kg·m <sup>2</sup>	2.67 × 10 <sup>-4</sup>	3.25 × 10 <sup>-4</sup>	3.86 × 10 <sup>-4</sup>	4.56 × 10 <sup>-4</sup>
Shaft Load - Axial	N (max.)	90	90	90	90
Shaft Load - Radial (End of Shaft)	N (max.)	270	270	270	270
Weight	Kg	4	4.39	5.2	6.3
Weight - With Brake	Kg	5.2	5.64	6.12	7.6

\*  Encoder Options:  Brake Options:  Oil Seal Options

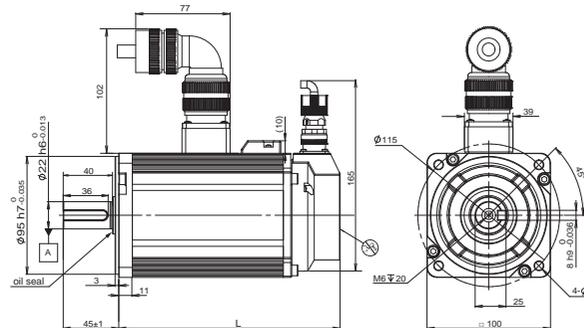
## Dimensions (Unit: mm)

### 1) Without Brake



Without Brake	L
SM3L-102A <input type="checkbox"/> NU <input type="checkbox"/> <input type="checkbox"/>	137
SM3L-103A <input type="checkbox"/> NU <input type="checkbox"/> <input type="checkbox"/>	152
SM3L-104A <input type="checkbox"/> NU <input type="checkbox"/> <input type="checkbox"/>	168
SM3L-105A <input type="checkbox"/> NU <input type="checkbox"/> <input type="checkbox"/>	186

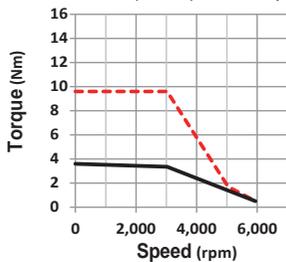
### 2) With Brake



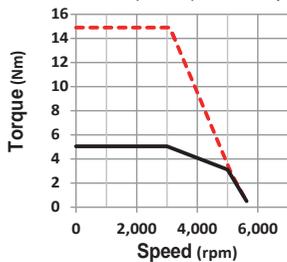
With Brake	L
SM3L-102A <input type="checkbox"/> BU <input type="checkbox"/> <input type="checkbox"/>	179
SM3L-103A <input type="checkbox"/> BU <input type="checkbox"/> <input type="checkbox"/>	194
SM3L-104A <input type="checkbox"/> BU <input type="checkbox"/> <input type="checkbox"/>	210
SM3L-105A <input type="checkbox"/> BU <input type="checkbox"/> <input type="checkbox"/>	228

## Torque Curves

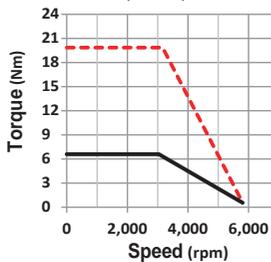
SM3L-102A (1000Watts)  
DC Bus: 320VDC (230VAC) - 6.0 Amps



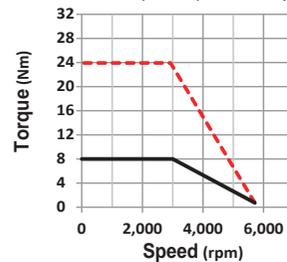
SM3L-103A (1500Watts)  
DC Bus: 320VDC (230VAC) - 9.6 Amps



SM3L-104A (2000Watts)  
DC Bus: 320VDC (230VAC) - 12.7 Amps



SM3L-105A (2500Watts)  
DC Bus: 320VDC (230VAC) - 13 Amps



----- Max. Intermittent Torque  
————— Max. Continuous Torque

**Motor Specification**    □ 100mm Low Inertia    400VAC Winding

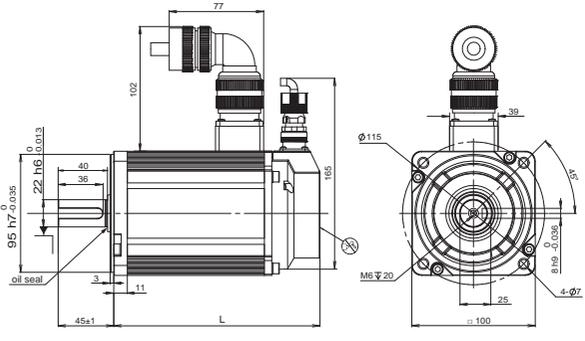
□ Specification

Type*		SM3L - 102Y ◇ □ U △	SM3L - 103Y ◇ □ U △	SM3L - 104Y ◇ □ U △	SM3L - 105Y ◇ □ U △
Rated Output Power	watts	1000	1500	2000	2500
Rated Speed	rpm	3000	3000	3000	3000
Max.Speed	rpm	6000	6000	6000	6000
Rated Torque	N·m	3.2	4.9	6.4	8
Peak Torque	N·m	9.6	14.7	19.2	24
Rated Current	A (rms)	3.8	5.7	7.4	7.7
Peak Current	A (rms)	14	21	25.5	26
Voltage Constant ± 5%	V (rms) / K rpm	59	59.2	60.5	70
Torque Constant ± 5%	N·m / A (rms)	0.842	0.86	0.86	1.04
Rotor Inertia	Kg·m <sup>2</sup>	1.79 × 10 <sup>-4</sup>	2.37 × 10 <sup>-4</sup>	2.98 × 10 <sup>-4</sup>	3.68 × 10 <sup>-4</sup>
Rotor Inertia - With Brake	Kg·m <sup>2</sup>	2.67 × 10 <sup>-4</sup>	3.25 × 10 <sup>-4</sup>	3.86 × 10 <sup>-4</sup>	4.56 × 10 <sup>-4</sup>
Shaft Load - Axial	N (max.)	90	90	90	90
Shaft Load - Radial (End of Shaft)	N (max.)	270	270	270	270
Weight	Kg	4	4.39	5.2	6.3
Weight - With Brake	Kg	5.2	5.64	6.12	7.6

\* ◇ Encoder Options: □ Brake Options: △ Oil Seal Options

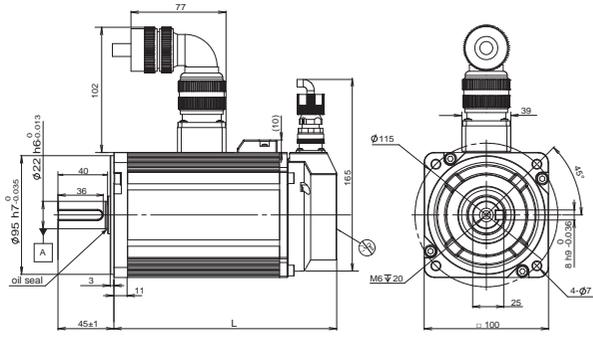
□ Dimensions (Unit: mm)

1) Without Brake



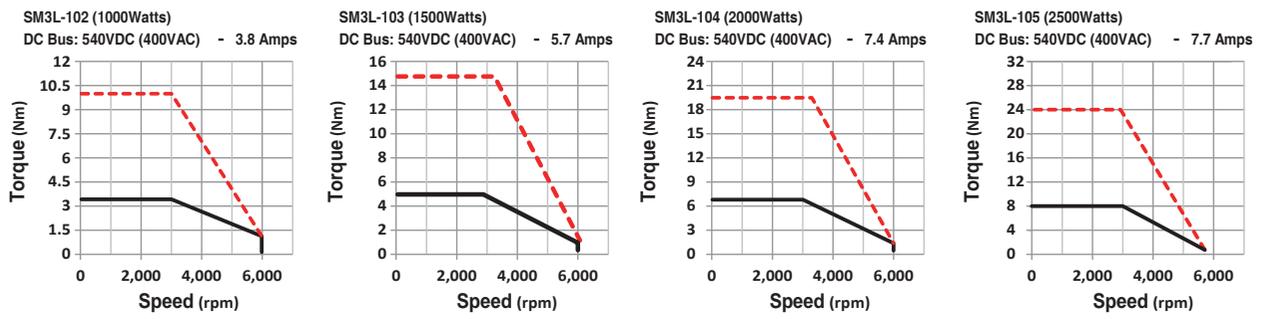
Without Brake	L
SM3L-102Y ◇ □ NU △	137
SM3L-103Y ◇ □ NU △	152
SM3L-104Y ◇ □ NU △	168
SM3L-105Y ◇ □ NU △	186

2) With Brake



With Brake	L
SM3L-102Y ◇ BU △	179
SM3L-103Y ◇ BU △	194
SM3L-104Y ◇ BU △	210
SM3L-105Y ◇ BU △	228

□ Torque Curves



----- Max. Intermittent Torque  
 \_\_\_\_\_ Max. Continuous Torque

## Motor Specification

□ 130mm  
Medium Inertia

220VAC Winding

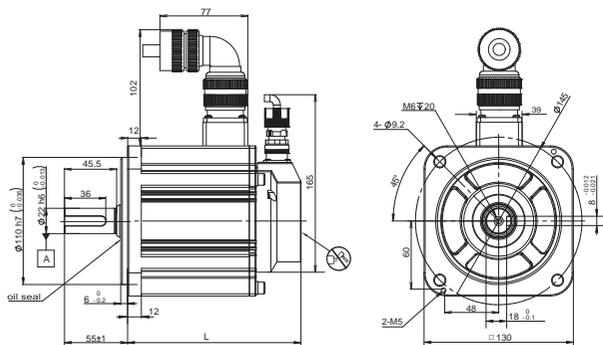
### □ Specification

Type*		SM3M - 132A □ U △	SM3M - 133A □ U △	SM3M - 134A □ U △
Rated Output Power	watts	1000	1500	2000
Rated Speed	rpm	2000	2000	2000
Max.Speed	rpm	3000	3000	3000
Rated Torque	N·m	4.77	7.16	9.55
Peak Torque	N·m	14.3	21.5	28.6
Rated Current	A (rms)	5.4	8.5	11
Peak Current	A (rms)	16.9	26	32.7
Voltage Constant ± 5%	V (rms) / K rpm	55.3	54.2	55.5
Torque Constant ± 5%	N·m / A (rms)	0.883	0.843	0.87
Rotor Inertia	Kg·m <sup>2</sup>	13 × 10 <sup>-4</sup>	18.3 × 10 <sup>-4</sup>	24.4 × 10 <sup>-4</sup>
Rotor Inertia - With Brake	Kg·m <sup>2</sup>	15.2 × 10 <sup>-4</sup>	20.5 × 10 <sup>-4</sup>	26.6 × 10 <sup>-4</sup>
Shaft Load - Axial	N (max.)	196	343	396
Shaft Load - Radial (End of Shaft)	N (max.)	490	686	980
Weight	Kg	5.33	6.67	9.1
Weight - With Brake	Kg	7.25	8.47	10.75

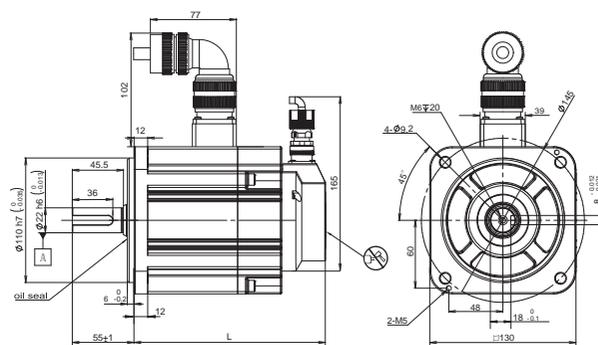
\* ◇ Encoder Options: □ Brake Options: △ Oil Seal Options

### □ Dimensions (Unit: mm)

#### 1) Without Brake



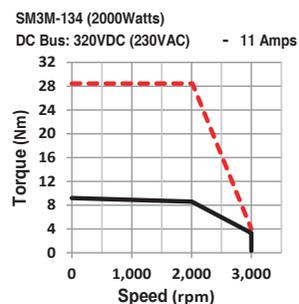
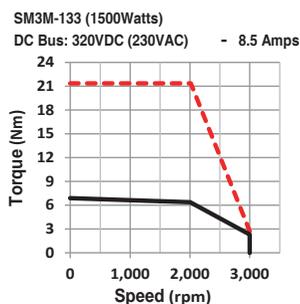
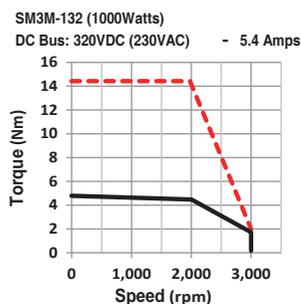
#### 2) With Brake



Without Brake	L
SM3M-132A ◇ NU △	138
SM3M-133A ◇ NU △	155
SM3M-134A ◇ NU △	169

With Brake	L
SM3M-132A ◇ BU △	171
SM3M-133A ◇ BU △	185
SM3M-134A ◇ BU △	202

### □ Torque Curves



----- Max. Intermittent Torque  
————— Max. Continuous Torque



## Motor Specification

130mm  
Medium Inertia

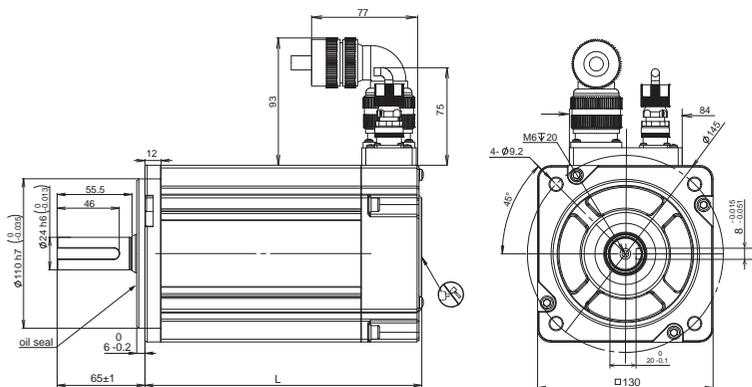
400VAC Winding

### Specification

Type*		SM3M - 135Y <input type="checkbox"/> M <input type="checkbox"/> Δ
Rated Output Power	watts	3000
Rated Speed	rpm	2000
Max.Speed	rpm	3000
Rated Torque	N·m	14.3
Peak Torque	N·m	42.9
Rated Current	A (rms)	10.5
Peak Current	A (rms)	30
Voltage Constant ± 5%	V (rms) / K rpm	93.2
Torque Constant ± 5%	N·m / A (rms)	1.47
Rotor Inertia	Kg·m <sup>2</sup>	36.4 × 10 <sup>-4</sup>
Rotor Inertia - With Brake	Kg·m <sup>2</sup>	38.6 × 10 <sup>-4</sup>
Shaft Load - Axial	N (max.)	396
Shaft Load - Radial (End of Shaft)	N (max.)	980
Weight	Kg	12.05
Weight - With Brake	Kg	13.95

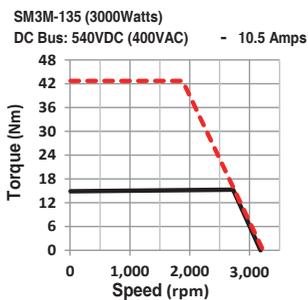
\*  Encoder Options:  Brake Options:  Oil Seal Options

### Dimensions (Unit: mm)



	Model	L
Without Brake	SM3M-135Y <input type="checkbox"/> NM <input type="checkbox"/> Δ	205
With Brake	SM3M-135Y <input type="checkbox"/> BM <input type="checkbox"/> Δ	238

### Torque Curves



--- Max. Intermittent Torque  
— Max. Continuous Torque

# Motor Specification

□ 130mm High Inertia 220VAC Winding

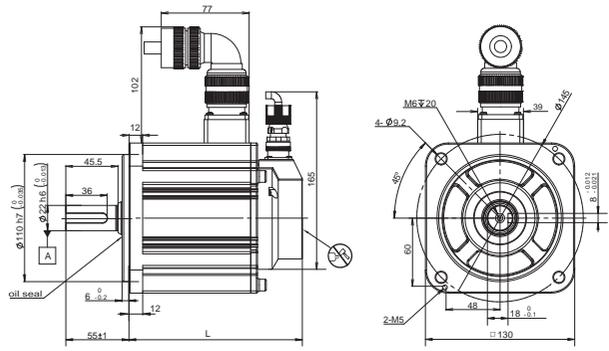
## □ Specification

Type*		SM3H - 132A □ □ U △	SM3H - 133A □ □ U △	SM3H - 134A □ □ U △
Rated Output Power	watts	850	1300	1800
Rated Speed	rpm	1500	1500	1500
Max. Speed	rpm	3000	3000	3000
Rated Torque	N·m	5.39	8.34	11.5
Peak Torque	N·m	16.2	25	34.5
Rated Current	A (rms)	6	9.6	13
Peak Current	A (rms)	19	29.6	45
Voltage Constant ± 5%	V (rms) / K rpm	55.3	54.2	51
Torque Constant ± 5%	N·m / A (rms)	0.891	0.869	0.88
Rotor Inertia	Kg·m <sup>2</sup>	13 × 10 <sup>-4</sup>	18.3 × 10 <sup>-4</sup>	24.4 × 10 <sup>-4</sup>
Rotor Inertia - With Brake	Kg·m <sup>2</sup>	15.2 × 10 <sup>-4</sup>	20.5 × 10 <sup>-4</sup>	26.6 × 10 <sup>-4</sup>
Shaft Load - Axial	N (max.)	196	343	396
Shaft Load - Radial (End of Shaft)	N (max.)	490	686	980
Weight	Kg	5.92	7	8.5
Weight - With Brake	Kg	7.84	8.8	10.15

\* □ Encoder Options: □ Brake Options: △ Oil Seal Options

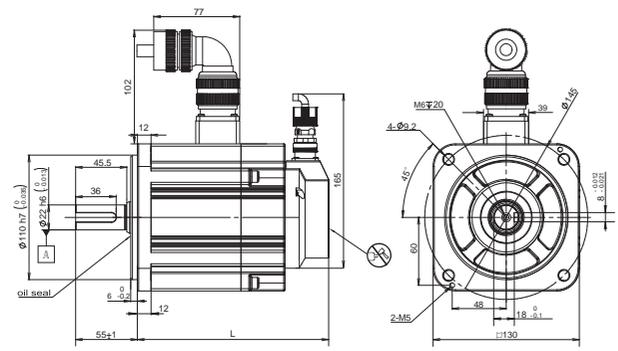
## □ Dimensions (Unit: mm)

### 1) Without Brake



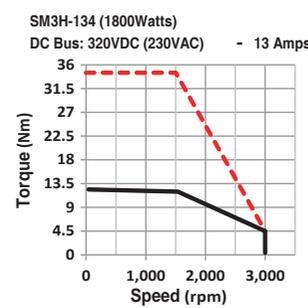
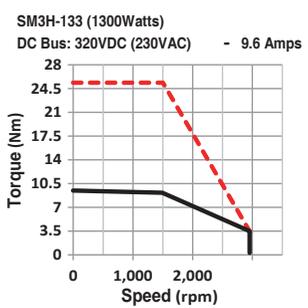
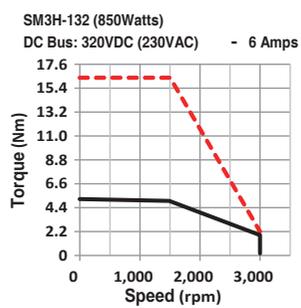
Without Brake	L
SM3H-132A □ NU △	138
SM3H-133A □ NU △	152
SM3H-134A □ NU △	169

### 2) With Brake



With Brake	L
SM3H-132A □ BU △	171
SM3H-133A □ BU △	185
SM3H-134A □ BU △	202

## □ Torque Curves



----- Max. Intermittent Torque  
 \_\_\_\_\_ Max. Continuous Torque

# 电机规格

□ 130mm  
High Inertia

400VAC Winding

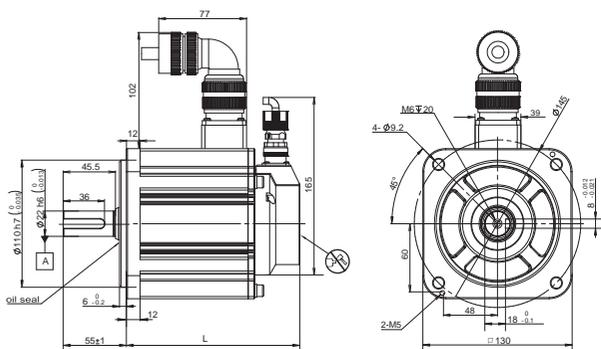
## □ Specification

Type*		SM3H - 132Y ◊ □ U △	SM3H - 133Y ◊ □ U △	SM3H - 134Y ◊ □ U △
Rated Output Power	watts	850	1300	1800
Rated Speed	rpm	1500	1500	1500
Max.Speed	rpm	3000	3000	3000
Rated Torque	N·m	5.39	8.34	11.5
Peak Torque	N·m	16.2	25	34.5
Rated Current	A (rms)	3.6	5.8	8.1
Peak Current	A (rms)	11	17.5	23.2
Voltage Constant ± 5%	V (rms) / K rpm	101	97	96
Torque Constant ± 5%	N·m / A (rms)	1.5	1.44	1.42
Rotor Inertia	Kg·m <sup>2</sup>	13 × 10 <sup>-4</sup>	18.3 × 10 <sup>-4</sup>	24.4 × 10 <sup>-4</sup>
Rotor Inertia - With Brake	Kg·m <sup>2</sup>	15.2 × 10 <sup>-4</sup>	20.5 × 10 <sup>-4</sup>	26.6 × 10 <sup>-4</sup>
Shaft Load - Axial	N (max.)	196	343	396
Shaft Load - Radial (End of Shaft)	N (max.)	490	686	980
Weight	Kg	5.92	7	8.5
Weight - With Brake	Kg	7.84	8.8	10.15

\* ◊ Encoder Options: □ Brake Options: △ Oil Seal Options

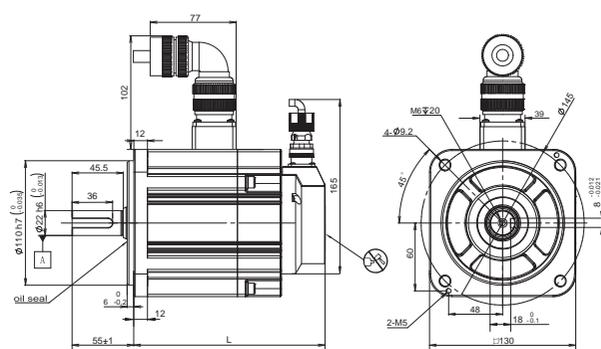
## □ Dimensions (Unit: mm)

### 1) Without Brake



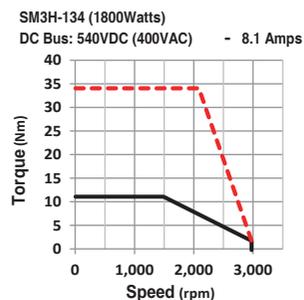
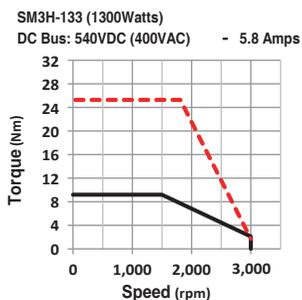
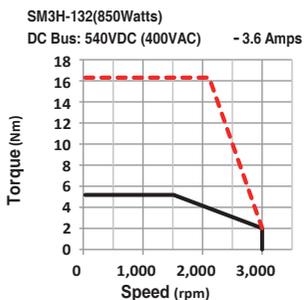
Without Brake	L
SM3H-132Y ◊ NU △	138
SM3H-133Y ◊ NU △	152
SM3H-134Y ◊ NU △	169

### 2) With Brake



With Brake	L
SM3H-132Y ◊ BU △	171
SM3H-133Y ◊ BU △	185
SM3H-134Y ◊ BU △	202

## □ Torque Curves



--- Max. Intermittent Torque  
— Max. Continuous Torque



## Motor Specification

180mm  
High Inertia

400VAC Winding

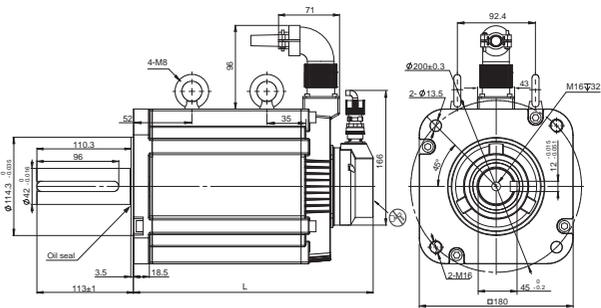
### Specification

Type*		SM3H - 184Y <input type="checkbox"/> U <input type="checkbox"/> Δ	SM3H - 185Y <input type="checkbox"/> U <input type="checkbox"/> Δ
Rated Output Power	watts	5500	7500
Rated Speed	rpm	1500	1500
Max.Speed	rpm	3000	3000
Rated Torque	N·m	35	48
Peak Torque	N·m	105	144
Rated Current	A (rms)	20.9	24.5
Peak Current	A (rms)	70	73.5
Voltage Constant ± 5%	V (rms) / K rpm	114	123
Torque Constant ± 5%	N·m / A (rms)	1.67	2.0
Rotor Inertia	Kg·m <sup>2</sup>	89 × 10 <sup>-4</sup>	125 × 10 <sup>-4</sup>
Rotor Inertia - With Brake	Kg·m <sup>2</sup>	92 × 10 <sup>-4</sup>	145 × 10 <sup>-4</sup>
Shaft Load - Axial	N (max.)	588	588
Shaft Load - Radial (End of Shaft)	N (max.)	1764	1764
Weight	Kg	21	26.8
Weight - With Brake	Kg	23	28.9

\*  Encoder Options:  Brake Options:  Oil Seal Options

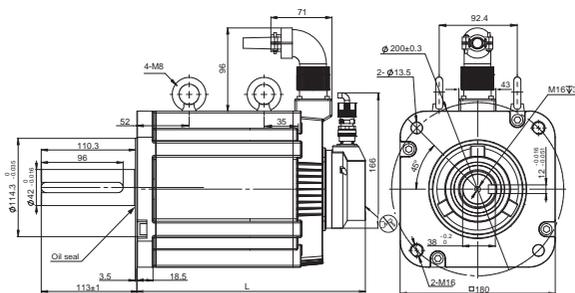
### Dimensions (Unit: mm)

#### 1) Without Brake



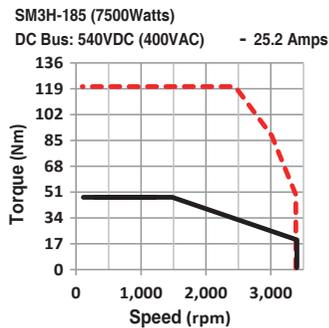
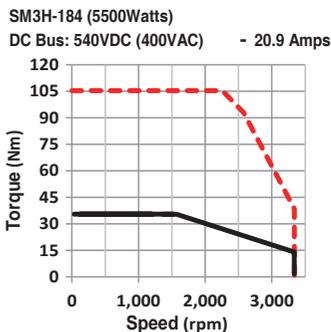
Without Brake	L
SM3H-184Y <input type="checkbox"/> NU <input type="checkbox"/> Δ	230
SM3H-185Y <input type="checkbox"/> NU <input type="checkbox"/> Δ	281

#### 2) With Brake



With Brake	L
SM3H-184Y <input type="checkbox"/> BU <input type="checkbox"/> Δ	280
SM3H-185Y <input type="checkbox"/> BU <input type="checkbox"/> Δ	316

### Torque Curves



----- Max. Intermittent Torque  
————— Max. Continuous Torque

Accessories

Encoder Cables

For □40mm, □60mm, □80mm Motor

Model*	Length(L)	Description	For Servo Motor*	Outline
2640-0100	1m	Encoder Cables Incremental Encoder Standard Shielded		
2640-0200	2m			
2640-0300	3m			
2640-0400	4m			
2640-0500	5m			
2640-0800	8m			
2640-1000	10m			
2640-1500	15m			
2640-2000	20m	Encoder Cables Incremental Encoder Flexible Shielded	SM3L-042A ◇ □ D △ SM3L-061A ◇ □ P △ SM3L-062A ◇ □ P △ SM3L-083A ◇ □ P △ SM3L-084A ◇ □ P △	
2640-0100-C10	1m			
2640-0200-C10	2m			
2640-0300-C10	3m			
2640-0400-C10	4m			
2640-0500-C10	5m			
2640-0800-C10	8m			
2640-1000-C10	10m			
2640-1500-C10	15m	Encoder Cables With Battery Absolute Encoder Standard Shielded	SM3H-041A ◇ □ P △ SM3H-042A ◇ □ P △ SM3H-061A ◇ □ P △ SM3H-062A ◇ □ P △ SM3H-083A ◇ □ P △	
2639-0100	1m			
2639-0200	2m			
2639-0300	3m			
2639-0400	4m			
2639-0500	5m			
2639-0800	8m			
2639-1000	10m			
2639-1500	15m	Encoder Cables With Battery Absolute Encoder Flexible Shielded	SM3L-042AB □ D △ SM3L-061AB □ D △ SM3L-062AB □ D △ SM3L-083AB □ D △ SM3L-084AB □ D △ SM3M-062AB □ D △ SM3M-083AB □ D △	
2639-0100-C10	1m			
2639-0200-C10	2m			
2639-0300-C10	3m			
2639-0400-C10	4m			
2639-0500-C10	5m			
2639-0800-C10	8m			
2639-1000-C10	10m			
2639-1500-C10	15m	Encoder Cables Without Battery Absolute Encoder Standard Shielded	SM3L-042AB □ D △ SM3L-061AB □ D △ SM3L-062AB □ D △ SM3L-083AB □ D △ SM3L-084AB □ D △ SM3M-062AB □ D △ SM3M-083AB □ D △	
2641-0100	1m			
2641-0200	2m			
2641-0300	3m			
2641-0400	4m			
2641-0500	5m			
2641-0800	8m			
2641-1000	10m			
2641-1500	15m	Encoder Cables Without Battery Absolute Encoder Flexible Shielded	SM3L-042AB □ D △ SM3L-061AB □ D △ SM3L-062AB □ D △ SM3L-083AB □ D △ SM3M-062AB □ D △ SM3M-083AB □ D △	
2641-0100-C10	1m			
2641-0200-C10	2m			
2641-0300-C10	3m			
2641-0400-C10	4m			
2641-0500-C10	5m			
2641-0800-C10	8m			
2641-1000-C10	10m			
2641-1500-C10	15m			
2641-2000-C10	20m			

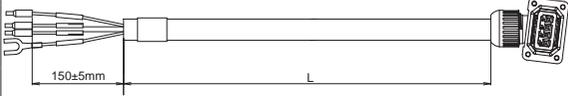
\* ◇ Encoder Options □ Brake Options △ Oil Seal Options

\* Flexible -C10 10 million times

Test Conditions: Bend Radius 50mm, Frequency 40 times/min, Distance 1000mm

Accessories

Motor Power Cables, Motor Brake Cables  
For □40mm, □60mm, □80mm Motor

Model*	Length(L)	Description	For Servo Motor*	Outline
1672-0100	1m	Motor Cables Standard Unshielded	SM3L-042A ◇ □ D △	
1672-0200	2m		SM3L-061A ◇ □ P △	
1672-0300	3m		SM3L-062A ◇ □ P △	
1672-0400	4m		SM3L-083A ◇ □ P △	
1672-0500	5m		SM3L-084A ◇ □ P △	
1672-0800	8m		SM3H-041A ◇ □ P △	
1672-1000	10m		SM3H-042A ◇ □ P △	
1672-1500	15m		SM3H-061A ◇ □ P △	
1672-2000	20m		SM3H-062A ◇ □ P △	
1672-0100-C10	1m		Motor Cables Flexible Unshielded	
1672-0200-C10	2m	SM3L-042AB □ D △		
1672-0300-C10	3m	SM3L-061AB □ D △		
1672-0400-C10	4m	SM3L-062AB □ D △		
1672-0500-C10	5m	SM3L-083AB □ D △		
1672-0800-C10	8m	SM3L-084AB □ D △		
1672-1000-C10	10m	SM3M-062AB □ D △		
1672-1500-C10	15m	SM3M-083AB □ D △		
1672-2000-C10	20m	SM3M-083AB □ D △		
1674-0100	1m	Brake Cables Standard Unshielded		SM3L-042A ◇ BD △
1674-0200	2m		SM3L-061A ◇ BP △	
1674-0300	3m		SM3L-062A ◇ BP △	
1674-0400	4m		SM3L-083A ◇ BP △	
1674-0500	5m		SM3L-084A ◇ BP △	
1674-0800	8m		SM3H-041A ◇ BP △	
1674-1000	10m		SM3H-042A ◇ BP △	
1674-1500	15m		SM3H-061A ◇ BP △	
1674-2000	20m		SM3H-062A ◇ BP △	
1674-0100-C10	1m		Brake Cables Flexible Unshielded	SM3H-083A ◇ BP △
1674-0200-C10	2m	SM3L-042ABBD △		
1674-0300-C10	3m	SM3L-061ABBD △		
1674-0400-C10	4m	SM3L-062ABBD △		
1674-0500-C10	5m	SM3L-083ABBD △		
1674-0800-C10	8m	SM3L-084ABBD △		
1674-1000-C10	10m	SM3M-062ABBD △		
1674-1500-C10	15m	SM3M-083ABBD △		
1674-2000-C10	20m	SM3M-083ABBD △		

\* ◇ Encoder Options □ Brake Options △ Oil Seal Options

\* Flexible -C10 10 million times

Test Conditions: Bend Radius 50mm, Frequency 40 times/min, Distance 1000mm

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Motor Matching List

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Motor Specification

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Accessories

Encoder Cables (Straight Plug)

For □100mm, □130mm, □180mm Motor

Model*	Length(L)	Description	For Servo Motor*	Outline
2643-0100	1m	Encoder Cables Incremental Encoder Standard Shielded		
2643-0300	3m			
2643-0500	5m			
2643-1000	10m			
2643-1500	15m			
2643-2000	20m			
2643-0100-C10	1m	Encoder Cables Incremental Encoder Flexible Shielded	SM3L-102 ◊◊□ U △ SM3L-103 ◊◊□ U △ SM3L-104 ◊◊□ U △ SM3L-105 ◊◊□ U △ SM3M-132 ◊◊□ U △ SM3M-133 ◊◊□ U △ SM3M-134 ◊◊□ U △ SM3M-135Y ◊□ M △	
2643-0300-C10	3m			
2643-0500-C10	5m			
2643-1000-C10	10m			
2643-1500-C10	15m			
2643-2000-C10	20m			
2642-0100	1m	Encoder Cables With Battery Absolute Encoder Standard Shielded	SM3H-132 ◊◊□ U △ SM3H-133 ◊◊□ U △ SM3H-134 ◊◊□ U △ SM3H-182Y ◊□ U △ SM3H-183Y ◊□ U △ SM3H-184Y ◊□ U △ SM3H-185Y ◊□ U △	
2642-0300	3m			
2642-0500	5m			
2642-1000	10m			
2642-1500	15m			
2642-2000	20m			
2642-0100-C10	1m	Encoder Cables With Battery Absolute Encoder Flexible Shielded		
2642-0300-C10	3m			
2642-0500-C10	5m			
2642-1000-C10	10m			
2642-1500-C10	15m			
2642-2000-C10	20m			

\* ◊ Winding Voltage ◊ Encoder Options △ Oil Seal Options

\* Flexible -C10 10 million times

Test Conditions: Bend Radius 50mm, Frequency 40 times/min, Distance 1000mm

Accessories

Motor Power Cables  
(Angled Plug)

- 100mm
- 130mm

220VAC Winding 1.0kW Motor  
 400VAC Winding 1.0/1.5kW Motor  
 220VAC Winding 0.85/1.0kW Motor  
 400VAC Winding 0.85/1.0/1.3/1.5kW Motor

Model*	Length(L)	Description	For Servo Motor*	Outline
1658-0100	1m	Motor Cables Standard Unshielded	M3L-102A ◇ NU △ SM3L-102Y ◇ NU △ SM3L-103Y ◇ NU △ SM3M-132A ◇ NU △ SM3H-132A ◇ NU △ SM3M-132Y ◇ NU △	
1658-0300	3m			
1658-0500	5m			
1658-1000	10m			
1658-1500	15m			
1658-2000	20m			
1658-0100-C10	1m	Motor Cables Flexible Unshielded	SM3M-132Y ◇ NU △ SM3M-133Y ◇ NU △ SM3H-132Y ◇ NU △ SM3H-133Y ◇ NU △	
1658-0300-C10	3m			
1658-0500-C10	5m			
1658-1000-C10	10m			
1658-1500-C10	15m			
1658-2000-C10	20m			
1660-0100	1m	Motor Cables With Built-in Brake Cable Standard Unshielded	SM3L-102A ◇ BU △ SM3L-102Y ◇ BU △ SM3L-103Y ◇ BU △ SM3M-132A ◇ BU △ SM3H-132A ◇ BU △ SM3M-132Y ◇ BU △	
1660-0300	3m			
1660-0500	5m			
1660-1000	10m			
1660-1500	15m			
1660-2000	20m			
1660-0100-C10	1m	Motor Cables With Built-in Brake Cable Flexible Unshielded	SM3M-132Y ◇ BU △ SM3M-133Y ◇ BU △ SM3H-132Y ◇ BU △ SM3H-133Y ◇ BU △	
1660-0300-C10	3m			
1660-0500-C10	5m			
1660-1000-C10	10m			
1660-1500-C10	15m			
1660-2000-C10	20m			

\* ◇ Encoder Options △ Oil Seal Options

\* Flexible -C10 10 million times

Test Conditions: Bend Radius 100mm, Frequency 40 times/min, Distance 1000mm

## Accessories

### Motor Power Cables (Angled Plug)

100mm

220VAC Winding 1.5kW Motor  
400VAC Winding 2.0/2.5kW Motor

130mm

220VAC Winding 1.3/1.5kW Motor  
400VAC Winding 1.8/2.0kW Motor

Model*	Length(L)	Description	For Servo Motor*	Outline
1656-0100	1m	Motor Cables Standard Unshielded	SM3L-103A ◇ NU △ SM3L-104Y ◇ NU △ SM3L-105Y ◇ NU △ SM3M-133A ◇ NU △ SM3H-133A ◇ NU △ SM3M-134Y ◇ NU △ SM3H-134Y ◇ NU △	
1656-0300	3m			
1656-0500	5m			
1656-1000	10m			
1656-1500	15m			
1656-2000	20m			
1656-0100-C10	1m	Motor Cables Flexible Unshielded	SM3M-133A ◇ NU △ SM3H-133A ◇ NU △ SM3M-134Y ◇ NU △ SM3H-134Y ◇ NU △	
1656-0300-C10	3m			
1656-0500-C10	5m			
1656-1000-C10	10m			
1656-1500-C10	15m			
1656-2000-C10	20m			
1662-0100	1m	Motor Cables With Built-in Brake Cable Standard Unshielded	SM3L-103A ◇ BU △ SM3L-104Y ◇ BU △ SM3L-105Y ◇ BU △ SM3M-133A ◇ BU △ SM3H-133A ◇ BU △ SM3M-134Y ◇ BU △ SM3H-134Y ◇ BU △	
1662-0300	3m			
1662-0500	5m			
1662-1000	10m			
1662-1500	15m			
1662-2000	20m			
1662-0100-C10	1m	Motor Cables With Built-in Brake Cable Flexible Unshielded	SM3M-133A ◇ BU △ SM3H-133A ◇ BU △ SM3M-134Y ◇ BU △ SM3H-134Y ◇ BU △	
1662-0300-C10	3m			
1662-0500-C10	5m			
1662-1000-C10	10m			
1662-1500-C10	15m			
1662-2000-C10	20m			

\* ◇ Encoder Options △ Oil Seal Options

\* Flexible -C10 10 million times

Test Conditions: Bend Radius 100mm, Frequency 40 times/min, Distance 1000mm

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Accessories

Motor Power Cables  
(Angled Plug)

- 100mm 220VAC Winding 2.0/2.5kW Motor
- 130mm 220VAC Winding 1.8/2.0kW Motor
- 130mm 400VAC Winding 3.0kW Motor

Model*	Length(L)	Description	For Servo Motor*	Outline
1650-0100	1m	Motor Cables Standard Unshielded	SM3L-104A ◇ NU △ SM3L-105A ◇ NU △ SM3M-134A ◇ NU △ SM3M-135Y ◇ NM △ SM3H-134A ◇ NU △	
1650-0300	3m			
1650-0500	5m			
1650-1000	10m			
1650-1500	15m			
1650-2000	20m			
1650-0100-C10	1m	Motor Cables Flexible Unshielded	SM3L-104A ◇ NU △ SM3L-105A ◇ NU △ SM3M-134A ◇ NU △ SM3M-135Y ◇ NM △ SM3H-134A ◇ NU △	
1650-0300-C10	3m			
1650-0500-C10	5m			
1650-1000-C10	10m			
1650-1500-C10	15m			
1650-2000-C10	20m			
1652-0100	1m	Motor Cables With Built-in Brake Cable Standard Unshielded	SM3L-104A ◇ BU △ SM3L-105A ◇ BU △ SM3M-134A ◇ BU △ SM3M-135Y ◇ BM △ SM3H-134A ◇ BU △	
1652-0300	3m			
1652-0500	5m			
1652-1000	10m			
1652-1500	15m			
1652-2000	20m			
1652-0100-C10	1m	Motor Cables With Built-in Brake Cable Flexible Unshielded	SM3L-104A ◇ BU △ SM3L-105A ◇ BU △ SM3M-134A ◇ BU △ SM3M-135Y ◇ BM △ SM3H-134A ◇ BU △	
1652-0300-C10	3m			
1652-0500-C10	5m			
1652-1000-C10	10m			
1652-1500-C10	15m			
1652-2000-C10	20m			

\* ◇ Encoder Options △ Oil Seal Options

\* Flexible -C10 10 million times

Test Conditions: Bend Radius 100mm, Frequency 40 times/min, Distance 1000mm

Accessories

Motor Power Cables (Angled Plug) □180mm 400VAC Winding 2.9kW Motor

Model*	Length(L)	Description	For Servo Motor*	Outline
1682-0100	1m	Motor Cables Standard Unshielded	SM3H-182Y ◇ NU △	
1682-0300	3m			
1682-0500	5m			
1682-1000	10m			
1682-1500	15m			
1682-2000	20m			
1682-0100-C10	1m	Motor Cables Flexible Unshielded	SM3H-182Y ◇ NU △	
1682-0300-C10	3m			
1682-0500-C10	5m			
1682-1000-C10	10m			
1682-1500-C10	15m			
1682-2000-C10	20m			
1683-0100	1m	Motor Cables With Built-in Brake Cable Standard Unshielded	SM3H-182Y ◇ BU △	
1683-0300	3m			
1683-0500	5m			
1683-1000	10m			
1683-1500	15m			
1683-2000	20m			
1683-0100-C10	1m	Motor Cables With Built-in Brake Cable Flexible Unshielded	SM3H-182Y ◇ BU △	
1683-0300-C10	3m			
1683-0500-C10	5m			
1683-1000-C10	10m			
1683-1500-C10	15m			
1683-2000-C10	20m			

\* ◇代表编码器类型；△代表是否安装油封

\* 耐折弯线 -C10 1000 万次。

折弯测试条件：折弯半径 100mm，频率 40 次 / 分钟，行程 1000mm。

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## Accessories

Motor Power Cables □180mm 400VAC Winding 4.4kW Motor  
(Angled Plug)

Model*	Length(L)	Description	For Servo Motor*	Outline
1666-0100	1m	Motor Cables Standard Unshielded	SM3H-183Y ◇ NU △	
1666-0300	3m			
1666-0500	5m			
1666-1000	10m			
1666-1500	15m			
1666-2000	20m			
1666-0100-C10	1m	Motor Cables Flexible Unshielded	SM3H-183Y ◇ BU △	
1666-0300-C10	3m			
1666-0500-C10	5m			
1666-1000-C10	10m			
1666-1500-C10	15m			
1666-2000-C10	20m			
1681-0100	1m	Motor Cables With Built-in Brake Cable Standard Unshielded	SM3H-183Y ◇ BU △	
1681-0300	3m			
1681-0500	5m			
1681-1000	10m			
1681-1500	15m			
1681-2000	20m			
1681-0100-C10	1m	Motor Cables With Built-in Brake Cable Flexible Unshielded	SM3H-183Y ◇ BU △	
1681-0300-C10	3m			
1681-0500-C10	5m			
1681-1000-C10	10m			
1681-1500-C10	15m			
1681-2000-C10	20m			

\* ◇ Encoder Options △ Oil Seal Options

\* Flexible -C10 10 million times

Test Conditions: Bend Radius 100mm, Frequency 40 times/min, Distance 1000mm

配件

Motor Power Cables (Angled Plug) □180mm 400VAC Winding 5.5/7.5kW Motor

Model*	Length(L)	Description	For Servo Motor*	Outline
1667-0100	1m	Motor Cables Standard Unshielded	SM3H-184Y ◇ NU △ SM3H-185Y ◇ NU △	
1667-0300	3m			
1667-0500	5m			
1667-1000	10m			
1667-1500	15m			
1667-2000	20m			
1667-0100-C10	1m	Motor Cables Flexible Unshielded	SM3H-184Y ◇ NU △ SM3H-185Y ◇ NU △	
1667-0300-C10	3m			
1667-0500-C10	5m			
1667-1000-C10	10m			
1667-1500-C10	15m			
1667-2000-C10	20m			
1680-0100	1m	Motor Cables With Built-in Brake Cable Standard Unshielded	SM3H-184Y ◇ BU △ SM3H-185Y ◇ BU △	
1680-0300	3m			
1680-0500	5m			
1680-1000	10m			
1680-1500	15m			
1680-2000	20m			
1680-0100-C10	1m	Motor Cables With Built-in Brake Cable Flexible Unshielded	SM3H-184Y ◇ BU △ SM3H-185Y ◇ BU △	
1680-0300-C10	3m			
1680-0500-C10	5m			
1680-1000-C10	10m			
1680-1500-C10	15m			
1680-2000-C10	20m			

\* ◇ Encoder Options △ Oil Seal Options

\* Flexible -C10 10 million times

Test Conditions: Bend Radius 100mm, Frequency 40 times/min, Distance 1000mm

Features

Drive  
Numbering Information

Drive Overview

Motor  
Numbering Information

Servo Drive and  
Motor Matching List

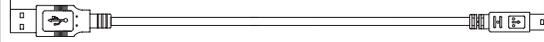
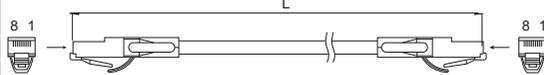
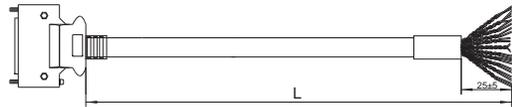
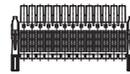
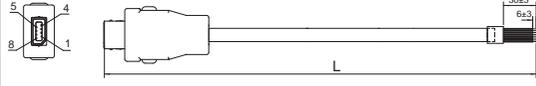
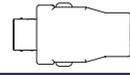
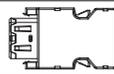
Drive Specification

Motor Specification

Accessories

Accessories

Servo Drive Accessories

USB Cable			
Model	Length (L)	Description	Outline
2620-150	1.5m	USB configuration cable connect with PC	
CN6/CN7 Communication Daisy Chain Cable			
Model	Length (L)	Description	Outline
2013-030	0.3m	Twisted-pair, Shielded type	
2013-300	3m		
IO Connector, I/O Signal Cable			
Model	Length (L)	Description	Outline
1644-100	1m	CN2 50pin high density I/O cable Shielded type	
1644-200	2m		
1644-300	3m		
M2-50P	-	CN2 50pin high density I/O connector	
MSOP-CN226P	-	CN2 26pin push-in spring I/O connector	
Second Encoder Connector, Full Closed-loop Accessories			
Model	Length (L)	Description	Outline
1643-300	3m	CN4 Secondary encoder feedback cable Shielded type	
1643-500	5m		
1643-300-C05	3m		
1643-500-C05	5m		
MSOP-CN408P	-	CN4 Secondary encoder feedback connector	
Motor Encoder Connector (Drive Side)			
Model	Length	Description	Outline
MSOP-CN310P	-	CN3 Motor encoder connector	
EMI Filter			
Model	Specification	Description	Outline
MSOP-EMI020	250VAC, 20A	EMI filter for AC power of drive side(Single Phase)	-
Absolute Encoder System Battery Kit			
Model	Specification	Description	Outline
MSOP-BA01	Battery	For motor with battery absolute encoder	-
MSOP-BAKIT01	Batteries and battery cases		
External Regenerative Resistor			
Model	Specification	Description	Outline
REG100W120R	100W, 20Ω	Regenerative absorbing resistor	-
REG200W120R	200W, 120Ω		
REG300W120R	300W, 120Ω		
Dynamic Brake Resistor (1.0/1.5/2.0/3 kW Type)			
Model	Specification	Description	Outline
DBR80W3R5	80W, 3.5Ω	External dynamic brake resistor	-
Drive Connector Kit			
Model	Description	Outline	
MSOP-DRPWKITA	200/400/750W drive P1, P2 JST handle lever	-	
MSOP-DRPWKITB	1.0/1.5/2.5/3.0kW drive P1, P2 JST handle lever	-	
STO Connector Kit			
Model	Specification	Description	Outline
STO CONNECTOR KIT	-	-	-
Motor Connector Kit (Motor Side)			
Model	Description	Outline	
MSOP-MTKITA	80mm and lower frame size motor (without brake connector)	-	
MSOP-MTKITD	80mm and lower frame size motor (with brake connector)		
MSOP-MTKITF	100mm/130mm frame size motor (angle plug type)		
MSOP-MTKITE	180mm frame size motor (angle plug type)		



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