MOONS'
moving in better ways

M5 6S AC SERVO SYSTEM

FUNCTIONAL SAFETY
UL LISTED

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	6, 13, 17, 21, 26	100, 130, 180	850W ~ 7.5kW

Application

M56S series servo systems are widely used in electronic and semiconductor processing equipment, battery manufacturing equipment, medical devices, machine tools, solar energy processing equipment, industrial robots, and customized equipment.

Standard

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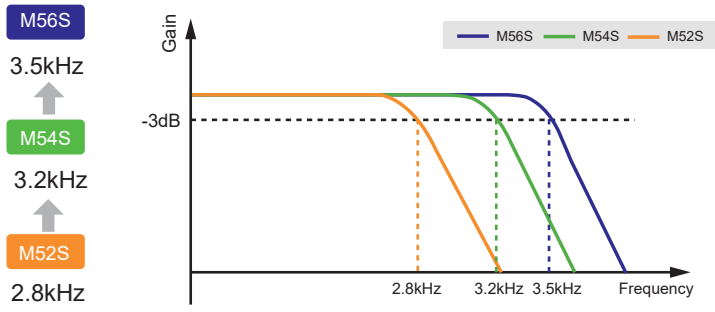
Contents

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.

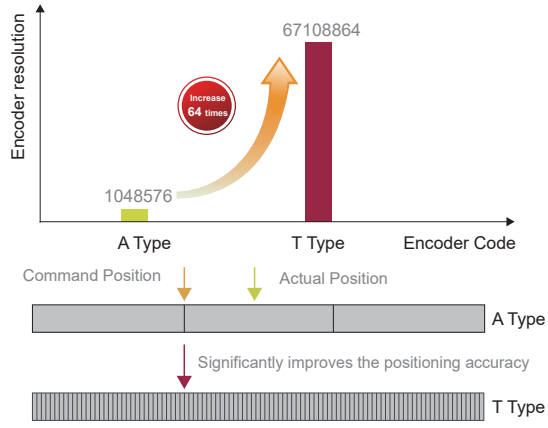


High Precision Positioning

The low cogging torque motor is equipped with a 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.

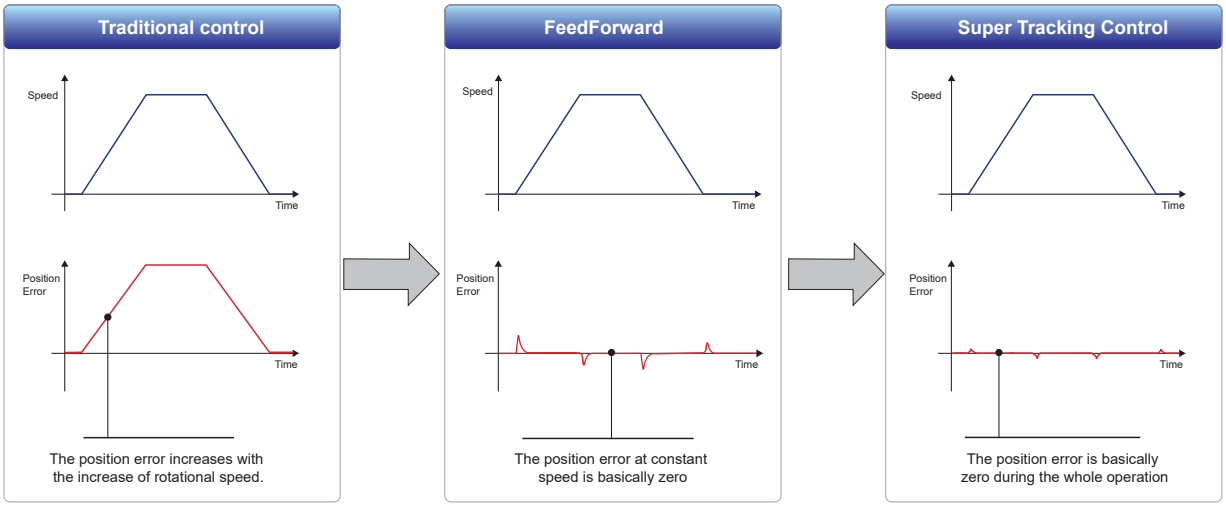
■ 26-bit Multi-turn Absolute Optical Encoder
- ◆ High resolution, up to 67,108,864 divisions per revolution
- ◆ Optional battery backup for 16-bit multi-turn

■ 21-bit Multi-turn Absolute 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.

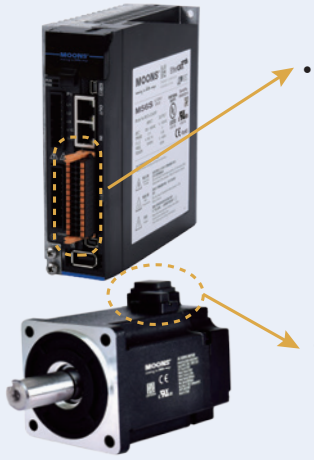
Unpacking

Wiring

Tuning

Commissioning

Easy wiring



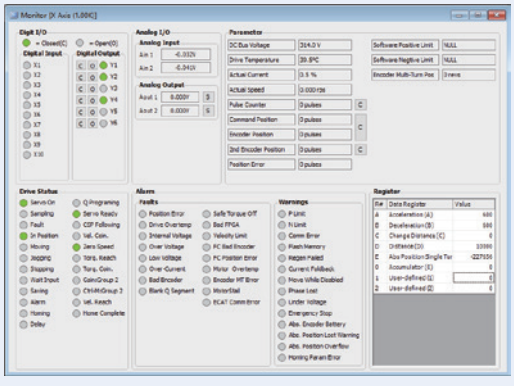
- Spring type I/O and power connector
- Plug-in type IP67 protection level connector

Easy tuning

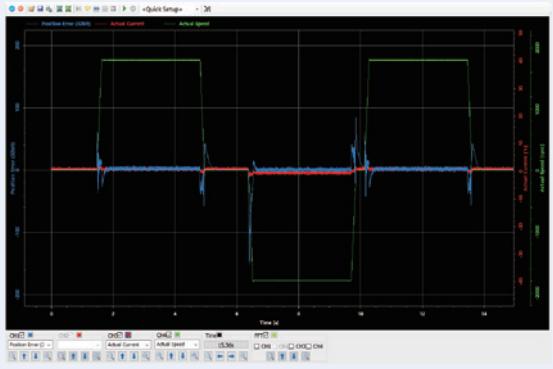
- High speed USB communication between Luna software and drive
- The drive automatically recognizes motors with smart encoder
- Both auto-tuning and tuning-less adjustment function are available
- Stable and smooth operation without complicated gain settings

Friendly software

- Operating Status Monitor



- Real-time Oscilloscope

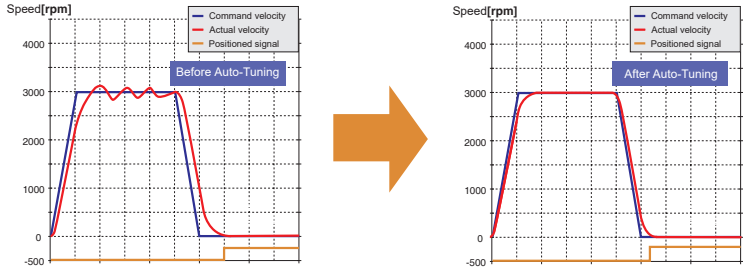


Easy Tuning

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.

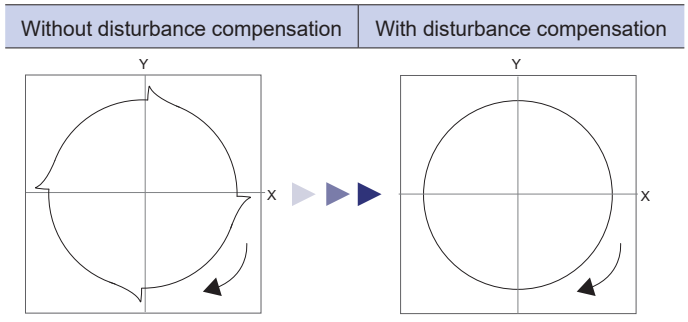
- ◆ Not be constrained by load types and drive control mode.
- ◆ High robustness with the guaranteed system stability margin.



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.

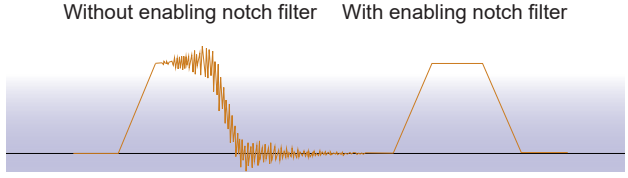


Quadrant protrusion phenomenon in simulating arc trajectories

Notch Filters

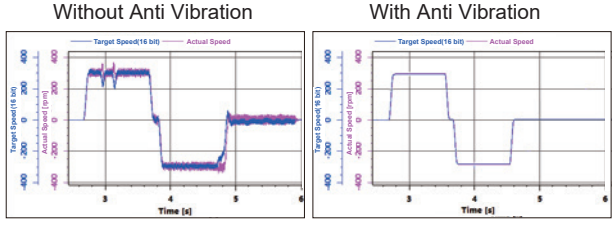
The M56S series provides 4 notch filters to suppress mechanical resonance in the system. The setting frequency range is 100~4000Hz.

- ◆ 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.



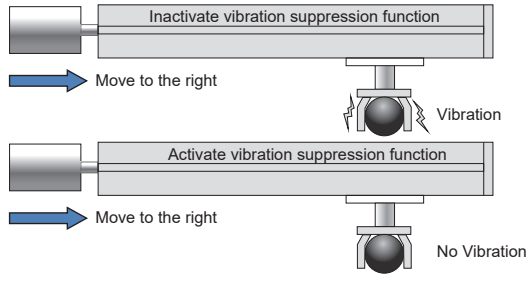
Medium Frequency Vibration Suppression

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.

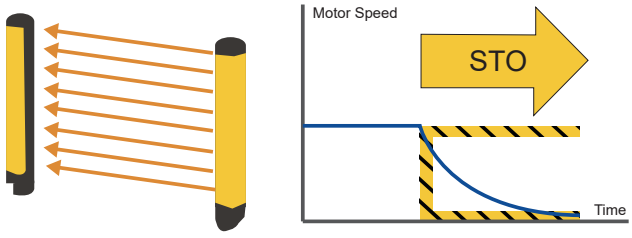


Reliable Operation

STO Safety Function

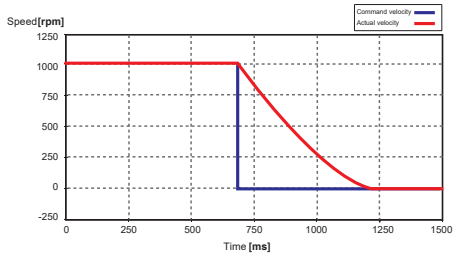
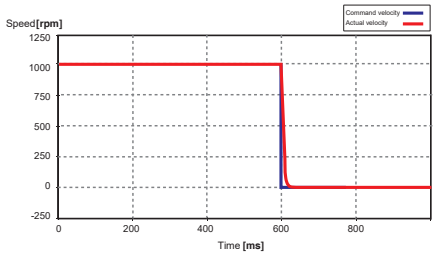
While the STO function is enabled, the drive's hardware circuitry automatically forces all power transistors off to cut off the power of the motor. This function is meant to protect personnel as well as equipment in emergency situations.

M56S series drive meets UL 61800-5-2(SIL 3), IEC 61800-5-2(SIL 3), IEC 61508(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.

Without dynamic brake	With dynamic brake
	
Without dynamic brake In this scenario, the drive exhibits a fault and is disabled. This results in the motor coming to an uncontrolled deceleration that is influenced purely by external factors such as the speed of the motor before fault, inertia of the system and the friction present in the system.	**Dynamic brake is in effect** In this scenario, the drive exhibits a fault and is disabled. The phases (U/V/W) of the servo motor are shorted and the current generated by the back EMF in the motor windings is used to stop the motor. This greatly reduces deceleration time and protects personnel as well as equipment.

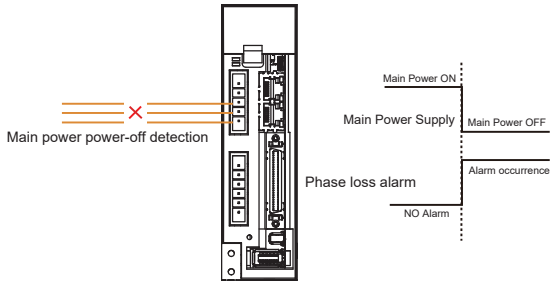
Built-in Regenerative Resistor

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 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

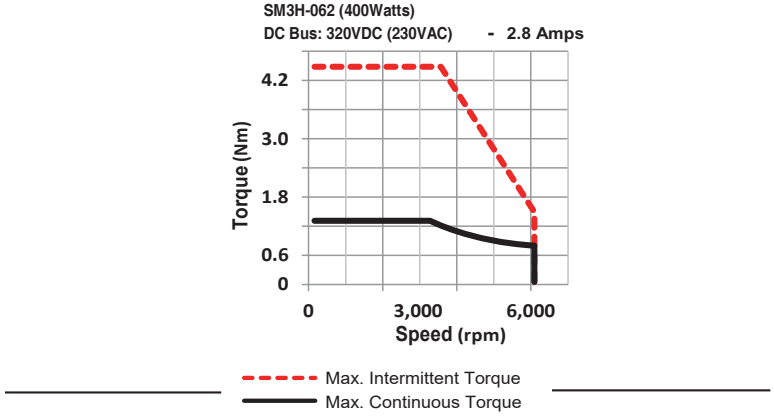
The SM3 series of servo motors are designed to have IP67 protection against dust and water. (except the shaft through hole of the motor mounting face)

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

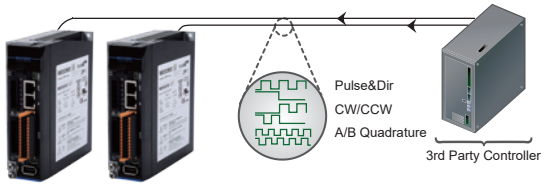
Digital Pulse Position Modes

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

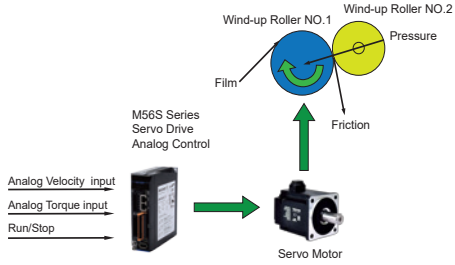


Analog Input / Output Control Modes

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:

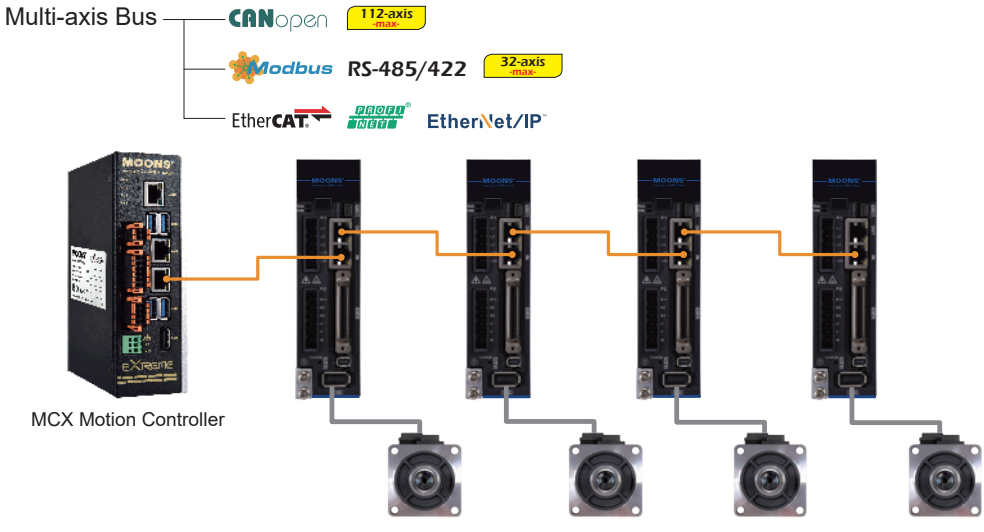
- Motion control commands (relative position, absolute position,homing mode, etc.)
- Multi-tasking
- Conditional Processing (external I/O, internal command)
- Math Calculation (+, -, *, /, &, or)
- Data register manipulation
- Logic motion commands (loop, call functions)

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		JS	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 Veolocity 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

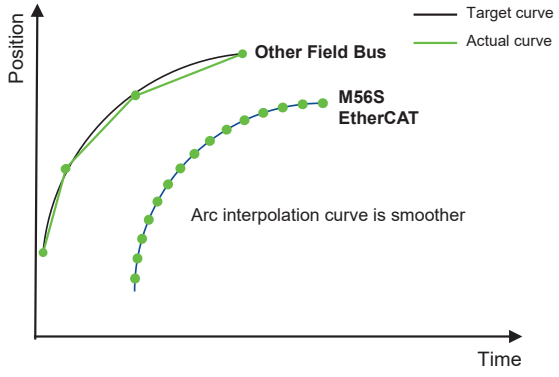
High Speed, High Efficiency

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 to125μs, 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

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.

Modbus

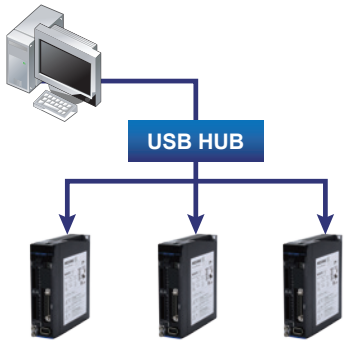
M56S series servo drive supports Modbus communication protocol, it provides an easy motion control platform for modifying drive parameters, and monitor the status of the servo drive.

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	Up to 32 axis The number of axes supported on the Ethernet depends on the network configuration

Friendly Software

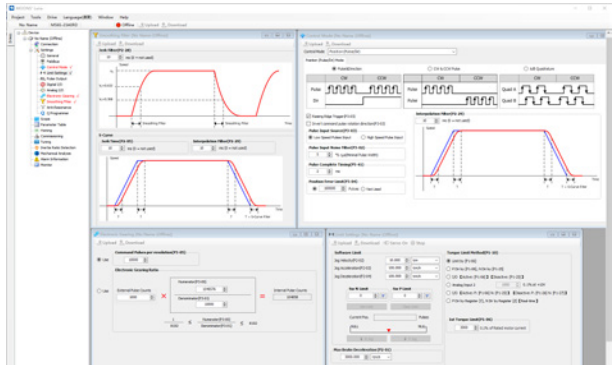
USB Multi-axis Tuning

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



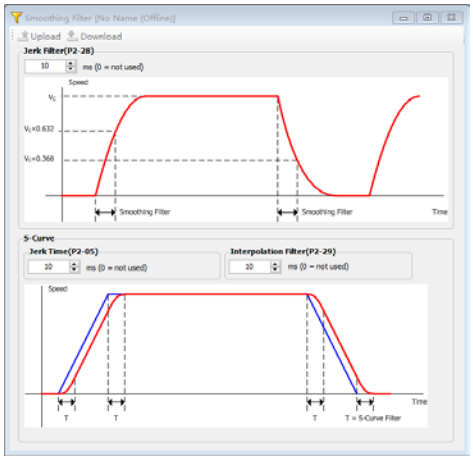
Tree Structure

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



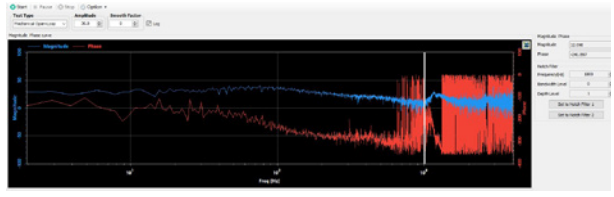
Graphical Setting Interface

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



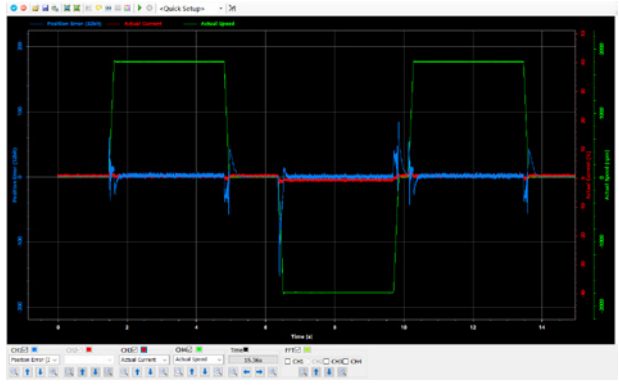
Mechanical Analysis

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)		UL 61800-5-2(SIL 3)	
		IEC 61508(SIL 3)	
		ISO 13849-1(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

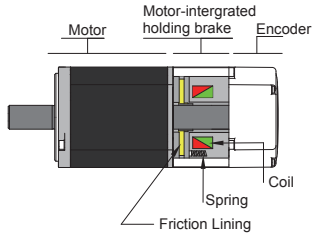
Insulation class	Class F (155℃)	Ambient temperature	Working temperature: 0℃ ~ 40℃ Storage temperature: -20℃ ~ 60℃
Protection level	IP67 (Except transfixion part of shaft)	Humidity	Storage and usage: 20 ~ 85%RH (no condensation)
Installation conditions	Indoor installation, avoiding direct sunlight, corrosive 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^2, 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.

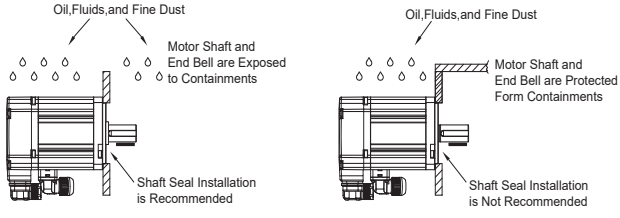
When the brake is powered on, the armature is retracted, the brake pad is released, and the motor can operate normally. When the brake is powered off, the armature is released, the brake pad is locked, and the motor can't rotate.

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℃)	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 (ms)	50	50	60	80	100	180
Release Time (ms)	20	20	40	40	40	80
Release Voltage	20VDC max.(at 20℃)					



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.

- Position control supports pulse, internal position or communication command for positioning.
- Velocity control supports analog, internal multi-segments velocity or communication commands.
- Torque control supports analog, internal torque or communication commands.

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

- The input functions can be assigned to any of the digital input by parameters.
- The output functions can be assigned to any of the digital output by parameters.

Encoder Feedback Output

- The motor encoder feedback and the second encoder feedback are output in A/B/Z pulse mode, and the pulse division output is supported.
- Support for pulse command By-pass output.

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 actived, 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 ② ③ ④ ⑤ ⑥

① M56S Series

② Supply Voltage *1

2 --- Single/Three-Phase 220VAC

3 --- Three-Phase 400VAC

④ Function Type

⑤ Model Type

⑥ Customization

Blank: Standard type

G: Gantry synchronous control is available

*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
*2		3A0	3	12	400W
*2		4A5	4.5	15	750W
*2		6A0	6	21	1.0kW
*3		10A	10	30	1.5kW
*3		13A	13	45	2.0kW
	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
- Gantry synchronous control*3
- USB(Configuration)

-EC EtherCAT

EtherCAT

- EtherCAT
- 2 Analog inputs*1
- Positon, velocity, torque control
- Built-in Q program control function
- Full closed-loop control*2
- Support STO(SIL3)*2
- Dynamic brake*2
- Gantry synchronous control*3
- USB(Configuration)

-C CANopen

CANopen

- CiA 301 & CiA 402 protocols
- 2 Analog inputs*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
- 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
- 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*3Certain models don't support this function. Please refer to the drive list on page 16 for details.

Servo Drive Table

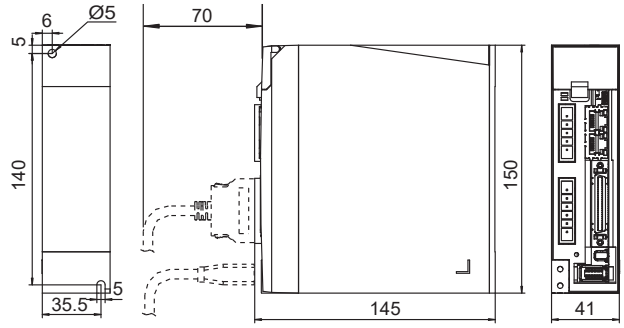
Function Type		-R—RS-485		-EC—EtherCAT		-C—CANopen		-IP—EtherNet/IP		-PN—Profinet	
											
Model Type		**F**	**D**	**X**	**N**	**X**	**N**	**X**	**N**	**X**	**N**
Control Mode	Position Mode	●	●	●	●	●	●	●	●	●	●
	Velocity Mode	●	●	●	●	●	●	●	●	●	●
	Torque Mode	●	●	●	●	●	●	●	●	●	●
	Q Program	●	●	●	●	●	●	●	●	●	●
	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	●		●		●		●		●	
	Gantry Synchronous Communication ※	●		●							
Comm Port	USB (Configuration)	●	●	●	●	●	●	●	●	●	●
	RS-485	●	●								
	EtherCAT			●	●						
	CANopen					●	●				
	EtherNet/IP							●	●		
	Modbus TCP							●	●		
	Profinet									●	●
Safty Function	Dynamic Brake	●		●		●		●		●	
	STO	●		●		●		●		●	

Short delivery time

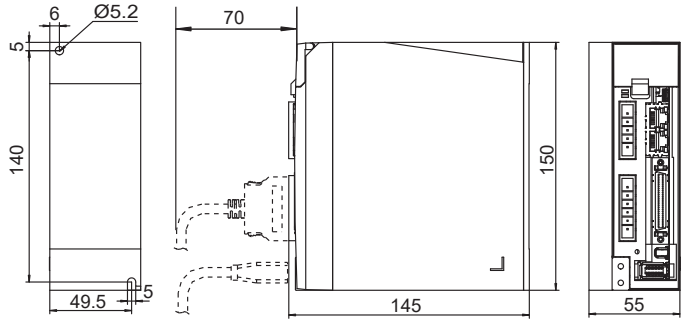
Note: ※ Gantry synchronization communication and secondary encoder input share the same interface, making these two functions mutually exclusive in operation.

Drive Mechanical Dimensions (Unit: mm)

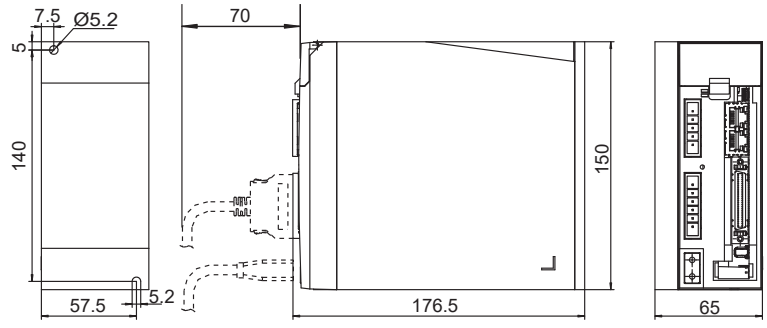
☐ M56S-21A8 ■◆ (200W)



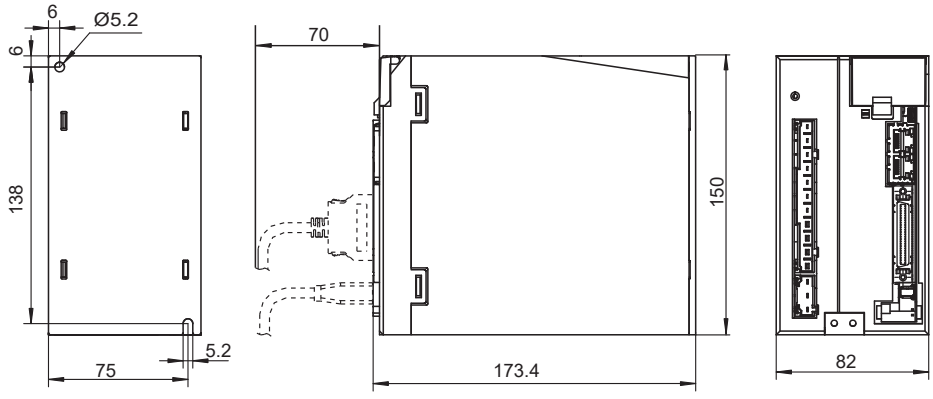
☐ M56S-23A0 ■◆ (400W)



☐ M56S-24A5 ■◆ (750W)



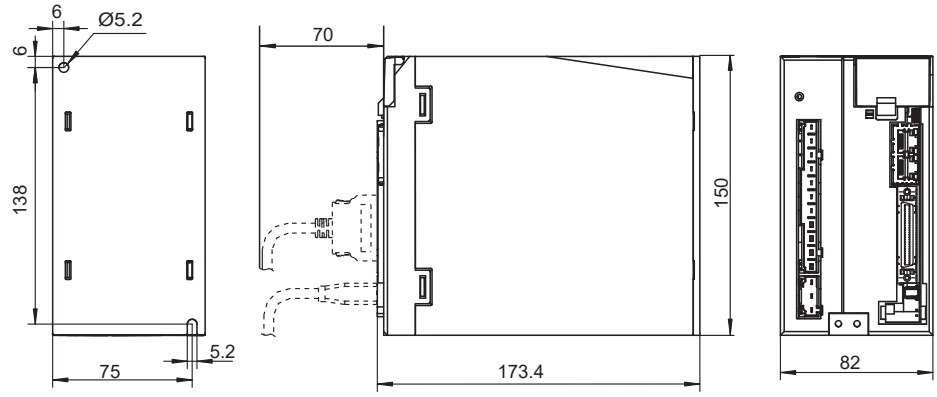
☐ M56S-26A0 ■◆ (1.0kW)
M56S-210A ■◆ (1.5kW)
M56S-213A ■◆ (2.5kW)



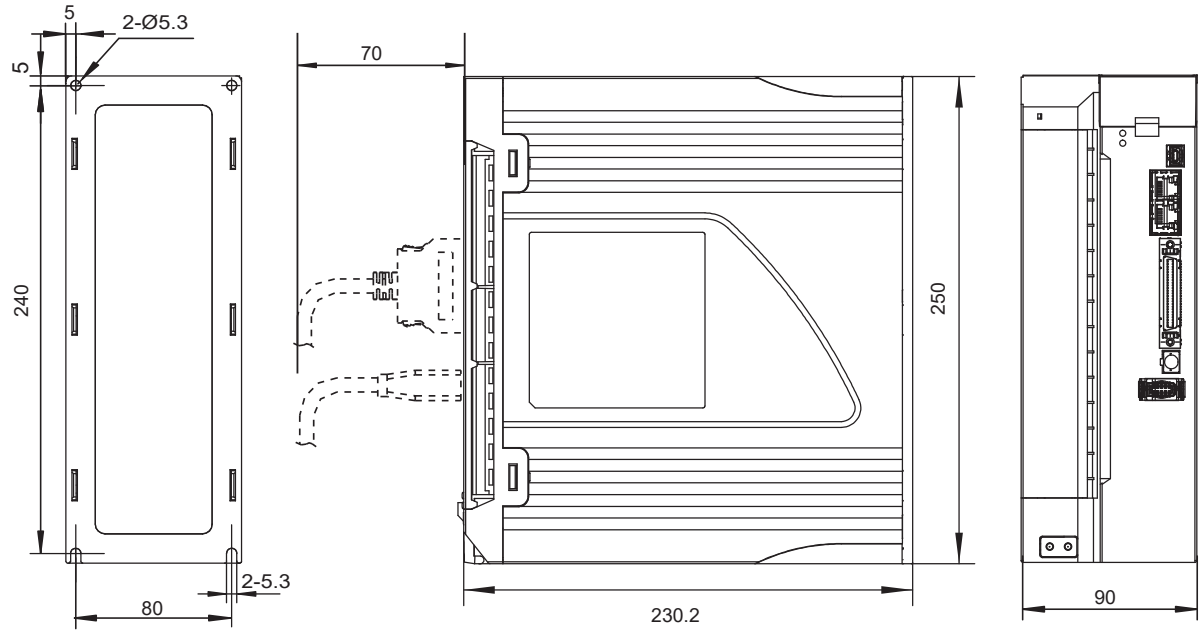
■ : Function Type ◆ : Model Type

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	26-bit Multi-turn Absolute Optical Encoder
X	21-bit Multi-turn Absolute Encoder
B	17-bit Battery-less Multi-turn Absolute Encoder

Motor Products Table

	Low Inertia		Medium Inertia		High Inertia	
Rated Power	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				□80	3000(6000)
1000	□100		□130	2000 (3000)		1500 (3000)
1300					□130	
1500	□100		□130			
1800					□130	
2000	□100		□130			
2500	□100					
2900					□180	
3000			□130			
4400					□180	
5500					□180	
7500					□180	

Drive and Motor Table

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			Matching Servo Drive				
										26-bit Multi-turn Absolute Optical Encoder	21-bit Multi-turn Absolute Encoder	17-bit Battery-less Multi-turn Absolute Encoder	-R RS-485	-EC EtherCAT	-C CANopen	-IP EtherNet/IP	-PN Profinet
40	High	220	50	0.16	0.64	3000	6000	1.4	4.8	SM3H-041AT ☐ P △	SM3H-041AX ☐ P △	SM3H-041AB ☐ PV	M56S-21A8R ◆	M56S-21A8EC ◆	M56S-21A8C ◆	M56S-21A8IP ◆	M56S-21A8PN ◆
	Low		100	0.32	1.28			1.2	5.9	SM3L-042AT ☐ D △	SM3L-042AX ☐ D △	SM3L-042AB ☐ D △					
	High			0.32	1.28			1.4	5.7	SM3H-042AT ☐ P △	SM3H-042AX ☐ P △	SM3H-042AB ☐ PV					
60	Low		200	0.64	1.9			1.5	5.4	SM3L-061AT ☐ P △	SM3L-061AX ☐ P △	SM3L-061AB ☐ D △					
	High			0.64	2.24			1.7	5.9	SM3H-061AT ☐ P △	SM3H-061AX ☐ P △	SM3H-061AB ☐ D △					
	Low		400	1.27	3.8			2.8	10	SM3L-062AT ☐ P △	SM3L-062AX ☐ P △	SM3L-062AB ☐ D △	M56S-23A0R ◆	M56S-23A0EC ◆	M56S-23A0C ◆	M56S-23A0IP ◆	M56S-23A0PN ◆
	High			1.27	4.44			2.8	9.8	SM3H-062AT ☐ P △	SM3H-062AX ☐ P △	SM3H-062AB ☐ D △					
80	Low		750	2.4	6.7			4.5	14	SM3L-083AT ☐ P △	SM3L-083AX ☐ P △	SM3L-083AB ☐ D △	M56S-24A5R ◆	M56S-24A5EC ◆	M56S-24A5C ◆	M56S-24A5IP ◆	M56S-24A5PN ◆
	High			2.4	8.4			4.5	16.7	SM3H-083AT ☐ P △	SM3H-083AX ☐ P △	SM3H-083AB ☐ D △					
	Low		1000	3.2	9.6			5.6	19	SM3L-084AT ☐ P △	SM3L-084AX ☐ P △	SM3L-084AB ☐ D △	M56S-26A0RF	M56S-26A0ECX	M56S-26A0CX	M56S-26A0IPX	M56S-26A0PNX
	High			3.2	11.2			5.9	20.5	SM3H-084AT ☐ P △	SM3H-084AX ☐ P △	SM3H-084AB ☐ D △					
100	Low	220	1000	3.2	9.6		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 △	—	M56S-210ARF	M56S-210AECX	M56S-210ACX	M56S-210AIPX	M56S-210APNX
			2000	6.4	19.2		5600	12.7	44	SM3L-104AT ☐ U △	SM3L-104AX ☐ U △	—	M56S-213ARF	M56S-213AECX	M56S-213ACX	M56S-213AIPX	M56S-213APNX
			2500	8	24		5600	13	45	SM3L-105AT ☐ U △	SM3L-105AX ☐ U △	—					
		400	1000	3.2	9.6		6000	3.8	14	SM3L-102YT ☐ U △	SM3L-102YX ☐ U △	—	M56S-36A0RF	M56S-36A0ECX	M56S-36A0CX	M56S-36A0IPX	M56S-36A0PNX
			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 △	—	M56S-313ARF	M56S-313AECX	M56S-313ACX	M56S-313AIPX	M56S-313APNX
			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 △	—	M56S-26A0RF	M56S-26A0ECX	M56S-26A0CX	M56S-26A0IPX	M56S-26A0PNX
			1500	7.16	21.5			8.5	26	SM3M-133AT ☐ U △	SM3M-133AX ☐ U △	—	M56S-210ARF	M56S-210AECX	M56S-210ACX	M56S-210AIPX	M56S-210APNX
			2000	9.55	28.6			11	32.7	SM3M-134AT ☐ U △	SM3M-134AX ☐ U △	—	M56S-213ARF	M56S-213AECX	M56S-213ACX	M56S-213AIPX	M56S-213APNX
		400	1000	4.77	14.3			3.3	10	SM3M-132YT ☐ U △	SM3M-132YX ☐ U △	—	M56S-36A0RF	M56S-36A0ECX	M56S-36A0CX	M56S-36A0IPX	M56S-36A0PNX
			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 △	—	M56S-313ARF	M56S-313AECX	M56S-313ACX	M56S-313AIPX	M56S-313APNX
			3000	14.3	42.9			10.5	30	SM3M-135YT ☐ M △	SM3M-135YX ☐ M △	—					
	High	220	850	5.39	16.2	1500	3000	6	19	SM3H-132AT ☐ U △	SM3H-132AX ☐ U △	—	M56S-26A0RF	M56S-26A0ECX	M56S-26A0CX	M56S-26A0IPX	M56S-26A0PNX
			1300	8.34	25			9.6	29.6	SM3H-133AT ☐ U △	SM3H-133AX ☐ U △	—	M56S-210ARF	M56S-210AECX	M56S-210ACX	M56S-210AIPX	M56S-210APNX
			1800	11.5	34.5			13	45	SM3H-134AT ☐ U △	SM3H-134AX ☐ U △	—	M56S-213ARF	M56S-213AECX	M56S-213ACX	M56S-213AIPX	M56S-213APNX
		400	850	5.39	16.2			3.6	11	SM3H-132YT ☐ U △	SM3H-132YX ☐ U △	—	M56S-36A0RF	M56S-36A0ECX	M56S-36A0CX	M56S-36A0IPX	M56S-36A0PNX
			1300	8.34	25			5.8	17.5	SM3H-133YT ☐ U △	SM3H-133YX ☐ U △	—					
			1800	11.5	34.5			8.1	23.2	SM3H-134YT ☐ U △	SM3H-134YX ☐ U △	—	M56S-313ARF	M56S-313AECX	M56S-313ACX	M56S-313AIPX	M56S-313APNX
180	High	400	2900	18.5	55.5			10.5	35.5	SM3H-182YT ☐ U △	—	—					
			4400	28	84			16.7	54.7	SM3H-183YT ☐ U △	—	—	M56S-317ARF	M56S-317AECX	M56S-317ACX	M56S-317AIPX	M56S-317APNX
			5500	35	105			20.9	70	SM3H-184YT ☐ U △	—	—	M56S-321ARF	M56S-321AECX	M56S-321ACX	M56S-321AIPX	M56S-321APNX
			7500	48	120			25.2	73.4	SM3H-185YT ☐ U △	—	—	M56S-326ARF	M56S-326AECX	M56S-326ACX	M56S-326AIPX	M56S-326APNX

☐ : 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.

Drive Specification

-R—RS-485 Type
220VAC Specification

Input Power	M56S-21A8R ◆ M56S-23A0R ◆ M56S-24A5R ◆ M56S-26A0RF	Main Circuit	Single / Three-phase, AC200 ~ 240V ±10%, 50/60Hz
		Control Circuit	Single-phase, AC200 ~ 240V ±10%, 50/60Hz
	M56S-210ARF M56S-213ARF	Main Circuit	Three-phase, AC200 ~ 240V ±10%, 50/60Hz
		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		● 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) ● Storage temperature: -20°C ~ 65°C
	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^2 or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)
Motor Encoder Feedback			● 26-bit multi-turn absolute optical encoder ● 21-bit multi-turn absolute encoder ● 17-bit battery-less multi-turn absolute encoder
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): ● Optocoupler input: 5 ~ 24V, minimum pulse width 1μs, max. pulse frequency 500KHz ● Line Receiver input: 5V differential signal, minimum pulse width 0.125μs, max. pulse frequency 4MHz
		Output	4 Outputs(3 Line Driver outputs, 1 open collector output) ● Line Driver output: Encoder A/B/Z feedback output ● Open collector output: Encoder Z phase
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			● -F Type built-in regenerative resistor ● -D Type only 750W 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*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, Positon 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			M56S-21A8R ◆ : 0.8Kg　　M56S-26A0RF: 1.9Kg M56S-23A0R ◆ : 1.1Kg　　M56S-210ARF: 1.9Kg M56S-24A5R ◆ : 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 M56S-317ARF M56S-321ARF M56S-326ARF	Main Circuit	Three-phase, AC380 ~ 480V ±10%, 50/60Hz
		Control Circuit	Single-phase, AC380 ~ 480V ±10%, 50/60Hz
Withstand Voltage			Primary to earth: withstand 1960 VAC, 1 min, (Leakage current: 20 mA)
Environment	Temperature		● 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) ● Storage temperature: -20°C ~ 65°C
	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^2 or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)
Motor Encoder Feedback			● 26-bit multi-turn absolute optical encoder ● 21-bit multi-turn absolute encoder
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): ● Optocoupler input: 5 ~ 24V, minimum pulse width 1μs, max. pulse frequency 500KHz ● Line Receiver input: 5V differential signal, minimum pulse width 0.125μs, max. pulse frequency 4MHz
		Output	4 Outputs(3 Line Driver outputs, 1 open collector output) ● Line Driver output: Encoder A/B/Z feedback output ● Open collector output: Encoder Z phase
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, 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-36A0RF: 1.9Kg M56S-313ARF: 1.9Kg M56S-317ARF: 3.8Kg M56S-321ARF: 3.8Kg M56S-326ARF: 3.8Kg

Drive Specification

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

Input Power	M56S-21A8 ■◆ M56S-23A0 ■◆ M56S-24A5 ■◆ M56S-26A0 ■ X	Main Circuit	Single / Three-phase, AC200 ~ 240V ±10%, 50/60Hz
		Control Circuit	Single-phase, AC200 ~ 240V ±10%, 50/60Hz
	M56S-210A ■ X M56S-213A ■ X	Main Circuit	Three-phase, AC200 ~ 240V ±10%, 50/60Hz
		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		● 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) ● Storage temperature: -20°C ~ 65°C
	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^2 or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)
Motor Encoder Feedback			● 26-bit multi-turn absolute optical encoder ● 21-bit multi-turn absolute encoder ● 17-bit battery-less multi-turn absolute encoder
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, 16bit
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			● -X Type built-in regenerative resistor ● -N Type only 750W 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*2, 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*2, 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, 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			M56S-21A8 ■◆ : 0.8Kg M56S-23A0 ■◆ : 1.1Kg M56S-24A5 ■◆ : 1.6Kg M56S-26A0 ■ X: 1.9Kg M56S-210A ■ X: 1.9Kg M56S-213A ■ X: 1.9Kg

Note: *1，*2 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 ~ 480V ±10%, 50/60Hz
		Control Circuit	Single-phase, AC380 ~ 480V ±10%, 50/60Hz
Withstand Voltage			Primary to earth: withstand 1960 VAC, 1 min, (Leakage current: 20 mA)
Environment	Temperature		● 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) ● Storage temperature: -20°C ~ 65°C
	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^2 or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)
Motor Encoder Feedback			● 26-bit multi-turn absolute optical encoder ● 21-bit multi-turn absolute encoder
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, 16bit
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, 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

Drive Specification

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

Input Power	M56S-21A8 ■◆ M56S-23A0 ■◆ M56S-24A5 ■◆ M56S-26A0 ■ X	Main Circuit	Single / Three-phase, AC200 ~ 240V ±10%, 50/60Hz
		Control Circuit	Single-phase, AC200 ~ 240V ±10%, 50/60Hz
	M56S-210A ■ X M56S-213A ■ X	Main Circuit	Three-phase, AC200 ~ 240V ±10%, 50/60Hz
		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		● 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) ● Storage temperature: -20°C ~ 65°C
	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^2 or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)
Motor Encoder Feedback			● 26-bit multi-turn absolute optical encoder ● 21-bit multi-turn absolute encoder ● 17-bit battery-less multi-turn absolute encoder
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, 16bit
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			● -X Type built-in regenerative resistor ● -N Type only 750W 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*2, 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			M56S-21A8 ■◆ : 0.8Kg M56S-23A0 ■◆ : 1.1Kg M56S-24A5 ■◆ : 1.6Kg M56S-26A0 ■ X: 1.9Kg M56S-210A ■ X: 1.9Kg M56S-213A ■ X: 1.9Kg

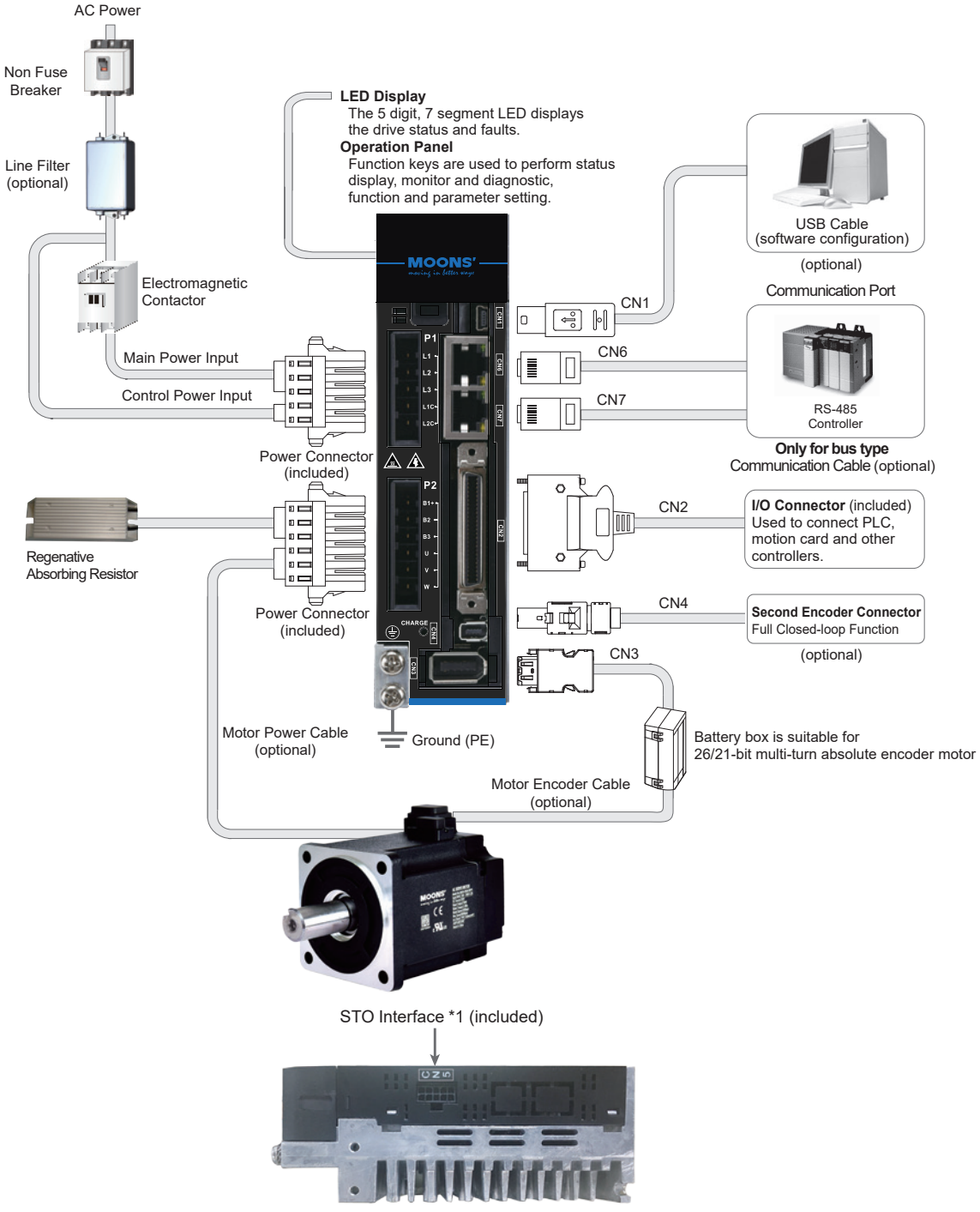
Note: *1, *2 Certain models don't support this function, please refer to page16 Servo Drive Table.
■ : Control Function Type ◆ : Model Type

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 ~ 480V ±10%, 50/60Hz
		Control Circuit	Single-phase, AC380 ~ 480V ±10%, 50/60Hz
Withstand Voltage			Primary to earth: withstand 1960 VAC, 1 min, (Leakage current: 20 mA)
Environment	Temperature		● 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) ● Storage temperature: -20°C ~ 65°C
	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^2 or less, 10 ~ 60Hz (Do not use continuously at resonance frequency)
Motor Encoder Feedback			● 26-bit multi-turn absolute optical encoder ● 21-bit multi-turn absolute encoder
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, 16bit
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

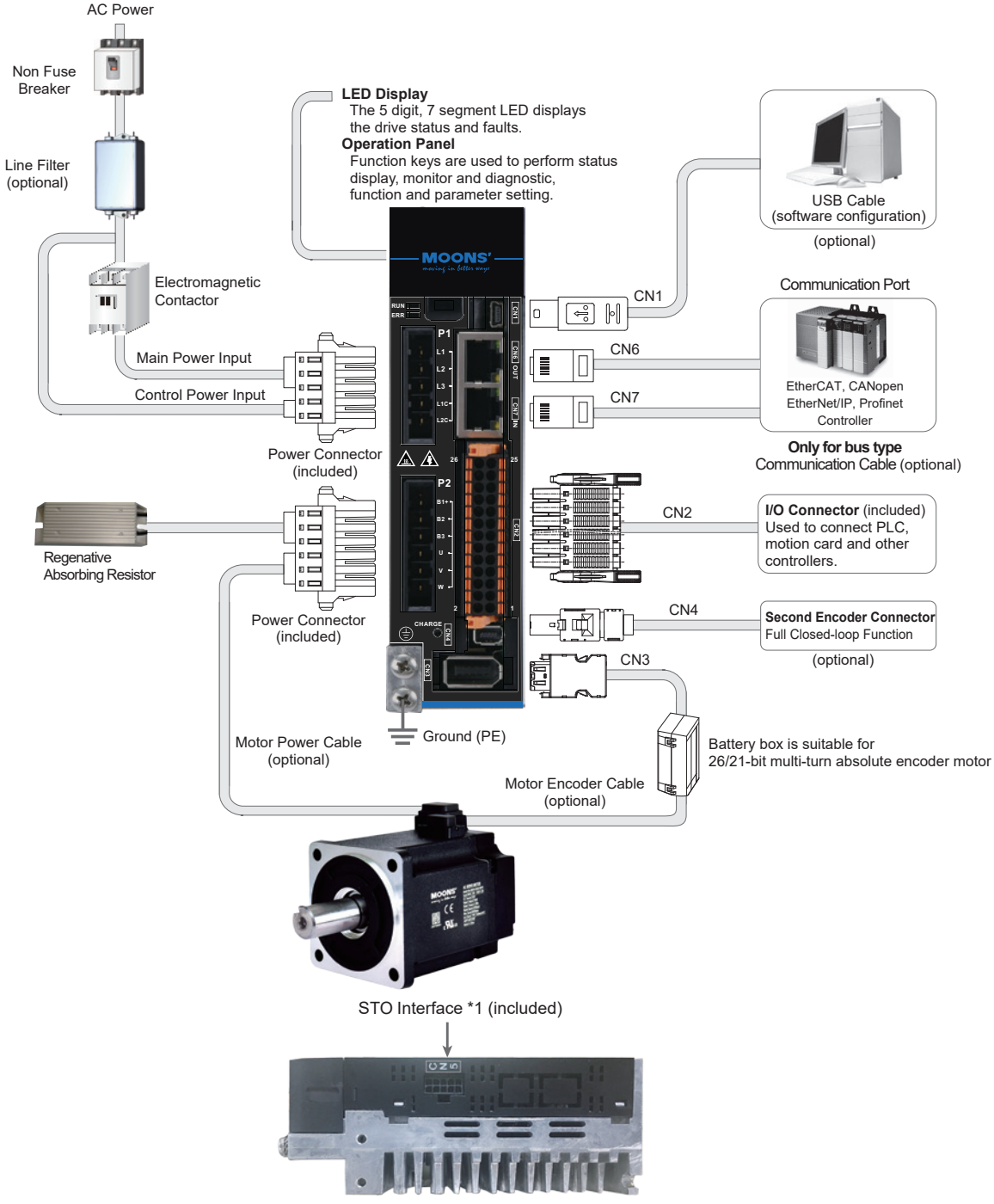


Note: *1 Certain models don't support this function, please refer to page 16.

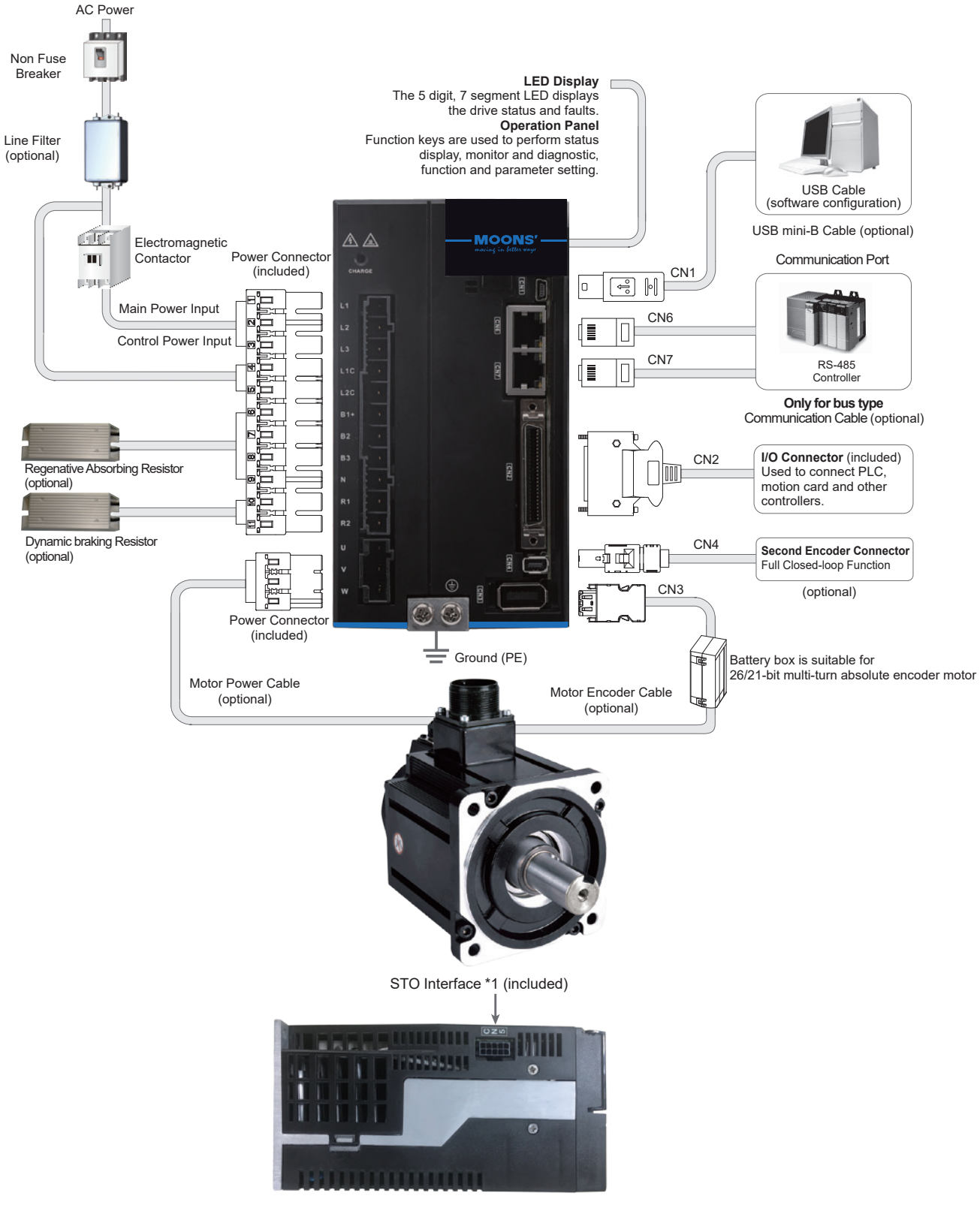
System Configuration

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

200/400/750W Type



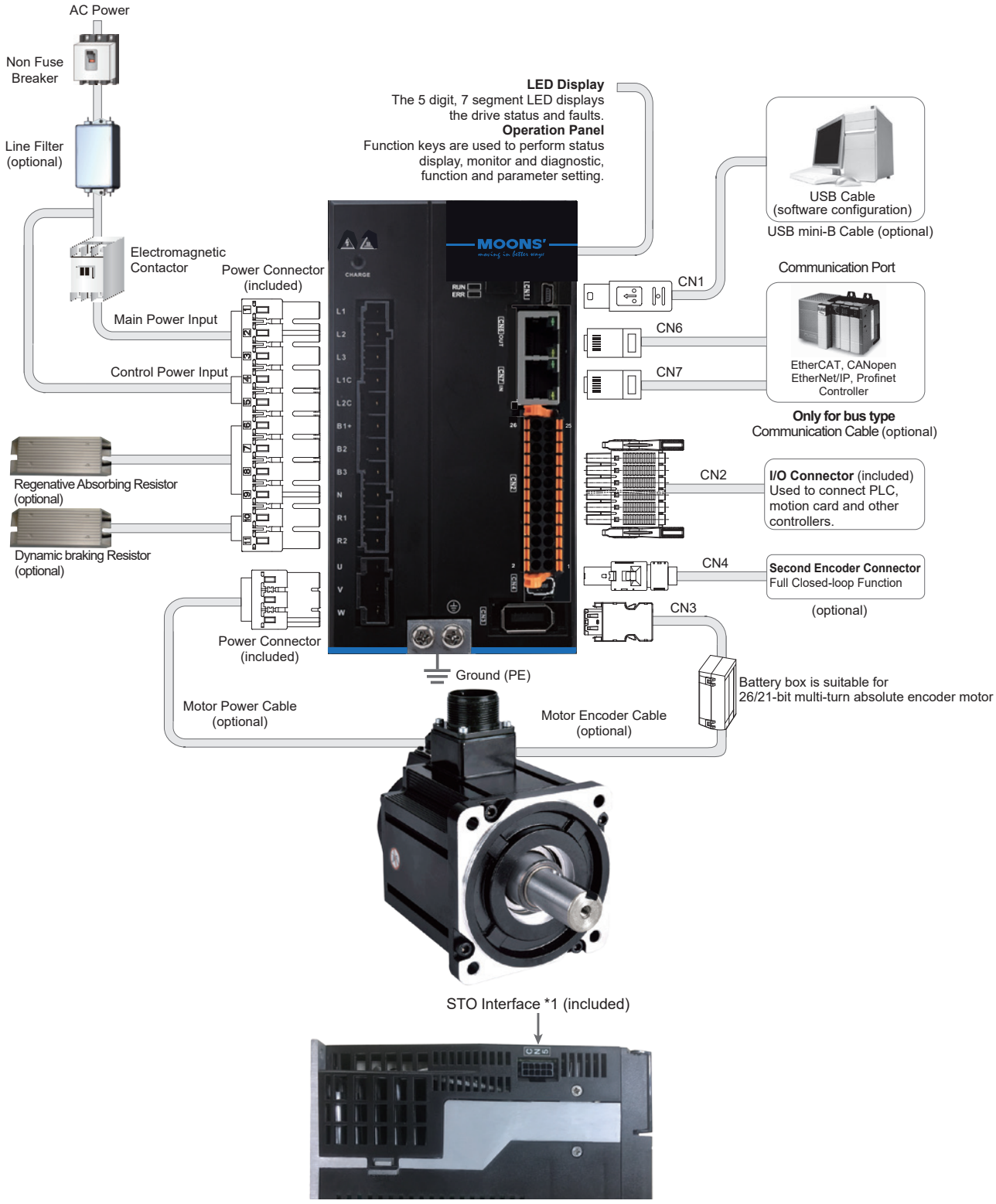
Note: *1 Certain models don't support this function, please refer to page 16.

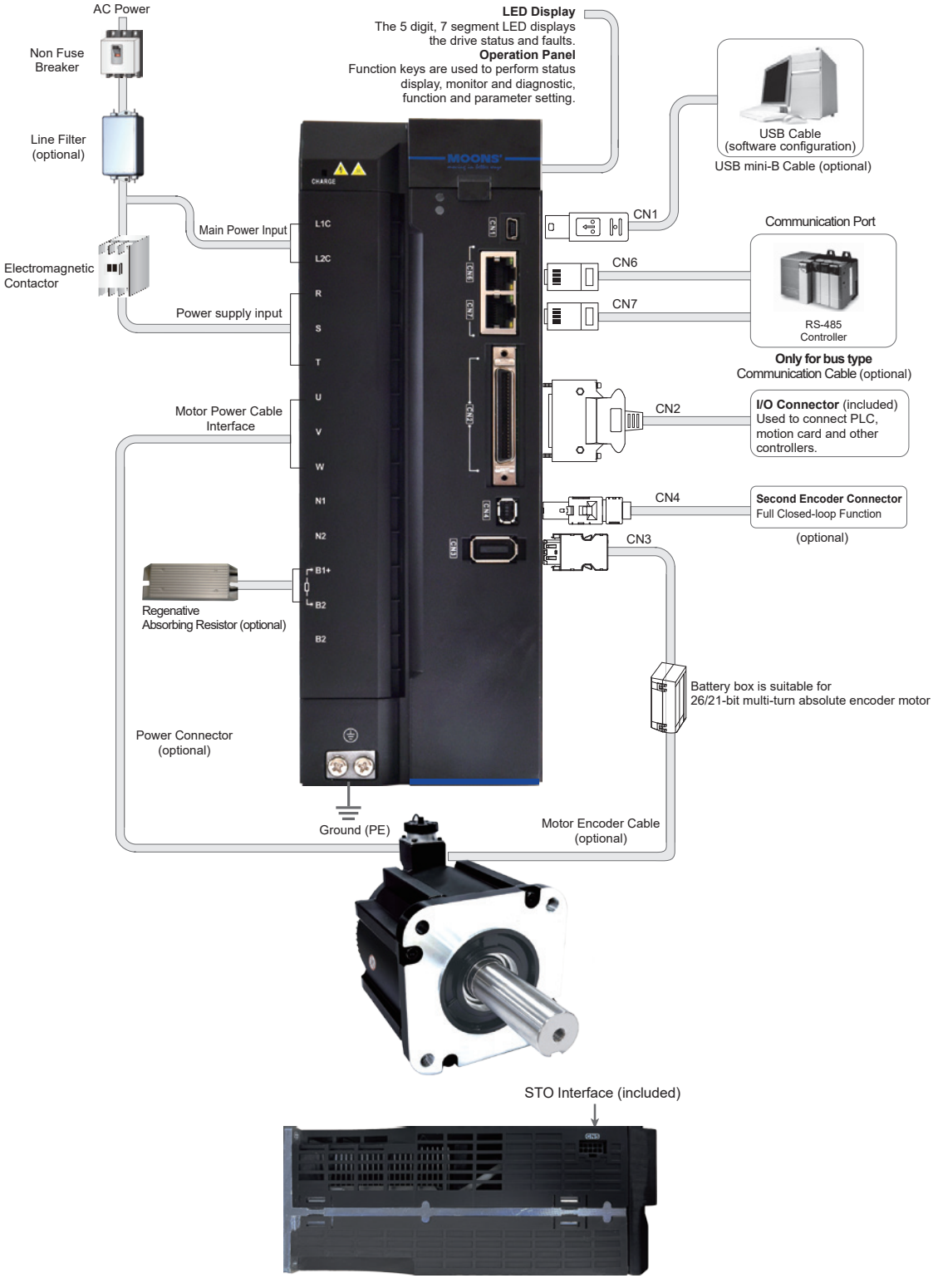

AC Power
Non Fuse Breaker
Line Filter (optional)
Electromagnetic Contactor
Power Connector (included)
Main Power Input
Control Power Input
Regenerative Absorbing Resistor (optional)
Dynamic braking Resistor (optional)
Power Connector (included)
Ground (PE)
LED Display
The 5 digit, 7 segment LED displays the drive status and faults.
Operation Panel
Function keys are used to perform status display, monitor and diagnostic, function and parameter setting.
CN1
USB Cable (software configuration)
USB mini-B Cable (optional)
Communication Port
CN6
CN7
RS-485 Controller
Only for bus type
Communication Cable (optional)
CN2
I/O Connector (included)
Used to connect PLC, motion card and other controllers.
CN4
Second Encoder Connector
Full Closed-loop Function
(optional)
CN3
Battery box is suitable for 26/21-bit multi-turn absolute encoder motor
Motor Power Cable (optional)
Motor Encoder Cable (optional)
STO Interface *1 (included)

System Configuration

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

1.0/1.5/2.0/3.0kW Type

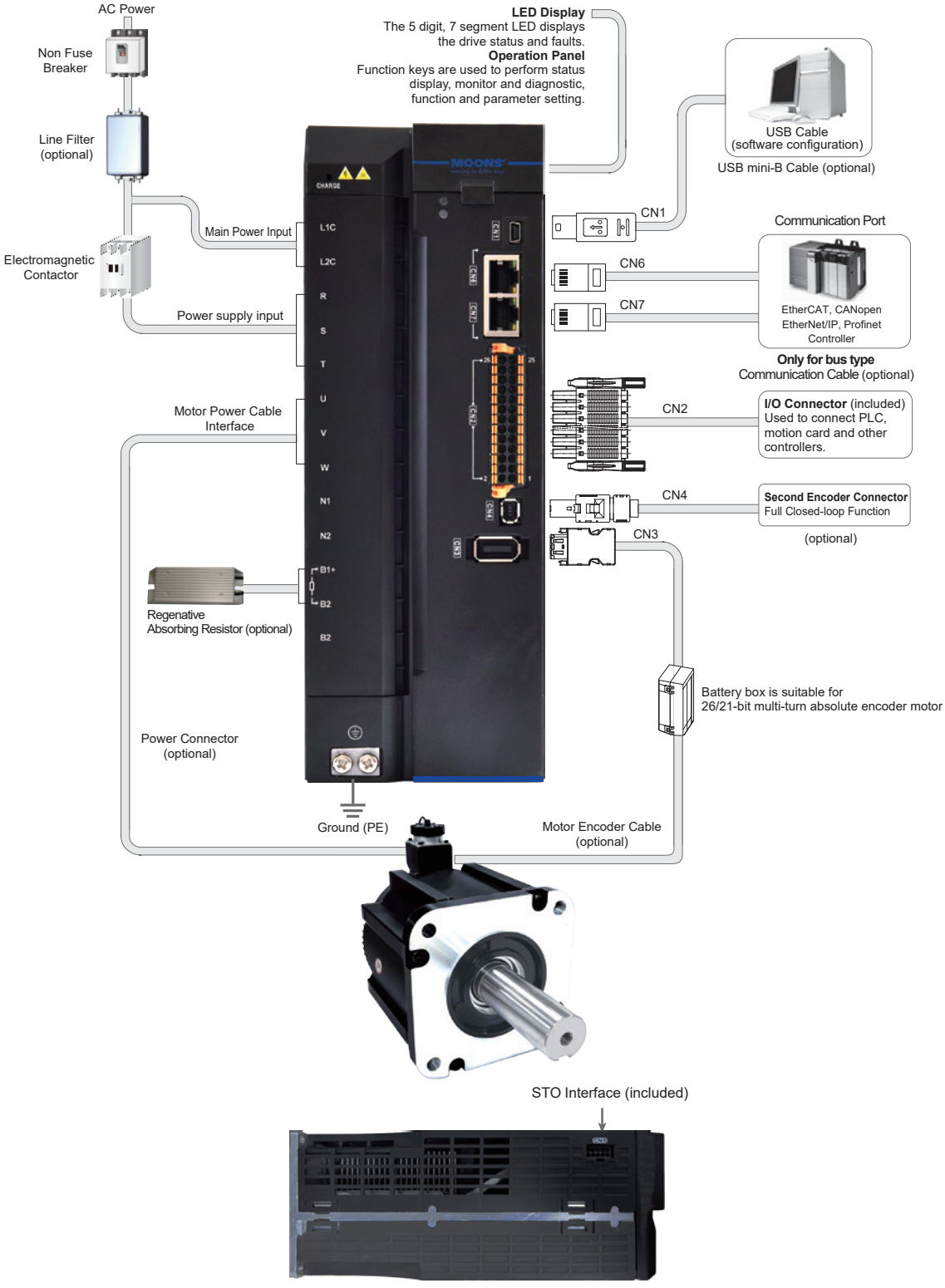



AC Power
Non Fuse Breaker
Line Filter (optional)
Electromagnetic Contactor
Main Power Input
Power supply input
Motor Power Cable Interface
Regenative Absorbing Resistor (optional)
Power Connector (optional)
Ground (PE)
LED Display
The 5 digit, 7 segment LED displays the drive status and faults.
Operation Panel
Function keys are used to perform status display, monitor and diagnostic, function and parameter setting.
USB Cable (software configuration)
USB mini-B Cable (optional)
CN1
Communication Port
CN6
CN7
RS-485 Controller
Only for bus type
Communication Cable (optional)
CN2
I/O Connector (included)
Used to connect PLC, motion card and other controllers.
CN4
Second Encoder Connector
Full Closed-loop Function
(optional)
CN3
Battery box is suitable for 26/21-bit multi-turn absolute encoder motor
Motor Encoder Cable (optional)
L1C
L2C
R
S
T
U
V
W
N1
N2
B1+
B2
B2
STO Interface (included)

System Configuration

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

5.0/6.0/7.5kW Type



Motor Specification

□40mm
Low Inertia　　220VAC Winding

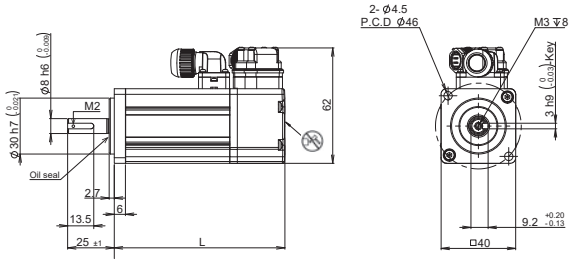
□ Specification

Type*		SM3L - 042A ◇□ D △
Rated Output Power	watts	100
Rated Speed	rpm	3000
Max.Speed	rpm	6000
Rated Torque	N·m	0.32
Peak Torque	N·m	1.28
Rated Current	A (rms)	1.2
Peak Current	A (rms)	5.9
Voltage Constant ±5%	V (rms) / K rpm	16.8
Torque Constant ±5%	N·m / A (rms)	0.267
Rotor Inertia	$Kg·m^2$	0.038×10^{-4}
Rotor Inertia - With Brake	$Kg·m^2$	0.0433×10^{-4}
Shaft Load - Axial	N (max.)	50
Shaft Load - Radial (End of Shaft)	N (max.)	60
Weight	Kg	0.49
Weight - With Brake	Kg	0.73

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

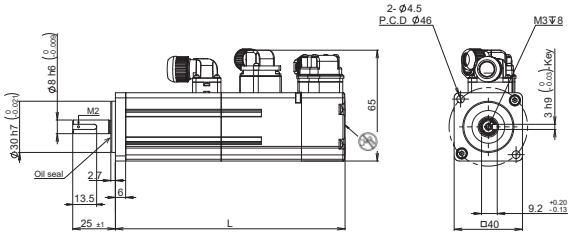
□ Dimensions (Unit: mm)

1) Without Brake



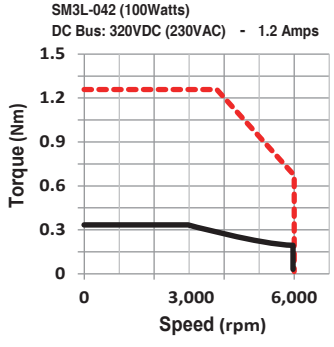
Without Brake	L
SM3L-042A ◇ ND △	91.5
SM3L-042ABND △	100

2) With Brake



With Brake	L
SM3L-042A ◇ BD △	134.5
SM3L-042ABBD △	143

□ Torque Curves



Motor Specification

□40mm
High Inertia 220VAC Winding

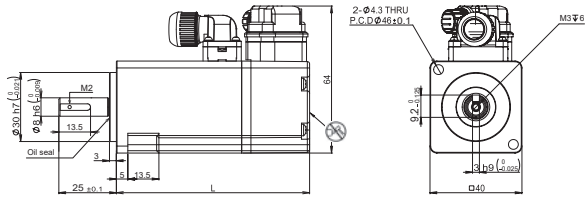
□ Specification

Type*		SM3H - 041A ◇□ P △	SM3H - 042A ◇□ P △
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	$Kg·m^2$	0.0383×10^{-4}	0.0702×10^{-4}
Rotor Inertia - With Brake	$Kg·m^2$	0.0395×10^{-4}	0.0724×10^{-4}
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**

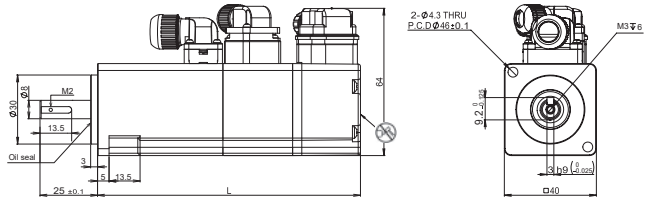
□ Dimensions (Unit: mm)

1) Without Brake



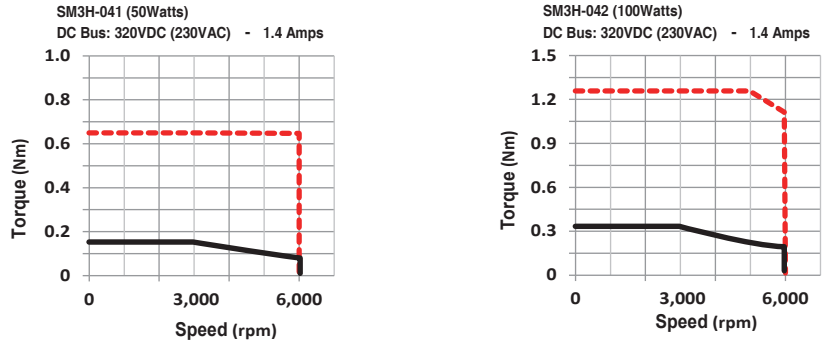
Without Brake	L
SM3H-041A ◇ NP △	70
SM3H-041ABNPV	63
SM3H-042A ◇ NP △	84
SM3H-042ABNPV	77

2) With Brake



With Brake	L
SM3H-041A ◇ BP △	100.3
SM3H-041ABBPV	85.3
SM3H-042A ◇ BP △	106
SM3H-042ABBPV	99.3

□ Torque Curves



Motor Specification

□60mm
Low Inertia 220VAC Winding

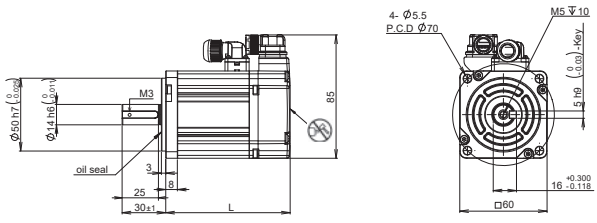
□ Specification

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	$Kg{\cdot}m^2$	0.152×10^{-4}	0.237×10^{-4}
Rotor Inertia - With Brake	$Kg{\cdot}m^2$	0.182×10^{-4}	0.268×10^{-4}
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**

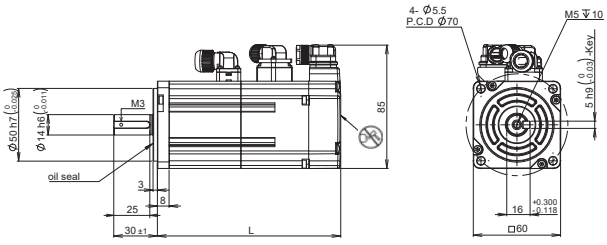
□ Dimensions (Unit: mm)

1) Without Brake



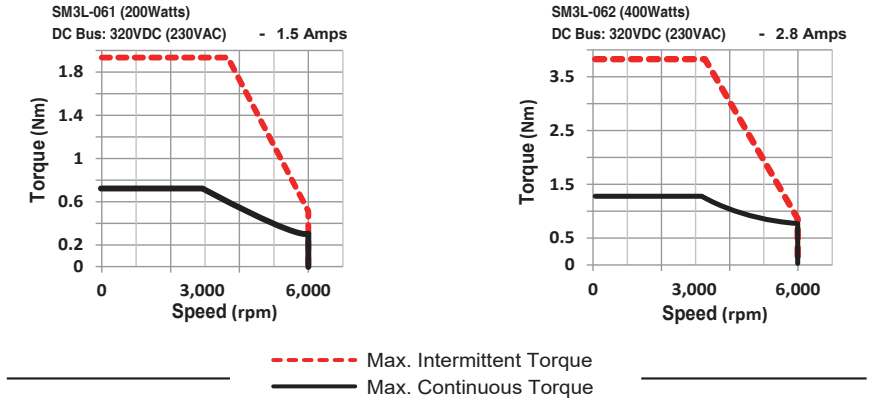
Without Brake	L
SM3L - 061A ◇ NP △	84.5
SM3L - 061ABND △	85.5
SM3L - 062A ◇ NP △	103
SM3L - 062ABND △	104

2) With Brake



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

□ Torque Curves



Motor Specification

□60mm High Inertia 220VAC Winding

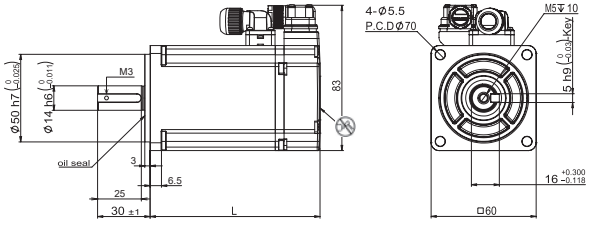
□ Specification

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	$Kg·m^2$	0.31×10^{-4}	0.566×10^{-4}
Rotor Inertia - With Brake	$Kg·m^2$	0.32×10^{-4}	0.62×10^{-4}
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**

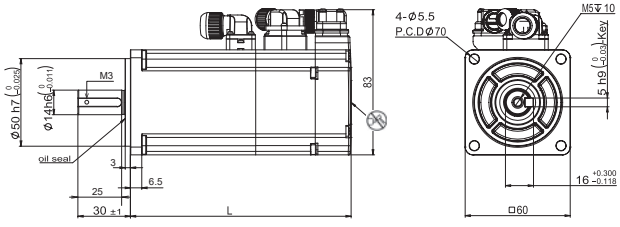
□ Dimensions (Unit: mm)

1) Without Brake



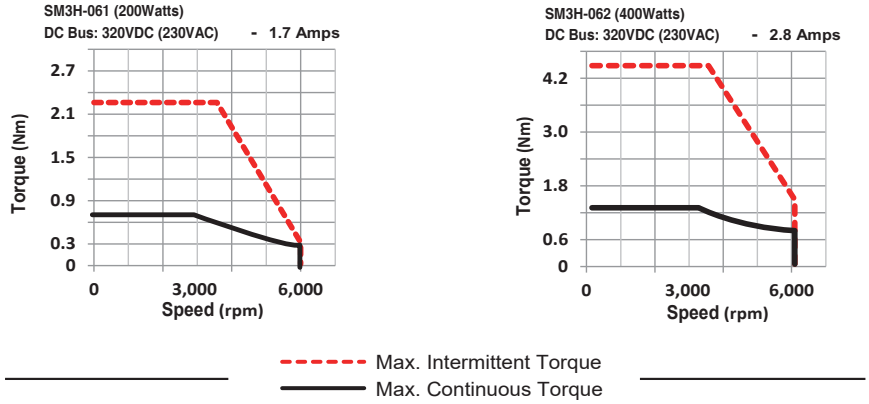
Without Brake	L
SM3H-061A ◇ NP △	77
SM3H-061ABND △	79
SM3H-062A ◇ NP △	97
SM3H-062ABND △	100

2) With Brake



With Brake	L
SM3H-061A ◇ BP △	106
SM3H-061ABBD △	108
SM3H-062A ◇ BP △	126
SM3H-062ABBD △	129

□ Torque Curves



Motor Specification

□80mm
Low Inertia 220VAC Winding

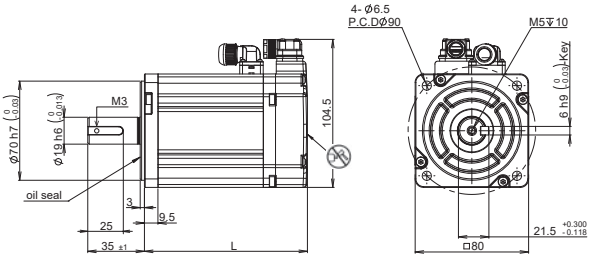
□ Specification

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	$Kg·m^2$	0.829×10^{-4}	1.01×10^{-4}
Rotor Inertia - With Brake	$Kg·m^2$	0.961×10^{-4}	1.12×10^{-4}
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**

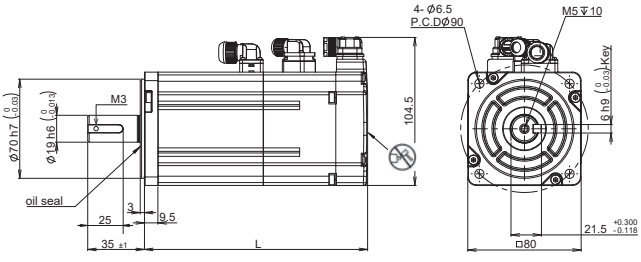
□ Dimensions (Unit: mm)

1) Without Brake



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

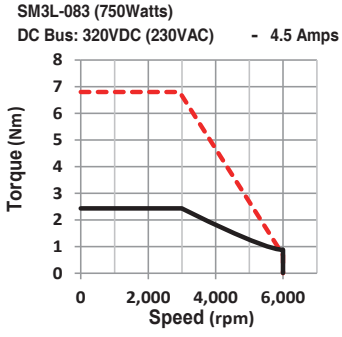
2) With Brake

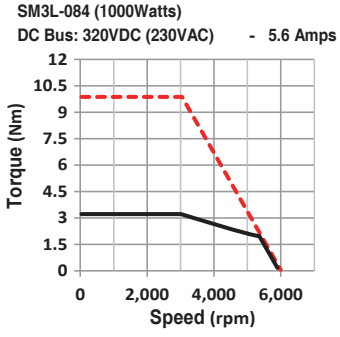


With Brake	L
SM3L-083A ◇ BP △	157
SM3L-083ABBD △	157.5
SM3L-084A ◇ BP △	171
SM3L-084ABBD △	171.5

Note: □ 80mm frame size, low inertia, encoder type B, with 40mm shaft length.

□ Torque Curves





Max. Intermittent Torque
Max. Continuous Torque

Motor Specification

□80mm
High Inertia 220VAC Winding

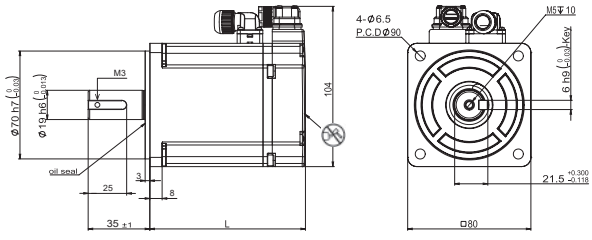
□ Specification

Type*		SM3H - 083A ◇□ P △	SM3H - 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	8.4	11.2
Rated Current	A (rms)	4.5	5.9
Peak Current	A (rms)	16.7	20.5
Voltage Constant ±5%	V (rms) / K rpm	32.3	33
Torque Constant ±5%	N·m / A (rms)	0.53	0.55
Rotor Inertia	$Kg·m^2$	1.46×10^{-4}	1.82×10^{-4}
Rotor Inertia - With Brake	$Kg·m^2$	1.63×10^{-4}	1.96×10^{-4}
Shaft Load - Axial	N (max.)	90	90
Shaft Load - Radial (End of Shaft)	N (max.)	270	270
Weight	Kg	2.1	2.65
Weight - With Brake	Kg	2.85	3.2

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

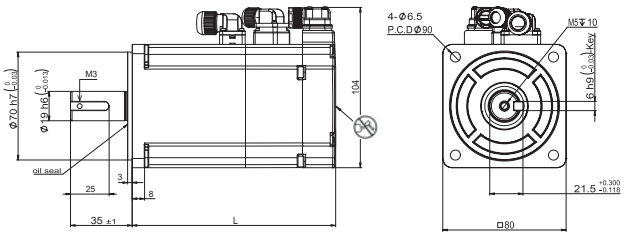
□ Dimensions (Unit: mm)

1) Without Brake



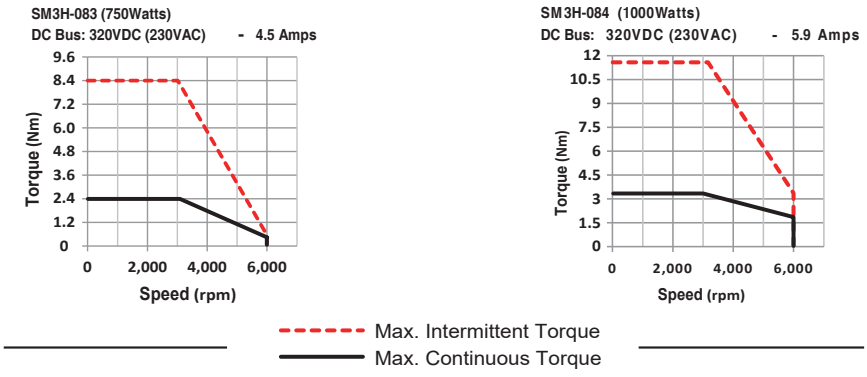
Without Brake	L
SM3H-083A ◇ NP △	101
SM3H-083ABND △	106
SM3H-084A ◇ NP △	115

2) With Brake



With Brake	L
SM3H-083A ◇ BP △	132
SM3H-083ABBD △	137
SM3H-084A ◇ BP △	146

□ Torque Curves



Motor Specification

□100mm
Low Inertia

220VAC Winding

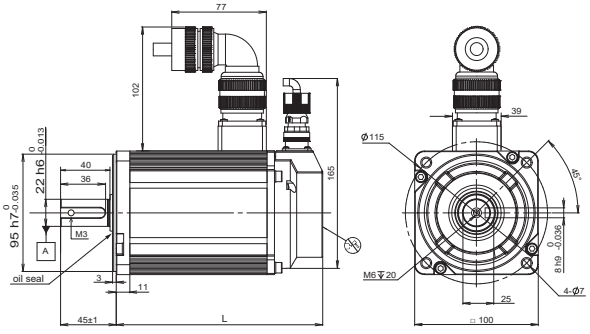
□ Specification

Type*		SM3L - 102A ◇□ U △	SM3L - 103A ◇□ U △	SM3L - 104A ◇□ U △	SM3L - 105A ◇□ U △
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	$Kg{\cdot}m^2$	1.79×10^{-4}	2.37×10^{-4}	2.98×10^{-4}	3.68×10^{-4}
Rotor Inertia - With Brake	$Kg{\cdot}m^2$	2.67×10^{-4}	3.25×10^{-4}	3.86×10^{-4}	4.56×10^{-4}
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**

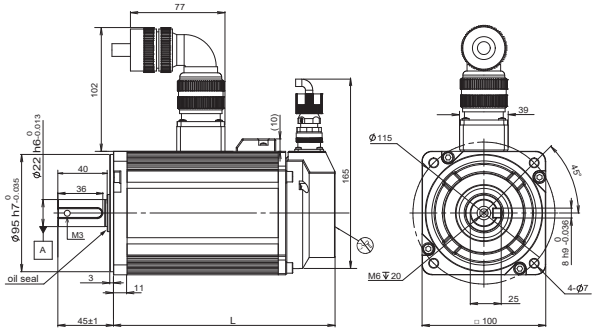
□ Dimensions (Unit: mm)

1) Without Brake



Without Brake	L
SM3L-102ATNU △	142
SM3L-103ATNU △	157
SM3L-104ATNU △	173
SM3L-105ATNU △	191

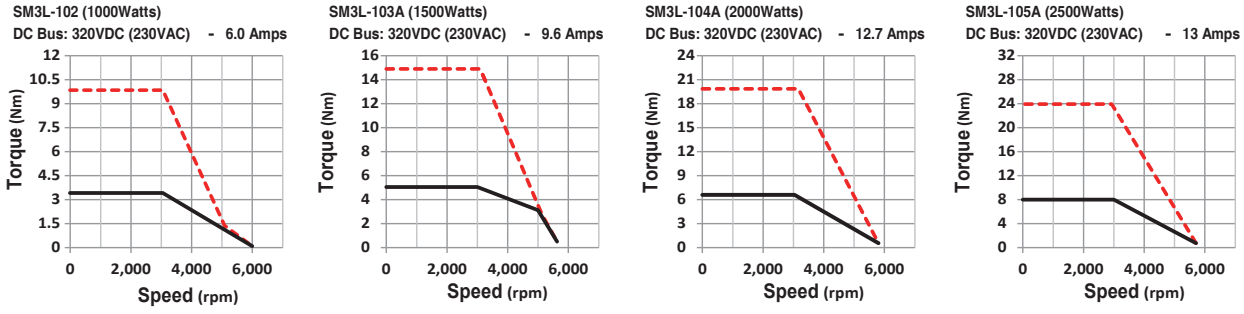
2) With Brake



With Brake	L
SM3L-102ATBU △	184
SM3L-103ATBU △	199
SM3L-104ATBU △	215
SM3L-105ATBU △	233

Note: The motor length (L) of type X encoder version is 5mm shorter than type T version.

□ Torque Curves



Motor Specification

□100mm Low Inertia 400VAC Winding

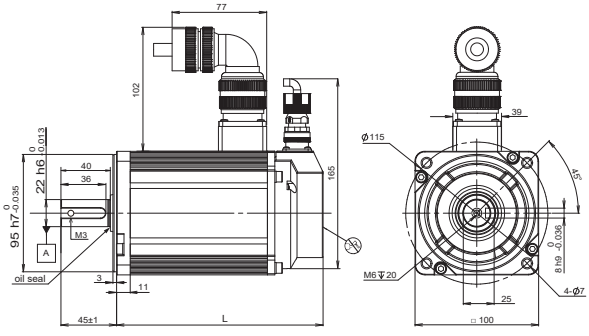
□ Specification

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	$Kg·m^2$	1.79×10^{-4}	2.37×10^{-4}	2.98×10^{-4}	3.68×10^{-4}
Rotor Inertia - With Brake	$Kg·m^2$	2.67×10^{-4}	3.25×10^{-4}	3.86×10^{-4}	4.56×10^{-4}
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**

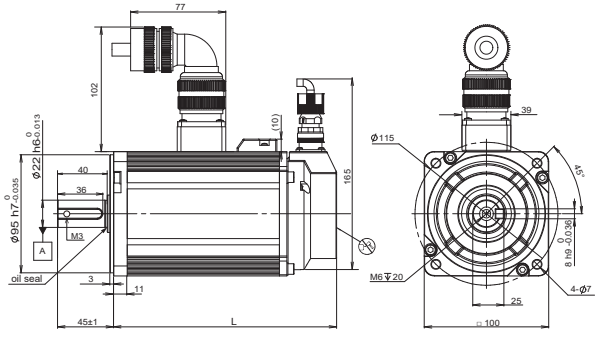
□ Dimensions (Unit: mm)

1) Without Brake



Without Brake	L
SM3L-102YTNU △	142
SM3L-103YTNU △	157
SM3L-104YTNU △	173
SM3L-105YTNU △	191

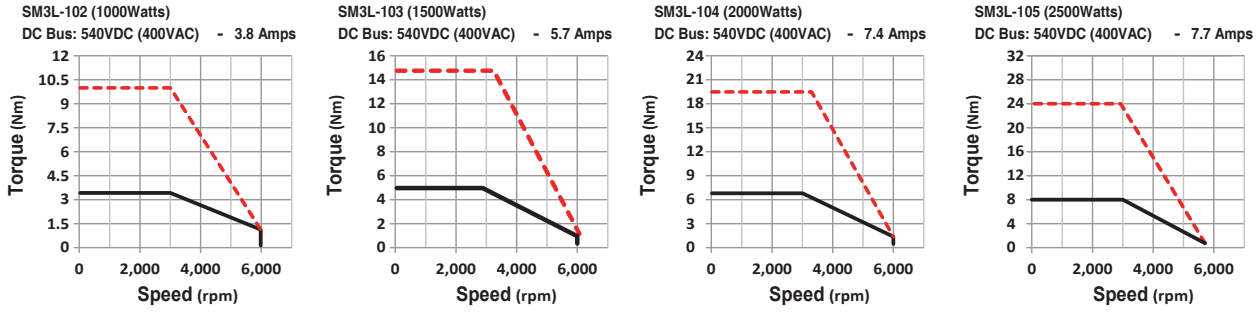
2) With Brake



With Brake	L
SM3L-102YTBU △	184
SM3L-103YTBU △	199
SM3L-104YTBU △	215
SM3L-105YTBU △	233

Note: The motor length (L) of type X encoder version is 5mm shorter than type T version.

□ Torque Curves



Motor Specification

□130mm
Medium Inertia

220VAC Winding

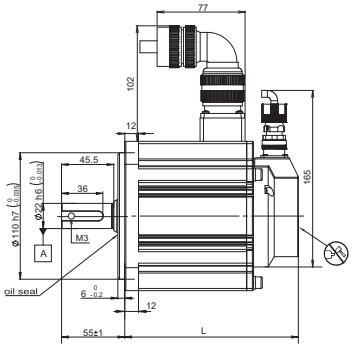
□ Specification

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	$Kg{\cdot}m^2$	13×10^{-4}	18.3×10^{-4}	24.4×10^{-4}
Rotor Inertia - With Brake	$Kg{\cdot}m^2$	15.2×10^{-4}	20.5×10^{-4}	26.6×10^{-4}
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**

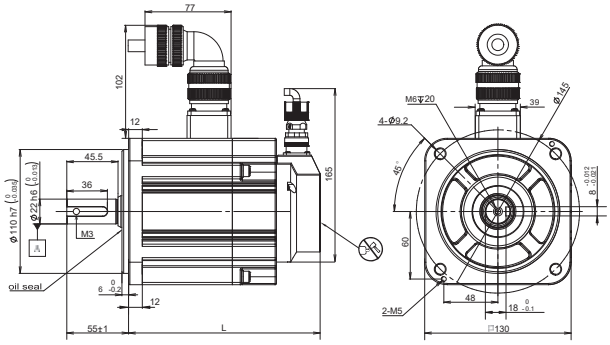
□ Dimensions (Unit: mm)

1) Without Brake



Without Brake	L
SM3M-132ATNU △	143
SM3M-133ATNU △	157
SM3M-134ATNU △	174

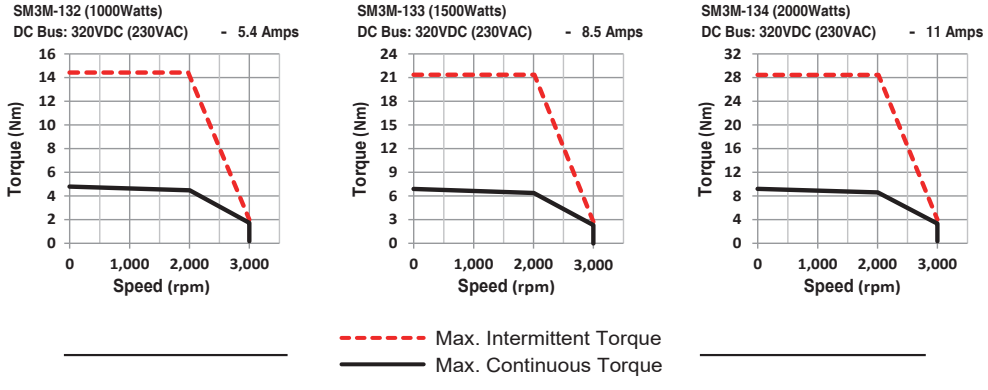
2) With Brake



With Brake	L
SM3M-132ATBU △	176
SM3M-133ATBU △	190
SM3M-134ATBU △	207

Note: The motor length (L) of type X encoder version is 5mm shorter than type T version.

□ Torque Curves



Motor Specification

□130mm
Medium Inertia

400VAC Winding

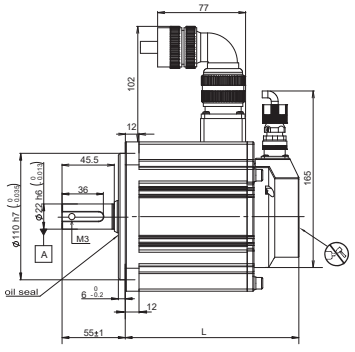
□ Specification

Type*		SM3M - 132Y ◇□ U △	SM3M - 133Y ◇□ U △	SM3M - 134Y ◇□ 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)	3.3	5.1	6.5
Peak Current	A (rms)	10	16	18.6
Voltage Constant ±5%	V (rms) / K rpm	101	97	101
Torque Constant ±5%	N·m / A (rms)	1.45	1.4	1.47
Rotor Inertia	$Kg{\cdot}m^2$	13×10^{-4}	18.3×10^{-4}	24.4×10^{-4}
Rotor Inertia - With Brake	$Kg{\cdot}m^2$	15.2×10^{-4}	20.5×10^{-4}	26.6×10^{-4}
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**

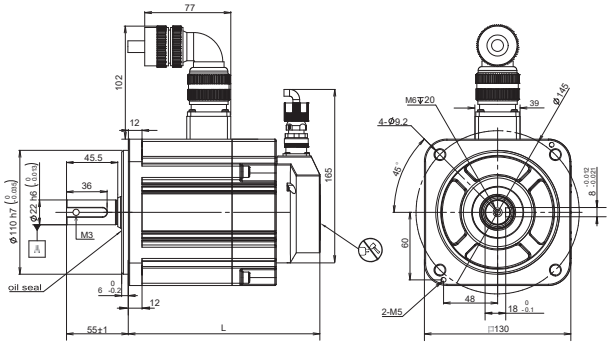
□ Dimensions (Unit: mm)

1) Without Brake



Without Brake	L
SM3M-132YTNU △	143
SM3M-133YTNU △	157
SM3M-134YTNU △	174

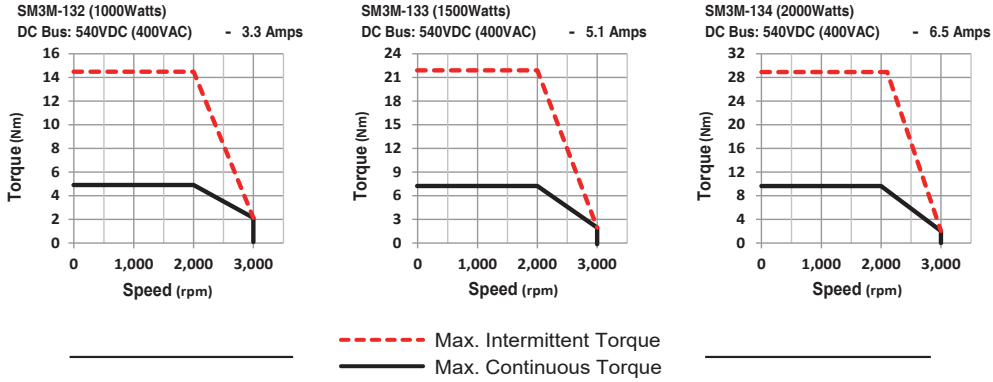
2) With Brake



With Brake	L
SM3M-132YTBU △	176
SM3M-133YTBU △	190
SM3M-134YTBU △	207

Note: The motor length (L) of type X encoder version is 5mm shorter than type T version.

□ Torque Curves



Motor Specification

□130mm
Medium Inertia

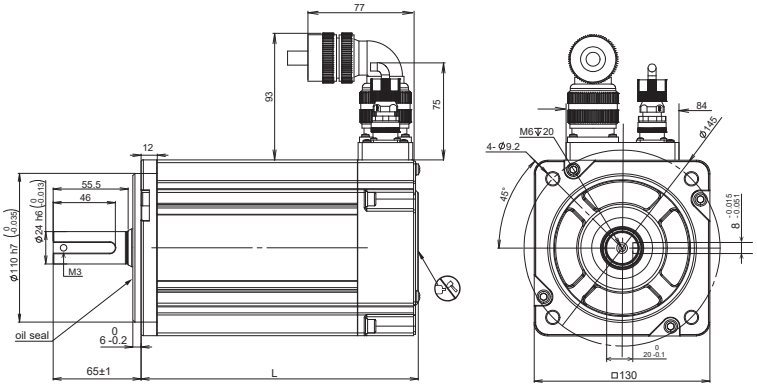
400VAC Winding

□ Specification

Type*		SM3M - 135Y ◇□ M △
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	$Kg{\cdot}m^2$	36.4×10^{-4}
Rotor Inertia - With Brake	$Kg{\cdot}m^2$	38.6×10^{-4}
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

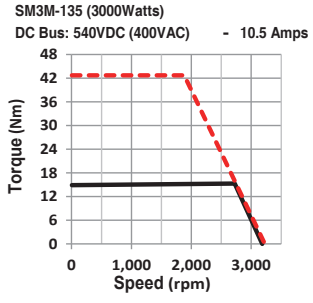
* ◇ **Encoder Options**; □ **Brake Options**; △ **Oil Seal Options**

□ Dimensions (Unit: mm)



Model		L
Without Brake	SM3M-135Y ◇ NM △	205
With Brake	SM3M-135Y ◇ BM △	238

□ Torque Curves



Max. Intermittent Torque
Max. Continuous Torque

Motor Specification

□130mm
High Inertia

220VAC Winding

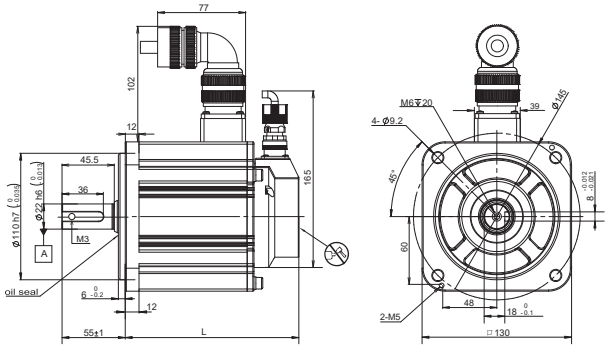
□ Specification

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	$Kg·m^2$	13×10^{-4}	18.3×10^{-4}	24.4×10^{-4}
Rotor Inertia - With Brake	$Kg·m^2$	15.2×10^{-4}	20.5×10^{-4}	26.6×10^{-4}
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**

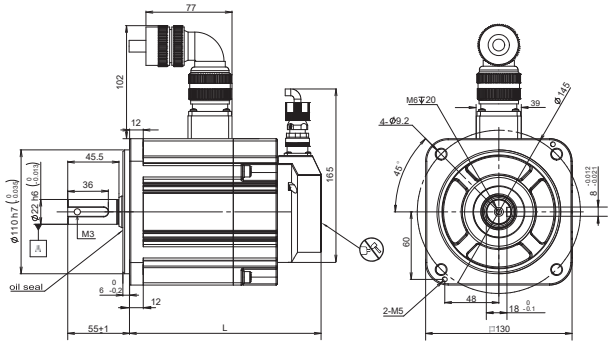
□ Dimensions (Unit: mm)

1) Without Brake



Without Brake	L
SM3H-132ATNU △	143
SM3H-133ATNU △	157
SM3H-134ATNU △	174

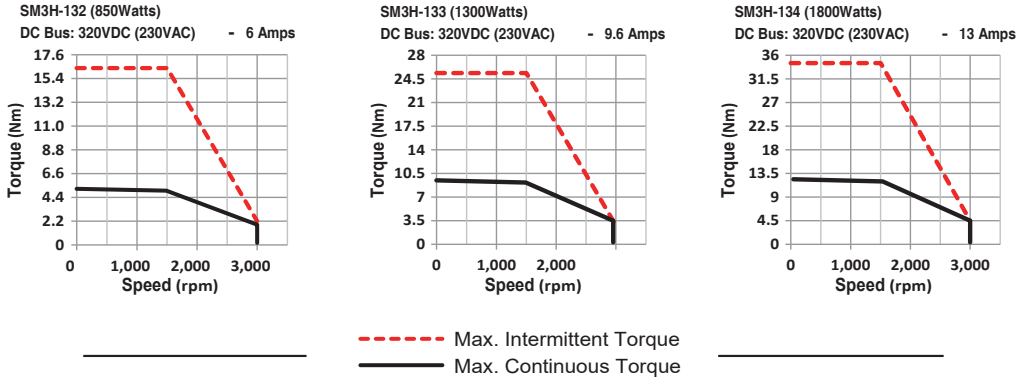
2) With Brake



With Brake	L
SM3H-132ATBU △	176
SM3H-133ATBU △	190
SM3H-134ATBU △	207

Note: The motor length (L) of type X encoder version is 5mm shorter than type T version.

□ Torque Curves



电机规格

□130mm
High Inertia

400VAC Winding

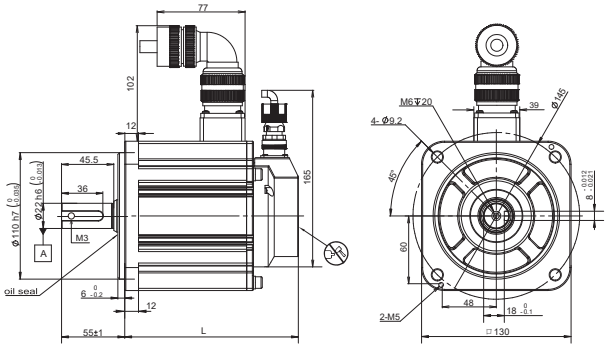
□ Specification

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	$Kg·m^2$	13×10^{-4}	18.3×10^{-4}	24.4×10^{-4}
Rotor Inertia - With Brake	$Kg·m^2$	15.2×10^{-4}	20.5×10^{-4}	26.6×10^{-4}
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**

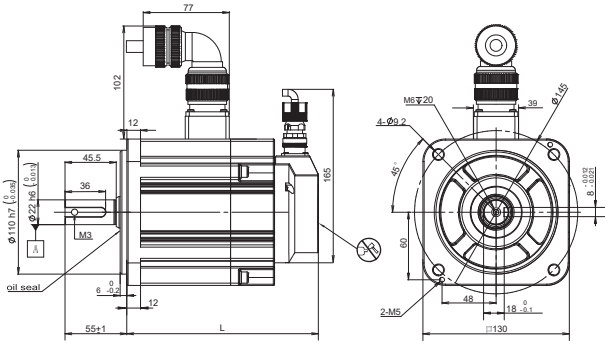
□ Dimensions (Unit: mm)

1) Without Brake



Without Brake	L
SM3H-132YTNU △	143
SM3H-133YTNU △	157
SM3H-134YTNU △	174

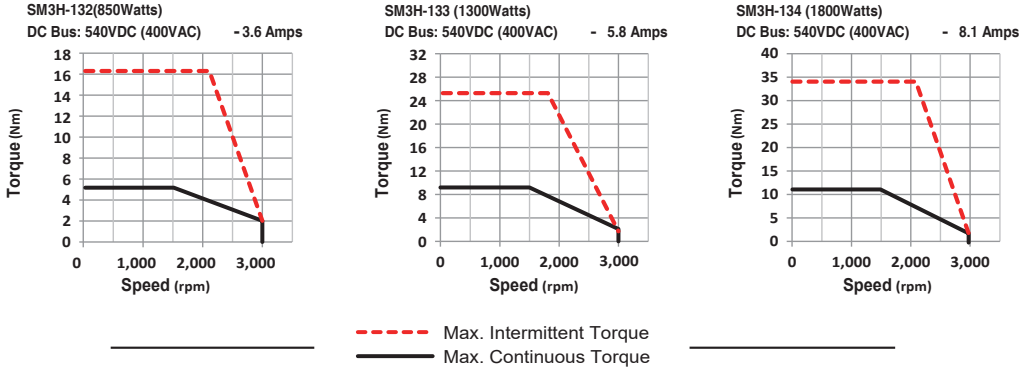
2) With Brake



With Brake	L
SM3H-132YTBU △	176
SM3H-133YTBU △	190
SM3H-134YTBU △	207

Note: The motor length (L) of type X encoder version is 5mm shorter than type T version.

□ Torque Curves



Motor Specification

□180mm High Inertia 400VAC Winding

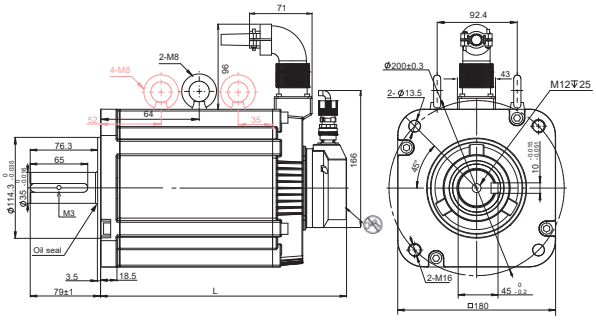
□ Specification

Type*		SM3H - 182Y ◇□ U △	SM3H - 183Y ◇□ U △
Rated Output Power	watts	2900	4400
Rated Speed	rpm	1500	1500
Max.Speed	rpm	3000	3000
Rated Torque	N·m	18.5	28
Peak Torque	N·m	55.5	84
Rated Current	A (rms)	10.5	16.7
Peak Current	A (rms)	35.5	54.7
Voltage Constant ±5%	V (rms) / K rpm	115	117
Torque Constant ±5%	N·m / A (rms)	1.76	1.68
Rotor Inertia	$Kg·m^2$	46×10^{-4}	67.5×10^{-4}
Rotor Inertia - With Brake	$Kg·m^2$	51×10^{-4}	72.5×10^{-4}
Shaft Load - Axial	N (max.)	490	490
Shaft Load - Radial (End of Shaft)	N (max.)	1470	1470
Weight	Kg	13.9	17.4
Weight - With Brake	Kg	15.9	19.4

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

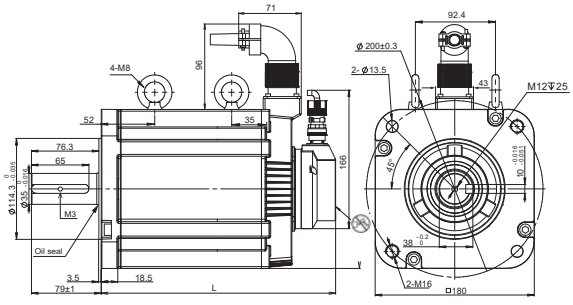
□ Dimensions (Unit: mm)

1) Without Brake



Without Brake	L
SM3H-182Y ◇ NU △	188
SM3H-183Y ◇ NU △	213

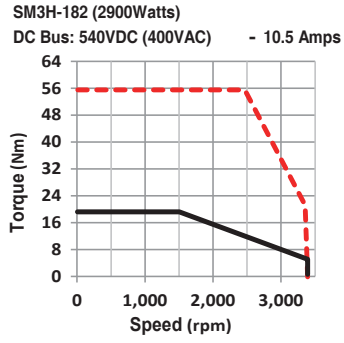
2) With Brake

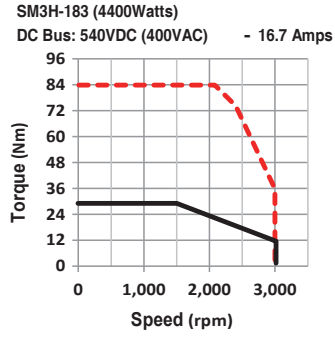


With Brake	L
SM3H-182Y ◇ BU △	243
SM3H-183Y ◇ BU △	263

Note : The red note indicates the mounting position of the ring for SM3H-183Y ◇ NU △

□ Torque Curves





Max. Intermittent Torque
Max. Continuous Torque

Motor Specification

□180mm
High Inertia

400VAC Winding

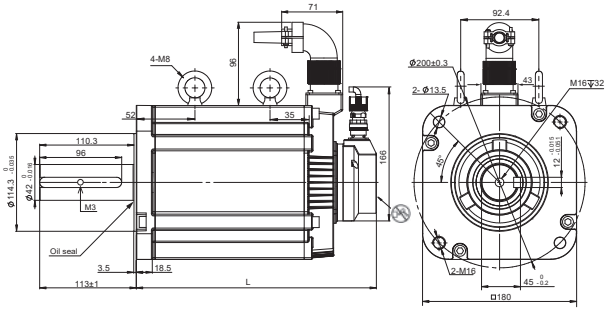
□ Specification

Type*		SM3H - 184Y ◇□ U △	SM3H - 185Y ◇□ U △
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	120
Rated Current	A (rms)	20.9	25.2
Peak Current	A (rms)	70	73.4
Voltage Constant ±5%	V (rms) / K rpm	114	115
Torque Constant ±5%	N·m / A (rms)	1.67	1.93
Rotor Inertia	$Kg{\cdot}m^2$	89×10^{-4}	125×10^{-4}
Rotor Inertia - With Brake	$Kg{\cdot}m^2$	92×10^{-4}	145×10^{-4}
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**

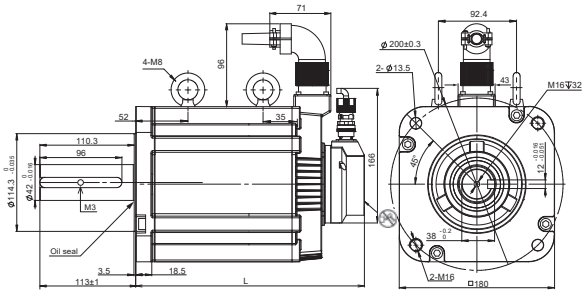
□ Dimensions (Unit: mm)

1) Without Brake



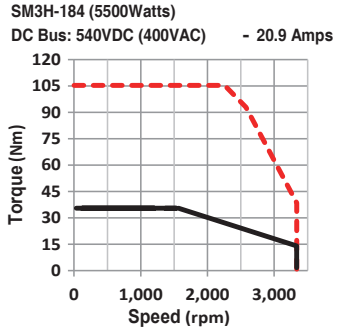
Without Brake	L
SM3H-184Y ◇ NU △	230
SM3H-185Y ◇ NU △	281

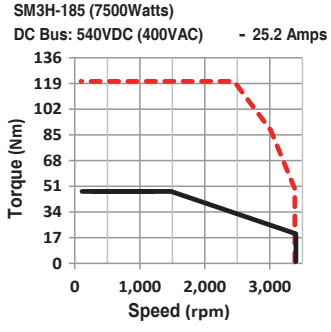
2) With Brake



With Brake	L
SM3H-184Y ◇ BU △	280
SM3H-185Y ◇ BU △	316

□ Torque Curves

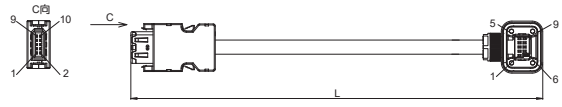
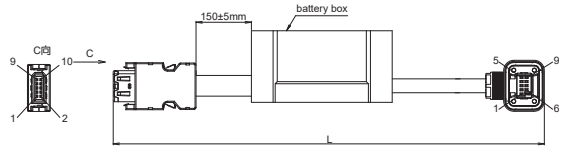
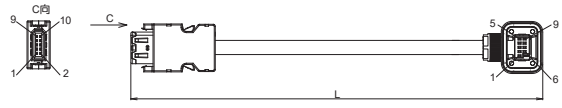




Max. Intermittent Torque
Max. Continuous Torque

Accessories

Encoder Cables
For □40mm, □60mm, □80mm Motor

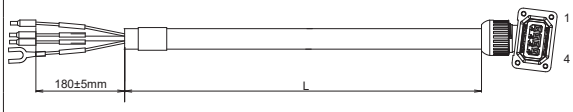
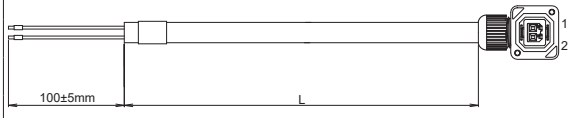
Model*	Length(L)	Description	For Servo Motor*	Outline
2640-0100	1m	Encoder Cables Incremental Encoder Standard Shielded	SM3L-042A ◇□ D △ SM3L-061A ◇□ P △ SM3L-062A ◇□ P △ SM3L-083A ◇□ P △ SM3L-084A ◇□ P △	
2640-0200	2m			
2640-0300	3m			
2640-0400	4m			
2640-0500	5m			
2640-0800	8m			
2640-1000	10m	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

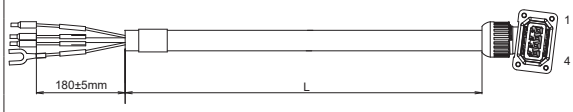
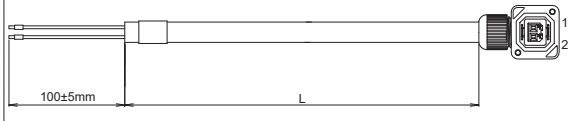
Model*	Length(L)	Description	For Servo Motor*	Outline
1672-0100	1m	Motor Cables Standard Unshielded	SM3L-042A ◇□ D △ SM3L-061A ◇□ P △ SM3L-062A ◇□ P △ SM3L-083A ◇□ P △ SM3L-084A ◇□ P △ SM3H-041A ◇□ P △ SM3H-042A ◇□ P △ SM3H-061A ◇□ P △ SM3H-062A ◇□ P △ SM3H-083A ◇□ P △ SM3H-084A ◇□ P △	
1672-0200	2m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

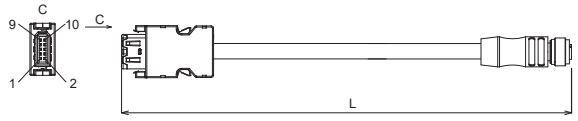
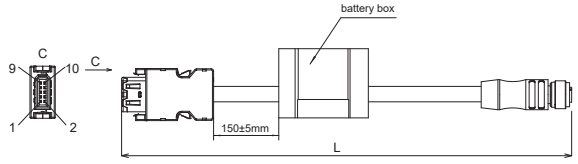
Motor Power Cables, Motor Brake Cables
For □40mm, □60mm, □80mm Motor

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

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

*** Flexible -C10 10 million times**
Test Conditions: Bend Radius 50mm, Frequency 40 times/min, Distance 1000mm

Encoder Cables (Straight Plug)
For □100mm, □130mm, □180mm Motor

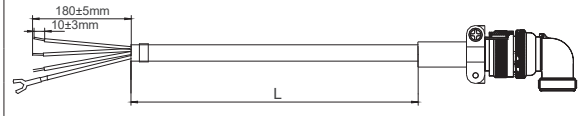
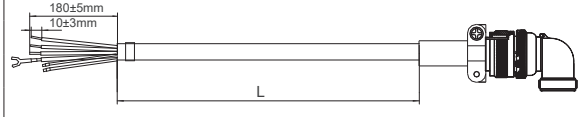
Model*	Length(L)	Description	For Servo Motor*	Outline
2643-0100	1m	Encoder Cables Incremental Encoder Standard Shielded	SM3L-102 ○◇□ U △ SM3L-103 ○◇□ U △ SM3L-104 ○◇□ U △ SM3L-105 ○◇□ U △ SM3M-132 ○◇□ U △ SM3M-133 ○◇□ U △ SM3M-134 ○◇□ U △ SM3M-135Y ◇□ M △	
2643-0300	3m			
2643-0500	5m			
2643-1000	10m			
2643-1500	15m			
2643-2000	20m			
2643-0100-C10	1m	Encoder Cables Incremental Encoder Flexible Shielded		
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	220VAC Winding	1.0kW Motor
	400VAC Winding	1.0/1.5kW Motor
□130mm	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	SM3L-102A ◇ NU △ SM3L-102Y ◇ NU △ SM3L-103Y ◇ NU △ SM3M-132A ◇ NU △ SM3H-132A ◇ NU △ SM3M-132Y ◇ NU △ SM3M-133Y ◇ NU △ SM3H-132Y ◇ NU △ SM3H-133Y ◇ NU △	
1658-0300	3m			
1658-0500	5m			
1658-1000	10m			
1658-1500	15m			
1658-2000	20m			
1658-0100-S	1m	Motor Cables Standard Shielded		
1658-0300-S	3m			
1658-0500-S	5m			
1658-1000-S	10m			
1658-1500-S	15m			
1658-2000-S	20m			
1658-0100-C10	1m	Motor Cables Flexible Unshielded		
1658-0300-C10	3m			
1658-0500-C10	5m			
1658-1000-C10	10m			
1658-1500-C10	15m			
1658-2000-C10	20m			
1658-0100-C10-S	1m	Motor Cables Flexible Shielded		
1658-0300-C10-S	3m			
1658-0500-C10-S	5m			
1658-1000-C10-S	10m			
1658-1500-C10-S	15m			
1658-2000-C10-S	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 △ SM3M-133Y ◇ BU △ SM3H-132Y ◇ BU △ SM3H-133Y ◇ BU △	
1660-0300	3m			
1660-0500	5m			
1660-1000	10m			
1660-1500	15m			
1660-2000	20m			
1660-0100-S	1m	Motor Cables With Built-in Brake Cable Standard Shielded		
1660-0300-S	3m			
1660-0500-S	5m			
1660-1000-S	10m			
1660-1500-S	15m			
1660-2000-S	20m			
1660-0100-C10	1m	Motor Cables With Built-in Brake Cable Flexible Unshielded		
1660-0300-C10	3m			
1660-0500-C10	5m			
1660-1000-C10	10m			
1660-1500-C10	15m			
1660-2000-C10	20m			
1660-0100-C10-S	1m	Motor Cables With Built-in Brake Cable Flexible Shielded		
1660-0300-C10-S	3m			
1660-0500-C10-S	5m			
1660-1000-C10-S	10m			
1660-1500-C10-S	15m			
1660-2000-C10-S	20m			

* ◇ **Encoder Options** △ **Oil Seal Options**

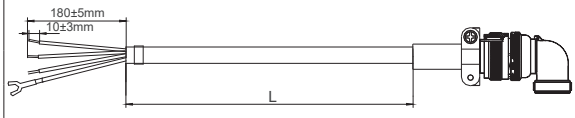
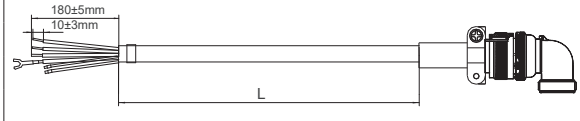
* **Flexible -C10 10 million times**
Test Conditions: Bend Radius 100mm, Frequency 40 times/min, Distance 1000mm

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

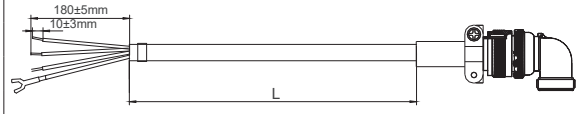
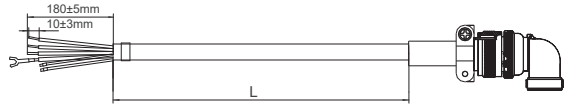
Model*	Length(L)	Description	For Servo Motor*	Outline
1656-0100	1m	Motor Cables Standard Unshielded	SM3L-103A ◇ NU △ SM3L-104Y ◇ NU △ SM3L-105Y ◇ NU △ SM3M-133A ◇ NU △ SM3H-133A ◇ NU △ SM3M-134Y ◇ NU △ SM3H-134Y ◇ NU △	
1656-0300	3m			
1656-0500	5m			
1656-1000	10m			
1656-1500	15m			
1656-2000	20m			
1656-0100-S	1m	Motor Cables Standard Shielded		
1656-0300-S	3m			
1656-0500-S	5m			
1656-1000-S	10m			
1656-1500-S	15m			
1656-2000-S	20m			
1656-0100-C10	1m	Motor Cables Flexible Unshielded		
1656-0300-C10	3m			
1656-0500-C10	5m			
1656-1000-C10	10m			
1656-1500-C10	15m			
1656-2000-C10	20m			
1656-0100-C10-S	1m	Motor Cables Flexible Shielded		
1656-0300-C10-S	3m			
1656-0500-C10-S	5m			
1656-1000-C10-S	10m			
1656-1500-C10-S	15m			
1656-2000-C10-S	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-S	1m	Motor Cables With Built-in Brake Cable Standard Shielded		
1662-0300-S	3m			
1662-0500-S	5m			
1662-1000-S	10m			
1662-1500-S	15m			
1662-2000-S	20m			
1662-0100-C10	1m	Motor Cables With Built-in Brake Cable Flexible Unshielded		
1662-0300-C10	3m			
1662-0500-C10	5m			
1662-1000-C10	10m			
1662-1500-C10	15m			
1662-2000-C10	20m			
1662-0100-C10-S	1m	Motor Cables With Built-in Brake Cable Flexible Shielded		
1662-0300-C10-S	3m			
1662-0500-C10-S	5m			
1662-1000-C10-S	10m			
1662-1500-C10-S	15m			
1662-2000-C10-S	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 2.0/2.5kW Motor
☐130mm 220VAC Winding 1.8/2.0kW Motor
400VAC Winding 3.0kW Motor

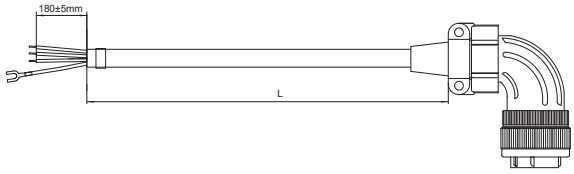
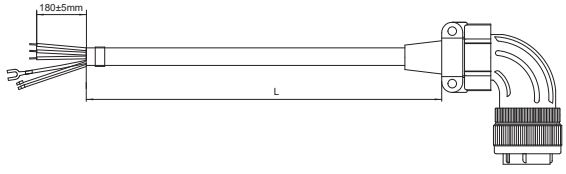
Model*	Length(L)	Description	For Servo Motor*	Outline
1650-0100	1m	Motor Cables Standard Unshielded	SM3L-104A ◇ NU △ SM3L-105A ◇ NU △ SM3M-134A ◇ NU △ SM3M-135Y ◇ NM △ SM3H-134A ◇ NU △	
1650-0300	3m			
1650-0500	5m			
1650-1000	10m			
1650-1500	15m			
1650-2000	20m			
1650-0100-S	1m	Motor Cables Standard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

* ◇ **Encoder Options** △ **Oil Seal Options**

* **Flexible -C10 10 million times**
Test Conditions: Bend Radius 100mm, Frequency 40 times/min, Distance 1000mm

Accessories

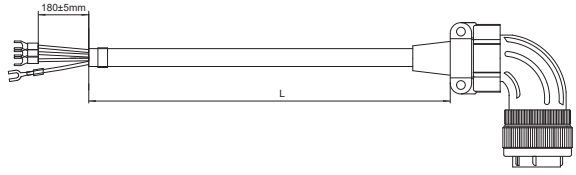
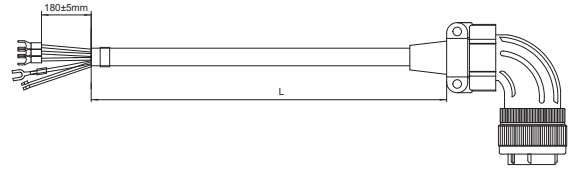
Motor Power Cables (Angled Plug) □180mm 400VAC Winding 2.9kW Motor

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-S	1m	Motor Cables Standard Shielded		
1682-0300-S	3m			
1682-0500-S	5m			
1682-1000-S	10m			
1682-1500-S	15m			
1682-2000-S	20m			
1682-0100-C10	1m	Motor Cables Flexible Unshielded		
1682-0300-C10	3m			
1682-0500-C10	5m			
1682-1000-C10	10m			
1682-1500-C10	15m			
1682-2000-C10	20m			
1682-0100-C10-S	1m	Motor Cables Flexible Shielded		
1682-0300-C10-S	3m			
1682-0500-C10-S	5m			
1682-1000-C10-S	10m			
1682-1500-C10-S	15m			
1682-2000-C10-S	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-S	1m	Motor Cables With Built-in Brake Cable Standard Shielded		
1683-0300-S	3m			
1683-0500-S	5m			
1683-1000-S	10m			
1683-1500-S	15m			
1683-2000-S	20m			
1683-0100-C10	1m	Motor Cables With Built-in Brake Cable Flexible Unshielded		
1683-0300-C10	3m			
1683-0500-C10	5m			
1683-1000-C10	10m			
1683-1500-C10	15m			
1683-2000-C10	20m			
1683-0100-C10-S	1m	Motor Cables With Built-in Brake Cable Flexible Shielded		
1683-0300-C10-S	3m			
1683-0500-C10-S	5m			
1683-1000-C10-S	10m			
1683-1500-C10-S	15m			
1683-2000-C10-S	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 4.4kW Motor

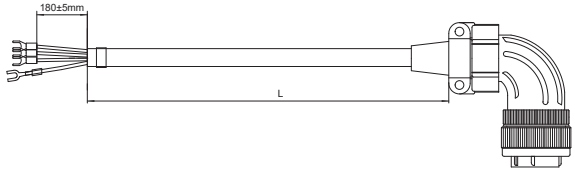
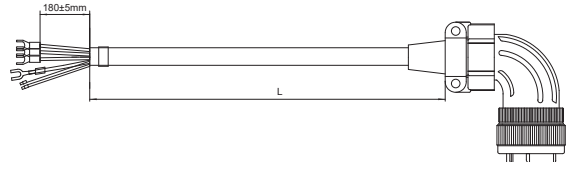
Model*	Length(L)	Description	For Servo Motor*	Outline
1666-0100	1m	Motor Cables Standard Unshielded	SM3H-183Y ◇ NU △	
1666-0300	3m			
1666-0500	5m			
1666-1000	10m			
1666-1500	15m			
1666-2000	20m			
1666-0100-S	1m	Motor Cables Standard Shielded		
1666-0300-S	3m			
1666-0500-S	5m			
1666-1000-S	10m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

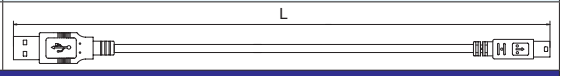
Model*	Length(L)	Description	For Servo Motor*	Outline
1667-0100	1m	Motor Cables Standard Unshielded	SM3H-184Y ◇ NU △ SM3H-185Y ◇ NU △	
1667-0300	3m			
1667-0500	5m			
1667-1000	10m			
1667-1500	15m			
1667-2000	20m			
1667-0100-S	1m	Motor Cables Standard Shielded		
1667-0300-S	3m			
1667-0500-S	5m		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

* ◇ Encoder Options △ Oil Seal Options
* Flexible -C10 10 million times
Test Conditions: Bend Radius 100mm, Frequency 40 times/min, Distance 1000mm

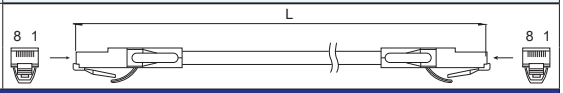
Accessories

Servo Drive and Motor Accessories

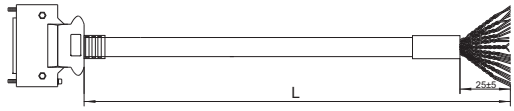
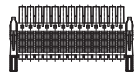
USB Cable

Model	Length (L)	Description	Outline
2620-150	1.5m	USB configuration cable connect with PC	

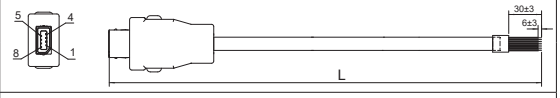
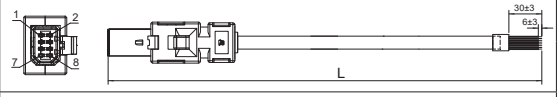
CN6/CN7 Communication Daisy Chain Cable

Model	Length (L)	Description	Outline
2013-030	0.3m	Twisted-pair, Shielded type	
2013-300	3m		

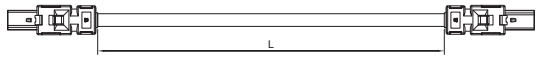
IO Connector, I/O Signal Cable

Model	Length (L)	Description	Outline
1644-0100	1m	CN2 50pin high density I/O cable Shielded type	
1644-0200	2m		
1644-0300	3m		
M2-50P	-	CN2 50pin high density I/O connector	
MSOP-CN226P	-	CN2 26pin push-in spring I/O connector	

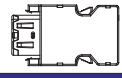
Second Encoder Connector, Full Closed-loop Accessories

Model	Length (L)	Description	Outline
1643-300-C05	3m	CN4 Secondary encoder feedback cable Shielded type	
1643-500-C05	5m		
1694-300-C05	3m	CN4 Secondary encoder feedback cable suiable for EtherCAT type drive Shielded type	
1694-500-C05	5m		
MSOP-CN408P	-	CN4 Secondary encoder feedback connector	
MSOP-CN408P-1	-	CN4 Secondary encoder feedback connector suitable for EtherCAT type drive	

Gantry Sync Control Communication Cable

Model	Length (L)	Description	Outline
2679-0030	0.3mm	Inter-drive communication cable for gantry pairing	
2679-0050	0.5mm		

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
REG100W60R	100W, 60Ω	Regenerative absorbing resistor	-
REG100W120R	100W, 120Ω		
REG200W120R	200W, 120Ω		
REG300W120R	300W, 120Ω		
REG1000W50R	1000W, 50Ω		
REG1500W50R	1500W, 50Ω		
REG2000W30R	2000W, 30Ω		

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	1.0/1.5/2.0/3.0kW drive P1, P2, JST handle lever	-

STO Connector Kit		
Model	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)	

Shield Bracket		
Model	Description	Outline
MSOP-DRPEKITB	Compatible with M56S series 200W/400W/750W servo drives	-
MSOP-DRPEKITC	Compatible with M56S series 1000W and above servo drives	

Customer Service Center

+86-400-820-9661

MOONS' Headquarter ★

Building 7, Lane 88, Minbei Road, Minhang District, Shanghai, 201107, P.R.China

MOONS' Taicang

No. 18 Yingang Rd, Fuqiao Town, Taicang City Jiangsu Province, 215434, P.R. China

Domestic Office

Beijing
Room 1206, Jing Liang Mansion, No.16 Middle Road of East,3rd Ring, Chaoyang District, Beijing 100022, P.R. China

Qingdao
Room1913,Scientific and Technological Innovation Builing,Floor19, No.171, ShanDong Road,Shibei District,QingDao, Shangdong Province, 266033, P.R. China

Xi'an
Room 1006, Tower D, Wangzuo International City, No.1 Tangyan Road, Xi'an, Shanxi Province, 710065, P.R. China

Wuhan
Room 3001, World Trade Tower, No.686 Jiefang Avenue, Jianghan District, Wuhan, Hubei Province, 430022, P.R. China

Hefei
Room 1521, Building B, CBC Tuoji Plaza, Jinggang Road, Shushan District, Hefei, Anhui Province, 230088, P.R. China

Nanjing
Room 1101-1102, Building 2, New Town Development Center, No.126 Tianyuan Road , Moling Street, Jiangning District, Jiangsu Province, China, 211106, P.R. China

Suzhou
Room 1103-1105, North Building 4, Huizu Plaza, 758 Nanhuan East Rd, Gusu District, Suzhou,Jiangsu Province, 215007, P.R. China

Ningbo
Room 309, Tower B, Taifu Plaza, 565 Jiangjia Road,Jiangdong District, Ningbo, Zhejiang Province, 315040, P.R. China

Chengdu
Room 3907, Maoye Plaza, No.19, Dongyu Street, Jinjiang Distrit, Chengdu Sichuan Province, 610066, P.R. China

Chongqing
Room 2108, South yuanzhu Buliding 20, No.18 Fuquan Rd., Jiangbei District, Chongqing, 400000, P.R. China

Guangzhou
Room 4006, Tower B, China Shine Plaza, 9 Linhe Xi Road, Tianhe District, Guangzhou, Guangdong Province, 510610, P.R. China

Dongguan
Room 1106-1207, Building 5, Linrunzhigu, No.1 RD 5th Rd, Songshan Lake, Dongguan, Guangdong Province, 523000, P.R. China

Shenzhen
Room 3901, Building A, Zhongguan Times Square,No 4168 Liuxian Avenue, Nanshan District, Shenzhen, Guangdong Province, 518000, P.R. China

North America

USA

MOONS' INDUSTRIES (AMERICA), INC. (Chicago)
1113 North Prospect Avenue, Itasca, IL 60143, USA

MOONS' INDUSTRIES (AMERICA), INC. (Boston)
36 Cordage Park Circle, Suite 310 Plymouth, MA 02360, USA

APPLIED MOTION PRODUCTS, INC. (Morgan Hill)
18645 Madrone Parkway. Morgan Hill, CA 95037, USA

LIN ENGINEERING, Inc. (Morgan Hill)
16245 Vineyard Blvd., Morgan Hill, CA 95037, USA

Europe

Italy

MOONS' INDUSTRIES (EUROPE) HEAD QUARTER S.R.L.
Via Torri Bianche n.1 20871 Vimercate(MB) Italy

Germany

AMP & MOONS' AUTOMATION (GERMANY) GMBH
Kaiserhofstr. 15
60313 Frankfurt am Main Germany

Switzerland

TECHNOSOFT SA
Avenue des Alpes 20
CH 2000 Neuchâtel Switzerland

U.K

MOONS' INDUSTRIES (UK), LIMITED
Rooms 4&5, 1st Floor, Greenbank, London Road, Reading, UK. RG1 5AQ

Asia

Singapore

MOONS' INDUSTRIES (SOUTH-EAST ASIA) PTE. LTD.
33 Ubi Avenue 3 #08-23 Vertex Singapore 408868

Japan

MOONS' INDUSTRIES JAPAN CO., LTD.
Room 602, 6F, Shin Yokohama Koushin Building,
2-12-1, Shin-Yokohama, Kohoku-ku, Yokohama, Kanagawa,
Japan 222-0033

India

MOONS' INTELLIGENT MOTION SYSTEM INDIA PVT. LTD.
Room. 908, 9th Floor, Amar Business Park,
Tal. Haveli, Baner, Pune, India 411045

Vietnam

MOONS' VIETNAM MANUFACTURING SITE
Factory C1&D1, Lot IN3-11*A, VSIP Hai Phong Industrial Park in Dinh Vu – Cat Hai Economic Zone, Lap Le Commune, Thuy Nguyen District, Hai Phong City, Vietnam

https://www.moonsindustries.com/
E-mail:ama-info@moons.com.cn
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