

SS Step-Servo

New

3rd Generation Step-Servo

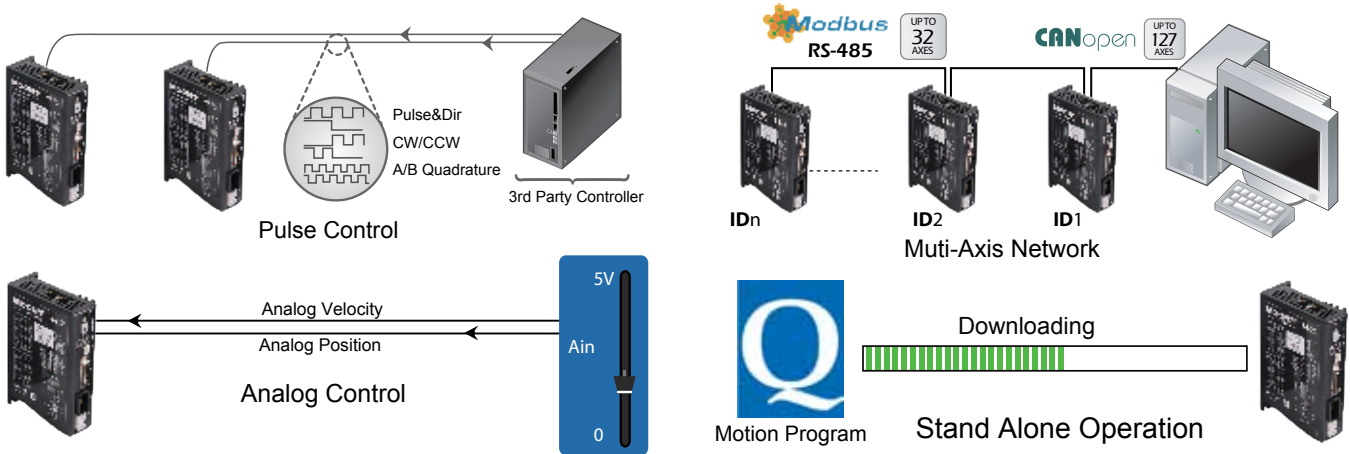
- Intelligent built-in controller
 - Multi-axis field bus control
 - Enhanced motor optimized design long life
 - Efficient smooth accurate fast
 - Low vibration low noise low heat



MOONS'
moving in better ways

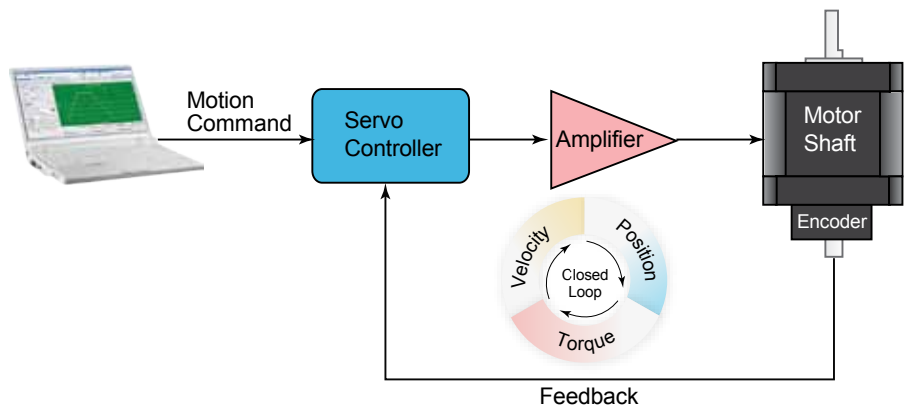
The **Step-Servo** is an innovative revolution for the world of stepper motor, it enhances the stepper motors with servo technology to create a product with exceptional feature and broad capability.

Multi-functional Capability

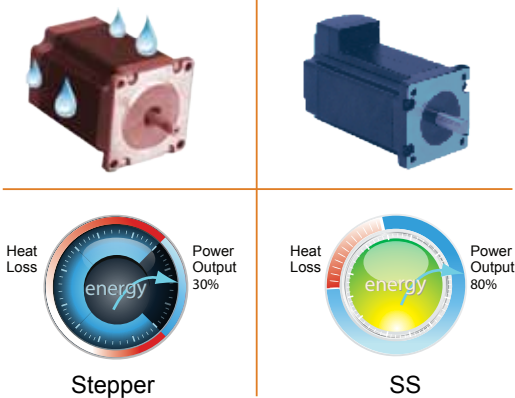


Closed Loop

- Very tight position and velocity control for the most demanding applications.
- Robust servo loops that tolerate wide fluctuation in load inertia and frictional loading.
- Precise positioning to within ± 1 count using high resolution encoder (20000 counts/rev for AM17/23/24/34SS motor, 4096 counts/rev for AM11SS motor).



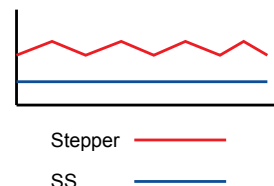
Low Heating/High Efficiency



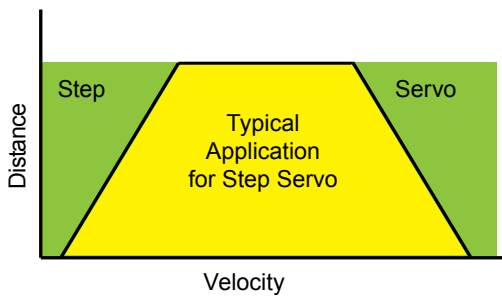
- Uses only the current required by the application, generating minimum heat output.
- When stand-still, current can reach nearly zero for extremely low heat output.
- Being able to use almost 100% of torque, allows for more efficient and compact motor usage.

Smooth & Accurate

- Space vector current control with 5000 line high resolution encoder, gives smooth and quiet operation, especially at low speeds. -----A feature never found with traditional stepping motors
- High stiffness due to the nature of the stepping motor combined with the highly responsive servo control -----Accurate position control both while running and static positioning



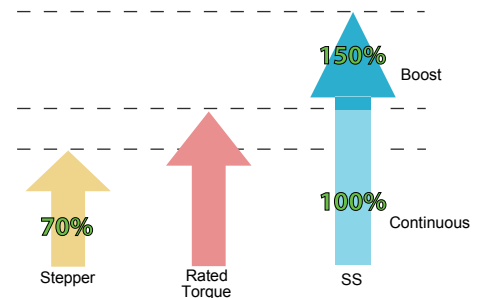
Fast Response



- When performing fast point-to-point moves, the high torque output and advanced servo control provides a very responsive system far exceeding what can be done with a conventional stepper system.

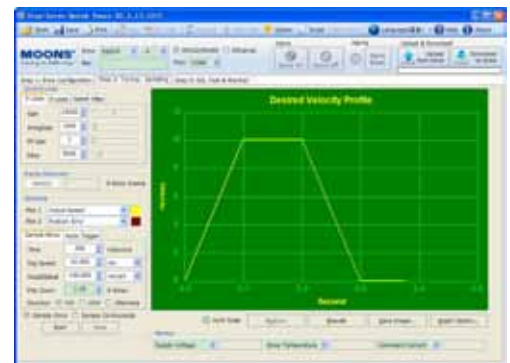
High Torque

- Because the **Step-Servo** operates in full servo mode, all the available torque of the motor can be used.
- The motor can provide as much as 50% more torque in many applications. High torque capability often eliminates the need for gear reduction.
- Boost torque capability can provide as much as 50% more torque for short, quick moves.

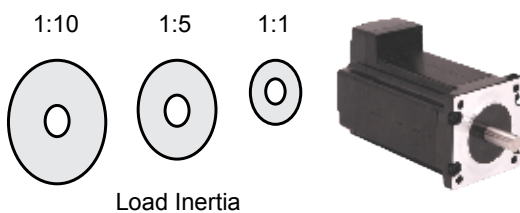


Motion Monitoring

- For difficult control situations where performing a precise move is necessary, the **Step-Servo** Quick Tuner provide an easy to use interface for performing and monitoring the motion profile.
- Many common parameters such as Actual Speed or Position Error can be monitored to evaluate system performance.
- The monitoring is interactive with the servo tuning capability so that optimum performance can be achieved.



Easy Tuning

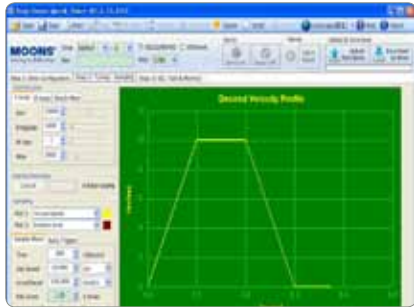


- Pre-defined tuning parameters for maximum control performance and stability.
- Easy selection list provides the level of control desired.
- In most cases NO extra manual tuning is required.

Key Features

- Up to 8 digital inputs, 4 digital outputs and 2 analog inputs for S/Q/C type
- A/B/Z differential encoder signal output supported for P/R type
- Automatic load inertia detection
- On board daisy chain connection for field bus control(RS-485, **Modbus/RTU, CANopen**)
- Multiple homing methods for S/Q type
- Software limit for S/Q type
- Built-in position table up to 63 points for S type

Step-Servo Quick Tuner



Feature

- Friendly Interface
- Easy setup within just three steps
- Drive setup and configuration
- Servo Tuning and Sampling
- Motion testing and monitoring
- Write and save SCL command scripts
- Online help integrated

Q Programmer



Feature

- Single-axis motion control
- Stored program execution
- Multi-tasking
- Conditional processing
- Math functions
- Data registers
- Motion Profile simulation
- Online help integrated

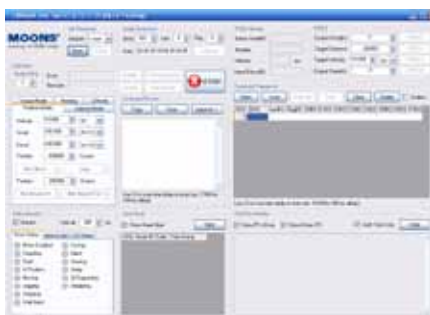
RS485 Bus Utility



Feature

- Stream SCL commands from the command line
- Simple interface with powerful capability
- Easy setup with RS-485 for 32 axis network motion control
- Monitoring Status of I/O, drive, alarm and the other nine most useful motion parameters
- Write and save SCL command scripts
- Online help integrated
- Supports all RS-485 drives

CANopen Test Tool



Feature

- Friendly User Interface
- Multiple operation Mode Support
- Multi-Thread, High Performance
- CAN bus monitor and log function
- Kvaser/PEAK adapter support

FREE DOWNLOAD

Our software and user manual can be downloaded from our website:

www.moonsindustries.com

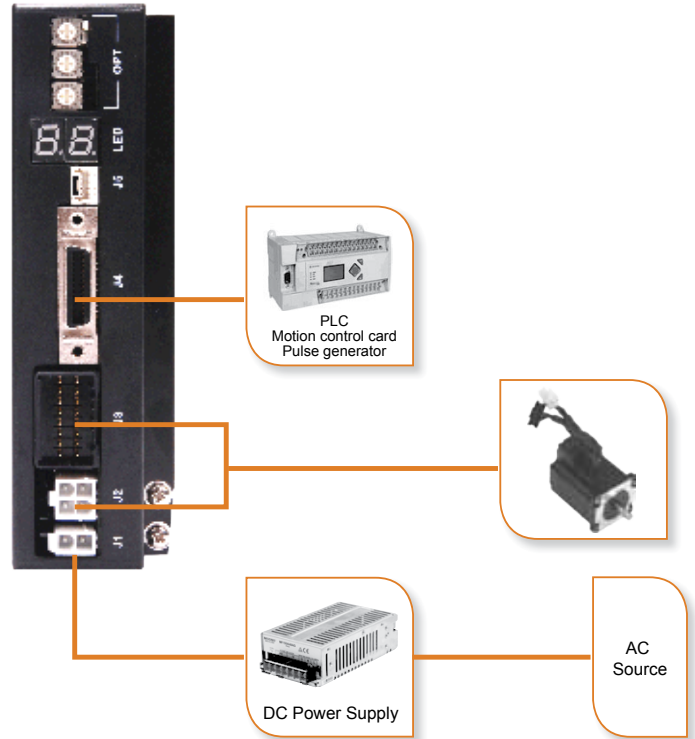
All software applications run on Window 7, Windows 8, 32-bit or 64-bit

◇ -R Switch Setting Pulse Input Type

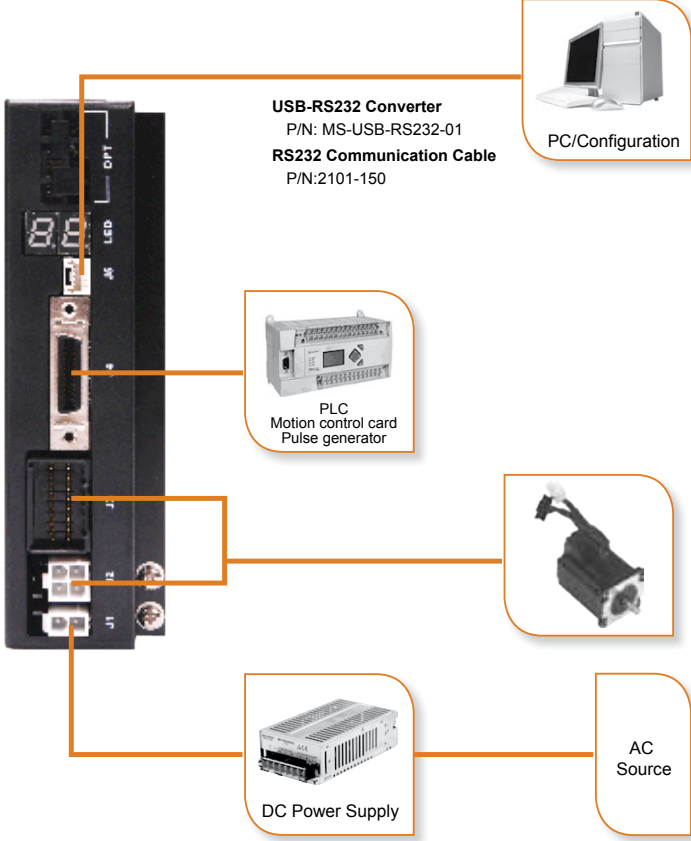
Controlled via pulse generator.

Main Features

- Accepts three types of pulse signal input as Pulse&Direction, CW/CCW and A/B Quadrature
- Encoder signal output, A/B/Z differential
- Configuration and Tuning via switches



Ordering Information
 150W P/N: MF150A24AG-V
 320W P/N: MF320A48AG-V



Ordering Information
 150W P/N: MF150A24AG-V
 320W P/N: MF320A48AG-V

◇ -P Software Setting Pulse Input Type

Controlled via pulse generator.

Main Features

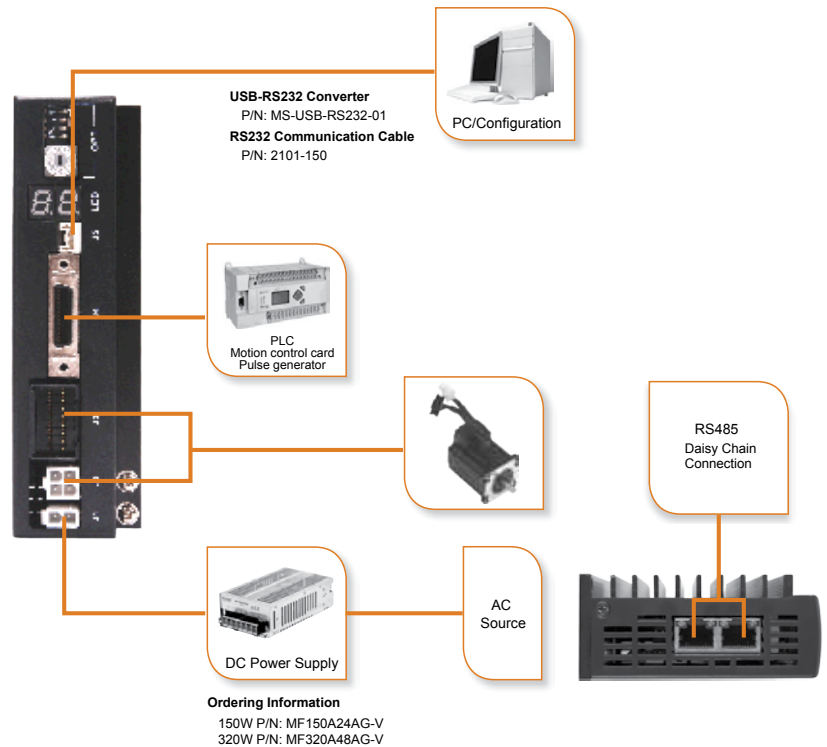
- Accepts three types of pulse signal input as Pulse&Direction, CW/CCW and A/B Quadrature
- Encoder signal output, A/B/Z differential

◇ -S Basic Type with Serial Communication

Controlled via pulse signals, analog signal or MOONS' SCL streaming series commands.

Main Features

- Pulse control
- Analog control
- Host real time control using SCL via RS-232/RS-485
- Up to 32 axes per channel for RS-485
- Support Position Table(up to 63 points)

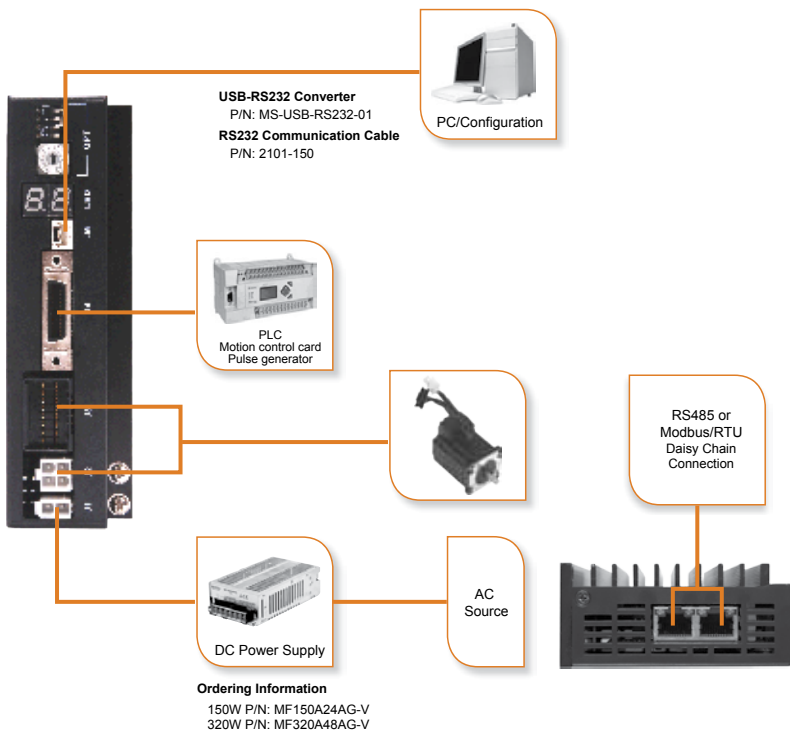


◇ -Q Built-in Programmable Motion Controller (Includes Modbus/RTU type)

Run stand-alone with sophisticated and functional programs. Commands for controlling motion, inputs & outputs, drive configuration and status, as well as math operations, register manipulation, and multi-tasking.

Main Features

- Stand-alone operation plus Serial host control
- Math operations
- Register manipulation
- Multi-tasking
- With all features in S type
- **Modbus/RTU** network, up to 32 axes per channel

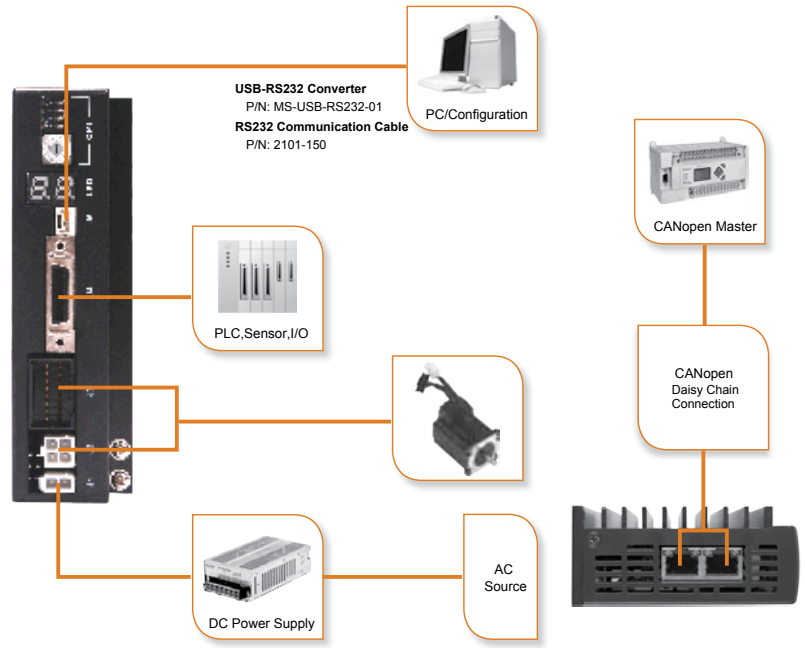


◇ -C CANopen Type

Operates on a **CANopen** communication network and conforms to CiA301 and CiA402. It supports running stored Q programs via MOONS'-specific **CANopen** objects.

Main Features

- **CANopen** network
- Up to 112 axes per channel
- Objects for Q programming



Ordering Information
 150W P/N: MF150A24AG-V
 320W P/N: MF320A48AG-V

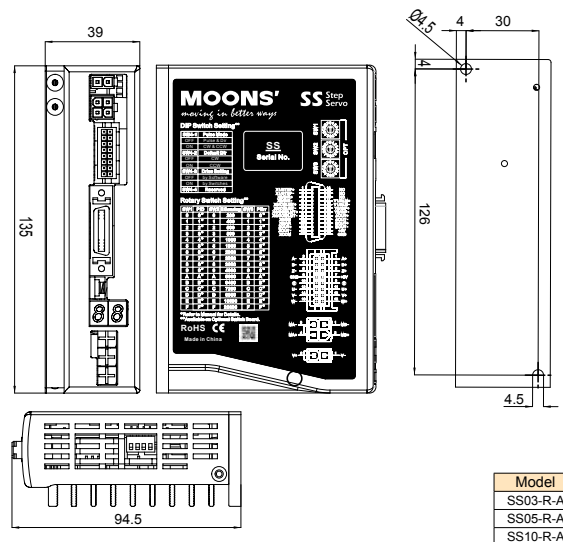
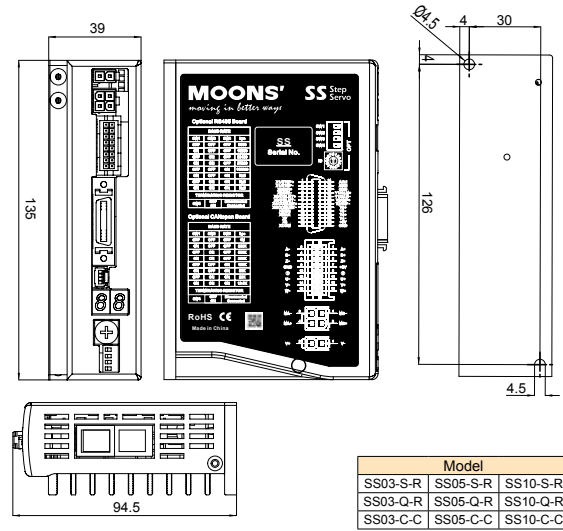
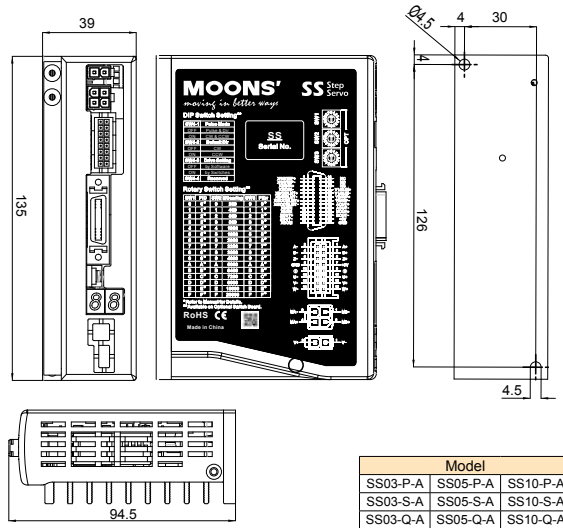
■ Specifications

Power Amplifier	
Amplifier Type	Dual H-Bridge, 4 Quadrant
Current Control	4 state PWM at 20 KHz
Output Current	SS03: Continuous Current 3A max, Boost Current 4.5A max (1.5s), current limitation auto set-up by attached motor SS05: Continuous Current 5A max, Boost Current 7.5A max (1.5s), current limitation auto set-up by attached motor SS10: Continuous Current 10A max, Boost Current 15A max (1.5s), current limitation auto set-up by attached motor
Power Supply	External nominal 24 - 75 volt DC power supply required, Absolute maximum input voltage range 18 - 80 VDC
Protection	Over-voltage, under-voltage, over-temp, motor/winding shorts (phase-to-phase, phase-to-ground)
Controller	
Electronic Gearing	Software selectable from 200 to 51200 steps/rev in increments of 2 steps/rev
Filters	Digital input noise filter, Analog input noise filter, Smoothing filter, PID filter, Notch filter
Non-Volatile Storage	Configurations are saved in FLASH memory on-board the DSP
Modes of Operation	R/P type: Position Mode(Pulse & Direction, CW & CCW Pulse, A/B Quadrature) S type: Position Mode(Pulse & Direction, CW & CCW Pulse, A/B Quadrature); Torque Mode, Velocity Mode, SCL Mode Q type: Position Mode(Pulse & Direction, CW & CCW Pulse, A/B Quadrature); Torque Mode, Velocity Mode, SCL Mode, Q Programming, Modbus/RTU C type: CANopen, CiA301, CiA402, Q Programming
Position Table(S type only)	Built-in Position Table, up to 63 positions
Digital Inputs	R/P type: X1/STEP, X2/DIR, X3/CW Limit, X4/CCW Limit; Optically isolated, differential, 5-24VDC; Minimum pulse width = 250 ns, Maximum pulse frequency = 2 MHz; X5/Enable, X6/Alarm Reset; Optically isolated, single-ended, 5-24VDC S/Q/C type: X1/STEP, X2/DIR, X3/CW Limit, X4/CCW Limit; Optically isolated, differential, 5-24VDC; Minimum pulse width = 250 ns, Maximum pulse frequency = 2 MHz; X5/Enable, X6/Alarm Reset, X7, X8; Optically isolated, single-ended, 5-24VDC
Digital Outputs	R/P type: Y1/Alarm, Y2/In Position; Optically isolated, 30V/100 mA max S/Q/C type: Y1/Alarm, Y2/In Position, Y3, Y4; Optically isolated, 30V/100 mA max
Analog Inputs (S/Q/C type only)	Two analog inputs Each input can accept a signal range of 0 to 5 VDC, ±5 VDC, 0 to 10 VDC or ±10 VDC
Encoder Outputs (R/P type only)	Differential encoder outputs (A±, B±, Z±), 26C31 line driver, 20 mA sink or source max
+5V Output	4.8~5V, 100 mA max
Communication	RS-232, RS-485(optional), Modbus/RTU(optional), CANopen(optional)
Physical	
Ambient Temperature	0 to 40°C (32 to 104°F) when mounted to a suitable heatsink
Ambient Humidity	90% Max., non-condensing
Mass	Approx 0.3 Kg

■ **Dimensions(Unit:mm)**

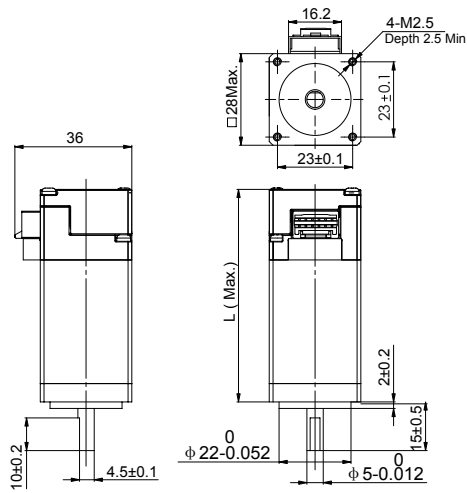
👉 Visit www.moonsindustries.com to get the 3D drawings.

◇ Drive



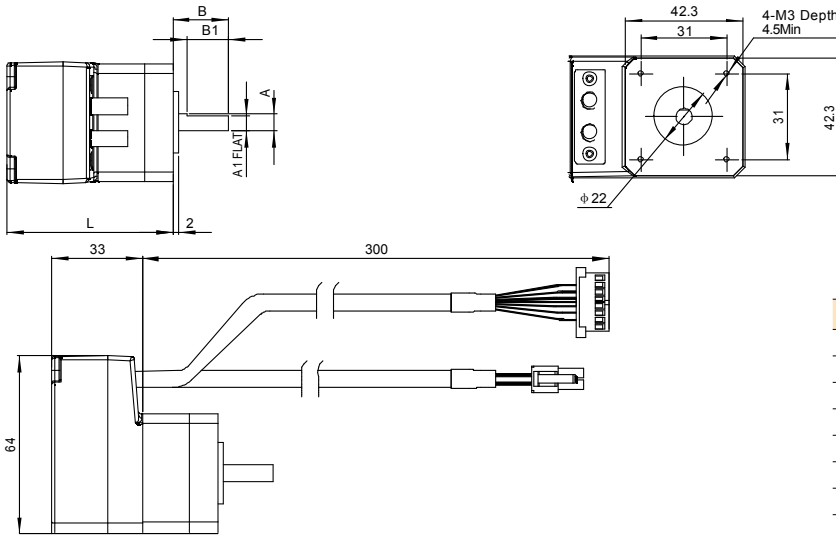
◇ Motor

AM11SS



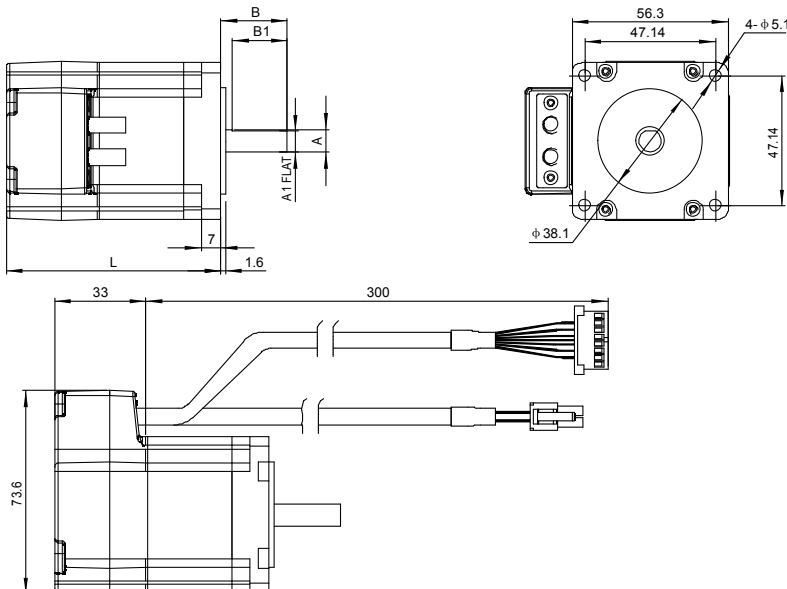
Model	L
AM11SS1DMA	43.8
AM11SS2DMA	52.9
AM11SS3DMA	64.1

AM17SS



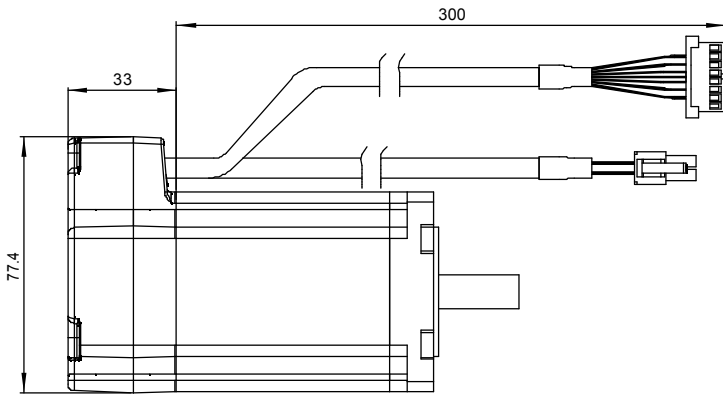
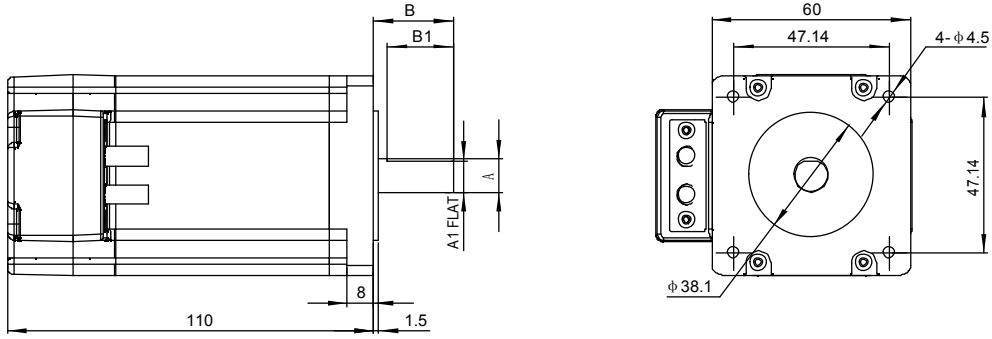
Model	A	A1	B	B1	L
AM17SS1DGA	φ6	5.5	20	15	59.5
AM17SS1DGB	φ5	4.5	24	15	59.5
AM17SS2DGA	φ6	5.5	20	15	65
AM17SS2DGB	φ5	4.5	24	15	65
AM17SS3DGA	φ6	5.5	20	15	73.5
AM17SS3DGB	φ5	4.5	24	15	73.5
AM17SS4DGA	φ6	5.5	20	15	89
AM17SS4DGB	φ5	4.5	24	15	89

AM23SS



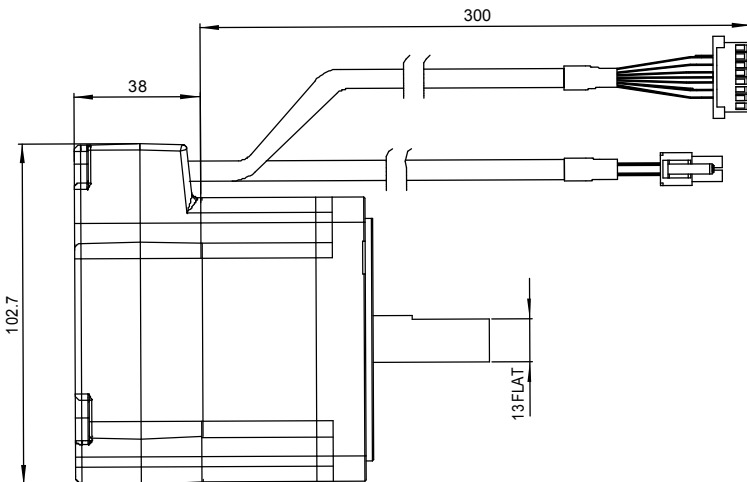
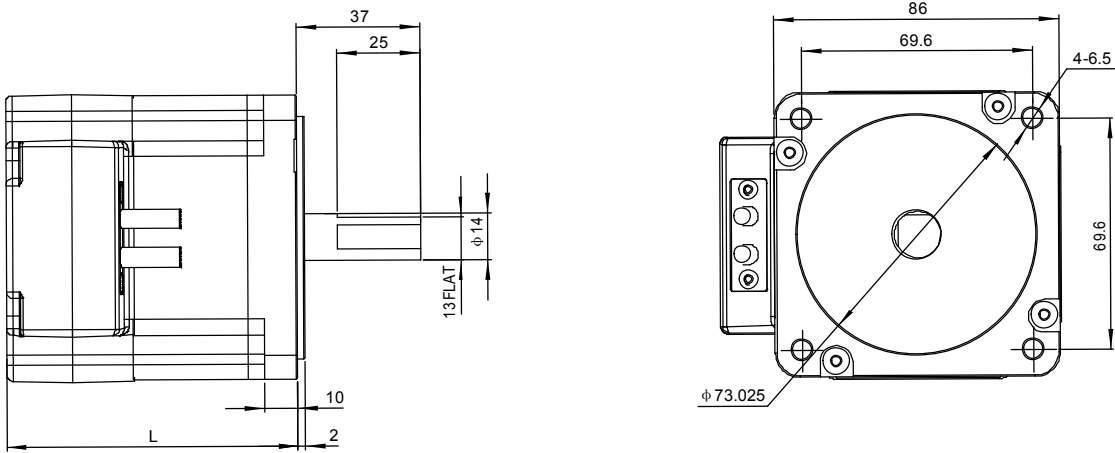
Model	A	A1	B	B1	L
AM23SS2DGA	φ8	7.5	24	20	77.5
AM23SS2DGB	φ6.35	5.85	20	15	77.5
AM23SS3DGA	φ8	7.5	24	20	99.5
AM23SS3DGB	φ6.35	5.85	20	15	99.5
AM23SS4DGA	φ8	7.5	24	20	102.5

AM24SS



Model	A	A1	B	B1
AM24SS3DGA	φ 10	9.5	24	20
AM24SS3DGB	φ 8	7.5	20	15

AM34SS



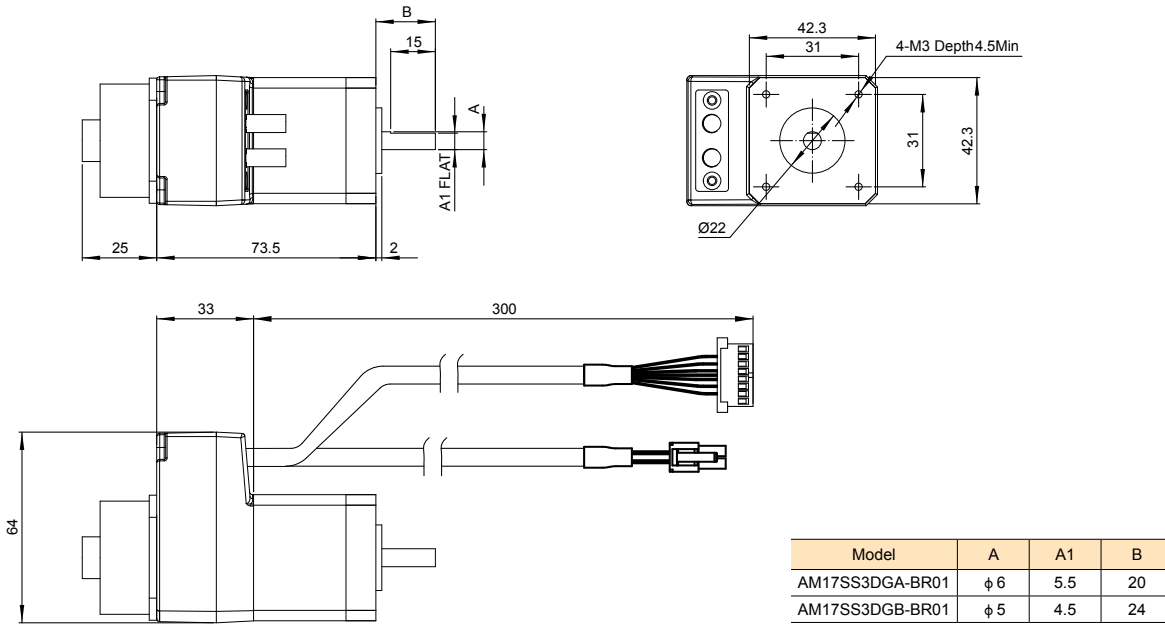
Model	L
AM34SS1DGA	88
AM34SS3DGA	117.5
AM34SS5DGA	147

◇ Motor (With Brake)

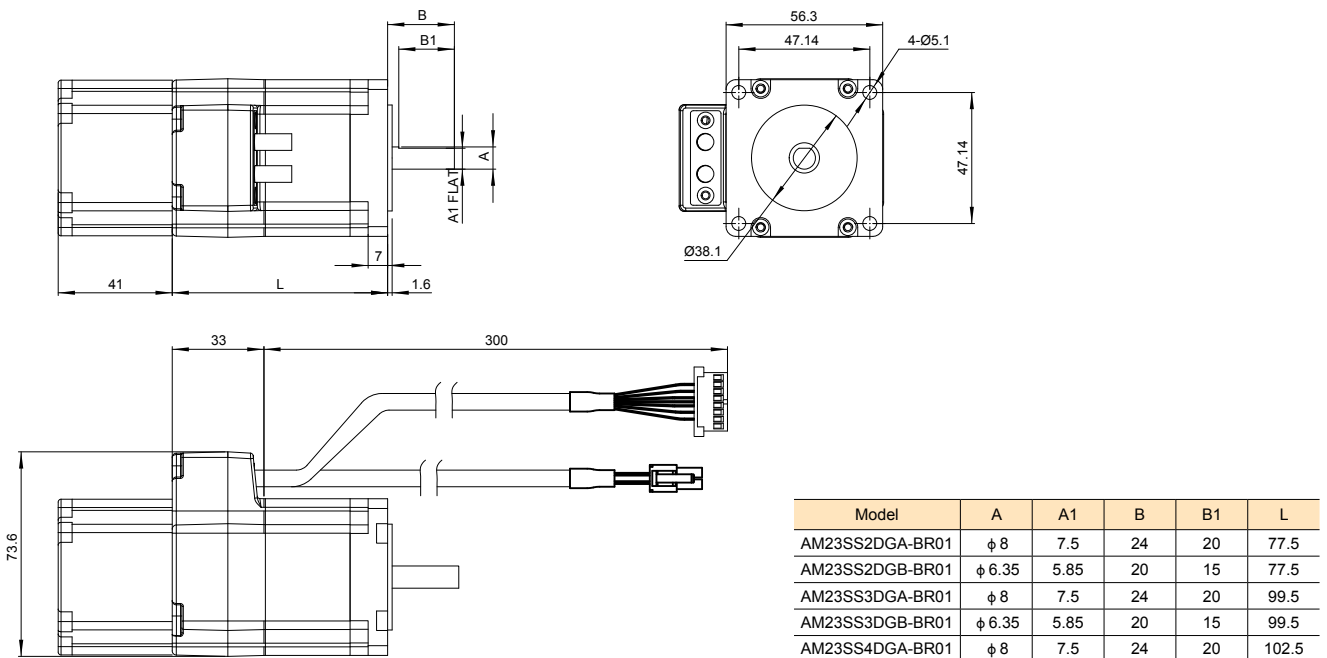
New

AM17SS	AM23SS	AM24SS	AM34SS
AM17SS3DGA-BR01	AM23SS2DGA-BR01	AM24SS3DGA-BR01	AM34SS3DGA-BR01
AM17SS3DGB-BR01	AM23SS2DGB-BR01	AM24SS3DGB-BR01	AM34SS5DGA-BR01
	AM23SS3DGA-BR01		
	AM23SS3DGB-BR01		
	AM23SS4DGA-BR01		

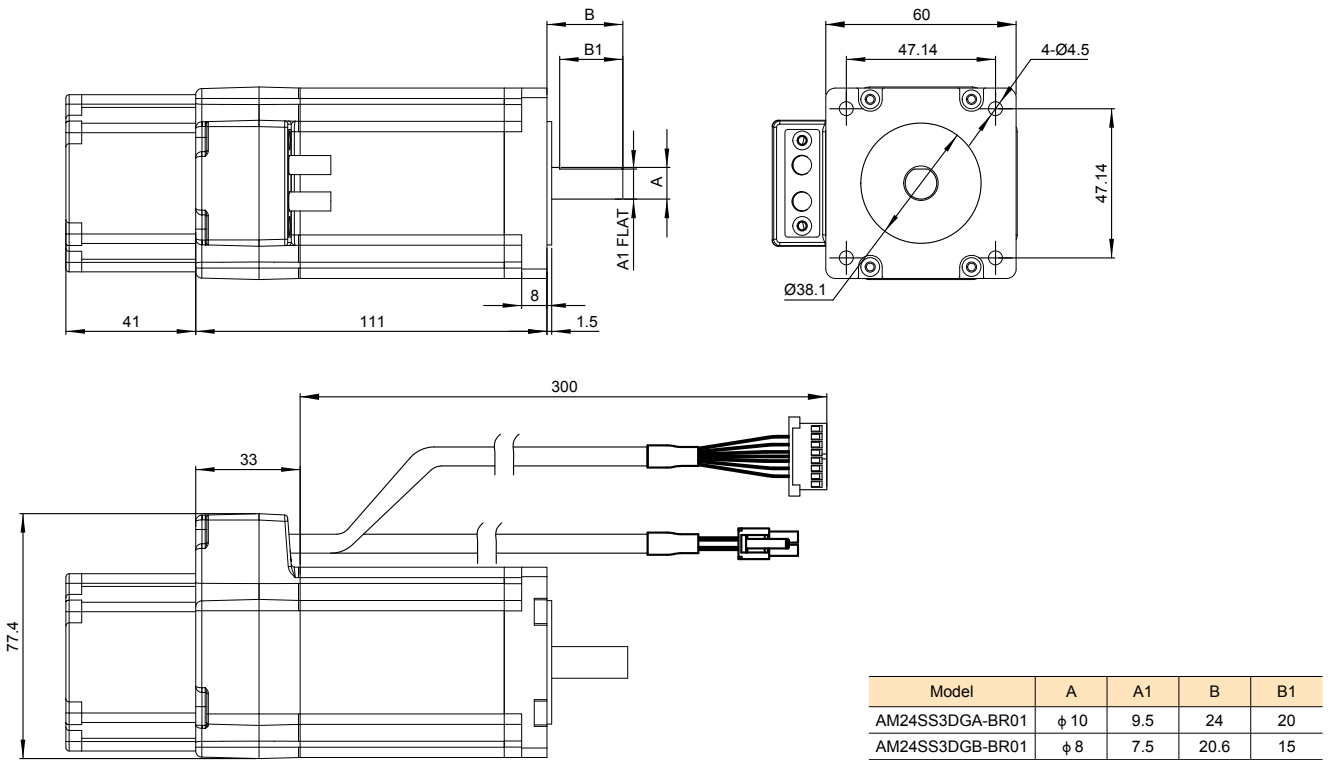
AM17SS (With Brake)



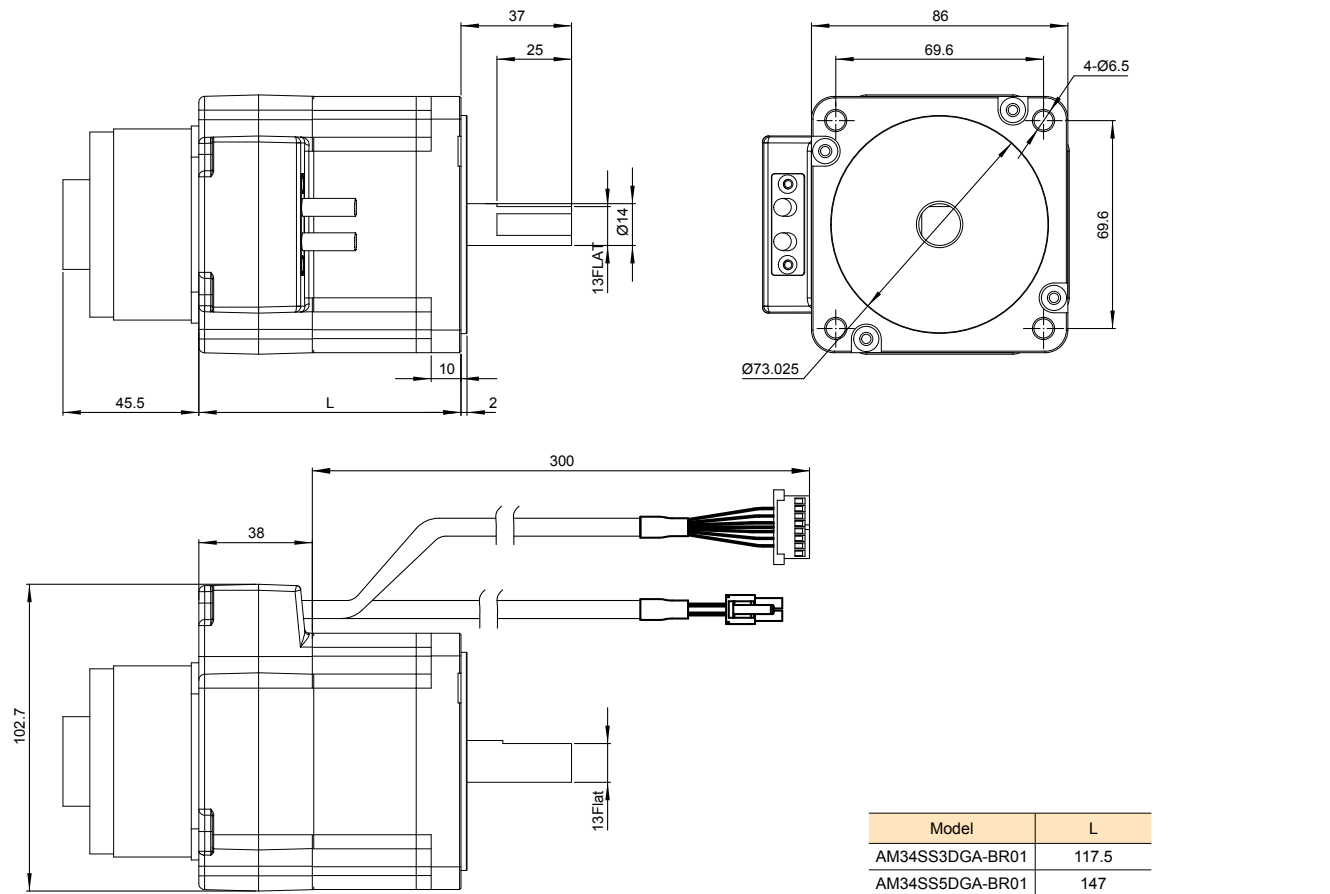
AM23SS (With Brake)



AM24SS (With Brake)

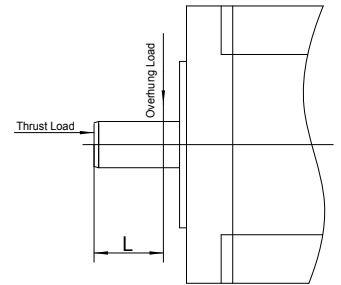


AM34SS (With Brake)



Motor Specifications

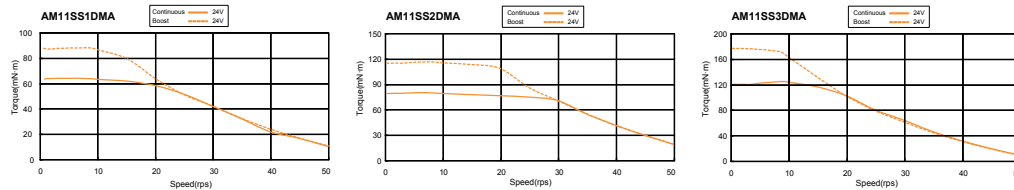
Motor P/N	Drive P/N	Holding Torque N·m	Rotor Inertia g·cm ²	Encoder Resolution counts/rev	Maximum Speed RPM	Mass g	Frame Size	Permissible Overhung Load (N) Distance(L) from Shaft End(mm)					Permissible Thrust Load	
								0	5	10	15	20		
AM11SS1DMA	SS03-■-◇	0.05	9	4096	3600	118	28mm	20	2	5	34	52	-	Less than the motor mass
AM11SS2DMA		0.07	12			168								
AM11SS3DMA		0.09	18			218								
AM17SS1DG □	SS03-■-◇ or SS05-■-◇	0.3	38	20000	3600	390	42mm	35	44	58	85	-		
AM17SS2DG □		0.5	57			440								
AM17SS3DG □		0.6	82			520								
AM17SS4DG □	SS05-■-◇	0.75	123	20000	3600	760	56mm	63	75	95	130	190		
AM23SS2DG □		0.9	260			850								
AM23SS3DG □		1.5	460			1250								
AM23SS4DGA	SS10-■-◇	2.5	365	20000	3600	840	60mm	90	100	130	180	270		
AM24SS3DG □		2.5	900			1650								
AM34SS1DGA		3.5	915			2000								
AM34SS3DGA	SS10-■-◇	6.0	1480	20000	3600	3100	80mm	260	290	340	390	480		
AM34SS5DGA		8.0	2200			4200								



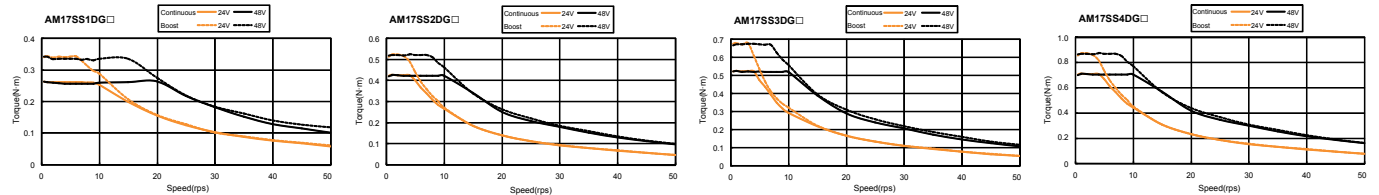
□ : A or B, refer to motor part numbering system; ■ : R, P, S, Q, or C, refer to driver part numbering system; ◇ : A, R or C, refer to driver part numbering system

Torque Curves

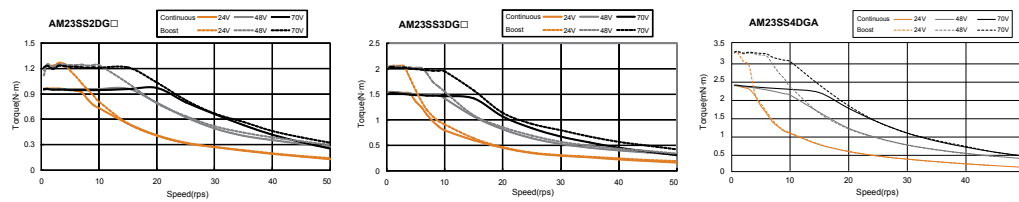
AM11SS Series



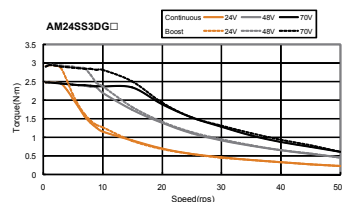
AM17SS Series



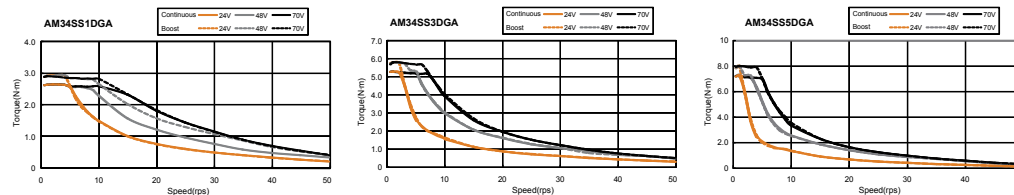
AM23SS Series



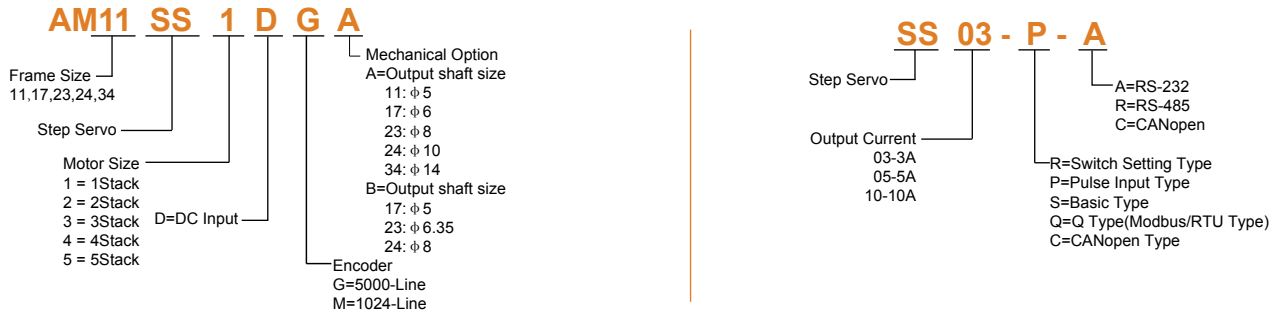
AM24SS Series



AM34SS Series



■ **Numbering System**



■ **Ordering Information**

Control	Drive Type	Motor Type	Torque	Control	Drive Type	Motor Type	Torque	
R Type Pulse Input Type Selectable Switch & RS232 Software 6 Digital Inputs 2 Digital Outputs Encoder Output	SS03-R-A	AM11SS1DMA	0.05N·m	P Type Pulse Input Type RS232 Software 6 Digital Inputs 2 Digital Outputs Encoder Output	SS03-P-A	AM11SS1DMA	0.05N·m	
		AM11SS2DMA	0.07N·m			AM11SS2DMA	0.07N·m	
		AM11SS3DMA	0.09N·m			AM11SS3DMA	0.09N·m	
	SS03-R-A / SS05-R-A	AM17SS1DG □	0.3N·m		SS03-P-A / SS05-P-A	AM17SS1DG □	0.3N·m	
		AM17SS2DG □	0.5N·m			AM17SS2DG □	0.5N·m	
		AM17SS3DG □	0.6N·m			AM17SS3DG □	0.6N·m	
		AM17SS4DG □	0.75N·m			AM17SS4DG □	0.75N·m	
		AM23SS2DG □	0.9N·m			AM23SS2DG □	0.9N·m	
		AM23SS3DG □	1.5N·m			AM23SS3DG □	1.5N·m	
	SS05-R-A	AM24SS3DG □	2.5N·m		SS05-P-A	AM24SS3DG □	2.5N·m	
		AM34SS1DGA	3.5N·m			AM34SS1DGA	3.5N·m	
		AM34SS3DGA	6.0N·m			AM34SS3DGA	6.0N·m	
AM34SS5DGA		8.0N·m	AM34SS5DGA	8.0N·m				
SS10-R-A	AM24SS3DG □	2.5N·m	SS10-P-A	AM24SS3DG □	2.5N·m			
	AM34SS1DGA	3.5N·m		AM34SS1DGA	3.5N·m			
	AM34SS3DGA	6.0N·m		AM34SS3DGA	6.0N·m			
	AM34SS5DGA	8.0N·m		AM34SS5DGA	8.0N·m			
	AM11SS1DMA	0.05N·m		S Type Basic Type RS485 Communication 8 Digital Inputs 4 Digital Outputs 2 Analog Inputs	SS03-S-R	AM11SS1DMA	0.05N·m	
	AM11SS2DMA	0.07N·m				AM11SS2DMA	0.07N·m	
AM11SS3DMA	0.09N·m	AM11SS3DMA	0.09N·m					
SS03-S-A	AM17SS1DG □	0.3N·m	SS03-S-R / SS05-S-R		AM17SS1DG □	0.3N·m		
	AM17SS2DG □	0.5N·m			AM17SS2DG □	0.5N·m		
	AM17SS3DG □	0.6N·m			AM17SS3DG □	0.6N·m		
	AM17SS4DG □	0.75N·m			AM17SS4DG □	0.75N·m		
	AM23SS2DG □	0.9N·m			AM23SS2DG □	0.9N·m		
	AM23SS3DG □	1.5N·m			AM23SS3DG □	1.5N·m		
SS05-S-A	AM24SS3DG □	2.5N·m	SS05-S-R		AM24SS3DG □	2.5N·m		
	AM34SS1DGA	3.5N·m			AM34SS1DGA	3.5N·m		
	AM34SS3DGA	6.0N·m			AM34SS3DGA	6.0N·m		
	AM34SS5DGA	8.0N·m		AM34SS5DGA	8.0N·m			
SS10-S-A	AM34SS5DGA	8.0N·m	SS10-S-R	AM34SS5DGA	8.0N·m			
	AM11SS1DMA	0.05N·m		Q Type Programm Type RS232 Communication Modbus/RTU 8 Digital Inputs 4 Digital Outputs 2 Analog Inputs	SS03-Q-R	AM11SS1DMA	0.05N·m	
	AM11SS2DMA	0.07N·m				AM11SS2DMA	0.07N·m	
	AM11SS3DMA	0.09N·m				AM11SS3DMA	0.09N·m	
	SS03-Q-A	AM17SS1DG □			0.3N·m	SS03-Q-R / SS05-Q-R	AM17SS1DG □	0.3N·m
		AM17SS2DG □			0.5N·m		AM17SS2DG □	0.5N·m
AM17SS3DG □		0.6N·m	AM17SS3DG □		0.6N·m			
AM17SS4DG □		0.75N·m	AM17SS4DG □		0.75N·m			
AM23SS2DG □		0.9N·m	AM23SS2DG □		0.9N·m			
AM23SS3DG □		1.5N·m	AM23SS3DG □		1.5N·m			
SS05-Q-A	AM24SS3DG □	2.5N·m	SS05-Q-R		AM24SS3DG □	2.5N·m		
	AM34SS1DGA	3.5N·m			AM34SS1DGA	3.5N·m		
	AM34SS3DGA	6.0N·m			AM34SS3DGA	6.0N·m		
	AM34SS5DGA	8.0N·m		AM34SS5DGA	8.0N·m			
SS10-Q-A	AM34SS5DGA	8.0N·m	SS10-Q-R	AM34SS5DGA	8.0N·m			
	AM11SS1DMA	0.05N·m		C Type CANopen 8 Digital Inputs 4 Digital Outputs 2 Analog Inputs	SS03-C-C	AM11SS1DMA	0.05N·m	
	AM11SS2DMA	0.07N·m				AM11SS2DMA	0.07N·m	
	AM11SS3DMA	0.09N·m				AM11SS3DMA	0.09N·m	
	SS03-C-C	AM17SS1DG □			0.3N·m	SS03-C-C / SS05-C-C	AM17SS1DG □	0.3N·m
		AM17SS2DG □			0.5N·m		AM17SS2DG □	0.5N·m
AM17SS3DG □		0.6N·m	AM17SS3DG □		0.6N·m			
AM17SS4DG □		0.75N·m	AM17SS4DG □		0.75N·m			
AM23SS2DG □		0.9N·m	AM23SS2DG □		0.9N·m			
AM23SS3DG □		1.5N·m	AM23SS3DG □		1.5N·m			
SS05-C-C	AM24SS3DG □	2.5N·m	SS05-C-C		AM24SS3DG □	2.5N·m		
	AM34SS1DGA	3.5N·m			AM34SS1DGA	3.5N·m		
	AM34SS3DGA	6.0N·m			AM34SS3DGA	6.0N·m		
	AM34SS5DGA	8.0N·m		AM34SS5DGA	8.0N·m			
SS10-C-C	AM34SS5DGA	8.0N·m	SS10-C-C	AM34SS5DGA	8.0N·m			

□ : Enter A(Enhanced Shaft) or B(Standard) in the box(□) within the model name

■ **Standard Accessories**

P/N	Category	Technical Specification
1103-200	Cable	Power Supply Cable
2101-150	Cable	RS232 Communication Cable

■ **Optional Accessories (Sold separately)**

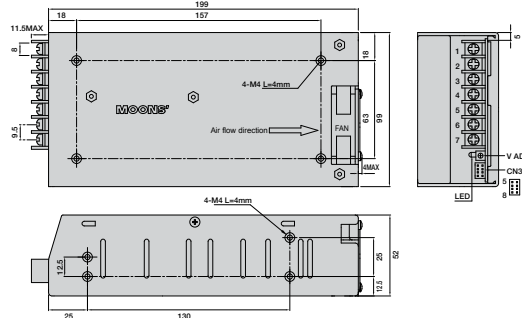
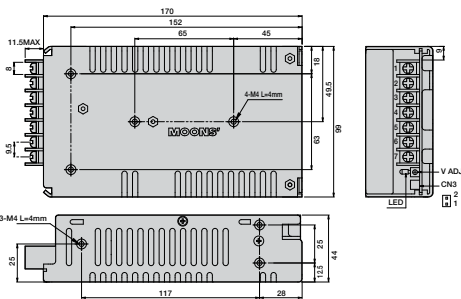
P/N	Category	Technical Specification
MF150A24AG-V	Switching Power Supply	150W, 24V
MF320A48AG-V	Switching Power Supply	320W, 48V
2103-□□□	Cable	Motor Extension Cable for AM17/23/24/34SS motor
2109-□□□	Cable	Motor Extension Cable for AM11SS motor
2104-□□□	Cable	Encoder Extension Cable for AM17/23/24/34SS motor
2108-□□□	Cable	Encoder Extension Cable for AM11SS motor

◇ **Switching Power Supplies**

MOONS' recommend to use following switching power supplies

P/N:MF150A24AG-V 150W,24VDC

P/N:MF320A48AG-V 320W,48VDC



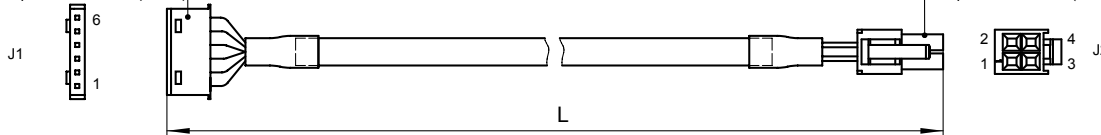
◇ **Motor Extension Cable for AM11SS motor**

P/N	Length(L)
2109-100	1M
2109-300	3M
2109-500	5M
2109-1000	10M

Wiring Diagram		
PIN (J1)	Colour(Signal)	PIN (J2)
1	Blue (B-)	1
3	Red (B+)	2
4	Green (A-)	3
6	Black (A+)	4

Housing: 51065-0600(Molex)
Crimp: 50212-8000(Molex)

Housing: 39-01-3048(Molex)
Crimp: 39-00-0038(Molex)



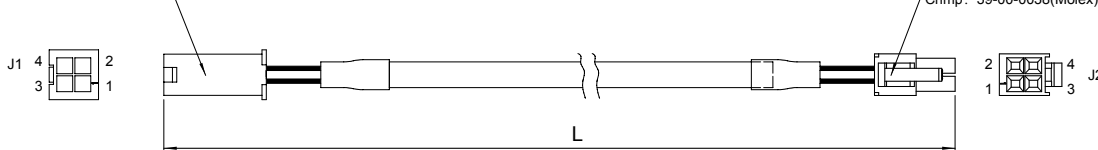
◇ **Motor Extension Cable for AM17/23/24/34SS motor**

P/N	Length(L)
2103-100	1M
2103-300	3M
2103-500	5M
2103-1000	10M

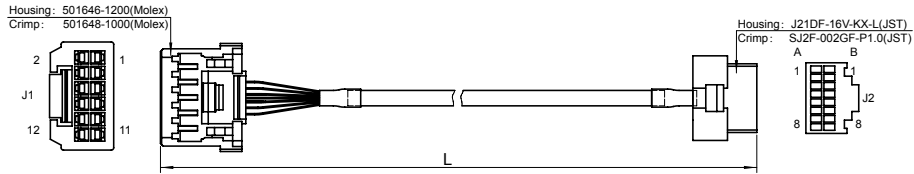
Wiring Diagram		
PIN (J1)	Colour(Signal)	PIN (J2)
1	Blue (B-)	1
2	Red (B+)	2
3	Green (A-)	3
4	Black (A+)	4

Housing: 39-01-3049(Molex)
Crimp: 39-00-0040(Molex)

Housing: 39-01-3048(Molex)
Crimp: 39-00-0038(Molex)



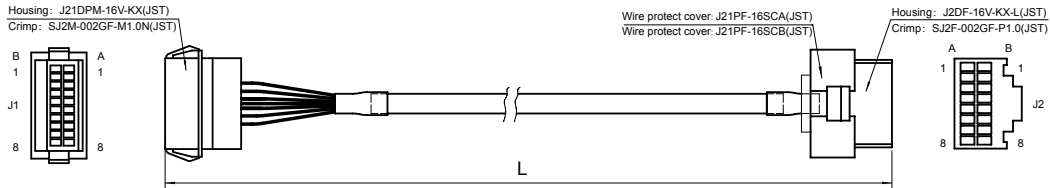
◇ Encoder Extension Cable for AM11SS motor



P/N	Length(L)
2108-100	1M
2108-300	3M
2108-500	5M
2108-1000	10M

Wiring Diagram					
PIN (J1)	Colour(Signal)	PIN (J2)	PIN (J1)	Colour(Signal)	PIN (J2)
10	Blue (A+)	A8		Brown (U+)	A3
9	Blue/Black (A-)	B8		Brown/Black (U-)	B3
8	Green (B+)	A7		Gray (V+)	A2
7	Green/Black (B-)	B7		Gray/Black (V-)	B2
6	Yellow (Z+)	A6	1	White (W+)	A1
5	Yellow/Black (Z-)	B6	2	White/Black (W-)	B1
3	Red (+5V)	A5	12	Shield	B4
4	Black (GND)	B5			

◇ Encoder Extension Cable for AM17/23/24/34SS motor



P/N	Length(L)
2104-100	1M
2104-300	3M
2104-500	5M
2104-1000	10M

Wiring Diagram					
PIN (J1)	Colour(Signal)	PIN (J2)	PIN (J1)	Colour(Signal)	PIN (J2)
A8	Blue (A+)	A8	A3	Brown (U+)	A3
B8	Blue/Black (A-)	B8	B3	Brown/Black (U-)	B3
A7	Green (B+)	A7	A2	Gray (V+)	A2
B7	Green/Black (B-)	B7	B2	Gray/Black (V-)	B2
A6	Yellow (Z+)	A6	A1	White (W+)	A1
B6	Yellow/Black (Z-)	B6	B1	White/Black (W-)	B1
A5	Red (+5V)	A5	B4	Shield	B4
B5	Black (GND)	B5			

SS-EC Step-Servo

- Intelligent built-in controller
 - Enhanced motor optimized design long life
 - Efficient smooth accurate fast
 - Low vibration low noise low heat



Ether**CAT**[®]



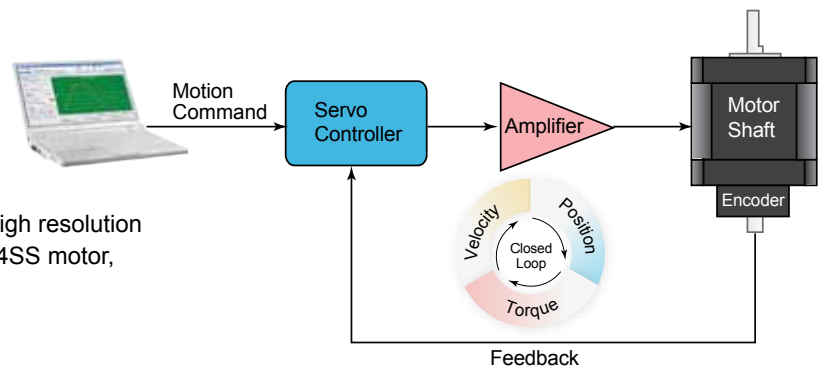
MOONS'
moving in better ways

The SS-EC is a member of Step-Servo family equipped with built-in EtherCAT communication interface. This drive can operate as a standard EtherCAT slave using CANopen over EtherCAT (CoE). This drive can be combined with various associated step servo motors.

- Programmable, digital step-servo drive and motor package
- Operates from a 24 to 70 volt DC power supply
- CANopen over EtherCAT (CoE) with full support of CiA402. Based on the widely used 100BASE-TX cabling system and with a baud rate of 100Mbps full-duplex, EtherCAT enables high speed and high reliable communication
- Dual port EtherCAT communication
- USB port for configuration
- Encoder resolution: 20000 counts/rev for AM17/23/24/34SS motor, 4096 counts/rev for AM11SS motor
- SS03-EC output current: continuous 3A, boost 4.5A
- SS05-EC output current: continuous 5A, boost 7.5A
- SS10-EC output current: continuous 10A, boost 15A
- 8 optically isolated digital inputs, 5-24VDC high level voltage
- 4 optically isolated digital outputs, max 30V/100mA sink or source current
- 2 analog inputs, can be configured to 0-5V, 0-10V, $\pm 5V$ or $\pm 10V$ signal ranges.
- Differential encoder signal output (AOUT \pm , BOUT \pm , ZOUT \pm)
26C31 line driver, 20mA sink or source current
- Auxiliary power supply for keep alive operation
- 4 keys and 5 digital LED display for parameters setting
- STO function (Safe Torque Off)

Closed Loop

- Very tight position and velocity control for the most demanding applications.
- Robust servo loops that tolerate wide fluctuation in load inertia and frictional loading.
- Precise positioning to within ± 1 count using high resolution encoder (20000 counts/rev for AM17/23/24/34SS motor, 4096 counts/rev for AM11SS motor).



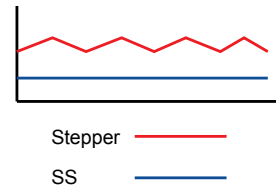
Low Heating/High Efficiency



- Uses only the current required by the application, generating minimum heat output.
- When stand-still, current can reach nearly zero for extremely low heat output.
- Being able to use almost 100% of torque, allows for more efficient and compact motor usage.

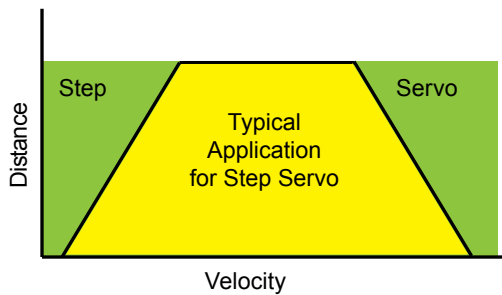
Smooth & Accurate

- Space vector current control with 5000 line high resolution encoder, gives smooth and quiet operation, especially at low speeds. -----A feature never found with traditional stepping motors
- High stiffness due to the nature of the stepping motor combined with the highly responsive servo control -----Accurate position control both while running and static positioning



±1 Count Error
(20000 counts/rev)

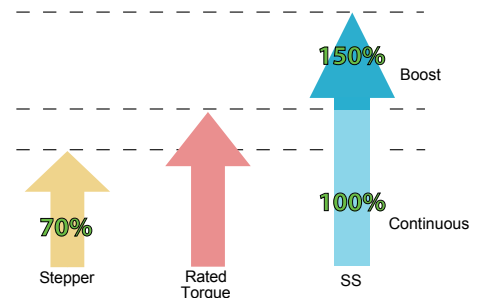
Fast Response



- When performing fast point-to-point moves, the high torque output and advanced servo control provides a very responsive system far exceeding what can be done with a conventional stepper system.

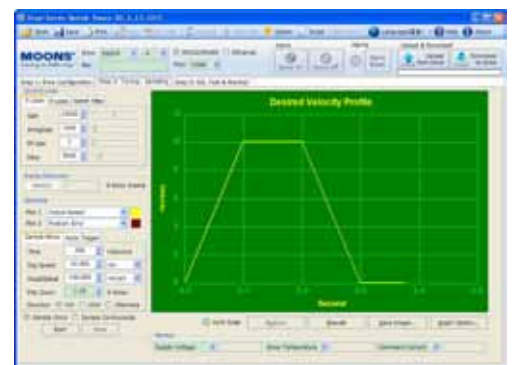
High Torque

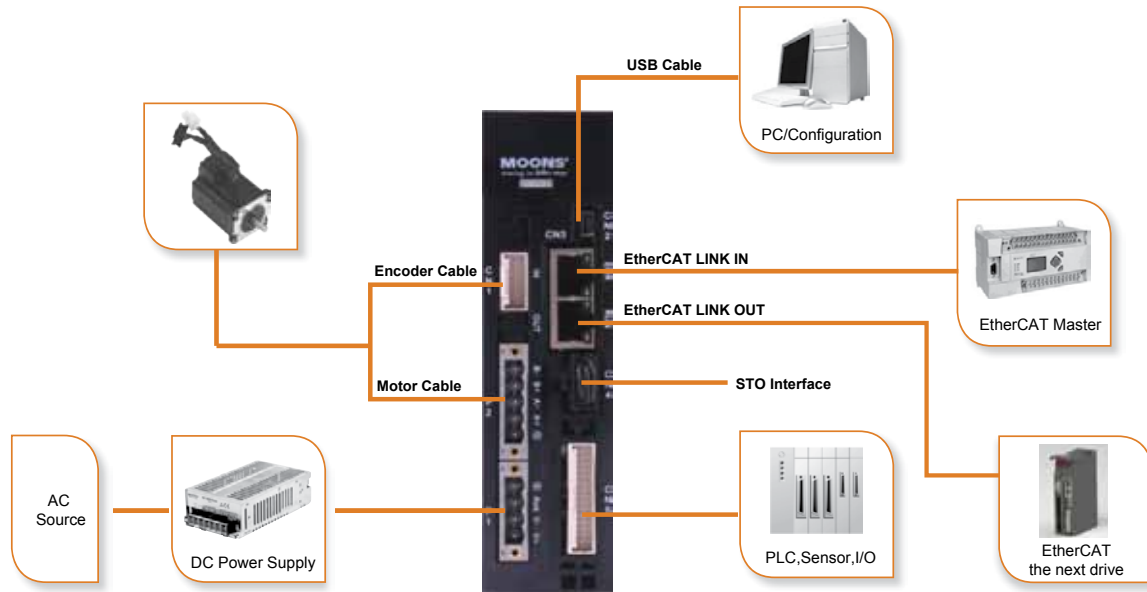
- Because the **Step-Servo** operates in full servo mode, all the available torque of the motor can be used.
- The motor can provide as much as 50% more torque in many applications. High torque capability often eliminates the need for gear reduction.
- Boost torque capability can provide as much as 50% more torque for short, quick moves.



Motion Monitoring

- For difficult control situations where performing a precise move is necessary, the **Step-Servo** Quick Tuner provide an easy to use interface for performing and monitoring the motion profile.
- Many common parameters such as Actual Speed or Position Error can be monitored to evaluate system performance.
- The monitoring is interactive with the servo tuning capability so that optimum performance can be achieved.





■ Specifications

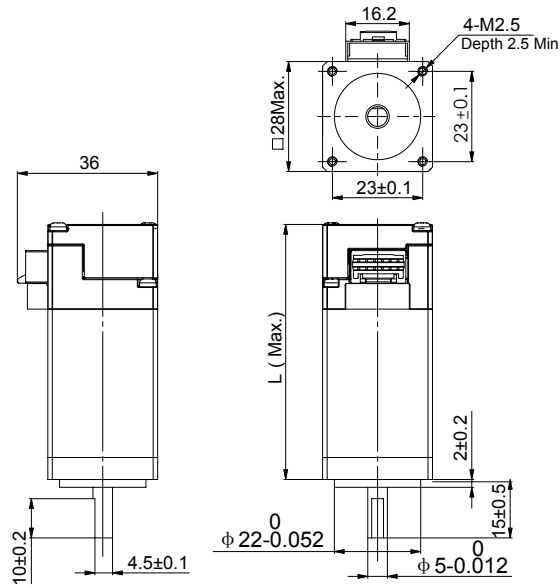
Power Amplifier	
Amplifier Type	Dual H-Bridge, 4 Quadrant
Current Control	4 state PWM at 20 KHz
Output Current	SS03 Maximum continuous current 3A, boost current 4.5A (for 1.5s) Drive auto-set the current limitation according to the attached motor
	SS05 Maximum continuous current 5A, boost current 7.5A (for 1.5s) Drive auto-set the current limitation according to the attached motor
	SS10 Maximum continuous current 10A, boost current 15A (for 1.5s) Drive auto-set the current limitation according to the attached motor
Power Supply	External nominal 24 - 70 volt DC power supply required Absolute maximum input voltage range 18 - 75 VDC
Protection	Over-voltage, under-voltage, over-temp, over-current
Controller	
Microstep Resolution	Software selectable from 200 to 51200 steps/rev in increments of 2 steps/rev
Encoder Resolution	20000 counts/rev for AM17/23/24/34SS motor; 4096 counts/rev for AM11SS motor
Speed Range	Speeds up to 3600 rpm
Filters	Programmable hardware digital noise filter, software noise filter, smoothing filter, PID filter, notch filter
Non-Volatile Storage	Configurations are saved in FLASH memory on-board the DSP
Digital Inputs	X1, X2, X3, X4: Optical isolated, differential, 5-24VDC, minimum pulse width 250ns, maximum pulse frequency 2MHz X5, X6, X7, X8: Optical isolated, single-ended input, 5 - 24 volts
Digital Output	Y1, Y2, Y3, Y4 Optical isolated, Open Collector, 30 volts, 100 mA max, maximum pulse frequency 10 KHz
Analog Input	AIN1, AIN2 Input resolution 12-bit, software configured as 0-5 volts, 0-10 volts, ±5 volts or ±10 volts (AIN referenced to GND)
+5V Supply Output	+4.8 - 5 volts @ 100mA maximum
Communication	EtherCAT and mini USB
Environment	
Ambient Temperature	0 - 40°C (32 - 104°F) when mounted to a suitable heatsink
Humidity	90% non-condensing

■ **Dimensions(Unit:mm)**

👉 Visit www.moonsindustries.com to get the 3D drawings.

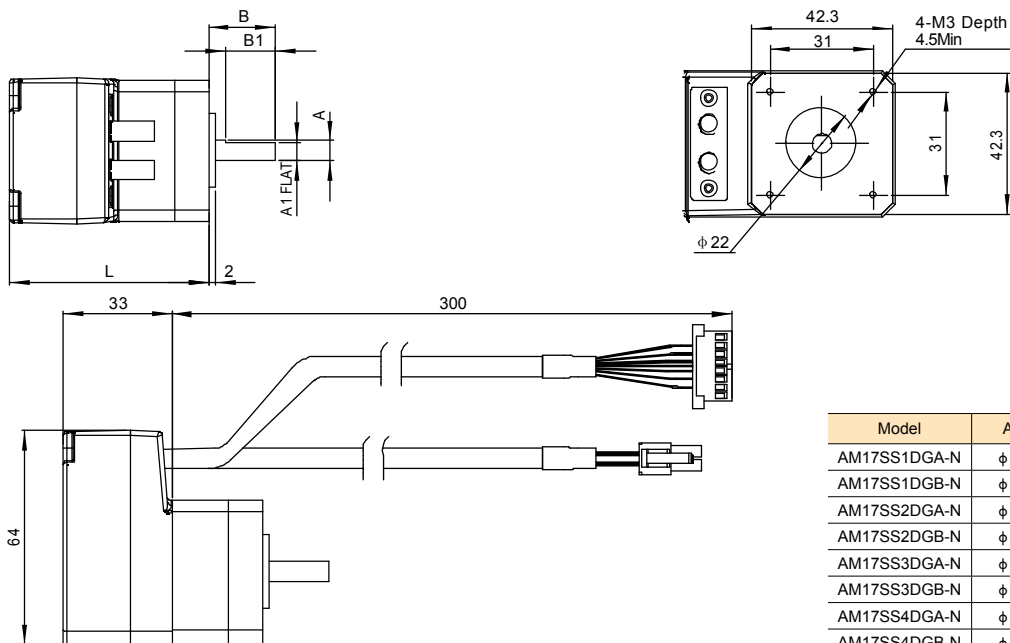
◇ Motor

AM11SS



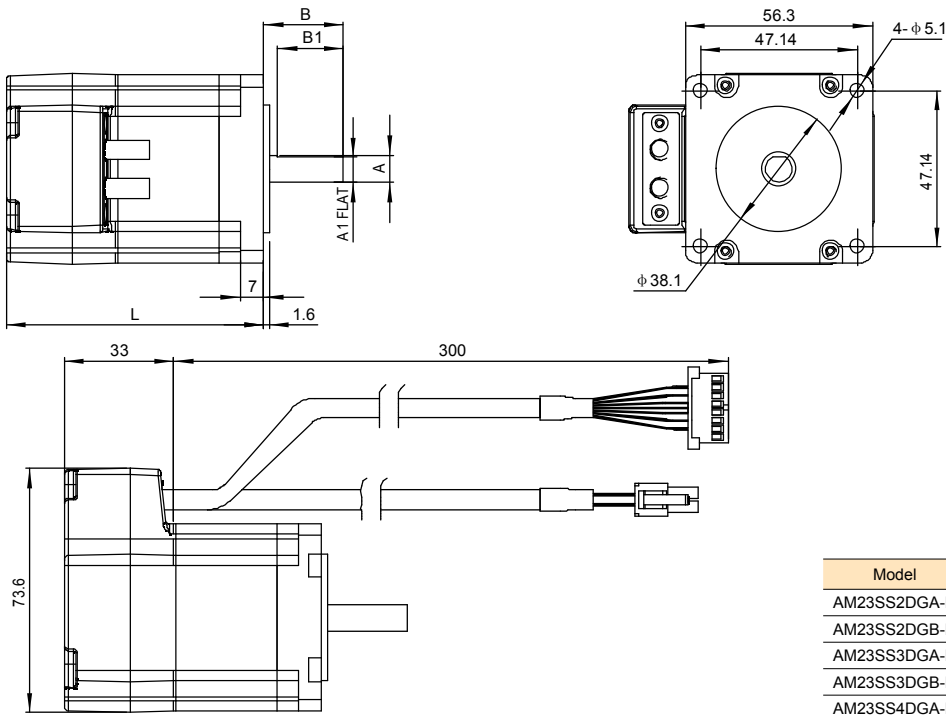
Model	L
AM11SS1DMA	43.8
AM11SS2DMA	52.9
AM11SS3DMA	64.1

AM17SS



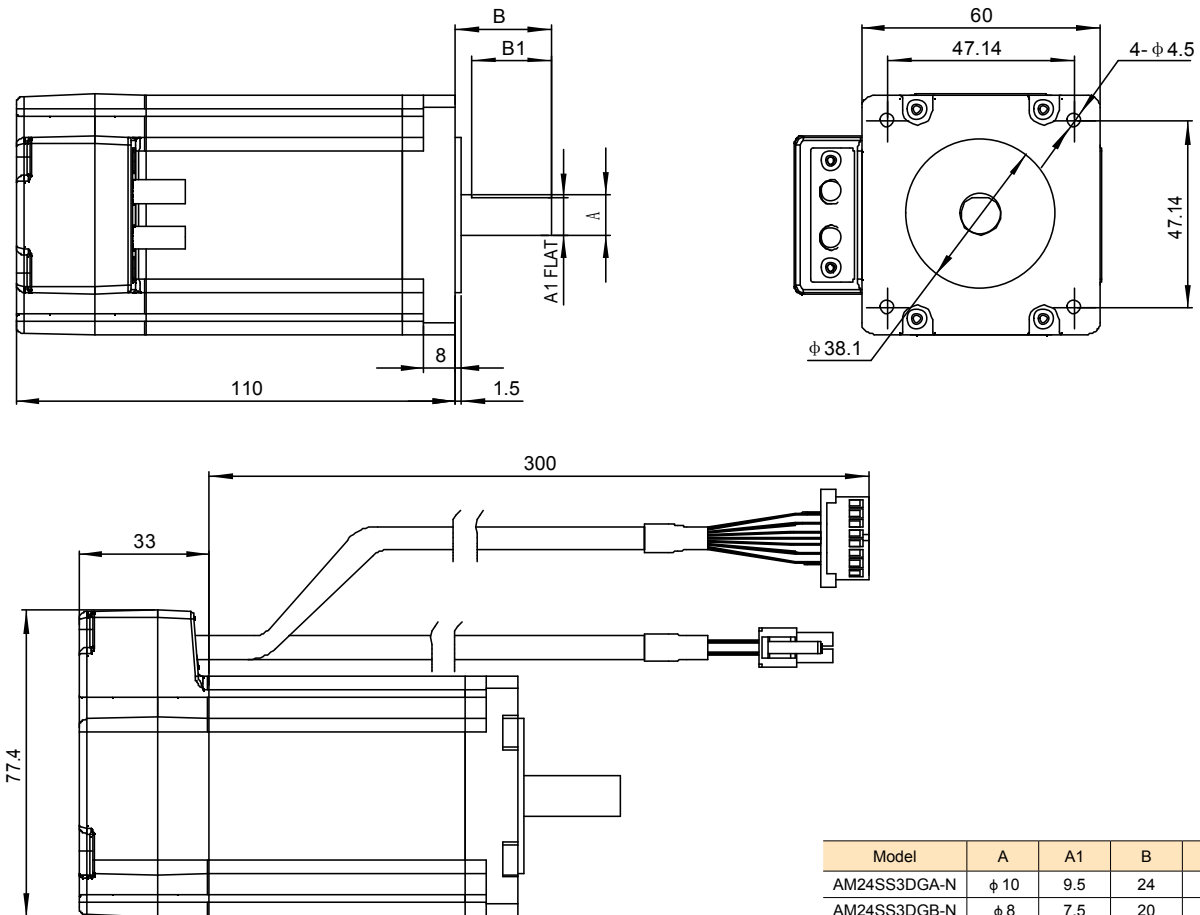
Model	A	A1	B	B1	L
AM17SS1DGA-N	φ 6	5.5	20	15	59.5
AM17SS1DGB-N	φ 5	4.5	24	15	59.5
AM17SS2DGA-N	φ 6	5.5	20	15	65
AM17SS2DGB-N	φ 5	4.5	24	15	65
AM17SS3DGA-N	φ 6	5.5	20	15	73.5
AM17SS3DGB-N	φ 5	4.5	24	15	73.5
AM17SS4DGA-N	φ 6	5.5	20	15	89
AM17SS4DGB-N	φ 5	4.5	24	15	89

AM23SS



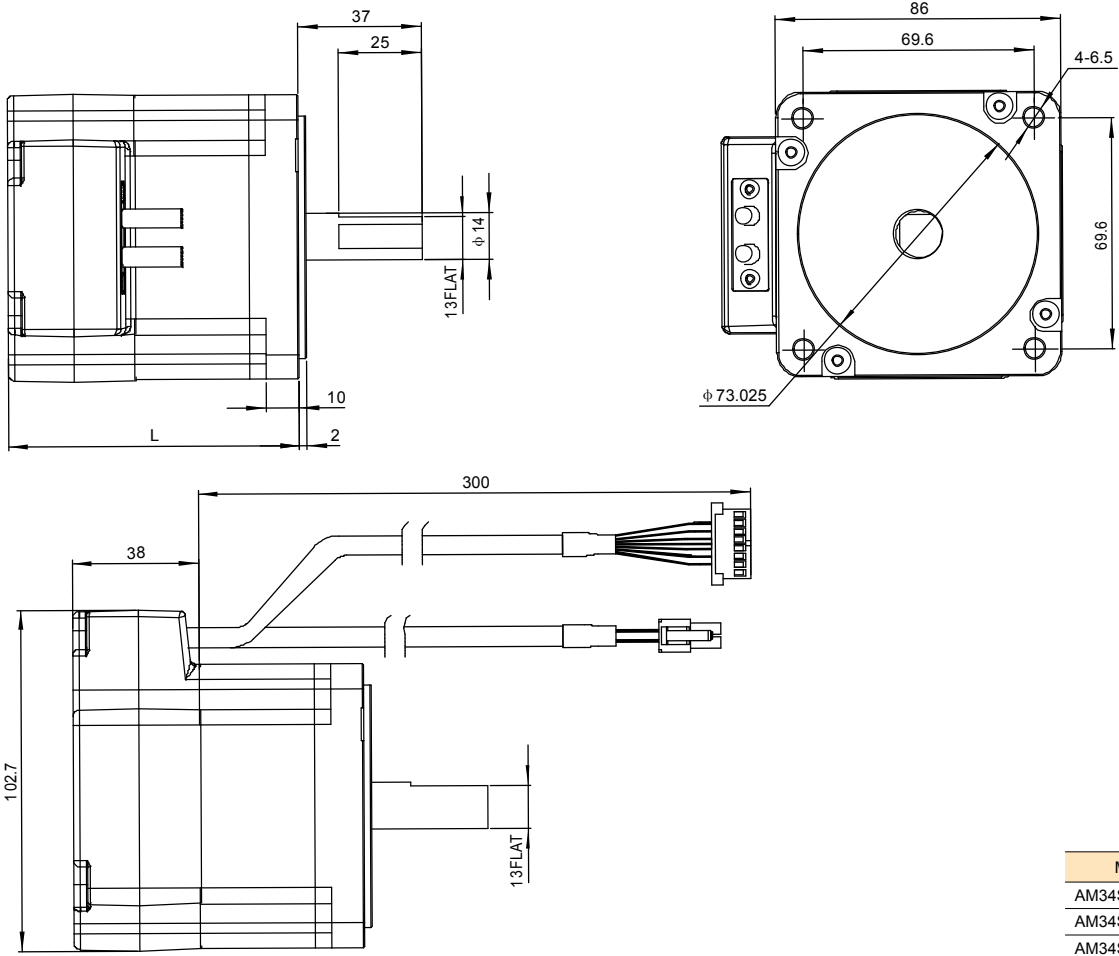
Model	A	A1	B	B1	L
AM23SS2DGA-N	φ 8	7.5	24	20	77.5
AM23SS2DGB-N	φ 6.35	5.85	20	15	77.5
AM23SS3DGA-N	φ 8	7.5	24	20	99.5
AM23SS3DGB-N	φ 6.35	5.85	20	15	99.5
AM23SS4DGA-N	φ 8	7.5	24	20	102.5

AM24SS



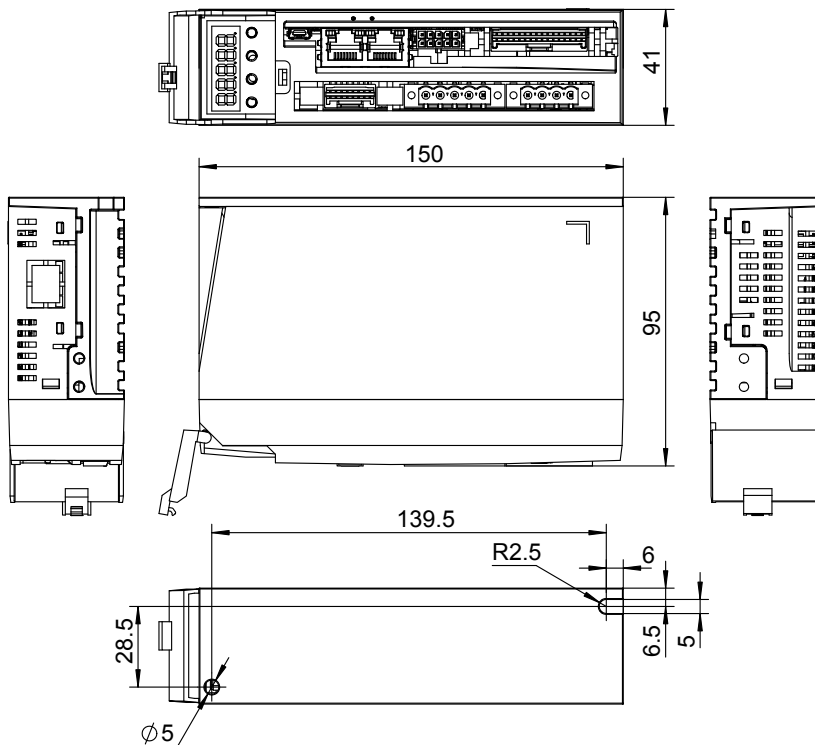
Model	A	A1	B	B1
AM24SS3DGA-N	φ 10	9.5	24	20
AM24SS3DGB-N	φ 8	7.5	20	15

AM34SS



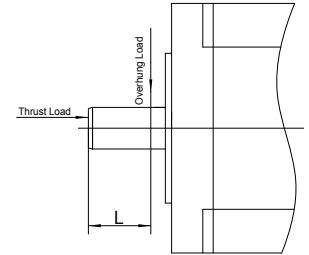
Model	L
AM34SS1DGA-N	88
AM34SS3DGA-N	117.5
AM34SS5DGA-N	147

◇ Drive



Motor Specifications

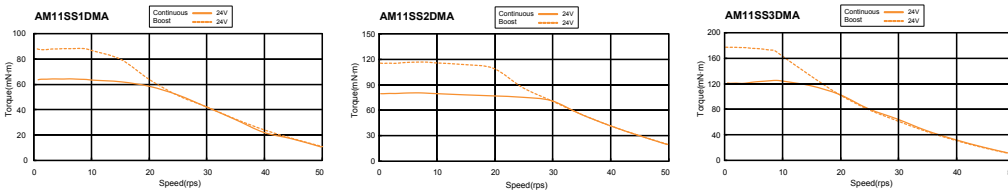
Motor Part Number	Matching Drive	Holding Torque N·m	Rotor Inertia g·cm ²	Encoder Resolution counts/rev	Maximum Speed RPM	Mass g	Frame Size	Permissible Overhung Load(N)					Permissible Thrust Load	
								Distance(L) from Shaft End(mm)						
								0	5	10	15	20		
AM11SS1DMA	SS03-EC-D	0.065	9	4096	3600	118	28mm	20	25	34	52	-	Less than the motor mass	
AM11SS2DMA		0.08	12					168	218					
AM11SS3DMA		0.125	18					218	218					
AM17SS1DG □ -N	SS03-EC-D or SS05-EC-D	0.3	38	20000	3600	390	42mm	35	44	58	85	-		
AM17SS2DG □ -N		0.5	57					440	520					
AM17SS3DG □ -N		0.6	82					520	760					
AM17SS4DG □ -N		0.75	123					760	850					
AM23SS2DG □ -N	SS05-EC-D	0.9	260	20000	3600	850	56mm	63	75	95	130	190		
AM23SS3DG □ -N		1.5	460					1250	840					
AM23SS4DGA-N	SS10-EC-D	2.5	365	20000	3600	840	60mm	90	100	130	180	270		
AM24SS3DG □ -N		2.5	900					1650	2000					
AM34SS1DGA-N		3.5	915					2000	3100					
AM34SS3DGA-N	SS10-EC-D	6.0	1480	20000	3600	3100	80mm	260	290	340	390	480		
AM34SS5DGA-N		8.0	2200					4200	4200					



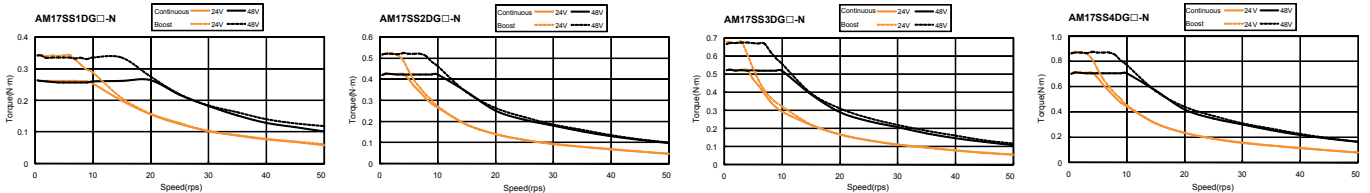
□: A or B, refer to motor part numbering system

Torque Curves

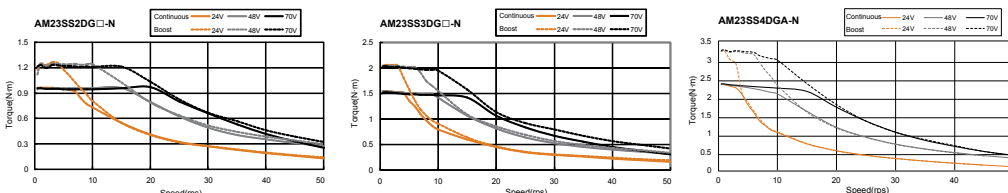
AM11SS Series



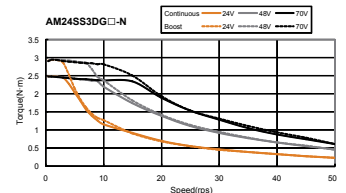
AM17SS Series



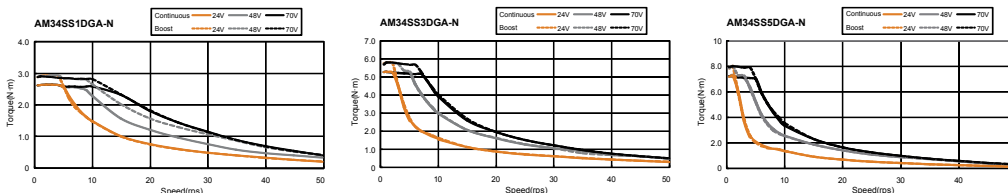
AM23SS Series



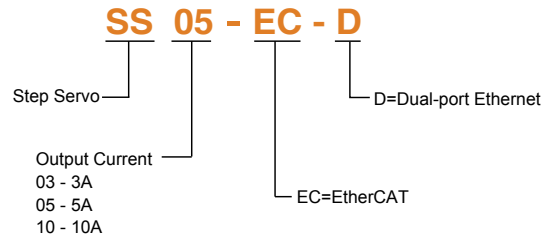
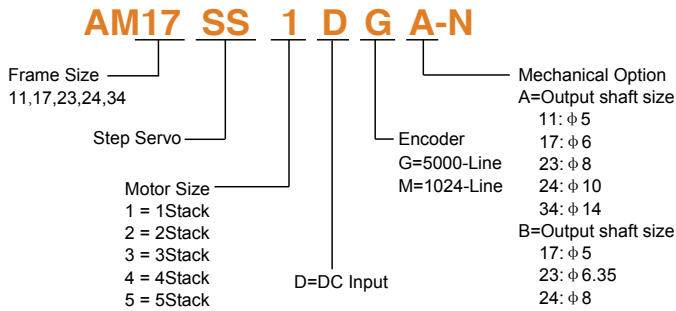
AM24SS Series



AM34SS Series



■ **Numbering System**

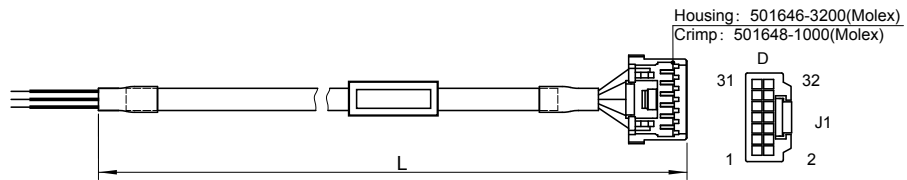


Note: AM17/23/24/34SS motors matching with SS-EC drive have -N suffix
AM11SS motors matching with SS-EC drive DO NOT have -N suffix

■ **Optional Accessories (Sold separately)**

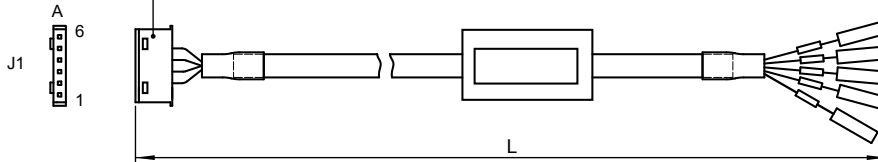
◇ **I/O Cable**

P/N	Length(L)
1117-200	2M



◇ **Motor Extension Cable between SS-EC drive and AM11SS motor**

Housing: 51065-0600(Molex)
Crimp: 50212-8000(Molex)

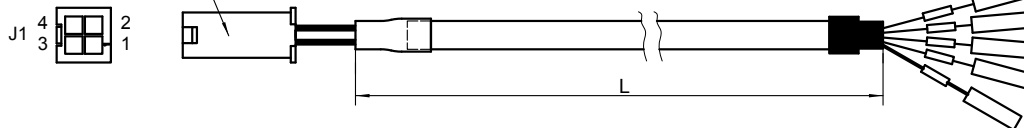


P/N	Length(L)
1127-100	1M
1127-300	3M
1127-500	5M
1127-1000	10M

Wiring Diagram	
PIN(J1)	Colour(Signal)
1	Blue(B-)
3	Red(B+)
4	Green(A-)
6	Black(A+)

◇ **Motor Extension Cable between SS-EC drive and AM17/23/24/34SS-N motor**

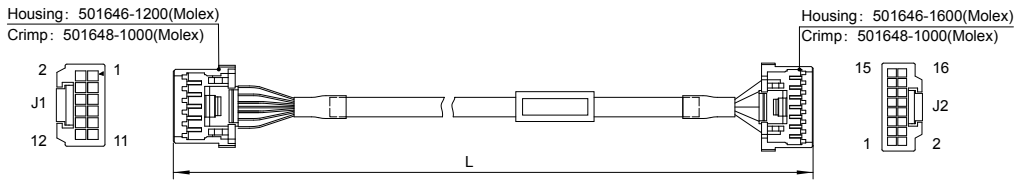
Housing: 39-01-3049(Molex)
Crimp: 39-00-0040(Molex)



P/N	Length(L)
1114-100	1M
1114-300	3M
1114-500	5M
1114-1000	10M

Wiring Diagram	
PIN(J1)	Colour(Signal)
1	Blue(B-)
2	Red(B+)
3	Green(A-)
4	Black(A+)

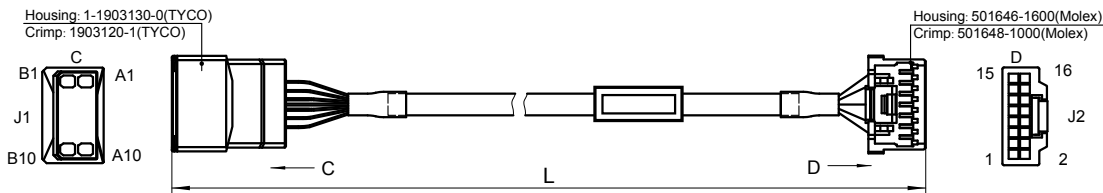
◇ Encoder Extension Cable between SS-EC drive and AM11SS Motor



P/N	Length(L)
2118-100	1M
2118-300	3M
2118-500	5M
2118-1000	10M

Wiring Diagram						
PIN(J1)	Colour(Signal)	PIN(J2)	PIN(J1)	Colour(Signal)	PIN(J2)	
10	Blue(A+)	1		Brown(U+)		
9	Blue/Black(A-)	2		Brown/Black(U-)		
8	Green(B+)	3		Gray(V+)		
7	Green/Black(B-)	4		Gray/Black(V-)		
6	Yellow(Z+)	5	1	White(W+)	15	
5	Yellow/Black(Z-)	6	2	White/Black(W-)	16	
3	Red(+5V)	7	12	Shield	10	
4	Black(GND)	8				

◇ Encoder Extension Cable between SS-EC drive and AM17/23/24/34SS-N Motor

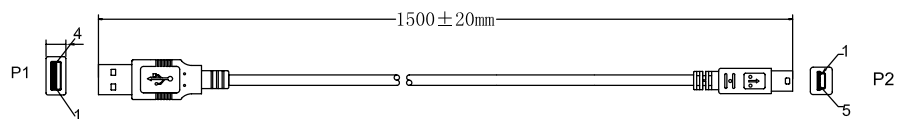


P/N	Length(L)
2117-100	1M
2117-300	3M
2117-500	5M
2117-1000	10M

Wiring Diagram						
PIN(J1)	Colour(Signal)	PIN(J2)	PIN(J1)	Colour(Signal)	PIN(J2)	
A9	Blue(A+)	1	B5	Shield	10	
B9	Blue/Black(A-)	2	A4	Brown(U+)	11	
A8	Green(B+)	3	B4	Brown/Black(U-)	12	
B8	Green/Black(B-)	4	A3	Gray(V+)	13	
A7	Yellow(Z+)	5	B3	Gray/Black(V-)	14	
B7	Yellow/Black(Z-)	6	A2	White(W+)	15	
A6	Red(+5V)	7	B2	White(W+)	16	
B6	Black(GND)	8				

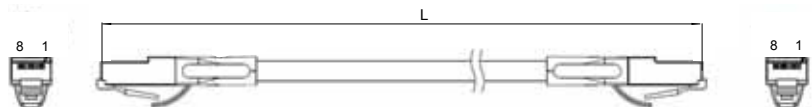
◇ USB Cable

P/N	Length(L)
2620-150	1.5M



◇ Network Cable

Common Type	Shielded Type	Length(L)
2012-030 *	2013-030	0.3M
2012-300	2013-300	3M



* 2012-030 is included in the drive package.

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