

# The Heart of Motion Control

SAEHAN ELECTRONICS CATALOG





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## STEPPING MOTOR

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## HIGH PRECISION MACHINING PART

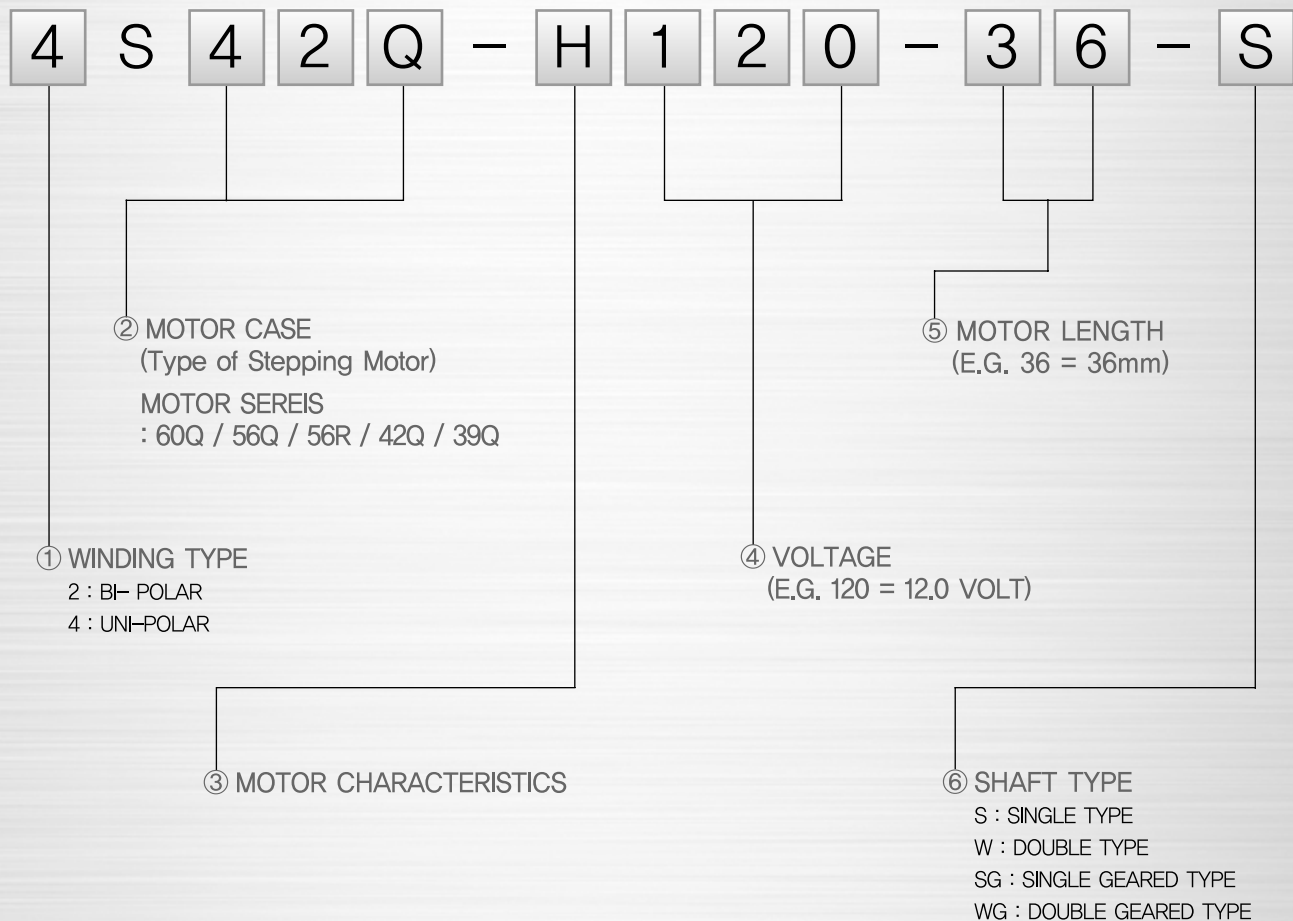
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# HYBRID STEPPING MOTOR



# HYBRID STEPPING MOTOR MODEL NUMBERING SYSTEM



## ■ GENERAL SPECIFICATIONS

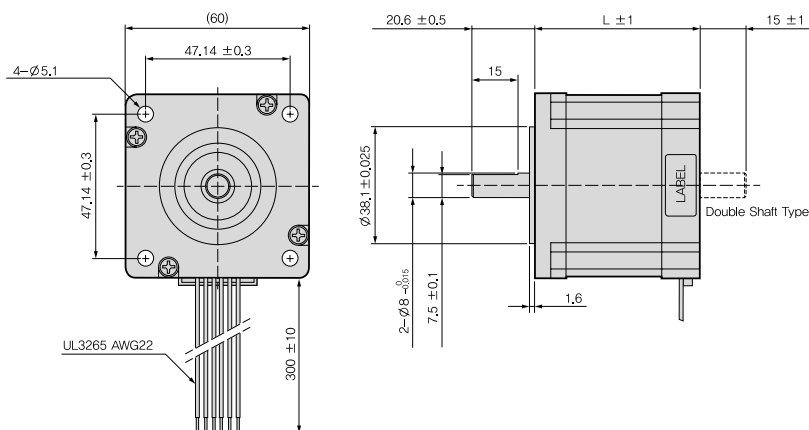
SERIES	60Q SERIES	56Q SERIES	56R SERIES	42Q SERIES	39Q SERIES
1. POSITIONAL ACCURACY	± 5%				
2. INSULATION CLASS	B CLASS				
3. OPERATING TEMPERATURE	-10°C ~ +50°C				
4. OPERATING RH	85% RH or BELOW (Noncondensing)				
5. OPERATING ENVIRONMENT	No Corrosive / Flammable Gas, No Oil Mist, No Dust				
6. INSULATION RESISTANCE	100MΩ MIN (DC500V MEGA)				
7. DIELECTRIC STRENGTH	AC 500V 1 Minute				
8. TEMPERATURE RISE	80°C MAX			70°C MAX	
9. RADIAL PLAY	0,03mm MAX (0,5kg Load)			0,03mm MAX (0,4kg Load)	
10. AXIAL PLAY	0,08mm MAX (0,7kg Load)			0,08mm MAX (0,5kg Load)	

# 60Q

HYBRID STEPPING MOTOR  
S E R I E S



## Dimension Specification



## Wiring Diagram



## 60Q UNI-POLAR SPECIFICATIONS

Model No. (Drive Sequence)	Step Angle (Deg.)	Rated Voltage (V/Phase)	Rated Current (A/Phase)	Winding Resistance (Ω/Phase)	Inductance (mH/Phase)	Holding Torque (kgf · cm)	Rotor Inertia (g · cm <sup>2</sup> )	Motor Length (L=mm)
4S60Q-04254S	1.8	4.2	2.0	2.0	2.9	10.0	400	54
4S60Q-02754S	1.8	2.7	3.0	0.8	1.2	10.0	400	54
4S60Q-04865S	1.8	4.8	2.0	2.4	3.0	13.5	570	65
4S60Q-03065S	1.8	3.0	3.0	1.0	1.4	13.5	570	65
4S60Q-04285S	1.8	4.2	3.0	1.4	2.7	21.0	840	85

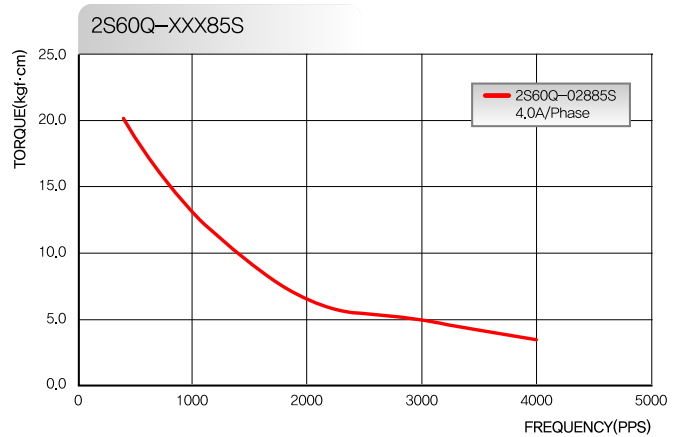
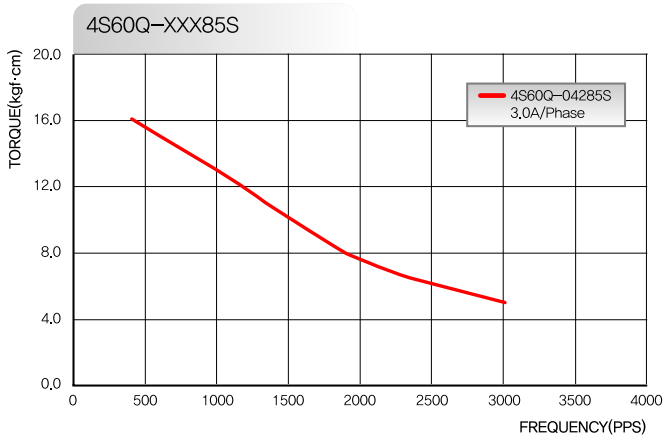
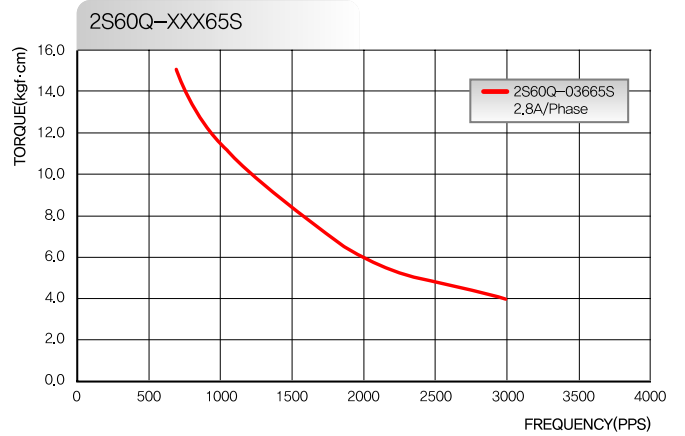
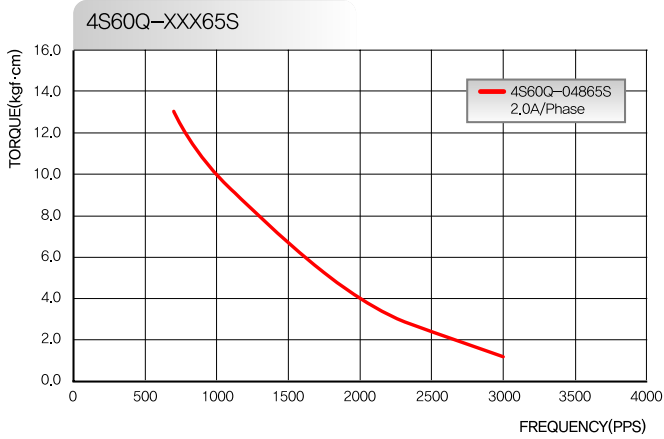
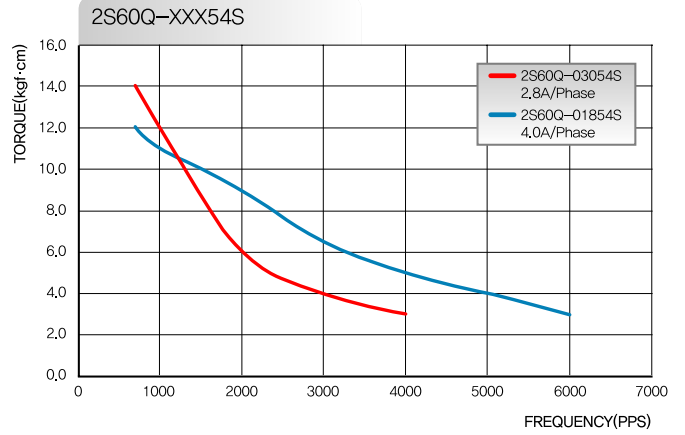
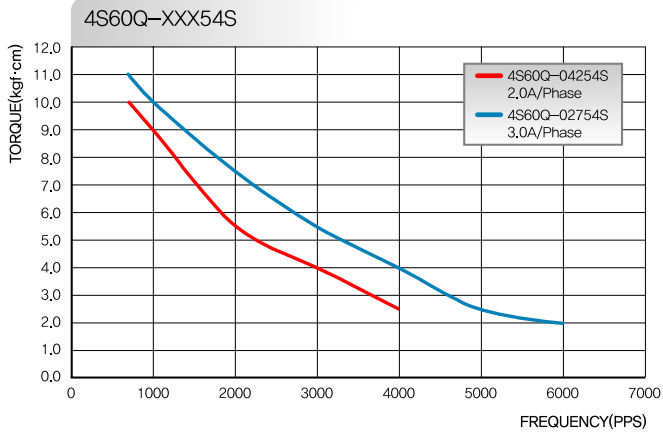
OTHER SPECIFICATIONS AVAILABLE UPON REQUEST

## 60Q BI-POLAR SPECIFICATIONS

Model No. (Drive Sequence)	Step Angle (Deg.)	Rated Voltage (V/Phase)	Rated Current (A/Phase)	Winding Resistance (Ω/Phase)	Inductance (mH/Phase)	Holding Torque (kgf · cm)	Rotor Inertia (g · cm <sup>2</sup> )	Motor Length (L=mm)
2S60Q-03054S	1.8	3.0	2.8	1.0	2.9	14.0	400	54
2S60Q-01854S	1.8	1.8	4.0	0.4	1.2	13.5	400	54
2S60Q-03665S	1.8	3.6	2.8	1.2	3.0	19.0	570	65
2S60Q-02065S	1.8	2.0	4.0	0.5	1.4	18.0	570	65
2S60Q-02885S	1.8	2.8	4.0	0.7	2.7	27.0	840	85

OTHER SPECIFICATIONS AVAILABLE UPON REQUEST

- DRIVER CHOPPER
- SUPPLY VOLTAGE : DC 24.0V
- 2 PHASE EXCITING
- MOUNTING WITH RUBBER DAMPER

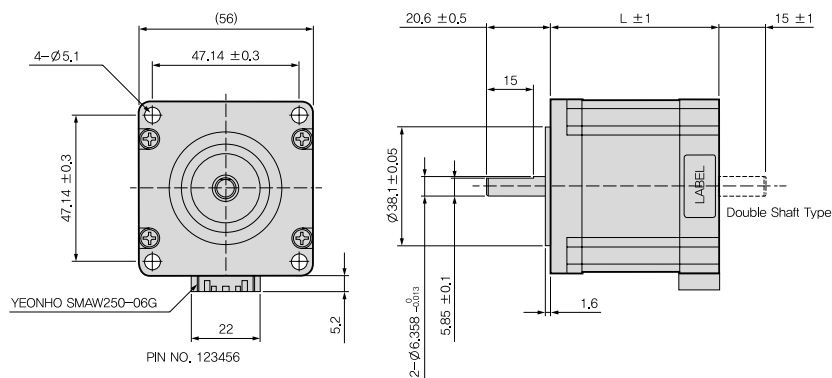


# 56Q

HYBRID STEPPING MOTOR  
S E R I E S



## Dimension Specification



## Wiring Diagram



## 56Q UNI-POLAR SPECIFICATIONS

Model No. (Drive Sequence)	Step Angle (Deg.)	Rated Voltage (V/Phase)	Rated Current (A/Phase)	Winding Resistance ( $\Omega$ /Phase)	Inductance (mH/Phase)	Holding Torque (kgf · cm)	Rotor Inertia (g · cm <sup>2</sup> )	Motor Length (L=mm)
4S56Q-P12042S	1.8	12.0	0.4	30.0	32.0	4.0	90	42.5
4S56Q-P05042S	1.8	5.0	1.0	5.0	6.9	4.0	90	42.5
4S56Q-P02642S	1.8	2.6	2.0	1.3	1.9	4.0	90	42.5
4S56Q-P01842S	1.8	1.8	3.0	0.65	0.9	4.0	90	42.5
4S56Q-P12054S	1.8	12.0	0.6	20.0	38.0	8.0	230	54.5
4S56Q-P08254S	1.8	8.2	1.0	8.2	14.0	8.0	230	54.5
4S56Q-P04054S	1.8	4.0	2.0	2.0	4.2	8.0	230	54.5
4S56Q-P02554S	1.8	2.5	3.0	0.85	1.7	8.0	230	54.5
4S56Q-P08576S	1.8	8.5	1.0	8.5	18.0	13.5	370	76.5
4S56Q-P04576S	1.8	4.5	2.0	2.3	4.3	13.5	370	76.5
4S56Q-P03076S	1.8	3.0	3.0	1.0	1.7	13.5	370	76.5

OTHER SPECIFICATIONS AVAILABLE UPON REQUEST

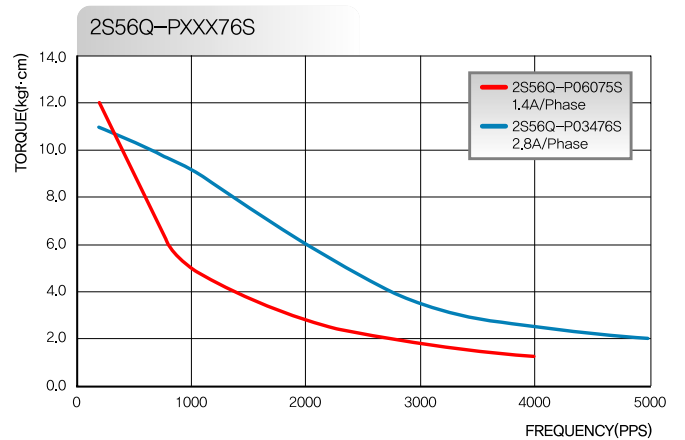
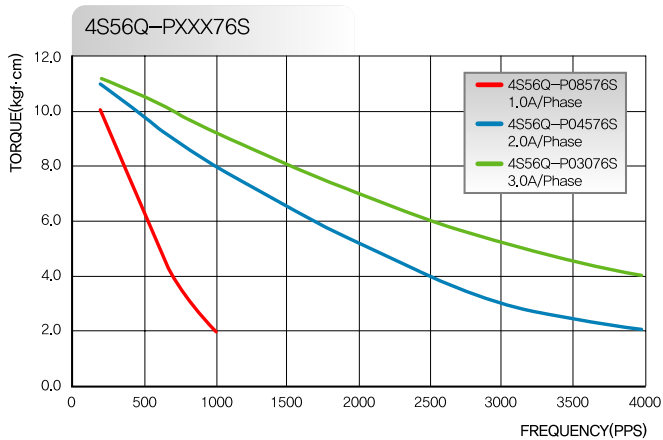
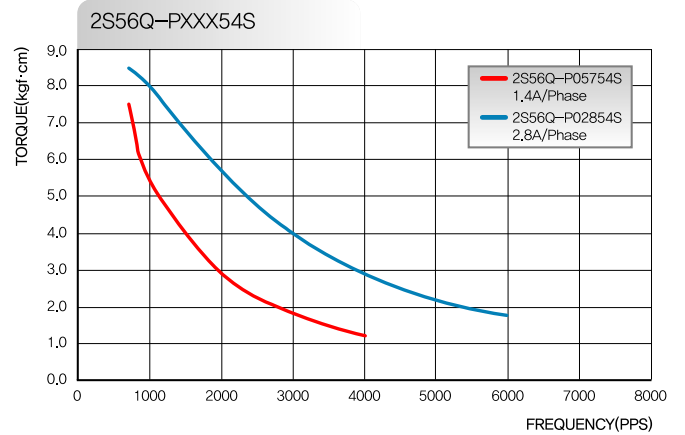
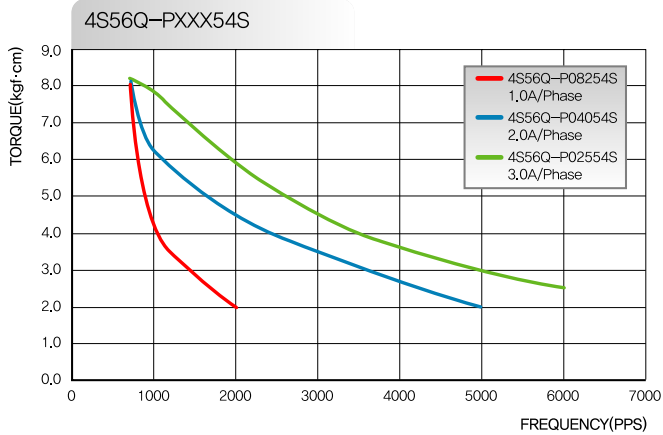
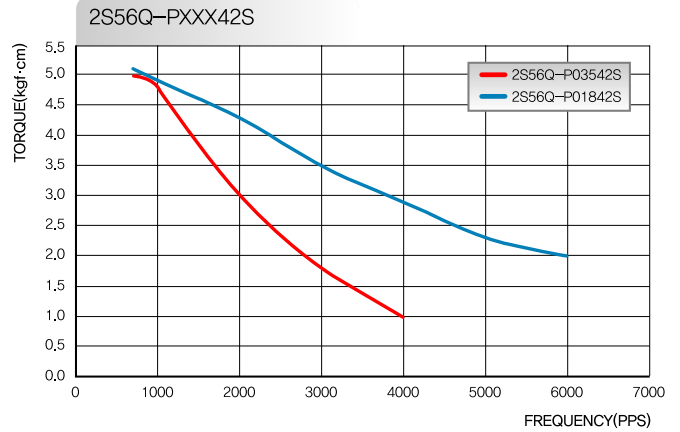
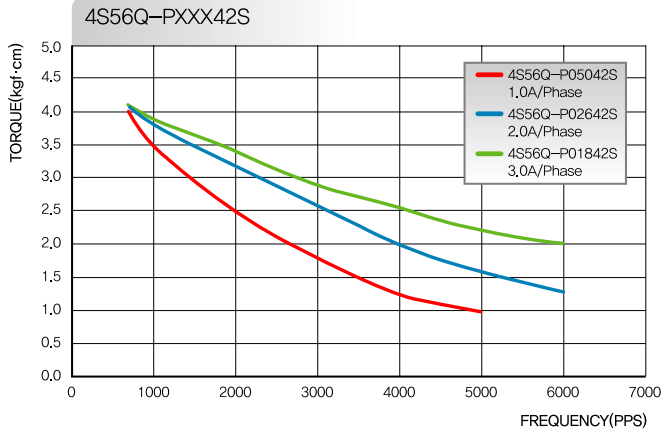
## 56Q BI-POLAR SPECIFICATIONS

Model No. (Drive Sequence)	Step Angle (Deg.)	Rated Voltage (V/Phase)	Rated Current (A/Phase)	Winding Resistance ( $\Omega$ /Phase)	Inductance (mH/Phase)	Holding Torque (kgf · cm)	Rotor Inertia (g · cm <sup>2</sup> )	Motor Length (L=mm)
2S56Q-P09042S	1.8	9.0	0.6	15.0	32.0	5.6	90	42.5
2S56Q-P03542S	1.8	3.5	1.4	2.5	6.9	5.6	90	42.5
2S56Q-P01842S	1.8	1.8	2.8	0.65	1.9	5.6	90	42.5
2S56Q-P08054S	1.8	8.0	0.8	10.0	38.0	11.2	230	54.5
2S56Q-P05754S	1.8	5.7	1.4	4.1	14.0	11.2	230	54.5
2S56Q-P02854S	1.8	2.8	2.8	1.0	4.2	11.2	230	54.5
2S56Q-P06076S	1.8	6.0	1.4	4.3	18.0	18.9	370	76.5
2S56Q-P03476S	1.8	3.4	2.8	1.2	4.3	18.9	370	76.5

OTHER SPECIFICATIONS AVAILABLE UPON REQUEST



- DRIVER CHOPPER
- SUPPLY VOLTAGE : DC 24.0V
- 2 PHASE EXCITING
- MOUNTING WITH RUBBER DAMPER

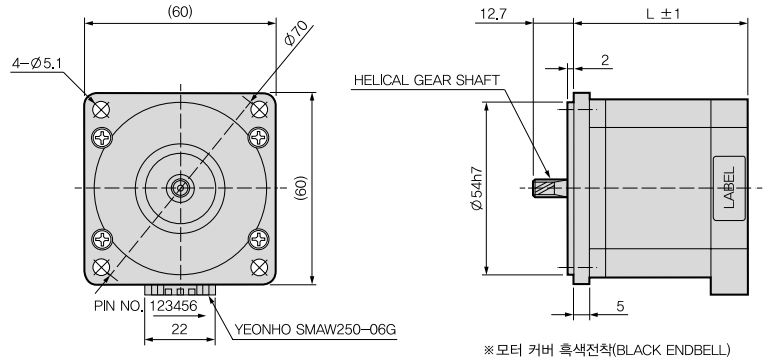


# 56Q

GEARED HYBRID STEPPING MOTOR SERIES

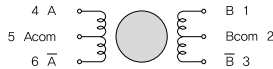


## Dimension Specification

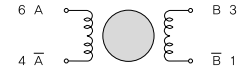


## Wiring Diagram

### UNI-POLAR



### BI-POLAR



## 56Q UNI-POLAR SPECIFICATIONS

Model No. (Drive Sequence)	Step Angle (Deg.)	Rated Voltage (V/Phase)	Rated Current (A/Phase)	Winding Resistance (Ω/Phase)	Inductance (mH/Phase)	Holding Torque (kgf · cm)	Rotor Inertia (g · cm <sup>2</sup> )	Motor Length (L=mm)
4S56Q-P12042SG	1.8	12.0	0.4	30.0	32.0	4.0	90	42.5
4S56Q-P05042SG	1.8	5.0	1.0	5.0	6.9	4.0	90	42.5
4S56Q-P02642SG	1.8	2.6	2.0	1.3	1.9	4.0	90	42.5
4S56Q-P01842SG	1.8	1.8	3.0	0.65	0.9	4.0	90	42.5
4S56Q-P12054SG	1.8	12.0	0.6	20.0	38.0	8.0	230	54.5
4S56Q-P08254SG	1.8	8.2	1.0	8.2	14.0	8.0	230	54.5
4S56Q-P04054SG	1.8	4.0	2.0	2.0	4.2	8.0	230	54.5
4S56Q-P02554SG	1.8	2.5	3.0	0.85	1.7	8.0	230	54.5
4S56Q-P08576SG	1.8	8.5	1.0	8.5	18.0	13.5	370	76.5
4S56Q-P04576SG	1.8	4.5	2.0	2.3	4.3	13.5	370	76.5
4S56Q-P03076SG	1.8	3.0	3.0	1.0	1.7	13.5	370	76.5

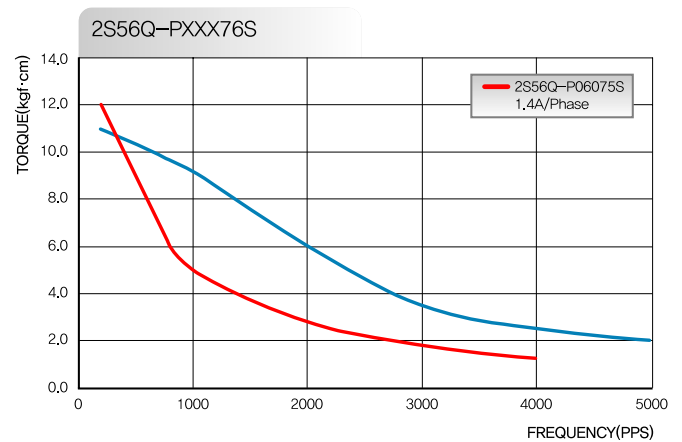
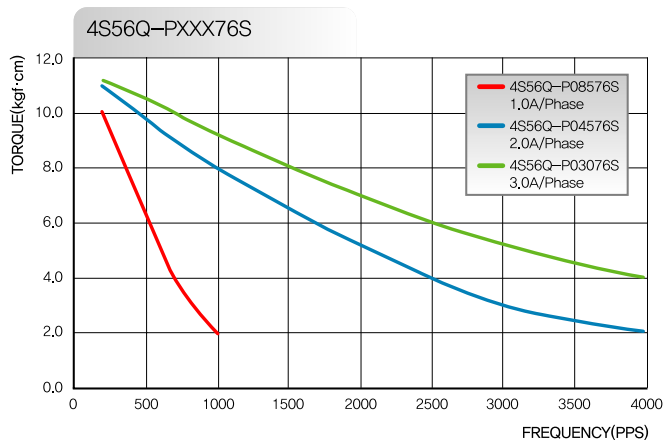
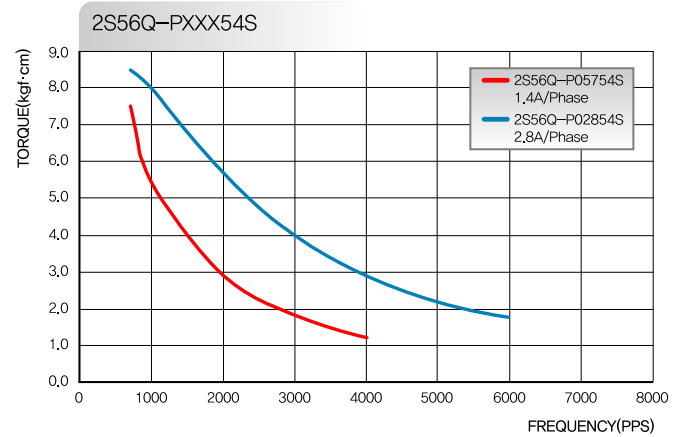
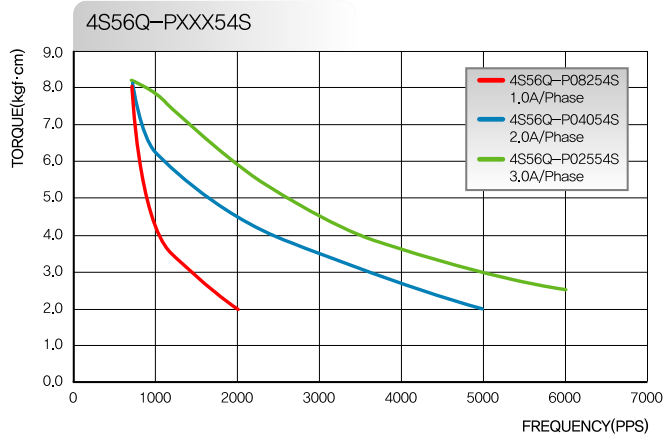
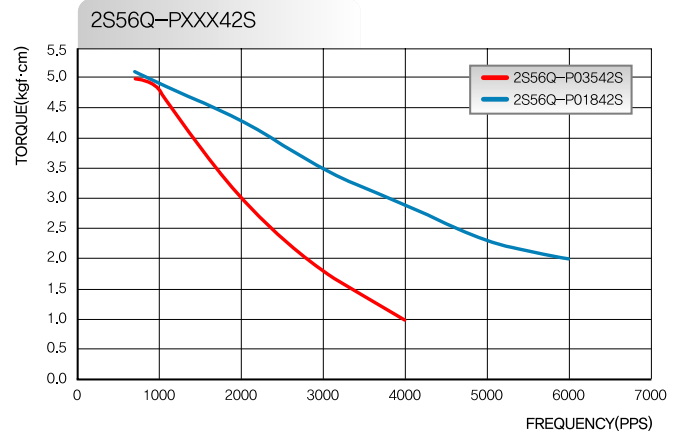
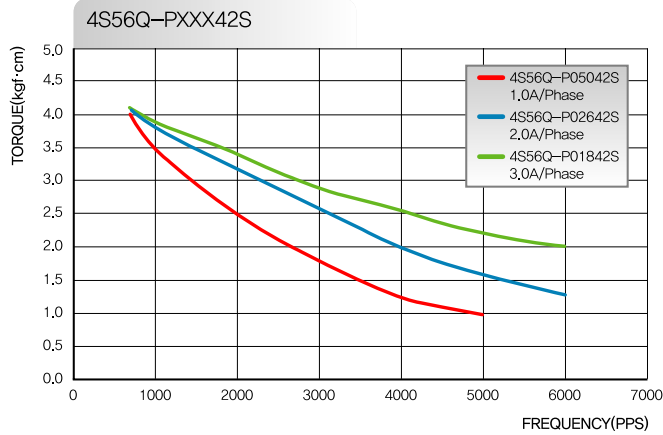
OTHER SPECIFICATIONS AVAILABLE UPON REQUEST

## 56Q BI-POLAR SPECIFICATIONS

Model No. (Drive Sequence)	Step Angle (Deg.)	Rated Voltage (V/Phase)	Rated Current (A/Phase)	Winding Resistance (Ω/Phase)	Inductance (mH/Phase)	Holding Torque (kgf · cm)	Rotor Inertia (g · cm <sup>2</sup> )	Motor Length (L=mm)
2S56Q-P09042SG	1.8	9.0	0.6	15.0	32.0	5.6	90	42.5
2S56Q-P03542SG	1.8	3.5	1.4	2.5	6.9	5.6	90	42.5
2S56Q-P01842SG	1.8	1.8	2.8	0.65	1.9	5.6	90	42.5
2S56Q-P08054SG	1.8	8.0	0.8	10.0	38.0	11.2	230	54.5
2S56Q-P05754SG	1.8	5.7	1.4	4.1	14.0	11.2	230	54.5
2S56Q-P02854SG	1.8	2.8	2.8	1.0	4.2	11.2	230	54.5
2S56Q-P06076SG	1.8	6.0	1.4	4.3	18.0	18.9	370	76.5
2S56Q-P03476SG	1.8	3.4	2.8	1.2	4.3	18.9	370	76.5

OTHER SPECIFICATIONS AVAILABLE UPON REQUEST

- DRIVER CHOPPER
- SUPPLY VOLTAGE : DC 24,0V
- 2 PHASE EXCITING
- MOUNTING WITH RUBBER DAMPER

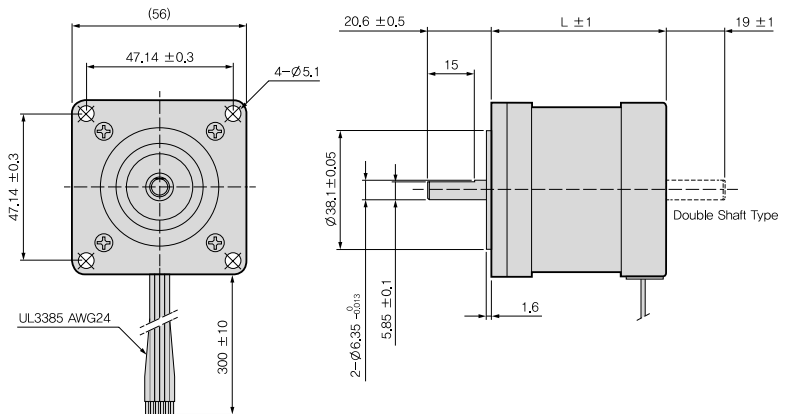


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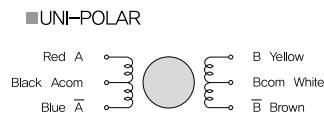
HYBRID STEPPING MOTOR  
S E R I E S



## Dimension Specification



## Wiring Diagram

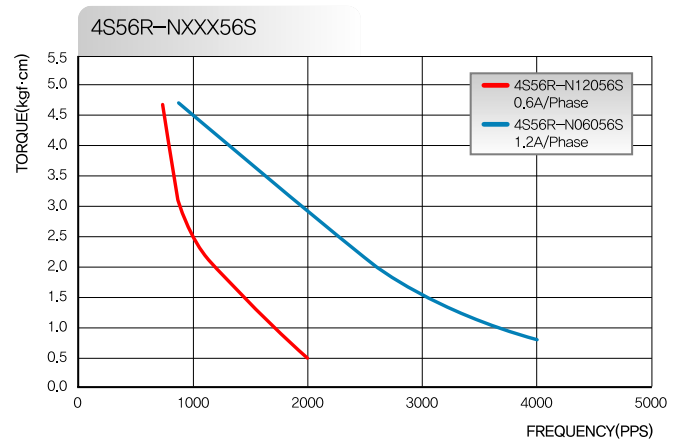
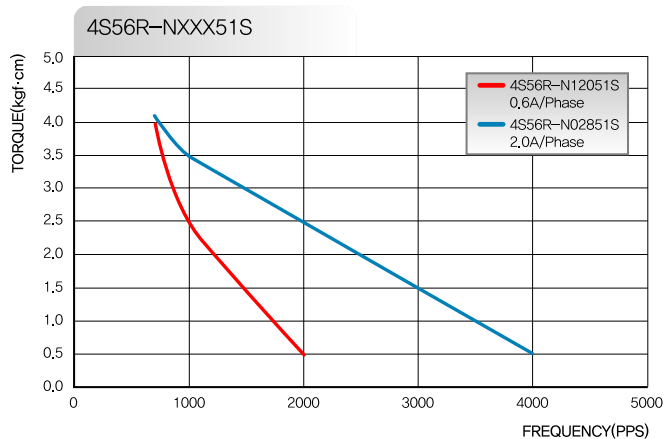


## 56R UNI-POLAR SPECIFICATIONS

Model No. (Drive Sequence)	Step Angle (Deg.)	Rated Voltage (V/Phase)	Rated Current (A/Phase)	Winding Resistance ( $\Omega$ /Phase)	Inductance (mH/Phase)	Holding Torque (kgf · cm)	Rotor Inertia (g · cm <sup>2</sup> )	Motor Length (L=mm)
4S56R-N12051S	1.8	12.0	0.6	20.0	30.0	5.0	120	51
4S56R-N02851S	1.8	2.8	2.0	1.4	2.0	5.0	120	51
4S56R-N12056S	1.8	12.0	0.6	20.0	38.0	6.0	155	56
4S56R-N06056S	1.8	6.0	1.2	5.0	9.8	6.0	155	56

OTHER SPECIFICATIONS AVAILABLE UPON REQUEST

- DRIVER CHOPPER
- SUPPLY VOLTAGE : DC 24.0V
- 2 PHASE EXCITING
- MOUNTING WITH RUBBER DAMPER

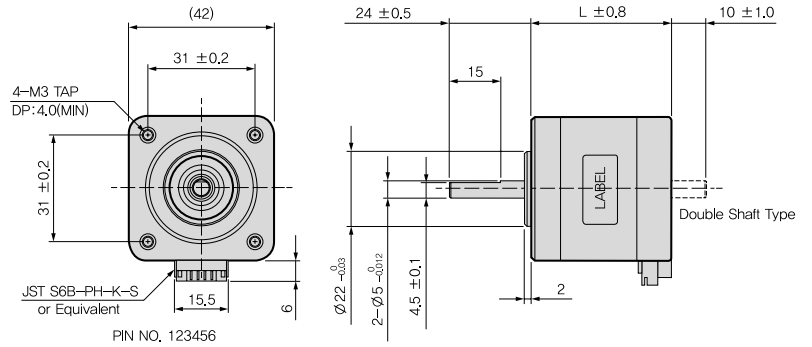


# 42Q

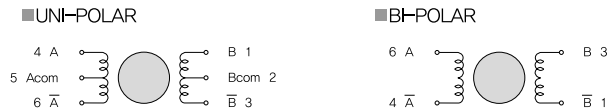
HYBRID STEPPING MOTOR  
S E R I E S



## Dimension Specification



## Wiring Diagram



## 42Q UNI-POLAR SPECIFICATIONS

Model No. (Drive Sequence)	Step Angle (Deg.)	Rated Voltage (V/Phase)	Rated Current (A/Phase)	Winding Resistance (Ω /Phase)	Inductance (mH/Phase)	Holding Torque (kgf · cm)	Rotor Inertia (g · cm <sup>2</sup> )	Motor Length (L=mm)
4S42Q-H09634S	1.8	9.6	0.4	24.0	15.0	1.8	38	34
4S42Q-H04334S	1.8	4.3	1.0	4.3	3.2	2.2	38	34
4S42Q-H03434S	1.8	3.4	1.2	2.8	1.9	2.2	38	34
4S42Q-H12040S	1.8	12.0	0.4	30.0	20.0	3.0	57	40
4S42Q-H07240S	1.8	7.2	0.6	12.0	11.5	3.3	57	40
4S42Q-H05940S	1.8	5.9	0.8	7.4	6.2	3.3	57	40
4S42Q-H04840S	1.8	4.8	1.0	4.8	4.2	3.3	57	40
4S42Q-H04140S	1.8	4.1	1.2	3.4	3.2	3.3	57	40
4S42Q-H04648S	1.8	4.6	1.2	3.8	3.0	4.0	81	48

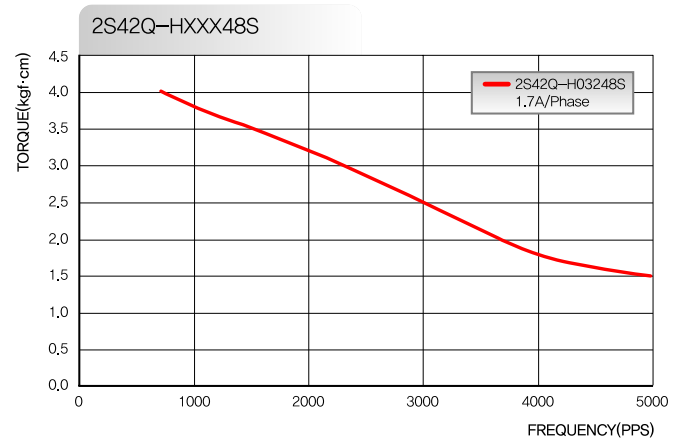
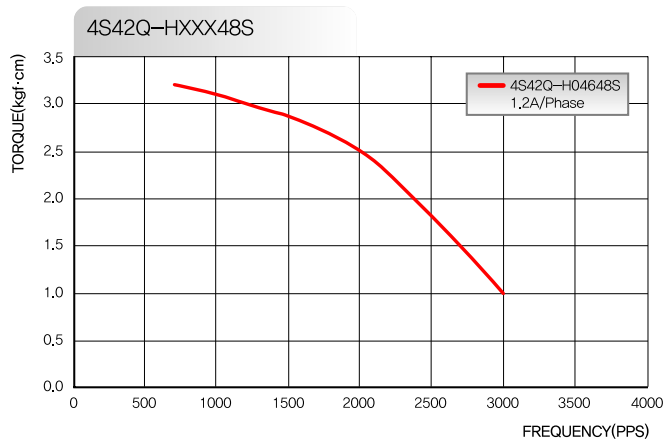
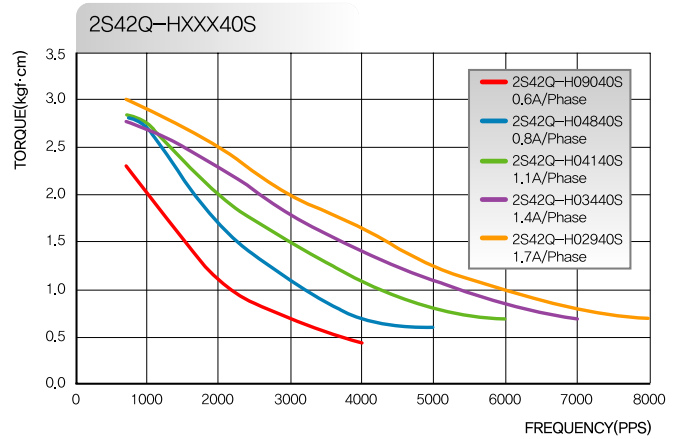
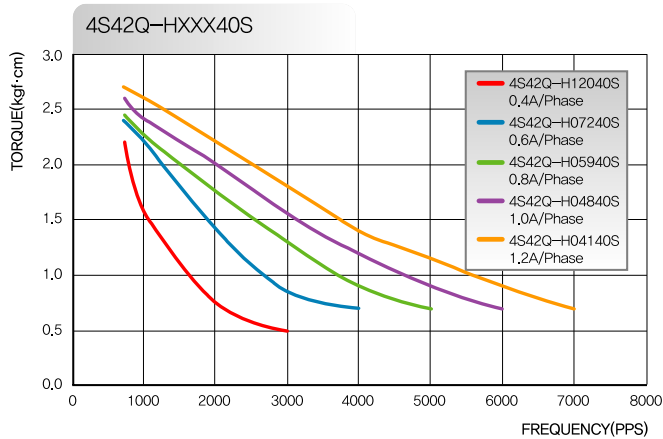
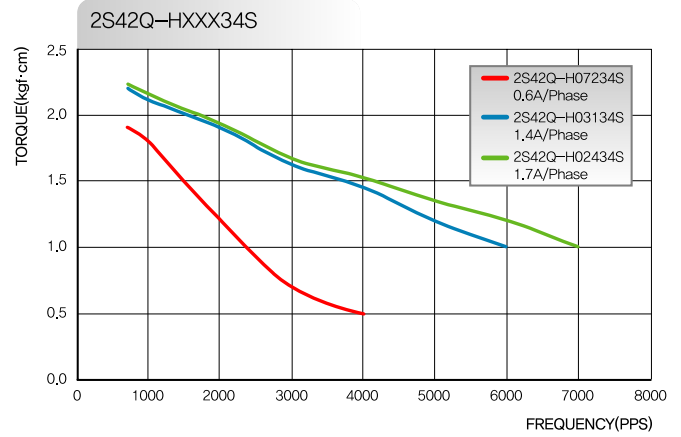
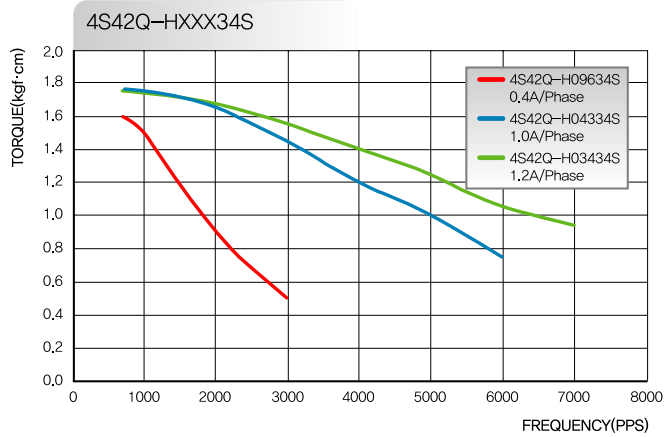
OTHER SPECIFICATIONS AVAILABLE UPON REQUEST

## 42Q BI-POLAR SPECIFICATIONS

Model No. (Drive Sequence)	Step Angle (Deg.)	Rated Voltage (V/Phase)	Rated Current (A/Phase)	Winding Resistance (Ω /Phase)	Inductance (mH/Phase)	Holding Torque (kgf · cm)	Rotor Inertia (g · cm <sup>2</sup> )	Motor Length (L=mm)
2S42Q-H07234S	1.8	7.2	0.6	12.0	15.0	2.5	38	34
2S42Q-H03134S	1.8	3.1	1.4	2.2	3.2	3.0	38	34
2S42Q-H02434S	1.8	2.4	1.7	1.4	1.9	3.0	38	34
2S42Q-H09040S	1.8	9.0	0.6	15.0	20.0	4.0	57	40
2S42Q-H04840S	1.8	4.8	0.8	6.0	11.5	4.0	57	40
2S42Q-H04140S	1.8	4.1	1.1	3.7	6.2	4.0	57	40
2S42Q-H03440S	1.8	3.4	1.4	2.4	4.2	4.0	57	40
2S42Q-H02940S	1.8	2.9	1.7	1.7	3.2	4.0	57	40
2S42Q-H03248S	1.8	3.2	1.7	1.9	3.0	5.0	81	48

OTHER SPECIFICATIONS AVAILABLE UPON REQUEST

- DRIVER CHOPPER
- SUPPLY VOLTAGE : DC 24,0V
- 2 PHASE EXCITING
- MOUNTING WITH RUBBER DAMPER

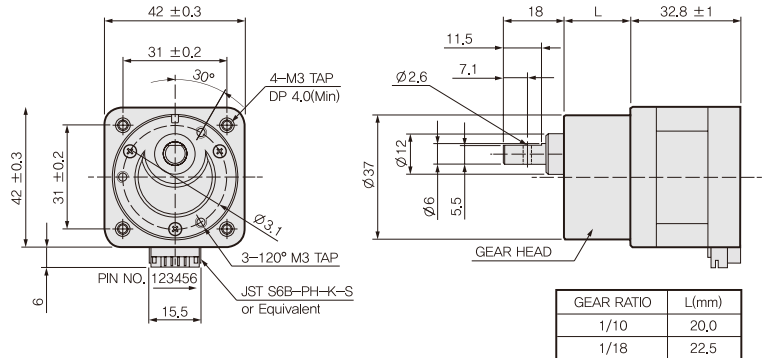


# 42Q

GEARED HYBRID STEPPING MOTOR SERIES



## Dimension Specification



## Wiring Diagram



## 42Q UNI-POLAR SPECIFICATIONS

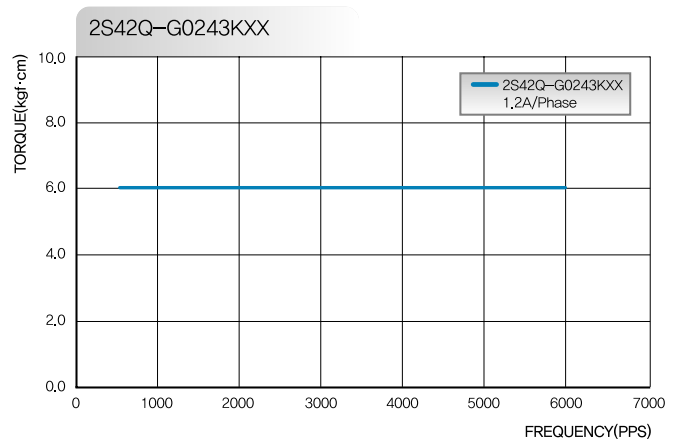
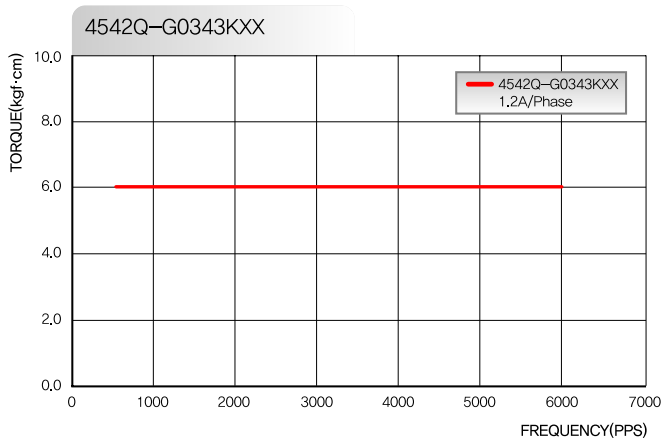
Model No. (Drive Sequence)	Gear Ratio	Step Angle (Deg.)	Rated Voltage (V/Phase)	Rated Current (A/Phase)	Winding Resistance (Ω/Phase)	Inductance (mH/Phase)	Holding Torque (kgf · cm)	Rotor Inertia (g · cm <sup>2</sup> )	Motor Length (L=mm)
4S42Q-G03434K10	1:10	0.18	3.4	1.2	2.8	1.9	6	38	54.0
4S42Q-G03434K18	1:18	0.10	3.4	1.2	2.8	1.9	6	38	56.5

OTHER SPECIFICATIONS AVAILABLE UPON REQUEST

## 42Q BI-POLAR SPECIFICATIONS

Model No. (Drive Sequence)	Gear Ratio	Step Angle (Deg.)	Rated Voltage (V/Phase)	Rated Current (A/Phase)	Winding Resistance (Ω/Phase)	Inductance (mH/Phase)	Holding Torque (kgf · cm)	Rotor Inertia (g · cm <sup>2</sup> )	Motor Length (L=mm)
2S42Q-G02434K10	1:10	0.18	2.4	1.7	1.4	1.9	6	38	54.0
2S42Q-G02434K18	1:18	0.10	2.4	1.7	1.4	1.9	6	38	56.5

OTHER SPECIFICATIONS AVAILABLE UPON REQUEST

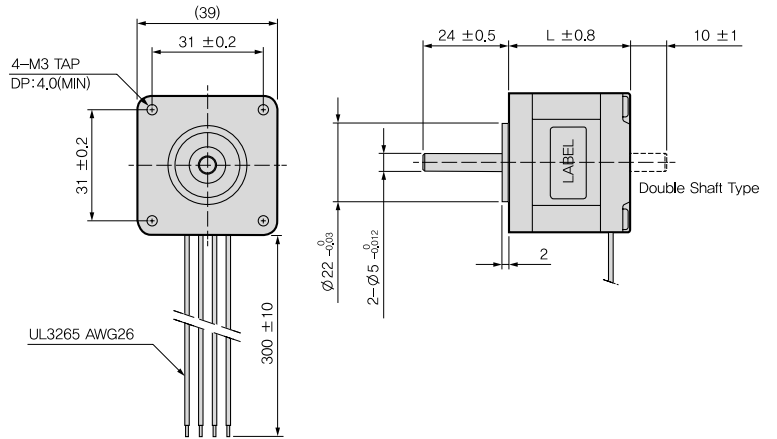


# 39Q

HYBRID STEPPING MOTOR  
S E R I E S

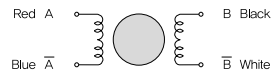


## Dimension Specification



## Wiring Diagram

### BI-POLAR

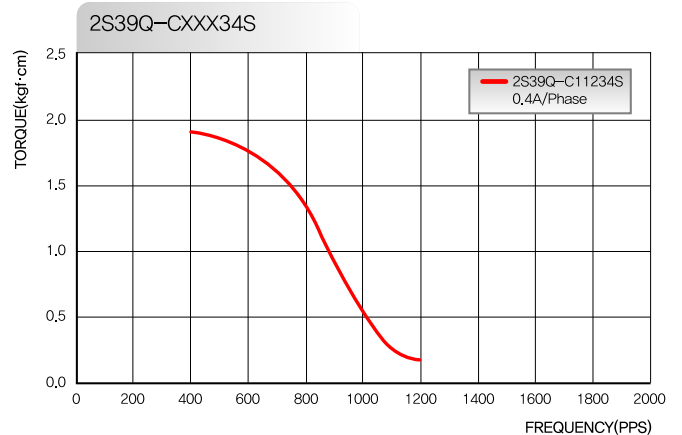
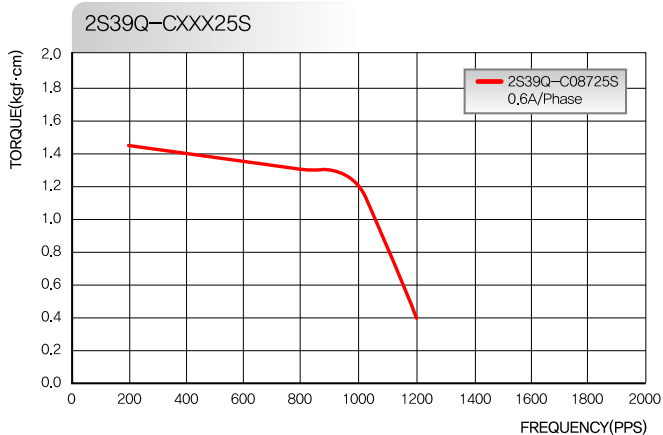


## 39Q BI-POLAR SPECIFICATIONS

Model No. (Drive Sequence)	Step Angle (Deg.)	Rated Voltage (V/Phase)	Rated Current (A/Phase)	Winding Resistance (Ω/Phase)	Inductance (mH/Phase)	Holding Torque (kgf • cm)	Rotor Inertia (g • cm <sup>2</sup> )	Motor Length (L=mm)
2S39Q-C08725S	1,8	8,7	0,6	14,5	10,5	1,3	16	25
2S39Q-C11234S	1,8	11,2	0,4	28,0	33,0	1,8	20	34

OTHER SPECIFICATIONS AVAILABLE UPON REQUEST

- DRIVER CHOPPER
- SUPPLY VOLTAGE : DC 24.0V
- 2 PHASE EXCITING
- MOUNTING WITH RUBBER DAMPER





# OPTION

HYBRID STEPPING MOTOR  
BLDC MOTOR

VARIOUS OPTION PARTS  
SHAFT MODIFICATION  
CNC MACHINING FOR CUSTOMER OPTION



◀ Machining for Encoder



◀ Flywheel



◀ Gear Box



◀ Mounting Bracket



▲ Leadscrew



◀ Pulley & Gear



◀ Damper with Gear



# BLDC MOTOR



# B60Q

BLDC MOTOR  
SERIES



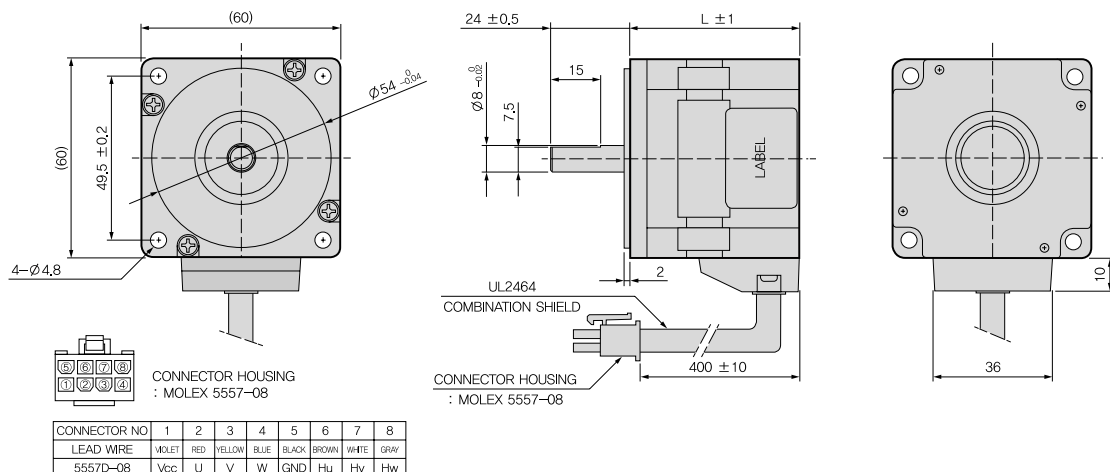
## General Specification

Insulation Class ..... B class  
 Operating Temperature ..... 0°C ~ +50°C  
 Operating RH ..... 85% RH or Below(Noncondensing)  
 Operating Environment ..... No Corrosive / Flammable Gas,  
 No Oil Mist, No Dust  
 Insulation Resistance ..... 100MΩ MIN (DC500V MEGA)  
 Dielectric Strength ..... AC 500V 1 MINUTE

## ■ SPECIFICATIONS

Model No.	D-Cut Shaft Type	B60Q-H24051-D1	B60Q-H24061-D1	B60Q-H24071-D1
	Geared Shaft Type	B60Q-H24051-G1	B60Q-H24061-G1	B60Q-H24071-G1
INPUT POWER	VDC	24	24	24
RATED POWER	W	20	40	60
PHASE NUMBER		3	3	3
SENSOR		Hall	Hall	Hall
RATED SPEED	RPM	3000	3000	3000
RATED CONTROL RANGE	RPM	200~3000	200~3000	200~3000
RATED TORQUE	mN • m	62	125	187
	oz • in	8,74	17,6	26,5
	Kgf • cm	0,63	1,27	1,91
RATED CURRENT	A	1,4	2,8	4,2
BODY LENGHT	mm	51	61	71

OTHER SPECIFICATIONS AVAILABLE UPON REQUEST





HIGH  
PRECISION  
MACHINING  
PART



# CNC

M A C H I N I N G  
P A R T

→ HIGHLY EXPERIENCED IN PRODUCING CNC MACHINED PARTS.  
SPECIALIZED IN SMALL TO MEDIUM SIZED  
PRODUCTION, PROTOTYPE, ENGINEERING.

MATERIAL : ALUMINIUM, COPPER, STAINLESS  
ROHS COMPLIANT  
TOLERANCE : 0.001mm

## PRODUCT & APPLICATION



# Company History

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1978  
Established Company

1985  
Beginning Production of Hybrid Stepping Motor  
and Precision Machining

1986  
Development HDD Spindle Motor Machining Parts

1998  
Certified 100PPM for Machining Precision Parts

2000  
LBP Spindle Motor Parts Component Development

2010  
Development and Production of BLDC Motor







## HEAD OFFICE AND FACTORY

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