



Leadshine

Datasheet of the Easy Servo Motor

ES-M Series



Stepper Motor with Encoder, 0.9 - 8 Nm

Version 1.4

<http://www.Leadshine.com>

Descriptions

Leadshine's ES-M series easy servo motors, or stepper motors with encoders, are designed to work with Leadshine's easy servo drives including the ES-D508, ES-D808 and ES-D1008. They are currently available from NEMA23 to NEMA34 with holding torque from 1 Nm to 8 Nm. All those easy servo motors are integrated with 1,000-line) optical incremental encoders.

Part Number

ES	—	□ M: Motor MH: High Voltage Motor	□ Motor Type 2: 2-Phase 3: 3-Phase	□ □ Motor Size 23: N EMA23 (57mm) 24: NEMA24 (60mm) 34: NEMA34 (86mm) 42: NEMA42 (110mm)	□ □ Holding Torque 09: 0.9 Nm 20: 2.0 Nm 40: 4.0 Nm
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Encoder Specifications

Parameter	Min	Typical	Max	Unit
Supply Voltage	4.5	5	5.5	VDC
Output Current per Channel	-1	-	5	mA
Low Level Output Voltage	-	-	0.4	VDC
High Level Output Voltage	2.4	-	-	VDC
Count Frequency	-	-	100	kHz

Motor Specifications

Part Number	Phase	Step Angle (°)	Leads	Holding Torque (N.m)	Phase Current (A)	Phase Resistance (Ohm)	Phase Inductance (mH)	Rotor Inertia (kg.cm ²)	Weight (Kg)	Shaft Diameter (mm)
ES-M32309	3	1.2°	3	1.0	3.4	0.44	1.0	0.3	0.95	8
ES-M32320	3	1.2°	3	2.0	3.4	0.70	1.9	0.55	1.35	8
ES-M22430	2	1.8°	4	3.0	5.0	0.45	2.0	0.69	1.5	8
ES-M23440	2	1.8°	4	4.0	5.5	0.46	4.0	1.95	2.7	14
ES-M23480	2	1.8°	4	8.0	6.0	0.53	3.9	2.8	4.0	14

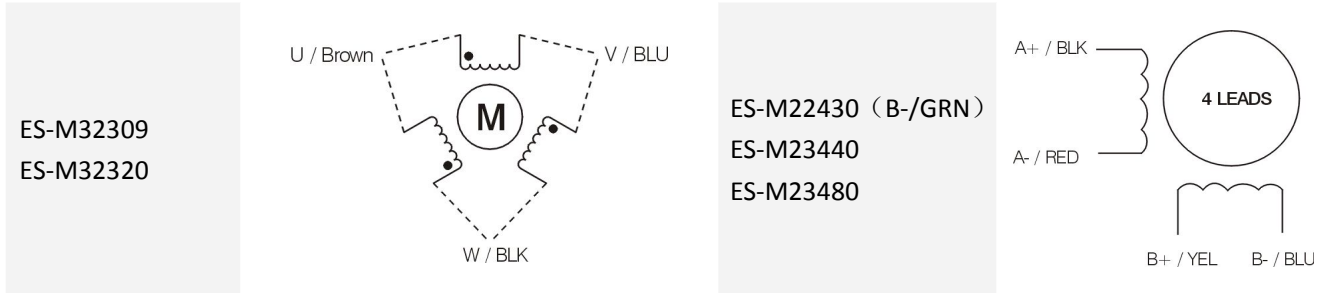
Note: A) The shaft diameter of the motor in NEMA 23 to 24 frame size can be 6.35mm, and the shaft diameter of the motor in NEMA34 frame size can be 12.7mm.

B) The length of the NEMA 34 motor can be chosen, please contact with Leadshine for the detail.

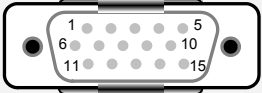
C) The brake motor is available in NEMA 23 and 34 frame size, please contact with Leadshine for the detail.

Motor Wiring Diagram

Note: Contact Leadshine for the wiring diagram of other motors.



Encoder Cable Connector

Pin	Name	Wire Color	I/O	Description	Connector
1	EA+	Black	O	Channel A+ output	
2	VCC	Red	I	+5V power input	
3	GND	White	GND	Ground	
4	NC	-	-	No Connection	
5	NC	-	-	No Connection	
6	NC	-	-	No Connection	
7	NC	-	-	No Connection	
8	NC	-	-	No Connection	
9	NC	-	-	No Connection	
10	NC	-	-	No Connection	
11	EB+	Yellow	O	Channel B+ output	
12	EB-	Green	O	Channel B- output	
13	EA-	Blue	O	Channel A- output	
14	NC	-	-	No Connection	
15	NC	-	-	No Connection	

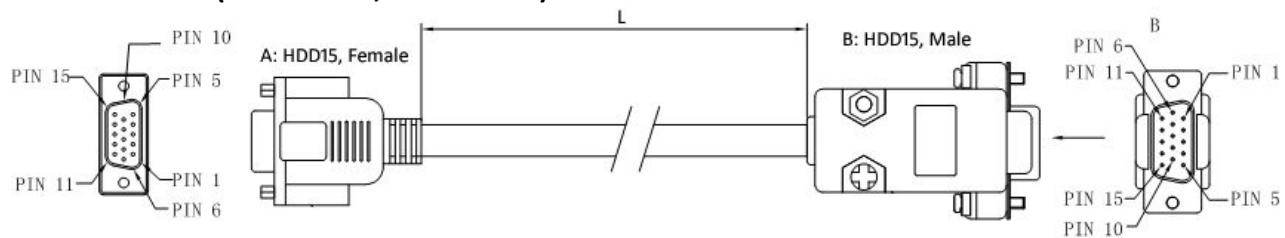
Cable Specifications

Part Number	Power Cable	Power Extension Cable	Encoder Cable	Encoder Extension Cable
ES-M32309	270±15mm	3.0m / CABLEH-RZ3M0 5.0m / CABLEH-RZ5M0 10.0m / CABLEH-RZ10M0	270±15mm (HDD15 Male)	3.0m / CABLEG-BM3M0
ES-M32320				8.0m / CABLEG-BM8M0
ES-M22430				10.0m / CABLEG-BM10M0
ES-M23440				12.0m / CABLEG-BM12M0
ES-M23480				

Encoder Extension Cable

Part Number	L	Matching Motor
CABLEG-BM3M0	3.0m	ES-M32309, ES-M32320
CABLEG-BM8M0	8.0m	(Note: The encoder extension cable must be connected between the ES-M3 motor and the ES-D508. You can not connect the motor's encoder cable to the ES-D508 directly.)
CABLEG-BM10M0	10.0m	
CABLEG-BM12M0	12.0m	
CABLEH-BM3M0	3.0m	ES-M22430, ES-M23440, ES-M23480 (Note: The encoder extension cable must be connected between the ES-M2 motor and the ES-D drive. You can not connect the motor's encoder cable to the ES-D808 / ES-D1008 directly.)
CABLEH-BM5M5	5.5m	
CABLEH-BM8M0	8.0m	
CABLEH-BM10M0	10.0m	
CABLEH-BM13M0	13.0m	

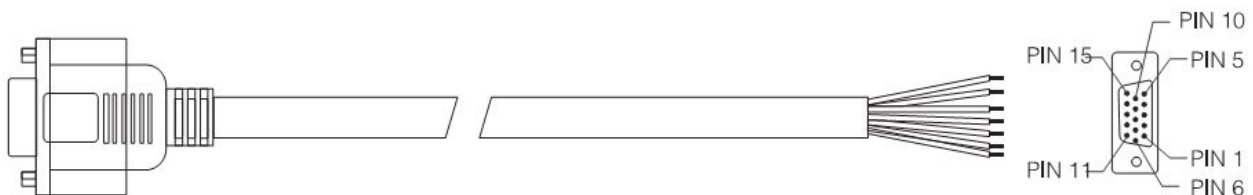
CABLEG-BMXXMX (ES-M32309, ES-M32320)



CABLEG-BMXXMX Pin Assignments

A: HDD15 Female		B: HDD15 Male		Name	Description
Pin	Wire Color	Pin			
1	Black	1	EA+	Channel A+	
2	Red	13	VCC	+5V power input	
3	White	3	GND	+5V GND	
11	Yellow	2	EB+	Channel B+	
12	Green	12	EB-	Channel B-	
13	Blue	11	EA-	Channel A-	

CABLEH-BMXXMX (ES-M22430, ES-M23440, ES-M23480)



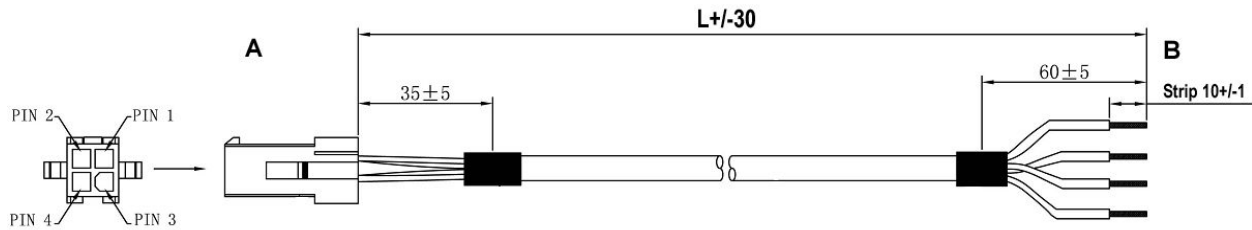
CABLEH-BMXXMX Pin Assignments

Pin	Wire Color	Name	Description	Pin	Wire Color	Name	Description
11	Yellow	EB+	Channel B+	13	Blue	EA-	Channel A-
12	Green	EB-	Channel B-	2	Red	VCC	+5V power input
1	Black	EA+	Channel A+	3	White	GND	+5V GND

Power Extension Cable

Part Number	L	Matching Motor
CABLEH-RZ3M0	3.0m	ES-M32309, ES-M32320, ES-M22430, ES-M23440, ES-M23480
CABLEH-RZ5M0	5.0m	
CABLEH-RZ10M0	10.0m	

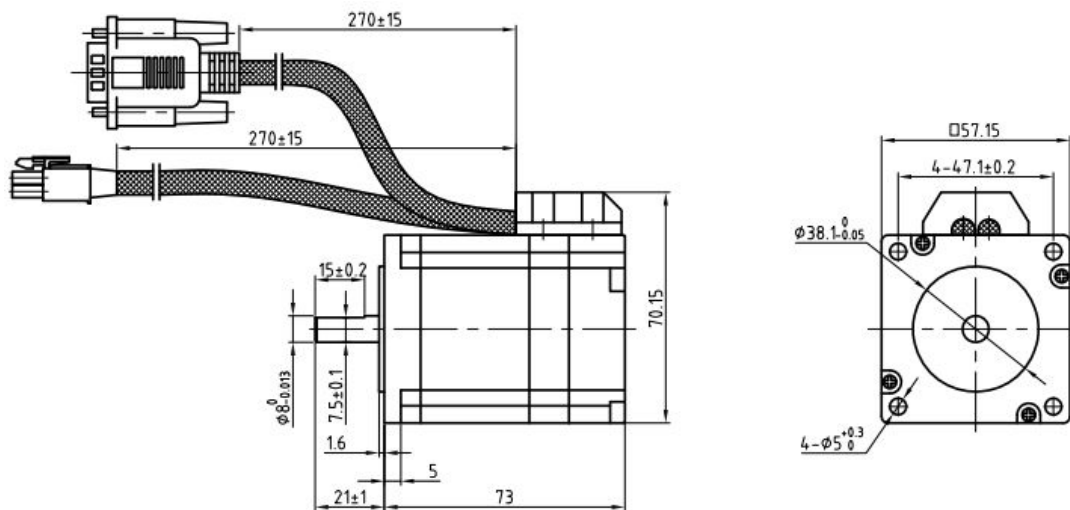
CABLEH-RZXXM (ES-M32309, ES-M32320, ES-M22430, ES-M23440, ES-M23480)



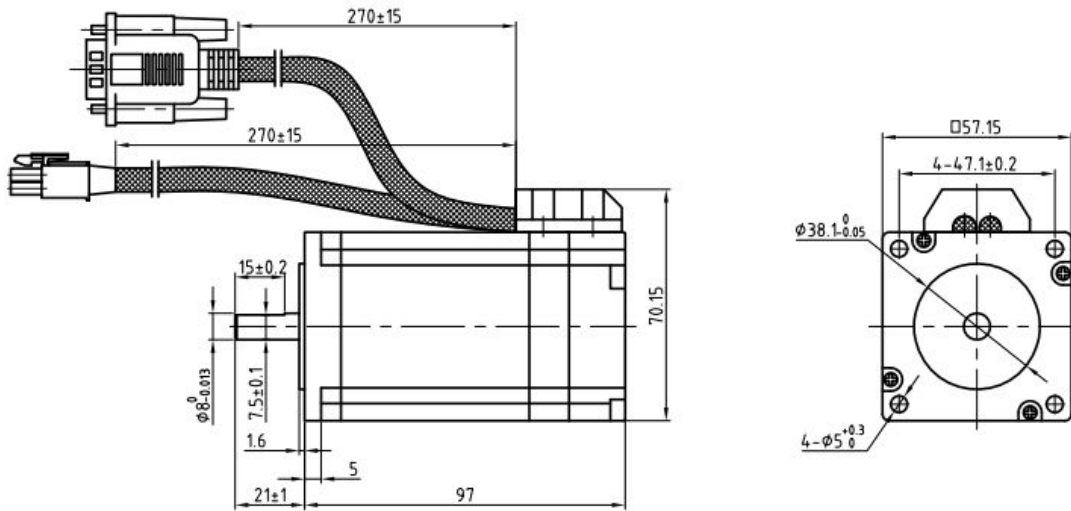
CABLEH-RZXXM Pin Assignments and Drive Connections

A	B	ES-D508	ES-D808, ES-D1008
Pin	Wire Color	Motor Connector	
1	Blue	V	B-
2	Red	U	A-
3	Black	W	A+
4	Yellow / Green	NC	B+

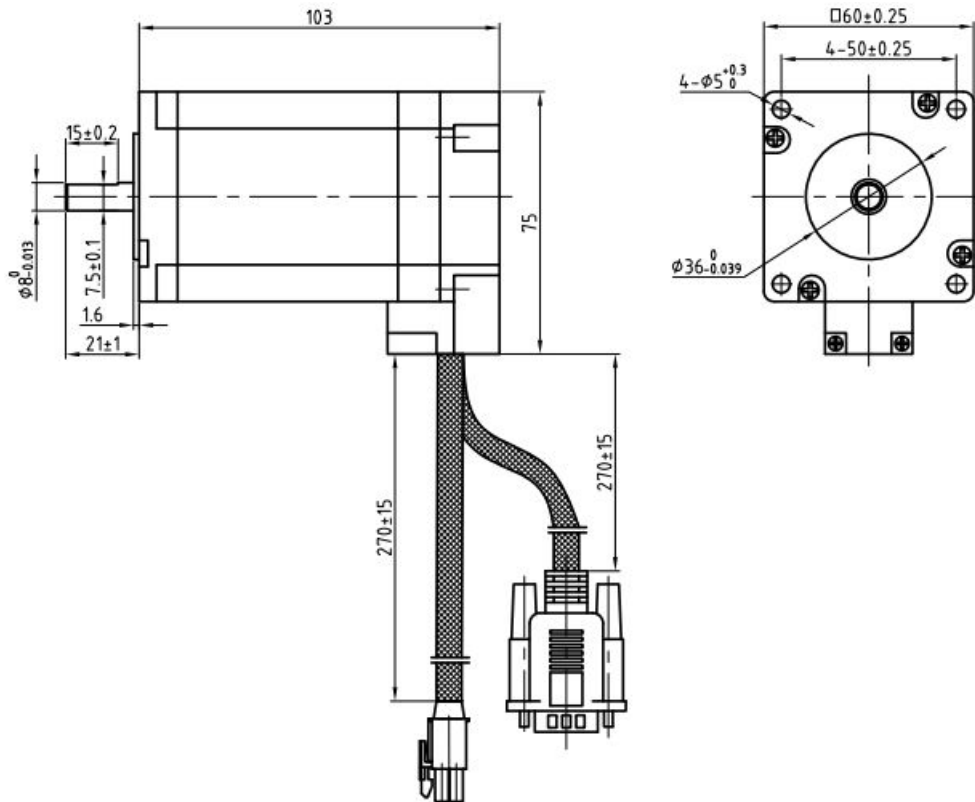
Mechanical Specifications



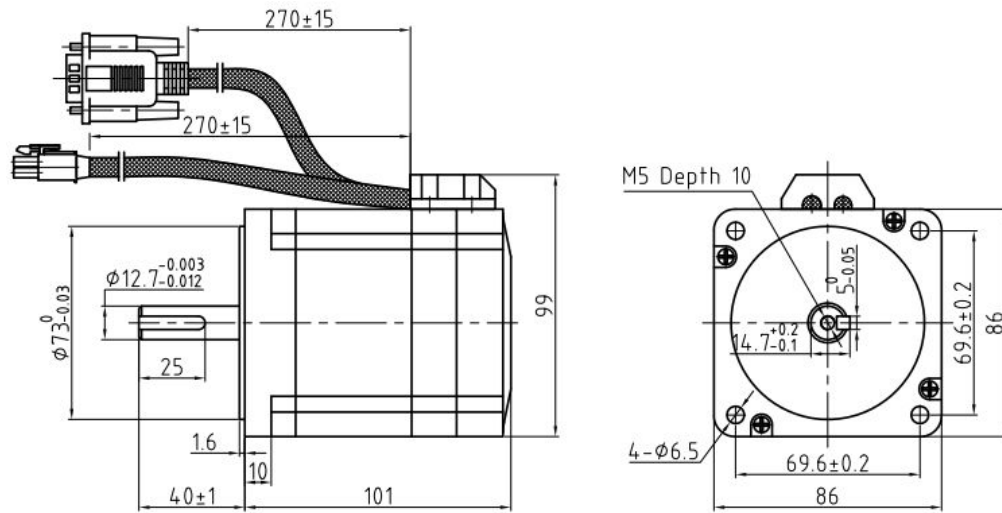
Mechanical Specification of the ES-M32309

Mechanical Specifications (Continued)


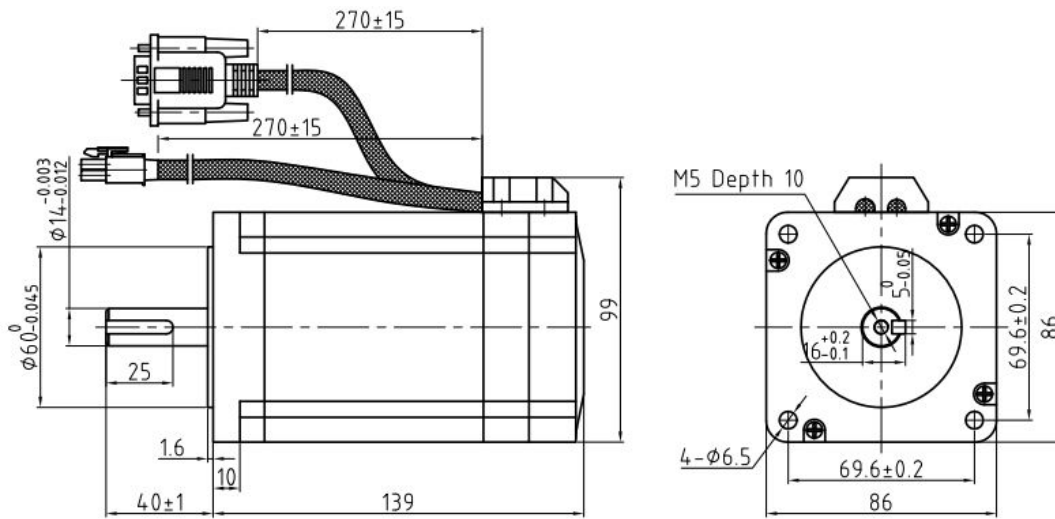
Mechanical Specification of the ES-M32320



Mechanical Specification of the ES-M22430

Mechanical Specifications (Continued)


Mechanical Specification of the ES-M23440



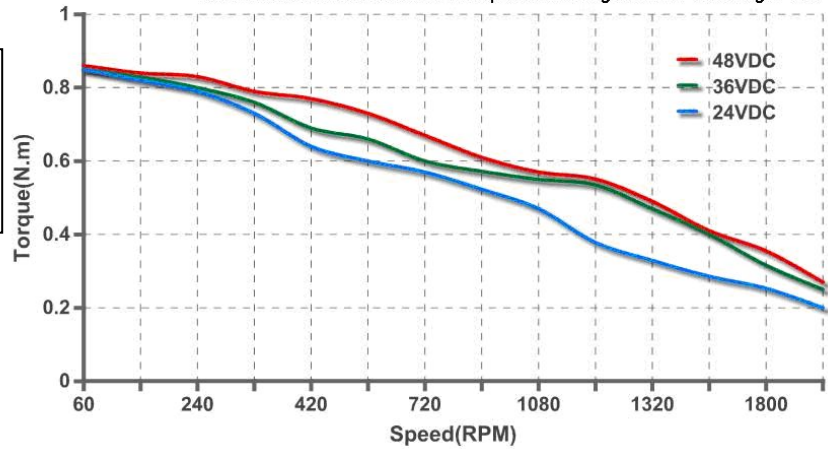
Mechanical Specification of the ES-M23480

Speed-Torque Curves

ES-M32309

Drive: ES-D508 Resolution: 4000steps/rev. Holding Current Percentage: 40%

Note: These curves are based on 40% holding torque percentage of ES-D508. If higher torque at high speed is required, you can change the holding torque percentage to 100%. See software manual.

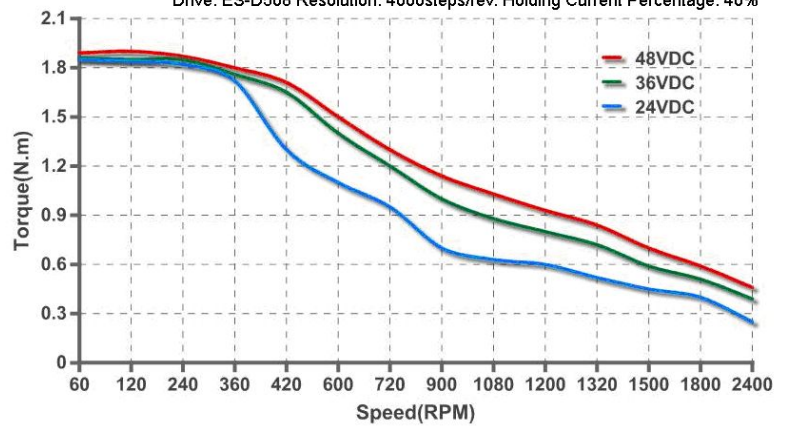


Speed Torque Curve of the ES-M32309

ES-M32320

Drive: ES-D508 Resolution: 4000steps/rev. Holding Current Percentage: 40%

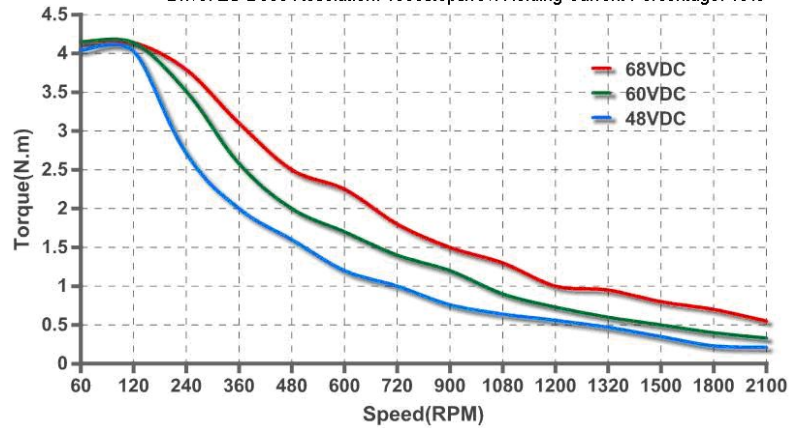
Note: These curves are based on 40% holding torque percentage of ES-D508. If higher torque at high speed is required, you can change the holding torque percentage to 100%. See software manual.



Speed Torque Curve of the ES-M32320

Speed-Torque Curves (Continued)
ES-M23440

Drive: ES-D808 Resolution: 4000steps/rev. Holding Current Percentage: 40%

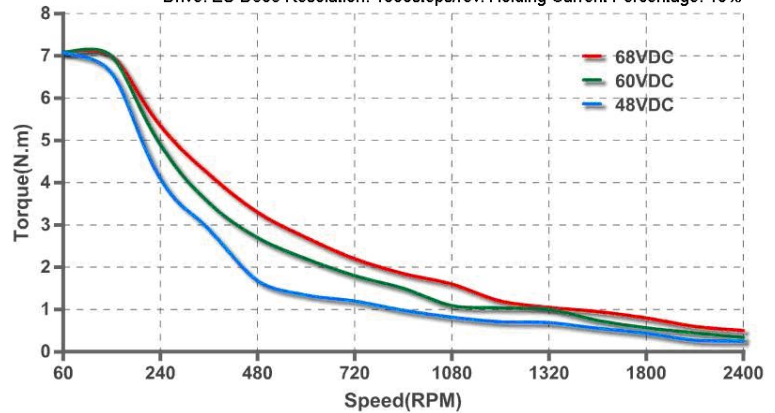


Speed Torque Curve of the ES-M23440

Note: These curves are based on 40% holding torque percentage of ES-D808. If higher torque at high speed is required, you can change the holding torque percentage to 100%. See software manual.

ES-M23480

Drive: ES-D808 Resolution: 4000steps/rev. Holding Current Percentage: 40%



Speed Torque Curve of the ES-M23480

Note: These curves are based on 40% holding torque percentage of ES-D808. If higher torque at high speed is required, you can change the holding torque percentage to 100%. See software manual.