

2024/25
Product
Catalogue



Delta Line
Moving together

Index

Brushed DC

Brushless DC

Servomotors

Motor + Controller

Stepper

Linear actuators

Gearboxes

Encoders

Controllers/Drives

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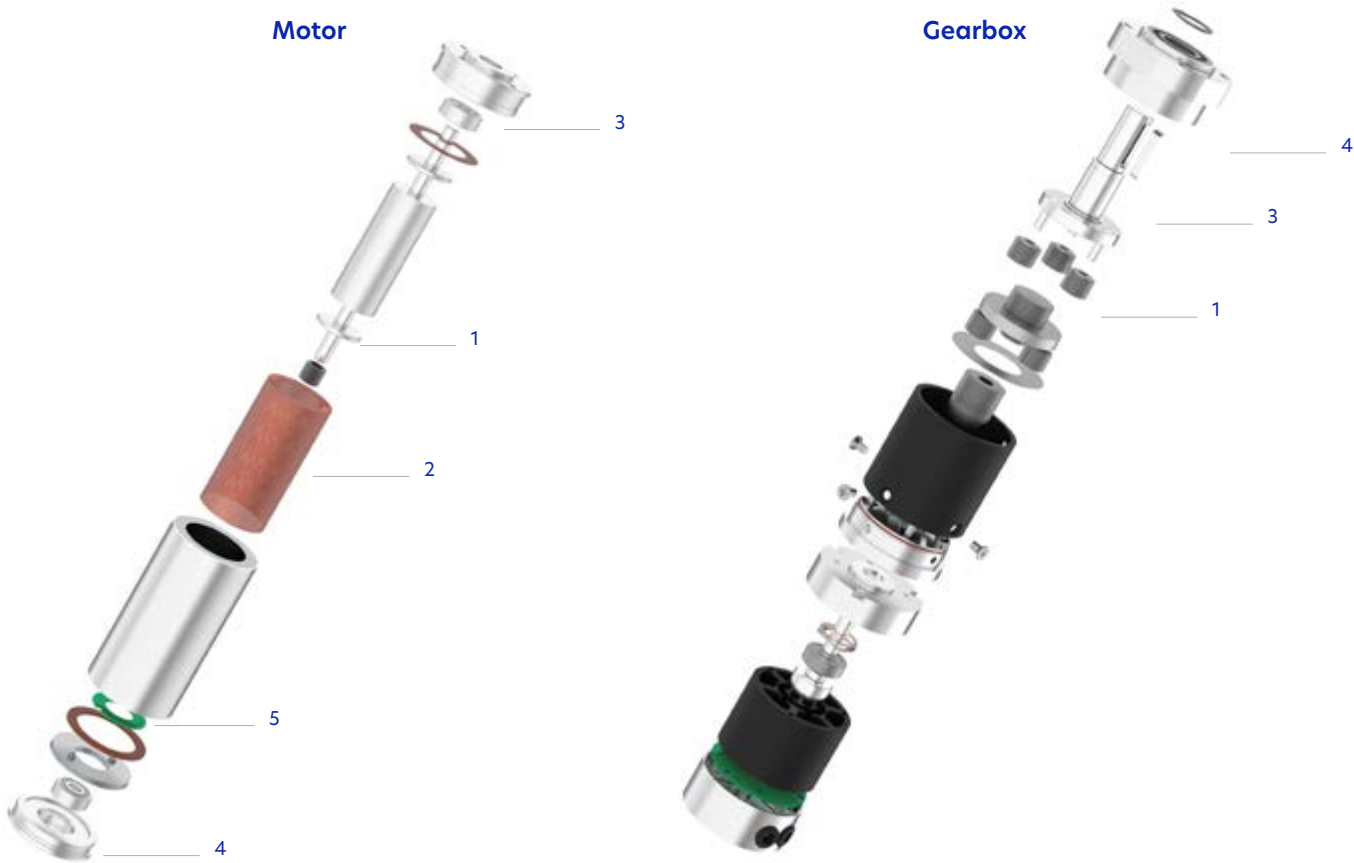
makes sense only
for large orders?

Who said that customization

A custom solution can often be, not just technically more satisfying, but also more cost-effective - no matter what the volume of your order is - because it is focused on your real needs.

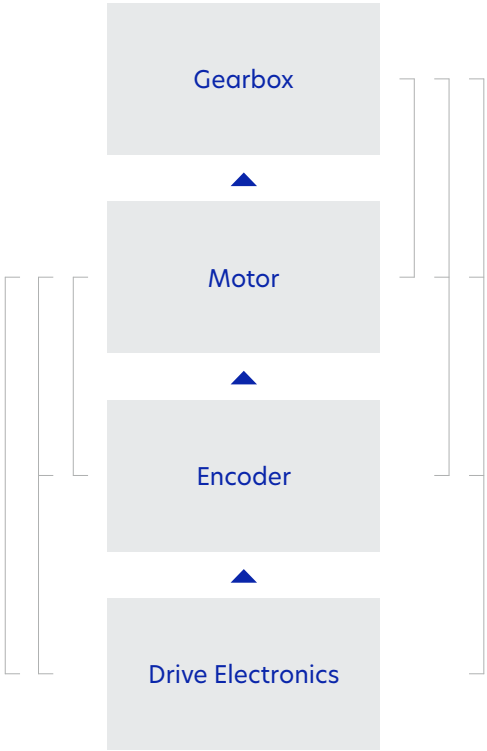
Possible customizations

1. Shaft	3. Special Ball Bearings
Length	
Diameter	
Surface: D-cut, cross-bore, Key	
Shape: hollow, female threads	
Output component: pinions, gear, pulley	
2. Winding	4. Special Front / Rear Flange
Nominal voltage	
Current	
Speed	
Temperature range	
	5. Cables & Connectors
	Length
	Hose
	Special Connectors



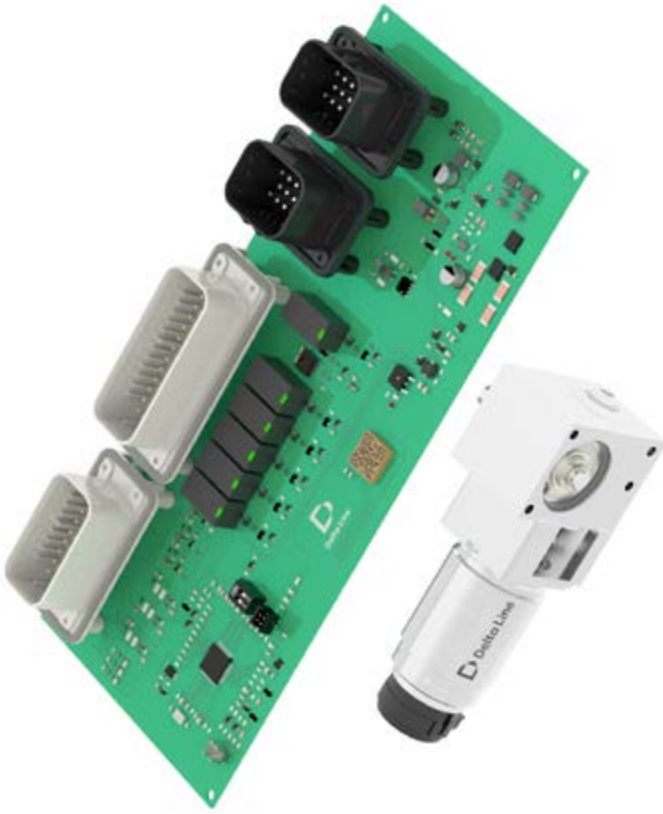
on motors and gearboxes: shaft range, windings, connector types, bearings.

1. Variation of standard



between motors, encoders, gearboxes, drive electronics.

2. Modular motion system assembly



adapted to specific project needs and using bespoke components.

3. Fully customized motion solutions and drives design customization

Customization Capabilities

tell us your challenge
and we will solve it



Sector
Drive motor for professional grass cutting machinery.

Challenges
Supply an IP65 solution to fit into existing limited length space envelope as part of customer's product upgrade.

Solution
Supplied a modified IP65 BLDC motor with special output configuration and cabling/ connectors with increased performance and quality levels in shortest possible length.

A



Sector
Vacuum pump for water and bioburden analysis in pharmaceutical environment.

Challenges
Supply a very compact cost effective dual mechatronic system.

Solution
Development of a compact, lightweight, quiet and reliable system for easy disinfection. The system is equipped with two flat BLDC 45BLW motors.

B



Sector
Agriculture, high-speed precision seed drill.

Challenges
Supply a compact, IP-protected system with integrated controller.

Solution
Gearmotor with integrated CAN controller, and cost-effective IP protection on the body and the back of the solution.

C



Sector
Intralogistics, parcel handling and sorting system.

Challenges
Supply a very compact, direct drive, low noise brushless motor.

Solution
Multipolar flat brushless motor with specific electromagnetic design for low noise operation at various speed ranges, adapted to customer's electronics.

D

Some of our customizations

Over 4.500 delighted customers served across Healthcare, Agriculture, Intralogistic, Security & Access, Industrial, Textile, Robotics and other sectors.

4.500 customers

We have manufacturing facilities, engineering and commercial teams in Europe, China, and North America.

Worldwide

We have more than 700 employees and a turnover of ~€135M, growing since 2008.

**700 employees
135M Euro turnover**



Brands

one trusted source of
sub-3kW motion control
components and systems

Delta Line Group

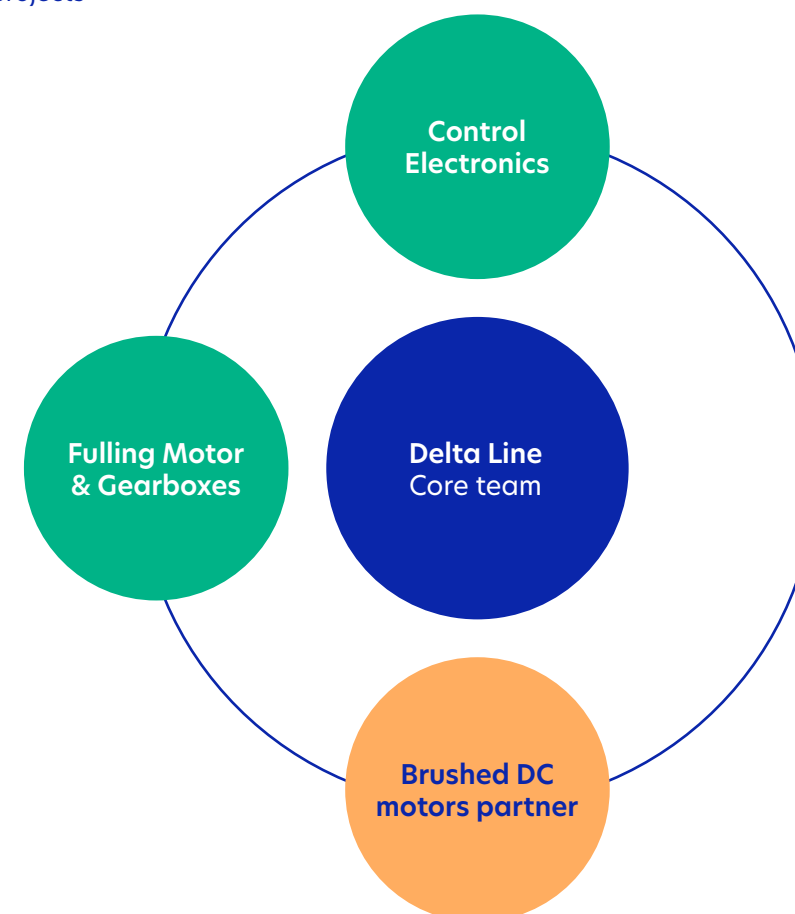
two carefully selected contract manufacturing partners

● **Contract manufacturing**

● **Co-owned manufacturing**

a lean cross-functional central team, which leads all projects

● **Core team**



- _ Agility and flexibility of a small company
- _ Comprehensive portfolio of technologies
- _ Attractive quality/price ratio
- _ Manufacturing flexibility and control

with many advantages

A unique structure



- Part of the Delta Line Group since 2010
- Established in 2001, Changzhou Fulling Motor Co. is a German-Swiss-Chinese joint venture
- Specialized in stepper motors, DC brushless motors and gearboxes design and manufacturing
- Based in Changzhou, China, employing more than 600 workers
- 30'000 sqm manufacturing facilities with cutting edge equipment
- More than 5 Million motors and gearboxes produced yearly
- ISO9001 and ISO14001 certified by TUV Germany
- All products RoHS compliant and CE certified



Delta Line

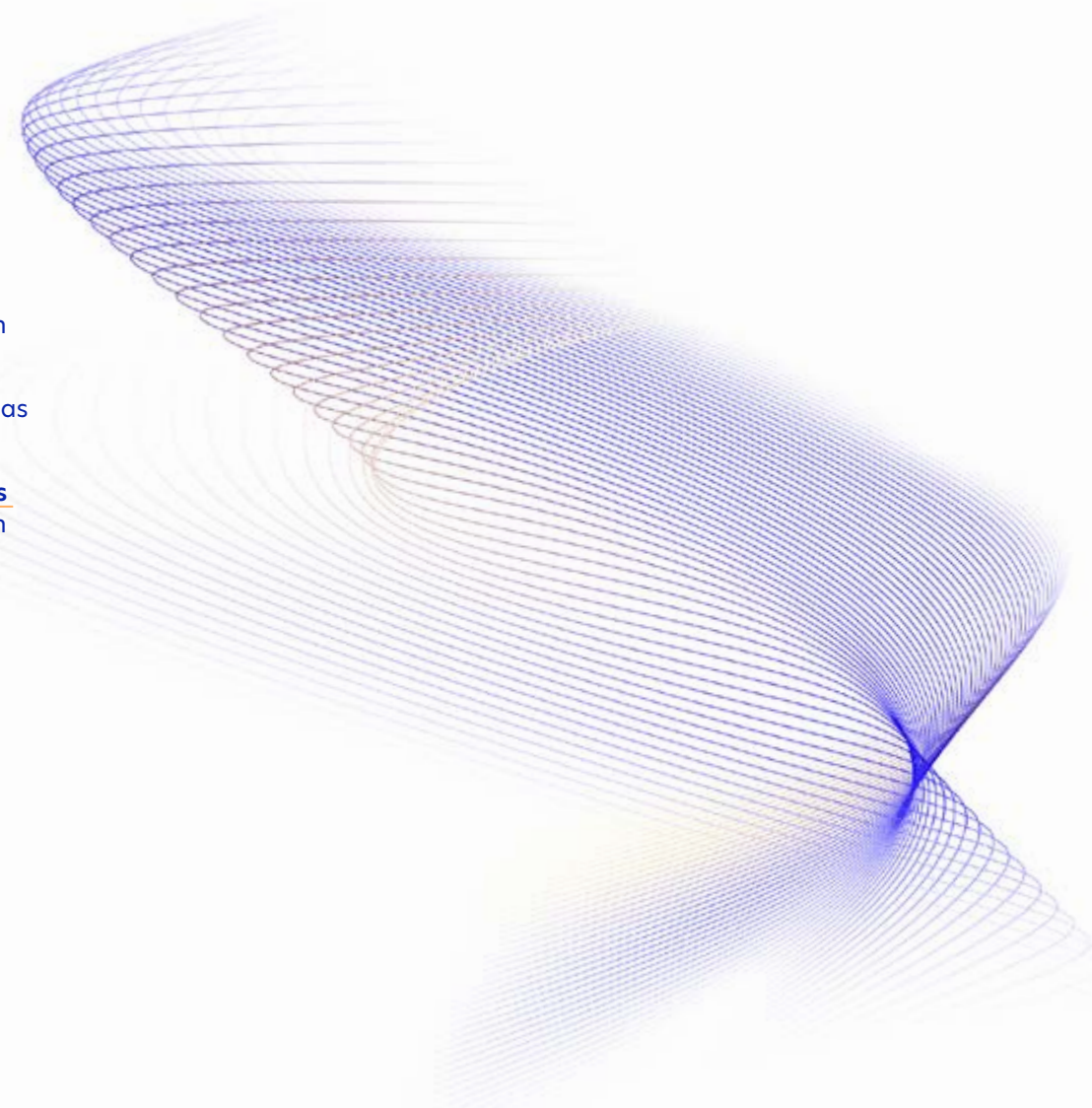
- Established in 1983, Delta Line is a Swiss based motion systems provider
- Headquartered in Lamone, Switzerland the company has an extensive footprint in Europe and North America
- Specialized in custom solution and Integrated Motors design and manufacturing through its own production and assembly facilities in Switzerland
- Wide portfolio of DC motors, motors with electronics, drives/controllers and gearboxes

we market our products under **Delta Line** and **Fulling Motor**

Our brands

Be it a need for a simple standard product or a co-designed fully customized motion system.

We want to be your trusted advisor and supplier when it comes to integrating **motion solutions** into your application.



1. Attention of a family company with functional capabilities of a large one
2. Supply & Quality you can trust
3. Flexible and Cost-effective solutions through collaborative engineering and efficient customizations
4. One-stop motion supplier: wide technology portfolio and manufacturing control

Your benefits

Market expertise



Powered hand tools
X-Ray & Oncology equipment
Liquid analyzers
Pumps (Manufacturers)
Laboratory equipment

Healthcare



Fertiliser distribution systems
Harvesting machines
Precision seed drills
Hydraulic equipment replacement
Milking systems (Robotics)
Feeding robots

Agriculture



Storage Systems (conveyor system)
AGV Automated Guided Vehicles
AMR Autonomous Mobile Robots
Logistic shuttles
Warehouse pick & place systems

Intralogistic & warehousing



Packaging & Labelling
Powered hand tools
Pumps (Manufacturers)
Welding Equipment
Pick and Place machines
Industrial analysers

Industrial



Knitting & embroidery machines
Spinning machines
Yarn preparation machines

Textile



Pedestrian & Passenger security
Physical access management
Vehicular access
Observation security

Security & Access



AGV (Automated guided vehicles)
Collaborative robots
Lawn mower robots
Service Robots
AMR (Autonomous Mobile Robot)

Robotics

Brushed DC motors

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Brushed DC

Controllers/Drives	Encoders	Gearboxes	Linear actuators	Stepper	Motor + Controller	Servomotors	Brushless DC	Brushed DC	Index
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Coreless
motors

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Permanent Magnet
motors

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Brushed DC Motors

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10DC17...25N -PM	0,9...2	31
12DC19...28N -PM	1,9...3,9	33
16DC25P -PM/G	3,8...4,8	35
16DC26...40N -PM/G	5...11,3	37
22DC32P -PM/G	8,5...12,6	41
22DC34...47N -PM/G	10,7...30,5	43
26DC44P -PM/G	20,8...28,8	47
26DC57N -PM/G	32,9...59,1	49
32DC72N -G	89,4...123	51
35DC70N -G	77,7...138	52
Permanent Magnet DC motors		Torque* (Nm) 55
42DI	0,038...0,057	56
52DI	0,09...0,22	57
63DI	0,18...0,27	58

* Rated Torque

Term	
N. of pole	Areas of a motor where a magnetic pole is generated either by a permanent magnet or by passing current through the coils of a winding.
N. of phase	A group of electrically connected coils.
Rated Voltage	The voltage at which rated torque is generated with the motor at ambient temperature.
Rated Speed	The approximate motor speed at its rated torque point.
Rated Torque	The maximum torque, at rated speed, the motor can produce on a continuous basis, without exceeding the thermal rating of the motor.
Max. Peak Torque	The maximum torque a motor can produce for short periods of time, before irreversible demagnetization of the motor's magnets occurs.
Stall Torque	Is the calculated load torque that causes the shaft to stop at nominal voltage. Rising motor temperatures reduce stall torque.
Torque constant	The ratio of a motor's output torque to the motor's input power.
Speed Constant	Shows the ideal no load speed per 1 volt of applied voltage. Friction losses not taken into account.
Rated Current	The approximate amount of current the motor will draw at its rated torque point.
Max. Peak Current	The current drawn by the motor when delivering peak torque.
No-load speed	Is the speed at which the unloaded motor runs with the rated voltage applied. It is approximately proportional to the applied voltage.
Stall Current	Is the quotient from nominal voltage and the motor's terminal resistance. Stall current is equivalent to stall torque.
No-Load Current	The current consumption of the motor at rated voltage and under no-load conditions. This value varies proportionally to speed and is influenced by temperature
Motor regulation	This value is a key performance indicator of a motor, indicating the amount of torque the motor can produce for a certain temperature rise (Joule losses). A lower number indicates a better power density.
Line to Line resistance	This is the phase resistance measured for the completed motor at room temperature. It includes solder, wire and (if present) connector resistances. In motors with very low resistance, the line to line resistance may differ significantly from the internal resistance.
Line to Line Inductance	This is the motor phase inductance measured with an inductance meter at 1000 Hz.
Rotor Inertia	Is the mass moment of inertia of the rotor, based on the axis of rotation.
Max. efficiency	Is the calculated load torque that brings the shaft to standstill at nominal voltage. It also doesn't always denote the optimal operating point.
Mechanical time constant	Is the time required for the rotor to accelerate from standstill to 63% of its no load speed.
Length	Total motor length.
Weight	Total motor mass.
Ambient temperature ball/sleeve bearings	Operating temperature range. This derives from the heat reliability of the materials used and viscosity of bearing lubrication.
Max. winding temperature	Maximum permissible winding temperature.
Max. speed	Is the maximum recommended speed based on thermal and mechanical perspectives. A reduced service life can be expected at higher speeds.
Axial Play	Axial shaft displacement occurring during a reversal of an axial force on the shaft.
Max. Radial Force/Load	Maximum force that can be applied to the shaft in the radial direction (any direction perpendicular to the motor shaft axis).
Max. Axial force	Maximum force that can be applied to the shaft in the axial direction (in the same axis as or parallel to the motor shaft axis).
Protection Class	IP (or "Ingress Protection") ratings are defined in international standard EN 60529 (British BS EN 60529:1992, European IEC 60509:1989). They are used to define levels of sealing effectiveness of electrical enclosures against intrusion from foreign bodies (tools, dirt etc) and moisture.
Insulation Class	The electrical insulation system for wires and other wire-wound electrical components is divided into different classes by temperature and temperature rise. The electrical insulation system is sometimes referred to as insulation class or thermal classification.

Product families
Brushed DC Coreless motors
Brushed PMDC motors

Brushed DC motors have long been a driving force in the world of electrical engineering, offering a robust and reliable solution for a wide range of applications. These motors utilize a simple yet ingenious design that sets them apart from their counterparts. The motor's properties are determined by the magnetic circuit at the stator (permanent magnet material, air gap, ...) and the coil at the rotor (windings, copper density), however the main advantages of Brushed DC motor technology is to be found in the simple construction and control, the attractive cost, and the higher starting torque.

These motors are called “brushed” because they use physical brushes and a commutator mechanism to control the flow of current through the motor windings. The commutator physically contacts the brushes, which are connected to opposite poles of the power source. The rotation's direction, clockwise and/or counterclockwise, can be reversed easily by reversing the polarity of the brushes, i.e., reversing the leads on the battery. In our portfolio we carry two options in terms of brushes:

More suitable for applications requiring higher power and higher current, in start/stop operations and in combination with electronic controls.

Graphite brushes

In combination with precious metal commutators, this design ensures constant low contact resistance and is often used in low-current applications with very low electromagnetic interferences.

Precious metal brushes

The Coreless – or Ironless – self-supporting coil is the central element of our Coreless Brushed DC motors. The coreless construction significantly reduces the mass and inertia of the rotor, so very rapid acceleration and deceleration rates are possible. This specific construction also means no iron losses and no cogging, giving coreless designs significantly higher efficiencies (up to 90 percent) than traditional Ironcore DC motors. Brushed DC coreless motors ripple torque is extremely low, which provides very smooth motor rotation with minimal vibration and noise.

Coreless DC motors are used extensively in medical applications, including prosthetics, small pumps (such as insulin pumps), laboratory equipment, and X-ray machines. Their ability to handle fast, dynamic moves also makes them ideal for use in robotic applications.

Coreless technology

PMDC motors, also known as permanent magnet motors, harness the strength of magnets to deliver exceptional performance. By incorporating permanent magnets into their design, these motors eliminate the need for a separate field winding, resulting in a more compact and efficient solution.

The key advantage of PMDC motors lies in their high power-to-size ratio. The presence of permanent magnets ensures strong magnetic fields, leading to increased torque and power output. This makes PMDC motors an excellent choice for applications where space is limited, without compromising on performance, and offer an ideal solution for all those customers that still want to rely on a well-established and trusted technology that provides easy-to-operate, long lasting and high torque capacity motors.

Additionally, our PMDC motors, are well suited to operate in harsh environmental conditions thanks to IP54 protection and F insulation class. The graphite commutation system with an optional EMC filter serves to reduce brush and collector wear and can significantly extend motor life.

Permanent Magnet technology

Composition	
1	Flange
2	Permanent magnet
3	Housing (magnetic return)
4	Shaft
5	Winding
6	Commutator plate
7	Commutator
8	Graphite brushes
9	Cover
10	Electrical connection
11	Ball bearing





Brushed DC

Coreless motors

Advantages at a glance
No cogging
High efficiency
Low starting voltage

Developed with a highly efficient ironless motor winding technology, this range offers compact, light and powerful drives with low inertia. Our brushed coreless DC motors deliver superior torque density and very high acceleration performances. Ranging from micro coreless 8mm diameter motors to larger 35mm solutions, these motors can be assembled with precious metal or graphite brushes.

Brushed DC Coreless motors	Torque* (mNm)	
08DC16N-PM	0,61...0,64	30
10DC17N-PM	0,91...0,99	31
10DC25N-PM	1,94...2,05	32
12DC19N-PM	1,88...1,95	33
12DC28N-PM	2,88...3,89	34
16DC25P-PM	3,8...4,06	35
16DC25P-G	3,71...4,76	36
16DC26N-PM	4,99...5,36	37
16DC26N-G	5,36...5,45	38
16DC40N-PM	5,06...10,8	39
16DC40N-G	8,58...11,3	40
22DC32P-PM	8,54...10,4	41
22DC32P-G	11,5...12,6	42
22DC34N-PM	10,7...14,7	43
22DC34N-G	14...15,3	44
22DC47N-PM	14,1...29,5	45
22DC47N-G	27...30,5	46
26DC44P-PM	20,8...28,8	47
26DC44P-G	26,3...28,3	48
26DC57N-PM	32,9...52,3	49
26DC57N-G	46,9...59,1	50
32DC72N-G	89,4...123	51
35DC70N-G	77,7...138	52

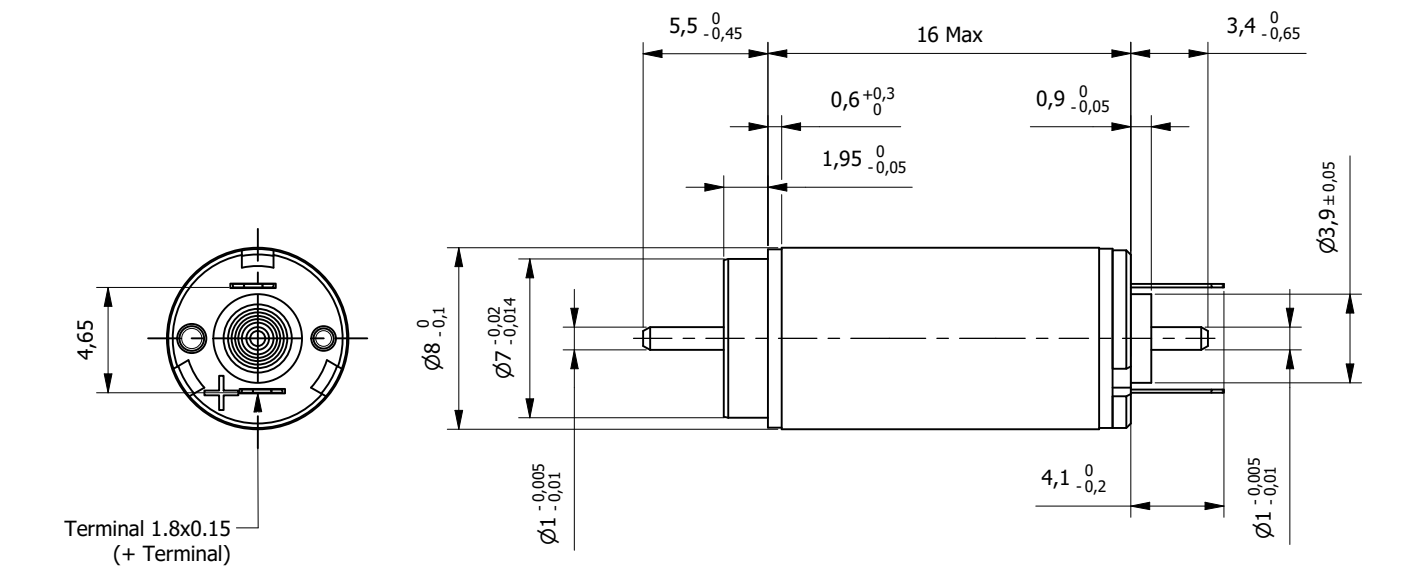
* Rated Torque

Brushed DC Coreless Motor 08DC16N-PM

Precious Metal brushes

Ø 8mm

0,6mNm

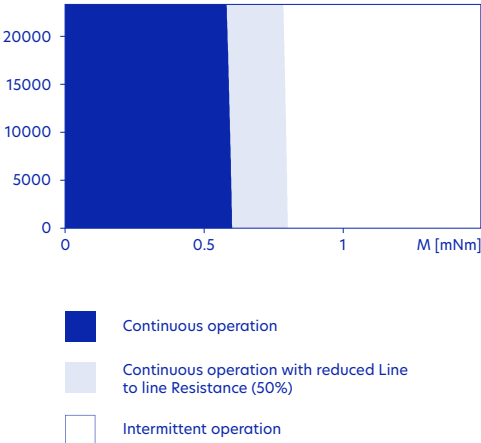


Product also available with ball bearings

Specification				
	Model	...4129	...5892	
1	Rated Voltage	V	6	12
2	Rated Speed	rpm	4190	5800
3	Rated Torque	mNm	0,641	0,614
4	Stall Torque	mNm	1,05	1,13
5	Torque Constant	mNm/A	5,08	8,71
6	Motor Regulation	10 ³ /Nms	1123,8	1215,3
7	Rated Current	A	0,13	0,073
8	Stall Current	A	0,207	0,13
9	No-load Current	mA	4,51	2,74
10	No-load Speed	rpm	11000	12900
11	Line to Line Resistance	Ω	29	92,2
12	Line to Line Inductance	mH	0,094	0,276
13	Rotor Inertia	gcm ²	0,037	0,035
14	Max. Efficiency	%	73	74
15	Mechanical Time Constant	ms	4,18	4,28
16	Length (L)	mm	16	16
17	Weight	g	4,4	4,4

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +85°C
Max. Winding Temperature	+100°C
Max. Speed	17300rpm
Radial play	0,012mm
Axial play	0,02 to 0,1mm
Max. Radial force (5mm from flange)	0,4N
Max. Axial force	0,1N
Max. Force for Press fit	10N

Operating range: Winding 6V

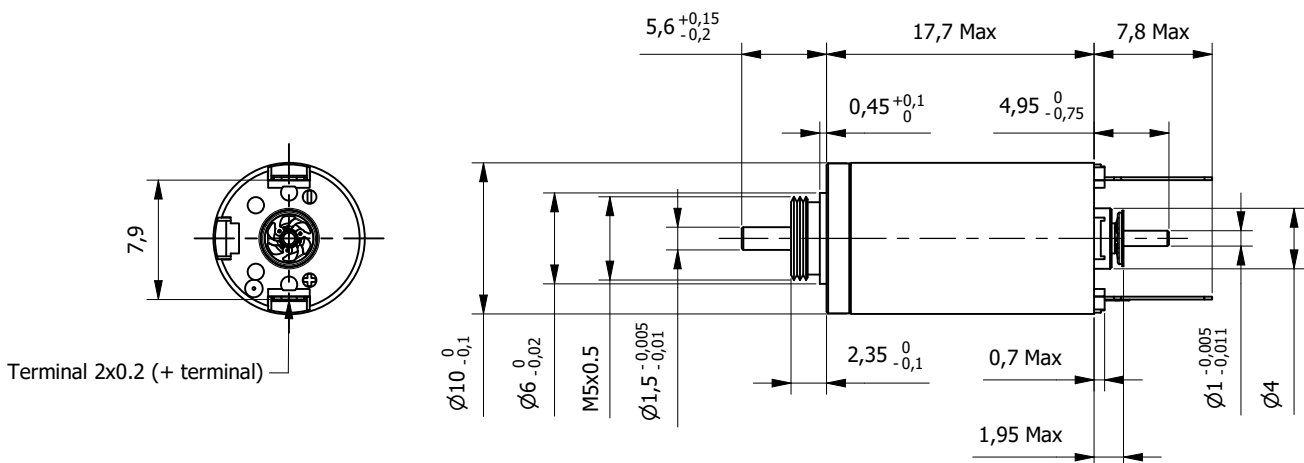


Brushed DC Coreless Motor 10DC17N-PM

Precious Metal brushes

Ø 10mm

0,9 to 1mNm

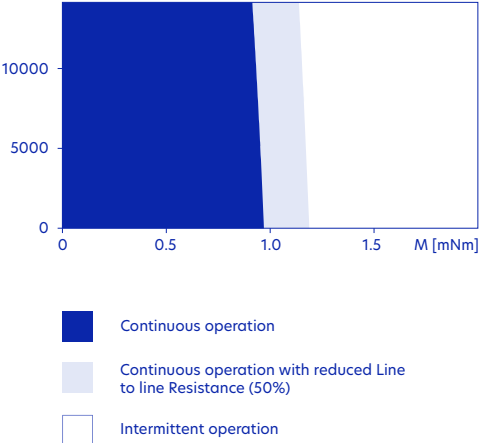


Product also available with ball bearings

Specification					
	Model	...4604	...3319	...3874	
1	Rated Voltage	V	3	6	12
2	Rated Speed	rpm	4690	3310	3890
3	Rated Torque	mNm	0,948	0,993	0,905
4	Stall Torque	mNm	1,54	1,46	1,37
5	Torque Constant	mNm/A	2,07	4,74	8,53
6	Motor Regulation	10³/Nms	942,8	867,9	1029,4
7	Rated Current	A	0,49	0,223	0,114
8	Stall Current	A	0,742	0,307	0,16
9	No-load Current	mA	43,8	18,2	10,5
10	No-load Speed	rpm	13000	11400	12500
11	Line to Line Resistance	Ω	4,04	19,5	74,9
12	Line to Line Inductance	mH	0,051	0,268	0,868
13	Rotor Inertia	gcm2	0,077	0,081	0,071
14	Max. Efficiency	%	58	58	56
15	Mechanical Time Constant	ms	7,19	7,03	7,26
16	Length (L)	mm	17,7	17,7	17,7
17	Weight	g	6,3	6,3	6,3

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +85°C
Max. Winding Temperature	+100°C
Max. Speed	14300rpm
Radial play	0,015mm
Axial play	0 to 0,15mm
Max. Radial force (5mm from flange)	0,8N
Max. Axial force	0,1N
Max. Force for Press fit	30N

Operating range: Winding 4.5V

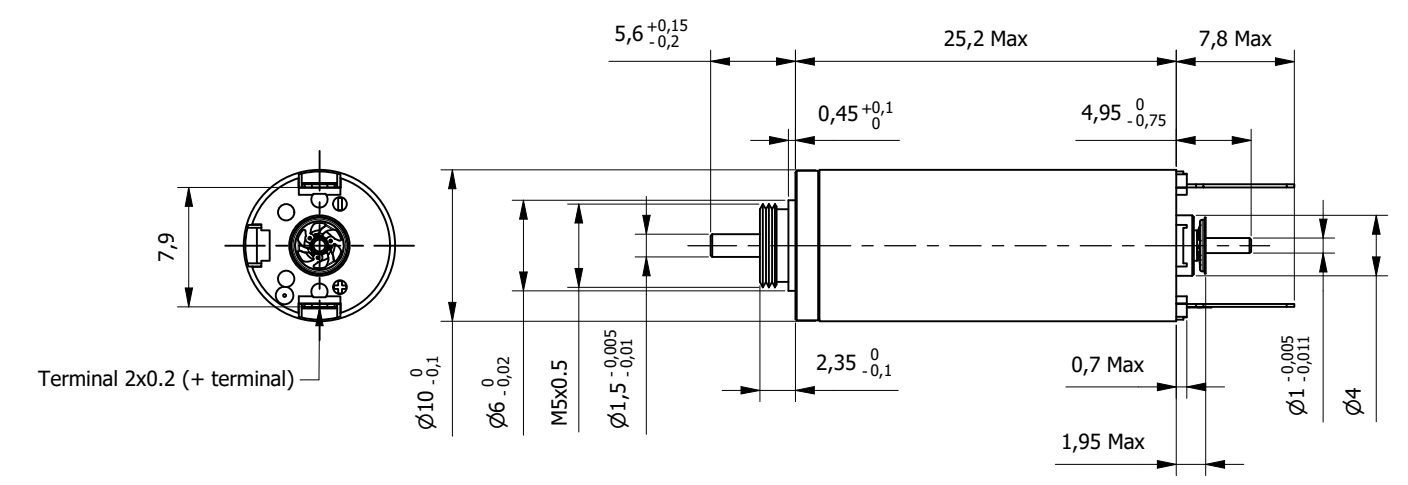


Brushed DC Coreless Motor 10DC25N-PM

Precious Metal brushes

Ø 10mm

1,9 to 2mNm

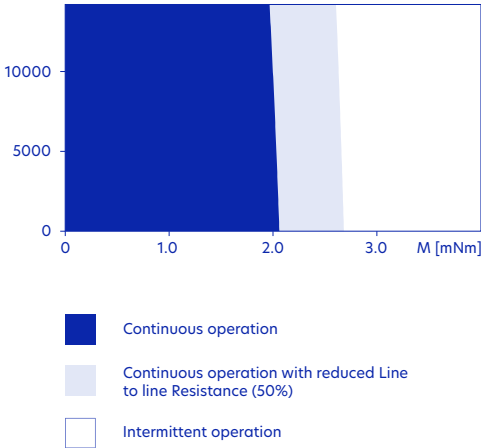


Product also available with ball bearings

Specification					
	Model	...6901	...6606	...5927	
1	Rated Voltage	V	3	6	12
2	Rated Speed	rpm	6930	6640	5980
3	Rated Torque	mNm	2,05	1,94	2,03
4	Stall Torque	mNm	4,81	4,32	4,36
5	Torque Constant	mNm/A	2,31	4,61	10
6	Motor Regulation	10 ³ /Nms	269,9	301,1	273,0
7	Rated Current	A	0,922	0,436	0,211
8	Stall Current	A	2,09	0,937	0,439
9	No-load Current	mA	38,7	19,3	8,71
10	No-load Speed	rpm	12200	12200	11300
11	Line to Line Resistance	Ω	1,44	6,4	27,3
12	Line to Line Inductance	mH	0,02	0,078	0,362
13	Rotor Inertia	gcm2	0,132	0,119	0,13
14	Max. Efficiency	%	75	74	74
15	Mechanical Time Constant	ms	3,57	3,58	3,59
16	Length (L)	mm	25,2	25,2	25,2
17	Weight	g	11	11	11

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +85°C
Max. Winding Temperature	+100°C
Max. Speed	14300rpm
Radial play	0,015mm
Axial play	0 to 0,15mm
Max. Radial force (5mm from flange)	0,8N
Max. Axial force	0,1N
Max. Force for Press fit	30N

Operating range: Winding 4.5V

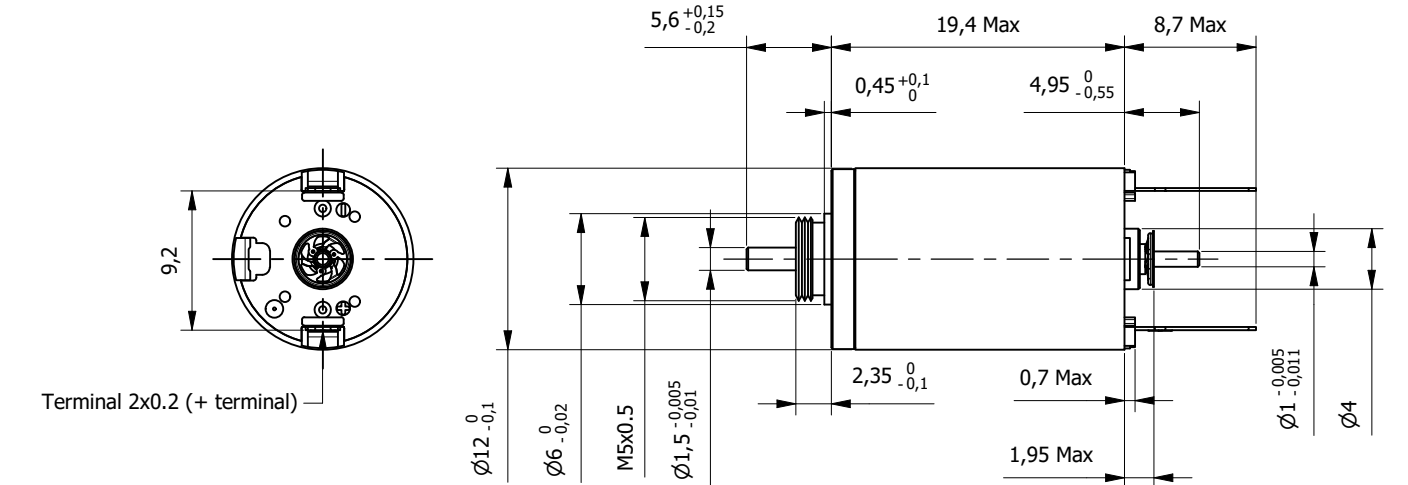


Brushed DC Coreless Motor 12DC19N-PM

Precious Metal brushes

Ø 12mm

1,9mNm

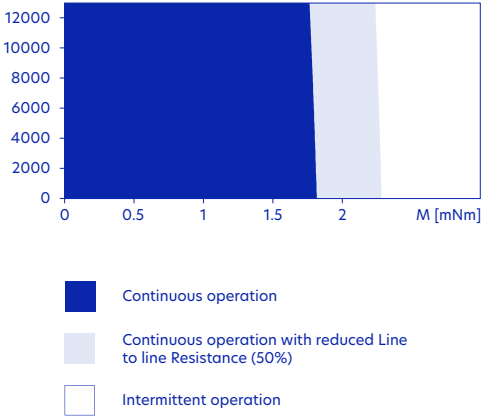


Product also available with ball bearings

Specification					
	Model	...3702	...3810	...3646	
1	Rated Voltage	V	3	6	12
2	Rated Speed	rpm	3760	3870	3620
3	Rated Torque	mNm	1,92	1,95	1,88
4	Stall Torque	mNm	3,35	3,46	3,21
5	Torque Constant	mNm/A	3,06	6,12	12,3
6	Motor Regulation	10 ³ /Nms	292,6	283	304,1
7	Rated Current	A	0,655	0,332	0,159
8	Stall Current	A	1,09	0,566	0,261
9	No-load Current	mA	31,8	15,9	7,88
10	No-load Speed	rpm	9090	9100	9020
11	Line to Line Resistance	Ω	2,74	10,6	46
12	Line to Line Inductance	mH	0,072	0,29	1,17
13	Rotor Inertia	gcm2	0,286	0,293	0,275
14	Max. Efficiency	%	69	70	69
15	Mechanical Time Constant	ms	8,37	8,31	8,33
16	Length (L)	mm	19,4	19,4	19,4
17	Weight	g	11	11	11

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +85°C
Max. Winding Temperature	+100°C
Max. Speed	13000rpm
Radial play	0,015mm
Axial play	0 to 0,15mm
Max. Radial force (5mm from flange)	0,8N
Max. Axial force	0,1N
Max. Force for Press fit	30N

Operating range: Winding 4.5V

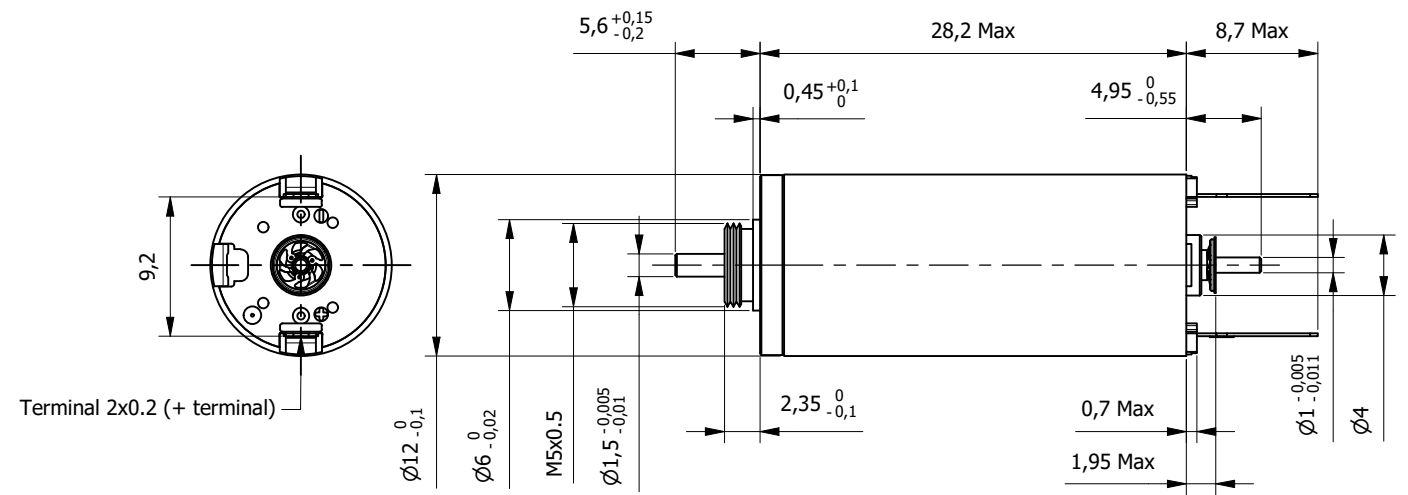


Brushed DC Coreless Motor 12DC28N-PM

Precious Metal brushes

Ø 12mm

2,9 to 3,9mNm

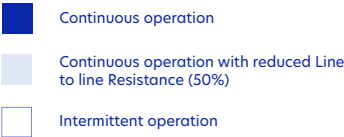
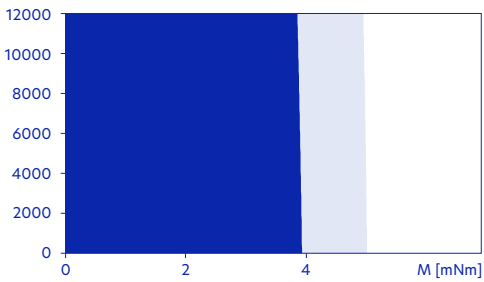


Product also available with ball bearings

Specification					
	Model	...6209	...5503	...5514	
1	Rated Voltage	V	3	6	12
2	Rated Speed	rpm	6230	5540	5560
3	Rated Torque	mNm	2,88	3,88	3,89
4	Stall Torque	mNm	9,9	10,5	10,6
5	Torque Constant	mNm/A	3,22	6,44	12,9
6	Motor Regulation	10 ³ /Nms	94,0	88,7	87,7
7	Rated Current	A	0,924	0,616	0,309
8	Stall Current	A	3,08	1,63	0,824
9	No-load Current	mA	31,3	15,7	7,83
10	No-load Speed	rpm	8810	8810	8810
11	Line to Line Resistance	Ω	0,975	3,68	14,6
12	Line to Line Inductance	mH	0,031	0,125	0,502
13	Rotor Inertia	gcm ²	0,484	0,496	0,498
14	Max. Efficiency	%	81	82	82
15	Mechanical Time Constant	ms	4,55	4,4	4,38
16	Length (L)	mm	28,2	28,2	28,2
17	Weight	g	16	16	16

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +85°C
Max. Winding Temperature	+100°C
Max. Speed	12000rpm
Radial play	0,015mm
Axial play	0 to 0,15mm
Max. Radial force (5mm from flange)	0,8N
Max. Axial force	0,1N
Max. Force for Press fit	30N

Operating range: Winding 4.5V

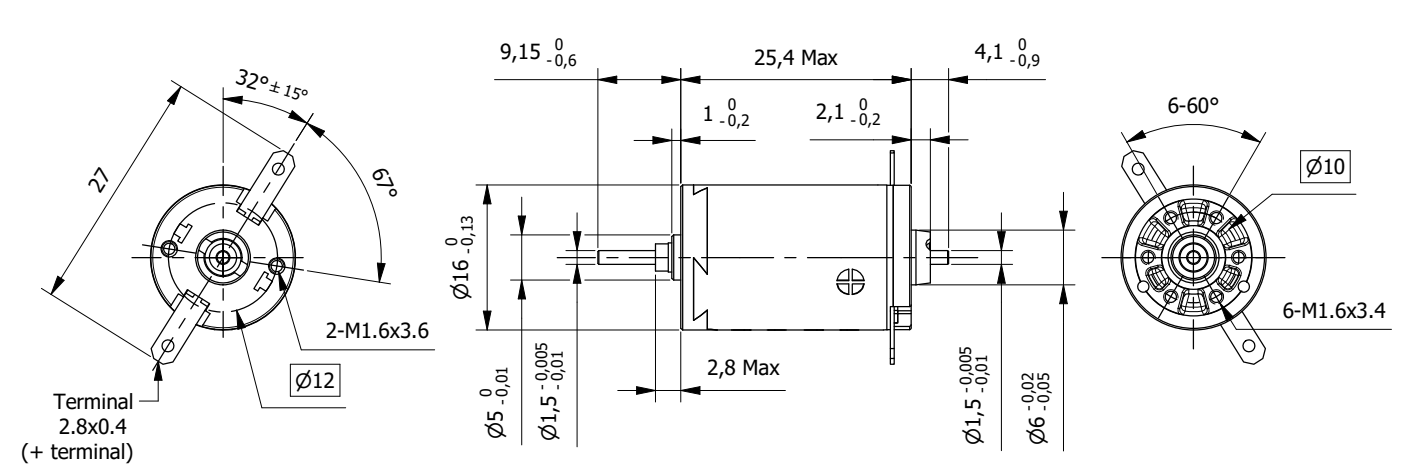


Brushed DC Coreless Motor 16DC25P-PM

Precious Metal brushes

Ø 16mm

3,8 to 4,1mNm

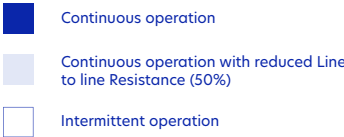
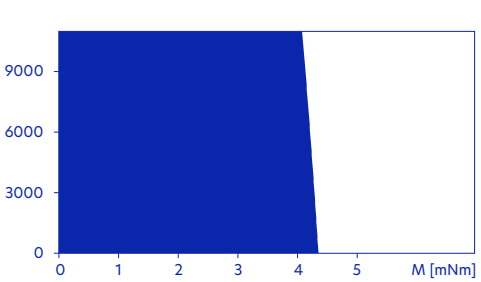


Product also available with ball bearings

Specification					
	Model	...4804	...4319	...4283	
1	Rated Voltage	V	6	12	24
2	Rated Speed	rpm	4830	4390	4210
3	Rated Torque	mNm	4,06	3,92	3,8
4	Stall Torque	mNm	10,5	9,44	8,75
5	Torque Constant	mNm/A	7,19	15	30,3
6	Motor Regulation	10 ³ /Nms	79,3	84,9	90,6
7	Rated Current	A	0,577	0,267	0,128
8	Stall Current	A	1,46	0,629	0,289
9	No-load Current	mA	14,7	6,9	3,4
10	No-load Speed	rpm	7890	7560	7470
11	Line to Line Resistance	Ω	4,1	19,1	83,2
12	Line to Line Inductance	mH	0,14	0,61	2,49
13	Rotor Inertia	gcm ²	1,12	1,05	0,994
14	Max. Efficiency	%	81	80	80
15	Mechanical Time Constant	ms	8,87	8,92	9
16	Length (L)	mm	25,4	25,4	25,4
17	Weight	g	23,3	23,3	23,3

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +65°C
Max. Winding Temperature	+85°C
Max. Speed	11000rpm
Radial play	0,012mm
Axial play	0,05 to 0,15mm
Max. Radial force (5mm from flange)	1,4N
Max. Axial force	0,8N
Max. Force for Press fit	35N

Operating range: Winding 12V

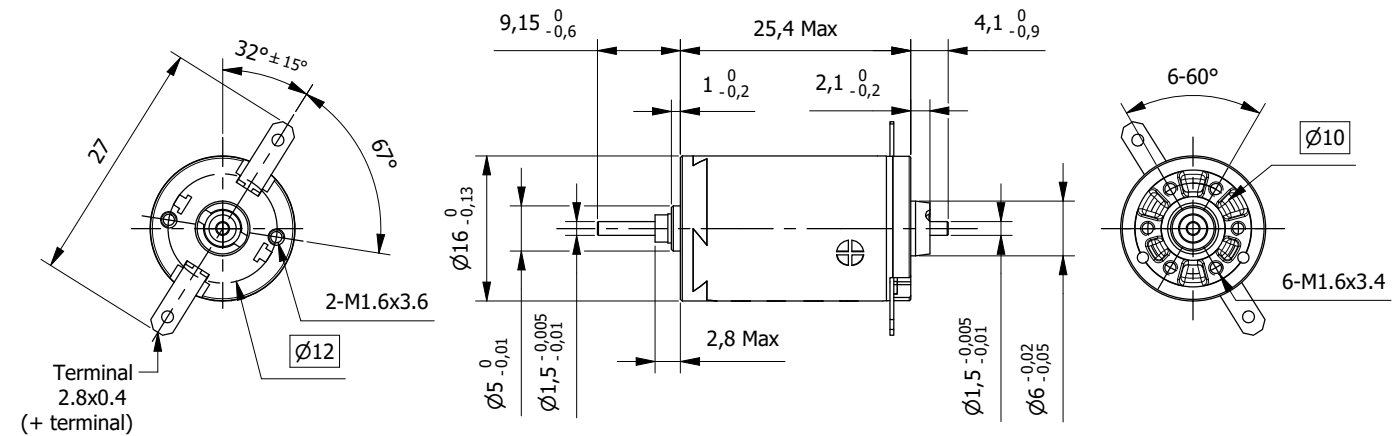


Brushed DC Coreless Motor 16DC25P-G

Graphite brushes

Ø 16mm

3,7 to 4,8mNm

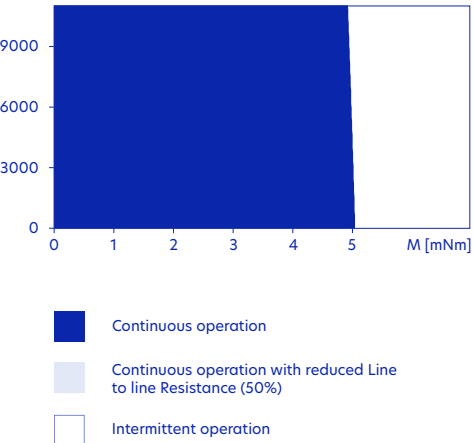


Product also available with ball bearings

Specification					
	Model		...6702	...6211	...6537
1	Rated Voltage	V	6	12	24
2	Rated Speed	rpm	6770	6200	6580
3	Rated Torque	mNm	3,71	4,31	4,76
4	Stall Torque	mNm	12,1	11,9	14,4
5	Torque Constant	mNm/A	5,62	11,2	22,5
6	Motor Regulation	10 ³ /Nms	88,3	90,9	74,1
7	Rated Current	A	0,72	0,413	0,227
8	Stall Current	A	2,15	1,05	0,64
9	No-load Current	mA	67,3	33,6	16,8
10	No-load Speed	rpm	9870	9860	9920
11	Line to Line Resistance	Ω	2,79	11,4	37,5
12	Line to Line Inductance	mH	0,086	0,343	1,37
13	Rotor Inertia	gcm2	1	0,993	1,16
14	Max. Efficiency	%	68	68	71
15	Mechanical Time Constant	ms	8,85	8,92	8,57
16	Length (L)	mm	25,4	25,4	25,4
17	Weight	g	23,1	23,1	23,1

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +85°C
Max. Winding Temperature	+125°C
Max. Speed	11000rpm
Radial play	0,012mm
Axial play	0,05 to 0,15mm
Max. Radial force (5mm from flange)	1,4N
Max. Axial force	0,8N
Max. Force for Press fit	35N

Operating range: Winding 24V

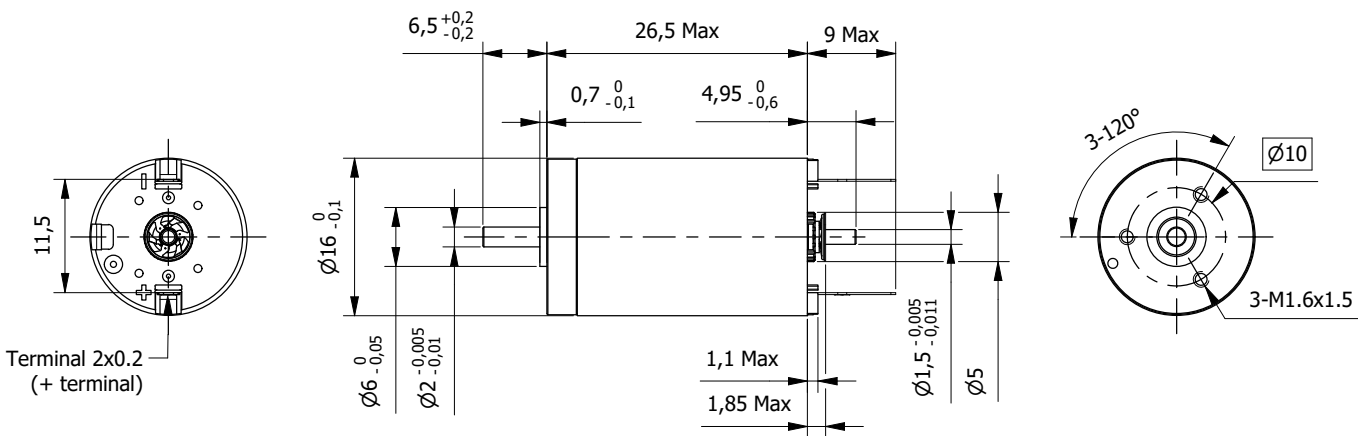


Brushed DC Coreless Motor 16DC26N-PM

Precious Metal brushes

Ø 16mm

5 to 5,4mNm

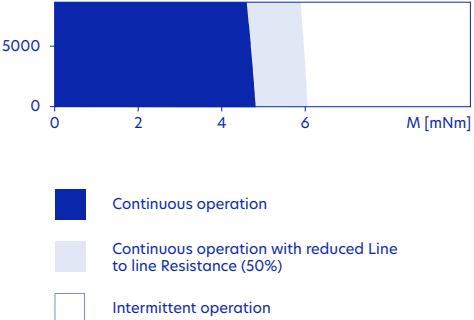


Product also available with ball bearings

Specification						
	Model		...3301	...3704	...3319	...3283
1	Rated Voltage	V	3	6	12	24
2	Rated Speed	rpm	3350	3760	3320	3200
3	Rated Torque	mNm	5,15	5,36	5,19	4,99
4	Stall Torque	mNm	11,1	12,6	11,2	10,4
5	Torque Constant	mNm/A	4,45	8,53	18	36
6	Motor Regulation	10³/Nms	60,6	55,8	59,3	64,1
7	Rated Current	A	1,2	0,65	0,299	0,144
8	Stall Current	A	2,49	1,48	0,624	0,289
9	No-load Current	mA	44,6	23,4	11	5,51
10	No-load Speed	rpm	6320	6610	6260	6250
11	Line to Line Resistance	Ω	1,2	4,06	19,2	83,1
12	Line to Line Inductance	mH	0,036	0,131	0,581	2,32
13	Rotor Inertia	gcm²	1	1,08	1,03	0,96
14	Max. Efficiency	%	75	77	75	74
15	Mechanical Time Constant	ms	6,09	6,05	6,11	6,17
16	Length (L)	mm	26,5	26,5	26,5	26,5
17	Weight	g	26	26	26	26

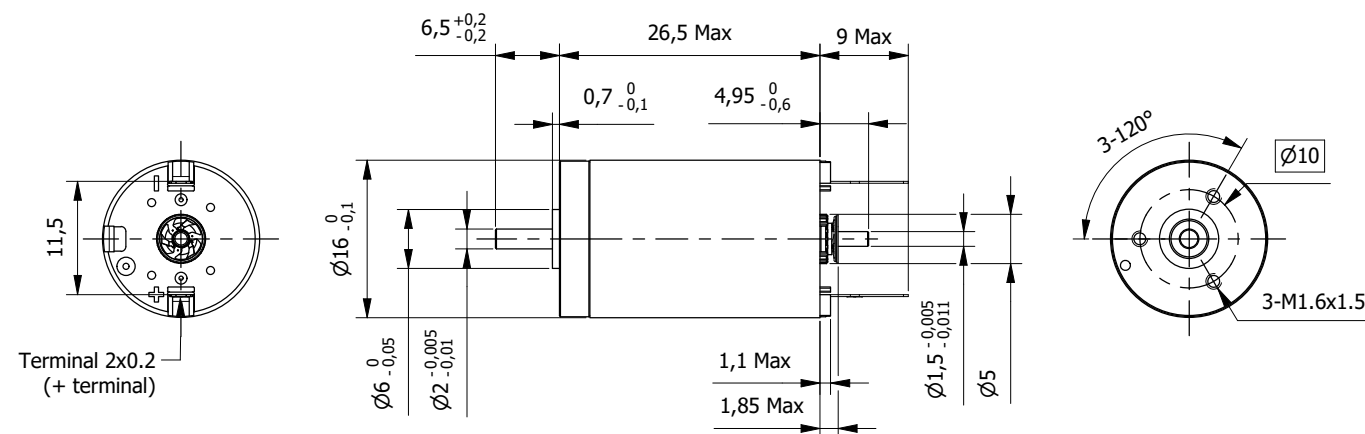
Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +85°C
Max. Winding Temperature	+100°C
Max. Speed	8680rpm
Radial play	0,015mm
Axial play	0 to 0,2mm
Max. Radial force (5mm from flange)	2N
Max. Axial force	0,1N
Max. Force for Press fit	60N

Operating range: Winding 12V



Graphite brushes

5,4mNm

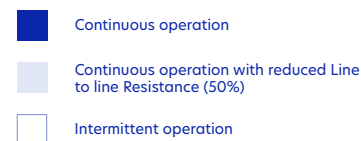
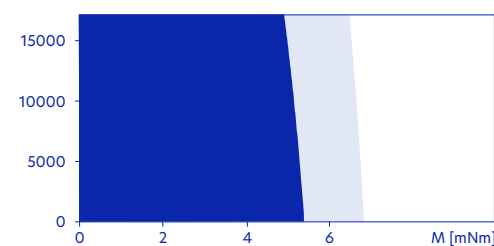


Product also available with ball bearings

Specification					
	Model	...9401	...9804	...9419	
1	Rated Voltage	V	6	12	24
2	Rated Speed	rpm	9400	9850	9430
3	Rated Torque	mNm	5,45	5,36	5,43
4	Stall Torque	mNm	21,3	22,6	21,7
5	Torque Constant	mNm/A	4,45	8,53	17,8
6	Motor Regulation	10³/Nms	63,1	62,3	62,2
7	Rated Current	A	1,28	0,662	0,321
8	Stall Current	A	4,79	2,65	1,22
9	No-load Current	mA	63,9	35,4	16,8
10	No-load Speed	rpm	12700	13200	12700
11	Line to Line Resistance	Ω	1,25	4,53	19,7
12	Line to Line Inductance	mH	0,036	0,131	0,569
13	Rotor Inertia	gcm2	1	1,08	1,02
14	Max. Efficiency	%	78	76	78
15	Mechanical Time Constant	ms	6,35	6,74	6,32
16	Length (L)	mm	26,5	26,5	26,5
17	Weight	g	26	26	26

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +100°C
Max. Winding Temperature	+125°C
Max. Speed	17000rpm
Radial play	0,015mm
Axial play	0 to 0,2mm
Max. Radial force (5mm from flange)	2N
Max. Axial force	0,1N
Max. Force for Press fit	60N

Operating range: Winding 12V

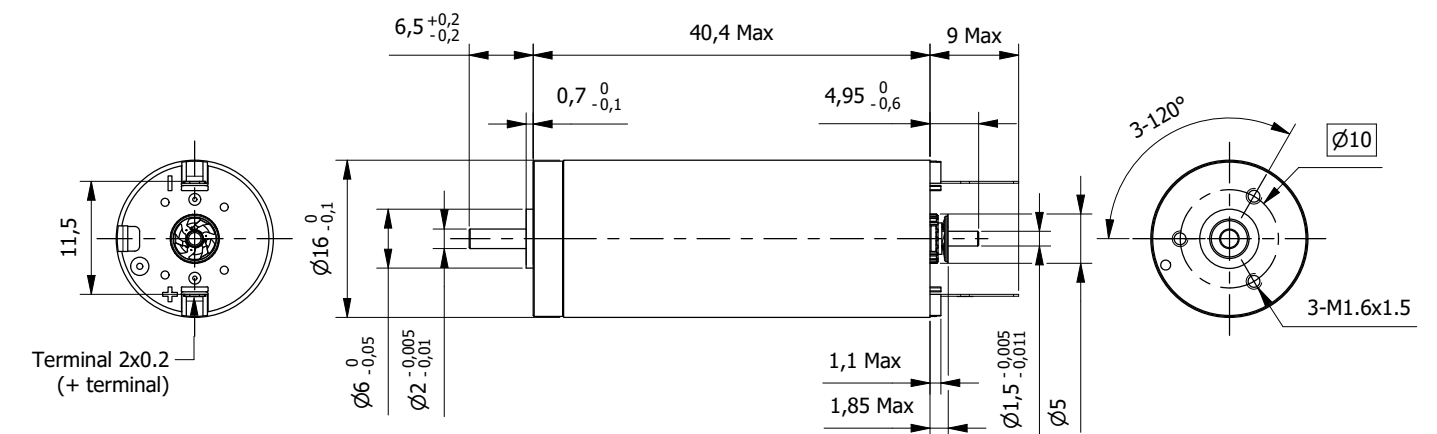


Brushed DC Coreless Motor 16DC40N-PM

Precious Metal brushes

Ø 16mm

5 to 10,8mNm

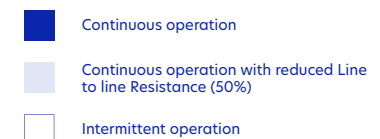
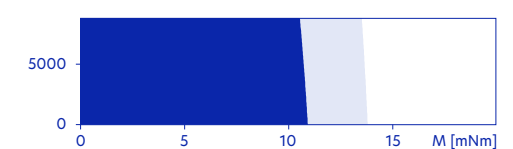


Product also available with ball bearings

Specification						
	Model	...5403	...4901	...4405	...4622	
1	Rated Voltage	V	3	6	12	24
2	Rated Speed	rpm	5450	4920	4490	4630
3	Rated Torque	mNm	5,06	10	10,8	10,7
4	Stall Torque	mNm	34,4	39,3	36,6	36,6
5	Torque Constant	mNm/A	4,44	8,59	17,8	34,7
6	Motor Regulation	10³/Nms	19,7	17,8	18,4	18,9
7	Rated Current	A	1,2	1,2	0,625	0,316
8	Stall Current	A	7,73	4,57	2,06	1,06
9	No-load Current	mA	62,5	32,6	15,6	8,05
10	No-load Speed	rpm	6400	6620	6400	6560
11	Line to Line Resistance	Ω	0,388	1,31	5,82	22,7
12	Line to Line Inductance	mH	0,026	0,096	0,411	1,56
13	Rotor Inertia	gcm2	2,18	2,36	2,28	2,23
14	Max. Efficiency	%	83	84	83	83
15	Mechanical Time Constant	ms	4,29	4,2	4,19	4,23
16	Length (L)	mm	40,4	40,4	40,4	40,4
17	Weight	g	42	42	42	42

Characteristics	
Item	
Ambient Temperature	Sleeve bearings -30°C to +85°C
Max. Winding Temperature	+100°C
Max. Speed	8680rpm
Radial play	0,015mm
Axial play	0 to 0,2mm
Max. Radial force (5mm from flange)	2N
Max. Axial force	0,1N
Max. Force for Press fit	60N

Operating range: Winding 9V

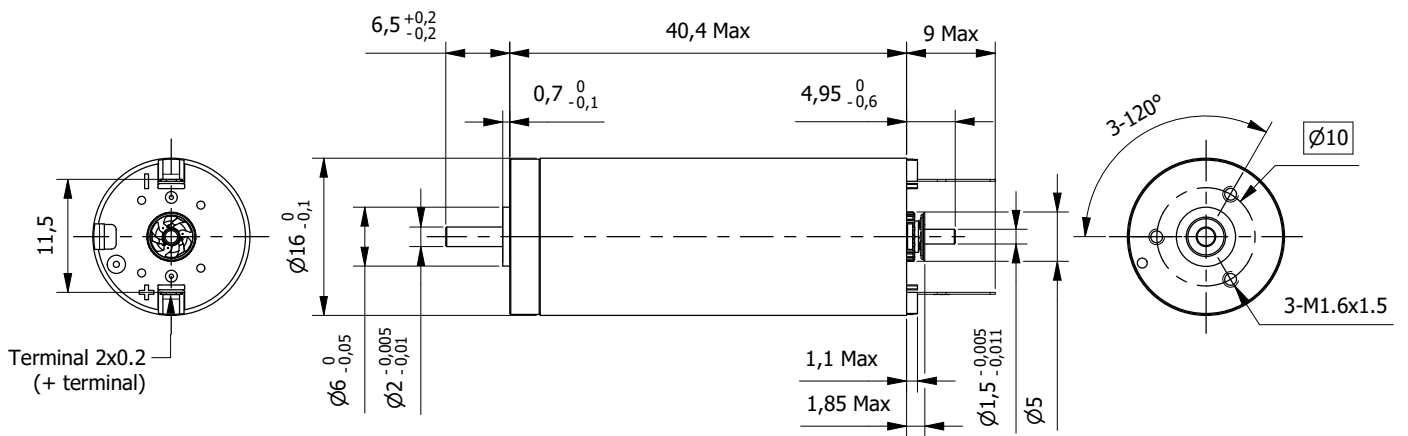


Brushed DC Coreless Motor 16DC40N-G

Graphite brushes

Ø 16mm

8,6 to 11,3mNm

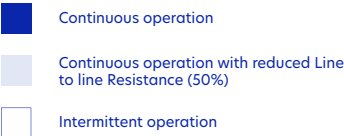
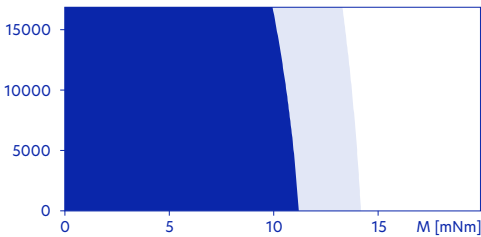


Product also available with ball bearings

Specification					
	Model	...11004	...10701	...10606	
1	Rated Voltage	V	6	12	24
2	Rated Speed	rpm	11000	10700	10600
3	Rated Torque	mNm	8,58	10,4	11,3
4	Stall Torque	mNm	61,8	63,3	68,5
5	Torque Constant	mNm/A	4,44	8,59	17,8
6	Motor Regulation	10 ³ /Nms	21,9	22,1	19,7
7	Rated Current	A	2	1,24	0,651
8	Stall Current	A	13,9	7,37	3,85
9	No-load Current	mA	73,5	38,6	18,4
10	No-load Speed	rpm	12800	13200	12800
11	Line to Line Resistance	Ω	0,431	1,63	6,23
12	Line to Line Inductance	mH	0,026	0,096	0,411
13	Rotor Inertia	gcm ²	2,18	2,36	2,28
14	Max. Efficiency	%	85	83	86
15	Mechanical Time Constant	ms	4,77	5,21	4,48
16	Length (L)	mm	40,4	40,4	40,4
17	Weight	g	42	42	42

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +100°C
Max. Winding Temperature	+125°C
Max. Speed	15000rpm
Radial play	0,015mm
Axial play	0 to 0,2mm
Max. Radial force (5mm from flange)	2N
Max. Axial force	0,1N
Max. Force for Press fit	60N

Operating range: Winding 12V

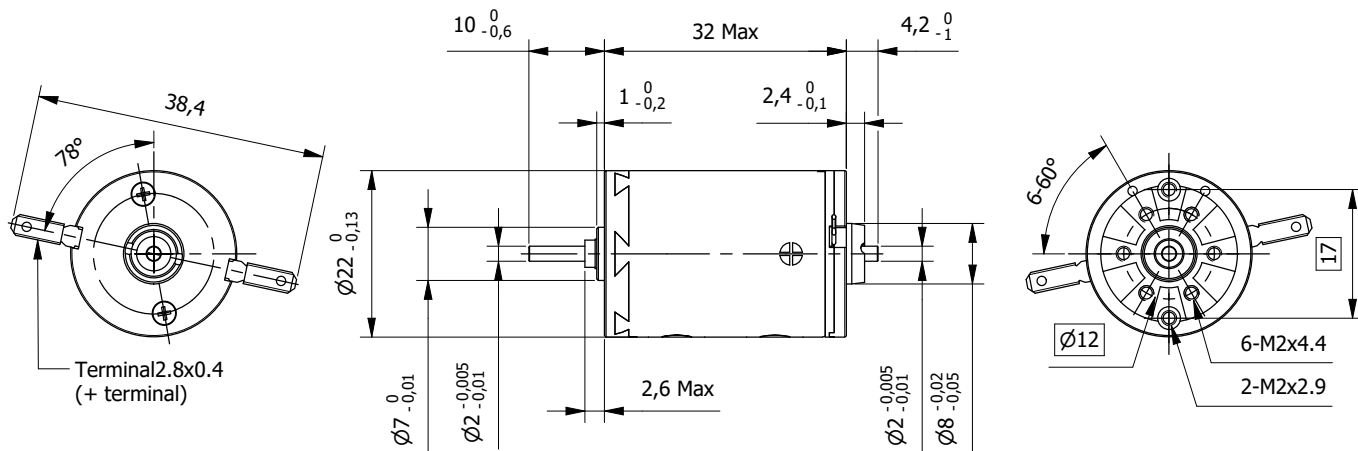


Brushed DC Coreless Motor 22DC32P-PM

Precious Metal brushes

Ø 22mm

8,5 to 10,4mNm

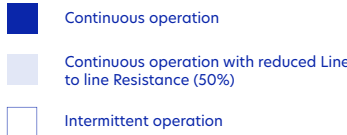
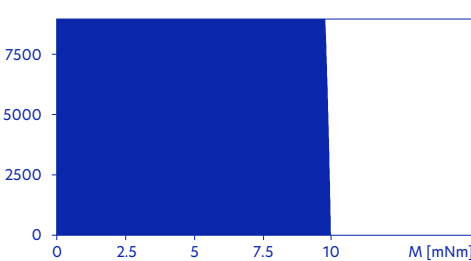


Product also available with ball bearings

Specification					
	Model	...4201	...4206	...3433	
1	Rated Voltage	V	6	12	24
2	Rated Speed	rpm	4280	4240	3440
3	Rated Torque	mNm	8,54	10,3	10,4
4	Stall Torque	mNm	39	36,9	33,3
5	Torque Constant	mNm/A	10,4	19,3	44,8
6	Motor Regulation	10 ³ /Nms	14,8	16,9	16,6
7	Rated Current	A	0,84	0,543	0,236
8	Stall Current	A	3,75	1,91	0,721
9	No-load Current	mA	20,8	11,7	4,62
10	No-load Speed	rpm	5480	5890	5090
11	Line to Line Resistance	Ω	1,6	6,28	33,3
12	Line to Line Inductance	mH	0,119	0,413	2,21
13	Rotor Inertia	gcm ²	5,7	4,98	5,05
14	Max. Efficiency	%	87,5	85,2	84,9
15	Mechanical Time Constant	ms	8,44	8,36	8,39
16	Length (L)	mm	32	32	32
17	Weight	g	53,8	53,8	53,8

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +65°C
Max. Winding Temperature	+85°C
Max. Speed	9000rpm
Radial play	0,012mm
Axial play	0,05 to 0,15mm
Max. Radial force (5mm from flange)	2,8N
Max. Axial force	1N
Max. Force for Press fit	80N

Operating range: Winding 12V

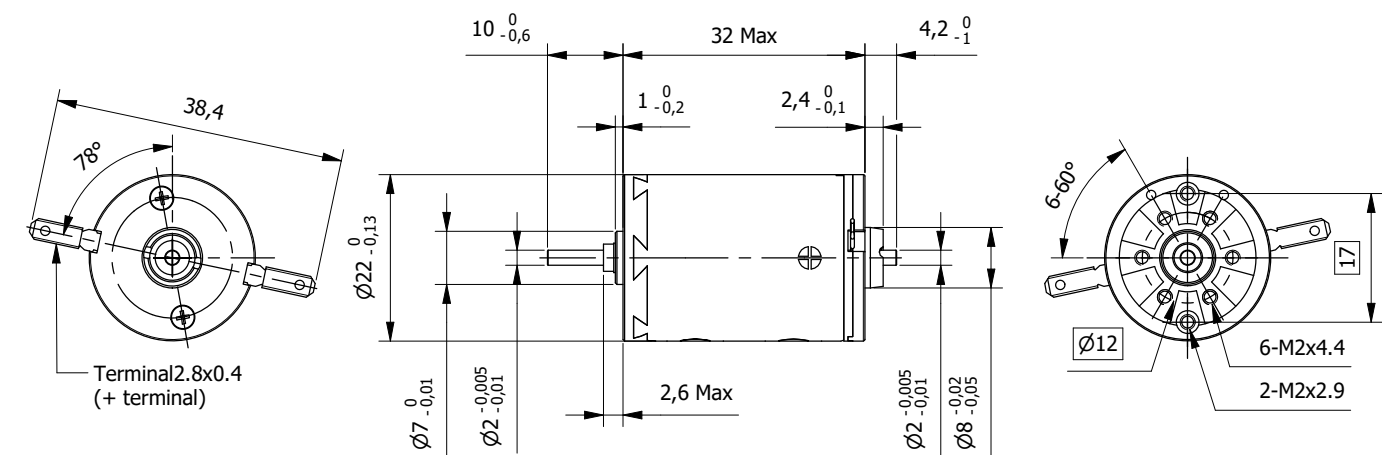


Brushed DC Coreless Motor 22DC32P-G

Graphite brushes

Ø 22mm

11,5 to 12,6mNm

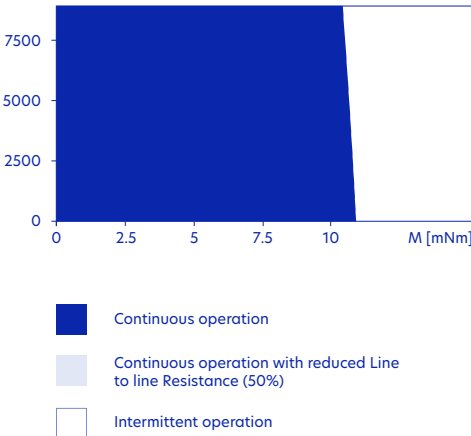


Product also available with ball bearings

Specification					
	Model	...4901	...5203	...5316	
1	Rated Voltage	V	6	12	24
2	Rated Speed	rpm	4950	5240	5350
3	Rated Torque	mNm	11,5	12,6	11,8
4	Stall Torque	mNm	42,4	49,4	44,6
5	Torque Constant	mNm/A	7,88	15,8	30,8
6	Motor Regulation	10 ³ /Nms	17,9	15,3	17,5
7	Rated Current	A	1,52	0,825	0,398
8	Stall Current	A	5,39	3,14	1,45
9	No-load Current	mA	58,8	29,5	15,1
10	No-load Speed	rpm	7030	7140	7330
11	Line to Line Resistance	Ω	1,11	3,83	16,6
12	Line to Line Inductance	mH	0,069	0,274	1,05
13	Rotor Inertia	gcm2	5,07	5,57	4,69
14	Max. Efficiency	%	76	80	80
15	Mechanical Time Constant	ms	9,09	8,57	8,2
16	Length (L)	mm	32	32	32
17	Weight	g	53,8	53,8	53,8

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +85°C
Max. Winding Temperature	+125°C
Max. Speed	9000rpm
Radial play	0,012mm
Axial play	0,05 to 0,15mm
Max. Radial force (5mm from flange)	2,8N
Max. Axial force	1N
Max. Force for Press fit	80N

Operating range: Winding 12V

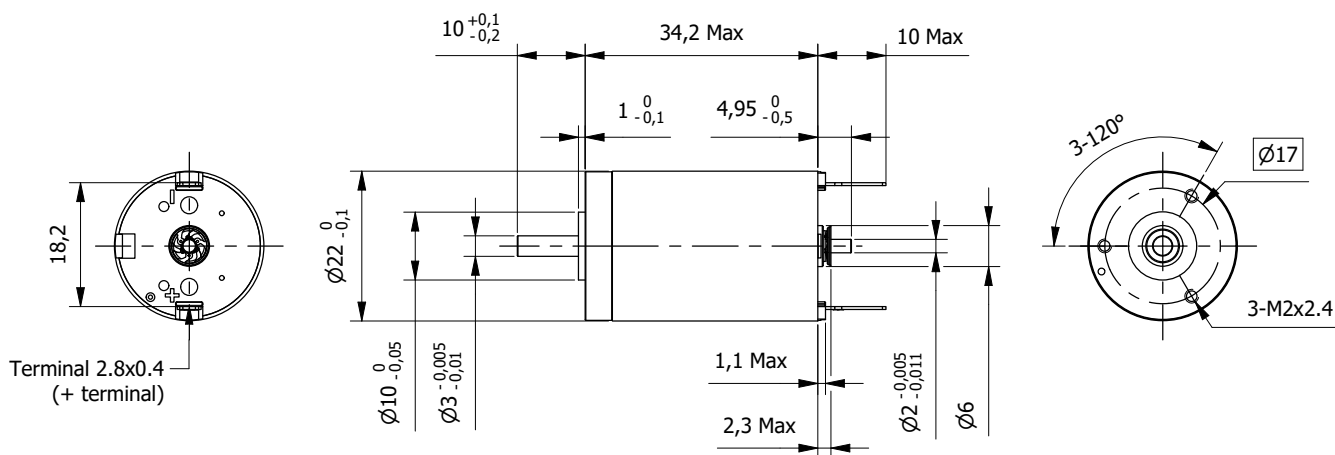


Brushed DC Coreless Motor 22DC34N-PM

Precious Metal brushes

Ø 22mm

10,7 to 14,7mNm

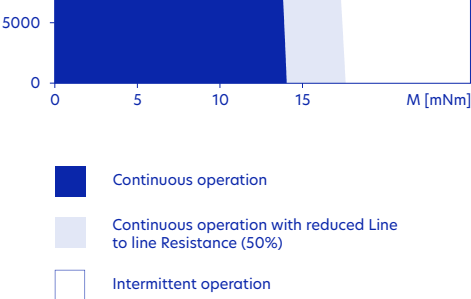


Product also available with ball bearings

Specification						
	Model		...4901	...4603	...4716	...4276
1	Rated Voltage	V	6	12	24	48
2	Rated Speed	rpm	4960	4670	4700	4240
3	Rated Torque	mNm	10,7	14,7	13,6	13,6
4	Stall Torque	mNm	53,7	59,7	52,7	48,6
5	Torque Constant	mNm/A	9,18	18,4	35,9	77,2
6	Motor Regulation	10³/Nms	12,1	10,9	12,6	12,8
7	Rated Current	A	1,2	0,817	0,388	0,18
8	Stall Current	A	5,85	3,25	1,47	0,63
9	No-load Current	mA	39,2	19,6	10,1	4,55
10	No-load Speed	rpm	6200	6200	6340	5890
11	Line to Line Resistance	Ω	1,02	3,69	16,3	76,2
12	Line to Line Inductance	mH	0,058	0,231	0,881	4,08
13	Rotor Inertia	gcm2	5,05	5,55	4,67	4,84
14	Max. Efficiency	%	84	85	84	84
15	Mechanical Time Constant	ms	6,14	6,07	5,93	6,19
16	Length (L)	mm	34,2	34,2	34,2	34,2
17	Weight	g	66	66	66	66

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +85°C
Max. Winding Temperature	+100°C
Max. Speed	7160rpm
Radial play	0,02mm
Axial play	0 to 0,2mm
Max. Radial force (5mm from flange)	3N
Max. Axial force	0,1N
Max. Force for Press fit	80N

Operating range: Winding 18V

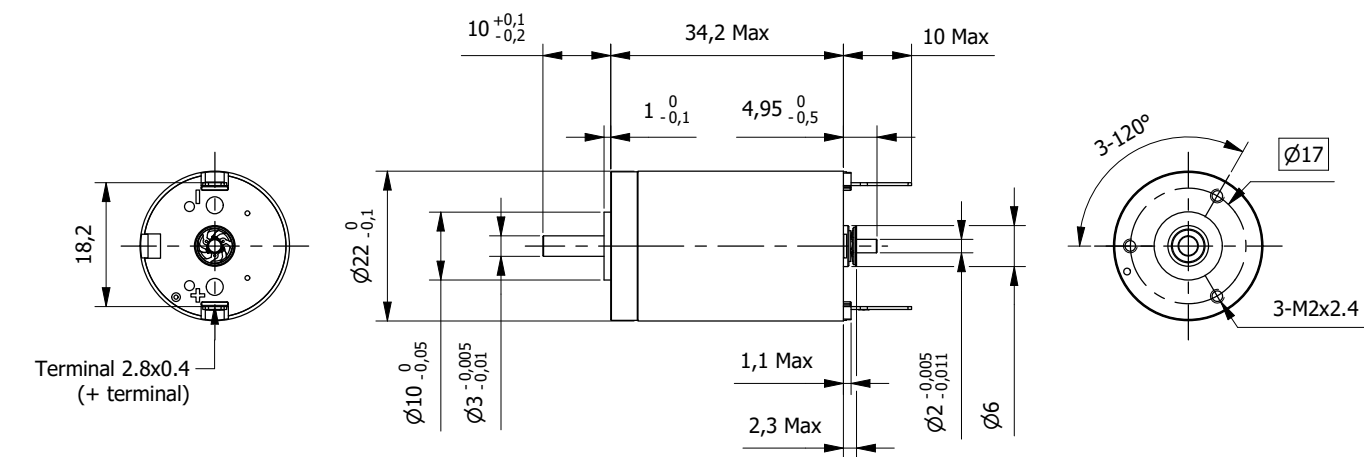


Brushed DC Coreless Motor 22DC34N-G

Graphite brushes

Ø 22mm

14 to 15,3mNm

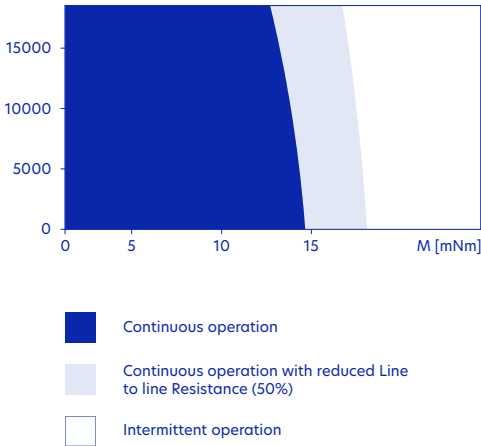


Product also available with ball bearings

Specification						
	Model		...9702	...10701	...10803	...10916
1	Rated Voltage	V	6	12	24	48
2	Rated Speed	rpm	9700	10700	10800	10900
3	Rated Torque	mNm	14,4	14,6	15,3	14
4	Stall Torque	mNm	101	108	120	104
5	Torque Constant	mNm/A	5,01	9,18	18,4	35,9
6	Motor Regulation	10³/Nms	11,8	12,1	10,9	12,9
7	Rated Current	A	3	1,65	0,869	0,406
8	Stall Current	A	20,2	11,8	6,51	2,9
9	No-load Current	mA	126	71,7	35,9	18,5
10	No-load Speed	rpm	11400	12400	12400	12700
11	Line to Line Resistance	Ω	0,297	1,02	3,69	16,6
12	Line to Line Inductance	mH	0,017	0,058	0,231	0,881
13	Rotor Inertia	gcm²	5,27	5,05	5,55	4,67
14	Max. Efficiency	%	85	85	86	84
15	Mechanical Time Constant	ms	6,23	6,12	6,07	6,01
16	Length (L)	mm	34,2	34,2	34,2	34,2
17	Weight	g	66	66	66	66

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +100°C
Max. Winding Temperature	+125°C
Max. Speed	18000rpm
Radial play	0,02mm
Axial play	0 to 0,2mm
Max. Radial force (5mm from flange)	3N
Max. Axial force	0,1N
Max. Force for Press fit	80N

Operating range: Winding 18V

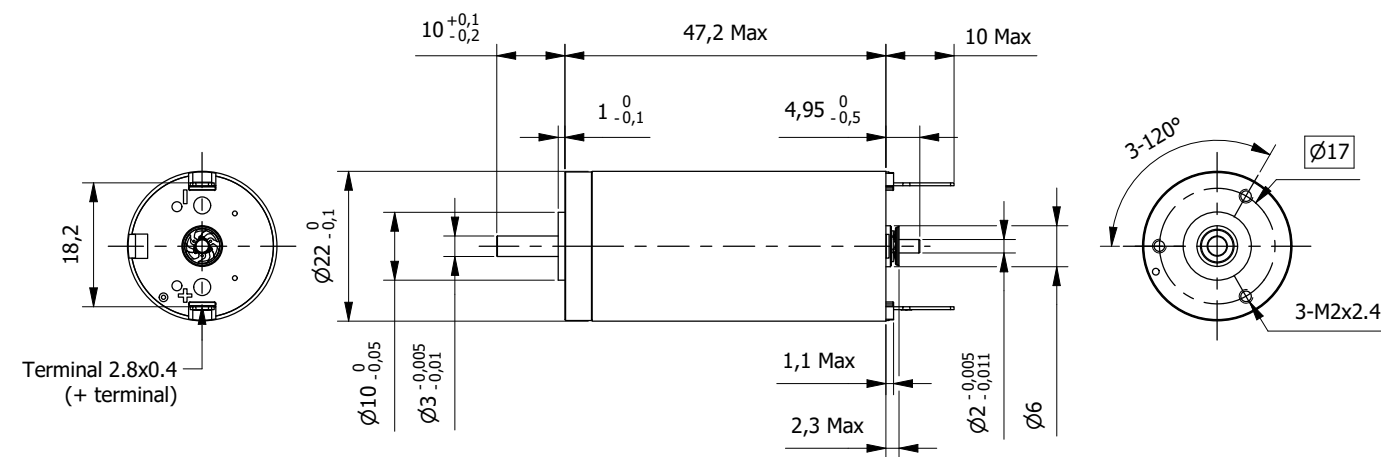


Brushed DC Coreless Motor 22DC47N-PM

Precious Metal brushes

Ø 22mm

14,1 to 29,5mNm

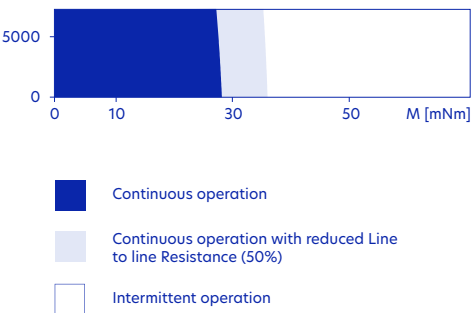


Product also available with ball bearings

Specification						
	Model		...5303	...4001	...4007	...4129
1	Rated Voltage	V	6	12	24	48
2	Rated Speed	rpm	5380	4000	4070	4180
3	Rated Torque	mNm	14,1	29,5	29,2	27,8
4	Stall Torque	mNm	170	150	150	140
5	Torque Constant	mNm/A	9,73	22,9	45,2	87,6
6	Motor Regulation	10³/Nms	3,6	3,5	3,5	3,9
7	Rated Current	A	1,5	1,3	0,655	0,322
8	Stall Current	A	17,5	6,54	3,31	1,6
9	No-load Current	mA	51	20	10,2	5,36
10	No-load Speed	rpm	5870	4980	5060	5220
11	Line to Line Resistance	Ω	0,343	1,84	7,25	29,9
12	Line to Line Inductance	mH	0,035	0,192	0,746	2,8
13	Rotor Inertia	gcm2	9,06	9	8,85	8,12
14	Max. Efficiency	%	89	89	89	89
15	Mechanical Time Constant	ms	3,28	3,14	3,14	3,17
16	Length (L)	mm	47,2	47,2	47,2	47,2
17	Weight	g	95	95	95	95

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +85°C
Max. Winding Temperature	+100°C
Max. Speed	7160rpm
Radial play	0,02mm
Axial play	0 to 0,2mm
Max. Radial force (5mm from flange)	3N
Max. Axial force	0,1N
Max. Force for Press fit	80N

Operating range: Winding 18V

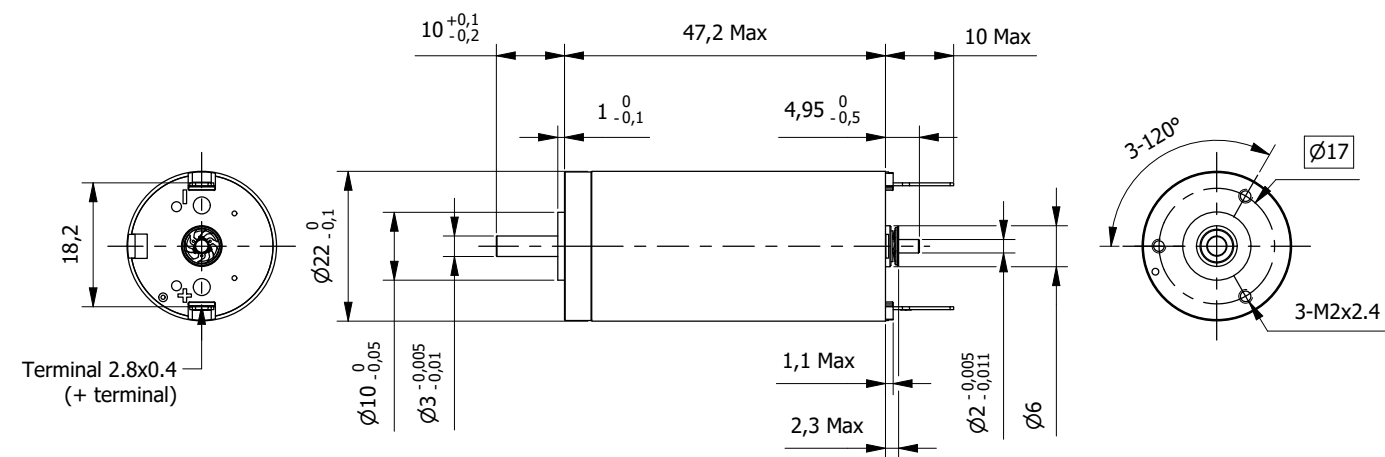


Brushed DC Coreless Motor 22DC47N-G

Graphite brushes

Ø 22mm

27 to 30,5mNm

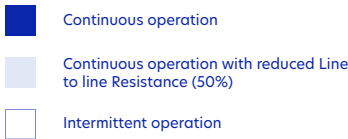
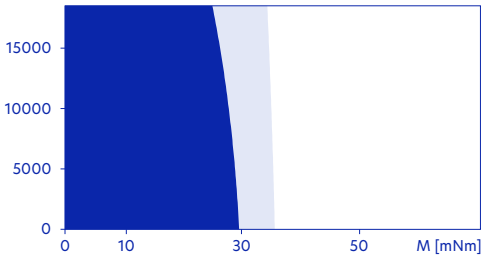


Product also available with ball bearings

Specification					
	Model	...11401	...10703	...9007	
1	Rated Voltage	V	9	12	48
2	Rated Speed	rpm	11400	10700	9020
3	Rated Torque	mNm	27	30,5	30,3
4	Stall Torque	mNm	371	348	294
5	Torque Constant	mNm/A	6,95	9,73	45,2
6	Motor Regulation	10 ³ /Nms	3,5	3,5	3,6
7	Rated Current	A	4	3,21	0,687
8	Stall Current	A	53,4	35,8	6,5
9	No-load Current	mA	118	81,8	16,2
10	No-load Speed	rpm	12300	11700	10100
11	Line to Line Resistance	Ω	0,168	0,335	7,39
12	Line to Line Inductance	mH	0,018	0,035	0,746
13	Rotor Inertia	gcm2	9,37	9,06	8,85
14	Max. Efficiency	%	90	91	90
15	Mechanical Time Constant	ms	3,27	3,21	3,2
16	Length (L)	mm	47,2	47,2	47,2
17	Weight	g	95	95	95

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +100°C
Max. Winding Temperature	+125°C
Max. Speed	18000rpm
Radial play	0,02mm
Axial play	0 to 0,2mm
Max. Radial force (5mm from flange)	3N
Max. Axial force	0,1N
Max. Force for Press fit	80N

Operating range: Winding 18V

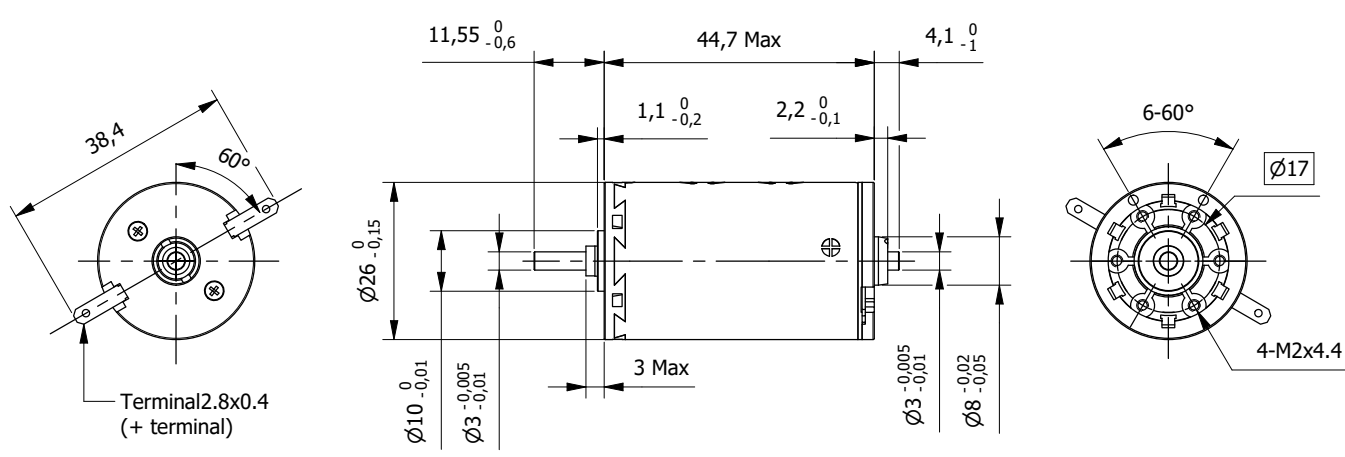


Brushed DC Coreless Motor 26DC44P-PM

Precious Metal brushes

Ø 26mm

20,8 to 28,8mNm

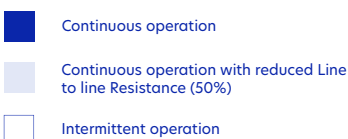
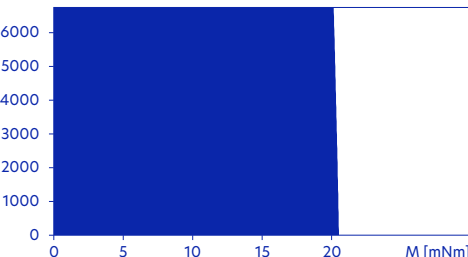


Product also available with ball bearings

Specification				
	Model	...3702	...3409	
1	Rated Voltage	V	12	24
2	Rated Speed	rpm	3790	3450
3	Rated Torque	mNm	20,8	28,8
4	Stall Torque	mNm	140	138
5	Torque Constant	mNm/A	25,6	52,2
6	Motor Regulation	10 ³ /Nms	3,3	3,3
7	Rated Current	A	0,84	0,564
8	Stall Current	A	5,49	2,64
9	No-load Current	mA	27,1	13,2
10	No-load Speed	rpm	4460	4370
11	Line to Line Resistance	Ω	2,19	9,08
12	Line to Line Inductance	mH	0,278	1,16
13	Rotor Inertia	gcm2	14,9	15,2
14	Max. Efficiency	%	87	87
15	Mechanical Time Constant	ms	4,99	5,06
16	Length (L)	mm	44,7	44,7
17	Weight	g	120	120

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +65°C
Max. Winding Temperature	+85°C
Max. Speed	6700rpm
Radial play	0,012mm
Axial play	0,1 to 0,2mm
Max. Radial force (5mm from flange)	5,5N
Max. Axial force	1,7N
Max. Force for Press fit	80N

Operating range: Winding 12V

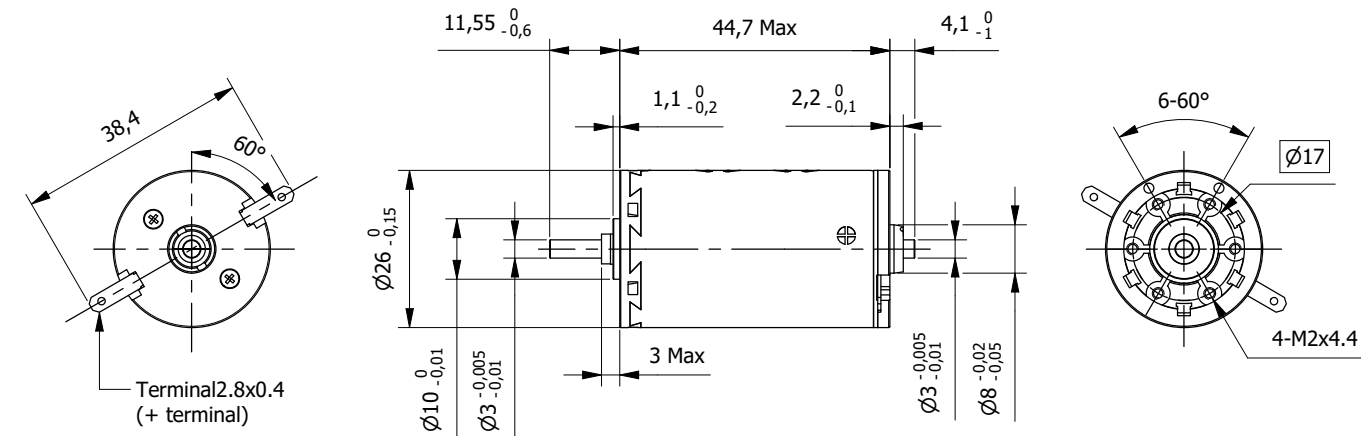


Brushed DC Coreless Motor 26DC44P-G

Graphite brushes

Ø 26mm

26,3 to 28,3mNm

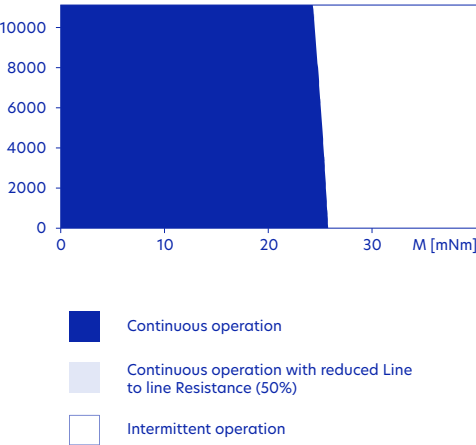


Product also available with ball bearings

Specification				
	Model	...8102	...7809	
1	Rated Voltage	V	24	48
2	Rated Speed	rpm	8100	7840
3	Rated Torque	mNm	26,3	28,3
4	Stall Torque	mNm	287	277
5	Torque Constant	mNm/A	25,6	52,2
6	Motor Regulation	10 ³ /Nms	3,3	3,3
7	Rated Current	A	1,08	0,567
8	Stall Current	A	11,2	5,31
9	No-load Current	mA	53	25,7
10	No-load Speed	rpm	8920	8730
11	Line to Line Resistance	Ω	2,14	9,04
12	Line to Line Inductance	mH	0,278	1,16
13	Rotor Inertia	gcm ²	14,9	15,2
14	Max. Efficiency	%	87	87
15	Mechanical Time Constant	ms	4,89	5,04
16	Length (L)	mm	44,7	44,7
17	Weight	g	120	120

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +85°C
Max. Winding Temperature	+100°C
Max. Speed	11000rpm
Radial play	0,012mm
Axial play	0,1 to 0,2mm
Max. Radial force (5mm from flange)	5,5N
Max. Axial force	1,7N
Max. Force for Press fit	80N

Operating range: Winding 24V

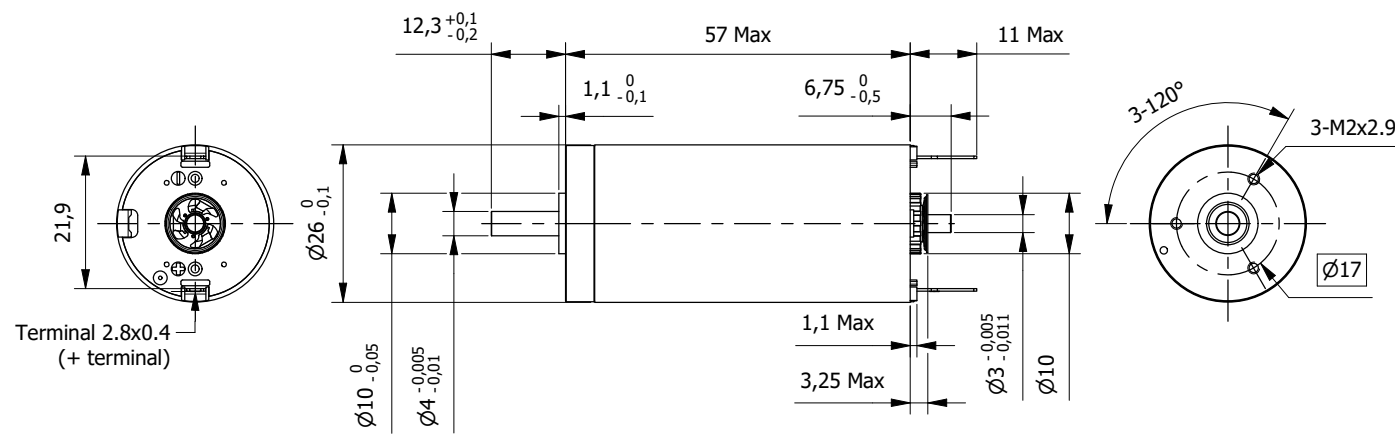


Brushed DC Coreless Motor 26DC57N-PM

Precious Metal brushes

Ø 26mm

32,9 to 52,3mNm

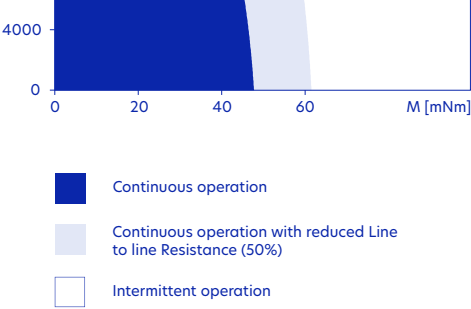


Product also available with ball bearings

Specification						
	Model		...5003	...4606	...4602	...4511
1	Rated Voltage	V	9	12	24	48
2	Rated Speed	rpm	5060	4690	4600	4570
3	Rated Torque	mNm	32,9	46,1	52,3	50,3
4	Stall Torque	mNm	384	384	384	355
5	Torque Constant	mNm/A	15,5	21,4	42,9	85,8
6	Motor Regulation	10³/Nms	1,5	1,5	1,5	1,5
7	Rated Current	A	2,2	2,2	1,25	0,599
8	Stall Current	A	24,8	17,9	8,95	4,14
9	No-load Current	mA	80,5	56,8	28,4	14,2
10	No-load Speed	rpm	5530	5330	5330	5320
11	Line to Line Resistance	Ω	0,363	0,671	2,68	11,6
12	Line to Line Inductance	mH	0,067	0,129	0,514	2,06
13	Rotor Inertia	gcm2	21,3	21,4	21,2	19,7
14	Max. Efficiency	%	89	89	89	89
15	Mechanical Time Constant	ms	3,23	3,13	3,09	3,11
16	Length (L)	mm	57	57	57	57
17	Weight	g	170	170	170	170

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +85°C
Max. Winding Temperature	+100°C
Max. Speed	5900rpm
Radial play	0,02mm
Axial play	0 to 0,2mm
Max. Radial force (5mm from flange)	5,5N
Max. Axial force	0,1N
Max. Force for Press fit	80N

Operating range: Winding 18V

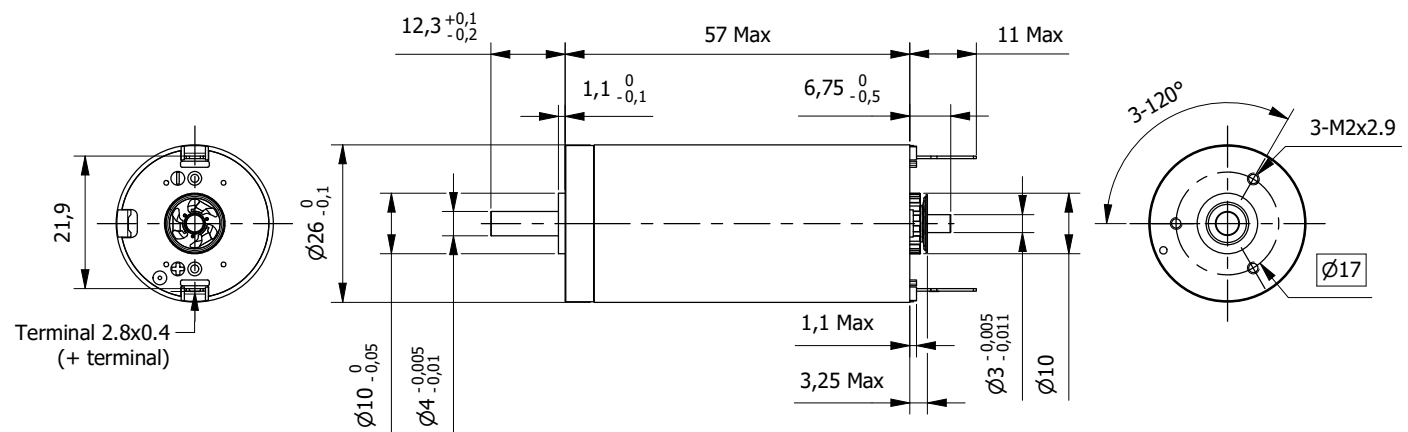


Brushed DC Coreless Motor 26DC57N-G

Graphite brushes

Ø 26mm

46,9 to 59,1mNm



Product also available with ball bearings

Specification					
	Model		...9402	...9607	...9702
1	Rated Voltage	V	12	24	48
2	Rated Speed	rpm	9460	9690	9730
3	Rated Torque	mNm	46,9	57,8	59,1
4	Stall Torque	mNm	532	695	697
5	Torque Constant	mNm/A	10,7	21,4	42,9
6	Motor Regulation	10³/Nms	2,1	1,6	1,6
7	Rated Current	A	4,5	2,76	1,41
8	Stall Current	A	49,7	32,4	16,2
9	No-load Current	mA	131	65,7	32,9
10	No-load Speed	rpm	10600	10700	10700
11	Line to Line Resistance	Ω	0,242	0,74	2,95
12	Line to Line Inductance	mH	0,032	0,129	0,514
13	Rotor Inertia	gcm²	21,4	21,4	21,2
14	Max. Efficiency	%	88	91	91
15	Mechanical Time Constant	ms	4,5	3,45	3,4
16	Length (L)	mm	57	57	57
17	Weight	g	170	170	170

Characteristics	
Item	
Ambient Temperature Sleeve bearings	-30°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	8600rpm
Radial play	0,02mm
Axial play	0 to 0,2mm
Max. Radial force (5mm from flange)	5,5N
Max. Axial force	0,1N
Max. Force for Press fit	80N

Operating range: Winding 18V

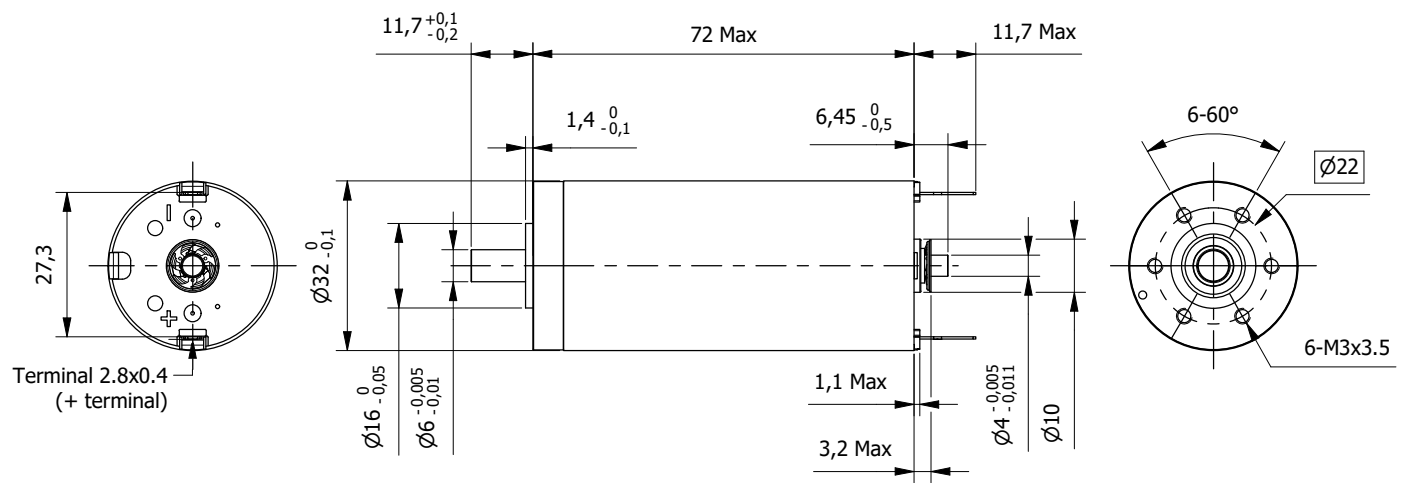


Brushed DC Coreless Motor 32DC72N-G

Graphite brushes

Ø 32mm

89,4 to 123mNm



Specification					
	Model	...6501	...7703	...7201	
1	Rated Voltage	V	12	24	48
2	Rated Speed	rpm	6560	7710	7260
3	Rated Torque	mNm	89,4	108	123
4	Stall Torque	mNm	1730	1980	2000
5	Torque Constant	mNm/A	15,6	27,3	58,5
6	Motor Regulation	10³/Nms	0,4	0,4	0,4
7	Rated Current	A	6	4,12	2,17
8	Stall Current	A	111	72,5	34,2
9	No-load Current	mA	274	164	75,2
10	No-load Speed	rpm	7120	8270	7780
11	Line to Line Resistance	Ω	0,108	0,331	1,4
12	Line to Line Inductance	mH	0,034	0,103	0,473
13	Rotor Inertia	gcm2	77,6	72,8	75,9
14	Max. Efficiency	%	85	88	90
15	Mechanical Time Constant	ms	3,44	3,24	3,11
16	Length (L)	mm	72	72	72
17	Weight	g	325	325	325

Characteristics	
Item	
Ambient Temperature Ball bearings	-40°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	11300rpm
Radial play	0,02mm
Axial play	0 to 0,1mm
Max. Radial force (5mm from flange)	65,3N
Max. Axial force	7N
Max. Force for Press fit	22,6N

Operating range: Winding 36V

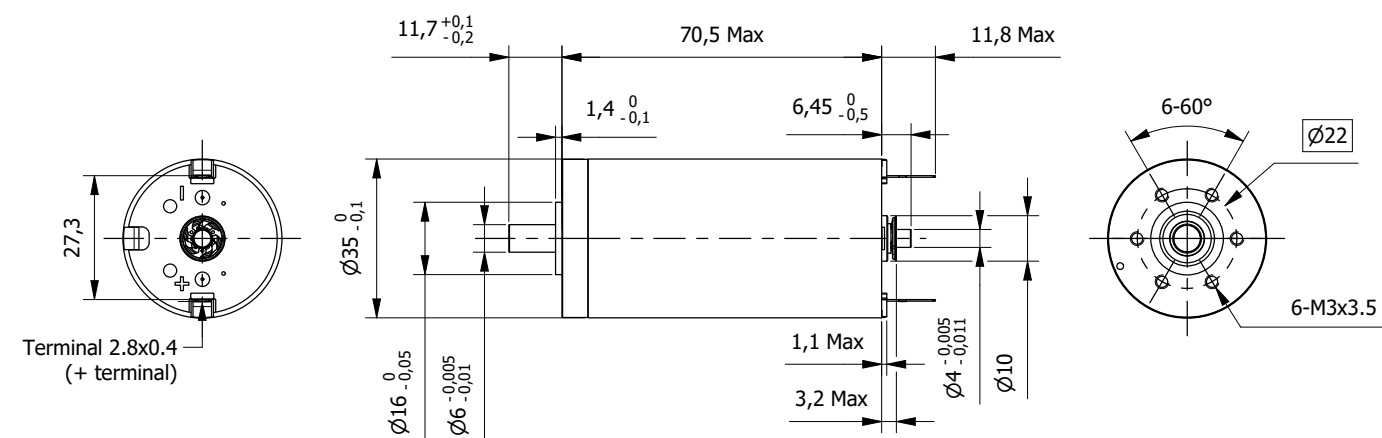


Brushed DC Coreless Motor 35DC70N-G

Graphite brushes

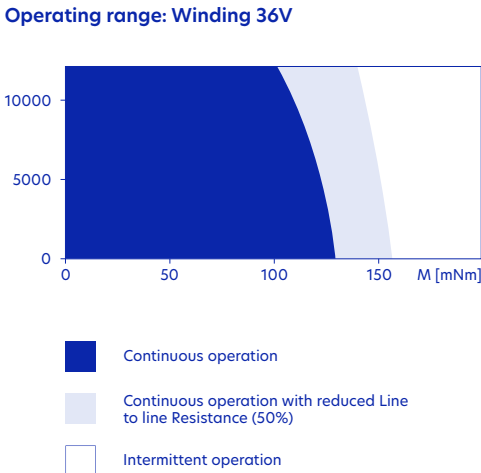
Ø 35mm

77,7 to 138mNm



Specification					
	Model	...7607	...7103	...6101	
1	Rated Voltage	V	12	24	48
2	Rated Speed	rpm	7610	7160	6140
3	Rated Torque	mNm	77,7	121	138
4	Stall Torque	mNm	2080	2030	1860
5	Torque Constant	mNm/A	13,7	29,3	68,3
6	Motor Regulation	10³/Nms	0,4	0,4	0,4
7	Rated Current	A	6	4,26	2,08
8	Stall Current	A	152	69,3	27,3
9	No-load Current	mA	320	146	58,6
10	No-load Speed	rpm	8130	7720	6670
11	Line to Line Resistance	Ω	0,079	0,346	1,76
12	Line to Line Inductance	mH	0,026	0,121	0,658
13	Rotor Inertia	gcm2	99,5	96,6	99,5
14	Max. Efficiency	%	85	89	90
15	Mechanical Time Constant	ms	4,21	3,91	3,76
16	Length (L)	mm	70,5	70,5	70,5
17	Weight	g	385	385	385

Characteristics	
Item	
Ambient Temperature Ball bearings	-40°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	12300rpm
Radial play	0,02mm
Axial play	0 to 0,1mm
Max. Radial force (5mm from flange)	65,3N
Max. Axial force	7N
Max. Force for Press fit	22,6N





Brushed DC

Permanent Magnet motors

Advantages at a glance	
High power-to-size ratio	
Easy to operate	
Extended motor life	

The key advantage of PMDC motors lies in their high power-to-size ratio. The presence of permanent magnets ensures strong magnetic fields, leading to increased torque and power output. This makes PMDC motors an excellent choice for applications where space is limited, without compromising on performance, and offer an ideal solution for all those customers that still want to rely on a well-established and trusted technology that provides easy-to-operate, long lasting and high torque capacity motors.

Permanent Magnet DC motors		Torque* (Nm)
42DI	0,038...0,057	56
52DI	0,09...0,22	57
63DI	0,18...0,27	58

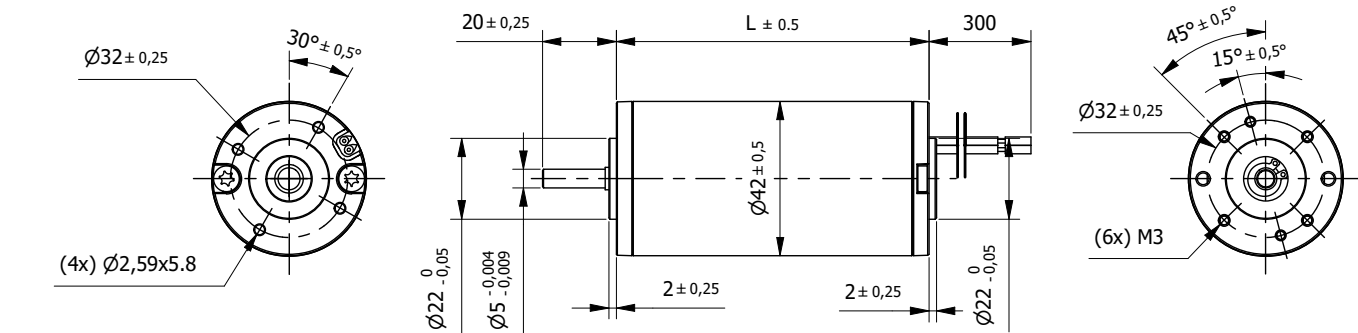
* Rated Torque

Brushed PMDC Motor 42DI

Permanent Magnet

Ø 42mm

0,038 - 0,057Nm



Specification		Model	...70-G3002	...70-G3007	...70-G3035	...85-G3001	...85-G3005	...85-G3021
1	Rated Voltage	V	12	24	48	12	24	48
2	Rated Speed	rpm	3000	3000	3000	3000	3000	3000
3	Rated Torque	Nm	0,038	0,038	0,038	0,057	0,057	0,057
4	Peak Torque	Nm	0,06	0,06	0,06	0,09	0,09	0,09
5	Stall Torque	Nm	0,13	0,14	0,14	0,27	0,27	0,27
6	Torque Constant	Nm/A	0,03	0,05	0,11	0,029	0,06	0,12
7	Speed Constant	rpm/V	354,6	175,1	84	340	165	84
8	Rated Current	A	1,60	0,78	0,38	2,16	1,06	0,53
9	Stall Current	A	5,3	2,78	1,35	9,6	4,64	2,3
10	No-load Current	A	0,28	0,15	0,038	0,22	0,11	0,05
11	No-load Speed	rpm	4091	4006	4115	4128	4064	4064
12	Line to Line Resistance	Ω	2,09	7,02	35,5	1,25	5,17	20,8
13	Rotor Inertia	gcm2	100	100	100	140	140	140
14	Max. Efficiency	%	71	71	71	77	77	77
15	Length (L)	mm	70	70	70	85	85	85
16	Weight	Kg	0,39	0,39	0,39	0,52	0,52	0,52

Characteristics	
Item	
Ambient Temperature Ball Bearings	40°
Radial Load (15 mm from front flange)	350 N
Protection Class	IP54
Insulation Class	F

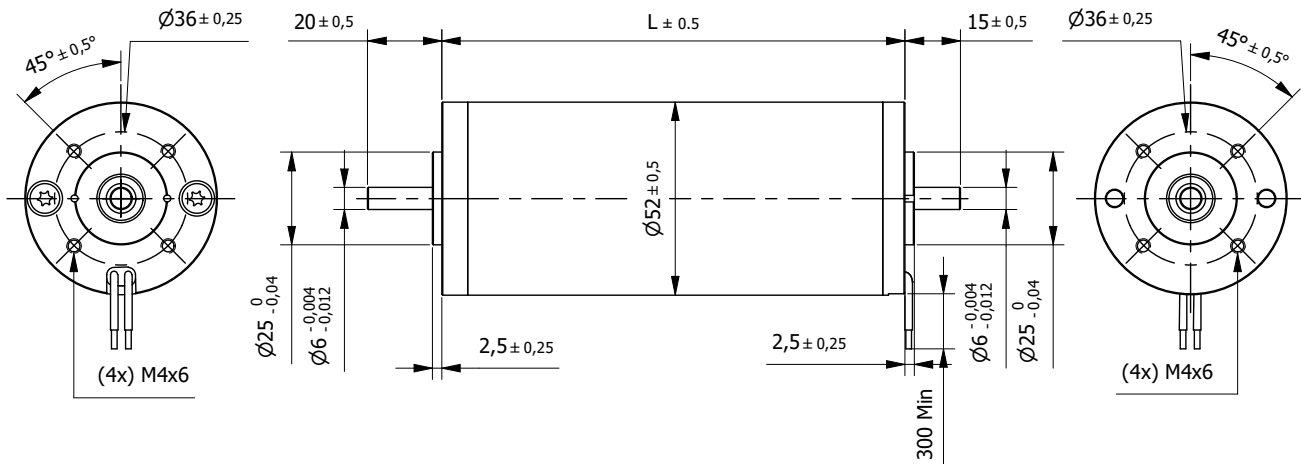
Connection			
n°	Color	Gauge	Function
1	Black	UL1569 AWG22	(V-)
2	Red	UL1569 AWG22	(V+)

Brushed PMDC Motor 52DI

Permanent Magnet

Ø 52mm

0,09 - 0,22Nm



Specification		Model	...95-G3001	...95-G3002	...95-G3007	...125-G3000	...125-G3001	...125-G3003
1	Rated Voltage	V	12	24	48	12	24	48
2	Rated Speed	rpm	3000	3000	3000	3000	3000	3000
3	Rated Torque	Nm	0,09	0,09	0,09	0,22	0,22	0,22
4	Peak Torque	Nm	0,15	0,15	0,15	0,35	0,35	0,35
5	Stall Torque	Nm	0,45	0,5	0,56	1	1,1	1
6	Torque Constant	Nm/A	0,021	0,06	0,12	0,031	0,056	0,1
7	Speed Constant	rpm/V	294	154,9	76,7	307	161,8	80,8
8	Rated Current	A	3,60	1,7	0,9	7,6	3,9	2,2
9	Stall Current	A	19	9,8	5	35,6	19	9,5
10	No-load Current	A	0,46	0,51	0,2	0,37	0,4	0,16
11	No-load Speed	rpm	3550	3561	3547	3760	3840	3838
12	Line to Line Resistance	Ω	0,63	1,93	6,69	0,33	0,94	3,42
13	Rotor Inertia	gcm2	233	233	233	570	570	570
14	Max. Efficiency	%	76	78	71	79	80	80
15	Length (L)	mm	95	95	95	125	125	125
16	Weight	Kg	0,85	0,85	0,85	1,16	1,16	1,16

Characteristics	
Item	
Ambient Temperature Ball Bearings	40°
Radial Load (15 mm from front flange)	90 N
Protection Class	IP54
Insulation Class	F

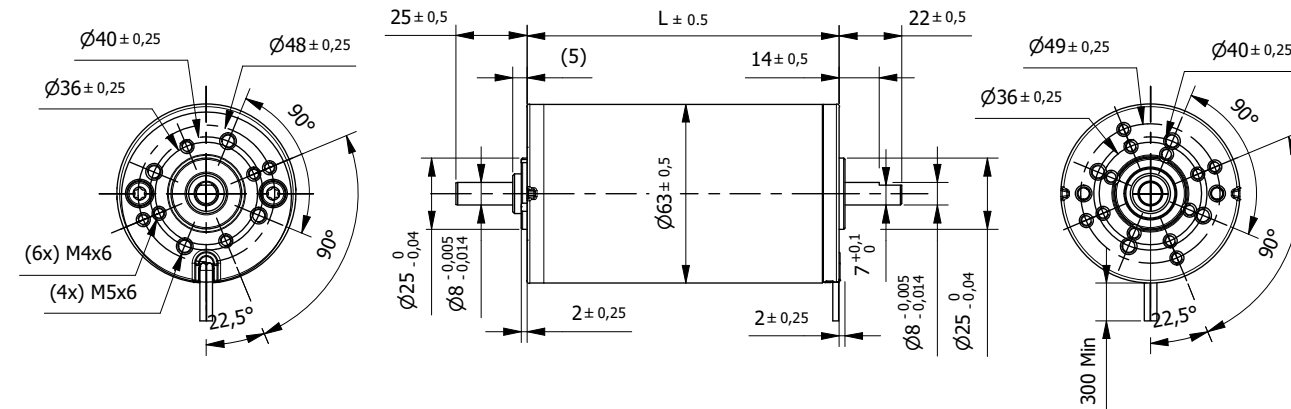
Connection			
n°	Color	Gauge	Function
1	Black	UL3266 AWG18	(V-)
2	Red	UL3266 AWG18	(V+)

Brushed PMDC Motor 63DI

Permanent Magnet

Ø 63mm

0,18 - 0,27Nm



Specification								
	Model		...95-G3000	...95-G3002	...95-G3005	...125-G3000	...125-G3001	...125-G3002
1	Rated Voltage	V	12	24	48	12	24	48
2	Rated Speed	rpm	3000	3000	3000	3000	3000	3000
3	Rated Torque	Nm	0,18	0,18	0,18	0,27	0,27	0,27
4	Peak Torque	Nm	0,3	0,3	0,3	0,45	0,45	0,45
5	Stall Torque	Nm	1,9	0,7	0,8	2,4	1,65	2,2
6	Torque Constant	Nm/A	0,03	0,06	0,12	0,03	0,06	0,1
7	Speed Constant	rpm/V	301	151,7	76,5	287	150,9	75,4
8	Rated Current	A	6,40	3,00	1,6	9,1	4,7	2,4
9	Stall Current	A	64	11,8	6,9	75	27,9	19,2
10	No-load Current	A	0,64	0,3	0,15	0,53	0,31	0,18
11	No-load Speed	rpm	3581	3591	3621	3521	3617	3613
12	Line to Line Resistance	Ω	0,19	1,65	5,13	0,16	0,59	2,3
13	Rotor Inertia	gcm2	740	740	740	930	930	930
14	Max. Efficiency	%	79	84	84	81	81	85
15	Length (L)	mm	95	95	95	125	125	125
16	Weight	Kg	0,85	0,85	0,85	1,16	1,16	1,16

Characteristics	
Item	
Ambient Temperature Ball Bearings	40°
Radial Load (15 mm from front flange)	150 N
Protection Class	IP54
Insulation Class	F

Connection			
n°	Color	Gauge	Function
1	Black	UL3266 AWG16	(V-)
2	Red	UL3266 AWG16	(V+)

Brushless DC

Controllers/Drives	Encoders	Gearboxes	Linear actuators	Stepper	Motor + Controller	Servomotors	Brushless DC	Brushed DC	Index
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Slotless motors -
SBL series
Standard

p.105



Slotless motors -
EC series
High Performance

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Slotted motors -
BL series
Standard

p.71



Slotted motors -
EC series
High Performance

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Slotted motors -
CBL series
Economy

p.95



Motors
with Encoder

p.131



Flat motors

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Flat motors
with Encoder

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Frameless
motors

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Brushless DC motors

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28BL	0,005...0,05	73
33BL	0,022...0,05	74
40BL	0,043...0,083	75
42BL - square - 8pole	0,063...0,25	76
42BLA - square - 10pole	0,07...0,36	77
42BLB - square - 6pole	0,064...0,43	78
42RBL	0,02...0,15	79
57BL - 4pole	0,055...0,44	80
57BLA - 6pole	0,2...0,8	81
57BLB - square	0,3...0,6	82
70BLS	0,5...1,5	83
80BLS	0,9...3	84
86BLC	0,4...2,22	85
86BLS	0,35...2,1	86
BLDC Slotted motors - EC High Performance series		Torque* (Nm) 89
22EC43...82N	0,03...0,08	90
BLDC Slotted motors - CBL Economy series		Torque* (Nm) 95
24CBL30	0,006	96
28CBL	0,028...0,05	97
36CBL	0,015...0,09	98
38CBL58	0,07	99
42CBL	0,068...0,15	100
48CBL68	0,18	101
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90BLW42-E	0,96	152
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38BLF	0,1...0,2	157
43BLF - NEW	0,15	158
50BLF	0,3...0,5	159
60BLF - NEW	0,45	160
70BLF	0,55...1	161
85BLF	1,2...2	162
102BLF - NEW	2,5	163
115BLF	3,9...7,8	164

* Rated Torque

Term	
N. of pole	Areas of a motor where a magnetic pole is generated either by a permanent magnet or by passing current through the coils of a winding.
N. of phase	A group of electrically connected coils.
Rated Voltage	The voltage at which rated torque is generated with the motor at ambient temperature.
Rated Speed	The approximate motor speed at its rated torque point.
Rated Torque	The maximum torque, at rated speed, the motor can produce on a continuous basis, without exceeding the thermal rating of the motor.
Max. Peak Torque	The maximum torque a motor can produce for short periods of time, before irreversible demagnetization of the motor's magnets occurs.
Torque constant	The ratio of a motor's output torque to the motor's input power
Rated Current	The approximate amount of current the motor will draw at its rated torque point.
Max. Peak Current	The current drawn by the motor when delivering peak torque
No-load speed	Is the speed at which the unloaded motor runs with the rated voltage applied. It is approximately proportional to the applied voltage.
No-Load Current	The current consumption of the motor at rated voltage and under no-load conditions. This value varies proportionally to speed and is influenced by temperature
Motor regulation	This value is a key performance indicator of a motor, indicating the amount of torque the motor can produce for a certain temperature rise (Joule losses). A lower number indicates a better power density.
Line to Line resistance	This is the phase resistance measured for the completed motor at room temperature. It includes solder, wire and (if present) connector resistances. In motors with very low resistance, the line to line resistance may differ significantly from the internal resistance.
Line to Line Inductance	This is the motor phase inductance measured with an inductance meter at 1000 Hz.
Rotor Inertia	Is the mass moment of inertia of the rotor, based on the axis of rotation.
Back EMF	The back (or counter) electromotive force (emf) E is the voltage generated by a running motor that acts to counter the supplied voltage.
Max. efficiency	Is the calculated load torque that brings the shaft to standstill at nominal voltage. It also doesn't always denote the optimal operating point.
Mechanical time constant	Is the time required for the rotor to accelerate from standstill to 63% of its no load speed.
Length	Total motor length.
Weight	Total motor mass.
Hall Effect angle	Phase angle at which hall sensors are positioned from each other.
Shaft run out	Is the geometric tolerance that specifies the run-out fluctuation of a target's feature when the target (part) is rotated on an axis (specified straight line).
Insulation class	The electrical insulation system for wires and other wire-wound electrical components is divided into different classes by temperature and temperature rise. The electrical insulation system is sometimes referred to as insulation class or thermal classification.
Operating Ambient Temperature	Temperature range allowed for correct operation.
Humidity	Humidity range allowed for correct operation.
Max. winding temperature	Maximum permissible winding temperature.
Max. speed	Is the maximum recommended speed based on thermal and mechanical perspectives. A reduced service life can be expected at higher speeds.
Protection class	IP (or "Ingress Protection") ratings are defined in international standard EN 60529 (British BS EN 60529:1992, European IEC 60509:1989). They are used to define levels of sealing effectiveness of electrical enclosures against intrusion from foreign bodies (tools, dirt etc) and moisture.
Radial Play	The shaft displacement perpendicular to the shaft due to a side force applied perpendicular to the shaft axis.
Axial Play	Axial shaft displacement occurring during a reversal of an axial force on the shaft.
Max. Radial force	Maximum force that can be applied to the shaft in the radial direction (any direction perpendicular to the motor shaft axis).
Max. Axial force	Maximum force that can be applied to the shaft in the axial direction (in the same axis as or parallel to the motor shaft axis).
Dielectric strength	A dielectric test (also known as hipot or high potential test) is performed on all motors under 500V phases to the housing and during 5 seconds after voltage ramp up. Maximum allowed leakage is 1mA
Insulation resistance	The measurement of insulation resistance is carried out by means of a megohmmeter - high resistance range ohmmeter. DC voltage is applied between the windings and the ground of the motor.

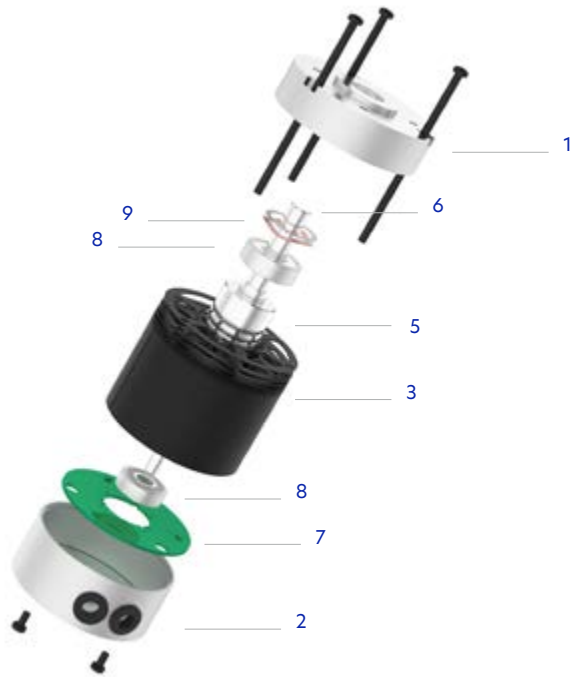
Glossary

Product families
Brushless DC Slotted motors
Brushless DC Slotless motors
Brushless DC motors with Encoder
Brushless DC Flat motors
Brushless DC Frameless motors

Brushless motors offer several advantages over brushed DC motors, including high torque to weight ratio, more torque per watt (increased efficiency), increased reliability, reduced noise, longer lifetime (no brush and commutator erosion), elimination of ionizing sparks from the commutator, and an overall reduction of electromagnetic interference (EMI). With no windings on the rotor, they are not subjected to centrifugal forces, and because the windings are supported by the housing, they can be cooled by conduction, requiring no airflow inside the motor for cooling. This in turn means that the motor's internals can be entirely enclosed and protected from dirt or other foreign matter.

Composition
1 Flange
2 Housing
3 Laminated steel stack
4 Winding
5 Permanent magnet
6 Shaft
7 Print with Hall sensors
8 Ball bearing
9 Spring (bearing preload)

BLDC Slotted motor



Brushless Slotted motors are particularly suitable for high speeds. The air gap in a slotted motor is smaller than the air gap in a slotless design (which must accommodate the self-supported winding assembly). This means that the flux density is higher in a slotted motor, and torque production is more effective and efficient.

Brushless DC Slotted motors

The slotless stator design originated with the goal to deliver smooth-running performance and eliminate cogging, which is an unwanted characteristic especially in slower-running applications (less than 500 rpm). Our slotless motors are typically designed with sinusoidal torque output that produces negligible distortion. Slotless motors have a larger rotor diameter than slotted construction for the same outside motor diameter, and will generate a higher inertia, as well as accommodating more magnet material for greater torque.

Brushless DC Slotless motors

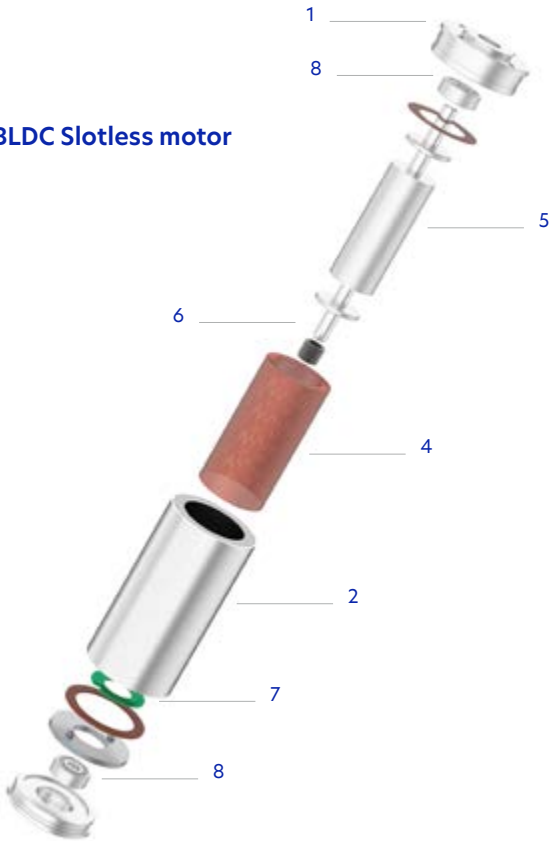
Our flat brushless DC motors have an extremely flat design, ranging from 14 to 40mm. The specific design gives these products an exceptional power to volume ratio, while keeping them very light and compact. Thanks to a high number of poles (starting at 8 till 22 poles), these motors offer very good control also at low speed, as well as a smooth and precise speed control.

Brushless DC Flat motors

One of the latest additions to our range, these motors allow for maximum integration with your assembly. Frameless motors reduce waste and redundancy by eliminating the need for additional mounting supports, plates, or brackets. Stator and rotor can be seamlessly incorporated into the system, reducing size without sacrificing performance and avoiding designing the application to fit the motor.

Brushless DC Frameless motors

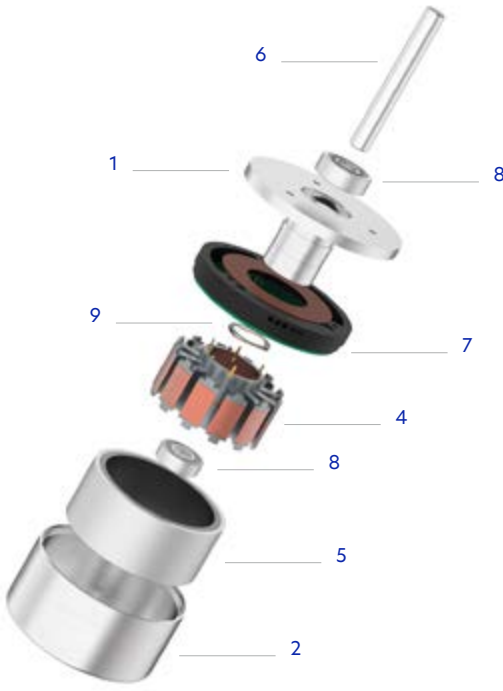
BLDC Slotless motor



Our BLDC slotted motors are also available equipped with an optical incremental encoder to increase the motion precision. Thanks to the encoder, the drive knows the position (or the speed) of the motor in real time and can perform adjustments to align the real condition with the condition requested by the system. The presence of an encoder is highly recommended when is critical to know the status of the motor (both position and speed) in every instant.

Brushless DC motors with Encoder

BLDC Flat motor



In order to energize the correct stator winding, the rotor position must be known. This is the job of the Hall effect sensors—to monitor the rotor's position. BLDC motors typically have three Hall effect sensors mounted either to the stator or to the rotor, and use what is known as six-step commutation. When the rotor passes a sensor, it produces either a high or a low signal to indicate which rotor pole (N or S) has passed.

Hall sensors

All our motors use only Neodymium rare earth magnets. Both bonded and sintered version are used depending on power and motor type. In specific cases other type of magnet can be integrated.

Magnets

Technical introduction



Slotted motors - BL series
Standard

p.71



Slotted motors - EC series
High Performance

p.89



Slotted motors - CBL series
Economy

p.95

Brushless DC

Slotted motors

Advantages at a glance
Low cogging
Higher inertia
High speed

The air gap in a Brushless Slotted DC motor is smaller than the air gap in a slotless design (which must accommodate the self-supported winding assembly). This means that the flux density is higher in a slotted motor, and torque production is more effective and efficient.

BLDC Slotted motors - BL Standard series	Torque* (Nm)	71
22BL	0,008...0,02	72
28BL	0,005...0,05	73
33BL	0,022...0,05	74
40BL	0,043...0,083	75
42BL - square - 8pole	0,063...0,25	76
42BLA - square - 10pole	0,07...0,36	77
42BLB - square - 6pole	0,064...0,43	78
42RBL	0,02...0,15	79
57BL - 4pole	0,055...0,44	80
57BLA - 6pole	0,2...0,8	81
57BLB - square	0,3...0,6	82
70BLS	0,5...1,5	83
80BLS	0,9...3	84
86BLC	0,4...2,22	85
86BLS	0,35...2,1	86

BLDC Slotted motors - EC High Performance series	Torque* (Nm)	89
22EC43N	0,03	90
22EC58N	0,05	91
22EC82N	0,08	92

BLDC Slotted motors - CBL Economy series	Torque* (Nm)	95
24CBL30	0,006	96
28CBL	0,028...0,05	97
36CBL	0,015...0,09	98
38CBL58	0,07	99
42CBL	0,068...0,15	100
48CBL68	0,18	101

* Rated Torque



BLDC Slotted motors

BL series - Standard

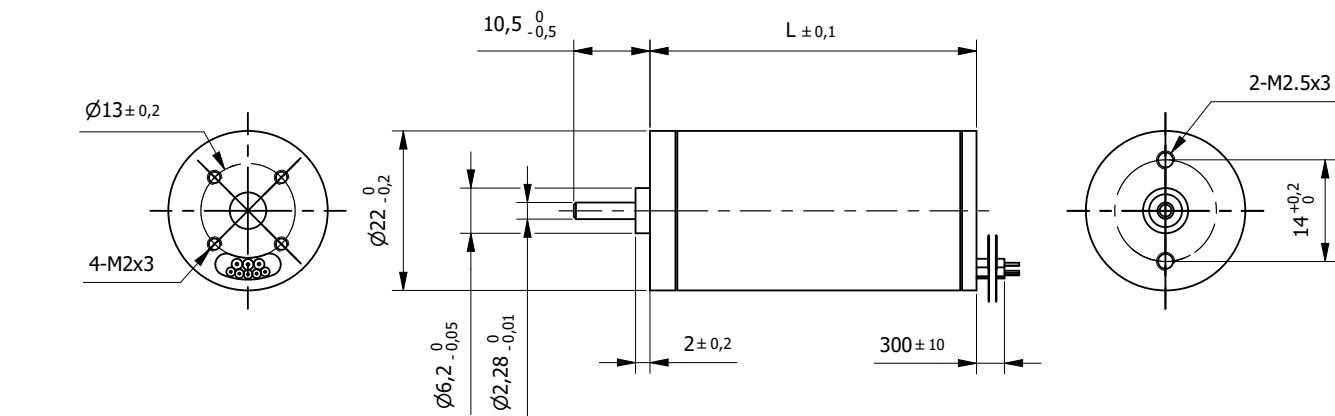
BLDC Slotted motors - BL Standard series		Torque* (Nm)
22BL	0,008...0,02	72
28BL	0,005...0,05	73
33BL	0,022...0,05	74
40BL	0,043...0,083	75
42BL - square - 8pole	0,063...0,25	76
42BLA - square - 10pole	0,07...0,36	77
42BLB - square - 6pole	0,064...0,43	78
42RBL	0,02...0,15	79
57BL - 4pole	0,055...0,44	80
57BLA - 6pole	0,2...0,8	81
57BLB - square	0,3...0,6	82
70BLS	0,5...1,5	83
80BLS	0,9...3	84
86BLC	0,4...2,22	85
86BLS	0,35...2,1	86

* Rated Torque

Brushless Slotted Motor 22BL

Ø 22mm

0,008 - 0,02Nm



Specification			
	Model	22BL45	22BL70
1	n° of Pole	8	8
2	n° of Phase	3	3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4600
5	Rated Torque	Nm	0,008
6	Max. Peak Torque	Nm	0,024
7	Torque Constant	Nm/A	0,030
8	Rated Current	A	0,26
9	Max. Peak Current	A	1,1
10	No-Load Current	mA	150
11	Line to Line Resistance	Ω	23
12	Line to Line Inductance	mH	6,2
13	Rotor Inertia	gcm2	0,66
14	Length (L)	mm	45
15	Weight	Kg	0,07

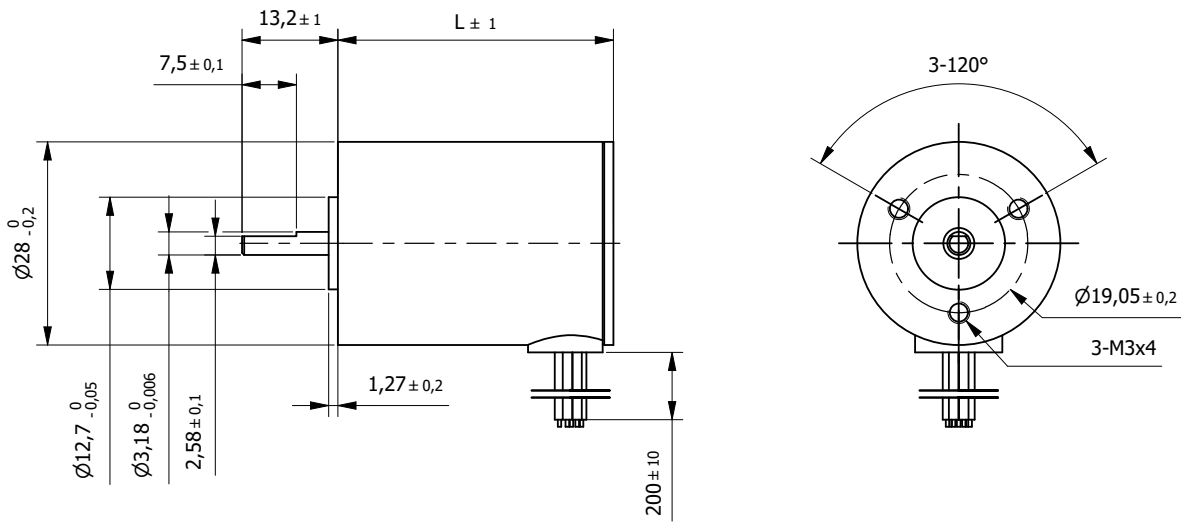
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	10N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	360 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Yellow	UL1430 AWG28	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Orange		Hall B
4	Brown		Hall C
5	White		GND Hall
6	Green	UL1430 AWG26	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 28BL

Ø 28mm

0,005 - 0,05Nm



BE Version: Rear shaft 13mm - 2x M2.5 on diameter 19,05mm

Specification				
	Model	28BL26	28BL38	28BL77
1	n° of Pole	4	4	4
2	n° of Phase	3	3	3
3	Rated Voltage	V	15	24
4	Rated Speed	rpm	8000	3100
5	Rated Torque	Nm	0,005	0,016
6	Max. Peak Torque	Nm	0,015	0,048
7	Torque Constant	Nm/A	0,014	0,024
8	Rated Current	A	0,35	0,67
9	Max. Peak Current	A	1,3	2
10	No-Load Current	mA	200	200
11	Line to Line Resistance	Ω	8,2	7,4
12	Line to Line Inductance	mH	2,3	2
13	Rotor Inertia	gcm2	2,35	3,69
14	Length (L)	mm	26	38
15	Weight	Kg	0,06	0,082

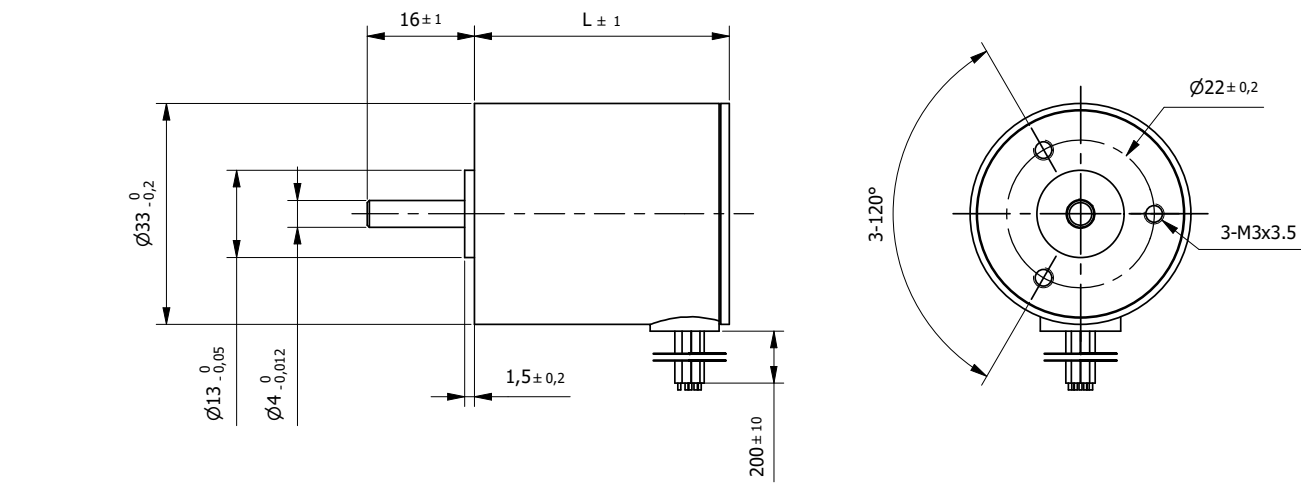
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	10N
Max. Axial force	2N
Dielectric strength (for 1 min.)	360 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Yellow	UL1430 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Orange		Hall B
4	Brown		Hall C
5	White		GND Hall
6	Green		Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 33BL

Ø 33mm

0,022 - 0,05Nm



BE Version: Rear shaft 13mm - 2x M2.5 on diameter 19,05mm

Specification				
	Model	33BL38	33BL80	
1	n° of Pole	4	4	
2	n° of Phase	3	3	
3	Rated Voltage	V	24	24
4	Rated Speed	rpm	3000	7800
5	Rated Torque	Nm	0,022	0,05
6	Max. Peak Torque	Nm	0,066	0,15
7	Torque Constant	Nm/A	0,046	0,023
8	Rated Current	A	0,48	2,17
9	Max. Peak Current	A	1,45	4,8
10	No-Load Current	mA	100	450
11	Line to Line Resistance	Ω	14,2	0,86
12	Line to Line Inductance	mH	7	0,55
13	Rotor Inertia	gcm2	7,95	23,55
14	Length (L)	mm	38	80
15	Weight	Kg	0,085	0,2

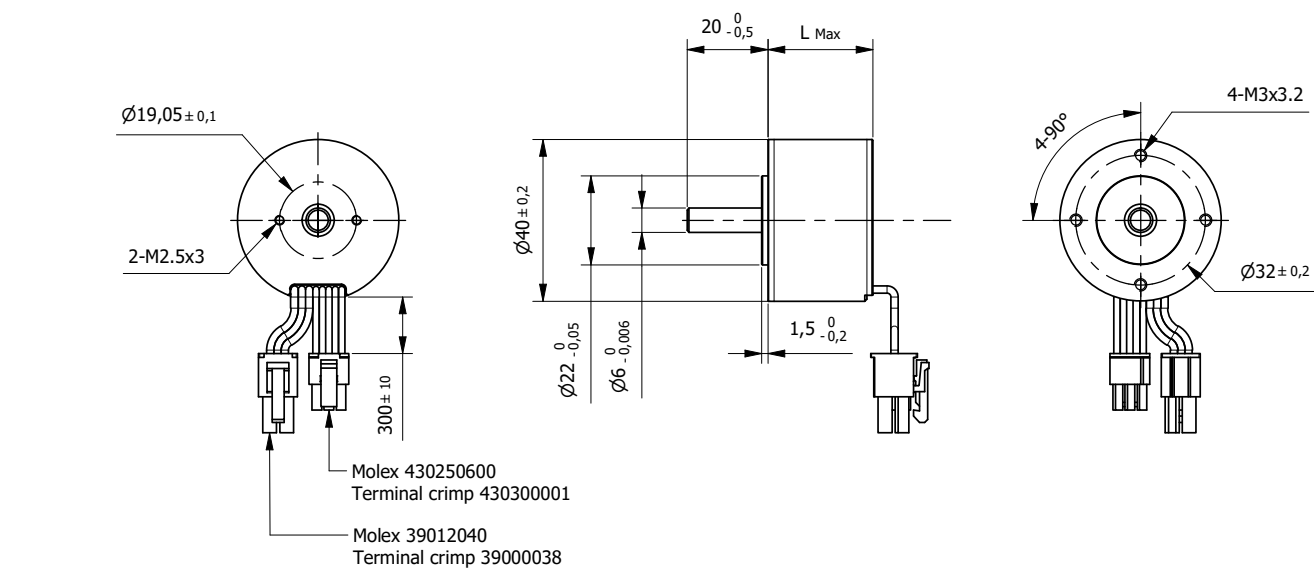
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	10N
Max. Axial force	2N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Yellow	UL1007 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Orange		Hall B
4	Brown		Hall C
5	White		GND Hall
6	Green	UL1007 AWG22	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 40BL

Ø 40mm

0,043 - 0,083Nm



BE Version: Rear shaft 13mm - 2x M2.5 on diameter 19,05mm

Specification						
	Model	40BL26-12V	40BL26-24V	40BL36-18V	40BL36-36V	
1	n° of Pole	14	14	14	14	
2	n° of Phase	3	3	3	3	
3	Rated Voltage	V	12	24	18	36
4	Rated Speed	rpm	9660	10300	8230	8740
5	Rated Torque	Nm	0,043	0,052	0,069	0,083
6	Max. Peak Torque	Nm	0,12	0,16	0,21	0,25
7	Torque Constant	Nm/A	0,009	0,017	0,017	0,034
8	Rated Current	A	5,06	3,06	4,06	2,44
9	Max. Peak Current	A	13,4	9,35	12,3	7,5
10	No-Load Current	mA	522	285	354	192
11	Line to Line Resistance	Ω	0,28	0,5	0,34	0,84
12	Line to Line Inductance	mH	0,11	0,39	0,18	0,64
13	Rotor Inertia	gcm2	10,5	10,5	24,2	24,2
14	Length (L)	mm	26	26	36	36
15	Weight	Kg	0,17	0,17	0,24	0,24

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	F
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,15mm
Max. Radial force (5mm from flange)	15N
Max. Axial force	5N
Dielectric strength (for 1 sec.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

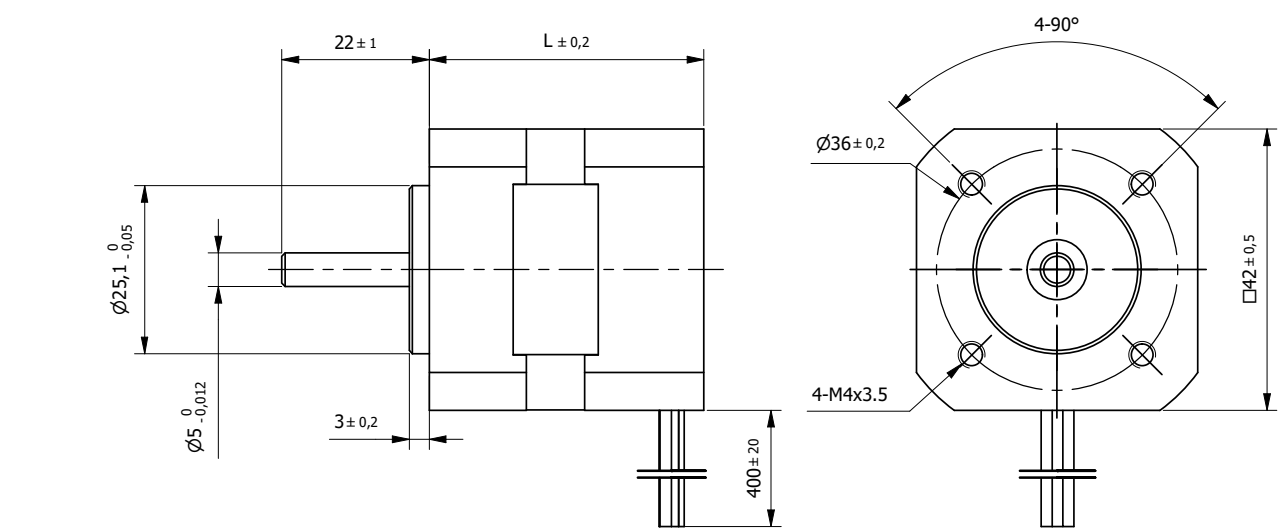
Connection			
Pin n°	Color	Gauge	Function
1	Red	UL1332 AWG20	Phase U
2	Black		Phase V
3	White		Phase W
1	Yellow	UL1332 AWG26	Hall A
2	Brown		Hall B
3	Gray		Hall C
4	Blue		GND Hall Sensor Ground
5	Green		Vcc Hall Sensor +5 to +24 Vdc

Brushless Slotted Motor 42BL

8-pole

□ 42mm

0,063 - 0,25Nm



BE Version: Rear shaft 13mm - 2x M2.5 on diameter 19,05mm

Specification					
	Model	42BL41	42BL61	42BL81	42BL100
1	n° of Pole	8	8	8	8
2	n° of Phase	3	3	3	3
3	Rated Voltage	V	24	24	24
4	Rated Speed	rpm	4000	4000	4000
5	Rated Torque	Nm	0,063	0,125	0,185
6	Max. Peak Torque	Nm	0,19	0,38	0,56
7	Torque Constant	Nm/A	0,035	0,036	0,036
8	Rated Current	A	1,79	3,47	5,14
9	Max. Peak Current	A	6	10,8	15,5
10	No-Load Current	mA	200	240	400
11	Line to Line Resistance	Ω	1,5	0,8	0,43
12	Line to Line Inductance	mH	2,1	1,2	0,71
13	Rotor Inertia	gcm2	24	48	72
14	Length (L)	mm	41	61	81
15	Weight	Kg	0,3	0,45	0,65

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

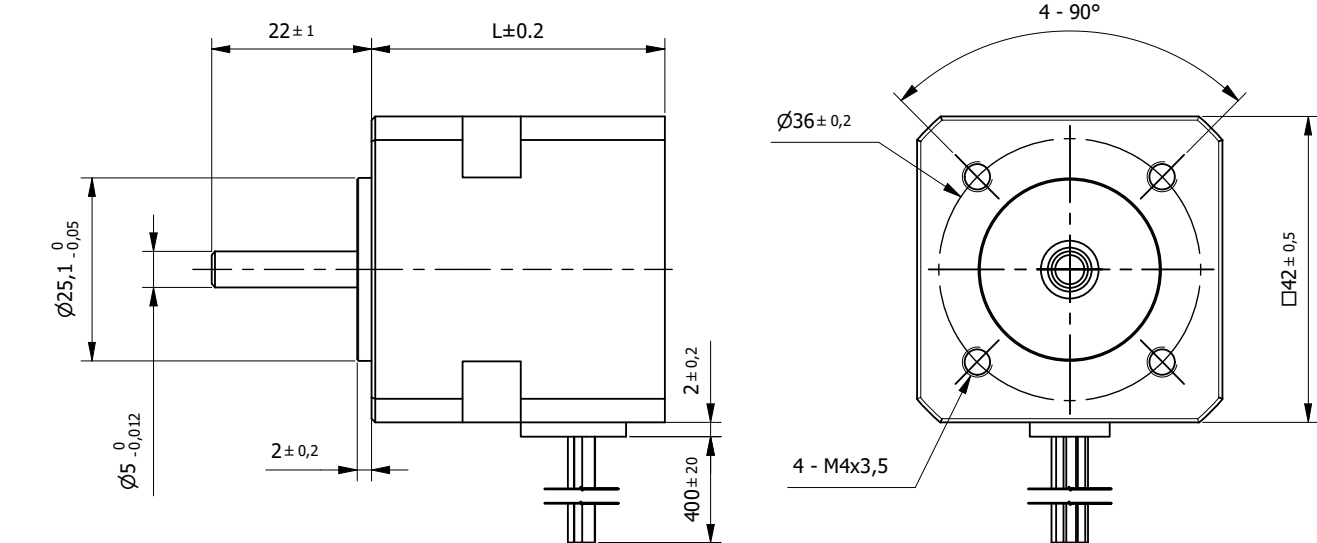
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1430 AWG20	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 42BLA

10-pole

□ 42mm

0,07 - 0,36Nm



BE Version: Rear shaft 13mm - 2x M2.5 on diameter 19,05mm

Specification					
	Model	42BLA01	42BLA02	42BLA03	42BLA04
1	n° of Pole	10	10	10	10
2	n° of Phase	3	3	3	3
3	Rated Voltage	V	24	24	24
4	Rated Speed	rpm	3000	3000	3000
5	Rated Torque	Nm	0,07	0,16	0,26
6	Max. Peak Torque	Nm	0,21	0,48	0,78
7	Torque Constant	Nm/A	0,055	0,059	0,058
8	Rated Current	A	1,27	2,71	4,48
9	Max. Peak Current	A	4	8,3	13,5
10	No-Load Current	mA	220	450	430
11	Line to Line Resistance	Ω	2,6	1,1	0,7
12	Line to Line Inductance	mH	1,83	0,96	0,58
13	Rotor Inertia	gcm2	48	101	154
14	Length (L)	mm	40,3	60,3	80,3
15	Weight	Kg	0,26	0,45	0,65

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

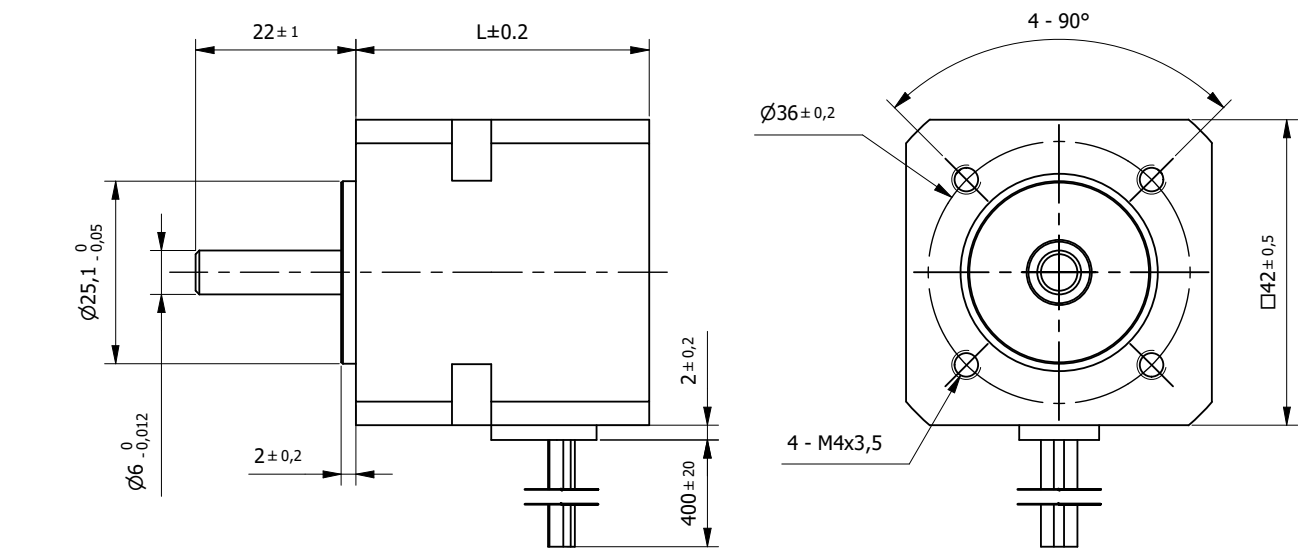
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1430 AWG20	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 42BLB

6-pole

□ 42mm

0,064 - 0,43Nm



BE Version: Rear shaft 13mm - 2x M2.5 on diameter 19,05mm

Specification					
	Model	42BLB01	42BLB02	42BLB03	42BLB04
1	n° of Pole	6	6	6	6
2	n° of Phase	3	3	3	3
3	Rated Voltage	V	24	24	24
4	Rated Speed	rpm	3000	3000	3000
5	Rated Torque	Nm	0,064	0,17	0,43
6	Max. Peak Torque	Nm	0,19	0,51	1,29
7	Torque Constant	Nm/A	0,057	0,058	0,062
8	Rated Current	A	1,12	2,93	6,94
9	Max. Peak Current	A	3,5	9	20,8
10	No-Load Current	mA	160	270	450
11	Line to Line Resistance	Ω	3,6	1,05	0,54
12	Line to Line Inductance	mH	1,8	0,75	0,3
13	Rotor Inertia	gcm2	80	100	140
14	Length (L)	mm	40,3	60,3	80,3
15	Weight	Kg	0,4	0,6	0,8

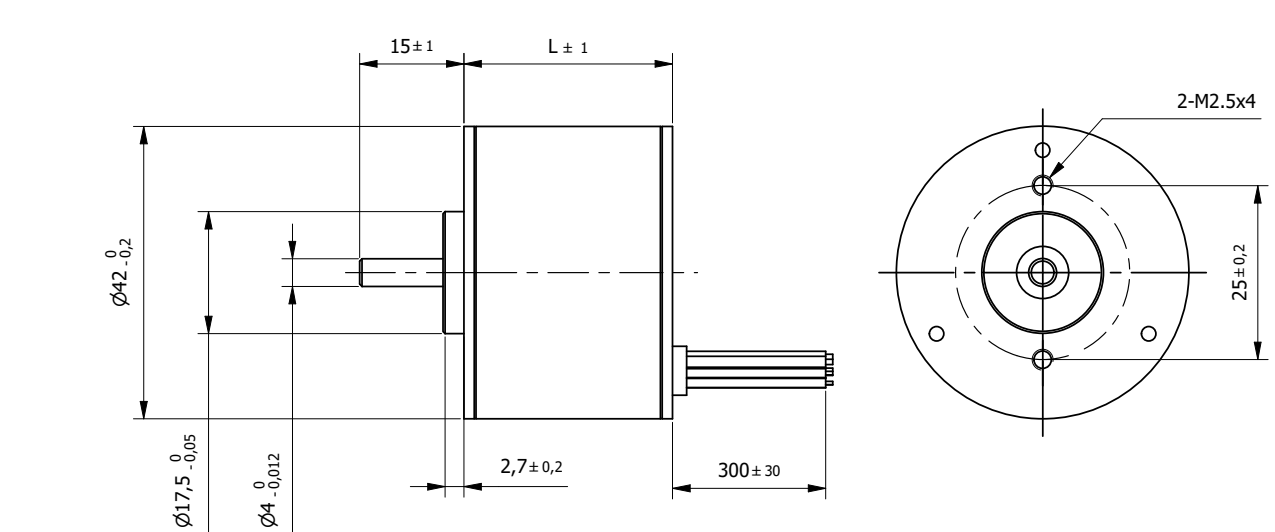
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1430 AWG20	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 42RBL

Ø 42mm

0,02 - 0,15Nm



BE Version: Rear shaft 13mm - 2x M2.5 on diameter 19,05mm

Specification				
	Model	42RBL30	42RBL60	42RBL85
1	n° of Pole	8	8	8
2	n° of Phase	3	3	3
3	Rated Voltage	V	24	24
4	Rated Speed	rpm	4000	4200
5	Rated Torque	Nm	0,02	0,06
6	Max. Peak Torque	Nm	0,06	0,17
7	Torque Constant	Nm/A	0,039	0,041
8	Rated Current	A	0,50	1,4
9	Max. Peak Current	A	1,5	4,2
10	No-Load Current	A	<0,4	<0,4
11	Line to Line Resistance	Ω	5,9	1,6
12	Line to Line Inductance	mH	5,1	1,94
13	Rotor Inertia	gcm2	15,6	33
14	Length (L)	mm	30	60
15	Weight	Kg	0,25	0,4

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	10N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

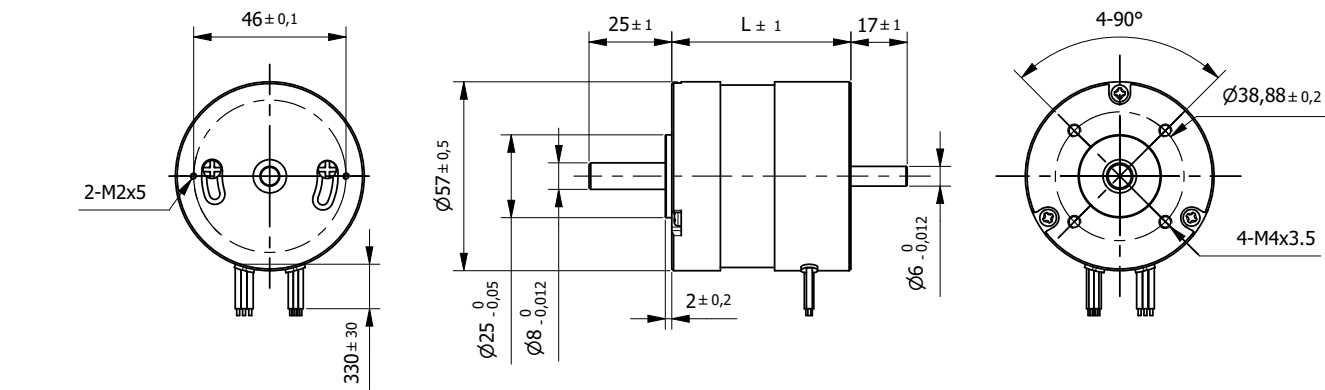
Connection			
Lead n°	Color	Gauge	Function
1	Yellow	UL1007 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Orange		Hall B
4	Brown		Hall C
5	White		GND Hall
6	Green	UL1007 AWG22	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 57BL

4-pole

Ø 57mm

0,055 - 0,44Nm



Specification							
	Model	57BL45	57BL54	57BL74	57BL94	57BL116	
1	n° of Pole	4	4	4	4	4	
2	n° of Phase	3	3	3	3	3	
3	Rated Voltage	V	36	36	36	36	
4	Rated Speed	rpm	4000	4000	4000	4000	
5	Rated Torque	Nm	0,055	0,11	0,22	0,44	
6	Max. Peak Torque	Nm	0,16	0,39	0,7	1,27	
7	Torque Constant	Nm/A	0,052	0,061	0,06	0,065	0,062
8	Rated Current	A	1,06	1,8	3,67	5,08	7,1
9	Max. Peak Current	A	3,5	6,8	12	16	21
10	No-Load Current	mA	240	300	400	450	540
11	Line to Line Resistance	Ω	4,1	1,5	0,58	0,45	0,35
12	Line to Line Inductance	mH	10	4,4	2	1,5	0,95
13	Rotor Inertia	gcm2	30	75	119	173	230
14	Length (L)	mm	43,6	53,6	73,6	93,6	113,6
15	Weight	Kg	0,33	0,44	0,72	0,95	1,2

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (460g load)	0,025mm
Axial play (4000g load)	0,025mm
Max. Radial force (10mm from flange)	75N
Max. Axial force	15N
Dielectric strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

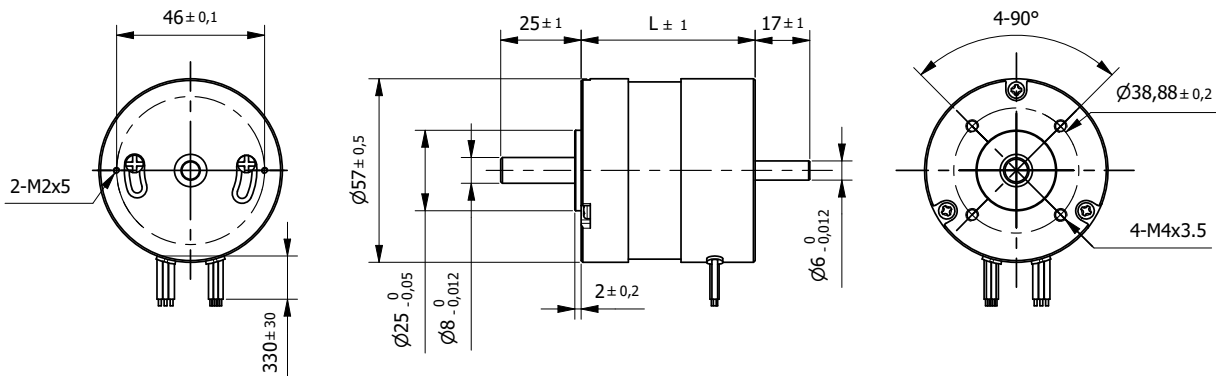
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1430 AWG20	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 57BLA

6-pole

Ø 57mm

0,2 - 0,8Nm



Specification					
	Model	57BLA01	57BLA02	57BLA03	57BLA04
1	n° of Pole	6	6	6	6
2	n° of Phase	3	3	3	3
3	Rated Voltage	V	36	36	36
4	Rated Speed	rpm	4000	4000	4000
5	Rated Torque	Nm	0,2	0,4	0,8
6	Max. Peak Torque	Nm	0,6	1,2	2,4
7	Torque Constant	Nm/A	0,07	0,07	0,07
8	Rated Current	A	2,86	5,71	11,43
9	Max. Peak Current	A	8,6	16	35
10	No-Load Current	mA	350	400	240
11	Line to Line Resistance	Ω	0,95	0,4	0,2
12	Line to Line Inductance	mH	1,2	0,55	0,25
13	Rotor Inertia	gcm2	275	375	693
14	Length (L)	mm	53,6	73,6	113,6
15	Weight	Kg	0,76	1	1,52

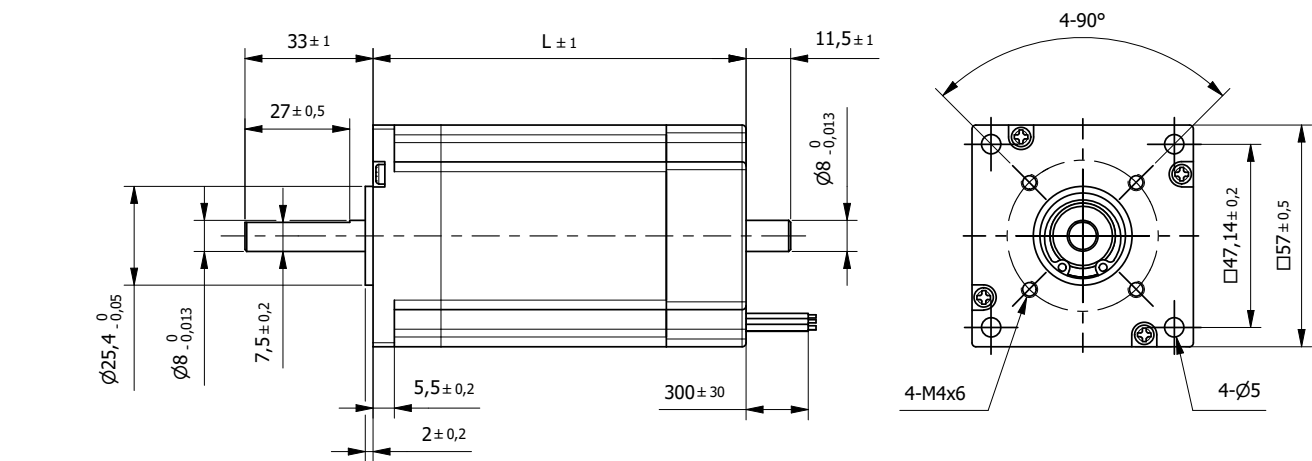
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (460g load)	0,025mm
Axial play (4000g load)	0,025mm
Max. Radial force (20mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1332 AWG18	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 57BLB

□ 57mm

0,3 - 0,6Nm



Specification				
Model		57BLB40	57BLB60	57BLB80
1 n° of Pole		8	8	8
2 n° of Phase		3	3	3
3 Rated Voltage	V	36	36	36
4 Rated Speed	rpm	3000	3000	3000
5 Rated Torque	Nm	0,3	0,45	0,6
6 Max. Peak Torque	Nm	0,9	1,35	1,8
7 Torque Constant	Nm/A	0,08	0,08	0,08
8 Rated Current	A	4	5,4	7,5
9 Max. Peak Current	A	12,3	18,2	23,8
10 No-Load Current	mA	400	550	620
11 Line to Line Resistance	Ω	1,2	0,8	0,5
12 Line to Line Inductance	mH	1,2	0,8	0,6
13 Rotor Inertia	gcm ²	210	320	430
14 Length (L)	mm	76	96	116
15 Weight	Kg	0,8	1	1,2

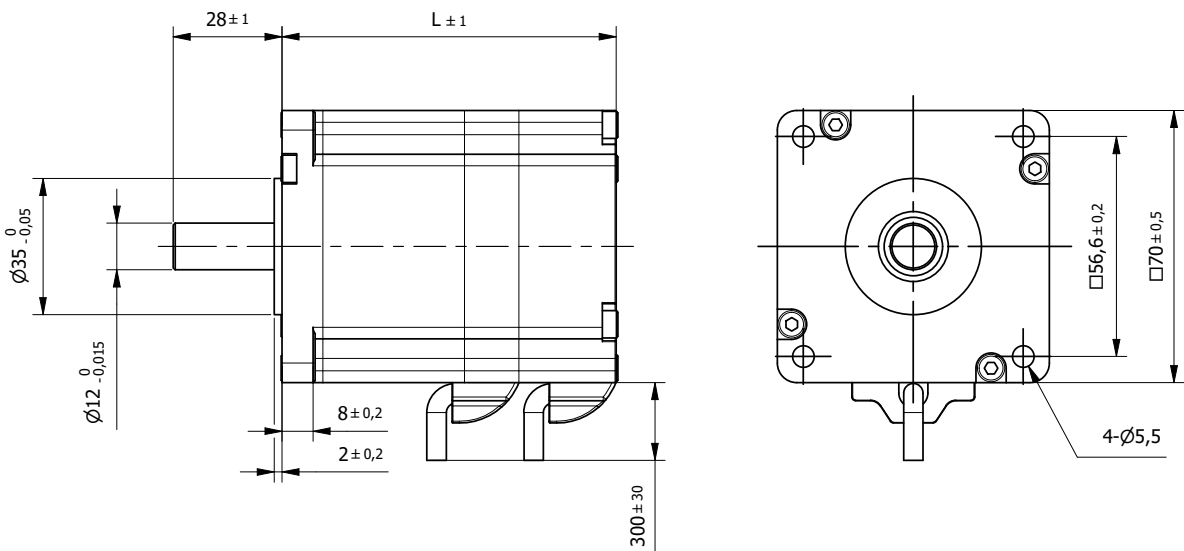
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,025mm
Axial play (4000g load)	0,025mm
Max. Radial force (10mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL3265 AWG28	Vcc Hall +5 to +24 Vdc
2	Yellow		Hall A
3	Blue		Hall B
4	Purple		Hall C
5	Black		GND Hall
6	Red	UL1430 AWG18	Phase U
7	Blue		Phase V
8	Black		Phase W

Brushless Slotted Motor 70BLS

□ 70mm

0,5 - 1,5Nm



BE Version: Rear shaft 13mm - 2x M2.5 on a diameter 46mm

Specification				
Model		70BLS86	70BLS116	70BLS136
1 n° of Pole		8	8	8
2 n° of Phase		3	3	3
3 Rated Voltage	V	48	48	48
4 Rated Speed	rpm	3000	3000	3000
5 Rated Torque	Nm	0,5	1	1,5
6 Max. Peak Torque	Nm	1,5	3	4,5
7 Torque Constant	Nm/A	0,12	0,12	0,12
8 Rated Current	A	4,17	8,33	12,5
9 Max. Peak Current	A	13	26	38
10 No-Load Current	mA	600	600	600
11 Line to Line Resistance	Ω	0,6	0,3	0,22
12 Line to Line Inductance	mH	1,4	0,7	0,55
13 Rotor Inertia	gcm ²	200	400	600
14 Length (L)	mm	86	116	136
15 Weight	Kg	1,3	2,1	2,9

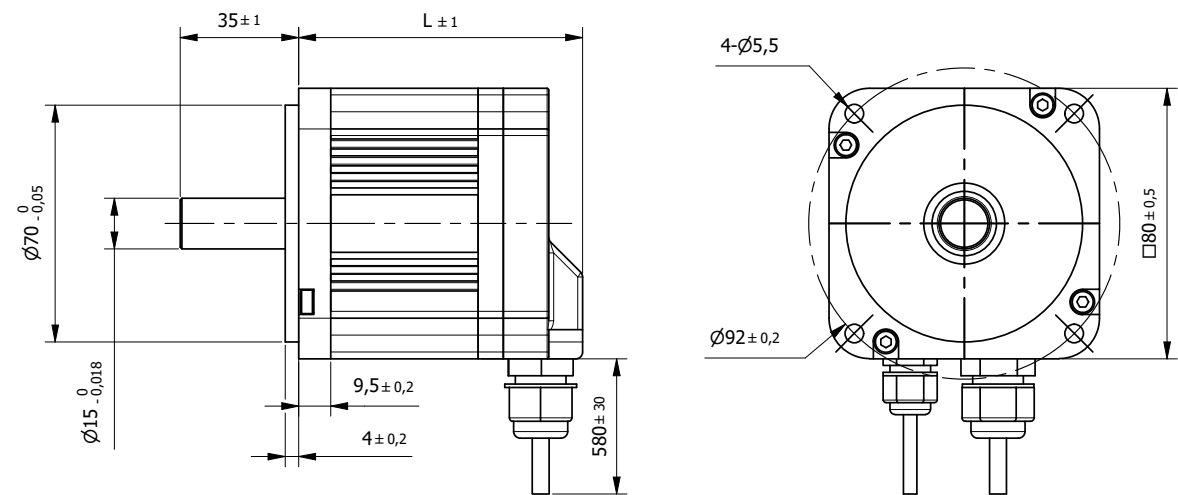
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL2464 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL2464 AWG16	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 80BLS

□ 80mm

0,9 - 3Nm



BE Version: Rear shaft 13mm - 2x M2.5 on a diameter 46mm

Specification					
	Model	80BLS84	80BLS105	80BLS120	80BLS125
1	n° of Pole	8	8	8	8
2	n° of Phase	3	3	3	3
3	Rated Voltage	V	48	48	48
4	Rated Speed	rpm	3000	3000	3000
5	Rated Torque	Nm	0,9	1,7	2,2
6	Max. Peak Torque	Nm	2,5	5	6,5
7	Torque Constant	Nm/A	0,118	0,113	0,109
8	Rated Current	A	7,63	15,04	20,18
9	Max. Peak Current	A	22	45	61
10	No-Load Current	mA	500	700	1000
11	Line to Line Resistance	Ω	0,25	0,1	0,07
12	Line to Line Inductance	mH	1,3	0,6	0,4
13	Rotor Inertia	gcm2	544	1020	1360
14	Length (L)	mm	84	105	120
15	Weight	Kg	1,6	2	2,5

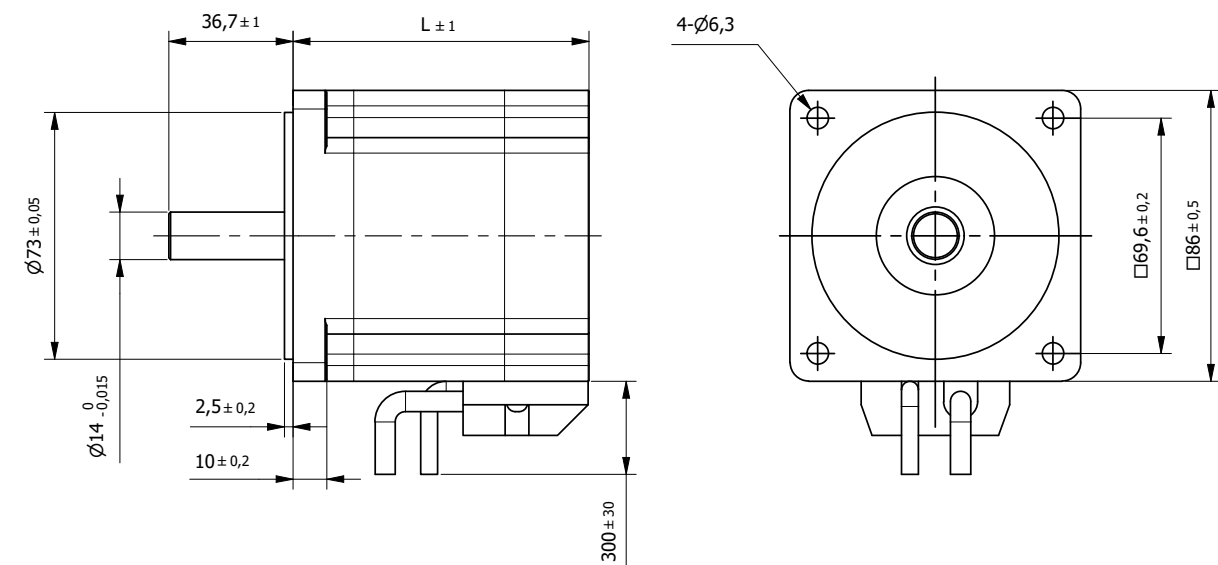
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	F
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1332 AWG22	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL3135 AWG14	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 86BLC

□ 86mm

0,4 - 2,22Nm

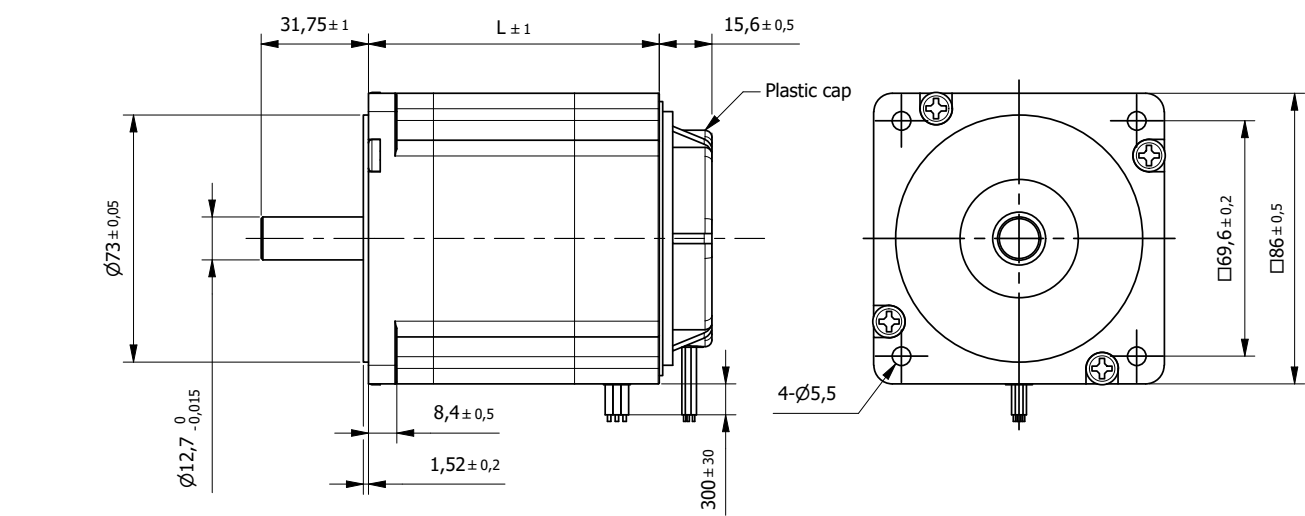


BE Version: Rear shaft 13mm - 2x M2.5 on diameter 46mm

Specification					
	Model	86BLC64	86BLC77	86BLC105	86BLC125
1	n° of Pole	8	8	8	8
2	n° of Phase	3	3	3	3
3	Rated Voltage	V	48	48	48
4	Rated Speed	rpm	3000	3000	3000
5	Rated Torque	Nm	0,4	0,8	1,6
6	Max. Peak Torque	Nm	1,2	2,4	4,8
7	Torque Constant	Nm/A	0,122	0,149	0,135
8	Rated Current	A	3,28	5,37	11,85
9	Max. Peak Current	A	11	17,5	37
10	No-Load Current	mA	380	550	860
11	Line to Line Resistance	Ω	1	0,34	0,14
12	Line to Line Inductance	mH	1,4	0,6	0,36
13	Rotor Inertia	gcm2	400	800	1600
14	Length (L)	mm	64	77	105
15	Weight	Kg	1,5	1,85	2,7

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (400g load)	0,08mm
Max. Radial force (20mm from flange)	220N
Max. Axial force	45N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG24	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1332 AWG16	Phase U
7	Red		Phase V
8	Black		Phase W



BE Version: Rear shaft 13mm - 2x M2.5 on a diameter 46mm

Specification					
Model		86BLS58	86BLS71	86BLS98	86BLS125
1	n° of Pole	8	8	8	8
2	n° of Phase	3	3	3	3
3	Rated Voltage	V	48	48	48
4	Rated Speed	rpm	3000	3000	3000
5	Rated Torque	Nm	0,35	0,7	1,4
6	Max. Peak Torque	Nm	1,05	2,1	4,2
7	Torque Constant	Nm/A	0,116	0,124	0,127
8	Rated Current	A	3,02	5,65	11,02
9	Max. Peak Current	A	9,5	20	33
10	No-Load Current	mA	540	800	1450
11	Line to Line Resistance	Ω	0,9	0,34	0,16
12	Line to Line Inductance	mH	2,6	1	0,5
13	Rotor Inertia	gcm2	400	800	1600
14	Length (L)	mm	58	71	98
15	Weight	Kg	1,6	2,12	3,15

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	220N
Max. Axial force	60N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1332 AWG22	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1332 AWG18	Phase U
7	Red		Phase V
8	Black		Phase W



BLDC Slotted motors

EC series - High Performance

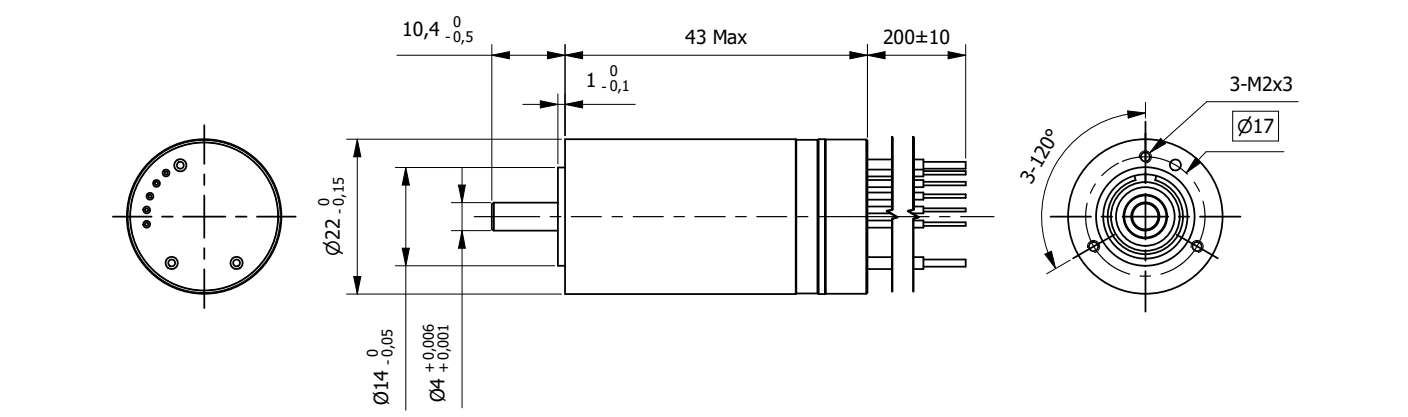
BLDC Slotted motors - EC High Performance series	Torque* (Nm)	
22EC43N	0,03	90
22EC58N	0,05	91
22EC82N	0,08	92

* Rated Torque

Brushless Slotted Motor 22EC43N

Ø 22mm

28,6 to 32,4mNm

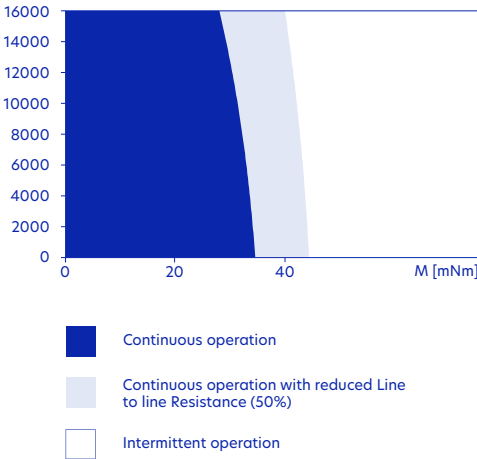


Specification			
Model	...13107	...10903	
1 n° of Pole	8	8	
2 n° of Phase	3	3	
3 Rated Voltage	V	24	48
4 Rated Speed	rpm	13100	10900
5 Rated Torque	mNm	28,6	32,4
6 Stall Torque	mNm	466	461
7 Torque Constant	mNm/A	14,8	34,9
8 Motor Regulation	10³/Nms	3,5	3
9 Rated Current	A	1,88	0,885
10 Stall Current	A	31,50	13,2
11 No-load Current	mA	145	56,5
12 No-load Speed	rpm	15300	13000
13 Line to Line Resistance	Ω	0,763	3,63
14 Line to Line Inductance	mH	0,428	2,38
15 Rotor Inertia	gcm2	1,72	1,72
16 Max. Efficiency	%	87,1	87,5
17 Mechanical Time Constant	ms	0,599	0,512
18 Length (L)	mm	43	43
19 Weight	g	82,1	82,1

Characteristics	
Item	
Ambient Temperature Ball bearings	-40°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	16000rpm
Radial play	preloaded
Axial play	0 to 0,24mm
Max. Radial force (5mm from flange)	22N
Max. Axial force	4N
Max. Force for Press fit	110N

Connection			
Lead n°	Color	Gauge	Function
1	Red	AWG18	Phase 1
2	Black		Phase 2
3	White		Phase 3
4	Orange	AWG26	Vcc Hall 5 ±0,5V
5	Blue		GND Hall
6	Yellow		Hall 1
7	Brown		Hall 2
8	Grey		Hall 3

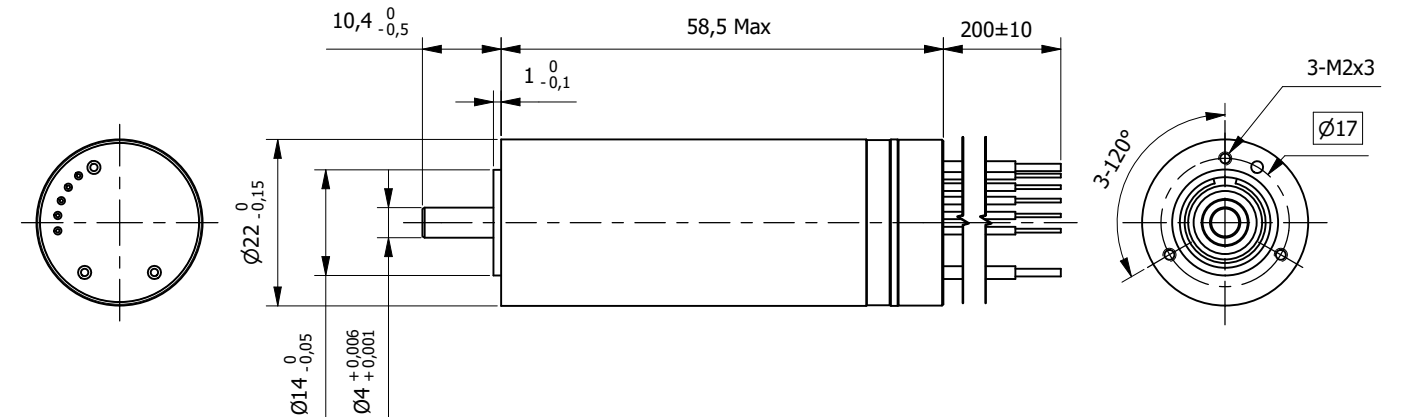
Operating range: Winding 24V



Brushless Slotted Motor 22EC58N

Ø 22mm

45,7 to 48,8mNm

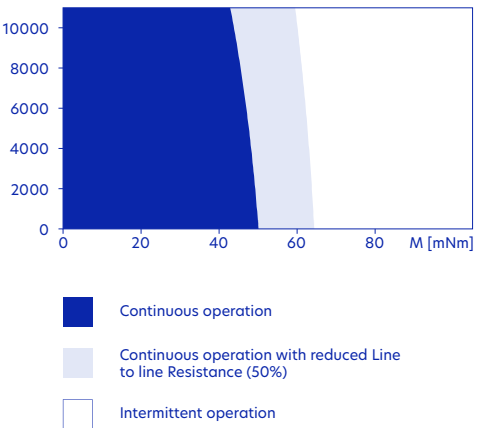


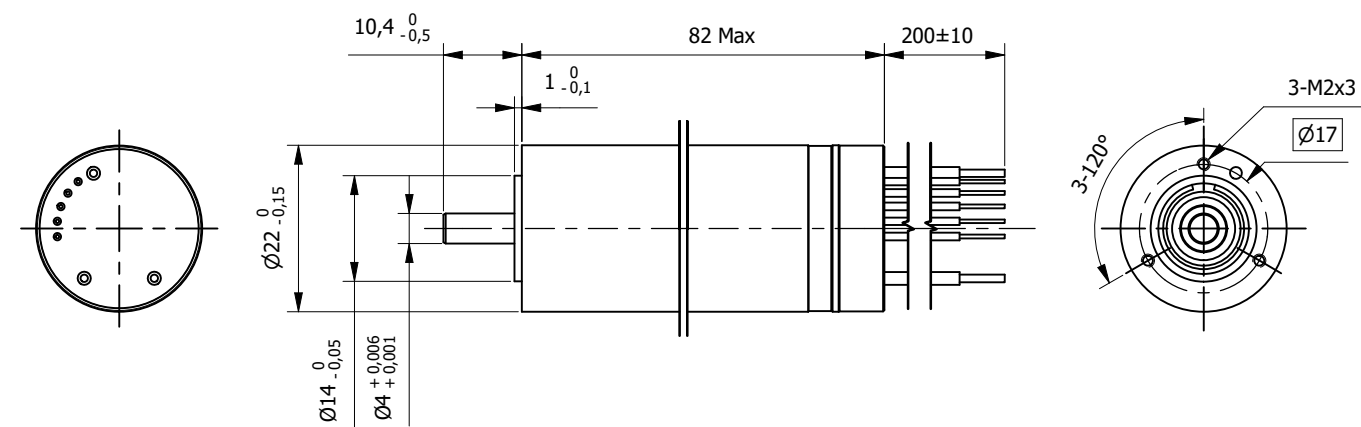
Specification					
	Model	...7902	...8807	...9302	
1	n° of Pole	8	8	8	
2	n° of Phase	3	3	3	
3	Rated Voltage	V	12	24	48
4	Rated Speed	rpm	7930	8850	9380
5	Rated Torque	mNm	45,7	48,1	48,8
6	Stall Torque	mNm	528	684	766
7	Torque Constant	mNm/A	12,1	22	41,8
8	Motor Regulation	10³/Nms	1,9	1,6	1,5
9	Rated Current	A	3,7	2,13	1,14
10	Stall Current	A	43,6	31,1	18,3
11	No-load Current	mA	224	129	69,9
12	No-load Speed	rpm	9380	10300	10900
13	Line to Line Resistance	Ω	0,275	0,771	2,62
14	Line to Line Inductance	mH	0,148	0,49	1,77
15	Rotor Inertia	gcm2	3,06	3,06	3,06
16	Max. Efficiency	%	86,4	87,7	88,2
17	Mechanical Time Constant	ms	0,575	0,488	0,459
18	Length (L)	mm	58,5	58,5	58,5
19	Weight	g	113	113	113

Characteristics	
Item	
Ambient Temperature Ball bearings	-40°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	11000rpm
Radial play	preloaded
Axial play	0 to 0,24mm
Max. Radial force (5mm from flange)	29N
Max. Axial force	4N
Max. Force for Press fit	110N

Connection			
Lead n°	Color	Gauge	Function
1	Red	AWG18	Phase 1
2	Black		Phase 2
3	White		Phase 3
4	Orange	AWG26	Vcc Hall 5 ±0,5V
5	Blue		GND Hall
6	Yellow		Hall 1
7	Brown		Hall 2
8	Grey		Hall 3

Operating range: Winding 24V



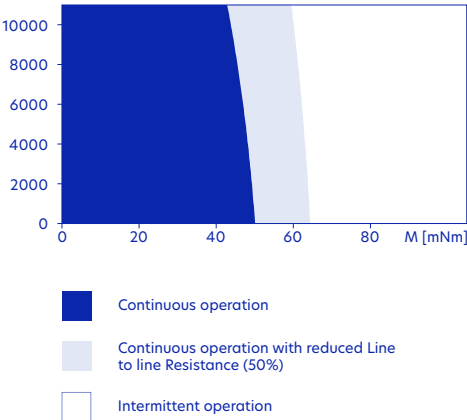


Specification				
Model		...5001	...5304	
1	n° of Pole	8	8	
2	n° of Phase	3	3	
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	5000	5320
5	Rated Torque	mNm	77,5	79,9
6	Stall Torque	mNm	730	832
7	Torque Constant	mNm/A	37,7	71,6
8	Motor Regulation	10³/Nms	0,9	0,8
9	Rated Current	A	2,01	1,09
10	Stall Current	A	19,4	11,6
11	No-load Current	mA	96,8	52
12	No-load Speed	rpm	6030	6350
13	Line to Line Resistance	Ω	1,24	4,13
14	Line to Line Inductance	mH	0,798	2,88
15	Rotor Inertia	gcm2	4,97	4,97
16	Max. Efficiency	%	86,5	87,2
17	Mechanical Time Constant	ms	0,434	0,401
18	Length (L)	mm	82	82
19	Weight	g	162	162

Characteristics	
Item	
Ambient Temperature Ball bearings	-40°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	8000rpm
Radial play	preloaded
Axial play	0 to 0,24mm
Max. Radial force (5mm from flange)	33N
Max. Axial force	4N
Max. Force for Press fit	110N

Connection			
Lead n°	Color	Gauge	Function
1	Red	AWG18	Phase 1
2	Black		Phase 2
3	White		Phase 3
4	Orange	AWG26	Vcc Hall 5 ±0,5V
5	Blue		GND Hall
6	Yellow		Hall 1
7	Brown		Hall 2
8	Grey		Hall 3

Operating range: Winding 24V





BLDC Slotted motors

CBL series - Economy

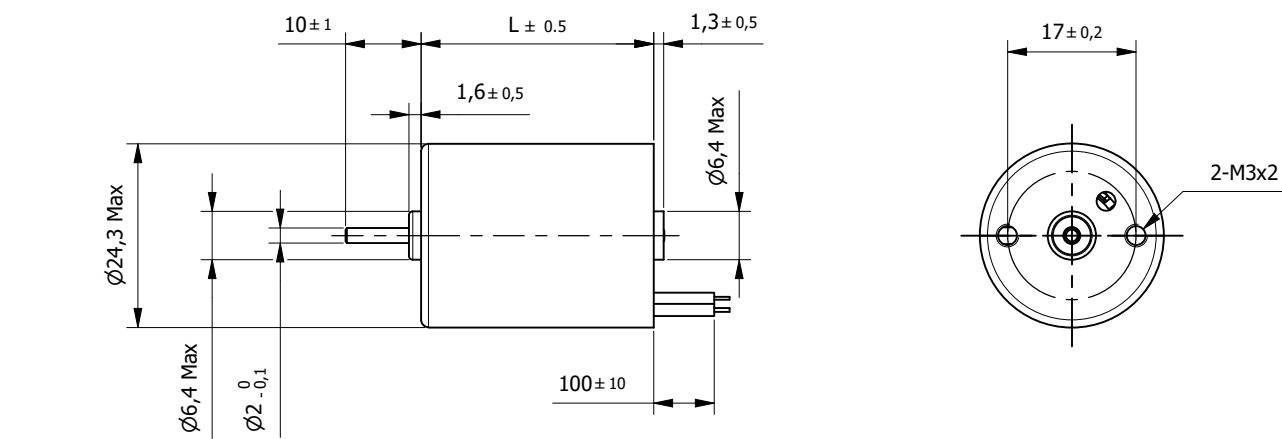
BLDC Slotted motors - CBL Economy series		Torque* (Nm)
24CBL30	0,006	96
28CBL	0,028...0,05	97
36CBL	0,015...0,09	98
38CBL58	0,07	99
42CBL	0,068...0,15	100
48CBL68	0,18	101

* Rated Torque

Brushless Slotted Motor 24CBL30

Ø 24mm

0,006Nm



Motor with Sleeve Bearings

Specification		
Model	24CBL30	
1 n° of Pole		12
2 n° of Phase		3
3 Rated Voltage	V	12
4 Rated Speed	rpm	4000
5 Rated Torque	Nm	0,006
6 Max. Peak Torque	Nm	0,017
7 Torque Constant	Nm/A	0,02
8 Rated Current	A	0,3
9 Max. Peak Current	A	0,9
10 No-Load Current	mA	200
11 Line to Line Resistance	Ω	7,3
12 Line to Line Inductance	mH	1,7
13 Rotor Inertia	gcm2	2,3
14 Length (L)	mm	30,8
15 Weight	Kg	0,04

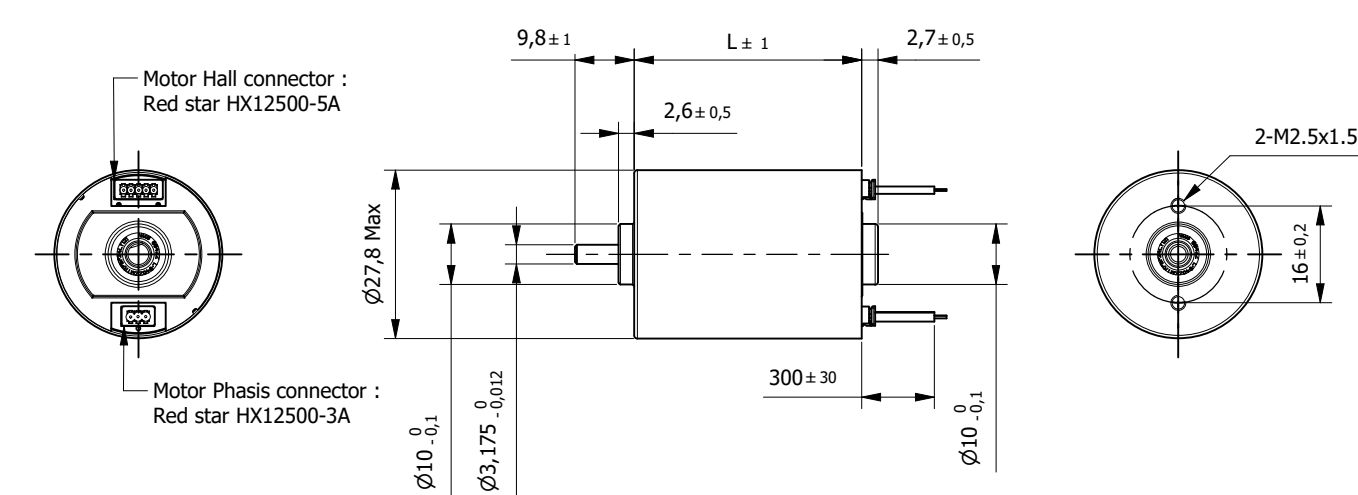
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (@4N)	0,025mm
Axial play (@4N)	0,2mm
Max. Radial force (10mm from flange)	5N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG28	VCC Hall +5 to +24VDC
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1430 AWG26	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 28CBL

Ø 28mm

0,028 - 0,05Nm



Specification			
Model	28CBL38	28CBL48	
1 n° of Pole	8	8	
2 n° of Phase	3	3	
3 Rated Voltage	V	24	24
4 Rated Speed	rpm	4000	4500
5 Rated Torque	Nm	0,028	0,05
6 Max. Peak Torque	Nm	0,084	0,072
7 Torque Constant	Nm/A	0,043	0,036
8 Rated Current	A	0,75	1,4
9 Max. Peak Current	A	2,3	2
10 No-Load Current	mA	300	140
11 Line to Line Resistance	Ω	5,7	2,5
12 Line to Line Inductance	mH	2,48	1,2
13 Rotor Inertia	gcm2	5,8	7,3
14 Length (L)	mm	38	48
15 Weight	Kg	0,095	0,12

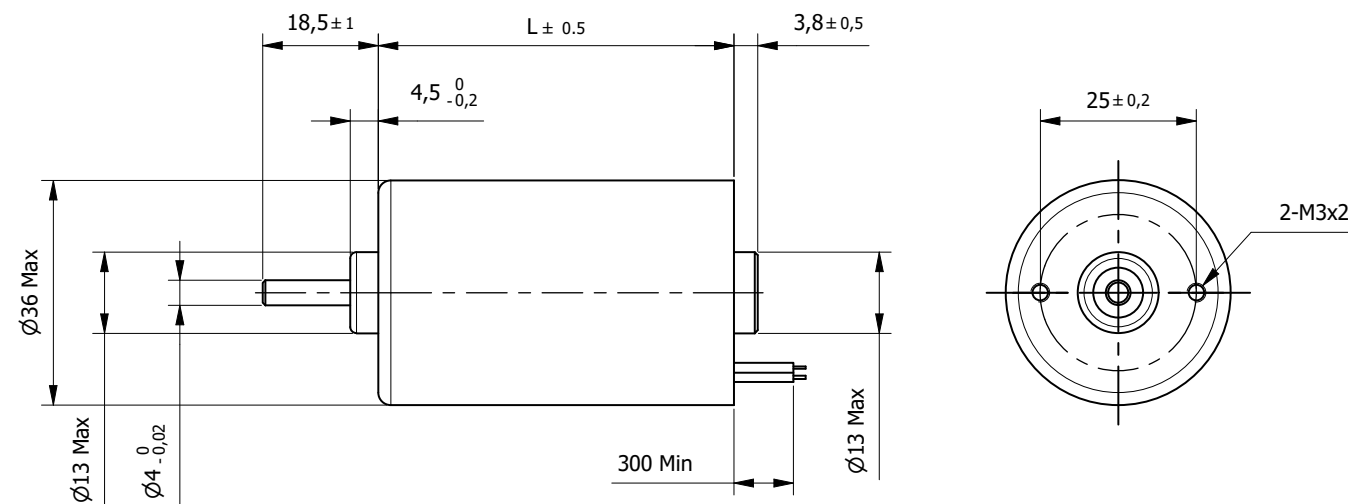
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	5N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	650 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Yellow	UL1061 AWG28	VCC Hall +5 to +24VDC
2	Blue		Hall A
3	Orange		Hall B
4	Brown		Hall C
5	White		GND Hall
6	Green	UL1061 AWG26	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 36CBL

Ø 36mm

0,015 - 0,09Nm



Specification							
	Model	36CBL30	36CBL40	36CBL50	36CBL57	36CBL60	36CBL65
1	n° of Pole	8	8	8	8	8	8
2	n° of Phase	3	3	3	3	3	3
3	Rated Voltage	V	24	24	24	24	24
4	Rated Speed	rpm	4800	4800	4800	4500	4800
5	Rated Torque	Nm	0,015	0,035	0,055	0,07	0,09
6	Max. Peak Torque	Nm	0,045	0,11	0,165	0,21	0,27
7	Torque Constant	Nm/A	0,03	0,035	0,036	0,04	0,035
8	Rated Current	A	0,5	1	1,5	1,8	2,5
9	Max. Peak Current	A	1,3	3	4,5	5,3	7,5
10	No-Load Current	mA	150	230	250	500	400
11	Line to Line Resistance	Ω	5,2	2	1,2	1,05	0,95
12	Line to Line Inductance	mH	3,3	1,9	1,2	1	0,85
13	Rotor Inertia	gcm2	6	12	22	27	30
14	Length (L)	mm	30	40	50	57	60
15	Weight	Kg	0,12	0,16	0,23	0,25	0,27

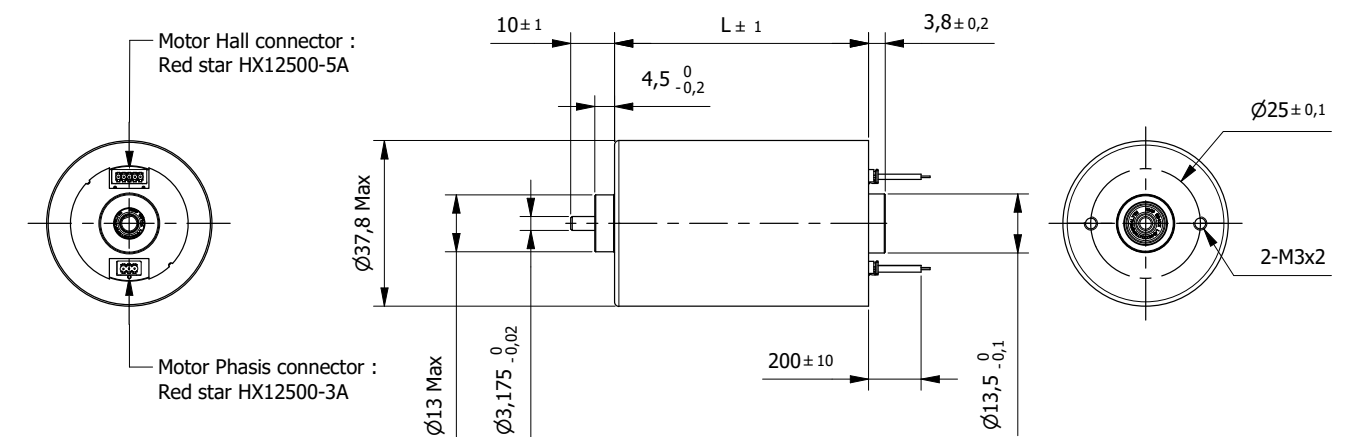
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	VCC Hall +5 to +24VDC
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1430 AWG24	Phase U
7	Brown		Phase V
8	Orange		Phase W

Brushless Slotted Motor 38CBL58

Ø 38mm

0,07Nm



Specification			
	Model	38CBL58	
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,07
6	Max. Peak Torque	Nm	0,21
7	Torque Constant	Nm/A	0,044
8	Rated Current	A	1,7
9	Max. Peak Current	A	5,1
10	No-Load Current	mA	200
11	Line to Line Resistance	Ω	2
12	Line to Line Inductance	mH	1,5
13	Rotor Inertia	gcm2	16
14	Length (L)	mm	58
15	Weight	Kg	0,24

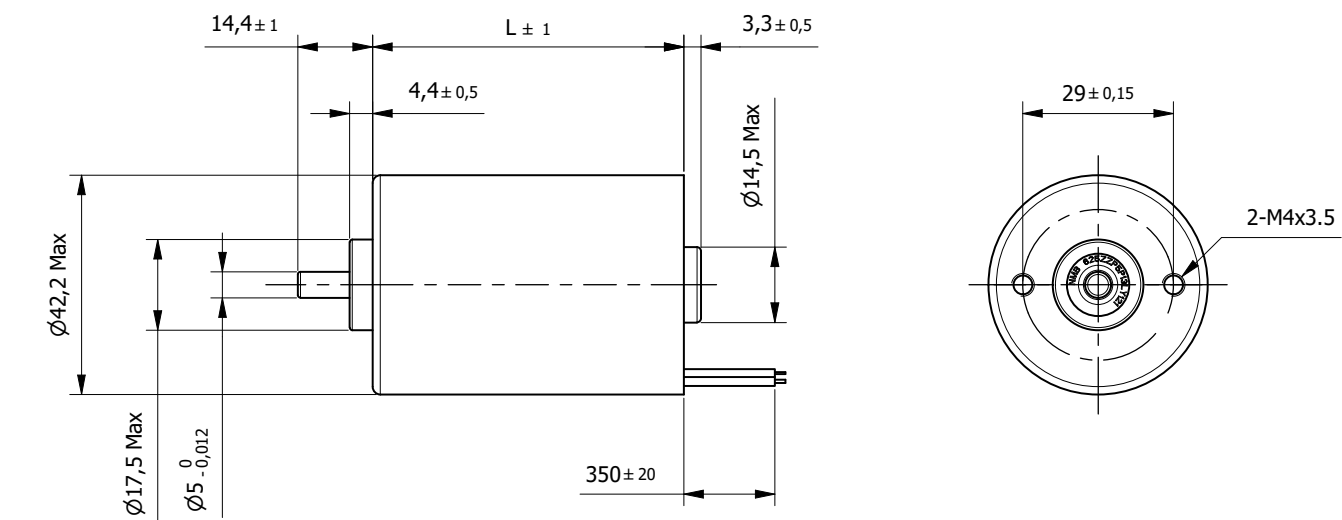
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	VCC Hall +5 to +24VDC
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1430 AWG22	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 42CBL

Ø 42mm

0,068 - 0,15Nm



Specification				
Model		42CBL60	42CBLA60	42CBL66
1 n° of Pole		8	8	8
2 n° of Phase		3	3	3
3 Rated Voltage	V	24	24	24
4 Rated Speed	rpm	5900	3200	4000
5 Rated Torque	Nm	0,068	0,12	0,15
6 Max. Peak Torque	Nm	0,2	0,36	0,45
7 Torque Constant	Nm/A	0,032	0,054	0,04
8 Rated Current	A	2,13	2,1	3,75
9 Max. Peak Current	A	6,6	6,3	11,2
10 No-Load Current	mA	430	300	400
11 Line to Line Resistance	Ω	0,66	1,2	0,75
12 Line to Line Inductance	mH	0,63	1,6	0,8
13 Rotor Inertia	gcm ²	44	44	55
14 Length (L)	mm	60	60	66
15 Weight	Kg	0,35	0,35	0,44

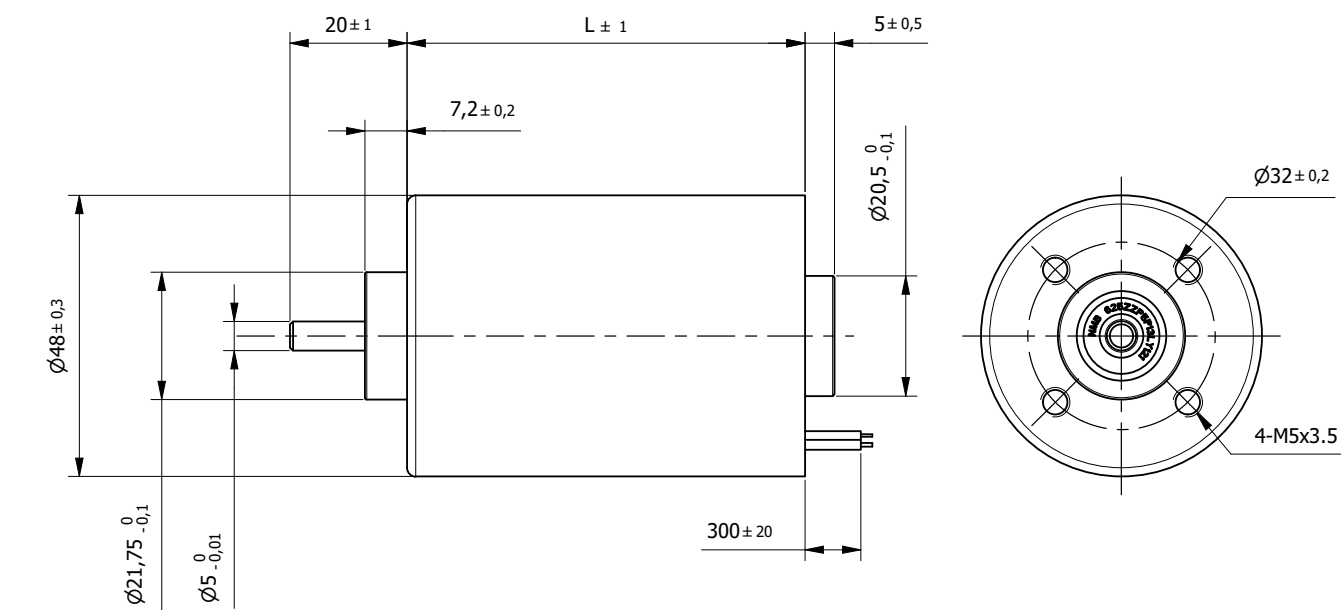
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	25N
Max. Axial force	15N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	VCC Hall +5 to +24VDC
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1332 AWG22	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotted Motor 48CBL68

Ø 48mm

0,18Nm



Specification		
Model		48CBL68
1 n° of Pole		10
2 n° of Phase		3
3 Rated Voltage	V	24
4 Rated Speed	rpm	3000
5 Rated Torque	Nm	0,18
6 Max. Peak Torque	Nm	0,3
7 Torque Constant	Nm/A	0,058
8 Rated Current	A	3
9 Max. Peak Current	A	5
10 No-Load Current	mA	500
11 Line to Line Resistance	Ω	0,7
12 Line to Line Inductance	mH	0,7
13 Rotor Inertia	gcm ²	80
14 Length (L)	mm	68
15 Weight	Kg	0,5

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	30N
Max. Axial force	20N
Dielectric strength (for 1 sec.)	650 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	VCC Hall +5 to +24VDC
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1430 AWG20	Phase U
7	Red		Phase V
8	Black		Phase W



Slotless motors -
SBL series
Standard

p.105



Slotless motors -
EC series
High Performance

p.113

Advantages at a glance
Low cogging
Lower inertia
High speed

The primary benefit of our slotless DC motor ironless coil construction, is the reduction of cogging torque and results in a motor with very smooth running characteristics. Torque production is predictable and highly controllable, because in the absence of these uncontrolled disturbances (i.e. cogging torque), motor torque production is directly related to the current supplied to the winding.

Since there's no iron core, inductance is very low and current can get into the stator windings very quickly, making slotless motors good for applications that require high acceleration and dynamic response.

BLDC Slotless motors - SBL Standard series	Torque* (Nm)	105
10SBL19	0,0005	106
14SBL45	0,004	107
16SBL	0,002...0,009	108
22SBL	0,006...0,025	109
28SBL	0,018...0,06	110
40SBL	0,2...0,25	111

BLDC Slotless motors - EC High Performance series	Torque* (Nm)	113
16EC24P	0,003	114
16EC36P	0,008	115
16EC40NS	0,007	116
16EC56NS	0,015...0,016	117
22EC32P	0,010...0,011	118
22EC44NS	0,018...0,02	119
22EC48P	0,023	120
22EC48T	0,043...0,045	121
22EC60NS	0,027...0,029	122
22EC66T	0,055	123
30EC42P	0,034	124
30EC47T	0,069...0,073	125
30EC64P	0,061...0,064	126
30EC64T	0,093...0,096	127
40EC58P	0,09...0,094	128
40EC88P	0,21	129

Brushless DC Slotless motors

*Rated Torque



BLDC Slotless motors

SBL series - Standard

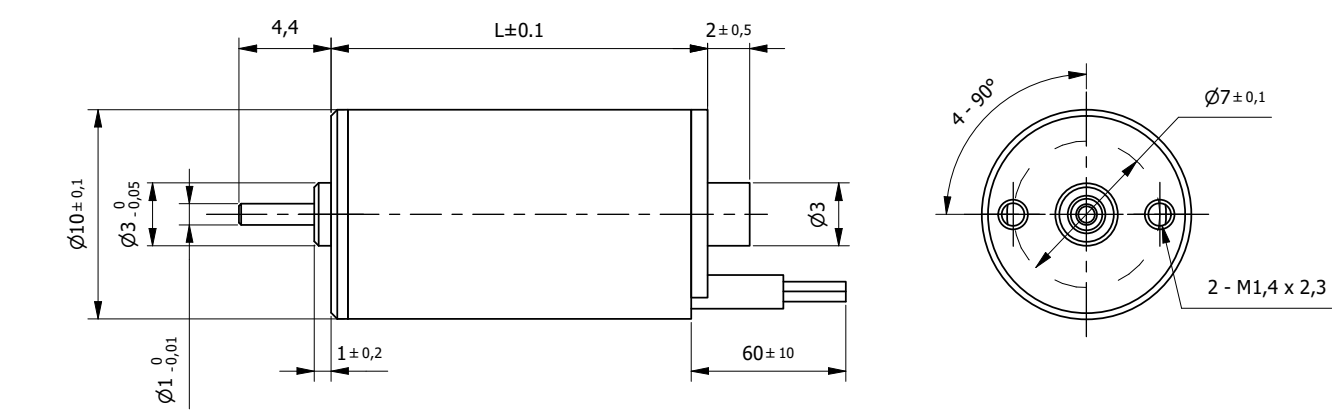
BLDC Slotless motors - SBL Standard series	Torque* (Nm)	
10SBL19	0,0005	106
14SBL45	0,004	107
16SBL	0,002...0,009	108
22SBL	0,006...0,025	109
28SBL	0,018...0,06	110
40SBL	0,2...0,25	111

* Rated Torque

Brushless Slotless Motor 10SBL19

Ø 10mm

0,5mNm



Specification		
Model	10SBL19	
1	n° of Pole	2
2	n° of Phase	3
3	Rated Voltage	V 3,7
4	Rated Speed	rpm 7000
5	Rated Torque	Nm 0,0005
6	Max. Peak Torque	Nm 0,001
7	Torque Constant	Nm/A 0,00235
8	Rated Current	A 0,2
9	Max. Peak Current	A 0,4
10	No-Load Current	A 0,05
11	Line to Line Resistance	Ω 4,82
12	Line to Line Inductance	mH 0,08
13	Rotor Inertia	gcm2 0,05
14	Length (L)	mm 19,4
15	Weight	g 10

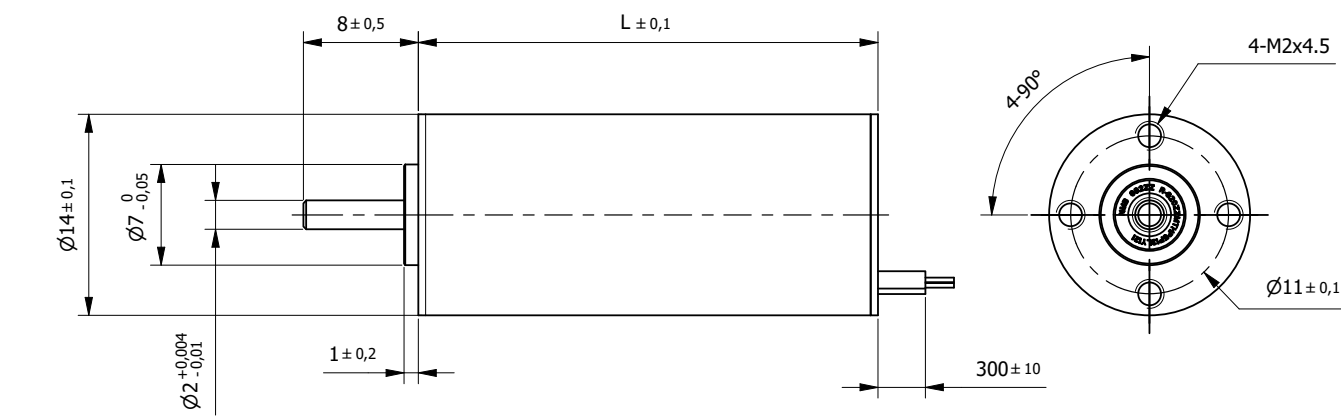
Characteristics	
Item	
Hall Effect Angle	120°
Insulation Class	B 130°C
Protection Class	IP40
Radial play (max. 4N)	0,02mm
Axial play (max. 4N)	0,14mm
Max. Radial force (5mm from flange)	3N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	360 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG28	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1430 AWG26	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotless Motor 14SBL45

Ø 14mm

0,004Nm



Specification		
Model	14SBL45	
1	n° of Pole	2
2	n° of Phase	3
3	Rated Voltage	V 6
4	Rated Speed	rpm 10000
5	Rated Torque	Nm 0,004
6	Max. Peak Torque	Nm 0,011
7	Torque Constant	Nm/A 0,005
8	Rated Current	A 0,8
9	Max. Peak Current	A 2,4
10	No-Load Current	A 0,1
11	Line to Line Resistance	Ω 1,3
12	Line to Line Inductance	mH 0,06
13	Rotor Inertia	gcm2 0,34
14	Length (L)	mm 36
15	Weight	Kg 0,065

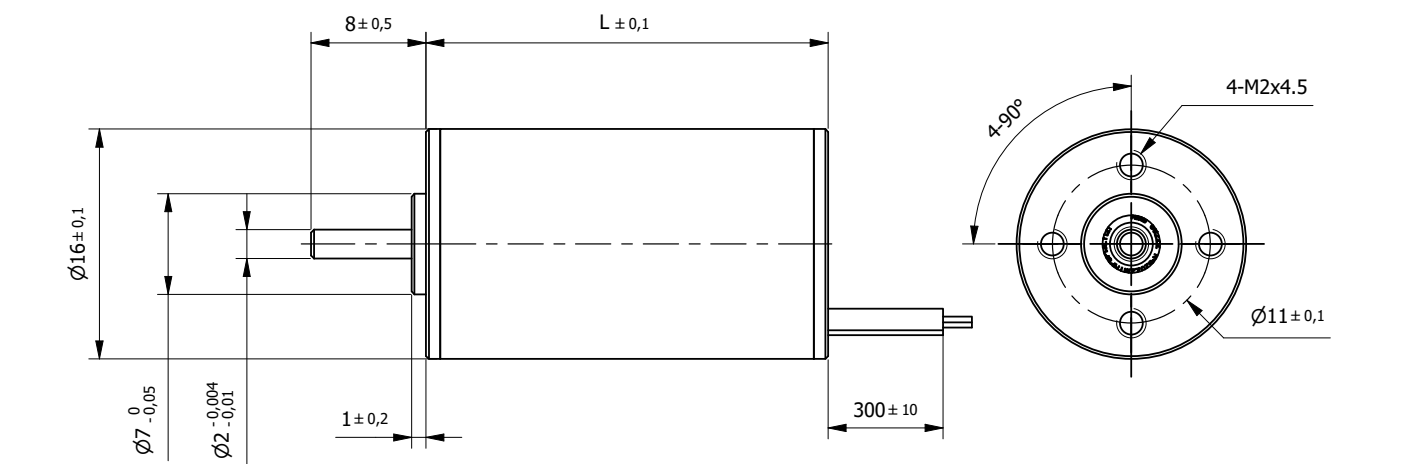
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (max. 4N)	0,025mm
Axial play (max. 4N)	0,3mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	5N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Yellow	UL1332 AWG26	Phase U
2	Red		Phase V
3	Black		Phase W

Brushless Slotless Motor 16SBL

Ø 16mm

0,002 - 0,009Nm



Specification				
Model		16SBL28	16SBL40	16SBL56
1 n° of Pole		2	2	2
2 n° of Phase		3	3	3
3 Rated Voltage	V	12	24	24
4 Rated Speed	rpm	22000	25000	25000
5 Rated Torque	Nm	0,002	0,004	0,009
6 Max. Peak Torque	Nm	0,005	0,012	0,027
7 Torque Constant	Nm/A	0,004	0,007	0,007
8 Rated Current	A	0,38	0,54	1,22
9 Max. Peak Current	A	1,2	1,7	3,7
10 No-Load Current	mA	100	200	250
11 Line to Line Resistance	Ω	5,4	6,6	3,15
12 Line to Line Inductance	mH	0,17	0,21	0,15
13 Rotor Inertia	gcm2	0,4	0,66	1,02
14 Length (L)	mm	28	40	56
15 Weight	Kg	0,029	0,042	0,064

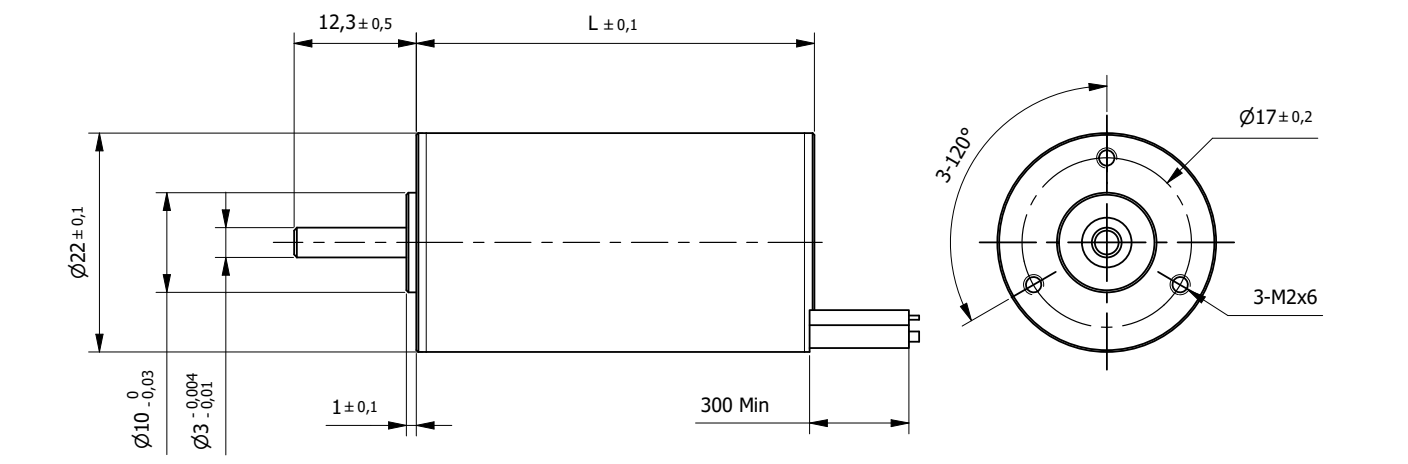
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (360g load)	0,025mm
Axial play (1000g load)	0,3mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	5N
Dielectric strength (for 1 sec.)	360 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Yellow	UL1430 AWG26	Phase U
2	Red		Phase V
3	Black		Phase W

Brushless Slotless Motor 22SBL

Ø 22mm

0,006 - 0,025Nm



Available with or without Hall Sensors

Specification				
Model		22SBL40	22SBL60	22SBL70
1 n° of Pole		2	2	2
2 n° of Phase		3	3	3
3 Rated Voltage	V	24	36	24
4 Rated Speed	rpm	35000	32000	22000
5 Rated Torque	Nm	0,006	0,021	0,025
6 Max. Peak Torque	Nm	0,018	0,063	0,075
7 Torque Constant	Nm/A	0,006	0,008	0,007
8 Rated Current	A	1,1	3,8	3,5
9 Max. Peak Current	A	3,2	7,6	10,5
10 No-Load Current	mA	400	<500	350
11 Line to Line Resistance	Ω	2	1	0,75
12 Line to Line Inductance	mH	0,13	0,07	0,07
13 Rotor Inertia	gcm2	1	3,2	4,5
14 Length (L)	mm	40	60	70
15 Weight	Kg	0,04	0,15	0,2
16 Length with Hall Sensors	mm	48	68	78

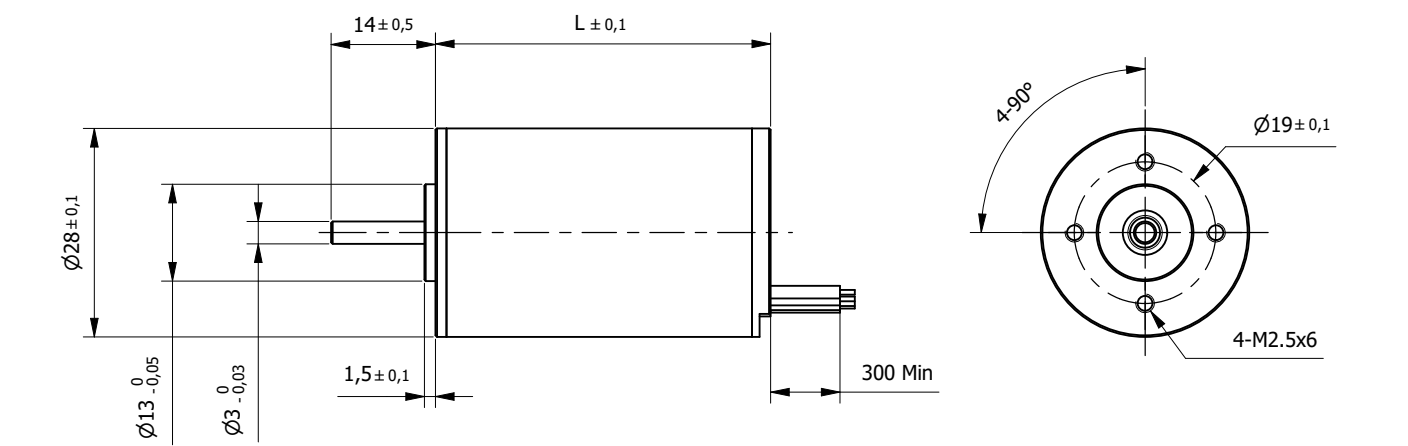
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	5N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	360 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG28	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1430 AWG26	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotless Motor 28SBL

Ø 28mm

0,018 - 0,06Nm



BE Version: Rear shaft 13mm - 2x M2.5 on diameter 19,05mm
Available with or without Hall Sensors

Specification				
	Model	28SBL44	28SBL66	28SBL80
1	n° of Pole	2	2	2
2	n° of Phase	3	3	3
3	Rated Voltage	V	24	24
4	Rated Speed	rpm	8000	14000
5	Rated Torque	Nm	0,018	0,054
6	Max. Peak Torque	Nm	0,055	0,162
7	Torque Constant	Nm/A	0,023	0,015
8	Rated Current	A	0,8	3,53
9	Max. Peak Current	A	2,5	11
10	No-Load Current	mA	200	400
11	Line to Line Resistance	Ω	4,2	0,6
12	Line to Line Inductance	mH	0,42	0,064
13	Rotor Inertia	gcm ²	8,8	16,2
14	Length (L)	mm	34	56
15	Weight	Kg	0,14	0,23
16	Length with Hall Sensors	mm	44	66

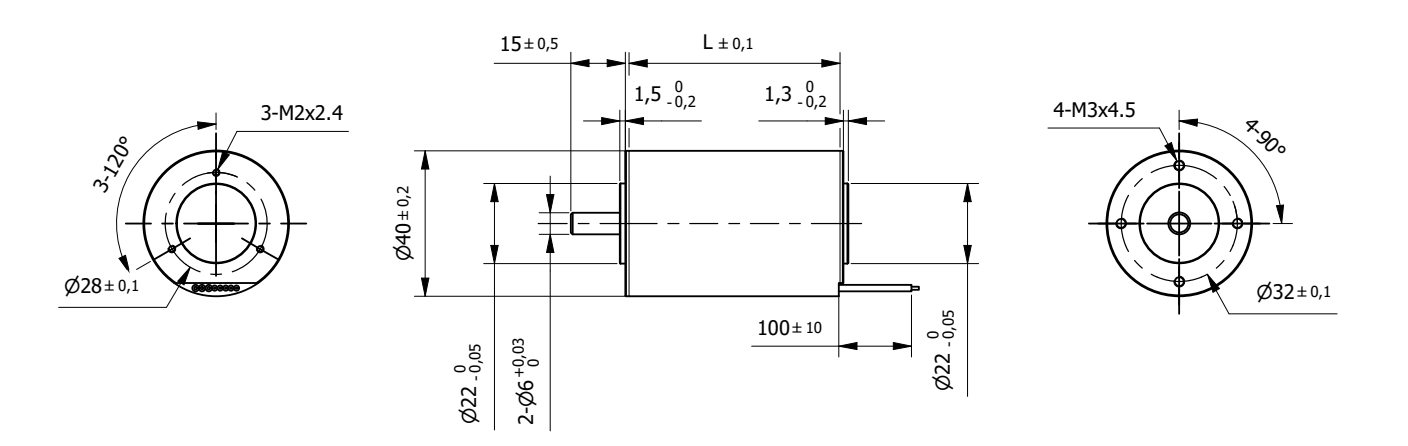
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (1000g load)	0,2mm
Max. Radial force (10mm from flange)	5N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG28	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1430 AWG26	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Slotless Motor 40SBL

Ø 40mm

0,2 - 0,25Nm



BE Version: Rear shaft 13mm - 2x M2.5 on diameter 19,05mm
Available with or without Hall Sensors

Specification				
	Model	40SBL65	40SBL85	
1	n° of Pole	4	4	
2	n° of Phase	3	3	
3	Rated Voltage	V	24	24
4	Rated Speed	rpm	8000	5100
5	Rated Torque	Nm	0,2	0,25
6	Max. Peak Torque	Nm	0,6	0,75
7	Torque Constant	Nm/A	0,026	0,041
8	Rated Current	A	8	7
9	Max. Peak Current	A	24	19,6
10	No-Load Current	mA	500	330
11	Line to Line Resistance	Ω	0,21	0,28
12	Line to Line Inductance	mH	0,037	0,057
13	Rotor Inertia	gcm ²	85	120
14	Length with Hall Sensors (L)	mm	65	85
15	Weight	Kg	0,4	0,5
16	Length w/o Hall Sensors	mm	55	75

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	F
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	AF R250-SY 0,15mm AWG26	Vcc Hall +5 to +24 Vdc
2	Blue		Hall U
3	Green		Hall V
4	White		Hall W
5	Black		Hall GND
6	Yellow	UL1332 AWG18	Phase U
7	Red		Phase V
8	Black		Phase W



BLDC Slotless motors

EC series - High Performance

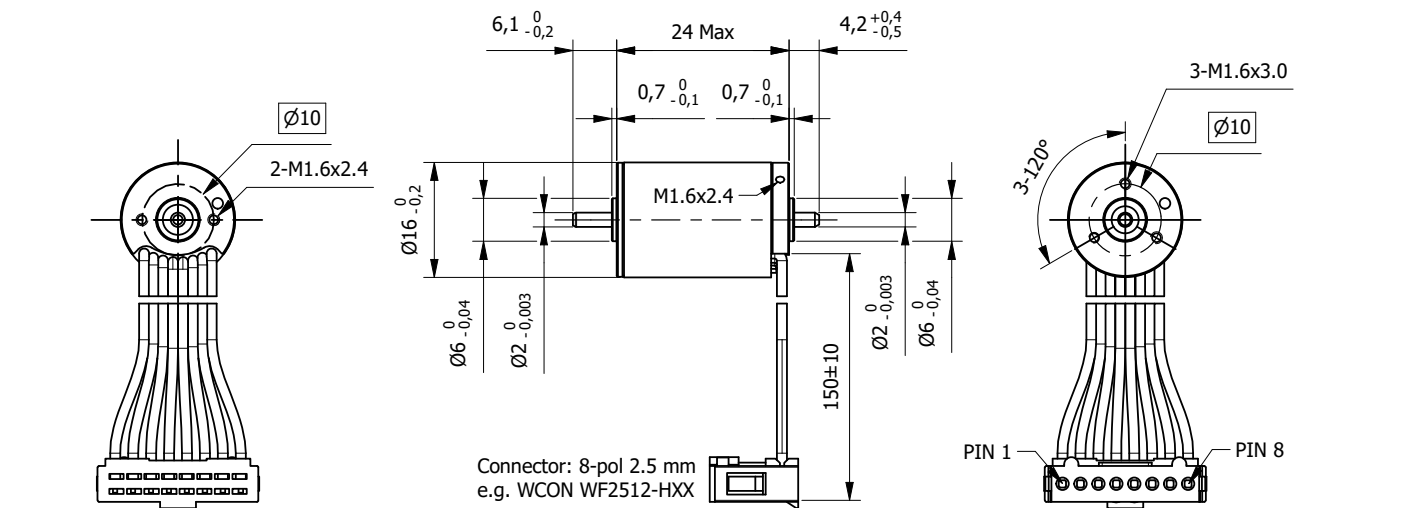
BLDC Slotless motors - EC High Performance series		Torque* (Nm)
16EC24P	0,003	114
16EC36P	0,008	115
16EC40NS	0,007	116
16EC56NS	0,015...0,016	117
22EC32P	0,010...0,011	118
22EC44NS	0,018...0,02	119
22EC48P	0,023	120
22EC48T	0,043...0,045	121
22EC60NS	0,027...0,029	122
22EC66T	0,055	123
30EC42P	0,034	124
30EC47T	0,069...0,073	125
30EC64P	0,061...0,064	126
30EC64T	0,093...0,096	127
40EC58P	0,09...0,094	128
40EC88P	0,21	129

* Rated Torque

Brushless Slotless Motor 16EC24P

Ø 16mm

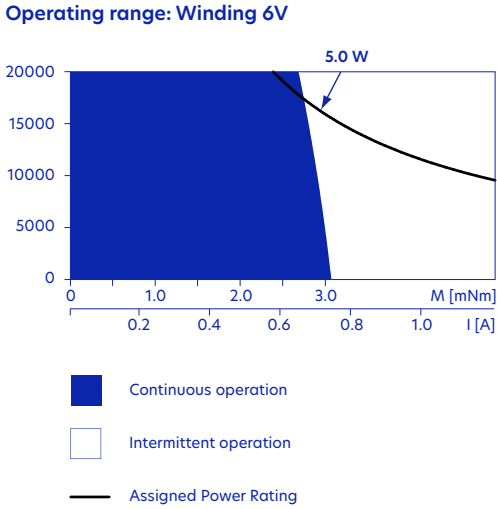
3,2mNm



Specification			
Model	...5604	...5815	
1 n° of Pole	2	2	
2 n° of Phase	3	3	
3 Rated Voltage	V	6	12
4 Rated Speed	rpm	5690	5840
5 Rated Torque	mNm	3,2	3,23
6 Stall Torque	mNm	5,79	5,95
7 Torque Constant	mNm/A	3,9	7,8
8 Motor Regulation	10³/Nms	265,6	258,1
9 Rated Current	A	0,903	0,456
10 Stall Current	A	1,4	0,762
11 No-load Current	mA	120	60,2
12 No-load Speed	rpm	13500	13500
13 Line to Line Resistance	Ω	4,04	15,7
14 Line to Line Inductance	mH	0,063	0,254
15 Rotor Inertia	gcm²	0,428	0,428
16 Max. Efficiency	%	53	53
17 Mechanical Time Constant	ms	11,4	11,1
18 Length (L)	mm	24	24
19 Weight	g	36	36

Characteristics	
Item	
Ambient Temperature	-40°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	20000rpm
Radial play	preloaded
Axial play	0 to 0,14mm
Max. Radial force (5mm from flange)	6N
Max. Axial force	1N
Max. Force for Press fit	18N

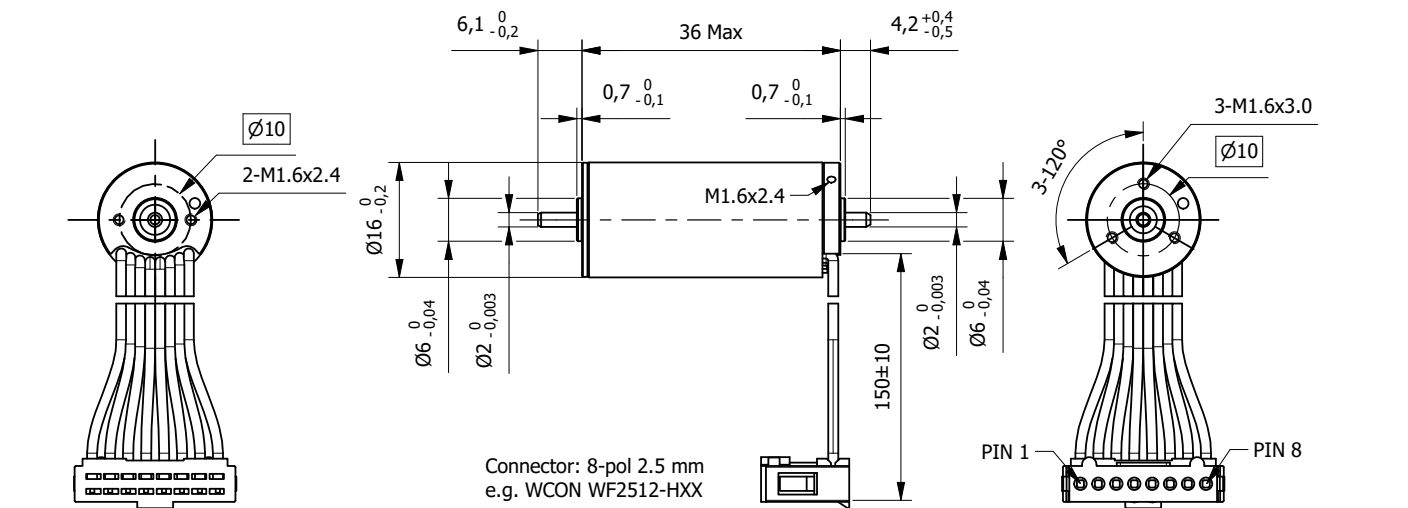
Connection			
Pin n°	Color	Gauge	Function
1	Brown	AWG24	Phase 1
2	Red		Phase 2
3	Orange		Phase 3
4	Yellow		Vcc Hall 3 to 24 Vdc
5	Green		GND Hall
6	Blue		Hall 1
7	Violet		Hall 2
8	Grey		Hall 3



Brushless Slotless Motor 16EC36P

Ø 16mm

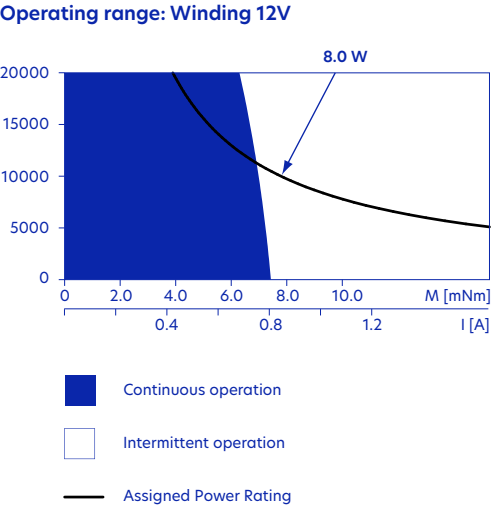
7,7 to 8,2mNm



Specification					
	Model	...7101	...7305	...7320	
1	n° of Pole	2	2	2	
2	n° of Phase	3	3	3	
3	Rated Voltage	V	6	12	24
4	Rated Speed	rpm	7120	7300	7350
5	Rated Torque	mNm	7,66	8,02	8,19
6	Stall Torque	mNm	19,2	21,1	22
7	Torque Constant	mNm/A	4,61	9,32	18,7
8	Motor Regulation	10 ³ /Nms	67,8	61	58,6
9	Rated Current	A	1,76	0,909	0,461
10	Stall Current	A	4,17	2,27	1,17
11	No-load Current	mA	130	64,2	31,9
12	No-load Speed	rpm	12000	11900	11900
13	Line to Line Resistance	Ω	1,44	5,3	20,5
14	Line to Line Inductance	mH	0,034	0,14	0,566
15	Rotor Inertia	gcm ²	0,85	0,85	0,85
16	Max. Efficiency	%	69	70	71
17	Mechanical Time Constant	ms	5,75	5,18	4,95
18	Length (L)	mm	36	36	36
19	Weight	g	52	52	52

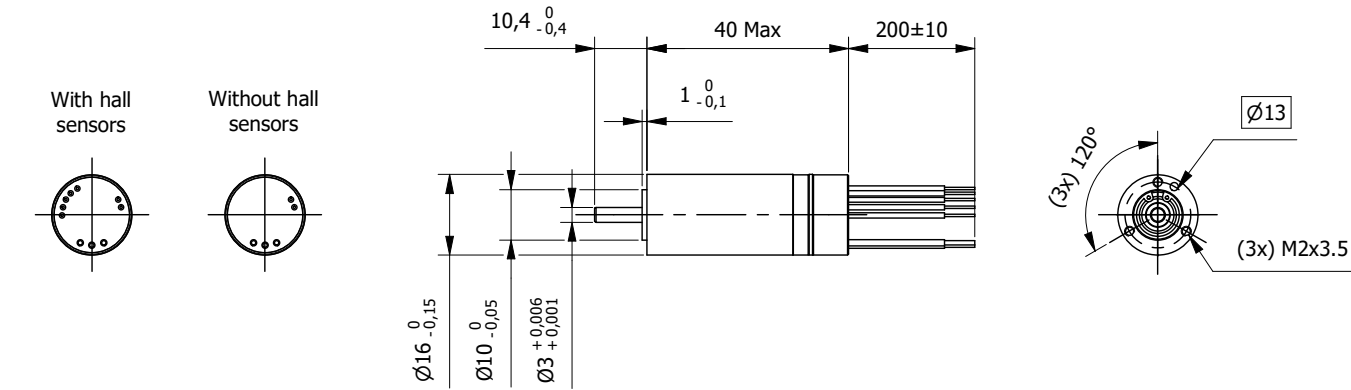
Characteristics	
Item	
Ambient Temperature	-40°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	20000rpm
Radial play	preloaded
Axial play	0 to 0,14mm
Max. Radial force (5mm from flange)	6N
Max. Axial force	1N
Max. Force for Press fit	18N

Connection			
Pin n°	Color	Gauge	Function
1	Brown	AWG24	Phase 1
2	Red		Phase 2
3	Orange		Phase 3
4	Yellow		Vcc Hall 3 to 24 Vdc
5	Green		GND Hall
6	Blue		Hall 1
7	Violet		Hall 2
8	Grey		Hall 3



Brushless Slotless Motor 16EC40NS
High Speed

Ø 16mm
7,2 to 7,5mNm

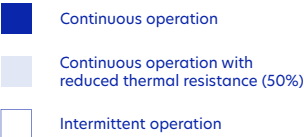
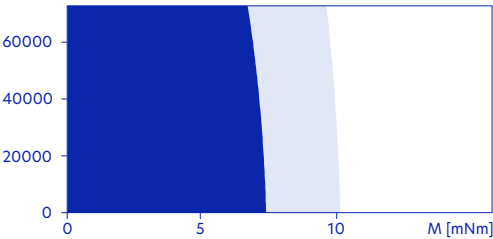


Specification						
	Model	...50805	...54008	...52201	...52203	
1	n° of Pole	2	2	2	2	
2	n° of Phase	3	3	3	3	
3	Rated Voltage	V	18	24	36	48
4	Rated Speed	rpm	50800	54000	52200	52200
5	Rated Torque	mNm	7,53	7,21	7,4	7,44
6	Stall Torque	mNm	109	111	113	115
7	Torque Constant	mNm/A	3,09	3,9	6,04	8,06
8	Motor Regulation	10³/Nms	53,6	55,3	52,6	51,6
9	Rated Current	A	2,67	2,05	1,35	1,01
10	Stall Current	A	35,1	28,5	18,8	14,3
11	No-load Current	mA	276	227	143	107
12	No-load Speed	rpm	55100	58300	56400	56400
13	Line to Line Resistance	Ω	0,512	0,841	1,92	3,35
14	Line to Line Inductance	mH	0,030	0,047	0,113	0,201
15	Rotor Inertia	gcm2	0,812	0,812	0,812	0,812
16	Max. Efficiency	%	83,5	83,4	83,7	83,8
17	Mechanical Time Constant	ms	4,36	4,5	4,26	4,19
18	Length (L)	mm	40	40	40	40
19	Weight	g	50	50	50	50

Characteristics	
Item	
Ambient Temperature	-20°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	70000rpm
Radial play	preloaded
Axial play	0 to 0,29mm
Max. Radial force (5mm from flange)	10N
Max. Axial force	1,5N
Max. Force for Press fit	60N

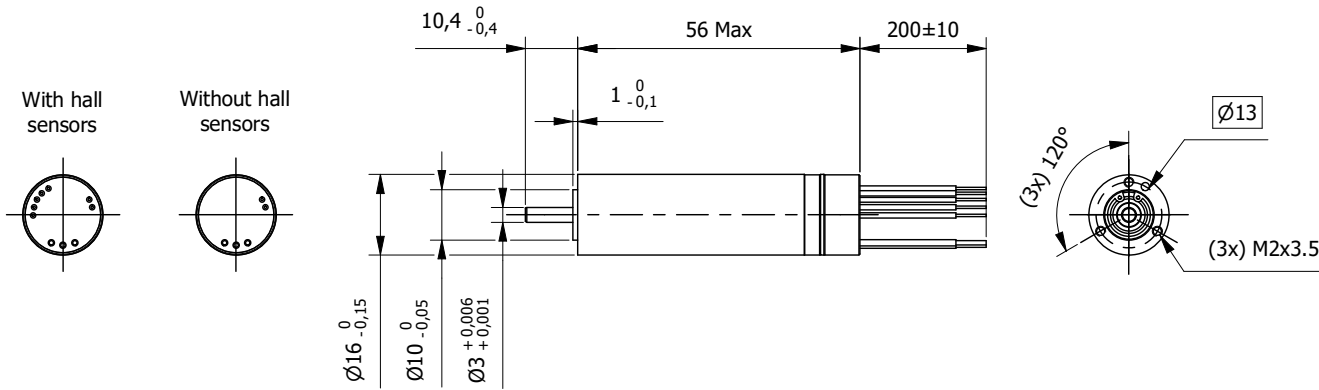
Connection		
Color	Gauge	Function
Red	AWG22	Phase 1
Black		Phase 2
White		Phase 3
Orange	AWG26	Vcc Hall 3 to 24 Vdc
Blue		GND Hall
Yellow		Hall 1
Brown		Hall 2
Grey		Hall 3
Purple		NTC

Operating range: Winding 36V



Brushless Slotless Motor 16EC56NS
High Speed

Ø 16mm
14,7 to 16mNm

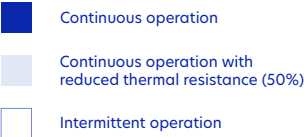
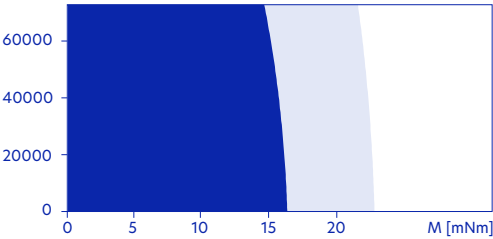


Specification						
	Model	...61201	...61602	...61804	...61808	
1	n° of Pole	2	2	2	2	
2	n° of Phase	3	3	3	3	
3	Rated Voltage	V	18	24	36	48
4	Rated Speed	rpm	61200	61600	61800	61800
5	Rated Torque	mNm	15,4	16	15,4	14,7
6	Stall Torque	mNm	346	407	414	396
7	Torque Constant	mNm/A	2,65	3,53	5,3	7,07
8	Motor Regulation	10 ³ /Nms	19,7	16,7	16,4	17,2
9	Rated Current	A	6,2	4,82	3,1	2,24
10	Stall Current	A	131	115	78,1	56
11	No-load Current	mA	459	344	230	172
12	No-load Speed	rpm	64600	64600	64600	64600
13	Line to Line Resistance	Ω	0,138	0,208	0,461	0,858
14	Line to Line Inductance	mH	0,008	0,014	0,032	0,057
15	Rotor Inertia	gcm ²	1,2	1,2	1,2	1,2
16	Max. Efficiency	%	88,7	89,5	89,6	89,4
17	Mechanical Time Constant	ms	2,35	2	1,97	2,06
18	Length (L)	mm	56	56	56	56
19	Weight	g	72,6	72,6	72,6	72,6

Characteristics	
Item	
Ambient Temperature	-20°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	70000rpm
Radial play	preloaded
Axial play	0 to 0,29mm
Max. Radial force (5mm from flange)	10N
Max. Axial force	1,5N
Max. Force for Press fit	60N

Connection		
Color	Gauge	Function
Red	AWG22	Phase 1
Black		Phase 2
White		Phase 3
Orange	AWG26	Vcc Hall 3 to 24 Vdc
Blue		GND Hall
Yellow		Hall 1
Brown		Hall 2
Grey		Hall 3
Purple		NTC

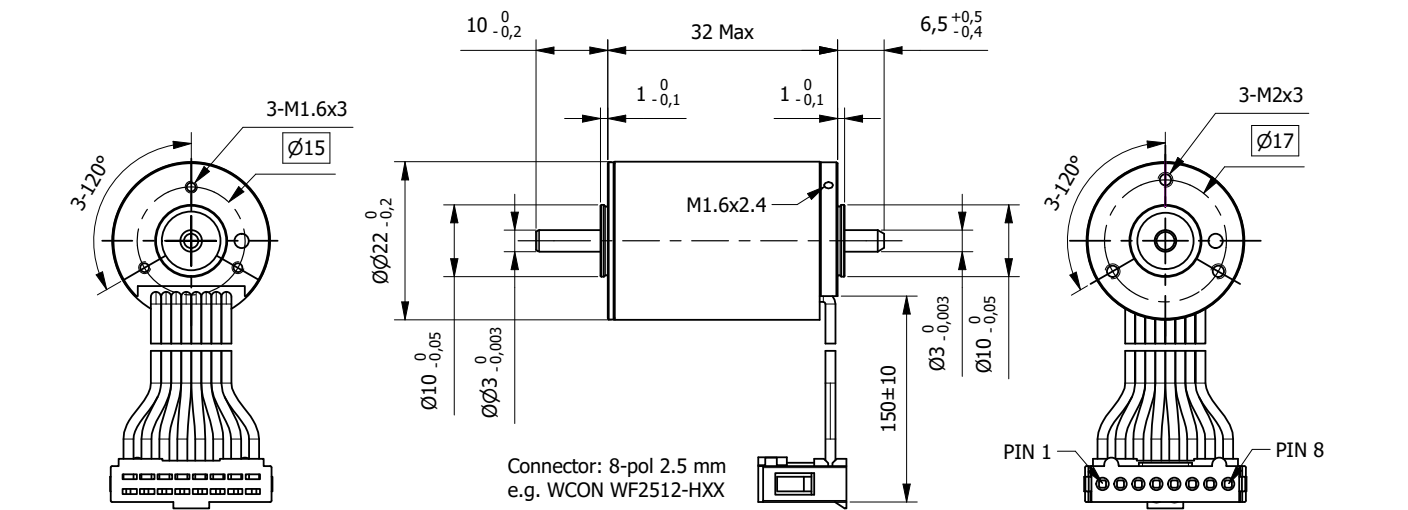
Operating range: Winding 36V



Brushless Slotless Motor 22EC32P

Ø 22mm

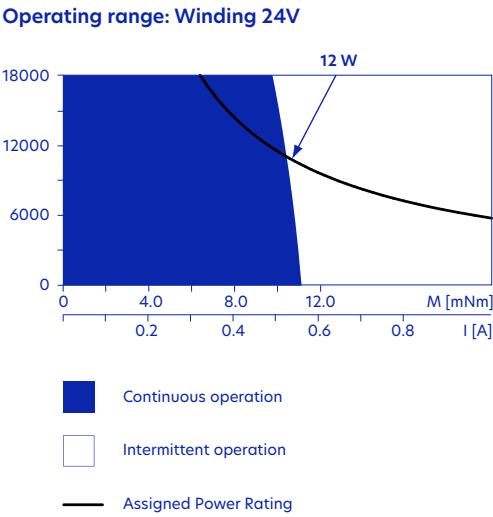
10,2 to 11mNm



Specification				
Model	...7908	...8003	...8212	
1 n° of Pole	2	2	2	
2 n° of Phase	3	3	3	
3 Rated Voltage	V	6	12	24
4 Rated Speed	rpm	7920	8040	8250
5 Rated Torque	mNm	11	10,2	10,8
6 Stall Torque	mNm	33,9	31,3	35,1
7 Torque Constant	mNm/A	4,61	9,02	18,1
8 Motor Regulation	10³/Nms	38,4	42,5	37,8
9 Rated Current	A	2,61	1,25	0,657
10 Stall Current	A	7,36	3,47	1,94
11 No-load Current	mA	301	155	77,3
12 No-load Speed	rpm	11900	12100	12100
13 Line to Line Resistance	Ω	0,816	3,46	12,4
14 Line to Line Inductance	mH	0,032	0,121	0,488
15 Rotor Inertia	gcm²	2,25	2,25	2,25
16 Max. Efficiency	%	65	63	65
17 Mechanical Time Constant	ms	8,63	9,56	8,47
18 Length (L)	mm	32	32	32
19 Weight	g	83	83	83

Characteristics	
Item	
Ambient Temperature	-40°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	18000rpm
Radial play	preloaded
Axial play	0 to 0,14mm
Max. Radial force (5mm from flange)	16N
Max. Axial force	3,5N
Max. Force for Press fit	53N

Connection			
Pin n°	Color	Gauge	Function
1	Brown	AWG24	Phase 1
2	Red		Phase 2
3	Orange		Phase 3
4	Yellow		Vcc Hall 3 to 24 Vdc
5	Green		GND Hall
6	Blue		Hall 1
7	Violet		Hall 2
8	Grey		Hall 3

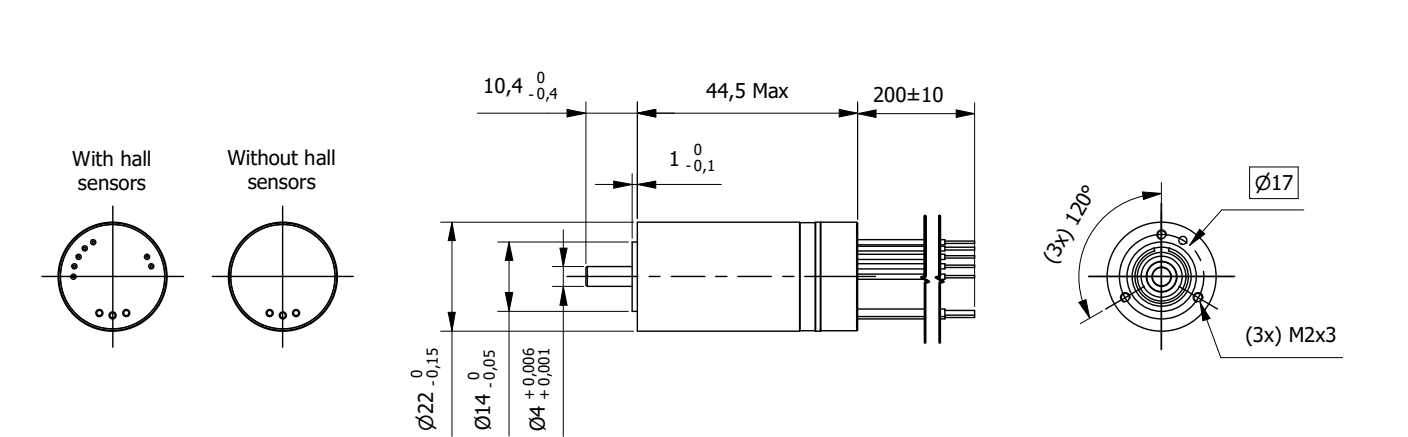


Brushless Slotless Motor 22EC44NS

Ø 22mm

High Speed

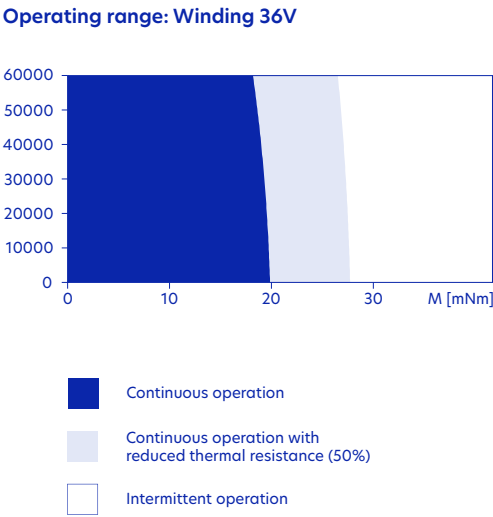
18,3 to 20,3mNm



Specification				
Model	...48201	...55601	...53004	...49909
1 n° of Pole	2	2	2	2
2 n° of Phase	3	3	3	3
3 Rated Voltage	V	18	24	36
4 Rated Speed	rpm	48200	55600	53000
5 Rated Torque	mNm	20,3	20,1	20
6 Stall Torque	mNm	454	549	537
7 Torque Constant	mNm/A	3,37	3,93	6,18
8 Motor Regulation	10³/Nms	11,7	11,1	10,8
9 Rated Current	A	6,28	5,36	3,4
10 Stall Current	A	135	140	87
11 No-load Current	mA	324	302	186
12 No-load Speed	rpm	50900	58100	55500
13 Line to Line Resistance	Ω	0,133	0,172	0,414
14 Line to Line Inductance	mH	0,010	0,013	0,033
15 Rotor Inertia	gcm²	2,15	2,15	2,15
16 Max. Efficiency	%	90,6	91	91,1
17 Mechanical Time Constant	ms	2,53	2,39	2,33
18 Length (L)	mm	44,5	44,5	44,5
19 Weight	g	98	98	98

Characteristics	
Item	
Ambient Temperature	-20°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	60000rpm
Radial play	preloaded
Axial play	0 to 0,24mm
Max. Radial force (5mm from flange)	16N
Max. Axial force	4N
Max. Force for Press fit	110N

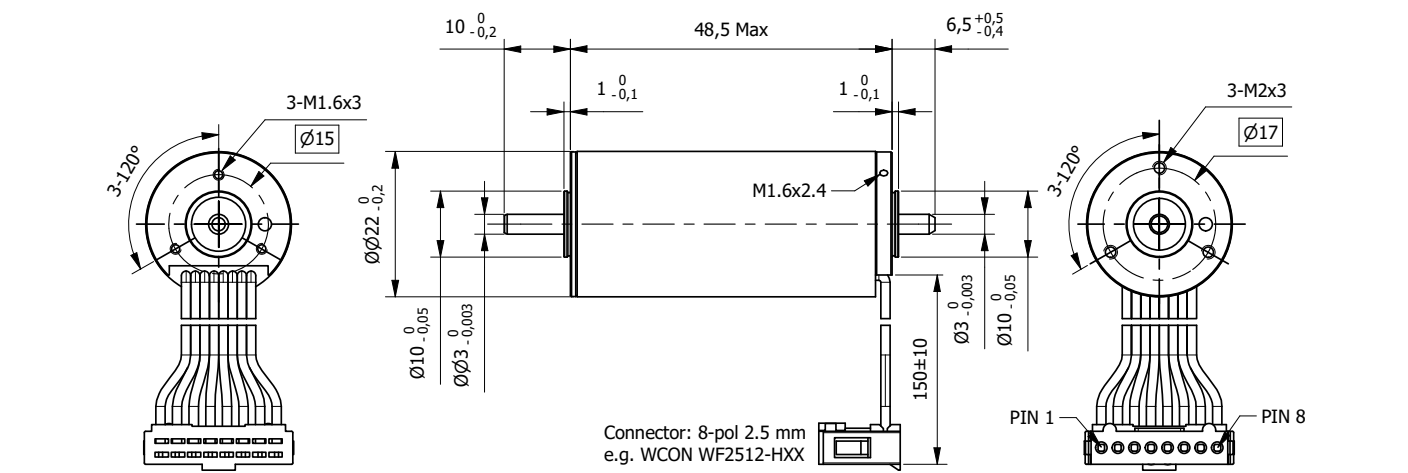
Connection		
Color	Gauge	Function
Red	AWG18	Phase 1
Black		Phase 2
White		Phase 3
Orange	AWG26	Vcc Hall 3 to 24 Vdc
Blue		GND Hall
Yellow		Hall 1
Brown		Hall 2
Grey		Hall 3
Purple		NTC



Brushless Slotless Motor 22EC48P

Ø 22mm

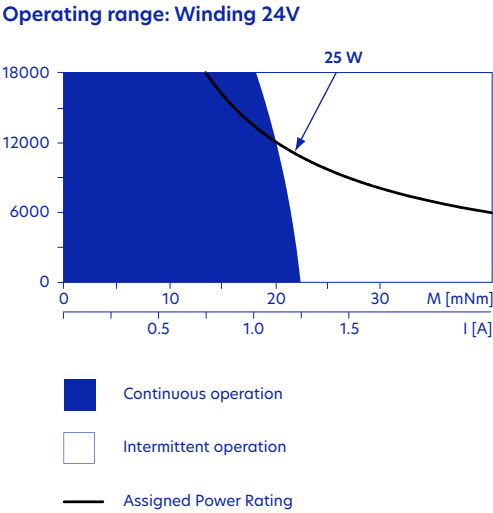
22,7 to 23,2mNm



Specification					
	Model	...9809	...10403	...10513	
1	n° of Pole	2	2	2	
2	n° of Phase	3	3	3	
3	Rated Voltage	V	12	24	48
4	Rated Speed	rpm	9800	10400	10500
5	Rated Torque	mNm	23	22,7	23,2
6	Stall Torque	mNm	114	121	127
7	Torque Constant	mNm/A	9,1	17,4	34,8
8	Motor Regulation	10³/Nms	11,5	11,4	10,8
9	Rated Current	A	2,71	1,4	0,716
10	Stall Current	A	12,6	6,97	3,66
11	No-load Current	mA	226	121	60,4
12	No-load Speed	rpm	12400	12900	12900
13	Line to Line Resistance	Ω	0,955	3,44	13,1
14	Line to Line Inductance	mH	0,05	0,182	0,729
15	Rotor Inertia	gcm2	4,45	4,45	4,45
16	Max. Efficiency	%	76	76	77
17	Mechanical Time Constant	ms	5,14	5,06	4,82
18	Length (L)	mm	48,5	48,5	48,5
19	Weight	g	110	110	110

Characteristics	
Item	
Ambient Temperature	-40°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	18000rpm
Radial play	preloaded
Axial play	0 to 0,14mm
Max. Radial force (5mm from flange)	16N
Max. Axial force	3,5N
Max. Force for Press fit	60N

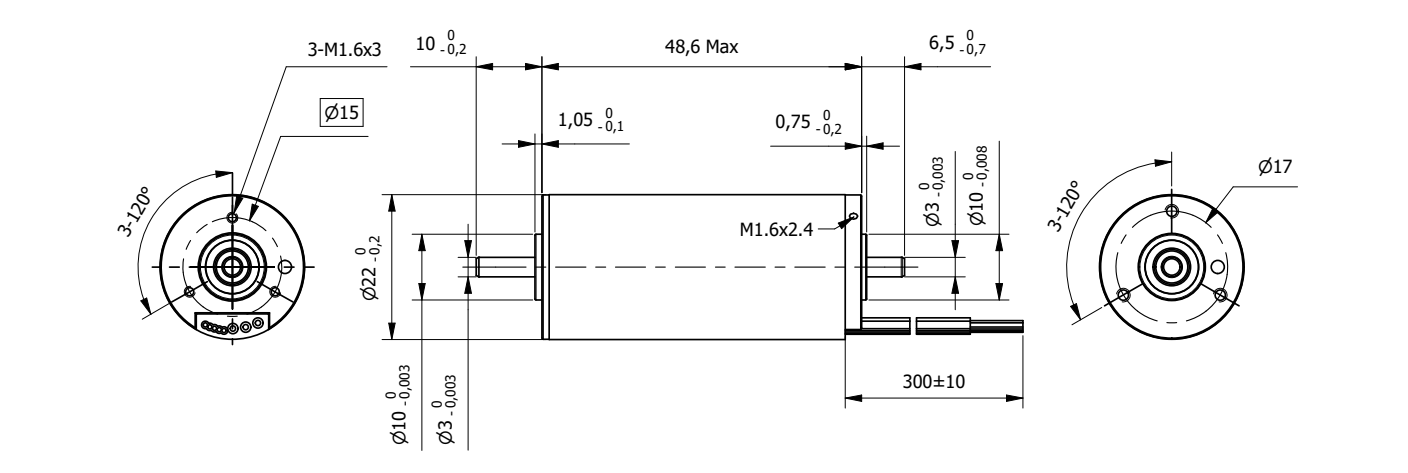
Connection			
Pin n°	Color	Gauge	Function
1	Brown	AWG24	Phase 1
2	Red		Phase 2
3	Orange		Phase 3
4	Yellow		Vcc Hall 3 to 24 Vdc
5	Green		GND Hall



Brushless Slotless Motor 22EC48T

Ø 22mm

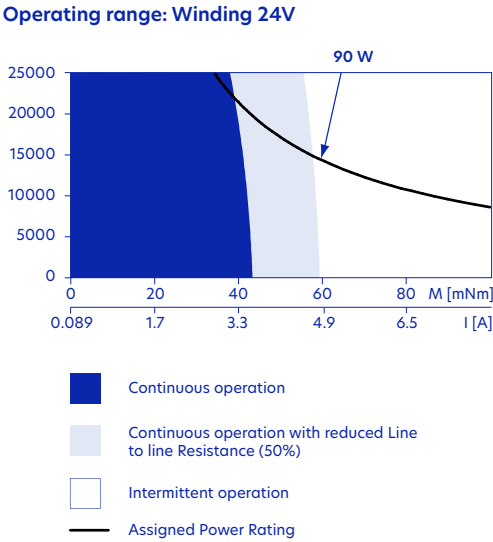
42,6 to 45,1mNm



Specification			
Model	...15005	...14902	
1 n° of Pole	4	4	
2 n° of Phase	3	3	
3 Rated Voltage	V	24	48
4 Rated Speed	rpm	15000	14900
5 Rated Torque	mNm	45,1	42,6
6 Stall Torque	mNm	639	586
7 Torque Constant	mNm/A	14	28,1
8 Motor Regulation	10³/Nms	2,7	2,9
9 Rated Current	A	3,34	1,58
10 Stall Current	A	45,5	20,9
11 No-load Current	mA	164	81,8
12 No-load Speed	rpm	16300	16300
13 Line to Line Resistance	Ω	0,527	2,3
14 Line to Line Inductance	mH	0,051	0,201
15 Rotor Inertia	gcm²	5,54	5,54
16 Max. Efficiency	%	89	88
17 Mechanical Time Constant	ms	1,48	1,62
18 Length (L)	mm	48,6	48,6
19 Weight	g	125	125

Characteristics	
Item	
Ambient Temperature	-20°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	25000rpm
Radial play	preloaded
Axial play	0 to 0,14mm
Max. Radial force (5mm from flange)	16N
Max. Axial force	4N
Max. Force for Press fit	53N

Connection			
Lead n°	Color	Gauge	Function
1	Red	AWG20	Phase 1
2	White		Phase 3
3	Black		Phase 2
4	Red/Grey	AWG26	Hall 1
5	Black/Grey		Hall 2
6	White/Grey		Hall 3
7	Green		Vcc Hall 3 to 24 Vdc
8	Blue		GND Hall

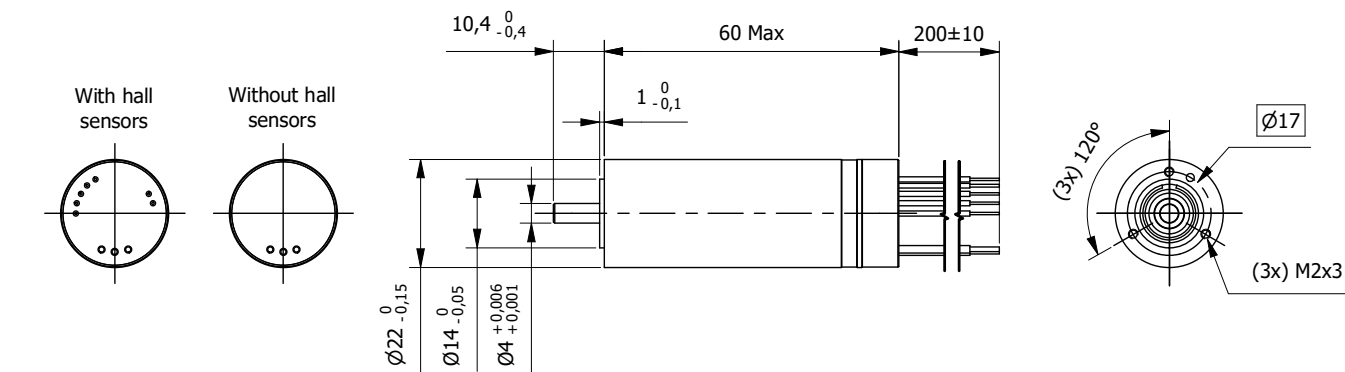


Brushless Slotless Motor 22EC60NS

High Speed

Ø 22mm

27,4 to 29,3mNm

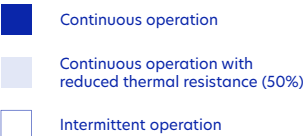
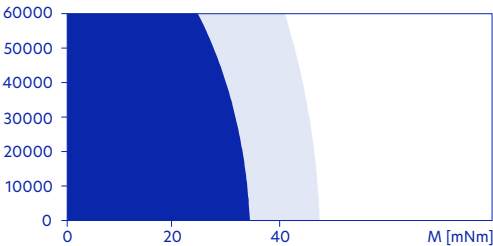


Specification				
Model	...47801	...49904	...50903	
1 n° of Pole	2	2	2	
2 n° of Phase	3	3	3	
3 Rated Voltage	V	24	36	48
4 Rated Speed	rpm	47800	49900	50900
5 Rated Torque	mNm	29,1	29,3	27,4
6 Stall Torque	mNm	1080	1290	1230
7 Torque Constant	mNm/A	4,63	6,68	8,74
8 Motor Regulation	10³/Nms	4,8	4,2	4,5
9 Rated Current	A	6,67	4,67	3,36
10 Stall Current	A	233	193	141
11 No-load Current	mA	432	307	238
12 No-load Speed	rpm	49400	51400	52400
13 Line to Line Resistance	Ω	0,103	0,187	0,341
14 Line to Line Inductance	mH	0,009	0,019	0,032
15 Rotor Inertia	gcm²	3,94	3,94	3,94
16 Max. Efficiency	%	91,7	92,3	92
17 Mechanical Time Constant	ms	1,9	1,65	1,76
18 Length (L)	mm	60	60	60
19 Weight	g	140	140	140

Characteristics	
Item	
Ambient Temperature	-20°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	60000rpm
Radial play	preloaded
Axial play	0 to 0,24mm
Max. Radial force (5mm from flange)	16N
Max. Axial force	4N
Max. Force for Press fit	110N

Connection		
Color	Gauge	Function
Red	AWG18	Phase 1
Black		Phase 2
White		Phase 3
Orange	AWG26	Vcc Hall 3 to 24 Vdc
Blue		GND Hall
Yellow		Hall 1
Brown		Hall 2
Grey		Hall 3
Purple		NTC

Operating range: Winding 36V

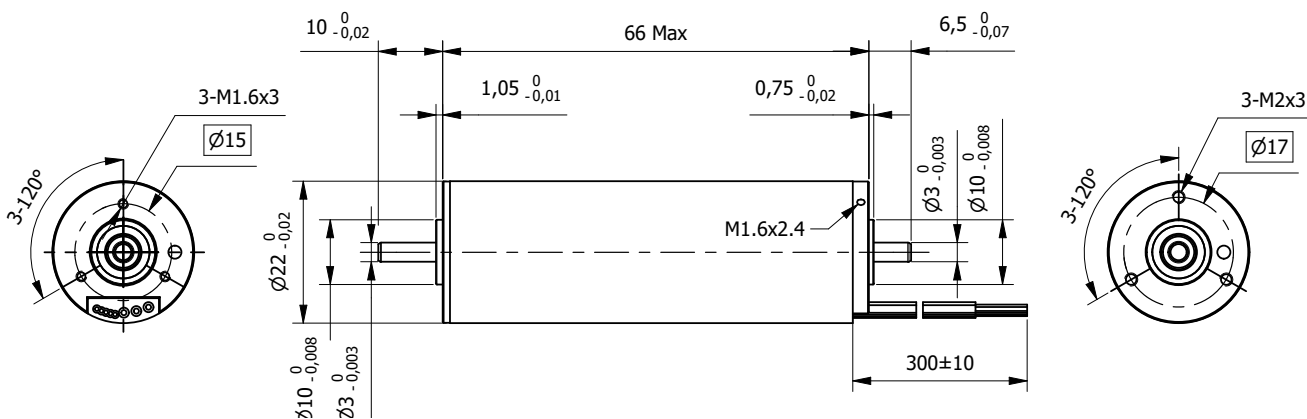


Brushless Slotless Motor 22EC66T

High Torque

Ø 22mm

54,5 to 54,6mNm

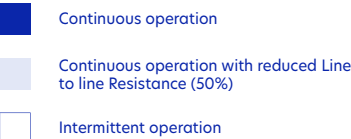
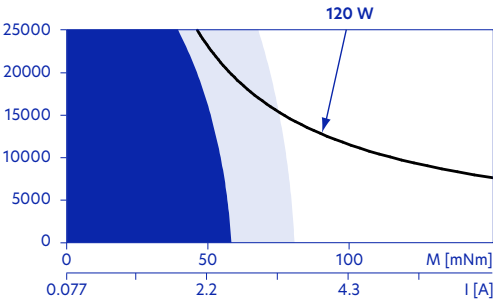


Specification				
Model	...15803	...15801		
1 n° of Pole	4	4		
2 n° of Phase	3	3		
3 Rated Voltage	V	24	48	
4 Rated Speed	rpm	15800	15800	
5 Rated Torque	mNm	54,6	54,5	
6 Stall Torque	mNm	954	1020	
7 Torque Constant	mNm/A	13,5	27,1	
8 Motor Regulation	10³/Nms	1,9	1,7	
9 Rated Current	A	4,21	2,1	
10 Stall Current	A	70,4	37,7	
11 No-load Current	mA	223	112	
12 No-load Speed	rpm	16900	16900	
13 Line to Line Resistance	Ω	0,341	1,27	
14 Line to Line Inductance	mH	0,031	0,123	
15 Rotor Inertia	gcm²	8,91	8,91	
16 Max. Efficiency	%	89	90	
17 Mechanical Time Constant	ms	1,65	1,54	
18 Length (L)	mm	66	66	
19 Weight	g	175	175	

Characteristics	
Item	
Ambient Temperature	-20°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	25000rpm
Radial play	preloaded
Axial play	0 to 0,14mm
Max. Radial force (5mm from flange)	16N
Max. Axial force	4N
Max. Force for Press fit	53N

Connection			
Lead n°	Color	Gauge	Function
1	Red	AWG20	Phase 1
2	White		Phase 3
3	Black		Phase 2
4	Red/Grey	AWG26	Hall 1
5	Black/Grey		Hall 2
6	White/Grey		Hall 3
7	Green		Vcc Hall 3 to 24 Vdc
8	Blue		GND Hall

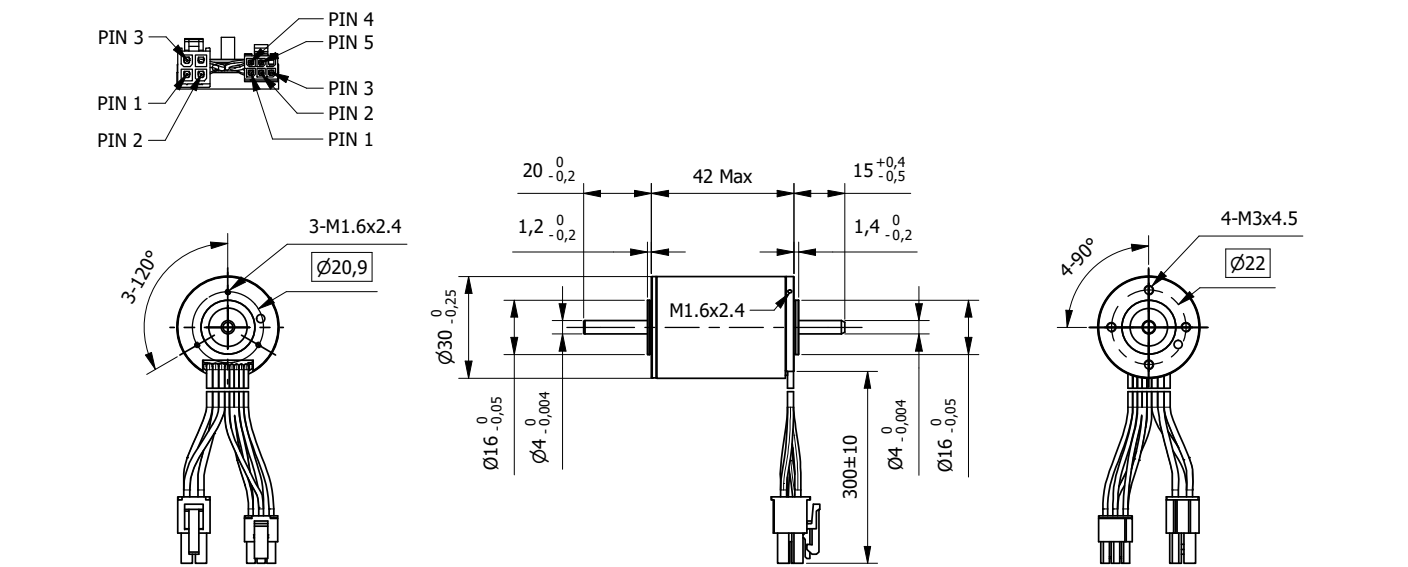
Operating range: Winding 48V



Brushless Slotless Motor 30EC42P

Ø 30mm

33,4 to 33,8mNm

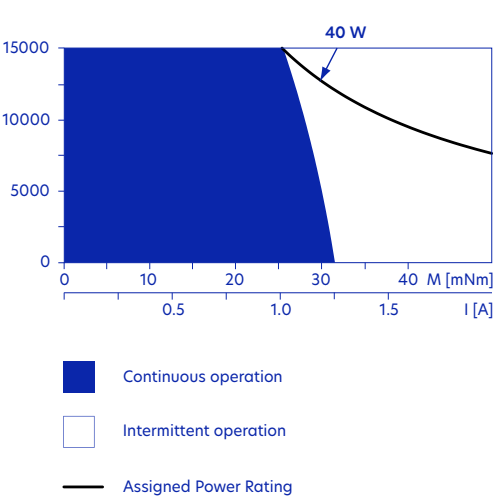


Specification			
Model	...7203	...7214	
1 n° of Pole	2	2	
2 n° of Phase	3	3	
3 Rated Voltage	V	24	48
4 Rated Speed	rpm	7220	7210
5 Rated Torque	mNm	33,8	33,4
6 Stall Torque	mNm	160	157
7 Torque Constant	mNm/A	24,3	48,6
8 Motor Regulation	10³/Nms	6,2	6,3
9 Rated Current	A	1,49	0,738
10 Stall Current	A	6,57	3,24
11 No-load Current	mA	123	61,4
12 No-load Speed	rpm	9250	9250
13 Line to Line Resistance	Ω	3,65	14,8
14 Line to Line Inductance	mH	0,31	1,24
15 Rotor Inertia	gcm²	11	11
16 Max. Efficiency	%	75	75
17 Mechanical Time Constant	ms	6,81	6,9
18 Length (L)	mm	42	42
19 Weight	g	195	195

Characteristics	
Item	
Ambient Temperature	-40°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	15000rpm
Radial play	preloaded
Axial play	0 to 0,14mm
Max. Radial force (5mm from flange)	25N
Max. Axial force	5N
Max. Force for Press fit	98N

Connection				
Pin n°	Color	Connector	Gauge	Function
1	Red	Molex 39-01-2040	AWG20	Phase 1
2	Black			Phase 2
3	White			Phase 3
1	Yellow	Molex 430-25-0600	AWG26	Hall 1
2	Brown			Hall 2
3	Grey			Hall 3
4	Blue			GND Hall
5	Green			Vcc Hall 3 to 24 Vdc

Operating range: Winding 24V

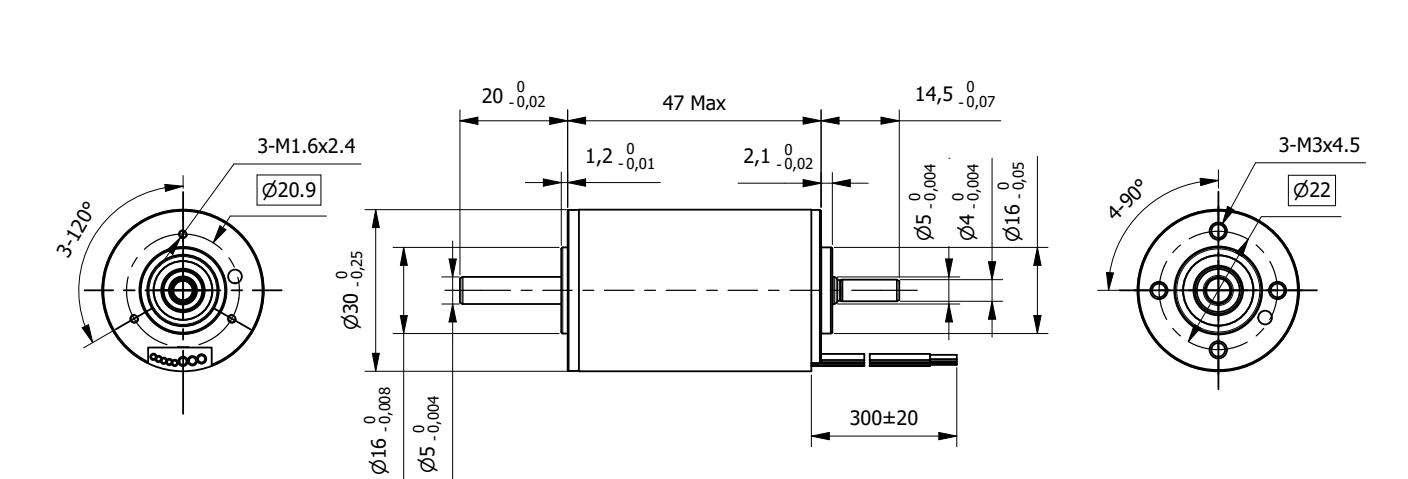


Brushless Slotless Motor 30EC47T

Ø 30mm

High Torque

68,8 to 73,4mNm

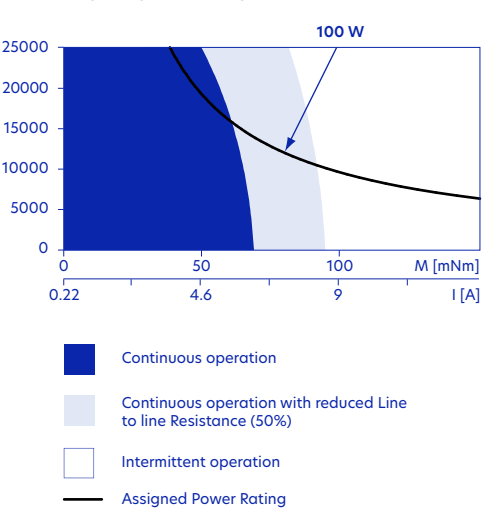


Specification			
Model	...16302	...16408	
1 n° of Pole	4	4	
2 n° of Phase	3	3	
3 Rated Voltage	V	24	48
4 Rated Speed	rpm	16300	16400
5 Rated Torque	mNm	68,8	73,4
6 Stall Torque	mNm	1270	1500
7 Torque Constant	mNm/A	13,1	26,1
8 Motor Regulation	10³/Nms	1,4	1,2
9 Rated Current	A	5,56	2,95
10 Stall Current	A	96,9	57,4
11 No-load Current	mA	379	189
12 No-load Speed	rpm	17500	17500
13 Line to Line Resistance	Ω	0,248	0,836
14 Line to Line Inductance	mH	0,030	0,118
15 Rotor Inertia	gcm²	18,3	18,3
16 Max. Efficiency	%	88,2	89,1
17 Mechanical Time Constant	ms	2,65	2,24
18 Length (L)	mm	47	47
19 Weight	g	210	210

Characteristics	
Item	
Ambient Temperature	-20°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	25000rpm
Radial play	preloaded
Axial play	0 to 0,14mm
Max. Radial force (5mm from flange)	25N
Max. Axial force	5,5N
Max. Force for Press fit	73N

Connection			
Lead n°	Color	Gauge	Function
1	Black	AWG18	Phase 2
2	White		Phase 3
3	Red		Phase 1
4	Black/Grey	AWG26	Hall 2
5	Blue		GND Hall
6	Green		Vcc Hall 3 to 24 Vdc
7	Red/Grey		Hall 1
8	White/Grey		Hall 3

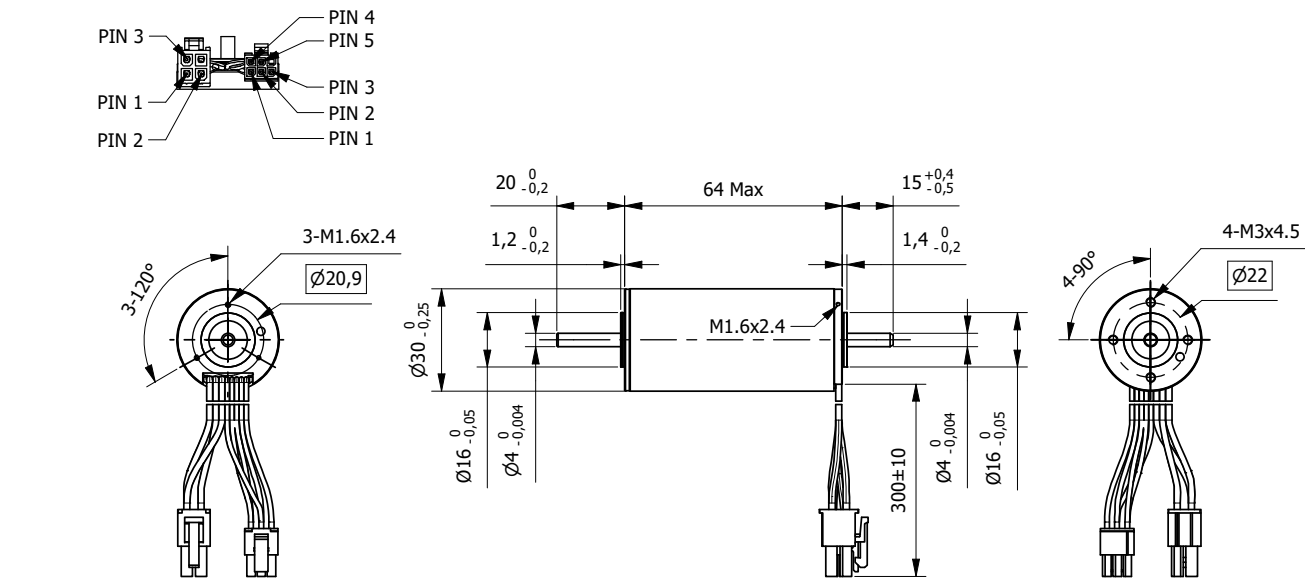
Operating range: Winding 24V



Brushless Slotless Motor 30EC64P

Ø 30mm

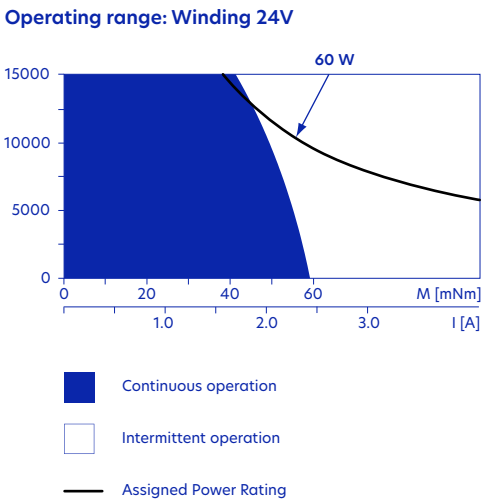
60,7 to 64,1mNm



Specification			
Model	...8001	...8104	
1 n° of Pole	2	2	
2 n° of Phase	3	3	
3 Rated Voltage	V	24	48
4 Rated Speed	rpm	8040	8130
5 Rated Torque	mNm	60,7	64,1
6 Stall Torque	mNm	458	519
7 Torque Constant	mNm/A	24,3	48,6
8 Motor Regulation	10³/Nms	2,2	1,9
9 Rated Current	A	2,66	1,4
10 Stall Current	A	18,8	10,7
11 No-load Current	mA	191	95,4
12 No-load Speed	rpm	9340	9350
13 Line to Line Resistance	Ω	1,27	4,49
14 Line to Line Inductance	mH	0,143	0,573
15 Rotor Inertia	gcm²	21,9	21,9
16 Max. Efficiency	%	81	82
17 Mechanical Time Constant	ms	4,73	4,17
18 Length (L)	mm	64	64
19 Weight	g	305	305

Characteristics	
Item	
Ambient Temperature	-40°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	15000rpm
Radial play	preloaded
Axial play	0 to 0,14mm
Max. Radial force (5mm from flange)	25N
Max. Axial force	5N
Max. Force for Press fit	98N

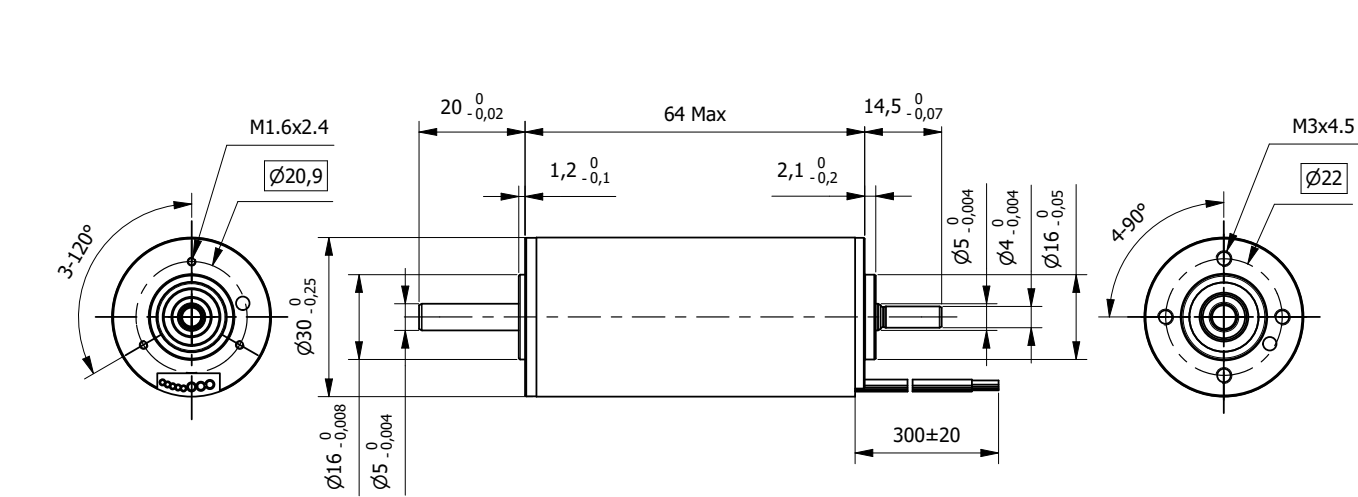
Connection				
Pin n°	Color	Connector	Gauge	Function
1	Red	Molex 39-01-2040	AWG20	Phase 1
2	Black			Phase 2
3	White			Phase 3
1	Yellow	Molex 430-25-0600	AWG26	Hall 1
2	Brown			Hall 2
3	Grey			Hall 3
4	Blue			GND Hall
5	Green			Vcc Hall 3 to 24 Vdc



Brushless Slotless Motor 30EC64T

Ø 30mm

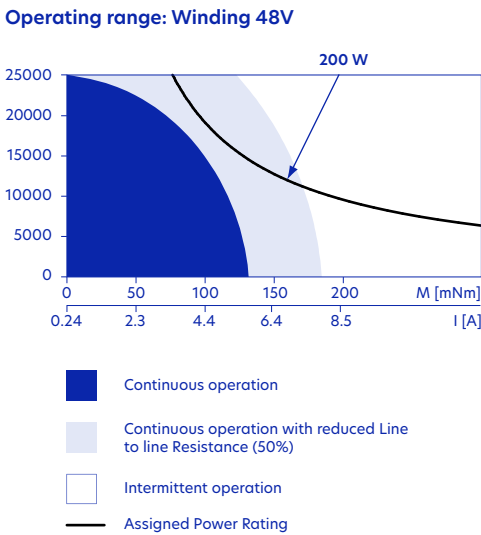
92,9 to 95,6mNm



Specification			
Model	...16101	...16003	
1 n° of Pole	4	4	
2 n° of Phase	3	3	
3 Rated Voltage	V	24	48
4 Rated Speed	rpm	16100	16000
5 Rated Torque	mNm	95,6	92,9
6 Stall Torque	mNm	3240	3430
7 Torque Constant	mNm/A	13,7	27,6
8 Motor Regulation	10³/Nms	0,5	0,5
9 Rated Current	A	7,61	3,68
10 Stall Current	A	236	124
11 No-load Current	mA	723	356
12 No-load Speed	rpm	16700	16500
13 Line to Line Resistance	Ω	0,102	0,386
14 Line to Line Inductance	mH	0,016	0,065
15 Rotor Inertia	gcm²	33,3	33,3
16 Max. Efficiency	%	90	90
17 Mechanical Time Constant	ms	1,8	1,69
18 Length (L)	mm	64	64
19 Weight	g	300	300

Characteristics	
Item	
Ambient Temperature	-20°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	25000rpm
Radial play	preloaded
Axial play	0 to 0,14mm
Max. Radial force (5mm from flange)	25N
Max. Axial force	5,5N
Max. Force for Press fit	73N

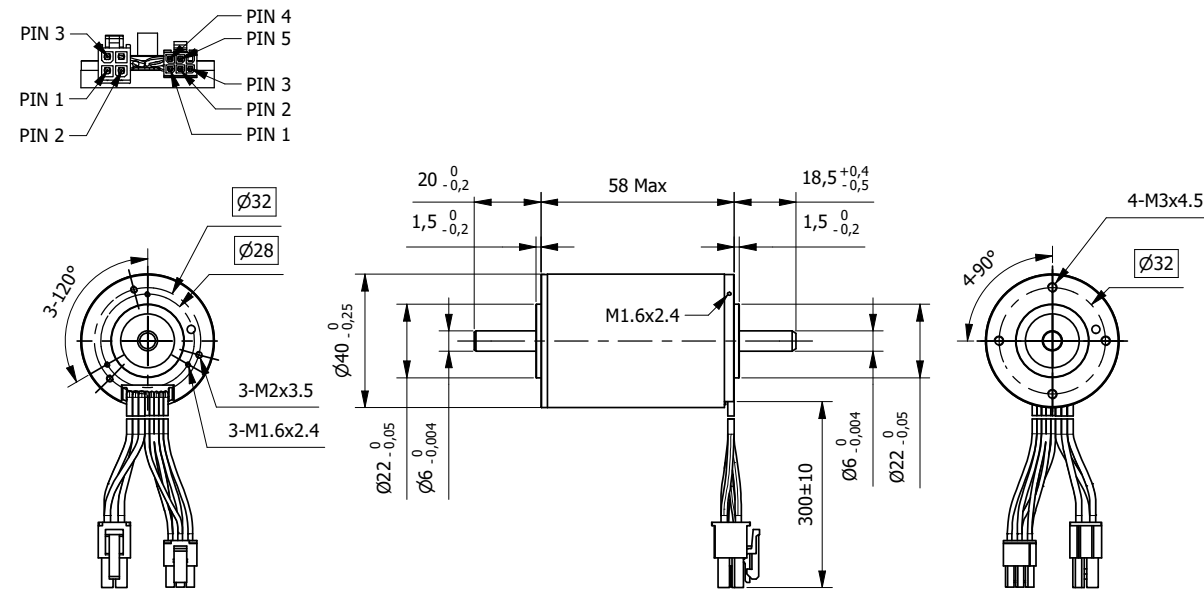
Connection			
Lead n°	Color	Gauge	Function
1	Black	AWG18	Phase 2
2	White		Phase 3
3	Red		Phase 1
4	Black/Grey	AWG26	Hall 2
5	Blue		GND Hall
6	Green		Vcc Hall 3 to 24 Vdc



Brushless Slotless Motor 40EC58P

Ø 40mm

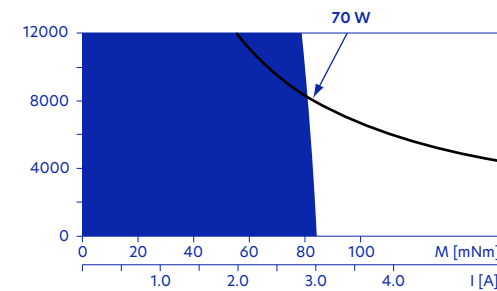
89,6 to 94,2mNm



Specification				
	Model	...6501	...7603	
1	n° of Pole	2	2	
2	n° of Phase	3	3	
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	6520	7610
5	Rated Torque	mNm	89,6	94,2
6	Stall Torque	mNm	497	636
7	Torque Constant	mNm/A	28	50
8	Motor Regulation	10³/Nms	1,7	1,5
9	Rated Current	A	3,44	2,02
10	Stall Current	A	17,8	12,7
11	No-load Current	mA	292	173
12	No-load Speed	rpm	8040	9030
13	Line to Line Resistance	Ω	1,35	3,78
14	Line to Line Inductance	mH	0,186	0,592
15	Rotor Inertia	gcm2	51,2	51,2
16	Max. Efficiency	%	77	79
17	Mechanical Time Constant	ms	8,82	7,73
18	Length (L)	mm	58	58
19	Weight	g	460	460

Characteristics	
Item	
Ambient Temperature	-40°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	12000rpm
Radial play	preloaded
Axial play	0 to 0,14mm
Max. Radial force (5mm from flange)	80N
Max. Axial force	8N
Max. Force for Press fit	211N

Connection				
Pin n°	Color	Connector	Gauge	Function
1	Red	Molex 39-01-2040	AWG20	Phase 1
2	Black			Phase 2
3	White			Phase 3
1	Yellow	Molex 430-25-0600	AWG26	Hall 1
2	Brown			Hall 2
3	Grey			Hall 3
4	Blue			GND Hall
5	Green			Vcc Hall 3 to 24 Vdc

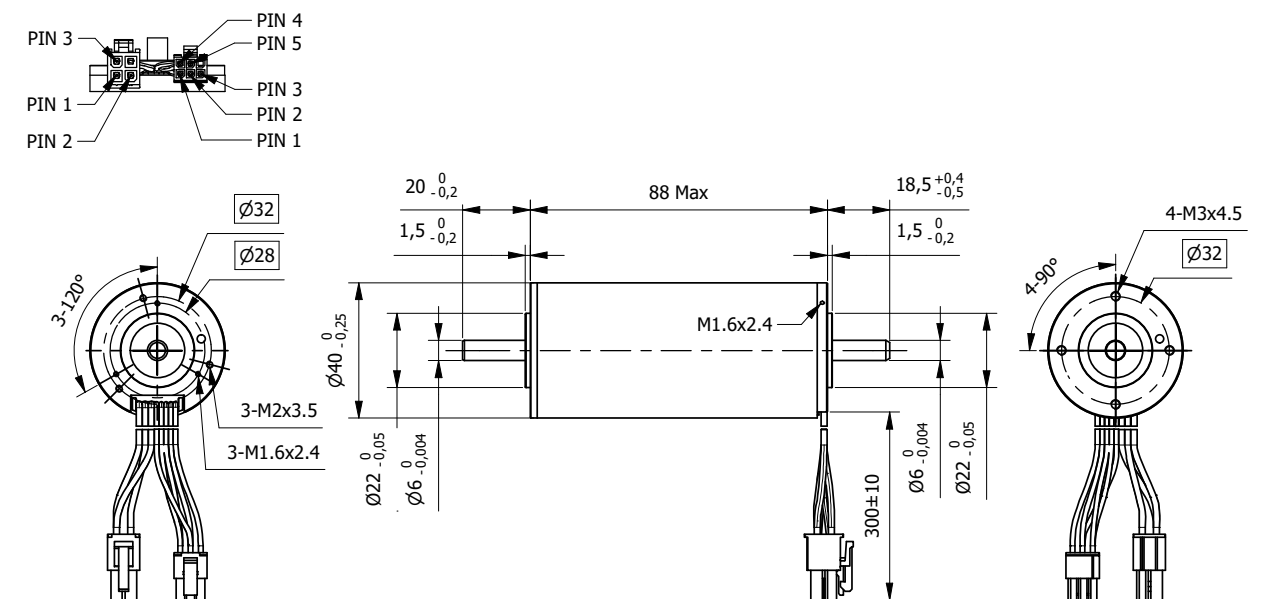


-  Continuous operation
-  Intermittent operation
-  Assigned Power Rating

Brushless Slotless Motor 40EC88P

Ø 40mm

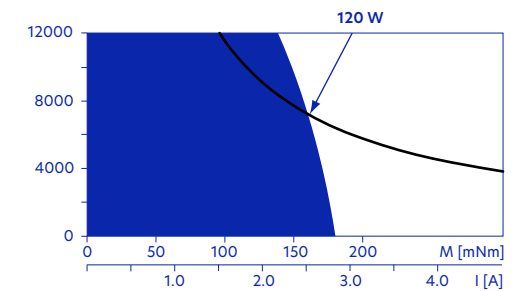
211mNm



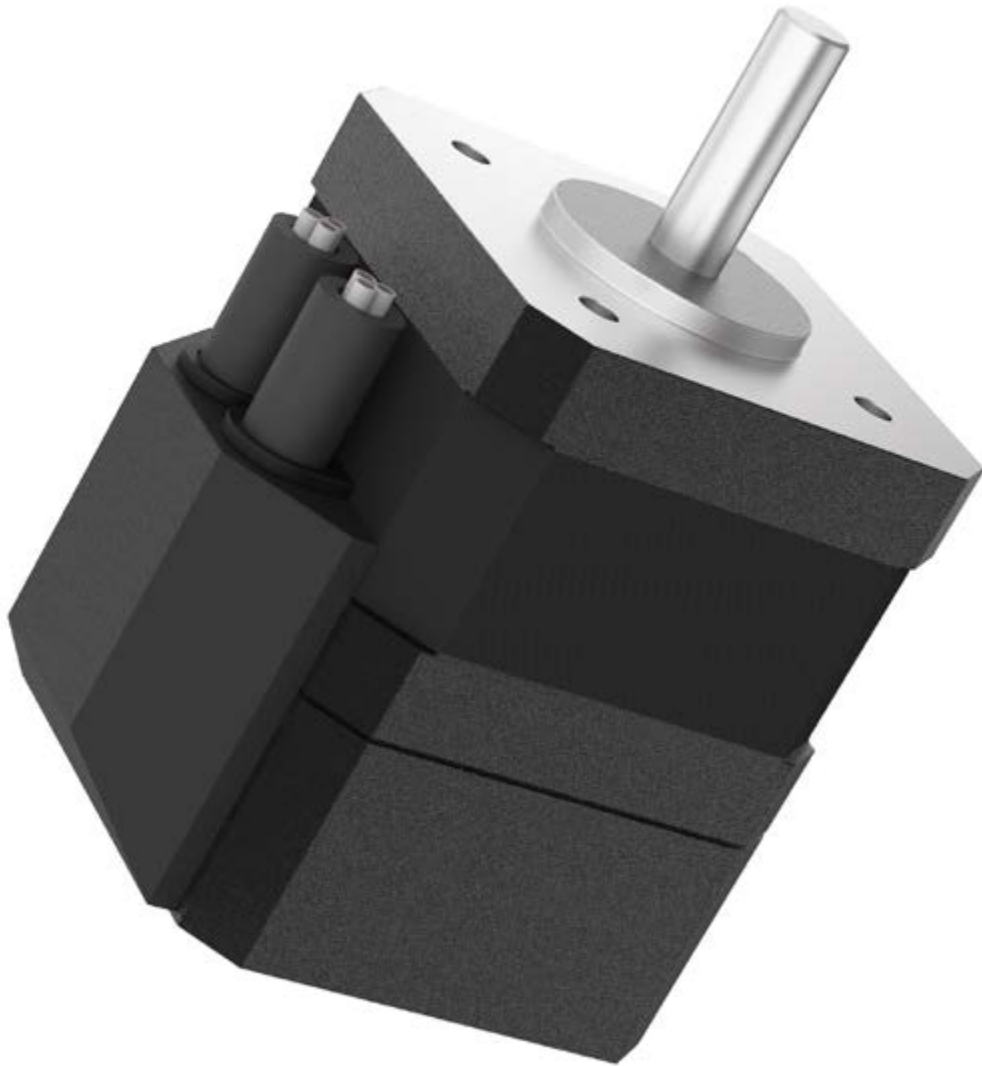
Specification		
Model	...2607	
1	n° of Pole	2
2	n° of Phase	3
3	Rated Voltage	V 48
4	Rated Speed	rpm 2670
5	Rated Torque	mNm 211
6	Stall Torque	mNm 838
7	Torque Constant	mNm/A 126
8	Motor Regulation	10 ³ /Nms 0,5
9	Rated Current	A 1,74
10	Stall Current	A 6,68
11	No-load Current	mA 72,8
12	No-load Speed	rpm 3610
13	Line to Line Resistance	Ω 7,19
14	Line to Line Inductance	mH 1,6
15	Rotor Inertia	gcm ² 101
16	Max. Efficiency	% 80
17	Mechanical Time Constant	ms 4,61
18	Length (L)	mm 88
19	Weight	g 720

Characteristics	
Item	
Ambient Temperature	-40°C to +100°C
Max. Winding Temperature	+155°C
Max. Speed	12000rpm
Radial play	preloaded
Axial play	0 to 0,14mm
Max. Radial force (5mm from flange)	80N
Max. Axial force	8N
Max. Force for Press fit	211N

Connection				
Pin n°	Color	Connector	Gauge	Function
1	Red	Molex 39-01-2040	AWG20	Phase 1
2	Black			Phase 2
3	White			Phase 3
1	Yellow	Molex 430-25-0600	AWG26	Hall 1
2	Brown			Hall 2
3	Grey			Hall 3
4	Blue			GND Hall
5	Green			Vcc Hall 3 to 24 Vdc



-  Continuous operation
-  Intermittent operation
-  Assigned Power Rating



Brushless DC

Motors with Encoder

Advantages at a glance
Compact size
Low speed operation
Complete closed loop system

Our BLDC slotted motors are also available equipped with an optical incremental encoder to increase the motion precision. Thanks to the encoder, the drive knows the position (or the speed) of the motor in real time and can perform adjustments to align the real condition with the condition requested by the system. The presence of an encoder is highly recommended when is critical to know the status of the motor (both position and speed) in every instant.

BLDC motors with Encoder	Torque* (Nm)	
42SVA	0,062...0,25	132
57SVA	0,3...0,6	133
80SVA - NEW	0,9...1,7	134

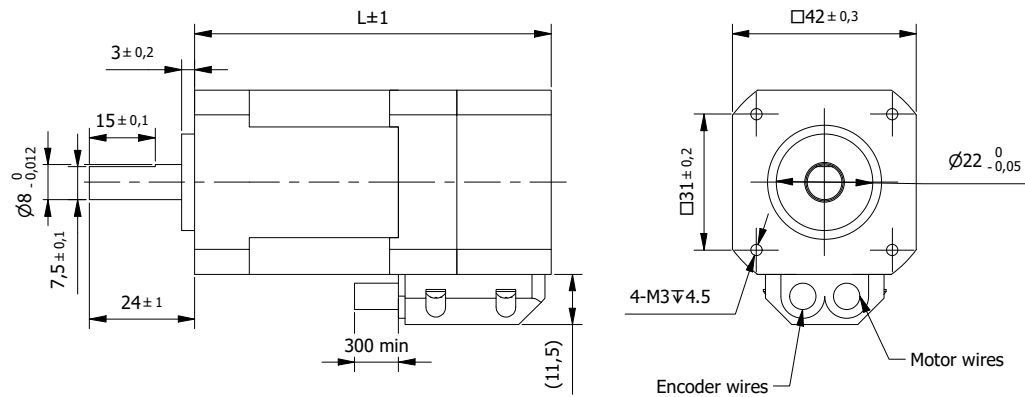
*Rated Torque

Brushless Slotted Motor 42SVA

with Encoder

□ 42mm

0,062 - 0,25Nm



Specification				
Model	42SVA01	42SVA02	42SVA03	42SVA04
1 n° of Pole	8	8	8	8
2 n° of Phase	3	3	3	3
3 Rated Voltage	V	24	24	24
4 Rated Speed	rpm	5000	5000	5000
5 Rated Torque	Nm	0,062	0,125	0,185
6 Max. Peak Torque	Nm	0,19	0,38	0,56
7 Torque Constant	Nm/A	0,03	0,031	0,031
8 Rated Current	A	2,1	4	6
9 Max. Peak Current	A	6,25	12	18
10 No Load Current	A	0,5	0,5	0,5
11 Back EMF	V/Krpm	2,23	2,3	2,32
12 Line to Line Resistance	Ω	1,15	0,5	0,28
13 Line to Line Inductance	mH	1,75	0,9	0,51
14 Rotor Inertia	gcm2	24	48	72
15 Length (L)	mm	61,3	81,3	101,3
16 Weight	Kg	0,3	0,45	0,65

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Hall Effect Angle	120°
Insulation Class	B
Protection Class	IP40
Max. Radial force (20mm from flange)	28 N
Max. Axial force	10 N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm
Working Temperature	-20°C to +40°C
* 3-channel encoder or other types on request	

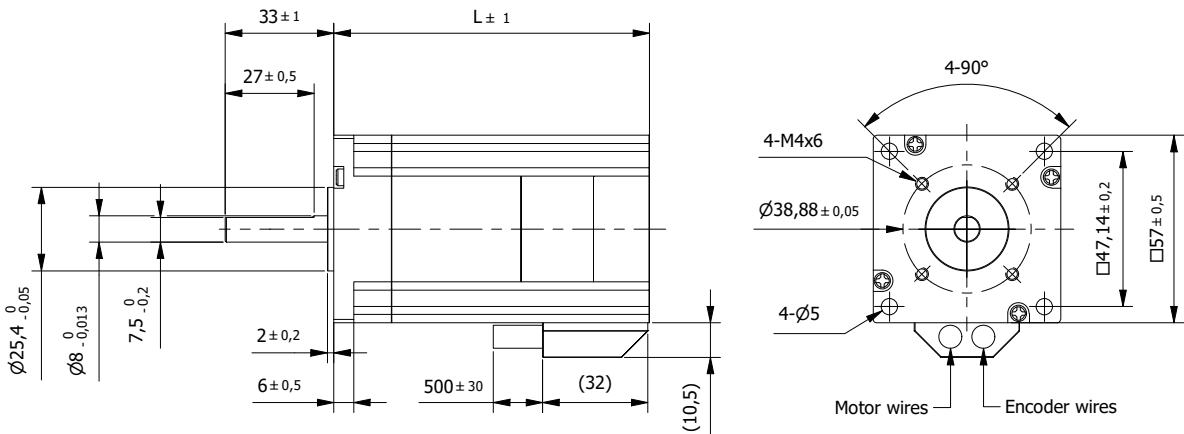
Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Red/White	AWG26	GND
2	Red		VCC:+5VDC
3	Blue		EA-
4	Blue/Black		EA+
5	Black		EB-
6	Black/White		EB+
7	Brown		HALL A
8	Orange		HALL B
9	Yellow		HALL C
Motor			
1	Yellow	AWG18	Phase U
2	Red		Phase V
3	Black		Phase W

Brushless Slotted Motor 57SVA

with Encoder

□ 57mm

0,3 - 0,6Nm



Specification				
Model	57SVA02	57SVA03	57SVA04	
1 n° of Pole	8	8	8	
2 n° of Phase	3	3	3	
3 Rated Voltage	V	36	36	36
4 Rated Speed	rpm	3000	3000	3000
5 Rated Torque	Nm	0,3	0,45	0,6
6 Max. Peak Torque	Nm	0,9	1,35	1,8
7 Torque Constant	Nm/A	0,075	0,075	0,075
8 Rated Current	A	4	6	8
9 Max. Peak Current	A	12,6	16,2	22,5
10 No Load Current	A	0,35	0,55	0,65
11 Back EMF	V/Krpm	5,6	5,6	5,7
12 Line to Line Resistance	Ω	1,2	0,8	0,5
13 Line to Line Inductance	mH	1,2	0,8	0,6
14 Rotor Inertia	gcm2	210	320	430
15 Length (L)	mm	96	116	136
16 Weight	Kg	0,8	1	1,2

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Hall Effect Angle	120°
Insulation Class	B
Protection Class	IP30
Max. Radial force (20mm from flange)	115N
Max. Axial force	45 N
Dielectric strength (for 1 sec.)	650 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Working Temperature	-20°C to +40°C
* 3-channel encoder or other types on request	

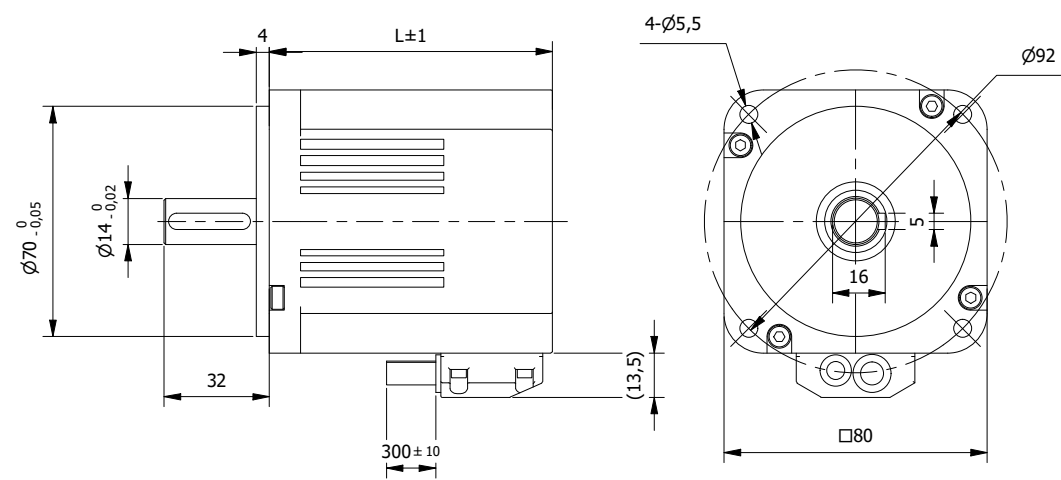
Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Red/White	AWG26	GND
2	Red		VCC:+5VDC
3	Blue		EA-
4	Blue/Black		EA+
5	Black		EB-
6	Black/White		EB+
7	Brown		HALL A
8	Orange		HALL B
9	Yellow		HALL C
Motor			
1	Yellow	AWG18	Phase U
2	Red		Phase V
3	Black		Phase W

Brushless Slotted Motor 80SVA

with Encoder

□ 80mm

0,9 - 1,7Nm



Specification			
Model		80SVA01	80SVA02
1	n° of Pole	8	8
2	n° of Phase	3	3
3	Rated Voltage	V	48
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,9
6	Max. Peak Torque	Nm	2,7
7	Torque Constant	Nm/A	0,118
8	Rated Current	A	7,6
9	Max. Peak Current	A	23
10	No Load Current	A	0,7
11	Back EMF	V/Krpm	8,7
12	Line to Line Resistance	Ω	0,29
13	Line to Line Inductance	mH	1,3
14	Rotor Inertia	gcm2	544
15	Length (L)	mm	86
16	Weight	Kg	1,7

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Hall Effect Angle	120°
Insulation Class	B
Protection Class	IP65
Max. Radial force (10mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Working Temperature	-20°C to +55°C
* 3-channel encoder or other types on request	

Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Red/White	AWG26	GND
2	Red		VCC:+5VDC
3	Blue		EA-
4	Blue/Black		EA+
5	Black		EB-
6	Black/White		EB+
7	Brown		HALL A
8	Orange		HALL B
9	Yellow		HALL C
Motor			
1	Yellow	AWG16	Phase U
2	Red		Phase V
3	Black		Phase W



Brushless DC

Flat motors

Advantages at a glance

- Very compact size
- Exceptional power to volume ratio
- Good control at low speed

Our flat brushless DC motors have an extremely flat design, ranging from 14 to 40mm. The specific design gives these products an exceptional power to volume ratio, while keeping them very light and compact. Thanks to a high number of poles (starting at 8 till 22 poles), these motors offer very good control also at low speed, as well as a smooth and precise speed control.

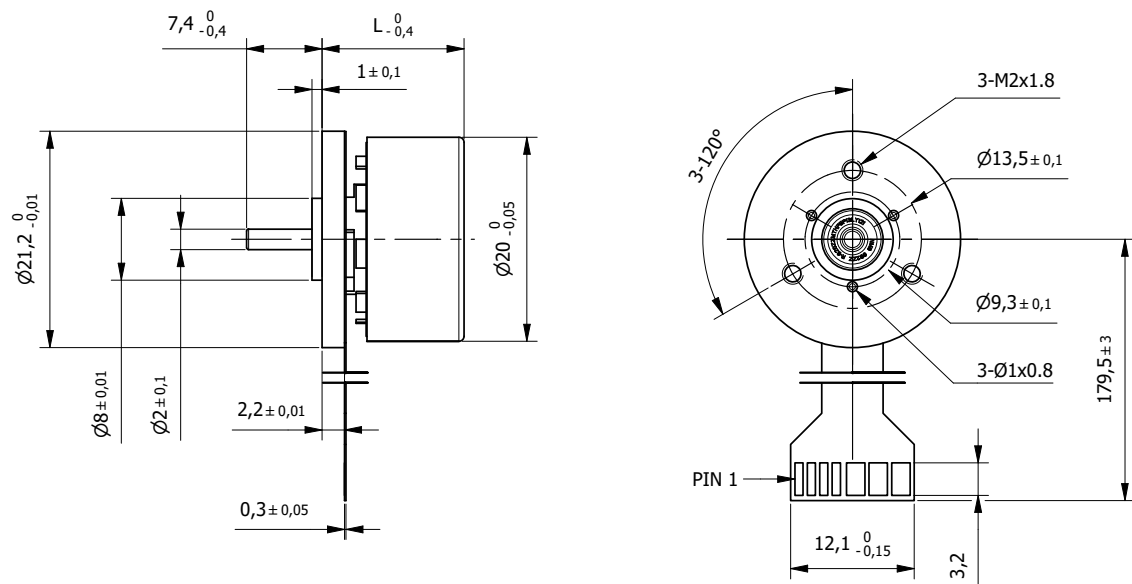
BLDC Flat motors	Torque* (Nm)	
20BLW14	0,008	138
32BLW18	0,025	139
45BLW16	0,055	140
45BLW Connector	0,05...0,13	141
45BLW Wires	0,05...0,13	142
60BLWA38	0,5	143
60BLW40	0,3	144
60BLW40 - IP54	0,3	145
90BLW	0,46...0,96	146

*Rated Torque

Brushless Flat Motor 20BLW14

Ø 20mm

0,008Nm



Specification			
Model	20BLW14-12V	20BLW14-24V	
1 n° of Pole	8	8	
2 n° of Phase	3	3	
3 Rated Voltage	V	12	24
4 Rated Speed	rpm	5170	5220
5 Rated Torque	Nm	0,008	0,008
6 Max. Peak Torque	Nm	0,019	0,02
7 Torque Constant	Nm/A	0,012	0,024
8 Rated Current	A	0,63	0,32
9 Max. Peak Current	A	1,62	0,85
10 No-Load Current	mA	230	120
11 Line to Line Resistance	Ω	6,9	25,8
12 Line to Line Inductance	mH	0,7	2,8
13 Rotor Inertia	gcm2	5,1	5,1
14 Length (L)	mm	14	14
15 Weight	Kg	0,023	0,023

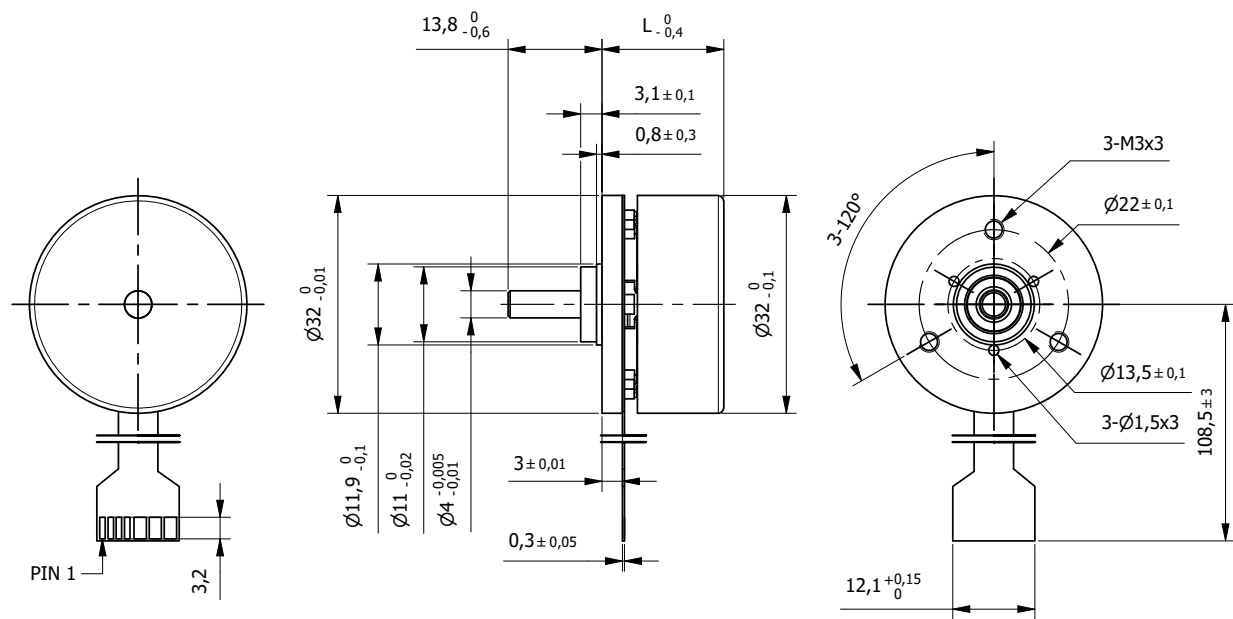
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	5N
Max. Axial force	2N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection		
Pin n°	Connector	Function
1	FPC cable	Vcc Hall +5 Vdc
2		Hall C
3		Hall A
4		Hall B
5		GND Hall
6		Phase W
7		Phase V
8		Phase U

Brushless Flat Motor 32BLW18

Ø 32mm

0,025Nm



Specification				
Model	32BLW18-9V	32BLW18-12V	32BLW18-24V	32BLW18-48V
1 n° of Pole	8	8	8	8
2 n° of Phase	3	3	3	3
3 Rated Voltage	V	9	12	24
4 Rated Speed	rpm	2100	2800	2760
5 Rated Torque	Nm	0,025	0,025	0,026
6 Max. Peak Torque	Nm	0,075	0,075	0,075
7 Torque Constant	Nm/A	0,023	0,025	0,051
8 Rated Current	A	1,09	1	0,51
9 Max. Peak Current	A	3,4	3,2	1,7
10 No-Load Current	mA	290	190	100
11 Line to Line Resistance	Ω	3	3	13
12 Line to Line Inductance	mH	1,6	1,9	7,7
13 Rotor Inertia	gcm2	35	35	35
14 Length (L)	mm	17,9	17,9	17,9
15 Weight	Kg	0,05	0,05	0,05

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,03mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,06mm
Max. Radial force (10mm from flange)	14N
Max. Axial force	4N
Dielectric strength (for 1 min.)	250 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

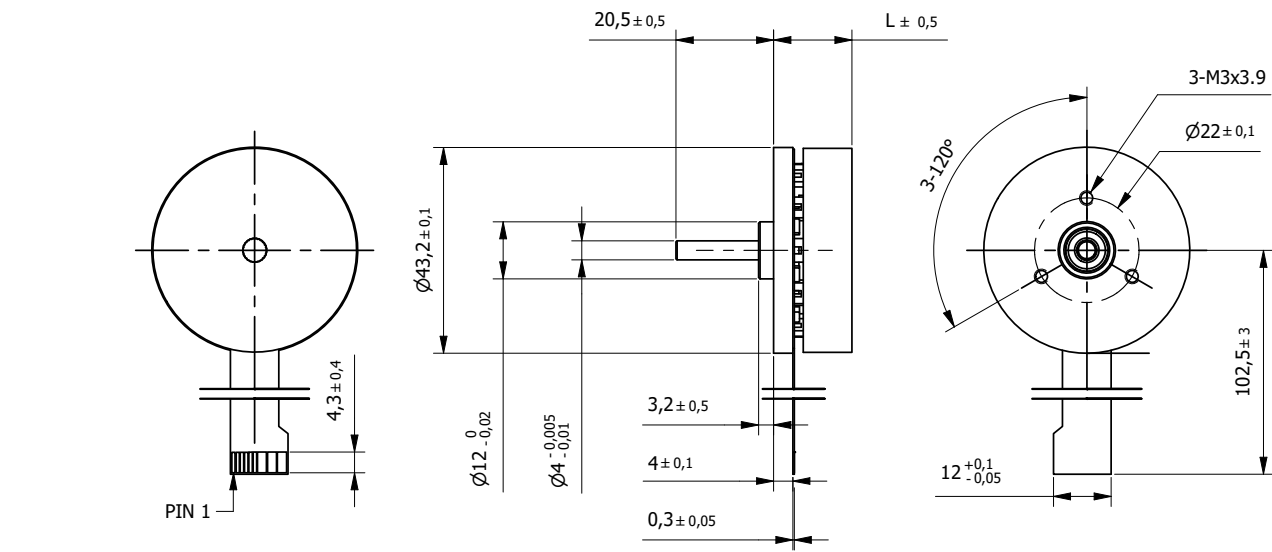
Connection		
Pin n°	Connector	Function
1	FPC cable	Vcc Hall +5 Vdc
2		Hall C
3		Hall A
4		Hall B
5		GND Hall
6		Phase W
7		Phase V
8		Phase U

Brushless Flat Motor 45BLW16

Flat Ribbon Cable

Ø 45mm

0,055Nm



Specification		
Model	45BLW16	
1 n° of Pole		16
2 n° of Phase		3
3 Rated Voltage	V	12
4 Rated Speed	rpm	2910
5 Rated Torque	Nm	0,055
6 Max. Peak Torque	Nm	0,16
7 Torque Constant	Nm/A	0,026
8 Rated Current	A	2,12
9 Max. Peak Current	A	6,3
10 No-Load Current	mA	320
11 Line to Line Resistance	Ω	0,9
12 Line to Line Inductance	mH	0,34
13 Rotor Inertia	gcm ²	92,5
14 Length (L)	mm	16
15 Weight	Kg	0,08

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,03mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

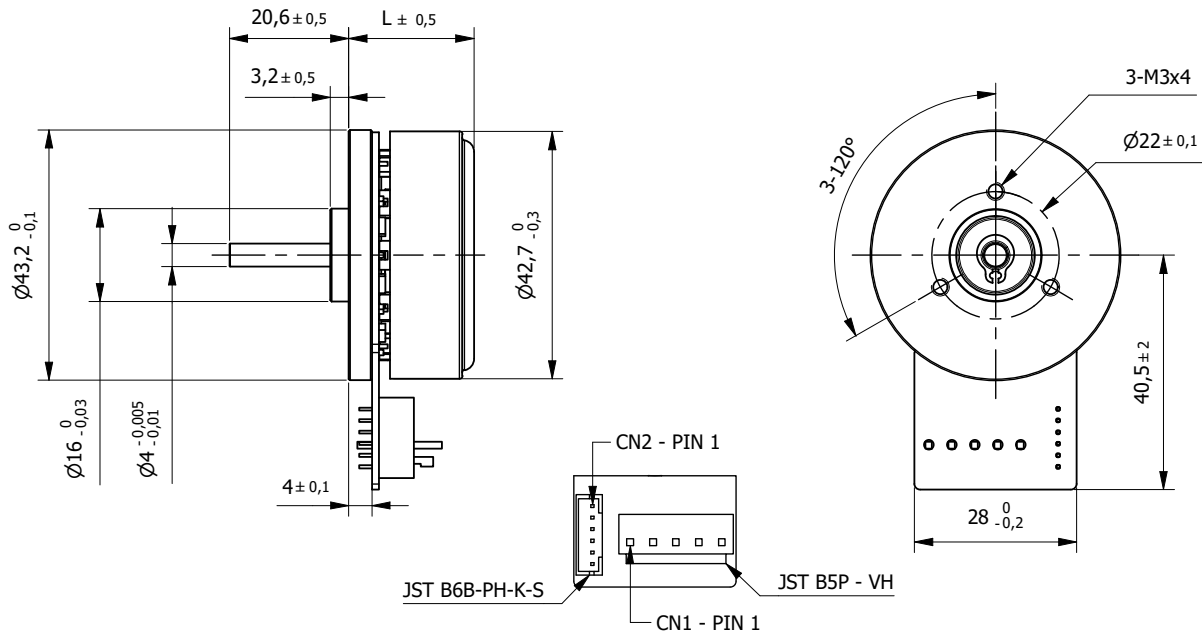
Connection		
Pin n°	Connector	Function
1	FPC cable	Vcc Hall +4,5 to 24 Vdc
2		Hall C
3		Hall A
4		Hall B
5		GND Hall
6		Phase W
7		Phase V
8		Phase U

Brushless Flat Motor 45BLW

Connector

Ø 45mm

0,05 - 0,13Nm



Specification				
Model	45BLW18	45BLW21	45BLW27	
1 n° of Pole	16	16	16	
2 n° of Phase	3	3	3	
3 Rated Voltage	V	24	24	
4 Rated Speed	rpm	5000	5260	
5 Rated Torque	Nm	0,05	0,084	
6 Max. Peak Torque	Nm	0,15	0,25	
7 Torque Constant	Nm/A	0,031	0,033	
8 Rated Current	A	1,61	2,55	
9 Max. Peak Current	A	4,8	7	
10 No-Load Current	mA	250	390	
11 Line to Line Resistance	Ω	1,83	0,8	
12 Line to Line Inductance	mH	0,59	0,33	
13 Rotor Inertia	gcm ²	100	135	
14 Length (L)	mm	18	21	
15 Weight	Kg	0,08	0,12	

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,03mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

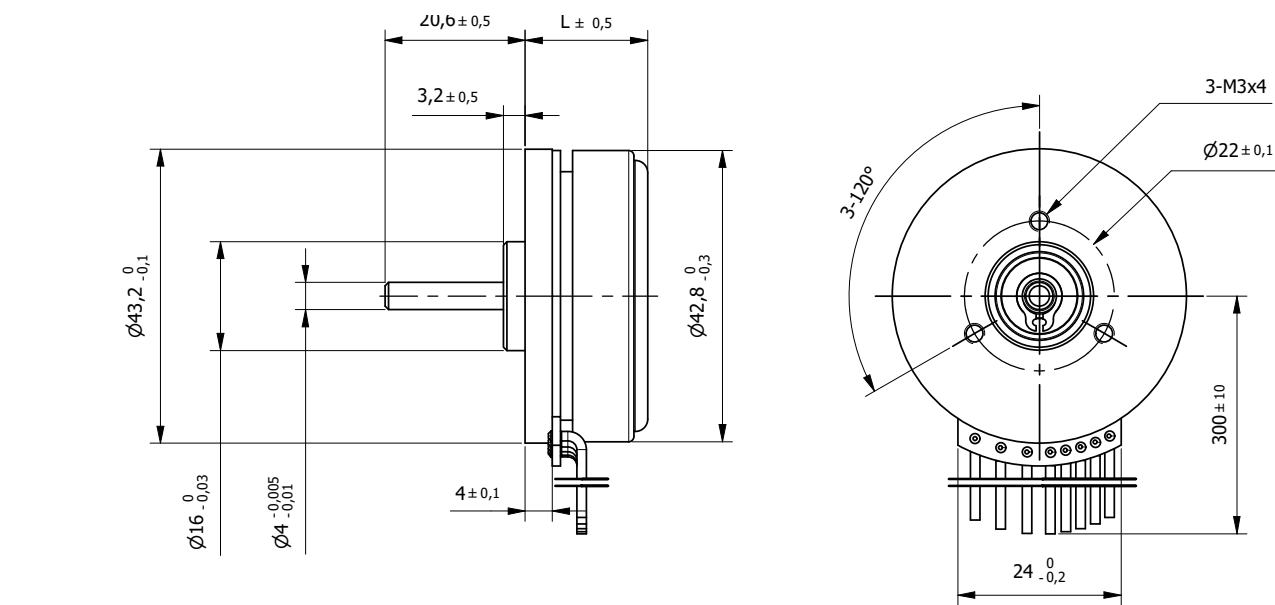
Connection		
Pin n°	Connector	Function
1	JST B5P-VH	GND
2		Phase W
3		Phase V
4		Phase U
5		GND
1	JST B6B-PH-K-S	GND
2		+5V DC
3		Hall A
4		Hall B
5		Hall C
6		GND

Brushless Flat Motor 45BLW

Wires

Ø 45mm

0,05 - 0,13Nm



Specification				
	Model	45BLW18	45BLW21	45BLW27
1	n° of Pole	16	16	16
2	n° of Phase	3	3	3
3	Rated Voltage	V	24	24
4	Rated Speed	rpm	5000	5260
5	Rated Torque	Nm	0,05	0,084
6	Max. Peak Torque	Nm	0,15	0,25
7	Torque Constant	Nm/A	0,031	0,033
8	Rated Current	A	1,61	2,55
9	Max. Peak Current	A	4,8	7
10	No-Load Current	mA	250	380
11	Line to Line Resistance	Ω	1,83	0,8
12	Line to Line Inductance	mH	0,59	0,33
13	Rotor Inertia	gcm2	99	135
14	Length (L)	mm	18	21
15	Weight	Kg	0,08	0,12

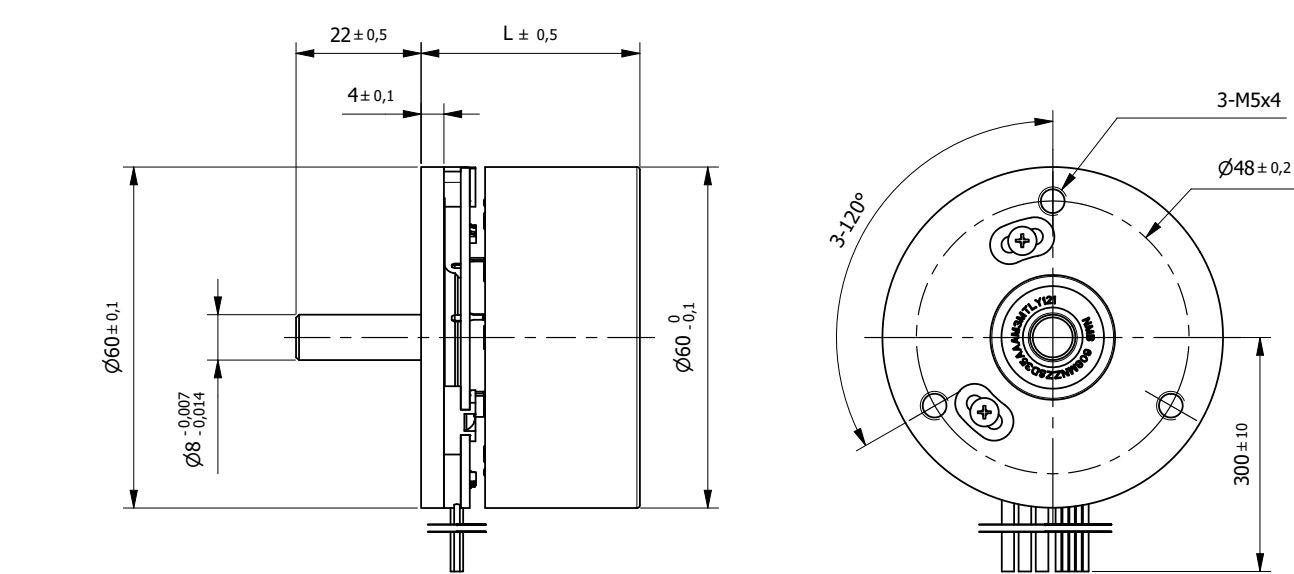
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,03mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG24	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Grey		Phase U
7	Brown		Phase V
8	Yellow		Phase W

Brushless Flat Motor 60BLWA38

Ø 60mm

0,5Nm



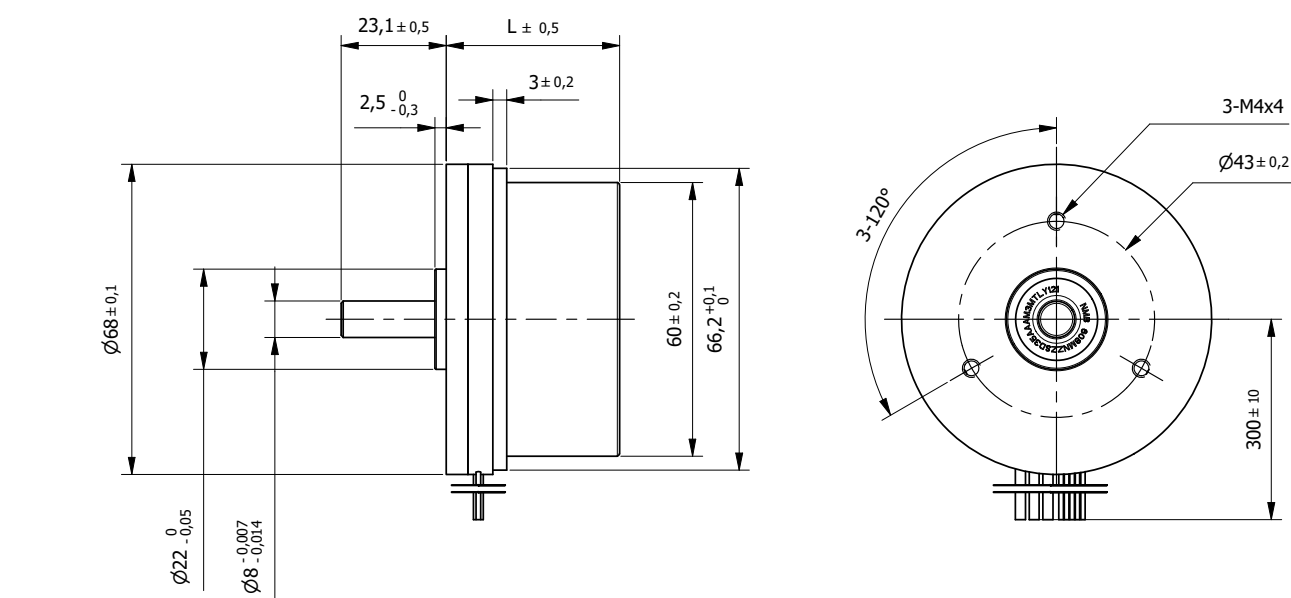
Specification		
	Model	60BLWA38
1	n° of Pole	14
2	n° of Phase	3
3	Rated Voltage	V
4	Rated Speed	rpm
5	Rated Torque	Nm
6	Max. Peak Torque	Nm
7	Torque Constant	Nm/A
8	Rated Current	A
9	Max. Peak Current	A
10	No-Load Current	mA
11	Line to Line Resistance	Ω
12	Line to Line Inductance	mH
13	Rotor Inertia	gcm2
14	Length (L)	mm
15	Weight	Kg

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	55N
Max. Axial force	12N
Dielectric strength (for 1 sec.)	600 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1332 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1007 AWG20	Phase U
7	Brown		Phase V
8	Orange		Phase W

Brushless Flat Motor 60BLW40

Ø 60mm
0,3Nm



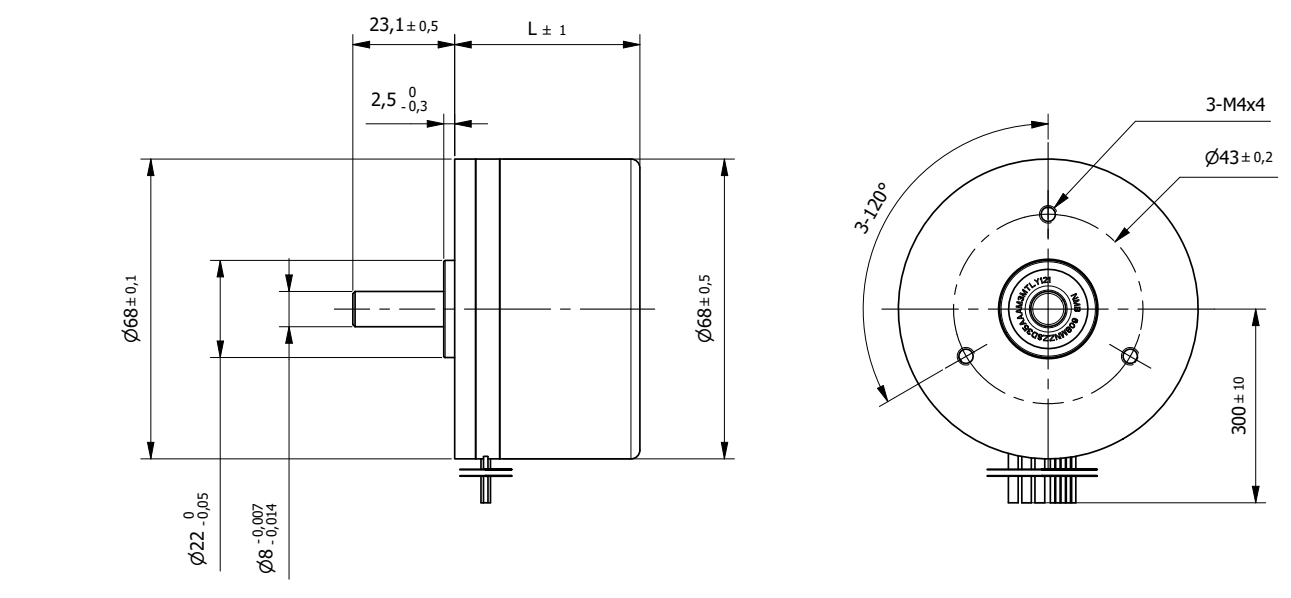
Specification				
	Model	60BLW40-24V	60BLW40-48V	
1	n° of Pole	14	14	
2	n° of Phase	3	3	
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	3700	3700
5	Rated Torque	Nm	0,3	0,3
6	Max. Peak Torque	Nm	0,9	0,9
7	Torque Constant	Nm/A	0,05	0,1
8	Rated Current	A	6	3
9	Max. Peak Current	A	18	9
10	No-Load Current	mA	800	400
11	Line to Line Resistance	Ω	0,3	1,1
12	Line to Line Inductance	mH	0,3	1,4
13	Rotor Inertia	gcm2	1500	1500
14	Length (L)	mm	38	38
15	Weight	Kg	0,5	0,5

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	55N
Max. Axial force	12N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1430 AWG18	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Flat Motor 60BLW40
IP54

Ø 68mm
0,3Nm



Specification				
	Model	60BLW40-24V-IP	60BLW40-48V-IP	
1	n° of Pole	14	14	
2	n° of Phase	3	3	
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	3700	3700
5	Rated Torque	Nm	0,3	0,3
6	Max. Peak Torque	Nm	0,9	0,9
7	Torque Constant	Nm/A	0,05	0,1
8	Rated Current	A	6	3
9	Max. Peak Current	A	18	9
10	No-Load Current	mA	800	400
11	Line to Line Resistance	Ω	0,3	1,1
12	Line to Line Inductance	mH	0,3	1,4
13	Rotor Inertia	gcm2	1500	1500
14	Length (L)	mm	42	42
15	Weight	Kg	0,5	0,5

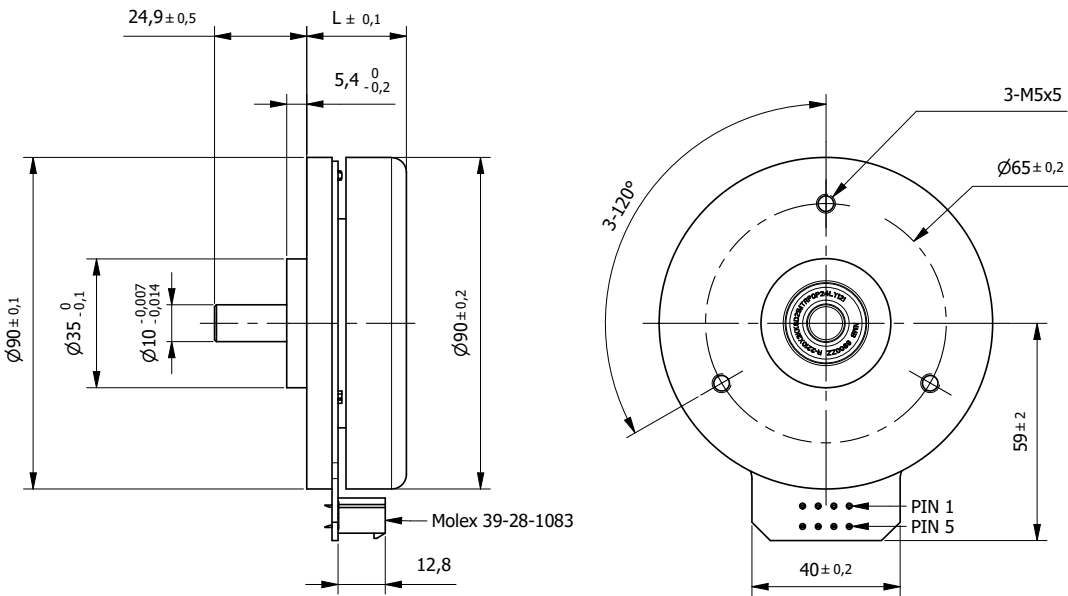
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP54
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	55N
Max. Axial force	12N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue		Hall A
3	Green		Hall B
4	White		Hall C
5	Black		GND Hall
6	Yellow	UL1430 AWG18	Phase U
7	Red		Phase V
8	Black		Phase W

Brushless Flat Motor 90BLW

Ø 90mm

0,46 to 0,96Nm



Specification							
	Model	...27-24V	...27-36V	...27-48V	...27-60V	...40-48V	
1	n° of Pole	22	22	22	22	22	
2	n° of Phase	3	3	3	3	3	
3	Rated Voltage	V	24	36	48	60	48
4	Rated Speed	rpm	2720	2510	1610	2200	1670
5	Rated Torque	Nm	0,457	0,56	0,533	0,46	0,964
6	Max. Peak Torque	Nm	1,8	1,8	1,8	1,8	3
7	Torque Constant	Nm/A	0,067	0,11	0,22	0,21	0,24
8	Rated Current	A	6,82	5,09	2,42	2,19	4
9	Max. Peak Current	A	23	14,5	7,5	7,5	13
10	No-Load Current	mA	650	420	300	260	280
11	Line to Line Resistance	Ω	0,21	0,5	2,1	2	0,65
12	Line to Line Inductance	mH	0,19	0,5	2	1,8	0,9
13	Rotor Inertia	gcm2	3000	3000	3000	3000	5000
14	Length (L)	mm	27	27	27	27	40
15	Weight	Kg	0,6	0,6	0,6	0,6	1

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	110N
Max. Axial force	45N
Dielectric strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection		
Pin n°	Connector	Function
3	Molex 39-28-1083	Vcc Hall +5 to +24 Vdc
1		Hall A
2		Hall B
5		Hall C
6		GND Hall
7		Phase U
8		Phase V
4		Phase W



Brushless DC

Flat motors with Encoder

Advantages at a glance
Very compact size
Exceptional power to volume ratio
Complete closed loop system

Our BLDC Flat motors are equipped with an optical incremental encoder to increase the motion precision. Thanks to the encoder, the drive knows the position (or the speed) of the motor in real time and can perform adjustments to align the real condition with the condition requested by the system. The presence of an encoder is highly recommended when is critical to know the status of the motor (both position and speed) in every instant.

BLDC Flat motors with Encoder	Torque* (Nm)	
45BLW29-E	0,13	150
60BLW42-E	0,29	151
90BLW42-E	0,96	152

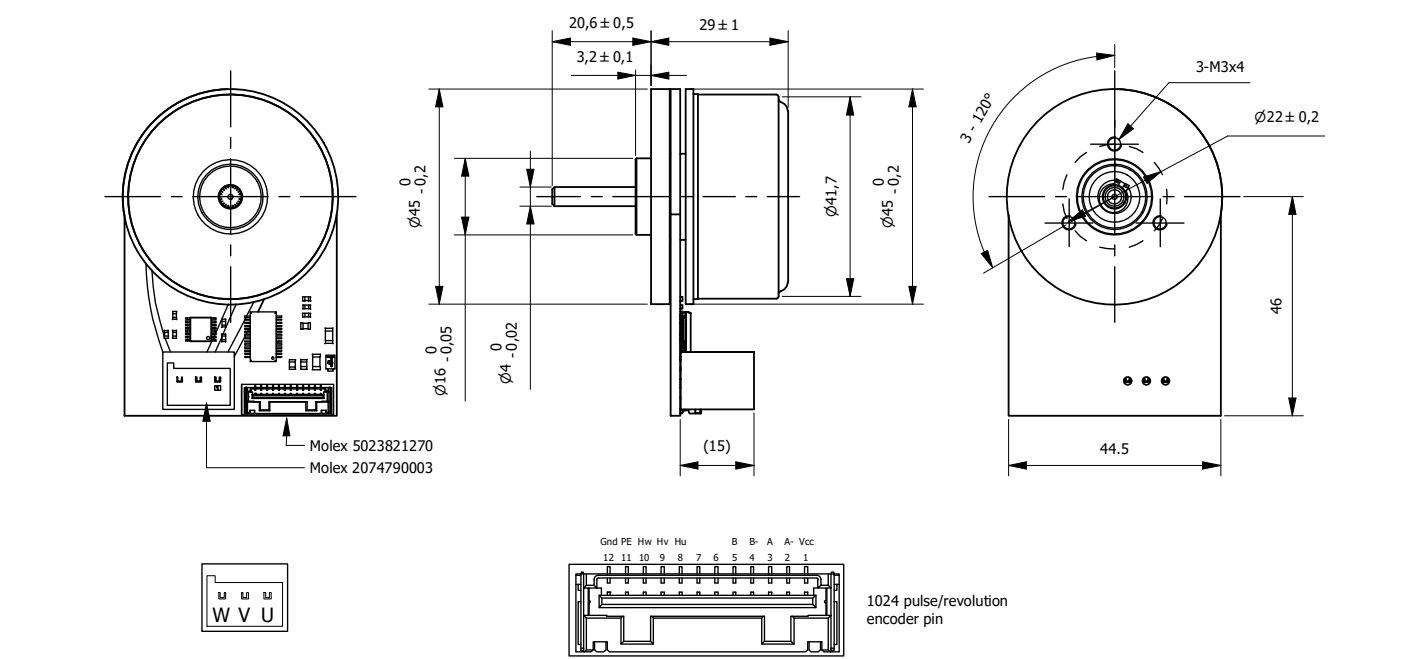
*Rated Torque

Brushless Flat Motor 45BLW29-E

with Encoder

Ø 45mm

0,13Nm



Specification		
Model	45BLW29-E	
1 n° of Pole		16
2 n° of Phase		3
3 Rated Voltage	V	24
4 Rated Speed	rpm	4840
5 Rated Torque	Nm	0,13
6 Max. Peak Torque	Nm	0,39
7 Torque Constant	Nm/A	0,037
8 Rated Current	A	3,5
9 Max. Peak Current	A	10
10 No-Load Current	mA	500
11 Line to Line Resistance	Ω	0,56
12 Line to Line Inductance	mH	0,27
13 Rotor Inertia	gcm2	181
14 Length (L)	mm	29
15 Weight	Kg	0,16

Characteristics	
Item	
Encoder Type*	Magnetic - Incremental
	1024 CPR / 2 channels
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (at 4N)	0,02mm
Axial play (at 4N)	0,14mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
*programmable	

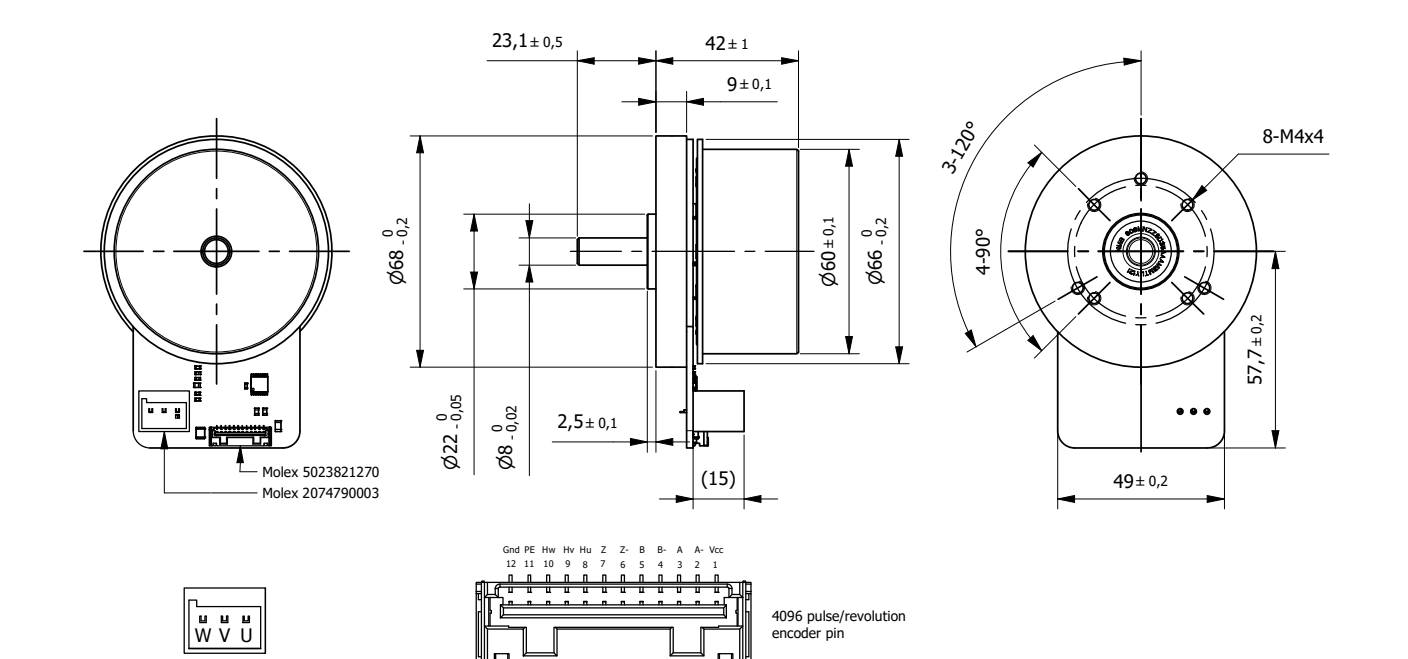
Connection	
Pin n°	Function
Feedback	
1	VCC
2	EA-
3	EA
4	EB-
5	EB
8	HALL A
9	HALL B
10	HALL C
11	PE
12	GND
Motor	
1	Phase U
2	Phase V
3	Phase W

Brushless Flat Motor 60BLW42-E

with Encoder

Ø 60mm

0,29Nm



Specification		
Model	60BLW42-E	
1 n° of Pole		14
2 n° of Phase		3
3 Rated Voltage	V	24
4 Rated Speed	rpm	3500
5 Rated Torque	Nm	0,29
6 Max. Peak Torque	Nm	0,87
7 Torque Constant	Nm/A	0,05
8 Rated Current	A	5,8
9 Max. Peak Current	A	17
10 No-Load Current	mA	700
11 Line to Line Resistance	Ω	0,25
12 Line to Line Inductance	mH	0,22
13 Rotor Inertia	gcm2	1000
14 Length (L)	mm	42
15 Weight	Kg	0,5

Characteristics	
Item	
Encoder Type*	Magnetic - Incremental
	4096 CPR / 3 channels
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (at 4N)	0,02mm
Axial play (at 4N)	0,08mm
Max. Radial force (10mm from flange)	55N
Max. Axial force	12N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
*programmable	

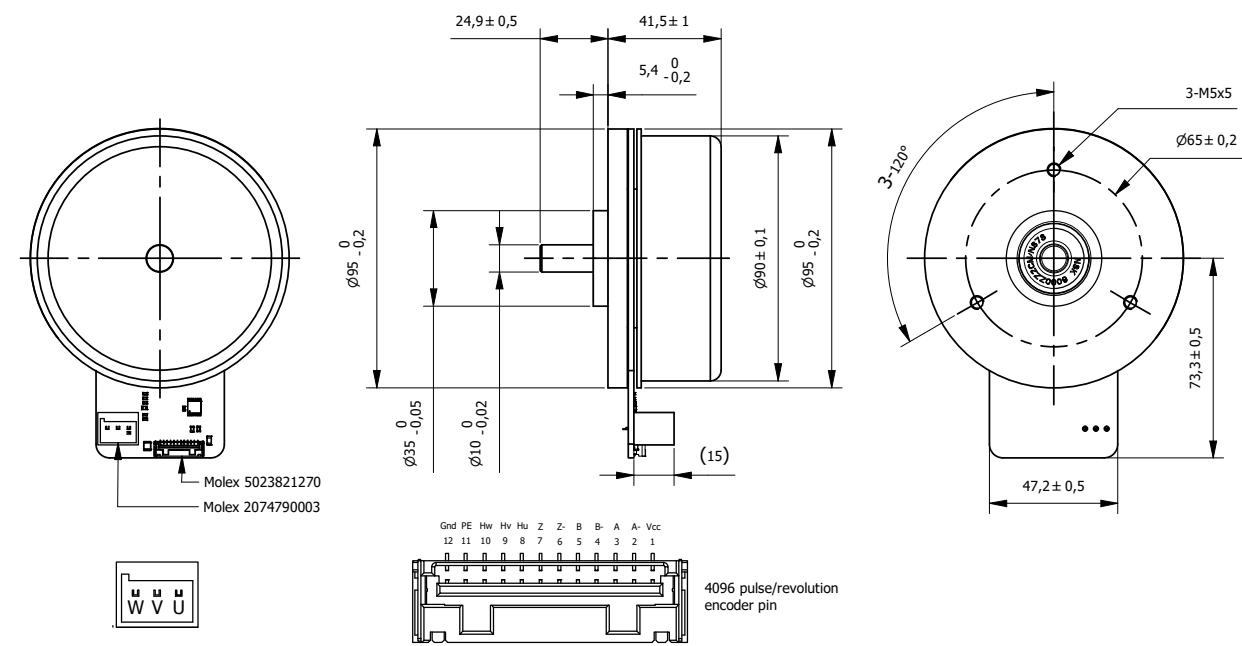
Connection	
Pin n°	Function
Feedback	
1	VCC
2	EA-
3	EA
4	EB-
5	EB
6	EZ-
7	EZ
8	HALL A
9	HALL B
10	HALL C
11	PE
12	GND
Motor	
1	Phase U
2	Phase V
3	Phase W

Brushless Flat Motor 90BLW42-E

with Encoder

Ø 90mm

0,96Nm



Specification		
Model		90BLW42-E
1	n° of Pole	22
2	n° of Phase	3
3	Rated Voltage	V 48
4	Rated Speed	rpm 1670
5	Rated Torque	Nm 0,96
6	Max. Peak Torque	Nm 3
7	Torque Constant	Nm/A 0,23
8	Rated Current	A 4,3
9	Max. Peak Current	A 13
10	No-Load Current	mA 400
11	Line to Line Resistance	Ω 0,53
12	Line to Line Inductance	mH 0,71
13	Rotor Inertia	gcm2 5000
14	Length (L)	mm 41,5
15	Weight	Kg 1,2

Characteristics	
Item	
Encoder Type*	Magnetic - Incremental 4096 CPR / 3 channels
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (at 4N)	0,02mm
Axial play (at 4N)	0,08mm
Max. Radial force (10mm from flange)	110N
Max. Axial force	45N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
*programmable	

Connection	
Pin n°	Function
Feedback	
1	VCC
2	EA-
3	EA
4	EB-
5	EB
6	EZ-
7	EZ
8	HALL A
9	HALL B
10	HALL C
11	PE
12	GND
Motor	
1	Phase U
2	Phase V
3	Phase W



Brushless DC

Frameless motors

Advantages at a glance	
Maximum integration options	
High torque	
Low weight	
One of the latest additions to our range, these motors allow for maximum integration with your assembly. Frameless motors reduce waste and redundancy by eliminating the need for additional mounting supports, plates, or brackets. Stator and rotor can be seamlessly incorporated into the system, reducing size without sacrificing performance and avoiding designing the application to fit the motor.	

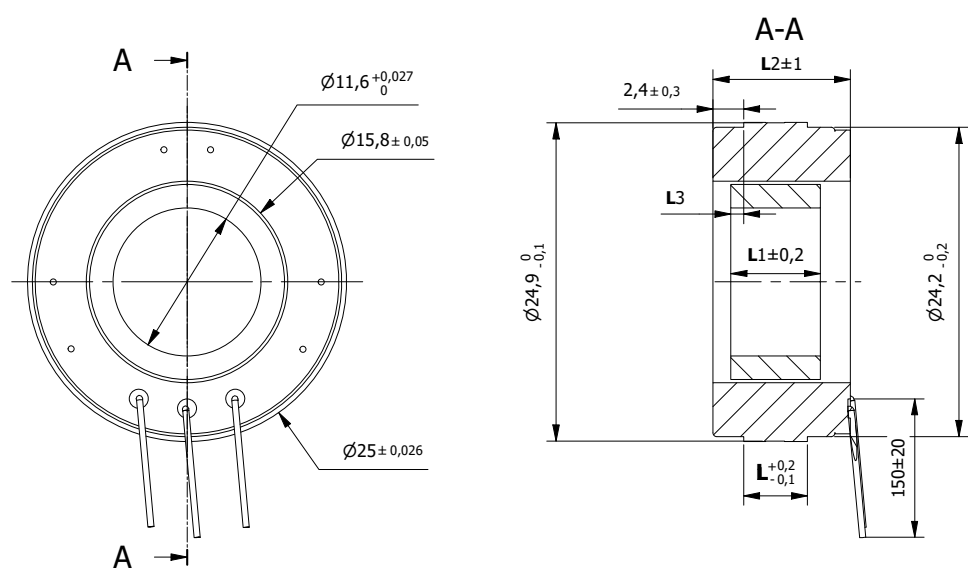
BLDC Frameless motors	Torque* (Nm)	
25BLF - NEW	0,03...0,06	156
38BLF	0,1...0,2	157
43BLF - NEW	0,15	158
50BLF	0,3...0,5	159
60BLF - NEW	0,45	160
70BLF	0,55...1	161
85BLF	1,2...2	162
102BLF - NEW	2,5	163
115BLF	3,9...7,8	164

*Rated Torque

Brushless Frameless Motor 25BLF

Ø 25mm

0,03 - 0,06Nm

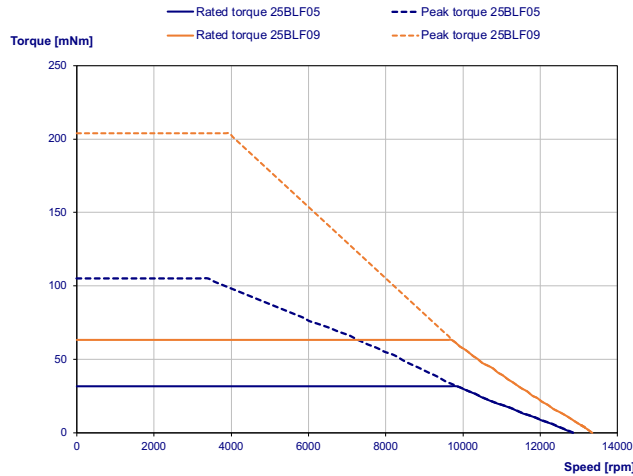


Optional: Thermistor

Specification			
Model		25BLF05	25BLF09
1 n° of Pole		14	14
2 n° of Phase		3	3
3 Rated Voltage	V	24	24
4 Rated Speed	rpm	10000	10000
5 Max. Speed	rpm	12300	13000
6 Rated Torque	Nm	0,032	0,063
7 Max. Peak Torque	Nm	0,105	0,204
8 Torque Constant	Nm/A	0,023	0,021
9 Rated Current	A	1,5	3
10 Max. Peak Current	A	5	9,8
11 No-Load Current	A	0,5	0,5
12 Line to Line Resistance	Ω	1,7	0,77
13 Line to Line Inductance	mH	0,6	0,28
14 Rotor Inertia	gcm2	1,17	2,34
15 Back EMF	Vrms/Krpm	1,37	1,3
16 Stator height (L)	mm	5	9,2
17 Rotor height (L1)	mm	7	11
18 Length (L2)	mm	10,75	14,95
19 Measure (L3)	mm	1	0,9
20 Weight	g	18	28,5

Characteristics	
Item	
Hall Effect Angle	120°
Insulation Class	B 130°C
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating ambient temperature	-20°C to +50°C
Humidity	max. 85% not condensing

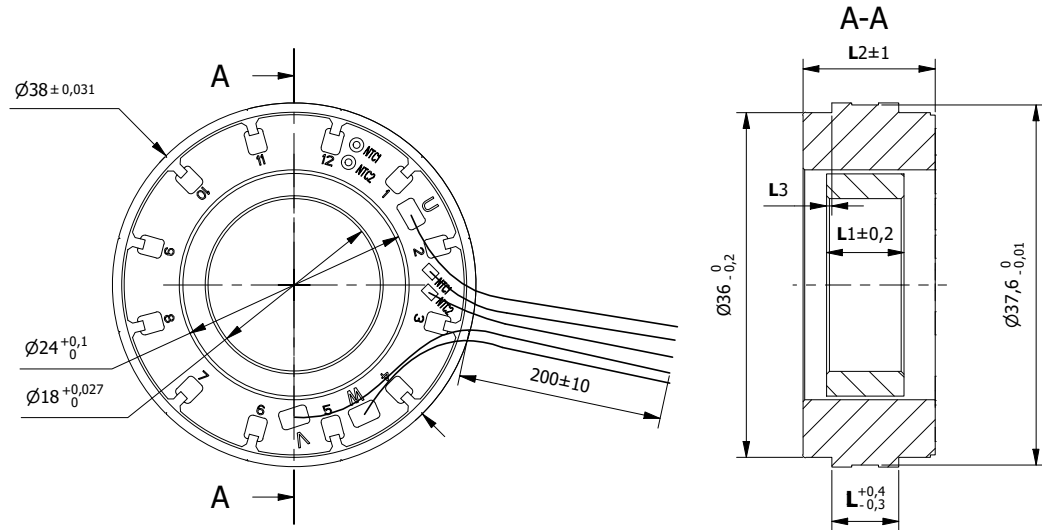
Connection		
Color	Gauge	Function
Red	AWG22	Phase U
White		Phase V
Black		Phase W



Brushless Frameless Motor 38BLF

Ø 38mm

0,1 - 0,2Nm

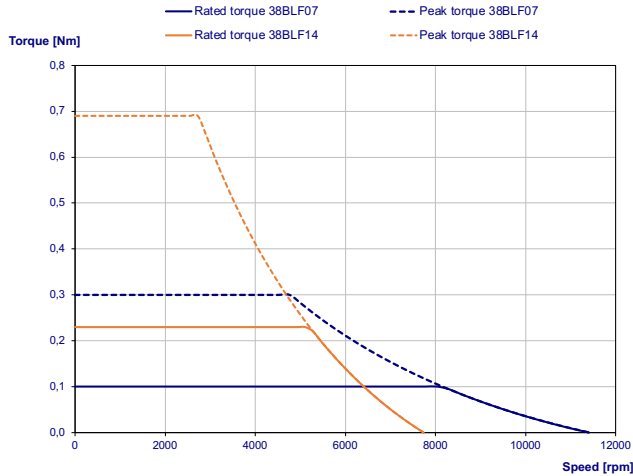


Optional: Thermistor

Specification			
Model		38BLF07	38BLF14
1 n° of Pole		14	14
2 n° of Phase		3	3
3 Rated Voltage	V	24	48
4 Rated Speed	rpm	8000	5000
5 Max. Speed	rpm	11000	7500
6 Rated Torque	Nm	0,1	0,23
7 Max. Peak Torque	Nm	0,3	0,69
8 Torque Constant	Nm/A	0,025	0,074
9 Rated Current	A	4,5	3,5
10 Max. Peak Current	A	13,5	10,5
11 No-Load Current	A	0,5	0,4
12 Line to Line Resistance	Ω	0,37	1,24
13 Line to Line Inductance	mH	0,32	1,3
14 Rotor Inertia	gcm2	9,68	19,2
15 Back EMF	Vrms/Krpm	1,54	4,5
16 Stator height (L)	mm	7	14
17 Rotor height (L1)	mm	8,1	16,1
18 Length (L2)	mm	13,8	20,8
19 Measure (L3)	mm	0,55	1
20 Weight	g	57	112

Characteristics	
Item	
Hall Effect Angle	120°
Insulation Class	B 130°C
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating ambient temperature	-20°C to +50°C
Humidity	max. 85% not condensing

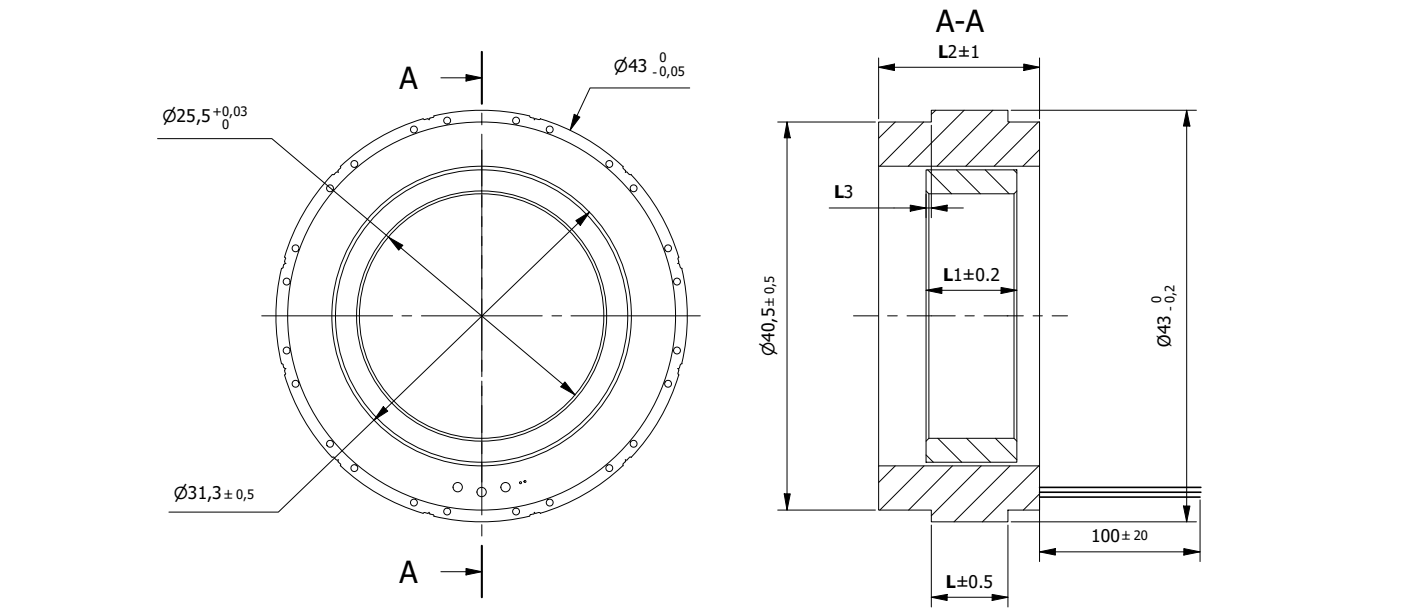
Connection		
Color	Gauge	Function
Yellow	AWG20	Phase U
Red		Phase V
Black		Phase W



Brushless Frameless Motor 43BLF

Ø 43mm

0,15Nm

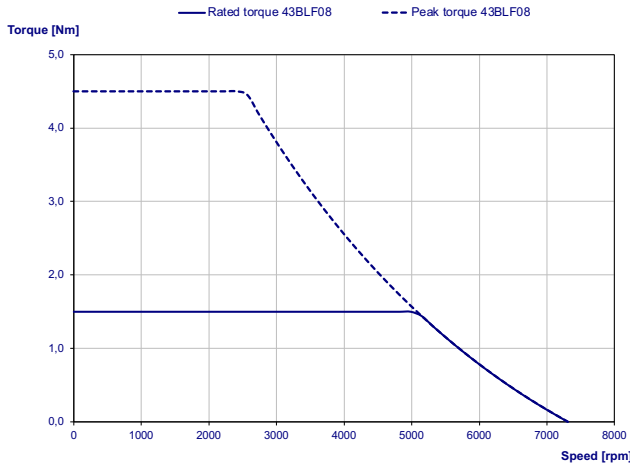


Optional: Thermistor

Specification		
Model	43BLF08	
1 n° of Pole		14
2 n° of Phase		3
3 Rated Voltage	V	48
4 Rated Speed	rpm	5000
5 Max. Speed	rpm	7300
6 Rated Torque	Nm	0,15
7 Max. Peak Torque	Nm	0,45
8 Torque Constant	Nm/A	0,077
9 Rated Current	A	2
10 Max. Peak Current	A	6
11 No-Load Current	A	0,4
12 Line to Line Resistance	Ω	2,8
13 Line to Line Inductance	mH	1,8
14 Rotor Inertia	gcm2	27
15 Back EMF	Vrms/Krpm	4,65
16 Stator height (L)	mm	8
17 Rotor height (L1)	mm	9,5
18 Length (L2)	mm	16,8
19 Measure (L3)	mm	0,5
20 Weight	g	70

Characteristics	
Item	
Hall Effect Angle	120°
Insulation Class	B 130°C
Dielectric strength (for 1 sec.)	650 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating ambient temperature	-20°C to +50°C
Humidity	max. 85% not condensing

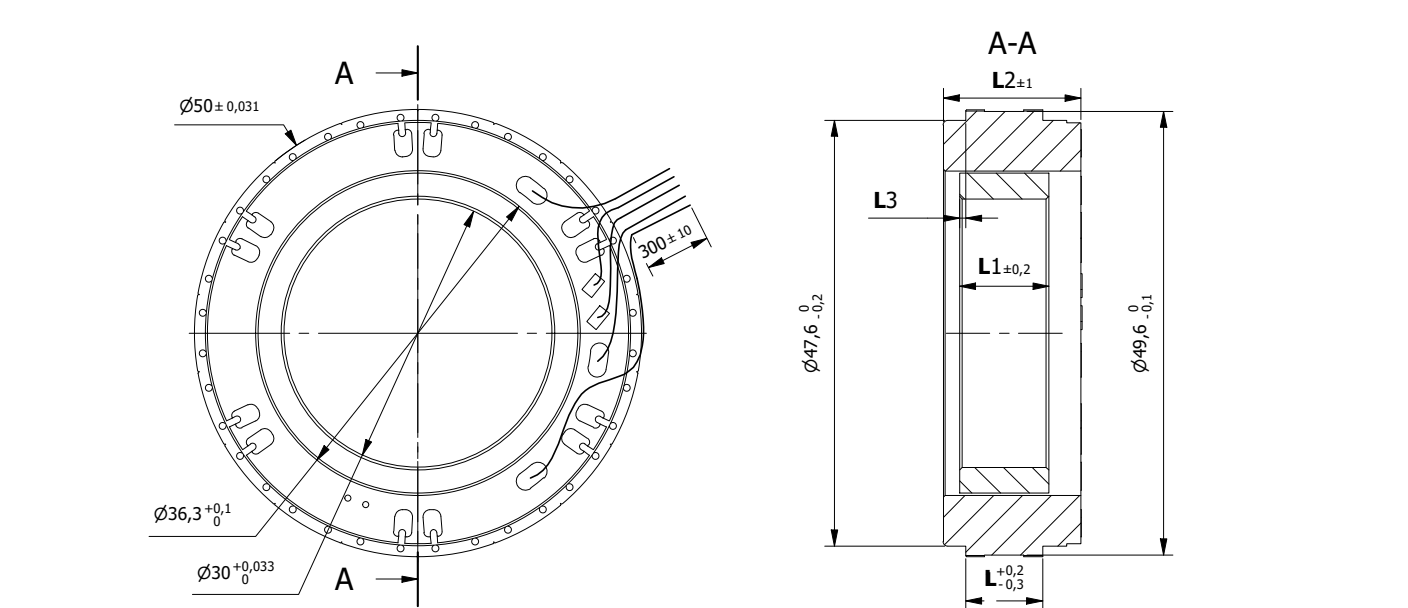
Connection		
Color	Gauge	Function
Yellow	AWG24	Phase U
Red		Phase V
Black		Phase W



Brushless Frameless Motor 50BLF

Ø 50mm

0,3 - 0,5Nm

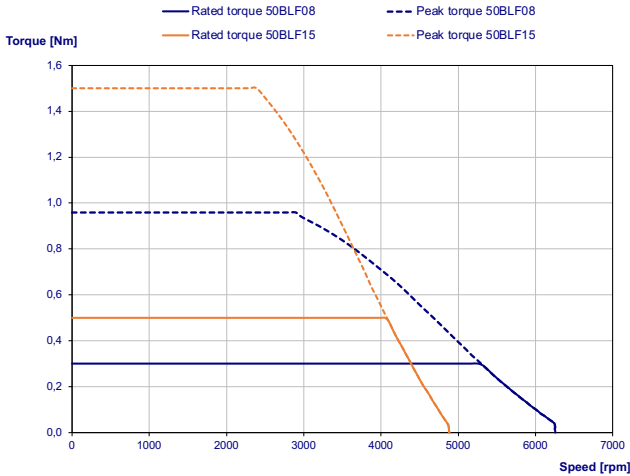


Optional: Hall sensors, Thermistor and PCB mounted Connector

Specification			
Model	50BLF08	50BLF15	
1 n° of Pole	20	20	
2 n° of Phase	3	3	
3 Rated Voltage	V	48	48
4 Rated Speed	rpm	5000	3500
5 Max. Speed	rpm	6200	4800
6 Rated Torque	Nm	0,3	0,5
7 Max. Peak Torque	Nm	0,96	1,5
8 Torque Constant	Nm/A	0,089	0,117
9 Rated Current	A	3,6	4,8
10 Max. Peak Current	A	11,6	14,5
11 No-Load Current	A	0,4	0,6
12 Line to Line Resistance	Ω	0,93	0,7
13 Line to Line Inductance	mH	0,46	0,38
14 Rotor Inertia	gcm2	56,36	95,93
15 Back EMF	Vrms/Krpm	5,4	7,1
16 Stator height (L)	mm	8,6	15
17 Rotor height (L1)	mm	10	17
18 Length (L2)	mm	15,4	21,6
19 Measure (L3)	mm	0,7	1
20 Weight	g	105	128

Characteristics	
Item	
Hall Effect Angle	120°
Insulation Class	B 130°C
Dielectric strength (for 1 sec.)	1000 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating ambient temperature	-20°C to +50°C
Humidity	max. 85% not condensing

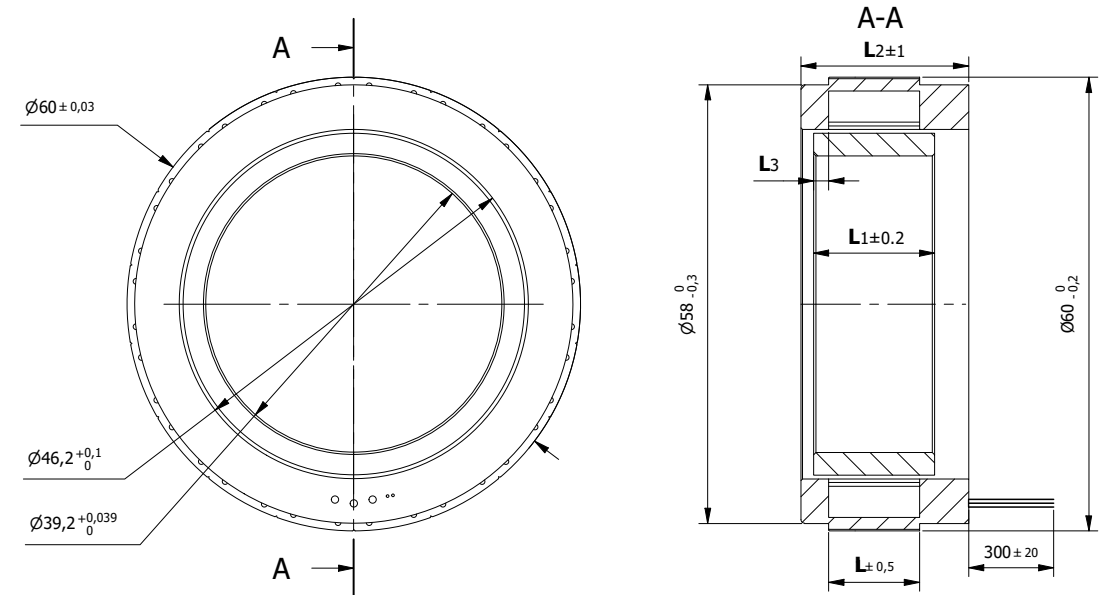
Connection		
Color	Gauge	Function
Yellow	AWG22/20	Phase U
Red		Phase V
Black		Phase W



Brushless Frameless Motor 60BLF

Ø 60mm

0,45Nm

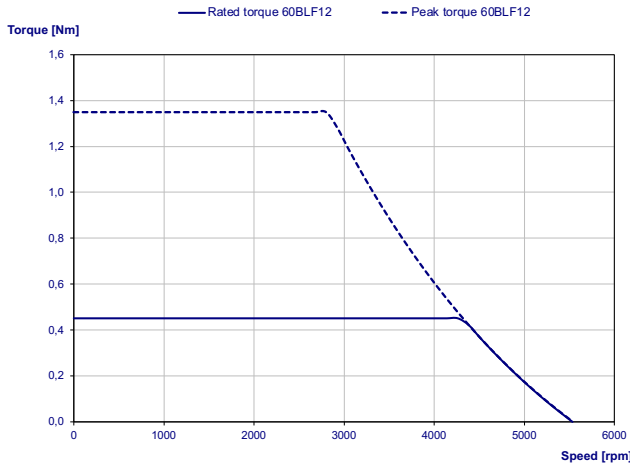


Optional: Hall sensors, Thermistor and PCB mounted Connector

Specification		
Model	60BLF12	
1 n° of Pole		20
2 n° of Phase		3
3 Rated Voltage	V	48
4 Rated Speed	rpm	4000
5 Max. Speed	rpm	5200
6 Rated Torque	Nm	0,45
7 Max. Peak Torque	Nm	1,35
8 Torque Constant	Nm/A	0,102
9 Rated Current	A	5
10 Max. Peak Current	A	15
11 No-Load Current	A	2
12 Line to Line Resistance	Ω	0,62
13 Line to Line Inductance	mH	0,46
14 Rotor Inertia	gcm2	172
15 Back EMF	Vrms/Krpm	6,2
16 Stator height (L)	mm	12
17 Rotor height (L1)	mm	16
18 Length (L2)	mm	22,2
19 Measure (L3)	mm	2
20 Weight	g	165

Characteristics	
Item	
Hall Effect Angle	120°
Insulation Class	B 130°C
Dielectric strength (for 1 sec.)	650 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating ambient temperature	-20°C to +50°C
Humidity	max. 85% not condensing

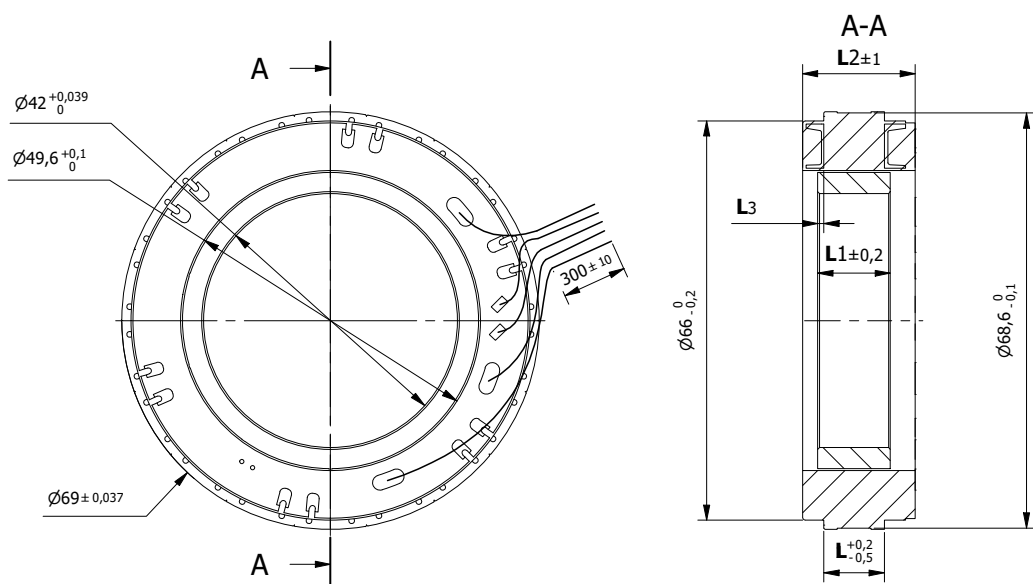
Connection		
Color	Gauge	Function
Yellow	AWG20	Phase U
Red		Phase V
Black		Phase W



Brushless Frameless Motor 70BLF

Ø 70mm

0,55 - 1Nm

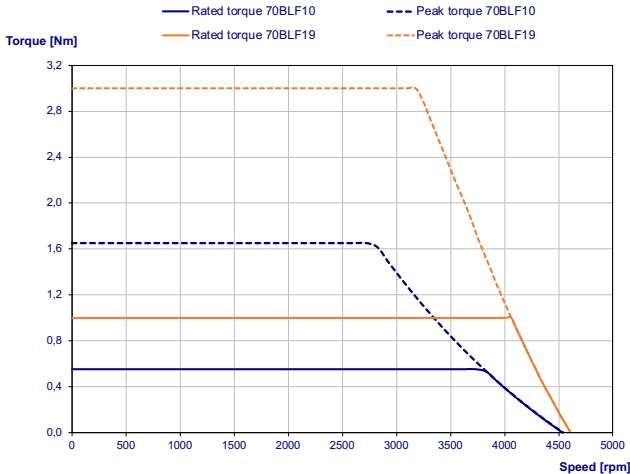


Optional: Hall sensors, Thermistor and PCB mounted Connector

Specification			
Model	70BLF10	70BLF19	
1 n° of Pole	20	20	20
2 n° of Phase	3	3	3
3 Rated Voltage	V	48	48
4 Rated Speed	rpm	3650	3500
5 Max. Speed	rpm	4750	4500
6 Rated Torque	Nm	0,55	1
7 Max. Peak Torque	Nm	1,65	3
8 Torque Constant	Nm/A	0,118	0,12
9 Rated Current	A	5,1	9
10 Max. Peak Current	A	15,5	27
11 No-Load Current	A	0,4	0,6
12 Line to Line Resistance	Ω	0,36	0,19
13 Line to Line Inductance	mH	0,33	0,18
14 Rotor Inertia	gcm2	215	376
15 Back EMF	Vrms/Krpm	7,14	7,2
16 Stator height (L)	mm	10	18,9
17 Rotor height (L1)	mm	12	21
18 Length (L2)	mm	18,6	27
19 Measure (L3)	mm	1	1
20 Weight	g	189	296

Characteristics	
Item	
Hall Effect Angle	120°
Insulation Class	B 130°C
Dielectric strength (for 1 sec.)	1000 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating ambient temperature	-20°C to +50°C
Humidity	max. 85% not condensing

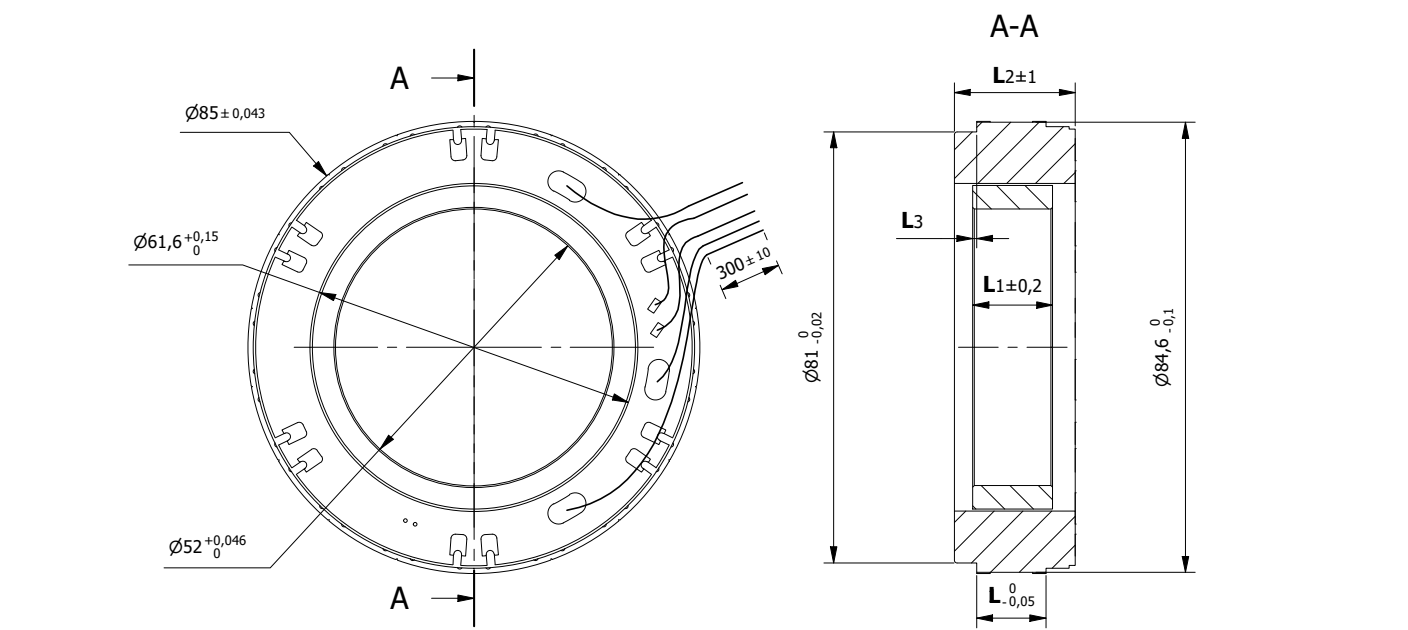
Connection		
Color	Gauge	Function
Yellow	AWG20/18	Phase U
Red		Phase V
Black		Phase W



Brushless Frameless Motor 85BLF

Ø 85mm

1,2 - 2Nm

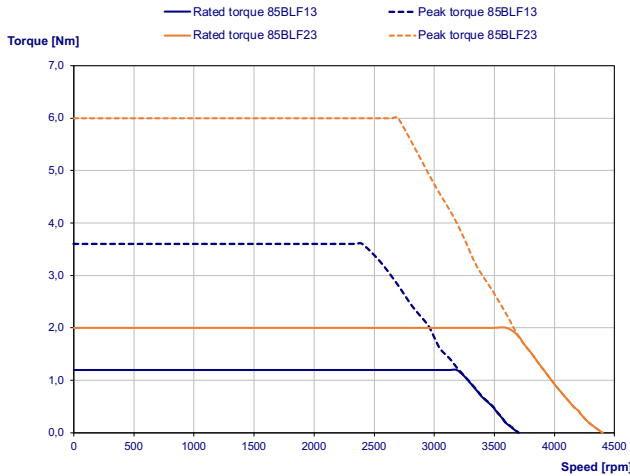


Optional: Hall sensors, Thermistor and PCB mounted Connector

Specification			
Model	85BLF13	85BLF23	
1 n° of Pole	20	20	
2 n° of Phase	3	3	
3 Rated Voltage	V	48	48
4 Rated Speed	rpm	2950	3500
5 Max. Speed	rpm	3700	4000
6 Rated Torque	Nm	1,2	2
7 Max. Peak Torque	Nm	3,6	6
8 Torque Constant	Nm/A	0,143	0,13
9 Rated Current	A	9	16,5
10 Max. Peak Current	A	27	49,5
11 No-Load Current	A	0,6	1,1
12 Line to Line Resistance	Ω	0,21	0,09
13 Line to Line Inductance	mH	0,3	0,12
14 Rotor Inertia	gcm2	646	1079
15 Back EMF	Vrms/Krpm	8,7	8,1
16 Stator height (L)	mm	13	23,8
17 Rotor height (L1)	mm	15	25
18 Length (L2)	mm	22,7	32,7
19 Measure (L3)	mm	0,7	0,6
20 Weight	g	346	554

Characteristics	
Item	
Hall Effect Angle	120°
Insulation Class	B 130°C
Dielectric strength (for 1 sec.)	1000 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating ambient temperature	-20°C to +50°C
Humidity	max. 85% not condensing

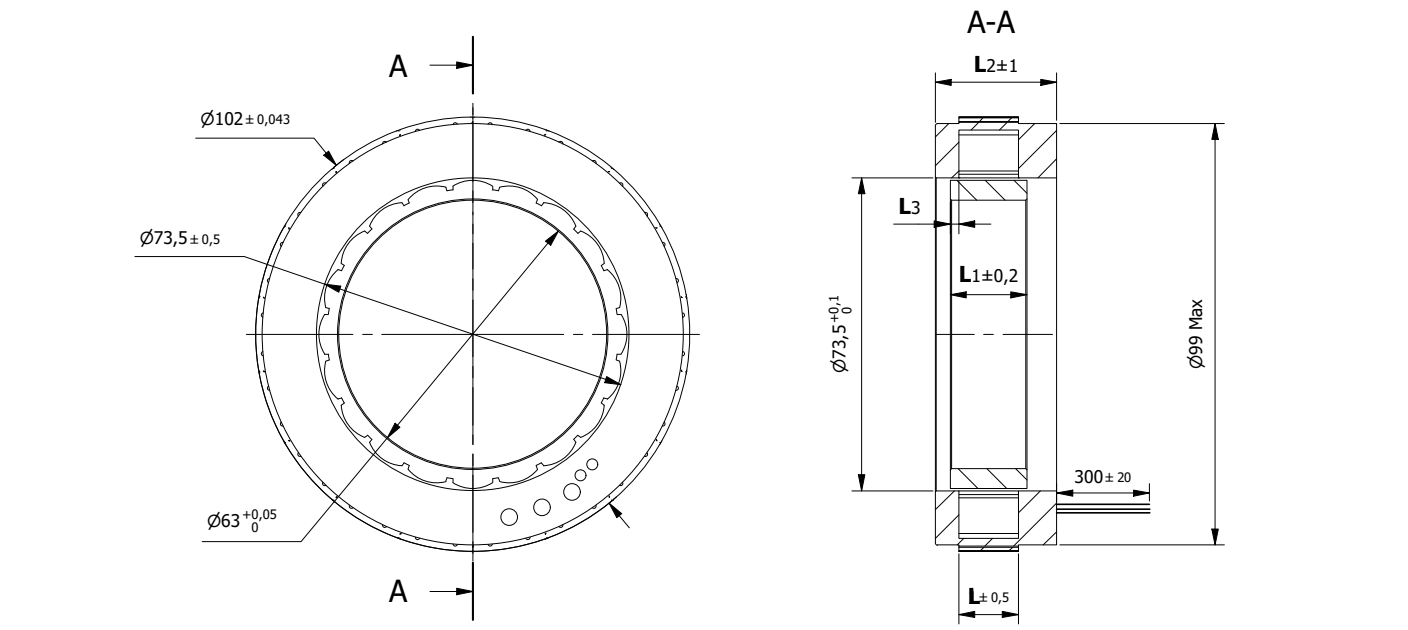
Connection		
Color	Gauge	Function
Yellow	AWG18/16	Phase U
Red		Phase V
Black		Phase W



Brushless Frameless Motor 102BLF

Ø 102mm

2,5Nm

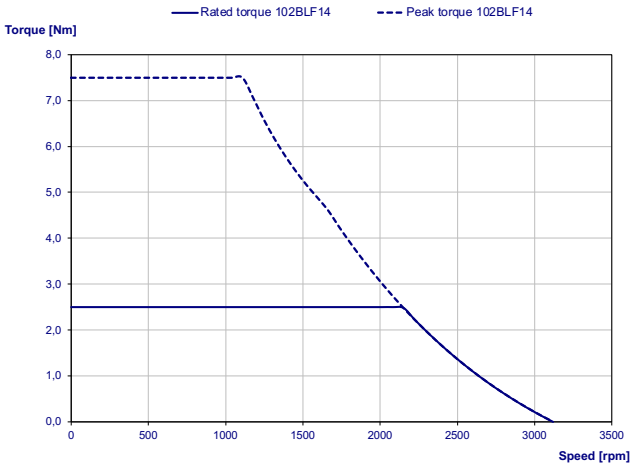


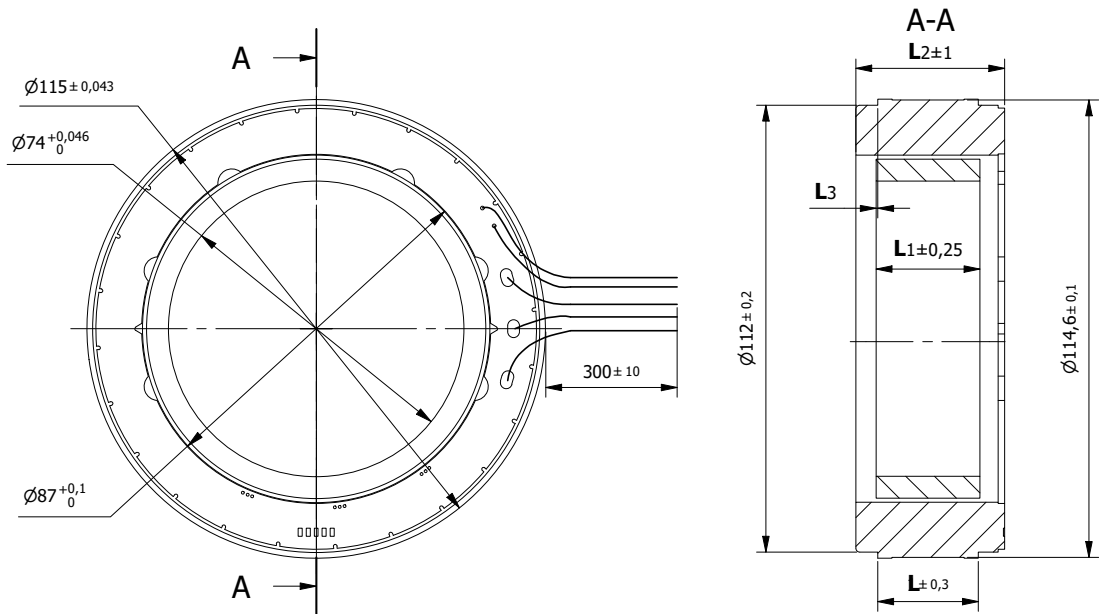
Optional: Hall sensors, Thermistor and PCB mounted Connector

Specification		
Model	102BLF14	
1 n° of Pole	20	
2 n° of Phase	3	
3 Rated Voltage	V	48
4 Rated Speed	rpm	2000
5 Max. Speed	rpm	3100
6 Rated Torque	Nm	2,5
7 Max. Peak Torque	Nm	7,5
8 Torque Constant	Nm/A	0,182
9 Rated Current	A	15,8
10 Max. Peak Current	A	44,4
11 No-Load Current	A	1,5
12 Line to Line Resistance	Ω	0,157
13 Line to Line Inductance	mH	0,555
14 Rotor Inertia	gcm2	1375
15 Back EMF	Vrms/Krpm	11,05
16 Stator height (L)	mm	14
17 Rotor height (L1)	mm	18
18 Length (L2)	mm	28,5
19 Measure (L3)	mm	2
20 Weight	g	608

Characteristics	
Item	
Hall Effect Angle	120°
Insulation Class	B 130°C
Dielectric strength (for 1 sec.)	650 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating ambient temperature	-20°C to +50°C
Humidity	max. 85% not condensing

Connection		
Color	Gauge	Function
Yellow	AWG16	Phase U
Red		Phase V
Black		Phase W



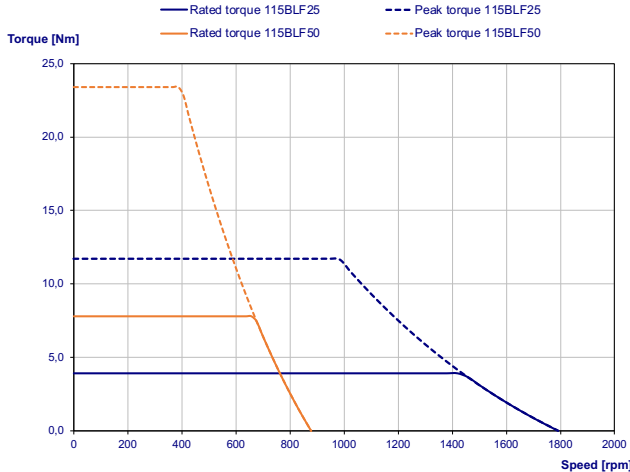


Optional: Hall sensors, Thermistor and PCB mounted Connector

Specification				
	Model	115BLF25	115BLF50	
1	n° of Pole	20	20	
2	n° of Phase	3	3	
3	Rated Voltage	V	48	48
4	Rated Speed	rpm	1400	620
5	Max. Speed	rpm	1900	900
6	Rated Torque	Nm	3,9	7,8
7	Max. Peak Torque	Nm	11,7	23,4
8	Torque Constant	Nm/A	0,293	0,662
9	Rated Current	A	14,1	13
10	Max. Peak Current	A	42,3	39
11	No-Load Current	A	1,4	1,3
12	Line to Line Resistance	Ω	0,2	0,35
13	Line to Line Inductance	mH	0,5	1,6
14	Rotor Inertia	gcm2	4120	9100
15	Back EMF	Vrms/Krpm	17,7	40
16	Stator height (L)	mm	25	50
17	Rotor height (L1)	mm	26	51
18	Length (L2)	mm	37,3	62,1
19	Measure (L3)	mm	0,4	0,5
20	Weight	g	1100	2000

Characteristics	
Item	
Hall Effect Angle	120°
Insulation Class	B 130°C
Dielectric strength (for 1 sec.)	1000 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating ambient temperature	-20°C to +50°C
Humidity	max. 85% not condensing

Connection		
Color	Gauge	Function
Yellow	AWG12	Phase U
Red		Phase V
Black		Phase W



Brushless Servomotors



Low voltage
Servomotors

p.175

Medium voltage
Servomotors

p.183

Brushless Servomotors

Technical introduction		172
Low voltage - Brushless DC Servomotors		175
38SV - 48VDC	Torque* (Nm)	0,16...0,32
60SV - 48VDC		0,64...1,27
80SV - 48VDC		2,39...3,18
100SV - 48VDC		3,18...4,77
110SV - 48VDC		4,77...6,37
130SV - 48VDC		9,55...14,3
Medium voltage - Brushless AC Servomotors		183
38SV - 220VAC	Torque* (Nm)	0,16...0,32
60SV - 220VAC		0,64...1,27
80SV - 220VAC		2,39...3,18
100SV - 220VAC		3,18...4,77
110SV - 220VAC		4,77...6,37
130SV - 220VAC		9,55...14,3

* Rated Torque

Term	
N. of pole	Areas of a motor where a magnetic pole is generated either by a permanent magnet or by passing current through the coils of a winding.
N. of phase	A group of electrically connected coils.
Nominal Voltage	The voltage at which nominal torque is generated with the motor at ambient temperature.
Rated Power	Mechanical power available at the motor output shaft while turning at its rated speed, applying its rated torque
Rated Speed	The approximate motor speed at its rated torque point.
No-load speed	Is the speed at which the unloaded motor runs with the rated voltage applied. It is approximately proportional to the applied voltage.
Rated Torque	The maximum torque, at rated speed, the motor can produce on a continuous basis, without exceeding the thermal rating of the motor.
Max. Peak Torque	The maximum torque a motor can produce for short periods of time, before irreversible demagnetization of the motor's magnets occurs.
Torque constant	The ratio of a motor's output torque to the motor's input power
Rated Current	The approximate amount of current the motor will draw at its rated torque point.
Max. Peak Current	The current drawn by the motor when delivering peak torque
No-Load Current	The current consumption of the motor at nominal voltage and under no-load conditions. This value varies proportionally to speed and is influenced by temperature
Back EMF constant	The constant corresponding to the relationship between the induced voltage in the rotor and the speed of rotation.
Line to Line resistance	This is the phase resistance measured for the completed motor at room temperature. It includes solder, wire and (if present) connector resistances. In motors with very low resistance, the line to line resistance may differ significantly from the internal resistance.
Line to Line Inductance	This is the motor phase inductance measured with an inductance meter at 1000 Hz.
Rotor Inertia	"Is the mass moment of inertia of the rotor, based on the axis of rotation."
Length	Total motor length.
Weight	Total motor mass.
Insulation class	The electrical insulation system for wires and other wire-wound electrical components is divided into different classes by temperature and temperature rise. The electrical insulation system is sometimes referred to as insulation class or thermal classification.
Radial Play	The shaft displacement perpendicular to the shaft due to a side force applied perpendicular to the shaft axis.
Axial Play	Axial shaft displacement occurring during a reversal of an axial force on the shaft.
Max. Radial force	Maximum force that can be applied to the shaft in the radial direction (any direction perpendicular to the motor shaft axis).
Max. Axial force	Maximum force that can be applied to the shaft in the axial direction (in the same axis as or parallel to the motor shaft axis).
Dielectric strength	A dielectric test (also known as hipot or high potential test) is performed on all motors under 500V phases to the housing and during 5 seconds after voltage ramp up. Maximum allowed leakage is 1mA
Insulation resistance	The measurement of insulation resistance is carried out by means of a megohmmeter - high resistance range ohmmeter. DC voltage is applied between the windings and the ground of the motor.

Product families
BLDC Low voltage Servomotors
BLAC Medium voltage Servomotors

Brushless Servomotors are a specific subset of Brushless motors intended for applications where precise positioning and/or high speeds are the goals. These motors are designed for fast and accurate response in highly dynamic applications where following trajectories and positioning quickly and precisely are key criteria.

Our Servomotors have a higher torque density than our BLDC slotted motors and are made for high performance applications where the most power in the smallest package size is critical. We've optimized the windings in our Servomotors for standard selections in both low voltage, typically 48VDC, and medium voltage, typically 220VAC.

Various encoder feedback options are available for our Servomotors, based on the needs of the application. Options include incremental encoders, with a variety of resolutions, and absolute encoders, both single-turn and multi-turn.

The motors are IP65 rated as standard so that they can be used in a wide variety of environments without concern.

IP65

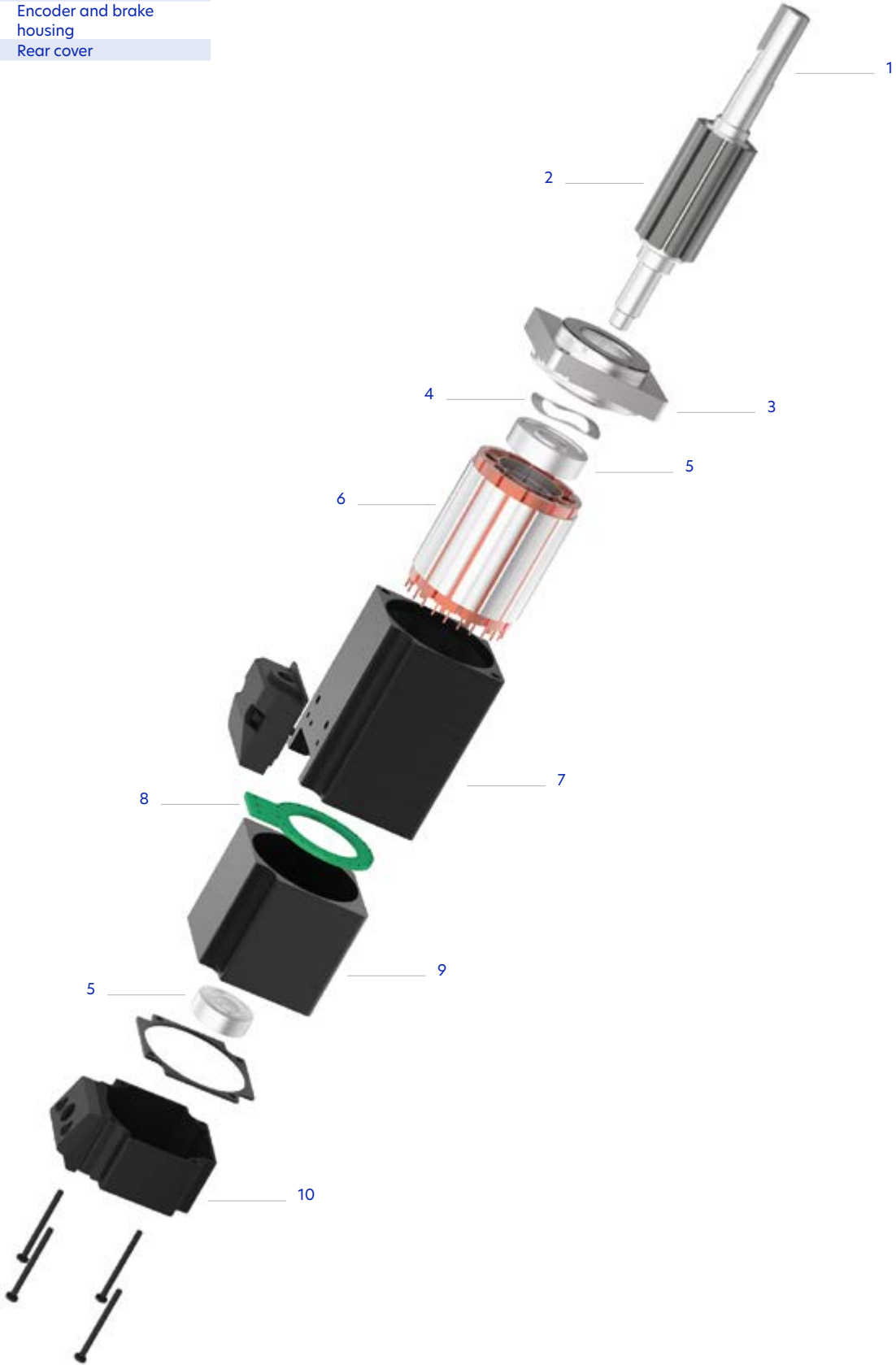
A brake, matched to the power output of the motor, is also an option on all models.

Optional brake

Our Servomotors offer high performance, optimized for your system voltage and feedback requirements, in a robust package.

Technical introduction

Composition	
1	Shaft
2	Permanent magnet
3	Flange
4	Spring (bearing preload)
5	Ball bearing
6	Stator
7	Stator housing
8	PCB
9	Encoder and brake housing
10	Rear cover





BLDC Servomotors

Low voltage

Low voltage - Brushless DC Servomotors		Torque* (Nm)
38SV - 48VDC	0,16...0,32	176
60SV - 48VDC	0,64...1,27	177
80SV - 48VDC	2,39...3,18	178
100SV - 48VDC	3,18...4,77	179
110SV - 48VDC	4,77...6,37	180
130SV - 48VDC	9,55...14,3	181

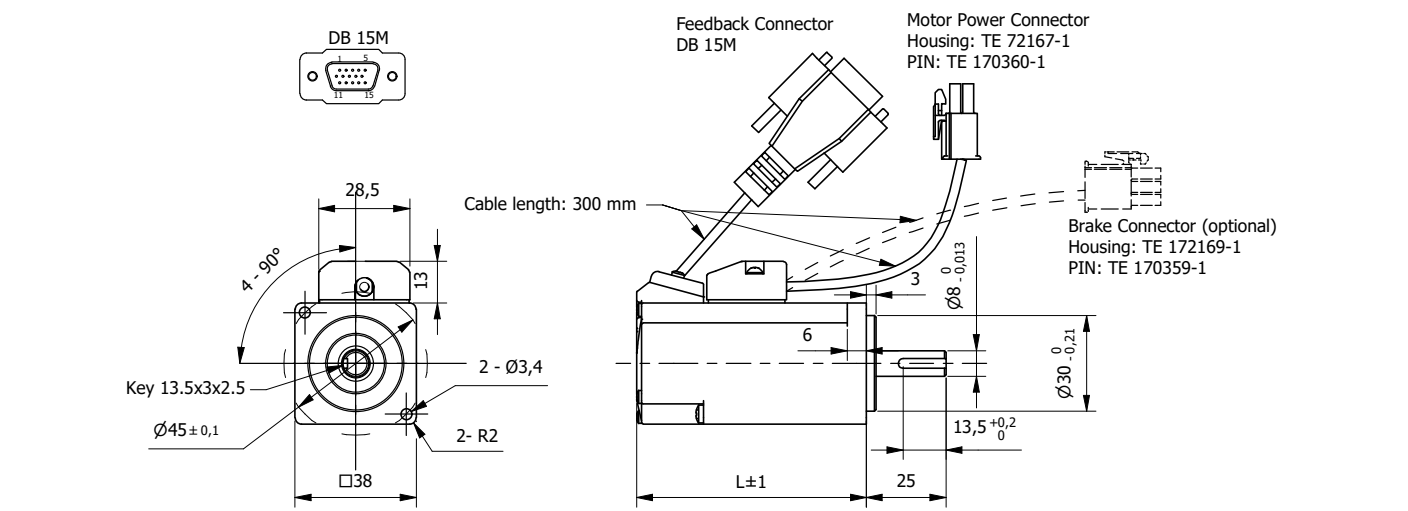
* Rated Torque

Brushless DC Servomotor 38SV-48VDC

Low voltage - IP65

38mm

0,16 to 0,32Nm



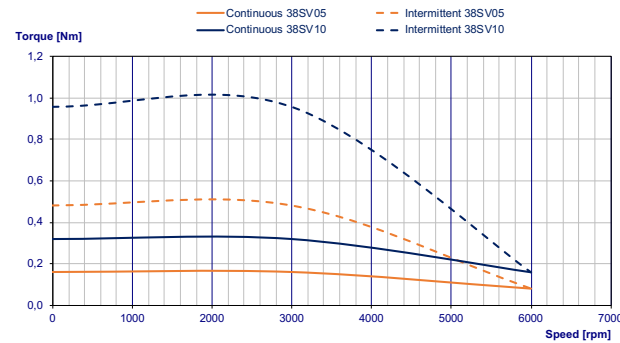
Note: optional brake

Specification				
Model	38SV05-48V-30EA1	38SV05-48V-30EA2	38SV10-48V-30EA1	38SV10-48V-30EA2
1 n° of Pole	10	10	10	10
2 n° of Phase	3	3	3	3
3 Nominal Voltage	VDC	48	48	48
4 Rated power	W	50	100	100
5 Rated Speed	RPM	3000	3000	3000
6 No-load Speed	RPM	6800 ±10%	6800 ±10%	6800 ±10%
7 Rated Torque	Nm	0,16	0,32	0,32
8 Max. Peak Torque	Nm	0,48	0,96	0,96
9 Torque Constant	Nm/A	0,083	0,083	0,083
10 Rated Current	A	2,1	4,3	4,3
11 Max. Peak Current	A	6,3	12,9	12,9
12 No-Load Current	A	0,2	0,4	0,4
13 Back EMF constant	V/kRPM	5	5	5
14 Line to Line Resistance	Ω	2,2 ±10%	0,88 ±10%	0,88 ±10%
15 Line to Line Inductance	mH	1,8 ±20%	0,78 ±20%	0,78 ±20%
16 Rotor Inertia	Kgcm2	0,024	0,05	0,05
17 Brake		24VDC - 0,35Nm		24VDC - 0,35Nm
18 Length (L)	mm	72	88	122
19 Weight	Kg	0,4	0,5	0,75

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,14 mm
Max. Radial force (14mm from flange)	69N
Max. Axial force	59N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Encoders	
Item	
Encoder Type - Standard	Optical Incremental 2500 CPR
Encoder Type - Optional	Optical Incremental: 1024-4096 CPR Magnetic Incremental: 2500 CPR Magnetic Absolute (single-turn, BiSS): 17bit, 16bit

Connection					
Pin	Color	Function	Pin	Color	Function
Feedback					
1	RD	+5V	9	WH	W+
2	BK	GND	10	GY	V+
4	BR	U+	11	YL/BK	Z-
5	BR/BK	U-	12	OR/BK	B-
6	YL	Z+	13	GN/BK	A-
7	OR	B+	14	WH/BK	W-
8	GN	A+	15	GY/BK	V-
Power					
1	YL	U	3	BK	W
2	RD	V	4	YL/GN	PE
Brake					
1	RD	Brake1	2	WH	Brake2

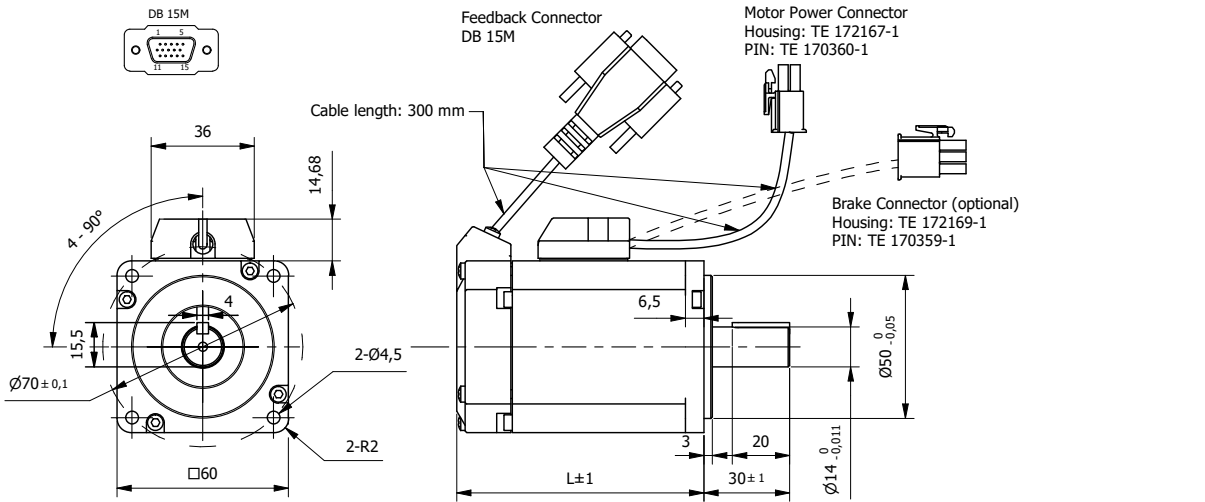


Brushless DC Servomotor 60SV-48VDC

Low voltage - IP65

60mm

0,64 to 1,27Nm



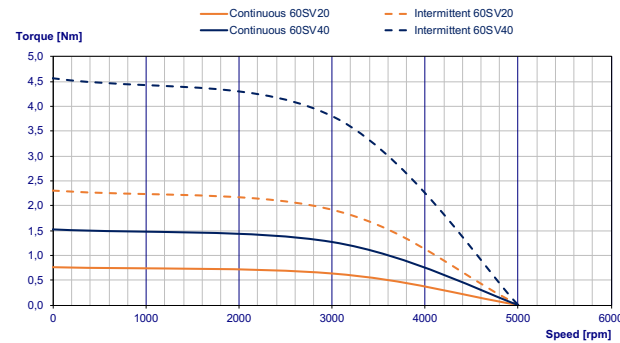
Note: optional brake

Specification				
Model	60SV20-48V-30EA1	60SV20-48V-30EA2	60SV40-48V-30EA1	60SV40-48V-30EA2
1 n° of Pole	10	10	10	10
2 n° of Phase	3	3	3	3
3 Nominal Voltage	VDC	48	48	48
4 Rated power	W	200	400	400
5 Rated Speed	RPM	3000	3000	3000
6 No-load Speed	RPM	5200 ±10%	5200 ±10%	5200 ±10%
7 Rated Torque	Nm	0,64	1,27	1,27
8 Max. Peak Torque	Nm	1,92	3,81	3,81
9 Torque Constant	Nm/A	0,107	0,107	0,107
10 Rated Current	A	6	12	12
11 Max. Peak Current	A	18	36	36
12 No-Load Current	A	0,6	<1	<1
13 Back EMF constant	V/kRPM	6,5	6,5	6,5
14 Line to Line Resistance	Ω	0,38 ±10%	0,38 ±10%	0,23 ±10%
15 Line to Line Inductance	mH	0,68 ±20%	0,68 ±20%	0,3 ±20%
16 Rotor Inertia	Kgcm2	0,15	0,25	0,25
17 Brake		24VDC - 1,5Nm		24VDC - 1,5Nm
18 Length (L)	mm	86,5	123	142,5
19 Weight	Kg	0,95	1,35	1,85

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,14 mm
Max. Radial force (20mm from flange)	245N
Max. Axial force	98N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Encoders	
Item	
Encoder Type - Standard	Optical Incremental 2500 CPR
Encoder Type - Optional	Optical Incremental: 1024-4096 CPR Magnetic Incremental: 2500 CPR Magnetic Absolute (single-turn, BiSS): 17bit, 16bit

Connection					
Pin	Color	Function	Pin	Color	Function
Feedback					
1	RD	+5V	9	WH	W+
2	BK	GND	10	GY	V+
4	BR	U+	11	YL/BK	Z-
5	BR/BK	U-	12	OR/BK	B-
6	YL	Z+	13	GN/BK	A-
7	OR	B+	14	WH/BK	W-
8	GN	A+	15	GY/BK	V-
Power					
1	YL	U	3	BK	W
2	RD	V	4	YL/GN	PE
Brake					
1	RD	Brake1	2	WH	Brake2

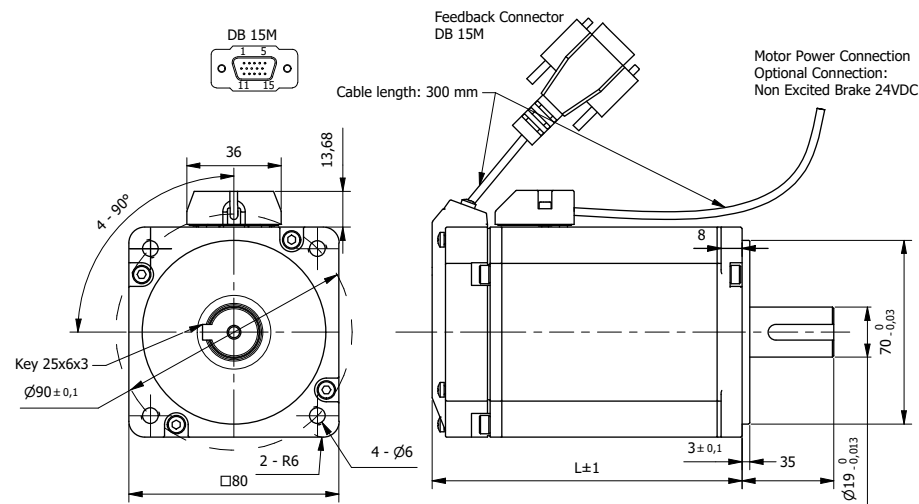


Brushless DC Servomotor 80SV-48VDC

Low voltage - IP65

80mm

2,39 to 3,18Nm



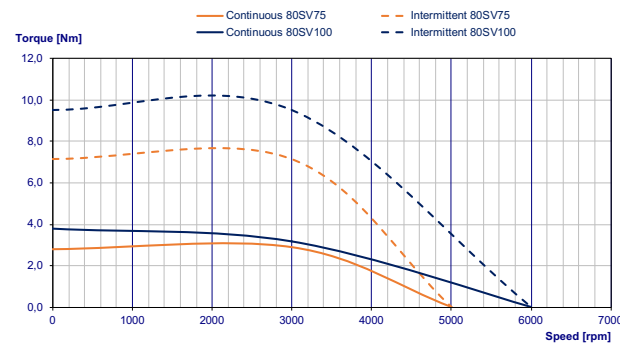
Note: optional brake

Specification				
Model	80SV75-48V-30EA1	80SV75-48V-30EA2	80SV100-48V-30EA1	80SV100-48V-30EA2
1 n° of Pole	10	10	10	10
2 n° of Phase	3	3	3	3
3 Nominal Voltage	VDC 48	48	48	48
4 Rated power	W 750	750	1000	1000
5 Rated Speed	RPM 3000	3000	3000	3000
6 No-load Speed	RPM 5000 ±10%	5000 ±10%	5000 ±10%	5000 ±10%
7 Rated Torque	Nm 2,39	2,39	3,18	3,18
8 Max. Peak Torque	Nm 7,17	7,17	9,54	9,54
9 Torque Constant	Nm/A 0,113	0,113	0,113	0,113
10 Rated Current	A 21,0	21,0	28,0	28,0
11 Max. Peak Current	A 63	63	84	84
12 No-Load Current	A 2	2	2	2
13 Back EMF constant	V/kRPM 6,8	6,8	6,8	6,8
14 Line to Line Resistance	Ω 0,064 ±10%	0,064 ±10%	0,043 ±10%	0,043 ±10%
15 Line to Line Inductance	mH 0,2 ±20%	0,2 ±20%	0,138 ±20%	0,138 ±20%
16 Rotor Inertia	Kgcm2 1,56	1,68	2,22	2,34
17 Brake		24VDC - 3,2Nm		24VDC - 3,2Nm
18 Length (L)	mm 118	155	135	171
19 Weight	Kg 2,5	3,2	3,2	3,9

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,08 mm
Max. Radial force (20mm from flange)	392N
Max. Axial force	147N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Encoders	
Item	
Encoder Type - Standard	Optical Incremental 2500 CPR
Encoder Type - Optional	Optical Incremental: 1024-4096 CPR Magnetic Incremental: 2500 CPR Magnetic Absolute (single-turn, BiSS): 17bit, 16bit

Connection					
Pin	Color	Function	Pin	Color	Function
Feedback					
1	RD	+5V	9	GY	W+
2	BK	GND	10	WH	V+
4	BR	U+	11	YL/BK	Z-
5	BR/BK	U-	12	GN/BK	B-
6	YL	Z+	13	OR/BK	A-
7	GN	B+	14	GY/BK	W-
8	OR	A+	15	WH/BK	V-
Power - connector options available					
	YL	U	BK	W	
	RD	V	YL/GN	PE	
Brake - connector options available					
	RD	+24V	WH	GND	

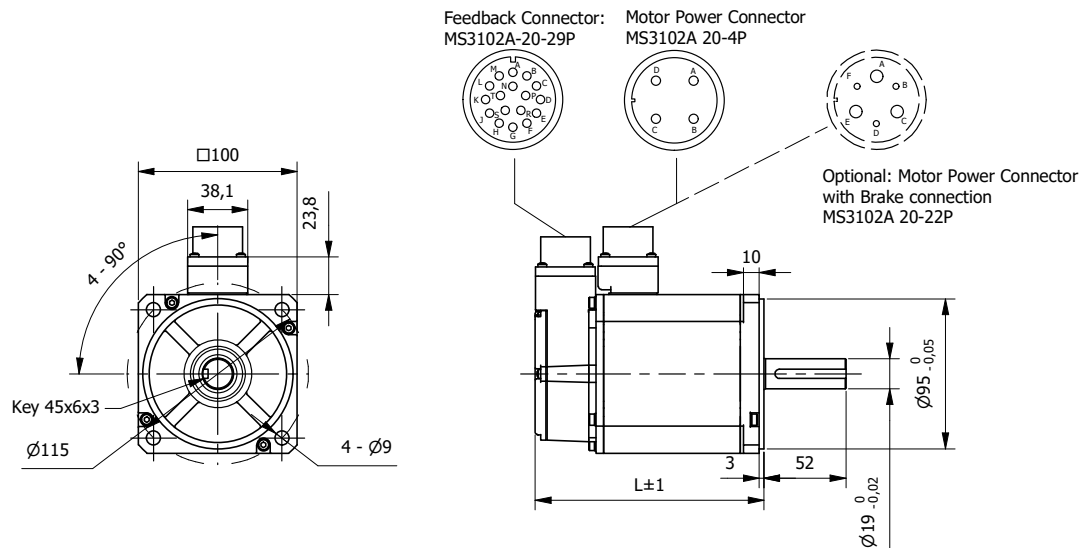


Brushless DC Servomotor 100SV-48VDC

Low voltage - IP65

100mm

3,18 to 4,77Nm

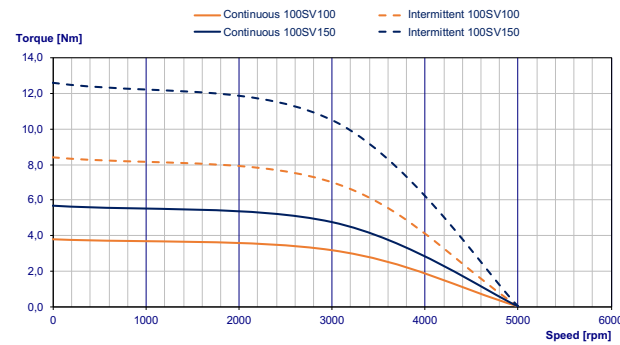


Specification				
Model	100SV100-48V-30EA1	100SV100-48V-30EA2	100SV150-48V-30EA1	100SV150-48V-30EA2
1 n° of Pole	10	10	10	10
2 n° of Phase	3	3	3	3
3 Nominal Voltage	VDC 48	48	48	48
4 Rated power	W 1000	1000	1500	1500
5 Rated Speed	RPM 3000	3000	3000	3000
6 No-load Speed	RPM 5000 ±10%	5000 ±10%	5000 ±10%	5000 ±10%
7 Rated Torque	Nm 3,18	3,18	4,77	4,77
8 Max. Peak Torque	Nm 7	7	10,5	10,5
9 Torque Constant	Nm/A 0,1	0,1	0,11	0,11
10 Rated Current	A 31,8	31,8	43,4	43,4
11 Max. Peak Current	A 70	70	95,5	95,5
12 No-Load Current	A 0,8	0,8	0,8	0,8
13 Back EMF constant	V/kRPM 6,18	6,18	6,48	6,48
14 Line to Line Resistance	Ω 0,02 ±10%	0,02 ±10%	0,015 ±10%	0,015 ±10%
15 Line to Line Inductance	mH 0,2 ±20%	0,2 ±20%	0,15 ±20%	0,15 ±20%
16 Rotor Inertia	Kgcm2 1,3	1,67	1,84	2,21
17 Brake		24VDC - 10Nm		24VDC - 10Nm
18 Length (L)	mm 142	177	164	199
19 Weight	Kg 3,73	4,73	4,7	5,7

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,08 mm
Max. Radial force (20mm from flange)	490N
Max. Axial force	196N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Encoders	
Item	
Encoder Type - Standard	Optical Incremental 2500 CPR
Encoder Type - Optional	Optical Incremental: 1024-4096 CPR Magnetic Incremental: 2500 CPR Magnetic Absolute (single-turn, BiSS): 17bit, 16bit

Connection			
Pin	Function	Pin	Function
Feedback			
A	+5V	J	U+
B	GND	K	U-
C	A+	L	V+
D	A-	M	V-
E	B+	N	W+
F	B-	P	W-
G	Z+	R	PE
H	Z-		
Power			
A	U	B	V
C	W	D	GND
Optional: Power & Brake			
A	U	B	Brake 1
C	V	D	Brake 2
E	W		

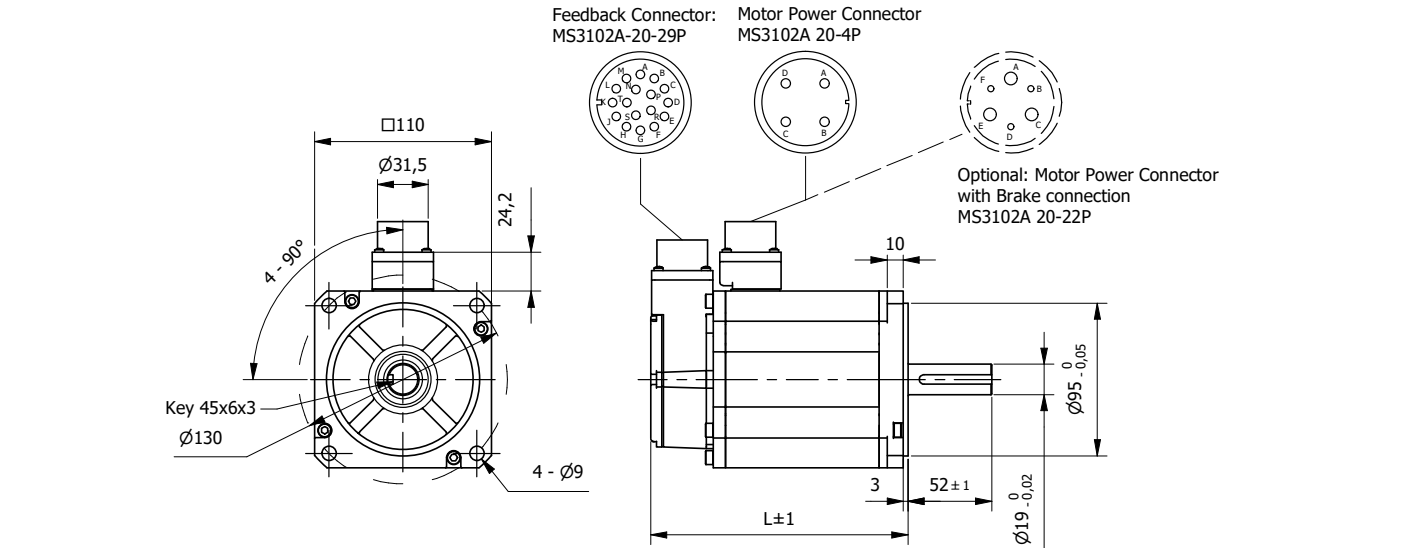


Brushless DC Servomotor 110SV-48VDC

Low voltage - IP65

□ 110mm

4,77 to 6,37Nm



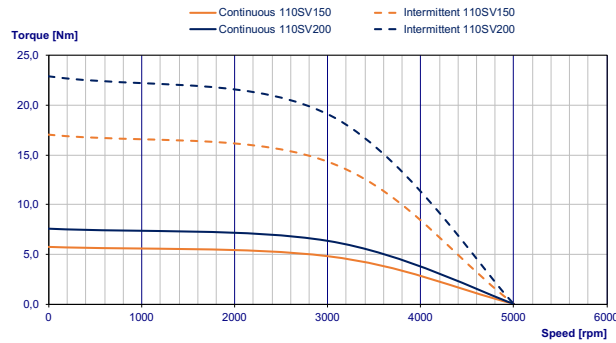
Note: optional brake

Specification				
Model	110SV150-48V-30EA1	110SV150-48V-30EA2	110SV200-48V-30EA1	110SV200-48V-30EA2
1 n° of Pole	10	10	10	10
2 n° of Phase	3	3	3	3
3 Nominal Voltage	VDC 48	48	48	48
4 Rated power	W 1500	1500	2000	2000
5 Rated Speed	RPM 3000	3000	3000	3000
6 No-load Speed	RPM 5000 ±10%	5000 ±10%	5000 ±10%	5000 ±10%
7 Rated Torque	Nm 4,77	4,77	6,37	6,37
8 Max. Peak Torque	Nm 14,3	14,3	19,1	19,1
9 Torque Constant	Nm/A 0,11	0,11	0,11	0,11
10 Rated Current	A 43,0	43,0	58,0	58,0
11 Max. Peak Current	A 130	130	174	174
12 No-Load Current	A 0,8	0,8	0,8	0,8
13 Back EMF constant	V/kRPM 6,35	6,35	6,63	6,63
14 Line to Line Resistance	Ω 0,01 ±10%	0,01 ±10%	0,009 ±10%	0,009 ±10%
15 Line to Line Inductance	mH 0,16 ±20%	0,16 ±20%	0,145 ±20%	0,145 ±20%
16 Rotor Inertia	Kgcm2 3,1	3,47	4,1	4,47
17 Brake		24VDC - 10Nm		24VDC - 10Nm
18 Length (L)	mm 156,5	192	173,5	209
19 Weight	Kg 5,2	6,2	6,9	7,9

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,08 mm
Max. Radial force (20mm from flange)	630N
Max. Axial force	315N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Encoders	
Item	
Encoder Type - Standard	Optical Incremental 2500 CPR
Encoder Type - Optional	Optical Incremental: 1024-4096 CPR Magnetic Incremental: 2500 CPR Magnetic Absolute (single-turn, BiSS): 17bit, 16bit

Connection			
Pin	Function	Pin	Function
Feedback			
A	+5V	J	U+
B	GND	K	U-
C	A+	L	V+
D	A-	M	V-
E	B+	N	W+
F	B-	P	W-
G	Z+	R	PE
H	Z-		
Power			
A	U	B	V
C	W	D	GND
Optional: Power & Brake			
A	U	B	Brake 1
C	V	D	Brake 2
E	W		

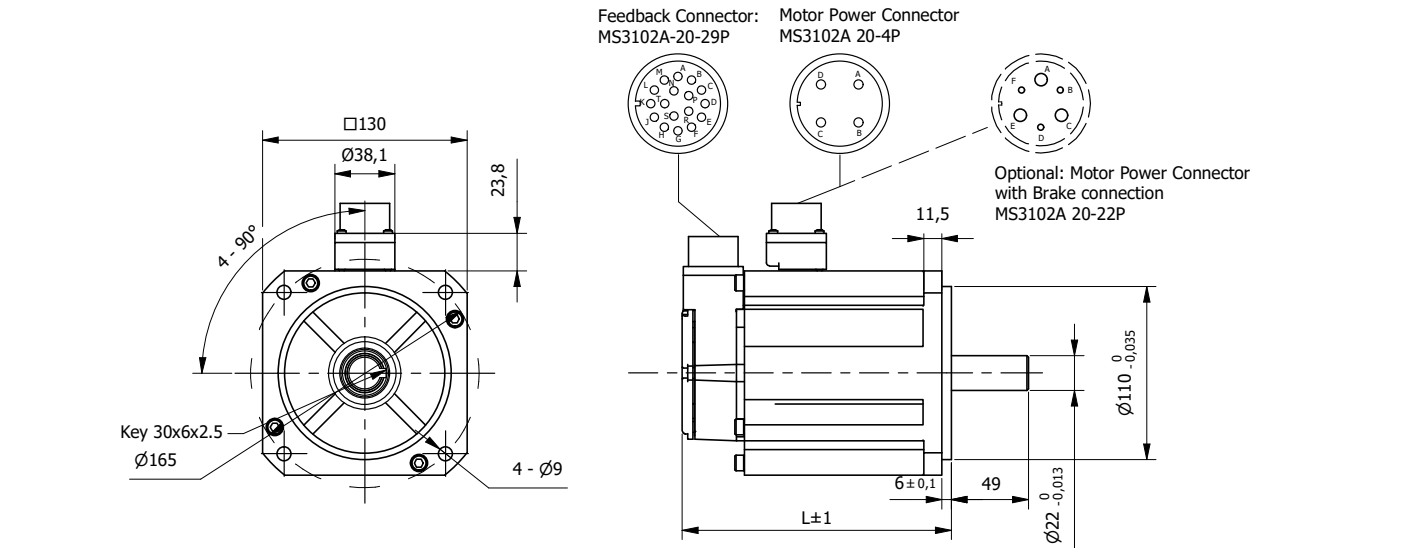


Brushless DC Servomotor 130SV-48VDC

Low voltage - IP65

□ 130mm

9,55 to 14,3Nm



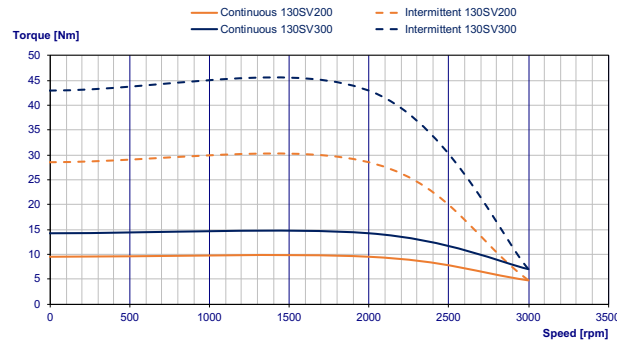
Note: optional brake

Specification				
Model	130SV200-48V-30EA1	130SV200-48V-30EA2	130SV300-48V-30EA1	130SV300-48V-30EA2
1 n° of Pole	10	10	10	10
2 n° of Phase	3	3	3	3
3 Nominal Voltage	VDC 48	48	48	48
4 Rated power	W 2000	2000	3000	3000
5 Rated Speed	RPM 2000	2000	2000	2000
6 No-load Speed	RPM 3000 ±10%	3000 ±10%	3000 ±10%	3000 ±10%
7 Rated Torque	Nm 9,55	9,55	14,3	14,3
8 Max. Peak Torque	Nm 28,65	28,65	42,9	42,9
9 Torque Constant	Nm/A 0,2	0,2	0,2	0,2
10 Rated Current	A 52,9	52,9	79,3	79,3
11 Max. Peak Current	A 158,7	158,7	237,9	237,9
12 No-Load Current	A <6	<6	<8	<8
13 Back EMF constant	V/kRPM 12	12	12	12
14 Line to Line Resistance	Ω 0,025 ±10%	0,025 ±10%	0,016 ±10%	0,016 ±10%
15 Line to Line Inductance	mH 0,14 ±20%	0,14 ±20%	0,1 ±20%	0,1 ±20%
16 Rotor Inertia	Kgcm2 14	15,2	19,9	20,2
17 Brake		24VDC - 16Nm		24VDC - 16Nm
18 Length (L)	mm 165	193	193	221
19 Weight	Kg 7,5	10	12,7	15,2

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,12 mm
Max. Radial force (30mm from flange)	490N
Max. Axial force	196N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Encoders	
Item	
Encoder Type - Standard	Optical Incremental 2500 CPR
Encoder Type - Optional	Optical Incremental: 1024-4096 CPR Magnetic Incremental: 2500 CPR Magnetic Absolute (single-turn, BiSS): 17bit, 16bit

Connection			
Pin	Function	Pin	Function
Feedback			
A	+5V	J	U+
B	GND	K	U-
C	A+	L	V+
D	A-	M	V-
E	B+	N	W+
F	B-	P	W-
G	Z+	R	PE
H	Z-		
Power			
A	U	B	V
C	W	D	GND
Optional: Power & Brake			
A	U	B	Brake 1
C	V	D	Brake 2
E	W		





BLAC Servomotors

Medium voltage

Medium voltage - Brushless AC Servomotors		Torque* (Nm)
38SV - 220VAC	0,16...0,32	184
60SV - 220VAC	0,64...1,27	185
80SV - 220VAC	2,39...3,18	186
100SV - 220VAC	3,18...4,77	187
110SV - 220VAC	4,77...6,37	188
130SV - 220VAC	9,55...14,3	189

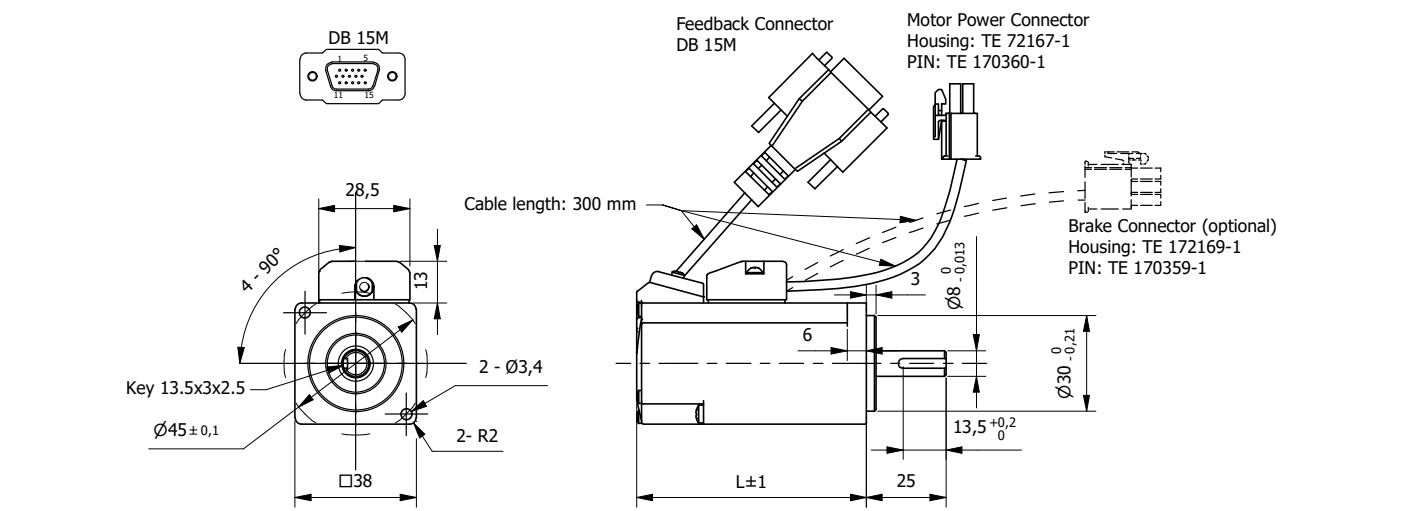
* Rated Torque

Brushless AC Servomotor 38SV-220VAC

Medium voltage - IP65

38mm

0,16 to 0,32Nm



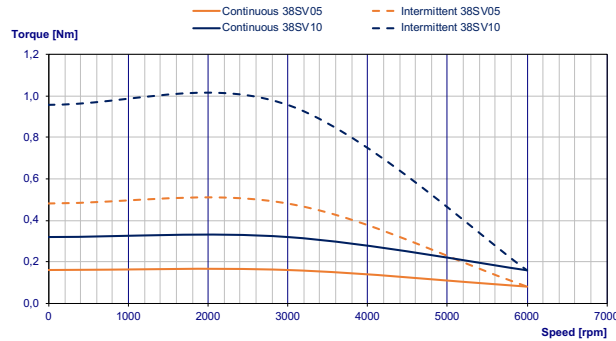
Note: optional brake

Specification				
Model	38SV05-220V-30EA1	38SV05-220V-30EA2	38SV10-220V-30EA1	38SV10-220V-30EA2
1 n° of Pole	10	10	10	10
2 n° of Phase	3	3	3	3
3 Nominal Voltage	VAC	220	220	220
4 Rated power	W	50	100	100
5 Rated Speed	RPM	3000	3000	3000
6 No-load Speed	RPM	10500 ±10%	10500 ±10%	10500 ±10%
7 Rated Torque	Nm	0,16	0,16	0,32
8 Max. Peak Torque	Nm	0,48	0,48	0,96
9 Torque Constant	Nm/A	0,032	0,032	0,034
10 Rated Current	A	0,5	0,5	1,0
11 Max. Peak Current	A	1,5	1,5	3
12 No-Load Current	A	0,1	0,1	0,1
13 Back EMF constant	V/kRPM	21	21	21
14 Line to Line Resistance	Ω	33 ±10%	33 ±10%	17,5 ±10%
15 Line to Line Inductance	mH	24 ±20%	24 ±20%	12,4 ±20%
16 Rotor Inertia	Kgcm2	0,024	0,034	0,04
17 Brake		24VDC - 0,35Nm		24VDC - 0,35Nm
18 Length (L)	mm	72	106	88
19 Weight	Kg	0,4	0,65	0,5

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,14 mm
Max. Radial force (14mm from flange)	69N
Max. Axial force	59N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Encoders	
Item	
Encoder Type - Standard	Optical Incremental 2500 CPR
Encoder Type - Optional	Optical Incremental: 1024-4096 CPR Magnetic Incremental: 2500 CPR Magnetic Absolute (single-turn, BiSS): 17bit, 16bit

Connection					
Pin	Color	Function	Pin	Color	Function
Feedback					
1	RD	+5V	9	WH	W+
2	BK	GND	10	GY	V+
4	BR	U+	11	YL/BK	Z-
5	BR/BK	U-	12	OR/BK	B-
6	YL	Z+	13	GN/BK	A-
7	OR	B+	14	WH/BK	W-
8	GN	A+	15	GY/BK	V-
Power					
1	YL	U	3	BK	W
2	RD	V	4	YL/GN	PE
Brake					
1	RD	Brake1	2	WH	Brake2

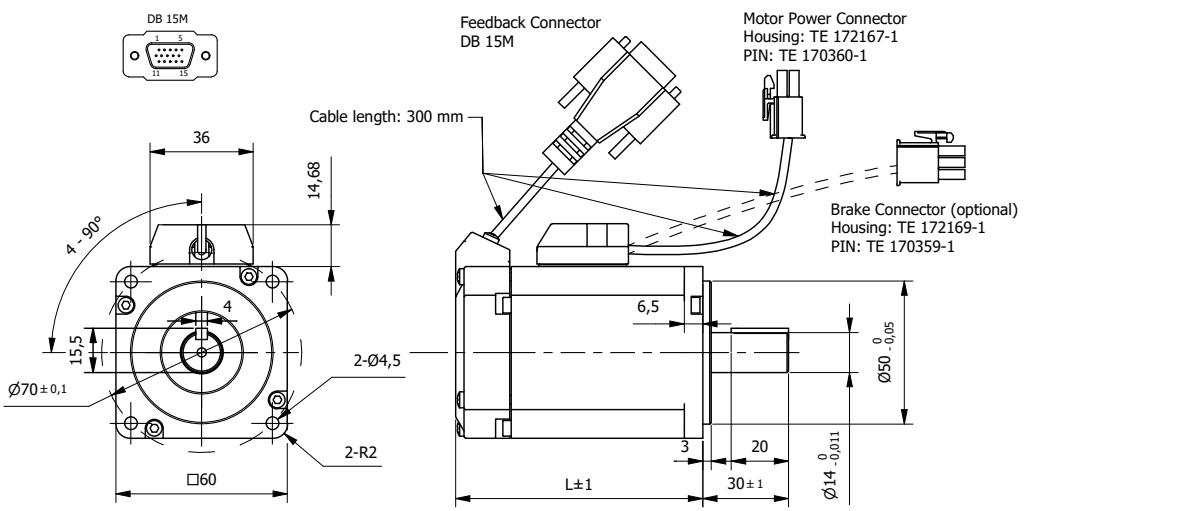


Brushless AC Servomotor 60SV-220VAC

Medium voltage - IP65

60mm

0,64 to 1,27Nm



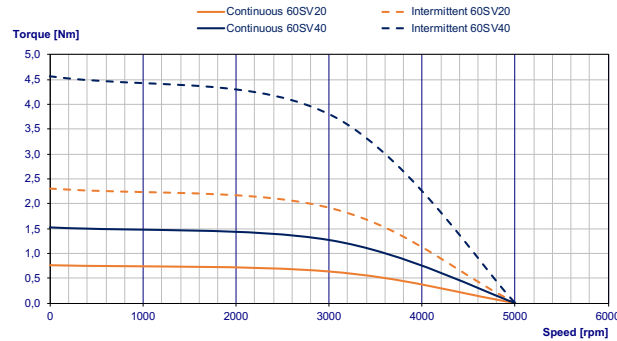
Note: optional brake

Specification				
Model	60SV20-220V-30EA1	60SV20-220V-30EA2	60SV40-220V-30EA1	60SV40-220V-30EA2
1 n° of Pole	10	10	10	10
2 n° of Phase	3	3	3	3
3 Nominal Voltage	VAC	220	220	220
4 Rated power	W	200	200	400
5 Rated Speed	RPM	3000	3000	3000
6 No-load Speed	RPM	6400 ±10%	6400 ±10%	6900 ±10%
7 Rated Torque	Nm	0,64	0,64	1,27
8 Max. Peak Torque	Nm	1,92	1,92	3,81
9 Torque Constant	Nm/A	0,53	0,53	0,53
10 Rated Current	A	1	1	2,4
11 Max. Peak Current	A	3,6	3,6	7,2
12 No-Load Current	A	0,6	0,6	0,3
13 Back EMF constant	V/kRPM	32	32	32
14 Line to Line Resistance	Ω	9,35 ±10%	9,35 ±10%	3,46 ±10%
15 Line to Line Inductance	mH	17 ±20%	17 ±20%	7,14 ±20%
16 Rotor Inertia	Kgcm2	0,15	0,15	0,25
17 Brake		24VDC - 1,5Nm		24VDC - 1,5Nm
18 Length (L)	mm	79,5	116	99
19 Weight	Kg	0,9	1,3	1,3

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,14 mm
Max. Radial force (20mm from flange)	245N
Max. Axial force	98N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Encoders	
Item	
Encoder Type - Standard	Optical Incremental 2500 CPR
Encoder Type - Optional	Optical Incremental: 1024-4096 CPR Magnetic Incremental: 2500 CPR Magnetic Absolute (single-turn, BiSS): 17bit, 16bit

Connection					
Pin	Color	Function	Pin	Color	Function
Feedback					
1	RD	+5V	9	WH	W+
2	BK	GND	10	GY	V+
4	BR	U+	11	YL/BK	Z-
5	BR/BK	U-	12	OR/BK	B-
6	YL	Z+	13	GN/BK	A-
7	OR	B+	14	WH/BK	W-
8	GN	A+	15	GY/BK	V-
Power					
1	YL	U	3	BK	W
2	RD	V	4	YL/GN	PE
Brake					
1	RD	Brake1	2	WH	Brake2

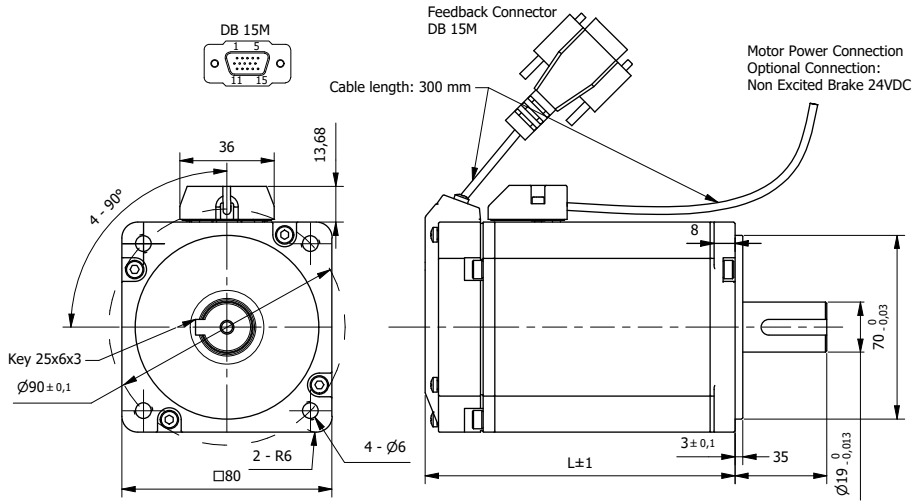


Brushless AC Servomotor 80SV-220VAC

Medium voltage - IP65

80mm

2,39 to 3,18Nm



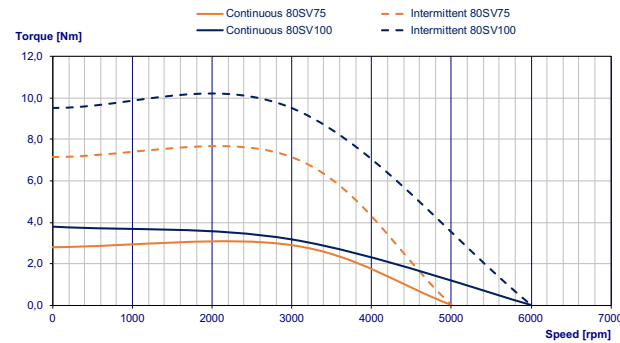
Note: optional brake

Specification				
Model	80SV75-220V-30EA1	80SV75-220V-30EA2	80SV100-220V-30EA1	80SV100-220V-30EA2
1 n° of Pole	10	10	10	10
2 n° of Phase	3	3	3	3
3 Nominal Voltage	VAC	220	220	220
4 Rated power	W	750	1000	1000
5 Rated Speed	RPM	3000	3000	3000
6 No-load Speed	RPM	6000 ±10%	6000 ±10%	6000 ±10%
7 Rated Torque	Nm	2,39	3,18	3,18
8 Max. Peak Torque	Nm	7,17	9,54	9,54
9 Torque Constant	Nm/A	0,6	0,6	0,6
10 Rated Current	A	4,4	5,9	5,9
11 Max. Peak Current	A	13,2	17,9	17,9
12 No-Load Current	A	0,6	0,7	0,7
13 Back EMF constant	V/kRPM	36	36	36
14 Line to Line Resistance	Ω	1,77 ±10%	0,885 ±10%	0,885 ±10%
15 Line to Line Inductance	mH	5,6 ±20%	3,67 ±20%	3,67 ±20%
16 Rotor Inertia	Kgcm2	1,56	2,22	2,3
17 Brake		24VDC - 3,2Nm		24VDC - 3,2Nm
18 Length (L)	mm	112	129	165
19 Weight	Kg	2,5	3,1	3,2

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,08 mm
Max. Radial force (20mm from flange)	392N
Max. Axial force	147N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Encoders	
Item	
Encoder Type - Standard	Optical Incremental 2500 CPR
Encoder Type - Optional	Optical Incremental: 1024-4096 CPR Magnetic Incremental: 2500 CPR Magnetic Absolute (single-turn, BiSS): 17bit, 16bit

Connection					
Pin	Color	Function	Pin	Color	Function
Feedback					
1	RD	+5V	9	GY	W+
2	BK	GND	10	WH	V+
4	BR	U+	11	YL/BK	Z-
5	BR/BK	U-	12	GN/BK	B-
6	YL	Z+	13	OR/BK	A-
7	GN	B+	14	GY/BK	W-
8	OR	A+	15	WH/BK	V-
Power - connector options available					
YL	U		BK	W	
RD	V		YL/GN	PE	
Brake - connector options available					
RD	+24V		WH	GND	

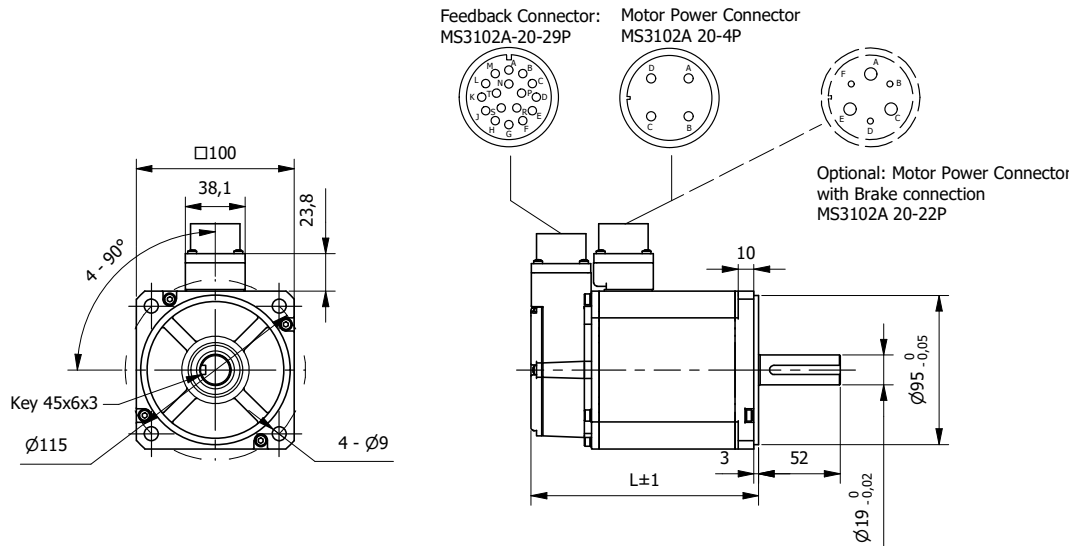


Brushless AC Servomotor 100SV-220VAC

Medium voltage - IP65

100mm

3,18 to 4,77Nm



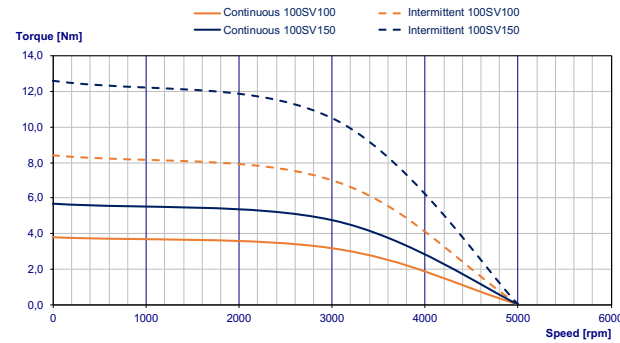
Note: optional brake

Specification				
Model	100SV100-220V-30EA1	100SV100-220V-30EA2	100SV150-220V-30EA1	100SV150-220V-30EA2
1 n° of Pole	10	10	10	10
2 n° of Phase	3	3	3	3
3 Nominal Voltage	VAC	220	220	220
4 Rated power	W	1000	1500	1500
5 Rated Speed	RPM	3000	3000	3000
6 No-load Speed	RPM	5000 ±10%	5000 ±10%	5000 ±10%
7 Rated Torque	Nm	3,18	4,77	4,77
8 Max. Peak Torque	Nm	7	10,5	10,5
9 Torque Constant	Nm/A	0,63	0,63	0,63
10 Rated Current	A	5,0	7,5	7,5
11 Max. Peak Current	A	11	16,7	16,7
12 No-Load Current	A	0,8	0,8	0,8
13 Back EMF constant	V/kRPM	38	38	38
14 Line to Line Resistance	Ω	0,82 ±10%	0,54 ±10%	0,54 ±10%
15 Line to Line Inductance	mH	7,4 ±20%	5,2±20%	5,2±20%
16 Rotor Inertia	Kgcm2	1,3	1,84	2,21
17 Brake		24VDC - 10Nm		24VDC - 10Nm
18 Length (L)	mm	137	159	194
19 Weight	Kg	3,73	4,7	5,7

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,08 mm
Max. Radial force (20mm from flange)	490N
Max. Axial force	196N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Encoders	
Item	
Encoder Type - Standard	Optical Incremental 2500 CPR
Encoder Type - Optional	Optical Incremental: 1024-4096 CPR Magnetic Incremental: 2500 CPR Magnetic Absolute (single-turn, BiSS): 17bit, 16bit

Connection			
Pin	Function	Pin	Function
Feedback			
A	+5V	J	U+
B	GND	K	U-
C	A+	L	V+
D	A-	M	V-
E	B+	N	W+
F	B-	P	W-
G	Z+	R	PE
H	Z-		
Power			
A	U	B	V
C	W	D	GND
Optional: Power & Brake			
A	U	B	Brake 1
C	V	D	Brake 2
E	W		

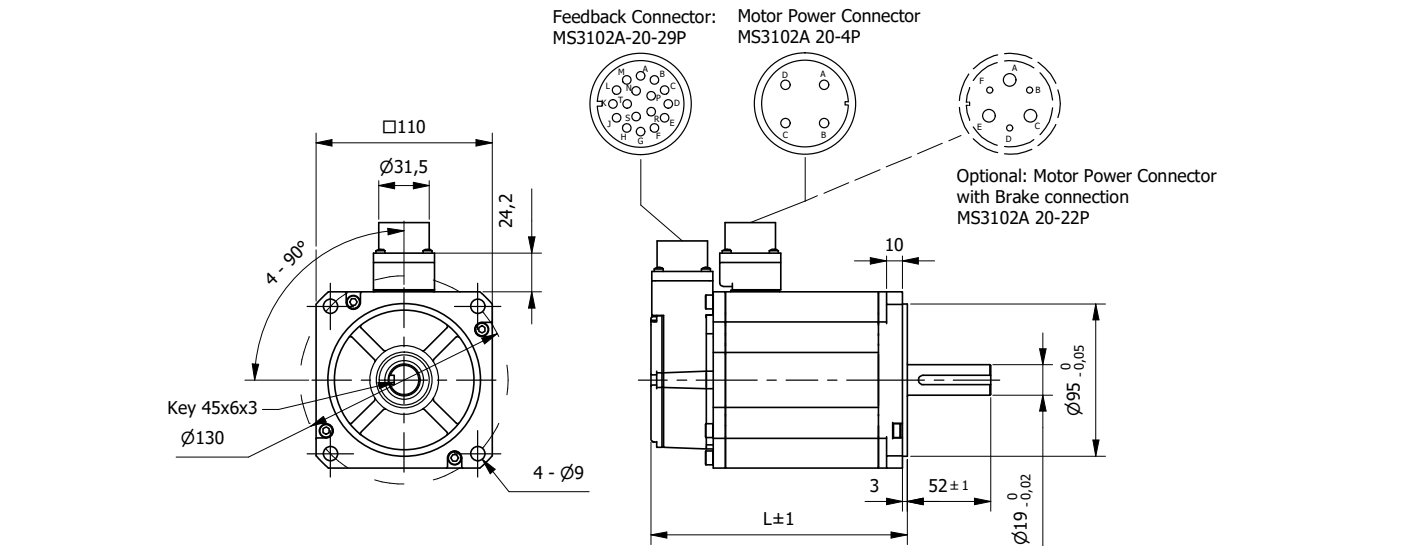


Brushless AC Servomotor 110SV-220VAC

Medium voltage - IP65

□ 110mm

4,77 to 6,37Nm



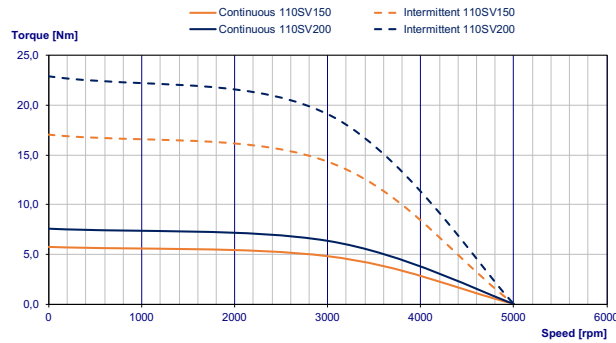
Note: optional brake

Specification		110SV150-220V-30EA1	110SV150-220V-30EA2	110SV200-220V-30EA1	110SV200-220V-30EA2
1	n° of Pole	10	10	10	10
2	n° of Phase	3	3	3	3
3	Nominal Voltage	VAC	220	220	220
4	Rated power	W	1500	1500	2000
5	Rated Speed	RPM	3000	3000	3000
6	No-load Speed	RPM	5000 ±10%	5000 ±10%	5000 ±10%
7	Rated Torque	Nm	4,77	4,77	6,37
8	Max. Peak Torque	Nm	14,3	14,3	19,1
9	Torque Constant	Nm/A	0,63	0,63	0,63
10	Rated Current	A	7,6	7,6	10,1
11	Max. Peak Current	A	22,8	22,8	30,3
12	No-Load Current	A	0,8	0,8	0,8
13	Back EMF constant	V/kRPM	38,1	38,1	38,1
14	Line to Line Resistance	Ω	0,36 ±10%	0,36 ±10%	0,29 ±10%
15	Line to Line Inductance	mH	5,6 ±20%	5,6 ±20%	4,8 ±20%
16	Rotor Inertia	Kgcm2	3,1	3,47	4,1
17	Brake		24VDC - 10Nm		24VDC - 10Nm
18	Length (L)	mm	151,5	187	204
19	Weight	Kg	5	6	7,7

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,08 mm
Max. Radial force (20mm from flange)	630N
Max. Axial force	315N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Encoders	
Item	
Encoder Type - Standard	Optical Incremental 2500 CPR
Encoder Type - Optional	Optical Incremental: 1024-4096 CPR Magnetic Incremental: 2500 CPR Magnetic Absolute (single-turn, BiSS): 17bit, 16bit

Connection			
Pin	Function	Pin	Function
Feedback			
A	+5V	J	U+
B	GND	K	U-
C	A+	L	V+
D	A-	M	V-
E	B+	N	W+
F	B-	P	W-
G	Z+	R	PE
H	Z-		
Power			
A	U	B	V
C	W	D	GND
Optional: Power & Brake			
A	U	B	Brake 1
C	V	D	Brake 2
E	W		

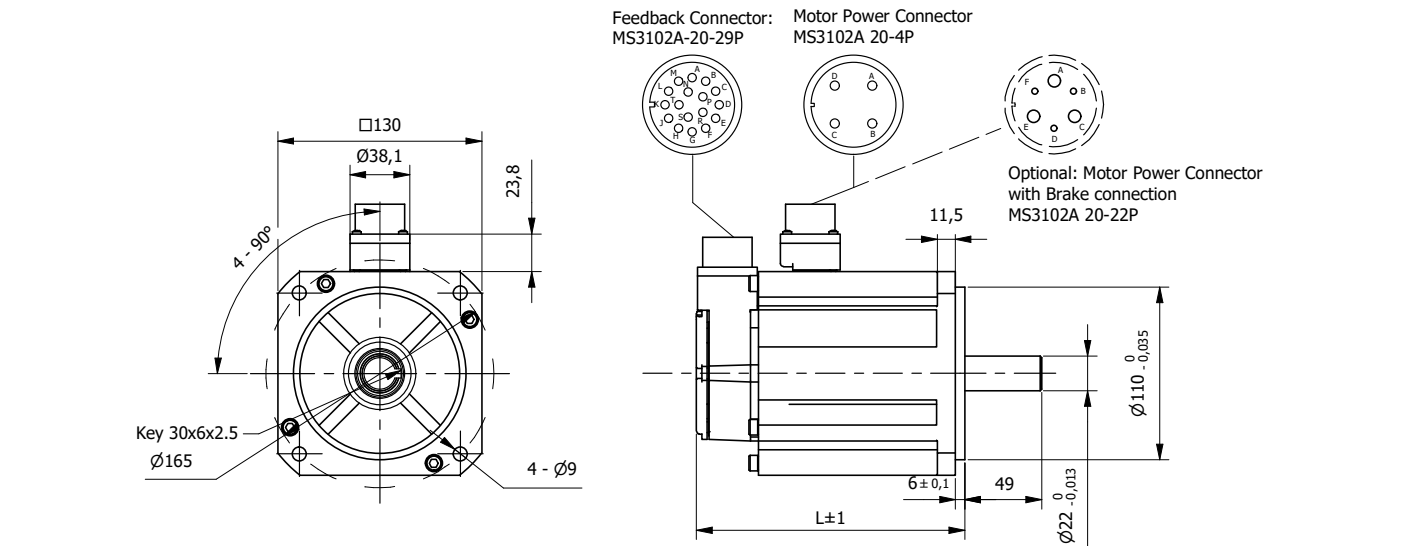


Brushless AC Servomotor 130SV-220VAC

Medium voltage - IP65

□ 130mm

9,55 to 14,3Nm



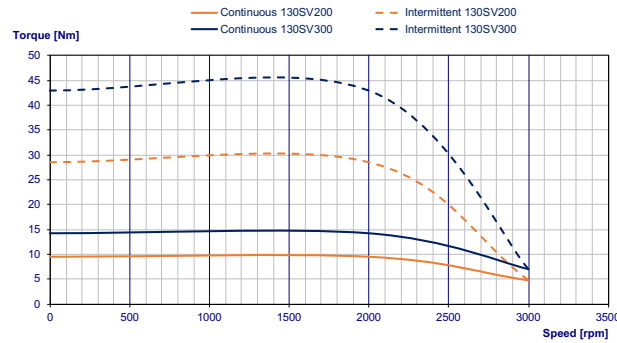
Note: optional brake

Specification		130SV200-220V-30EA1	130SV200-220V-30EA2	130SV300-220V-30EA1	130SV300-220V-30EA2
1	n° of Pole	10	10	10	10
2	n° of Phase	3	3	3	3
3	Nominal Voltage	VAC	220	220	220
4	Rated power	W	2000	2000	3000
5	Rated Speed	RPM	2000	2000	2000
6	No-load Speed	RPM	3200 ±10%	3200 ±10%	3200 ±10%
7	Rated Torque	Nm	9,55	9,55	14,3
8	Max. Peak Torque	Nm	28,65	28,65	42,9
9	Torque Constant	Nm/A	1,12	1,12	1,12
10	Rated Current	A	9,3	9,3	14,0
11	Max. Peak Current	A	27,9	27,9	42
12	No-Load Current	A	<1	<1	<1,4
13	Back EMF constant	V/kRPM	68	68	68
14	Line to Line Resistance	Ω	0,8 ±10%	0,8 ±10%	0,5 ±10%
15	Line to Line Inductance	mH	4,2 ±20%	4,2 ±20%	3 ±20%
16	Rotor Inertia	Kgcm2	14	15,2	19,9
17	Brake		24VDC - 16Nm		24VDC - 16Nm
18	Length (L)	mm	150	178	206
19	Weight	Kg	7	9,5	11,7

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,12 mm
Max. Radial force (30mm from flange)	490N
Max. Axial force	196N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Encoders	
Item	
Encoder Type - Standard	Optical Incremental 2500 CPR
Encoder Type - Optional	Optical Incremental: 1024-4096 CPR Magnetic Incremental: 2500 CPR Magnetic Absolute (single-turn, BiSS): 17bit, 16bit

Connection			
Pin	Function	Pin	Function
Feedback			
A	+5V	J	U+
B	GND	K	U-
C	A+	L	V+
D	A-	M	V-
E	B+	N	W+
F	B-	P	W-
G	Z+	R	PE
H	Z-		
Power			
A	U	B	V
C	W	D	GND
Optional: Power & Brake			
A	U	B	Brake 1
C	V	D	Brake 2
E	W		



Motors with Controller



Motors with integrated Controller

Technical introduction		196
Brushless DC motors with Speed Controller		Torque* (Nm) 199
16EC33P-2W	0,002	200
36CBL-IE	0,016...0,08	201
42BL-IE - square	0,063...0,25	202
42CBL60-IE	0,068	203
42RBL60-IE	0,08	204
57BL-IE	0,11...0,33	205
Brushless DC motors with Motion Controller		Torque* (Nm) 207
IBS042	0,062...0,25	208
IBS057	0,055...0,44	209
IBI057- IP65	0,055...0,44	210
IBS080	0,8...1,13	211
IBI080 - IP65	0,8...1,13	212
Brushless Servo motors with Motion Controller		Torque* (Nm) 215
IVI060 - IP65	0,64...1,27	216
IVI080 - IP65	2,39...3,18	217
Stepper motors with Motion Controller		Torque** (Nm) 219
ISS042	0,22...0,8	220
ISI042 - IP65	0,22...0,8	221
ISS057	0,55...1,89	222
ISI057-IP65	0,55...1,89	223
ISS060	1...3,1	224
ISI060-IP65	1...3,1	225
ISS086	2,2...12	226
ISI086 - IP65	2,2...12	227

* Rated Torque
** Holding Torque

Term	
N. of pole	Areas of a motor where a magnetic pole is generated either by a permanent magnet or by passing current through the coils of a winding.
N. of phase	A group of electrically connected coils.
Rated Voltage	The voltage at which rated torque is generated with the motor at ambient temperature.
Operating Voltage	Describes the range of the permissible supply voltage.
Rated Power	Maximum amount of power that the motor is designed to handle under specific operating conditions without overheating or suffering damage.
Rated Speed	The approximate motor speed at its rated torque point.
Rated Torque	The maximum torque, at rated speed, the motor can produce on a continuous basis, without exceeding the thermal rating of the motor.
Max. Peak Torque	The maximum torque a motor can produce for short periods of time, before irreversible demagnetization of the motor's magnets occurs.
Torque constant	The ratio of a motor's output torque to the motor's input power
Holding Torque	The torque generated by the motor at nominal current.
Rated Current	The approximate amount of current the motor will draw at its rated torque point.
Max. Peak Current	The current drawn by the motor when delivering peak torque
No-Load Current	The current consumption of the motor at rated voltage and under no-load conditions. This value varies proportionally to speed and is influenced by temperature
Current/Phase	The current supplied to the motor phases that will not exceed, at an ambient temperature of 20°C, the thermal limits of the motor.
Resistance/Phase	Winding resistance per phase. Tolerance +/- 12%, steady state.
Inductance/Phase	Winding inductance per phase measured at 1kHz.
Line to Line resistance	This is the phase resistance measured for the completed motor at room temperature. It includes solder, wire and (if present) connector resistances. In motors with very low resistance, the line to line resistance may differ significantly from the internal resistance.
Line to Line Inductance	This is the motor phase inductance measured with an inductance meter at 1000 Hz.
Rotor Inertia	Is the mass moment of inertia of the rotor, based on the axis of rotation.
Back EMF constant	The back (or counter) electromotive force (emf) E is the voltage generated by a running motor that acts to counter the supplied voltage.
Length	Total motor length.
Weight	Total motor mass.
Hall Effect angle	Phase angle at which hall sensors are positioned from each other.
Step Angle	Number of angular degrees the motor moves per full-step.
Step Angle accuracy	The percentage position error per full step, at no load and nominal current. This error is not cumulative between steps.
Shaft run out	Is the geometric tolerance that specifies the run-out fluctuation of a target's feature when the target (part) is rotated on an axis (specified straight line).
Insulation class	The electrical insulation system for wires and other wire-wound electrical components is divided into different classes by temperature and temperature rise. The electrical insulation system is sometimes referred to as insulation class or thermal classification.
Protection Class	IP (or "Ingress Protection") ratings are defined in international standard EN 60529 (British BS EN 60529:1992, European IEC 60509:1989). They are used to define levels of sealing effectiveness of electrical enclosures against intrusion from foreign bodies (tools, dirt etc) and moisture.
Working Temperature	Temperature range allowed for correct operation.
Humidity	Humidity range allowed for correct operation.
Radial Play	The shaft displacement perpendicular to the shaft due to a side force applied perpendicular to the shaft axis.
Axial Play	Axial shaft displacement occurring during a reversal of an axial force on the shaft.
Max. Radial force	Maximum force that can be applied to the shaft in the radial direction (any direction perpendicular to the motor shaft axis).
Max. Axial force	Maximum force that can be applied to the shaft in the axial direction (in the same axis as or parallel to the motor shaft axis).
Dielectric strength	A dielectric test (also known as hipot or high potential test) is performed on all motors under 500V phases to the housing and during 5 seconds after voltage ramp up. Maximum allowed leakage is 1mA
Insulation resistance	The measurement of insulation resistance is carried out by means of a megohmmeter – high resistance range ohmmeter. DC voltage is applied between the windings and the ground of the motor.

Glossary

Product families
BLDC motors with Speed Controller
BLDC motors with Motion Controller
Servomotors with Motion Controller
Stepper motors with Motion Controller

Delta Line's motors with integrated drive and control electronics offer machine builders unprecedented design flexibility due to their compact size, high efficiency, and exceptional reliability. Available as Brushless DC, Servo, and Stepper motors, these advanced motors eliminate the need for separate drives and external controllers, thereby removing the requirement for motor power and feedback cables. This significant reduction in cabling simplifies integration, enhances efficiency, and improves both reliability and electrical noise reduction. As a result, encoder signals remain "clean" and free from electromagnetic interference, providing a complete motor solution in a single, easy-to-integrate device.

The compact integration of the speed controller reduces space requirements and simplifies installation and start-up, opening a wide range of application areas. The integrated electronics facilitate speed control by means of a PID controller. The direction of rotation can be changed via a separate switching input.

BLDC motor with integrated Speed Controller

Our slotted BLDC motors with integrated controllers combine the compactness of a standard motor with the advanced features of our drives. These motors come equipped with digital inputs and outputs, an analog input, and support for multiple Fieldbus protocols, including CANopen, Modbus RTU, EtherCAT, Modbus TCP/IP, Profinet, Powerlink, and EtherNet/IP. For optimal performance, a fully integrated single-turn magnetic encoder is also available. Additionally, several of our models are IP65 rated as standard, ensuring they can operate reliably in a wide variety of environments.

BLDC motor with integrated Motion Controller

Our servo motors with integrated controllers are among the most compact on the market. The powerful drive, integrated directly into the motor, reduces cabling and simplifies installation and configuration, thereby improving overall efficiency. These high-performance motors are IP65 rated, STO (Safe Torque Off) certified, and available with an optional integrated brake. All models support a wide range of Fieldbus protocols, including CANopen, Modbus-RTU, Modbus-TCP, EtherCAT, Profinet, EtherNet/IP, and Powerlink.

Servomotors with integrated Motion Controller

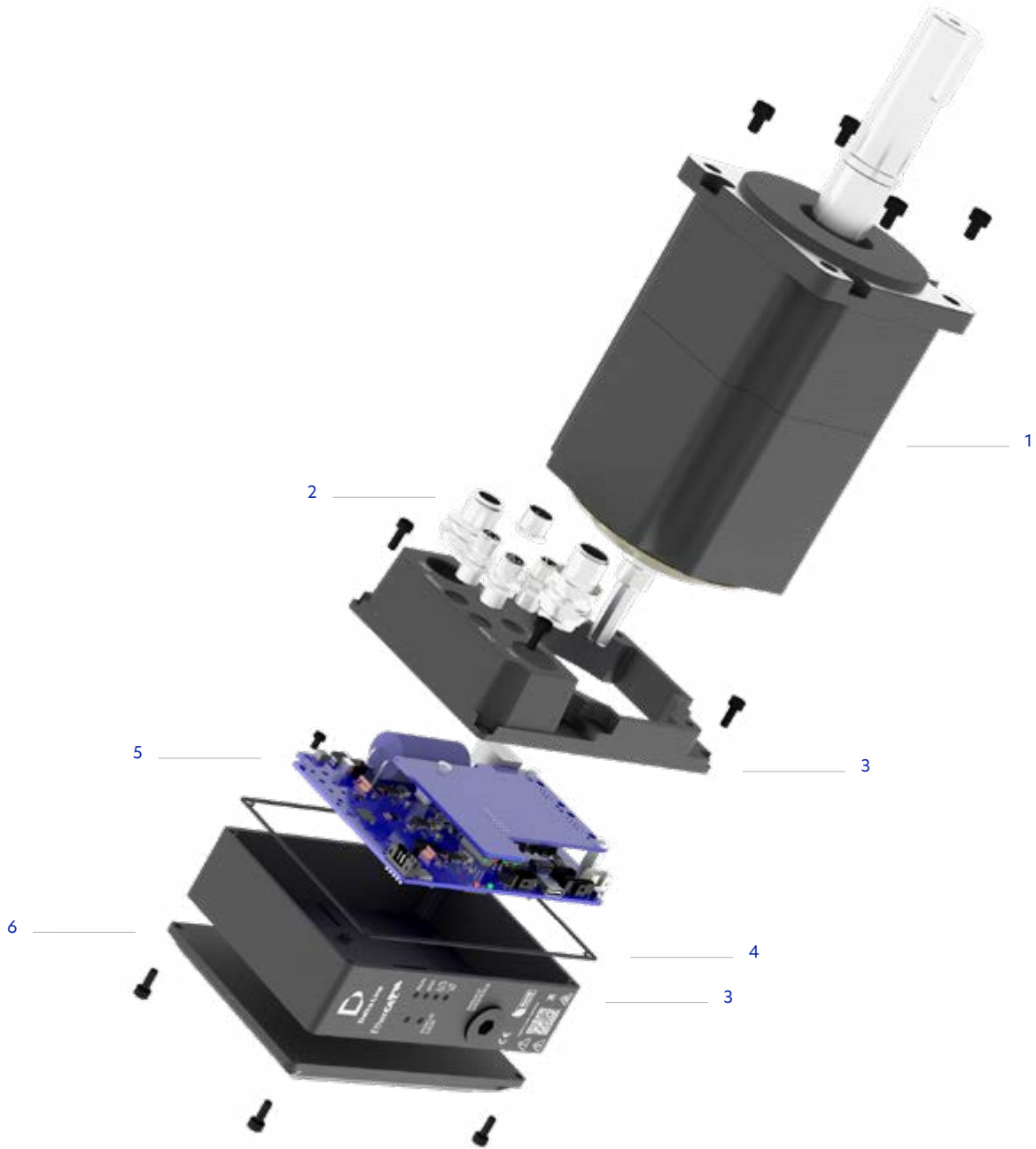
Our stepper motors with integrated electronics use continuous control technology for 65,536 microsteps per revolution and offer encoder options such as magnetic incremental, single-turn absolute, or multi-turn absolute, to meet a wide range of applications. Communication options include CANopen, Modbus RTU, EtherCAT, Modbus TCP/IP, Profinet, Powerlink and EtherNet/IP, allowing the motors to easily connect to any industrial network. Many of our models are IP65 rated, making them suitable for a wide range of environments where moisture or water spray is present.

Stepper motor with integrated Motion Controller

All our motors with Motion Controllers come with two software options: DL Studio and DL Space. DL Studio is a configuration and testing tool that allows users to set all parameters within the drive and control the motor from a PC while monitoring its response, including current, speed, and other data. DL Space includes all the features of DL Studio but also enables users to write custom applications for the drive using a simple, user-friendly programming language. The motor with a Motion Controller can be connected to the PC through a specific interface kit.

Software

Composition - Servomotor with Motion Controller	
1	Motor + Encoder
2	Connectors
3	Case
4	Gasket
5	Drive
6	Heat sink





Advantages at a glance
Space saving, minimal wiring
Simple Speed and Direction control
High torque

The compact integration of the speed controller reduces space requirements and simplifies installation and start-up, opening a wide range of application areas. The integrated electronics facilitate speed control by means of a PID controller. The direction of rotation can be changed via a separate switching input.

Brushless DC motors with Speed Controller	Torque* (Nm)	
16EC33P-2W	0,002	200
36CBL-IE	0,016...0,08	201
42BL-IE - square	0,063...0,25	202
42CBL60-IE	0,068	203
42RBL60-IE	0,08	204
57BL-IE	0,11...0,33	205

Brushless DC motors

with Speed controller

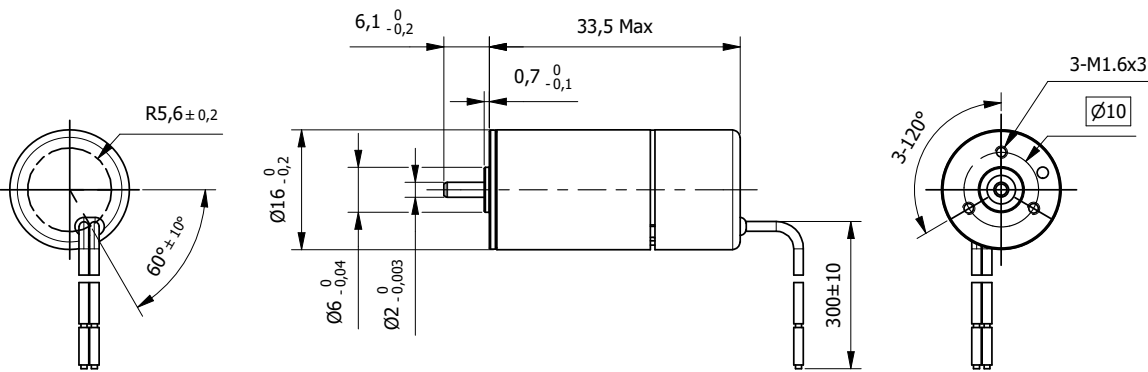
* Rated Torque

Brushless Slotless Motor 16EC33P-2W

with Speed Controller

Ø 16mm

0,002Nm



Specification				
Model		...7500	...8000	
1	Rated Voltage	V	6	12
2	Rated Speed	rpm	7510	8080
3	Rated Torque	mNm	2,19	2,26
4	Stall Torque	mNm	5,25	5,76
5	Torque Constant	mNm/A	3,87	7,73
6	Rated Current	A	0,714	0,37
7	Stall Current	A	1,44	0,801
8	No-load Current	mA	149	72,7
9	No-load Speed	rpm	13400	13800
10	Speed Range	rpm	11300-20000	5360-17400
11	Rotor Inertia	gcm2	0,428	0,428
12	Max. Efficiency	%	46,4	49
13	Mechanical Time Constant	ms	11,6	11,3
14	Length (L)	mm	33,5	33,5
15	Weight	g	32	32

Characteristics	
Item	
Supply Voltage +Vcc	+5 to +15V
Current Limitation	1,6A ±15%
Type of control	speed
Ambient Temperature	-40°C to +85°C
Max. Electronics Temperature	+100°C
Max. Speed	20000rpm
Radial play	preloaded
Axial play	0 to 0,14mm
Max. Radial force (5mm from flange)	6N
Max. Axial force	1N
Max. Force for Press fit	18N

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1569 AWG26/7	+Vcc Supply voltage +5 to +15V
2	Black		GND Ground system

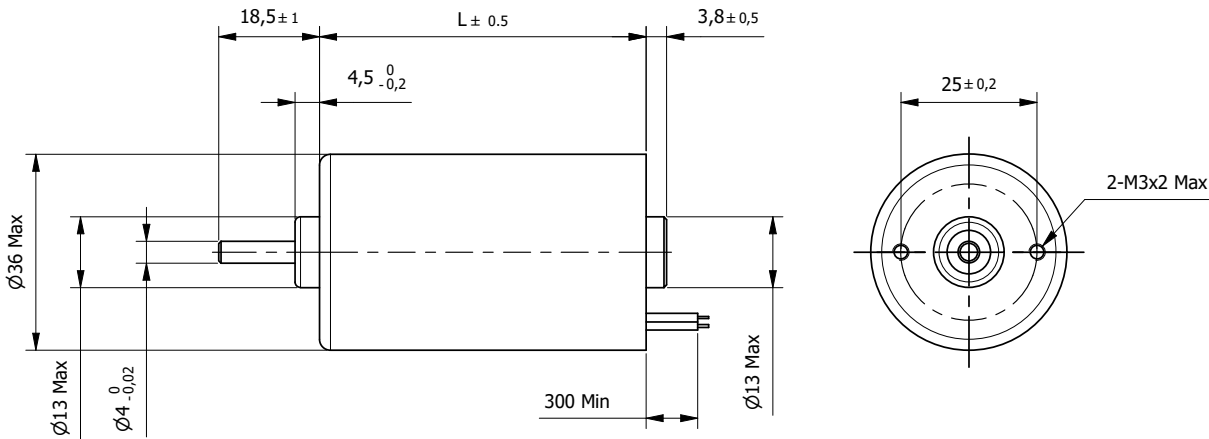
Attention: operating voltage Vcc > 18VDC will destroy the electronics

Brushless Slotted Motor 36CBL-IE

with Speed Controller

Ø 36mm

0,016 - 0,08Nm



Specification				
Model		36CBL30-IE	36CBL40-IE	36CBL57-IE
1	n° of Pole	8	8	8
2	n° of Phase	3	3	3
3	Rated Voltage	V	24	24
4	Rated Speed	rpm	4800	4800
5	Rated Torque	Nm	0,016	0,035
6	Max. Peak Torque	Nm	0,05	0,11
7	Torque Constant	Nm/A	0,034	0,037
8	Rated Current	A	0,47	0,95
9	Max. Peak Current	A	1,4	3
10	No-Load Current	mA	120	230
11	Line to Line Resistance	Ω	7,8	2,7
12	Line to Line Inductance	mH	5,5	2,6
13	Rotor Inertia	gcm2	6	12
14	Length (L)	mm	30	40
15	Weight	Kg	0,12	0,18

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

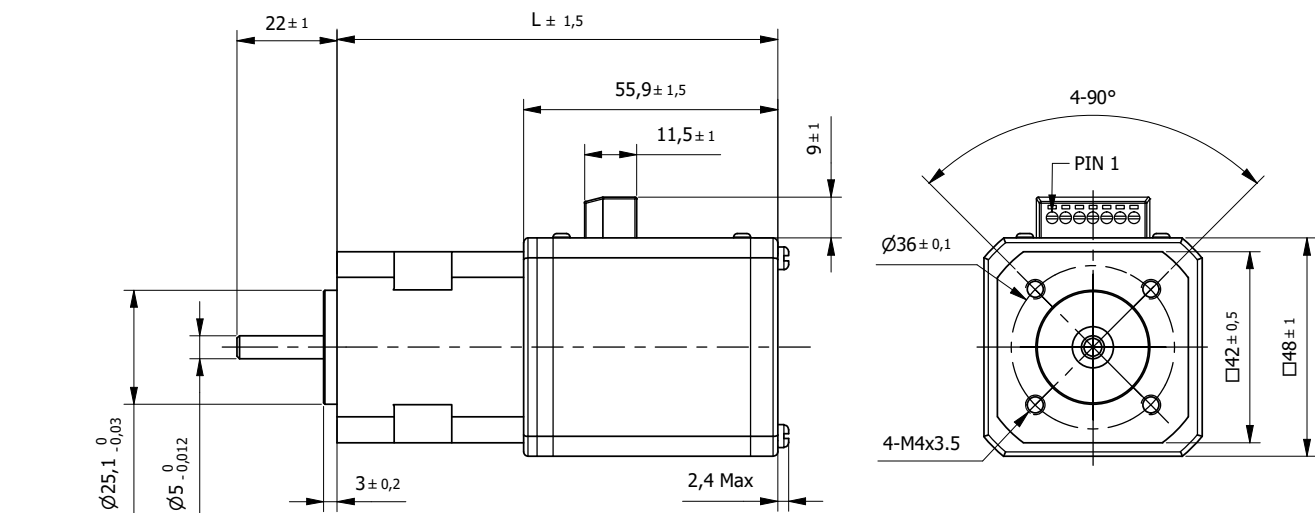
Connection			
Pin n°	Color	Gauge	Function
1	Red	UL1430 AWG22	VCC +24VDC
2	Black		GND
3	Green	UL1430 AWG26	CW/CCW Direction
4	White		PWM speed control
5	Blue		Brake
6	Yellow	UL1332 AWG22	Tacho Out

Brushless Slotted Motor 42BL-IE

with Speed Controller

□ 42mm

0,063 - 0,25Nm



Specification		42BL41-IE	42BL61-IE	42BL81-IE	42BL100-IE
1	n° of Pole	8	8	8	8
2	n° of Phase	3	3	3	3
3	Rated Voltage	V	24	24	24
4	Rated Speed	rpm	4000	4000	4000
5	Rated Torque	Nm	0,063	0,125	0,185
6	Max. Peak Torque	Nm	0,19	0,37	0,56
7	Torque Constant	Nm/A	0,035	0,036	0,036
8	Rated Current	A	1,79	3,47	5,14
9	Max. Peak Current	A	6	10,8	15,5
10	No-Load Current	mA	220	250	340
11	Line to Line Resistance	Ω	1,5	0,8	0,43
12	Line to Line Inductance	mH	2,1	1,2	0,7
13	Rotor Inertia	gcm2	24	48	72
14	Length (L)	mm	96	116	137
15	Weight	Kg	0,5	0,65	0,85

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

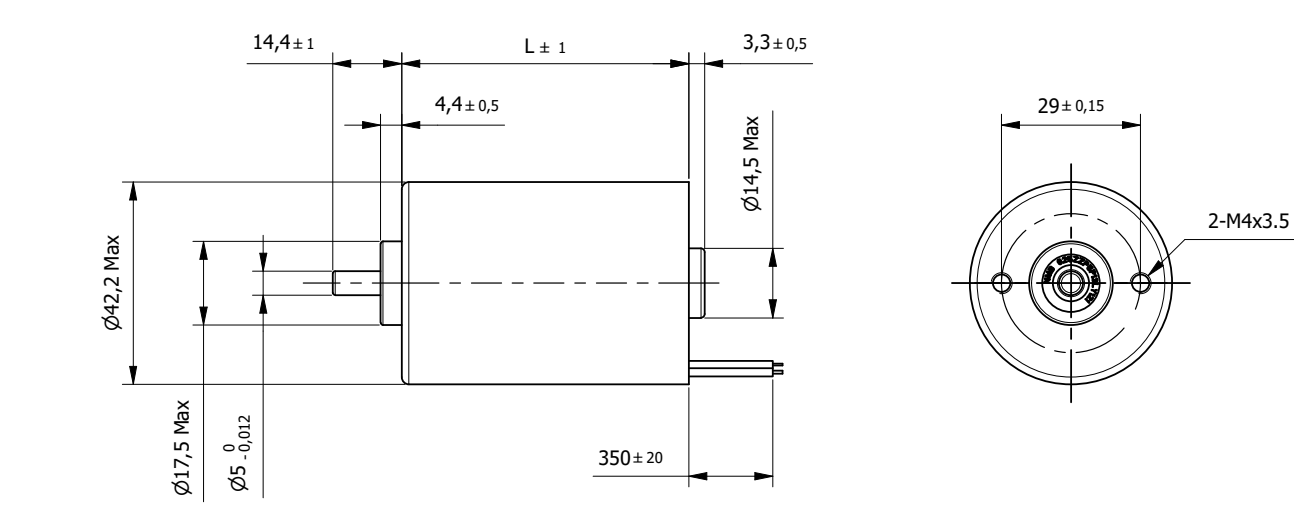
Connection	
Pin n°	Function
1	+5V Voltage output
2	F/R Rotation direction
3	SV Speed voltage 0/+5VDC
4	PG Speed Pulse output TTL.24 pulse/rev.
5	GND Common ground system
6	GND Common ground system
7	+Vp DC power input +24VDC

Brushless Slotted Motor 42CBL60-IE

with Speed Controller

Ø 42mm

0,068Nm



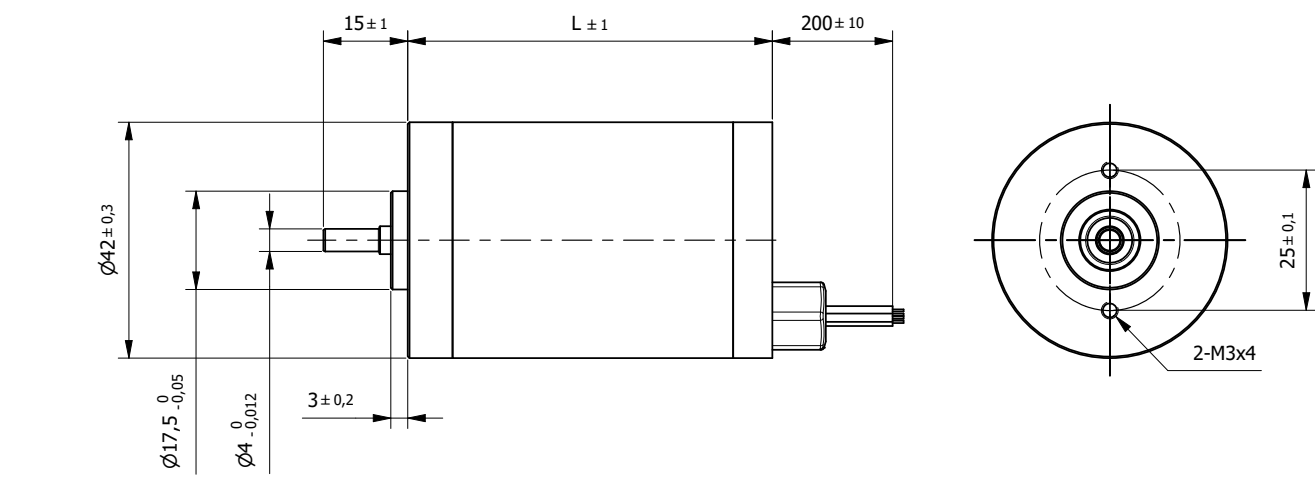
Specification			
	Model	42CBL60-IE	
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	5900
5	Rated Torque	Nm	0,068
6	Max. Peak Torque	Nm	0,2
7	Torque Constant	Nm/A	0,032
8	Rated Current	A	2,13
9	Max. Peak Current	A	6,6
10	No-Load Current	mA	250
11	Line to Line Resistance	Ω	0,82
12	Line to Line Inductance	mH	0,75
13	Rotor Inertia	gcm2	44
14	Length (L)	mm	60
15	Weight	Kg	0,35

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	10N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG22	VCC +24VDC
2	Black		GND
3	Green	UL1430 AWG26	CW/CCW Direction
4	White		PWM speed control
5	Blue		Brake
6	Yellow	UL1332 AWG22	Tacho Out

Brushless Slotted Motor 42RBL60-IE
with Speed Controller

Ø 42mm
0,056Nm



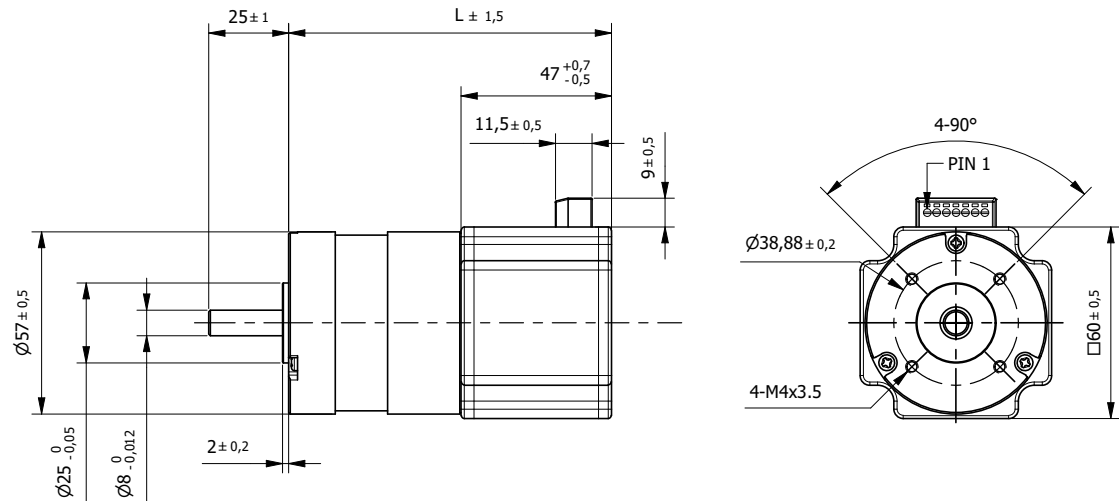
Specification		
Model	42RBL60-IE	
1	n° of Pole	8
2	n° of Phase	3
3	Rated Voltage	V 24
4	Rated Speed	rpm 4200
5	Rated Torque	Nm 0,056
6	Max. Peak Torque	Nm 0,105
7	Torque Constant	Nm/A 0,041
8	Rated Current	A 1,35
9	Max. Peak Current	A 3
10	No-Load Current	A <0,4
11	Line to Line Resistance	Ω 1,6
12	Line to Line Inductance	mH 1,94
13	Rotor Inertia	gcm2 33
14	Length (L)	mm 65
15	Weight	Kg 0,4

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	10N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection		
Color	Gauge	Function
Red	UL1007 AWG22	VCC +
Black		GND
White		CW/CCW Direction
Blue		SV Speed Control
Yellow		Tacho out

Brushless Slotted Motor 57BL-IE
with Speed Controller

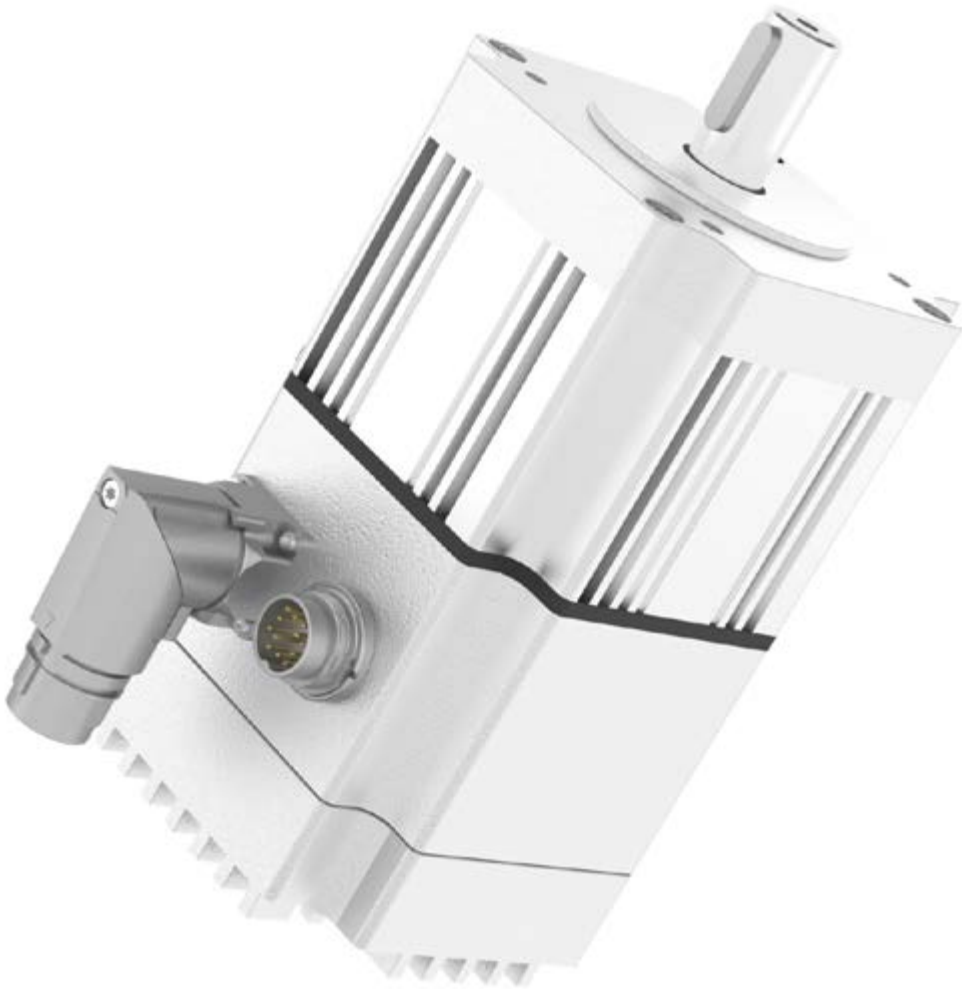
Ø 57mm
0,11 - 0,33Nm



Specification				
	Model	57BL54-IE	57BL74-IE	57BL94-IE
1	n° of Pole	4	4	4
2	n° of Phase	3	3	3
3	Rated Voltage	V 36	36	36
4	Rated Speed	rpm 4000	4000	4000
5	Rated Torque	Nm 0,11	0,22	0,33
6	Max. Peak Torque	Nm 0,39	0,7	1
7	Torque Constant	Nm/A 0,061	0,06	0,065
8	Rated Current	A 1,8	3,67	5,08
9	Max. Peak Current	A 6,8	12	16
10	No-Load Current	mA 300	400	450
11	Line to Line Resistance	Ω 1,5	0,58	0,45
12	Line to Line Inductance	mH 4,4	2	1,5
13	Rotor Inertia	gcm2 75	119	173
14	Length (L)	mm 101	121	141
15	Weight	Kg 0,67	0,9	1,2

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (460g load)	0,025mm
Axial play (4000g load)	0,025mm
Max. Radial force (10mm from flange)	75N
Max. Axial force	15N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection	
Pin n°	Function
1	+Vp DC power input +36VDC
2	GND DC power input GND
3	GND Common ground system
4	PG Speed pulse output TTL.6 pulse/rev.
5	SV Reference speed voltage 0/+5V
6	F/R Rotation direction
7	+5V Voltage output



Brushless DC motors
with Motion controller

Advantages at a glance
Compact construction
Integrated Motion, Speed and Current control
Parametrization and programming with software

Our slotted BLDC motors with integrated controllers combine the compactness of a standard motor with the advanced features of our drives. These motors come equipped with digital inputs and outputs, an analog input, and support for multiple Fieldbus protocols, including CANopen, Modbus RTU, EtherCAT, Modbus TCP/IP, Profinet, Powerlink, and EtherNet/IP. For optimal performance, a fully integrated single-turn magnetic encoder is also available. Additionally, several of our models are IP65 rated as standard, ensuring they can operate reliably in a wide variety of environments.

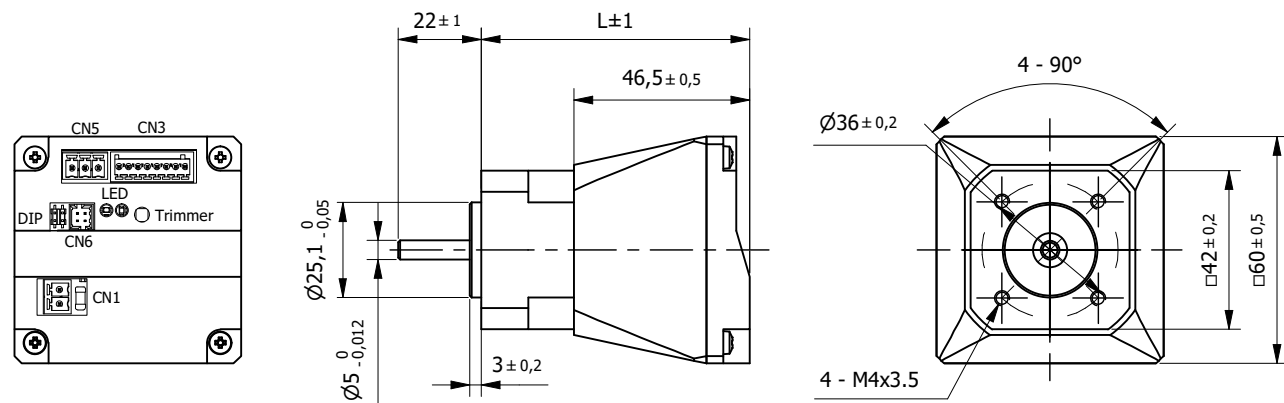
Brushless DC motors with Motion Controller	Torque* (Nm)	
IBS042	0,062...0,25	208
IBS057	0,055...0,44	209
IBI057- IP65	0,055...0,44	210
IBS080	0,8...1,13	211
IBI080 - IP65	0,8...1,13	212

* Rated Torque

with Motion Controller

□ 42mm

0,062 - 0,25Nm



Specification						
	Model		...0026N	...0050N	...0074N	...0100N
1	n° of Pole		8	8	8	8
2	Rated Voltage	VDC	24	24	24	24
3	Operating Voltage	VDC	24-36	24-36	24-36	24-36
4	Rated Power	W	26	50	74	100
5	Rated Speed	rpm	4000	4000	4000	4000
6	Torque - Rated/Peak	Nm	0,062/0,19	0,125/0,38	0,185/0,56	0,25/0,75
7	Torque Constant	Nm/A	0,035	0,036	0,038	0,036
8	Current - Rated/Peak	A	1,8/5,4	3,5/10,7	4,9/14,7	7/20,8
9	No-Load Current	A	<0,5	<0,5	<0,5	<0,6
10	Rotor Inertia	Kgcm2	0,024	0,048	0,072	0,096
11	Length (L)	mm	75	95	115	135
12	Weight	Kg	0,5	0,65	0,85	1

Characteristics	
Item	
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP20
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software*	Setup & config. - DL Studio Programming - DL Space

Product code reference	
IBS 042 0026 N E 1 000 M S200	
042	Frame size
0026	Rated Power
N	Brake options (N= no brake)
E	Encoder options
1	Connector code (1= standard)
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental encoder	E

Connection		
Connector	Type	Function
CN1	Phoenix 1707421	DC Supply
CN3	Phoenix 1781120	Inputs and Outputs
CN5	Phoenix 1800312	Interface
CN6		Service SCI Interface

Mating connectors included. More information can be found in the product manual on our website.

Input and Output		
Input	Digital	3 not isolated 5-24 Vdc NPN or Push Pull
	Analog	1 with potentiometer or 0-10 Vdc
Output	Digital	2 not isolated open drain, 5-24 Vdc 100mA

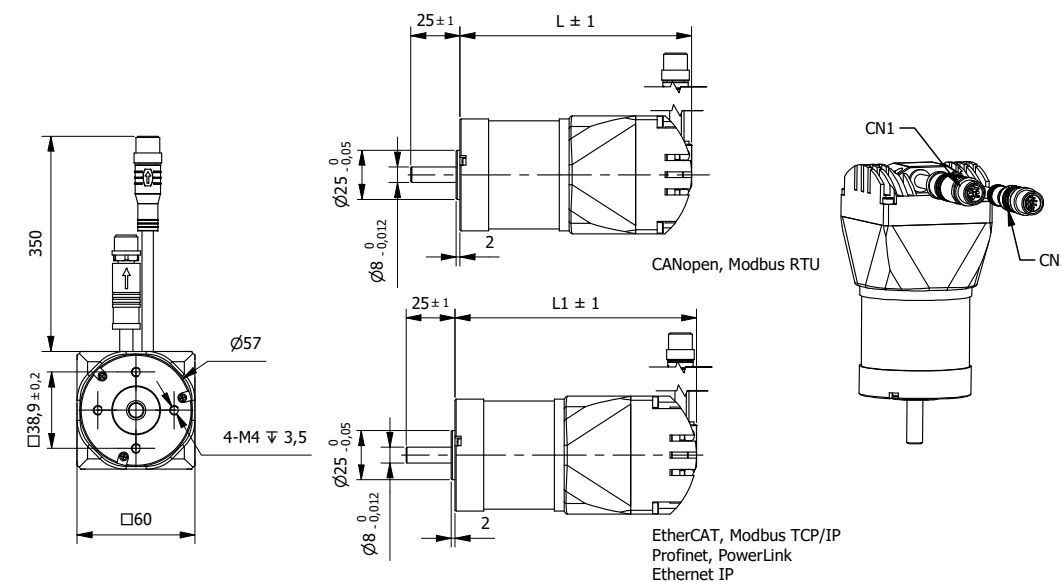
Interface Control Mode	
Fieldbus	Code
Analog	A-S300
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402

Brushless DC Motor IBS057

with Motion Controller

Ø 57mm

0,055 - 0,44Nm



Specification						
	Model	...0022N	...0044N	...0088N	...0128N	...0168N
1	n° of Pole	4	4	4	4	4
2	Rated Voltage	VDC 36	36	36	36	36
3	Operating Voltage	VDC 24-36	24-36	24-36	24-36	24-36
4	Rated Power	W 22	44	88	128	168
5	Rated Speed	rpm 4000	4000	4000	4000	4000
6	Torque - Rated/Peak	Nm 0,055/0,16	0,11/0,33	0,22/0,66	0,33/0,99	0,44/1,3
7	Torque Constant	Nm/A 0,052	0,06	0,06	0,063	0,063
8	Current - Rated/Peak	A 1,1/3,1	1,8/5,5	3,7/11	5,2/15,7	7/20,6
9	No-Load Current	A <0,4	<0,4	<0,5	<0,6	<0,65
10	Rotor Inertia	Kgcm2 0,03	0,075	0,119	0,173	0,23
11	Length (L)	mm 88	98	118	138	158
12	Length (L1)	mm 93	103	123	143	163
13	Weight	Kg 0,58	0,7	1	1,2	1,45

Characteristics	
Item	
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP20
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Radial play (460g load)	0,025mm
Axial play (4000g load)	0,025mm
Max. Radial force (20mm from flange)	75N
Max. Axial force	15N
Dielectric strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface (not for A-M-C)
Software*	Setup & config. - DL Studio Programming - DL Space

Product code reference	
IBS 057 0022 N E 1 000 M S200	
057	Frame size
0022	Rated Power
N	Brake options (N= no brake)
E	Encoder options
1	Connector code (1= standard)
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental encoder	E

Connection		
Connector	Type	Function
CN1	M12 4P S-Code Male	DC Supply
CN2	M12 12P A-Code Male	Inputs/Outputs for A-M-C fieldbus
CN2	M12 17P A-Code Male	Inputs/Outputs for T-E-P-R-H fieldbus

Cable kit available on request. More information can be found in the product manual on our website.

Input and Output		
Input	Digital inputs	4 not isolated 5-24 Vdc PNP
	Analog inputs (A-M-C fieldbus)	1 not isolated 0-10 Vdc
Output	Digital outputs	2 not isolated 24 Vdc PNP

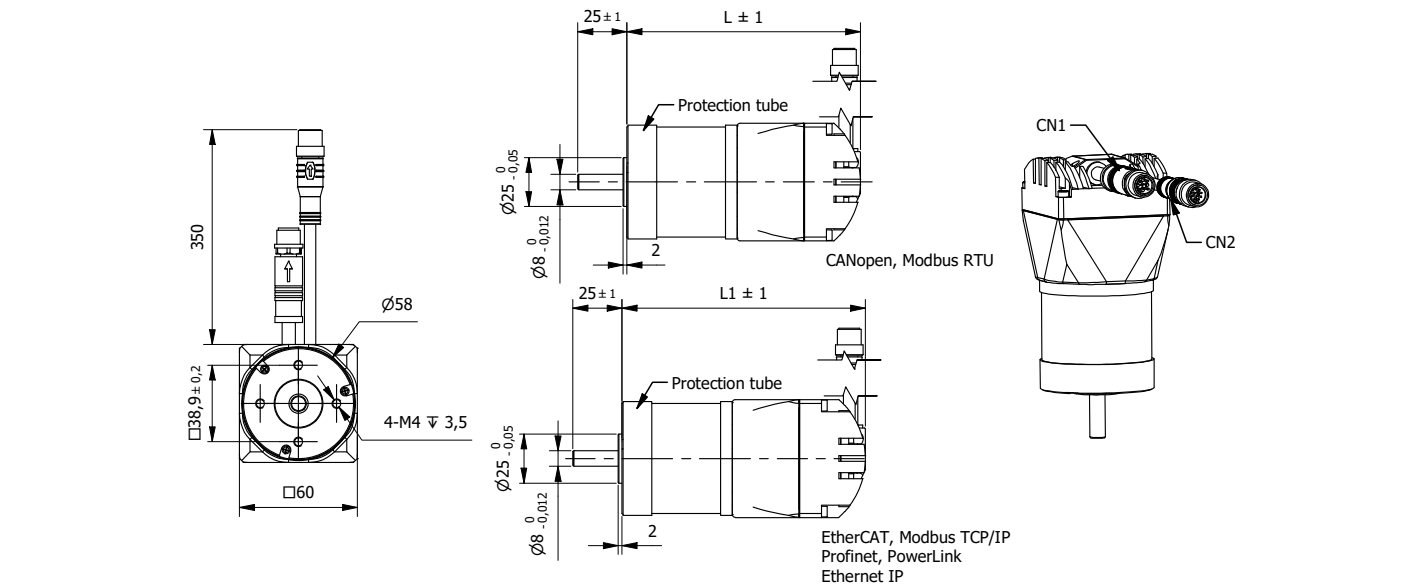
Interface Control Mode	
Fieldbus	Code
Analog	A-S300
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Brushless DC Motor IBI057

with Motion Controller - IP65

Ø 57mm

0,055 - 0,44Nm



Specification		Model	...0022N	...0044N	...0088N	...0128N	...0168N
1	n° of Pole		4	4	4	4	4
2	Rated Voltage	VDC	36	36	36	36	36
3	Operating Voltage	VDC	24-36	24-36	24-36	24-36	24-36
4	Rated Power	W	22	44	88	128	168
5	Rated Speed	rpm	4000	4000	4000	4000	4000
6	Torque - Rated/Peak	Nm	0,055/0,16	0,11/0,33	0,22/0,66	0,33/0,99	0,44/1,3
7	Torque Constant	Nm/A	0,052	0,06	0,06	0,063	0,063
8	Current - Rated/Peak	A	1,1/3,1	1,8/5,5	3,7/11	5,2/15,7	7/20,6
9	No-Load Current	A	<0,4	<0,4	<0,5	<0,6	<0,65
10	Rotor Inertia	Kgcm2	0,03	0,075	0,119	0,173	0,23
11	Length (L)	mm	89	99	119	139	159
12	Length (L1)	mm	94	104	124	144	164
13	Weight	Kg	0,58	0,7	1	1,2	1,45

Characteristics	
Item	
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Radial play (460g load)	0,025mm
Axial play (4000g load)	0,025mm
Max. Radial force (20mm from flange)	75N
Max. Axial force	15N
Dielectric strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface (not for A-M-C)
Software*	Setup & config. - DL Studio
	Programming - DL Space

Product code reference	
IBI 057 0022 N E 1 000 M S200	
057	Frame size
0022	Rated Power
N	Brake options (N= no brake)
E	Encoder options
1	Connector code (1= standard)
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental encoder	E

Connection		
Connector	Type	Function
CN1	M12 4P S-Code Male	DC Supply
CN2	M12 12P A-Code Male	Inputs/Outputs for A-M-C fieldbus
CN2	M12 17P A-Code Male	Inputs/Outputs for T-E-P-R-H fieldbus

Cable kit available on request. More information can be found in the product manual on our website.

Input and Output		
Input	Digital inputs	4 not isolated 5-24 Vdc PNP
	Analog inputs (A-M-C fieldbus)	1 not isolated 0-10 Vdc
Output	Digital outputs	2 not isolated 24 Vdc PNP

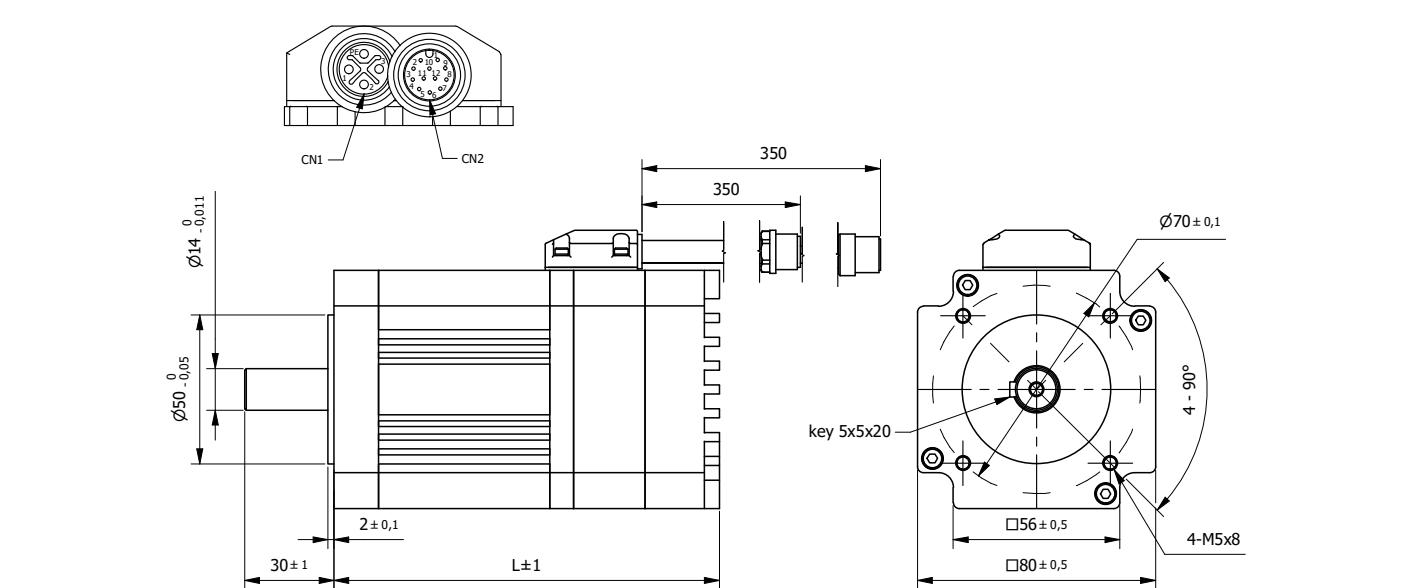
Interface Control Mode	
Fieldbus	Code
Analog	A-S300
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Brushless DC Motor IBS080

with Motion Controller

□ 80mm

0,8 - 1,13Nm



UL certified: UL E531626 | UL E531627

Specification		Model	...0290N	...0362N
1	n° of Pole		8	8
2	Rated Voltage	VDC	40	40
3	Operating Voltage	VDC	24-48	24-48
4	Rated Power	W	290	362
5	Rated Speed	rpm	3210	3210
6	Torque - Rated/Peak	Nm	0,8/2,4	1,13/3,4
7	Torque Constant	Nm/A	0,094	0,085
8	Current - Rated/Peak	A	10/30	13,3/40
9	No-Load Current	A	0,7	0,6
10	Rotor Inertia	Kgcm2	0,68	0,68
11	Length (L)	mm	120	130
12	Weight	Kg	2,1	2,3

Characteristics	
Item	
Shaft run out	0,05mm
Insulation Class	F
Protection Class	IP54
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Radial play (450g load)	0,04mm
Axial play (450g load)	0,08mm
Max. Radial force (at mid-shaft)	330N
Max. Axial force	764N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	CAN/RS485 interface
Software	Setup & config. - DL Studio
	Programming - DL Space

Product code reference	
IBS 080 0290 N E 1 000 M S200	
080	Frame size
0290	Rated Power
N	Brake options (N= no brake)
E	Encoder options
1	Connector code (1= standard)
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental encoder	E

Connection		
Connector	Type	Function
CN1	M12 4P S-Code Male	DC Supply
CN2	M12 12P A-Code Male	Inputs/Outputs

Cable kit available on request. More information can be found in the product manual on our website.

Input and Output		
Input	Digital inputs	4 not isolated 24 Vdc PNP
	Analog inputs	1 not isolated 0-10 Vdc
Output	Digital outputs	2 not isolated 24 Vdc PNP

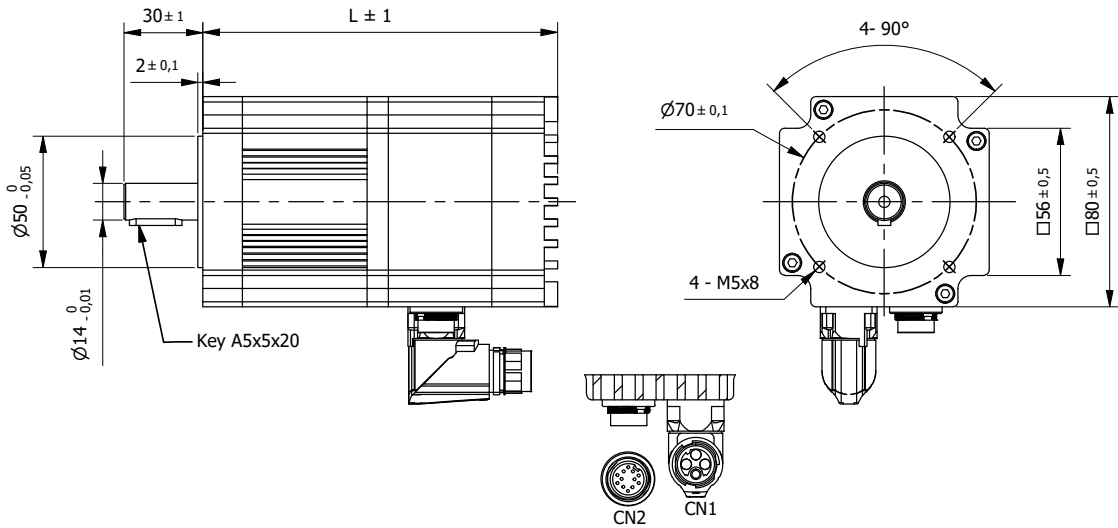
Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402

Brushless DC Motor IBI080

with Motion Controller - IP65

80mm

0,8 - 1,13Nm



UL certified: UL E531626 | UL E531627

Specification				
	Model	...0290N	...0362N	
1	n° of Pole	8	8	
2	Rated Voltage	VDC 40	40	
3	Operating Voltage	VDC 24-48	24-48	
4	Rated Power	W 290	362	
5	Rated Speed	rpm 3210	3210	
6	Torque - Rated/Peak	Nm 0,8/2,4	1,13/3,4	
7	Torque Constant	Nm/A 0,094	0,085	
8	Current - Rated/Peak	A 10/30	13,3/40	
9	No-Load Current	A 0,7	0,6	
10	Rotor Inertia	Kgcm2 0,68	0,68	
11	Length (L)	mm 135	145	
12	Weight	Kg 2,15	2,35	

Characteristics	
Item	
Shaft run out	0,05mm
Insulation Class	F
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Radial play (450g load)	0,04mm
Axial play (450g load)	0,08mm
Max. Radial force (at mid-shaft)	330N
Max. Axial force	764N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	CAN/RS485 interface
Software	Setup & config. - DL Studio Programming - DL Space

Product code reference	
IBI 080 0290 N E 1 000 M S200	
080	Frame size
0290	Rated Power
N	Brake options (N= no brake)
E	Encoder options
1	Connector code (1= standard)
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental encoder	E

Connection		
Connector	Type	Function
CN1	M17 4P TE-BGC-894N0000153A00	DC Supply
CN2	M16 12P Amphenol C09131C0121002U	Inputs/Outputs

Cable kit available on request. More information can be found in the product manual on our website.

Input and Output		
Input	Digital inputs	4 not isolated 24 Vdc PNP
	Analog inputs	1 not isolated 0-10 Vdc
Output	Digital outputs	2 not isolated 24 Vdc PNP

Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402



Brushless Servo motors with Motion controller

Advantages at a glance	
Rated Power from 200 to 1000W	
STO (Safe Torque Off) function	
IP65 rated and optional integrated brake	

Our servo motors with integrated controllers are among the most compact on the market. The powerful drive, integrated directly into the motor, reduces cabling and simplifies installation and configuration, thereby improving overall efficiency. These high-performance motors are IP65 rated, STO (Safe Torque Off) certified, and available with an optional integrated brake. All models support a wide range of Fieldbus protocols, including CANopen, Modbus-RTU, Modbus-TCP, EtherCAT, Profinet, EtherNet/IP, and Powerlink.

Brushless Servo motors with Motion Controller	Torque* (Nm)	
IVI060 - IP65	0,64...1,27	216
IVI080 - IP65	2,39...3,18	217

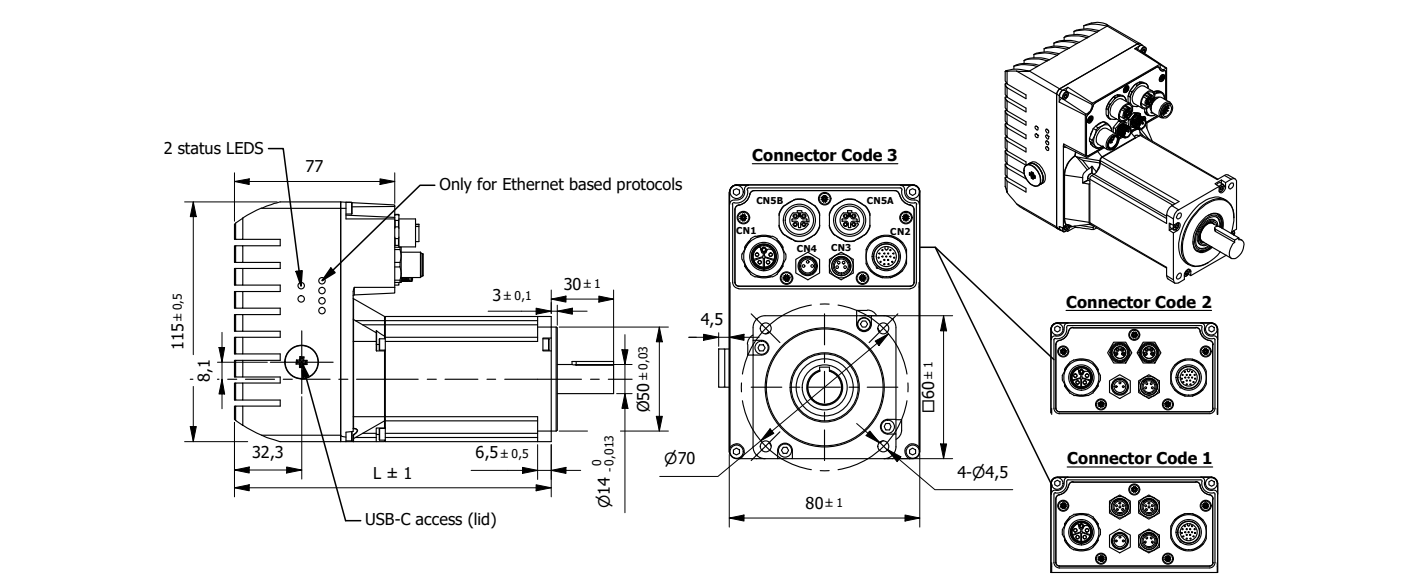
* Rated Torque

Brushless DC Servo motor IVI060

with Motion Controller - IP65

□ 60mm

0,64 - 1,27Nm



with Safe Torque Off function

Specification						
	Model		...0200N	...0200B	...0400N	...0400B
1	n° of Pole		10	10	10	10
2	Rated Voltage	VDC	48	48	48	48
3	Operating Voltage	VDC	24-48	24-48	24-48	24-48
4	Rated Power	W	200	200	400	400
5	Rated Speed	rpm	3000	3000	3000	3000
6	Torque - Rated/Peak	Nm	0,64/1,92	0,64/1,92	1,27/3,81	1,27/3,81
7	Torque Constant	Nm/A	0,107	0,107	0,107	0,107
8	Current - Rated/Peak	A	6/18	6/18	12/36	12/36
9	No-Load Current	A	0,6	0,6	<1	<1
10	Back EMF constant	V/kRPM	6,5	6,5	6,5	6,5
11	Rotor Inertia	Kgcm2	0,15	0,15	0,25	0,25
12	Brake		24VDC - 1,5Nm		24VDC - 1,5Nm	
13	Length (L) - Encoder E/A	mm	131/141	167/177	152/162	188/198
14	Weight	Kg	1,43	1,86	1,82	2,25

Characteristics	
Item	
Shaft run out	0,05mm
Insulation Class	F 155°C
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (at mid-shaft)	245N
Max. Axial force	98N
Dielectric strength (for 1 min.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over current, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/PL
Debug & configuration	Serial interface
Software*	Setup & config. - DL Studio
	Programming - DL Space

*Service SCI cable required and available on request

Product code reference	
IVI 060 0200 N E 1 000 M S200	
060	Frame size
0200	Rated Power
N	Brake options (N= no brake)
E	Encoder options
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Optical Incremental 2500 CPR	E
Magnetic Absolute (single-turn, BiSS): 17bit, 16bit	A

Other options	
Item	Code
Standard	000
With End resistor 120Ω (for M-C fieldbus)	001

Connection			
Connector	Type	Function	Code
CN1	M12 5P L-Code Male	DC Supply	
CN2	M12 17P A-Code Male	Inputs/Outputs	
CN3	M8 4P A-Code Male	STO Input	
CN4	M8 3P A-Code Male	Brake Resistor	
CN5A/B	M8 6P A-Code Male	Fieldbus (M-C)	1
CN5A/B	M8 4P A-Code Female	Fieldbus (T-E)	2
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	3

Cable kit available on request. More information can be found in the product manual on our website.

Input and Output		
Input	Digital	4 not isolated 5-24 Vdc PNP
	Analog	2 not isolated 0-10 Vdc
Output	Digital	2 not isolated 24 Vdc PNP

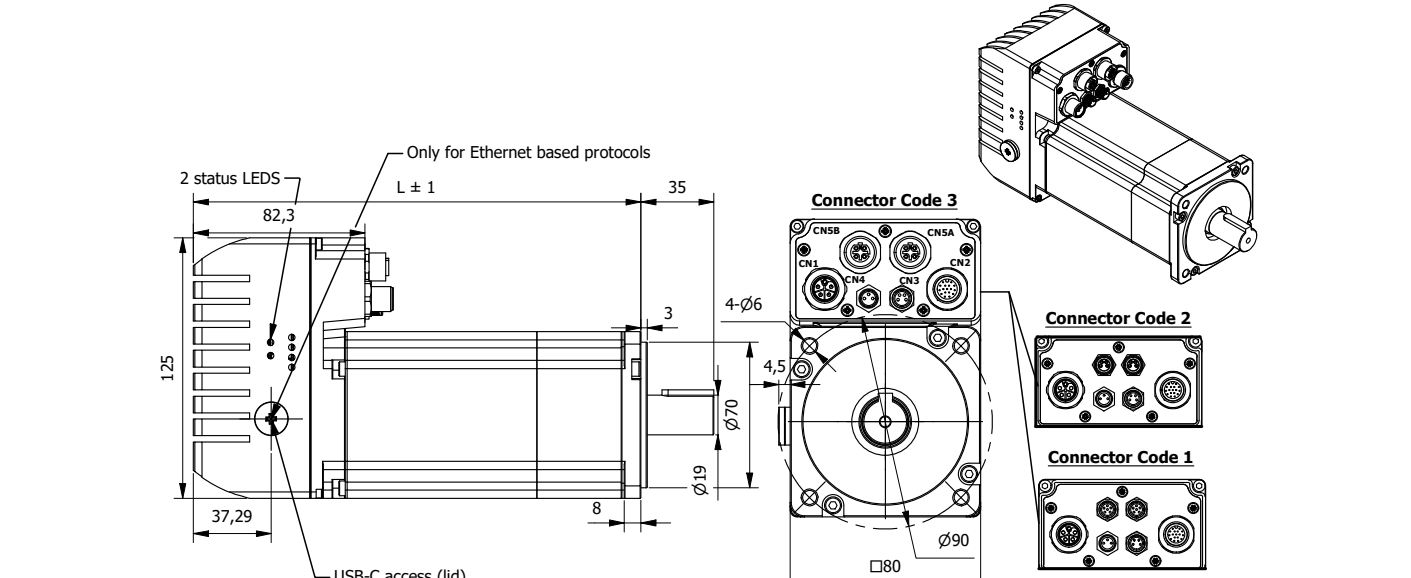
Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Brushless DC Servo motor IVI080

with Motion Controller - IP65

□ 80mm

2,39 - 3,18Nm



with Safe Torque Off function

Specification						
	Model		...0750N	...0750B	...1000N	...1000B
1	n° of Pole		10	10	10	10
2	Rated Voltage	VDC	48	48	48	48
3	Operating Voltage	VDC	24-48	24-48	24-48	24-48
4	Rated Power	W	750	750	1000	1000
5	Rated Speed	rpm	3000	3000	3000	3000
6	Torque - Rated/Peak	Nm	2,39/7,17	2,39/7,17	3,18/9,54	3,18/9,54
7	Torque Constant	Nm/A	0,113	0,113	0,113	0,113
8	Current - Rated/Peak	A	21/63	21/63	28/84	28/84
9	No-Load Current	A	2	2	2	2
10	Back EMF constant	V/kRPM	6,8	6,8	6,8	6,8
11	Rotor Inertia	Kgcm2	1,56	1,56	2,22	2,22
12	Brake		24VDC - 3,2Nm		24VDC - 3,2Nm	
13	Length (L) - Encoder E/A	mm	165/175	195/205	185/195	215/225
14	Weight	Kg	3,15	3,74	3,8	4,39

Characteristics	
Item	
Shaft run out	0,05mm
Insulation Class	F 155°C
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (at mid-shaft)	392N
Max. Axial force	147N
Dielectric strength (for 1 min.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over current, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/PL
Debug & configuration	Serial interface
Software*	Setup & config. - DL Studio
	Programming - DL Space

*Service SCI cable required and available on request

Product code reference	
IVI 080 0750 N E 1 000 M S200	
080	Frame size
0750	Rated Power
N	Brake options (N= no brake)
E	Encoder options
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Optical Incremental 2500 CPR	E
Magnetic Absolute (single-turn, BiSS): 17bit, 16bit	A

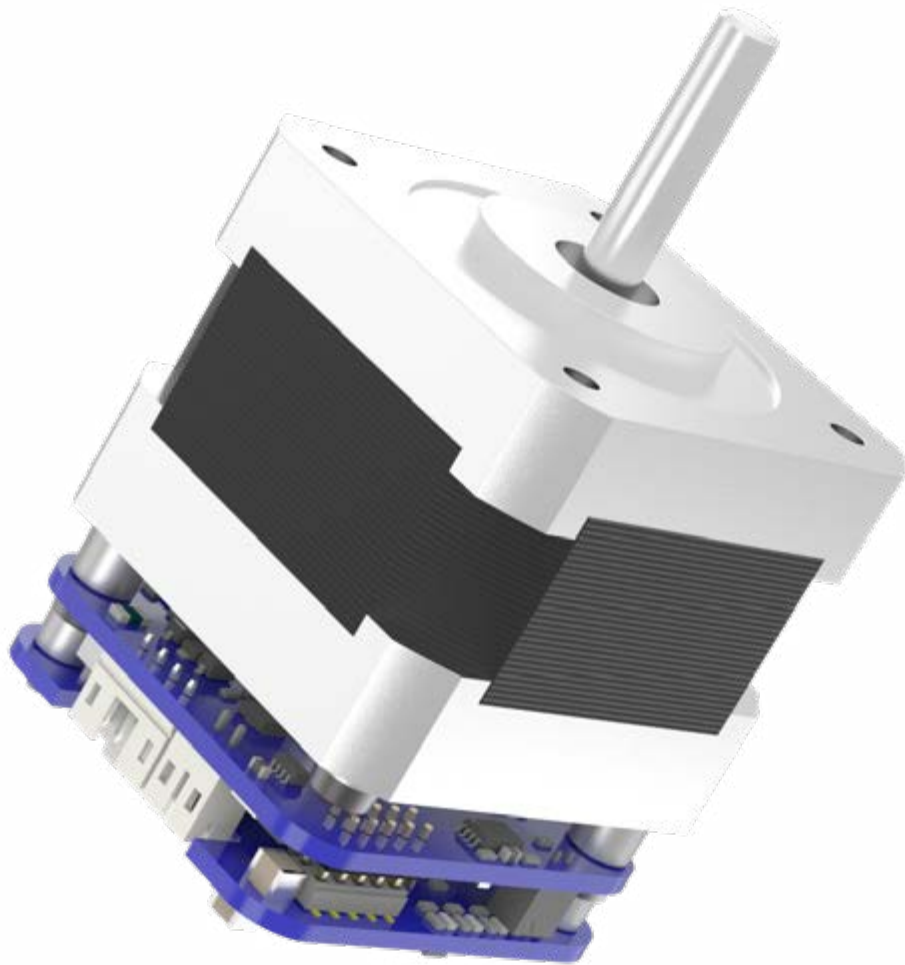
Other options	
Item	Code
Standard	000
With End resistor 120Ω (for M-C fieldbus)	001

Connection			
Connector	Type	Function	Code
CN1	M12 5P L-Code Male	DC Supply	
CN2	M12 17P A-Code Male	Inputs/Outputs	
CN3	M8 4P A-Code Male	STO Input	
CN4	M8 3P A-Code Male	Brake Resistor	
CN5A/B	M8 6P A-Code Male	Fieldbus (M-C)	1
CN5A/B	M8 4P A-Code Female	Fieldbus (T-E)	2
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	3

Cable kit available on request. More information can be found in the product manual on our website.

Input and Output		
Input	Digital	4 not isolated 5-24 Vdc PNP
	Analog	2 not isolated 0-10 Vdc
Output	Digital	2 not isolated 24 Vdc PNP

Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200



Stepper motors
with Motion controller

Advantages at a glance
Compact construction
Integrated Motion, Speed and Current control
Parametrization and programming with software

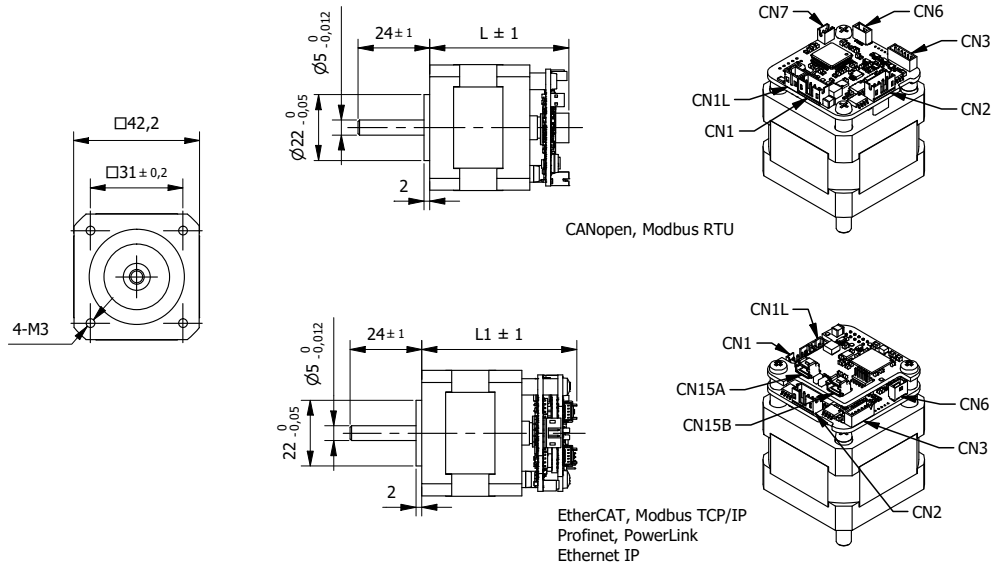
Our stepper motors with integrated electronics use continuous control technology for 65,536 microsteps per revolution and offer encoder options such as magnetic incremental, single-turn absolute, or multi-turn absolute, to meet a wide range of applications. Communication options include CANopen, Modbus RTU, EtherCAT, Modbus TCP/IP, Profinet, Powerlink and EtherNet/IP, allowing the motors to easily connect to any industrial network. Many of our models are IP65 rated, making them suitable for a wide range of environments where moisture or water spray is present.

Stepper motors with Motion Controller	Torque** (Nm)	219
ISS042	0,22...0,8	220
ISI042 - IP65	0,22...0,8	221
ISS057	0,55...1,89	222
ISI057-IP65	0,55...1,89	223
ISS060	1...3,1	224
ISI060-IP65	1...3,1	225
ISS086	2,2...12	226
ISI086 - IP65	2,2...12	227

** Holding Torque

Stepper Motor ISS042
with Motion Controller

42mm
0,22 - 0,8Nm



Specification						
	Model		...0047N	...0053N	...0061N	...0073N
1	Operating Voltage	VDC	12÷36	12÷36	12÷36	12÷36
2	Current/Phase	A	2	2	2	2
3	Resistance/Phase	Ω	0,95	1	1,4	2,1
4	Inductance/Phase	mH	1,4	2,2	2,5	4,7
5	Holding Torque	Nm	0,22	0,36	0,44	0,8
6	Rotor Inertia	gcm2	38	54	75	102
7	Length (L)	mm	47	53	61	73
8	Length (L1)	mm	52	58	66	79
9	Weight	Kg	0,27	0,32	0,39	0,52

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Protection Class	IP00
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating
Debug & configuration	Serial interface
Software*	Setup & config. - DL Studio Programming - DL Space
*Service SCI cable required and available on request	

Product code reference	
ISS 042 0047 N E 1 000 M S200	
042	Frame size
0047	Motor length
N	Brake options (N= no brake)
E	Encoder options
1	Connector code (1= standard)
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 4096 CPR or Absolute Single turn encoder	E

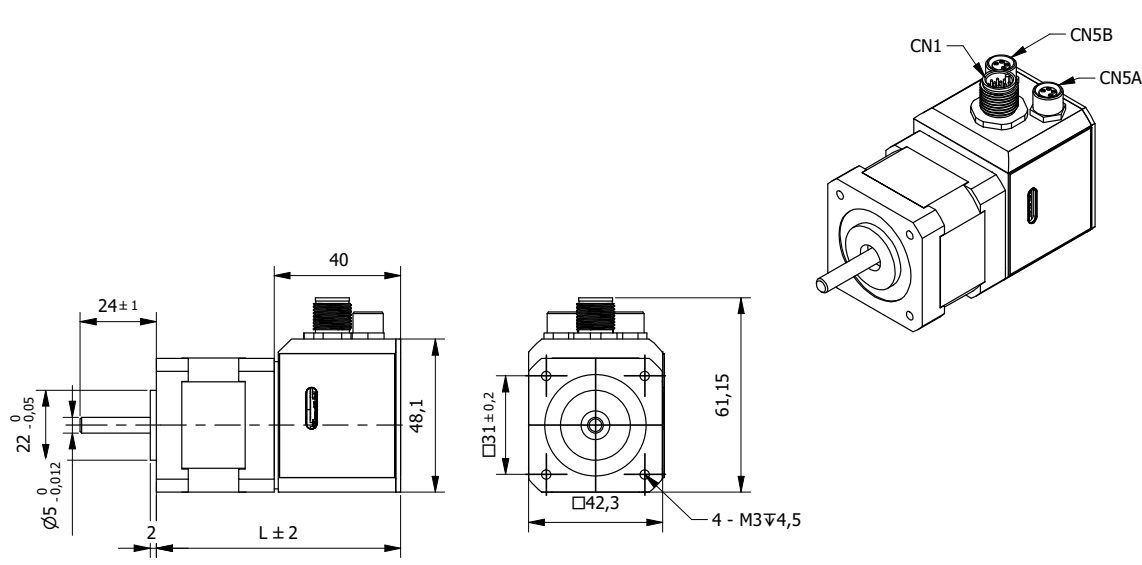
Connection		
Connector	Type	Function
CN1	JST B4B-PH	Power and Fieldbus (M-C)
CN1L	JST B2B-PH	Logic
CN2	JST B4B-PH-B	Motor connection
CN3	JST B6B-ZR	Inputs/Outputs
CN6	Molex 203562-0505	Service SCI Interface
CN7	JST B2B-ZR	Analog Input (M-C fieldbus)
CN15A/B	Molex 203562-0505	Fieldbus (T-E-P-R-H)
Cable kit available on request. More information can be found in the product manual on our website.		

Input and Output		
Input	Digital	3 not isolated 5-24 Vdc PNP
	Analog (M-C fieldbus)	1 with potentiometer or 0-10 Vdc not isolated
Output	Digital	2 not isolated open drain, 5-24 Vdc 100mA

Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Stepper Motor ISI042
with Motion Controller - IP65

42mm
0,22 - 0,8Nm



Specification						
	Model		...0077N	...0083N	...0091N	...0104N
1	Operating Voltage	VDC	12÷30	12÷30	12÷30	12÷30
2	Current/Phase	A	1,5	1,5	1,5	1,5
3	Resistance/Phase	Ω	1,6	1,95	2,3	3,2
4	Inductance/Phase	mH	2,2	4,5	4,6	8
5	Holding Torque	Nm	0,22	0,36	0,44	0,8
6	Rotor Inertia	gcm2	35	54	68	102
7	Length (L)	mm	77	83	91	104
8	Weight	Kg	0,35	0,41	0,48	0,61

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating
Debug & configuration	Serial interface (not for M-C)
Software*	Setup & config. - DL Studio Programming - DL Space
*Service SCI cable required and available on request	

Product code reference	
ISS 042 0077 N E 1 000 M S200	
042	Frame size
0077	Motor length
N	Brake options (N= no brake)
E	Encoder options
1	Connector code (1= standard)
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 4096 CPR or Absolute Single turn encoder	E

Other options	
Item	Code
Standard	000
With End resistor 120Ω (for M-C fieldbus)	001

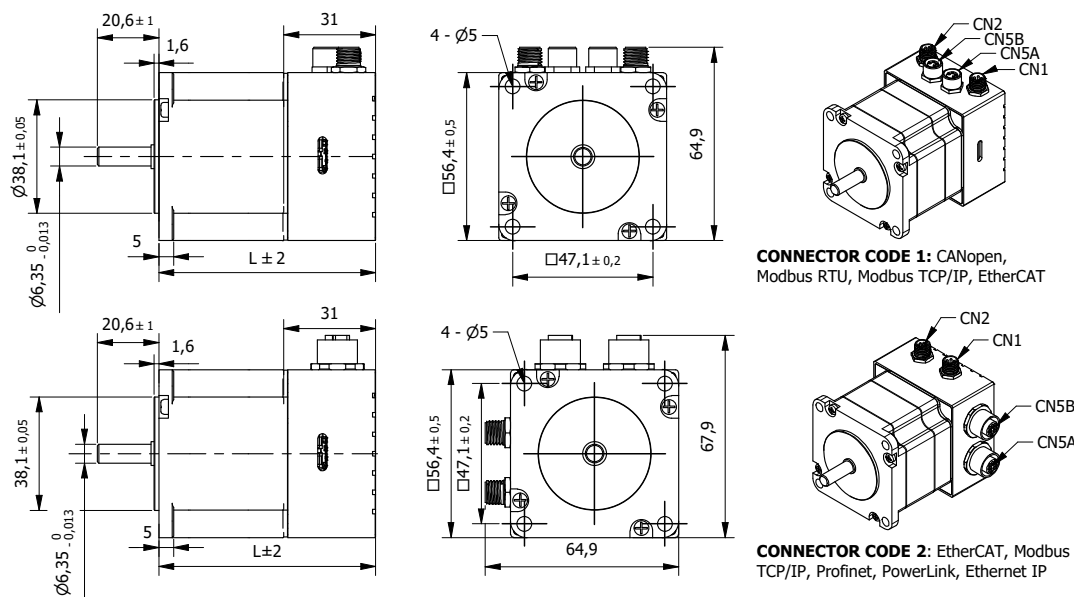
Connection		
Connector	Type	Function
CN1	M12 17P A-Code Male	Power, Logic, Inputs/Outputs
CN5A/B	M8 4P A-Code Female	Fieldbus
Cable kit available on request. More information can be found in the product manual on our website.		

Input and Output		
Input	Digital	3 not isolated 5-24 Vdc PNP
	Analog (M-C fieldbus)	1 with potentiometer or 0-10 Vdc not isolated
Output	Digital	2 not isolated open drain, 5-24 Vdc 100mA

Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Stepper Motor ISS057
with Motion Controller

□ 57mm
0,55 - 1,89Nm



Integrated Brake available on request

Specification					
	Model	...0071N	...0081N	...0085N	...0106N
1	Operating Voltage	VDC	12÷48	12÷48	12÷48
2	Current/Phase	A	3	3	3
3	Resistance/Phase	Ω	0,7	0,83	0,83
4	Inductance/Phase	mH	1,4	2,5	2,8
5	Holding Torque	Nm	0,55	1	1,26
6	Rotor Inertia	gcm ²	120	275	300
7	Detent Torque	Nm	0,021	0,036	0,04
8	Length (L)	mm	71	81	85
9	Weight	Kg	0,54	0,71	0,78

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Protection Class	IP30
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75 N
Max Axial Force	15 N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface (not for M-C)
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

Product code reference	
ISS 057 0071 N E 1 000 M S200	
057	Frame size
0071	Motor length
N	Brake options (N= no brake)
E	Encoder options
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 4096 CPR or Absolute Single turn encoder	E
Other options on request	

Other options	
Item	Code
Standard	000
With End resistor 120 Ω (for M-C fieldbus)	001

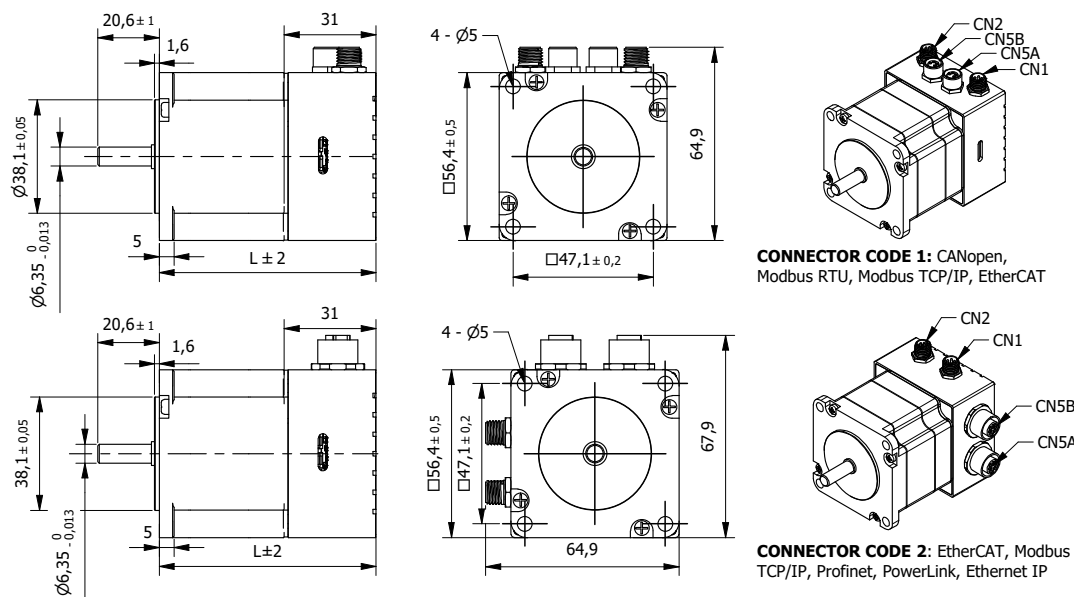
Connection			
Connector	Type	Function	Code
CN1	M8 4P A-Code Male	Power/Logic	
CN2	M8 8P A-Code Male	Inputs/Outputs	
CN5A/B	M8 4P A-Code Female	Fieldbus (M-C-T-E)	1
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	2
Cable kit available on request. More information can be found in the product manual on our website.			

Input and Output		
Input	Digital	Up to 4 not isolated 5-24 Vdc PNP
	Analog (M-C fieldbus)	1 with potentiometer or 0-10 Vdc not isolated
Output	Digital	Up to 2 not isolated open drain, 5-24 Vdc 100mA

Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Stepper Motor ISI057
with Motion Controller - IP65

□ 57mm
0,55 - 1,89Nm



Integrated Brake available on request

Specification					
	Model	...0073N	...0083N	...0087N	...0108N
1	Operating Voltage	VDC	12÷48	12÷48	12÷48
2	Current/Phase	A	3	3	3
3	Resistance/Phase	Ω	0,7	0,83	0,83
4	Inductance/Phase	mH	1,4	2,5	2,8
5	Holding Torque	Nm	0,55	1	1,26
6	Rotor Inertia	gcm ²	120	275	300
7	Detent Torque	Nm	0,021	0,036	0,04
8	Length (L)	mm	73	83	87
9	Weight	Kg	0,56	0,73	0,79

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75 N
Max Axial Force	15 N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface (not for M-C)
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

Product code reference	
ISI 057 0073 N E 1 000 M S200	
057	Frame size
0073	Motor length
N	Brake options (N= no brake)
E	Encoder options
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 4096 CPR or Absolute Single turn encoder	E
Other options on request	

Other options	
Item	Code
Standard	000
With End resistor 120 Ω (for M-C fieldbus)	001

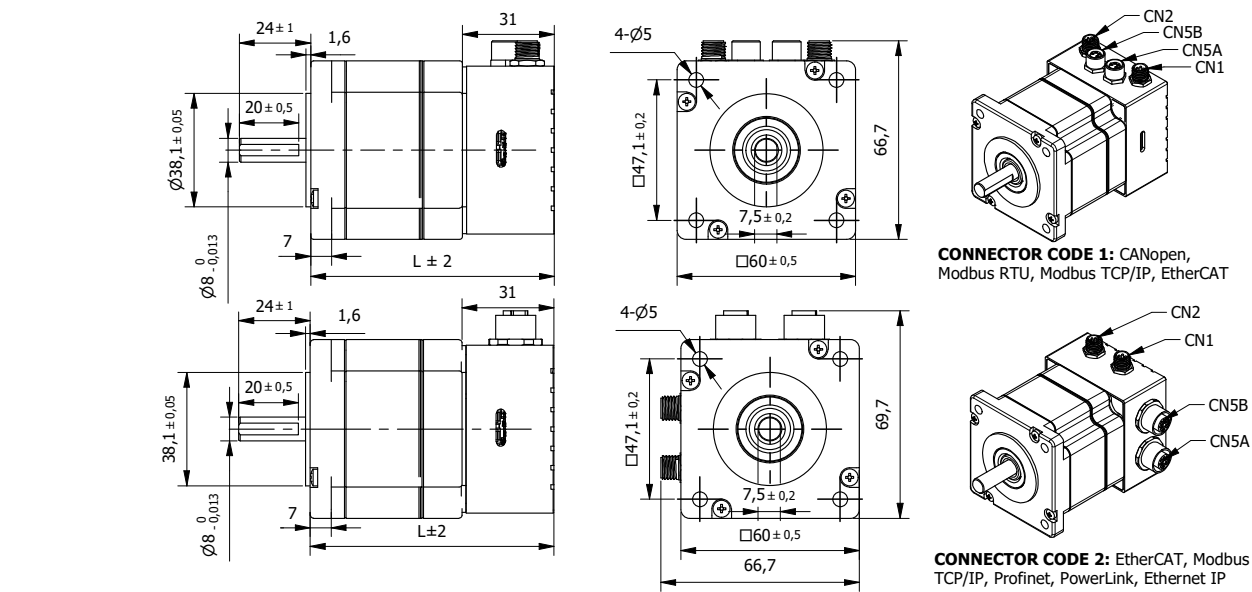
Connection			
Connector	Type	Function	Code
CN1	M8 4P A-Code Male	Power/Logic	
CN2	M8 8P A-Code Male	Inputs/Outputs	
CN5A/B	M8 4P A-Code Female	Fieldbus (M-C-T-E)	1
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	2
Cable kit available on request. More information can be found in the product manual on our website.			

Input and Output		
Input	Digital	Up to 4 not isolated 5-24 Vdc PNP
	Analog (M-C fieldbus)	1 with potentiometer or 0-10 Vdc not isolated
Output	Digital	Up to 2 not isolated open drain, 5-24 Vdc 100mA

Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Stepper Motor ISS060
with Motion Controller

□ 60mm
1 - 3,1Nm



Integrated Brake available on request

Specification					
	Model	...0080N	...0089N	...0100N	...0121N
1	Operating Voltage	VDC	12÷48	12÷48	12÷48
2	Current/Phase	A	3	3	3
3	Resistance/Phase	Ω	0,68	0,8	0,98
4	Inductance/Phase	mH	1,7	3	5,4
5	Holding Torque	Nm	1	1,75	2,1
6	Rotor Inertia	gcm2	275	440	570
7	Detent Torque	Nm	0,05	0,069	0,088
8	Length (L)	mm	80	89	100
9	Weight	Kg	0,76	0,94	1,15

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Protection Class	IP30
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75 N
Max Axial Force	15 N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface (not for M-C)
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

Product code reference	
ISS 060 0080 N E 1 000 M S200	
060	Frame size
0080	Motor length
N	Brake options (N= no brake)
E	Encoder options
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 4096 CPR or Absolute Single turn encoder	E
Other options on request	

Other options	
Item	Code
Standard	000
With End resistor 120Ω (for M-C fieldbus)	001

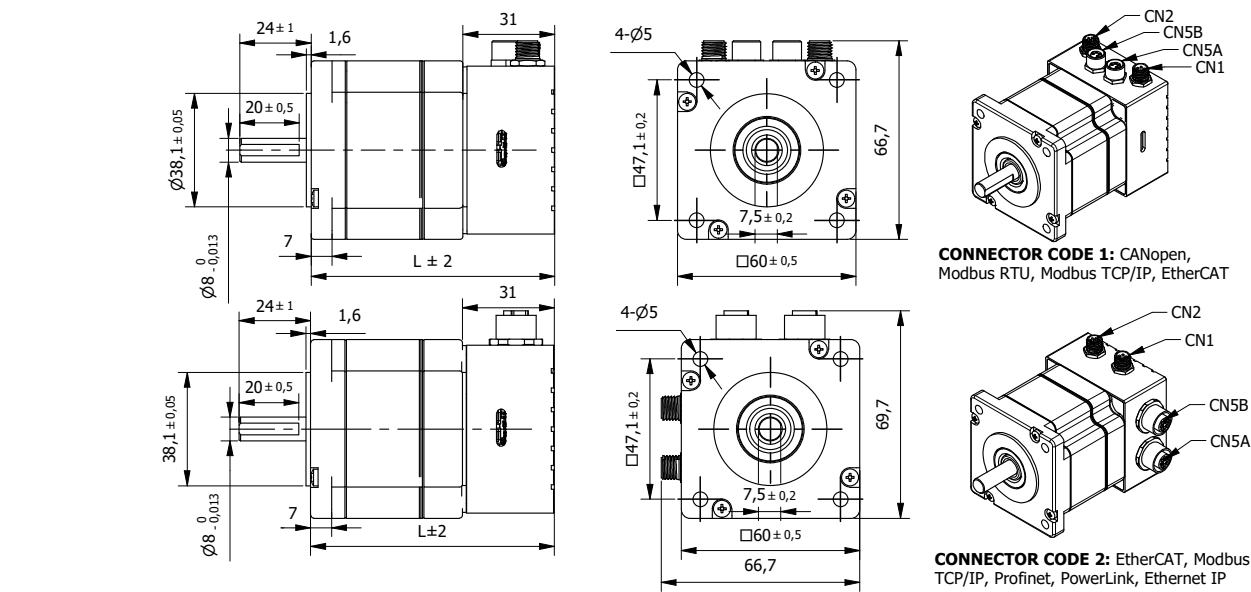
Connection			
Connector	Type	Function	Code
CN1	M8 4P A-Code Male	Power/Logic	
CN2	M8 8P A-Code Male	Inputs/Outputs	
CN5A/B	M8 4P A-Code Female	Fieldbus (M-C-T-E)	1
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	2
Cable kit available on request. More information can be found in the product manual on our website.			

Input and Output	
Input	Digital Up to 4 not isolated 5-24 Vdc PNP
	Analog (M-C fieldbus) 1 with potentiometer or 0-10 Vdc not isolated
Output	Digital Up to 2 not isolated open drain, 5-24 Vdc 100mA

Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Stepper Motor ISI060
with Motion Controller - IP65

□ 60mm
1 - 3,1Nm



Integrated Brake available on request

Specification					
	Model	...0082N	...0091N	...0102N	...0123N
1	Operating Voltage	VDC	12÷48	12÷48	12÷48
2	Current/Phase	A	3	3	3
3	Resistance/Phase	Ω	0,68	0,8	0,98
4	Inductance/Phase	mH	1,7	3	5,4
5	Holding Torque	Nm	1	1,75	2,1
6	Rotor Inertia	gcm2	275	440	570
7	Detent Torque	Nm	0,05	0,069	0,088
8	Length (L)	mm	82	91	102
9	Weight	Kg	0,78	0,95	1,16

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75 N
Max Axial Force	15 N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface (not for M-C)
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

Product code reference	
ISI 060 0082 N E 1 000 M S200	
060	Frame size
0082	Motor length
N	Brake options (N= no brake)
E	Encoder options
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 4096 CPR or Absolute Single turn encoder	E
Other options on request	

Other options	
Item	Code
Standard	000
With End resistor 120Ω (for M-C fieldbus)	001

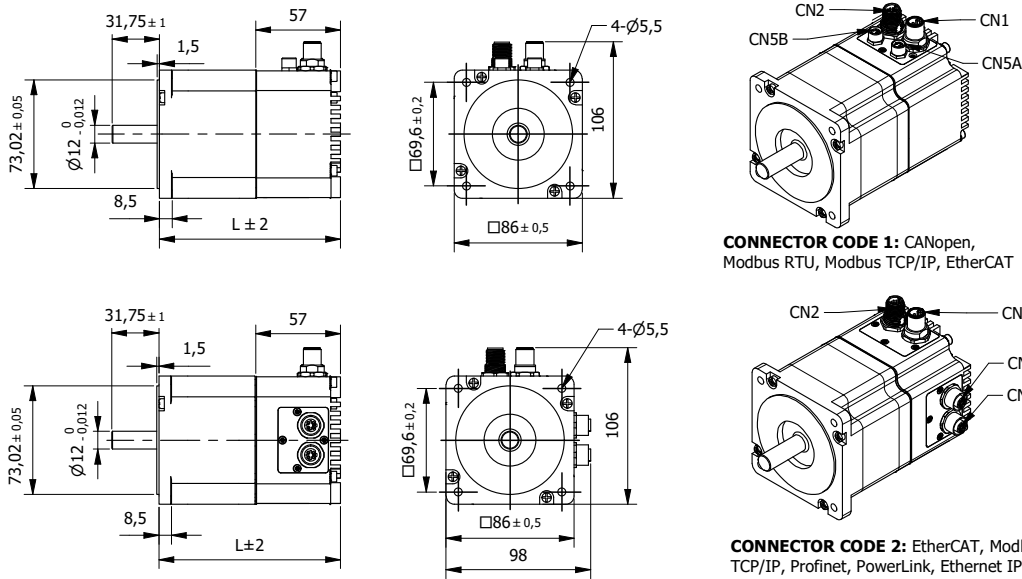
Connection			
Connector	Type	Function	Code
CN1	M8 4P A-Code Male	Power/Logic	
CN2	M8 8P A-Code Male	Inputs/Outputs	
CN5A/B	M8 4P A-Code Female	Fieldbus (M-C-T-E)	1
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	2
Cable kit available on request. More information can be found in the product manual on our website.			

Input and Output	
Input	Digital Up to 4 not isolated 5-24 Vdc PNP
	Analog (M-C fieldbus) 1 with potentiometer or 0-10 Vdc not isolated
Output	Digital Up to 2 not isolated open drain, 5-24 Vdc 100mA

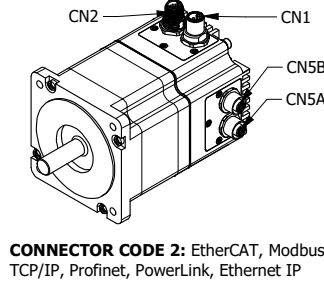
Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Stepper Motor ISS086
with Motion Controller

□ 86mm
2,2 - 12Nm



CONNECTOR CODE 1: CANopen, Modbus RTU, Modbus TCP/IP, EtherCAT



CONNECTOR CODE 2: EtherCAT, Modbus TCP/IP, Profinet, PowerLink, Ethernet IP

Integrated Brake available on request

Specification						
	Model	...0122N	...0135N	...0156N	...0173N	...0212N
1	Operating Voltage	VDC	12÷48	12÷48	12÷48	12÷48
2	Current/Phase	A	3	5,5	5,5	6,2
3	Resistance/Phase	Ω	1,14	0,42	0,47	0,68
4	Inductance/Phase	mH	6,8	3,5	4,5	9
5	Holding Torque	Nm	2,2	4,5	7	12
6	Rotor Inertia	gcm ²	1000	1400	2700	4000
7	Detent Torque	Nm	0,08	0,12	0,12	0,36
8	Length (L)	mm	122	135	156	173
9	Weight	Kg	2,19	2,79	3,29	4,29

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Protection Class	IP30
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	220 N
Max Axial Force	60 N
Dielectric Strength (for 1 min.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface (not for M-C)
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

Product code reference	
ISS 086 0122 N E 1 000 M S200	
086	Frame size
0122	Motor length
N	Brake options (N= no brake)
E	Encoder options
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 4096 CPR or Absolute Single turn encoder	E
Other options on request	

Other options	
Item	Code
Standard	000
With End resistor 120Ω (for M-C fieldbus)	001

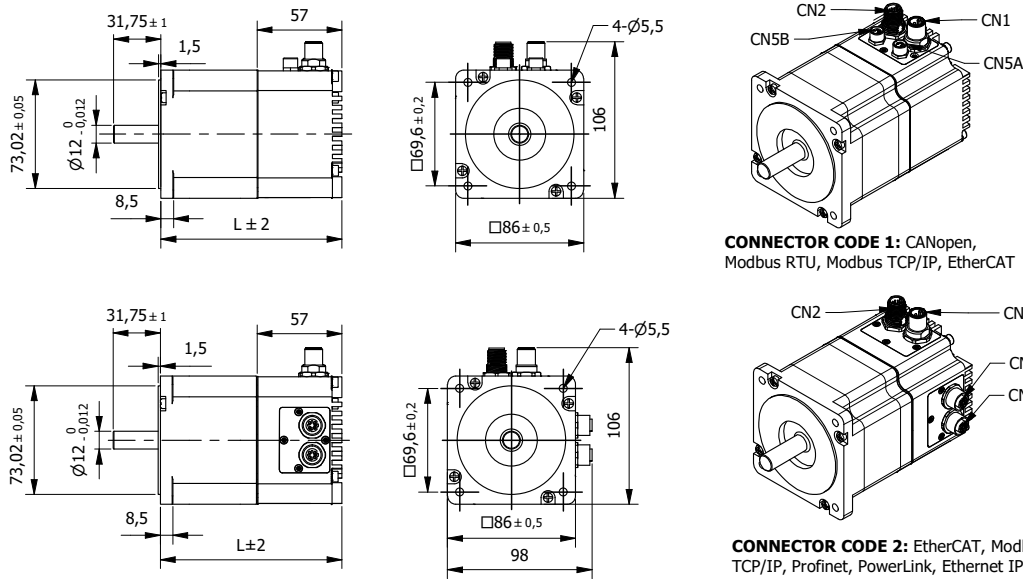
Connection			
Connector	Type	Function	Code
CN1	M12 5P L-Code Male	Power/Logic	
CN2	M12 12P A-Code Male	Inputs/Outputs	
CN5A/B	M8 4P A-Code Female	Fieldbus (M-C-T-E)	1
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	2
Cable kit available on request. More information can be found in the product manual on our website.			

Input and Output		
Input	Digital	4 not isolated 5-24 Vdc PNP
	Analog (M-C fieldbus)	2 with potentiometer or 0-10 Vdc not isolated
Output	Digital	2 not isolated open drain, 5-24 Vdc 100mA

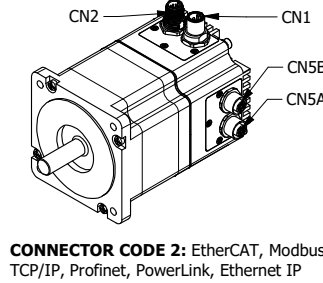
Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Stepper Motor ISI086
with Motion Controller - IP65

□ 86mm
2,2 - 12Nm



CONNECTOR CODE 1: CANopen, Modbus RTU, Modbus TCP/IP, EtherCAT



CONNECTOR CODE 2: EtherCAT, Modbus TCP/IP, Profinet, PowerLink, Ethernet IP

Integrated Brake available on request

Specification						
	Model	...0122N	...0135N	...0156N	...0173N	...0212N
1	Operating Voltage	VDC	12÷48	12÷48	12÷48	12÷48
2	Current/Phase	A	3	5,5	5,5	6,2
3	Resistance/Phase	Ω	1,14	0,42	0,47	0,68
4	Inductance/Phase	mH	6,8	3,5	4,5	9
5	Holding Torque	Nm	2,2	4,5	7	12
6	Rotor Inertia	gcm ²	1000	1400	2700	4000
7	Detent Torque	Nm	0,08	0,12	0,12	0,36
8	Length (L)	mm	122	135	156	173
9	Weight	Kg	2,19	2,79	3,29	4,29

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	220 N
Max Axial Force	60 N
Dielectric Strength (for 1 min.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface (not for M-C)
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

Product code reference	
ISS 086 0122 N E 1 000 M S200	
086	Frame size
0122	Motor length
N	Brake options (N= no brake)
E	Encoder options
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 4096 CPR or Absolute Single turn encoder	E
Other options on request	

Other options	
Item	Code
Standard	000
With End resistor 120Ω (for M-C fieldbus)	001

Connection			
Connector	Type	Function	Code
CN1	M12 5P L-Code Male	Power/Logic	
CN2	M12 12P A-Code Male	Inputs/Outputs	
CN5A/B	M8 4P A-Code Female	Fieldbus (M-C-T-E)	1
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	2
Cable kit available on request. More information can be found in the product manual on our website.			

Input and Output		
Input	Digital	4 not isolated 5-24 Vdc PNP
	Analog (M-C fieldbus)	2 with potentiometer or 0-10 Vdc not isolated
Output	Digital	2 not isolated open drain, 5-24 Vdc 100mA

Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Stepper

Stepper Motors



Flat Hybrid Stepper

p.309



Hybrid Stepper
S series
Standard

p.239



Hybrid Stepper
SH series
High Torque

p.249



Hybrid Stepper
STC series
Connector

p.285



3-Phase Hybrid Stepper

p.295



Hollow Shaft Stepper

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Hybrid Stepper
with Encoder

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IP65 Hybrid Stepper

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Technical introduction		234
Hybrid Stepper motors - S Standard series		Torque* (Nm) 239
57S41...76	0,288...1,25	240
86S67...125	2,3...7,6	244
Hybrid Stepper motors - SH High Torque series		Torque* (Nm) 249
14SH30	0,006	250
20SH	0,018...0,03	251
25SH23	0,033	252
28SH32...51	0,043...0,12	253
35SH	0,07...0,14	256
39SH20...38	0,065...0,29	257
42SH33...60	0,158...0,8	260
42SH33...47M - step 0,9°	0,158...0,44	264
57SH41...76	0,39...1,89	267
57SH41...76M - step 0,9°	0,39...1,8	271
60SH45...86	0,78...3,1	274
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110SH	11,2...28	283
Hybrid Stepper motors - STC Connector series		Torque* (Nm) 285
20STC	0,022...0,036	286
28STC32...51	0,08...0,18	287
57STC41...76	0,6...2,3	290
3-Phase Hybrid Stepper motors		Torque* (Nm) 295
42 3P	0,08...0,2	296
57 3P	0,45...1,5	297
60 3P53	0,9	298
Hollow Shaft Stepper motors		Torque* (Nm) 301
20STC40 H	0,036	302
28STC51 H	0,12	303
35STC38 H	0,23	304
42STC47 H	0,44	305
57STC76 H	2,3	306
86SH118 H	6	307
Flat Hybrid Stepper motors		Torque* (Nm) 309
28S10	0,01	310
63S10	0,064	311
Stepper motors with Encoder		Torque* (Nm) 313
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60SC	1...3	315
86SC	3,5...12	316
IP65 Hybrid Stepper motors		Torque* (Nm) 319
SM28 070 - IP65	0,127	320
SM42-E - IP65	0,16...0,72	321
SM57-E - IP65	0,7...1,95	322

* Holding Torque

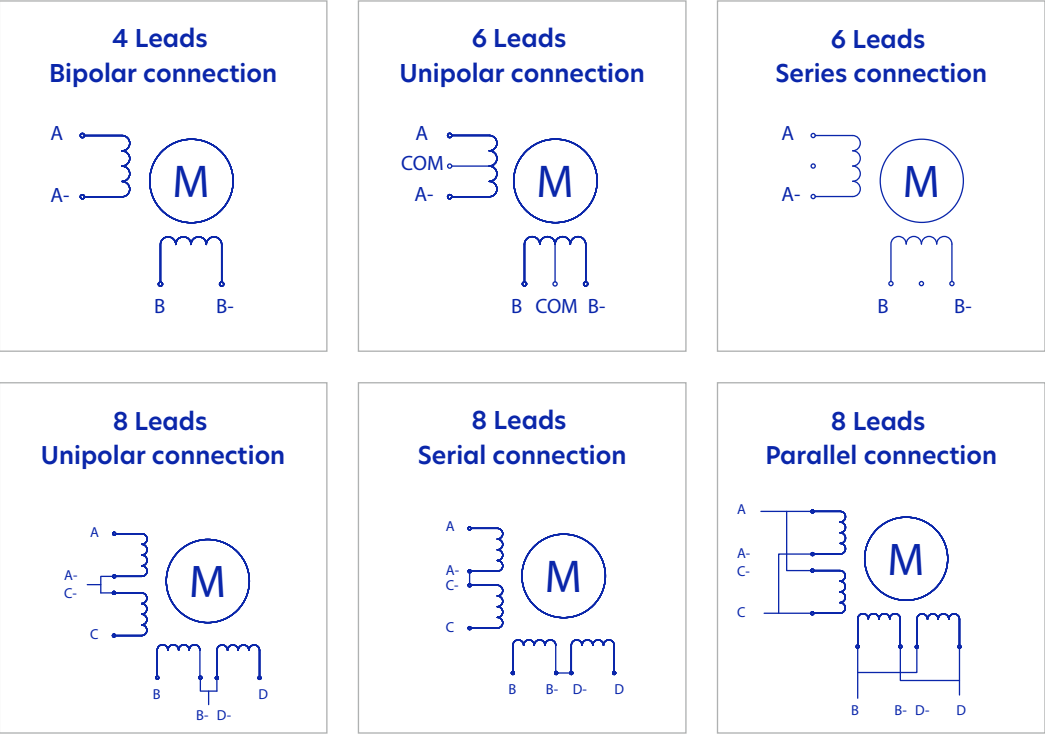
Term	
Rated voltage	Voltage necessary to reach the nominal current per phase.
Current/Phase	The current supplied to the motor phases that will not exceed, at an ambient temperature of 20°C, the thermal limits of the motor.
Resistance/Phase	Winding resistance per phase. Tolerance +/- 12%, steady state.
Inductance/Phase	Winding inductance per phase measured at 1kHz.
Holding Torque	The torque generated by the motor at nominal current.
Rotor Inertia	Is the mass moment of inertia of the rotor, based on the axis of rotation.
Detent Torque	The torque required to rotate a non-energized step motor.
Number of leads	Number of lead wires available to connect the motor.
Length	Total motor length.
Weight	Total motor mass.
Step angle	Number of angular degrees the motor moves per full-step
Step angle accuracy	The percentage position error per full step, at no load and nominal current. This error is not cumulative between steps.
Insulation class	The electrical insulation system for wires and other wire-wound electrical components is divided into different classes by temperature and temperature rise. The electrical insulation system is sometimes referred to as insulation class or thermal classification.
Ambient temperature	Temperatures at which the motor can operate.
Max. Temp. Rise (rated current 2 phase on)	Maximum temperature rise for the motor at rated voltage and two phases
Max. shaft radial play	The shaft displacement perpendicular to the shaft due to a side force applied perpendicular to the shaft axis.
Max. shaft axial play	Axial shaft displacement occurring during a reversal of an axial force on the shaft.
Max. Radial force	Maximum force that can be applied to the shaft in the radial direction (any direction perpendicular to the motor shaft axis).
Max. Axial force	Maximum force that can be applied to the shaft in the axial direction (in the same axis as or parallel to the motor shaft axis).
Dielectric strength	A dielectric test (also known as hipot or high potential test) is performed on all motors under 500V phases to the housing and during 5 seconds after voltage ramp up. Maximum allowed leakage is 1mA
Insulation resistance	The measurement of insulation resistance is carried out by means of a megohmmeter - high resistance range ohmmeter. DC voltage is applied between the windings and the ground of the motor.

Wires Connection table				
4 lead wires	A	A-	B	B-
Color Code 1	White	Red	Blue	Yellow
Color Code 2	Black	Green	Red	Blue
Color Code 3	Red	Blue	Orange	Yellow
Color Code 4	Red	White	Yellow	Green
Color Code 5	Yellow	Green	Red	Black

3 phase wires	U	V	W
Color Code 1	Red	Yellow	Blue
Color Code 2	Red-Orange	White-Blue	Yellow-Green
Color Code 3	Red	Green	White

6 lead wires	A	A-	B	B-	Com A	Com B
Color Code 1	White	Red	Blue	Yellow	Black	Brown
Unipolar Motor	Black	Green	Red	Blue	Yellow	White

8 lead wires	A	A-	C	C-	B	B-	D	D-
Color Code 1	Blue/White	Blue	Red	Red/White	Green/White	Green	Black	Black/White
Color Code 2	Orange	Orange/White	Black	Black/White	Red	Red/White	Yellow	Yellow/White
Color Code 3	Red	Yellow	Black	Blue	White	Orange	Green	Brown



Product families
Hybrid Stepper motors
3-Phase Hybrid Stepper motors
Hollow Shaft Stepper motors
Flat Hybrid Stepper motors
Stepper motors with Encoder
IP65 Hybrid Stepper motors

A stepper motor is an electromechanical device which converts electrical pulses into discrete mechanical movements. The shaft or spindle of a stepper motor rotates in discrete step increments when electrical command pulses are applied to it in the proper sequence. The motors rotation has several direct relationships to these applied input pulses. The sequence of the applied pulses is directly related to the direction of motor shafts rotation. A stepper motor can be a good choice whenever controlled movement is required. They can be used to advantage in applications where you need to control rotation angle, speed, position and synchronism.

Main advantages
1 The rotation angle of the motor is proportional to the input pulse.
2 Precise positioning and repeatability of movement since good stepper motors have an accuracy of 3 - 5% of a step and this error is non cumulative from one step to the next.
3 Excellent response to starting/stopping/reversing.
4 Very reliable since there are no contact brushes in the motor. Therefore the life of the motor is simply dependent on the life of the bearing.
5 A wide range of rotational speeds can be realized as the speed is proportional to the frequency of the input pulses.

The hybrid stepper motor is more expensive than the PM stepper motor but provides better performance with respect to step resolution, torque and speed. This motor combines the best features of both the PM and Variable Reluctance stepper motors. The rotor is multi-toothed and contains an axially magnetized concentric magnet around its shaft. The teeth on the rotor provide an even better path which helps guide the magnetic flux to preferred locations in the air gap. This further increases the detent, holding and dynamic torque characteristics of the motor when compared with both the VR and PM types.

Hybrid Stepper motors (2-Phase)

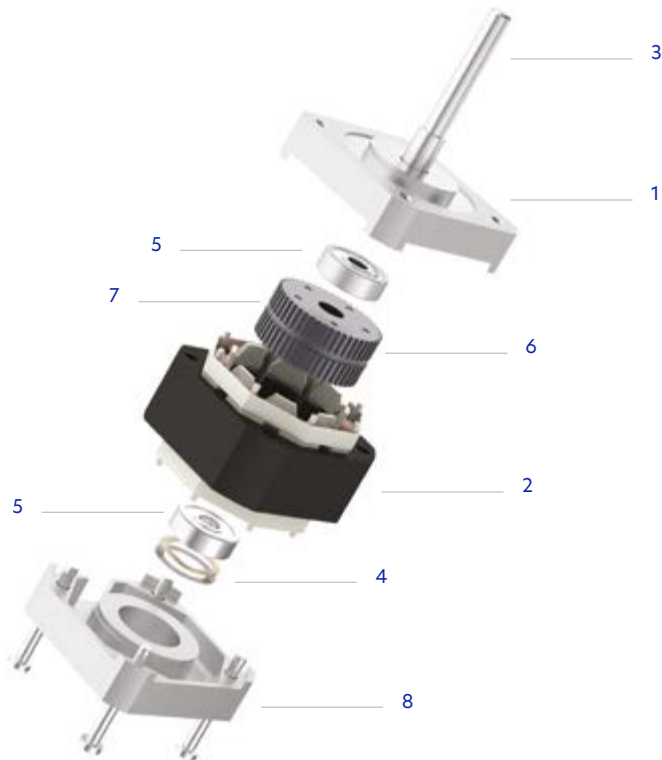
3-Phase technology in hybrid stepper motor is used mainly where ultra-low vibration and very low noise levels are required. The drive circuit of these motors is simplified because it is driven with a star wiring connection. The use of three phases inherently helps to reduce torque ripple and smooth motor performance. An example of an ideal application is in performance lighting, where quick movement and quiet operation are required.

3-Phase Hybrid Stepper motors

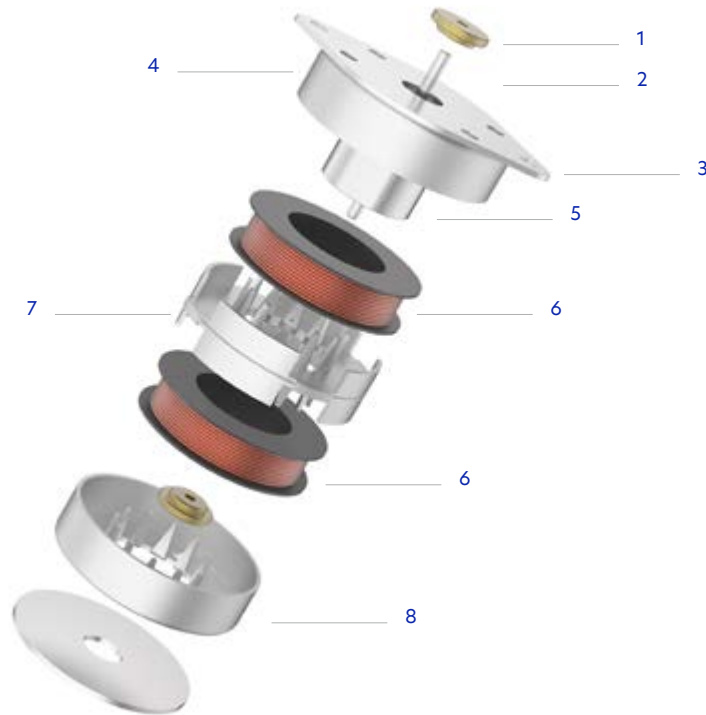
Our Hybrid stepper motors are also available equipped with an optical incremental encoder to increase the motion precision. Thanks to the encoder, the drive knows the position (or the speed) of the motor in real time and can perform adjustments to align the real condition with the condition requested by the system. The presence of an encoder is highly recommended when is critical to know the status of the motor (both position and speed) in every instant.

Stepper motors with integrated Encoder

Composition Hybrid Stepper
1 Front Endbell
2 Stator & Coils
3 Shaft
4 Washer
5 Ball bearings
6 Rotor cup
7 Magnet
8 Rear Endbell



Composition PM Stepper
1 Sleeve bearing
2 Shaft
3 Front flange
4 Front cover/stator
5 Rotor
6 Windings
7 Inner stator
8 Rear cover/stator





Hybrid Stepper
S series
Standard

p.239



Hybrid Stepper
SH series
High Torque

p.249



Hybrid Stepper
STC series
Connector

p.285

Advantages at a glance
High torque
High speed
High reliability

The hybrid stepper motor combines the best features of both the Permanent Magnet and Variable Reluctance stepper motors. The rotor is multi-toothed and contains an axially magnetized concentric magnet around its shaft. The teeth on the rotor provide an even better path which helps guide the magnetic flux to preferred locations in the air gap. This further increases the detent, holding and dynamic torque characteristics of the motor when compared with both the VR and PM types.

Hybrid Stepper motors - S Standard series	Torque* (Nm)	239
57S41	0,29...0,4	240
57S51	0,49...0,69	241
57S56	0,6...0,84	242
57S76	0,9...1,25	243
86S67	2,3...2,8	244
86S94	3,8...4,8	245
86S125	6,2...7,6	246

Hybrid Stepper motors - SH High Torque series	Torque* (Nm)	249
14SH30	0,006	250
20SH	0,018...0,03	251
25SH23	0,033	252
28SH32	0,043...0,06	253
28SH45	0,075...0,095	254
28SH51	0,09...0,12	255
35SH	0,07...0,14	256
39SH20	0,065...0,08	257
39SH34	0,13...0,21	258
39SH38	0,2...0,29	259
42SH33	0,158...0,22	260
42SH38	0,259...0,36	261
42SH47	0,317...0,44	262
42SH60	0,65...0,8	263
42SH33M - step 0,9°	0,158...0,22	264
42SH38M - step 0,9°	0,259...0,36	265
42SH47M - step 0,9°	0,317...0,44	266
57SH41	0,39...0,55	267
57SH51	0,72...1,01	268
57SH56	0,9...1,26	269
57SH76	1,35...1,89	270
57SH41M - step 0,9°	0,39...0,55	271
57SH56M - step 0,9°	0,9...1,26	272
57SH76M - step 0,9°	1,35...1,8	273
60SH45	0,78...1,1	274
60SH56	1,17...1,65	275
60SH65	1,5...2,1	276
60SH86	2,2...3,1	277
86SH65	2,6...3,4	278
86SH80	4,6	279
86SH96	7,0	280
86SH118	8,7	281
86SH156	12,1	282
110SH	11,2...28	283

Hybrid Stepper motors - STC Connector series	Torque* (Nm)	285
20STC	0,022...0,036	286
28STC32	0,08	287
28STC40	0,13	288
28STC51	0,18	289
57STC41	0,6	290
57STC56	1,4	291
57STC76	2,3	292

* Holding Torque

Stepper motors

2-Phase Hybrid



Hybrid Stepper motors

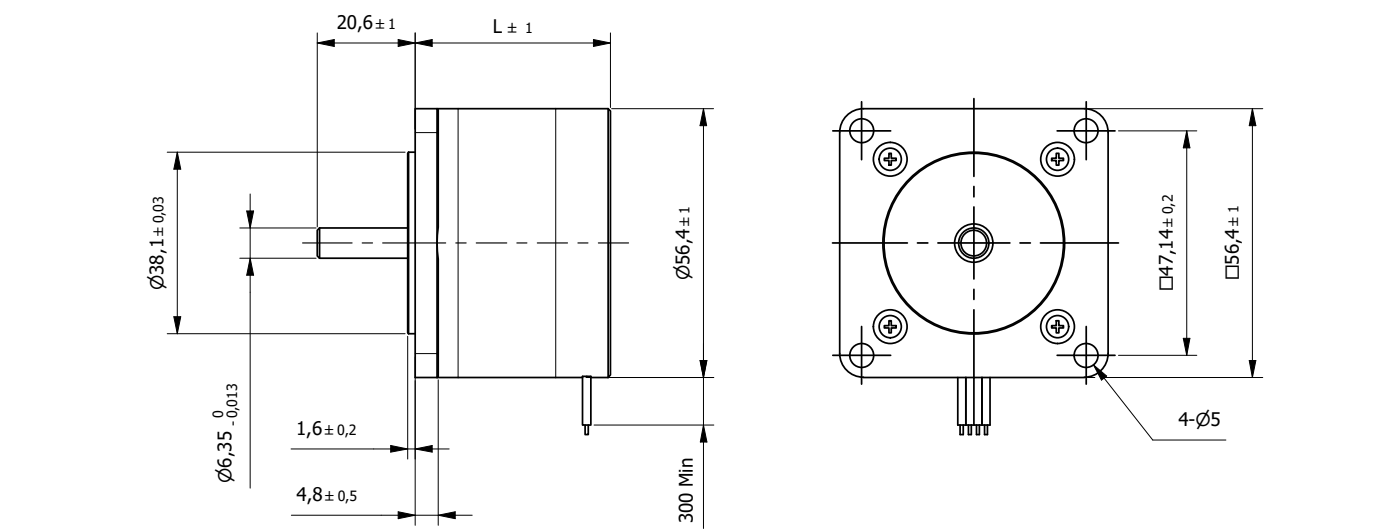
S series - Standard

Hybrid Stepper motors - S Standard series		Torque* (Nm)
57S41	0,29...0,4	240
57S51	0,49...0,69	241
57S56	0,6...0,84	242
57S76	0,9...1,25	243
86S67	2,3...2,8	244
86S94	3,8...4,8	245
86S125	6,2...7,6	246

* Holding Torque

Hybrid Stepper Motor 57S41

□ 57mm

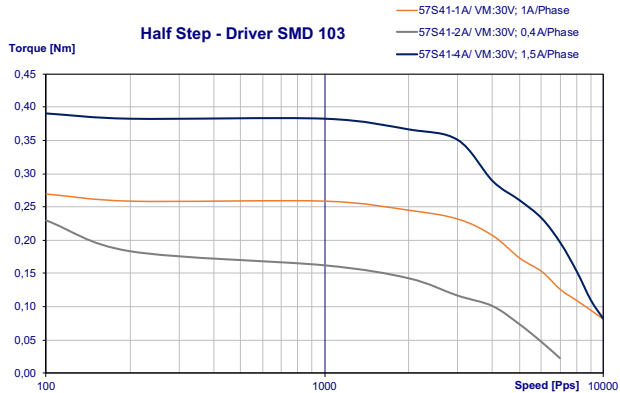


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification					
	Model	57S41-1A	57S41-2A	57S41-4A	
1	Rated Voltage	V	4	12	2,8
2	Current/Phase	A	1,1	0,4	1,56
3	Resistance/Phase	Ω	3,6	30	1,8
4	Inductance/Phase	mH	4	30	3,6
5	Holding Torque	Nm	0,288	0,288	0,4
6	Rotor Inertia	gcm2	57	57	57
7	Detent Torque	Nm	0,018	0,018	0,018
8	n° of Leads		6	6	4
9	Length (L)	mm	41	41	41
10	Weight	Kg	0,35	0,35	0,35

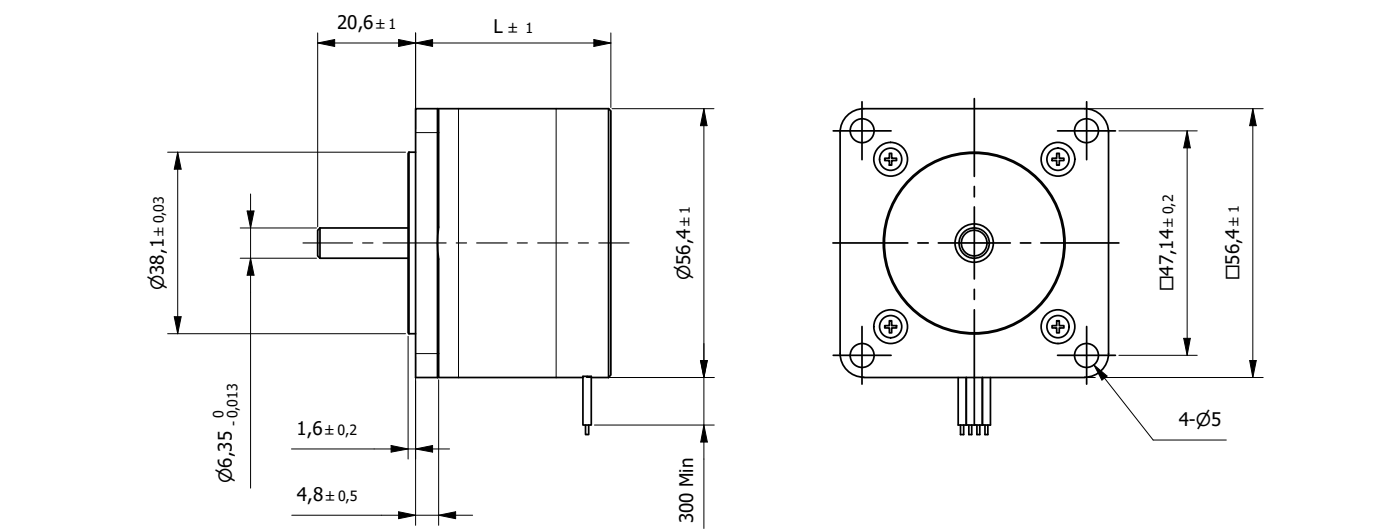
Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG22	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 57S51

□ 57mm

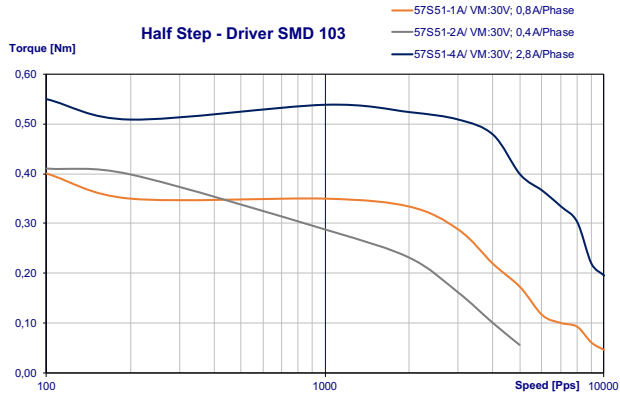


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification					
	Model	57S51-1A	57S51-2A	57S51-4A	
1	Rated Voltage	V	6	12	2,38
2	Current/Phase	A	0,85	0,42	2,8
3	Resistance/Phase	Ω	7,1	29	0,85
4	Inductance/Phase	mH	9	36	2,1
5	Holding Torque	Nm	0,49	0,49	0,69
6	Rotor Inertia	gcm2	110	110	110
7	Detent Torque	Nm	0,035	0,035	0,035
8	n° of Leads		6	6	4
9	Length (L)	mm	51	51	51
10	Weight	Kg	0,6	0,6	0,6

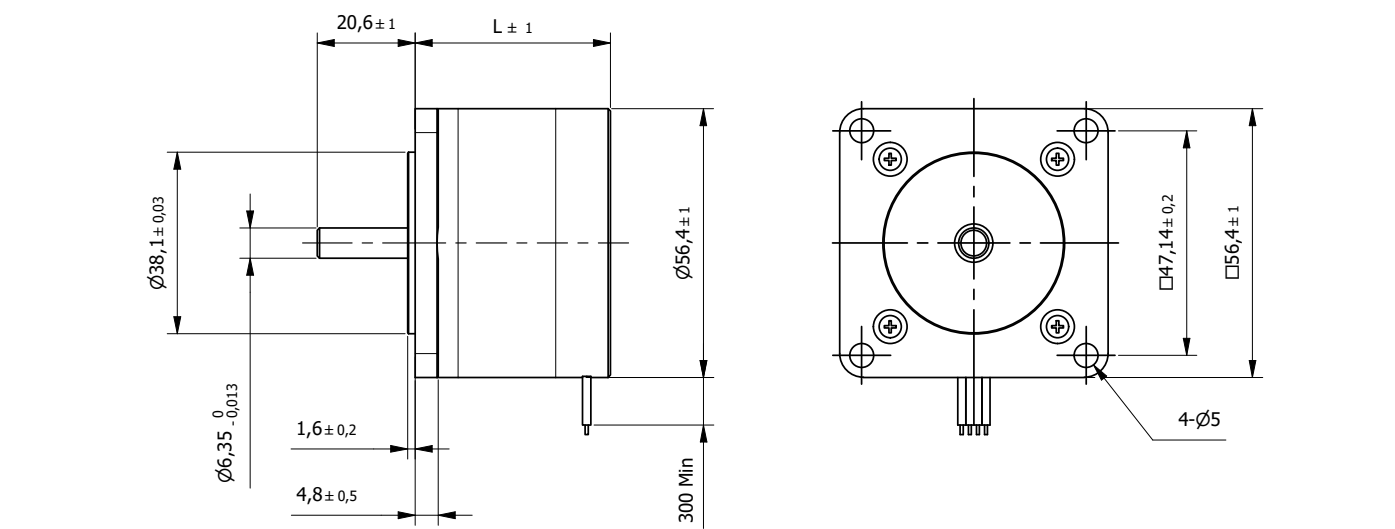
Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG22	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 57S56

□ 57mm

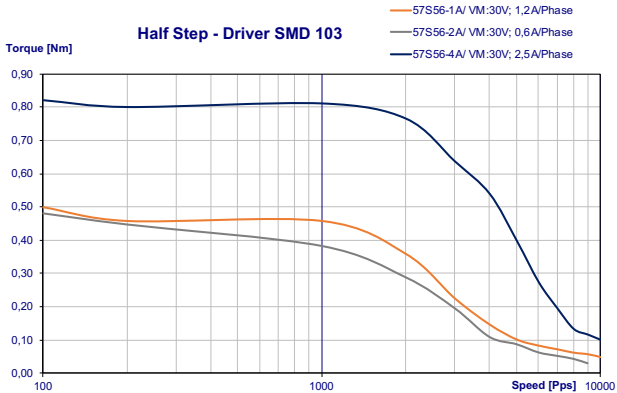


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification					
	Model		57S56-1A	57S56-2A	57S56-4A
1	Rated Voltage	V	6	12	2,8
2	Current/Phase	A	1,2	0,6	2,5
3	Resistance/Phase	Ω	5	20	1,1
4	Inductance/Phase	mH	8	32	3,6
5	Holding Torque	Nm	0,605	0,605	0,84
6	Rotor Inertia	gcm2	135	135	135
7	Detent Torque	Nm	0,042	0,042	0,042
8	n° of Leads		6	6	4
9	Length (L)	mm	56	56	56
10	Weight	Kg	0,65	0,65	0,65

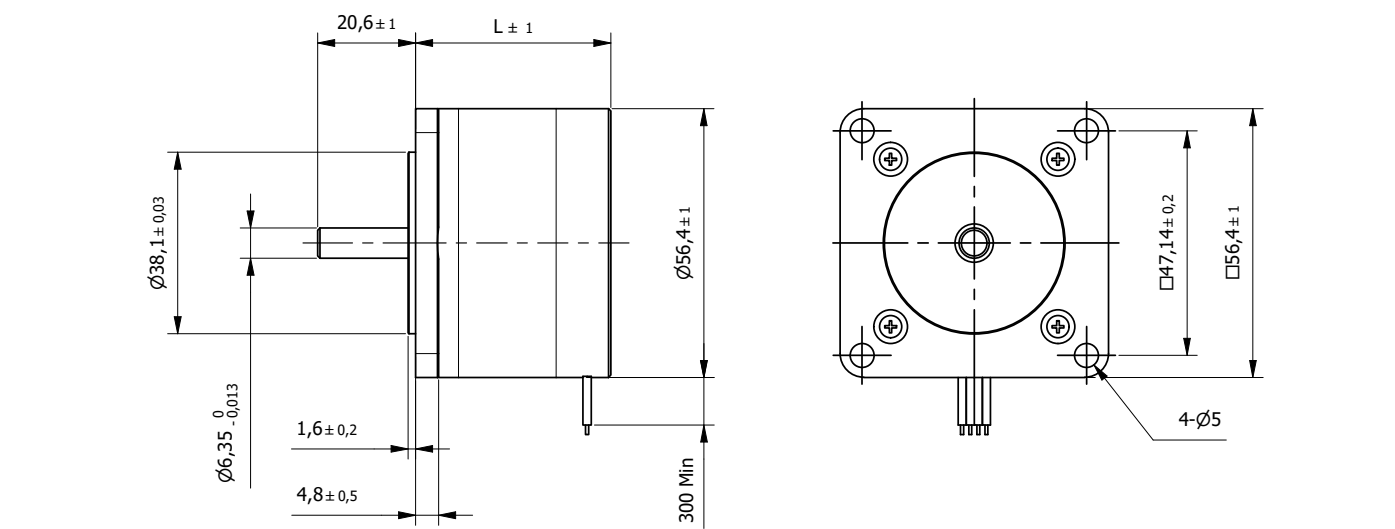
Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG22	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 57S76

□ 57mm

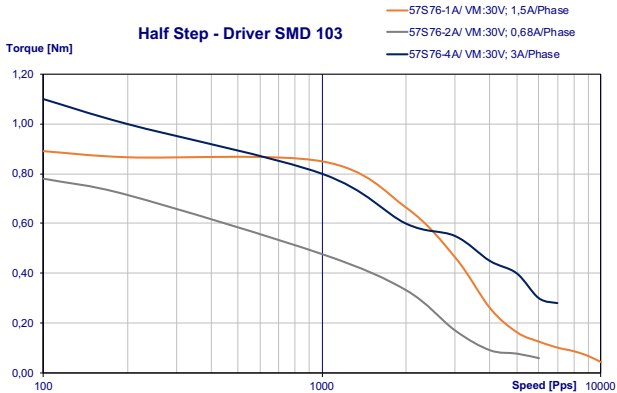


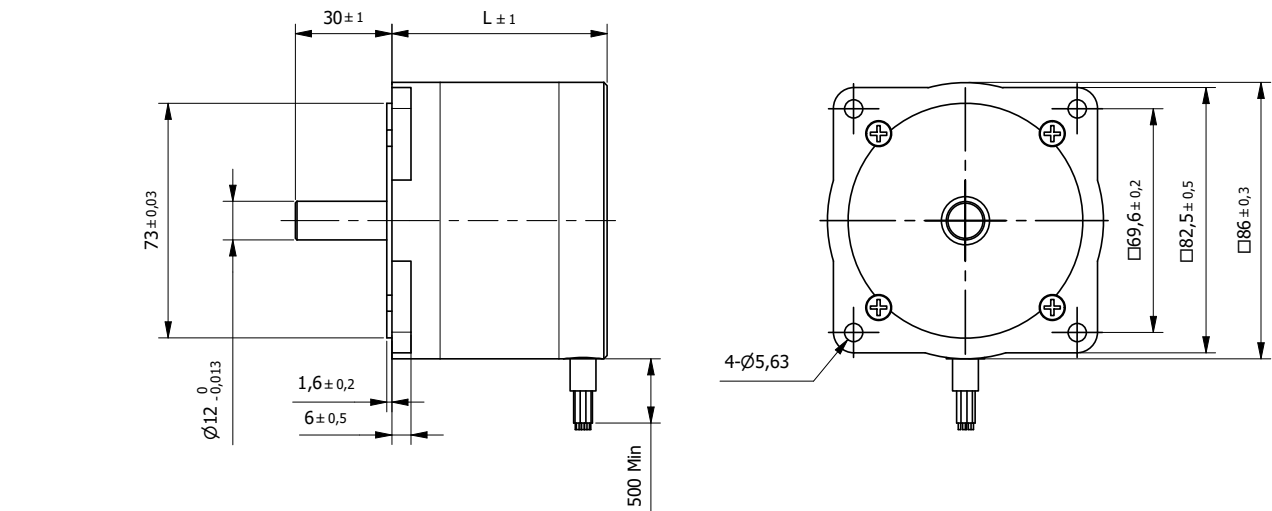
BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification					
	Model		57S76-1A	57S76-2A	57S76-4A
1	Rated Voltage	V	5,4	12	2,7
2	Current/Phase	A	1,5	0,68	3,3
3	Resistance/Phase	Ω	3,6	17,7	0,85
4	Inductance/Phase	mH	6	30	3
5	Holding Torque	Nm	0,9	0,9	1,25
6	Rotor Inertia	gcm2	200	200	200
7	Detent Torque	Nm	0,072	0,072	0,072
8	n° of Leads		6	6	4
9	Length (L)	mm	76	76	76
10	Weight	Kg	0,95	0,95	0,95

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG22	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



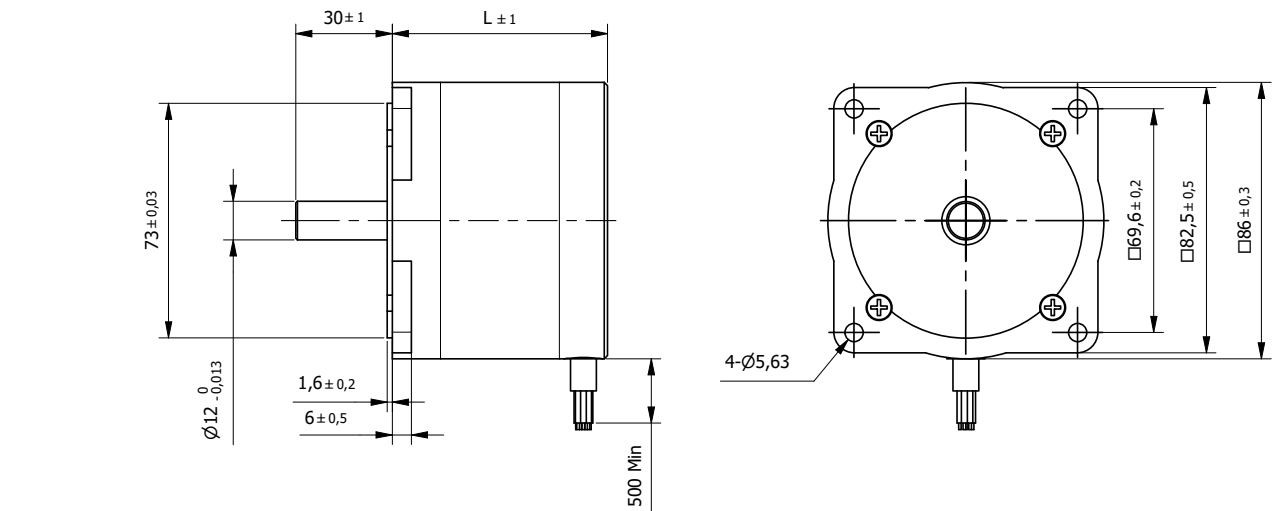
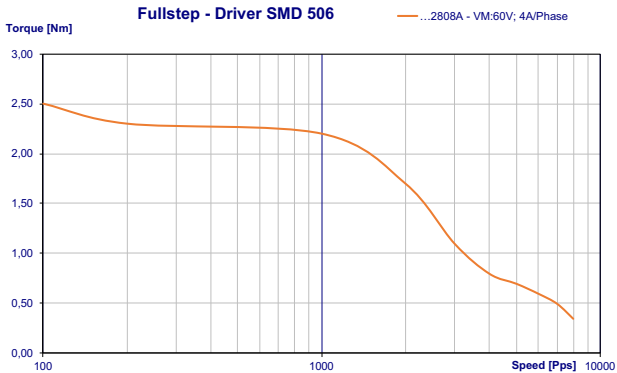


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification				
Model		86S67-2808A		
		Unipolar	Parallel	Series
1	Rated Voltage	V	3,64	2,54
2	Current/Phase	A	2,8	3,92
3	Resistance/Phase	Ω	1,3	0,65
4	Inductance/Phase	mH	5,1	5,1
5	Holding Torque	Nm	2,3	2,8
6	Rotor Inertia	gcm2	660	660
7	Detent Torque	Nm	0,085	0,085
8	n° of Leads		8	8
9	Length (L)	mm	67	67
10	Weight	Kg	1,6	1,6

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	220N
Max Axial Force	60N
Dielectric Strength (for 1 min.)	750 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Orange	UL3266 AWG20	Phase A
2	Orange/White		Phase A-
3	Black/White		Phase C-
4	Black		Phase C
5	Red		Phase B
6	Red/White		Phase B-
7	Yellow/White		Phase D -
8	Yellow		Phase D

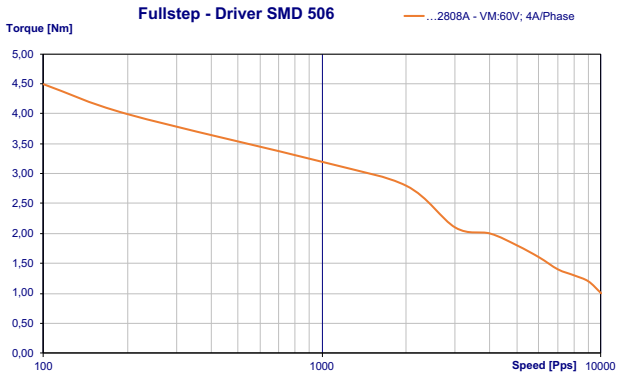


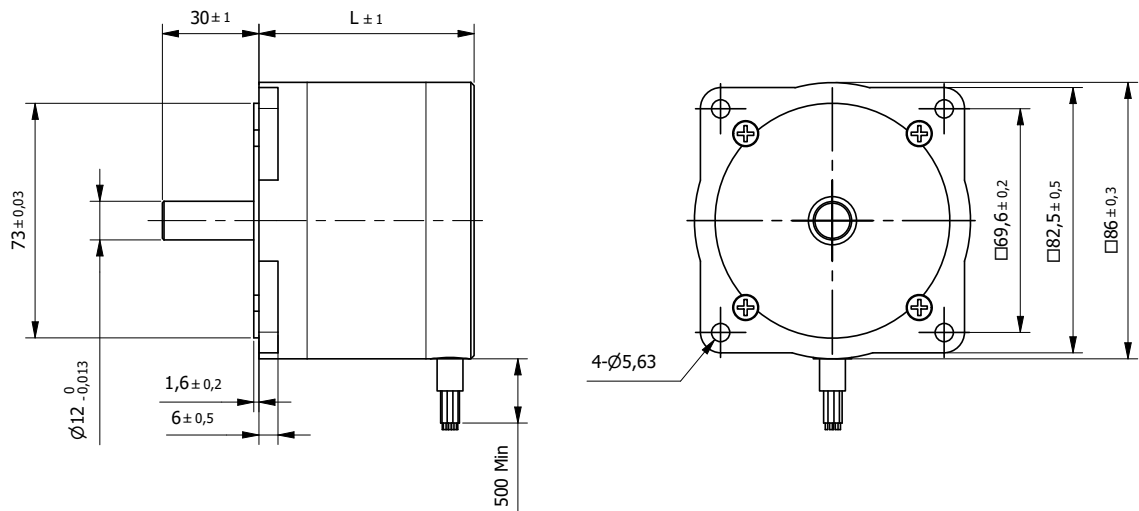
BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification				
Model		86S94-2808A		
		Unipolar	Parallel	Series
1	Rated Voltage	V	4,76	2,54
2	Current/Phase	A	2,8	3,92
3	Resistance/Phase	Ω	1,7	0,85
4	Inductance/Phase	mH	7,7	7,7
5	Holding Torque	Nm	3,8	4,8
6	Rotor Inertia	gcm2	1200	1200
7	Detent Torque	Nm	0,13	0,13
8	n° of Leads		8	8
9	Length (L)	mm	94	94
10	Weight	Kg	2,4	2,4

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	220N
Max Axial Force	60N
Dielectric Strength (for 1 min.)	750 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Orange	UL3266 AWG20	Phase A
2	Orange/White		Phase A-
3	Black/White		Phase C-
4	Black		Phase C
5	Red		Phase B
6	Red/White		Phase B-
7	Yellow/White		Phase D -
8	Yellow		Phase D



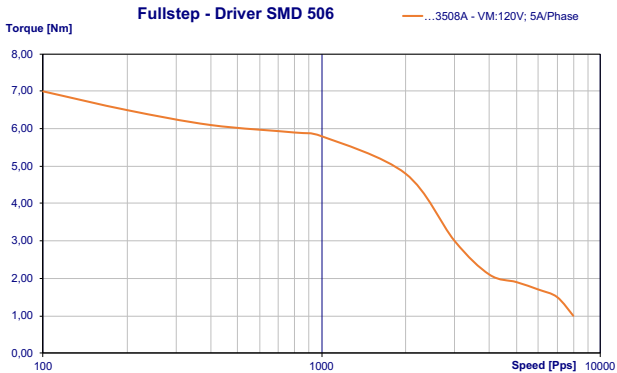


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification					
Model			86S125-3508A		
			Unipolar	Parallel	Series
1	Rated Voltage	V	4,97	3,47	6,95
2	Current/Phase	A	3,5	4,9	2,45
3	Resistance/Phase	Ω	1,42	0,71	2,84
4	Inductance/Phase	mH	7,9	7,9	31,6
5	Holding Torque	Nm	6,2	7,6	7,6
6	Rotor Inertia	gcm2	1800	1800	1800
7	Detent Torque	Nm	0,23	0,23	0,23
8	n° of Leads		8	8	8
9	Length (L)	mm	125	125	125
10	Weight	Kg	3,6	3,6	3,6

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	220N
Max Axial Force	60N
Dielectric Strength (for 1 min.)	750 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Orange	UL3266 AWG20	Phase A
2	Orange/White		Phase A-
3	Black/White		Phase C-
4	Black		Phase C
5	Red		Phase B
6	Red/White		Phase B-
7	Yellow/White		Phase D -
8	Yellow		Phase D





Hybrid Stepper motors

SH series - High Torque

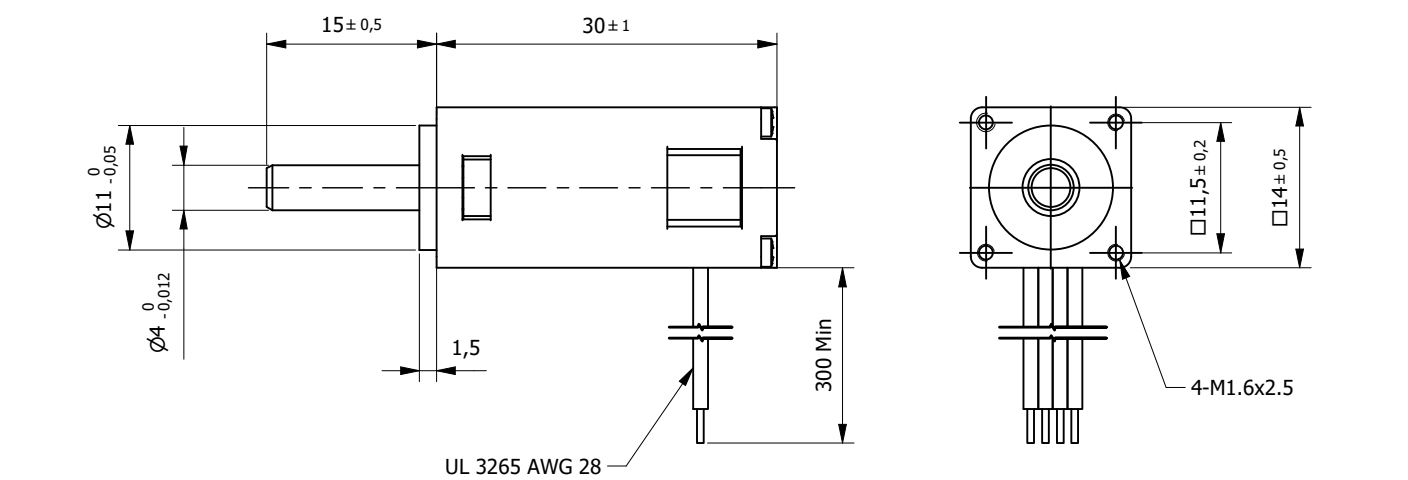
Hybrid Stepper motors - SH High Torque series	Torque* (Nm)	249
14SH30	0,006	250
20SH	0,018...0,03	251
25SH23	0,033	252
28SH32	0,043...0,06	253
28SH45	0,075...0,095	254
28SH51	0,09...0,12	255
35SH	0,07...0,14	256
39SH20	0,065...0,08	257
39SH34	0,13...0,21	258
39SH38	0,2...0,29	259
42SH33	0,158...0,22	260
42SH38	0,259...0,36	261
42SH47	0,317...0,44	262
42SH60	0,65...0,8	263
42SH33M - step 0,9°	0,158...0,22	264
42SH38M - step 0,9°	0,259...0,36	265
42SH47M - step 0,9°	0,317...0,44	266
57SH41	0,39...0,55	267
57SH51	0,72...1,01	268
57SH56	0,9...1,26	269
57SH76	1,35...1,89	270
57SH41M - step 0,9°	0,39...0,55	271
57SH56M - step 0,9°	0,9...1,26	272
57SH76M - step 0,9°	1,35...1,8	273
60SH45	0,78...1,1	274
60SH56	1,17...1,65	275
60SH65	1,5...2,1	276
60SH86	2,2...3,1	277
86SH65	2,6...3,4	278
86SH80	4,6	279
86SH96	7,0	280
86SH118	8,7	281
86SH156	12,1	282
110SH	11,2...28	283

* Holding Torque

Hybrid Stepper Motor 14SH30

High Torque

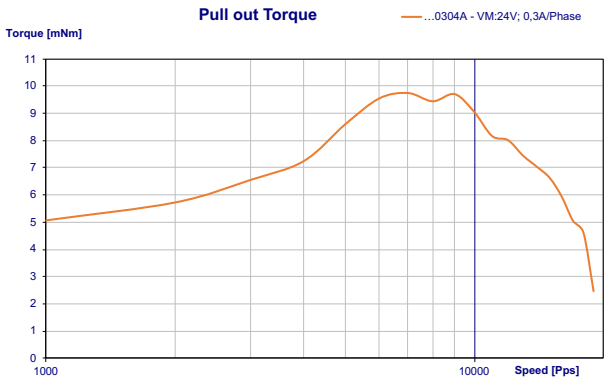
□ 14mm



Specification		
Model	...0304A	
1 Rated Voltage	V	6,3
2 Current/Phase	A	0,3
3 Resistance/Phase	Ω	21
4 Inductance/Phase	mH	4,2
5 Holding Torque	Nm	0,006
6 Rotor Inertia	gcm2	5,8
7 n° of Leads		4
8 Length (L)	mm	30
9 Weight	Kg	0,03

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (4N load)	0,02mm
Max. Shaft Axial play (4N load)	0,08mm
Max. Radial Force (20mm from front flange)	3,9N
Max Axial Force	1N
Dielectric Strength (for 1 sec.)	300 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

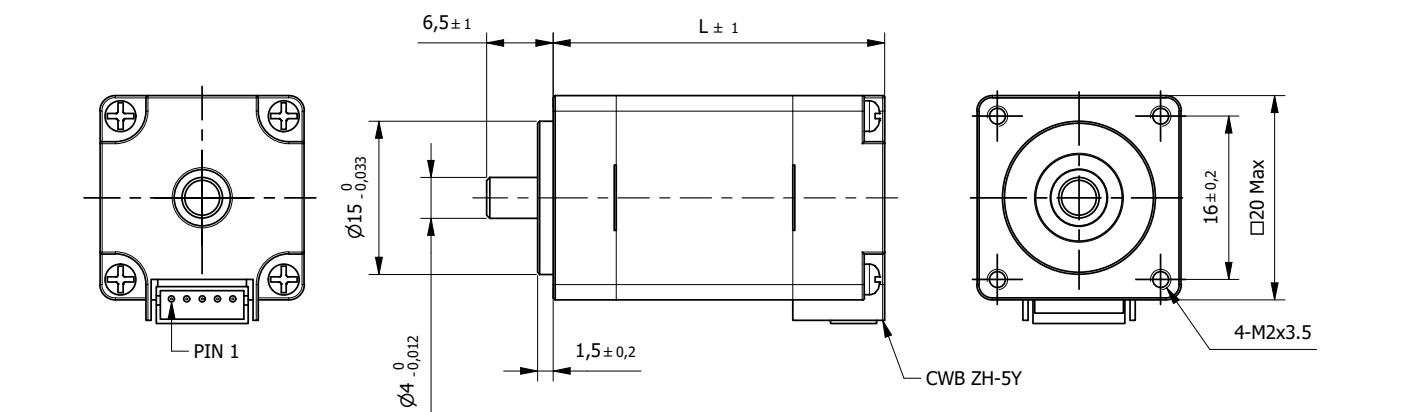
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL3265 AWG28	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-



Hybrid Stepper Motor 20SH

High Torque

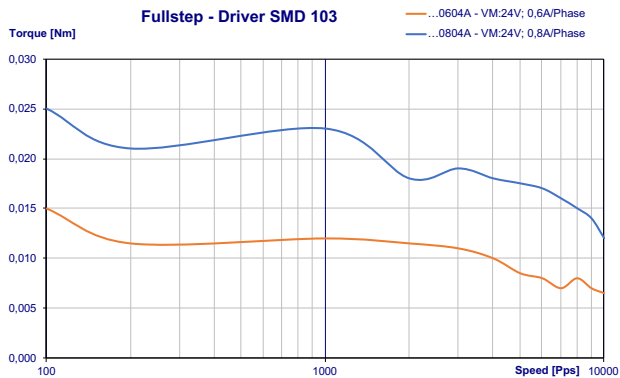
□ 20mm



Specification			
Model	...33-0604A	...42-0804A	
1 Rated Voltage	V	3,96	4,32
2 Current/Phase	A	0,6	0,8
3 Resistance/Phase	Ω	6,5	5,4
4 Inductance/Phase	mH	1,7	1,5
5 Holding Torque	Nm	0,018	0,03
6 Rotor Inertia	gcm2	2	3,6
7 Detent Torque	Nm	0,002	0,002
8 n° of Leads		4	4
9 Length (L)	mm	33	42
10 Weight	Kg	0,06	0,08

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	10N
Max Axial Force	4N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

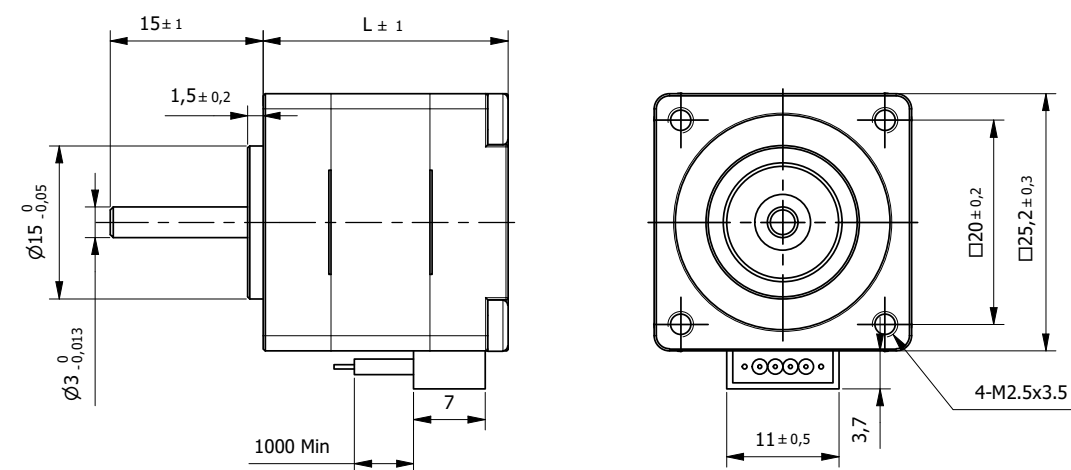
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG28	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-



Hybrid Stepper Motor 25SH23

High Torque

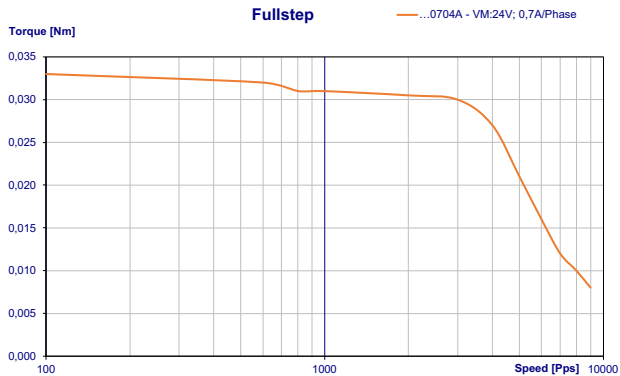
□ 25mm



Specification		
Model	...0704A	
1 Rated Voltage	V	3
2 Current/Phase	A	0,7
3 Resistance/Phase	Ω	4,3
4 Inductance/Phase	mH	2,4
5 Holding Torque	Nm	0,033
6 Rotor Inertia	gcm2	2
7 Detent Torque	Nm	0,003
8 n° of Leads		4
9 Length (L)	mm	24
10 Weight	Kg	0,055

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-25°C to +40°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (10mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

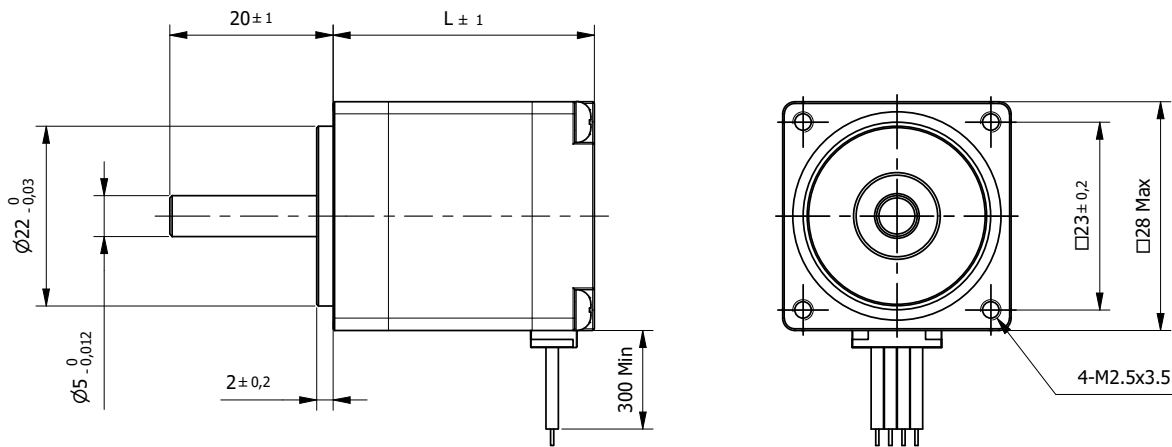
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-



Hybrid Stepper Motor 28SH32

High Torque

□ 28mm

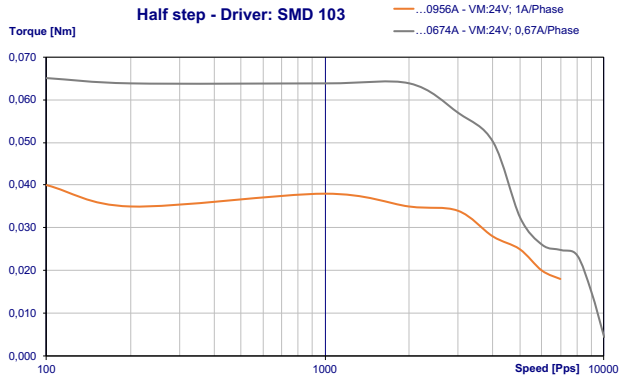


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

Specification			
Model		...0956A	...0674A
1 Rated Voltage	V	2,66	3,8
2 Current/Phase	A	0,95	0,67
3 Resistance/Phase	Ω	2,8	5,6
4 Inductance/Phase	mH	0,8	3,4
5 Holding Torque	Nm	0,043	0,06
6 Rotor Inertia	gcm2	9	9
7 Detent Torque	Nm	0,005	0,005
8 n° of Leads		6	4
9 Length (L)	mm	32	32
10 Weight	Kg	0,11	0,11

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (5mm from front flange)	28N
Max Axial Force	7N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

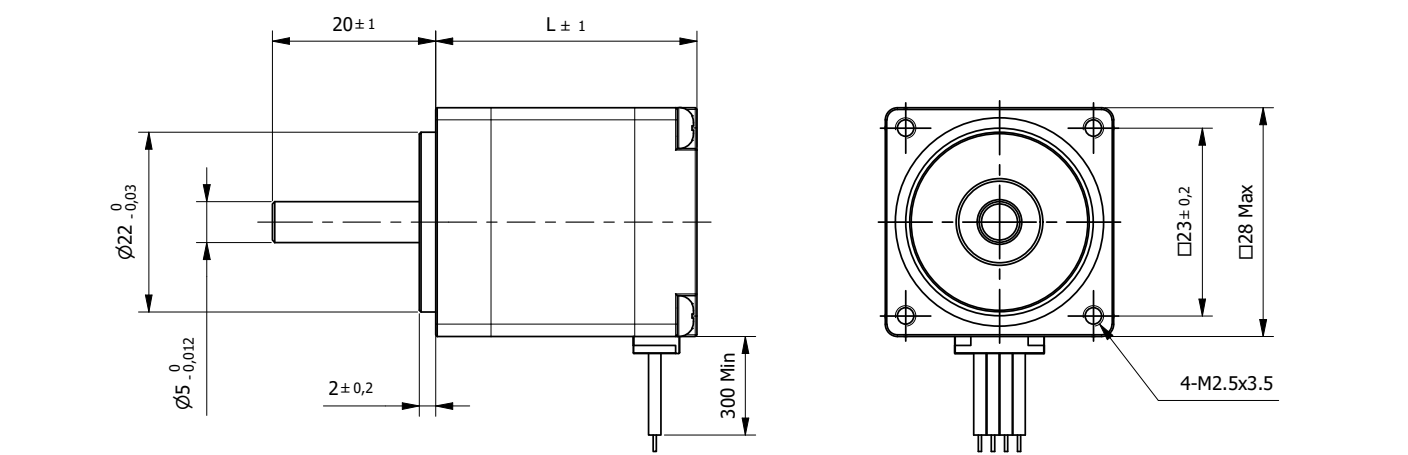
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 28SH45

High Torque

□ 28mm

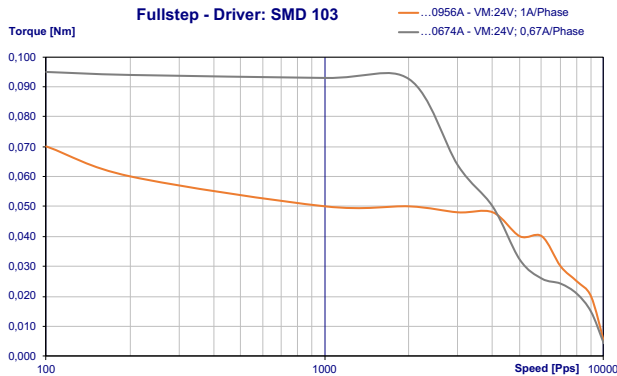


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

Specification				
Model		...0956A	...0674A	
1	Rated Voltage	V	3,4	4,56
2	Current/Phase	A	0,95	0,67
3	Resistance/Phase	Ω	3,4	6,8
4	Inductance/Phase	mH	1,2	4,9
5	Holding Torque	Nm	0,075	0,095
6	Rotor Inertia	gcm2	12	12
7	Detent Torque	Nm	0,006	0,006
8	n° of Leads		6	4
9	Length (L)	mm	45	45
10	Weight	Kg	0,14	0,14

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (5mm from front flange)	28N
Max Axial Force	7N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

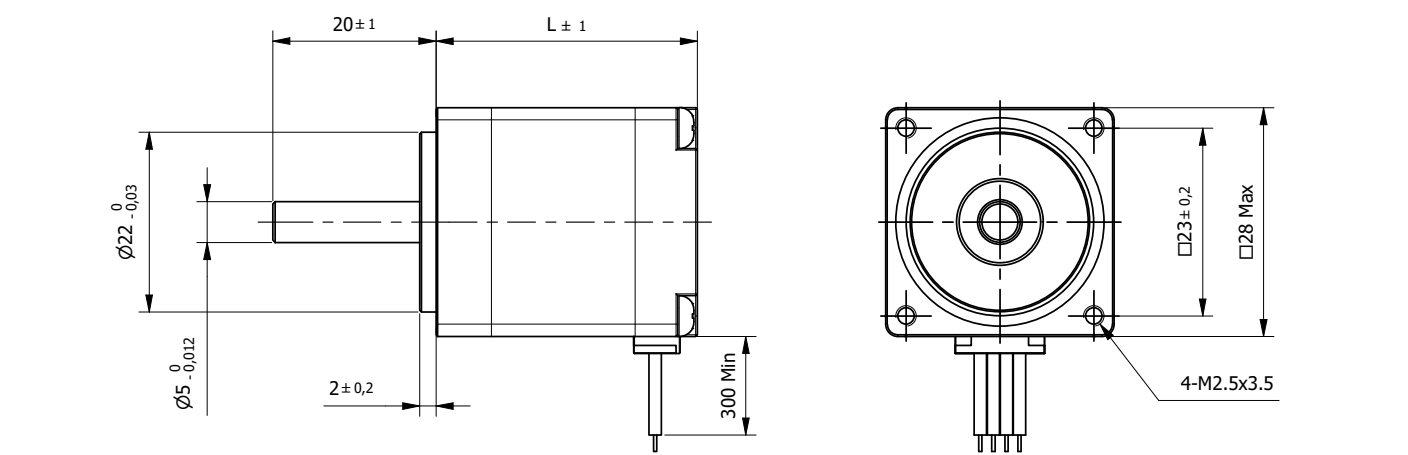
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 28SH51

High Torque

□ 28mm

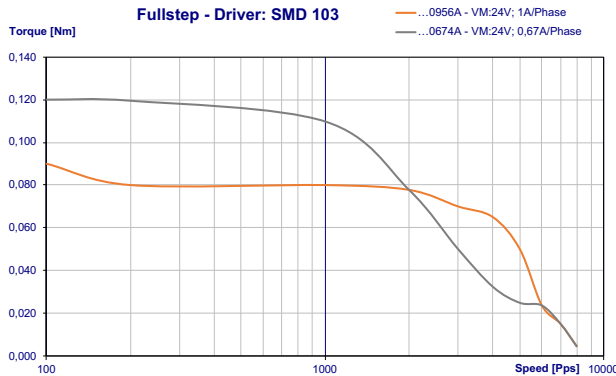


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

Specification				
Model		...0956A	...0674A	
1	Rated Voltage	V	4,4	6,2
2	Current/Phase	A	0,95	0,67
3	Resistance/Phase	Ω	4,6	9,2
4	Inductance/Phase	mH	1,8	7,2
5	Holding Torque	Nm	0,09	0,12
6	Rotor Inertia	gcm2	18	18
7	Detent Torque	Nm	0,008	0,008
8	n° of Leads		6	4
9	Length (L)	mm	51	51
10	Weight	Kg	0,2	0,2

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (5mm from front flange)	28N
Max Axial Force	7N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

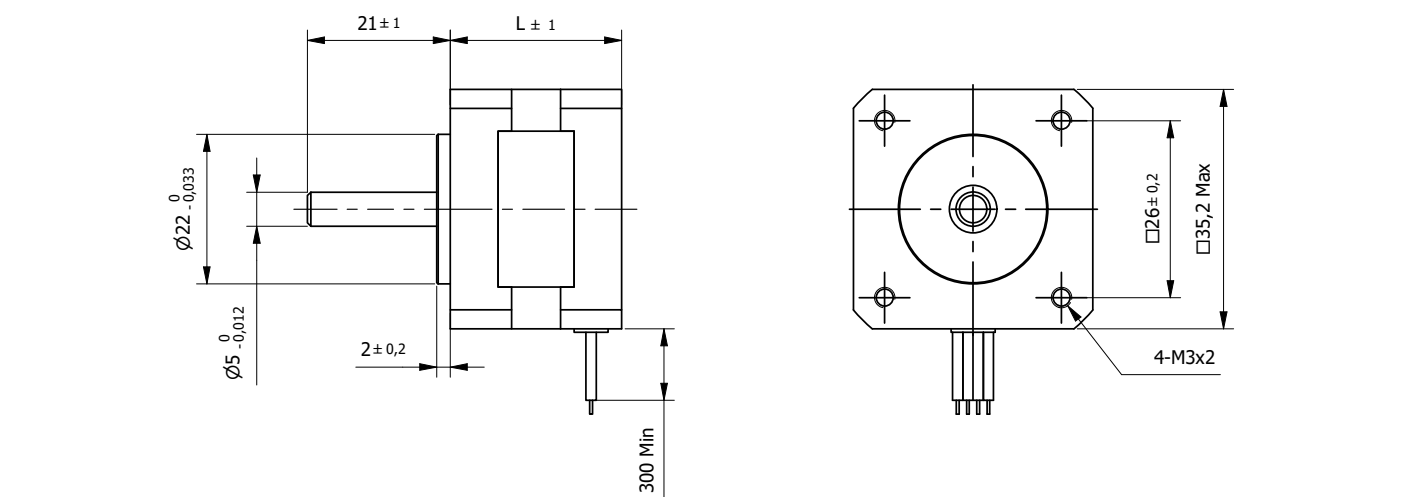
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 35SH

High Torque

□ 35mm

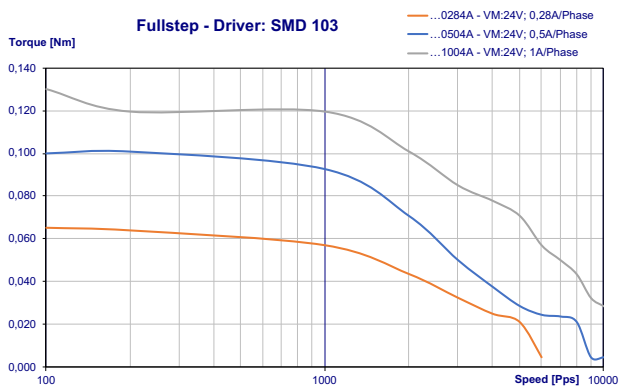


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

Specification				
Model		...26-0284A	...28-0504A	...36-1004A
1 Rated Voltage	V	7,4	10	2,7
2 Current/Phase	A	0,28	0,5	1
3 Resistance/Phase	Ω	26	20	2,7
4 Inductance/Phase	mH	27	14	4,3
5 Holding Torque	Nm	0,07	0,1	0,14
6 Rotor Inertia	gcm2	10	11	14
7 Detent Torque	Nm	0,006	0,008	0,01
8 n° of Leads		4	4	4
9 Length (L)	mm	26	28	36
10 Weight	Kg	0,13	0,14	0,18

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

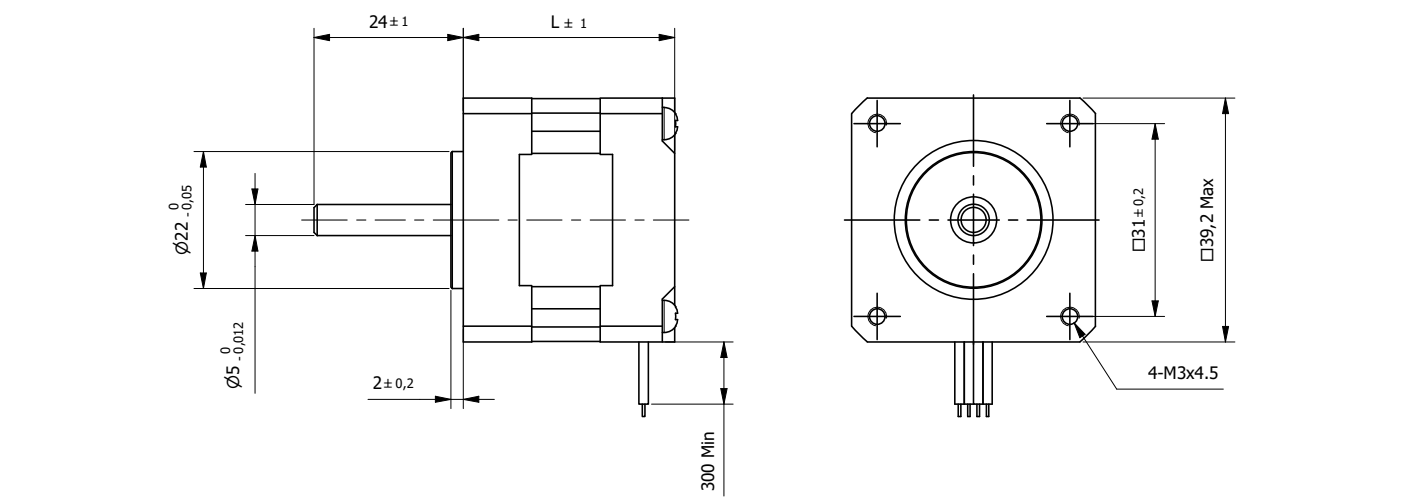
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-



Hybrid Stepper Motor 39SH20

High Torque

□ 39mm

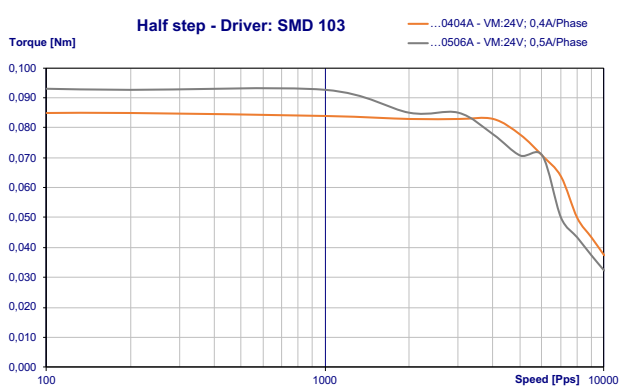


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

Specification			
Model		...0404A	...0506A
1 Rated Voltage	V	2,64	6,5
2 Current/Phase	A	0,4	0,5
3 Resistance/Phase	Ω	6,6	13
4 Inductance/Phase	mH	6	6
5 Holding Torque	Nm	0,065	0,08
6 Rotor Inertia	gcm2	11	11
7 Detent Torque	Nm	0,005	0,005
8 n° of Leads		4	4
9 Length (L)	mm	20	20
10 Weight	Kg	0,12	0,12

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

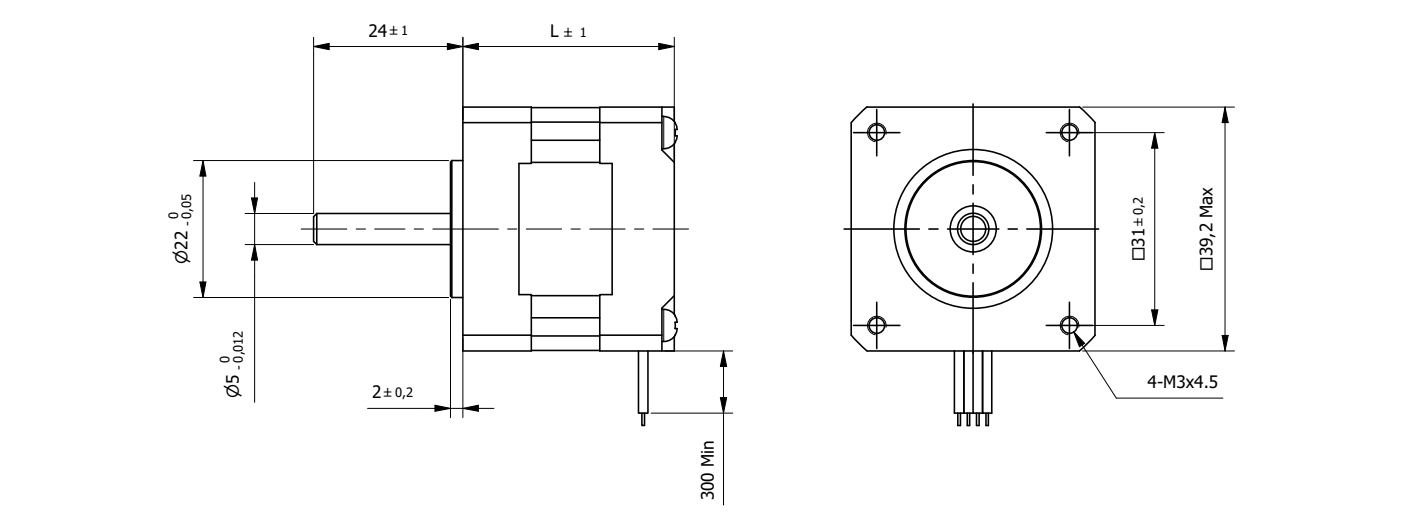
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1007 AWG28	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 39SH34

High Torque

□ 39mm

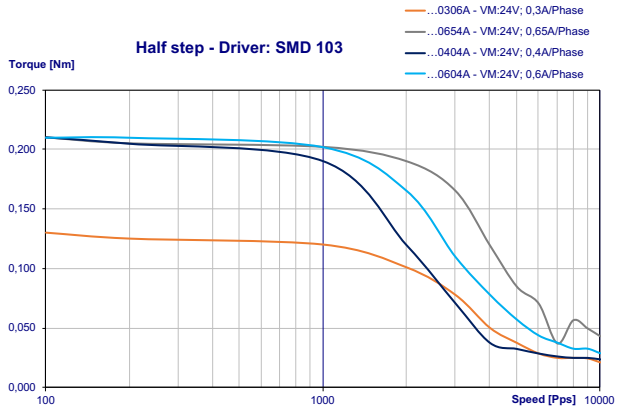


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

Specification						
	Model		...0306A	...0654A	...0404A	...0604A
1	Rated Voltage	V	12	4,55	12	9
2	Current/Phase	A	0,3	0,65	0,4	0,6
3	Resistance/Phase	Ω	40	7	30	15
4	Inductance/Phase	mH	20	9,3	43	16
5	Holding Torque	Nm	0,13	0,18	0,21	0,21
6	Rotor Inertia	gcm2	20	20	20	20
7	Detent Torque	Nm	0,012	0,012	0,012	0,012
8	n° of Leads		6	4	4	4
9	Length (L)	mm	34	34	34	34
10	Weight	Kg	0,18	0,18	0,18	0,18

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

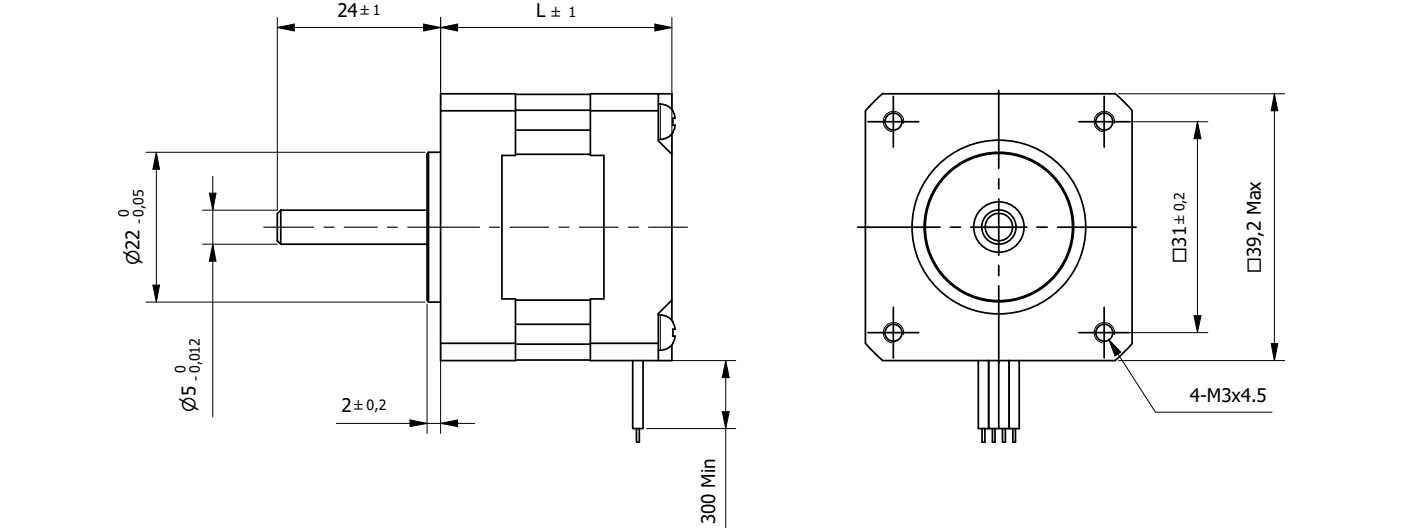
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 39SH38

High Torque

□ 39mm

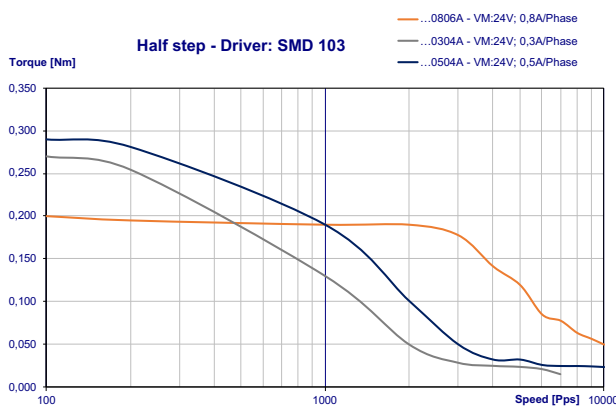


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

Specification					
	Model	...0806A	...0304A	...0504A	
1	Rated Voltage	V	6	12	11
2	Current/Phase	A	0,8	0,3	0,5
3	Resistance/Phase	Ω	7,5	40	22
4	Inductance/Phase	mH	8	100	40
5	Holding Torque	Nm	0,2	0,28	0,29
6	Rotor Inertia	gcm2	24	24	24
7	Detent Torque	Nm	0,018	0,018	0,018
8	n° of Leads		6	4	4
9	Length (L)	mm	38	38	38
10	Weight	Kg	0,2	0,2	0,2

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

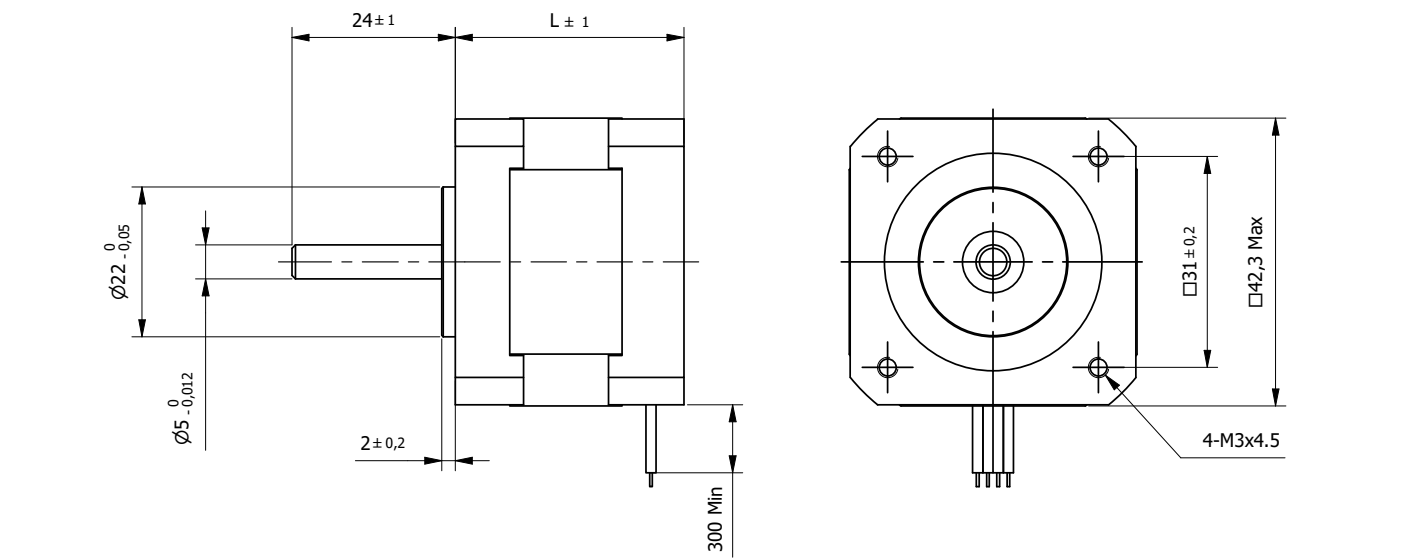
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 42SH33

High Torque

□ 42mm

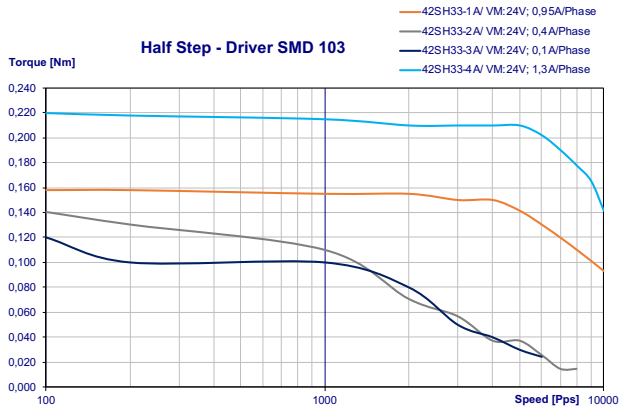


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19.05mm

Specification					
Model		42SH33-1A	42SH33-2A	42SH33-3A	42SH33-4A
1 Rated Voltage	V	4	9,6	12	2,8
2 Current/Phase	A	0,95	0,4	0,31	1,33
3 Resistance/Phase	Ω	4,2	24	38,5	2,1
4 Inductance/Phase	mH	2,5	15	21	2,5
5 Holding Torque	Nm	0,158	0,158	0,158	0,22
6 Rotor Inertia	gcm2	35	35	35	35
7 Detent Torque	Nm	0,012	0,012	0,012	0,012
8 n° of Leads		6	6	6	4
9 Length (L)	mm	33,5	33,5	33,5	33,5
10 Weight	Kg	0,22	0,22	0,22	0,22

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

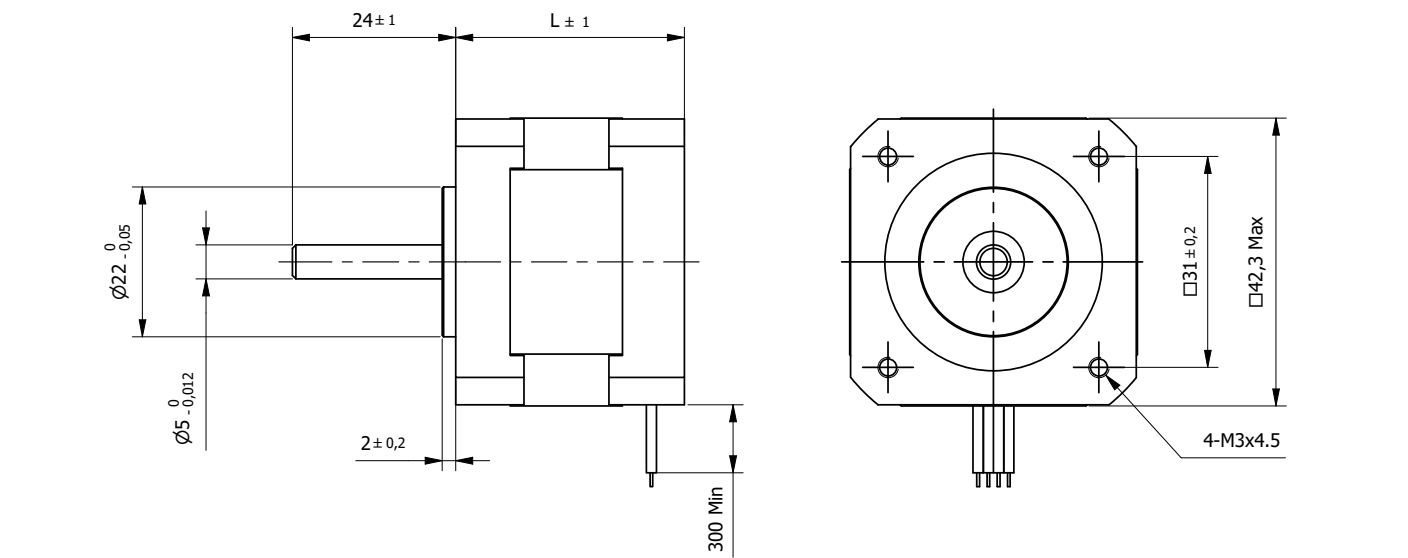
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 42SH38

High Torque

□ 42mm

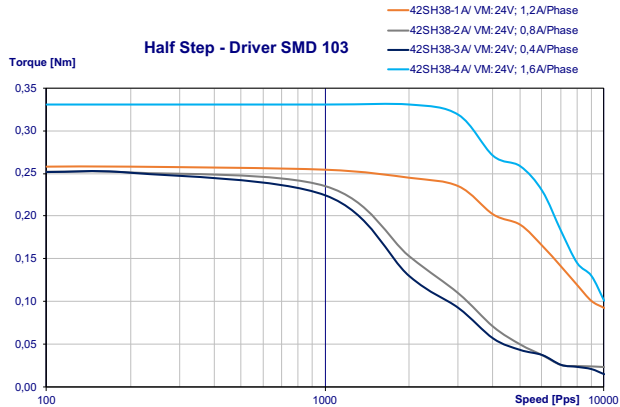


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19.05mm

Specification					
Model		42SH38-1A	42SH38-2A	42SH38-3A	42SH38-4A
1 Rated Voltage	V	4	6	12	2,8
2 Current/Phase	A	1,2	0,8	0,4	1,68
3 Resistance/Phase	Ω	3,3	7,5	30	1,65
4 Inductance/Phase	mH	3,2	6,7	25	3,2
5 Holding Torque	Nm	0,259	0,259	0,259	0,36
6 Rotor Inertia	gcm2	54	54	54	54
7 Detent Torque	Nm	0,015	0,015	0,015	0,015
8 n° of Leads		6	6	6	4
9 Length (L)	mm	39,5	39,5	39,5	39,5
10 Weight	Kg	0,28	0,28	0,28	0,28

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

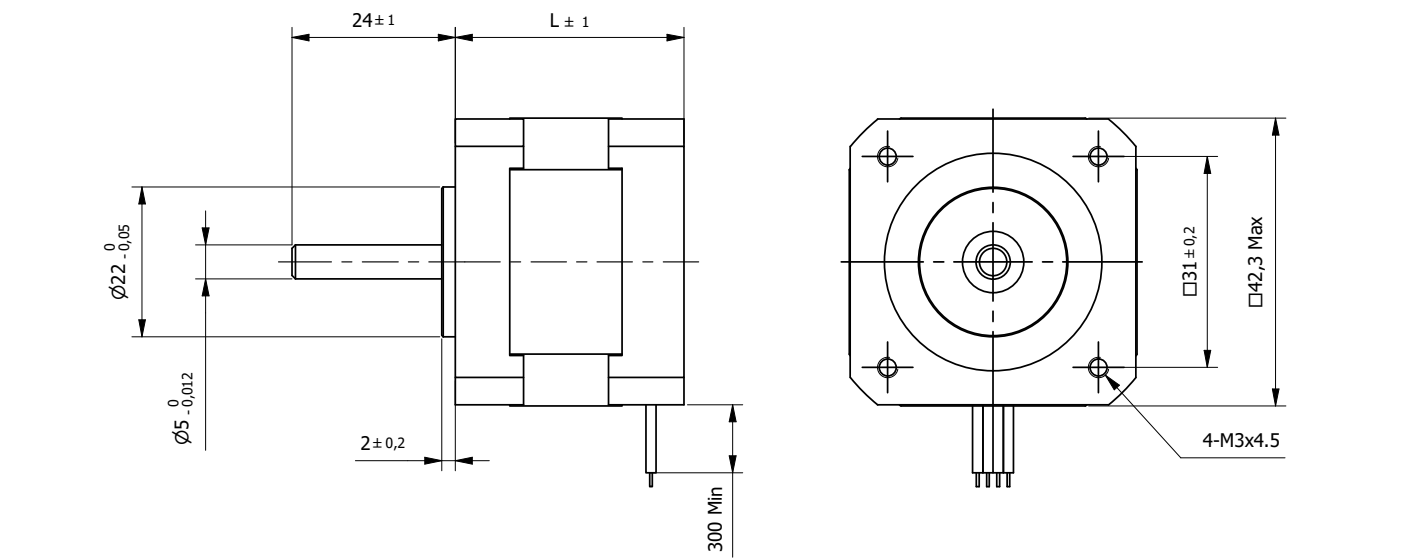
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 42SH47

High Torque

□ 42mm

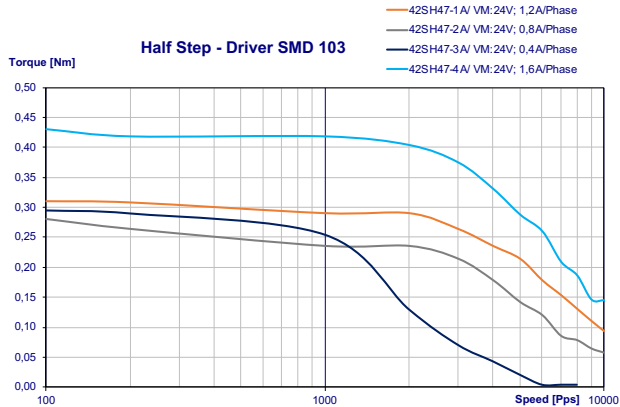


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19.05mm

Specification					
	Model	42SH47-1A	42SH47-2A	42SH47-3A	42SH47-4A
1	Rated Voltage	V	4	6	12
2	Current/Phase	A	1,2	0,8	0,4
3	Resistance/Phase	Ω	3,3	7,5	30
4	Inductance/Phase	mH	2,8	6,3	25
5	Holding Torque	Nm	0,317	0,317	0,317
6	Rotor Inertia	gcm2	68	68	68
7	Detent Torque	Nm	0,02	0,02	0,02
8	n° of Leads		6	6	6
9	Length (L)	mm	47,5	47,5	47,5
10	Weight	Kg	0,35	0,35	0,35

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

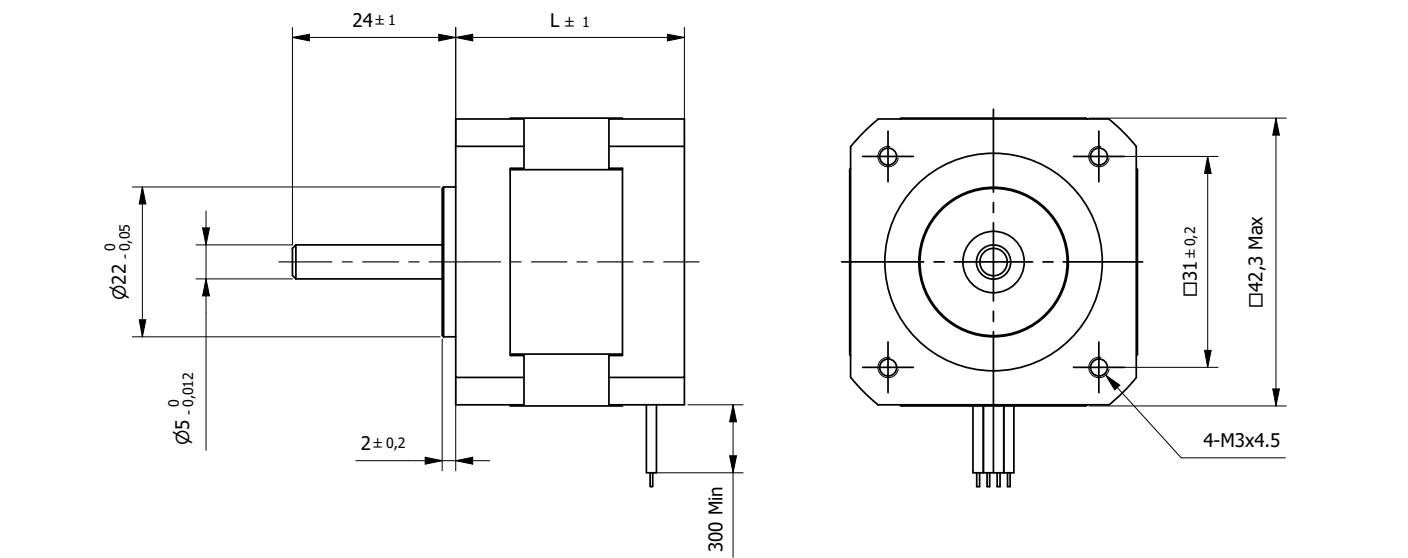
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 42SH60

High Torque

□ 42mm

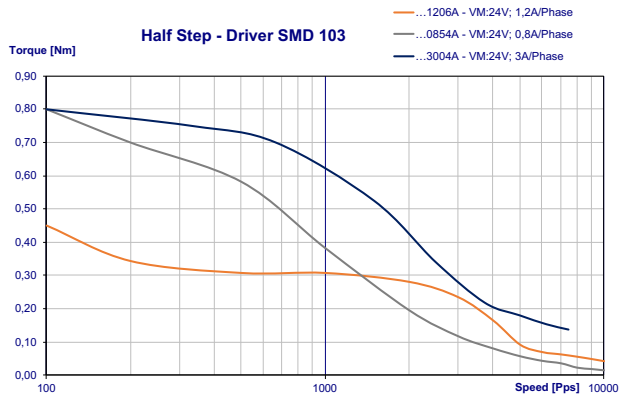


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19.05mm

Specification					
	Model	...1206A	...0854A	...3004A	
1	Rated Voltage	V	7,2	10,2	3,3
2	Current/Phase	A	1,2	0,85	3
3	Resistance/Phase	Ω	6	12	1,1
4	Inductance/Phase	mH	7	29	2,7
5	Holding Torque	Nm	0,65	0,8	0,8
6	Rotor Inertia	gcm2	102	102	102
7	Detent Torque	Nm	0,028	0,028	0,028
8	n° of Leads		6	4	4
9	Length (L)	mm	60	60	60
10	Weight	Kg	0,5	0,5	0,5

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

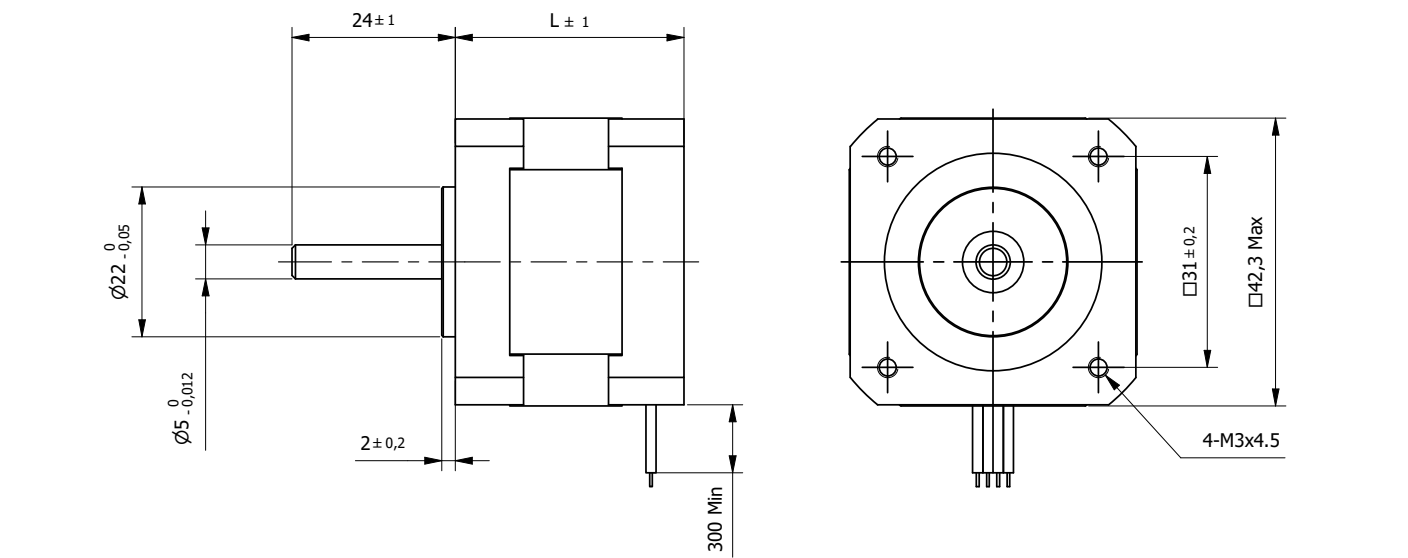
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 42SH33M

High Torque - step angle 0,9°

□ 42mm

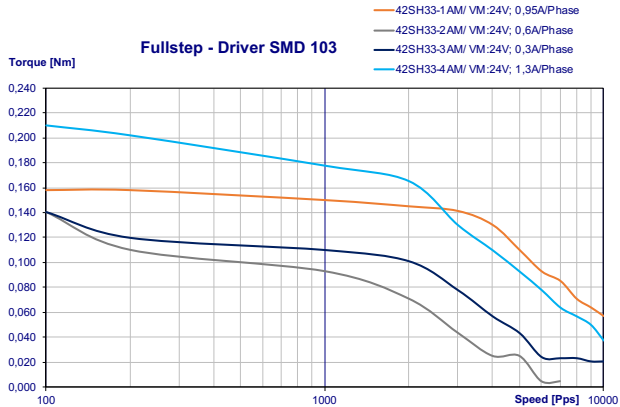


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19.05mm

Specification					
Model		42SH33-1AM	42SH33-2AM	42SH33-3AM	42SH33-4AM
1 Rated Voltage	V	4	6	12	2,8
2 Current/Phase	A	0,95	0,6	0,31	1,33
3 Resistance/Phase	Ω	4,2	10	38,5	2,1
4 Inductance/Phase	mH	4	11	33	4,2
5 Holding Torque	Nm	0,158	0,158	0,158	0,22
6 Rotor Inertia	gcm2	35	35	35	35
7 Detent Torque	Nm	0,02	0,02	0,02	0,02
8 n° of Leads		6	6	6	4
9 Length (L)	mm	33,5	33,5	33,5	33,5
10 Weight	Kg	0,22	0,22	0,22	0,22

Characteristics	
Item	
Step angle	0,9°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

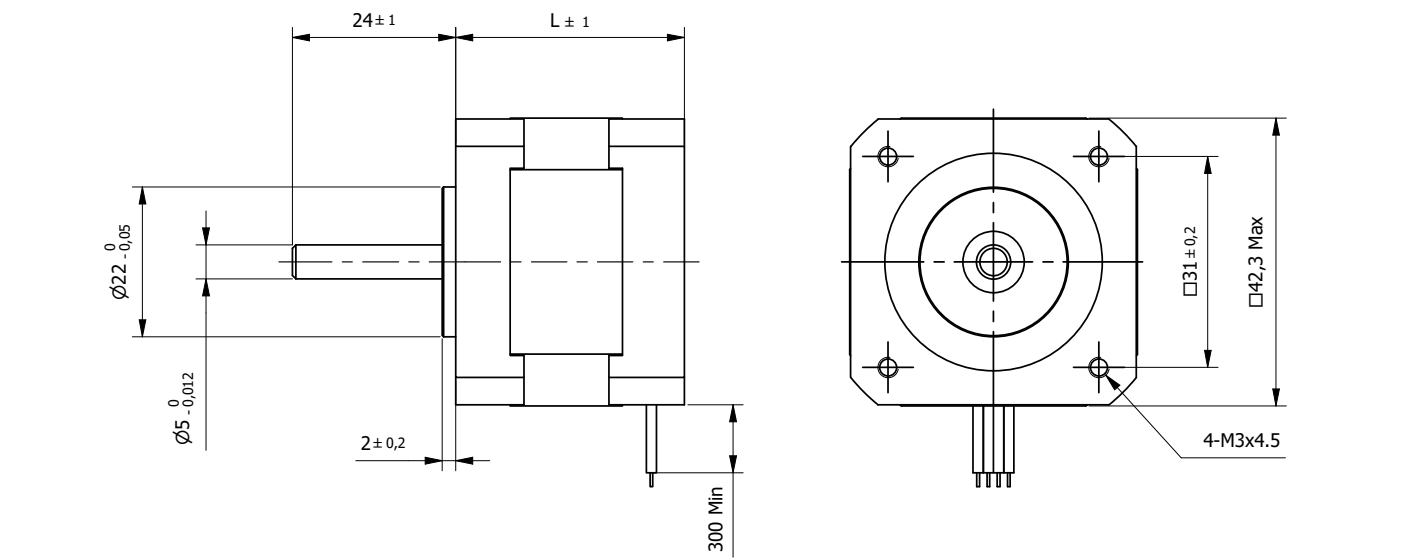
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 42SH38M

High Torque - step angle 0,9°

□ 42mm

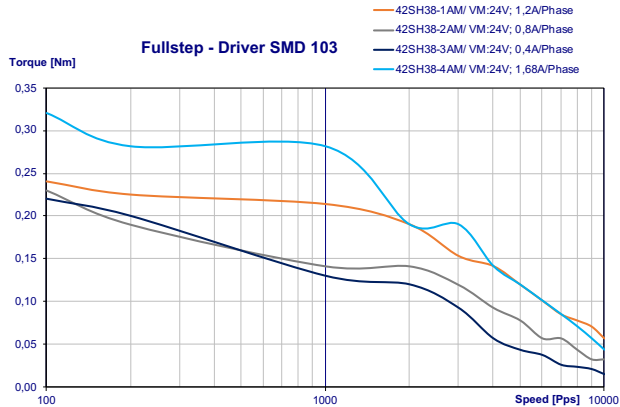


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19.05mm

Specification					
Model		42SH38-1AM	42SH38-2AM	42SH38-3AM	42SH38-4AM
1 Rated Voltage	V	4	6	12	2,8
2 Current/Phase	A	1,2	0,8	0,4	1,68
3 Resistance/Phase	Ω	3,3	7,5	30	1,65
4 Inductance/Phase	mH	4,1	8,3	30	4,1
5 Holding Torque	Nm	0,259	0,259	0,259	0,36
6 Rotor Inertia	gcm2	54	54	54	54
7 Detent Torque	Nm	0,022	0,022	0,022	0,022
8 n° of Leads		6	6	6	4
9 Length (L)	mm	39,5	39,5	39,5	39,5
10 Weight	Kg	0,28	0,28	0,28	0,28

Characteristics	
Item	
Step angle	0,9°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

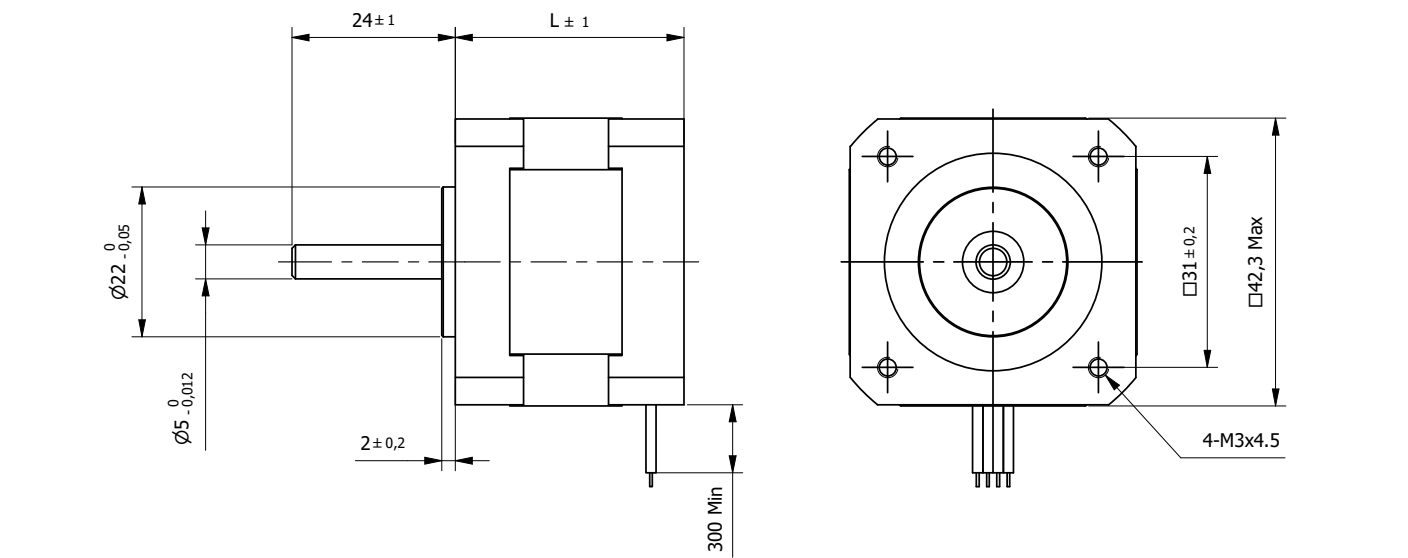
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 42SH47M

High Torque - step angle 0,9°

□ 42mm

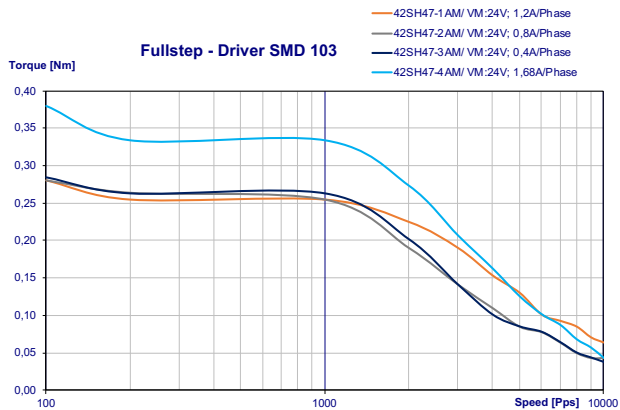


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19.05mm

Specification					
Model		42SH47-1AM	42SH47-2AM	42SH47-3AM	42SH47-4AM
1 Rated Voltage	V	4	6	12	2,8
2 Current/Phase	A	1,2	0,8	0,4	1,68
3 Resistance/Phase	Ω	3,3	7,5	30	1,65
4 Inductance/Phase	mH	4,9	110	43	50
5 Holding Torque	Nm	0,317	0,317	0,317	0,44
6 Rotor Inertia	gcm2	68	68	68	68
7 Detent Torque	Nm	0,02	0,02	0,02	0,02
8 n° of Leads		6	6	6	4
9 Length (L)	mm	47,5	47,5	47,5	47,5
10 Weight	Kg	0,35	0,35	0,35	0,35

Characteristics	
Item	
Step angle	0,9°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

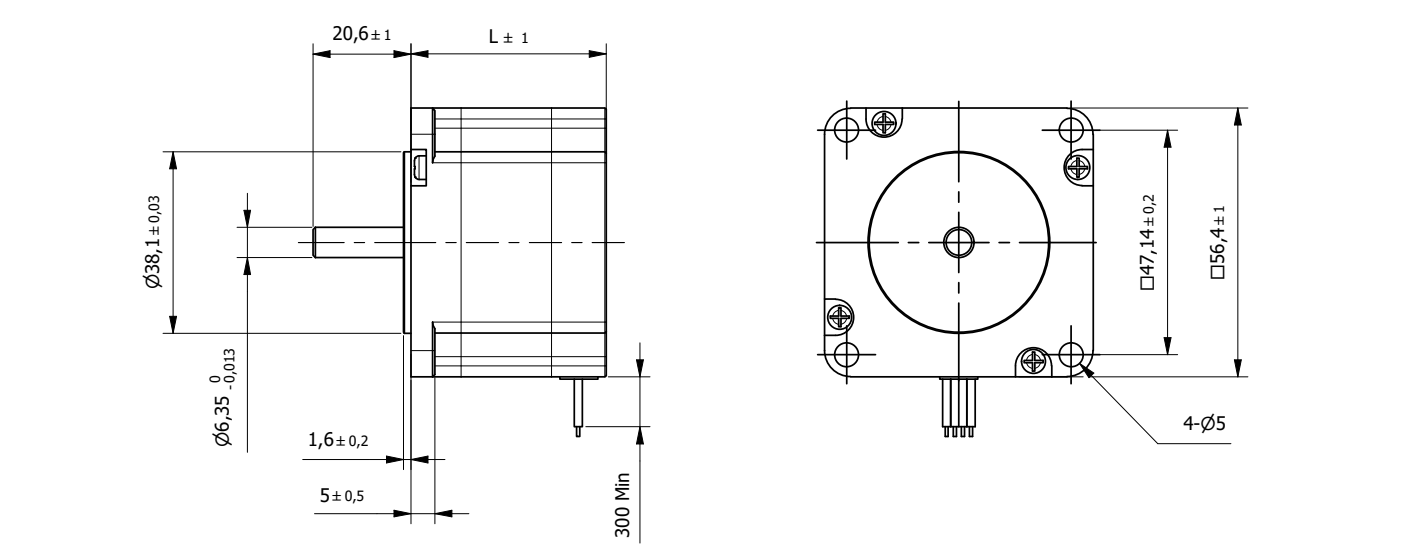
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 57SH41

High Torque

□ 57mm

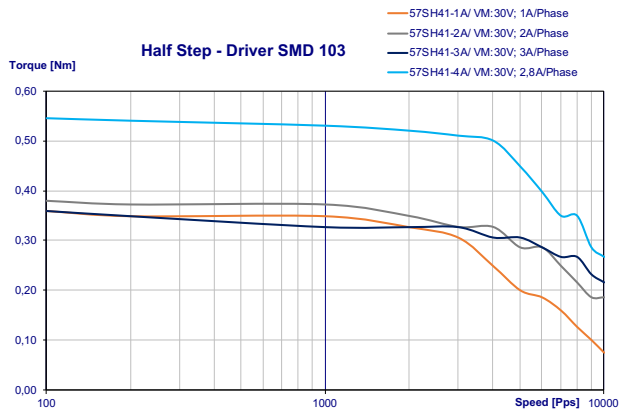


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification					
Model		57SH41-1A	57SH41-2A	57SH41-3A	57SH41-4A
1 Rated Voltage	V	5,7	2,8	1,9	2
2 Current/Phase	A	1	2	3	2,8
3 Resistance/Phase	Ω	5,7	1,4	0,63	0,7
4 Inductance/Phase	mH	5,4	1,4	0,6	1,4
5 Holding Torque	Nm	0,39	0,39	0,39	0,55
6 Rotor Inertia	gcm2	120	120	120	120
7 Detent Torque	Nm	0,021	0,021	0,021	0,021
8 n° of Leads		6	6	6	4
9 Length (L)	mm	41	41	41	41
10 Weight	Kg	0,45	0,45	0,45	0,45

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

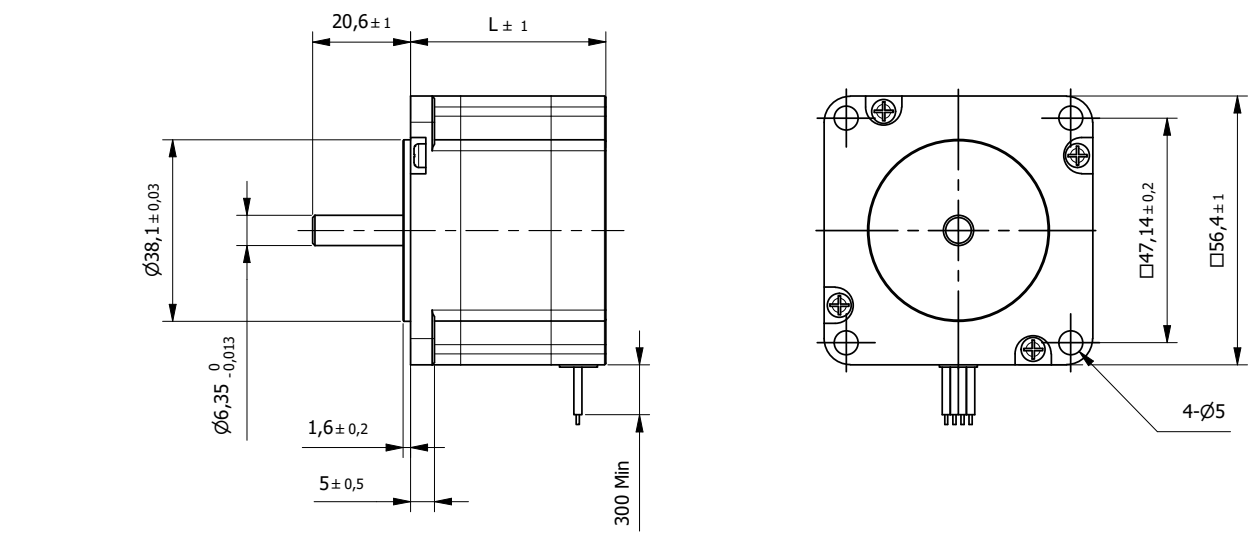
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 57SH51

High Torque

□ 57mm

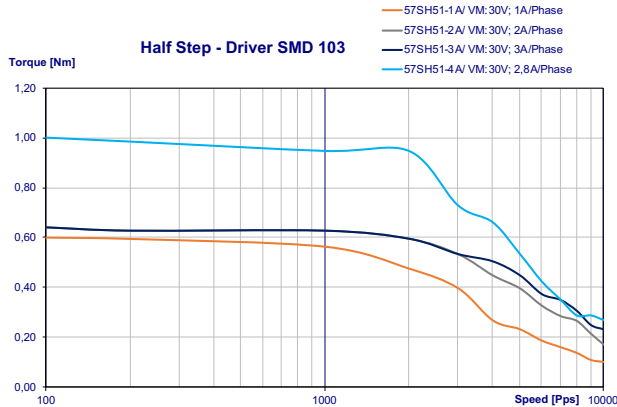


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification						
	Model	57SH51-1A	57SH51-2A	57SH51-3A	57SH51-4A	
1	Rated Voltage	V	6,6	3,3	2,2	2,3
2	Current/Phase	A	1	2	3	2,8
3	Resistance/Phase	Ω	6,6	1,65	0,74	0,83
4	Inductance/Phase	mH	8,2	2,2	0,9	2,2
5	Holding Torque	Nm	0,72	0,72	0,72	1,01
6	Rotor Inertia	gcm2	275	275	275	275
7	Detent Torque	Nm	0,036	0,036	0,036	0,036
8	n° of Leads		6	6	6	4
9	Length (L)	mm	51	51	51	51
10	Weight	Kg	0,65	0,65	0,65	0,65

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

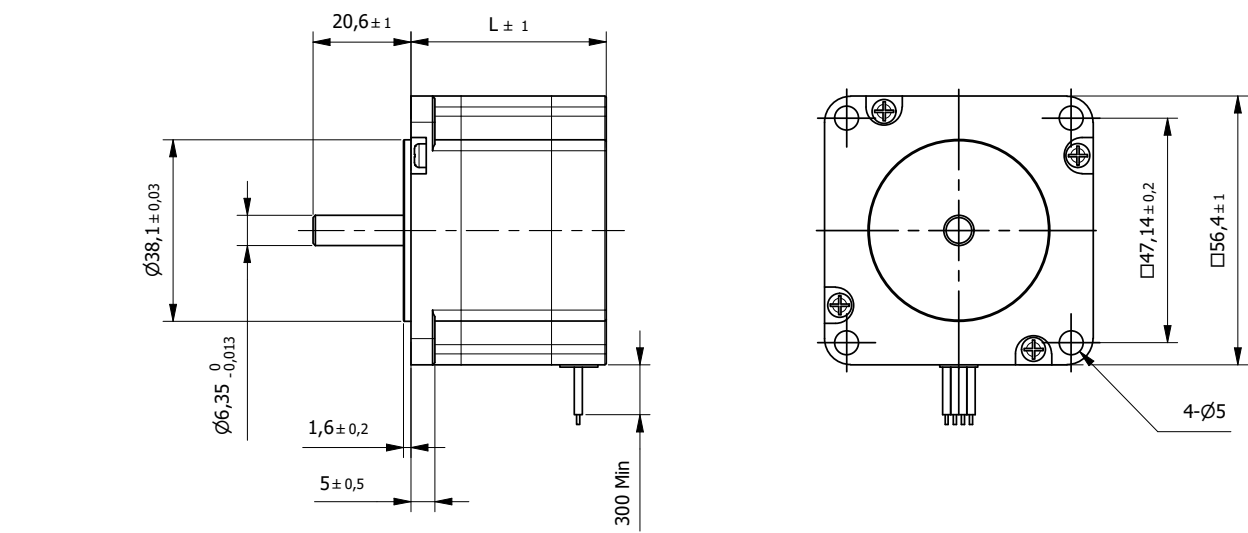
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 57SH56

High Torque

□ 57mm

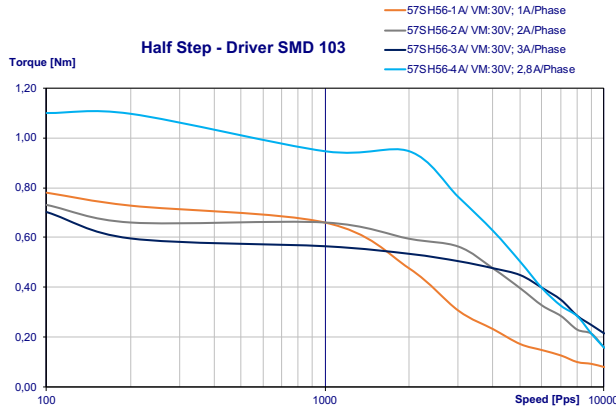


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification						
	Model	57SH56-1A	57SH56-2A	57SH56-3A	57SH56-4A	
1	Rated Voltage	V	7,4	3,6	2,3	2,5
2	Current/Phase	A	1	2	3	2,8
3	Resistance/Phase	Ω	7,4	1,8	0,75	0,9
4	Inductance/Phase	mH	10	2,5	1,1	2,5
5	Holding Torque	Nm	0,9	0,9	0,9	1,26
6	Rotor Inertia	gcm2	300	300	300	300
7	Detent Torque	Nm	0,04	0,04	0,04	0,04
8	n° of Leads		6	6	6	4
9	Length (L)	mm	56	56	56	56
10	Weight	Kg	0,7	0,7	0,7	0,7

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

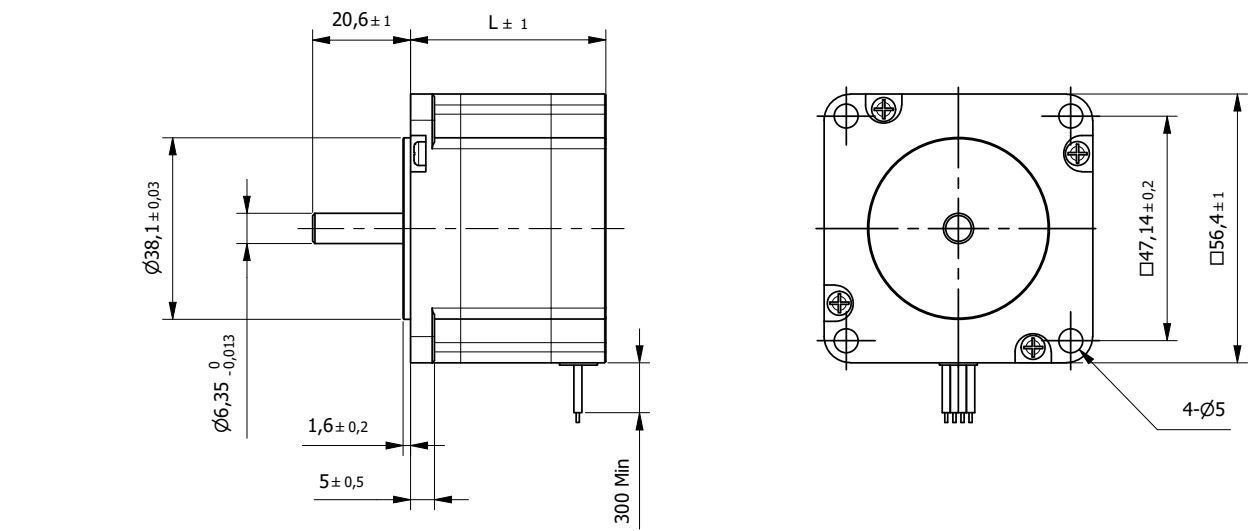
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 57SH76

High Torque

□ 57mm

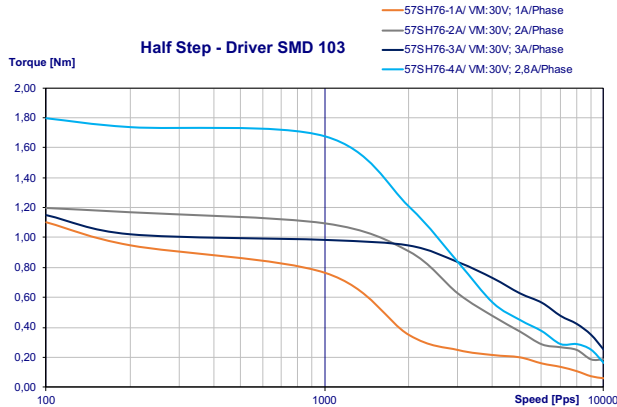


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification						
	Model		57SH76-1A	57SH76-2A	57SH76-3A	57SH76-4A
1	Rated Voltage	V	8,6	4,5	3	3,2
2	Current/Phase	A	1	2	3	2,8
3	Resistance/Phase	Ω	8,6	2,25	1	1,13
4	Inductance/Phase	mH	14	3,6	1,6	3,6
5	Holding Torque	Nm	1,35	1,35	1,35	1,89
6	Rotor Inertia	gcm2	480	480	480	480
7	Detent Torque	Nm	0,068	0,068	0,068	0,068
8	n° of Leads		6	6	6	4
9	Length (L)	mm	76	76	76	76
10	Weight	Kg	1	1	1	1

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

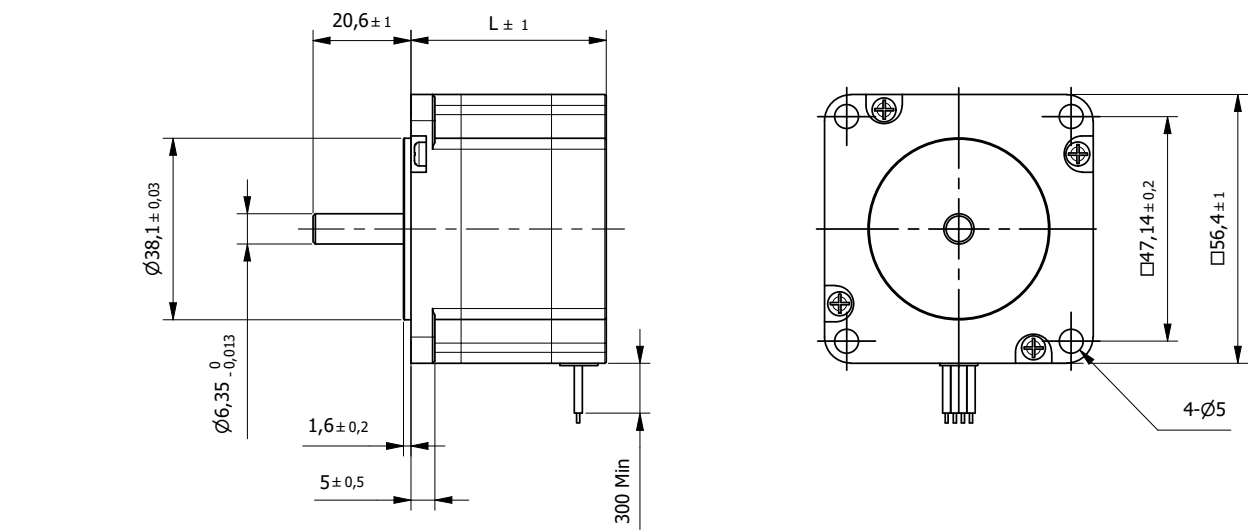
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 57SH41M

High Torque - step angle 0,9°

□ 57mm

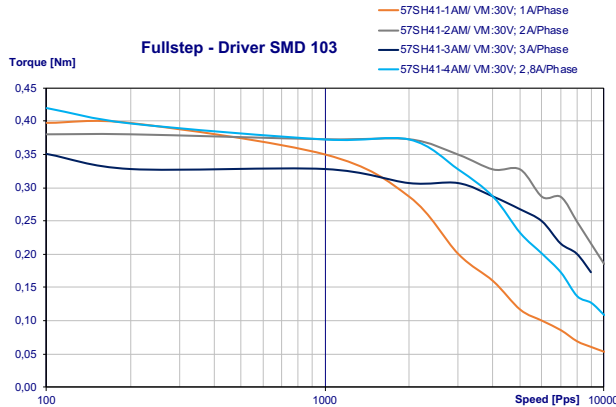


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification						
	Model	57SH41-1AM	57SH41-2AM	57SH41-3AM	57SH41-4AM	
1	Rated Voltage	V	5,7	2,8	1,9	2
2	Current/Phase	A	1	2	3	2,8
3	Resistance/Phase	Ω	5,7	1,4	0,63	0,7
4	Inductance/Phase	mH	8	2,2	1	2,2
5	Holding Torque	Nm	0,39	0,39	0,39	0,55
6	Rotor Inertia	gcm2	120	120	120	120
7	Detent Torque	Nm	0,021	0,021	0,021	0,021
8	n° of Leads		6	6	6	4
9	Length (L)	mm	41	41	41	41
10	Weight	Kg	0,45	0,45	0,45	0,45

Characteristics	
Item	
Step angle	0,9°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

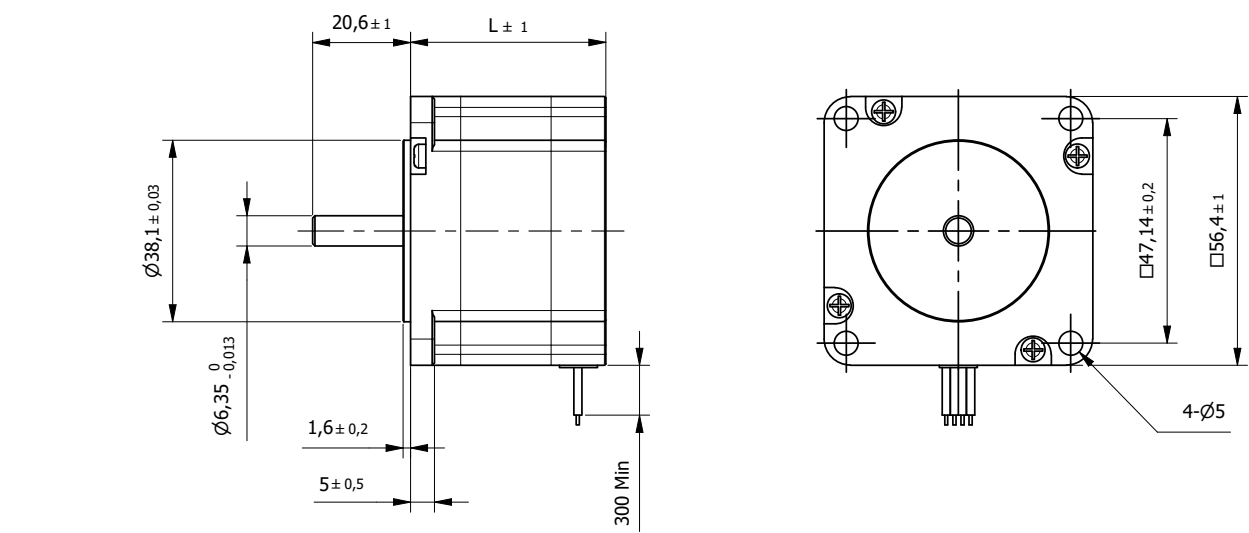
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 57SH56M

High Torque - step angle 0,9°

□ 57mm

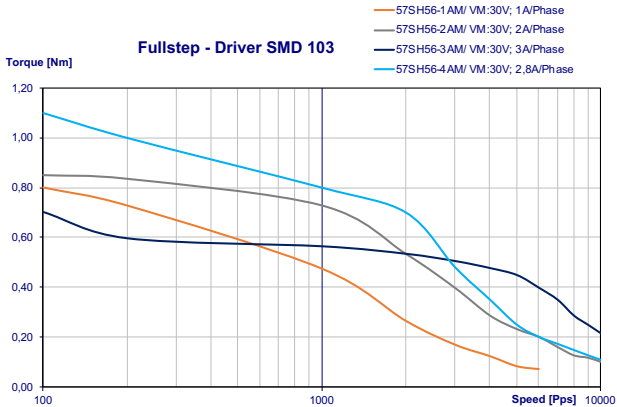


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification						
	Model	57SH56-1AM	57SH56-2AM	57SH56-3AM	57SH56-4AM	
1	Rated Voltage	V	7,4	3,6	2,3	2,5
2	Current/Phase	A	1	2	3	2,8
3	Resistance/Phase	Ω	7,4	1,8	0,75	0,9
4	Inductance/Phase	mH	17,5	4,5	1,9	4,5
5	Holding Torque	Nm	0,9	0,9	0,9	1,26
6	Rotor Inertia	gcm2	300	300	300	300
7	Detent Torque	Nm	0,04	0,04	0,04	0,04
8	n° of Leads		6	6	6	4
9	Length (L)	mm	56	56	56	56
10	Weight	Kg	0,7	0,7	0,7	0,7

Characteristics	
Item	
Step angle	0,9°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

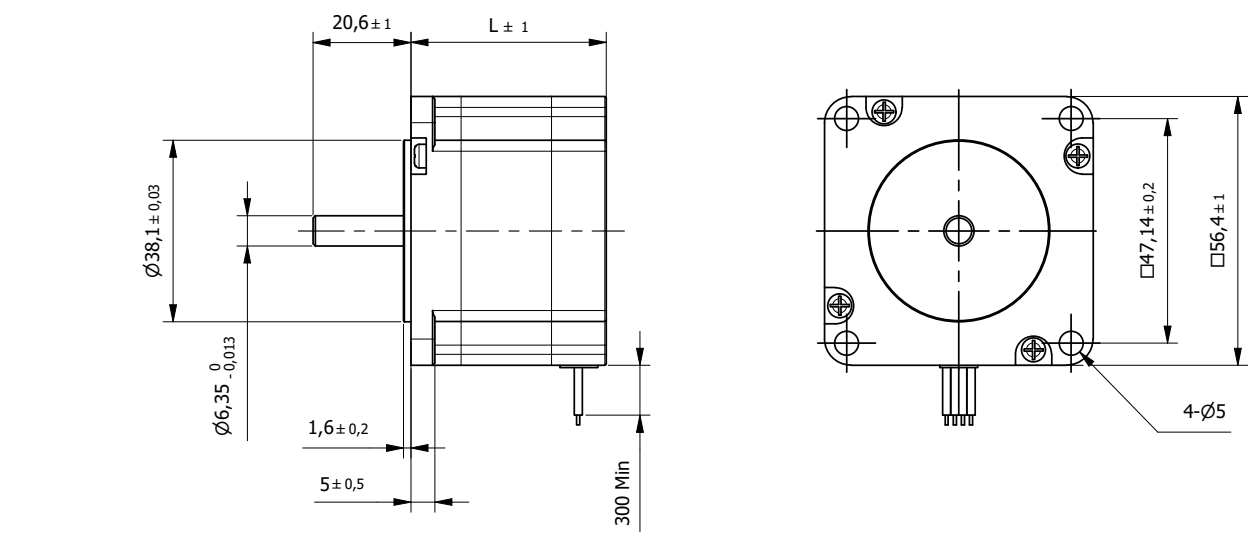
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 57SH76M

High Torque - step angle 0,9°

□ 57mm

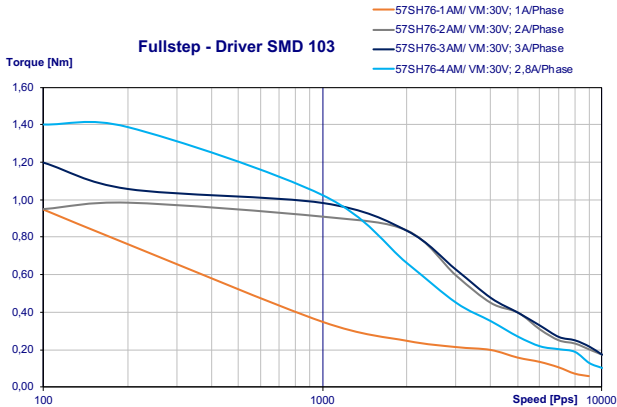


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification						
	Model	57SH76-1AM	57SH76-2AM	57SH76-3AM	57SH76-4AM	
1	Rated Voltage	V	8,6	4,5	3	3,2
2	Current/Phase	A	1	2	3	2,8
3	Resistance/Phase	Ω	8,6	2,25	1	1,13
4	Inductance/Phase	mH	23	5,6	2,6	5,6
5	Holding Torque	Nm	1,35	1,35	1,35	1,8
6	Rotor Inertia	gcm2	480	480	480	480
7	Detent Torque	Nm	0,068	0,068	0,068	0,068
8	n° of Leads		6	6	6	4
9	Length (L)	mm	76	76	76	76
10	Weight	Kg	1	1	1	1

Characteristics	
Item	
Step angle	0,9°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

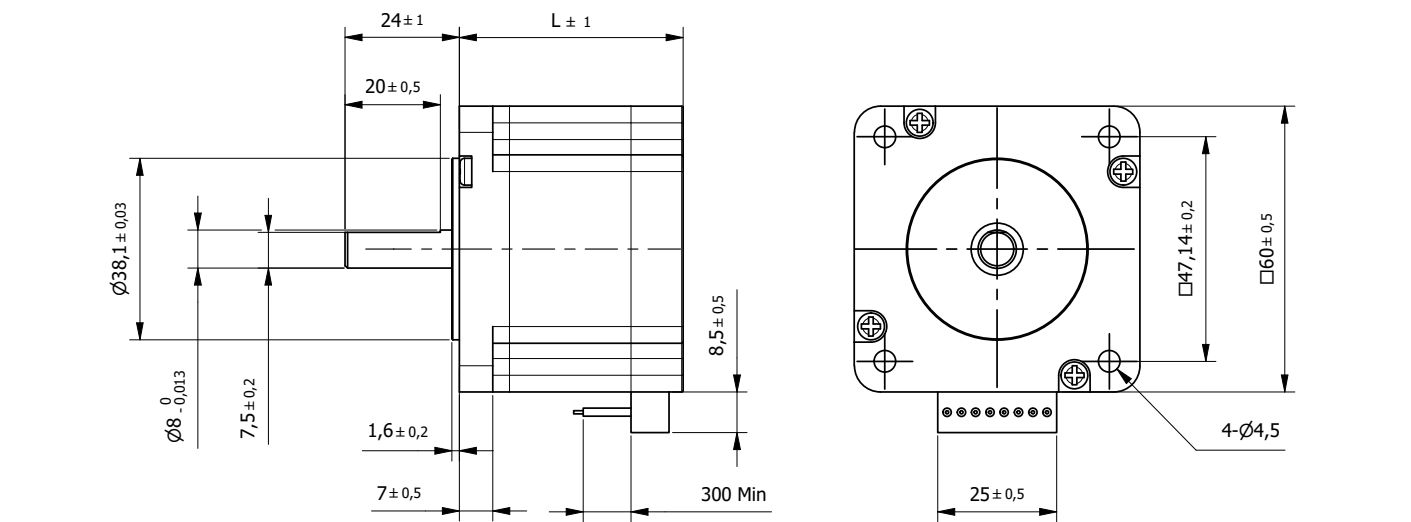
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-
Unipolar motor			
5	Yellow		COM Phase A
6	White		COM Phase B



Hybrid Stepper Motor 60SH45

High Torque

60mm

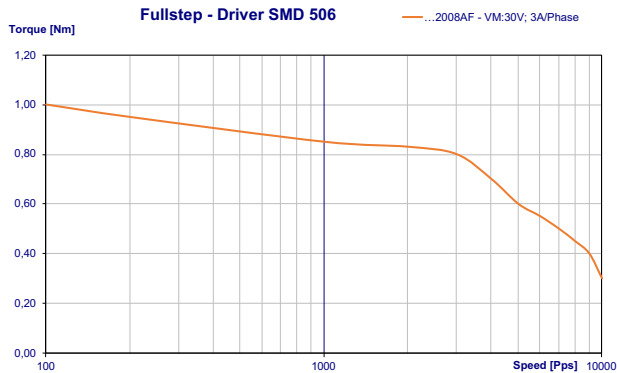


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification					
Model		60SH45-2008AF			
		Unipolar	Parallel	Series	
1	Rated Voltage	V	3	2,1	4,2
2	Current/Phase	A	2	2,8	1,4
3	Resistance/Phase	Ω	1,5	0,75	3
4	Inductance/Phase	mH	2	2	8
5	Holding Torque	Nm	0,78	1,1	1,1
6	Rotor Inertia	gcm2	275	275	275
7	Detent Torque	Nm	0,05	0,05	0,05
8	n° of Leads		8	8	8
9	Length (L)	mm	45	45	45
10	Weight	Kg	0,6	0,6	0,6

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

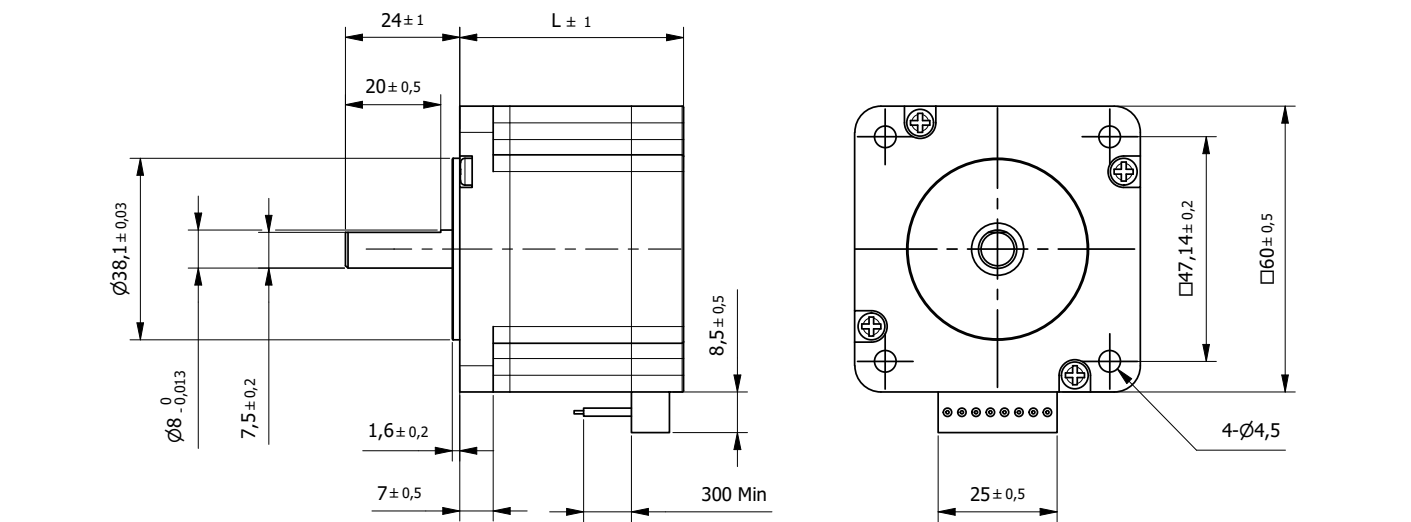
Connection			
Lead n°	Color	Gauge	Function
1	Blue/White	UL1430 AWG22	Phase A
2	Blue		Phase A-
3	Red/White		Phase C-
4	Red		Phase C
5	Green/White		Phase B
6	Green		Phase B-
7	Black/White		Phase D -
8	Black		Phase D



Hybrid Stepper Motor 60SH56

High Torque

60mm

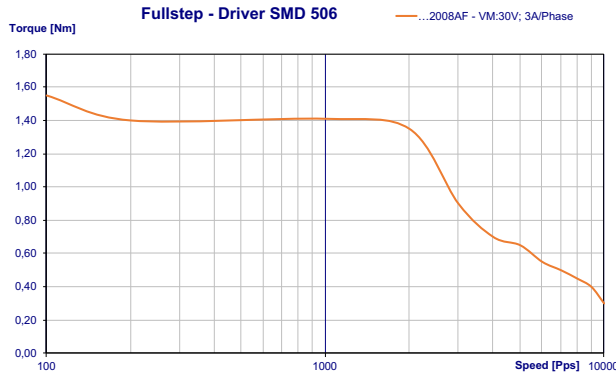


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification					
Model		60SH56-2008AF			
		Unipolar	Parallel	Series	
1	Rated Voltage	V	3,6	2,52	5,04
2	Current/Phase	A	2	2,8	1,4
3	Resistance/Phase	Ω	1,8	0,9	3,6
4	Inductance/Phase	mH	3,6	3,6	14,4
5	Holding Torque	Nm	1,17	1,65	1,65
6	Rotor Inertia	gcm2	400	400	400
7	Detent Torque	Nm	0,07	0,07	0,07
8	n° of Leads		8	8	8
9	Length (L)	mm	56	56	56
10	Weight	Kg	0,77	0,77	0,77

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

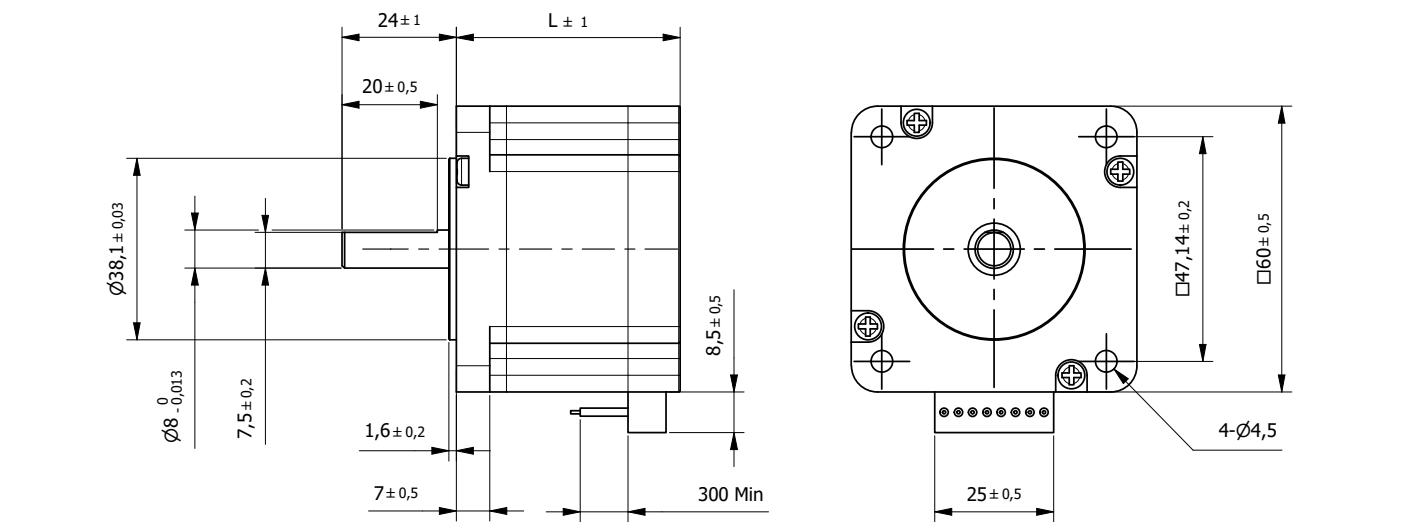
Connection			
Lead n°	Color	Gauge	Function
1	Blue/White	UL1430 AWG22	Phase A
2	Blue		Phase A-
3	Red/White		Phase C-
4	Red		Phase C
5	Green/White		Phase B
6	Green		Phase B-
7	Black/White		Phase D -
8	Black		Phase D



Hybrid Stepper Motor 60SH65

High Torque

60mm

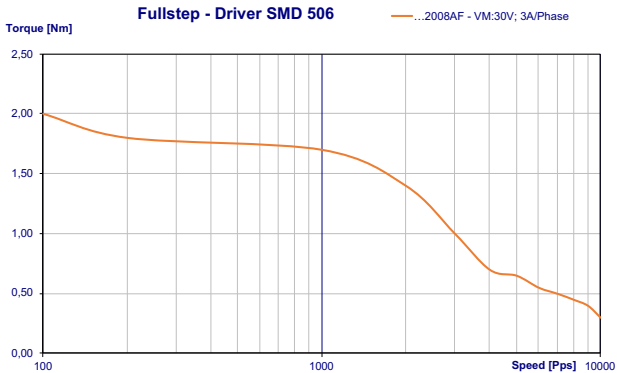


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification					
Model		60SH65-2008AF			
		Unipolar	Parallel	Series	
1	Rated Voltage	V	4,8	3,36	6,72
2	Current/Phase	A	2	2,8	1,4
3	Resistance/Phase	Ω	2,4	1,2	4,8
4	Inductance/Phase	mH	4,6	4,6	18,4
5	Holding Torque	Nm	1,5	2,1	2,1
6	Rotor Inertia	gcm2	570	570	570
7	Detent Torque	Nm	0,09	0,09	0,09
8	n° of Leads		8	8	8
9	Length (L)	mm	65	65	65
10	Weight	Kg	1,2	1,2	1,2

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

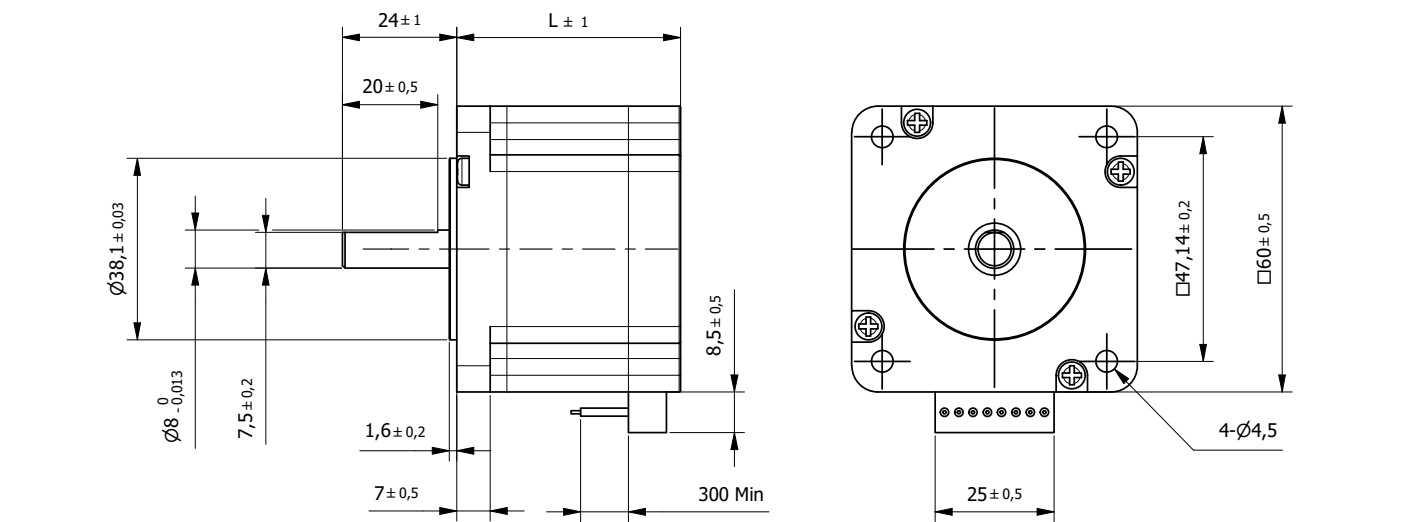
Connection			
Lead n°	Color	Gauge	Function
1	Blue/White	UL1430 AWG22	Phase A
2	Blue		Phase A-
3	Red/White		Phase C-
4	Red		Phase C
5	Green/White		Phase B
6	Green		Phase B-
7	Black/White		Phase D -
8	Black		Phase D



Hybrid Stepper Motor 60SH86

High Torque

60mm

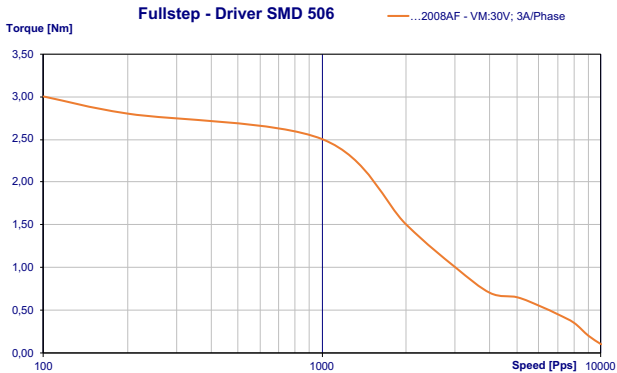


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification					
Model		60SH86-2008AF			
		Unipolar	Parallel	Series	
1	Rated Voltage	V	6	4,17	8,4
2	Current/Phase	A	2	2,8	1,4
3	Resistance/Phase	Ω	3	1,5	6
4	Inductance/Phase	mH	6,8	6,8	27,2
5	Holding Torque	Nm	2,2	3,1	3,1
6	Rotor Inertia	gcm2	840	840	840
7	Detent Torque	Nm	0,1	0,1	0,1
8	n° of Leads		8	8	8
9	Length (L)	mm	86	86	86
10	Weight	Kg	1,4	1,4	1,4

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

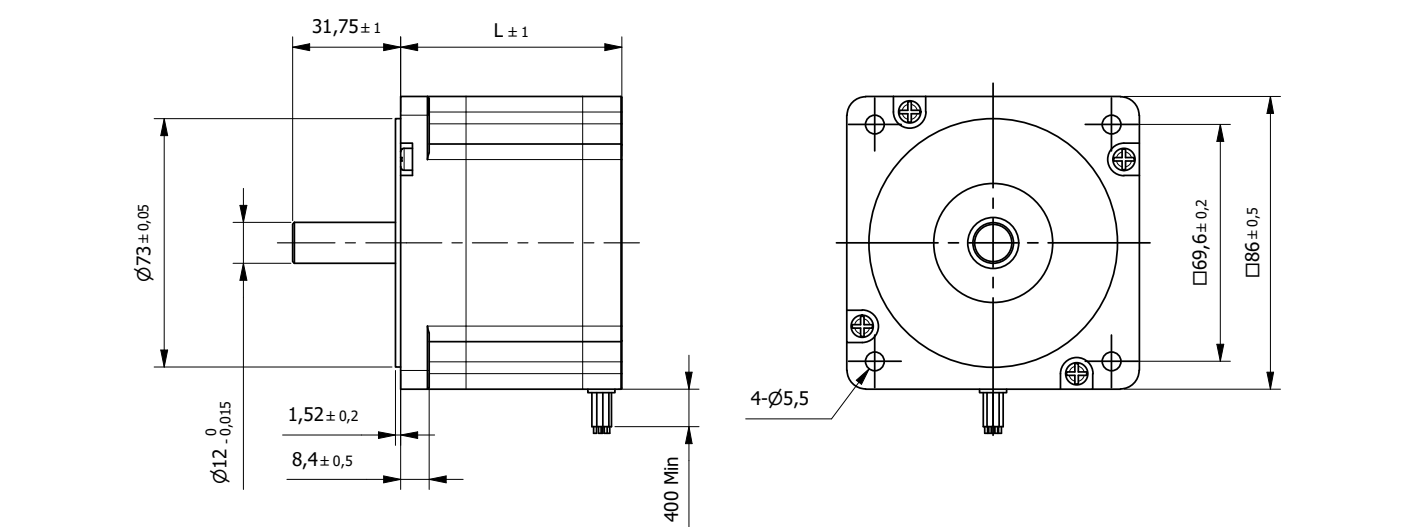
Connection			
Lead n°	Color	Gauge	Function
1	Blue/White	UL1430 AWG22	Phase A
2	Blue		Phase A-
3	Red/White		Phase C-
4	Red		Phase C
5	Green/White		Phase B
6	Green		Phase B-
7	Black/White		Phase D -
8	Black		Phase D



Hybrid Stepper Motor 86SH65

High Torque

□ 86mm

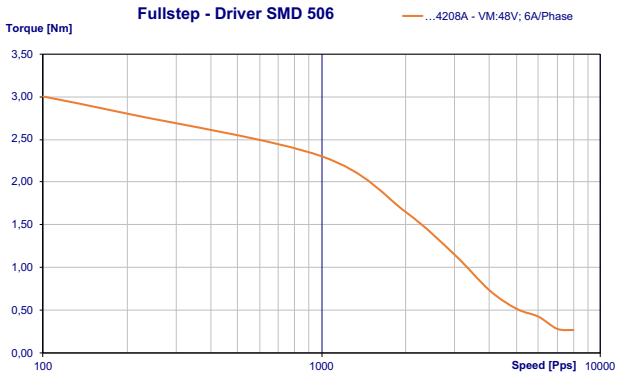


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification				
Model		86SH65-4208A		
		Unipolar	Parallel	Series
1	Rated Voltage	V	2,39	1,65
2	Current/Phase	A	4,2	5,9
3	Resistance/Phase	Ω	0,57	0,28
4	Inductance/Phase	mH	1,7	1,7
5	Holding Torque	Nm	2,6	3,4
6	Rotor Inertia	gcm2	1000	1000
7	Detent Torque	Nm	0,08	0,08
8	n° of Leads		8	8
9	Length (L)	mm	65	65
10	Weight	Kg	1,7	1,7

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	220N
Max Axial Force	60N
Dielectric Strength (for 1 sec.)	1200 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

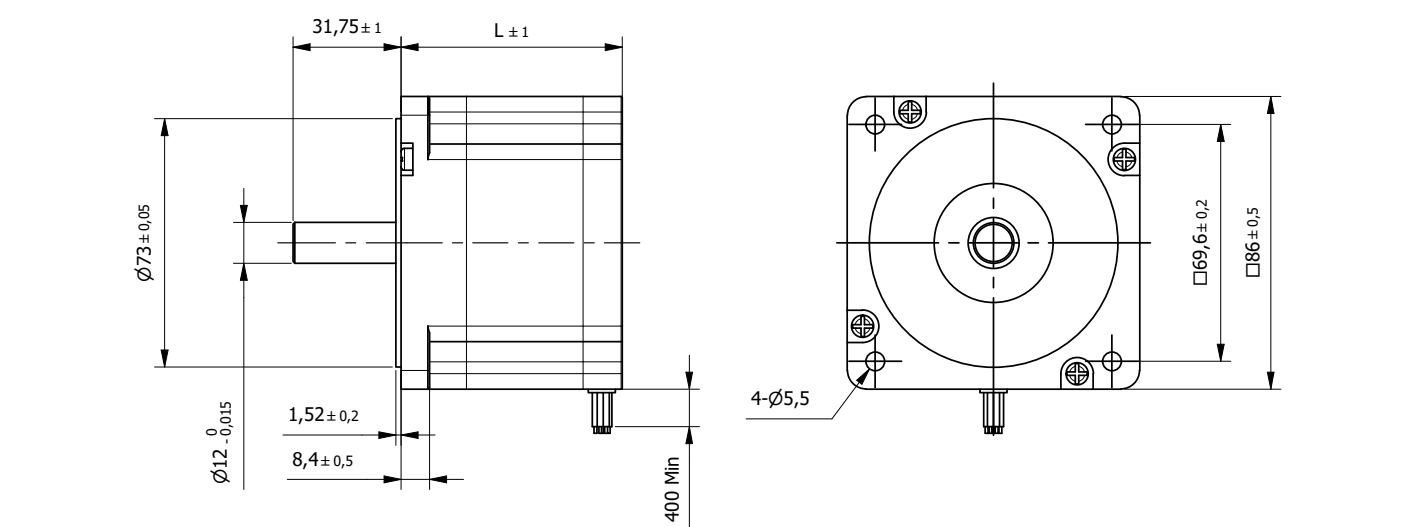
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG20	Phase A
2	Yellow		Phase A-
3	Blue		Phase C-
4	Black		Phase C
5	White		Phase B
6	Orange		Phase B-
7	Brown		Phase D -
8	Green		Phase D



Hybrid Stepper Motor 86SH80

High Torque

□ 86mm

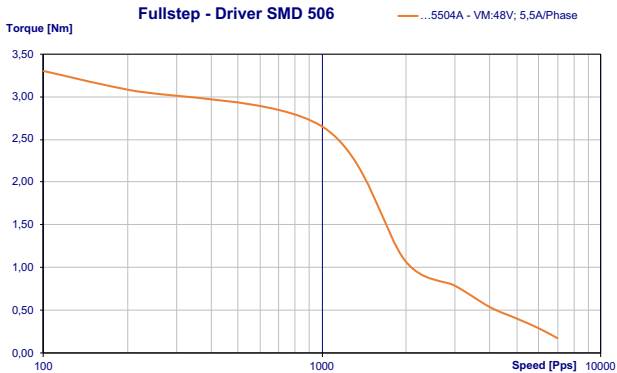


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification		
Model		...5504A
1	Rated Voltage	V
2	Current/Phase	A
3	Resistance/Phase	Ω
4	Inductance/Phase	mH
5	Holding Torque	Nm
6	Rotor Inertia	gcm2
7	Detent Torque	Nm
8	n° of Leads	
9	Length (L)	mm
10	Weight	Kg

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	220N
Max Axial Force	60N
Dielectric Strength (for 1 sec.)	1200 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

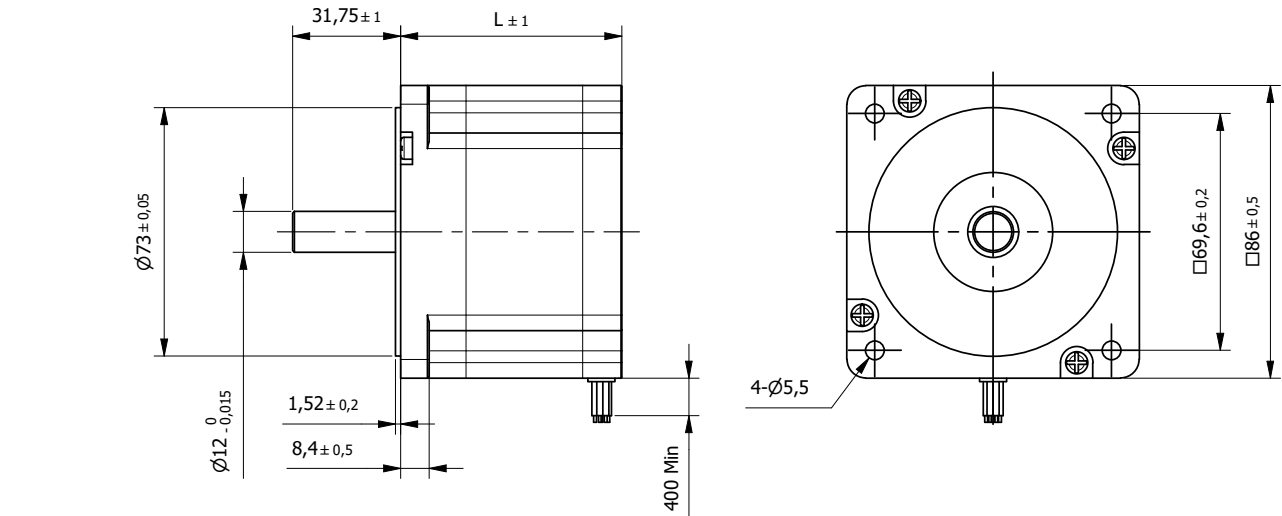
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG20	Phase A
2	White		Phase A-
3	Yellow		Phase B
4	Green		Phase B-



Hybrid Stepper Motor 86SH96

High Torque

86mm

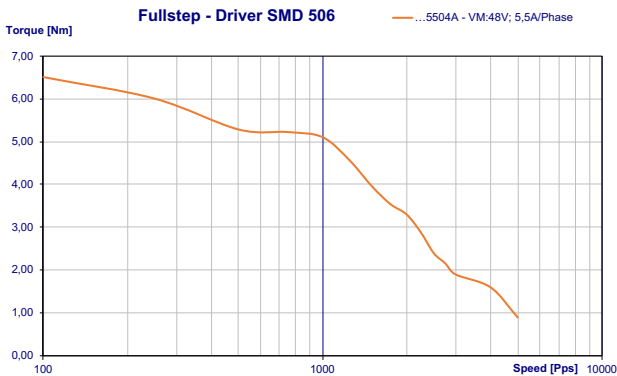


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification		
Model	...5504A	
1 Rated Voltage	V	2,56
2 Current/Phase	A	5,5
3 Resistance/Phase	Ω	0,465
4 Inductance/Phase	mH	4,5
5 Holding Torque	Nm	7
6 Rotor Inertia	gcm2	2700
7 Detent Torque	Nm	0,12
8 n° of Leads		4
9 Length (L)	mm	96
10 Weight	Kg	2,8

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	220N
Max Axial Force	60N
Dielectric Strength (for 1 sec.)	1200 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

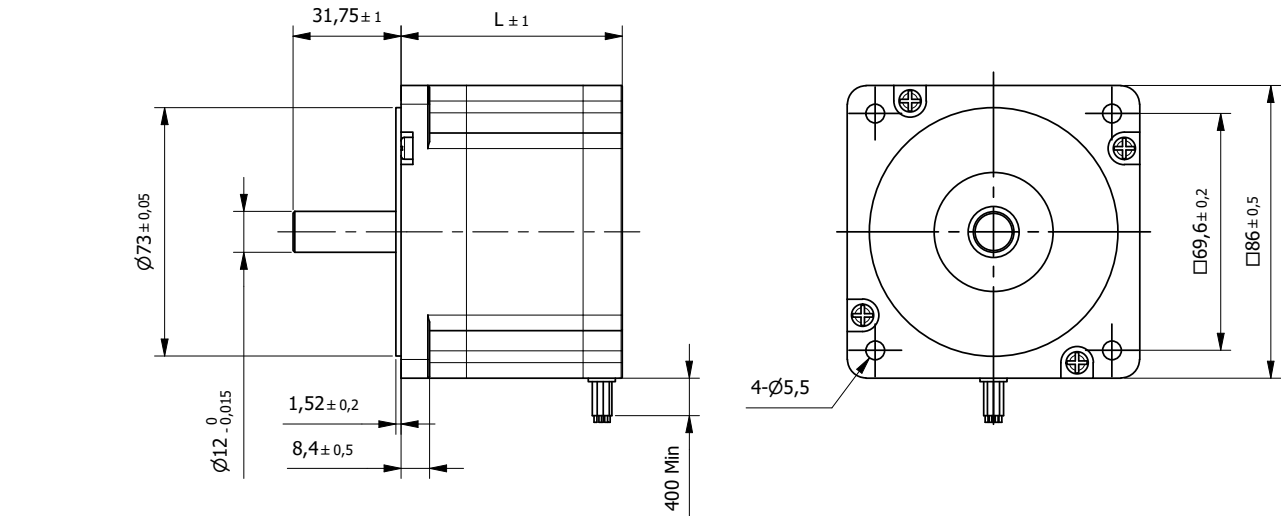
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG20	Phase A
2	White		Phase A-
3	Yellow		Phase B
4	Green		Phase B-



Hybrid Stepper Motor 86SH118

High Torque

86mm

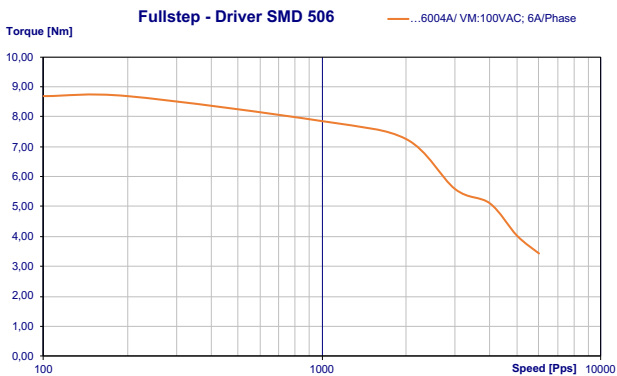


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification		
Model	...6004A	
1 Rated Voltage	V	2,7
2 Current/Phase	A	6
3 Resistance/Phase	Ω	0,45
4 Inductance/Phase	mH	5,1
5 Holding Torque	Nm	8,7
6 Rotor Inertia	gcm2	2700
7 Detent Torque	Nm	0,24
8 n° of Leads		4
9 Length (L)	mm	118
10 Weight	Kg	3,8

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	220N
Max Axial Force	60N
Dielectric Strength (for 1 sec.)	1200 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

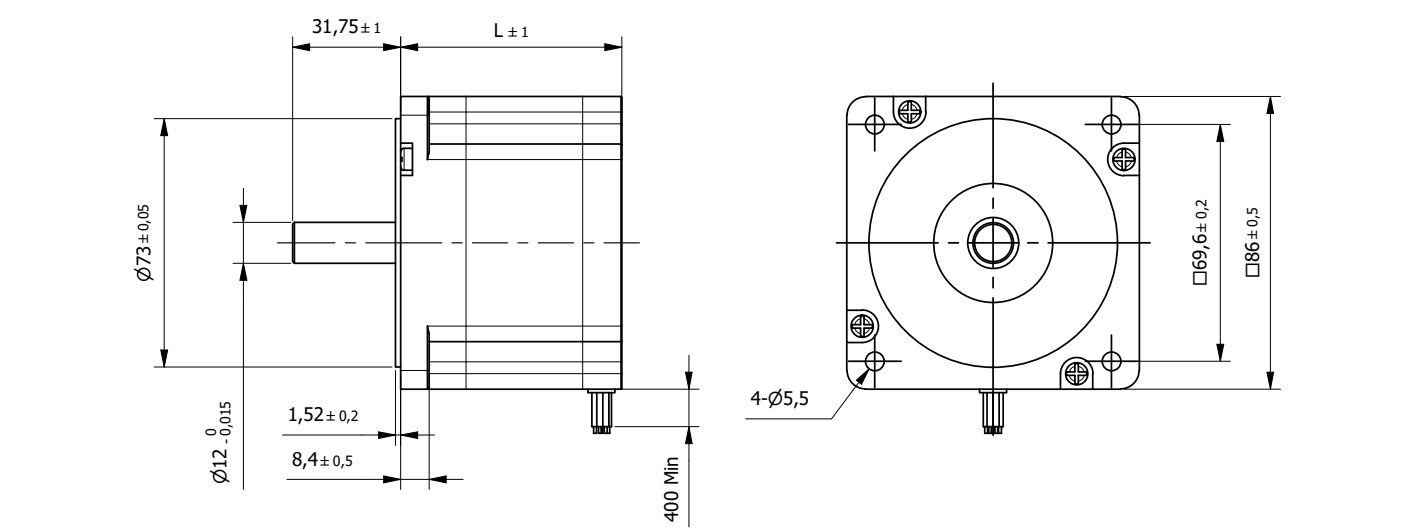
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG20	Phase A
2	White		Phase A-
3	Yellow		Phase B
4	Green		Phase B-



Hybrid Stepper Motor 86SH156

High Torque

86mm

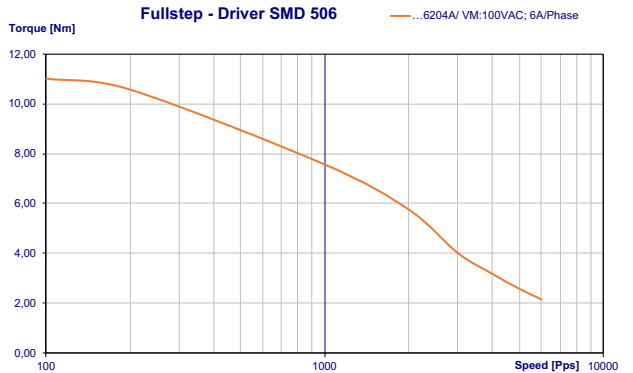


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification			
Model		...6204A	
1	Rated Voltage	V	4,5
2	Current/Phase	A	6,2
3	Resistance/Phase	Ω	0,72
4	Inductance/Phase	mH	9
5	Holding Torque	Nm	12,1
6	Rotor Inertia	gcm2	4000
7	Detent Torque	Nm	0,36
8	n° of Leads		4
9	Length (L)	mm	156
10	Weight	Kg	5,4

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	220N
Max Axial Force	60N
Dielectric Strength (for 1 sec.)	1200 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

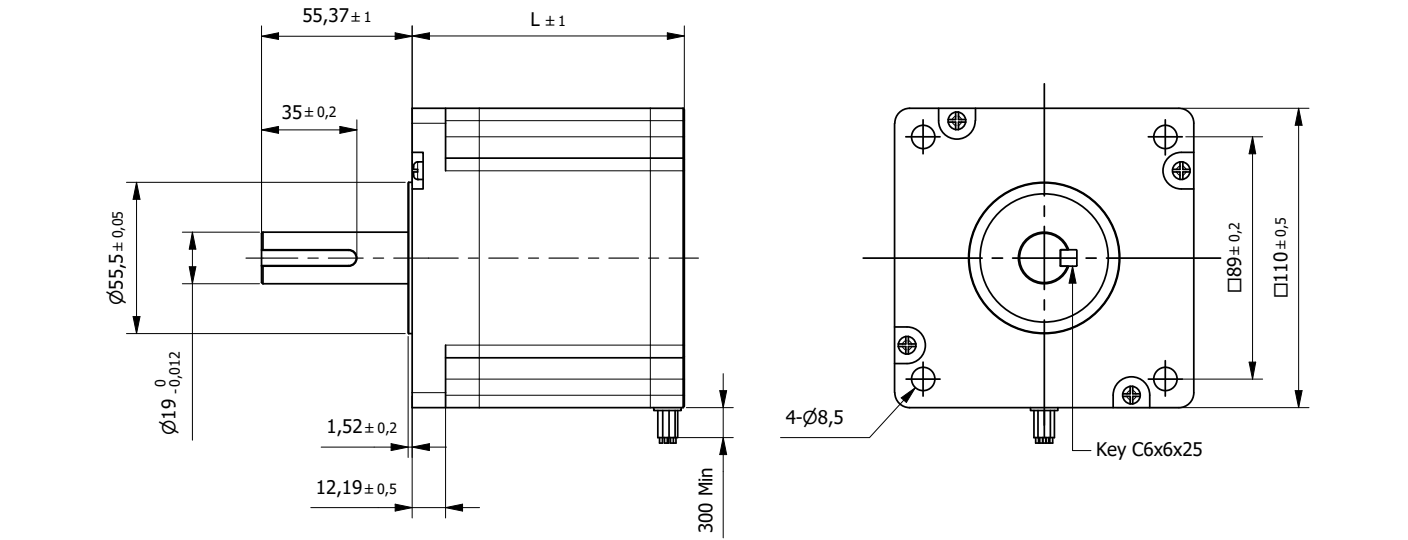
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG20	Phase A
2	White		Phase A-
3	Yellow		Phase B
4	Green		Phase B-



Hybrid Stepper Motor 110SH

High Torque

110mm

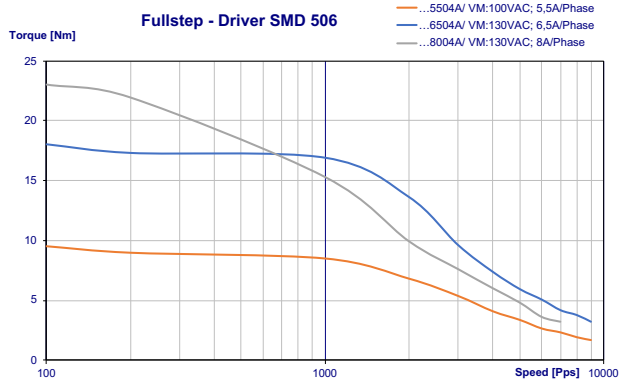


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification					
	Model		...99-5504A	...150-6504A	...201-8004A
1	Rated Voltage	V	4,95	5,2	5,36
2	Current/Phase	A	5,5	6,5	8
3	Resistance/Phase	Ω	0,7	0,72	0,67
4	Inductance/Phase	mH	9,8	11,5	12
5	Holding Torque	Nm	11,2	21	28
6	Rotor Inertia	gcm2	5500	10'900	16'200
7	Detent Torque	Nm	0,3	0,59	0,75
8	n° of Leads		4	4	4
9	Length (L)	mm	99	150	201
10	Weight	Kg	5	8,4	11,7

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	330N
Max Axial Force	100N
Dielectric Strength (for 1 sec.)	1200 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG18	Phase A
2	White		Phase A-
3	Yellow		Phase B
4	Green		Phase B-





Hybrid Stepper motors

STC series - Integrated Connector

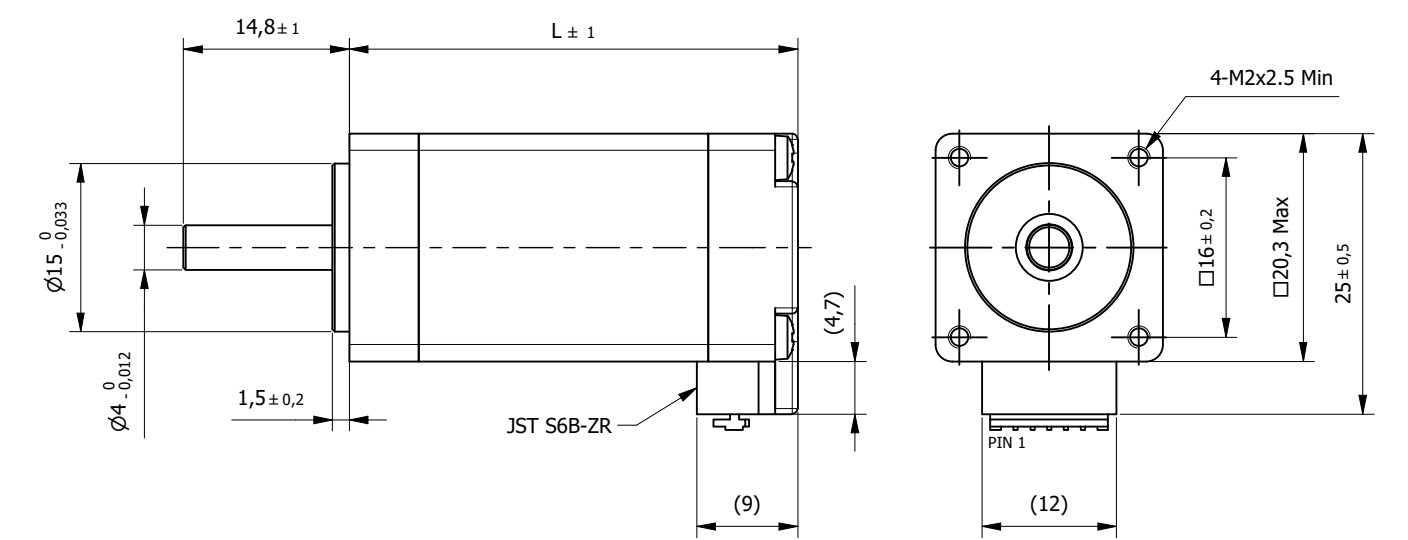
Hybrid Stepper motors - STC Connector series	Torque* (Nm)	
20STC	0,022...0,036	286
28STC32	0,08	287
28STC40	0,13	288
28STC51	0,18	289
57STC41	0,6	290
57STC56	1,4	291
57STC76	2,3	292

* Holding Torque

Hybrid Stepper Motor 20STC

High Torque with Connector

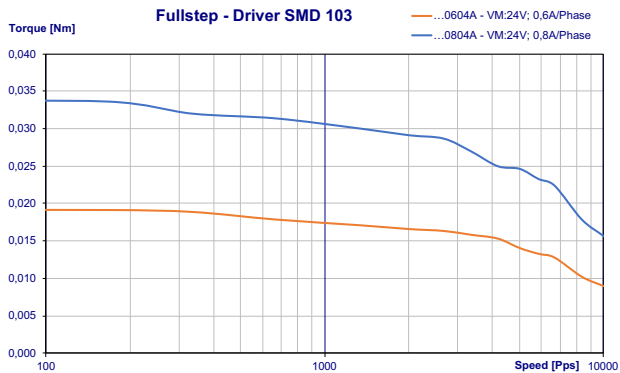
□ 20mm



Specification				
Model		...33-0604A	...40-0804A	
1	Rated Voltage	V	3,84	4,32
2	Current/Phase	A	0,6	0,8
3	Resistance/Phase	Ω	6,4	5,6
4	Inductance/Phase	mH	2,6	2,3
5	Holding Torque	Nm	0,022	0,036
6	Rotor Inertia	gcm ²	2	3,6
7	Detent Torque	Nm	0,002	0,002
8	n° of Leads		4	4
9	Length (L)	mm	33	40
10	Weight	Kg	0,06	0,08

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	10N
Max Axial Force	4N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

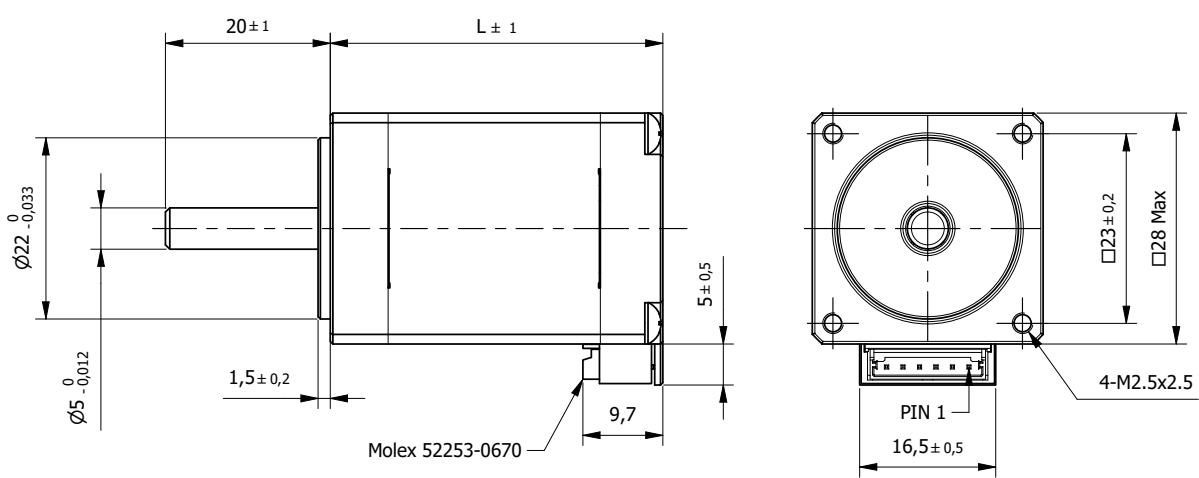
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
2	Yellow		COM Phase A
3	Green		Phase A-
4	Red		Phase B
5	White		COM Phase B
6	Blue		Phase B-



Hybrid Stepper Motor 28STC32

High Torque with Connector

□ 28mm

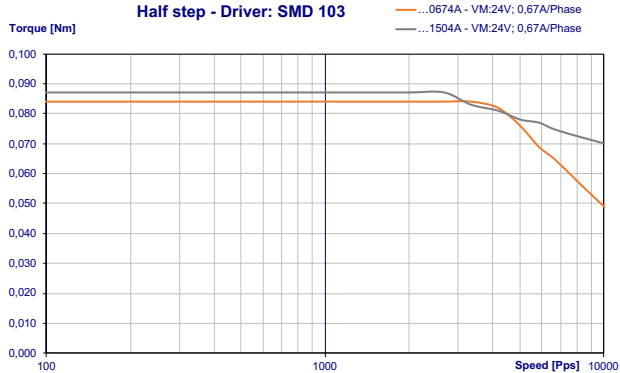


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

Specification				
Model		...0674A	...1504A	
1	Rated Voltage	V	4,2	1,95
2	Current/Phase	A	0,67	1,5
3	Resistance/Phase	Ω	6,2	1,3
4	Inductance/Phase	mH	5,76	1
5	Holding Torque	Nm	0,08	0,08
6	Rotor Inertia	gcm ²	9	9
7	Detent Torque	Nm	0,005	0,005
8	n° of Leads		4	4
9	Length (L)	mm	32	32
10	Weight	Kg	0,11	0,11

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (5mm from front flange)	28N
Max Axial Force	7N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

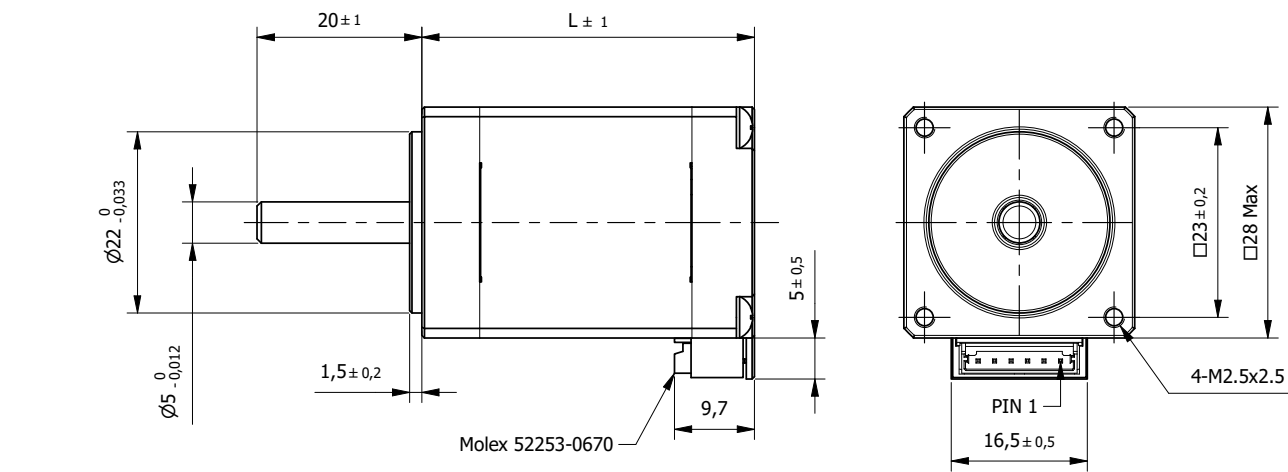
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Yellow		COM Phase A
3	Green		Phase A-
4	Red		Phase B
5	White		COM Phase B
6	Blue		Phase B-



Hybrid Stepper Motor 28STC40

High Torque with Connector

□ 28mm

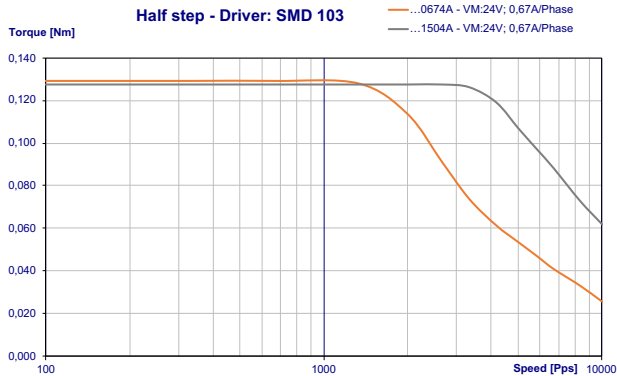


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

Specification				
Model		...0674A	...1504A	
1	Rated Voltage	V	4,9	2,2
2	Current/Phase	A	0,67	1,5
3	Resistance/Phase	Ω	7,3	1,45
4	Inductance/Phase	mH	6,52	1,25
5	Holding Torque	Nm	0,13	0,13
6	Rotor Inertia	gcm2	12	12
7	Detent Torque	Nm	0,006	0,006
8	n° of Leads		4	4
9	Length (L)	mm	40	40
10	Weight	Kg	0,14	0,14

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (5mm from front flange)	28N
Max Axial Force	7N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

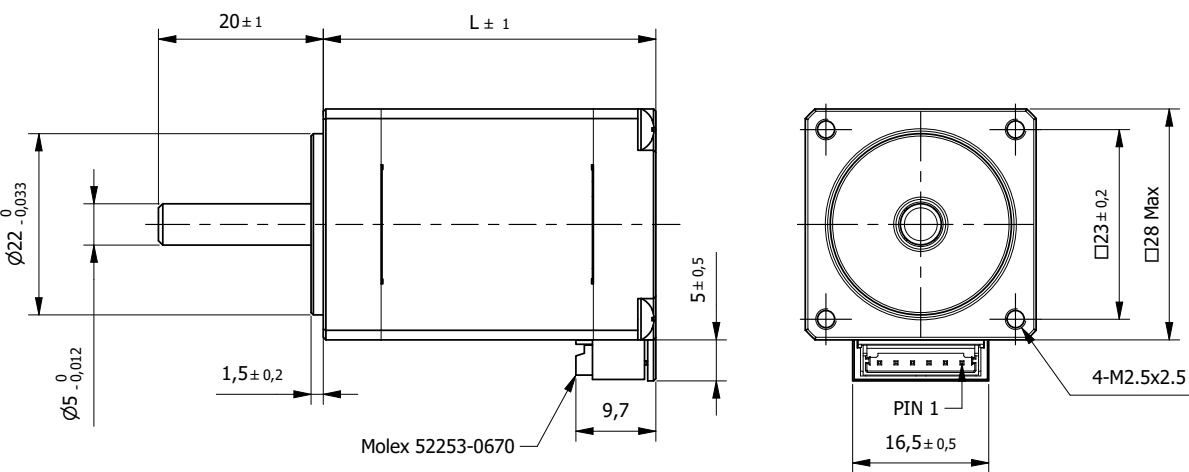
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Yellow		COM Phase A
3	Green		Phase A-
4	Red		Phase B
5	White		COM Phase B
6	Blue		Phase B-



Hybrid Stepper Motor 28STC51

High Torque with Connector

□ 28mm

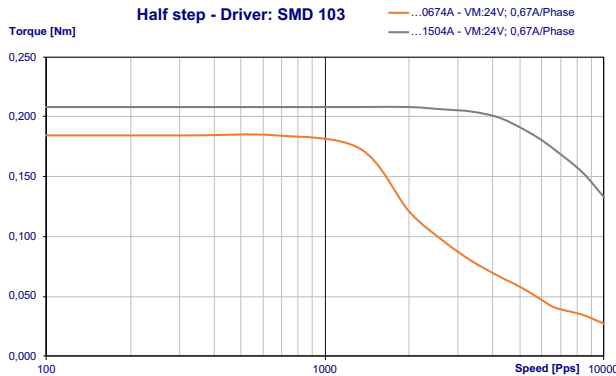


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

Specification				
Model		...0674A	...1504A	
1	Rated Voltage	V	6,2	2,7
2	Current/Phase	A	0,67	1,5
3	Resistance/Phase	Ω	9,2	1,9
4	Inductance/Phase	mH	8,4	1,9
5	Holding Torque	Nm	0,18	0,18
6	Rotor Inertia	gcm2	18	18
7	Detent Torque	Nm	0,008	0,008
8	n° of Leads		4	4
9	Length (L)	mm	51,5	51,5
10	Weight	Kg	0,2	0,2

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (5mm from front flange)	28N
Max Axial Force	7N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

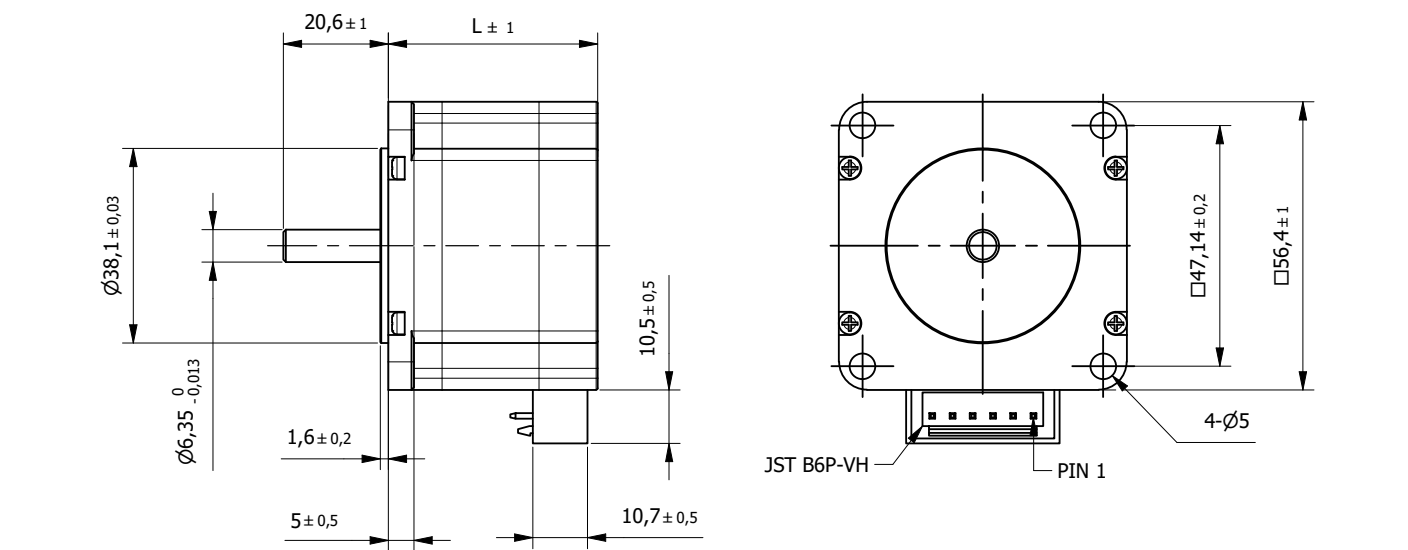
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Yellow		COM Phase A
3	Green		Phase A-
4	Red		Phase B
5	White		COM Phase B
6	Blue		Phase B-



Hybrid Stepper Motor 57STC41

High Torque with Connector

□ 57mm

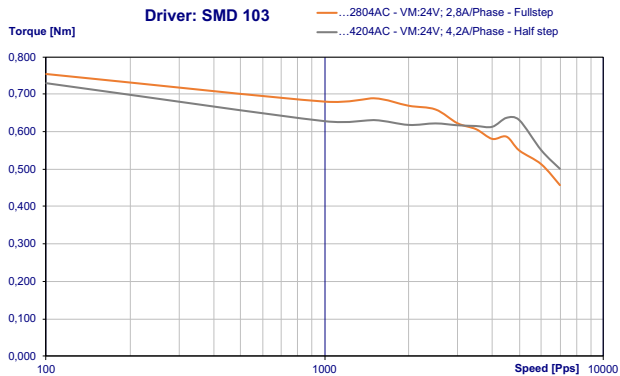


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification				
	Model	...2804AC	...4204AC	
1	Rated Voltage	V	2,1	1,5
2	Current/Phase	A	2,8	4,2
3	Resistance/Phase	Ω	0,78	0,35
4	Inductance/Phase	mH	1,8	0,8
5	Holding Torque	Nm	0,6	0,6
6	Rotor Inertia	gcm2	120	120
7	Detent Torque	Nm	0,021	0,021
8	n° of Leads		4	4
9	Length (L)	mm	41	41
10	Weight	Kg	0,45	0,45

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

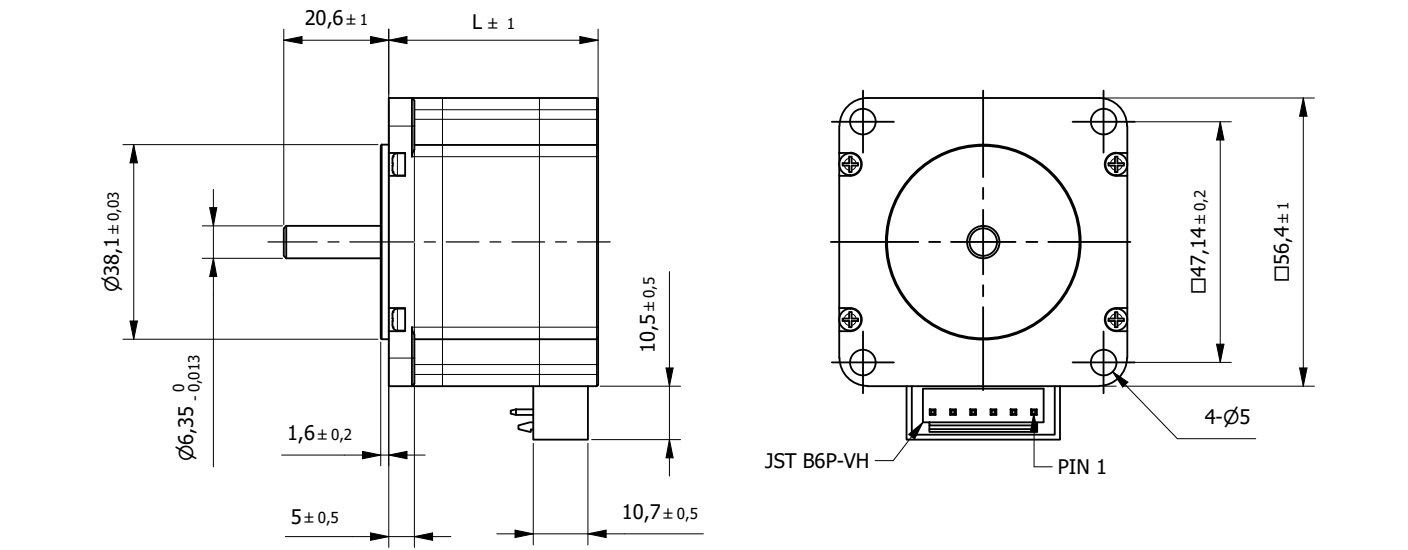
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Yellow		COM Phase A
3	Green		Phase A-
4	Red		Phase B
5	White		COM Phase B
6	Blue		Phase B-



Hybrid Stepper Motor 57STC56

High Torque with Connector

□ 57mm

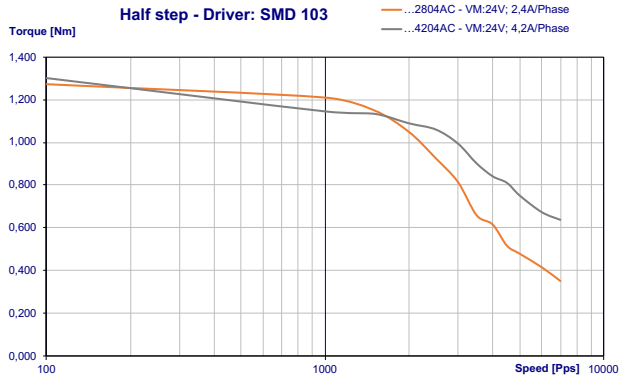


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification				
	Model	...2804AC	...4204AC	
1	Rated Voltage	V	2,8	2,1
2	Current/Phase	A	2,8	4,2
3	Resistance/Phase	Ω	1	0,5
4	Inductance/Phase	mH	3,2	1,6
5	Holding Torque	Nm	1,4	1,4
6	Rotor Inertia	gcm2	300	300
7	Detent Torque	Nm	0,04	0,04
8	n° of Leads		4	4
9	Length (L)	mm	56	56
10	Weight	Kg	0,7	0,7

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

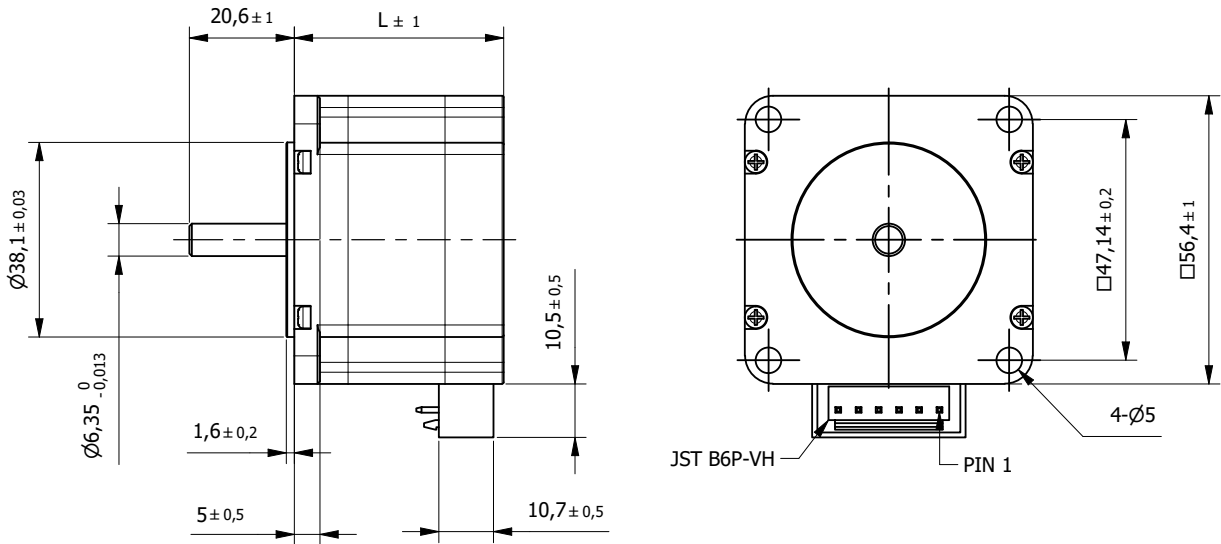
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Yellow		COM Phase A
3	Green		Phase A-
4	Red		Phase B
5	White		COM Phase B
6	Blue		Phase B-



Hybrid Stepper Motor 57STC76

High Torque with Connector

□ 57mm

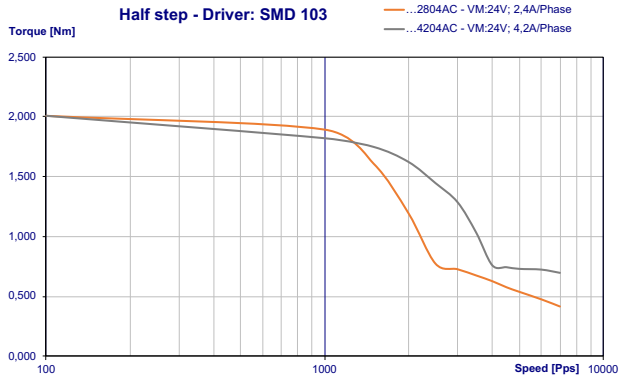


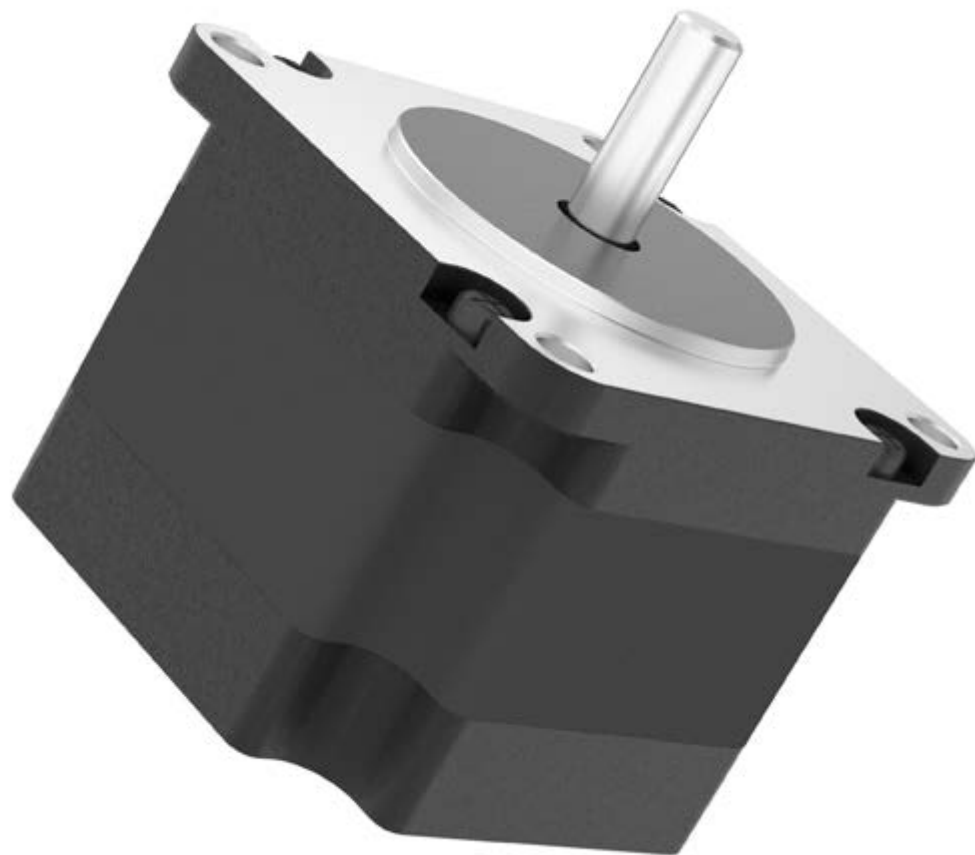
BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification				
Model		...2804AC	...4204AC	
1	Rated Voltage	V	3,6	2,3
2	Current/Phase	A	2,8	4,2
3	Resistance/Phase	Ω	1,3	0,55
4	Inductance/Phase	mH	5,3	2,1
5	Holding Torque	Nm	2,3	2,3
6	Rotor Inertia	gcm2	480	480
7	Detent Torque	Nm	0,068	0,068
8	n° of Leads		4	4
9	Length (L)	mm	76	76
10	Weight	Kg	1,2	1,2

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Yellow		COM Phase A
3	Green		Phase A-
4	Red		Phase B
5	White		COM Phase B
6	Blue		Phase B-





Stepper motors

3-Phase Hybrid

Advantages at a glance	
Low noise and losses	
High torque	
Smooth precise movement	

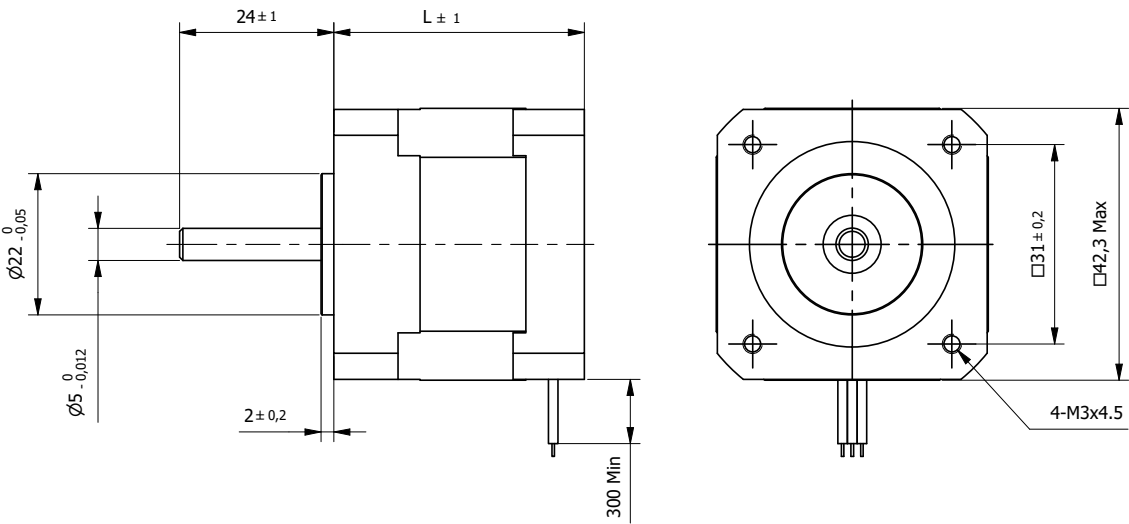
3-Phase Hybrid Stepper motors		Torque* (Nm)	
42 3P		0,08...0,2	296
57 3P		0,45...1,5	297
60 3P53		0,9	298

3-Phase technology in hybrid stepper motor is used mainly where ultra-low vibration and very low noise levels are required. The drive circuit of these motors is simplified because it is driven with a star wiring connection. The use of three phases inherently helps to reduce torque ripple and smooth motor performance. An example of an ideal application is in performance lighting, where quick movement and quiet operation are required.

* Holding Torque

Hybrid Stepper Motor 423P
3-Phase

42mm

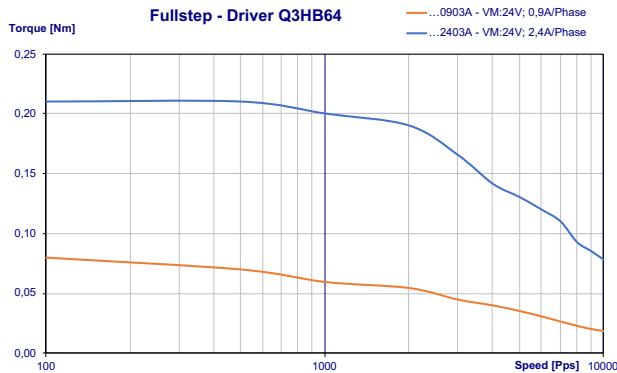


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19.05mm

Specification				
	Model	...24-0903A	...39-2403A	
1	Rated Voltage	V	5,58	2,88
2	Current/Phase	A	0,9	2,4
3	Resistance/Phase	Ω	6,2	1,2
4	Inductance/Phase	mH	3,2	0,8
5	Holding Torque	Nm	0,08	0,2
6	Rotor Inertia	gcm2	20	54
7	n° of Leads		3	3
8	Length (L)	mm	24	39
9	Weight	Kg	0,14	0,28

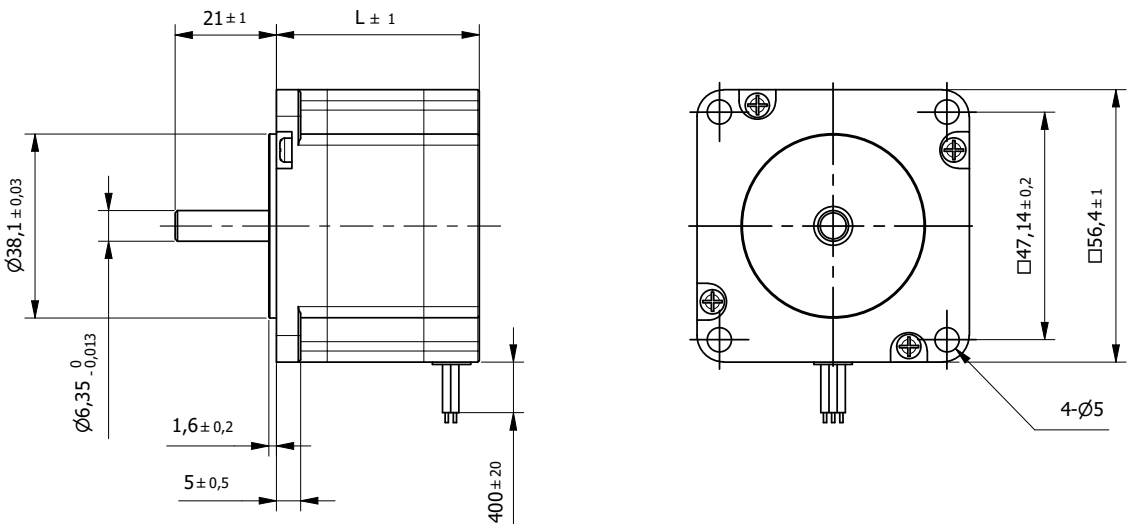
Characteristics	
Item	
Step angle	1,2°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1061 AWG26	Phase U
2	Yellow		Phase V
3	Blue		Phase W



Hybrid Stepper Motor 573P
3-Phase

57mm

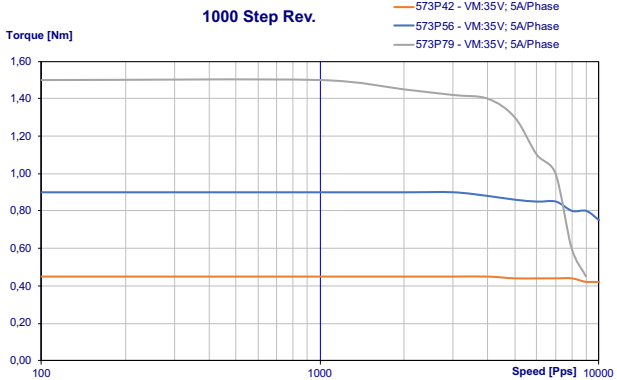


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification					
	Model		573P42	573P56	573P79
1	Rated Voltage	V	6,76	4	6
2	Current/Phase	A	5,2	5,6	5,8
3	Resistance/Phase	Ω	1,3	0,7	1,05
4	Inductance/Phase	mH	1,4	1,7	2,4
5	Holding Torque	Nm	0,45	0,9	1,5
6	Rotor Inertia	gcm2	110	300	480
7	n° of Leads		6	6	6
8	Length (L)	mm	42	56	79
9	Weight	Kg	0,45	0,75	1,1

Characteristics	
Item	
Step angle	1,2°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

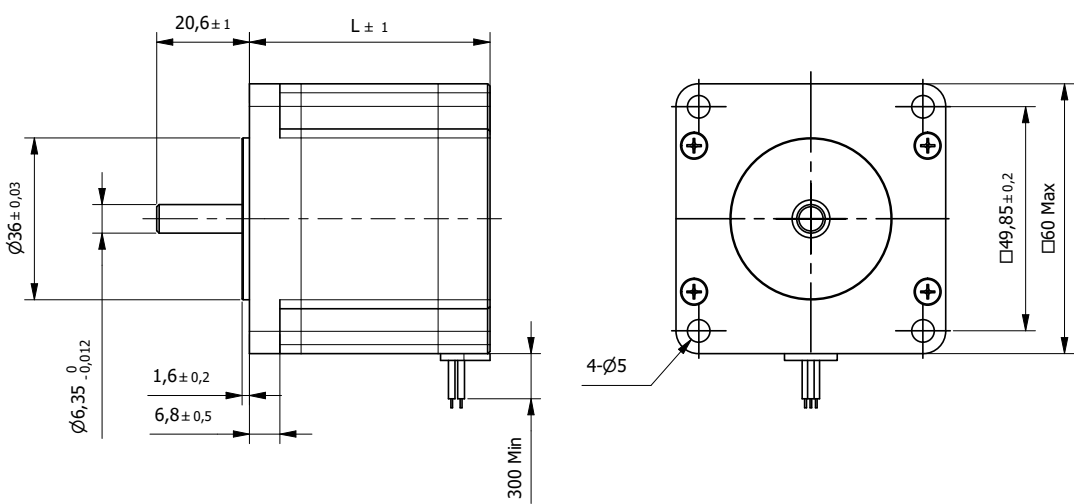
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1332 AWG18	Phase U
2	Orange		Phase U
3	White		Phase V
4	Blue		Phase V
5	Yellow		Phase W
6	Green		Phase W



Hybrid Stepper Motor 603P53

3-Phase

□ 60mm

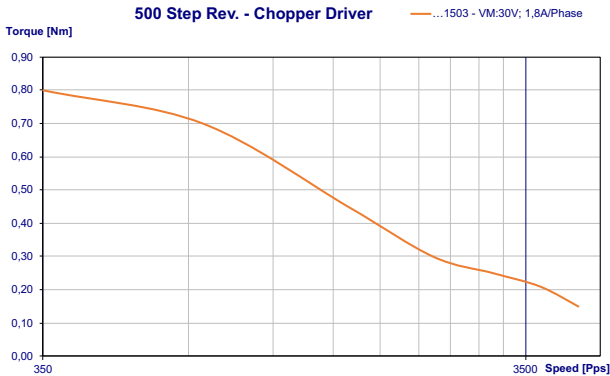


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification		
Model		...1503
1	Rated Voltage	V 6,75
2	Current/Phase	A 1,5
3	Resistance/Phase	Ω 4,5
4	Inductance/Phase	mH 12
5	Holding Torque	Nm 0,9
6	Rotor Inertia	gcm2 260
7	n° of Leads	3
8	Length (L)	mm 53,5
9	Weight	Kg 0,8

Characteristics	
Item	
Step angle	1,2°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG22	Phase U
2	Green		Phase V
3	White		Phase W





Stepper motors

Hollow Shaft

Advantages at a glance
High torque
High speed
High reliability

Based on our standard range of Hybrid stepper motor which provide superior performance with respect to step resolution, torque and speed, our hollow shaft series comes in sizes from 20 till 86mm. The hollow shaft can be used to pass cables or conduct laser beams through it in order to save space.

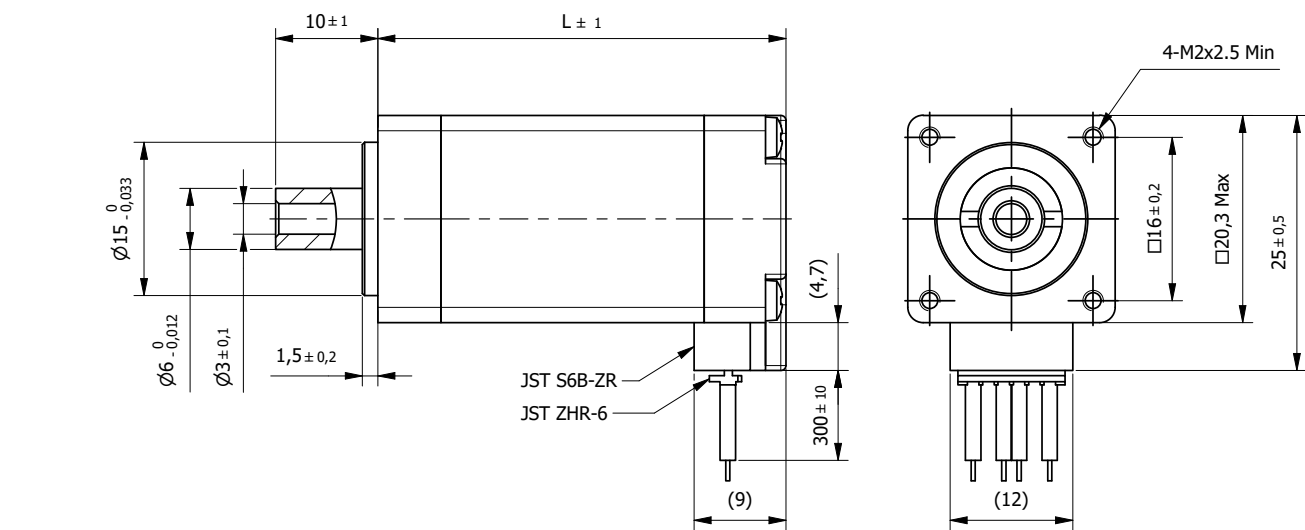
Hollow Shaft Stepper motors	Torque* (Nm)	
20STC40 H	0,036	302
28STC51 H	0,12	303
35STC38 H	0,23	304
42STC47 H	0,44	305
57STC76 H	2,3	306
86SH118 H	6	307

* Holding Torque

Hybrid Stepper Motor 20STC40-H

Hollow Shaft - High Torque

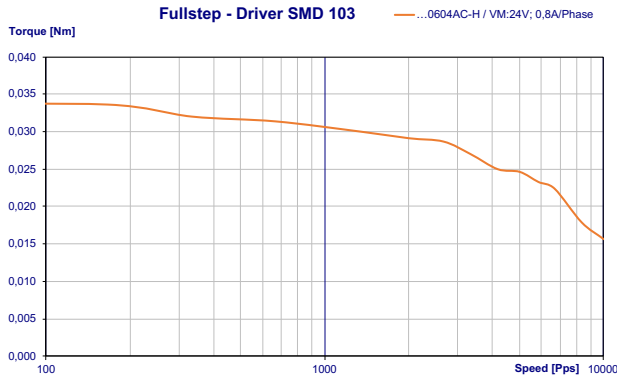
□ 20mm



Specification			
Model		...0604AC-H	
1	Rated Voltage	V	4,3
2	Current/Phase	A	0,6
3	Resistance/Phase	Ω	7,2
4	Inductance/Phase	mH	3,15
5	Holding Torque	Nm	0,036
6	Rotor Inertia	gcm ²	2,9
7	Detent Torque	Nm	0,002
8	n° of Leads		4
9	Length (L)	mm	40
10	Weight	Kg	0,08

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (5mm from front flange)	10N
Max Axial Force	4N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

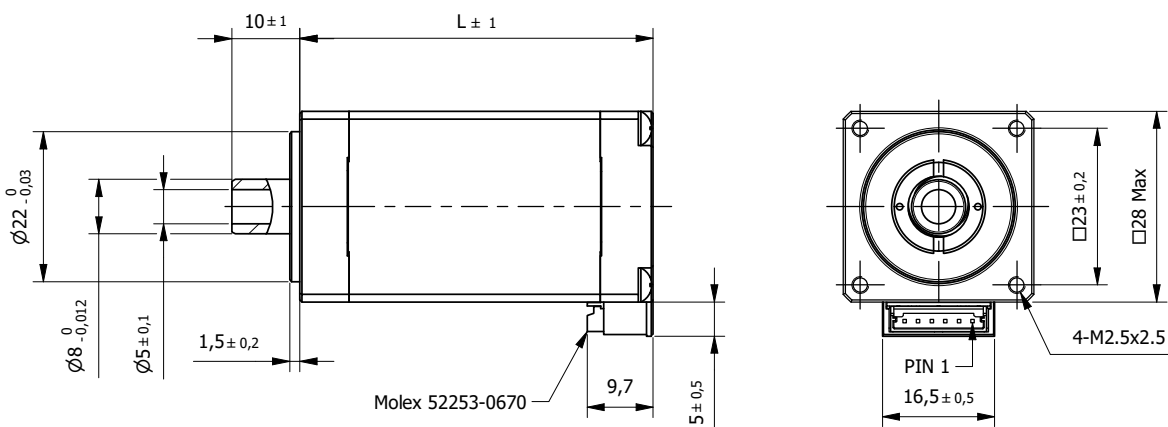
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
2	Yellow		COM Phase A
3	Green		Phase A-
4	Red		Phase B
5	White		COM Phase B
6	Blue		Phase B-



Hybrid Stepper Motor 28STC51-H

Hollow Shaft - High Torque

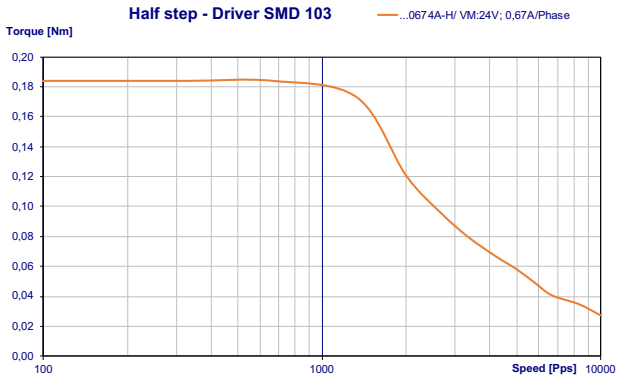
□ 28mm



Specification			
Model		...0674A-H	
1	Rated Voltage	V	6,2
2	Current/Phase	A	0,67
3	Resistance/Phase	Ω	9,2
4	Inductance/Phase	mH	5,6
5	Holding Torque	Nm	0,12
6	Rotor Inertia	gcm ²	18
7	Detent Torque	Nm	0,008
8	n° of Leads		4
9	Length (L)	mm	52
10	Weight	Kg	0,2

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (at 4,5N)	0,02mm
Max. Shaft Axial play (at 4,5N)	0,08mm
Max. Radial Force (5mm from front flange)	28N
Max Axial Force	7N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

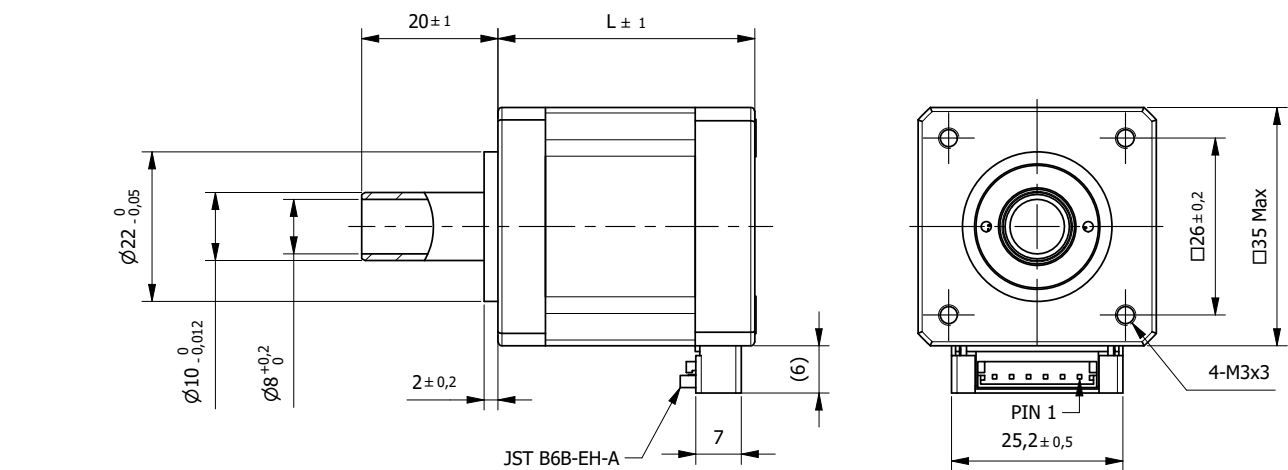
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Yellow		COM Phase A
3	Green		Phase A-
4	Red		Phase B
5	White		COM Phase B
6	Blue		Phase B-



Hybrid Stepper Motor 35STC38-H

Hollow Shaft - High Torque

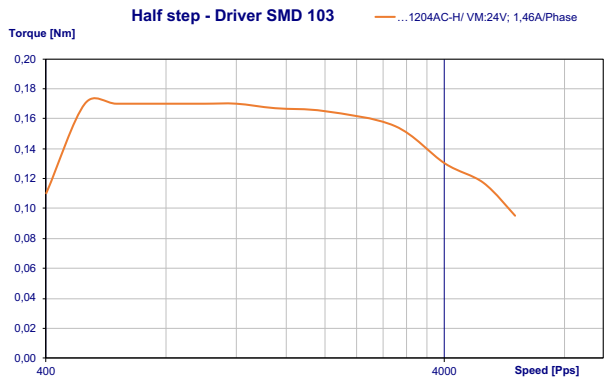
□ 35mm



Specification			
Model		...1204AC-H	
1	Rated Voltage	V	3,4
2	Current/Phase	A	1,2
3	Resistance/Phase	Ω	2,8
4	Inductance/Phase	mH	4
5	Holding Torque	Nm	0,23
6	Rotor Inertia	gcm2	20
7	Detent Torque	Nm	0,018
8	n° of Leads		4
9	Length (L)	mm	38
10	Weight	Kg	0,21

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (at 4N)	0,02mm
Max. Shaft Axial play (at 4N)	0,08mm
Max. Radial Force (10mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

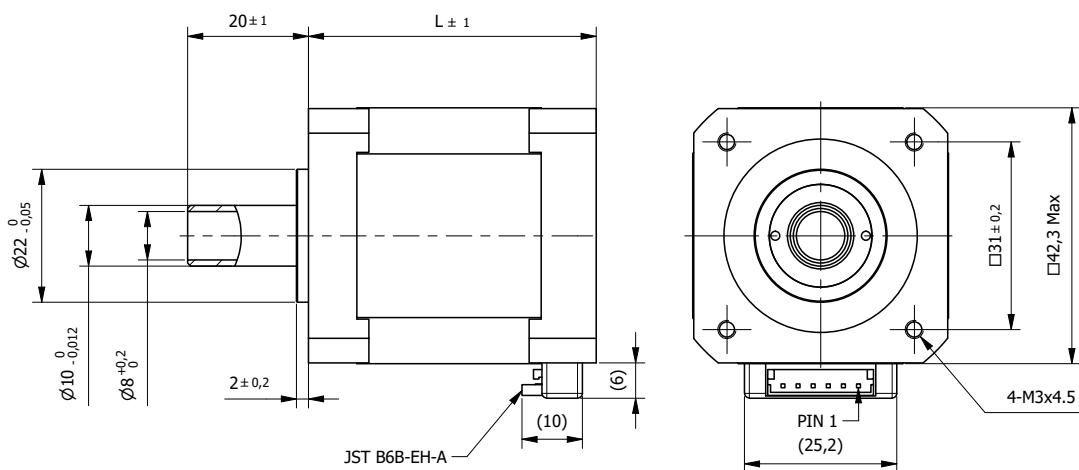
Connection			
Pin n°	Color	Gauge	Function
1	Yellow	UL1430 AWG26	COM Phase A
2	Black		Phase A
3	Green		Phase A-
4	Red		Phase B
5	Blue		Phase B-
6	White		COM Phase B



Hybrid Stepper Motor 42STC47-H

Hollow Shaft - High Torque

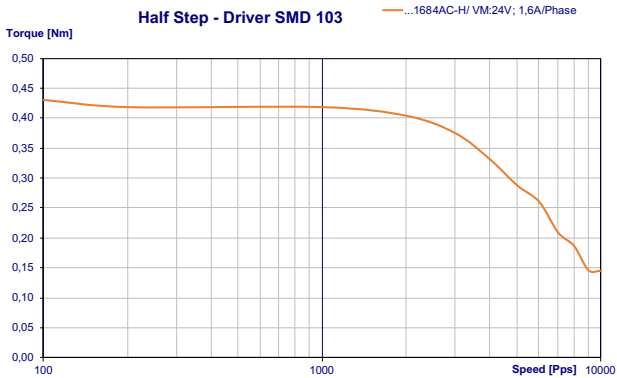
□ 42mm



Specification			
Model		...1684AC-H	
1	Rated Voltage	V	2,8
2	Current/Phase	A	1,7
3	Resistance/Phase	Ω	1,65
4	Inductance/Phase	mH	2,8
5	Holding Torque	Nm	0,44
6	Rotor Inertia	gcm2	68
7	Detent Torque	Nm	0,02
8	n° of Leads		4
9	Length (L)	mm	47,5
10	Weight	Kg	0,35

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (at 4N)	0,02mm
Max. Shaft Axial play (at 4N)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

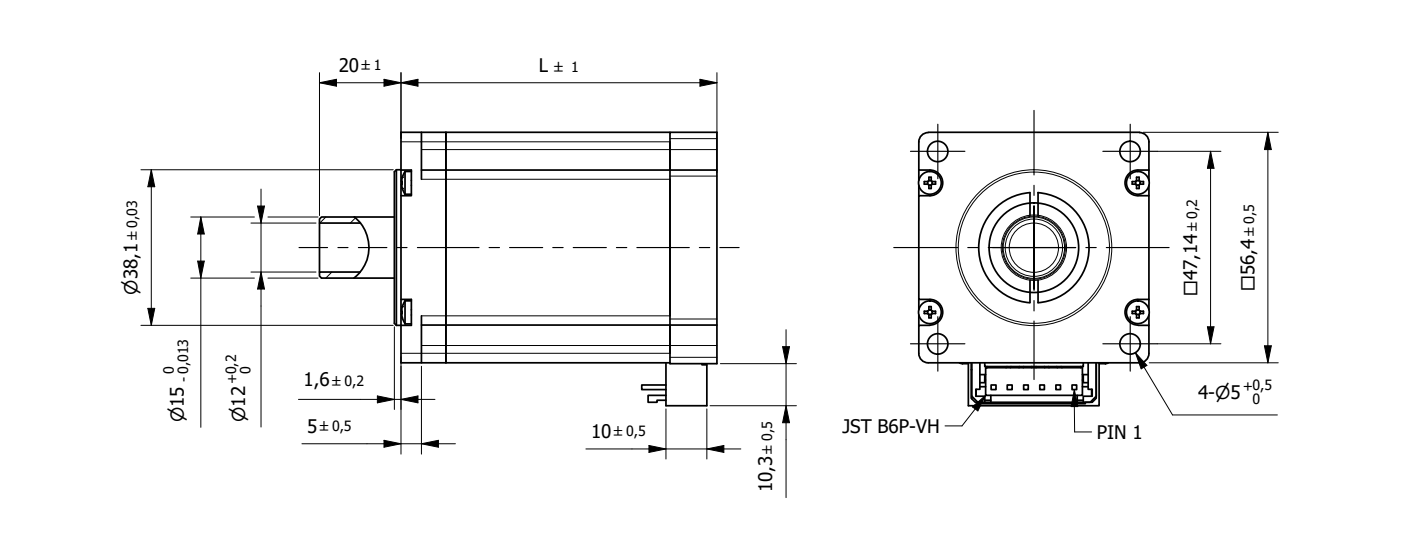
Connection		
Pin n°	Color	Function
1	Yellow	COM Phase A
2	Black	Phase A
3	Green	Phase A-
4	Red	Phase B
5	Blue	Phase B-
6	White	COM Phase B



Hybrid Stepper Motor 57STC76-H

Hollow Shaft - High Torque

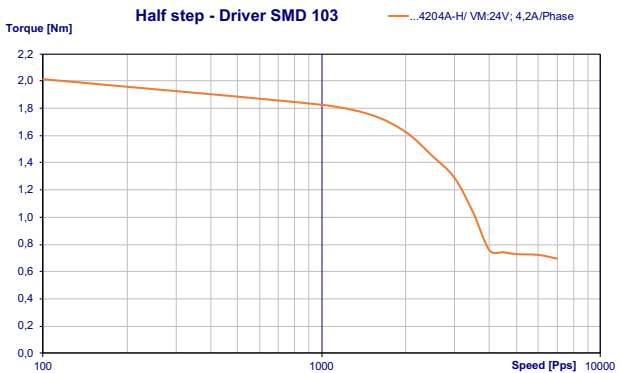
57mm



Specification			
Model		...4204A-H	
1	Rated Voltage	V	3,6
2	Current/Phase	A	4,2
3	Resistance/Phase	Ω	0,55
4	Inductance/Phase	mH	2,1
5	Holding Torque	Nm	2,3
6	Rotor Inertia	gcm2	480
7	Detent Torque	Nm	0,068
8	n° of Leads		4
9	Length (L)	mm	77,5
10	Weight	Kg	1,1

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

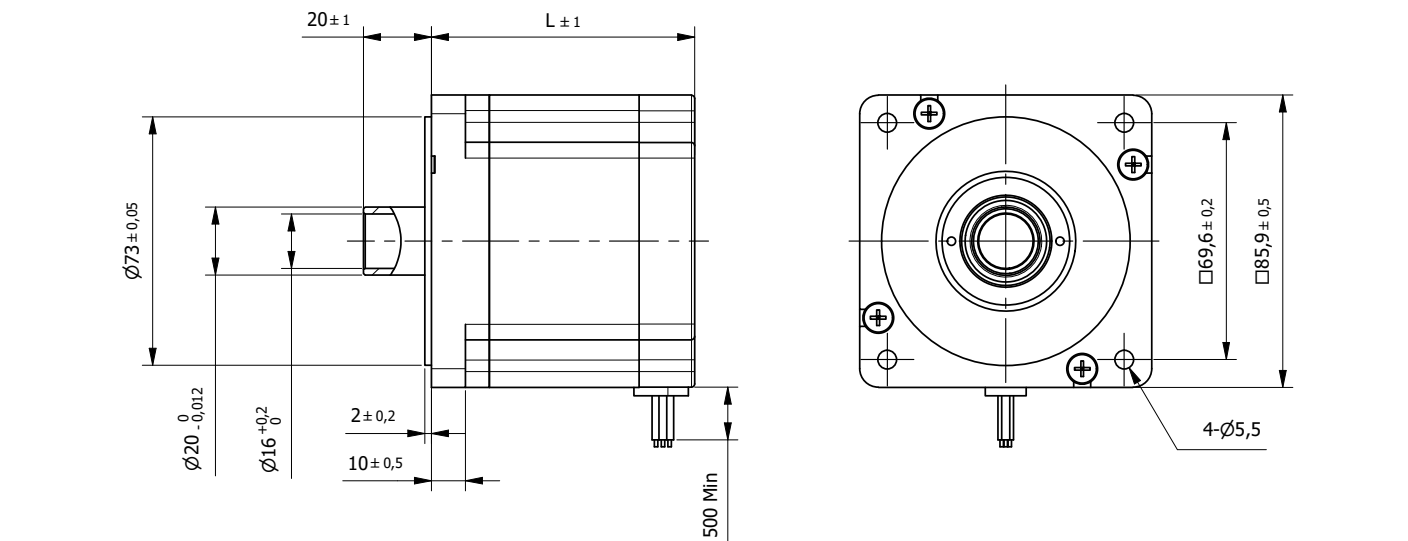
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Yellow		COM Phase A
3	Green		Phase A-
4	Red		Phase B
5	White		COM Phase B
6	Blue		Phase B-



Hybrid Stepper Motor 86SH118-H

Hollow Shaft - High Torque

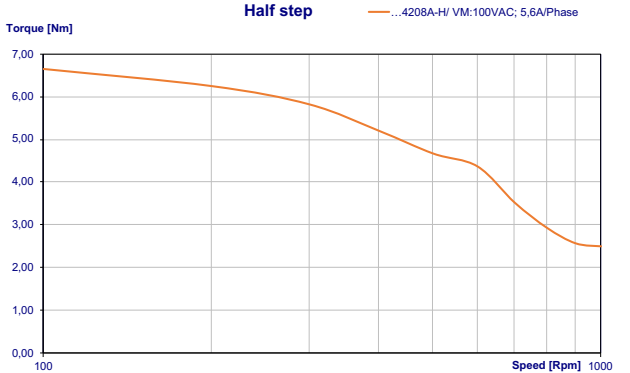
86mm



Specification			
Model		...4208A-H	
1	Rated Voltage	V	5
2	Current/Phase	A	4,2
3	Resistance/Phase	Ω	1,2
4	Inductance/Phase	mH	6,5
5	Holding Torque	Nm	6
6	Rotor Inertia	gcm2	2700
7	Detent Torque	Nm	0,24
8	n° of Leads		8
9	Length (L)	mm	114
10	Weight	Kg	3,8

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (at 4N)	0,02mm
Max. Shaft Axial play (at 4N)	0,08mm
Max. Radial Force (20mm from front flange)	130N
Max Axial Force	36N
Dielectric Strength (for 1 sec.)	1200 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG18	Phase A
2	Yellow		Phase A-
3	Blue		Phase C-
4	Black		Phase C
5	White		Phase B
6	Orange		Phase B-
7	Brown		Phase D-
8	Green		Phase D





Stepper motors

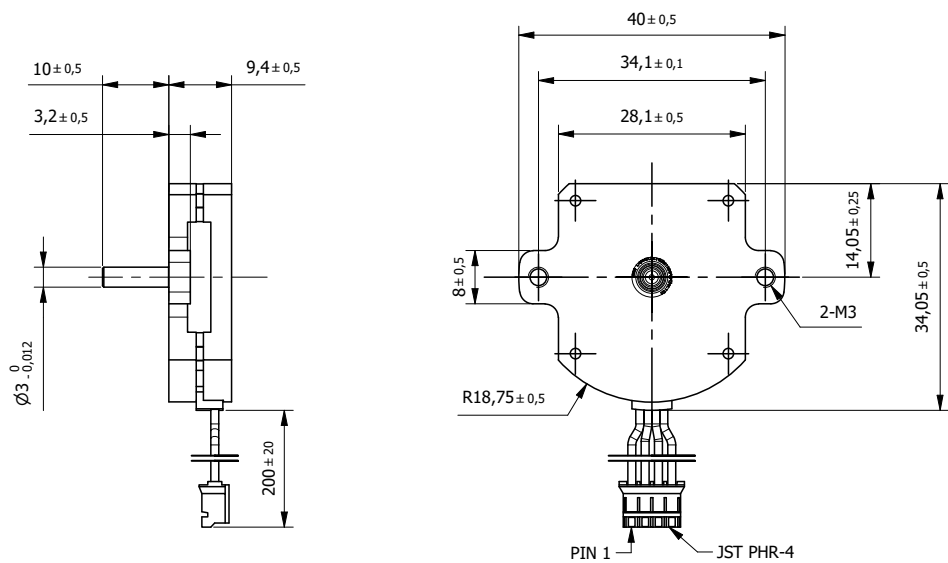
Flat Hybrid

Advantages at a glance	
Very compact size	
High torque	
Great power to volume ratio	

Flat Hybrid Stepper motors		Torque* (Nm)	
28S10		0,01	310
63S10		0,064	311

Our flat high-torque stepper motors offer maximum functionality in a very compact package. With speed up to 4300 rpm, our 2-phase flat stepper motors are ideal for applications where power and size are decisive. Specifically designed for semi-conductor applications, these unique Stepper motors are suitable for many other size-sensitive devices.

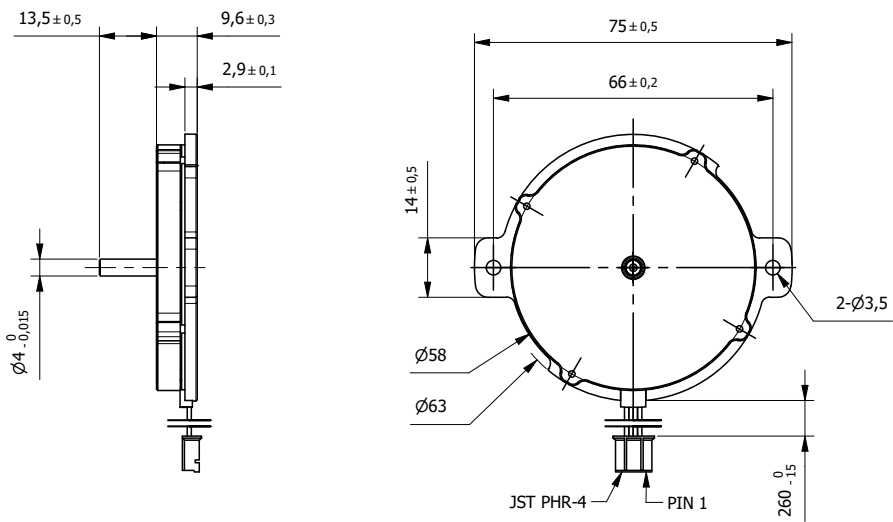
* Holding Torque



Specification		
Model	...0504	
1 Rated Voltage	V	1,85
2 Current/Phase	A	0,5
3 Resistance/Phase	Ω	3,7
4 Inductance/Phase	mH	0,88
5 Holding Torque	Nm	0,01
6 Rotor Inertia	gcm2	1,7
7 n° of Leads		4
8 Length (L)	mm	9,4
9 Weight	Kg	0,028

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (at 4N)	0,02mm
Max. Shaft Axial play (at 4N)	0,08mm
Max. Radial Force (5mm from front flange)	10N
Max Axial Force	2N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

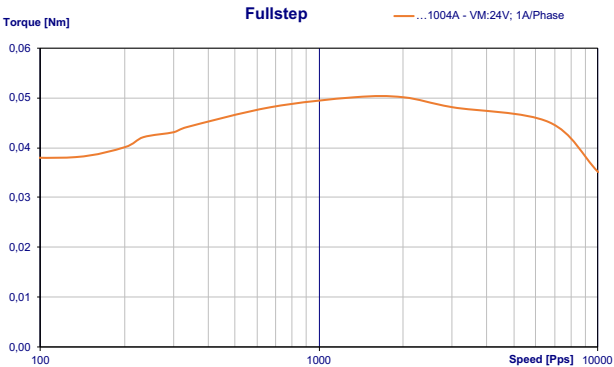
Connection			
Pin n°	Color	Gauge	Function
1	Red	UL1061 AWG26	Phase A
2	Blue		Phase A-
3	Orange		Phase B
4	Yellow		Phase B-



Specification		
Model	...1004A	
1 Rated Voltage	V	3,8
2 Current/Phase	A	1
3 Resistance/Phase	Ω	3,8
4 Inductance/Phase	mH	2
5 Holding Torque	Nm	0,064
6 Rotor Inertia	gcm2	16
7 n° of Leads		4
8 Length (L)	mm	9,6
9 Weight	Kg	0,095

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	E
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (at 4N)	0,02mm
Max. Shaft Axial play (at 4N)	0,08mm
Max. Radial Force (5mm from front flange)	10N
Max Axial Force	2N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Pin n°	Color	Gauge	Function
1	Red	UL1061 AWG26	Phase A
2	Blue		Phase A-
3	Orange		Phase B
4	Yellow		Phase B-





Stepper motors

Hybrid with Encoder

Advantages at a glance	
Compact design	
Complete closed loop system	
Smooth and precise	

Our Hybrid stepper motors are also available equipped with an optical incremental encoder to increase the motion precision. Thanks to the encoder, the drive knows the position (or the speed) of the motor in real time and can perform adjustments to align the real condition with the condition requested by the system. The presence of an encoder is highly recommended when is critical to know the status of the motor (both position and speed) in every instant.

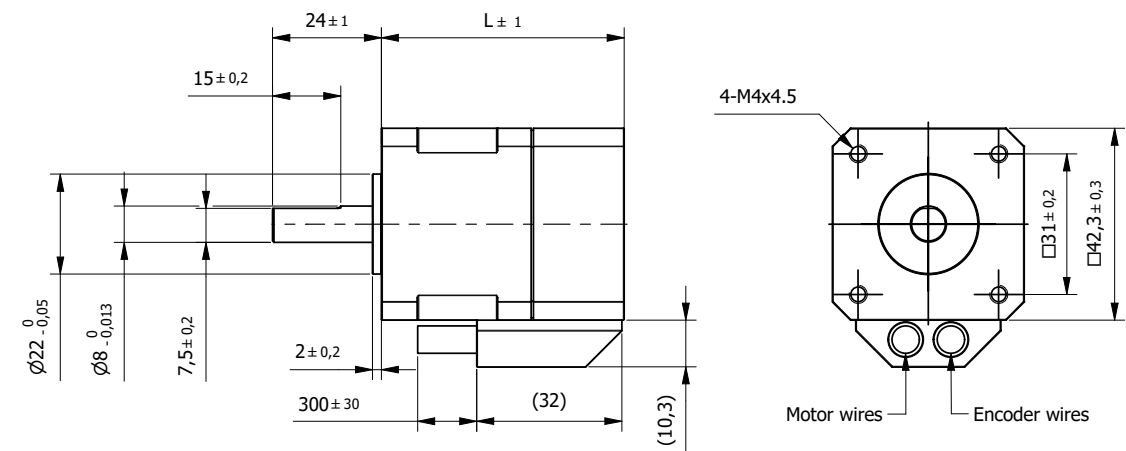
Stepper motors with Encoder	Torque* (Nm)	
42SC	0,22...0,75	314
60SC	1...3	315
86SC	3,5...12	316

* Holding Torque

Hybrid Stepper Motor 42SC

with Encoder

□ 42mm

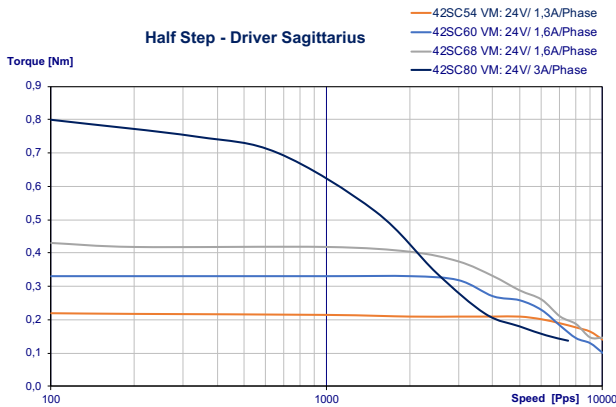


Specification		42SC54	42SC60	42SC68	42SC80
1	Rated Voltage	V	2,8	2,8	3,5
2	Current/Phase	A	1,33	1,68	3
3	Resistance/Phase	Ω	2,1	1,65	1,2
4	Inductance/Phase	mH	2,5	3,2	2,9
5	Holding Torque	Nm	0,22	0,36	0,44
6	Rotor Inertia	gcm2	35	54	102
7	Detent Torque	Nm	0,012	0,015	0,028
8	n°of Leads		4	4	4
9	Length (L)	mm	53,5	59,5	67,5
10	Weight	Kg	0,22	0,28	0,35

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP20
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial force (20mm from front flange)	28N
Max. Axial force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

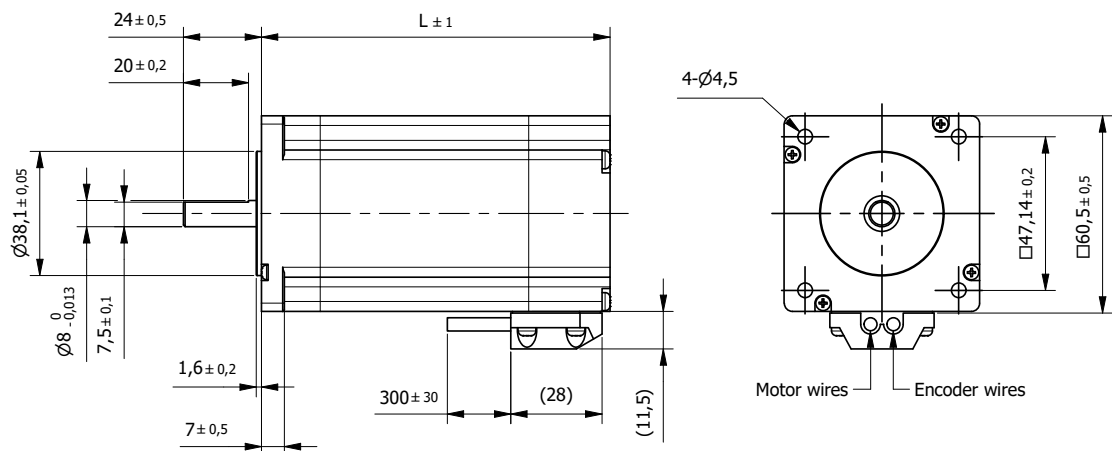
Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Black	AWG24	GND
2	Red		VCC:+5VDC
3	Blue		EA-
4	Blue/White		EA+
5	Orange		EB-
6	Orange/White		EB+
Motor			
1	Black	AWG20	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-



Hybrid Stepper Motor 60SC

with Encoder

□ 60mm

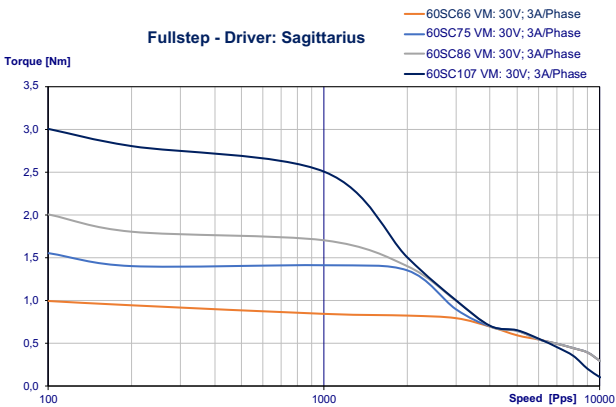


Specification		60SC66	60SC75	60SC86	60SC107
1	Rated Voltage	V	2,1	2,8	3,4
2	Current/Phase	A	2,8	2,8	2,8
3	Resistance/Phase	Ω	0,75	1	1,2
4	Inductance/Phase	mH	2	3,6	4,6
5	Holding Torque	Nm	1	1,65	2
6	Rotor Inertia	gcm2	275	450	570
7	Detent Torque	Nm	0,05	0,05	0,1
8	n°of Leads		4	4	4
9	Length (L)	mm	66	75	86
10	Weight	Kg	0,6	0,82	1,3

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial force (20mm from front flange)	75N
Max. Axial force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

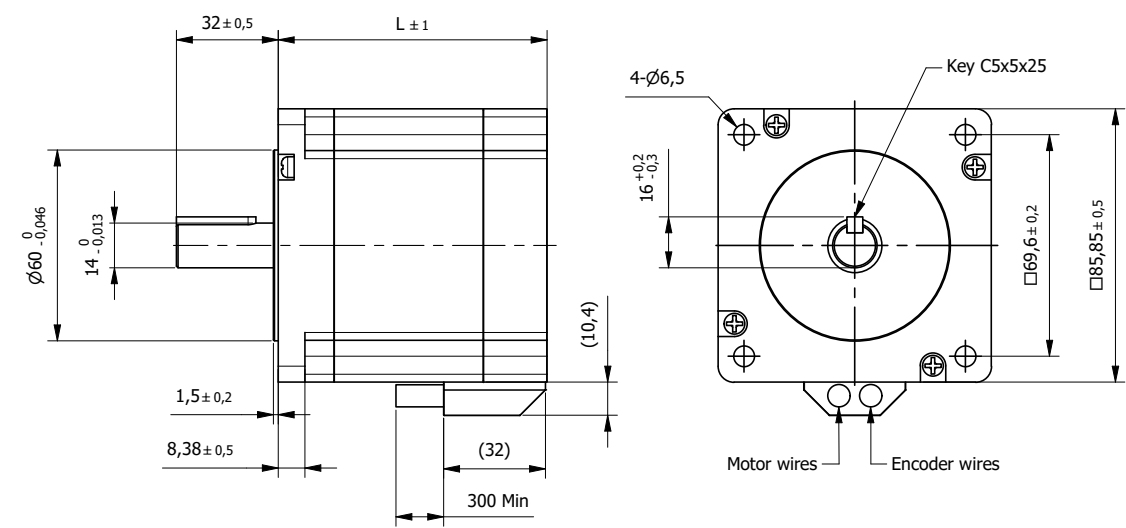
Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Black	AWG24	GND
2	Red		VCC:+5VDC
3	Blue		EA+
4	Blue/White		EA-
5	Orange		EB+
6	Orange/White		EB-
Motor			
1	Black	AWG20	Phase A
2	Green		Phase A-
3	Red		Phase B
4	Blue		Phase B-



Hybrid Stepper Motor 86SC

with Encoder

□ 86mm

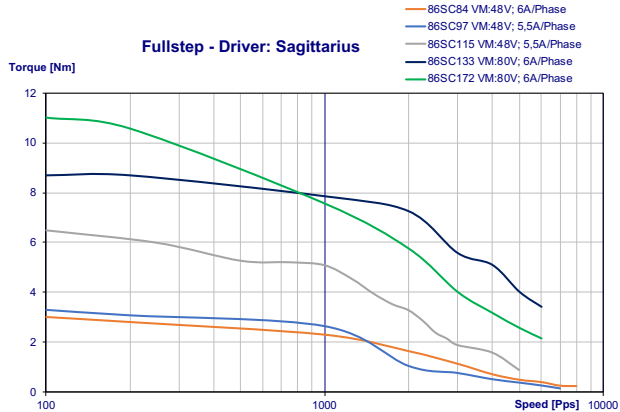


Specification			86SC84	86SC97	86SC115	86SC133	86SC172
1	Rated Voltage	V	1,7	2,3	2,6	3,3	4,3
2	Current/Phase	A	6	5,5	5,5	6	6,2
3	Resistance/Phase	Ω	0,3	0,4	0,5	0,55	0,7
4	Inductance/Phase	mH	1,8	3,5	3,4	6	9
5	Holding Torque	Nm	3,5	4,5	6,5	8,5	12
6	Rotor Inertia	gcm2	1000	1400	1900	2700	4000
7	Detent Torque	Nm		0,12	0,12	0,24	0,36
8	n°of Leads		4	4	4	4	4
9	Length (L)	mm	84,5	97	115,5	133	172
10	Weight	Kg	1,7	2,3	2,8	3,8	5,3

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial force (20mm from front flange)	220N
Max. Axial force	60N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Black	AWG24	GND
2	Red		VCC:+5VDC
3	Blue		EA+
4	Blue/White		EA-
5	Orange		EB+
6	Orange/White		EB-
Motor			
1	Black	AWG18	Phase A
2	Red		Phase A-
3	Yellow		Phase B
4	Green		Phase B-





Stepper motors

IP65 Hybrid

Advantages at a glance	
High protection	
High torque	
High speed	

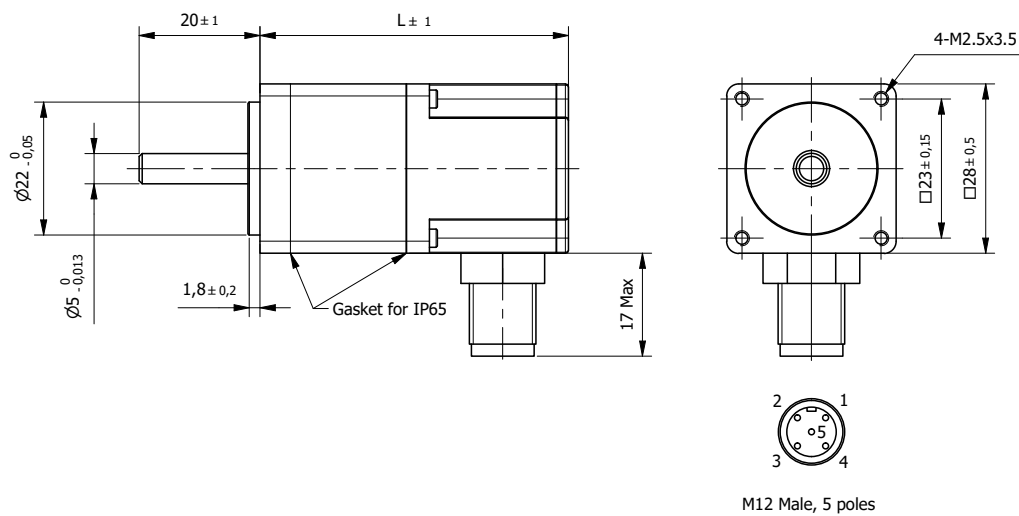
Our Hybrid stepper motors with protection class IP65 are designed for harsh operating environments. These IP65-rated stepper motors are completely dustproof. Dust cannot enter the device and therefore cannot damage it internally under any circumstances. IP65 rating also guarantees the protection of the device against water projections, and can withstand low-pressure jets of water.

IP65 Hybrid Stepper motors		Torque* (Nm)
SM28 070 - IP65	0,127	320
SM42-E - IP65	0,16...0,72	321
SM57-E - IP65	0,7...1,95	322

* Holding Torque

Hybrid Stepper Motor SM28 070
IP65

28mm



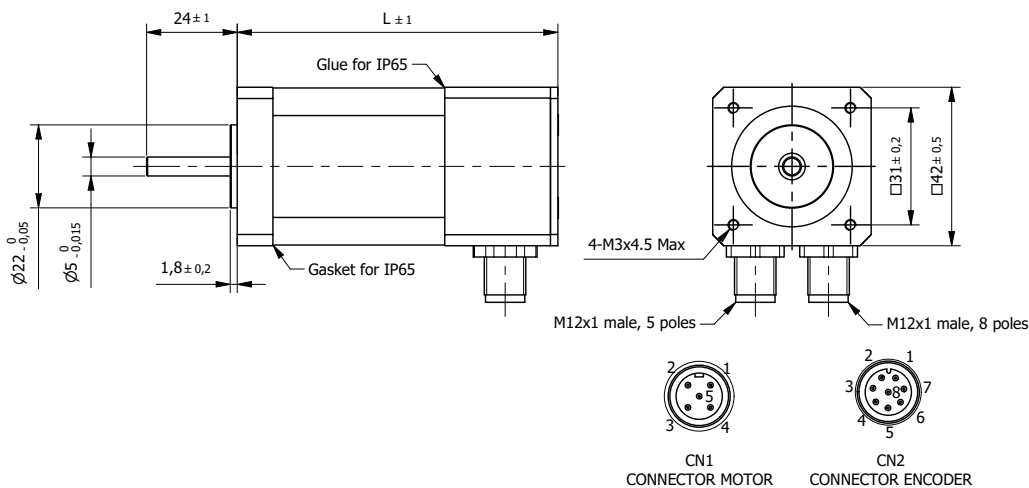
Specification		
Model	SM28 070	
1 Rated Voltage	V	9,2
2 Current/Phase	A	0,67
3 Resistance/Phase	Ω	9,2
4 Inductance/Phase	mH	7,2
5 Holding Torque	Nm	0,127
6 Rotor Inertia	gcm2	18
7 Detent Torque	Nm	0,036
8 n°of Leads		4
9 Length (L)	mm	70,3
10 Weight	Kg	0,22

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP65
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,03mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial force (at shaft end)	21N
Max. Axial force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection	
Poles n°	Function
Motor	
1	Phase A
2	Phase A-
3	Phase B
4	Phase B-

Hybrid Stepper Motor SM42
with Encoder - IP65

42mm

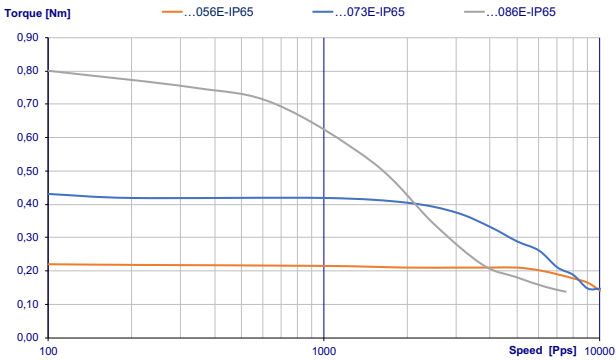


Specification				
Model	...056E-IP65	...073E-IP65	...086E-IP65	
1 Rated Voltage	V	1,5	2,7	3,6
2 Current/Phase	A	1,8	1,8	1,8
3 Resistance/Phase	Ω	0,86	1,52	2
4 Inductance/Phase	mH	1,1	3,7	5
5 Holding Torque	Nm	0,16	0,48	0,72
6 Rotor Inertia	gcm2	25	80	115
7 Detent Torque	Nm	0,012	0,012	0,012
8 n°of Leads		4	4	4
9 Length (L)	mm	56	73	86
10 Weight	Kg	0,2	0,56	0,7

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP65
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial force (at shaft end)	21N
Max. Axial force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

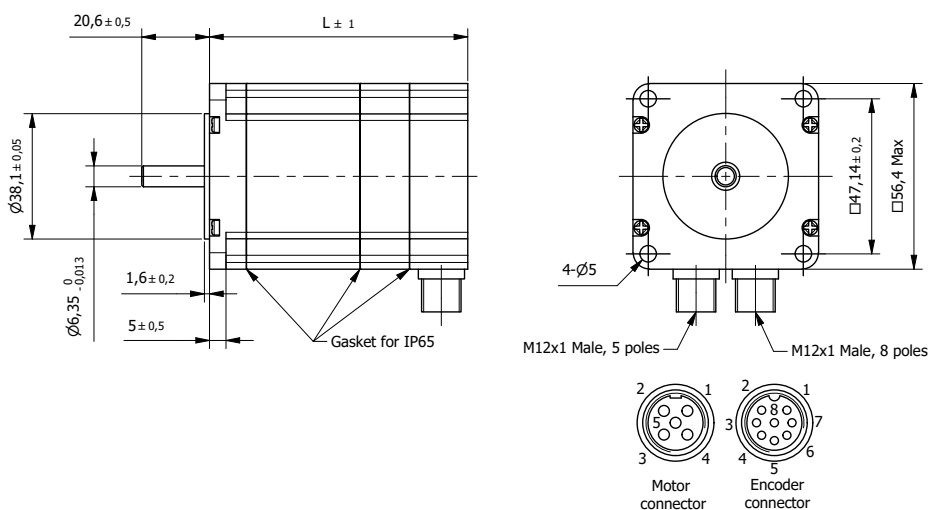
Connection	
Poles n°	Function
Motor	
1	Phase A
2	Phase A-
3	Phase B
4	Phase B-
Feedback	
1	Vdc
2	GND
3	A
4	A-
5	B
6	B-
7	Z
8	Z-



Hybrid Stepper Motor SM57

with Encoder - IP65

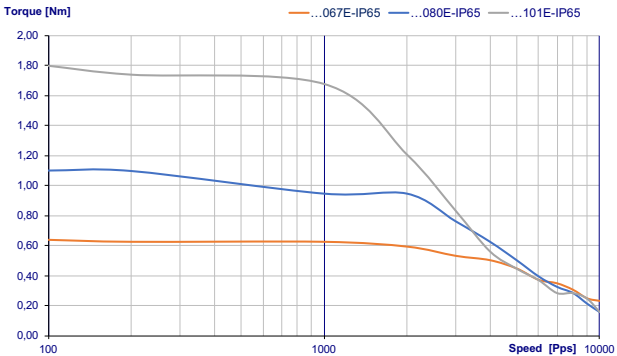
57mm



Specification					
	Model	...067E-IP65	...080E-IP65	...101E-IP65	
1	Rated Voltage	V	1,6	2,4	3,1
2	Current/Phase	A	2,82	2,82	2,82
3	Resistance/Phase	Ω	0,57	0,85	1,1
4	Inductance/Phase	mH	1,6	2,5	4,4
5	Holding Torque	Nm	0,7	1,1	1,95
6	Rotor Inertia	gcm2	170	280	520
7	Detent Torque	Nm	0,036	0,036	0,036
8	n°of Leads		4	4	4
9	Length (L)	mm	67	80	101
10	Weight	Kg	0,5	0,85	1

Characteristics	
Item	
Encoder Type*	Optical - Incremental 500 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP65
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,03mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial force (at shaft end)	75N
Max. Axial force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection	
Poles n°	Function
Motor	
1	Phase A
2	Phase A-
3	GND
4	Phase B
5	Phase B-
Feedback	
1	Vdc
2	GND
3	A
4	A-
5	B
6	B-
7	Z
8	Z-



Linear Actuators

Linear Actuators



External Stepper
Linear Actuators

p.333



Non-Captive Stepper
Linear Actuators

p.345



Captive Stepper
Linear Actuators

p.357

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28E	336
35E	338
42E	340
57E	342
Non-Captive Hybrid Stepper Linear Actuators	345
20N	346
28N	348
35N	350
42N	352
57N	354
Captive Hybrid Stepper Linear Actuators	357
20C	358
28C	360
35C	362
42C	364
57C	366

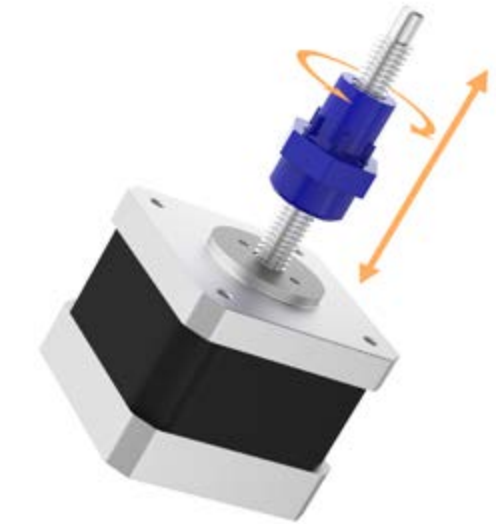
Term	
Rated voltage	Voltage necessary to reach the nominal current per phase.
Current/Phase	The current supplied to the motor phases that will not exceed, at an ambient temperature of 20°C, the thermal limits of the motor.
Resistance/Phase	Winding resistance per phase. Tolerance +/- 12%, steady state.
Inductance/Phase	Winding inductance per phase measured at 1kHz.
Number of leads	Number of lead wires available to connect the motor.
Rotor Inertia	Is the mass moment of inertia of the rotor, based on the axis of rotation.
Length	Total motor length.
Weight	Total motor mass.
Wiring - Bipolar	A motor having two groups of coils in the stator. Generally represented by A and B on the wiring diagram and 4 lead wires extending from the motor.
Step angle	Number of angular degrees the motor moves per full-step
Insulation class	The electrical insulation system for wires and other wire-wound electrical components is divided into different classes by temperature and temperature rise. The electrical insulation system is sometimes referred to as insulation class or thermal classification.
Operating temperature	Temperatures at which the motor can operate.
Protection Class	IP (International Protection) degree defines the protection level against dust and water.
Temperature rise	Maximum temperature rise for the motor at rated voltage.
Dielectric strength	A dielectric test (also known as hipot or high potential test) is performed on all motors under 500V phases to the housing and during 5 seconds after voltage ramp up. Maximum allowed leakage is 1mA
Screw diameter	The outside diameter of the screw.
Screw lead	The axial distance the nut advances in one revolution of the screw. The lead is equal to the pitch times the number of starts. PITCH x STARTS = LEAD
Screw travel per step	The linear translation of a lead nut or screw for one full step of the motor.
Power Off Force	Maximum force in N that can be applied to the screw at standstill without producing screw rotation.

- Product families
- External Hybrid Stepper
Linear Actuators
- Captive Hybrid Stepper
Linear Actuators
- Non-Captive Hybrid Stepper
Linear Actuators

Linear actuators are a type of actuator that convert rotational motion in motors into linear or straight push/pull movements. Linear actuators are ideal for all types of applications where tilting, lifting, pulling or pushing with high force are required. Electric linear actuators are often the preferred solution when you need simple, safe and clean movement with accurate precision and smooth motion control.

Lead Screws Actuators Characteristics
Small to medium load ratings, therefore suitable for low to medium loads
Very high accuracy using closed loop function through Delta Line drivers
Customizable screws end machining
Customizable nuts
High reliability and long service life with marginal need for maintenance

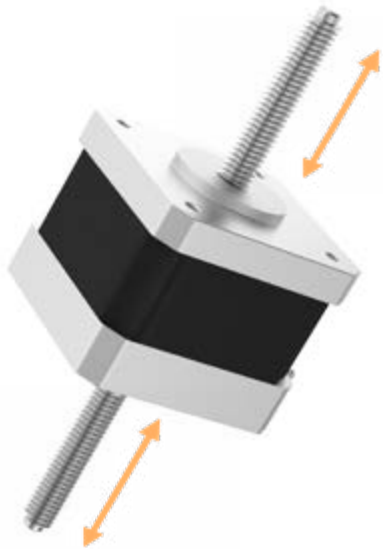
External Stepper
Linear Actuators



Captive Stepper
Linear Actuators



Non-Captive Stepper
Linear Actuators



The lead screw turns with the rotor, moving a nut back and forth linearly. An external guide is necessary to prevent rotation of the nut. In the case of external linear actuators, the lead screw is permanently attached to the motor shaft and turns with the shaft when the motor is energized. If an external threaded nut - in standardized or anti-backlash version - is mounted on the lead screw and secured against rotating by an external guide, the threaded nut moves along the lead screw.

EXTERNAL Stepper Motor Actuators

The lead screw moves back and forth linearly with the linear guide serving as an anti-rotation device. In the case of linear actuators with linear guide (captive), the plastic threaded nut is injection-molded into the hollow shaft rotor of the stepper motor and positively connected to it. If the motor is energized, the connection of lead screw and threaded nut transforms the rotary movement of the rotor into the linear movement of the lead screw. For this purpose, a linear guide is attached to the front of the lead screw and prevents the lead screw from rotating.

CAPTIVE Stepper Motor Actuators

The rotor drives the lead screw back and forth linearly. An external guide is necessary to prevent rotation. In the case of linear actuators without linear guide (non-captive), the plastic threaded nut is injection-molded into the hollow shaft rotor of the stepper motor and positively connected to it. If the motor is energized and the lead screw secured against rotating by means of an external guide, the connection of lead screw and threaded nut transforms the rotary movement of the rotor into the linear movement of the lead screw.

NON-CAPTIVE Stepper Motor Actuators

The selection of the correct lead screw and nut for a particular application involves four interrelated factors. Before attempting to determine the lead screw and nut combination, the following values must be known:

- Axial load measured in pounds or newtons
- Speed measured in inches or millimeters per minute
- Length between bearings measured in inches or millimeters
- End fixity type

Load
The loads that need to be considered are the static loads, dynamic loads, reaction forces and any external forces affecting the screw.

Speed
The travel rate (linear speed) is the rpm at which the screw or nut is rotating multiplied by the lead of the screw.

Length
The unsupported length of the screw.

End fixity
Refers to the method by which the ends of the screw are supported. The degree of end fixity is related to the amount of restraint of the ends of the screw.

Technical introduction



External Linear Actuators

Advantages at a glance

Small to medium load ratings

High accuracy

Customizable

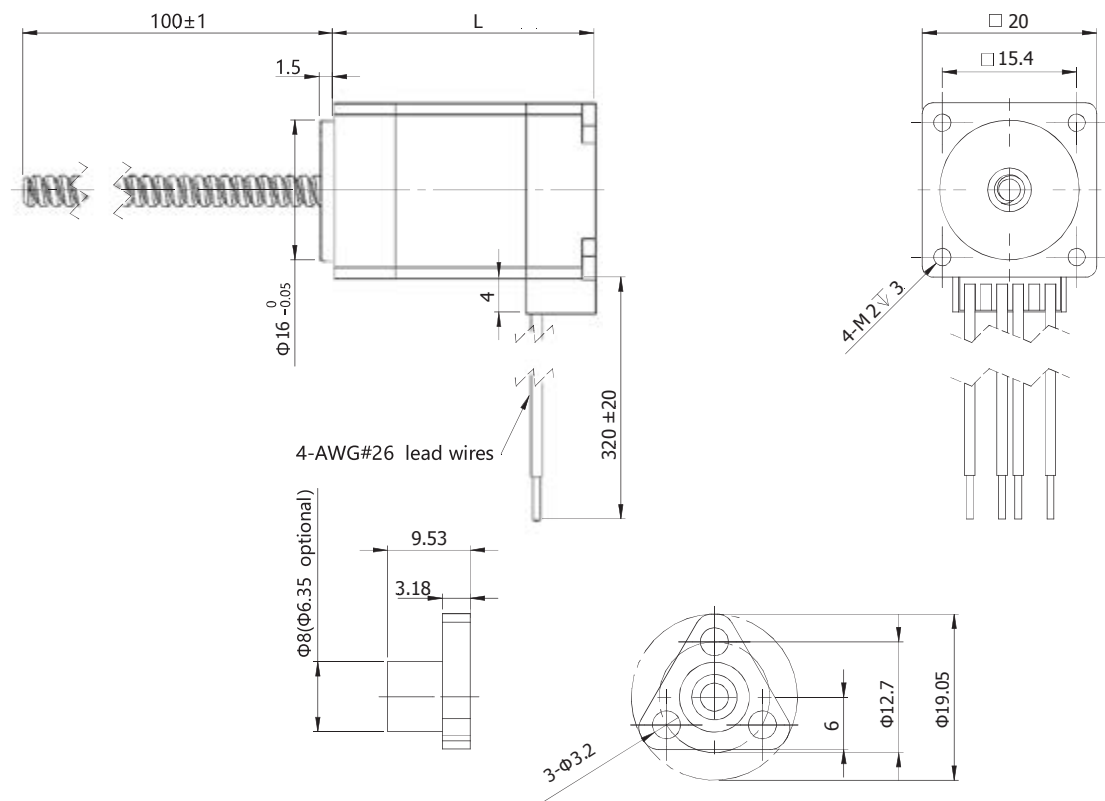
Our External Stepper Motor Actuators feature precision lead screws and nuts to produce accurate and repeatable linear motion. Actuators are manufactured in NEMA sizes 8, 11, 14, 17 and 23. Standard and custom nut designs are available. Optional accessories are connectors, wire harnesses, digital encoders and custom lead screw nuts.

External Hybrid Stepper Linear Actuators	
20E	334
28E	336
35E	338
42E	340
57E	342

External Linear Actuator 20E

Hybrid Stepper motor

□ 20mm



Note: nut options available on request

Actuator Specification				
Model		20E30	20E42	
1	Rated Voltage	V	2,5	6,3
2	Current / Phase	A	0,5	0,5
3	Resistance / Phase	Ω	5,1	12,5
4	Inductance / Phase	mH	1,5	11
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	2	3
7	Motor Length (L)	mm	30	42
8	Weight	g	50	80

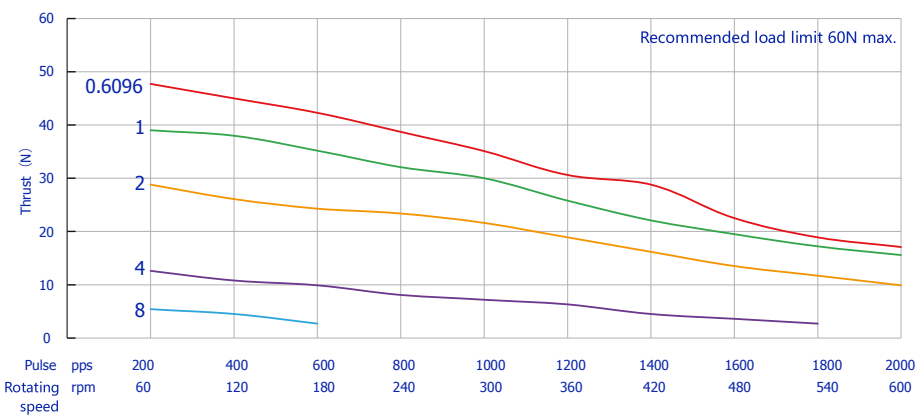
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
AA	3,5	0,6096	0,003048	80
AB	3,5	1	0,005	40
AC	3,5	2	0,01	10
AD	3,5	4	0,02	1
AE	3,5	8	0,04	0

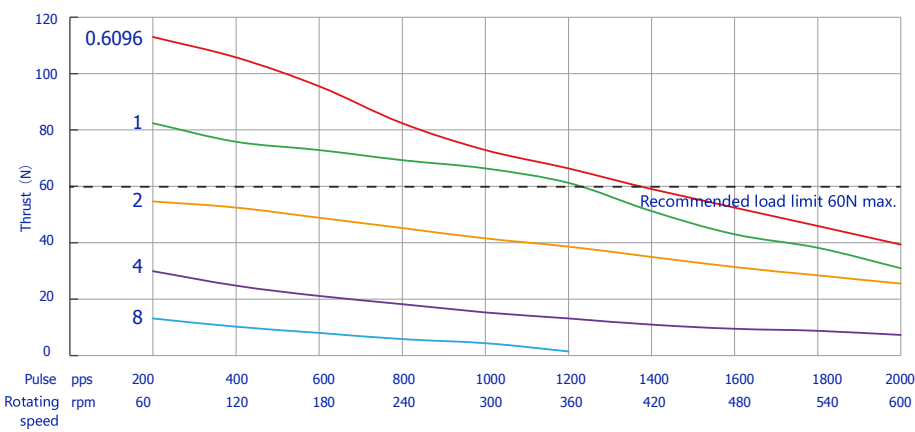
Note 1: other screw options available on request
Note 2: customized machining is viable at the end of lead screw

Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Black	Phase A+
2		Green	Phase A-
3		Red	Phase B+
4		Blue	Phase B-

Product code reference	
20E30-05-AA100	
20	Frame size
E	External
30	Motor length
05	Current / Phase (no comma)
AA	Lead screw code
100	Screw length



20 series 30mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø3.5mm lead screw)



20 series 42mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø3.5mm lead screw)

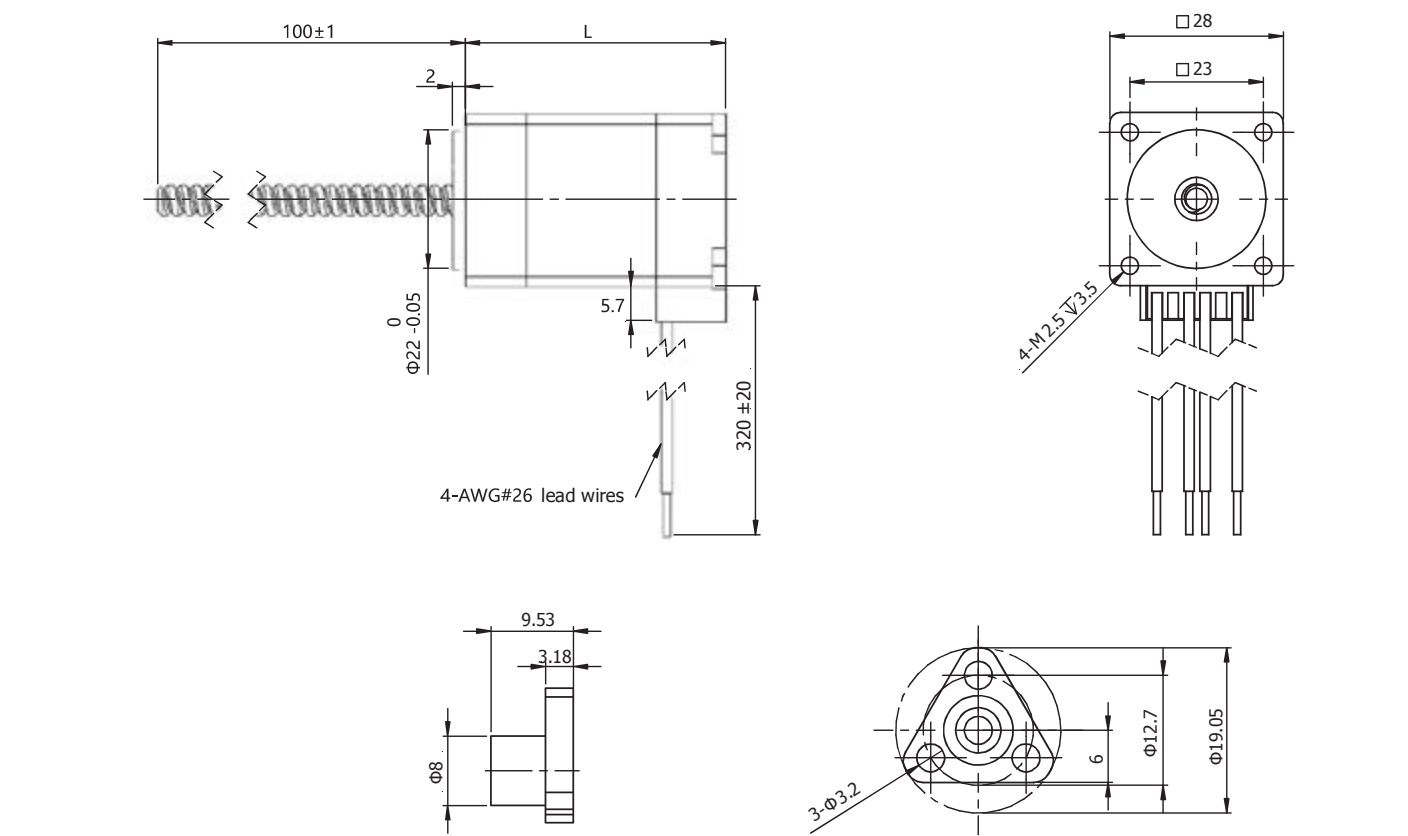
Lead (mm)	Linear Velocity (mm/s)									
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540	600
0,6096	0,6096	1,2192	1,8288	2,4384	3,048	3,6576	4,2672	4,8768	5,4864	6,096
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
4	4	8	12	16	20	24	28	32	36	40
8	8	16	24	32	40	48	56	64	72	80

Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V

External Linear Actuator 28E

Hybrid Stepper motor

□ 28mm



Note: nut options available on request

Actuator Specification				
Model		28E34	28E45	
1	Rated Voltage	V	2,1	3,7
2	Current / Phase	A	1	1
3	Resistance / Phase	Ω	2,1	3,7
4	Inductance / Phase	mH	1,5	2,3
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	9	13
7	Motor Length (L)	mm	34	45
8	Weight	g	120	180

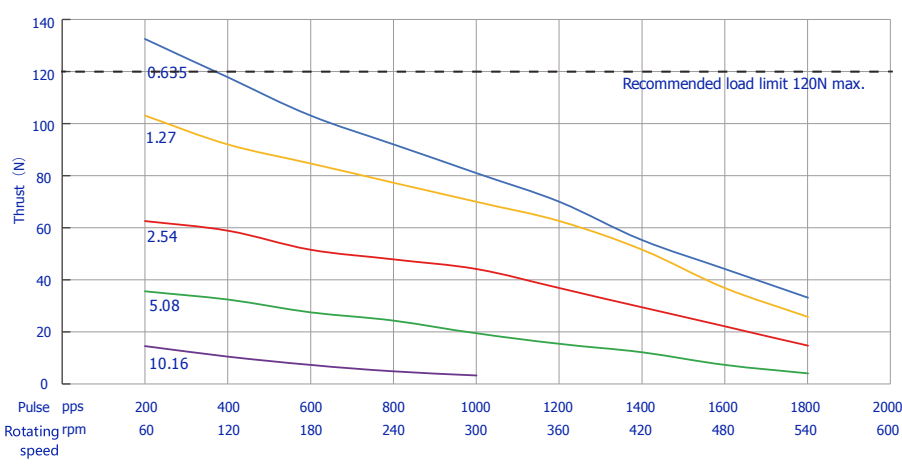
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
BA	4,76	0,635	0,003175	100
BB	4,76	1,27	0,00635	40
BC	4,76	2,54	0,0127	10
BD	4,76	5,08	0,0254	1
BE	4,76	10,16	0,0508	0

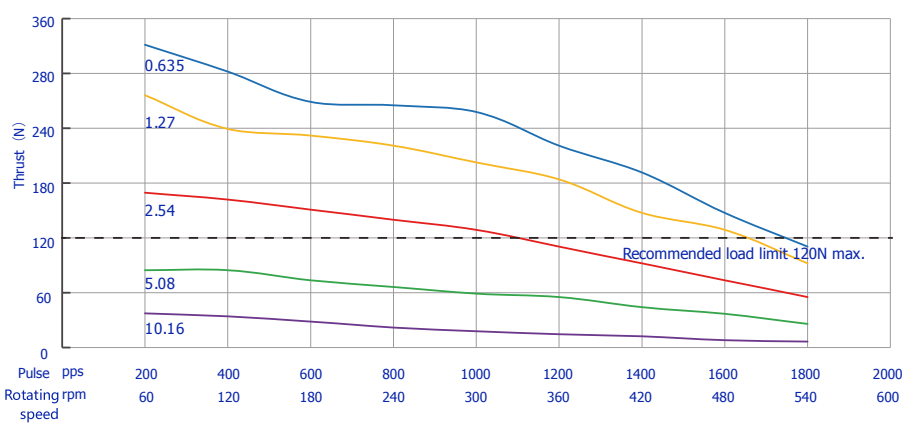
Note 1: other screw options available on request
Note 2: customized machining is viable at the end of lead screw

Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Black	Phase A+
2		Green	Phase A-
3		Red	Phase B+
4		Blue	Phase B-

Product code reference	
28E34-10-BA100	
28	Frame size
E	External
34	Motor length
10	Current / Phase (2-digit no comma)
BA	Lead screw code
100	Screw length



28 series 34mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø4.76mm lead screw)



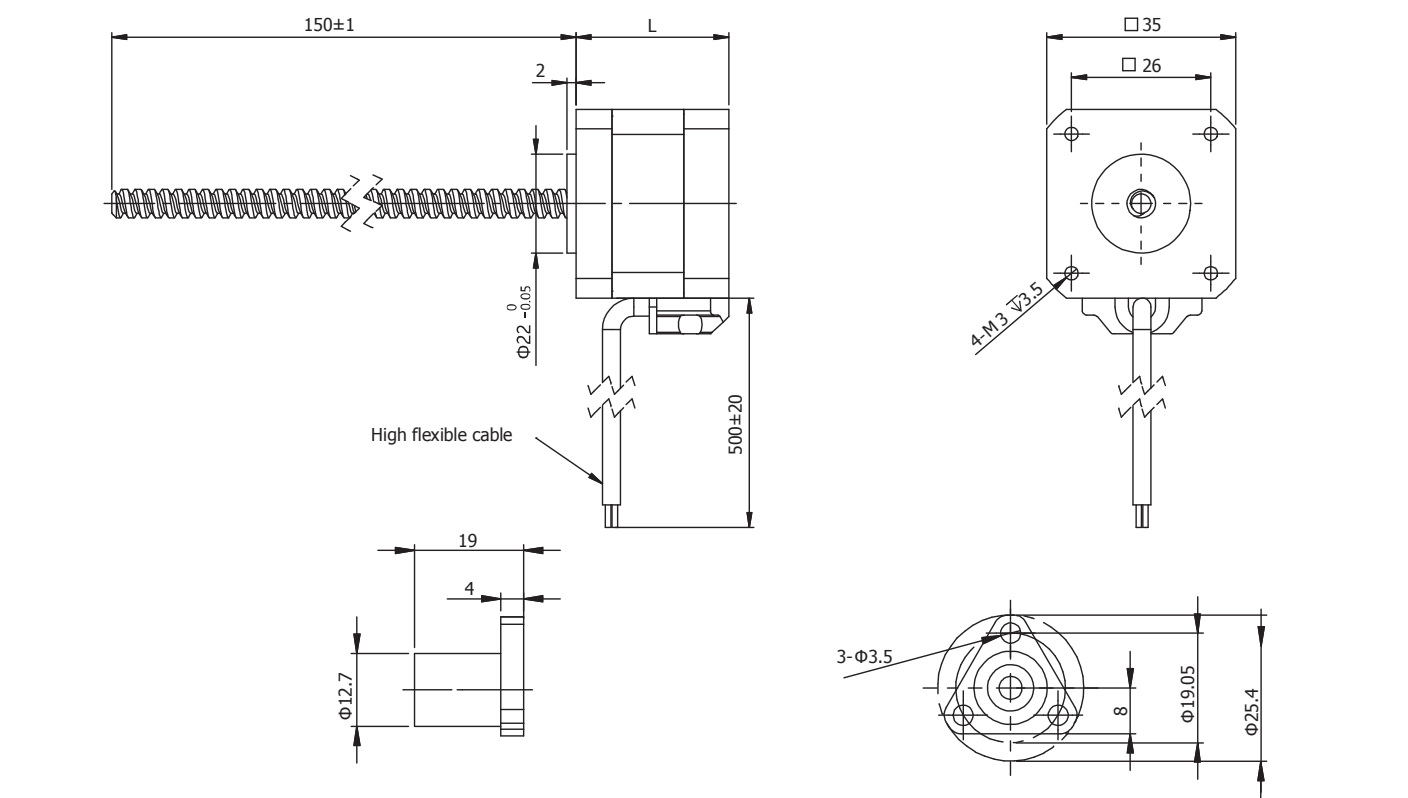
28 series 45mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø4.76mm lead screw)

Lead (mm)	Linear Velocity (mm/s)									
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540	600
0,635	0,635	1,27	1,905	2,54	3,175	3,81	4,445	5,08	5,715	6,35
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43	12,7
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86	25,4
5,08	5,08	10,16	15,24	20,32	25,4	30,48	35,56	40,64	45,72	50,8
10,16	10,16	20,32	30,48	40,64	50,8	60,96	71,12	81,28	91,44	101,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V										

External Linear Actuator 35E

Hybrid Stepper motor

35mm



Note: nut options available on request

Actuator Specification				
Model		35E34	35E47	
1	Rated Voltage	V	1,4	2,9
2	Current / Phase	A	1,5	1,5
3	Resistance / Phase	Ω	0,95	1,9
4	Inductance / Phase	mH	1,4	3,2
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	20	30
7	Motor Length (L)	mm	34	47
8	Weight	g	190	230

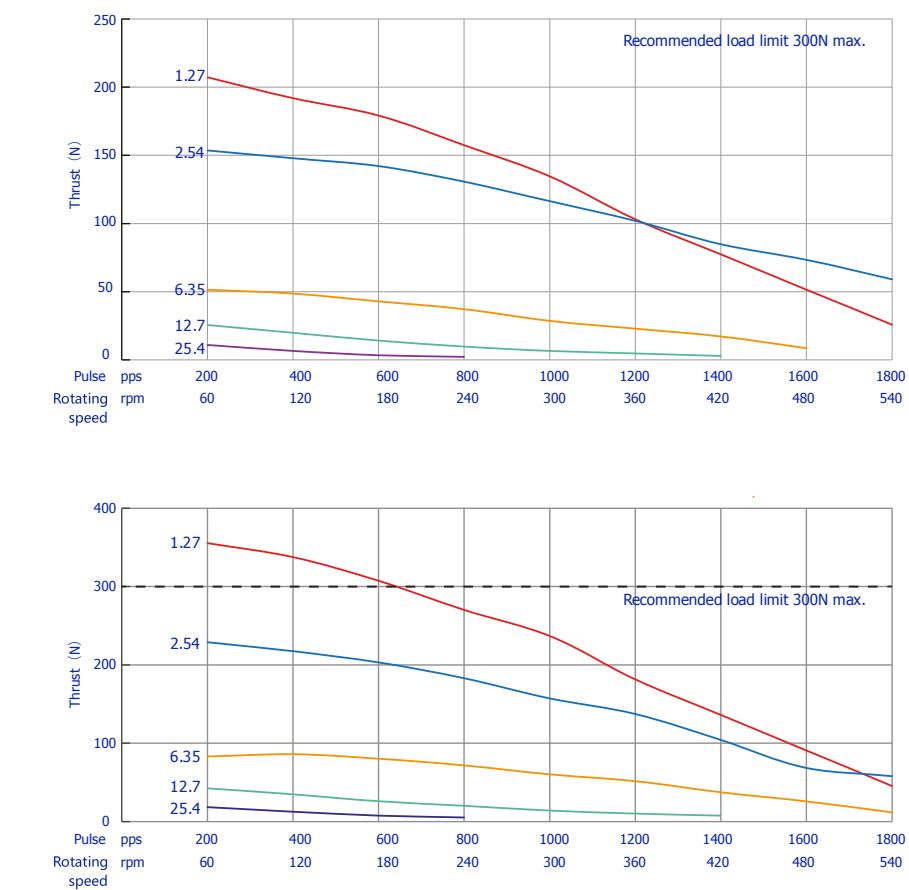
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
CA	6,35	1,27	0,00635	150
CB	6,35	2,54	0,0127	40
CC	6,35	6,35	0,03175	15
CD	6,35	12,7	0,0635	3
CE	6,35	25,4	0,127	0

Note 1: other screw options available on request
Note 2: customized machining is viable at the end of lead screw

Connection			
Lead n°	Gauge	Color	Function
1	Flex cable	Black	Phase A+
2		Green	Phase A-
3		Red	Phase B+
4		Blue	Phase B-

Product code reference	
35E34-15-CA100	
35	Frame size
E	External
34	Motor length
15	Current / Phase (2-digit no comma)
CA	Lead screw code
100	Screw length



35 series 34mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)

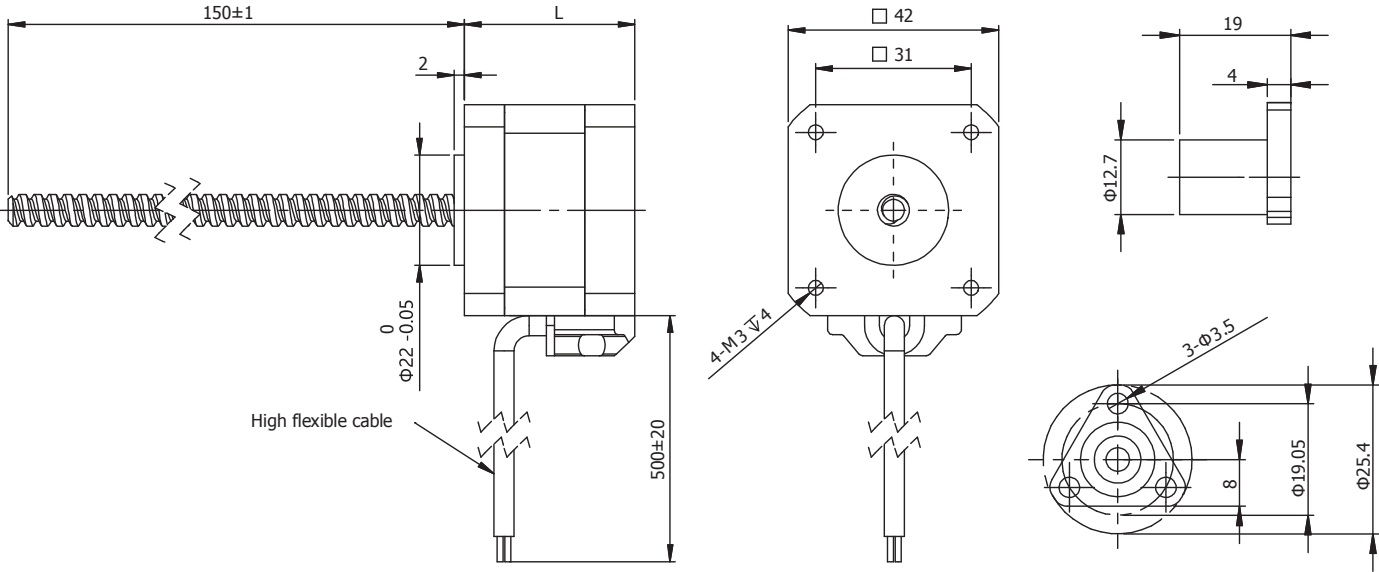
35 series 47mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
6,35	6,35	12,7	19,05	25,4	31,75	38,1	44,45	50,8	57,15
12,7	12,7	25,4	38,1	50,8	63,5	76,2	88,9	101,6	114,3
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V									

External Linear Actuator 42E

Hybrid Stepper motor

42mm



Note: nut options available on request

Actuator Specification						
	Model		42E34	42E40	42E48	42E60
1	Rated Voltage	V	2,6	3,3	2	2,5
2	Current / Phase	A	1,5	1,5	2,5	2,5
3	Resistance / Phase	Ω	1,8	2,2	0,8	1
4	Inductance / Phase	mH	2,6	4,6	1,8	2,8
5	n° of Lead Wires		4	4	4	4
6	Rotor Inertia	gcm2	35	55	70	105
7	Motor Length (L)	mm	34	40	48	60
8	Weight	g	250	290	385	450

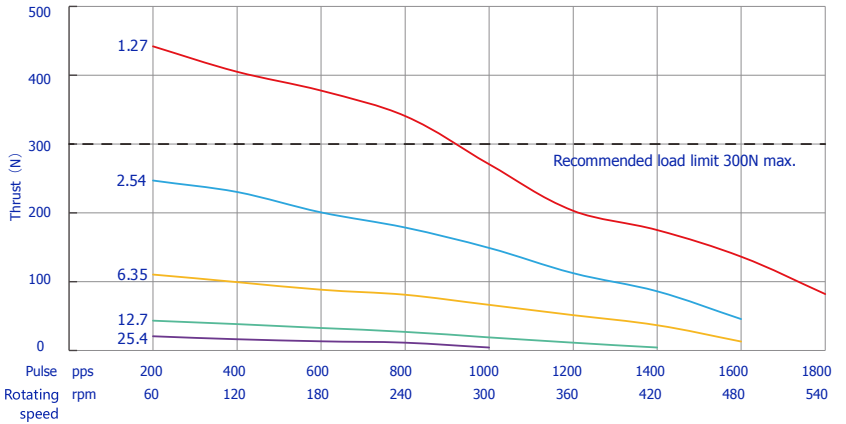
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
CA	6,35	1,27	0,00635	150
CB	6,35	2,54	0,0127	40
CC	6,35	6,35	0,03175	15
CD	6,35	12,7	0,0635	3
CE	6,35	25,4	0,127	0

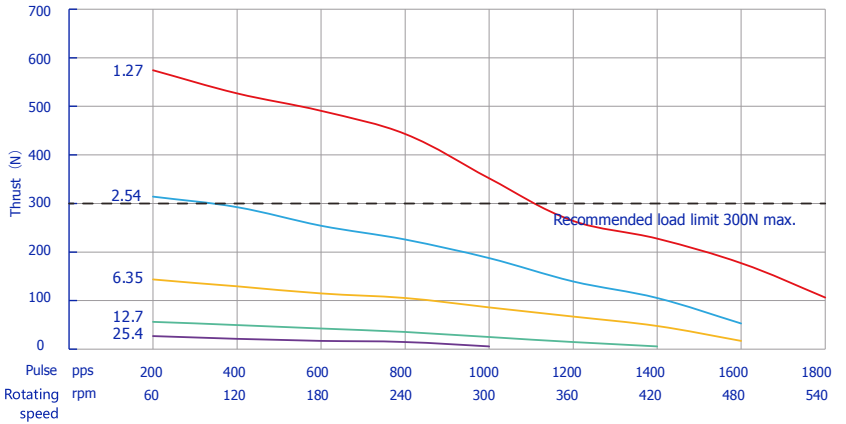
Note 1: other screw options available on request
Note 2: customized machining is viable at the end of lead screw

Connection			
Lead n°	Gauge	Color	Function
1	Flex cable	Black	Phase A+
2		Green	Phase A-
3		Red	Phase B+
4		Blue	Phase B-

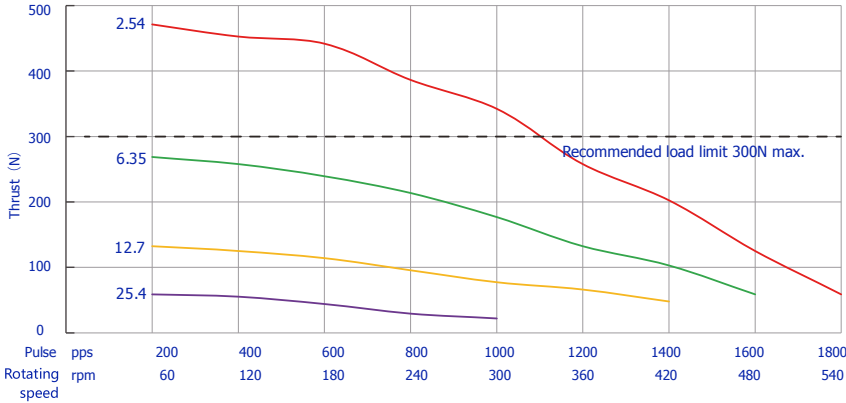
Product code reference	
42E34-15-CA100	
42	Frame size
E	External
34	Motor length
15	Current / Phase (2-digit no comma)
CA	Lead screw code
100	Screw length



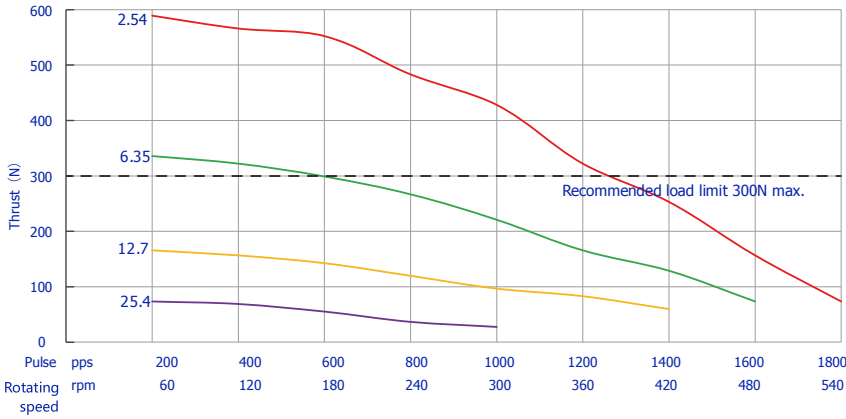
42 series 34mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø6.35mm lead screw)



42 series 40mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø6.35mm lead screw)



42 series 48mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø6.35mm lead screw)



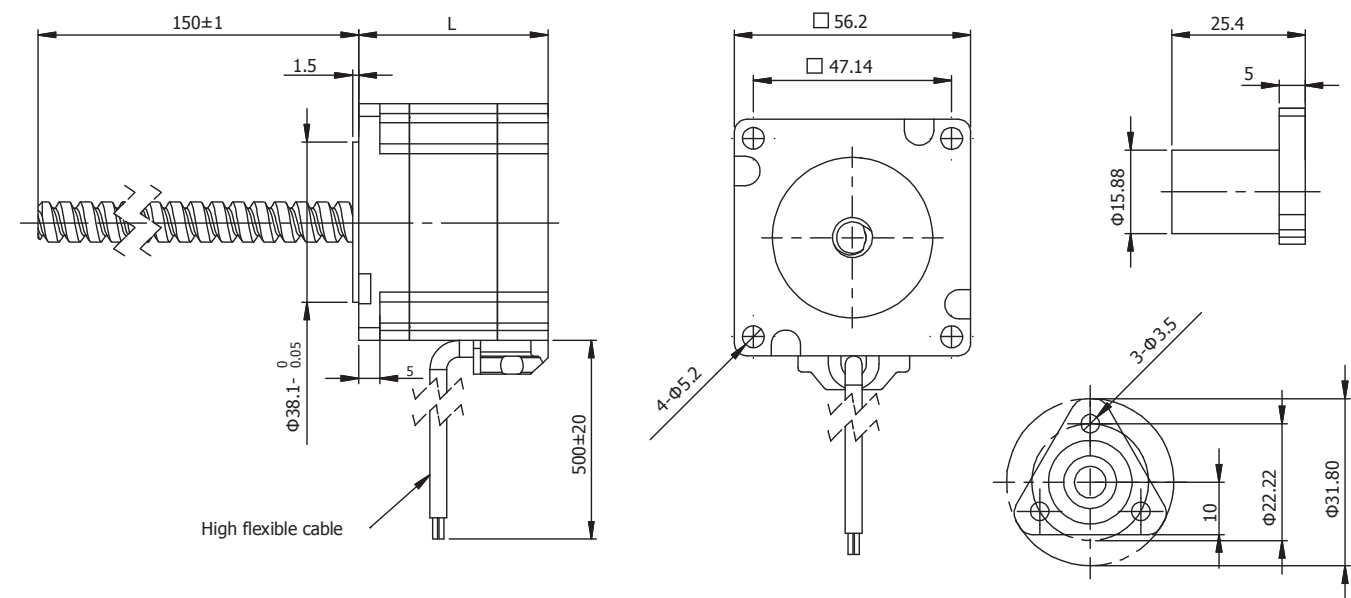
42 series 60mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø6.35mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
6,35	6,35	12,7	19,05	25,4	31,75	38,1	44,45	50,8	57,15
12,7	12,7	25,4	38,1	50,8	63,5	76,2	88,9	101,6	114,3
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 40V									

External Linear Actuator 57E

Hybrid Stepper motor

57mm



Note: nut options available on request

Actuator Specification						
	Model		57E45	57E55	57E65	57E75
1	Rated Voltage	V	2,3	3	3,1	3,8
2	Current / Phase	A	3	3	4	4
3	Resistance / Phase	Ω	0,75	1	0,78	0,95
4	Inductance / Phase	mH	2,5	4,5	3,3	4,5
5	n° of Lead Wires		4	4	4	4
6	Rotor Inertia	gcm2	150	300	400	480
7	Motor Length (L)	mm	45	55	65	75
8	Weight	g	580	710	880	950

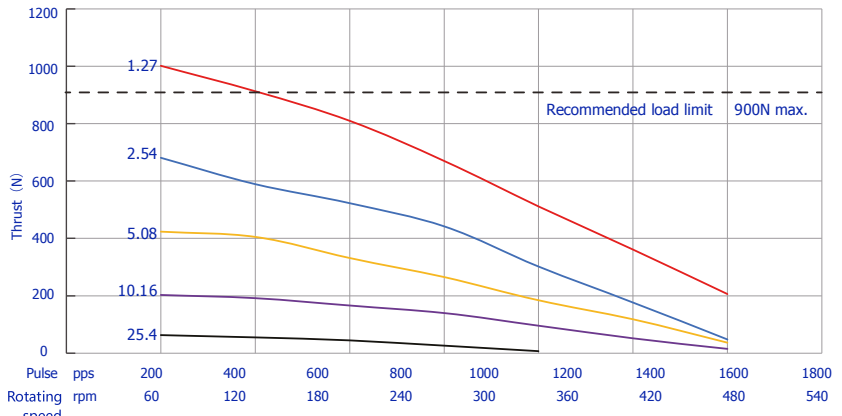
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
DA	9,525	1,27	0,00635	800
DB	9,525	2,54	0,0127	300
DC	9,525	5,08	0,0254	90
DD	9,525	10,16	0,0508	30
DE	9,525	25,4	0,127	6

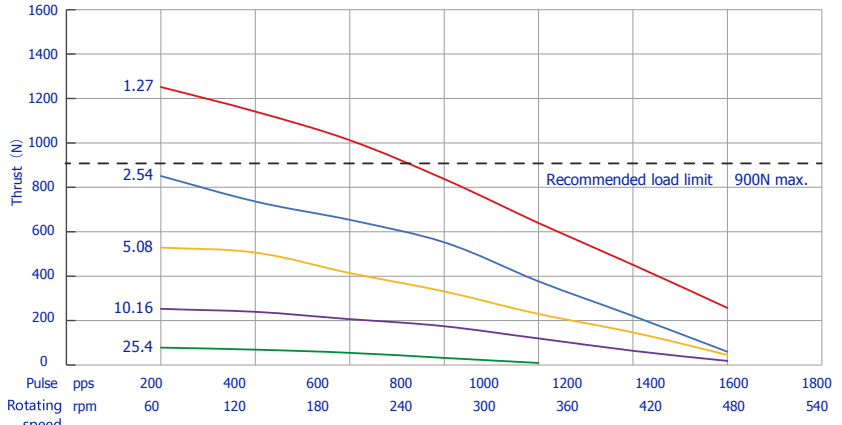
Note 1: other screw options available on request
Note 2: customized machining is viable at the end of lead screw

Connection			
Lead n°	Gauge	Color	Function
1	Flex cable	Black	Phase A+
2		Green	Phase A-
3		Red	Phase B+
4		Blue	Phase B-

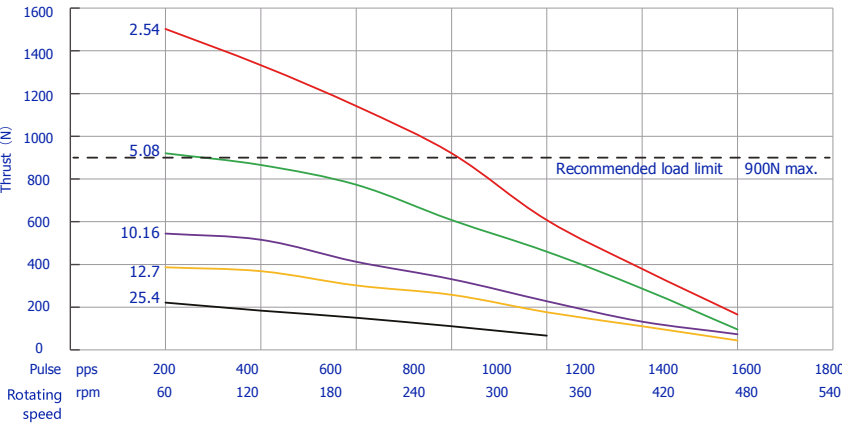
Product code reference	
57E45-30-DA100	
57	Frame size
E	External
45	Motor length
30	Current / Phase (2-digit no comma)
DA	Lead screw code
100	Screw length



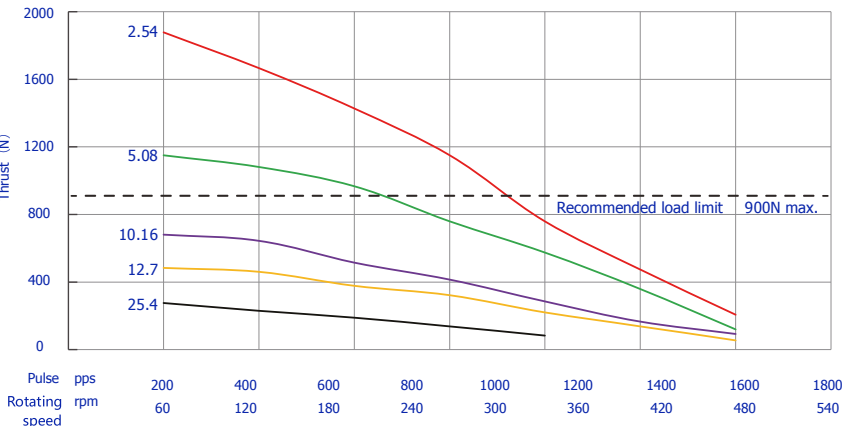
57 series 45mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø9.525mm lead screw)



57 series 55mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø9.525mm lead screw)

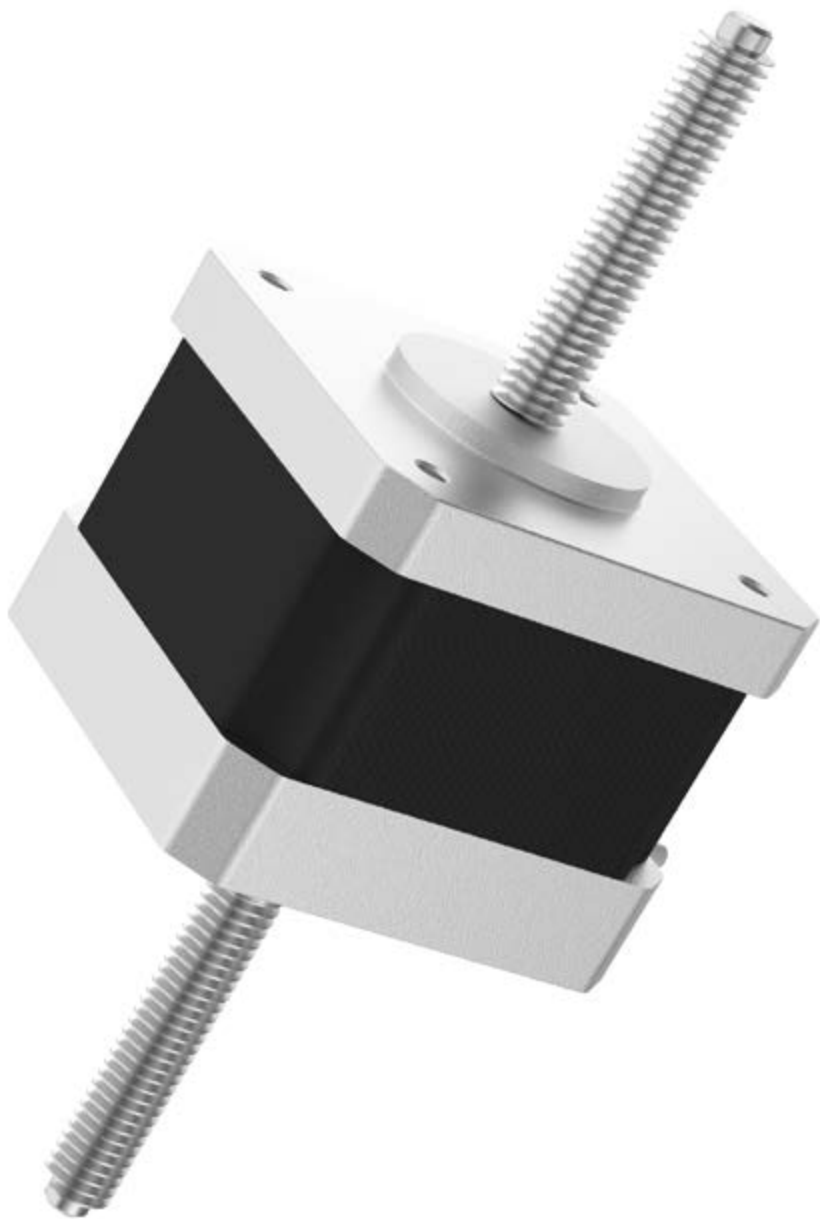


57 series 65mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø9.525mm lead screw)



57 series 75mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø9.525mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
5,08	5,08	10,16	15,24	20,32	25,4	30,48	35,56	40,64	45,72
10,16	10,16	20,32	30,48	40,64	50,8	60,96	71,12	81,28	91,44
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 40V									



Non-Captive Linear Actuators

Advantages at a glance	
Small to medium load ratings	
High accuracy	
Customizable	

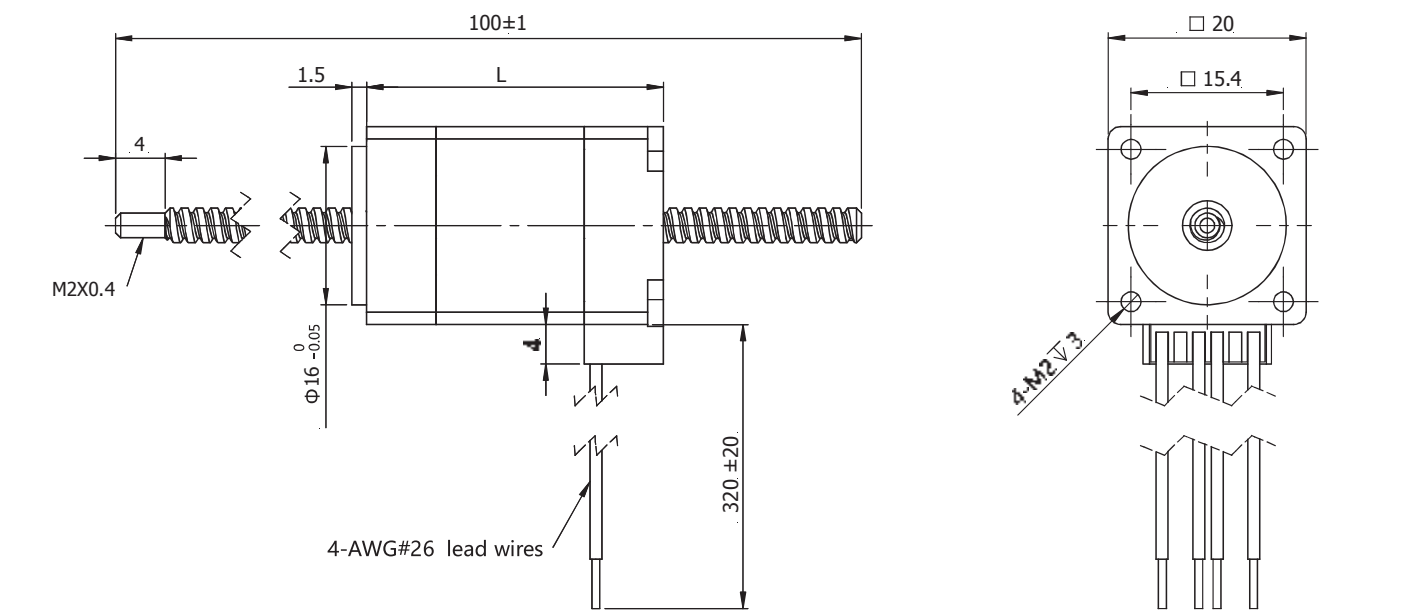
Our Non-Captive Stepper Motor Actuators are offered in NEMA 8,11,14, 17 and 23 frame motors. These stepper motor linear actuators operate with a precision lead screw that translates through the motor housing. The lead screw nut is manufactured from high performance plastic to offer long life and maximum load carrying.

Non-Captive Hybrid Stepper Linear Actuators	
20N	346
28N	348
35N	350
42N	352
57N	354

Non-Captive Linear Actuator 20N

Hybrid Stepper motor

□ 20mm



Actuator Specification				
Model		20N30	20N42	
1	Rated Voltage	V	2,5	6,3
2	Current / Phase	A	0,5	0,5
3	Resistance / Phase	Ω	5,1	12,5
4	Inductance / Phase	mH	1,5	11
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	2	3
7	Motor Length (L)	mm	30	42
8	Weight	g	50	80

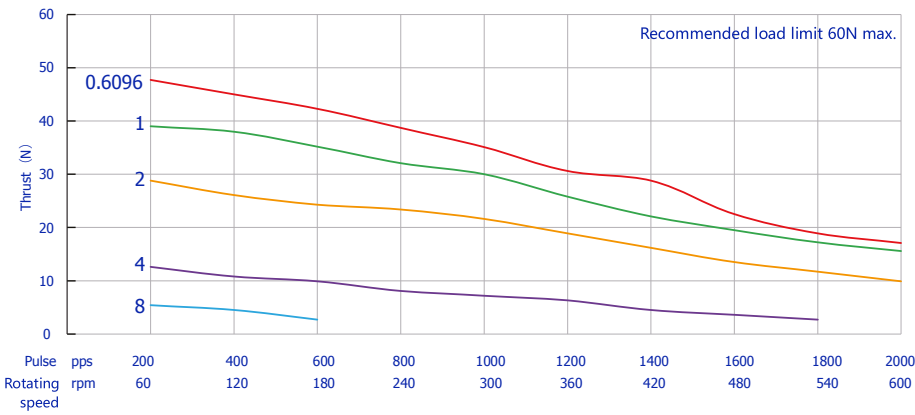
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
AA	3,5	0,6096	0,003048	80
AB	3,5	1	0,005	40
AC	3,5	2	0,01	10
AD	3,5	4	0,02	1
AE	3,5	8	0,04	0

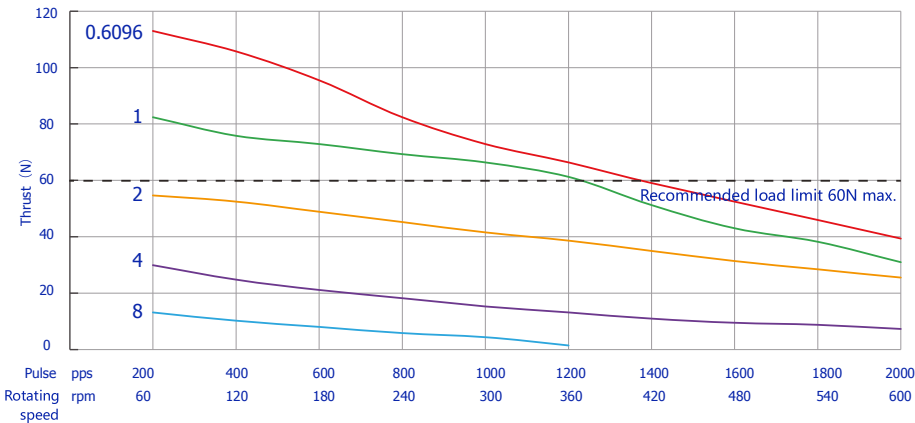
Note 1: other screw options available on request
Note 2: customized machining is viable at the end of lead screw

Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Black	Phase A+
2		Green	Phase A-
3		Red	Phase B+
4		Blue	Phase B-

Product code reference	
20N30-05-AA100	
20	Frame size
N	Non-Captive
30	Motor length
05	Current / Phase (2-digit no comma)
AA	Lead screw code
100	Screw length



20 series 30mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø3.5mm lead screw)



20 series 42mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø3.5mm lead screw)

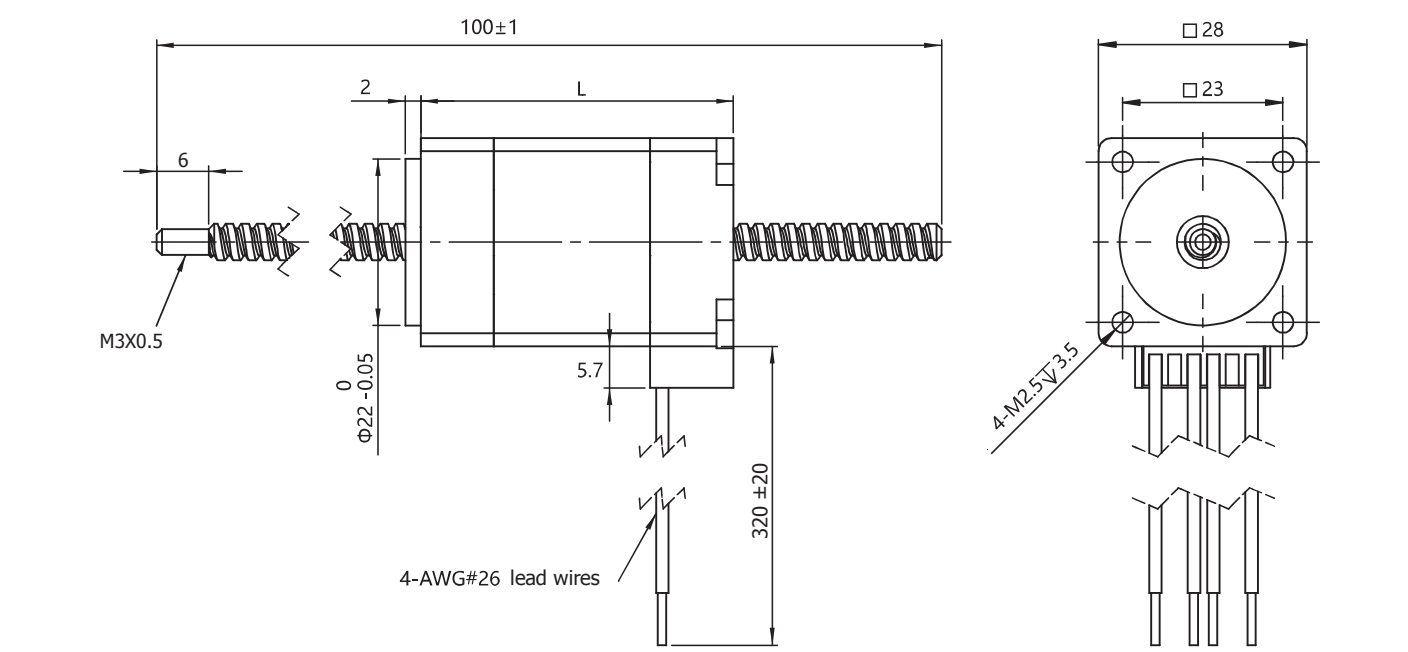
Lead (mm)	Linear Velocity (mm/s)									
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540	600
0,6096	0,6096	1,2192	1,8288	2,4384	3,048	3,6576	4,2672	4,8768	5,4864	6,096
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
4	4	8	12	16	20	24	28	32	36	40
8	8	16	24	32	40	48	56	64	72	80

Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V

Non-Captive Linear Actuator 28N

Hybrid Stepper motor

□ 28mm



Actuator Specification				
Model		28N34	28N45	
1	Rated Voltage	V	2,1	3,7
2	Current / Phase	A	1	1
3	Resistance / Phase	Ω	2,1	3,7
4	Inductance / Phase	mH	1,5	2,3
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	9	13
7	Motor Length (L)	mm	34	45
8	Weight	g	120	180

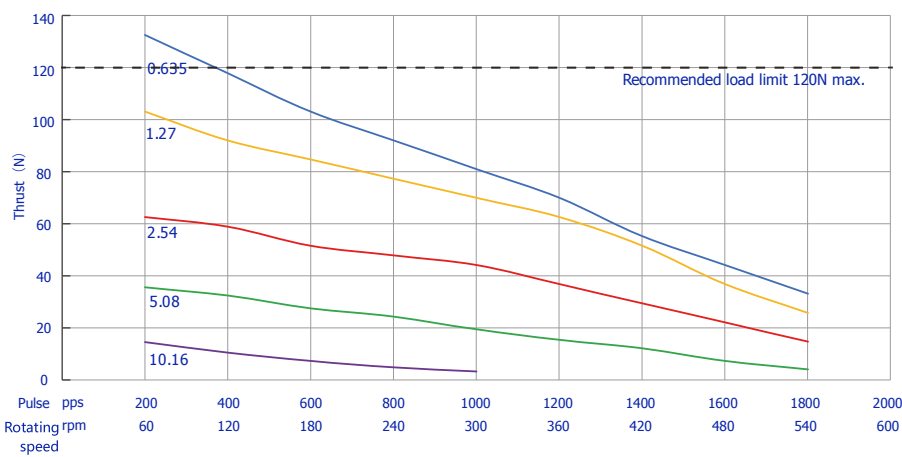
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
BA	4,76	0,635	0,003175	100
BB	4,76	1,27	0,00635	40
BC	4,76	2,54	0,0127	10
BD	4,76	5,08	0,0254	1
BE	4,76	10,16	0,0508	0

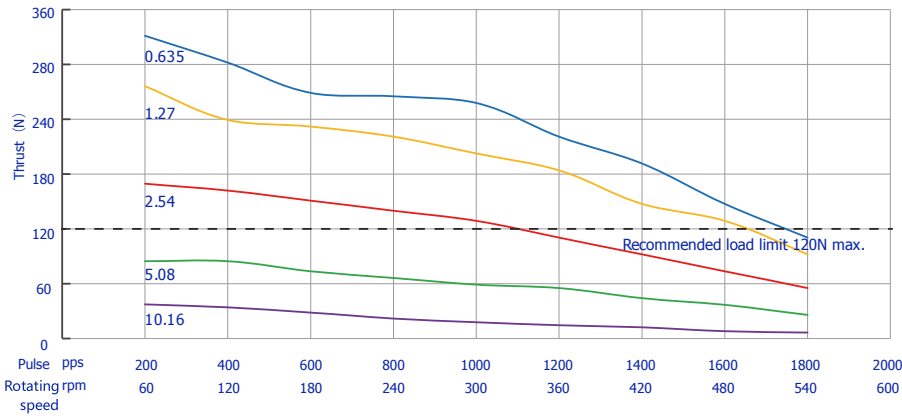
Note 1: other screw options available on request
Note 2: customized machining is viable at the end of lead screw

Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Black	Phase A+
2		Green	Phase A-
3		Red	Phase B+
4		Blue	Phase B-

Product code reference	
28N34-1-BA100	
28	Frame size
N	Non-Captive
34	Motor length
10	Current / Phase (2-digit no comma)
BA	Lead screw code
100	Screw length



28 series 34mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø4.76mm lead screw)



28 series 45mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø4.76mm lead screw)

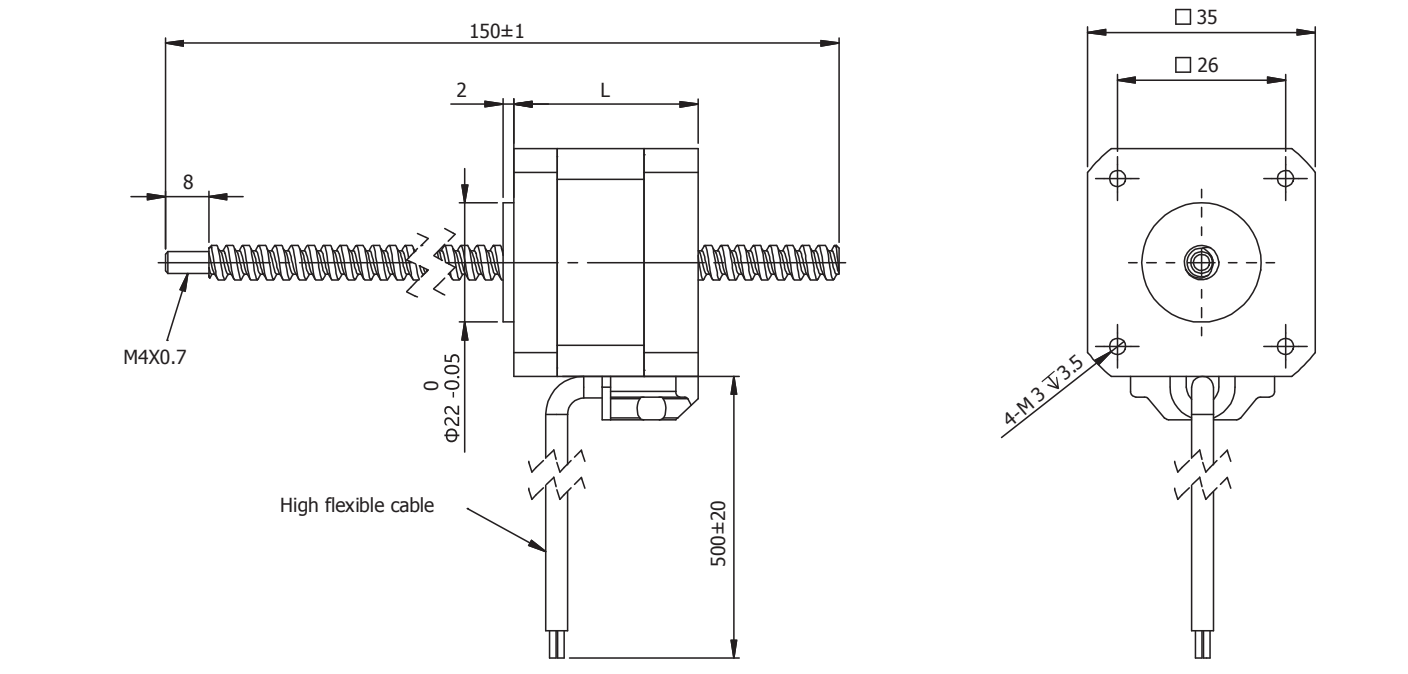
Lead (mm)	Linear Velocity (mm/s)									
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540	600
0,635	0,635	1,27	1,905	2,54	3,175	3,81	4,445	5,08	5,715	6,35
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43	12,7
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86	25,4
5,08	5,08	10,16	15,24	20,32	25,4	30,48	35,56	40,64	45,72	50,8
10,16	10,16	20,32	30,48	40,64	50,8	60,96	71,12	81,28	91,44	101,6

Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V

Non-Captive Linear Actuator 35N

Hybrid Stepper motor

□ 35mm



Actuator Specification				
Model		35N34	35N47	
1	Rated Voltage	V	1,4	2,9
2	Current / Phase	A	1,5	1,5
3	Resistance / Phase	Ω	0,95	1,9
4	Inductance / Phase	mH	1,4	3,2
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	20	30
7	Motor Length (L)	mm	34	47
8	Weight	g	190	230

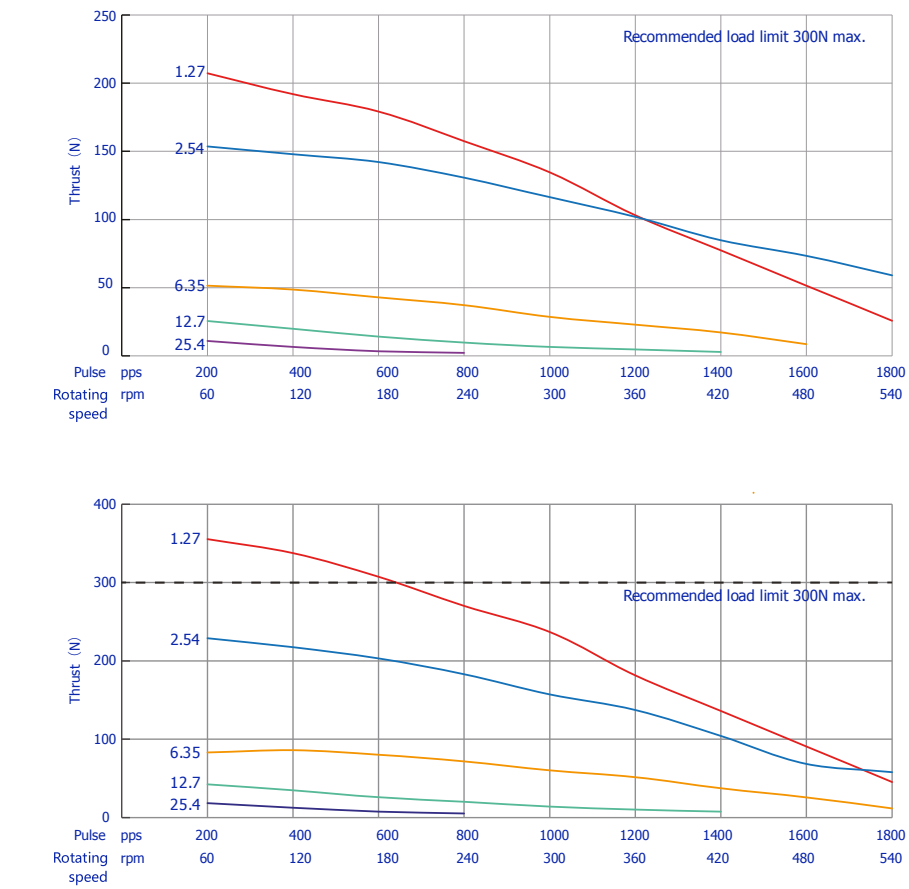
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
CA	6,35	1,27	0,00635	150
CB	6,35	2,54	0,0127	40
CC	6,35	6,35	0,03175	15
CD	6,35	12,7	0,0635	3
CE	6,35	25,4	0,127	0

Note 1: other screw options available on request
Note 2: customized machining is viable at the end of lead screw

Connection			
Lead n°	Gauge	Color	Function
1	Flex cable	Black	Phase A+
2		Green	Phase A-
3		Red	Phase B+
4		Blue	Phase B-

Product code reference	
35N34-15-CA100	
35	Frame size
N	Non-Captive
34	Motor length
15	Current / Phase (2-digit no comma)
CA	Lead screw code
100	Screw length



35 series 34mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø6.35mm lead screw)

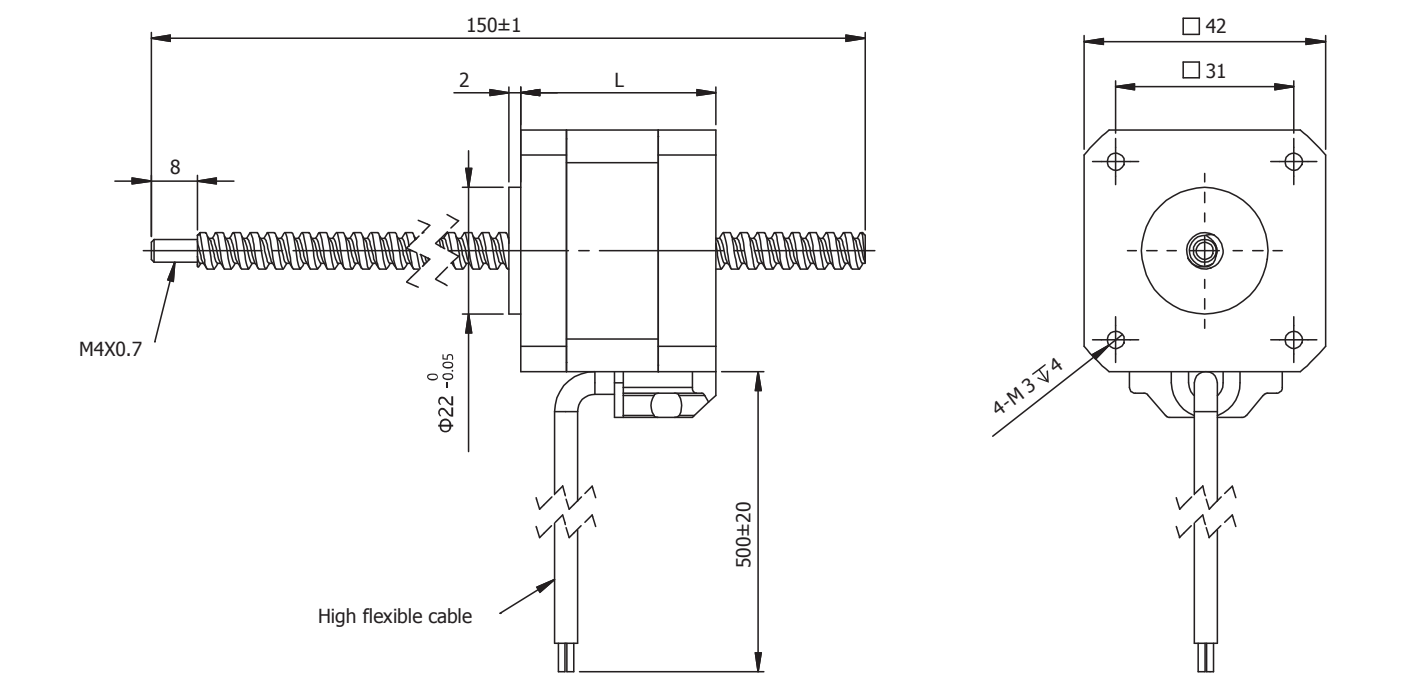
35 series 47mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø6.35mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
6,35	6,35	12,7	19,05	25,4	31,75	38,1	44,45	50,8	57,15
12,7	12,7	25,4	38,1	50,8	63,5	76,2	88,9	101,6	114,3
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V									

Non-Captive Linear Actuator 42N

Hybrid Stepper motor

42mm



Actuator Specification						
	Model		42N34	42N40	42N48	42N60
1	Rated Voltage	V	2,6	3,3	2	2,5
2	Current / Phase	A	1,5	1,5	2,5	2,5
3	Resistance / Phase	Ω	1,8	2,2	0,8	1
4	Inductance / Phase	mH	2,6	4,6	1,8	2,8
5	n° of Lead Wires		4	4	4	4
6	Rotor Inertia	gcm2	35	55	70	105
7	Motor Length (L)	mm	34	40	48	60
8	Weight	g	250	290	385	450

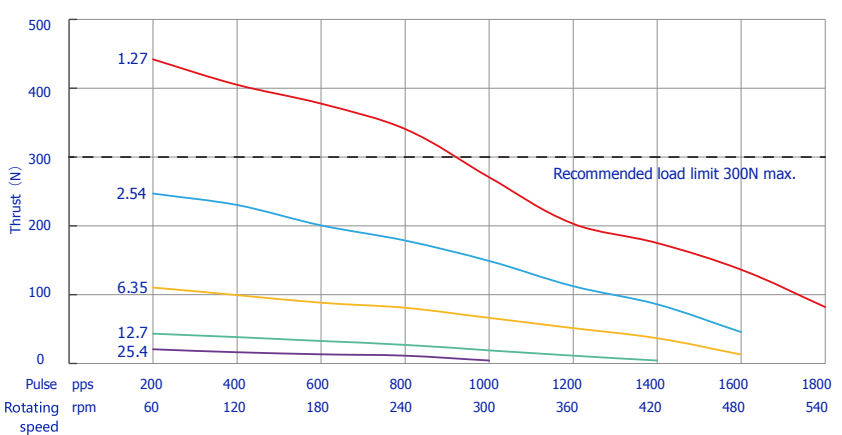
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
CA	6,35	1,27	0,00635	150
CB	6,35	2,54	0,0127	40
CC	6,35	6,35	0,03175	15
CD	6,35	12,7	0,0635	3
CE	6,35	25,4	0,127	0

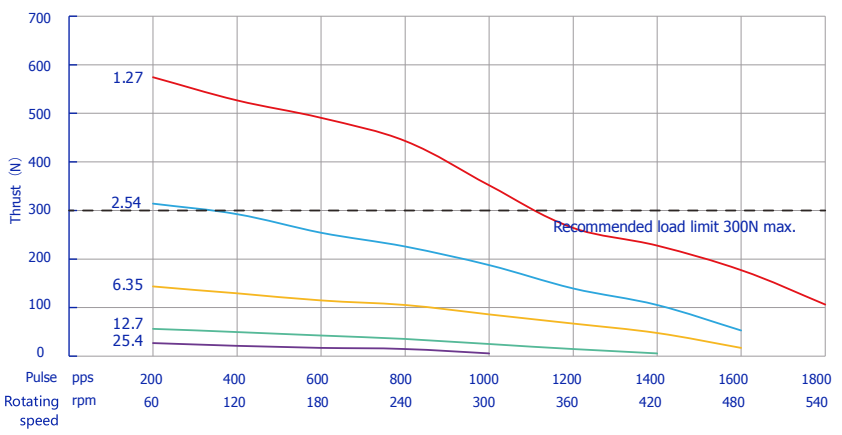
Note 1: other screw options available on request
Note 2: customized machining is viable at the end of lead screw

Connection			
Lead n°	Gauge	Color	Function
1	Flex cable	Black	Phase A+
2		Green	Phase A-
3		Red	Phase B+
4		Blue	Phase B-

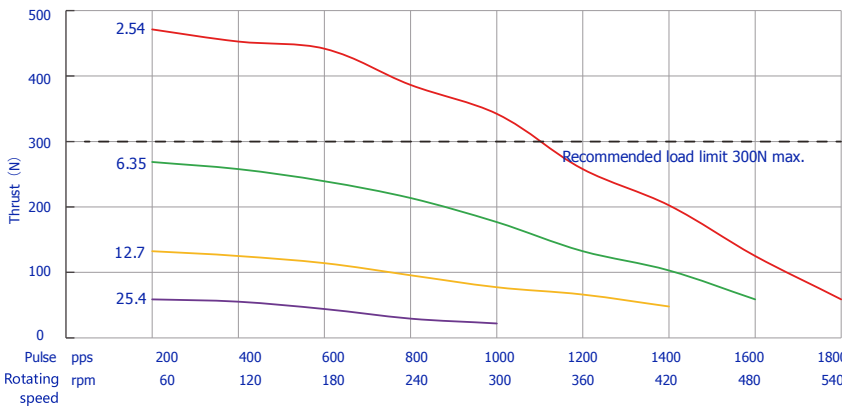
Product code reference	
42N34-15-CA100	
42	Frame size
N	Non-Captive
34	Motor length
15	Current / Phase (2-digit no comma)
CA	Lead screw code
100	Screw length



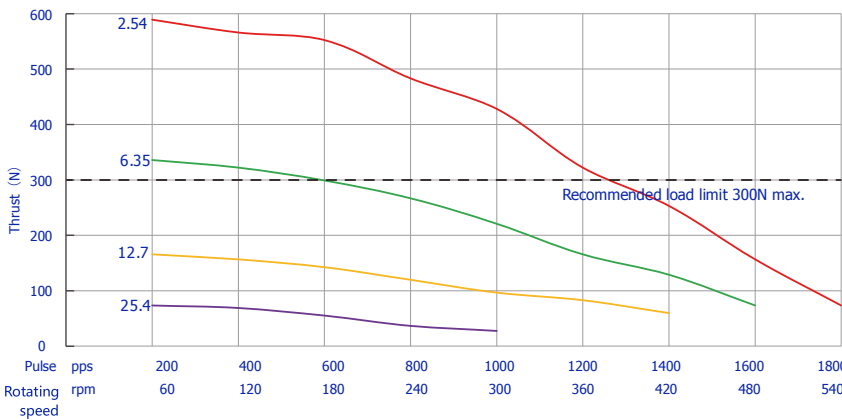
42 series 34mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø6.35mm lead screw)



42 series 40mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø6.35mm lead screw)



42 series 48mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø6.35mm lead screw)



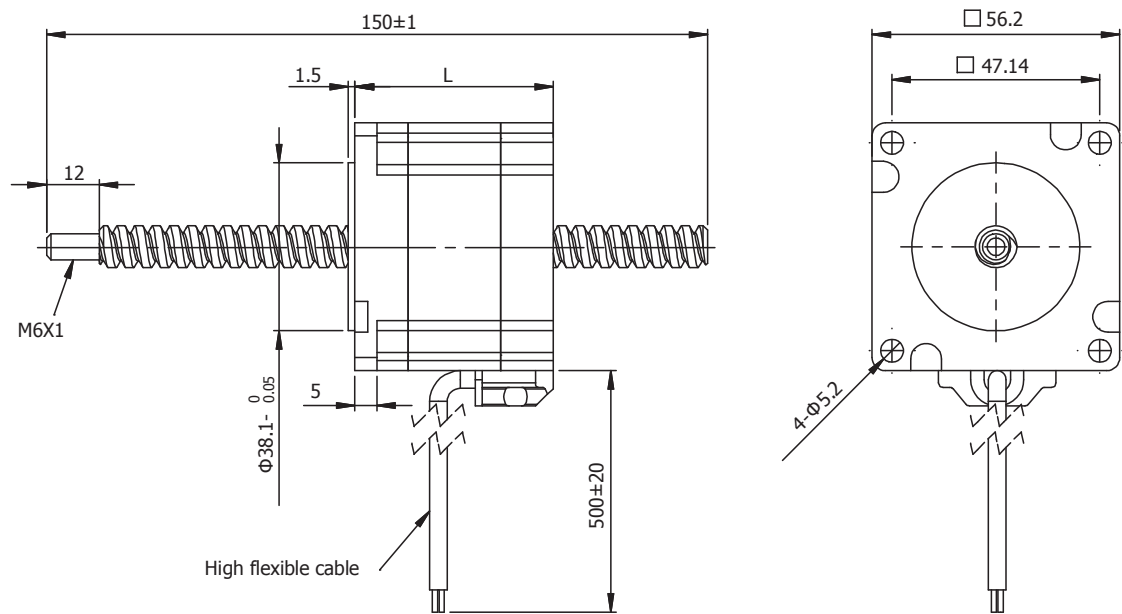
42 series 60mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø6.35mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
6,35	6,35	12,7	19,05	25,4	31,75	38,1	44,45	50,8	57,15
12,7	12,7	25,4	38,1	50,8	63,5	76,2	88,9	101,6	114,3
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 40V									

Non-Captive Linear Actuator 57N

Hybrid Stepper motor

□ 57mm



Actuator Specification						
	Model		57N45	57N55	57N65	57N75
1	Rated Voltage	V	2,3	3	3,1	3,8
2	Current / Phase	A	3	3	4	4
3	Resistance / Phase	Ω	0,75	1	0,78	0,95
4	Inductance / Phase	mH	2,5	4,5	3,3	4,5
5	n° of Lead Wires		4	4	4	4
6	Rotor Inertia	gcm2	150	300	400	480
7	Motor Length (L)	mm	45	55	65	75
8	Weight	g	580	710	880	950

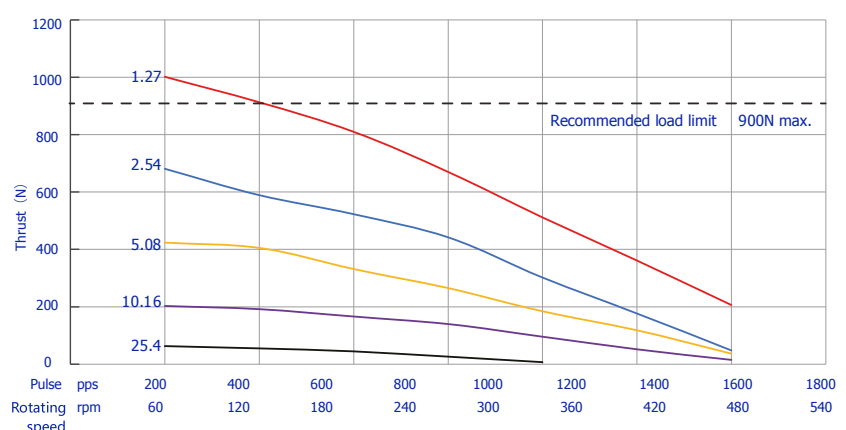
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
DA	9,525	1,27	0,00635	800
DB	9,525	2,54	0,0127	300
DC	9,525	5,08	0,0254	90
DD	9,525	10,16	0,0508	30
DE	9,525	25,4	0,127	6

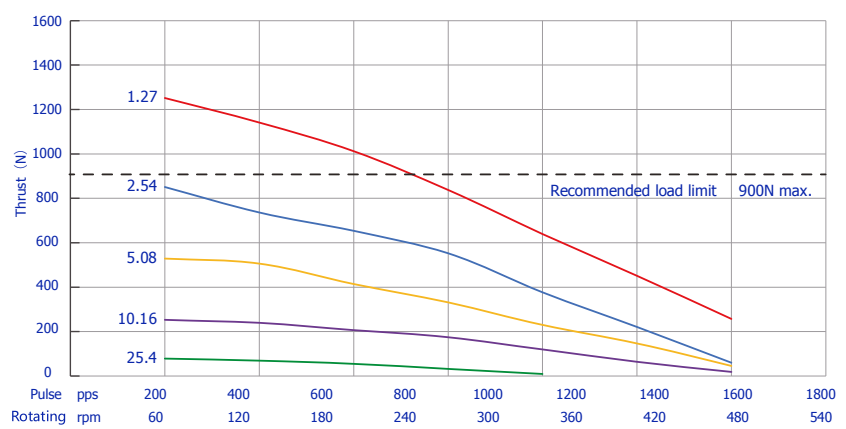
Note 1: other screw options available on request
Note 2: customized machining is viable at the end of lead screw

Connection				
Lead n°	Gauge	Color	Function	
1	Flex cable	Black	Phase A+	
2		Green	Phase A-	
3		Red	Phase B+	
4		Blue	Phase B-	

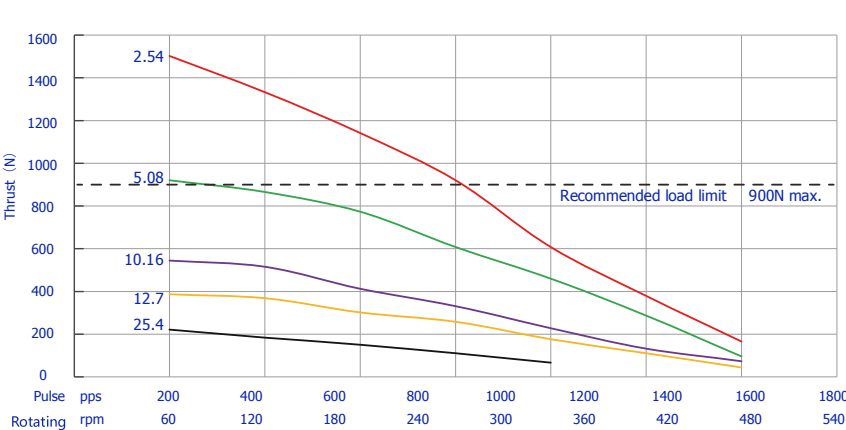
Product code reference	
57N45-30-DA100	
57	Frame size
N	Non-Captive
45	Motor length
30	Current / Phase (2-digit no comma)
DA	Lead screw code
100	Screw length



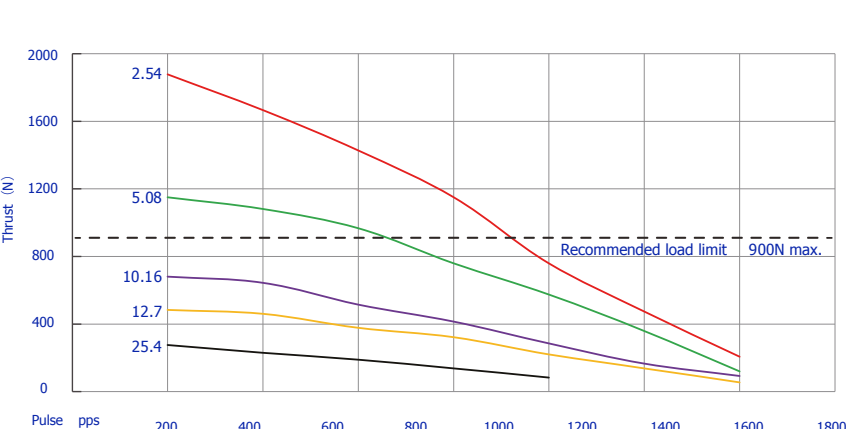
57 series 45mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø9.525mm lead screw)



57 series 55mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø9.525mm lead screw)



57 series 65mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø9.525mm lead screw)



57 series 75mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø9.525mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
5,08	5,08	10,16	15,24	20,32	25,4	30,48	35,56	40,64	45,72
10,16	10,16	20,32	30,48	40,64	50,8	60,96	71,12	81,28	91,44
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 40V									



Captive Linear Actuators

Advantages at a glance	
Small to medium load ratings	
High accuracy	
Customizable	

Our Captive Stepper Motor Actuators feature a precision lead screw, nut and a spline shaft to produce accurate and repeatable linear motion. Actuators are manufactured in NEMA sizes 8, 11, 14, 17 and 23. These captive linear stepper motor actuators operate with a precision lead screw and spline shaft that translates through the motor housing.

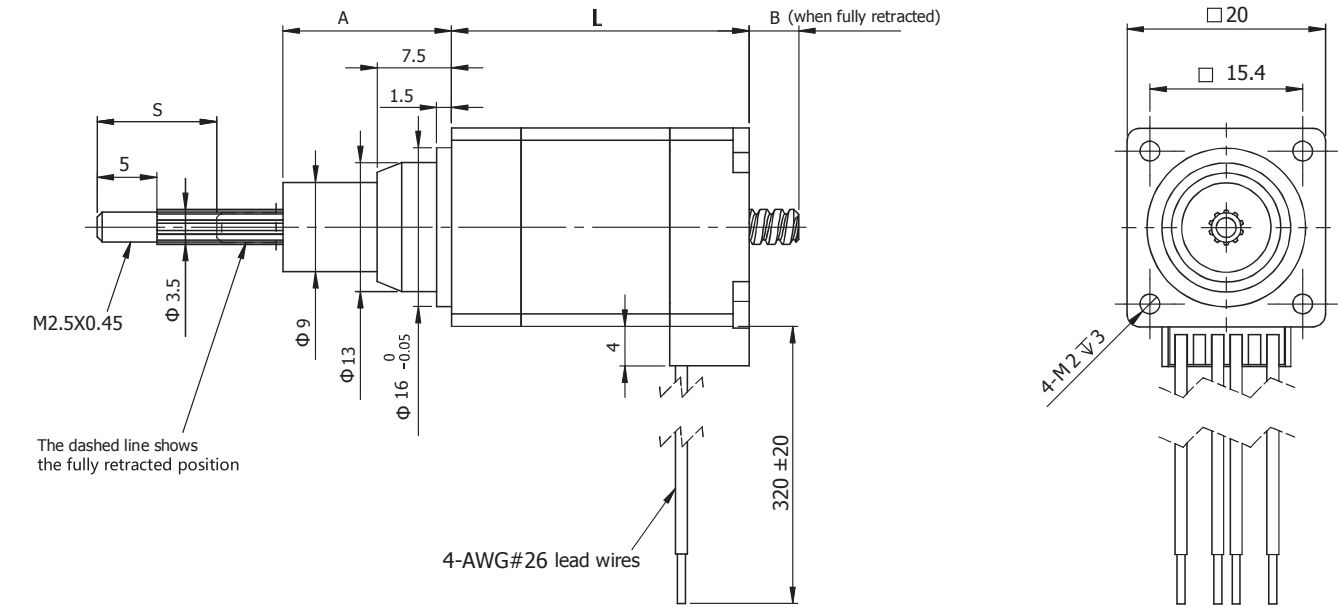
Captive Hybrid Stepper Linear Actuators	
20C	358
28C	360
35C	362
42C	364
57C	366

* Max. Axial Load

Captive Linear Actuator 20C

Hybrid Stepper motor

□ 20mm



Actuator Specification				
Model		20C30	20C42	
1	Rated Voltage	V	2,5	6,3
2	Current / Phase	A	0,5	0,5
3	Resistance / Phase	Ω	5,1	12,5
4	Inductance / Phase	mH	1,5	11
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	2	3
7	Motor Length (L)	mm	30	42
8	Weight	g	50	80

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

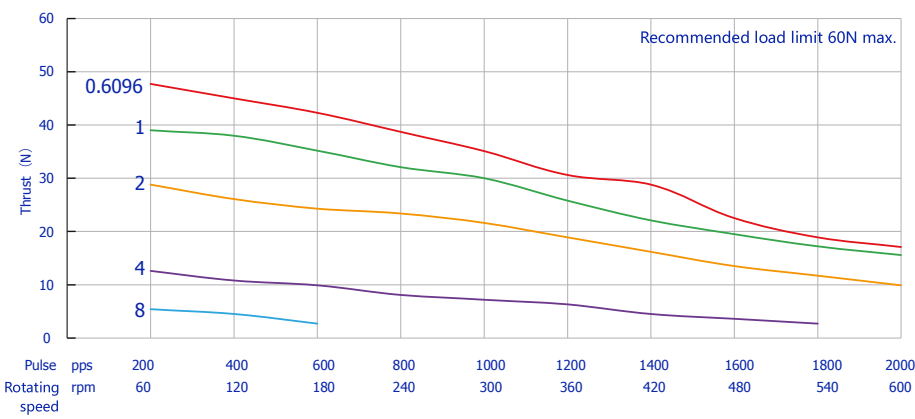
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
AA	3,5	0,6096	0,003048	80
AB	3,5	1	0,005	40
AC	3,5	2	0,01	10
AD	3,5	4	0,02	1
AE	3,5	8	0,04	0

Note 1: other screw options available on request
Note 2: customized machining is viable at the end of lead screw

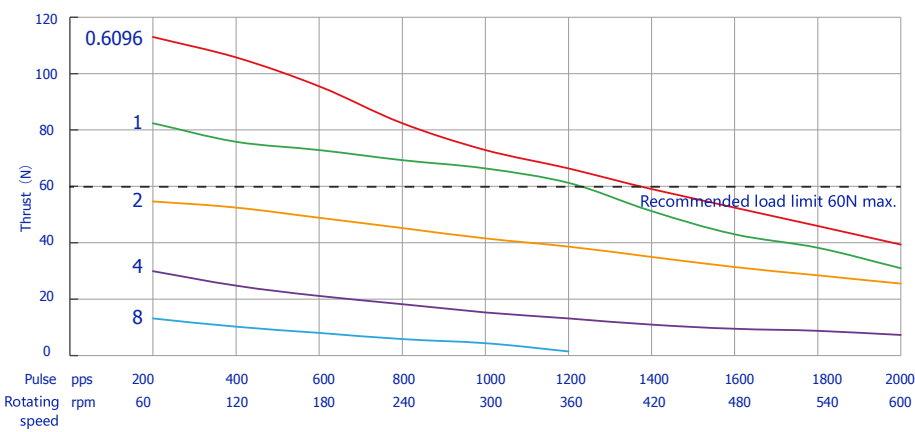
Product code reference	
20C30-05-AA127	
20	Frame size
C	Captive
30	Motor length
05	Current / Phase (2-digit no comma)
AA	Lead screw code
127	Stroke S (3-digit no comma)

Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Black	Phase A+
2		Green	Phase A-
3		Red	Phase B+
4		Blue	Phase B-

Standard Stroke options			
Stroke S (mm)	A (mm)	B (mm)	
		Motor L=30	Motor L=42
9	14,6	0,4	0
12,7	18,3	4,1	0
19,1	24,7	10,5	0,3
25,4	31	16,8	6,6
31,8	37,4	23,2	13
38,1	43,7	29,5	19,3
50,8	56,4	42,2	32



20 series 30mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø3.5mm lead screw)



20 series 42mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø3.5mm lead screw)

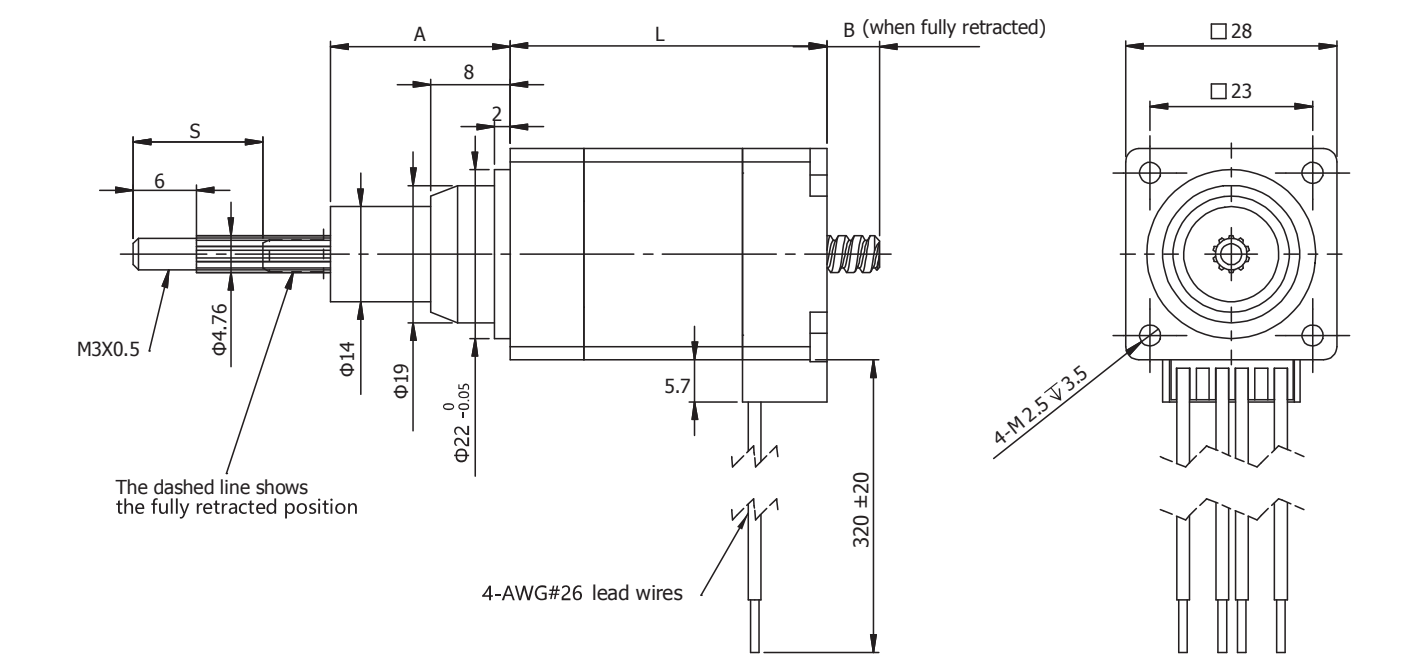
Lead (mm)	Linear Velocity (mm/s)									
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540	600
0,6096	0,6096	1,2192	1,8288	2,4384	3,048	3,6576	4,2672	4,8768	5,4864	6,096
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
4	4	8	12	16	20	24	28	32	36	40
8	8	16	24	32	40	48	56	64	72	80

Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V

Captive Linear Actuator 28C

Hybrid Stepper motor

□ 28mm



Actuator Specification				
Model		28C34	28C45	
1	Rated Voltage	V	2,1	3,7
2	Current / Phase	A	1	1
3	Resistance / Phase	Ω	2,1	3,7
4	Inductance / Phase	mH	1,5	2,3
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	9	13
7	Motor Length (L)	mm	34	45
8	Weight	g	120	180

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
BA	4,76	0,635	0,003175	100
BB	4,76	1,27	0,00635	40
BC	4,76	2,54	0,0127	10
BD	4,76	5,08	0,0254	1
BE	4,76	10,16	0,0508	0

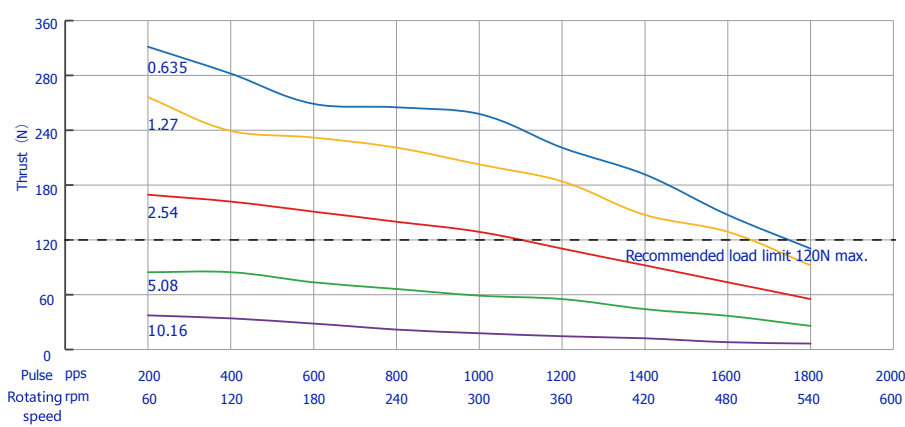
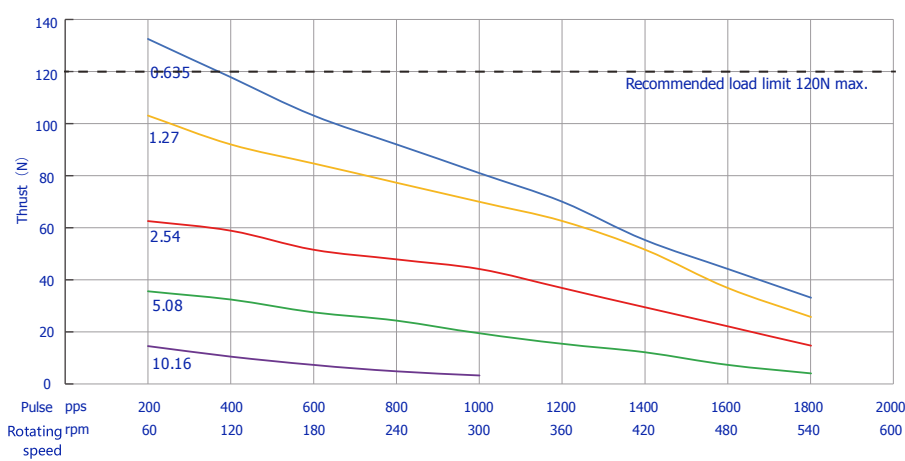
Note 1: other screw options available on request

Note 2: customized machining is viable at the end of lead screw

Product code reference	
28C34-10-BA127	
28	Frame size
C	Captive
34	Motor length
10	Current / Phase (2-digit no comma)
BA	Lead screw code
127	Stroke S (3-digit no comma)

Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Black	Phase A+
2		Green	Phase A-
3		Red	Phase B+
4		Blue	Phase B-

Standard Stroke options			
Stroke S (mm)	A (mm)	B (mm)	
		Motor L=34	Motor L=45
12,7	19,8	6,5	0
19,1	26,2	12,9	0
25,4	32,5	19,2	5,9
31,8	38,9	25,6	12,3
38,1	45,2	31,9	18,6
50,8	57,9	44,6	31,3
63,5	70,6	57,3	44

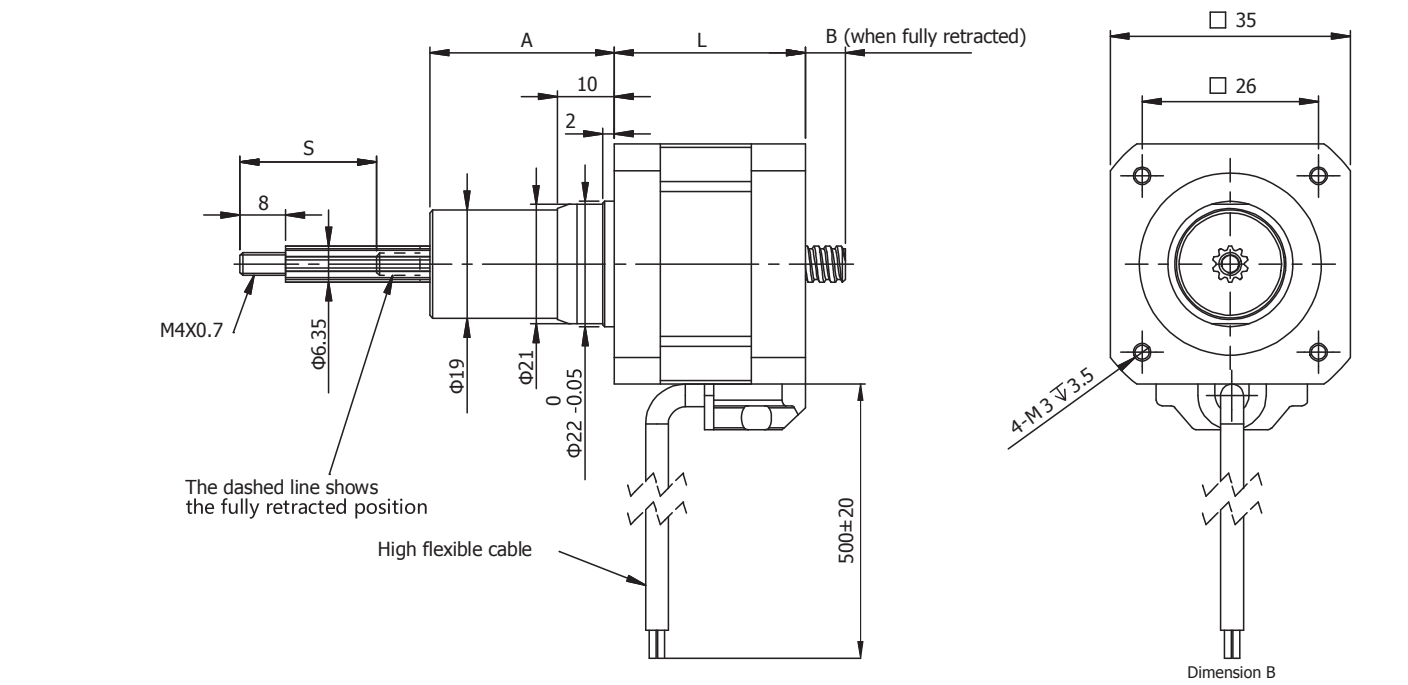


Lead (mm)	Linear Velocity (mm/s)									
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540	600
0,635	0,635	1,27	1,905	2,54	3,175	3,81	4,445	5,08	5,715	6,35
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43	12,7
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86	25,4
5,08	5,08	10,16	15,24	20,32	25,4	30,48	35,56	40,64	45,72	50,8
10,16	10,16	20,32	30,48	40,64	50,8	60,96	71,12	81,28	91,44	101,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V										

Captive Linear Actuator 35C

Hybrid Stepper motor

35mm



Actuator Specification				
Model		35C34	35C47	
1	Rated Voltage	V	1,4	2,9
2	Current / Phase	A	1,5	1,5
3	Resistance / Phase	Ω	0,95	1,9
4	Inductance / Phase	mH	1,4	3,2
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	20	30
7	Motor Length (L)	mm	34	47
8	Weight	g	190	230

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

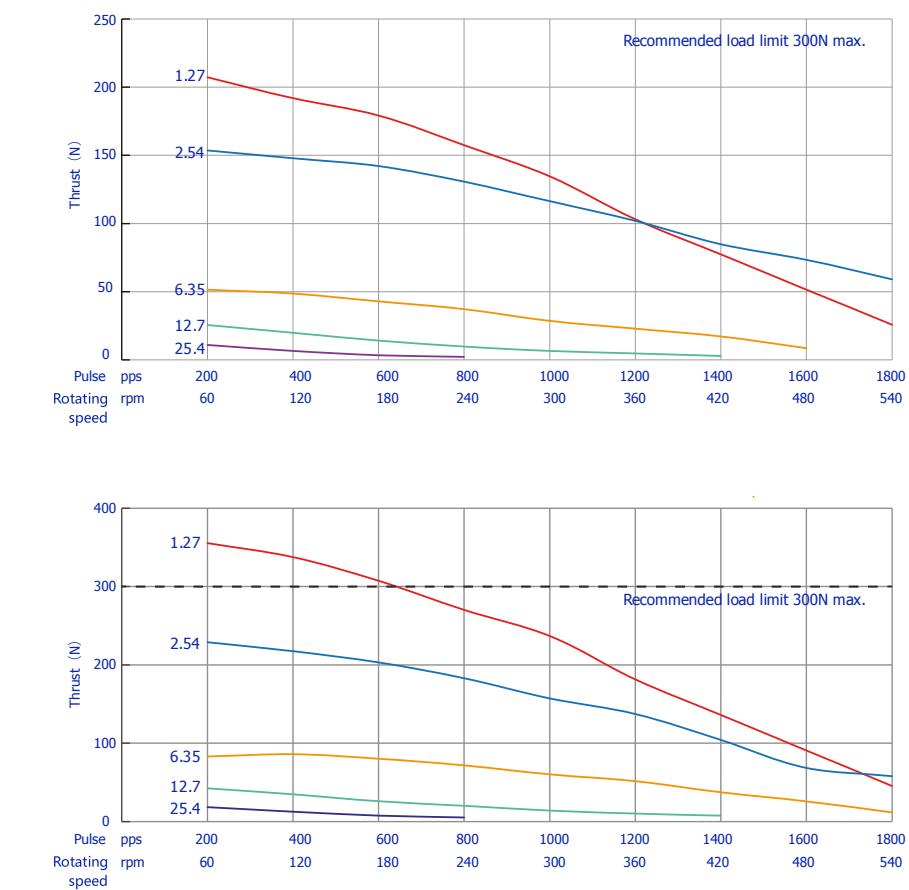
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
CA	6,35	1,27	0,00635	150
CB	6,35	2,54	0,0127	40
CC	6,35	6,35	0,03175	15
CD	6,35	12,7	0,0635	3
CE	6,35	25,4	0,127	0

Note 1: other screw options available on request
Note 2: customized machining is viable at the end of lead screw

Product code reference	
35C34-15-CA127	
35	Frame size
C	Captive
34	Motor length
15	Current / Phase (2-digit no comma)
CA	Lead screw code
127	Stroke S (3-digit no comma)

Connection			
Lead n°	Gauge	Color	Function
1	Flex cable	Black	Phase A+
2		Green	Phase A-
3		Red	Phase B+
4		Blue	Phase B-

Standard Stroke options			
Stroke S (mm)	A (mm)	B (mm)	
		Motor L=34	Motor L=47
12,7	20,6	8,4	0
19,1	27	14,8	0,8
25,4	33,3	21,1	7,1
31,8	39,7	27,5	13,5
38,1	46	33,8	19,8
50,8	58,7	46,5	32,5
63,5	71,4	59,2	45,2



35 series 34mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)

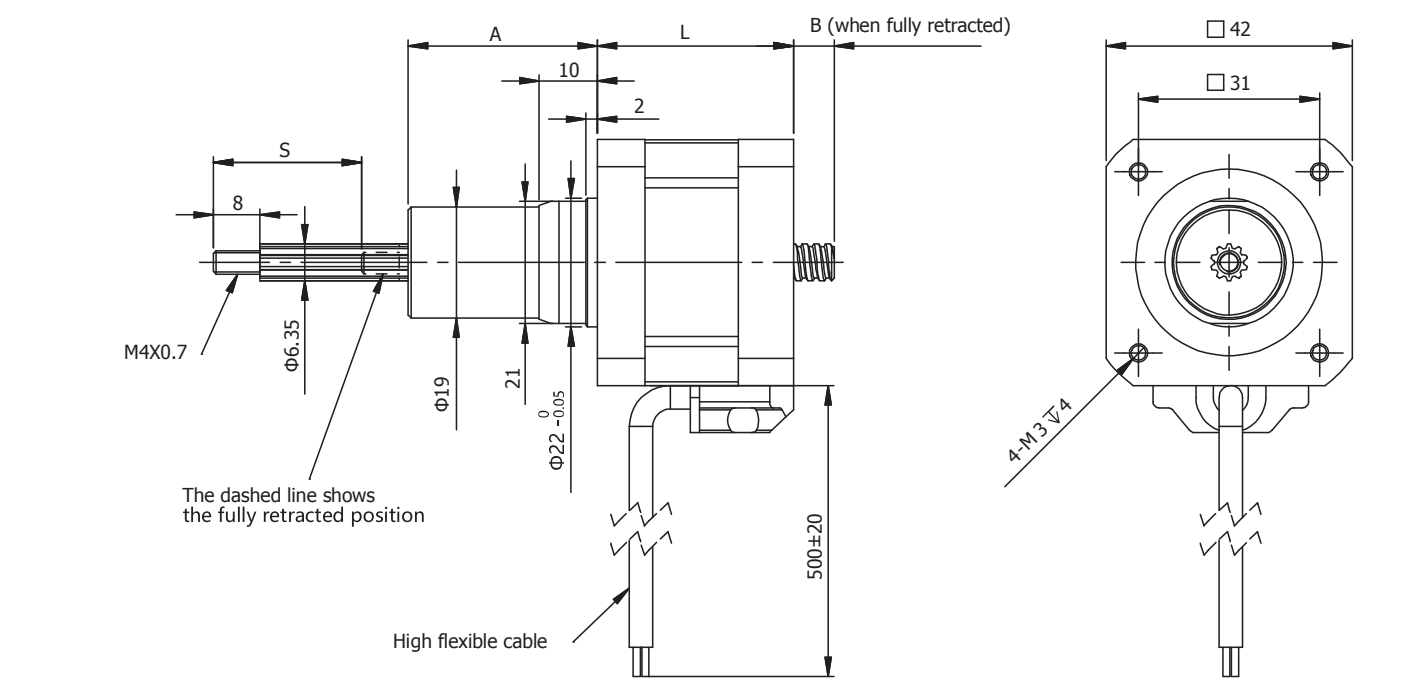
35 series 47mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
6,35	6,35	12,7	19,05	25,4	31,75	38,1	44,45	50,8	57,15
12,7	12,7	25,4	38,1	50,8	63,5	76,2	88,9	101,6	114,3
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V									

Captive Linear Actuator 42C

Hybrid Stepper motor

42mm



Actuator Specification						
	Model	42C34	42C40	42C48	42C60	
1	Rated Voltage	V	2,6	3,3	2	2,5
2	Current / Phase	A	1,5	1,5	2,5	2,5
3	Resistance / Phase	Ω	1,8	2,2	0,8	1
4	Inductance / Phase	mH	2,6	4,6	1,8	2,8
5	n° of Lead Wires		4	4	4	4
6	Rotor Inertia	gcm2	35	55	70	105
7	Motor Length (L)	mm	34	40	48	60
8	Weight	g	250	290	385	450

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

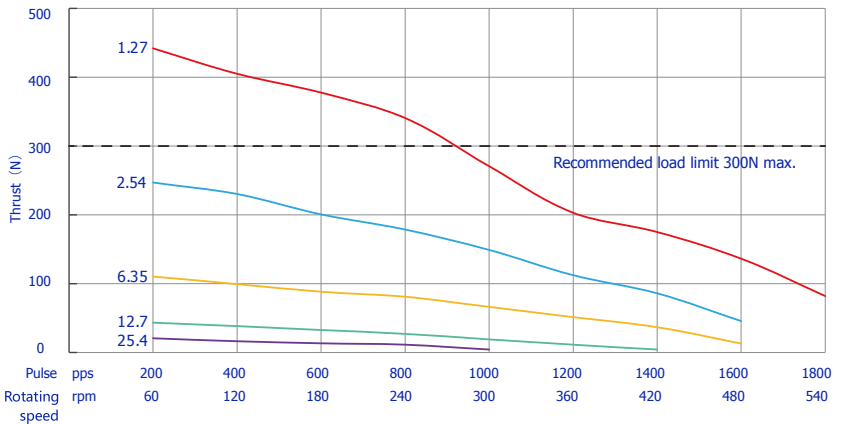
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
CA	6,35	1,27	0,00635	150
CB	6,35	2,54	0,0127	40
CC	6,35	6,35	0,03175	15
CD	6,35	12,7	0,0635	3
CE	6,35	25,4	0,127	0

Note 1: other screw options available on request
Note 2: customized machining is viable at the end of lead screw

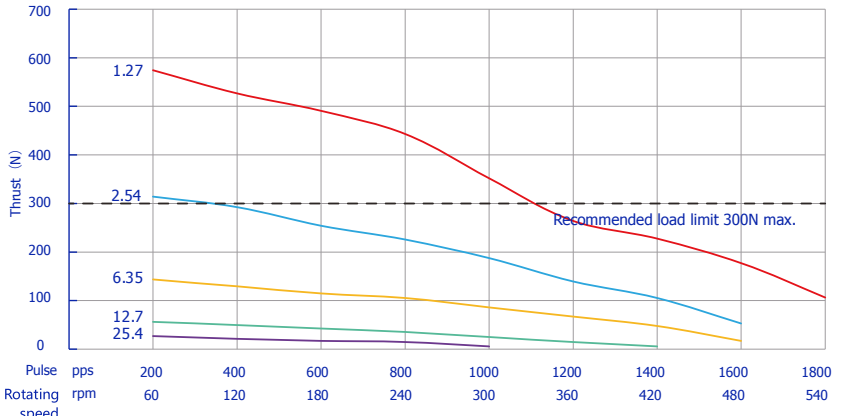
Product code reference	
42C34-15-CA127	
42	Frame size
C	Captive
34	Motor length
15	Current / Phase (2-digit no comma)
CA	Lead screw code
127	Stroke S (3-digit no comma)

Connection			
Lead n°	Gauge	Color	Function
1	Flex cable	Black	Phase A+
2		Green	Phase A-
3		Red	Phase B+
4		Blue	Phase B-

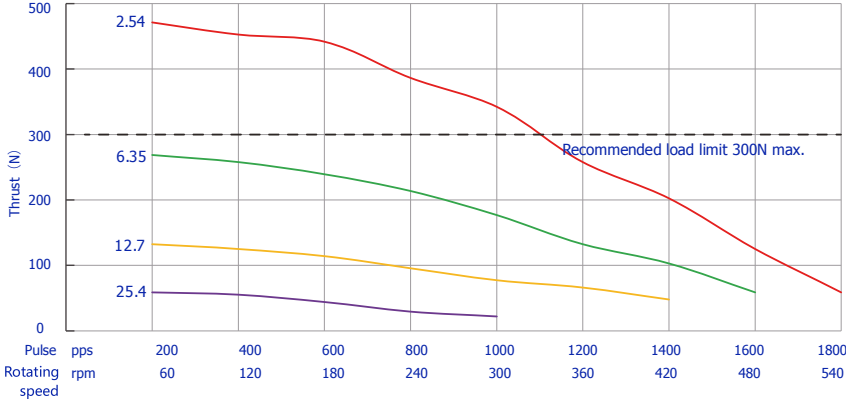
Standard Stroke options					
Stroke S (mm)	A (mm)	B (mm)			
		Motor L=34	Motor L=40	Motor L=48	Motor L=60
12,7	20,6	6,4	0,4	0	0
19,1	27	12,8	6,8	0	0
25,4	33,3	19,1	13,1	5,1	0
31,8	39,7	25,5	19,5	11,5	0
38,1	46	31,8	25,8	17,8	5,8
50,8	58,7	44,5	38,5	30,5	18,5
63,5	71,4	57,2	51,2	43,2	31,2



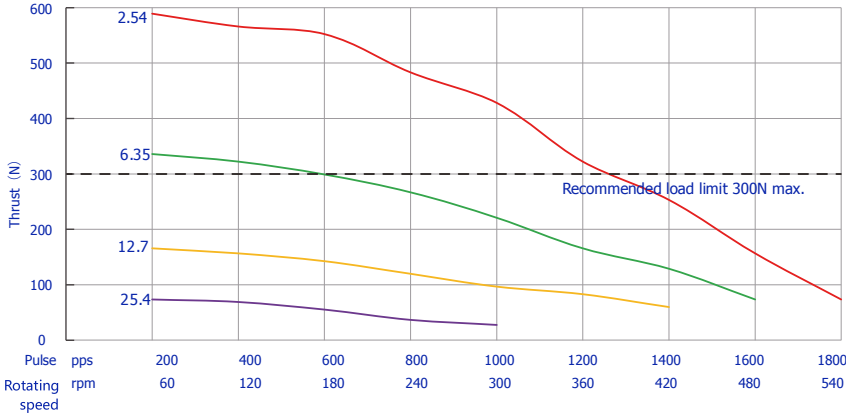
42 series 34mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



42 series 40mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



42 series 48mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



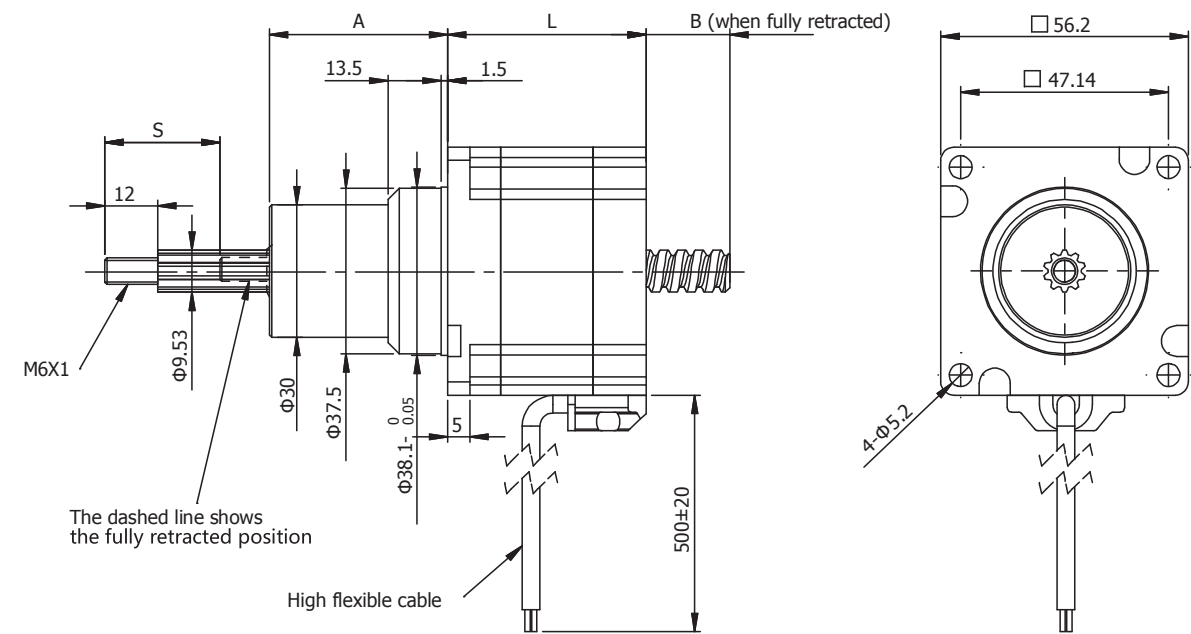
42 series 60mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
6,35	6,35	12,7	19,05	25,4	31,75	38,1	44,45	50,8	57,15
12,7	12,7	25,4	38,1	50,8	63,5	76,2	88,9	101,6	114,3
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 40V									

Captive Linear Actuator 57C

Hybrid Stepper motor

57mm



Actuator Specification						
	Model		57C45	57C55	57C65	57C75
1	Rated Voltage	V	2,3	3	3,1	3,8
2	Current / Phase	A	3	3	4	4
3	Resistance / Phase	Ω	0,75	1	0,78	0,95
4	Inductance / Phase	mH	2,5	4,5	3,3	4,5
5	n° of Lead Wires		4	4	4	4
6	Rotor Inertia	gcm2	150	300	400	480
7	Motor Length (L)	mm	45	55	65	75
8	Weight	g	580	710	880	950

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

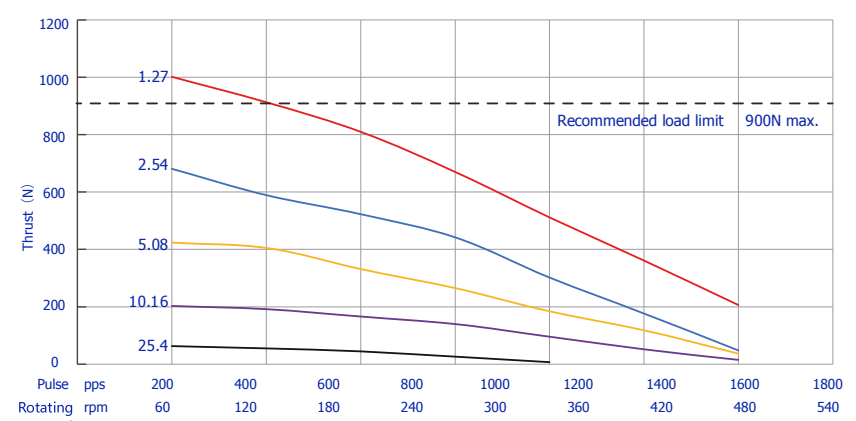
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
DA	9,525	1,27	0,00635	800
DB	9,525	2,54	0,0127	300
DC	9,525	5,08	0,0254	90
DD	9,525	10,16	0,0508	30
DE	9,525	25,4	0,127	6

Note 1: other screw options available on request
Note 2: customized machining is viable at the end of lead screw

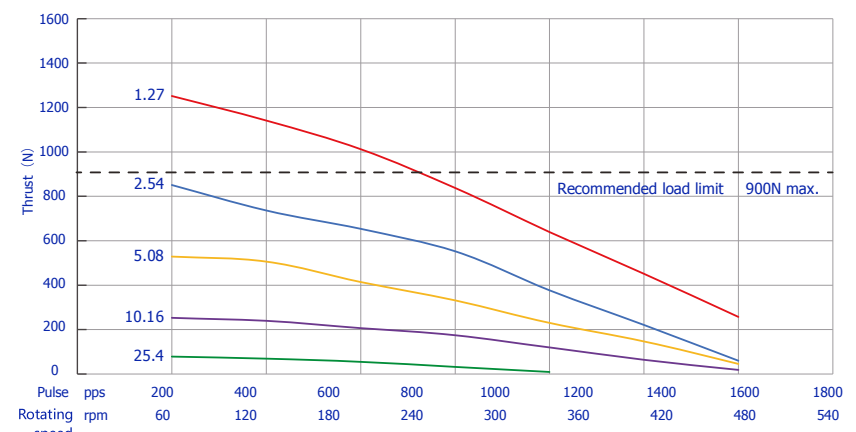
Product code reference	
57C45-30-DA127	
57	Frame size
C	Captive
45	Motor length
30	Current / Phase (2-digit no comma)
DA	Lead screw code
127	Stroke S (3-digit no comma)

Connection			
Lead n°	Gauge	Color	Function
1	Flex cable	Black	Phase A+
2		Green	Phase A-
3		Red	Phase B+
4		Blue	Phase B-

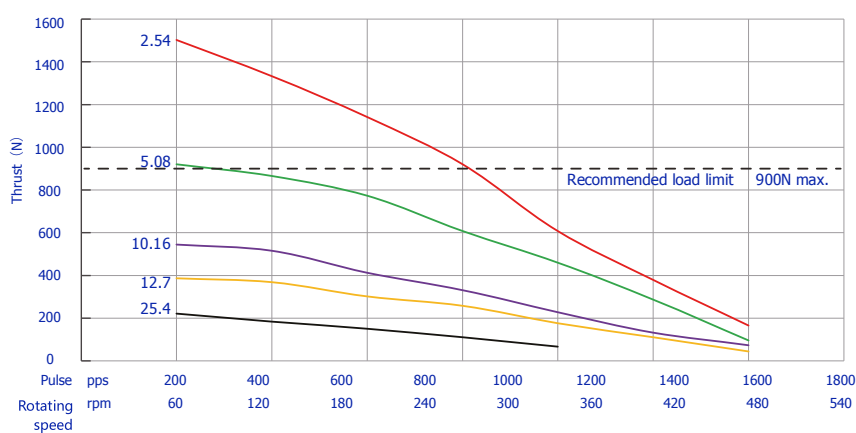
Standard Stroke options					
Stroke S (mm)	A (mm)	B (mm)			
		Motor L=45	Motor L=55	Motor L=65	Motor L=75
12,7	24,1	1,1	0	0	0
19,1	30,5	7,5	0	0	0
25,4	36,8	13,8	4,8	0	0
31,8	43,2	20,2	11,2	0,2	0
38,1	49,5	26,5	17,5	6,5	0
50,8	62,2	39,2	30,2	19,2	9,2
63,5	74,9	51,9	42,9	31,9	21,9



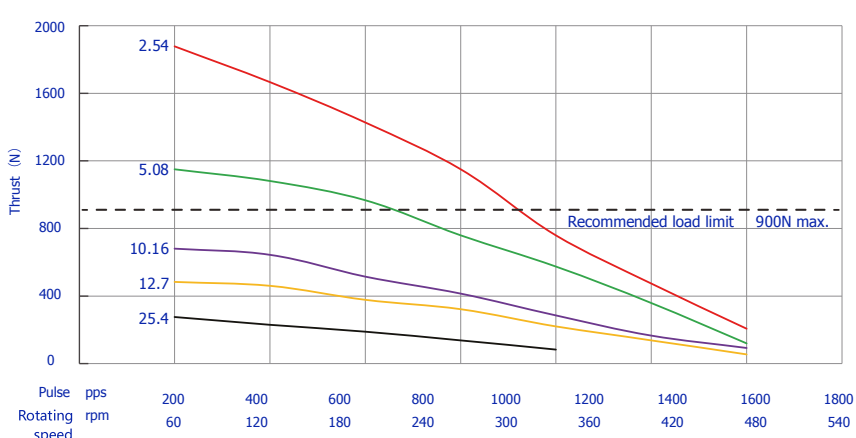
57 series 45mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø9.525mm lead screw)



57 series 55mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø9.525mm lead screw)



57 series 65mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø9.525mm lead screw)



57 series 75mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Ø9.525mm lead screw)

Lead (mm)		Linear Velocity (mm/s)								
Pulse (pps)		200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)		60	120	180	240	300	360	420	480	540
1,27		1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54		2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
5,08		5,08	10,16	15,24	20,32	25,4	30,48	35,56	40,64	45,72
10,16		10,16	20,32	30,48	40,64	50,8	60,96	71,12	81,28	91,44
25,4		25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 40V										

Gearboxes

Controllers/Drives	Encoders	Gearboxes	Linear actuators	Stepper	Motor + Controller	Servomotors	Brushless DC	Brushed DC	Index
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Gearboxes



Planetary gearboxes
GP series
Standard

p.379



Planetary gearboxes
JMS series
Economy

p.393



Spur gearboxes

p.401

Technical introduction		374
Planetary gearboxes - GP Standard series		Torque* (Nm) 379
08GPS	0,008...0,1	380
10GPS	0,01...0,15	381
12GPS	0,08...0,17	382
16GPS	0,2...0,45	383
22GPS	0,5...1,5	384
26GPS	0,75...4,5	385
32GPS	1,25...5	386
GP42-S	6,5...19	387
GP56-S/N/T	1,5...35	388
GP80-T	23...67	391
Planetary gearboxes - JMS Economy series		Torque* (Nm) 393
22JMS	0,6...2	394
28JMS	1,2...4	395
36JMS	2...6	396
42JMS	3...10	397
56JMS	9...30	398
Spur gearboxes		Torque* (Nm) 401
12GSS	0,01...0,025	402
16GSS/GSP/GST	0,01...0,1	403
24GSP	0,1	406

* Nominal Output Torque

Term	
Number of stages	States the number of gear stages engaged in series.
Reduction ratio	The ratio by which the speed of the gear output shaft is smaller than the motor speed.
Rated output torque	Recommended load applied to the ouput shaft for continuous operation.
Max. output torque	Maximum load possible applied to the ouput shaft; exceeding this value will reduce service life.
Rated input speed	Recommended input speed for continuous operation.
Max. input speed	Maximum inpout speed possible; exceeding this value will reduce service life.
Efficiency	The specified efficiency is a maximum value that is valid for maximum continuous torque.
Moment of inertia	Is the mass moment of inertia of the gearbox, based on the axis of rotation.
Length	Total gearbox length.
Weight	Total gearbox mass.
Backlash	The backlash is defined as the recoil angle of the output shaft, when the gearbox input pinion is locked in a fixed position. The recoil angle is the angle through which the output shaft can be rotated back and forth with this condition. The amount of torque used for this validation test is 1-2% of the rated continuous torque.
Max radial load	The maximum radial load is the maximum load that can be applied radially (perpendicular) to the output shaft at a given position of the shaft. This load value is based upon a given output shaft reference speed in RPM. The service life may be compromised if this load value is exceeded.
Max axial load	The maximum axial load is the maximum load that can be applied axially to the output shaft. This load value is based upon a given output shaft reference speed in RPM. The service life may be compromised if this load value is exceeded.
Max press-fit force	Corresponds to the force with which, for example, a coupling element may be mounted to the gear drive shaft.
Noise level	Noise at given speed and distance
Operating temperature	Temperatures at which the gearbox can operate.
Service Life	Operational lifetime estimation based on rated parameters.
Protection class	IP (or "Ingress Protection") ratings are defined in international standard EN 60529 (British BS EN 60529:1992, European IEC 60509:1989). They are used to define levels of sealing effectiveness of electrical enclosures against intrusion from foreign bodies (tools, dirt etc) and moisture.

Product families
Planetary gearboxes
Spur gearboxes

A planetary gearbox is a gearbox with the input shaft and the output shaft aligned. This type of gearbox is used to transfer the largest torque in the most compact form (known as torque density).

The planetary gearbox got its name because of how the different gears move together. In a planetary gearbox we see a sun (solar) gear, satellite (ring) gear and two or more planet gears. Normally, the sun-gear is driven and thus move the planet gears locked in the planet carrier and form the output shaft. The satellite gears have a fixed position in relation to the outside world. This looks like our planetary solar system and that is where the name comes from.

Planetary gearboxes

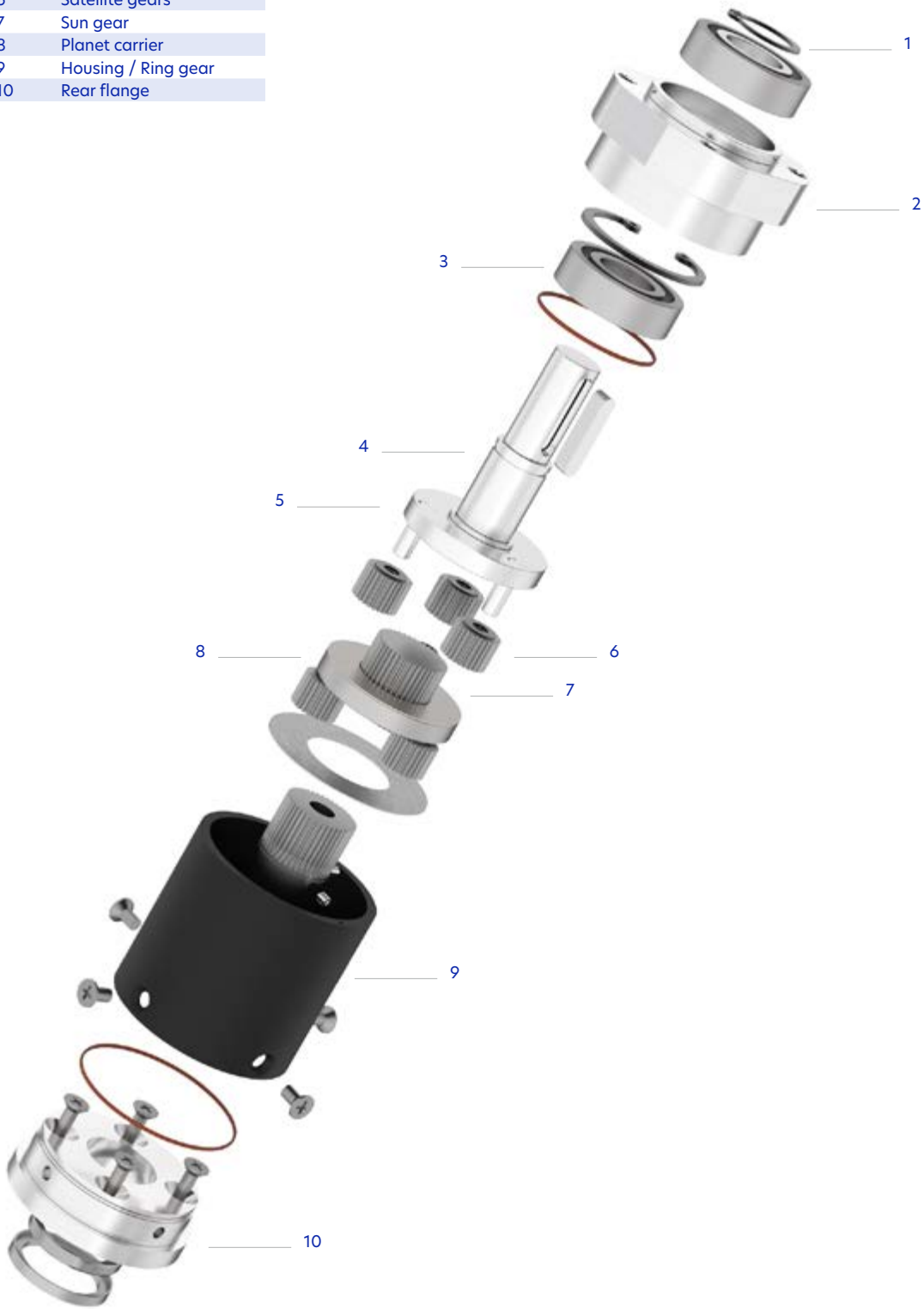
A spur gear head's construction consists of larger gears that mesh with smaller gears. The gears are mounted on parallel shafts, but offset from one another. The meshing of the smaller gears with the larger gears reduces rpm transforming it into torque. The tooth pitch of the gears is critical in determining the final output speed and torque of the gear motor. Adding multiple gear stages within the gear head produces larger reduction ratios resulting in even lower output speed and higher output torque. Spur gearheads have a single contact point at any time. This means that any load is held entirely by a single point of contact between two gears.

Spur gearboxes

Advantages at a glance
Compact size
High efficiency
Low backlash
High torque to weight ratio

Advantages at a glance
Simple design and less expensive
Best for low-torque and low-speed applications

Planetary gearbox Composition	
1	Retaining ring
2	Front flange
3	Ball bearing
4	Output shaft
5	Satellite gear shafts
6	Satellite gears
7	Sun gear
8	Planet carrier
9	Housing / Ring gear
10	Rear flange





Planetary gearboxes
GP series
Standard

p.379



Planetary gearboxes
JMS series
Economy

p.393

Advantages at a glance
High efficiency
Low backlash
High torque to weight ratio

Our high performance planetary gearboxes are designed for robustness to sustain intermittent or sudden load changes. Depending on the diameter size, these gearboxes can sustain a high input speed or a high output torque, and are also ideally suited for precise positioning applications.

Planetary gearboxes - GP Standard series	Torque* (Nm)	379
08GPS	0,008...0,1	380
10GPS	0,01...0,15	381
12GPS	0,08...0,17	382
16GPS	0,2...0,45	383
22GPS	0,5...1,5	384
26GPS	0,75...4,5	385
32GPS	1,25...5	386
GP42-S	6,5...19	387
GP56-S	13,55...26,38	388
GP56-N (Low noise)	1,5...11,8	389
GP56-T (High radial load)	13,55...35	390
GP80-T (High radial load)	23...67	391

Planetary gearboxes - JMS Economy series	Torque* (Nm)	393
22JMS	0,6...2	394
28JMS	1,2...4	395
36JMS	2...6	396
42JMS	3...10	397
56JMS	9...30	398

Planetary gearboxes

*Nominal Output Torque

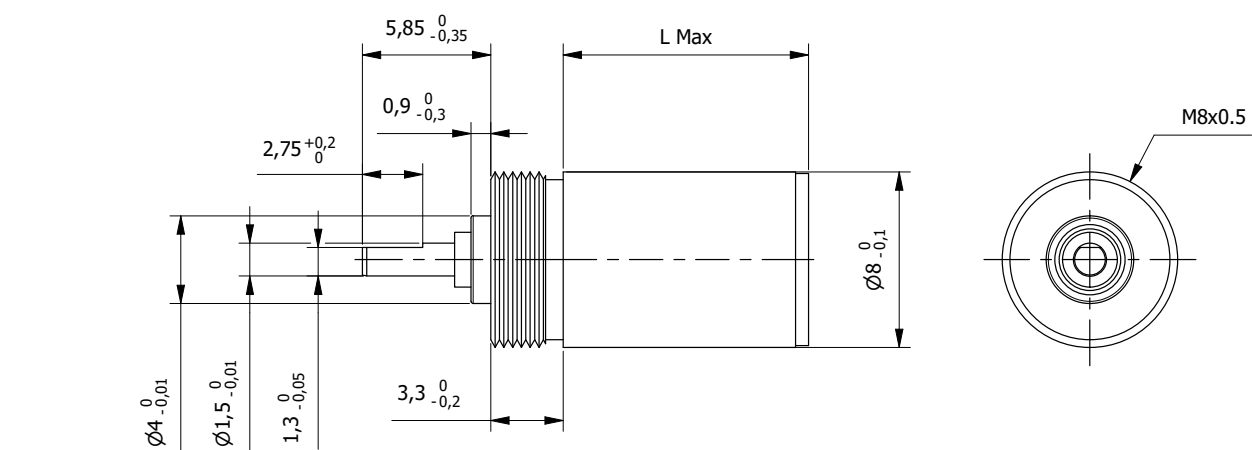


Planetary Gearboxes

GP series - Standard

Planetary gearboxes - GP Standard series		Torque* (Nm)
08GPS	0,008...0,1	380
10GPS	0,01...0,15	381
12GPS	0,08...0,17	382
16GPS	0,2...0,45	383
22GPS	0,5...1,5	384
26GPS	0,75...4,5	385
32GPS	1,25...5	386
GP42-S	6,5...19	387
GP56-S	13,55...26,38	388
GP56-N (Low noise)	1,5...11,8	389
GP56-T (High radial load)	13,55...35	390
GP80-T (High radial load)	23...67	391

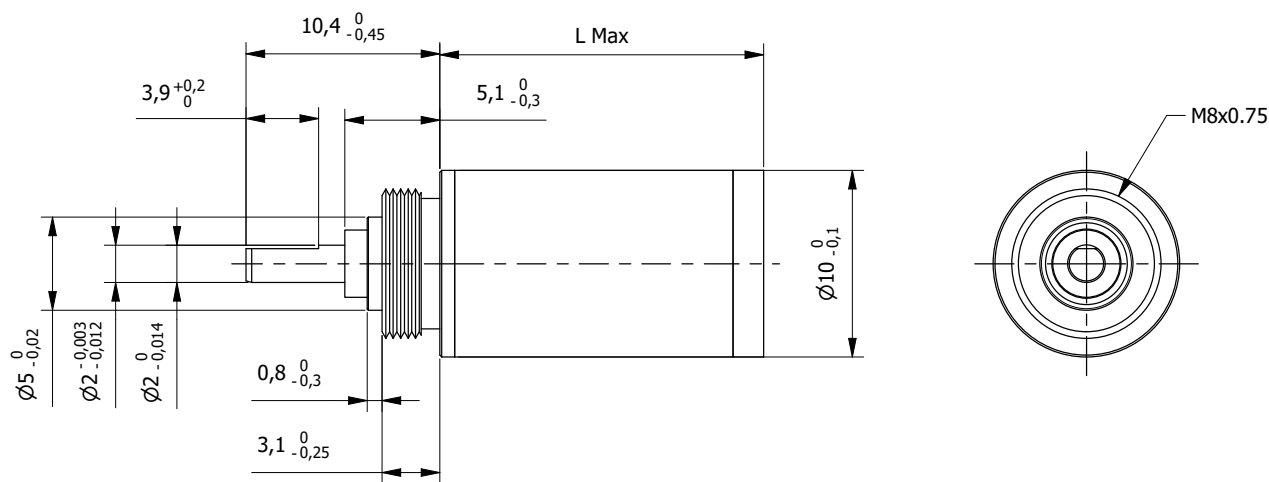
* Nominal Output Torque



Specification							
	Model	...1N-4	...2N-16	...2N-36	...3N-64	...3N-216	
1	Stages	1	2	2	3	3	
2	Reduction Ratio	4	16	36	64	216	
3	Nominal Output Torque	Nm	0,01	0,02	0,008	0,06	0,02
4	Max. Output Torque	Nm	0,015	0,03	0,012	0,09	0,03
5	Recommended Input Speed	rpm	12000	12000	12000	12000	12000
6	Max. Input Speed	rpm	20000	20000	20000	20000	20000
7	Efficiency	%	90	81	76	73	66
8	Average Backlash no-load	°	1,8	2	2,4	2,2	2,6
9	Max. Axial load (dynamic)	N	5	5	5	5	5
10	Max. Radial load (5mm from flange)	N	5	6	6	7	7
11	Length (L)	mm	5,5	8,1	8,3	10,7	11,1
12	Weight	g	2,6	3,2	3,2	3,8	3,8

Specification					
	Model	...4N-256	...4N-1296	...5N-1024	
1	Stages	4	4	5	
2	Reduction Ratio	256	1296	1024	
3	Nominal Output Torque	Nm	0,08	0,04	0,1
4	Max. Output Torque	Nm	0,12	0,06	0,15
5	Recommended Input Speed	rpm	12000	12000	12000
6	Max. Input Speed	rpm	20000	20000	20000
7	Efficiency	%	65	57	59
8	Average Backlash no-load	°	2,5	2,8	2,8
9	Max. Axial load (dynamic)	N	5	5	5
10	Max. Radial load (5mm from flange)	N	8	8	8
11	Length (L)	mm	13,3	13,9	15,9
12	Weight	g	4,4	4,4	5

Characteristics	
Item	
Operating temperature	-15 to +80°C
Bearing output	Ball bearings



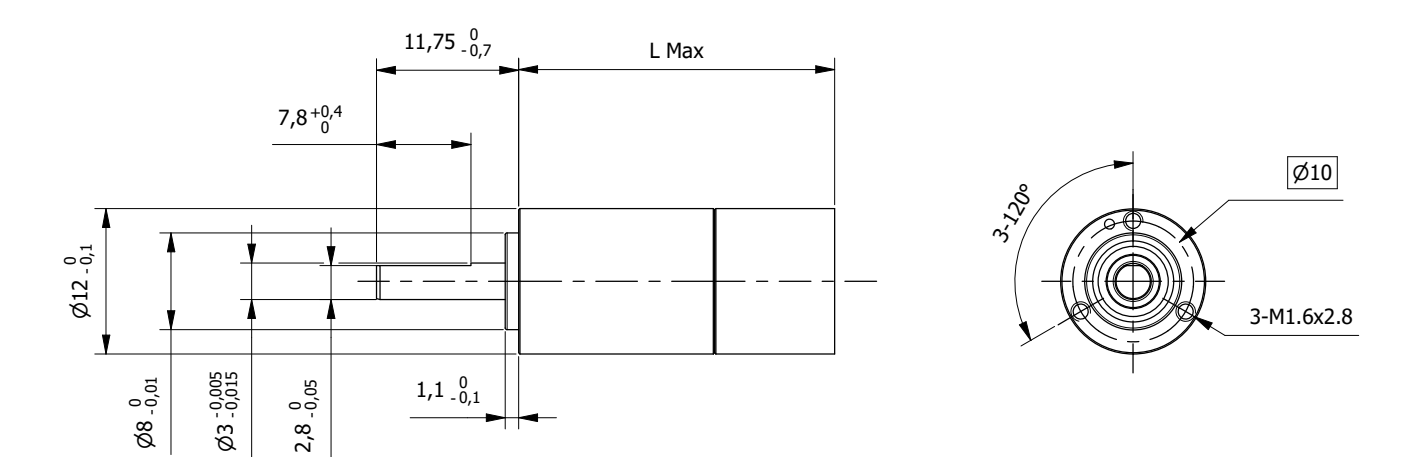
Specification						
	Model	...1N-4	...2N-16	...3N-64	...4N-256	...5N-1024
1	Stages	1	2	3	4	5
2	Reduction Ratio	4	16	64	256	1024
3	Nominal Output Torque	Nm	0,01	0,03	0,1	0,15
4	Max. Output Torque	Nm	0,02	0,05	0,15	0,2
5	Recommended Input Speed	rpm	12000	12000	12000	12000
6	Max. Input Speed	rpm	15000	15000	15000	15000
7	Efficiency	%	90	81	73	65
8	Average Backlash no-load	°	1,5	1,8	2	2,2
9	Max. Axial load (dynamic)	N	5	5	5	5
10	Max. Radial load (5mm from flange)	N	5	10	15	20
11	Length (L)	mm	9,9	13,4	16,6	19,8
12	Weight	g	6,7	7,2	7,7	8,2

Characteristics	
Item	
Operating temperature	-40 to +80°C
Bearing output	Ball bearings

Planetary Gearbox 12GPS

Ø 12mm

0,08 to 0,17Nm



Specification						
Model	...1N-5,3	...2N-21	...2N-28	...3N-83	...3N-138	...3N-172
1 Stages	1	2	2	3	3	3
2 Reduction Ratio	5,3	21	28	83	138	172
3 Nominal Output Torque	Nm	0,08	0,11	0,11	0,14	0,14
4 Max. Output Torque	Nm	0,1	0,14	0,14	0,18	0,18
5 Recommended Input Speed	rpm	16000	16000	16000	16000	16000
6 Max. Input Speed	rpm	20000	20000	20000	20000	20000
7 Efficiency	%	90	80	80	75	75
8 Average Backlash no-load	°	1,2	1,5	1,5	1,8	1,8
9 Max. Axial load (dynamic)	N	20	20	20	20	20
10 Max. Radial load (5mm from flange)	N	30	35	35	50	50
11 Length (L)	mm	15,5	20,4	20,4	25,2	25,2
12 Weight	g	11	14	14	17	17

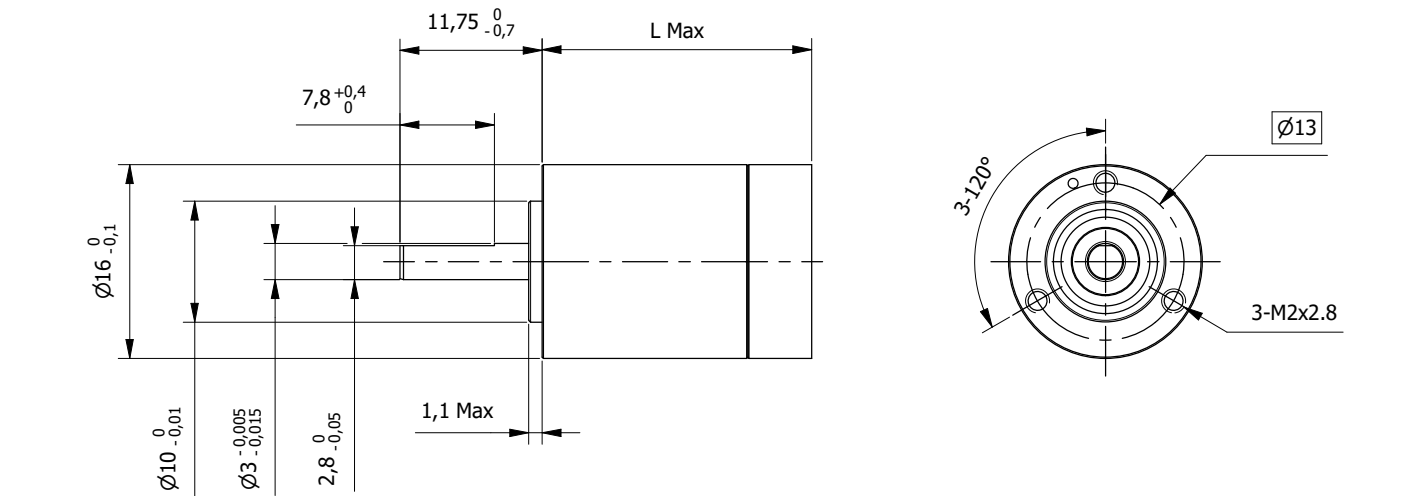
Specification				
Model	...4N-326	...4N-439	...4N-679	...4N-913
1 Stages	4	4	4	4
2 Reduction Ratio	326	439	679	913
3 Nominal Output Torque	Nm	0,17	0,17	0,17
4 Max. Output Torque	Nm	0,21	0,21	0,21
5 Recommended Input Speed	rpm	16000	16000	16000
6 Max. Input Speed	rpm	20000	20000	20000
7 Efficiency	%	65	65	65
8 Average Backlash no-load	°	2,1	2,1	2,1
9 Max. Axial load (dynamic)	N	20	20	20
10 Max. Radial load (5mm from flange)	N	50	50	50
11 Length (L)	mm	30,1	30,1	30,1
12 Weight	g	19	19	19

Characteristics	
Item	
Operating temperature	-40 to +100°C
Bearing output	Ball bearings

Planetary Gearbox 16GPS

Ø 16mm

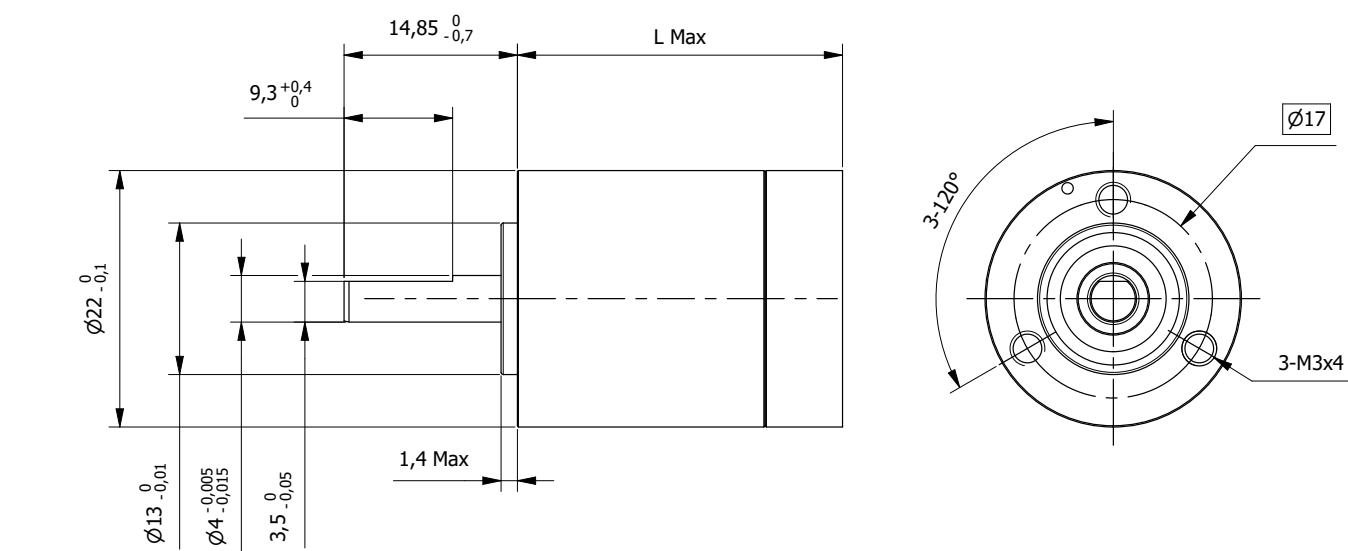
0,2 to 0,45Nm



Specification						
Model	...1N-5,3	...2N-21	...2N-28	...3N-83	...3N-138	...3N-172
1 Stages	1	2	2	3	3	3
2 Reduction Ratio	5,3	21	28	83	138	172
3 Nominal Output Torque	Nm	0,2	0,25	0,25	0,35	0,35
4 Max. Output Torque	Nm	0,25	0,35	0,35	0,45	0,45
5 Recommended Input Speed	rpm	12000	14000	14000	16000	16000
6 Max. Input Speed	rpm	15000	17500	17500	20000	20000
7 Efficiency	%	90	80	80	75	75
8 Average Backlash no-load	°	1	1,2	1,2	1,3	1,3
9 Max. Axial load (dynamic)	N	20	20	20	20	20
10 Max. Radial load (5mm from flange)	N	30	45	45	70	70
11 Length (L)	mm	15,8	20,7	20,7	25,7	25,7
12 Weight	g	20	25	25	27	27

Specification				
Model	...4N-326	...4N-439	...4N-679	...4N-913
1 Stages	4	4	4	4
2 Reduction Ratio	326	439	679	913
3 Nominal Output Torque	Nm	0,45	0,45	0,45
4 Max. Output Torque	Nm	0,55	0,55	0,55
5 Recommended Input Speed	rpm	16000	16000	16000
6 Max. Input Speed	rpm	20000	20000	20000
7 Efficiency	%	65	65	65
8 Average Backlash no-load	°	1,4	1,4	1,4
9 Max. Axial load (dynamic)	N	20	20	20
10 Max. Radial load (5mm from flange)	N	70	70	70
11 Length (L)	mm	30,6	30,6	30,6
12 Weight	g	31	31	31

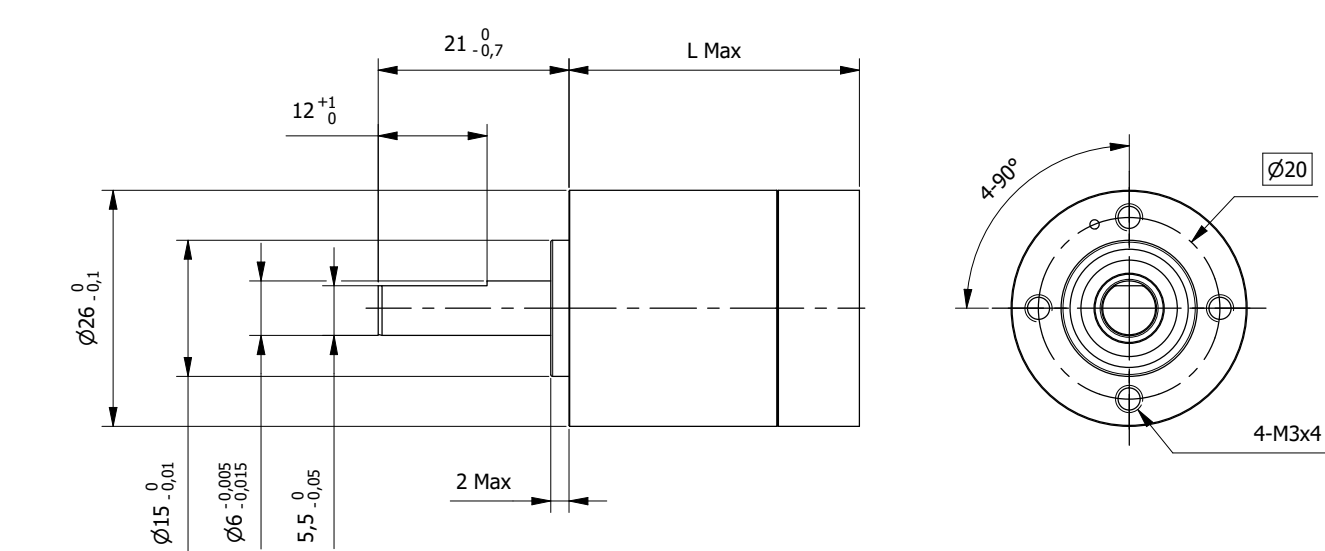
Characteristics	
Item	
Operating temperature	-40 to +100°C
Bearing output	Ball bearings



Specification						
Model	...1N-5,3	...2N-21	...2N-28	...3N-83	...3N-138	...3N-172
1 Stages	1	2	2	3	3	3
2 Reduction Ratio	5,3	21	28	83	138	172
3 Nominal Output Torque	Nm	0,5	0,7	1,2	1,2	1,2
4 Max. Output Torque	Nm	0,6	0,9	1,5	1,5	1,5
5 Recommended Input Speed	rpm	8000	10000	10000	12000	12000
6 Max. Input Speed	rpm	10000	12500	12500	15000	15000
7 Efficiency	%	90	81	81	74	74
8 Average Backlash no-load	°	0,85	1,05	1,05	1,2	1,2
9 Max. Axial load (dynamic)	N	40	40	40	40	40
10 Max. Radial load (10mm from flange)	N	65	100	100	120	120
11 Length (L)	mm	19,9	26,4	26,4	32,2	32,2
12 Weight	g	45	58	58	67	67

Specification				
Model	...4N-326	...4N-439	...4N-679	...4N-913
1 Stages	4	4	4	4
2 Reduction Ratio	326	439	679	913
3 Nominal Output Torque	Nm	1,5	1,5	1,5
4 Max. Output Torque	Nm	1,9	1,9	1,9
5 Recommended Input Speed	rpm	12000	12000	12000
6 Max. Input Speed	rpm	15000	15000	15000
7 Efficiency	%	66	66	66
8 Average Backlash no-load	°	1,35	1,35	1,35
9 Max. Axial load (dynamic)	N	40	40	40
10 Max. Radial load (10mm from flange)	N	120	120	120
11 Length (L)	mm	43	43	43
12 Weight	g	89	89	89

Characteristics	
Item	
Operating temperature	-40 to +100°C
Bearing output	Ball bearings



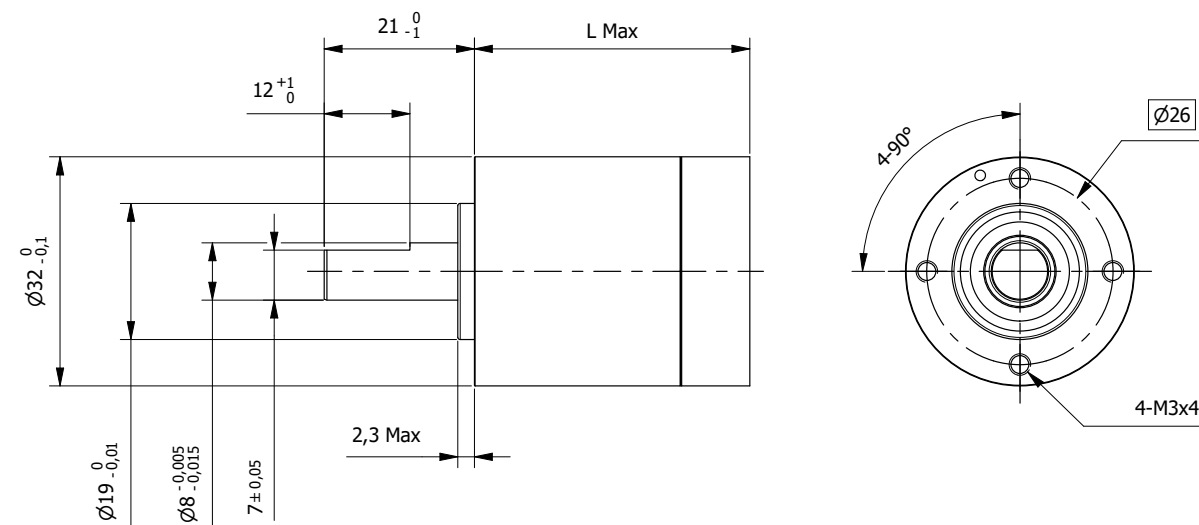
Specification						
Model	...1N-5,3	...2N-21	...2N-28	...3N-83	...3N-138	...3N-172
1 Stages	1	2	2	3	3	3
2 Reduction Ratio	5,3	21	28	83	138	172
3 Nominal Output Torque	Nm	0,75	2,25	2,25	4,5	4,5
4 Max. Output Torque	Nm	1,1	3,2	3,2	6,2	6,2
5 Recommended Input Speed	rpm	7000	8000	8000	10000	10000
6 Max. Input Speed	rpm	8750	10000	10000	12500	12500
7 Efficiency	%	90	78	78	75	75
8 Average Backlash no-load	°	0,75	0,95	0,95	1,1	1,1
9 Max. Axial load (dynamic)	N	80	80	80	80	80
10 Max. Radial load (10mm from flange)	N	95	145	145	150	150
11 Length (L)	mm	21,3	30,2	30,2	35,5	35,5
12 Weight	g	75	95	95	105	105

Characteristics	
Item	
Operating temperature	-40 to +100°C
Bearing output	Ball bearings

Planetary Gearbox 32GPS

Ø 32mm

1,25 to 5Nm



Specification					
	Model	...1N-5,3	...2N-16	...2N-26	...2N-35
1	Stages	1	2	2	2
2	Reduction Ratio	5,3	16	26	35
3	Nominal Output Torque	Nm	1,25	2,9	2,9
4	Max. Output Torque	Nm	1,6	3,6	3,6
5	Recommended Input Speed	rpm	6000	7000	7000
6	Max. Input Speed	rpm	7500	8750	8750
7	Efficiency	%	90	78	78
8	Average Backlash no-load	°	0,55	0,7	0,7
9	Max. Axial load (dynamic)	N	110	110	110
10	Max. Radial load (10mm from flange)	N	160	180	180
11	Length (L)	mm	26,7	36,3	36,3
12	Weight	g	140	185	185

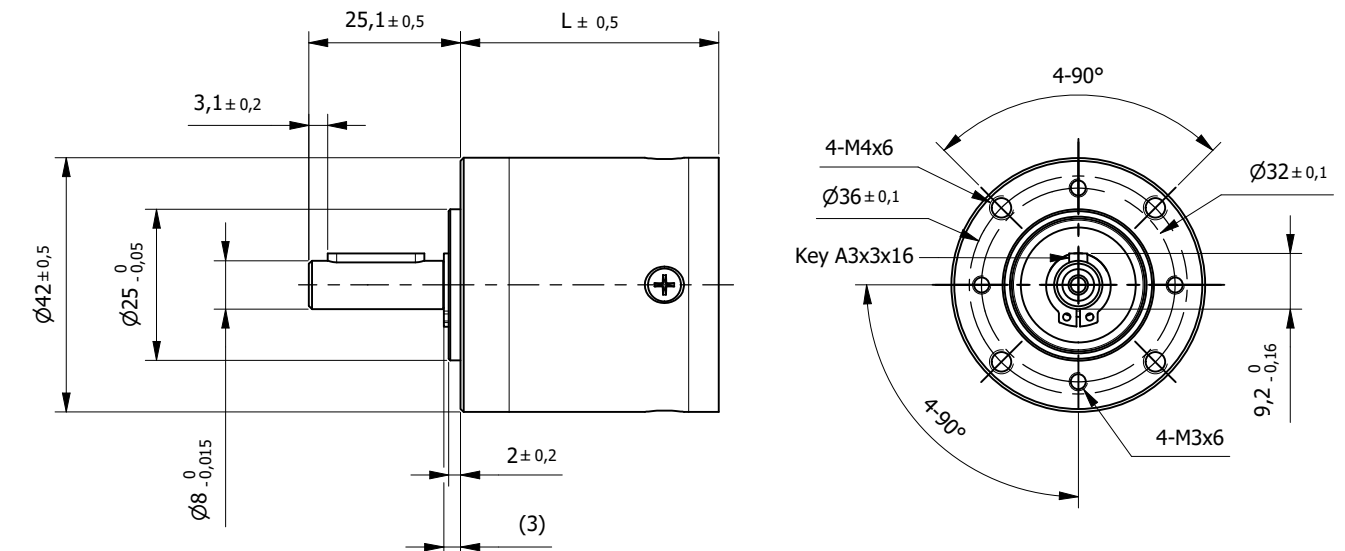
Specification				
	Model	...3N-62	...3N-138	...3N-186
1	Stages	3	3	3
2	Reduction Ratio	62	138	186
3	Nominal Output Torque	Nm	5	5
4	Max. Output Torque	Nm	6,25	6,25
5	Recommended Input Speed	rpm	8000	8000
6	Max. Input Speed	rpm	10000	10000
7	Efficiency	%	75	75
8	Average Backlash no-load	°	0,9	0,9
9	Max. Axial load (dynamic)	N	110	110
10	Max. Radial load (10mm from flange)	N	180	180
11	Length (L)	mm	43,9	43,9
12	Weight	g	230	230

Characteristics	
Item	
Operating temperature	-40 to +100°C
Bearing output	Ball bearings

Planetary Gearbox GP42-S

Ø 42mm

6,5 to 19Nm



Specification							
	Model	...1 / 3.9	...1 / 4.3	...1 / 5.3	...1 / 6	...1 / 7.1	...1 / 8.7
1	Stages	1	1	1	1	1	1
2	Reduction Ratio	3,93	4,27	5,25	6	7,07	8,73
3	Nominal Output Torque	Nm	6,5	6,9	7	7,3	7
4	Max. Output Torque	Nm	13	13,8	14	14,6	14
5	Recommended Input Speed	rpm	3000	3000	3000	3000	3000
6	Max. Input Speed	rpm	8236	9187	11943	14050	18000
7	Efficiency	%	≈90%	≈90%	≈90%	≈90%	≈90%
8	Moment of Inertia ≤φ6,35	kgmm²	1,23	1,05	0,78	0,67	0,46
9	Length (L)	mm	42,7	42,7	42,7	42,7	42,7
10	Weight	kg	0,3	0,3	0,3	0,3	0,3

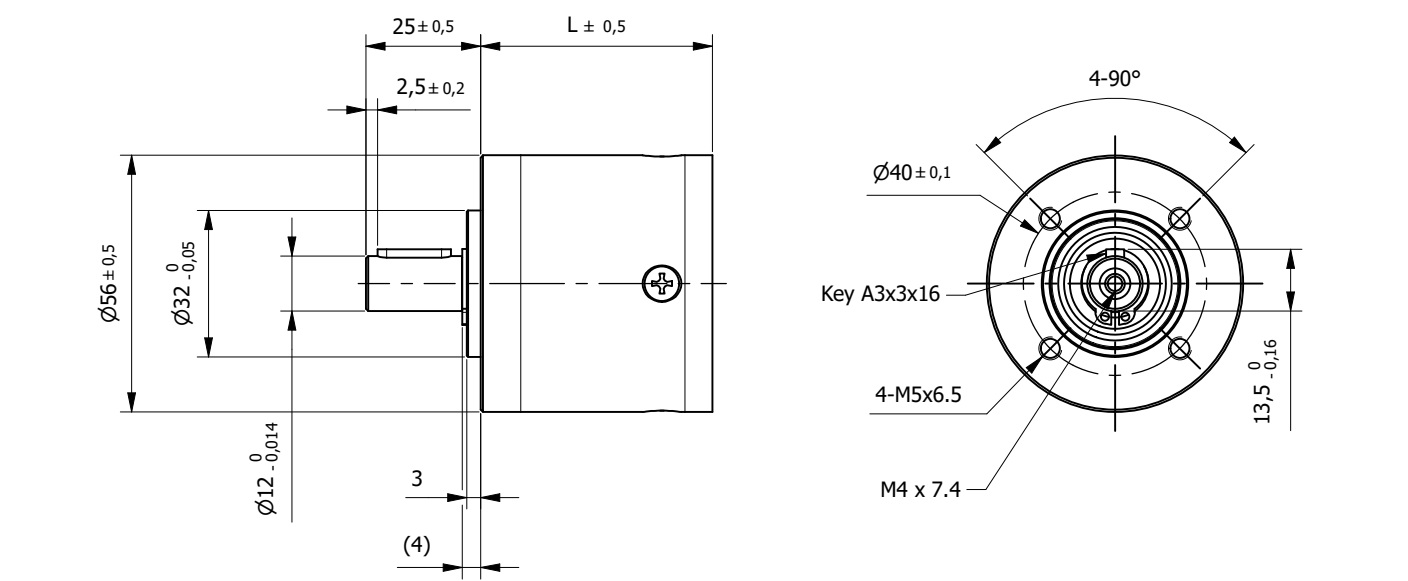
Specification							
	Model	...2 / 15.5	...2 / 20.6	...2 / 25.6	...2 / 45.8	...3 / 100	...3 / 250
1	Stages	2	2	2	2	3	3
2	Reduction Ratio	15,45	20,64	25,62	45,82	95,688	240,545
3	Nominal Output Torque	Nm	9,1	9,4	8,6	12,2	19
4	Max. Output Torque	Nm	18,2	18,8	17,2	24,4	36
5	Recommended Input Speed	rpm	3000	3000	3000	3000	3000
6	Max. Input Speed	rpm	8236	11943	14050	18000	9187
7	Efficiency	%	≈85%	≈85%	≈85%	≈85%	≈78%
8	Moment of Inertia ≤φ6,35	kgmm²	1,26	0,44	0,67	0,46	0,71
9	Length (L)	mm	56,6	56,6	56,6	56,6	70,6
10	Weight	kg	0,4	0,4	0,4	0,4	0,5

Characteristics	
Item	
Backlash at 2% nominal output torque	≤1°
Max. Radial load (middle of the key)	305N at n out=100rpm 210N at n out=300rpm 140N at n out=1000rpm
Max. Axial load (output shaft center)	890N at n out=100rpm 575N at n out=300rpm 340N at n out=1000rpm
Max. Press fit force	320N
Noise level (at recommended speed and 1m)	≤55 dB
Operating temperature	-15 to +90°C
Service Life (at recommended input speed)	10000h
Protection class	IP54
Bearing output	Ball bearings

Planetary Gearbox GP56-S

Ø 56mm

13,55 to 26,38Nm



Specification								
Model	...1 / 3.3	...1 / 3.9	...1 / 4.2	...1 / 5.1	...1 / 6.5	...1 / 7.7	...1 / 9.5	
1 Stages	1	1	1	1	1	1	1	
2 Reduction Ratio	3,29	3,94	4,24	5,09	6,53	7,71	9,55	
3 Nominal Output Torque	Nm	14,19	14,68	14,76	15,28	16,29	16,58	13,55
4 Max. Output Torque	Nm	28,38	29,36	29,52	30,56	32,58	33,16	27,1
5 Recommended Input Speed	rpm	3500	3500	3500	3500	3500	3500	3500
6 Max. Input Speed	rpm	4658	5968	6589	8307	8988	10919	13000
7 Efficiency	%	≈92%	≈92%	≈92%	≈92%	≈92%	≈92%	≈92%
8 Moment of Inertia ≤φ8	kgmm²	15,05	5,48	4,67	3,13	2,62	2,27	4,3
9 Length (L)	mm	50,6	50,6	50,6	50,6	50,6	50,6	50,6
10 Weight	kg	0,5	0,5	0,5	0,5	0,5	0,5	0,5

Specification								
Model	...2 / 10.8	...2 / 15.5	...2 / 20	...2 / 25.7	...2 / 32.7	...2 / 42.6	...2 / 62.3	
1 Stages	2	2	2	2	2	2	2	
2 Reduction Ratio	10,84	15,51	20,03	25,71	32,72	42,63	62,33	
3 Nominal Output Torque	Nm	20,27	22,01	23,03	23,13	22,24	26,38	26,38
4 Max. Output Torque	Nm	40,54	44,02	46,06	46,26	44,48	52,76	52,76
5 Recommended Input Speed	rpm	3500	3500	3500	3500	3500	3500	3500
6 Max. Input Speed	rpm	4658	5968	8307	8988	10919	8988	13000
7 Efficiency	%	≈85%	≈85%	≈85%	≈85%	≈85%	≈85%	≈85%
8 Moment of Inertia ≤φ8	kgmm²	8,7	5,04	3,81	2,51	2,19	2,46	1,87
9 Length (L)	mm	67,8	67,8	67,8	67,8	67,8	67,8	67,8
10 Weight	kg	0,8	0,8	0,8	0,8	0,8	0,8	0,8

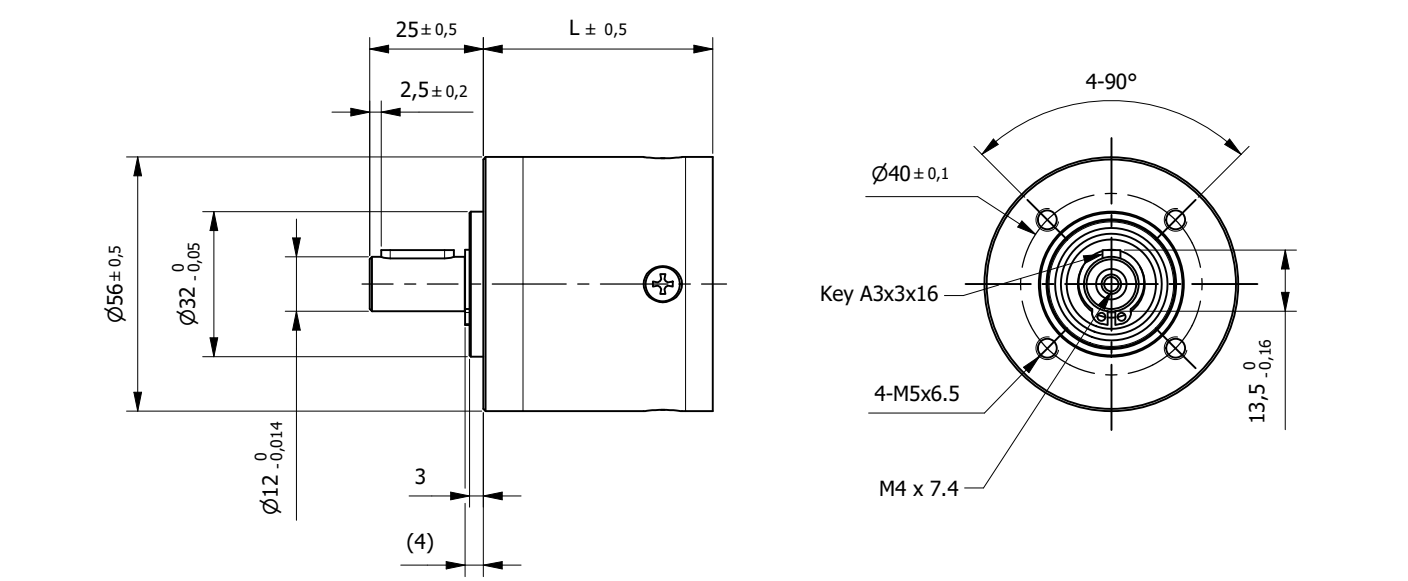
Characteristics	
Item	
Backlash at 2% nominal output torque	≤0,5°
Max. Radial load (middle of the key)	515N at n out=100rpm 355N at n out=300rpm 240N at n out=1000rpm
Max. Axial load (output shaft center)	1460N at n out=100rpm 935N at n out=300rpm 555N at n out=1000rpm
Max. Press fit force	500N
Noise level (at recommended speed and 1m)	≤55 dB
Operating temperature	-15 to +90°C
Service Life (at recommended input speed)	10000h
Protection class	IP 54
Bearing output	Ball bearings

Planetary Gearbox GP56-N

Ø 56mm

Low Noise

1,5 to 11,8Nm



Specification				
Model	...1 / 3.2	...1 / 4	...1 / 5.4	...1 / 6.2
1 Stages	1	1	1	1
2 Reduction Ratio	3,24	3,96	5,37	6,19
3 Nominal Output Torque	Nm	2	1,7	1,5
4 Max. Output Torque	Nm	6,09	5,9	4,6
5 Recommended Input Speed	rpm	3500	3500	3500
6 Max. Input Speed	rpm	4700	6050	8800
7 Efficiency	%	≈92%	≈92%	≈92%
8 Moment of Inertia ≤φ8	kgmm²	4,09	2,08	0,88
9 Length (L)	mm	56	56	56
10 Weight	kg	0,3	0,3	0,3

Specification					
Model	...2 / 10.7	...2 / 15.6	...2 / 20.2	...2 / 25.9	...2 / 35
1 Stages	2	2	2	2	2
2 Reduction Ratio	10,68	15,61	20,17	25,88	35,05
3 Nominal Output Torque	Nm	6,4	7,4	9,2	11,8
4 Max. Output Torque	Nm	12,6	15,1	14,8	19
5 Recommended Input Speed	rpm	3500	3500	3500	3500
6 Max. Input Speed	rpm	4700	6050	6050	8800
7 Efficiency	%	≈85%	≈85%	≈85%	≈85%
8 Moment of Inertia ≤φ8	kgmm²	4,2	2,04	1,97	1,92
9 Length (L)	mm	73	73	73	73
10 Weight	kg	0,4	0,4	0,4	0,4

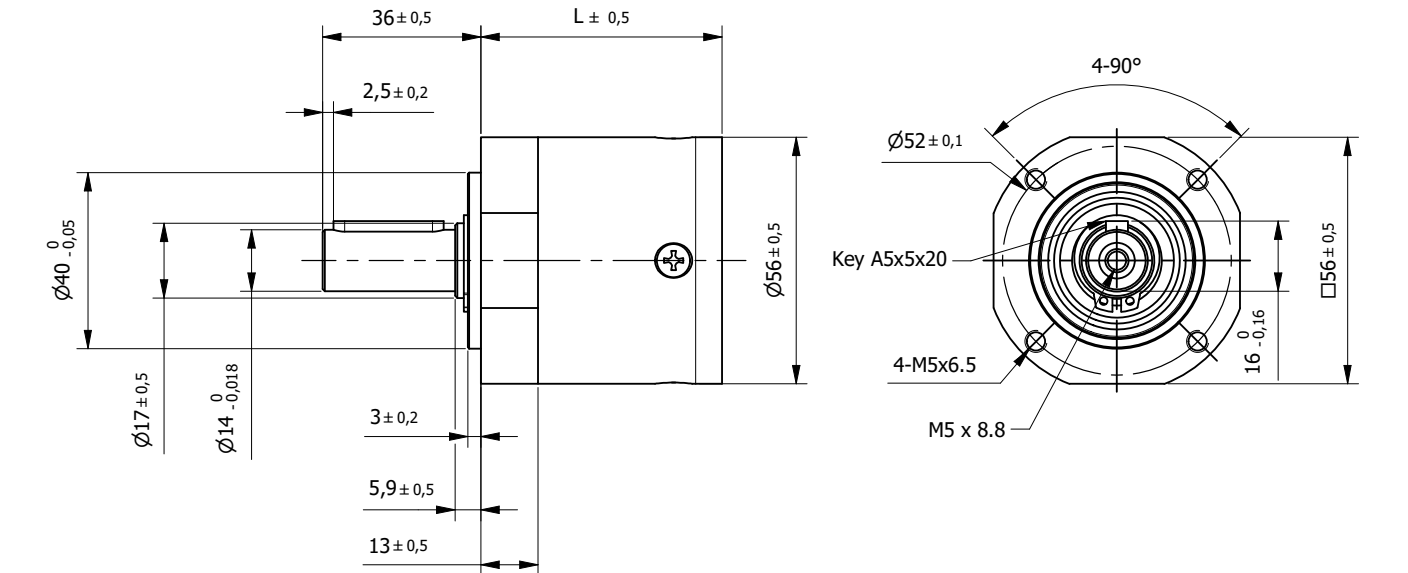
Characteristics	
Item	
Backlash at 2% nominal output torque	≤1°
Max. Radial load (middle of the key)	515N at n out=100rpm 355N at n out=300rpm 240N at n out=1000rpm
Max. Axial load (output shaft center)	1460N at n out=100rpm 935N at n out=300rpm 555N at n out=1000rpm
Max. Press fit force	500N
Noise level (at recommended speed and 1m)	≤50 dB
Operating temperature	-15 to +90°C
Service Life (at recommended input speed)	5000h
Protection class	IP 54
Bearing output	Ball bearings

Planetary Gearbox GP56-T

High Radial Load

Ø 56mm

13,55 to 35Nm



Specification								
Model	...1 / 3.3	...1 / 3.9	...1 / 4.2	...1 / 5.1	...1 / 6.5	...1 / 7.7	...1 / 9.5	
1 Stages	1	1	1	1	1	1	1	
2 Reduction Ratio	3,29	3,94	4,24	5,09	6,53	7,71	9,55	
3 Nominal Output Torque	Nm	14,19	14,68	14,76	15,28	16,29	16,58	13,55
4 Max. Output Torque	Nm	28,38	29,36	29,52	30,56	32,58	33,16	27,1
5 Recommended Input Speed	rpm	3500	3500	3500	3500	3500	3500	3500
6 Max. Input Speed	rpm	4658	5968	6589	8307	8988	10919	13000
7 Efficiency	%	≈92%	≈92%	≈92%	≈92%	≈92%	≈92%	≈92%
8 Moment of Inertia ≤φ8	kgmm²	15,06	5,48	4,67	3,13	2,6	2,27	4,3
9 Length (L)	mm	54,8	54,8	54,8	54,8	54,8	54,8	54,8
10 Weight	kg	0,5	0,5	0,5	0,5	0,5	0,5	0,5

Specification								
Model	...2 / 10.8	...2 / 15.5	...2 / 20	...2 / 25.7	...2 / 32.7	...2 / 42.6	...2 / 62.3	
1 Stages	2	2	2	2	2	2	2	
2 Reduction Ratio	10,84	15,51	20,03	25,71	32,72	42,63	62,33	
3 Nominal Output Torque	Nm	20,27	22,01	23,03	22,24	26,38	28,38	
4 Max. Output Torque	Nm	40,54	44,02	46,06	46,26	44,48	52,76	
5 Recommended Input Speed	rpm	3500	3500	3500	3500	3500	3500	
6 Max. Input Speed	rpm	4658	5968	8307	8988	10919	8988	13000
7 Efficiency	%	≈85%	≈85%	≈85%	≈85%	≈85%	≈85%	≈85%
8 Moment of Inertia ≤φ8	kgmm²	8,7	5,04	3,81	2,51	2,19	2,46	1,87
9 Length (L)	mm	72	72	72	72	72	72	72
10 Weight	kg	0,8	0,8	0,8	0,8	0,8	0,8	0,8

Specification		
Model	...3 / 100	...3 / 250
1 Stages	3	3
2 Reduction Ratio	101,23	256,23
3 Nominal Output Torque	Nm	34
4 Max. Output Torque	Nm	68
5 Recommended Input Speed	rpm	3500
6 Max. Input Speed	rpm	5968
7 Efficiency	%	≈78%
8 Moment of Inertia ≤φ8	kgmm²	6,446
9 Length (L)	mm	86
10 Weight	kg	1,1

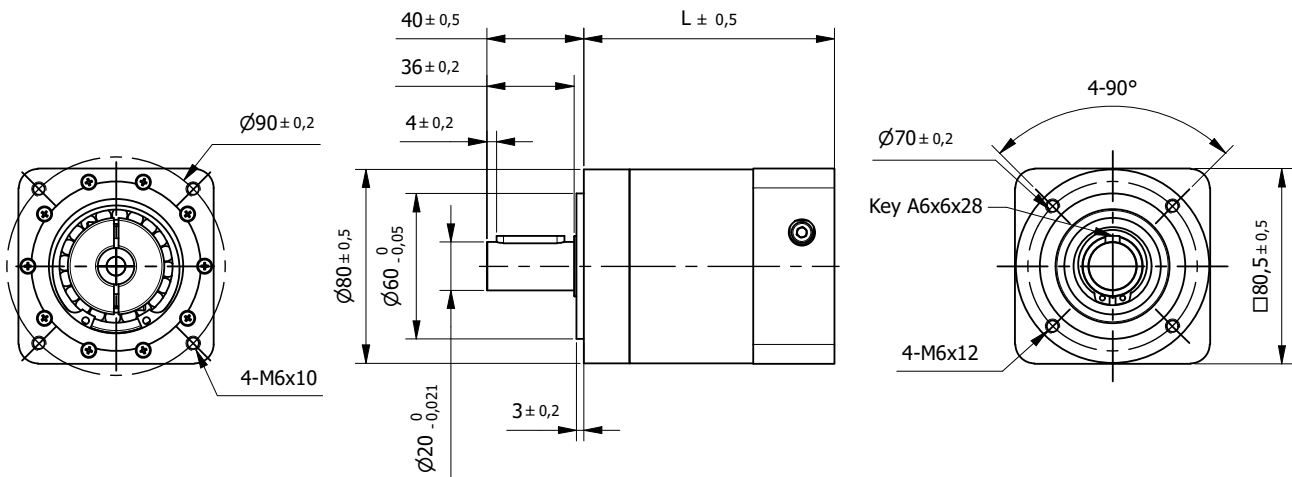
Characteristics	
Item	
Backlash	≤0,5° [1-2 stages]
at 2% nominal output torque	≤0,75° [3 stages]
Max. Radial load (middle of the key)	540N [711N 3-stage] at n out=100rpm 375N [493N 3-stage] at n out=300rpm 250N [330N 3-stage] at n out=1000rpm 1630N [1931N 3-stage] at n out=100rpm 1015N [1329N 3-stage] at n out=300rpm 595N [764N 3-stage] at n out=1000rpm
Max. Axial load (output shaft center)	500N
Max. Press fit force	500N
Noise level (at 1m and 3'000rpm input)	≤55 dB
Operating temperature	-15 to +90°C
Service Life	10000h
Protection class	IP 54
Bearing output	Ball bearings

Planetary Gearbox GP80-T

High Radial Load

Ø 80mm

23 to 67Nm



Specification							
Model	...1 / 3.3	...1 / 4.2	...1 / 4.9	...1 / 6.8	...1 / 8	...1 / 9.7	
1 Stages	1	1	1	1	1	1	
2 Reduction Ratio	3,333	4,182	4,889	6,833	8	9,75	
3 Nominal Output Torque	Nm	40	41	42	33	23	
4 Max. Output Torque	Nm	80	82	84	66	46	
5 Recommended Input Speed	rpm	3000	3000	3000	3000	3000	
6 Max. Input Speed	rpm	3184	4342	5307	7000	7000	
7 Efficiency	%	≈92%	≈92%	≈92%	≈92%	≈92%	
8 Moment of Inertia ≤φ15	kgmm²	74,51	64,96	60,74	28,17	53,37	51,86
9 Length (L)	mm	103,5	103,5	103,5	103,5	103,5	103,5
10 Weight	kg	2,1	2,1	2,1	2,1	2,1	2,1

Specification						
Model	...2 / 11.1	...2 / 16.3	...2 / 20.4	...2 / 26.3	...2 / 30.7	...2 / 66.6
1 Stages	2	2	2	2	2	2
2 Reduction Ratio	11,11	16,296	20,444	26,278	30,75	66,625
3 Nominal Output Torque	Nm	42	56	57	58	67
4 Max. Output Torque	Nm	84	112	114	116	134
5 Recommended Input Speed	rpm	3000	3000	3000	3000	3000
6 Max. Input Speed	rpm	3184	3184	4342	5307	7000
7 Efficiency	%	≈85%	≈85%	≈85%	≈85%	≈85%
8 Moment of Inertia ≤φ15	kgmm²	93,33	92,09	83,39	77,8	74,37
9 Length (L)	mm	129,0	129,0	129,0	129,0	129,0
10 Weight	kg	2,6	2,6	2,6	2,6	2,6

Characteristics	
Item	
Backlash at 2% nominal output torque	≤1°
Max. Radial load (middle of the key)	970N at n out=100rpm 680N at n out=300rpm 455N at n out=1000rpm
Max. Axial load (output shaft center)	2950N at n out=100rpm 1800N at n out=300rpm 1055N at n out=1000rpm
Max. Press fit force	1500N
Noise level (at recommended speed and 1m)	≤60 dB
Operating temperature	-15 to +90°C
Service Life (at recommended input speed)	10000h
Protection class	IP 54
Bearing output	Ball bearings



Planetary Gearboxes

JMS series - Economy

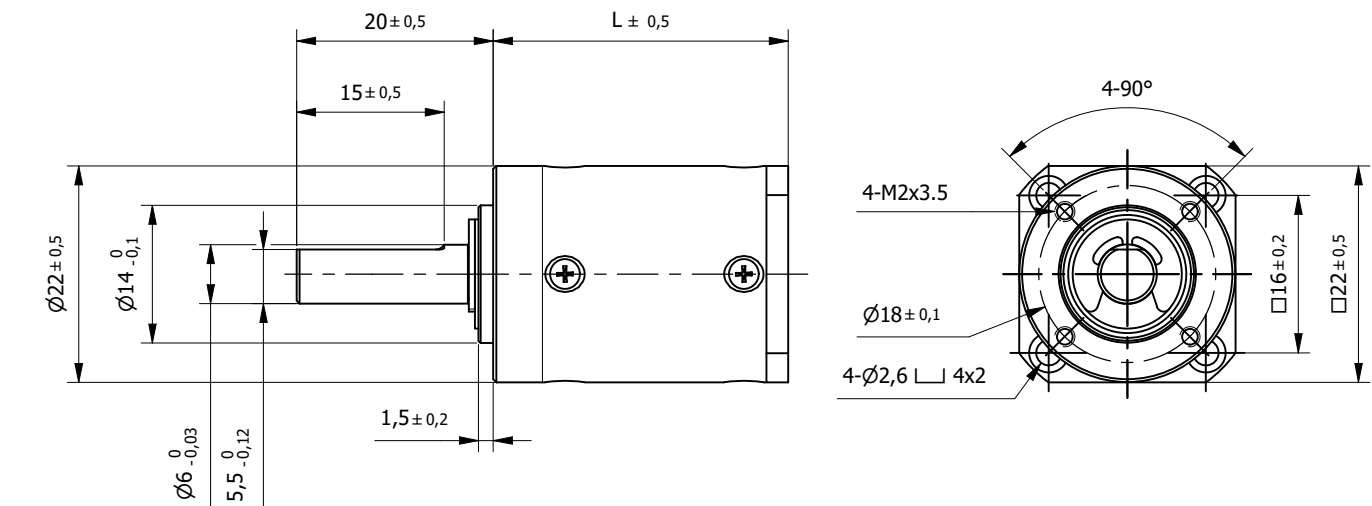
Planetary gearboxes - JMS Economy series	Torque* (Nm)	
22JMS	0,6...2	394
28JMS	1,2...4	395
36JMS	2...6	396
42JMS	3...10	397
56JMS	9...30	398

* Nominal Output Torque

Planetary Gearbox 22JMS

Ø 22mm

0,6 to 2Nm



Specification						
Model	...	1 / 3,7	...	1 / 5,2	...	2 / 14
1 Stages		1		1		2
2 Exact Ratio		3,71		5,18		13,76
3 Nominal Output Torque	Nm	0,6		0,6		1
4 Max. Output Torque	Nm	2		2		3
5 Recommended Input Speed	rpm	4000		4000		4000
6 Efficiency	%	≈90%		≈90%		≈81%
7 Backlash at No-load		≤1°		≤1°		≤1,2°
8 Length (L)	mm	23,4		23,4		30,0
9 Weight	kg	0,031		0,031		0,037

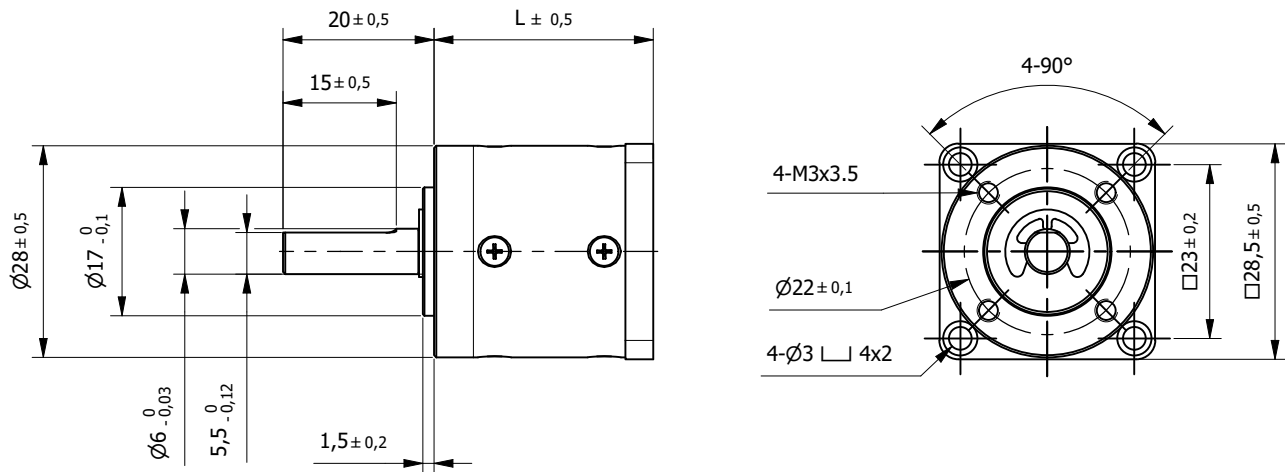
Specification					
Model	...	3 / 51	...	3 / 71	...
1 Stages		3		3	
2 Exact Ratio		51,06		71,3	
3 Nominal Output Torque	Nm	2		2	
4 Max. Output Torque	Nm	6		6	
5 Recommended Input Speed	rpm	4000		4000	
6 Efficiency	%	≈73%		≈73%	
7 Backlash at No-load		≤1,5°		≤1,5°	
8 Length (L)	mm	36,4		36,4	
9 Weight	kg	0,043		0,043	

Characteristics	
Item	
Max. Radial load (middle of the key)	50N
Max. Axial load (output shaft center)	30N
Radial Play	<0,08mm
Axial Play	<0,3mm
Max. Press fit force	60N
Operating temperature	-20 to +80°C
Operating Ambient Humidity	20-80% RH
Bearing output	Ball bearings

Planetary Gearbox 28JMS

Ø 28mm

1,2 to 4Nm



Specification						
Model	...	1 / 3,7	...	1 / 5,2	...	2 / 14
1 Stages		1		1		2
2 Exact Ratio		3,71		5,18		13,76
3 Nominal Output Torque	Nm	1,2		1,2		2
4 Max. Output Torque	Nm	4		4		6
5 Recommended Input Speed	rpm	4000		4000		4000
6 Efficiency	%	≈90%		≈90%		≈81%
7 Backlash at No-load		≤1°		≤1°		≤1,2°
8 Length (L)	mm	29,0		29,0		36,1
9 Weight	kg	0,075		0,075		0,097

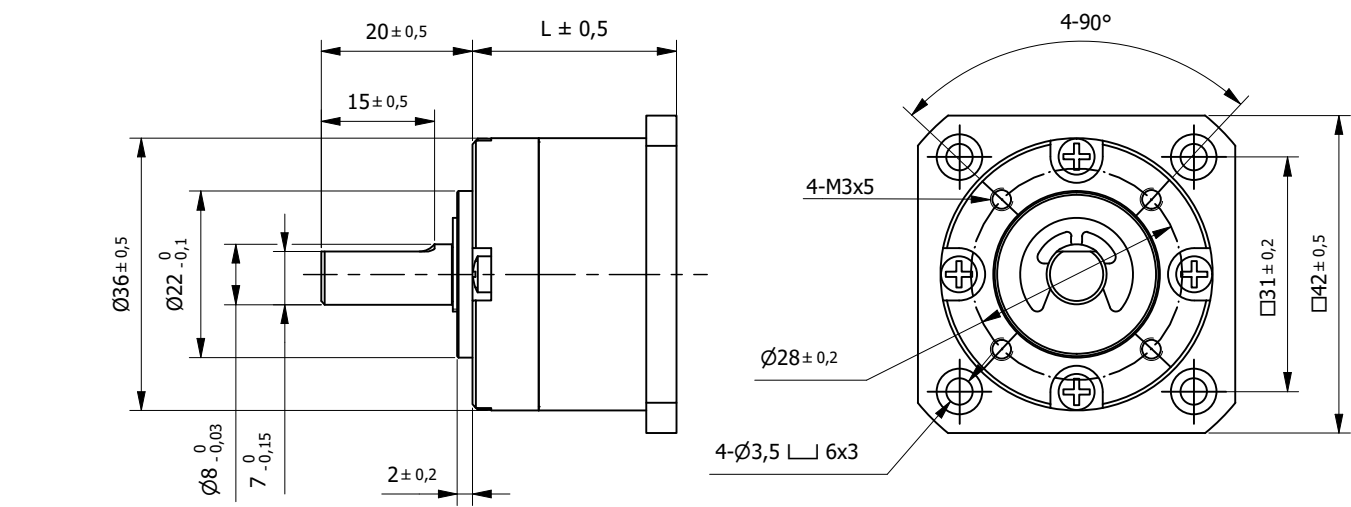
Specification					
Model	...	3 / 51	...	3 / 71	...
1 Stages		3		3	
2 Exact Ratio		51,06		71,3	
3 Nominal Output Torque	Nm	4		4	
4 Max. Output Torque	Nm	12		12	
5 Recommended Input Speed	rpm	4000		4000	
6 Efficiency	%	≈73%		≈73%	
7 Backlash at No-load		≤1,5°		≤1,5°	
8 Length (L)	mm	43		43	
9 Weight	kg	0,119		0,119	

Characteristics	
Item	
Max. Radial load (middle of the key)	100N
Max. Axial load (output shaft center)	50N
Radial Play	<0,07mm
Axial Play	<0,3mm
Max. Press fit force	100N
Operating temperature	-20 to +80°C
Operating Ambient Humidity	20-80% RH
Bearing output	Ball bearings

Planetary Gearbox 36JMS

Ø 36mm

2 to 6Nm



Specification						
Model	...1 / 3.7	...1 / 5.2	...2 / 14	...2 / 19	...2 / 27	
1 Stages	1	1	2	2	2	
2 Exact Ratio	3,71	5,18	13,76	19,22	26,83	
3 Nominal Output Torque	Nm	2	3	3	3	
4 Max. Output Torque	Nm	6	9	9	9	
5 Recommended Input Speed	rpm	4000	4000	4000	4000	
6 Efficiency	%	≈90%	≈90%	≈81%	≈81%	≈81%
7 Backlash at No-load		≤1°	≤1°	≤1,2°	≤1,2°	≤1,2°
8 Length (L)	mm	27,0	27,0	34,2	34,2	34,2
9 Weight	kg	0,134	0,134	0,173	0,173	0,173

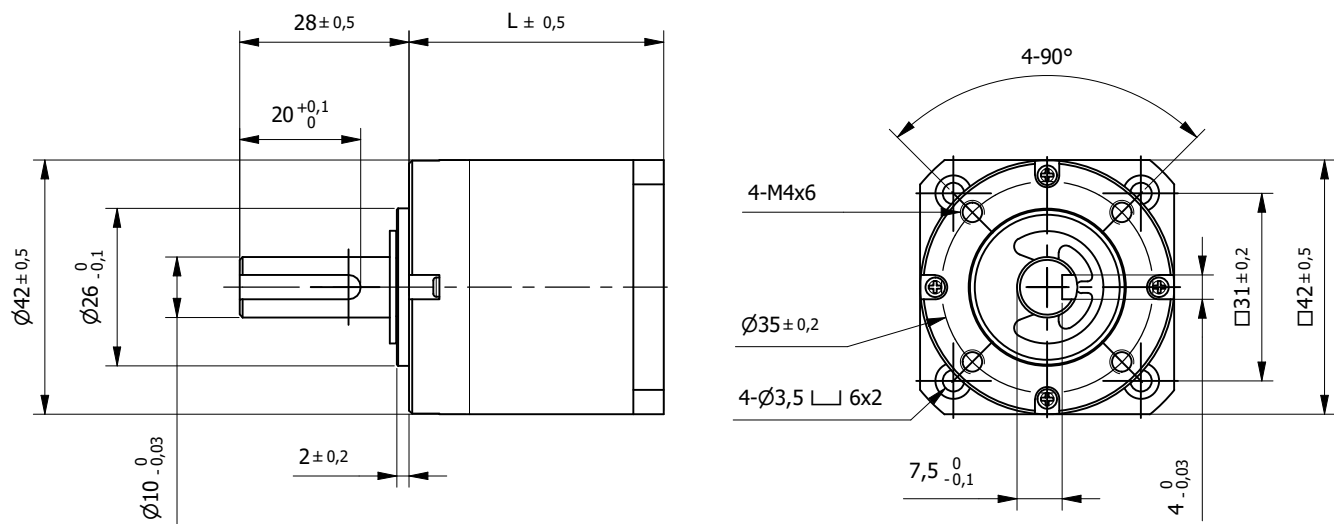
Specification					
Model	...3 / 51	...3 / 71	...3 / 100	...3 / 139	
1 Stages	3	3	3	3	
2 Exact Ratio	51,06	71,3	99,55	138,99	
3 Nominal Output Torque	Nm	6	6	6	
4 Max. Output Torque	Nm	18	18	18	
5 Recommended Input Speed	rpm	4000	4000	4000	4000
6 Efficiency	%	≈73%	≈73%	≈73%	≈73%
7 Backlash at No-load		≤1,5°	≤1,5°	≤1,5°	≤1,5°
8 Length (L)	mm	41,1	41,1	41,1	41,1
9 Weight	kg	0,212	0,212	0,212	0,212

Characteristics	
Item	
Max. Radial load (middle of the key)	100N
Max. Axial load (output shaft center)	50N
Radial Play	<0,07mm
Axial Play	<0,3mm
Max. Press fit force	120N
Operating temperature	-20 to +80°C
Operating Ambient Humidity	20-80% RH
Bearing output	Ball bearings

Planetary Gearbox 42JMS

Ø 42mm

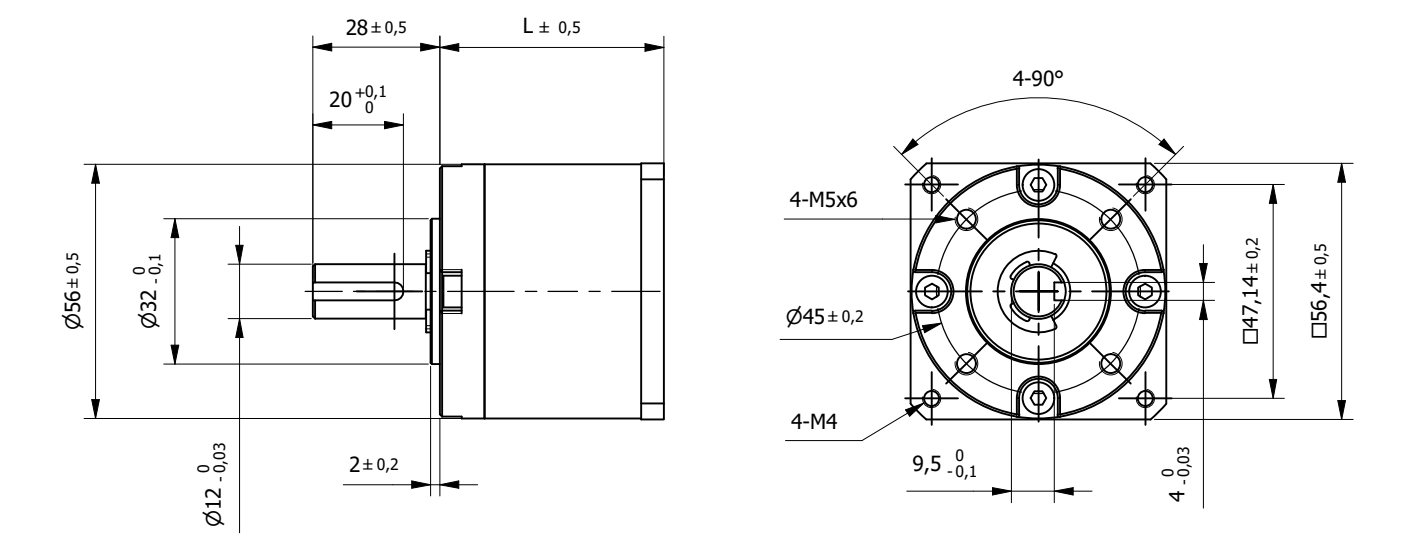
3 to 10Nm



Specification						
Model	...1 / 3.7	...1 / 5.2	...2 / 14	...2 / 19	...2 / 27	
1 Stages	1	1	2	2	2	
2 Exact Ratio	3,71	5,18	13,76	19,22	26,83	
3 Nominal Output Torque	Nm	3	5	5	5	
4 Max. Output Torque	Nm	9	15	15	15	
5 Recommended Input Speed	rpm	4000	4000	4000	4000	4000
6 Efficiency	%	≈90%	≈90%	≈81%	≈81%	≈81%
7 Backlash at No-load		≤1°	≤1°	≤1,2°	≤1,2°	≤1,2°
8 Length (L)	mm	31,5	31,5	42,1	42,1	42,1
9 Weight	kg	0,208	0,208	0,290	0,290	0,290

Specification					
Model	...3 / 51	...3 / 71	...3 / 100	...3 / 139	
1 Stages	3	3	3	3	
2 Exact Ratio	51,06	71,3	99,55	138,99	
3 Nominal Output Torque	Nm	10	10	10	
4 Max. Output Torque	Nm	30	30	30	
5 Recommended Input Speed	rpm	4000	4000	4000	4000
6 Efficiency	%	≈73%	≈73%	≈73%	≈73%
7 Backlash at No-load		≤1,5°	≤1,5°	≤1,5°	≤1,5°
8 Length (L)	mm	52,5	52,5	52,5	52,5
9 Weight	kg	0,372	0,372	0,372	0,372

Characteristics	
Item	
Max. Radial load (middle of the key)	200N
Max. Axial load (output shaft center)	100N
Radial Play	<0,06mm
Axial Play	<0,3mm
Max. Press fit force	150N
Operating temperature	-20 to +80°C
Operating Ambient Humidity	20-80% RH
Bearing output	Ball bearings



Specification								
	Model		...1 / 3.6	...1 / 4.3	...2 / 13	...2 / 15	...2 / 18	...2 / 23
1	Stages		1	1	2	2	2	2
2	Exact Ratio		3,6	4,25	12,96	15,3	18,06	22,67
3	Nominal Output Torque	Nm	9	9	15	15	15	15
4	Max. Output Torque	Nm	27	27	60	60	60	60
5	Recommended Input Speed	rpm	4000	4000	4000	4000	4000	4000
6	Efficiency	%	≈90%	≈90%	≈81%	≈81%	≈81%	≈81%
7	Backlash at No-load		≤1°	≤1°	≤1,2°	≤1,2°	≤1,2°	≤1,2°
8	Length (L)	mm	37,8	37,8	49,4	49,4	49,4	49,4
9	Weight	kg	0,455	0,455	0,610	0,610	0,610	0,610

Specification					
	Model	...3 / 47	...3 / 55	...3 / 65	...3 / 77
1	Stages	3	3	3	3
2	Exact Ratio	46,66	55,08	65,03	76,77
3	Nominal Output Torque	Nm 30	30	30	30
4	Max. Output Torque	Nm 90	90	90	90
5	Recommended Input Speed	rpm 4000	4000	4000	4000
6	Efficiency	% ≈73%	≈73%	≈73%	≈73%
7	Backlash at No-load	≤1,5°	≤1,5°	≤1,5°	≤1,5°
8	Length (L)	mm 60,8	60,8	60,8	60,8
9	Weight	kg 0,765	0,765	0,765	0,765

Characteristics	
Item	
Max. Radial load (middle of the key)	300N
Max. Axial load (output shaft center)	200N
Radial Play	<0,08mm
Axial Play	<0,4mm
Max. Press fit force	300N
Operating temperature	-20 to +80°C
Operating Ambient Humidity	20-80% RH
Bearing output	Ball bearings



Gearboxes

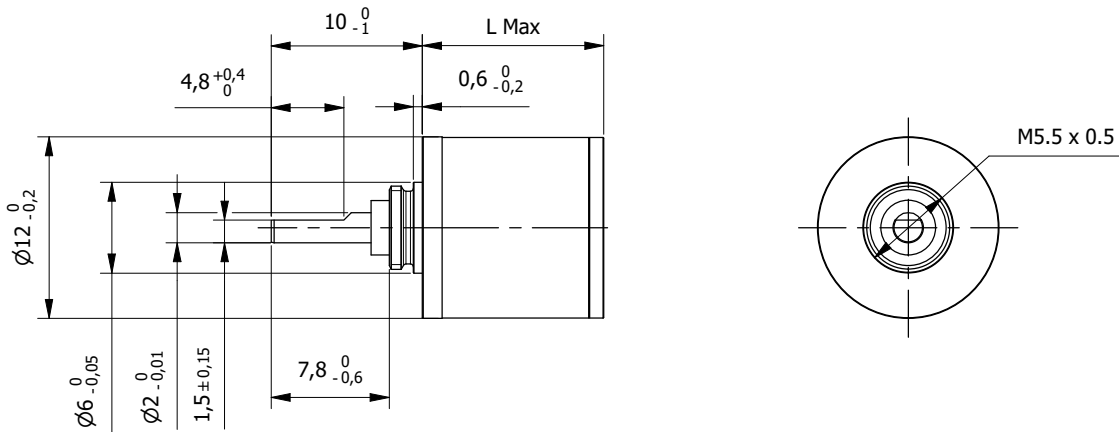
Spur gearboxes

Advantages at a glance	
Compact & simple design	
Cost-efficient	
Best for low-torque/speed applications	

Our extensive spur gearbox range offers good torque to size ratios coupled with high efficiencies. If the standard configuration does not meet the application requirement then a customized design could be proposed, even for low volumes.

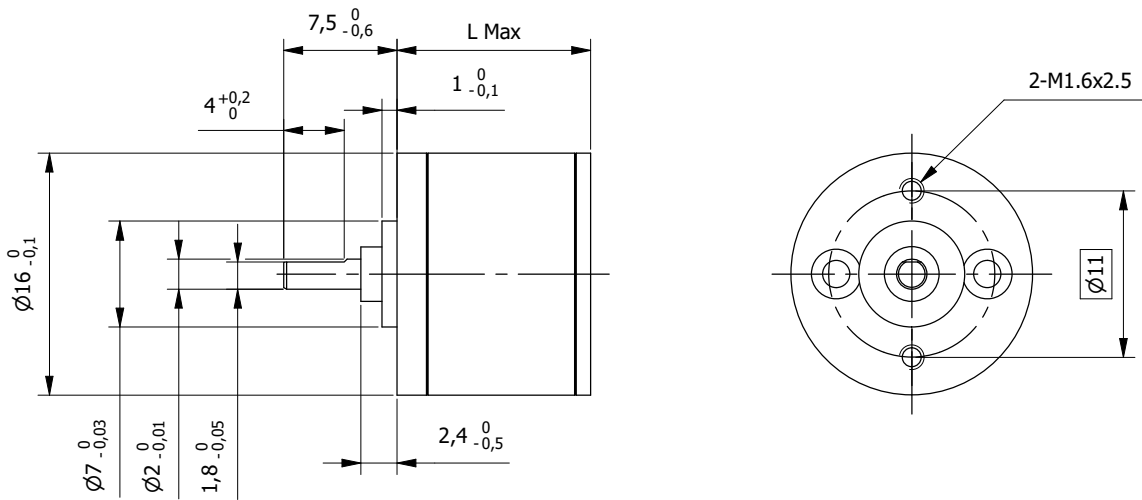
Spur gearboxes	Torque* (Nm)	
12GSS	0,01...0,025	402
16GSS	0,01...0,03	403
16GSP (plastic version)	0,01...0,03	404
16GST (reinforced)	0,06...0,1	405
24GSP	0,1	406

*Nominal Output Torque



Specification					
Model	...2-6,4	...3-22	...4-76	...5-141	
1 Stages	2	3	4	5	
2 Reduction Ratio	6,4	22	76	141	
3 Nominal Output Torque	Nm	0,01	0,015	0,02	0,025
4 Max. Output Torque	Nm	0,03	0,035	0,04	0,045
5 Recommended Input Speed	rpm	8000	8000	8000	8000
6 Efficiency	%	81	73	66	59
7 Mass Inertia	gcm ²	0,002	0,002	0,002	0,002
8 Average Backlash no-load	°	1	1	1,2	1,2
9 Max. Axial load (dynamic)	N	2	2	2	2
10 Max. Radial load (6,5mm from flange)	N	2	2	2	2
11 Length (L)	mm	10	12	14	16
12 Weight	g	6,5	7,4	8,3	9,2

Characteristics	
Item	
Max. Press fit force	30N
Operating temperature	-15 to +100°C
Bearing output	Sleeve bearings



Specification					
Model	...2-9,1	...3-31	...4-76	...4-141	
1 Stages	2	3	4	4	
2 Reduction Ratio	9,1	31	76	141	
3 Nominal Output Torque	Nm	0,015	0,025	0,035	0,035
4 Max. Output Torque	Nm	0,1	0,1	0,1	0,1
5 Recommended Input Speed	rpm	8000	8000	8000	8000
6 Efficiency	%	81	73	66	66
7 Mass Inertia	gcm ²	0,003	0,003	0,003	0,003
8 Average Backlash no-load	°	1	1	1,2	1,2
9 Max. Axial load (dynamic)	N	2	2	2	2
10 Max. Radial load (6,5mm from flange)	N	2	2	2	2
11 Length (L)	mm	11,8	12,8	14,8	14,8
12 Weight	g	9	9,8	10,2	10,2

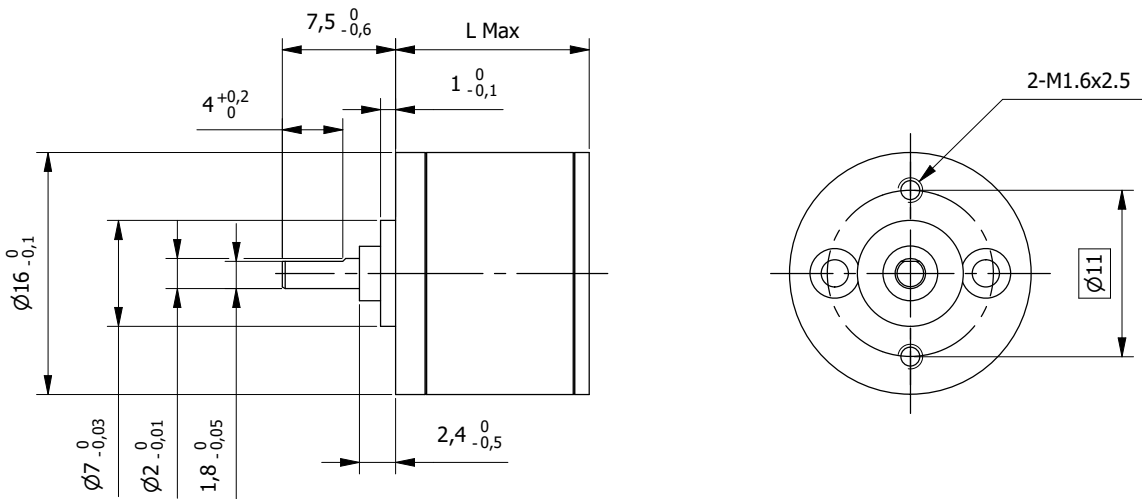
Characteristics	
Item	
Max. Press fit force	30N
Operating temperature	-15 to +100°C
Bearing output	Sleeve bearings

Spur Gearbox 16GSP

Plastic version

Ø 16mm

0,01 to 0,03Nm



Specification						
	Model	...2-6,4	...2-9,1	...3-31	...4-76	...4-141
1	Stages	2	2	3	4	4
2	Reduction Ratio	6,4	9,1	31	76	141
3	Nominal Output Torque	Nm	0,01	0,01	0,02	0,03
4	Max. Output Torque	Nm	0,1	0,1	0,1	0,1
5	Recommended Input Speed	rpm	8000	8000	8000	8000
6	Efficiency	%	81	81	73	66
7	Mass Inertia	gcm²	0,003	0,003	0,003	0,003
8	Average Backlash no-load	°	1	1	1	1,2
9	Max. Axial load (dynamic)	N	2	2	2	2
10	Max. Radial load (6,5mm from flange)	N	1	1	1	1
11	Length (L)	mm	11,8	11,8	12,8	14,8
12	Weight	g	9	9	9,8	10,2

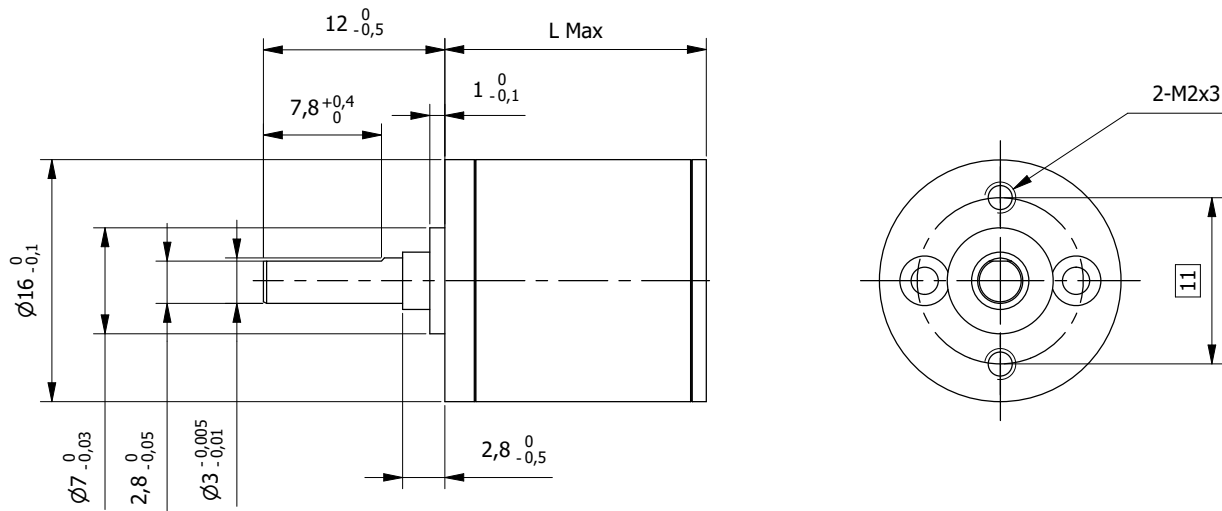
Characteristics	
Item	
Max. Press fit force	15N
Operating temperature	-15 to +80°C
Bearing output	Sleeve bearings

Spur Gearbox 16GST

Reinforced

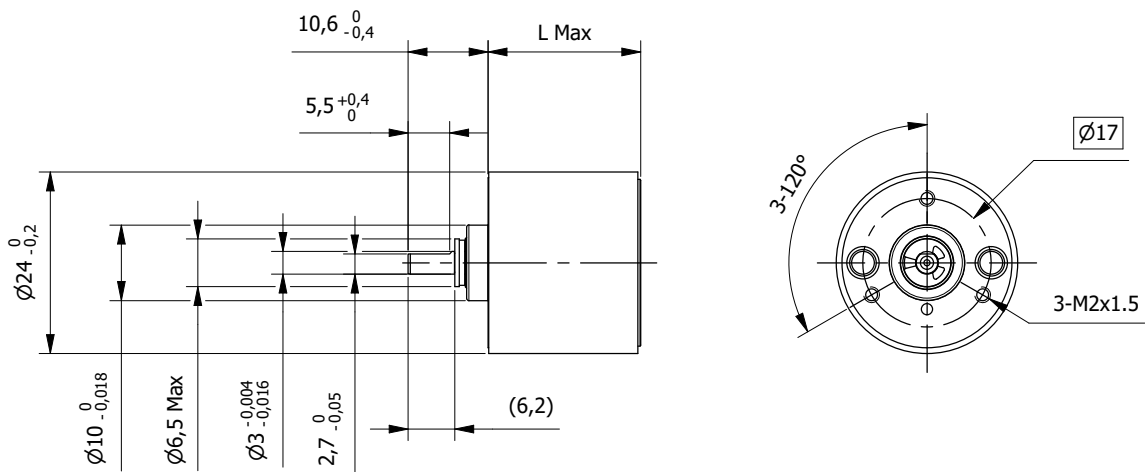
Ø 16mm

0,06 to 0,1Nm



Specification						
	Model		...2-9,1	...3-31	...4-76	...4-141
1	Stages		2	3	4	4
2	Reduction Ratio		9,1	31	76	141
3	Nominal Output Torque	Nm	0,06	0,06	0,1	0,1
4	Max. Output Torque	Nm	0,15	0,15	0,3	0,3
5	Recommended Input Speed	rpm	8000	8000	8000	8000
6	Efficiency	%	81	73	66	66
7	Mass Inertia	gcm²	0,006	0,005	0,004	0,004
8	Average Backlash no-load	°	1	1	1,2	1,2
9	Max. Axial load (dynamic)	N	5	5	5	5
10	Max. Radial load (6,5mm from flange)	N	10	15	20	20
11	Length (L)	mm	14,3	17,3	19,3	19,3
12	Weight	g	13,8	14,5	15,8	15,8

Characteristics	
Item	
Max. Press fit force	5N
Operating temperature	-15 to +100°C
Bearing output	Ball bearings



Specification							
	Model	...2-7,2	...2-20	...4-32	...4-64	...4-131	...6-325
1	Stages	2	2	4	4	4	6
2	Reduction Ratio	7,2	20	32	64	131	325
3	Nominal Output Torque	Nm	0,1	0,1	0,1	0,1	0,1
4	Max. Output Torque	Nm	0,15	0,15	0,15	0,15	0,15
5	Recommended Input Speed	rpm	4000	4000	4000	4000	4000
6	Efficiency	%	81	66	66	66	53
7	Mass Inertia	gcm²	0,008	0,01	0,008	0,007	0,006
8	Average Backlash no-load	°	1	2	2	2	3
9	Max. Axial load (dynamic)	N	8	8	8	8	8
10	Max. Radial load (8mm from flange)	N	5	5	5	5	5
11	Length (L)	mm	16,5	16,5	20,2	20,2	24
12	Weight	g	25	28	28	28	30

Characteristics	
Item	
Max. Press fit force	500N
Operating temperature	-15 to +80°C
Bearing output	Sleeve bearings

Encoders

Controllers/Drives	Encoders	Gearboxes	Linear actuators	Stepper	Motor + Controller	Servomotors	Brushless DC	Brushed DC	Index
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Incremental
Encoders

Advantages at a glance
Modular design
Easy assembly
High compatibility

Encoders translate rotary or linear motion into a digital signal for monitoring or controlling speed, direction, distance or position. Incremental encoders provide a relative position with respect to a home or zero position. Depending on the required precision and environmental harshness, optical or magnetic sensors can be utilized. An incremental encoder has two output signals, A and B, which issue pulses when the device is moved. Together, the A and B signals indicate both the occurrence of and direction of movement. Many incremental encoders have an additional output signal, typically designated index or Z, which indicates the encoder is located at a particular reference position.

Technical introduction	414
Incremental Encoders	
E3 - Optical encoder - 3 channels	416
E4T - Optical encoder - 2 channels	417
E5 - Optical encoder - 3 channels	418

Term	
Cycles per revolution	The number of full quadrature cycles per full shaft revolution (360 mechanical degrees).
Number of channels	A channel is an electrical output signal from an incremental encoder. Channels are designated A and B for the two quadrature outputs and I or Z for the index output.
Max. Frequency	Maximum frequency at which the encoder electronics can switch back and forth between low and high signal level.
Max. Speed	Maximum speed at which the encoder electronics can swith back and forth between low and high signal level.
Supply Voltage	Defines the range of supply voltage necessary for the encoder to function properly. To avoid damaging the encoder, this range must be adhered to.
Supply Current	Indicates the current consumption of the encoder at the given operating voltage.
Low level output	Voltage value of the low level signal.
High level output	Voltage value of the high level signal.
Output rise time	Time for changing from the lower to the higher signal.
Output fall time	Time for changing from the higher to the lower signal.
Phase shift	The delay in time or degrees between the rising edge of channel A and the rising edge of channel B. Also defined as the delay between the center of the high state on channel A to the center of the high state on channel B.
Operating temperature	Temperatures at which the encoder can operate.
Max. shaft radial play	Maximum allowed perpendicular shaft displacement.
Max. Acceleration	Maximum acceleration that the encoder can properly measure.
Codewheel	The encoder code wheel (or disc) defines the transmission code of pulses.

Encoders translate rotary or linear motion into a digital signal for monitoring or controlling speed, direction, distance or position. Incremental encoders provide a relative position with respect to a home or zero position. Depending on the required precision and environmental harshness, optical or magnetic sensors can be utilized. An incremental encoder has two output signals, A and B, which issue pulses when the device is moved. Together, the A and B signals indicate both the occurrence of and direction of movement. Many incremental encoders have an additional output signal, typically designated index or Z, which indicates the encoder is located at a particular reference position.

The E3 is a high resolution rotary encoder with a rugged glass-filled polymer enclosure, which utilizes either a 5-pin locking or standard connector. This optical incremental encoder is designed to easily mount to and dismount from an existing shaft to provide digital feedback information.

E3

The E4T miniature transmissive optical encoder is designed to provide digital quadrature encoder feedback for high volume, limited space applications. The E4T utilizes an innovative, push-on encoder disk which accepts shaft diameters of 2mm to 6.3mm. The E4T is designed to be a one-time installation miniature encoder.

E4T

The E5 rotary encoder has a rugged glass-filled polymer enclosure with either a 5-pin or 10-pin latching connector. The module contains a highly collimated solid state light source and monolithic phased array sensor, which together provide a system extremely tolerant to mechanical misalignments.

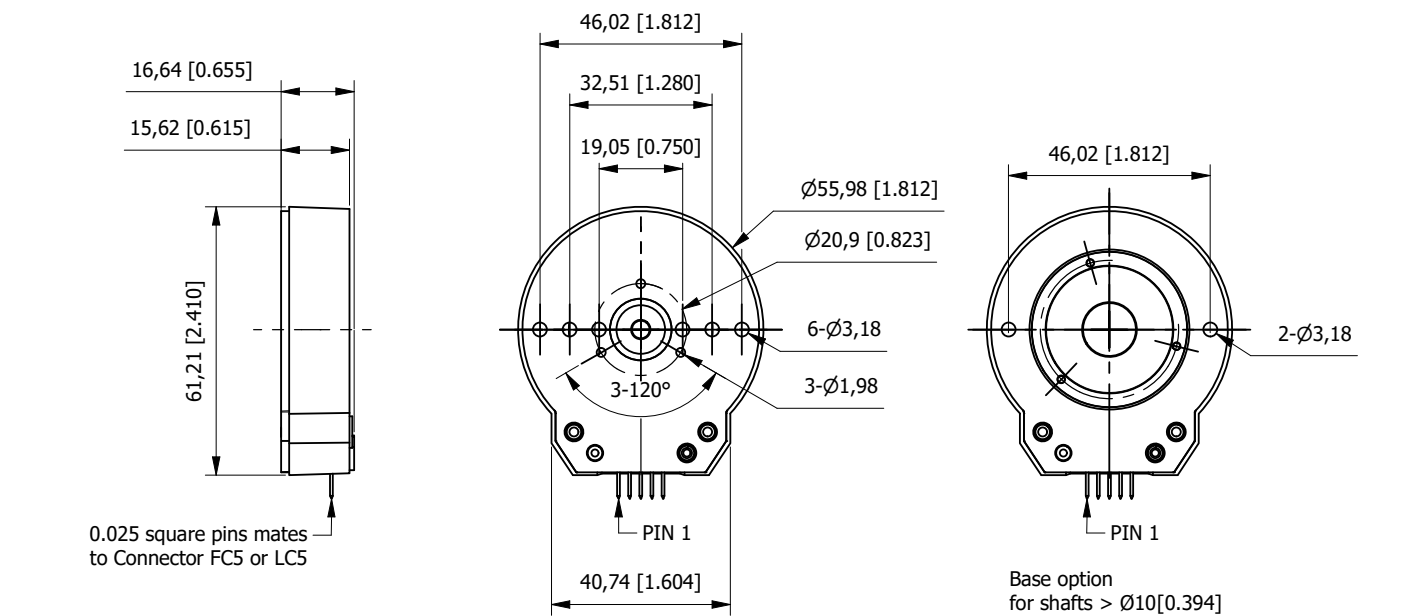
E5

Composition	
1	Base
2	PCB & Connector
3	Hub
4	Code wheel / disc
5	Cover



Incremental Encoder E3

Optical - 3 channel



Specification							
Model		E3-100	E3-500	E3-1024	E3-2500	E3-4096	E3-8000
Cycles per revolution	CPR	100	500	1024	2500	4096	8000
Number of channels		2 + index*	2 + index*	2 + index*	2 + index*	2 + index*	2 + index*
Max. Frequency	kHz	300	300	300	300	300	300
Max. Speed	rpm	60'000	36'000	17'575	7'200	5'273	5'400

Available CPR: 64, 100, 200, 400, 500, 512, 1000, 1024, 1800, 2000, 2048, 2500, 3600, 4000, 4096, 5000, 7200, 8000, 8192, 10000

Available with different bore options to suit all our motors

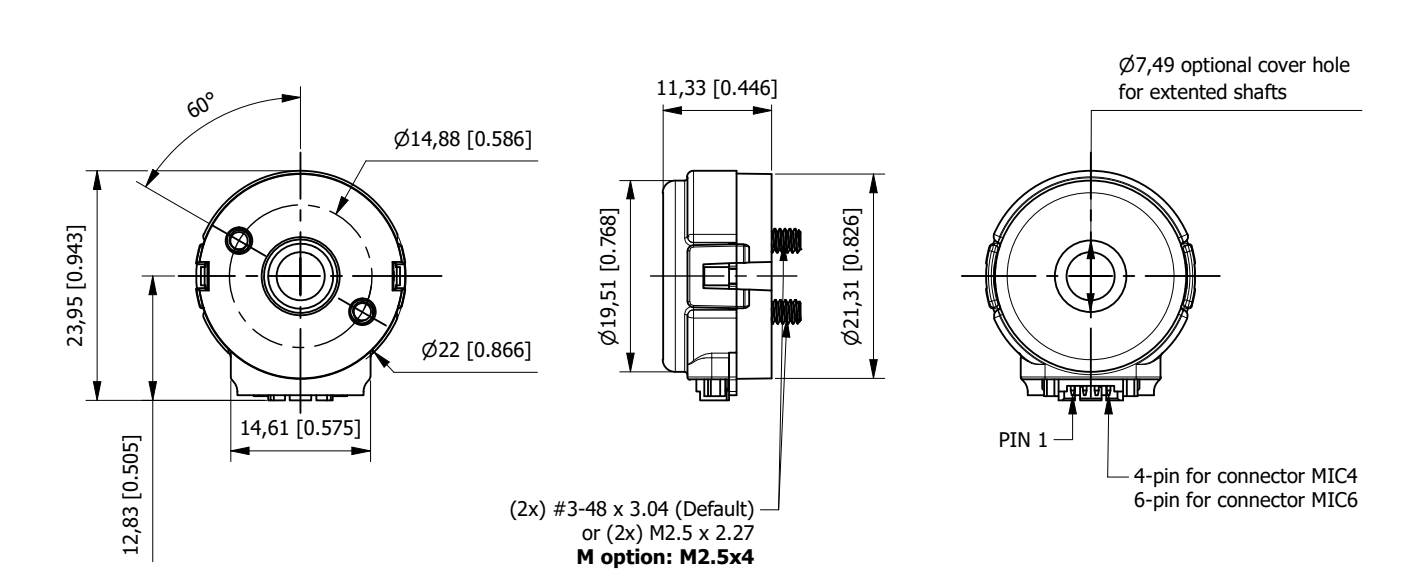
* optional

Electrical Specification		
Item		
Supply Voltage	V	5 ±10%
Supply Current (CPR ≤1000, no load)	mA	27-33
Supply Current (CPR ≥1000 and <3600, no load)	mA	54-62
Supply Current (CPR ≥3600, no load)	mA	72-85
Low Level Output	Vmax	0,5
High Level Output	Vmin	2
Output Rise Time (CPR <3600)	ns	110
Output Rise Time (CPR ≥3600)	ns	50
Output Fall Time (CPR <3600)	ns	35
Output Fall Time (CPR ≥3600)	ns	50
Phase shift	°e	90 ±60

Characteristics		
Item		
Operating Temperature (CPR <3600)	°C	-40° to 100°
Operating Temperature (CPR ≥3600)	°C	-25° to 100°
Max. Shaft Axial Play	mm	±0,254
Max. Shaft Run out	mm	0,1 T.I.R.
Max. Acceleration	rad/s²	250'000
Codewheel Moment of Inertia (bore <12mm)	gcm²	6,285
Codewheel Moment of Inertia (bore ≥12mm)	gcm²	28,246
Minimum Shaft Length	mm	11,3
Maximum Shaft Length	mm	17,02

Incremental Encoder E4T

Optical - 2 channel



Specification							
Model		E4T-100	E4T-200	E4T-256	E4T-400	E4T-500	E4T-1000
Cycles per revolution	CPR	100	200	256	400	500	1000
Number of channels		2	2	2	2	2	2
Max. Frequency	kHz	100	100	100	100	100	100
Max. Speed	rpm	60'000	30'000	23'437	15'000	12'000	6'000

Available CPR: 100, 108, 120, 125, 128, 200, 250, 256, 300, 360, 400, 500, 512, 720, 800, 1000

Available with different bore options to suit all our motors

Electrical Specification			
		Single-Ended	Differential
Supply Voltage	V	5 ±10%	5 ±10%
Supply Current (CPR ≤ 500, no load)	mA	25-30	27-32
Supply Current (CPR > 500, no load)	mA	34-42	36-44
Low Level Output	Vmax	0,4	0,6
High Level Output	Vmin	2,4	4,75
Differential Output Voltage	Vmin	---	3
Output Rise Time	ns	100	20
Output Fall Time	ns	50	20
Phase shift	°e	90 ±60	90 ±60

Characteristics		
Item		
Operating Temperature	°C	-20° to 100°
Max. Shaft Axial Play	mm	±0,254
Max. Shaft Run out	mm	0,05 T.I.R.
Max. Acceleration	rad/s²	250'000
Codewheel Moment of Inertia	gcm²	0,036
Minimum Shaft Length	mm	6,985
Maximum Shaft Length	mm	10

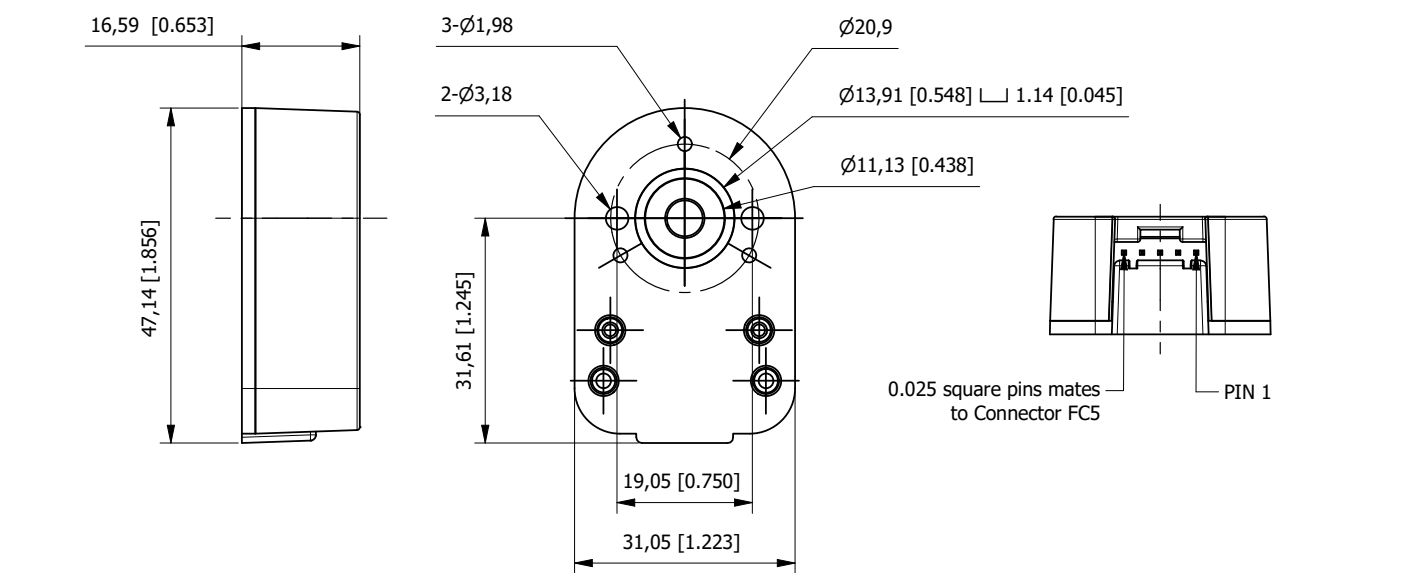
Connection		
Pin	Single-Ended	Differential
1	+5VDC power	Ground
2	A channel	A channel
3	Ground	A- channel
4	B channel	+5VDC power
5		B channel
6		B- channel

Mating Connector CON-MIC4 CON-MIC6

Available with different cable options

Incremental Encoder E5

Optical - 3 channel



Specification							
Model		E5-100	E5-200	E5-400	E5-500	E5-1024	E5-4096
Cycles per revolution	CPR	100	200	400	500	1024	4096
Number of channels		2 + index*	2 + index*	2 + index*	2 + index*	2 + index*	2 + index*
Max. Frequency	kHz	300	300	300	300	300	720
Max. Speed	rpm	60'000	60'000	45'000	36'000	17'575	10'546

Available CPR: 32,50, 96, 100, 192, 200, 250, 256, 360, 400, 500, 512, 540, 720, 800, 900, 1000, 1024, 1250, 2000, 2048, 2500, 4000, 4096, 5000

Available with different bore options to suit all our motors

* optional

Electrical Specification				
		Single-Ended	Differential	High-Voltage
Supply Voltage	V	5 ±10%	5 ±10%	7,5-30
Supply Current (CPR <500, no load)	mA	27-33	29-36	8-10
Supply Current (CPR ≥500 and <2000, no load)	mA	54-62	56-65	16-19
Supply Current (CPR ≥2000, no load)	mA	72-85	74-88	22-25
Low Level Output	Vmax	0,5	0,4	0,4
High Level Output	Vmin	2	2,4	---
Output Rise Time (CPR <2000, no load)	ns	110	≤20	---
Output Rise Time (CPR ≥2000, ±5mA load)	ns	50	≤20	---
Output Fall Time (CPR <2000, no load)	ns	100	≤20	---
Output Fall Time (CPR ≥2000, ±5mA load)	ns	50	≤20	---
Phase shift	°e	90 ±60	90 ±60	---

Connection		
Pin	Single-Ended	Differential
1	Ground	Ground
2	Index	Ground
3	A channel	Index-
4	+5VDC power	Index+
5	B channel	A- channel
6		A+ channel
7		+5VDC power
8		+5VDC power
9		B- channel
10		B+ channel
Mating Connector	CON-FC5	CON-FC10

Available with different cable options

Characteristics		
Item		
Operating Temperature (CPR <2000)	°C	-40° to 100°
Operating Temperature (CPR ≥2000)	°C	-25° to 100°
Max. Shaft Axial Play	mm	±0,254
Max. Shaft Run out	mm	0,1 T.I.R.
Max. Acceleration	rad/s²	250'000
Codewheel Moment of Inertia	gcm²	0,565
Minimum Shaft Length	mm	11,3
Maximum Shaft Length	mm	19,05

Controllers — Drives



Brushless DC motor
Controllers

p.429



Brushless DC motor
Multi-Axis Controllers

p.437



Brushless AC motor
Controllers

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Stepper motor
Controllers

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Controllers – Drives

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Pegasus B144 - NEW	up to 3	431
Pegasus B360 - NEW	up to 12	432
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Leo B2000	up to 40	435
Brushless DC motor Multi-Axis Drives		437
Phoenix - B100	up to 3 (each motor)	438
Phoenix - B500	up to 12 (each motor)	439
Brushless AC motor Drives		441
Scorpius A750	up to 3	442
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Stepper motor Drives		445
Hercules SOD202	up to 2	446
Hercules SOD203 - NEW	up to 3	447
Libra SBD205	up to 5,5	448
Aquarius SBD204	up to 4,2	449
Aquarius SBD207	up to 7,1	450
Sagittarius SBA207	up to 7,1	451
Andromeda SBA208	up to 8,5	452
Lyra SBAC203	up to 3	453
Draco SBAC205	up to 5,2	454
Dorado SBAC208	up to 8	455

* Phase Current

Term	
Phase Current	Nominal Current that the drive can provide to one phase of the motor.
Peak Current	Maximum Current that the drive can provide to one phase of the motor, for a limited time (max 1s).
Power Supply	AC or DC Voltage range allowed to supply the drive.
Logic Power Supply	AC or DC Voltage range allowed to supply the logic part of the drive.
Output Power	Maximum motor power managed by the drive.
Chopper frequency	Switching frequency of the drive.
Protection degree	IP (International Protection) degree: it defines the protection against dust and water
Pollution degree	Degree of protection against pollution.
Category	Drive category following standard EN 61800-3 (electromagnetic compatibility): it defines the capability of a device to work satisfactorily in an electromagnetic environment without itself causing electromagnetic interference which is unacceptable for other devices present in this environment.
Temperatures	Temperature ranges allowed for correct operation (Working Temperature) or for proper storage (Storage Temperature).
Humidity	Humidity range allowed for correct operation.
Closed-loop	Closed loop motor control, also known as feedback control, incorporates a feedback mechanism to continuously monitor and adjust the motor's output. It uses sensors or encoders to measure the actual performance of the motor and compares it to the desired output.

- Product families
- BLDC motor Controllers
- BLDC motor Multi-Axis Controllers
- BLAC motor Controllers
- Stepper motor Controllers

Delta Line Electronics can provide solutions to accomplish every customers' need: our drives portfolio can cover a wide range of different motors, from Stepper to Brushless motors.

Our portfolio is divided in Brushless DC Drives for 3-phase BLDC motors with phase current up to 40A rms, Brushless DC Multi-Axis Drives able to simultaneously control up to three BLDC 3-phase motors with phase current up to 12A rms (each motor), Brushless AC Drives for 3-phase BLAC motors with phase current up to 5,2A rms and Stepper Drives for 2-phase Stepper motors suitable for DC and AC power supply and with a phase current up to 8,5A rms. All our drives feature ARM Core M4 Technology and are capable to drive motors with smooth and silent movements.

Portfolio

All our programmable drives are offered with two software: DL Studio and DL Space. DL Studio is a configuration and test tool that lets the user set all the objects inside the drive and move the motor from the PC while seeing the motor response, in terms of current, speed and other information. DL Space contains all the features of DL Studio, but lets the user write custom applications for the drive using a simple and user-friendly programming language. The drive can be connected to the PC through a specific interface kit.

Software

One of the many peculiarities of our drives is the possibility to choose different control methods:

the drive receives one signal to control the direction and one signal to control the speed from a master (a PLC or any other master capable of this control methodologies). These methods are extremely simple but limited by the performance of the master.

Clock and Direction / Analogue Reference

the drive is controlled through a fieldbus network: the master exchanges data with the drives connected to the bus. This control method has a great robustness, and the initial high cost is often justified by a reduction of the cablings and of the cost of assembly/ maintenance procedures.

Fieldbus

the drive contains a custom application that can control the drive itself and the motor, even without the presence of a master. Programmable drives can be coupled with a PLC master to lighten the complexity of the PLC program, or they can be use standalone, even for complex usages.

Programmable

In modern industrial systems, communication protocols are essential for connecting and controlling devices efficiently. Each protocol offers unique advantages, whether it's for real-time performance, scalability, or compatibility across different applications. All Delta Line Drives equipped with any fieldbus act like slave for the bus, so it is necessary to have at least one master that handles the data exchange. Here below an overview of the available communication protocols across our range.

FIELDBUSES



It is a communication protocol widely used in automation, healthcare, agricultural and automotive systems. The CANopen protocol is based on the CANbus (Controller Area Network) physical layer, it can reach a transmission rate up to 1Mbps and allows the connection of up to 32 drives without losing performance.

CANopen

It is a very common serial communication protocol published by Gould-Modicon (now Schneider Electric) in 1979. Modbus RTU is based on the RS485 physical layer, it can reach a transmission rate up to 115200 bps and allows the connection of up to 32 drives without losing performance. Modbus TCP instead leans on the Ethernet bus; it can reach a transmission rate up to 100Mbps and allows the connection of an infinite number of drives. Also, the Modbus TCP/IP potentially allows remote connections.

Modbus

Ethernet for Control Automation Technology (EtherCAT) was developed by Beckhoff: it is based on the CANopen protocol and on the Ethernet bus, and it is optimized for industrial automation control. It has a transmission rate of 100Mbps and has no limits on the number of drives connected. It is the only fieldbus we offer that permits axes interpolation.

EtherCAT

Profinet is an industrial technical standard for data communication over industrial ethernet, designed for collecting data and controlling equipment in industrial systems, with a particular strength in delivering data under tight time constraints. It defines the communication with field connected peripheral devices. Profinet defines the entire data exchange between controllers and the devices.

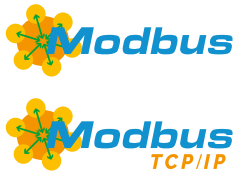
Profinet

Powerlink is a real-time Ethernet protocol designed for high-precision applications. It provides microsecond-level cycle times and supports unlimited nodes, making it ideal for complex automation systems requiring strict timing accuracy.

Powerlink

EtherNet/IP is a highly versatile industrial network protocol that leverages standard Ethernet for real-time communication and control. It enables integration across diverse systems and manufacturers, offering robust and reliable data exchange for a wide range of automation applications.

EtherNet/IP





Brushless DC motor

Controllers – Drives

Advantages at a glance
Position, Speed and Torque control
Analogue, fieldbus or programmable
Flexible configuration

Our Brushless DC Drives are specifically developed for 3-phases brushless motors with phase current up to 40A rms. All our drives feature ARM Core M4 Technology and are capable to drive motors with smooth and silent movements.

Brushless DC motor Drives	Current* (Arms)	
Pegasus B072	up to 2	430
Pegasus B144 - NEW	up to 3	431
Pegasus B360 - NEW	up to 12	432
Gemini B400	up to 10	433
Leo B1400	up to 30	434
Leo B2000	up to 40	435

PEGASUS	GEMINI
Benefits • Compact design • Price/performance • Programmable	Benefits • Digital I/O and up to 2 analogue inputs • Programmable

Characteristics • Phase Current up to 12A rms • Power Supply: 12-48 VDC • Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP, Profinet, PowerLink, EtherNet/IP	Characteristics • Phase Current up to 10A rms • Power Supply: 12-48 VDC • Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP
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LEO
Benefits • Compact design • High performance • High motor power

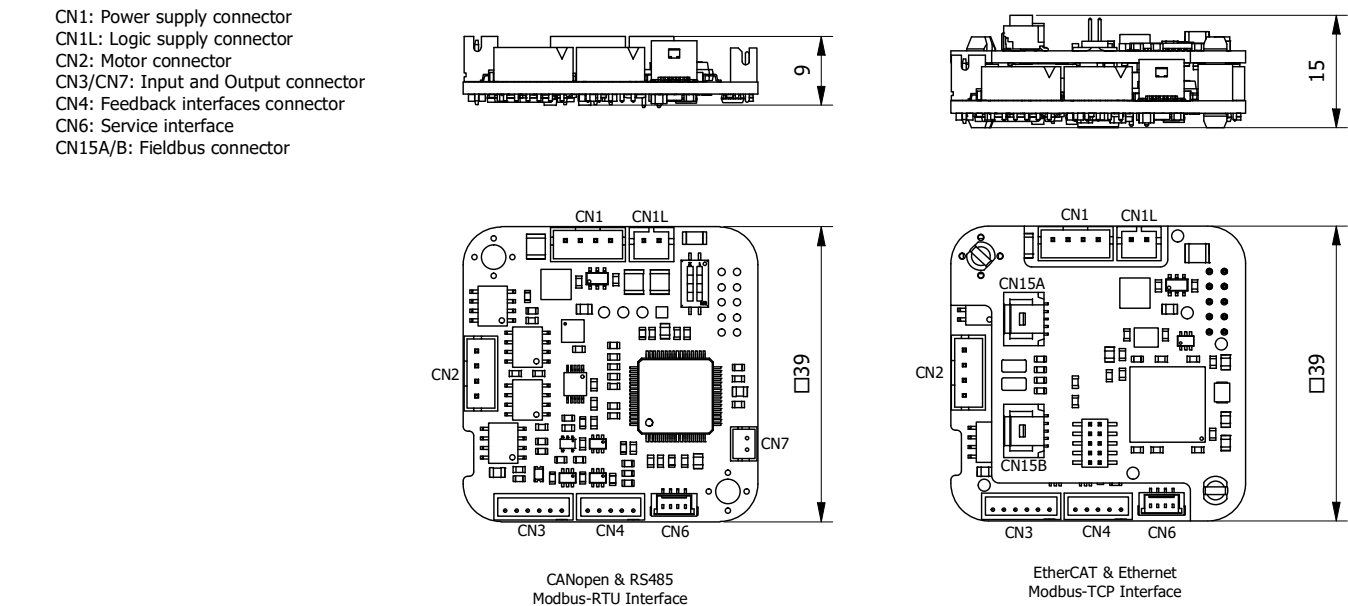
Characteristics • Phase Current up to 40A rms • Power Supply: 12-48 VDC • Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP, Profinet, PowerLink, EtherNet/IP

* Phase Current

Drive for BLDC Motor Pegasus B072O06

Motion Controller

up to 2A rms



Electrical Data			
Item			
1	Phase Current	A rms	up to 2
2	Peak Current	A peak	2
3	Output Power	W	up to 72
4	Power Supply	VDC	12÷36
5	Logic Power Supply (optional)	VDC	12÷36
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	3	2	1
CANopen (programmable)	C...-S200	3	2	1
CANopen (DS 402)	C...-S402	3	2	1
Ethernet Modbus TCP/IP (programmable)	T...-S200	3	2	0
EtherCAT (DS 402)	E...-S402	3	2	0
Profinet (programmable)	P...-S200	3	2	0
PowerLink (DS 402)	R...-S402	3	2	0
EtherNet IP (programmable)	H...-S200	3	2	0

Cable kit available on request. More information can be found in the product manual on our website.

Characteristics	
Item	
Weight	15g
Closed-loop	Available
Protection Class	IP00
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Supply inversion
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

Standard Combination	
Motor	
All motors with Phase Current up to 2A rms	

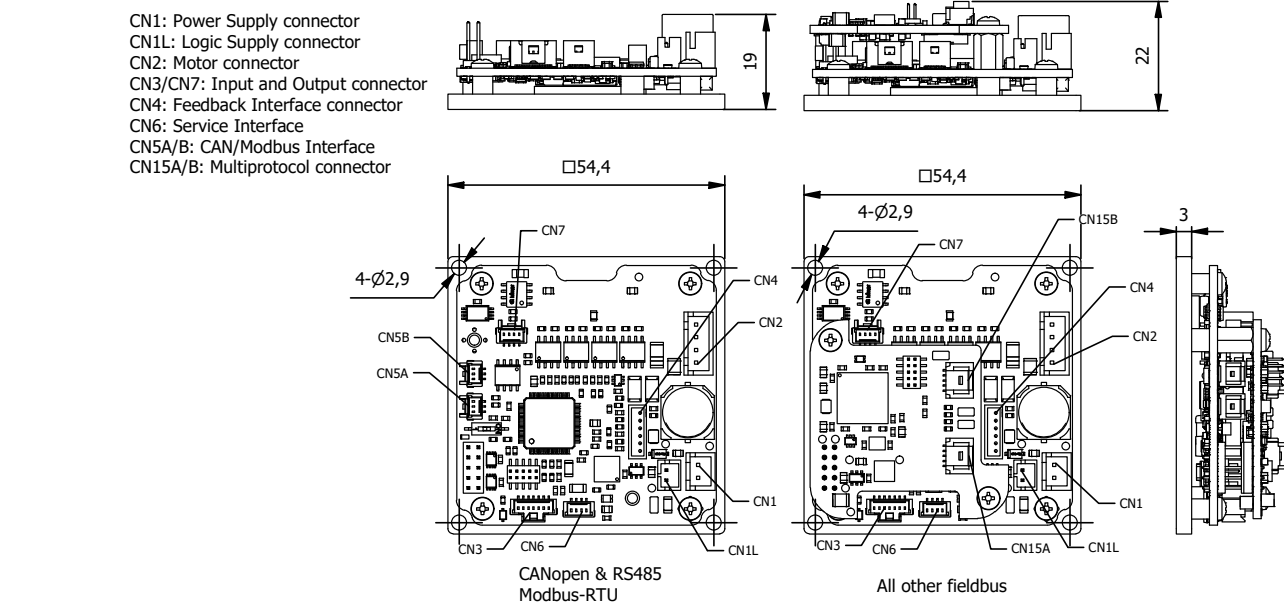
Feedback options		
Type		
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)		001
Hall effect sensors: 5V Single-Ended (TTL/CMOS)		001

Product code reference		
B072O06 M 001-S200		
M	Fieldbus	
001	Feedback options	
S200	Protocol reference	

Drive for BLDC Motor Pegasus B144O03

Motion Controller

up to 3A rms



Electrical Data			
Item			
1	Phase Current	A rms	up to 3
2	Peak Current	A peak	3
3	Output Power	W	up to 144
4	Power Supply	VDC	12÷48
5	Logic Power Supply (optional)	VDC	12÷48
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	4	3	1
CANopen (programmable)	C...-S200	4	3	1
CANopen (DS 402)	C...-S402	4	3	1
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	1
EtherCAT (DS 402)	E...-S402	4	3	1
Profinet (programmable)	P...-S200	4	3	1
PowerLink (DS 402)	R...-S402	4	3	1
EtherNet IP (programmable)	H...-S200	4	3	1

Cable kit available on request. More information can be found in the product manual on our website.

Characteristics	
Item	
Weight	27g
Closed-loop	Available
Protection Class	IP00
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Supply inversion
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

Standard Combination	
Motor	
All motors with Phase Current up to 3A rms	

Feedback options		
Type		
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)		001
Hall effect sensors: 5V Single-Ended (TTL/CMOS)		001
Absolute Encoder Biss-C		002

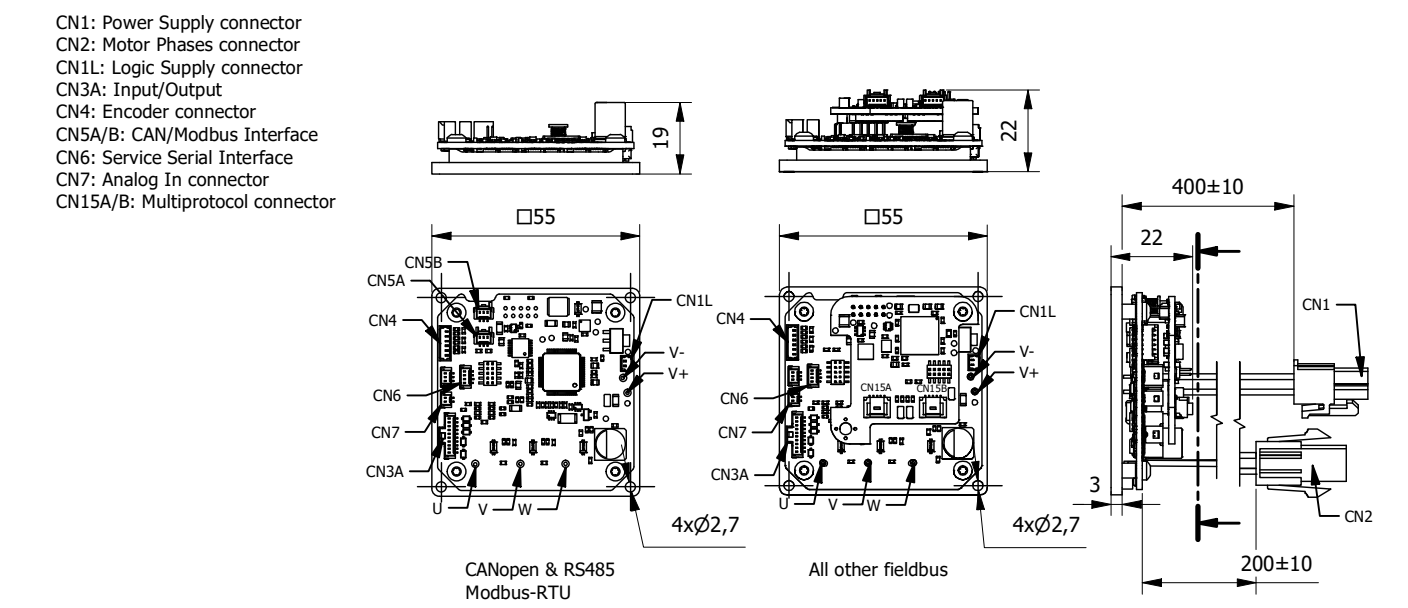
Product code reference		
B144O03 M 001-S200		
M	Fieldbus	
001	Feedback options	
S200	Protocol reference	

Drive for BLDC Motor

Pegasus B360O30

up to 12A rms

Motion Controller



Electrical Data			
Item			
1	Phase Current	A rms	up to 12
2	Peak Current	A peak	30
3	Output Power	W	up to 360
4	Power Supply	VDC	12÷36
5	Logic Power Supply (optional)	VDC	12÷36
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	4	2	2
CANopen (programmable)	C...-S200	4	2	2
CANopen (DS 402)	C...-S402	4	2	2
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	2	1
EtherCAT (DS 402)	E...-S402	4	2	1
Profinet (programmable)	P...-S200	4	2	1
PowerLink (DS 402)	R...-S402	4	2	1
EtherNet IP (programmable)	H...-S200	4	2	1

Cable kit available on request. More information can be found in the product manual on our website.

Characteristics	
Item	
Weight	43g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Supply inversion
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

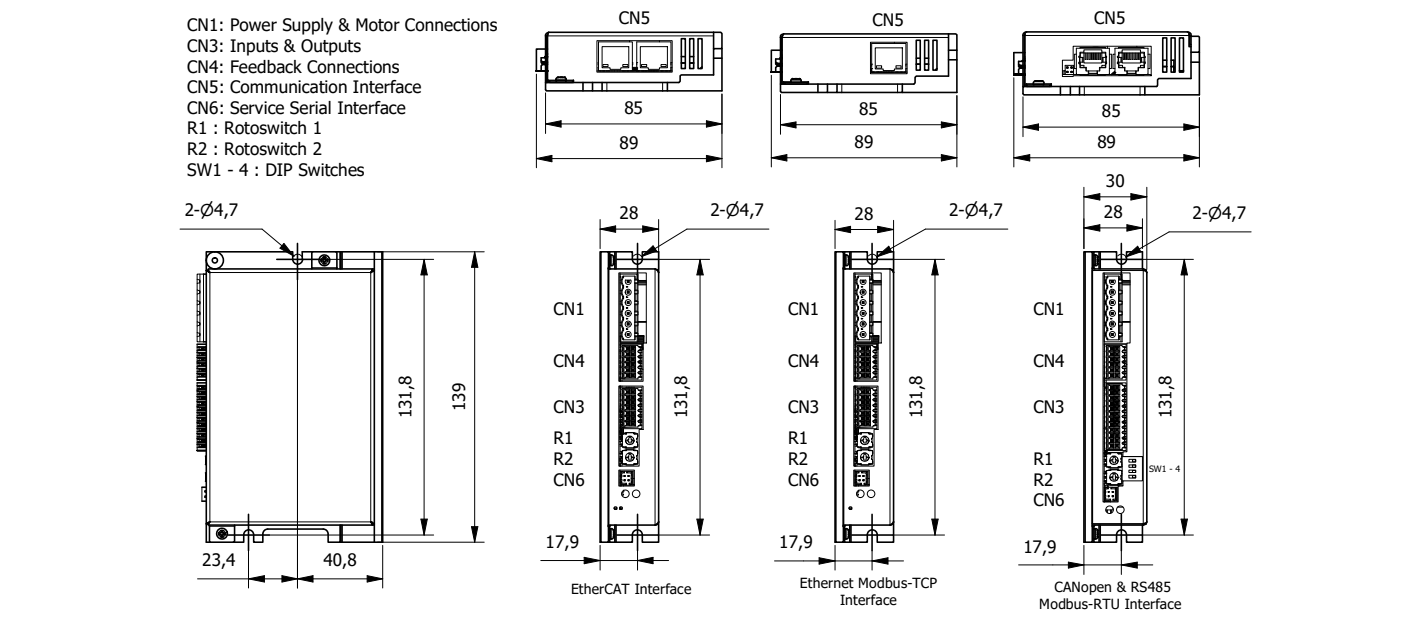
Standard Combination	
Motor	
All motors with Phase Current up to 12A rms	

Drive for BLDC Motor

Gemini B400B30

up to 10A rms

Motion Controller



Electrical Data			
Item			
1	Phase Current	A rms	up to 10
2	Peak Current	A peak	28 (for 5s.)
3	Output Power	W	up to 400
4	Power Supply	VDC	12÷48
5	Logic Power Supply (optional)	VDC	12÷48
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs (not isolated)
RS485 Modbus-RTU (programmable)	M...-S200	6	3	2
CANopen (programmable)	C...-S200	6	3	2
CANopen (DS 402)	C...-S402	6	3	2
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	0
EtherCAT (DS 402)	E...-S200	4	3	0
EtherCAT (programmable)	E...-S200	4	3	0
EtherCAT (DS 402)	E...-S402	4	3	0

Cable kit available on request. More information can be found in the product manual on our website.

Characteristics	
Item	
Weight (CAN-Modbus only)	380g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

Standard Combination	
Motor	
All motors with Phase Current up to 10A rms	

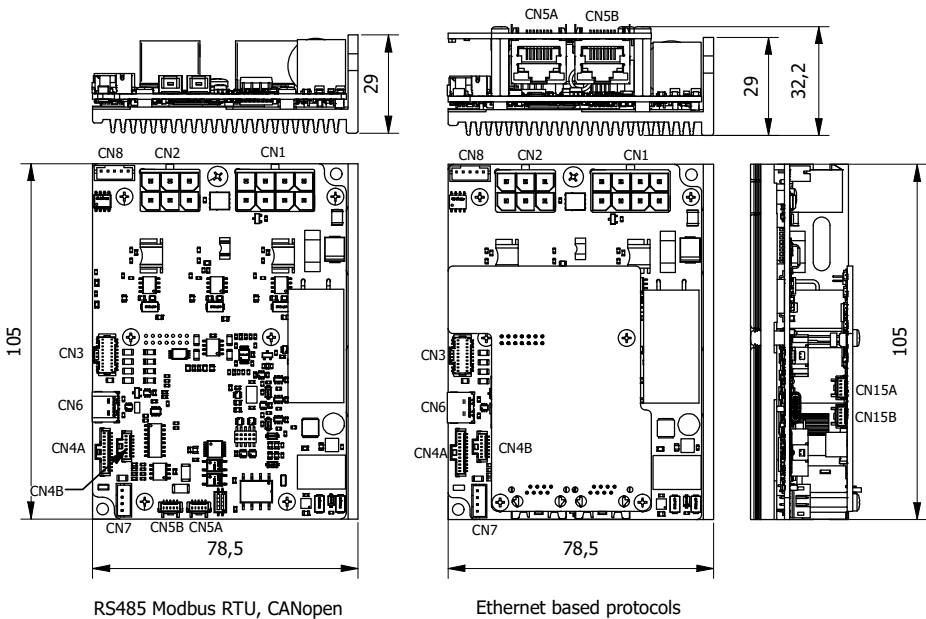
Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Hall effect sensors: 5V Single-Ended (TTL/CMOS)	001

Product code reference	
B400B30 M 001-S200	
M	Fieldbus
001	Feedback options
S200	Protocol reference

Drive for BLDC Motor Leo B1400O90
Motion Controller

up to 30A rms

- CN1: Power Supply + Logic Supply + Brake Resistor Outputs
- CN2: Motor connector
- CN3: Inputs and Outputs
- CN4A: Incremental Encoder + Hall Sensor
- CN4B: Absolute Encoder
- CN5A/B: Communication Interface
- CN6: Service Serial Interface
- CN7: STO Interface
- CN8: Brake Output + External Temperature Sensor
- CN15A/B: Communication Interface



with Safe Torque Off function

Table with 3 columns: Item, Value 1, Value 2. Rows include Phase Current, Peak Current, Output Power, Power Supply, Logic Power Supply, and Chopper Frequency.

Table with 5 columns: Fieldbus, Code, Digital Inputs, Digital Outputs, Analog Inputs. Rows list various communication protocols like RS485 Modbus-RTU, CANopen, Ethernet Modbus TCP/IP, etc.

Cable kit available on request. More information can be found in the product manual on our website.

Table with 2 columns: Item, Value. Rows include Weight, Closed-loop, Protection Class, Pollution Degree, Category, Temperatures, Humidity, Operating mode, Protective functions, Safety feature, and Software.

*Service SCI cable required and available on request

Table with 2 columns: Item, Value. Rows include Motor and a note about phase current up to 30A rms.

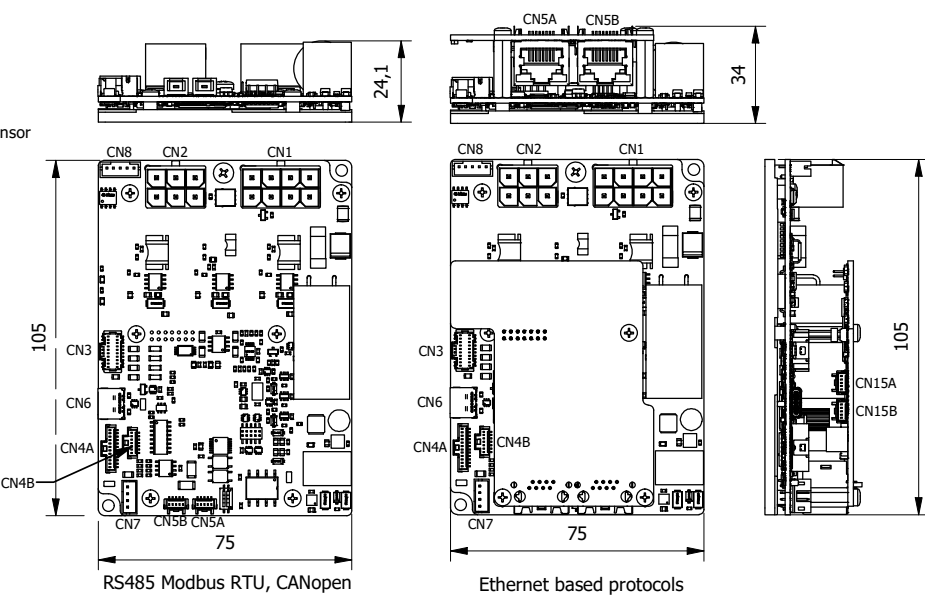
Table with 3 columns: Feedback options, Type, Code. Rows include Incremental encoder, Hall effect sensors, and Absolute Encoder.

Table with 3 columns: Product code reference, L, Feedback options. Rows include B1400O90 L 002-S200 and S200.

Drive for BLDC Motor Leo B2000O90
Motion Controller

up to 40A rms

- CN1: Power Supply + Logic Supply + Brake Resistor Outputs
- CN2: Motor connector
- CN3: Inputs and Outputs
- CN4A: Incremental Encoder + Hall Sensor
- CN4B: Absolute Encoder
- CN5A/B: Communication Interface
- CN6: Service Serial Interface
- CN7: STO Interface
- CN8: Brake Output + External Temperature Sensor
- CN15A/B: Communication Interface



with Safe Torque Off function

Table with 3 columns: Item, Value 1, Value 2. Rows include Phase Current, Peak Current, Output Power, Power Supply, Logic Power Supply, and Chopper Frequency.

Table with 5 columns: Fieldbus, Code, Digital Inputs, Digital Outputs, Analog Inputs. Rows list various communication protocols like RS485 Modbus-RTU, CANopen, Ethernet Modbus TCP/IP, etc.

Cable kit available on request. More information can be found in the product manual on our website.

Table with 2 columns: Item, Value. Rows include Weight, Closed-loop, Protection Class, Pollution Degree, Category, Temperatures, Humidity, Operating mode, Protective functions, Safety feature, and Software.

*Service SCI cable required and available on request

Table with 2 columns: Item, Value. Rows include Motor and a note about phase current up to 40A rms.



BLDC motor Multi-Axis Controllers — Drives

Advantages at a glance
Position, Speed and Torque control
EtherCAT fieldbus
Flexible configuration

Our Brushless Multi-Axis Drives (Phoenix B100 and Phoenix B500) are specifically developed to simultaneously control up to three BLDC 3-phase motors with phase current up to 12A rms (each motor). All our drives feature ARM Core M4 Technology and are capable to drive motors with smooth and silent movements.

Brushless DC motor Multi-Axis Drives	Current* (Arms)
Phoenix - B100	up to 3 (each motor) 438
Phoenix - B500	up to 12 (each motor) 439

PHOENIX B100	PHOENIX B500
Benefits • Compact dimensions • Digital I/O • Simultaneous control of up to 3 motors/axis	Benefits • Compact dimensions • Digital I/O • Simultaneous control of up to 3 motors/axis
Characteristics • Phase Current up to 3A rms for each motor • Power Supply: 12-48VDC • Fieldbus: EtherCAT	Characteristics • Phase Current up to 12A rms for each motor • Power Supply: 12-48VDC • Fieldbus: EtherCAT

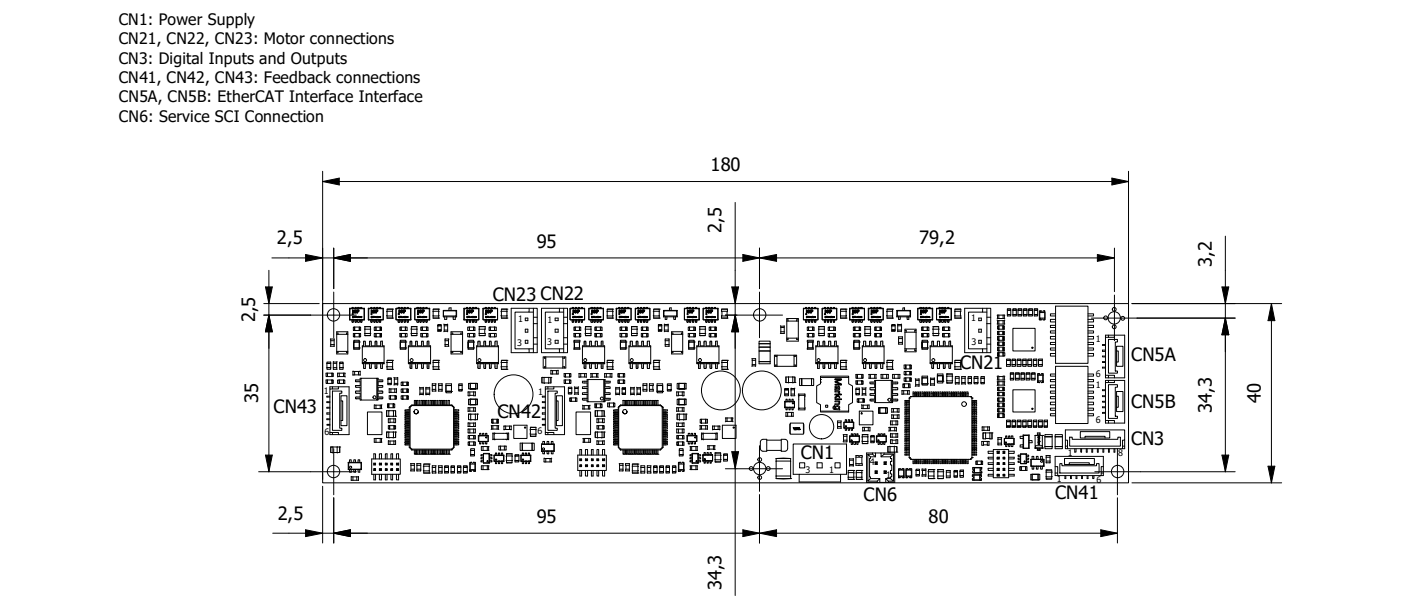
* Phase Current

Drive for BLDC Motor Phoenix B100O05M3

3-Axis Motion Controller

up to 3A rms

each motor



Electrical Data			
Item			
1	Phase Current (each axis)	A rms	up to 3
2	Peak Current (each axis)	A peak	5 (for 2s.)
3	Output Power	W	up to 100
4	Power Supply	VDC	12÷48
5	Logic Power Supply (optional)	VDC	12÷48
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs (not isolated)
EtherCAT (DS 402)	E...-S402	3	3	0
Cable kit available on request. More information can be found in the product manual on our website.				

Characteristics	
Item	
Weight	200g
Closed-loop	Available
Protection Class	IP00
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C Storage -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Software*	Setup & config. - DL Studio
*Service SCI cable required and available on request	

Standard Combination	
Motor	
All motors with Phase Current up to 3A rms	

Feedback options		
Type		Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)		001
Hall effect sensors: 5V Single-Ended (TTL/CMOS)		001

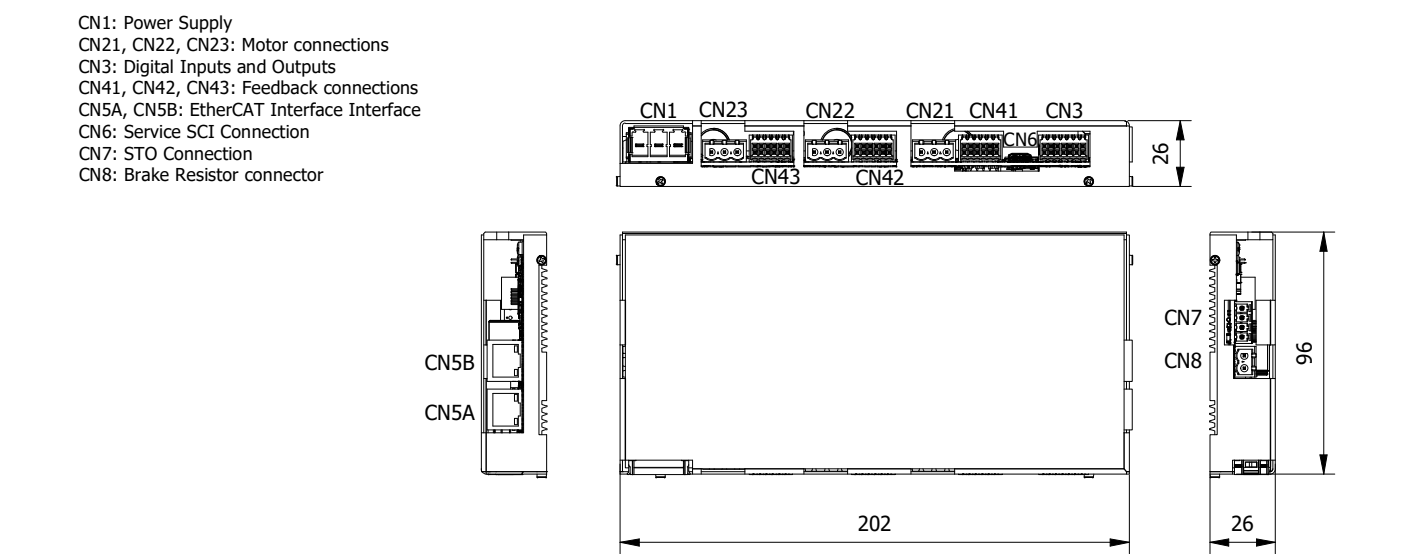
Product code reference		
B100O05 M3 E 001-S402		
M	Multi-axis	
3	Number of axis	
E	Fieldbus	
001	Feedback options	
S402	Protocol reference	

Drive for BLDC Motor Phoenix B500B36M3

3-Axis Motion Controller

up to 12A rms

each motor



with Safe Torque Off function

Electrical Data			
Item			
1	Phase Current (each axis)	A rms	up to 12
2	Peak Current (each axis)	A peak	36 (for 2s.)
3	Output Power	W	up to 500
4	Power Supply	VDC	12÷48
5	Logic Power Supply (optional)	VDC	12÷48
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs (not isolated)
EtherCAT (DS 402)	E...-S402	3	3	0
Cable kit available on request. More information can be found in the product manual on our website.				

Characteristics	
Item	
Weight	300g
Closed-loop	Available
Protection Class	IP00
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C Storage -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/Ple
Software*	Setup & config. - DL Studio
*Service SCI cable required and available on request	

Standard Combination	
Motor	
All motors with Phase Current up to 12A rms	

Feedback options		
Type		Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)		002
Hall effect sensors: 5V Single-Ended (TTL/CMOS)		002

Product code reference		
B500B36 M3 E 002-S402		
M	Multi-axis	
3	Number of axis	
E	Fieldbus	
002	Feedback options	
S402	Protocol reference	



Brushless AC motor
Controllers – Drives

Advantages at a glance
Position, Speed and Torque control
Analogue, fieldbus or programmable
Flexible configuration

Brushless AC motor Drives	Current* (Arms)	
Scorpius A750	up to 3	442
Serpens A1300	up to 5,2	443

Our Brushless AC Drives are specifically developed to control AC power supplied 3-phase brushless motors with phase current up to 5,2A rms. All our drives feature ARM Core M4 Technology and are capable to drive motors with smooth and silent movements.

SCORPIUS	SERPENS
Benefits • Compact dimensions • Digital I/O • Programmable	Benefits • Compact dimensions • Digital I/O • Programmable
Characteristics • Phase Current up to 3A rms • Power Supply: 100-240 VAC • Fieldbus: RS485 Modbus RTU, CANopen and EtherCAT	Characteristics • Phase Current up to 5,2A rms • Power Supply: 85-265 VAC • Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP and Profinet

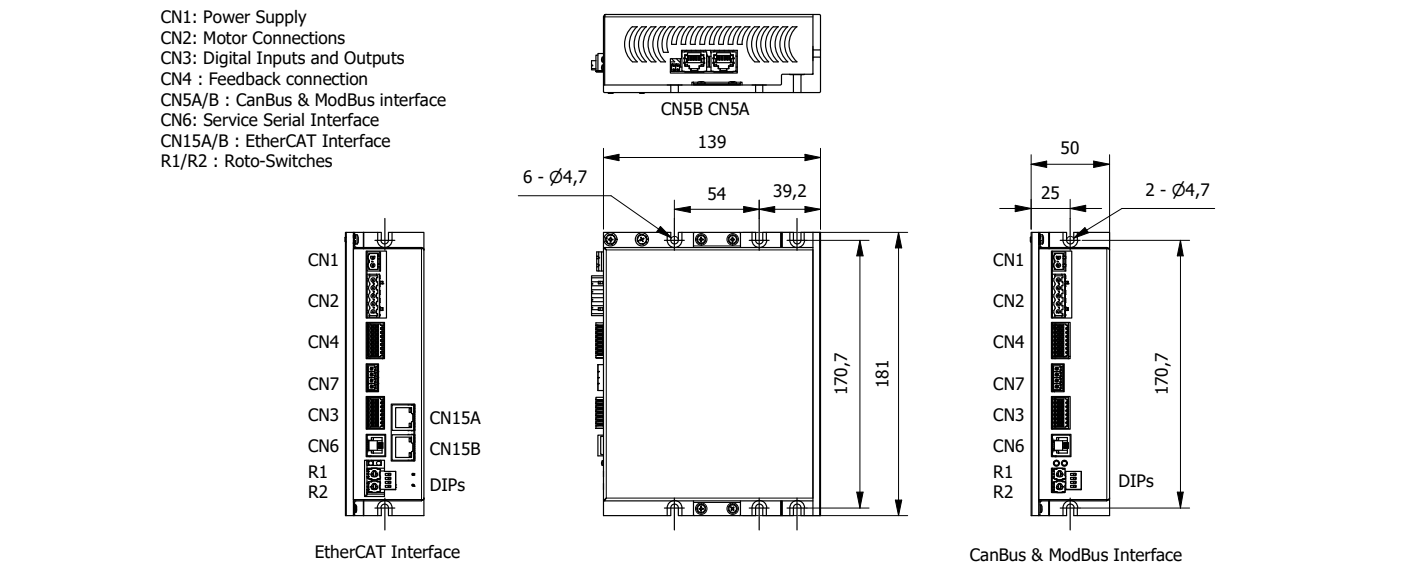
* Phase Current

Drive for AC Brushless Motor

Scorpius A750B12

up to 3A rms

Motion Controller



with Safe Torque Off function

Electrical Data			
Item			
1	Phase Current	A rms	up to 3
2	Peak Current	A peak	12
3	Output Power	W	up to 750
4	Power Supply	VAC	100÷240
5	Logic Power Supply (optional)	VDC	24
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
RS485 Modbus-RTU (programmable)	L...-S200	4	3	0
CANopen (programmable)	L...-S200	4	3	0
CANopen (DS 402)	L...-S402	4	3	0
EtherCAT (DS 402)	E...-S402	4	3	0

Connector kit available on request. More information can be found in the product manual on our website.

Characteristics	
Item	
Weight	800g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 50°C Storage -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/Ple
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

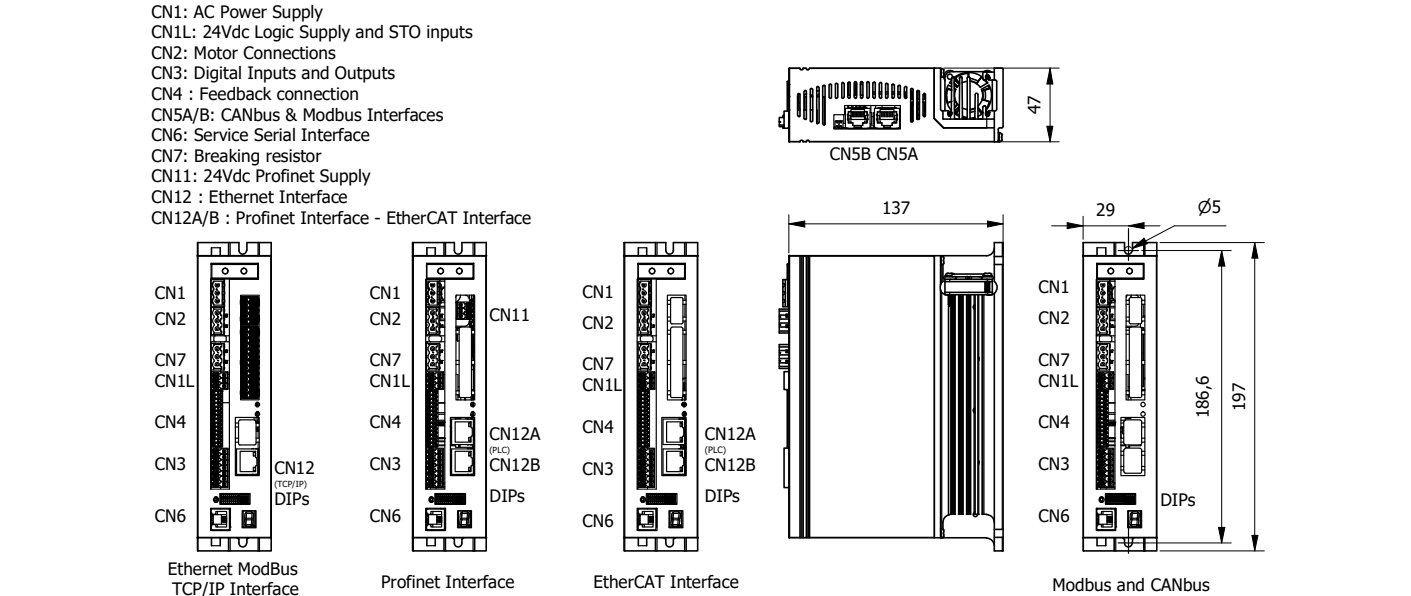
Standard Combination	
Motor	
All motors with Phase Current up to 3A rms	

Drive for AC Brushless Motor

Serpens A1300B12

up to 5,2A rms

Motion Controller



with Safe Torque Off function

Electrical Data			
Item			
1	Phase Current	A rms	up to 5,2
2	Peak Current	A peak	12
3	Output Power	W	up to 1300
4	Power Supply	VAC	(mono or triphase) 85÷265
5	Logic Power Supply (optional)	VDC	24
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs (isolated)
RS485 Modbus-RTU (programmable)	L...-S200	4	3	1
CANopen (programmable)	L...-S200	4	3	1
CANopen (DS 402)	L...-S402	4	3	1
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	0
EtherCAT (DS 402)	E...-S402	4	3	0
Profinet (programmable)	P...-S200	4	3	0

Connector kit available on request. More information can be found in the product manual on our website.

Characteristics	
Item	
Weight	550g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 50°C Storage -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/Ple
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

Standard Combination	
Motor	
All motors with Phase Current up to 5,2A rms	



Stepper motor
Controllers — Drives

Advantages at a glance
Position, Speed and Torque control
Analogue, fieldbus or programmable
Flexible configuration

Our Stepper Drives are specifically developed for 2-phases stepper motors with phase current up to 8,5A rms and offer solutions for both DC and AC power supply. All our drives feature ARM Core M4 Technology and are capable to drive motors with smooth and silent movements.

Stepper motor Drives	Current* (Arms)
Hercules SOD202	up to 2 446
Hercules SOD203 - NEW	up to 3 447
Libra SBD205	up to 5,5 448
Aquarius SBD204	up to 4,2 449
Aquarius SBD207	up to 7,1 450
Sagittarius SBA207	up to 7,1 451
Andromeda SBA208	up to 8,5 452
Lyra SBAC203	up to 3 453
Draco SBAC205	up to 5,2 454
Dorado SBAC208	up to 8 455

HERCULES	AQUARIUS
Benefits • Compact design • Price/performance • Programmable • DC power supply	Benefits • Digital I/O and up to 2 analogue inputs • Programmable • DC power supply
Characteristics • Phase Current up to 3A rms • Power Supply: 12-48 VDC • Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP, Profinet, PowerLink, EtherNet/IP	Characteristics • Phase Current up to 7,1A rms • Power Supply: 12-48 VDC • Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP, Profinet

LIBRA	SAGITTARIUS	ANDROMEDA
Benefits • Price/performance • Simple usage • DC power supply	Benefits • Digital I/O and up to 2 analogue inputs • Programmable • AC or DC power supply	Benefits • Digital I/O and up to 2 analogue inputs • Programmable • AC or DC power supply
Characteristics • Phase Current up to 5,5A rms • Power Supply: 24-80 VDC • Clock & Direction control	Characteristics • Phase Current up to 7,1A rms • Power Supply: 18-56 VAC or 24-80 VDC • Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP	Characteristics • Phase Current up to 8,5A rms • Power Supply: 18-100 VAC or 24-140 VDC • Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP

LYRA	DRACO	DORADO
Benefits • Digital I/O • Programmable • AC power supply	Benefits • Digital I/O and up to 1 analogue inputs • Programmable • AC power supply	Benefits • Digital I/O and up to 1 analogue inputs • Programmable • AC power supply
Characteristics • Phase Current up to 3A rms • Power Supply: 100-240 VAC • Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Clock&Direction	Characteristics • Phase Current up to 5,2A rms • Power Supply: 85-265 VAC • Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP, Profinet	Characteristics • Phase Current up to 8A rms • Power Supply: 85-120 VAC • Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP, Profinet

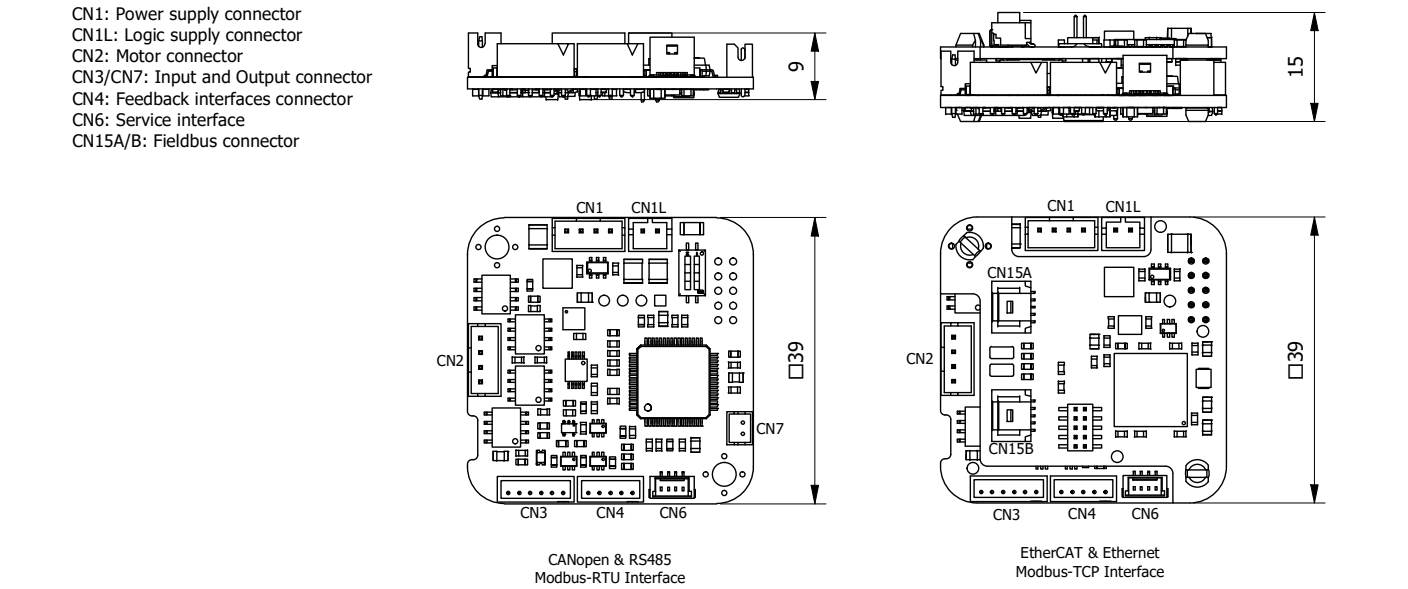
* Phase Current

Drive for Stepper Motor

Hercules SOD202

up to 2A rms

Motion Controller



Electrical Data			
Item			
1	Phase Current	A rms	up to 2
2	Peak Current	A peak	2
3	Power Supply	VDC	12÷36
4	Logic Power Supply (optional)	VDC	12÷36
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	3	2	1
CANopen (programmable)	C...-S200	3	2	1
CANopen (DS 402)	C...-S402	3	2	1
Ethernet Modbus TCP/IP (programmable)	T...-S200	3	2	0
EtherCAT (DS 402)	E...-S402	3	2	0
Profinet (programmable)	P...-S200	3	2	0
PowerLink (DS 402)	R...-S402	3	2	0
EtherNet IP (programmable)	H...-S200	3	2	0

Cable kit available on request. More information can be found in the product manual on our website.

Characteristics		Feedback options	
Item		Type	Code
Weight	15g	Incremental encoder (not isolated): 5V Single-Ended (TTL/CMOS)	001
Closed-loop	Available		
Protection Class	IP00		
Pollution Degree	2		
Category	C3 following standard EN 61800-3		
Temperatures	Working: 5°C ÷ 40°C Storage: -25°C ÷ 55°C		
Humidity	5% ÷ 85% not condensing		
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)		
Protective functions	Over current, Over/Under Voltage, Overheating, Supply inversion		
Software*	Setup & config. - DL Studio Programming - DL Space		
*Service SCI cable required and available on request			

Product code reference	
SOD202 M 001-S200	
M	Fieldbus
001	Feedback options
S200	Protocol reference

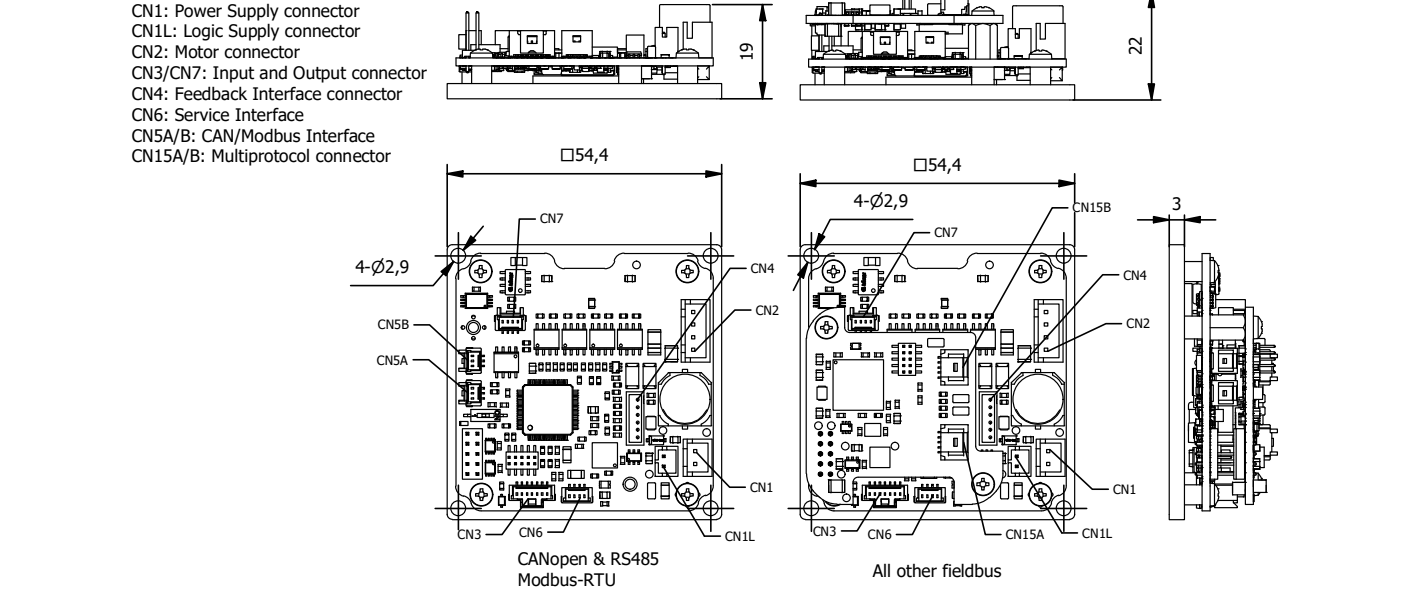
Standard Combination	
Motor	
All motors with Phase Current up to 2A rms	

Drive for Stepper Motor

Hercules SOD203

up to 3A rms

Motion Controller



Electrical Data			
Item			
1	Phase Current	A rms	up to 3
2	Peak Current	A peak	3
3	Power Supply	VDC	12÷48
4	Logic Power Supply (optional)	VDC	12÷48
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	4	3	1
CANopen (programmable)	C...-S200	4	3	1
CANopen (DS 402)	C...-S402	4	3	1
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	0
EtherCAT (DS 402)	E...-S402	4	3	0
Profinet (programmable)	P...-S200	4	3	0
PowerLink (DS 402)	R...-S402	4	3	0
EtherNet IP (programmable)	H...-S200	4	3	0

Cable kit available on request. More information can be found in the product manual on our website.

Characteristics		Feedback options	
Item		Type	Code
Weight	27g	Incremental encoder (not isolated): 5V Single-Ended (TTL/CMOS)	002
Closed-loop	Available	Absolute Encoder Biss-C	003
Protection Class	IP00		
Pollution Degree	2		
Category	C3 following standard EN 61800-3		
Temperatures	Working: 5°C ÷ 40°C Storage: -25°C ÷ 55°C		
Humidity	5% ÷ 85% not condensing		
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)		
Protective functions	Over current, Over/Under Voltage, Overheating, Supply inversion		
Software*	Setup & config. - DL Studio Programming - DL Space		
*Service SCI cable required and available on request			

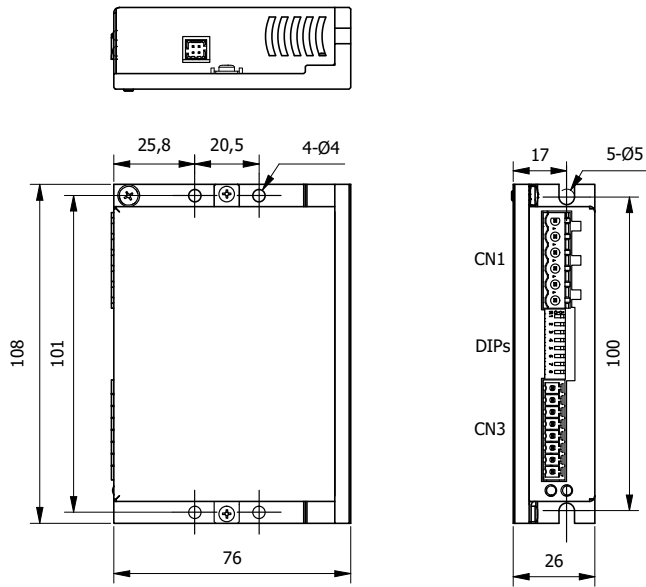
Product code reference	
SOD203 M 002-S200	
M	Fieldbus
002	Feedback options
S200	Protocol reference

Standard Combination	
Motor	
All motors with Phase Current up to 3A rms	

Drive for Stepper Motor Libra SBD205
Motion Controller

up to 5,5A rms

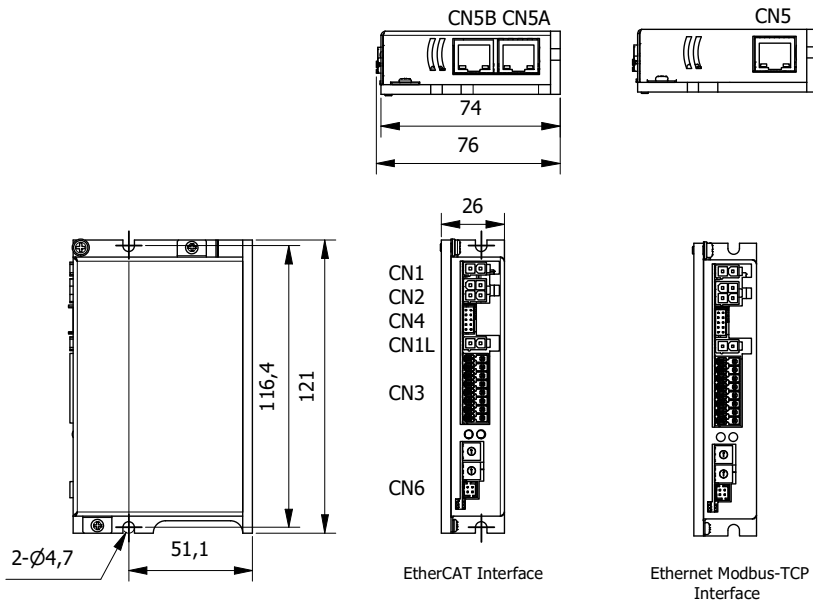
CN1: Power Supply
CN3: Digital I/O



Drive for Stepper Motor Aquarius SBD204
Motion Controller

up to 4,2A rms

CN1: Power Supply
CN2: Motor Connections
CN1L: Logic Power Supply
CN3: Inputs and Outputs
CN4: Feedback Connections
CN5: Communication Interface
CN6: Service Serial Interface



Electrical Data			
Item			
1	Phase Current	A rms	up to 5,5
2	Peak Current	A peak	7.8
3	Power Supply	VDC	24 ÷ 80
4	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Operating Mode	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
Clock & Direction	N...-S100	3	1	0
Connector kit included. More information can be found in the product manual on our website.				

Characteristics	
Item	
Weight	200g
Closed-loop	Not available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: from Fullstep to 1/100 step (config. with dip switches)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Service SCI cable required for monitoring and available on request	

Product code reference	
SBD205 N 001-S100	
N	Operating mode
001	Standard version
S100	Protocol reference

Standard Combination	
Motor	
All motors with Phase Current up to 5,5A rms	

Electrical Data			
Item			
1	Phase Current	A rms	up to 4,2
2	Peak Current	A peak	6
3	Power Supply	VDC	12÷48
4	Logic Power Supply (optional)	VDC	12÷48
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	2	0
EtherCAT (DS 402)	E...-S402	4	2	0
Cable and Connector kit available on request. More information can be found in the product manual on our website.				

Characteristics	
Item	
Weight	350g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Software*	Setup & config. - DL Studio Programming - DL Space
*Service SCI cable required and available on request	

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Absolute Encoder Biss-C	002

Product code reference	
SBD204 T 001-S200	
T	Fieldbus
001	Feedback options
S200	Protocol reference

Standard Combination	
Motor	
All motors with Phase Current up to 4,2A rms	

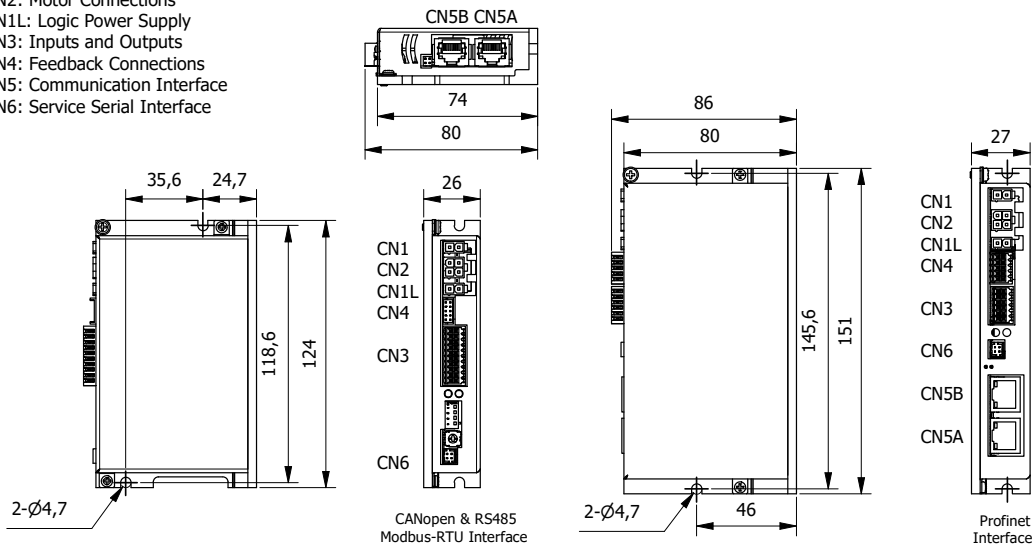
Drive for Stepper Motor

Aquarius SBD207

Motion Controller

up to 7,1A rms

CN1: Power Supply
CN2: Motor Connections
CN1L: Logic Power Supply
CN3: Inputs and Outputs
CN4: Feedback Connections
CN5: Communication Interface
CN6: Service Serial Interface



Electrical Data			
Item			
1	Phase Current	A rms	up to 7,1
2	Peak Current	A peak	10
3	Power Supply	VDC	12÷48
4	Logic Power Supply (optional)	VDC	12÷48
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	4	3	2
CANopen (programmable)	C...-S200	4	3	2
CANopen (DS 402)	C...-S402	4	3	2
Profinet (programmable)	P...-S200	4	2	0

Cable and Connector kit available on request. More information can be found in the product manual on our website.

Characteristics	
Item	
Weight	280g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

Standard Combination	
Motor	
All motors with Phase Current up to 7,1A rms	

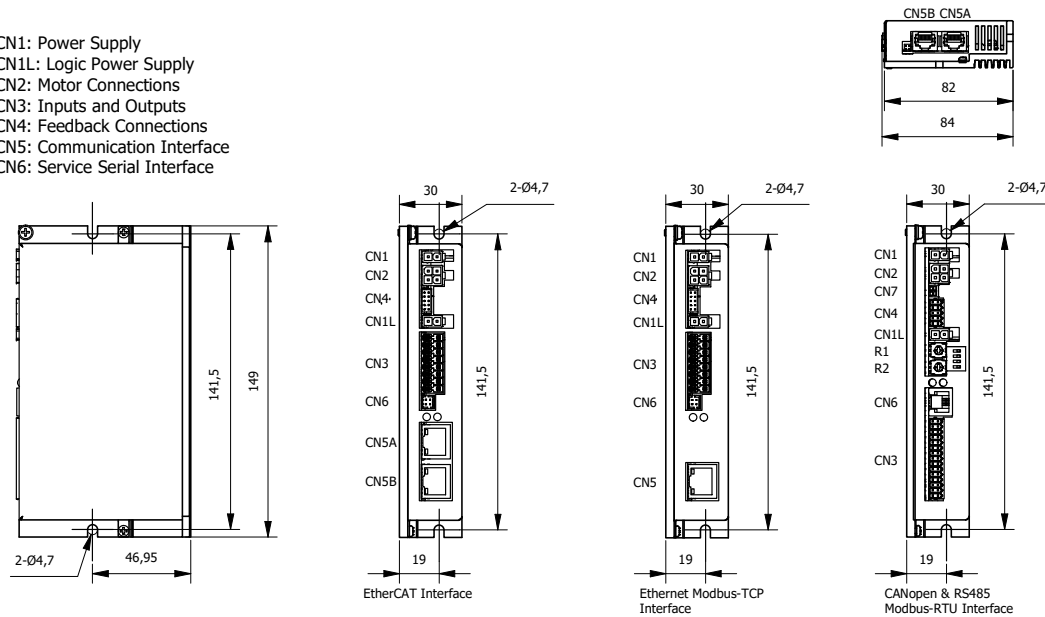
Drive for Stepper Motor

Sagittarius SBA207

Motion Controller

up to 7,1A rms

CN1: Power Supply
CN1L: Logic Power Supply
CN2: Motor Connections
CN3: Inputs and Outputs
CN4: Feedback Connections
CN5: Communication Interface
CN6: Service Serial Interface



Electrical Data			
Item			
1	Phase Current	A rms	up to 7,1
2	Peak Current	A peak	10
3	Power Supply	VDC	18÷56VAC or 24÷80VDC
4	Logic Power Supply (optional)	VDC	24
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	4	2	2
CANopen (programmable)	C...-S200	4	2	2
CANopen (DS 402)	C...-S402	4	2	2
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	2	0
EtherCAT (DS 402)	E...-S402	4	2	0

Cable and Connector kit available on request. More information can be found in the product manual on our website.

Characteristics	
Item	
Weight	450g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

Standard Combination	
Motor	
All motors with Phase Current up to 7,1A rms	

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Absolute Encoder Biss-C	002

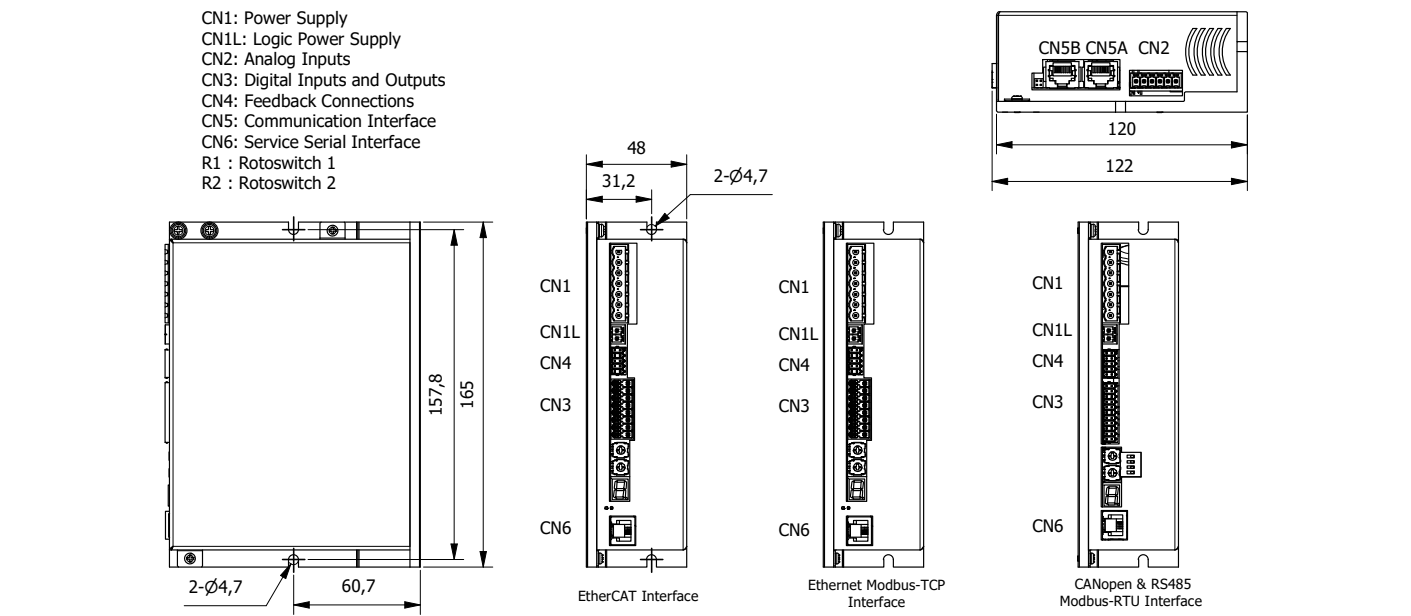
Product code reference	
SBA207 M 001-S200	
M	Fieldbus
001	Feedback options
S200	Protocol reference

Drive for Stepper Motor

Andromeda SBA208

up to 8,5A rms

Motion Controller



Electrical Data			
Item			
1	Phase Current	A rms	up to 8,5
2	Peak Current	A peak	12
3	Power Supply	18÷100VAC or 24÷140VDC	
4	Logic Power Supply (optional)	18÷100VAC or 24÷140VDC	
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	6	4	2
CANopen (programmable)	C...-S200	6	4	2
CANopen (DS 402)	C...-S402	6	4	2
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	2	0
EtherCAT (DS 402)	E...-S402	4	2	0

Connector kit available on request. More information can be found in the product manual on our website.

Characteristics	
Item	
Weight	550g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

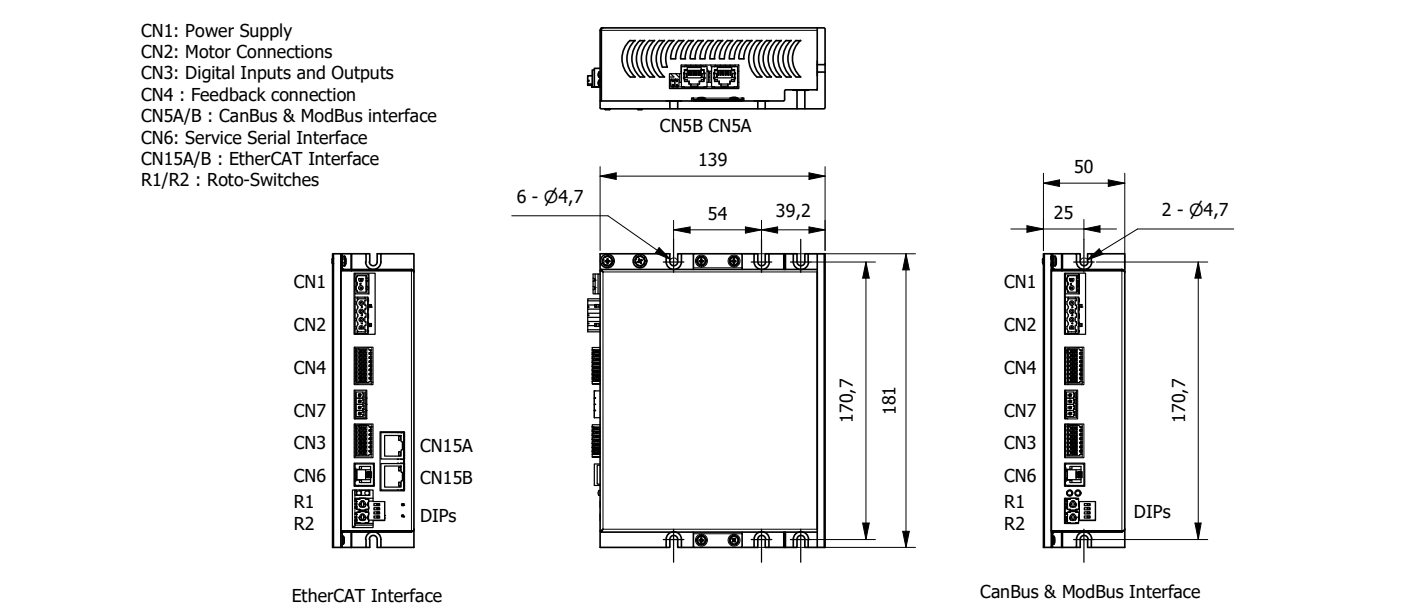
Standard Combination	
Motor	
All motors with Phase Current up to 8,5A rms	

Drive for Stepper Motor

Lyra SBAC203

up to 3A rms

Motion Controller - High voltage



with Safe Torque Off function

Electrical Data			
Item			
1	Phase Current	A rms	up to 3
2	Peak Current	A peak	4.2
3	Power Supply	VAC	100÷240
4	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus / Operating Mode	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
Clock and Direction	N...-S100	4	3	0
RS485 Modbus-RTU (programmable)	L...-S200	4	3	0
CANopen (programmable)	L...-S200	4	3	0
CANopen (DS 402)	L...-S402	4	3	0
EtherCAT (DS 402)	E...-S402	4	3	0

Connector kit available on request. More information can be found in the product manual on our website.

Characteristics	
Item	
Weight	800g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode (N)	Clock and Direction
Operating mode (L-E)	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/PLe
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

Standard Combination	
Motor	
All motors with Phase Current up to 3A rms	

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Absolute encoder: 5V SSI or BISS-C (isolated)	001

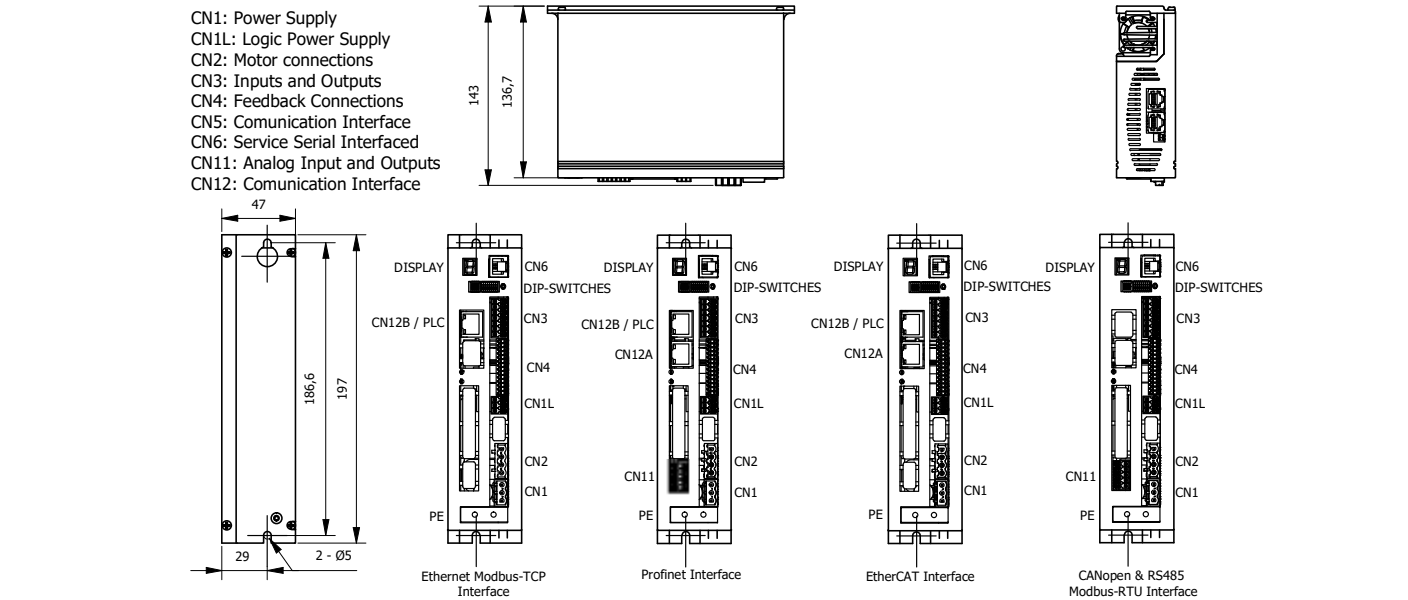
Product code reference	
SBAC203 L 001-S200	
L	Fieldbus / Operating mode
001	Feedback options
S200	Protocol reference

Drive for Stepper Motor

Draco SBAC205

up to 5,2A rms

Motion Controller - High voltage



with Safe Torque Off function

Electrical Data			
Item			
1	Phase Current	A rms	up to 5,2
2	Peak Current	A peak	7,3
3	Power Supply (monophase-triphas)	VAC	85÷265
4	Logic Power Supply (mandatory)	VDC	24
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
RS485 Modbus-RTU (programmable)	L...-S200	4	3	1
CANopen (programmable)	L...-S200	4	3	1
CANopen (DS 402)	L...-S402	4	3	1
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	0
EtherCAT (DS 402)	E...-S402	4	3	0
Profinet (programmable)	P...-S200	4	3	0

Connector kit available on request. More information can be found in the product manual on our website.

Characteristics	
Item	
Weight	550g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/PLe
Software	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

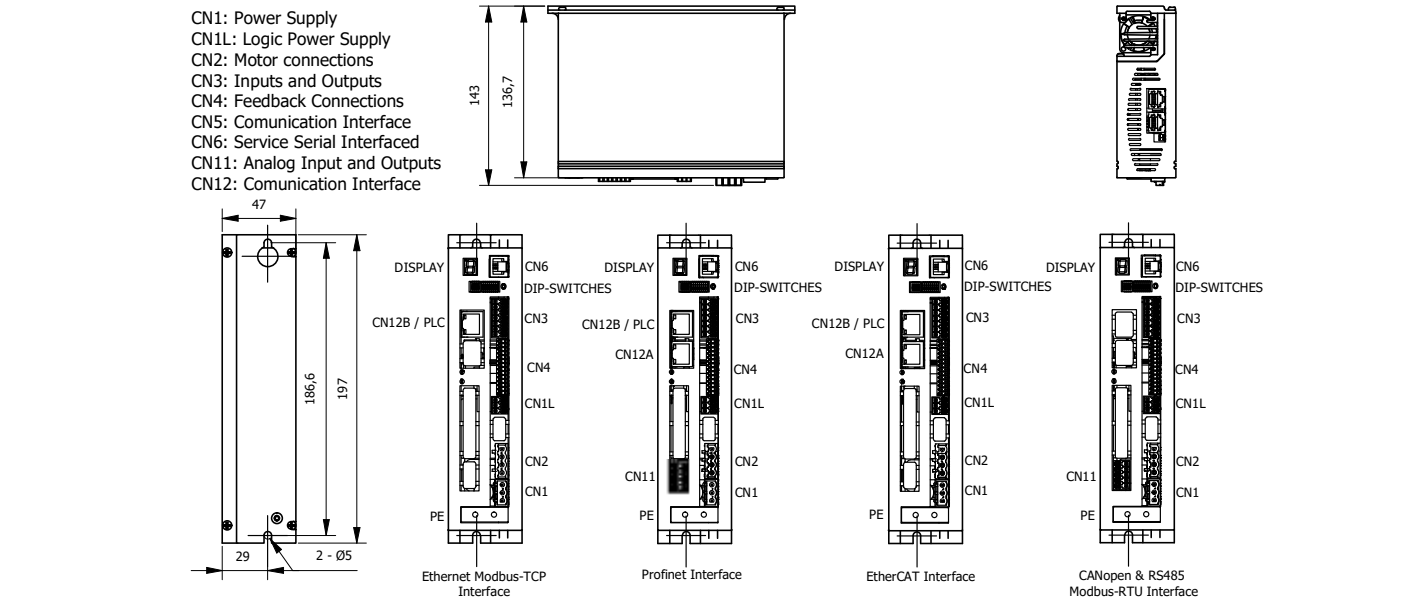
Standard Combination	
Motor	
All motors with Phase Current up to 5,2A rms	

Drive for Stepper Motor

Dorado SBAC208

up to 8A rms

Motion Controller - High voltage



with Safe Torque Off function

Electrical Data			
Item			
1	Phase Current	A rms	up to 8
2	Peak Current	A peak	11,3
3	Power Supply (monophase-triphas)	VAC	85÷120
4	Logic Power Supply (mandatory)	VDC	24
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
RS485 Modbus-RTU (programmable)	L...-S200	4	3	1
CANopen (programmable)	L...-S200	4	3	1
CANopen (DS 402)	L...-S402	4	3	1
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	0
EtherCAT (DS 402)	E...-S402	4	3	0
Profinet (programmable)	P...-S200	4	3	0

Connector kit available on request. More information can be found in the product manual on our website.

Characteristics	
Item	
Weight	550g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/PLe
Software*	Setup & config. - DL Studio Programming - DL Space

*Service SCI cable required and available on request

Standard Combination	
Motor	
All motors with Phase Current up to 8A rms	

To see our full range
please visit our website:



www.delta-line.com



- _ Coreless
- _ PMDC

Brushed DC Motors
Ø 8-63mm



- _ Slotted & Slotless
- _ Flat
- _ Frameless
- _ with encoder

Brushless DC Motors
Ø 10-115 mm



- _ Medium voltage 220VAC
- _ Low voltage 48VDC

Servomotors
□ 38-130mm



- _ Hybrid
- _ Flat
- _ Hollow shaft
- _ with encoder

Stepper Motors
Nema 6-42 Ø 14-110mm



- _ External
- _ Captive
- _ Non-Captive

Linear Actuators
Nema 8-23

Motors



- _ for Stepper motors
- _ for Brushless motors

Controllers / Drives
Phase current 2 to 40A rms



- _ Speed Controller
- _ Motion Controller

BLDC, Servo & Stepper with Controller
Ø 16-80mm / □ 42-86mm

Electronics



- _ Planetary
- _ Spur

Gearboxes
Ø 8-80mm

Gearboxes



- _ Standard variations
- _ Modular assembly
- _ Full custom

Customizations

Custom

Our technologies

Our experts are here
to help you find the
most suitable solution.
Contact us.

Plenty of products, right?

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fax. +41 (0)91 612 85 19

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