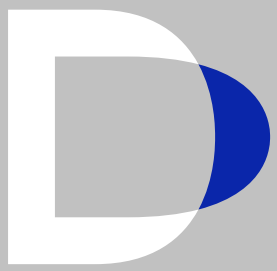
2021/2022
Product
Catalogue



Delta Line

Moving together

Delta Line SA

Via Prè d'là 1
CH - 6814 Lamone
Switzerland

ph. +41 (0)91 612 85 00
fax. +41 (0)91 612 85 19

www.delta-line.com
info@delta-line.com

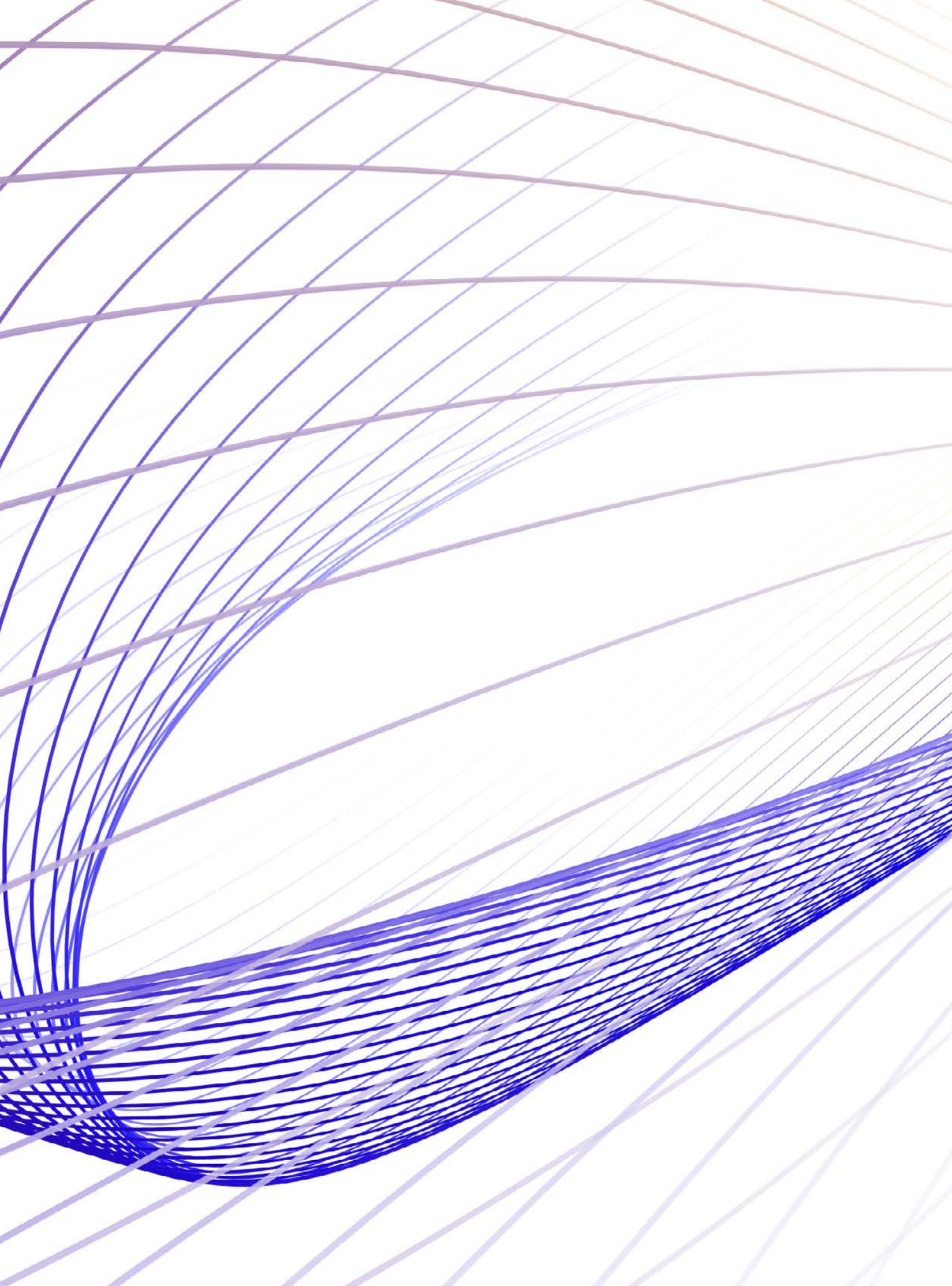
Delta Line North America, Inc

DTC Tech
4600 South Syracuse, 9th Floor
Denver, CO 80237, USA

ph. +1 303 256 6212

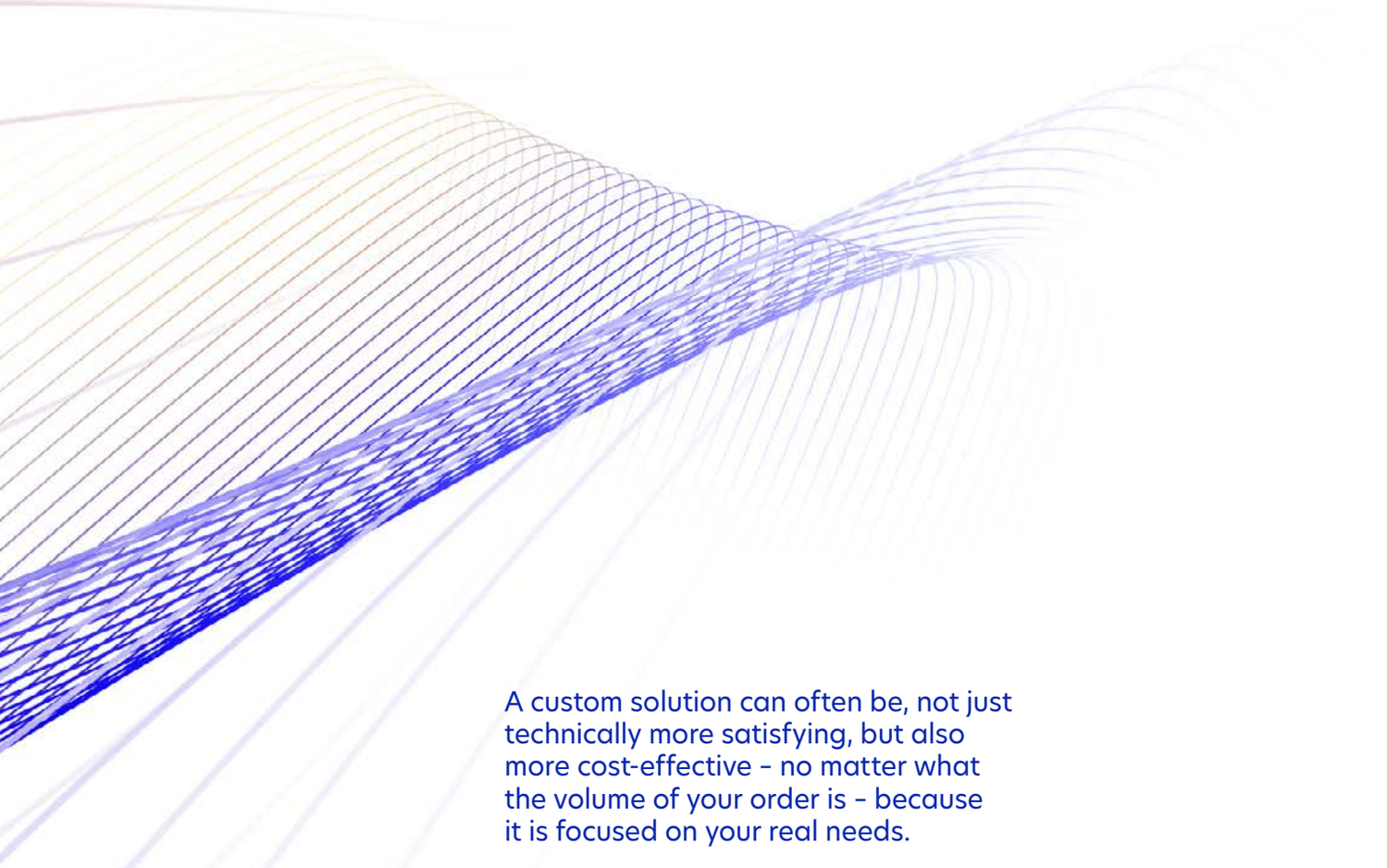
www.delta-line.com
infous@delta-line.com

June 2021 version



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
- Length
- Diameter
- Surface: D-cut, cross-bore, Key
- Shape: hollow, female threads
- Output component: pinions, gear, pulley

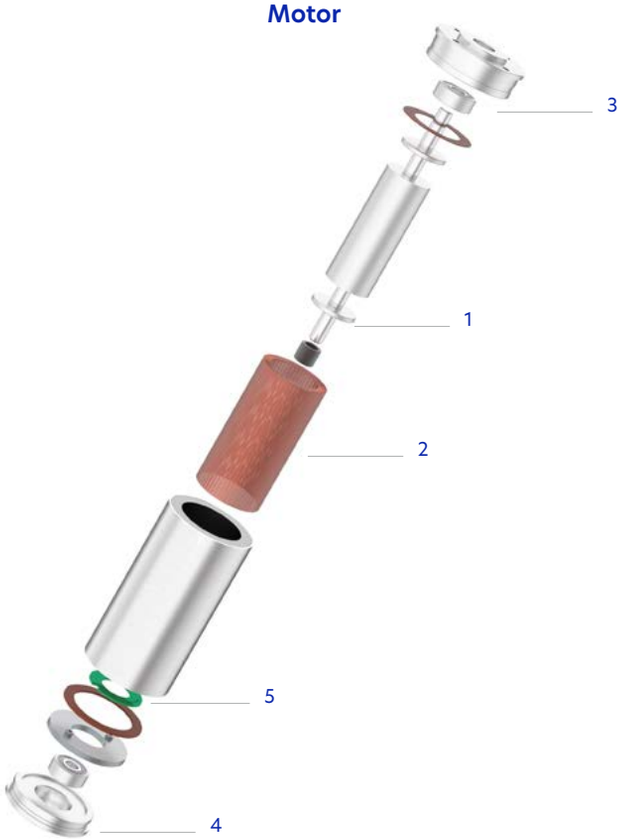
2. Winding
- Nominal voltage
- Current
- Speed
- Temperature range

3. Special Ball Bearings

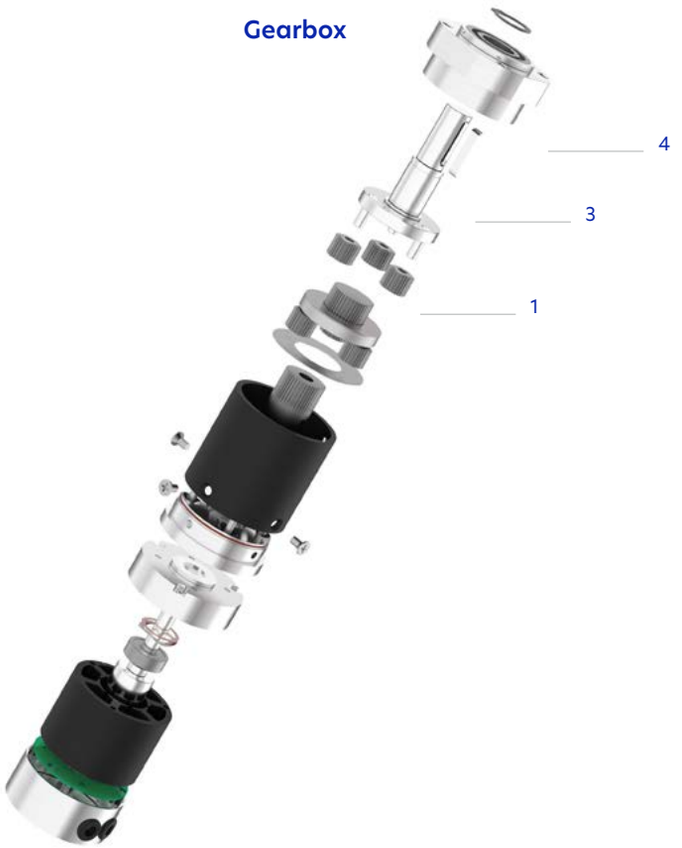
4. Special Front / Rear Flange

5. Cables & Connectors
- Length
- Hose
- Special Connectors

Motor



Gearbox

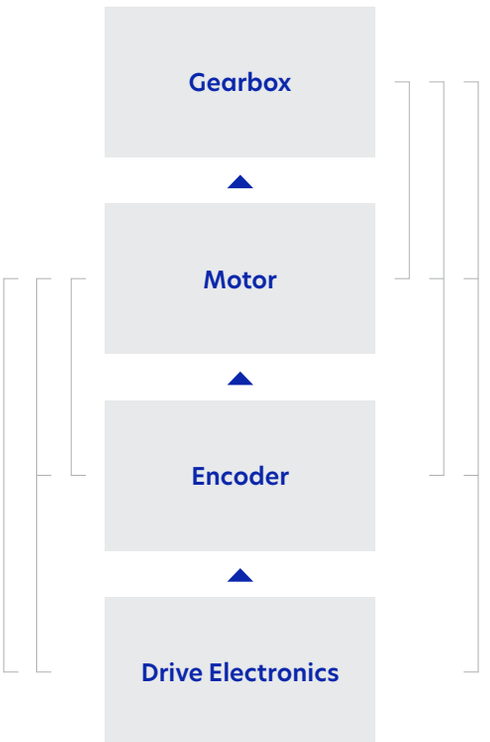


on motors and gearboxes: shaft range, windings, connector types, bearings.

1. Variation of standard

Customization Capabilities

Our design team can operate at **3 levels**



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

Sector
Robotics

Challenges
develop a high-power motion system with 3 axis output respecting narrow space and low noise requirements

Solution
optimised coil BLDC motor with customized 1-stage and 3-axis output gearbox

A

Sector
Agriculture

Challenges
develop an IP protected high precision motion system to allow simultaneous distribution of multiple products in the soil

Solution
flat BLDC motor combined with a customized multi-speed 3-axis output gearbox (each axe able to rotate at different speed)

B

Some of our customizations

tell us your challenge and we will solve it

Sector
Robotics

Challenges
develop a low cost modular motorization solution, respecting space and IP protection constraints

Solution
BLDC motor combined with a spur gear reducer with tailor made IP proof plastic moulded housing which enables direct wheel assembly

C

Sector
Packaging industry

Challenges
develop an efficient long service life complete motion system with perpendicular exit, allowing to be used in multiple positions

Solution
BLDC motor with integrated drive controller, 2-stage planetary gearbox ending with a crown gear reducer with angular exit shaft on the same axis as the complete unit allowing cost efficiency due to its high versatility

D

We have more than 4.500 delighted customers in **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 ~€80M, growing since 2008.

735 employees
80M Euro turnover

Delta Line

Julling Motor
a Delta Line company

E&D Electronics&Drive
a Delta Line company

HELIX LINEAR TECHNOLOGIES

Brands

one trusted source of
sub-1kW motion control
components and systems

Delta Line, since 1983

Fulling Motor
a Delta Line company

- **Established in 2001**, Changzhou Fulling Motor Co. is a German-Swiss-Chinese joint venture
- Specialized in **stepper and DC brushed & brushless motors** design and manufacturing
- Based in Changzhou, China, employing more than **600 workers**
- **18'000 sqm manufacturing** facilities with cutting edge equipment
- **6 Million motors and gearboxes** produced yearly
- **ISO9001** and **ISO14001** certified by TUV Germany
- All products **RoHS compliant** and **CE certified**

E&D
Electronics&Drive
a Delta Line company

- **Established in 2019,** E&D is a joint venture between Delta Line SA and leading motion control expert Ever Elettronica (active since 1977 in Italy)
- Specialized in design and manufacturing of **hardware and software motion systems**
- E&D products include motors with integrated encoder and electronics, IP65 solutions, as well as stand-alone drivers/controllers for brushless and stepper motors.
- E&D can rely on an efficient internal production department and a team of expert mechatronic application engineers based in Switzerland.

we are co-owner
of **Fulling motor** and
E&D drive electronics

Our companies

not top-heavy bureaucratic.
Our organization is setup to be
fast and adaptable to client needs,
allowing us to make decisions quickly.

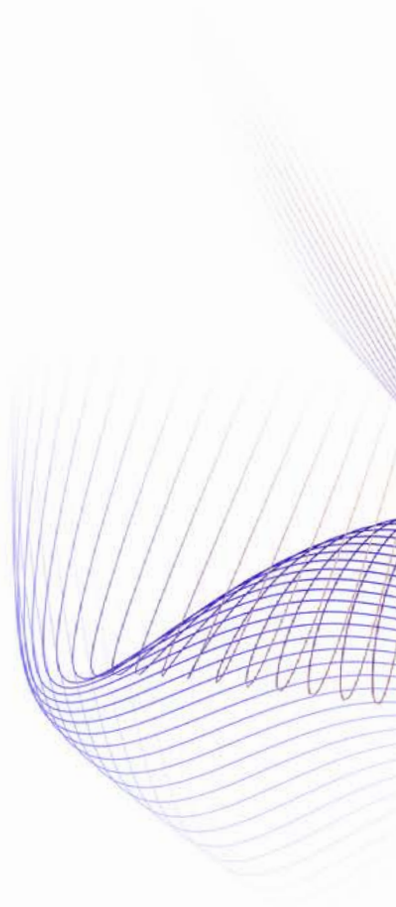
We Are Lean

offering wide access to technologies
and customizations, thanks to the
combination of own manufacturing,
carefully selected partner brands and
dedicated inhouse design teams.

We Are Flexible

yet also close-at-hand, through our
own manufacturing and logistic
facilities on 3 continents, and
direct contact to our market-based
technical and commercial teams.

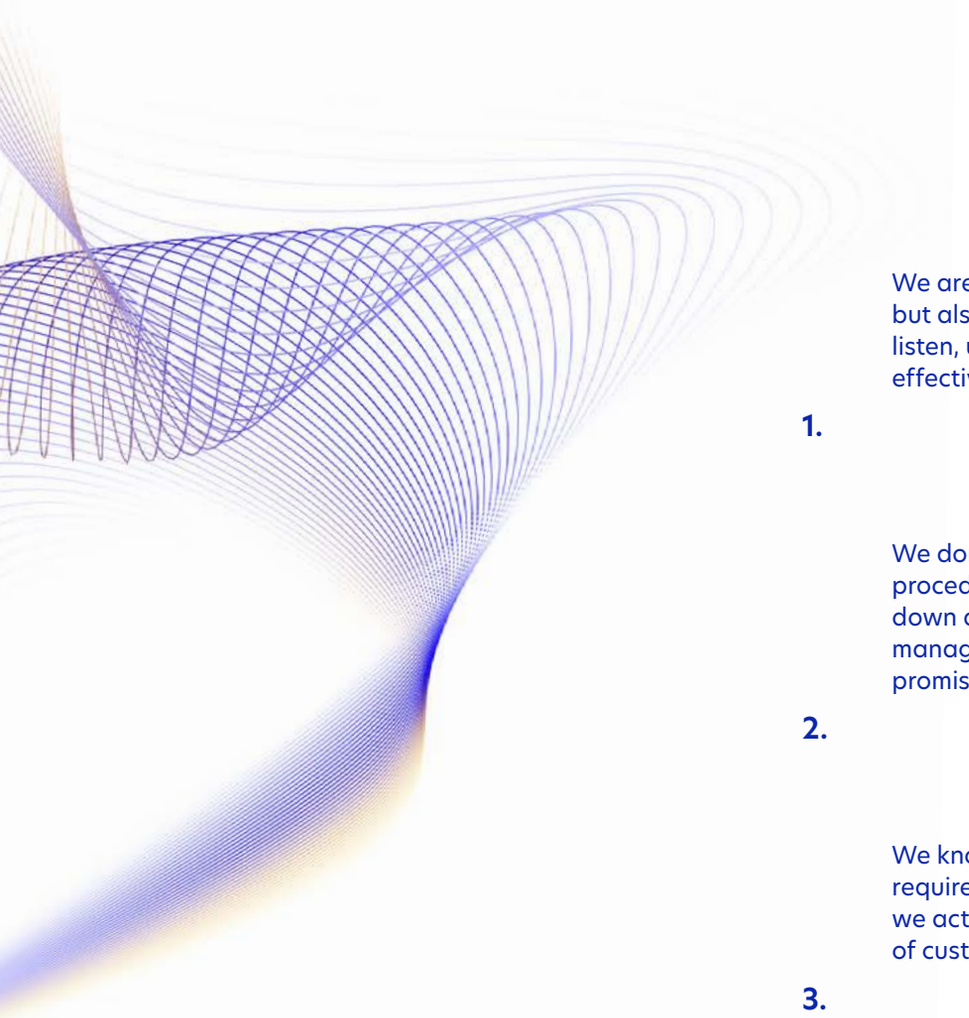
We Are Global



Delta Line combines the functional capabilities of a large company with the agility of a small one.

Our unique corporate structure

The key to successful partnership is service: we give you a **single point of contact** – a team committed to your project from initial consultation to after-sales service.



1. We are experts in our technology, but also in applications. Our job is to listen, understand, and suggest cost-effective solutions - not just sell.

2. We don't have complex internal procedures or policies that slow down delivery. We know how to manage projects and we keep our promises.

3. We know that every project will require some degree of adaptation: we act fast and can offer all forms of customization.

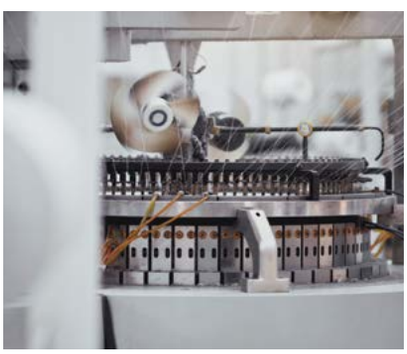
Our mission, personal service

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

Healthcare

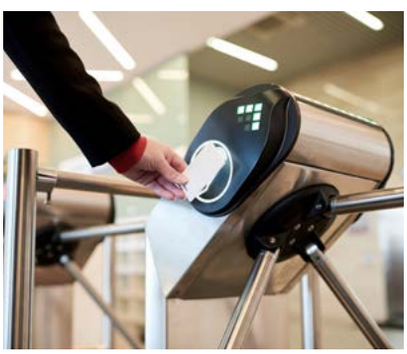
Fertiliser distribution systems
Harvesting machines
Precision seed drills
Hydraulic equipment replacement
Milking systems (Robotics)
Feeding robots

Agriculture



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

Market expertise

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

Brushed DC motors - NEW 21

Brushless DC motors 53

Motors with integrated Controller 209

Stepper motors 259

Linear actuators - NEW 391

Gearboxes 445

Encoders 489

Motor Controllers/Drives 501

Brushed DC

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.

* 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. Its value is the product of rated current and winding resistance.
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.
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	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).

Glossary

Brushed DC

Brushed DC coreless motors are found in a large variety of products and applications such as healthcare, robotics, instrumentation, and security and access products. 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).

The commutator physically contacts the brushes, which are connected to opposite poles of the power source. The rotation's direction, clockwise and/or counter clockwise, can be reversed easily by reversing the polarity of the brushes, i.e., reversing the leads on the battery. The Coreless - or Ironless - self-supporting coil is the central element of our 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.

In combination with graphite brushes, which are more suitable for applications requiring higher power and higher current, in start/stop operations and in combination with electronic controls.

Mechanical commutation with 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.

Mechanical commutation with Precious metal brushes

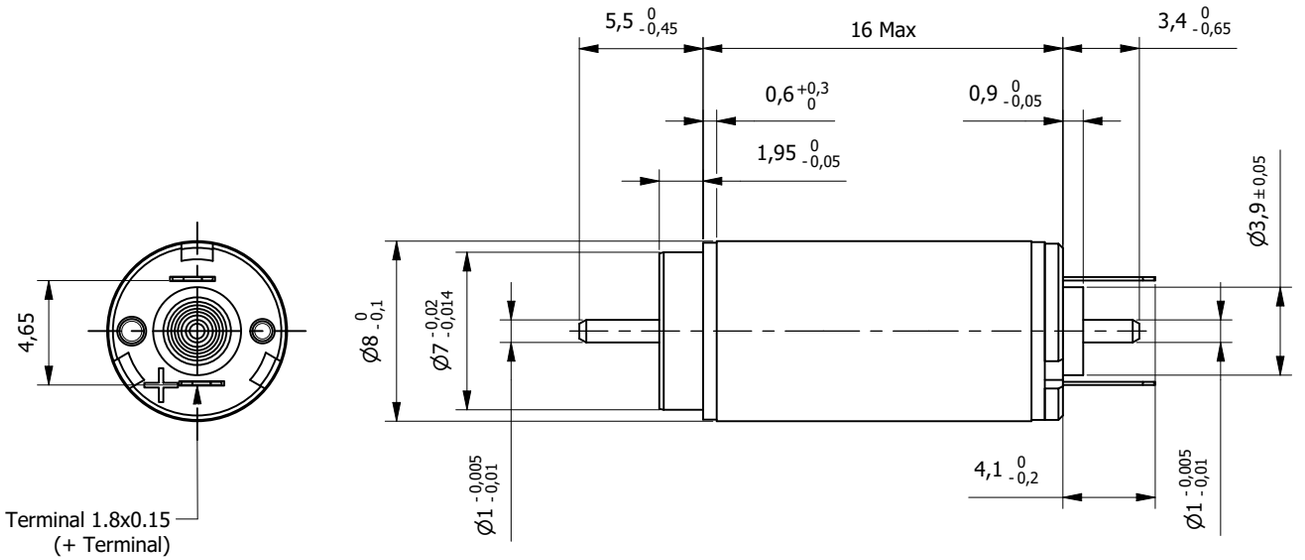
Technical introduction

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 Motor 08DC16N-PM

Precious Metal brushes

Ø 8mm - 0,6mNm



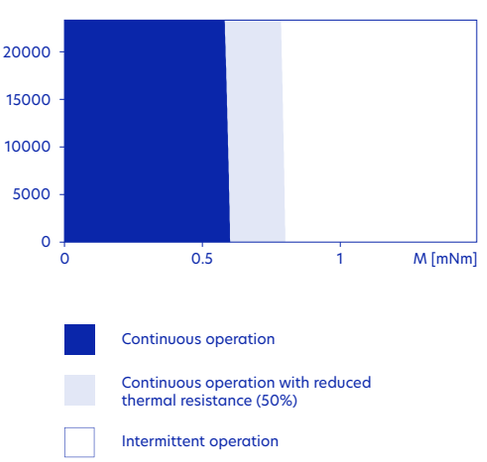
Product also available with ball bearings

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	gcm2	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

Standard Combination
Gearbox
08GPS
* other options on request

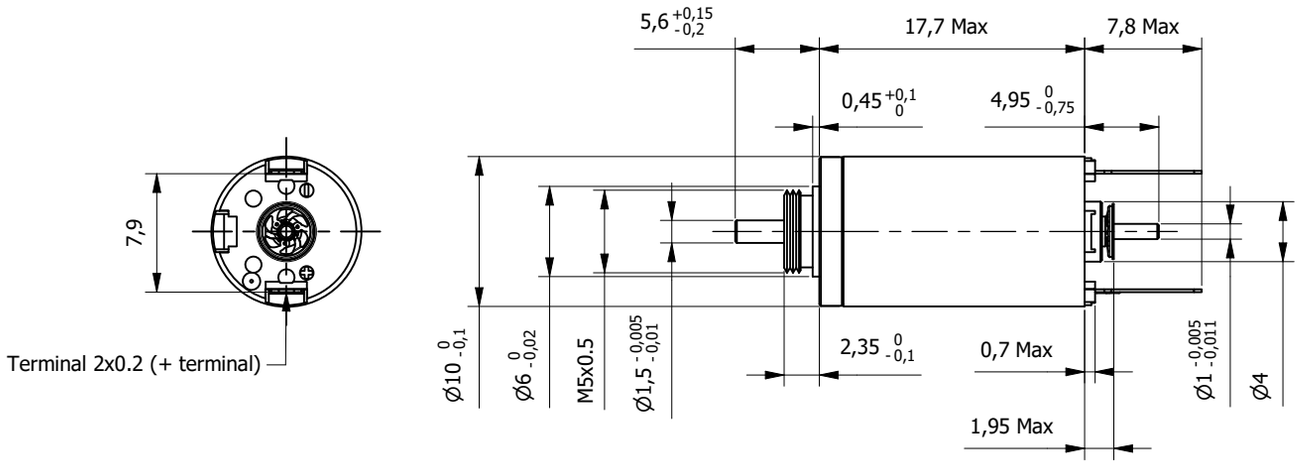
Operating range: Winding 6V



Brushed DC Coreless Motor 10DC17N-PM

Precious Metal brushes

Ø 10mm - 1mNm



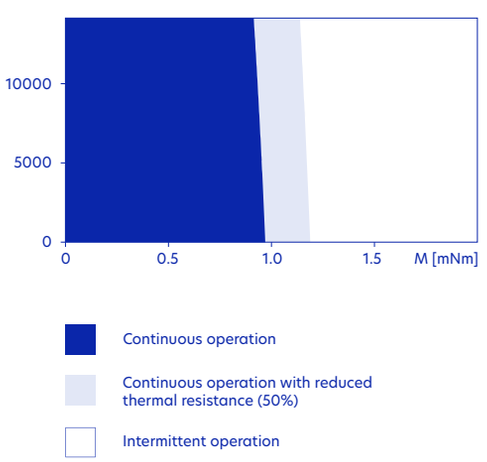
Product also available with ball bearings

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	10^3/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

Standard Combination
Gearbox
10GPS
* other options on request

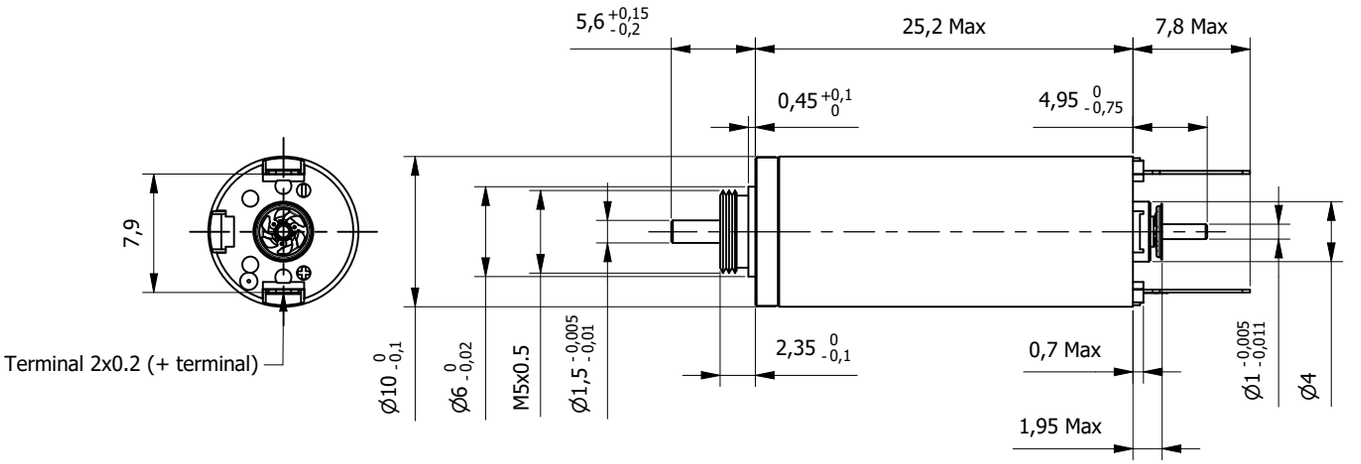
Operating range: Winding 4.5V



Brushed DC Coreless Motor 10DC25N-PM

Precious Metal brushes

Ø 10mm - 2mNm



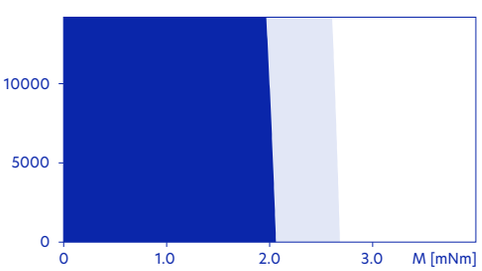
Product also available with ball bearings

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

Standard Combination
Gearbox
10GPS
* other options on request

Operating range: Winding 4.5V



Continuous operation

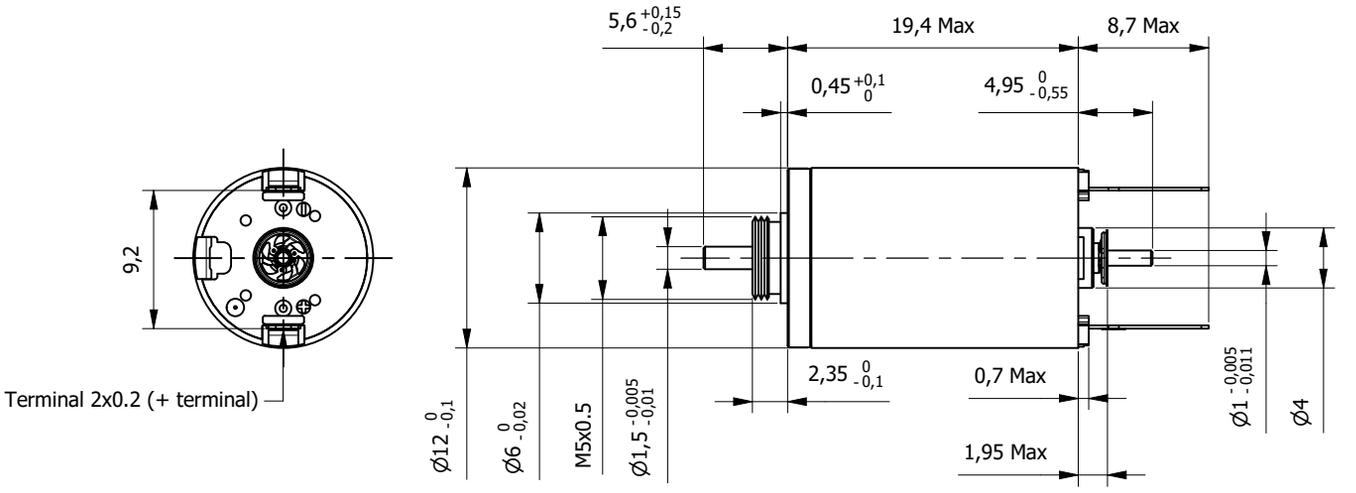
Continuous operation with reduced thermal resistance (50%)

Intermittent operation

Brushed DC Coreless Motor 12DC19N-PM

Precious Metal brushes

Ø 12mm - 1,9mNm



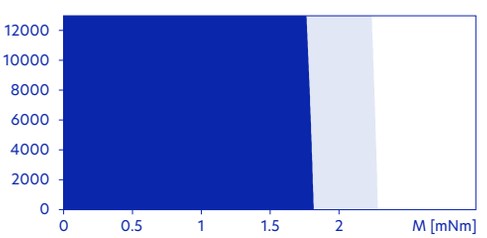
Product also available with ball bearings

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

Standard Combination
Gearbox
12GPS
* other options on request

Operating range: Winding 4.5V



Continuous operation

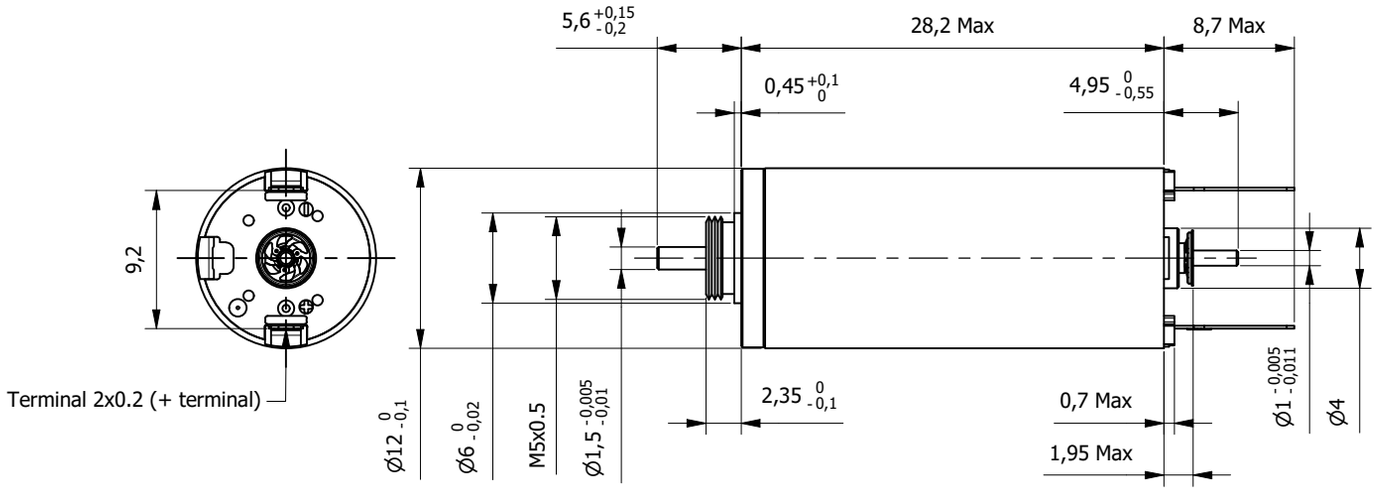
Continuous operation with reduced thermal resistance (50%)

Intermittent operation

Brushed DC Coreless Motor 12DC28N-PM

Precious Metal brushes

Ø 12mm - 3,9mNm



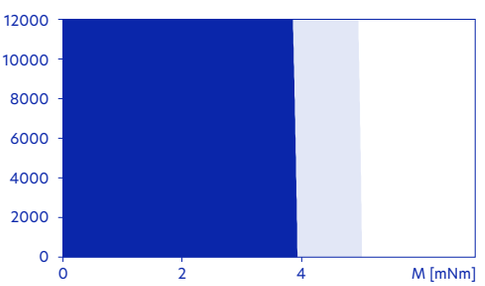
Product also available with ball bearings

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	gcm2	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

Standard Combination
Gearbox
12GPS
* other options on request

Operating range: Winding 4.5V



Continuous operation

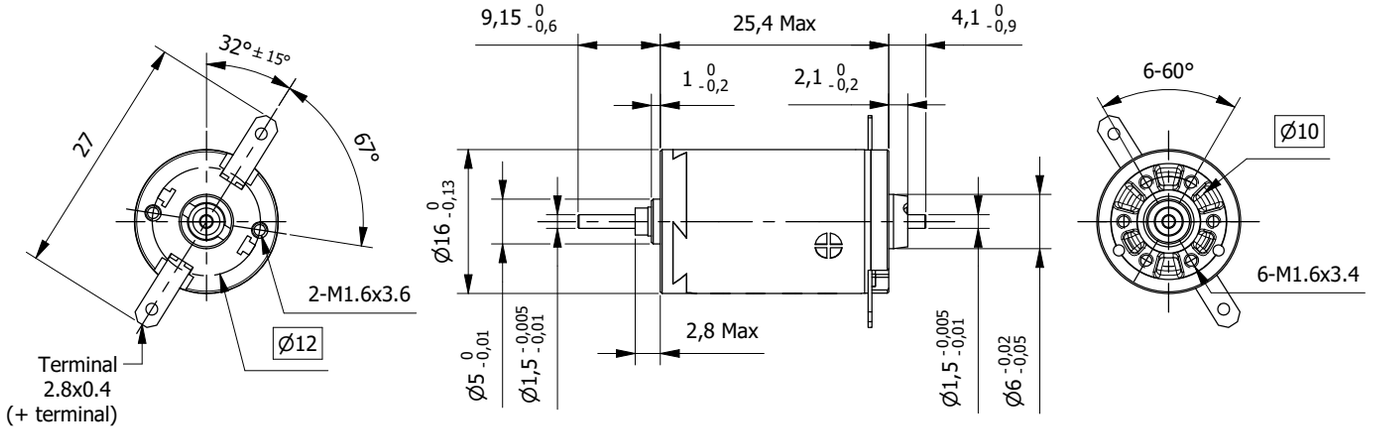
Continuous operation with reduced thermal resistance (50%)

Intermittent operation

Brushed DC Coreless Motor 16DC25P-PM

Precious Metal brushes

Ø 16mm - 4,1mNm



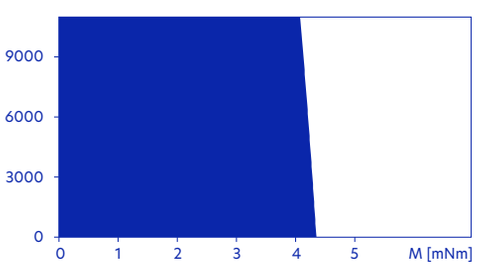
Product also available with ball bearings

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	gcm2	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

Standard Combination
Gearbox
16GPS
* other options on request

Operating range: Winding 12V



Continuous operation

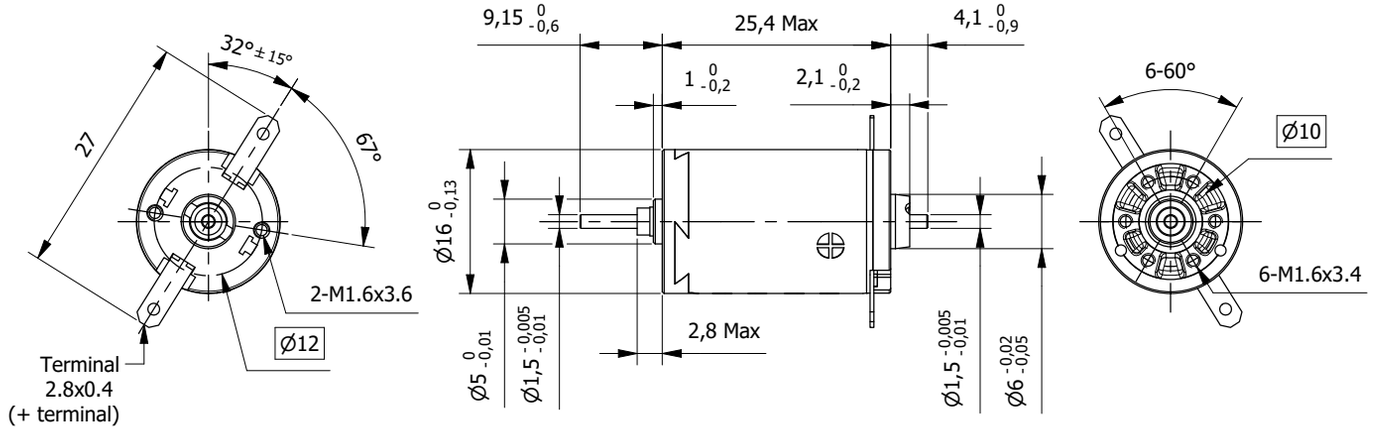
Continuous operation with reduced thermal resistance (50%)

Intermittent operation

Brushed DC Coreless Motor 16DC25P-G

Graphite brushes

Ø 16mm - 4,8mNm



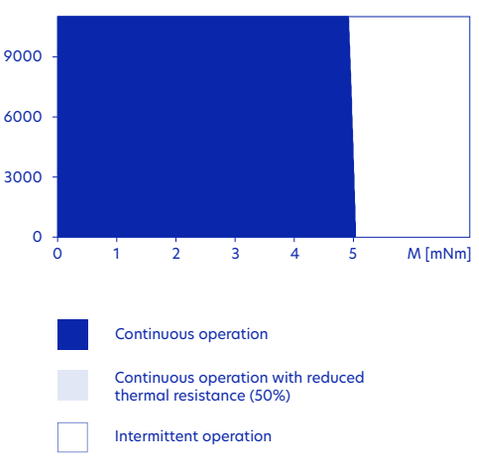
Product also available with ball bearings

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

Standard Combination
Gearbox
16GPS
* other options on request

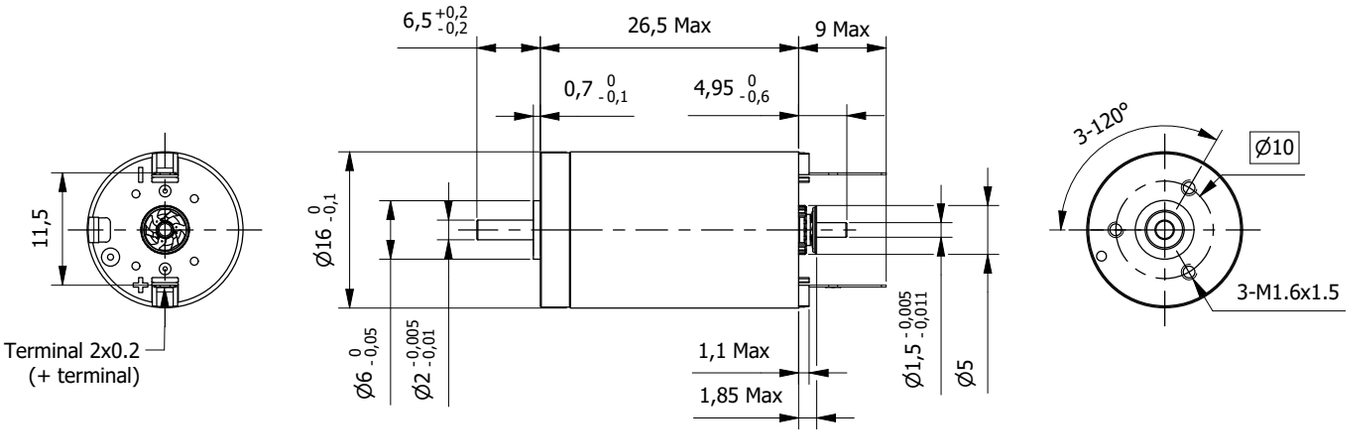
Operating range: Winding 24V



Brushed DC Coreless Motor 16DC26N-PM

Precious Metal brushes

Ø 16mm - 5,4mNm



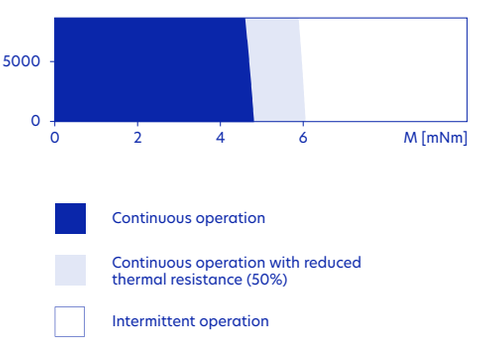
Product also available with ball bearings

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	10^3/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

Standard Combination
Gearbox
16GPS
* other options on request

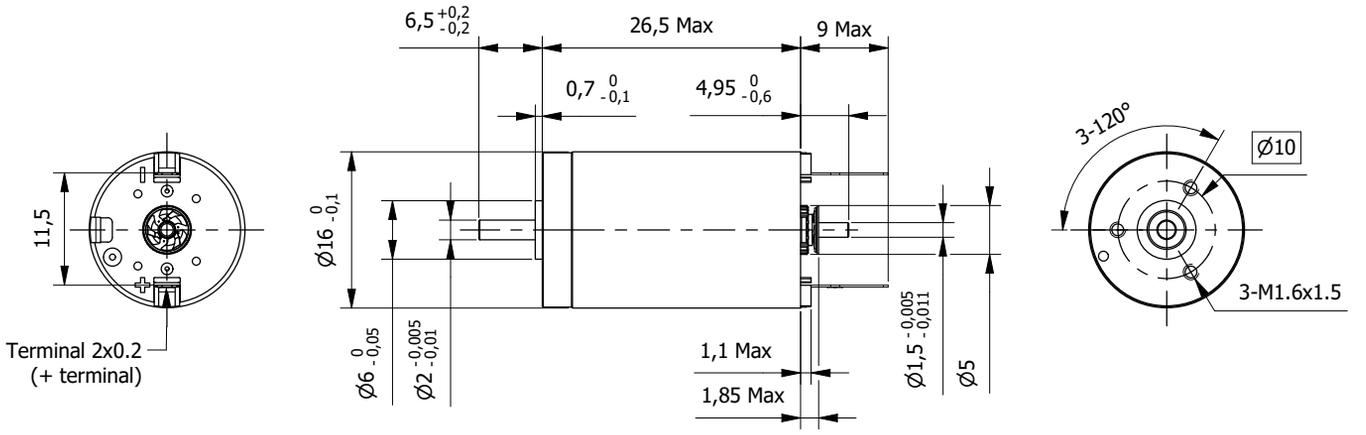
Operating range: Winding 12V



Brushed DC Coreless Motor 16DC26N-G

Graphite brushes

Ø 16mm - 5,4mNm



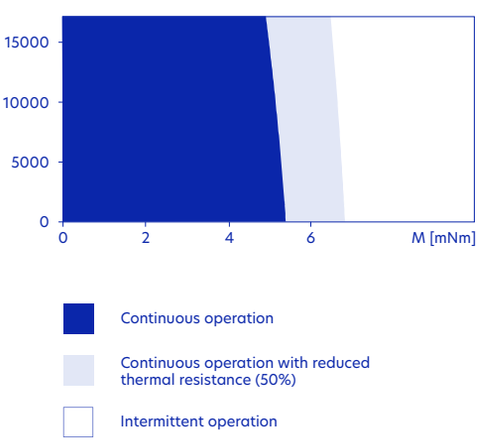
Product also available with ball bearings

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	10^3/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

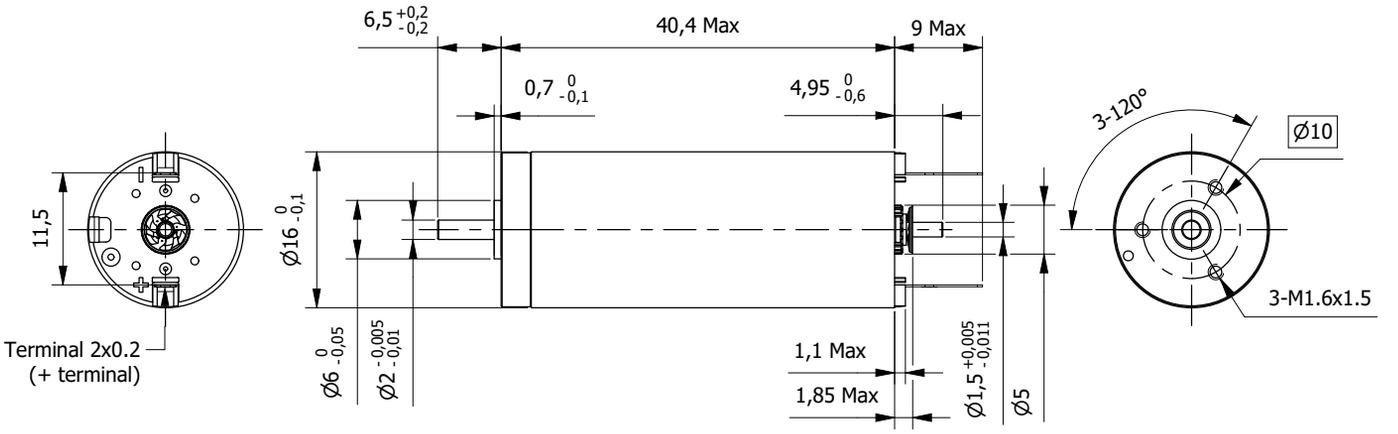
Standard Combination
Gearbox
16GPS
* other options on request

Operating range: Winding 12V



Brushed DC Coreless Motor 16DC40N-PM Ø 16mm - 10,8mNm

Precious Metal brushes



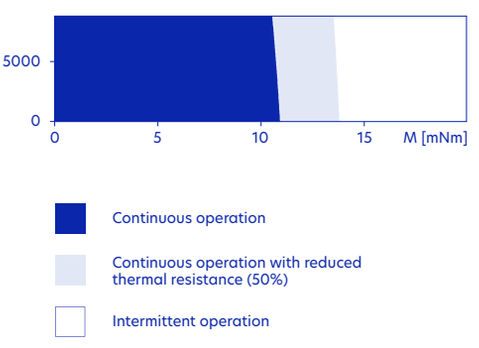
Product also available with ball bearings

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	10^3/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

Standard Combination
Gearbox
16GPS
* other options on request

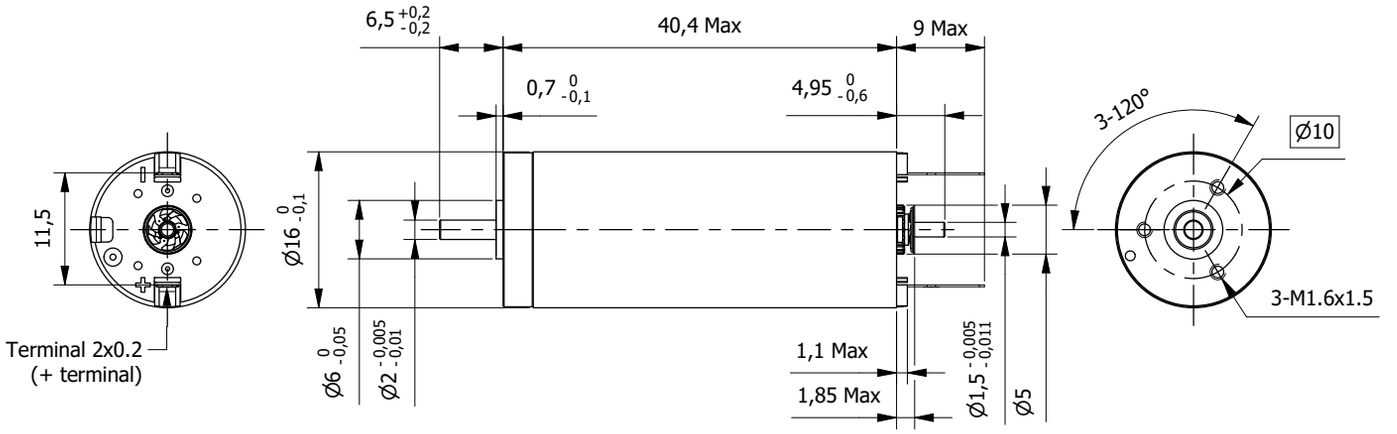
Operating range: Winding 9V



Brushed DC Coreless Motor 16DC40N-G

Graphite brushes

Ø 16mm - 11,3mNm



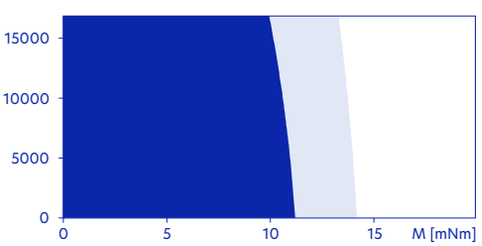
Product also available with ball bearings

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	gcm2	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

Standard Combination
Gearbox
16GPS
* other options on request

Operating range: Winding 12V



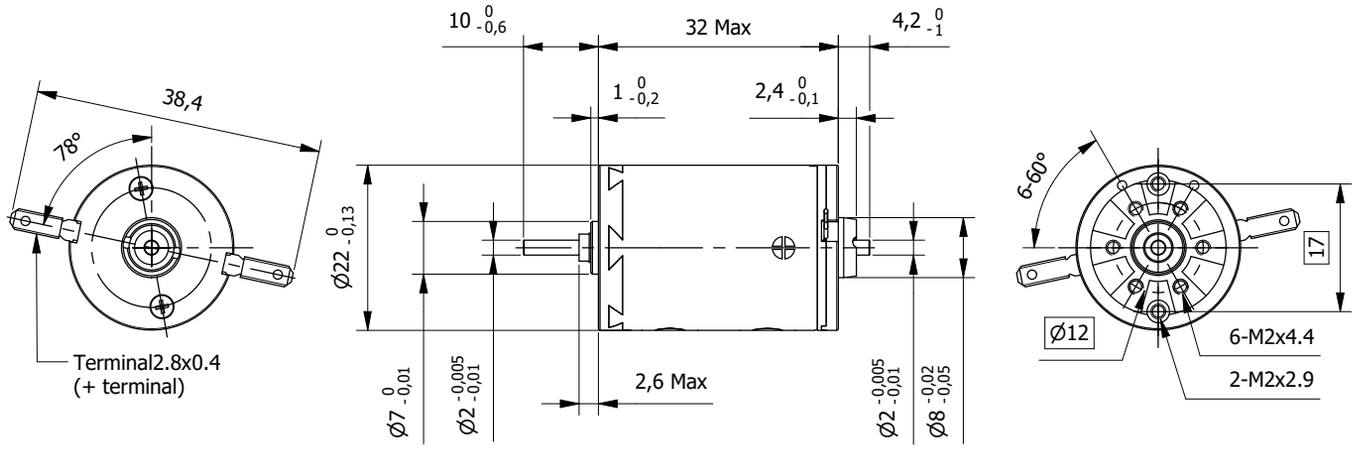
Continuous operation

Continuous operation with reduced thermal resistance (50%)

Intermittent operation

Brushed DC Coreless Motor 22DC32P-PM Ø 22mm - 10,4mNm

Precious Metal brushes



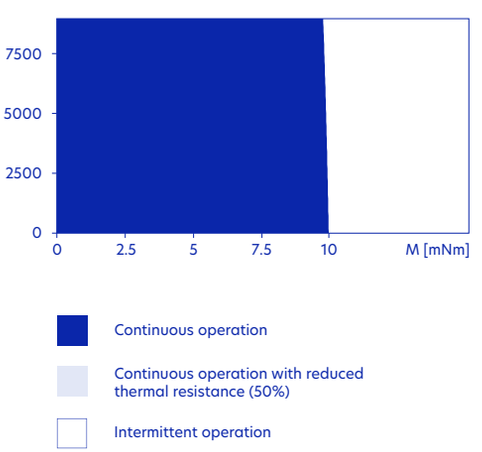
Product also available with ball bearings

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	gcm2	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

Standard Combination
Gearbox
22GPS
* other options on request

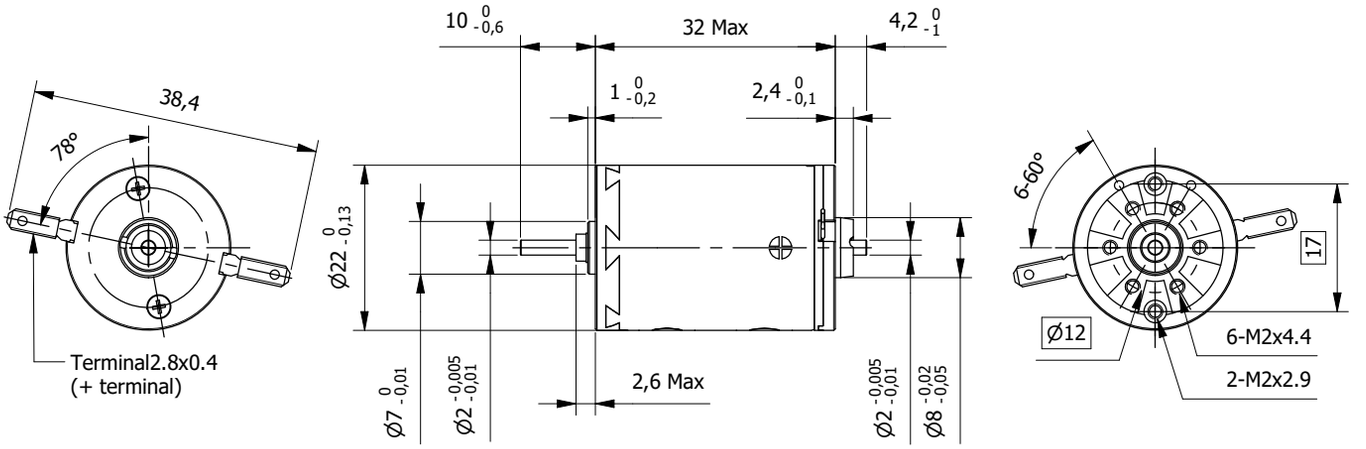
Operating range: Winding 12V



Brushed DC Coreless Motor 22DC32P-G

Graphite brushes

Ø 22mm - 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

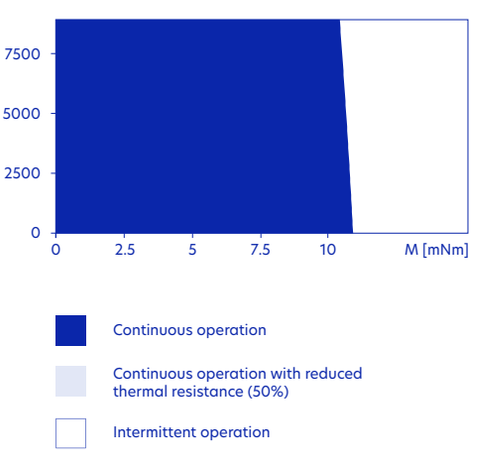
Characteristics

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

Standard Combination

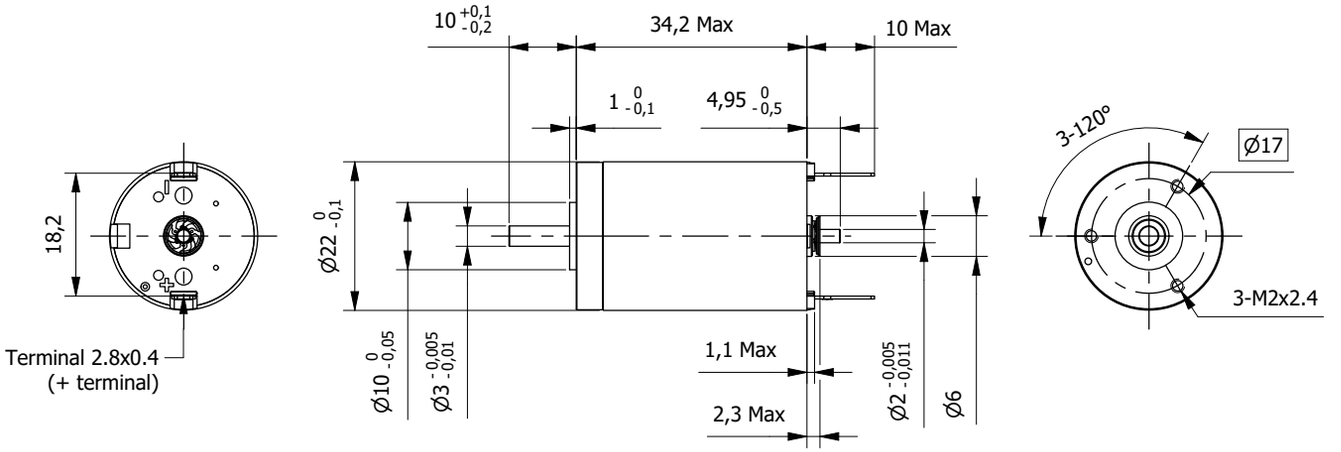
Gearbox
22GPS
* other options on request

Operating range: Winding 12V



Brushed DC Coreless Motor 22DC34N-PM Ø 22mm - 14,7mNm

Precious Metal brushes



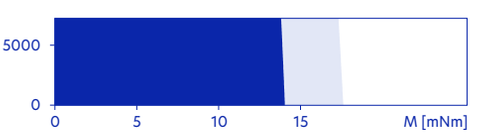
Product also available with ball bearings

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	10^3/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

Standard Combination
Gearbox
22GPS
* other options on request

Operating range: Winding 18V



Continuous operation

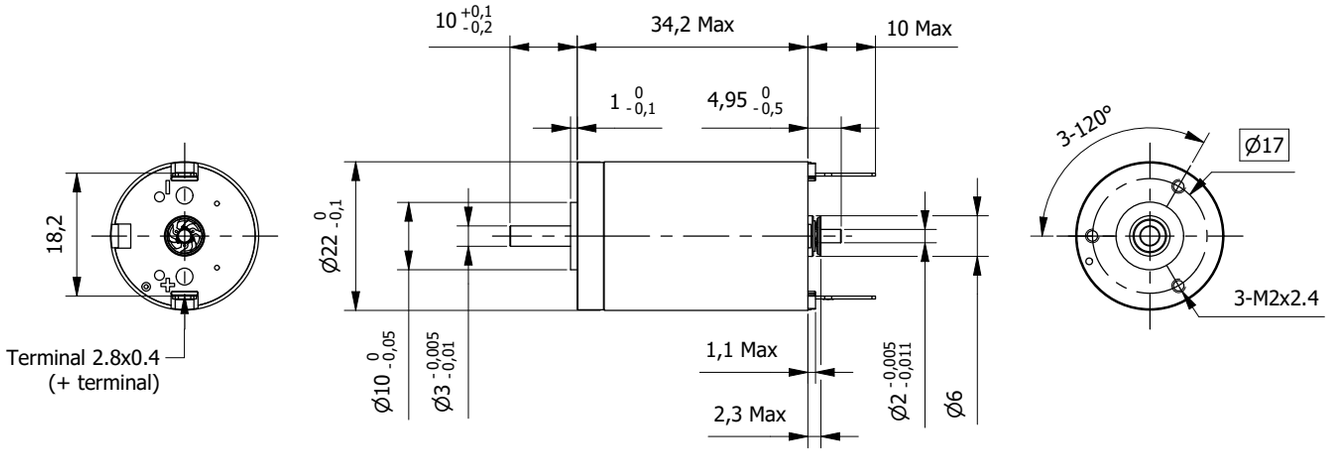
Continuous operation with reduced thermal resistance (50%)

Intermittent operation

Brushed DC Coreless Motor 22DC34N-G

Graphite brushes

Ø 22mm - 15,3mNm



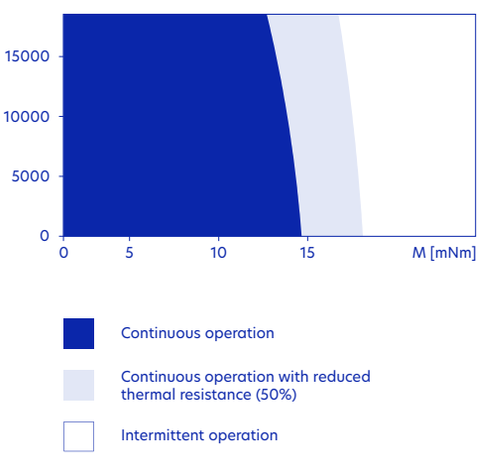
Product also available with ball bearings

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	10^3/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

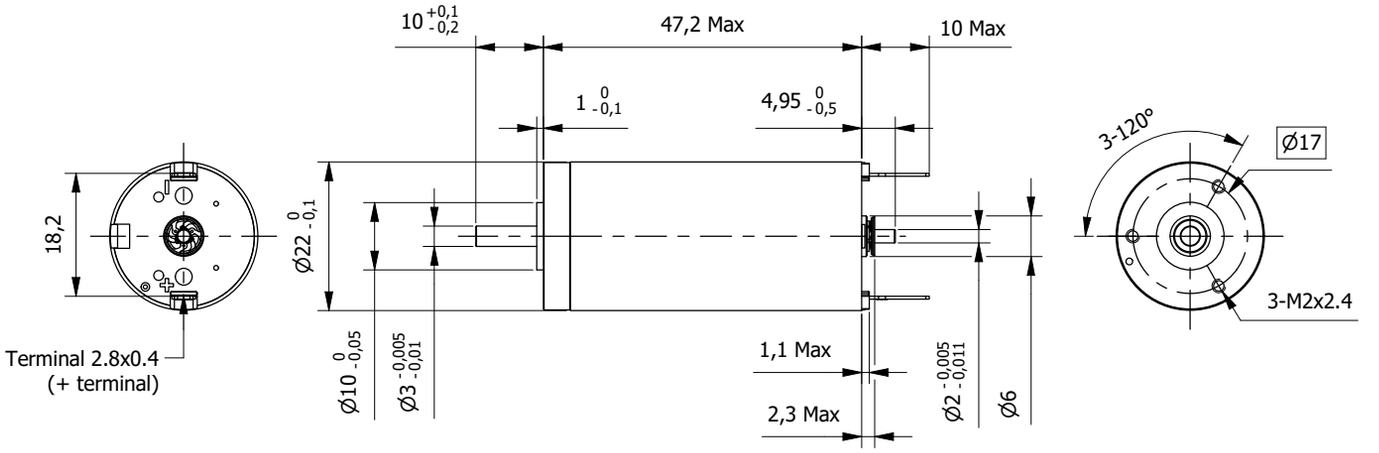
Standard Combination
Gearbox
22GPS
* other options on request

Operating range: Winding 18V



Brushed DC Coreless Motor 22DC47N-PM Ø 22mm - 29,5mNm

Precious Metal brushes



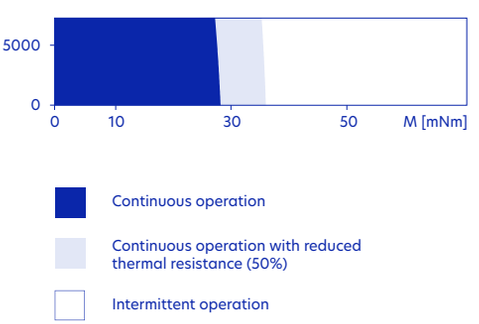
Product also available with ball bearings

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	10^3/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

Standard Combination
Gearbox
22GPS
* other options on request

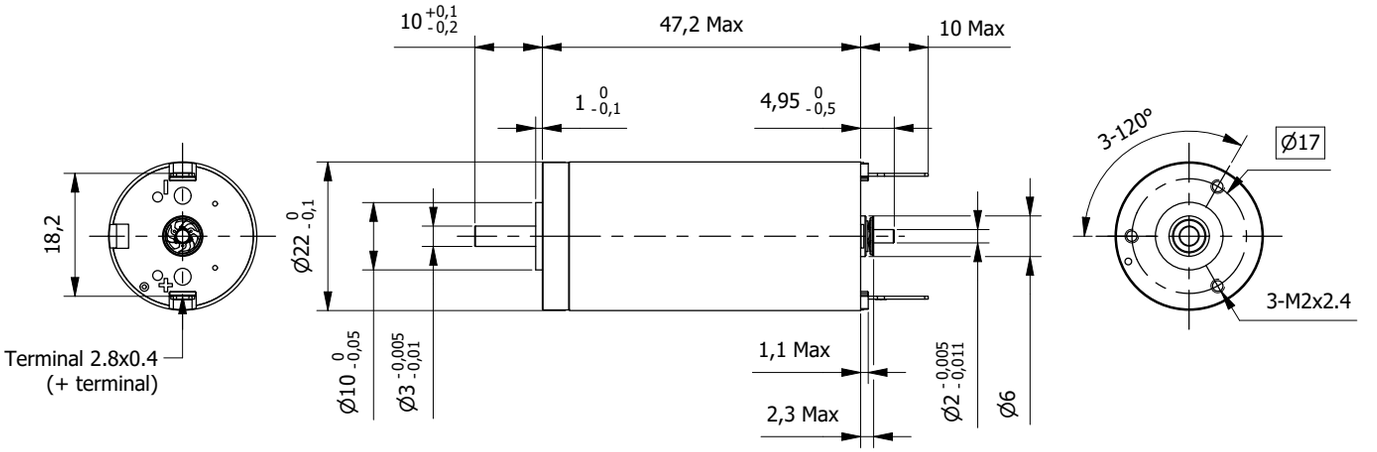
Operating range: Winding 18V



Brushed DC Coreless Motor 22DC47N-G

Graphite brushes

Ø 22mm - 30,5mNm



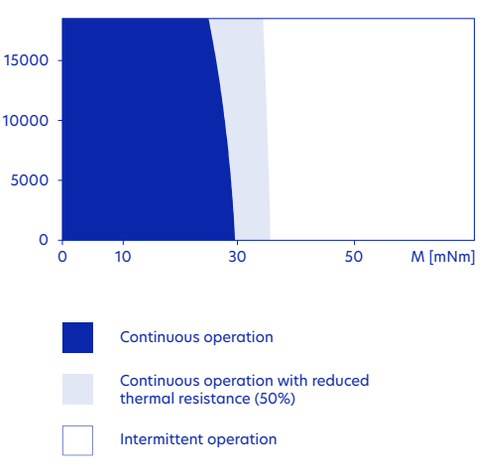
Product also available with ball bearings

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

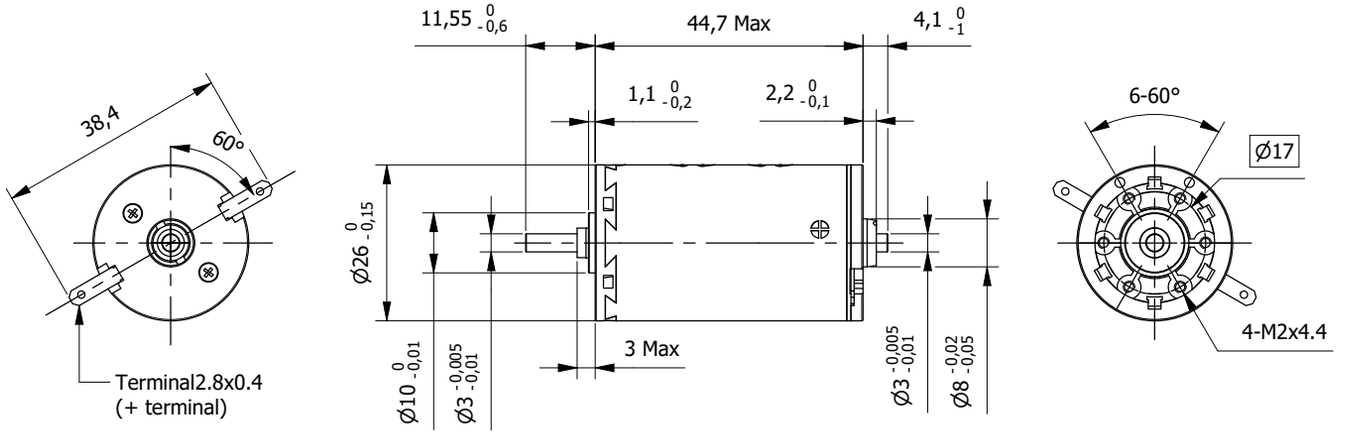
Standard Combination
Gearbox
22GPS
* other options on request

Operating range: Winding 18V



Brushed DC Coreless Motor 26DC44P-PM Ø 26mm - 28,8mNm

Precious Metal brushes



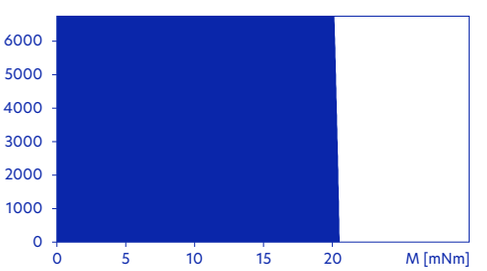
Product also available with ball bearings

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

Standard Combination
Gearbox
26GPS
* other options on request

Operating range: Winding 12V



Continuous operation

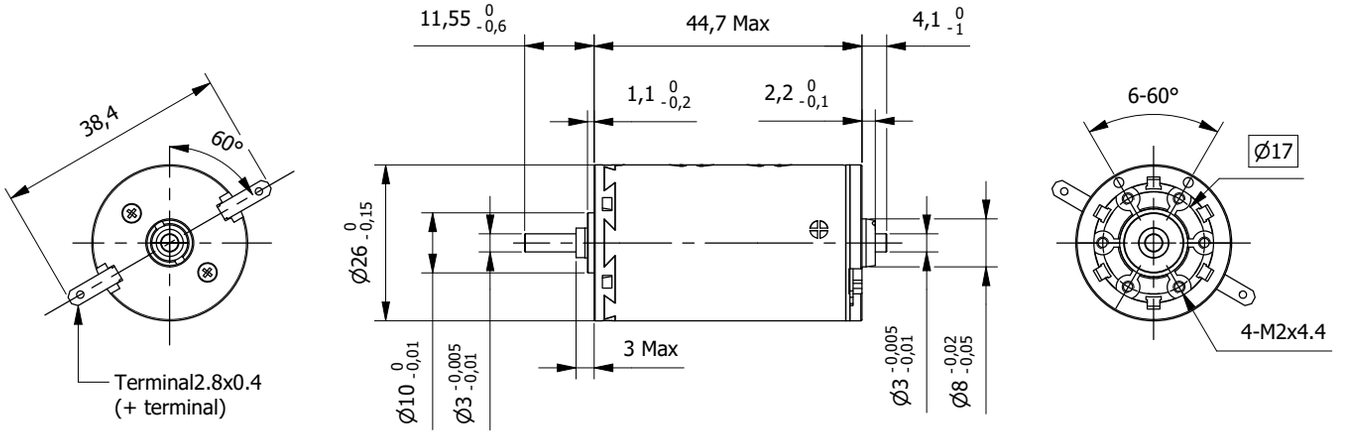
Continuous operation with reduced thermal resistance (50%)

Intermittent operation

Brushed DC Coreless Motor 26DC44P-G

Graphite brushes

Ø 26mm - 28,3mNm



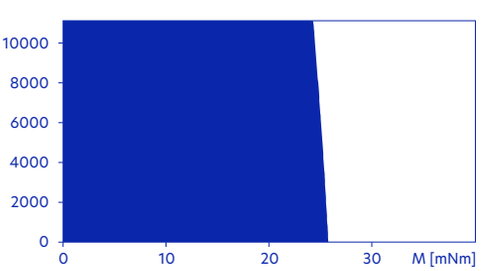
Product also available with ball bearings

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	gcm2	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

Standard Combination
Gearbox
26GPS
* other options on request

Operating range: Winding 24V



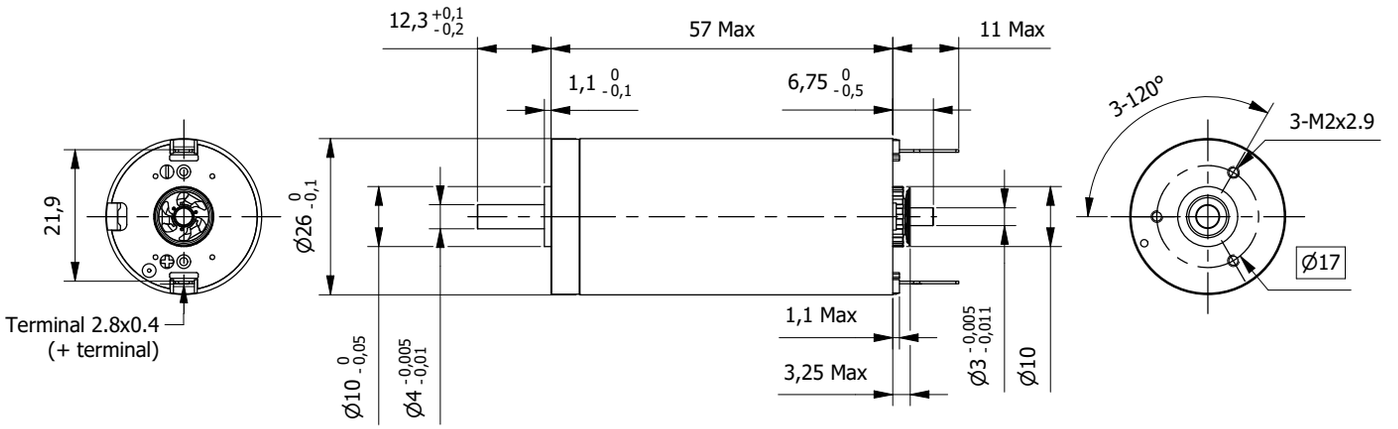
Continuous operation

Continuous operation with reduced thermal resistance (50%)

Intermittent operation

Brushed DC Coreless Motor 26DC57N-PM Ø 26mm - 52,3mNm

Precious Metal brushes



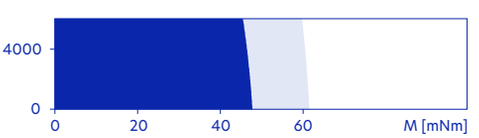
Product also available with ball bearings

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	10^3/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

Standard Combination
Gearbox
26GPS
* other options on request

Operating range: Winding 18V



Continuous operation

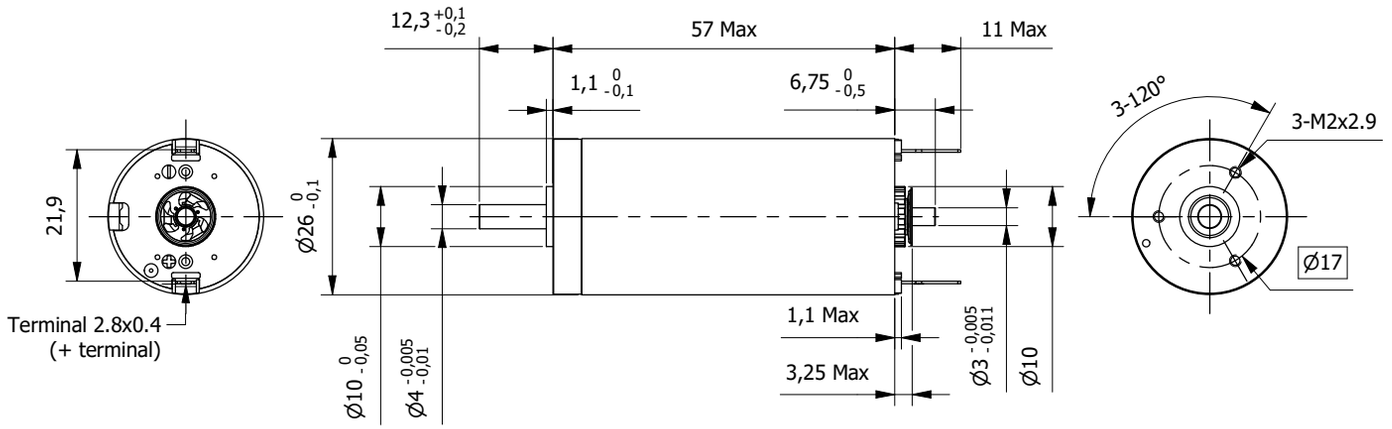
Continuous operation with reduced thermal resistance (50%)

Intermittent operation

Brushed DC Coreless Motor 26DC57N-G

Graphite brushes

Ø 26mm - 59,1mNm



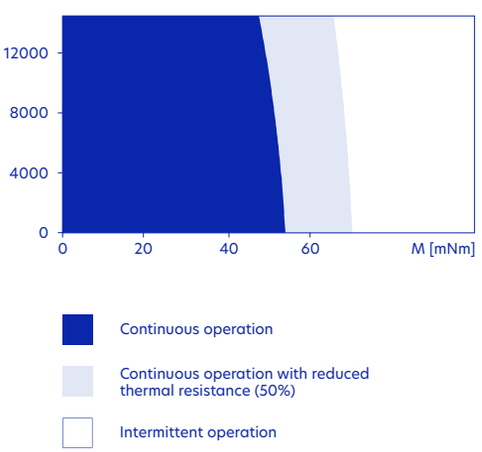
Product also available with ball bearings

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	10^3/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

Standard Combination
Gearbox
26GPS
* other options on request

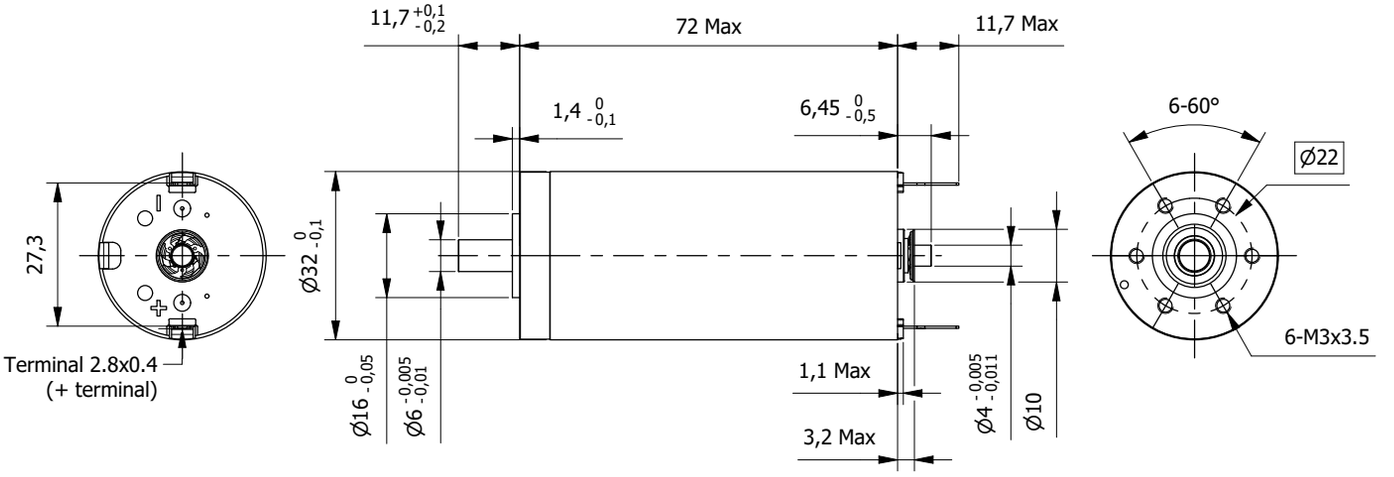
Operating range: Winding 18V



Brushed DC Coreless Motor 32DC72N-G

Graphite brushes

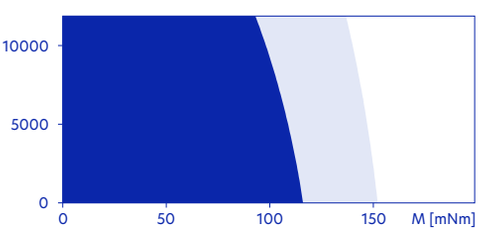
Ø 32mm - 123mNm



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	10^3/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



Continuous operation

Continuous operation with reduced thermal resistance (50%)

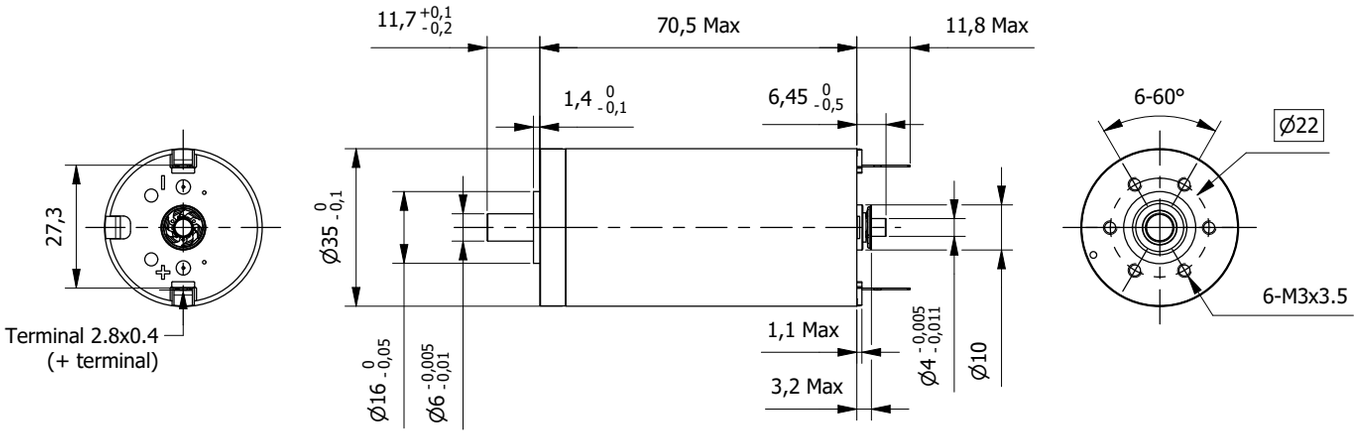
Intermittent operation

Standard Combination
Gearbox
32GPS
* other options on request

Brushed DC Coreless Motor 35DC70N-G

Graphite brushes

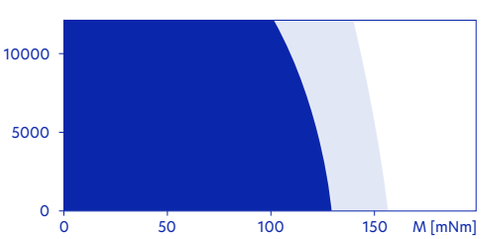
Ø 35mm - 138mNm



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	10^3/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

Operating range: Winding 36V



Continuous operation

Continuous operation with reduced thermal resistance (50%)

Intermittent operation

Brushed DC

Brushless DC

Slotless motors -
SBL series

p.139 - NEW

Slotless motors -
EC series

p.155 - NEW

Slotted motors -
BL series

p.61

Slotted motors -
EC series

p.115 - NEW

Slotted motors -
CBL series

p.121

Motors
with Encoder

p.169

Flat motors

p.181

Flat motors
with Encoder

p.197 - NEW

Frameless
motors

p.201 - NEW

Brushless DC motors

*** 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. Its value is the product of rated current and winding resistance.
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.
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.
Ambient temperature ball 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.
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

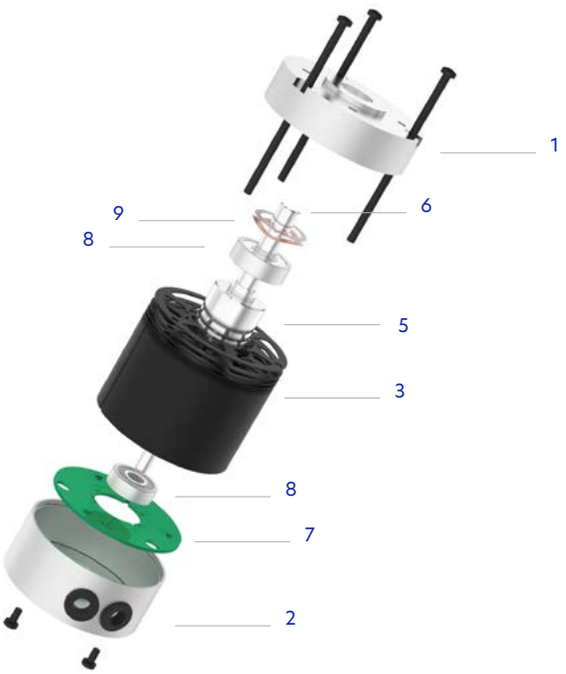
Brushless DC

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

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.

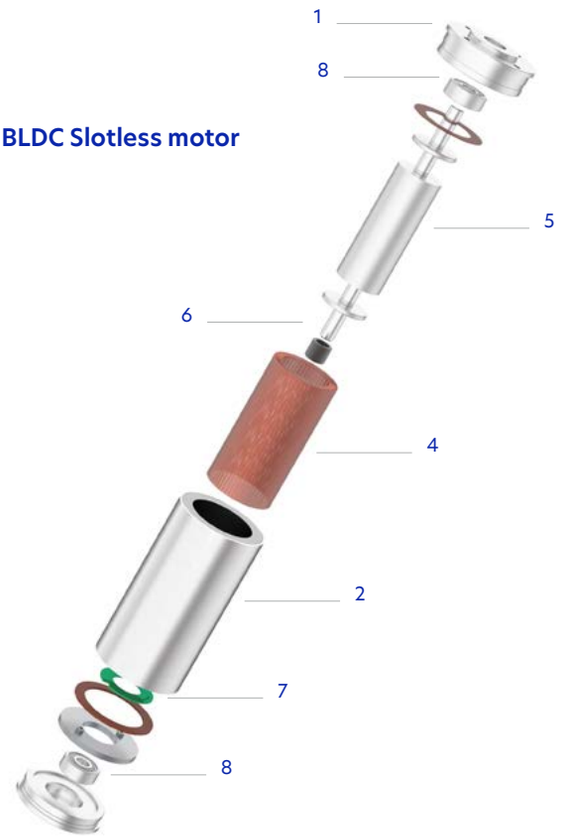
Brushless DC Flat motors

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.

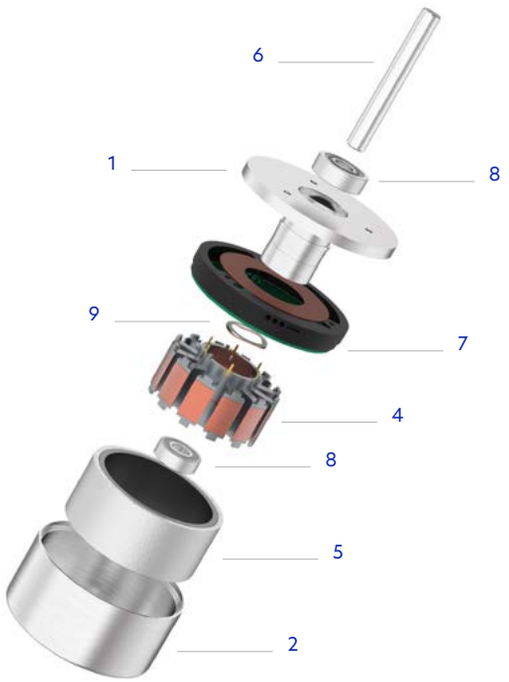
Brushless DC Frameless motors

Technical introduction

BLDC Slotless motor



BLDC Flat motor



Available as Slotted BLDC with integrated Speed or Motion Controller.

Brushless DC motors with Controller

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 PI controller. The direction of rotation can be changed via a separate switching input.

With integrated Speed Controller

Our BLDC motors with Integrated Drive (IBS series) offer the compactness of a standard motor together with all the features of our drives. The IBS drive has digital inputs and outputs and an analogue input, and can be also equipped with RS485 Modbus-RTU or CANopen fieldbuses. To reach top performances, a single turn magnetic encoder can also be added inside.

With integrated Motion Controller

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

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

BLDC
Slotted motors
BL series

p.61

BLDC
Slotted motors
EC series

p.115 - NEW

BLDC
Slotted motors
CBL series

p.121

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.

Brushless DC Slotted motors - BL series	Torque* (Nm)	61
22BL45	0,008	62
22BL70	0,020	63
28BL26	0,005	64
28BL38	0,016	65
28BL77	0,050	66
33BL38	0,022	67
33BL80	0,050	68
40BL26	0,043...0,052	69
40BL36	0,069...0,083	70
42BL41 - square - 8pole	0,063	71
42BL61 - square - 8pole	0,125	72
42BL81 - square - 8pole	0,185	73
42BL100 - square - 8pole	0,250	74
42BLA01 - square - 10pole	0,070	75
42BLA02 - square - 10pole	0,160	76
42BLA03 - square - 10pole	0,260	77
42BLA04 - square - 10pole	0,360	78
42BLB01 - square - 6pole	0,064	79
42BLB02 - square - 6pole	0,170	80
42BLB03 - square - 6pole	0,300	81
42BLB04 - square - 6pole	0,430	82
42RBL30	0,020	83
42RBL60	0,060	84
42RBL85	0,150	85
57BL45 - 4pole	0,055	86
57BL54 - 4pole	0,110	87
57BL74 - 4pole	0,220	88
57BL94 - 4pole	0,330	89
57BL116 - 4pole	0,440	90
57BLA01 - 6pole	0,200	91
57BLA02 - 6pole	0,400	92
57BLA03 - 6pole	0,600	93
57BLA04 - 6pole	0,800	94
57BLB40 - square	0,300	95
57BLB60 - square	0,450	96
57BLB80 - square	0,600	97
70BLS86	0,500	98
70BLS116	1,000	99
70BLS136	1,500	100
80BLS84	0,900	101
80BLS105	1,700	102
80BLS120	2,200	103
80BLS125	3,000	104
86BLC64	0,400	105
86BLC77	0,800	106
86BLC105	1,600	107
86BLC125	2,220	108
86BLS58	0,350	109
86BLS71	0,700	110
86BLS98	1,400	111
86BLS125	2,100	112

Brushless DC Slotted motors - EC series - NEW	Torque* (Nm)	115
22EC43N	0,03	116
22EC58N	0,05	117
22EC82N	0,08	118

Brushless DC Slotted motors - CBL series	Torque* (Nm)	121
24CBL30	0,006	122
28CBL38	0,028	123
28CBL48	0,050	124
36CBL30	0,015	125
36CBL40	0,035	126
36CBL50	0,055	127
36CBL57	0,070	128
36CBL60	0,080	129
36CBL65	0,090	130
38CBL58	0,070	131
42CBL60	0,068	132
42CBL66	0,150	133
42CBLA60	0,120	134
48CBL68	0,180	135

* Rated Torque

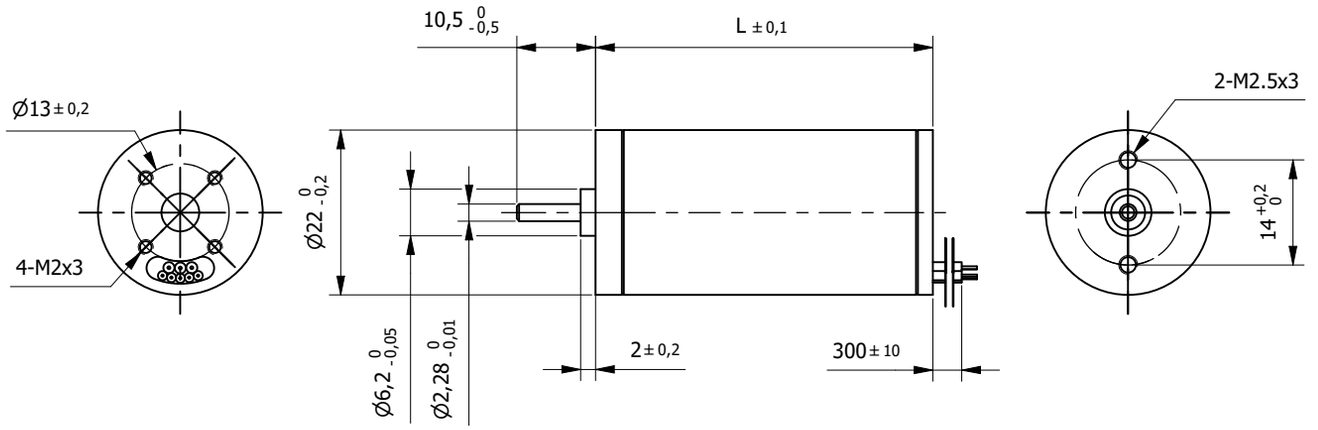
BLDC Slotted motors

BL-series

Brushless DC Slotted motors - BL series	Torque* (Nm)	
22BL45	0,008	62
22BL70	0,020	63
28BL26	0,005	64
28BL38	0,016	65
28BL77	0,050	66
33BL38	0,022	67
33BL80	0,050	68
40BL26	0,043...0,052	69
40BL36	0,069...0,083	70
42BL41 - square - 8pole	0,063	71
42BL61 - square - 8pole	0,125	72
42BL81 - square - 8pole	0,185	73
42BL100 - square - 8pole	0,250	74
42BLA01 - square - 10pole	0,070	75
42BLA02 - square - 10pole	0,160	76
42BLA03 - square - 10pole	0,260	77
42BLA04 - square - 10pole	0,360	78
42BLB01 - square - 6pole	0,064	79
42BLB02 - square - 6pole	0,170	80
42BLB03 - square - 6pole	0,300	81
42BLB04 - square - 6pole	0,430	82
42RBL30	0,020	83
42RBL60	0,060	84
42RBL85	0,150	85
57BL45 - 4pole	0,055	86
57BL54 - 4pole	0,110	87
57BL74 - 4pole	0,220	88
57BL94 - 4pole	0,330	89
57BL116 - 4pole	0,440	90
57BLA01 - 6pole	0,200	91
57BLA02 - 6pole	0,400	92
57BLA03 - 6pole	0,600	93
57BLA04 - 6pole	0,800	94
57BLB40 - square	0,300	95
57BLB60 - square	0,450	96
57BLB80 - square	0,600	97
70BLS86	0,500	98
70BLS116	1,000	99
70BLS136	1,500	100
80BLS84	0,900	101
80BLS105	1,700	102
80BLS120	2,200	103
80BLS125	3,000	104
86BLC64	0,400	105
86BLC77	0,800	106
86BLC105	1,600	107
86BLC125	2,220	108
86BLS58	0,350	109
86BLS71	0,700	110
86BLS98	1,400	111
86BLS125	2,100	112

Brushless Slotted Motor 22BL45

Ø 22mm - 0,008Nm



Specification			
	Model		22BL45
1	n° of Pole		8
2	n° of Phase		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

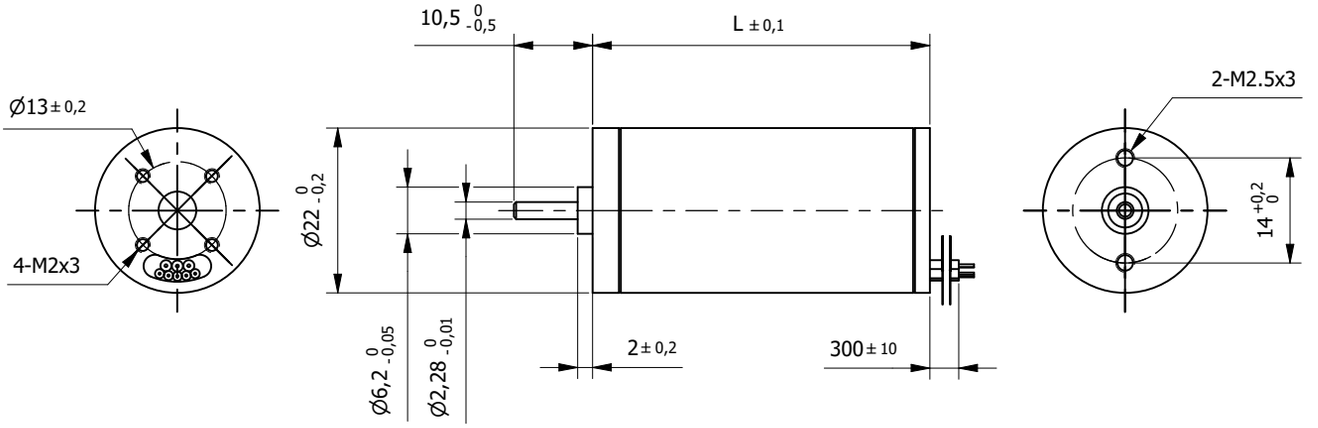
Standard Combination	
Gearbox	Drive
22JMS	Taurus
	Gemini

* other options on request

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 22BL70

Ø 22mm - 0,02Nm



Specification			
	Model		22BL70
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	3800
5	Rated Torque	Nm	0,02
6	Max. Peak Torque	Nm	0,06
7	Torque Constant	Nm/A	0,036
8	Rated Current	A	0,56
9	Max. Peak Current	A	2
10	No-Load Current	mA	120
11	Line to Line Resistance	Ω	11,6
12	Line to Line Inductance	mH	4,2
13	Rotor Inertia	gcm2	1,32
14	Length (L)	mm	68
15	Weight	Kg	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)	0,08mm
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

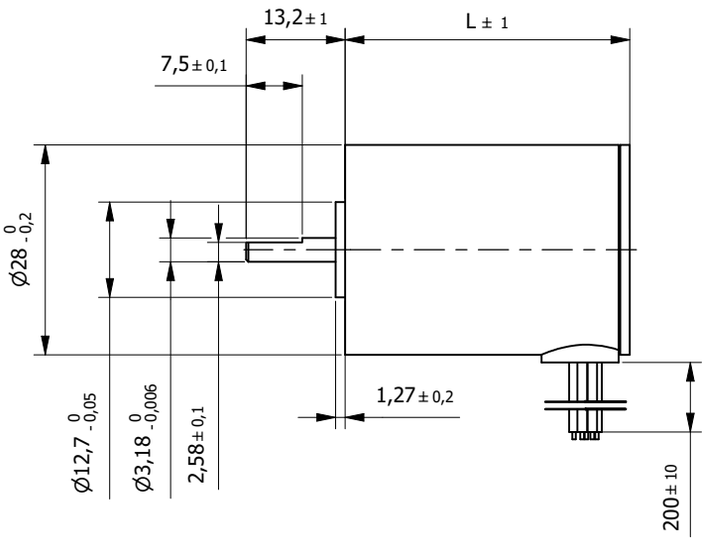
Standard Combination	
Gearbox	Drive
22JMS	Taurus
	Gemini

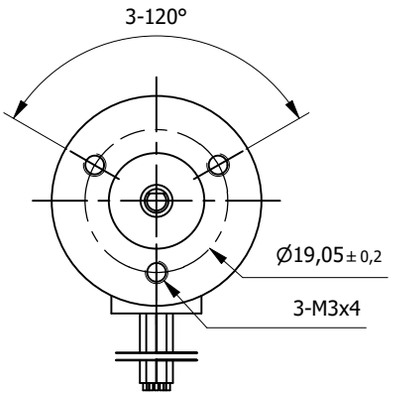
* other options on request

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 28BL26

Ø 28mm - 0,005Nm





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

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

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

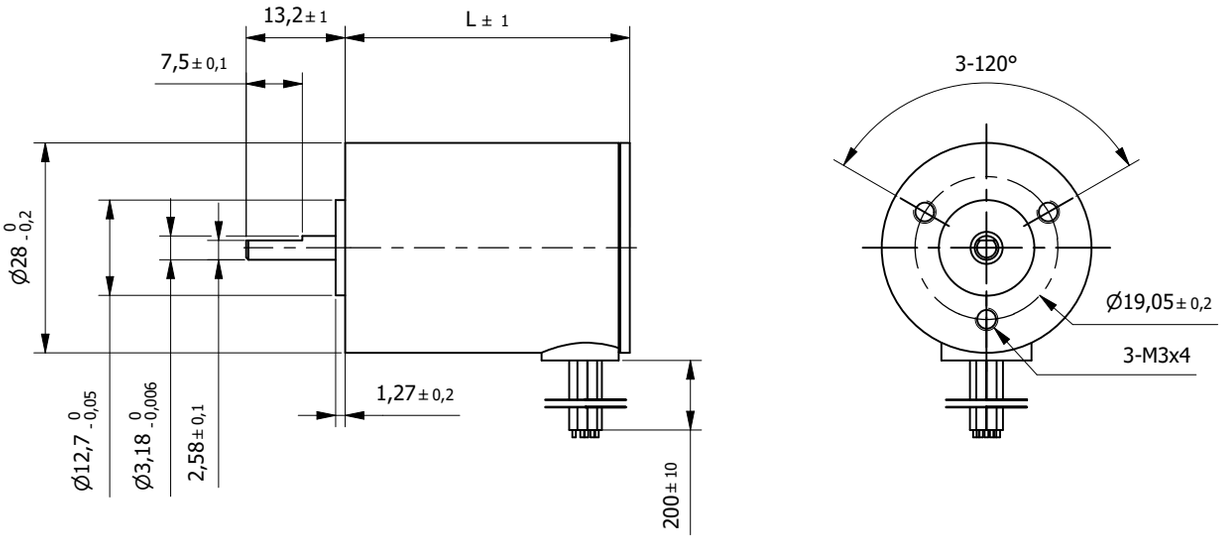
Standard Combination		
Encoder	Gearbox	Drive
E4	28JMS	Taurus
E5		Gemini

* other options on request

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 28BL38

Ø 28mm - 0,016Nm



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

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

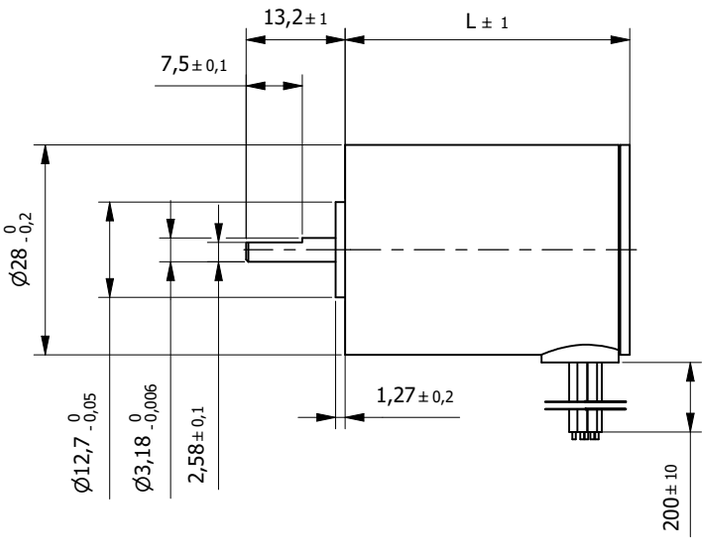
Standard Combination		
Encoder	Gearbox	Drive
E4	28JMS	Taurus
E5		Gemini

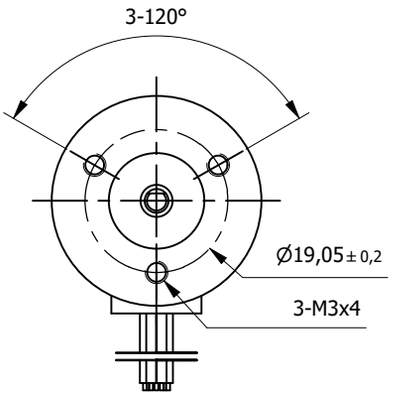
* other options on request

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 28BL77

Ø 28mm - 0,05Nm





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

Specification			
	Model		28BL77
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	3100
5	Rated Torque	Nm	0,05
6	Max. Peak Torque	Nm	0,15
7	Torque Constant	Nm/A	0,05
8	Rated Current	A	1
9	Max. Peak Current	A	3
10	No-Load Current	mA	150
11	Line to Line Resistance	Ω	4,67
12	Line to Line Inductance	mH	2,2
13	Rotor Inertia	gcm2	10,98
14	Length (L)	mm	77
15	Weight	Kg	0,28

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

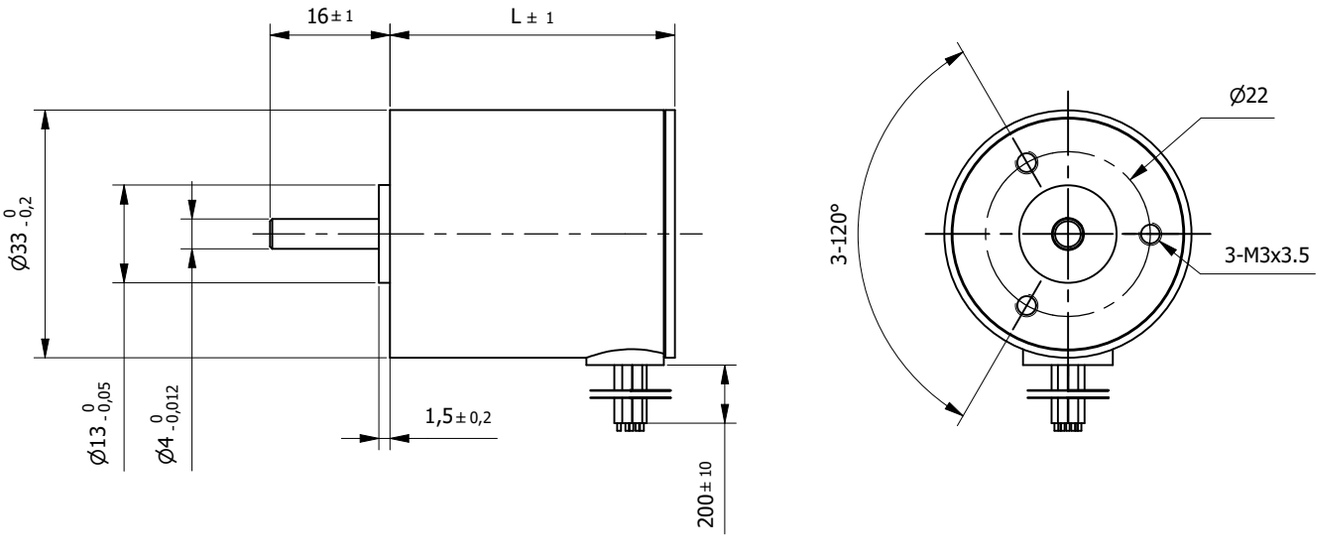
Standard Combination		
Encoder	Gearbox	Drive
E4	28JMS	Taurus
E5		Gemini

* other options on request

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 33BL38

Ø 33mm - 0,022Nm



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

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

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

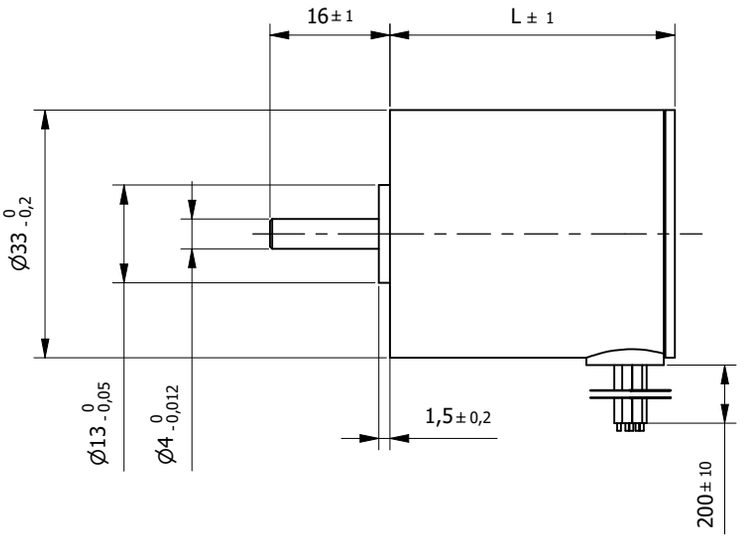
Standard Combination		
Encoder	Gearbox	Drive
E4	28JMS	Taurus
E5		Gemini

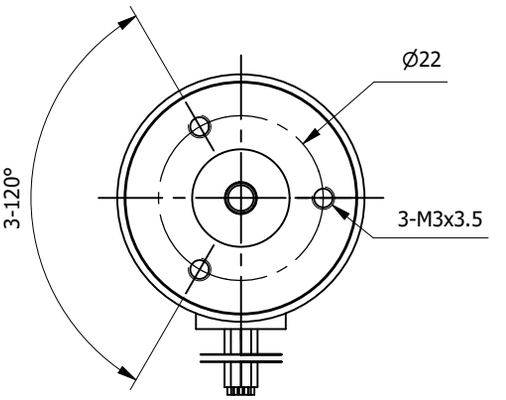
* other options on request

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	UL1430 AWG22	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 33BL80

Ø 33mm - 0,05Nm





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

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

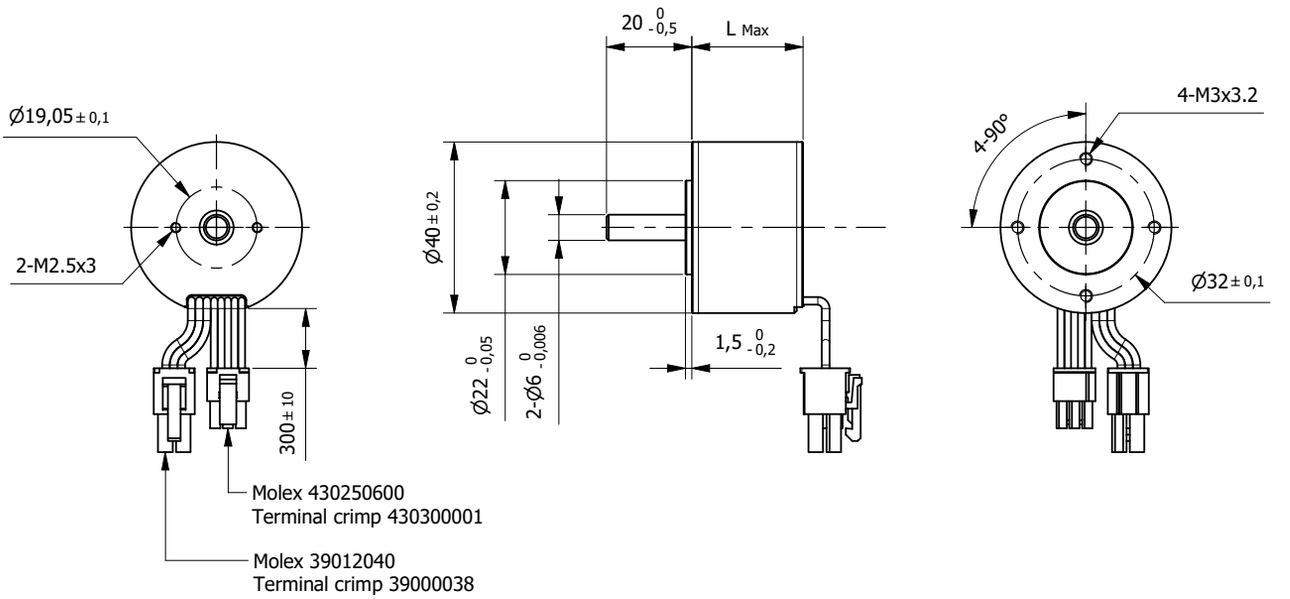
Standard Combination		
Encoder	Gearbox	Drive
E4	28JMS	Taurus
E5		Gemini

* other options on request

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	UL1430 AWG22	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 40BL26

Ø 40mm - 0,043Nm



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

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

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

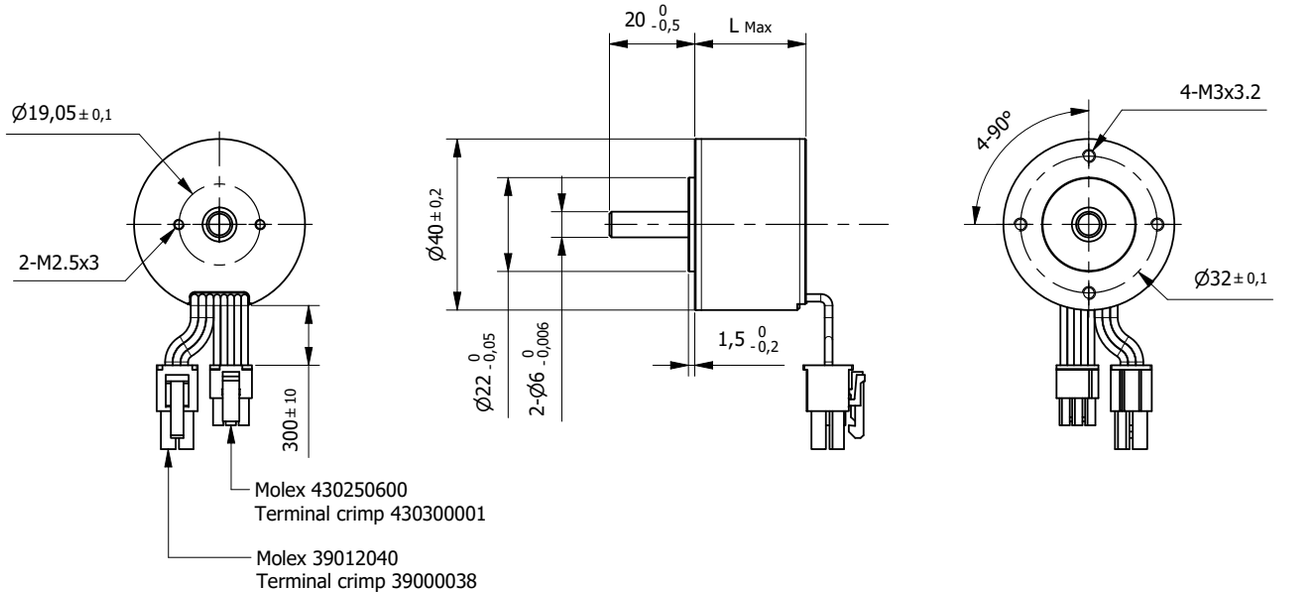
Standard Combination		
Encoder	Gearbox	Drive
E4	36JMS	Gemini
E5		

* other options on request

Connection			
Pin n°	Color	Gauge	Function
1	Red	UL1332 AWG20	Phase U
2	Black	|	Phase V
3	White	|	Phase W
1	Yellow	UL1332 AWG24	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 40BL36

Ø 40mm - 0,069Nm



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

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

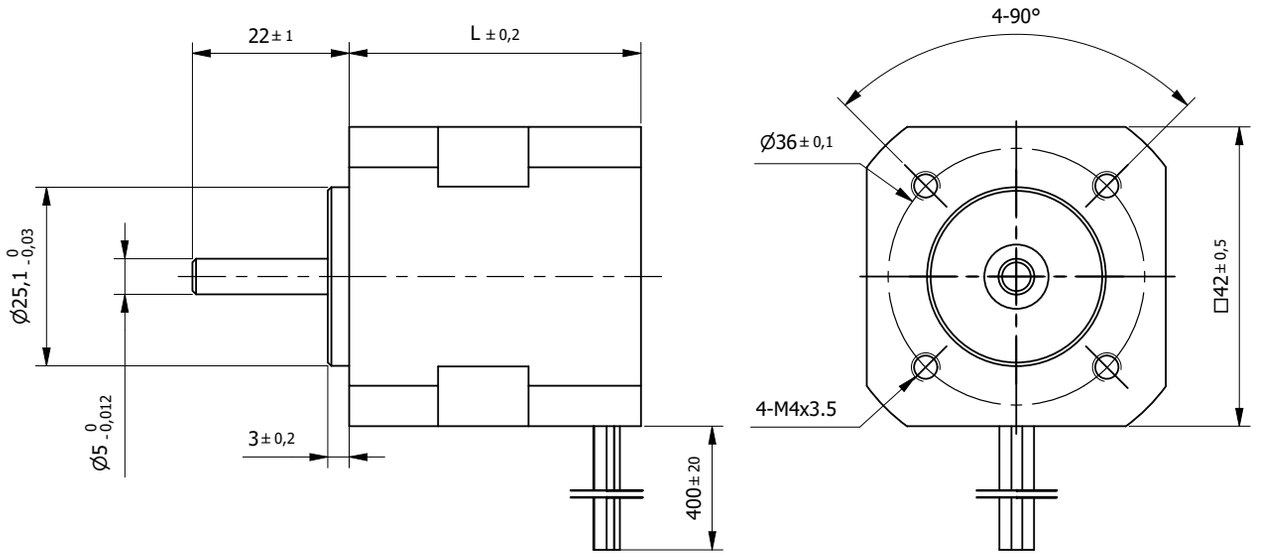
Standard Combination		
Encoder	Gearbox	Drive
E4	36JMS	Gemini
E5		

* other options on request

Connection			
Pin n°	Color	Gauge	Function
1	Red	UL1332 AWG20	Phase U
2	Black	|	Phase V
3	White	|	Phase W
1	Yellow	UL1332 AWG24	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 42BL41
8-pole

□ 42mm - 0,063Nm



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

Specification			
	Model		42BL41
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,063
6	Max. Peak Torque	Nm	0,19
7	Torque Constant	Nm/A	0,035
8	Rated Current	A	1,79
9	Max. Peak Current	A	6
10	No-Load Current	mA	200
11	Line to Line Resistance	Ω	1,5
12	Line to Line Inductance	mH	2,1
13	Rotor Inertia	gcm2	24
14	Length (L)	mm	41
15	Weight	Kg	0,3

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

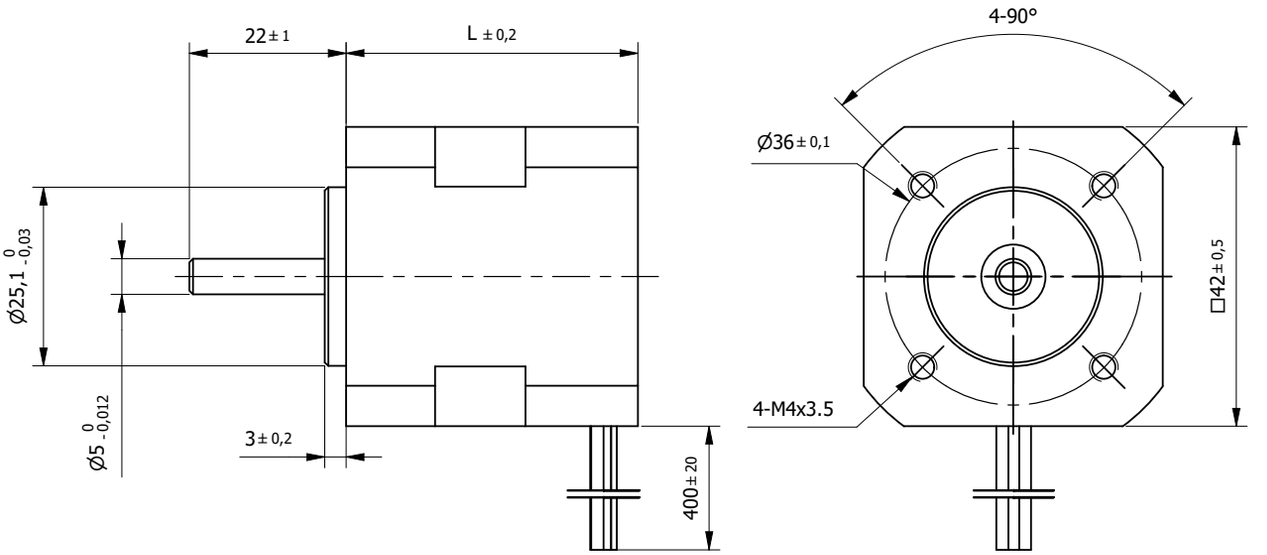
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Gemini
E5	42JMS	

* other options on request

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 42BL61
8-pole

□ 42mm - 0,125Nm



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

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

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

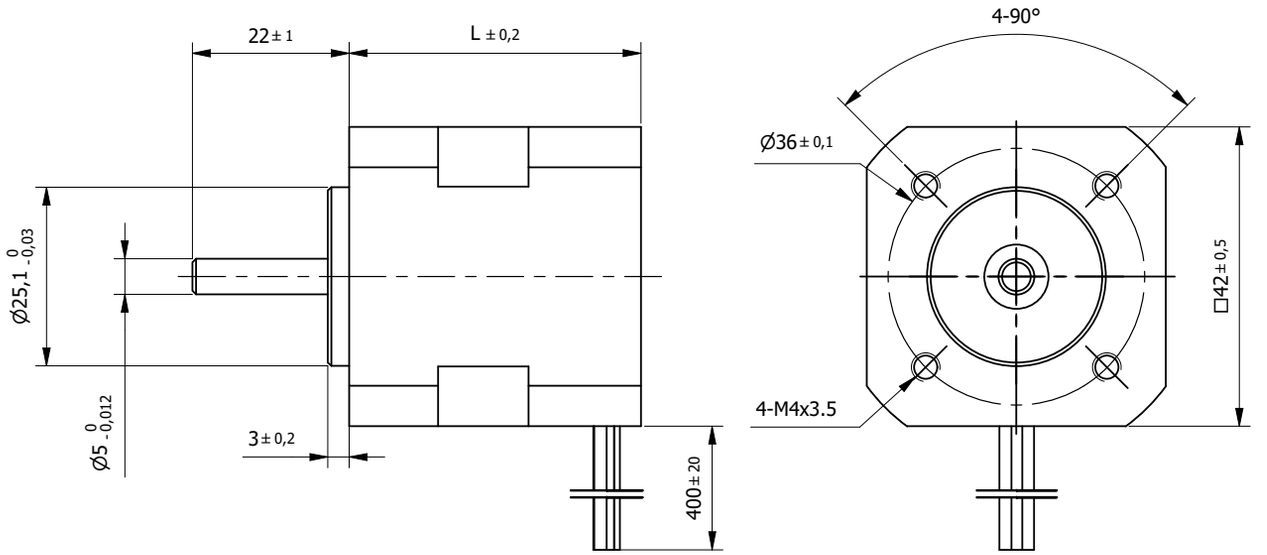
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Gemini
E5	42JMS	

* other options on request

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 42BL81
8-pole

□ 42mm - 0,185Nm



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

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

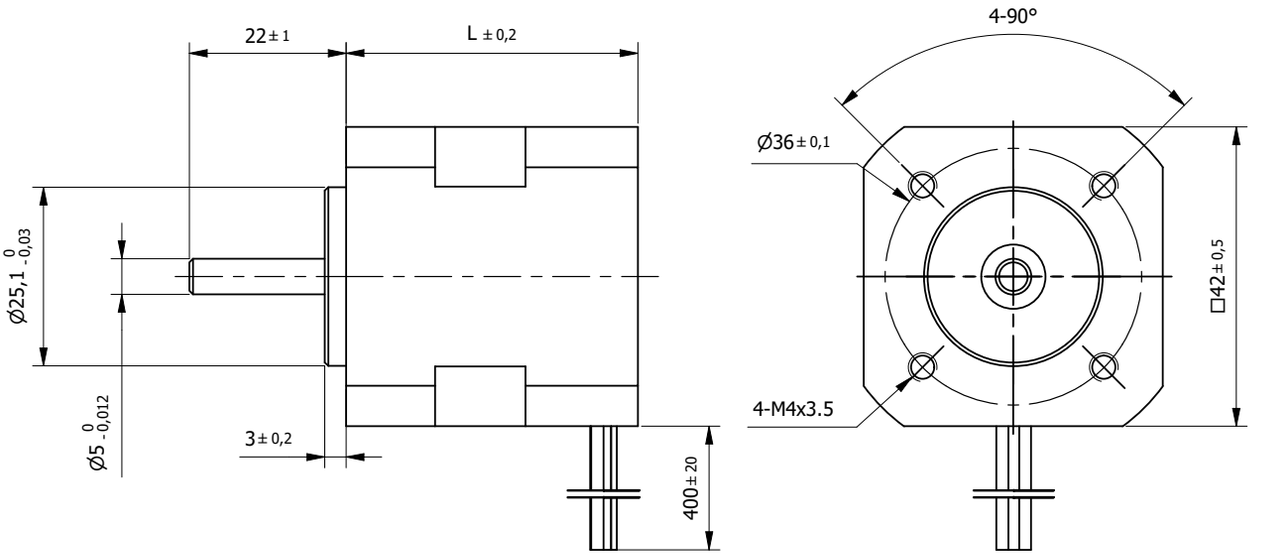
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Gemini
E5	42JMS	

* other options on request

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 42BL100
8-pole

□ 42mm - 0,25Nm



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

Specification			
	Model		42BL100
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,25
6	Max. Peak Torque	Nm	0,75
7	Torque Constant	Nm/A	0,036
8	Rated Current	A	6,94
9	Max. Peak Current	A	21,7
10	No-Load Current	mA	450
11	Line to Line Resistance	Ω	0,3
12	Line to Line Inductance	mH	0,5
13	Rotor Inertia	gcm2	96
14	Length (L)	mm	100
15	Weight	Kg	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

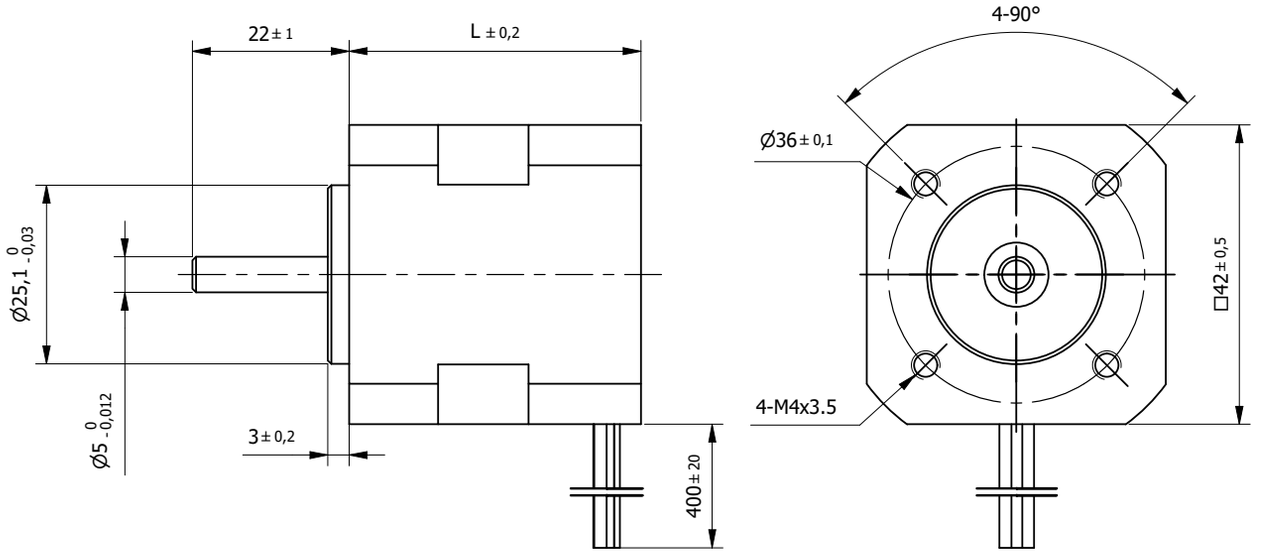
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Gemini
E5	42JMS	

* other options on request

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 42BLA01
10-pole

□ 42mm - 0,07Nm



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

Specification			
	Model		42BLA01
1	n° of Pole		10
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,07
6	Max. Peak Torque	Nm	0,21
7	Torque Constant	Nm/A	0,055
8	Rated Current	A	1,27
9	Max. Peak Current	A	4
10	No-Load Current	mA	220
11	Line to Line Resistance	Ω	2,6
12	Line to Line Inductance	mH	1,83
13	Rotor Inertia	gcm2	48
14	Length (L)	mm	40,3
15	Weight	Kg	0,26

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

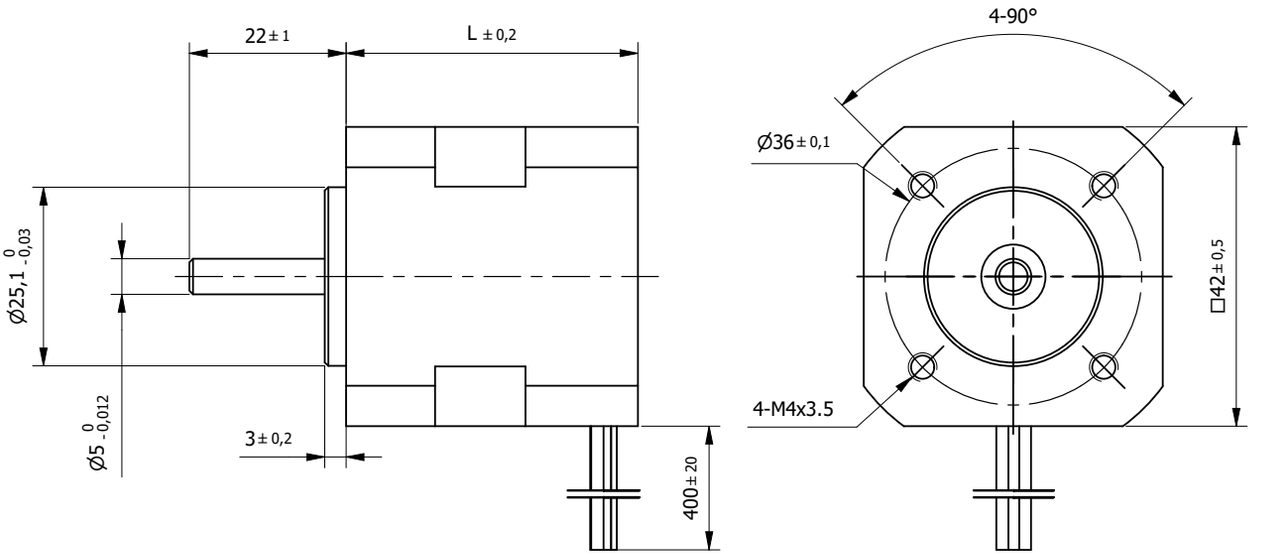
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Taurus
E5	42JMS	Gemini

* other options on request

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 42BLA02
10-pole

□ 42mm - 0,16Nm



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

Specification			
	Model		42BLA02
1	n° of Pole		10
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,16
6	Max. Peak Torque	Nm	0,48
7	Torque Constant	Nm/A	0,059
8	Rated Current	A	2,71
9	Max. Peak Current	A	8,3
10	No-Load Current	mA	450
11	Line to Line Resistance	Ω	1,1
12	Line to Line Inductance	mH	0,96
13	Rotor Inertia	gcm2	101
14	Length (L)	mm	60,3
15	Weight	Kg	0,45

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

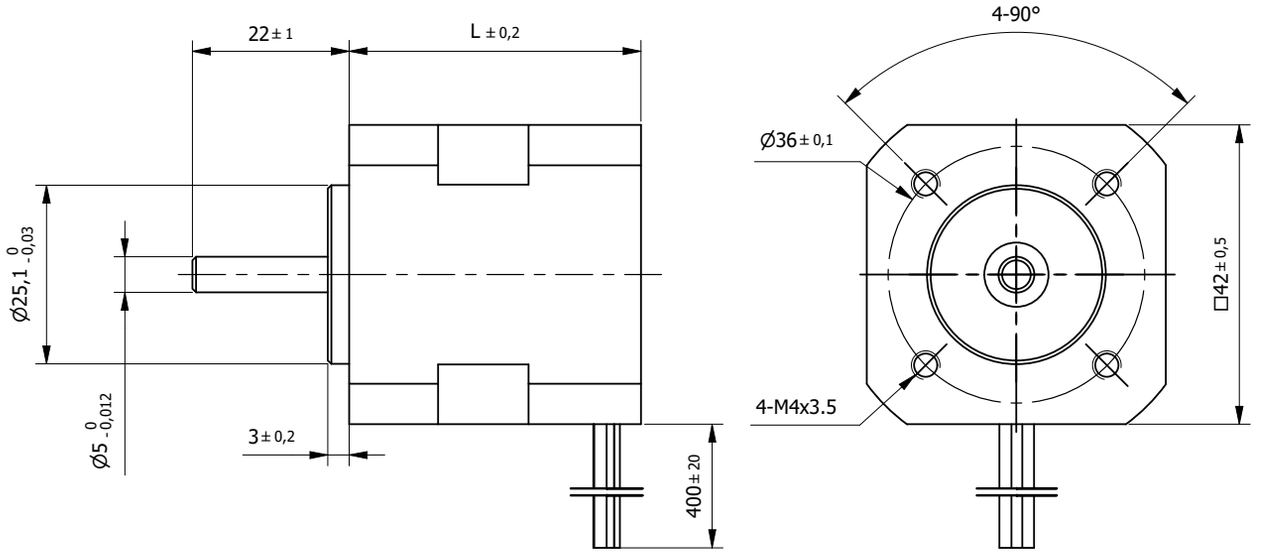
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Gemini
E5	42JMS	

* other options on request

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 42BLA03
10-pole

□ 42mm - 0,26Nm



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

Specification			
	Model		42BLA03
1	n° of Pole		10
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,26
6	Max. Peak Torque	Nm	0,78
7	Torque Constant	Nm/A	0,058
8	Rated Current	A	4,48
9	Max. Peak Current	A	13,5
10	No-Load Current	mA	430
11	Line to Line Resistance	Ω	0,7
12	Line to Line Inductance	mH	0,58
13	Rotor Inertia	gcm2	154
14	Length (L)	mm	80,3
15	Weight	Kg	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

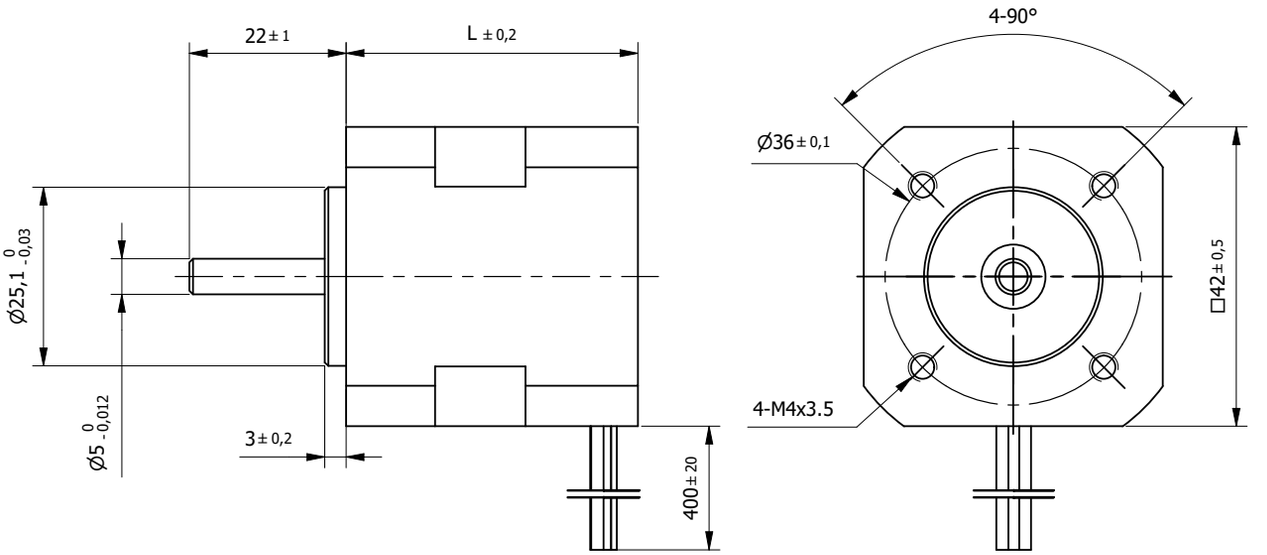
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Gemini
E5	42JMS	

* other options on request

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 42BLA04
10-pole

□ 42mm - 0,36Nm



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

Specification			
	Model		42BLA04
1	n° of Pole		10
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,36
6	Max. Peak Torque	Nm	1,08
7	Torque Constant	Nm/A	0,057
8	Rated Current	A	6,32
9	Max. Peak Current	A	19
10	No-Load Current	mA	490
11	Line to Line Resistance	Ω	0,48
12	Line to Line Inductance	mH	0,44
13	Rotor Inertia	gcm2	207
14	Length (L)	mm	100,3
15	Weight	Kg	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 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

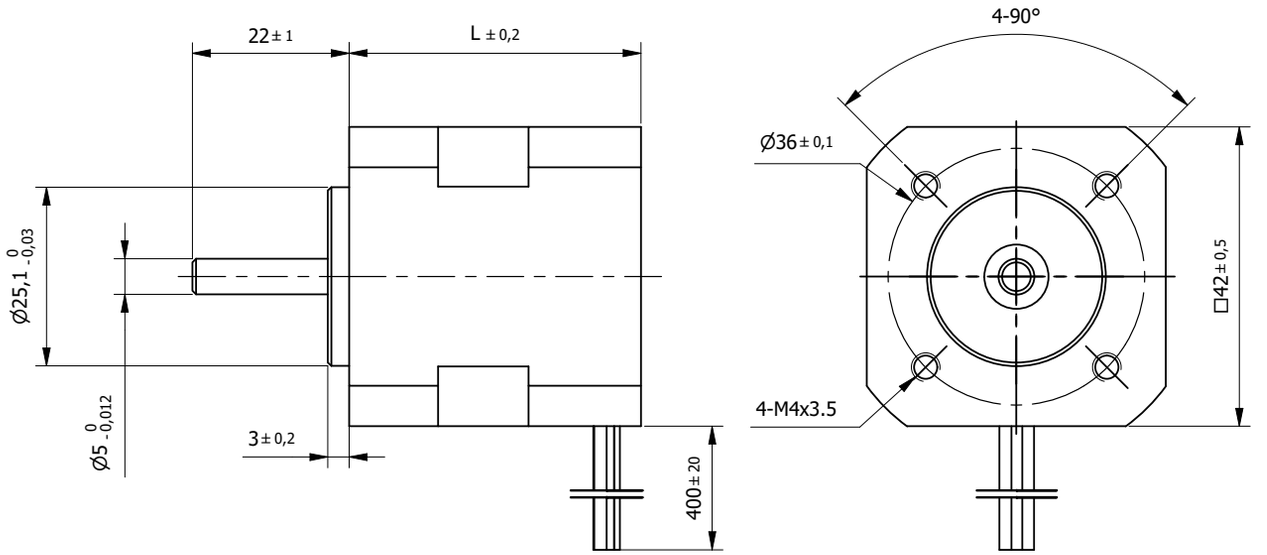
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Gemini
E5	42JMS	

* other options on request

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 42BLB01
6-pole

□ 42mm - 0,064Nm



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

Specification			
	Model		42BLB01
1	n° of Pole		6
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,064
6	Max. Peak Torque	Nm	0,19
7	Torque Constant	Nm/A	0,057
8	Rated Current	A	1,12
9	Max. Peak Current	A	3,5
10	No-Load Current	mA	160
11	Line to Line Resistance	Ω	3,6
12	Line to Line Inductance	mH	1,8
13	Rotor Inertia	gcm2	80
14	Length (L)	mm	40,3
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)	28N
Max. Axial force	10N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

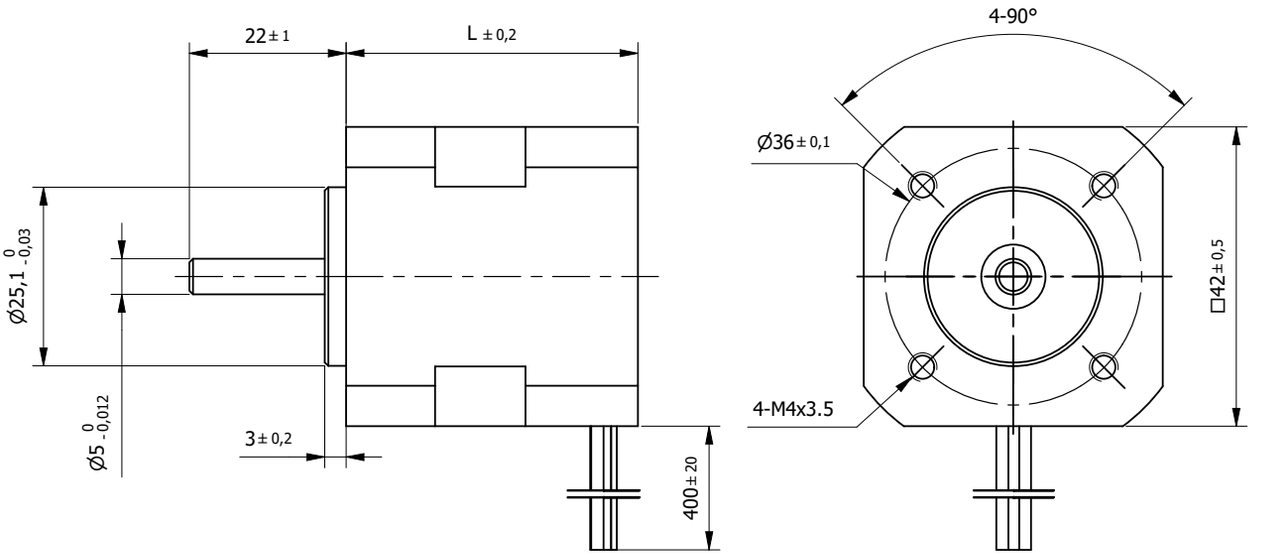
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Taurus
E5	42JMS	Gemini

* other options on request

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 42BLB02
6-pole

□ 42mm - 0,17Nm



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

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

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

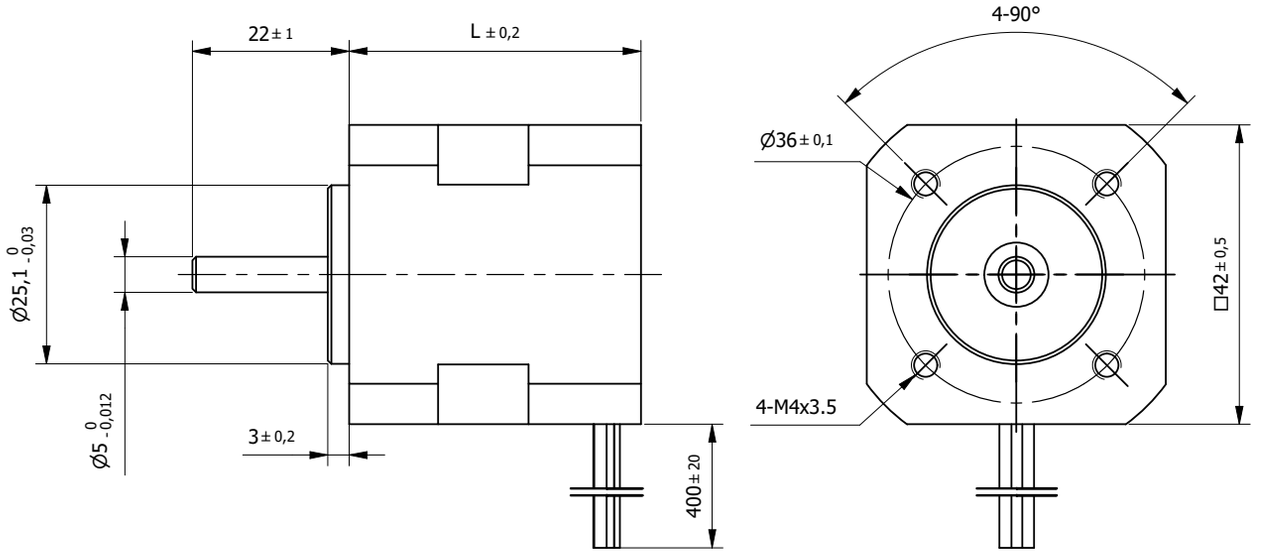
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Gemini
E5	42JMS	

* other options on request

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 42BLB03
6-pole

□ 42mm - 0,3Nm



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

Specification			
	Model		42BLB03
1	n° of Pole		6
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,3
6	Max. Peak Torque	Nm	0,9
7	Torque Constant	Nm/A	0,062
8	Rated Current	A	4,84
9	Max. Peak Current	A	14,5
10	No-Load Current	mA	330
11	Line to Line Resistance	Ω	0,54
12	Line to Line Inductance	mH	0,45
13	Rotor Inertia	gcm2	120
14	Length (L)	mm	80,3
15	Weight	Kg	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

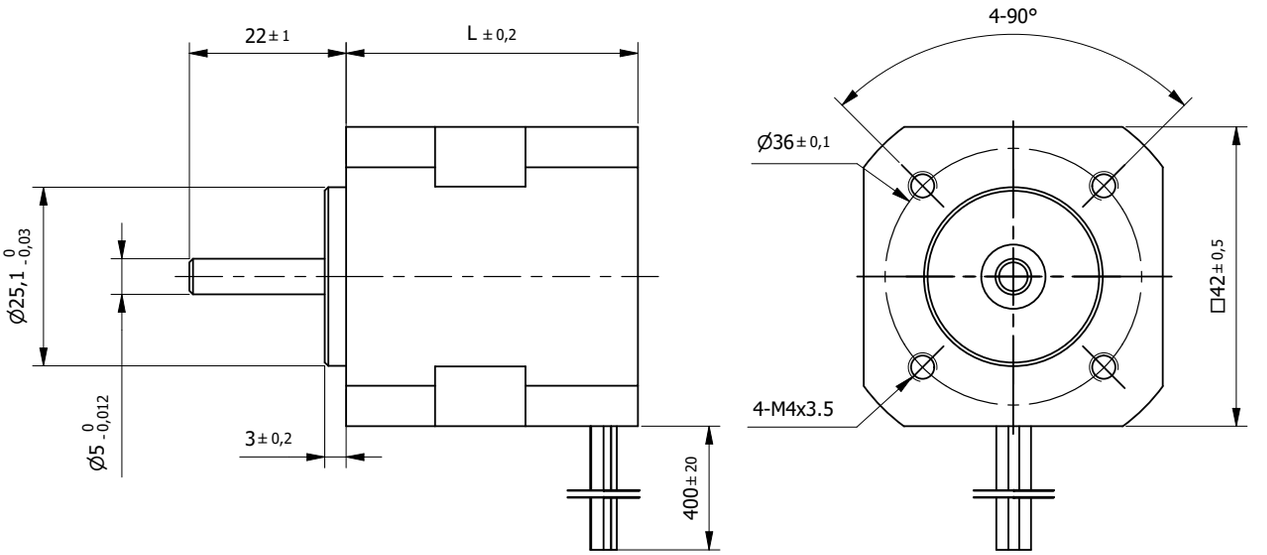
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Gemini
E5	42JMS	

* other options on request

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 42BLB04
6-pole

□ 42mm - 0,43Nm



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

Specification			
	Model		42BLB04
1	n° of Pole		6
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,43
6	Max. Peak Torque	Nm	1,29
7	Torque Constant	Nm/A	0,062
8	Rated Current	A	6,94
9	Max. Peak Current	A	20,8
10	No-Load Current	mA	450
11	Line to Line Resistance	Ω	0,4
12	Line to Line Inductance	mH	0,3
13	Rotor Inertia	gcm2	140
14	Length (L)	mm	100,3
15	Weight	Kg	1

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

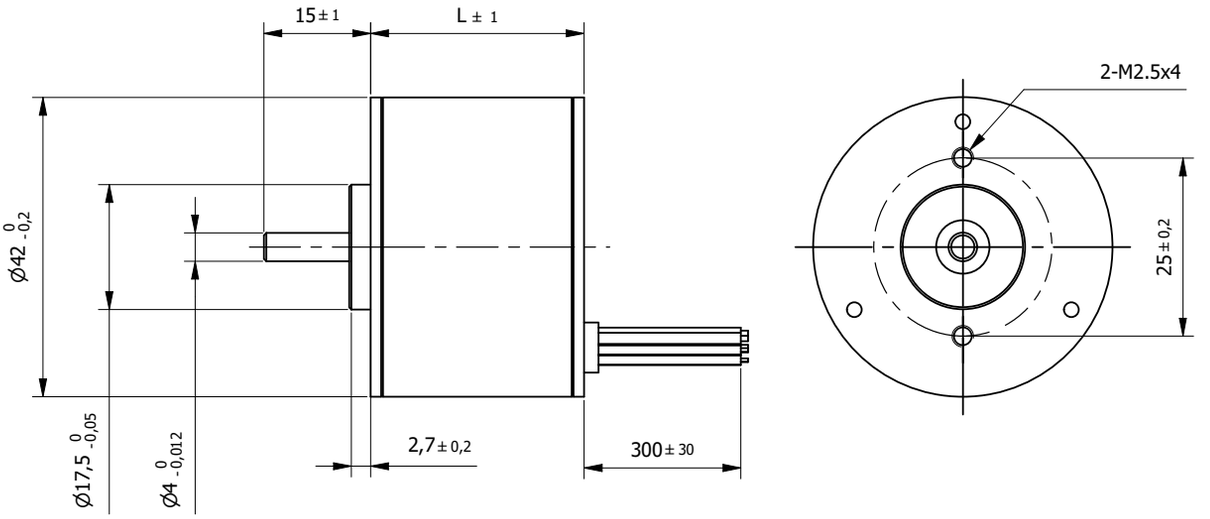
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Gemini
E5	42JMS	

* other options on request

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 42RBL30

Ø 42mm - 0,02Nm



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

Specification			
	Model		42RBL30
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,02
6	Max. Peak Torque	Nm	0,06
7	Torque Constant	Nm/A	0,039
8	Rated Current	A	0,51
9	Max. Peak Current	A	1,7
10	No-Load Current	mA	160
11	Line to Line Resistance	Ω	5,9
12	Line to Line Inductance	mH	5,1
13	Rotor Inertia	gcm2	15,6
14	Length (L)	mm	30
15	Weight	Kg	0,25

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

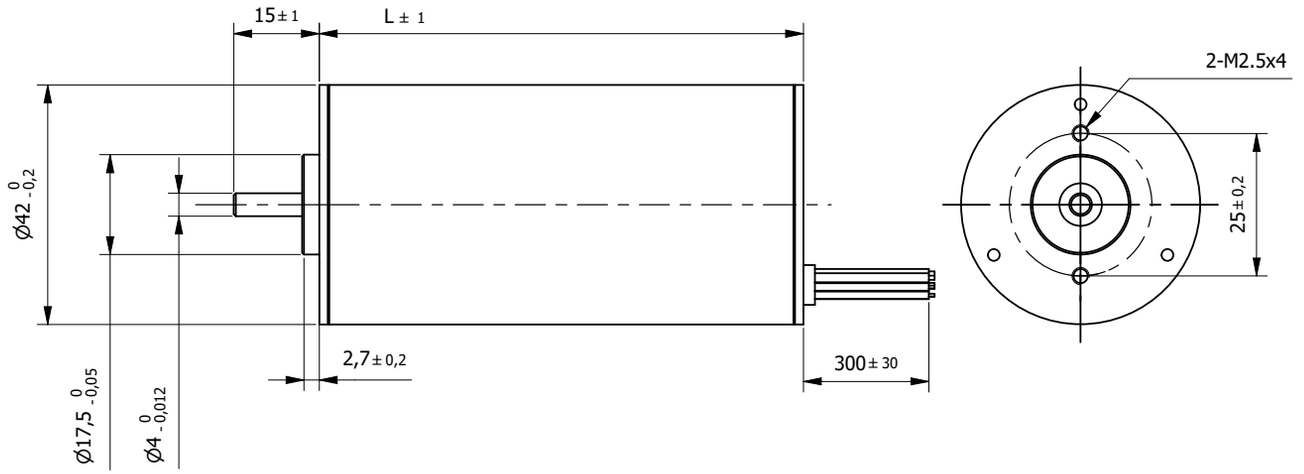
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Taurus
E5	42JMS	Gemini

* other options on request

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	UL1430 AWG22	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 42RBL60

Ø 42mm - 0,06Nm



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

Specification			
	Model		42RBL60
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,06
6	Max. Peak Torque	Nm	0,18
7	Torque Constant	Nm/A	0,038
8	Rated Current	A	1,58
9	Max. Peak Current	A	4,4
10	No-Load Current	mA	230
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	60
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

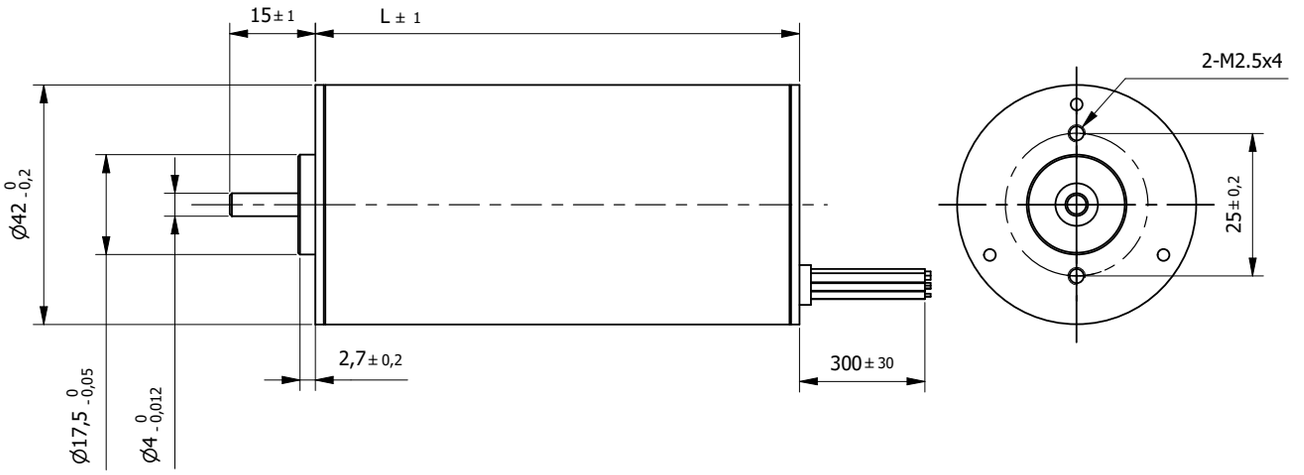
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Gemini
E5	42JMS	

* other options on request

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	UL1430 AWG22	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 42RBL85

Ø 42mm - 0,15Nm



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

Specification			
	Model		42RBL85
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,15
6	Max. Peak Torque	Nm	0,45
7	Torque Constant	Nm/A	0,036
8	Rated Current	A	4,17
9	Max. Peak Current	A	11,4
10	No-Load Current	mA	280
11	Line to Line Resistance	Ω	0,71
12	Line to Line Inductance	mH	0,86
13	Rotor Inertia	gcm2	84
14	Length (L)	mm	85
15	Weight	Kg	0,7

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

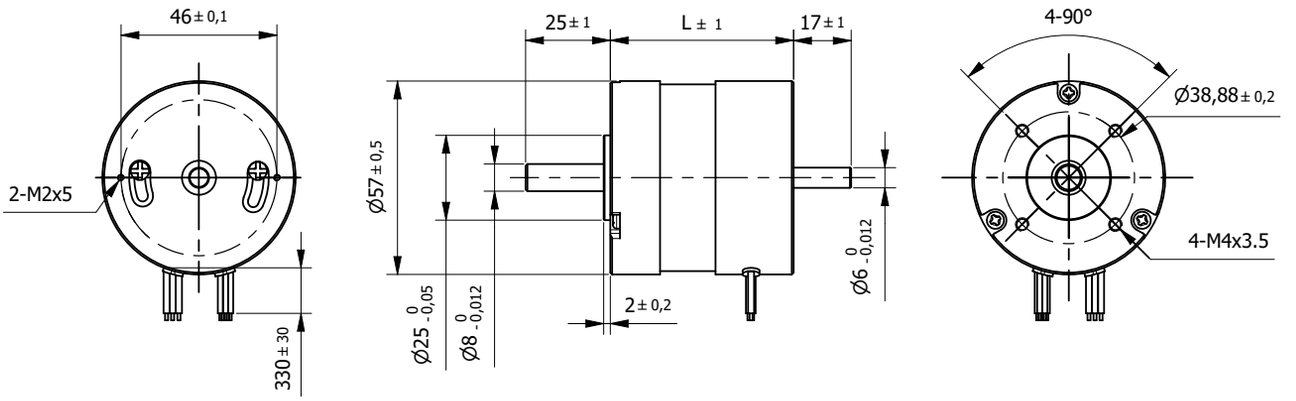
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Gemini
E5	42JMS	

* other options on request

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	UL1430 AWG22	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 57BL45
4-pole

Ø 57mm - 0,055Nm



Specification			
	Model		57BL45
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,055
6	Max. Peak Torque	Nm	0,16
7	Torque Constant	Nm/A	0,052
8	Rated Current	A	1,06
9	Max. Peak Current	A	3,5
10	No-Load Current	mA	240
11	Line to Line Resistance	Ω	4,1
12	Line to Line Inductance	mH	10
13	Rotor Inertia	gcm2	30
14	Length (L)	mm	43,6
15	Weight	Kg	0,33

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

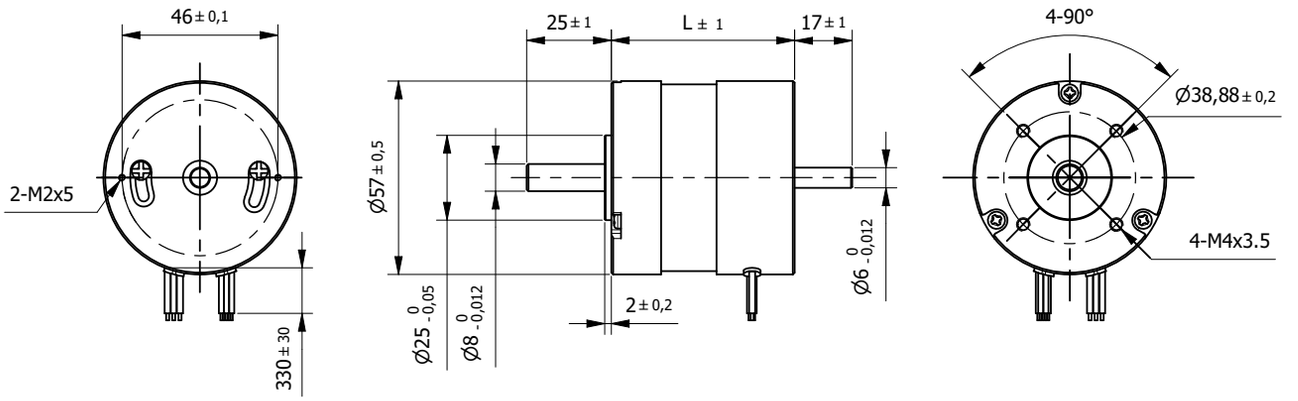
Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Taurus
E5	56JMS	Gemini

* other options on request

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 57BL54
4-pole

Ø 57mm - 0,11Nm



Specification			
	Model		57BL54
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,11
6	Max. Peak Torque	Nm	0,39
7	Torque Constant	Nm/A	0,061
8	Rated Current	A	1,80
9	Max. Peak Current	A	6,8
10	No-Load Current	mA	300
11	Line to Line Resistance	Ω	1,5
12	Line to Line Inductance	mH	4,4
13	Rotor Inertia	gcm2	75
14	Length (L)	mm	53,6
15	Weight	Kg	0,44

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

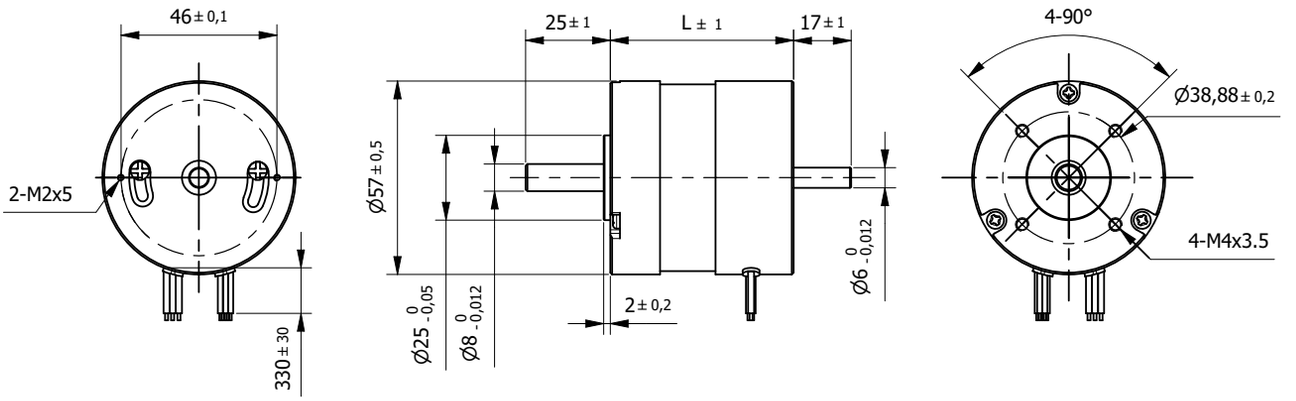
Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Gemini
E5	56JMS	

* other options on request

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 57BL74
4-pole

Ø 57mm - 0,22Nm



Specification			
	Model		57BL74
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,22
6	Max. Peak Torque	Nm	0,7
7	Torque Constant	Nm/A	0,06
8	Rated Current	A	3,67
9	Max. Peak Current	A	12
10	No-Load Current	mA	400
11	Line to Line Resistance	Ω	0,58
12	Line to Line Inductance	mH	2
13	Rotor Inertia	gcm2	119
14	Length (L)	mm	73,6
15	Weight	Kg	0,72

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

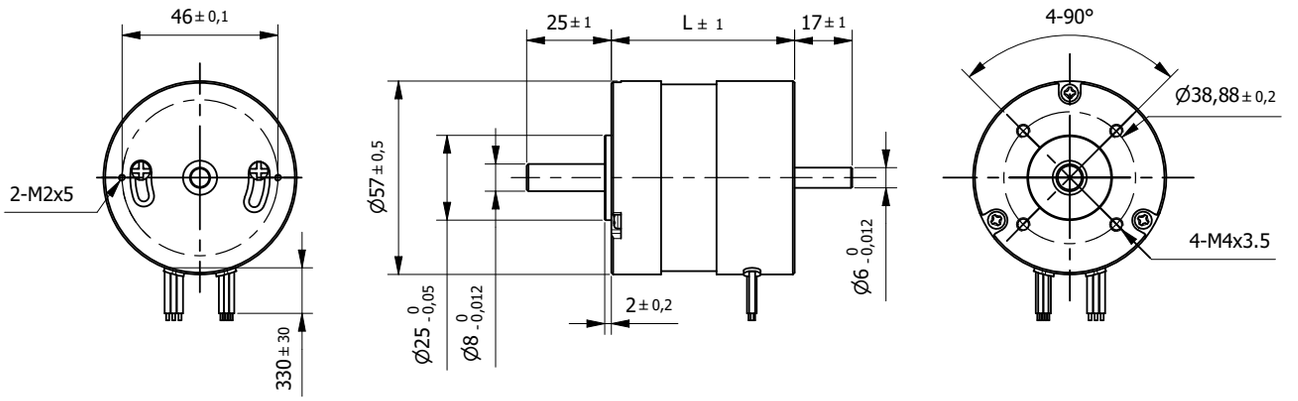
Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Gemini
E5	56JMS	

* other options on request

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 57BL94
4-pole

Ø 57mm - 0,33Nm



Specification			
	Model		57BL94
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,33
6	Max. Peak Torque	Nm	1
7	Torque Constant	Nm/A	0,065
8	Rated Current	A	5,08
9	Max. Peak Current	A	16
10	No-Load Current	mA	450
11	Line to Line Resistance	Ω	0,45
12	Line to Line Inductance	mH	1,5
13	Rotor Inertia	gcm2	173
14	Length (L)	mm	93,6
15	Weight	Kg	0,95

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

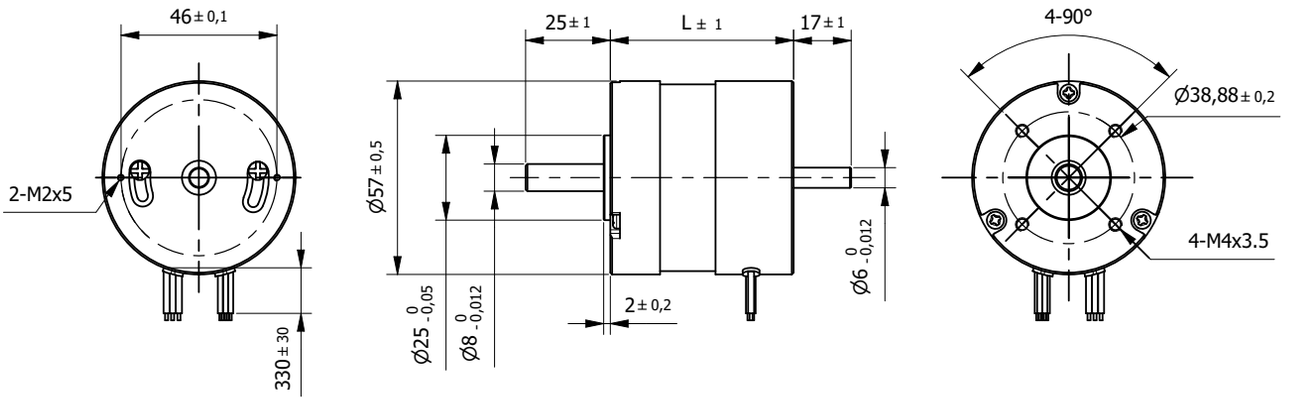
Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Gemini
E5	56JMS	

* other options on request

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 57BL116
4-pole

Ø 57mm - 0,44Nm



Specification			
	Model		57BL116
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,44
6	Max. Peak Torque	Nm	1,27
7	Torque Constant	Nm/A	0,062
8	Rated Current	A	7,10
9	Max. Peak Current	A	21
10	No-Load Current	mA	540
11	Line to Line Resistance	Ω	0,35
12	Line to Line Inductance	mH	0,95
13	Rotor Inertia	gcm2	230
14	Length (L)	mm	113,6
15	Weight	Kg	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

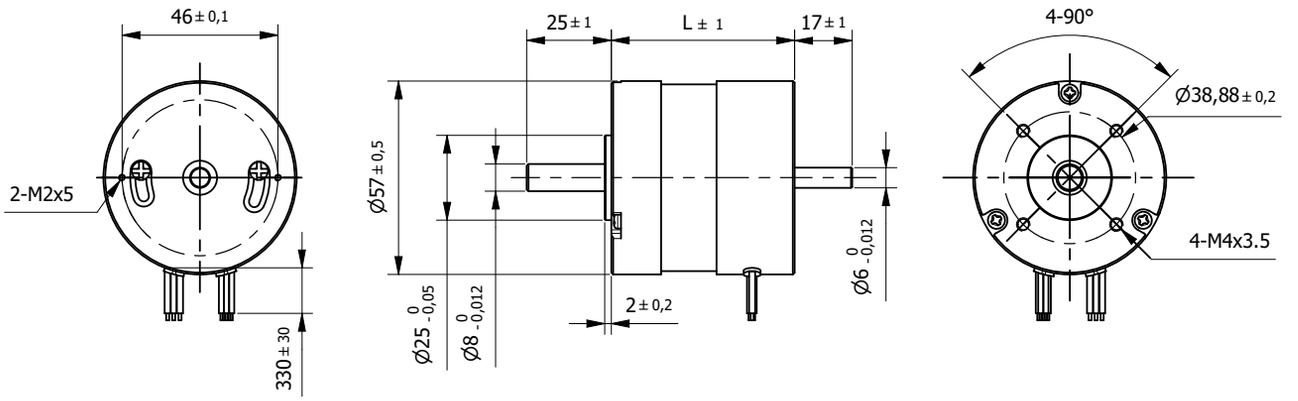
Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Gemini
E5	56JMS	

* other options on request

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 57BLA01
6-pole

Ø 57mm - 0,2Nm



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

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

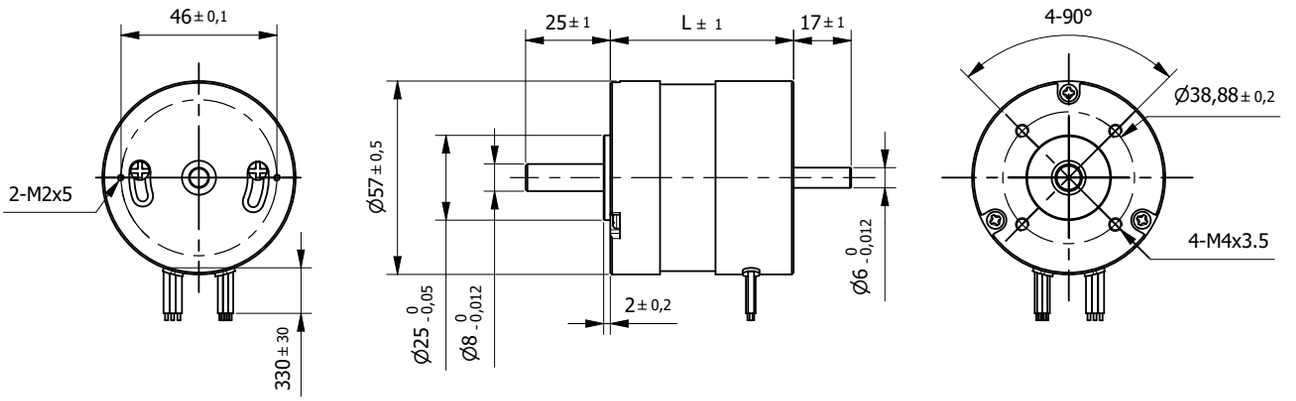
Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Gemini
E5	56JMS	

* other options on request

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 57BLA02
6-pole

Ø 57mm - 0,4Nm



Specification			
	Model		57BLA02
1	n° of Pole		6
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,4
6	Max. Peak Torque	Nm	1,2
7	Torque Constant	Nm/A	0,07
8	Rated Current	A	5,71
9	Max. Peak Current	A	16
10	No-Load Current	mA	400
11	Line to Line Resistance	Ω	0,4
12	Line to Line Inductance	mH	0,55
13	Rotor Inertia	gcm2	375
14	Length (L)	mm	73,6
15	Weight	Kg	0,75

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

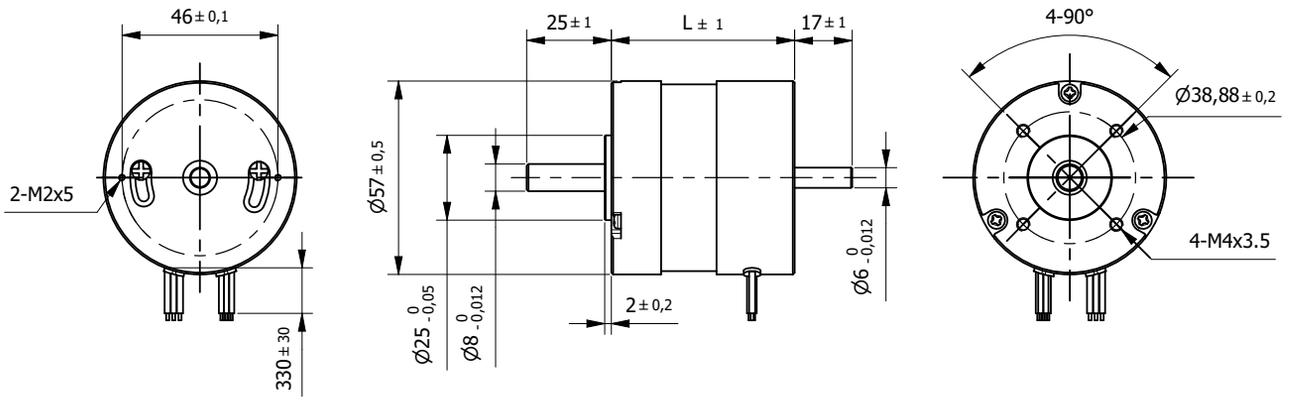
Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Gemini
E5	56JMS	

* other options on request

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 57BLA03
6-pole

Ø 57mm - 0,6Nm



Specification			
	Model		57BLA03
1	n° of Pole		6
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,6
6	Max. Peak Torque	Nm	1,8
7	Torque Constant	Nm/A	0,06
8	Rated Current	A	10
9	Max. Peak Current	A	29
10	No-Load Current	mA	580
11	Line to Line Resistance	Ω	0,25
12	Line to Line Inductance	mH	0,4
13	Rotor Inertia	gcm2	510
14	Length (L)	mm	93,6
15	Weight	Kg	1

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

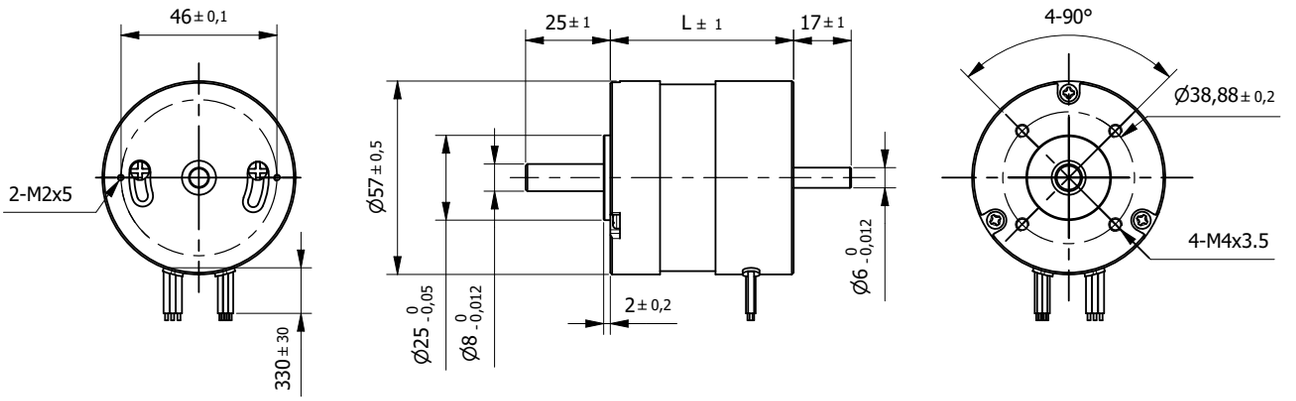
Standard Combination	
Encoder	Gearbox
E3	GYP56
E5	56JMS

* other options on request

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 57BLA04
6-pole

Ø 57mm - 0,8Nm



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

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

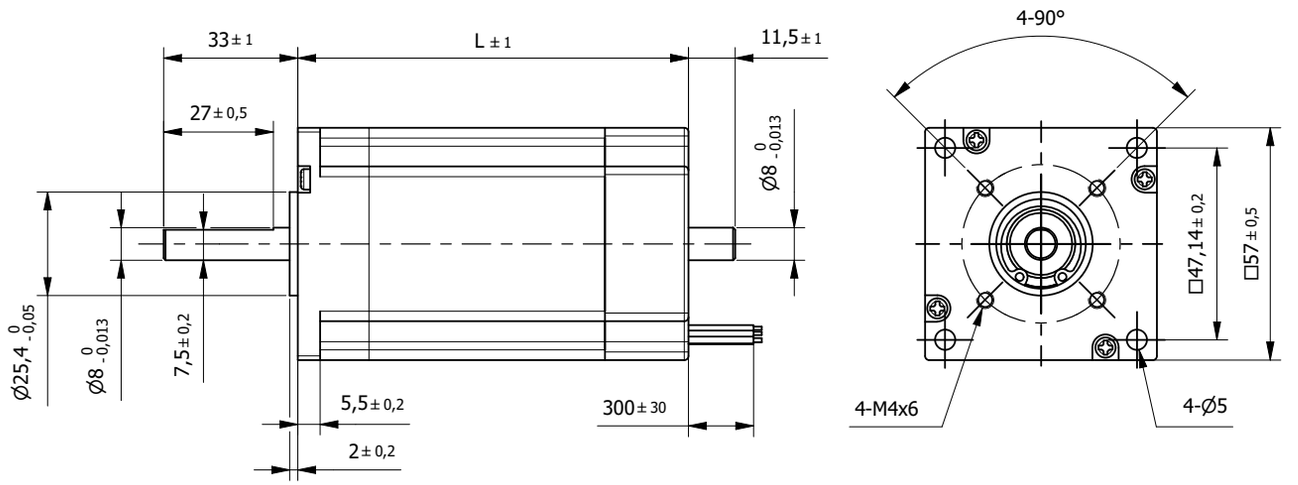
Standard Combination	
Encoder	Gearbox
E3	GYP56
E5	56JMS

* other options on request

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 57BLB40

□ 57mm - 0,3Nm



Specification			
	Model		57BLB40
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,3
6	Max. Peak Torque	Nm	0,9
7	Torque Constant	Nm/A	0,08
8	Rated Current	A	3,75
9	Max. Peak Current	A	12,3
10	No-Load Current	mA	400
11	Line to Line Resistance	Ω	1,2
12	Line to Line Inductance	mH	1,2
13	Rotor Inertia	gcm2	210
14	Length (L)	mm	76
15	Weight	Kg	0,8

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

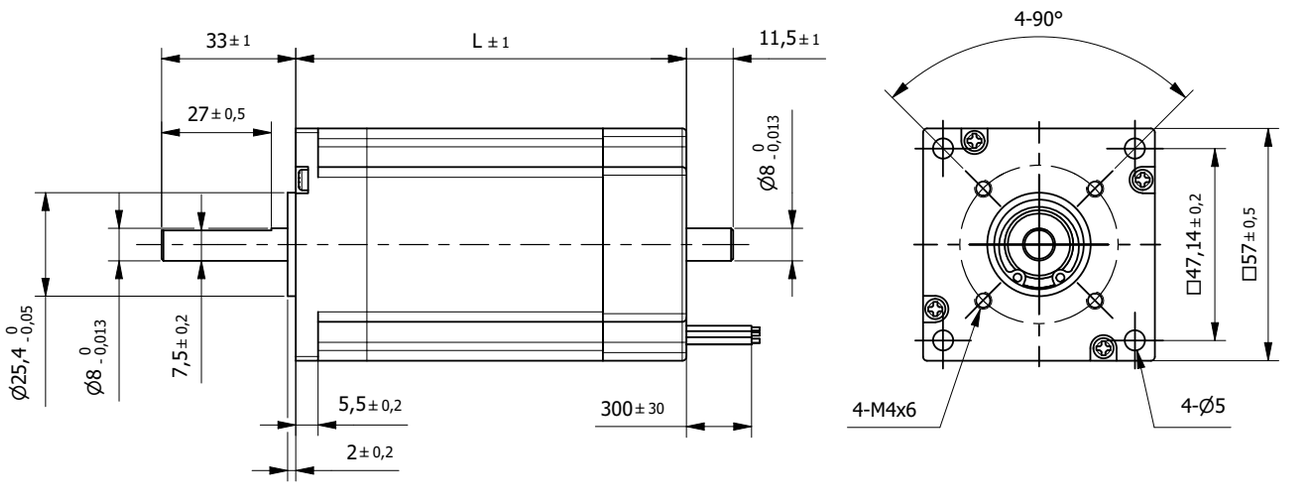
Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Gemini
E5	56JMS	

* other options on request

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 57BLB60

□ 57mm - 0,45Nm



Specification			
	Model		57BLB60
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,45
6	Max. Peak Torque	Nm	1,35
7	Torque Constant	Nm/A	0,08
8	Rated Current	A	5,63
9	Max. Peak Current	A	18,2
10	No-Load Current	mA	550
11	Line to Line Resistance	Ω	0,8
12	Line to Line Inductance	mH	0,8
13	Rotor Inertia	gcm2	320
14	Length (L)	mm	96
15	Weight	Kg	1

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

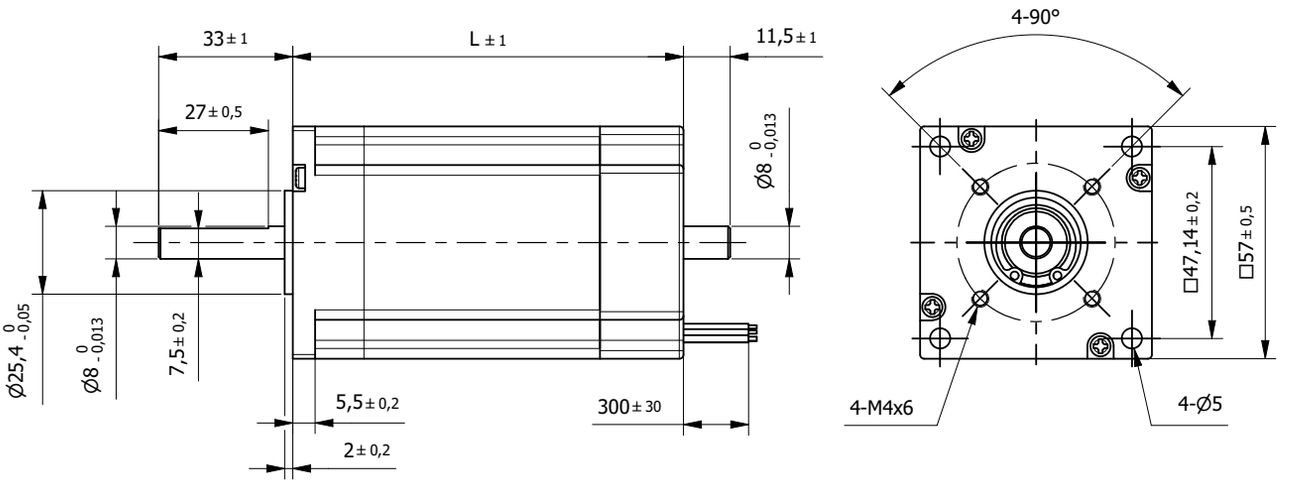
Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Gemini
E5	56JMS	

* other options on request

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 57BLB80

□ 57mm - 0,6Nm



Specification			
	Model		57BLB80
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,6
6	Max. Peak Torque	Nm	1,8
7	Torque Constant	Nm/A	0,08
8	Rated Current	A	7,5
9	Max. Peak Current	A	23,8
10	No-Load Current	mA	620
11	Line to Line Resistance	Ω	0,5
12	Line to Line Inductance	mH	0,6
13	Rotor Inertia	gcm2	430
14	Length (L)	mm	116
15	Weight	Kg	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

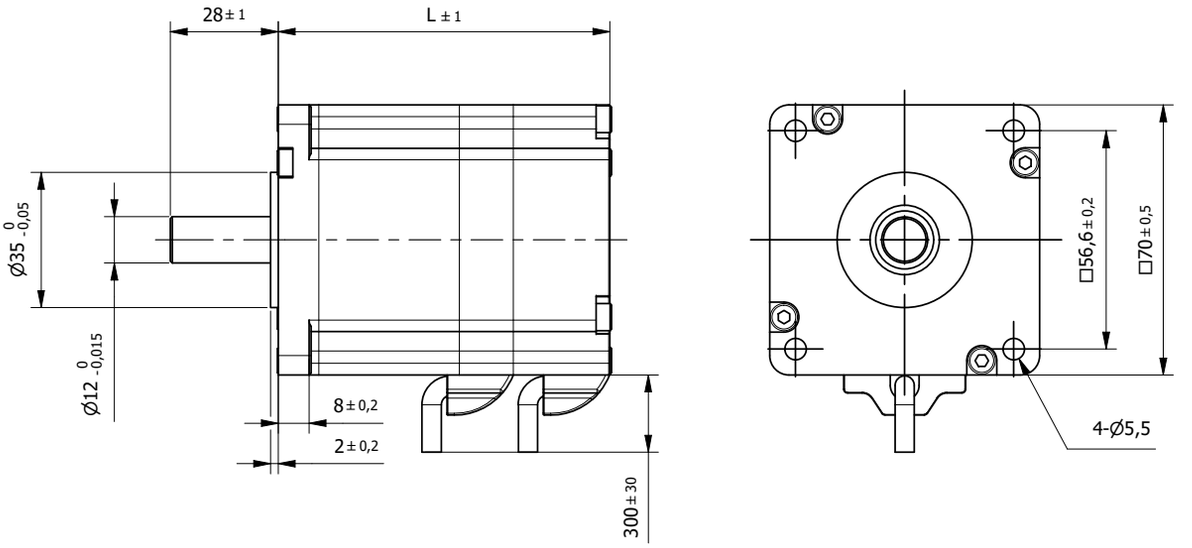
Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Gemini
E5	56JMS	

* other options on request

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 70BLS86

□ 70mm - 0,5Nm



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

Specification			
	Model		70BLS86
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,5
6	Max. Peak Torque	Nm	1,5
7	Torque Constant	Nm/A	0,12
8	Rated Current	A	4,17
9	Max. Peak Current	A	13
10	No-Load Current	mA	600
11	Line to Line Resistance	Ω	0,6
12	Line to Line Inductance	mH	1,4
13	Rotor Inertia	gcm2	200
14	Length (L)	mm	86
15	Weight	Kg	1,3

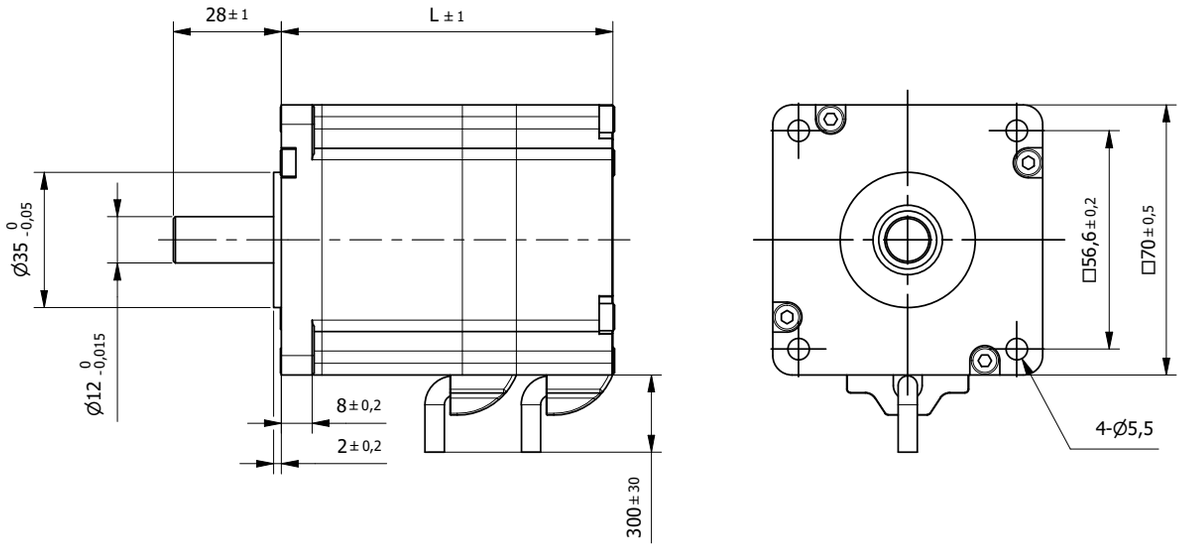
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min.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

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Gemini
E4	56JMS	
E5		
* other options on request		

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 70BLS116

□ 70mm - 1Nm



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

Specification			
	Model		70BLS116
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	1
6	Max. Peak Torque	Nm	3
7	Torque Constant	Nm/A	0,12
8	Rated Current	A	8,33
9	Max. Peak Current	A	26
10	No-Load Current	mA	600
11	Line to Line Resistance	Ω	0,3
12	Line to Line Inductance	mH	0,7
13	Rotor Inertia	gcm2	400
14	Length (L)	mm	116
15	Weight	Kg	2,1

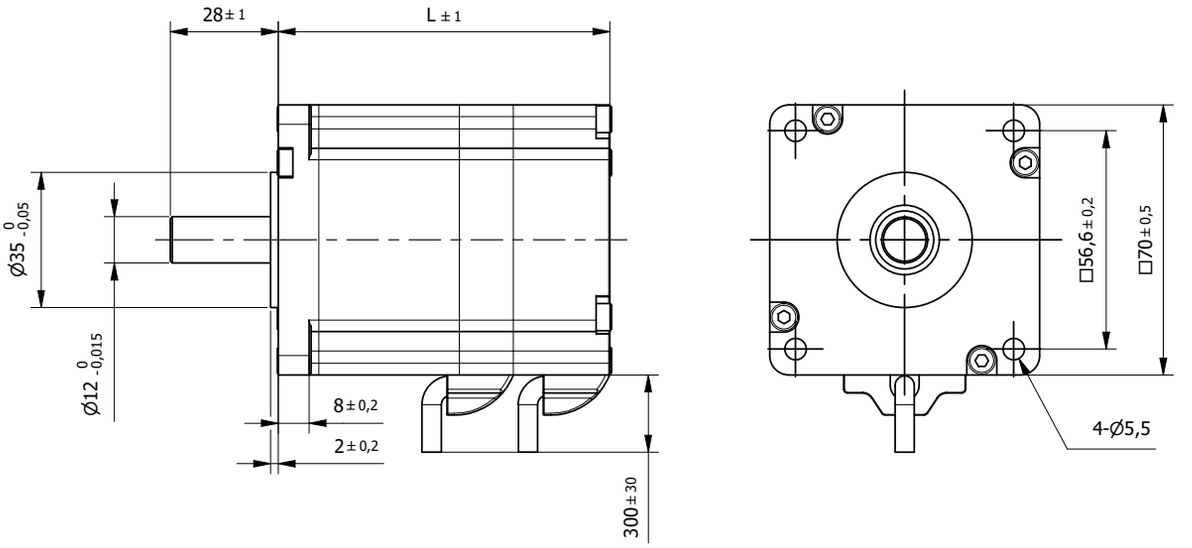
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min.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

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Gemini
E4	56JMS	
E5		
* other options on request		

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 70BLS136

□ 70mm - 1,5Nm



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

Specification			
	Model		70BLS136
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	1,5
6	Max. Peak Torque	Nm	4,5
7	Torque Constant	Nm/A	0,12
8	Rated Current	A	12,5
9	Max. Peak Current	A	38
10	No-Load Current	mA	600
11	Line to Line Resistance	Ω	0,22
12	Line to Line Inductance	mH	0,55
13	Rotor Inertia	gcm2	600
14	Length (L)	mm	136
15	Weight	Kg	2,9

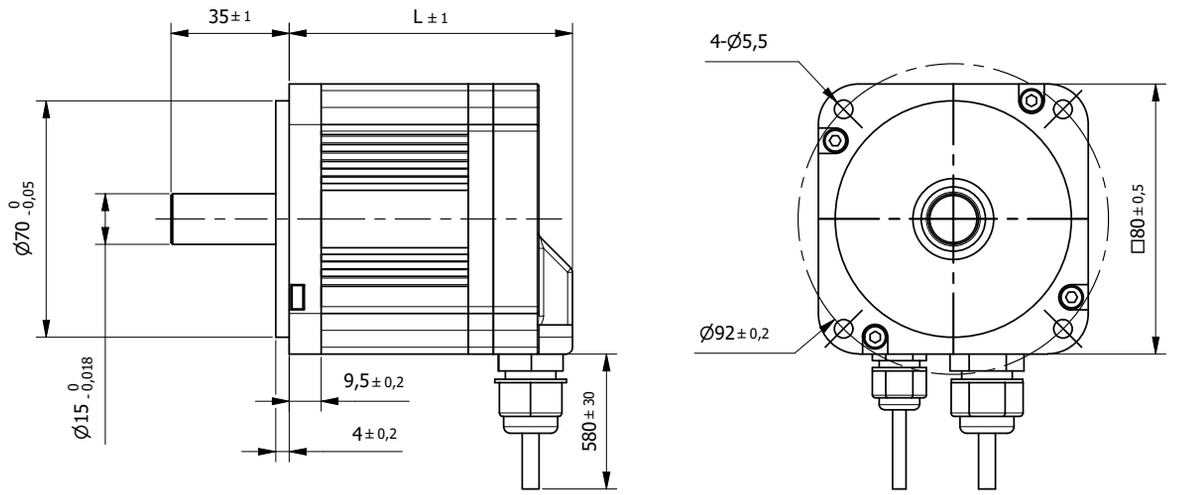
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min.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

Standard Combination	
Encoder	Gearbox
E3	GYP56
E4	56JMS
E5	
* other options on request	

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 80BLS84

□ 80mm - 0,9Nm



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

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

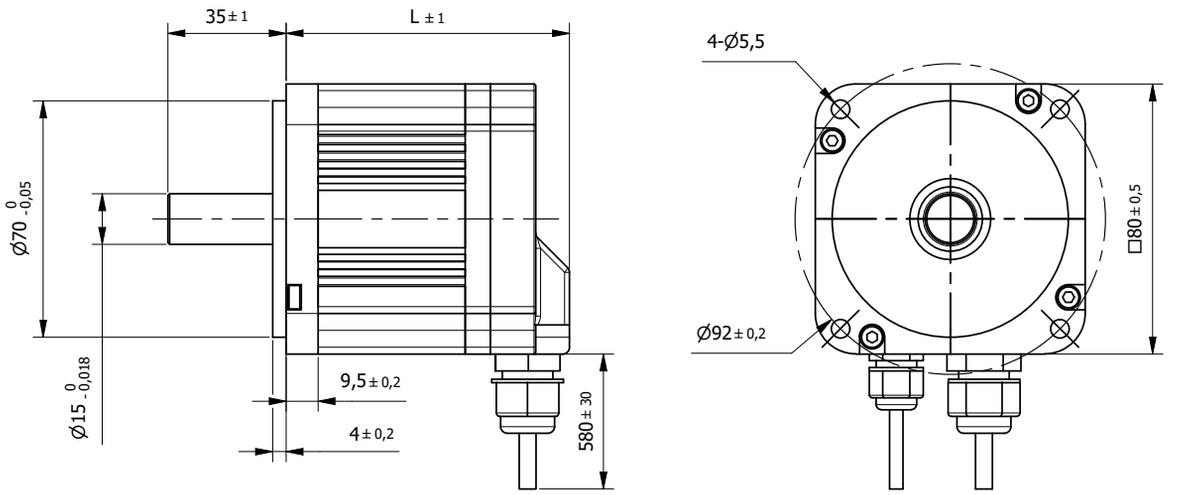
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	F
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min.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

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP80	Gemini
E4		
E5		
* other options on request		

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 80BLS105

□ 80mm - 1,7Nm



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

Specification			
	Model		80BLS105
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	1,7
6	Max. Peak Torque	Nm	5
7	Torque Constant	Nm/A	0,113
8	Rated Current	A	15,04
9	Max. Peak Current	A	45
10	No-Load Current	mA	700
11	Line to Line Resistance	Ω	0,1
12	Line to Line Inductance	mH	0,6
13	Rotor Inertia	gcm2	1020
14	Length (L)	mm	105
15	Weight	Kg	2

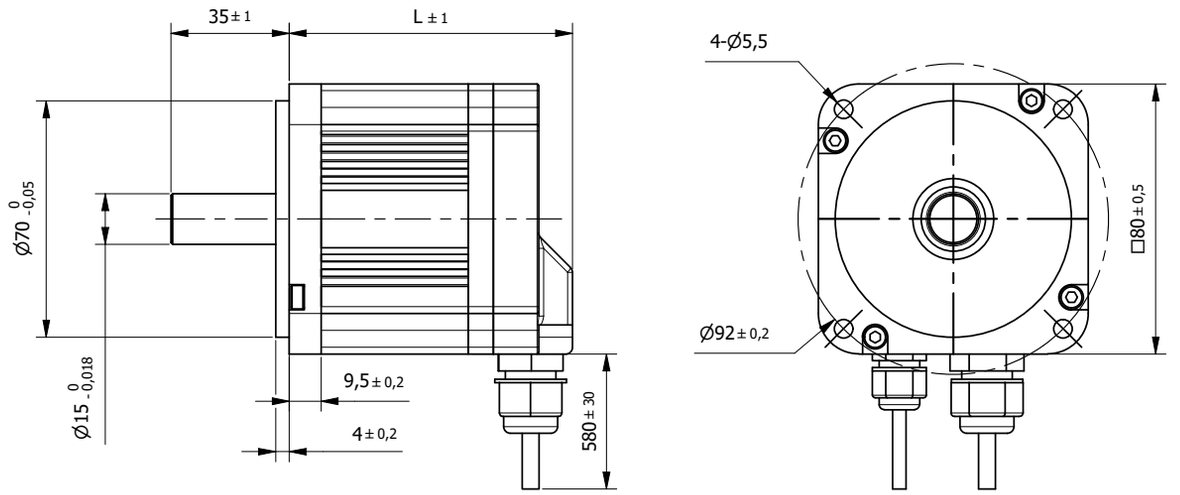
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	F
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min.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

Standard Combination	
Encoder	Gearbox
E3	GYP80
E4	
E5	
* other options on request	

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 80BLS120

□ 80mm - 2,2Nm



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

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

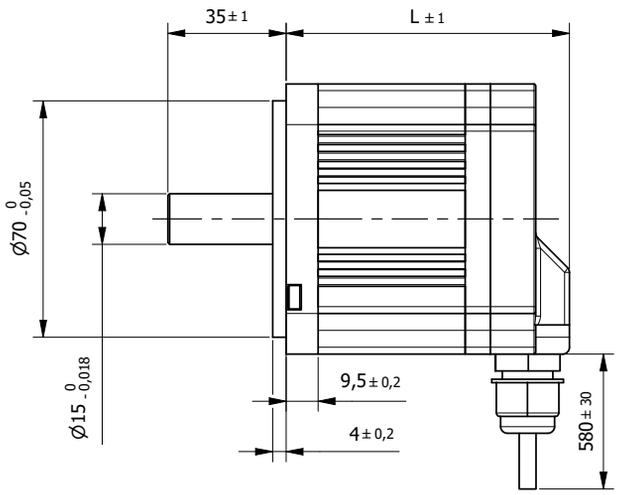
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	F
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min.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

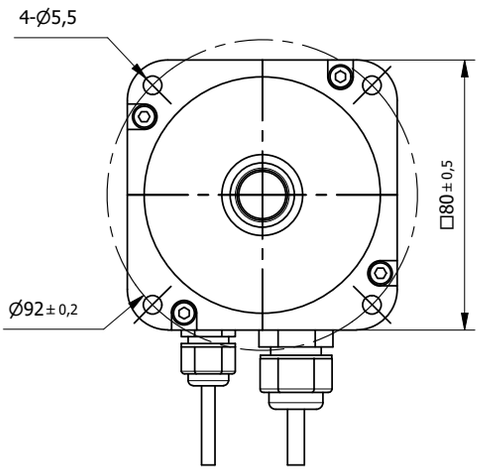
Standard Combination	
Encoder	Gearbox
E3	GYP80
E4	
E5	
* other options on request	

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 80BLS125

□ 80mm - 3Nm





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

Specification			
	Model		80BLS125
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	3
6	Max. Peak Torque	Nm	8,5
7	Torque Constant	Nm/A	0,111
8	Rated Current	A	27,03
9	Max. Peak Current	A	78
10	No-Load Current	mA	1500
11	Line to Line Resistance	Ω	0,057
12	Line to Line Inductance	mH	0,3
13	Rotor Inertia	gcm2	1900
14	Length (L)	mm	140
15	Weight	Kg	2,9

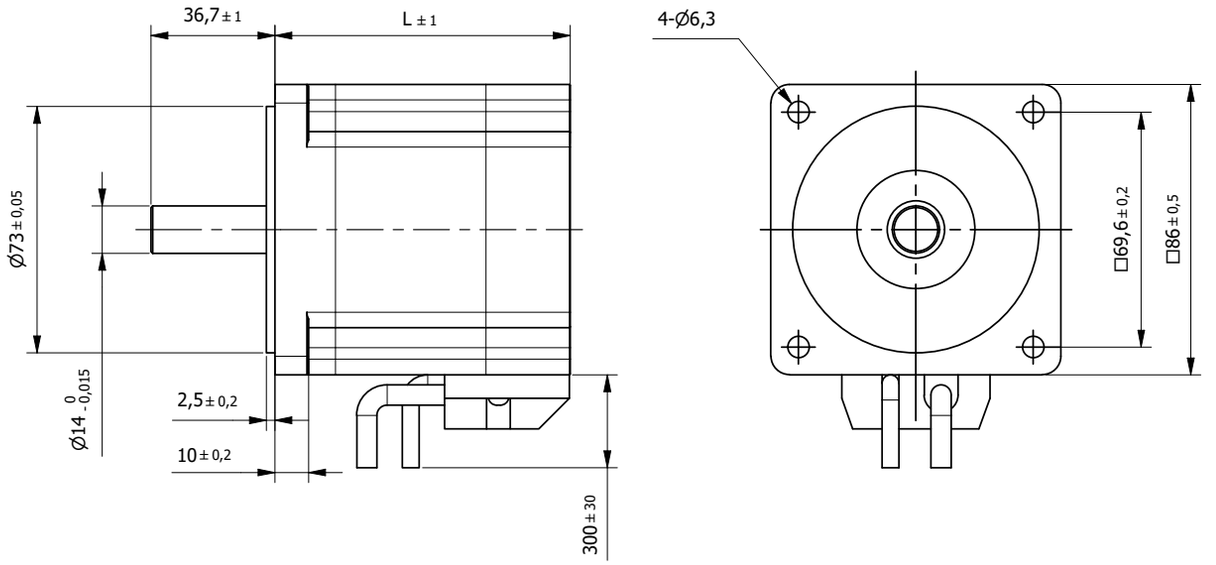
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	F
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min.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

Standard Combination	
Encoder	Gearbox
E3	GYP80
E4	
E5	
* other options on request	

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 86BLC64

□ 86mm - 0,4Nm



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

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

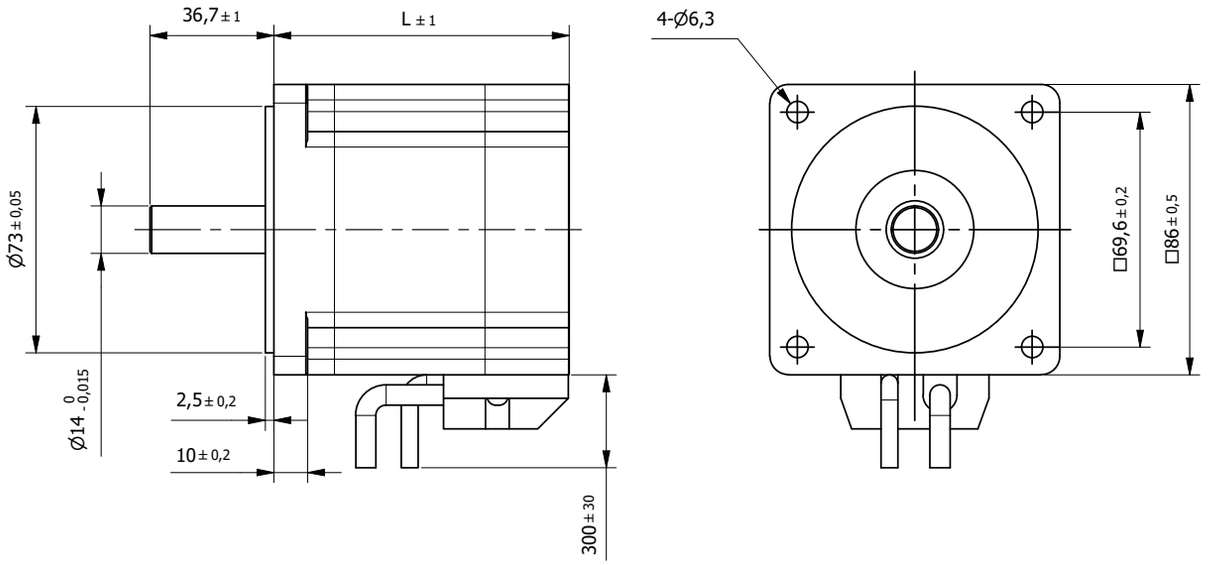
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (400g load)	0,08mm
Max. Radial force (20mm from flange)	220N
Max. Axial force	45N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min.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

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP80	Gemini
E4		
E5		
* other options on request		

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	UL1332 AWG14	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 86BLC77

□ 86mm - 0,8Nm



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

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

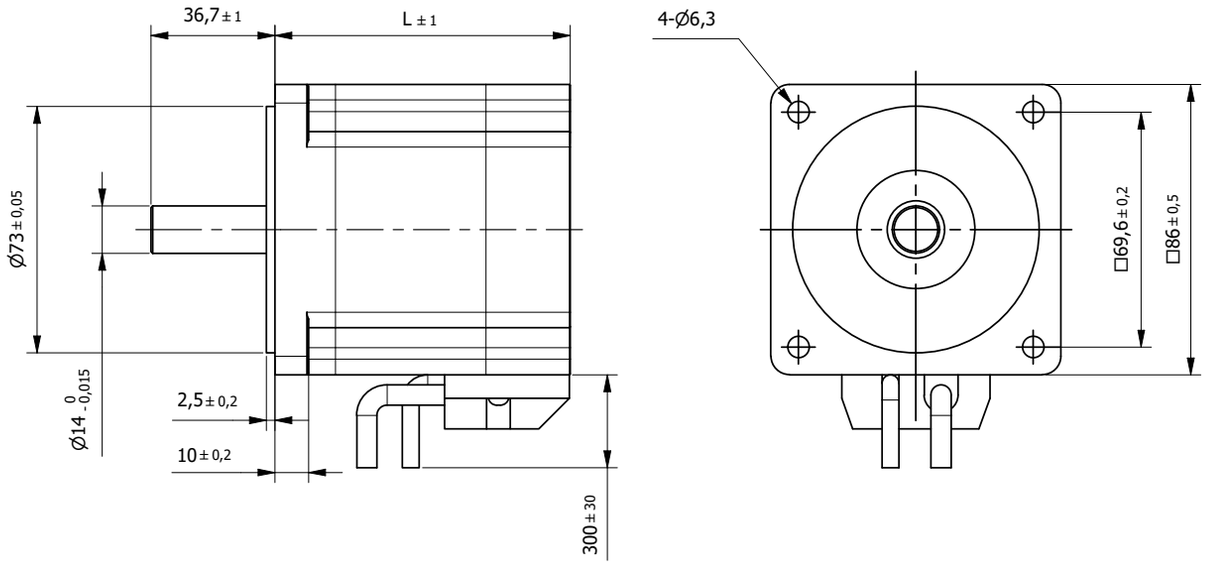
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (400g load)	0,08mm
Max. Radial force (20mm from flange)	220N
Max. Axial force	45N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min.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

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP80	Gemini
E4		
E5		
* other options on request		

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	UL1332 AWG14	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 86BLC105

□ 86mm - 1,6Nm



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

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

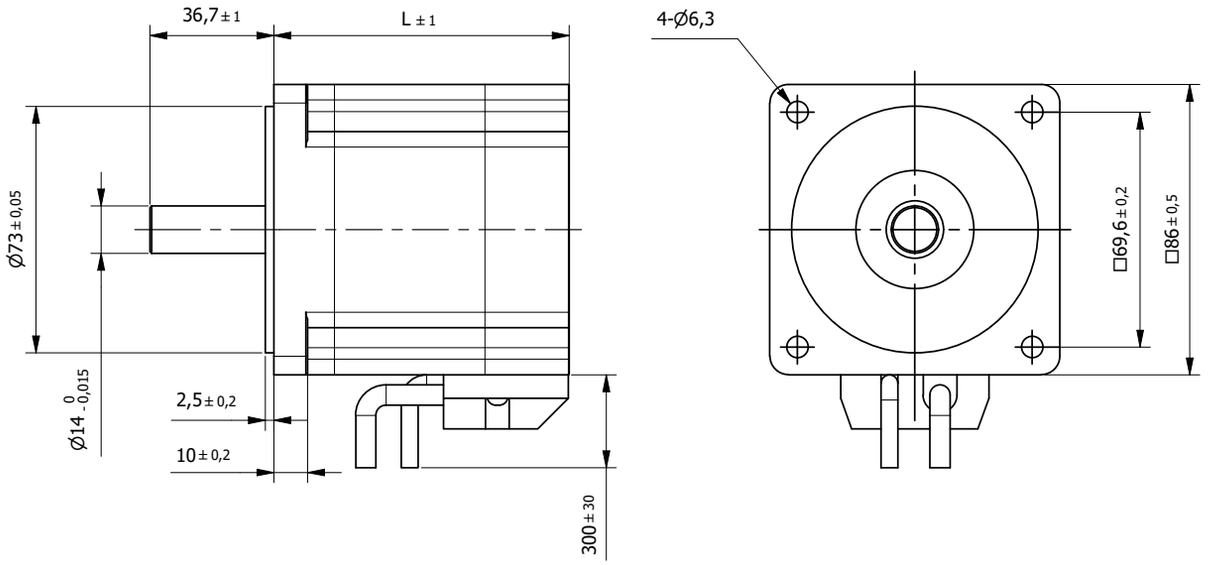
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (400g load)	0,08mm
Max. Radial force (20mm from flange)	220N
Max. Axial force	45N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min.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

Standard Combination	
Encoder	Gearbox
E3	GYP80
E4	
E5	
* other options on request	

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	UL1332 AWG14	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 86BLC125

□ 86mm - 2,22Nm



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

Specification			
	Model		86BLC125
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	2,22
6	Max. Peak Torque	Nm	6,66
7	Torque Constant	Nm/A	0,131
8	Rated Current	A	16,95
9	Max. Peak Current	A	52
10	No-Load Current	mA	1200
11	Line to Line Resistance	Ω	0,1
12	Line to Line Inductance	mH	0,24
13	Rotor Inertia	gcm2	2400
14	Length (L)	mm	125
15	Weight	Kg	4

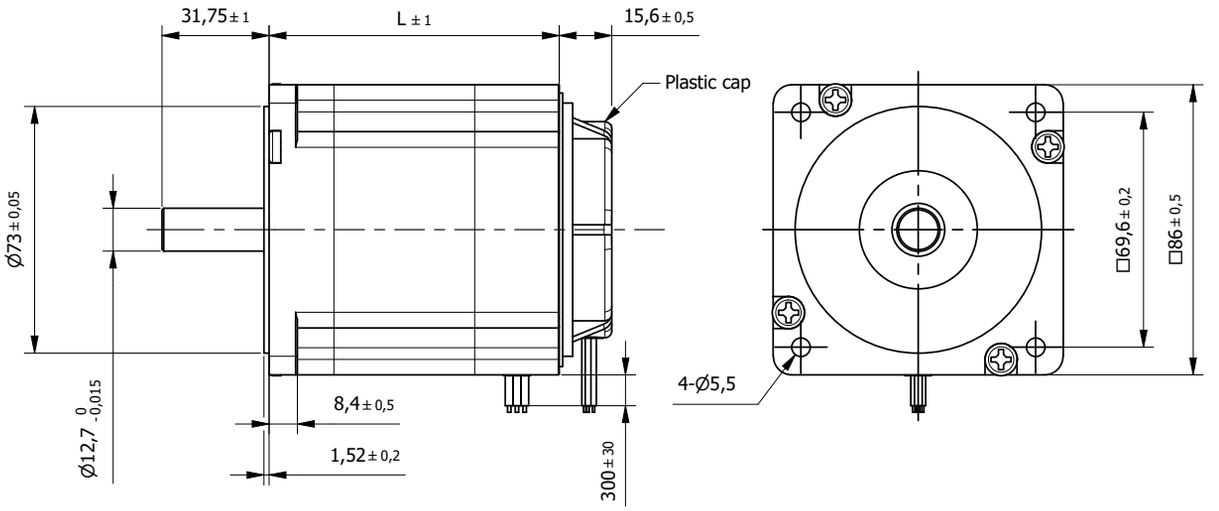
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (400g load)	0,08mm
Max. Radial force (20mm from flange)	220N
Max. Axial force	45N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min.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

Standard Combination	
Encoder	Gearbox
E3	GYP80
E4	
E5	
* other options on request	

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	UL1332 AWG14	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 86BLS58

□ 86mm - 0,35Nm



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

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

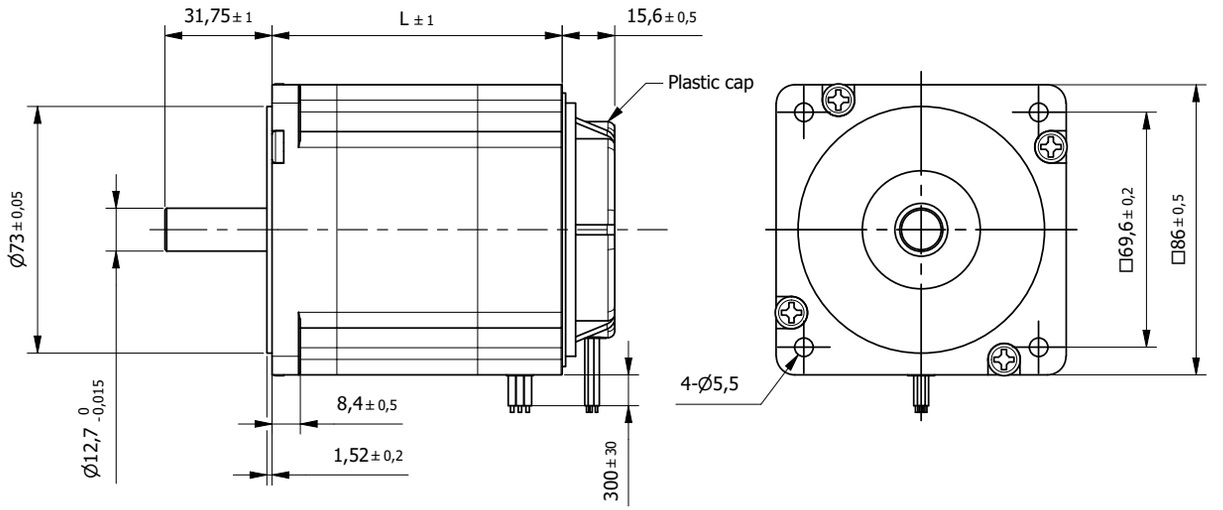
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	220N
Max. Axial force	60N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min.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

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP80	Gemini
E4		
E5		
* other options on request		

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

Brushless Slotted Motor 86BLS71

□ 86mm - 0,7Nm



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

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

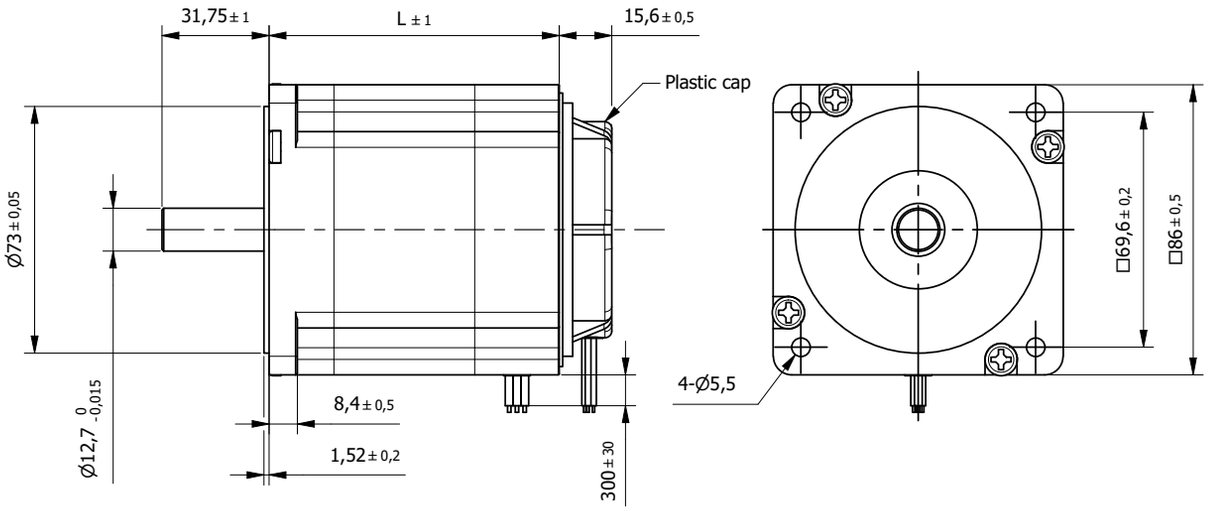
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	220N
Max. Axial force	60N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min.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

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP80	Gemini
E4		
E5		
* other options on request		

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

Brushless Slotted Motor 86BLS98

□ 86mm - 1,4Nm



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

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

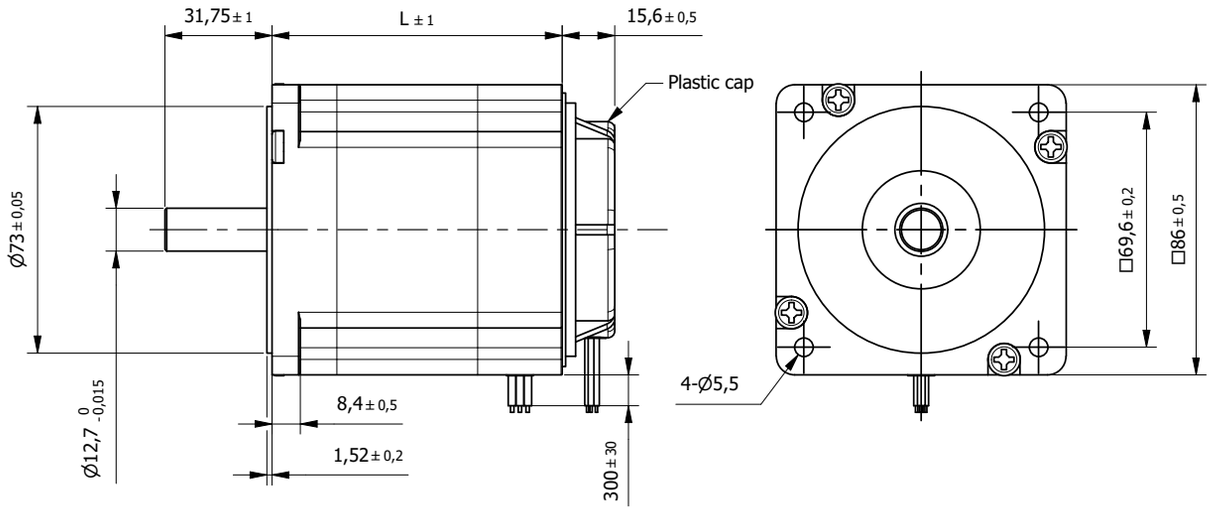
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	220N
Max. Axial force	60N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min.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

Standard Combination	
Encoder	Gearbox
E3	GYP80
E4	
E5	
* other options on request	

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

Brushless Slotted Motor 86BLS125

□ 86mm - 2,1Nm



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

Specification			
	Model		86BLS125
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	2,1
6	Max. Peak Torque	Nm	6,3
7	Torque Constant	Nm/A	0,128
8	Rated Current	A	16,41
9	Max. Peak Current	A	56
10	No-Load Current	mA	1640
11	Line to Line Resistance	Ω	0,1
12	Line to Line Inductance	mH	0,31
13	Rotor Inertia	gcm2	2400
14	Length (L)	mm	125
15	Weight	Kg	4,2

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

Standard Combination	
Encoder	Gearbox
E3	GYP80
E4	
E5	
* other options on request	

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

Brushless DC

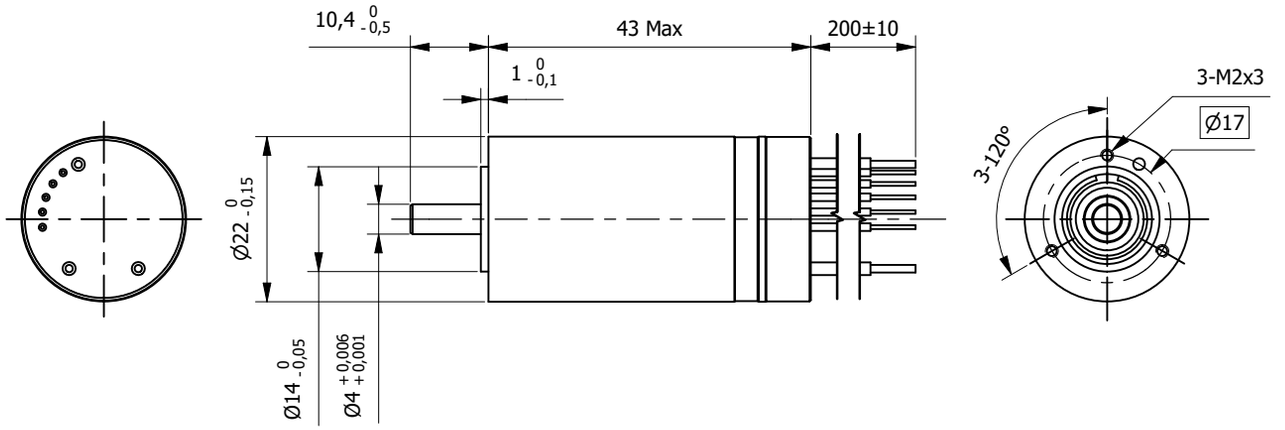
BLDC Slotted motors

EC-series

Brushless DC Slotted motors - EC series - NEW	Torque* (Nm)	
22EC43N	0,03	116
22EC58N	0,05	117
22EC82N	0,08	118

Brushless Slotted Motor 22EC43N

Ø 22mm - 0,03Nm



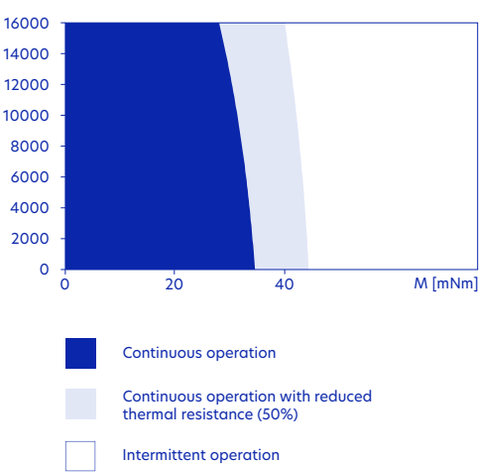
Specification				
	Model		...13107	...10903
1	n° of Pole		8	8
2	n° of Phase		3	3
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	13100	10900
5	Rated Torque	mNm	28,6	32,4
6	Stall Torque	mNm	466	461
7	Torque Constant	mNm/A	14,8	34,9
8	Motor Regulation	10^3/Nms	3,5	3
9	Rated Current	A	1,88	0,885
10	Stall Current	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

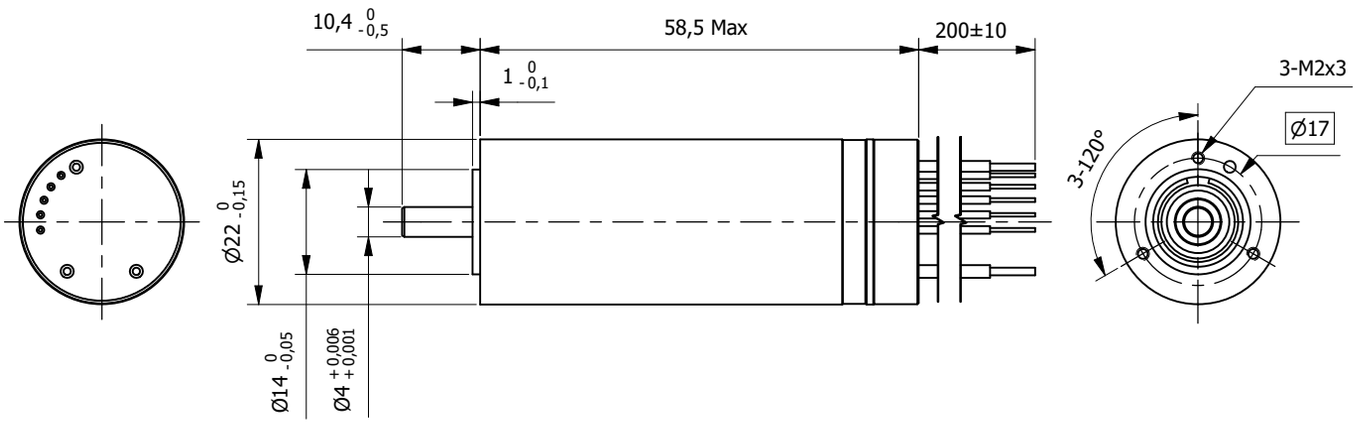
Standard Combination
Gearbox
22GPS
* other options on request

Operating range: Winding 24V



Brushless Slotted Motor 22EC58N

Ø 22mm - 0,05Nm



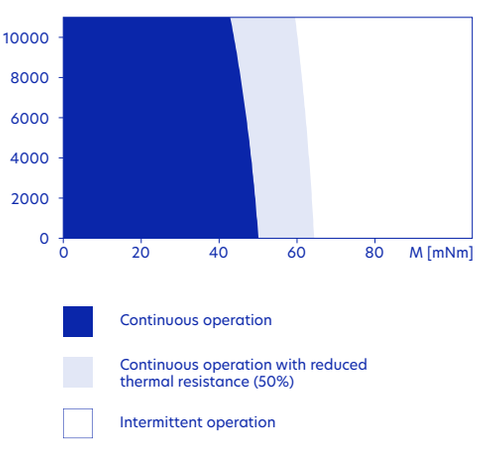
Specification					
	Model		...7902	...8807	...9302
1	n° of Pole		8	8	8
2	n° of Phase		3	3	3
3	Rated Voltage	V	12	24	48
4	Rated Speed	rpm	7930	8850	9380
5	Rated Torque	mNm	45,7	48,1	48,8
6	Stall Torque	mNm	528	684	766
7	Torque Constant	mNm/A	12,1	22	41,8
8	Motor Regulation	10^3/Nms	1,9	1,6	1,5
9	Rated 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

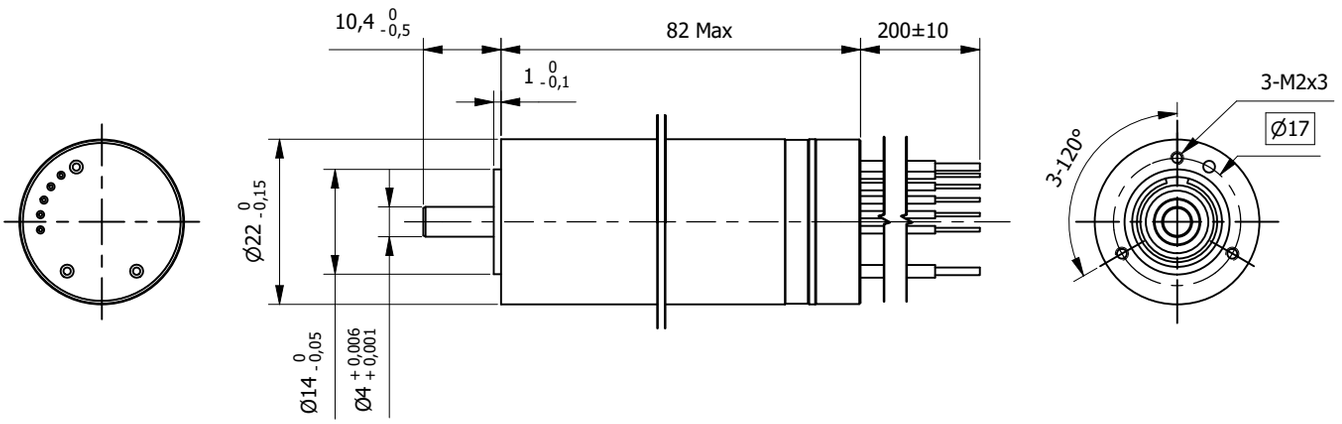
Standard Combination
Gearbox
22GPS
* other options on request

Operating range: Winding 24V



Brushless Slotted Motor 22EC82N

Ø 22mm - 0,08Nm



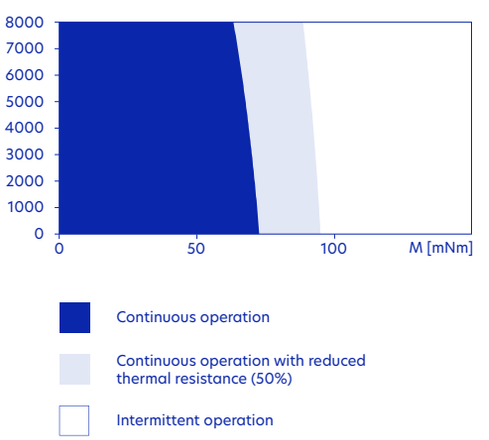
Specification				
	Model		...5001	...5304
1	n° of Pole		8	8
2	n° of Phase		3	3
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	5000	5320
5	Rated Torque	mNm	77,5	79,9
6	Stall Torque	mNm	730	832
7	Torque Constant	mNm/A	37,7	71,6
8	Motor Regulation	10^3/Nms	0,9	0,8
9	Rated Current	A	2,01	1,09
10	Stall Current	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

Standard Combination
Gearbox
22GPS
* other options on request

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 DC

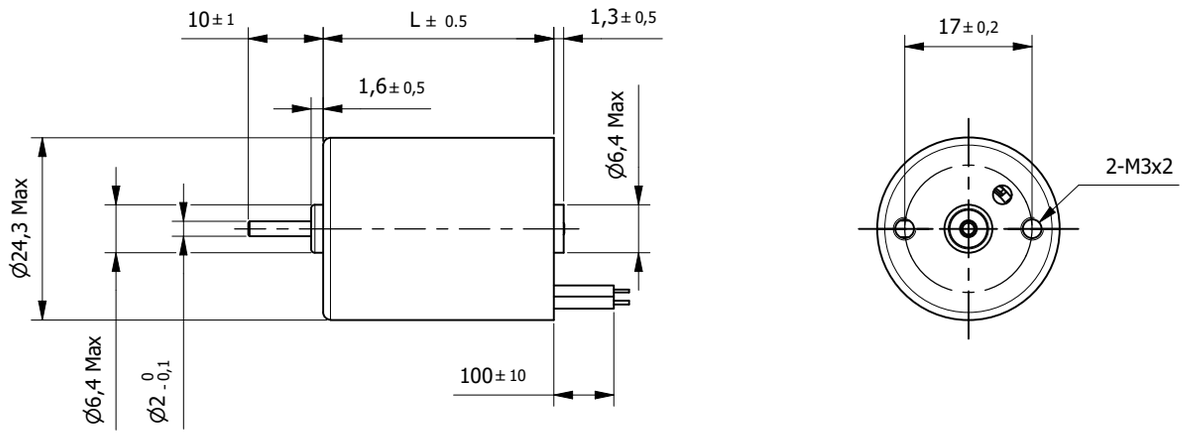
BLDC Slotted motors

CBL-series

Brushless DC Slotted motors - CBL series	Torque* (Nm)	
24CBL30	0,006	122
28CBL38	0,028	123
28CBL48	0,050	124
36CBL30	0,015	125
36CBL40	0,035	126
36CBL50	0,055	127
36CBL57	0,070	128
36CBL60	0,080	129
36CBL65	0,090	130
38CBL58	0,070	131
42CBL60	0,068	132
42CBL66	0,150	133
42CBLA60	0,120	134
48CBL68	0,180	135

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

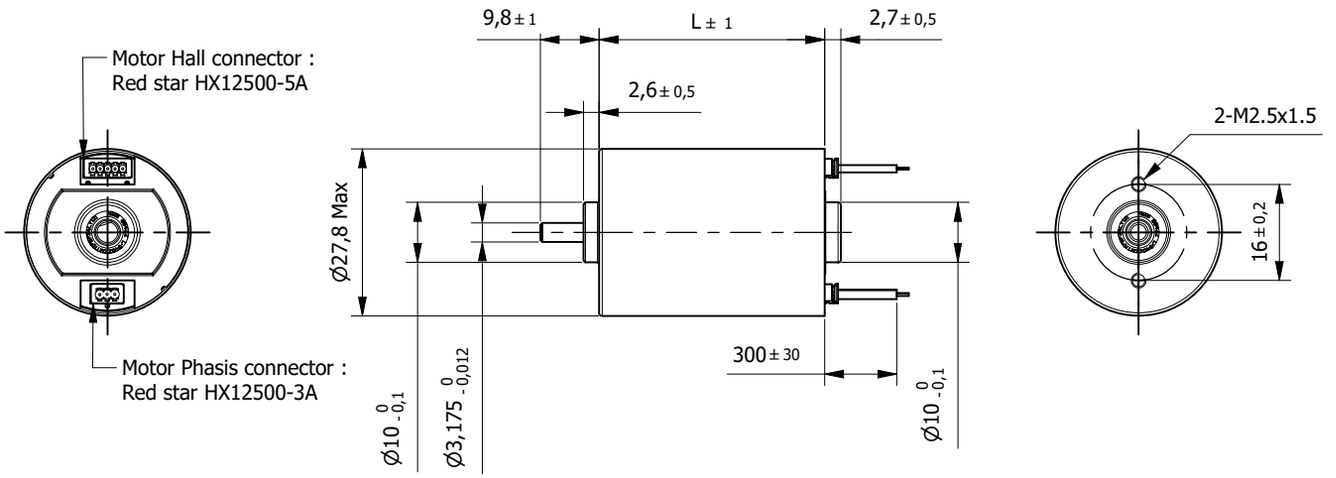
Standard Combination	
Gearbox	Drive
22JMS	Taurus
	Gemini

* other options on request

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 28CBL38

Ø 28mm - 0,028Nm



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

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 sec.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

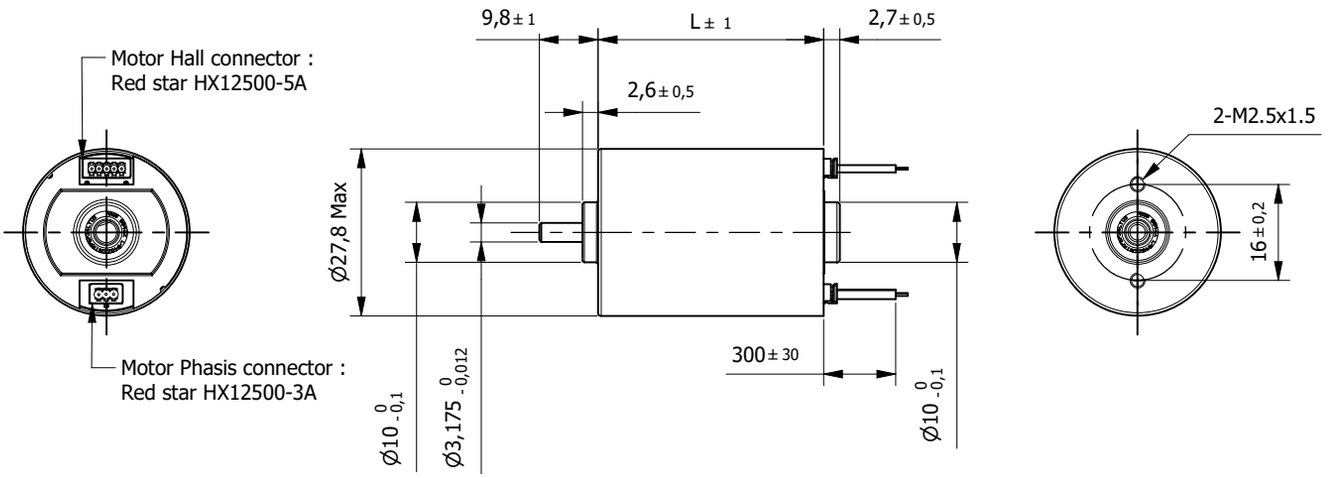
Standard Combination	
Gearbox	Drive
28JMS	Taurus
	Gemini

* other options on request

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

Brushless Slotted Motor 28CBL48

Ø 28mm - 0,05Nm



Specification			
	Model		28CBL48
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4500
5	Rated Torque	Nm	0,05
6	Max. Peak Torque	Nm	0,15
7	Torque Constant	Nm/A	0,036
8	Rated Current	A	1,4
9	Max. Peak Current	A	4,5
10	No-Load Current	mA	180
11	Line to Line Resistance	Ω	2,5
12	Line to Line Inductance	mH	1,2
13	Rotor Inertia	gcm2	7,3
14	Length (L)	mm	48
15	Weight	Kg	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)	0,08mm
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

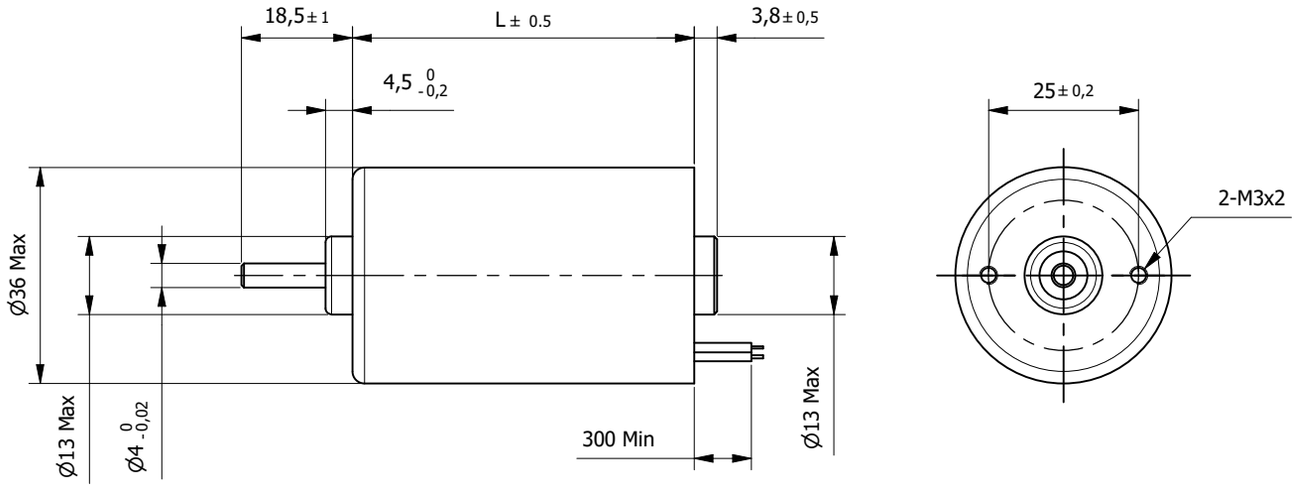
Standard Combination	
Gearbox	Drive
28JMS	Taurus
	Gemini

* other options on request

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

Brushless Slotted Motor 36CBL30

Ø 36mm - 0,015Nm



Specification			
	Model		36CBL30
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4800
5	Rated Torque	Nm	0,015
6	Max. Peak Torque	Nm	0,045
7	Torque Constant	Nm/A	0,03
8	Rated Current	A	0,5
9	Max. Peak Current	A	1,3
10	No-Load Current	mA	150
11	Line to Line Resistance	Ω	5,2
12	Line to Line Inductance	mH	3,3
13	Rotor Inertia	gcm2	6
14	Length (L)	mm	30
15	Weight	Kg	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)	0,08mm
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

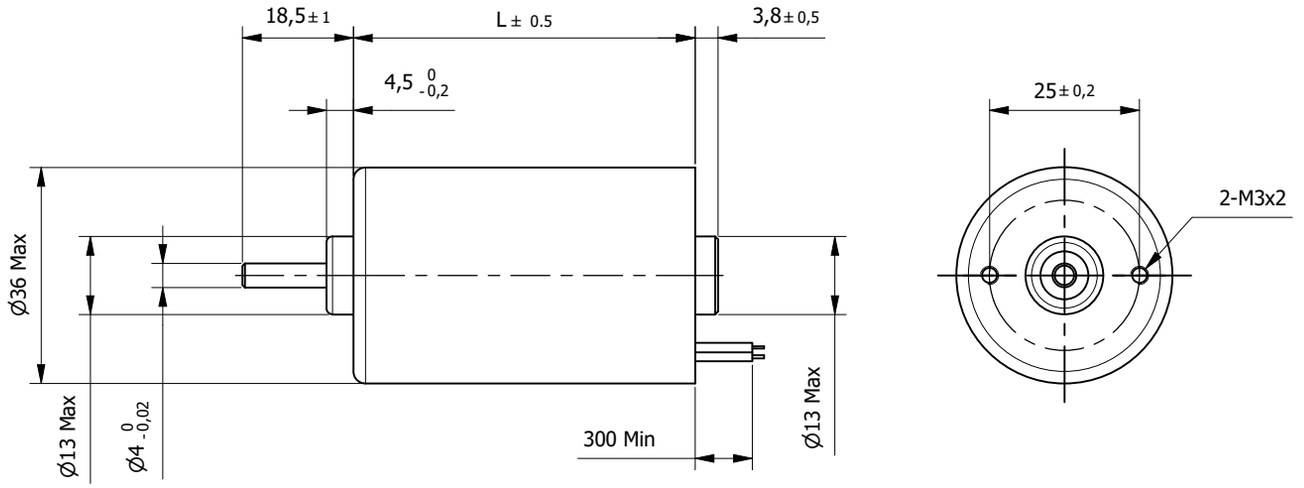
Standard Combination	
Gearbox	Drive
36JMS	Taurus
	Gemini

* other options on request

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 36CBL40

Ø 36mm - 0,035Nm



Specification			
	Model		36CBL40
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4800
5	Rated Torque	Nm	0,035
6	Max. Peak Torque	Nm	0,11
7	Torque Constant	Nm/A	0,035
8	Rated Current	A	1
9	Max. Peak Current	A	3
10	No-Load Current	mA	230
11	Line to Line Resistance	Ω	2
12	Line to Line Inductance	mH	1,9
13	Rotor Inertia	gcm2	12
14	Length (L)	mm	40
15	Weight	Kg	0,16

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

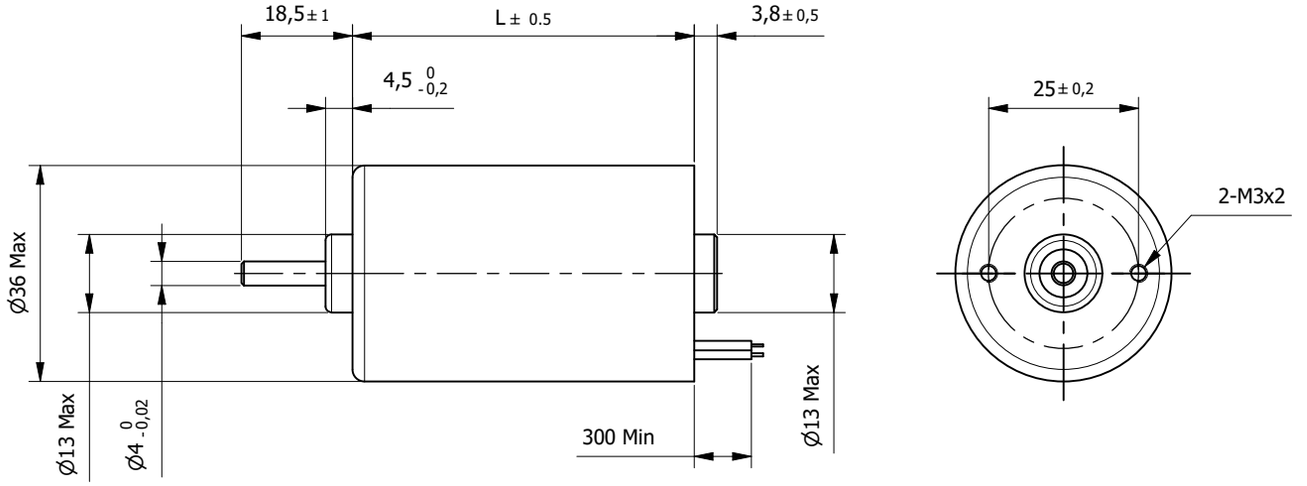
Standard Combination	
Gearbox	Drive
36JMS	Taurus
	Gemini

* other options on request

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 36CBL50

Ø 36mm - 0,055Nm



Specification			
	Model		36CBL50
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4800
5	Rated Torque	Nm	0,055
6	Max. Peak Torque	Nm	0,165
7	Torque Constant	Nm/A	0,036
8	Rated Current	A	1,5
9	Max. Peak Current	A	4,5
10	No-Load Current	mA	250
11	Line to Line Resistance	Ω	1,2
12	Line to Line Inductance	mH	1,2
13	Rotor Inertia	gcm2	22
14	Length (L)	mm	50
15	Weight	Kg	0,23

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

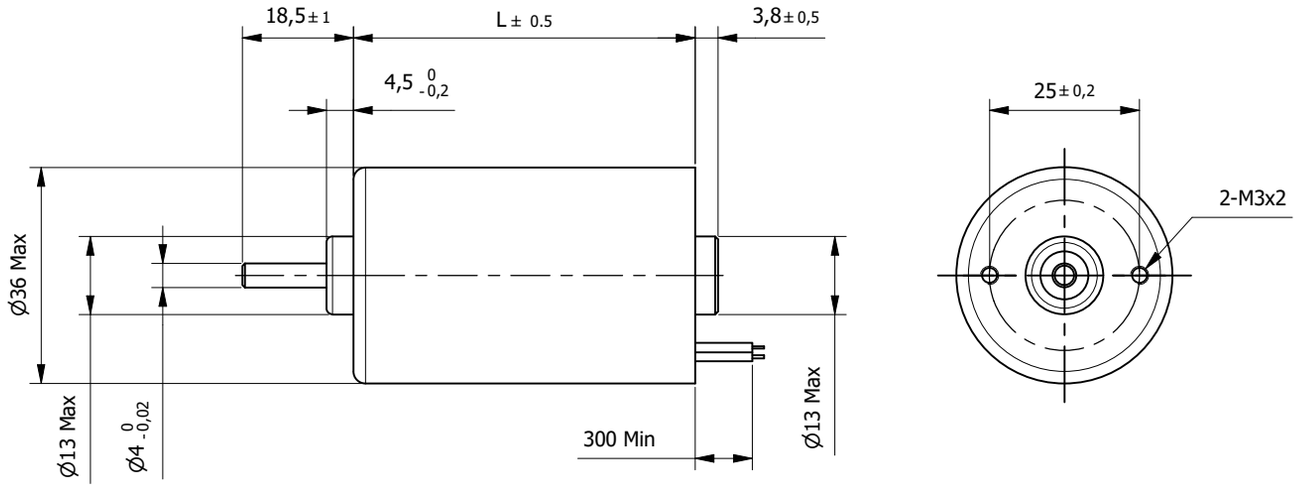
Standard Combination	
Gearbox	Drive
36JMS	Taurus
	Gemini

* other options on request

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 36CBL57

Ø 36mm - 0,07Nm



Specification			
	Model		36CBL57
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4500
5	Rated Torque	Nm	0,07
6	Max. Peak Torque	Nm	0,21
7	Torque Constant	Nm/A	0,04
8	Rated Current	A	1,8
9	Max. Peak Current	A	5,3
10	No-Load Current	mA	500
11	Line to Line Resistance	Ω	1,05
12	Line to Line Inductance	mH	1
13	Rotor Inertia	gcm2	27
14	Length (L)	mm	57
15	Weight	Kg	0,25

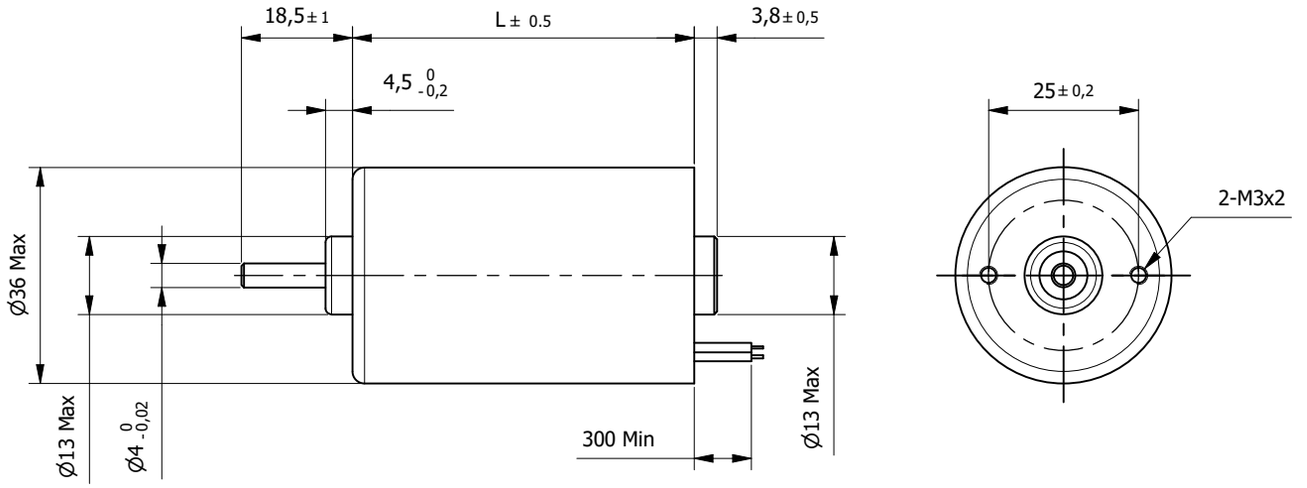
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min.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

Standard Combination	
Gearbox	Drive
36JMS	Gemini
* other options on request	

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 36CBL60

Ø 36mm - 0,08Nm



Specification			
	Model		36CBL60
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4800
5	Rated Torque	Nm	0,08
6	Max. Peak Torque	Nm	0,24
7	Torque Constant	Nm/A	0,035
8	Rated Current	A	2,3
9	Max. Peak Current	A	7
10	No-Load Current	mA	220
11	Line to Line Resistance	Ω	0,95
12	Line to Line Inductance	mH	0,85
13	Rotor Inertia	gcm2	30
14	Length (L)	mm	60
15	Weight	Kg	0,27

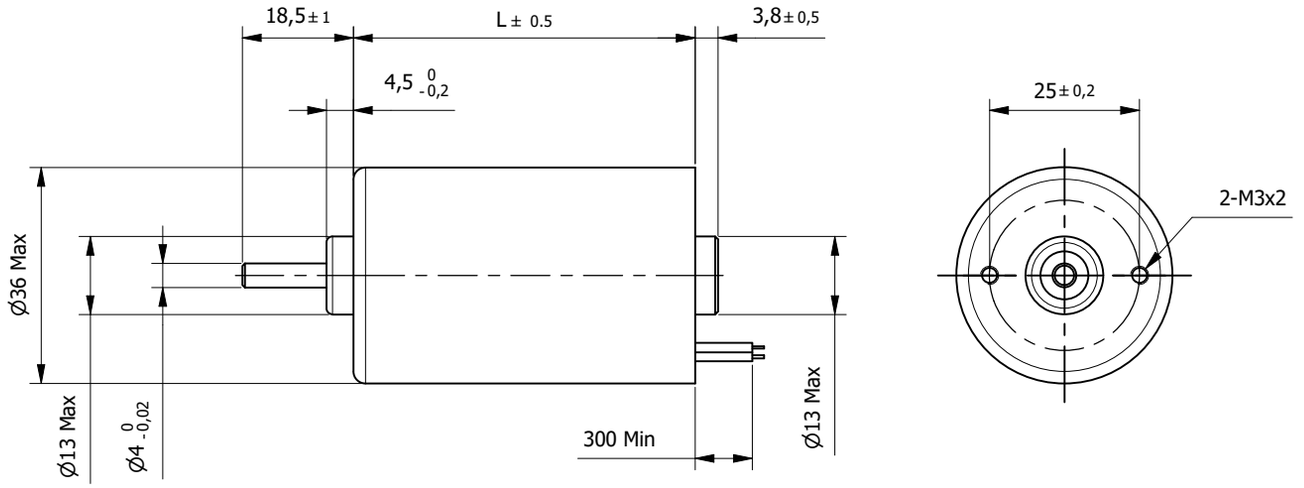
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min.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

Standard Combination	
Gearbox	Drive
36JMS	Gemini
* other options on request	

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 36CBL65

Ø 36mm - 0,09Nm



Specification			
	Model		36CBL65
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4800
5	Rated Torque	Nm	0,09
6	Max. Peak Torque	Nm	0,27
7	Torque Constant	Nm/A	0,036
8	Rated Current	A	2,5
9	Max. Peak Current	A	7,5
10	No-Load Current	mA	400
11	Line to Line Resistance	Ω	0,88
12	Line to Line Inductance	mH	0,8
13	Rotor Inertia	gcm2	32
14	Length (L)	mm	65
15	Weight	Kg	0,28

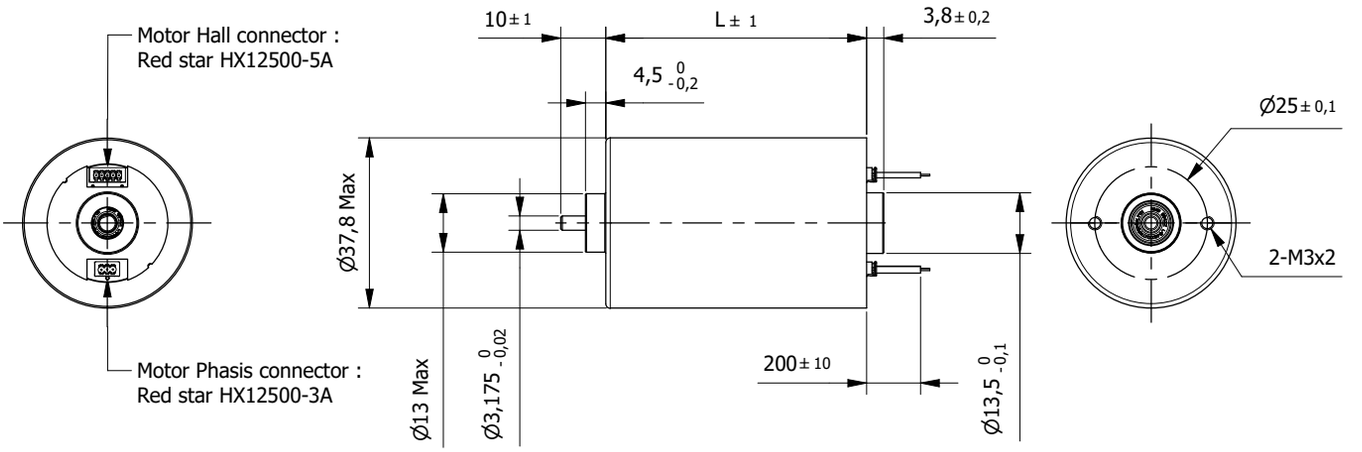
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min.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

Standard Combination	
Gearbox	Drive
36JMS	Gemini
* other options on request	

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

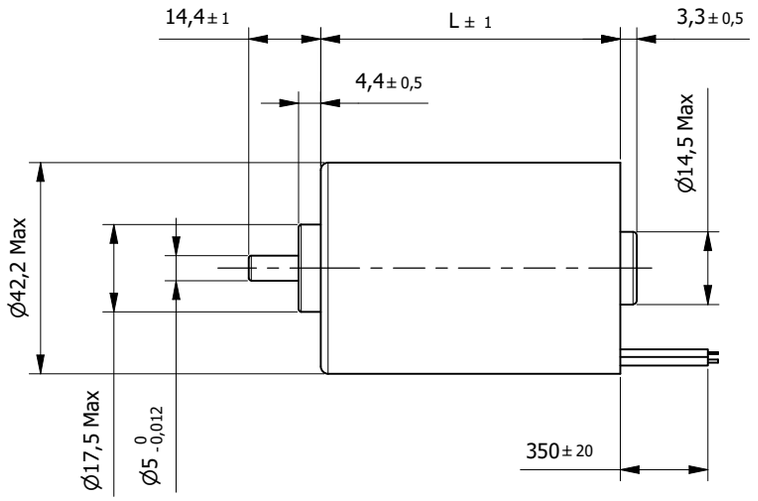
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	500 VAC
Insulation Resistance (min.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

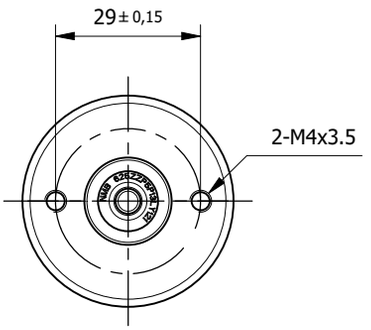
Standard Combination	
Gearbox	Drive
36JMS	Gemini
* other options on request	

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 42CBL60

Ø 42mm - 0,068Nm





Specification			
	Model		42CBL60
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	430
11	Line to Line Resistance	Ω	0,66
12	Line to Line Inductance	mH	0,63
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

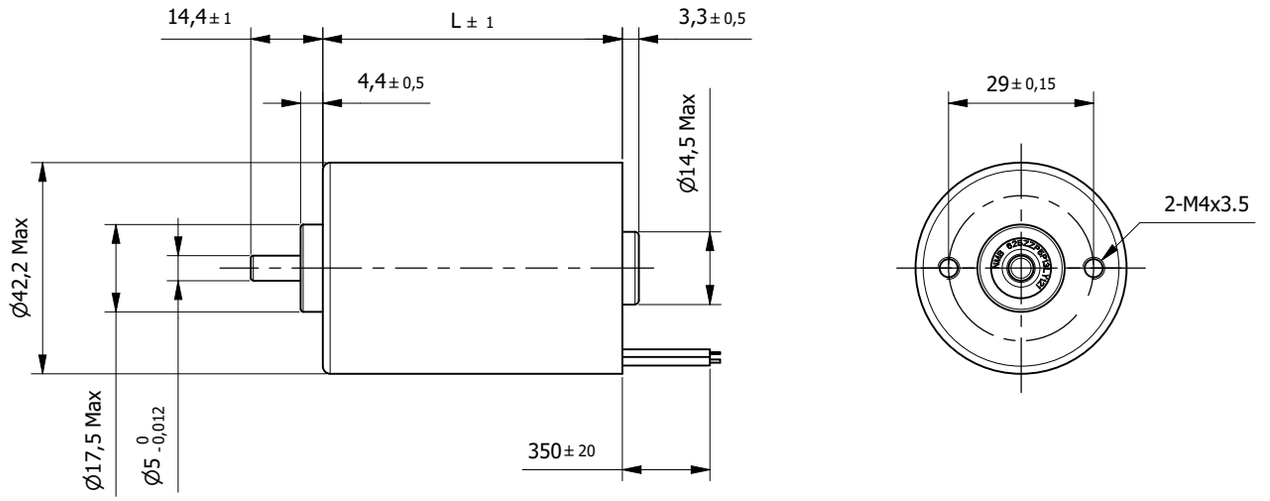
Standard Combination	
Gearbox	Drive
GYP42	Gemini
42JMS	

* other options on request

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 42CBL66

Ø 42mm - 0,15Nm



Specification			
	Model		42CBL66
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,15
6	Max. Peak Torque	Nm	0,45
7	Torque Constant	Nm/A	0,04
8	Rated Current	A	3,75
9	Max. Peak Current	A	11,2
10	No-Load Current	mA	400
11	Line to Line Resistance	Ω	0,75
12	Line to Line Inductance	mH	0,8
13	Rotor Inertia	gcm2	55
14	Length (L)	mm	66
15	Weight	Kg	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)	0,14mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	650 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

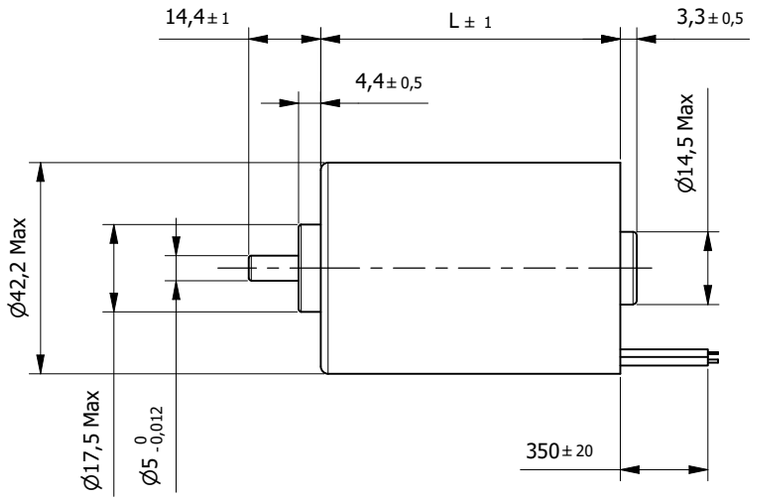
Standard Combination	
Gearbox	Drive
GYP42	Gemini
42JMS	

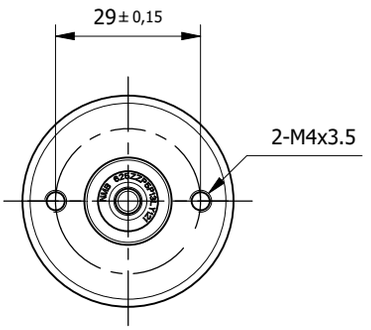
* other options on request

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 42CBLA60

Ø 42mm - 0,12Nm





Specification			
	Model		42CBLA60
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	3200
5	Rated Torque	Nm	0,12
6	Max. Peak Torque	Nm	0,36
7	Torque Constant	Nm/A	0,054
8	Rated Current	A	2,1
9	Max. Peak Current	A	6,3
10	No-Load Current	mA	300
11	Line to Line Resistance	Ω	1,2
12	Line to Line Inductance	mH	1,6
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)	0,14mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	650 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

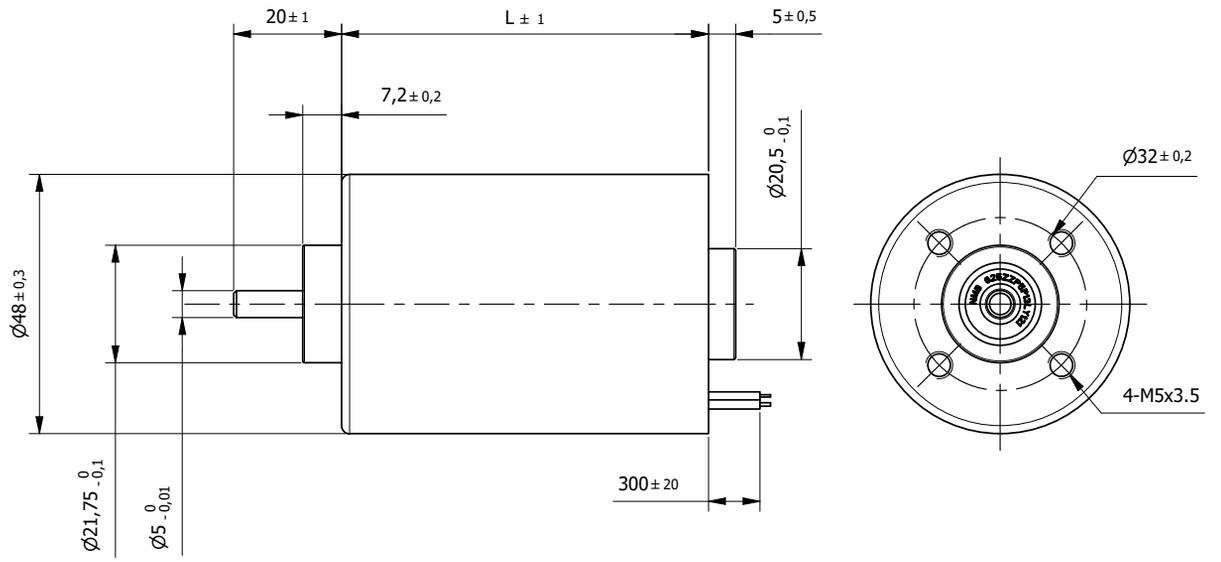
Standard Combination	
Gearbox	Drive
GYP42	Gemini
42JMS	

* other options on request

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	gcm2	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)	28N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	650 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination	
Gearbox	Drive
GYP42	Gemini
42JMS	

* other options on request

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

BLDC
Slotless motors
SBL series

p.139 - NEW

BLDC
Slotless motors
EC series

p.155 - NEW

Brushless DC
Slotless motors

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.

Brushless DC Slotless motors - SBL series - NEW	Torque* (Nm)	139
14SBL45	0,003	140
16SBL28	0,002	141
16SBL40	0,004	142
16SBL56	0,009	143
22SBL40	0,006	144
22SBL60	0,021	145
22SBL70	0,025	146
28SBL44	0,018	147
28SBL66	0,054	148
28SBL80	0,060	149
40SBL60	0,200	150
40SBL80	0,360	151
49SBL90	0,140	152
49SBL120	0,200	153

Brushless DC Slotless motors - EC series - NEW	Torque* (Nm)	155
16EC24P	0,003	156
16EC36P	0,008	157
22EC32P	0,011	158
22EC48P	0,023	159
22EC48T	0,045	160
22EC66T	0,055	161
30EC42P	0,034	162
30EC47T	0,069...0,073	163
30EC64P	0,061...0,064	164
30EC64T	0,093...0,096	165
40EC58P	0,090...0,094	166
40EC88P	0,211	167

*Rated Torque

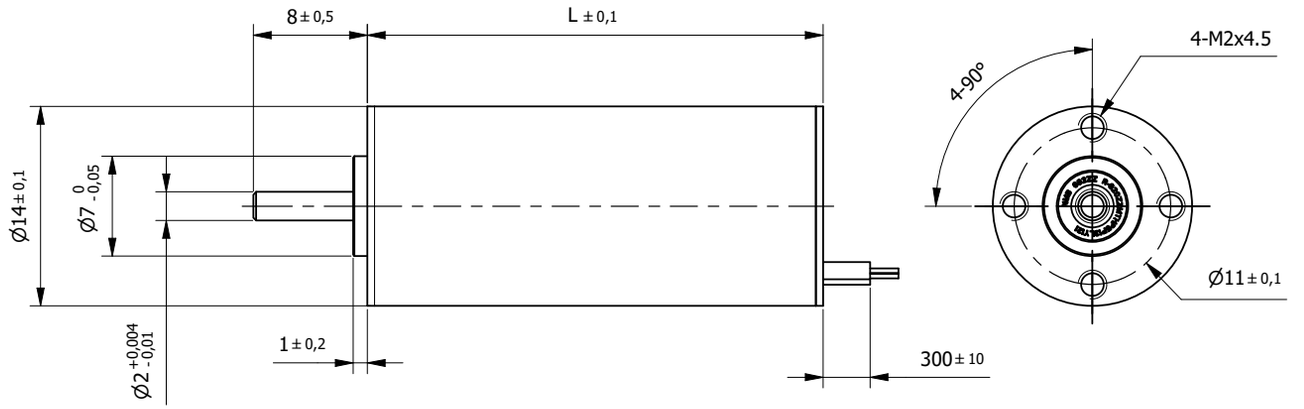
BLDC Slotless motors

SBL-series

Brushless DC Slotless motors - SBL series - NEW	Torque* (Nm)	
14SBL45	0,003	140
16SBL28	0,002	141
16SBL40	0,004	142
16SBL56	0,009	143
22SBL40	0,006	144
22SBL60	0,021	145
22SBL70	0,025	146
28SBL44	0,018	147
28SBL66	0,054	148
28SBL80	0,060	149
40SBL60	0,200	150
40SBL80	0,360	151
49SBL90	0,140	152
49SBL120	0,200	153

Brushless Slotless Motor 14SBL45

Ø 14mm - 0,003Nm



Available with or without Hall Sensors

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	0,003
6	Max. Peak Torque	Nm	0,007
7	Torque Constant	Nm/A	0,005
8	Rated Current	A	0,57
9	Max. Peak Current	A	1,2
10	No-Load Current	mA	100
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	32
15	Weight	Kg	0,065
16	Length with Hall Sensors	mm	42

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	F
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

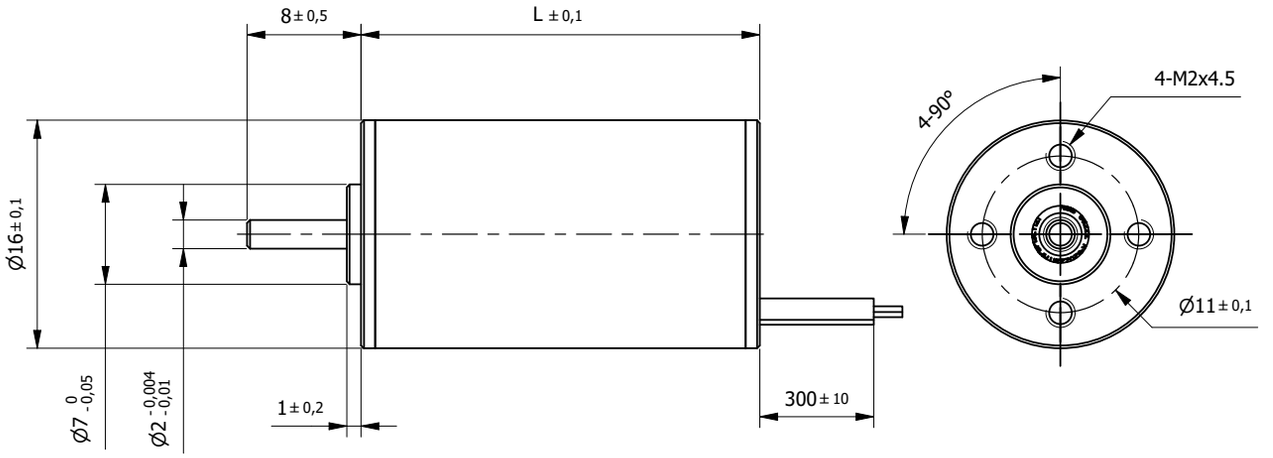
Standard Combination
Drive
Taurus
Gemini

* other options on request

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 16SBL28

Ø 16mm - 0,002Nm



Available with or without Hall Sensors

Specification			
	Model		16SBL28
1	n° of Pole		2
2	n° of Phase		3
3	Rated Voltage	V	12
4	Rated Speed	rpm	22000
5	Rated Torque	Nm	0,002
6	Max. Peak Torque	Nm	0,005
7	Torque Constant	Nm/A	0,004
8	Rated Current	A	0,38
9	Max. Peak Current	A	1,2
10	No-Load Current	mA	100
11	Line to Line Resistance	Ω	5,4
12	Line to Line Inductance	mH	0,17
13	Rotor Inertia	gcm2	0,4
14	Length (L)	mm	28
15	Weight	Kg	0,029
16	Length with Hall Sensors	mm	38

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

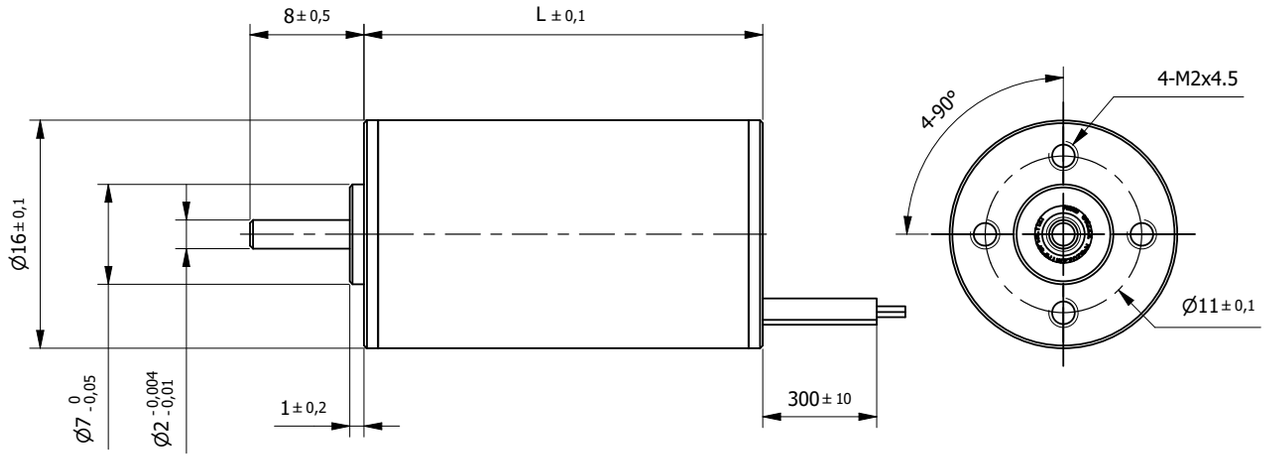
Standard Combination
Drive
Taurus
Gemini

* other options on request

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 16SBL40

Ø 16mm - 0,004Nm



Available with or without Hall Sensors

Specification			
	Model		16SBL40
1	n° of Pole		2
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	25000
5	Rated Torque	Nm	0,004
6	Max. Peak Torque	Nm	0,012
7	Torque Constant	Nm/A	0,007
8	Rated Current	A	0,54
9	Max. Peak Current	A	1,7
10	No-Load Current	mA	200
11	Line to Line Resistance	Ω	6,6
12	Line to Line Inductance	mH	0,21
13	Rotor Inertia	gcm2	0,66
14	Length (L)	mm	40
15	Weight	Kg	0,042
16	Length with Hall Sensors	mm	50

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	F
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

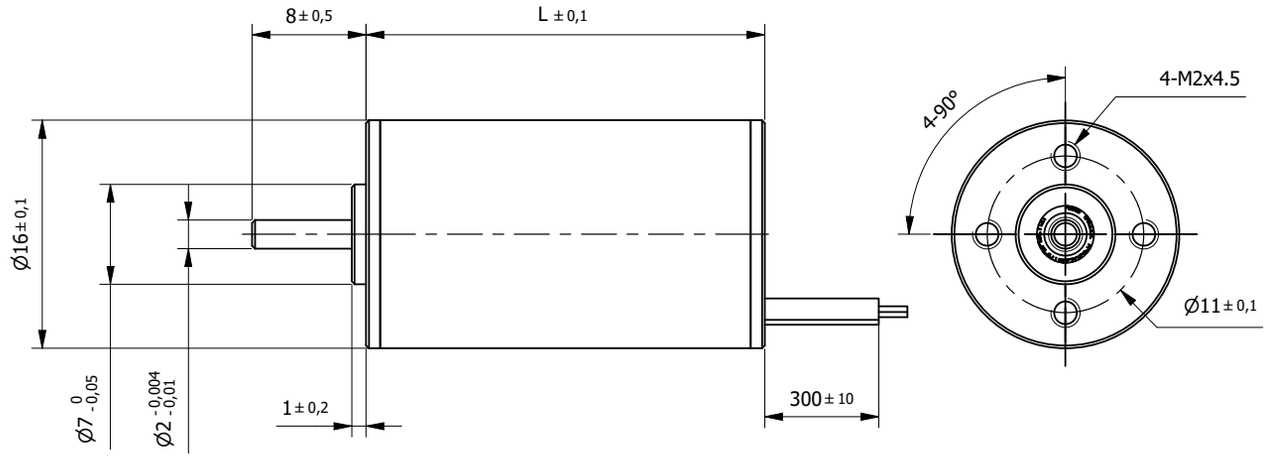
Standard Combination
Drive
Taurus
Gemini

* other options on request

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 16SBL56

Ø 16mm - 0,009Nm



Available with or without Hall Sensors

Specification			
	Model		16SBL56
1	n° of Pole		2
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	25000
5	Rated Torque	Nm	0,009
6	Max. Peak Torque	Nm	0,027
7	Torque Constant	Nm/A	0,007
8	Rated Current	A	1,22
9	Max. Peak Current	A	3,7
10	No-Load Current	mA	250
11	Line to Line Resistance	Ω	3,15
12	Line to Line Inductance	mH	0,15
13	Rotor Inertia	gcm2	1,02
14	Length (L)	mm	56
15	Weight	Kg	0,064
16	Length with Hall Sensors	mm	66

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	F
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

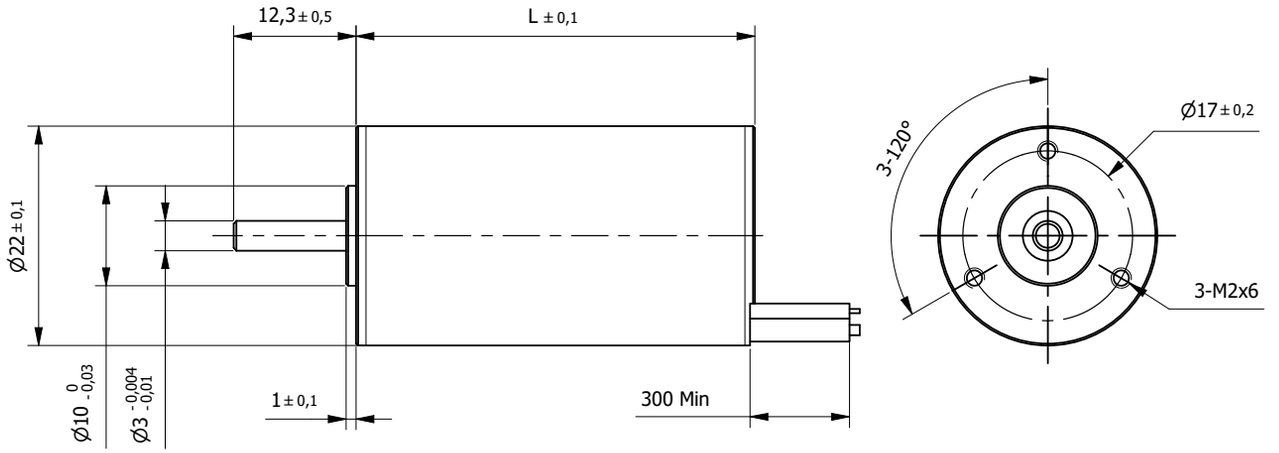
Standard Combination
Drive
Taurus
Gemini

* other options on request

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 22SBL40

Ø 22mm - 0,006Nm



Available with or without Hall Sensors

Specification			
	Model		22SBL40
1	n° of Pole		2
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	35000
5	Rated Torque	Nm	0,006
6	Max. Peak Torque	Nm	0,018
7	Torque Constant	Nm/A	0,006
8	Rated Current	A	1,1
9	Max. Peak Current	A	3,2
10	No-Load Current	mA	400
11	Line to Line Resistance	Ω	2
12	Line to Line Inductance	mH	0,13
13	Rotor Inertia	gcm2	1
14	Length (L)	mm	40
15	Weight	Kg	0,04
16	Length with Hall Sensors	mm	48

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

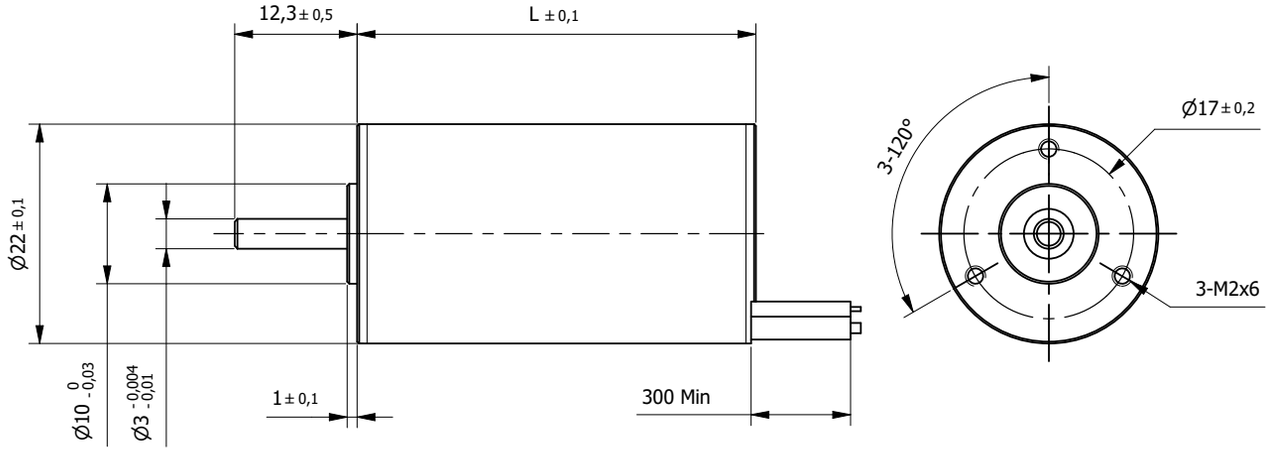
Standard Combination	
Gearbox	Drive
22JMS	Taurus
	Gemini

* other options on request

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 22SBL60

Ø 22mm - 0,021Nm



Available with or without Hall Sensors

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

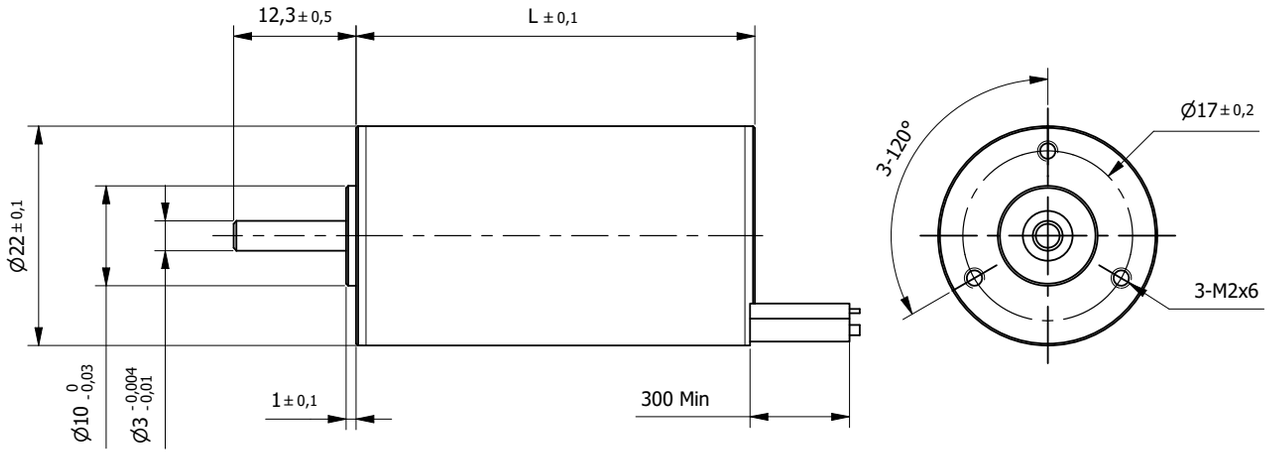
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	5N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	360 VAC
Insulation Resistance (min. 500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

Standard Combination	
Gearbox	Drive
22JMS	Gemini
* other options on request	

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 22SBL70

Ø 22mm - 0,025Nm



Available with or without Hall Sensors

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

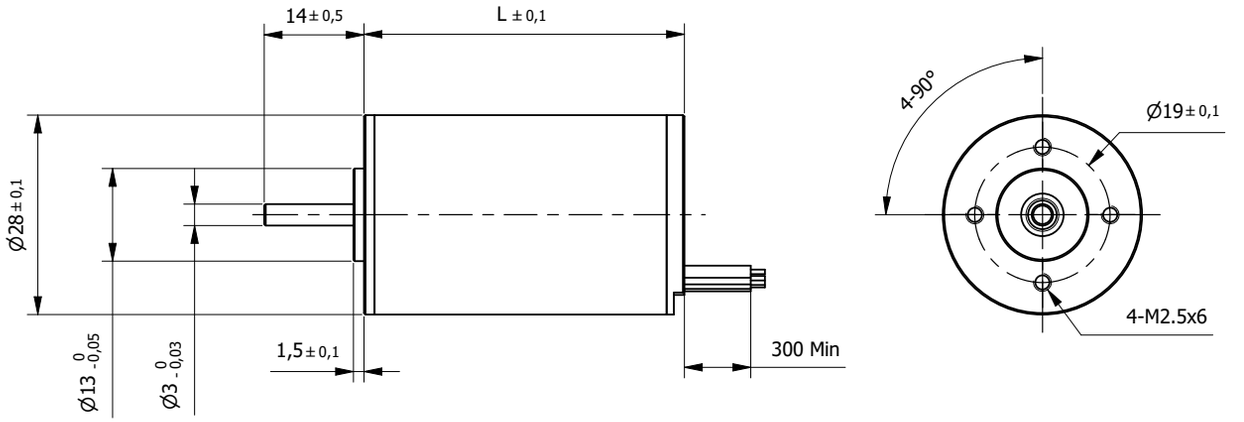
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	5N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	360 VAC
Insulation Resistance (min. 500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

Standard Combination	
Gearbox	Drive
22JMS	Gemini
* other options on request	

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 28SBL44

Ø 28mm - 0,018Nm



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

Specification			
	Model		28SBL44
1	n° of Pole		2
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	8000
5	Rated Torque	Nm	0,018
6	Max. Peak Torque	Nm	0,055
7	Torque Constant	Nm/A	0,023
8	Rated Current	A	0,8
9	Max. Peak Current	A	2,5
10	No-Load Current	mA	200
11	Line to Line Resistance	Ω	4,2
12	Line to Line Inductance	mH	0,42
13	Rotor Inertia	gcm2	8,8
14	Length (L)	mm	34
15	Weight	Kg	0,14
16	Length with Hall Sensors	mm	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 (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

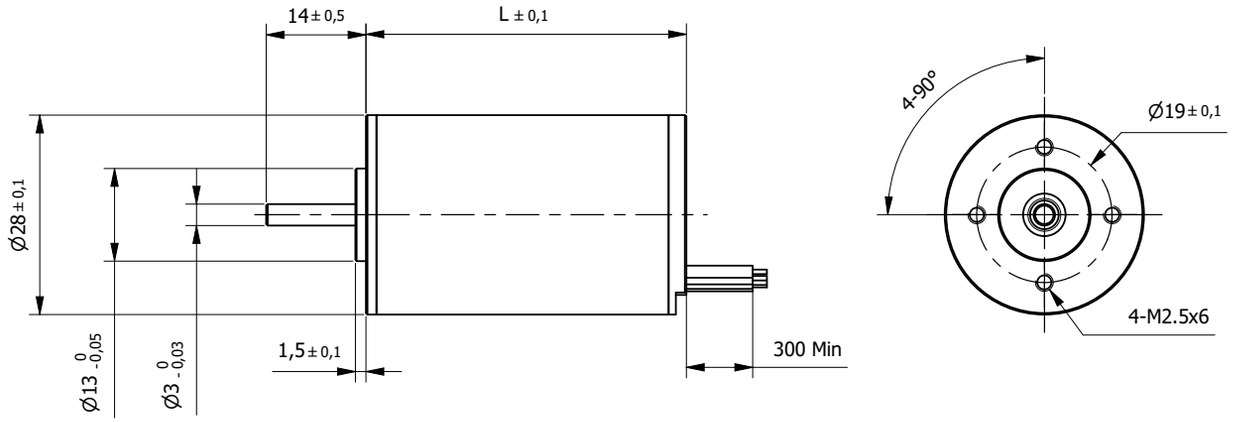
Standard Combination		
Encoder	Gearbox	Drive
E4	28JMS	Taurus
E5		Gemini

* other options on request

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 28SBL66

Ø 28mm - 0,054Nm



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

Specification			
	Model		28SBL66
1	n° of Pole		2
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	14000
5	Rated Torque	Nm	0,054
6	Max. Peak Torque	Nm	0,162
7	Torque Constant	Nm/A	0,015
8	Rated Current	A	3,53
9	Max. Peak Current	A	11
10	No-Load Current	mA	400
11	Line to Line Resistance	Ω	0,6
12	Line to Line Inductance	mH	0,064
13	Rotor Inertia	gcm2	16,2
14	Length (L)	mm	56
15	Weight	Kg	0,23
16	Length with Hall Sensors	mm	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

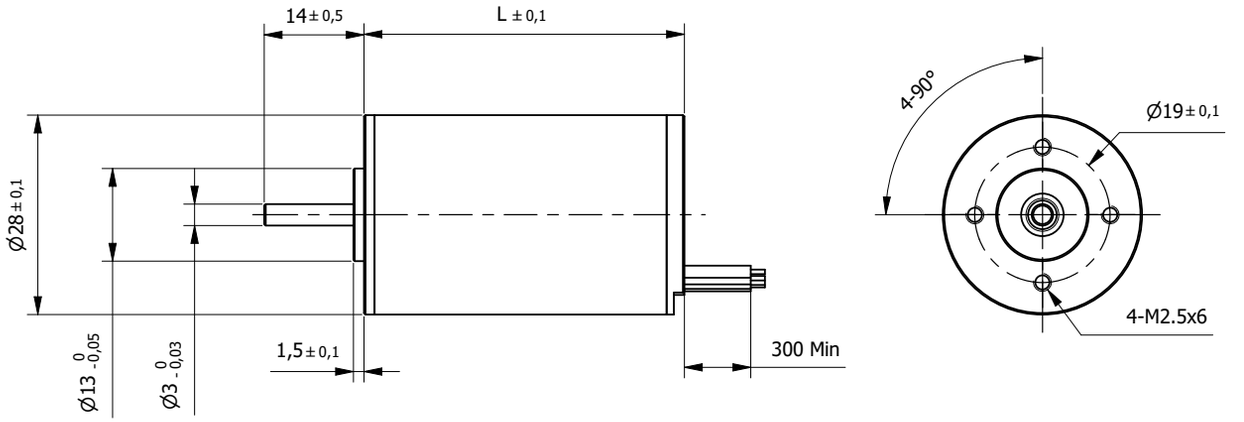
Standard Combination		
Encoder	Gearbox	Drive
E4	28JMS	Gemini
E5		

* other options on request

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 28SBL80

Ø 28mm - 0,06Nm



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

Specification			
	Model		28SBL80
1	n° of Pole		2
2	n° of Phase		3
3	Rated Voltage	V	12
4	Rated Speed	rpm	6000
5	Rated Torque	Nm	0,06
6	Max. Peak Torque	Nm	0,09
7	Torque Constant	Nm/A	0,015
8	Rated Current	A	4
9	Max. Peak Current	A	6,5
10	No-Load Current	mA	500
11	Line to Line Resistance	Ω	1
12	Line to Line Inductance	mH	0,11
13	Rotor Inertia	gcm2	20,2
14	Length (L)	mm	70
15	Weight	Kg	0,25
16	Length with Hall Sensors	mm	80

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

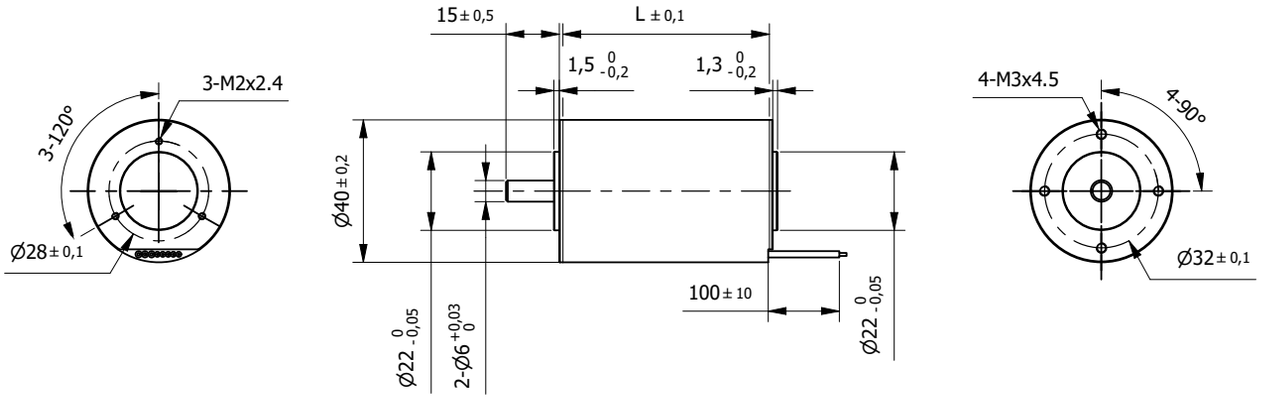
Standard Combination		
Encoder	Gearbox	Drive
E4	28JMS	Gemini
E5		

* other options on request

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 40SBL60

Ø 40mm - 0,2Nm



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

Specification			
	Model		40SBL60
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,2
6	Max. Peak Torque	Nm	0,6
7	Torque Constant	Nm/A	0,045
8	Rated Current	A	4,4
9	Max. Peak Current	A	14
10	No-Load Current	mA	200
11	Line to Line Resistance	Ω	0,9
12	Line to Line Inductance	mH	0,08
13	Rotor Inertia	gcm2	71,4
14	Length (L)	mm	60
15	Weight	Kg	0,45
16	Length with Hall Sensors	mm	70

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 (20mm from flange)	28N
Max. Axial force	12N
Dielectric strength (for 1 sec.)	800 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

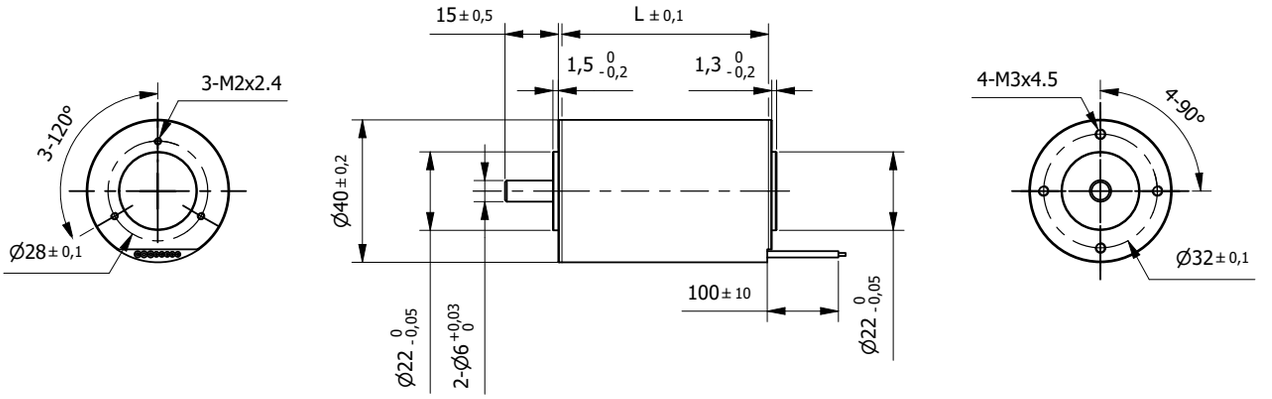
Standard Combination		
Encoder	Gearbox	Drive
E4	36JMS	Gemini
E5		

* other options on request

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

Brushless Slotless Motor 40SBL80

Ø 40mm - 0,36Nm



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

Specification			
	Model		40SBL80
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	5000
5	Rated Torque	Nm	0,36
6	Max. Peak Torque	Nm	1,08
7	Torque Constant	Nm/A	0,076
8	Rated Current	A	4,7
9	Max. Peak Current	A	15
10	No-Load Current	mA	200
11	Line to Line Resistance	Ω	0,82
12	Line to Line Inductance	mH	0,16
13	Rotor Inertia	gcm2	117,5
14	Length (L)	mm	80
15	Weight	Kg	0,5
16	Length with Hall Sensors	mm	90

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 (20mm from flange)	28N
Max. Axial force	12N
Dielectric strength (for 1 sec.)	800 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

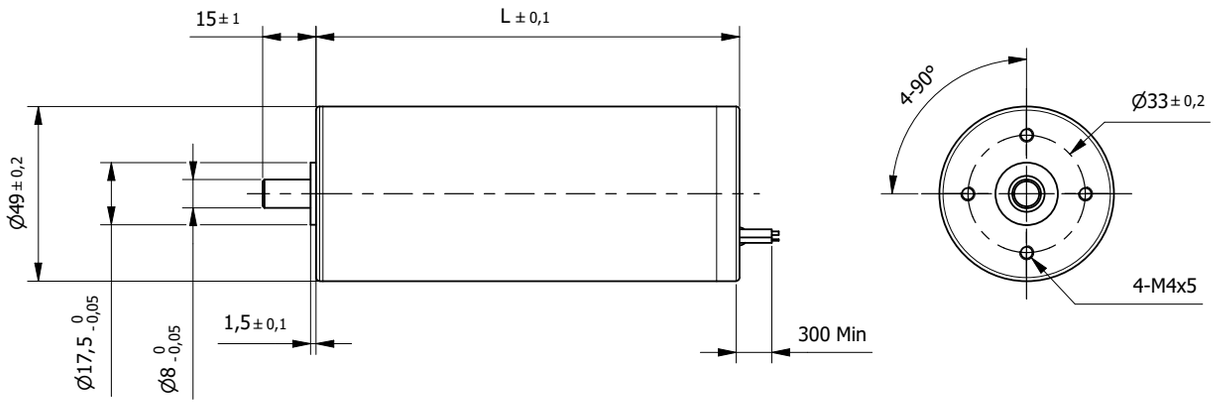
Standard Combination		
Encoder	Gearbox	Drive
E4	36JMS	Gemini
E5		

* other options on request

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

Brushless Slotless Motor 49SBL90

Ø 49mm - 0,14Nm



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

Specification			
	Model		49SBL90
1	n° of Pole		2
2	n° of Phase		3
3	Rated Voltage	V	110
4	Rated Speed	rpm	13000
5	Rated Torque	Nm	0,14
6	Max. Peak Torque	Nm	0,42
7	Torque Constant	Nm/A	0,072
8	Rated Current	A	1,9
9	Max. Peak Current	A	6
10	No-Load Current	mA	300
11	Line to Line Resistance	Ω	2,6
12	Line to Line Inductance	mH	1,8
13	Rotor Inertia	gcm2	110
14	Length (L)	mm	82
15	Weight	Kg	1,1
16	Length with Hall Sensors	mm	90

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)	56N
Max. Axial force	12N
Dielectric strength (for 1 sec.)	1200 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

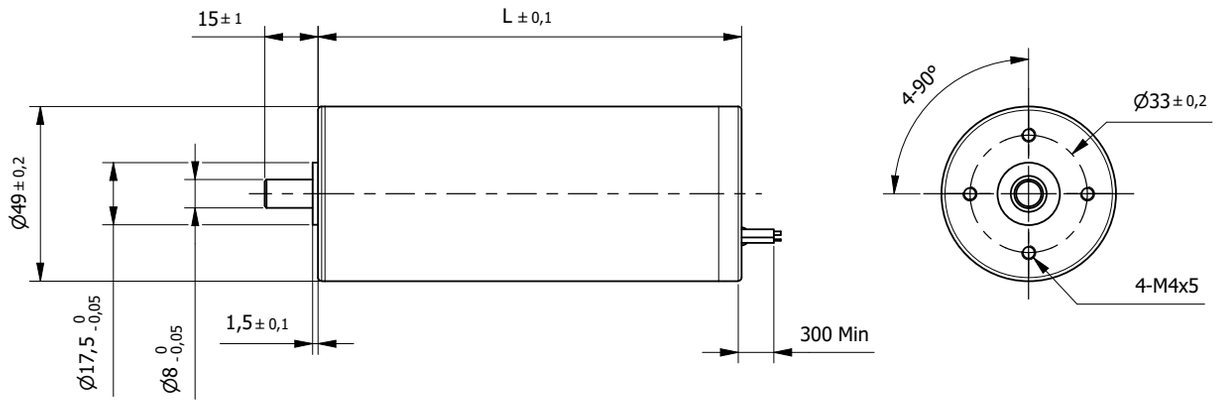
Standard Combination		
Encoder	Gearbox	Drive
E4	GYP42	Gemini
E5	42JMS	

* other options on request

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	UL1332 AWG18	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotless Motor 49SBL120

Ø 49mm - 0,2Nm



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

Specification			
	Model		49SBL120
1	n° of Pole		2
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	24000
5	Rated Torque	Nm	0,2
6	Max. Peak Torque	Nm	0,6
7	Torque Constant	Nm/A	0,017
8	Rated Current	A	13
9	Max. Peak Current	A	38
10	No-Load Current	mA	1500
11	Line to Line Resistance	Ω	0,09
12	Line to Line Inductance	mH	0,08
13	Rotor Inertia	gcm2	175
14	Length (L)	mm	112
15	Weight	Kg	1,5
16	Length with Hall Sensors	mm	120

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)	56N
Max. Axial force	12N
Dielectric strength (for 1 sec.)	1200 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination	
Encoder	Gearbox
E4	GYP42
E5	42JMS

* other options on request

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	UL1332 AWG18	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

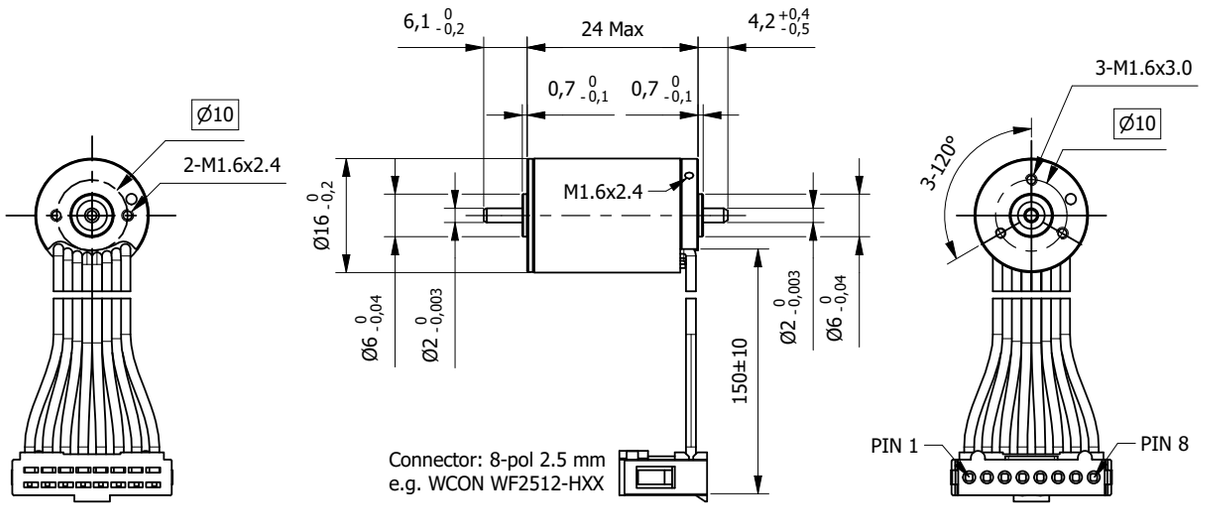
BLDC Slotless motors

EC-series

Brushless DC Slotless motors - EC series - NEW	Torque* (Nm)	
16EC24P	0,003	156
16EC36P	0,008	157
22EC32P	0,011	158
22EC48P	0,023	159
22EC48T	0,045	160
22EC66T	0,055	161
30EC42P	0,034	162
30EC47T	0,069...0,073	163
30EC64P	0,061...0,064	164
30EC64T	0,093...0,096	165
40EC58P	0,090...0,094	166
40EC88P	0,211	167

Brushless Slotless Motor 16EC24P

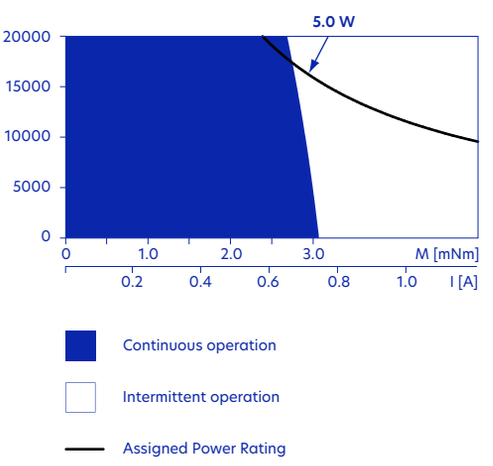
Ø 16mm - 0,003Nm



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	10^3/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

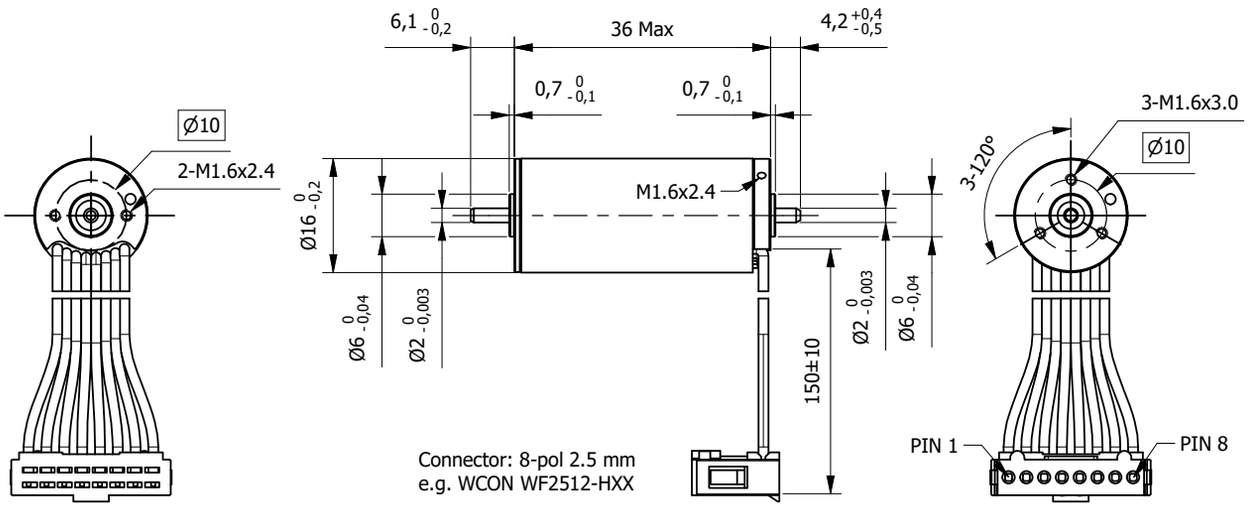
Operating range: Winding 6V



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 - 0,008Nm

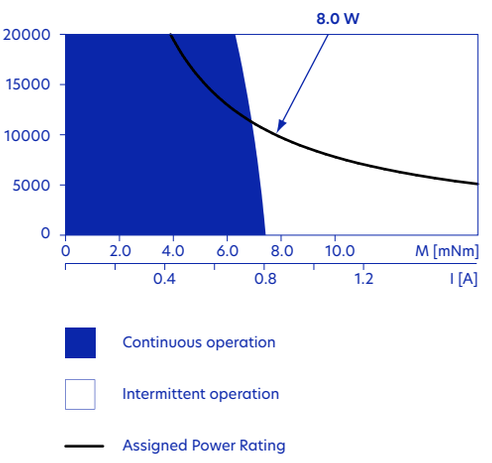


Specification					
	Model		...7101	...7305	...7320
1	n° of Pole		2	2	2
2	n° of Phase		3	3	3
3	Rated Voltage	V	6	12	24
4	Rated Speed	rpm	7120	7300	7350
5	Rated Torque	mNm	7,66	8,02	8,19
6	Stall Torque	mNm	19,2	21,1	22
7	Torque Constant	mNm/A	4,61	9,32	18,7
8	Motor Regulation	10^3/Nms	67,8	61	58,6
9	Rated 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	gcm2	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

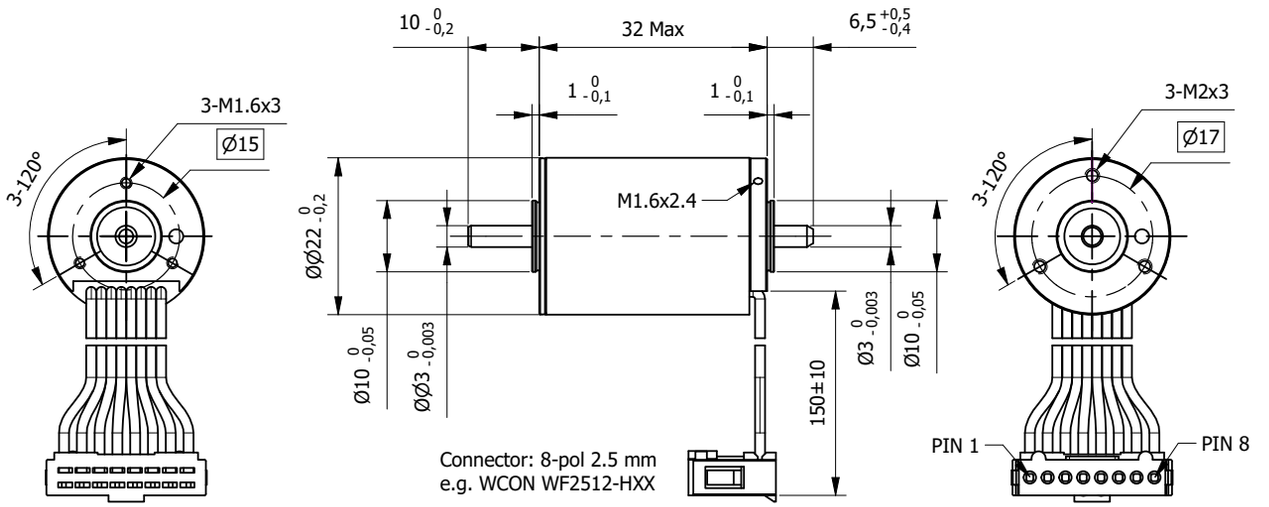
Connection			
Pin n°	Color	Gauge	Function
1	Brown	AWG24	Phase 1
2	Red	|	Phase 2
3	Orange	|	Phase 3
4	Yellow	|	Vcc Hall 3 to 24 Vdc
5	Green	|	GND Hall
6	Blue	|	Hall 1
7	Violet	|	Hall 2
8	Grey	|	Hall 3

Operating range: Winding 12V



Brushless Slotless Motor 22EC32P

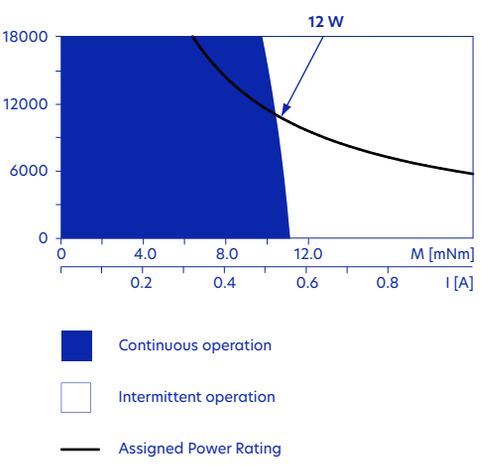
Ø 22mm - 0,011Nm



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	10^3/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

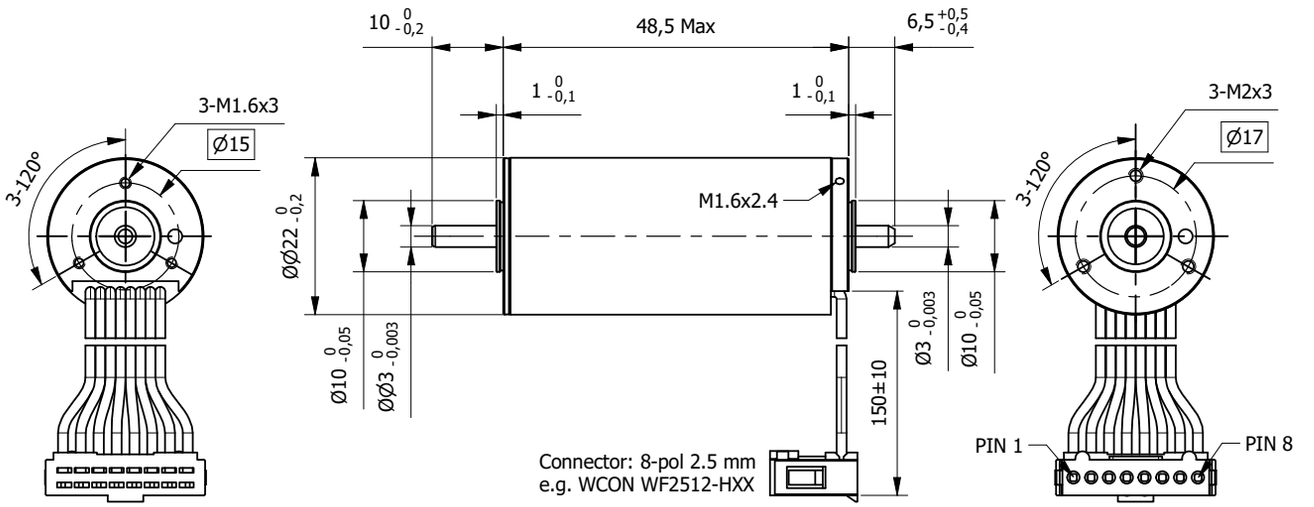
Operating range: Winding 24V



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 22EC48P

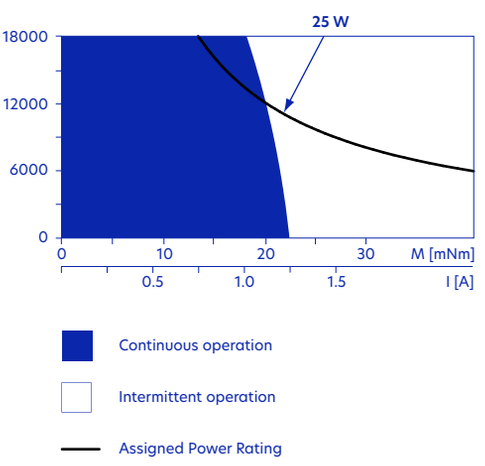
Ø 22mm - 0,023Nm



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	10^3/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

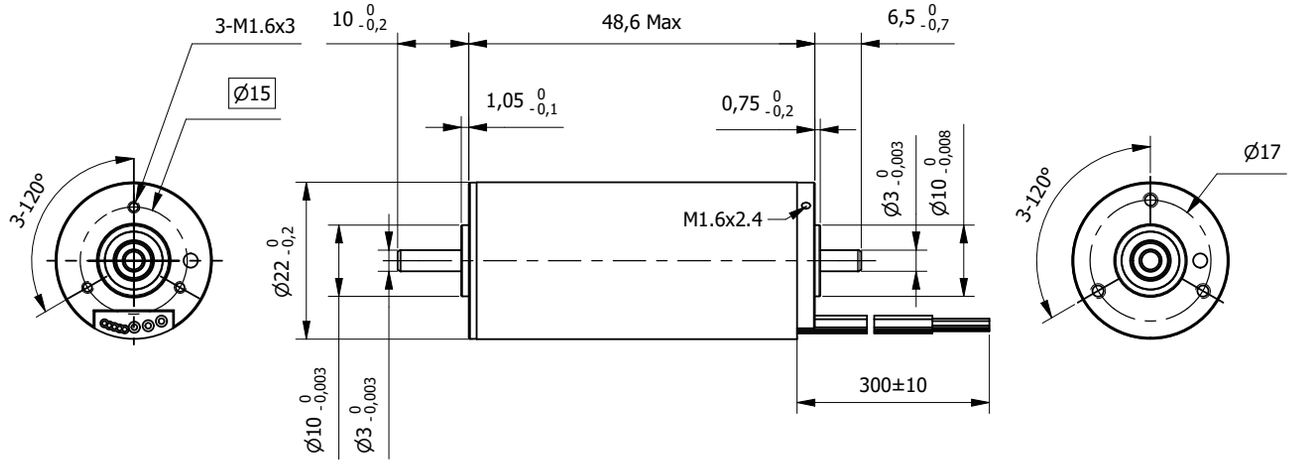
Operating range: Winding 24V



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 22EC48T

Ø 22mm - 0,045Nm

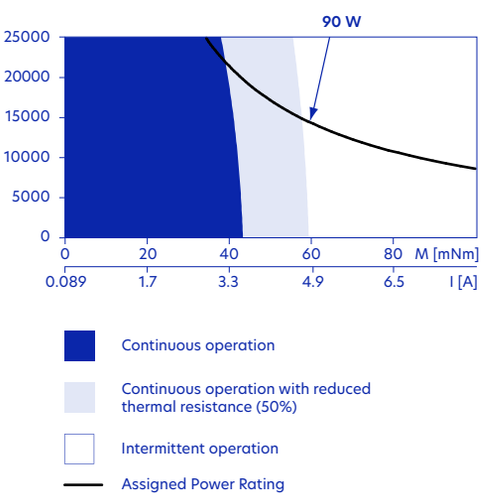


Specification				
	Model		...15005	...14902
1	n° of Pole		4	4
2	n° of Phase		3	3
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	15000	14900
5	Rated Torque	mNm	45,1	42,6
6	Stall Torque	mNm	639	586
7	Torque Constant	mNm/A	14	28,1
8	Motor Regulation	10^3/Nms	2,7	2,9
9	Rated Current	A	3,34	1,58
10	Stall Current	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

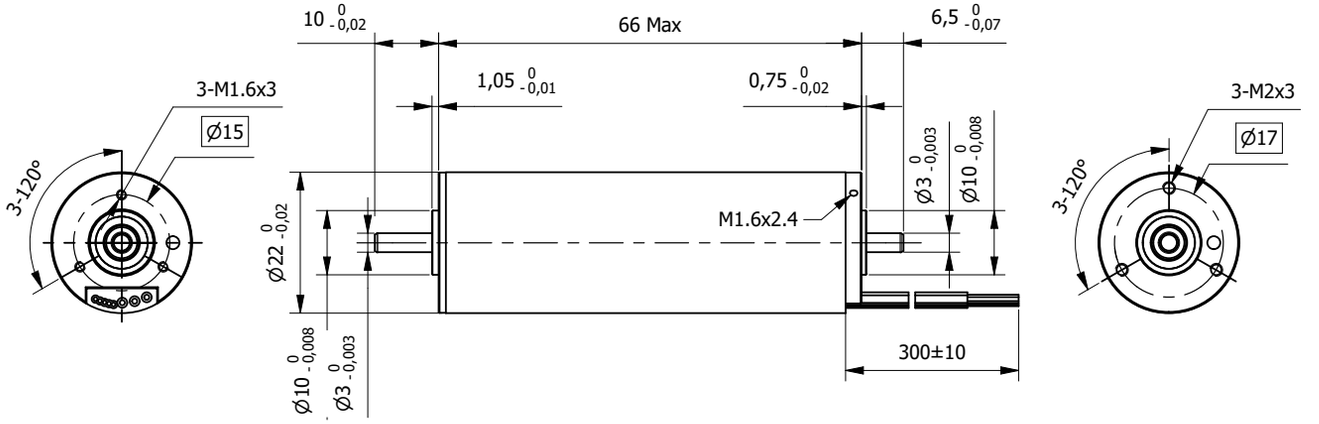
Connection			
Lead n°	Color	Gauge	Function
1	Red	AWG20	Phase 1
2	White	|	Phase 3
3	Black	|	Phase 2
4	Red/Grey	AWG26	Hall 1
5	Black/Grey	|	Hall 2
6	White/Grey	|	Hall 3
7	Green	|	Vcc Hall 3 to 24 Vdc
8	Blue	|	GND Hall

Operating range: Winding 24V



Brushless Slotless Motor 22EC66T

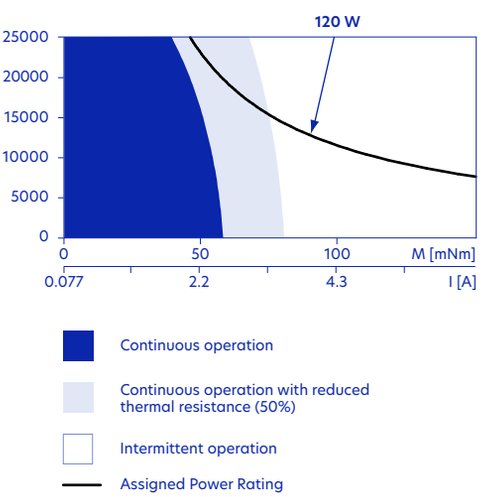
Ø 22mm - 0,055Nm



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	10^3/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

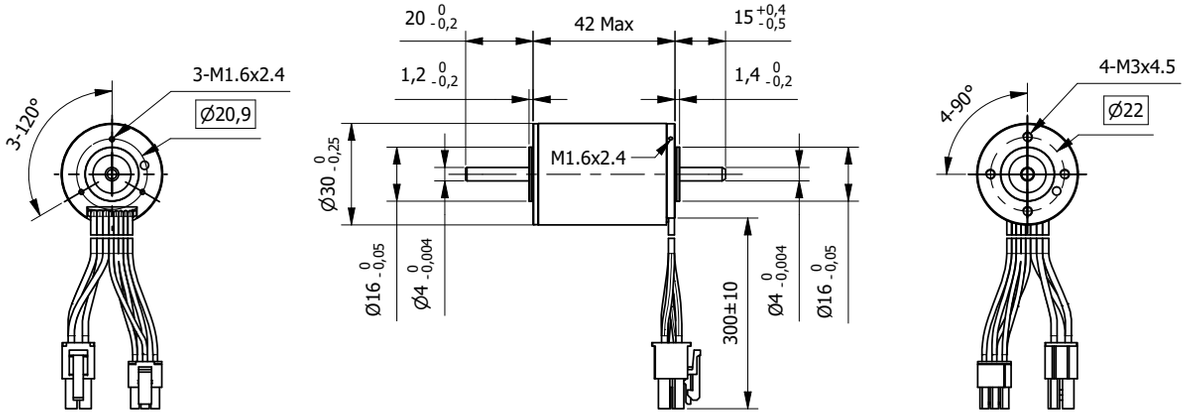
Operating range: Winding 48V

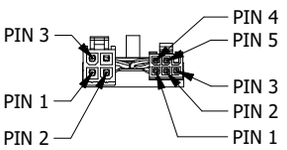


Connection			
Lead n°	Color	Gauge	Function
1	Red	AWG20	Phase 1
2	White	|	Phase 3
3	Black	|	Phase 2
4	Red/Grey	AWG26	Hall 1
5	Black/Grey	|	Hall 2
6	White/Grey	|	Hall 3
7	Green	|	Vcc Hall 3 to 24 Vdc
8	Blue	|	GND Hall

Brushless Slotless Motor 30EC42P

Ø 30mm - 0,034Nm

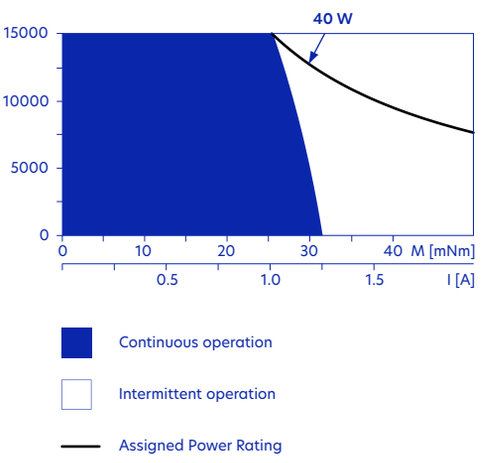




Specification				
	Model		...7203	...7214
1	n° of Pole		2	2
2	n° of Phase		3	3
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	7220	7210
5	Rated Torque	mNm	33,8	33,4
6	Stall Torque	mNm	160	157
7	Torque Constant	mNm/A	24,3	48,6
8	Motor Regulation	10^3/Nms	6,2	6,3
9	Rated Current	A	1,49	0,738
10	Stall Current	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

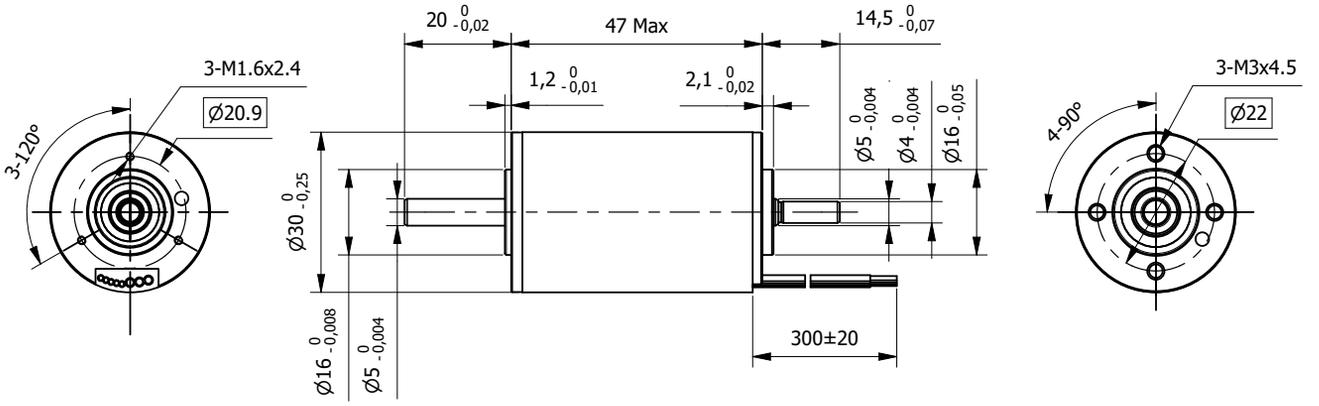
Operating range: Winding 24V



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 30EC47T

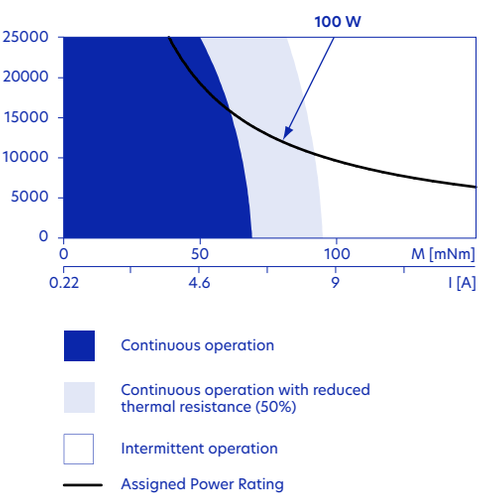
Ø 30mm - 0,073Nm



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	10^3/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

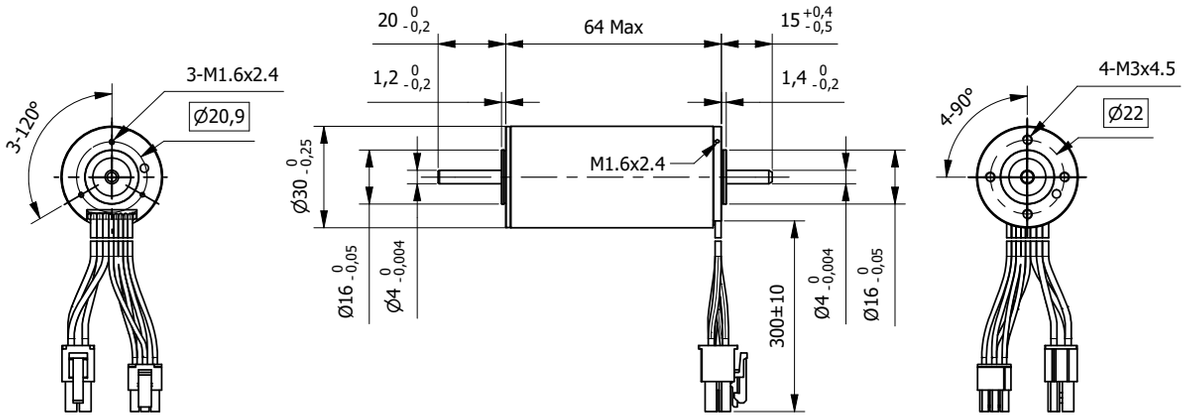
Operating range: Winding 24V

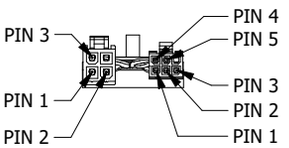


Connection			
Lead n°	Color	Gauge	Function
1	Black	AWG18	Phase 2
2	White	|	Phase 3
3	Red	|	Phase 1
4	Black/Grey	AWG26	Hall 2
5	Blue	|	GND Hall
6	Green	|	Vcc Hall 3 to 24 Vdc
7	Red/Grey	|	Hall 1
8	White/Grey	|	Hall 3

Brushless Slotless Motor 30EC64P

Ø 30mm - 0,064Nm

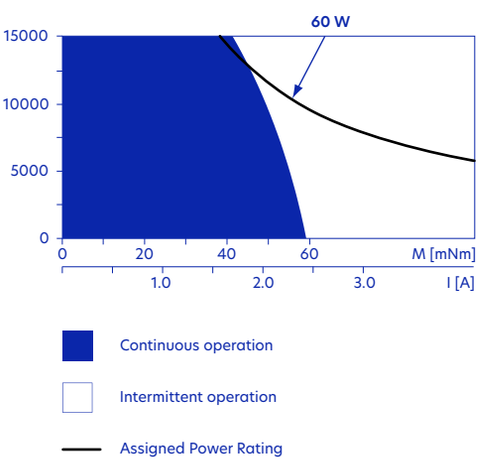




Specification				
	Model		...8001	...8104
1	n° of Pole		2	2
2	n° of Phase		3	3
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	8040	8130
5	Rated Torque	mNm	60,7	64,1
6	Stall Torque	mNm	458	519
7	Torque Constant	mNm/A	24,3	48,6
8	Motor Regulation	10^3/Nms	2,2	1,9
9	Rated Current	A	2,66	1,4
10	Stall Current	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

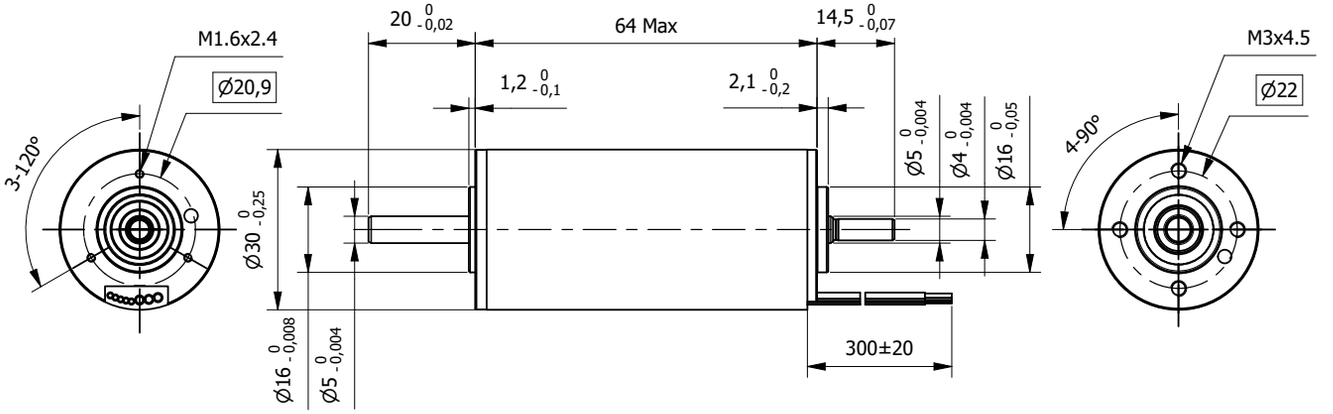
Operating range: Winding 24V



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

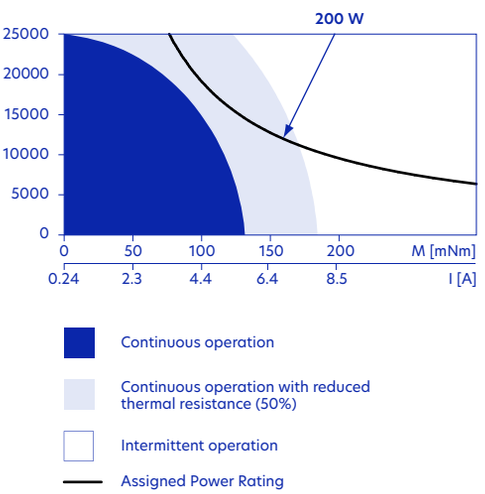
Ø 30mm - 0,096Nm



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	10^3/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

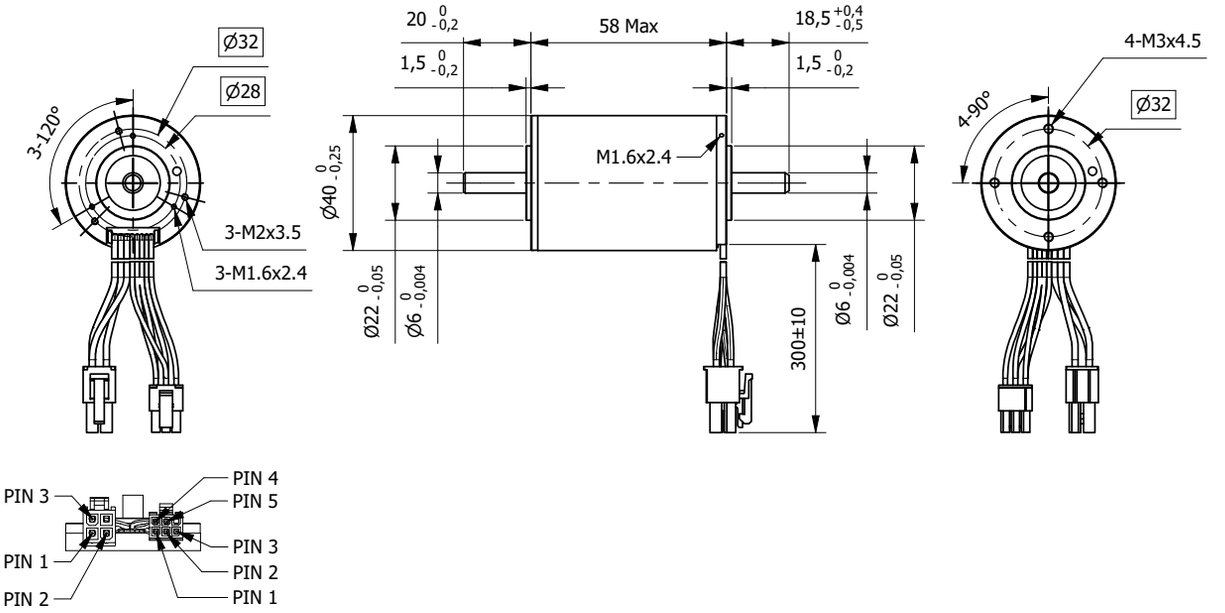
Operating range: Winding 48V



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

Brushless Slotless Motor 40EC58P

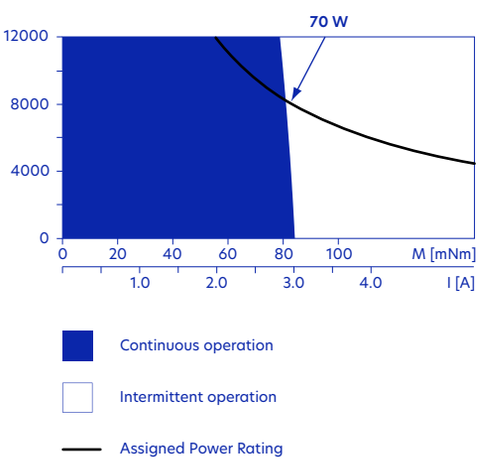
Ø 40mm - 0,094Nm



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	10^3/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

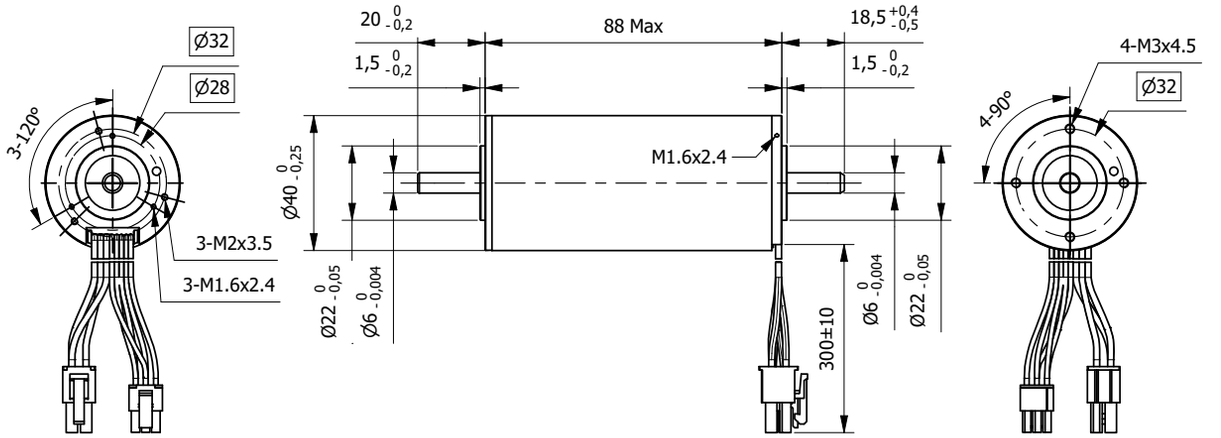
Operating range: Winding 24V

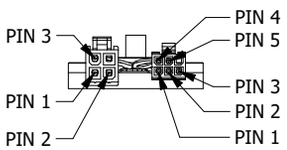


Connection				
Pin n°	Color	Connector	Gauge	Function
1	Red	Molex 39-01-2040	AWG20	Phase 1
2	Black	|	|	Phase 2
3	White	|	|	Phase 3
1	Yellow	Molex 430-25-0600	AWG26	Hall 1
2	Brown	|	|	Hall 2
3	Grey	|	|	Hall 3
4	Blue	|	|	GND Hall
5	Green	|	|	Vcc Hall 3 to 24 Vdc

Brushless Slotless Motor 40EC88P

Ø 40mm - 0,211Nm

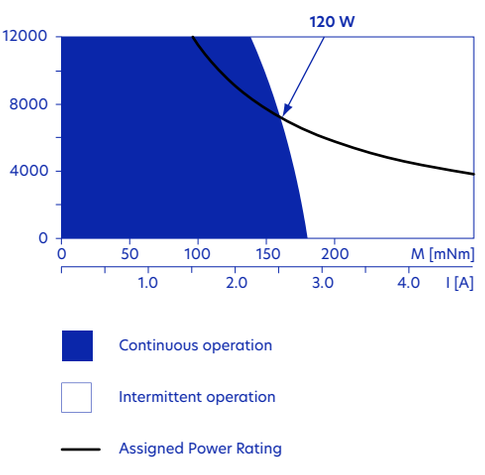




Specification			
	Model		...2607
1	n° of Pole		2
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	2670
5	Rated Torque	mNm	211
6	Stall Torque	mNm	838
7	Torque Constant	mNm/A	126
8	Motor Regulation	10^3/Nms	0,5
9	Rated Current	A	1,74
10	Stall Current	A	6,68
11	No-load Current	mA	72,8
12	No-load Speed	rpm	3610
13	Line to Line Resistance	Ω	7,19
14	Line to Line Inductance	mH	1,6
15	Rotor Inertia	gcm2	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

Operating range: Winding 48V



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 DC

Motors with Encoder

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

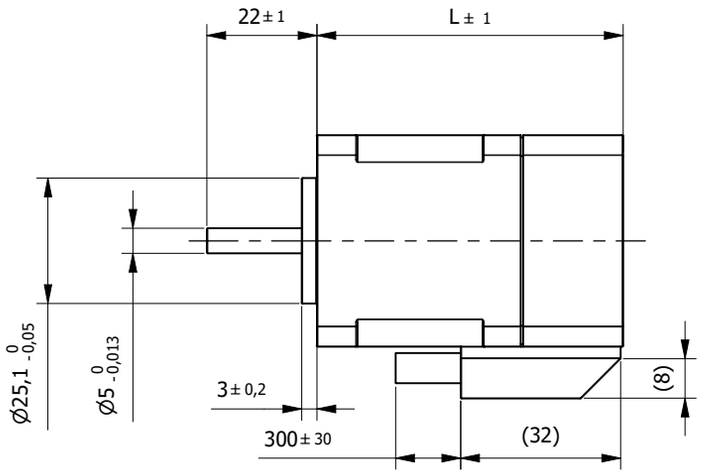
Our BLDC slotted motors are also available equipped with an optical incremental encoder to increase the motion precision. Thanks to the encoder, the drive knows the position (or the speed) of the motor in real time and can perform adjustments to align the real condition with the condition requested by 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.

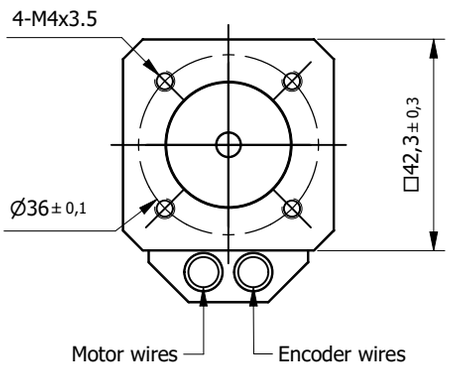
Brushless DC motors with Encoder	Torque* (Nm)	
BL42 061 - E	0,062	170
BL42 081 - E	0,125	171
BL42 101 - E	0,185	172
BL42 121 - E	0,250	173
BL57 096 - E	0,300	174
BL57 116 - E	0,450	175
BL57 136 - E	0,600	176
BL86 080 - E	0,400	177
BL86 093 - E	0,800	178
BL86 121 - E	1,600	179

*Rated Torque

Brushless Slotted Motor BL42 061-E
with Encoder

□ 42mm - 0,062Nm





Specification			
	Model		BL42061-026E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,062
6	Max. Peak Torque	Nm	0,19
7	Torque Constant	Nm/A	0,035
8	Rated Current	A	1,8
9	Max. Peak Current	A	5,4
10	No-Load Current	mA	200
11	Line to Line Resistance	Ω	1,5
12	Line to Line Inductance	mH	2,1
13	Rotor Inertia	gcm2	24
14	Length (L)	mm	61,3
15	Weight	Kg	0,3

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Max. Radial force (10mm from flange)	28 N
Max. Axial force	10 N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

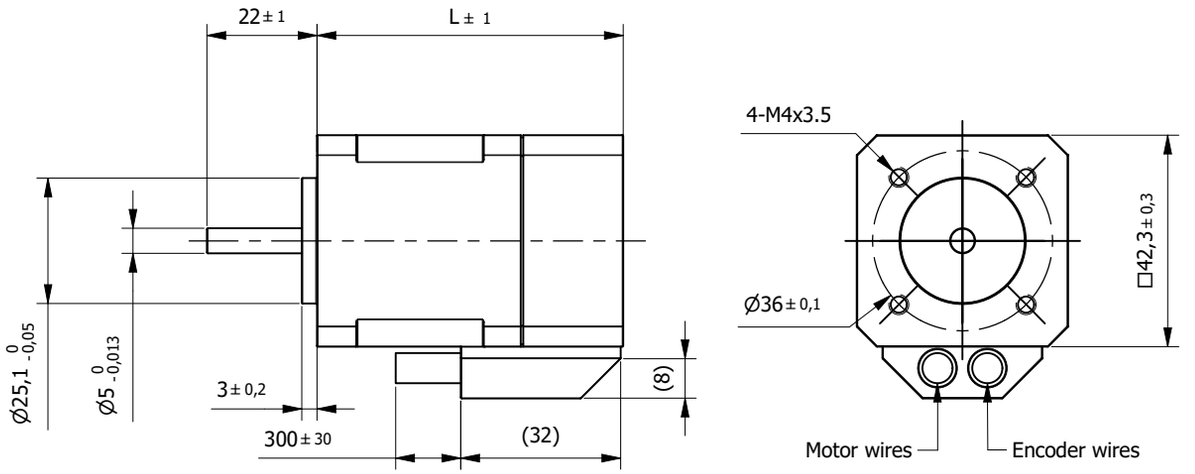
Standard Combination	
Gearbox	Drive
GYP42	Gemini
42JMS	

* other options 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 BL42 081-E
with Encoder

□ 42mm - 0,125Nm



Specification			
	Model		BL42081-050E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,125
6	Max. Peak Torque	Nm	0,38
7	Torque Constant	Nm/A	0,036
8	Rated Current	A	3,5
9	Max. Peak Current	A	10,6
10	No-Load Current	mA	240
11	Line to Line Resistance	Ω	0,8
12	Line to Line Inductance	mH	1,2
13	Rotor Inertia	gcm2	48
14	Length (L)	mm	81,3
15	Weight	Kg	0,45

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Max. Radial force (10mm from flange)	28 N
Max. Axial force	10 N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

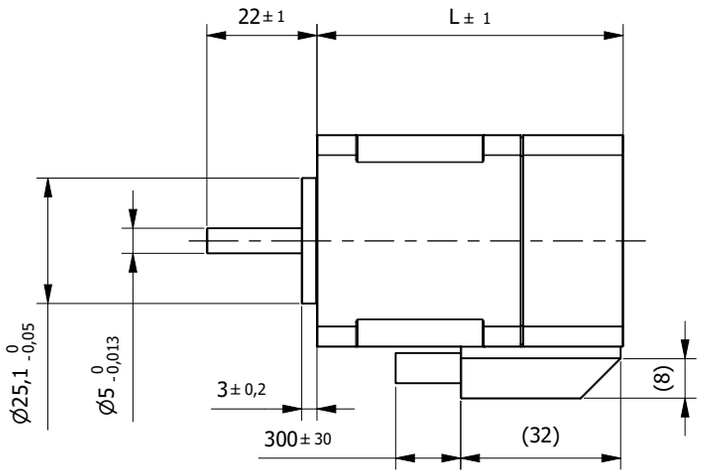
Standard Combination	
Gearbox	Drive
GYP42	Gemini
42JMS	

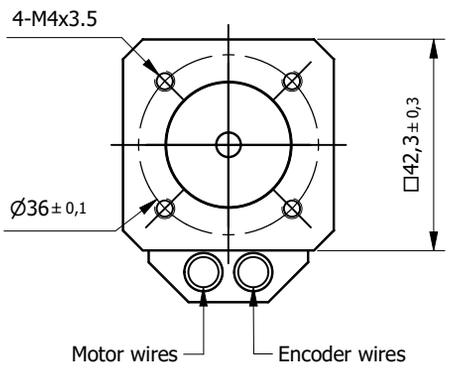
* other options on request

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 BL42 101-E
with Encoder

□ 42mm - 0,185Nm





Specification			
	Model		BL42101-074E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,185
6	Max. Peak Torque	Nm	0,56
7	Torque Constant	Nm/A	0,038
8	Rated Current	A	4,9
9	Max. Peak Current	A	14,7
10	No-Load Current	mA	400
11	Line to Line Resistance	Ω	0,43
12	Line to Line Inductance	mH	0,71
13	Rotor Inertia	gcm2	72
14	Length (L)	mm	101,3
15	Weight	Kg	0,65

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Max. Radial force (10mm from flange)	28 N
Max. Axial force	10 N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

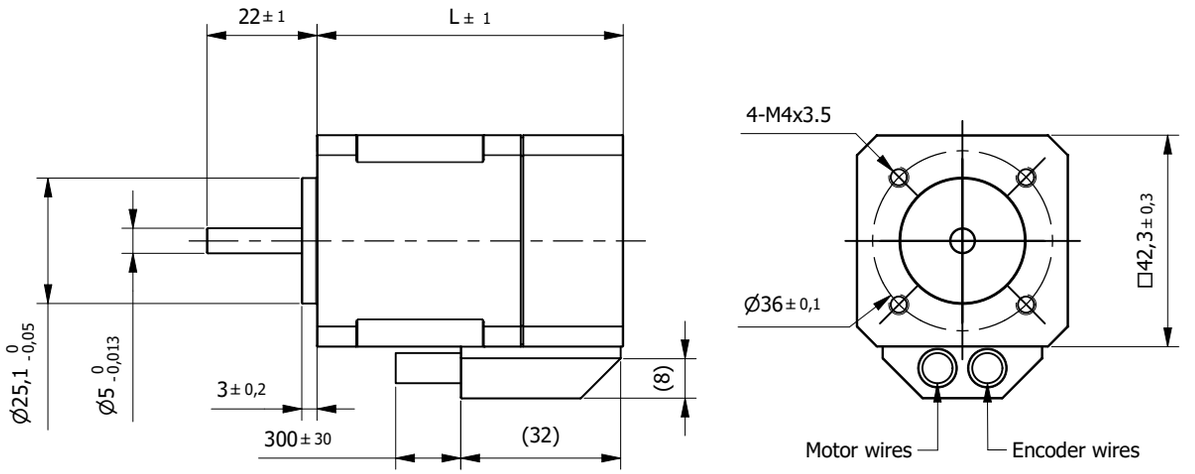
Standard Combination	
Gearbox	Drive
GYP42	Gemini
42JMS	

* other options 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 BL42 121-E
with Encoder

□ 42mm - 0,250Nm



Specification			
	Model		BL42121-100E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,25
6	Max. Peak Torque	Nm	0,75
7	Torque Constant	Nm/A	0,036
8	Rated Current	A	6,9
9	Max. Peak Current	A	20,8
10	No-Load Current	mA	450
11	Line to Line Resistance	Ω	0,3
12	Line to Line Inductance	mH	0,5
13	Rotor Inertia	gcm2	96
14	Length (L)	mm	121,3
15	Weight	Kg	0,8

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Max. Radial force (10mm from flange)	28 N
Max. Axial force	10 N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

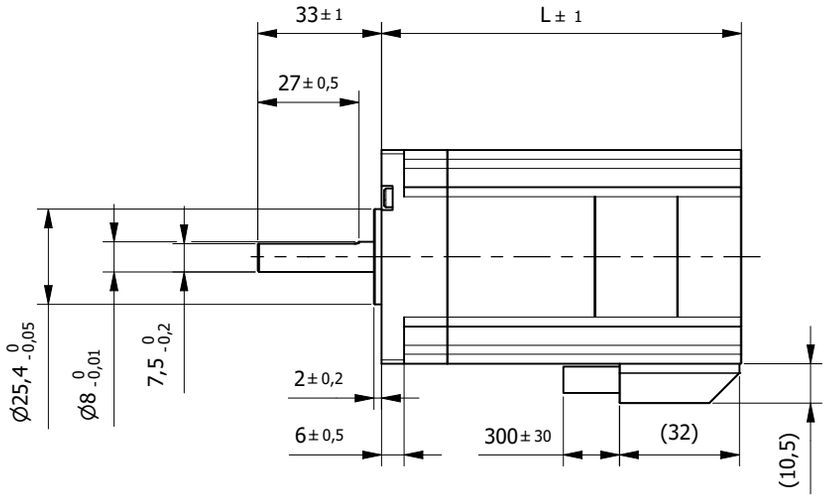
Standard Combination	
Gearbox	Drive
GYP42	Gemini
42JMS	

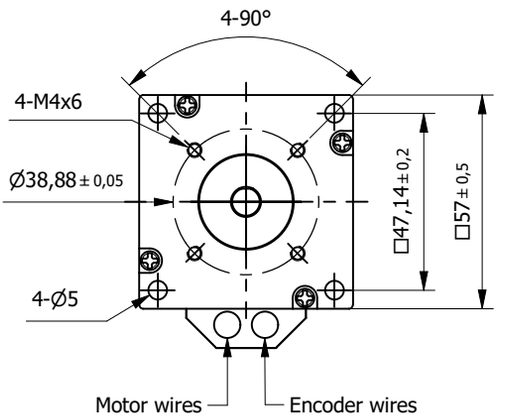
* other options on request

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 BL57 096-E
with Encoder

□ 57mm - 0,3Nm





Specification			
	Model		BL57096-090E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,3
6	Max. Peak Torque	Nm	0,8
7	Torque Constant	Nm/A	0,075
8	Rated Current	A	4,0
9	Max. Peak Current	A	12
10	No-Load Current	mA	450
11	Line to Line Resistance	Ω	1,2
12	Line to Line Inductance	mH	1,2
13	Rotor Inertia	gcm2	210
14	Length (L)	mm	96
15	Weight	Kg	1

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Max. Radial force (10mm from flange)	115N
Max. Axial force	45 N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

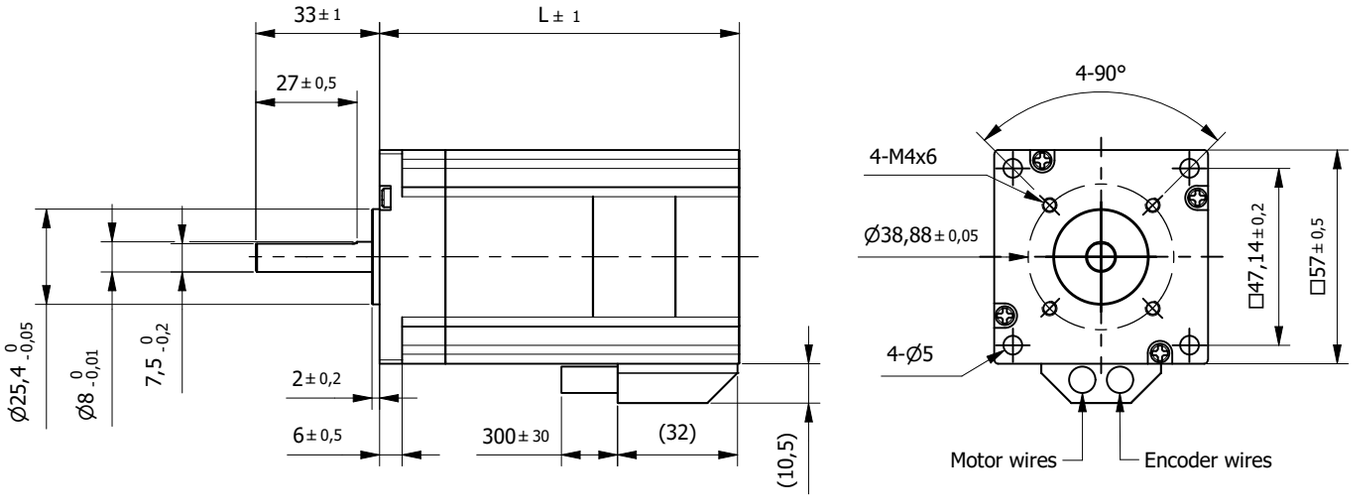
Standard Combination	
Gearbox	Drive
GYP56	Gemini
56JMS	

* other options 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 BL57 116-E
with Encoder

□ 57mm - 0,45Nm



Specification			
	Model		BL57116-135E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,45
6	Max. Peak Torque	Nm	1,1
7	Torque Constant	Nm/A	0,08
8	Rated Current	A	5,6
9	Max. Peak Current	A	13,8
10	No-Load Current	mA	550
11	Line to Line Resistance	Ω	0,8
12	Line to Line Inductance	mH	0,8
13	Rotor Inertia	gcm2	320
14	Length (L)	mm	116
15	Weight	Kg	1,3

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Max. Radial force (10mm from flange)	115N
Max. Axial force	45 N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

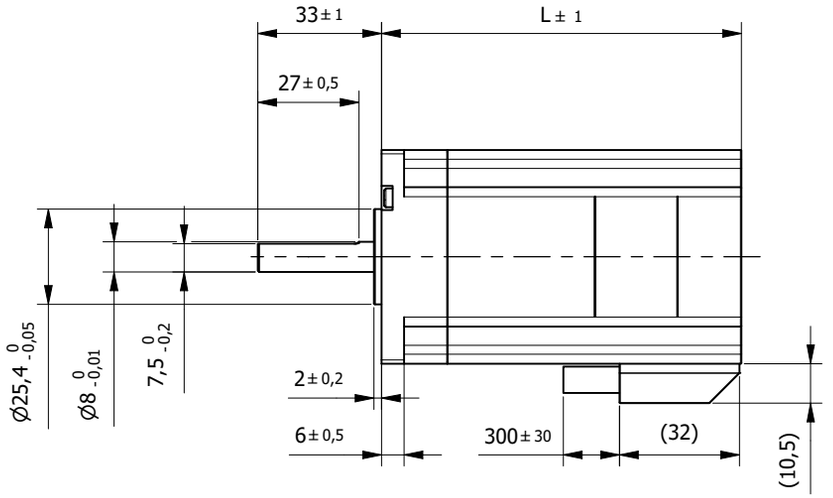
Standard Combination	
Gearbox	Drive
GYP56	Gemini
56JMS	

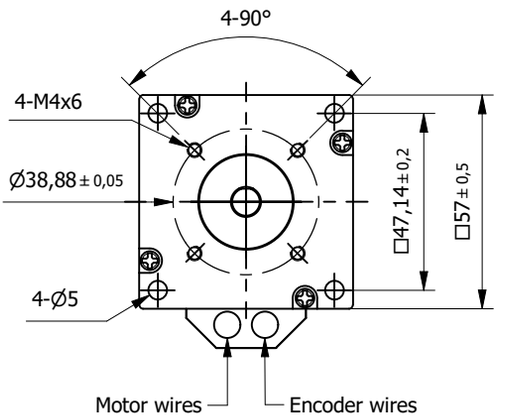
* other options on request

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 BL57 136-E
with Encoder

□ 57mm - 0,6Nm





Specification			
	Model		BL57136-180E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,6
6	Max. Peak Torque	Nm	1,5
7	Torque Constant	Nm/A	0,08
8	Rated Current	A	7,5
9	Max. Peak Current	A	18,8
10	No-Load Current	mA	650
11	Line to Line Resistance	Ω	0,5
12	Line to Line Inductance	mH	0,6
13	Rotor Inertia	gcm2	430
14	Length (L)	mm	136
15	Weight	Kg	1,8

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Max. Radial force (10mm from flange)	115N
Max. Axial force	45 N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

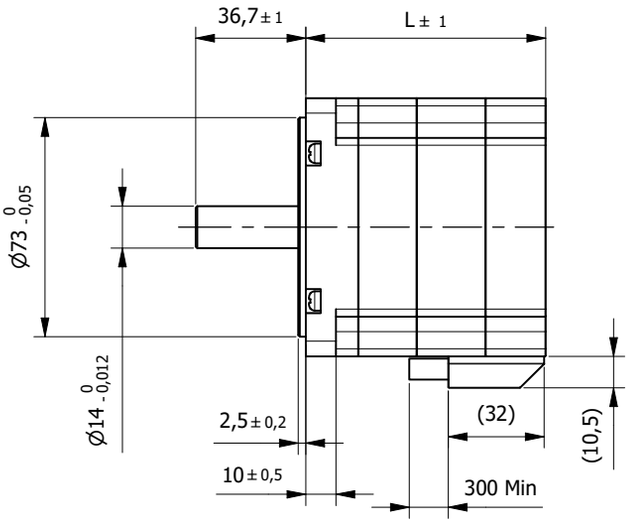
Standard Combination	
Gearbox	Drive
GYP56	Gemini
56JMS	

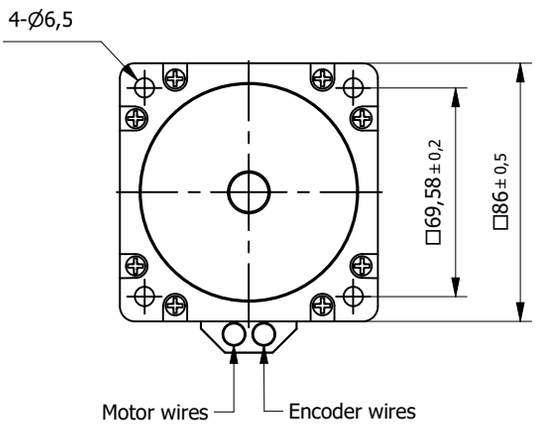
* other options on request

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 BL86 080-E
with Encoder

□ 86mm - 0,4Nm





Specification			
	Model		BL86080-130E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,4
6	Max. Peak Torque	Nm	1,2
7	Torque Constant	Nm/A	0,122
8	Rated Current	A	3,3
9	Max. Peak Current	A	9,8
10	No-Load Current	mA	380
11	Line to Line Resistance	Ω	1
12	Line to Line Inductance	mH	1,4
13	Rotor Inertia	gcm2	400
14	Length (L)	mm	80
15	Weight	Kg	1,5

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Max. Radial force (20mm from flange)	220N
Max. Axial force	65 N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

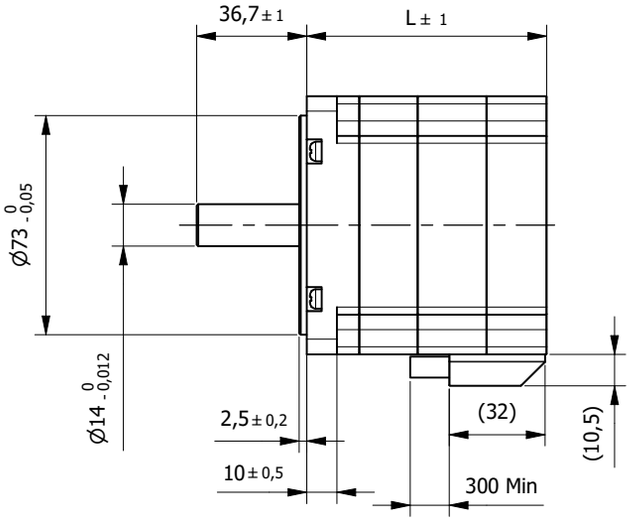
Standard Combination	
Gearbox	Drive
GYP80	Gemini

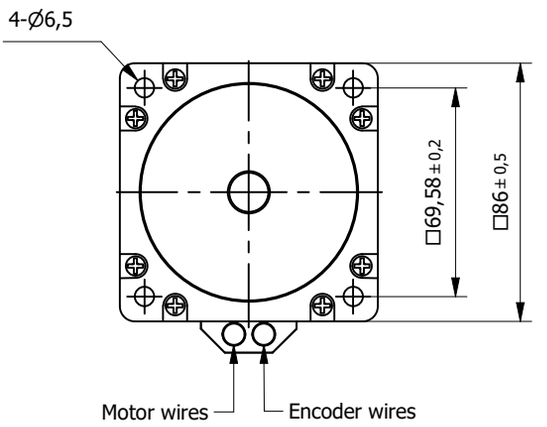
* other options on request

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 Slotted Motor BL86 093-E
with Encoder

□ 86mm - 0,8Nm





Specification			
	Model		BL86093-250E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	0,8
6	Max. Peak Torque	Nm	2,4
7	Torque Constant	Nm/A	0,13
8	Rated Current	A	6,2
9	Max. Peak Current	A	17
10	No-Load Current	mA	550
11	Line to Line Resistance	Ω	0,45
12	Line to Line Inductance	mH	0,75
13	Rotor Inertia	gcm2	800
14	Length (L)	mm	93
15	Weight	Kg	1,85

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Max. Radial force (20mm from flange)	220N
Max. Axial force	65 N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

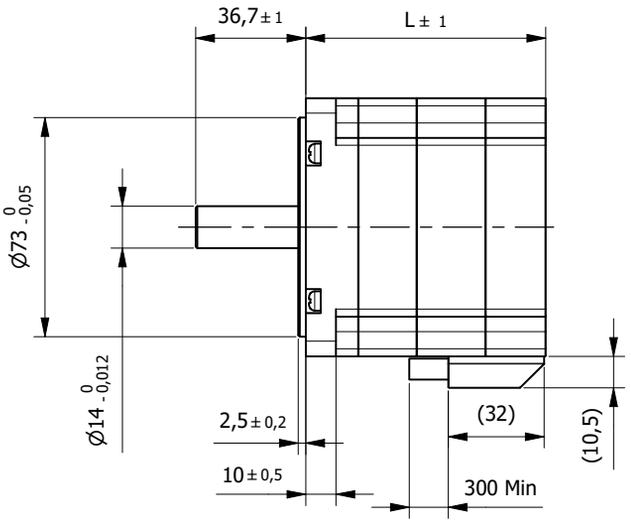
Standard Combination	
Gearbox	Drive
GYP80	Gemini

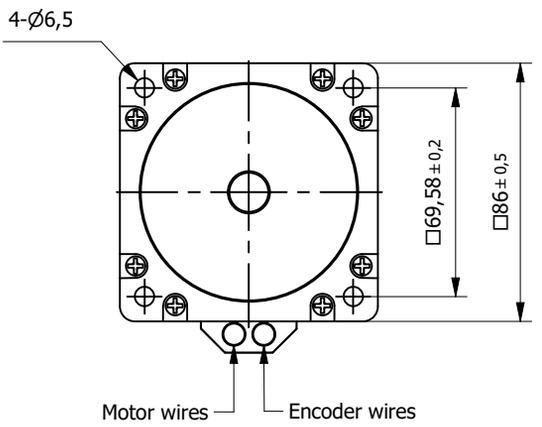
* other options on request

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 Slotted Motor BL86 121-E
with Encoder

□ 86mm - 1,6Nm





Specification			
	Model		BL86121-500E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	3000
5	Rated Torque	Nm	1,6
6	Max. Peak Torque	Nm	4,8
7	Torque Constant	Nm/A	0,135
8	Rated Current	A	11,9
9	Max. Peak Current	A	35,6
10	No-Load Current	mA	860
11	Line to Line Resistance	Ω	0,14
12	Line to Line Inductance	mH	0,36
13	Rotor Inertia	gcm2	1600
14	Length (L)	mm	121
15	Weight	Kg	2,7

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Max. Radial force (20mm from flange)	220N
Max. Axial force	65 N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

Standard Combination
Gearbox
GYP80
* other options 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

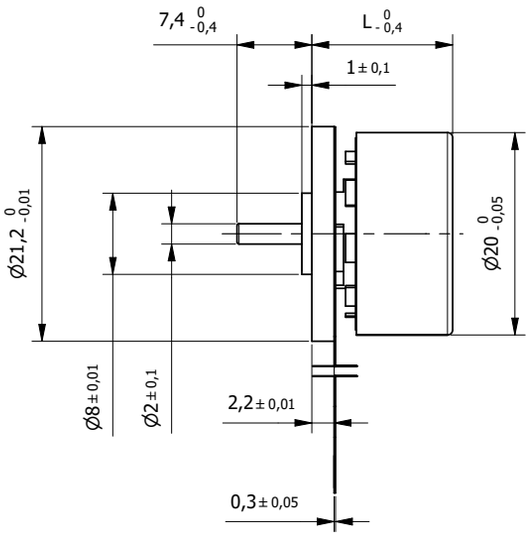
Our flat brushless DC motors have an extremely flat design, ranging from 14 to 40mm. The specific design gives these products an exceptional power to volume ratio, while keeping them very light and compact. Thanks to a high number of poles (starting at 8 till 22 poles), these motors offer very good control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

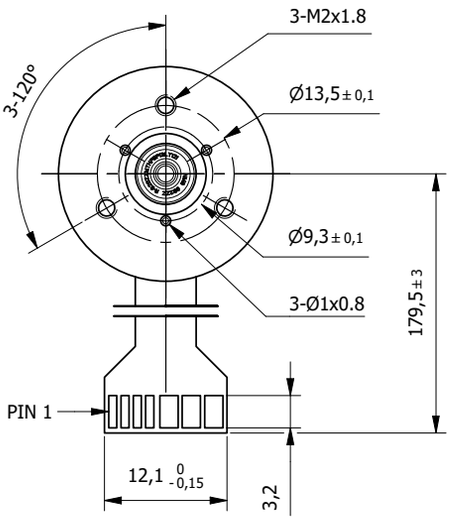
Brushless DC Flat motors	Torque* (Nm)	
20BLW14	0,008	182
32BLW18	0,025	183
45BLW16	0,055	184
45BLW18 Connector	0,050	185
45BLW18 Wires	0,050	186
45BLW21 Connector	0,084	187
45BLW21 Wires	0,084	188
45BLW27 Connector	0,130	189
45BLW27 Wires	0,130	190
60BLW40	0,300	191
60BLW40 - IP54	0,300	192
60BLWA38	0,500	193
90BLW27	0,457...0,560	194
90BLW40	0,964	195

*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

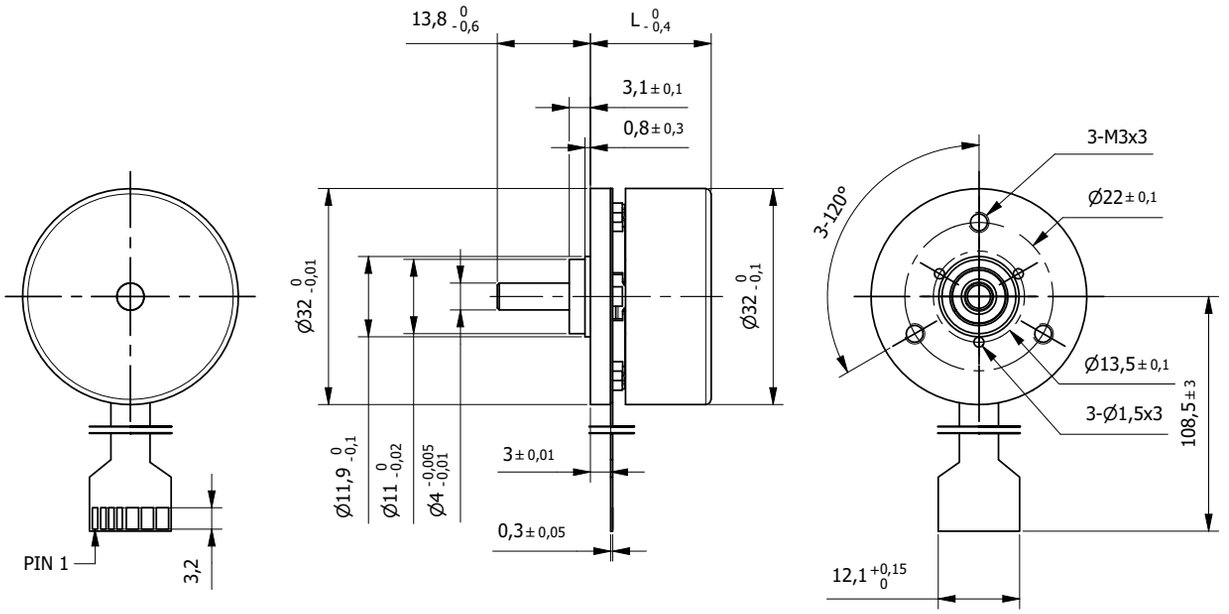
Standard Combination
Drive
Taurus
Gemini

* other options on request

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	48
4	Rated Speed	rpm	2100	2800	2760	2950
5	Rated Torque	Nm	0,025	0,025	0,026	0,025
6	Max. Peak Torque	Nm	0,075	0,075	0,075	0,075
7	Torque Constant	Nm/A	0,023	0,025	0,051	0,096
8	Rated Current	A	1,09	1	0,51	0,26
9	Max. Peak Current	A	3,4	3,2	1,7	0,97
10	No-Load Current	mA	290	190	100	90
11	Line to Line Resistance	Ω	3	3	13	53
12	Line to Line Inductance	mH	1,6	1,9	7,7	28
13	Rotor Inertia	gcm2	35	35	35	35
14	Length (L)	mm	17,9	17,9	17,9	17,9
15	Weight	Kg	0,05	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

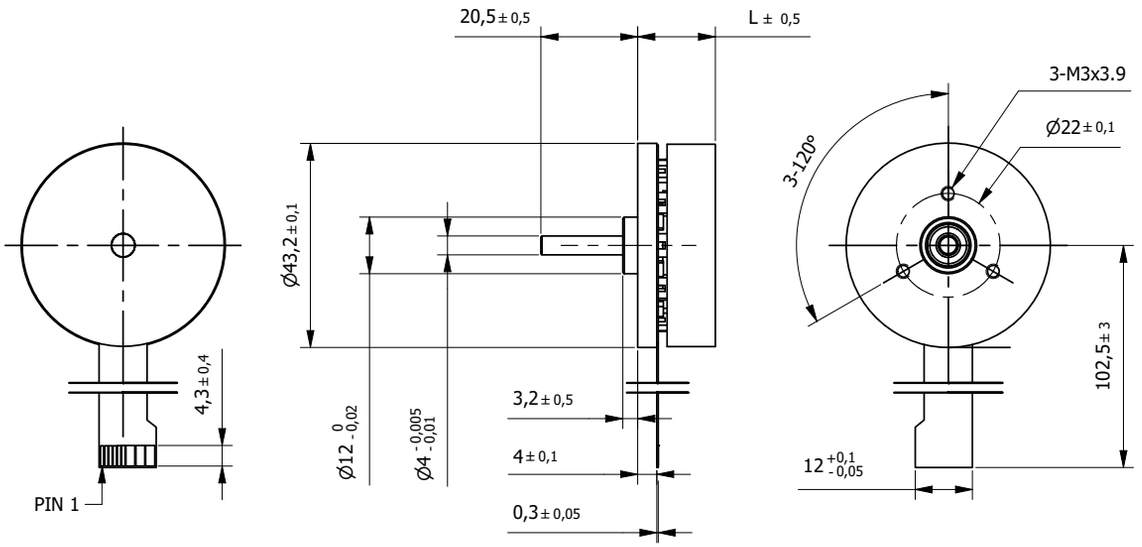
Standard Combination	
Gearbox	Drive
22JMS	Taurus
28JMS	Gemini

* other options on request

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	gcm2	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

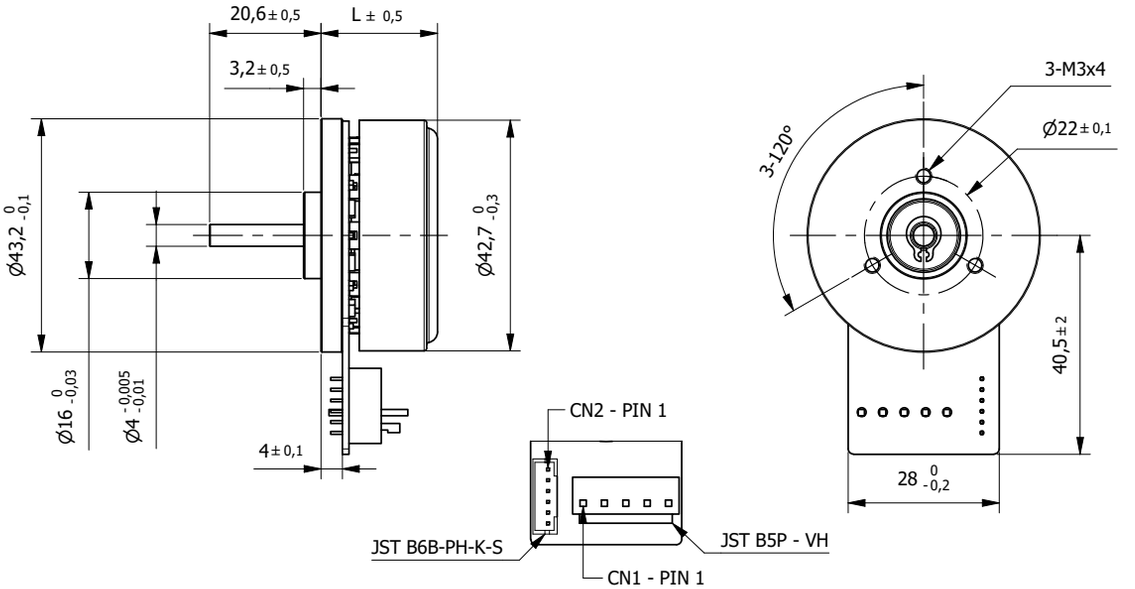
Standard Combination	
Gearbox	Drive
GYP42	Taurus
42JMS	Gemini

* other options on request

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 45BLW18
Connector

Ø 45mm - 0,05Nm



Specification			
	Model		45BLW18
1	n° of Pole		16
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	5000
5	Rated Torque	Nm	0,05
6	Max. Peak Torque	Nm	0,15
7	Torque Constant	Nm/A	0,031
8	Rated Current	A	1,61
9	Max. Peak Current	A	4,8
10	No-Load Current	mA	250
11	Line to Line Resistance	Ω	1,83
12	Line to Line Inductance	mH	0,59
13	Rotor Inertia	gcm2	100
14	Length (L)	mm	18
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

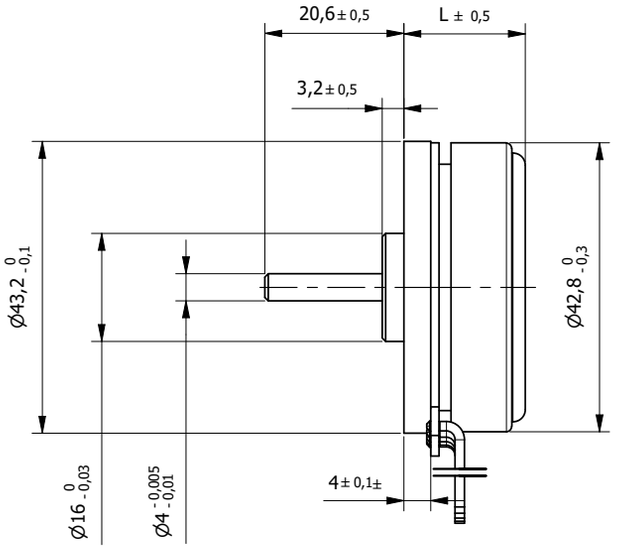
Standard Combination	
Gearbox	Drive
GYP42	Gemini
42JMS	

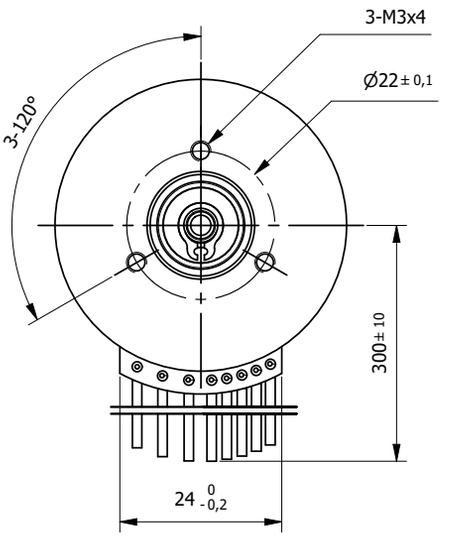
* other options on request

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 45BLW18
Wires

Ø 45mm - 0,05Nm





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

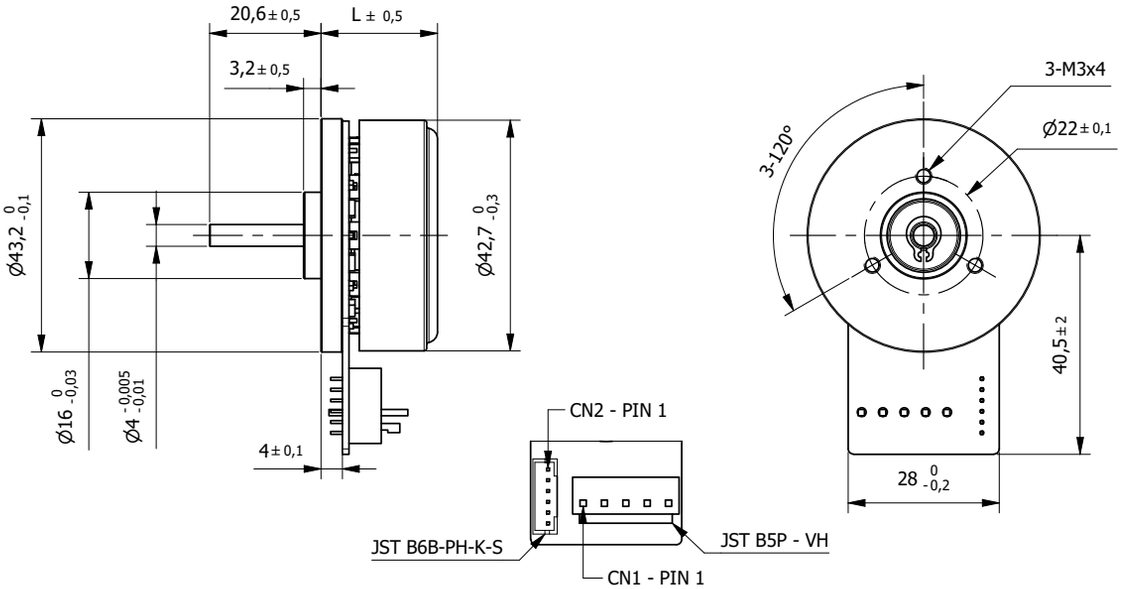
Standard Combination	
Gearbox	Drive
GYP42	Gemini
42JMS	

* other options on request

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 45BLW21
Connector

Ø 45mm - 0,084Nm



Specification			
	Model		45BLW21
1	n° of Pole		16
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	5260
5	Rated Torque	Nm	0,084
6	Max. Peak Torque	Nm	0,25
7	Torque Constant	Nm/A	0,033
8	Rated Current	A	2,55
9	Max. Peak Current	A	7
10	No-Load Current	mA	390
11	Line to Line Resistance	Ω	0,8
12	Line to Line Inductance	mH	0,33
13	Rotor Inertia	gcm2	135
14	Length (L)	mm	21
15	Weight	Kg	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

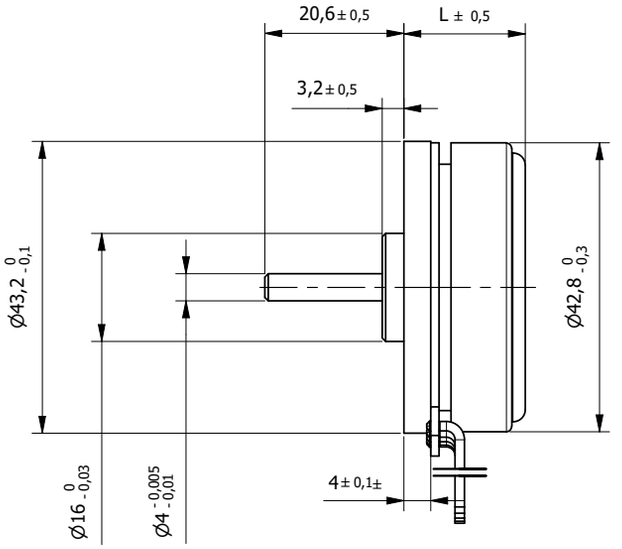
Standard Combination	
Gearbox	Drive
GYP42	Gemini
42JMS	

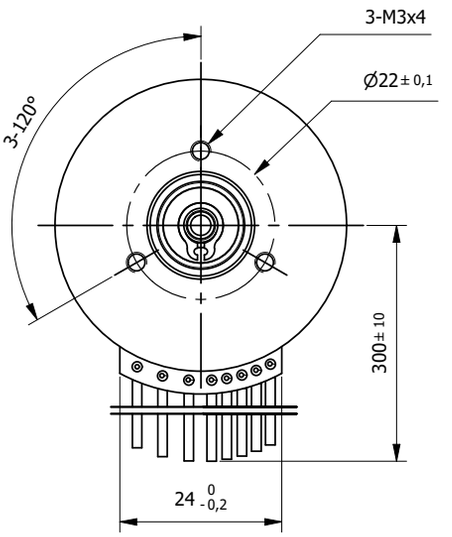
* other options on request

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 45BLW21
Wires

Ø 45mm - 0,084Nm





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

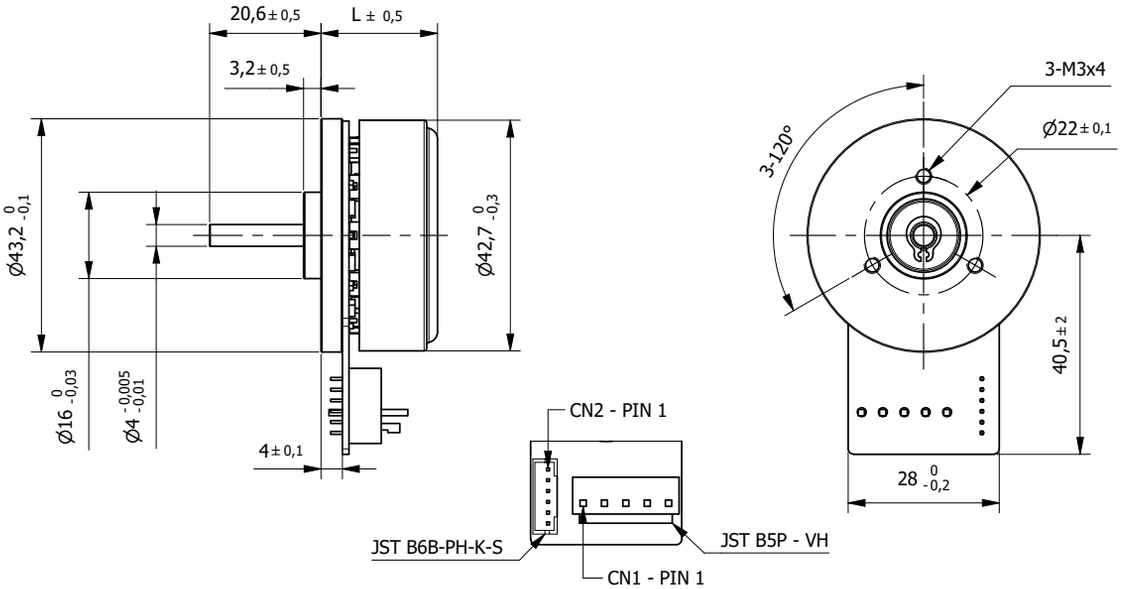
Standard Combination	
Gearbox	Drive
GYP42	Gemini
42JMS	

* other options on request

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 45BLW27
Connector

Ø 45mm - 0,13Nm



Specification			
	Model		45BLW27
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	3,51
9	Max. Peak Current	A	10
10	No-Load Current	mA	430
11	Line to Line Resistance	Ω	0,61
12	Line to Line Inductance	mH	0,27
13	Rotor Inertia	gcm2	180
14	Length (L)	mm	27
15	Weight	Kg	0,15

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

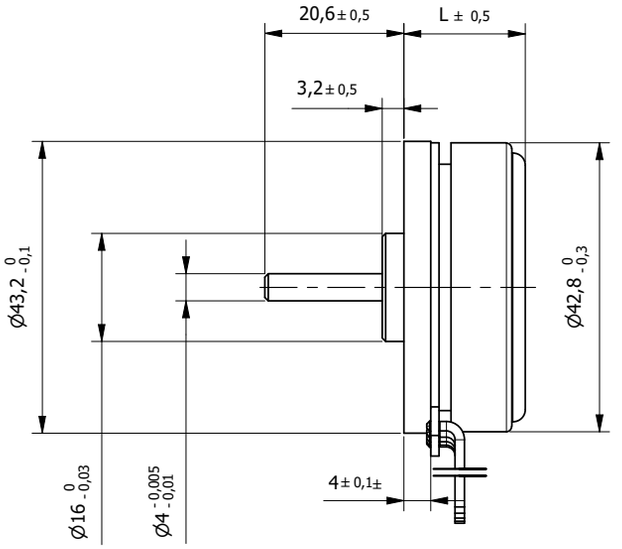
Standard Combination	
Gearbox	Drive
GYP42	Gemini
42JMS	

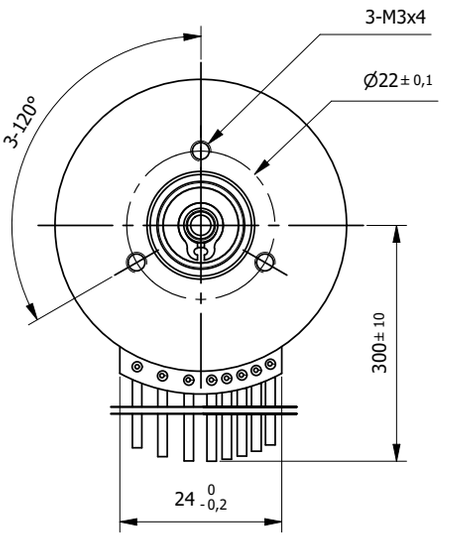
* other options on request

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 45BLW27
Wires

Ø 45mm - 0,13Nm





Specification			
	Model		45BLW27
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	3,51
9	Max. Peak Current	A	10
10	No-Load Current	mA	430
11	Line to Line Resistance	Ω	0,61
12	Line to Line Inductance	mH	0,27
13	Rotor Inertia	gcm2	180
14	Length (L)	mm	27
15	Weight	Kg	0,15

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

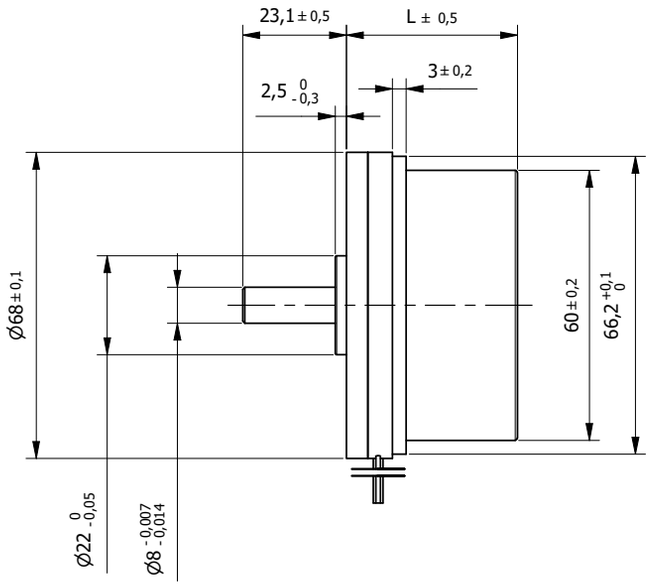
Standard Combination	
Gearbox	Drive
GYP42	Gemini
42JMS	

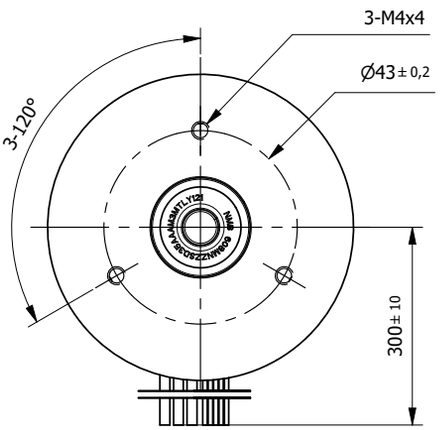
* other options on request

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 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	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	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

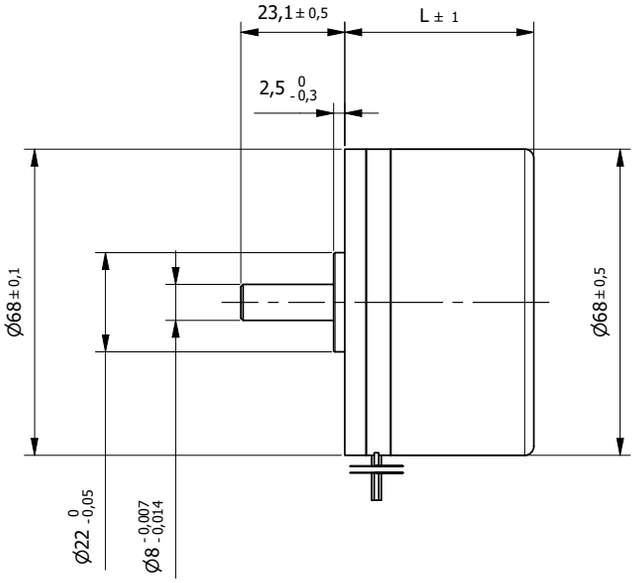
Standard Combination	
Gearbox	Drive
GYP56	Gemini
56JMS	

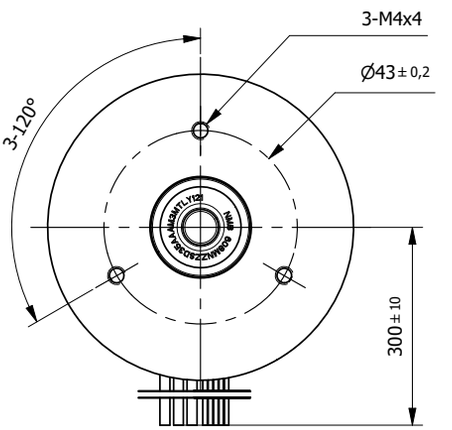
* other options on request

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)	28N
Max. Axial force	10N
Dielectric strength (for 1 min.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

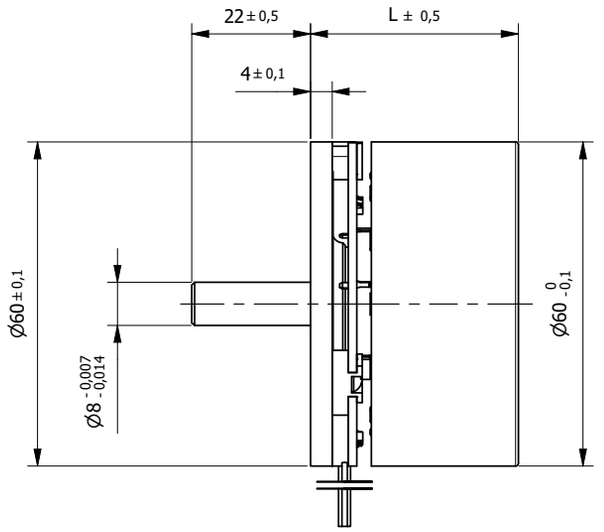
Standard Combination	
Gearbox	Drive
GYP56	Gemini
56JMS	

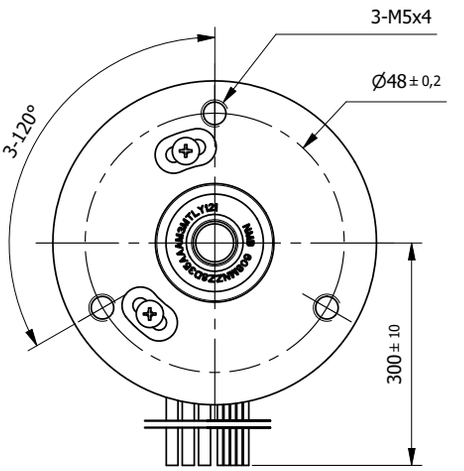
* other options on request

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 60BLWA38

Ø 60mm - 0,5Nm





Specification			
	Model		60BLWA38
1	n° of Pole		14
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	3400
5	Rated Torque	Nm	0,5
6	Max. Peak Torque	Nm	1,5
7	Torque Constant	Nm/A	0,108
8	Rated Current	A	4,6
9	Max. Peak Current	A	14
10	No-Load Current	mA	500
11	Line to Line Resistance	Ω	0,59
12	Line to Line Inductance	mH	0,6
13	Rotor Inertia	gcm2	1100
14	Length (L)	mm	38
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)	0,08mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	600 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

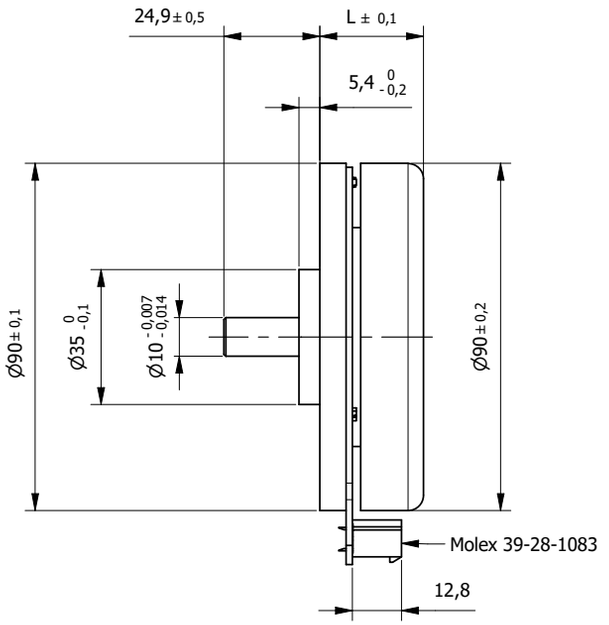
Standard Combination	
Gearbox	Drive
GYP56	Gemini
56JMS	

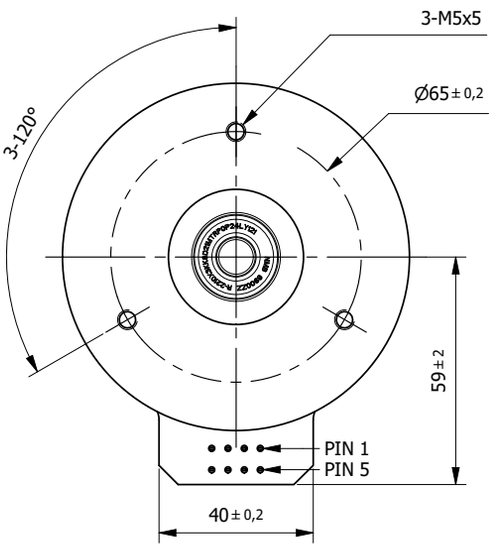
* other options on request

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 90BLW27

Ø 90mm - 0,5Nm





Specification						
	Model		90BLW27-24V	90BLW27-36V	90BLW27-48V	90BLW27-60V
1	n° of Pole		22	22	22	22
2	n° of Phase		3	3	3	3
3	Rated Voltage	V	24	36	48	60
4	Rated Speed	rpm	2720	2510	1610	2200
5	Rated Torque	Nm	0,457	0,56	0,533	0,46
6	Max. Peak Torque	Nm	1,8	1,8	1,8	1,8
7	Torque Constant	Nm/A	0,067	0,11	0,22	0,21
8	Rated Current	A	6,82	5,09	2,42	2,19
9	Max. Peak Current	A	23	14,5	7,5	7,5
10	No-Load Current	mA	650	420	300	260
11	Line to Line Resistance	Ω	0,21	0,5	2,1	2
12	Line to Line Inductance	mH	0,19	0,5	2	1,8
13	Rotor Inertia	gcm2	3000	3000	3000	3000
14	Length (L)	mm	27	27	27	27
15	Weight	Kg	0,6	0,6	0,6	0,6

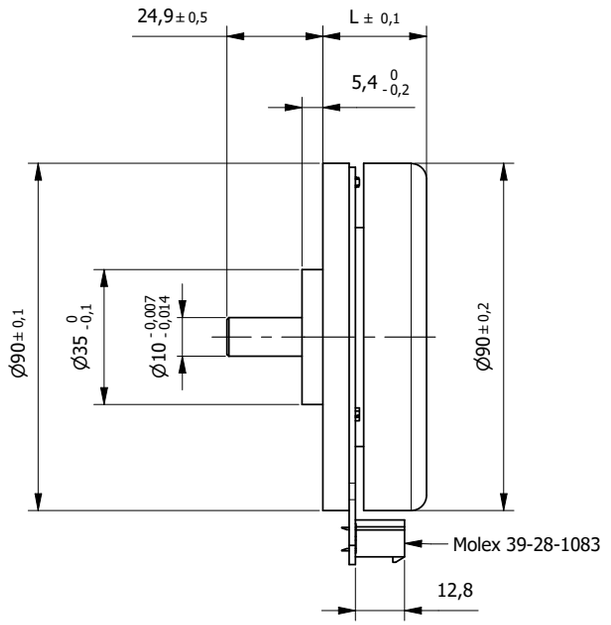
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	110N
Max. Axial force	45N
Dielectric strength (for 1 min.)	500 VAC
Insulation Resistance (min.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

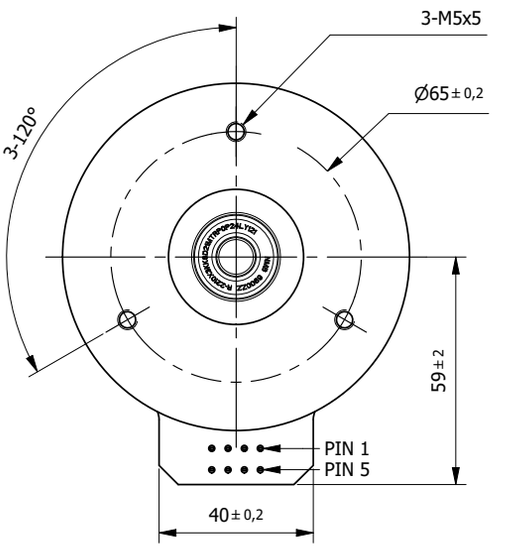
Standard Combination	
Gearbox	Drive
GYP80	Gemini
* other options on request	

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 Flat Motor 90BLW40

Ø 90mm - 1Nm





Specification			
	Model		90BLW40-48V
1	n° of Pole		22
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	1670
5	Rated Torque	Nm	0,964
6	Max. Peak Torque	Nm	3
7	Torque Constant	Nm/A	0,24
8	Rated Current	A	4
9	Max. Peak Current	A	13
10	No-Load Current	mA	280
11	Line to Line Resistance	Ω	0,65
12	Line to Line Inductance	mH	0,9
13	Rotor Inertia	gcm2	5000
14	Length (L)	mm	40
15	Weight	Kg	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

Standard Combination	
Gearbox	Drive
GYP80	Gemini
* other options on request	

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

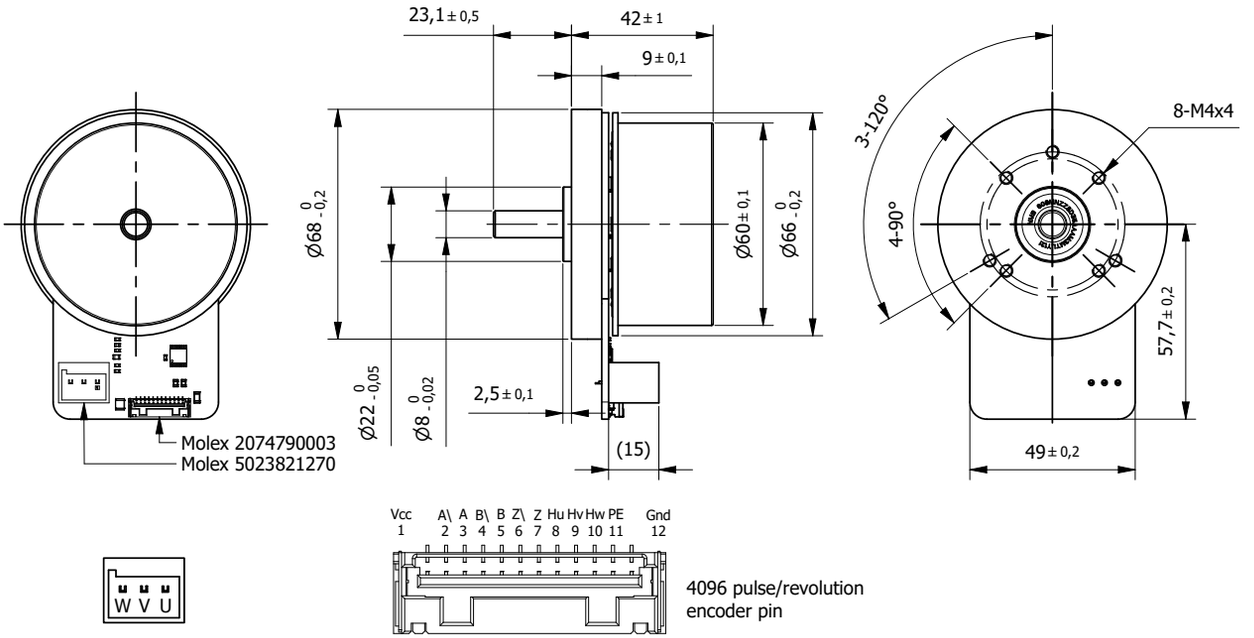
Our BLDC Flat motors are equipped with an optical incremental encoder to increase the motion precision. Thanks to the encoder, the drive knows the position (or the speed) of the motor in real time and can perform adjustments to align the real condition with the condition requested by the system. The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

Brushless DC Flat motors with Encoder - NEW	Torque* (Nm)	
60BLW42-E	0,29	198
90BLW42-E	0,96	199

*Rated Torque

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)	28N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
*programmable	

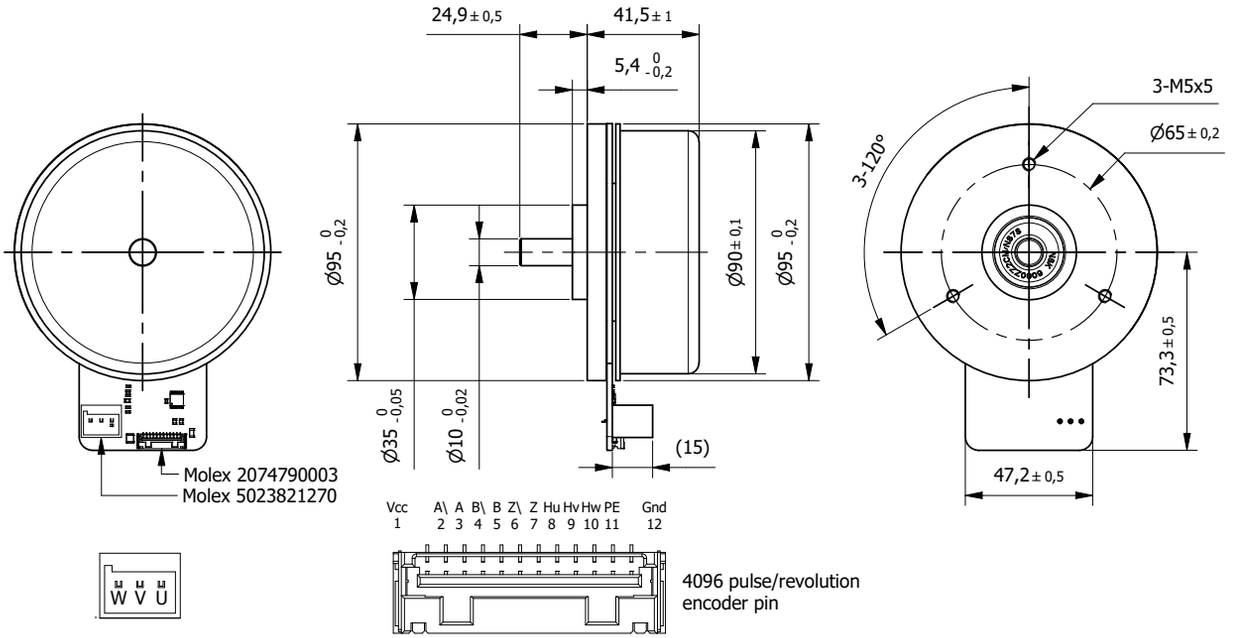
Standard Combination	
Gearbox	Drive
GYP56	Gemini
56JMS	

* other options on request

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	

Standard Combination	
Gearbox	**Drive**
GYP80	Gemini
* other options on request	

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

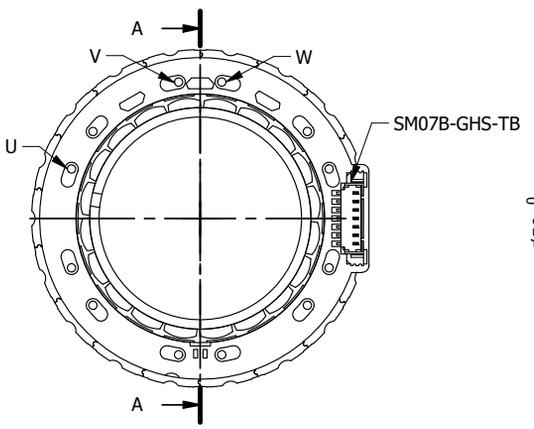
Brushless DC Frameless motors - NEW	Torque* (Nm)	
50BLF15	0,5	202
70BLF19	1,0	203
85BLF23	2,0	204

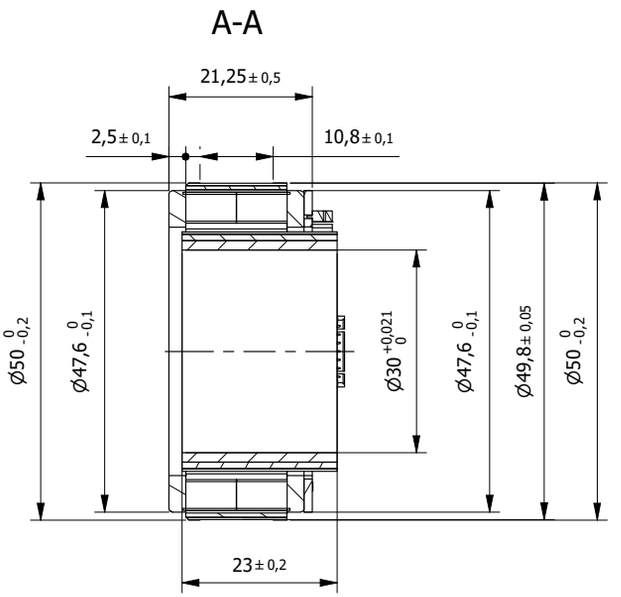
One of the latest additions to our range, these motors allow for maximum integration with your assembly. Frameless motors reduce waste and redundancy by eliminating the need for additional mounting supports, plates, or brackets. Stator and rotor can be seamlessly incorporated into the system, reducing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

*Rated Torque

Brushless Frameless Motor 50BLF15

Ø 50mm - 0,5Nm





Specification			
	Model		50BLF15
1	n° of Pole		20
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	3500
5	Rated Torque	Nm	0,5
6	Max. Peak Torque	Nm	1,5
7	Torque Constant	Nm/A	0,11
8	Rated Current	A	4,8
9	Max. Peak Current	A	14,5
10	No-Load Current	mA	600
11	Line to Line Resistance	Ω	0,77
12	Line to Line Inductance	mH	0,38
13	Rotor Inertia	gcm2	93
14	Length (L)	mm	26
15	Weight	Kg	0,135

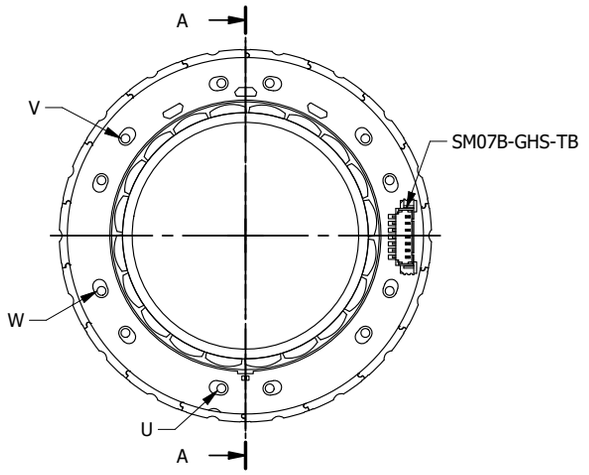
Characteristics	
Item	
Hall Effect Angle	120°
Insulation Class	B
Dielectric strength (for 1 sec.)	1000 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating ambient temperature	-20°C to +50°C

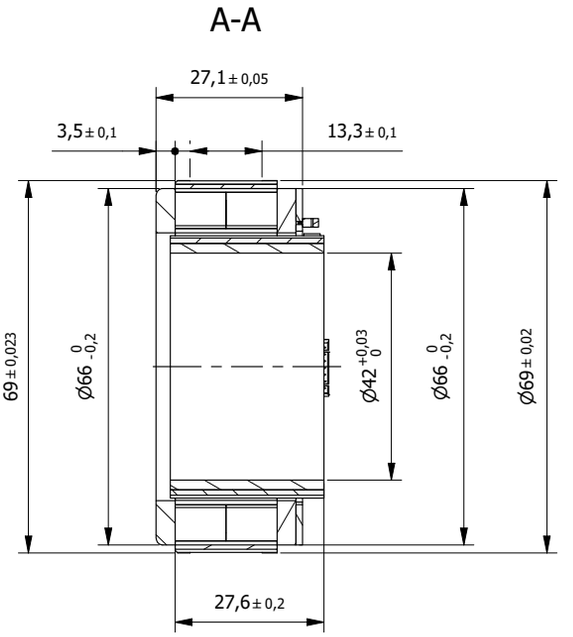
Standard Combination
Drive
Gemini
* other options on request

Connection		
Pin n°	Connector	Function
1	SM07B-GHS-TB	Vcc Hall +5V
4	|	Hall A
3	|	Hall B
2	|	Hall C
5	|	GND Hall
Color	Gauge	Function
Yellow	UL1332 AWG22	Phase U
Red	|	Phase V
Black	|	Phase W

Brushless Frameless Motor 70BLF19

Ø 70mm - 1Nm





Specification			
	Model		70BLF19
1	n° of Pole		20
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	4500
5	Rated Torque	Nm	1
6	Max. Peak Torque	Nm	3
7	Torque Constant	Nm/A	0,12
8	Rated Current	A	9,2
9	Max. Peak Current	A	28
10	No-Load Current	mA	600
11	Line to Line Resistance	Ω	0,19
12	Line to Line Inductance	mH	0,18
13	Rotor Inertia	gcm2	493
14	Length (L)	mm	32
15	Weight	Kg	0,32

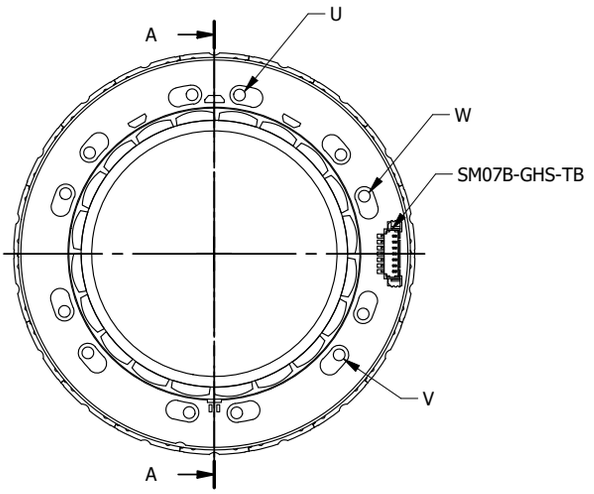
Characteristics	
Item	
Hall Effect Angle	120°
Insulation Class	B
Dielectric strength (for 1 sec.)	1000 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating ambient temperature	-20°C to +50°C

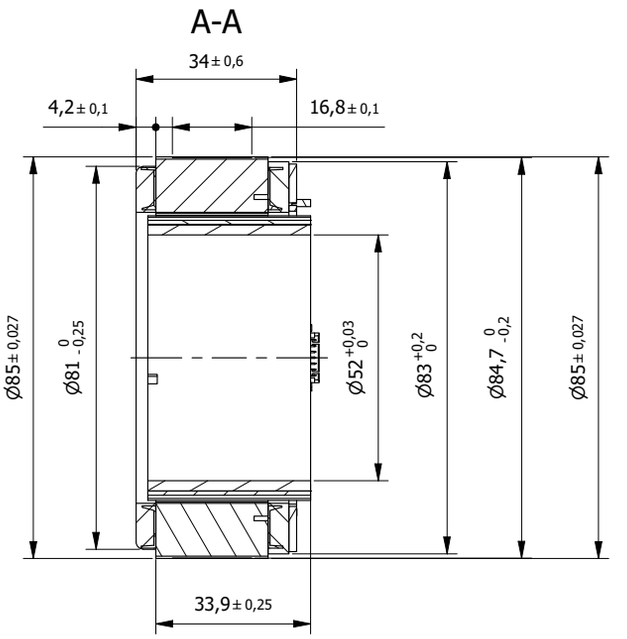
Standard Combination
Drive
Gemini
* other options on request

Connection		
Pin n°	Connector	Function
1	SM07B-GHS-TB	Vcc Hall +5V
4	|	Hall A
3	|	Hall B
2	|	Hall C
5	|	GND Hall
Color	Gauge	Function
Yellow	UL1332 AWG20	Phase U
Red	|	Phase V
Black	|	Phase W

Brushless Frameless Motor 85BLF23

Ø 85mm - 2Nm





Specification			
	Model		85BLF23
1	n° of Pole		20
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	3500
5	Rated Torque	Nm	2
6	Max. Peak Torque	Nm	6
7	Torque Constant	Nm/A	0,137
8	Rated Current	A	15
9	Max. Peak Current	A	45
10	No-Load Current	mA	1100
11	Line to Line Resistance	Ω	0,1
12	Line to Line Inductance	mH	0,12
13	Rotor Inertia	gcm2	1150
14	Length (L)	mm	35
15	Weight	Kg	0,58

Characteristics	
Item	
Hall Effect Angle	120°
Insulation Class	B
Dielectric strength (for 1 sec.)	1000 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating ambient temperature	-20°C to +50°C

Connection		
Pin n°	Connector	Function
1	SM07B-GHS-TB	Vcc Hall +5V
4	|	Hall A
3	|	Hall B
2	|	Hall C
5	|	GND Hall
Color	Gauge	Function
Yellow	UL1332 AWG16	Phase U
Red	|	Phase V
Black	|	Phase W

Brushless DC

Motors with Controller

BLDC motors with Speed controller

p.213

BLDC motors with Motion controller

p.229

Stepper motors with Motion controller

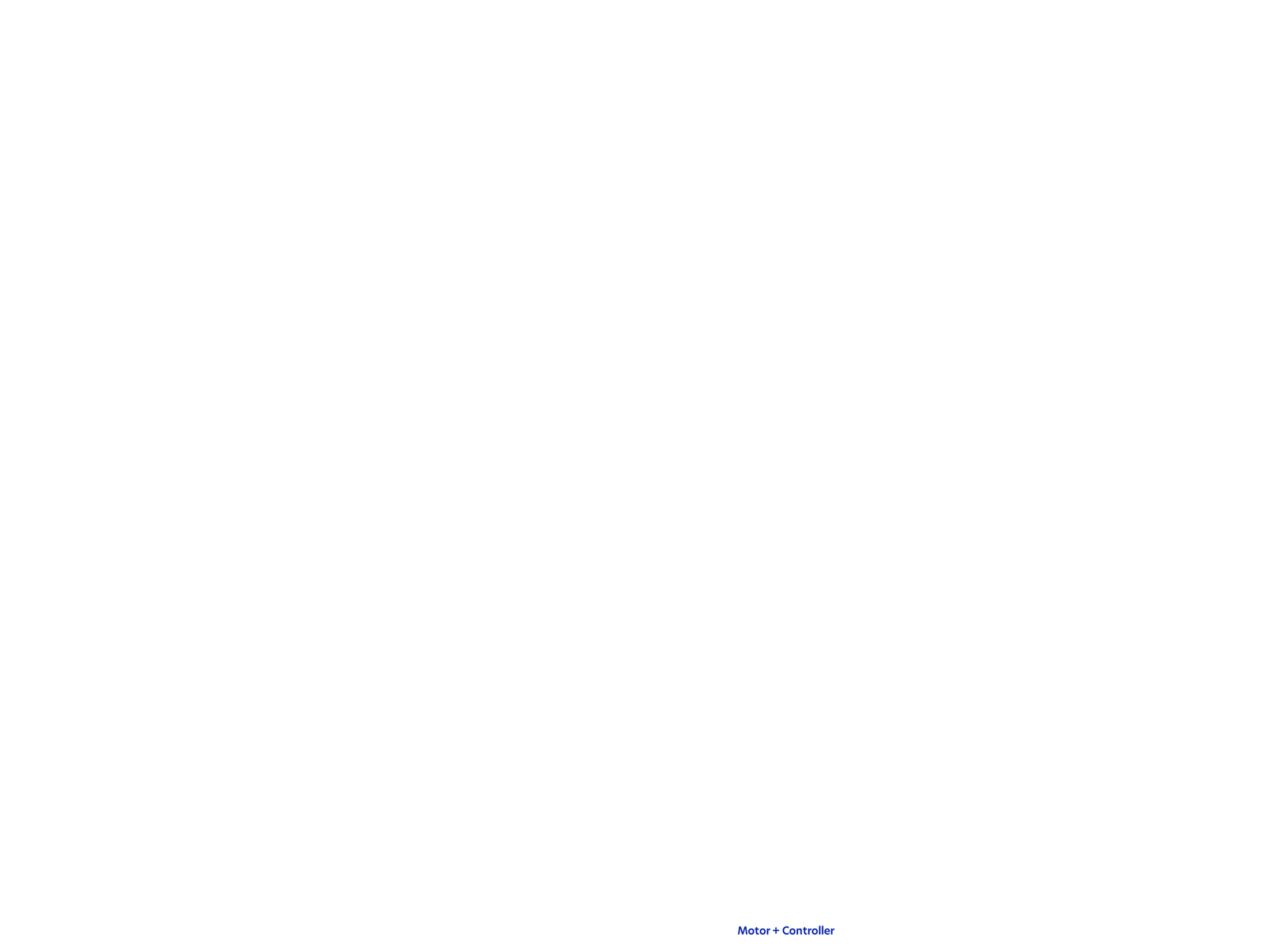
p.247

Motors with integrated Controller

* 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. Its value is the product of rated current and winding resistance.
Operating Voltage	Describes the range of the permissible supply voltage
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 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
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.
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.
IP rate	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


Motor + Controller

Brushless DC motors
with Speed controller

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

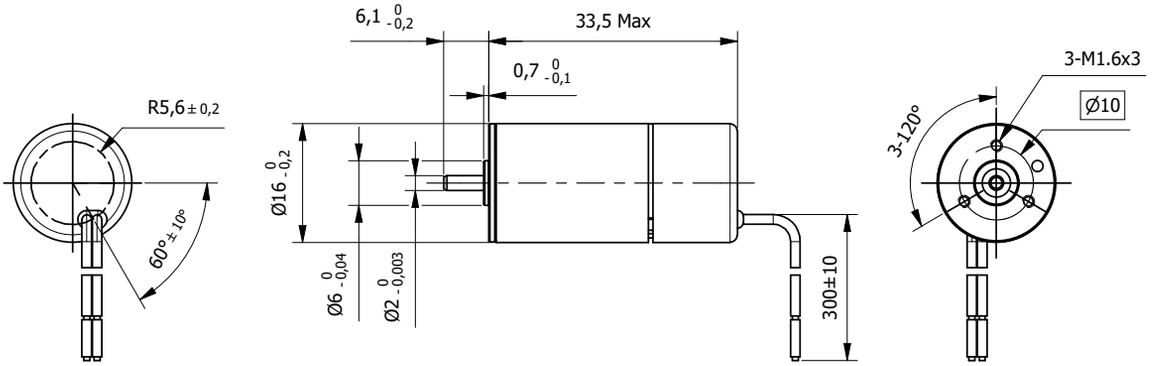
The compact integration of the speed controller reduces space requirements and simplifies installation and start-up, opening a wide range of application areas. The integrated electronics facilitate speed control by means of a PI controller. The direction of rotation can be changed via a separate switching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

Brushless DC motors with Speed controller	Torque* (Nm)	
16EC33P-2W	0,002	214
36CBL30-IE	0,016	215
36CBL40-IE	0,035	216
36CBL57-IE	0,070	217
36CBL60-IE	0,080	218
42BL41-IE - square	0,063	219
42BL61-IE - square	0,125	220
42BL81-IE - square	0,185	221
42BL100-IE - square	0,250	222
42CBL60-IE - round	0,068	223
42RBL60-IE - round	0,080	224
57BL54-IE	0,110	225
57BL74-IE	0,220	226
57BL94-IE	0,330	227

* Rated Torque

Brushless Slotless Motor 16EC33P-2W
with integrated Electronic 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

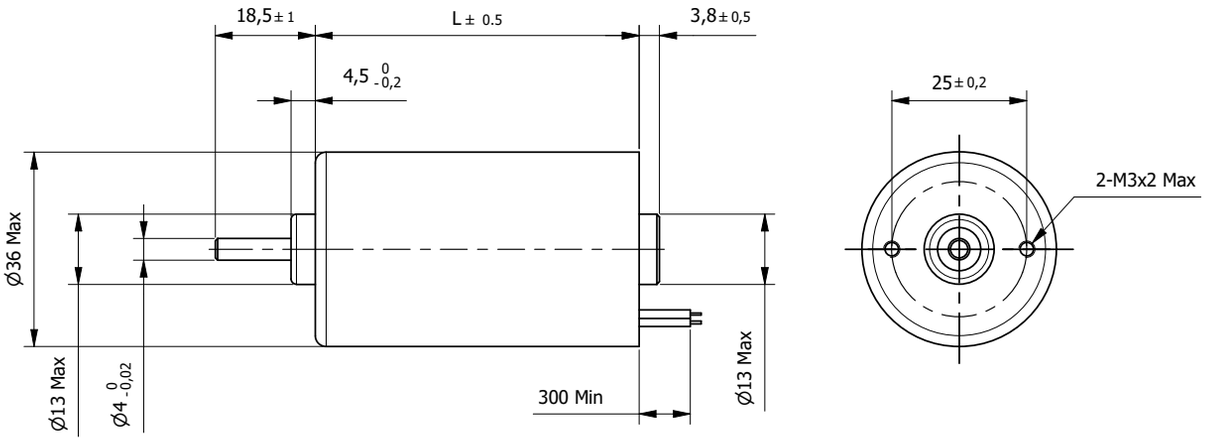
Characteristics	
Item	
Supply Voltage +Vcc	+5 to +15V
Current Limitation	1,6A ±15%
Type of control	speed
Ambient Temperature	-40°C to +85°C
Max. Electronics Temperature	+100°C
Max. Speed	20000rpm
Radial play	preloaded
Axial play	0 to 0,14mm
Max. Radial force (5mm from flange)	6N
Max. Axial force	1N
Max. 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 36CBL30-IE
with integrated Electronic Speed Controller

Ø 36mm - 0,016Nm



Specification			
	Model		36CBL30-IE
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4800
5	Rated Torque	Nm	0,016
6	Max. Peak Torque	Nm	0,05
7	Torque Constant	Nm/A	0,034
8	Rated Current	A	0,47
9	Max. Peak Current	A	1,4
10	No-Load Current	mA	120
11	Line to Line Resistance	Ω	7,8
12	Line to Line Inductance	mH	5,5
13	Rotor Inertia	gcm2	6
14	Length (L)	mm	30
15	Weight	Kg	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)	0,08mm
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

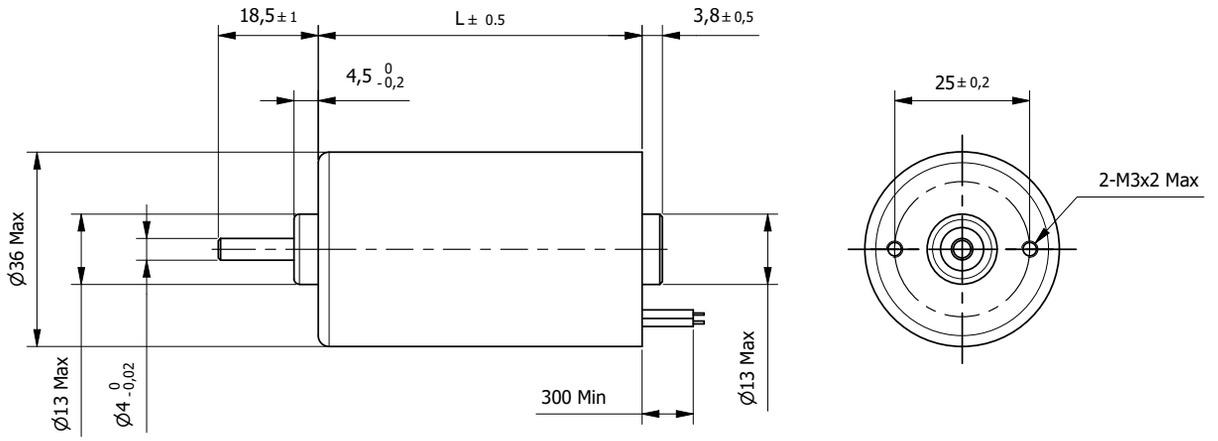
Standard Combination
Gearbox
28JMS
36JMS

* other options on request

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 36CBL40-IE
with integrated Electronic Speed Controller

Ø 36mm - 0,035Nm



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

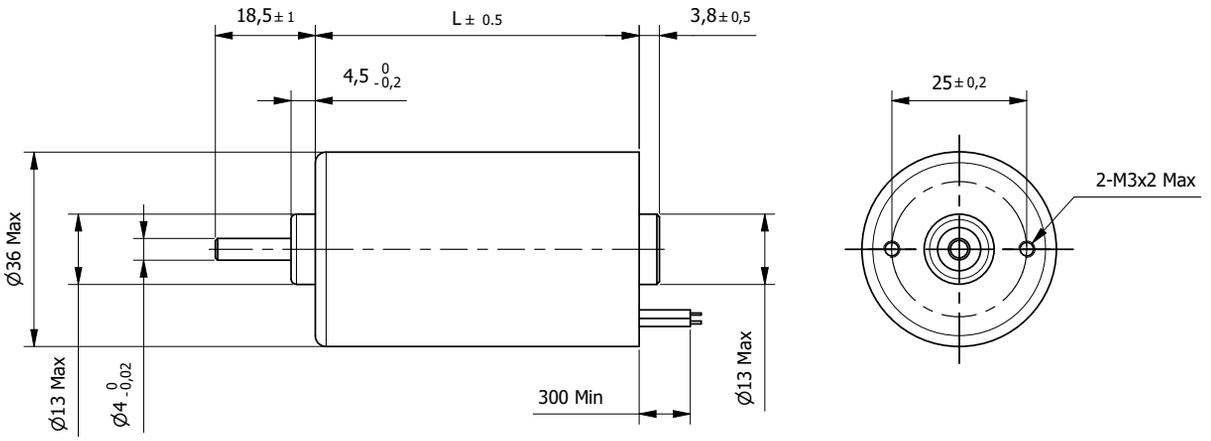
Standard Combination
Gearbox
28JMS
36JMS

* other options on request

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 36CBL57-IE
with integrated Electronic Speed Controller

Ø 36mm - 0,07Nm



Specification			
	Model		36CBL57-IE
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4500
5	Rated Torque	Nm	0,07
6	Max. Peak Torque	Nm	0,21
7	Torque Constant	Nm/A	0,041
8	Rated Current	A	1,71
9	Max. Peak Current	A	5,3
10	No-Load Current	mA	260
11	Line to Line Resistance	Ω	1,3
12	Line to Line Inductance	mH	1,6
13	Rotor Inertia	gcm2	27
14	Length (L)	mm	57
15	Weight	Kg	0,25

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

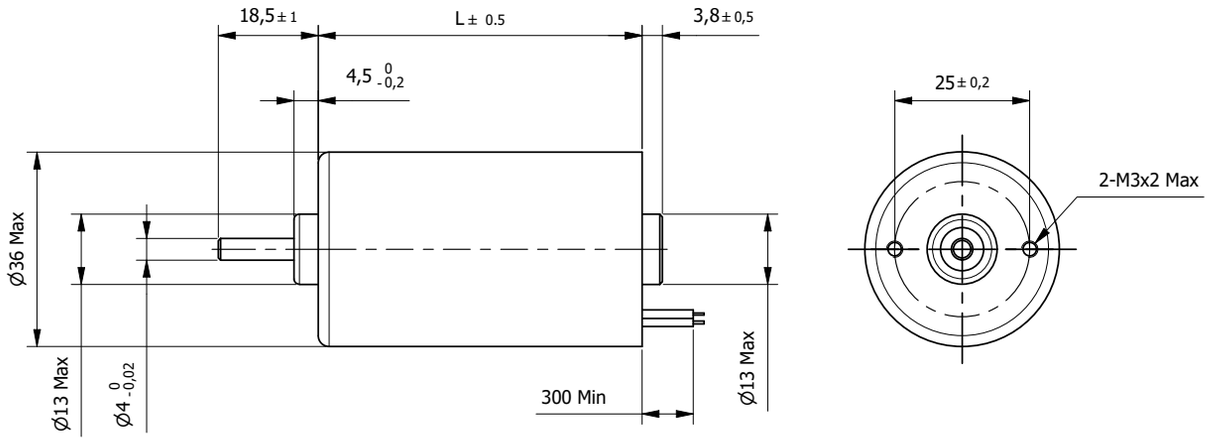
Standard Combination
Gearbox
28JMS
36JMS

* other options on request

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 36CBL60-IE
with integrated Electronic Speed Controller

Ø 36mm - 0,08Nm



Specification			
	Model		36CBL60-IE
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4800
5	Rated Torque	Nm	0,08
6	Max. Peak Torque	Nm	0,24
7	Torque Constant	Nm/A	0,038
8	Rated Current	A	2,11
9	Max. Peak Current	A	6,5
10	No-Load Current	mA	200
11	Line to Line Resistance	Ω	0,9
12	Line to Line Inductance	mH	1,3
13	Rotor Inertia	gcm2	30
14	Length (L)	mm	60
15	Weight	Kg	0,3

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

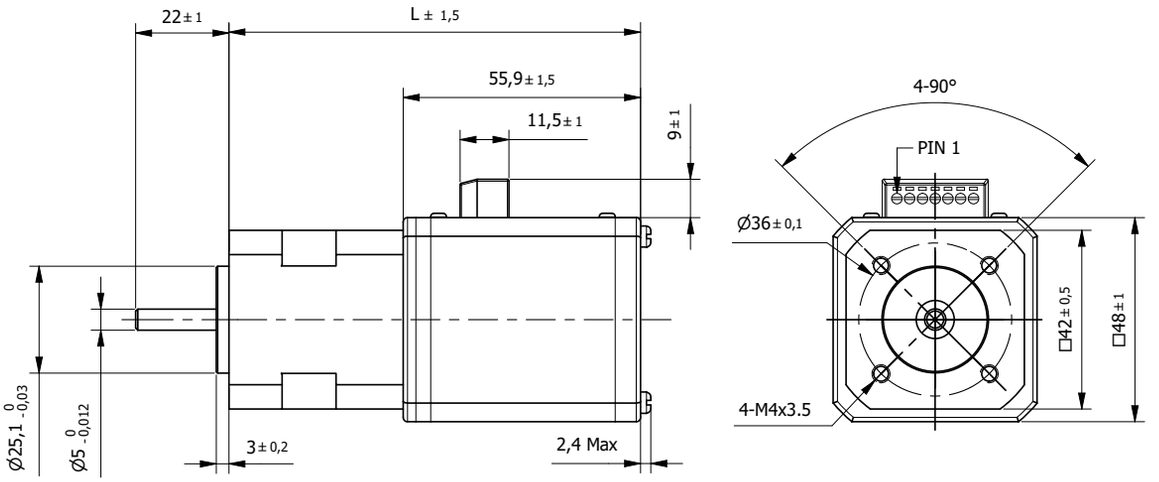
Standard Combination
Gearbox
28JMS
36JMS

* other options on request

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 42BL41-IE
with integrated Electronic Speed Controller

□ 42mm - 0,063Nm



Specification			
	Model		42BL41-IE
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,063
6	Max. Peak Torque	Nm	0,19
7	Torque Constant	Nm/A	0,035
8	Rated Current	A	1,79
9	Max. Peak Current	A	6
10	No-Load Current	mA	220
11	Line to Line Resistance	Ω	1,5
12	Line to Line Inductance	mH	2,1
13	Rotor Inertia	gcm2	24
14	Length (L)	mm	87
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)	0,08mm
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

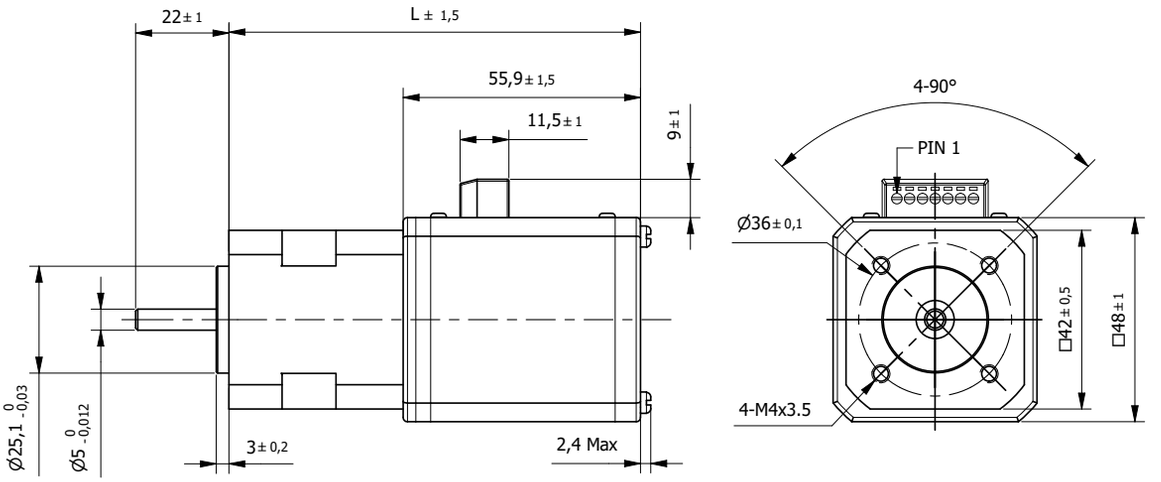
Standard Combination
Gearbox
GYP42
42JMS

* other options on request

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 42BL61-IE
with integrated Electronic Speed Controller

□ 42mm - 0,125Nm



Specification			
	Model		42BL61-IE
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,125
6	Max. Peak Torque	Nm	0,37
7	Torque Constant	Nm/A	0,036
8	Rated Current	A	3,47
9	Max. Peak Current	A	10,8
10	No-Load Current	mA	250
11	Line to Line Resistance	Ω	0,8
12	Line to Line Inductance	mH	1,2
13	Rotor Inertia	gcm2	48
14	Length (L)	mm	102
15	Weight	Kg	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 sec.)	500 VDC
Insulation Resistance (min. 500 VDC)	100 Mohm

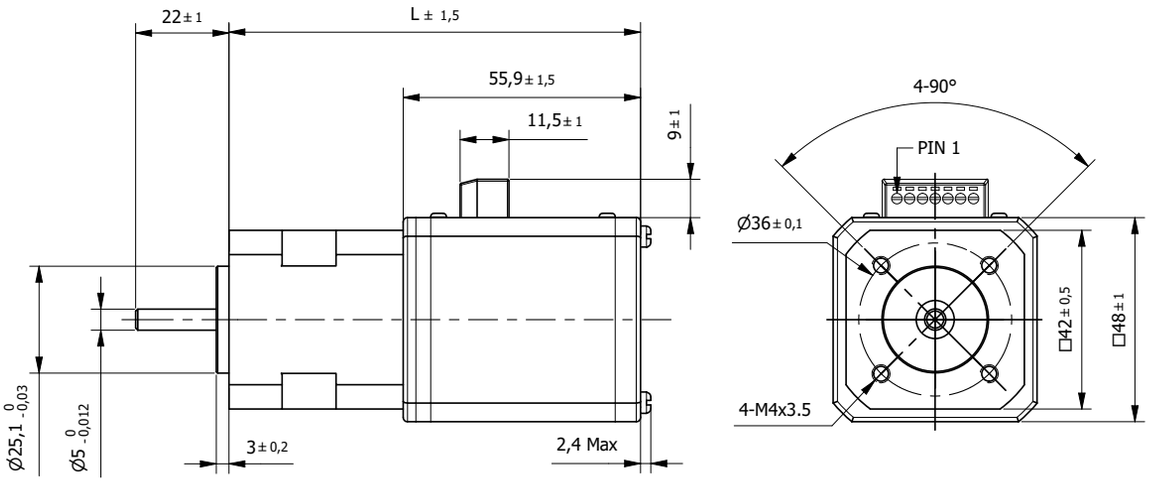
Standard Combination
Gearbox
GYP42
42JMS

* other options on request

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 42BL81-IE
with integrated Electronic Speed Controller

□ 42mm - 0,185Nm



Specification			
	Model		42BL81-IE
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,185
6	Max. Peak Torque	Nm	0,56
7	Torque Constant	Nm/A	0,036
8	Rated Current	A	5,14
9	Max. Peak Current	A	15,5
10	No-Load Current	mA	340
11	Line to Line Resistance	Ω	0,43
12	Line to Line Inductance	mH	0,7
13	Rotor Inertia	gcm2	72
14	Length (L)	mm	127
15	Weight	Kg	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

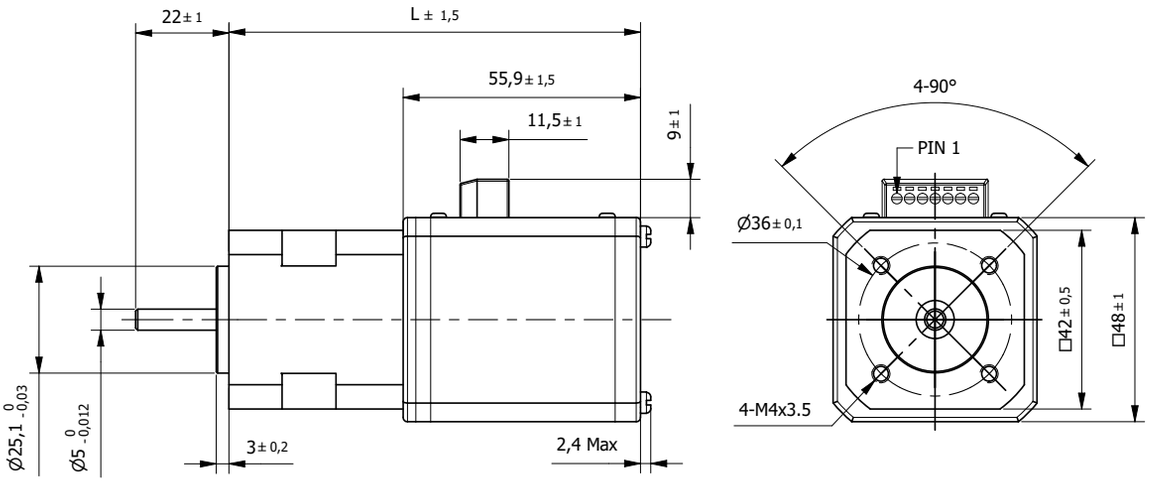
Standard Combination
Gearbox
GYP42
42JMS

* other options on request

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 42BL100-IE
with integrated Electronic Speed Controller

□ 42mm - 0,25Nm



Specification			
	Model		42BL100-IE
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,25
6	Max. Peak Torque	Nm	0,74
7	Torque Constant	Nm/A	0,036
8	Rated Current	A	6,94
9	Max. Peak Current	A	21,7
10	No-Load Current	mA	450
11	Line to Line Resistance	Ω	0,3
12	Line to Line Inductance	mH	0,5
13	Rotor Inertia	gcm2	96
14	Length (L)	mm	146
15	Weight	Kg	1

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

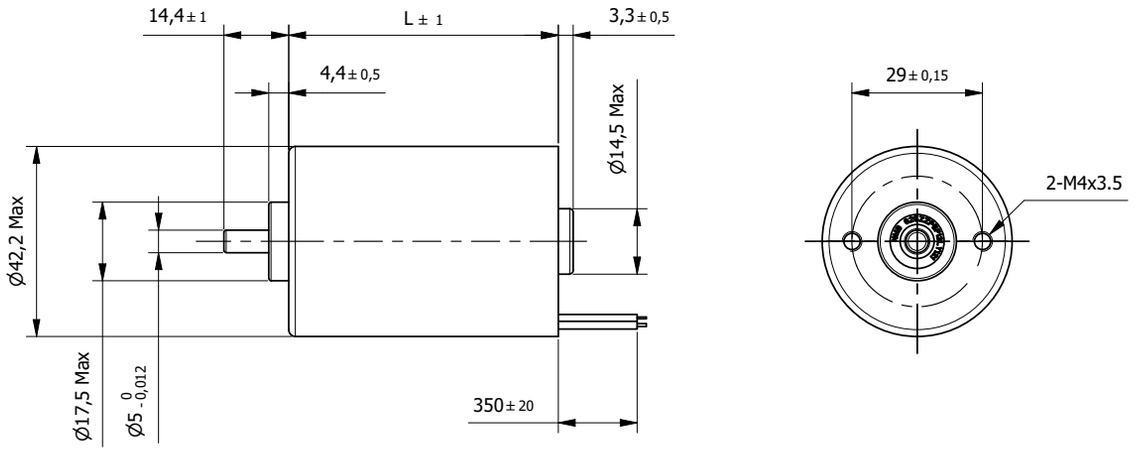
Standard Combination
Gearbox
GYP42
42JMS

* other options on request

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 integrated Electronic 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

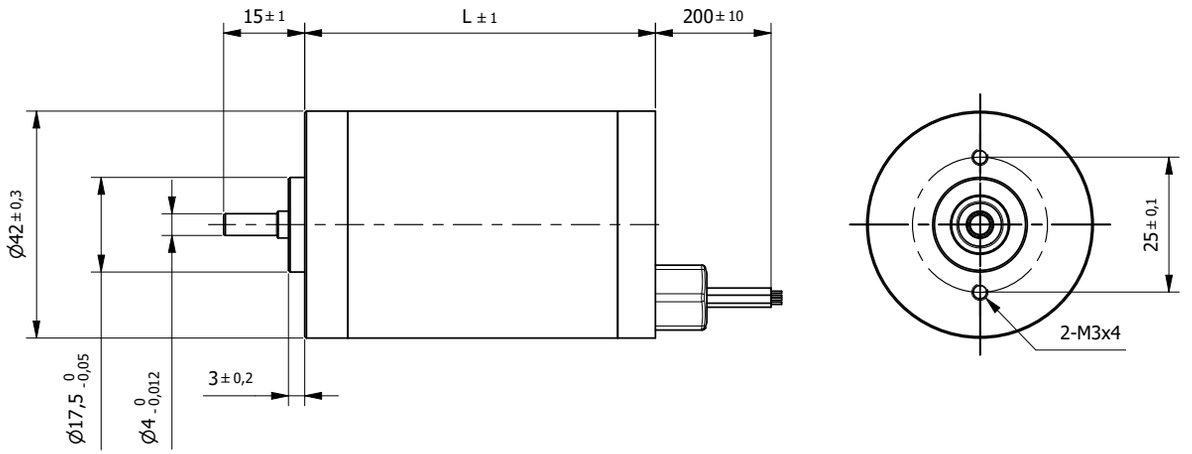
Standard Combination
Gearbox
GYP42
42JMS

* other options on request

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 integrated Electronic Speed Controller

Ø 42mm - 0,08Nm



Specification			
	Model		42RBL60-IE
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,08
6	Max. Peak Torque	Nm	0,19
7	Torque Constant	Nm/A	0,038
8	Rated Current	A	2,11
9	Max. Peak Current	A	5
10	No-Load Current	mA	230
11	Line to Line Resistance	Ω	1,6
12	Line to Line Inductance	mH	1,94
13	Rotor Inertia	gcm2	48
14	Length (L)	mm	92
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)	0,08mm
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

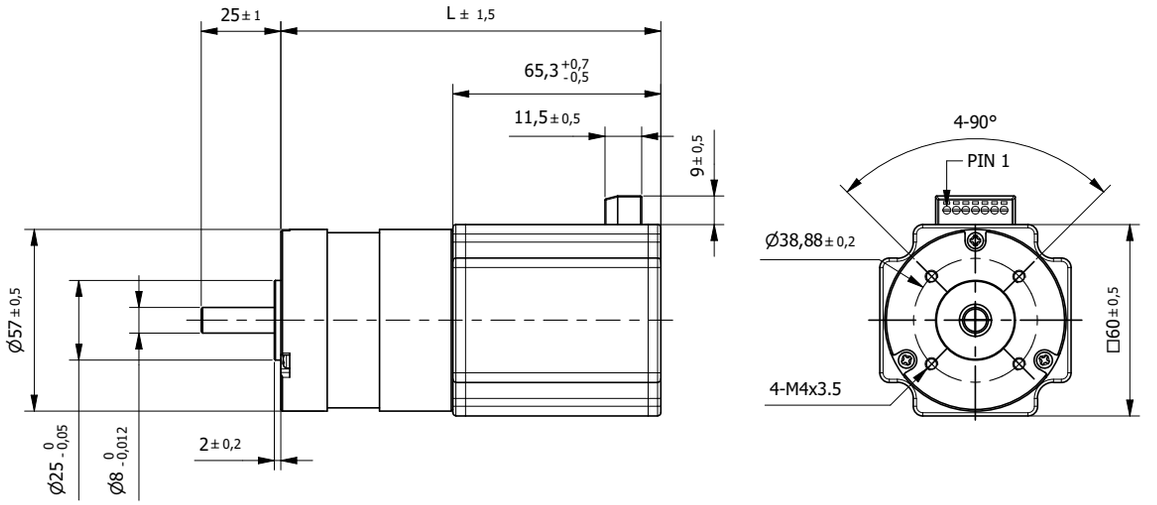
Standard Combination
Gearbox
GYP42
42JMS

* other options on request

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1007 AWG26	VCC +
2	Black	|	GND
3	White	|	Analog speed 1,2V - 3V
4	Green	|	Direction

Brushless Slotted Motor 57BL54-IE
with integrated Electronic Speed Controller

Ø 57mm - 0,11Nm



Specification			
	Model		57BL54-IE
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,11
6	Max. Peak Torque	Nm	0,39
7	Torque Constant	Nm/A	0,061
8	Rated Current	A	1,8
9	Max. Peak Current	A	6,8
10	No-Load Current	mA	300
11	Line to Line Resistance	Ω	1,5
12	Line to Line Inductance	mH	4,4
13	Rotor Inertia	gcm2	75
14	Length (L)	mm	102
15	Weight	Kg	0,44

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

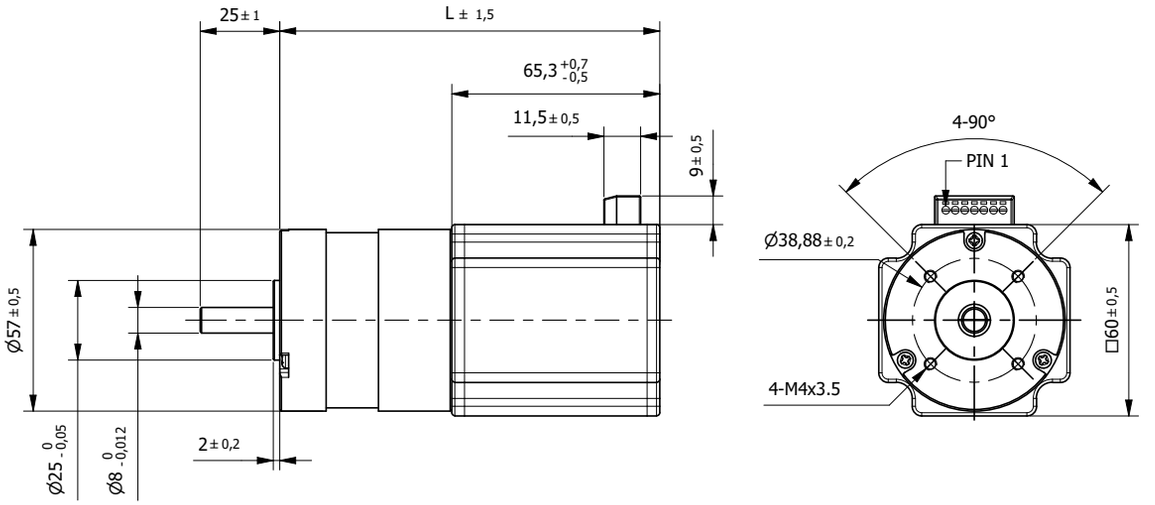
Standard Combination
Gearbox
GYP56
56JMS

* other options on request

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 Slotted Motor 57BL74-IE
with integrated Electronic Speed Controller

Ø 57mm - 0,22Nm



Specification			
	Model		57BL74-IE
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,22
6	Max. Peak Torque	Nm	0,7
7	Torque Constant	Nm/A	0,06
8	Rated Current	A	3,67
9	Max. Peak Current	A	12
10	No-Load Current	mA	400
11	Line to Line Resistance	Ω	0,58
12	Line to Line Inductance	mH	2
13	Rotor Inertia	gcm2	119
14	Length (L)	mm	122
15	Weight	Kg	0,72

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

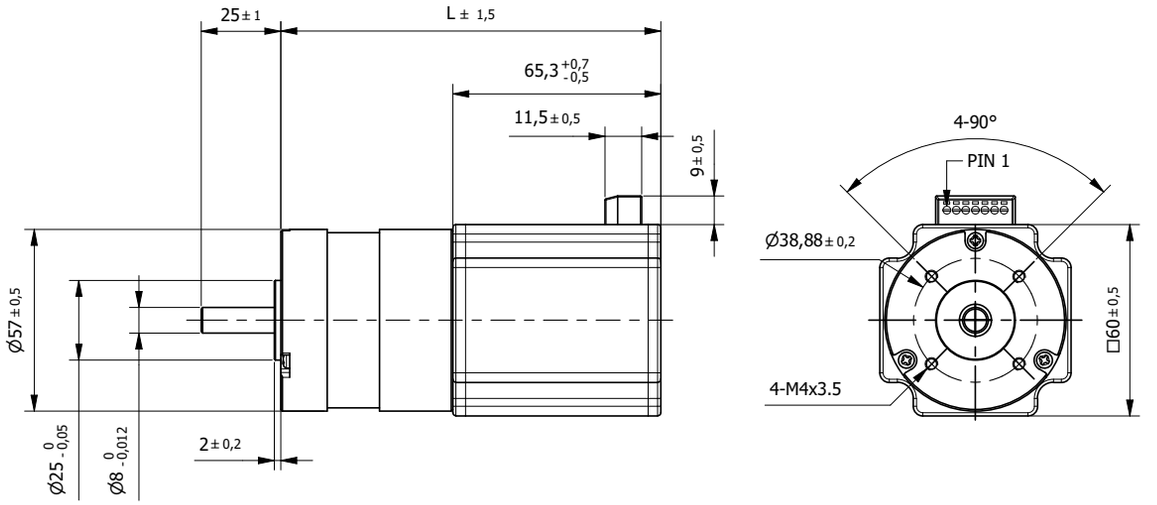
Standard Combination
Gearbox
GYP56
56JMS

* other options on request

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 Slotted Motor 57BL94-IE
with integrated Electronic Speed Controller

Ø 57mm - 0,33Nm



Specification			
	Model		57BL94-IE
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Rated Speed	rpm	4000
5	Rated Torque	Nm	0,33
6	Max. Peak Torque	Nm	1
7	Torque Constant	Nm/A	0,065
8	Rated Current	A	5,08
9	Max. Peak Current	A	16
10	No-Load Current	mA	450
11	Line to Line Resistance	Ω	0,45
12	Line to Line Inductance	mH	1,5
13	Rotor Inertia	gcm2	173
14	Length (L)	mm	133,5
15	Weight	Kg	0,95

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

Standard Combination
Gearbox
GYP56
56JMS

* other options on request

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 E&D software

Our BLDC motors with Integrated Drive (IBS series) offer the compactness of a standard motor together with all the features of our drives. The IBS drive has digital inputs and outputs and an analog input, and can be also equipped with RS485 Modbus-RTU or CANopen fieldbuses. To reach top performances, a single turn magnetic encoder can also be added inside.

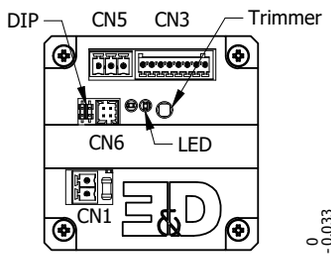
Brushless DC motors with Motion controller	Torque* (Nm)	
IBS42 026	0,062	230
IBS42 050	0,125	231
IBS42 074	0,185	232
IBS42 100	0,250	233
IBS57 022	0,055	234
IBS57 044	0,110	235
IBS57 088	0,220	236
IBS57 128	0,320	237
IBS57 168	0,420	238
IBI57 022 - IP65 - NEW	0,055	239
IBI57 044 - IP65 - NEW	0,110	240
IBI57 088 - IP65 - NEW	0,220	241
IBI57 128 - IP65 - NEW	0,320	242
IBI57 168 - IP65 - NEW	0,420	243
IBI80 290 - IP65 - NEW	0,900	244
IBI80 362 - IP65 - NEW	1,130	245

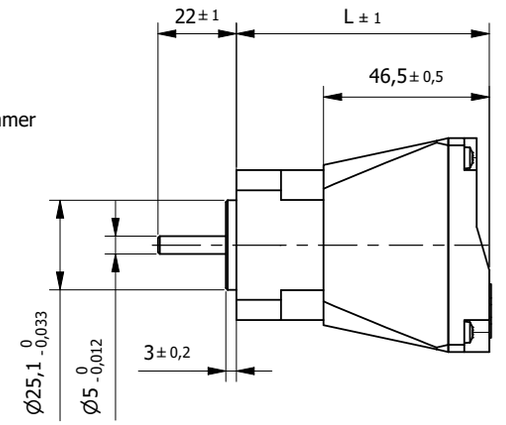
* Rated Torque

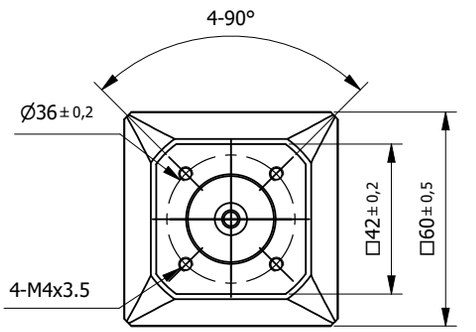
Brushless Slotted Motor IBS42 026
with integrated Electronic Motion Controller

□ 42mm - 0,062Nm

CN1 - Phoenix 1707421 : DC Supply
CN3 - Phoenix 1781120 : Inputs and Outputs
CN5 - Phoenix 1800312 : Interface
CN6 : Service SCI Interface







Specification			
	Model		IBS42026-E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Operating Voltage	Vdc	24-36
5	Rated Speed	rpm	4000
6	Rated Torque	Nm	0,062
7	Max. Peak Torque	Nm	0,19
8	Torque Constant	Nm/A	0,035
9	Rated Current	A	1,8
10	Max. Peak Current	A	5,4
11	No-Load Current	mA	<500
12	Line to Line Resistance	Ω	1,5
13	Line to Line Inductance	mH	2,1
14	Rotor Inertia	gcm2	24
15	Length (L)	mm	71,75
16	Weight	Kg	0,5

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP20
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	Position, Speed, Torque
Encoder	Hall effects or Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

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

Interface Control Mode	
Fieldbus	Part number
Analog	IBS42 026E A001-S300
Serial RS485 Modbus-RTU	IBS42 026E M001-S200
CANopen (DS402)	IBS42 026E C001-S402
CANopen (Programmable)	IBS42 026E C001-S200

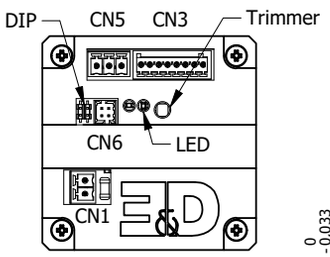
Standard Combination
Gearbox
GYP42
42JMS

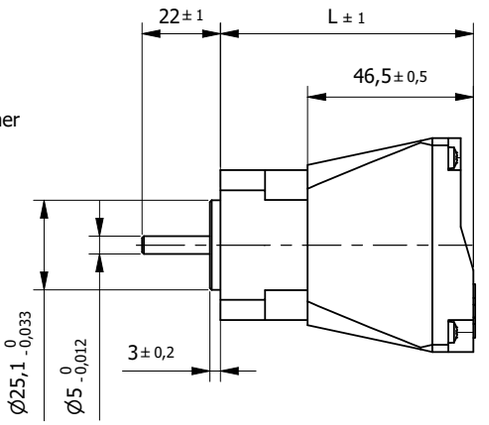
* other options on request

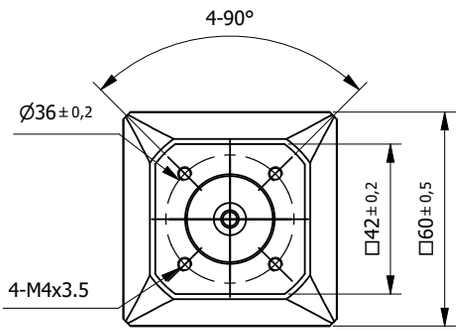
Brushless Slotted Motor IBS42 050
with integrated Electronic Motion Controller

□ 42mm - 0,125Nm

CN1 - Phoenix 1707421 : DC Supply
CN3 - Phoenix 1781120 : Inputs and Outputs
CN5 - Phoenix 1800312 : Interface
CN6 : Service SCI Interface







Specification			
	Model		IBS42050-E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Operating Voltage	Vdc	24-36
5	Rated Speed	rpm	4000
6	Rated Torque	Nm	0,125
7	Max. Peak Torque	Nm	0,38
8	Torque Constant	Nm/A	0,036
9	Rated Current	A	3,5
10	Max. Peak Current	A	10,6
11	No-Load Current	mA	<500
12	Line to Line Resistance	Ω	0,8
13	Line to Line Inductance	mH	1,2
14	Rotor Inertia	gcm2	48
15	Length (L)	mm	91,75
16	Weight	Kg	0,65

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP20
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	Position, Speed, Torque
Encoder	Hall effects or Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

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

Interface Control Mode	
Fieldbus	Part number
Analog	IBS42 050E A001-S300
Serial RS485 Modbus-RTU	IBS42 050E M001-S200
CANopen (DS402)	IBS42 050E C001-S402
CANopen (Programmable)	IBS42 050E C001-S200

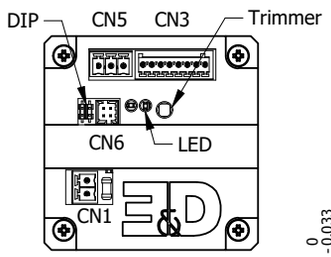
Standard Combination
Gearbox
GYP42
42JMS

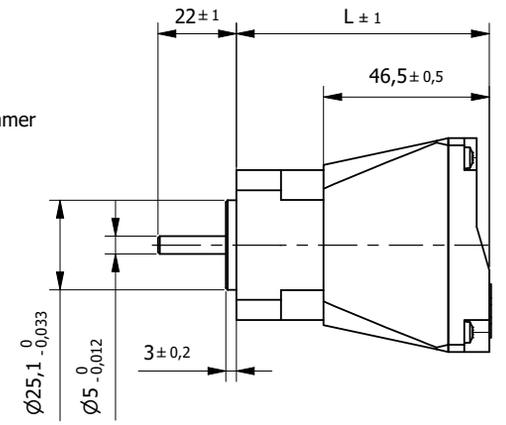
* other options on request

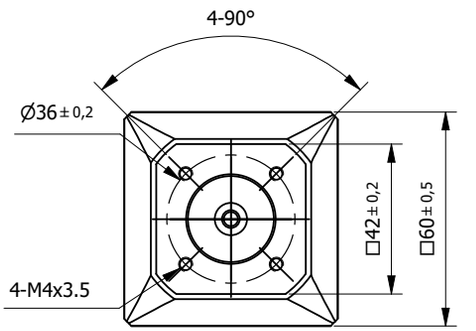
Brushless Slotted Motor IBS42 074
with integrated Electronic Motion Controller

□ 42mm - 0,185Nm

CN1 - Phoenix 1707421 : DC Supply
CN3 - Phoenix 1781120 : Inputs and Outputs
CN5 - Phoenix 1800312 : Interface
CN6 : Service SCI Interface







Specification			
	Model		IBS42074-E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Operating Voltage	Vdc	24-36
5	Rated Speed	rpm	4000
6	Rated Torque	Nm	0,185
7	Max. Peak Torque	Nm	0,56
8	Torque Constant	Nm/A	0,038
9	Rated Current	A	4,9
10	Max. Peak Current	A	14,7
11	No-Load Current	mA	<500
12	Line to Line Resistance	Ω	0,4
13	Line to Line Inductance	mH	0,7
14	Rotor Inertia	gcm2	72
15	Length (L)	mm	111,75
16	Weight	Kg	0,85

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP20
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	Position, Speed, Torque
Encoder	Hall effects or Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

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

Interface Control Mode	
Fieldbus	Part number
Analog	IBS42 074E A001-S300
Serial RS485 Modbus-RTU	IBS42 074E M001-S200
CANopen (DS402)	IBS42 074E C001-S402
CANopen (Programmable)	IBS42 074E C001-S200

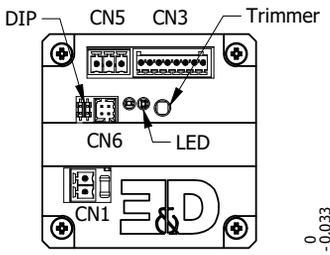
Standard Combination
Gearbox
GYP42
42JMS

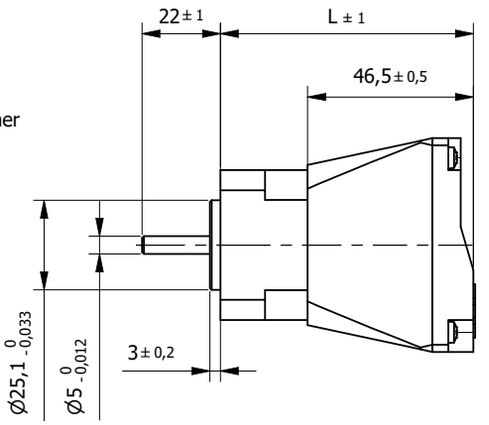
* other options on request

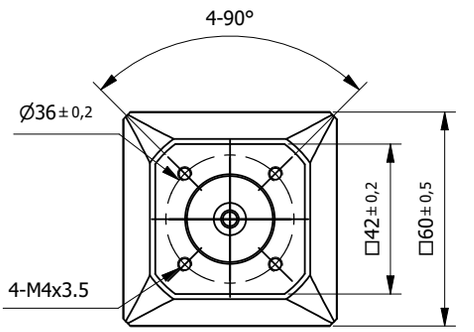
Brushless Slotted Motor IBS42 100
with integrated Electronic Motion Controller

□ 42mm - 0,25Nm

CN1 - Phoenix 1707421 : DC Supply
CN3 - Phoenix 1781120 : Inputs and Outputs
CN5 - Phoenix 1800312 : Interface
CN6 : Service SCI Interface







Specification			
	Model		IBS42100-E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Operating Voltage	Vdc	24-36
5	Rated Speed	rpm	4000
6	Rated Torque	Nm	0,25
7	Max. Peak Torque	Nm	0,75
8	Torque Constant	Nm/A	0,036
9	Rated Current	A	6,9
10	Max. Peak Current	A	20,8
11	No-Load Current	mA	<600
12	Line to Line Resistance	Ω	0,3
13	Line to Line Inductance	mH	0,5
14	Rotor Inertia	gcm2	96
15	Length (L)	mm	130,75
16	Weight	Kg	1

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP20
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	Position, Speed, Torque
Encoder	Hall effects or Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

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

Interface Control Mode	
Fieldbus	Part number
Analog	IBS42 100E A001-S300
Serial RS485 Modbus-RTU	IBS42 100E M001-S200
CANopen (DS402)	IBS42 100E C001-S402
CANopen (Programmable)	IBS42 100E C001-S200

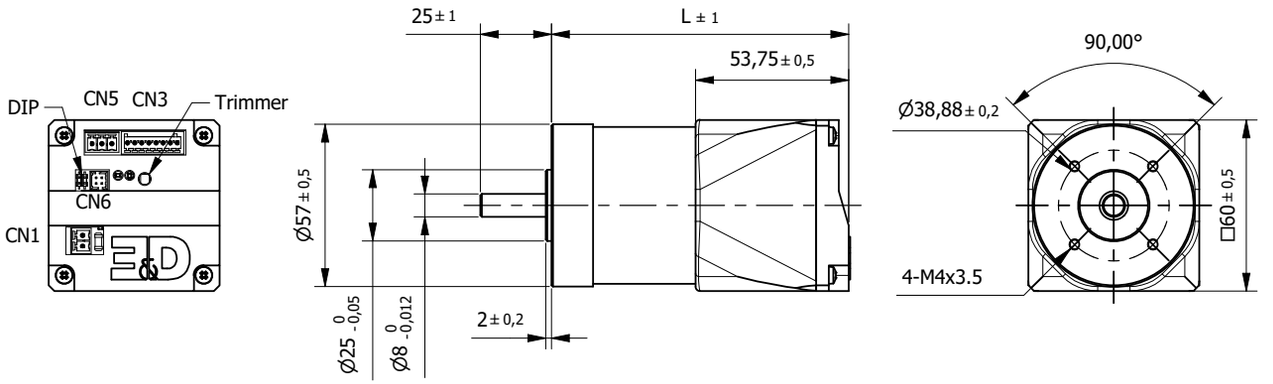
Standard Combination
Gearbox
GYP42
42JMS

* other options on request

Brushless Slotted Motor IBS57 022
with integrated Electronic Motion Controller

Ø 57mm - 0,055Nm

CN1 - Phoenix 1707421 : DC Supply
CN3 - Phoenix 1781120 : Inputs and Outputs
CN5 - Phoenix 1800312 : Interface
CN6 : Service SCI Interface



Specification			
	Model		IBS57022-E
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Operating Voltage	Vdc	24-36
5	Rated Speed	rpm	4000
6	Rated Torque	Nm	0,055
7	Max. Peak Torque	Nm	0,16
8	Torque Constant	Nm/A	0,052
9	Rated Current	A	1,1
10	Max. Peak Current	A	3,1
11	No-Load Current	mA	<400
12	Line to Line Resistance	Ω	4,3
13	Line to Line Inductance	mH	8,6
14	Rotor Inertia	gcm2	30
15	Length (L)	mm	75,75
16	Weight	Kg	0,45

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP20
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
Operating mode	Position, Speed, Torque
Encoder	Hall effects or Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

Interface Control Mode	
Fieldbus	Part number
Analog	IBS57 022E A001-S300
Serial RS485 Modbus-RTU	IBS57 022E M001-S200
CANopen (DS402)	IBS57 022E C001-S402
CANopen (Programmable)	IBS57 022E C001-S200

Standard Combination
Gearbox
GYP56
56JMS

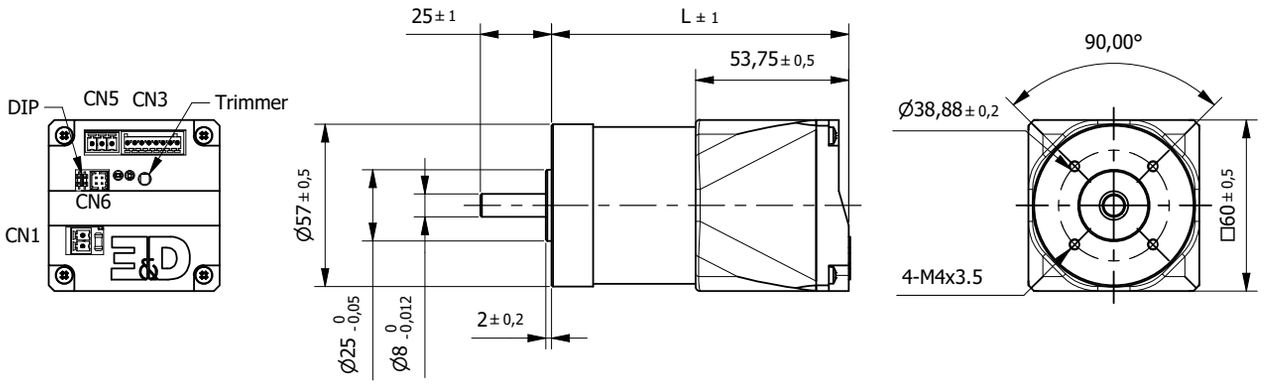
* other options on request

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

Brushless Slotted Motor IBS57 044
with integrated Electronic Motion Controller

Ø 57mm - 0,11Nm

CN1 - Phoenix 1707421 : DC Supply
CN3 - Phoenix 1781120 : Inputs and Outputs
CN5 - Phoenix 1800312 : Interface
CN6 : Service SCI Interface



Specification			
	Model		IBS57044-E
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Operating Voltage	Vdc	24-36
5	Rated Speed	rpm	4500
6	Rated Torque	Nm	0,11
7	Max. Peak Torque	Nm	0,33
8	Torque Constant	Nm/A	0,06
9	Rated Current	A	1,8
10	Max. Peak Current	A	5,5
11	No-Load Current	mA	<400
12	Line to Line Resistance	Ω	1,6
13	Line to Line Inductance	mH	4,4
14	Rotor Inertia	gcm2	75
15	Length (L)	mm	84,75
16	Weight	Kg	0,7

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP20
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
Operating mode	Position, Speed, Torque
Encoder	Hall effects or Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

Interface Control Mode	
Fieldbus	Part number
Analog	IBS57 044E A001-S300
Serial RS485 Modbus-RTU	IBS57 044E M001-S200
CANopen (DS402)	IBS57 044E C001-S402
CANopen (Programmable)	IBS57 044E C001-S200

Standard Combination
Gearbox
GYP56
56JMS

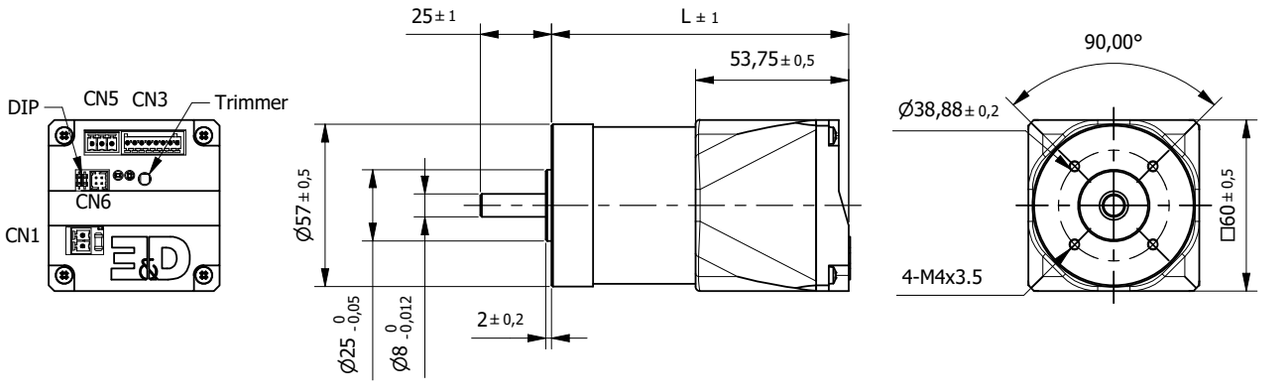
* other options on request

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

Brushless Slotted Motor IBS57 088
with integrated Electronic Motion Controller

Ø 57mm - 0,22Nm

CN1 - Phoenix 1707421 : DC Supply
CN3 - Phoenix 1781120 : Inputs and Outputs
CN5 - Phoenix 1800312 : Interface
CN6 : Service SCI Interface



Specification			
	Model		IBS57088-E
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Operating Voltage	Vdc	24-36
5	Rated Speed	rpm	4000
6	Rated Torque	Nm	0,22
7	Max. Peak Torque	Nm	0,68
8	Torque Constant	Nm/A	0,06
9	Rated Current	A	3,7
10	Max. Peak Current	A	11,3
11	No-Load Current	mA	<500
12	Line to Line Resistance	Ω	0,6
13	Line to Line Inductance	mH	2
14	Rotor Inertia	gcm2	119
15	Length (L)	mm	104,75
16	Weight	Kg	1

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP20
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
Operating mode	Position, Speed, Torque
Encoder	Hall effects or Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

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

Interface Control Mode	
Fieldbus	Part number
Analog	IBS57 088E A001-S300
Serial RS485 Modbus-RTU	IBS57 088E M001-S200
CANopen (DS402)	IBS57 088E C001-S402
CANopen (Programmable)	IBS57 088E C001-S200

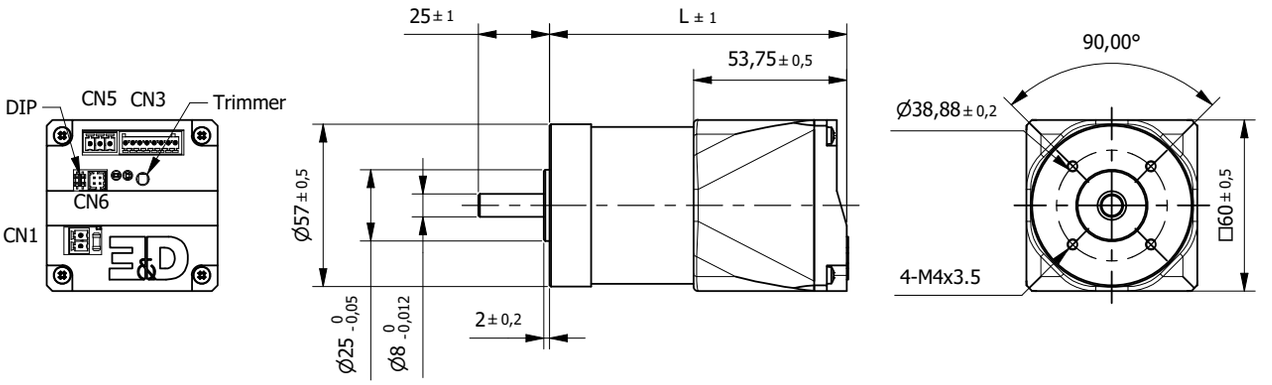
Standard Combination
Gearbox
GYP56
56JMS

* other options on request

Brushless Slotted Motor IBS57 128
with integrated Electronic Motion Controller

Ø 57mm - 0,32Nm

CN1 - Phoenix 1707421 : DC Supply
CN3 - Phoenix 1781120 : Inputs and Outputs
CN5 - Phoenix 1800312 : Interface
CN6 : Service SCI Interface



Specification			
	Model		IBS57128-E
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Operating Voltage	Vdc	24-36
5	Rated Speed	rpm	4000
6	Rated Torque	Nm	0,32
7	Max. Peak Torque	Nm	0,98
8	Torque Constant	Nm/A	0,063
9	Rated Current	A	5,1
10	Max. Peak Current	A	15,6
11	No-Load Current	mA	<600
12	Line to Line Resistance	Ω	0,45
13	Line to Line Inductance	mH	1,5
14	Rotor Inertia	gcm2	173
15	Length (L)	mm	124,75
16	Weight	Kg	1,2

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP20
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
Operating mode	Position, Speed, Torque
Encoder	Hall effects or Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

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

Interface Control Mode	
Fieldbus	Part number
Analog	IBS57 128E A001-S300
Serial RS485 Modbus-RTU	IBS57 128E M001-S200
CANopen (DS402)	IBS57 128E C001-S402
CANopen (Programmable)	IBS57 128E C001-S200

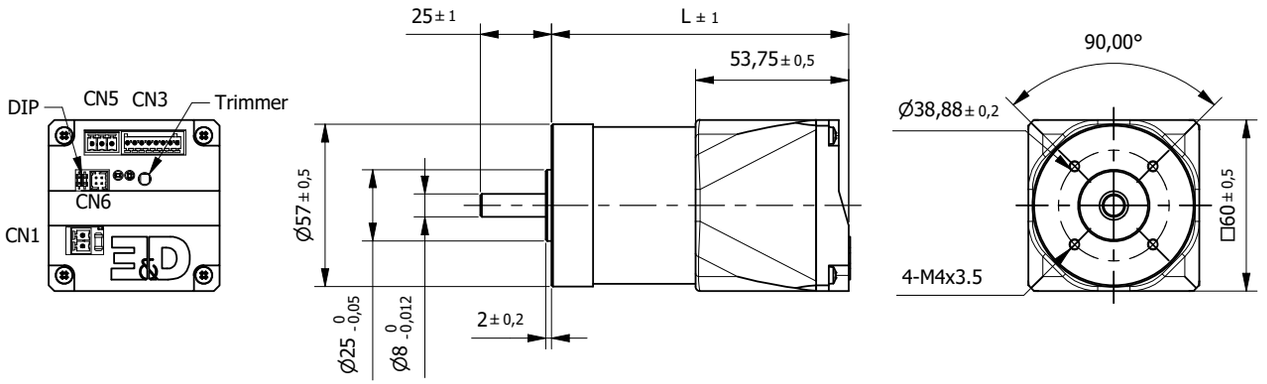
Standard Combination
Gearbox
GYP56
56JMS

* other options on request

Brushless Slotted Motor IBS57 168
with integrated Electronic Motion Controller

Ø 57mm - 0,42Nm

CN1 - Phoenix 1707421 : DC Supply
CN3 - Phoenix 1781120 : Inputs and Outputs
CN5 - Phoenix 1800312 : Interface
CN6 : Service SCI Interface



Specification			
	Model		IBS57168-E
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Operating Voltage	Vdc	24-36
5	Rated Speed	rpm	4000
6	Rated Torque	Nm	0,42
7	Max. Peak Torque	Nm	1,3
8	Torque Constant	Nm/A	0,063
9	Rated Current	A	6,7
10	Max. Peak Current	A	21
11	No-Load Current	mA	<650
12	Line to Line Resistance	Ω	0,33
13	Line to Line Inductance	mH	0,95
14	Rotor Inertia	gcm2	230
15	Length (L)	mm	146,75
16	Weight	Kg	1,45

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP20
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
Operating mode	Position, Speed, Torque
Encoder	Hall effects or Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

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

Interface Control Mode	
Fieldbus	Part number
Analog	IBS57 168E A001-S300
Serial RS485 Modbus-RTU	IBS57 168E M001-S200
CANopen (DS402)	IBS57 168E C001-S402
CANopen (Programmable)	IBS57 168E C001-S200

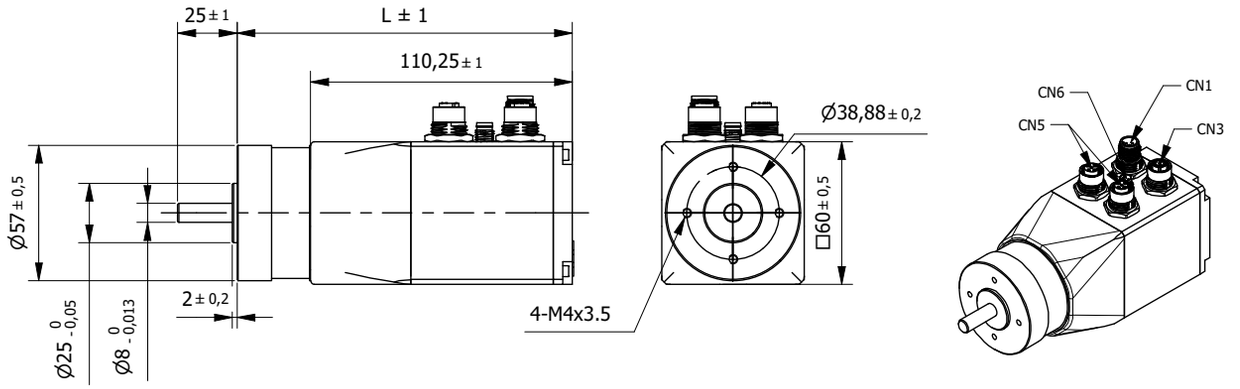
Standard Combination
Gearbox
GYP56
56JMS

* other options on request

Brushless Slotted Motor IBI57 022
with integrated Electronic Motion Controller - IP65

Ø 57mm - 0,055Nm

CN1: Power Supply
CN3: Inputs and Outputs
CN5: Communication Interface
CN6: Service Serial Interface



Specification			
	Model		IBI57022-E
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Operating Voltage	Vdc	24-36
5	Rated Speed	rpm	4000
6	Rated Torque	Nm	0,055
7	Max. Peak Torque	Nm	0,16
8	Torque Constant	Nm/A	0,052
9	Rated Current	A	1,1
10	Max. Peak Current	A	3,1
11	No-Load Current	mA	<400
12	Line to Line Resistance	Ω	4,3
13	Line to Line Inductance	mH	8,6
14	Rotor Inertia	gcm2	30
15	Length (L)	mm	75,75
16	Weight	Kg	0,45

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Protection Class	IP65
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
Operating mode	Position, Speed, Torque
Encoder	Hall effects or Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

Interface Control Mode	
Fieldbus	Part number
Analog	IBI57 022E A001-S300
Serial RS485 Modbus-RTU	IBI57 022E M001-S200
CANopen (DS402)	IBI57 022E C001-S402
CANopen (Programmable)	IBI57 022E C001-S200

Standard Combination
Gearbox
GYP56
56JMS

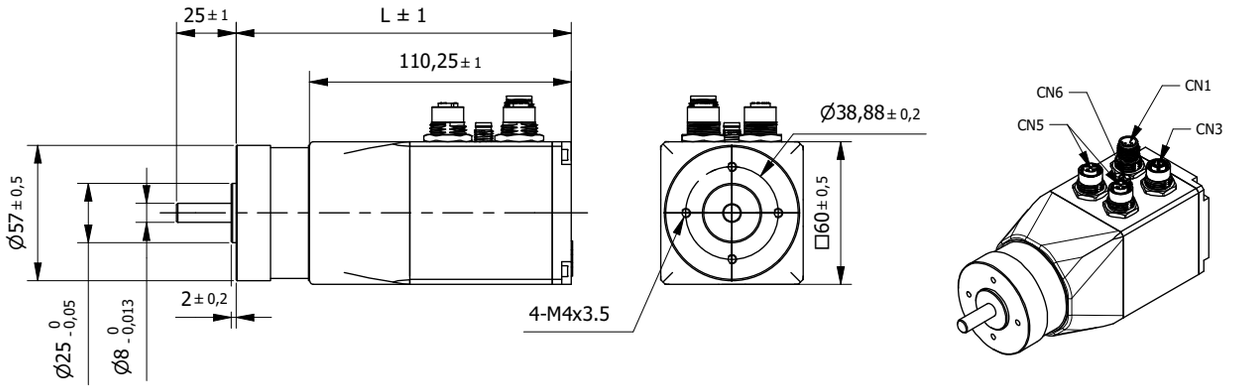
* other options on request

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

Brushless Slotted Motor IBI57 044
with integrated Electronic Motion Controller - IP65

Ø 57mm - 0,11Nm

CN1: Power Supply
CN3: Inputs and Outputs
CN5: Communication Interface
CN6: Service Serial Interface



Specification			
	Model		IBI57044-E
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Operating Voltage	Vdc	24-36
5	Rated Speed	rpm	4500
6	Rated Torque	Nm	0,11
7	Max. Peak Torque	Nm	0,33
8	Torque Constant	Nm/A	0,06
9	Rated Current	A	1,8
10	Max. Peak Current	A	5,5
11	No-Load Current	mA	<400
12	Line to Line Resistance	Ω	1,6
13	Line to Line Inductance	mH	4,4
14	Rotor Inertia	gcm2	75
15	Length (L)	mm	84,75
16	Weight	Kg	0,7

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Protection Class	IP65
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
Operating mode	Position, Speed, Torque
Encoder	Hall effects or Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

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

Interface Control Mode	
Fieldbus	Part number
Analog	IBI57 044E A001-S300
Serial RS485 Modbus-RTU	IBI57 044E M001-S200
CANopen (DS402)	IBI57 044E C001-S402
CANopen (Programmable)	IBI57 044E C001-S200

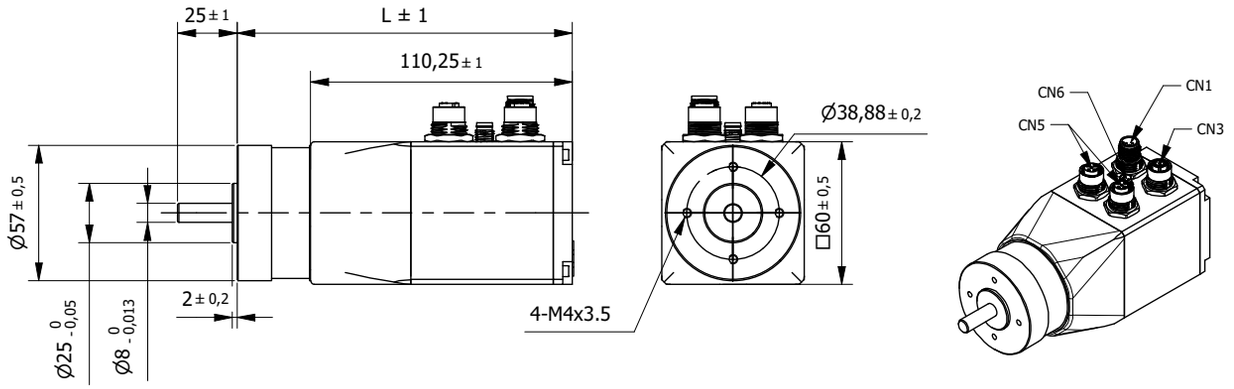
Standard Combination
Gearbox
GYP56
56JMS

* other options on request

Brushless Slotted Motor IBI57 088
with integrated Electronic Motion Controller - IP65

Ø 57mm - 0,22Nm

CN1: Power Supply
CN3: Inputs and Outputs
CN5: Communication Interface
CN6: Service Serial Interface



Specification			
	Model		IBI57088-E
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Operating Voltage	Vdc	24-36
5	Rated Speed	rpm	4000
6	Rated Torque	Nm	0,22
7	Max. Peak Torque	Nm	0,68
8	Torque Constant	Nm/A	0,06
9	Rated Current	A	3,7
10	Max. Peak Current	A	11,3
11	No-Load Current	mA	<500
12	Line to Line Resistance	Ω	0,6
13	Line to Line Inductance	mH	2
14	Rotor Inertia	gcm2	119
15	Length (L)	mm	104,75
16	Weight	Kg	1

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Protection Class	IP65
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
Operating mode	Position, Speed, Torque
Encoder	Hall effects or Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

Interface Control Mode	
Fieldbus	Part number
Analog	IBI57 088E A001-S300
Serial RS485 Modbus-RTU	IBI57 088E M001-S200
CANopen (DS402)	IBI57 088E C001-S402
CANopen (Programmable)	IBI57 088E C001-S200

Standard Combination
Gearbox
GYP56
56JMS

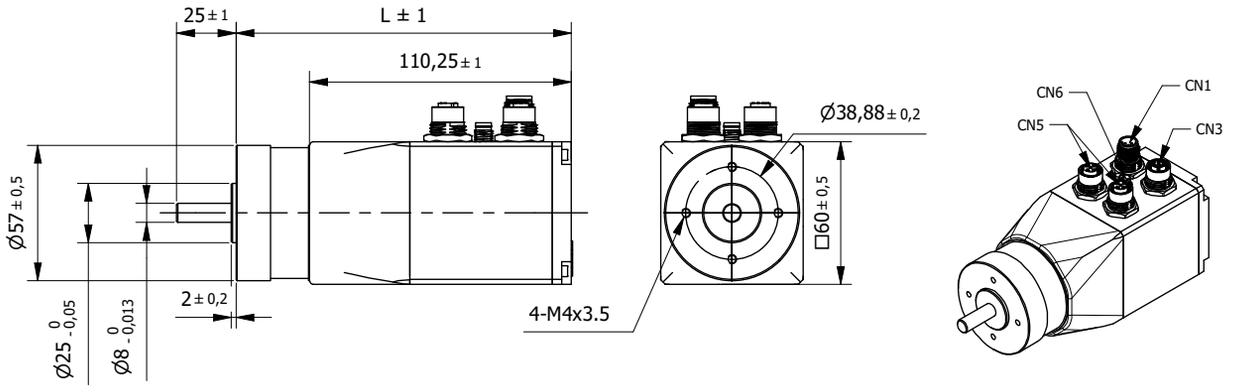
* other options on request

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

Brushless Slotted Motor IBI57 128
with integrated Electronic Motion Controller - IP65

Ø 57mm - 0,32Nm

CN1: Power Supply
CN3: Inputs and Outputs
CN5: Communication Interface
CN6: Service Serial Interface



Specification			
	Model		IBI57128-E
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Operating Voltage	Vdc	24-36
5	Rated Speed	rpm	4000
6	Rated Torque	Nm	0,32
7	Max. Peak Torque	Nm	0,98
8	Torque Constant	Nm/A	0,063
9	Rated Current	A	5,1
10	Max. Peak Current	A	15,6
11	No-Load Current	mA	<600
12	Line to Line Resistance	Ω	0,45
13	Line to Line Inductance	mH	1,5
14	Rotor Inertia	gcm2	173
15	Length (L)	mm	124,75
16	Weight	Kg	1,2

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Protection Class	IP65
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
Operating mode	Position, Speed, Torque
Encoder	Hall effects or Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

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

Interface Control Mode	
Fieldbus	Part number
Analog	IBI57 128E A001-S300
Serial RS485 Modbus-RTU	IBI57 128E M001-S200
CANopen (DS402)	IBI57 128E C001-S402
CANopen (Programmable)	IBI57 128E C001-S200

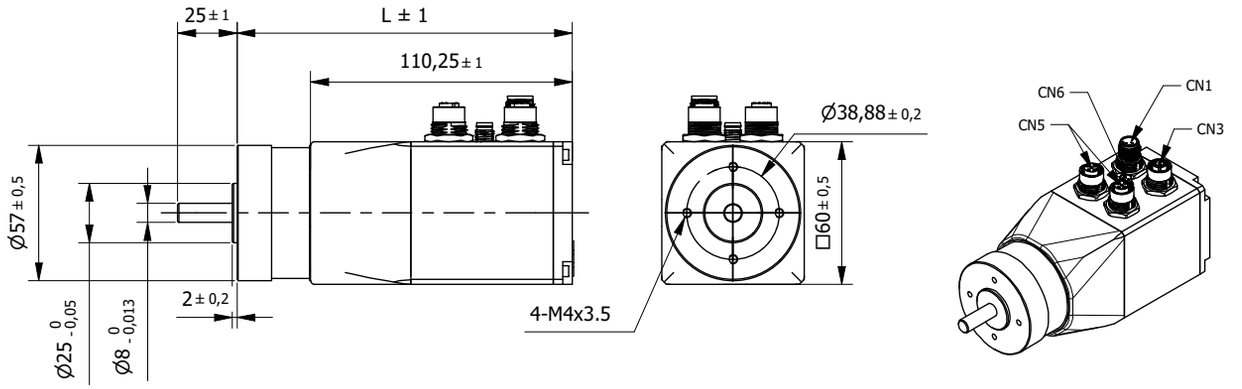
Standard Combination
Gearbox
GYP56
56JMS

* other options on request

Brushless Slotted Motor IBI57 168
with integrated Electronic Motion Controller - IP65

Ø 57mm - 0,42Nm

CN1: Power Supply
CN3: Inputs and Outputs
CN5: Communication Interface
CN6: Service Serial Interface



Specification			
	Model		IBI57168-E
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	36
4	Operating Voltage	Vdc	24-36
5	Rated Speed	rpm	4000
6	Rated Torque	Nm	0,42
7	Max. Peak Torque	Nm	1,3
8	Torque Constant	Nm/A	0,063
9	Rated Current	A	6,7
10	Max. Peak Current	A	21
11	No-Load Current	mA	<650
12	Line to Line Resistance	Ω	0,33
13	Line to Line Inductance	mH	0,95
14	Rotor Inertia	gcm2	230
15	Length (L)	mm	146,75
16	Weight	Kg	1,45

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Protection Class	IP65
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
Operating mode	Position, Speed, Torque
Encoder	Hall effects or Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

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

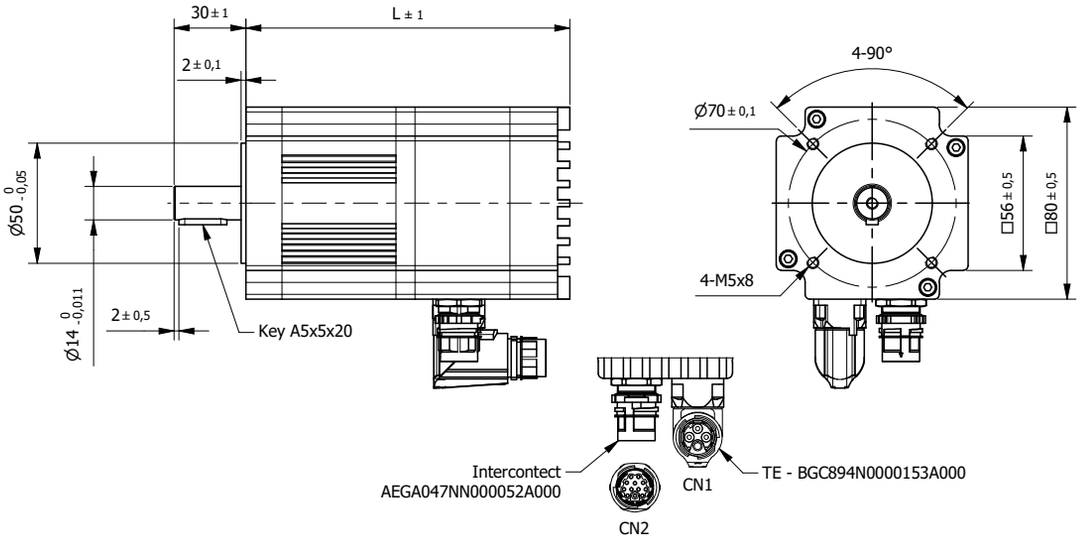
Interface Control Mode	
Fieldbus	Part number
Analog	IBI57 168E A001-S300
Serial RS485 Modbus-RTU	IBI57 168E M001-S200
CANopen (DS402)	IBI57 168E C001-S402
CANopen (Programmable)	IBI57 168E C001-S200

Standard Combination
Gearbox
GYP56
56JMS

* other options on request

Brushless Slotted Motor IBI80 290
with integrated Electronic Motion Controller - IP65

□ 80mm - 0,9Nm



Specification			
	Model		IBI80290-E
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	40
4	Operating Voltage	Vdc	24-48
5	Rated Speed	rpm	3210
6	Rated Torque	Nm	0,9
7	Max. Peak Torque	Nm	2,4
8	Torque Constant	Nm/A	0,094
9	Rated Current	A	10,0
10	Max. Peak Current	A	30
11	No-Load Current	mA	700
12	Line to Line Resistance	Ω	0,17
13	Line to Line Inductance	mH	0,89
14	Rotor Inertia	gcm2	680
15	Length (L)	mm	135
16	Weight	Kg	2,1

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	F
Protection Class	IP65
Radial play (450g load)	0,02mm
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	Position, Speed, Torque
Encoder	Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

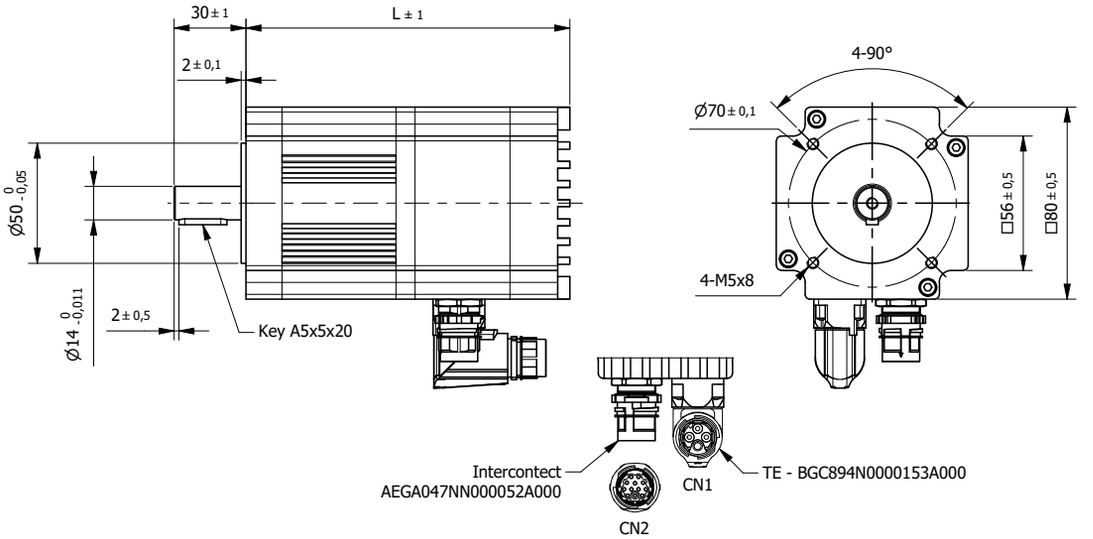
Interface Control Mode	
Fieldbus	Part number
Serial RS485 Modbus-RTU	IBI80 290E M001-S200
CANopen (Programmable)	IBI80 290E C001-S200

Standard Combination
Gearbox
GYP80
* other options on request

Connection		
Inputs	Digital inputs	4 not isolated 24 Vdc PNP
	Analog inputs	1 | 0-10 Vdc
Output	Digital outputs	2 not isolated 24 Vdc PNP
	CN1	4-Pin Power connector
	CN2	12-Pin Logic connector

Brushless Slotted Motor IBI80 362
with integrated Electronic Motion Controller - IP65

□ 80mm - 1,13Nm



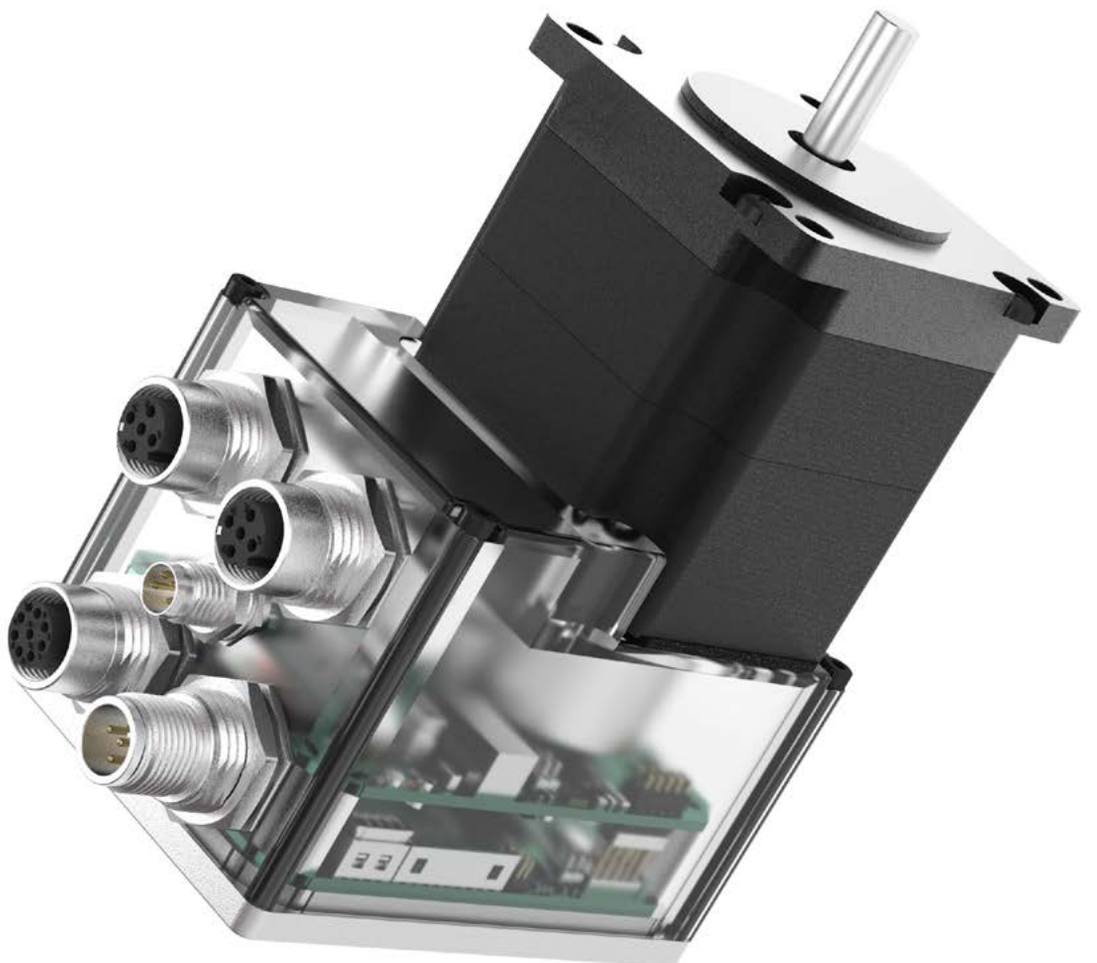
Specification			
	Model		**IBI80362-E**
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	40
4	Operating Voltage	Vdc	24-48
5	Rated Speed	rpm	3210
6	Rated Torque	Nm	1,13
7	Max. Peak Torque	Nm	3,4
8	Torque Constant	Nm/A	0,085
9	Rated Current	A	13,3
10	Max. Peak Current	A	40
11	No-Load Current	mA	600
12	Line to Line Resistance	Ω	0,11
13	Line to Line Inductance	mH	0,52
14	Rotor Inertia	gcm2	680
15	Length (L)	mm	145
16	Weight	Kg	2,2

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP65
Radial play (450g load)	0,02mm
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	Position, Speed, Torque
Encoder	Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

Interface Control Mode	
Fieldbus	**Part number**
Serial RS485 Modbus-RTU	IBI80 362E M001-S200
CANopen (Programmable)	IBI80 362E C001-S200

Standard Combination
Gearbox
GYP80
* other options on request

Connection		
Inputs	Digital inputs	4 not isolated 24 Vdc PNP
	Analog inputs	1 | 0-10 Vdc
Output	Digital outputs	2 not isolated 24 Vdc PNP
	CN1	4-Pin Power connector
	CN2	12-Pin Logic connector



Stepper motors
with Motion controller

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

Our Stepper motors with integrated Drive (ISI series) offer the compactness of a standard motor together with all the features of our drives. These highly programmable integrated servo Stepper motor systems come with integrated motor, encoder and a controller with different Comunication fieldbuses options such as RS485 Modbus-RTU, CANopen, EtherCAT CoE or Ethernet Modbus TCP.

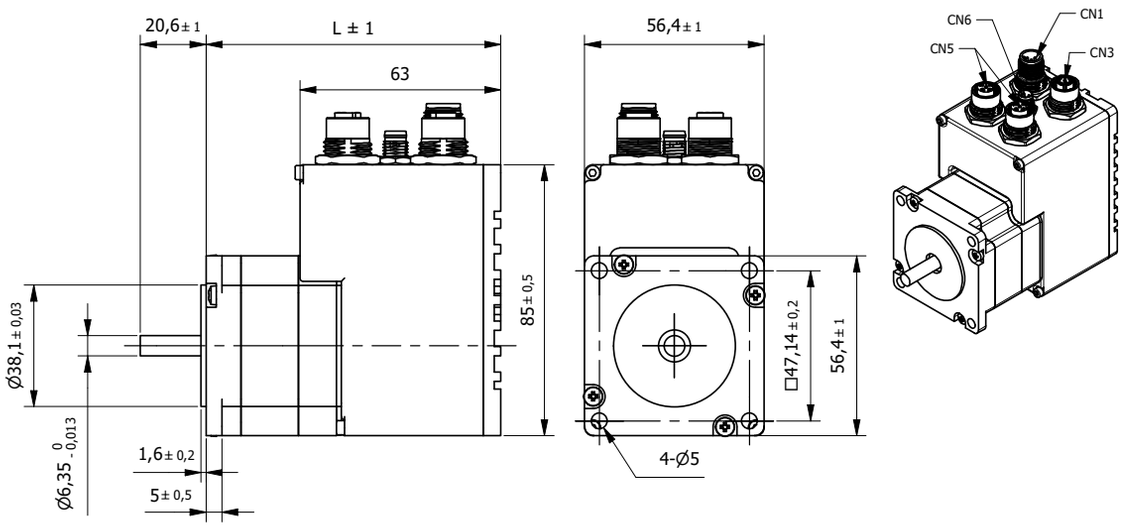
Stepper motors with Motion controller - NEW	Torque** (Nm)	
ISI57 090 - IP65	0,55	248
ISI57 100 - IP65	1,01	249
ISI57 105 - IP65	1,26	250
ISI57 125 - IP65	1,89	251
ISI60 096 - IP65	1,10	252
ISI60 105 - IP65	1,65	253
ISI60 116 - IP65	2,10	254
ISI60 137 - IP65	3,10	255

** Holding Torque

Stepper Motor ISI57 090
with Motion Controller - IP65

□ 57mm

CN1: Power Supply
CN3: Inputs and Outputs
CN5: Communication Interface
CN6: Service Serial Interface



Specification			
	Model		ISI57090-E
1	Operating Voltage	Vdc	12÷48
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	0,7
4	Inductance/Phase	mH	1,4
5	Holding Torque	Nm	0,55
6	Rotor Inertia	gcm2	120
7	Detent Torque	Nm	0,021
8	Length (L)	mm	90

Interface Control Mode	
Fieldbus	Part number
Serial RS485 Modbus-RTU	ISI57 090E M001-S200
CANopen	ISI57 090E C001
Ethernet Modbus TCP	ISI57 090E T001-S200
EtherCAT CoE (DS 402)	ISI57 090E E001-S402

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
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 (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Encoder	Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

Connection		
Inputs	Digital inputs	4 not isolated 5-24 Vdc NPN or Push Pull
	Analog inputs	1 with potentiometer or 0-10 Vdc
Output	Digital outputs	2 not isolated open drain, 5-24 Vdc 100mA

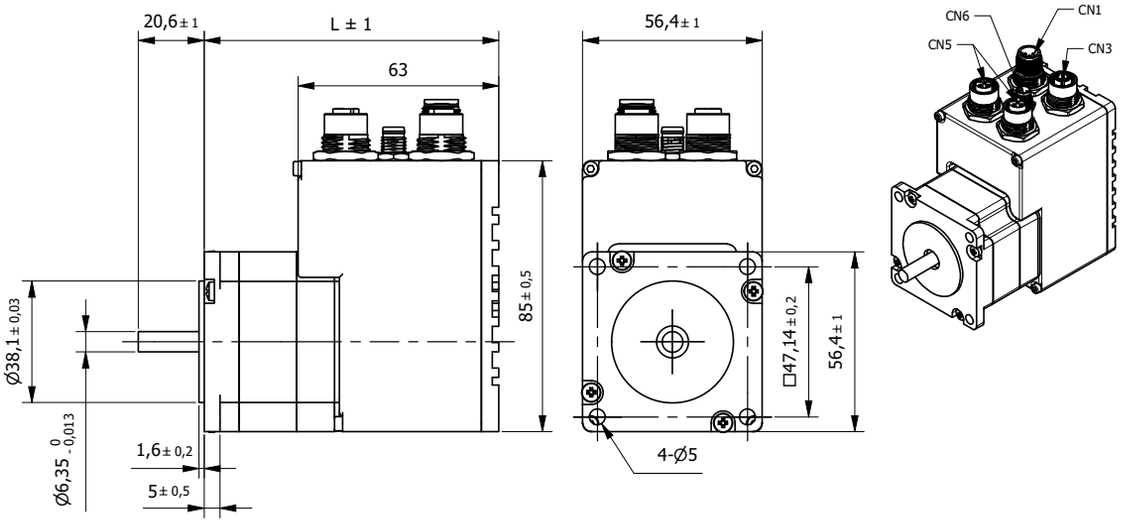
Standard Combination
Gearbox
GYP56
56JMS

* other options on request

Stepper Motor ISI57 100
with Motion Controller - IP65

□ 57mm

CN1: Power Supply
CN3: Inputs and Outputs
CN5: Communication Interface
CN6: Service Serial Interface



Specification			
	Model		ISI57100-E
1	Operating Voltage	Vdc	12÷48
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	0,83
4	Inductance/Phase	mH	2,2
5	Holding Torque	Nm	1,01
6	Rotor Inertia	gcm2	275
7	Detent Torque	Nm	0,036
8	Length (L)	mm	100

Interface Control Mode	
Fieldbus	Part number
Serial RS485 Modbus-RTU	ISI57 100E M001-S200
CANopen	ISI57 100E C001
Ethernet Modbus TCP	ISI57 100E T001-S200
EtherCAT CoE (DS 402)	ISI57 100E E001-S402

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
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 (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Encoder	Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

Connection		
Inputs	Digital inputs	4 not isolated 5-24 Vdc NPN or Push Pull
	Analog inputs	1 with potentiometer or 0-10 Vdc
Output	Digital outputs	2 not isolated open drain, 5-24 Vdc 100mA

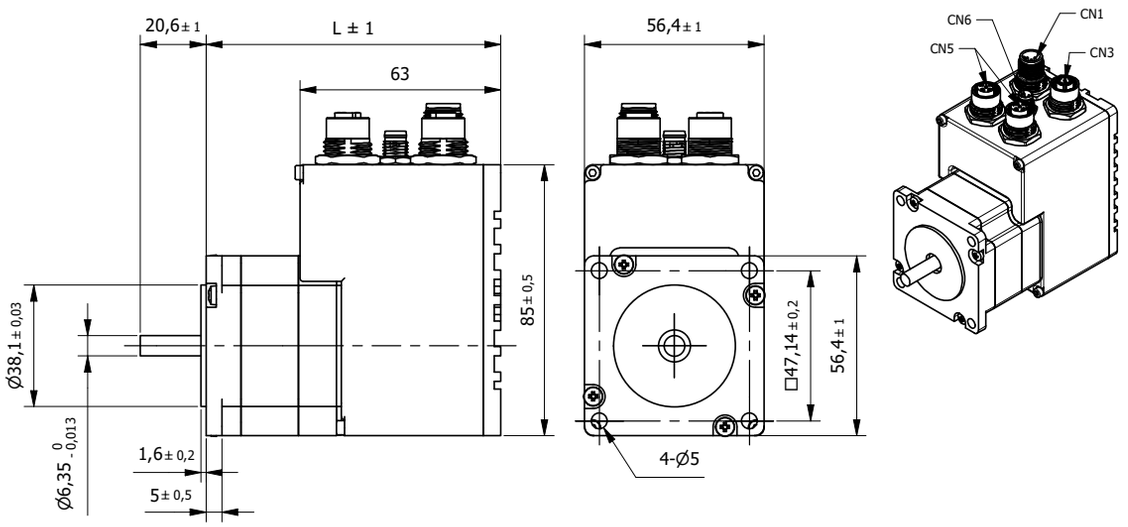
Standard Combination
Gearbox
GYP56
56JMS

* other options on request

Stepper Motor ISI57 105
with Motion Controller - IP65

□ 57mm

CN1: Power Supply
CN3: Inputs and Outputs
CN5: Communication Interface
CN6: Service Serial Interface



Specification			
	Model		ISI57105-E
1	Operating Voltage	Vdc	12÷48
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	0,9
4	Inductance/Phase	mH	2,5
5	Holding Torque	Nm	1,26
6	Rotor Inertia	gcm2	300
7	Detent Torque	Nm	0,04
8	Length (L)	mm	105

Interface Control Mode	
Fieldbus	Part number
Serial RS485 Modbus-RTU	ISI57 105E M001-S200
CANopen	ISI57 105E C001
Ethernet Modbus TCP	ISI57 105E T001-S200
EtherCAT CoE (DS 402)	ISI57 105E E001-S402

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
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 (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Encoder	Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

Connection		
Inputs	Digital inputs	4 not isolated 5-24 Vdc NPN or Push Pull
	Analog inputs	1 with potentiometer or 0-10 Vdc
Output	Digital outputs	2 not isolated open drain, 5-24 Vdc 100mA

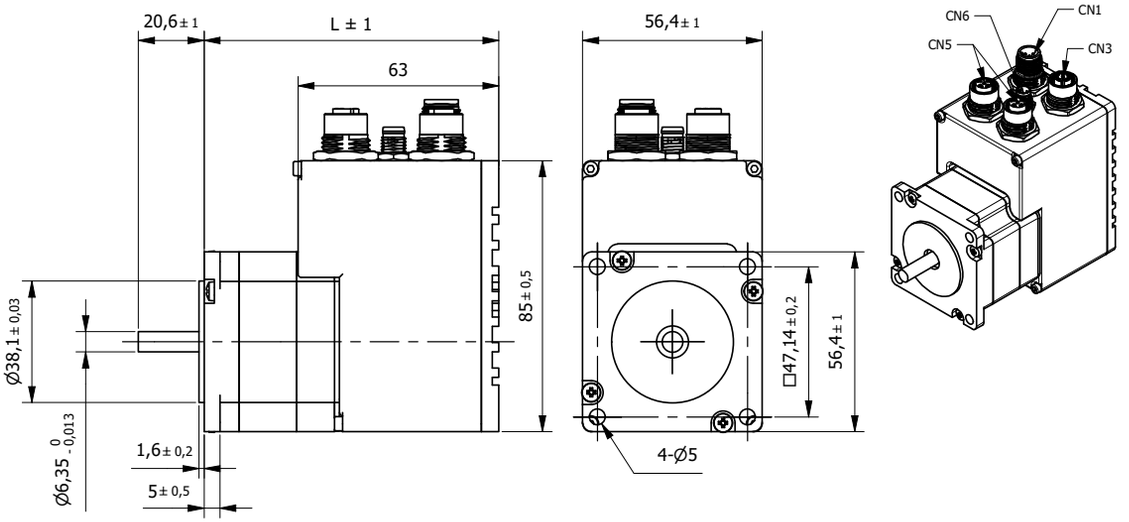
Standard Combination
Gearbox
GYP56
56JMS

* other options on request

Stepper Motor ISI57 125
with Motion Controller - IP65

□ 57mm

CN1: Power Supply
CN3: Inputs and Outputs
CN5: Communication Interface
CN6: Service Serial Interface



Specification			
	Model		ISI57125-E
1	Operating Voltage	Vdc	12÷48
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	1,13
4	Inductance/Phase	mH	3,6
5	Holding Torque	Nm	1,89
6	Rotor Inertia	gcm2	480
7	Detent Torque	Nm	0,067
8	Length (L)	mm	125

Interface Control Mode	
Fieldbus	Part number
Serial RS485 Modbus-RTU	ISI57 125E M001-S200
CANopen	ISI57 125E C001
Ethernet Modbus TCP	ISI57 125E T001-S200
EtherCAT CoE (DS 402)	ISI57 125E E001-S402

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
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 (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Encoder	Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

Connection		
Inputs	Digital inputs	4 not isolated 5-24 Vdc NPN or Push Pull
	Analog inputs	1 with potentiometer or 0-10 Vdc
Output	Digital outputs	2 not isolated open drain, 5-24 Vdc 100mA

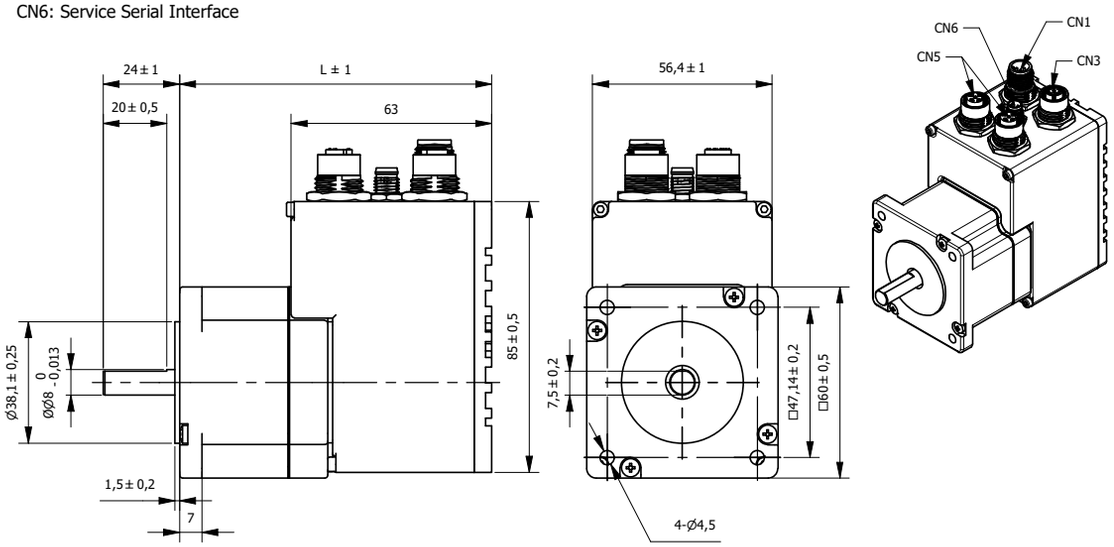
Standard Combination
Gearbox
GYP56
56JMS

* other options on request

Stepper Motor ISI60 096
with Motion Controller - IP65

□ 60mm

CN1: Power Supply
CN3: Inputs and Outputs
CN5: Communication Interface
CN6: Service Serial Interface



Specification			
	Model		ISI60096-E
1	Operating Voltage	Vdc	12÷48
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	0,75
4	Inductance/Phase	mH	2
5	Holding Torque	Nm	1,1
6	Rotor Inertia	gcm2	275
7	Detent Torque	Nm	0,05
8	Length (L)	mm	96

Interface Control Mode	
Fieldbus	Part number
Serial RS485 Modbus-RTU	ISI60 096E M001-S200
CANopen	ISI60 096E C001
Ethernet Modbus TCP	ISI60 096E T001-S200
EtherCAT CoE (DS 402)	ISI60 096E E001-S402

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
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 (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Encoder	Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

Connection		
Inputs	Digital inputs	4 not isolated 5-24 Vdc NPN or Push Pull
	Analog inputs	1 with potentiometer or 0-10 Vdc
Output	Digital outputs	2 not isolated open drain, 5-24 Vdc 100mA

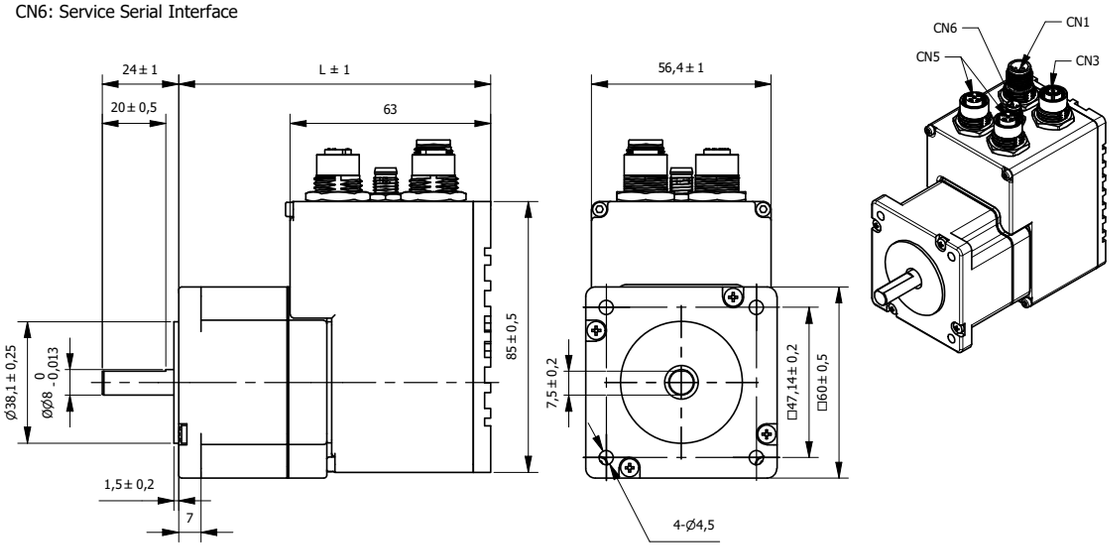
Standard Combination
Gearbox
GYP56
56JMS

* other options on request

Stepper Motor ISI60 105
with Motion Controller - IP65

□ **60mm**

CN1: Power Supply
CN3: Inputs and Outputs
CN5: Communication Interface
CN6: Service Serial Interface



Specification			
	Model		**ISI60105-E**
1	Operating Voltage	Vdc	12÷48
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	0,9
4	Inductance/Phase	mH	3,6
5	Holding Torque	Nm	1,65
6	Rotor Inertia	gcm2	400
7	Detent Torque	Nm	0,069
8	Length (L)	mm	105

Interface Control Mode	
Fieldbus	**Part number**
Serial RS485 Modbus-RTU	ISI60 105E M001-S200
CANopen	ISI60 105E C001
Ethernet Modbus TCP	ISI60 105E T001-S200
EtherCAT CoE (DS 402)	ISI60 105E E001-S402

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
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 (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Encoder	Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

Connection		
Inputs	Digital inputs	4 not isolated 5-24 Vdc NPN or Push Pull
	Analog inputs	1 with potentiometer or 0-10 Vdc
Output	Digital outputs	2 not isolated open drain, 5-24 Vdc 100mA

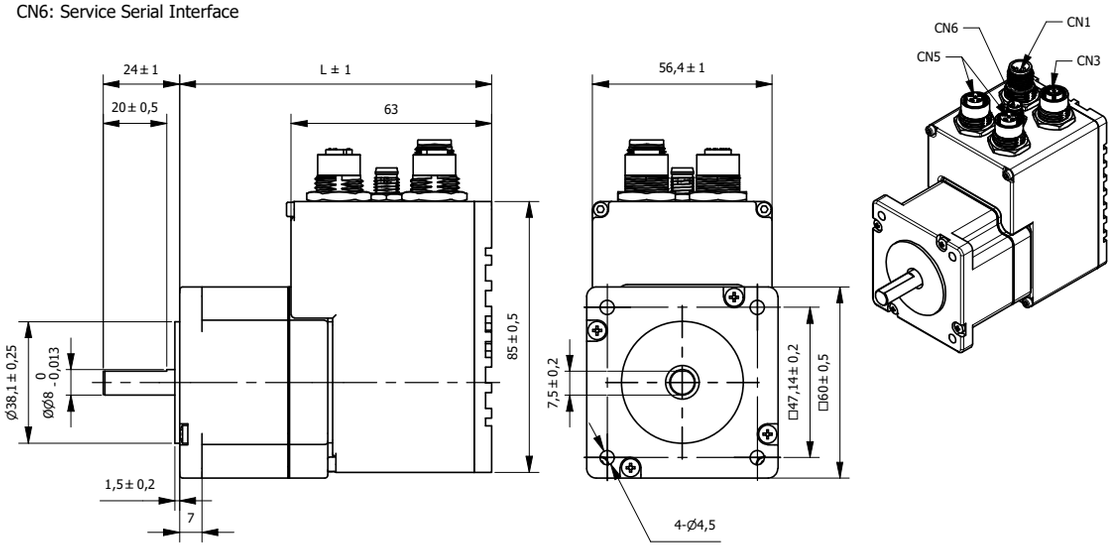
Standard Combination
Gearbox
GYP56
56JMS

* other options on request

Stepper Motor ISI60 116
with Motion Controller - IP65

□ 60mm

CN1: Power Supply
CN3: Inputs and Outputs
CN5: Communication Interface
CN6: Service Serial Interface



Specification			
	Model		ISI60116-E
1	Operating Voltage	Vdc	12÷48
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	1,2
4	Inductance/Phase	mH	4,6
5	Holding Torque	Nm	2,1
6	Rotor Inertia	gcm2	570
7	Detent Torque	Nm	0,088
8	Length (L)	mm	116

Interface Control Mode	
Fieldbus	Part number
Serial RS485 Modbus-RTU	ISI60 116E M001-S200
CANopen	ISI60 116E C001
Ethernet Modbus TCP	ISI60 116E T001-S200
EtherCAT CoE (DS 402)	ISI60 116E E001-S402

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
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 (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Encoder	Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

Connection		
Inputs	Digital inputs	4 not isolated 5-24 Vdc NPN or Push Pull
	Analog inputs	1 with potentiometer or 0-10 Vdc
Output	Digital outputs	2 not isolated open drain, 5-24 Vdc 100mA

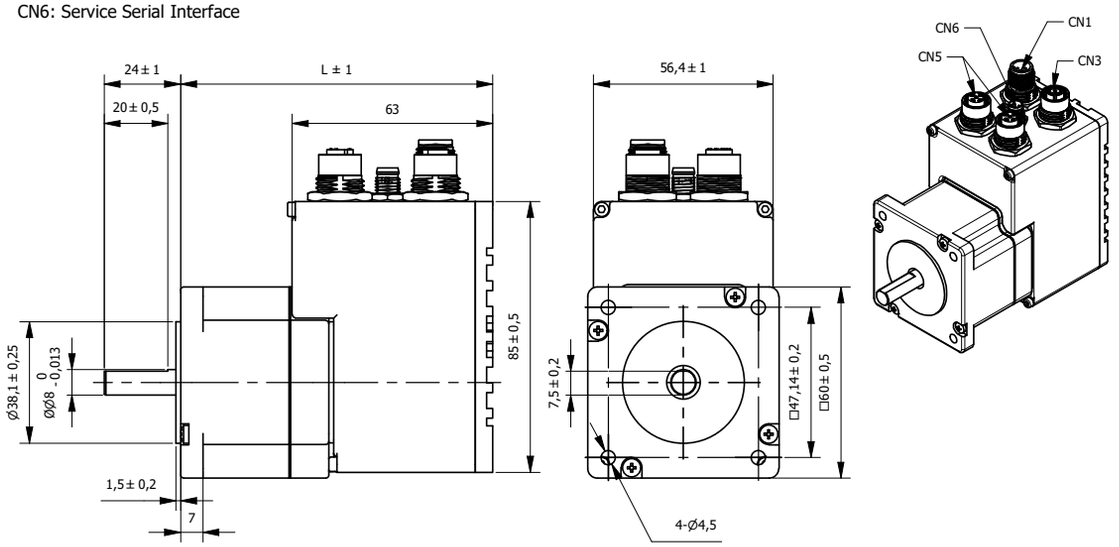
Standard Combination
Gearbox
GYP56
56JMS

* other options on request

Stepper Motor ISI60 137
with Motion Controller - IP65

□ 60mm

CN1: Power Supply
CN3: Inputs and Outputs
CN5: Communication Interface
CN6: Service Serial Interface



Specification			
	Model		ISI60137-E
1	Operating Voltage	Vdc	12÷48
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	1,5
4	Inductance/Phase	mH	6,8
5	Holding Torque	Nm	3,1
6	Rotor Inertia	gcm2	840
7	Detent Torque	Nm	0,098
8	Length (L)	mm	137

Interface Control Mode	
Fieldbus	Part number
Serial RS485 Modbus-RTU	ISI60 137E M001-S200
CANopen	ISI60 137E C001
Ethernet Modbus TCP	ISI60 137E T001-S200
EtherCAT CoE (DS 402)	ISI60 137E E001-S402

Connection		
Inputs	Digital inputs	4 not isolated 5-24 Vdc NPN or Push Pull
	Analog inputs	1 with potentiometer or 0-10 Vdc
Output	Digital outputs	2 not isolated open drain, 5-24 Vdc 100mA

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
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 (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Encoder	Magnetic Incremental and Absolute Single turn
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - E&D Studio Programming - E&D Space

Standard Combination
Gearbox
GYP56
56JMS

* other options on request

Stepper

Permanent Magnet Stepper

p.265

Flat Hybrid Stepper

p.353

Hybrid Stepper S series

p.277

Hybrid Stepper SH series

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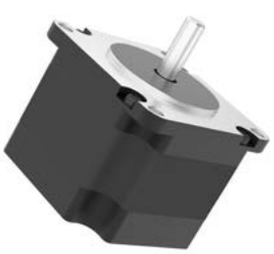
Hybrid Stepper STC series

p.327



3-Phase Hybrid Stepper

p.337

Hollow Shaft Stepper

p.345 - NEW

Hybrid Stepper with Encoder

p.357

IP65 Hybrid Stepper

p.373

Stepper Motors

* 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.

Glossary

Stepper

Product families

- Permanent Magnet Stepper motors
- 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.

Often referred to as “tin can” or “can stack” motor the permanent magnet step motor is a low cost and low resolution type motor. PM motors have permanent magnets added to the motor structure. The rotor no longer has teeth, instead the rotor is magnetized with alternating north and south poles situated in a straight line parallel to the rotor shaft. These motors offer good torque at lower speed.

Permanent Magnets stepper motors

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.

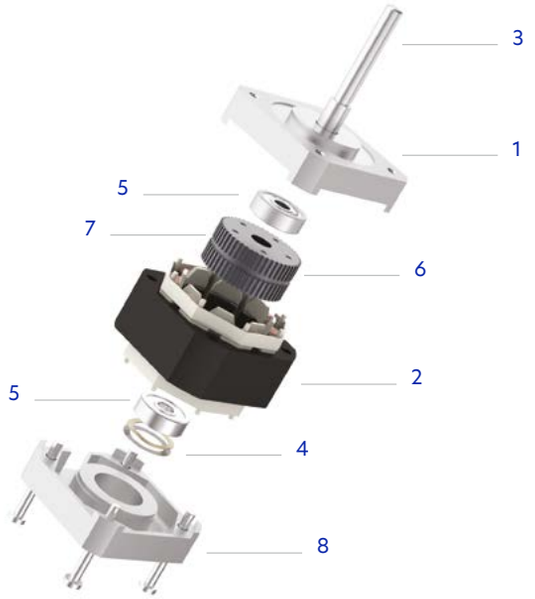
3-Phase Hybrid Stepper motors

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.

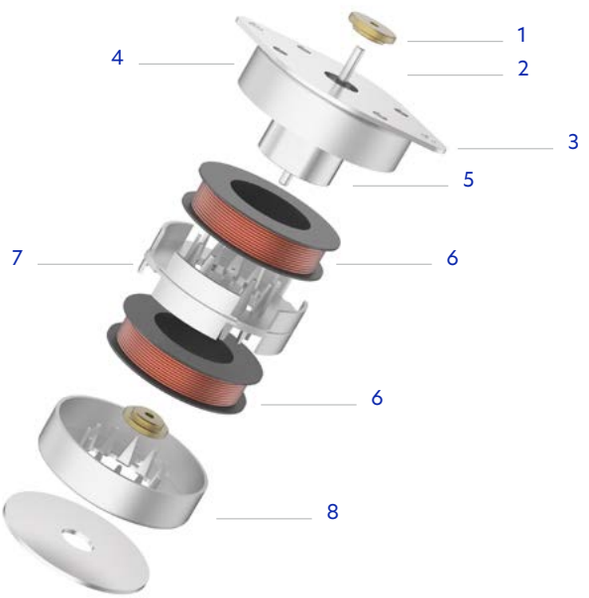
Stepper motors with integrated Encoder

Technical introduction

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



Stepper motors

Permanent Magnet

Advantages at a glance
Cost-efficient
Good torque at lower speed
Low noise

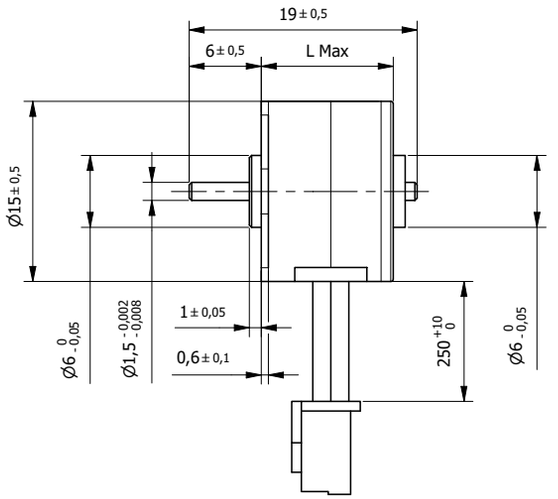
Often referred to as “tin can” or “can stack” motor the permanent magnet step motor is a low cost and low resolution type motor. PM motors have permanent magnets added to the motor structure. The rotor no longer has teeth, instead the rotor is magnetized with alternating north and south poles situated in a straight line parallel to the rotor shaft. These motors offer good torque at lower speed.

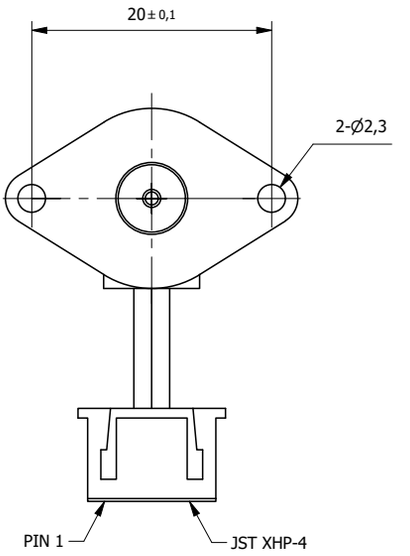
Permanent Magnet Stepper motors	Torque* (Nm)	
15PM12	0,003...0,004	266
20PM18	0,005	267
25PM15	0,010...0,016	268
35PM16	0,040	269
35PM22	0,055	270
42PM17	0,050	271
42PM22	0,060	272
57PM25	0,120...0,150	273

* Holding Torque

Permanent Magnet Stepper 15PM12

Ø 15mm





Specification

	Model		...0064A	...0244A
1	Rated Voltage	V	12	12
2	Current/Phase	A	0,065	0,24
3	Resistance/Phase	Ω	190	50
4	Inductance/Phase	mH	37	9,5
5	Holding Torque	Nm	0,003	0,004
6	Rotor Inertia	gcm2	1	1
7	n°of Leads		4	4
8	Length (L)	mm	12	12
9	Weight	Kg	0,012	0,012

Characteristics

Item	
Step angle	18°
Step angle Accuracy	±8%
Insulation Class	E
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Radial Force (3mm from front flange)	2N
Max. Axial Force	1N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

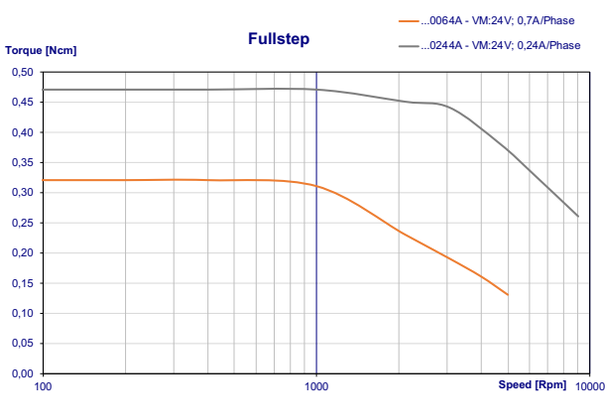
Standard Combination

Drive
Aries
Libra
Orion
Aquarius

* other options on request

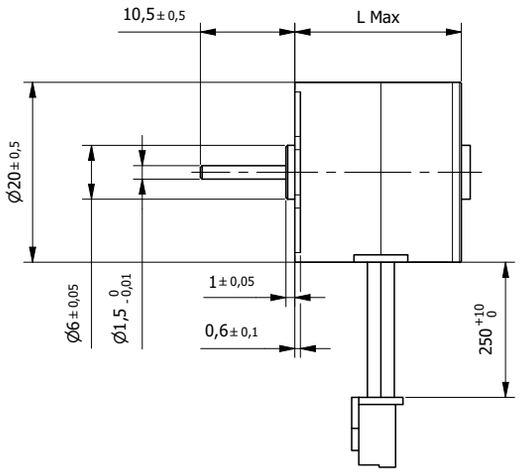
Connection

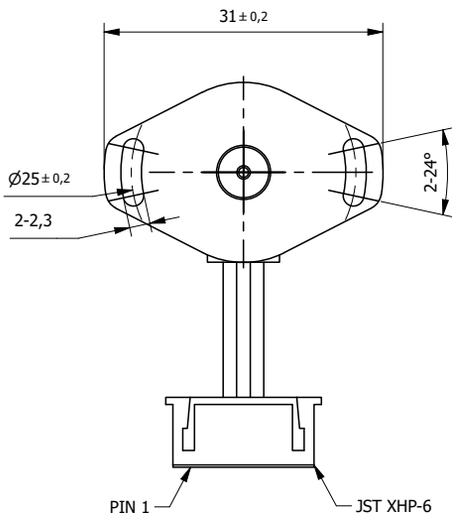
Pin n°	Color	Gauge	Function
1	White	UL1430 AWG30	Phase A
2	Red	|	Phase A-
3	Blue	|	Phase B
4	Yellow	|	Phase B-



Permanent Magnet Stepper 20PM18

Ø 20mm





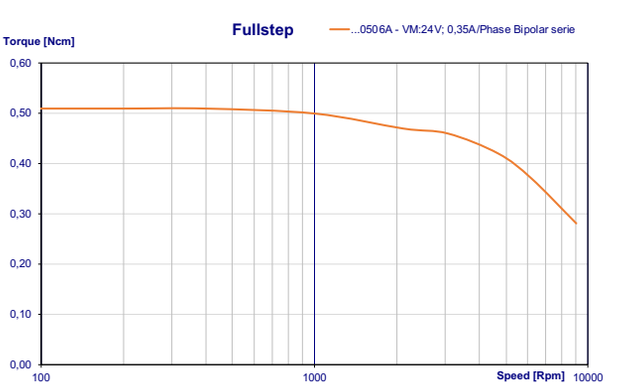
Specification			
	Model		...0506A
1	Rated Voltage	V	5
2	Current/Phase	A	0,5
3	Resistance/Phase	Ω	10
4	Inductance/Phase	mH	1,85
5	Holding Torque	Nm	0,005
6	Rotor Inertia	gcm2	1
7	n°of Leads		6
8	Length (L)	mm	18,5
9	Weight	Kg	0,026

Characteristics	
Item	
Step angle	18°
Step angle Accuracy	±5%
Insulation Class	B
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Radial Force (3mm from front flange)	2N
Max. Axial Force	1N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination
Drive
Aries
Libra
Orion
Aquarius

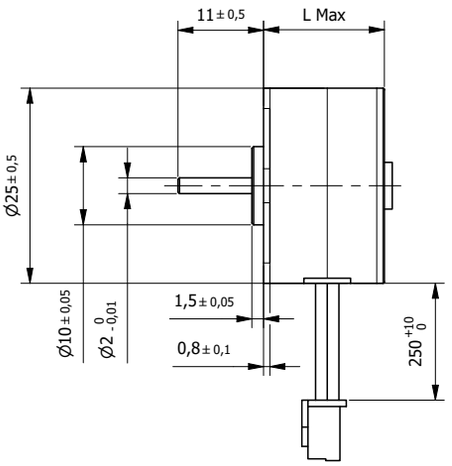
* other options on request

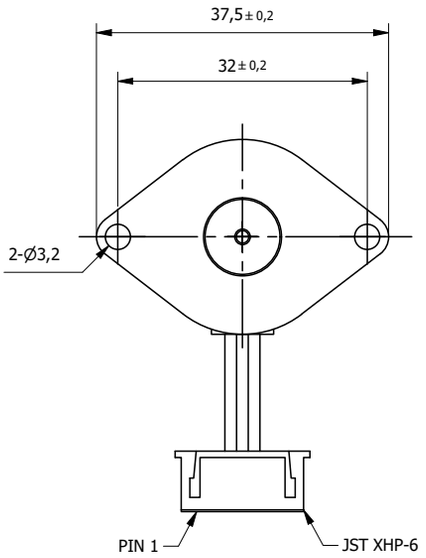
Connection			
Pin n°	Color	Gauge	Function
1	White	UL1430 AWG30	Phase A
2	Red	|	Phase A-
3	Blue	|	Phase B
4	Yellow	|	Phase B-
5	Black	|	COM Phase A
6	Brown	|	COM Phase B



Permanent Magnet Stepper 25PM15

Ø 25mm





Specification

	Model		...0246A	...0436A	...0506A	...0764A
1	Rated Voltage	V	12	5	5	3,8
2	Current/Phase	A	0,24	0,43	0,5	0,76
3	Resistance/Phase	Ω	50	11,5	10	5
4	Inductance/Phase	mH	3	2,3	1,8	3
5	Holding Torque	Nm	0,016	0,01	0,014	0,01
6	Rotor Inertia	gcm2	1	1	1	1
7	n°of Leads		6	6	6	4
8	Length (L)	mm	15,5	15,5	15,5	15,5
9	Weight	Kg	0,036	0,036	0,036	0,036

Characteristics

Item	
Step angle	7,5°
Step angle Accuracy	±8%
Insulation Class	B
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Radial Force (3mm from front flange)	3N
Max. Axial Force	1,5N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

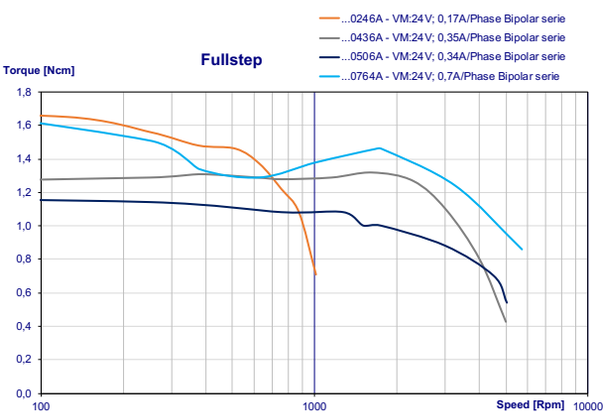
Standard Combination

Drive
Aries
Libra
Orion
Aquarius

* other options on request

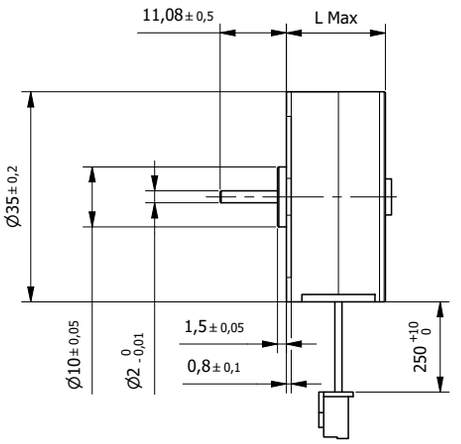
Connection

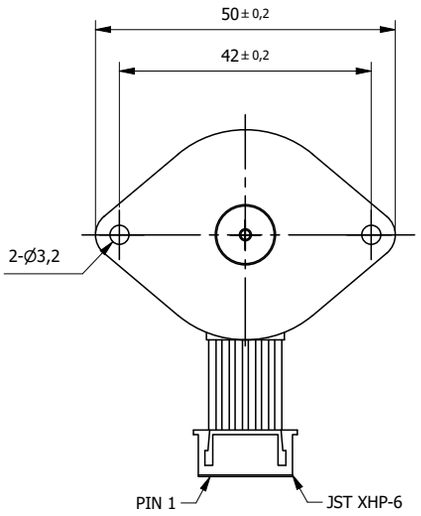
Pin n°	Color	Gauge	Function
1	White	UL1430 AWG30	Phase A
2	Red	|	Phase A-
3	Blue	|	Phase B
4	Yellow	|	Phase B-
5	Black	|	COM Phase A
6	Brown	|	COM Phase B



Permanent Magnet Stepper 35PM16

Ø 35mm



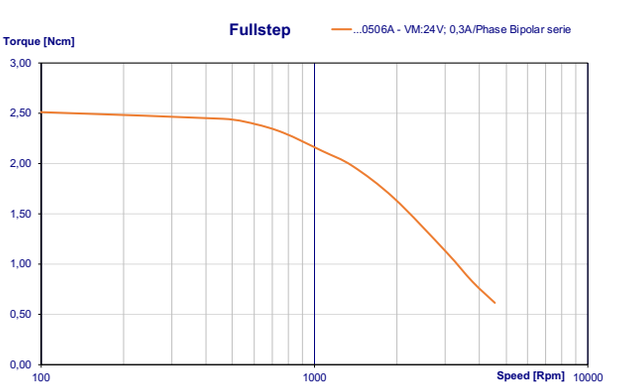


Specification			
	Model		...0506A
1	Rated Voltage	V	5
2	Current/Phase	A	0,5
3	Resistance/Phase	Ω	10
4	Inductance/Phase	mH	3,8
5	Holding Torque	Nm	0,04
6	Rotor Inertia	gcm2	5
7	n°of Leads		6
8	Length (L)	mm	16,5
9	Weight	Kg	0,09

Characteristics	
Item	
Step angle	7,5°
Step angle Accuracy	±7%
Insulation Class	B
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Radial Force (3mm from front flange)	3N
Max. Axial Force	1,5N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

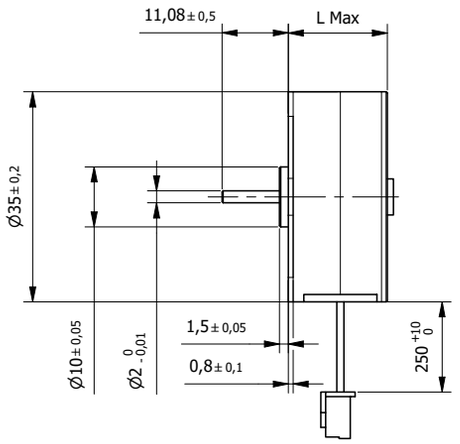
Standard Combination
Drive
Aries
Libra
Orion
Aquarius
* other options on request

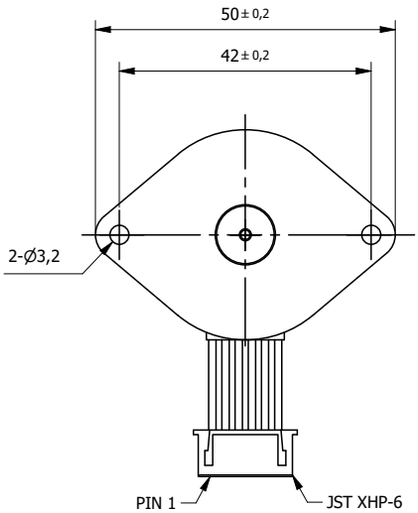
Connection			
Pin n°	Color	Gauge	Function
1	White	UL1430 AWG30	Phase A
2	Red	|	Phase A-
3	Blue	|	Phase B
4	Yellow	|	Phase B-
5	Black	|	COM Phase A
6	Brown	|	COM Phase B



Permanent Magnet Stepper 35PM22

Ø 35mm



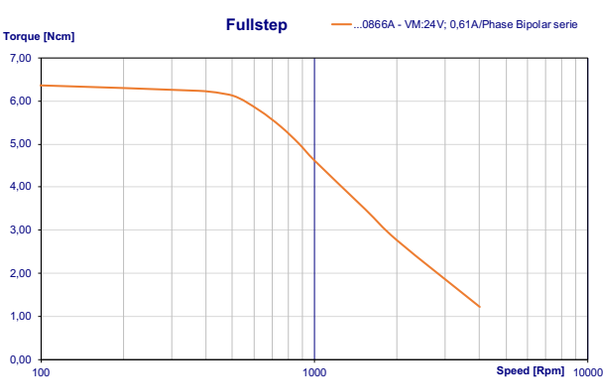


Specification			
	Model		...0866A
1	Rated Voltage	V	5
2	Current/Phase	A	0,86
3	Resistance/Phase	Ω	5,8
4	Inductance/Phase	mH	3,2
5	Holding Torque	Nm	0,055
6	Rotor Inertia	gcm2	7,5
7	n°of Leads		6
8	Length (L)	mm	22
9	Weight	Kg	0,09

Characteristics	
Item	
Step angle	7,5°
Step angle Accuracy	±7%
Insulation Class	E
Ambient Temperature	-10°C to +40°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Radial Force (3mm from front flange)	3N
Max. Axial Force	1,5N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

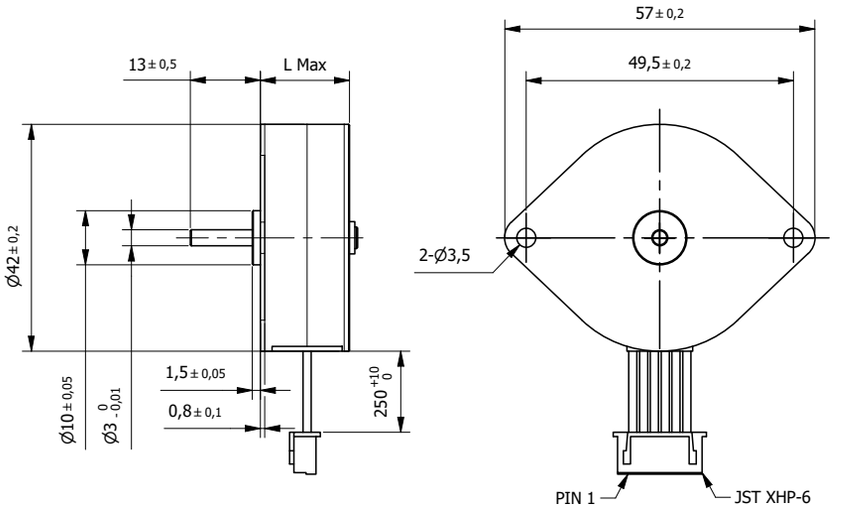
Standard Combination
Drive
Aries
Libra
Orion
Aquarius
* other options on request

Connection			
Pin n°	Color	Gauge	Function
1	White	UL1430 AWG30	Phase A
2	Red	|	Phase A-
3	Blue	|	Phase B
4	Yellow	|	Phase B-
5	Black	|	COM Phase A
6	Brown	|	COM Phase B



Permanent Magnet Stepper 42PM17

Ø 42mm

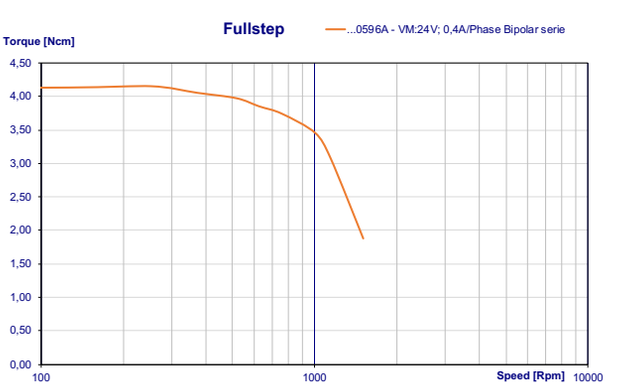


Specification			
	Model		...0596A
1	Rated Voltage	V	5
2	Current/Phase	A	0,59
3	Resistance/Phase	Ω	8,6
4	Inductance/Phase	mH	4,5
5	Holding Torque	Nm	0,05
6	Rotor Inertia	gcm2	9,6
7	n°of Leads		6
8	Length (L)	mm	17
9	Weight	Kg	0,11

Characteristics	
Item	
Step angle	7,5°
Step angle Accuracy	±7%
Insulation Class	B
Ambient Temperature	-10°C to +40°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Radial Force (3mm from front flange)	5N
Max. Axial Force	2N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

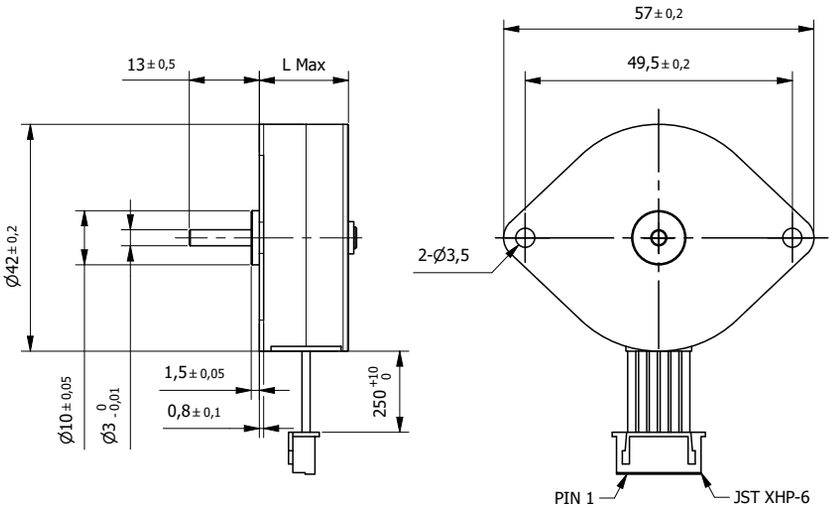
Standard Combination
Drive
Aries
Libra
Orion
Aquarius
* other options on request

Connection			
Pin n°	Color	Gauge	Function
1	White	UL1430 AWG30	Phase A
2	Red	|	Phase A-
3	Blue	|	Phase B
4	Yellow	|	Phase B-
5	Black	|	COM Phase A
6	Brown	|	COM Phase B



Permanent Magnet Stepper 42PM22

Ø 42mm

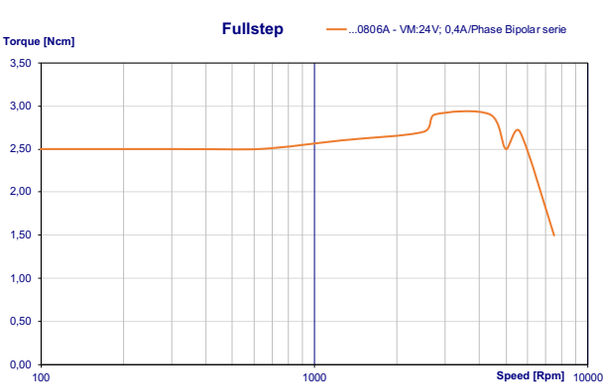


Specification			
	Model		...0806A
1	Rated Voltage	V	5
2	Current/Phase	A	0,8
3	Resistance/Phase	Ω	6,2
4	Inductance/Phase	mH	5,5
5	Holding Torque	Nm	0,06
6	Rotor Inertia	gcm2	9,6
7	n°of Leads		6
8	Length (L)	mm	22,5
9	Weight	Kg	0,13

Characteristics	
Item	
Step angle	7,5°
Step angle Accuracy	±7%
Insulation Class	E
Ambient Temperature	-10°C to +40°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Radial Force (3mm from front flange)	5N
Max. Axial Force	2N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

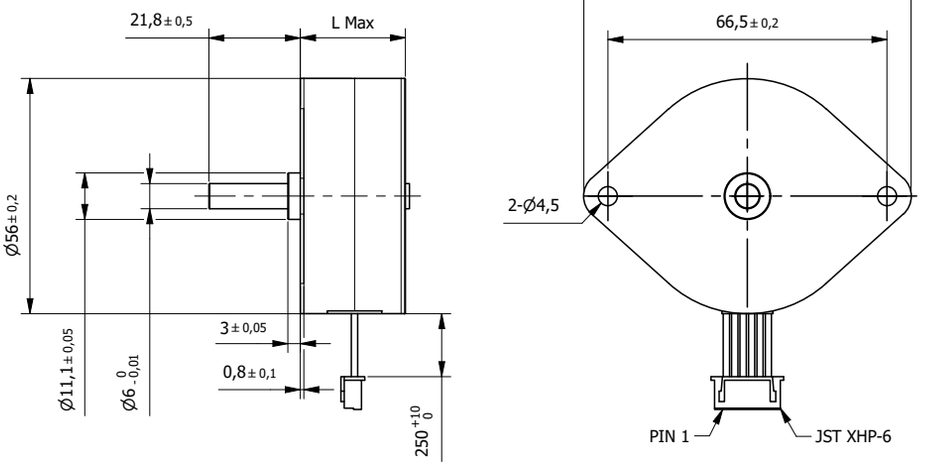
Standard Combination
Drive
Aries
Libra
Orion
Aquarius
* other options on request

Connection			
Pin n°	Color	Gauge	Function
1	White	UL1430 AWG30	Phase A
2	Red	|	Phase A-
3	Blue	|	Phase B
4	Yellow	|	Phase B-
5	Black	|	COM Phase A
6	Brown	|	COM Phase B



Permanent Magnet Stepper 57PM25

Ø 57mm



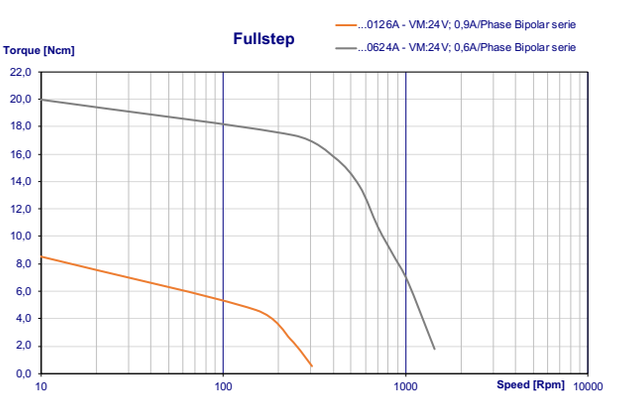
Specification				
	Model		...0126A	...0624A
1	Rated Voltage	V	12	5,6
2	Current/Phase	A	0,12	0,625
3	Resistance/Phase	Ω	100	9
4	Inductance/Phase	mH	107	19,9
5	Holding Torque	Nm	0,15	0,12
6	Rotor Inertia	gcm2	12,5	12,5
7	n°of Leads		6	4
8	Length (L)	mm	25	25
9	Weight	Kg	0,27	0,27

Characteristics	
Item	
Step angle	7,5°
Step angle Accuracy	±8%
Insulation Class	B
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Radial Force (3mm from front flange)	5N
Max. Axial Force	2N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination
Drive
Aries
Libra
Orion
Aquarius

* other options on request

Connection			
Pin n°	Color	Gauge	Function
1	White	UL1430 AWG30	Phase A
2	Red	|	Phase A-
3	Blue	|	Phase B
4	Yellow	|	Phase B-
5	Black	|	COM Phase A
6	Brown	|	COM Phase B



Hybrid Stepper
S series

p.277

Hybrid Stepper
SH series

p.287

Hybrid Stepper
STC series

p.327

Stepper motors

2-Phase Hybrid

Advantages at a glance
High torque
High speed
High reliability

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.

* Holding Torque

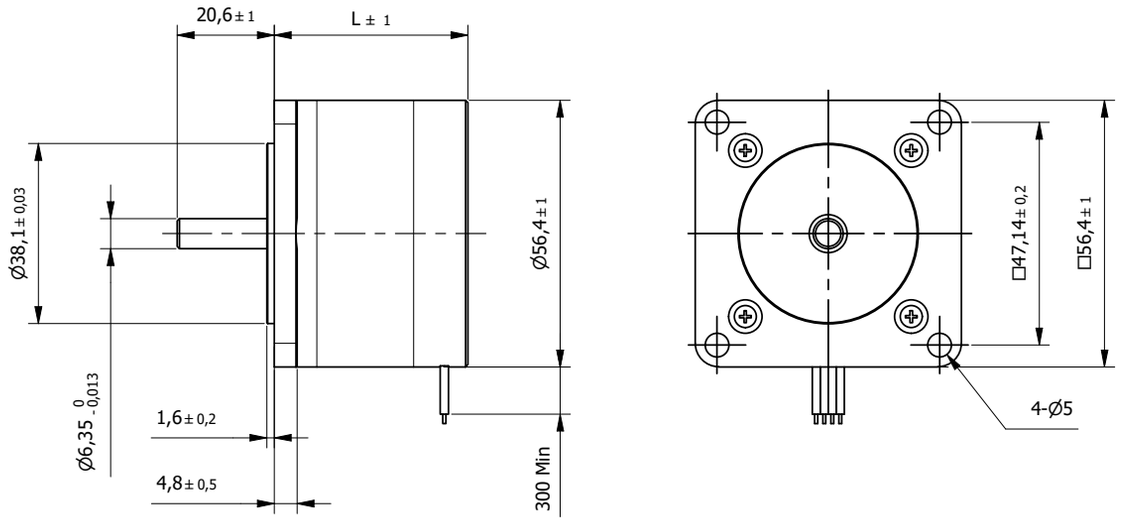
Hybrid Stepper motors

S-series

Hybrid Stepper motors - S series	Torque* (Nm)	
57S41	0,29...0,40	278
57S51	0,49...0,69	279
57S56	0,60...0,84	280
57S76	0,90...1,25	281
86S67	2,30...2,80	282
86S94	3,80...4,80	283
86S125	6,20...7,60	284

Hybrid Stepper Motor 57S41

□ 57mm



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

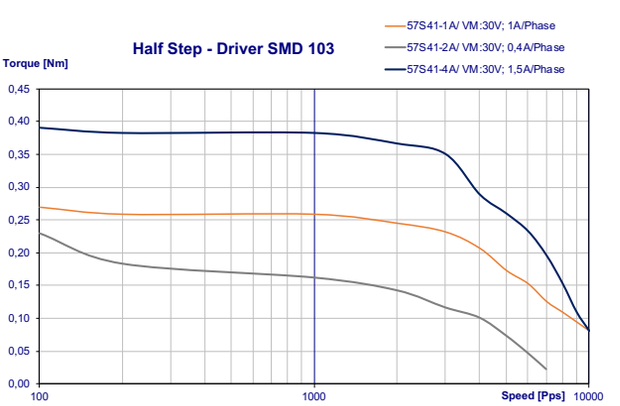
Specification					
	Model		57S41-1A	57S41-2A	57S41-4A
1	Rated Voltage	V	4	12	2,8
2	Current/Phase	A	1,1	0,4	1,56
3	Resistance/Phase	Ω	3,6	30	1,8
4	Inductance/Phase	mH	4	30	3,6
5	Holding Torque	Nm	0,288	0,288	0,4
6	Rotor Inertia	gcm2	57	57	57
7	Detent Torque	Nm	0,018	0,018	0,018
8	n° of Leads		6	6	4
9	Length (L)	mm	41	41	41
10	Weight	Kg	0,54	0,54	0,54

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

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

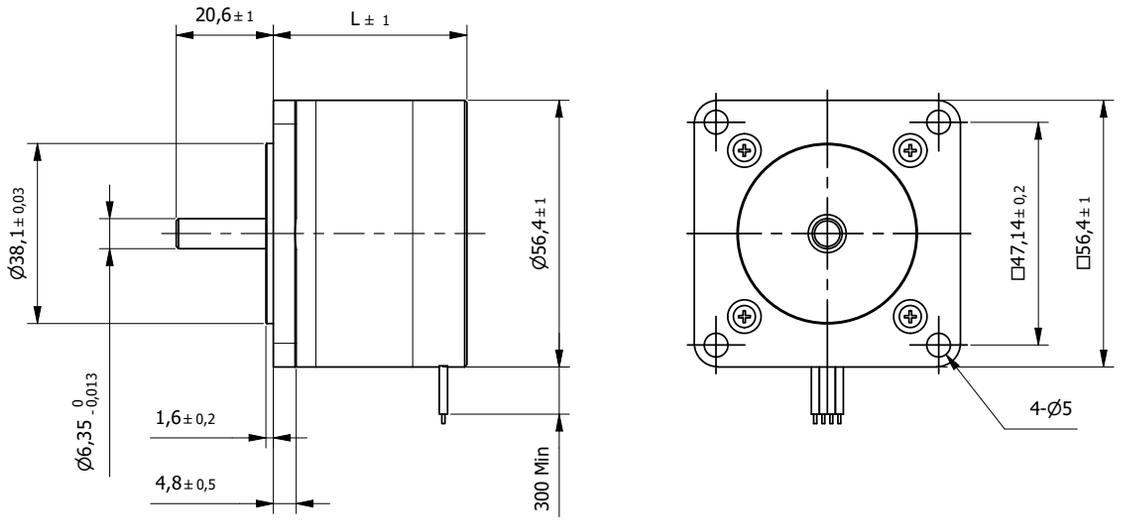
* other options on request

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 13mm - 2x M2.5 on diameter 46mm

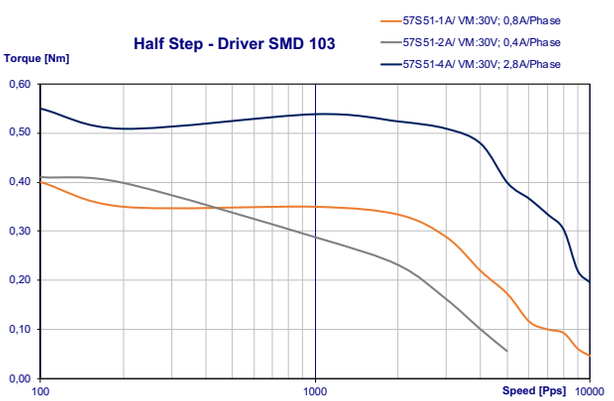
Specification					
	Model		57S51-1A	57S51-2A	57S51-4A
1	Rated Voltage	V	6	12	2,38
2	Current/Phase	A	0,85	0,42	2,8
3	Resistance/Phase	Ω	7,1	29	0,85
4	Inductance/Phase	mH	9	36	2,1
5	Holding Torque	Nm	0,49	0,49	0,69
6	Rotor Inertia	gcm2	110	110	110
7	Detent Torque	Nm	0,035	0,035	0,035
8	n° of Leads		6	6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

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

* other options on request

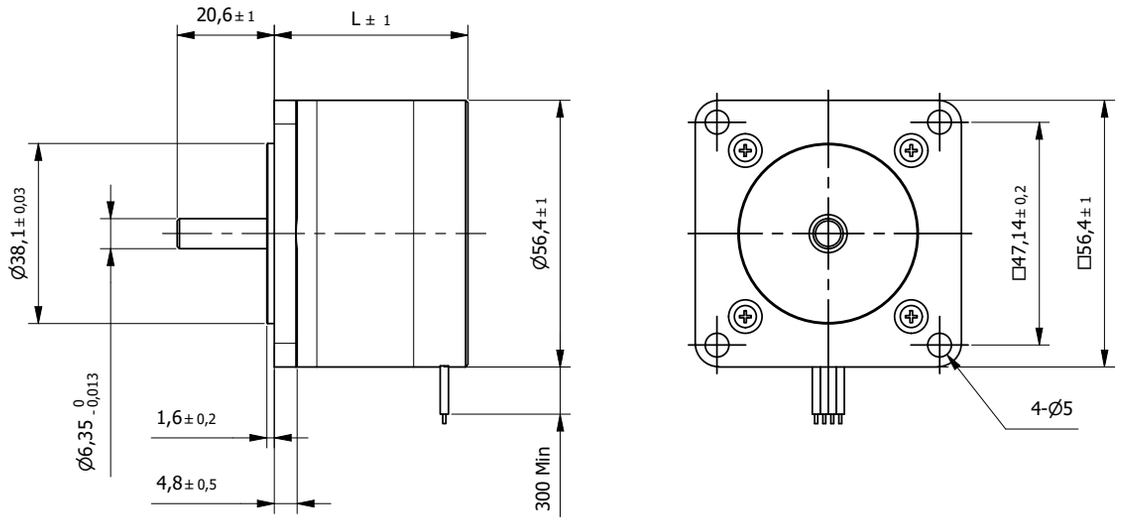
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Stepper

Hybrid Stepper Motor 57S56

□ 57mm



BE Version: Rear shaft 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

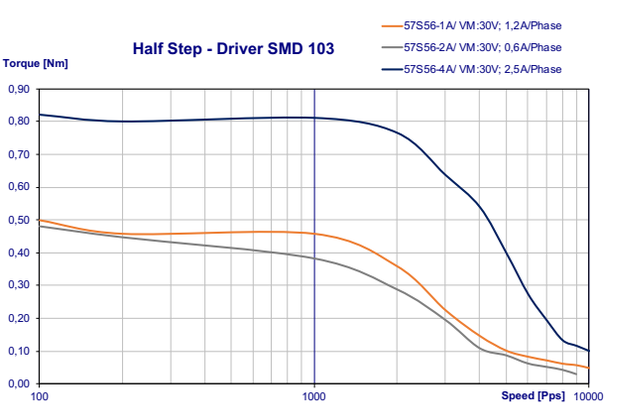
Standard Combination

Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

* other options on request

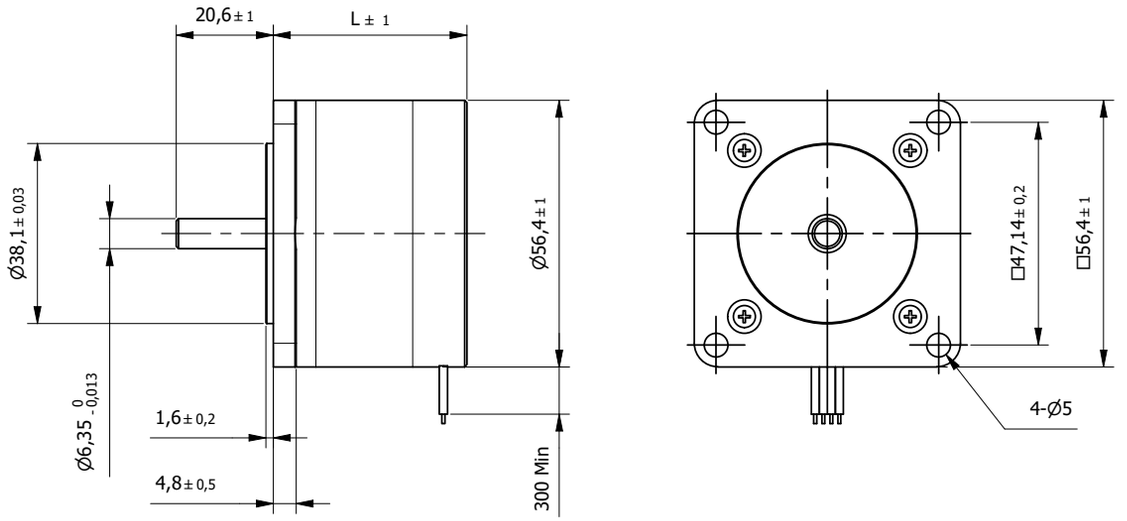
Connection

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 13mm - 2x M2.5 on diameter 46mm

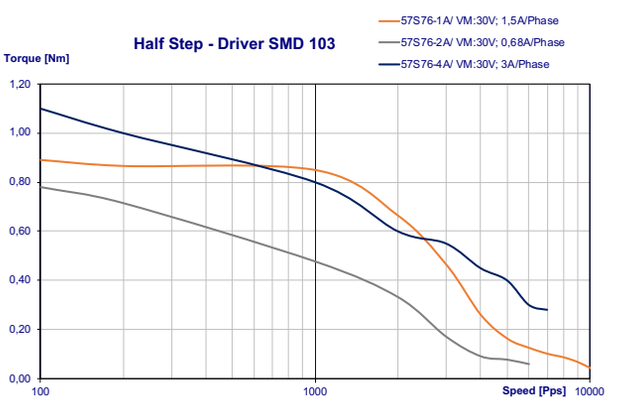
Specification					
	Model		57S76-1A	57S76-2A	57S76-4A
1	Rated Voltage	V	5,4	12	2,7
2	Current/Phase	A	1,5	0,68	3,3
3	Resistance/Phase	Ω	3,6	17,7	0,85
4	Inductance/Phase	mH	6	30	3
5	Holding Torque	Nm	0,9	0,9	1,25
6	Rotor Inertia	gcm2	200	200	200
7	Detent Torque	Nm	0,072	0,072	0,072
8	n° of Leads		6	6	4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

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

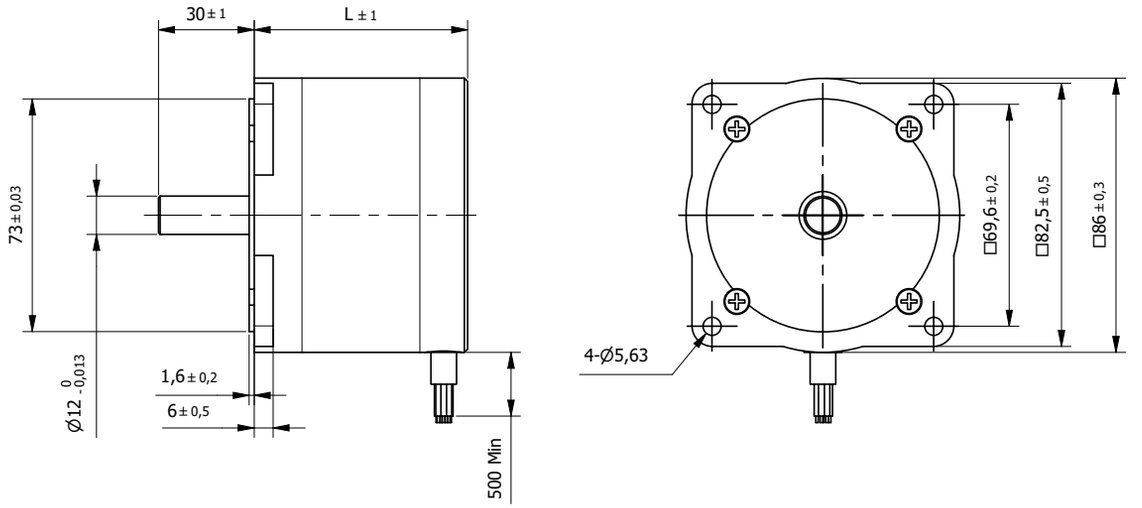
* other options on request

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 86S67

□ 86mm



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

Specification

	Model		86S67-2808A		
			Unipolar	Parallel	Series
1	Rated Voltage	V	3,64	2,54	5
2	Current/Phase	A	2,8	3,92	1,96
3	Resistance/Phase	Ω	1,3	0,65	2,6
4	Inductance/Phase	mH	5,1	5,1	20,4
5	Holding Torque	Nm	2,3	2,8	2,8
6	Rotor Inertia	gcm2	660	660	660
7	Detent Torque	Nm	0,085	0,085	0,085
8	n° of Leads		8	8	8
9	Length (L)	mm	67	67	67
10	Weight	Kg	1,6	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

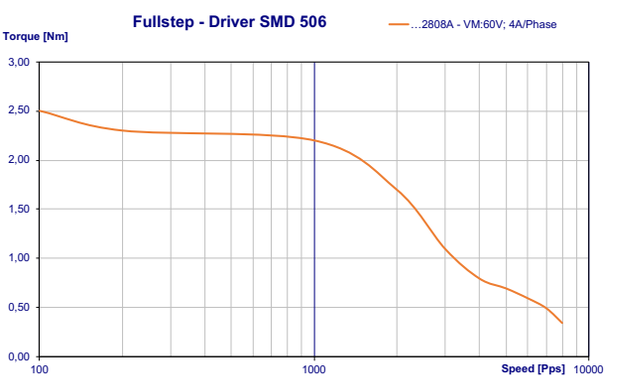
Standard Combination

Encoder	Gearbox	Drive
E3	GYP80	Aries
E4		Libra
E5		Sagittarius
		Aquarius

* other options on request

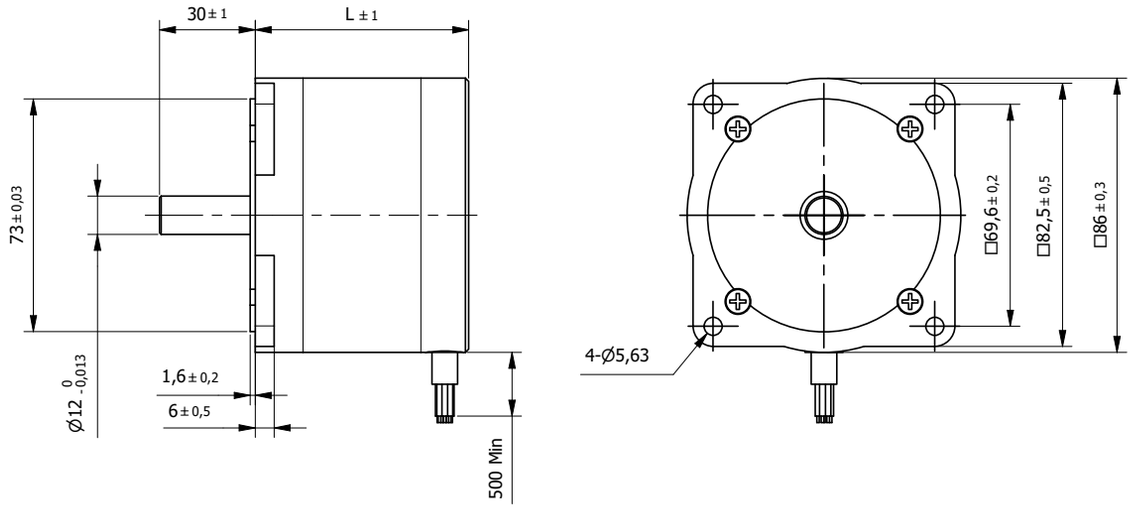
Connection

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 Motor 86S94

□ 86mm



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

Specification

	Model		86S94-2808A		
			Unipolar	Parallel	Series
1	Rated Voltage	V	4,76	2,54	6,6
2	Current/Phase	A	2,8	3,92	1,96
3	Resistance/Phase	Ω	1,7	0,85	3,4
4	Inductance/Phase	mH	7,7	7,7	30,8
5	Holding Torque	Nm	3,8	4,8	4,8
6	Rotor Inertia	gcm2	1200	1200	1200
7	Detent Torque	Nm	0,13	0,13	0,13
8	n° of Leads		8	8	8
9	Length (L)	mm	94	94	94
10	Weight	Kg	2,4	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

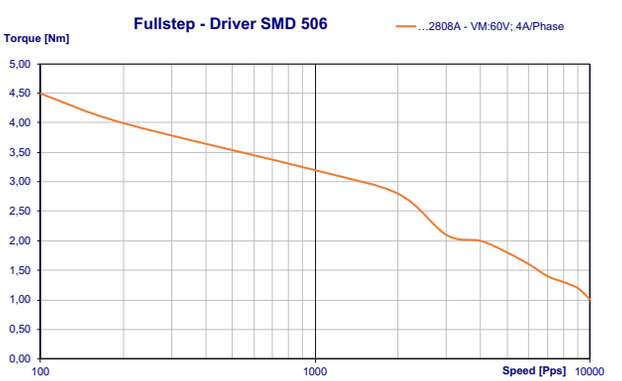
Standard Combination

Encoder	Gearbox	Drive
E3	GYP80	Aries
E4		Libra
E5		Sagittarius
		Aquarius

* other options on request

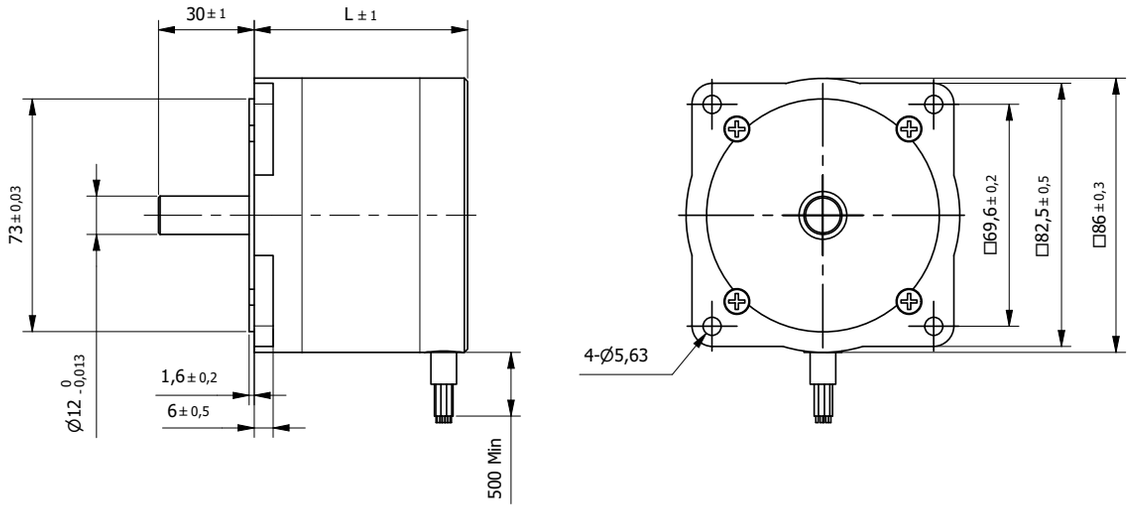
Connection

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 Motor 86S125

□ 86mm



BE Version: Rear shaft 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

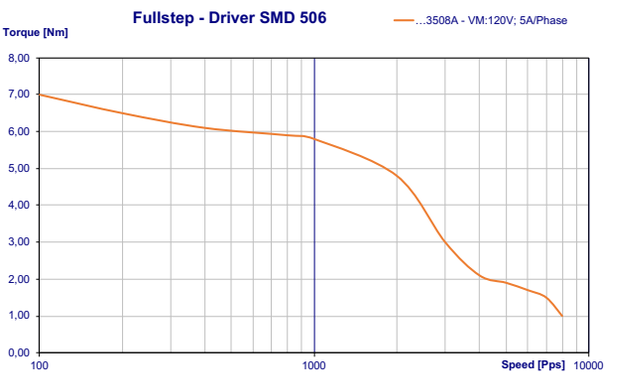
Standard Combination

Encoder	Gearbox	Drive
E3	GYP80	Libra
E4		Sagittarius
E5		Aquarius
		Andromeda

* other options on request

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



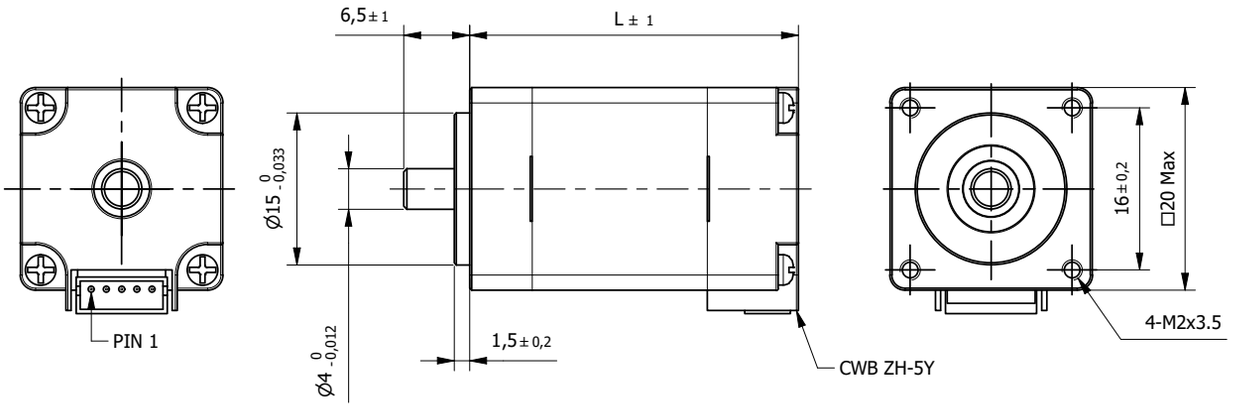
Stepper

Hybrid Stepper motors

SH-series

Hybrid Stepper Motor 20SH33
High Torque

□ 20mm



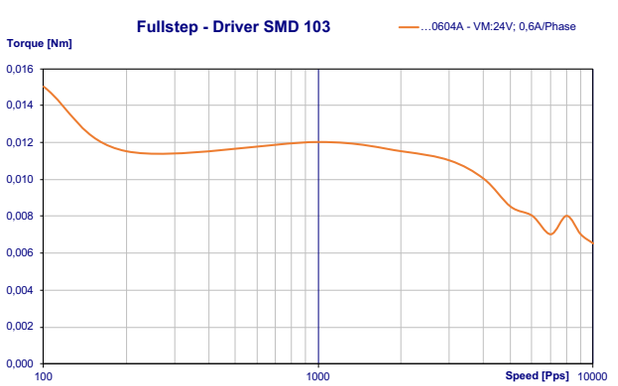
Specification			
	Model		...0604A
1	Rated Voltage	V	3,96
2	Current/Phase	A	0,6
3	Resistance/Phase	Ω	6,5
4	Inductance/Phase	mH	1,7
5	Holding Torque	Nm	0,018
6	Rotor Inertia	gcm2	2
7	Detent Torque	Nm	0,002
8	n° of Leads		4
9	Length (L)	mm	33
10	Weight	Kg	0,06

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	2N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination
Drive
Aries
Libra
Orion
Aquarius

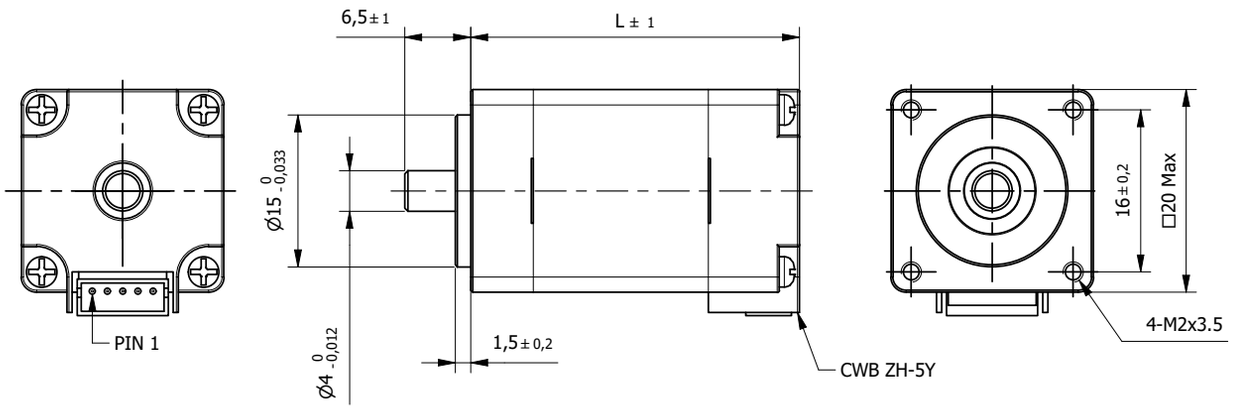
* other options on request

Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1061 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 20SH42
High Torque

□ 20mm

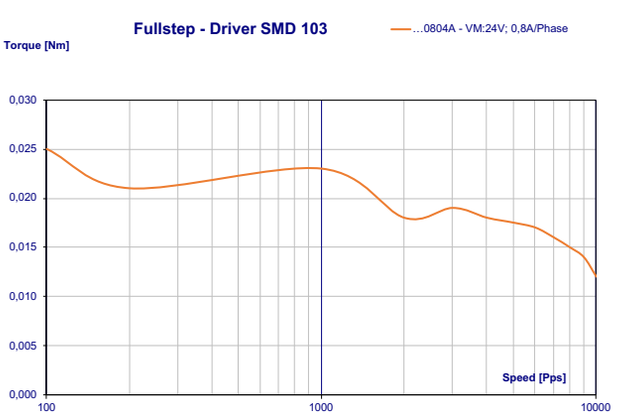


Specification			
	Model		...0804A
1	Rated Voltage	V	4,32
2	Current/Phase	A	0,8
3	Resistance/Phase	Ω	5,4
4	Inductance/Phase	mH	1,5
5	Holding Torque	Nm	0,03
6	Rotor Inertia	gcm2	3,6
7	Detent Torque	Nm	0,002
8	n° of Leads		4
9	Length (L)	mm	42
10	Weight	Kg	0,08

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 (20mm from front flange)	28N
Max Axial Force	2N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

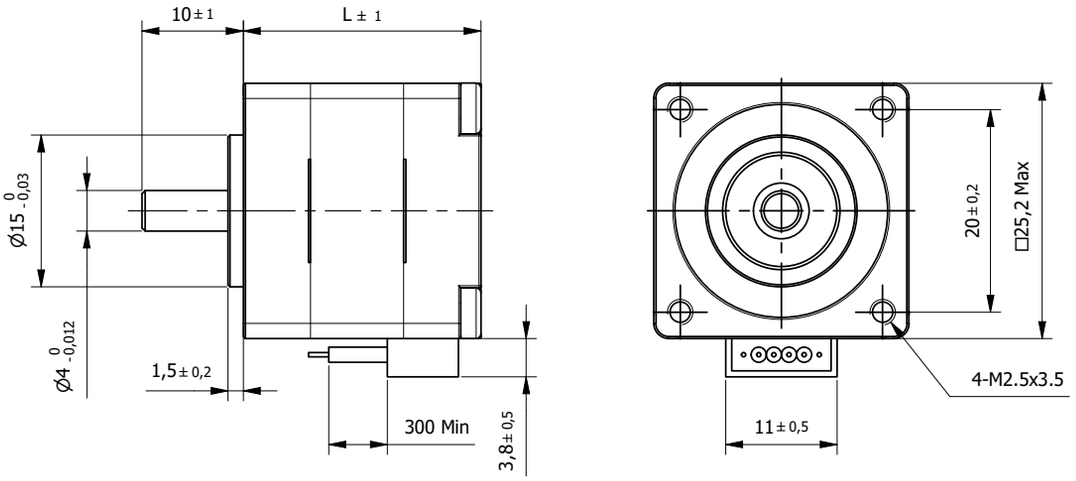
Standard Combination
Drive
Aries
Libra
Orion
Aquarius
* other options on request

Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1061 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 25SH23
High Torque

□ 25mm



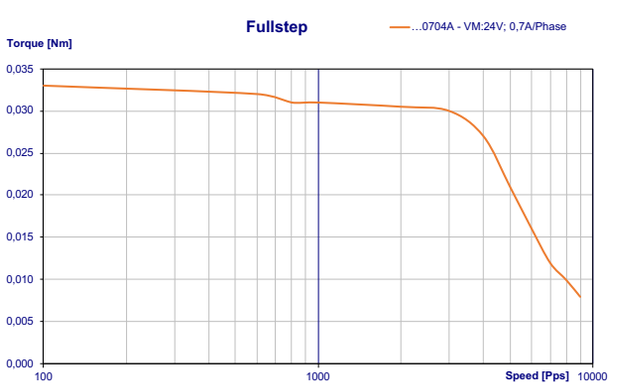
Specification			
	Model		...0704A
1	Rated Voltage	V	3
2	Current/Phase	A	0,7
3	Resistance/Phase	Ω	4,3
4	Inductance/Phase	mH	2,4
5	Holding Torque	Nm	0,033
6	Rotor Inertia	gcm2	2
7	Detent Torque	Nm	0,003
8	n° of Leads		4
9	Length (L)	mm	23
10	Weight	Kg	0,055

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	7N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination	
Gearbox	Drive
22JMS	Aries
	Libra
	Orion
	Aquarius

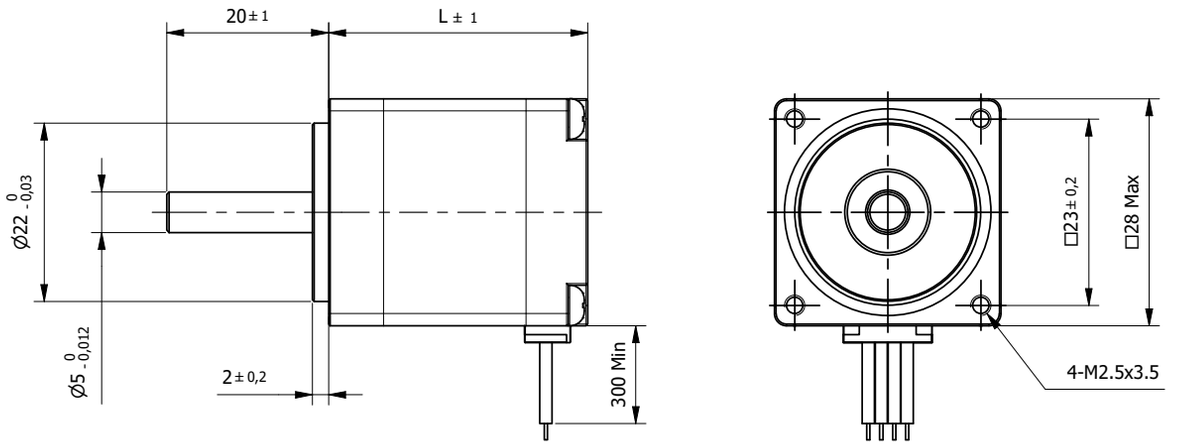
* other options on request

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 13mm - 2x M2.5 on diameter 19,05mm

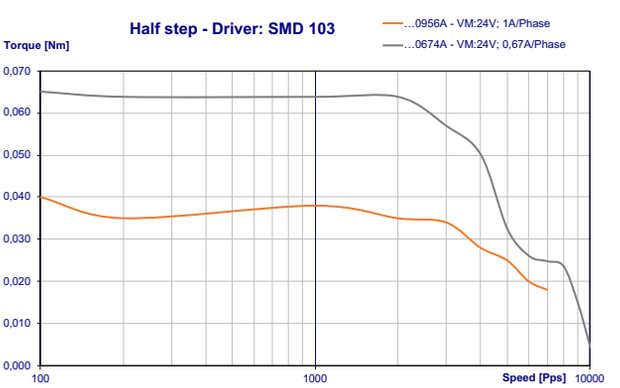
Specification				
	Model		...0956A	...0674A
1	Rated Voltage	V	2,66	3,8
2	Current/Phase	A	0,95	0,67
3	Resistance/Phase	Ω	2,8	5,6
4	Inductance/Phase	mH	0,8	3,4
5	Holding Torque	Nm	0,043	0,06
6	Rotor Inertia	gcm2	9	9
7	Detent Torque	Nm	0,005	0,005
8	n° of Leads		6	4
9	Length (L)	mm	32	32
10	Weight	Kg	0,11	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 (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E4	28JMS	Aries
E5	22JMS	Libra
		Orion
		Aquarius

* other options on request

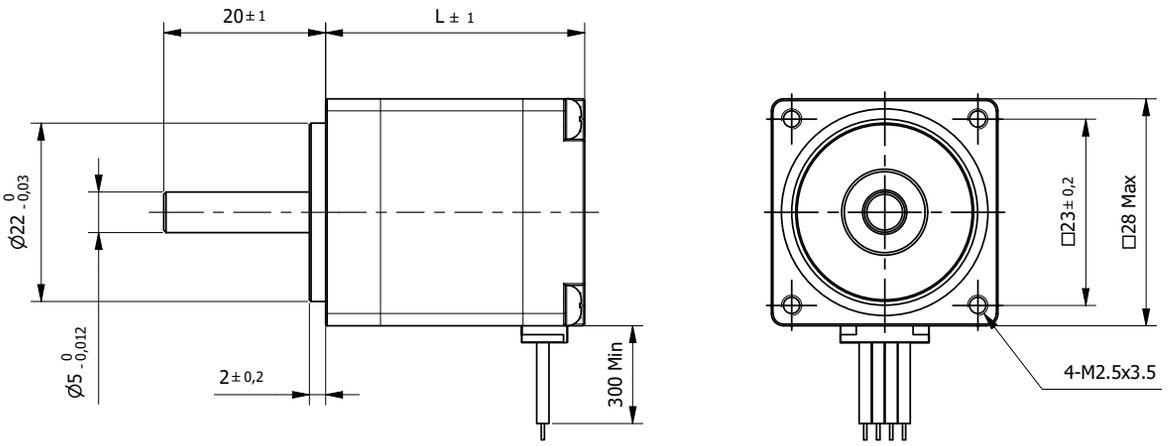
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Stepper

Hybrid Stepper Motor 28SH45
High Torque

□ 28mm



BE Version: Rear shaft 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 (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

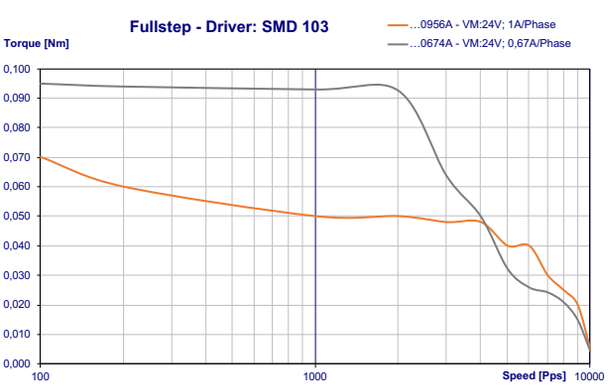
Standard Combination

Encoder	Gearbox	Drive
E4	28JMS	Aries
E5	22JMS	Libra
		Orion
		Aquarius

* other options on request

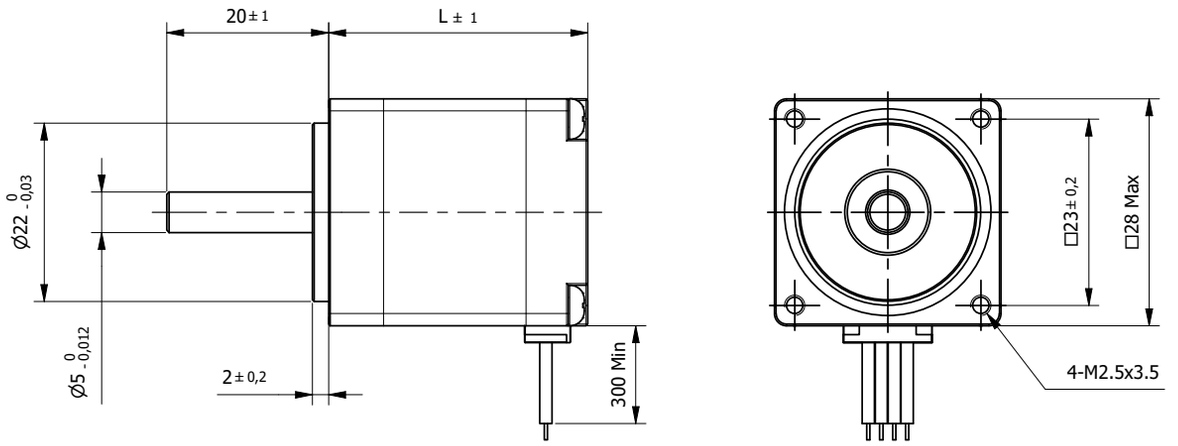
Connection

Lead n°	Color	Gauge	Function
1	Black	UL1061 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 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 (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

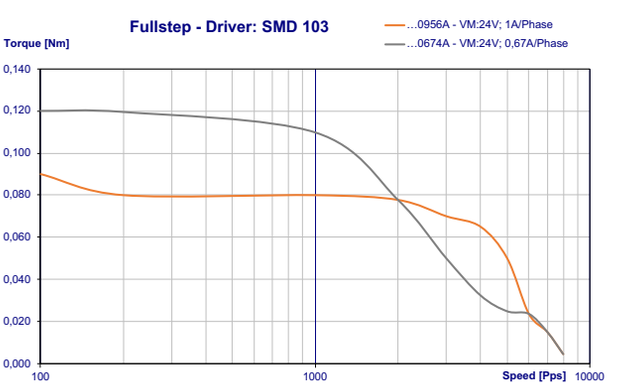
Standard Combination

Encoder	Gearbox	Drive
E4	28JMS	Aries
E5	22JMS	Libra
		Orion
		Aquarius

* other options on request

Connection

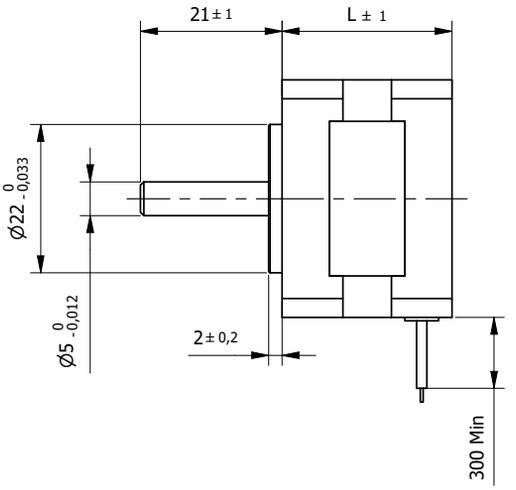
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B

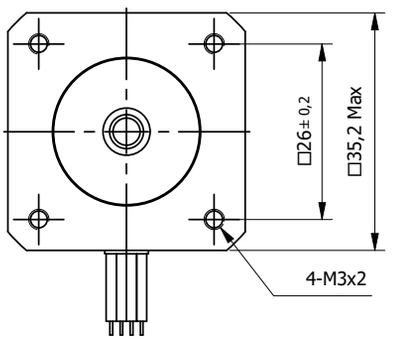


Stepper

Hybrid Stepper Motor 35SH26
High Torque

□ 35mm





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

Specification

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

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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

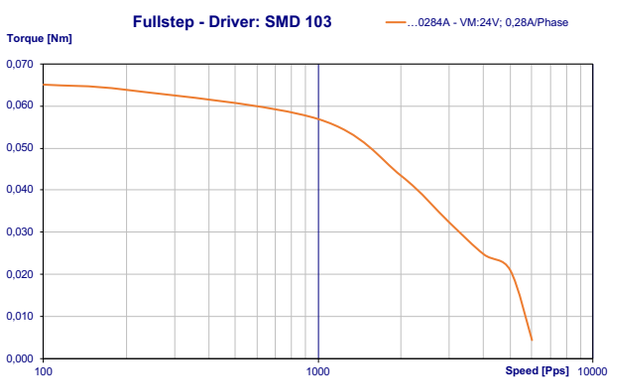
Standard Combination

Encoder	Gearbox	Drive
E3	28JMS	Aries
E4		Libra
E5		Orion
		Aquarius

* other options on request

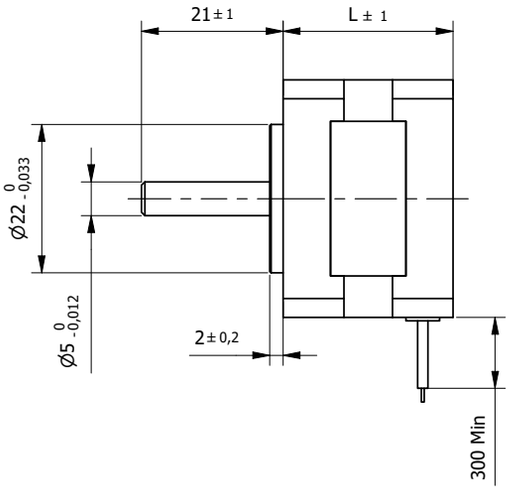
Connection

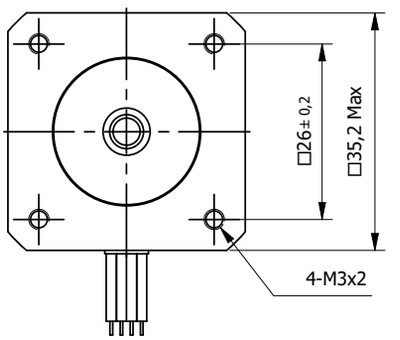
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 35SH28
High Torque

□ 35mm





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

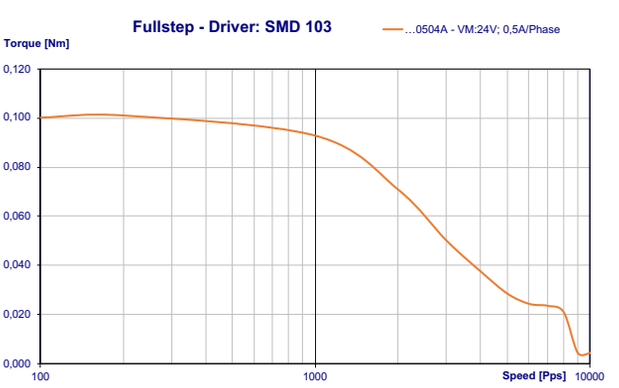
Specification			
	Model		...0504A
1	Rated Voltage	V	10
2	Current/Phase	A	0,5
3	Resistance/Phase	Ω	20
4	Inductance/Phase	mH	14
5	Holding Torque	Nm	0,1
6	Rotor Inertia	gcm2	11
7	Detent Torque	Nm	0,008
8	n° of Leads		4
9	Length (L)	mm	28
10	Weight	Kg	0,14

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 (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	28JMS	Aries
E4		Libra
E5		Orion
		Aquarius

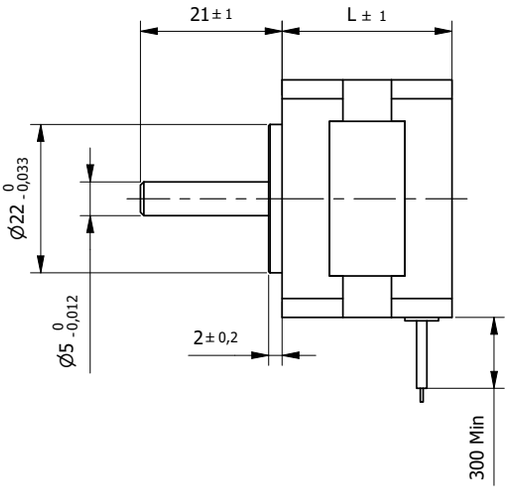
* other options on request

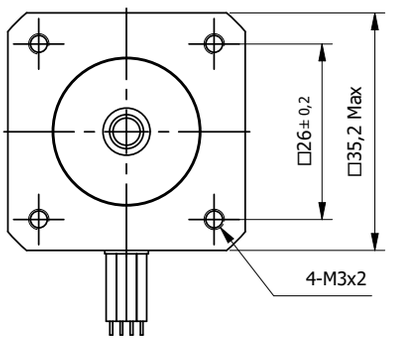
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 35SH36
High Torque

□ 35mm





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

Specification

	Model		...1004A
1	Rated Voltage	V	2,7
2	Current/Phase	A	1
3	Resistance/Phase	Ω	2,7
4	Inductance/Phase	mH	4,3
5	Holding Torque	Nm	0,14
6	Rotor Inertia	gcm2	14
7	Detent Torque	Nm	0,01
8	n° of Leads		4
9	Length (L)	mm	36
10	Weight	Kg	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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

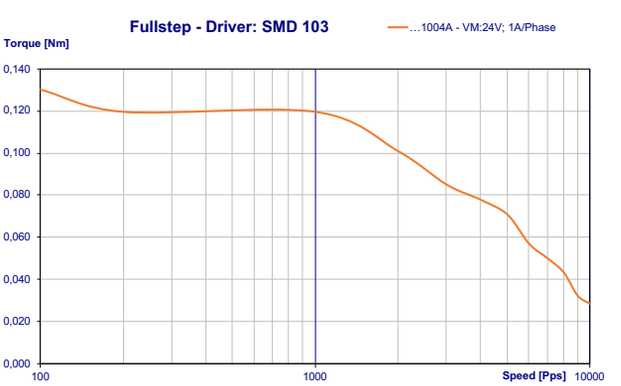
Standard Combination

Encoder	Gearbox	Drive
E3	28JMS	Aries
E4		Libra
E5		Orion
		Aquarius

* other options on request

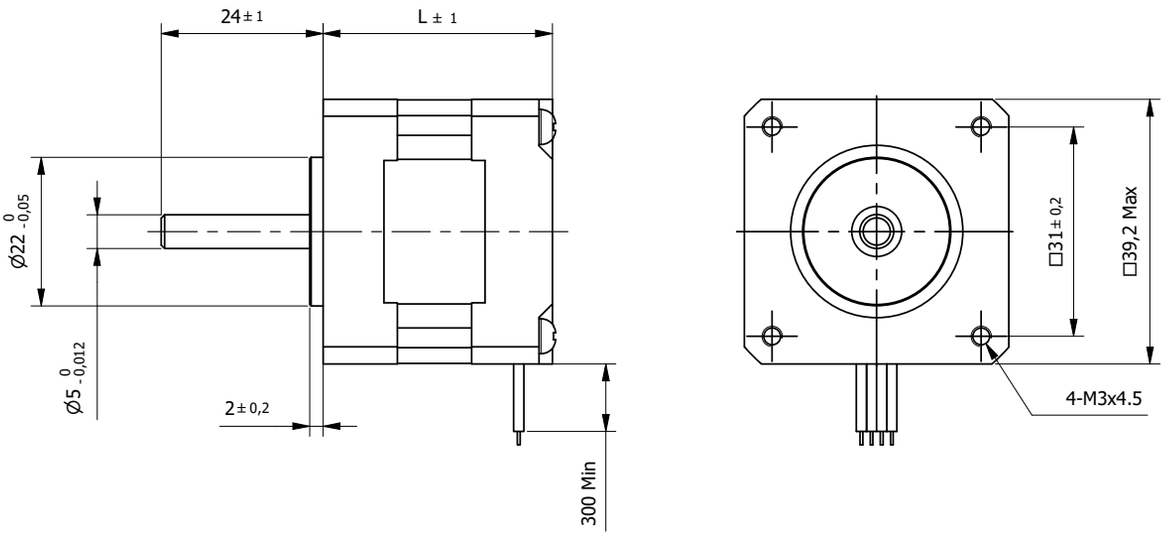
Connection

Lead n°	Color	Gauge	Function
1	Black	UL1061 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 39SH20
High Torque

□ 39mm



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

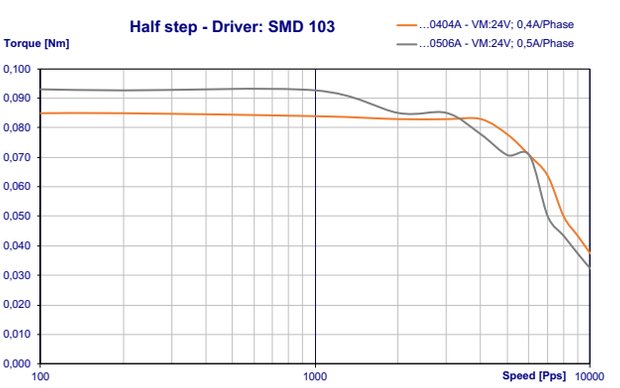
Specification				
	Model		...0404A	...0506A
1	Rated Voltage	V	2,64	6,5
2	Current/Phase	A	0,4	0,5
3	Resistance/Phase	Ω	6,6	13
4	Inductance/Phase	mH	6	6
5	Holding Torque	Nm	0,065	0,08
6	Rotor Inertia	gcm2	11	11
7	Detent Torque	Nm	0,005	0,005
8	n° of Leads		4	4
9	Length (L)	mm	20	20
10	Weight	Kg	0,12	0,12

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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	36JMS	Aries
E4		Libra
E5		Orion
		Aquarius

* other options on request

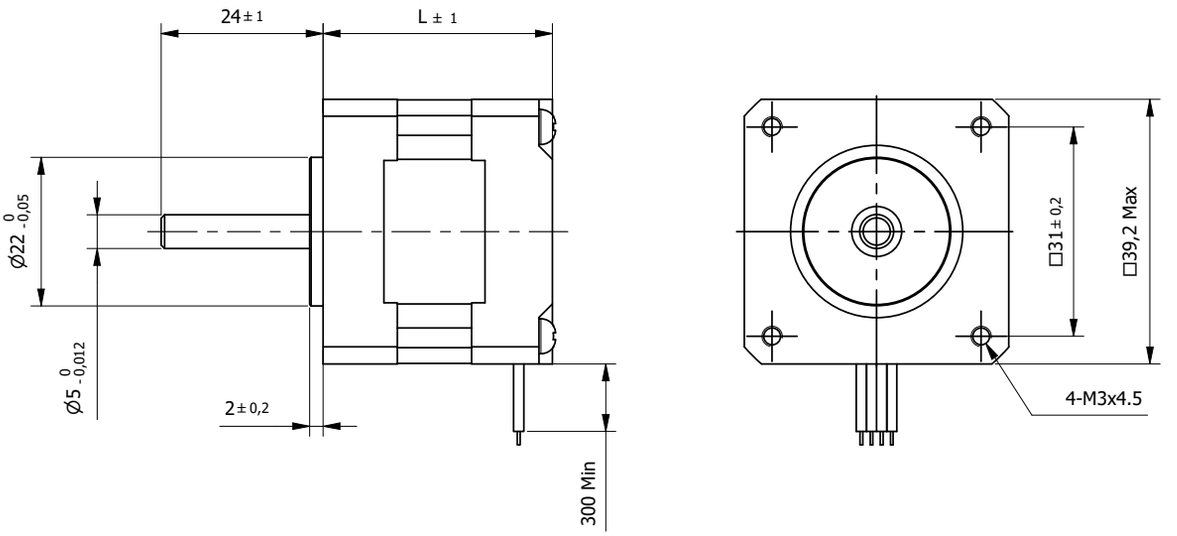
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1007 AWG28	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Stepper

Hybrid Stepper Motor 39SH34
High Torque

□ 39mm



BE Version: Rear shaft 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

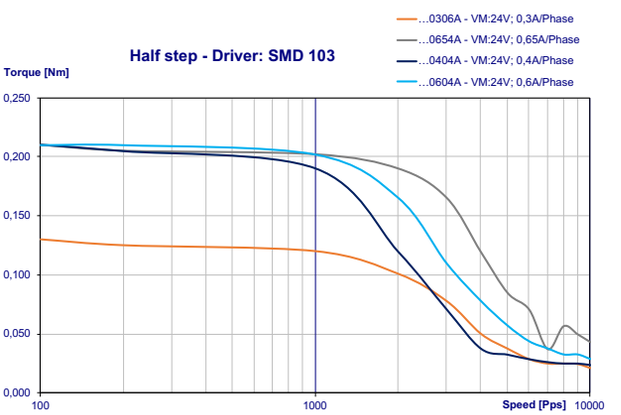
Standard Combination

Encoder	Gearbox	Drive
E3	36JMS	Aries
E4		Libra
E5		Orion
		Aquarius

* other options on request

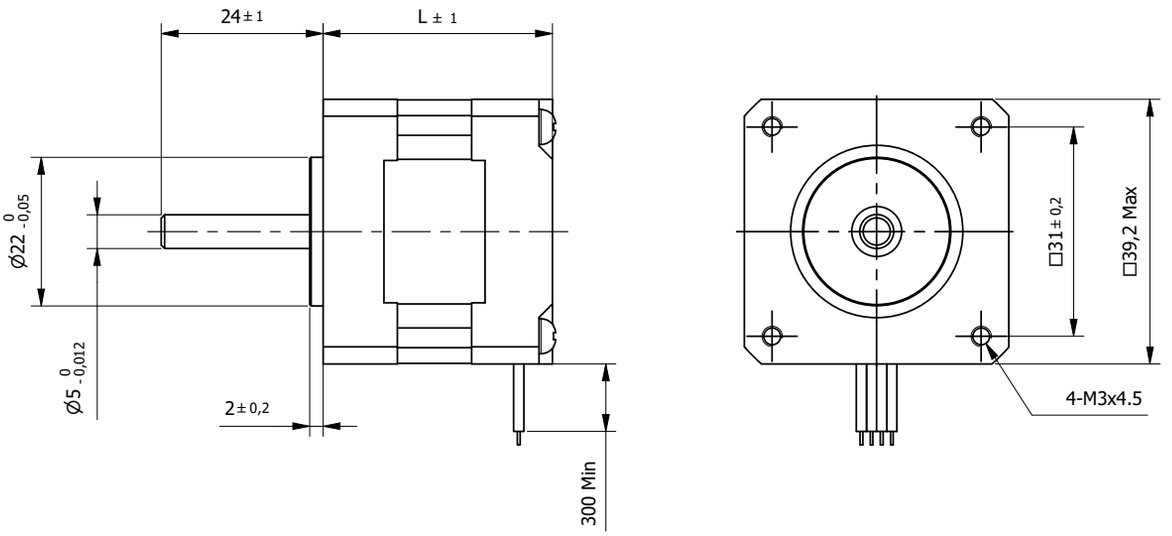
Connection

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 13mm - 2x M2.5 on diameter 19,05mm

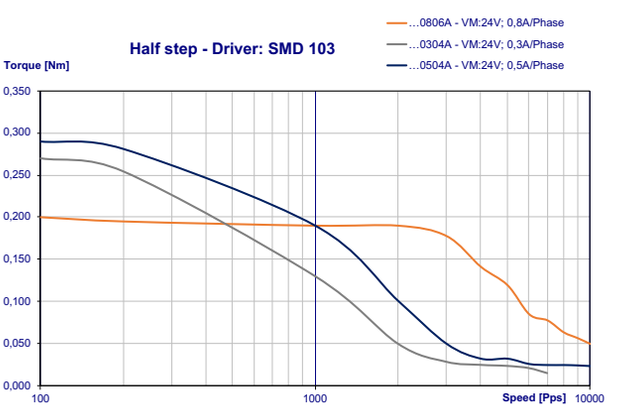
Specification					
	Model		...0806A	...0304A	...0504A
1	Rated Voltage	V	6	12	11
2	Current/Phase	A	0,8	0,3	0,5
3	Resistance/Phase	Ω	7,5	40	22
4	Inductance/Phase	mH	8	100	40
5	Holding Torque	Nm	0,2	0,28	0,29
6	Rotor Inertia	gcm2	24	24	24
7	Detent Torque	Nm	0,018	0,018	0,018
8	n° of Leads		6	4	4
9	Length (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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	36JMS	Aries
E4		Libra
E5		Orion
		Aquarius

* other options on request

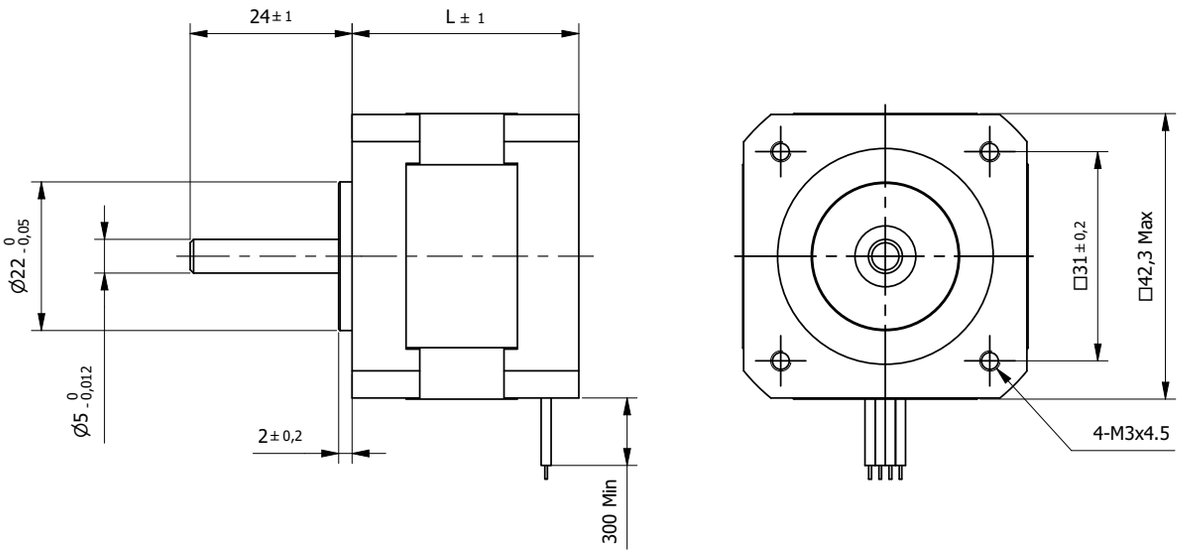
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Stepper

Hybrid Stepper Motor 42SH33
High Torque

□ 42mm



BE Version: Rear shaft 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

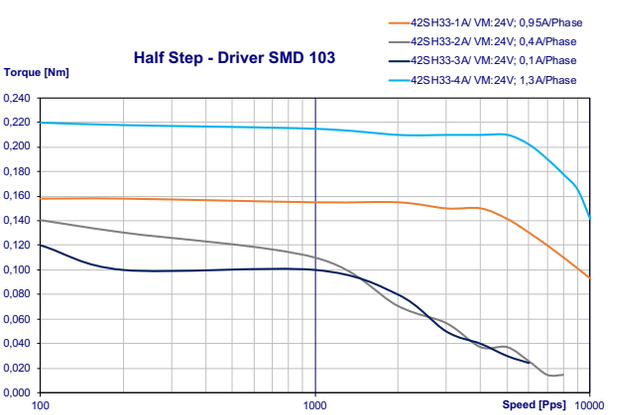
Standard Combination

Encoder	Gearbox	Drive
E3	GYP42	Aries
E4	42JMS	Libra
E5		Orion
		Aquarius

* other options on request

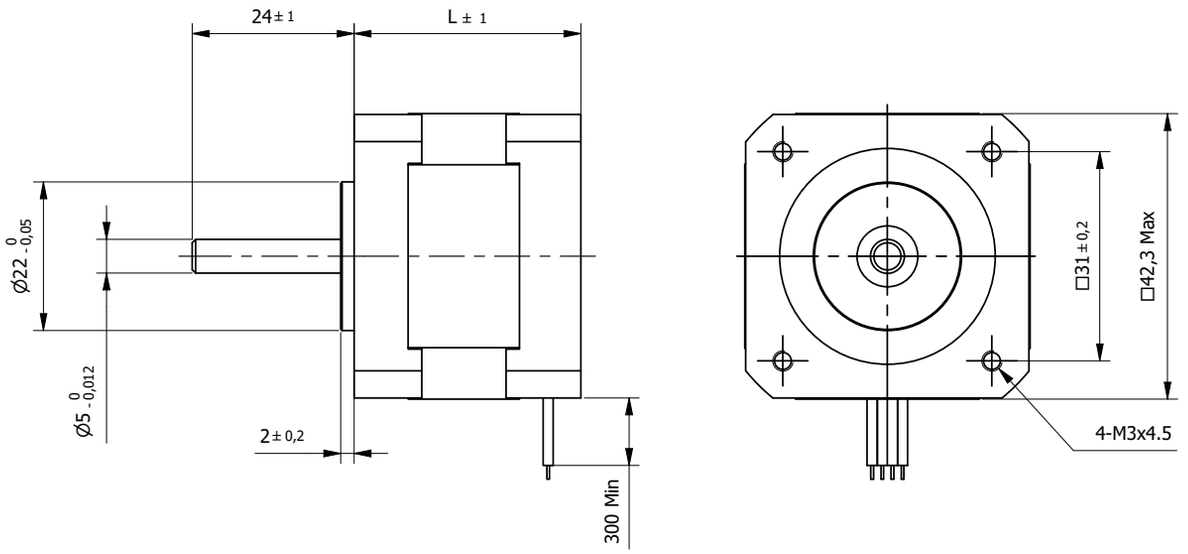
Connection

Lead n°	Color	Gauge	Function
1	Black	UL1061 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 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

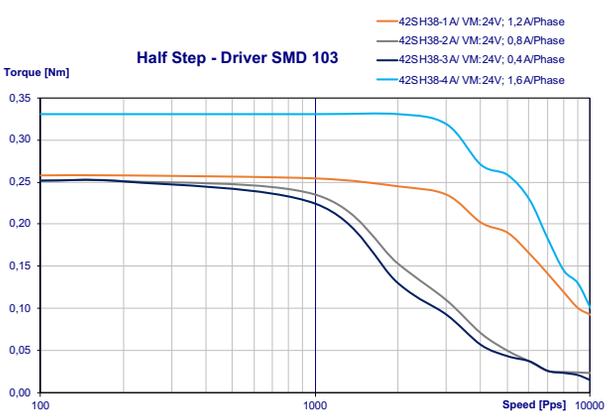
Standard Combination

Encoder	Gearbox	Drive
E3	GYP42	Aries
E4	42JMS	Libra
E5		Orion
		Aquarius

* other options on request

Connection

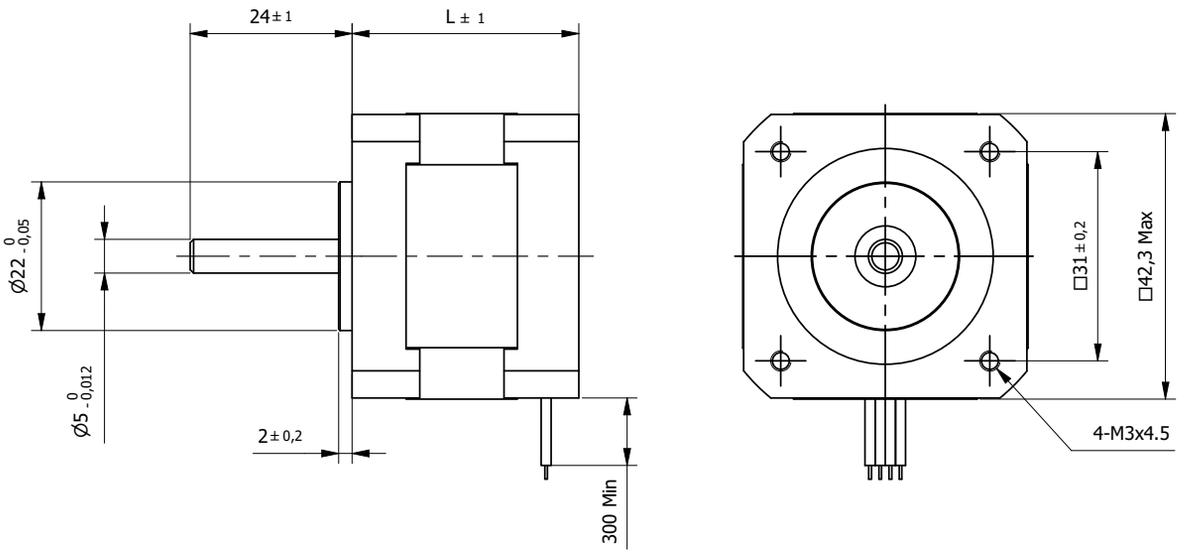
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Stepper

Hybrid Stepper Motor 42SH47
High Torque

□ 42mm



BE Version: Rear shaft 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	2,8
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	2,8	6,3	25	2,8
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	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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

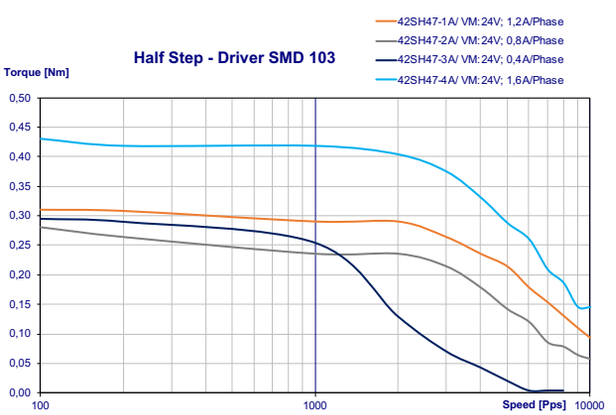
Standard Combination

Encoder	Gearbox	Drive
E3	GYP42	Aries
E4	42JMS	Libra
E5		Orion
		Aquarius

* other options on request

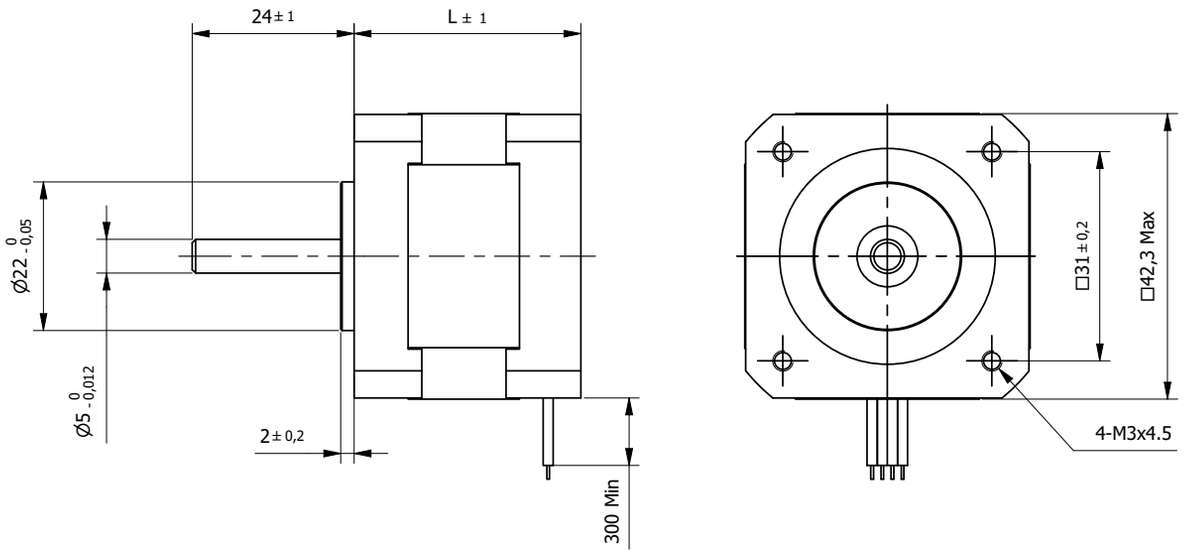
Connection

Lead n°	Color	Gauge	Function
1	Black	UL1061 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 13mm - 2x M2.5 on diameter 19.05mm

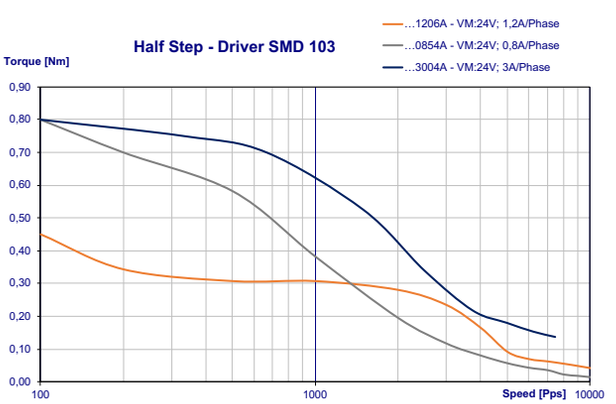
Specification					
	Model		...1206A	...0854A	...3004A
1	Rated Voltage	V	7,2	10,2	3,3
2	Current/Phase	A	1,2	0,85	3
3	Resistance/Phase	Ω	6	12	1,1
4	Inductance/Phase	mH	7	29	2,7
5	Holding Torque	Nm	0,65	0,8	0,8
6	Rotor Inertia	gcm2	102	102	102
7	Detent Torque	Nm	0,028	0,028	0,028
8	n° of Leads		6	4	4
9	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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP42	Aries
E4	42JMS	Libra
E5		Orion
		Aquarius

* other options on request

Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 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

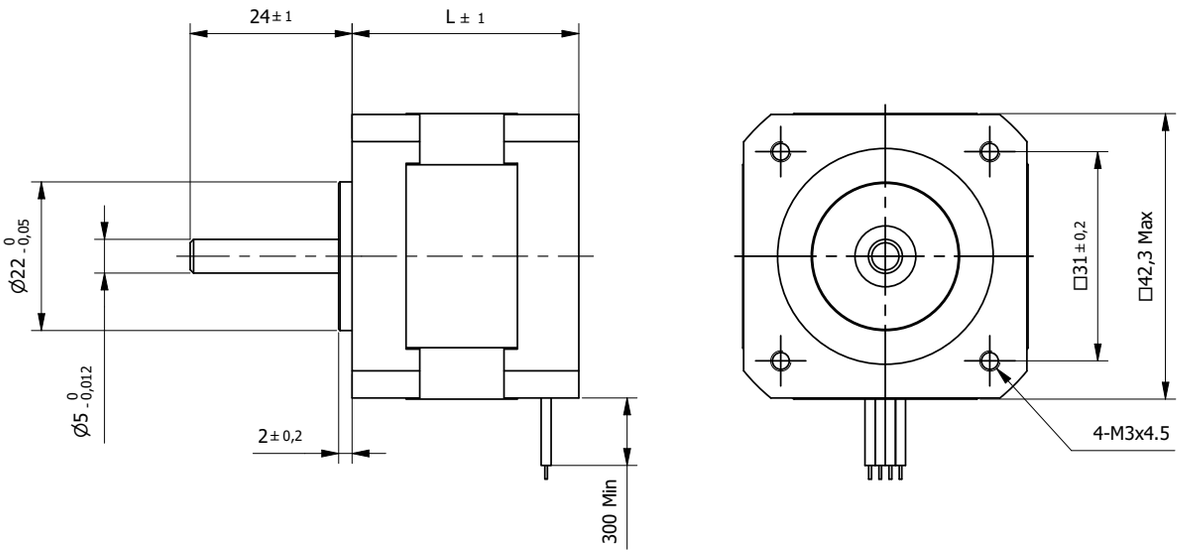


Stepper

Hybrid Stepper Motor 42SH33M

High Torque - step angle 0,9°

□ 42mm



BE Version: Rear shaft 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

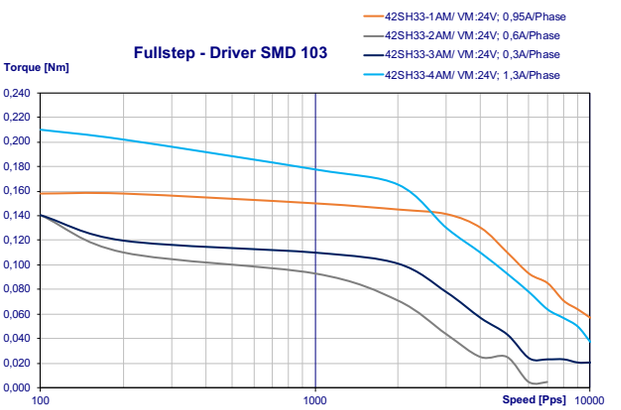
Standard Combination

Encoder	Gearbox	Drive
E3	GYP42	Aries
E4	42JMS	Libra
E5		Orion
		Aquarius

* other options on request

Connection

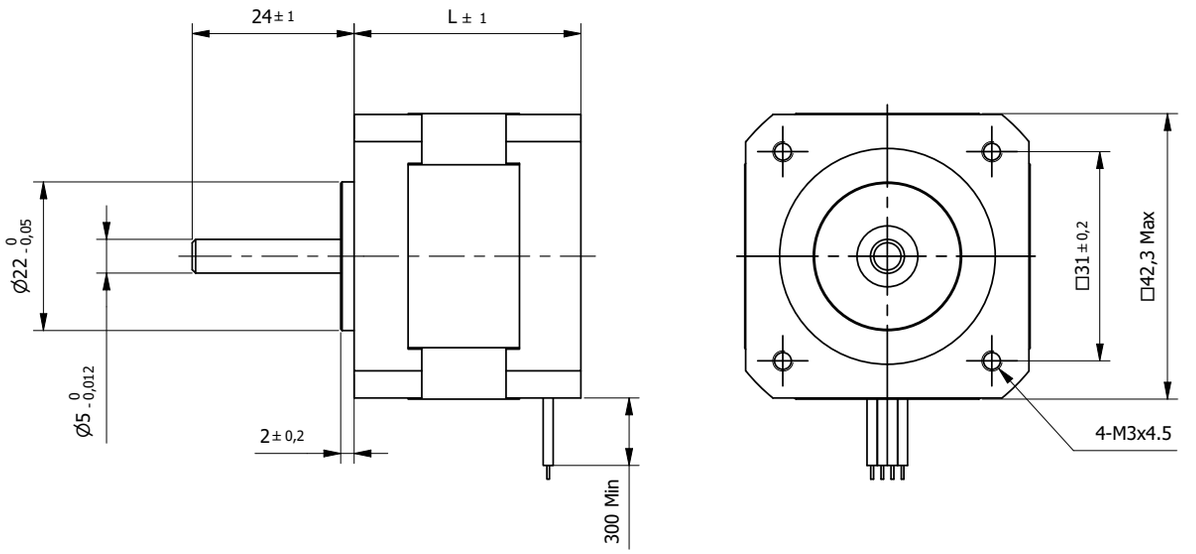
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 42SH38M

High Torque - step angle 0.9°

□ 42mm



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

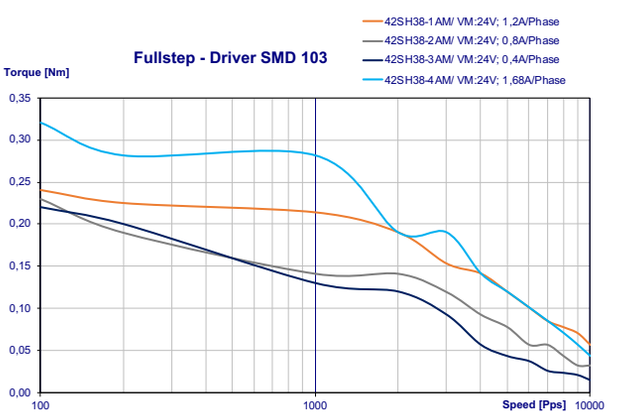
Specification						
	Model		42SH38-1AM	42SH38-2AM	42SH38-3AM	42SH38-4AM
1	Rated Voltage	V	4	6	12	2,8
2	Current/Phase	A	1,2	0,8	0,4	1,68
3	Resistance/Phase	Ω	3,3	7,5	30	1,65
4	Inductance/Phase	mH	4,1	8,3	30	4,1
5	Holding Torque	Nm	0,259	0,259	0,259	0,36
6	Rotor Inertia	gcm2	54	54	54	54
7	Detent Torque	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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP42	Aries
E4	42JMS	Libra
E5		Orion
		Aquarius

* other options on request

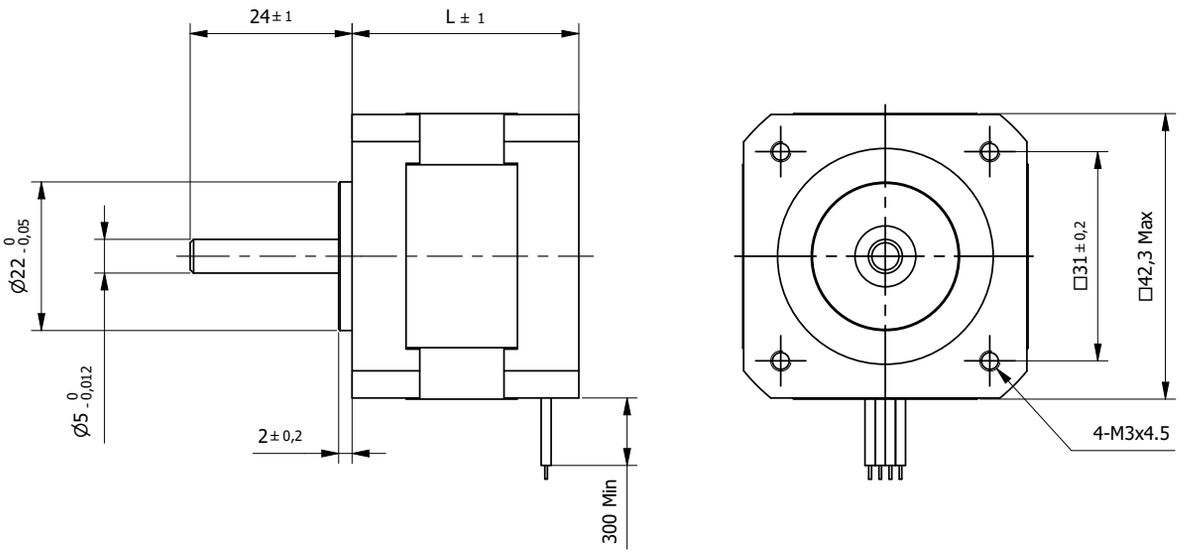
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 42SH47M

High Torque - step angle 0,9°

□ 42mm



BE Version: Rear shaft 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

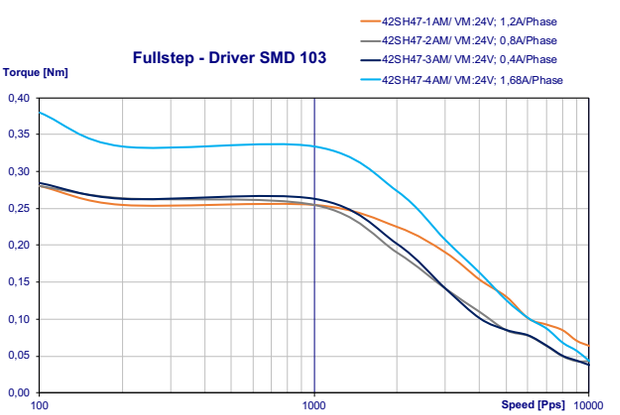
Standard Combination

Encoder	Gearbox	Drive
E3	GYP42	Aries
E4	42JMS	Libra
E5		Orion
		Aquarius

* other options on request

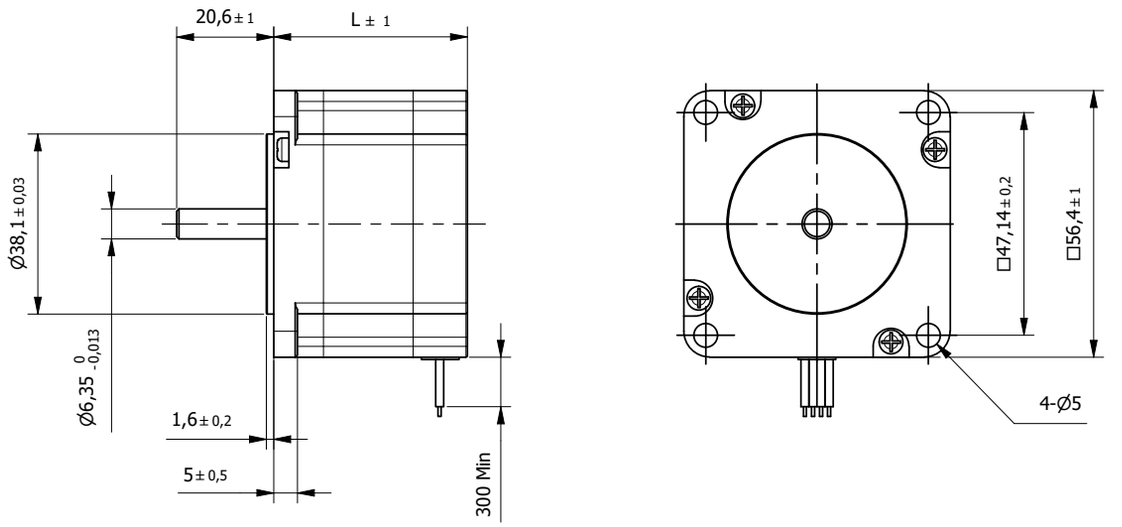
Connection

Lead n°	Color	Gauge	Function
1	Black	UL1061 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 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

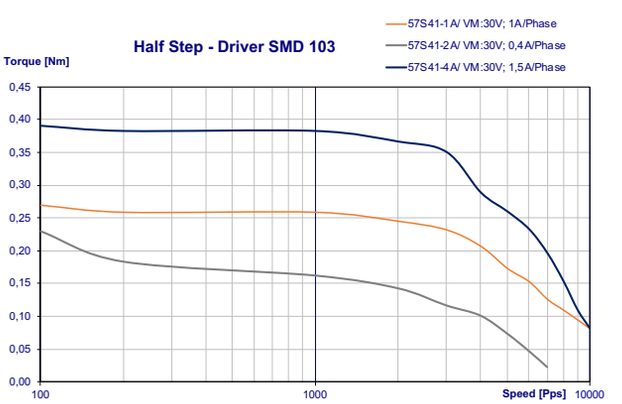
Standard Combination

Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

* other options on request

Connection

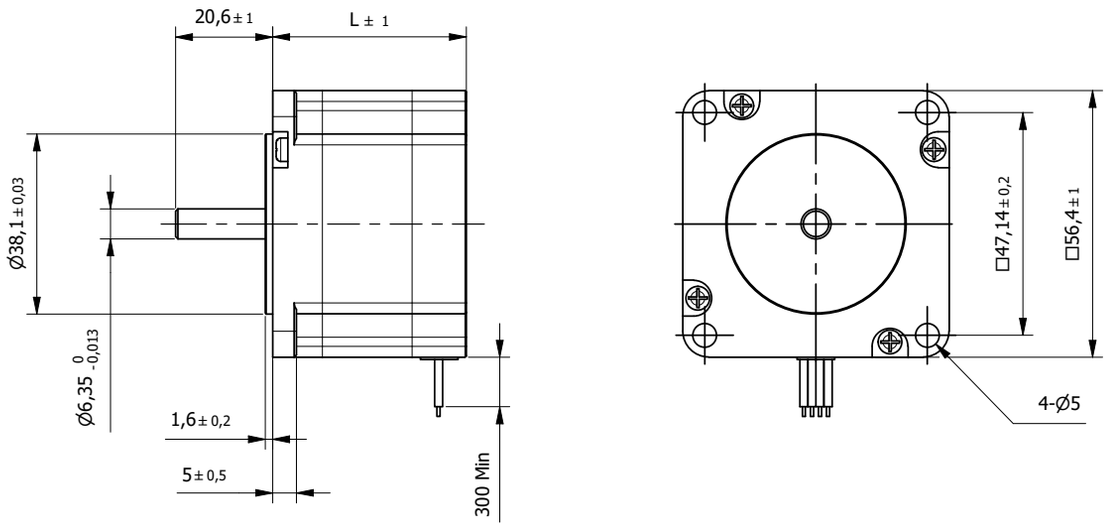
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Stepper

Hybrid Stepper Motor 57SH51
High Torque

□ 57mm



BE Version: Rear shaft 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

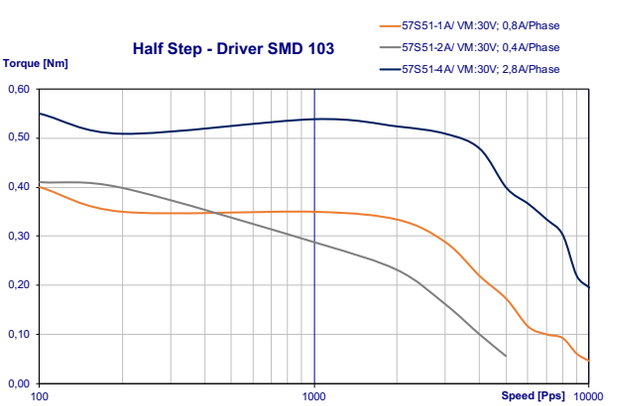
Standard Combination

Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

* other options on request

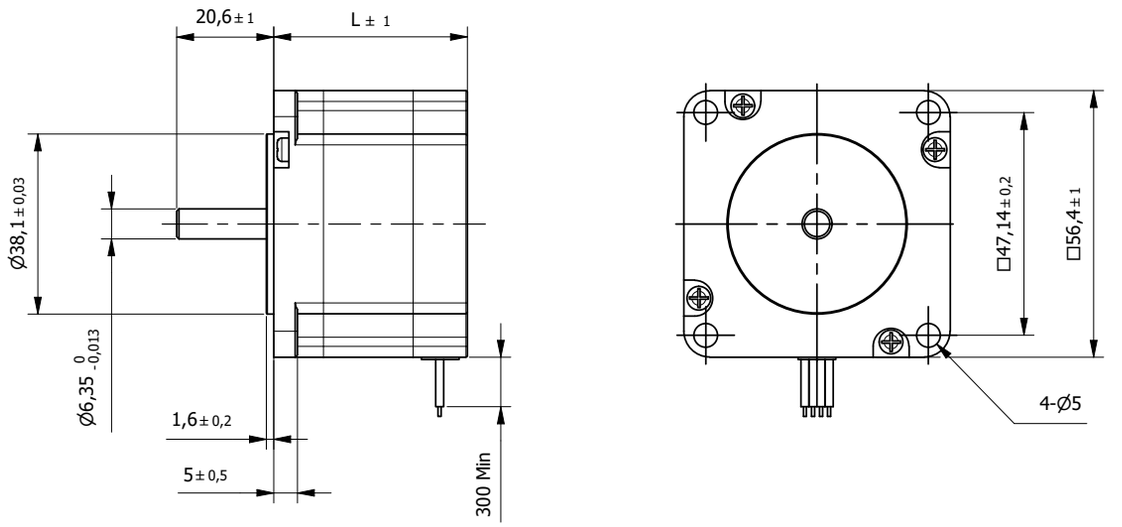
Connection

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 57SH56
High Torque

□ 57mm



BE Version: Rear shaft 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

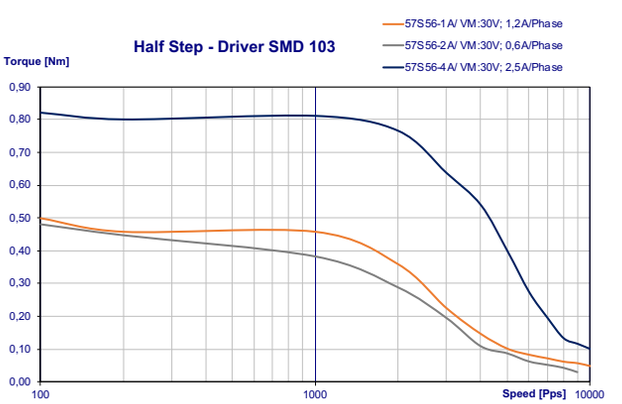
Standard Combination

Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

* other options on request

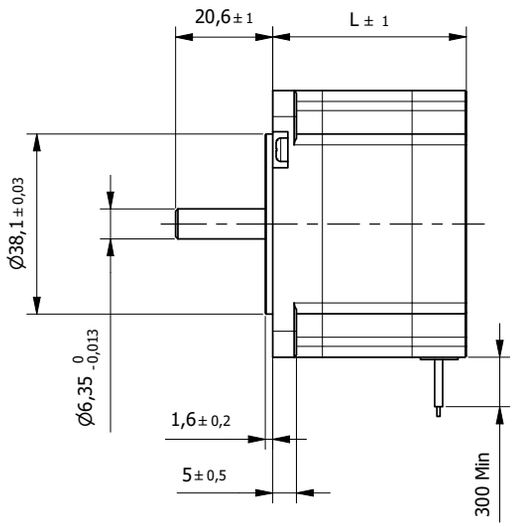
Connection

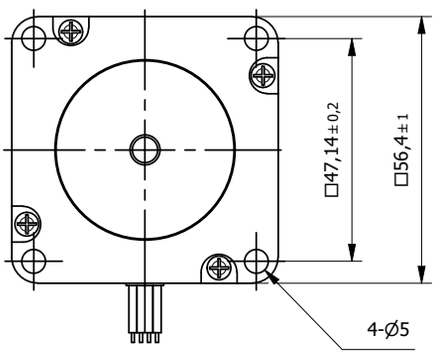
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 57SH76
High Torque

□ 57mm





BE Version: Rear shaft 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

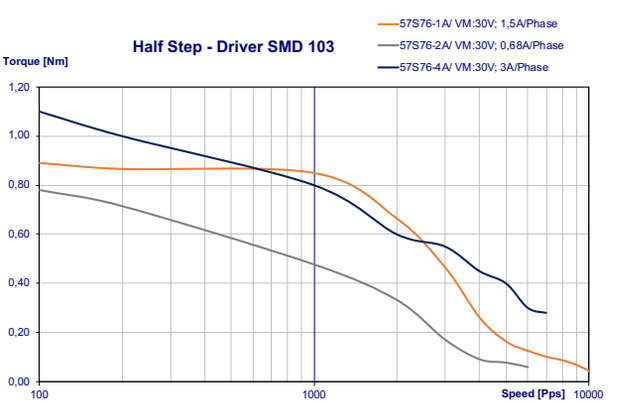
Standard Combination

Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

* other options on request

Connection

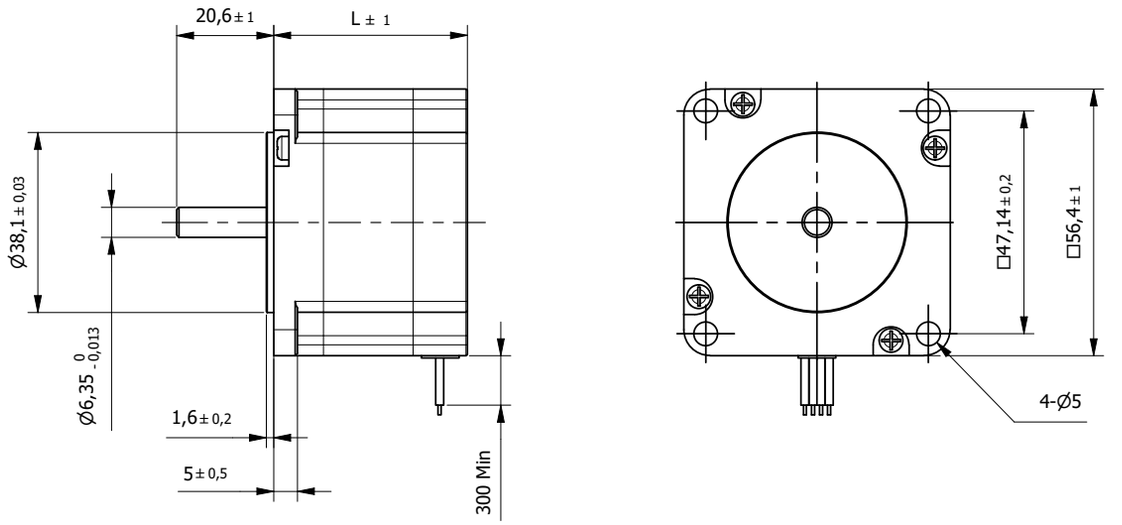
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 57SH41M

High Torque - step angle 0,9°

□ 57mm



BE Version: Rear shaft 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

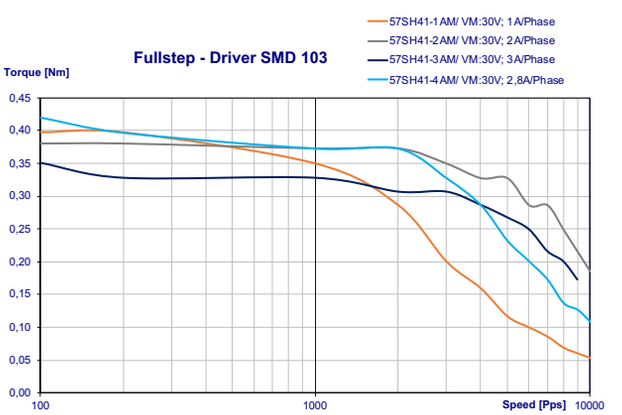
Standard Combination

Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

* other options on request

Connection

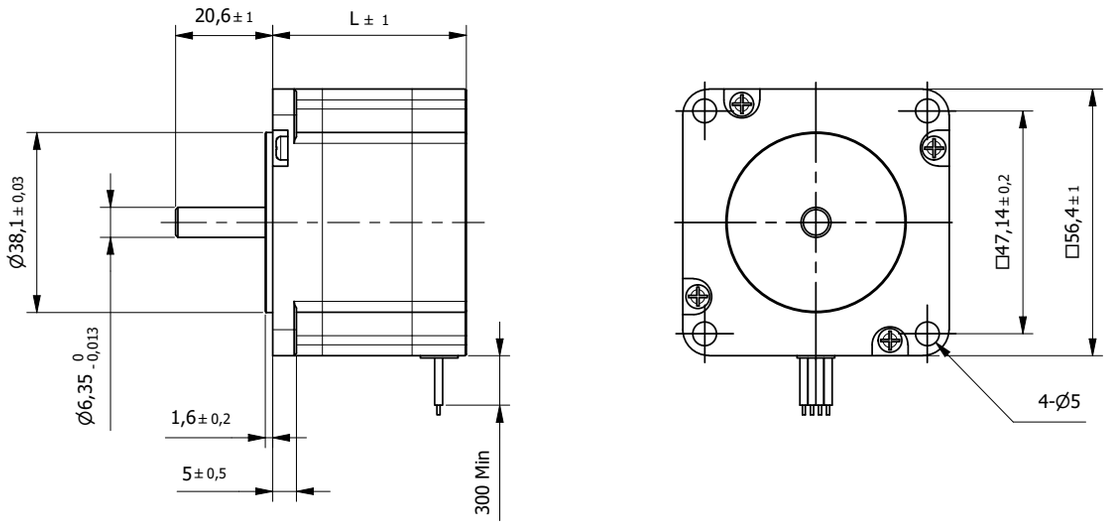
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 57SH56M

High Torque - step angle 0,9°

□ 57mm



BE Version: Rear shaft 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

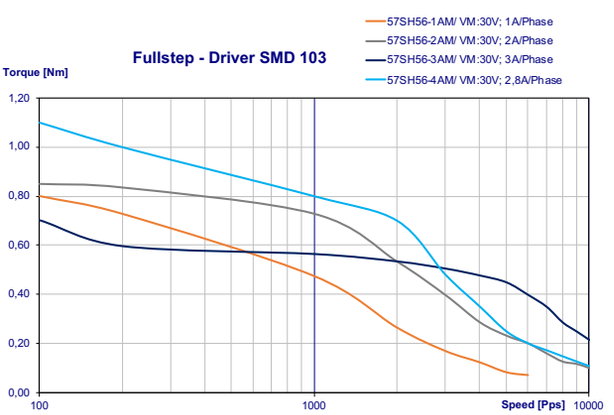
Standard Combination

Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

* other options on request

Connection

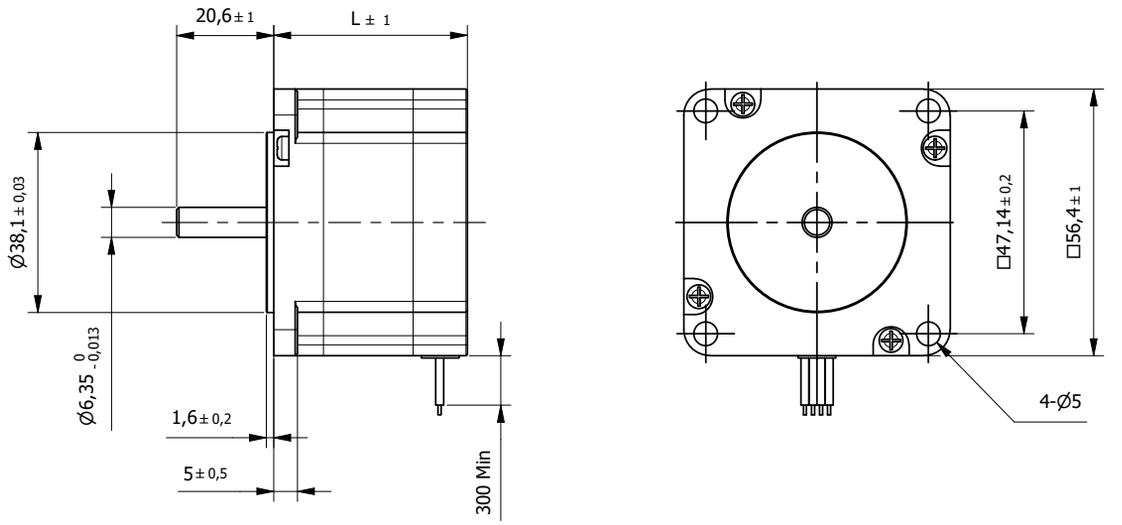
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 57SH76M

High Torque - step angle 0,9°

□ 57mm



BE Version: Rear shaft 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

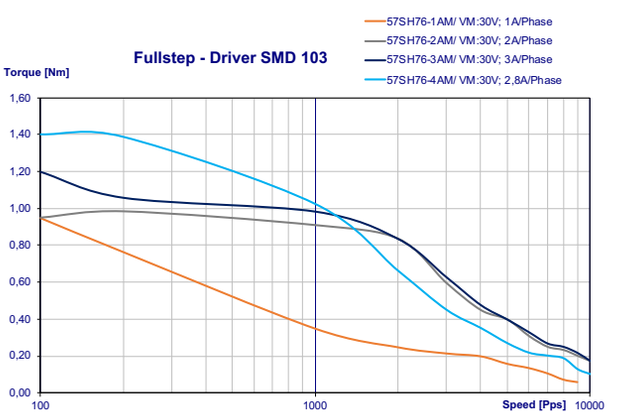
Standard Combination

Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

* other options on request

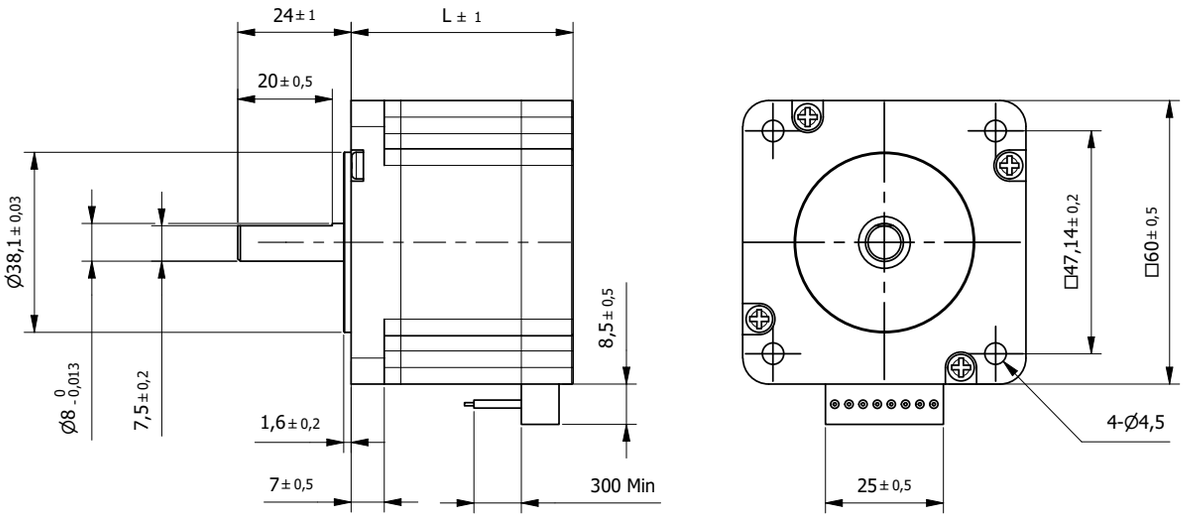
Connection

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 60SH45
High Torque

□ 60mm



BE Version: Rear shaft 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

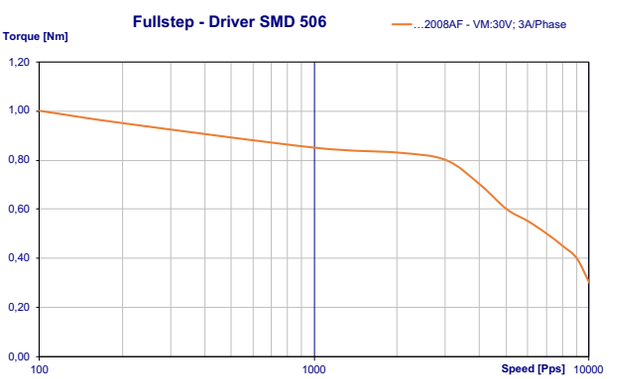
Standard Combination

Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

* other options on request

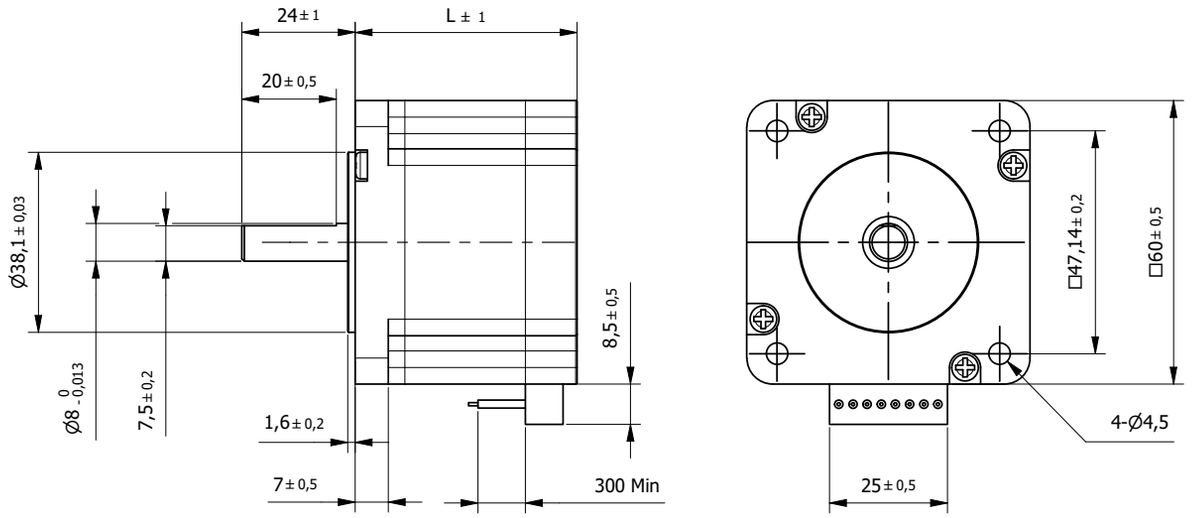
Connection

Lead n°	Color	Gauge	Function
1	Blue/White	UL1061 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 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

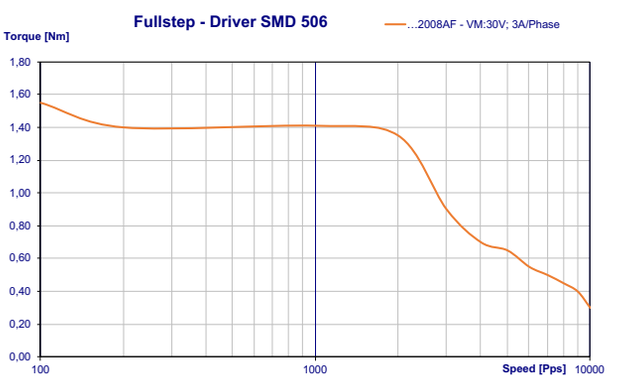
Standard Combination

Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

* other options on request

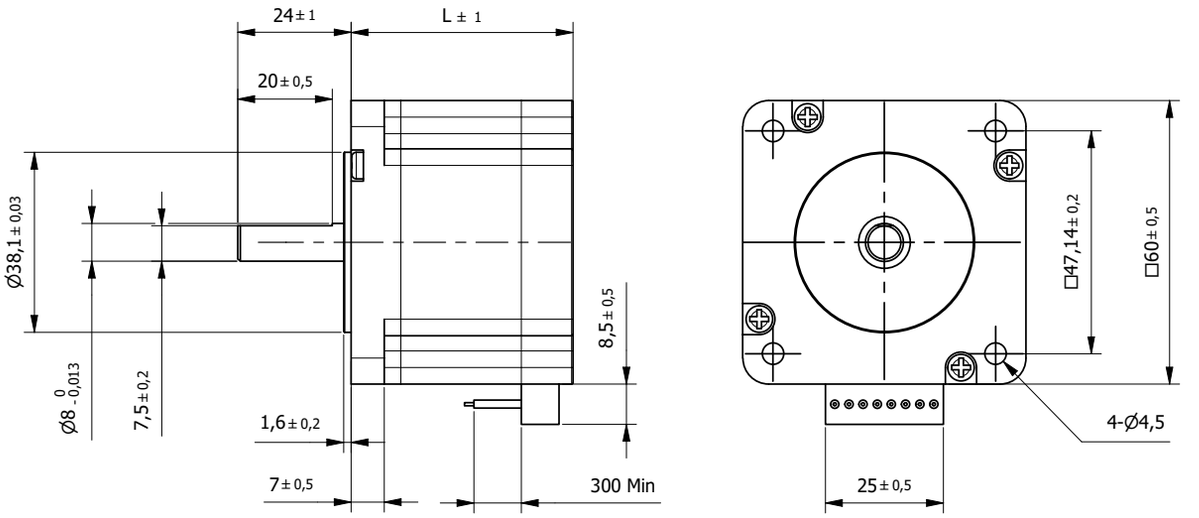
Connection

Lead n°	Color	Gauge	Function
1	Blue/White	UL1061 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 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

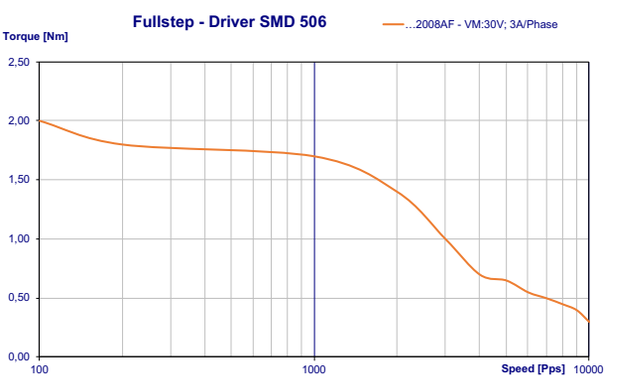
Standard Combination

Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

* other options on request

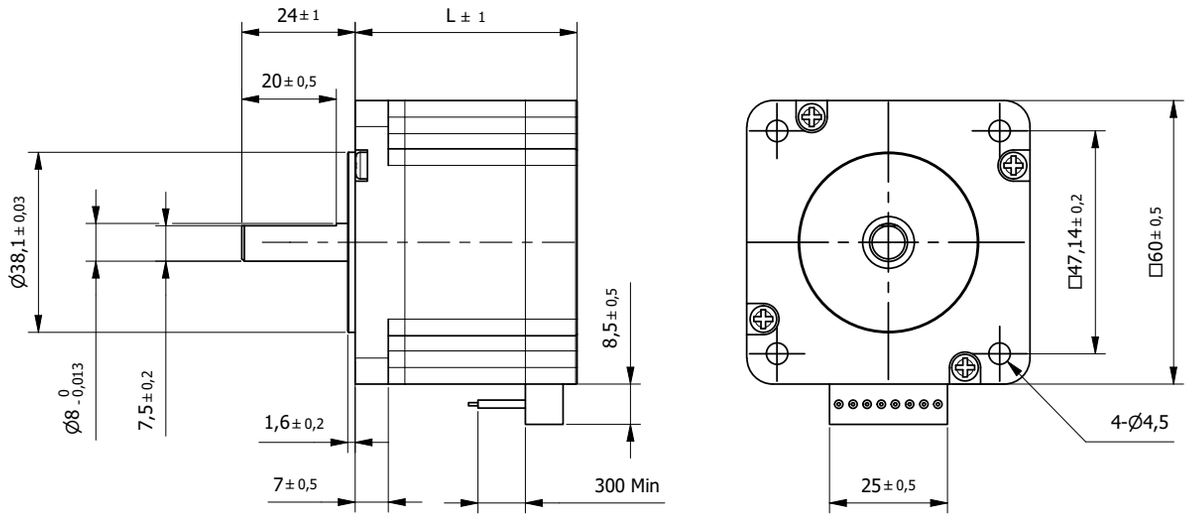
Connection

Lead n°	Color	Gauge	Function
1	Blue/White	UL1061 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 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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

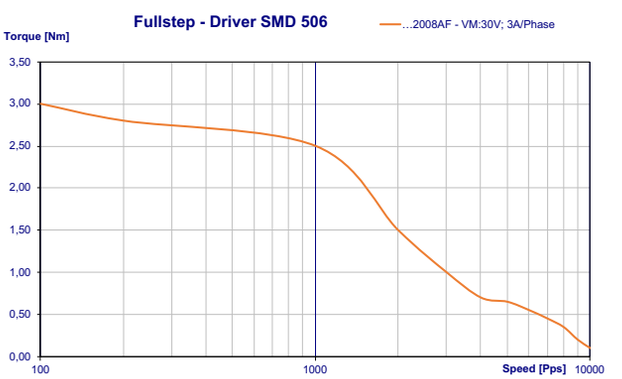
Standard Combination

Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Orion
		Aquarius

* other options on request

Connection

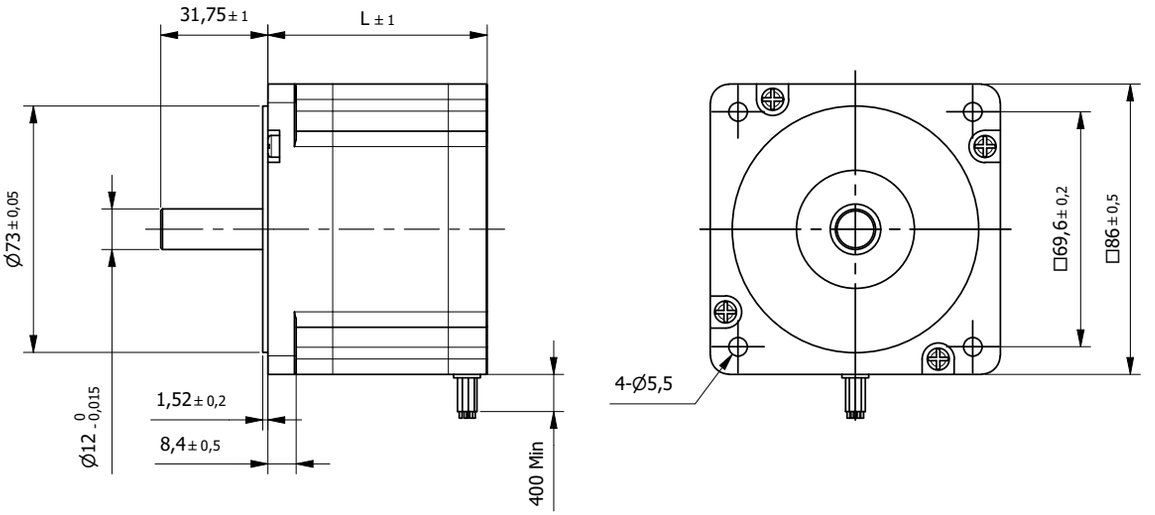
Lead n°	Color	Gauge	Function
1	Blue/White	UL1061 AWG22	Phase A
2	Blue	|	Phase A-
3	Red/White	|	Phase C-
4	Red	|	Phase C
5	Green/White	|	Phase B
6	Green	|	Phase B-
7	Black/White	|	Phase D -
8	Black	|	Phase D



Stepper

Hybrid Stepper Motor 86SH65
High Torque

□ 86mm



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

Specification

	Model		86SH65-4208A		
			Unipolar	Parallel	Series
1	Rated Voltage	V	2,39	1,65	3,42
2	Current/Phase	A	4,2	5,9	3
3	Resistance/Phase	Ω	0,57	0,28	1,14
4	Inductance/Phase	mH	1,7	1,7	6,8
5	Holding Torque	Nm	2,6	3,4	3,4
6	Rotor Inertia	gcm2	1000	1000	1000
7	Detent Torque	Nm	0,08	0,08	0,08
8	n° of Leads		8	8	8
9	Length (L)	mm	65	65	65
10	Weight	Kg	1,7	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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

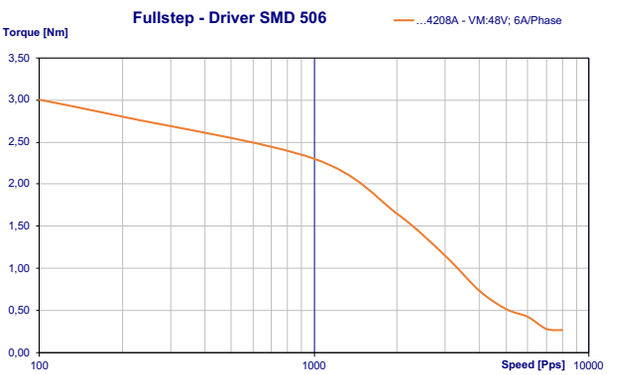
Standard Combination

Encoder	Gearbox	Drive
E3	GYP80	Libra
E4		Sagittarius
E5		Aquarius
		Andromeda

* other options on request

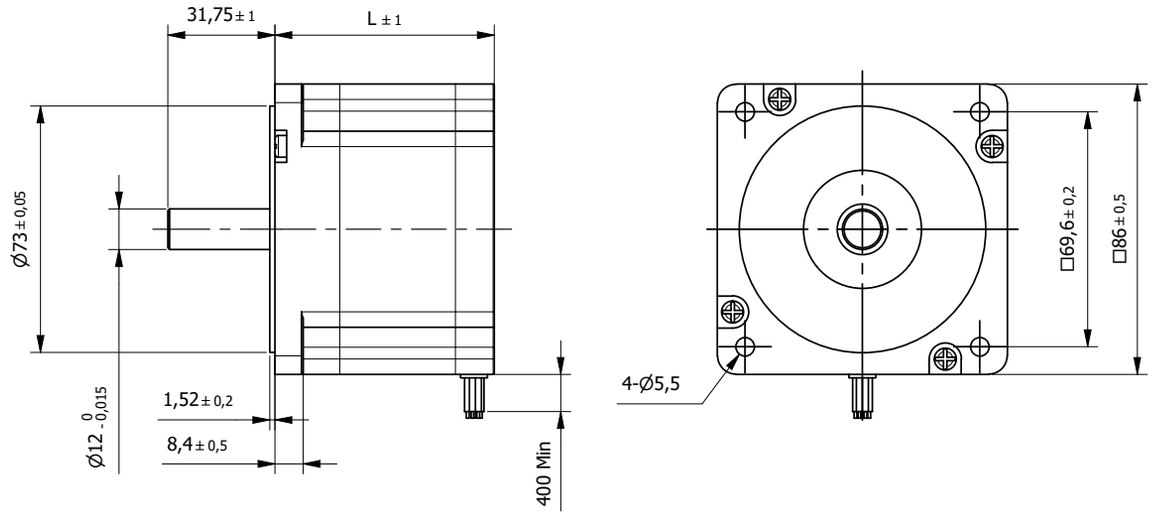
Connection

Lead n°	Color	Gauge	Function
1	Red	UL1061 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 13mm - 2x M2.5 on diameter 46mm

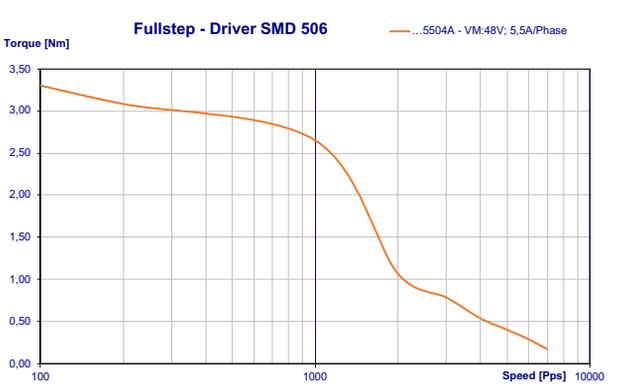
Specification			
	Model		...5504A
1	Rated Voltage	V	2,3
2	Current/Phase	A	5,5
3	Resistance/Phase	Ω	0,42
4	Inductance/Phase	mH	3,5
5	Holding Torque	Nm	4,6
6	Rotor Inertia	gcm2	1400
7	Detent Torque	Nm	0,12
8	n° of Leads		4
9	Length (L)	mm	80
10	Weight	Kg	2,3

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

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP80	Libra
E4		Sagittarius
E5		Aquarius
		Andromeda

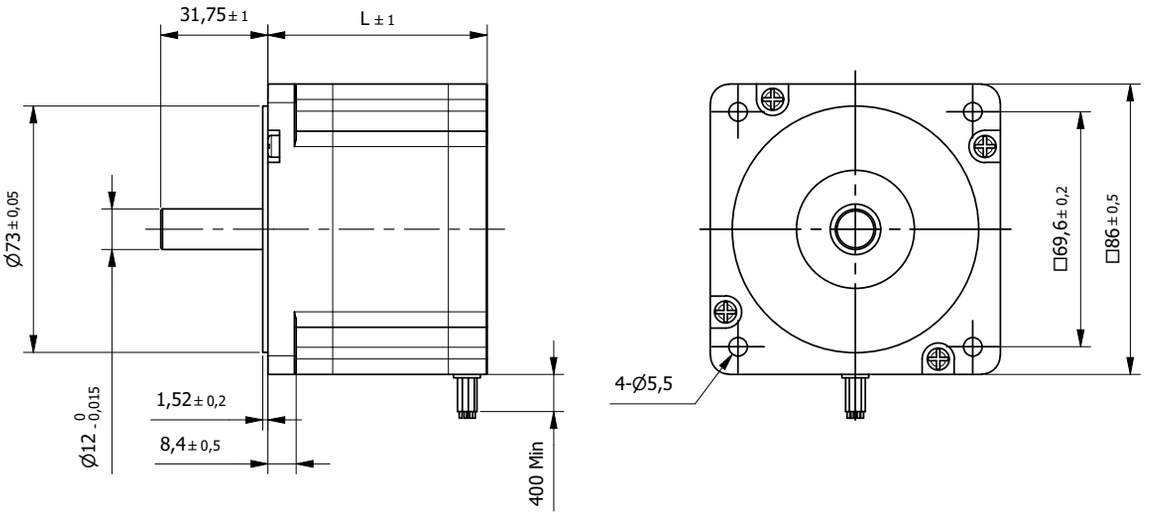
* other options on request

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1061 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 13mm - 2x M2.5 on diameter 46mm

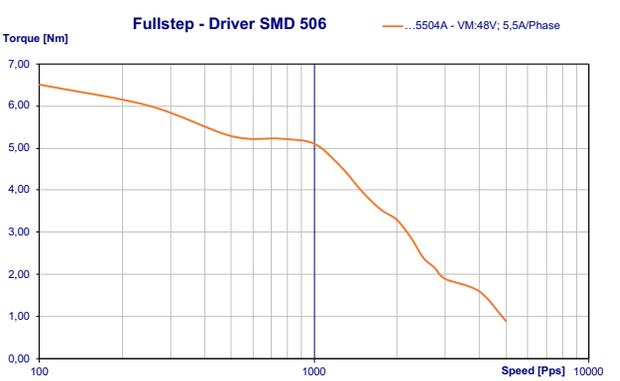
Specification			
	Model		...5504A
1	Rated Voltage	V	2,56
2	Current/Phase	A	5,5
3	Resistance/Phase	Ω	0,465
4	Inductance/Phase	mH	4,5
5	Holding Torque	Nm	7
6	Rotor Inertia	gcm2	2700
7	Detent Torque	Nm	0,12
8	n° of Leads		4
9	Length (L)	mm	96
10	Weight	Kg	2,8

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 min.)	750 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP80	Libra
E4		Sagittarius
E5		Aquarius
		Andromeda

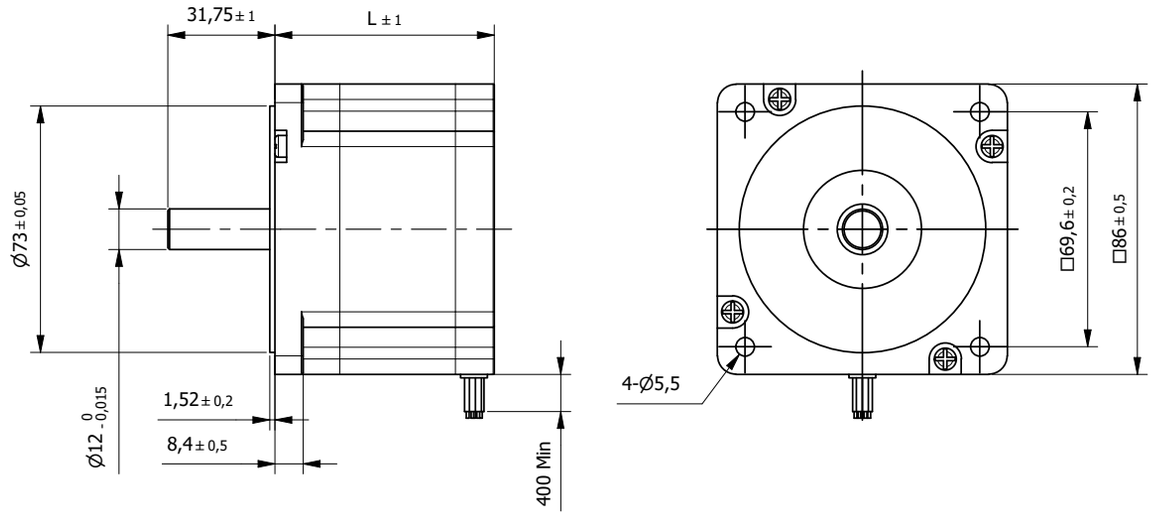
* other options on request

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1061 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 13mm - 2x M2.5 on diameter 46mm

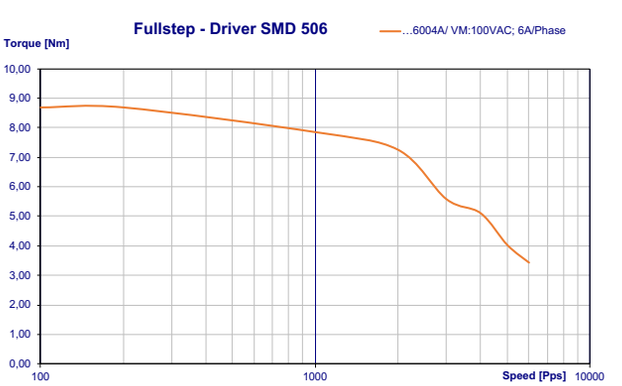
Specification			
	Model		...6004A
1	Rated Voltage	V	2,7
2	Current/Phase	A	6
3	Resistance/Phase	Ω	0,45
4	Inductance/Phase	mH	5,1
5	Holding Torque	Nm	8,7
6	Rotor Inertia	gcm2	2700
7	Detent Torque	Nm	0,24
8	n° of Leads		4
9	Length (L)	mm	118
10	Weight	Kg	3,8

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 min.)	750 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP80	Libra
E4		Sagittarius
E5		Aquarius
		Andromeda

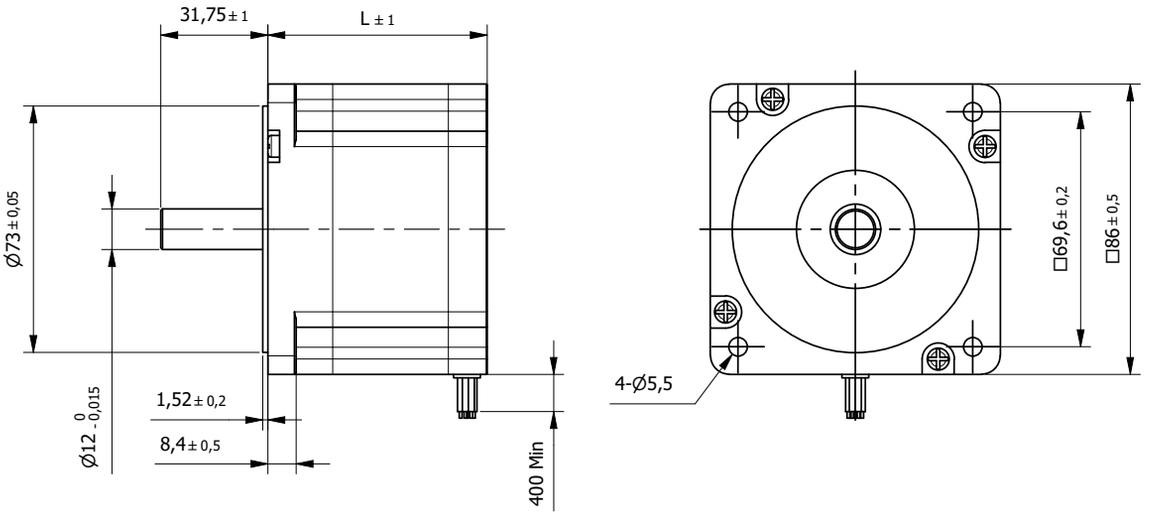
* other options on request

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1061 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 13mm - 2x M2.5 on diameter 46mm

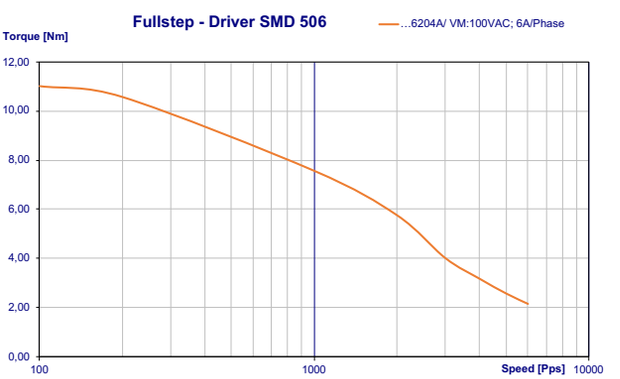
Specification			
	Model		...6204A
1	Rated Voltage	V	4,5
2	Current/Phase	A	6,2
3	Resistance/Phase	Ω	0,72
4	Inductance/Phase	mH	9
5	Holding Torque	Nm	12,1
6	Rotor Inertia	gcm2	4000
7	Detent Torque	Nm	0,36
8	n° of Leads		4
9	Length (L)	mm	156
10	Weight	Kg	5,4

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 min.)	750 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP80	Libra
E4		Sagittarius
E5		Aquarius
		Andromeda

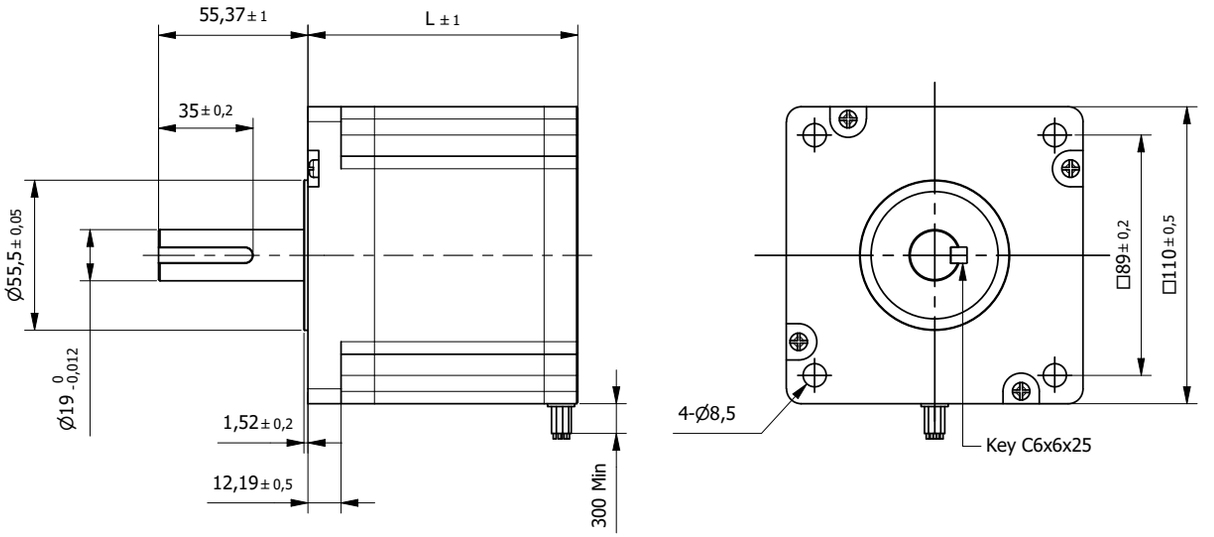
* other options on request

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1061 AWG20	Phase A
2	White	|	Phase A-
3	Yellow	|	Phase B
4	Green	|	Phase B-



Hybrid Stepper Motor 110SH99
High Torque

□ 110mm



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

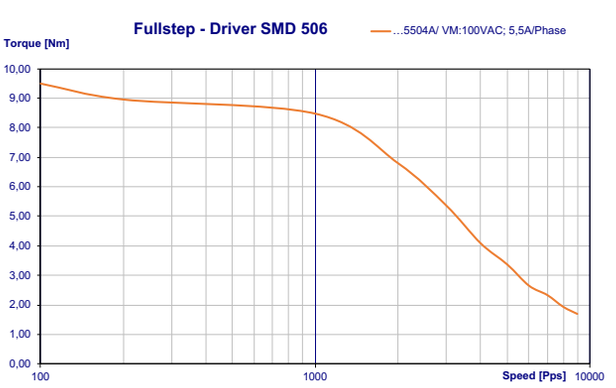
Specification			
	Model		...5504A
1	Rated Voltage	V	4,95
2	Current/Phase	A	5,5
3	Resistance/Phase	Ω	0,7
4	Inductance/Phase	mH	9,8
5	Holding Torque	Nm	11,2
6	Rotor Inertia	gcm2	5500
7	Detent Torque	Nm	0,3
8	n° of Leads		4
9	Length (L)	mm	99
10	Weight	Kg	5

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)	330N
Max Axial Force	100N
Dielectric Strength (for 1 min.)	1500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP80	Libra
E4		Sagittarius
E5		Aquarius
		Andromeda

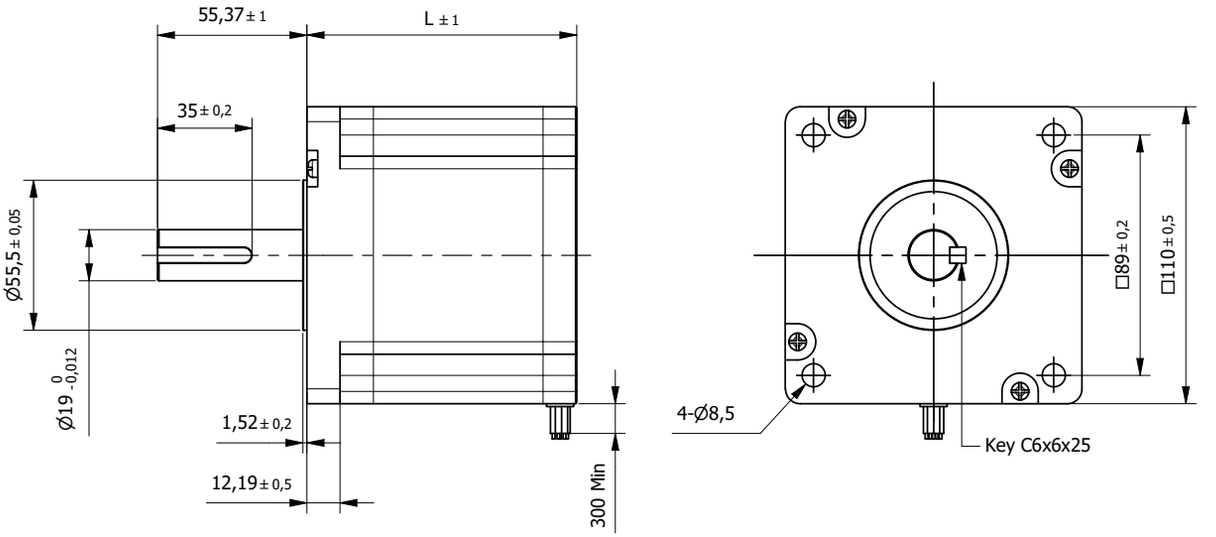
* other options on request

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 Motor 110SH150
High Torque

□ 110mm



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

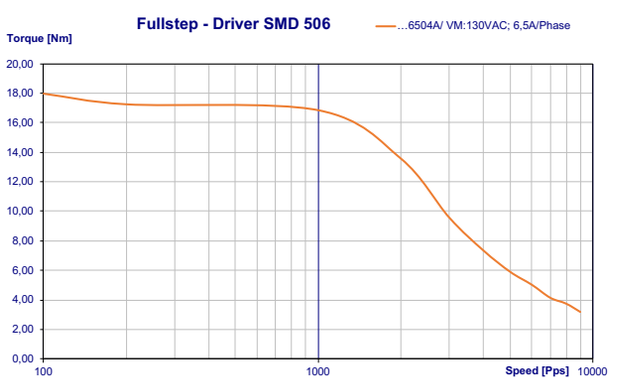
Specification			
	Model		...6504A
1	Rated Voltage	V	5,2
2	Current/Phase	A	6,5
3	Resistance/Phase	Ω	0,72
4	Inductance/Phase	mH	11,5
5	Holding Torque	Nm	21
6	Rotor Inertia	gcm2	10'900
7	Detent Torque	Nm	0,59
8	n° of Leads		4
9	Length (L)	mm	150
10	Weight	Kg	8,4

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)	330N
Max Axial Force	100N
Dielectric Strength (for 1 min.)	1500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP80	Libra
E4		Sagittarius
E5		Aquarius
		Andromeda

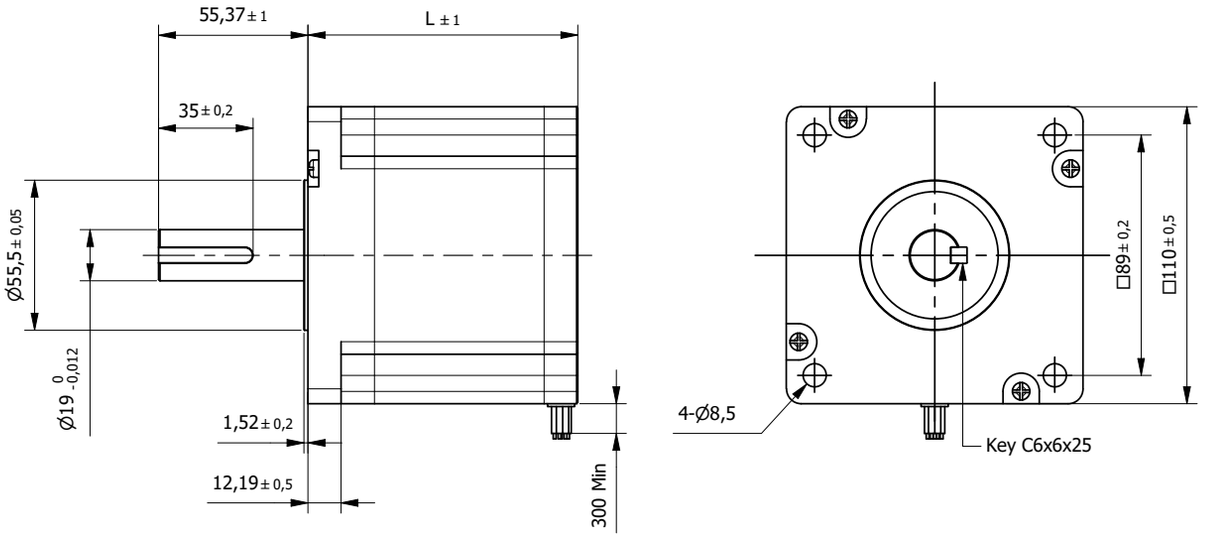
* other options on request

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 Motor 110SH201
High Torque

□ 110mm



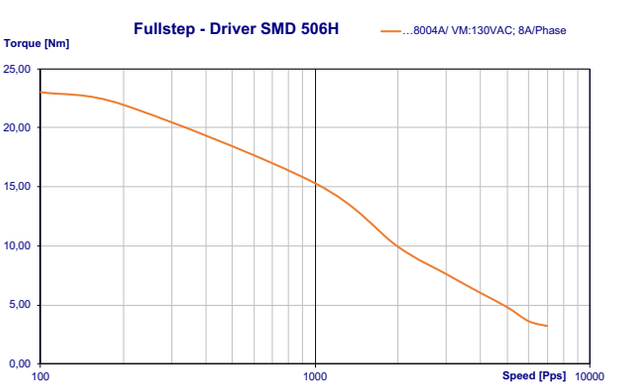
BE Version: Rear shaft 13mm - 2x M2.5 on diameter 46mm

Specification			
	Model		...8004A
1	Rated Voltage	V	5,36
2	Current/Phase	A	8
3	Resistance/Phase	Ω	0,67
4	Inductance/Phase	mH	12
5	Holding Torque	Nm	28
6	Rotor Inertia	gcm2	16'200
7	Detent Torque	Nm	0,75
8	n° of Leads		4
9	Length (L)	mm	201
10	Weight	Kg	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 min.)	1500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP80	Andromeda
E4		
E5		
* other options on request		

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

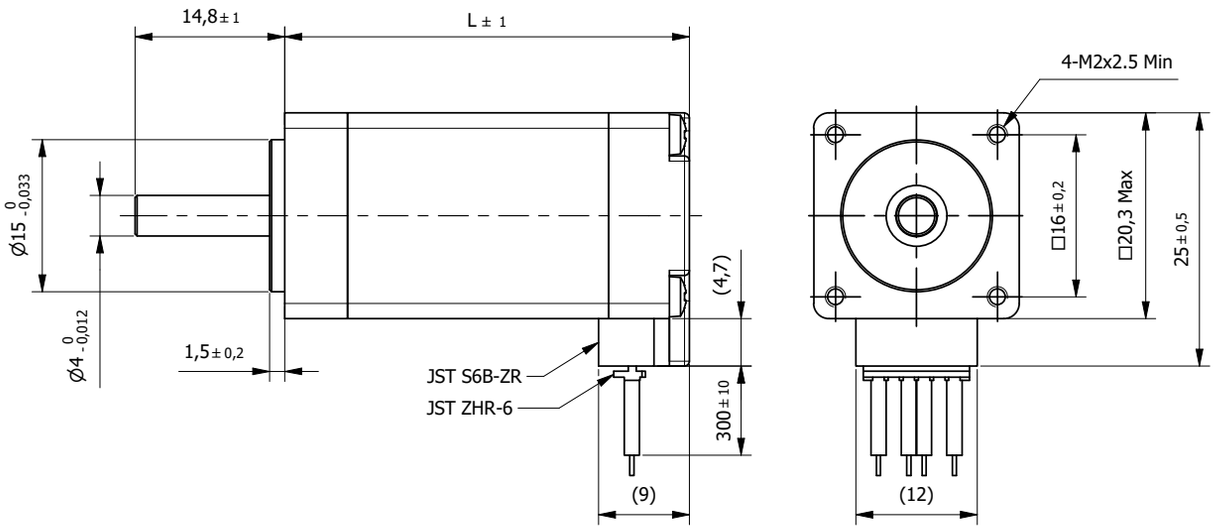


Hybrid Stepper motors

STC-series

Hybrid Stepper Motor 20STC33
Hyper Torque

□ 20mm

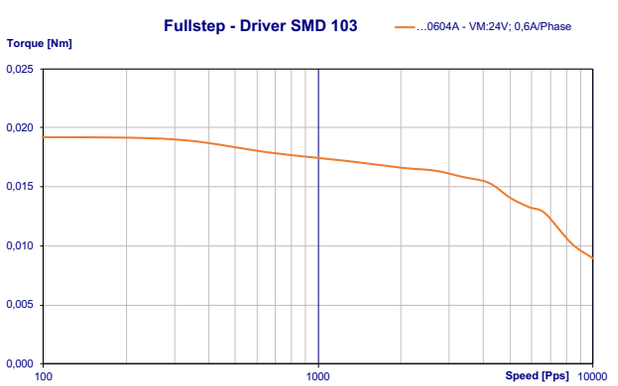


Specification			
	Model		...0604A
1	Rated Voltage	V	3,84
2	Current/Phase	A	0,6
3	Resistance/Phase	Ω	6,4
4	Inductance/Phase	mH	2,6
5	Holding Torque	Nm	0,022
6	Rotor Inertia	gcm2	2
7	Detent Torque	Nm	0,002
8	n° of Leads		4
9	Length (L)	mm	33
10	Weight	Kg	0,06

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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

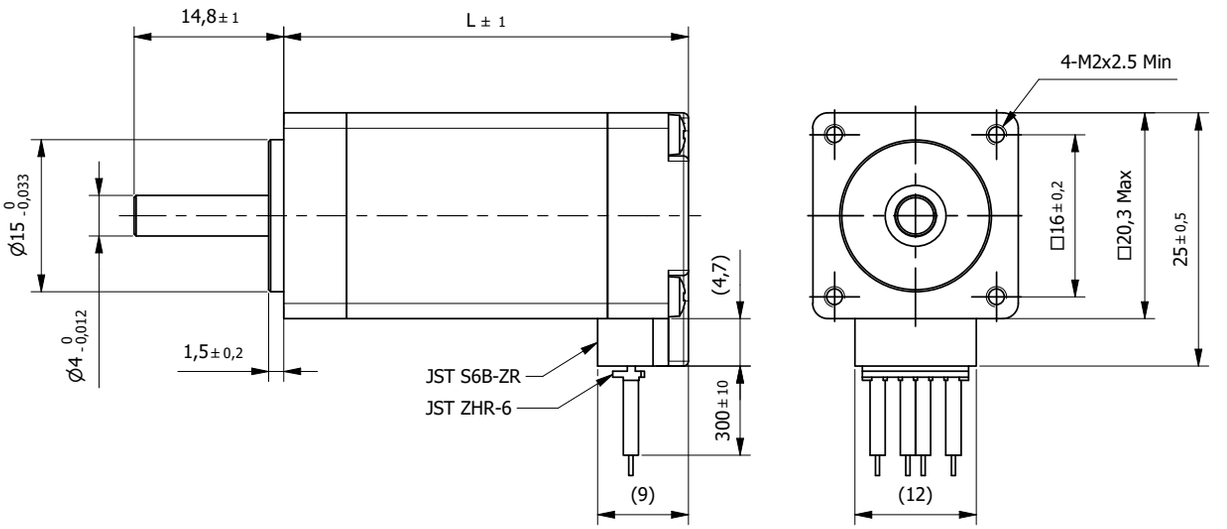
Standard Combination
Drive
Aries
Libra
Orion
Aquarius
* other options on request

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



Hybrid Stepper Motor 20STC40
Hyper Torque

□ 20mm

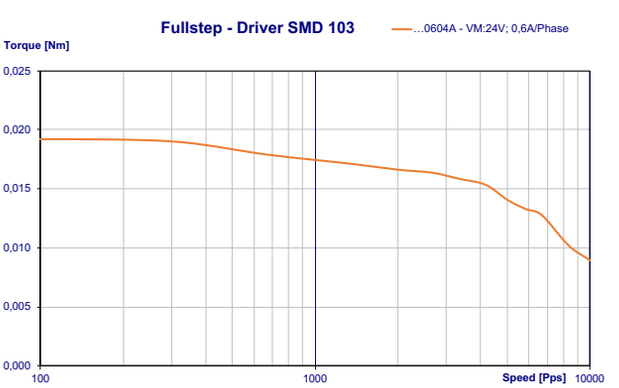


Specification			
	Model		...0804A
1	Rated Voltage	V	4,32
2	Current/Phase	A	0,8
3	Resistance/Phase	Ω	5,6
4	Inductance/Phase	mH	2,3
5	Holding Torque	Nm	0,036
6	Rotor Inertia	gcm2	3,6
7	Detent Torque	Nm	0,002
8	n° of Leads		4
9	Length (L)	mm	40
10	Weight	Kg	0,08

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 (20mm from front flange)	10N
Max Axial Force	4N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination
Drive
Aries
Libra
Orion
Aquarius
* other options on request

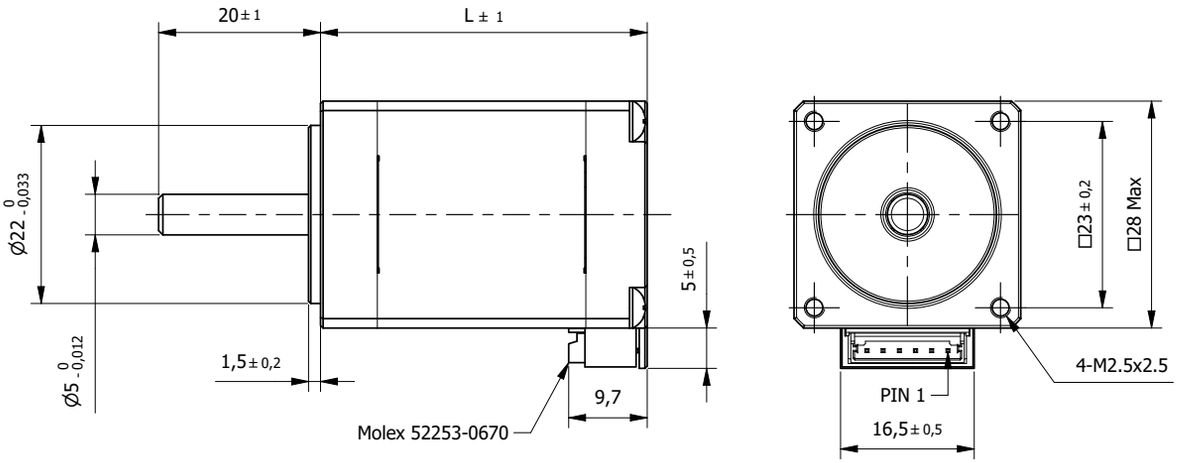
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
6	Blue	|	Phase B-



Hybrid Stepper Motor 28STC32

Hyper Torque

□ 28mm



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

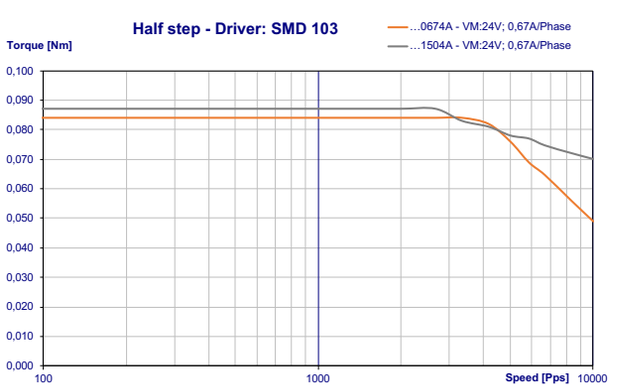
Specification				
	Model		...0674A	...1504A
1	Rated Voltage	V	4,2	1,95
2	Current/Phase	A	0,67	1,5
3	Resistance/Phase	Ω	6,2	1,3
4	Inductance/Phase	mH	5,76	1
5	Holding Torque	Nm	0,08	0,08
6	Rotor Inertia	gcm2	9	9
7	Detent Torque	Nm	0,005	0,005
8	n° of Leads		4	4
9	Length (L)	mm	32	32
10	Weight	Kg	0,11	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 (20mm from front flange)	28N
Max Axial Force	7N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E4	28JMS	Aries
E5	22JMS	Libra
		Orion
		Aquarius

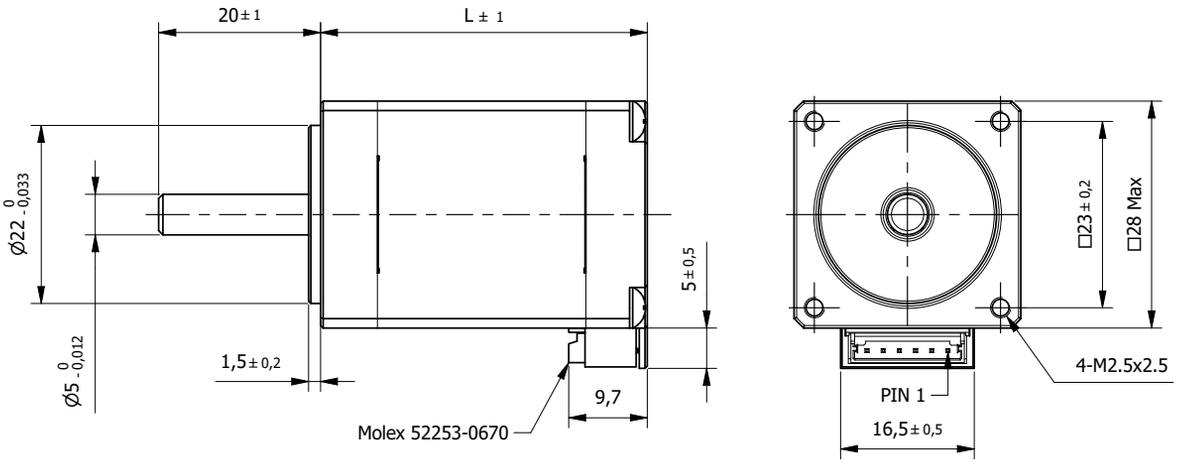
* other options on request

Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1061 AWG28	Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
6	Blue	|	Phase B-



Hybrid Stepper Motor 28STC40
Hyper Torque

□ 28mm



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

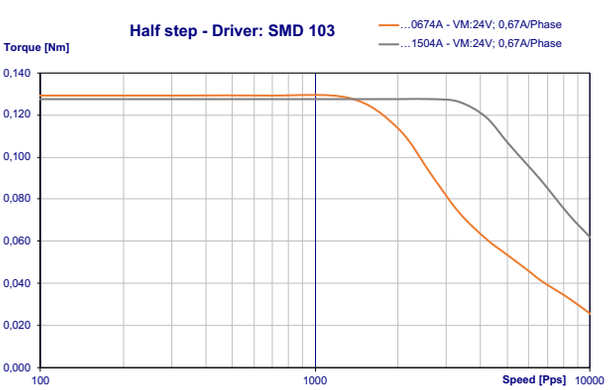
Specification				
	Model		...0674A	...1504A
1	Rated Voltage	V	4,9	2,2
2	Current/Phase	A	0,67	1,5
3	Resistance/Phase	Ω	7,3	1,45
4	Inductance/Phase	mH	6,52	1,25
5	Holding Torque	Nm	0,13	0,13
6	Rotor Inertia	gcm2	12	12
7	Detent Torque	Nm	0,006	0,006
8	n° of Leads		4	4
9	Length (L)	mm	40	40
10	Weight	Kg	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 (20mm from front flange)	28N
Max Axial Force	7N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E4	28JMS	Aries
E5	22JMS	Libra
		Orion
		Aquarius

* other options on request

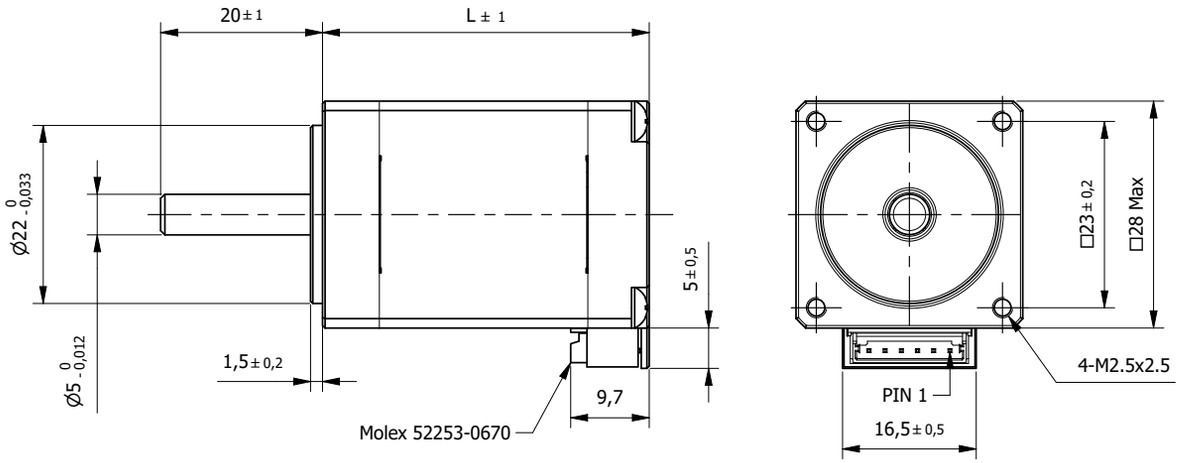
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1061 AWG28	Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
6	Blue	|	Phase B-



Hybrid Stepper Motor 28STC51

Hyper Torque

□ 28mm



BE Version: Rear shaft 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 (20mm from front flange)	28N
Max Axial Force	7N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

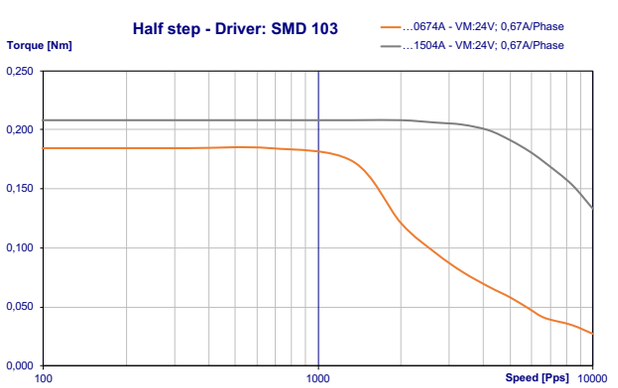
Standard Combination

Encoder	Gearbox	Drive
E4	28JMS	Aries
E5	22JMS	Libra
		Orion
		Aquarius

* other options on request

Connection

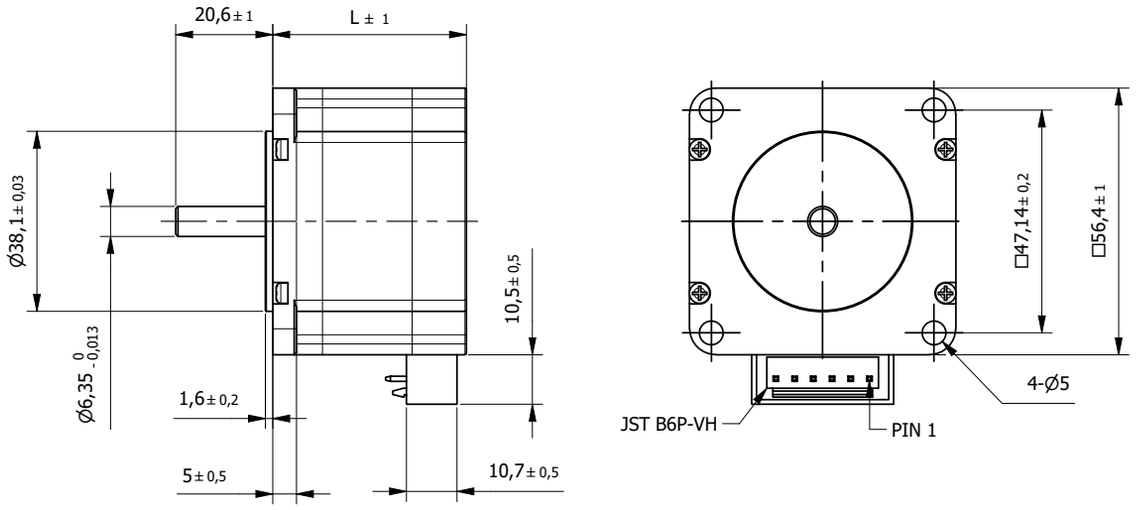
Pin n°	Color	Gauge	Function
1	Black	UL1061 AWG28	Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
6	Blue	|	Phase B-



Hybrid Stepper Motor 57STC41

Hyper Torque

□ 57mm



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

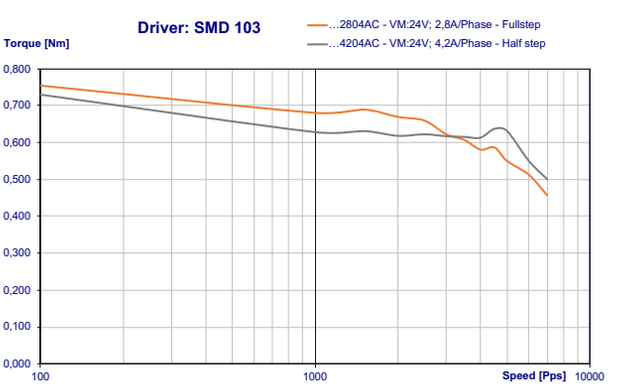
Specification				
	Model		...2804AC	...4204AC
1	Rated Voltage	V	2,1	1,5
2	Current/Phase	A	2,8	4,2
3	Resistance/Phase	Ω	0,78	0,35
4	Inductance/Phase	mH	1,8	0,8
5	Holding Torque	Nm	0,6	0,6
6	Rotor Inertia	gcm2	120	120
7	Detent Torque	Nm	0,021	0,021
8	n° of Leads		4	4
9	Length (L)	mm	41	41
10	Weight	Kg	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)	20N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Sagittarius
		Aquarius

* other options on request

Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-

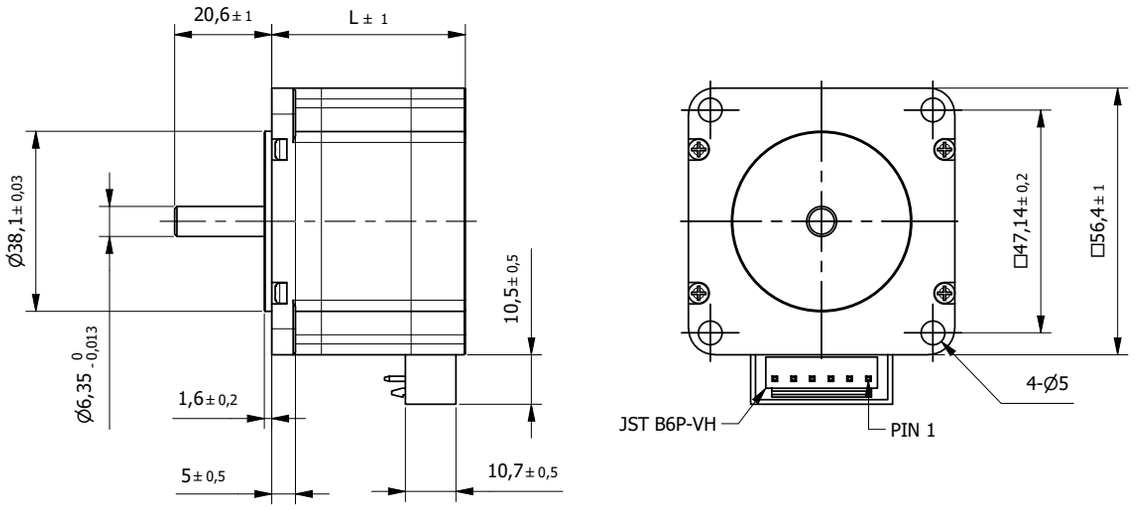


Stepper

Hybrid Stepper Motor 57STC56

Hyper Torque

□ 57mm



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

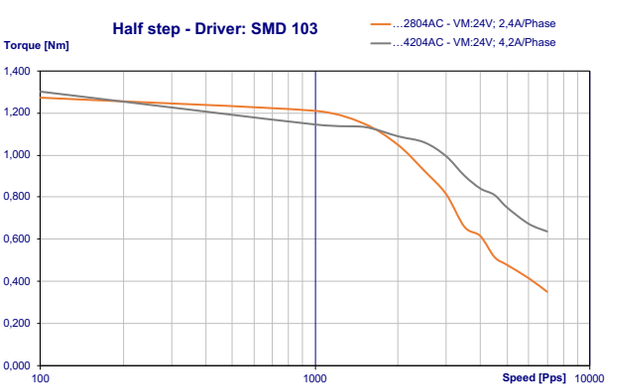
Specification				
	Model		...2804AC	...4204AC
1	Rated Voltage	V	2,8	2,1
2	Current/Phase	A	2,8	4,2
3	Resistance/Phase	Ω	1	0,5
4	Inductance/Phase	mH	3,2	1,6
5	Holding Torque	Nm	1,4	1,4
6	Rotor Inertia	gcm2	300	300
7	Detent Torque	Nm	0,04	0,04
8	n° of Leads		4	4
9	Length (L)	mm	56	56
10	Weight	Kg	0,7	0,7

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)	20N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Sagittarius
		Aquarius

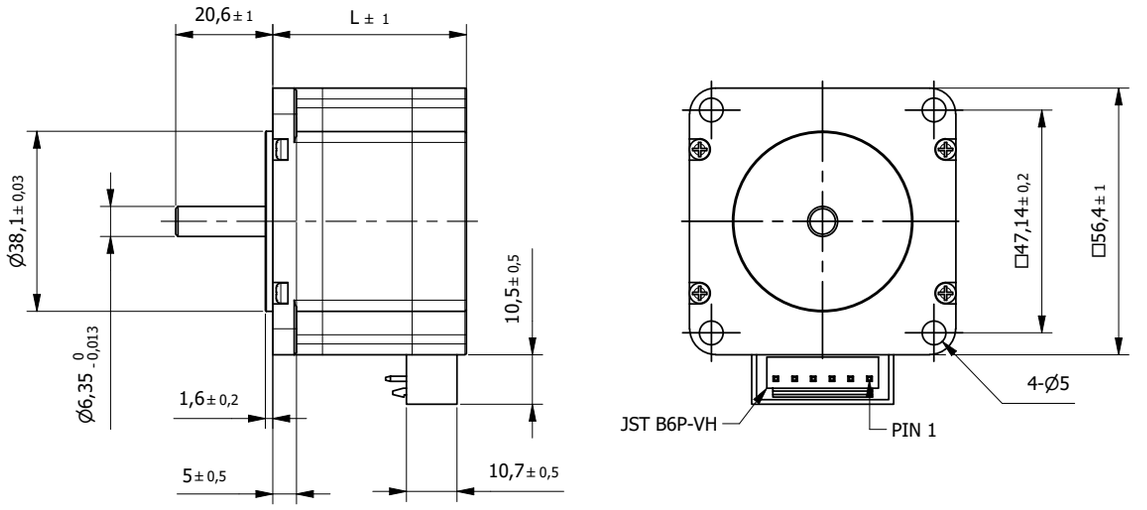
* other options on request

Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-



Hybrid Stepper Motor 57STC76
Hyper Torque

□ 57mm



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

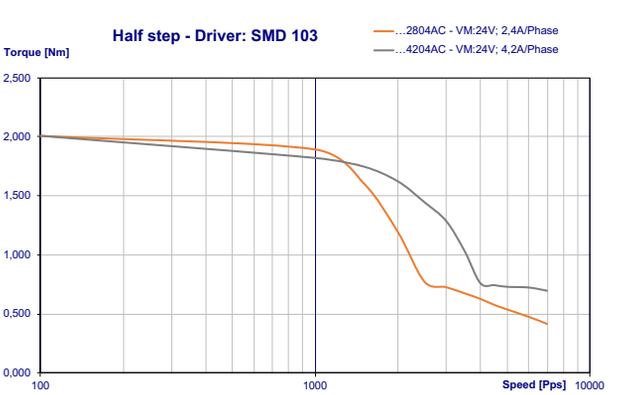
Specification				
	Model		...2804AC	...4204AC
1	Rated Voltage	V	3,6	2,3
2	Current/Phase	A	2,8	4,2
3	Resistance/Phase	Ω	1,3	0,55
4	Inductance/Phase	mH	5,3	2,1
5	Holding Torque	Nm	2,3	2,3
6	Rotor Inertia	gcm2	480	480
7	Detent Torque	Nm	0,068	0,068
8	n° of Leads		4	4
9	Length (L)	mm	76	76
10	Weight	Kg	1,2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

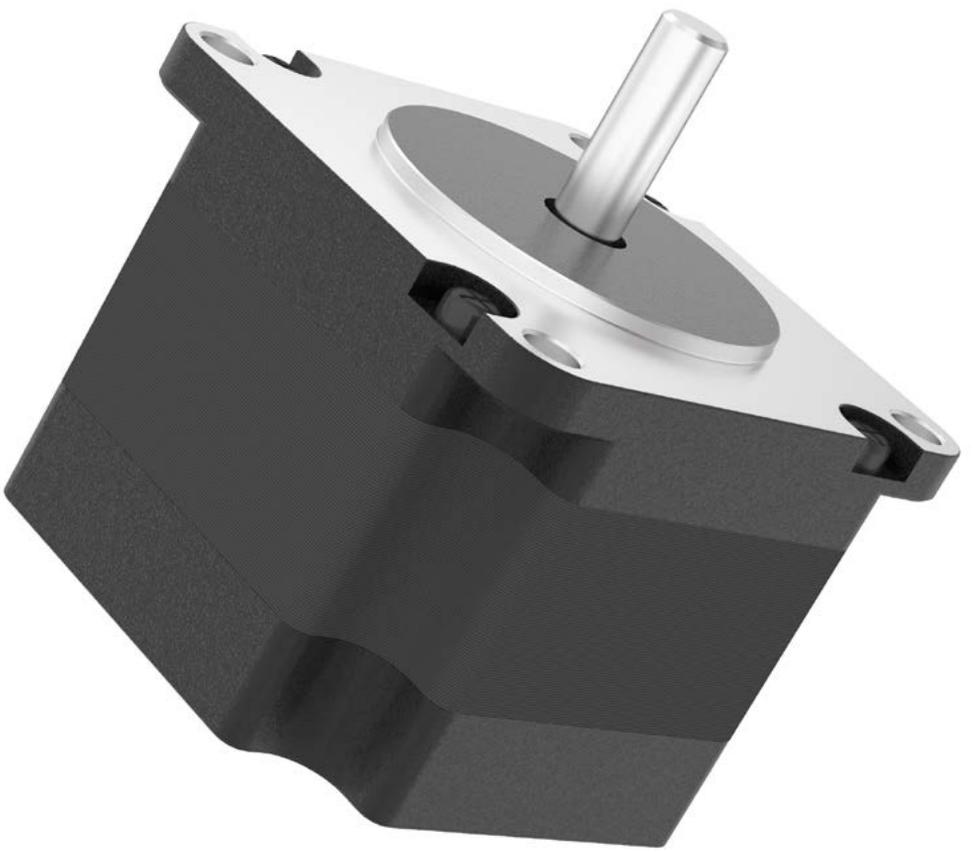
Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front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

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Aries
E4	56JMS	Libra
E5		Sagittarius
		Aquarius

* other options on request

Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-





Stepper motors

3-Phase Hybrid

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

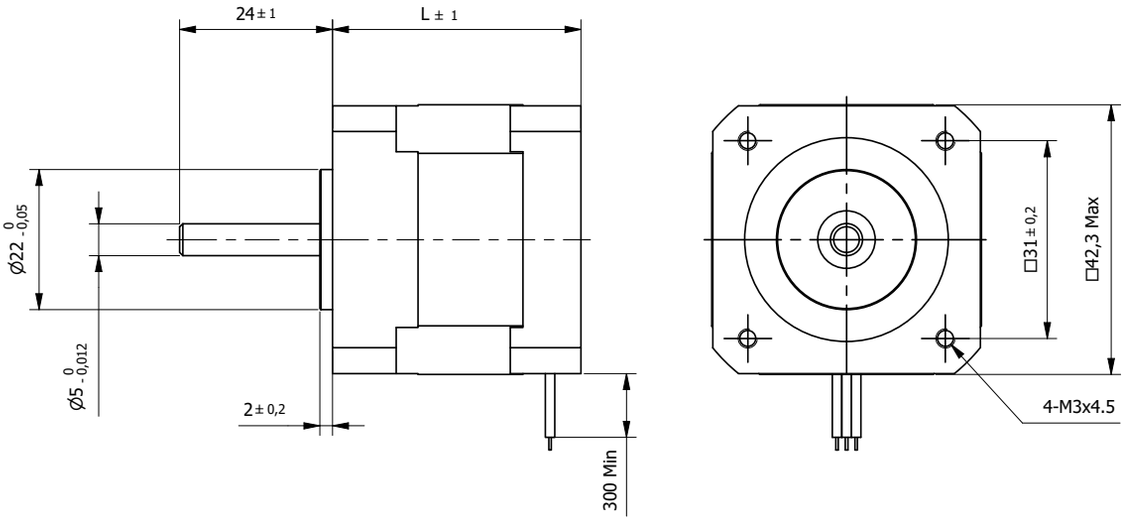
3-Phase technology in hybrid stepper motor is used mainly where ultra-low vibration and very low noise levels are required. The drive circuit of these motors is simplified because it is driven with a star wiring connection. The use of three phases inherently helps to reduce torque ripple and smooth motor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

3-Phase Hybrid Stepper motors	Torque* (Nm)	
42 3P24	0,080	338
42 3P39	0,200	339
57 3P42	0,450	340
57 3P56	0,900	341
57 3P79	1,500	342
60 3P53	0,900	343

* Holding Torque

Hybrid Stepper Motor 423P24
3-Phase

□ 42mm



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

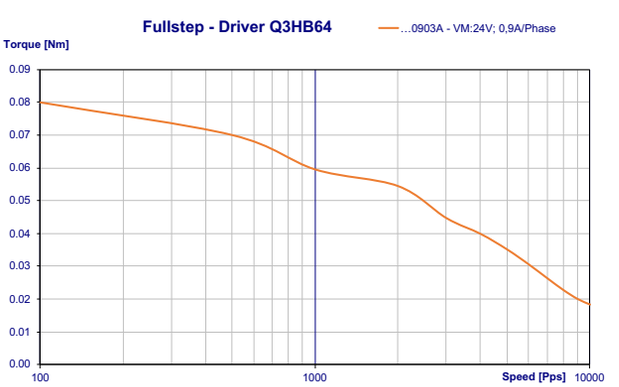
Specification			
	Model		...0903A
1	Rated Voltage	V	5,58
2	Current/Phase	A	0,9
3	Resistance/Phase	Ω	6,2
4	Inductance/Phase	mH	3,2
5	Holding Torque	Nm	0,08
6	Rotor Inertia	gcm2	20
7	n° of Leads		3
8	Length (L)	mm	24
9	Weight	Kg	0,14

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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP42	Aries
E4	42JMS	Libra
E5		Orion
		Aquarius

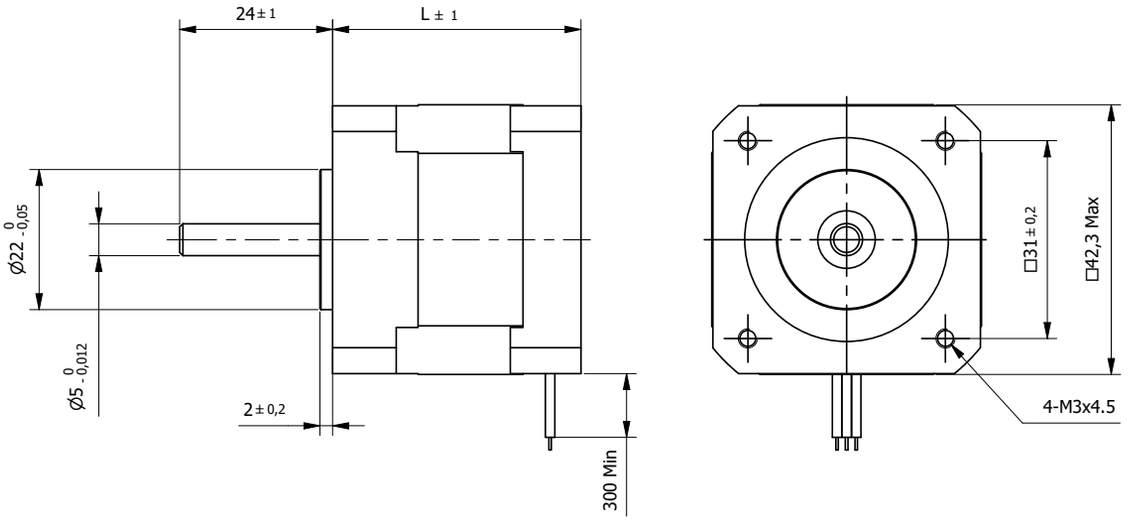
* other options on request

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



Hybrid Stepper Motor 423P39
3-Phase

□ 42mm



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

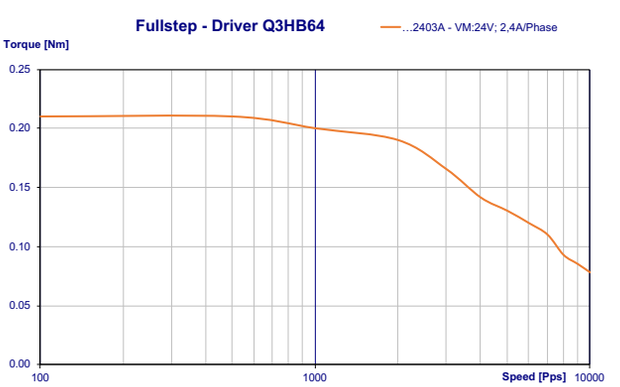
Specification			
	Model		...2403A
1	Rated Voltage	V	2,88
2	Current/Phase	A	2,4
3	Resistance/Phase	Ω	1,2
4	Inductance/Phase	mH	0,8
5	Holding Torque	Nm	0,2
6	Rotor Inertia	gcm2	54
7	n° of Leads		3
8	Length (L)	mm	39
9	Weight	Kg	0,28

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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP42	Aries
E4	42JMS	Libra
E5		Orion
		Aquarius

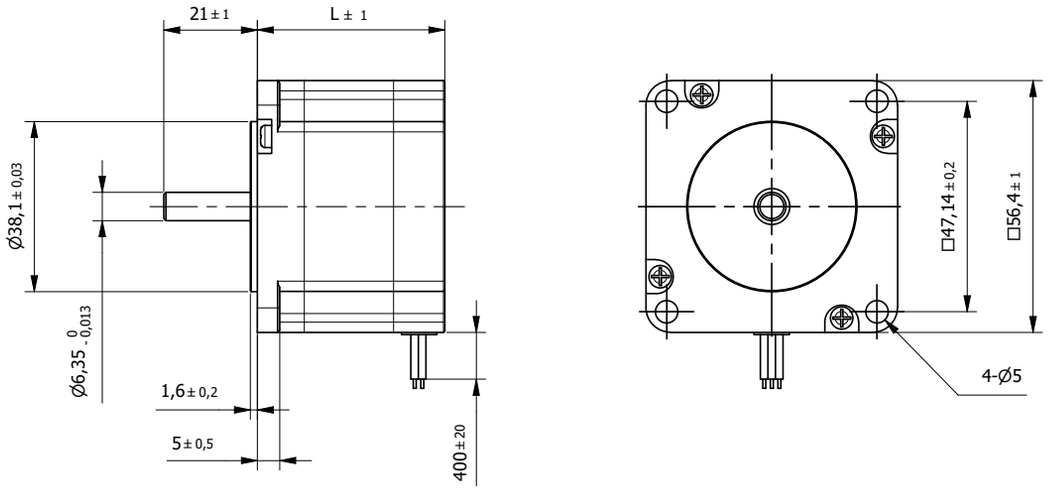
* other options on request

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



Hybrid Stepper Motor 573P42
3-Phase

□ 57mm



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

Specification

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

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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

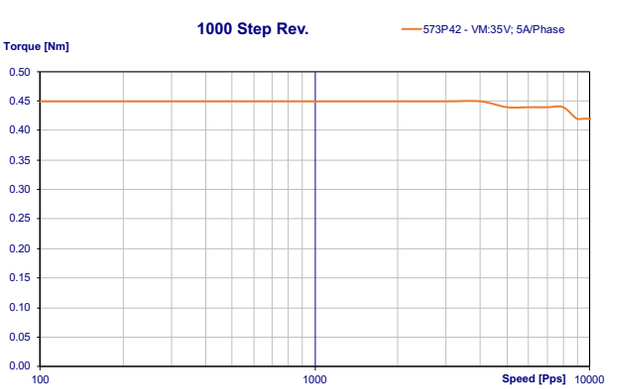
Standard Combination

Encoder	Gearbox	Drive
E3	GYP56	Libra
E4	56JMS	Sagittarius
E5		Aquarius
		Andromeda

* other options on request

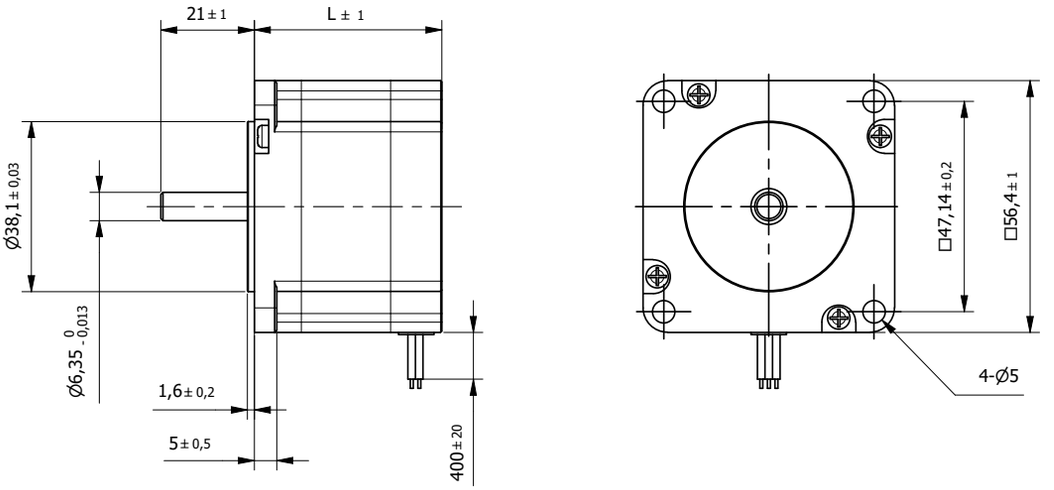
Connection

Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	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 573P56
3-Phase

□ 57mm



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

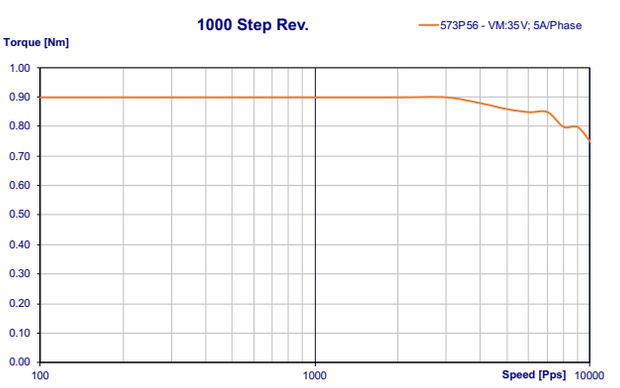
Specification			
	Model		573P56
1	Rated Voltage	V	4
2	Current/Phase	A	5,6
3	Resistance/Phase	Ω	0,7
4	Inductance/Phase	mH	1,7
5	Holding Torque	Nm	0,9
6	Rotor Inertia	gcm2	300
7	n° of Leads		6
8	Length (L)	mm	56
9	Weight	Kg	0,75

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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Libra
E4	56JMS	Sagittarius
E5		Aquarius
		Andromeda

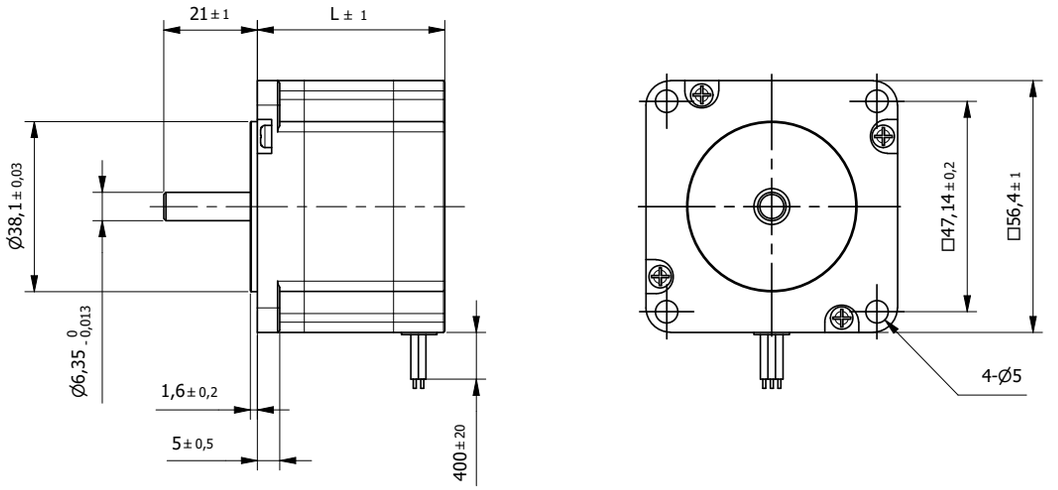
* other options on request

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	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 573P79
3-Phase

□ 57mm



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

Specification

	Model		573P79
1	Rated Voltage	V	6
2	Current/Phase	A	5,8
3	Resistance/Phase	Ω	1,05
4	Inductance/Phase	mH	2,4
5	Holding Torque	Nm	1,5
6	Rotor Inertia	gcm2	480
7	n° of Leads		6
8	Length (L)	mm	79
9	Weight	Kg	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)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

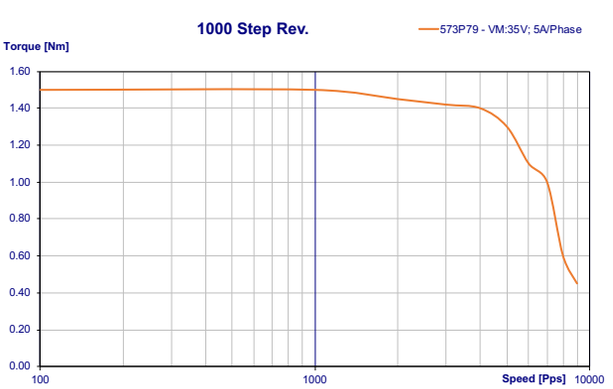
Standard Combination

Encoder	Gearbox	Drive
E3	GYP56	Libra
E4	56JMS	Sagittarius
E5		Aquarius
		Andromeda

* other options on request

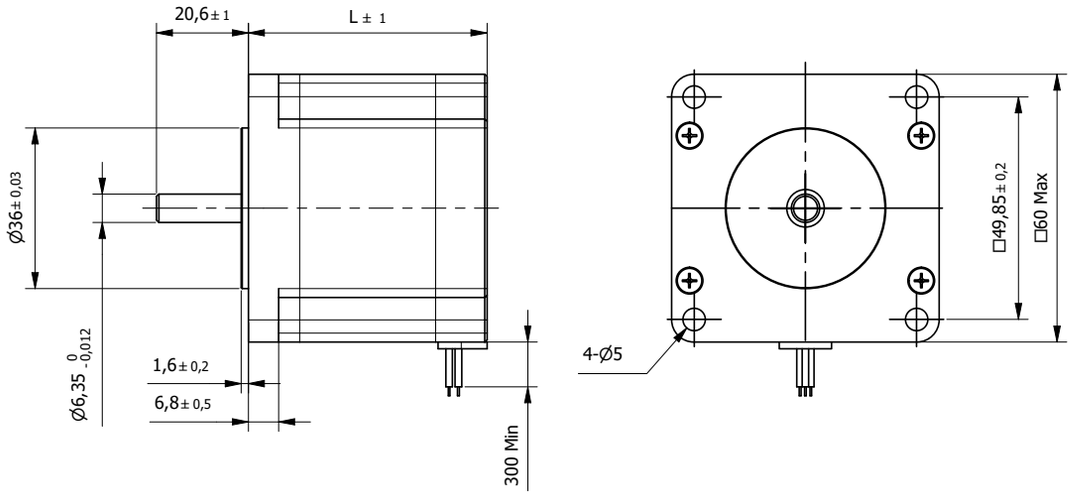
Connection

Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	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 13mm - 2x M2.5 on diameter 46mm

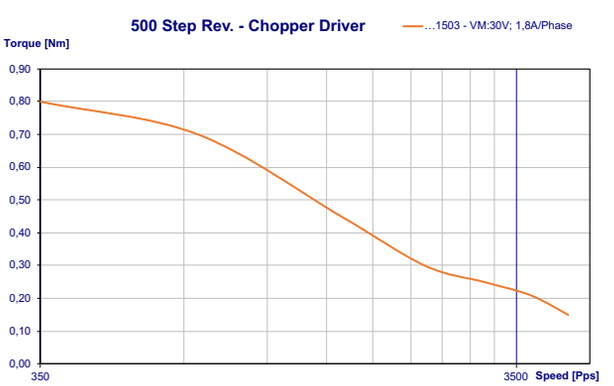
Specification			
	Model		...1503
1	Rated Voltage	V	6,75
2	Current/Phase	A	1,5
3	Resistance/Phase	Ω	4,5
4	Inductance/Phase	mH	12
5	Holding Torque	Nm	0,9
6	Rotor Inertia	gcm2	260
7	n° of Leads		3
8	Length (L)	mm	53,5
9	Weight	Kg	0,8

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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination		
Encoder	Gearbox	Drive
E3	GYP56	Libra
E4	56JMS	Sagittarius
E5		Aquarius
		Andromeda

* other options on request

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1061 AWG26	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.

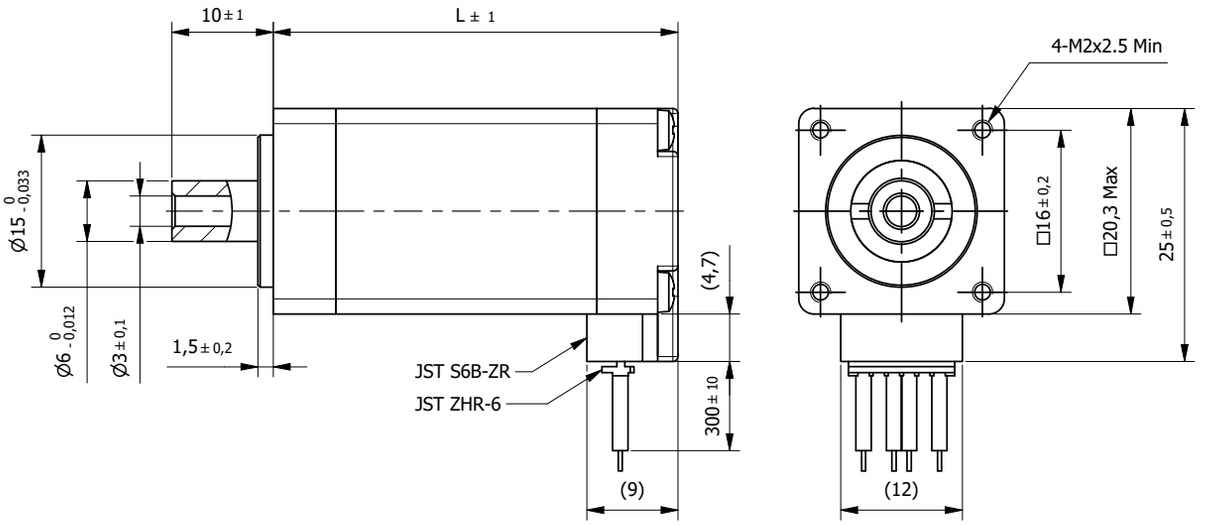
Hollow Shaft Stepper motors - NEW	Torque* (Nm)	
20STC40 H - Hyper Torque	0,036	346
28STC51 H - Hyper Torque	0,120	347
35STC38 H - Hyper Torque	0,230	348
42STC47 H - Hyper Torque	0,440	349
57STC76 H - Hyper Torque	2,300	350
86SH118 H - High Torque	6,000	351

* Holding Torque

Hybrid Stepper Motor 20STC40-H

Hollow Shaft - Hyper Torque

□ 20mm

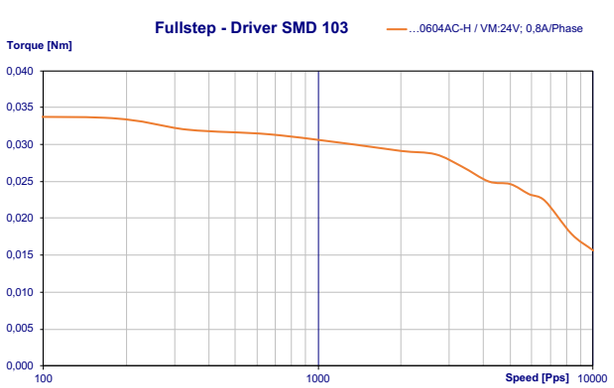


Specification			
	Model		...0604AC-H
1	Rated Voltage	V	4,3
2	Current/Phase	A	0,6
3	Resistance/Phase	Ω	7,2
4	Inductance/Phase	mH	3,15
5	Holding Torque	Nm	0,036
6	Rotor Inertia	gcm2	2,9
7	Detent Torque	Nm	0,002
8	n° of Leads		4
9	Length (L)	mm	40
10	Weight	Kg	0,08

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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination
Drive
Aries
Libra
Orion
Aquarius
* other options on request

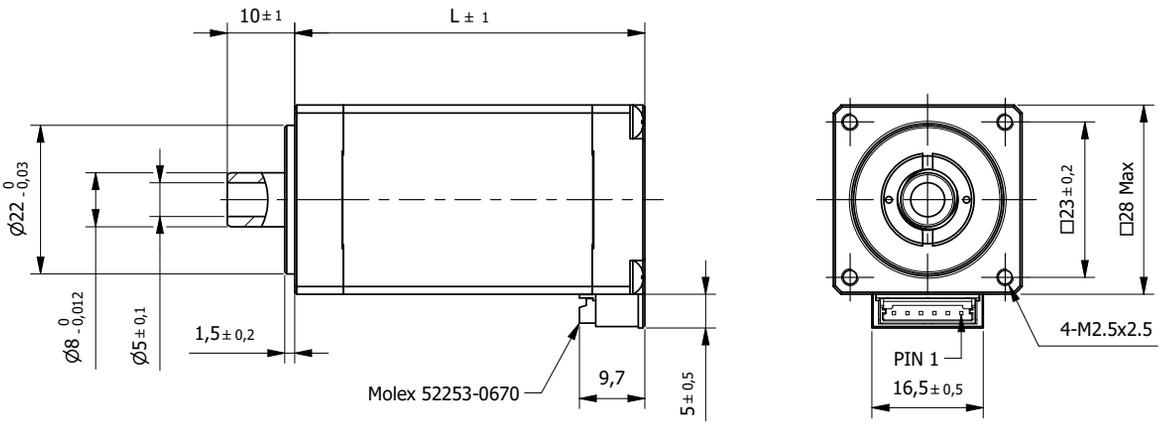
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-



Hybrid Stepper Motor 28STC51-H

Hollow Shaft - Hyper Torque

□ 28mm



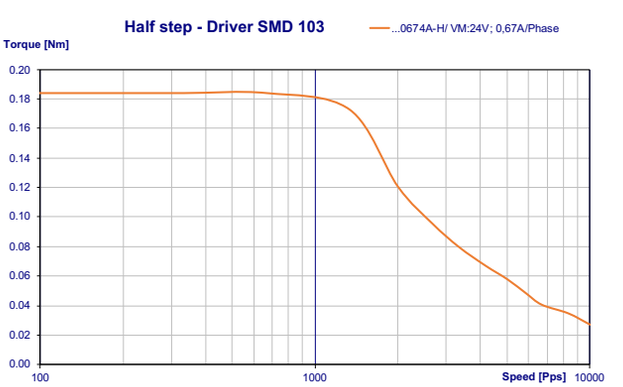
Specification			
	Model		...0674A-H
1	Rated Voltage	V	6,2
2	Current/Phase	A	0,67
3	Resistance/Phase	Ω	9,2
4	Inductance/Phase	mH	5,6
5	Holding Torque	Nm	0,12
6	Rotor Inertia	gcm2	18
7	Detent Torque	Nm	0,008
8	n° of Leads		4
9	Length (L)	mm	52
10	Weight	Kg	0,2

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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination	
Gearbox	Drive
28JMS	Aries
22JMS	Libra
	Orion
	Aquarius

* other options on request

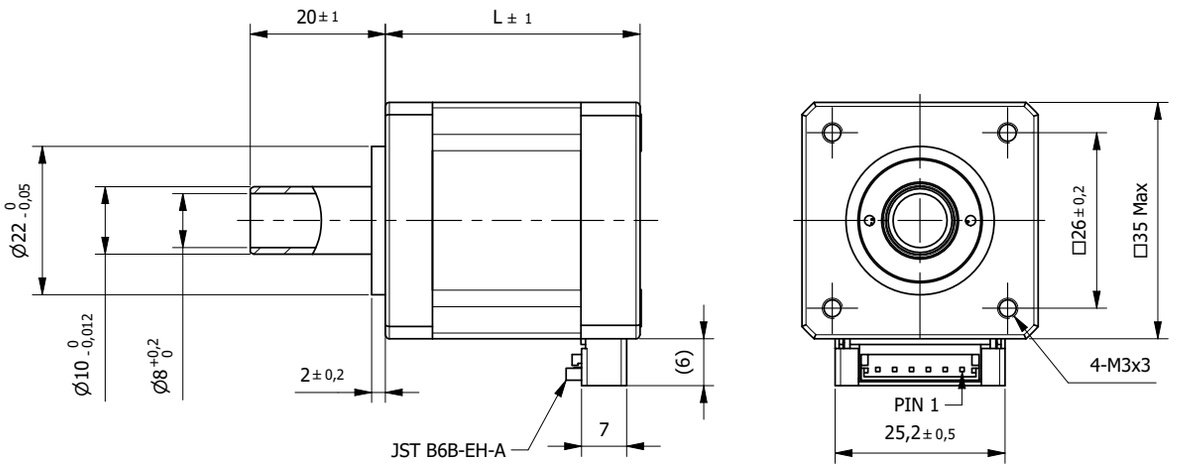
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
6	Blue	|	Phase B-



Hybrid Stepper Motor 35STC38-H

Hollow Shaft - Hyper Torque

□ 35mm



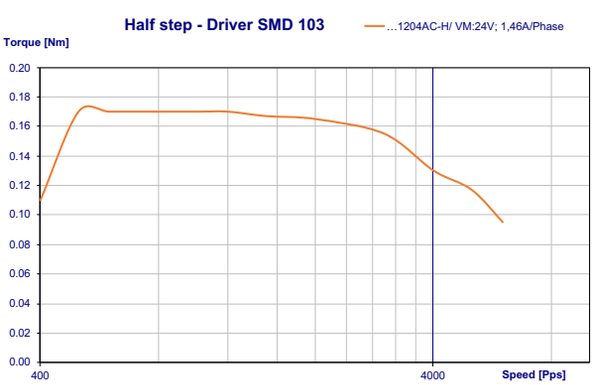
Specification			
	Model		...1204AC-H
1	Rated Voltage	V	3,4
2	Current/Phase	A	1,2
3	Resistance/Phase	Ω	2,8
4	Inductance/Phase	mH	4
5	Holding Torque	Nm	0,23
6	Rotor Inertia	gcm2	20
7	Detent Torque	Nm	0,018
8	n° of Leads		4
9	Length (L)	mm	38
10	Weight	Kg	0,21

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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination	
Gearbox	Drive
28JMS	Aries
	Libra
	Orion
	Aquarius

* other options on request

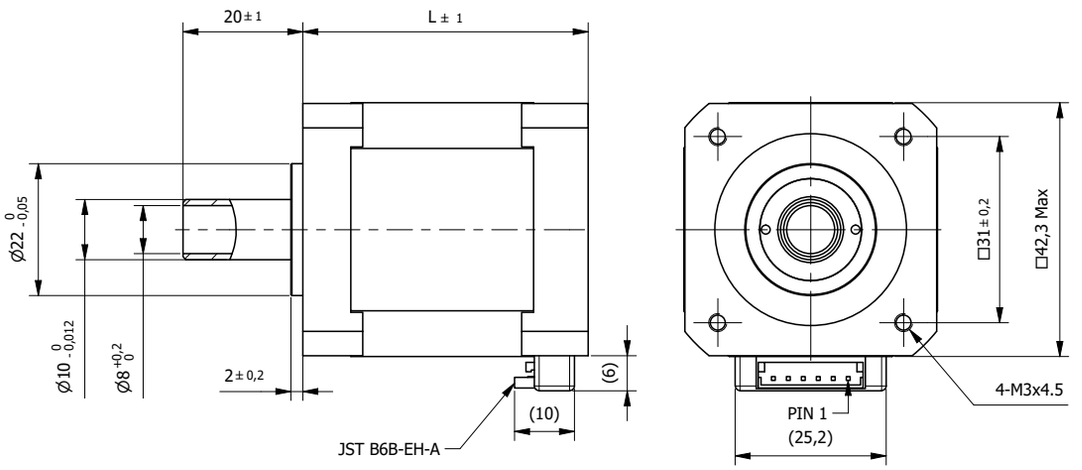
Connection	
Pin n°	Function
2	Phase A
3	Phase A-
4	Phase B
5	Phase B-



Hybrid Stepper Motor 42STC47-H

Hollow Shaft - Hyper Torque

□ 42mm



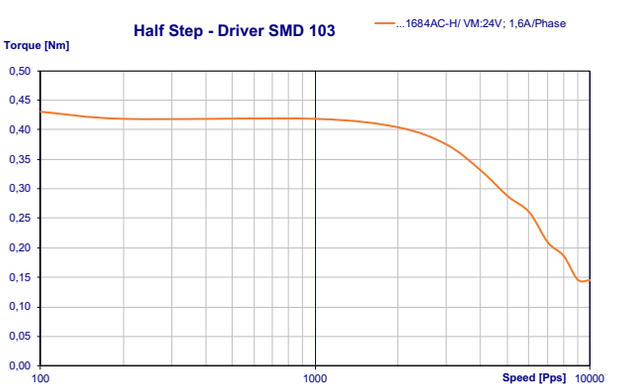
Specification			
	Model		...1684AC-H
1	Rated Voltage	V	2,8
2	Current/Phase	A	1,7
3	Resistance/Phase	Ω	1,65
4	Inductance/Phase	mH	2,8
5	Holding Torque	Nm	0,44
6	Rotor Inertia	gcm2	68
7	Detent Torque	Nm	0,02
8	n° of Leads		4
9	Length (L)	mm	47,5
10	Weight	Kg	0,35

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 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination	
Gearbox	Drive
GYP42	Aries
42JMS	Libra
	Orion
	Aquarius

* other options on request

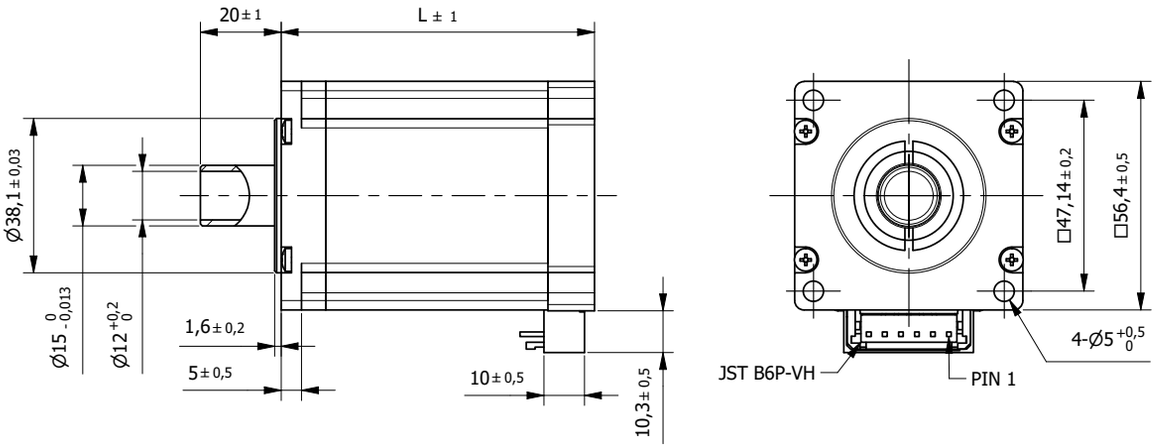
Connection	
Pin n°	Function
2	Phase A
3	Phase A-
4	Phase B
5	Phase B-



Hybrid Stepper Motor 57STC76-H

Hollow Shaft - Hyper Torque

□ 57mm



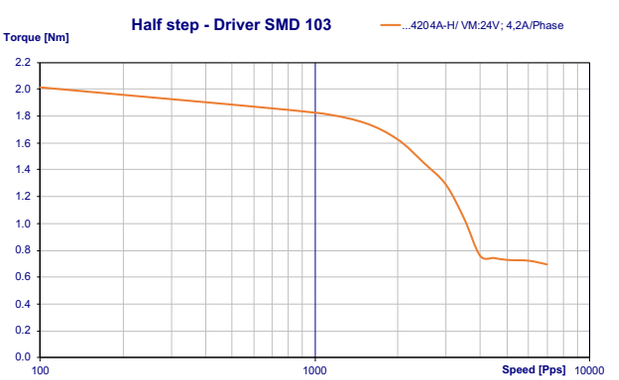
Specification			
	Model		...4204A-H
1	Rated Voltage	V	3,6
2	Current/Phase	A	4,2
3	Resistance/Phase	Ω	0,55
4	Inductance/Phase	mH	2,1
5	Holding Torque	Nm	2,3
6	Rotor Inertia	gcm2	480
7	Detent Torque	Nm	0,068
8	n° of Leads		4
9	Length (L)	mm	77,5
10	Weight	Kg	1,1

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

Standard Combination	
Gearbox	Drive
GYP56	Aries
56JMS	Libra
	Sagittarius
	Aquarius

* other options on request

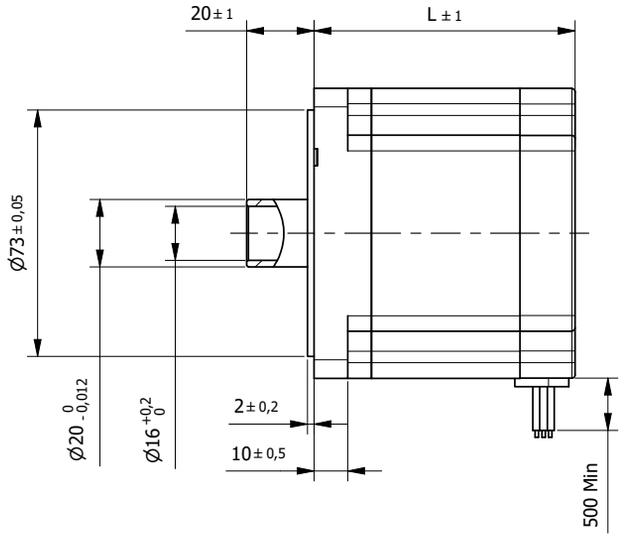
Connection	
Pin n°	Function
1	Phase A
3	Phase A-
4	Phase B
6	Phase B-

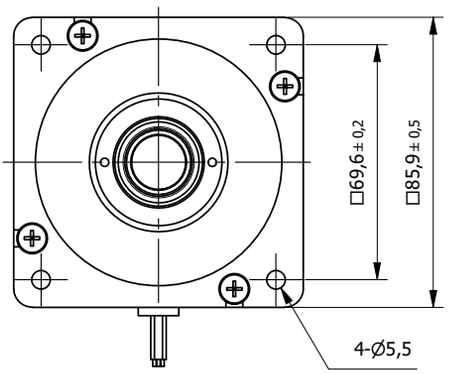


Hybrid Stepper Motor 86SH118-H

Hollow Shaft - High Torque

□ 86mm





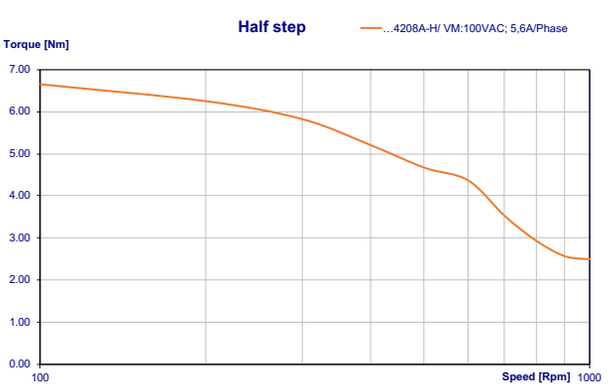
Specification			
	Model		...4208A-H
1	Rated Voltage	V	5
2	Current/Phase	A	4,2
3	Resistance/Phase	Ω	1,2
4	Inductance/Phase	mH	6,5
5	Holding Torque	Nm	6
6	Rotor Inertia	gcm2	2700
7	Detent Torque	Nm	0,24
8	n° of Leads		8
9	Length (L)	mm	114
10	Weight	Kg	3,8

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 min.)	750 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Standard Combination
Drive
Aries
Libra
Sagittarius
Aquarius

* other options on request

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

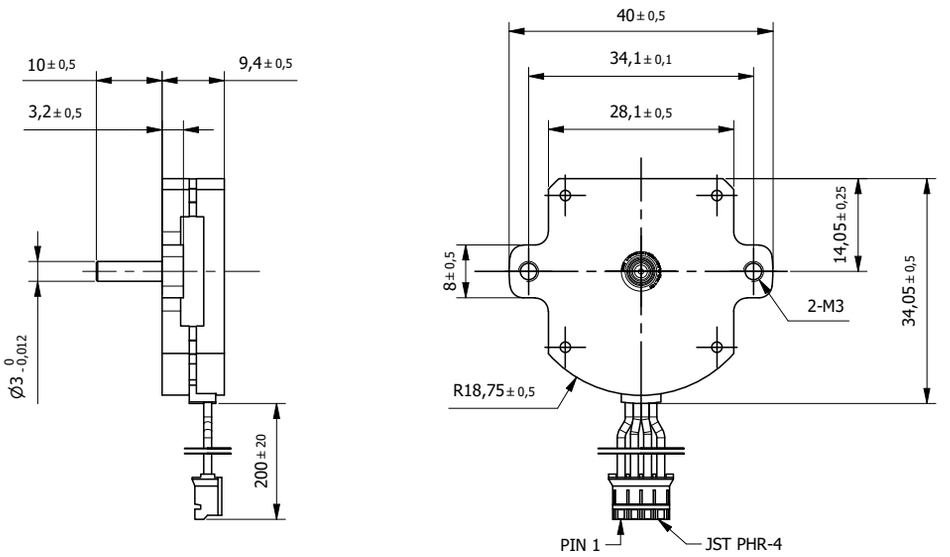
Flat Hybrid Stepper motors	Torque* (Nm)	
28S10	0,010	354
63S10	0,064	355

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

Flat Hybrid Stepper Motor 28S10

□ 28mm



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

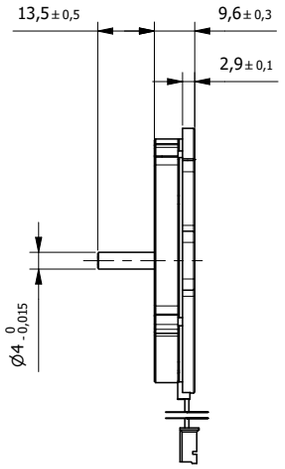
Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (at 4N)	0,02mm
Max. Shaft Axial play (at 4N)	0,08mm
Max. Radial Force (5mm from front flange)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

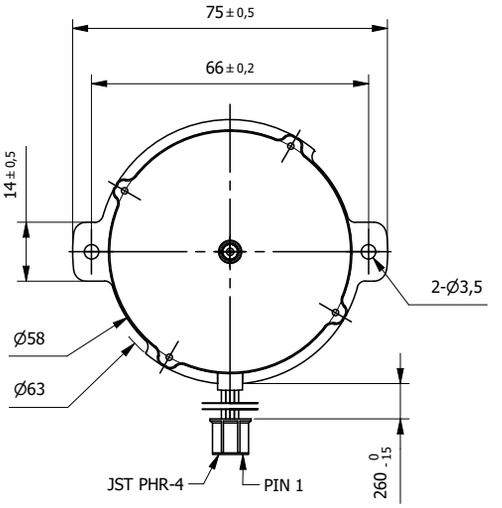
Standard Combination
Drive
Aries
Libra
Orion
Aquarius
* other options on request

Connection			
Pin n°	Color	Gauge	Function
1	Red	UL1061 AWG26	Phase A
2	Blue	|	Phase A-
3	Orange	|	Phase B
4	Yellow	|	Phase B-

Flat Hybrid Stepper Motor 63S10

Ø 63mm





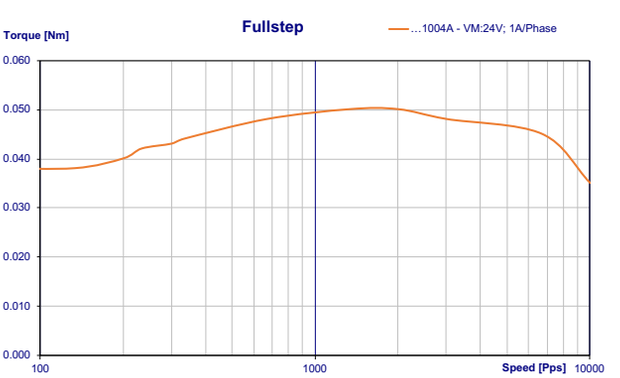
Specification			
	Model		...1004A
1	Rated Voltage	V	3,8
2	Current/Phase	A	1
3	Resistance/Phase	Ω	3,8
4	Inductance/Phase	mH	2
5	Holding Torque	Nm	0,064
6	Rotor Inertia	gcm2	16
7	n° of Leads		4
8	Length (L)	mm	9,6
9	Weight	Kg	0,095

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

Standard Combination
Drive
Aries
Libra
Orion
Aquarius

* other options on request

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

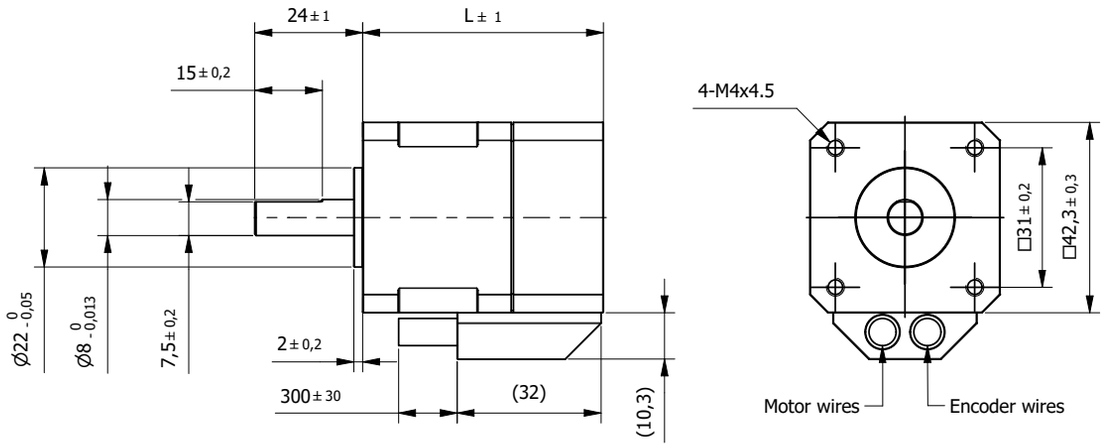
Our Hybrid stepper motors are also available equipped with an optical incremental encoder to increase the motion precision. Thanks to the encoder, the drive knows the position (or the speed) of the motor in real time and can perform adjustments to align the real condition with the condition requested 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)	
SM42 054 - E	0,22	358
SM42 060 - E	0,36	359
SM42 068 - E	0,44	360
SM42 080 - E	0,75	361
SM60 066 - E	1,00	362
SM60 075 - E	1,65	363
SM60 086 - E	2,00	364
SM60 107 - E	3,00	365
SM86 084 - E	3,50	366
SM86 097 - E	4,50	367
SM86 115 - E	6,50	368
SM86 133 - E	8,50	369
SM86 172 - E	12,00	370

* Holding Torque

Hybrid Stepper Motor SM42 054-E
with Encoder

□ 42mm



Specification			
	Model		...13E4F
1	Rated Voltage	V	2,8
2	Current/Phase	A	1,33
3	Resistance/Phase	Ω	2,1
4	Inductance/Phase	mH	2,5
5	Holding Torque	Nm	0,22
6	Rotor Inertia	gcm2	35
7	Detent Torque	Nm	0,012
8	n°of Leads		4
9	Length (L)	mm	53,5
10	Weight	Kg	0,22

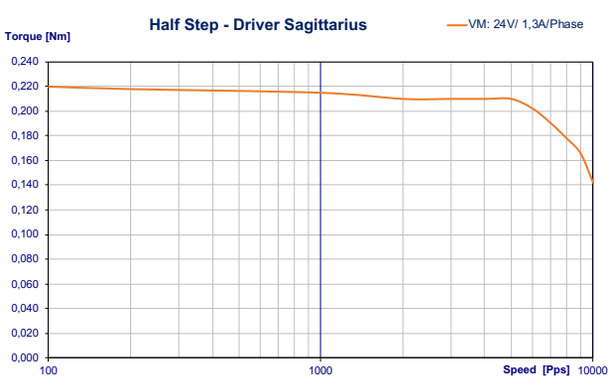
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP20
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP42	Aries
42JMS	Libra
	Orion
	Sagittarius

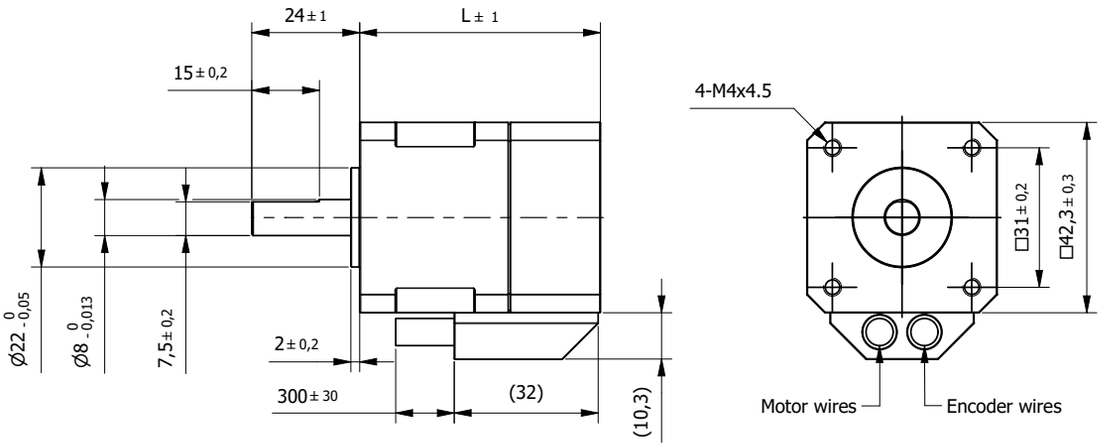
* other options on request

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 SM42 060-E
with Encoder

□ 42mm



Specification			
	Model		...16E4F
1	Rated Voltage	V	2,8
2	Current/Phase	A	1,68
3	Resistance/Phase	Ω	1,65
4	Inductance/Phase	mH	3,2
5	Holding Torque	Nm	0,36
6	Rotor Inertia	gcm2	54
7	Detent Torque	Nm	0,015
8	n°of Leads		4
9	Length (L)	mm	59,5
10	Weight	Kg	0,28

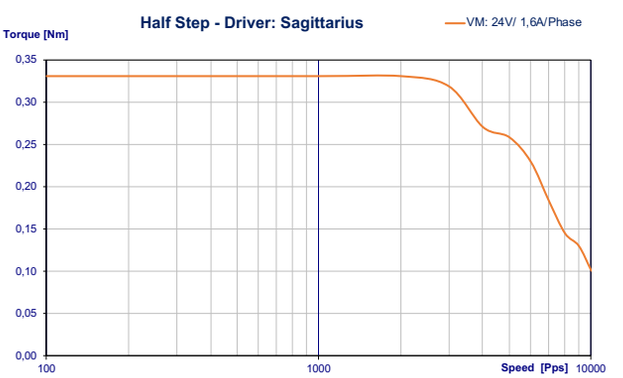
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP20
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP42	Aries
42JMS	Libra
	Orion
	Sagittarius

* other options on request

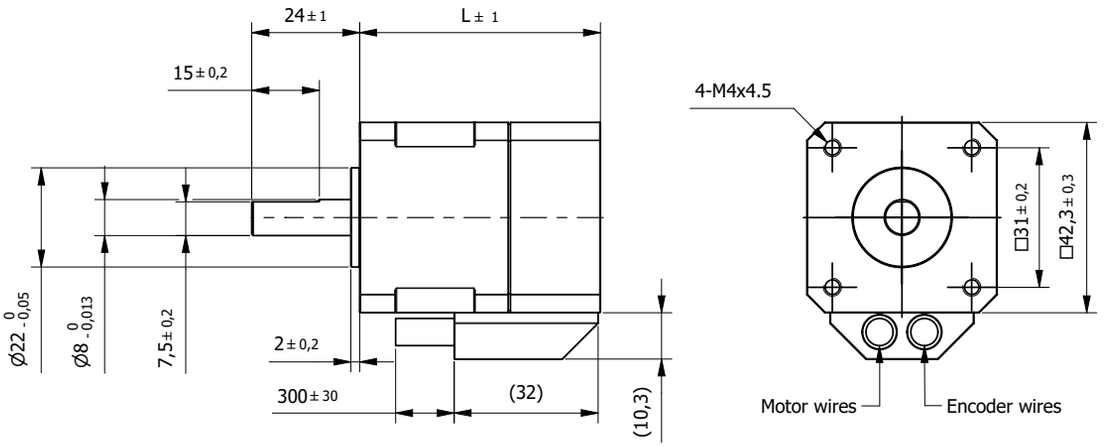
Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Black	AWG24	GND
2	Red	|	VCC:+5VDC
3	Blue	|	EA-
4	Blue/White	|	EA+
5	Orange	|	EB-
6	Orange/White	|	EB+
Motor			
1	Black	AWG20	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-



Stepper

Hybrid Stepper Motor SM42 068-E
with Encoder

□ 42mm



Specification			
	Model		...16E4F
1	Rated Voltage	V	2,8
2	Current/Phase	A	1,68
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	67,5
10	Weight	Kg	0,35

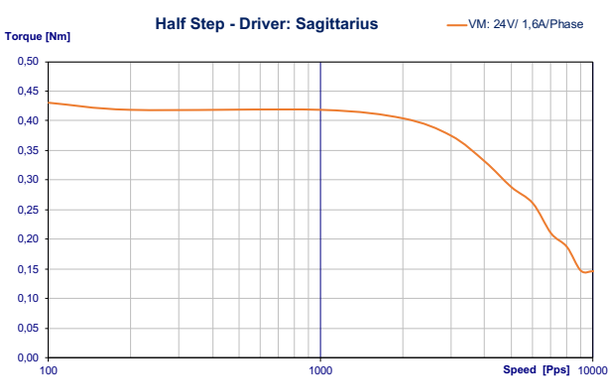
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP20
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP42	Aries
42JMS	Libra
	Orion
	Sagittarius

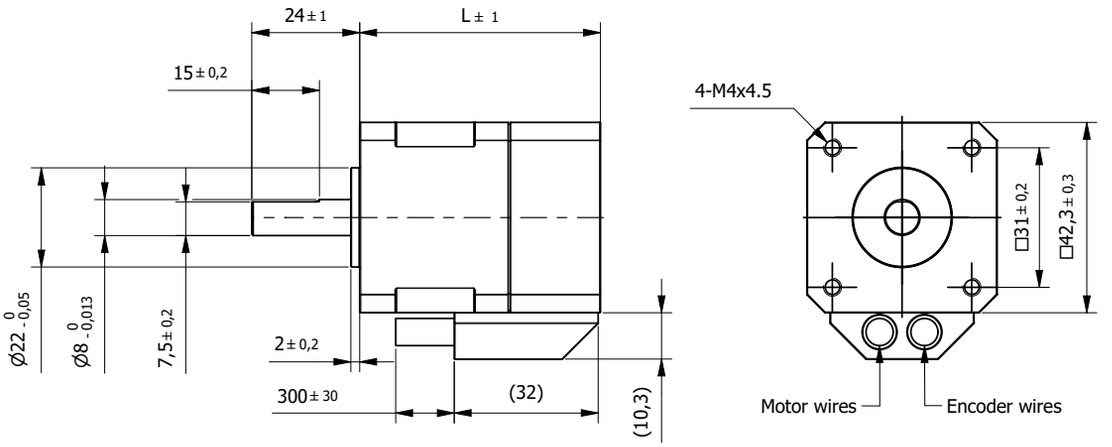
* other options on request

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 SM42 080-E
with Encoder

□ 42mm



Specification			
	Model		...30E4F
1	Rated Voltage	V	3,5
2	Current/Phase	A	3
3	Resistance/Phase	Ω	1,2
4	Inductance/Phase	mH	2,9
5	Holding Torque	Nm	0,75
6	Rotor Inertia	gcm2	102
7	Detent Torque	Nm	0,028
8	n°of Leads		4
9	Length (L)	mm	80
10	Weight	Kg	0,5

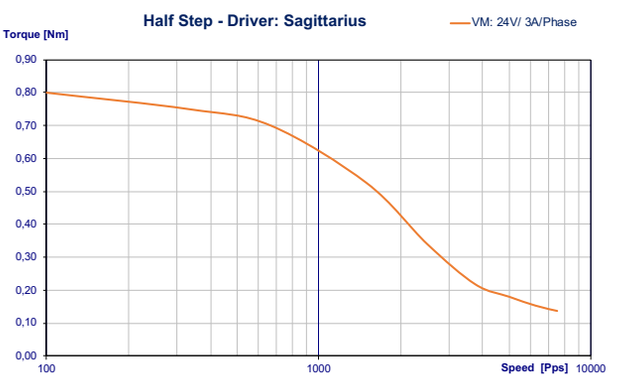
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP20
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP42	Aries
42JMS	Libra
	Orion
	Sagittarius

* other options on request

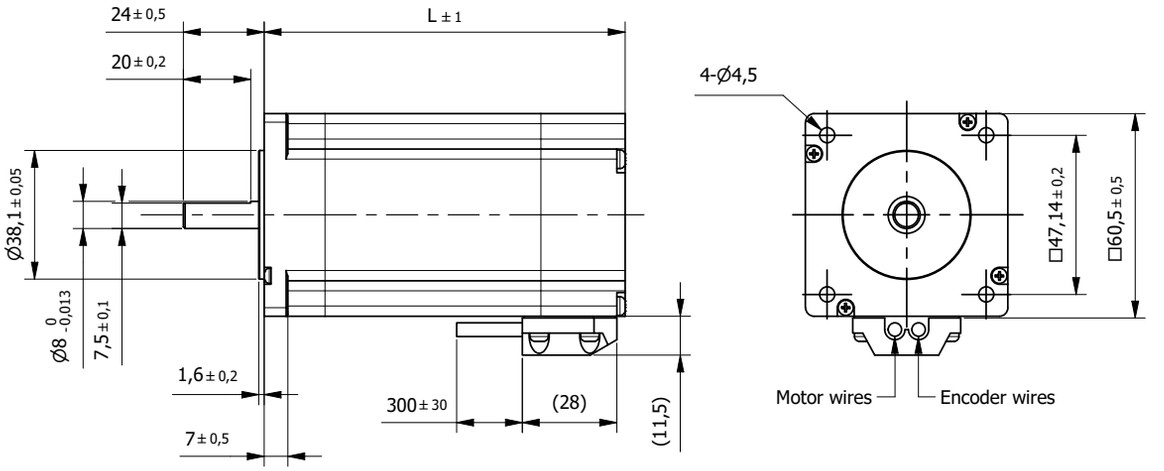
Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Black	AWG24	GND
2	Red	|	VCC:+5VDC
3	Blue	|	EA-
4	Blue/White	|	EA+
5	Orange	|	EB-
6	Orange/White	|	EB+
Motor			
1	Black	AWG20	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-



Stepper

Hybrid Stepper Motor SM60 066-E
with Encoder

□ 60mm



Specification			
	Model		...28E4F
1	Rated Voltage	V	2,1
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	0,75
4	Inductance/Phase	mH	2
5	Holding Torque	Nm	1
6	Rotor Inertia	gcm2	275
7	Detent Torque	Nm	0,05
8	n°of Leads		4
9	Length (L)	mm	66
10	Weight	Kg	0,6

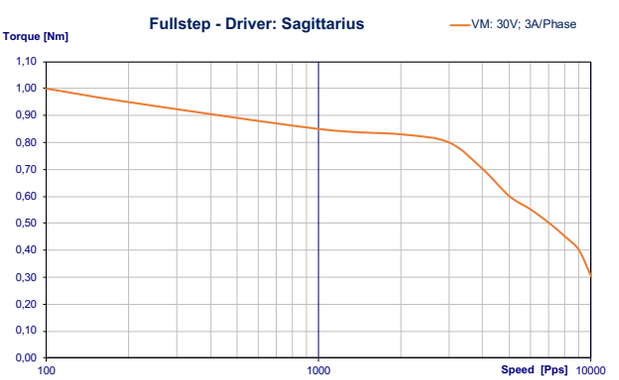
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP56	Aries
56JMS	Libra
	Orion
	Sagittarius

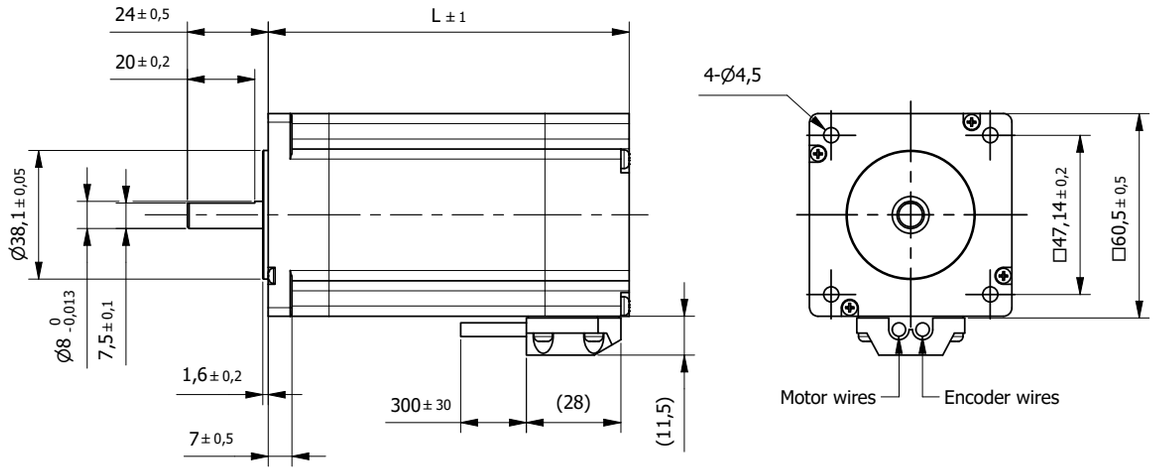
* other options on request

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 SM60 075-E
with Encoder

□ 60mm



Specification			
	Model		...28E4F
1	Rated Voltage	V	2,8
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	1
4	Inductance/Phase	mH	3,6
5	Holding Torque	Nm	1,65
6	Rotor Inertia	gcm2	450
7	Detent Torque	Nm	0,05
8	n°of Leads		4
9	Length (L)	mm	75
10	Weight	Kg	0,82

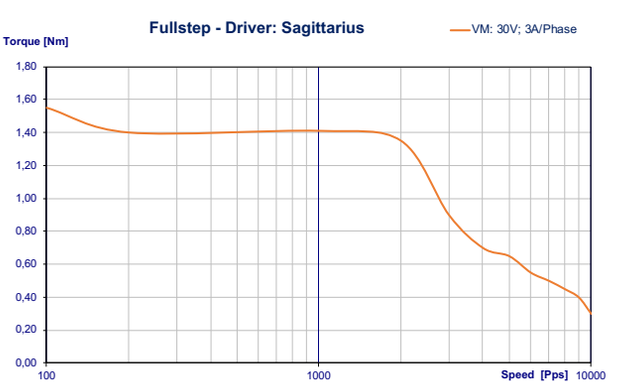
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP56	Aries
56JMS	Libra
	Orion
	Sagittarius

* other options on request

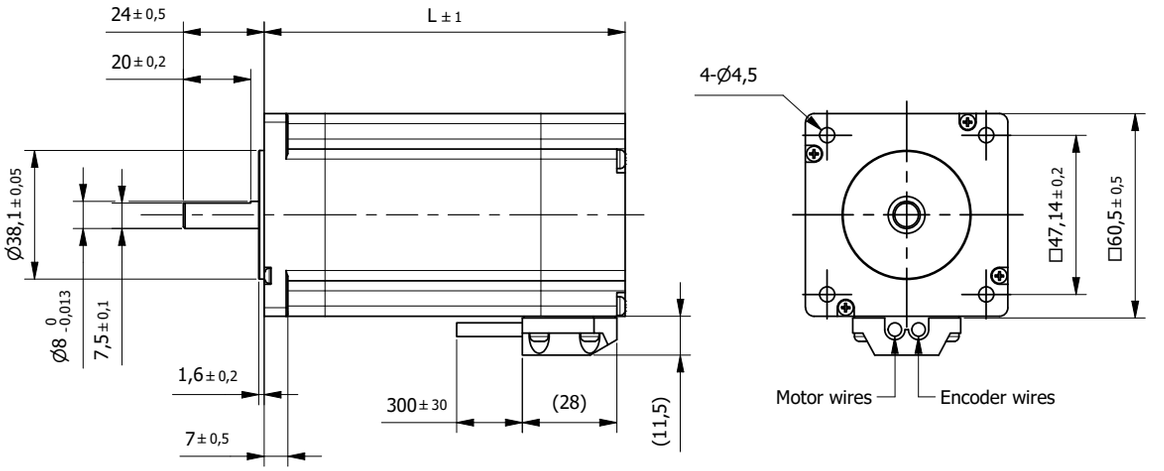
Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Black	AWG24	GND
2	Red	|	VCC:+5VDC
3	Blue	|	EA+
4	Blue/White	|	EA-
5	Orange	|	EB+
6	Orange/White	|	EB-
Motor			
1	Black	AWG20	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-



Stepper

Hybrid Stepper Motor SM60 086-E
with Encoder

□ 60mm



Specification			
	Model		...28E4F
1	Rated Voltage	V	3,4
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	1,2
4	Inductance/Phase	mH	4,6
5	Holding Torque	Nm	2
6	Rotor Inertia	gcm2	570
7	Detent Torque	Nm	0,05
8	n°of Leads		4
9	Length (L)	mm	86
10	Weight	Kg	1,3

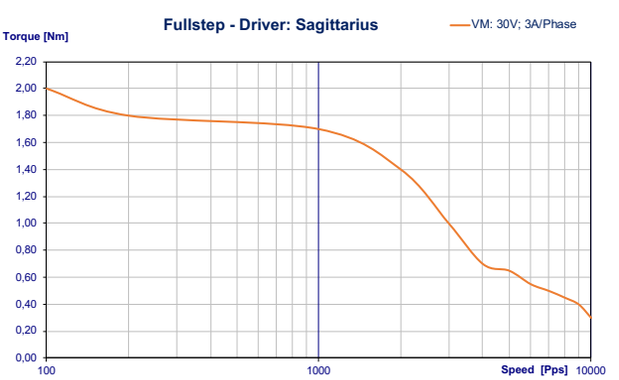
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP56	Aries
56JMS	Libra
	Orion
	Sagittarius

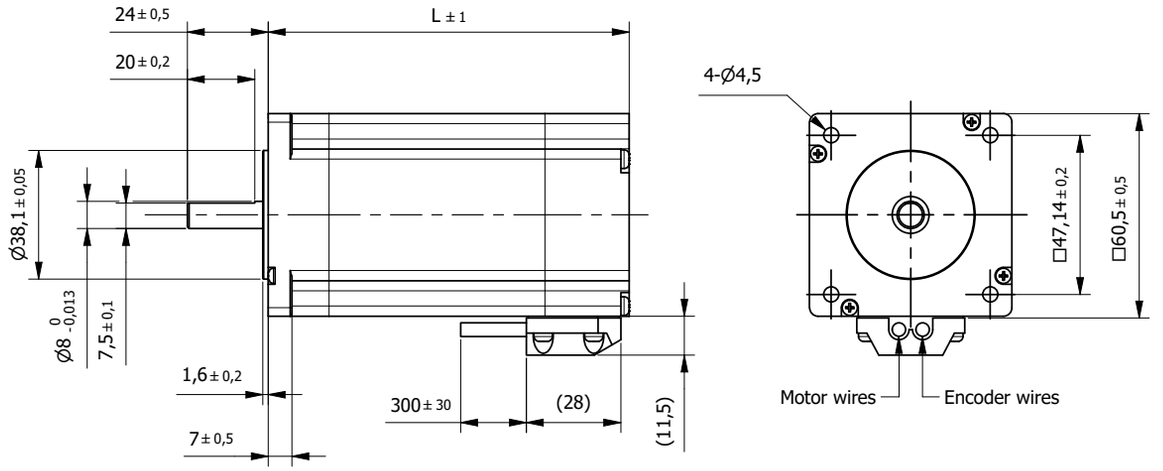
* other options on request

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 SM60 107-E
with Encoder

□ 60mm



Specification			
	Model		...28E4F
1	Rated Voltage	V	4,2
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	1,5
4	Inductance/Phase	mH	6,8
5	Holding Torque	Nm	3
6	Rotor Inertia	gcm2	840
7	Detent Torque	Nm	0,1
8	n°of Leads		4
9	Length (L)	mm	107
10	Weight	Kg	1,4

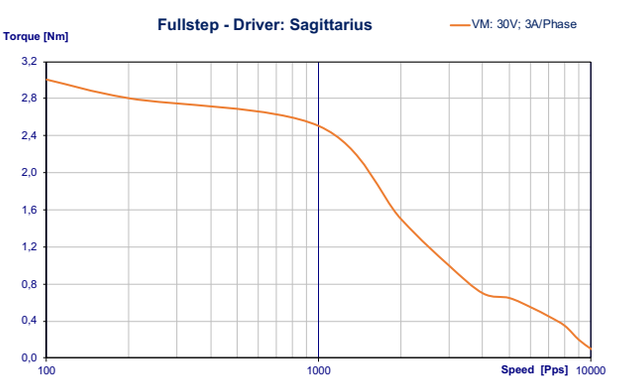
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP56	Aries
56JMS	Libra
	Orion
	Sagittarius

* other options on request

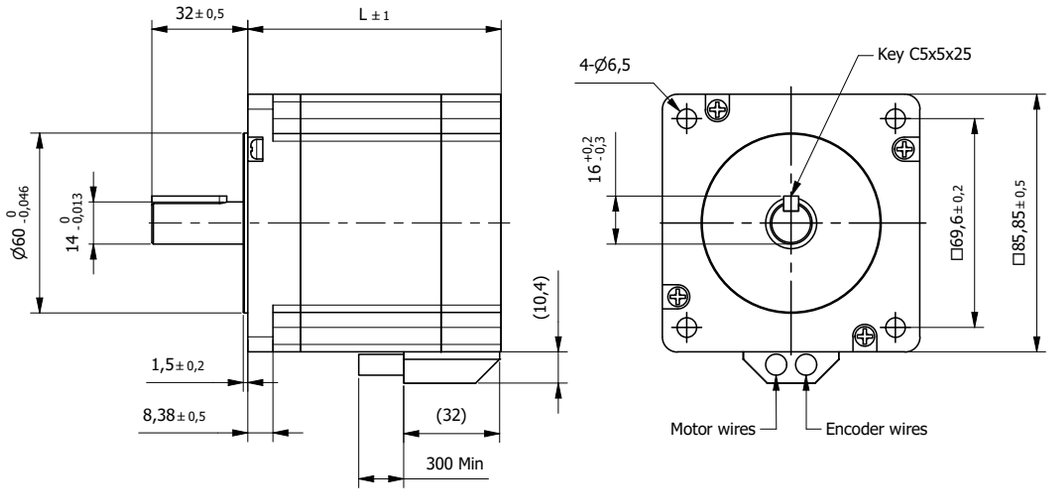
Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Black	AWG24	GND
2	Red	|	VCC:+5VDC
3	Blue	|	EA+
4	Blue/White	|	EA-
5	Orange	|	EB+
6	Orange/White	|	EB-
Motor			
1	Black	AWG20	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-



Stepper

Hybrid Stepper Motor SM86 084-E
with Encoder

□ 86mm



Specification			
	Model		...60E4K
1	Rated Voltage	V	1,7
2	Current/Phase	A	6
3	Resistance/Phase	Ω	0,3
4	Inductance/Phase	mH	1,8
5	Holding Torque	Nm	3,5
6	Rotor Inertia	gcm2	1000
7	n°of Leads		4
8	Length (L)	mm	84,5
9	Weight	Kg	1,7

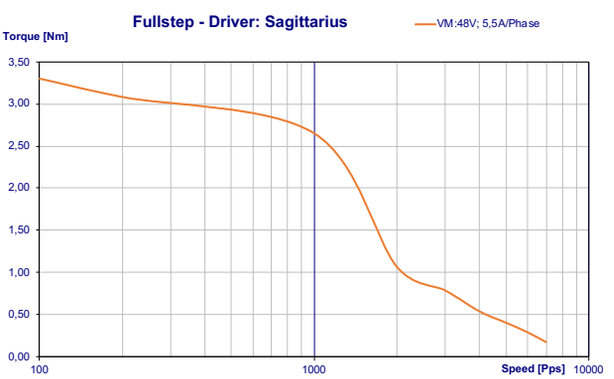
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP80	Libra
	Sagittarius
	Aquarius
	Andromeda

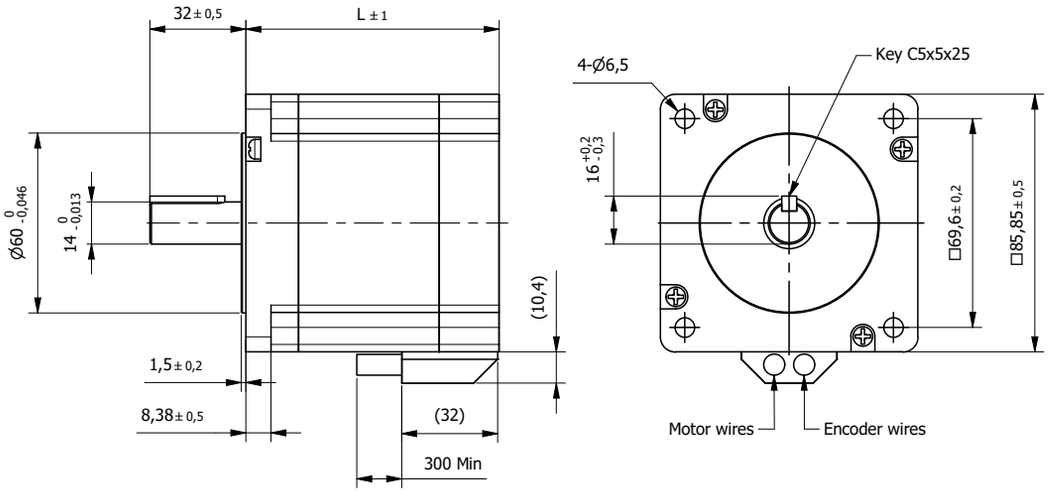
* other options on request

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-



Hybrid Stepper Motor SM86 097-E
with Encoder

□ 86mm



Specification			
	Model		...55E4K
1	Rated Voltage	V	2,3
2	Current/Phase	A	5,5
3	Resistance/Phase	Ω	0,4
4	Inductance/Phase	mH	3,5
5	Holding Torque	Nm	4,5
6	Rotor Inertia	gcm2	1400
7	Detent Torque	Nm	0,12
8	n°of Leads		4
9	Length (L)	mm	97
10	Weight	Kg	2,3

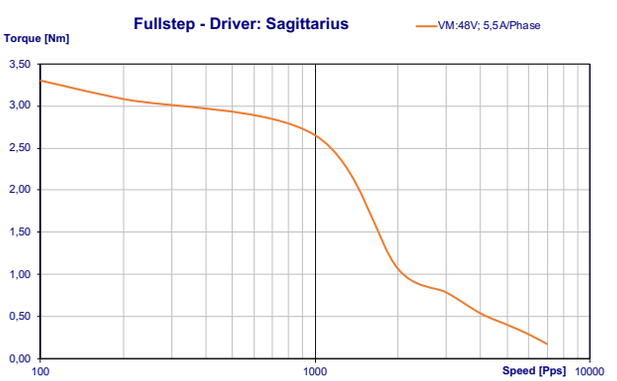
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP80	Libra
	Sagittarius
	Aquarius
	Andromeda

* other options on request

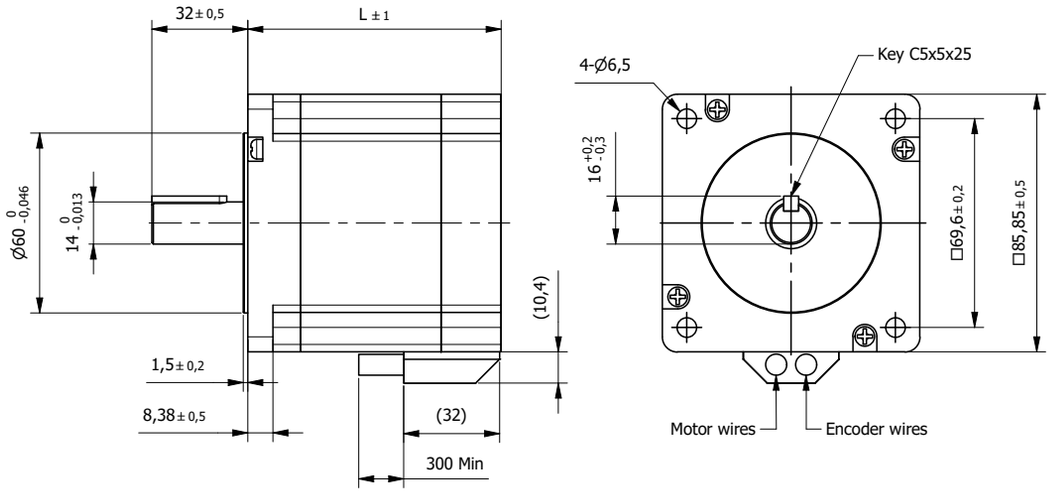
Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Black	AWG24	GND
2	Red	|	VCC:+5VDC
3	Blue	|	EA+
4	Blue/White	|	EA-
5	Orange	|	EB+
6	Orange/White	|	EB-
Motor			
1	Black	AWG18	Phase A
2	Red	|	Phase A-
3	Yellow	|	Phase B
4	Green	|	Phase B-



Stepper

Hybrid Stepper Motor SM86 115-E
with Encoder

□ 86mm



Specification			
	Model		...55E4K
1	Rated Voltage	V	2,6
2	Current/Phase	A	5,5
3	Resistance/Phase	Ω	0,5
4	Inductance/Phase	mH	3,4
5	Holding Torque	Nm	6,5
6	Rotor Inertia	gcm2	1900
7	Detent Torque	Nm	0,12
8	n°of Leads		4
9	Length (L)	mm	115,5
10	Weight	Kg	2,8

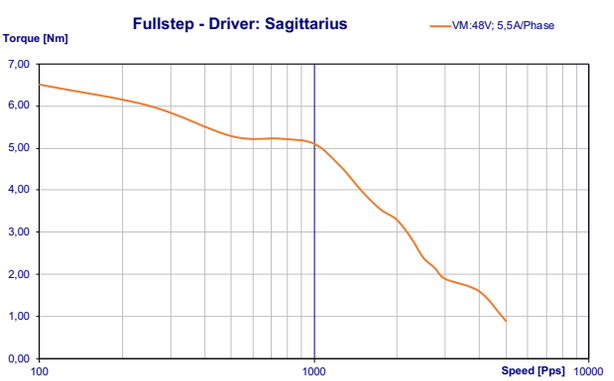
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP80	Libra
	Sagittarius
	Aquarius
	Andromeda

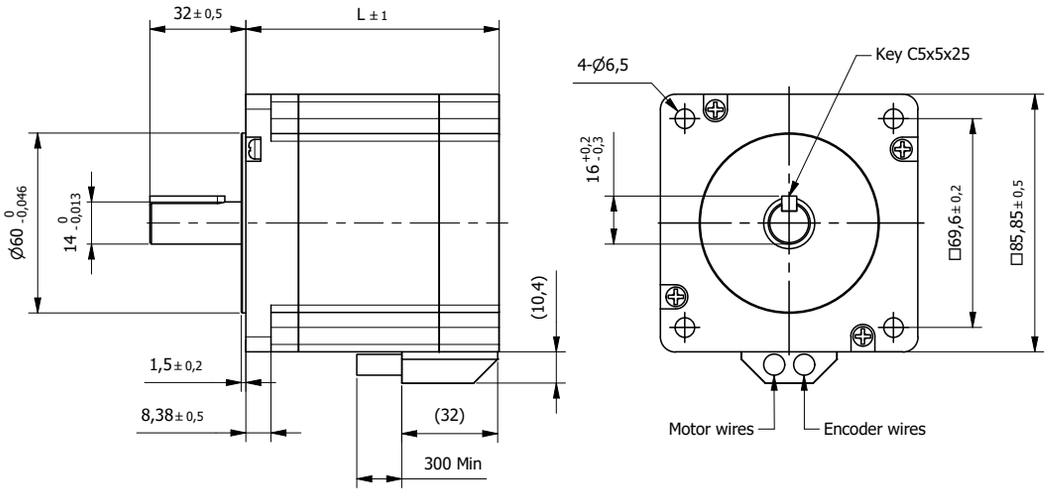
* other options on request

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-



Hybrid Stepper Motor SM86 133-E
with Encoder

□ 86mm



Specification			
	Model		...60E4K
1	Rated Voltage	V	3,3
2	Current/Phase	A	6
3	Resistance/Phase	Ω	0,55
4	Inductance/Phase	mH	6
5	Holding Torque	Nm	8,5
6	Rotor Inertia	gcm2	2700
7	Detent Torque	Nm	0,24
8	n°of Leads		4
9	Length (L)	mm	133
10	Weight	Kg	3,8

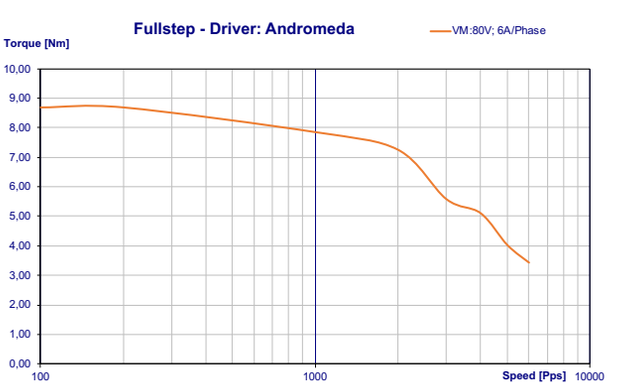
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP80	Libra
	Sagittarius
	Aquarius
	Andromeda

* other options on request

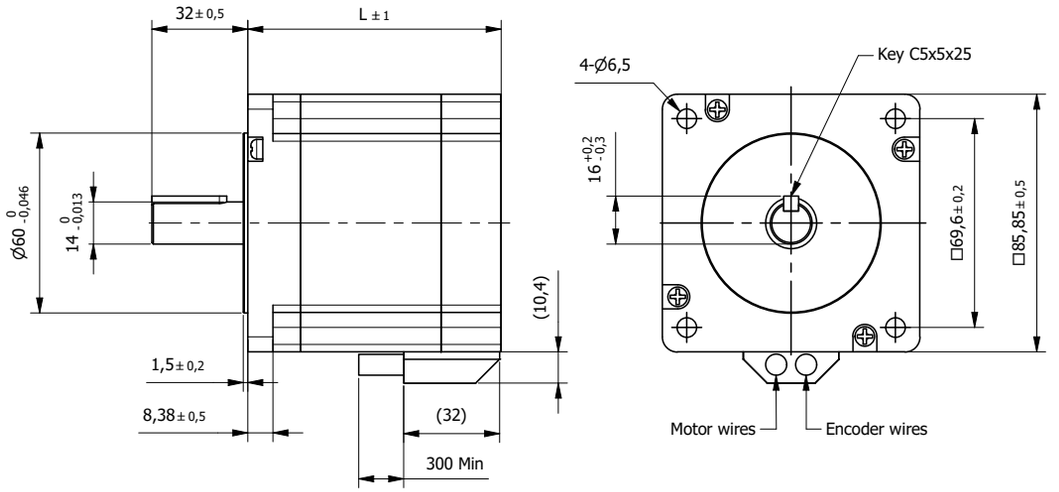
Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Black	AWG24	GND
2	Red	|	VCC:+5VDC
3	Blue	|	EA+
4	Blue/White	|	EA-
5	Orange	|	EB+
6	Orange/White	|	EB-
Motor			
1	Black	AWG18	Phase A
2	Red	|	Phase A-
3	Yellow	|	Phase B
4	Green	|	Phase B-



Stepper

Hybrid Stepper Motor SM86 172-E
with Encoder

□ 86mm



Specification			
	Model		...62E4K
1	Rated Voltage	V	4,3
2	Current/Phase	A	6,2
3	Resistance/Phase	Ω	0,7
4	Inductance/Phase	mH	9
5	Holding Torque	Nm	12
6	Rotor Inertia	gcm2	4000
7	Detent Torque	Nm	0,36
8	n°of Leads		4
9	Length (L)	mm	172
10	Weight	Kg	5,3

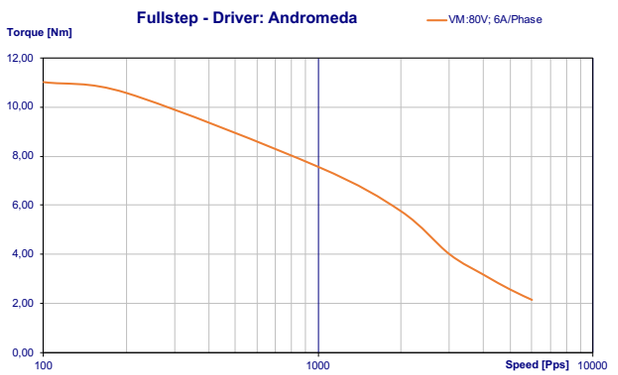
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP80	Libra
	Sagittarius
	Aquarius
	Andromeda

* other options 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

Stepper motors

IP65 Hybrid

Advantages at a glance
High protection
High torque
High speed

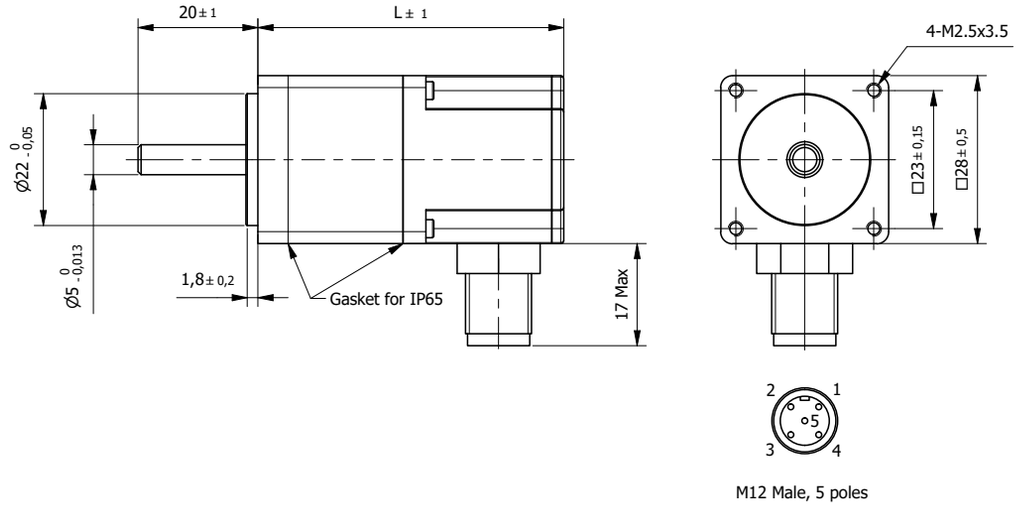
Our Hybrid stepper motors with protection class IP65 are designed for harsh operating environments. These IP65-rated stepper motors are completely dustproof. Dust cannot enter the device and therefore cannot damage it internally under any circumstances. IP65 rating also guarantees the protection of the device against water projections, and can withstand low-pressure jets of water.

IP65 Hybrid Stepper motors	Torque* (Nm)	
SM28 051 - IP65	0,071	374
SM28 070 - IP65	0,127	375
SM42 097 - IP65	0,160	376
SM42 115 - IP65	0,480	377
SM42 127 - IP65	0,720	378
SM42 097 - E - IP65	0,160	379
SM42 115 - E - IP65	0,480	380
SM42 127 - E - IP65	0,720	381
SM57 070 - IP65	1,200	382
SM57 093 - IP65	2,200	383
SM57 101 - E - IP65	0,700	384
SM57 112 - E - IP65	1,240	385
SM57 136 - E - IP65	1,950	386

* Holding Torque

Hybrid Stepper Motor SM28 051
IP65

□ 28mm



M12 Male, 5 poles

Specification			
	Model		...07S4-IP
1	Rated Voltage	V	3,75
2	Current/Phase	A	0,67
3	Resistance/Phase	Ω	5,6
4	Inductance/Phase	mH	4
5	Holding Torque	Nm	0,071
6	Rotor Inertia	gcm2	9
7	n° of Leads		4
8	Length (L)	mm	51
9	Weight	Kg	0,13

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)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (on shaft end)	21N
Max Axial Force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

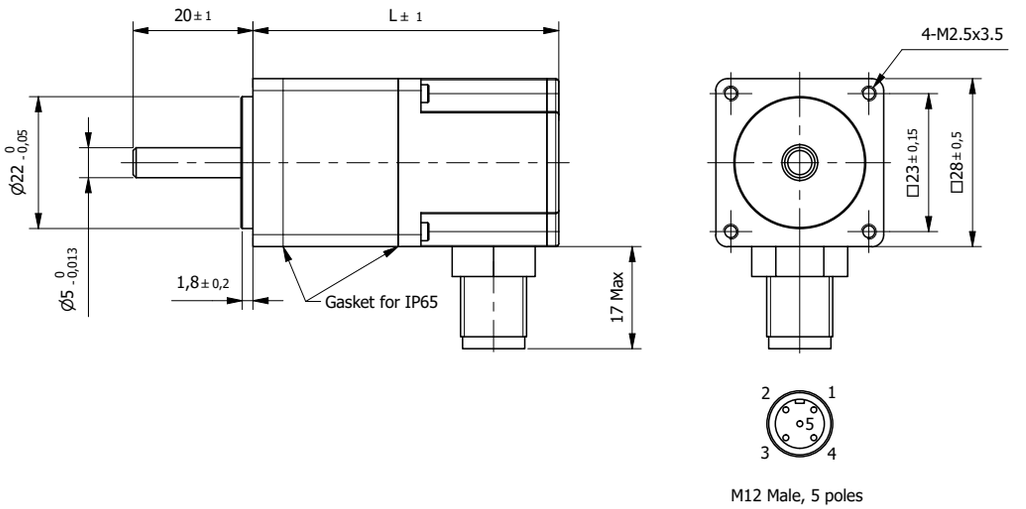
Standard Combination	
Gearbox	Drive
28JMS	Aries
22JMS	Libra
	Orion
	Aquarius

* other options on request

Connection	
Pole n°	Function
1	Phase A-
2	Phase A
3	Phase B
4	Phase B-

Hybrid Stepper Motor SM28 070
IP65

□ 28mm



M12 Male, 5 poles

Specification			
	Model		...07S4-IP
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	n° of Leads		4
8	Length (L)	mm	70
9	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)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (on shaft end)	21N
Max Axial Force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

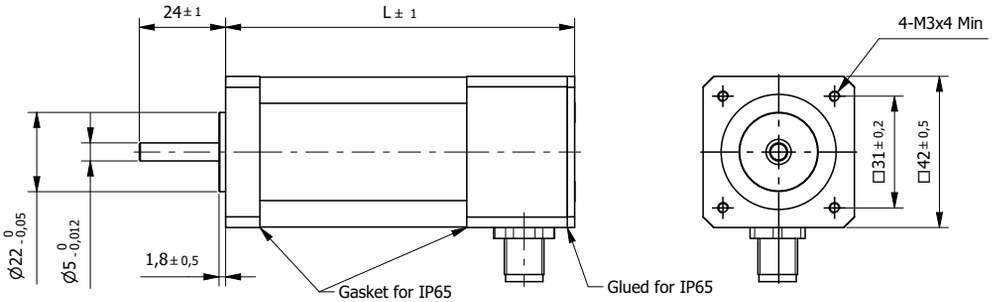
Standard Combination	
Gearbox	Drive
28JMS	Aries
22JMS	Libra
	Orion
	Aquarius

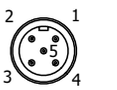
* other options on request

Connection	
Pole n°	Function
1	Phase A-
2	Phase A
3	Phase B
4	Phase B-

Hybrid Stepper Motor SM42 097
IP65

□ 42mm





M12 Male, 5 poles

Specification			
	Model		...18S4-IP
1	Rated Voltage	V	1,5
2	Current/Phase	A	1,8
3	Resistance/Phase	Ω	0,86
4	Inductance/Phase	mH	1,1
5	Holding Torque	Nm	0,16
6	Rotor Inertia	gcm2	25
7	Detent torque	Nm	0,012
8	n° of Leads		4
9	Length (L)	mm	97
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)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (on shaft end)	21N
Max Axial Force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

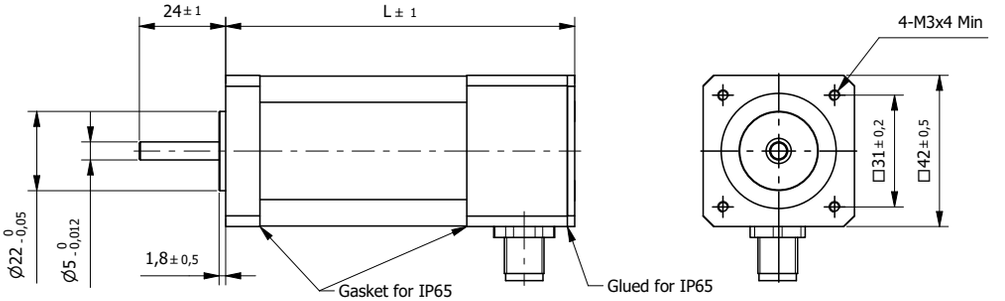
Standard Combination	
Gearbox	Drive
GYP42	Aries
42JMS	Libra
	Orion
	Aquarius

* other options on request

Connection	
Pole n°	Function
1	Phase A-
2	Phase A
3	Phase B
4	Phase B-

Hybrid Stepper Motor SM42 115
IP65

□ 42mm



M12 Male, 5 poles

Specification			
	Model		...18S4-IP
1	Rated Voltage	V	2,7
2	Current/Phase	A	1,8
3	Resistance/Phase	Ω	1,52
4	Inductance/Phase	mH	3,7
5	Holding Torque	Nm	0,48
6	Rotor Inertia	gcm2	80
7	Detent torque	Nm	0,012
8	n° of Leads		4
9	Length (L)	mm	115
10	Weight	Kg	0,56

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)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (on shaft end)	21N
Max Axial Force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

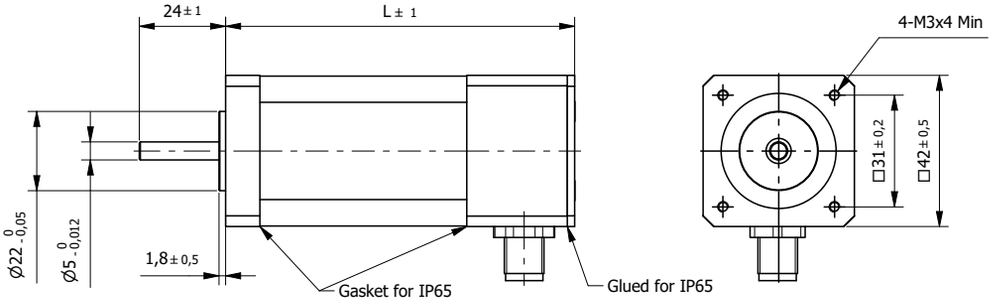
Standard Combination	
Gearbox	Drive
GYP42	Aries
42JMS	Libra
	Orion
	Aquarius

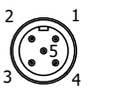
* other options on request

Connection	
Pole n°	Function
1	Phase A-
2	Phase A
3	Phase B
4	Phase B-

Hybrid Stepper Motor SM42 127
IP65

□ 42mm





M12 Male, 5 poles

Specification			
	Model		...18S4-IP
1	Rated Voltage	V	3,6
2	Current/Phase	A	1,8
3	Resistance/Phase	Ω	2
4	Inductance/Phase	mH	5
5	Holding Torque	Nm	0,72
6	Rotor Inertia	gcm2	115
7	Detent torque	Nm	0,012
8	n° of Leads		4
9	Length (L)	mm	127
10	Weight	Kg	0,7

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)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (on shaft end)	21N
Max Axial Force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

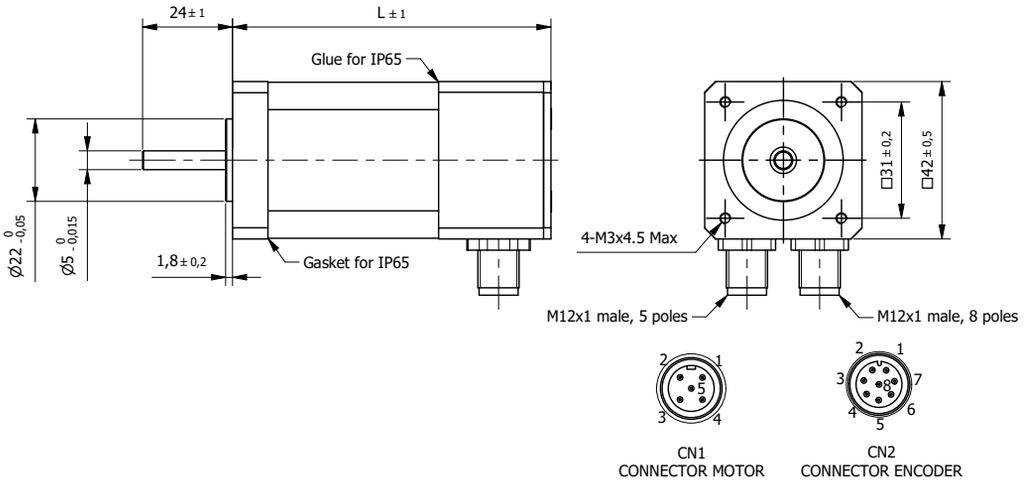
Standard Combination	
Gearbox	Drive
GYP42	Aries
42JMS	Libra
	Orion
	Aquarius

* other options on request

Connection	
Pole n°	Function
1	Phase A-
2	Phase A
3	Phase B
4	Phase B-

Hybrid Stepper Motor SM42 097
with Encoder - IP65

□ 42mm



Specification			
	Model		...18E4-IP
1	Rated Voltage	V	1,6
2	Current/Phase	A	1,8
3	Resistance/Phase	Ω	0,86
4	Inductance/Phase	mH	1,1
5	Holding Torque	Nm	0,16
6	Rotor Inertia	gcm2	25
7	Detent Torque	Nm	0,012
8	n°of Leads		4
9	Length (L)	mm	97
10	Weight	Kg	0,2

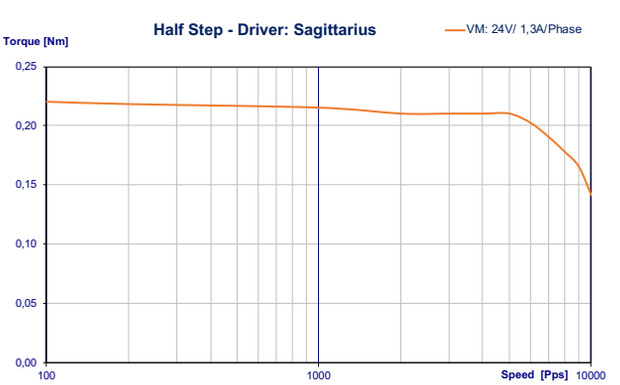
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP65
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP42	Aries
42JMS	Libra
	Orion
	Sagittarius

* other options on request

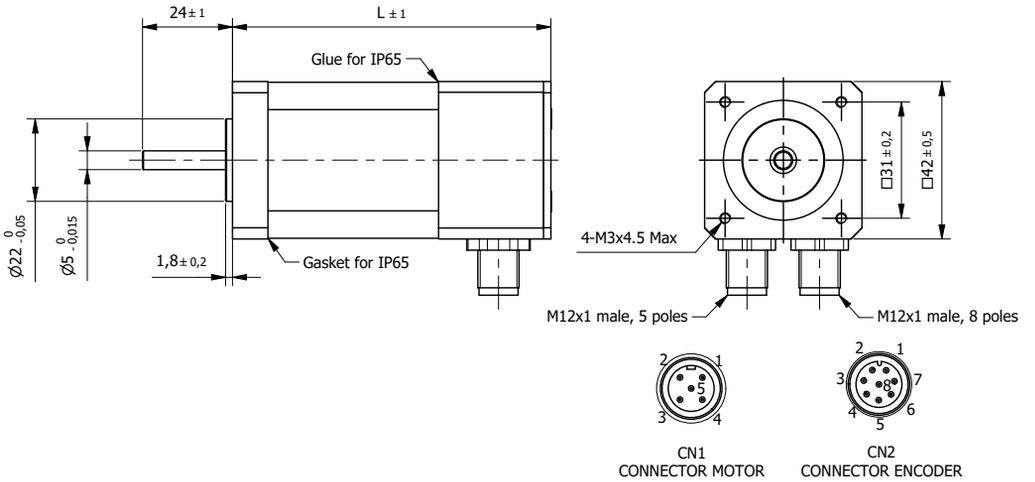
Connection	
Poles n°	Function
Motor	
1	Phase A
2	Phase A-
3	Phase B
4	Phase B-
Feedback	
1	EA+
2	EA-
3	EB+
4	EB-
5	GND
6	EZ+
7	EZ-
8	VDC 5V



Stepper

Hybrid Stepper Motor SM42 115
with Encoder - IP65

□ 42mm



Specification			
	Model		...18E4-IP
1	Rated Voltage	V	2,7
2	Current/Phase	A	1,8
3	Resistance/Phase	Ω	1,52
4	Inductance/Phase	mH	3,7
5	Holding Torque	Nm	0,48
6	Rotor Inertia	gcm2	80
7	Detent Torque	Nm	0,012
8	n°of Leads		4
9	Length (L)	mm	115
10	Weight	Kg	0,56

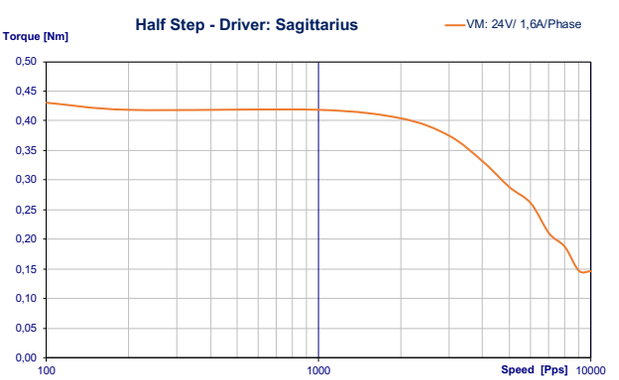
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP65
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP42	Aries
42JMS	Libra
	Orion
	Sagittarius

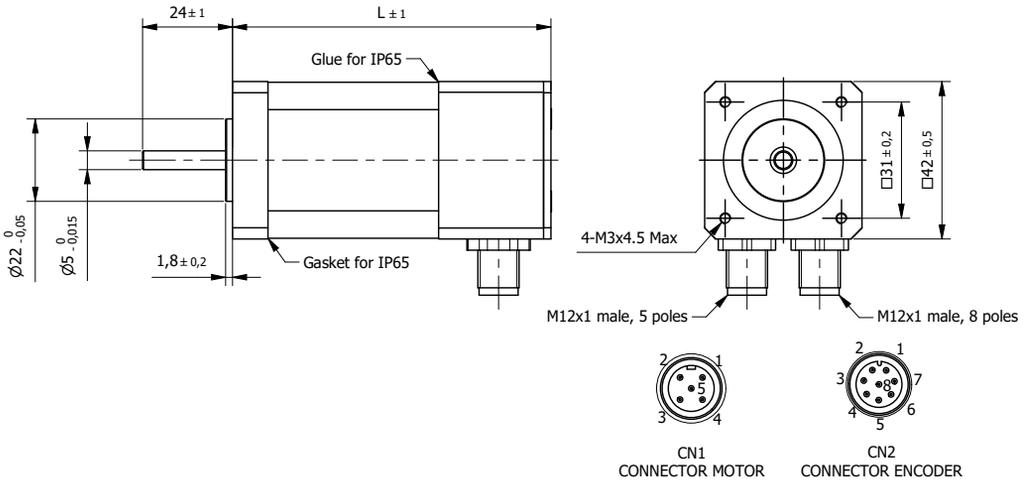
* other options on request

Connection	
Poles n°	Function
Motor	
1	Phase A
2	Phase A-
3	Phase B
4	Phase B-
Feedback	
1	EA+
2	EA-
3	EB+
4	EB-
5	GND
6	EZ+
7	EZ-
8	VDC 5V



Hybrid Stepper Motor SM42 127
with Encoder - IP65

□ 42mm



Specification			
	Model		...18E4-IP
1	Rated Voltage	V	3,6
2	Current/Phase	A	1,8
3	Resistance/Phase	Ω	2
4	Inductance/Phase	mH	5
5	Holding Torque	Nm	0,72
6	Rotor Inertia	gcm2	115
7	Detent Torque	Nm	0,012
8	n°of Leads		4
9	Length (L)	mm	127
10	Weight	Kg	0,7

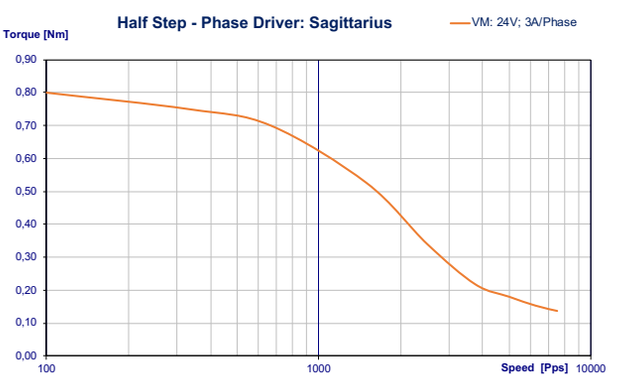
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP65
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial 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

Standard Combination	
Gearbox	Drive
GYP42	Aries
42JMS	Libra
	Orion
	Sagittarius

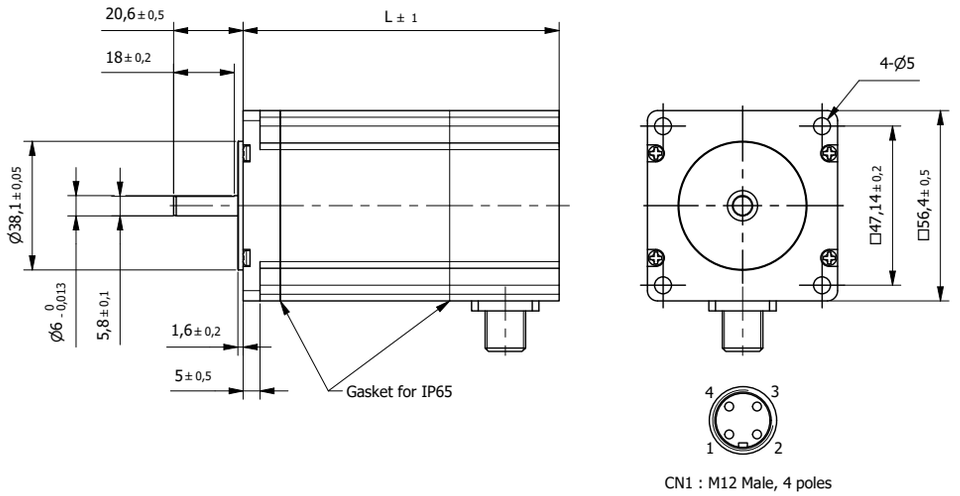
* other options on request

Connection	
Poles n°	Function
Motor	
1	Phase A
2	Phase A-
3	Phase B
4	Phase B-
Feedback	
1	EA+
2	EA-
3	EB+
4	EB-
5	GND
6	EZ+
7	EZ-
8	VDC 5V



Hybrid Stepper Motor SM57 070
IP65

□ 57mm



CN1 : M12 Male, 4 poles

Specification			
	Model		...42S4-IP
1	Rated Voltage	V	1,7
2	Current/Phase	A	4,2
3	Resistance/Phase	Ω	0,4
4	Inductance/Phase	mH	1,2
5	Holding Torque	Nm	1,2
6	Rotor Inertia	gcm2	300
7	n° of Leads		4
8	Length (L)	mm	70
9	Weight	Kg	0,7

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)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (on shaft end)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

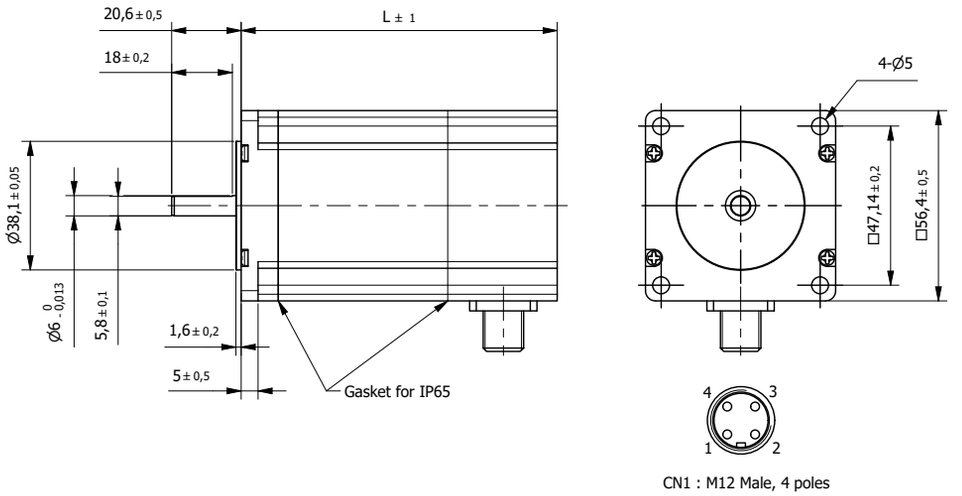
Standard Combination	
Gearbox	Drive
GYP56	Aries
56JMS	Libra
	Sagittarius
	Aquarius

* other options on request

Connection	
Pole n°	Function
1	Phase A-
2	Phase A
3	Phase B
4	Phase B-

Hybrid Stepper Motor SM57 093
IP65

□ 57mm



CN1 : M12 Male, 4 poles

Specification			
	Model		...42S4-IP
1	Rated Voltage	V	2,1
2	Current/Phase	A	4,2
3	Resistance/Phase	Ω	0,5
4	Inductance/Phase	mH	1,77
5	Holding Torque	Nm	2,2
6	Rotor Inertia	gcm2	520
7	n° of Leads		4
8	Length (L)	mm	93,7
9	Weight	Kg	1

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)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (on shaft end)	75N
Max Axial Force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

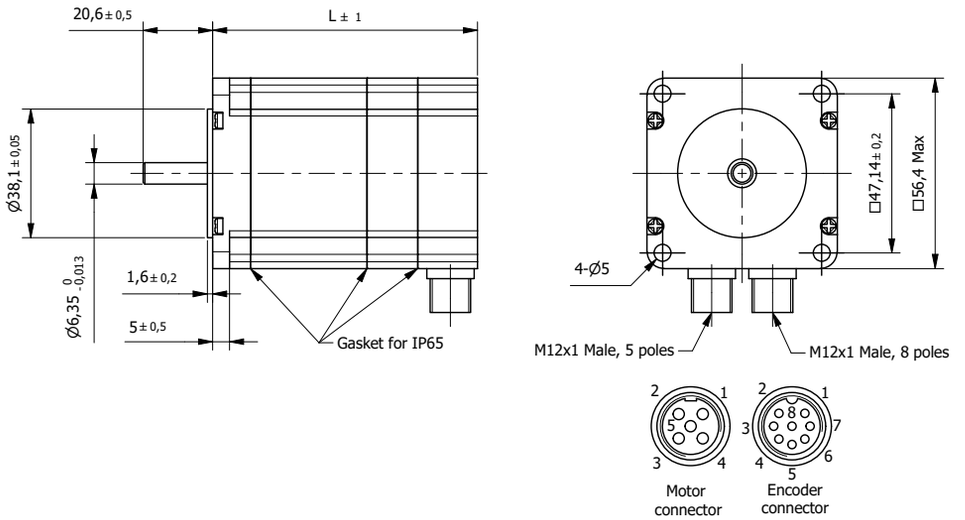
Standard Combination	
Gearbox	Drive
GYP56	Aries
56JMS	Libra
	Sagittarius
	Aquarius

* other options on request

Connection	
Pole n°	Function
1	Phase A
2	Phase A-
3	Phase B
4	Phase B-

Hybrid Stepper Motor SM57 101
with Encoder - IP65

□ 57mm



Specification			
	Model		...28E4-IP
1	Rated Voltage	V	1,6
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	0,57
4	Inductance/Phase	mH	1,6
5	Holding Torque	Nm	0,7
6	Rotor Inertia	gcm2	170
7	Detent Torque	Nm	0,036
8	n°of Leads		4
9	Length (L)	mm	101
10	Weight	Kg	0,5

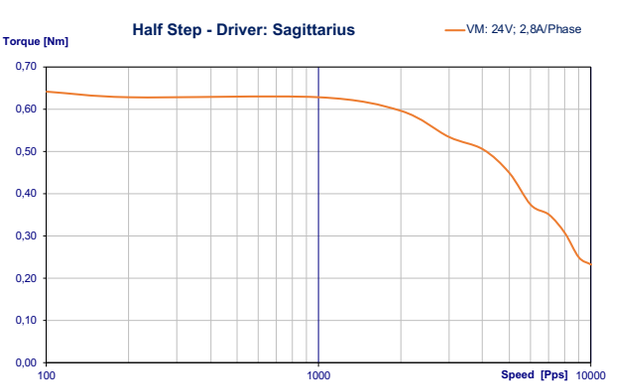
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP65
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial force (at shaft end)	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

Standard Combination	
Gearbox	Drive
GYP56	Aries
56JMS	Libra
	Orion
	Sagittarius

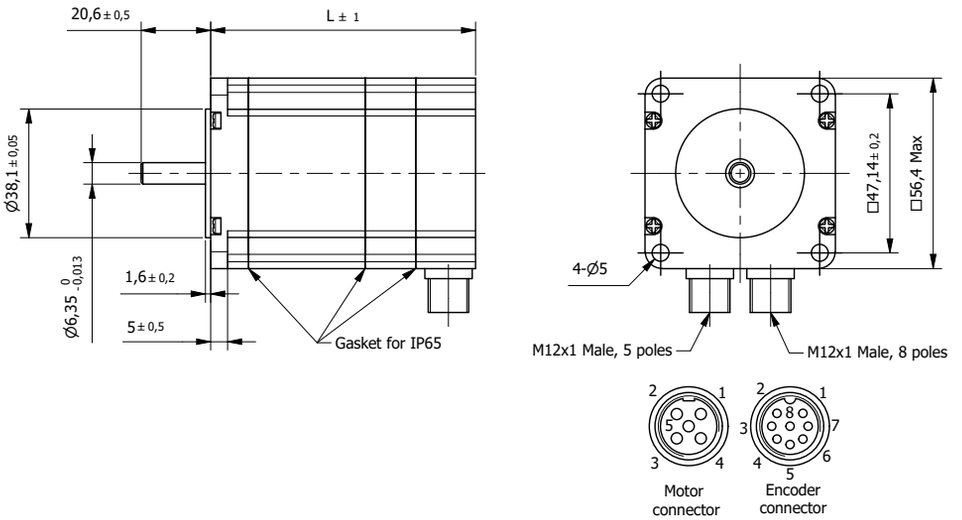
* other options on request

Connection	
Poles n°	Function
Motor	
1	Phase A
2	Phase A-
3	Phase B
4	Phase B-
Feedback	
1	EA+
2	EA-
3	EB+
4	EB-
5	GND
6	EZ+
7	EZ-
8	VDC 5V



Hybrid Stepper Motor SM57 112
with Encoder - IP65

□ 57mm



Specification			
	Model		...28E4-IP
1	Rated Voltage	V	2,5
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	0,9
4	Inductance/Phase	mH	2,9
5	Holding Torque	Nm	1,24
6	Rotor Inertia	gcm2	280
7	Detent Torque	Nm	0,04
8	n°of Leads		4
9	Length (L)	mm	112
10	Weight	Kg	0,7

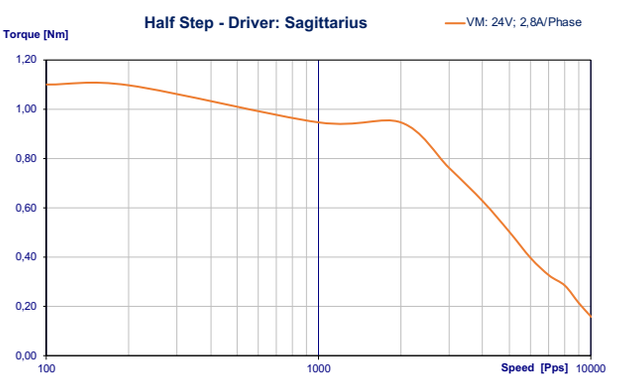
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP65
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial force (at shaft end)	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

Standard Combination	
Gearbox	Drive
GYP56	Aries
56JMS	Libra
	Orion
	Sagittarius

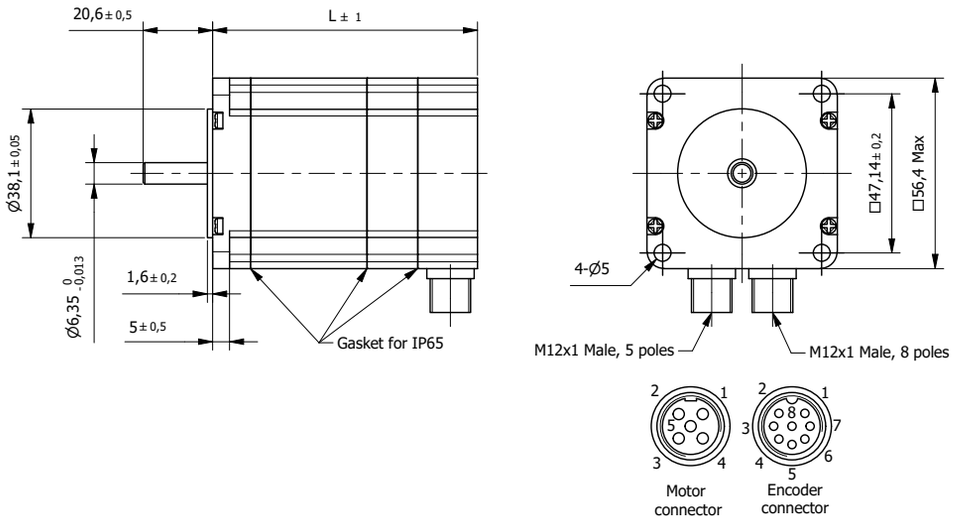
* other options on request

Connection	
Poles n°	Function
Motor	
1	Phase A
2	Phase A-
3	Phase B
4	Phase B-
Feedback	
1	EA+
2	EA-
3	EB+
4	EB-
5	GND
6	EZ+
7	EZ-
8	VDC 5V



Hybrid Stepper Motor SM57 136
with Encoder - IP65

□ 57mm



Specification			
	Model		...28E4-IP
1	Rated Voltage	V	3,1
2	Current/Phase	A	2,8
3	Resistance/Phase	Ω	1,1
4	Inductance/Phase	mH	3,8
5	Holding Torque	Nm	1,95
6	Rotor Inertia	gcm2	520
7	Detent Torque	Nm	0,068
8	n°of Leads		4
9	Length (L)	mm	136
10	Weight	Kg	1

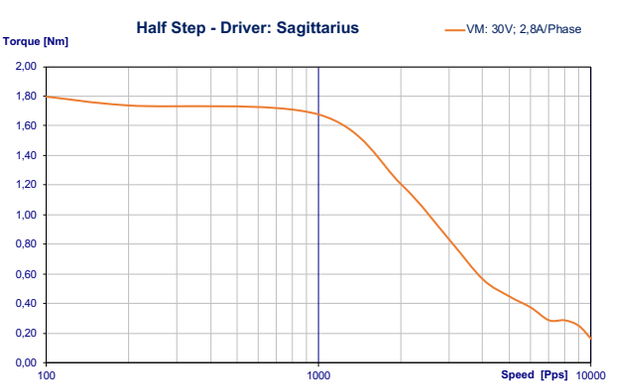
Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP65
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial force (at shaft end)	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

Standard Combination	
Gearbox	Drive
GYP56	Aries
56JMS	Libra
	Orion
	Sagittarius

* other options on request

Connection	
Poles n°	Function
Motor	
1	Phase A
2	Phase A-
3	Phase B
4	Phase B-
Feedback	
1	EA+
2	EA-
3	EB+
4	EB-
5	GND
6	EZ+
7	EZ-
8	VDC 5V



Stepper

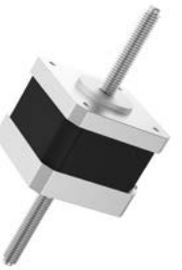
Linear Actuators

External Stepper Linear Actuators

p.397 - NEW

Captive Stepper Linear Actuators

p.405 - NEW



Non-Captive Stepper Linear Actuators

p.413 - NEW

Lead Screws

p.421 - NEW

Threaded Nuts

p.431 - NEW

Linear Actuators

* Max. Axial Load

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.
Power consumption	The power consumption of a motor is the amount of energy consumed by that motor in units of Watts (W). 1W is 1 kg·m2·s−3
Max. Axial load	Also referred to as thrust load, this is the maximum axial force that should be applied to not exceed the dynamic load rating of the actuator or its components.
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
Magnet Wire 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.
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.
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
Travel per step	The linear translation of a lead nut or screw for one full step of the motor.

Glossary

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 travelling speeds, thanks to over-square pitches ($p \leq 6 \times d$)
High efficiency (μ~0.5...0.8), thanks to high surface quality of the steel leadscrews and nuts made of high performance plastics
Weight optimization possible based on aluminum screws
Performance optimization sometimes possible based on coating
High reliability and long service life with marginal need for maintenance

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.

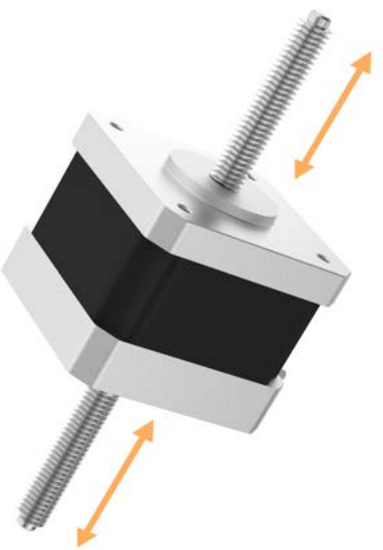
LEAD SCREW & NUT Selection

Technical introduction

External Stepper Linear Actuators

Captive Stepper Linear Actuators

Non-Captive Stepper Linear Actuators



External Linear Actuators

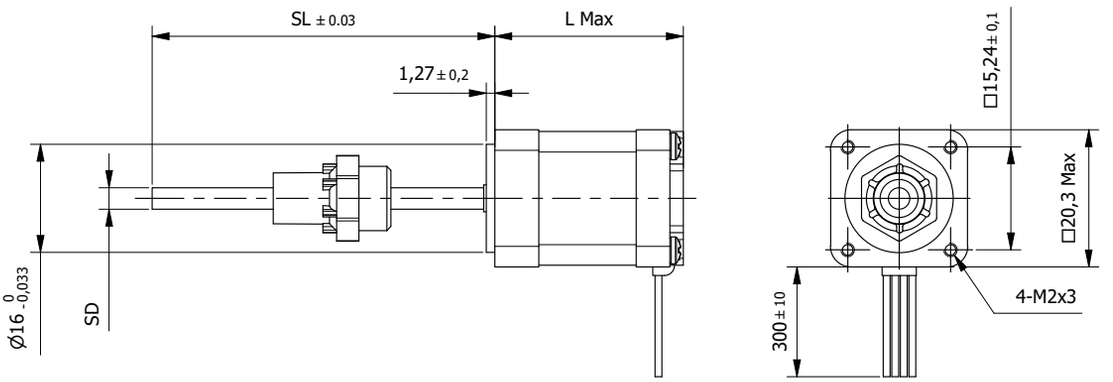
Advantages at a glance
Small to medium load ratings
Very high travelling speeds
High efficiency (μ~0.5...0.8)

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, 23 and 34. Standard and custom nut designs are available. Optional accessories are connectors, wire harnesses, digital encoders and custom lead screw nuts.

* Max. Axial Load

External Linear Actuator SMA-8
Hybrid Stepper motor

□ 20mm



Note: various Nut options available, see below

Motor Specification

	Model		...S2,5-E	...S5-E	...S7,5-E	...D2,5-E	...D5-E	...D7,5-E
1	Rated Voltage	V	2,5	5	7,5	2,5	5	7,5
2	Current / Phase	A	0,49	0,24	0,16	1,32	0,65	0,43
3	Resistance / Phase	Ω	5,1	20,4	45,9	1,9	7,7	17,3
4	Inductance / Phase	mH	1,5	5	11,9	0,8	3,2	6,1
5	Power Consumption	W	2,45	2,45	2,45	6,5	6,5	6,5
6	Max. Axial Load	N	45	45	45	222	222	222
7	Length (L)	mm	28	28	28	34	34	34
8	Weight	g	43	43	43	68	68	68

Motor Characteristics

Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

Connection

Lead n°	Gauge	Color	Function
1	AWG28	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

Standard Lead Screws

Product code	Diameter	Lead	Travel per step
012-012	0,125"	0,012"	0,00006"
012-024	0,125"	0,024"	0,00012"
016-039	4mm	1mm	0,005mm
016-078	4mm	2mm	0,010mm

* More options available - see lead screw section

Standard Nut options

NFA - Standard Flanged Nut
NTA - Standard Threaded Nut
AFA - Anti-Backlash Flanged Nut
ATA - Anti-Backlash Threaded Nut

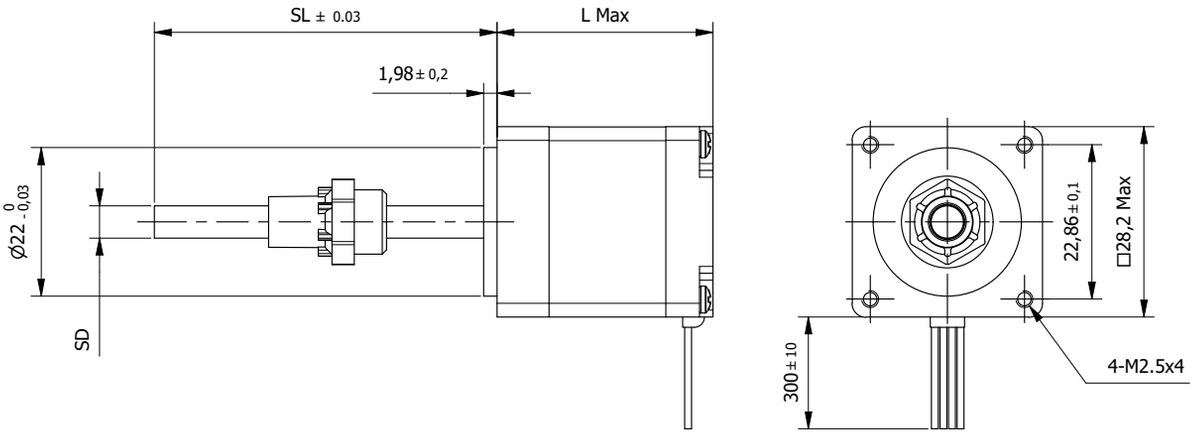
* More options available - see nut section

Standard Combination

Encoder and Drive combination available on request

External Linear Actuator SMA-11
Hybrid Stepper motor

□ 28mm



Note: various Nut options available, see below

Motor Specification								
	Model		...S2,1-E	...S5-E	...S12-E	...D2,1-E	...D5-E	...D12-E
1	Rated Voltage	V	2,1	5	12	2,1	5	12
2	Current / Phase	A	1	0,42	0,18	1,9	0,75	0,35
3	Resistance / Phase	Ω	2,1	11,9	68,6	1,1	6,7	34,8
4	Inductance / Phase	mH	1,5	6,7	39	1,1	5,8	35,6
5	Power Consumption	W	4,2	4,2	4,2	7,5	7,5	7,5
6	Max. Axial Load	N	89	89	89	89	89	89
7	Length (L)	mm	32	32	32	46	46	46
8	Weight	g	119	119	119	180	180	180

Motor Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

Standard Lead Screws			
Product code	Diameter	Lead	Travel per step
018-050	0,1875"	0,05"	0,00025"
018-100	0,1875"	0,1"	0,00050"
016-157	4mm	4mm	0,020mm
016-196	4mm	5mm	0,025mm

* More options available - see lead screw section

Standard Nut options

NFA - Standard Flanged Nut
NTA - Standard Threaded Nut
AFA - Anti-Backlash Flanged Nut
ATA - Anti-Backlash Threaded Nut

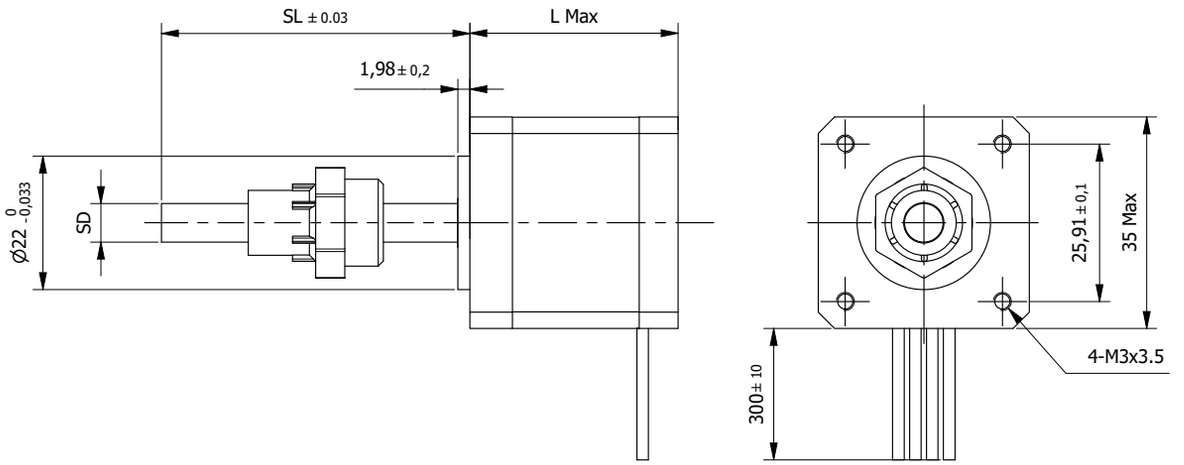
* More options available - see nut section

Standard Combination

Encoder and Drive combination available on request

External Linear Actuator SMA-14
Hybrid Stepper motor

□ 35mm



Note: various Nut options available, see below

Motor Specification								
	Model		...S2,33-E	...S5-E	...S12-E	...D2,33-E	...D5-E	...D12-E
1	Rated Voltage	V	2,33	5	12	2,33	5	12
2	Current / Phase	A	1,25	0,57	0,24	2	0,91	0,38
3	Resistance / Phase	Ω	1,86	8,8	50,5	1,2	5,5	31,6
4	Inductance / Phase	mH	2,8	13	60	1,9	7,63	65,1
5	Power Consumption	W	5,7	5,7	5,7	9,1	9,1	9,1
6	Max. Axial Load	N	222	222	222	222	222	222
7	Length (L)	mm	34	34	34	44	44	44
8	Weight	g	162	162	162	240	240	240

Motor Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

Standard Lead Screws			
Product code	Diameter	Lead	Travel per step
025-062	0,25"	0,0625"	0,0003125"
025-250	0,25"	0,25"	0,00125"
024-236	6mm	6mm	0,03mm
024-472	6mm	12mm	0,06mm

* More options available - see lead screw section

Standard Nut options

NFA - Standard Flanged Nut
NTA - Standard Threaded Nut
AFA - Anti-Backlash Flanged Nut
ATA - Anti-Backlash Threaded Nut
RFA - Radial Anti-Backlash Flanged Nut
RTA - Radial Anti-Backlash Threaded Nut

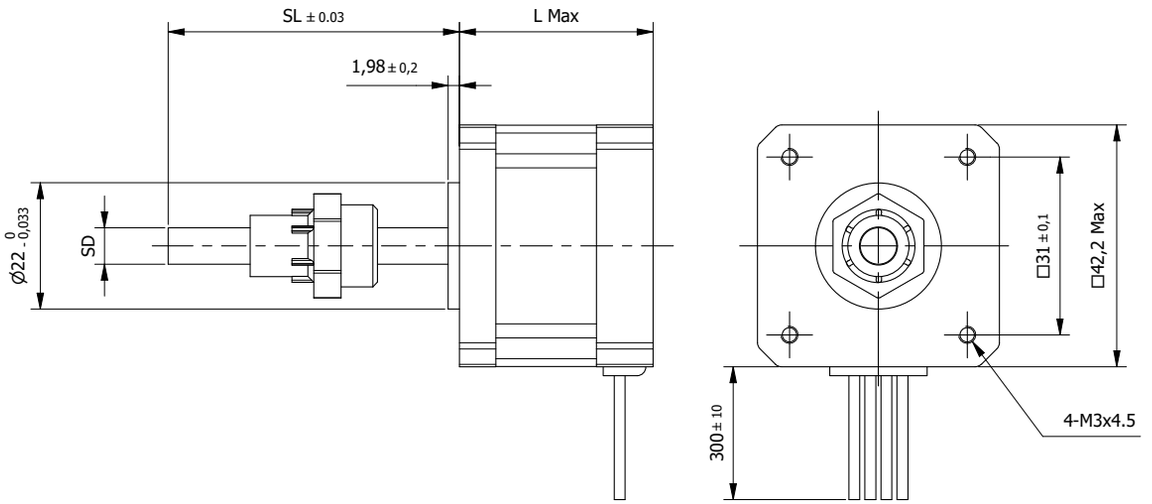
* More options available - see nut section

Standard Combination

Encoder and Drive combination available on request

External Linear Actuator SMA-17
Hybrid Stepper motor

□ 42mm



Note: various Nut options available, see below

Motor Specification

	Model		...S2,33-E	...S5-E	...S12-E	...D2,33-E	...D5-E	...D12-E
1	Rated Voltage	V	2,33	5	12	2,33	5	12
2	Current / Phase	A	1,5	0,7	0,29	2,6	1,3	0,55
3	Resistance / Phase	Ω	1,56	7,2	41,5	0,9	3,8	21,9
4	Inductance / Phase	mH	1,9	10,6	73,3	1,33	6,6	45,1
5	Power Consumption	W	7	7	7	14	14	14
6	Max. Axial Load	N	222	222	222	222	222	222
7	Length (L)	mm	34	34	34	48	48	48
8	Weight	g	241	241	241	352	352	352

Motor Characteristics

Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

Connection

Lead n°	Gauge	Color	Function
1	AWG26	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

Standard Lead Screws

Product code	Diameter	Lead	Travel per step
025-062	0,25"	0,0625"	0,0003125"
025-250	0,25"	0,25"	0,00125"
024-236	6mm	6mm	0,03mm
024-472	6mm	12mm	0,06mm

* More options available - see lead screw section

Standard Nut options

NFA - Standard Flanged Nut
NTA - Standard Threaded Nut
AFA - Anti-Backlash Flanged Nut
ATA - Anti-Backlash Threaded Nut
RFA - Radial Anti-Backlash Flanged Nut
RTA - Radial Anti-Backlash Threaded Nut

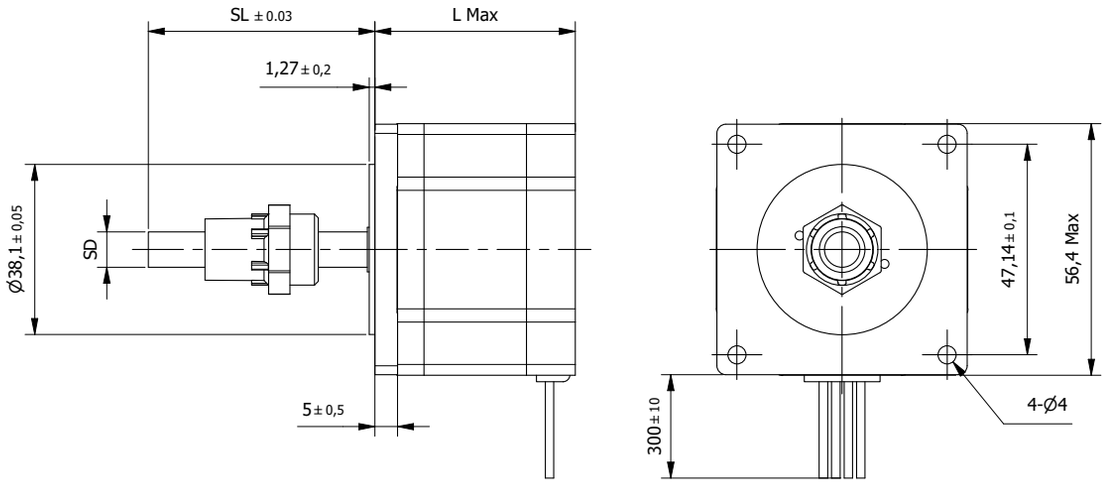
* More options available - see nut section

Standard Combination

Encoder and Drive combination available on request

External Linear Actuator SMA-23
Hybrid Stepper motor

□ 56,4mm



Note: various Nut options available, see below

Motor Specification

	Model		...S3,25-E	...S5-E	...S12-E	...D3,25-E	...D5-E	...D12-E
1	Rated Voltage	V	3,25	5	12	3,25	5	12
2	Current / Phase	A	2	1,3	0,54	3,32	2,16	0,9
3	Resistance / Phase	Ω	1,63	3,85	22,2	0,98	2,31	13,33
4	Inductance / Phase	mH	3,5	10,5	47	1,33	6,6	45,1
5	Power Consumption	W	13	13	13	14	14	14
6	Max. Axial Load	N	889	889	889	889	889	889
7	Length (L)	mm	45	45	45	64	64	64
8	Weight	g	511	511	511	964	964	964

Motor Characteristics

Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

Connection

Lead n°	Gauge	Color	Function
1	AWG22	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

Standard Lead Screws

Product code	Diameter	Lead	Travel per step
037-100	0,375"	0,1"	0,0005"
037-250	0,375"	0,25"	0,00125"
037-196	10mm	5mm	0,025mm
039-472	10mm	12mm	0,06mm

* More options available - see lead screw section

Standard Nut options

NFA - Standard Flanged Nut
NTA - Standard Threaded Nut
AFA - Anti-Backlash Flanged Nut
ATA - Anti-Backlash Threaded Nut
RFA - Radial Anti-Backlash Flanged Nut
RTA - Radial Anti-Backlash Threaded Nut

* More options available - see nut section

Standard Combination

Encoder and Drive combination available on request

Captive Linear Actuators

Advantages at a glance
Small to medium load ratings
Very high travelling speeds
High efficiency (μ~0.5...0.8)

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, 23 and 34. These captive stepper motor actuators operate with a precision lead screw and spline shaft that translates through the motor housing.

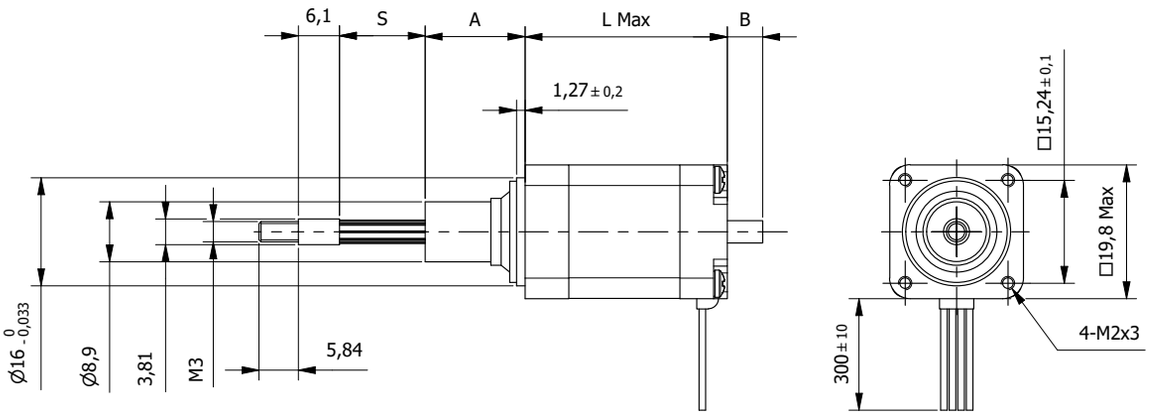
Captive Hybrid Stepper Linear Actuators	Load* (N)	
SMA8-C	45	406
SMA11-C	89	407
SMA14-C	222	408
SMA17-C	222	409
SMA23-C	889	410

* Max. Axial Load

Captive Linear Actuator SMA-8

Hybrid Stepper motor

□ 20mm



Motor Specification					
	Model		...S2,5-C	...S5-C	...S7,5-C
1	Rated Voltage	V	2,5	5	7,5
2	Current / Phase	A	0,49	0,24	0,16
3	Resistance / Phase	Ω	5,1	20,4	45,9
4	Inductance / Phase	mH	1,5	5	11,9
5	Power Consumption	W	2,45	2,45	2,45
6	Max. Axial Load	N	45	45	45
7	Length (L)	mm	28	28	28
8	Weight	g	43	43	43

Standard Stroke options			
Stroke code	Stroke		
	Dim.S in(mm)	Dim.A in(mm)	Dim.B in(mm)
0,25	0,25 (9)	0,437 (11,1)	0,062 (1,58)
0,50	0,50 (12,7)	0,583 (14,81)	0,207 (5,28)
0,75	0,75 (19,1)	0,833 (21,16)	0,457 (11,63)
1,00	1,00 (25,4)	1,08 (27,51)	0,707 (17,98)
1,25	1,25 (31,8)	1,33 (33,86)	0,957 (24,33)
1,50	1,50 (38,1)	1,58 (40,21)	1,20 (30,68)

Standard Lead Screws			
Product code	Diameter	Lead	Travel per step
012-024	0,125"	0,024"	0,00012"
012-048	0,125"	0,048"	0,00024"
012-096	0,125"	0,096"	0,00048"
012-157	0,125"	0,157"	0,00078"

* More options available - see lead screw section

Motor Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

Connection			
Lead n°	Gauge	Color	Function
1	AWG28	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

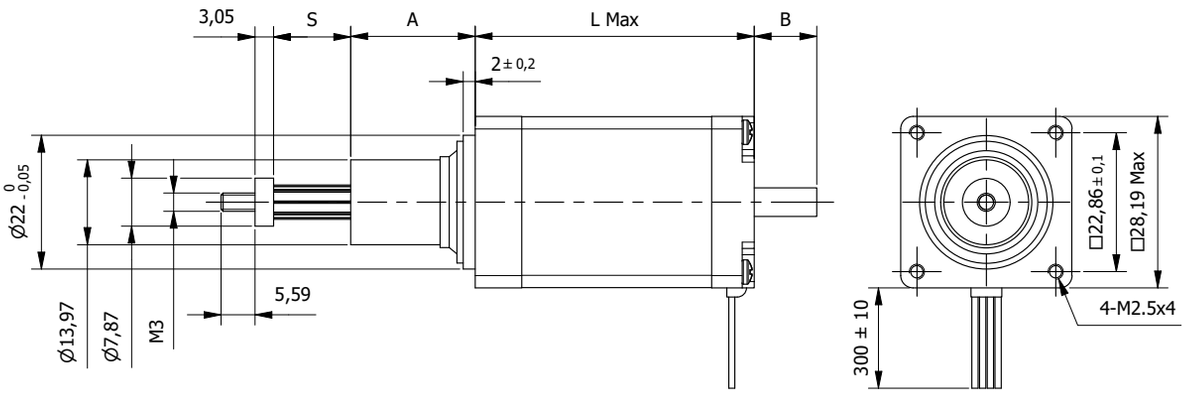
Standard Combination

Drive combination available on request

Captive Linear Actuator SMA-11

Hybrid Stepper motor

□ 28mm



Motor Specification								
	Model		...S2,1-C	...S5-C	...S12-C	...D2,1-C	...D5-C	...D12-C
1	Rated Voltage	V	2,1	5	12	2,1	5	12
2	Current / Phase	A	1	0,42	0,18	1,9	0,75	0,35
3	Resistance / Phase	Ω	2,1	11,9	68,6	1,1	6,7	34,8
4	Inductance / Phase	mH	1,5	6,7	39	1,1	5,8	35,6
5	Power Consumption	W	4,2	4,2	4,2	7,5	7,5	7,5
6	Max. Axial Load	N	89	89	89	89	89	89
7	Length (L)	mm	32	32	32	46	46	46
8	Weight	g	119	119	119	180	180	180

Standard Stroke options			
Stroke code	Stroke		
	Dim.S in(mm)	Dim.A in(mm)	Dim.B in(mm)
0,50	0,50 (12,7)	0,818 (20,47)	0,066 (1,68)
0,75	0,75 (19,1)	1,05 (26,82)	0,316 (8,03)
1,00	1,00 (25,4)	1,30 (33,17)	0,566 (14,38)
1,25	1,25 (31,8)	1,55 (39,52)	0,816 (20,73)
1,50	1,50 (38,1)	1,80 (45,85)	1,066 (27,08)
2,00	2,00 (50,8)	2,30 (58,55)	1,566 (39,78)

Standard Lead Screws			
Product code	Diameter	Lead	Travel per step
018-025	0,1875"	0,025"	0,00012"
018-050	0,1875"	0,05"	0,00025"
018-100	0,1875"	0,1"	0,00050"
018-200	0,1875"	0,2"	0,001"

* More options available - see lead screw section

Motor Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

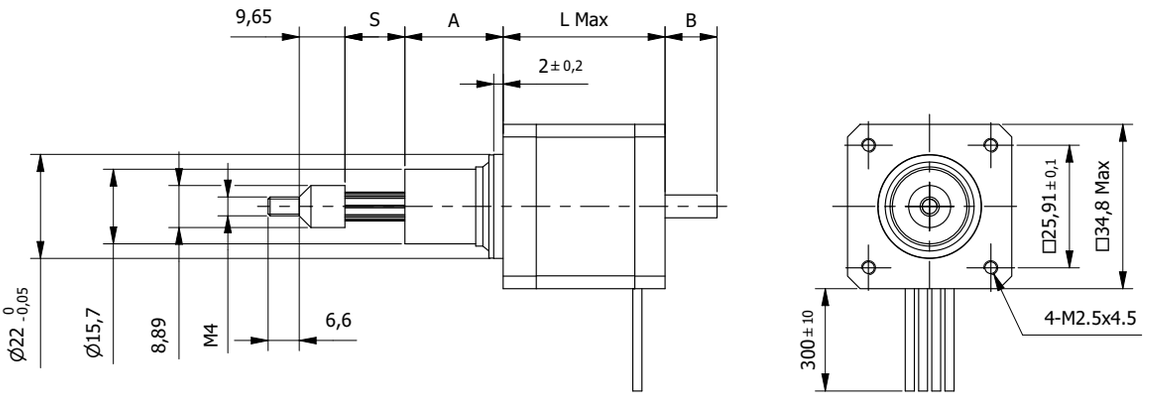
Standard Combination

Drive combination available on request

Captive Linear Actuator SMA-14

Hybrid Stepper motor

□ 35mm



Motor Specification								
	Model		...S2,33-C	...S5-C	...S12-C	...D2,33-C	...D5-C	...D12-C
1	Rated Voltage	V	2,33	5	12	2,33	5	12
2	Current / Phase	A	1,25	0,57	0,24	2	0,91	0,38
3	Resistance / Phase	Ω	1,86	8,8	50,5	1,2	5,5	31,6
4	Inductance / Phase	mH	2,8	13	60	1,9	7,63	65,1
5	Power Consumption	W	5,7	5,7	5,7	9,1	9,1	9,1
6	Max. Axial Load	N	222	222	222	222	222	222
7	Length (L)	mm	34	34	34	44	44	44
8	Weight	g	162	162	162	240	240	240

Standard Stroke options			
Stroke code	Stroke		
	Dim.S in(mm)	Dim.A in(mm)	Dim.B in(mm)
0,50	0,50 (12,7)	0,818 (20,8)	0,039 (1)
0,75	0,75 (19,1)	1,070 (27,2)	0,291 (7,4)
1,00	1,00 (25,4)	1,318 (33,5)	0,539 (13,7)
1,25	1,25 (31,8)	1,570 (39,9)	0,791 (20,1)
1,50	1,50 (38,1)	1,818 (46,2)	1,039 (26,4)
2,00	2,00 (50,8)	2,318 (58,9)	1,539 (39,1)

Standard Lead Screws			
Product code	Diameter	Lead	Travel per step
025-031	0,25"	0,031"	0,00015625"
025-062	0,25"	0,0625"	0,0003125"
025-096	0,25"	0,096"	0,00048"
025-125	0,25"	0,125"	0,000625"
025-250	0,25"	0,250"	0,00125"
* More options available - see lead screw section			

Motor Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

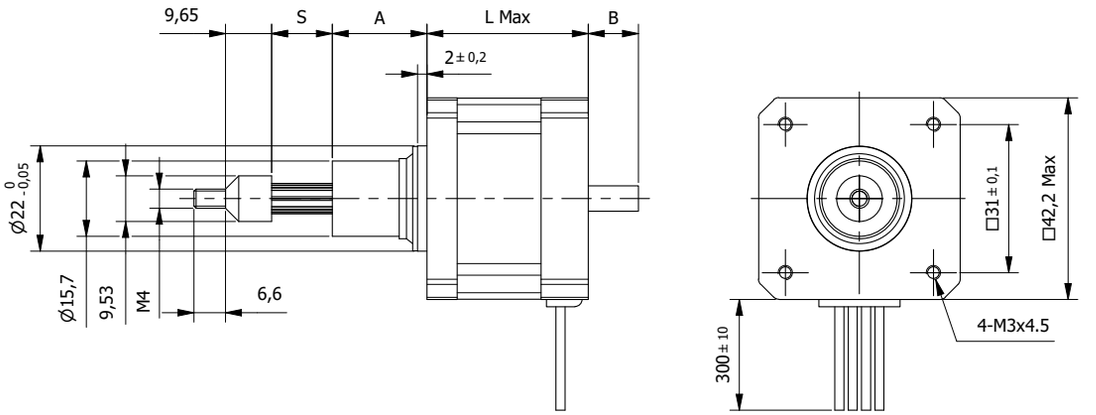
Standard Combination

Drive combination available on request

Captive Linear Actuator SMA-17

Hybrid Stepper motor

□ 42mm



Motor Specification								
	Model		...S2,33-C	...S5-C	...S12-C	...D2,33-C	...D5-C	...D12-C
1	Rated Voltage	V	2,33	5	12	2,33	5	12
2	Current / Phase	A	1,5	0,7	0,29	2,6	1,3	0,55
3	Resistance / Phase	Ω	1,56	7,2	41,5	0,9	3,8	21,9
4	Inductance / Phase	mH	1,9	10,6	73,3	1,33	6,6	45,1
5	Power Consumption	W	7	7	7	14	14	14
6	Max. Axial Load	N	222	222	222	222	222	222
7	Length (L)	mm	34	34	34	48	48	48
8	Weight	g	241	241	241	352	352	352

Standard Stroke options				
Stroke code	Stroke		Model ...S	Model ...D
	Dim.S in(mm)	Dim.A in(mm)	Dim.B in(mm)	Dim.B in(mm)
0,50	0,50 (12,7)	0,779 (19,8)	0,161 (4,1)	0,020 (0,51)
0,75	0,75 (19,1)	1,031 (26,2)	0,409 (10,4)	0,270 (6,86)
1,00	1,00 (25,4)	1,279 (32,5)	0,661 (16,8)	0,520 (13,21)
1,25	1,25 (31,8)	1,531 (38,9)	0,909 (23,1)	0,770 (19,56)
1,50	1,50 (38,1)	1,779 (45,2)	1,161 (29,5)	1,020 (25,91)
2,00	2,00 (50,8)	2,279 (57,9)	1,661 (42,2)	1,520 (38,61)

Standard Lead Screws			
Product code	Diameter	Lead	Travel per step
025-031	0,25"	0,031"	0,00015625"
025-062	0,25"	0,0625"	0,0003125"
025-096	0,25"	0,096"	0,00048"
025-125	0,25"	0,125"	0,000625"
025-250	0,25"	0,250"	0,00125"
* More options available - see lead screw section			

Motor Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

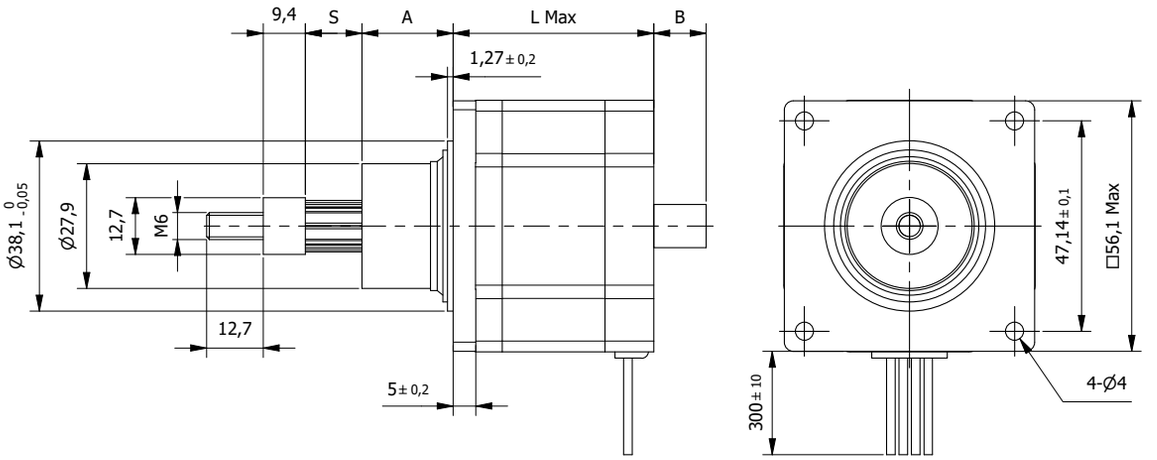
Standard Combination

Drive combination available on request

Captive Linear Actuator SMA-23

Hybrid Stepper motor

□ 56,4mm



Motor Specification								
	Model		...S3,25-C	...S5-C	...S12-C	...D3,25-C	...D5-C	...D12-C
1	Rated Voltage	V	3,25	5	12	3,25	5	12
2	Current / Phase	A	2	1,3	0,54	3,32	2,16	0,9
3	Resistance / Phase	Ω	1,63	3,85	22,2	0,98	2,31	13,33
4	Inductance / Phase	mH	3,5	10,5	47	1,33	6,6	45,1
5	Power Consumption	W	13	13	13	14	14	14
6	Max. Axial Load	N	889	889	889	889	889	889
7	Length (L)	mm	45	45	45	64	64	64
8	Weight	g	511	511	511	964	964	964

Standard Stroke options					
Stroke code	Stroke	Model ...S		Model ...D	
	Dim.S in(mm)	Dim.A in(mm)	Dim.B in(mm)	Dim.A in(mm)	Dim.B in(mm)
0,50	0,50 (12,7)	1,011 (25,7)	0,059 (1,5)	0,805 (20,47)	0,066 (1,68)
0,75	0,75 (19,1)	1,259 (32)	0,307 (7,9)	1,055 (26,82)	0,316 (8,03)
1,00	1,00 (25,4)	1,511 (38,4)	0,559 (14,2)	1,305 (33,17)	0,566 (14,38)
1,25	1,25 (31,8)	1,759 (44,7)	0,811 (20,6)	1,555 (39,52)	0,816 (20,73)
1,50	1,50 (38,1)	2,011 (51,1)	1,059 (26,9)	1,805 (45,87)	1,066 (27,08)
2,00	2,00 (50,8)	2,511 (63,8)	1,559 (39,6)	2,300 (58,57)	1,566 (39,78)

Standard Lead Screws			
Product code	Diameter	Lead	Travel per step
037-062	0,375"	0,062"	0,0003125"
037-083	0,375"	0,083"	0,0004167"
037-100	0,375"	0,1"	0,0005"
037-166	0,375"	0,166"	0,0008333"
037-200	0,375"	0,200"	0,001"
037-400	0,375"	0,400"	0,002"

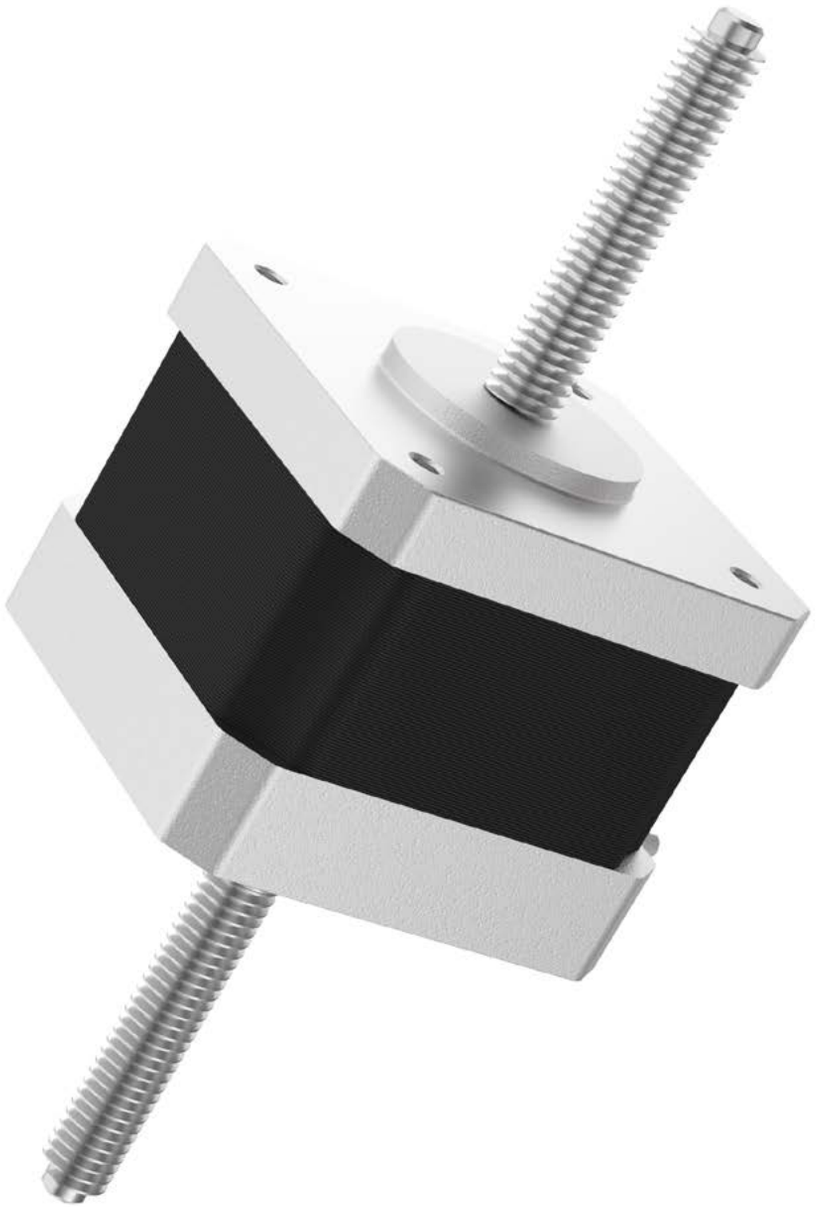
* More options available - see lead screw section

Motor Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

Connection			
Lead n°	Gauge	Color	Function
1	AWG22	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

Standard Combination

Drive combination available on request



Non-Captive Linear Actuators

Advantages at a glance
Small to medium load ratings
Very high travelling speeds
High efficiency (μ~0.5...0.8)

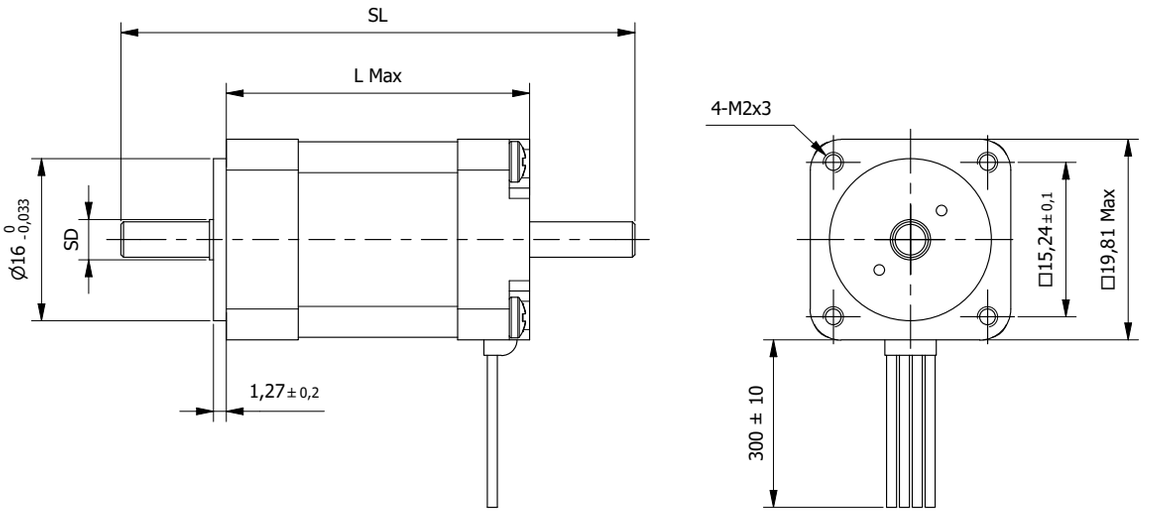
Our Non-Captive Stepper Motor Actuators are offered in NEMA 8,11,14, 17, 23 and 34 frame motors. These stepper motor linear actuators operate with a precision lead screw that translates through the motor housing. The lead screw nut is manufactured from high performance plastic to offer long life and maximum load carrying.

Non-Captive Hybrid Stepper Linear Actuators	Load* (N)	
SMA8-N	45	414
SMA11-N	89	415
SMA14-N	222	416
SMA17-N	222	417
SMA23-N	889	418
SMA34-N	2200	419

* Max. Axial Load

Non-Captive Linear Actuator SMA-8
Hybrid Stepper motor

□ 20mm



Motor Specification					
	Model		...S2,5-N	...S5-N	...S7,5-N
1	Rated Voltage	V	2,5	5	7,5
2	Current / Phase	A	0,49	0,24	0,16
3	Resistance / Phase	Ω	5,1	20,4	45,9
4	Inductance / Phase	mH	1,5	5	11,9
5	Power Consumption	W	2,45	2,45	2,45
6	Max. Axial Load	N	45	45	45
7	Length (L)	mm	28	28	28
8	Weight	g	43	43	43

Motor Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

Standard Lead Screws (screw length SL = 2" to 6")			
Product code	Diameter	Lead	Travel per step
012-024	0,125"	0,024"	0,00012"
012-048	0,125"	0,048"	0,00024"
012-096	0,125"	0,096"	0,00048"
012-157	0,125"	0,157"	0,00078"

* More options available - see lead screw section

Connection			
Lead n°	Gauge	Color	Function
1	AWG28	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

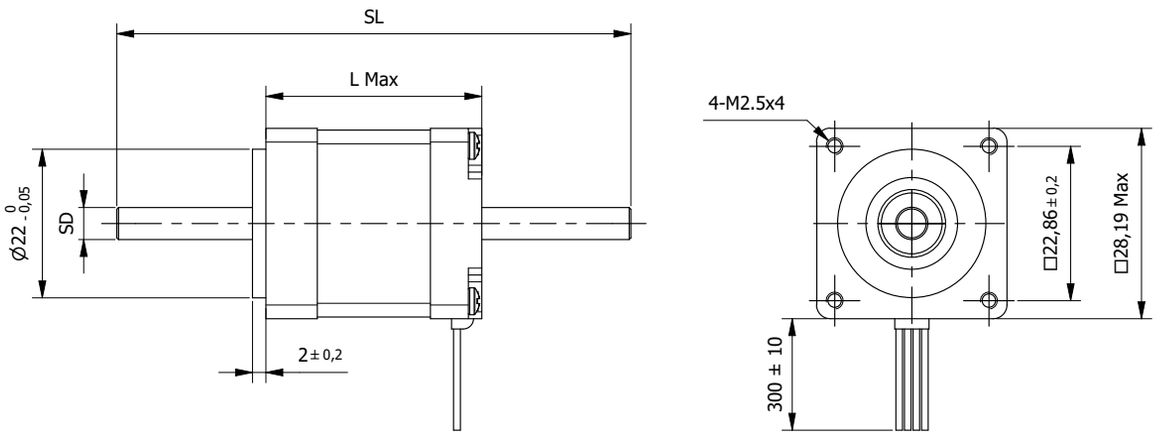
Standard Combination

Drive combination available on request

Non-Captive Linear Actuator SMA-11

Hybrid Stepper motor

□ 28mm



Motor Specification								
	Model		...S2,1-N	...S5-N	...S12-N	...D2,1-N	...D5-N	...D12-N
1	Rated Voltage	V	2,1	5	12	2,1	5	12
2	Current / Phase	A	1	0,42	0,18	1,9	0,75	0,35
3	Resistance / Phase	Ω	2,1	11,9	68,6	1,1	6,7	34,8
4	Inductance / Phase	mH	1,5	6,7	39	1,1	5,8	35,6
5	Power Consumption	W	4,2	4,2	4,2	7,5	7,5	7,5
6	Max. Axial Load	N	89	89	89	89	89	89
7	Length (L)	mm	32	32	32	46	46	46
8	Weight	g	119	119	119	180	180	180

Motor Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

Standard Lead Screws (screw length SL = 3" to 12")			
Product code	Diameter	Lead	Travel per step
018-025	0,1875"	0,025"	0,00012"
018-050	0,1875"	0,05"	0,00025"
018-100	0,1875"	0,1"	0,00050"
018-200	0,1875"	0,2"	0,001"

* More options available - see lead screw section

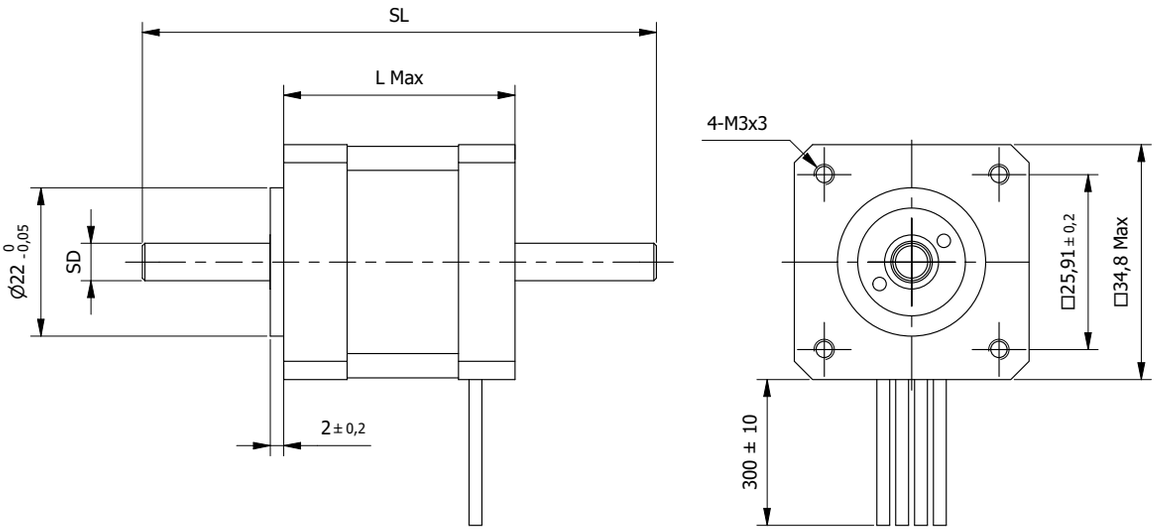
Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

Standard Combination

Drive combination available on request

Non-Captive Linear Actuator SMA-14
Hybrid Stepper motor

□ 35mm



Motor Specification								
	Model		...S2,33-N	...S5-N	...S12-N	...D2,33-N	...D5-N	...D12-N
1	Rated Voltage	V	2,33	5	12	2,33	5	12
2	Current / Phase	A	1,25	0,57	0,24	2	0,91	0,38
3	Resistance / Phase	Ω	1,86	8,8	50,5	1,2	5,5	31,6
4	Inductance / Phase	mH	2,8	13	60	1,9	7,63	65,1
5	Power Consumption	W	5,7	5,7	5,7	9,1	9,1	9,1
6	Max. Axial Load	N	222	222	222	222	222	222
7	Length (L)	mm	34	34	34	44	44	44
8	Weight	g	162	162	162	240	240	240

Motor Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

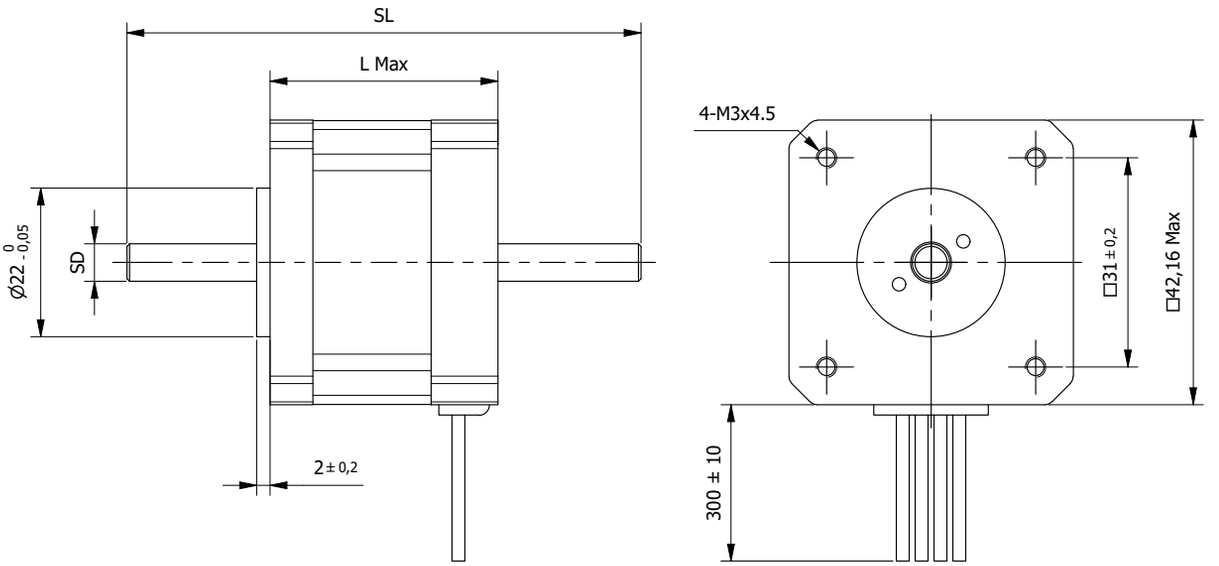
Standard Lead Screws (screw length SL = 3" to 18")			
Product code	Diameter	Lead	Travel per step
025-031	0,25"	0,031"	0,00015625"
025-062	0,25"	0,0625"	0,0003125"
025-096	0,25"	0,096"	0,00048"
025-125	0,25"	0,125"	0,000625"
025-250	0,25"	0,250"	0,00125"
* More options available - see lead screw section			

Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

Standard Combination
Drive combination available on request

Non-Captive Linear Actuator SMA-17
Hybrid Stepper motor

□ 42mm



Motor Specification								
	Model		...S2,33-N	...S5-N	...S12-N	...D2,33-N	...D5-N	...D12-N
1	Rated Voltage	V	2,33	5	12	2,33	5	12
2	Current / Phase	A	1,5	0,7	0,29	2,6	1,3	0,55
3	Resistance / Phase	Ω	1,56	7,2	41,5	0,9	3,8	21,9
4	Inductance / Phase	mH	1,9	10,6	73,3	1,33	6,6	45,1
5	Power Consumption	W	7	7	7	14	14	14
6	Max. Axial Load	N	222	222	222	222	222	222
7	Length (L)	mm	34	34	34	48	48	48
8	Weight	g	241	241	241	352	352	352

Motor Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

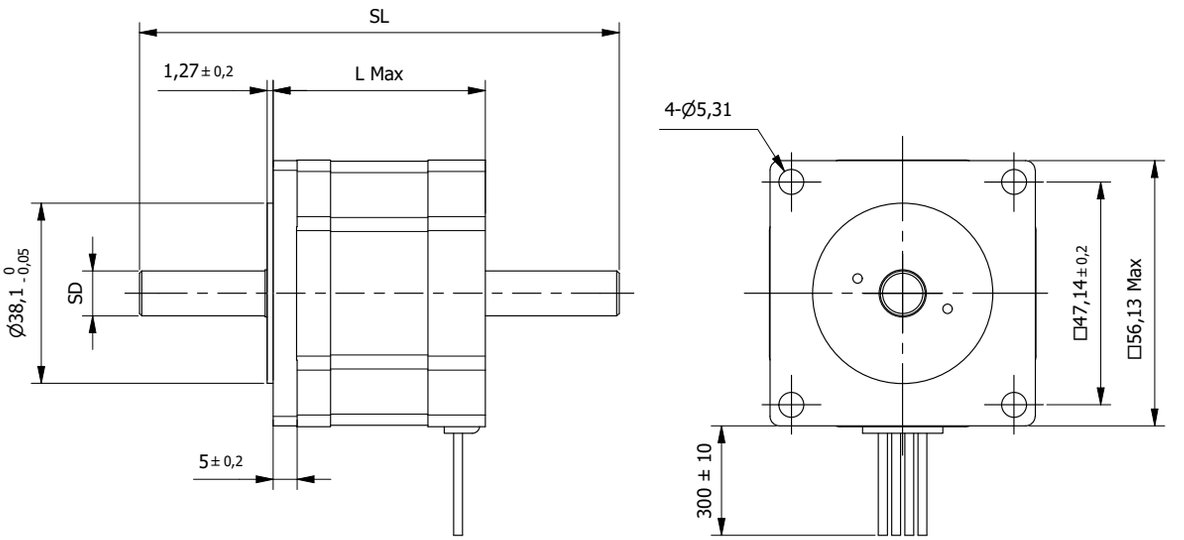
Standard Lead Screws (screw length SL = 3" to 18")			
Product code	Diameter	Lead	Travel per step
025-031	0,25"	0,031"	0,00015625"
025-062	0,25"	0,0625"	0,0003125"
025-096	0,25"	0,096"	0,00048"
025-125	0,25"	0,125"	0,000625"
025-250	0,25"	0,250"	0,00125"
* More options available - see lead screw section			

Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

Standard Combination
Drive combination available on request

Non-Captive Linear Actuator SMA-23
Hybrid Stepper motor

□ 56,4mm



Motor Specification								
	Model		...S3,25-N	...S5-N	...S12-N	...D3,25-N	...D5-N	...D12-N
1	Rated Voltage	V	3,25	5	12	3,25	5	12
2	Current / Phase	A	2	1,3	0,54	3,32	2,16	0,9
3	Resistance / Phase	Ω	1,63	3,85	22,2	0,98	2,31	13,33
4	Inductance / Phase	mH	3,5	10,5	47	1,33	6,6	45,1
5	Power Consumption	W	13	13	13	14	14	14
6	Max. Axial Load	N	889	889	889	889	889	889
7	Length (L)	mm	45	45	45	64	64	64
8	Weight	g	511	511	511	964	964	964

Motor Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

Standard Lead Screws (screw length SL = 4" to 18")			
Product code	Diameter	Lead	Travel per step
037-062	0,375"	0,062"	0,0003125"
037-083	0,375"	0,083"	0,0004167"
037-100	0,375"	0,1"	0,0005"
037-166	0,375"	0,166"	0,0008333"
037-200	0,375"	0,200"	0,001"
037-400	0,375"	0,400"	0,002"

* More options available - see lead screw section

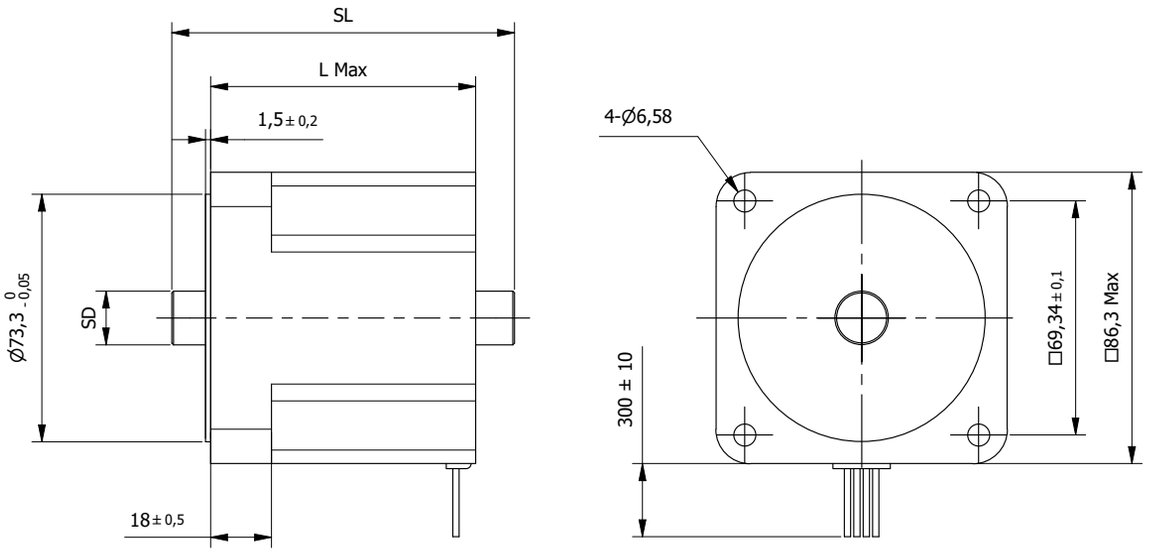
Connection			
Lead n°	Gauge	Color	Function
1	AWG22	Red	Phase A
2	|	Red/White	Phase A-
3	|	Green/White	Phase B
4	|	Green	Phase B-

Standard Combination

Drive combination available on request

Non-Captive Linear Actuator SMA-34
Hybrid Stepper motor

□ 85mm



Motor Specification					
	Model		...S2,85-N	...S5-N	...S12-N
1	Rated Voltage	V	2,85	5	12
2	Current / Phase	A	5,47	3,12	1,3
3	Resistance / Phase	Ω	0,52	1,6	9,23
4	Inductance / Phase	mH	2,86	8,8	51
5	Power Consumption	W	31,2	31,2	31,2
6	Max. Axial Load	N	2200	2200	2200
7	Length (L)	mm	78,5	78,5	78,5
8	Weight	kg	2,3	2,3	2,3

Motor Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Magnet Wire Insulation class	B
Operating Temperature	-10 to 50°C
Temperature Rise	75°C
Dielectric Strength (for 1 min.)	500VAC

Standard Lead Screws (screw length SL = 4" to 36")			
Product code	Diameter	Lead	Travel per step
062-100	0,625"	0,100"	0,0005"
062-125	0,625"	0,125"	0,000625"
062-500	0,625"	0,500"	0,0025"
062-999	0,625"	1,000"	0,005"

* More options available - see lead screw section

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

Standard Combination

Drive combination available on request

Lead Screws

Our lead screws are ranging in size from 1.5 - 50 mm diameter with a wide variety of nut designs and materials. Our assemblies guarantee maximum load sharing, minimal torque and long life. Lead screws can be coated with Teflon to provide a dry lubricant and extend nut life by 10X.

Lead Screws

Lead Screw selection

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: the loads that need to be considered are the static loads, dynamic loads, reaction forces and any external forces affecting the screw, measured in pounds or newtons
- Speed: the travel rate (linear speed) is the rpm at which the screw or nut is rotating multiplied by the lead of the screw, measured in inches or millimeters per minute
- Length: the unsupported length of the screw between bearings, measured in inches or millimeters
- End fixity type: refers to the method by which the ends of the screw are supported.

Materials and Manufacturing

Helix Linear Technologies manufactures precision lead screws by thread rolling, thread whirling, or thread grinding
Helix lead screw products feature centralizing and custom thread forms for smooth, no-wedging performance.

Thread rolling	Helix offers the largest selection of rolled lead screw sizes in the industry. Rolled thread screws are precise, cost effective, and are stocked for quick delivery.
Thread grinding	Ground thread screws offer higher lead accuracy for applications where positioning tolerances are extremely critical.
Thread whirling	Helix thread whirling results in increased productivity and improved thread surface finish.

Machined Ends types

End machining for lead screws is not required, however, the majority of lead screw applications involve some sort of modification on one or both of the ends. Helix Linear Technologies has designed a family of standard machined ends applicable to a variety of bearing arrangements. Specifying standard machined ends results in quicker deliveries, however, where standard ends do not satisfy the application requirements, special ends may be machined to customer specifications. vOur End Machining types:

Type 1	Typical Journal for single bearing.
Type 2	Typical Journal for duplexed bearing.
Type 3	Typical Journal for multiple sets of duplexed bearing.
Type 4	Typical Journal for pillow block.
Type 5	Typical Journal for EZRF bearing block (in).
Option K	Designed with a shaft extension and keyway for square keys.
Option L	Designed with a shaft extension without a keyway.
Option N	Designed to be a non-driven support end.

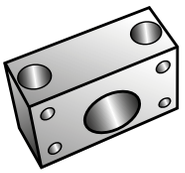
Screw Type	Material	Thread Class	Lead Accuracy	Screw Dia.	Screw Lengths
Rolled	Alloy	Helix Centralizing 2C or Stub	± .0003 in/in up to 2½" dia.	1⁄8" to 6"	Limited only by material availability
	Stainless	Helix Centralizing 2C or Stub	± .0003 in/in up to 1½" dia.	1⁄8" to 1½"	Limited only by material availability
Ground	Alloy	Helix Centralizing 2C, 3C, 3G, 4C, 4G	± .0005"/ft	1⁄4" to 4"	up to 19"
	Stainless	Helix Centralizing 2C, 2G, 3C, 4G	± .0005"/ft	1⁄4" to 4"	up to 19"

	Alloy	Stainless steel
Screw Material	4140	300 Series
Minimum Hardness	200 Brinnel	170 Brinnel
Tensile Ultimate Strength	95,000 psi	85,000 psi
Finish	Black Oxide	Polished

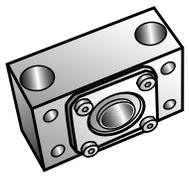
Technical introduction

Bearing mounts - EZZE-MOUNT™

Linear motion applications utilizing a ball screw or an Acme screw require this screw end machining matched with precision bearing mounts. EZZE-MOUNT bearing blocks contain precision anti-friction bearings and are designed to be used with both ball screws and Acme screws.

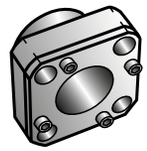


Universal Mount
Single bearing



Universal Mount
Double bearing

Flange Mount
Single bearing



Flange Mount
Double bearing

Term	
Screw Diameter	The outside diameter of the 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
Travel per step	The linear translation of a lead nut or screw for one full step of the motor.
Pitch	The axial distance between threads. Pitch is equal to the lead in a single start screw.
Screw Starts	The number of independent threads on the screw shaft; example one, two or four.
Right/Left hand	The handedness of a screw refers to the direction in which the helical thread wraps around the screw shaft.
Efficiency	Efficiency of Helix precision lead screw assemblies range from 15% to 85%. These efficiencies are dependent upon nut material, lubrication, lead and thread form.
Journal	A smooth diameter machined on the end of screw used as mounting surface for bearings, couplings, pulleys, gears, etc.

Glossary

Lead Screw
Screw sizes

Nominal Diameter		Diameter Code	Lead		Lead Code	Pitch		Starts	End Machining Code		Available in Left Hand	Efficiency %*
Inch	mm		Inch	mm		Inch	mm		type 1,2,3	type 4		
5/64	2	008	0.001	0.02	016	0.000	0.02	1			Yes	18
			0.012	0.30	012	0.012	0.30	1	Contact us		Yes	24
			0.019	0.50	020	0.019	0.50	1	for Special		Yes	36
			0.039	1.00	039	0.019	0.50	2	Applications		**	52
			0.078	2.00	078	0.019	0.50	4			**	66
1/8	3.2	012	0.012	0.30	012	0.012	0.30	1	2*	1*	Yes	23
			0.022	0.58	023	0.022	0.58	1	2*	1*	Yes	
			0.024	0.61	024	0.024	0.61	1	2*	1*	Yes	44
			0.025	0.64	025	0.025	0.64	1	2*	1*	Yes	45
			0.031	0.79	031	0.031	0.79	1	2*	1*	Yes	53
			0.039	1.00	039	0.039	1.00	1	2*	1*	Yes	57
			0.048	1.22	048	0.024	0.61	2	2*	1*	Yes	61
			0.062	1.59	062	0.031	0.79	2	2*	1*	**	67
			0.075	1.91	075	0.025	0.64	3	2*	1*	**	70
			0.078	2.00	078	0.039	1.00	2	2*	1*	**	72
			0.096	2.44	096	0.024	0.61	4	2*	1*	**	75
			0.125	3.18	125	0.031	0.79	4	2*	1*	**	80
			0.1575	4.00	157	0.039	1.00	4	2*	1*	**	81
			0.2000	5.08	200	0.025	0.64	8	2*	1*	**	82
			0.2500	6.35	250	0.041	1.06	6	2*	1*	**	83
0.140	3.5	RD014	0.031	0.79	031	0.031	0.79	1	2*	1*	**	48
			0.062	1.59	062	0.031	0.79	2	2*	1*	**	63
0.160	4	016	0.012	0.30	012	0.012	0.30	1	3	1	Yes	24
			0.024	0.61	024	0.024	0.61	1	2	1	Yes	43
			0.039	1.00	039	0.039	1.00	1	2	1	Yes	45
			0.048	1.22	048	0.024	0.61	2	2*	1*	Yes	59
			0.093	2.38	093	0.031	0.79	3	2	1	**	67
			0.096	2.44	096	0.024	0.61	4	2*	1*	**	69
			0.125	3.18	125	0.031	0.79	4	2	1	**	74
			0.250	6.35	250	0.031	0.79	8	3	1	**	83
			0.375	9.53	375	0.031	0.79	12	3	1	**	85
			0.393	10.00	393	0.049	1.25	8	3*	1*	**	85
			0.500	12.70	500	0.031	0.79	16	3	1	**	86
3/16	4.8	018	0.024	0.61	024	0.024	0.61	1	4	2	Yes	36
			0.025	0.64	025	0.025	0.64	1	4	2	Yes	39
			0.031	0.79	031	0.031	0.79	1	4	2	Yes	42
			0.039	1.00	039	0.039	1.00	1	4*	2	Yes	47
			0.048	1.22	048	0.048	1.22	1	4*	2	Yes	51
			0.050	1.27	050	0.050	1.27	1	4*	2	Yes	58
			0.050	1.27	050	0.050	1.27	1	4*	2	**	58
			0.062	1.59	062	0.031	0.79	2	4	2	Yes	60
			0.078	2.00	078	0.039	1.00	2	4*	2	Yes	64
			0.096	2.44	096	0.048	1.22	2	4*	2	Yes	67
			0.100	2.54	100	0.050	1.27	2	4*	2	**	69
			0.108	2.75	108	0.054	1.38	2	4	2	**	70
			0.125	3.18	125	0.031	0.79	4	4	2	**	72
			0.157	4.00	157	0.039	1.00	4	4*	2	**	75
			0.187	4.76	187	0.023	0.60	8	4*	2	**	78
			0.192	4.88	192	0.048	1.22	4	4*	2	**	80
			0.200	5.08	200	0.050	1.27	4	4*	2	Yes	82
0.200	5	020	0.196	5.00	196	0.049	1.25	4	4*	2	**	82
0.220	5.5	022	0.019	0.50	020	0.019	0.50	1	4*	2	Yes	78
0.240	6	024	0.039	1.00	039	0.039	1.00	1	4*	2	**	40
			0.236	6.00	236	0.059	1.50	4	4	2	**	68
			0.472	12.00	472	0.059	1.50	8	4	2	**	85
			0.787	20.00	787	0.049	1.25	16	5	3	Yes	86

* Listed Efficiencies are theorical values based on Helix H10X PTFE coated screws. Efficiencies for bronze nuts are approximately 8-10% lower.
** Left Hand screws are available on request. Please contact us.

Nominal Diameter		Diameter Code	Lead		Lead Code	Pitch		Starts	End Machining Code		Available in Left Hand	Efficiency %*
Inch	mm		Inch	mm		Inch	mm		type 1,2,3	type 4		
1/4	6.4	025	0.024	0.61	024	0.024	0.61	1	5	3	Yes	28
			0.025	0.64	025	0.025	0.64	1	5	3	Yes	30
			0.031	0.79	031	0.031	0.79	1	5	3	Yes	34
			0.039	1.00	039	0.039	1.00	1	5*	3	Yes	40
			0.048	1.22	048	0.048	1.22	1	4	3*	Yes	45
			0.050	1.27	050	0.050	1.27	1	4	3*	Yes	46
			0.062	1.59	062	0.062	1.59	1	4	3*	Yes	46
			0.078	2.00	078	0.039	1.00	2	5*	3	Yes	59
			0.096	2.44	096	0.048	1.22	2	4	3*	Yes	61
			0.100	2.54	100	0.050	1.27	2	4	3*	**	62
			0.118	3.00	118	0.059	1.50	2	4	3*	**	68
			0.125	3.18	125	0.063	1.59	2	4	3*	**	67
			0.157	4.00	157	0.039	1.00	4	5*	3	**	69
			0.196	5.00	196	0.039	1.00	5	5*	3	**	72
			0.200	5.08	200	0.050	1.27	4	4	3*	**	65
			0.250	6.35	250	0.063	1.59	4	4	3*	**	79
			0.333	8.46	333	0.083	2.11	4	4	3*	**	82
			0.393	10.00	393	0.032	0.83	12	4	3*	**	78
			0.400	10.16	400	0.080	2.03	5	4	3*	**	84
			0.500	12.70	500	0.071	1.81	7	4	3*	**	85
			0.500	12.70	500	0.083	2.12	6	4	3*	**	85
			1.000	25.40	999	0.100	2.54	10	4	3*	**	84
0.280	7	027	0.019	0.50	020	0.019	0.50	1	6	4*	Yes	73
5/16	7.9	031	0.100	2.54	100	0.100	2.54	1	4	3	Yes	72
			0.200	5.08	200	0.100	2.54	2	4	3	**	72
			0.250	6.35	250	0.125	3.18	2	5	3	**	76
			0.500	12.70	500	0.125	3.18	4	5	3	**	83
0.320	8	032	0.012	0.30	012	0.012	0.30	1	6*	3	Yes	21
			0.024	0.61	024	0.024	0.61	1	6*	3	Yes	26
			0.059	1.50	059	0.059	1.50	1	6*	3	Yes	43
			0.157	4.00	157	0.078	2.00	2	6*	3	**	71
			0.295	7.50	295	0.049	1.25	6	6*	4*	**	74
			0.315	8.00	315	0.078	2.00	4	6*	4*	**	79
			0.393	10.00	393	0.098	2.50	4	6*/5	3	**	80
			0.472	12.00	472	0.094	2.40	5	6*	4*	**	83
			0.590	15.00	590	0.098	2.50	6	6*	4*	**	84
			0.787	20.00	787	0.157	4.00	5	6*	4*	**	86
			0.984	25.00	984	0.049	1.25	20	6	4*	**	88
			1.181	30.00	M30	0.049	1.25	24	7	4	Yes	89
3/8	9.5	037	0.025	0.64	025	0.025	0.64	1	8	4	Yes	21
			0.039	1.00	039	0.039	1.00	1	8	4	Yes	28
			0.050	1.27	050	0.050	1.27	1	7	4	Yes	36
			0.062	1.59	062	0.062	1.59	1	7	4	Yes	41
			0.078	2.00	078	0.079	2.00	1	7*	4	Yes	47
			0.083	2.12	083	0.083	2.12	1	7*	4	Yes	48
			0.100	2.54	100	0.100	2.54	1	6	4*	Yes	53
			0.125	3.18	125	0.063	1.59	2	7	4	Yes	59
			0.157	4.00	157	0.079	2.00	2	7*	4	Yes	65
			0.166	4.23	166	0.083	2.12	2	7*	4	Yes	61
			0.197	5.00	196	0.039	1.00	5	8	4	**	69
			0.200	5.08	200	0.100	2.54	2	6	4*	**	69
			0.250	6.35	250	0.063	1.59	4	7	4	**	70
			0.250	6.35	--	0.125	3.18	2	7	4	**	70
			0.250	6.35	--	0.083	2.12	3	7*	4	**	70
			0.333	8.47	333	0.083	2.12	4	7*	4	**	78
			0.375	9.53	375	0.094	2.38	4	7*	4	**	79
			0.394	10.00	393	0.079	2.00	5	7*	4	**	79
			0.400	10.16	400	0.100	2.54	4	6	4*	**	79
			0.500	12.70	500	0.125	3.18	4	7	4	**	81
			0.667	16.94	667	0.095	2.42	7	7	4	**	83
			0.750	19.05	750	0.125	3.18	6	7*	4	**	84
			1.000	25.40	999	0.200	5.08	5	6	4*	Yes	84
			1.500	38.10	M38	0.167	4.23	9	7*	4	**	83

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Nominal Diameter		Diameter Code	Lead		Lead Code	Pitch		Starts	End Machining Code		Available in Left Hand	Efficiency %*
Inch	mm		Inch	mm		Inch	mm		type 1,2,3	type 4		
0.390	10.0	039	0.039	1.00	039	0.039	1.00	1	8	4	Yes	79
			0.059	1.50	059	0.059	1.50	1	8*	4	Yes	38
			0.078	2.00	078	0.078	2.00	1	7	4	Yes	47
			0.118	3.00	118	0.059	1.50	2	8*	4	**	52
			0.1575	4.00	157	0.078	2.00	2	7	4	**	65
			0.3543	9.00	354	0.118	3.00	3	6	4*	**	73
			0.3937	10.00	393	0.049	1.25	8	8	4	**	79
			0.4724	12.00	472	0.118	3.00	4	7	4	Yes	80
			0.500	12.70	500	0.125	3.18	4	7	4	**	80
			0.590	15.00	590	0.118	3.00	5	7	4	**	81
			1.378	35.00	M35	0.049	1.25	28	8	4	Yes	82
			1.968	50.00	M50	0.196	5.00	10	7	4	Yes	85
0.430	11.0	043	0.236	6.00	236	0.118	3.00	2	7	4	**	70
0.450	11.5	RD043	0.500	12.70	500	0.125	3.18	4	8	4	**	80
7/16	11.1	043	0.250	6.35	250	0.125	3.18	2	8	4	Yes	70
			0.500	12.70	500	0.125	3.18	4	8	4	**	80
			1.201	30.50	M31	0.200	5.08	6	8	4	**	84
0.470	12.0	047	0.078	2.00	078	0.079	2.00	1	9	4	Yes	41
			0.118	3.00	118	0.118	3.00	1	7	4	Yes	49
			0.236	6.00	236	0.118	3.00	2	7	4	**	65
			0.393	10.00	393	0.098	2.50	4	8	4	**	76
			0.590	15.00	590	0.118	3.00	5	9	4	Yes	80
			0.984	25.00	984	0.196	5.00	5	9*	4	Yes	84
			1.574	40.00	M40	0.049	1.25	32	10	6	**	85
			1.771	45.00	M45	0.049	1.25	36	10	6	Yes	86
			2.362	60.00	M60	0.197	5.00	12	9	4	Yes	88
0.500	12.7	050	0.050	1.27	050	0.050	1.27	1	9	6	Yes	29
			0.100	2.54	100	0.100	2.54	1	9	6*	Yes	46
			0.125	3.18	125	0.125	3.18	1	9*	6*	Yes	51
			0.196	5.00	197	0.098	2.50	2	9	6	**	62
			0.200	5.08	200	0.100	2.54	2	9	6	**	63
			0.250	6.35	250	0.125	3.18	2	8	4	Yes	67
			0.400	10.16	400	0.100	2.54	4	10	6	**	76
			0.500	6.35	500	0.100	2.54	5	10	6	Yes	79
			0.800	20.32	800	0.100	2.54	8	10	6	**	83
			1.000	25.40	999	0.125	3.18	8	9	6	**	84
			1.402	35.60	M36	0.200	5.09	7	9	6	**	85
0.550	14	055	0.118	3.00	118	0.118	3.00	1	10	6	Yes	48
			0.157	4.00	157	0.157	4.00	1	9	4	Yes	58
			0.3150	8.00	315	0.1575	4.00	2	9	6	**	71
			0.7087	18.00	708	0.1181	3.00	6	10	6	Yes	79
			0.7874	20.00	787	0.1969	5.00	4	9	4	**	82
			1.1811	30.00	M30	0.1969	5.00	6	10	6	Yes	85
			2.756	70.00	M70	0.197	5.00	14	10	6	Yes	88
9/16	14.3	056	1'598	40.60	M41	0.200	5.07	8	10	6	Yes	86
0.625	15.9	062	0.100	2.54	100	0.100	2.54	1	12	8	Yes	40
			0.125	6.35	125	0.125	3.18	1	10	6	Yes	45
			0.200	6.35	200	0.100	2.54	2	12	6	Yes	53
			0.250	6.35	250	0.125	3.18	2	10	6	**	63
			0.375	9.53	375	0.125	3.18	3	10	6	Yes	70
			0.500	12.70	500	0.125	3.18	4	10	6	**	76
			0.625	15.88	625	0.125	3.18	5	10	6	**	78
			2.000	50.80	M51	0.167	4.23	12	10	6	**	86
0.630	16	063	0.079	2.00	078	0.079	2.00	1	10	6	Yes	41
			0.158	4.00	157	0.158	4.00	1	10	6	Yes	58
			0.1969	5.00	196	0.09843	2.50	2	10	6	**	62
			0.236	6.00	236	0.118	3.00	2	10	6	Yes	55
			0.315	8.00	315	0.157	4.00	2	10	6	**	68
			0.7874	20.00	787	0.0984	2.50	8	12	6	Yes	82
			0.8268	21.00	826	0.1181	3.00	7	12	6	Yes	83
			0.9843	25.00	984	0.1969	5.00	5	10	6	**	84
			1.3780	35.00	M35	0.1969	5.00	7	12	6	**	85
			1.8000	45.72	M46	0.2000	5.08	9	12	8	**	86
			3.1496	80.00	M80	0.1969	5.00	16	12	8*	Yes	87
			3.543	90.00	M90	0.197	5.00	18	12	8	**	88

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** Left Hand screws are available on request. Please contact us.

Nominal Diameter		Diameter Code	Lead		Lead Code	Pitch		Starts	End Machining Code		Available in Left Hand	Efficiency %*
Inch	mm		Inch	mm		Inch	mm		type 1,2,3	type 4		
0.710	18	071	0.0787	2.00	078	0.07874	2.00	1	12	8	Yes	41
			0.158	4.00	157	0.158	4.00	1	12	8	Yes	58
			0.6299	16.00	629	0.1575	4.00	4	12	8	**	76
			0.9449	24.00	944	0.1181	3.00	8	15	8	Yes	84
			1.1811	30.00	M30	0.1969	5.00	6	12	8	**	85
			1.5748	40.00	M40	0.1969	5.00	8	12	8	Yes	86
			2.0000	50.80	M51	0.2000	5.08	10	12	8	**	86
			3.937	100.00	M00	0.197	5.00	20	15	10	Yes	88
0.750	19.1	075	0.100	2.54	100	0.100	2.54	1	15	8	Yes	35
			0.167	4.23	166	0.167	4.23	1	12	8	Yes	47
			0.200	5.08	200	0.200	5.08	1	12	8	Yes	52
			0.250	6.35	250	0.125	3.18	2	12	8	**	57
			0.333	8.47	333	0.167	4.23	2	12	8	Yes	64
			0.500	12.70	500	0.125	3.18	4	12	8	**	73
0.790	20	079	0.158	4.00	157	0.158	4.00	1	12	8	Yes	37
			0.315	8.00	315	0.157	4.00	2	12	8	Yes	61
			0.4724	12.00	472	0.1575	4.00	3	15	8	**	72
			1.0630	27.00	M27	0.1181	3.00	9	17	10	**	82
			1.772	45.00	M45	0.197	5.00	9	15	10	**	84
0.870	22.0	087	0.1969	5.00	196	0.19685	5.00	1	15	10	Yes	50
0.870	22	087	0.7874	20.00	787	0.1575	4.00	5	17	10	**	78
			1.3780	35.00	M35	0.1969	5.00	7	17*	10	**	83
			1.969	50.00	M50	0.197	5.00	10	17	10	**	85
0.87	22.1	RD088	0.2000	5.08	200	0.10000	2.54	2	15	10	**	48
7/8	22.2	088	0.166	4.22	166	0.166	4.22	1	15	10	Yes	45
7/8	22.2	088	0.200	5.08	200	0.200	5.08	1	15	10	Yes	48
0.94	24	094	1.1811	30.00	M30	0.1181	3.00	10	20*	12	Yes	85
			1.5748	40.00	M40	0.1969	5.00	8	20*	12	**	83
			2.165	55.00	M55	0.197	5.00	11	20	12	**	86
1	25.4	100	0.100	2.54	100	0.100	2.54	1	20	12	Yes	24
			0.167	4.23	166	0.167	4.23	1	17	10	Yes	40
			0.200	5.08	200	0.200	5.08	1	17	10	Yes	44
			0.250	6.35	250	0.250	6.35	1	17	10	Yes	46
			0.500	12.70	500	0.250	6.35	2	17	10	Yes	63
			1.000	25.40	999	0.100	2.54	10	20	12	Yes	74
			3.000	76.20	M76	0.200	5.08	15	20	12	Yes	86
1.02	26		0.236	6.00		0.236	6.00	1	17	10	Yes	43
1 1/8	28.6		0.200	5.08		0.200	5.08	1	20	12	Yes	42
1.18	29.9	1.25	1.6000	40.64	1.6	0.40000	10.16	4	20	12	**	84
1 1/4	31.8		0.200	5.08		0.200	5.08	1	25	16	Yes	35
			0.250	6.35		0.250	6.35	1	20	12	Yes	45
			0.500	12.70		0.250	6.35	2	20	12	Yes	55
1 1/2	38.1		0.100	2.54		0.100	2.54	1	30	19	Yes	25
			0.200	5.08		0.200	5.08	1	30	19	Yes	35
			0.250	6.35		0.250	6.35	1	30	19	Yes	40
			0.375	9.53		0.375	9.53	1	25	16	Yes	43
			0.500	12.70		0.250	6.35	2	30	19	Yes	56
			1.000	25.40		0.100	2.54	10	30	19	**	78
1.57	40		0.276	7.00		0.276	7.00	1	30	19	Yes	37
1 3/4	44.5		0.250	6.35		0.250	6.35	1	35	22	Yes	38
2	50.8		0.131	3.33		0.131	3.33	1	50	32	Yes	27
			0.200	5.08		0.200	5.08	1	40	24	Yes	30
			0.250	6.35		0.250	6.35	1	40	24	Yes	32
			0.500	12.70		0.500	12.70	1	35	22	Yes	46
2.17	55		0.472	12.00		0.472	12.00	1	30	19	Yes	37
2 1/4	57.2		0.250	6.35		0.250	6.35	1	45	28	Yes	31
			0.500	12.70		0.500	12.70	1	40	24	Yes	46
2 1/2	63.5		0.250	6.35		0.250	6.35	1	50	32	Yes	30
			0.333	8.47		0.333	8.47	1	50	32	Yes	34
			0.500	12.70		0.500	12.70	1	45	28	Yes	39

* Listed Efficiencies are theorical values based on Helix H10X PTFE coated screws. Efficiencies for bronze nuts are approximately 8-10% lower.
** Left Hand screws are available on request. Please contact us.

Threaded Nuts

Our nuts are available in threaded and flange mounts. Anti-backlash nuts perform with zero backlash, and are self-compensating for wear. All nuts are molded from a proprietary internally lubricated material.

Materials

Plastic Acme & Trapezoidal Nuts
The high strength and inherent lubricity of our proprietary plastic nut material can result in product life that can equal or exceed conventional nut materials.

- Material: Helix™ ACETAL/PTFE blend
- Tensile Strength @70°F: 8,000 psi
- Compressive Strength @70°F: 16,000 psi
- PV Limit: 2,700 lubricated
- Coefficient of Friction: 0.10 lubricated

Bronze Acme & Trapezoidal Nuts
Special high tensile bronze is selected for our smooth running, anti-wedging bronze nuts.

- Material: Bronze
- Tensile Yield: 50,000 psi
- Tensile Ultimate: 65,000 psi
- Hardness: HB75
- Dynamic Coefficient of Friction: 0.125 with Helix™ Lubricant

Flanges for Bronze & Plastic Nuts
Made from carbon steel with black oxide finish.

NUT Selection

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
The loads that need to be considered are the static loads, dynamic loads, reaction forces and any external forces affecting the screw, measured in pounds or newtons.

Speed
The travel rate (linear speed) is the rpm at which the screw or nut is rotating multiplied by the lead of the screw, measured in inches or millimeters per minute.

Length
The unsupported length of the screw between bearings, measured in inches or millimeters.

End fixity type
Refers to the method by which the ends of the screw are supported.

Standard Nuts

Standard Freewheeling Nuts
This is a one-piece nut that will have a small amount of axial and radial lash. Applications where repeatability and accuracy are not high. These nuts are often used in vertical applications where the load is always in one direction, like a 3d printer.

Axial Anti-Backlash Nuts
Consist of a main nut body and a secondary ring that share the same thread form. There is a spring between the two components that force each part against opposing flanks of the screw thread. This biasing takes up the clearance between all the components i.e. gets rid of the backlash. The drawback to this design is that if the load is greater than the spring force, you can still get backlash in the system. For a greater load you need a stronger spring to keep backlash to a minimum, however, a stronger spring means more friction between the nut and screw which requires more drive torque to overcome. Applications where repeatability and accuracy are needed. These nuts are the most cost effective anti-backlash nut that we offer.

Radial Anti-Backlash Nuts
Consist of a nut body with flexible "fingers". There is an axial spring that pushes a ring along the nut body. There are ramp features on the ends of the fingers that the ring uses to push the fingers inward towards the screw. The threads on the fingers are pushed into the valleys of the screw thread to take up any clearance. There is a mechanical advantage provided by the ramp features between the fingers and the collar which amplifies the force of the spring. Unlike the axial anti-backlash nut design the radial anti-backlash nut design can handle loads greater than the spring force. There is also less of an increase in required drive torque compared to axial anti-backlash nut. This is a mid-range anti-backlash nut that operates backlash free up to its rated load. Once that load is exceeded, the nut can deflect.

Torsional Anti-Backlash Nuts
The nut with the highest design load rating offering the greatest bi-directional repeatability is the torsion anti-backlash nut. It has the most stiffness of any of the anti-backlash styles while maintaining the lowest drag torque. Essentially, a spacer which separates the two nut halves is adjusted automatically by the torsion spring to lengthen and take up the gap as wear occurs, thus maintaining zero backlash. This is our high-performance nut. It requires the lowest amount of torque and is extremely stiff. This nut will operate without backlash even under loads that are higher than the rated dynamic load.

Technical introduction

Additional types of Nuts available on request

Trunnion Nut (Plastic)
TMA Series

Trunnion Nut (Bronze)
TMB Series

Cylinder Nut
CYA Series

Power AC (Plastic)
NPA Series

Power AC (Bronze)
NPB Series

Torsional Anti-Backlash Nut
GNA Compact Series

Heavy Load Nut (2-hole)
HLR Series

Heavy Load Nut (4-hole)
HLC Series

Ball Nut Replacement
BNR Series

Gear Nut

Custom Specialty Nuts

Term	
Screw Diameter	The outside diameter of the 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
Travel per step	The linear translation of a lead nut or screw for one full step of the motor.
Pitch	The axial distance between threads. Pitch is equal to the lead in a single start screw.
Screw Starts	The number of independent threads on the screw shaft; example one, two or four.
Right/Left hand	The handedness of a screw refers to the direction in which the helical thread wraps around the screw shaft.
Efficiency	Efficiency of Helix precision lead screw assemblies range from 15% to 85%. These efficiencies are dependent upon nut material, lubrication, lead and thread form.
Journal	A smooth diameter machined on the end of screw used as mounting surface for bearings, couplings, pulleys, gears, etc.

Term - Threaded Nut	
Dynamic Load	Maximum recommended thrust load which should be applied to stepper motor linear actuator assembly while in motion
Drag Torque	The amount of torque required to drive the unloaded lead screw.

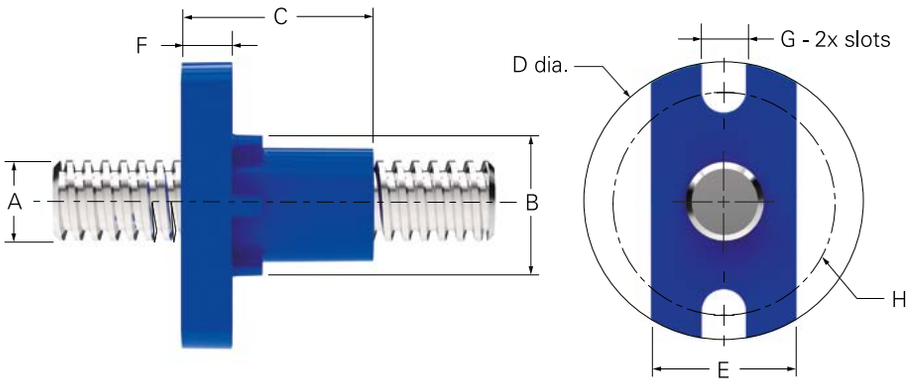
Glossary

Standard Freewheeling Nut

Standard Freewheeling Nut - NFA

2-Hole flanged

Nut material: Helital™

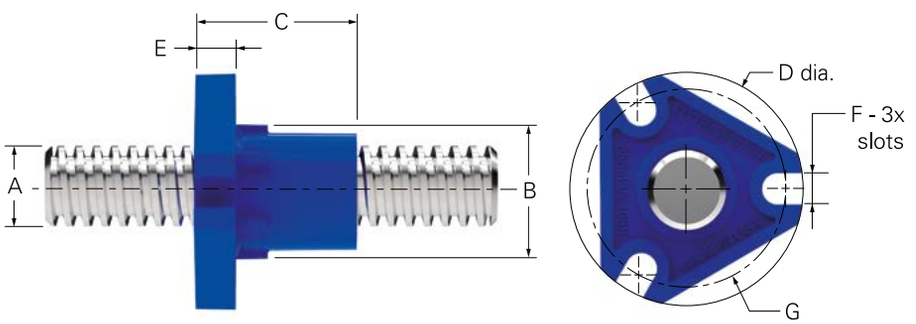


A Screw Dia. inch (mm)	B Nut Dia. inch (mm)	C Nut Length inch (mm)	D Flange Dia. inch (mm)	E Flange Height inch (mm)	F Flange Thickness inch (mm)	G Slot Width inch (mm)	H Bolt Circle Dia. inch (mm)	Dynamic Load lbs (Kg)	Drag Torque (max.) oz-in (N-m)
5/64 (2)	0.400 (10.2)	0.500 (12.7)	0.750 (19.0)	0.400 (10.2)	0.130 (3.3)	0.120 (3.1)	0.600 (15.3)	35 (16)	Freewheeling
1/8 (3)									
3/16 (4)									
7/32 (5)									

Standard Freewheeling Nut - NFA

3-Hole flanged

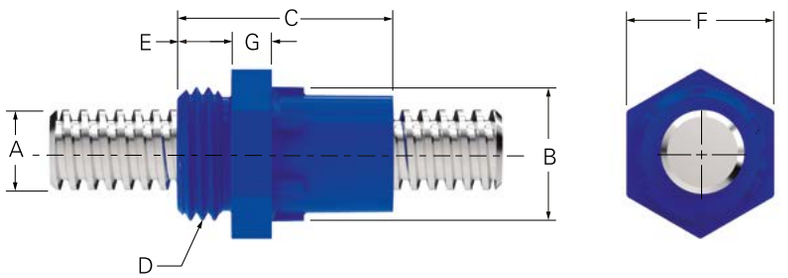
Nut material: Helital™



A Screw Dia. inch (mm)	B Nut Dia. inch (mm)	C Nut Length inch (mm)	D Flange Dia. inch (mm)	E Flange Thickness inch (mm)	F Slot Width inch (mm)	G Bolt Circle Dia. inch (mm)	Dynamic Load lbs (Kg)	Drag Torque (max.) oz-in (N-m)
1/4 (6)	0.500 (12.7)	0.625 (15.8)	1.00 (25.4)	0.188 (4.8)	0.144 (3.7)	0.750 (19)	75 (35)	Freewheeling
5/16 (8)	0.625 (15.8)	0.750 (19.1)	1.125 (28.5)	0.188 (4.8)	0.144 (3.7)	0.875 (22.2)	75 (35)	
3/8 (10)								
7/16 (11)	0.750 (19.1)	1.125 (28.5)	1.500 (38.1)	0.250 (6.35)	0.203 (5.2)	1.125 (28.5)	150 (68)	
1/2 (13)								
9/16 (14)	1.125(28.5)	1.250 (31.7)	1.750 (44.4)	0.250 (6.35)	0.221 (5.6)	1.438 (36.5)	150 (68)	
5/8 (16)							225 (100)	
11/16 (18)							350 (160)	
3/4 (19)								

Standard Freewheeling Nut - NTA

Nut material: Helital™



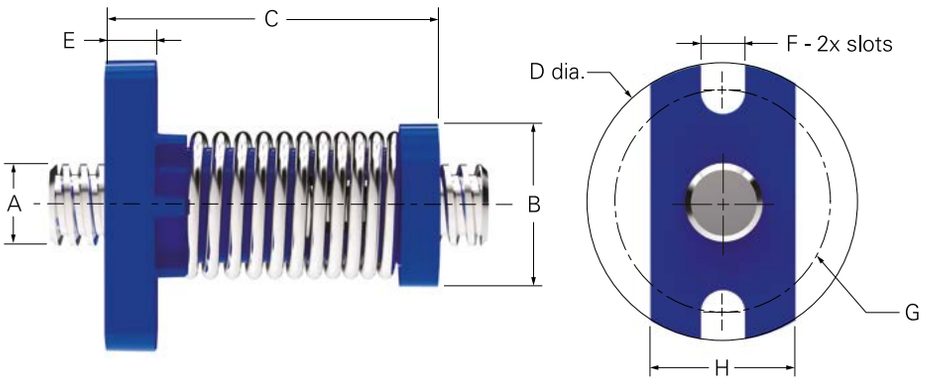
A Screw Dia. inch (mm)	B Nut Dia. inch (mm)	C Nut Length inch (mm)	D Thread Size inch (mm)	E Thread Length inch (mm)	F Hex Across flats inch (mm)	G Hex Thickness inch (mm)	Dynamic Load lbs (Kg)	Drag Torque (max.) oz-in (N-m)
5/64 (2)	0.400 (10.2)	0.500 (12.7)	3/8-24 UNF	0.188 (4.8)	0.437 (11)	0.130 (3.3)	35 (16)	Freewheeling
1/8 (3)								
3/16 (4)								
7/32 (5)	0.500 (12.7)	0.625 (15.8)	9/16"-18 UNF	0.250 (6.3)	0.625 (15.8)	0.180 (4.8)	115 (52)	
1/4 (6)								
5/16 (8)	0.625 (15.8)	0.750 (19)	5/8"-18 UNF	0.250 (6.3)	0.687 (17.4)	0.180 (4.8)	125 (57)	
3/8 (10)								
7/16 (11)	0.750 (19.1)	1.125 (28.6)	15/16"-16 UN	0.375 (9.5)	1.00 (25.4)	0.250 (6.4)	200 (91)	
1/2 (13)								
9/16 (14)	1.125(28.6)	1.250 (31.7)	1-1/16-16 UN	0.375 (9.5)	1-1/8 (28.5)	0.250 (6.4)	350 (159)	
5/8 (16)								
11/16 (18)								
3/4 (19)								
7/8 (22)	1.5 (38)	1.375 (35)	1-3/8"-16 UN	0.375 (9.5)	1-7/16 (36.5)	0.310 (7.9)	530	
1 (25.4)								

Axial Anti-Backlash Nut

Axial Anti-Backlash Nut - AFA

2-Hole flanged

Nut material: Helital™

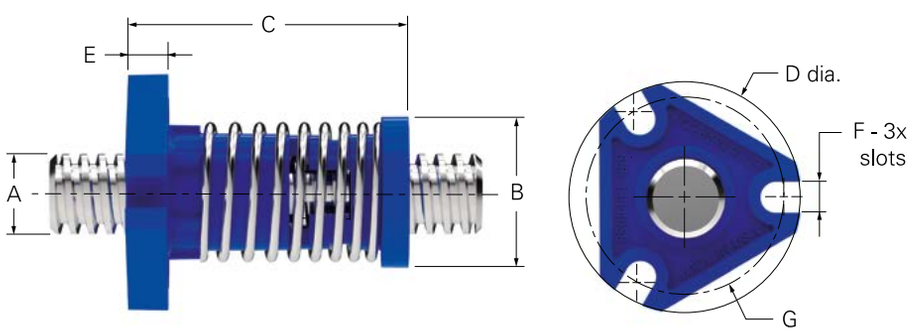


A Screw Dia. inch (mm)	B Nut Dia. inch (mm)	C Nut Length inch (mm)	D Flange Dia. inch (mm)	E Flange Thickness inch (mm)	F Slot Width inch (mm)	G Bolt Circle Dia. inch (mm)	H Flange Height inch (mm)	Dynamic Load lbs (Kg)	Drag Torque (max.) oz-in (N-m)
5/64 (2)	0.420 (10.2)	0.945 (24)	0.750 (19.0)	0.130 (3.3)	0.120 (3.1)	0.600 (15.3)	0.400 (10.2)	35 (16)	3 (.113)
1/8 (3)									
3/16 (4)									

Axial Anti-Backlash Nut - AFA

3-Hole flanged

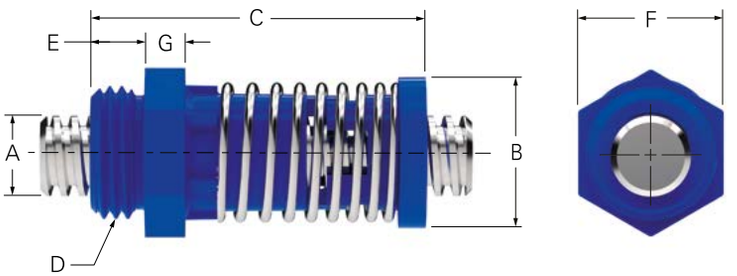
Nut material: Helital™



A Screw Dia. inch (mm)	B Nut Dia. inch (mm)	C Nut Length inch (mm)	D Flange Dia. inch (mm)	E Flange Thickness inch (mm)	F Slot Width inch (mm)	G Bolt Circle Dia. inch (mm)	Dynamic Load lbs (Kg)	Drag Torque (max.) oz-in (N-m)
7/32 (5)	0.563 (14.3)	1.100 (28)	1.00 (25.4)	0.188 (4.8)	0.144 (3.7)	0.750 (19)	75 (35)	4 (.03)
1/4 (6)								
5/16 (8)	0.688 (17.4)	1.398 (35.5)	1.125 (28.5)	0.188 (4.8)	0.144 (3.7)	0.875 (22.2)	75 (35)	5 (.04)
3/8 (10)								
7/16 (11)	0.875 (22)	2.00 (50.8)	1.500 (38.1)	0.250 (6.35)	0.203 (5.2)	1.125 (28.5)	150 (68)	9 (.06)
1/2 (13)								
9/16 (14)	1.125(28.5)	2.34 (59.4)	1.750 (44.4)	0.250 (6.35)	0.221 (5.6)	1.438 (36.5)	150 (68) 225 (100) 350 (160)	12 (.113)
5/8 (16)								
11/16 (18)								
3/4 (19)								
7/8 (22)	1.5 (38)	2.675	2.250	0.313	0.257	1.875	530	16 (.113)
15/16 (24)								

Axial Anti-Backlash Nut - ATA

Nut material: Helital™



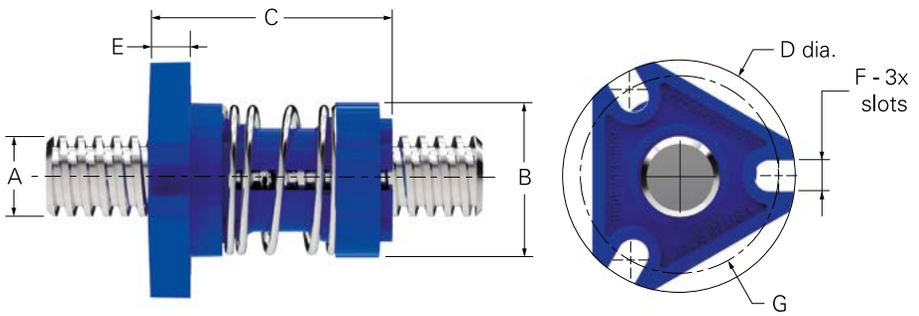
A Screw Dia. inch (mm)	B Nut Dia. inch (mm)	C Nut Length inch (mm)	D Thread Size inch (mm)	E Thread Length inch (mm)	F Hex Across flats inch (mm)	G Hex Thickness inch (mm)	Dynamic Load lbs (Kg)	Drag Torque (max.) oz-in (N-m)
5/64 (2)	0.420 (10.2)	0.945 (24)	3/8-24 UNF	0.188 (4.8)	0.437 (11)	0.130 (3.3)	35 (16)	4 (.03)
1/8 (3)								
3/16 (4)								
7/32 (5)	0.500 (12.7)	1.100 (28)	9/16"-18 UNF	0.250 (6.3)	0.625 (15.8)	0.180 (4.8)	75 (35)	4 (.03)
1/4 (6)								
5/16 (8)	0.625 (15.8)	1.398 (35.5)	5/8"-18 UNF	0.250 (6.3)	0.687 (17.4)	0.180 (4.8)	75 (35)	5 (.04)
3/8 (10)								
7/16 (11)	0.750 (19.1)	2.00 (50.8)	15/16"-16 UN	0.375 (9.5)	1.00 (25.4)	0.250 (6.4)	150 (68)	9 (.06)
1/2 (13)								
9/16 (14)	1.125(28.6)	2.34 (59.4)	1-1/16-16 UN	0.375 (9.5)	1-1/8 (28.5)	0.250 (6.4)	150 (68) 225 (100) 350 (160)	12 (.084)
5/8 (16)								
11/16 (18)								
3/4 (19)								
7/8 (22)	1.5 (38)	2.675 (68)	1-3/8"-16 UN	0.375 (9.5)	1-7/16 (36.5)	0.310 (7.9)	530 (240)	16 (.113)
15/16 (24)								

Radial Anti-Backlash Nut

Radial Anti-Backlash Nut - RFA

3-Hole flanged

Nut material: Helital™

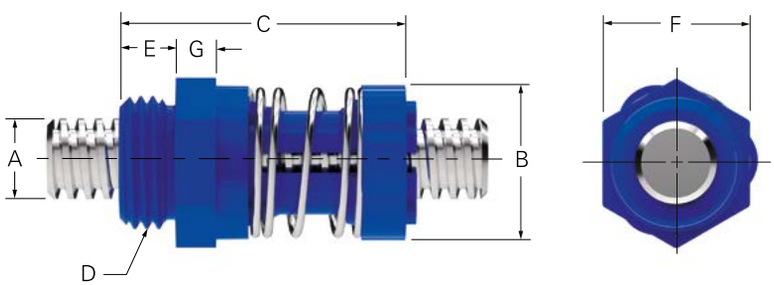


A Screw Dia. inch (mm)	B Nut Dia. inch (mm)	C Nut Length inch (mm)	D Flange Dia. inch (mm)	E Flange Thickness inch (mm)	F Slot Width inch (mm)	G Bolt Circle Dia. inch (mm)	Dynamic Load lbs (Kg)	Drag Torque (max.) oz-in (N-m)
1/4 (6)	0.610 (15.4)	0.940 (23.8)	1.00 (25.4)	0.188 (4.8)	0.144 (3.7)	0.750 (19)	75 (35)	0.25-3 (.002-.021)
5/16 (8) 3/8 (10)	0.780 (19.7)	1.160 (29.5)	1.13 (28.6)	0.188 (4.8)	0.144 (3.7)	0.875 (22.2)	75 (35)	1-5 (.007-.03)
7/16 (11) 1/2 (13)	0.930 (23.6)	1.440 (36.5)	1.50 (38.1)	0.250 (6.35)	0.203 (5.2)	1.125 (28.5)	150 (68)	3-7 (.02-.05)
5/8 (16) 3/4 (19)	1.275 (32.4)	1.75 (44.4)	1.75 (44.4)	0.250 (6.3)	0.221 (5.6)	1.438 (36.5)	35 (16)	4-8 (.028-.055)

Radial Anti-Backlash Nut - RTA

Threaded

Nut material: Helital™



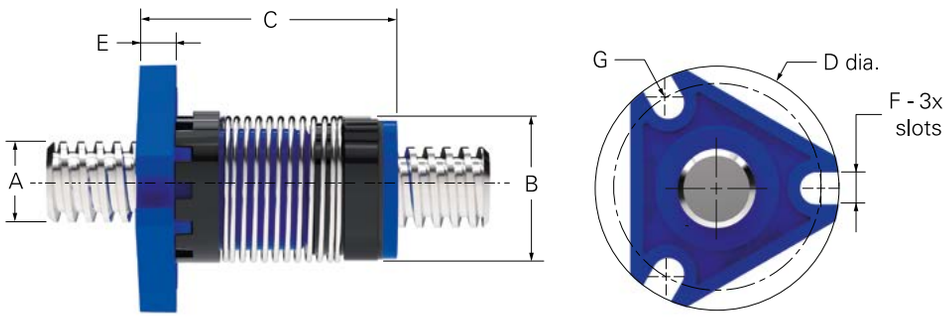
A Screw Dia. inch (mm)	B Nut Dia. inch (mm)	C Nut Length inch (mm)	D Thread Size inch (mm)	E Thread Length inch (mm)	F Hex Across flats inch (mm)	G Hex Thickness inch (mm)	Dynamic Load lbs (Kg)	Drag Torque (max.) oz-in (N-m)
1/4 (6)	0.610 (15.4)	0.940 (23.8)	9/16"-18 UNF	0.250 (6.3)	0.625 (15.8)	0.180 (4.8)	75 (35)	0.25-3 (.002-.021)
5/16 (8) 3/8 (10)	0.780 (19.7)	1.160 (29.5)	15/16"-16 UN	0.375 (9.5)	1.00 (25.4)	0.180 (4.8)	75 (35)	1-5 (.007-.03)
7/16 (11) 1/2 (13)	0.930 (23.6)	1.440 (36.5)	15/16"-16 UN	0.375 (9.5)	1.00 (25.4)	0.250 (6.4)	150 (68)	3-7 (.02-.05)
5/8 (16) 3/4 (19)	1.275 (32.4)	2.13 (54.1)	1-1/16-16 UN	0.370 (9.4)	1.12 (28.4)	0.250 (6.4)	35 (16)	4-8 (.028-.055)

Torsional Anti-Backlash Nuts

Torsional Anti-Backlash Nut - KFA

3-Hole flanged

Nut material: Helital™

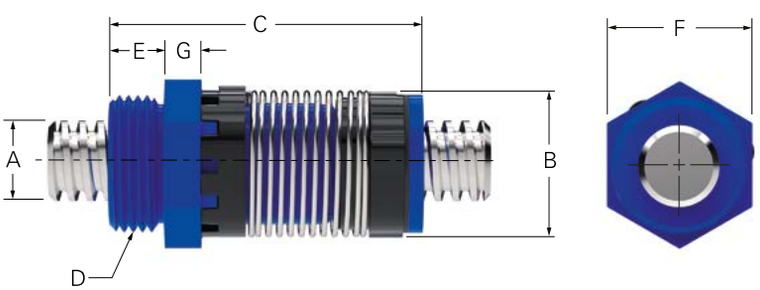


A Screw Dia. inch (mm)	B Nut Dia. inch (mm)	C Nut Length inch (mm)	D Flange Dia. inch (mm)	E Flange Thick- ness inch (mm)	F Slot Width inch (mm)	G Bolt Circle Dia. inch (mm)	Dynamic Load lbs (Kg)	Drag Torque (max.) oz-in (N-m)
1/4 (6)	.70 (17.8)	1.6 (40.6)	1.12 (28.6)	.18 (4.8)	.144 (3.7)	.875 (22.2)	20 (9)	3 (.025)
5/16 (8)	.87 (22.1)	1.8 (45.7)	1.50 (38.1)	.25 (6.4)	.203 (5.2)	1.125 (28.6)	30 (13)	3 (.025)
3/8 (10)								
7/16 (11)	1.06 (26.9)	2.1(53.3)	1.75 (44.5)	.25 (6.4)	.220 (5.6)	1.406 (35.7)	50 (23)	6 (.040)
1/2 (13)	1.06 (26.9)	2.1(53.3)	1.75 (44.5)	.25 (6.4)	.220 (5.6)	1.406 (35.7)	75 (34)	6 (.040)
9/16 (14)	1.30 (33.0)	2.5 (63.5)	1.75 (44.5)	.31 (8.0)	.220 (5.6)	1.750 (44.5)	90 (41)	6 (.040)
5/8 (16)	1.30 (33.0)	2.5 (63.5)	1.75 (44.5)	.31 (8.0)	.220 (5.6)	1.750 (44.5)	150 (68)	6 (.040)
3/4 (19)	1.63 (41.4)	2.8 (71.1)	2.38 (60.5)	.31 (8.0)	.220 (5.6)	2.000 (50.8)	250 (113)	7 (.050)

Torsional Anti-Backlash Nut - KTA

Threaded

Nut material: Helital™



A Screw Dia. inch (mm)	B Nut Dia. inch (mm)	C Nut Length inch (mm)	D Thread Size inch (mm)	E Thread Length inch (mm)	F Hex Across flats inch (mm)	G Hex Thickness inch (mm)	Dynamic Load lbs (Kg)	Drag Torque (max.) oz-in (N-m)
1/4 (6)	.70 (17.8)	1.6 (40.6)	9/16-18	0.250 (6.3)	.69 (17.5)	0.180 (4.8)	20 (9)	3 (.025)
5/16 (8)	.87 (22.1)	1.8 (45.7)	3/4-20	0.375 (9.5)	.88 (22.35)	0.250 (6.4)	30 (13)	3 (.025)
3/8 (10)								
7/16 (11)	1.06 (26.9)	2.1(53.3)	15/16-16	0.375 (9.5)	1.00 (25.4)	0.250 (6.4)	50 (23)	6 (.040)
1/2 (13)	1.06 (26.9)	2.1(53.3)	1-1/8-16	0.375 (9.5)	1.00 (25.4)	0.250 (6.4)	75 (34)	6 (.040)
9/16 (14)	1.30 (33.0)	2.5 (63.5)	1-1/8-16	0.375 (9.5)	1.25 (31.7)	0.310 (8.0)	90 (41)	6 (.040)
5/8 (16)	1.30 (33.0)	2.5 (63.5)	1-1/8-16	0.375 (9.5)	1.25 (31.7)	0.310 (8.0)	150 (68)	6 (.040)
3/4 (19)	1.63 (41.4)	2.8 (71.1)	1-3/8-16	0.375 (9.5)	1.56 (39.8)	0.320 (8.0)	250 (113)	7 (.050)

Gearboxes

Spur gearboxes

p.479

Planetary gearboxes
GP series

p.453

Planetary gearboxes
GPS series

p.461

Planetary gearboxes
JMS series

p.471

Gearboxes

*Rated 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.

Glossary

Gearboxes

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.

Advantages at a glance
Compact size
High efficiency
Low backlash
High torque to weight ratio

Planetary gearboxes

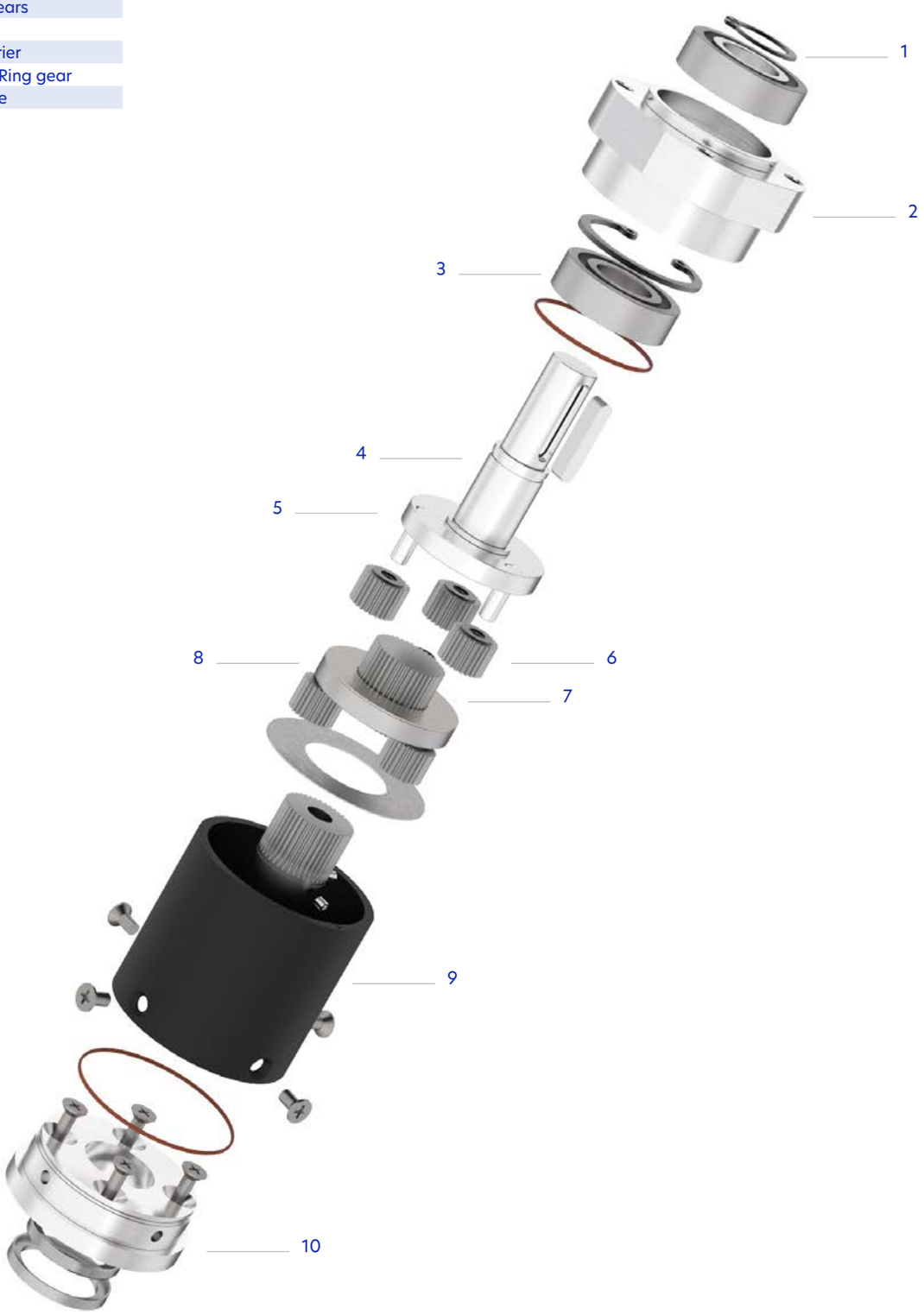
A spur gear head's construction consists of larger gears that mesh with smaller gears. The gears are mounted on parallel shafts, but offset from one another. The meshing of the smaller gears with the larger gears reduces rpm transforming it into torque. The tooth pitch of the gears is critical in determining 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.

Advantages at a glance
Simple design and less expensive
Best for low-torque and low-speed applications

Spur gearboxes

Technical introduction

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

p.453

Planetary gearboxes
GPS series

p.461

Planetary gearboxes
JMS series

p.471

Planetary gearboxes

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.

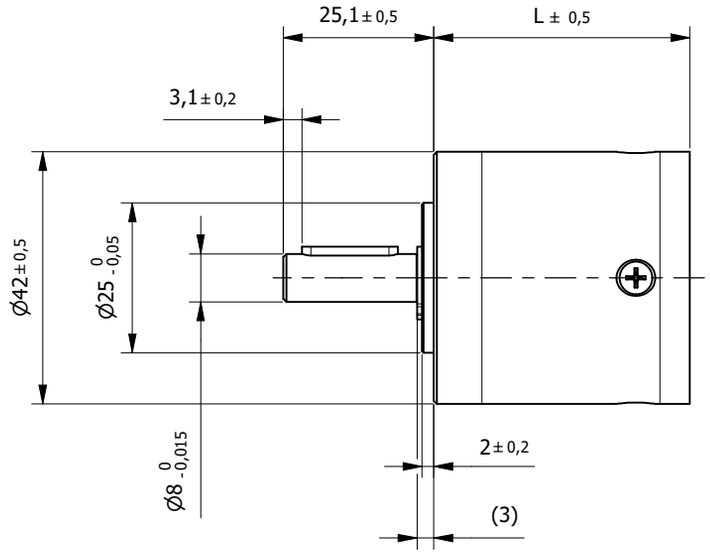
*Nominal Output Torque

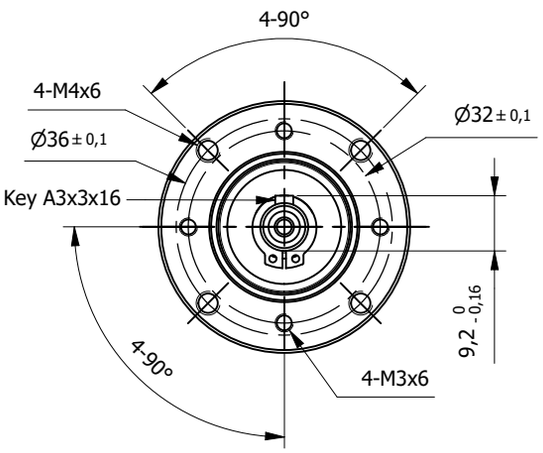
Planetary Gearboxes

GP-series

Planetary Gearbox GP42-S

Ø 42mm - 2,88 to 10,73Nm





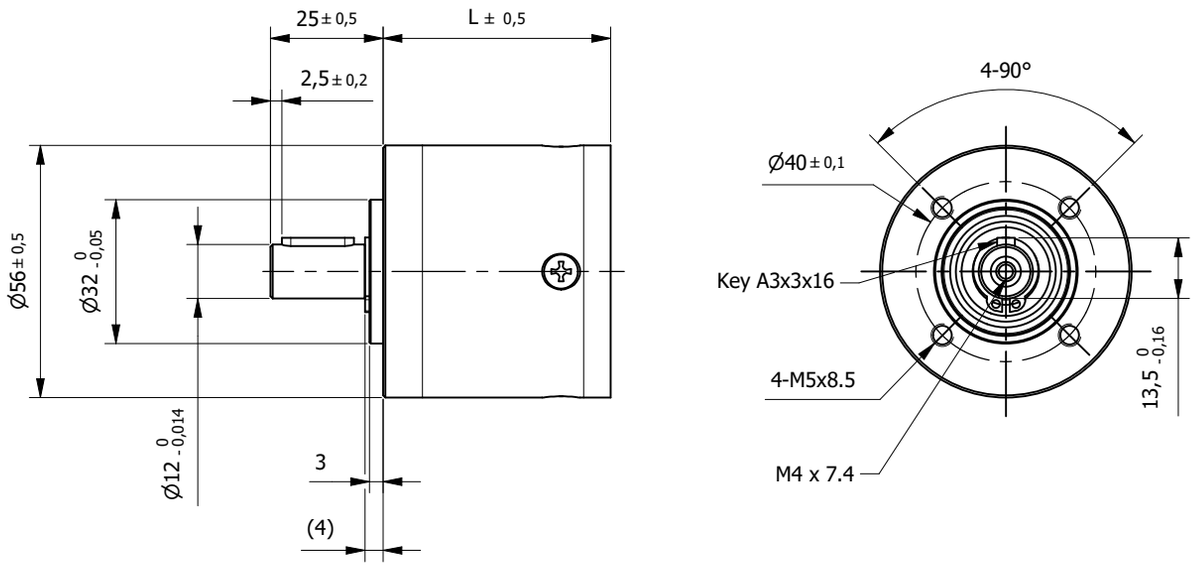
Specification							
	Model		...1 / 3.9	...1 / 4.3	...1 / 5.3	...1 / 6	...1 / 7.1	...1 / 8.7
1	Stages		1	1	1	1	1	1
2	Reduction Ratio		3,9	4,3	5,3	6	7,1	8,7
3	Nominal Output Torque	Nm	6,37	5,63	8,66	5,55	5,09	2,88
4	Max. Output Torque	Nm	12,74	11,26	17,32	11,1	10,18	5,76
5	Recommended Input Speed	rpm	3000	3000	3000	3000	3000	3000
6	Max. Input Speed	rpm	8236	9187	11943	14050	17061	18000
7	Efficiency	%	≈90%	≈90%	≈90%	≈90%	≈90%	≈90%
8	Moment of Inertia ≤ϕ8	kgmm²	18,99	19,23	21,52	23,98	27,78	35,16
9	Length (L)	mm	42,7	42,7	42,7	42,7	42,7	42,7
10	Weight	kg	0,28	0,28	0,28	0,28	0,28	0,28

Specification						
	Model		...2 / 15.5	...2 / 20.6	...2 / 25.6	...2 / 45.8
1	Stages		2	2	2	2
2	Reduction Ratio		15,5	20,6	25,6	45,8
3	Nominal Output Torque	Nm	10,53	10,73	9,88	10,54
4	Max. Output Torque	Nm	21,06	21,46	19,76	21,08
5	Recommended Input Speed	rpm	3000	3000	3000	3000
6	Max. Input Speed	rpm	8236	11943	14050	18000
7	Efficiency	%	≈85%	≈85%	≈85%	≈85%
8	Moment of Inertia ≤ϕ8	kgmm²	299,82	189,35	439,23	961,62
9	Length (L)	mm	56,6	56,6	56,6	56,6
10	Weight	kg	0,4	0,4	0,4	0,4

Characteristics	
Item	
Backlash at 2% nominal output torque	≤60 arcmin
Max. Radial load (middle of the key)	386N at n out=100rpm 267N at n out=300rpm 179N at n out=1000rpm
Max. Axial load (output shaft center)	1062N at n out=100rpm 736N at n out=300rpm 428N 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)	5000h
Protection class	IP54
Bearing output	Ball bearings
Housing material	Metal

Planetary Gearbox GP56-S

Ø 56mm - 7,73 to 26,48Nm



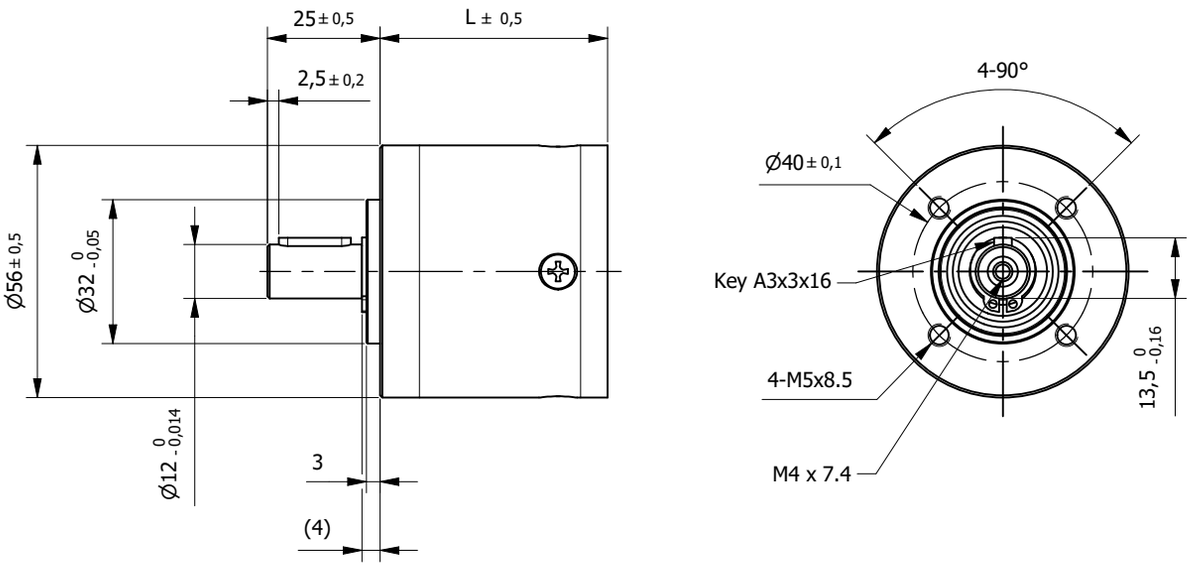
Specification								
	Model		...1 / 3.3	...1 / 3.9	...1 / 4.2	...1 / 5.1	...1 / 6.5	...1 / 7.7	...1 / 9.5
1	Stages		1	1	1	1	1	1	1
2	Reduction Ratio		3,3	3,9	4,2	5,1	6,5	7,7	9,5
3	Nominal Output Torque	Nm	7,73	18,03	18,15	18,82	20,04	16,89	10,16
4	Max. Output Torque	Nm	15,46	36,06	36,3	37,64	40,08	33,78	20,32
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	163	85	84	81	111	135	392
9	Length (L)	mm	50,6	50,6	50,6	50,6	50,6	50,6	50,6
10	Weight	kg	0,56	0,56	0,56	0,56	0,56	0,56	0,56

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		10,8	15,5	20	25,7	32,7	42,6	62,3
3	Nominal Output Torque	Nm	11,22	25,27	25,17	25,83	25,61	26,15	26,48
4	Max. Output Torque	Nm	22,44	50,54	50,34	51,66	51,22	52,3	52,96
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	1022	1212	1529	1659	2343	4469	7274
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	≤30 arcmin
Max. Radial load (middle of the key)	650N at n out=100rpm 451N at n out=300rpm 302N at n out=1000rpm
Max. Axial load (output shaft center)	1641N at n out=100rpm 1138N at n out=300rpm 656N 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)	5000h
Protection class	IP 54
Bearing output	Ball bearings
Housing material	Metal

Planetary Gearbox GP56-N
Low Noise

Ø 56mm - 1,53 to 15,84Nm



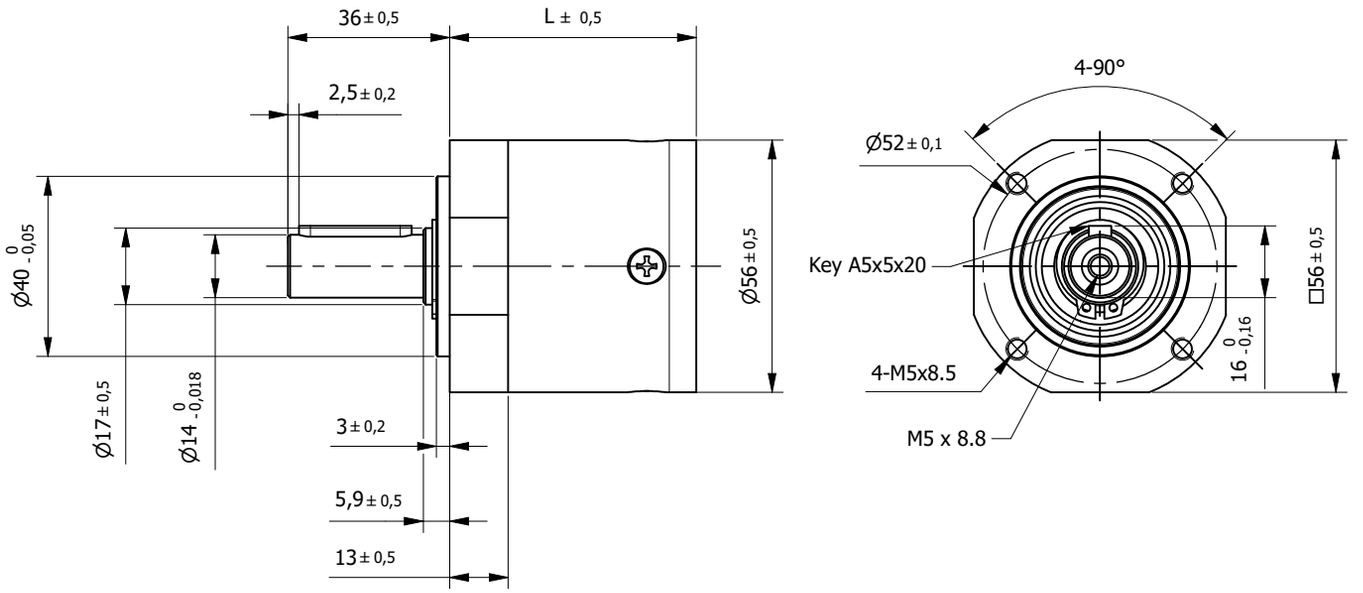
Specification						
	Model		...1 / 3.2	...1 / 4	...1 / 5.4	...1 / 6.2
1	Stages		1	1	1	1
2	Reduction Ratio		3,24	3,96	5,37	6,19
3	Nominal Output Torque	Nm	2,03	1,97	1,68	1,53
4	Max. Output Torque	Nm	4,06	3,94	3,36	3,06
5	Recommended Input Speed	rpm	3000	3000	3000	3000
6	Max. Input Speed	rpm	5453	6621	9758	9270
7	Efficiency	%	≈92%	≈92%	≈92%	≈92%
8	Moment of Inertia ≤ϕ8	kgmm²	44	48	54	60
9	Length (L)	mm	56	56	56	56
10	Weight	kg	0,56	0,56	0,56	0,56

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	9,93	11,23	13,1	15,84	15,77
4	Max. Output Torque	Nm	19,86	22,46	26,2	31,68	31,54
5	Recommended Input Speed	rpm	3000	3000	3000	3000	3000
6	Max. Input Speed	rpm	5453	6621	6621	6621	9758
7	Efficiency	%	≈92%	≈92%	≈85%	≈85%	≈85%
8	Moment of Inertia ≤ϕ8	kgmm²	1163	1182	2073	3362	2850
9	Length (L)	mm	73	73	73	73	73
10	Weight	kg	0,8	0,8	0,8	0,8	0,8

Characteristics	
Item	
Backlash at 2% nominal output torque	≤60 arcmin
Max. Radial load (middle of the key)	650N at n out=100rpm 451N at n out=300rpm 302N at n out=1000rpm
Max. Axial load (output shaft center)	1641N at n out=100rpm 1138N at n out=300rpm 656N 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
Housing material	Metal

Planetary Gearbox GP56-T
High Torque

Ø 56mm - 7,73 to 26,48Nm



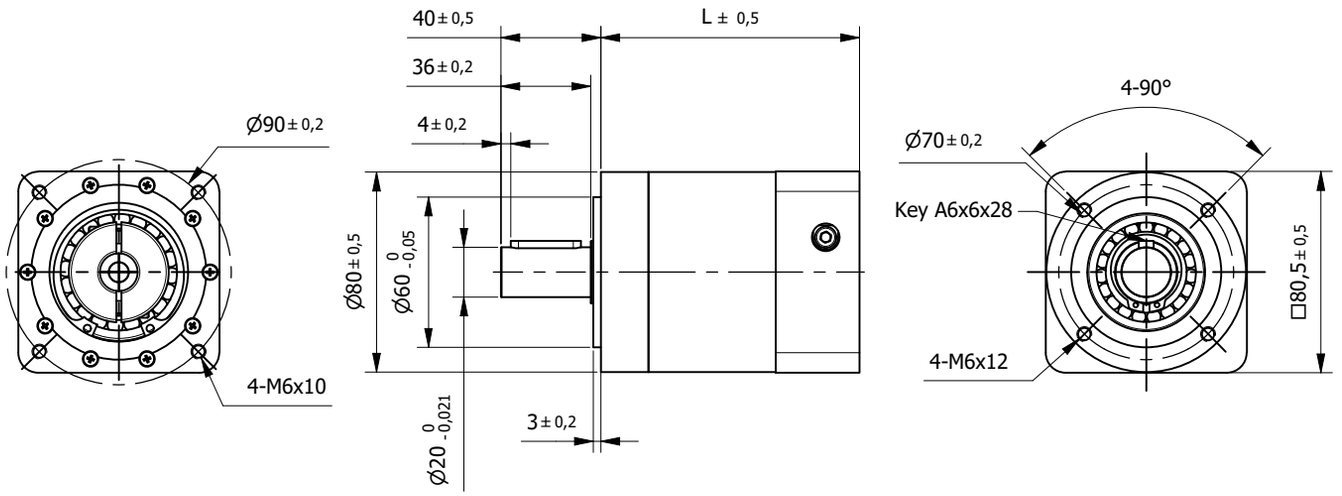
Specification								
	Model		...1 / 3.3	...1 / 3.9	...1 / 4.2	...1 / 5.1	...1 / 6.5	...1 / 7.7	...1 / 9.5
1	Stages		1	1	1	1	1	1	1
2	Reduction Ratio		3,3	3,9	4,2	5,1	6,5	7,7	9,5
3	Nominal Output Torque	Nm	7,73	18,03	18,15	18,82	20,04	16,89	10,16
4	Max. Output Torque	Nm	15,46	36,06	36,3	37,64	40,08	33,78	20,32
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	163	85	84	81	111	135	392
9	Length (L)	mm	54,8	54,8	54,8	54,8	54,8	54,8	54,8
10	Weight	kg	0,56	0,56	0,56	0,56	0,56	0,56	0,56

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		10,8	15,5	20	25,7	32,7	42,6	62,3
3	Nominal Output Torque	Nm	11,22	25,27	25,17	25,83	25,61	26,15	26,48
4	Max. Output Torque	Nm	22,44	50,54	50,34	51,66	51,22	52,3	52,96
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	1022	1212	1529	1659	2343	4469	7274
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

Characteristics	
Item	
Backlash at 2% nominal output torque	≤30 arcmin
Max. Radial load (middle of the key)	711N at n out=100rpm 493N at n out=300rpm 330N at n out=1000rpm
Max. Axial load (output shaft center)	1931N at n out=100rpm 1329N at n out=300rpm 764N 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)	5000h
Protection class	IP 54
Bearing output	Ball bearings
Housing material	Metal

Planetary Gearbox GP80-T
High Torque

Ø 80mm - 10,58 to 47,85Nm



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	4	5	7	8	10
3	Nominal Output Torque	Nm	22,56	36,96	40,38	21,37	14,56	10,58
4	Max. Output Torque	Nm	45,12	73,92	80,76	42,74	29,12	21,16
5	Recommended Input Speed	rpm	3000	3000	3000	3000	3000	3000
6	Max. Input Speed	rpm	3184	4342	5307	7000	7000	7000
7	Efficiency	%	≈92%	≈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	16	20	26	31	67
3	Nominal Output Torque	Nm	28,33	46,73	47,23	47,85	39,48	33,14
4	Max. Output Torque	Nm	56,66	93,46	94,46	95,7	78,96	66,28
5	Recommended Input Speed	rpm	3000	3000	3000	3000	3000	3000
6	Max. Input Speed	rpm	3184	3184	4342	5307	7000	7000
7	Efficiency	%	≈85%	≈85%	≈85%	≈85%	≈85%	≈85%
8	Moment of Inertia ≤ϕ15	kgmm²	93,33	92,09	83,39	77,8	74,37	71,35
9	Length (L)	mm	129,0	129,0	129,0	129,0	129,0	129,0
10	Weight	kg	2,6	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
Housing material	Metal

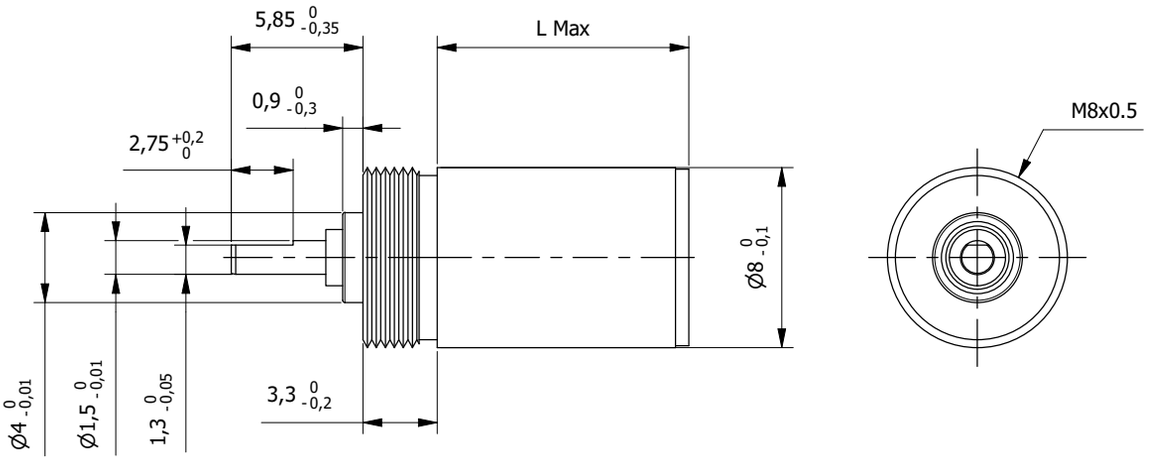
Gearboxes

Planetary Gearboxes

GPS-series

Planetary Gearbox 08GPS

Ø 8mm - 0,008 to 0,1Nm



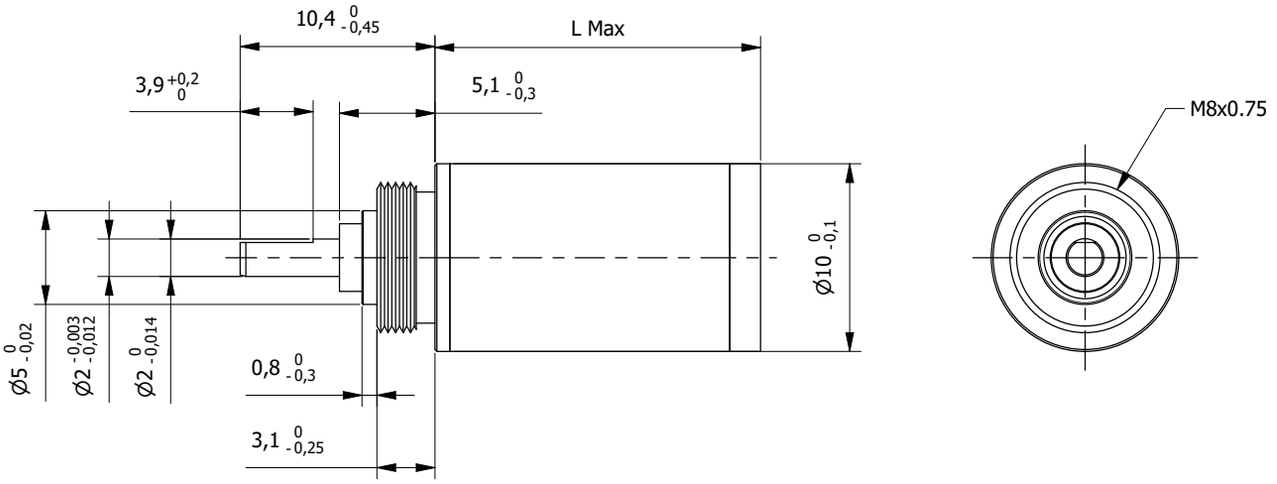
Specification							
	Model		...1N-4	...2N-16	...2N-36	...3N-64	...3N-216
1	Stages		1	2	2	3	3
2	Reduction Ratio		4	16	36	64	216
3	Nominal Output Torque	Nm	0,01	0,02	0,008	0,06	0,02
4	Max. Output Torque	Nm	0,015	0,03	0,012	0,09	0,03
5	Recommended Input Speed	rpm	12000	12000	12000	12000	12000
6	Max. Input 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
Housing material	Metal

Planetary Gearbox 10GPS

Ø 10mm - 0,01 to 0,15Nm

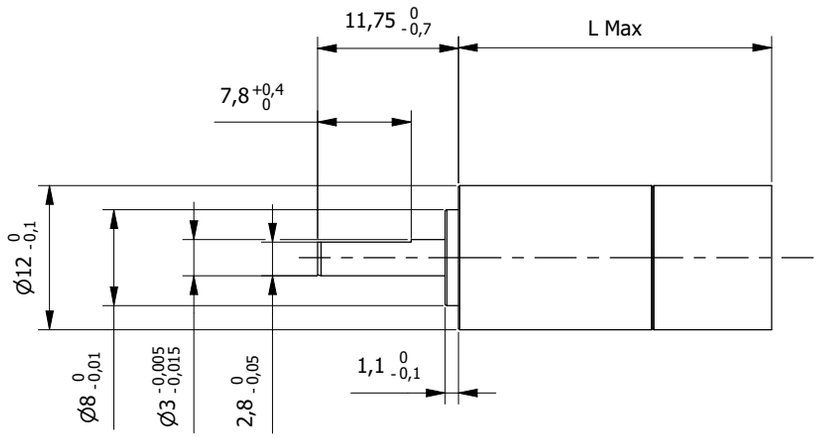


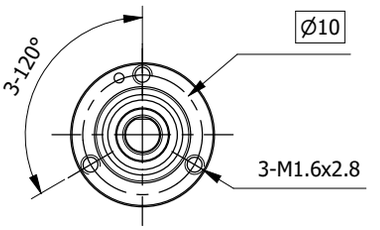
Specification							
	Model		...1N-4	...2N-16	...3N-64	...4N-256	...5N-1024
1	Stages		1	2	3	4	5
2	Reduction Ratio		4	16	64	256	1024
3	Nominal Output Torque	Nm	0,01	0,03	0,1	0,15	0,15
4	Max. Output Torque	Nm	0,02	0,05	0,15	0,2	0,2
5	Recommended Input Speed	rpm	12000	12000	12000	12000	12000
6	Max. Input Speed	rpm	15000	15000	15000	15000	15000
7	Efficiency	%	90	81	73	65	59
8	Average Backlash no-load	°	1,5	1,8	2	2,2	2,5
9	Max. Axial load (dynamic)	N	5	5	5	5	5
10	Max. Radial load (5mm from flange)	N	5	10	15	20	25
11	Length (L)	mm	9,9	13,4	16,6	19,8	23
12	Weight	g	6,7	7,2	7,7	8,2	8,7

Characteristics	
Item	
Operating temperature	-40 to +80°C
Bearing output	Ball bearings
Housing material	Metal

Planetary Gearbox 12GPS

Ø 12mm - 0,08 to 0,17Nm





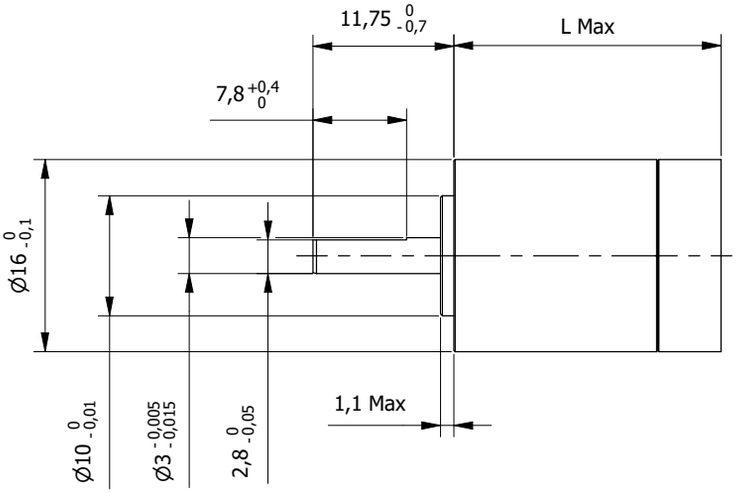
Specification							
	Model		...1N-5,3	...2N-21	...2N-28	...3N-83	...3N-138	...3N-172
1	Stages		1	2	2	3	3	3
2	Reduction Ratio		5,3	21	28	83	138	172
3	Nominal Output Torque	Nm	0,08	0,11	0,11	0,14	0,14	0,14
4	Max. Output Torque	Nm	0,1	0,14	0,14	0,18	0,18	0,18
5	Recommended Input Speed	rpm	16000	16000	16000	16000	16000	16000
6	Max. Input Speed	rpm	20000	20000	20000	20000	20000	20000
7	Efficiency	%	90	80	80	75	75	75
8	Average Backlash no-load	°	1,2	1,5	1,5	1,8	1,8	1,8
9	Max. Axial load (dynamic)	N	20	20	20	20	20	20
10	Max. Radial load (5mm from flange)	N	30	35	35	50	50	50
11	Length (L)	mm	15,5	20,4	20,4	25,2	25,2	25,2
12	Weight	g	11	14	14	17	17	17

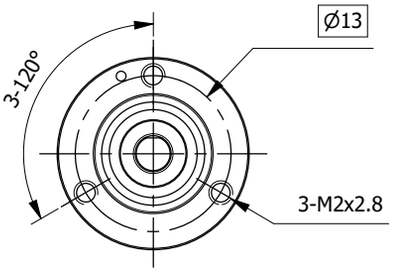
Specification						
	Model		...4N-326	...4N-439	...4N-679	...4N-913
1	Stages		4	4	4	4
2	Reduction Ratio		326	439	679	913
3	Nominal Output Torque	Nm	0,17	0,17	0,17	0,17
4	Max. Output Torque	Nm	0,21	0,21	0,21	0,21
5	Recommended Input Speed	rpm	16000	16000	16000	16000
6	Max. Input Speed	rpm	20000	20000	20000	20000
7	Efficiency	%	65	65	65	65
8	Average Backlash no-load	°	2,1	2,1	2,1	2,1
9	Max. Axial load (dynamic)	N	20	20	20	20
10	Max. Radial load (5mm from flange)	N	50	50	50	50
11	Length (L)	mm	30,1	30,1	30,1	30,1
12	Weight	g	19	19	19	19

Characteristics	
Item	
Operating temperature	-40 to +100°C
Bearing output	Ball bearings
Housing material	Metal

Planetary Gearbox 16GPS

Ø 16mm - 0,2 to 0,45Nm





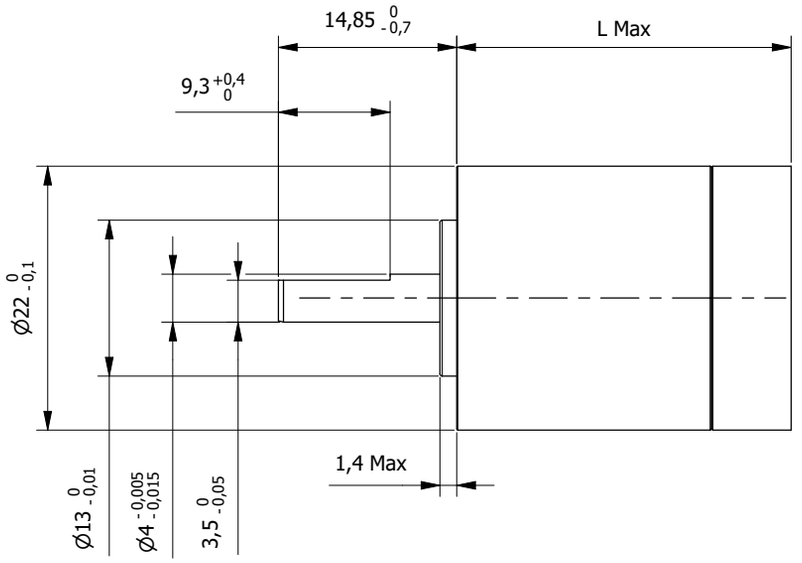
Specification								
	Model		...1N-5,3	...2N-21	...2N-28	...3N-83	...3N-138	...3N-172
1	Stages		1	2	2	3	3	3
2	Reduction Ratio		5,3	21	28	83	138	172
3	Nominal Output Torque	Nm	0,2	0,25	0,25	0,35	0,35	0,35
4	Max. Output Torque	Nm	0,25	0,35	0,35	0,45	0,45	0,45
5	Recommended Input Speed	rpm	12000	14000	14000	16000	16000	16000
6	Max. Input Speed	rpm	15000	17500	17500	20000	20000	20000
7	Efficiency	%	90	80	80	75	75	75
8	Average Backlash no-load	°	1	1,2	1,2	1,3	1,3	1,3
9	Max. Axial load (dynamic)	N	20	20	20	20	20	20
10	Max. Radial load (5mm from flange)	N	30	45	45	70	70	70
11	Length (L)	mm	15,8	20,7	20,7	25,7	25,7	25,7
12	Weight	g	20	25	25	27	27	27

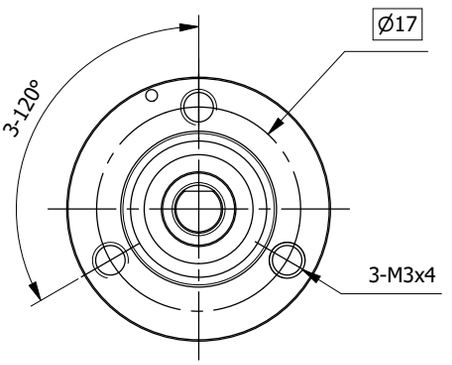
Specification						
	Model		...4N-326	...4N-439	...4N-679	...4N-913
1	Stages		4	4	4	4
2	Reduction Ratio		326	439	679	913
3	Nominal Output Torque	Nm	0,45	0,45	0,45	0,45
4	Max. Output Torque	Nm	0,55	0,55	0,55	0,55
5	Recommended Input Speed	rpm	16000	16000	16000	16000
6	Max. Input Speed	rpm	20000	20000	20000	20000
7	Efficiency	%	65	65	65	65
8	Average Backlash no-load	°	1,4	1,4	1,4	1,4
9	Max. Axial load (dynamic)	N	20	20	20	20
10	Max. Radial load (5mm from flange)	N	70	70	70	70
11	Length (L)	mm	30,6	30,6	30,6	30,6
12	Weight	g	31	31	31	31

Characteristics	
Item	
Operating temperature	-40 to +100°C
Bearing output	Ball bearings
Housing material	Metal

Planetary Gearbox 22GPS

Ø 22mm - 0,5 to 1,5Nm





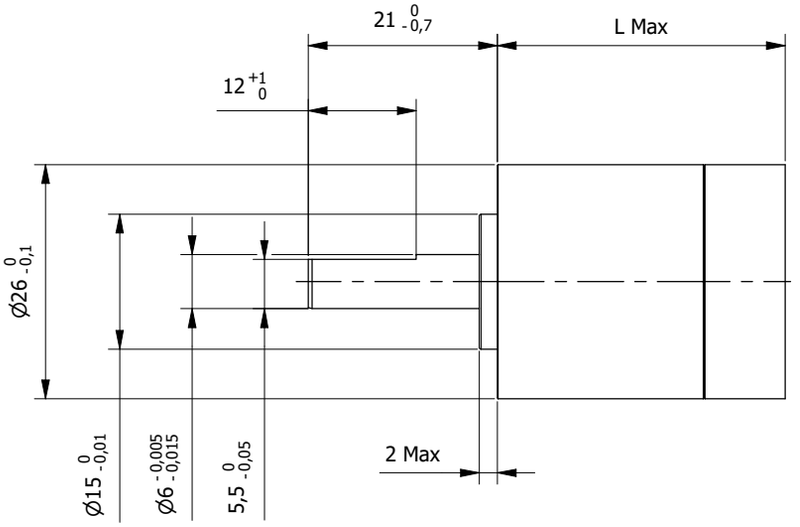
Specification							
	Model		...1N-5,3	...2N-21	...2N-28	...3N-83	...3N-138	...3N-172
1	Stages		1	2	2	3	3	3
2	Reduction Ratio		5,3	21	28	83	138	172
3	Nominal Output Torque	Nm	0,5	0,7	0,7	1,2	1,2	1,2
4	Max. Output Torque	Nm	0,6	0,9	0,9	1,5	1,5	1,5
5	Recommended Input Speed	rpm	8000	10000	10000	12000	12000	12000
6	Max. Input Speed	rpm	10000	12500	12500	15000	15000	15000
7	Efficiency	%	90	81	81	74	74	74
8	Average Backlash no-load	°	0,85	1,05	1,05	1,2	1,2	1,2
9	Max. Axial load (dynamic)	N	40	40	40	40	40	40
10	Max. Radial load (10mm from flange)	N	65	100	100	120	120	120
11	Length (L)	mm	19,9	26,4	26,4	32,2	32,2	32,2
12	Weight	g	45	58	58	67	67	67

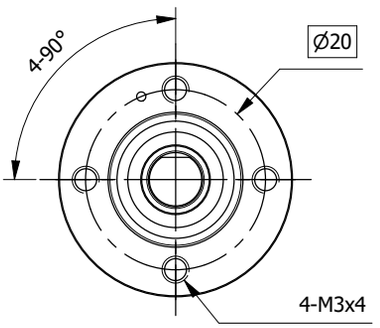
Specification						
	Model		...4N-326	...4N-439	...4N-679	...4N-913
1	Stages		4	4	4	4
2	Reduction Ratio		326	439	679	913
3	Nominal Output Torque	Nm	1,5	1,5	1,5	1,5
4	Max. Output Torque	Nm	1,9	1,9	1,9	1,9
5	Recommended Input Speed	rpm	12000	12000	12000	12000
6	Max. Input Speed	rpm	15000	15000	15000	15000
7	Efficiency	%	66	66	66	66
8	Average Backlash no-load	°	1,35	1,35	1,35	1,35
9	Max. Axial load (dynamic)	N	40	40	40	40
10	Max. Radial load (10mm from flange)	N	120	120	120	120
11	Length (L)	mm	43	43	43	43
12	Weight	g	89	89	89	89

Characteristics	
Item	
Operating temperature	-40 to +100°C
Bearing output	Ball bearings
Housing material	Metal

Planetary Gearbox 26GPS

Ø 26mm - 0,75 to 4,5Nm



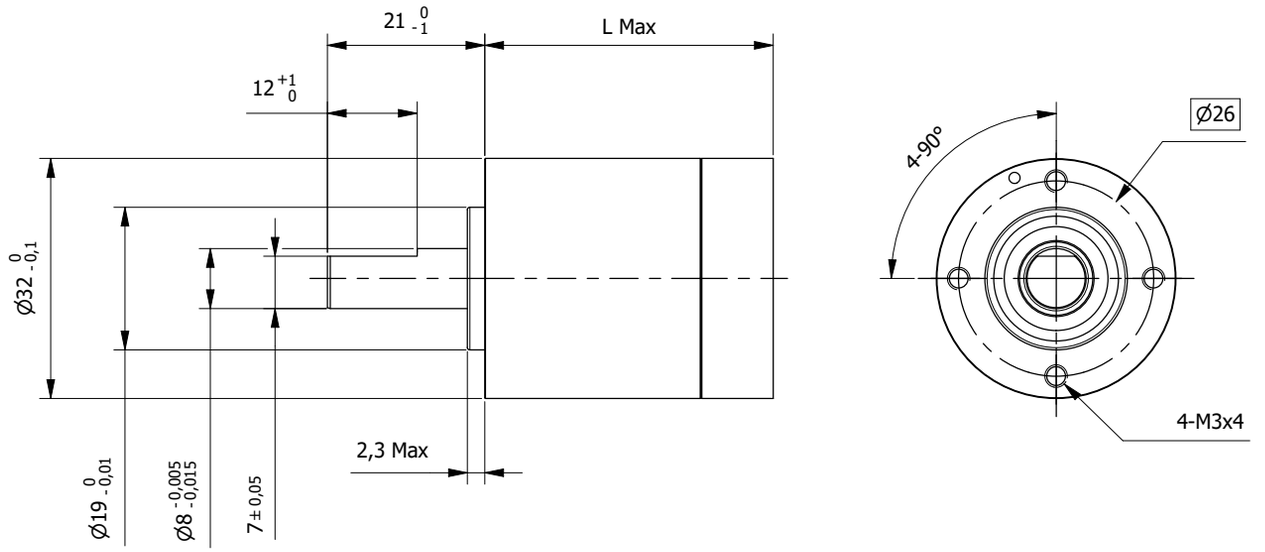


Specification								
	Model		...1N-5,3	...2N-21	...2N-28	...3N-83	...3N-138	...3N-172
1	Stages		1	2	2	3	3	3
2	Reduction Ratio		5,3	21	28	83	138	172
3	Nominal Output Torque	Nm	0,75	2,25	2,25	4,5	4,5	4,5
4	Max. Output Torque	Nm	1,1	3,2	3,2	6,2	6,2	6,2
5	Recommended Input Speed	rpm	7000	8000	8000	10000	10000	10000
6	Max. Input Speed	rpm	8750	10000	10000	12500	12500	12500
7	Efficiency	%	90	78	78	75	75	75
8	Average Backlash no-load	°	0,75	0,95	0,95	1,1	1,1	1,1
9	Max. Axial load (dynamic)	N	80	80	80	80	80	80
10	Max. Radial load (10mm from flange)	N	95	145	145	150	150	150
11	Length (L)	mm	21,3	30,2	30,2	35,5	35,5	35,5
12	Weight	g	75	95	95	105	105	105

Characteristics	
Item	
Operating temperature	-40 to +100°C
Bearing output	Ball bearings
Housing material	Metal

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	2,9
4	Max. Output Torque	Nm	1,6	3,6	3,6	3,6
5	Recommended Input Speed	rpm	6000	7000	7000	7000
6	Max. Input Speed	rpm	7500	8750	8750	8750
7	Efficiency	%	90	78	78	78
8	Average Backlash no-load	°	0,55	0,7	0,7	0,7
9	Max. Axial load (dynamic)	N	110	110	110	110
10	Max. Radial load (10mm from flange)	N	160	180	180	180
11	Length (L)	mm	26,7	36,3	36,3	36,3
12	Weight	g	140	185	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	5
4	Max. Output Torque	Nm	6,25	6,25	6,25
5	Recommended Input Speed	rpm	8000	8000	8000
6	Max. Input Speed	rpm	10000	10000	10000
7	Efficiency	%	75	75	75
8	Average Backlash no-load	°	0,9	0,9	0,9
9	Max. Axial load (dynamic)	N	110	110	110
10	Max. Radial load (10mm from flange)	N	180	180	180
11	Length (L)	mm	43,9	43,9	43,9
12	Weight	g	230	230	230

Characteristics	
Item	
Operating temperature	-40 to +100°C
Bearing output	Ball bearings
Housing material	Metal

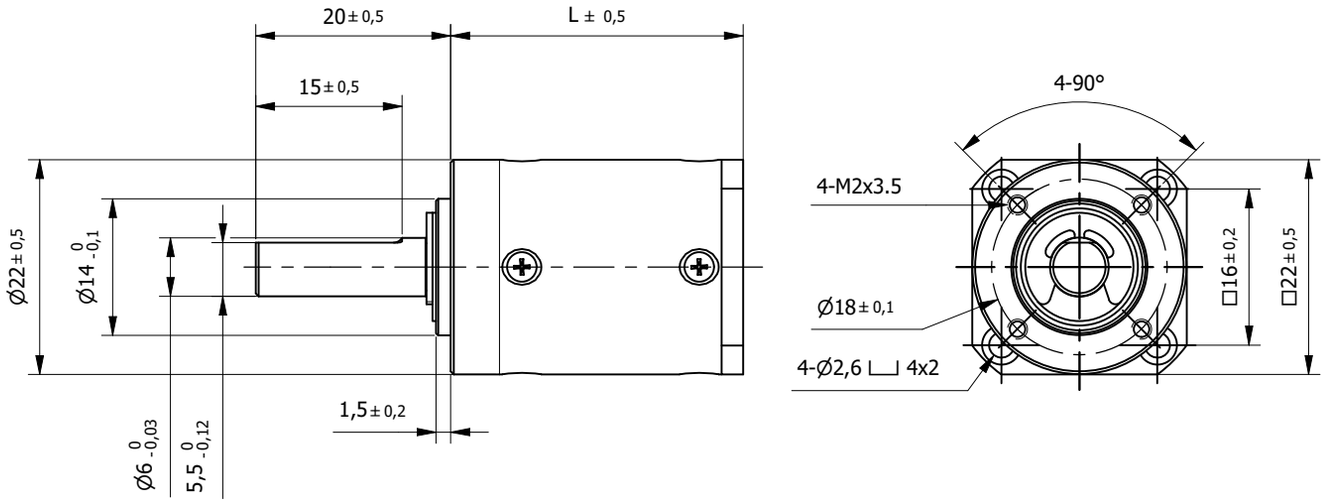
Gearboxes

Planetary Gearboxes

JMS-series

Planetary Gearbox 22JMS

Ø 22mm - 0,6 to 2Nm



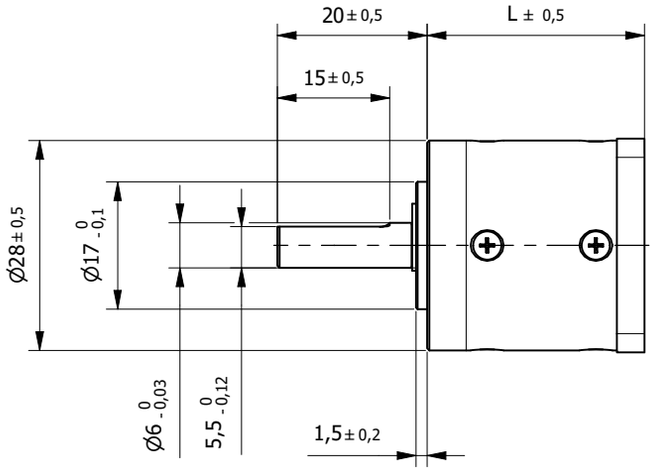
Specification							
	Model		...1 / 3.7	...1 / 5.2	...2 / 14	...2 / 19	...2 / 27
1	Stages		1	1	2	2	2
2	Exact Ratio		3,71	5,18	13,76	19,22	26,83
3	Nominal Output Torque	Nm	0,6	0,6	1	1	1
4	Max. Output Torque	Nm	2	2	3	3	3
5	Recommended Input Speed	rpm	4000	4000	4000	4000	4000
6	Efficiency	%	≈90%	≈90%	≈81%	≈81%	≈81%
7	Backlash at No-load		≤1°	≤1°	≤1,2°	≤1,2°	≤1,2°
8	Length (L)	mm	23,4	23,4	30,0	30,0	30,0
9	Weight	kg	0,031	0,031	0,037	0,037	0,037

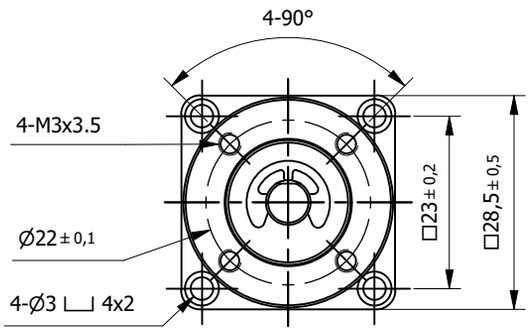
Specification						
	Model		...3 / 51	...3 / 71	...3 / 100	...3 / 139
1	Stages		3	3	3	3
2	Exact Ratio		51,06	71,3	99,55	138,99
3	Nominal Output Torque	Nm	2	2	2	2
4	Max. Output Torque	Nm	6	6	6	6
5	Recommended Input Speed	rpm	4000	4000	4000	4000
6	Efficiency	%	≈73%	≈73%	≈73%	≈73%
7	Backlash at No-load		≤1,5°	≤1,5°	≤1,5°	≤1,5°
8	Length (L)	mm	36,4	36,4	36,4	36,4
9	Weight	kg	0,043	0,043	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
Housing material	Metal

Planetary Gearbox 28JMS

Ø 28mm - 1,2 to 4Nm





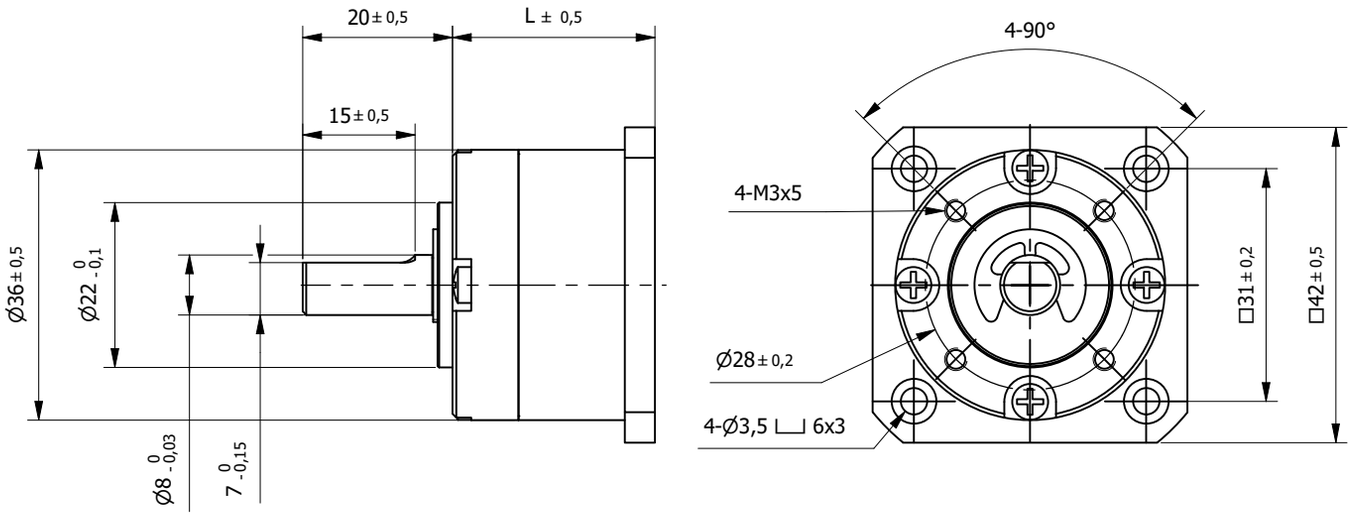
Specification							
	Model		...1 / 3.7	...1 / 5.2	...2 / 14	...2 / 19	...2 / 27
1	Stages		1	1	2	2	2
2	Exact Ratio		3,71	5,18	13,76	19,22	26,83
3	Nominal Output Torque	Nm	1,2	1,2	2	2	2
4	Max. Output Torque	Nm	4	4	6	6	6
5	Recommended Input Speed	rpm	4000	4000	4000	4000	4000
6	Efficiency	%	≈90%	≈90%	≈81%	≈81%	≈81%
7	Backlash at No-load		≤1°	≤1°	≤1,2°	≤1,2°	≤1,2°
8	Length (L)	mm	29,0	29,0	36,1	36,1	36,1
9	Weight	kg	0,075	0,075	0,097	0,097	0,097

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	4	4	4	4
4	Max. Output Torque	Nm	12	12	12	12
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	43	43	43	43
9	Weight	kg	0,119	0,119	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
Housing material	Metal

Planetary Gearbox 36JMS

Ø 36mm - 2 to 6Nm



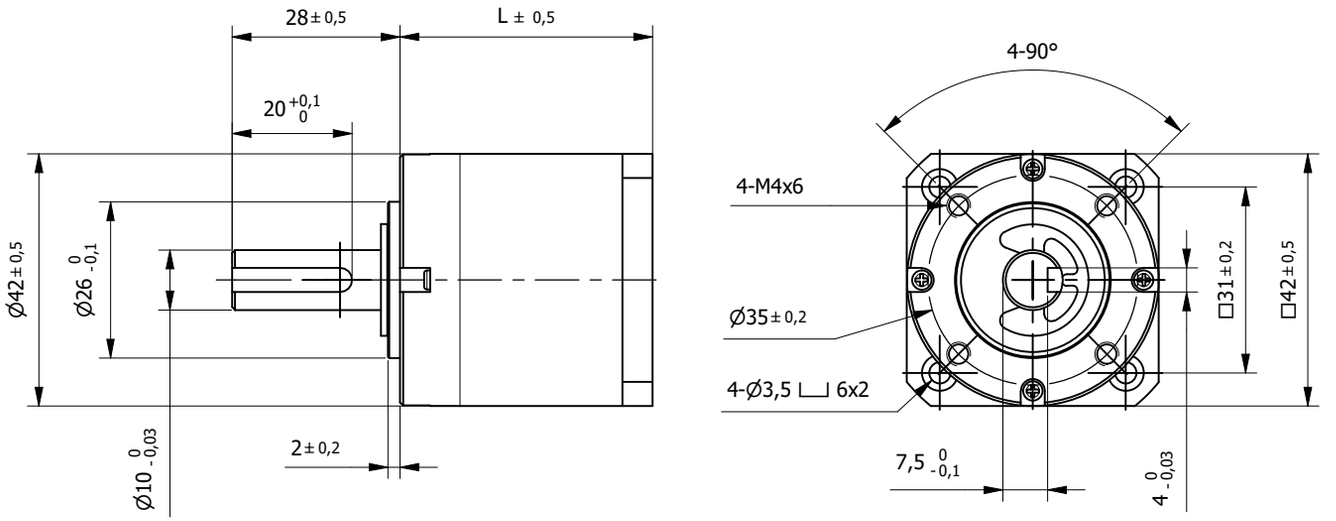
Specification							
	Model		...1 / 3.7	...1 / 5.2	...2 / 14	...2 / 19	...2 / 27
1	Stages		1	1	2	2	2
2	Exact Ratio		3,71	5,18	13,76	19,22	26,83
3	Nominal Output Torque	Nm	2	2	3	3	3
4	Max. Output Torque	Nm	6	6	9	9	9
5	Recommended Input Speed	rpm	4000	4000	4000	4000	4000
6	Efficiency	%	≈90%	≈90%	≈81%	≈81%	≈81%
7	Backlash at No-load		≤1°	≤1°	≤1,2°	≤1,2°	≤1,2°
8	Length (L)	mm	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	6
4	Max. Output Torque	Nm	18	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
Housing material	Metal - powder metal

Planetary Gearbox 42JMS

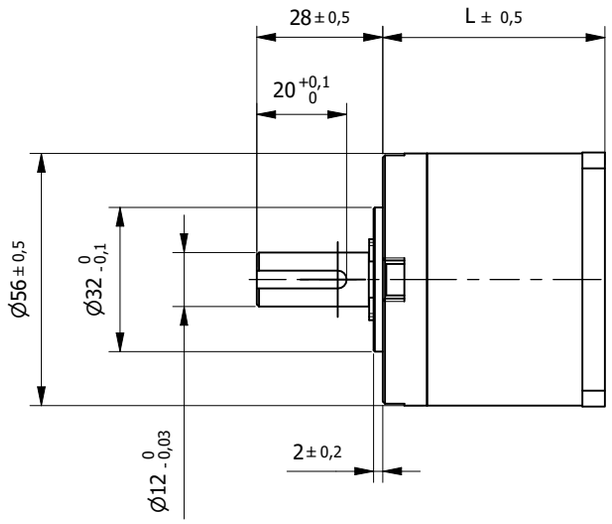
Ø 42mm - 3 to 10Nm

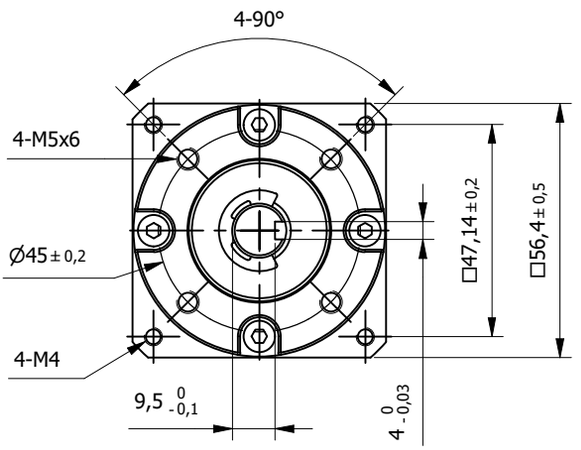


Specification							
	Model		...1 / 3.7	...1 / 5.2	...2 / 14	...2 / 19	...2 / 27
1	Stages		1	1	2	2	2
2	Exact Ratio		3,71	5,18	13,76	19,22	26,83
3	Nominal Output Torque	Nm	3	3	5	5	5
4	Max. Output Torque	Nm	9	9	15	15	15
5	Recommended Input Speed	rpm	4000	4000	4000	4000	4000
6	Efficiency	%	≈90%	≈90%	≈81%	≈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	10
4	Max. Output Torque	Nm	30	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
Housing material	Metal - powder metal





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
Housing material	Metal

Gearboxes

Gearboxes

Spur gearboxes

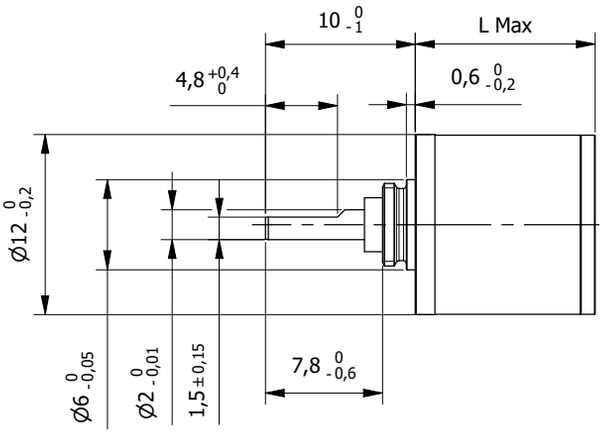
Advantages at a glance
Compact & simple design
Cost-efficient
Best for low-torque/speed applications

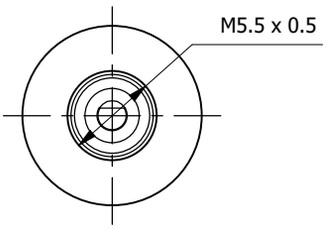
Our extensive spur gearbox range offers good torque to size ratios coupled with high efficiencies. If the standard configuration does not meet the application requirement then a customized design could be proposed, even for low volumes.

Spur gearboxes - NEW	Torque* (Nm)	
12GSS	0,01...0,025	480
16GSS	0,01...0,03	481
16GSP	0,01...0,03	482
16GST	0,06...0,10	483
24GSP	0,1	484

*Nominal Output Torque

Ø 12mm - 0,01 to 0,025Nm



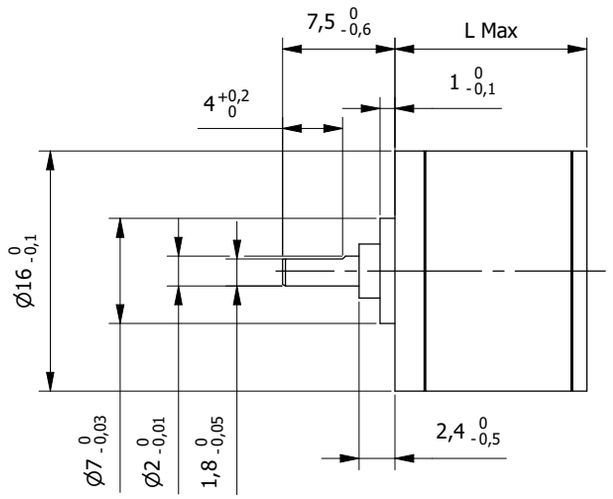


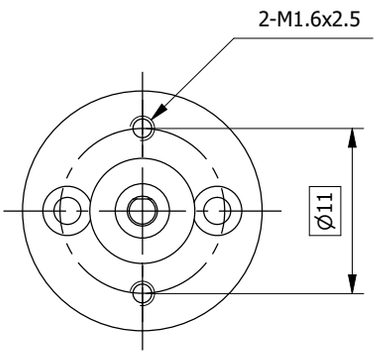
Specification						
	Model		...2-6,4	...3-22	...4-76	...5-141
1	Stages		2	3	4	5
2	Reduction Ratio		6,4	22	76	141
3	Nominal Output Torque	Nm	0,01	0,015	0,02	0,025
4	Max. Output Torque	Nm	0,03	0,035	0,04	0,045
5	Recommended Input Speed	rpm	8000	8000	8000	8000
6	Efficiency	%	81	73	66	59
7	Mass Inertia	gcm²	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
Housing material	Metal

Spur Gearbox 16GSS

Ø 16mm - 0,015 to 0,035Nm



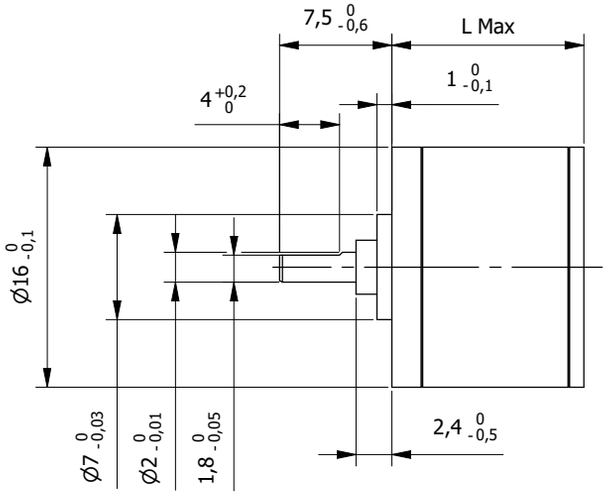


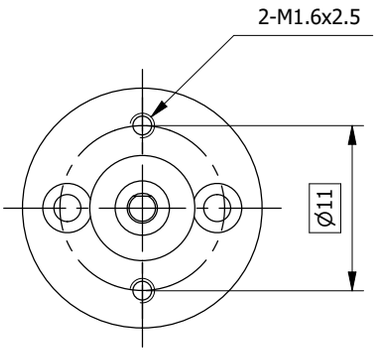
Specification						
	Model		...2-9,1	...3-31	...4-76	...4-141
1	Stages		2	3	4	4
2	Reduction Ratio		9,1	31	76	141
3	Nominal Output Torque	Nm	0,015	0,025	0,035	0,035
4	Max. Output Torque	Nm	0,1	0,1	0,1	0,1
5	Recommended Input Speed	rpm	8000	8000	8000	8000
6	Efficiency	%	81	73	66	66
7	Mass Inertia	gcm²	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
Housing material	Metal

Spur Gearbox 16GSP
Plastic version

Ø 16mm - 0,01 to 0,03Nm



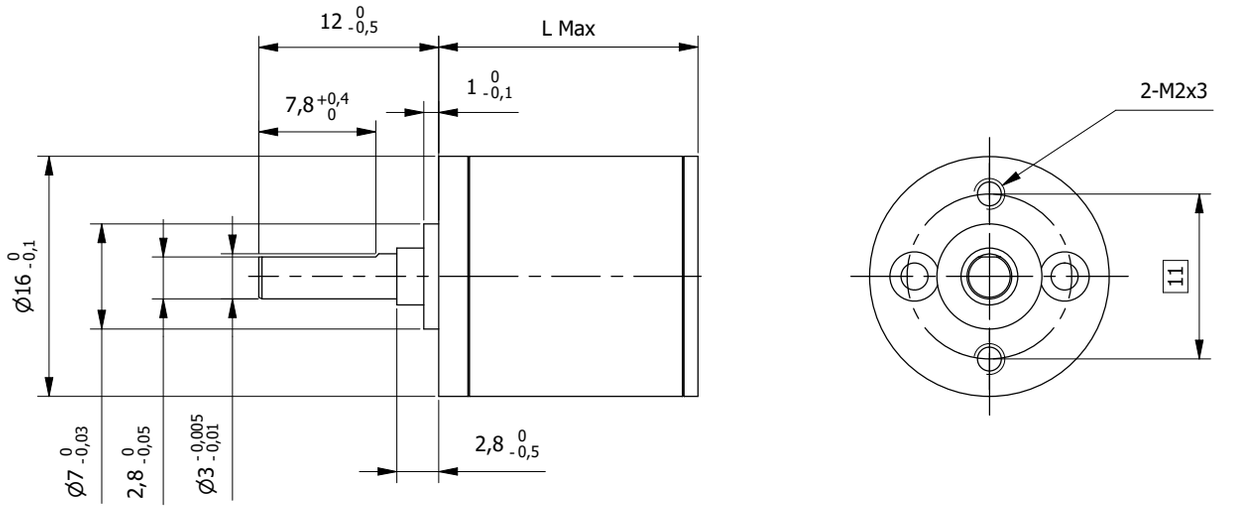


Specification							
	Model		...2-6,4	...2-9,1	...3-31	...4-76	...4-141
1	Stages		2	2	3	4	4
2	Reduction Ratio		6,4	9,1	31	76	141
3	Nominal Output Torque	Nm	0,01	0,01	0,02	0,03	0,03
4	Max. Output Torque	Nm	0,1	0,1	0,1	0,1	0,1
5	Recommended Input Speed	rpm	8000	8000	8000	8000	8000
6	Efficiency	%	81	81	73	66	66
7	Mass Inertia	gcm²	0,003	0,003	0,003	0,003	0,003
8	Average Backlash no-load	°	1	1	1	1,2	1,2
9	Max. Axial load (dynamic)	N	2	2	2	2	2
10	Max. Radial load (6,5mm from flange)	N	1	1	1	1	1
11	Length (L)	mm	11,8	11,8	12,8	14,8	14,8
12	Weight	g	9	9	9,8	10,2	10,2

Characteristics	
Item	
Max. Press fit force	15N
Operating temperature	-15 to +80°C
Bearing output	Sleeve bearings
Housing material	Plastic

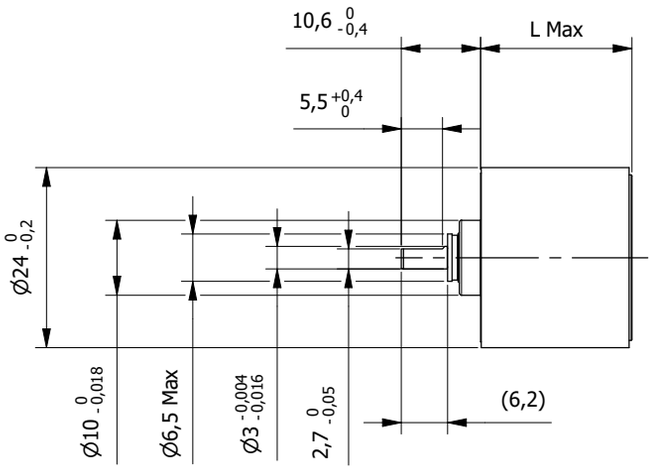
Spur Gearbox 16GST
Reinforced

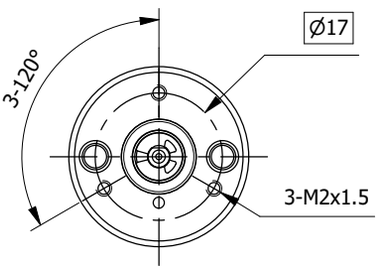
Ø 16mm - 0,06 to 0,1Nm



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
Housing material	Metal - reinforced





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	0,1
4	Max. Output Torque	Nm	0,15	0,15	0,15	0,15	0,15	0,15
5	Recommended Input Speed	rpm	4000	4000	4000	4000	4000	4000
6	Efficiency	%	81	66	66	66	66	53
7	Mass Inertia	gcm²	0,008	0,01	0,008	0,007	0,006	0,006
8	Average Backlash no-load	°	1	2	2	2	2	3
9	Max. Axial load (dynamic)	N	8	8	8	8	8	8
10	Max. Radial load (8mm from flange)	N	5	5	5	5	5	5
11	Length (L)	mm	16,5	20,2	20,2	20,2	20,2	24
12	Weight	g	25	28	28	28	28	30

Characteristics	
Item	
Max. Press fit force	500N
Operating temperature	-15 to +80°C
Bearing output	Sleeve bearings
Housing material	Plastic

Gearboxes

Encoders

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.

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 swicth back and forth between low and high signal level.
Supply Voltage	Defines the range of supply voltage necssary 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 input	Voltage value of the low level signal.
High level input	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.

Glossary

Encoders

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 E4 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.

E4

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.

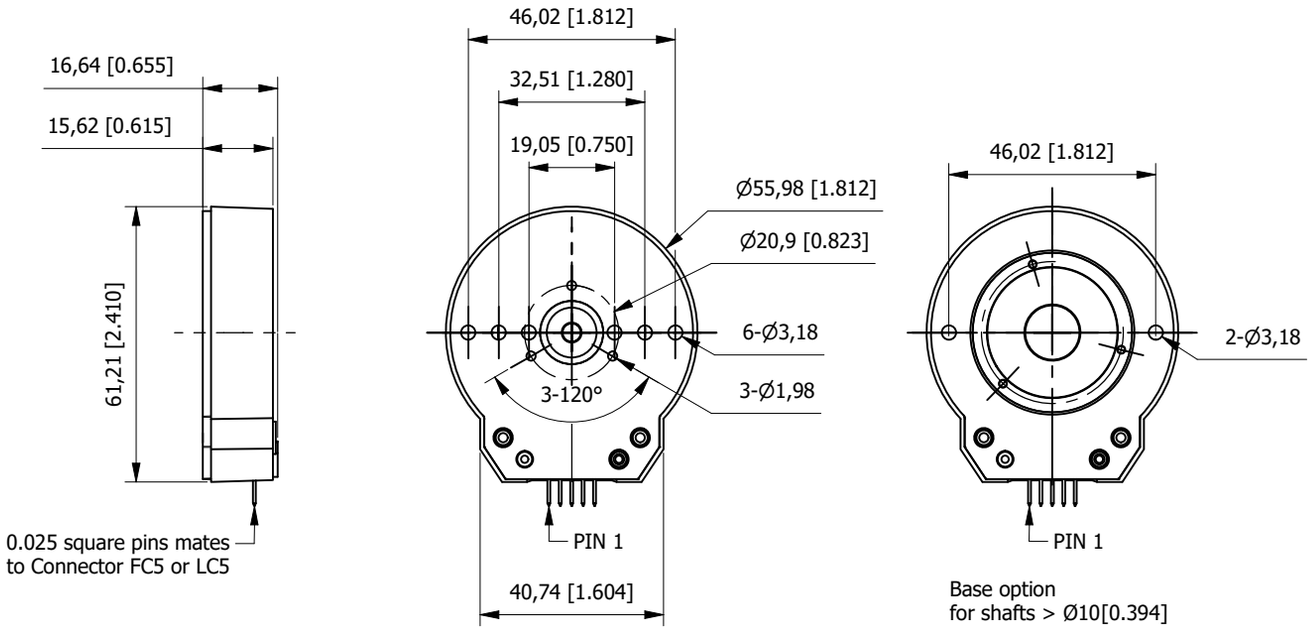
E5

Technical introduction

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 Input	Vmax	0,5
High Level Input	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

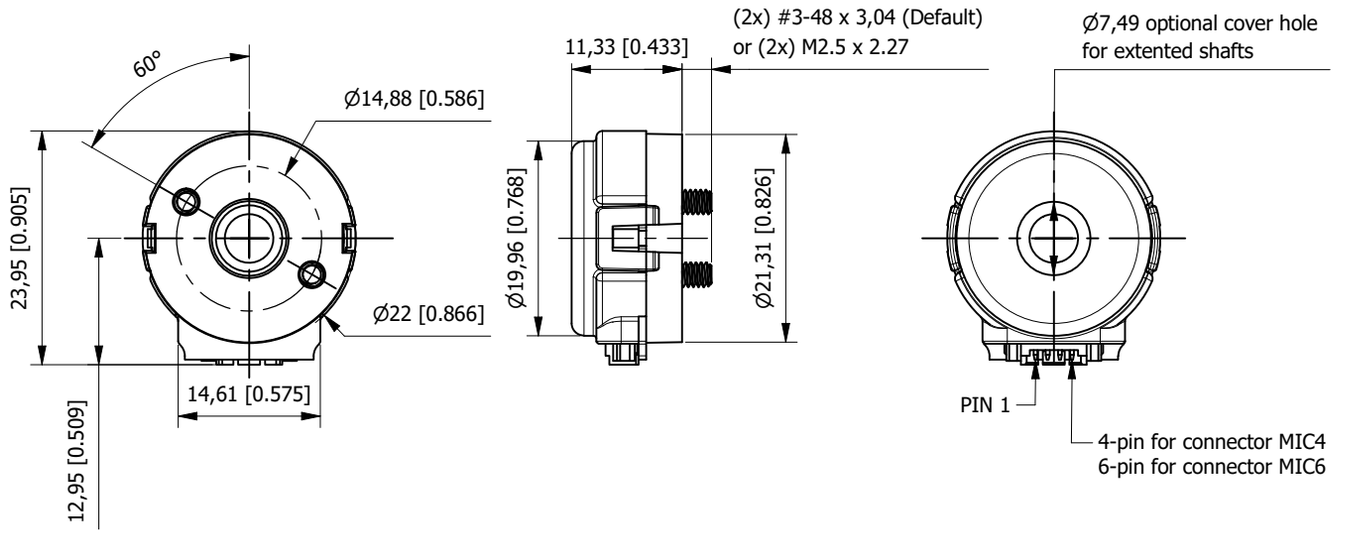
Connection	
Pin	
1	Ground
2	Index
3	A channel
4	+5VDC power
5	B channel
Mating Connector	CON-C5 or CON-LC5

Available with different cable options

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 E4

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 Input	Vmax	0,4	0,6
High Level Input	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

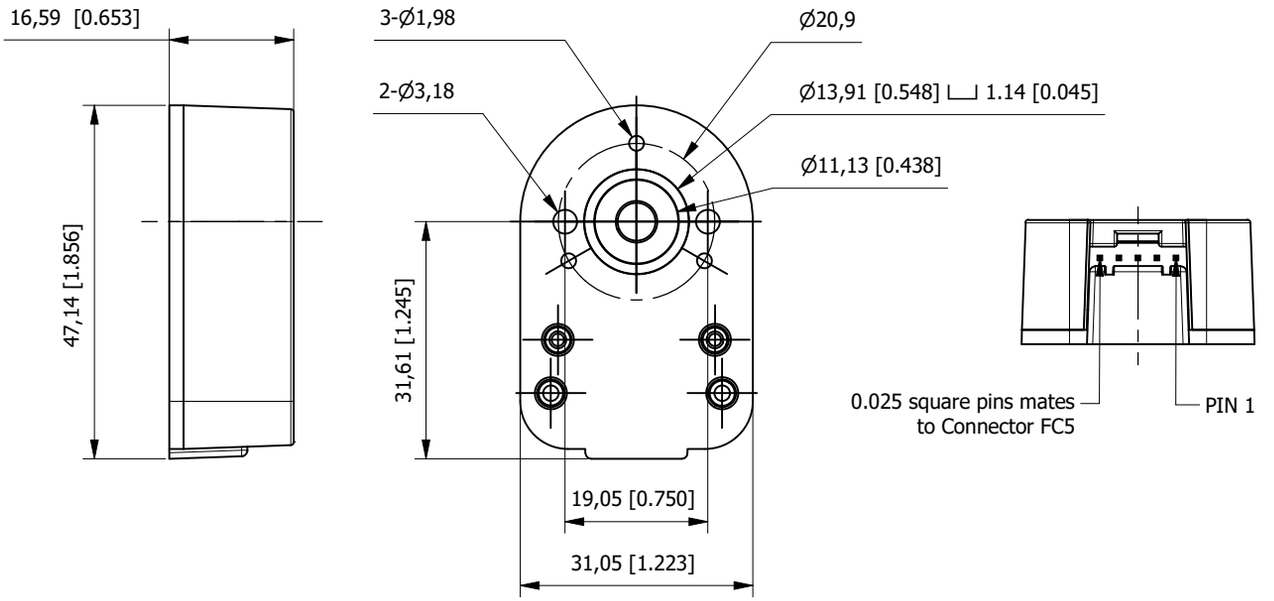
Connection		
Pin	Single-Ended	Differential
1	+5VDC power	Ground
2	A channel	A channel
3	Ground	A- channel
4	B channel	+5VDC power
5		B channel
6		B- channel
Mating Connector	CON-MIC4	CON-MIC6

Available with different cable options

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

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
Supply Voltage	V	5 ±10%	5 ±10%
Supply Current (CPR <500, no load)	mA	27-33	29-36
Supply Current (CPR ≥500 and <2000, no load)	mA	54-62	56-65
Supply Current (CPR ≥2000, no load)	mA	72-85	74-88
Low Level Input	Vmax	0,5	0,4
High Level Input	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

Encoders

Controllers — Drives

Brushless DC motor Controllers

p.507

Stepper motor Controllers

p.511

Controllers — Drives

* 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.
Motor Power	Maximum motor power managed by the drive. Only for BLDC motors drives.
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.

Glossary

With a 20-year-old experience in motor drives design and development, our company E&D (Electronics & Drive), a joint-venture with italian Ever elettronica, can provide solutions to accomplish every customers' need: our drives portfolio can cover a wide range of different motors, from Stepper to BLDC motors.

Our portfolio is divided in Stepper Drives (Libra, Orion, Aries, Sagittarius, Aquarius and Andromeda) for 2-phases stepper motors with phase current up to 7.1A rms and Brushless Drives (Taurus and Gemini) for 3-phases brushless motors with phase current up to 10.0A 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 come together with two software: ED Studio and ED Space. ED 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. ED Space contains all the features of ED 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 ED specific Interface kit.

Our 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

Technical introduction

Fieldbuses are more and more used and preferred over standard control methods, because of the high flexibility and the possibility to cover long distances. All E&D 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. E&D offers five fieldbuses: CANopen, RS485 Modbus-RTU, Ethernet Modbus TCP, EtherCAT and Profinet.

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

Brushless DC motor

Controllers – Drives

Advantages at a glance
Position, Speed and Torque control
Analogue, fieldbus or programmable
Flexible configuration

Brushless DC motor Controllers – Drives	Current* (A rms)	
Taurus	up to 3	508
Gemini	up to 10	509

With a 20-year-old experience in motor drives design and development, our company E&D (Electronics & Drive), a joint-venture with italian Ever elettronica, can provide solutions to accomplish every customers' need: our drives portfolio can cover a wide range of different motors.
Our Brushless Drives (Taurus and Gemini) are specifically developed for 3-phases brushless motors with phase current up to 10.0A rms.
All our drives feature ARM Core M4 Technology and are capable to drive motors with smooth and silent movements.

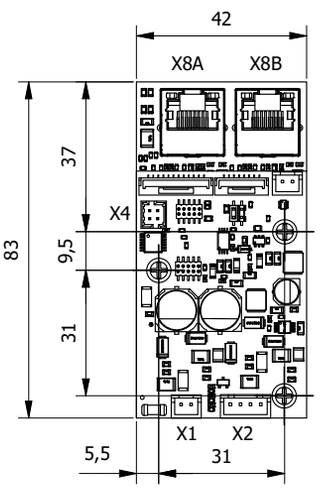
TAURUS	GEMINI
Benefits	**Benefits**
• Compact dimensions • Digital I/O and analogue input • Programmable • Available with RS485 Modbus RTU, CANopen, EtherCAT	• All four fieldbuses available • Digital I/O and up to 2 analogue inputs • Programmable
Characteristics	**Characteristics**
• Smallest BLDC drive of the portfolio • Current up to 3.0A rms	• Only BLDC drive of the portfolio available with Ethernet Modbus TCP • Phase Current up to 10.0A rms
Best Used for	**Best Used for**
• Complex applications where the space available for the drive is limited • Applications that do not require high current	• Complex applications where some intelligence can be implemented inside the drive

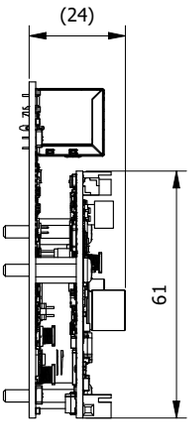
* Phase Current

Drive for Brushless Motor Taurus B025O04
Motion Controller

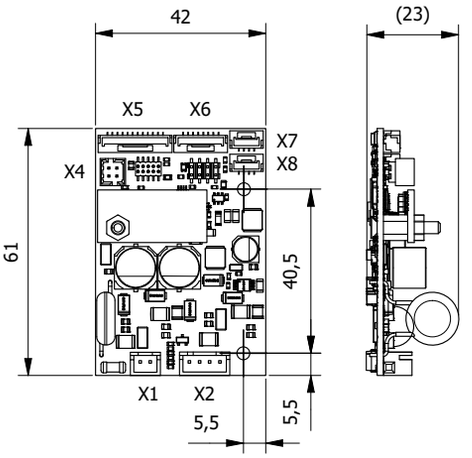
up to 3A rms

X1: Power Connections
X2: Motor Connections
X4: Service Serial Interface
X5: Inputs and Outputs
X6: Feedback Connections
X7/X8 (all versions except for EtherCAT) : CommunicationInterface and Logic Power Supply
X7 (only EtherCAT): Logic Power Supply
X8 (only EtherCAT): Communication Interface





EtherCAT Interface



CANopen & RS485 Modbus-RTU Interface

Electrical Data			
	Item		
1	Phase Current	A rms	up to 3
2	Peak Current	A peak	4,2
3	Power Supply	Vdc	12÷36
4	Logic Power Supply (mandatory)	Vdc	12÷28
5	Motor Power	W	120
6	Chopper Frequency	kHz	40

Characteristics	
Item	
Weight	120g
Closed-loop	Available
Protections	Over current, Over/Under Voltage, Overheating, Short circuit
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

Interface Control Mode				
Model	...M001-S200	...C001-S200	...C001-S402	...E001-S402
Fieldbus	RS485 Modbus RTU	CANopen	CANopen	EtherCAT
Programmable	Programming and real time debugging		Only configuration	
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)			

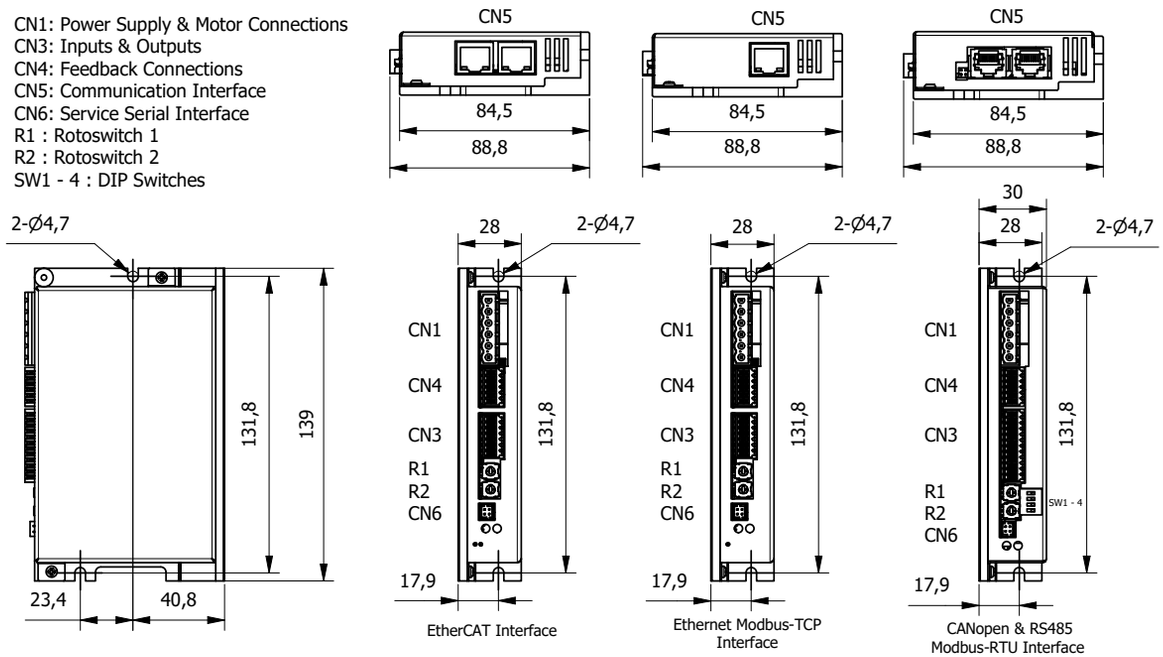
Connection				
Model	...M001-S200	...C001-S200	...C001-S402	...E001-S402
Digital Inputs (not isolated)	4	4	4	4
Digital Outputs (not isolated)	3	3	3	3
Analog Inputs	1	1	1	1
Encoder Input	5V Single-Ended (TTL/CMOS) or 24V Push-Pull incremental encoder (not isolated)			

Standard Combination
Motor
All motor with Phase Current up to 3A rms

Drive for Brushless Motor Gemini B400B30
Motion Controller

up to 10A rms

CN1: Power Supply & Motor Connections
CN3: Inputs & Outputs
CN4: Feedback Connections
CN5: Communication Interface
CN6: Service Serial Interface
R1 : Rotoswitch 1
R2 : Rotoswitch 2
SW1 - 4 : DIP Switches



Electrical Data			
	Item		
1	Phase Current	A rms	up to 10
2	Peak Current	A peak	28 (for 5s.)
3	Power Supply	Vdc	12÷48
4	Logic Power Supply (optional)	Vdc	12÷48
5	Motor Power	W	up to 400
6	Chopper Frequency	kHz	40

Characteristics	
Item	
Weight	150g
Closed-loop	Available
Protections	Over current, Over/Under Voltage, Overheating, Short circuit
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

Interface Control Mode					
Model	...M001-S200	...T001-S200	...C001-S200	...C001-S402	...E001-S402
Fieldbus	RS485 Modbus RTU	Ethernet Modbus TCP	CANopen	CANopen	EtherCAT
Programmable	Programming and real time debugging			Only configuration	
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode, Clock direction mode				

Connection					
Model	...M001-S200	...T001-S200	...C001-S200	...C001-S402	...E001-S402
Digital Inputs (opto-coupled)	6	4	6	6	4
Digital Outputs (opto-coupled)	3	3	3	3	3
Analog Inputs	2	---	2	2	---
Encoder Input	5V Differential (RS422) or 5V Single-Ended (TTL/CMOS) incremental encoder (not isolated)				
Hall Input	5V Single-Ended (TTL/CMOS) hall effect sensors				

Standard Combination
Motor
All motor with Phase Current up to 10A rms

Stepper motor

Controllers – Drives

Advantages at a glance
Position, Speed and Torque control
Analogue, fieldbus or programmable
Flexible configuration

With a 20-year-old experience in motor drives design and development, our company E&D (Electronics & Drive), a joint-venture with italian Ever elettronica, can provide solutions to accomplish every customers' need: our drives portfolio can cover a wide range of different motors. Our Stepper Drives (Libra, Orion, Aries and Sagittarius) are specifically developed for 2-phases stepper motors with phase current up to 7.1A rms. All our drives feature ARM Core M4 Technology and are capable to drive motors with smooth and silent movements.

Stepper motor Controllers – Drives	Current* (A rms)	
Orion	up to 3	512
Libra SBD203	up to 3,2	513
Libra SBD207	up to 7,1	514
Aries	up to 4,2	515
Sagittarius	up to 7,1	516
Aquarius SBD204	up to 4,2	517
Aquarius SBD207	up to 7,1	518
Andromeda	up to 8.5	519

LIBRA

Benefits

- Price-performance
- Simple Usage
- Clock & Direction Control

Characteristics

- No fieldbus
- SBA207N001-S200 programmable
- Phase Current up to 7.1A rms

Best Used for

- Simple application where price is critical
- All applications where a master controls everything - no need to have a complex drivehave a complex drive

ORION

Benefits

- Compact dimensions
- Digital I/O and analogue input
- Programmable
- Available with RS485 Modbus RTU, CANopen, EtherCAT

Characteristics

- Smallest stepper drive of the portfolio
- Phase Current up to 3.0A rms

Best Used for

- Complex applications where the space available for the drive is limited
- Applications that do not require high current

ARIES

Benefits

- Compact dimensions
- Simple Usage
- EherCAT control

Characteristics

- Only need basic configuration - everything else is managed by the EtherCAT master
- Phase Current up to 4.2A rms

Best Used for

- Perfect for applications already built around the EtherCAT bus

SAGITTARIUS

Benefits

- All four fieldbuses available
- Digital I/O and up to 2 analogue inputs
- Programmable

Characteristics

- Only stepper drive of the portfolio available with Ethernet Modbus TCP
- Phase Current up to 7.1A rms

Best Used for

- Complex applications where some intelligence can be implemented inside the drive

AQUARIUS

Benefits

- Profinet fieldbus available
- Digital I/O and up to 2 analogue inputs
- Programmable

Characteristics

- Smallest Stepper drive with cover of the portfolio
- Phase Current up to 7.1A rms

Best Used for

- Complex applications where the space available for the drive is limited

ANDROMEDA

Benefits

- High current
- Digital I/O and up to 2 analogue inputs
- Programmable

Characteristics

- Most Powerful Stepper drive of the portfolio
- Phase Current up to 8.5A rms

Best Used for

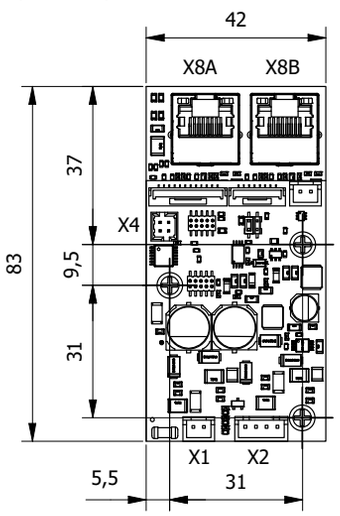
- Complex applications where some intelligence can be implemented inside the drive and where the motor size is important

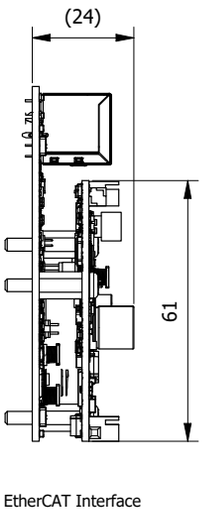
* Phase Current

Drive for Stepper Motor Orion SOD203
Motion Controller

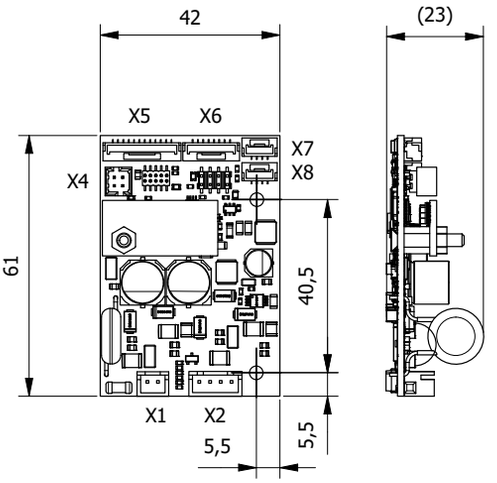
up to 3A rms

X1: Power Connections
X2: Motor Connections
X4: Service Serial Interface
X5: Inputs and Outputs
X6: Feedback Connections
X7/X8 (all versions except for EtherCAT) : CommunicationInterface and Logic Power Supply
X7 (only EtherCAT): Logic Power Supply
X8 (only EtherCAT): Communication Interface





EtherCAT Interface



CANopen & RS485 Modbus-RTU Interface

Electrical Data			
	Item		
1	Phase Current	A rms	up to 3
2	Peak Current	A peak	4,2
3	Power Supply	Vdc	12÷36
4	Logic Power Supply (mandatory)	Vdc	12÷28
5	Chopper Frequency	kHz	40

Characteristics	
Item	
Weight	120g
Closed-loop	Available
Protections	Over current, Over/Under Voltage, Overheating, Short circuit
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

Interface Control Mode				
Model	...M001-S200	...C001-S200	...C001-S402	...E001-S402
Fieldbus	RS485 Modbus RTU	CANopen	CANopen	EtherCAT
Programmable	Programming and real time debugging		Only configuration	
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)			

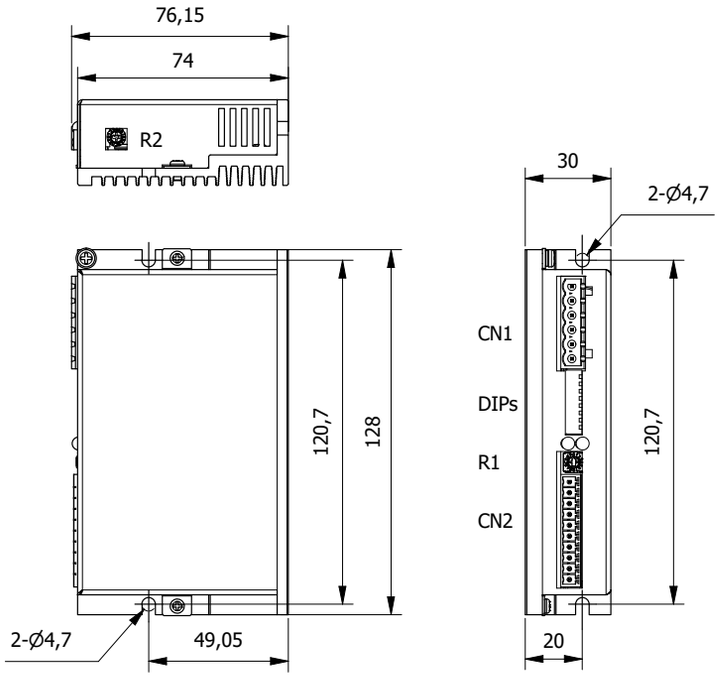
Connection				
Model	...M001-S200	...C001-S200	...C001-S402	...E001-S402
Digital Inputs (not isolated)	4	4	4	4
Digital Outputs (not isolated)	3	3	3	3
Analog Inputs	1	1	1	1
Encoder Input	5V Single-Ended (TTL/CMOS) or 24V Push-Pull incremental encoder (not isolated)			

Standard Combination
Motor
All motor with Phase Current up to 3A rms

Drive for Stepper Motor Libra SBD203
Motion Controller

up to 3,2A rms

CN1: Power Supply
CN2: Motor Connections



Electrical Data				
	Model		...N001-S100	...N002-S100
1	Phase Current	A rms	up to 3	up to 3,2
2	Peak Current	A peak	4,2	4,5
3	Power Supply	Vdc	12÷36	24÷80
4	Chopper Frequency	kHz	40	40

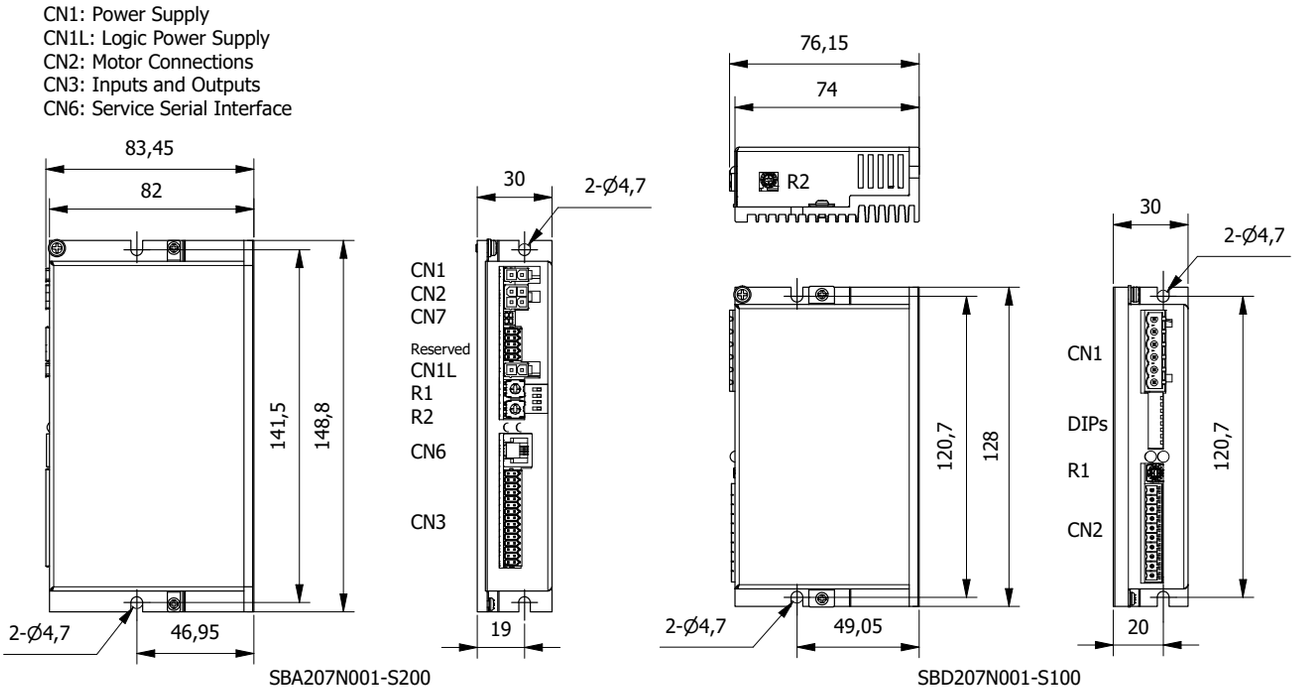
Characteristics	
Item	
Weight	290g
Closed-loop	NOT available
Protections	Over current, Over/Under Voltage, Overheating, Short circuit
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing

Interface Control Mode	
Item	
Control Mode	Clock & Direction
Operating mode	Step resolution: from Fullstep to 1/256 step (emulated)

Standard Combination
Motor
All motor with Phase Current up to 3,2A rms

Drive for Stepper Motor Libra SBD207
Motion Controller

up to 7,1A rms



Electrical Data				
	Model		...N001-S100	...N001-S200
1	Phase Current	A rms	up to 7,1	up to 7,1
2	Peak Current	A peak	10	10
3	Power Supply		24÷80 VDC	18÷56 VAC
4	Chopper Frequency	kHz	40	40

Characteristics	
Item	
Weight	290g
Closed-loop	Available ONLY for ...N001-S200
Protections	Over current, Over/Under Voltage, Overheating, Short circuit
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

Interface Control Mode		
Model	...N001-S100	...N001-S200
Control Mode	Clock & Direction	Clock & Direction
Programmable	---	Programming and real time debugging
Operating mode	Step resolution: from Fullstep to 1/256 step (emulated)	

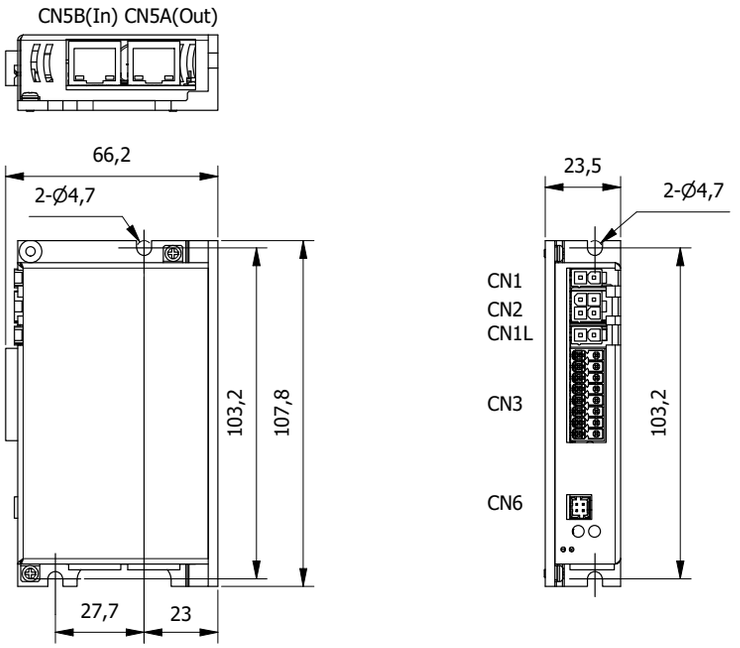
Connection		
Model	...N001-S100	...N001-S200
Digital Inputs (opto-coupled)	---	4
Digital Outputs (opto-coupled)	---	2
Analog Inputs	---	----

Standard Combination
Motor
All motor with Phase Current up to 7,1A rms

Drive for Stepper Motor Aries SBD204
Motion Controller

up to 4,2A rms

CN1: Power Supply
CN1L: Logic Power Supply
CN2: Motor Connections
CN3: Inputs and Outputs
CN5: Communication Interface
CN6: Service Serial Interface



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

Characteristics	
Item	
Weight	150g
Closed-loop	NOT available
Protections	Over current, Over/Under Voltage, Overheating, Short circuit
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

Interface Control Mode	
Model	...E001-S402
Fieldbus	EtherCAT
Programmable	Only configuration
Operating mode	Stepless Control Technology (65536 emulated positions per turn)

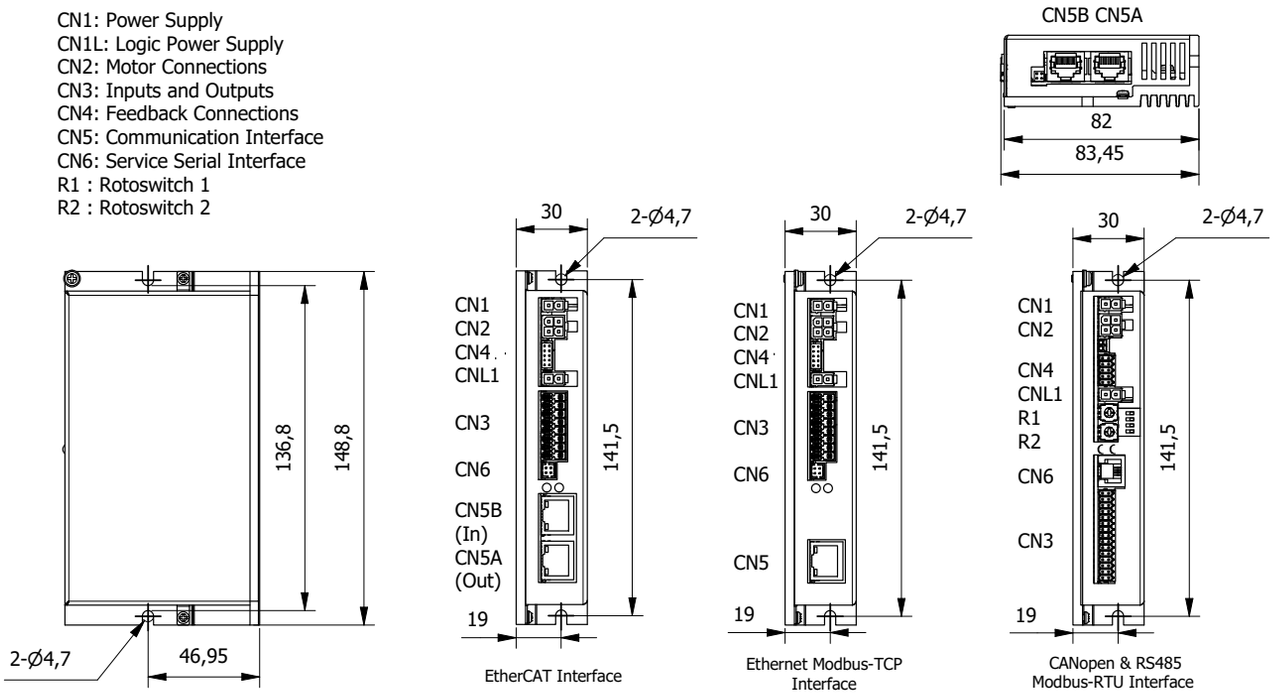
Connection	
Model	...E001-S402
Digital Inputs (opto-coupled)	4
Digital Outputs (opto-coupled)	2
Analog Inputs	---

Standard Combination
Motor
All motor with Phase Current up to 4,2A 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
R1 : Rotoswitch 1
R2 : Rotoswitch 2



Electrical Data			
	Item		
1	Phase Current	A rms	up to 7,1
2	Peak Current	A peak	10
3	Power Supply		18÷56Vac or 24÷80Vdc
4	Logic Power Supply (optional)	Vdc	24
5	Chopper Frequency	kHz	40

Characteristics	
Item	
Weight	450g
Closed-loop	Available
Protections	Over current, Over/Under Voltage, Overheating, Short circuit
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

Interface Control Mode						
Model	...T001-S200	...M001-S200	...C001-S200	...C001-S402	...E001-S402	...EA02-S402
Fieldbus	Ethernet ModBus TCP	RS485 Modbus RTU	CANopen	CANopen	EtherCAT	EtherCAT
Programmable	Programming and real time debugging			Only configuration		
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)					

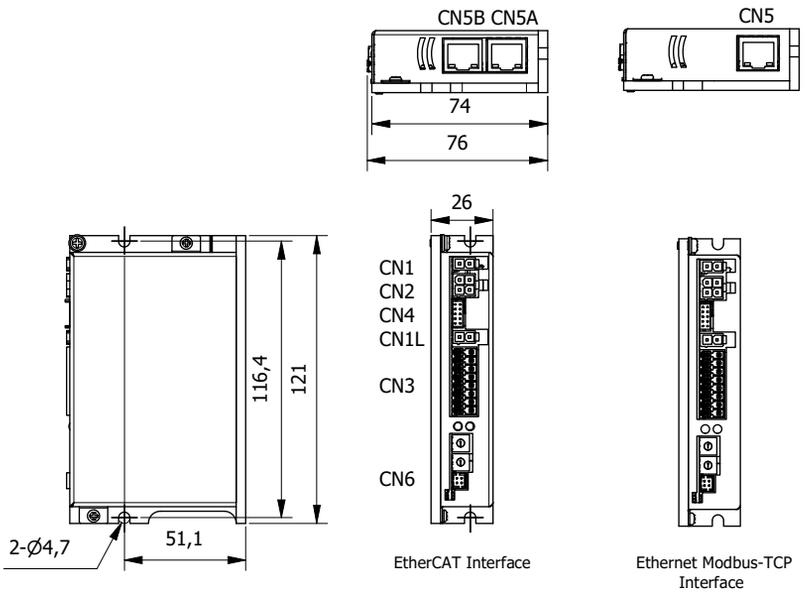
Connection						
Model	...T001-S200	...M001-S200	...C001-S200	...C001-S402	...E001-S402	...EA02-S402
Digital Inputs (opto-coupled)	4	4	4	4	4	4
Digital Outputs (opto-coupled)	2	2	2	2	2	2
Analog Inputs		2	2	2		
Encoder Input	5V Differential (RS422) or 5V Single-Ended (TTL/CMOS) incremental encoder (not isolated)					5V BiSS-C or SSI absolute encoder
Encoder Output	5V Differential (RS422) (not isolated)					

Standard Combination
Motor
All motor with Phase Current up to 7.1A rms

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				
	Model		...T001-S200	...E002-S402
1	Phase Current	A rms	up to 4,2	up to 4,2
2	Peak Current	A peak	6	6
3	Power Supply	Vdc	12÷48	12÷48
4	Logic Power Supply (optional)	Vdc	12÷48	12÷48
5	Chopper Frequency	kHz	40	40

Characteristics	
Item	
Weight	350g
Closed-loop	Available
Protections	Over current, Over/Under Voltage, Overheating, Short circuit
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

Interface Control Mode		
Model	...T001-S200	...E002-S402
Fieldbus	Ethernet ModBus TCP	EtherCAT (DS402)
Programmable	Programming and real time debugging	Only configuration
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)	

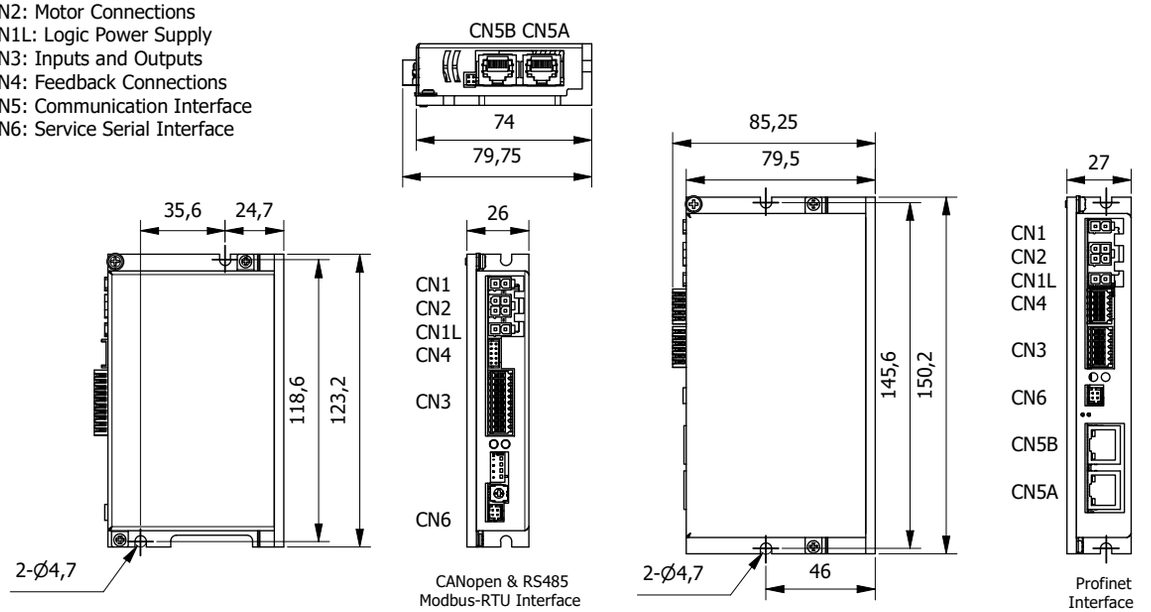
Connection		
Model	...T001-S200	...E002-S402
Digital Inputs (opto-isolated)	4	4
Digital Outputs (opto-isolated)	2	2
Encoder Input	5V Differential (RS422) or 5V Single-Ended (TTL/CMOS) incremental encoder	
Encoder Output	5V Differential (RS422) (not isolated)	

Standard Combination
Motor
All motor 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

Characteristics	
Item	
Weight	280g
Closed-loop	Available
Protections	Over current, Over/Under Voltage, Overheating, Short circuit
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

Interface Control Mode				
Model	...M001-S200	...C001-S200	...P001-S200	...C001-S402
Fieldbus	RS485 Modbus RTU	CANopen	Profinet	CANopen (DS402)
Programmable	Programming and real time debugging			Only configuration
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)			

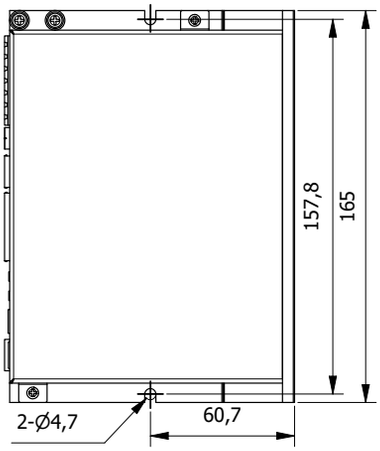
Connection				
Model	...M001-S200	...C001-S200	...P001-S200	...C001-S402
Digital Inputs (opto-coupled)	4	4	4	4
Digital Outputs (opto-coupled)	3	3	2	3
Analog Inputs	2	2	0	2
Encoder Input	5V Differential (RS422) or 5V Single-Ended (TTL/CMOS) incremental encoder			
Encoder Output	5V Differential (RS422) (not isolated)			

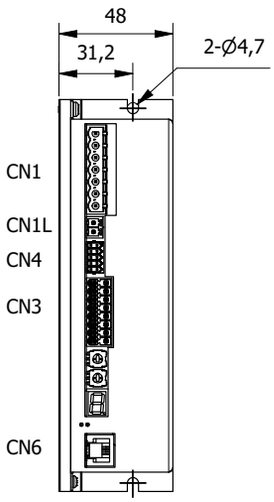
Standard Combination
Motor
All motor with Phase Current up to 7.1A rms

Drive for Stepper Motor Andromeda SBA208
Motion Controller

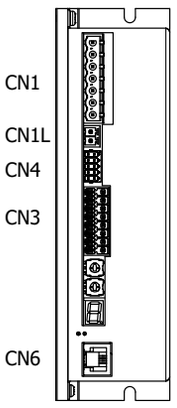
up to 8,5A rms

CN1: Power Supply
CN1L: Logic Power Supply
CN2: Analog Inputs
CN3: Digital Inputs and Outputs
CN4: Feedback Connections
CN5: Communication Interface
CN6: Service Serial Interface
R1 : Rotoswitch 1
R2 : Rotoswitch 2

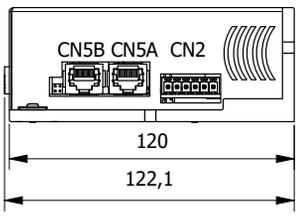


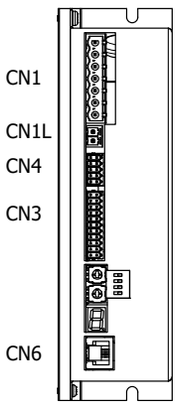


EtherCAT Interface



Ethernet Modbus-TCP Interface





CANopen & RS485 Modbus-RTU Interface

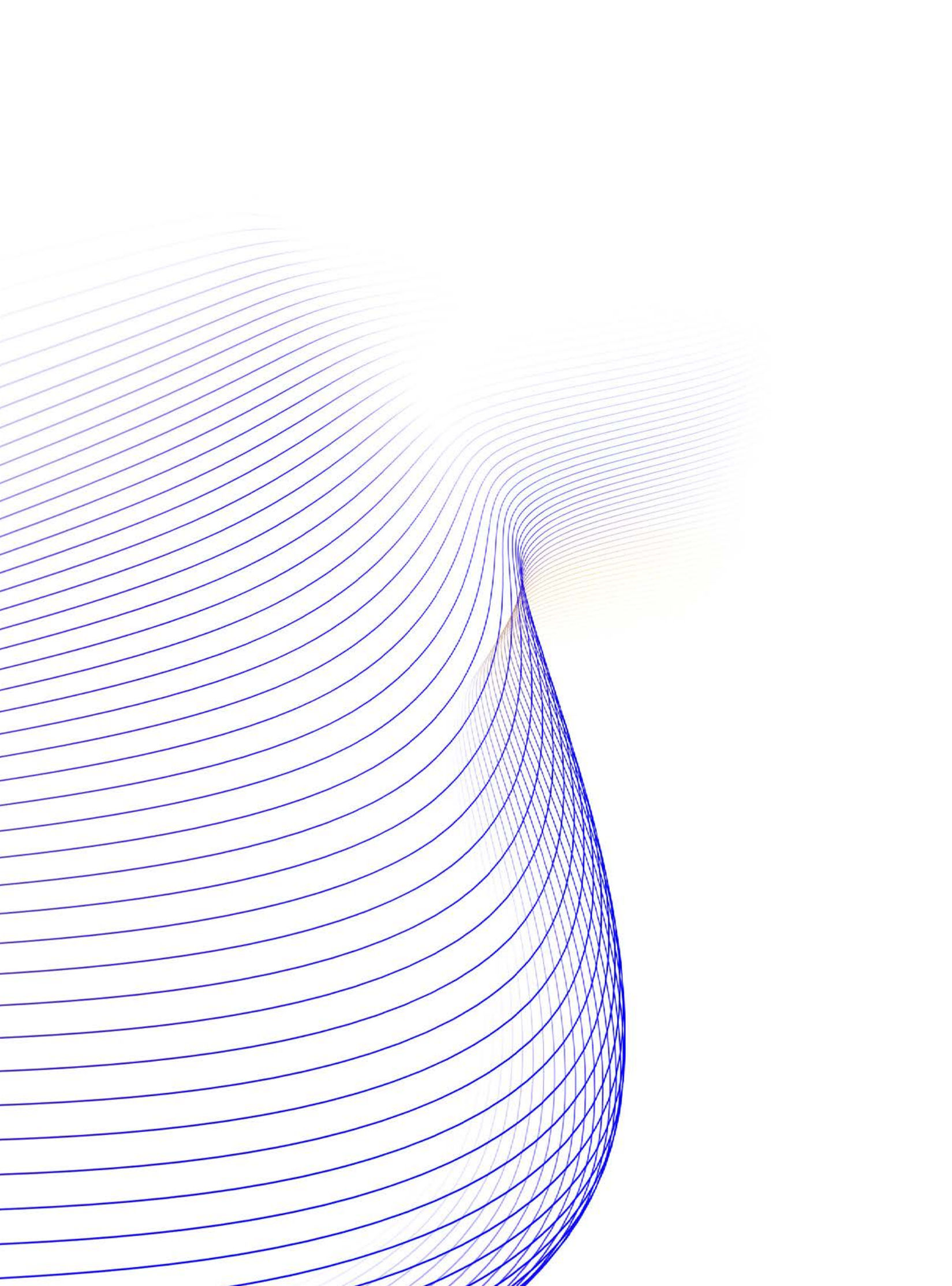
Electrical Data			
	Item		
1	Phase Current	A rms	up to 8,5
2	Peak Current	A peak	12
3	Power Supply		18÷100Vac or 24÷140Vdc
4	Logic Power Supply (optional)		18÷100Vac or 24÷140Vdc
5	Chopper Frequency	kHz	40

Characteristics	
Item	
Weight	550g
Closed-loop	Available
Protections	Over current, Over/Under Voltage, Overheating, Short circuit
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

Interface Control Mode					
Model	...T001-S200	...M001-S200	...C001-S200	...C001-S402	...E001-S402
Fieldbus	Ethernet ModBus TCP	RS485 Modbus RTU	CANopen	CANopen (DS402)	EtherCAT
Programmable	Programming and real time debugging			Only configuration	
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)				

Connection					
Model	...T001-S200	...M001-S200	...C001-S200	...C001-S402	...E001-S402
Digital Inputs (opto-coupled)	6	6	6	6	6
Digital Outputs (opto-coupled)	4	4	4	4	4
Analog Inputs	2	2	2	2	2
Encoder Input	5V Differential (RS422) or 5V Single-Ended (TTL/CMOS) incremental encoder (not isolated)				
Encoder Output	5V Differential (RS422) (not isolated)				

Standard Combination
Motor
All motor with Phase Current up to 8,5A rms



Our experts are here to help you find the most suitable solution. Contact us.

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Delta Line SA

Via Prè d'là 1
CH - 6814 Lamone
Switzerland

ph. +41 (0)91 612 85 00
fax. +41 (0)91 612 85 19

www.delta-line.com
info@delta-line.com

Delta Line North America, Inc

DTC Tech
4600 South Syracuse, 9th Floor
Denver, CO 80237, USA

ph. +1 303 256 6212

www.delta-line.com
infous@delta-line.com

Delta Line SA

Via Prè d'là 1
CH - 6814 Lamone
Switzerland

ph. +41 (0)91 612 85 00
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