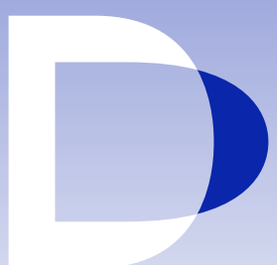
2026/27
Product Catalogue



Delta Line

Moving together

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ISO 14001 ENVIRONMENT

ISO 9001 QUALITY

Brushed DC motors - detailed index	**23**
Technical introduction	26
Brushed DC Coreless motors	29
Brushed Permanent Magnet DC motors	55

Brushless DC motors - detailed index	**63**
Technical introduction	66
Brushless DC Slotted motors	69
Brushless DC Slotless motors	103
Brushless DC motors with Encoder	131
Brushless DC Flat motors	137
Brushless DC Flat motors with Encoder	149
Brushless DC Frameless motors	155

Servomotors - detailed index	**169**
Technical introduction	172
Low voltage - BLDC servomotors	175
Medium voltage - BLAC servomotors	185

Motors with integrated Controller - detailed index	**195**
Technical introduction	198
Brushless DC motors with Speed Controller	201
Brushless DC motors with Motion Controller	209
Brushless Servo motors with Motion Controller	221
Stepper motors with Motion Controller	231

Stepper motors - detailed index	**243**
Technical introduction	246
Hybrid Stepper motors	249
3-Phase Hybrid Stepper motors	307
Hollow Shaft Stepper motors	313
Flat Hybrid Stepper motors	321
Stepper motors with Encoder	325
IP65 Hybrid Stepper motors	331

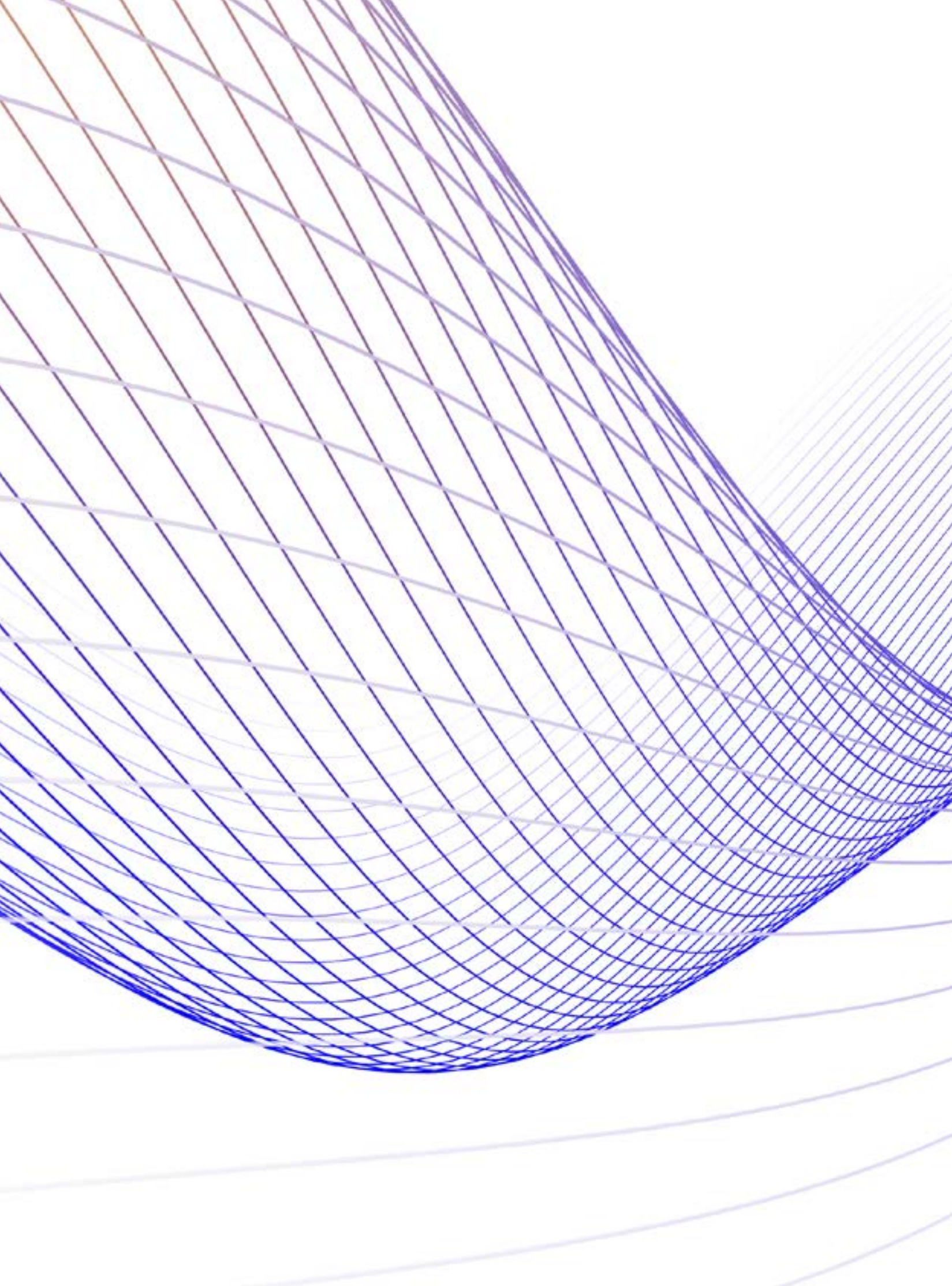
Linear actuators - detailed index	**339**
Technical introduction	342
External Hybrid Stepper Linear Actuators	345
Non-Captive Hybrid Stepper Linear Actuators	357
Captive Hybrid Stepper Linear Actuators	369

Gearboxes - detailed index	**383**
Technical introduction	386
Planetary gearboxes	389
Spur gearboxes	415
Worm & Wheel gearboxes	423

Encoders - detailed index	**433**
Technical introduction	436
Incremental Encoders	438

Motor Controllers/Drives - detailed index	**445**
Technical introduction	448
Brushless DC motor Drives	451
Brushless DC motor Multi-Axis Drives	461
Brushless AC motor Drives	465
Stepper motor Drives	469

Robotics & Advanced Motion - detailed index	**483**
Technical introduction	486
Dynamic Robotic Joints - **NEW**	489
Wheel Hubs - **NEW**	499
Picking Fingers Module - **NEW**	503



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

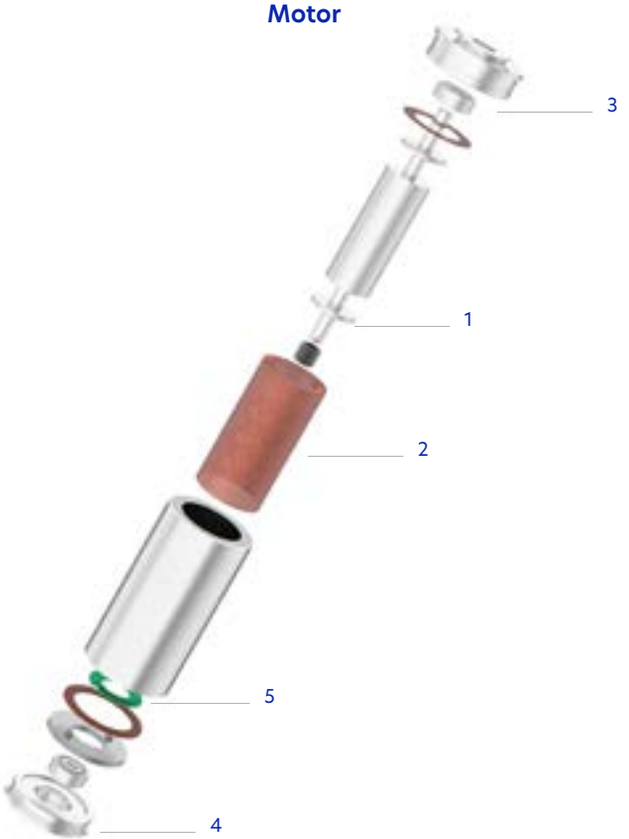
2. Winding
- Nominal voltage
- Current
- Speed
- Temperature range

3. Special Ball Bearings

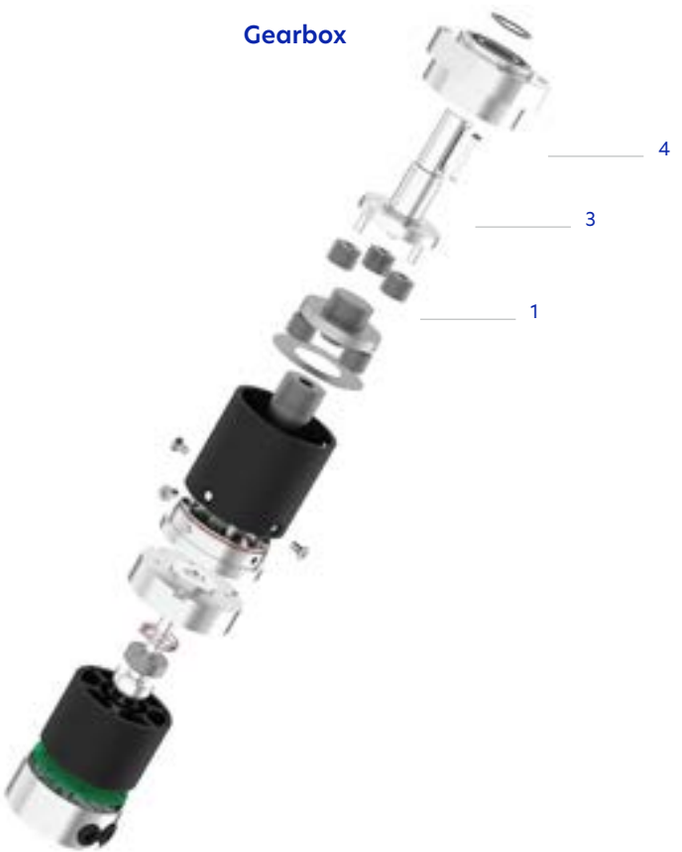
4. Special Front / Rear Flange

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

Motor



Gearbox

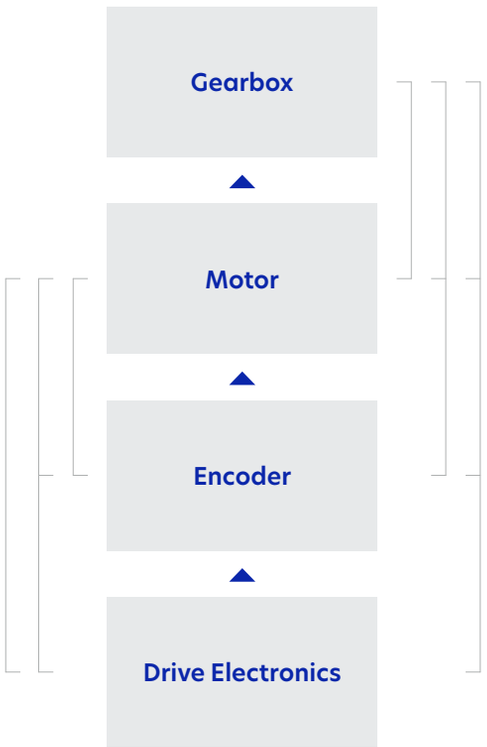


on motors and gearboxes: shaft range, windings, connector types, bearings.

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 and drives design customization



Sector
Drive motor for professional grass cutting machinery.

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

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

A



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

Challenges
Supply a very compact cost effective dual mechatronic system.

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

B

Some of our customizations

tell us your challenge and we will solve it



Sector
Agriculture, high-speed precision seed drill.

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

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

C



Sector
Intralogistics, parcel handling and sorting system.

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

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

D

Over 4.500 delighted customers served across **Healthcare, Agriculture, Intralogistics, 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

As a group, across our manufacturing locations and regional and local headquarters, we have more than 1.230 employees and a turnover of ~€135M.

1.230 employees
130M Euro turnover

Delta Line

FULLING MOTOR® a Delta Line company

ever e-MOTION SOLUTIONS a Delta Line company

Brands

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

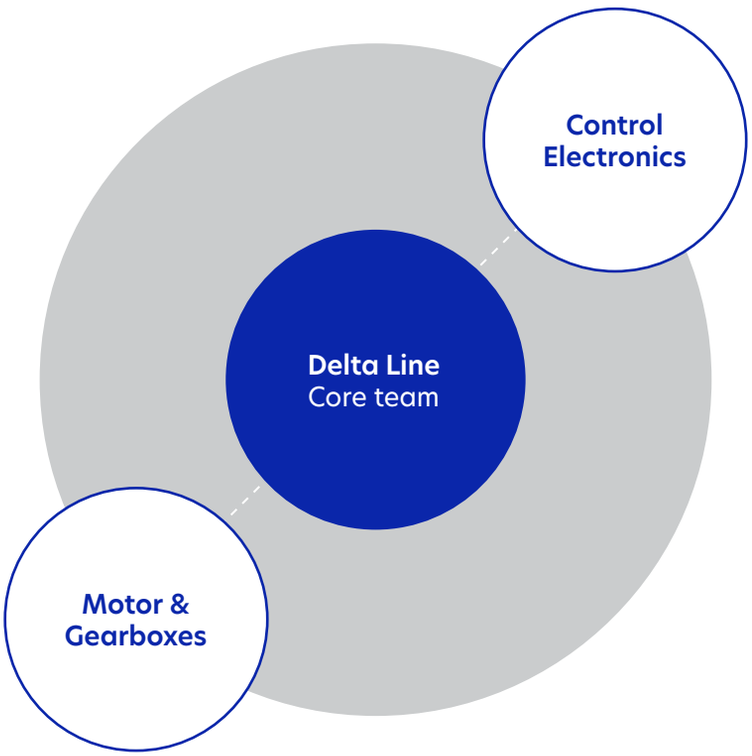
Delta Line Group

Delta Line
Group

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

- **Core team**

- **Co-owned manufacturing**



_ Agility and flexibility of a small company

_ Comprehensive portfolio of technologies

_ Attractive quality/price ratio

_ Manufacturing flexibility and control

with many advantages

A unique structure

Delta Line

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

FULLING MOTOR®
a Delta Line company

- **Part of the Delta Line Group since 2010**
- **Established in 2001**, Jiangsu Fulling Motor Technology Co. is a Chinese-Swiss joint venture
- Specialized in **stepper motors, DC brushless motors and gearboxes** design and manufacturing
- Based in Changzhou, China, employing more than **1.000 workers**
- **74.000 sqm manufacturing** facilities with cutting edge equipment
- More than **6 Million motors and gearboxes** produced yearly
- **ISO9001** and **ISO14001** certified by TUV Germany
- All products **RoHS compliant** and **CE certified**

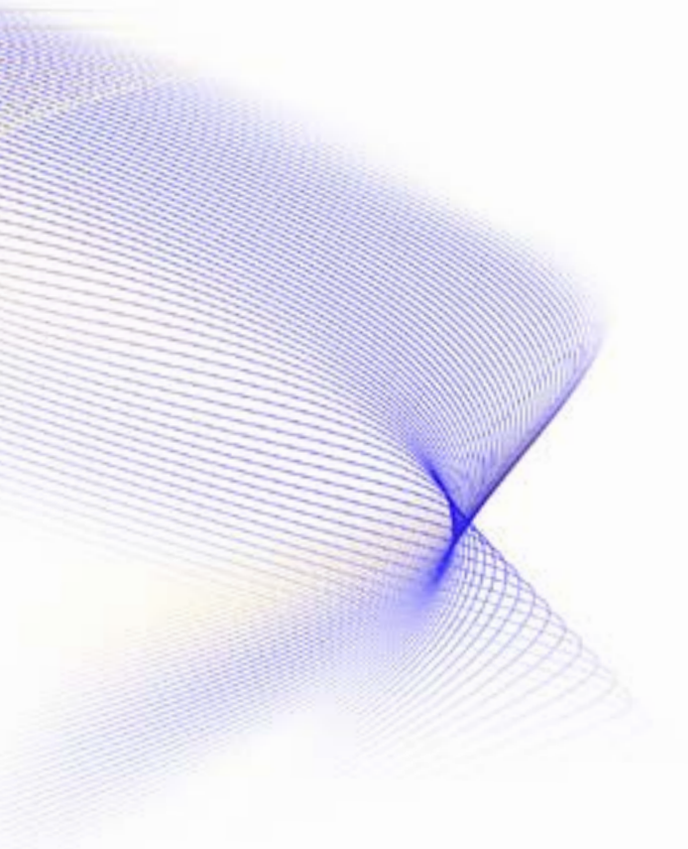
ever e-MOTION SOLUTIONS
a Delta Line company

- Part of the **Delta Line Group since 2026**
- **Established in 1977**
- Specialized in **controllers & drives**
- Based in Lodi, Italy, employing more than 80 workers
- **ISO 9001**, CE/UKCA certified, RoHS & REACH compliant, UL & STO on specific models

Our brands

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

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



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

Your benefits



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



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



AS/RS Storage System
AGVs and AMRs
Cross-Belt Sorters
Transfer Units
Textile
Packaging & Labelling
Powered hand tools
Pumps (Manufacturers)
Welding Equipment
Pick and Place machines
Industrial analysers

Intralogistics & warehousing



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

Industrial

Brushed DC motors 23

Technical introduction 26

Brushed DC Coreless motors 29
08DC16N -PM 30
10DC17...25N -PM 31
12DC19...28N -PM 33
16DC25P -PM/G 35
16DC26...40N -PM/G 37
22DC32P -PM/G 41
22DC34...47N -PM/G 43
26DC44P -PM/G 47
26DC57N -PM/G 49
32DC72N -G 51
35DC70N -G 52

Brushed Permanent Magnet DC motors 55
42DI 56
52DI 57
63DI 58

Brushless DC motors 63

Technical introduction 66

BLDC Slotted motors - BL Standard series 71
22BL 72
28BL 73
33BL 74
40BL 75
42BL - square - 8pole 76
42BLA - square - 10pole 77
42BLB - square - 6pole 78
42RBL 79
57BL - 4pole 80
57BLA - 6pole 81
57BLB - square 82
70BLS 83
80BLS 84
86BLC 85
86BLS 86

BLDC Slotted motors - EC High Performance series 89
22EC43...82N 90

BLDC Slotted motors - CBL Economy series 95
24CBL30 96
28CBL 97
36CBL 98
42CBL 99
48CBL68 100

BLDC Slotless motors - SBL Standard series 105
10SBL19 106
14SBL45 107
16SBL 108
22SBL 109
28SBL 110
40SBL 111

BLDC Slotless motors - EC High Performance series 113
16EC24...36P 114
16EC40...56NS 116
22EC32P 118
22EC44NS 119
22EC48P 120
22EC48T 121
22EC60NS 122
22EC66T 123
30EC42P 124
30EC47T 125
30EC64P 126
30EC64T 127
40EC58...88P 128

BLDC motors with Encoder 131
42SVA 132
57SVA 133
80SVA 134

BLDC Flat motors 137
20BLW14 138
32BLW18 139
45BLW16 140
45BLW Connector 141
45BLW Wires 142
60BLWA38 143
60BLW40 144
60BLW40 - IP54 145
90BLW 146

BLDC Flat motors with Encoder 149
45BLW29-E 150
60BLW42-E 151
90BLW42-E 152

BLDC Frameless motors 155
25BLF 156
38BLF 157
43BLF 158
50BLF 159
60BLF 160
70BLF 161
85BLF 162
102BLF 163
115BLF 164

Brushless Servomotors 169

Technical introduction 172

Low voltage - Brushless DC Servomotors 175
25SV - 24VDC 176
38SV - 48VDC 177
60SV - 48VDC 178
80SV - 48VDC 179
100SV - 48VDC 180
110SV - 48VDC 181
130SV - 48VDC 182

Medium voltage - Brushless AC Servomotors 185
38SV - 220VAC 186
60SV - 220VAC 187
80SV - 220VAC 188
100SV - 220VAC 189
110SV - 220VAC 190
130SV - 220VAC 191

Motors with integrated Controller 195

Technical introduction 198

Brushless DC motors with Speed Controller 201
16EC33P-2W 202
36CBL-IE 203
42BL-IE - square 204
42CBL60-IE 205
42RBL60-IE 206
57BL-IE 207

Brushless DC motors with Motion Controller 209
IBS042 210
IBS057 211
IBI057- IP65 212
IBIX57A - IP65 - **NEW** 213
IBIX57A integrated Brake - IP65 - **NEW** 214
IBIX57B - IP65 - **NEW** 215
IBIX57B integrated Brake - IP65 - **NEW** 216
IBS080 217
IBI080 - IP65 218

Brushless Servo motors with Motion Controller 221
IVI060 222
IVIX60 - **NEW** 223
IVID60 - Code 1 & 2 - **NEW** 224
IVID60 - Code 3 & 4 - **NEW** 225
IVID60 - Code 5, 6, 7 & 8 - **NEW** 226
IVI080 227
IVI100 228
IVI110 229

Stepper motors with Motion Controller 231
ISS042 232
ISI042 - IP65 233
ISS057 234
ISI057-IP65 235
ISS060 236
ISI060-IP65 237
ISS086 238
ISI086 - IP65 239

Stepper motors 243

Technical introduction 246

Hybrid Stepper motors - S Standard series 251
57S41...76 252
86S67...125 256

Hybrid Stepper motors - SH High Torque series 261
14SH30 262
20SH 263
25SH23 264
28SH32...51 265
35SH 268
39SH20...38 269
42SH33...60 272
42SH33...47M - step 0,9° 276
57SH41...76 279
57SH41...76M - step 0,9° 283
60SH45...86 286
86SH65...156 290
110SH 295

Hybrid Stepper motors - STC Connector series 297
20STC 298
28STC32...51 299
57STC41...76 302

3-Phase Hybrid Stepper motors 307
42 3P 308
57 3P 309
60 3P53 310

Hollow Shaft Stepper motors 313
20STC40 H 314
28STC51 H 315
35STC38 H 316
42STC47 H 317
57STC76 H 318
86SH118 H 319

Flat Hybrid Stepper motors 321
28S10 322
63S10 323

Stepper motors with Encoder 325
42SC 326
60SC 327
86SC 328

IP65 Hybrid Stepper motors 331
SM28 070 - IP65 332
SM42-E - IP65 333
SM57-E - IP65 334

Linear actuators 339

Technical introduction 342

External Hybrid Stepper Linear Actuators 345
20E 346
28E 348
35E 350
42E 352
57E 354

Non-Captive Hybrid Stepper Linear Actuators 357
20N 358
28N 360
35N 362
42N 364
57N 366

Captive Hybrid Stepper Linear Actuators 369
20C 370
28C 372
35C 374
42C 376
57C 378

Gearboxes 383

Technical introduction 386

Planetary gearboxes - GP Standard series 391
08GPS 392
10GPS 393
12GPS 394
16GPS 395
22GPS 396
26GPS 397
32GPS 398
GP42-S/N 399
GP56-S/N/T 401
GP80-T 404

Planetary gearboxes - JMS Economy series 407
22JMS 408
28JMS 409
36JMS 410
42JMS 411
56JMS 412

Spur gearboxes 415
12GSS 416
16GSS/GSP/GST 417
24GSP 420

Worm & Wheel gearboxes - NEW 423
GWS 424
GW58 425
GW80 426
GW12 427
GWL 428
GW65 429

Encoders 433

Technical introduction 436

Incremental Encoders 433
E3 - Optical encoder - 3 channels 438
E4T - Optical encoder - 2 channels 439
E5 - Optical encoder - 3 channels 440

Motor Controllers/Drives 445

Technical introduction 448

Brushless DC motor Drives 451
Pegasus B072 452
Pegasus B144 453
Pegasus B360 454
Gemini B400 455
Leo B860 456
Leo B1400 457
Leo B2000 458
Leo B3800 459

Brushless DC motor Multi-Axis Drives 461
Phoenix - B100 462
Phoenix - B500 463

Brushless AC motor Drives 465
Scorpius A750 466
Serpens A1300 467

Stepper motor Drives 469
Hercules SOD202 470
Hercules SOD203 471
Libra SBD205 472
Aquarius SBD204 473
Aquarius SBD207 474
Sagittarius SBA207 475
Andromeda SBA208 476
Lyra SBAC203 477
Draco SBAC205 478
Dorado SBAC208 479

Robotics & Advanced Motion Solutions 483

Technical introduction 486

Dynamic Robotic Joints 489
DJB 046 - **NEW** 490
DJB 057 - **NEW** 491
DJB 078 36V - **NEW** 492
DJB 078 48V - **NEW** 493
DJB 088 - **NEW** 494
DJB 110 - **NEW** 495
DJB 120 - **NEW** 496

Wheel Hubs 499
Wheel Hub 60 - **NEW** 500
Wheel Hub 80 - **NEW** 501

Picking Fingers Module 503
6VDC Gear Motor - 20DI - **NEW** 504
12VDC Gear Motor - 20DI - **NEW** 504

Brushed DC



Coreless
motors

p.29



Permanent Magnet
motors

p.55

Brushed DC Motors

Technical introduction		26

Brushed DC Coreless motors	Torque* (mNm)	29
08DC16N -PM	0,6	30
10DC17...25N -PM	0,9...2	31
12DC19...28N -PM	1,9...3,9	33
16DC25P -PM/G	3,8...4,8	35
16DC26...40N -PM/G	5...11,3	37
22DC32P -PM/G	8,5...12,6	41
22DC34...47N -PM/G	10,7...30,5	43
26DC44P -PM/G	20,8...28,8	47
26DC57N -PM/G	32,9...59,1	49
32DC72N -G	89,4...123	51
35DC70N -G	77,7...138	52

Permanent Magnet DC motors	Torque* (Nm)	55
42DI	0,038...0,057	56
52DI	0,09...0,22	57
63DI	0,18...0,27	58

* Rated Torque

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

Glossary

Product families
Brushed DC Coreless motors
Brushed PMDC motors

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

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

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

Graphite brushes

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

Precious metal brushes

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

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

Coreless technology

PMDC motors, also known as permanent magnet motors, harness the strength of magnets to deliver exceptional performance. By incorporating permanent magnets into their design, these motors eliminate the need for a separate field winding, resulting in a more compact and efficient solution.
The key advantage of PMDC motors lies in their high power-to-size ratio. The presence of permanent magnets ensures strong magnetic fields, leading to increased torque and power output. This makes PMDC motors an excellent choice for applications where space is limited, without compromising on performance, and offer an ideal solution for all those customers that still want to rely on a well-established and trusted technology that provides easy-to-operate, long lasting and high torque capacity motors.
Additionally, our PMDC motors, are well suited to operate in harsh environmental conditions thanks to IP54 protection and F insulation class. The graphite commutation system with an optional EMC filter serves to reduce brush and collector wear and can significantly extend motor life.

Permanent Magnet technology

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 motors

Advantages at a glance
No cogging
High efficiency
Low starting voltage

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

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

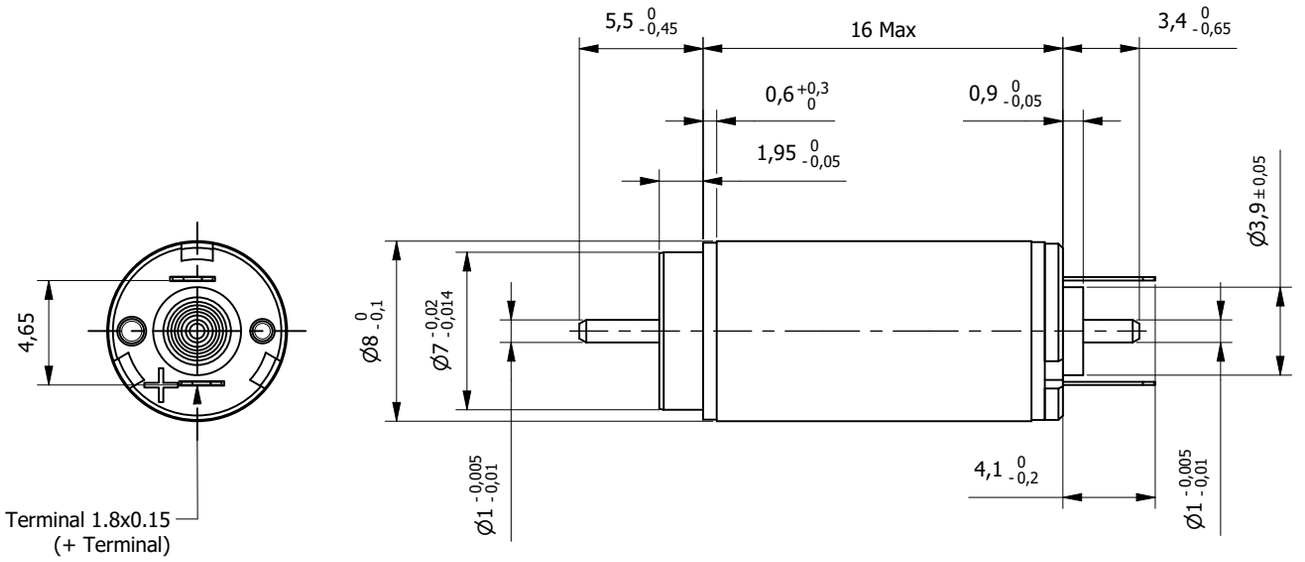
* Rated Torque

Brushed DC Coreless Motor 08DC16N-PM

Precious Metal brushes

Ø 8mm

0,6mNm

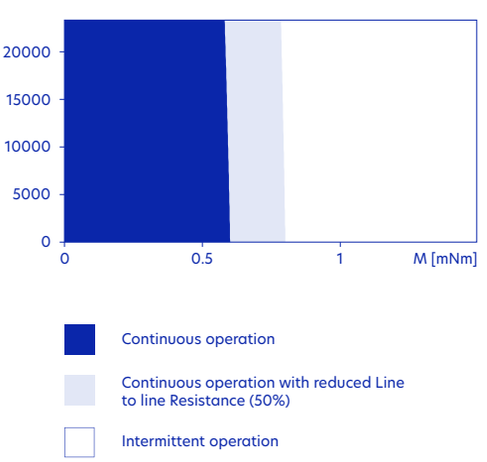


Product also available with ball bearings

Specification				
	Model		...4129	...5892
1	Rated Voltage	V	6	12
2	Rated Speed	rpm	4190	5800
3	Rated Torque	mNm	0,641	0,614
4	Stall Torque	mNm	1,05	1,13
5	Torque Constant	mNm/A	5,08	8,71
6	Motor Regulation	10^3/Nms	1123,8	1215,3
7	Rated Current	A	0,13	0,073
8	Stall Current	A	0,207	0,13
9	No-load Current	mA	4,51	2,74
10	No-load Speed	rpm	11000	12900
11	Line to Line Resistance	Ω	29	92,2
12	Line to Line Inductance	mH	0,094	0,276
13	Rotor Inertia	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

Operating range: Winding 6V

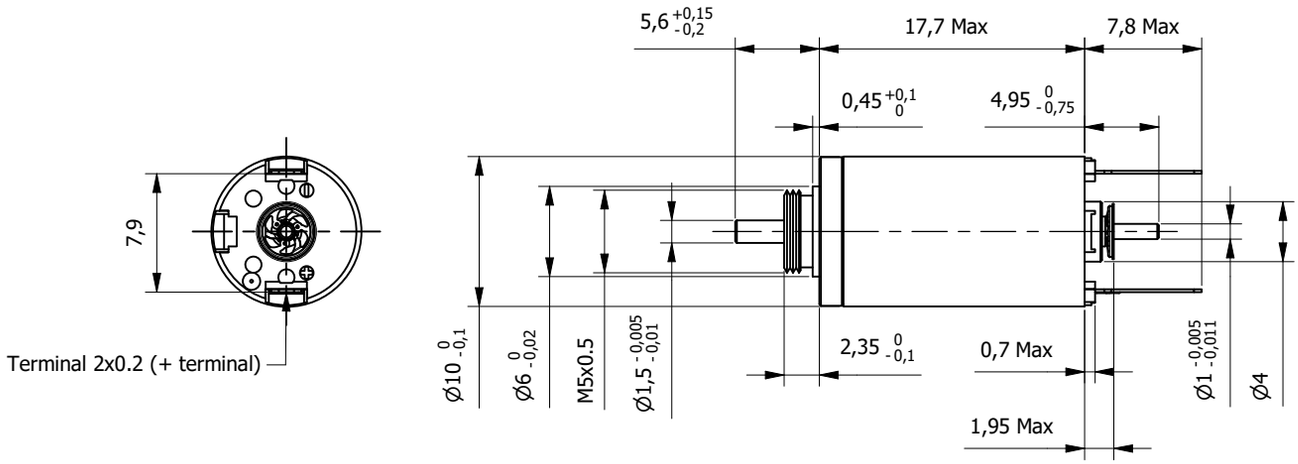


Brushed DC Coreless Motor 10DC17N-PM

Precious Metal brushes

Ø 10mm

0,9 to 1mNm

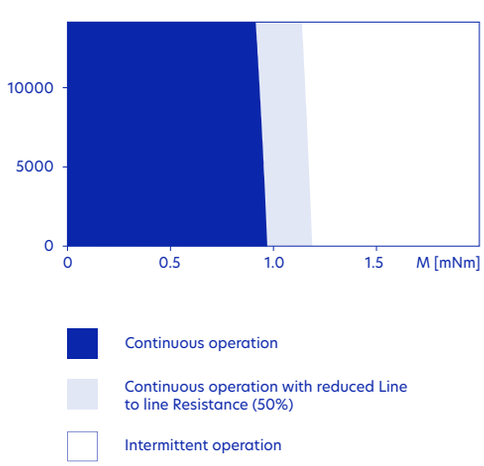


Product also available with ball bearings

Specification					
	Model		...4604	...3319	...3874
1	Rated Voltage	V	3	6	12
2	Rated Speed	rpm	4690	3310	3890
3	Rated Torque	mNm	0,948	0,993	0,905
4	Stall Torque	mNm	1,54	1,46	1,37
5	Torque Constant	mNm/A	2,07	4,74	8,53
6	Motor Regulation	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

Operating range: Winding 4.5V

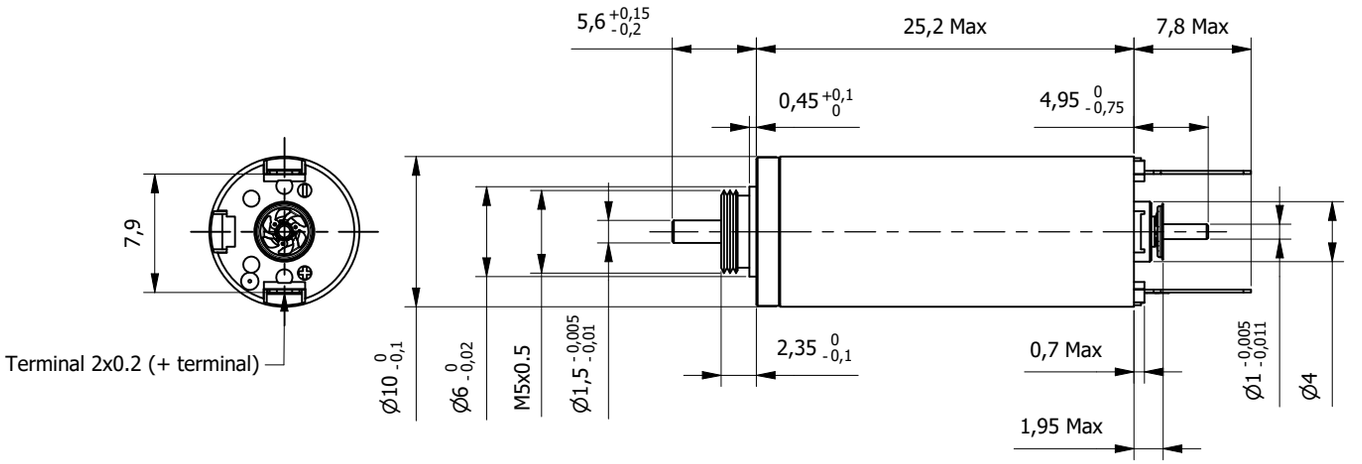


Brushed DC Coreless Motor 10DC25N-PM

Precious Metal brushes

Ø 10mm

1,9 to 2mNm

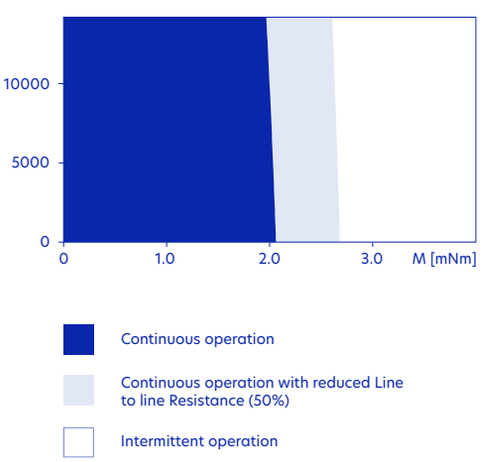


Product also available with ball bearings

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

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

Operating range: Winding 4.5V

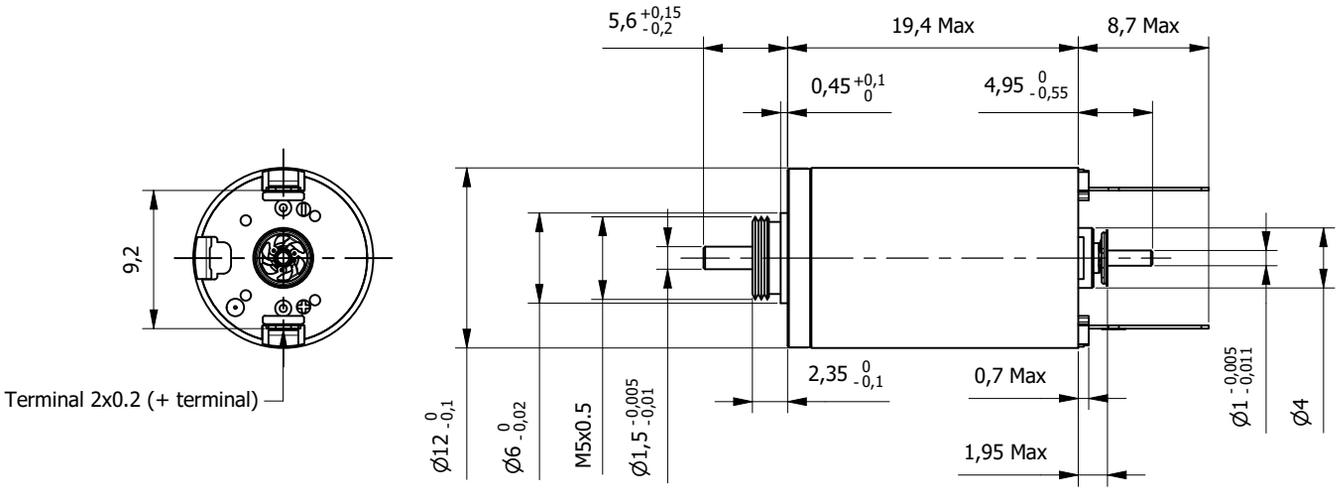


Brushed DC Coreless Motor 12DC19N-PM

Precious Metal brushes

Ø 12mm

1,9mNm

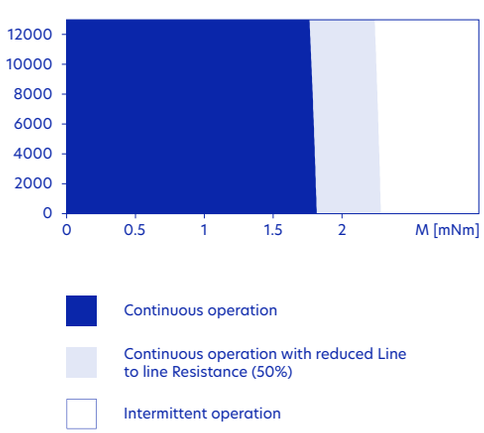


Product also available with ball bearings

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

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

Operating range: Winding 4.5V

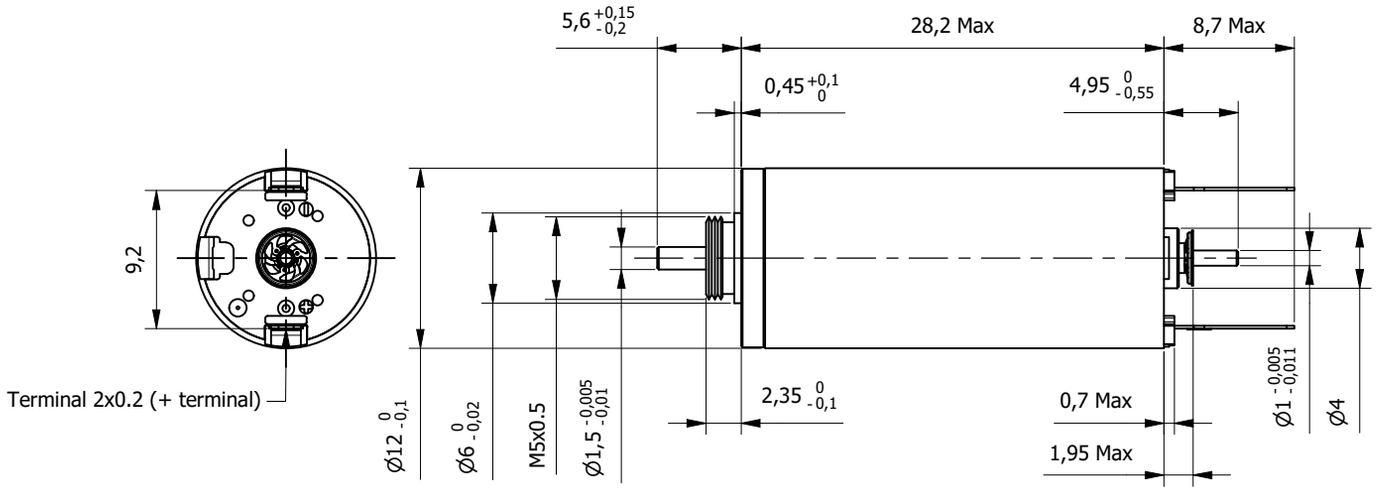


Brushed DC Coreless Motor 12DC28N-PM

Precious Metal brushes

Ø 12mm

2,9 to 3,9mNm

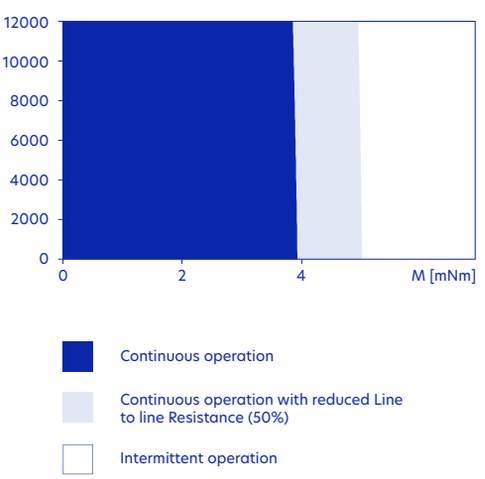


Product also available with ball bearings

Specification					
	Model		...6209	...5503	...5514
1	Rated Voltage	V	3	6	12
2	Rated Speed	rpm	6230	5540	5560
3	Rated Torque	mNm	2,88	3,88	3,89
4	Stall Torque	mNm	9,9	10,5	10,6
5	Torque Constant	mNm/A	3,22	6,44	12,9
6	Motor Regulation	10³/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

Operating range: Winding 4.5V

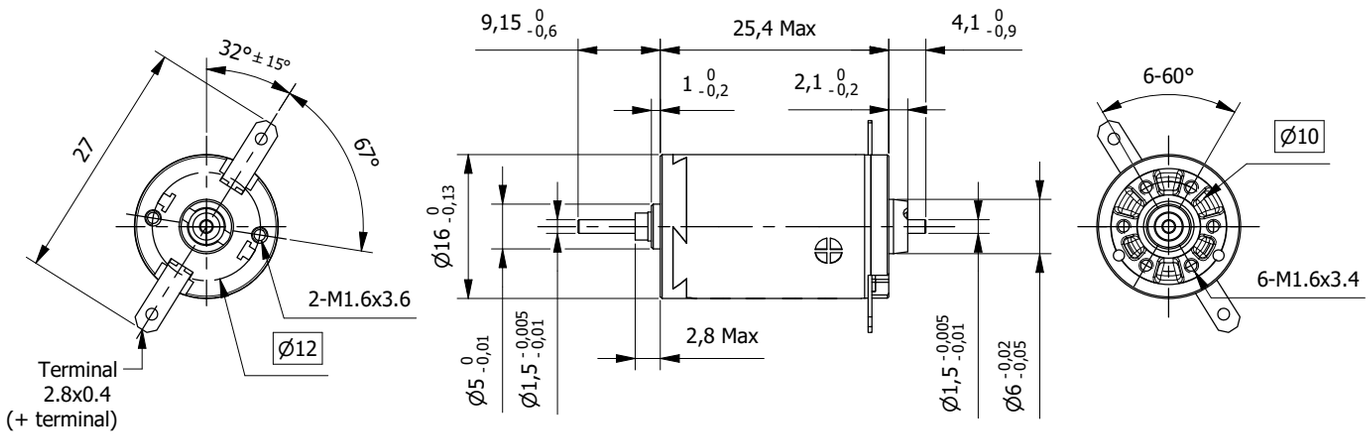


Brushed DC Coreless Motor 16DC25P-PM

Precious Metal brushes

Ø 16mm

3,8 to 4,1mNm

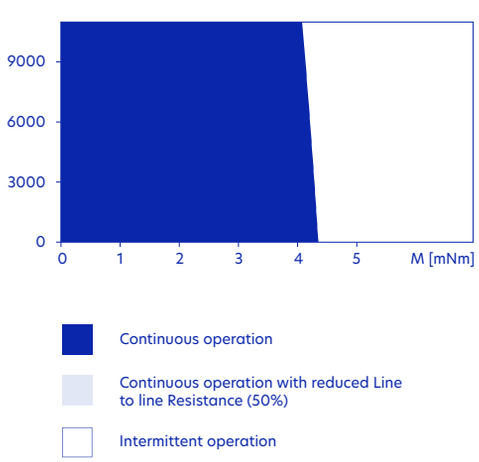


Product also available with ball bearings

Specification					
	Model		...4804	...4319	...4283
1	Rated Voltage	V	6	12	24
2	Rated Speed	rpm	4830	4390	4210
3	Rated Torque	mNm	4,06	3,92	3,8
4	Stall Torque	mNm	10,5	9,44	8,75
5	Torque Constant	mNm/A	7,19	15	30,3
6	Motor Regulation	10^3/Nms	79,3	84,9	90,6
7	Rated Current	A	0,577	0,267	0,128
8	Stall Current	A	1,46	0,629	0,289
9	No-load Current	mA	14,7	6,9	3,4
10	No-load Speed	rpm	7890	7560	7470
11	Line to Line Resistance	Ω	4,1	19,1	83,2
12	Line to Line Inductance	mH	0,14	0,61	2,49
13	Rotor Inertia	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

Operating range: Winding 12V

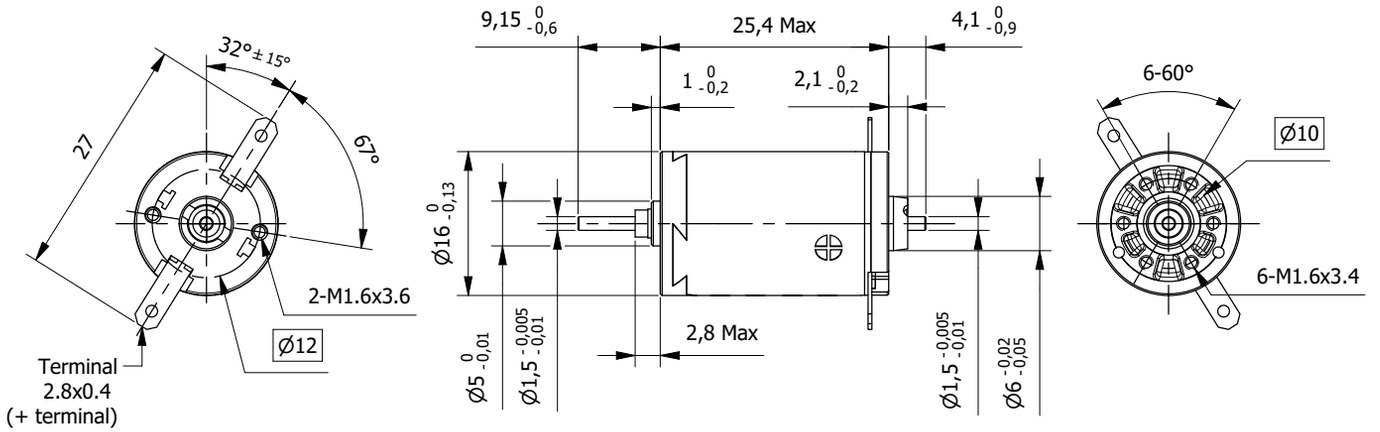


Brushed DC Coreless Motor 16DC25P-G

Graphite brushes

Ø 16mm

3,7 to 4,8mNm

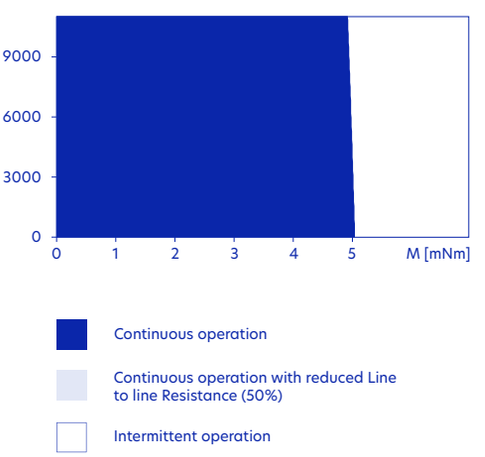


Product also available with ball bearings

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

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

Operating range: Winding 24V

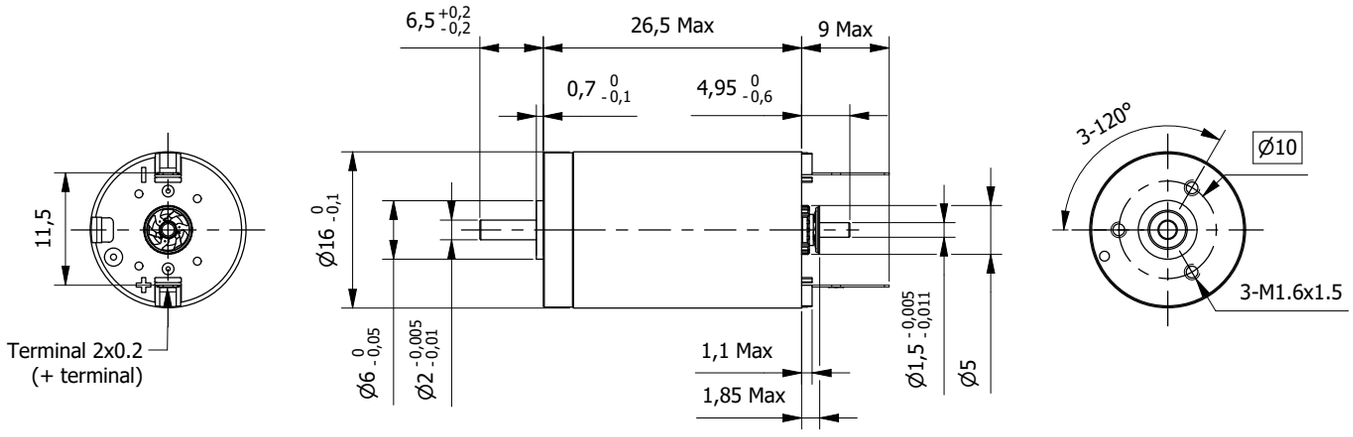


Brushed DC Coreless Motor 16DC26N-PM

Precious Metal brushes

Ø 16mm

5 to 5,4mNm

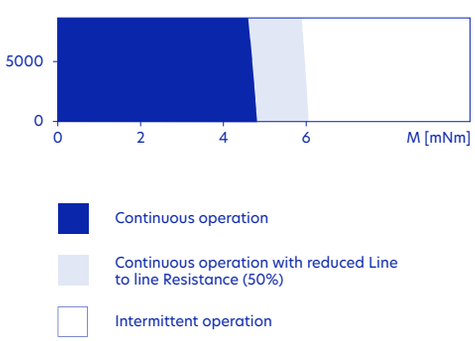


Product also available with ball bearings

Specification						
	Model		...3301	...3704	...3319	...3283
1	Rated Voltage	V	3	6	12	24
2	Rated Speed	rpm	3350	3760	3320	3200
3	Rated Torque	mNm	5,15	5,36	5,19	4,99
4	Stall Torque	mNm	11,1	12,6	11,2	10,4
5	Torque Constant	mNm/A	4,45	8,53	18	36
6	Motor Regulation	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

Operating range: Winding 12V

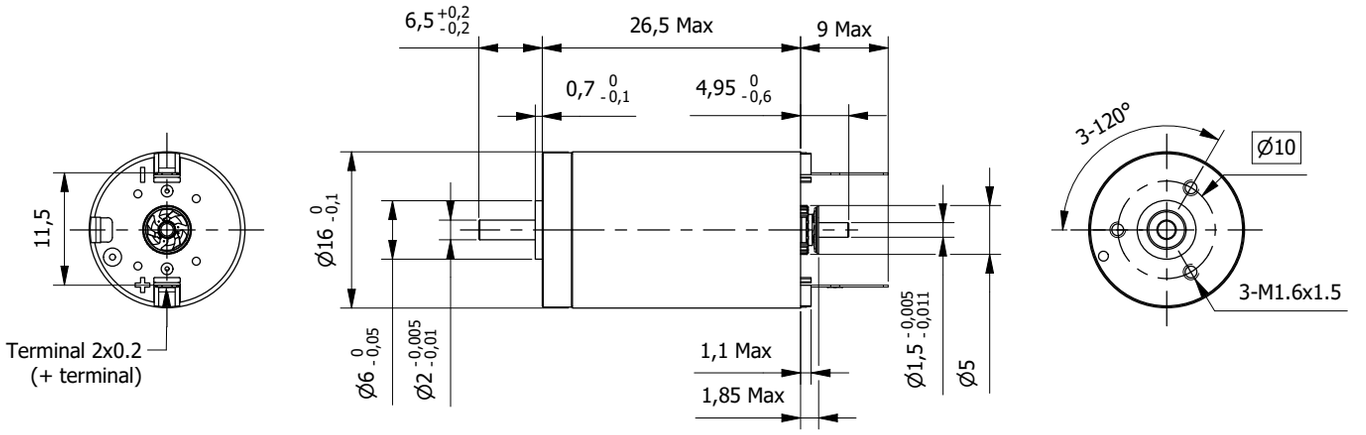


Brushed DC Coreless Motor 16DC26N-G

Graphite brushes

Ø 16mm

5,4mNm

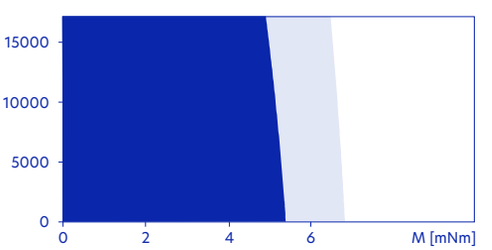


Product also available with ball bearings

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

Operating range: Winding 12V



Continuous operation

Continuous operation with reduced Line to line Resistance (50%)

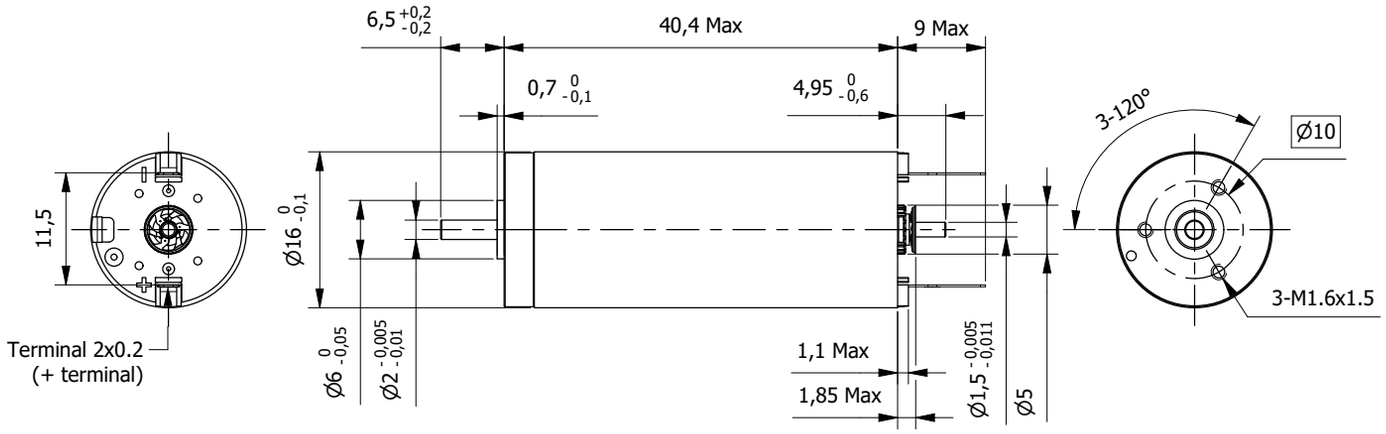
Intermittent operation

Brushed DC Coreless Motor 16DC40N-PM

Precious Metal brushes

Ø 16mm

5 to 10,8mNm

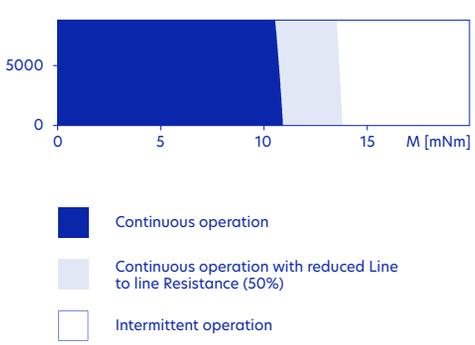


Product also available with ball bearings

Specification						
	Model		...5403	...4901	...4405	...4622
1	Rated Voltage	V	3	6	12	24
2	Rated Speed	rpm	5450	4920	4490	4630
3	Rated Torque	mNm	5,06	10	10,8	10,7
4	Stall Torque	mNm	34,4	39,3	36,6	36,6
5	Torque Constant	mNm/A	4,44	8,59	17,8	34,7
6	Motor Regulation	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

Operating range: Winding 9V

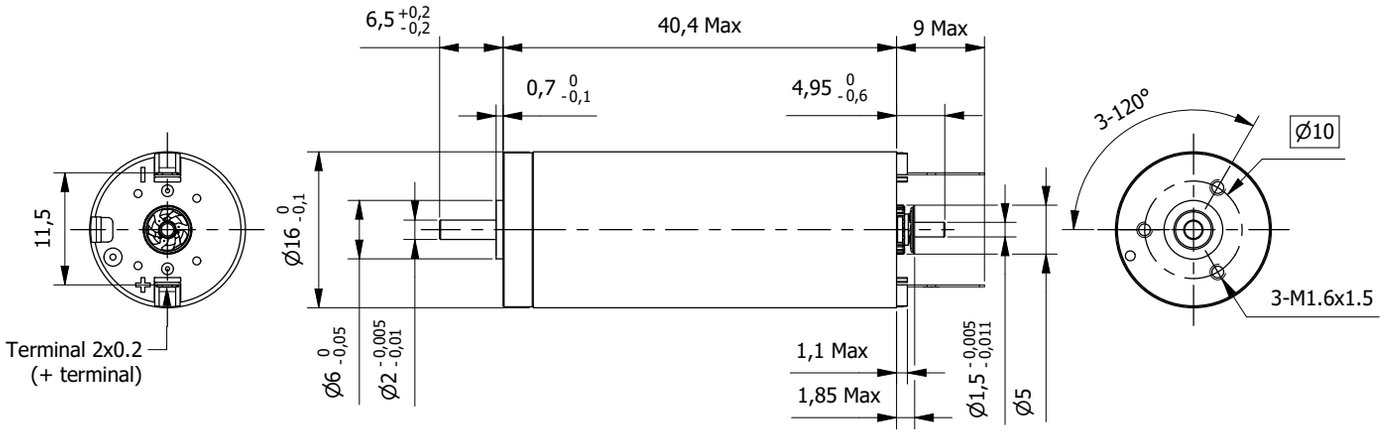


Brushed DC Coreless Motor 16DC40N-G

Graphite brushes

Ø 16mm

8,6 to 11,3mNm

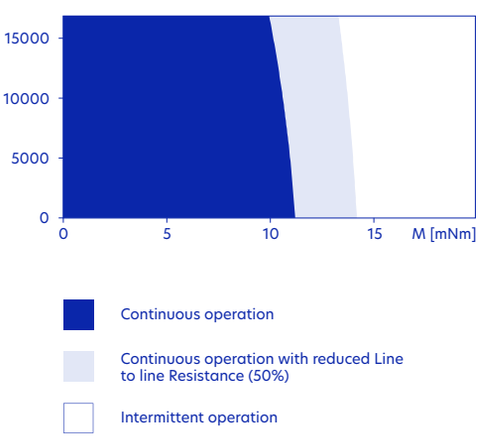


Product also available with ball bearings

Specification					
	Model		...11004	...10701	...10606
1	Rated Voltage	V	6	12	24
2	Rated Speed	rpm	11000	10700	10600
3	Rated Torque	mNm	8,58	10,4	11,3
4	Stall Torque	mNm	61,8	63,3	68,5
5	Torque Constant	mNm/A	4,44	8,59	17,8
6	Motor Regulation	10^3/Nms	21,9	22,1	19,7
7	Rated Current	A	2	1,24	0,651
8	Stall Current	A	13,9	7,37	3,85
9	No-load Current	mA	73,5	38,6	18,4
10	No-load Speed	rpm	12800	13200	12800
11	Line to Line Resistance	Ω	0,431	1,63	6,23
12	Line to Line Inductance	mH	0,026	0,096	0,411
13	Rotor Inertia	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

Operating range: Winding 12V

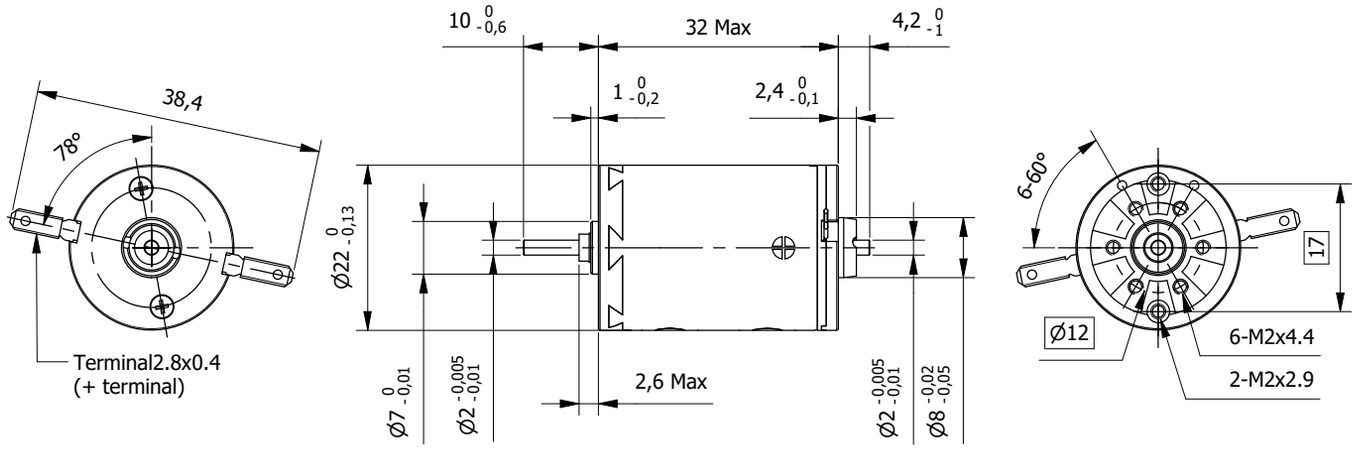


Brushed DC Coreless Motor 22DC32P-PM

Precious Metal brushes

Ø 22mm

8,5 to 10,4mNm

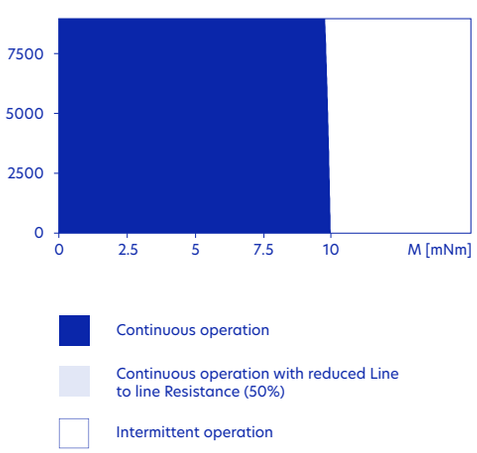


Product also available with ball bearings

Specification					
	Model		...4201	...4206	...3433
1	Rated Voltage	V	6	12	24
2	Rated Speed	rpm	4280	4240	3440
3	Rated Torque	mNm	8,54	10,3	10,4
4	Stall Torque	mNm	39	36,9	33,3
5	Torque Constant	mNm/A	10,4	19,3	44,8
6	Motor Regulation	10^3/Nms	14,8	16,9	16,6
7	Rated Current	A	0,84	0,543	0,236
8	Stall Current	A	3,75	1,91	0,721
9	No-load Current	mA	20,8	11,7	4,62
10	No-load Speed	rpm	5480	5890	5090
11	Line to Line Resistance	Ω	1,6	6,28	33,3
12	Line to Line Inductance	mH	0,119	0,413	2,21
13	Rotor Inertia	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

Operating range: Winding 12V

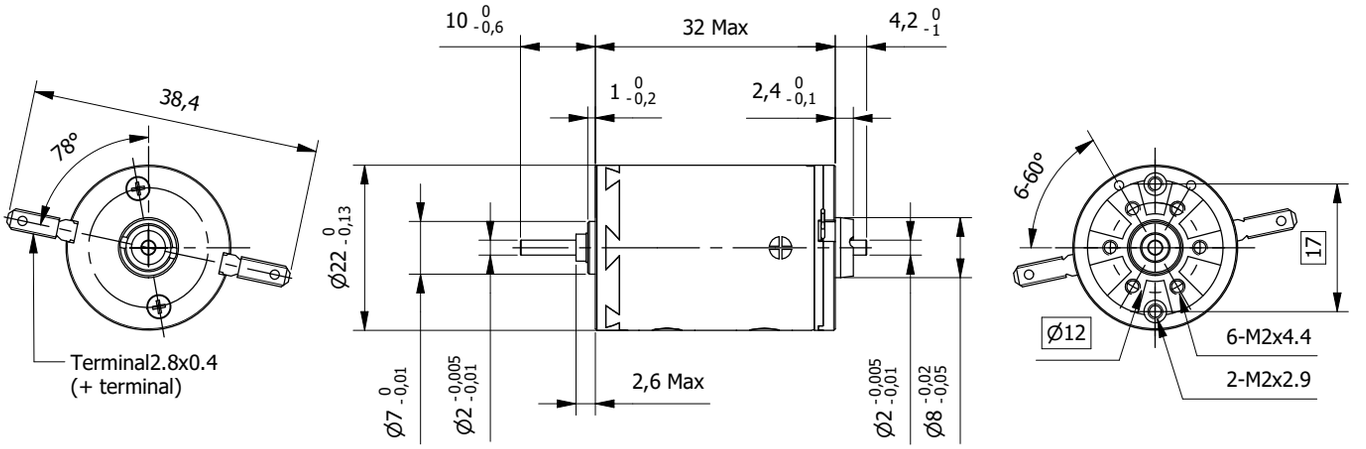


Brushed DC Coreless Motor 22DC32P-G

Graphite brushes

Ø 22mm

11,5 to 12,6mNm

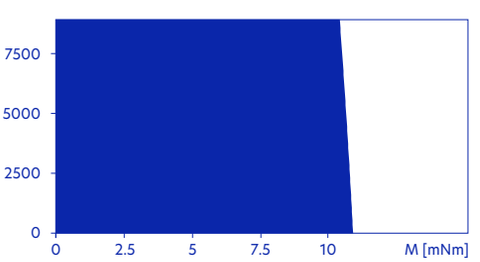


Product also available with ball bearings

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

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

Operating range: Winding 12V



Continuous operation

Continuous operation with reduced Line to line Resistance (50%)

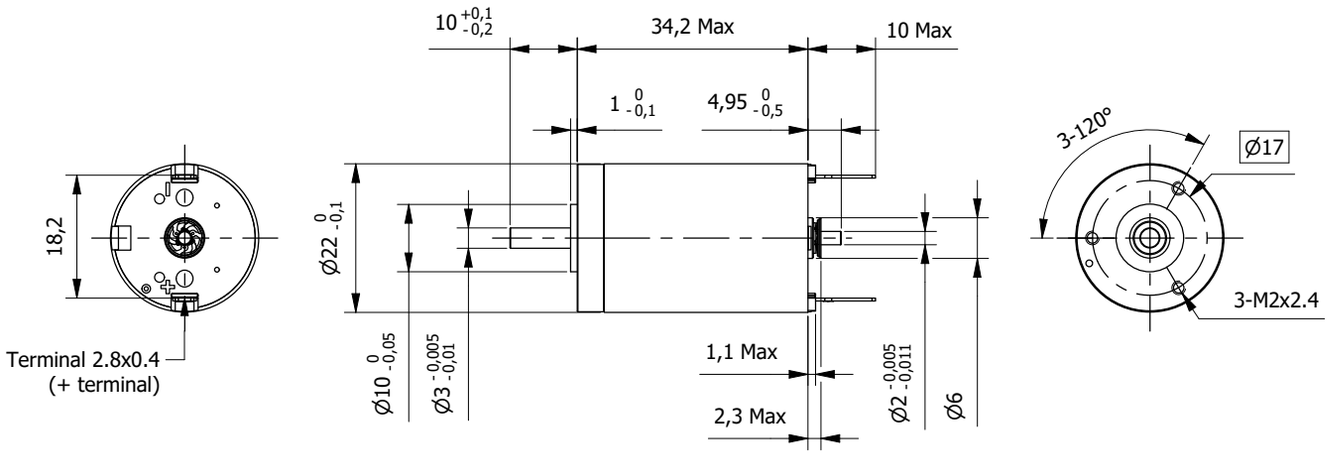
Intermittent operation

Brushed DC Coreless Motor 22DC34N-PM

Precious Metal brushes

Ø 22mm

10,7 to 14,7mNm

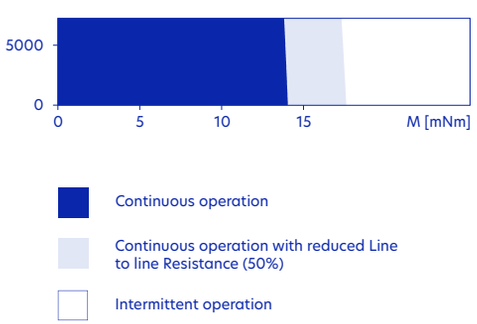


Product also available with ball bearings

Specification						
	Model		...4901	...4603	...4716	...4276
1	Rated Voltage	V	6	12	24	48
2	Rated Speed	rpm	4960	4670	4700	4240
3	Rated Torque	mNm	10,7	14,7	13,6	13,6
4	Stall Torque	mNm	53,7	59,7	52,7	48,6
5	Torque Constant	mNm/A	9,18	18,4	35,9	77,2
6	Motor Regulation	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

Operating range: Winding 18V

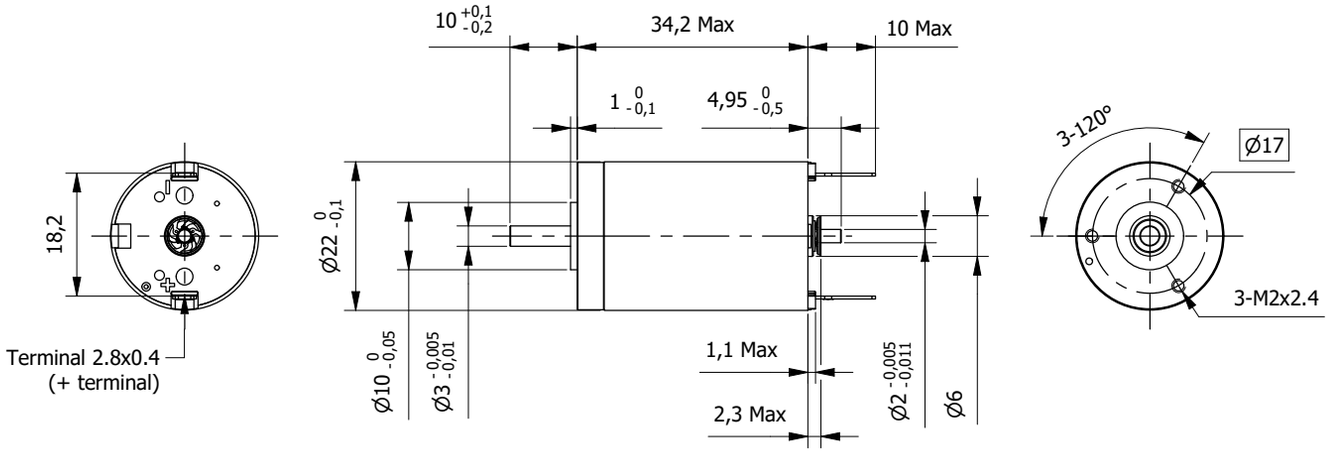


Brushed DC Coreless Motor 22DC34N-G

Graphite brushes

Ø 22mm

14 to 15,3mNm

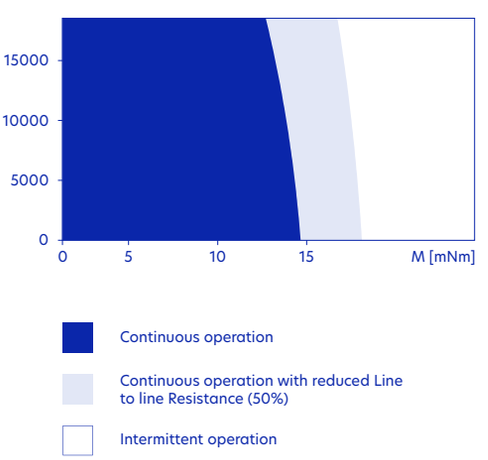


Product also available with ball bearings

Specification						
	Model		...9702	...10701	...10803	...10916
1	Rated Voltage	V	6	12	24	48
2	Rated Speed	rpm	9700	10700	10800	10900
3	Rated Torque	mNm	14,4	14,6	15,3	14
4	Stall Torque	mNm	101	108	120	104
5	Torque Constant	mNm/A	5,01	9,18	18,4	35,9
6	Motor Regulation	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

Operating range: Winding 18V

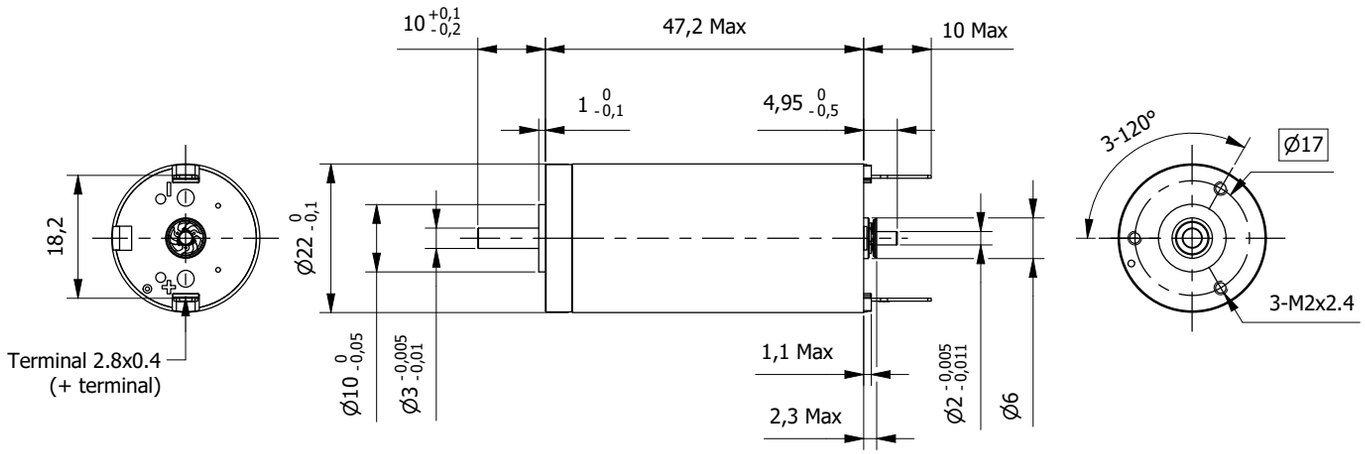


Brushed DC Coreless Motor 22DC47N-PM

Precious Metal brushes

Ø 22mm

14,1 to 29,5mNm

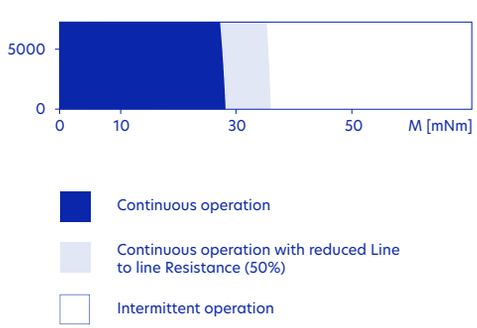


Product also available with ball bearings

Specification						
	Model		...5303	...4001	...4007	...4129
1	Rated Voltage	V	6	12	24	48
2	Rated Speed	rpm	5380	4000	4070	4180
3	Rated Torque	mNm	14,1	29,5	29,2	27,8
4	Stall Torque	mNm	170	150	150	140
5	Torque Constant	mNm/A	9,73	22,9	45,2	87,6
6	Motor Regulation	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

Operating range: Winding 18V

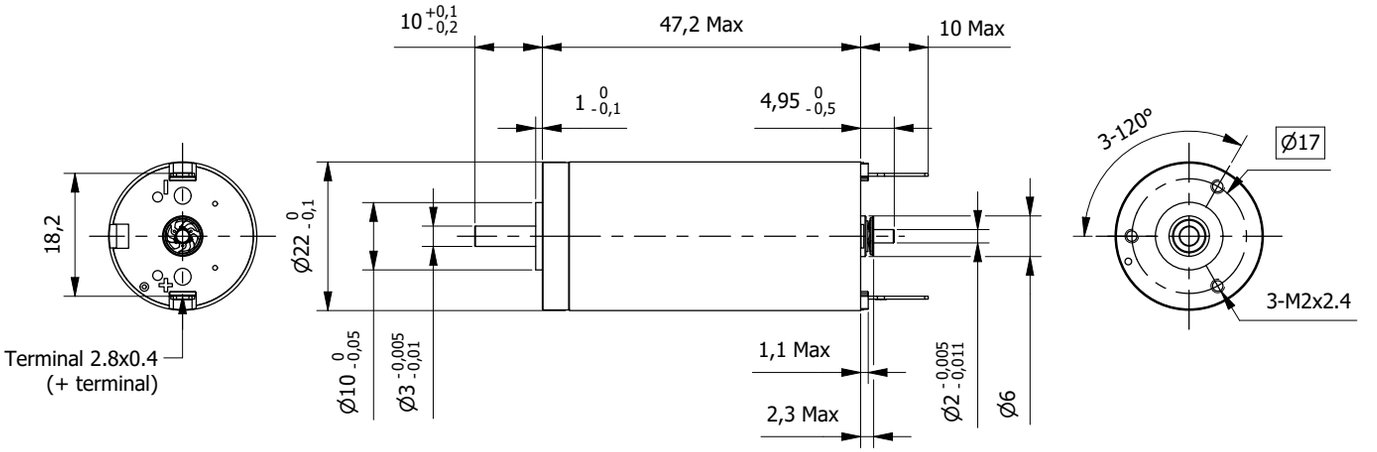


Brushed DC Coreless Motor 22DC47N-G

Graphite brushes

Ø 22mm

27 to 30,5mNm

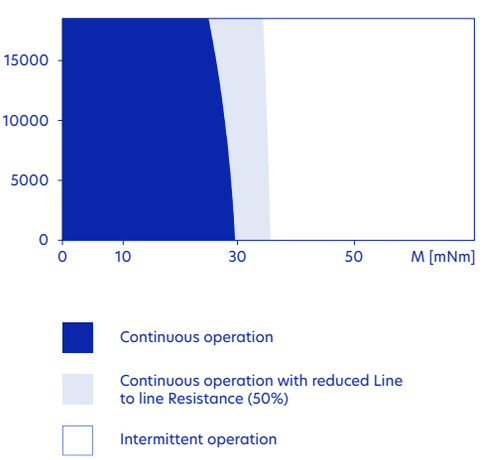


Product also available with ball bearings

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

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

Operating range: Winding 18V

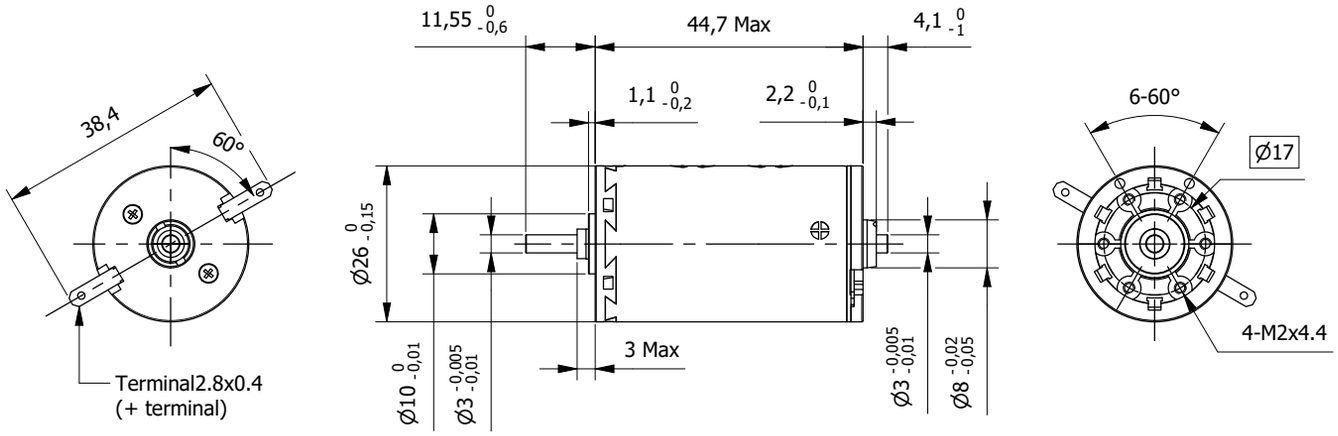


Brushed DC Coreless Motor 26DC44P-PM

Precious Metal brushes

Ø 26mm

20,8 to 28,8mNm

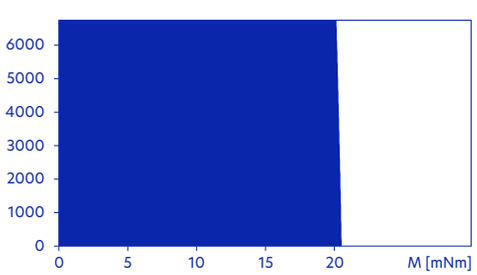


Product also available with ball bearings

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

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

Operating range: Winding 12V



Continuous operation

Continuous operation with reduced Line to line Resistance (50%)

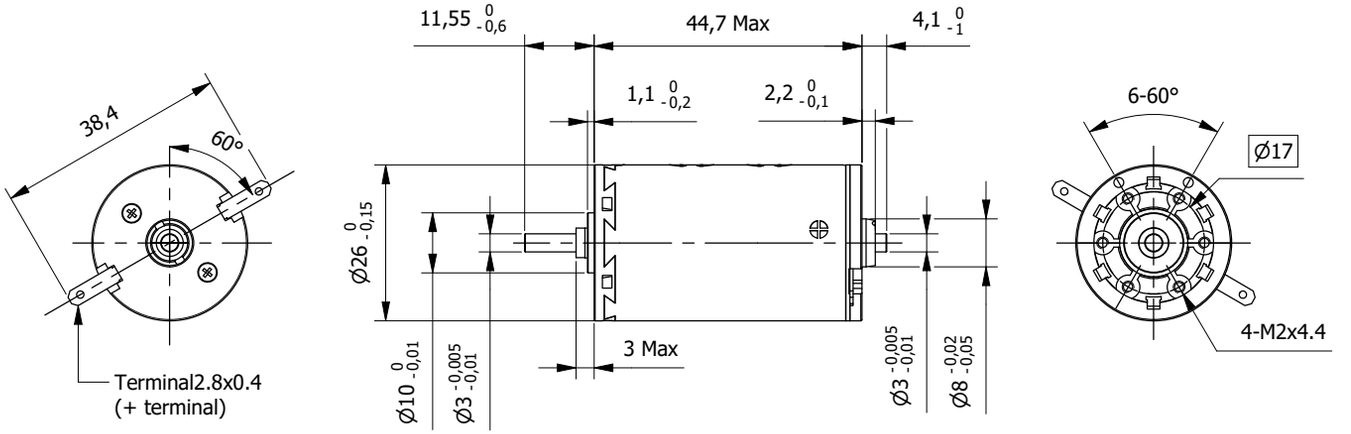
Intermittent operation

Brushed DC Coreless Motor 26DC44P-G

Graphite brushes

Ø 26mm

26,3 to 28,3mNm

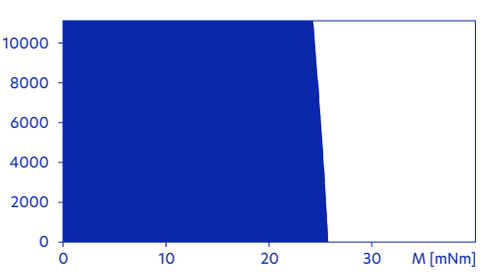


Product also available with ball bearings

Specification				
	Model		...8102	...7809
1	Rated Voltage	V	24	48
2	Rated Speed	rpm	8100	7840
3	Rated Torque	mNm	26,3	28,3
4	Stall Torque	mNm	287	277
5	Torque Constant	mNm/A	25,6	52,2
6	Motor Regulation	10^3/Nms	3,3	3,3
7	Rated Current	A	1,08	0,567
8	Stall Current	A	11,2	5,31
9	No-load Current	mA	53	25,7
10	No-load Speed	rpm	8920	8730
11	Line to Line Resistance	Ω	2,14	9,04
12	Line to Line Inductance	mH	0,278	1,16
13	Rotor Inertia	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

Operating range: Winding 24V



Continuous operation

Continuous operation with reduced Line to line Resistance (50%)

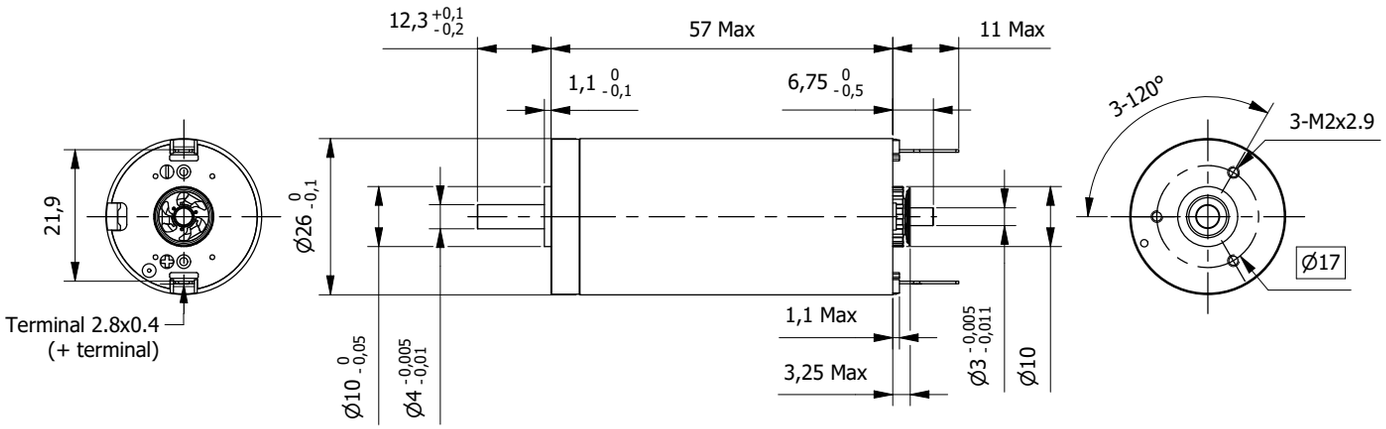
Intermittent operation

Brushed DC Coreless Motor 26DC57N-PM

Precious Metal brushes

Ø 26mm

32,9 to 52,3mNm

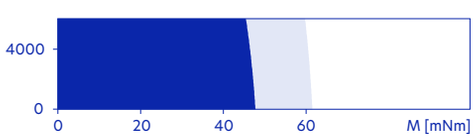


Product also available with ball bearings

Specification						
	Model		...5003	...4606	...4602	...4511
1	Rated Voltage	V	9	12	24	48
2	Rated Speed	rpm	5060	4690	4600	4570
3	Rated Torque	mNm	32,9	46,1	52,3	50,3
4	Stall Torque	mNm	384	384	384	355
5	Torque Constant	mNm/A	15,5	21,4	42,9	85,8
6	Motor Regulation	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

Operating range: Winding 18V



Continuous operation

Continuous operation with reduced Line to line Resistance (50%)

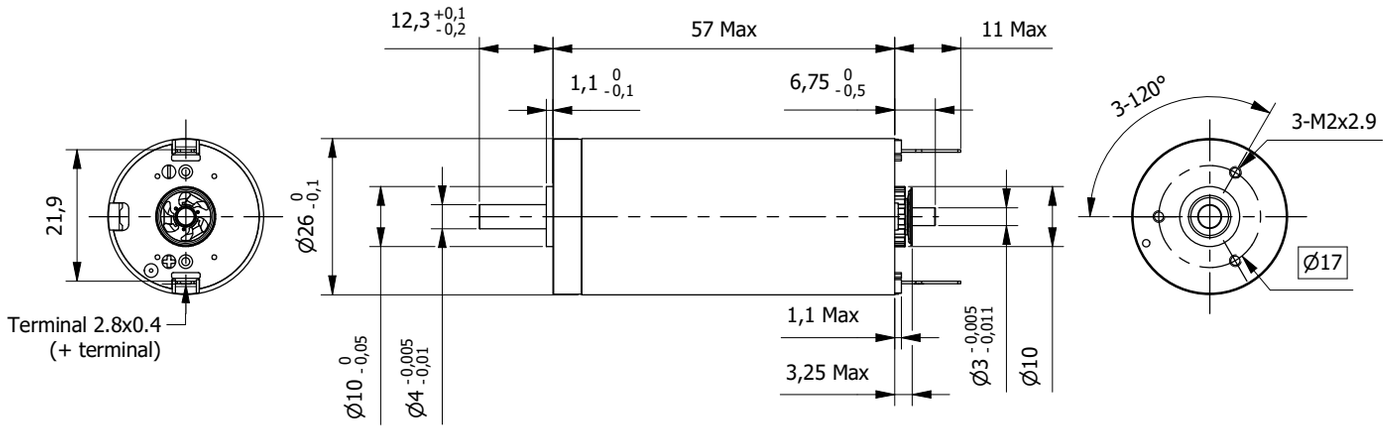
Intermittent operation

Brushed DC Coreless Motor 26DC57N-G

Graphite brushes

Ø 26mm

46,9 to 59,1mNm

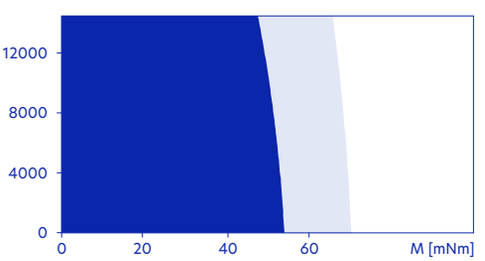


Product also available with ball bearings

Specification					
	Model		...9402	...9607	...9702
1	Rated Voltage	V	12	24	48
2	Rated Speed	rpm	9460	9690	9730
3	Rated Torque	mNm	46,9	57,8	59,1
4	Stall Torque	mNm	532	695	697
5	Torque Constant	mNm/A	10,7	21,4	42,9
6	Motor Regulation	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	14400rpm
Radial play	0,02mm
Axial play	0 to 0,2mm
Max. Radial force (5mm from flange)	5,5N
Max. Axial force	0,1N
Max. Force for Press fit	80N

Operating range: Winding 18V



Continuous operation

Continuous operation with reduced Line to line Resistance (50%)

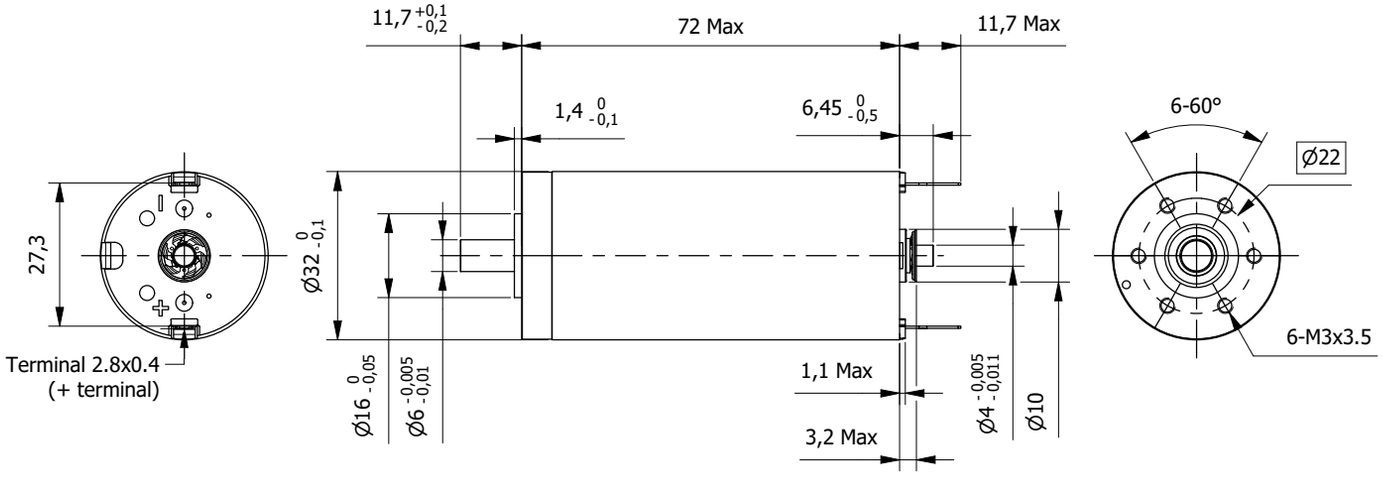
Intermittent operation

Brushed DC Coreless Motor 32DC72N-G

Graphite brushes

Ø 32mm

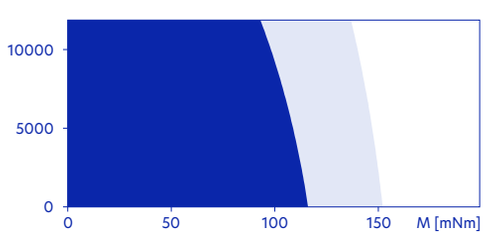
89,4 to 123mNm



Specification					
	Model		...6501	...7703	...7201
1	Rated Voltage	V	12	24	48
2	Rated Speed	rpm	6560	7710	7260
3	Rated Torque	mNm	89,4	108	123
4	Stall Torque	mNm	1730	1980	2000
5	Torque Constant	mNm/A	15,6	27,3	58,5
6	Motor Regulation	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 Line to line Resistance (50%)

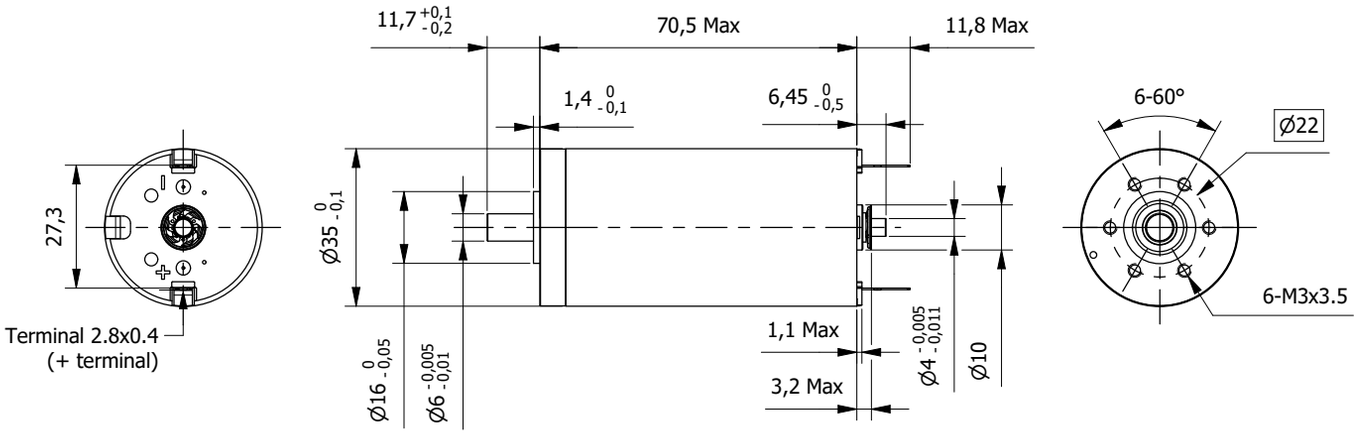
Intermittent operation

Brushed DC Coreless Motor 35DC70N-G

Graphite brushes

Ø 35mm

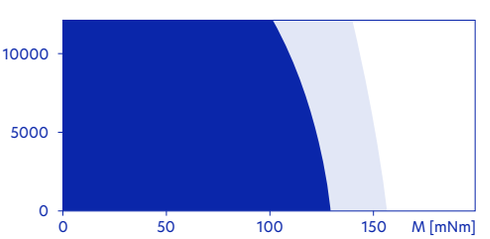
77,7 to 138mNm



Specification					
	Model		...7607	...7103	...6101
1	Rated Voltage	V	12	24	48
2	Rated Speed	rpm	7610	7160	6140
3	Rated Torque	mNm	77,7	121	138
4	Stall Torque	mNm	2080	2030	1860
5	Torque Constant	mNm/A	13,7	29,3	68,3
6	Motor Regulation	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 Line to line Resistance (50%)

Intermittent operation



Brushed DC

Permanent Magnet motors

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

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

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

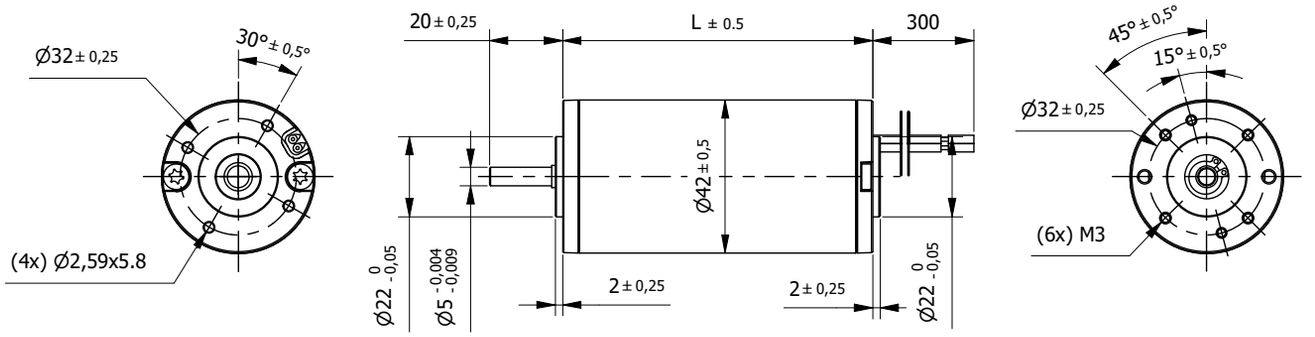
* Rated Torque

Brushed PMDC Motor 42DI

Permanent Magnet

Ø 42mm

0,038 - 0,057Nm



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

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

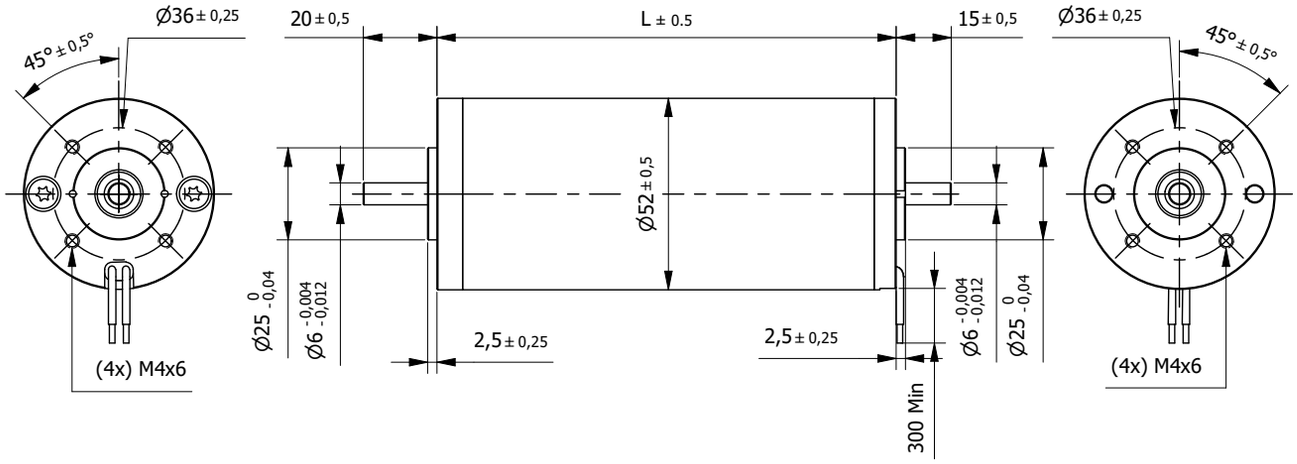
Connection			
n°	Color	Gauge	Function
1	Black	UL1569 AWG22	(V-)
2	Red	UL1569 AWG22	(V+)

Brushed PMDC Motor 52DI

Permanent Magnet

Ø 52mm

0,09 - 0,22Nm



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

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

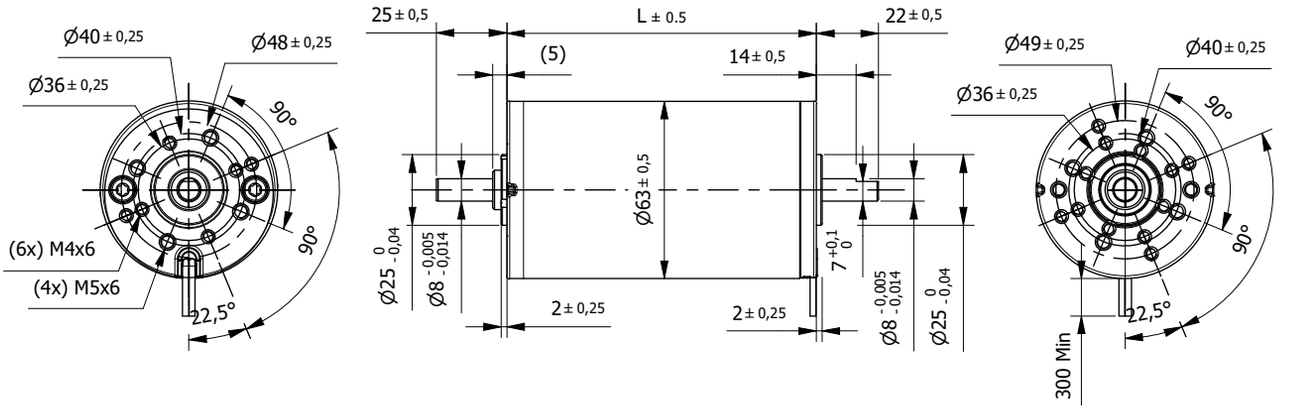
Connection			
n°	Color	Gauge	Function
1	Black	UL3266 AWG18	(V-)
2	Red	UL3266 AWG18	(V+)

Brushed PMDC Motor 63DI

Permanent Magnet

Ø 63mm

0,18 - 0,27Nm



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

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

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

Brushless DC



Slotless motors -
SBL series
Standard

p.105



Slotless motors -
EC series
High Performance

p.113



Slotted motors -
BL series
Standard

p.71



Slotted motors -
EC series
High Performance

p.89



Slotted motors -
CBL series
Economy

p.95



Motors
with Encoder

p.131



Flat motors

p.137



Flat motors
with Encoder

p.149



Frameless
motors

p.155

Brushless DC motors

Technical introduction		66
BLDC Slotted motors - BL Standard series	**Torque* (Nm)**	**71**
22BL	0,008...0,02	72
28BL	0,005...0,05	73
33BL	0,022...0,05	74
40BL	0,043...0,083	75
42BL - square - 8pole	0,063...0,25	76
42BLA - square - 10pole	0,07...0,36	77
42BLB - square - 6pole	0,064...0,43	78
42RBL	0,02...0,15	79
57BL - 4pole	0,055...0,44	80
57BLA - 6pole	0,2...0,8	81
57BLB - square	0,3...0,6	82
70BLS	0,5...1,5	83
80BLS	0,9...3	84
86BLC	0,4...2,22	85
86BLS	0,35...2,1	86
BLDC Slotted motors - EC High Performance series	**Torque* (Nm)**	**89**
22EC43...82N	0,03...0,08	90
BLDC Slotted motors - CBL Economy series	**Torque* (Nm)**	**95**
24CBL30	0,006	96
28CBL	0,028...0,05	97
36CBL	0,015...0,09	98
42CBL	0,068...0,15	99
48CBL68	0,18	100
BLDC Slotless motors - SBL Standard series	**Torque* (Nm)**	**105**
10SBL19	0,0005	106
14SBL45	0,004	107
16SBL	0,002...0,009	108
22SBL	0,006...0,025	109
28SBL	0,018...0,06	110
40SBL	0,2...0,25	111
BLDC Slotless motors - EC High Performance series	**Torque* (Nm)**	**113**
16EC24...36P	0,003...0,008	114
16EC40...56NS	0,007...0,016	116
22EC32P	0,010...0,011	118
22EC44NS	0,018...0,02	119
22EC48P	0,023	120
22EC48T	0,043...0,045	121
22EC60NS	0,027...0,029	122
22EC66T	0,055	123
30EC42P	0,034	124
30EC47T	0,069...0,073	125
30EC64P	0,061...0,064	126
30EC64T	0,093...0,096	127
40EC58...88P	0,09...0,21	128
BLDC motors with Encoder	**Torque* (Nm)**	**131**
42SVA	0,062...0,25	132
57SVA	0,3...0,6	133
80SVA	0,9...1,7	134
BLDC Flat motors	**Torque* (Nm)**	**137**
20BLW14	0,008	138
32BLW18	0,025	139
45BLW16	0,055	140
45BLW Connector	0,05...0,13	141
45BLW Wires	0,05...0,13	142
60BLWA38	0,5	143
60BLW40	0,3	144
60BLW40 - IP54	0,3	145
90BLW	0,46...0,96	146
BLDC Flat motors with Encoder	**Torque* (Nm)**	**149**
45BLW29-E	0,13	150
60BLW42-E	0,29	151
90BLW42-E	0,96	152
BLDC Frameless motors	**Torque* (Nm)**	**155**
25BLF	0,03...0,06	156
38BLF	0,1...0,2	157
43BLF	0,15	158
50BLF	0,3...0,5	159
60BLF	0,45	160
70BLF	0,55...1	161
85BLF	1,2...2	162
102BLF	2,5	163
115BLF	3,9...7,8	164

* Rated Torque

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

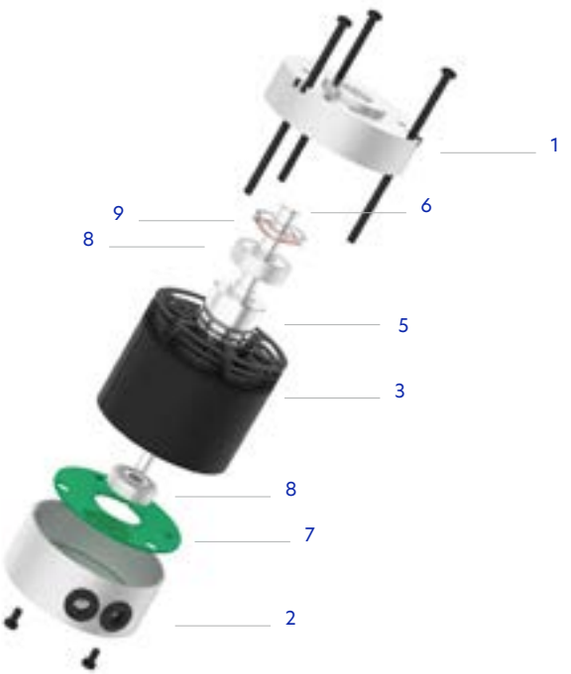
Glossary

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

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

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

BLDC Slotted motor



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

Brushless DC Slotted motors

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

Brushless DC Slotless motors

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

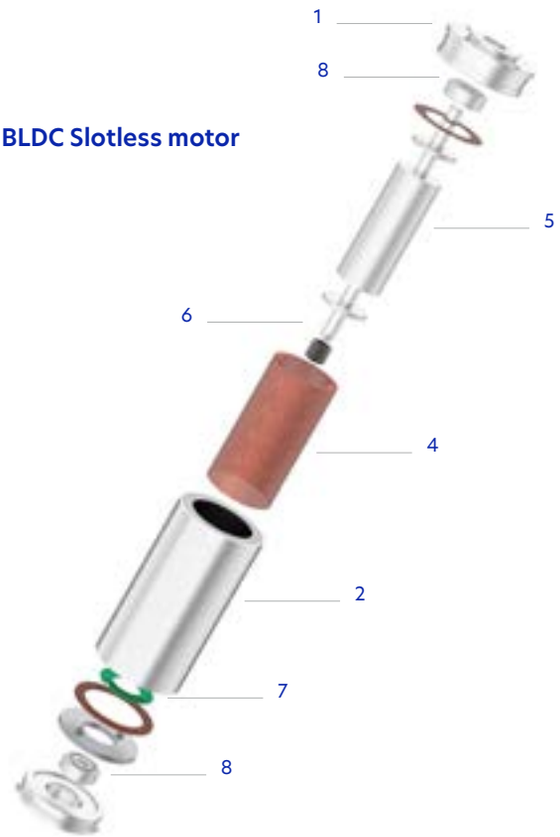
Brushless DC Flat motors

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

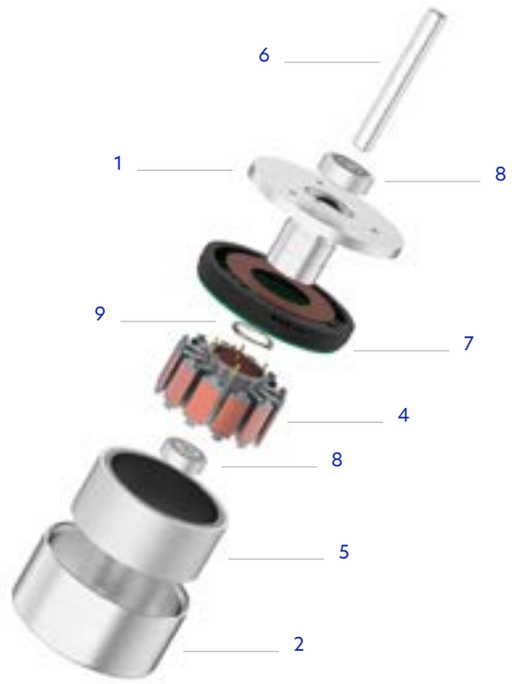
Brushless DC Frameless motors

Technical introduction

BLDC Slotless motor



BLDC Flat motor



Brushless DC motors with Encoder

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.

Hall sensors

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.

Magnets

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.



Slotted motors -
BL series
Standard

p.71



Slotted motors -
EC series
High Performance

p.89



Slotted motors -
CBL series
Economy

p.95

Brushless DC
Slotted motors

Advantages at a glance
Low cogging
Higher inertia
High speed

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

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

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

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

* Rated Torque



BLDC Slotted motors

BL series - Standard

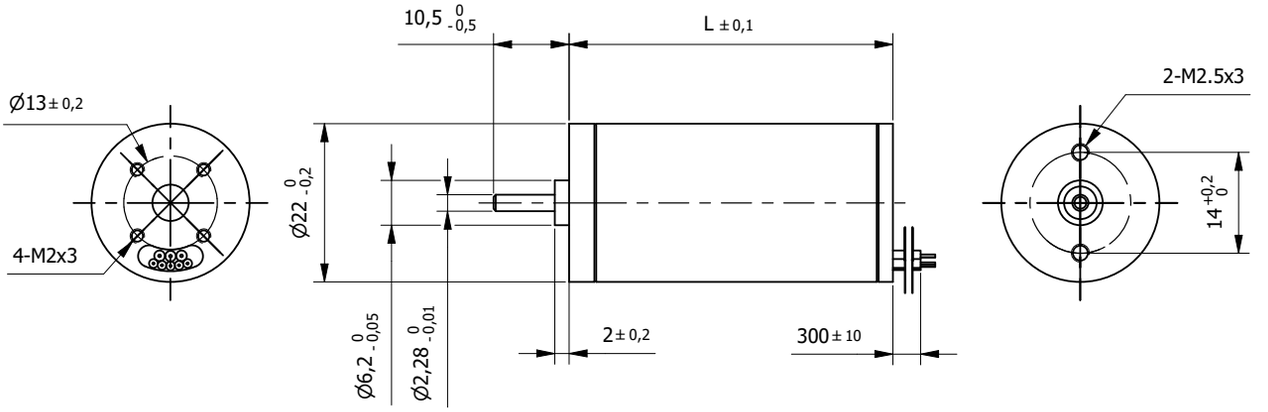
BLDC Slotted motors - BL Standard series	Torque* (Nm)	
22BL	0,008...0,02	72
28BL	0,005...0,05	73
33BL	0,022...0,05	74
40BL	0,043...0,083	75
42BL - square - 8pole	0,063...0,25	76
42BLA - square - 10pole	0,07...0,36	77
42BLB - square - 6pole	0,064...0,43	78
42RBL	0,02...0,15	79
57BL - 4pole	0,055...0,44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

* Rated Torque

Brushless Slotted Motor 22BL

Ø 22mm

0,008 - 0,02Nm



Specification				
	Model		22BL45	22BL70
1	n° of Pole		8	8
2	n° of Phase		3	3
3	Rated Voltage	V	24	24
4	Rated Speed	rpm	4600	3800
5	Rated Torque	Nm	0,008	0,02
6	Max. Peak Torque	Nm	0,024	0,06
7	Torque Constant	Nm/A	0,030	0,036
8	Rated Current	A	0,26	0,56
9	Max. Peak Current	A	1,1	2
10	No-Load Current	mA	150	120
11	Line to Line Resistance	Ω	23	11,6
12	Line to Line Inductance	mH	6,2	4,2
13	Rotor Inertia	gcm2	0,66	1,32
14	Length (L)	mm	45	68
15	Weight	Kg	0,07	0,12

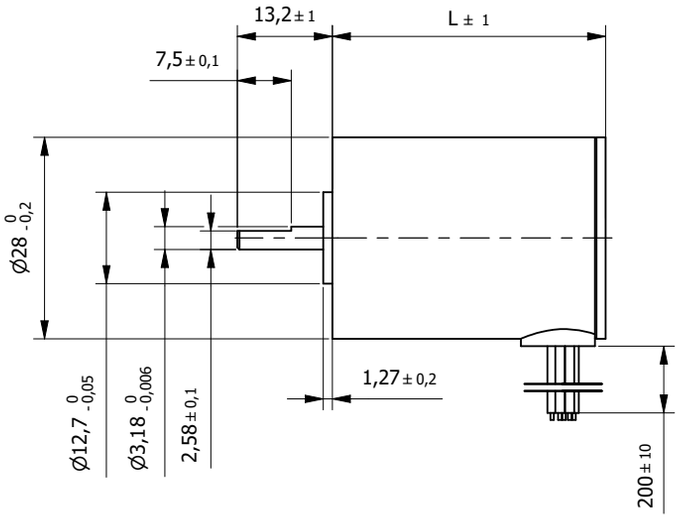
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	10N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	360 VAC
Insulation Resistance (min. 500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

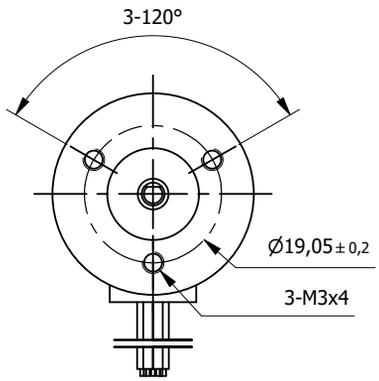
Connection			
Lead n°	Color	Gauge	Function
1	Yellow	UL1430 AWG28	Vcc Hall +5 to +24 Vdc
2	Blue	|	Hall A
3	Orange	|	Hall B
4	Brown	|	Hall C
5	White	|	GND Hall
6	Green	UL1430 AWG26	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 28BL

Ø 28mm

0,005 - 0,05Nm





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

Specification					
	Model		28BL26	28BL38	28BL77
1	n° of Pole		4	4	4
2	n° of Phase		3	3	3
3	Rated Voltage	V	15	24	24
4	Rated Speed	rpm	8000	3100	3100
5	Rated Torque	Nm	0,005	0,016	0,05
6	Max. Peak Torque	Nm	0,015	0,048	0,15
7	Torque Constant	Nm/A	0,014	0,024	0,05
8	Rated Current	A	0,35	0,67	1
9	Max. Peak Current	A	1,3	2	3
10	No-Load Current	mA	200	200	150
11	Line to Line Resistance	Ω	8,2	7,4	4,67
12	Line to Line Inductance	mH	2,3	2	2,2
13	Rotor Inertia	gcm2	2,35	3,69	10,98
14	Length (L)	mm	26	38	77
15	Weight	Kg	0,06	0,082	0,28

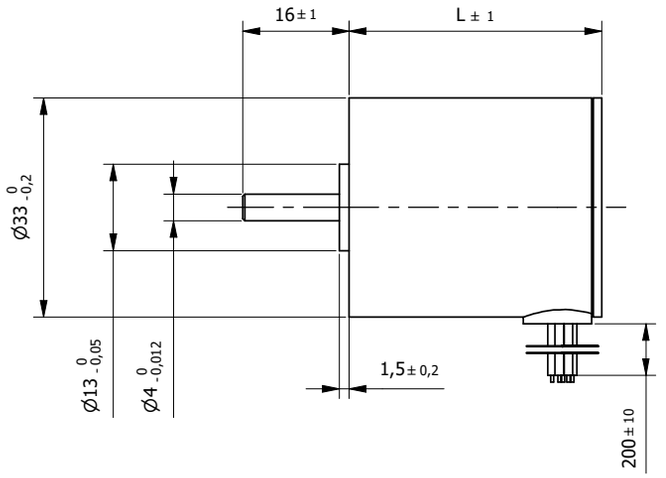
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	10N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

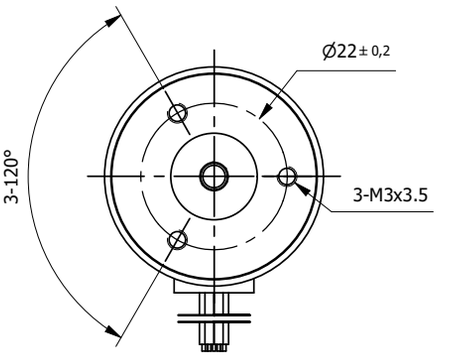
Connection			
Lead n°	Color	Gauge	Function
1	Yellow	UL1430 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue	|	Hall A
3	Orange	|	Hall B
4	Brown	|	Hall C
5	White	|	GND Hall
6	Green	|	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 33BL

Ø 33mm

0,022 - 0,05Nm





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

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

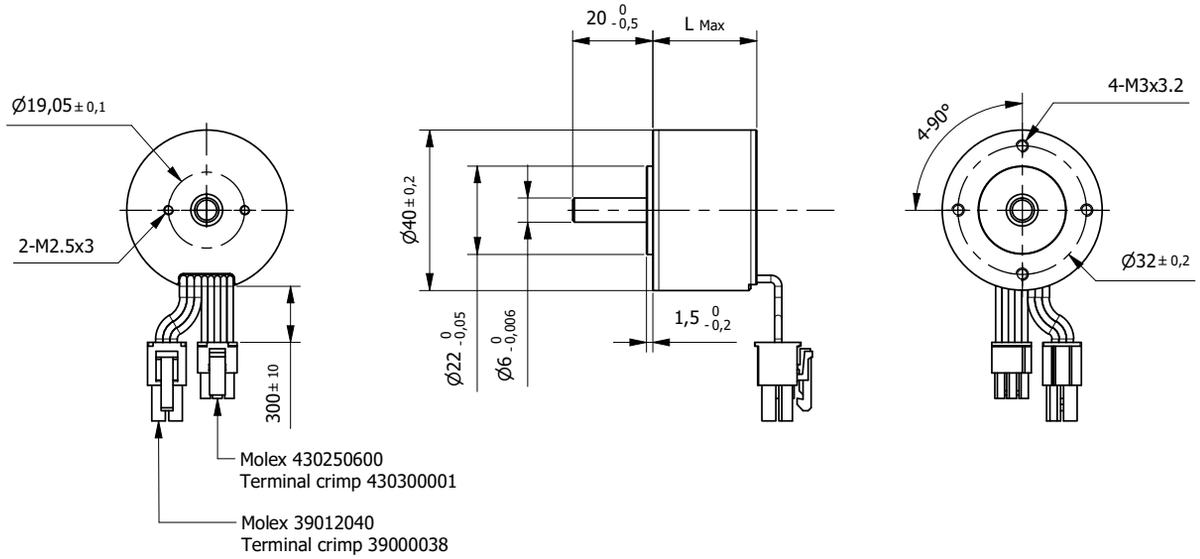
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	10N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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

Brushless Slotted Motor 40BL

Ø 40mm

0,043 - 0,083Nm



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

Specification

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

Characteristics

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

Connection

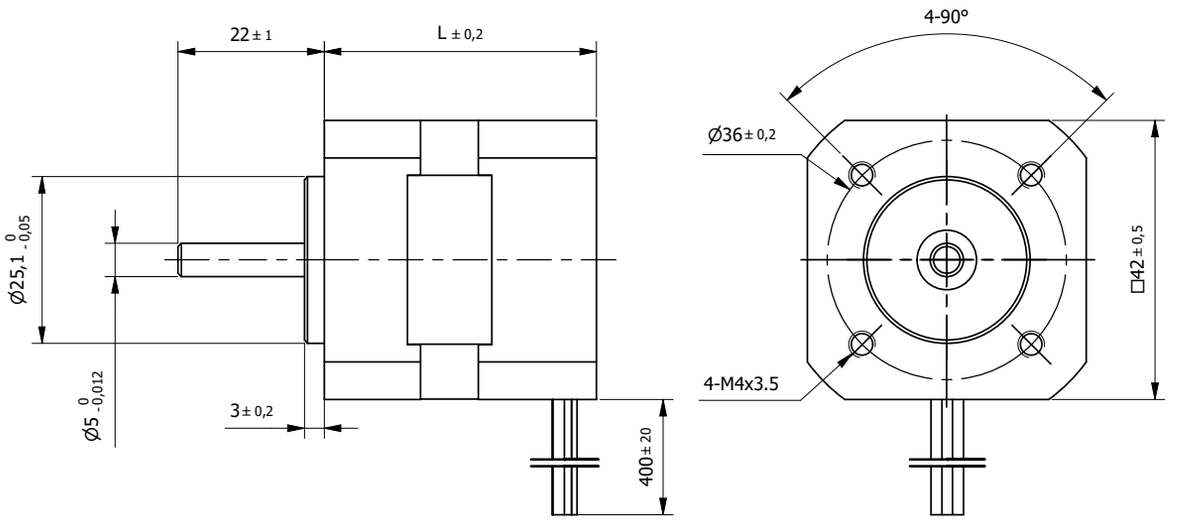
Pin n°	Color	Gauge	Function
1	Red	UL1332 AWG20	Phase U
2	Black	|	Phase V
3	White	|	Phase W
1	Yellow	UL1332 AWG26	Hall A
2	Brown	|	Hall B
3	Gray	|	Hall C
4	Blue	|	GND Hall Sensor Ground
5	Green	|	Vcc Hall Sensor +5 to +24 Vdc

Brushless Slotted Motor 42BL

8-pole

□ 42mm

0,063 - 0,25Nm



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

Specification						
	Model		42BL41	42BL61	42BL81	42BL100
1	n° of Pole		8	8	8	8
2	n° of Phase		3	3	3	3
3	Rated Voltage	V	24	24	24	24
4	Rated Speed	rpm	4000	4000	4000	4000
5	Rated Torque	Nm	0,063	0,125	0,185	0,25
6	Max. Peak Torque	Nm	0,19	0,38	0,56	0,75
7	Torque Constant	Nm/A	0,035	0,036	0,036	0,036
8	Rated Current	A	1,79	3,47	5,14	6,94
9	Max. Peak Current	A	6	10,8	15,5	21,7
10	No-Load Current	mA	200	240	400	450
11	Line to Line Resistance	Ω	1,5	0,8	0,43	0,3
12	Line to Line Inductance	mH	2,1	1,2	0,71	0,5
13	Rotor Inertia	gcm2	24	48	72	96
14	Length (L)	mm	41	61	81	100
15	Weight	Kg	0,3	0,45	0,65	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 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

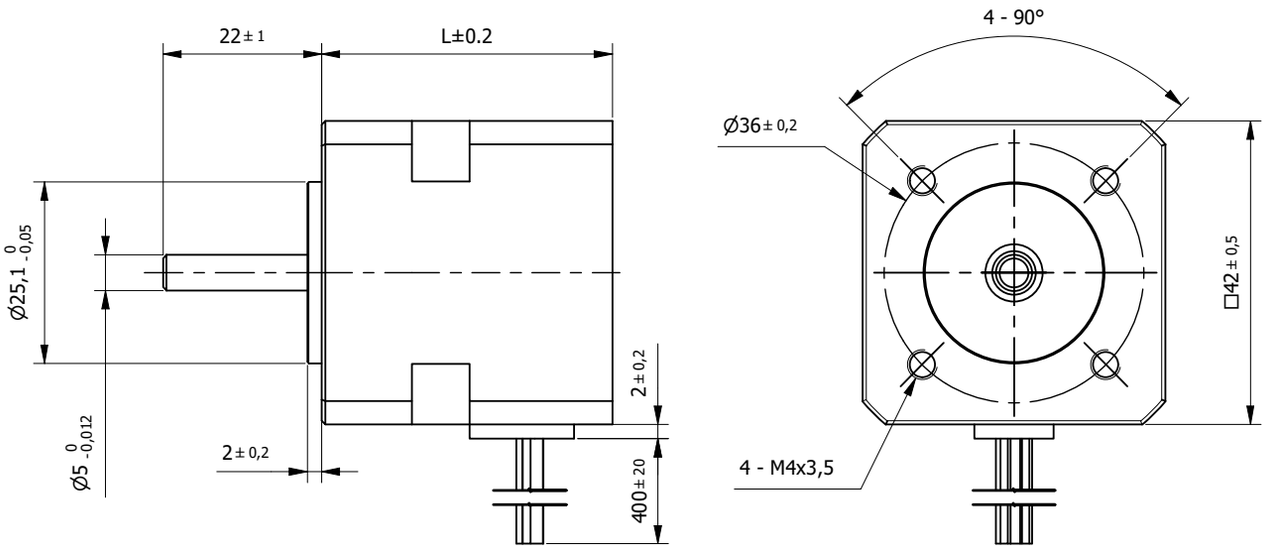
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue	|	Hall A
3	Green	|	Hall B
4	White	|	Hall C
5	Black	|	GND Hall
6	Yellow	UL1430 AWG20	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 42BLA

10-pole

□ 42mm

0,07 - 0,36Nm



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

Specification						
	Model		42BLA01	42BLA02	42BLA03	42BLA04
1	n° of Pole		10	10	10	10
2	n° of Phase		3	3	3	3
3	Rated Voltage	V	24	24	24	24
4	Rated Speed	rpm	3000	3000	3000	3000
5	Rated Torque	Nm	0,07	0,16	0,26	0,36
6	Max. Peak Torque	Nm	0,21	0,48	0,78	1,08
7	Torque Constant	Nm/A	0,055	0,059	0,058	0,057
8	Rated Current	A	1,27	2,71	4,48	6,32
9	Max. Peak Current	A	4	8,3	13,5	19
10	No-Load Current	mA	220	450	430	490
11	Line to Line Resistance	Ω	2,6	1,1	0,7	0,48
12	Line to Line Inductance	mH	1,83	0,96	0,58	0,44
13	Rotor Inertia	gcm2	48	101	154	207
14	Length (L)	mm	40,3	60,3	80,3	100,3
15	Weight	Kg	0,26	0,45	0,65	0,85

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

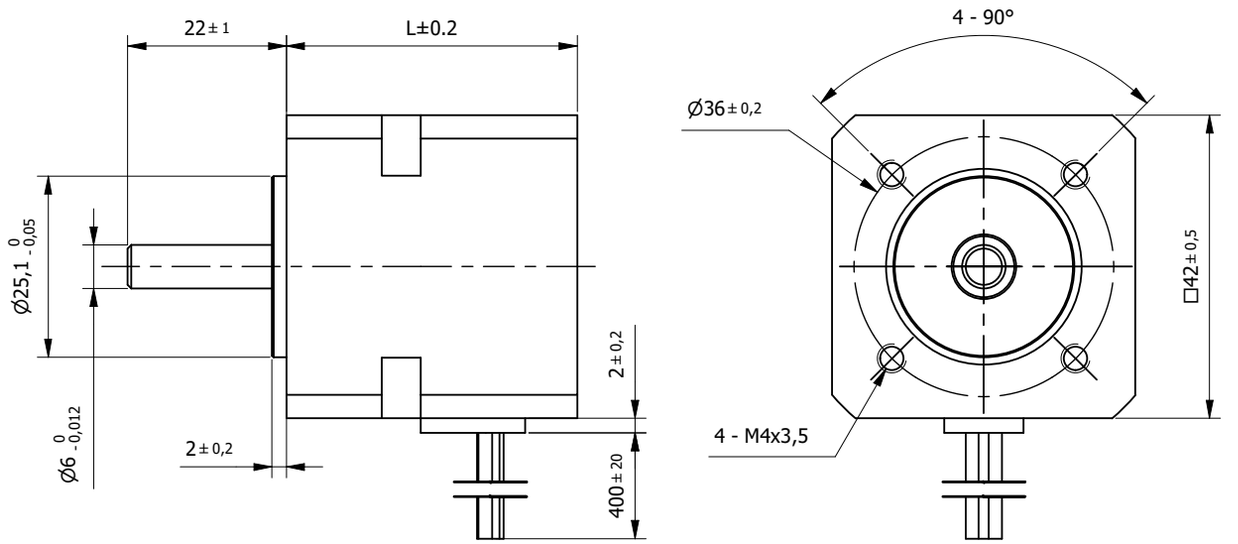
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue	|	Hall A
3	Green	|	Hall B
4	White	|	Hall C
5	Black	|	GND Hall
6	Yellow	UL1430 AWG20	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 42BLB

6-pole

□ 42mm

0,064 - 0,43Nm



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

Specification						
	Model		42BLB01	42BLB02	42BLB03	42BLB04
1	n° of Pole		6	6	6	6
2	n° of Phase		3	3	3	3
3	Rated Voltage	V	24	24	24	24
4	Rated Speed	rpm	3000	3000	3000	3000
5	Rated Torque	Nm	0,064	0,17	0,3	0,43
6	Max. Peak Torque	Nm	0,19	0,51	0,9	1,29
7	Torque Constant	Nm/A	0,057	0,058	0,062	0,062
8	Rated Current	A	1,12	2,93	4,84	6,94
9	Max. Peak Current	A	3,5	9	14,5	20,8
10	No-Load Current	mA	160	270	330	450
11	Line to Line Resistance	Ω	3,6	1,05	0,54	0,4
12	Line to Line Inductance	mH	1,8	0,75	0,45	0,3
13	Rotor Inertia	gcm2	80	100	120	140
14	Length (L)	mm	40,3	60,3	80,3	100,3
15	Weight	Kg	0,4	0,6	0,8	1

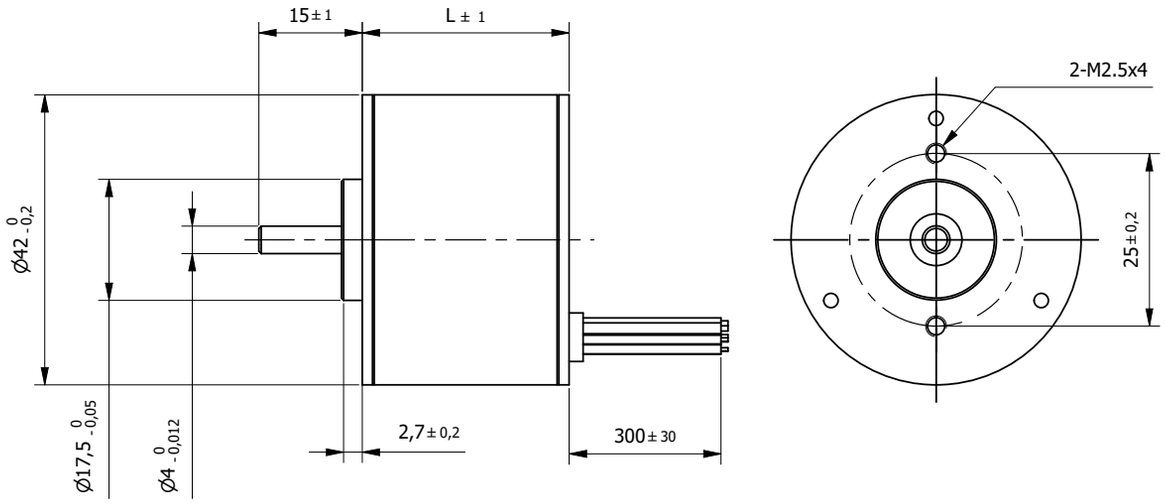
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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

Brushless Slotted Motor 42RBL

Ø 42mm

0,02 - 0,15Nm



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

Specification					
	Model		42RBL30	42RBL60	42RBL85
1	n° of Pole		8	8	8
2	n° of Phase		3	3	3
3	Rated Voltage	V	24	24	24
4	Rated Speed	rpm	4000	4200	4000
5	Rated Torque	Nm	0,02	0,06	0,15
6	Max. Peak Torque	Nm	0,06	0,17	0,45
7	Torque Constant	Nm/A	0,039	0,041	0,04
8	Rated Current	A	0,50	1,4	3,5
9	Max. Peak Current	A	1,5	4,2	11,2
10	No-Load Current	A	<0,4	<0,4	<0,4
11	Line to Line Resistance	Ω	5,9	1,6	0,71
12	Line to Line Inductance	mH	5,1	1,94	0,86
13	Rotor Inertia	gcm2	15,6	33	84
14	Length (L)	mm	30	60	85
15	Weight	Kg	0,25	0,4	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 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

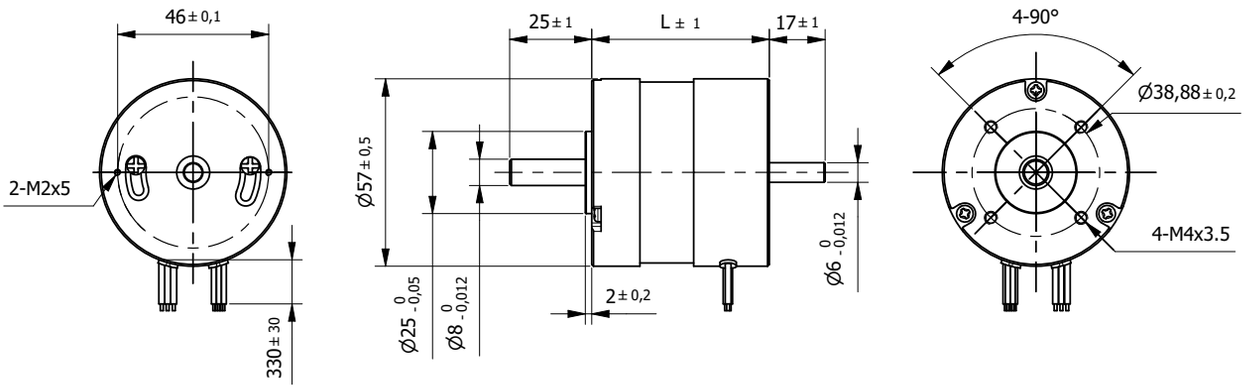
Connection			
Lead n°	Color	Gauge	Function
1	Yellow	UL1007 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue	|	Hall A
3	Orange	|	Hall B
4	Brown	|	Hall C
5	White	|	GND Hall
6	Green	UL1007 AWG22	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 57BL

4-pole

Ø 57mm

0,055 - 0,44Nm



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

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

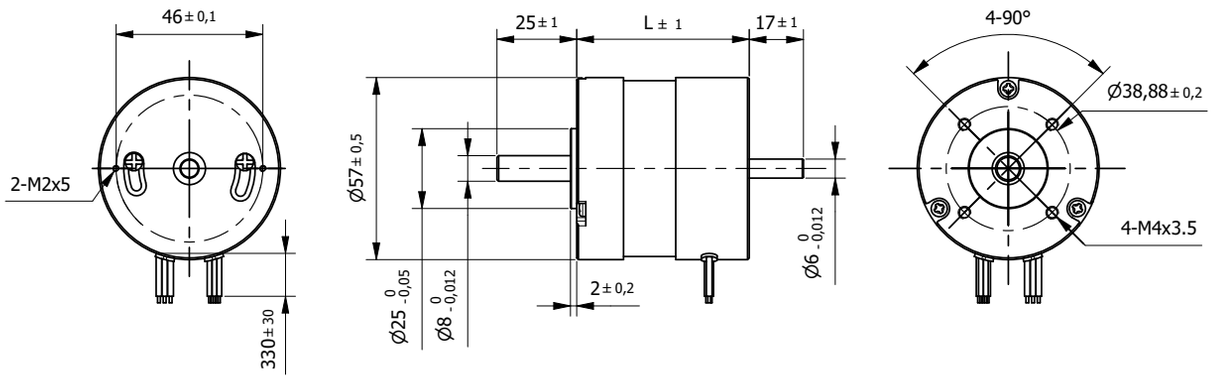
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue	|	Hall A
3	Green	|	Hall B
4	White	|	Hall C
5	Black	|	GND Hall
6	Yellow	UL1430 AWG20	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Slotted Motor 57BLA

6-pole

Ø 57mm

0,2 - 0,8Nm



Specification						
	Model		57BLA01	57BLA02	57BLA03	57BLA04
1	n° of Pole		6	6	6	6
2	n° of Phase		3	3	3	3
3	Rated Voltage	V	36	36	36	36
4	Rated Speed	rpm	4000	4000	4000	4000
5	Rated Torque	Nm	0,2	0,4	0,6	0,8
6	Max. Peak Torque	Nm	0,6	1,2	1,8	2,4
7	Torque Constant	Nm/A	0,07	0,07	0,06	0,07
8	Rated Current	A	2,86	5,71	10	11,43
9	Max. Peak Current	A	8,6	16	29	35
10	No-Load Current	mA	350	400	580	240
11	Line to Line Resistance	Ω	0,95	0,4	0,25	0,2
12	Line to Line Inductance	mH	1,2	0,55	0,4	0,25
13	Rotor Inertia	gcm2	275	375	250	693
14	Length (L)	mm	53,6	73,6	93,6	113,6
15	Weight	Kg	0,76	1	1,25	1,52

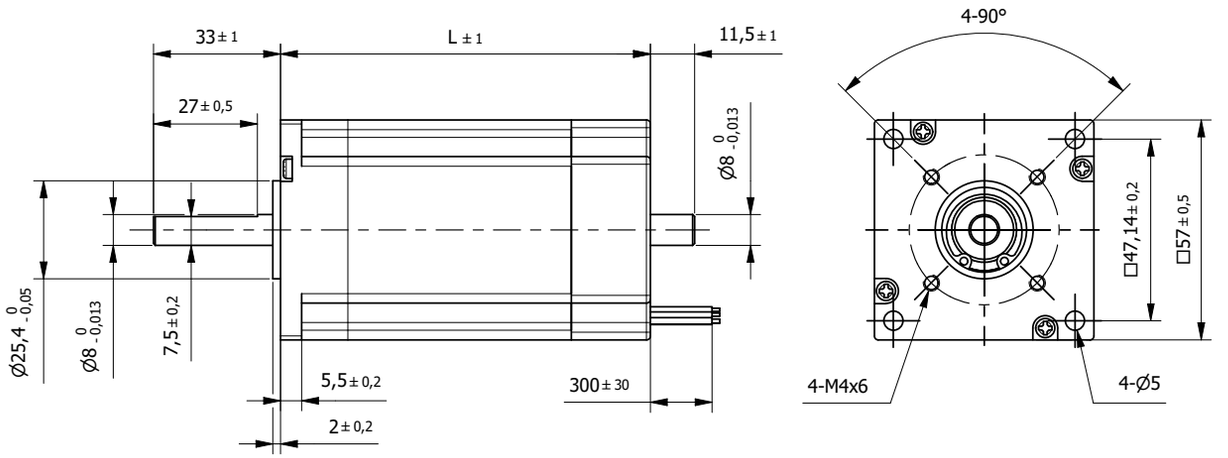
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (460g load)	0,025mm
Axial play (4000g load)	0,025mm
Max. Radial force (20mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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

Brushless Slotted Motor 57BLB

□ 57mm

0,3 - 0,6Nm



Specification					
	Model		57BLB40	57BLB60	57BLB80
1	n° of Pole		8	8	8
2	n° of Phase		3	3	3
3	Rated Voltage	V	36	36	36
4	Rated Speed	rpm	3000	3000	3000
5	Rated Torque	Nm	0,3	0,45	0,6
6	Max. Peak Torque	Nm	0,9	1,35	1,8
7	Torque Constant	Nm/A	0,08	0,08	0,08
8	Rated Current	A	4	5,4	7,5
9	Max. Peak Current	A	12,3	18,2	23,8
10	No-Load Current	mA	400	550	620
11	Line to Line Resistance	Ω	1,2	0,8	0,5
12	Line to Line Inductance	mH	1,2	0,8	0,6
13	Rotor Inertia	gcm2	210	320	430
14	Length (L)	mm	76	96	116
15	Weight	Kg	0,8	1	1,2

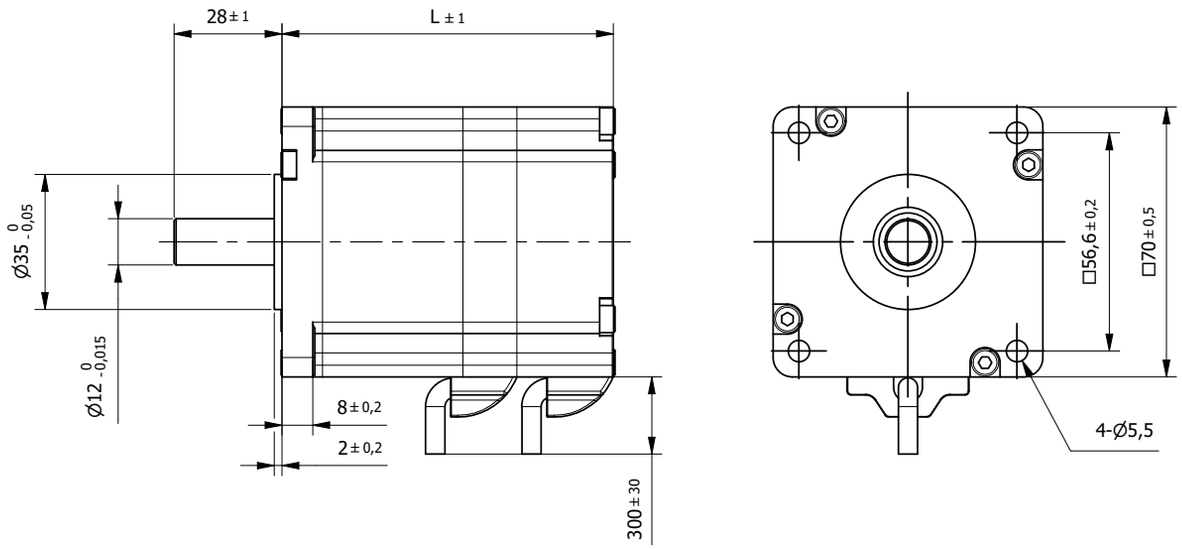
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,025mm
Axial play (4000g load)	0,025mm
Max. Radial force (10mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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

Brushless Slotted Motor 70BLS

□ 70mm

0,5 - 1,5Nm



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

Specification					
	Model		70BLS86	70BLS116	70BLS136
1	n° of Pole		8	8	8
2	n° of Phase		3	3	3
3	Rated Voltage	V	48	48	48
4	Rated Speed	rpm	3000	3000	3000
5	Rated Torque	Nm	0,5	1	1,5
6	Max. Peak Torque	Nm	1,5	3	4,5
7	Torque Constant	Nm/A	0,12	0,12	0,12
8	Rated Current	A	4,17	8,33	12,5
9	Max. Peak Current	A	13	26	38
10	No-Load Current	mA	600	600	600
11	Line to Line Resistance	Ω	0,6	0,3	0,22
12	Line to Line Inductance	mH	1,4	0,7	0,55
13	Rotor Inertia	gcm2	200	400	600
14	Length (L)	mm	86	116	136
15	Weight	Kg	1,3	2,1	2,9

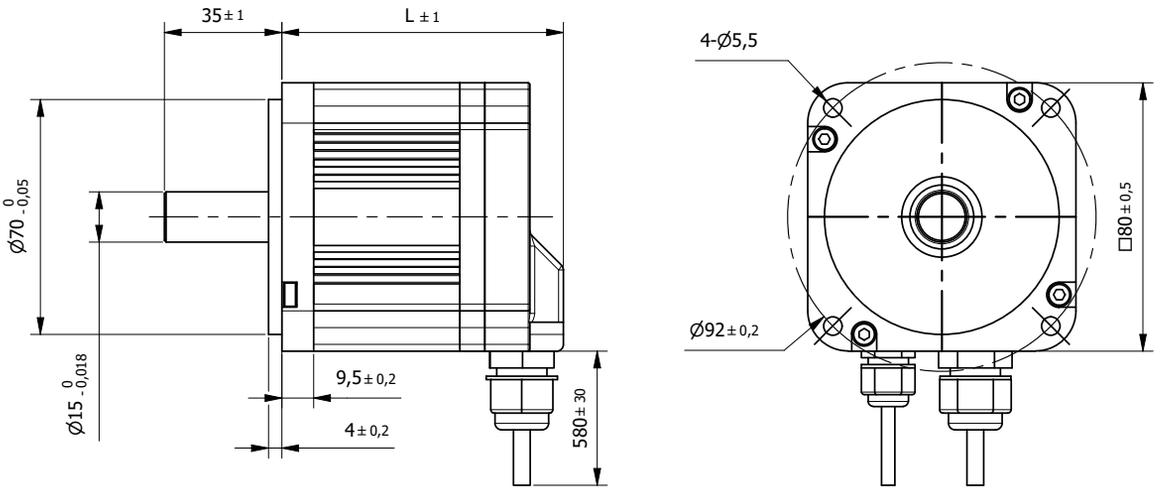
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min.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

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

Brushless Slotted Motor 80BLS

□ 80mm

0,9 - 3Nm



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

Specification						
	Model		80BLS84	80BLS105	80BLS120	80BLS140
1	n° of Pole		8	8	8	8
2	n° of Phase		3	3	3	3
3	Rated Voltage	V	48	48	48	48
4	Rated Speed	rpm	3000	3000	3000	3000
5	Rated Torque	Nm	0,9	1,7	2,2	3
6	Max. Peak Torque	Nm	2,5	5	6,5	8,5
7	Torque Constant	Nm/A	0,118	0,113	0,109	0,111
8	Rated Current	A	7,63	15,04	20,18	27,03
9	Max. Peak Current	A	22	45	61	78
10	No-Load Current	mA	500	700	1000	1500
11	Line to Line Resistance	Ω	0,25	0,1	0,07	0,057
12	Line to Line Inductance	mH	1,3	0,6	0,4	0,3
13	Rotor Inertia	gcm2	544	1020	1360	1900
14	Length (L)	mm	84	105	120	140
15	Weight	Kg	1,6	2	2,5	2,9

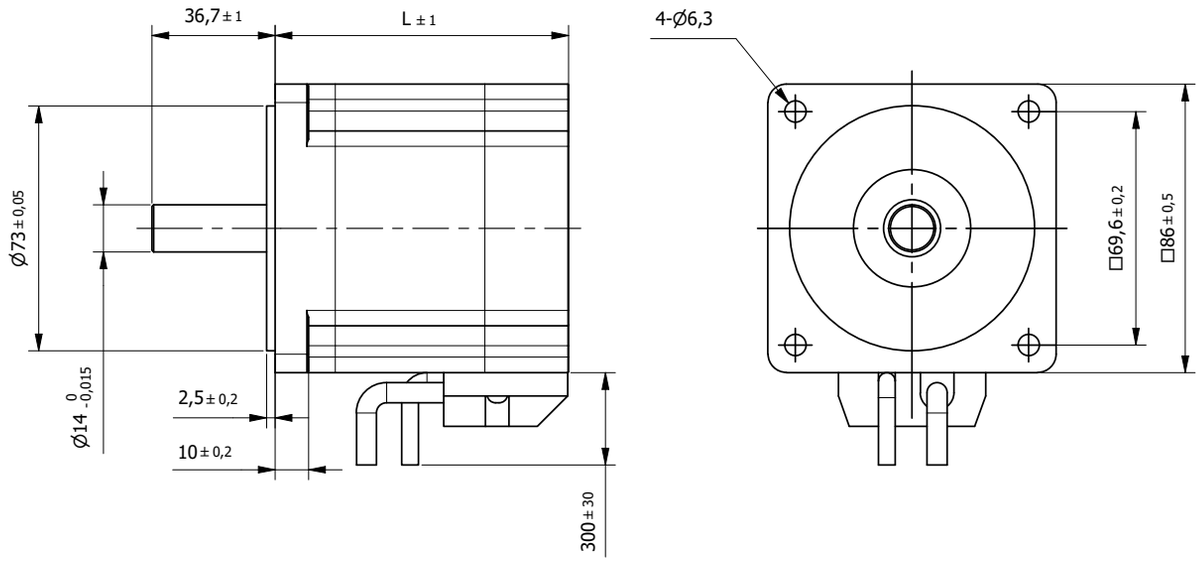
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	F
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (20mm from flange)	115N
Max. Axial force	45N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min.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

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

Brushless Slotted Motor 86BLC

□ 86mm

0,4 - 2,22Nm



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

Specification						
	Model		86BLC64	86BLC77	86BLC105	86BLC125
1	n° of Pole		8	8	8	8
2	n° of Phase		3	3	3	3
3	Rated Voltage	V	48	48	48	48
4	Rated Speed	rpm	3000	3000	3000	3000
5	Rated Torque	Nm	0,4	0,8	1,6	2,22
6	Max. Peak Torque	Nm	1,2	2,4	4,8	6,66
7	Torque Constant	Nm/A	0,122	0,149	0,135	0,131
8	Rated Current	A	3,28	5,37	11,85	16,95
9	Max. Peak Current	A	11	17,5	37	52
10	No-Load Current	mA	380	550	860	1200
11	Line to Line Resistance	Ω	1	0,34	0,14	0,1
12	Line to Line Inductance	mH	1,4	0,6	0,36	0,24
13	Rotor Inertia	gcm2	400	800	1600	2400
14	Length (L)	mm	64	77	105	125
15	Weight	Kg	1,5	1,85	2,7	4

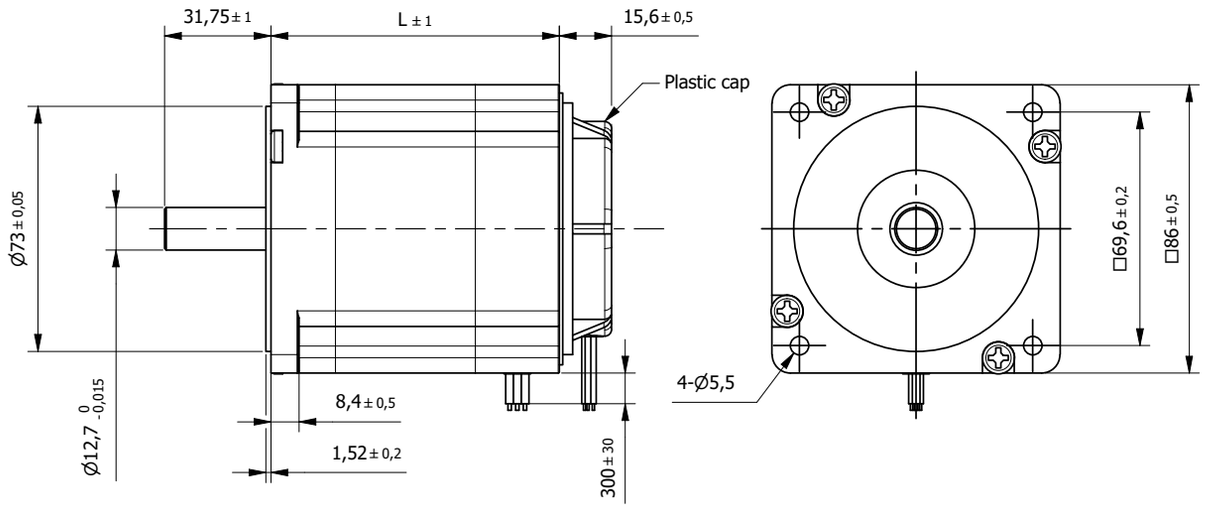
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (400g load)	0,08mm
Max. Radial force (20mm from flange)	220N
Max. Axial force	45N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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

Brushless Slotted Motor 86BLS

□ 86mm

0,35 - 2,1Nm



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

Specification						
	Model		86BLS58	86BLS71	86BLS98	86BLS125
1	n° of Pole		8	8	8	8
2	n° of Phase		3	3	3	3
3	Rated Voltage	V	48	48	48	48
4	Rated Speed	rpm	3000	3000	3000	3000
5	Rated Torque	Nm	0,35	0,7	1,4	2,1
6	Max. Peak Torque	Nm	1,05	2,1	4,2	6,3
7	Torque Constant	Nm/A	0,116	0,124	0,127	0,128
8	Rated Current	A	3,02	5,65	11,02	16,41
9	Max. Peak Current	A	9,5	20	33	56
10	No-Load Current	mA	540	800	1450	1640
11	Line to Line Resistance	Ω	0,9	0,34	0,16	0,1
12	Line to Line Inductance	mH	2,6	1	0,5	0,31
13	Rotor Inertia	gcm2	400	800	1600	2400
14	Length (L)	mm	58	71	98	125
15	Weight	Kg	1,6	2,12	3,15	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 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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



BLDC Slotted motors

EC series - High Performance

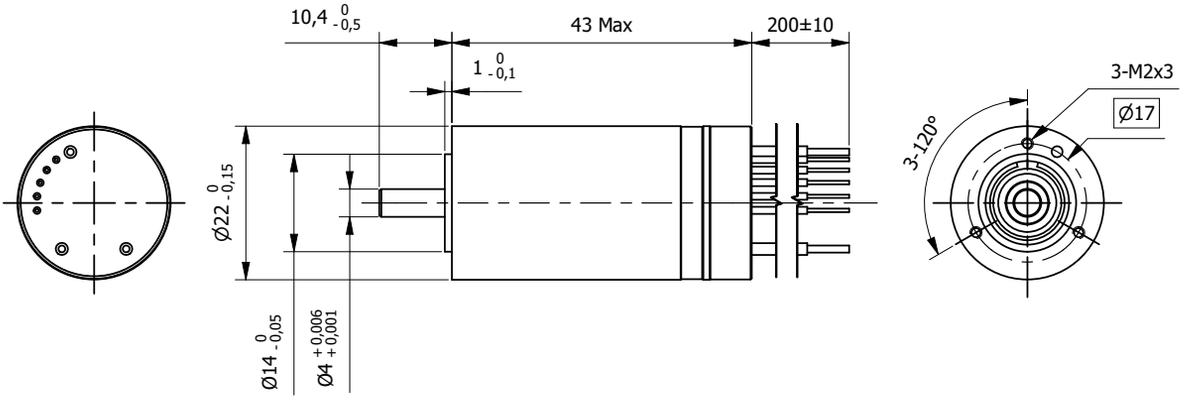
BLDC Slotted motors - EC High Performance series	Torque* (Nm)	
22EC43N	0,03	90
22EC58N	0,05	91
22EC82N	0,08	92

* Rated Torque

Brushless Slotted Motor 22EC43N

Ø 22mm

28,6 to 32,4mNm

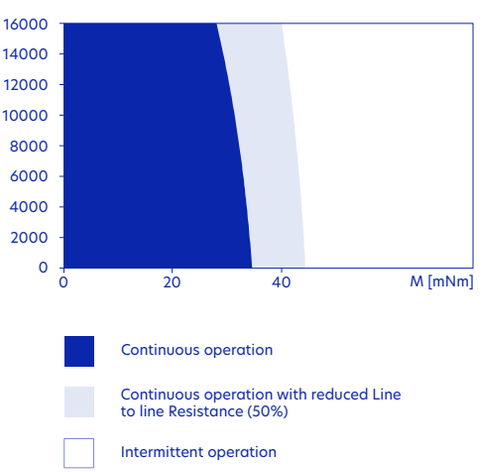


Specification				
	Model		...13107	...10903
1	n° of Pole		8	8
2	n° of Phase		3	3
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	13100	10900
5	Rated Torque	mNm	28,6	32,4
6	Stall Torque	mNm	466	461
7	Torque Constant	mNm/A	14,8	34,9
8	Motor Regulation	10^3/Nms	3,5	3
9	Rated Current	A	1,88	0,885
10	Stall Current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

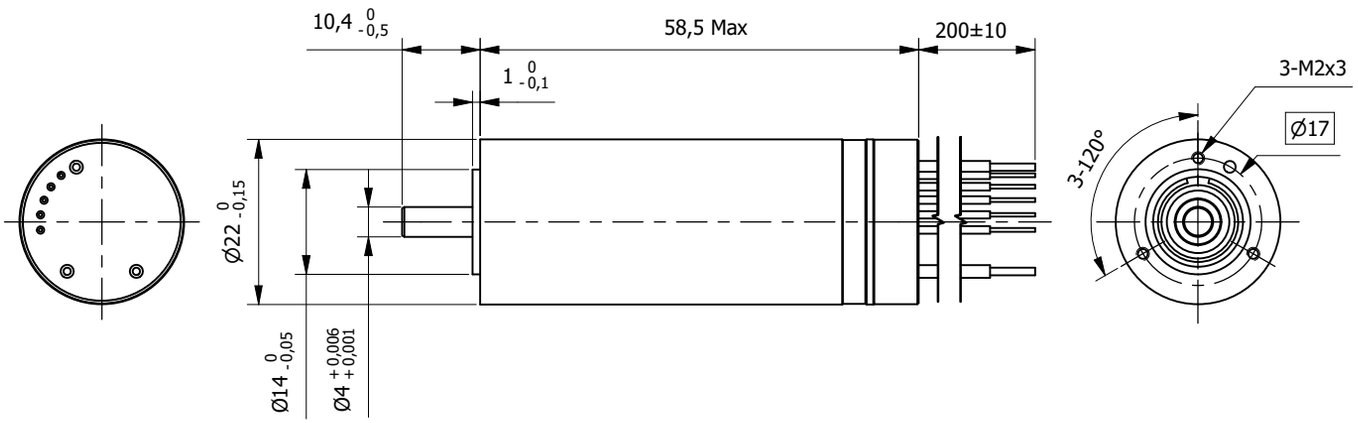
Operating range: Winding 24V



Brushless Slotted Motor 22EC58N

Ø 22mm

45,7 to 48,8mNm

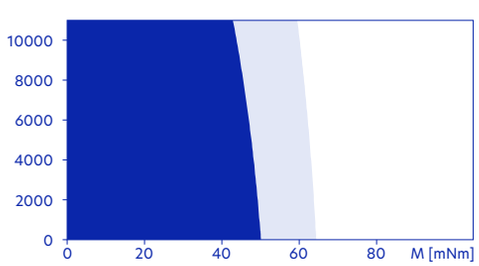


Specification					
	Model		...7902	...8807	...9302
1	n° of Pole		8	8	8
2	n° of Phase		3	3	3
3	Rated Voltage	V	12	24	48
4	Rated Speed	rpm	7930	8850	9380
5	Rated Torque	mNm	45,7	48,1	48,8
6	Stall Torque	mNm	528	684	766
7	Torque Constant	mNm/A	12,1	22	41,8
8	Motor Regulation	10^3/Nms	1,9	1,6	1,5
9	Rated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

Operating range: Winding 24V



Continuous operation

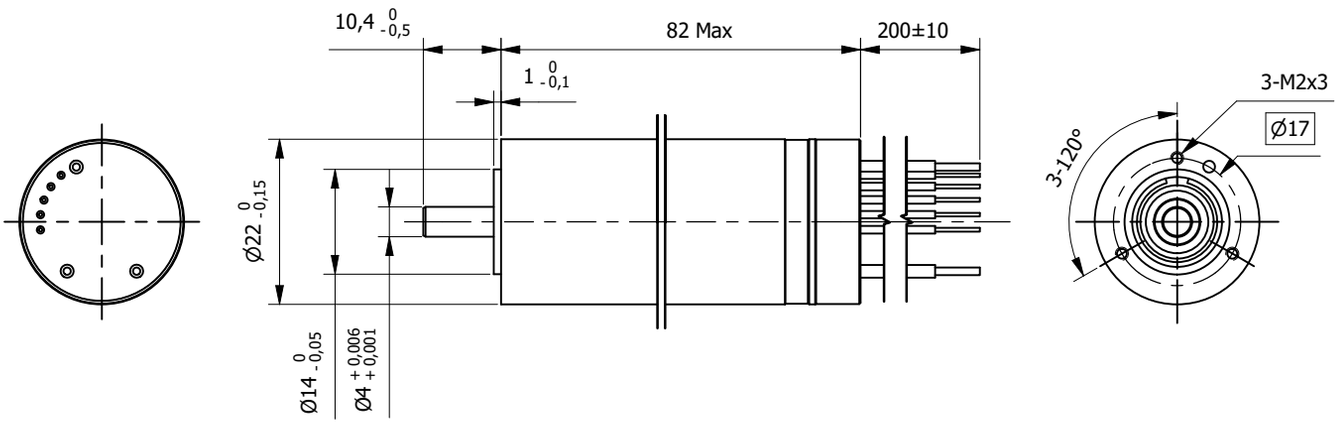
Continuous operation with reduced Line to line Resistance (50%)

Intermittent operation

Brushless Slotted Motor 22EC82N

Ø 22mm

77,5 to 79,9mNm

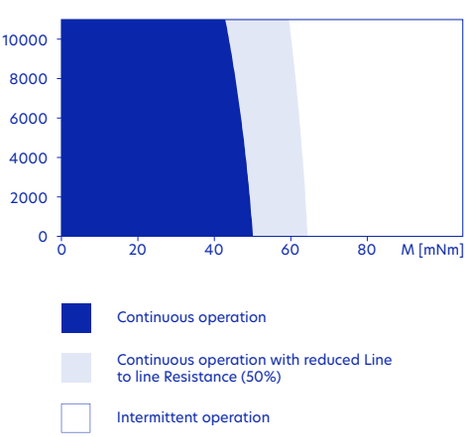


Specification				
	Model		...5001	...5304
1	n° of Pole		8	8
2	n° of Phase		3	3
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	5000	5320
5	Rated Torque	mNm	77,5	79,9
6	Stall Torque	mNm	730	832
7	Torque Constant	mNm/A	37,7	71,6
8	Motor Regulation	10³/Nms	0,9	0,8
9	Rated Current	A	2,01	1,09
10	Stall Current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

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

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

Operating range: Winding 24V





BLDC Slotted motors

CBL series - Economy

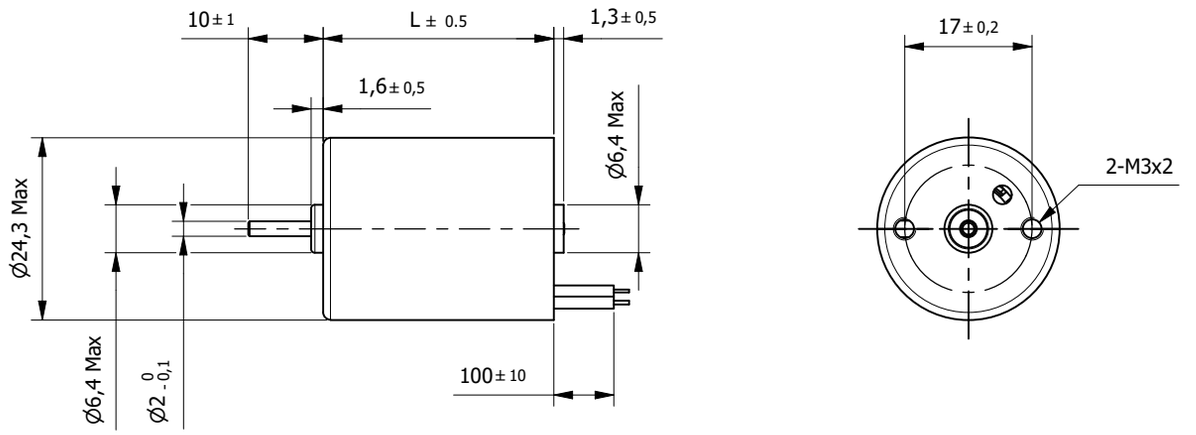
BLDC Slotted motors - CBL Economy series	Torque* (Nm)	
24CBL30	0,006	96
28CBL	0,028...0,05	97
36CBL	0,015...0,09	98
42CBL	0,068...0,15	99
48CBL68	0,18	100

* Rated Torque

Brushless Slotted Motor 24CBL30

Ø 24mm

0,006Nm



Motor with Sleeve Bearings

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

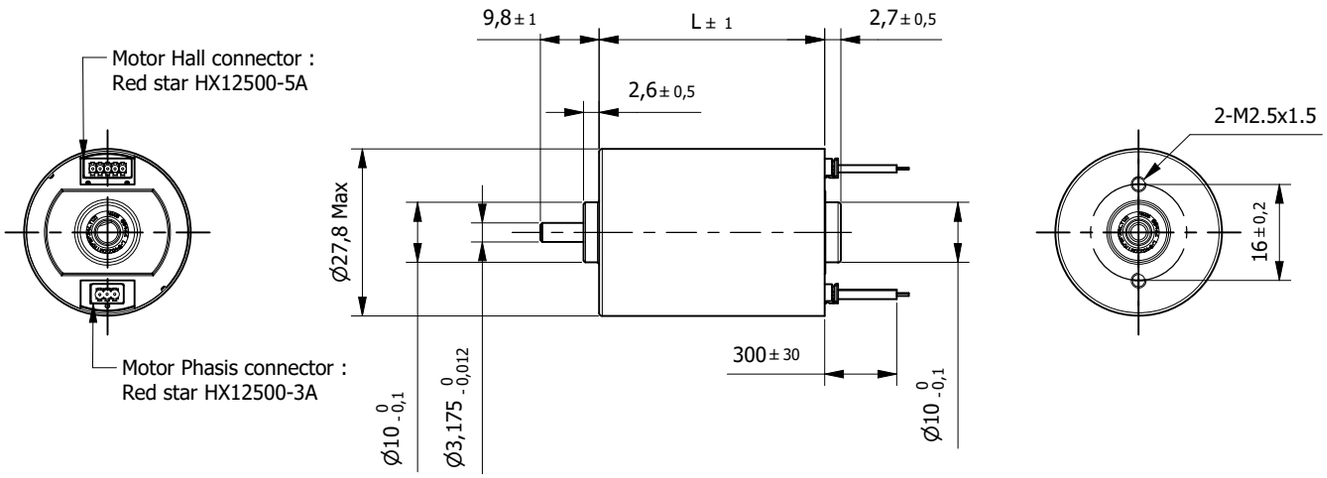
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,025mm
Axial play (450g load)	0,2mm
Max. Radial force (10mm from flange)	5N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	500 VAC
Insulation Resistance (min. 500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

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

Brushless Slotted Motor 28CBL

Ø 28mm

0,028 - 0,05Nm



Specification				
	Model		28CBL38	28CBL48
1	n° of Pole		8	8
2	n° of Phase		3	3
3	Rated Voltage	V	24	24
4	Rated Speed	rpm	4000	4500
5	Rated Torque	Nm	0,028	0,05
6	Max. Peak Torque	Nm	0,084	0,15
7	Torque Constant	Nm/A	0,043	0,036
8	Rated Current	A	0,75	1,5
9	Max. Peak Current	A	2,3	4,5
10	No-Load Current	mA	300	<400
11	Line to Line Resistance	Ω	5,7	3,2
12	Line to Line Inductance	mH	2,48	1,2
13	Rotor Inertia	gcm2	5,8	6
14	Length (L)	mm	38	48
15	Weight	Kg	0,095	0,12

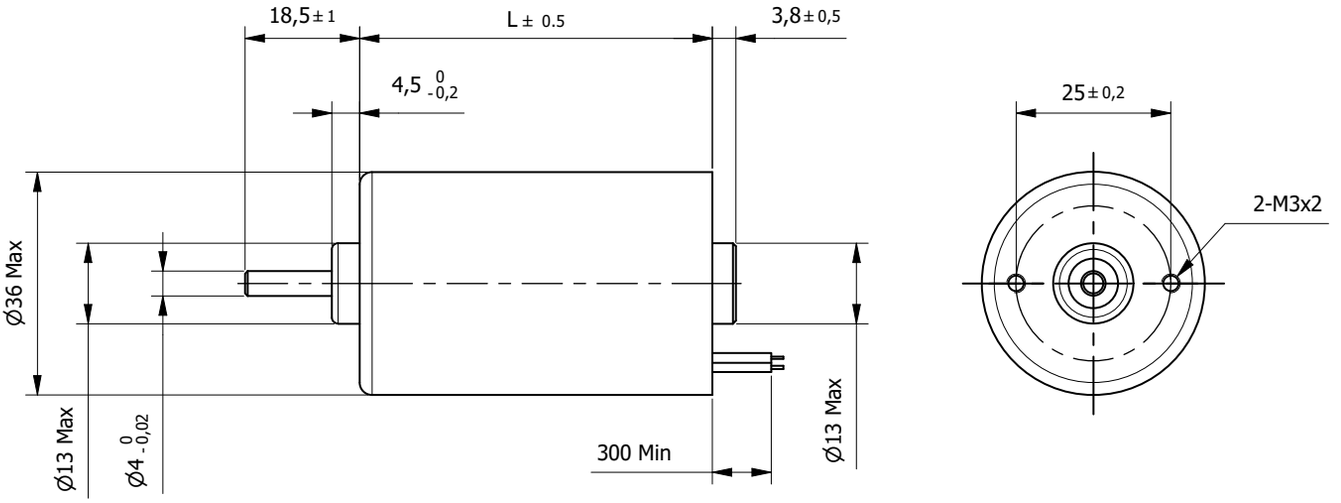
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	5N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	650 VAC
Insulation Resistance (min. 500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

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

Brushless Slotted Motor 36CBL

Ø 36mm

0,015 - 0,09Nm



Specification							
	Model		36CBL30	36CBL40	36CBL50	36CBL57	36CBL60	36CBL65
1	n° of Pole		8	8	8	8	8	8
2	n° of Phase		3	3	3	3	3	3
3	Rated Voltage	V	24	24	24	24	24	24
4	Rated Speed	rpm	4800	4800	4800	4500	4800	4800
5	Rated Torque	Nm	0,015	0,035	0,055	0,07	0,08	0,09
6	Max. Peak Torque	Nm	0,045	0,11	0,165	0,21	0,24	0,27
7	Torque Constant	Nm/A	0,03	0,035	0,036	0,04	0,035	0,036
8	Rated Current	A	0,5	1	1,5	1,8	2,3	2,5
9	Max. Peak Current	A	1,3	3	4,5	5,3	7	7,5
10	No-Load Current	mA	150	230	250	500	220	400
11	Line to Line Resistance	Ω	5,2	2	1,2	1,05	0,95	0,88
12	Line to Line Inductance	mH	3,3	1,9	1,2	1	0,85	0,8
13	Rotor Inertia	gcm2	6	12	22	27	30	32
14	Length (L)	mm	30	40	50	57	60	65
15	Weight	Kg	0,12	0,16	0,23	0,25	0,27	0,28

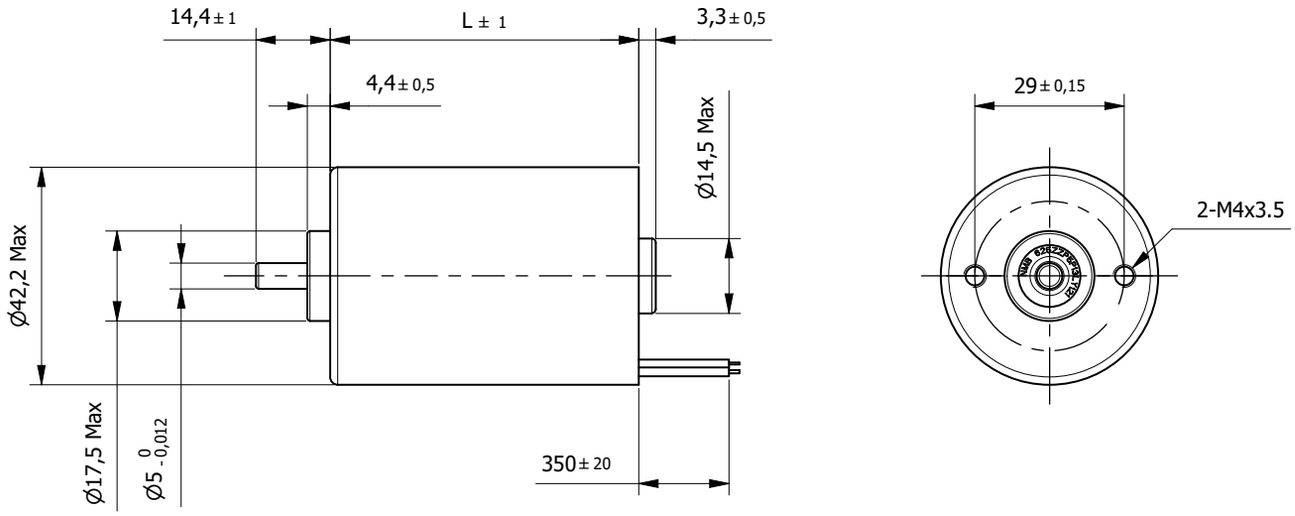
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min.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

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 42CBL

Ø 42mm

0,068 - 0,15Nm



Specification				
	Model		42CBL60	42CBLA60	42CBL66
1	n° of Pole		8	8	8
2	n° of Phase		3	3	3
3	Rated Voltage	V	24	24	24
4	Rated Speed	rpm	5900	3200	4000
5	Rated Torque	Nm	0,068	0,12	0,15
6	Max. Peak Torque	Nm	0,2	0,36	0,45
7	Torque Constant	Nm/A	0,032	0,054	0,04
8	Rated Current	A	2,13	2,1	3,75
9	Max. Peak Current	A	6,6	6,3	11,2
10	No-Load Current	mA	430	300	400
11	Line to Line Resistance	Ω	0,66	1,2	0,75
12	Line to Line Inductance	mH	0,63	1,6	0,8
13	Rotor Inertia	gcm2	44	44	55
14	Length (L)	mm	60	60	66
15	Weight	Kg	0,35	0,35	0,44

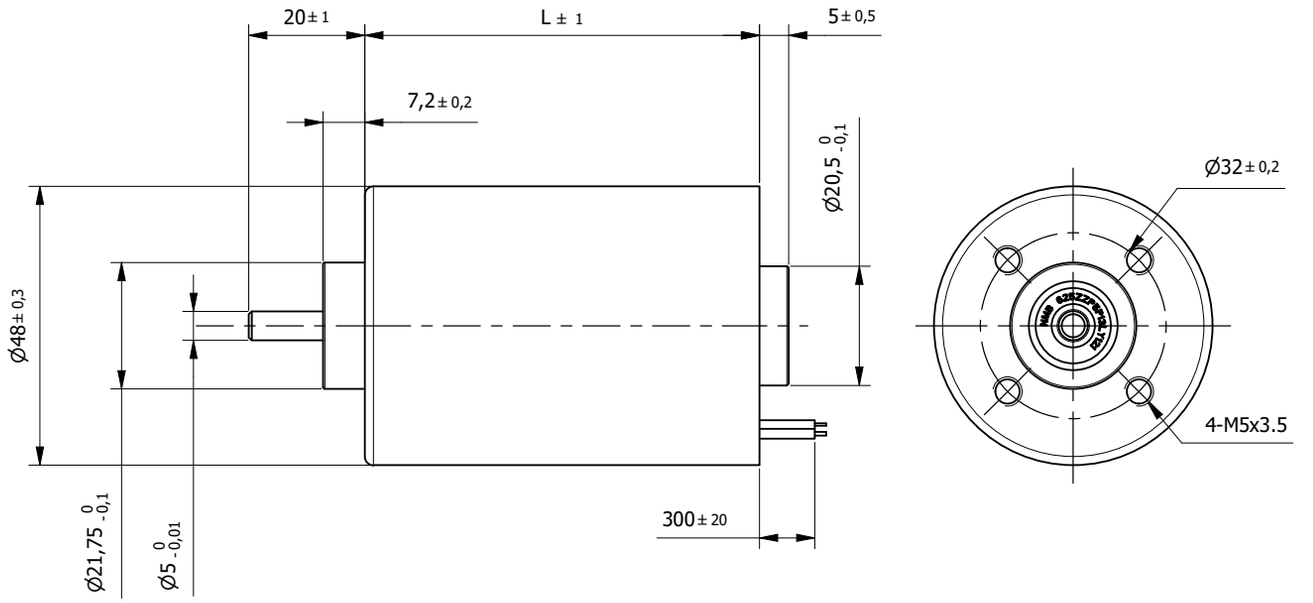
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	25N
Max. Axial force	15N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	VCC Hall +5 to +24VDC
2	Blue	|	Hall A
3	Green	|	Hall B
4	White	|	Hall C
5	Black	|	GND Hall
6	Yellow	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)	30N
Max. Axial force	20N
Dielectric strength (for 1 sec.)	650 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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



Slotless motors -
SBL series
Standard

p.105



Slotless motors -
EC series
High Performance

p.113

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.

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

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

*Rated Torque



BLDC Slotless motors

SBL series - Standard

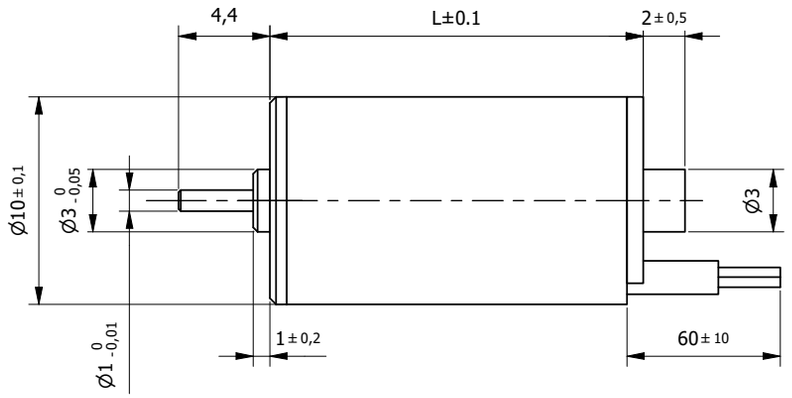
BLDC Slotless motors - SBL Standard series	Torque* (Nm)	
10SBL19	0,0005	106
14SBL45	0,004	107
16SBL	0,002...0,009	108
22SBL	0,006...0,025	109
28SBL	0,018...0,06	110
40SBL	0,2...0,25	111

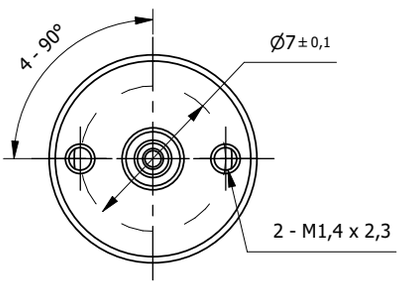
* Rated Torque

Brushless Slotless Motor 10SBL19

Ø 10mm

0,5mNm





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

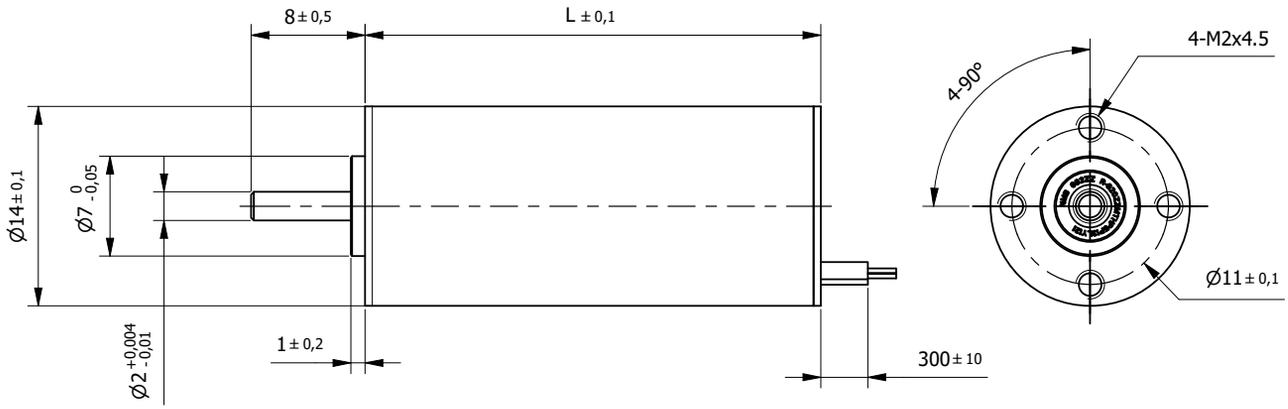
Characteristics	
Item	
Hall Effect Angle	120°
Insulation Class	B 130°C
Protection Class	IP40
Radial play (max. 4N)	0,02mm
Axial play (max. 4N)	0,14mm
Max. Radial force (5mm from flange)	3N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	360 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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

Brushless Slotless Motor 14SBL45

Ø 14mm

0,004Nm



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

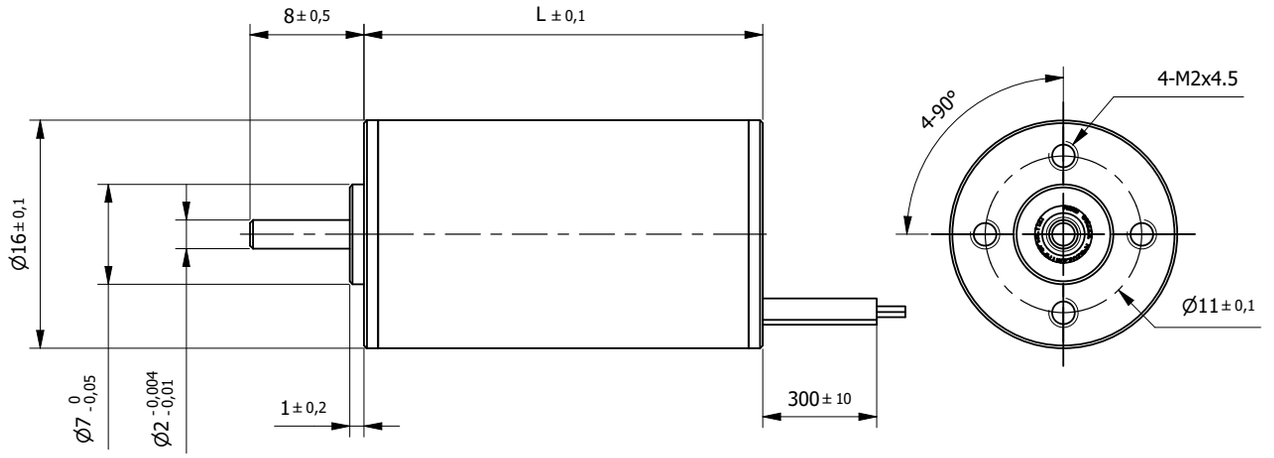
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (max. 4N)	0,025mm
Axial play (max. 4N)	0,3mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	5N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)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

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

Brushless Slotless Motor 16SBL

Ø 16mm

0,002 - 0,009Nm



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

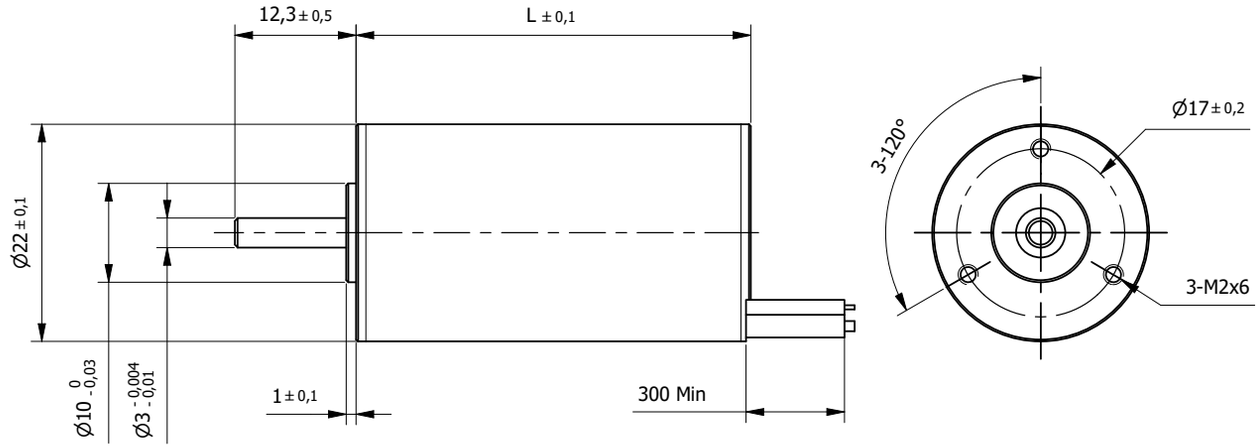
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (360g load)	0,025mm
Axial play (1000g load)	0,3mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	5N
Dielectric strength (for 1 sec.)	360 VAC
Insulation Resistance (min.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

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

Brushless Slotless Motor 22SBL

Ø 22mm

0,006 - 0,025Nm



Available with or without Hall Sensors

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

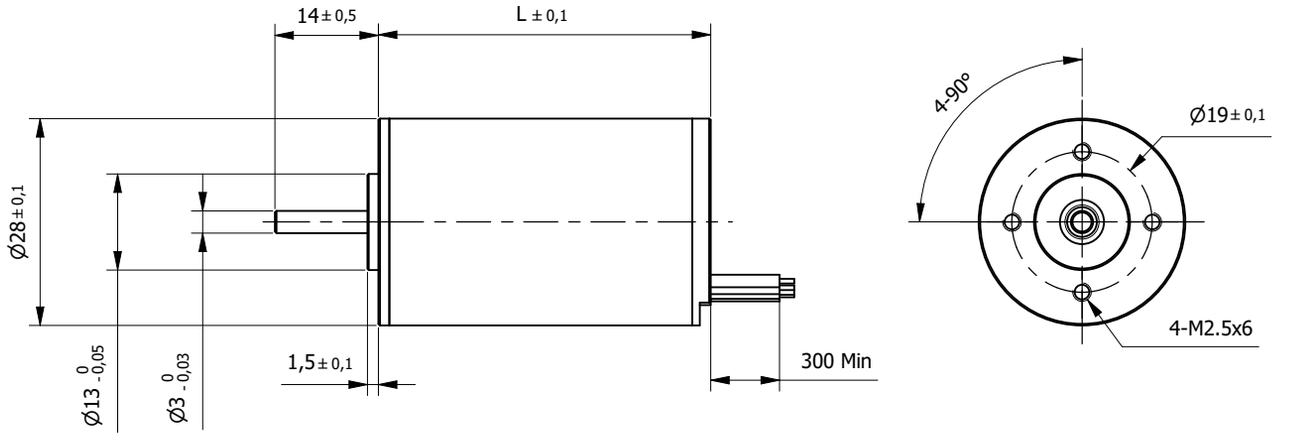
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	5N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	360 VAC
Insulation Resistance (min. 500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

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

Brushless Slotless Motor 28SBL

Ø 28mm

0,018 - 0,06Nm



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

Specification					
	Model		28SBL44	28SBL66	28SBL80
1	n° of Pole		2	2	2
2	n° of Phase		3	3	3
3	Rated Voltage	V	24	24	12
4	Rated Speed	rpm	8000	14000	6000
5	Rated Torque	Nm	0,018	0,054	0,06
6	Max. Peak Torque	Nm	0,055	0,162	0,09
7	Torque Constant	Nm/A	0,023	0,015	0,015
8	Rated Current	A	0,8	3,53	4
9	Max. Peak Current	A	2,5	11	6,5
10	No-Load Current	mA	200	400	500
11	Line to Line Resistance	Ω	4,2	0,6	1
12	Line to Line Inductance	mH	0,42	0,064	0,11
13	Rotor Inertia	gcm2	8,8	16,2	20,2
14	Length (L)	mm	34	56	70
15	Weight	Kg	0,14	0,23	0,25
16	Length with Hall Sensors	mm	44	66	80

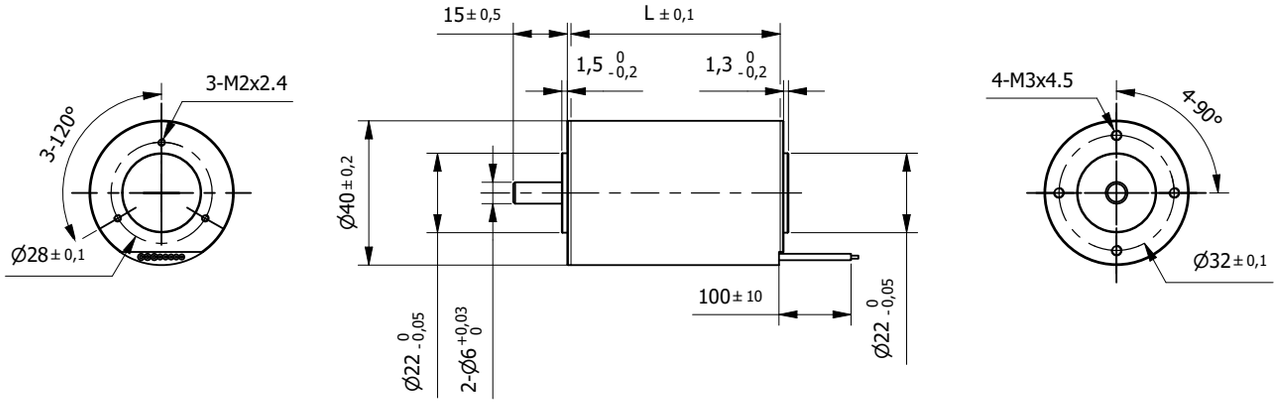
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (1000g load)	0,2mm
Max. Radial force (10mm from flange)	5N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500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

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

Brushless Slotless Motor 40SBL

Ø 40mm

0,2 - 0,25Nm



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

Specification				
	Model		40SBL65	40SBL85
1	n° of Pole		4	4
2	n° of Phase		3	3
3	Rated Voltage	V	24	24
4	Rated Speed	rpm	8000	5100
5	Rated Torque	Nm	0,2	0,25
6	Max. Peak Torque	Nm	0,6	0,75
7	Torque Constant	Nm/A	0,026	0,041
8	Rated Current	A	8	7
9	Max. Peak Current	A	24	19,6
10	No-Load Current	mA	500	330
11	Line to Line Resistance	Ω	0,21	0,28
12	Line to Line Inductance	mH	0,037	0,057
13	Rotor Inertia	gcm2	85	120
14	Length	mm	55	75
15	Weight	Kg	0,4	0,5
16	Length with Hall Sensors (L)	mm	65	85

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

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



BLDC Slotless motors

EC series - High Performance

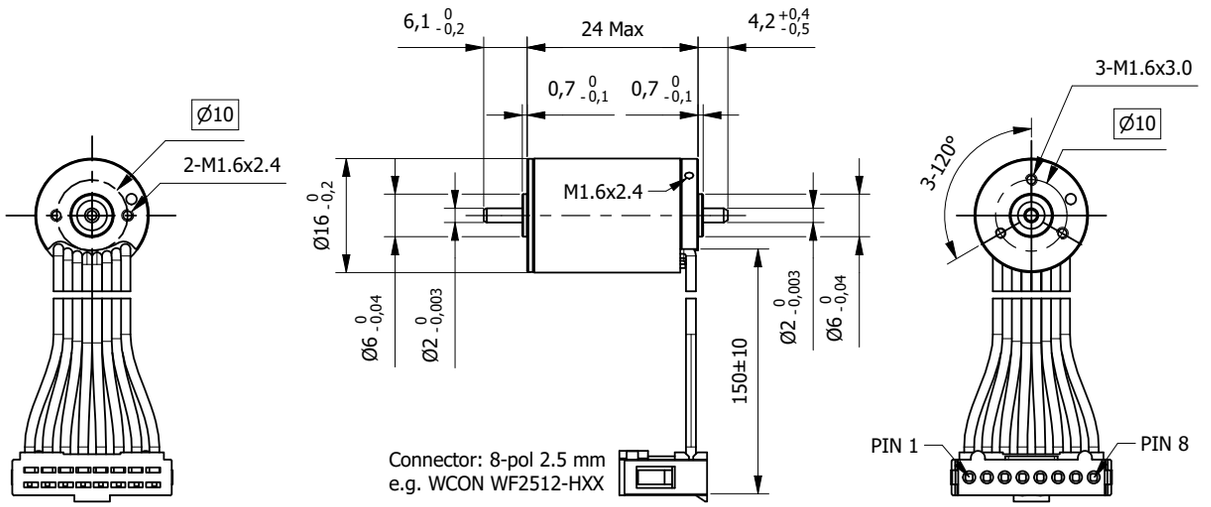
BLDC Slotless motors - EC High Performance series	Torque* (Nm)	
16EC24P	0,003	114
16EC36P	0,008	115
16EC40NS	0,007	116
16EC56NS	0,015...0,016	117
22EC32P	0,010...0,011	118
22EC44NS	0,018...0,02	119
22EC48P	0,023	120
22EC48T	0,043...0,045	121
22EC60NS	0,027...0,029	122
22EC66T	0,055	123
30EC42P	0,034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

* Rated Torque

Brushless Slotless Motor 16EC24P

Ø 16mm

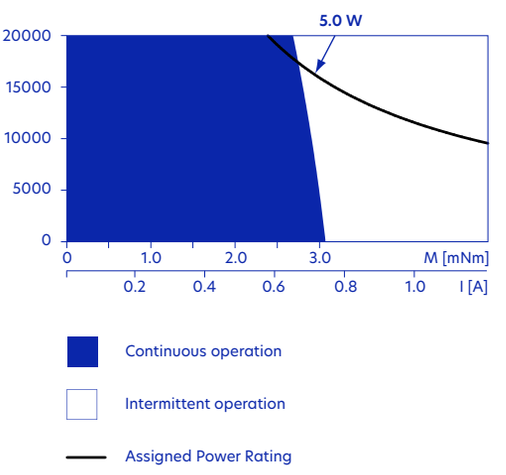
3,2mNm



Specification				
	Model		...5604	...5815
1	n° of Pole		2	2
2	n° of Phase		3	3
3	Rated Voltage	V	6	12
4	Rated Speed	rpm	5690	5840
5	Rated Torque	mNm	3,2	3,23
6	Stall Torque	mNm	5,79	5,95
7	Torque Constant	mNm/A	3,9	7,8
8	Motor Regulation	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

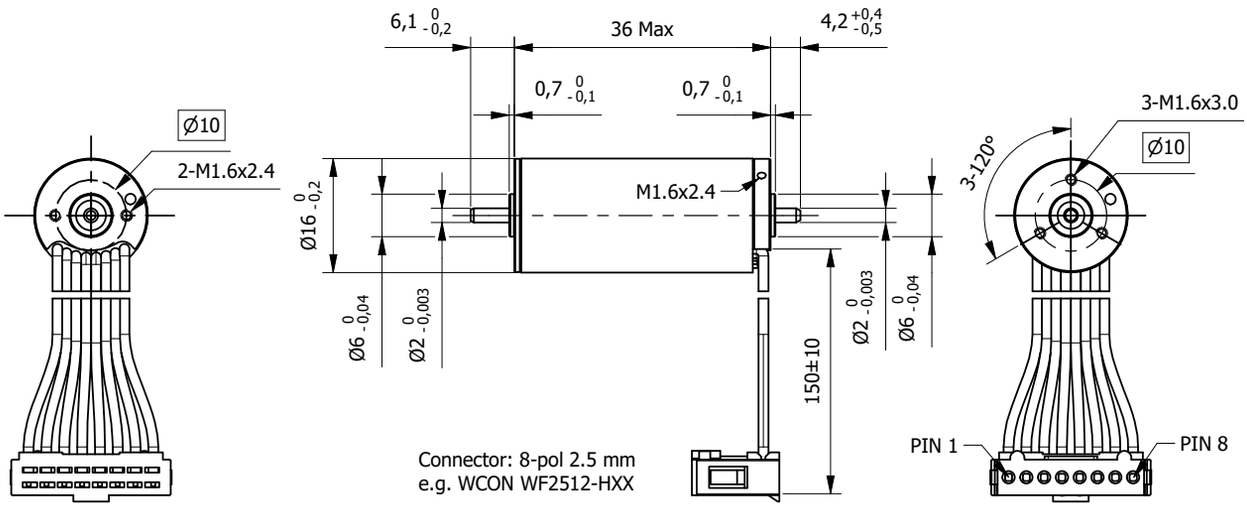


Connection			
Pin n°	Color	Gauge	Function
1	Brown	AWG24	Phase 1
2	Red	|	Phase 2
3	Orange	|	Phase 3
4	Yellow	|	Vcc Hall 3 to 24 Vdc
5	Green	|	GND Hall
6	Blue	|	Hall 1
7	Violet	|	Hall 2
8	Grey	|	Hall 3

Brushless Slotless Motor 16EC36P

Ø 16mm

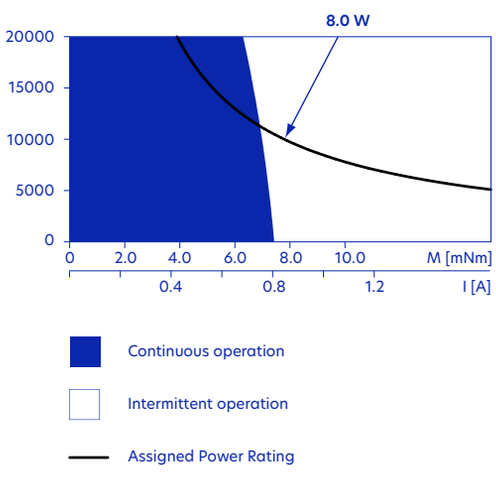
7,7 to 8,2mNm



Specification					
	Model		...7101	...7305	...7320
1	n° of Pole		2	2	2
2	n° of Phase		3	3	3
3	Rated Voltage	V	6	12	24
4	Rated Speed	rpm	7120	7300	7350
5	Rated Torque	mNm	7,66	8,02	8,19
6	Stall Torque	mNm	19,2	21,1	22
7	Torque Constant	mNm/A	4,61	9,32	18,7
8	Motor Regulation	10^3/Nms	67,8	61	58,6
9	Rated Current	A	1,76	0,909	0,461
10	Stall Current	A	4,17	2,27	1,17
11	No-load Current	mA	130	64,2	31,9
12	No-load Speed	rpm	12000	11900	11900
13	Line to Line Resistance	Ω	1,44	5,3	20,5
14	Line to Line Inductance	mH	0,034	0,14	0,566
15	Rotor Inertia	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

Operating range: Winding 12V



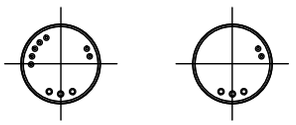
Connection			
Pin n°	Color	Gauge	Function
1	Brown	AWG24	Phase 1
2	Red	|	Phase 2
3	Orange	|	Phase 3
4	Yellow	|	Vcc Hall 3 to 24 Vdc
5	Green	|	GND Hall
6	Blue	|	Hall 1
7	Violet	|	Hall 2
8	Grey	|	Hall 3

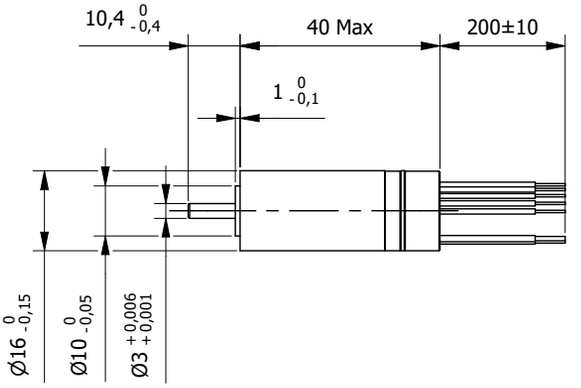
Brushless Slotless Motor 16EC40NS

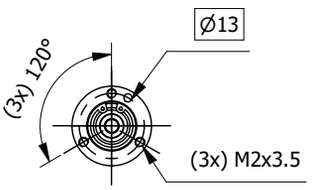
High Speed

Ø 16mm

7,2 to 7,5mNm



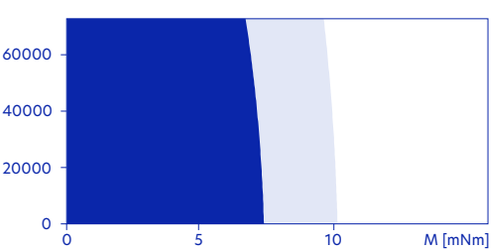




Specification						
	Model		...50805	...54008	...52201	...52203
1	n° of Pole		2	2	2	2
2	n° of Phase		3	3	3	3
3	Rated Voltage	V	18	24	36	48
4	Rated Speed	rpm	50800	54000	52200	52200
5	Rated Torque	mNm	7,53	7,21	7,4	7,44
6	Stall Torque	mNm	109	111	113	115
7	Torque Constant	mNm/A	3,09	3,9	6,04	8,06
8	Motor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

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

Operating range: Winding 36V



Continuous operation

Continuous operation with reduced thermal resistance (50%)

Intermittent operation

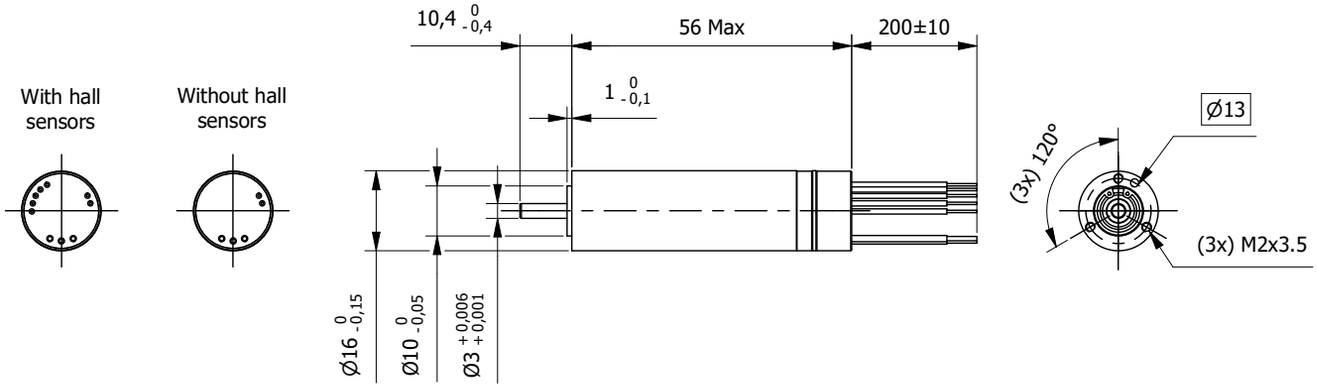
Connection		
Color	Gauge	Function
Red	AWG22	Phase 1
Black	|	Phase 2
White	|	Phase 3
Orange	AWG26	Vcc Hall 3 to 24 Vdc
Blue	|	GND Hall
Yellow	|	Hall 1
Brown	|	Hall 2
Grey	|	Hall 3
Purple	|	NTC

Brushless Slotless Motor 16EC56NS

High Speed

Ø 16mm

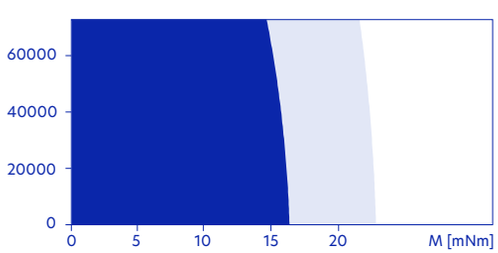
14,7 to 16mNm



Specification						
	Model		...61201	...61602	...61804	...61808
1	n° of Pole		2	2	2	2
2	n° of Phase		3	3	3	3
3	Rated Voltage	V	18	24	36	48
4	Rated Speed	rpm	61200	61600	61800	61800
5	Rated Torque	mNm	15,4	16	15,4	14,7
6	Stall Torque	mNm	346	407	414	396
7	Torque Constant	mNm/A	2,65	3,53	5,3	7,07
8	Motor Regulation	10^3/Nms	19,7	16,7	16,4	17,2
9	Rated Current	A	6,2	4,82	3,1	2,24
10	Stall Current	A	131	115	78,1	56
11	No-load Current	mA	459	344	230	172
12	No-load Speed	rpm	64600	64600	64600	64600
13	Line to Line Resistance	Ω	0,138	0,208	0,461	0,858
14	Line to Line Inductance	mH	0,008	0,014	0,032	0,057
15	Rotor Inertia	gcm2	1,2	1,2	1,2	1,2
16	Max. Efficiency	%	88,7	89,5	89,6	89,4
17	Mechanical Time Constant	ms	2,35	2	1,97	2,06
18	Length (L)	mm	56	56	56	56
19	Weight	g	72,6	72,6	72,6	72,6

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

Operating range: Winding 36V



Continuous operation

Continuous operation with reduced thermal resistance (50%)

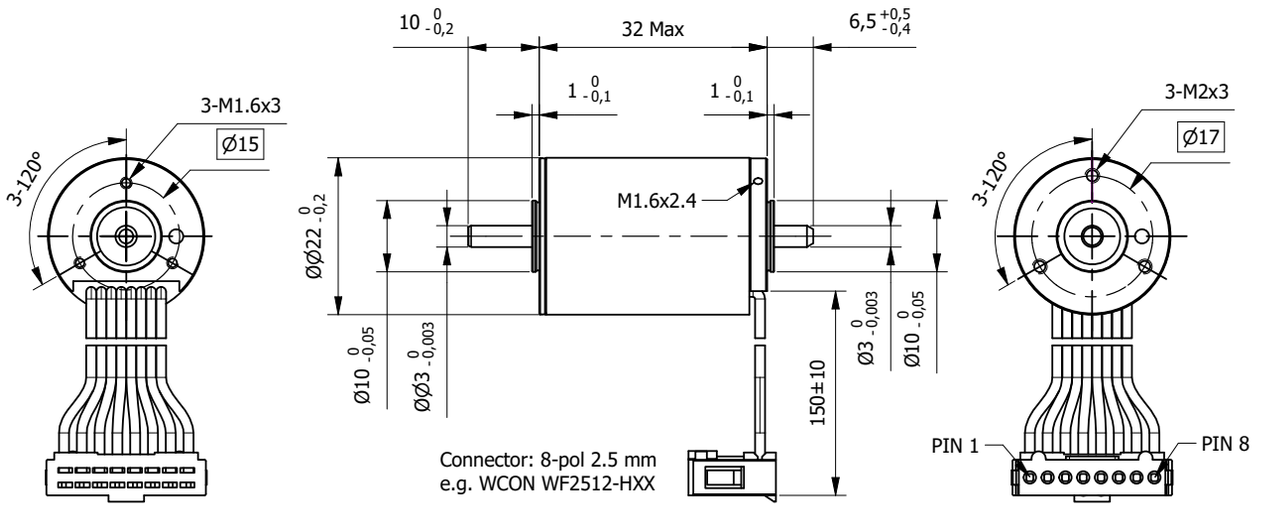
Intermittent operation

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

Brushless Slotless Motor 22EC32P

Ø 22mm

10,2 to 11mNm

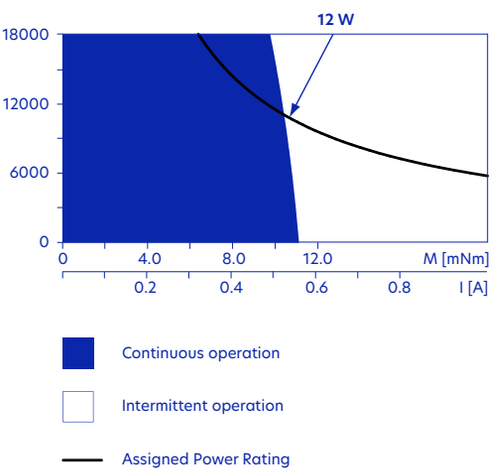


Specification					
	Model		...7908	...8003	...8212
1	n° of Pole		2	2	2
2	n° of Phase		3	3	3
3	Rated Voltage	V	6	12	24
4	Rated Speed	rpm	7920	8040	8250
5	Rated Torque	mNm	11	10,2	10,8
6	Stall Torque	mNm	33,9	31,3	35,1
7	Torque Constant	mNm/A	4,61	9,02	18,1
8	Motor Regulation	10^3/Nms	38,4	42,5	37,8
9	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

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 24V

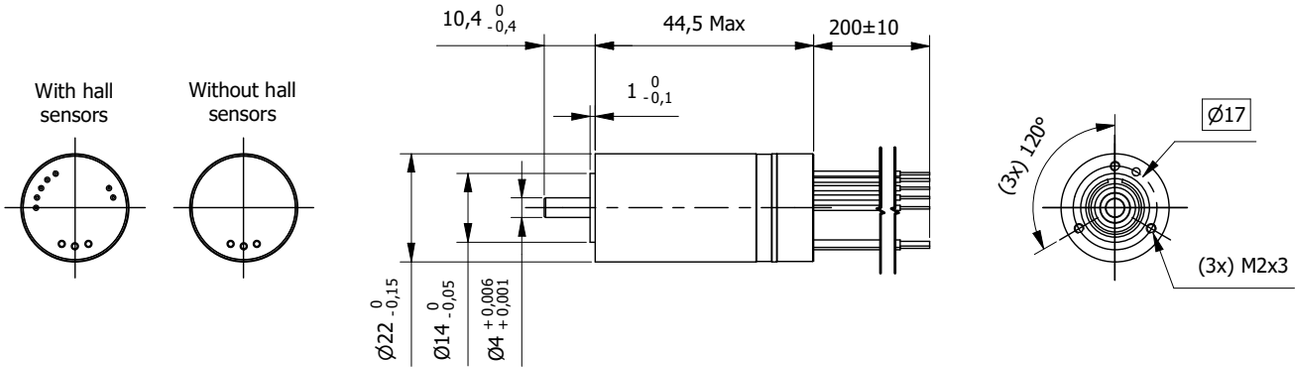


Brushless Slotless Motor 22EC44NS

High Speed

Ø 22mm

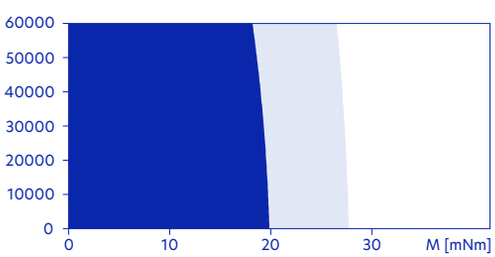
18,3 to 20,3mNm



Specification						
	Model		...48201	...55601	...53004	...49909
1	n° of Pole		2	2	2	2
2	n° of Phase		3	3	3	3
3	Rated Voltage	V	18	24	36	48
4	Rated Speed	rpm	48200	55600	53000	49900
5	Rated Torque	mNm	20,3	20,1	20	18,3
6	Stall Torque	mNm	454	549	537	425
7	Torque Constant	mNm/A	3,37	3,93	6,18	8,7
8	Motor Regulation	10^3/Nms	11,7	11,1	10,8	13,0
9	Rated Current	A	6,28	5,36	3,4	2,21
10	Stall Current	A	135	140	87	48,8
11	No-load Current	mA	324	302	186	128
12	No-load Speed	rpm	50900	58100	55500	52500
13	Line to Line Resistance	Ω	0,133	0,172	0,414	0,983
14	Line to Line Inductance	mH	0,010	0,013	0,033	0,065
15	Rotor Inertia	gcm2	2,15	2,15	2,15	2,15
16	Max. Efficiency	%	90,6	91	91,1	90,2
17	Mechanical Time Constant	ms	2,53	2,39	2,33	2,79
18	Length (L)	mm	44,5	44,5	44,5	44,5
19	Weight	g	98	98	98	98

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

Operating range: Winding 36V



Continuous operation

Continuous operation with reduced thermal resistance (50%)

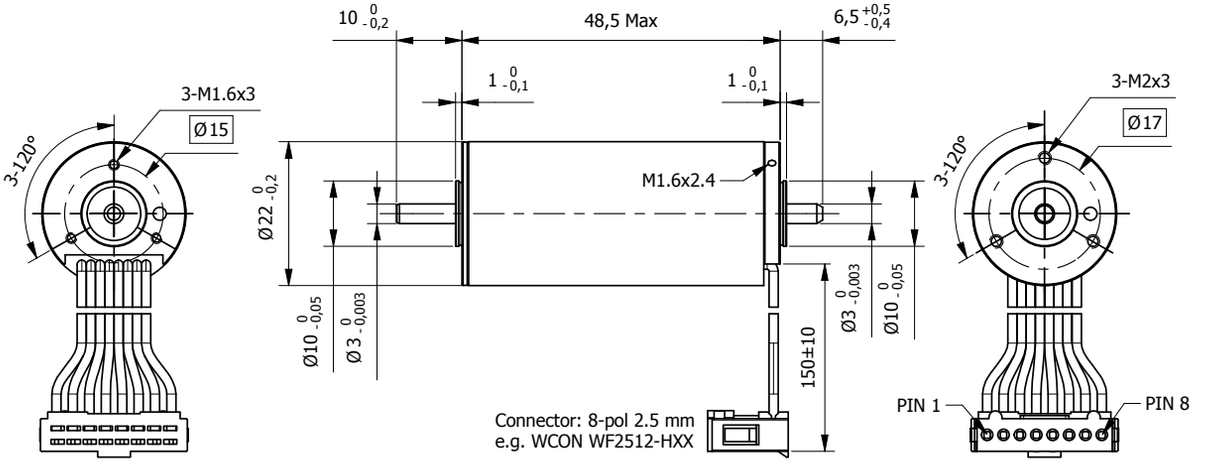
Intermittent operation

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

Brushless Slotless Motor 22EC48P

Ø 22mm

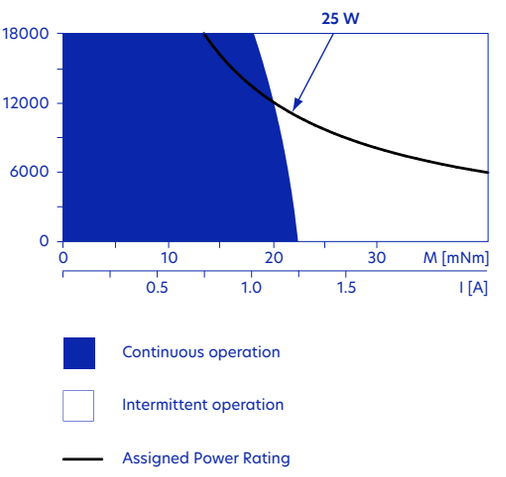
22,7 to 23,2mNm



Specification					
	Model		...9809	...10403	...10513
1	n° of Pole		2	2	2
2	n° of Phase		3	3	3
3	Rated Voltage	V	12	24	48
4	Rated Speed	rpm	9800	10400	10500
5	Rated Torque	mNm	23	22,7	23,2
6	Stall Torque	mNm	114	121	127
7	Torque Constant	mNm/A	9,1	17,4	34,8
8	Motor Regulation	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



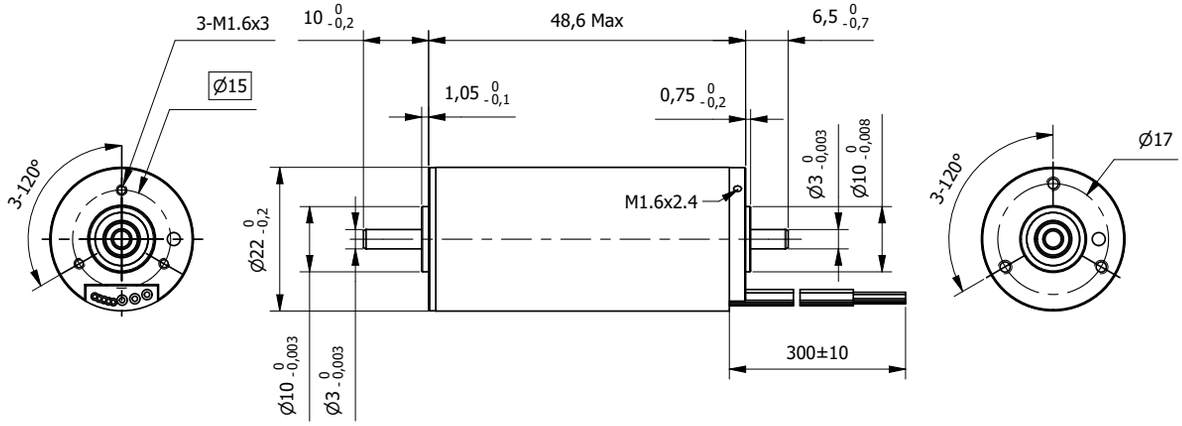
Connection			
Pin n°	Color	Gauge	Function
1	Brown	AWG24	Phase 1
2	Red	|	Phase 2
3	Orange	|	Phase 3
4	Yellow	|	Vcc Hall 3 to 24 Vdc
5	Green	|	GND Hall
6	Blue	|	Hall 1
7	Violet	|	Hall 2
8	Grey	|	Hall 3

Brushless Slotless Motor 22EC48T

High Torque

Ø 22mm

42,6 to 45,1mNm

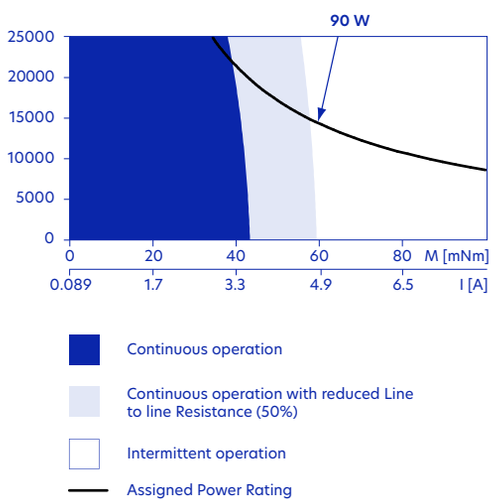


Specification				
	Model		...15005	...14902
1	n° of Pole		4	4
2	n° of Phase		3	3
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	15000	14900
5	Rated Torque	mNm	45,1	42,6
6	Stall Torque	mNm	639	586
7	Torque Constant	mNm/A	14	28,1
8	Motor Regulation	10^3/Nms	2,7	2,9
9	Rated Current	A	3,34	1,58
10	Stall Current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

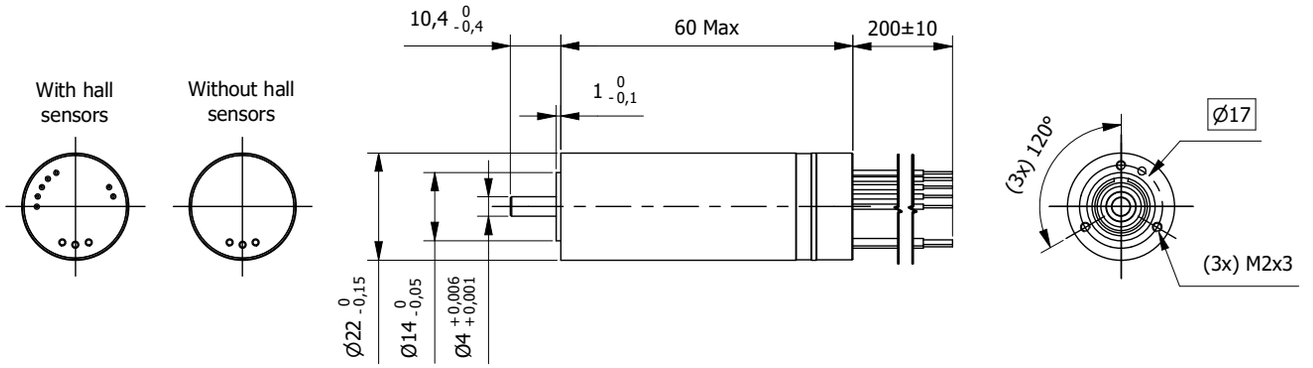


Brushless Slotless Motor 22EC60NS

High Speed

Ø 22mm

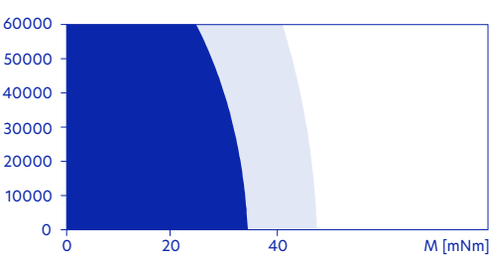
27,4 to 29,3mNm



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

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

Operating range: Winding 36V



Continuous operation

Continuous operation with reduced thermal resistance (50%)

Intermittent operation

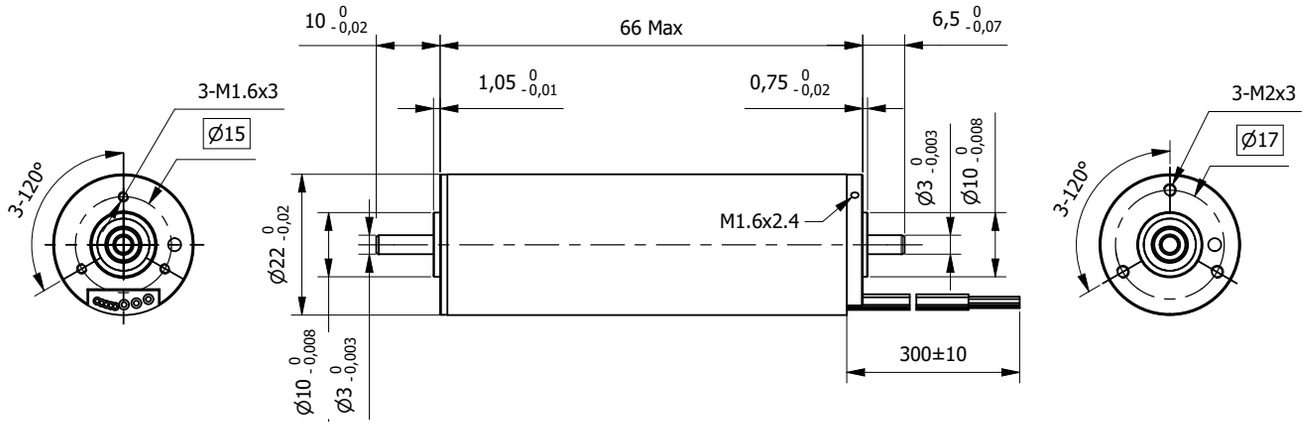
Connection		
Color	Gauge	Function
Red	AWG18	Phase 1
Black	|	Phase 2
White	|	Phase 3
Orange	AWG26	Vcc Hall 3 to 24 Vdc
Blue	|	GND Hall
Yellow	|	Hall 1
Brown	|	Hall 2
Grey	|	Hall 3
Purple	|	NTC

Brushless Slotless Motor 22EC66T

High Torque

Ø 22mm

54,5 to 54,6mNm

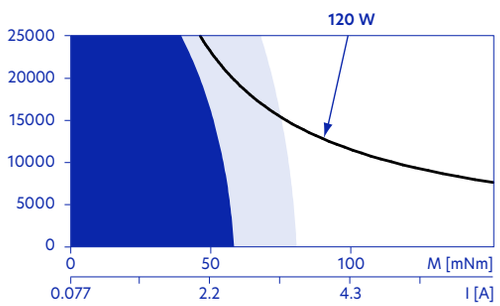


Specification				
	Model		...15803	...15801
1	n° of Pole		4	4
2	n° of Phase		3	3
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	15800	15800
5	Rated Torque	mNm	54,6	54,5
6	Stall Torque	mNm	954	1020
7	Torque Constant	mNm/A	13,5	27,1
8	Motor Regulation	10^3/Nms	1,9	1,7
9	Rated Current	A	4,21	2,1
10	Stall Current	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

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

Operating range: Winding 48V



Continuous operation

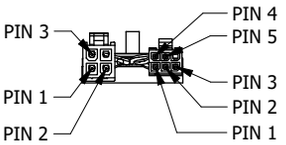
Continuous operation with reduced Line to line Resistance (50%)

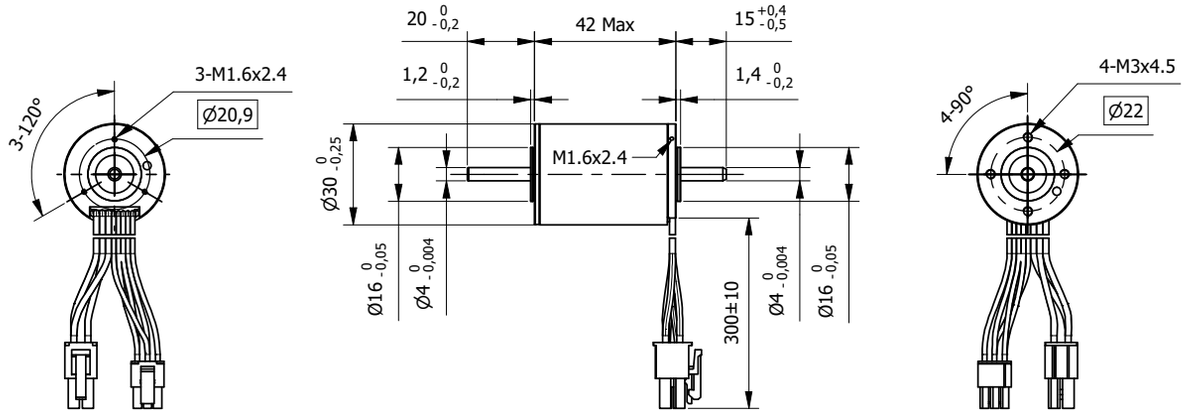
Intermittent operation

Brushless Slotless Motor 30EC42P

Ø 30mm

33,4 to 33,8mNm

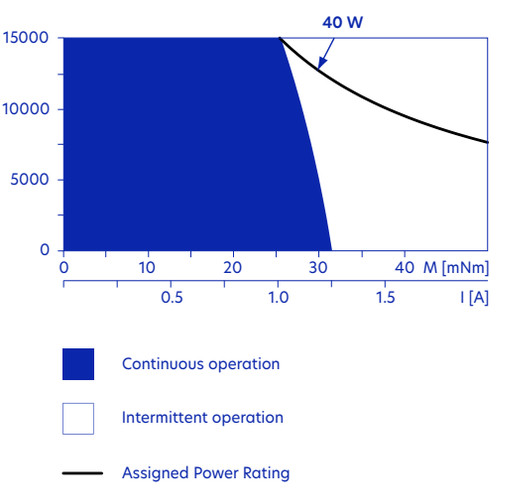




Specification				
	Model		...7203	...7214
1	n° of Pole		2	2
2	n° of Phase		3	3
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	7220	7210
5	Rated Torque	mNm	33,8	33,4
6	Stall Torque	mNm	160	157
7	Torque Constant	mNm/A	24,3	48,6
8	Motor Regulation	10^3/Nms	6,2	6,3
9	Rated Current	A	1,49	0,738
10	Stall Current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



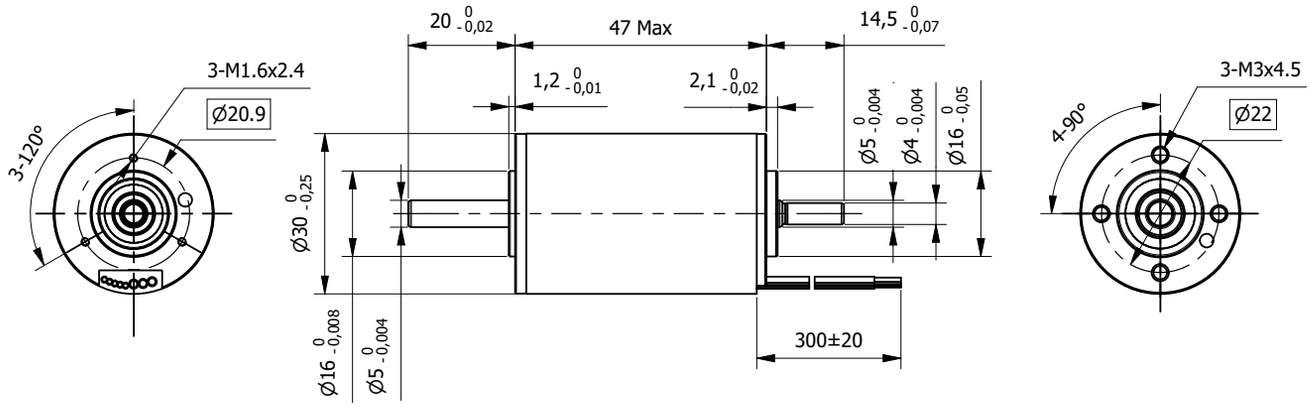
Connection				
Pin n°	Color	Connector	Gauge	Function
1	Red	Molex 39-01-2040	AWG20	Phase 1
2	Black	|	|	Phase 2
3	White	|	|	Phase 3
1	Yellow	Molex 430-25-0600	AWG26	Hall 1
2	Brown	|	|	Hall 2
3	Grey	|	|	Hall 3
4	Blue	|	|	GND Hall
5	Green	|	|	Vcc Hall 3 to 24 Vdc

Brushless Slotless Motor 30EC47T

High Torque

Ø 30mm

68,8 to 73,4mNm

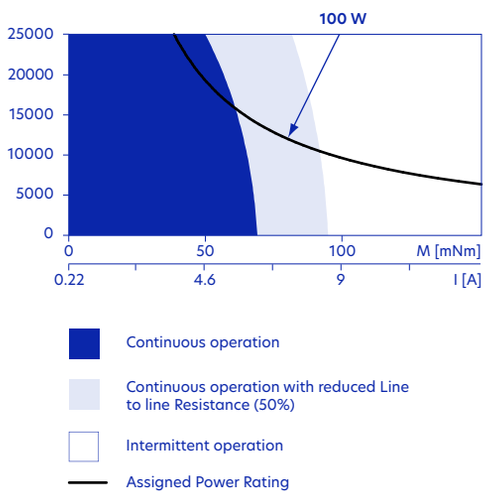


Specification				
	Model		...16302	...16408
1	n° of Pole		4	4
2	n° of Phase		3	3
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	16300	16400
5	Rated Torque	mNm	68,8	73,4
6	Stall Torque	mNm	1270	1500
7	Torque Constant	mNm/A	13,1	26,1
8	Motor Regulation	10^3/Nms	1,4	1,2
9	Rated Current	A	5,56	2,95
10	Stall Current	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

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

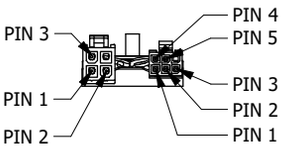
Operating range: Winding 24V

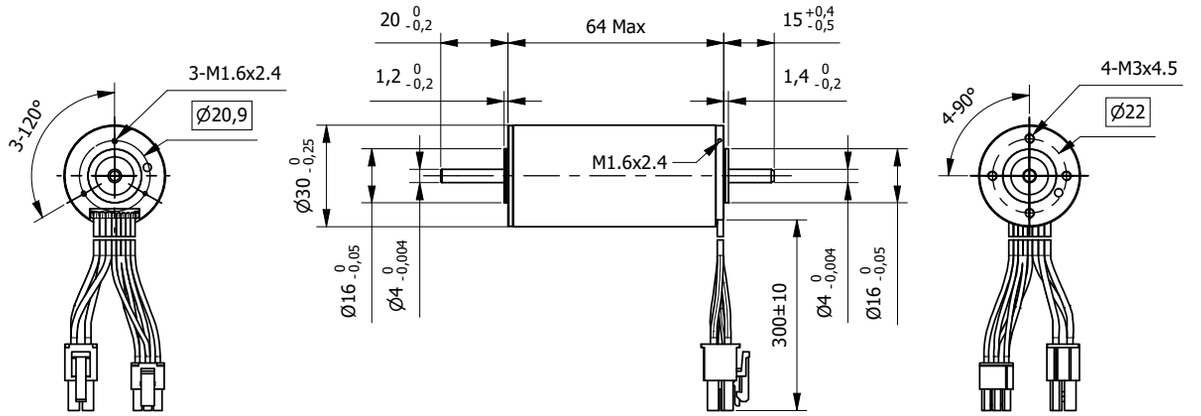


Brushless Slotless Motor 30EC64P

Ø 30mm

60,7 to 64,1mNm

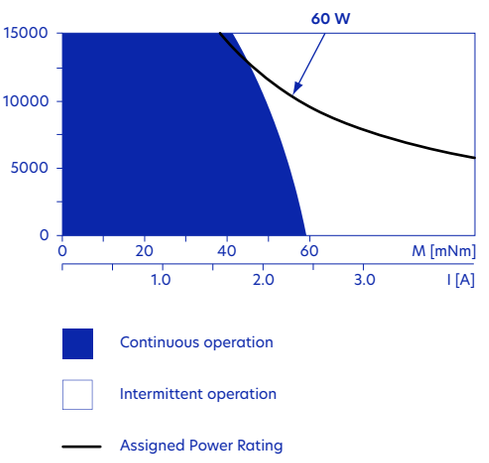




Specification				
	Model		...8001	...8104
1	n° of Pole		2	2
2	n° of Phase		3	3
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	8040	8130
5	Rated Torque	mNm	60,7	64,1
6	Stall Torque	mNm	458	519
7	Torque Constant	mNm/A	24,3	48,6
8	Motor Regulation	10^3/Nms	2,2	1,9
9	Rated Current	A	2,66	1,4
10	Stall Current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



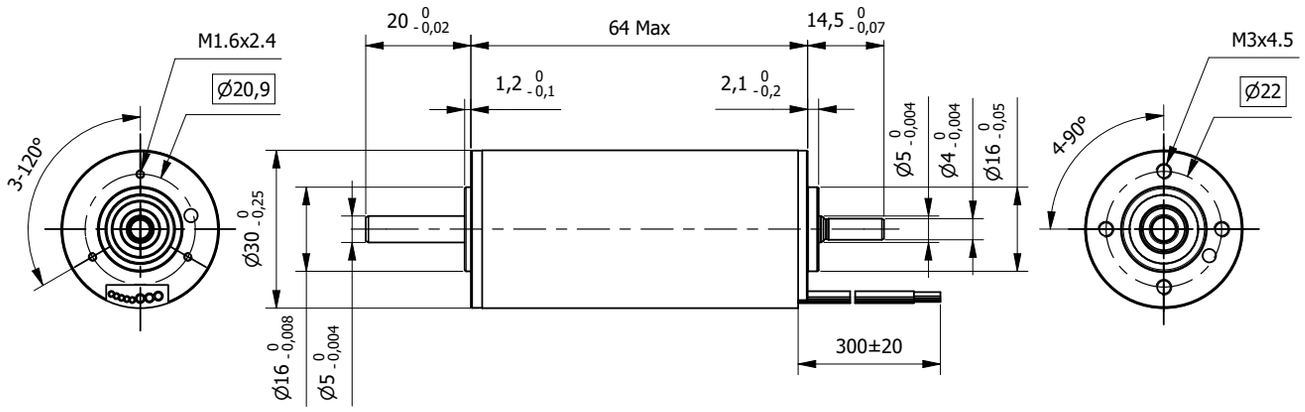
Connection				
Pin n°	Color	Connector	Gauge	Function
1	Red	Molex 39-01-2040	AWG20	Phase 1
2	Black	|	|	Phase 2
3	White	|	|	Phase 3
1	Yellow	Molex 430-25-0600	AWG26	Hall 1
2	Brown	|	|	Hall 2
3	Grey	|	|	Hall 3
4	Blue	|	|	GND Hall
5	Green	|	|	Vcc Hall 3 to 24 Vdc

Brushless Slotless Motor 30EC64T

High Torque

Ø 30mm

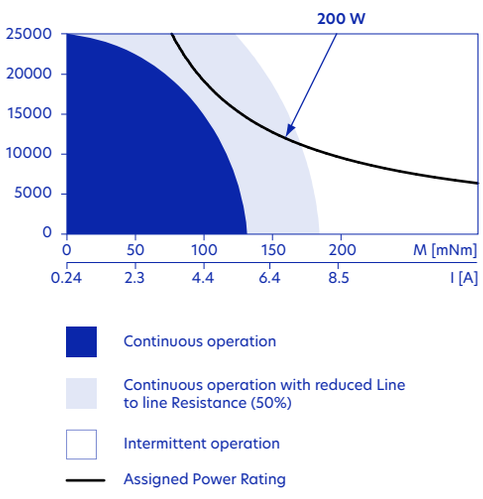
92,9 to 95,6mNm



Specification				
	Model		...16101	...16003
1	n° of Pole		4	4
2	n° of Phase		3	3
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	16100	16000
5	Rated Torque	mNm	95,6	92,9
6	Stall Torque	mNm	3240	3430
7	Torque Constant	mNm/A	13,7	27,6
8	Motor Regulation	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

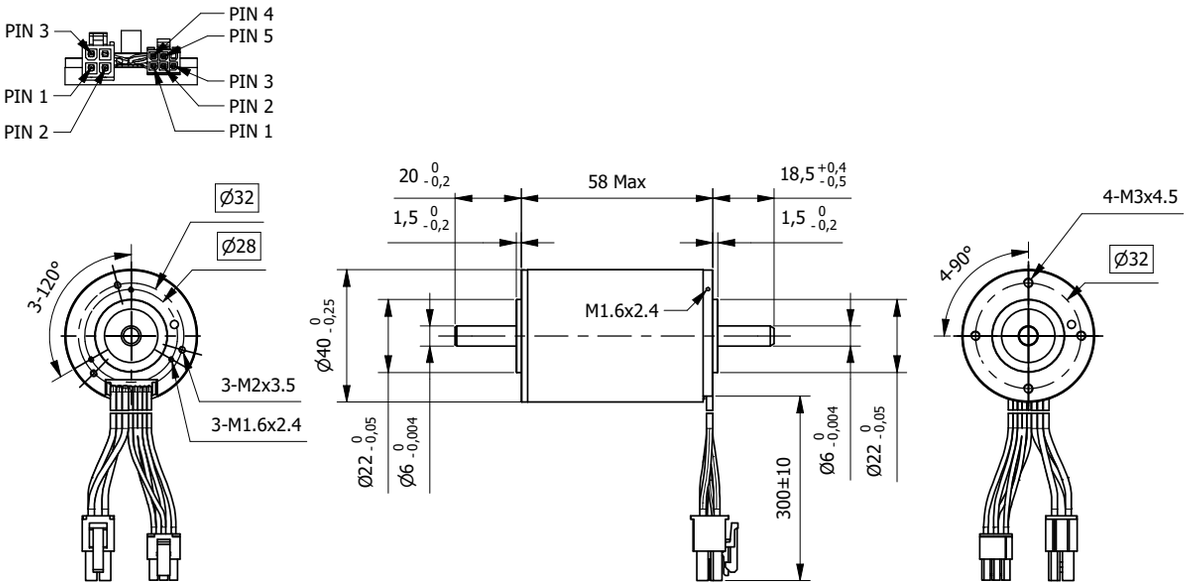


Connection			
Lead n°	Color	Gauge	Function
1	Black	AWG18	Phase 2
2	White	|	Phase 3
3	Red	|	Phase 1
4	Black/Grey	AWG26	Hall 2
5	Blue	|	GND Hall
6	Green	|	Vcc Hall 3 to 24 Vdc

Brushless Slotless Motor 40EC58P

Ø 40mm

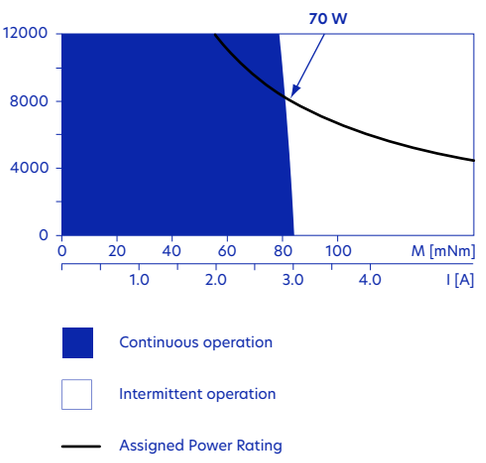
89,6 to 94,2mNm



Specification				
	Model		...6501	...7603
1	n° of Pole		2	2
2	n° of Phase		3	3
3	Rated Voltage	V	24	48
4	Rated Speed	rpm	6520	7610
5	Rated Torque	mNm	89,6	94,2
6	Stall Torque	mNm	497	636
7	Torque Constant	mNm/A	28	50
8	Motor Regulation	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

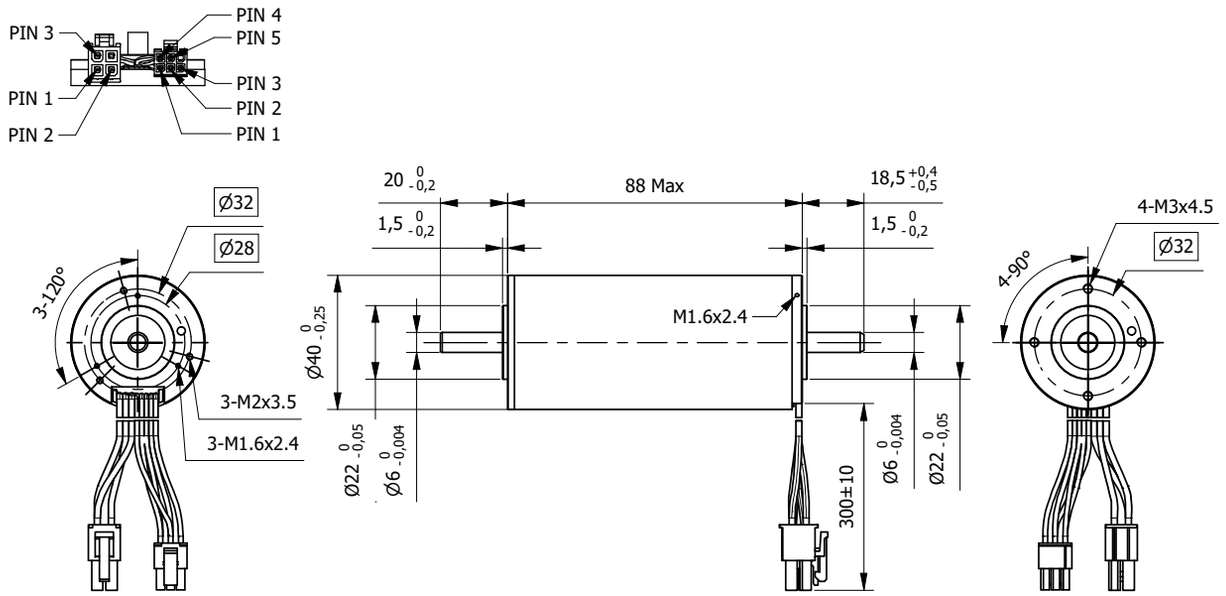


Connection				
Pin n°	Color	Connector	Gauge	Function
1	Red	Molex 39-01-2040	AWG20	Phase 1
2	Black	|	|	Phase 2
3	White	|	|	Phase 3
1	Yellow	Molex 430-25-0600	AWG26	Hall 1
2	Brown	|	|	Hall 2
3	Grey	|	|	Hall 3
4	Blue	|	|	GND Hall
5	Green	|	|	Vcc Hall 3 to 24 Vdc

Brushless Slotless Motor 40EC88P

Ø 40mm

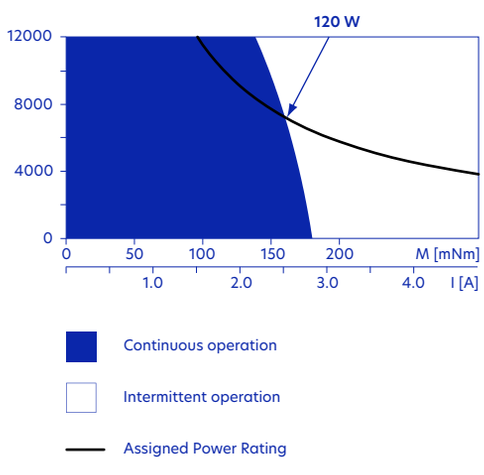
211mNm



Specification			
	Model		...2607
1	n° of Pole		2
2	n° of Phase		3
3	Rated Voltage	V	48
4	Rated Speed	rpm	2670
5	Rated Torque	mNm	211
6	Stall Torque	mNm	838
7	Torque Constant	mNm/A	126
8	Motor Regulation	10³/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

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

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.

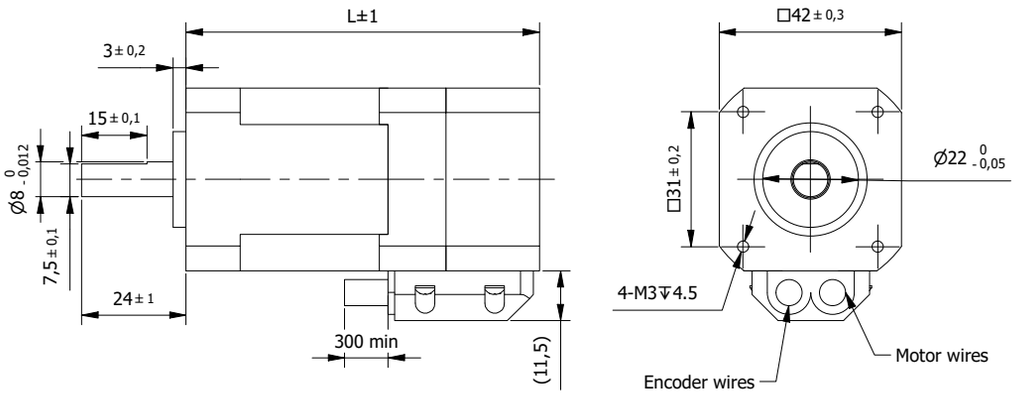
*Rated Torque

Brushless Slotted Motor 42SVA

with Encoder

□ 42mm

0,062 - 0,25Nm



Specification						
	Model		42SVA01	42SVA02	42SVA03	42SVA04
1	n° of Pole		8	8	8	8
2	n° of Phase		3	3	3	3
3	Rated Voltage	V	24	24	24	24
4	Rated Speed	rpm	5000	5000	5000	5000
5	Rated Torque	Nm	0,062	0,125	0,185	0,25
6	Max. Peak Torque	Nm	0,19	0,38	0,56	0,75
7	Torque Constant	Nm/A	0,03	0,031	0,031	0,031
8	Rated Current	A	2,1	4	6	8
9	Max. Peak Current	A	6,25	12	18	24
10	No Load Current	A	0,5	0,5	0,5	0,65
11	Back EMF	V/Krpm	2,23	2,3	2,32	2,28
12	Line to Line Resistance	Ω	1,15	0,5	0,28	0,25
13	Line to Line Inductance	mH	1,75	0,9	0,51	0,38
14	Rotor Inertia	gcm2	24	48	72	96
15	Length (L)	mm	61,3	81,3	101,3	121,3
16	Weight	Kg	0,3	0,45	0,65	0,8

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Hall Effect Angle	120°
Insulation Class	B
Protection Class	IP40
Max. Radial force (20mm from flange)	28 N
Max. Axial force	10 N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Working Temperature	-20°C to +40°C
* 3-channel encoder or other types on request	

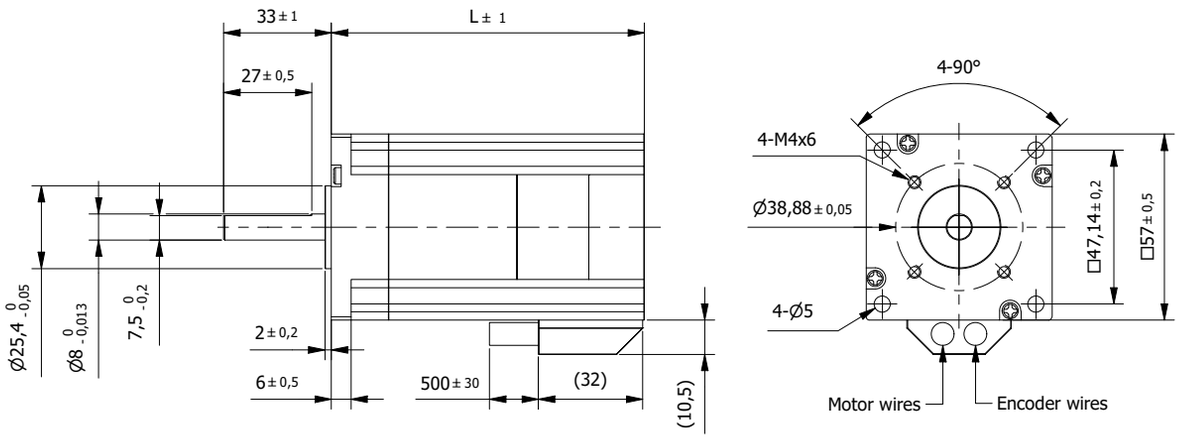
Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Red/White	AWG26	GND
2	Red	|	VCC:+5VDC
3	Blue	|	EA-
4	Blue/Black	|	EA+
5	Black	|	EB-
6	Black/White	|	EB+
7	Brown	|	HALL A
8	Orange	|	HALL B
9	Yellow	|	HALL C
Motor			
1	Yellow	AWG18	Phase U
2	Red	|	Phase V
3	Black	|	Phase W

Brushless Slotted Motor 57SVA

with Encoder

□ 57mm

0,3 - 0,6Nm



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

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

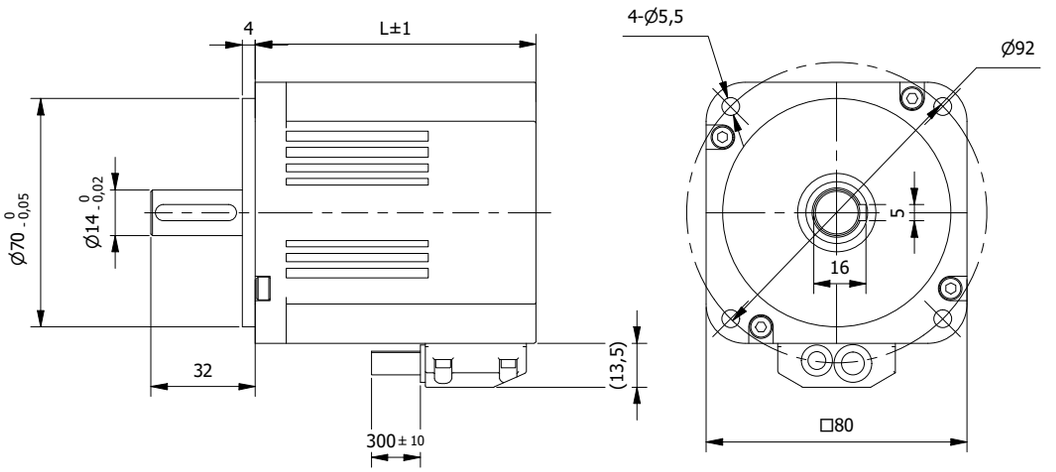
Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Red/White	AWG26	GND
2	Red	|	VCC:+5VDC
3	Blue	|	EA-
4	Blue/Black	|	EA+
5	Black	|	EB-
6	Black/White	|	EB+
7	Brown	|	HALL A
8	Orange	|	HALL B
9	Yellow	|	HALL C
Motor			
1	Yellow	AWG18	Phase U
2	Red	|	Phase V
3	Black	|	Phase W

Brushless Slotted Motor 80SVA

with Encoder

□ 80mm

0,9 - 1,7Nm



Specification				
	Model		80SVA01	80SVA02
1	n° of Pole		8	8
2	n° of Phase		3	3
3	Rated Voltage	V	48	48
4	Rated Speed	rpm	3000	3000
5	Rated Torque	Nm	0,9	1,7
6	Max. Peak Torque	Nm	2,7	5,1
7	Torque Constant	Nm/A	0,118	0,113
8	Rated Current	A	7,6	15
9	Max. Peak Current	A	23	45
10	No Load Current	A	0,7	0,7
11	Back EMF	V/Krpm	8,7	8,4
12	Line to Line Resistance	Ω	0,29	0,11
13	Line to Line Inductance	mH	1,3	0,6
14	Rotor Inertia	gcm2	544	1020
15	Length (L)	mm	86	107
16	Weight	Kg	1,7	2,1

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

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



Brushless DC

Flat motors

Advantages at a glance
Very compact size
Exceptional power to volume ratio
Good control at low speed

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

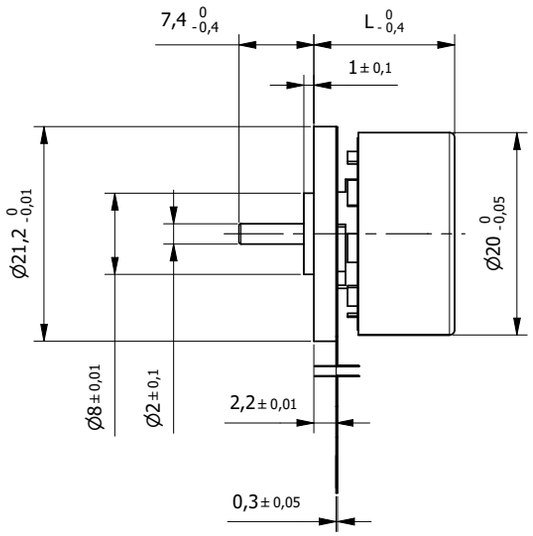
BLDC Flat motors	Torque* (Nm)	
20BLW14	0,008	138
32BLW18	0,025	139
45BLW16	0,055	140
45BLW Connector	0,05...0,13	141
45BLW Wires	0,05...0,13	142
60BLWA38	0,5	143
60BLW40	0,3	144
60BLW40 - IP54	0,3	145
90BLW	0,46...0,96	146

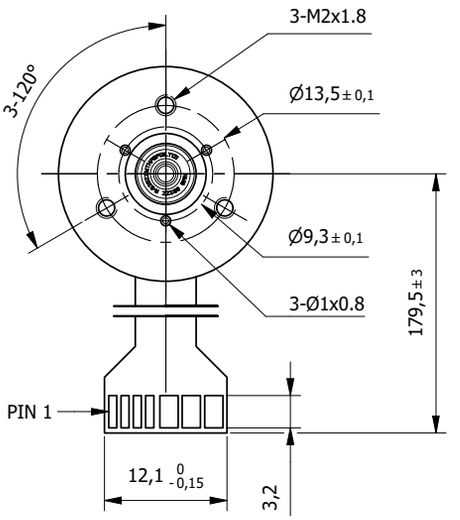
*Rated Torque

Brushless Flat Motor 20BLW14

Ø 20mm

0,008Nm





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

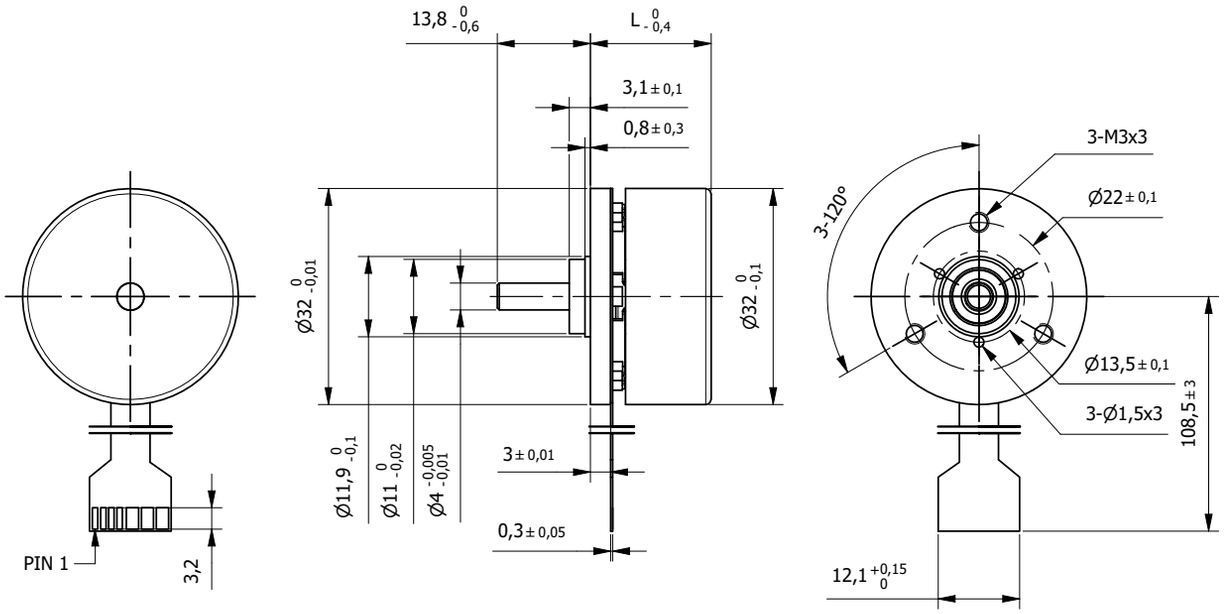
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	5N
Max. Axial force	2N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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

Brushless Flat Motor 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 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

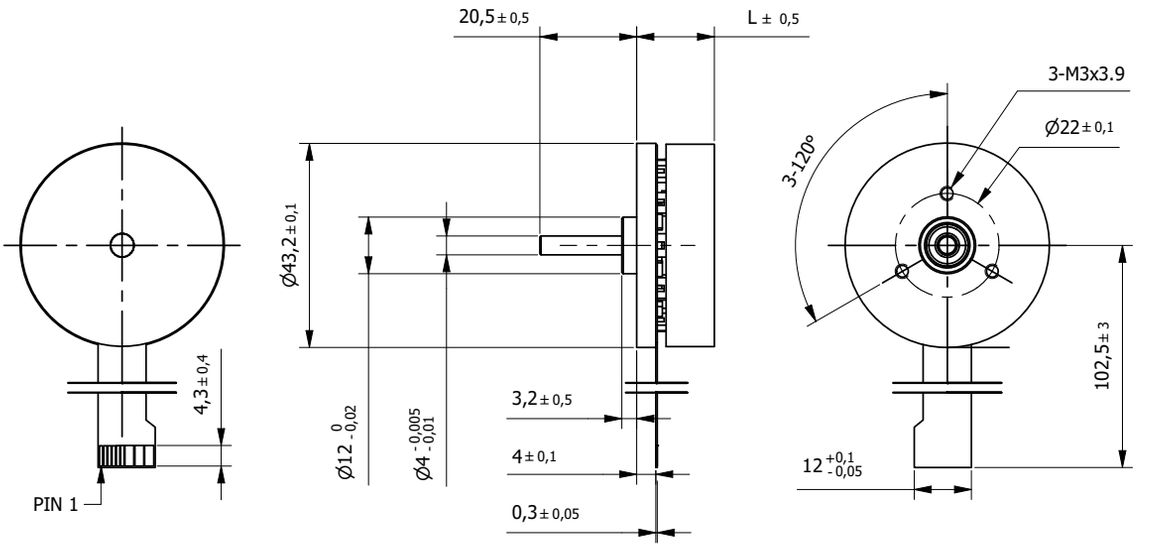
Connection		
Pin n°	Connector	Function
1	FPC cable	Vcc Hall +5 Vdc
2	|	Hall C
3	|	Hall A
4	|	Hall B
5	|	GND Hall
6	|	Phase W
7	|	Phase V
8	|	Phase U

Brushless Flat Motor 45BLW16

Flat Ribbon Cable

Ø 45mm

0,055Nm



Specification			
	Model		45BLW16
1	n° of Pole		16
2	n° of Phase		3
3	Rated Voltage	V	12
4	Rated Speed	rpm	2910
5	Rated Torque	Nm	0,055
6	Max. Peak Torque	Nm	0,16
7	Torque Constant	Nm/A	0,026
8	Rated Current	A	2,12
9	Max. Peak Current	A	6,3
10	No-Load Current	mA	320
11	Line to Line Resistance	Ω	0,9
12	Line to Line Inductance	mH	0,34
13	Rotor Inertia	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 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

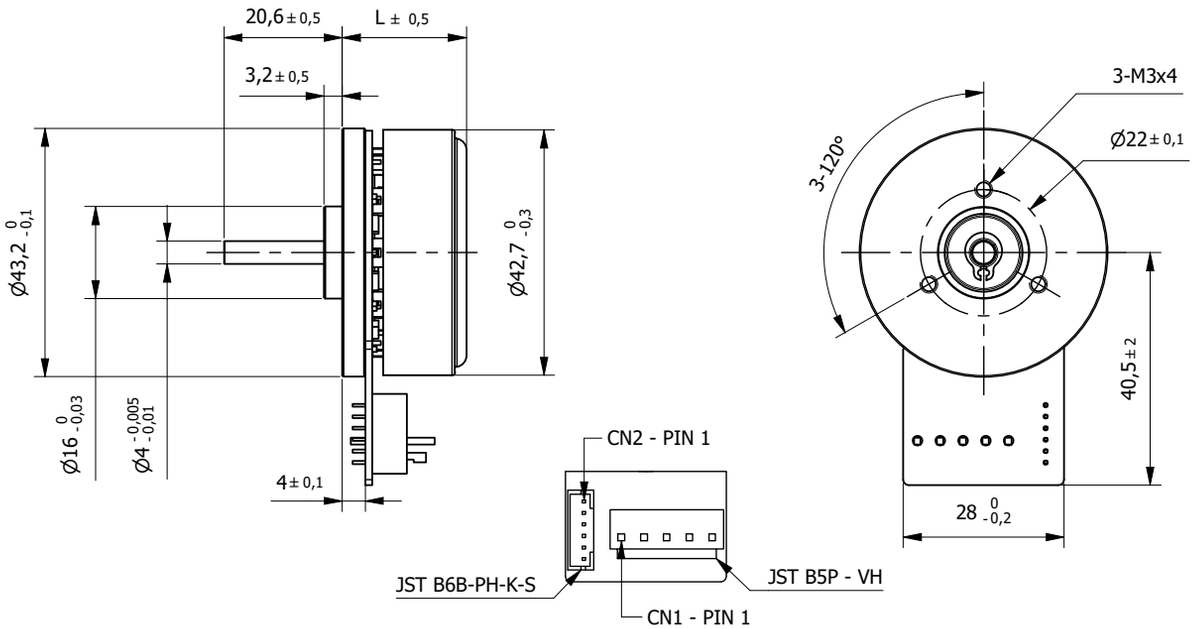
Connection		
Pin n°	Connector	Function
1	FPC cable	Vcc Hall +4,5 to 24 Vdc
2	|	Hall C
3	|	Hall A
4	|	Hall B
5	|	GND Hall
6	|	Phase W
7	|	Phase V
8	|	Phase U

Brushless Flat Motor 45BLW

Connector

Ø 45mm

0,05 - 0,13Nm



Specification					
	Model		45BLW18	45BLW21	45BLW27
1	n° of Pole		16	16	16
2	n° of Phase		3	3	3
3	Rated Voltage	V	24	24	24
4	Rated Speed	rpm	5000	5260	4840
5	Rated Torque	Nm	0,05	0,084	0,13
6	Max. Peak Torque	Nm	0,15	0,25	0,39
7	Torque Constant	Nm/A	0,031	0,033	0,037
8	Rated Current	A	1,61	2,55	3,51
9	Max. Peak Current	A	4,8	7	10
10	No-Load Current	mA	250	390	430
11	Line to Line Resistance	Ω	1,83	0,8	0,61
12	Line to Line Inductance	mH	0,59	0,33	0,27
13	Rotor Inertia	gcm2	100	135	180
14	Length (L)	mm	18	21	27
15	Weight	Kg	0,08	0,12	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 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

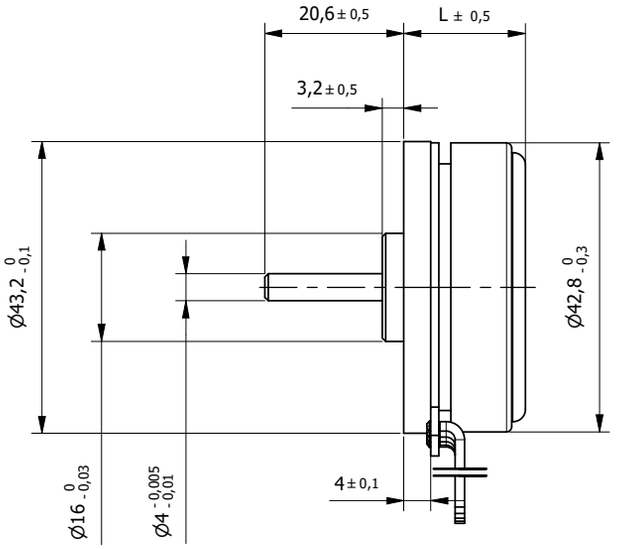
Connection		
Pin n°	Connector	Function
1	JST B5P-VH	GND
2	|	Phase W
3	|	Phase V
4	|	Phase U
5	|	GND
1	JST B6B-PH-K-S	GND
2	|	+5V DC
3	|	Hall A
4	|	Hall B
5	|	Hall C
6	|	GND

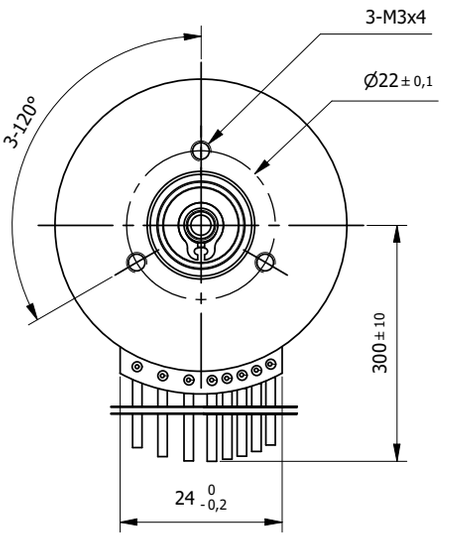
Brushless Flat Motor 45BLW

Wires

Ø 45mm

0,05 - 0,13Nm





Specification					
	Model		45BLW18	45BLW21	45BLW27
1	n° of Pole		16	16	16
2	n° of Phase		3	3	3
3	Rated Voltage	V	24	24	24
4	Rated Speed	rpm	5000	5260	4840
5	Rated Torque	Nm	0,05	0,084	0,13
6	Max. Peak Torque	Nm	0,15	0,25	0,39
7	Torque Constant	Nm/A	0,031	0,033	0,037
8	Rated Current	A	1,61	2,55	3,51
9	Max. Peak Current	A	4,8	7	10
10	No-Load Current	mA	250	380	430
11	Line to Line Resistance	Ω	1,83	0,8	0,61
12	Line to Line Inductance	mH	0,59	0,33	0,27
13	Rotor Inertia	gcm2	99	135	180
14	Length (L)	mm	18	21	27
15	Weight	Kg	0,08	0,12	0,15

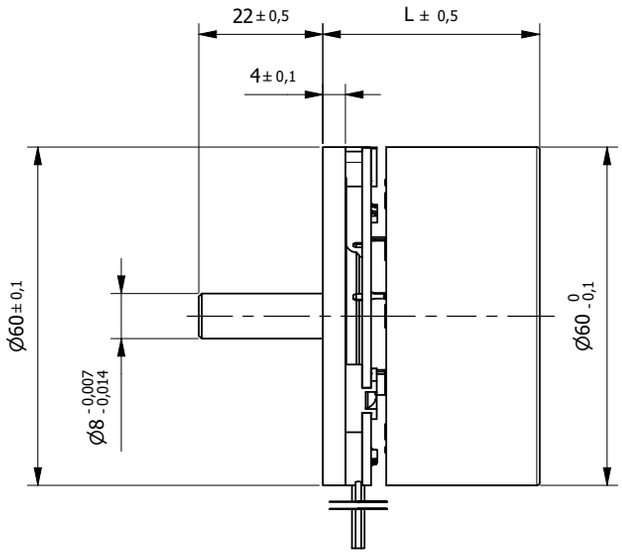
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,03mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

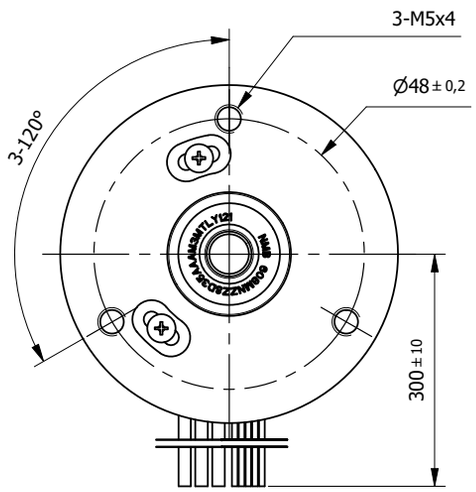
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG24	Vcc Hall +5 to +24 Vdc
2	Blue	|	Hall A
3	Green	|	Hall B
4	White	|	Hall C
5	Black	|	GND Hall
6	Grey	|	Phase U
7	Brown	|	Phase V
8	Yellow	|	Phase W

Brushless Flat Motor 60BLWA38

Ø 60mm

0,5Nm





Specification			
	Model		60BLWA38
1	n° of Pole		14
2	n° of Phase		3
3	Rated Voltage	V	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

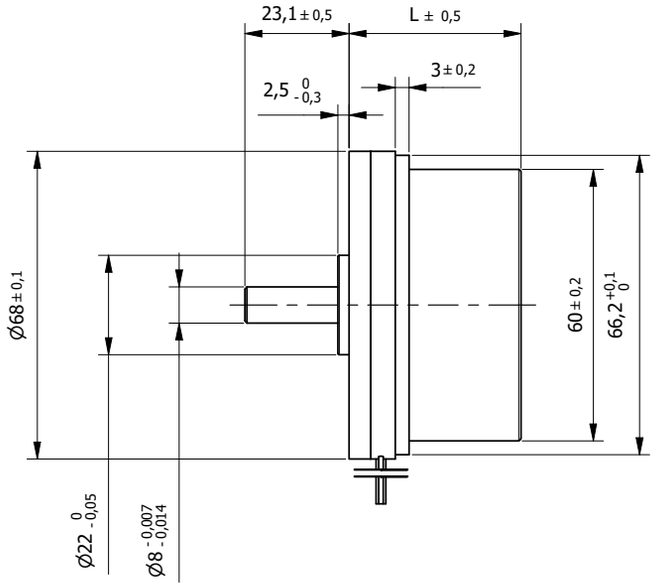
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	55N
Max. Axial force	12N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min.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

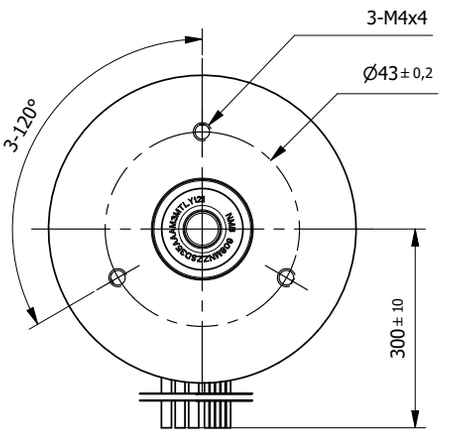
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1332 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue	|	Hall A
3	Green	|	Hall B
4	White	|	Hall C
5	Black	|	GND Hall
6	Yellow	UL1007 AWG20	Phase U
7	Brown	|	Phase V
8	Orange	|	Phase W

Brushless Flat Motor 60BLW40

Ø 60mm

0,3Nm





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

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	55N
Max. Axial force	12N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

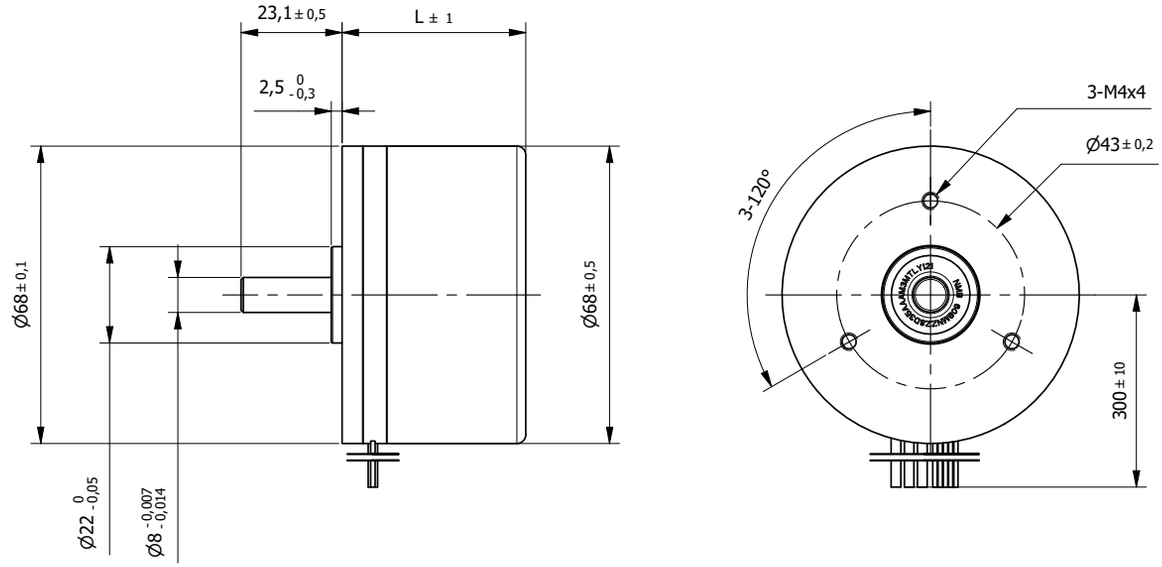
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue	|	Hall A
3	Green	|	Hall B
4	White	|	Hall C
5	Black	|	GND Hall
6	Yellow	UL1430 AWG18	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Flat Motor 60BLW40

IP54

Ø 68mm

0,3Nm



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

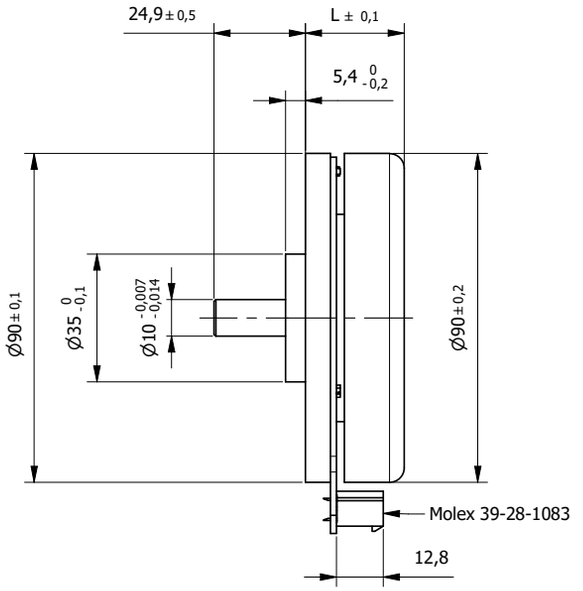
Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP54
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (10mm from flange)	55N
Max. Axial force	12N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

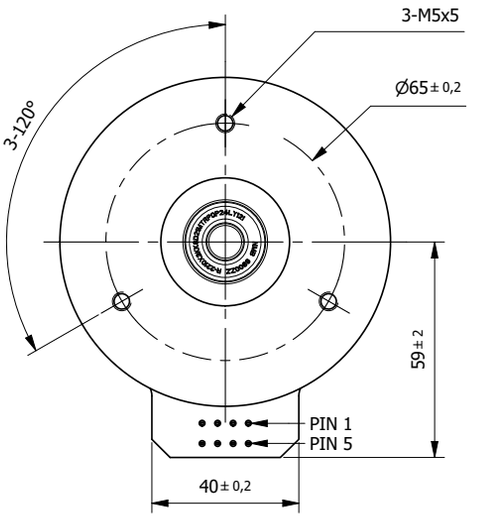
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG26	Vcc Hall +5 to +24 Vdc
2	Blue	|	Hall A
3	Green	|	Hall B
4	White	|	Hall C
5	Black	|	GND Hall
6	Yellow	UL1430 AWG18	Phase U
7	Red	|	Phase V
8	Black	|	Phase W

Brushless Flat Motor 90BLW

Ø 90mm

0,46 to 0,96Nm





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

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,05mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (10mm from flange)	110N
Max. Axial force	45N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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



Brushless DC

Flat motors with Encoder

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

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

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.

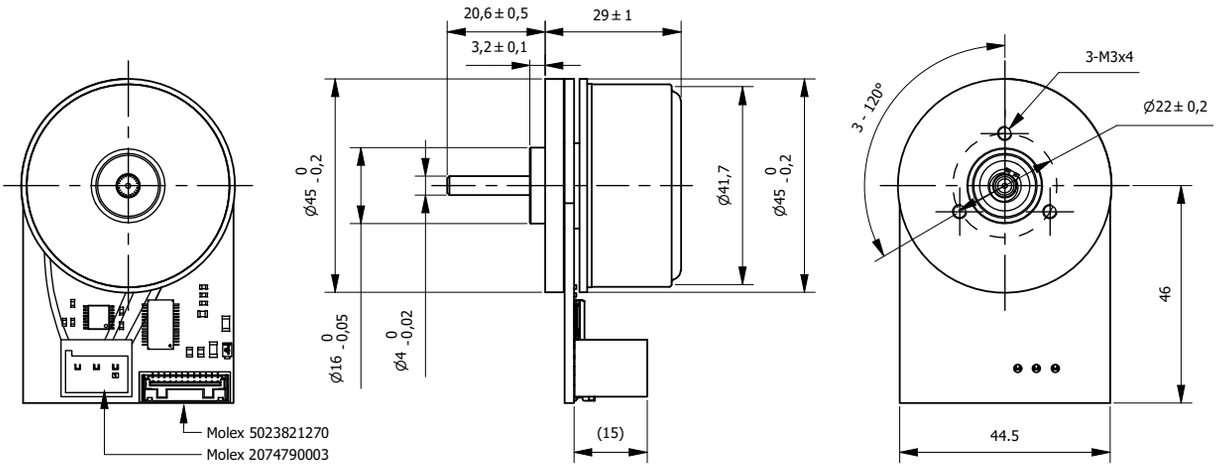
*Rated Torque

Brushless Flat Motor 45BLW29-E

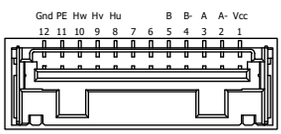
with Encoder

Ø 45mm

0,13Nm







1024 pulse/revolution encoder pin

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

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

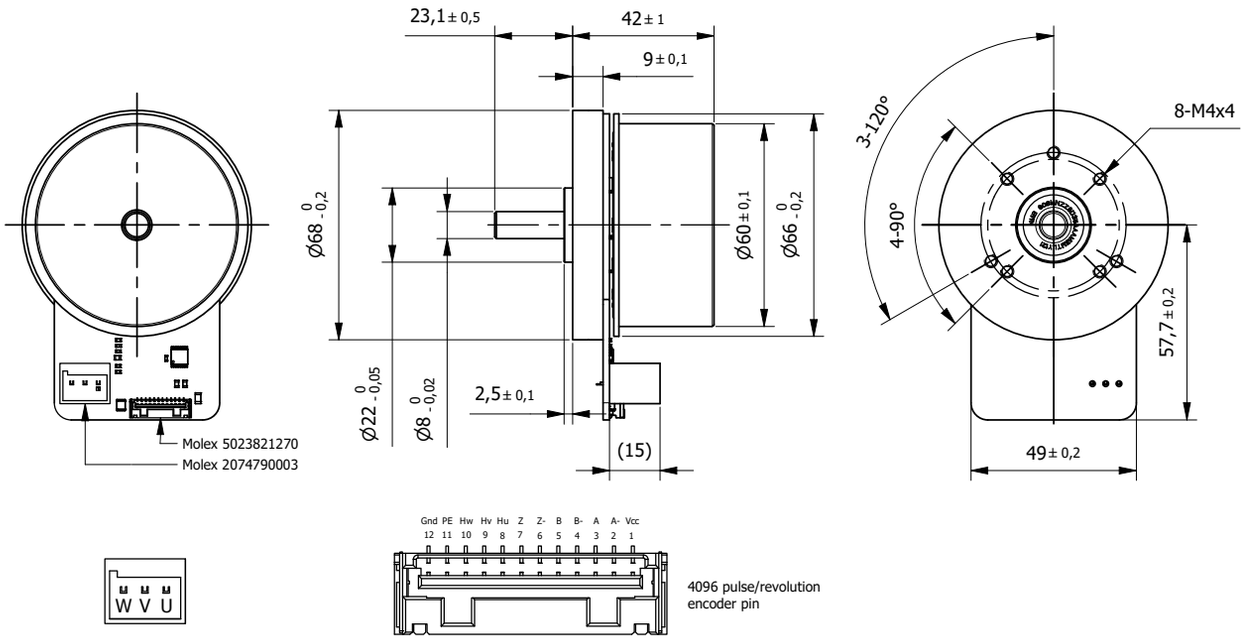
Connection	
Pin n°	**Function**
Feedback	
1	VCC
2	EA-
3	EA
4	EB-
5	EB
8	HALL A
9	HALL B
10	HALL C
11	PE
12	GND
Motor	
1	Phase U
2	Phase V
3	Phase W

Brushless Flat Motor 60BLW42-E

with Encoder

Ø 60mm

0,29Nm



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

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

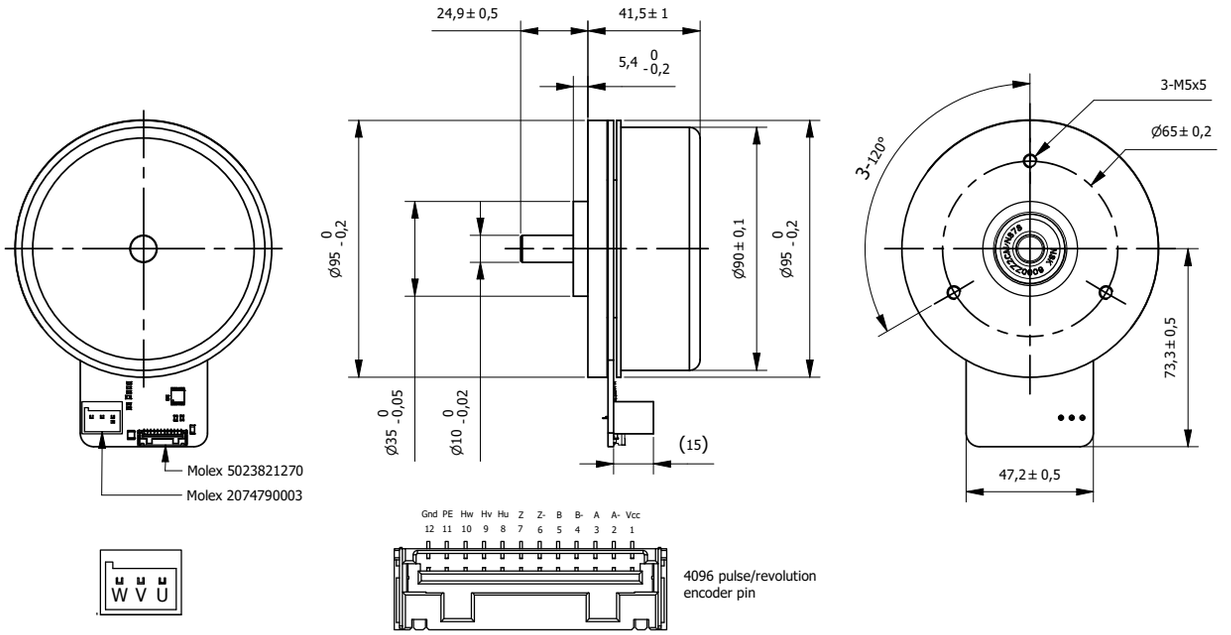
Connection	
Pin n°	Function
Feedback	
1	VCC
2	EA-
3	EA
4	EB-
5	EB
6	EZ-
7	EZ
8	HALL A
9	HALL B
10	HALL C
11	PE
12	GND
Motor	
1	Phase U
2	Phase V
3	Phase W

Brushless Flat Motor 90BLW42-E

with Encoder

Ø 90mm

0,96Nm



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

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

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



Brushless DC

Frameless motors

Advantages at a glance
Maximum integration options
High torque
Low weight

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

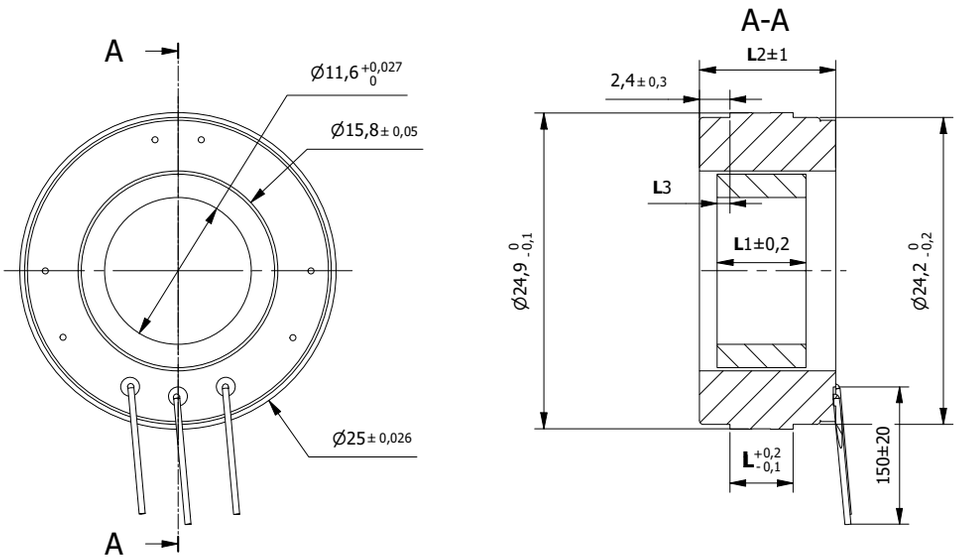
BLDC Frameless motors	Torque* (Nm)	155
25BLF	0,03...0,06	156
38BLF	0,1...0,2	157
43BLF	0,15	158
50BLF	0,3...0,5	159
60BLF	0,45	160
70BLF	0,55...1	161
85BLF	1,2...2	162
102BLF	2,5	163
115BLF	3,9...7,8	164

*Rated Torque

Brushless Frameless Motor 25BLF

Ø 25mm

0,03 - 0,06Nm

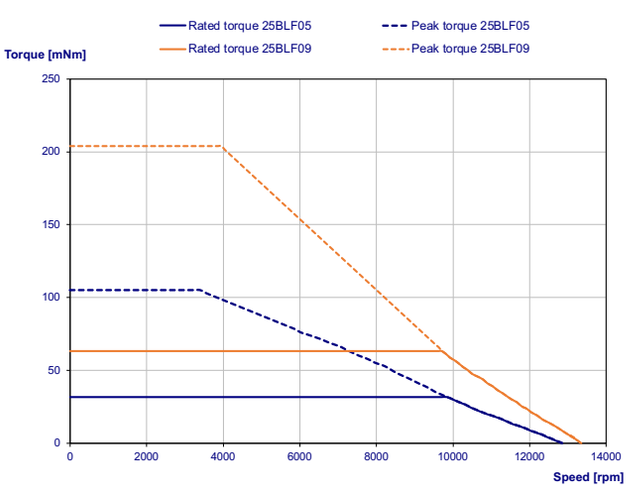


Optional: Thermistor

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

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

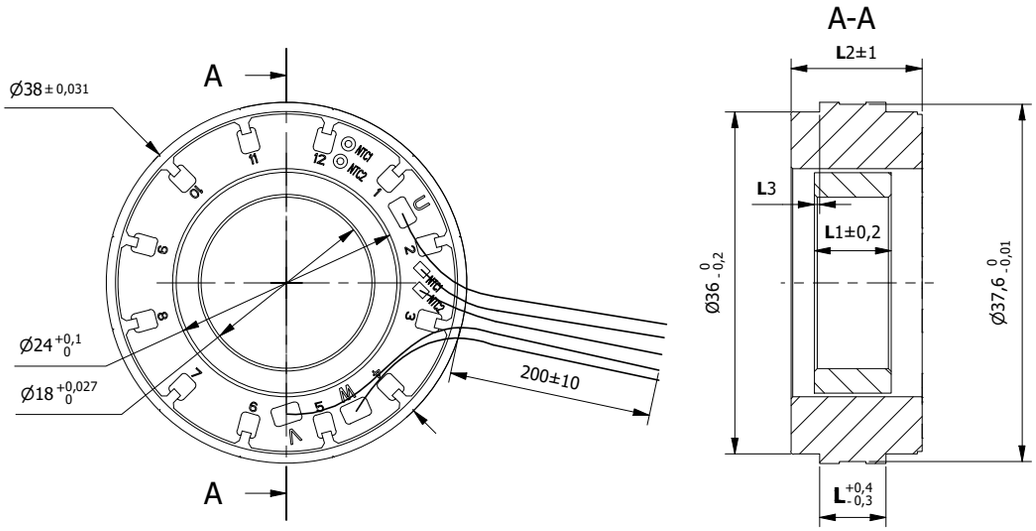
Connection		
Color	Gauge	Function
Red	AWG22	Phase U
White	|	Phase V
Black	|	Phase W



Brushless Frameless Motor 38BLF

Ø 38mm

0,1 - 0,2Nm

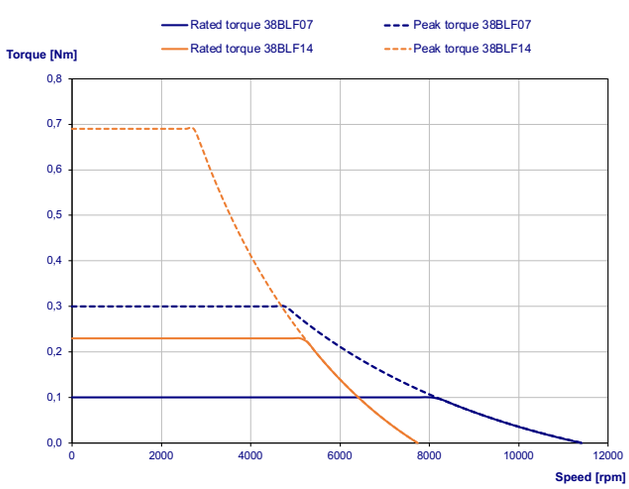


Optional: Thermistor

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

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

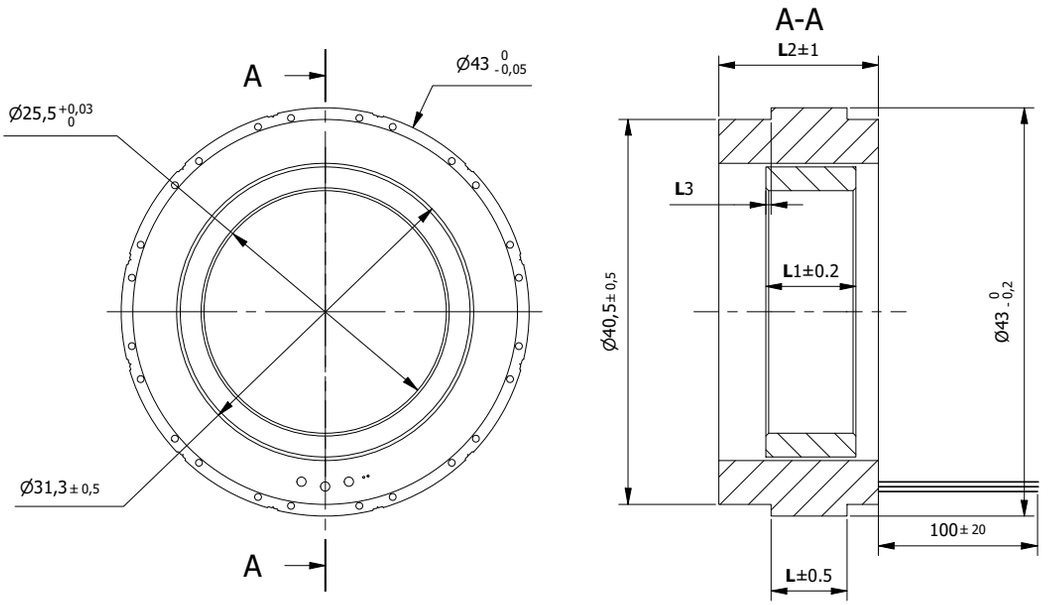
Connection		
Color	Gauge	Function
Yellow	AWG20	Phase U
Red	|	Phase V
Black	|	Phase W



Brushless Frameless Motor 43BLF

Ø 43mm

0,15Nm

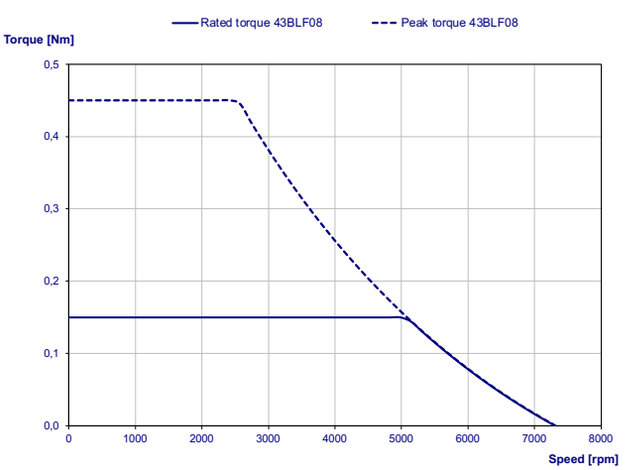


Optional: Thermistor

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

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

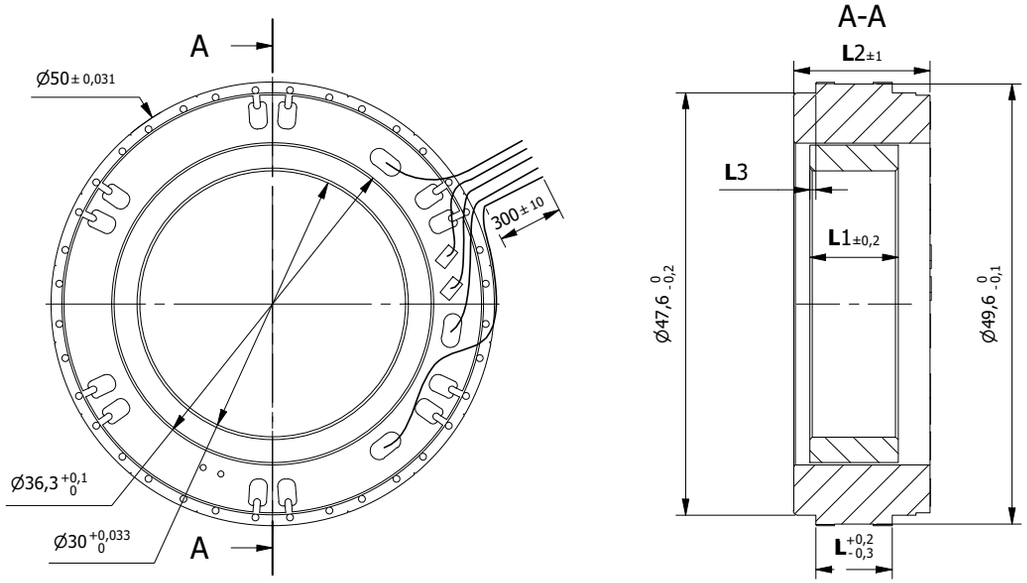
Connection		
Color	Gauge	Function
Yellow	AWG24	Phase U
Red	|	Phase V
Black	|	Phase W



Brushless Frameless Motor 50BLF

Ø 50mm

0,3 - 0,5Nm

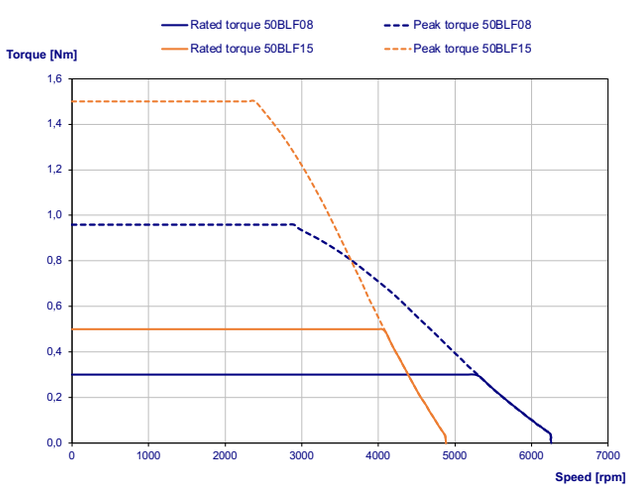


Optional: Hall sensors, Thermistor and PCB mounted Connector

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

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

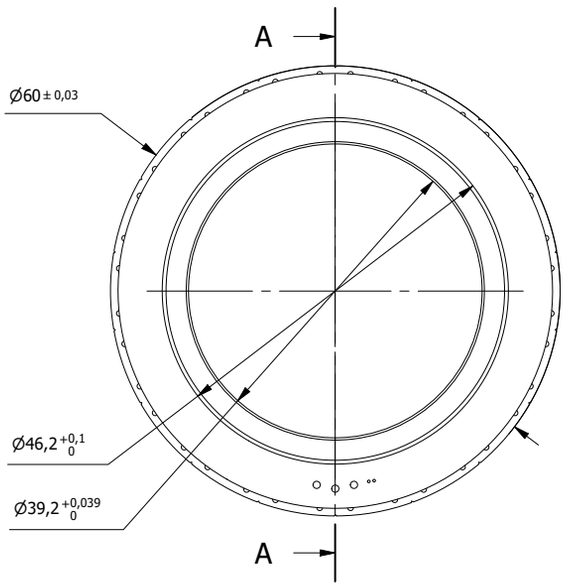
Connection		
Color	Gauge	Function
Yellow	AWG22/20	Phase U
Red	|	Phase V
Black	|	Phase W

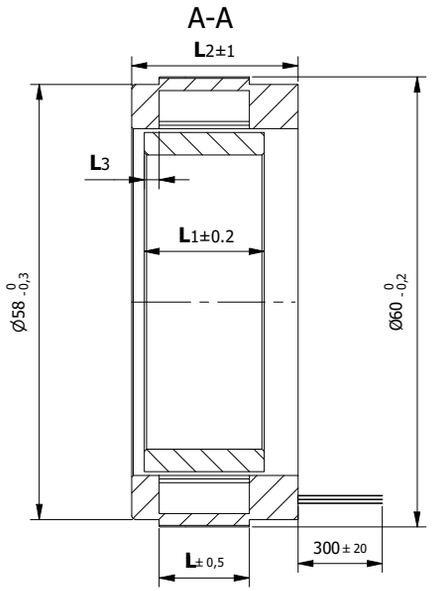


Brushless Frameless Motor 60BLF

Ø 60mm

0,45Nm



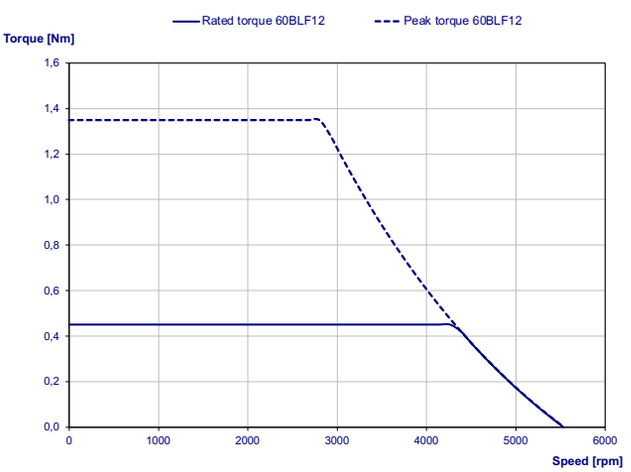


Optional: Hall sensors, Thermistor and PCB mounted Connector

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

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

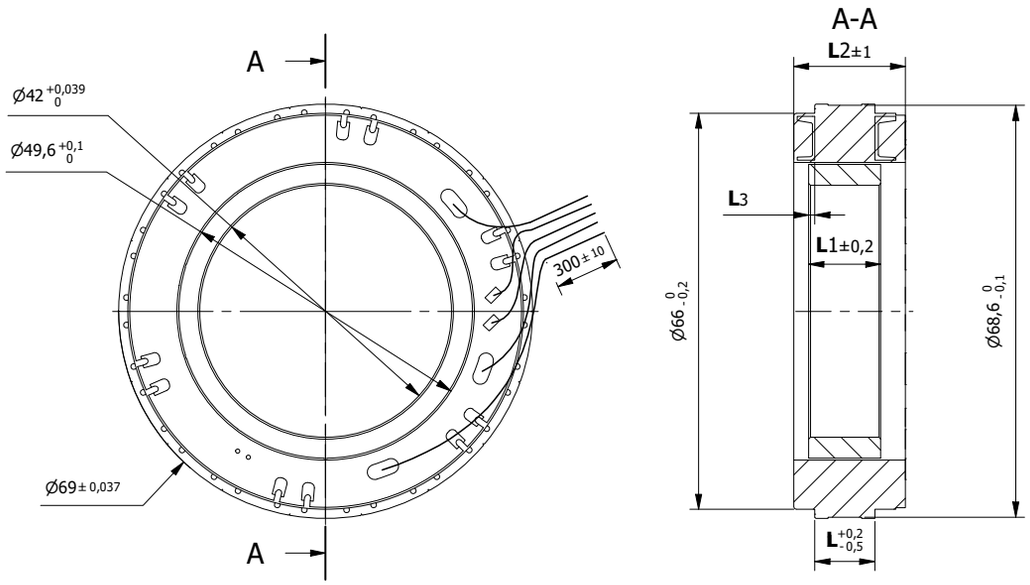
Connection		
Color	Gauge	Function
Yellow	AWG20	Phase U
Red	|	Phase V
Black	|	Phase W



Brushless Frameless Motor 70BLF

Ø 70mm

0,55 - 1Nm

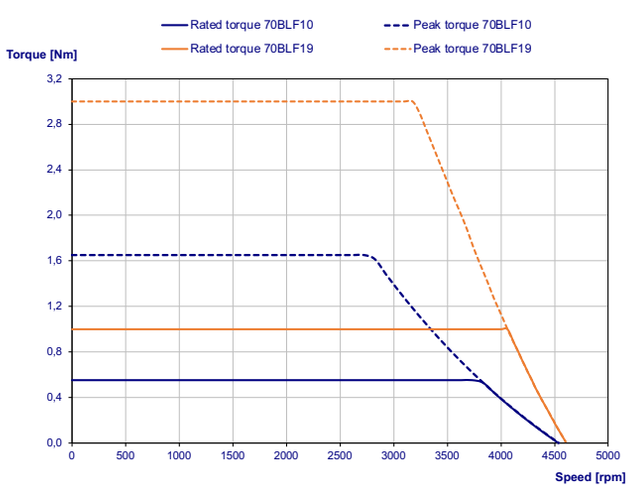


Optional: Hall sensors, Thermistor and PCB mounted Connector

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

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

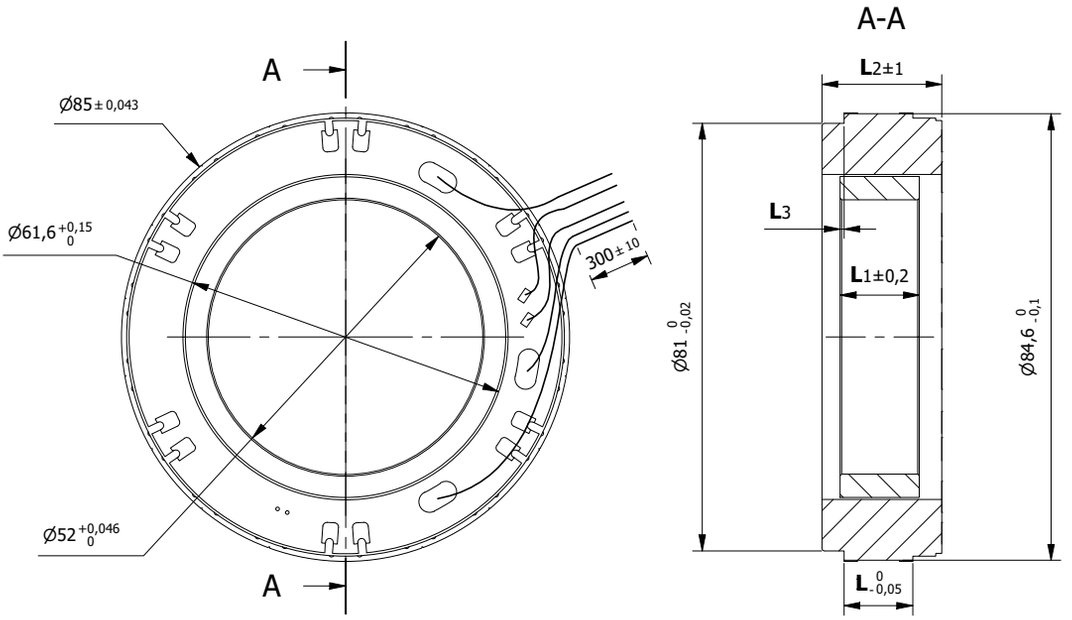
Connection		
Color	Gauge	Function
Yellow	AWG20/18	Phase U
Red	|	Phase V
Black	|	Phase W



Brushless Frameless Motor 85BLF

Ø 85mm

1,2 - 2Nm

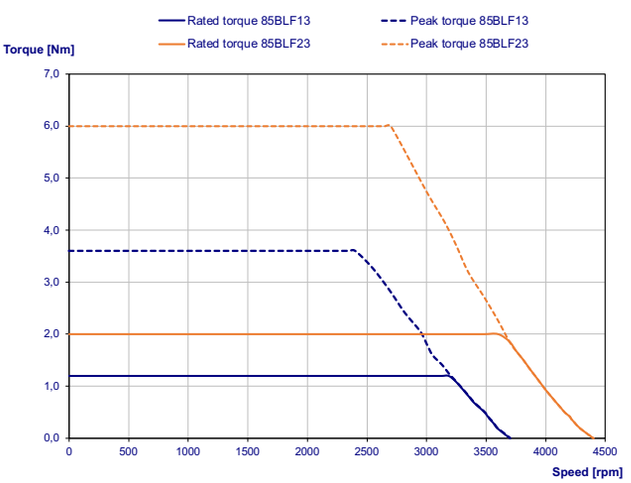


Optional: Hall sensors, Thermistor and PCB mounted Connector

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

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

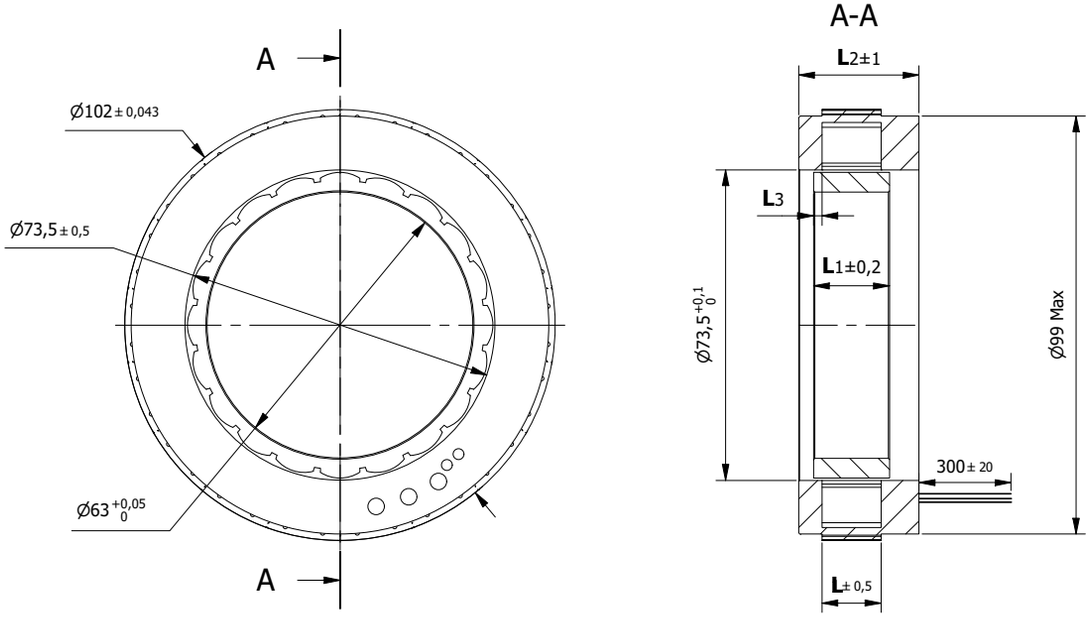
Connection		
Color	Gauge	Function
Yellow	AWG18/16	Phase U
Red	|	Phase V
Black	|	Phase W



Brushless Frameless Motor 102BLF

Ø 102mm

2,5Nm

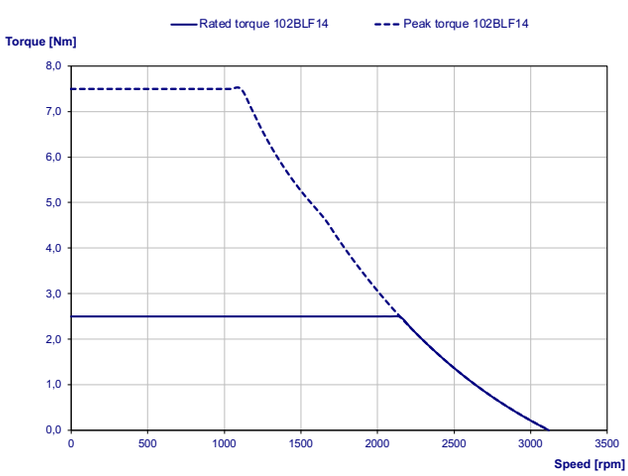


Optional: Hall sensors, Thermistor and PCB mounted Connector

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

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

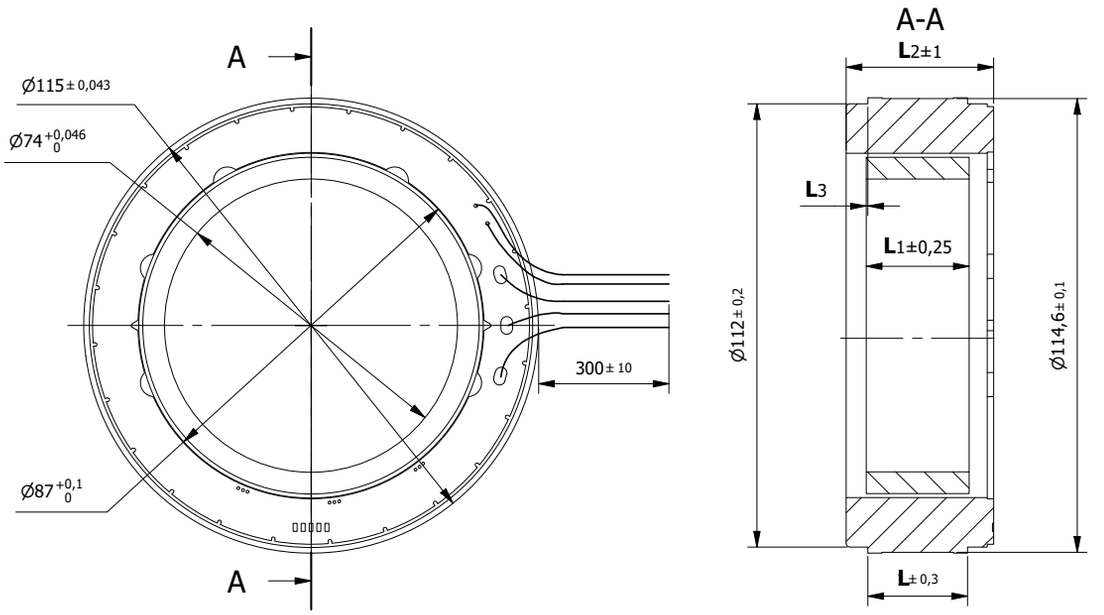
Connection		
Color	Gauge	Function
Yellow	AWG16	Phase U
Red	|	Phase V
Black	|	Phase W



Brushless Frameless Motor 115BLF

Ø 115mm

3,9 - 7,8Nm

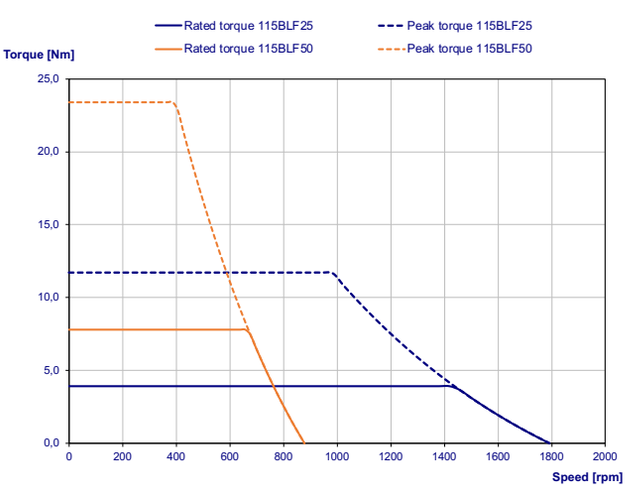


Optional: Hall sensors, Thermistor and PCB mounted Connector

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

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

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



Brushless Servomotors



Low voltage
Servomotors

p.175



Medium voltage
Servomotors

p.185

Brushless
Servomotors

Technical introduction		172

Low voltage - Brushless DC Servomotors	Torque* (Nm)	175
25SV - 24VDC - **NEW**	0,095	176
38SV - 48VDC	0,16...0,32	177
60SV - 48VDC	0,64...1,27	178
80SV - 48VDC	2,39...3,18	179
100SV - 48VDC	3,18...4,77	180
110SV - 48VDC	4,77...6,37	181
130SV - 48VDC	9,55...14,3	182

Medium voltage - Brushless AC Servomotors	Torque* (Nm)	185
38SV - 220VAC	0,16...0,32	186
60SV - 220VAC	0,64...1,27	187
80SV - 220VAC	2,39...3,18	188
100SV - 220VAC	3,18...4,77	189
110SV - 220VAC	4,77...6,37	190
130SV - 220VAC	9,55...14,3	191

* Rated Torque

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

Glossary

Product families
BLDC Low voltage Servomotors
BLAC Medium voltage Servomotors

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

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

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

The motors are IP65 rated as standard (exept our 25SV-24VDC which is IP54) so that they can be used in a wide variety of environments without concern.

IP65

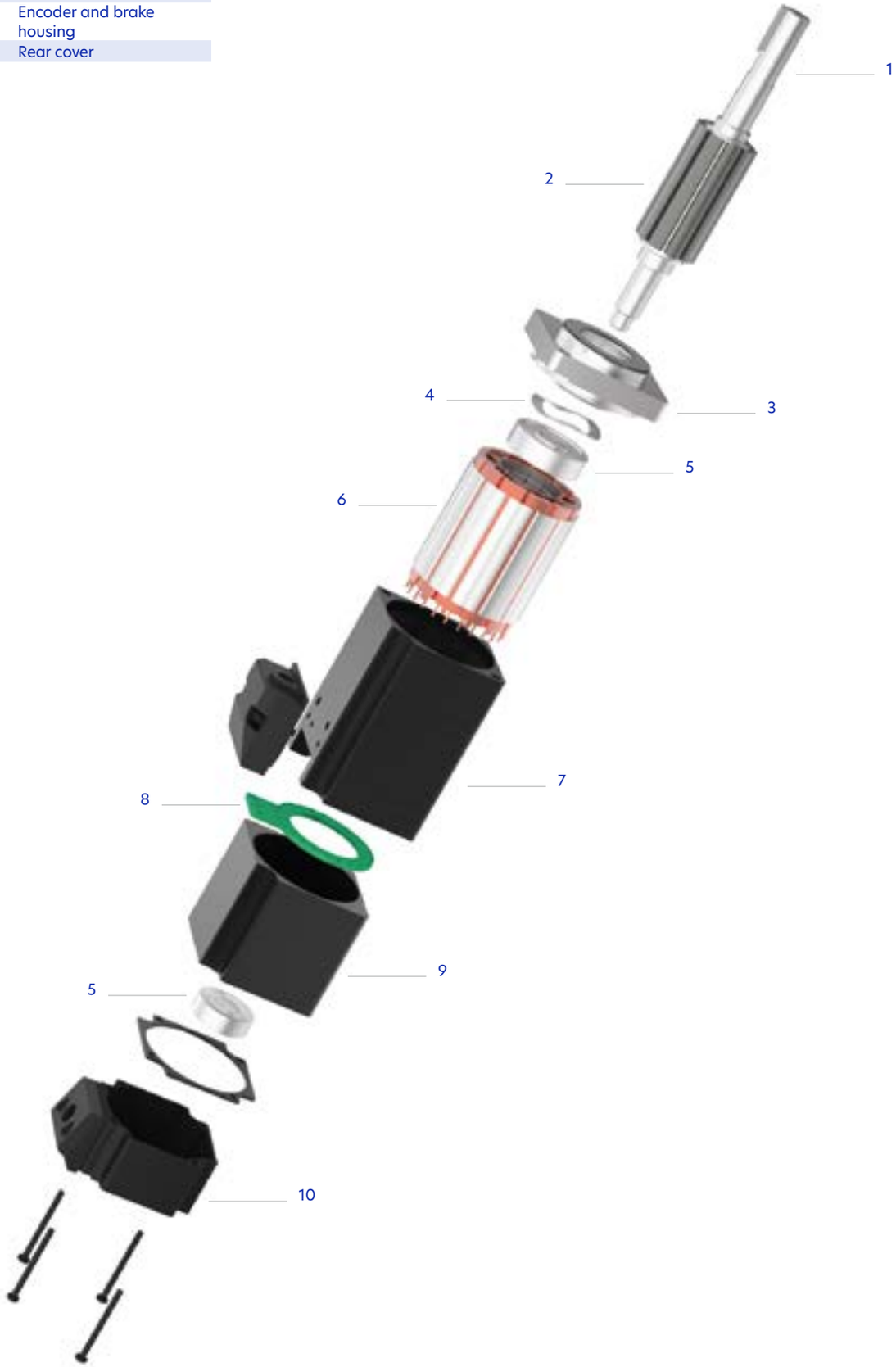
A brake, matched to the power output of the motor, is also an option on almost all models.

Optional brake

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

Technical introduction

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





BLDC Servomotors

Low voltage

Low voltage - Brushless DC Servomotors	Torque* (Nm)	
25SV - 24VDC - **NEW**	0,095	176
38SV - 48VDC	0,16...0,32	177
60SV - 48VDC	0,64...1,27	178
80SV - 48VDC	2,39...3,18	179
100SV - 48VDC	3,18...4,77	180
110SV - 48VDC	4,77...6,37	181
130SV - 48VDC	9,55...14,3	182

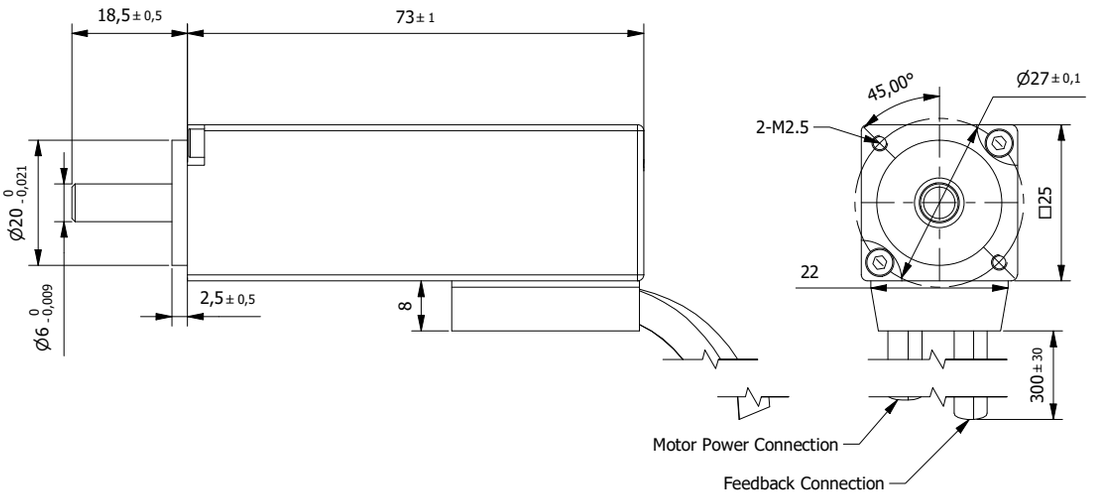
* Rated Torque

Brushless DC Servomotor 25SV-24VDC

Low voltage - IP54

□ 25mm

0,095Nm

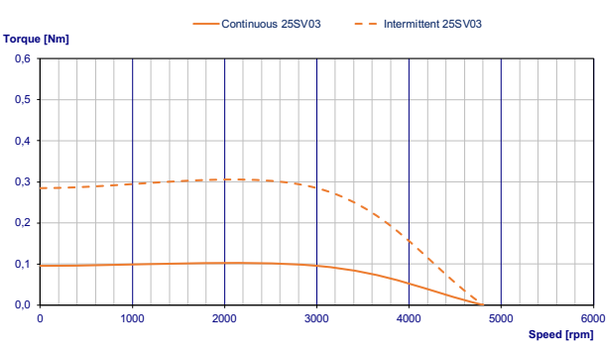


Specification			
	Model		25SV03-24V-30EA1
1	n° of Pole		8
2	n° of Phase		3
3	Nominal Voltage	VDC	24
4	Rated power	W	30
5	Rated Speed	RPM	3000
6	Max. Speed	RPM	4800
7	Rated Torque	Nm	0,095
8	Max. Peak Torque	Nm	0,285
9	Torque Constant	Nm/A	0,057
10	Rated Current	A	2
11	Max. Peak Current	A	6
12	Back EMF constant	V/kRPM	3,42
13	Line to Line Resistance	Ω	2,3 ±10%
14	Line to Line Inductance	mH	0,7 ±20%
15	Rotor Inertia	gcm2	1,27
16	Length (L)	mm	73
17	Weight	Kg	0,2

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP54
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,14 mm
Max. Radial force (14mm from flange)	6N
Max. Axial force	5N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Encoders	
Item	
Encoder Type - Standard	Magnetic Absolute multi-turn encoder (Communication Interface RS485): 17 bit, 16 bit

Connection		
Color	Gauge	Function
Feedback		
Red	UL2517 AWG28	+5V
Black	|	GND
White	|	485+
Blue	|	485-
Shielded	|	PE
Power		
Yellow	AWG20	U
Red	|	V
Black	|	W
Green	|	GND

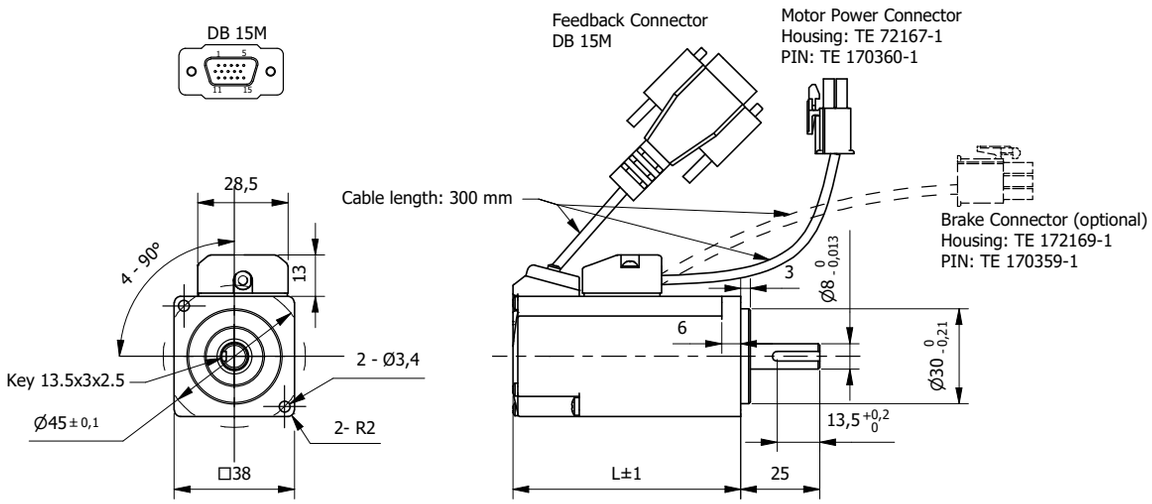


Brushless DC Servomotor 38SV-48VDC

Low voltage - IP65

□ 38mm

0,16 to 0,32Nm



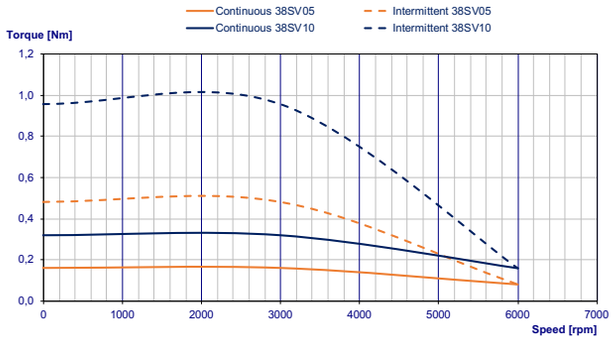
Note: optional brake

Specification						
	Model		38SV05-48V-30EA1	38SV05-48V-30EA2	38SV10-48V-30EA1	38SV10-48V-30EA2
1	n° of Pole		10	10	10	10
2	n° of Phase		3	3	3	3
3	Nominal Voltage	VDC	48	48	48	48
4	Rated power	W	50	50	100	100
5	Rated Speed	RPM	3000	3000	3000	3000
6	No-load Speed	RPM	6800 ±10%	6800 ±10%	6800 ±10%	6800 ±10%
7	Rated Torque	Nm	0,16	0,16	0,32	0,32
8	Max. Peak Torque	Nm	0,48	0,48	0,96	0,96
9	Torque Constant	Nm/A	0,083	0,083	0,083	0,083
10	Rated Current	A	2,1	2,1	4,3	4,3
11	Max. Peak Current	A	6,3	6,3	12,9	12,9
12	No-Load Current	A	0,2	0,2	0,4	0,4
13	Back EMF constant	V/kRPM	5	5	5	5
14	Line to Line Resistance	Ω	2,2 ±10%	2,2 ±10%	0,88 ±10%	0,88 ±10%
15	Line to Line Inductance	mH	1,8 ±20%	1,8 ±20%	0,78 ±20%	0,78 ±20%
16	Rotor Inertia	Kgcm2	0,024	0,035	0,05	0,05
17	Brake			24VDC - 0,35Nm		24VDC - 0,35Nm
18	Length (L)	mm	72	106	88	122
19	Weight	Kg	0,4	0,65	0,5	0,75

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

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

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

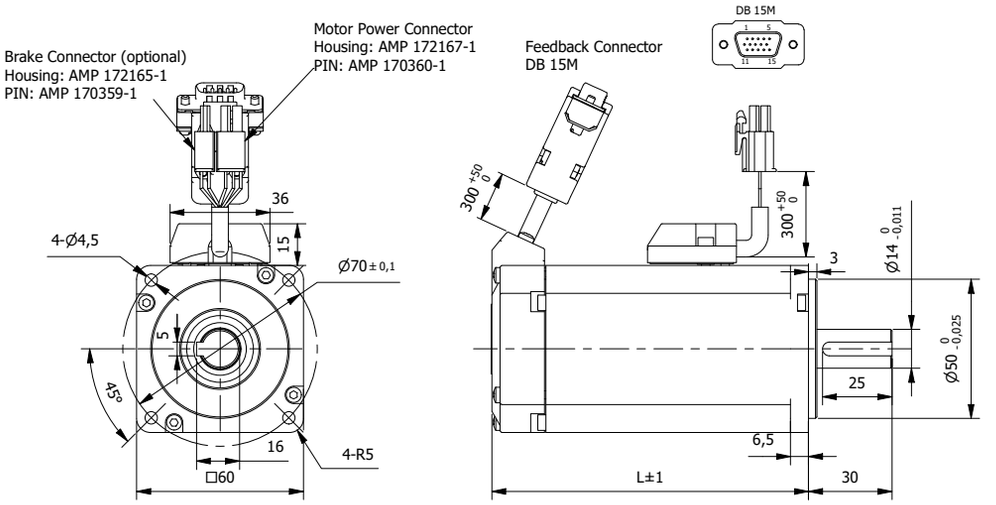


Brushless DC Servomotor 60SV-48VDC

Low voltage - IP65

□ 60mm

0,64 to 1,27Nm



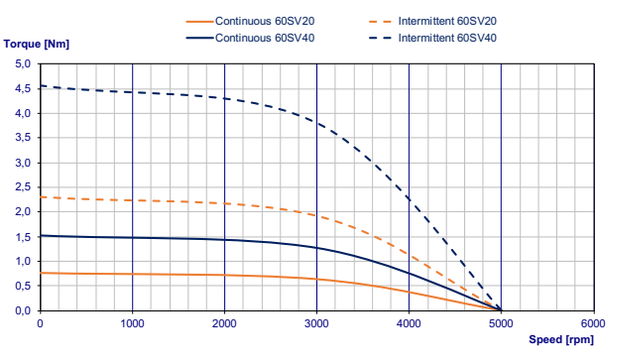
Note: optional brake

Specification						
	Model		60SV20-48V-30EA1	60SV20-48V-30EA2	60SV40-48V-30EA1	60SV40-48V-30EA2
1	n° of Pole		10	10	10	10
2	n° of Phase		3	3	3	3
3	Nominal Voltage	VDC	48	48	48	48
4	Rated power	W	200	200	400	400
5	Rated Speed	RPM	3000	3000	3000	3000
6	No-load Speed	RPM	5200 ±10%	5200 ±10%	5200 ±10%	5200 ±10%
7	Rated Torque	Nm	0,64	0,64	1,27	1,27
8	Max. Peak Torque	Nm	1,92	1,92	3,81	3,81
9	Torque Constant	Nm/A	0,107	0,107	0,107	0,107
10	Rated Current	A	6	6	12	12
11	Max. Peak Current	A	18	18	36	36
12	No-Load Current	A	0,6	0,6	1,2	1,2
13	Back EMF constant	V/kRPM	6,5	6,5	6,5	6,5
14	Line to Line Resistance	Ω	0,44 ±10%	0,44 ±10%	0,19 ±10%	0,19 ±10%
15	Line to Line Inductance	mH	0,65 ±20%	0,65 ±20%	0,38 ±20%	0,38 ±20%
16	Rotor Inertia	Kgcm2	0,21	0,21	0,25	0,25
17	Brake			24VDC - 1,3Nm		24VDC - 1,3Nm
18	Length (L)	mm	79	114	99	135
19	Weight	Kg	0,95	1,35	1,35	1,85

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,08 mm
Max. Radial force (20mm from flange)	245N
Max. Axial force	98N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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

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

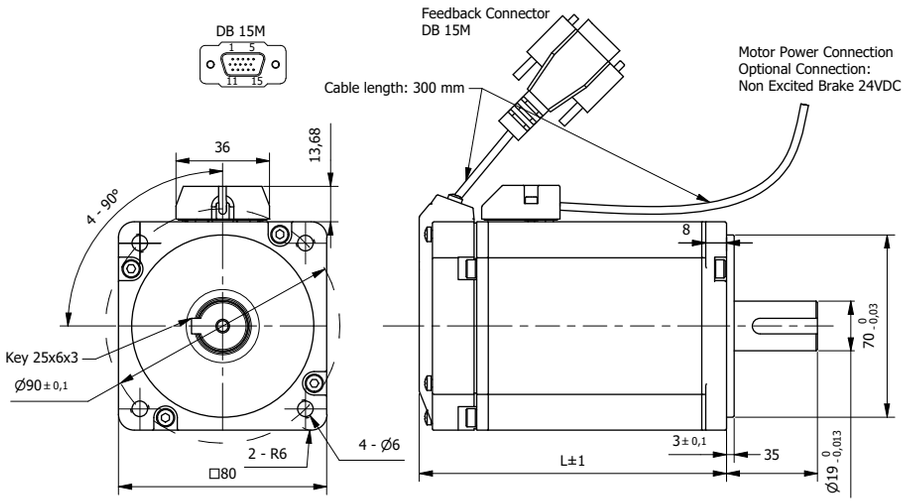


Brushless DC Servomotor 80SV-48VDC

Low voltage - IP65

□ 80mm

2,39 to 3,18Nm



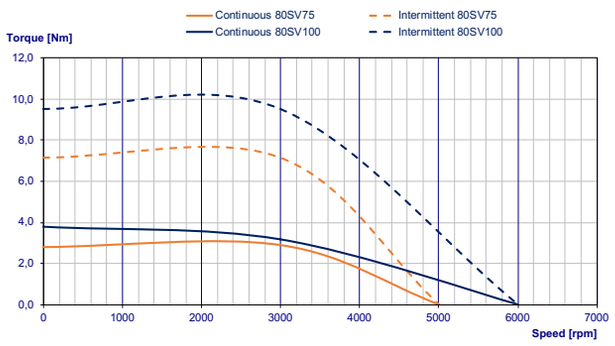
Note: optional brake

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

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

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

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

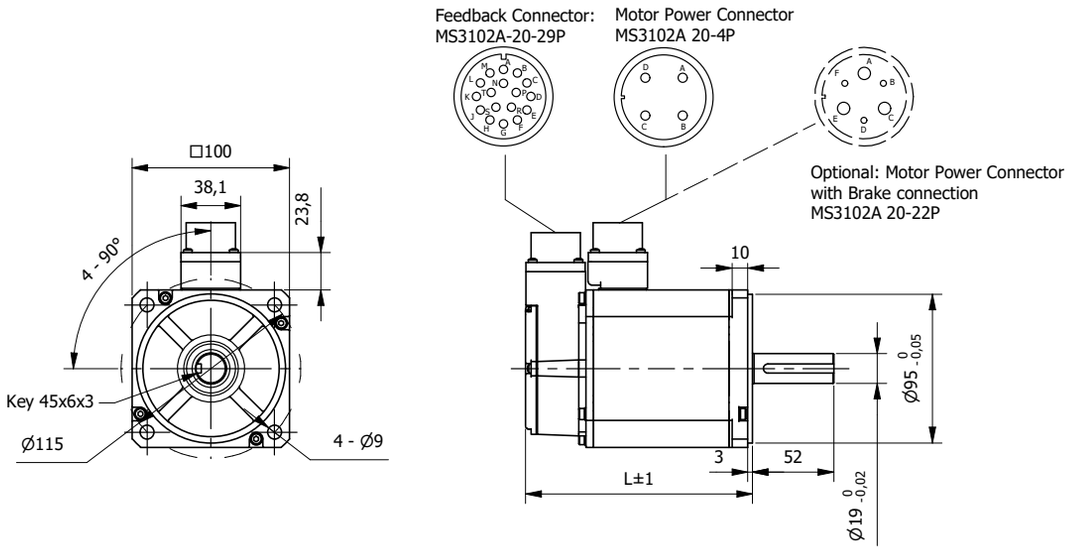


Brushless DC Servomotor 100SV-48VDC

Low voltage - IP65

□ 100mm

3,18 to 4,77Nm

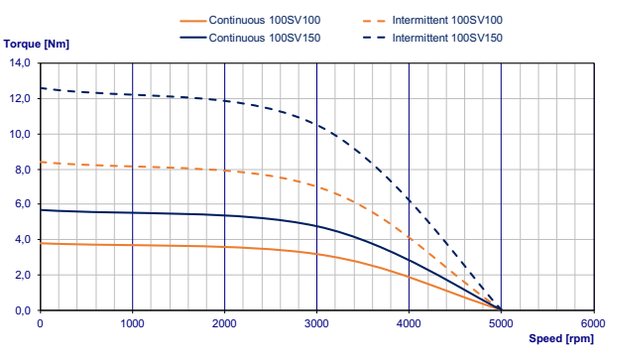


Specification						
	Model		100SV100-48V-30EA1	100SV100-48V-30EA2	100SV150-48V-30EA1	100SV150-48V-30EA2
1	n° of Pole		10	10	10	10
2	n° of Phase		3	3	3	3
3	Nominal Voltage	VDC	48	48	48	48
4	Rated power	W	1000	1000	1500	1500
5	Rated Speed	RPM	3000	3000	3000	3000
6	No-load Speed	RPM	5000 ±10%	5000 ±10%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

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

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

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

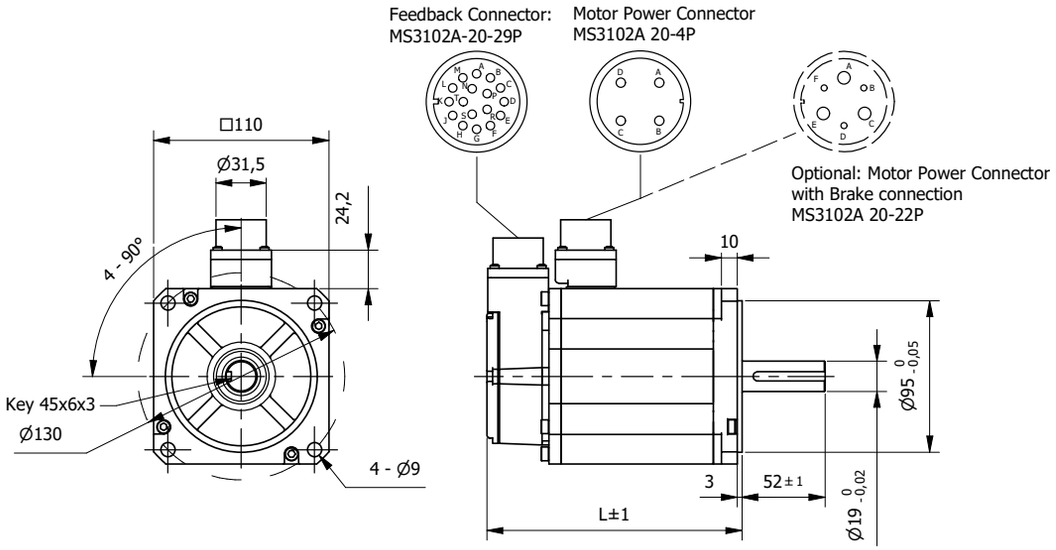


Brushless DC Servomotor 110SV-48VDC

Low voltage - IP65

□ 110mm

4,77 to 6,37Nm



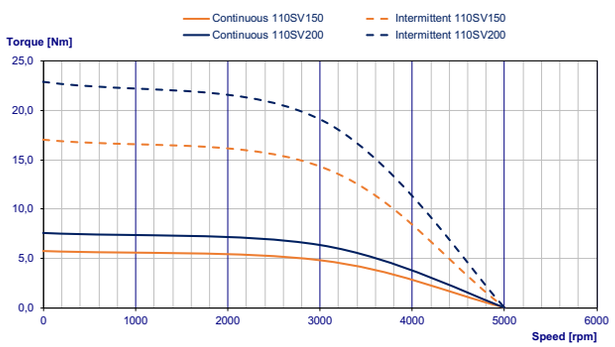
Note: optional brake

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

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

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

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

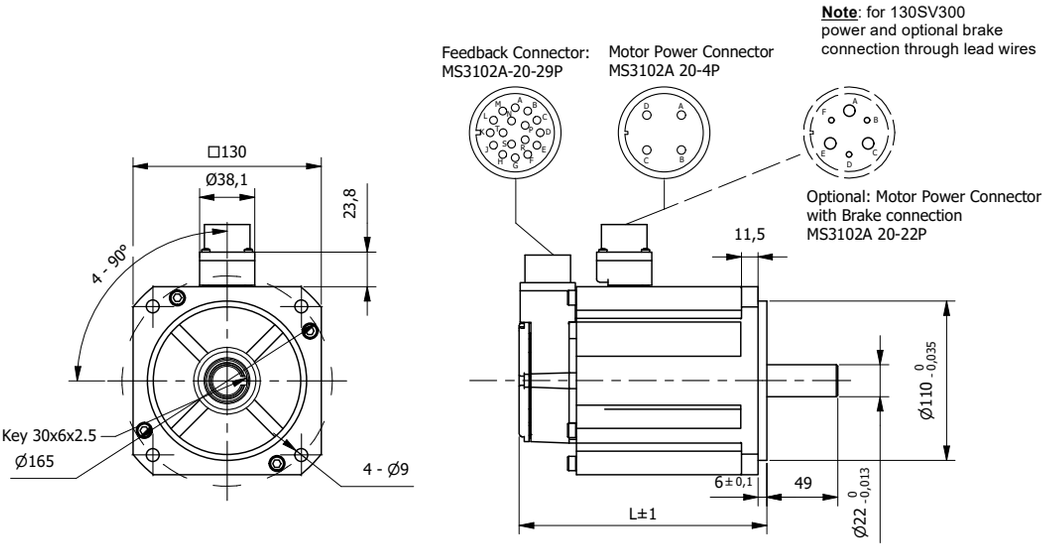


Brushless DC Servomotor 130SV-48VDC

Low voltage - IP65

□ 130mm

9,55 to 14,3Nm



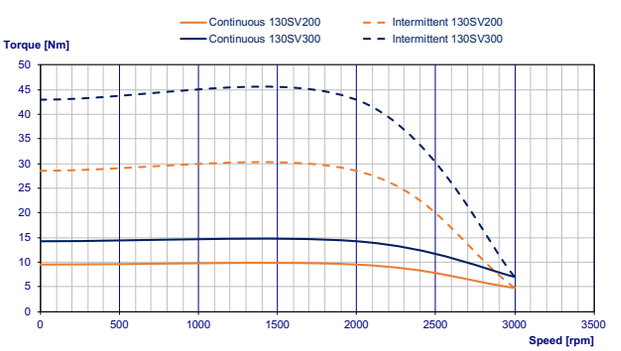
Note: optional brake

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

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

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

Connection			
Pin	Function	Pin	Function
Feedback			
A	+5V	J	U+
B	GND	K	U-
C	A+	L	V+
D	A-	M	V-
E	B+	N	W+
F	B-	P	W-
G	Z+	R	PE
H	Z-		
Power (for SV300 3x AWG8 300mm wires)			
A	U (yellow)	B	V (red)
C	W (black)	D	GND
Optional: Power & Brake (for SV300 2x AWG26 300mm wires)			
A	U	B	Brake 1 (black)
C	V	D	Brake 2 (black)
E	W		





BLAC Servomotors

Medium voltage

Medium voltage - Brushless AC Servomotors	Torque* (Nm)	
38SV - 220VAC	0,16...0,32	186
60SV - 220VAC	0,64...1,27	187
80SV - 220VAC	2,39...3,18	188
100SV - 220VAC	3,18...4,77	189
110SV - 220VAC	4,77...6,37	190
130SV - 220VAC	9,55...14,3	191

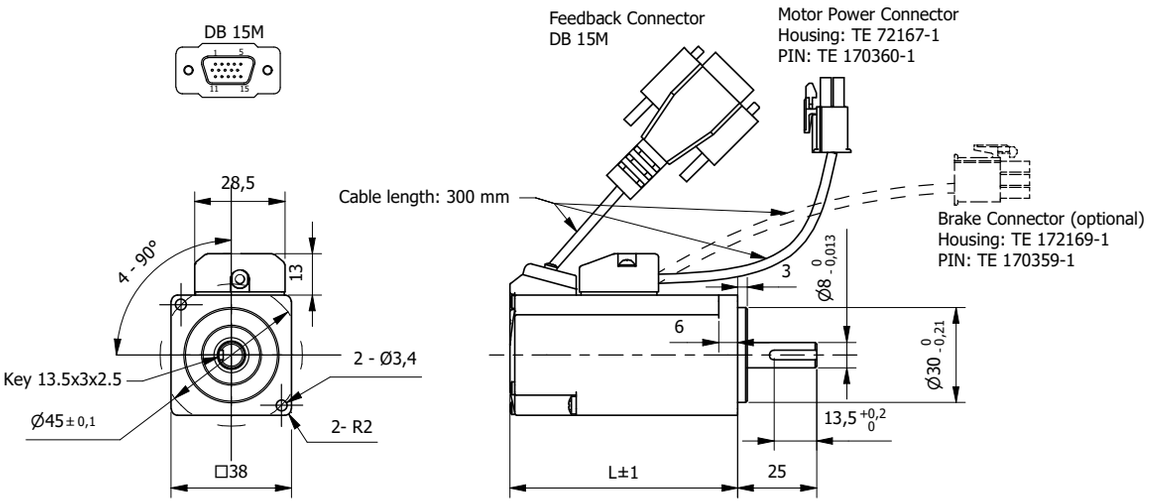
* Rated Torque

Brushless AC Servomotor 38SV-220VAC

Medium voltage - IP65

□ 38mm

0,16 to 0,32Nm



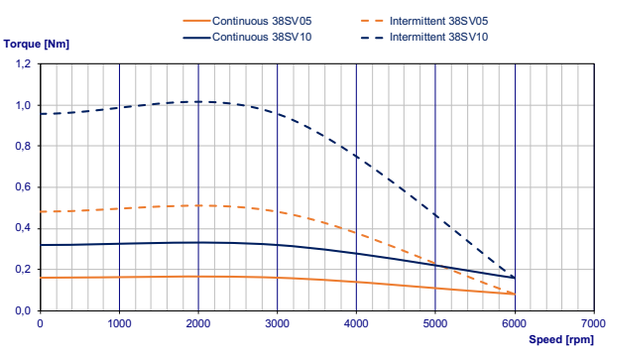
Note: optional brake

Specification						
	Model		38SV05-220V-30EA1	38SV05-220V-30EA2	38SV10-220V-30EA1	38SV10-220V-30EA2
1	n° of Pole		10	10	10	10
2	n° of Phase		3	3	3	3
3	Nominal Voltage	VAC	220	220	220	220
4	Rated power	W	50	50	100	100
5	Rated Speed	RPM	3000	3000	3000	3000
6	No-load Speed	RPM	10500 ±10%	10500 ±10%	10500 ±10%	10500 ±10%
7	Rated Torque	Nm	0,16	0,16	0,32	0,32
8	Max. Peak Torque	Nm	0,48	0,48	0,96	0,96
9	Torque Constant	Nm/A	0,032	0,032	0,034	0,034
10	Rated Current	A	0,5	0,5	1,0	1,0
11	Max. Peak Current	A	1,5	1,5	3	3
12	No-Load Current	A	0,1	0,1	0,1	0,1
13	Back EMF constant	V/kRPM	21	21	21	21
14	Line to Line Resistance	Ω	33 ±10%	33 ±10%	17,5 ±10%	17,5 ±10%
15	Line to Line Inductance	mH	24 ±20%	24 ±20%	12,4 ±20%	12,4 ±20%
16	Rotor Inertia	Kgcm2	0,024	0,034	0,04	0,05
17	Brake			24VDC - 0,35Nm		24VDC - 0,35Nm
18	Length (L)	mm	72	106	88	122
19	Weight	Kg	0,4	0,65	0,5	0,75

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

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

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

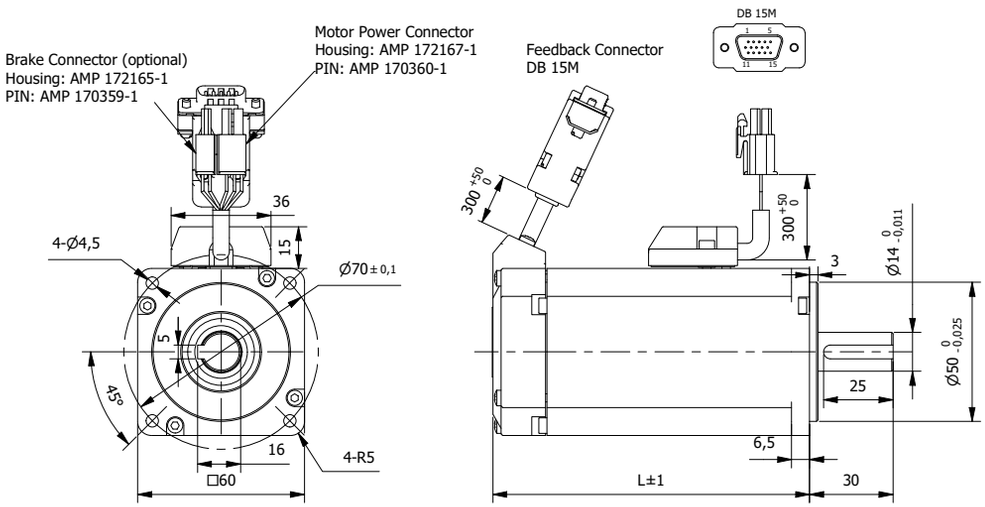


Brushless AC Servomotor 60SV-220VAC

Medium voltage - IP65

□ 60mm

0,64 to 1,27Nm



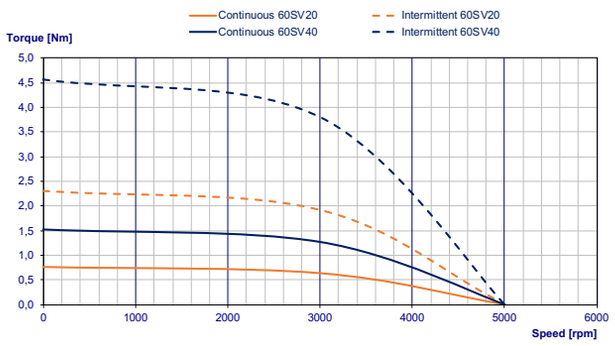
Note: optional brake

Specification						
	Model		60SV20-220V-30EA1	60SV20-220V-30EA2	60SV40-220V-30EA1	60SV40-220V-30EA2
1	n° of Pole		10	10	10	10
2	n° of Phase		3	3	3	3
3	Nominal Voltage	VAC	220	220	220	220
4	Rated power	W	200	200	400	400
5	Rated Speed	RPM	3000	3000	3000	3000
6	No-load Speed	RPM	8800 ±10%	8800 ±10%	8800 ±10%	8800 ±10%
7	Rated Torque	Nm	0,64	0,64	1,27	1,27
8	Max. Peak Torque	Nm	1,92	1,92	3,81	3,81
9	Torque Constant	Nm/A	0,41	0,41	0,41	0,41
10	Rated Current	A	1,7	1,7	3,4	3,4
11	Max. Peak Current	A	5,1	5,1	10,2	10,2
12	No-Load Current	A	0,17	0,17	0,8	0,8
13	Back EMF constant	V/kRPM	25	25	25	25
14	Line to Line Resistance	Ω	5,7 ±10%	5,7 ±10%	2,8 ±10%	2,8 ±10%
15	Line to Line Inductance	mH	10,6 ±20%	10,6 ±20%	5,1 ±20%	5,1 ±20%
16	Rotor Inertia	Kgcm2	0,2	0,2	0,38	0,38
17	Brake			24VDC - 1,3Nm		24VDC - 1,3Nm
18	Length (L)	mm	79	114	99	135
19	Weight	Kg	0,95	1,3	1,3	1,8

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,08 mm
Max. Radial force (20mm from flange)	245N
Max. Axial force	98N
Dielectric strength (for 1 sec.)	1200 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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

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

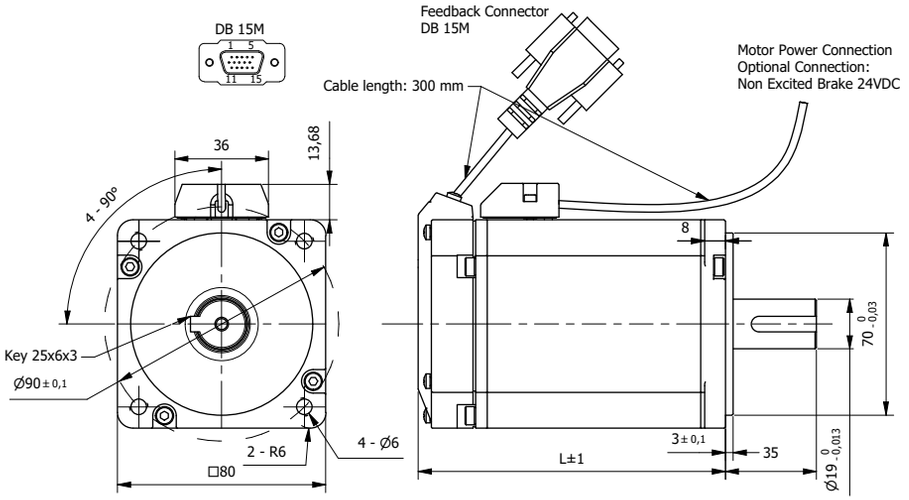


Brushless AC Servomotor 80SV-220VAC

Medium voltage - IP65

□ 80mm

2,39 to 3,18Nm



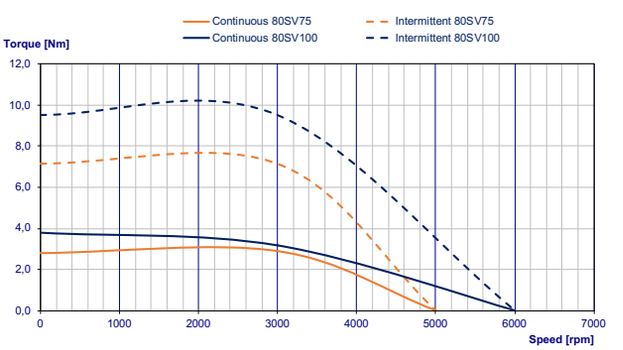
Note: optional brake

Specification						
	Model		80SV75-220V-30EA1	80SV75-220V-30EA2	80SV100-220V-30EA1	80SV100-220V-30EA2
1	n° of Pole		10	10	10	10
2	n° of Phase		3	3	3	3
3	Nominal Voltage	VAC	220	220	220	220
4	Rated power	W	750	750	1000	1000
5	Rated Speed	RPM	3000	3000	3000	3000
6	No-load Speed	RPM	6000 ±10%	6000 ±10%	6000 ±10%	6000 ±10%
7	Rated Torque	Nm	2,39	2,39	3,18	3,18
8	Max. Peak Torque	Nm	7,17	7,17	9,54	9,54
9	Torque Constant	Nm/A	0,6	0,6	0,6	0,6
10	Rated Current	A	4,4	4,4	5,9	5,9
11	Max. Peak Current	A	13,2	13,2	17,9	17,9
12	No-Load Current	A	0,6	0,6	0,7	0,7
13	Back EMF constant	V/kRPM	36	36	36	36
14	Line to Line Resistance	Ω	1,77 ±10%	1,77 ±10%	0,885 ±10%	0,885 ±10%
15	Line to Line Inductance	mH	5,6 ±20%	5,6 ±20%	3,67 ±20%	3,67 ±20%
16	Rotor Inertia	Kgcm2	1,56	1,6	2,22	2,3
17	Brake			24VDC - 2,5Nm		24VDC - 2,5Nm
18	Length (L)	mm	112	149	129	165
19	Weight	Kg	2,5	3,1	3,2	3,8

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

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

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

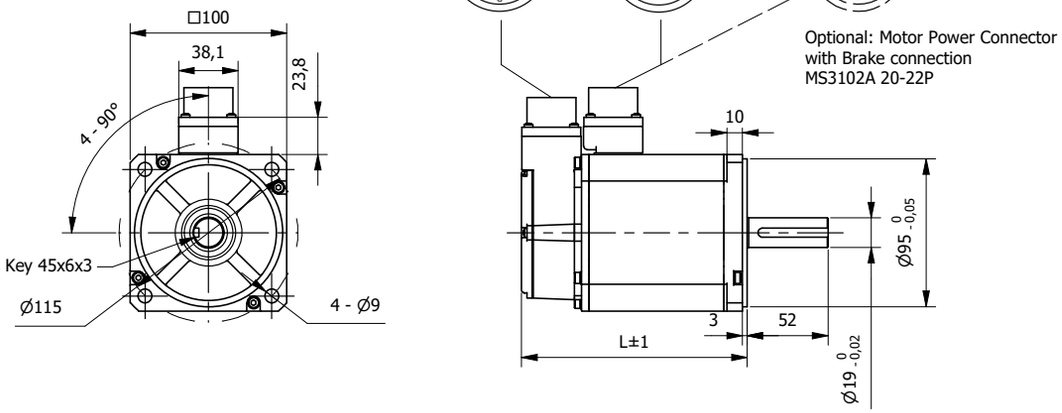


Brushless AC Servomotor 100SV-220VAC

Medium voltage - IP65

□ 100mm

3,18 to 4,77Nm



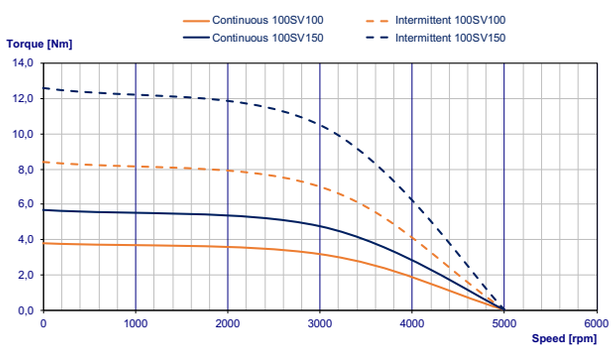
Note: optional brake

Specification						
	Model		100SV100-220V-30EA1	100SV100-220V-30EA2	100SV150-220V-30EA1	100SV150-220V-30EA2
1	n° of Pole		10	10	10	10
2	n° of Phase		3	3	3	3
3	Nominal Voltage	VAC	220	220	220	220
4	Rated power	W	1000	1000	1500	1500
5	Rated Speed	RPM	3000	3000	3000	3000
6	No-load Speed	RPM	5000 ±10%	5000 ±10%	5000 ±10%	5000 ±10%
7	Rated Torque	Nm	3,18	3,18	4,77	4,77
8	Max. Peak Torque	Nm	7	7	10,5	10,5
9	Torque Constant	Nm/A	0,63	0,63	0,63	0,63
10	Rated Current	A	5,0	5,0	7,5	7,5
11	Max. Peak Current	A	11	11	16,7	16,7
12	No-Load Current	A	0,8	0,8	0,8	0,8
13	Back EMF constant	V/kRPM	38	38	38	38
14	Line to Line Resistance	Ω	0,82 ±10%	0,82 ±10%	0,54 ±10%	0,54 ±10%
15	Line to Line Inductance	mH	7,4 ±20%	7,4 ±20%	5,2±20%	5,2±20%
16	Rotor Inertia	Kgcm2	1,3	1,67	1,84	2,21
17	Brake			24VDC - 10Nm		24VDC - 10Nm
18	Length (L)	mm	137	172	159	194
19	Weight	Kg	3,73	4,73	4,7	5,7

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

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

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

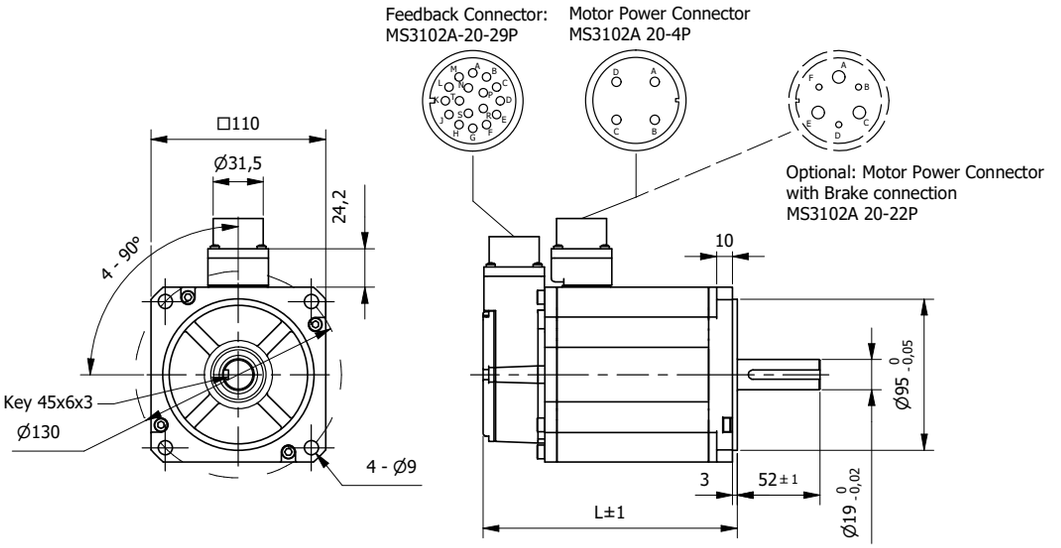


Brushless AC Servomotor 110SV-220VAC

Medium voltage - IP65

□ 110mm

4,77 to 6,37Nm



Note: optional brake

Specification

	Model		110SV150-220V-30EA1	110SV150-220V-30EA2	110SV200-220V-30EA1	110SV200-220V-30EA2
1	n° of Pole		10	10	10	10
2	n° of Phase		3	3	3	3
3	Nominal Voltage	VAC	220	220	220	220
4	Rated power	W	1500	1500	2000	2000
5	Rated Speed	RPM	3000	3000	3000	3000
6	No-load Speed	RPM	5000 ±10%	5000 ±10%	5000 ±10%	5000 ±10%
7	Rated Torque	Nm	4,77	4,77	6,37	6,37
8	Max. Peak Torque	Nm	14,3	14,3	19,1	19,1
9	Torque Constant	Nm/A	0,63	0,63	0,63	0,63
10	Rated Current	A	7,6	7,6	10,1	10,1
11	Max. Peak Current	A	22,8	22,8	30,3	30,3
12	No-Load Current	A	0,8	0,8	0,8	0,8
13	Back EMF constant	V/kRPM	38,1	38,1	38,1	38,1
14	Line to Line Resistance	Ω	0,36 ±10%	0,36 ±10%	0,29 ±10%	0,29 ±10%
15	Line to Line Inductance	mH	5,6 ±20%	5,6 ±20%	4,8 ±20%	4,8 ±20%
16	Rotor Inertia	Kgcm2	3,1	3,47	4,1	4,47
17	Brake			24VDC - 10Nm		24VDC - 10Nm
18	Length (L)	mm	151,5	187	168,5	204
19	Weight	Kg	5	6	6,7	7,7

Characteristics

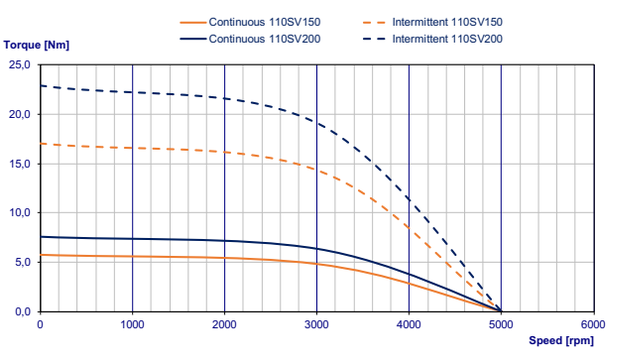
Item	
Insulation Class	F 155°C
Protection Class	IP65
Radial play (max. 4N)	0,02 mm
Axial play (max. 4N)	0,08 mm
Max. Radial force (20mm from flange)	630N
Max. Axial force	315N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Encoders

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

Connection

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

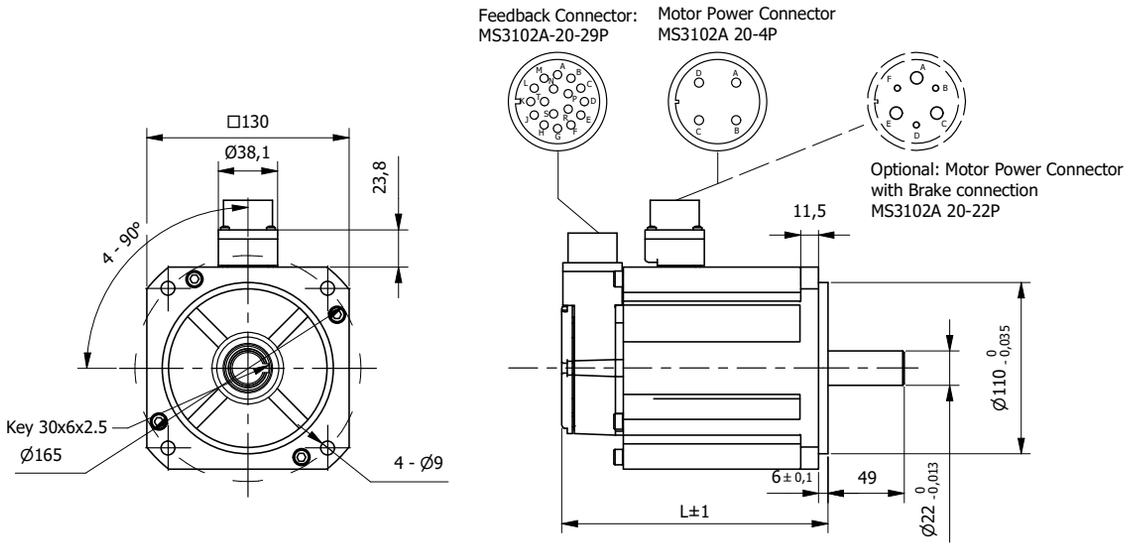


Brushless AC Servomotor 130SV-220VAC

Medium voltage - IP65

□ 130mm

9,55 to 14,3Nm



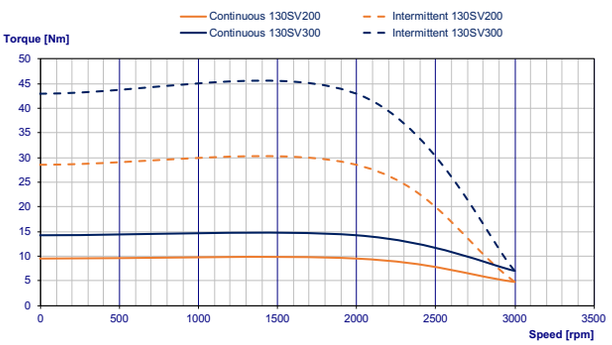
Note: optional brake

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

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

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

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



Motors with Controller



Stepper motors with Motion controller

p.231



Servomotors with Motion controller

p.221



BLDC motors with Speed controller

p.201



BLDC motors with Motion controller

p.209

Motors with integrated Controller

Technical introduction		198

Brushless DC motors with Speed Controller	Torque* (Nm)	201
16EC33P-2W	0,002	202
36CBL-IE	0,015...0,08	203
42BL-IE - square	0,063...0,25	204
42CBL60-IE	0,068	205
42RBL60-IE	0,08	206
57BL-IE	0,11...0,33	207

Brushless DC motors with Motion Controller	Torque* (Nm)	209
IBS042	0,062...0,25	210
IBS057	0,055...0,44	211
IBI057- IP65	0,055...0,44	212
IBIX57A - IP65 - **NEW**	0,2...0,8	213
IBIX57A integrated Brake - IP65 - **NEW**	0,2...0,8	214
IBIX57B - IP65 - **NEW**	0,06...0,44	215
IBIX57B integrated Brake - IP65 - **NEW**	0,06...0,44	216
IBS080	0,8...1,13	217
IBI080 - IP65	0,8...1,13	218

Brushless Servo motors with Motion Controller	Torque* (Nm)	221
IVI060	0,64...1,27	222
IVIX60 - **NEW**	0,64...1,27	223
IVID60 - Code 1 & 2 - **NEW**	0,64...1,27	224
IVID60 - Code 3 & 4 - **NEW**	0,64...1,27	225
IVID60 - Code 5, 6, 7 & 8 - **NEW**	0,64...1,27	226
IVI080	2,39...3,18	227
IVI100	3,18...4,77	228
IVI110	4,77...6,37	229

Stepper motors with Motion Controller	Torque** (Nm)	231
ISS042	0,22...0,8	232
ISI042 - IP65	0,22...0,8	233
ISS057	0,55...1,89	234
ISI057-IP65	0,55...1,89	235
ISS060	1...3,1	236
ISI060-IP65	1...3,1	237
ISS086	2,2...12	238
ISI086 - IP65	2,2...12	239

* Rated Torque
** Holding Torque

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

Glossary

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

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

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

BLDC motor with integrated Speed Controller

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

BLDC motor with integrated Motion Controller

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

Servomotors with integrated Motion Controller

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

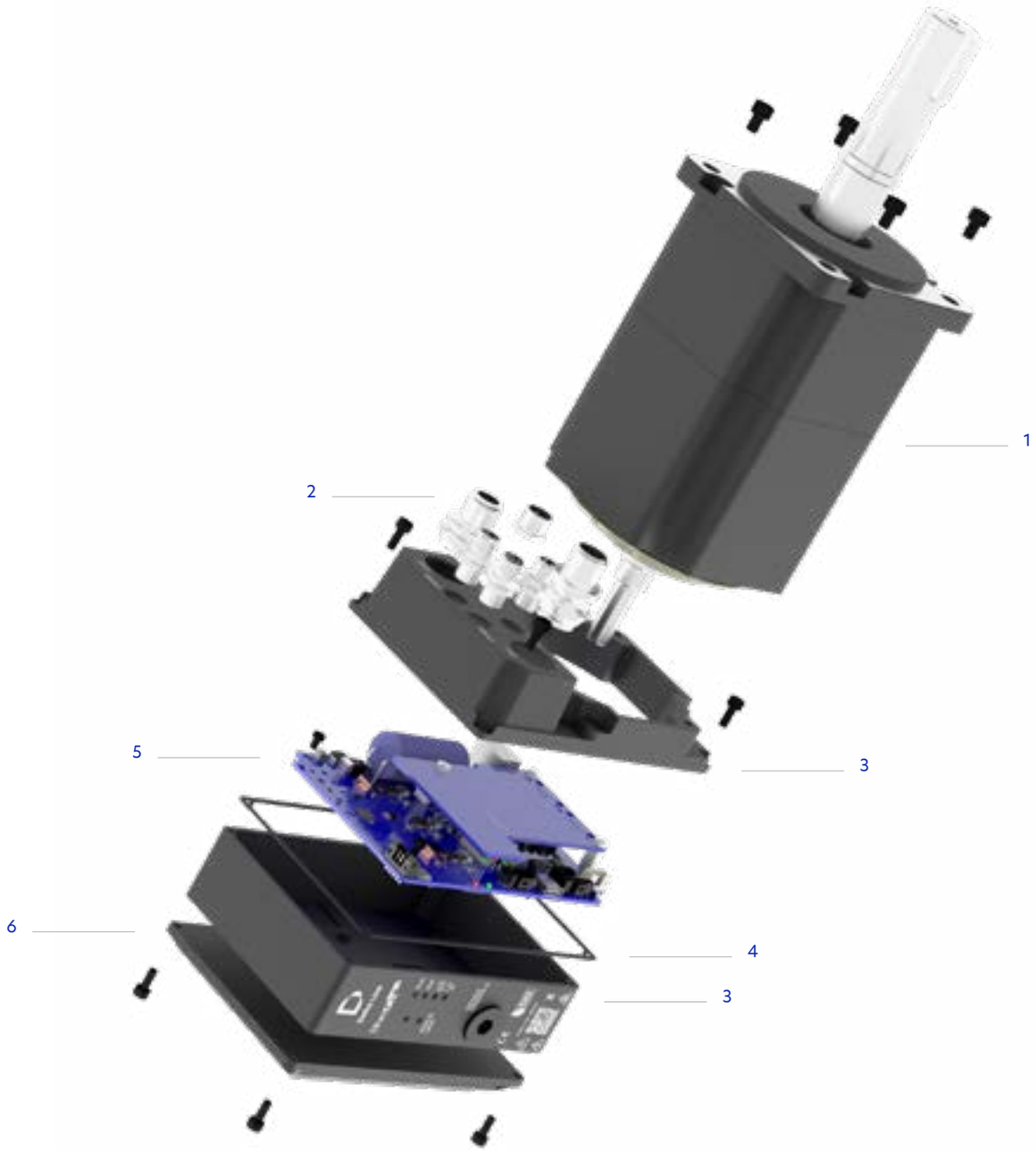
Stepper motor with integrated Motion Controller

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

Software

Technical introduction

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





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

Brushless DC motors with Speed Controller	Torque* (Nm)	
16EC33P-2W	0,002	202
36CBL-IE	0,015...0,08	203
42BL-IE - square	0,063...0,25	204
42CBL60-IE	0,068	205
42RBL60-IE	0,08	206
57BL-IE	0,11...0,33	207

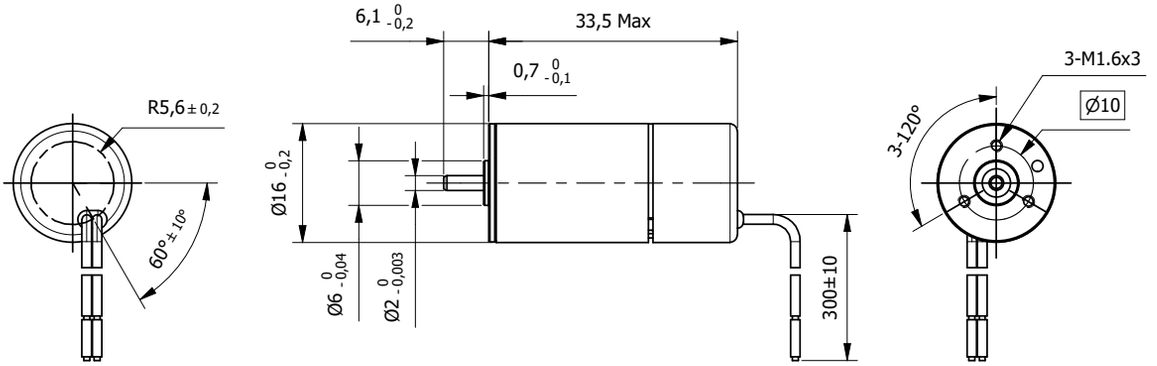
* Rated Torque

Brushless Slotless Motor 16EC33P-2W

with Speed Controller

Ø 16mm

0,002Nm



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

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

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

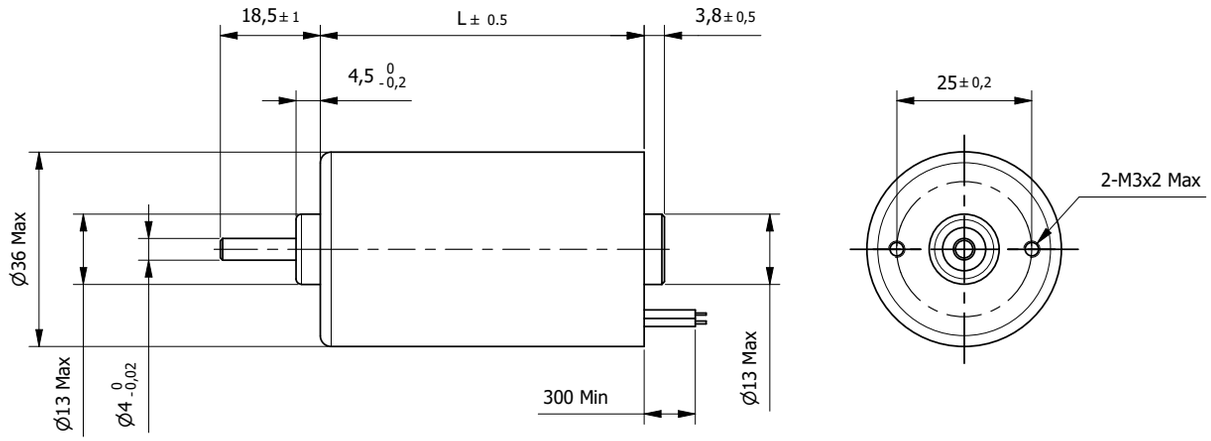
Attention: operating voltage Vcc > 18VDC will destroy the electronics

Brushless Slotted Motor 36CBL-IE

with Speed Controller

Ø 36mm

0,015 - 0,08Nm



Specification						
	Model		36CBL30-IE	36CBL40-IE	36CBL57-IE	36CBL60-IE
1	n° of Pole		8	8	8	8
2	n° of Phase		3	3	3	3
3	Rated Voltage	V	24	24	24	24
4	Rated Speed	rpm	4800	4800	4500	4800
5	Rated Torque	Nm	0,015	0,035	0,07	0,08
6	Max. Peak Torque	Nm	0,045	0,105	0,11	0,11
7	Torque Constant	Nm/A	0,036	0,04	0,04	0,038
8	Rated Current	A	0,5	1	1,8	2,3
9	Max. Peak Current	A	1,4	3	3	3
10	No-Load Current	mA	150	250	500	300
11	Line to Line Resistance	Ω	5,2	2	1,05	0,95
12	Line to Line Inductance	mH	3,3	1,75	1	0,85
13	Rotor Inertia	gcm2	6	12	27	30
14	Length (L)	mm	30	40	57	60
15	Weight	Kg	0,12	0,16	0,25	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

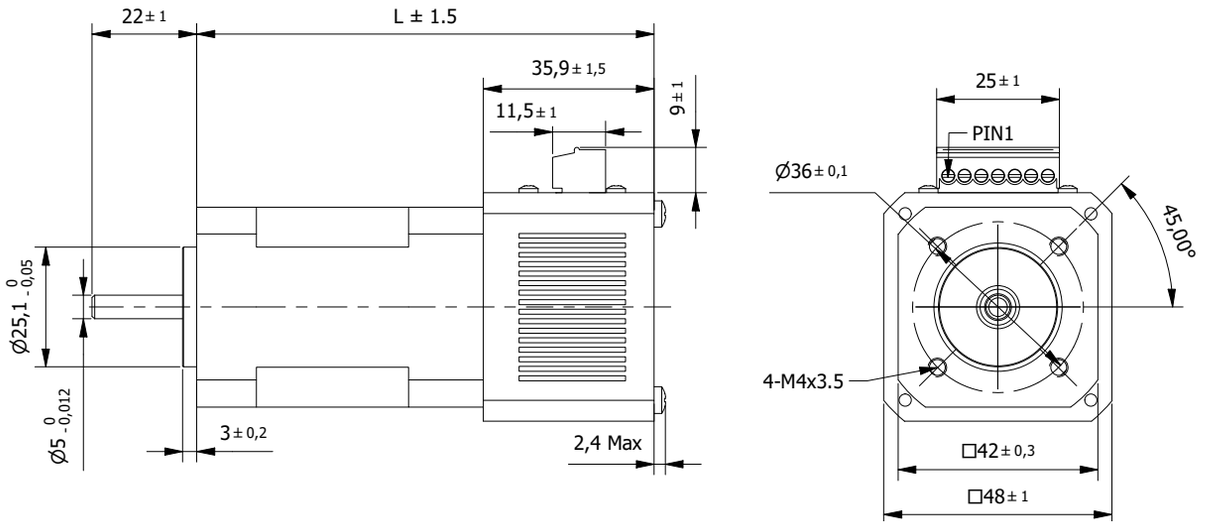
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG22	VCC +24VDC
2	Black	|	GND
3	Blue	UL1430 AWG26	CW/CCW Direction
4	Green	|	PWM speed control
5	Yellow	|	Tacho Out
6	White	|	Brake

Brushless Slotted Motor 42BL-IE

with Speed Controller

□ 42mm

0,063 - 0,25Nm



Specification						
	Model		42BL01-IE	42BL02-IE	42BL03-IE	42BL04-IE
1	n° of Pole		8	8	8	8
2	n° of Phase		3	3	3	3
3	Rated Voltage	V	24	24	24	24
4	Rated Speed	rpm	4000	4000	4000	4000
5	Rated Torque	Nm	0,063	0,125	0,185	0,25
6	Max. Peak Torque	Nm	0,19	0,38	0,56	0,75
7	Torque Constant	Nm/A	0,035	0,036	0,038	0,036
8	Rated Current	A	1,8	3,6	5	7,23
9	Max. Peak Current	A	5,4	10,8	15	21,7
10	No-Load Current	mA	500	500	<500	600
11	Line to Line Resistance	Ω	1,5	0,8	0,43	0,3
12	Line to Line Inductance	mH	2,1	1,2	0,71	0,5
13	Rotor Inertia	gcm2	24	48	72	96
14	Length (L)	mm	76	96	116	136
15	Weight	Kg	0,35	0,5	0,7	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)	0,14mm
Max. Radial force (10mm from flange)	28N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

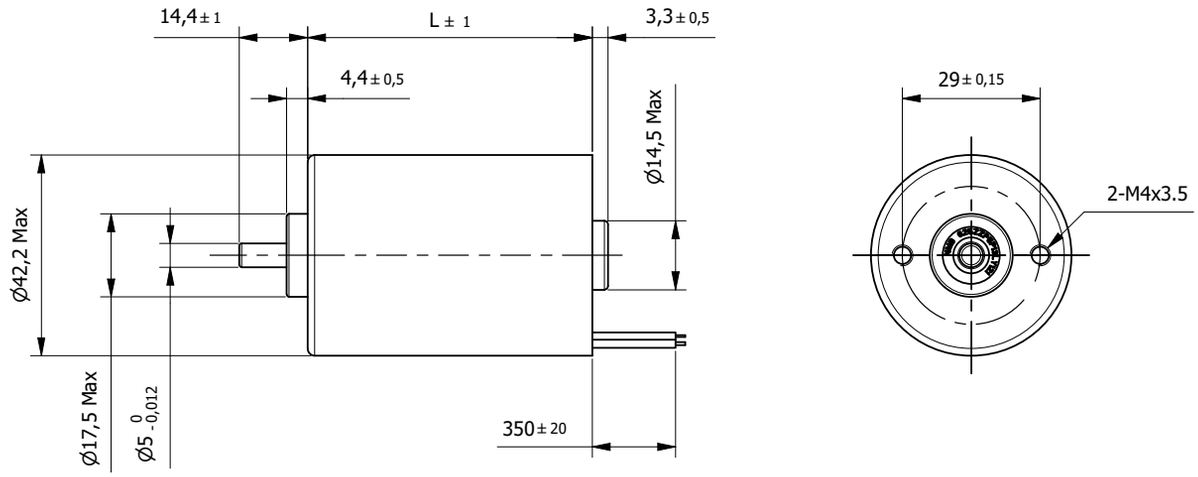
Connection	
Pin n°	Function
1	+5V | Voltage output
2	F/R | Rotation direction
3	SV | Speed voltage 0/+5VDC
4	PG | Speed Pulse output TTL.24 pulse/rev.
5	GND | Common ground system
6	GND | Common ground system
7	+Vp | DC power input +24VDC

Brushless Slotted Motor 42CBL60-IE

with Speed Controller

Ø 42mm

0,068Nm



Specification			
	Model		42CBL60-IE
1	n° of Pole		4
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	5900
5	Rated Torque	Nm	0,068
6	Max. Peak Torque	Nm	0,102
7	Torque Constant	Nm/A	0,034
8	Rated Current	A	2
9	Max. Peak Current	A	3
10	No-Load Current	mA	250
11	Line to Line Resistance	Ω	0,87
12	Line to Line Inductance	mH	1
13	Rotor Inertia	gcm2	44
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)	0,14mm
Max. Radial force (10mm from flange)	15N
Max. Axial force	10N
Dielectric strength (for 1 sec.)	750 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

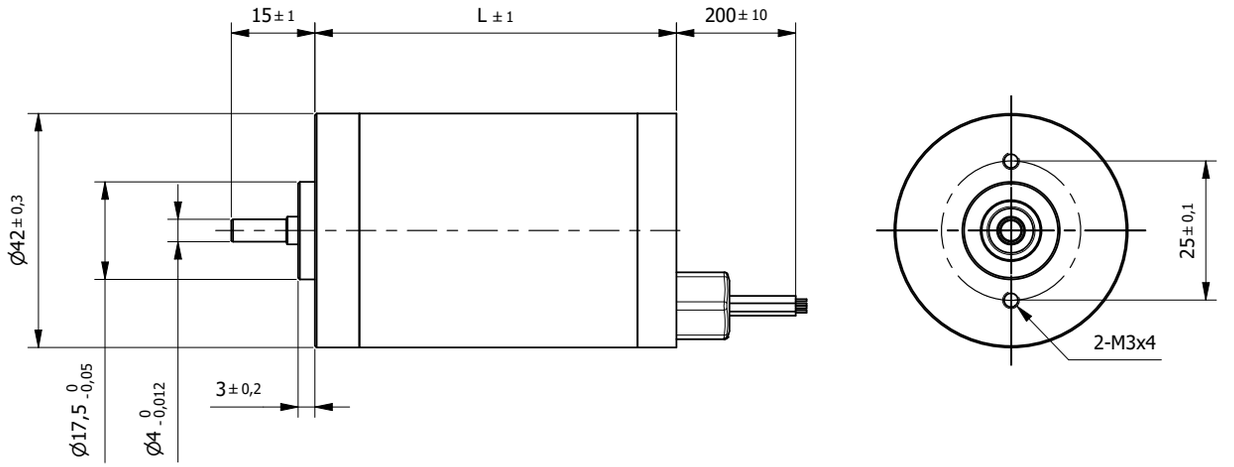
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1332 AWG22	VCC +24VDC
2	Black	|	GND
3	Green	UL1430 AWG26	CW/CCW Direction
4	White	|	PWM speed control
5	Yellow	|	Tacho Out
6	Blue	|	Brake

Brushless Slotted Motor 42RBL60-IE

with Speed Controller

Ø 42mm

0,056Nm



Specification			
	Model		42RBL60-IE
1	n° of Pole		8
2	n° of Phase		3
3	Rated Voltage	V	24
4	Rated Speed	rpm	4200
5	Rated Torque	Nm	0,056
6	Max. Peak Torque	Nm	0,125
7	Torque Constant	Nm/A	0,039
8	Rated Current	A	1,35
9	Max. Peak Current	A	3
10	No-Load Current	A	0,4
11	Line to Line Resistance	Ω	1,6
12	Line to Line Inductance	mH	1,94
13	Rotor Inertia	gcm2	33
14	Length (L)	mm	65
15	Weight	Kg	0,4

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
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

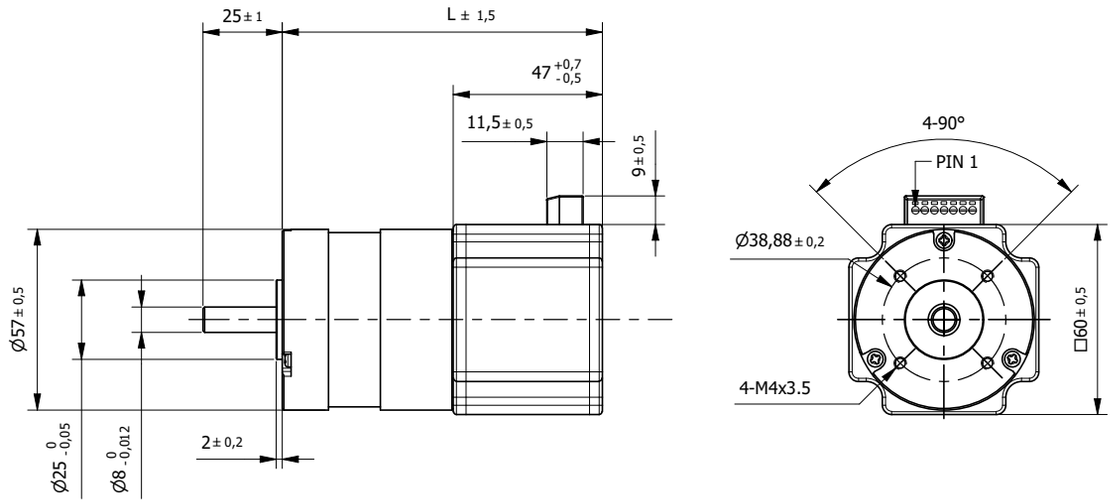
Connection		
Color	Gauge	Function
Red	UL1007 AWG22	VCC +
Black	|	GND
White	|	CW/CCW Direction
Blue	|	SV Speed Control
Yellow	|	Tacho out

Brushless Slotted Motor 57BL-IE

with Speed Controller

Ø 57mm

0,11 - 0,33Nm



Specification					
	Model		57BL54-IE	57BL74-IE	57BL94-IE
1	n° of Pole		4	4	4
2	n° of Phase		3	3	3
3	Rated Voltage	V	36	36	36
4	Rated Speed	rpm	4000	4000	4000
5	Rated Torque	Nm	0,11	0,22	0,33
6	Max. Peak Torque	Nm	0,33	0,66	1
7	Torque Constant	Nm/A	0,061	0,06	0,065
8	Rated Current	A	1,8	3,7	5,1
9	Max. Peak Current	A	5,5	11,1	16
10	No-Load Current	mA	<400	<500	<500
11	Line to Line Resistance	Ω	1,6	0,64	0,45
12	Line to Line Inductance	mH	4,4	2	1,5
13	Rotor Inertia	gcm2	75	119	173
14	Length (L)	mm	101	121	141
15	Weight	Kg	0,67	0,9	1,2

Characteristics	
Item	
Hall Effect Angle	120°
Shaft run out	0,025mm
Insulation Class	B
Protection Class	IP40
Radial play (460g load)	0,025mm
Axial play (4000g load)	0,025mm
Max. Radial force (20mm from flange)	75N
Max. Axial force	15N
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection	
Pin n°	Function
1	Vp+ | DC power input +36VDC
2	GND | Common ground system
3	GND | Common ground system
4	PG | Speed pulse output (TTL) 12 pulse/rev.
5	SV | Reference speed voltage 0/+5VDC
6	F/R | Rotation direction
7	+5V | Voltage output



Brushless DC motors

with Motion controller

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

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

Brushless DC motors with Motion Controller	Torque* (Nm)	
IBS042	0,062...0,25	210
IBS057	0,055...0,44	211
IBI057- IP65	0,055...0,44	212
IBIX57A - IP65 - **NEW**	0,2...0,8	213
IBIX57A integrated Brake - IP65 - **NEW**	0,2...0,8	214
IBIX57B - IP65 - **NEW**	0,06...0,44	215
IBIX57B integrated Brake - IP65 - **NEW**	0,06...0,44	216
IBS080	0,8...1,13	217
IBI080 - IP65	0,8...1,13	218

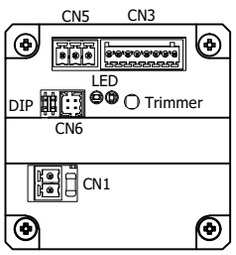
* Rated Torque

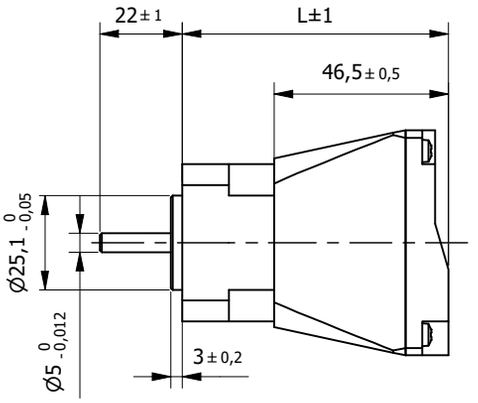
Brushless DC Motor IBS042

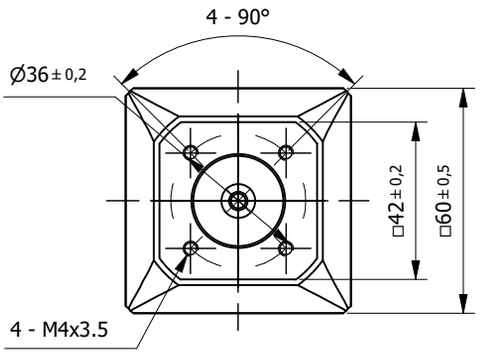
with Motion Controller

□ 42mm

0,062 - 0,25Nm







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

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

*Service SCI cable required and available on request

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

Encoders	
Type	Code
Magnetic Incremental encoder	E

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

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

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

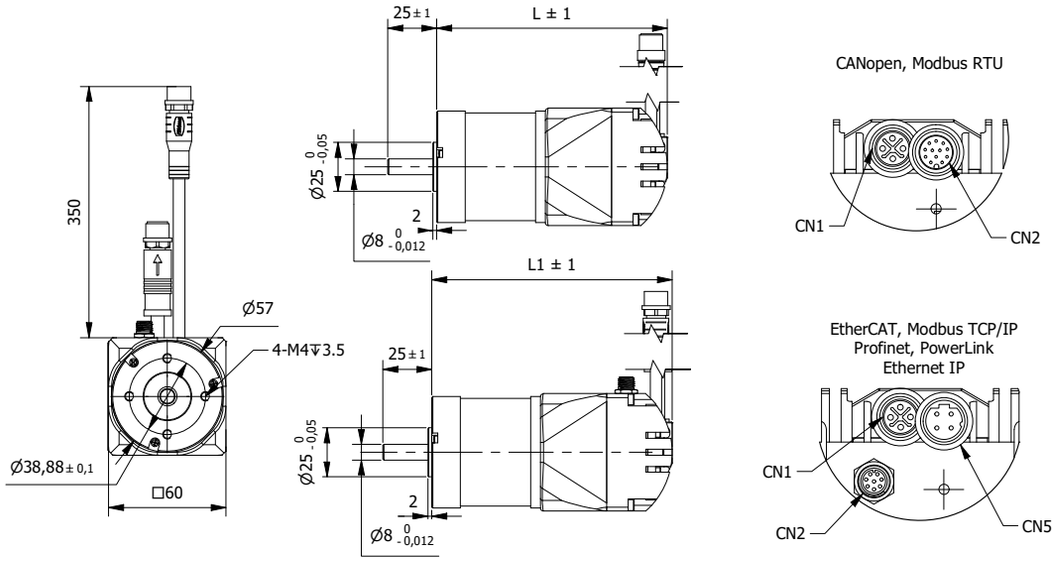
Interface Control Mode	
Fieldbus	Code
Analog	A-S300
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402

Brushless DC Motor IBS057

with Motion Controller

Ø 57mm

0,055 - 0,44Nm



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

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

*Service SCI cable required and available on request

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

Encoders	
Type	Code
Magnetic Incremental encoder	E

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

Connection		
Connector	Type	Function
CN1	M12 4P S-Code Male	DC Supply
CN2	M12 12P A-Code Male	In/Out (A-M-C fieldbus)
CN2	M8 8P A-Code Male	In/Out (T-E-P-R-H fieldbus)
CN5	M12 4P D-Code Female	Communication interface

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

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

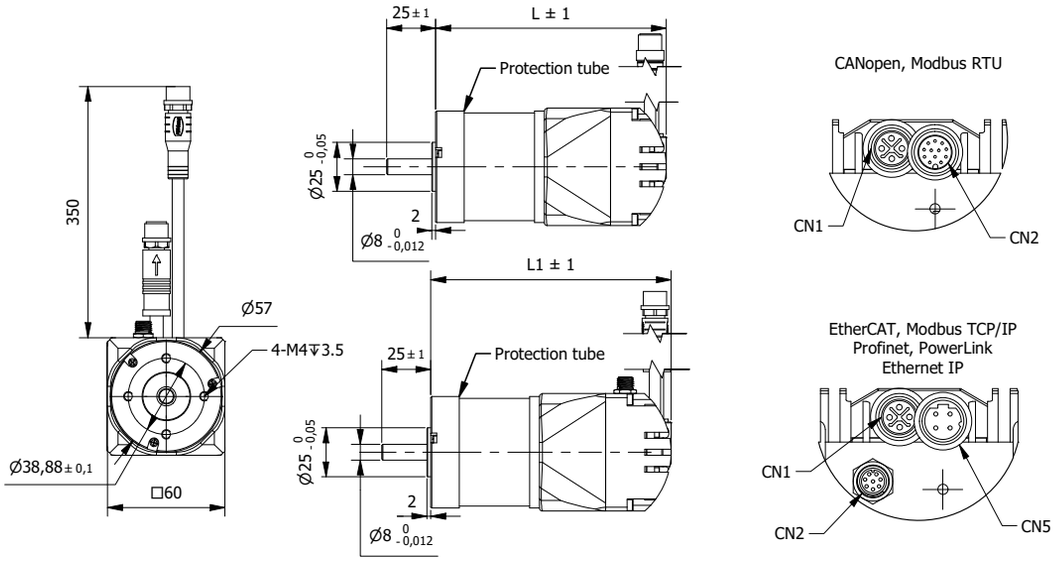
Interface Control Mode	
Fieldbus	Code
Analog	A-S300
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Brushless DC Motor IBI057

with Motion Controller - IP65

Ø 57mm

0,055 - 0,44Nm



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

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

*Service SCI cable required and available on request

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

Encoders	
Type	Code
Magnetic Incremental encoder	E

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

Connection		
Connector	Type	Function
CN1	M12 4P S-Code Male	DC Supply
CN2	M12 12P A-Code Male	In/Out (A-M-C fieldbus)
CN2	M8 8P A-Code Male	In/Out (T-E-P-R-H fieldbus)
CN5	M12 4P D-Code Female	Communication interface

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

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

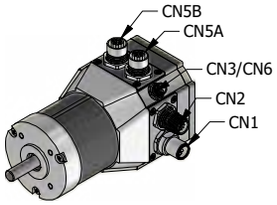
Interface Control Mode	
Fieldbus	Code
Analog	A-S300
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

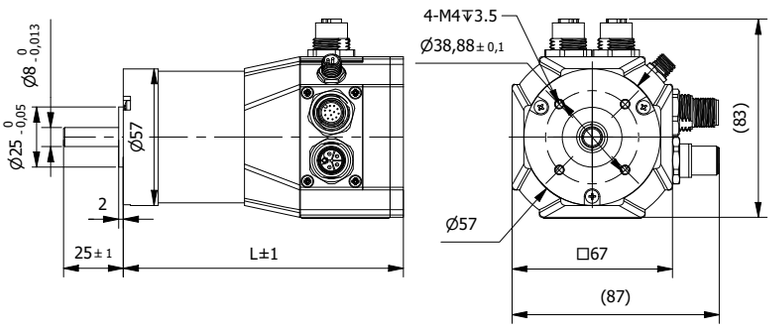
Brushless DC Motor IBIX57A

with Motion Controller - IP65

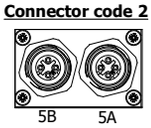
Ø 57mm

0,2 - 0,8Nm

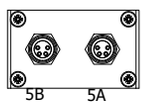




Connector code 2



Connector code 1



with Safe Torque Off function

Specification						
	Model		...084N	...168N	...251N	...335N
1	n° of Pole		6	6	6	6
2	Rated Voltage	VDC	48	48	48	48
3	Operating Voltage	VDC	24-48	24-48	24-48	24-48
4	Rated Power	W	84	168	251	335
5	Rated Speed	rpm	4000	4000	4000	4000
6	Torque - Rated/Peak	Nm	0,2/0,6	0,4/1,2	0,6/1,8	0,8/2,4
7	Torque Constant	Nm/A	0,088	0,088	0,088	0,088
8	No-Load Current	A	0,3	0,4	0,45	0,54
9	Back EMF constant	V/kRPM	7,35	7,5	7,05	7,8
10	Rotor Inertia	Kgcm2	0,275	0,375	0,51	0,693
11	Length (L) - Encoder E/A	mm	97/107	117/127	137/147	157/167
12	Weight - Encoder E/A	Kg	1,05/1,11	1,29/1,35	1,54/1,6	1,81/1,87

Characteristics	
Item	
Shaft run out	0,025mm
Insulation Class	B 130°C
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Radial play (450g load)	0,025mm
Axial play (450g load)	0,025mm
Max. Radial force (at mid-shaft)	75N
Max. Axial force	15N
Dielectric strength (for 1 min.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/PLe
Debug & configuration	Serial interface
Software	Setup & config. - DL Studio Programming - DL Space
Note: Service SCI Interface cable is required for programming and available on request	

Product code reference	
IBIX 57 A 084 N E 1 000 M S200	
57	Frame size
A	Model
084	Rated Power
N	Brake options (N= no brake)
E	Encoder type
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 2500 CPR	E
Magnetic Absolute Multiturn (BiSS): 17bit, 16bit	A

Connection			
Connector	Type	Function	Code
CN1	M12 5P L-Code Male	DC Supply	
CN2	M12 17P A-Code Male	Inputs/Outputs	
CN3/CN6	M8 4P A-Code Male	STO or Serial Input	
CN5A/B	M8 4P A-Code Female	Fieldbus (M-C-T-E)	1
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	2
Cable kit available on request. More information can be found in the product manual on our website.			

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

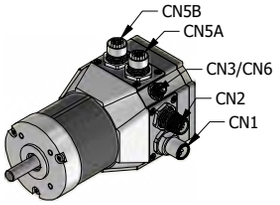
Other options	
Item	Code
Standard (no STO)	000
With STO (Safe Torque Off function)	001

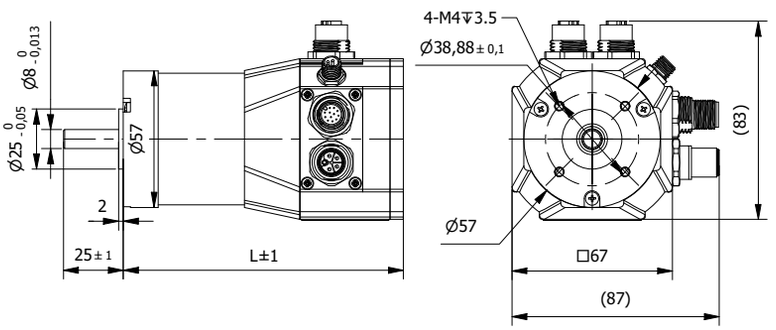
Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS402)	C-S402
Ethernet Modbus TCP (programmable)	T-S200
Ethercat (DS402)	E-S402
Profinet (programmable)	P-S200
Powerlink (DS402)	R-S402
Ethernet IP (programmable)	H-S200

Brushless DC Motor IBIX57A - integrated Brake
with Motion Controller - IP65

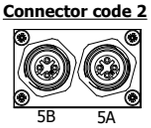
Ø 57mm

0,2 - 0,8Nm

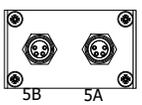




Connector code 2



Connector code 1



with Safe Torque Off function

Specification

	Model		...084B	...168B	...251B	...335B
1	n° of Pole		6	6	6	6
2	Rated Voltage	VDC	48	48	48	48
3	Operating Voltage	VDC	24-48	24-48	24-48	24-48
4	Rated Power	W	84	168	251	335
5	Rated Speed	rpm	4000	4000	4000	4000
6	Torque - Rated/Peak	Nm	0,2/0,6	0,4/1,2	0,6/1,8	0,8/2,4
7	Torque Constant	Nm/A	0,088	0,088	0,088	0,088
8	No-Load Current	A	0,3	0,4	0,45	0,54
9	Back EMF constant	V/kRPM	7,35	7,5	7,05	7,8
10	Rotor Inertia	Kgcm2	0,275	0,375	0,51	0,693
11	Brake		24VDC - 1,0Nm	24VDC - 1,0Nm	24VDC - 1,0Nm	24VDC - 1,0Nm
12	Length (L) - Encoder E/A	mm	140/150	160/170	180/190	200/210
13	Weight - Encoder E/A	Kg	1,55/1,61	1,79/1,85	2,04/2,10	2,31/2,37

Characteristics

Item	
Shaft run out	0,025mm
Insulation Class	B 130°C
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Radial play (450g load)	0,025mm
Axial play (450g load)	0,025mm
Max. Radial force (at mid-shaft)	75N
Max. Axial force	15N
Dielectric strength (for 1 min.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/PLe
Debug & configuration	Serial interface
Software	Setup & config. - DL Studio Programming - DL Space
Note: Service SCI Interface cable is required for programming and available on request	

Product code reference

IBIX 57 A 084 B E 1 000 M S200	
57	Frame size
A	Model
084	Rated Power
B	Brake options (N= no brake)
E	Encoder type
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders

Type	Code
Magnetic Incremental 2500 CPR	E
Magnetic Absolute Multiturn (BiSS): 17bit, 16bit	A

Connection

Connector	Type	Function	Code
CN1	M12 5P L-Code Male	DC Supply	
CN2	M12 17P A-Code Male	Inputs/Outputs	
CN3/CN6	M8 4P A-Code Male	STO or Serial Input	
CN5A/B	M8 4P A-Code Female	Fieldbus (M-C-T-E)	1
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	2
Cable kit available on request. More information can be found in the product manual on our website.			

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

Other options

Item	Code
Standard (no STO)	000
With STO (Safe Torque Off function)	001

Interface Control Mode

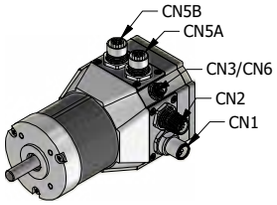
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS402)	C-S402
Ethernet Modbus TCP (programmable)	T-S200
Ethercat (DS402)	E-S402
Profinet (programmable)	P-S200
Powerlink (DS402)	R-S402
Ethernet IP (programmable)	H-S200

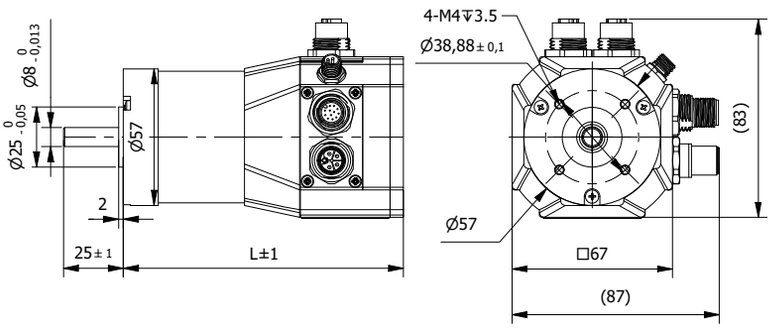
Brushless DC Motor IBIX57B

with Motion Controller - IP65

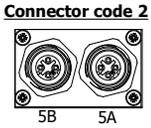
Ø 57mm

0,06 - 0,44Nm

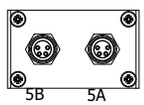




Connector code 2



Connector code 1



with Safe Torque Off function

Specification

	Model		...025N	...046N	...092N	...138N	...184N
1	n° of Pole		4	4	4	4	4
2	Rated Voltage	VDC	48	48	48	48	48
3	Operating Voltage	VDC	24-48	24-48	24-48	24-48	24-48
4	Rated Power	W	25	49	92	138	184
5	Rated Speed	rpm	4000	4000	4000	4000	4000
6	Torque - Rated/Peak	Nm	0,06/0,16	0,11/0,33	0,22/0,7	0,33/1	0,44/1,27
7	Torque Constant	Nm/A	0,067	0,067	0,08	0,08	0,08
8	No-Load Current	A	0,24	0,3	0,4	0,45	0,54
9	Back EMF constant	V/kRPM	5,7	6,75	6,67	7,2	6,9
10	Rotor Inertia	Kgcm2	0,03	0,075	0,119	0,173	0,23
11	Length (L) - Encoder E/A	mm	87/97	97/107	117/127	136/147	157/167
12	Weight - Encoder E/A	Kg	0,62/0,68	0,73/0,79	1,01/1,07	1,24/1,30	1,49/1,55

Characteristics

Item	
Shaft run out	0,025mm
Insulation Class	B 130°C
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Radial play (450g load)	0,025mm
Axial play (450g load)	0,025mm
Max. Radial force (at mid-shaft)	75N
Max. Axial force	15N
Dielectric strength (for 1 min.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/PLe
Debug & configuration	Serial interface
Software	Setup & config. - DL Studio Programming - DL Space
Note: Service SCI Interface cable is required for programming and available on request	

Product code reference

IBIX 57 B 025 N E 1 000 M S200	
57	Frame size
B	Model
025	Rated Power
N	Brake options (N= no brake)
E	Encoder type
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders

Type	Code
Magnetic Incremental 2500 CPR	E
Magnetic Absolute Multiturn (BiSS): 17bit, 16bit	A

Connection

Connector	Type	Function	Code
CN1	M12 5P L-Code Male	DC Supply	
CN2	M12 17P A-Code Male	Inputs/Outputs	
CN3/CN6	M8 4P A-Code Male	STO or Serial Input	
CN5A/B	M8 4P A-Code Female	Fieldbus (M-C-T-E)	1
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	2
Cable kit available on request. More information can be found in the product manual on our website.			

Input and Output

Input	Digital inputs	4 not isolated 5-24 Vdc PNP
	Analog inputs	2 not isolated | 0-10 Vdc
Output	Digital outputs	2 not isolated 24 Vdc PNP

Other options

Item	Code
Standard (no STO)	000
With STO (Safe Torque Off function)	001

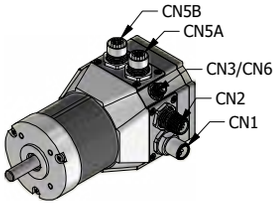
Interface Control Mode

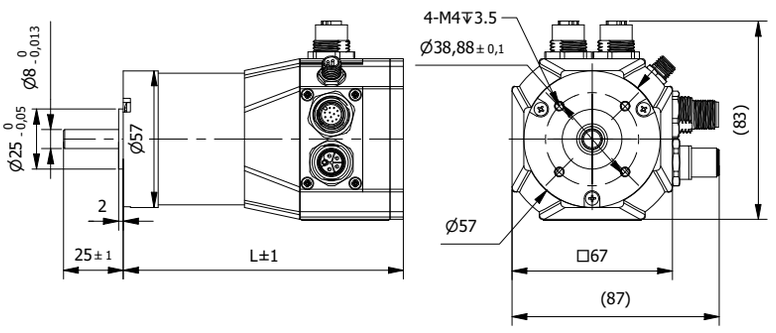
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS402)	C-S402
Ethernet Modbus TCP (programmable)	T-S200
Ethercat (DS402)	E-S402
Profinet (programmable)	P-S200
Powerlink (DS402)	R-S402
Ethernet IP (programmable)	H-S200

Brushless DC Motor IBIX57B - integrated Brake
with Motion Controller - IP65

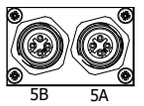
Ø 57mm

0,06 - 0,44Nm

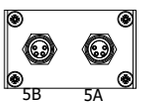




Connector code 2



Connector code 1



with Safe Torque Off function

Specification							
	Model		...025B	...046B	...092B	...138B	...184B
1	n° of Pole		4	4	4	4	4
2	Rated Voltage	VDC	48	48	48	48	48
3	Operating Voltage	VDC	24-48	24-48	24-48	24-48	24-48
4	Rated Power	W	25	49	92	138	184
5	Rated Speed	rpm	4000	4000	4000	4000	4000
6	Torque - Rated/Peak	Nm	0,06/0,16	0,11/0,33	0,22/0,7	0,33/1	0,44/1,27
7	Torque Constant	Nm/A	0,067	0,067	0,08	0,08	0,08
8	No-Load Current	A	0,24	0,3	0,4	0,45	0,54
9	Back EMF constant	V/kRPM	5,7	6,75	6,67	7,2	6,9
10	Rotor Inertia	Kgcm2	0,03	0,075	0,119	0,173	0,23
11	Brake		24VDC - 1,0Nm	24VDC - 1,0Nm	24VDC - 1,0Nm	24VDC - 1,0Nm	24VDC - 1,0Nm
12	Length (L) - Encoder E/A	mm	130/140	140/150	160/170	180/190	200/210
13	Weight - Encoder E/A	Kg	1,12/1,18	1,23/1,29	1,51/1,57	1,74/1,80	1,99/2,05

Characteristics	
Item	
Shaft run out	0,025mm
Insulation Class	B 130°C
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Radial play (450g load)	0,025mm
Axial play (450g load)	0,025mm
Max. Radial force (at mid-shaft)	75N
Max. Axial force	15N
Dielectric strength (for 1 min.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/PLe
Debug & configuration	Serial interface
Software	Setup & config. - DL Studio Programming - DL Space
Note: Service SCI Interface cable is required for programming and available on request	

Product code reference	
IBIX 57 B 025 B E 1 000 M S200	
57	Frame size
B	Model
025	Rated Power
B	Brake options (N= no brake)
E	Encoder type
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 2500 CPR	E
Magnetic Absolute Multiturn (BiSS): 17bit, 16bit	A

Connection			
Connector	Type	Function	Code
CN1	M12 5P L-Code Male	DC Supply	
CN2	M12 17P A-Code Male	Inputs/Outputs	
CN3/CN6	M8 4P A-Code Male	STO or Serial Input	
CN5A/B	M8 4P A-Code Female	Fieldbus (M-C-T-E)	1
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	2
Cable kit available on request. More information can be found in the product manual on our website.			

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

Other options	
Item	Code
Standard (no STO)	000
With STO (Safe Torque Off function)	001

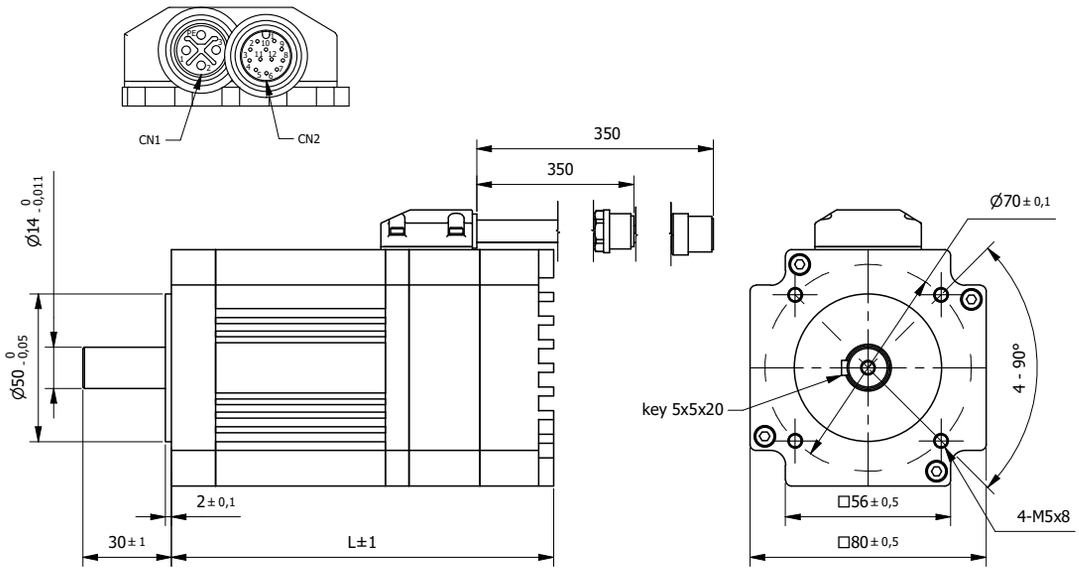
Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS402)	C-S402
Ethernet Modbus TCP (programmable)	T-S200
Ethercat (DS402)	E-S402
Profinet (programmable)	P-S200
Powerlink (DS402)	R-S402
Ethernet IP (programmable)	H-S200

Brushless DC Motor IBS080

with Motion Controller

□ 80mm

0,8 - 1,13Nm



UL certified: UL E531626 | UL E531627

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

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

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

Encoders	
Type	Code
Magnetic Incremental encoder	E

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

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

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

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

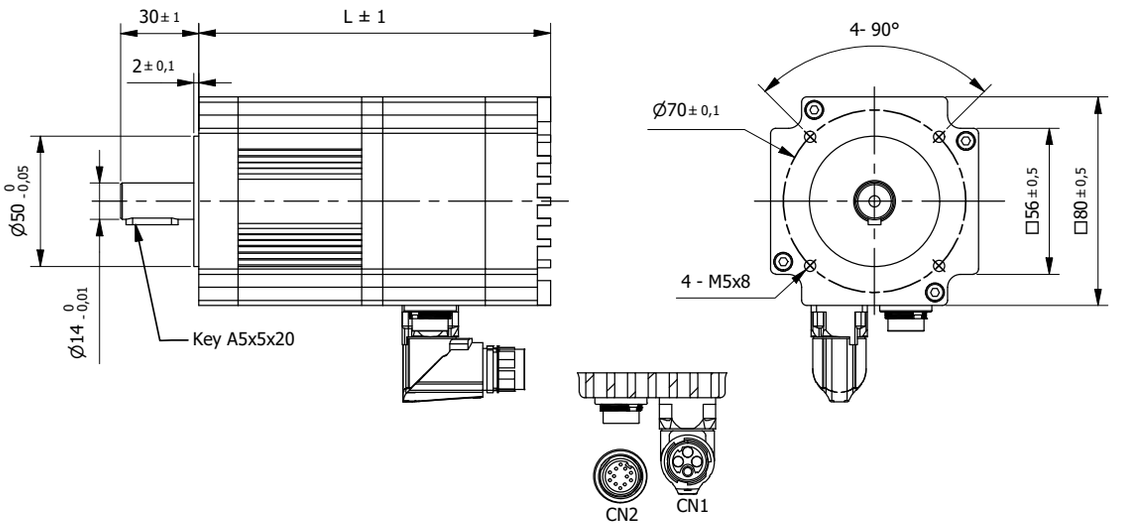
Interface Control Mode	
Fieldbus	Code
Analog	A-S300
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402

Brushless DC Motor IBI080

with Motion Controller - IP65

□ 80mm

0,8 - 1,13Nm



UL certified: UL E531626 | UL E531627

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

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

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

Encoders	
Type	Code
Magnetic Incremental encoder	E

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

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

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

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

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



Brushless Servo motors

with Motion controller

Advantages at a glance
High Rated Torque and Power
STO (Safe Torque Off) function
IP65 rated and optional integrated brake

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

Brushless Servo motors with Motion Controller	Torque* (Nm)	
IVI060	0,64...1,27	222
IVIX60 - **NEW**	0,64...1,27	223
IVID60 - Code 1 & 2 - **NEW**	0,64...1,27	224
IVID60 - Code 3 & 4 - **NEW**	0,64...1,27	225
IVID60 - Code 5, 6, 7 & 8 - **NEW**	0,64...1,27	226
IVI080	2,39...3,18	227
IVI100	3,18...4,77	228
IVI110	4,77...6,37	229

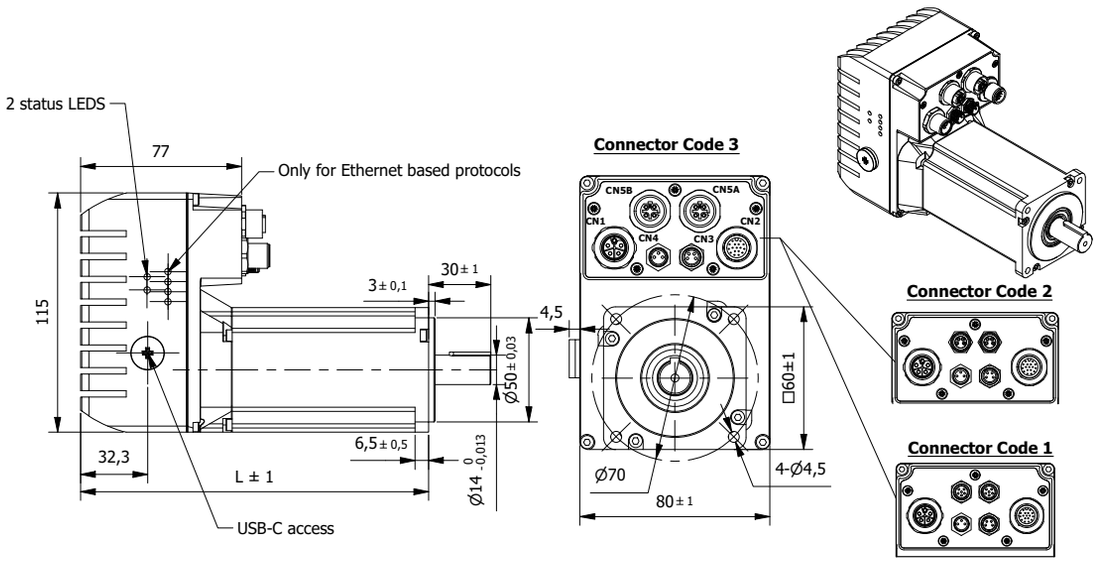
* Rated Torque

Brushless DC Servo motor IVI060

with Motion Controller - IP65

□ 60mm

0,64 - 1,27Nm



UL certified: UL E531627
with Safe Torque Off function

Specification

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

Characteristics

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

Product code reference

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

Encoders

Type	Code
Magnetic Incremental/Absolute single turn 2500 CPR	E
Magnetic Absolute multi-turn 16bit (single-turn 17bit)	A

Other options

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

Connection

Connector	Type	Function	Code
CN1	M12 5P L-Code Male	DC Supply	
CN2	M12 17P A-Code Male	Inputs/Outputs	
CN3	M8 4P A-Code Male	STO Input	
CN4	M8 3P A-Code Male	Brake Resistor	
CN5A/B	M8 6P A-Code Male	Fieldbus (M-C)	1
CN5A/B	M8 4P A-Code Female	Fieldbus (T-E)	2
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	3
Cable kit available on request. More information can be found in the product manual on our website.			

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

Interface Control Mode

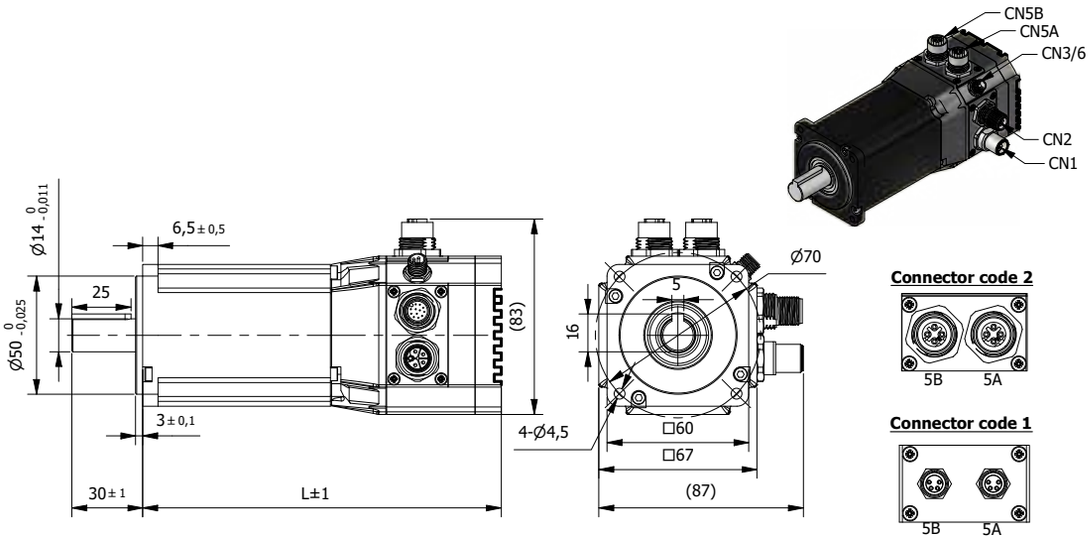
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Brushless DC Servo motor IVIX60

with Motion Controller - IP65

□ 60mm

0,64 - 1,27Nm



with Safe Torque Off function

Specification						
	Model		...0200N	...0200B	...0400N	...0400B
1	n° of Pole		10	10	10	10
2	Rated Voltage	VDC	48	48	48	48
3	Operating Voltage	VDC	24-48	24-48	24-48	24-48
4	Rated Power	W	200	200	400	400
5	Rated Speed	rpm	3000	3000	3000	3000
6	Torque - Rated/Peak	Nm	0,64/1,92	0,64/1,92	1,27/3,81	1,27/3,81
7	Torque Constant	Nm/A	0,107	0,107	0,107	0,107
	Current - Rated/Peak	A	6/18	6/18	12/36	12/36
8	No-Load Current	A	0,6	0,6	<1	<1
9	Back EMF constant	V/kRPM	6,5	6,5	6,5	6,5
10	Rotor Inertia	Kgcm2	0,15	0,15	0,25	0,25
	Brake			24VDC - 1,5Nm		24VDC - 1,5Nm
11	Length (L)	mm	125	161	146	182
12	Weight	Kg	1,27	1,67	1,67	2,17

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

Product code reference	
IVIX 60 0200 N E 1 000 M S200	
60	Frame size
0200	Rated Power
N	Brake options (N= no brake)
E	Encoder type
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 2500 CPR	E
Magnetic Absolute Multiturn (BiSS): 17bit, 16bit	A

Connection			
Connector	Type	Function	Code
CN1	M12 5P L-Code Male	DC Supply	
CN2	M12 17P A-Code Male	Inputs/Outputs	
CN3/CN6	M8 4P A-Code Male	STO or Serial Input	
CN5A/B	M8 4P A-Code Female	Fieldbus (M-C-T-E)	1
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	2
Cable kit available on request. More information can be found in the product manual on our website.			

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

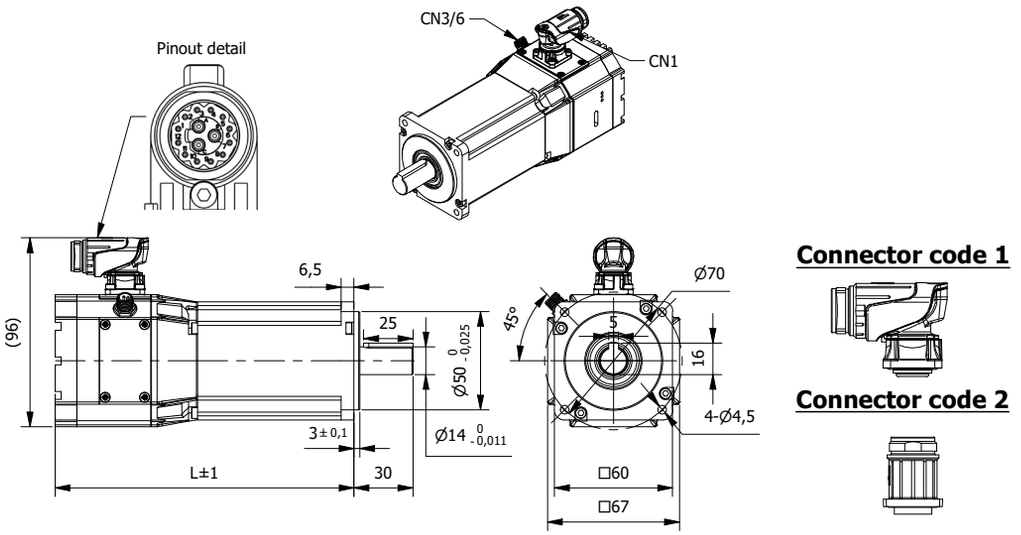
Other options	
Item	Code
Standard (no STO)	000
With STO (Safe Torque Off function)	001

Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS402)	C-S402
Ethernet Modbus TCP (programmable)	T-S200
Ethercat (DS402)	E-S402
Profinet (programmable)	P-S200
Powerlink (DS402)	R-S402
Ethernet IP (programmable)	H-S200

Brushless DC Servo motor IVID60 - Code 1 & 2
with Motion Controller - IP65

□ 60mm

0,64 - 1,27Nm



CN1 connector orientation: 0° standard; 90°, 180° and 270° available on request.

Specification

	Model		...0200N	...0200B	...0400N	...0400B
1	n° of Pole		10	10	10	10
2	Rated Voltage	VDC	48	48	48	48
3	Operating Voltage	VDC	24-48	24-48	24-48	24-48
4	Rated Power	W	200	200	400	400
5	Rated Speed	rpm	3000	3000	3000	3000
6	Torque - Rated/Peak	Nm	0,64/1,92	0,64/1,92	1,27/3,81	1,27/3,81
7	Torque Constant	Nm/A	0,107	0,107	0,107	0,107
	Current - Rated/Peak	A	6/18	6/18	12/36	12/36
8	No-Load Current	A	0,6	0,6	<1	<1
9	Back EMF constant	V/kRPM	6,5	6,5	6,5	6,5
10	Rotor Inertia	Kgcm2	0,15	0,15	0,25	0,25
	Brake			24VDC - 1,5Nm		24VDC - 1,5Nm
11	Length (L)	mm	125	161	146	182
12	Weight	Kg	1,27	1,67	1,67	2,17

Characteristics

Item	
Shaft run out	0,02mm
Insulation Class	F 155°C
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Radial play (450g load)	0,02mm
Axial play (450g load)	0,14mm
Max. Radial force (at mid-shaft)	245N
Max. Axial force	98N
Dielectric strength (for 1 min.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Debug & configuration	Serial interface
Software	Setup & config. - DL Studio Programming - DL Space
Note: Service SCI Interface cable is required for programming and available on request	

Product code reference

IVID 60 0200 N E 1 000 M S200	
60	Frame size
0200	Rated Power
N	Brake options (N= no brake)
E	Encoder type
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders

Type	Code
Magnetic Incremental 2500 CPR	E
Magnetic Absolute Multiturn (BiSS): 17bit, 16bit	A

Other options

Item	Code
Standard	000

Connection

Connector	Type	Function	Code
CN1	M16 Hummel 12+3 (90°)	Power & Logic	1
CN1	M16 Hummel 12+3 (Straight)	Power & Logic	2
CN6	M8 4P A-Code Male	Serial Input	
Cable kit available on request. More information can be found in the product manual on our website.			

Input and Output		
Input	Digital inputs	4 not isolated 5-24 Vdc PNP
	Analog inputs	1 not isolated | 0-10 Vdc
Output	Digital outputs	2 not isolated 24 Vdc PNP

Interface Control Mode

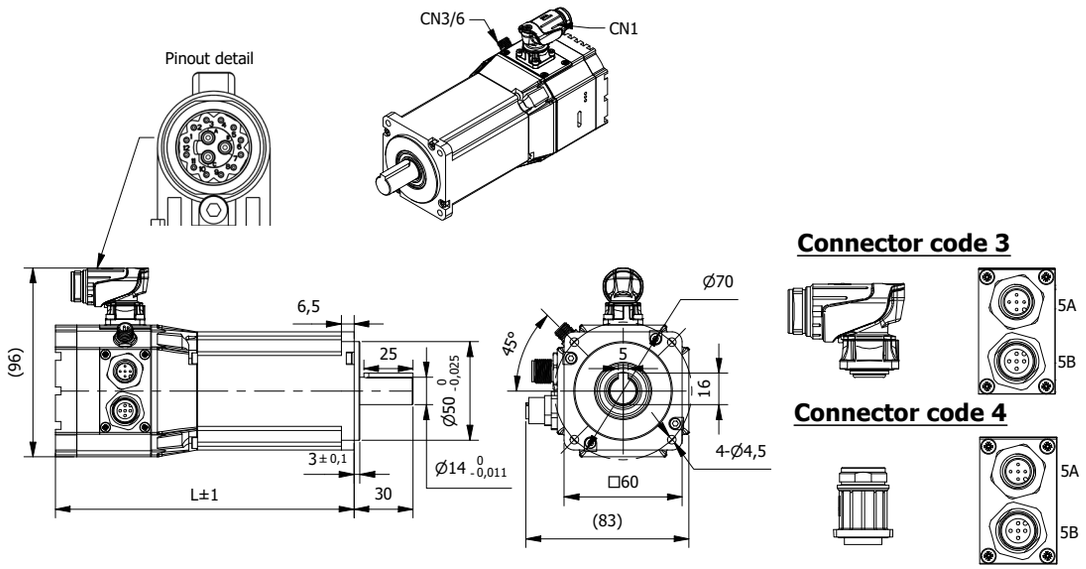
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS402)	C-S402

Brushless DC Servo motor IVID60 - Code 3 & 4

with Motion Controller - IP65

□ 60mm

0,64 - 1,27Nm



CN1 connector orientation: 0° standard; 90°, 180° and 270° available on request.

Specification						
	Model		...0200N	...0200B	...0400N	...0400B
1	n° of Pole		10	10	10	10
2	Rated Voltage	VDC	48	48	48	48
3	Operating Voltage	VDC	24-48	24-48	24-48	24-48
4	Rated Power	W	200	200	400	400
5	Rated Speed	rpm	3000	3000	3000	3000
6	Torque - Rated/Peak	Nm	0,64/1,92	0,64/1,92	1,27/3,81	1,27/3,81
7	Torque Constant	Nm/A	0,107	0,107	0,107	0,107
	Current - Rated/Peak	A	6/18	6/18	12/36	12/36
8	No-Load Current	A	0,6	0,6	<1	<1
9	Back EMF constant	V/kRPM	6,5	6,5	6,5	6,5
10	Rotor Inertia	Kgcm2	0,15	0,15	0,25	0,25
	Brake			24VDC - 1,5Nm		24VDC - 1,5Nm
11	Length (L)	mm	125	161	146	182
12	Weight	Kg	1,27	1,67	1,67	2,17

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

Product code reference	
IVID 60 0200 N E 1 000 M S200	
60	Frame size
0200	Rated Power
N	Brake options (N= no brake)
E	Encoder type
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 2500 CPR	E
Magnetic Absolute Multiturn (BiSS): 17bit, 16bit	A

Other options	
Item	Code
Standard	000

Connection			
Connector	Type	Function	Code
CN1	M16 Hummel 12+3	Power & Logic	3
CN1	M16 Hummel 12+3	Power & Logic	4
CN6	M8 4P A-Code Male	Serial Input	
CN5A/B	M12 5P A-Code Male, Female	Fieldbus (M-C)	
Cable kit available on request. More information can be found in the product manual on our website.			

Input and Output		
Input	Digital inputs	4 not isolated 5-24 Vdc PNP
	Analog inputs	1 not isolated | 0-10 Vdc
Output	Digital outputs	2 not isolated 24 Vdc PNP

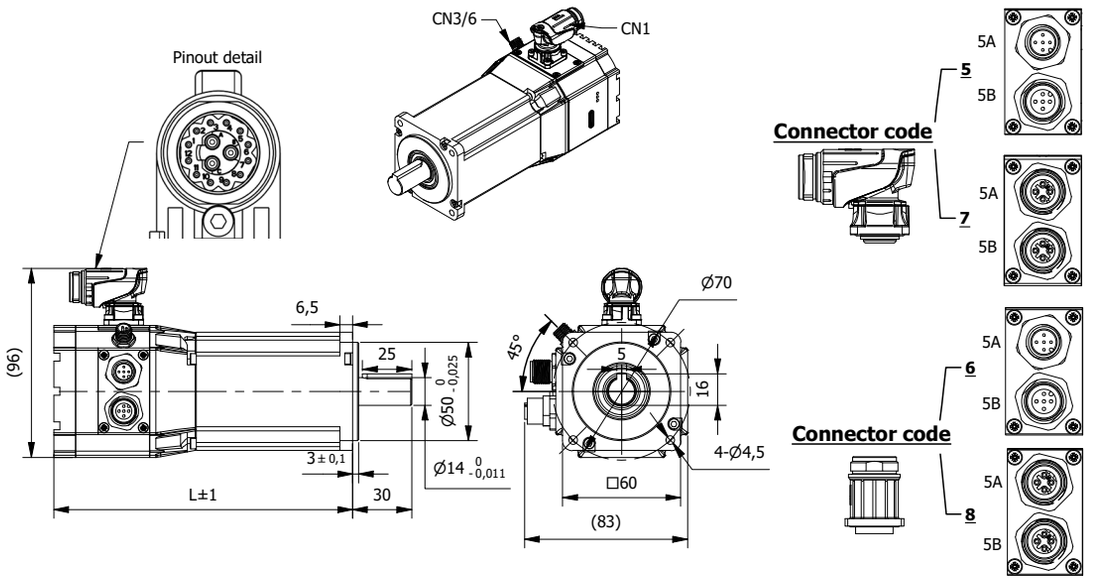
Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS402)	C-S402

Brushless DC Servo motor IVID60 - Code 5, 6, 7 & 8

with Motion Controller - IP65

□ 60mm

0,64 - 1,27Nm



with Safe Torque Off function

CN1 connector orientation: 0° standard; 90°, 180° and 270° available on request.

Specification						
	Model		...0200N	...0200B	...0400N	...0400B
1	n° of Pole		10	10	10	10
2	Rated Voltage	VDC	48	48	48	48
3	Operating Voltage	VDC	24-48	24-48	24-48	24-48
4	Rated Power	W	200	200	400	400
5	Rated Speed	rpm	3000	3000	3000	3000
6	Torque - Rated/Peak	Nm	0,64/1,92	0,64/1,92	1,27/3,81	1,27/3,81
7	Torque Constant	Nm/A	0,107	0,107	0,107	0,107
	Current - Rated/Peak	A	6/18	6/18	12/36	12/36
8	No-Load Current	A	0,6	0,6	<1	<1
9	Back EMF constant	V/kRPM	6,5	6,5	6,5	6,5
10	Rotor Inertia	Kgcm2	0,15	0,15	0,25	0,25
	Brake			24VDC - 1,5Nm		24VDC - 1,5Nm
11	Length (L)	mm	125	161	146	182
12	Weight	Kg	1,27	1,67	1,67	2,17

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

Product code reference	
IVID 60 0200 N E 1 000 M S200	
60	Frame size
0200	Rated Power
N	Brake options (N= no brake)
E	Encoder type
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 2500 CPR	E
Magnetic Absolute Multiturn (BiSS): 17bit, 16bit	A

Other options	
Item	Code
Standard	000

Connection			
Connector	Type	Function	Code
CN1	M16 Hummel 12+3 (90°)	Power & Logic + STO	5-7
CN1	M16 Hummel 12+3 (Straight)	Power & Logic + STO	6-8
CN6	M8 4P A-Code Male	Serial Input	
CN5A/B	M12 5P A-Code Male, Female	Fieldbus (M-C)	5-6
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	7-8
Cable kit available on request. More information can be found in the product manual on our website.			

Input and Output		
Input	Digital inputs	3 not isolated 5-24 Vdc PNP
	Analog inputs	1 not isolated | 0-10 Vdc
Output	Digital outputs	3 not isolated 24 Vdc PNP

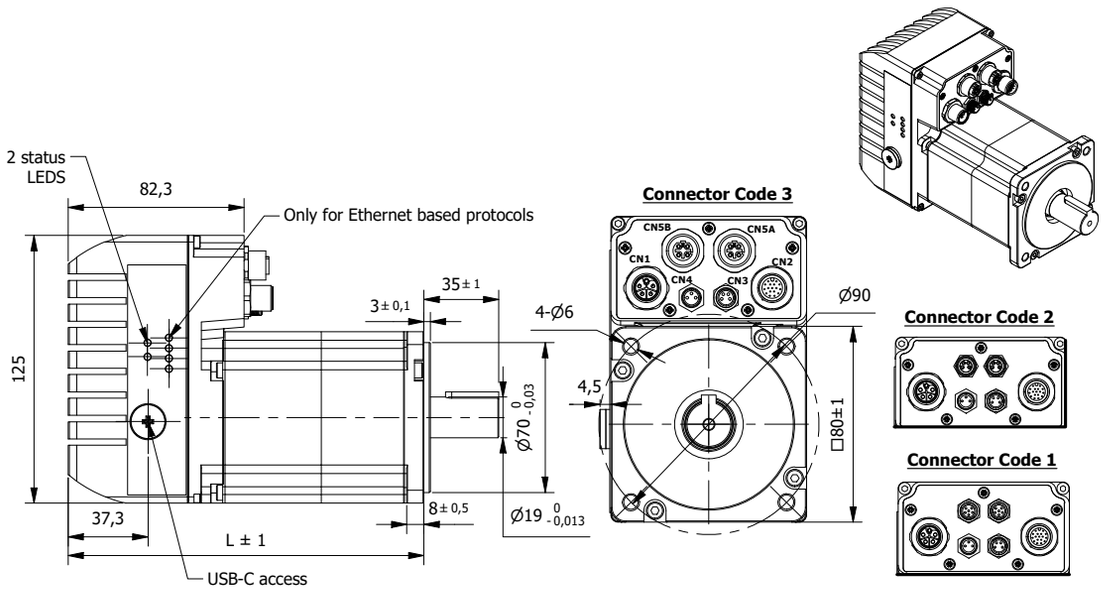
Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS402)	C-S402
Ethernet Modbus TCP (programmable)	T-S200
Ethercat (DS402)	E-S402
Profinet (programmable)	P-S200
Powerlink (DS402)	R-S402
Ethernet IP (programmable)	H-S200

Brushless DC Servo motor IVI080

with Motion Controller - IP65

□ 80mm

2,39 - 3,18Nm



with Safe Torque Off function

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

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

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

Encoders	
Type	Code
Magnetic Incremental/Absolute single turn 2500 CPR	E
Magnetic Absolute multi-turn 16bit (single-turn 17bit)	A

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

Connection			
Connector	Type	Function	Code
CN1	M12 5P L-Code Male	DC Supply	
CN2	M12 17P A-Code Male	Inputs/Outputs	
CN3	M8 4P A-Code Male	STO Input	
CN4	M8 3P A-Code Male	Brake Resistor	
CN5A/B	M8 6P A-Code Male	Fieldbus (M-C)	1
CN5A/B	M8 4P A-Code Female	Fieldbus (T-E)	2
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	3
Cable kit available on request. More information can be found in the product manual on our website.			

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

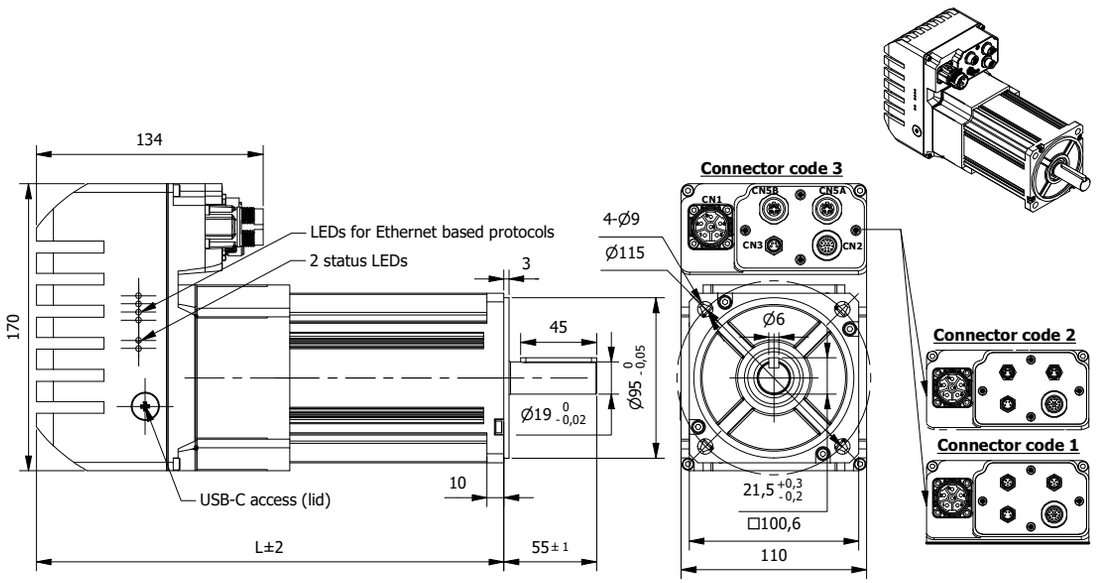
Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Brushless DC Servo motor IVI100

with Motion Controller - IP65

□ 100mm

3,18 - 4,77Nm



with Safe Torque Off function

Specification						
	Model		...1000N	...1000B	...1500N	...1500B
1	n° of Pole		10	10	10	10
2	Rated Voltage	VDC	48	48	48	48
3	Operating Voltage	VDC	24-48	24-48	24-48	24-48
4	Rated Power	W	1000	1000	1500	1500
5	Rated Speed	rpm	3000	3000	3000	3000
6	Torque - Rated/Peak	Nm	3,18/7	3,18/7	4,77/10,5	4,77/10,5
7	Torque Constant	Nm/A	0,1	0,1	0,11	0,11
8	Current - Rated/Peak	A	31,8/70	31,8/70	43,4/95,5	43,4/95,5
9	No-Load Current	A	0,8	0,8	0,8	0,8
10	Back EMF constant	V/kRPM	6,18	6,18	6,48	6,48
11	Rotor Inertia	Kgcm2	1,3	1,67	1,84	2,21
12	Brake			24VDC - 10Nm		24VDC - 10Nm
13	Length (L)	mm	207	249	235	277
14	Weight	Kg	5,4	6,4	6,4	7,4

Characteristics	
Item	
Shaft run out	0,05mm
Insulation Class	B 130°C
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (at mid-shaft)	490N
Max. Axial force	196N
Dielectric strength (for 1 min.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/PLe
Debug & configuration	Serial interface
Software*	Setup & config. - DL Studio Programming - DL Space
*Service SCI cable required and available on request	

Product code reference	
IVI 100 1000 N E 1 000 M S200	
100	Frame size
1000	Rated Power
N	Brake options (N= no brake)
E	Encoder type
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 2500 CPR	E
Magnetic Absolute Multiturn (BiSS): 17bit, 16bit	A

Connection			
Connector	Type	Function	Code
CN1	M23 6P (5+PE) Male	DC Supply	
CN2	M12 17P A-Code Male	Inputs/Outputs	
CN3	M8 4P A-Code Male	STO Input	
CN5A/B	M8 6P A-Code Male	Fieldbus (M-C)	1
CN5A/B	M8 4P A-Code Female	Fieldbus (T-E)	2
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	3

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

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

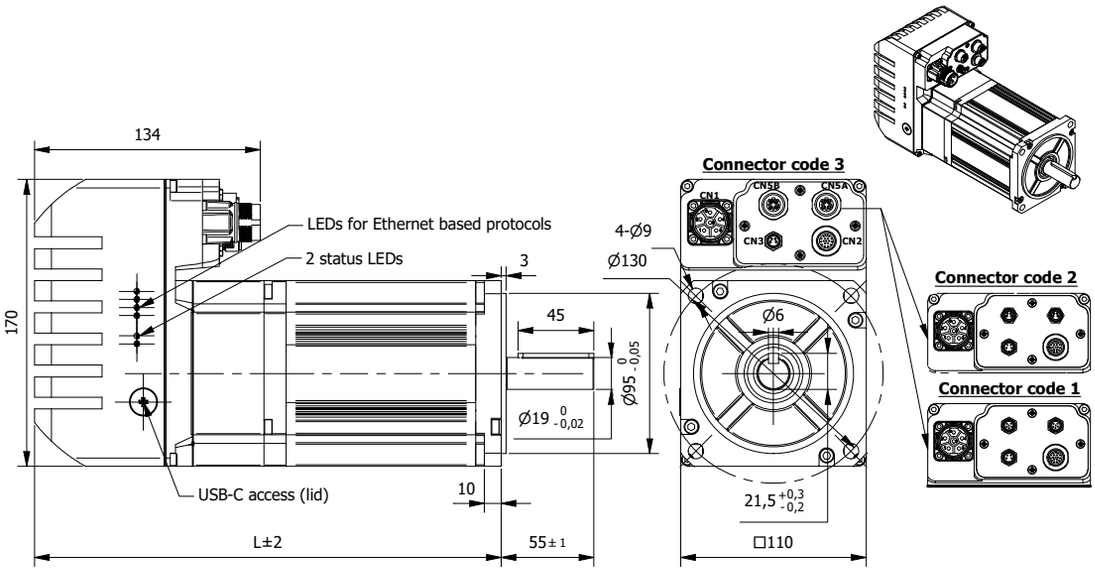
Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS402)	C-S402
Ethernet Modbus TCP (programmable)	T-S200
Ethercat (DS402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS402)	R-S402
Ethernet IP (programmable)	H-S200

Brushless DC Servo motor IVI110

with Motion Controller - IP65

□ 110mm

4,77 - 6,37Nm



with Safe Torque Off function

Specification						
	Model		...1500N	...1500B	...2000N	...2000B
1	n° of Pole		10	10	10	10
2	Rated Voltage	VDC	48	48	48	48
3	Operating Voltage	VDC	24-48	24-48	24-48	24-48
4	Rated Power	W	1500	1500	2000	2000
5	Rated Speed	rpm	3000	3000	3000	3000
6	Torque - Rated/Peak	Nm	4,77/14,3	4,77/14,3	6,37/19,1	6,37/19,1
7	Torque Constant	Nm/A	0,11	0,11	0,11	0,11
8	Current - Rated/Peak	A	43/130	43/130	58/174	58/174
9	No-Load Current	A	0,8	0,8	0,8	0,8
10	Back EMF constant	V/kRPM	6,35	6,35	6,63	6,63
11	Rotor Inertia	Kgcm2	3,1	3,1	4,1	4,1
12	Brake			24VDC - 10Nm		24VDC - 10Nm
13	Length (L)	mm	218	261	236	277
14	Weight	Kg	6,9	7,9	8,6	9,6

Characteristics	
Item	
Shaft run out	0,05mm
Insulation Class	B 130°C
Protection Class	IP65
Working Temperature	+5°C to +40°C
Humidity	5% to 85% not condensing
Radial play (450g load)	0,02mm
Axial play (450g load)	0,08mm
Max. Radial force (at mid-shaft)	630N
Max. Axial force	315N
Dielectric strength (for 1 min.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/PLe
Debug & configuration	Serial interface
Software*	Setup & config. - DL Studio Programming - DL Space
*Service SCI cable required and available on request	

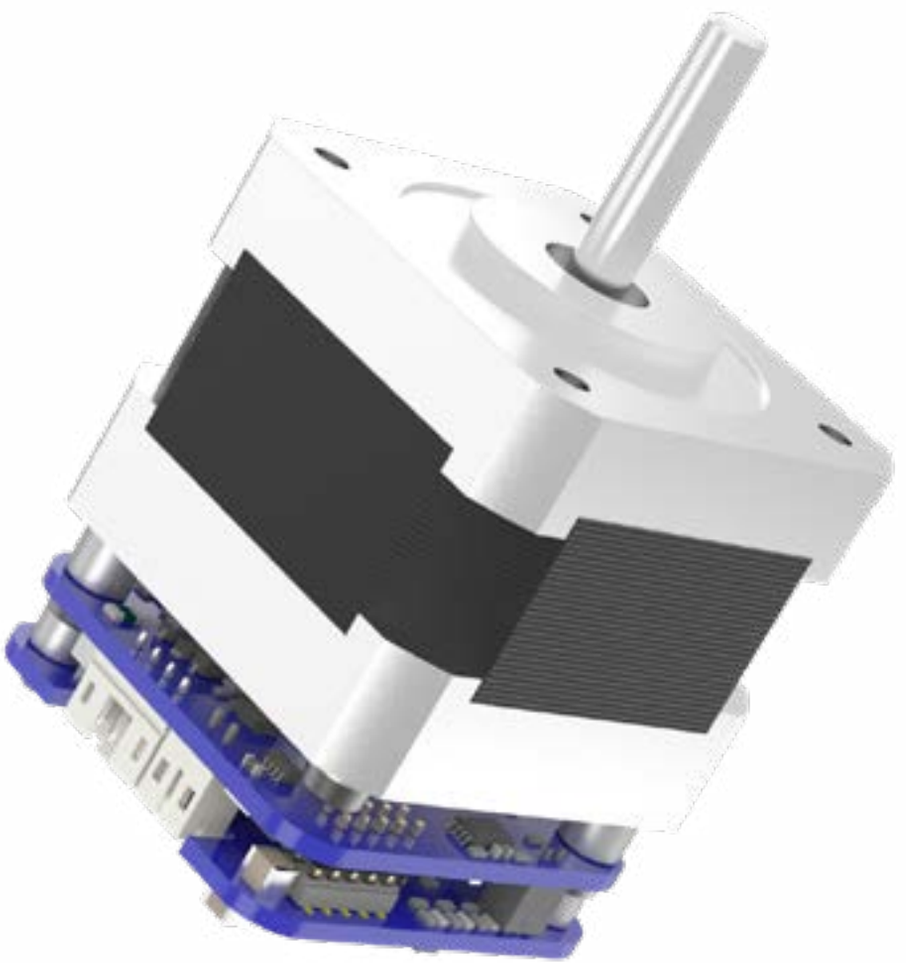
Product code reference	
IVI 110 1500 N E 1 000 M S200	
110	Frame size
1500	Rated Power
N	Brake options (N= no brake)
E	Encoder type
1	Connector code
000	Other options
M	Fieldbus
S200	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 2500 CPR	E
Magnetic Absolute Multiturn (BiSS): 17bit, 16bit	A

Connection			
Connector	Type	Function	Code
CN1	M23 6P (5+PE) Male	DC Supply	
CN2	M12 17P A-Code Male	Inputs/Outputs	
CN3	M8 4P A-Code Male	STO Input	
CN5A/B	M8 6P A-Code Male	Fieldbus (M-C)	1
CN5A/B	M8 4P A-Code Female	Fieldbus (T-E)	2
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	3
Cable kit available on request. More information can be found in the product manual on our website.			

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

Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS402)	C-S402
Ethernet Modbus TCP (programmable)	T-S200
Ethercat (DS402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS402)	R-S402
Ethernet IP (programmable)	H-S200



Stepper motors
with Motion controller

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

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

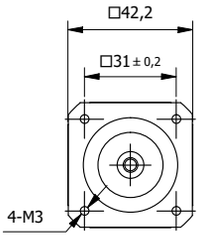
Stepper motors with Motion Controller	Torque** (Nm)	
ISS042	0,22...0,8	232
ISI042 - IP65	0,22...0,8	233
ISS057	0,55...1,89	234
ISI057-IP65	0,55...1,89	235
ISS060	1...3,1	236
ISI060-IP65	1...3,1	237
ISS086	2,2...12	238
ISI086 - IP65	2,2...12	239

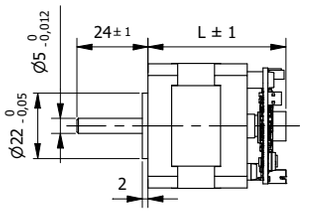
** Holding Torque

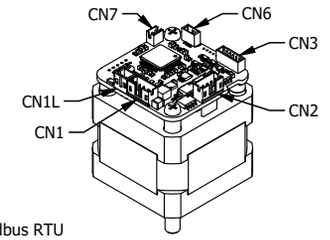
Stepper Motor ISS042
with Motion Controller

□ 42mm

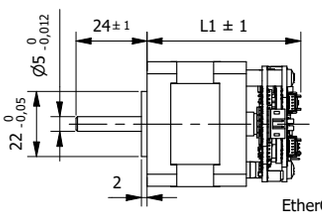
0,22 - 0,8Nm

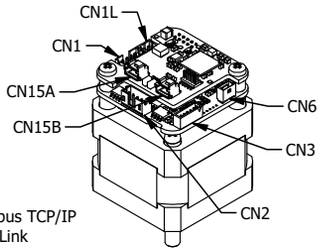






CANopen, Modbus RTU





EtherCAT, Modbus TCP/IP
Profinet, PowerLink
Ethernet IP

Specification

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

Characteristics

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

Product code reference

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

Encoders

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

Connection

Connector	Type	Function
CN1	JST B4B-PH	Power and Fieldbus (M-C)
CN1L	JST B2B-PH	Logic
CN2	JST B4B-PH-B	Motor connection
CN3	JST B6B-ZR	Inputs/Outputs
CN6	Molex 203562-0505	Service SCI Interface
CN7	JST B2B-ZR	Analog Input (M-C fieldbus)
CN15A/B	Molex 203562-0505	Fieldbus (T-E-P-R-H)

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

Input and Output

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

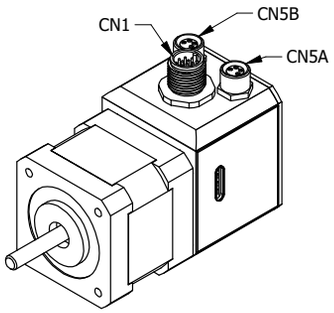
Interface Control Mode

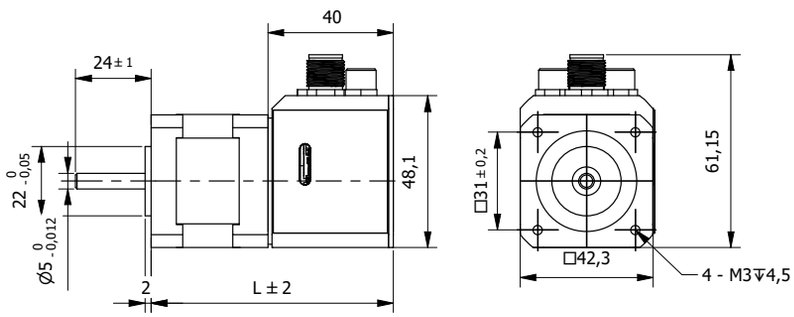
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

Stepper Motor ISI042
with Motion Controller - IP65

□ 42mm

0,22 - 0,8Nm





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

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

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

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

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

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

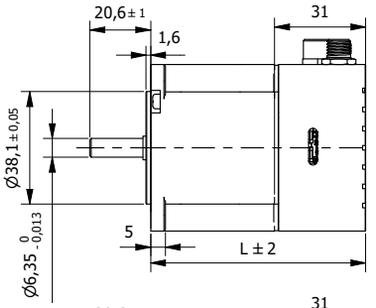
Input and Output		
Input	Digital	3 not isolated 5-24 Vdc PNP
	Analog (M-C fieldbus)	1 with potentiometer or 0-10 Vdc not isolated
Output	Digital	2 not isolated open drain, 5-24 Vdc 100mA

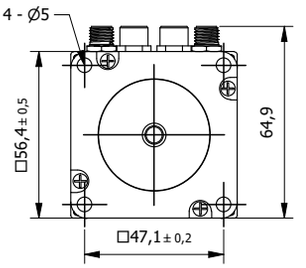
Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

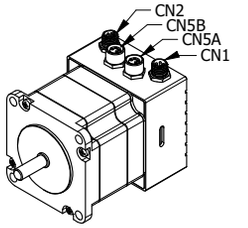
Stepper Motor ISS057
with Motion Controller

□ 57mm

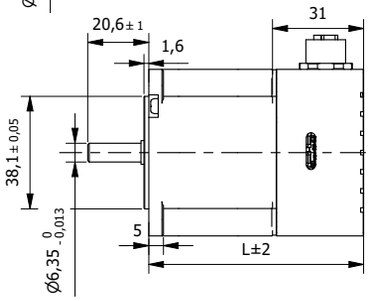
0,55 - 1,89Nm

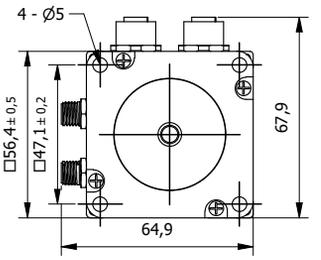


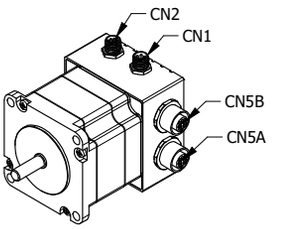




CONNECTOR CODE 1: CANopen, Modbus RTU, Modbus TCP/IP, EtherCAT







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

Integrated Brake available on request

Specification						
	Model		...0071N	...0081N	...0085N	...0106N
1	Operating Voltage	VDC	12÷48	12÷48	12÷48	12÷48
2	Current/Phase	A	3	3	3	3
3	Resistance/Phase	Ω	0,7	0,83	0,83	1,13
4	Inductance/Phase	mH	1,4	2,5	2,8	4
5	Holding Torque	Nm	0,55	1	1,26	1,89
6	Rotor Inertia	gcm2	120	275	300	480
7	Detent Torque	Nm	0,021	0,036	0,04	0,067
8	Length (L)	mm	71	81	85	106
9	Weight	Kg	0,54	0,71	0,78	1,12

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

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

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

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

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

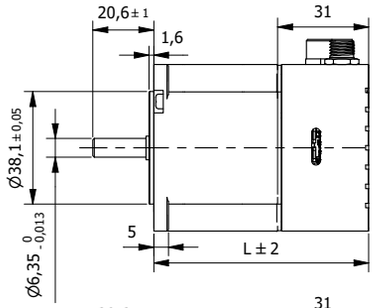
Input and Output		
Input	Digital	Up to 4 not isolated 5-24 Vdc PNP
	Analog (M-C fieldbus)	1 with potentiometer or 0-10 Vdc not isolated
Output	Digital	Up to 2 not isolated open drain, 5-24 Vdc 100mA

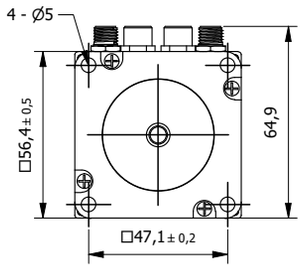
Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

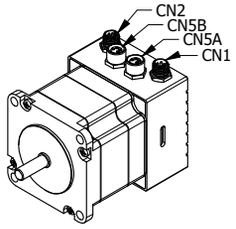
Stepper Motor ISI057
with Motion Controller - IP65

□ 57mm

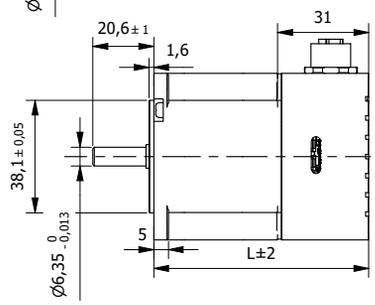
0,55 - 1,89Nm

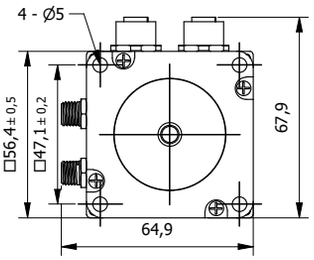


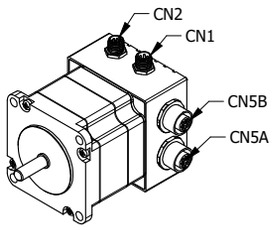




CONNECTOR CODE 1: CANopen, Modbus RTU, Modbus TCP/IP, EtherCAT







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

Integrated Brake available on request

Specification						
	Model		...0073N	...0083N	...0087N	...0108N
1	Operating Voltage	VDC	12÷48	12÷48	12÷48	12÷48
2	Current/Phase	A	3	3	3	3
3	Resistance/Phase	Ω	0,7	0,83	0,83	1,13
4	Inductance/Phase	mH	1,4	2,5	2,8	4
5	Holding Torque	Nm	0,55	1	1,26	1,89
6	Rotor Inertia	gcm2	120	275	300	480
7	Detent Torque	Nm	0,021	0,036	0,04	0,067
8	Length (L)	mm	73	83	87	108
9	Weight	Kg	0,56	0,73	0,79	1,13

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

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

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

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

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

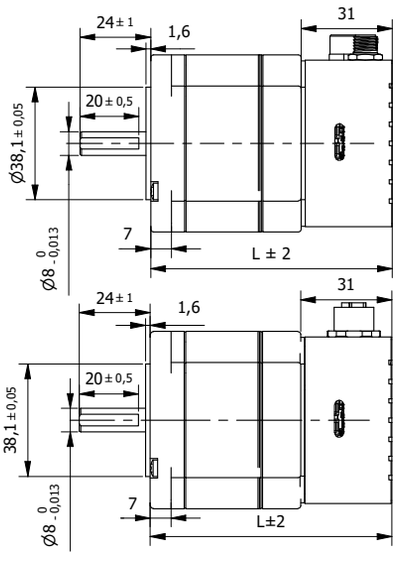
Input and Output		
Input	Digital	Up to 4 not isolated 5-24 Vdc PNP
	Analog (M-C fieldbus)	1 with potentiometer or 0-10 Vdc not isolated
Output	Digital	Up to 2 not isolated open drain, 5-24 Vdc 100mA

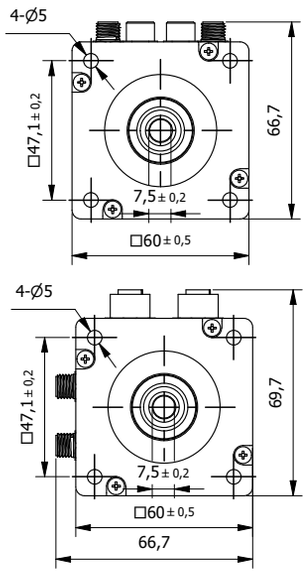
Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

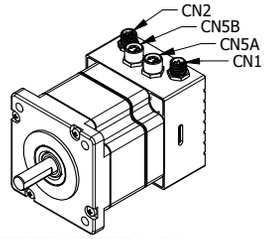
Stepper Motor ISS060
with Motion Controller

□ 60mm

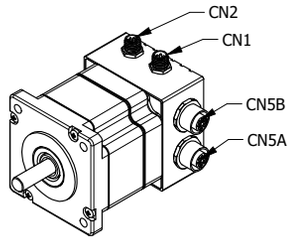
1 - 3,1Nm







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



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

Integrated Brake available on request

Specification

	Model		...0080N	...0089N	...0100N	...0121N
1	Operating Voltage	VDC	12÷48	12÷48	12÷48	12÷48
2	Current/Phase	A	3	3	3	3
3	Resistance/Phase	Ω	0,68	0,8	0,98	1,2
4	Inductance/Phase	mH	1,7	3	3	5,4
5	Holding Torque	Nm	1	1,75	2,1	3,1
6	Rotor Inertia	gcm2	275	440	570	840
7	Detent Torque	Nm	0,05	0,069	0,088	0,098
8	Length (L)	mm	80	89	100	121
9	Weight	Kg	0,76	0,94	1,14	1,55

Characteristics

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

Product code reference

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

Encoders

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

Other options

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

Connection

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

Input and Output

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

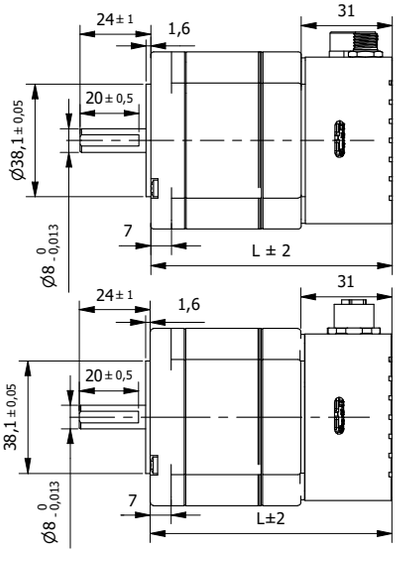
Interface Control Mode

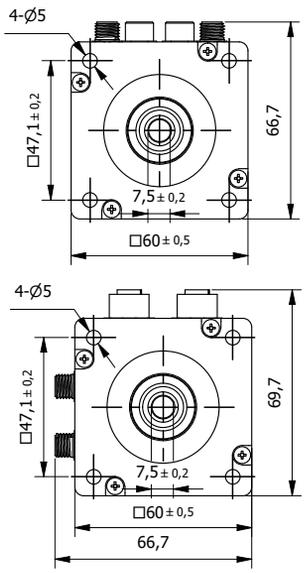
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

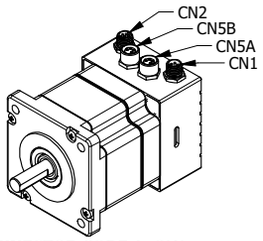
Stepper Motor ISI060
with Motion Controller - IP65

□ 60mm

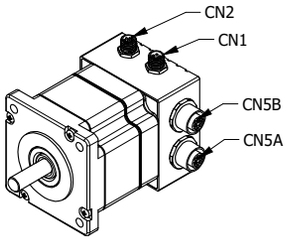
1 - 3,1Nm







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



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

Integrated Brake available on request

Specification						
	Model		...0082N	...0091N	...0102N	...0123N
1	Operating Voltage	VDC	12÷48	12÷48	12÷48	12÷48
2	Current/Phase	A	3	3	3	3
3	Resistance/Phase	Ω	0,68	0,8	0,98	1,2
4	Inductance/Phase	mH	1,7	3	3	5,4
5	Holding Torque	Nm	1	1,75	2,1	3,1
6	Rotor Inertia	gcm2	275	440	570	840
7	Detent Torque	Nm	0,05	0,069	0,088	0,098
8	Length (L)	mm	82	91	102	123
9	Weight	Kg	0,78	0,95	1,16	1,57

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

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

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

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

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

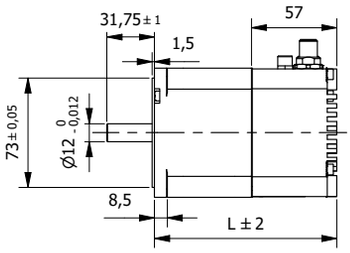
Input and Output		
Input	Digital	Up to 4 not isolated 5-24 Vdc PNP
	Analog (M-C fieldbus)	1 with potentiometer or 0-10 Vdc not isolated
Output	Digital	Up to 2 not isolated open drain, 5-24 Vdc 100mA

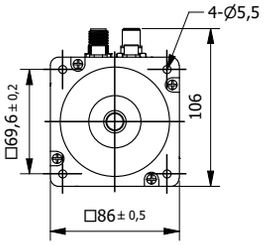
Interface Control Mode	
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

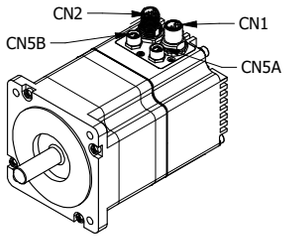
Stepper Motor ISS086
with Motion Controller

□ 86mm

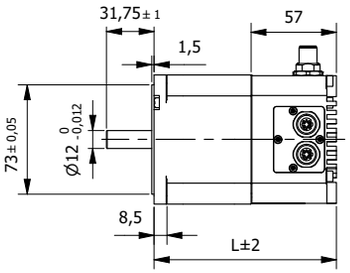
2,2 - 12Nm

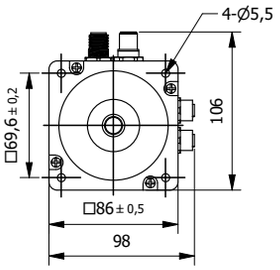


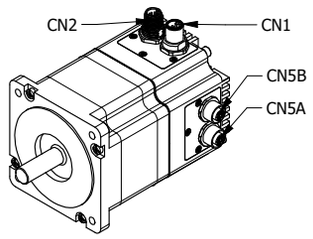




CONNECTOR CODE 1: CANopen, Modbus RTU, Modbus TCP/IP, EtherCAT







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

Integrated Brake available on request

Specification

	Model		...0122N	...0135N	...0156N	...0173N	...0212N
1	Operating Voltage	VDC	12÷48	12÷48	12÷48	12÷48	12÷48
2	Current/Phase	A	3	5,5	5,5	6	6,2
3	Resistance/Phase	Ω	1,14	0,42	0,47	0,5	0,68
4	Inductance/Phase	mH	6,8	3,5	4,5	6	9
5	Holding Torque	Nm	2,2	4,5	7	8,5	12
6	Rotor Inertia	gcm2	1000	1400	2700	2700	4000
7	Detent Torque	Nm	0,08	0,12	0,12	0,24	0,36
8	Length (L)	mm	122	135	156	173	212
9	Weight	Kg	2,19	2,79	3,29	4,29	5,89

Characteristics

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

Product code reference

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

Encoders

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

Other options

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

Connection

Connector	Type	Function	Code
CN1	M12 5P L-Code Male	Power/Logic	
CN2	M12 12P A-Code Male	Inputs/Outputs	
CN5A/B	M8 4P A-Code Female	Fieldbus (M-C-T-E)	1
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	2

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

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

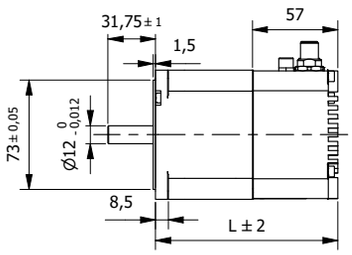
Interface Control Mode

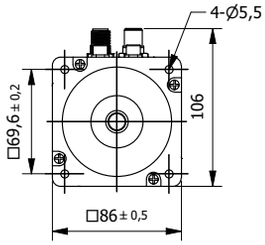
Fieldbus	Code
RS485 Modbus-RTU (programmable)	M-S200
CANopen (programmable)	C-S200
CANopen (DS 402)	C-S402
Ethernet Modbus TCP/IP (programmable)	T-S200
EtherCAT (DS 402)	E-S402
Profinet (programmable)	P-S200
PowerLink (DS 402)	R-S402
EtherNet IP (programmable)	H-S200

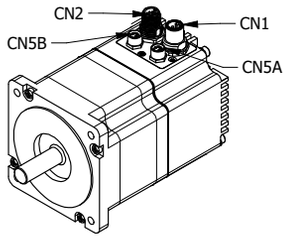
Stepper Motor ISI086
with Motion Controller - IP65

□ 86mm

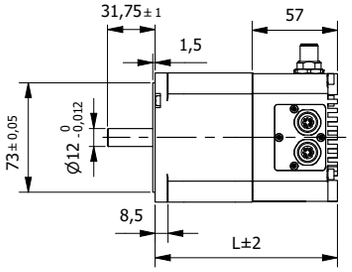
2,2 - 12Nm

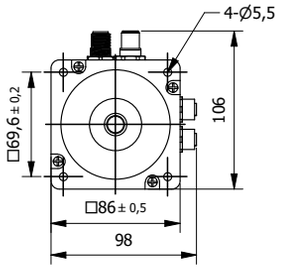


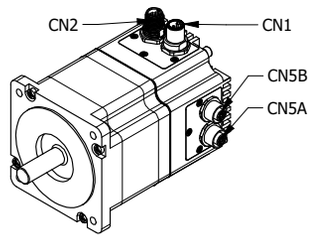




CONNECTOR CODE 1: CANopen, Modbus RTU, Modbus TCP/IP, EtherCAT







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

Integrated Brake available on request

Specification

	Model		...0122N	...0135N	...0156N	...0173N	...0212N
1	Operating Voltage	VDC	12÷48	12÷48	12÷48	12÷48	12÷48
2	Current/Phase	A	3	5,5	5,5	6	6,2
3	Resistance/Phase	Ω	1,14	0,42	0,47	0,5	0,68
4	Inductance/Phase	mH	6,8	3,5	4,5	6	9
5	Holding Torque	Nm	2,2	4,5	7	8,5	12
6	Rotor Inertia	gcm2	1000	1400	2700	2700	4000
7	Detent Torque	Nm	0,08	0,12	0,12	0,24	0,36
8	Length (L)	mm	122	135	156	173	212
9	Weight	Kg	2,19	2,79	3,29	4,29	5,89

Characteristics

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

Product code reference

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

Encoders

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

Other options

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

Connection

Connector	Type	Function	Code
CN1	M12 5P L-Code Male	Power/Logic	
CN2	M12 12P A-Code Male	Inputs/Outputs	
CN5A/B	M8 4P A-Code Female	Fieldbus (M-C-T-E)	1
CN5A/B	M12 4P D-Code Female	Fieldbus (T-E-P-R-H)	2

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

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

Interface Control Mode

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

Stepper



Flat Hybrid Stepper

p.321



Hybrid Stepper S series
Standard

p.251



Hybrid Stepper SH series
High Torque

p.261



Hybrid Stepper STC series
Connector

p.297



3-Phase Hybrid Stepper

p.307



Hollow Shaft Stepper

p.313



Hybrid Stepper with Encoder

p.325



IP65 Hybrid Stepper

p.331

Stepper Motors

Technical introduction		246

Hybrid Stepper motors - S Standard series	Torque* (Nm)	251
57S41...76	0,288...1,25	252
86S67...125	2,3...7,6	256

Hybrid Stepper motors - SH High Torque series	Torque* (Nm)	261
14SH30	0,006	262
20SH	0,018...0,03	263
25SH23	0,033	264
28SH32...51	0,043...0,12	265
35SH	0,07...0,14	268
39SH20...38	0,065...0,29	269
42SH33...60	0,158...0,8	272
42SH33...47M - step 0,9°	0,158...0,44	276
57SH41...76	0,39...1,89	279
57SH41...76M - step 0,9°	0,39...1,8	283
60SH45...86	0,78...3,1	286
86SH65...156	2,6...12,1	290
110SH	11,2...28	295

Hybrid Stepper motors - STC Connector series	Torque* (Nm)	297
20STC	0,022...0,036	298
28STC32...51	0,08...0,18	299
57STC41...76	0,6...2,3	302

3-Phase Hybrid Stepper motors	Torque* (Nm)	307
42 3P	0,08...0,2	308
57 3P	0,45...1,5	309
60 3P53	0,9	310

Hollow Shaft Stepper motors	Torque* (Nm)	313
20STC40 H	0,036	314
28STC51 H	0,12	315
35STC38 H	0,23	316
42STC47 H	0,44	317
57STC76 H	2,3	318
86SH118 H	6	319

Flat Hybrid Stepper motors	Torque* (Nm)	321
28S10	0,01	322
63S10	0,064	323

Stepper motors with Encoder	Torque* (Nm)	325
42SC	0,22...0,75	326
60SC	1...3	327
86SC	3,5...12	328

IP65 Hybrid Stepper motors	Torque* (Nm)	331
SM28 070 - IP65	0,127	332
SM42-E - IP65	0,16...0,72	333
SM57-E - IP65	0,7...1,95	334

* 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

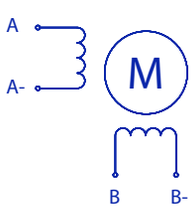
Wires Connection table								
4 lead wires	A	A-	B	B-				
Color Code 1	White	Red	Blue	Yellow				
Color Code 2	Black	Green	Red	Blue				
Color Code 3	Red	Blue	Orange	Yellow				
Color Code 4	Red	White	Yellow	Green				
Color Code 5	Yellow	Green	Red	Black				

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

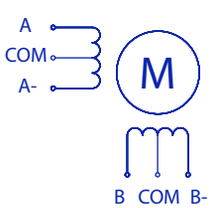
6 lead wires	A	A-	B	B-	Com A	Com B
Color Code 1	White	Red	Blue	Yellow	Black	Brown
Unipolar Motor	Black	Green	Red	Blue	Yellow	White

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

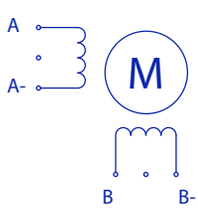
4 Leads
Bipolar connection



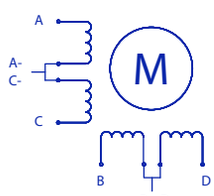
6 Leads
Unipolar connection



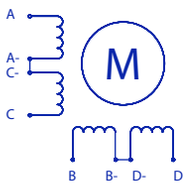
6 Leads
Series connection



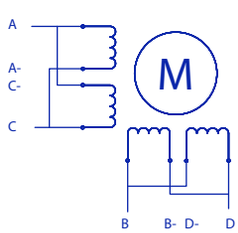
8 Leads
Unipolar connection



8 Leads
Serial connection



8 Leads
Parallel connection



Product families

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

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

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

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

Hybrid Stepper motors (2-Phase)

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

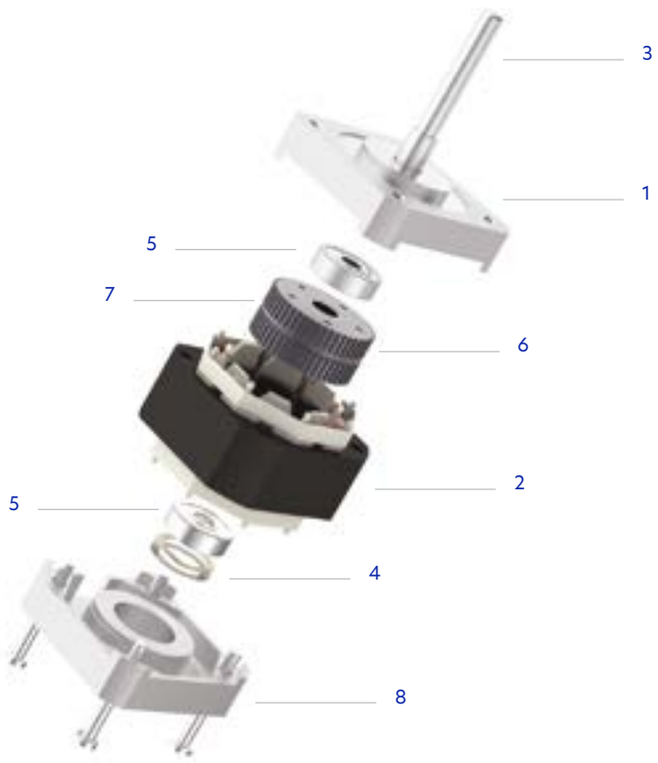
3-Phase Hybrid Stepper motors

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

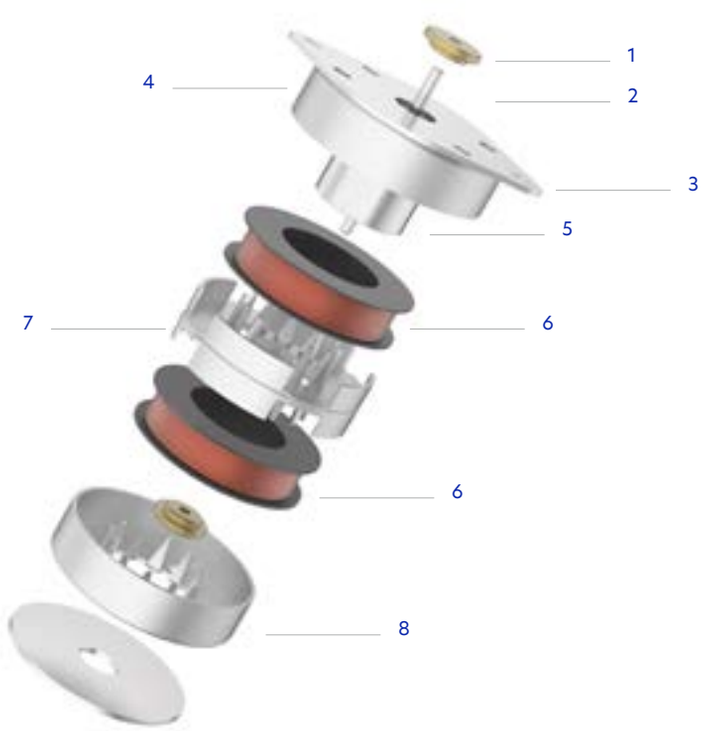
Stepper motors with integrated Encoder

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





Hybrid Stepper
S series
Standard

p.251



Hybrid Stepper
SH series
High Torque

p.261



Hybrid Stepper
STC series
Connector

p.297

Stepper motors

2-Phase Hybrid

Advantages at a glance
High torque
High speed
High reliability

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

Hybrid Stepper motors - S Standard series	Torque* (Nm)	251
57S41	0,29...0,4	252
57S51	0,49...0,69	253
57S56	0,6...0,84	254
57S76	0,9...1,25	255
86S67	2,3...2,8	256
86S94	3,8...4,8	257
86S125	6,2...7,6	258

Hybrid Stepper motors - SH High Torque series	Torque* (Nm)	261
14SH30	0,006	262
20SH	0,018...0,03	263
25SH23	0,033	264
28SH32	0,043...0,06	265
28SH45	0,075...0,095	266
28SH51	0,09...0,12	267
35SH	0,07...0,14	268
39SH20	0,065...0,08	269
39SH34	0,13...0,21	270
39SH38	0,2...0,29	271
42SH33	0,158...0,22	272
42SH38	0,259...0,36	273
42SH47	0,317...0,44	274
42SH60	0,65...0,8	275
42SH33M - step 0,9°	0,158...0,22	276
42SH38M - step 0,9°	0,259...0,36	277
42SH47M - step 0,9°	0,317...0,44	278
57SH41	0,39...0,55	279
57SH51	0,72...1,01	280
57SH56	0,9...1,26	281
57SH76	1,35...1,89	282
57SH41M - step 0,9°	0,39...0,55	283
57SH56M - step 0,9°	0,9...1,26	284
57SH76M - step 0,9°	1,35...1,8	285
60SH45	0,78...1,1	286
60SH56	1,17...1,65	287
60SH65	1,5...2,1	288
60SH86	2,2...3,1	289
86SH65	2,6...3,4	290
86SH80	4,6	291
86SH96	7,0	292
86SH118	8,7	293
86SH156	12,1	294
110SH	11,2...28	295

Hybrid Stepper motors - STC Connector series	Torque* (Nm)	297
20STC	0,022...0,036	298
28STC32	0,08	299
28STC40	0,13	300
28STC51	0,18	301
57STC41	0,6	302
57STC56	1,4	303
57STC76	2,3	304

* Holding Torque



Hybrid Stepper motors

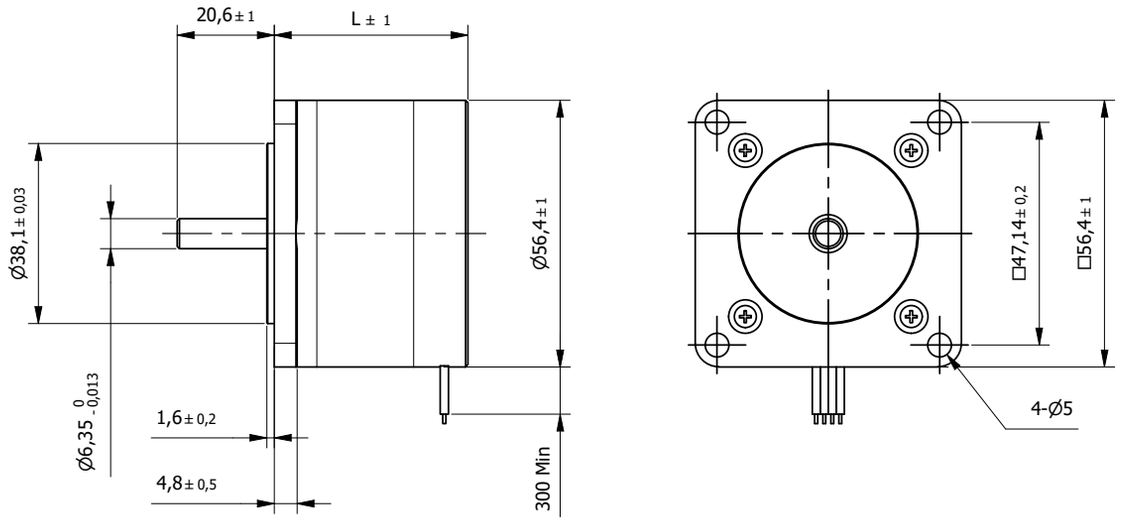
S series - Standard

Hybrid Stepper motors - S Standard series	Torque* (Nm)	
57S41	0,29...0,4	252
57S51	0,49...0,69	253
57S56	0,6...0,84	254
57S76	0,9...1,25	255
86S67	2,3...2,8	256
86S94	3,8...4,8	257
86S125	6,2...7,6	258

* Holding Torque

Hybrid Stepper Motor 57S41

□ 57mm

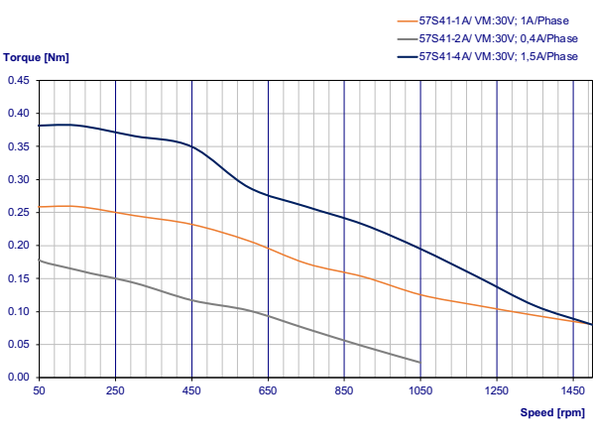


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

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

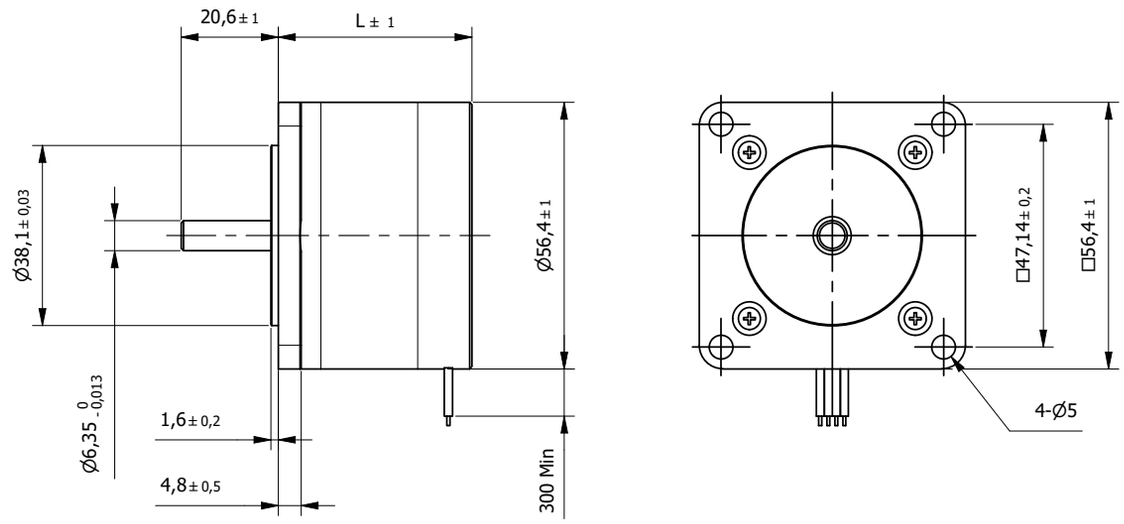
Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front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

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



Hybrid Stepper Motor 57S51

□ 57mm

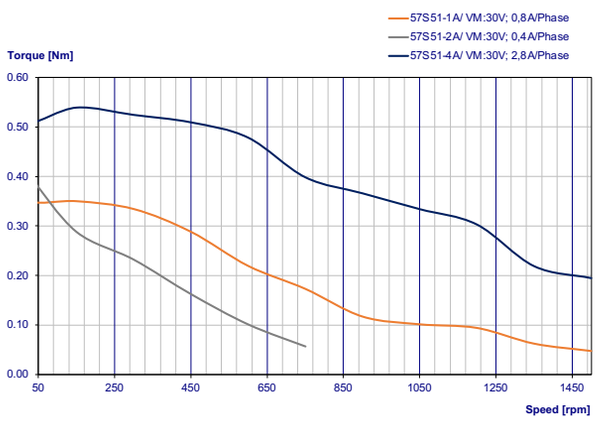


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

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

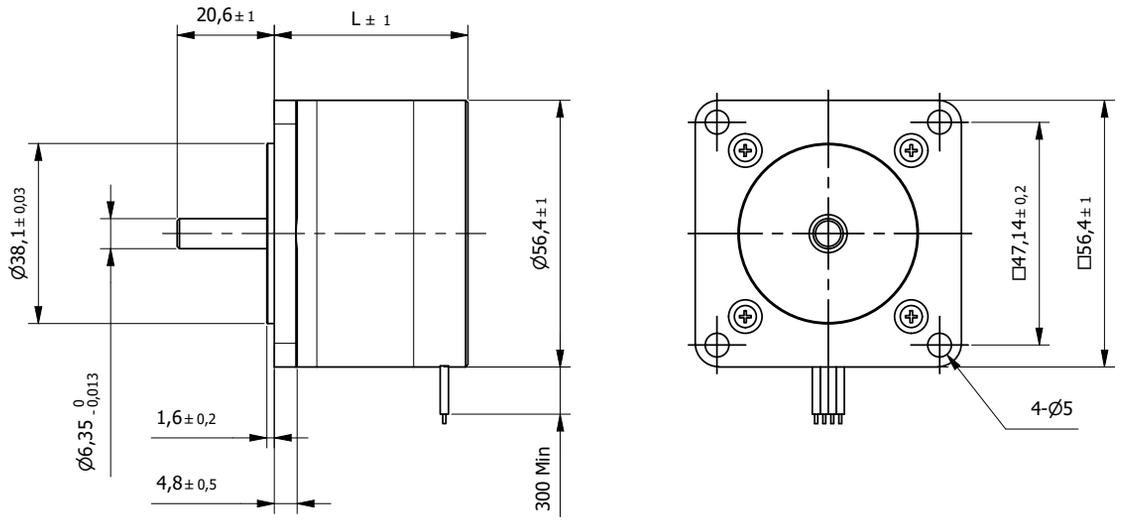
Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front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

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



Hybrid Stepper Motor 57S56

□ 57mm

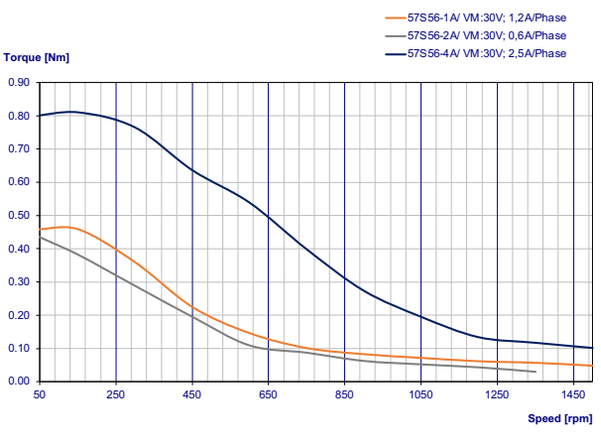


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

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

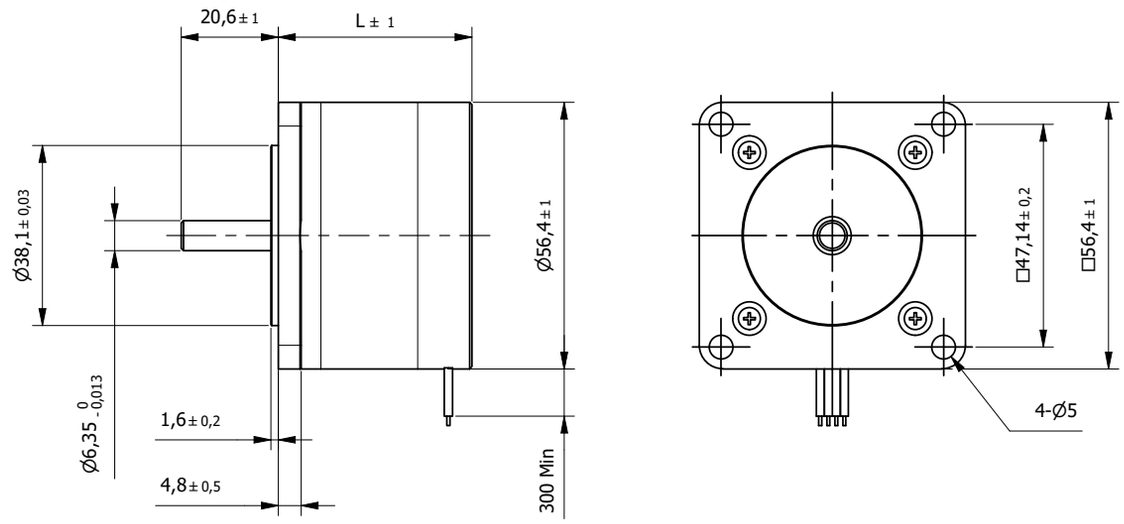
Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front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

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



Hybrid Stepper Motor 57S76

□ 57mm

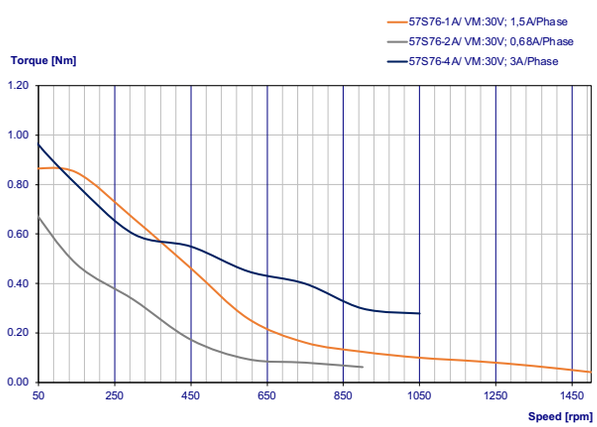


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

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

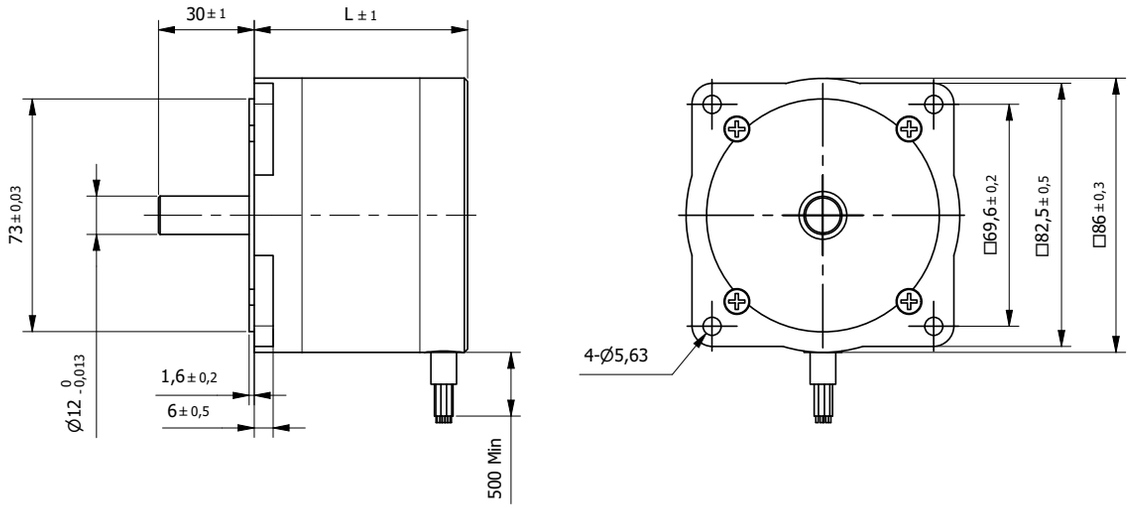
Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front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

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



Hybrid Stepper Motor 86S67

□ 86mm



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

Specification

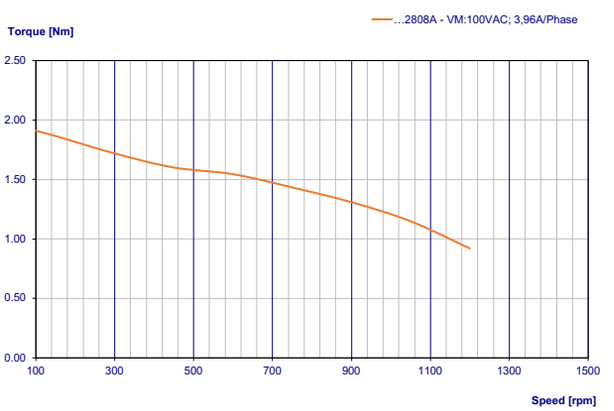
	Model		86S67-2808A		
			Unipolar	Parallel	Series
1	Rated Voltage	V	3,64	2,54	5
2	Current/Phase	A	2,8	3,92	1,96
3	Resistance/Phase	Ω	1,3	0,65	2,6
4	Inductance/Phase	mH	5,1	5,1	20,4
5	Holding Torque	Nm	2,3	2,8	2,8
6	Rotor Inertia	gcm2	660	660	660
7	Detent Torque	Nm	0,085	0,085	0,085
8	n° of Leads		8	8	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 sec.)	820 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

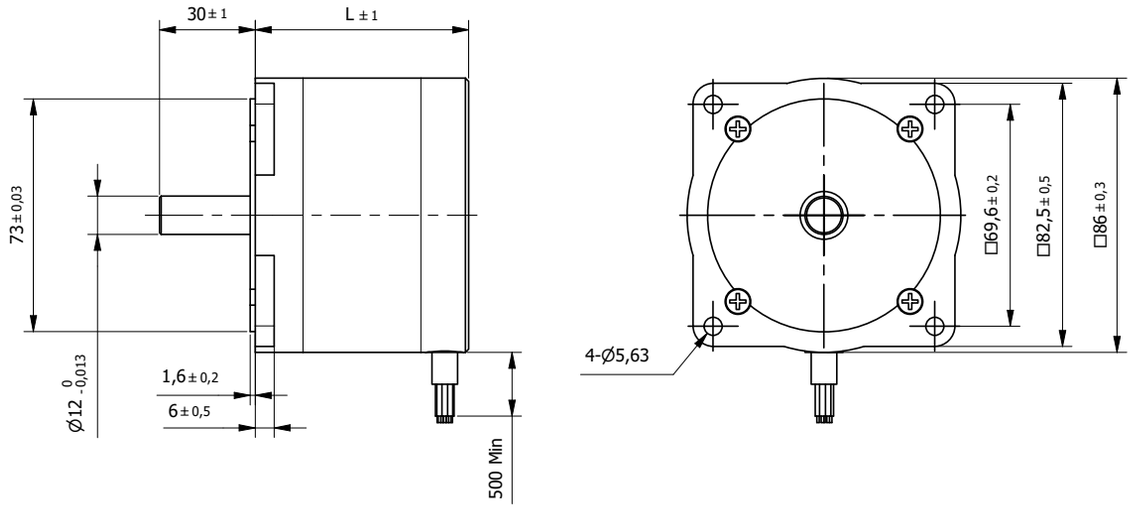
Connection

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



Hybrid Stepper Motor 86S94

□ 86mm



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

Specification

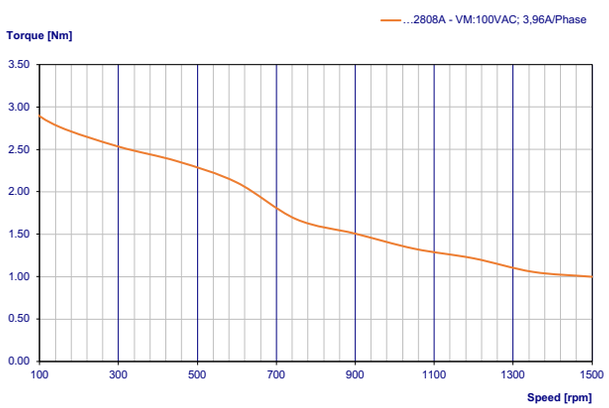
	Model		86S94-2808A		
			Unipolar	Parallel	Series
1	Rated Voltage	V	4,76	2,54	6,6
2	Current/Phase	A	2,8	3,92	1,96
3	Resistance/Phase	Ω	1,7	0,85	3,4
4	Inductance/Phase	mH	7,7	7,7	30,8
5	Holding Torque	Nm	3,8	4,8	4,8
6	Rotor Inertia	gcm2	1200	1200	1200
7	Detent Torque	Nm	0,13	0,13	0,13
8	n° of Leads		8	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 sec.)	820 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

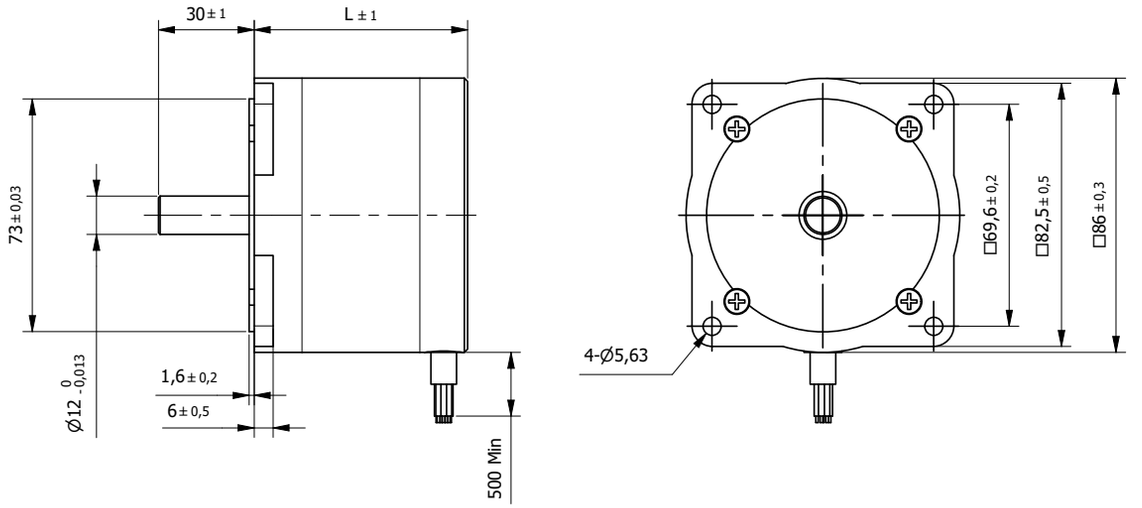
Connection

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



Hybrid Stepper Motor 86S125

□ 86mm



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

Specification

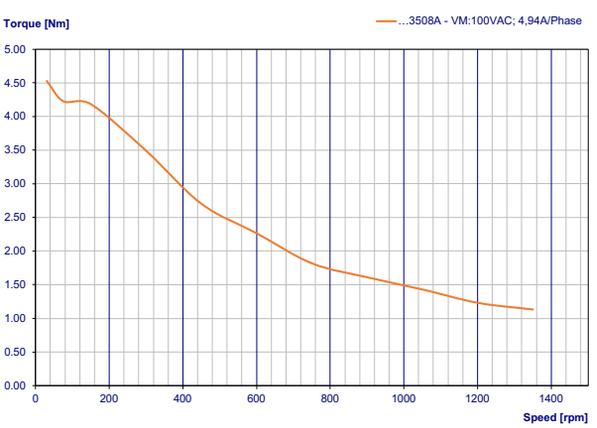
	Model		86S125-3508A		
			Unipolar	Parallel	Series
1	Rated Voltage	V	4,97	3,47	6,95
2	Current/Phase	A	3,5	4,9	2,45
3	Resistance/Phase	Ω	1,42	0,71	2,84
4	Inductance/Phase	mH	7,9	7,9	31,6
5	Holding Torque	Nm	6,2	7,6	7,6
6	Rotor Inertia	gcm2	1800	1800	1800
7	Detent Torque	Nm	0,23	0,23	0,23
8	n° of Leads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

Characteristics

Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	220N
Max Axial Force	60N
Dielectric Strength (for 1 sec.)	820 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection

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





Hybrid Stepper motors

SH series - High Torque

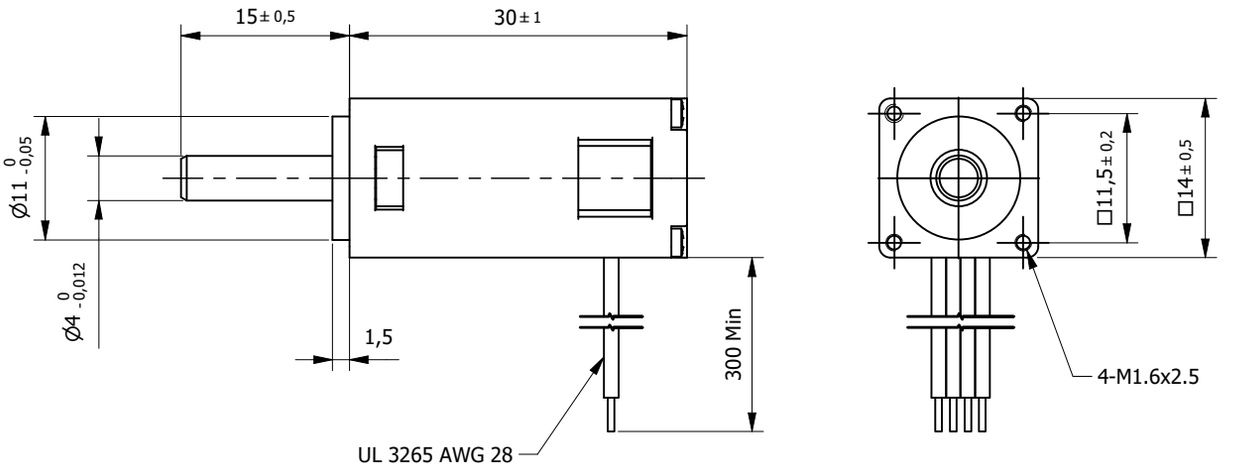
Hybrid Stepper motors - SH High Torque series	Torque* (Nm)	
14SH30	0,006	262
20SH	0,018...0,03	263
25SH23	0,033	264
28SH32	0,043...0,06	265
28SH45	0,075...0,095	266
28SH51	0,09...0,12	267
35SH	0,07...0,14	268
39SH20	0,065...0,08	269
39SH34	0,13...0,21	270
39SH38	0,2...0,29	271
42SH33	0,158...0,22	272
42SH38	0,259...0,36	273
42SH47	0,317...0,44	274
42SH60	0,65...0,8	275
42SH33M - step 0,9°	0,158...0,22	276
42SH38M - step 0,9°	0,259...0,36	277
42SH47M - step 0,9°	0,317...0,44	278
57SH41	0,39...0,55	279
57SH51	0,72...1,01	280
57SH56	0,9...1,26	281
57SH76	1,35...1,89	282
57SH41M - step 0,9°	0,39...0,55	283
57SH56M - step 0,9°	0,9...1,26	284
57SH76M - step 0,9°	1,35...1,8	285
60SH45	0,78...1,1	286
60SH56	1,17...1,65	287
60SH65	1,5...2,1	288
60SH86	2,2...3,1	289
86SH65	2,6...3,4	290
86SH80	4,6	291
86SH96	7,0	292
86SH118	8,7	293
86SH156	12,1	294
110SH	11,2...28	295

* Holding Torque

Hybrid Stepper Motor 14SH30

High Torque

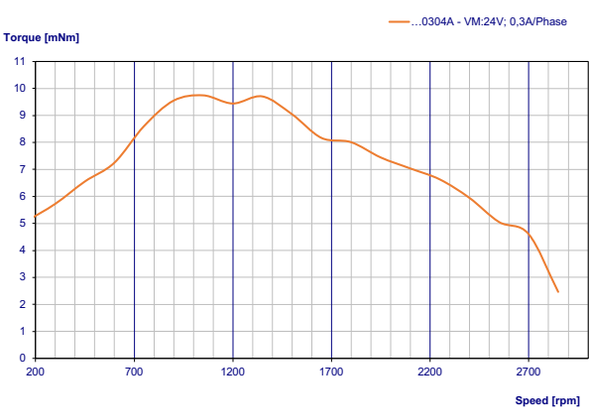
□ 14mm



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

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

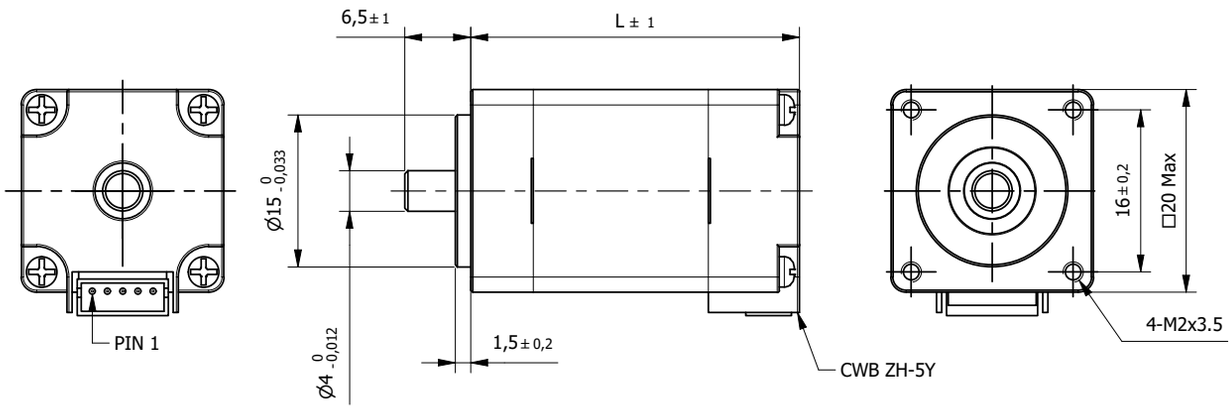
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL3265 AWG28	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-



Hybrid Stepper Motor 20SH

High Torque

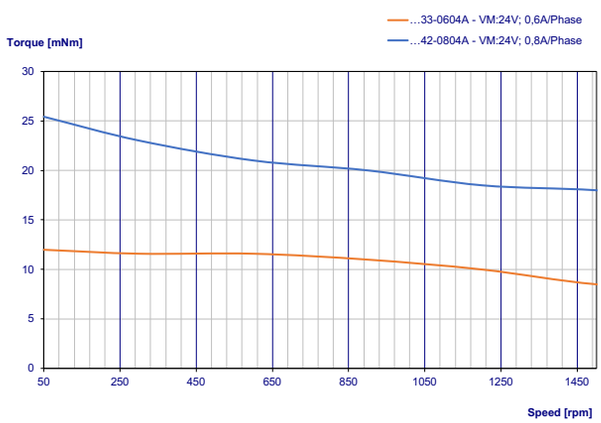
□ 20mm



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

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

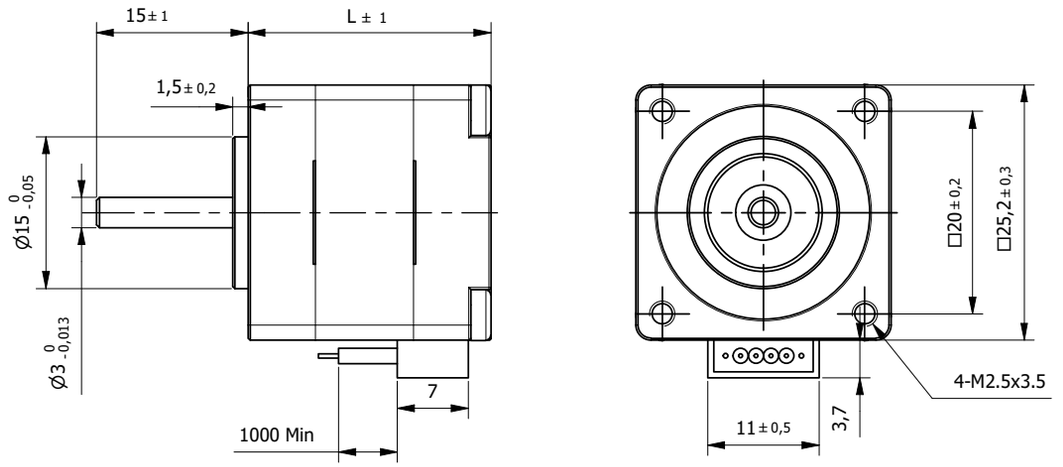
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG28	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-



Hybrid Stepper Motor 25SH23

High Torque

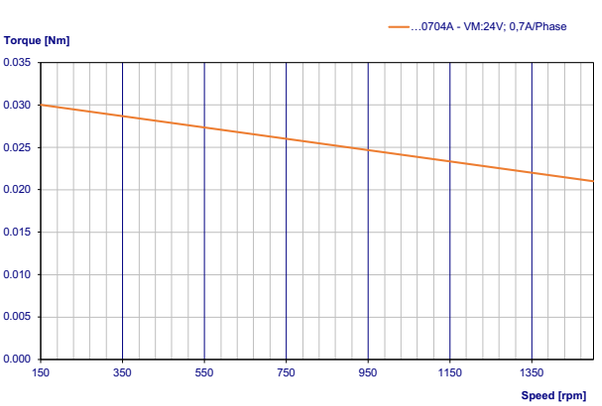
□ 25mm



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

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

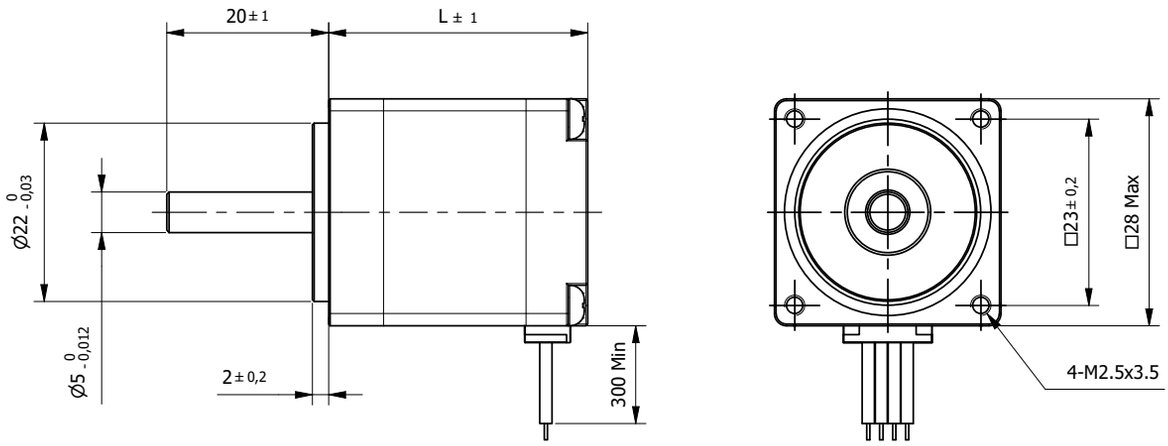
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-



Hybrid Stepper Motor 28SH32

High Torque

□ 28mm

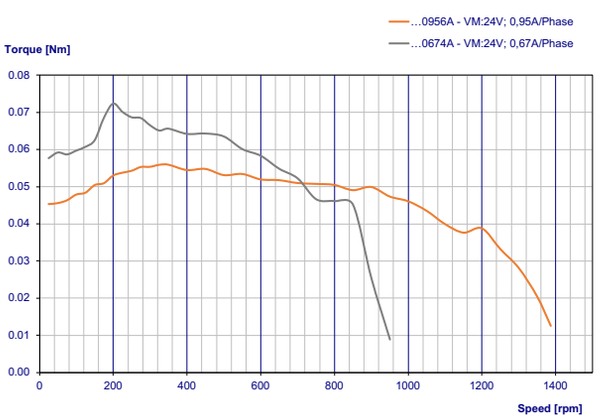


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

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

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

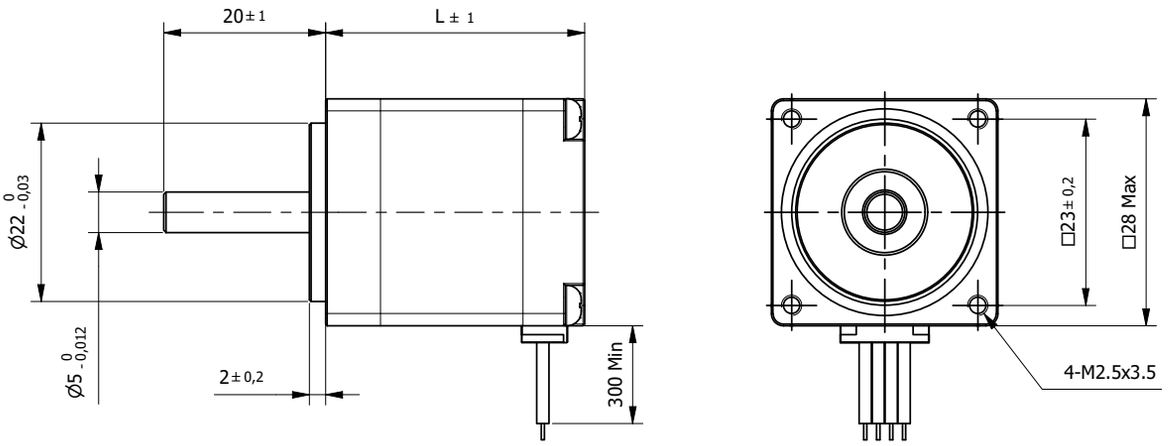
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 28SH45

High Torque

□ 28mm

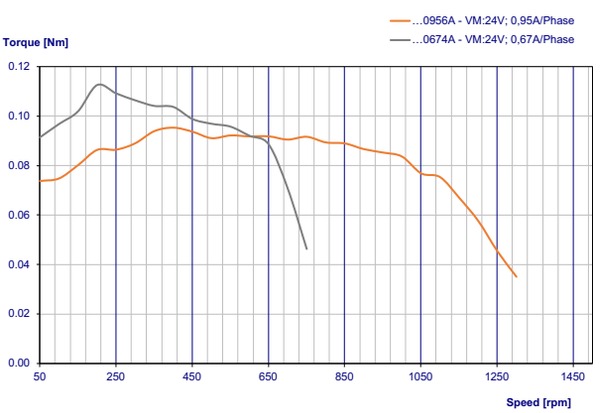


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

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

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

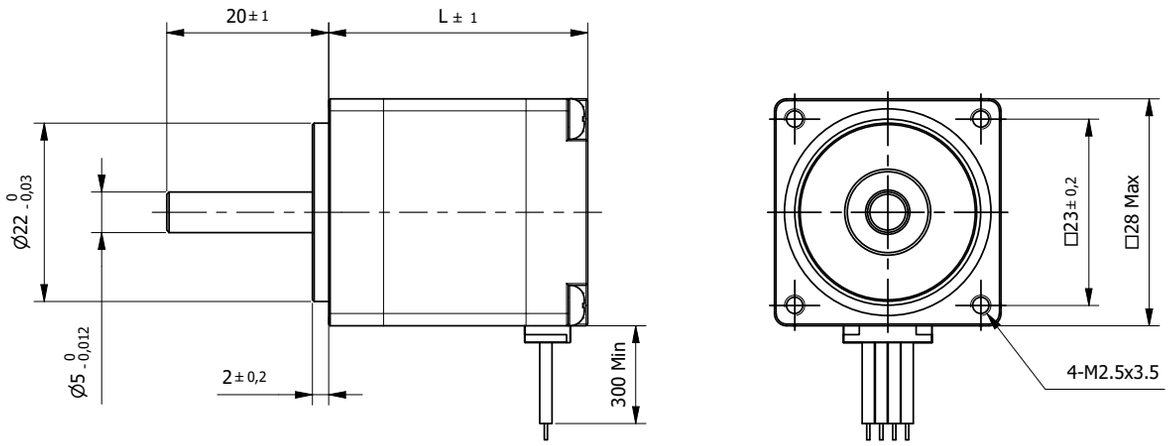
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 28SH51

High Torque

□ 28mm

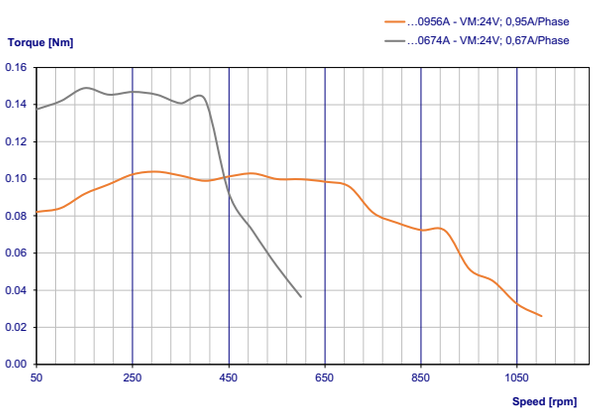


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

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

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

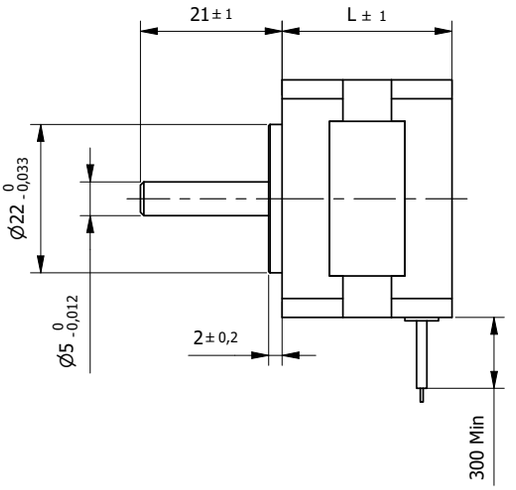
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B

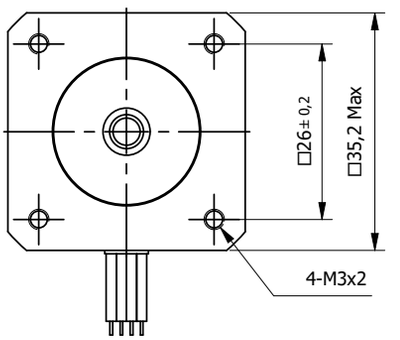


Hybrid Stepper Motor 35SH

High Torque

□ 35mm





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

Specification

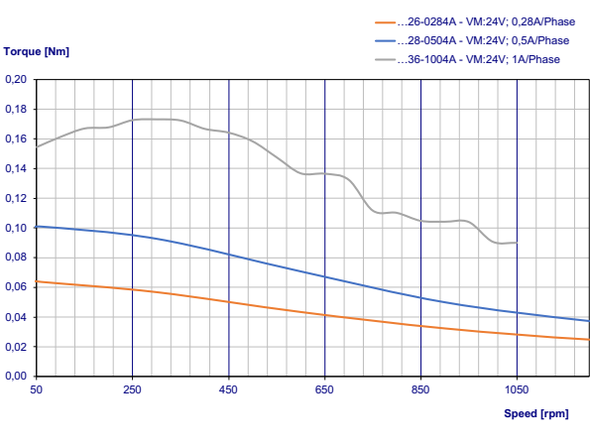
	Model		...26-0284A	...28-0504A	...36-1004A
1	Rated Voltage	V	7,4	10	2,7
2	Current/Phase	A	0,28	0,5	1
3	Resistance/Phase	Ω	26	20	2,7
4	Inductance/Phase	mH	27	14	4,3
5	Holding Torque	Nm	0,07	0,1	0,14
6	Rotor Inertia	gcm2	10	11	14
7	Detent Torque	Nm	0,006	0,008	0,01
8	n° of Leads		4	4	4
9	Length (L)	mm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

Characteristics

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

Connection

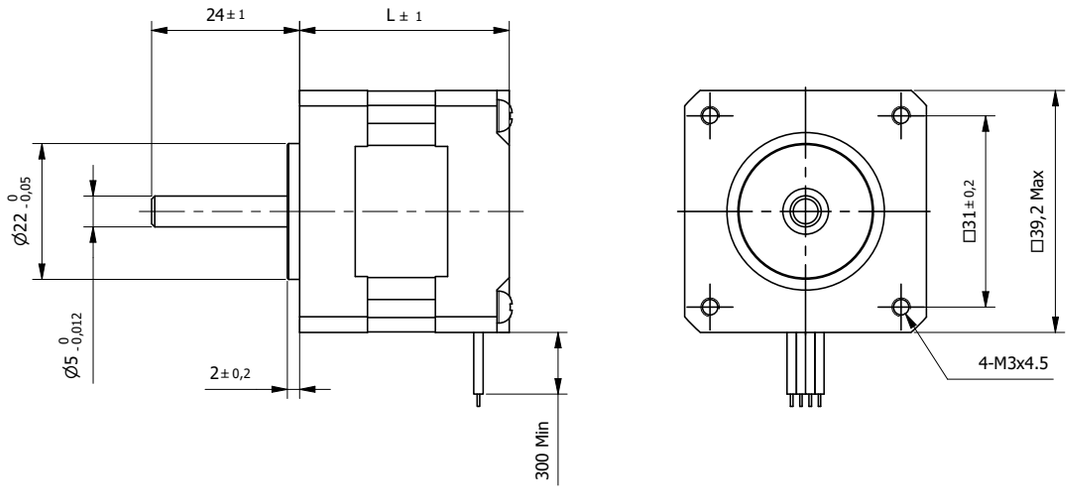
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-



Hybrid Stepper Motor 39SH20

High Torque

□ 39mm

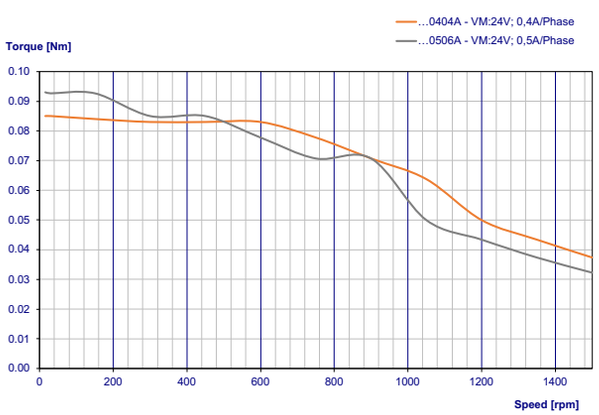


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

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

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

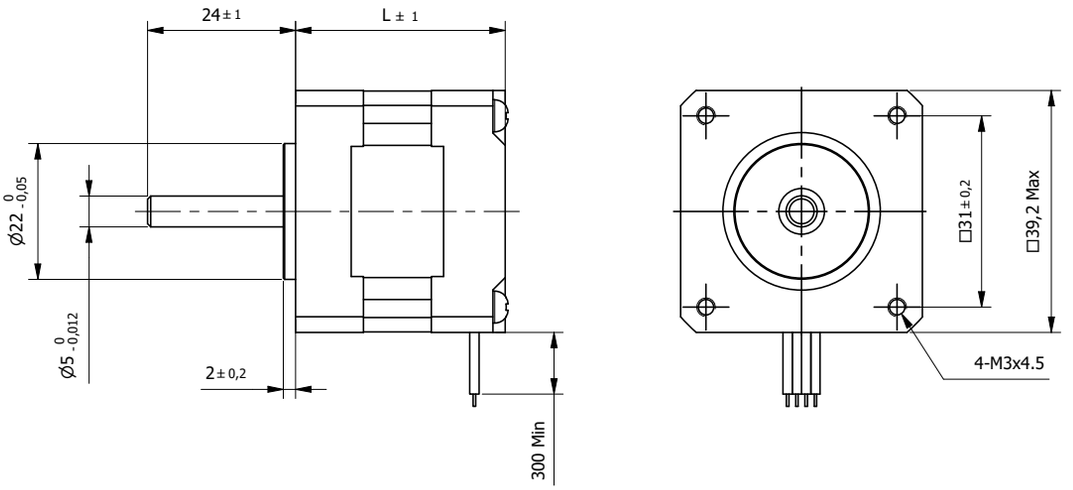
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1007 AWG28	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 39SH34

High Torque

□ 39mm



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

Specification

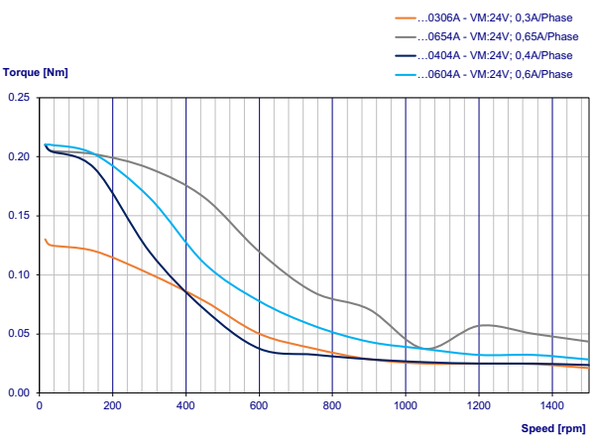
	Model		...0306A	...0654A	...0404A	...0604A
1	Rated Voltage	V	12	4,55	12	9
2	Current/Phase	A	0,3	0,65	0,4	0,6
3	Resistance/Phase	Ω	40	7	30	15
4	Inductance/Phase	mH	20	9,3	43	16
5	Holding Torque	Nm	0,13	0,18	0,21	0,21
6	Rotor Inertia	gcm2	20	20	20	20
7	Detent Torque	Nm	0,012	0,012	0,012	0,012
8	n° of Leads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

Characteristics

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

Connection

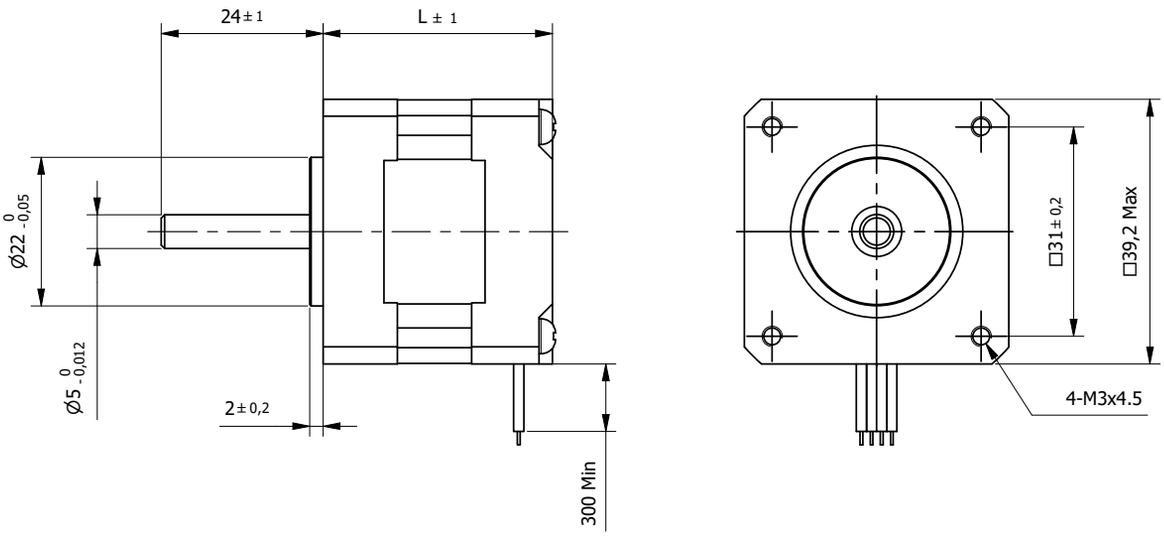
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 39SH38

High Torque

□ 39mm



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

Specification

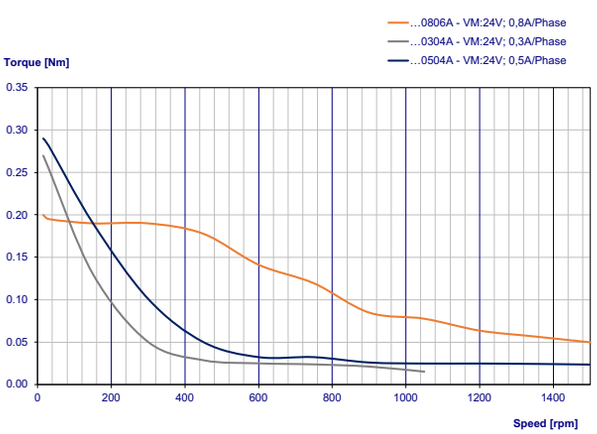
	Model		...0806A	...0304A	...0504A
1	Rated Voltage	V	6	12	11
2	Current/Phase	A	0,8	0,3	0,5
3	Resistance/Phase	Ω	7,5	40	22
4	Inductance/Phase	mH	8	100	40
5	Holding Torque	Nm	0,2	0,28	0,29
6	Rotor Inertia	gcm2	24	24	24
7	Detent Torque	Nm	0,018	0,018	0,018
8	n° of Leads		6	4	4
9	Length (L)	mm	38	38	38
10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

Characteristics

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

Connection

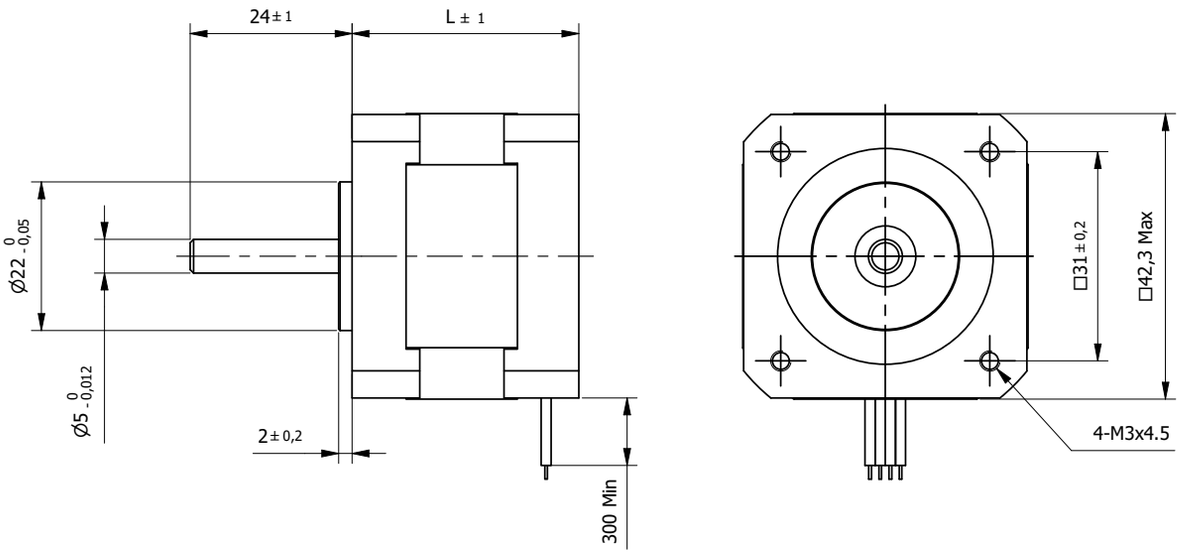
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 42SH33

High Torque

□ 42mm



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

Specification

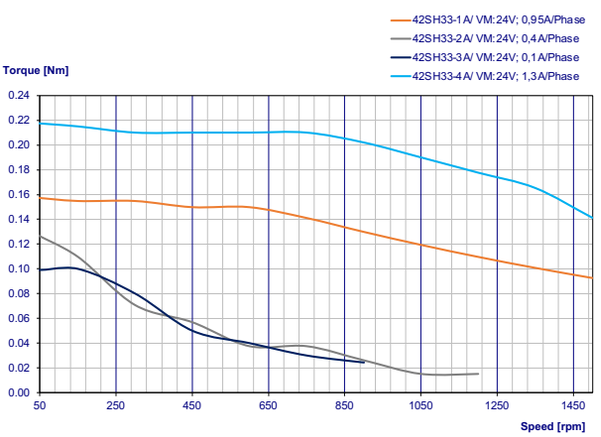
	Model		42SH33-1A	42SH33-2A	42SH33-3A	42SH33-4A
1	Rated Voltage	V	4	9,6	12	2,8
2	Current/Phase	A	0,95	0,4	0,31	1,33
3	Resistance/Phase	Ω	4,2	24	38,5	2,1
4	Inductance/Phase	mH	2,5	15	21	2,5
5	Holding Torque	Nm	0,158	0,158	0,158	0,22
6	Rotor Inertia	gcm2	35	35	35	35
7	Detent Torque	Nm	0,012	0,012	0,012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

Characteristics

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

Connection

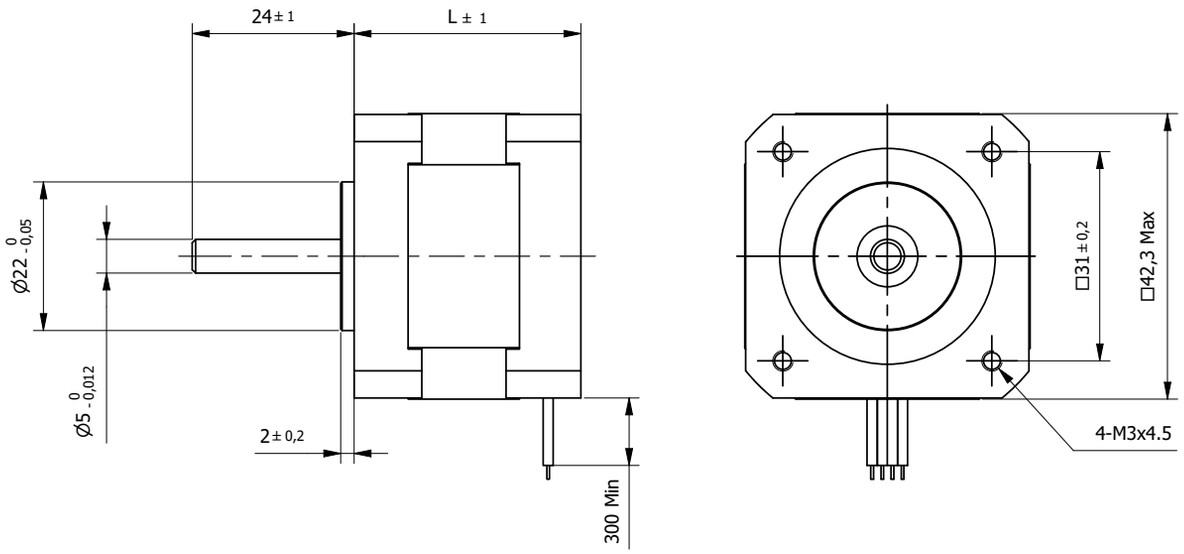
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 42SH38

High Torque

□ 42mm

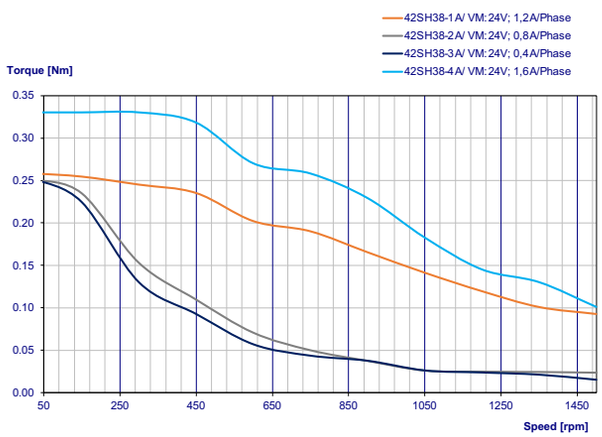


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19.05mm

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

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

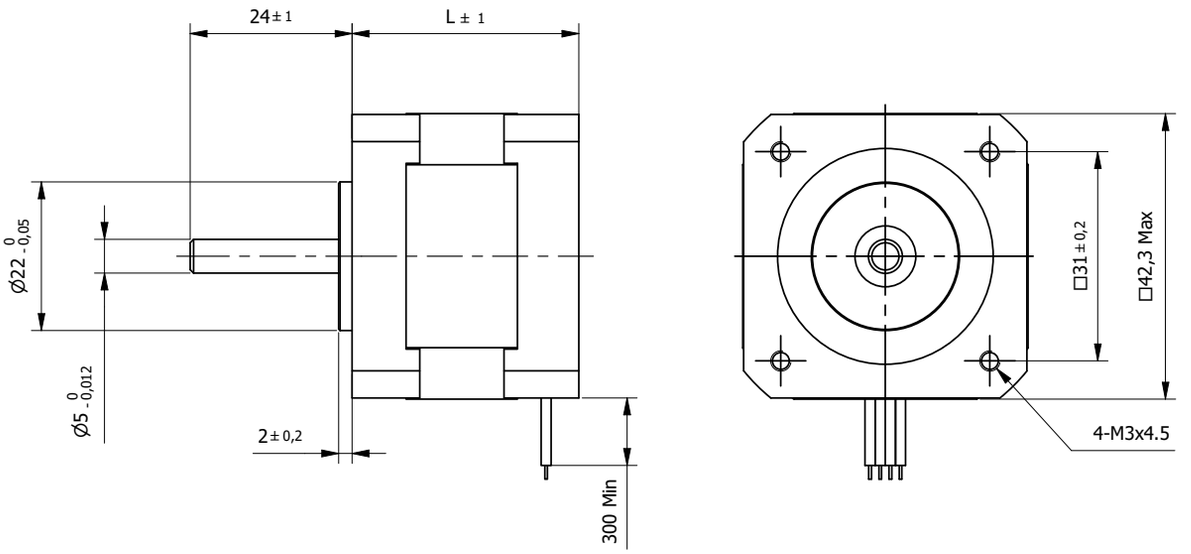
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 42SH47

High Torque

□ 42mm



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

Specification

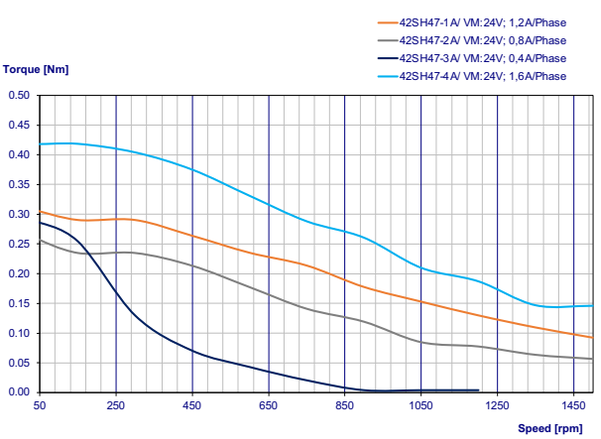
	Model		42SH47-1A	42SH47-2A	42SH47-3A	42SH47-4A
1	Rated Voltage	V	4	6	12	2,8
2	Current/Phase	A	1,2	0,8	0,4	1,68
3	Resistance/Phase	Ω	3,3	7,5	30	1,65
4	Inductance/Phase	mH	2,8	6,3	25	2,8
5	Holding Torque	Nm	0,317	0,317	0,317	0,44
6	Rotor Inertia	gcm2	68	68	68	68
7	Detent Torque	Nm	0,02	0,02	0,02	0,02
8	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 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection

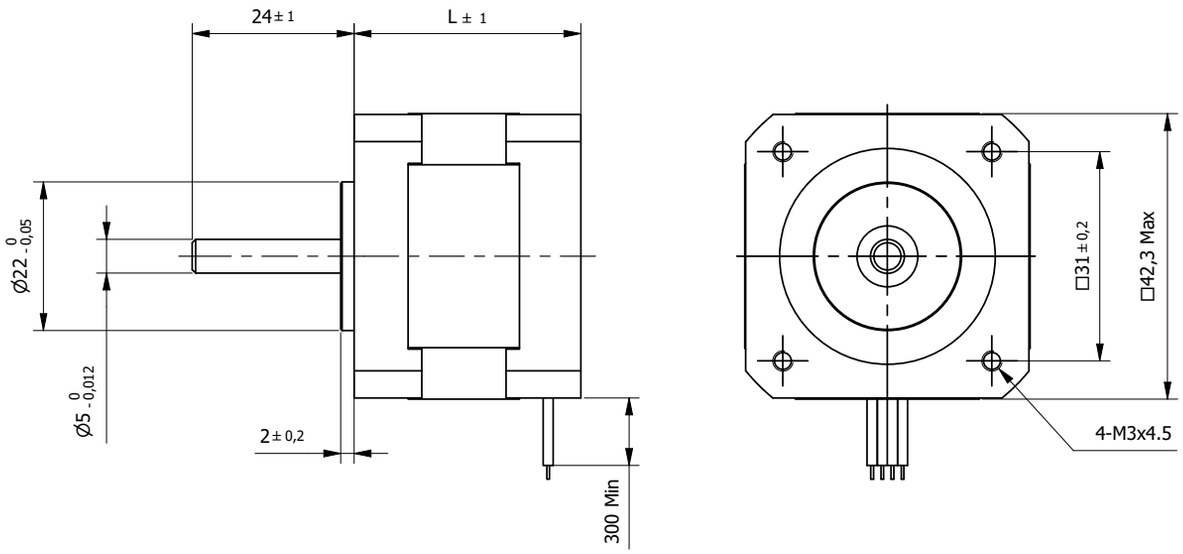
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 42SH60

High Torque

□ 42mm

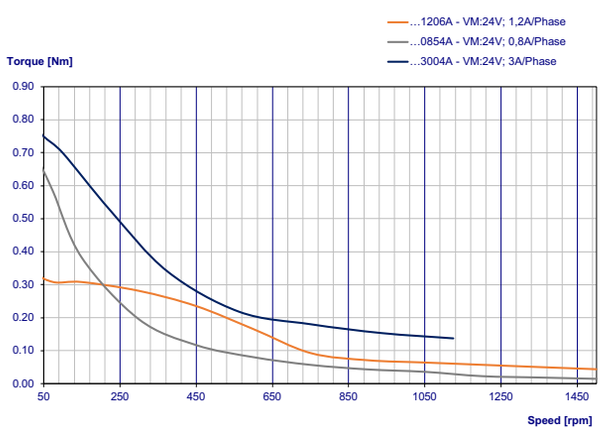


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19.05mm

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

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

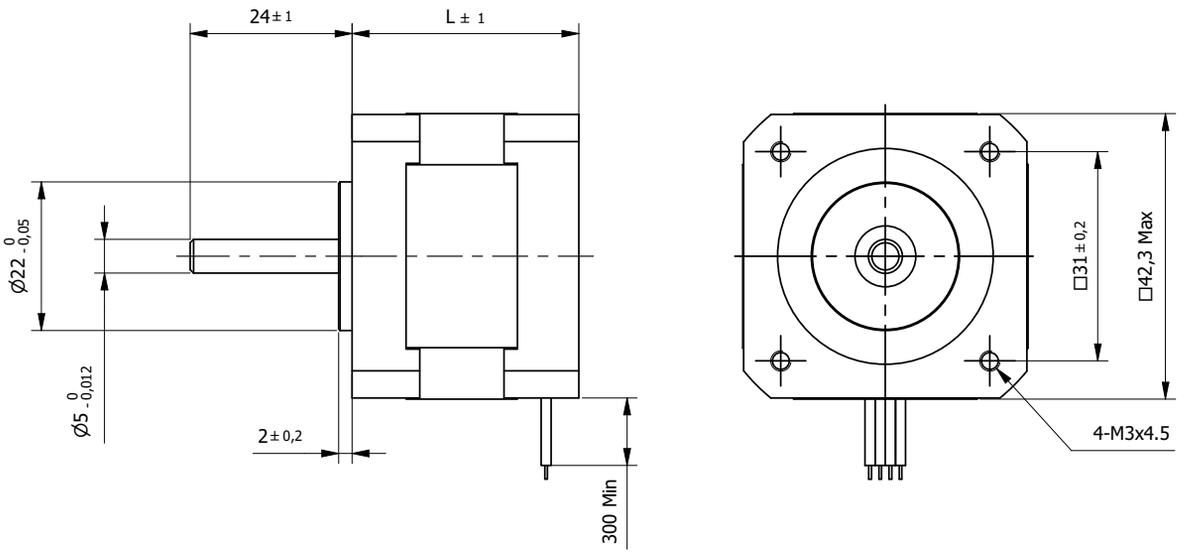
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 42SH33M

High Torque - step angle 0,9°

□ 42mm



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

Specification

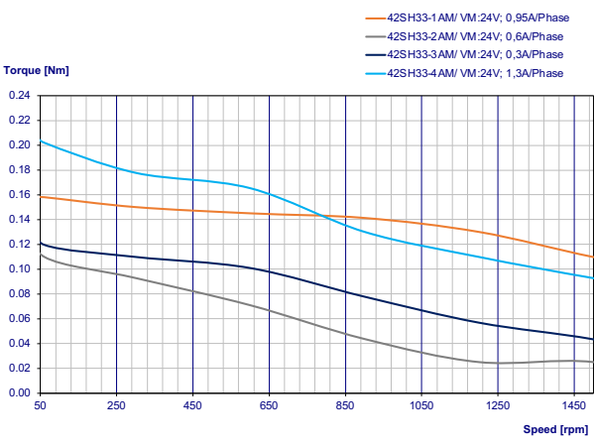
	Model		42SH33-1AM	42SH33-2AM	42SH33-3AM	42SH33-4AM
1	Rated Voltage	V	4	6	12	2,8
2	Current/Phase	A	0,95	0,6	0,31	1,33
3	Resistance/Phase	Ω	4,2	10	38,5	2,1
4	Inductance/Phase	mH	4	11	33	4,2
5	Holding Torque	Nm	0,158	0,158	0,158	0,22
6	Rotor Inertia	gcm2	35	35	35	35
7	Detent Torque	Nm	0,02	0,02	0,02	0,02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

Characteristics

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

Connection

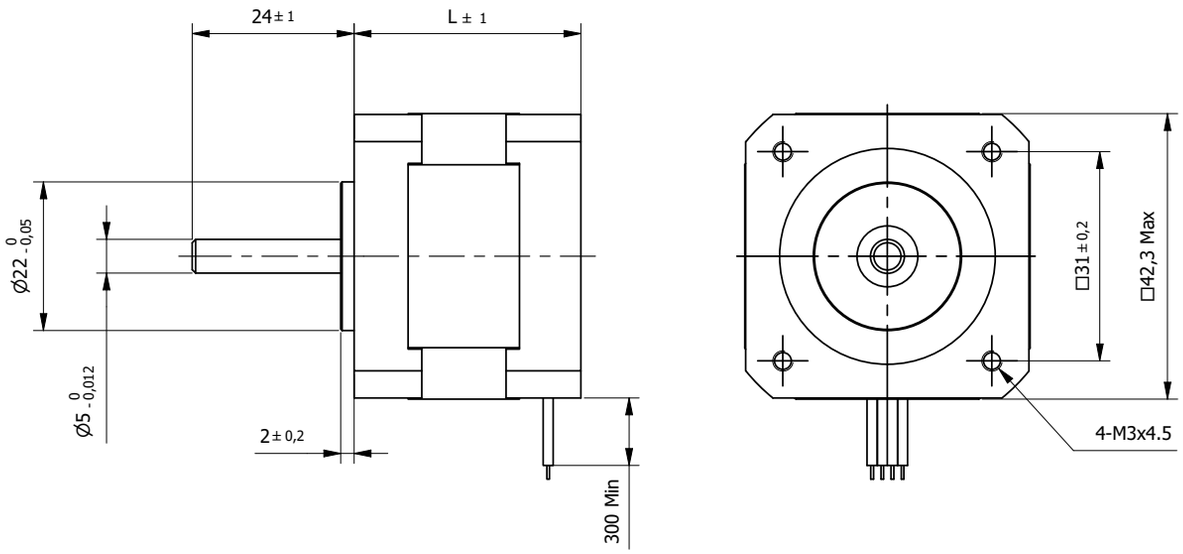
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 42SH38M

High Torque - step angle 0,9°

□ 42mm

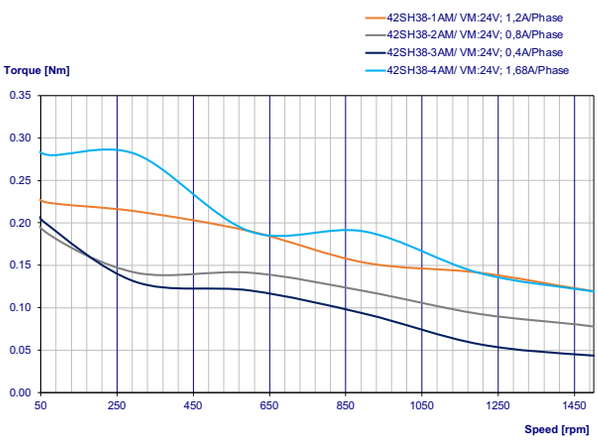


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19.05mm

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

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

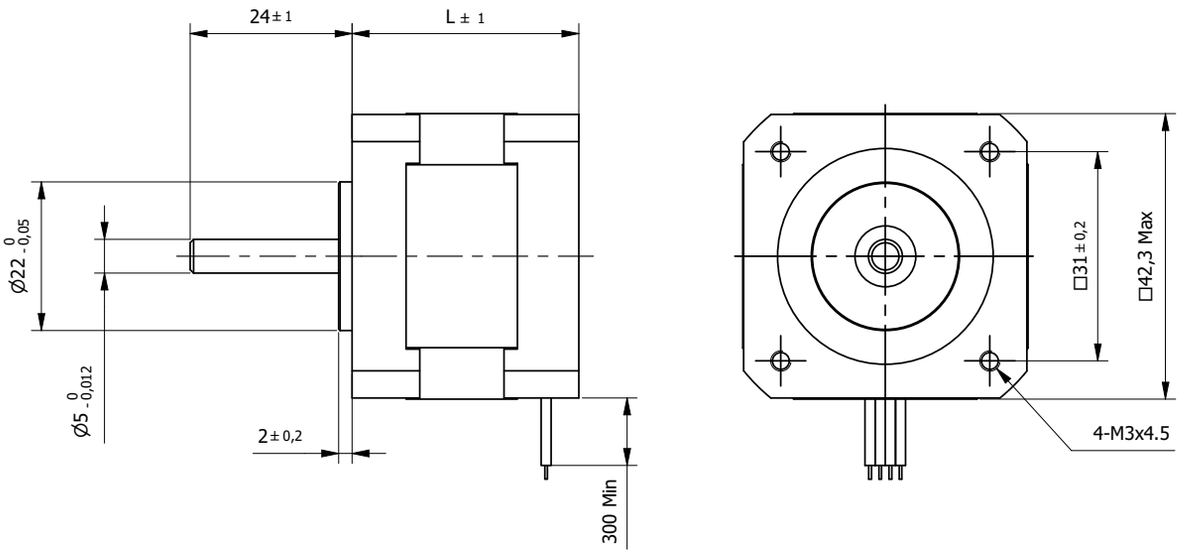
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 42SH47M

High Torque - step angle 0,9°

□ 42mm



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

Specification

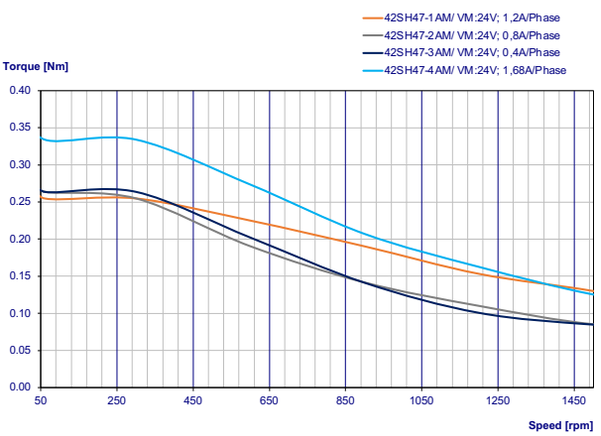
	Model		42SH47-1AM	42SH47-2AM	42SH47-3AM	42SH47-4AM
1	Rated Voltage	V	4	6	12	2,8
2	Current/Phase	A	1,2	0,8	0,4	1,68
3	Resistance/Phase	Ω	3,3	7,5	30	1,65
4	Inductance/Phase	mH	4,9	110	43	50
5	Holding Torque	Nm	0,317	0,317	0,317	0,44
6	Rotor Inertia	gcm2	68	68	68	68
7	Detent Torque	Nm	0,02	0,02	0,02	0,02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

Characteristics

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

Connection

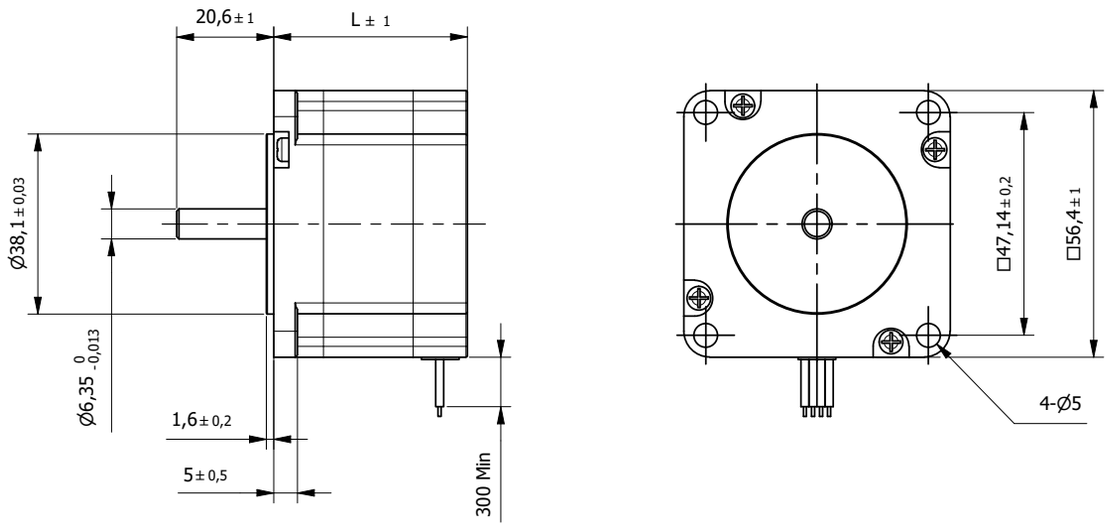
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 57SH41

High Torque

□ 57mm

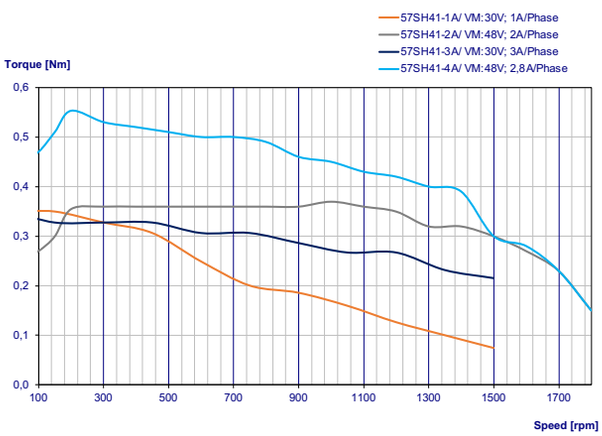


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

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

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

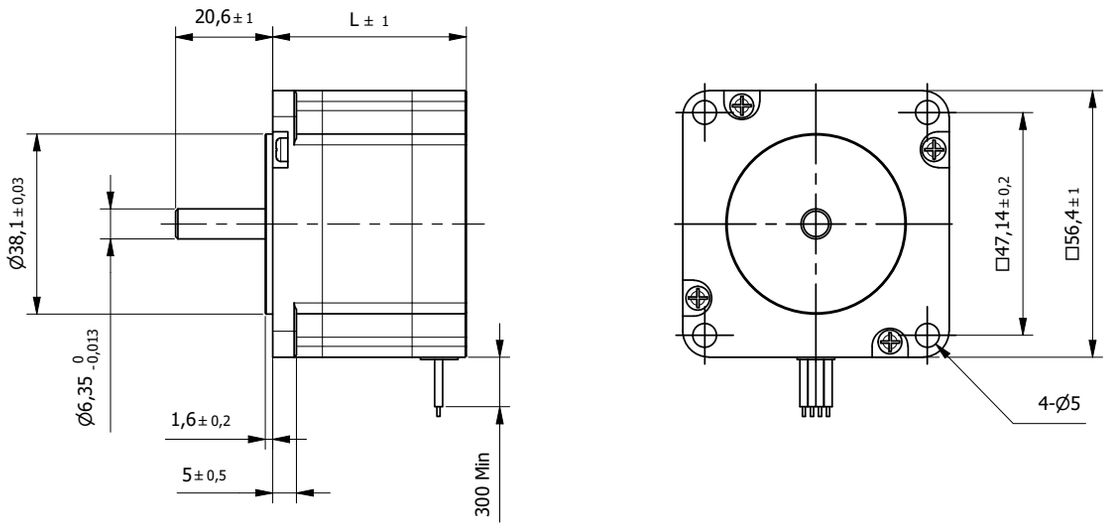
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 57SH51

High Torque

□ 57mm



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

Specification

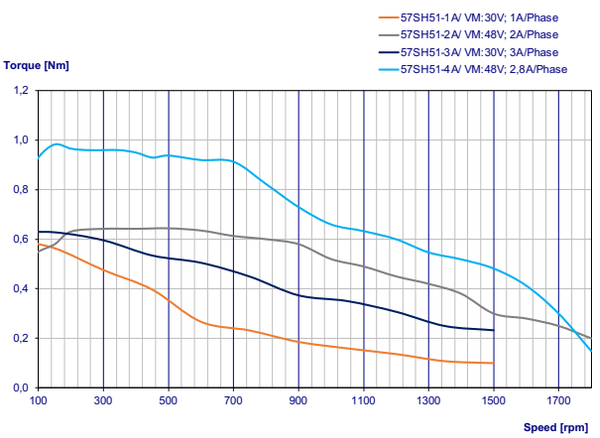
	Model		57SH51-1A	57SH51-2A	57SH51-3A	57SH51-4A
1	Rated Voltage	V	6,6	3,3	2,2	2,3
2	Current/Phase	A	1	2	3	2,8
3	Resistance/Phase	Ω	6,6	1,65	0,74	0,83
4	Inductance/Phase	mH	8,2	2,2	0,9	2,2
5	Holding Torque	Nm	0,72	0,72	0,72	1,01
6	Rotor Inertia	gcm2	275	275	275	275
7	Detent Torque	Nm	0,036	0,036	0,036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

Characteristics

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

Connection

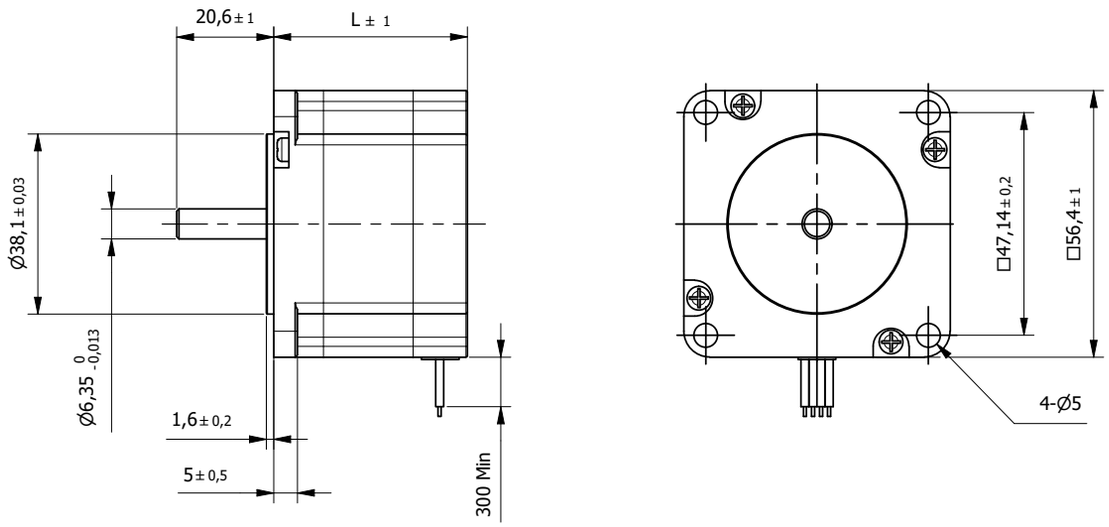
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 57SH56

High Torque

□ 57mm

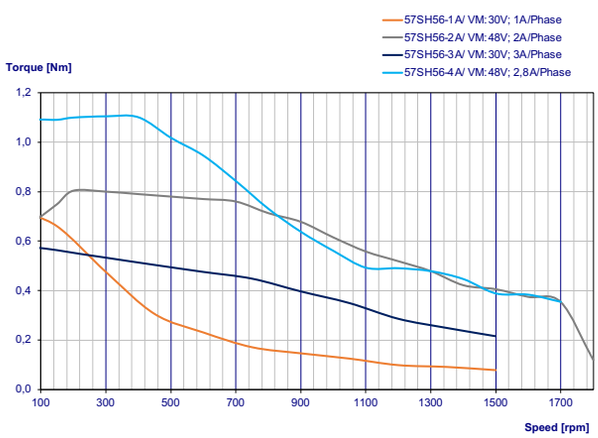


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

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

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

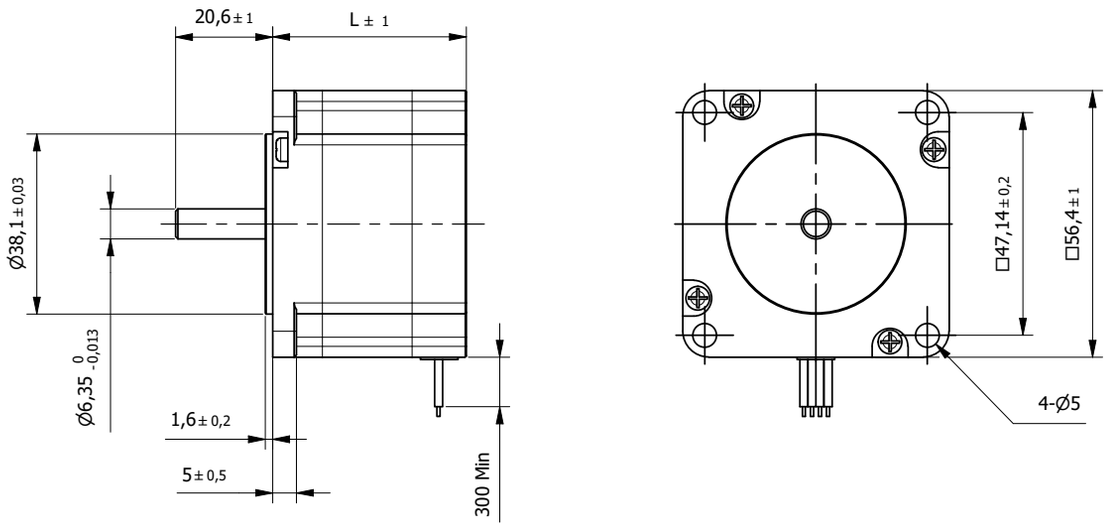
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 57SH76

High Torque

□ 57mm



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

Specification

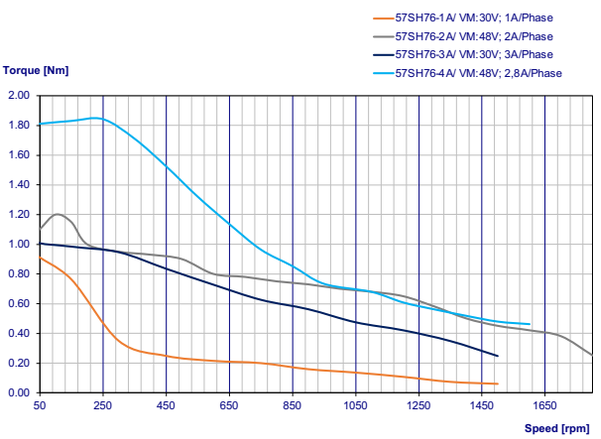
	Model		57SH76-1A	57SH76-2A	57SH76-3A	57SH76-4A
1	Rated Voltage	V	8,6	4,5	3	3,2
2	Current/Phase	A	1	2	3	2,8
3	Resistance/Phase	Ω	8,6	2,25	1	1,13
4	Inductance/Phase	mH	14	3,6	1,6	3,6
5	Holding Torque	Nm	1,35	1,35	1,35	1,89
6	Rotor Inertia	gcm2	480	480	480	480
7	Detent Torque	Nm	0,068	0,068	0,068	0,068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

Characteristics

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

Connection

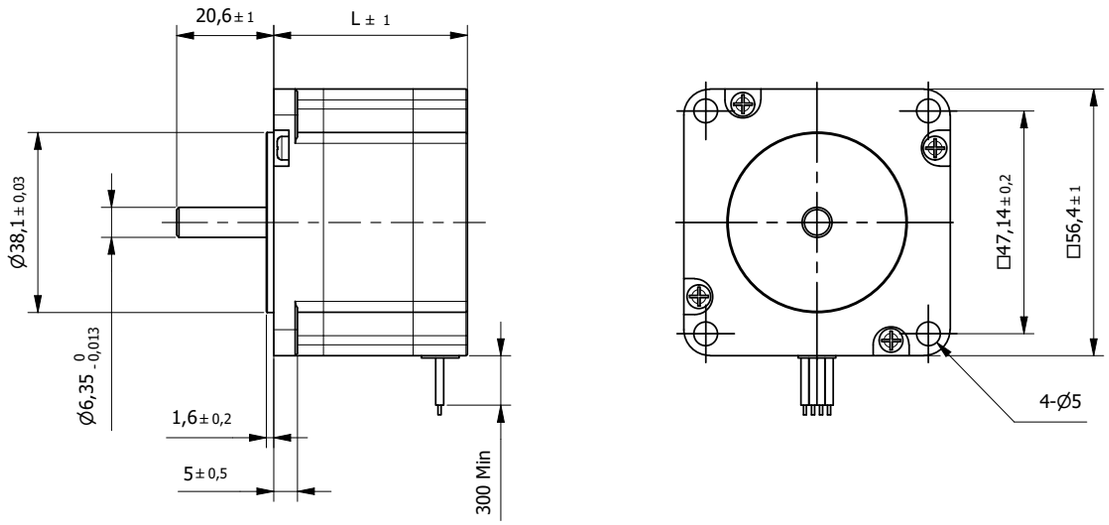
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 57SH41M

High Torque - step angle 0,9°

□ 57mm



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

Specification

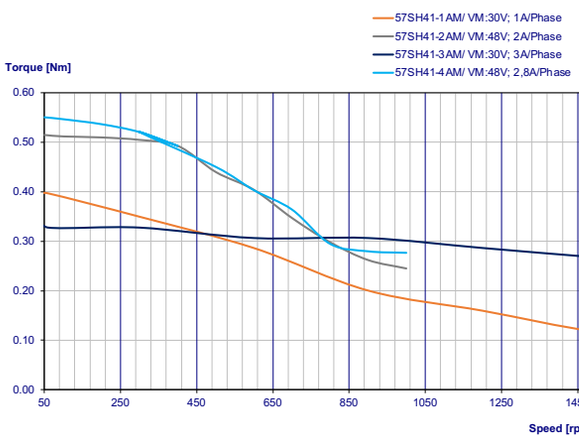
	Model		57SH41-1AM	57SH41-2AM	57SH41-3AM	57SH41-4AM
1	Rated Voltage	V	5,7	2,8	1,9	2
2	Current/Phase	A	1	2	3	2,8
3	Resistance/Phase	Ω	5,7	1,4	0,63	0,7
4	Inductance/Phase	mH	8	2,2	1	2,2
5	Holding Torque	Nm	0,39	0,39	0,39	0,55
6	Rotor Inertia	gcm2	120	120	120	120
7	Detent Torque	Nm	0,021	0,021	0,021	0,021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

Characteristics

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

Connection

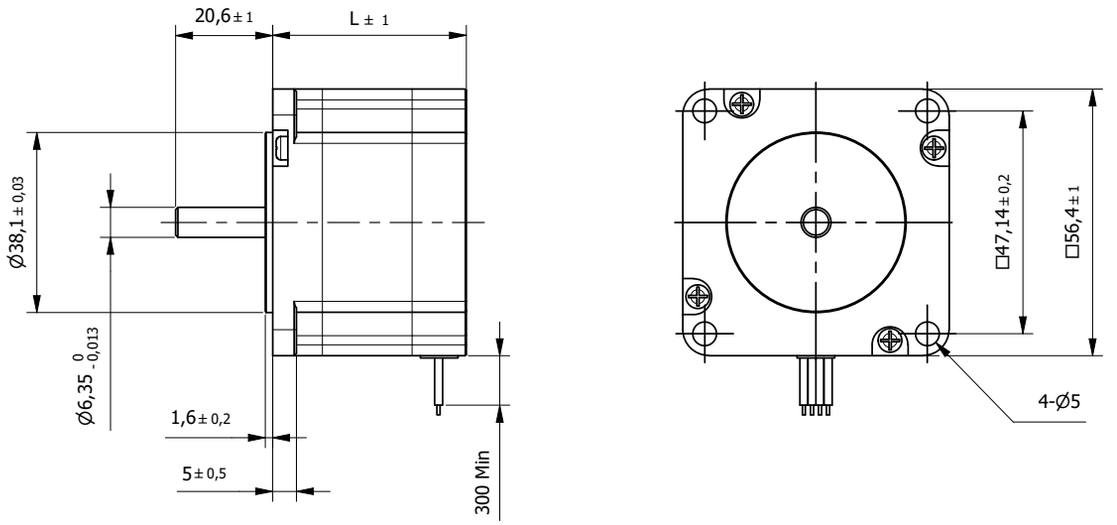
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 57SH56M

High Torque - step angle 0,9°

□ 57mm

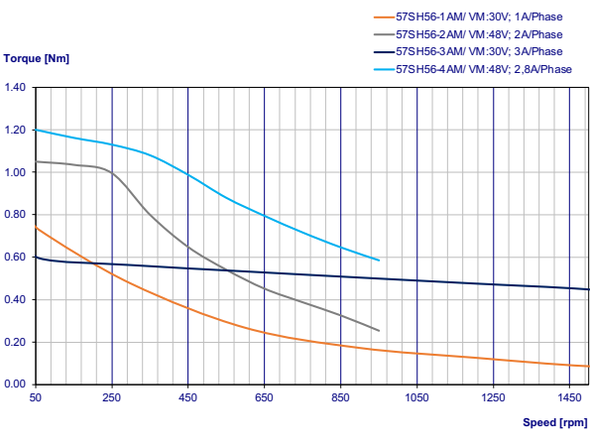


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

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

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

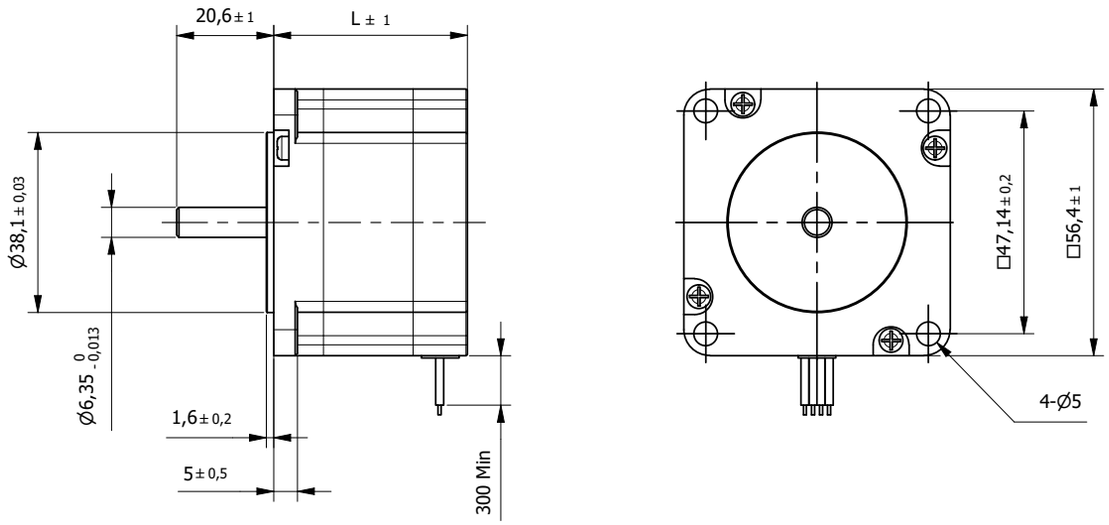
Connection			
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 57SH76M

High Torque - step angle 0,9°

□ 57mm



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

Specification

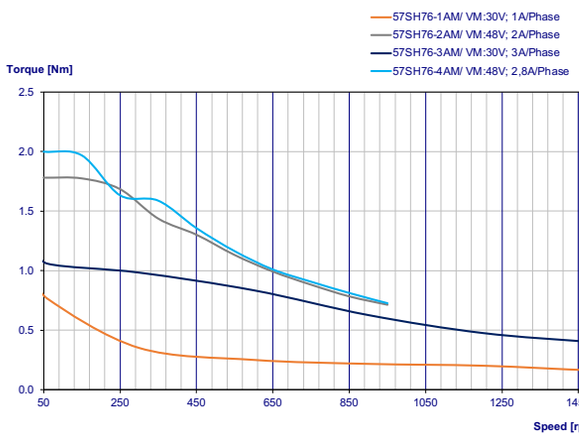
	Model		57SH76-1AM	57SH76-2AM	57SH76-3AM	57SH76-4AM
1	Rated Voltage	V	8,6	4,5	3	3,2
2	Current/Phase	A	1	2	3	2,8
3	Resistance/Phase	Ω	8,6	2,25	1	1,13
4	Inductance/Phase	mH	23	5,6	2,6	5,6
5	Holding Torque	Nm	1,35	1,35	1,35	1,8
6	Rotor Inertia	gcm2	480	480	480	480
7	Detent Torque	Nm	0,068	0,068	0,068	0,068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

Characteristics

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

Connection

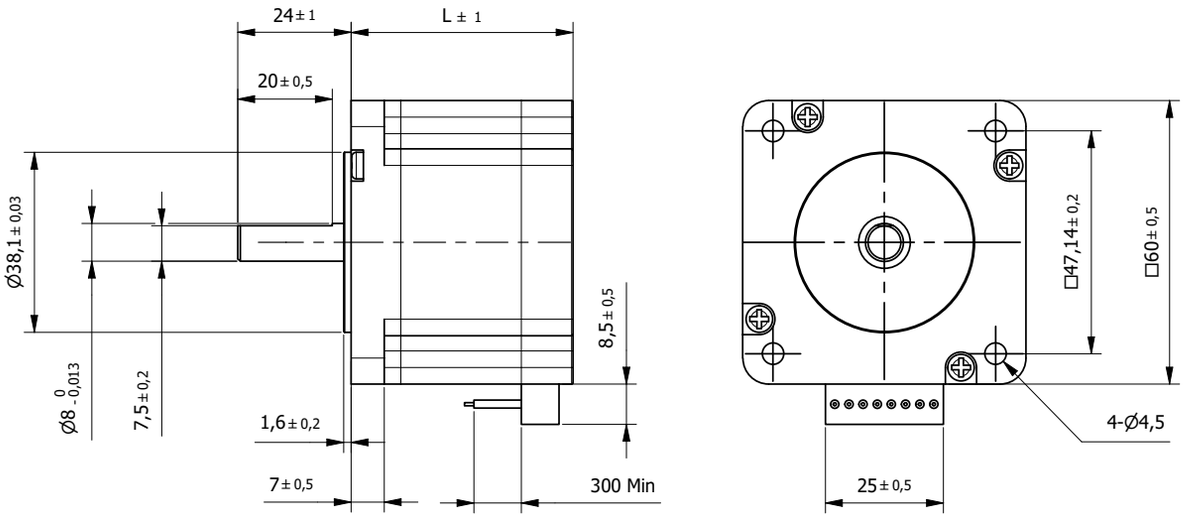
Lead n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-
	Unipolar motor		
5	Yellow	|	COM Phase A
6	White	|	COM Phase B



Hybrid Stepper Motor 60SH45

High Torque

□ 60mm



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

Specification

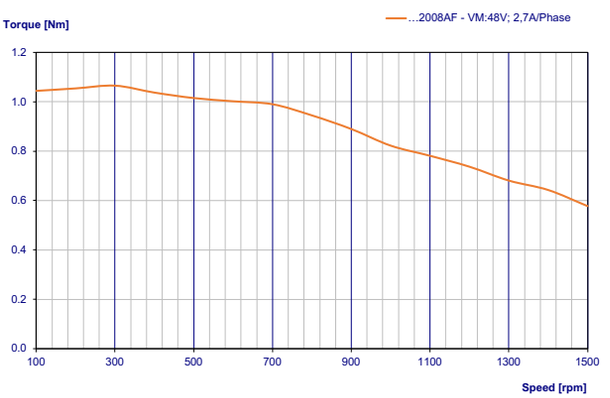
	Model		60SH45-2008AF		
			Unipolar	Parallel	Series
1	Rated Voltage	V	3	2,1	4,2
2	Current/Phase	A	2	2,8	1,4
3	Resistance/Phase	Ω	1,5	0,75	3
4	Inductance/Phase	mH	2	2	8
5	Holding Torque	Nm	0,78	1,1	1,1
6	Rotor Inertia	gcm2	275	275	275
7	Detent Torque	Nm	0,05	0,05	0,05
8	n° of Leads		8	8	8
9	Length (L)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

Characteristics

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

Connection

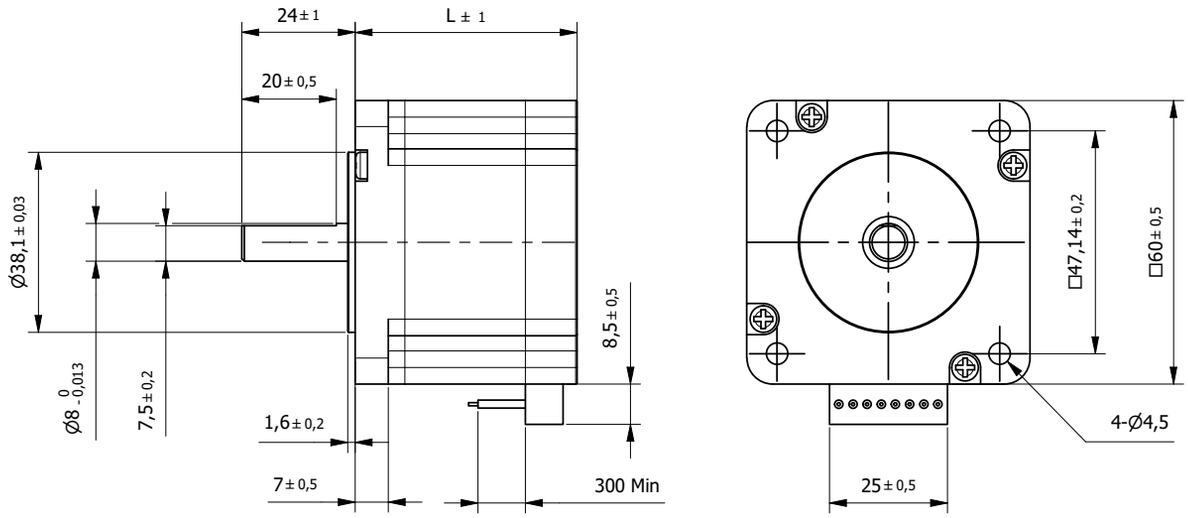
Lead n°	Color	Gauge	Function
1	Blue/White	UL1430 AWG22	Phase A
2	Blue	|	Phase A-
3	Red/White	|	Phase C-
4	Red	|	Phase C
5	Green/White	|	Phase B
6	Green	|	Phase B-
7	Black/White	|	Phase D -
8	Black	|	Phase D



Hybrid Stepper Motor 60SH56

High Torque

□ 60mm



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

Specification

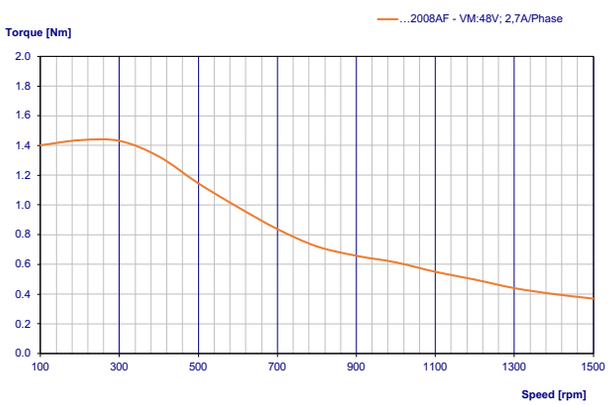
	Model		60SH56-2008AF		
			Unipolar	Parallel	Series
1	Rated Voltage	V	3,6	2,52	5,04
2	Current/Phase	A	2	2,8	1,4
3	Resistance/Phase	Ω	1,8	0,9	3,6
4	Inductance/Phase	mH	3,6	3,6	14,4
5	Holding Torque	Nm	1,17	1,65	1,65
6	Rotor Inertia	gcm2	400	400	400
7	Detent Torque	Nm	0,07	0,07	0,07
8	n° of Leads		8	8	8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

Characteristics

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

Connection

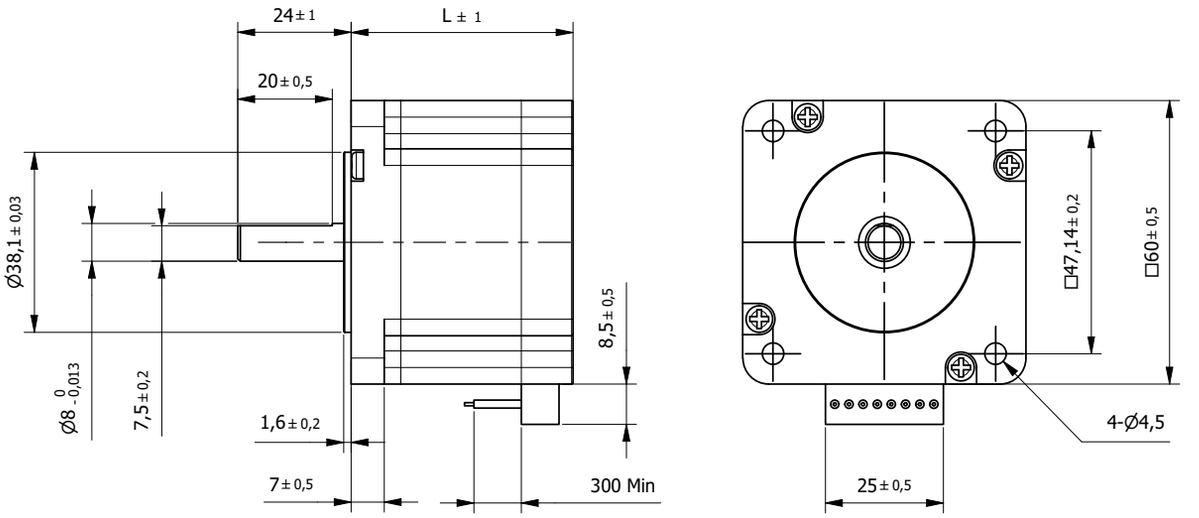
Lead n°	Color	Gauge	Function
1	Blue/White	UL1430 AWG22	Phase A
2	Blue	|	Phase A-
3	Red/White	|	Phase C-
4	Red	|	Phase C
5	Green/White	|	Phase B
6	Green	|	Phase B-
7	Black/White	|	Phase D -
8	Black	|	Phase D



Hybrid Stepper Motor 60SH65

High Torque

□ 60mm



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

Specification

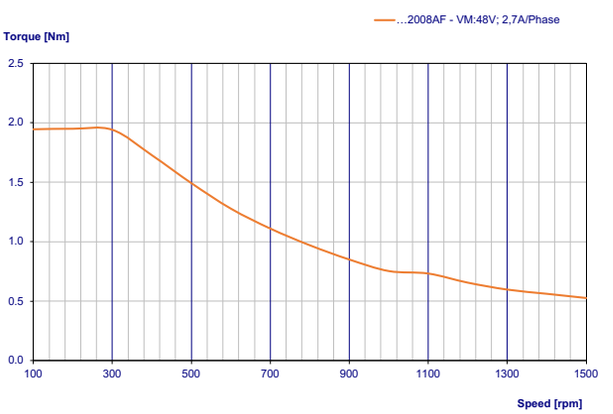
	Model		60SH65-2008AF		
			Unipolar	Parallel	Series
1	Rated Voltage	V	4,8	3,36	6,72
2	Current/Phase	A	2	2,8	1,4
3	Resistance/Phase	Ω	2,4	1,2	4,8
4	Inductance/Phase	mH	4,6	4,6	18,4
5	Holding Torque	Nm	1,5	2,1	2,1
6	Rotor Inertia	gcm2	570	570	570
7	Detent Torque	Nm	0,09	0,09	0,09
8	n° of Leads		8	8	8
9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

Characteristics

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

Connection

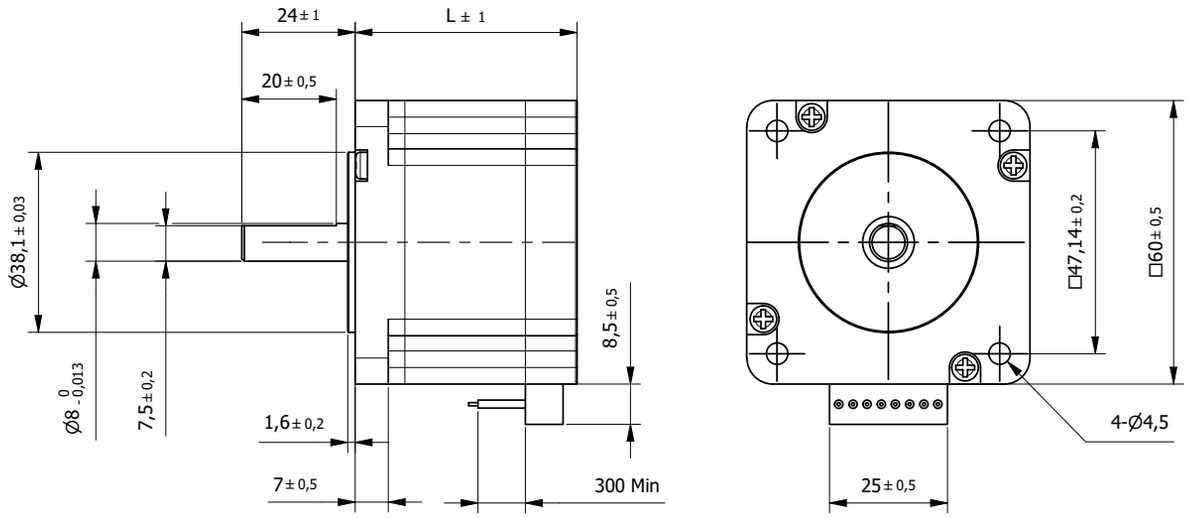
Lead n°	Color	Gauge	Function
1	Blue/White	UL1430 AWG22	Phase A
2	Blue	|	Phase A-
3	Red/White	|	Phase C-
4	Red	|	Phase C
5	Green/White	|	Phase B
6	Green	|	Phase B-
7	Black/White	|	Phase D -
8	Black	|	Phase D



Hybrid Stepper Motor 60SH86

High Torque

□ 60mm



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

Specification

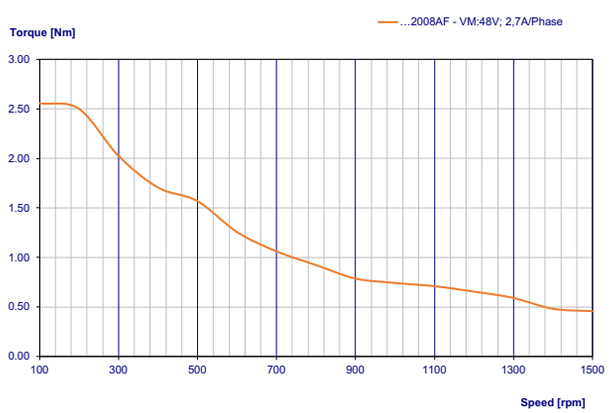
	Model		60SH86-2008AF		
			Unipolar	Parallel	Series
1	Rated Voltage	V	6	4,17	8,4
2	Current/Phase	A	2	2,8	1,4
3	Resistance/Phase	Ω	3	1,5	6
4	Inductance/Phase	mH	6,8	6,8	27,2
5	Holding Torque	Nm	2,2	3,1	3,1
6	Rotor Inertia	gcm2	840	840	840
7	Detent Torque	Nm	0,1	0,1	0,1
8	n° of Leads		8	8	8
9	Length (L)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

Characteristics

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

Connection

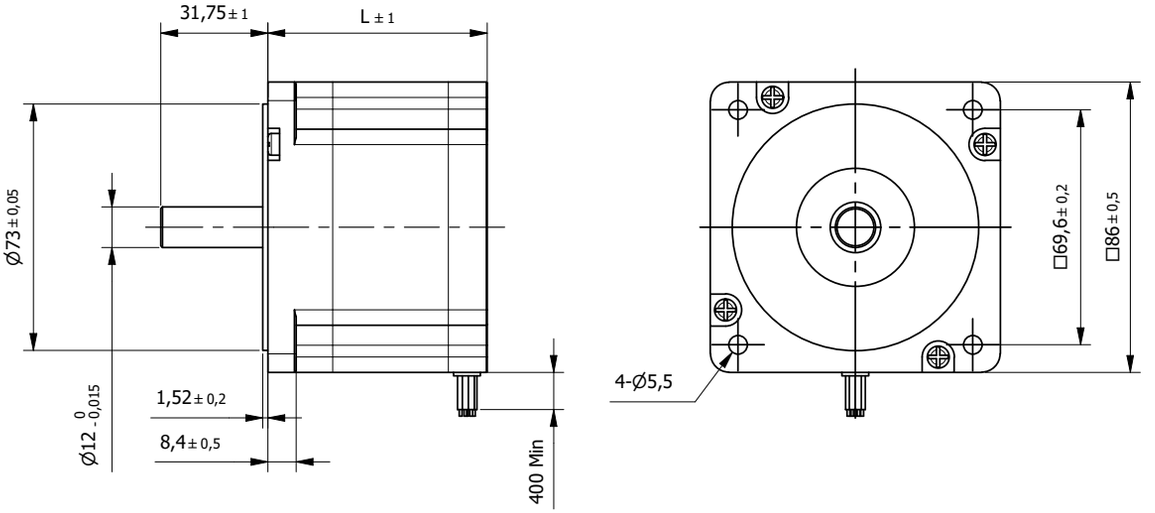
Lead n°	Color	Gauge	Function
1	Blue/White	UL1430 AWG22	Phase A
2	Blue	|	Phase A-
3	Red/White	|	Phase C-
4	Red	|	Phase C
5	Green/White	|	Phase B
6	Green	|	Phase B-
7	Black/White	|	Phase D -
8	Black	|	Phase D



Hybrid Stepper Motor 86SH65

High Torque

□ 86mm



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

Specification

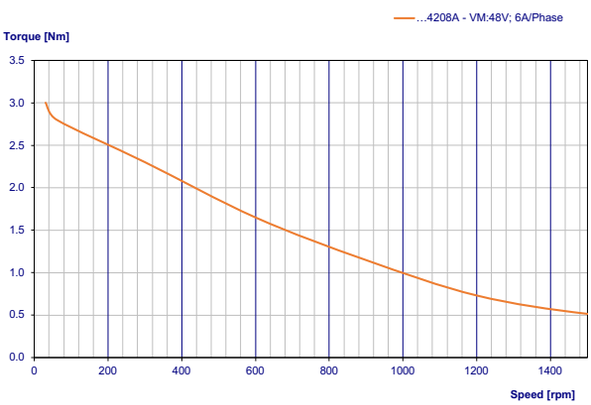
	Model		86SH65-4208A		
			Unipolar	Parallel	Series
1	Rated Voltage	V	2,39	1,65	3,42
2	Current/Phase	A	4,2	5,9	3
3	Resistance/Phase	Ω	0,57	0,28	1,14
4	Inductance/Phase	mH	1,7	1,7	6,8
5	Holding Torque	Nm	2,6	3,4	3,4
6	Rotor Inertia	gcm2	1000	1000	1000
7	Detent Torque	Nm	0,08	0,08	0,08
8	n° of Leads		8	8	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 sec.)	1200 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection

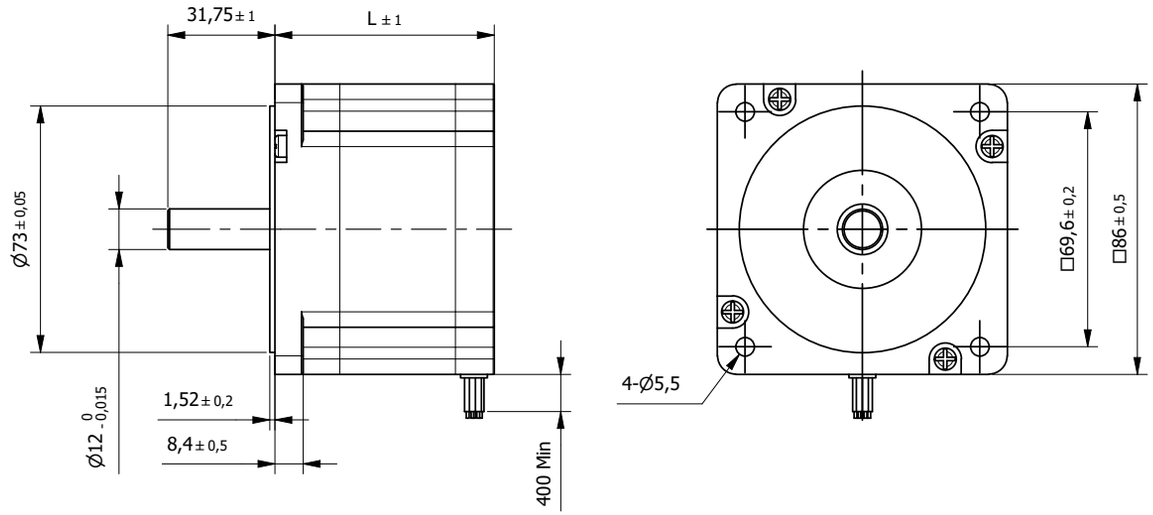
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG20	Phase A
2	Yellow	|	Phase A-
3	Blue	|	Phase C-
4	Black	|	Phase C
5	White	|	Phase B
6	Orange	|	Phase B-
7	Brown	|	Phase D -
8	Green	|	Phase D



Hybrid Stepper Motor 86SH80

High Torque

□ 86mm

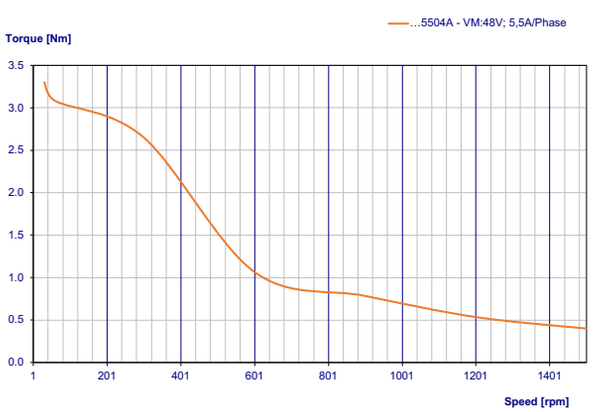


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification			
	Model		...5504A
1	Rated Voltage	V	2,3
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 sec.)	1200 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

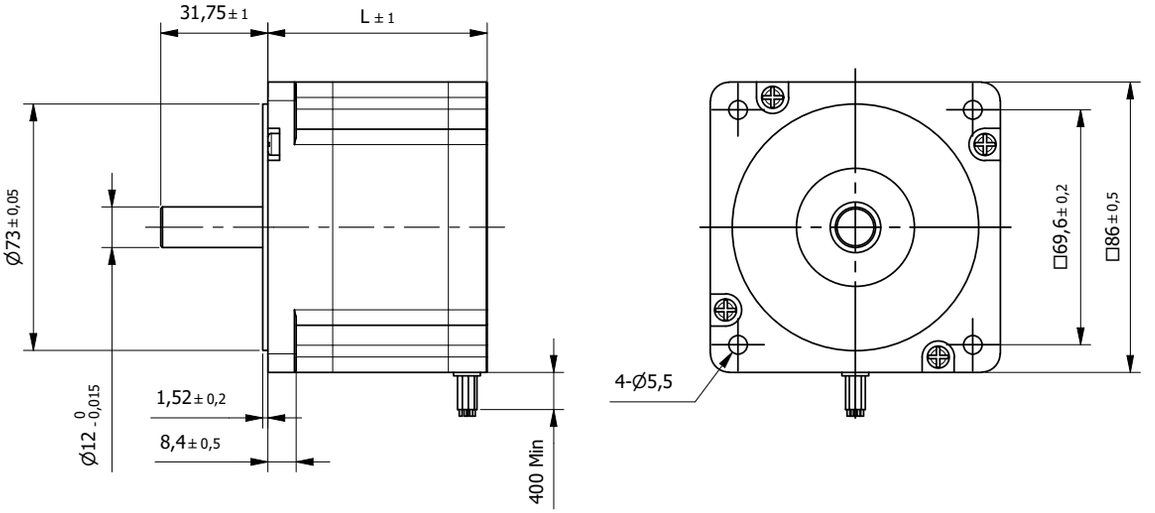
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG20	Phase A
2	White	|	Phase A-
3	Yellow	|	Phase B
4	Green	|	Phase B-



Hybrid Stepper Motor 86SH96

High Torque

□ 86mm

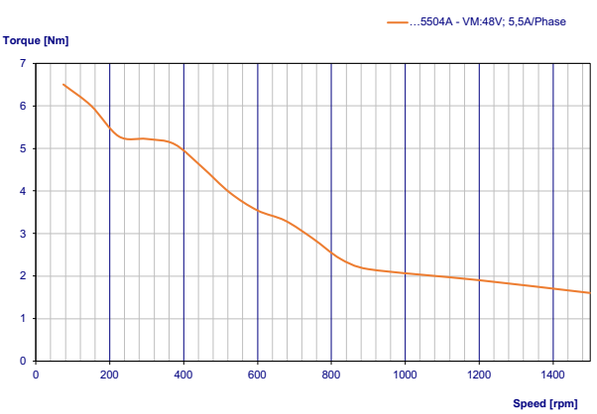


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

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

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

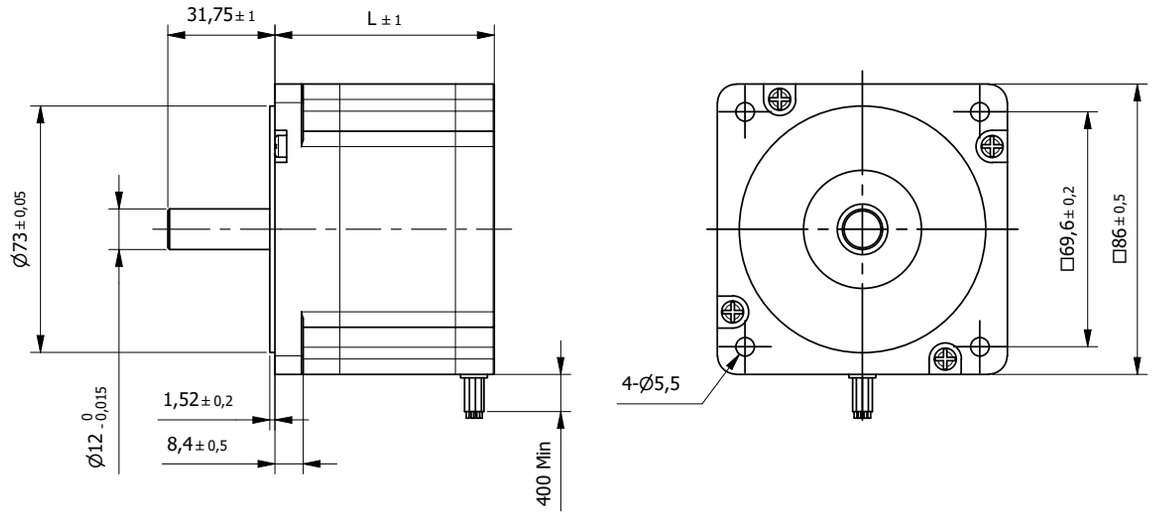
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG20	Phase A
2	White	|	Phase A-
3	Yellow	|	Phase B
4	Green	|	Phase B-



Hybrid Stepper Motor 86SH118

High Torque

□ 86mm

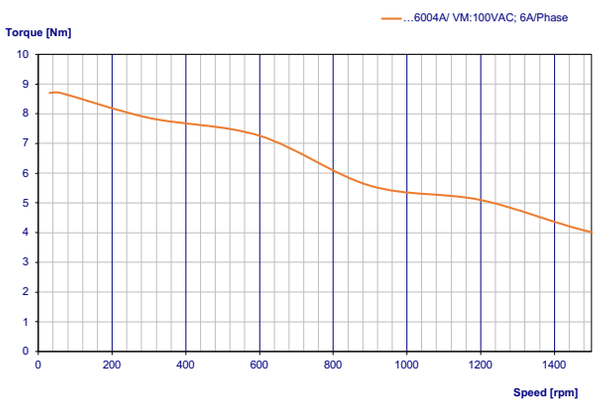


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

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

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

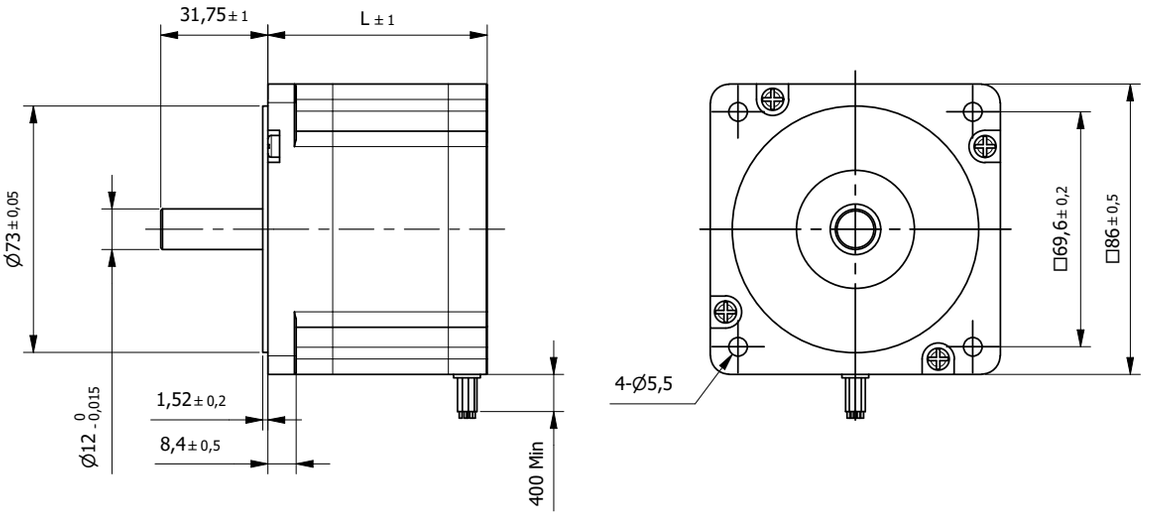
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG20	Phase A
2	White	|	Phase A-
3	Yellow	|	Phase B
4	Green	|	Phase B-



Hybrid Stepper Motor 86SH156

High Torque

□ 86mm

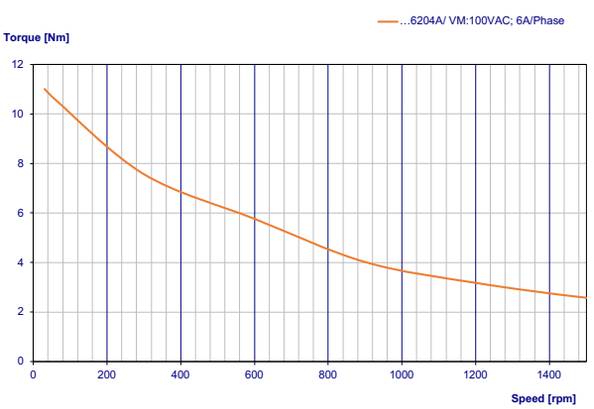


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

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

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

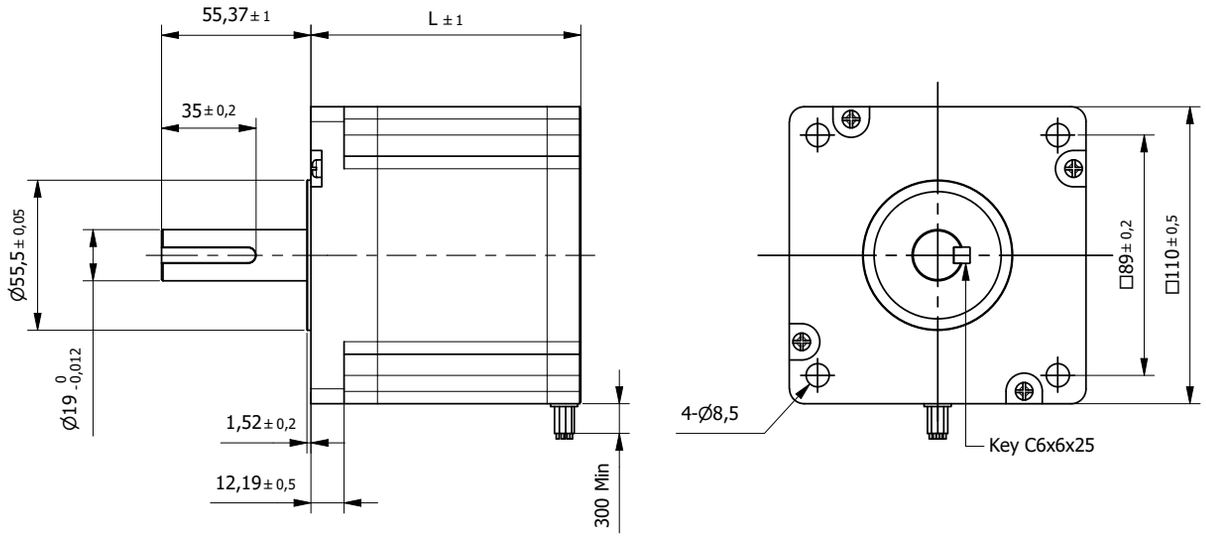
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG20	Phase A
2	White	|	Phase A-
3	Yellow	|	Phase B
4	Green	|	Phase B-



Hybrid Stepper Motor 110SH

High Torque

□ 110mm

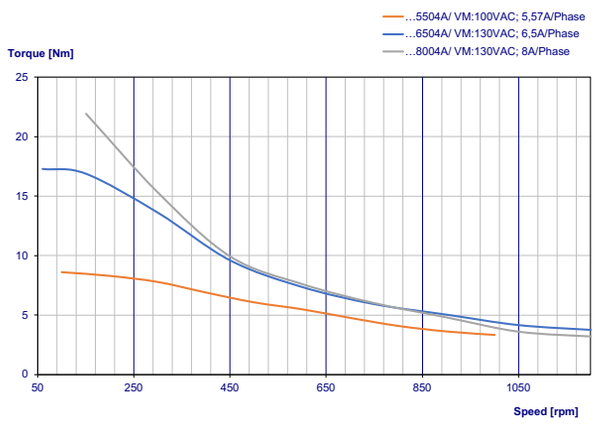


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

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

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

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





Hybrid Stepper motors

STC series - Integrated Connector

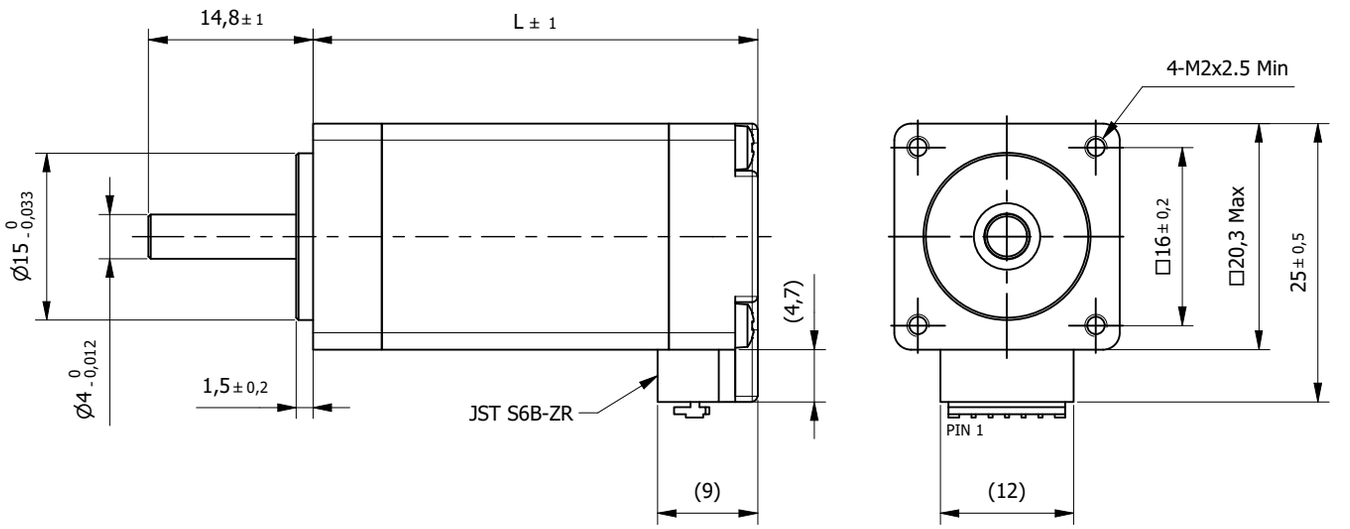
Hybrid Stepper motors - STC Connector series	Torque* (Nm)	
20STC	0,022...0,036	298
28STC32	0,08	299
28STC40	0,13	300
28STC51	0,18	301
57STC41	0,6	302
57STC56	1,4	303
57STC76	2,3	304

* Holding Torque

Hybrid Stepper Motor 20STC

High Torque with Connector

□ 20mm



Specification

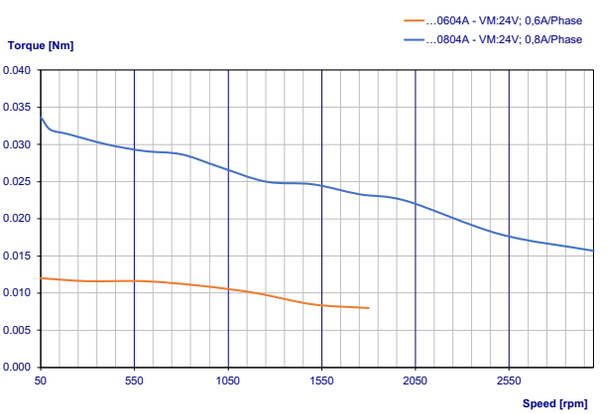
	Model		...33-0604A	...40-0804A
1	Rated Voltage	V	3,84	4,32
2	Current/Phase	A	0,6	0,8
3	Resistance/Phase	Ω	6,4	5,6
4	Inductance/Phase	mH	2,6	2,3
5	Holding Torque	Nm	0,022	0,036
6	Rotor Inertia	gcm2	2	3,6
7	Detent Torque	Nm	0,002	0,002
8	n° of Leads		4	4
9	Length (L)	mm	33	40
10	Weight	Kg	0,06	0,08

Characteristics

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

Connection

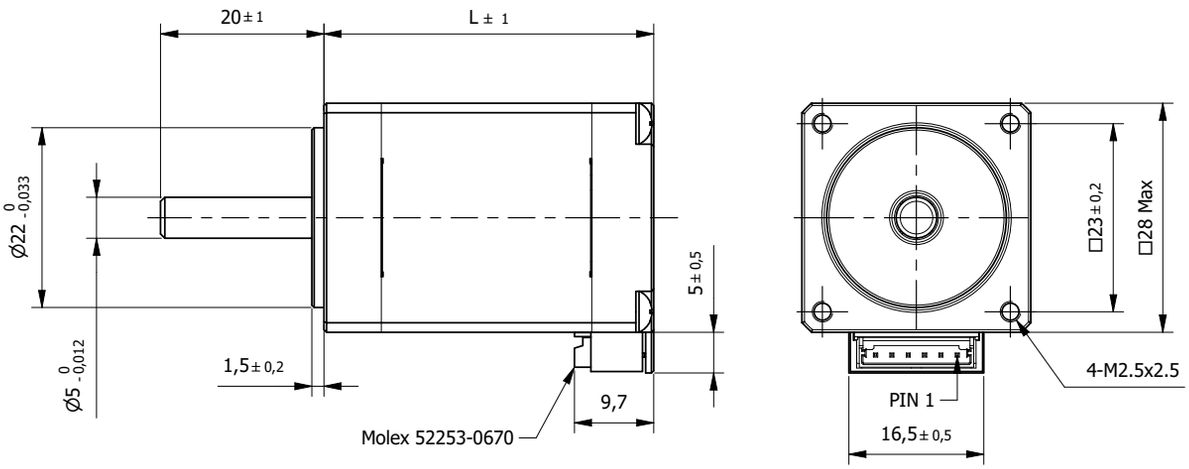
Pin n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
2	Yellow	|	COM Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
5	White	|	COM Phase B
6	Blue	|	Phase B-



Hybrid Stepper Motor 28STC32

High Torque with Connector

□ 28mm

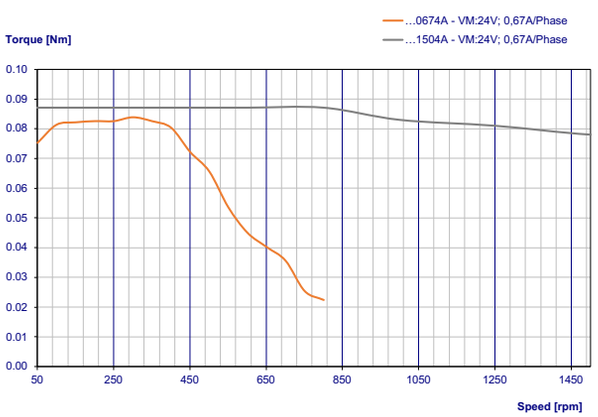


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

Specification				
	Model		...0674A	...1504A
1	Rated Voltage	V	4,2	1,95
2	Current/Phase	A	0,67	1,5
3	Resistance/Phase	Ω	6,2	1,3
4	Inductance/Phase	mH	5,76	1
5	Holding Torque	Nm	0,08	0,08
6	Rotor Inertia	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 (5mm from front flange)	28N
Max Axial Force	7N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

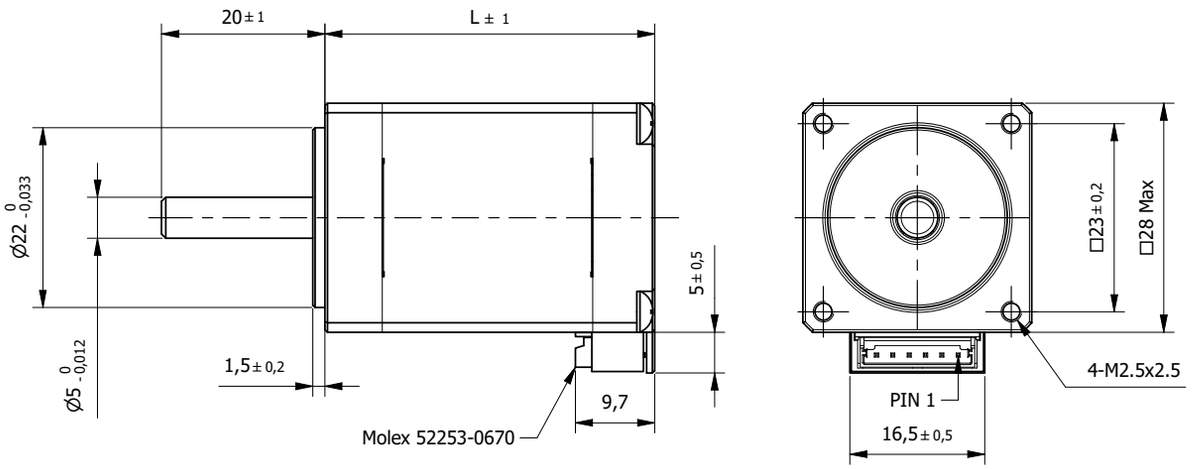
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Yellow	|	COM Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
5	White	|	COM Phase B
6	Blue	|	Phase B-



Hybrid Stepper Motor 28STC40

High Torque with Connector

□ 28mm



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

Specification

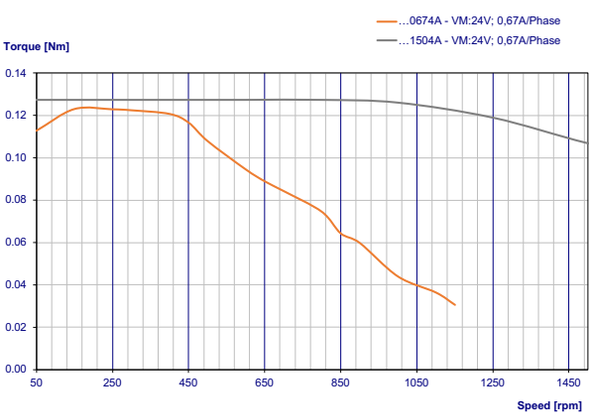
	Model		...0674A	...1504A
1	Rated Voltage	V	4,9	2,2
2	Current/Phase	A	0,67	1,5
3	Resistance/Phase	Ω	7,3	1,45
4	Inductance/Phase	mH	6,52	1,25
5	Holding Torque	Nm	0,13	0,13
6	Rotor Inertia	gcm2	12	12
7	Detent Torque	Nm	0,006	0,006
8	n° of Leads		4	4
9	Length (L)	mm	40	40
10	Weight	Kg	0,14	0,14

Characteristics

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

Connection

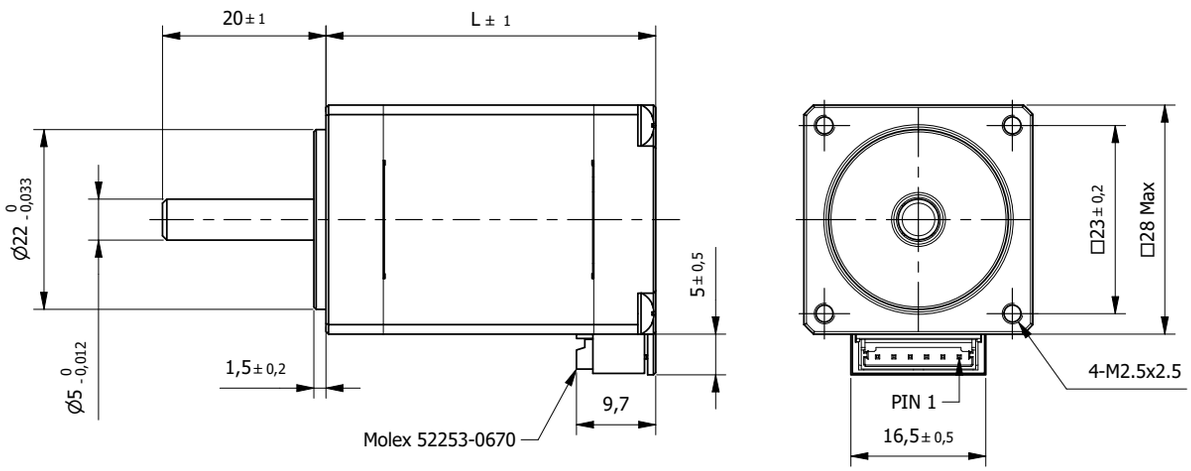
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Yellow	|	COM Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
5	White	|	COM Phase B
6	Blue	|	Phase B-



Hybrid Stepper Motor 28STC51

High Torque with Connector

□ 28mm

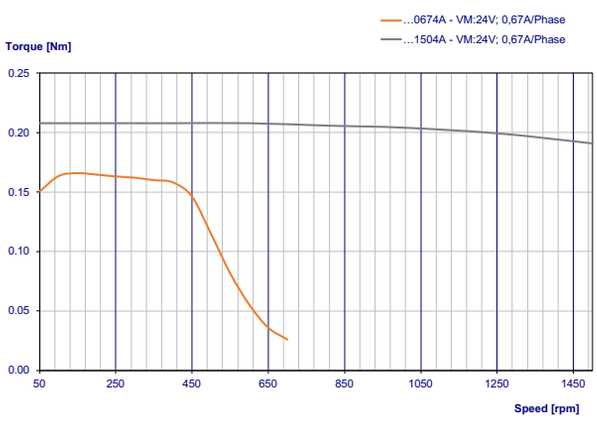


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 19,05mm

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

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

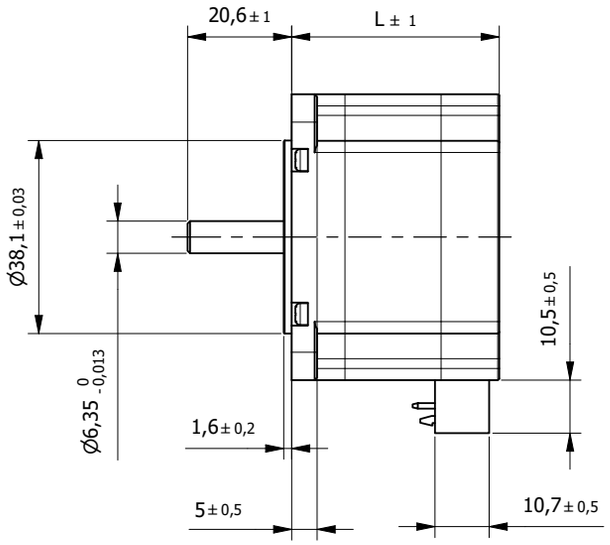
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Yellow	|	COM Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
5	White	|	COM Phase B
6	Blue	|	Phase B-

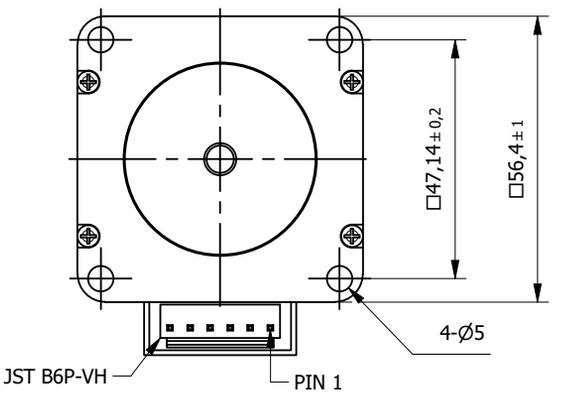


Hybrid Stepper Motor 57STC41

High Torque with Connector

□ 57mm



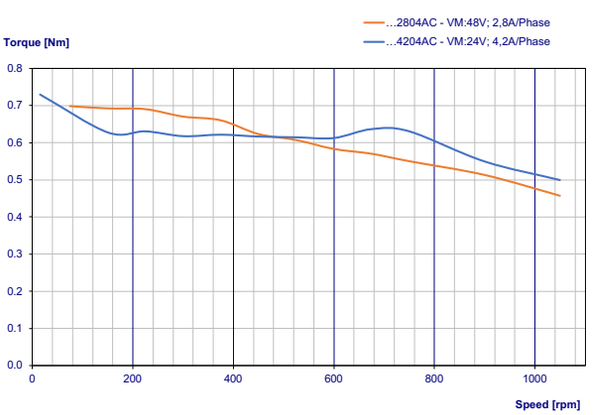


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

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

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

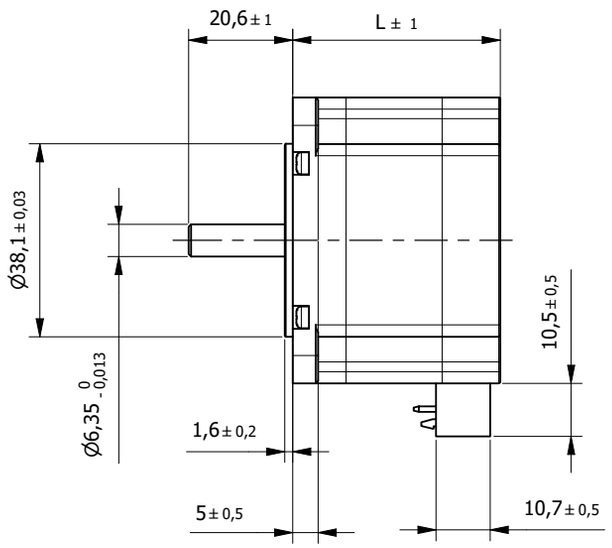
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Yellow	|	COM Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
5	White	|	COM Phase B
6	Blue	|	Phase B-

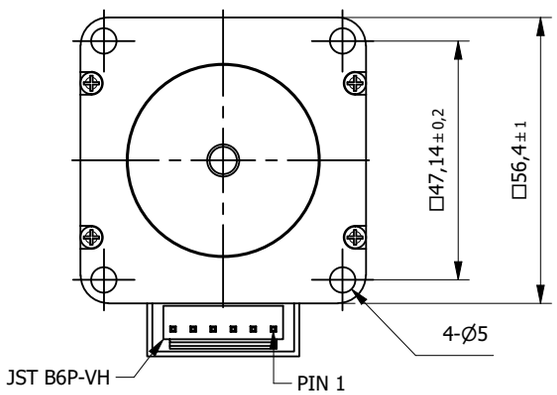


Hybrid Stepper Motor 57STC56

High Torque with Connector

□ 57mm



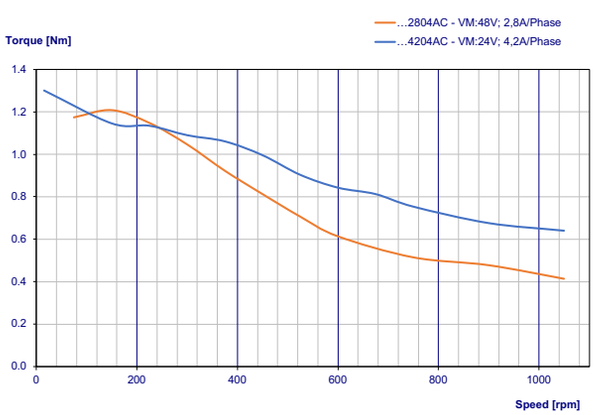


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

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

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

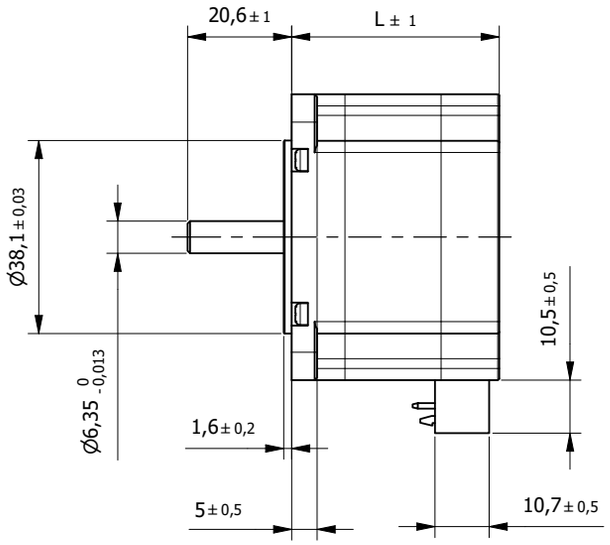
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Yellow	|	COM Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
5	White	|	COM Phase B
6	Blue	|	Phase B-

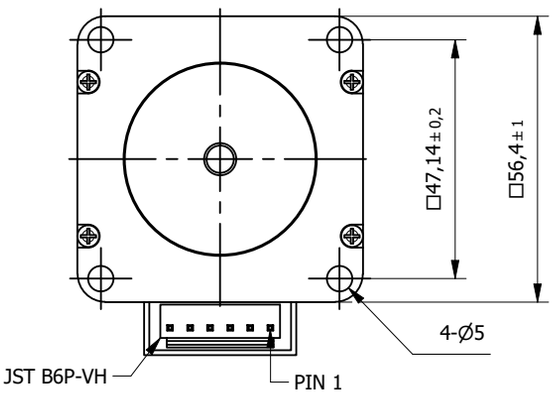


Hybrid Stepper Motor 57STC76

High Torque with Connector

□ 57mm



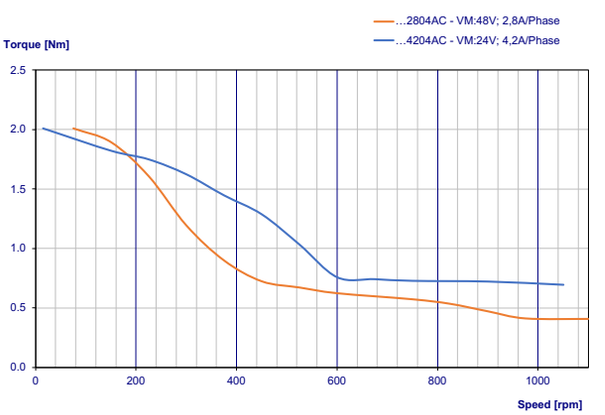


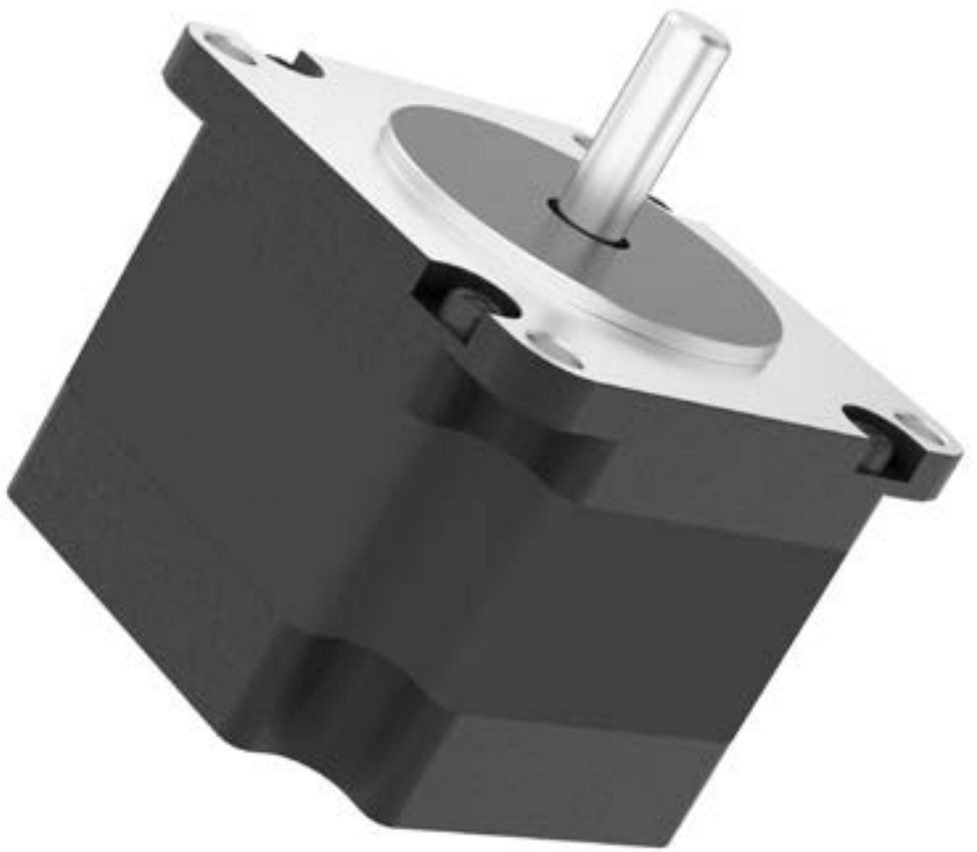
BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

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

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

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





Stepper motors

3-Phase Hybrid

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

3-Phase Hybrid Stepper motors	Torque* (Nm)	
42 3P	0,08...0,2	308
57 3P	0,45...1,5	309
60 3P53	0,9	310

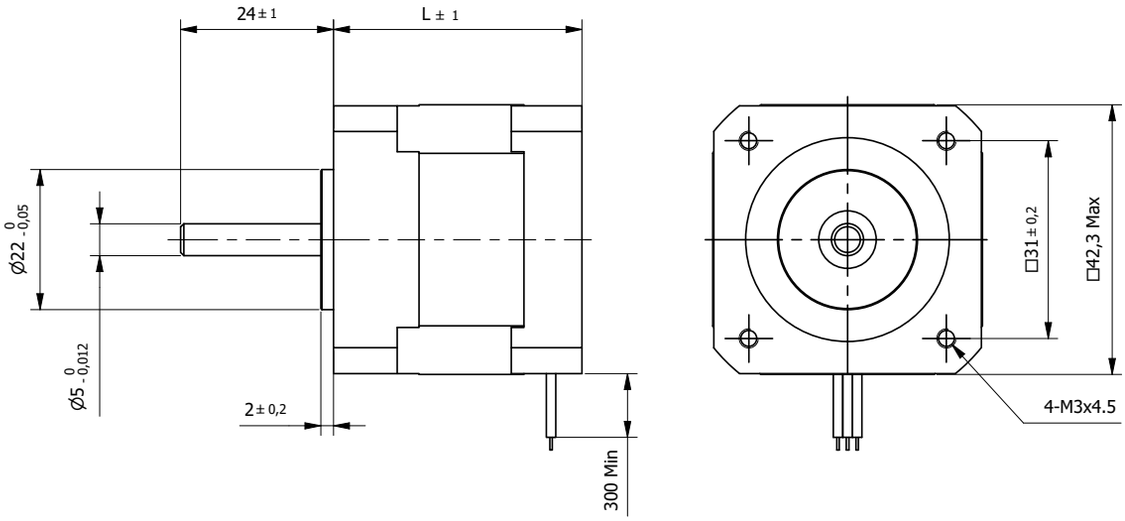
3-Phase technology in hybrid stepper motor is used mainly where ultra-low vibration and very low noise levels are required. The drive circuit of these motors is simplified because it is driven with a star wiring connection. The use of three phases inherently helps to reduce torque ripple and smooth motor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

* Holding Torque

Hybrid Stepper Motor 423P

3-Phase

□ 42mm



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

Specification

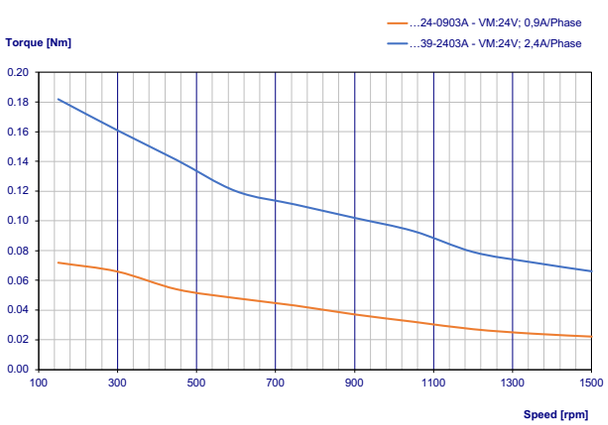
	Model		...24-0903A	...39-2403A
1	Rated Voltage	V	5,58	2,88
2	Current/Phase	A	0,9	2,4
3	Resistance/Phase	Ω	6,2	1,2
4	Inductance/Phase	mH	3,2	0,8
5	Holding Torque	Nm	0,08	0,2
6	Rotor Inertia	gcm2	20	54
7	n° of Leads		3	3
8	Length (L)	mm	24	39
9	Weight	Kg	0,14	0,28

Characteristics

Item	
Step angle	1,2°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 3-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection

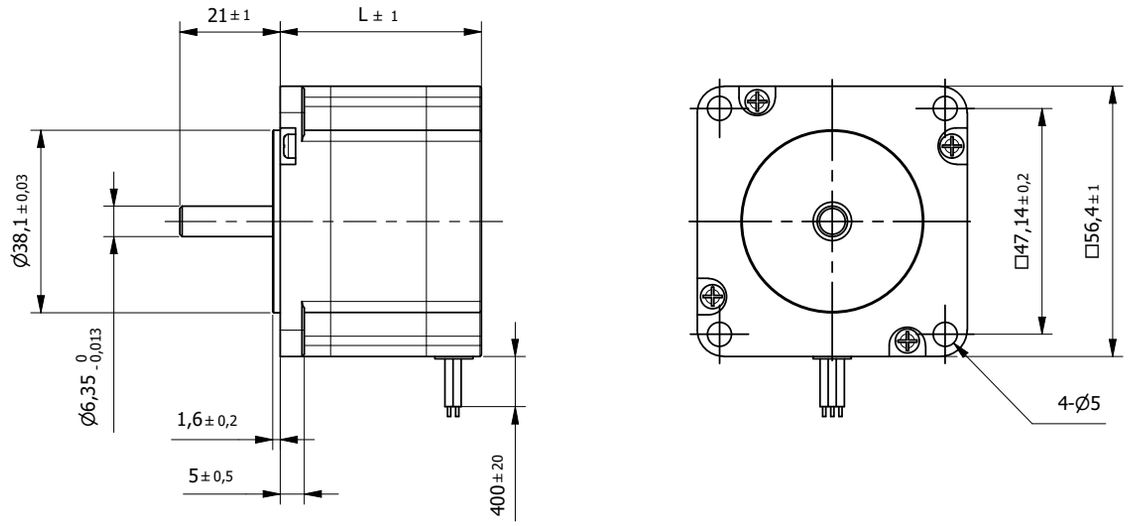
Lead n°	Color	Gauge	Function
1	Red	UL1061 AWG26	Phase U
2	Yellow	|	Phase V
3	Blue	|	Phase W



Hybrid Stepper Motor 573P

3-Phase

□ 57mm

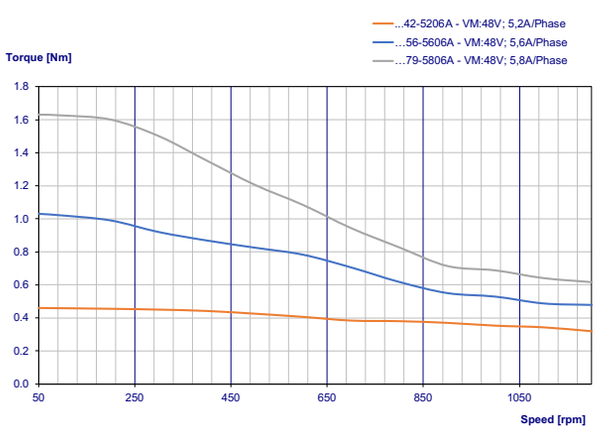


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification					
	Model		...42-5206A	...56-5606A	...79-5806A
1	Rated Voltage	V	6,76	4	6
2	Current/Phase	A	5,2	5,6	5,8
3	Resistance/Phase	Ω	1,3	0,7	1,05
4	Inductance/Phase	mH	1,4	1,7	2,4
5	Holding Torque	Nm	0,45	0,9	1,5
6	Rotor Inertia	gcm2	110	300	480
7	n° of Leads		6	6	6
8	Length (L)	mm	42	56	79
9	Weight	Kg	0,45	0,75	1,1

Characteristics	
Item	
Step angle	1,2°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 3-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	900 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

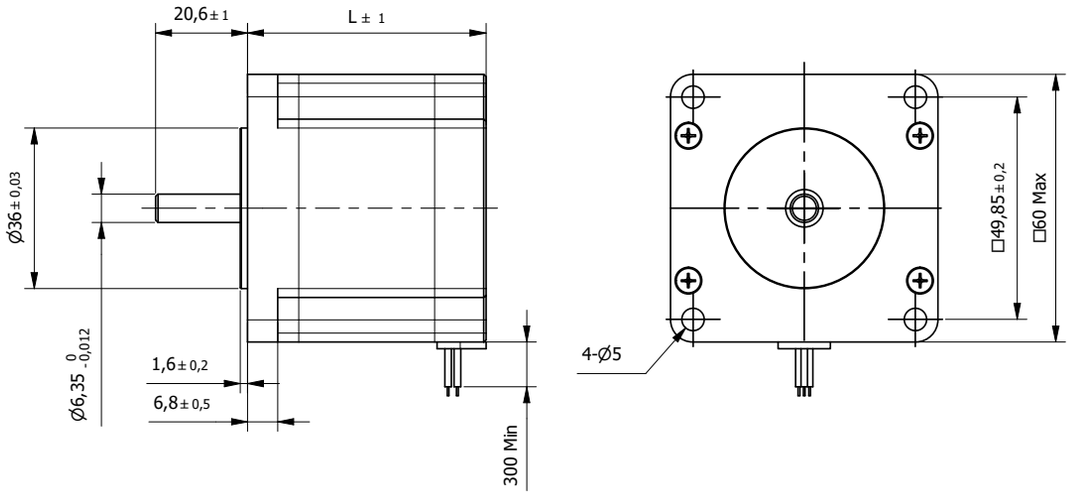
Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1332 AWG18	Phase U
2	Orange	|	Phase U
3	White	|	Phase V
4	Blue	|	Phase V
5	Yellow	|	Phase W
6	Green	|	Phase W



Hybrid Stepper Motor 603P53

3-Phase

□ 60mm

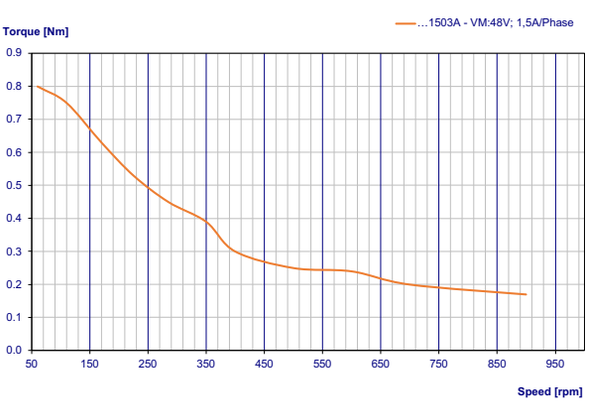


BE Version: Rear shaft length 13mm - 2x M2.5 on diameter 46mm

Specification			
	Model		...1503A
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, 3-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial Force (20mm from front flange)	75N
Max Axial Force	15N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG22	Phase U
2	Green	|	Phase V
3	White	|	Phase W





Stepper motors

Hollow Shaft

Advantages at a glance
High torque
High speed
High reliability

Based on our standard range of Hybrid stepper motor which provide superior performance with respect to step resolution, torque and speed, our hollow shaft series comes in sizes from 20 till 86mm. The hollow shaft can be used to pass cables or conduct laser beams through it in order to save space.

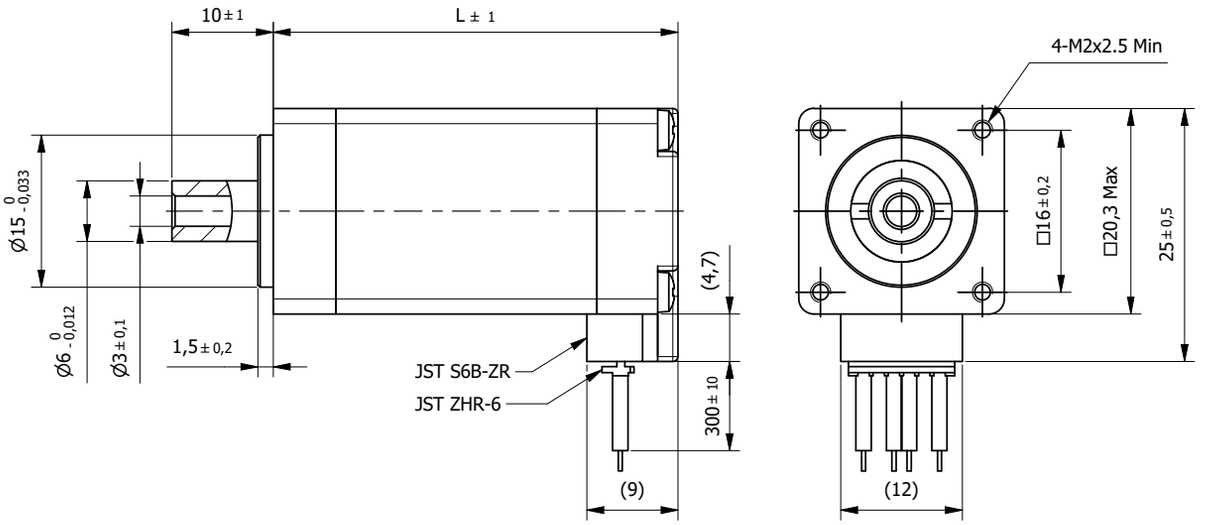
Hollow Shaft Stepper motors	Torque* (Nm)	
20STC40 H	0,036	314
28STC51 H	0,12	315
35STC38 H	0,23	316
42STC47 H	0,44	317
57STC76 H	2,3	318
86SH118 H	6	319

* Holding Torque

Hybrid Stepper Motor 20STC40-H

Hollow Shaft - High Torque

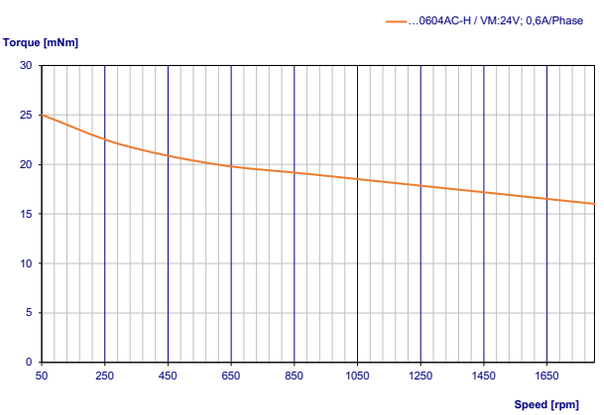
□ 20mm



Specification			
	Model		...0604AC-H
1	Rated Voltage	V	4,3
2	Current/Phase	A	0,6
3	Resistance/Phase	Ω	7,2
4	Inductance/Phase	mH	3,15
5	Holding Torque	Nm	0,036
6	Rotor Inertia	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 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

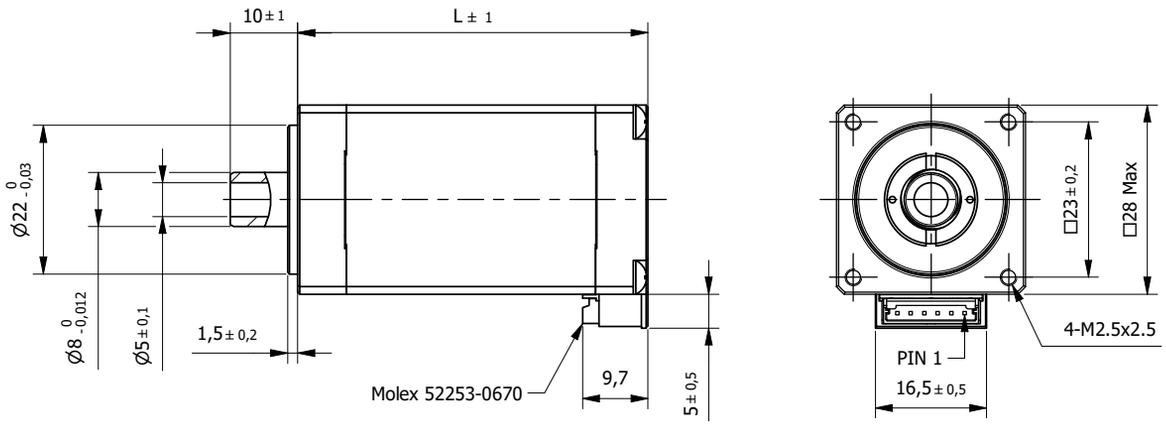
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1061 AWG26	Phase A
2	Yellow	|	COM Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
5	White	|	COM Phase B
6	Blue	|	Phase B-



Hybrid Stepper Motor 28STC51-H

Hollow Shaft - High Torque

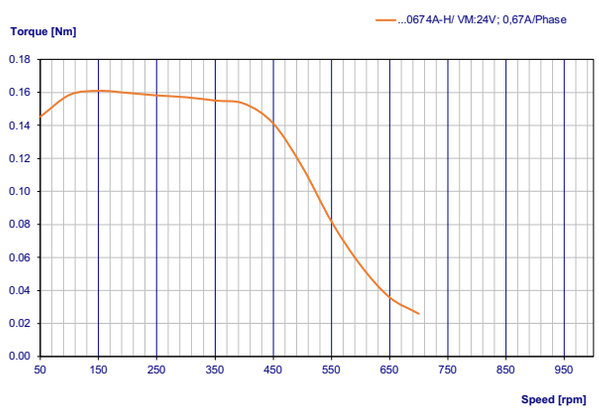
□ 28mm



Specification			
	Model		...0674A-H
1	Rated Voltage	V	6,2
2	Current/Phase	A	0,67
3	Resistance/Phase	Ω	9,2
4	Inductance/Phase	mH	5,6
5	Holding Torque	Nm	0,12
6	Rotor Inertia	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 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

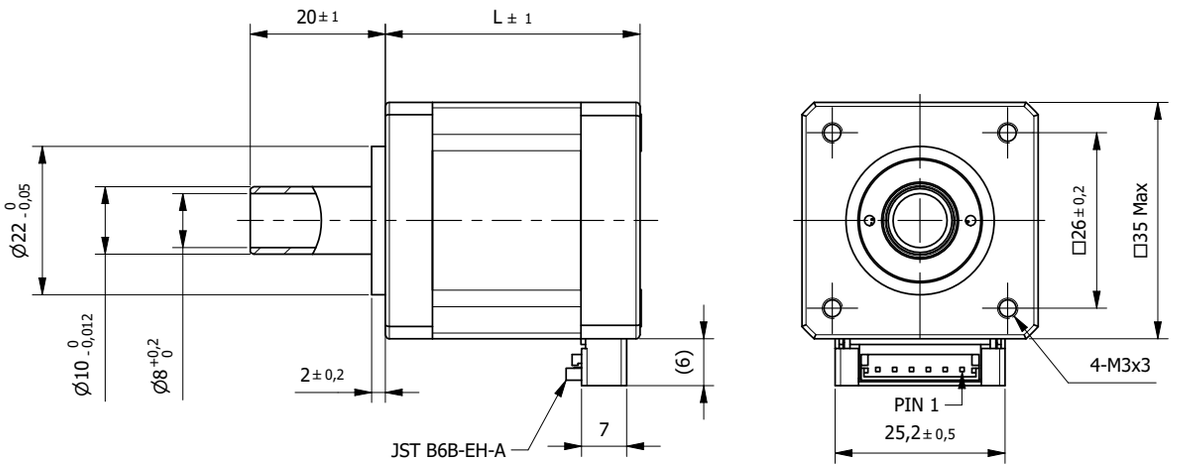
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG26	Phase A
2	Yellow	|	COM Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
5	White	|	COM Phase B
6	Blue	|	Phase B-



Hybrid Stepper Motor 35STC38-H

Hollow Shaft - High Torque

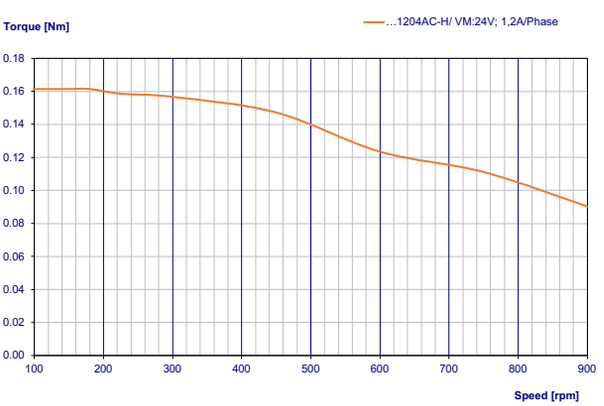
□ 35mm



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

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (at 4N)	0,02mm
Max. Shaft Axial play (at 4N)	0,08mm
Max. Radial Force (10mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

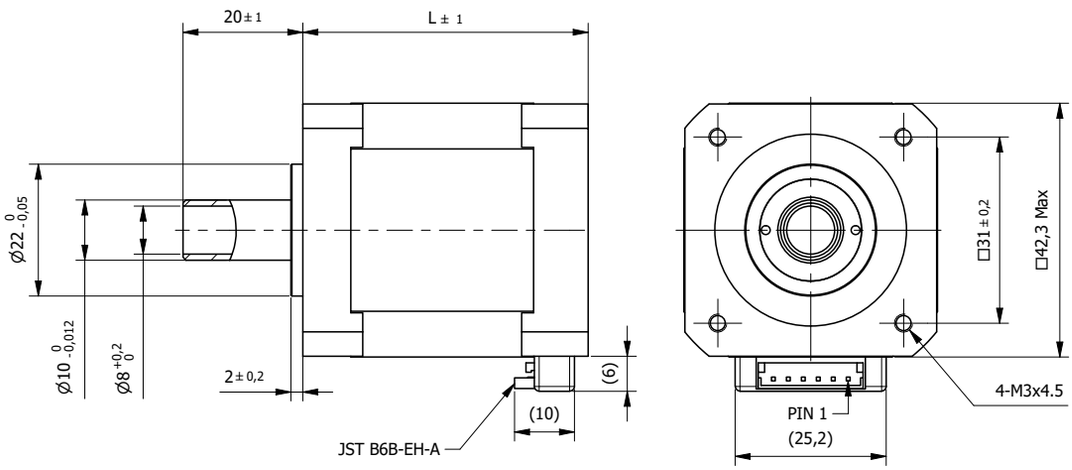
Connection			
Pin n°	Color	Gauge	Function
1	Yellow	UL1430 AWG26	COM Phase A
2	Black	|	Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
5	Blue	|	Phase B-
6	White	|	COM Phase B



Hybrid Stepper Motor 42STC47-H

Hollow Shaft - High Torque

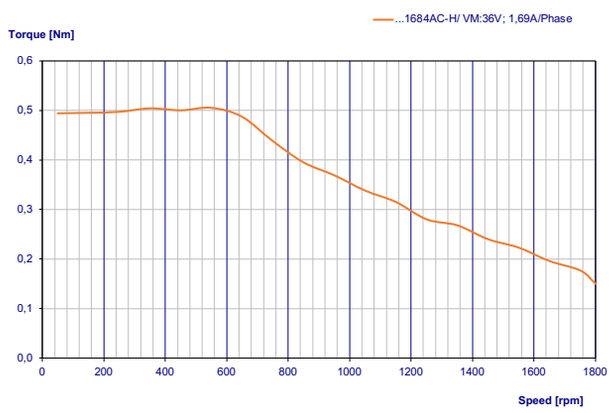
□ 42mm



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

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (at 4N)	0,02mm
Max. Shaft Axial play (at 4N)	0,08mm
Max. Radial Force (20mm from front flange)	28N
Max Axial Force	10N
Dielectric Strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

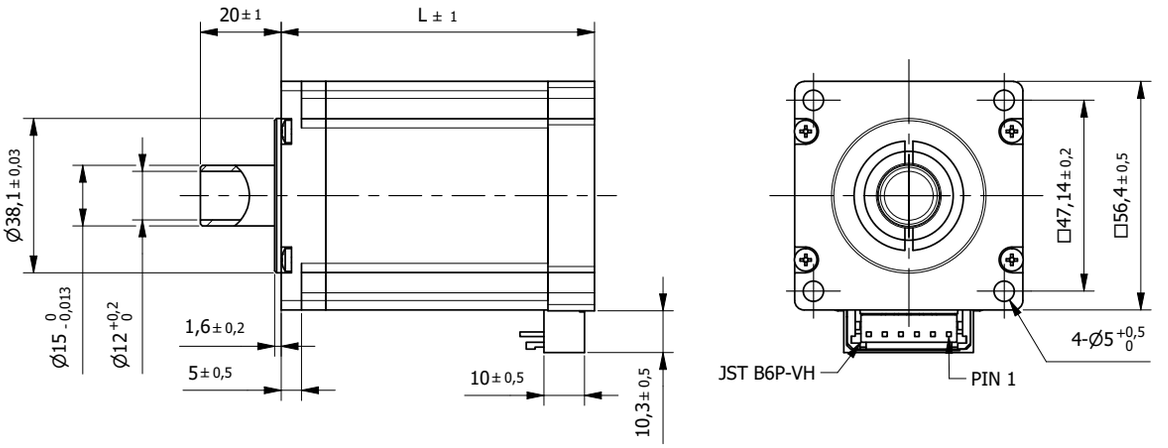
Connection		
Pin n°	Color	Function
1	Yellow	COM Phase A
2	Black	Phase A
3	Green	Phase A-
4	Red	Phase B
5	Blue	Phase B-
6	White	COM Phase B



Hybrid Stepper Motor 57STC76-H

Hollow Shaft - High Torque

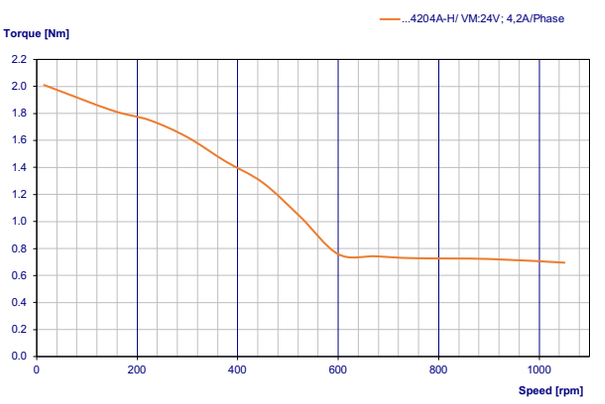
□ 57mm



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

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

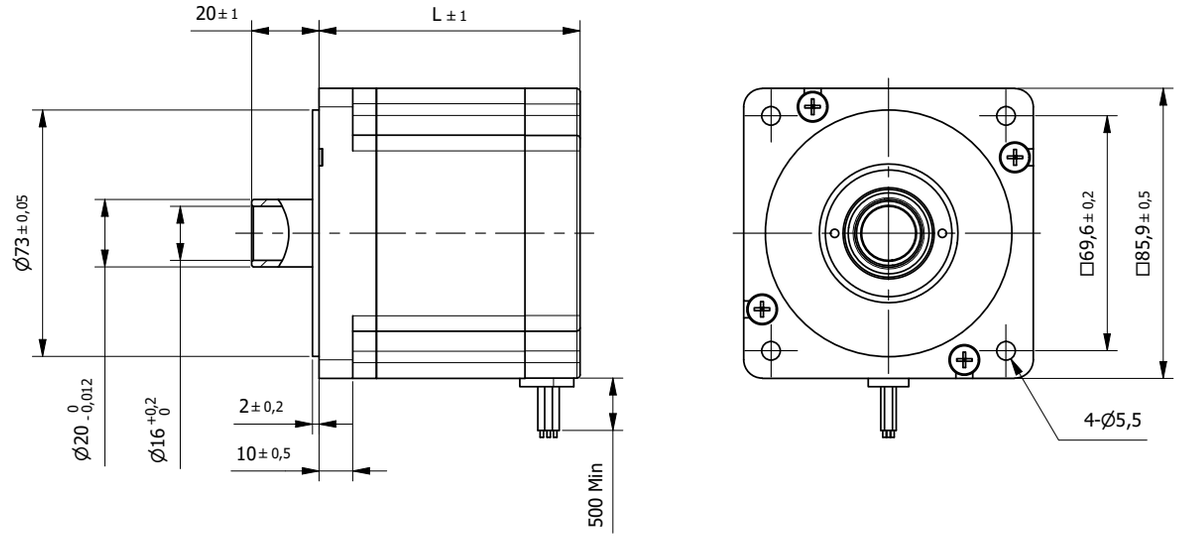
Connection			
Pin n°	Color	Gauge	Function
1	Black	UL1430 AWG22	Phase A
2	Yellow	|	COM Phase A
3	Green	|	Phase A-
4	Red	|	Phase B
5	White	|	COM Phase B
6	Blue	|	Phase B-



Hybrid Stepper Motor 86SH118-H

Hollow Shaft - High Torque

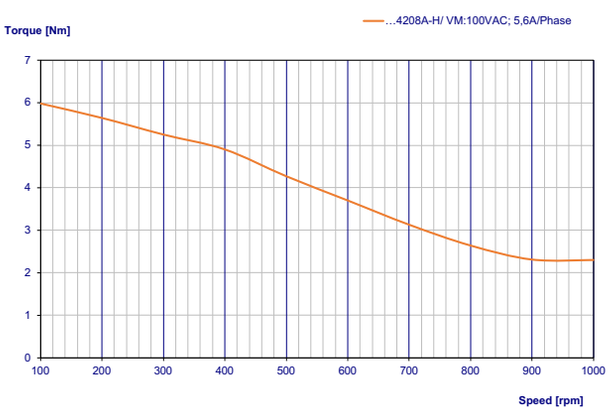
□ 86mm



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

Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (at 4N)	0,02mm
Max. Shaft Axial play (at 4N)	0,08mm
Max. Radial Force (20mm from front flange)	130N
Max Axial Force	36N
Dielectric Strength (for 1 sec.)	1200 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection			
Lead n°	Color	Gauge	Function
1	Red	UL1430 AWG18	Phase A
2	Yellow	|	Phase A-
3	Blue	|	Phase C-
4	Black	|	Phase C
5	White	|	Phase B
6	Orange	|	Phase B-
7	Brown	|	Phase D-
8	Green	|	Phase D





Stepper motors

Flat Hybrid

Advantages at a glance
Very compact size
High torque
Great power to volume ratio

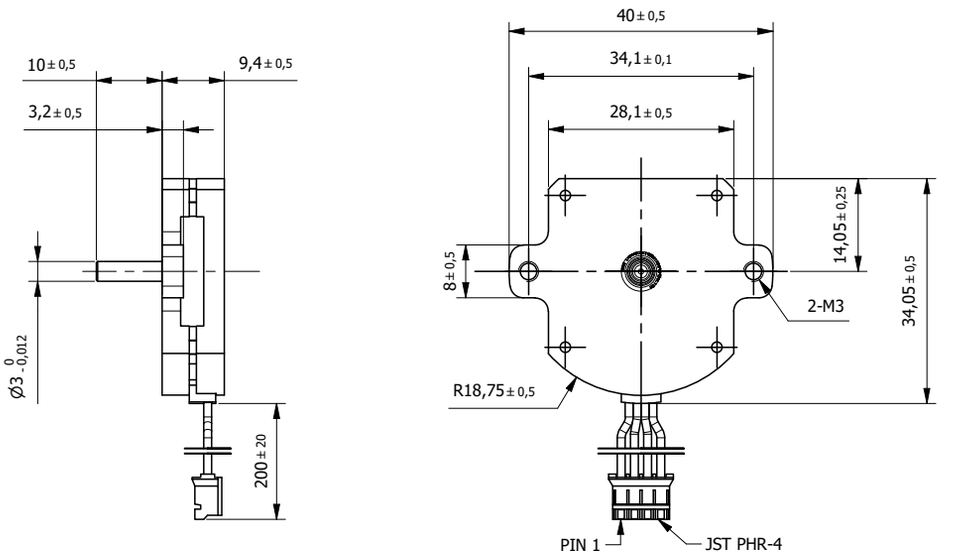
Our flat high-torque stepper motors offer maximum functionality in a very compact package. With speed up to 4300 rpm, our 2-phase flat stepper motors are ideal for applications where power and size are decisive. Specifically designed for semi-conductor applications, these unique Stepper motors are suitable for many other size-sensitive devices.

Flat Hybrid Stepper motors	Torque* (Nm)	
28S10	0,01	322
63S10	0,064	323

* Holding Torque

Flat Hybrid Stepper Motor 28S10

□ 28mm



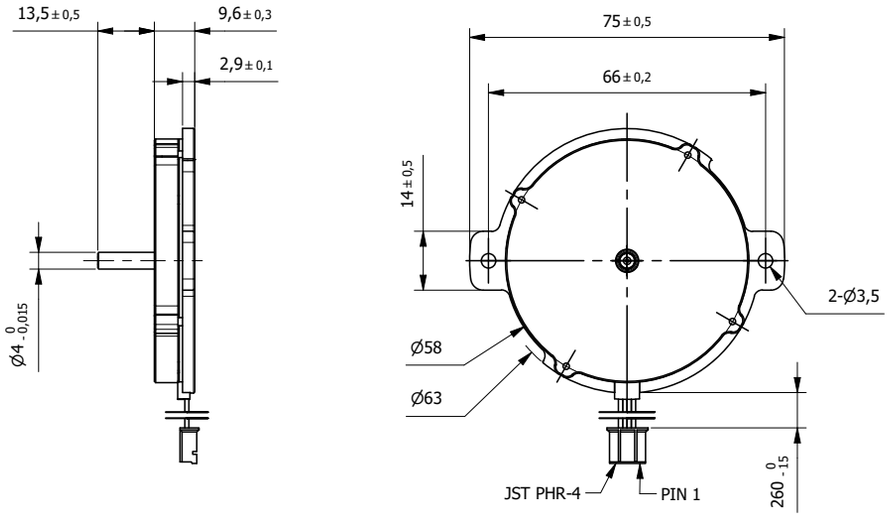
Specification			
	Model		...0504
1	Rated Voltage	V	1,85
2	Current/Phase	A	0,5
3	Resistance/Phase	Ω	3,7
4	Inductance/Phase	mH	0,88
5	Holding Torque	Nm	0,01
6	Rotor Inertia	gcm2	1,7
7	n° of Leads		4
8	Length (L)	mm	9,4
9	Weight	Kg	0,028

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 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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

Flat Hybrid Stepper Motor 63S10

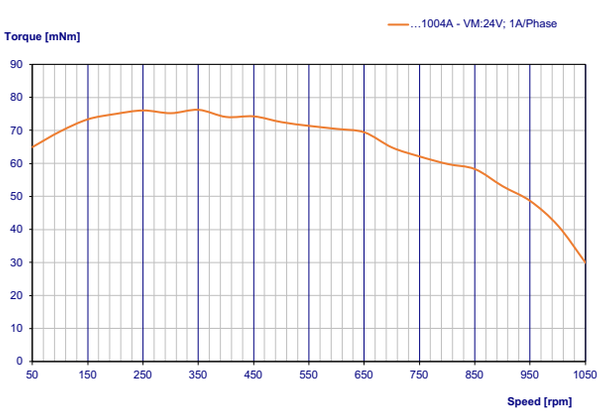
Ø 63mm



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 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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





Stepper motors

Hybrid with Encoder

Advantages at a glance
Compact design
Complete closed loop system
Smooth and precise

Stepper motors with Encoder	Torque* (Nm)	
42SC	0,22...0,75	326
60SC	1...3	327
86SC	3,5...12	328

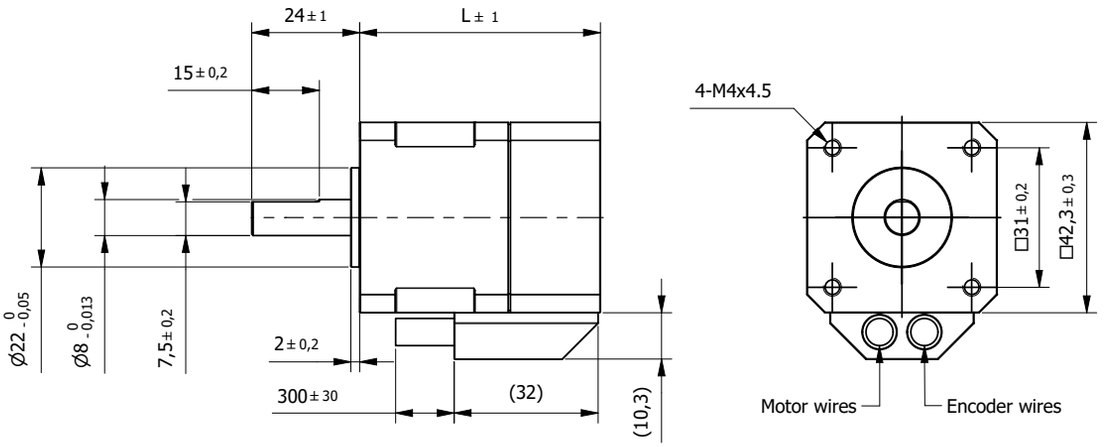
Our Hybrid stepper motors are also available equipped with an optical incremental encoder to increase the motion precision. Thanks to the encoder, the drive knows the position (or the speed) of the motor in real time and can perform adjustments to align the real condition with the condition requested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

* Holding Torque

Hybrid Stepper Motor 42SC

with Encoder

□ 42mm

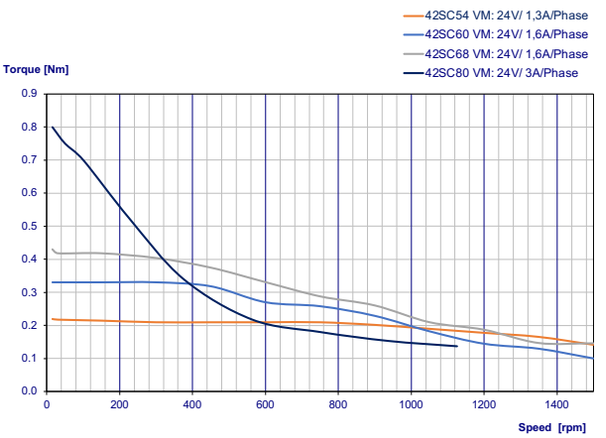


Specification						
	Model		42SC54	42SC60	42SC68	42SC80
1	Rated Voltage	V	2,8	2,8	2,8	3,5
2	Current/Phase	A	1,33	1,68	1,68	3
3	Resistance/Phase	Ω	2,1	1,65	1,65	1,2
4	Inductance/Phase	mH	2,5	3,2	2,8	2,9
5	Holding Torque	Nm	0,22	0,36	0,44	0,75
6	Rotor Inertia	gcm2	35	54	68	102
7	Detent Torque	Nm	0,012	0,015	0,02	0,028
8	n°of Leads		4	4	4	4
9	Length (L)	mm	53,5	59,5	67,5	80
10	Weight	Kg	0,22	0,28	0,35	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

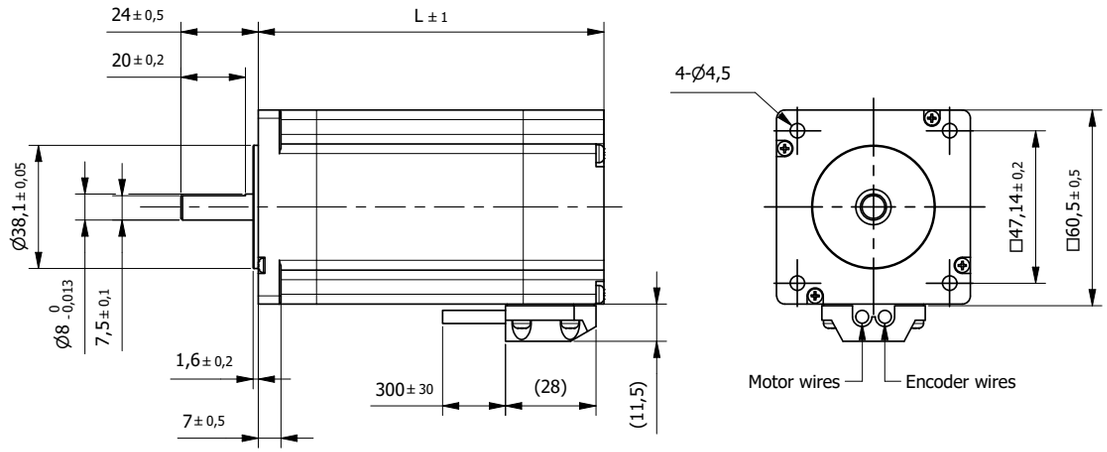
* 3-channel encoder or other types on request

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



Hybrid Stepper Motor 60SC
with Encoder

□ 60mm

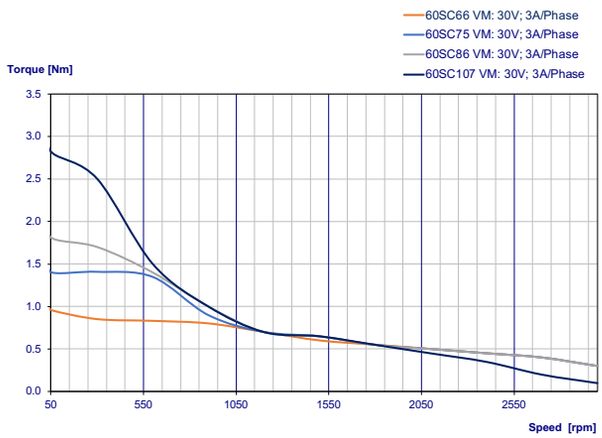


Specification						
	Model		60SC66	60SC75	60SC86	60SC107
1	Rated Voltage	V	2,1	2,8	3,4	4,2
2	Current/Phase	A	2,8	2,8	2,8	2,8
3	Resistance/Phase	Ω	0,75	1	1,2	1,5
4	Inductance/Phase	mH	2	3,6	4,6	6,8
5	Holding Torque	Nm	1	1,65	2	3
6	Rotor Inertia	gcm2	275	450	570	840
7	Detent Torque	Nm	0,05	0,05	0,05	0,1
8	n°of Leads		4	4	4	4
9	Length (L)	mm	66	75	86	107
10	Weight	Kg	0,6	0,82	1,3	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

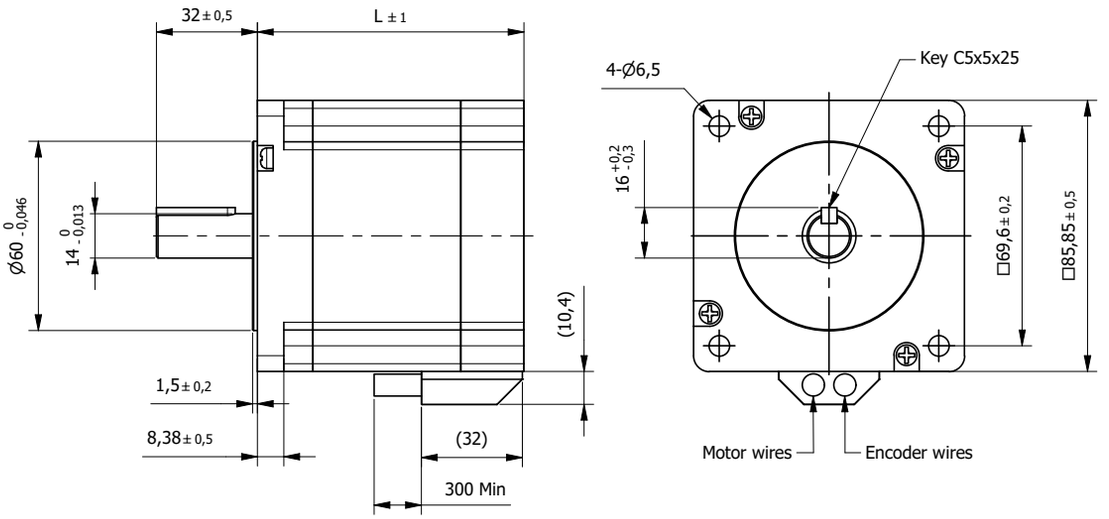
Connection			
Lead n°	Color	Gauge	Function
Feedback			
1	Black	AWG24	GND
2	Red	|	VCC:+5VDC
3	Blue	|	EA+
4	Blue/White	|	EA-
5	Orange	|	EB+
6	Orange/White	|	EB-
Motor			
1	Black	AWG20	Phase A
2	Green	|	Phase A-
3	Red	|	Phase B
4	Blue	|	Phase B-



Hybrid Stepper Motor 86SC

with Encoder

□ 86mm

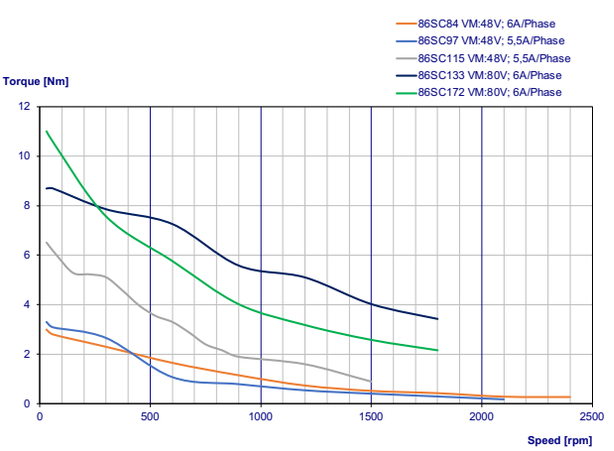


Specification							
	Model		86SC84	86SC97	86SC115	86SC133	86SC172
1	Rated Voltage	V	1,7	2,3	2,6	3,3	4,3
2	Current/Phase	A	6	5,5	5,5	6	6,2
3	Resistance/Phase	Ω	0,3	0,4	0,5	0,55	0,7
4	Inductance/Phase	mH	1,8	3,5	3,4	6	9
5	Holding Torque	Nm	3,5	4,5	6,5	8,5	12
6	Rotor Inertia	gcm2	1000	1400	1900	2700	4000
7	Detent Torque	Nm		0,12	0,12	0,24	0,36
8	n°of Leads		4	4	4	4	4
9	Length (L)	mm	84,5	97	115,5	133	172
10	Weight	Kg	1,7	2,3	2,8	3,8	5,3

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP30
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial force (20mm from front flange)	220N
Max. Axial force	60N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

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





Stepper motors

IP65 Hybrid

Advantages at a glance
High protection
High torque
High speed

IP65 Hybrid Stepper motors	Torque* (Nm)	
SM28 070 - IP65	0,127	332
SM42-E - IP65	0,16...0,72	333
SM57-E - IP65	0,7...1,95	334

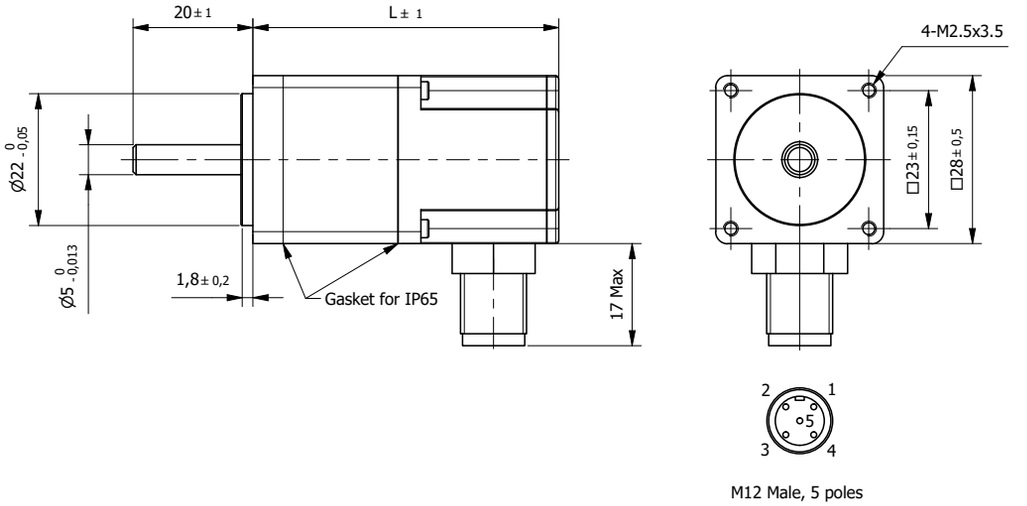
Our Hybrid stepper motors with protection class IP65 are designed for harsh operating environments. These IP65-rated stepper motors are completely dustproof. Dust cannot enter the device and therefore cannot damage it internally under any circumstances. IP65 rating also guarantees the protection of the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

* Holding Torque

Hybrid Stepper Motor SM28 070

IP65

□ 28mm



M12 Male, 5 poles

Specification			
	Model		SM28 070
1	Rated Voltage	V	9,2
2	Current/Phase	A	0,67
3	Resistance/Phase	Ω	9,2
4	Inductance/Phase	mH	7,2
5	Holding Torque	Nm	0,127
6	Rotor Inertia	gcm2	18
7	Detent Torque	Nm	0,036
8	n°of Leads		4
9	Length (L)	mm	70,3
10	Weight	Kg	0,22

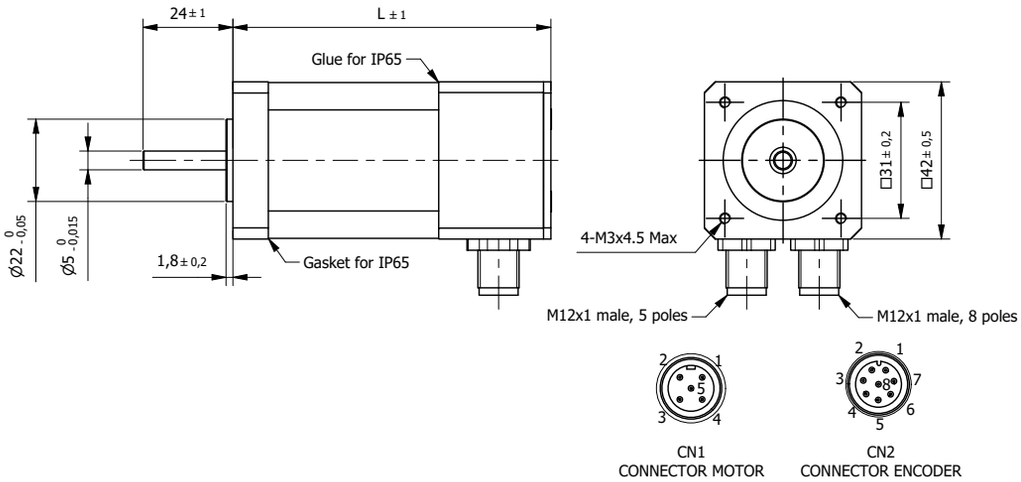
Characteristics	
Item	
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP65
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,03mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial force (at shaft end)	21N
Max. Axial force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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

Hybrid Stepper Motor SM42

with Encoder - IP65

□ 42mm

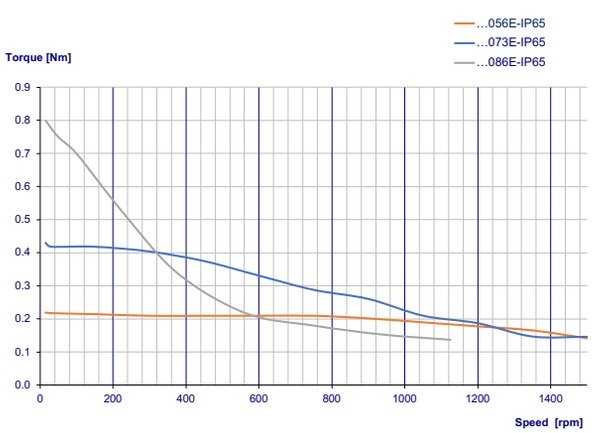


Specification					
	Model		...056E-IP65	...073E-IP65	...086E-IP65
1	Rated Voltage	V	1,5	2,7	3,6
2	Current/Phase	A	1,8	1,8	1,8
3	Resistance/Phase	Ω	0,86	1,52	2
4	Inductance/Phase	mH	1,1	3,7	5
5	Holding Torque	Nm	0,16	0,48	0,72
6	Rotor Inertia	gcm2	25	80	115
7	Detent Torque	Nm	0,012	0,012	0,012
8	n°of Leads		4	4	4
9	Length (L)	mm	56	73	86
10	Weight	Kg	0,2	0,56	0,7

Characteristics	
Item	
Encoder Type*	Optical - Incremental 1000 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP65
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,02mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial force (at shaft end)	21N
Max. Axial force	10N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

* 3-channel encoder or other types on request

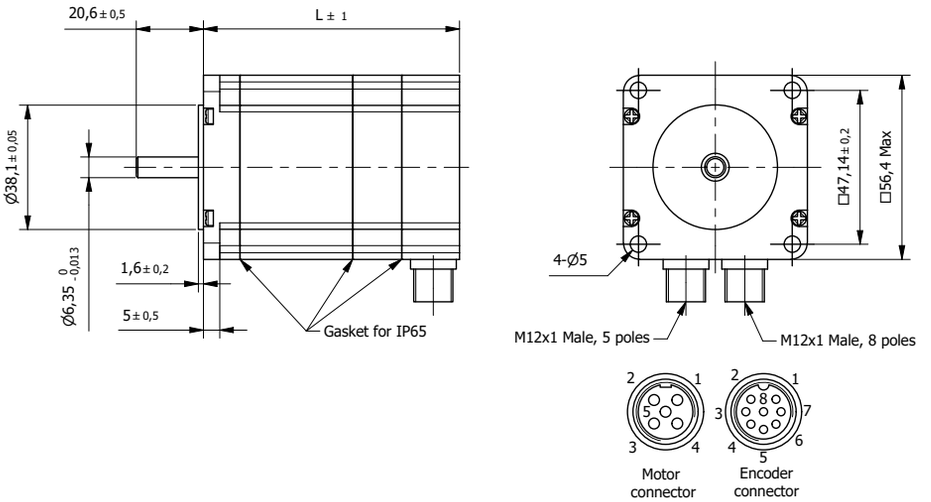
Connection	
Poles n°	Function
Motor	
1	Phase A
2	Phase A-
4	Phase B
5	Phase B-
Feedback	
1	Vdc
2	GND
3	A
4	A-
5	B
6	B-
7	Z
8	Z-



Hybrid Stepper Motor SM57

with Encoder - IP65

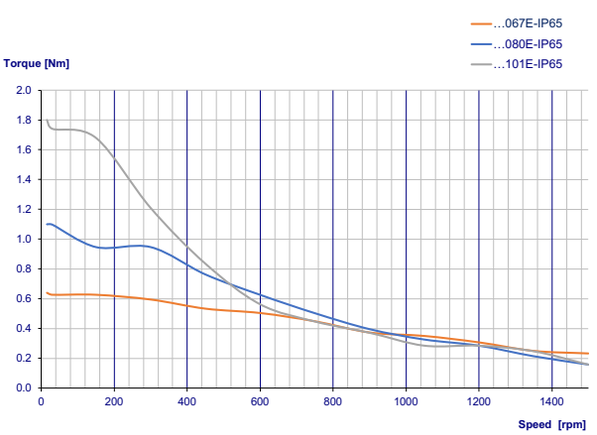
□ 57mm



Specification					
	Model		...067E-IP65	...080E-IP65	...101E-IP65
1	Rated Voltage	V	1,6	2,4	3,1
2	Current/Phase	A	2,82	2,82	2,82
3	Resistance/Phase	Ω	0,57	0,85	1,1
4	Inductance/Phase	mH	1,6	2,5	4,4
5	Holding Torque	Nm	0,7	1,1	1,95
6	Rotor Inertia	gcm2	170	280	520
7	Detent Torque	Nm	0,036	0,036	0,036
8	n°of Leads		4	4	4
9	Length (L)	mm	67	80	101
10	Weight	Kg	0,5	0,85	1

Characteristics	
Item	
Encoder Type*	Optical - Incremental 500 CPR / 2 channels
Step angle	1,8°
Step angle Accuracy	±5%
Insulation Class	B
Protection Class	IP65
Ambient Temperature	-20°C to +50°C
Max. Temp. Rise (rated current, 2-phase on)	80°C
Max. Shaft Radial play (450g load)	0,03mm
Max. Shaft Axial play (450g load)	0,08mm
Max. Radial force (at shaft end)	75N
Max. Axial force	15N
Dielectric Strength (for 1 min.)	500 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

Connection	
Poles n°	Function
Motor	
1	Phase A
2	Phase A-
3	GND
4	Phase B
5	Phase B-
Feedback	
1	Vdc
2	GND
3	A
4	A-
5	B
6	B-
7	Z
8	Z-



Linear Actuators



External Stepper Linear Actuators

p.345



Non-Captive Stepper Linear Actuators

p.357



Captive Stepper Linear Actuators

p.369

Linear Actuators

Technical introduction	342
External Hybrid Stepper Linear Actuators	**345**
20E	346
28E	348
35E	350
42E	352
57E	354
Non-Captive Hybrid Stepper Linear Actuators	**357**
20N	358
28N	360
35N	362
42N	364
57N	366
Captive Hybrid Stepper Linear Actuators	**369**
20C	370
28C	372
35C	374
42C	376
57C	378

Term	
Rated voltage	Voltage necessary to reach the nominal current per phase.
Current/Phase	The current supplied to the motor phases that will not exceed, at an ambient temperature of 20°C, the thermal limits of the motor.
Resistance/Phase	Winding resistance per phase. Tolerance +/- 12%, steady state.
Inductance/Phase	Winding inductance per phase measured at 1kHz.
Number of leads	Number of lead wires available to connect the motor.
Rotor Inertia	Is the mass moment of inertia of the rotor, based on the axis of rotation.
Length	Total motor length.
Weight	Total motor mass.
Wiring - Bipolar	A motor having two groups of coils in the stator. Generally represented by A and B on the wiring diagram and 4 lead wires extending from the motor.
Step angle	Number of angular degrees the motor moves per full-step
Insulation class	The electrical insulation system for wires and other wire-wound electrical components is divided into different classes by temperature and temperature rise. The electrical insulation system is sometimes referred to as insulation class or thermal classification.
Operating temperature	Temperatures at which the motor can operate.
Protection Class	IP (International Protection) degree defines the protection level against dust and water.
Temperature rise	Maximum temperature rise for the motor at rated voltage.
Dielectric strength	A dielectric test (also known as hipot or high potential test) is performed on all motors under 500V phases to the housing and during 5 seconds after voltage ramp up. Maximum allowed leakage is 1mA
Screw diameter	The outside diameter of the screw.
Screw lead	The axial distance the nut advances in one revolution of the screw. The lead is equal to the pitch times the number of starts. PITCH x STARTS = LEAD
Screw travel per step	The linear translation of a lead nut or screw for one full step of the motor.
Power Off Force	Maximum force in N that can be applied to the screw at standstill without producing screw rotation.

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 accuracy using closed loop function through Delta Line drivers
Customizable screws end machining
Customizable nuts
High reliability and long service life with marginal need for maintenance

The lead screw turns with the rotor, moving a nut back and forth linearly. An external guide is necessary to prevent rotation of the nut. In the case of external linear actuators, the lead screw is permanently attached to the motor shaft and turns with the shaft when the motor is energized. If an external threaded nut – in standardized or anti-backlash version – is mounted on the lead screw and secured against rotating by an external guide, the threaded nut moves along the lead screw.

EXTERNAL Stepper Motor Actuators

The lead screw moves back and forth linearly with the linear guide serving as an anti-rotation device. In the case of linear actuators with linear guide (captive), the plastic threaded nut is injection-molded into the hollow shaft rotor of the stepper motor and positively connected to it. If the motor is energized, the connection of lead screw and threaded nut transforms the rotary movement of the rotor into the linear movement of the lead screw. For this purpose, a linear guide is attached to the front of the lead screw and prevents the lead screw from rotating.

CAPTIVE Stepper Motor Actuators

The rotor drives the lead screw back and forth linearly. An external guide is necessary to prevent rotation. In the case of linear actuators without linear guide (non-captive), the plastic threaded nut is injection-molded into the hollow shaft rotor of the stepper motor and positively connected to it. If the motor is energized and the lead screw secured against rotating by means of an external guide, the connection of lead screw and threaded nut transforms the rotary movement of the rotor into the linear movement of the lead screw.

NON-CAPTIVE Stepper Motor Actuators

The selection of the correct lead screw and nut for a particular application involves four interrelated factors. Before attempting to determine the lead screw and nut combination, the following values must be known:

- Axial load measured in pounds or newtons
- Speed measured in inches or millimeters per minute
- Length between bearings measured in inches or millimeters
- End fixity type

Load
The loads that need to be considered are the static loads, dynamic loads, reaction forces and any external forces affecting the screw.

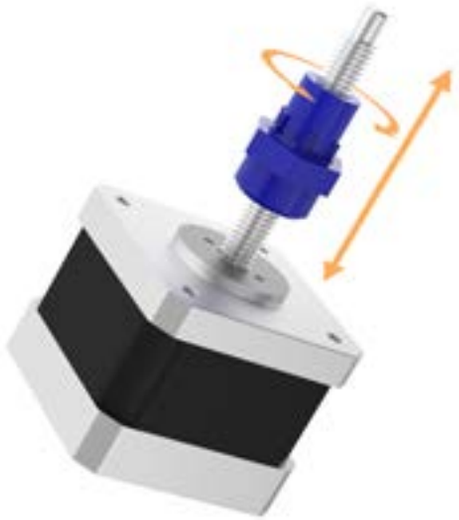
Speed
The travel rate (linear speed) is the rpm at which the screw or nut is rotating multiplied by the lead of the screw.

Length
The unsupported length of the screw.

End fixity
Refers to the method by which the ends of the screw are supported. The degree of end fixity is related to the amount of restraint of the ends of the screw.

Technical introduction

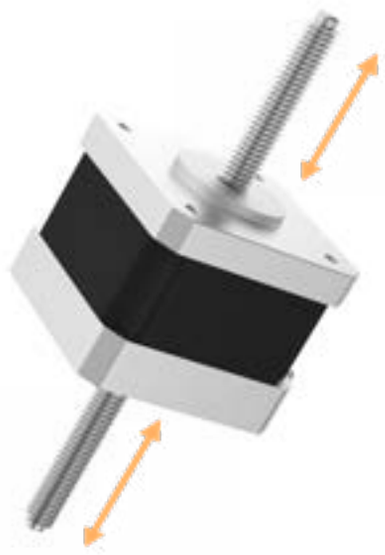
External Stepper Linear Actuators



Captive Stepper Linear Actuators



Non-Captive Stepper Linear Actuators





External Linear Actuators

Advantages at a glance
Small to medium load ratings
High accuracy
Customizable

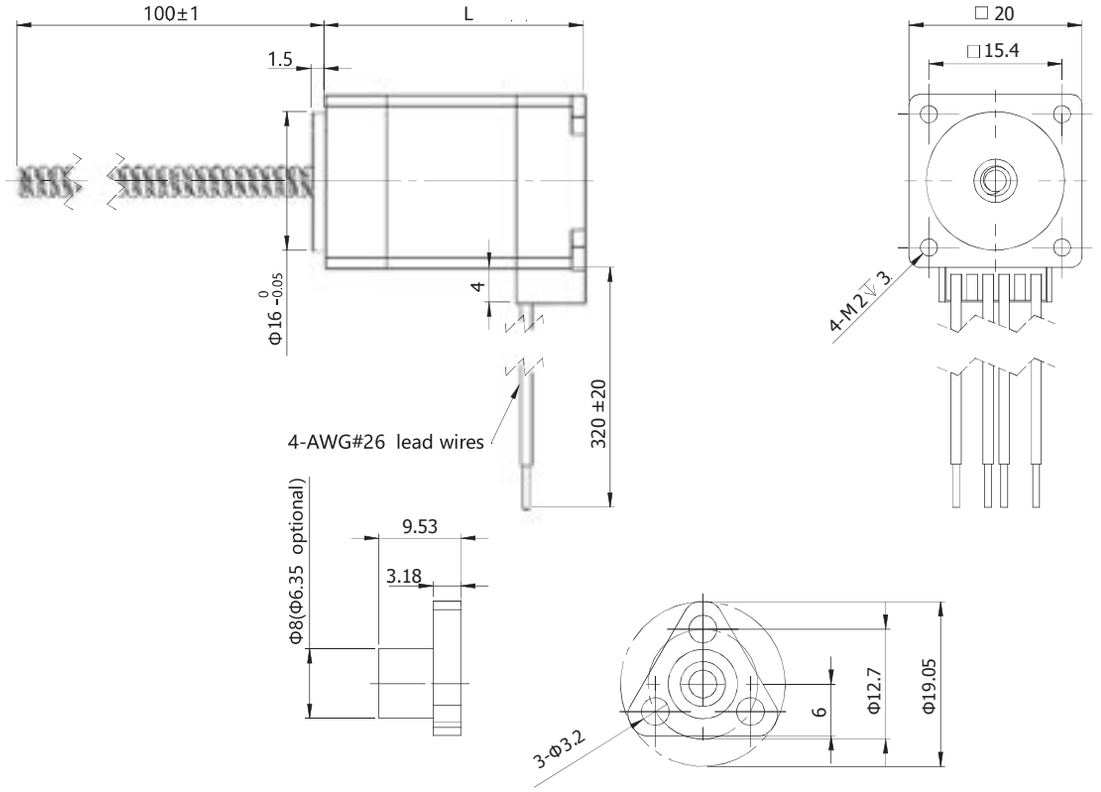
Our External Stepper Motor Actuators feature precision lead screws and nuts to produce accurate and repeatable linear motion. Actuators are manufactured in NEMA sizes 8, 11, 14, 17 and 23. Standard and custom nut designs are available. Optional accessories are connectors, wire harnesses, digital encoders and custom lead screw nuts.

External Hybrid Stepper Linear Actuators	
20E	346
28E	348
35E	350
42E	352
57E	354

External Linear Actuator 20E

Hybrid Stepper motor

□ 20mm



Note: nut options available on request

Actuator Specification				
	Model		20E30	20E42
1	Rated Voltage	V	2,5	6,3
2	Current / Phase	A	0,5	0,5
3	Resistance / Phase	Ω	5,1	12,5
4	Inductance / Phase	mH	1,5	11
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	2	3
7	Motor Length (L)	mm	30	42
8	Weight	g	50	80

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

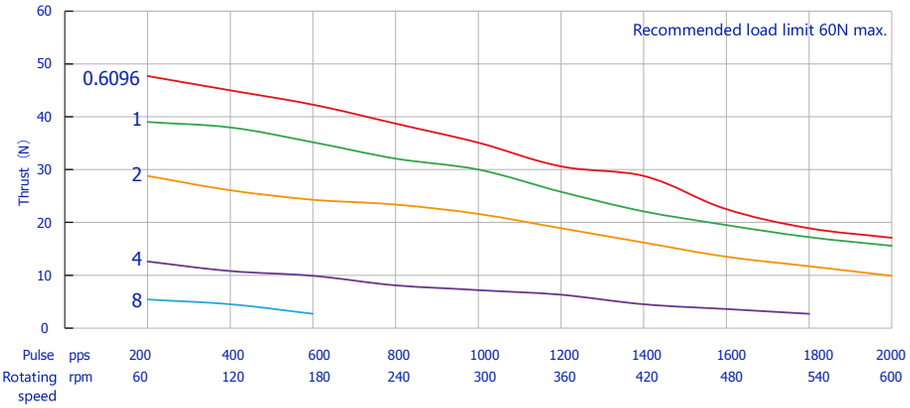
Connection			
Lead n°	Gauge	Color	Function
1	AWG26	Black	Phase A+
2	|	Green	Phase A-
3	|	Red	Phase B+
4	|	Blue	Phase B-

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
AA	3,5	0,6096	0,003048	80
AB	3,5	1	0,005	40
AC	3,5	2	0,01	10
AD	3,5	4	0,02	1
AE	3,5	8	0,04	0

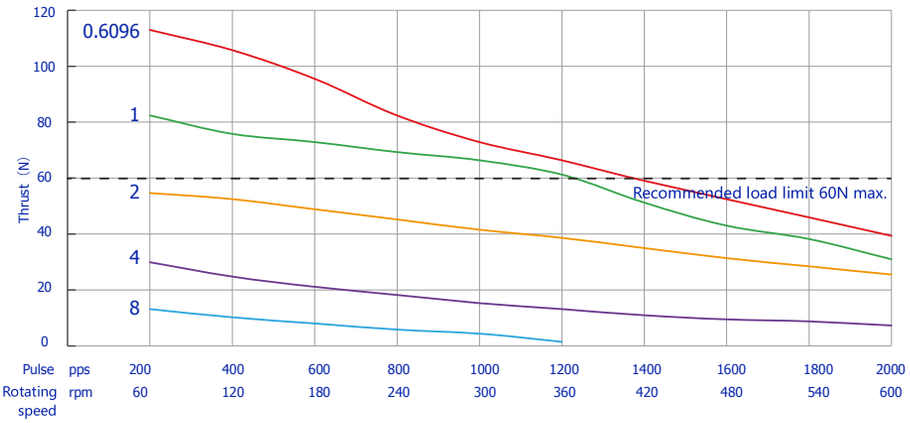
Note 1: other screw options available on request

Note 2: customized machining is viable at the end of lead screw

Product code reference	
20E30-05-AA100	
20	Frame size
E	External
30	Motor length
05	Current / Phase (no comma)
AA	Lead screw code
100	Screw length



20 series 30mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ3.5mm lead screw)



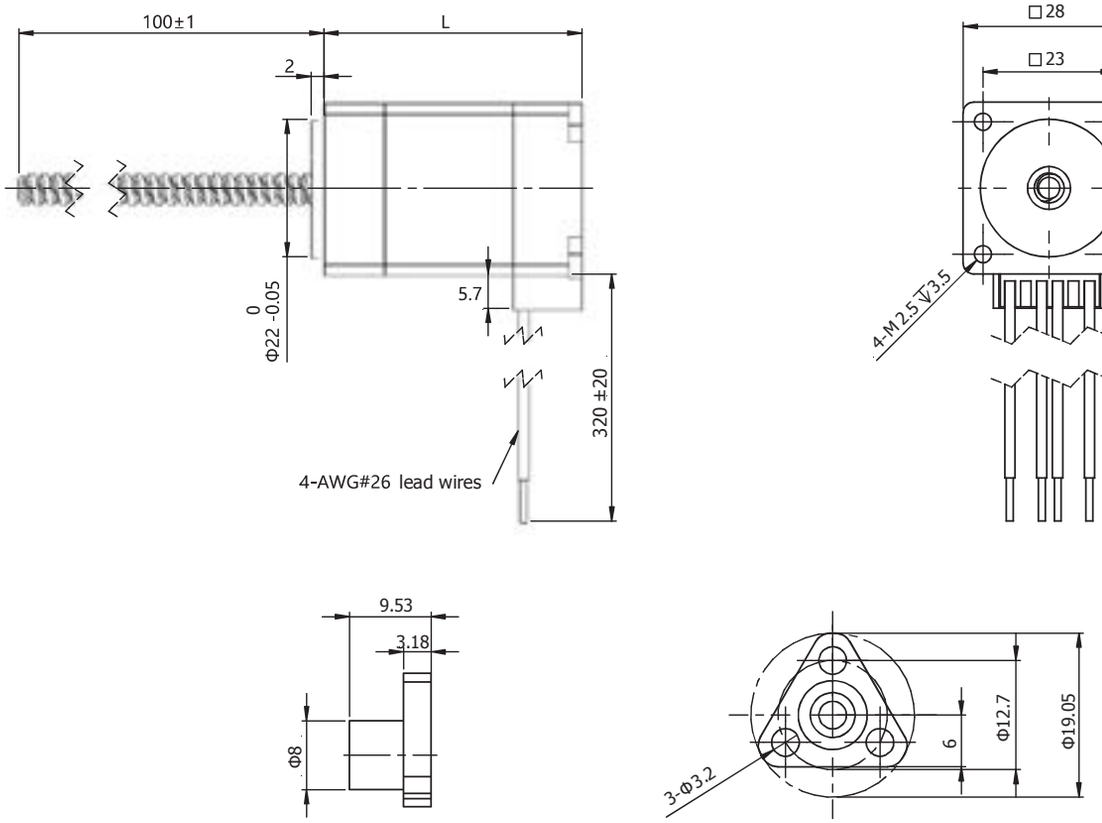
20 series 42mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ3.5mm lead screw)

Lead (mm)	Linear Velocity (mm/s)									
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540	600
0,6096	0,6096	1,2192	1,8288	2,4384	3,048	3,6576	4,2672	4,8768	5,4864	6,096
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
4	4	8	12	16	20	24	28	32	36	40
8	8	16	24	32	40	48	56	64	72	80
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V										

External Linear Actuator 28E

Hybrid Stepper motor

□ 28mm



Note: nut options available on request

Actuator Specification				
	Model		28E34	28E45
1	Rated Voltage	V	2,1	3,7
2	Current / Phase	A	1	1
3	Resistance / Phase	Ω	2,1	3,7
4	Inductance / Phase	mH	1,5	2,3
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	9	13
7	Motor Length (L)	mm	34	45
8	Weight	g	120	180

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

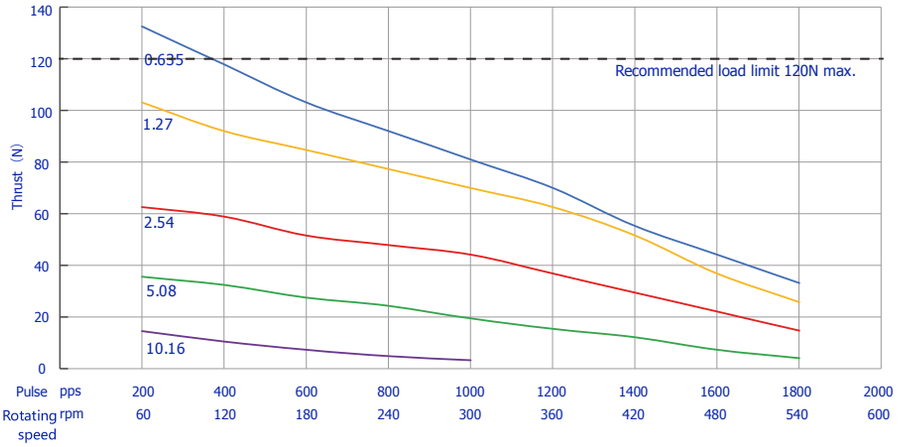
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
BA	4,76	0,635	0,003175	100
BB	4,76	1,27	0,00635	40
BC	4,76	2,54	0,0127	10
BD	4,76	5,08	0,0254	1
BE	4,76	10,16	0,0508	0

Note 1: other screw options available on request

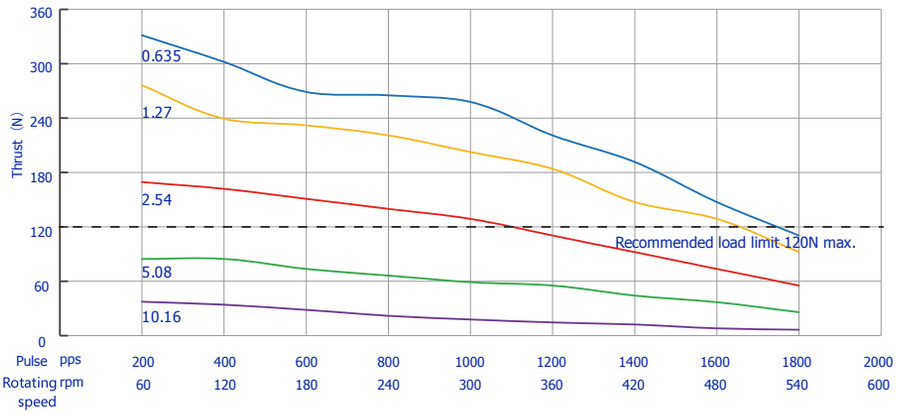
Note 2: customized machining is viable at the end of lead screw

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

Product code reference	
28E34-10-BA100	
28	Frame size
E	External
34	Motor length
10	Current / Phase (2-digit no comma)
BA	Lead screw code
100	Screw length



28 series 34mm motor
length bipolar Chopper drive
100% current pulsefrequency and thrust curve
(Φ4.76mm lead screw)



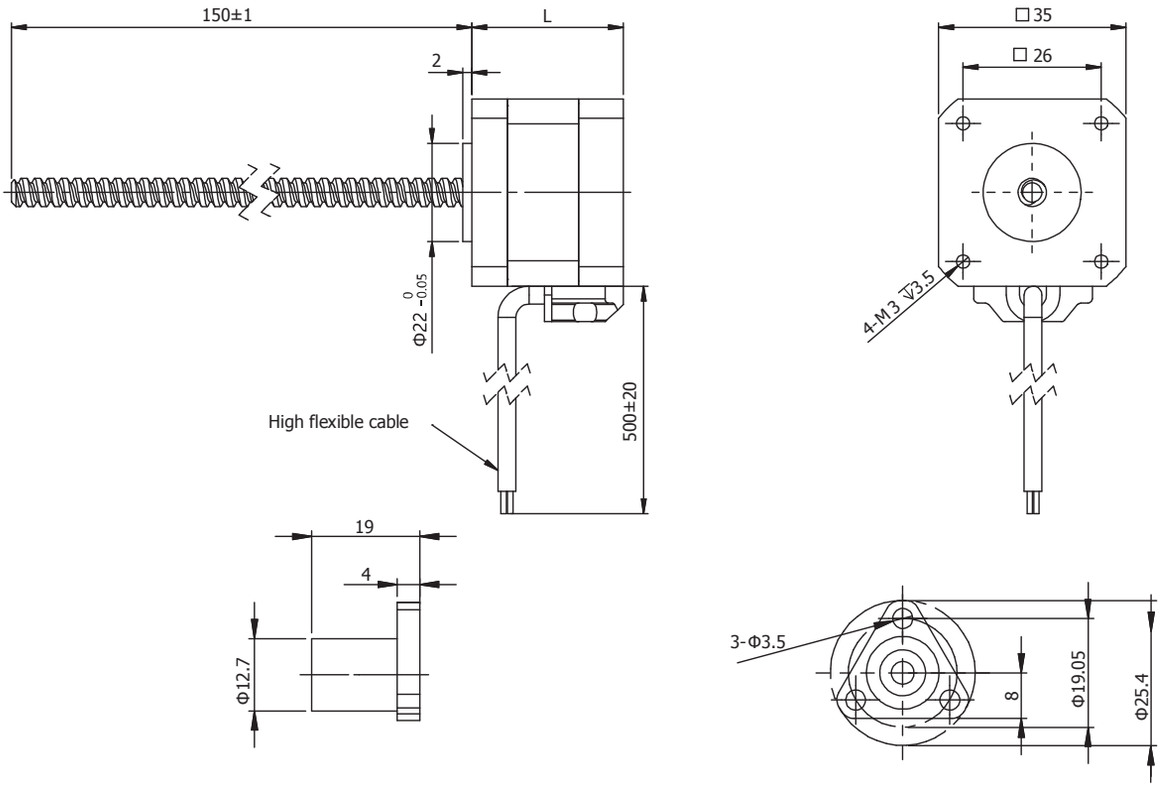
28 series 45mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ4.76mm lead screw)

Lead (mm)	Linear Velocity (mm/s)									
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540	600
0,635	0,635	1,27	1,905	2,54	3,175	3,81	4,445	5,08	5,715	6,35
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43	12,7
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86	25,4
5,08	5,08	10,16	15,24	20,32	25,4	30,48	35,56	40,64	45,72	50,8
10,16	10,16	20,32	30,48	40,64	50,8	60,96	71,12	81,28	91,44	101,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V										

External Linear Actuator 35E

Hybrid Stepper motor

□ 35mm



Note: nut options available on request

Actuator Specification				
	Model		35E34	35E47
1	Rated Voltage	V	1,4	2,9
2	Current / Phase	A	1,5	1,5
3	Resistance / Phase	Ω	0,95	1,9
4	Inductance / Phase	mH	1,4	3,2
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	20	30
7	Motor Length (L)	mm	34	47
8	Weight	g	190	230

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

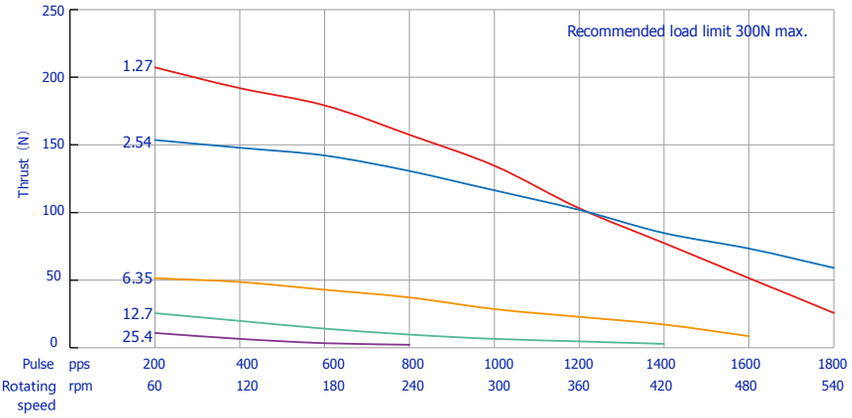
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
CA	6,35	1,27	0,00635	150
CB	6,35	2,54	0,0127	40
CC	6,35	6,35	0,03175	15
CD	6,35	12,7	0,0635	3
CE	6,35	25,4	0,127	0

Note 1: other screw options available on request

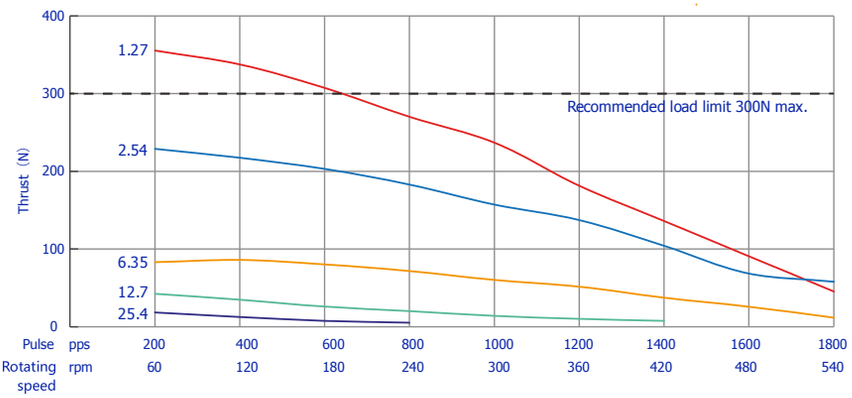
Note 2: customized machining is viable at the end of lead screw

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

Product code reference	
35E34-15-CA100	
35	Frame size
E	External
34	Motor length
15	Current / Phase (2-digit no comma)
CA	Lead screw code
100	Screw length



35 series 34mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



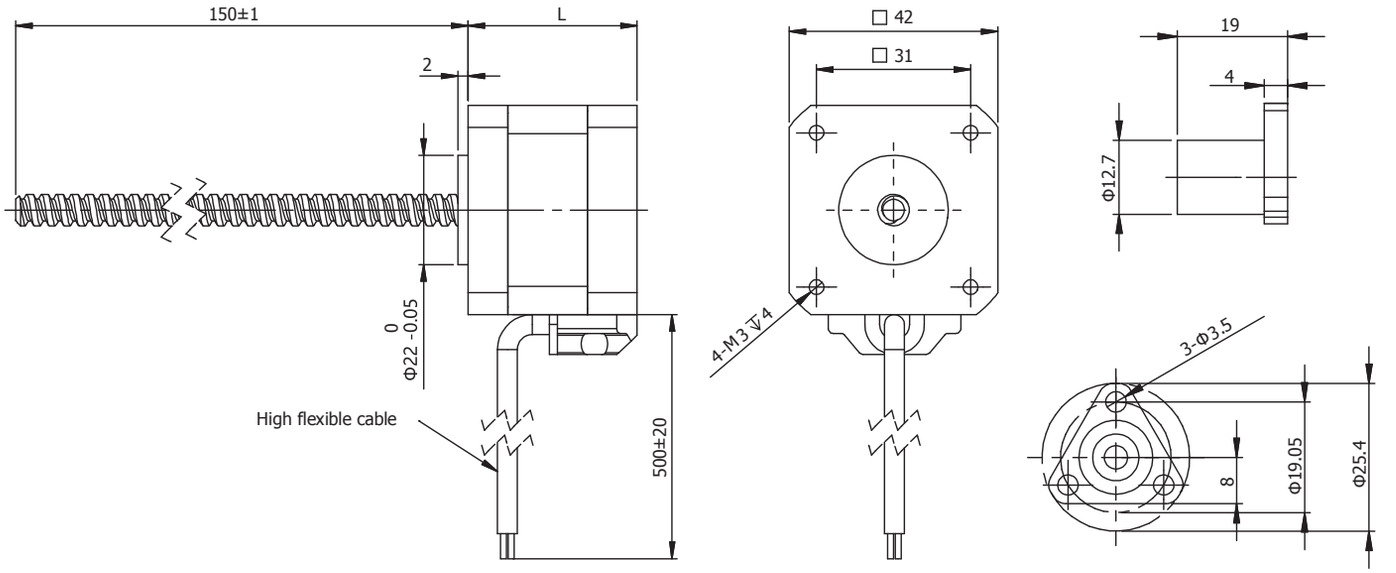
35 series 47mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
6,35	6,35	12,7	19,05	25,4	31,75	38,1	44,45	50,8	57,15
12,7	12,7	25,4	38,1	50,8	63,5	76,2	88,9	101,6	114,3
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V									

External Linear Actuator 42E

Hybrid Stepper motor

□ 42mm



Note: nut options available on request

Actuator Specification						
	Model		42E34	42E40	42E48	42E60
1	Rated Voltage	V	2,6	3,3	2	2,5
2	Current / Phase	A	1,5	1,5	2,5	2,5
3	Resistance / Phase	Ω	1,8	2,2	0,8	1
4	Inductance / Phase	mH	2,6	4,6	1,8	2,8
5	n° of Lead Wires		4	4	4	4
6	Rotor Inertia	gcm2	35	55	70	105
7	Motor Length (L)	mm	34	40	48	60
8	Weight	g	250	290	385	450

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

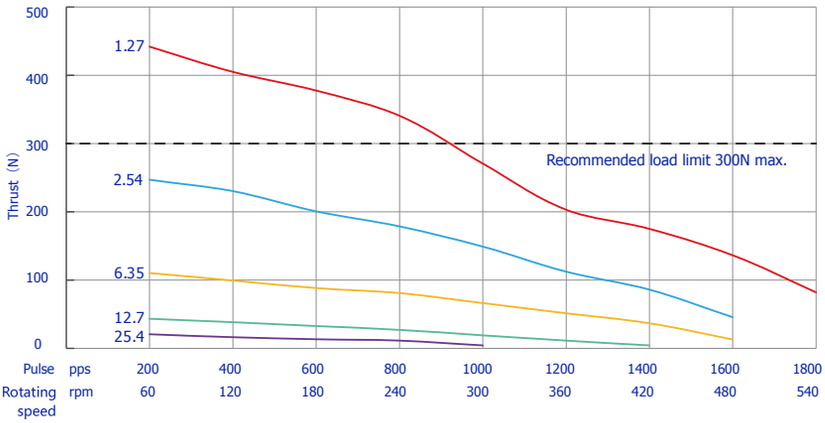
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
CA	6,35	1,27	0,00635	150
CB	6,35	2,54	0,0127	40
CC	6,35	6,35	0,03175	15
CD	6,35	12,7	0,0635	3
CE	6,35	25,4	0,127	0

Note 1: other screw options available on request

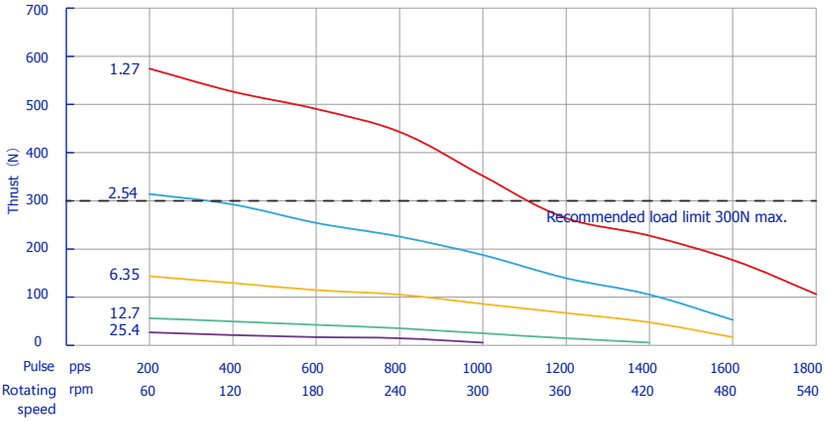
Note 2: customized machining is viable at the end of lead screw

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

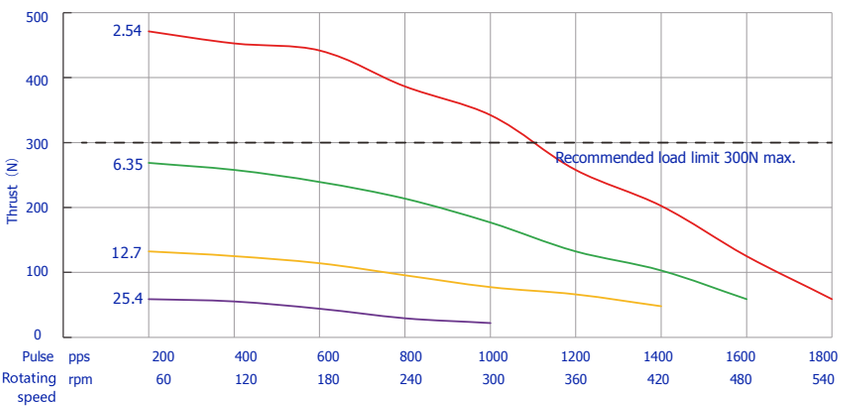
Product code reference	
42E34-15-CA100	
42	Frame size
E	External
34	Motor length
15	Current / Phase (2-digit no comma)
CA	Lead screw code
100	Screw length



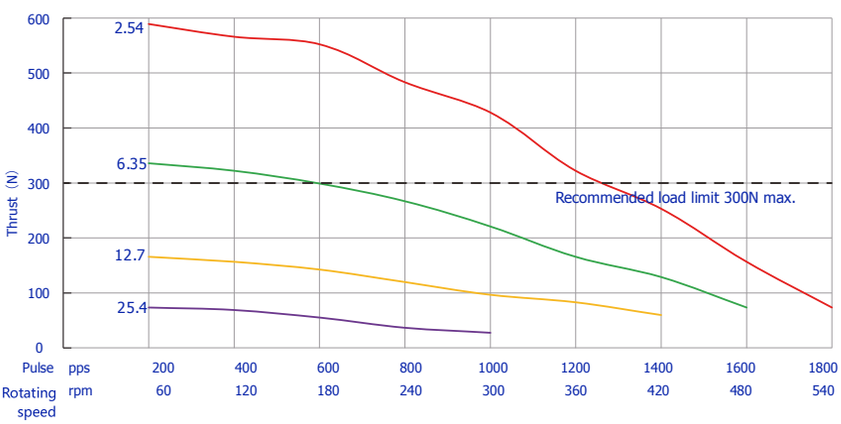
42 series 34mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



42 series 40mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



42 series 48mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



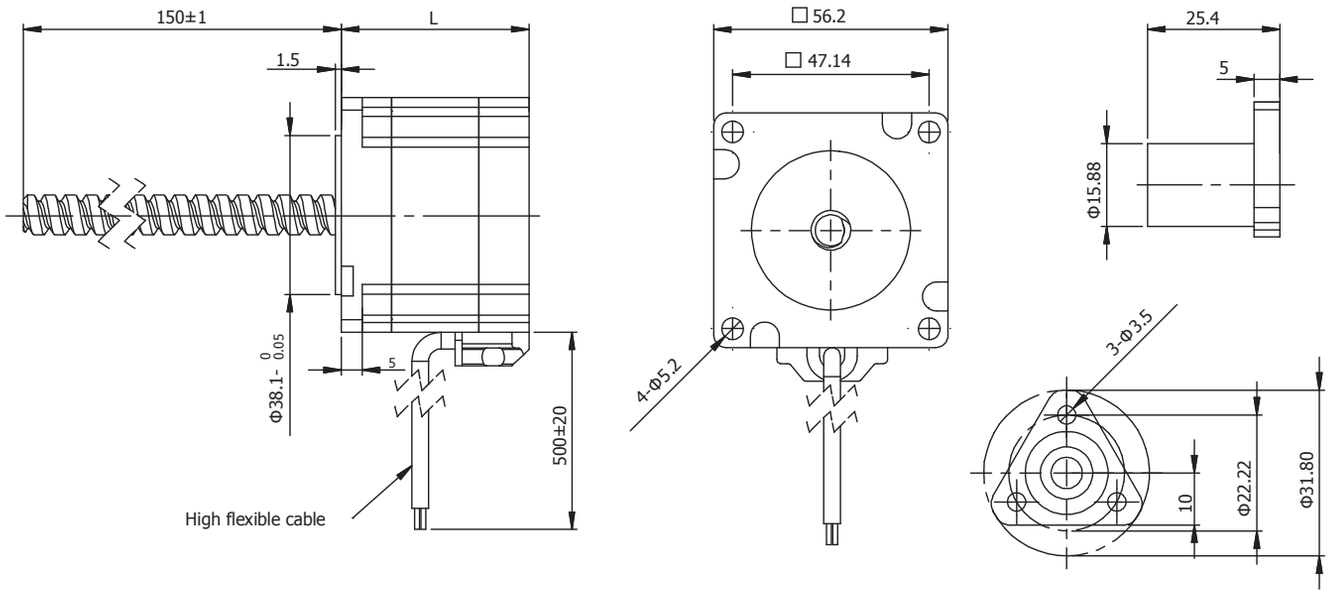
42 series 60mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
6,35	6,35	12,7	19,05	25,4	31,75	38,1	44,45	50,8	57,15
12,7	12,7	25,4	38,1	50,8	63,5	76,2	88,9	101,6	114,3
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 40V									

External Linear Actuator 57E

Hybrid Stepper motor

□ 57mm



Note: nut options available on request

Actuator Specification						
	Model		57E45	57E55	57E65	57E75
1	Rated Voltage	V	2,3	3	3,1	3,8
2	Current / Phase	A	3	3	4	4
3	Resistance / Phase	Ω	0,75	1	0,78	0,95
4	Inductance / Phase	mH	2,5	4,5	3,3	4,5
5	n° of Lead Wires		4	4	4	4
6	Rotor Inertia	gcm2	150	300	400	480
7	Motor Length (L)	mm	45	55	65	75
8	Weight	g	580	710	880	950

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

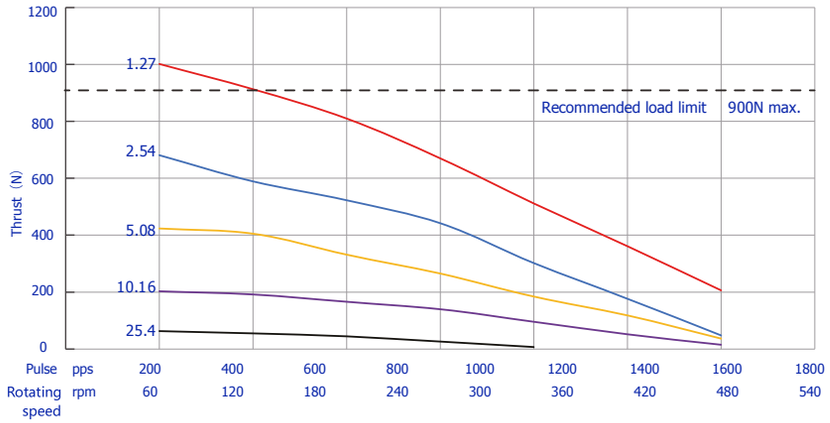
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
DA	9,525	1,27	0,00635	800
DB	9,525	2,54	0,0127	300
DC	9,525	5,08	0,0254	90
DD	9,525	10,16	0,0508	30
DE	9,525	25,4	0,127	6

Note 1: other screw options available on request

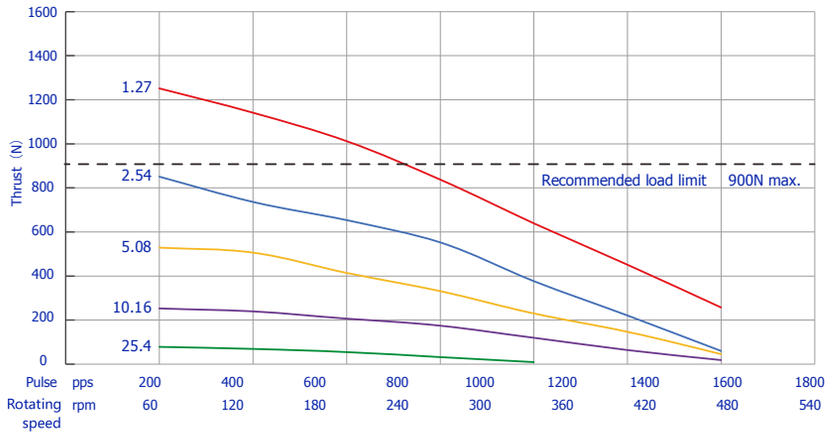
Note 2: customized machining is viable at the end of lead screw

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

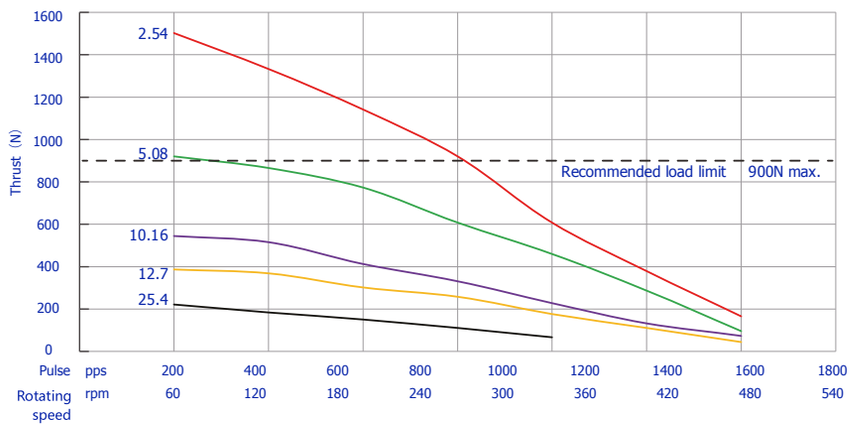
Product code reference	
57E45-30-DA100	
57	Frame size
E	External
45	Motor length
30	Current / Phase (2-digit no comma)
DA	Lead screw code
100	Screw length



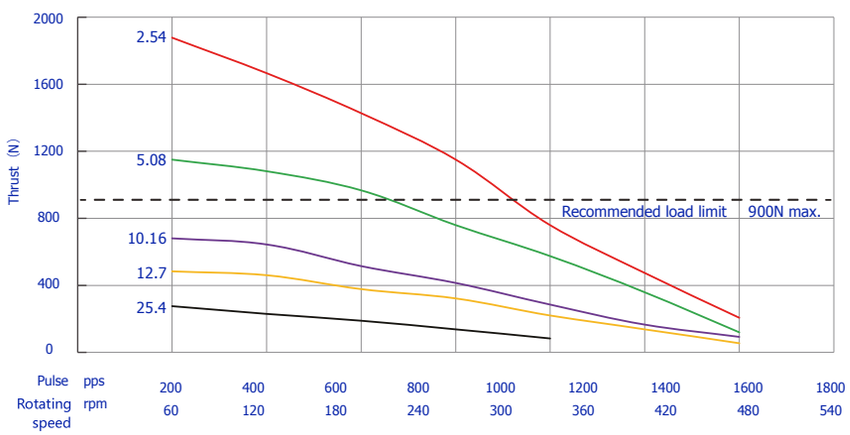
57 series 45mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ9.525mm lead screw)



57 series 55mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ9.525mm lead screw)

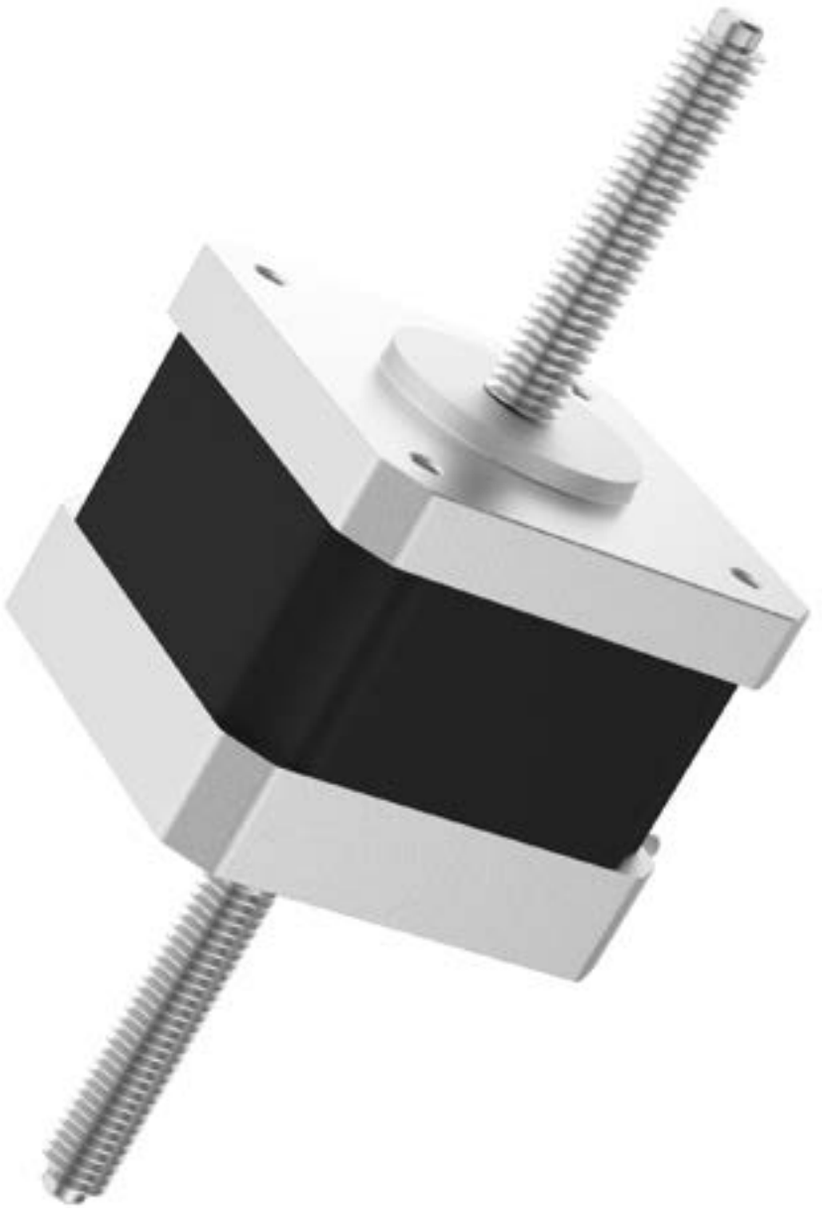


57 series 65mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ9.525mm lead screw)



57 series 75mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ9.525mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
5,08	5,08	10,16	15,24	20,32	25,4	30,48	35,56	40,64	45,72
10,16	10,16	20,32	30,48	40,64	50,8	60,96	71,12	81,28	91,44
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 40V									



Non-Captive Linear Actuators

Advantages at a glance
Small to medium load ratings
High accuracy
Customizable

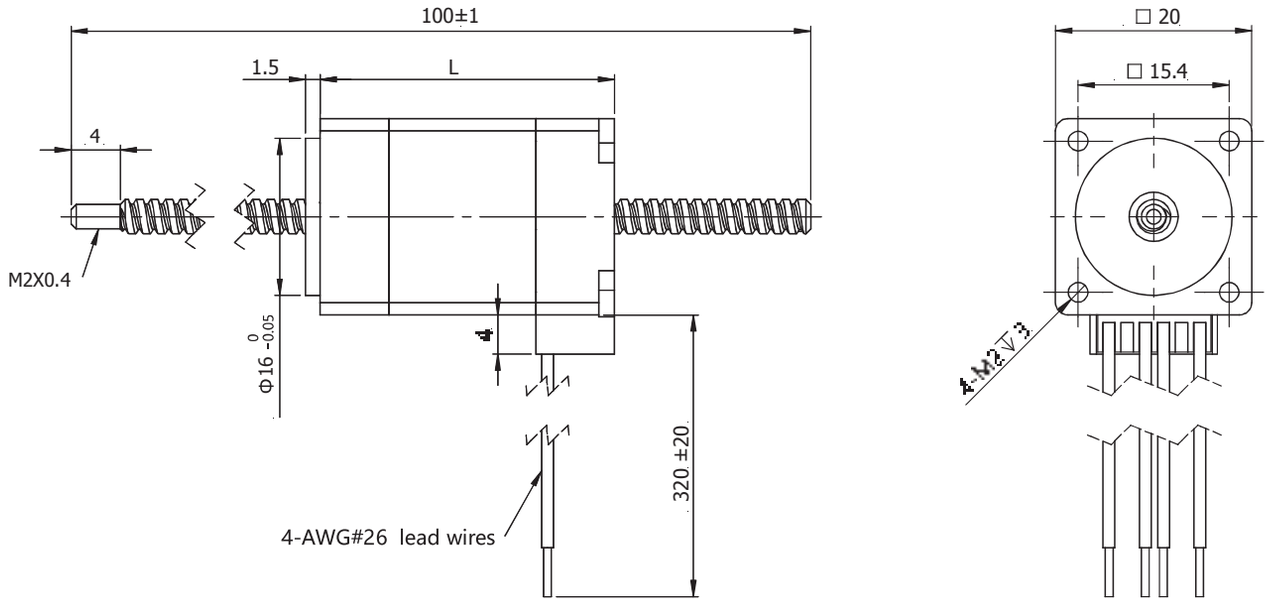
Our Non-Captive Stepper Motor Actuators are offered in NEMA 8,11,14, 17 and 23 frame motors. These stepper motor linear actuators operate with a precision lead screw that translates through the motor housing. The lead screw nut is manufactured from high performance plastic to offer long life and maximum load carrying.

Non-Captive Hybrid Stepper Linear Actuators	
20N	358
28N	360
35N	362
42N	364
57N	366

Non-Captive Linear Actuator 20N

Hybrid Stepper motor

□ 20mm



Actuator Specification				
	Model		20N30	20N42
1	Rated Voltage	V	2,5	6,3
2	Current / Phase	A	0,5	0,5
3	Resistance / Phase	Ω	5,1	12,5
4	Inductance / Phase	mH	1,5	11
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	2	3
7	Motor Length (L)	mm	30	42
8	Weight	g	50	80

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

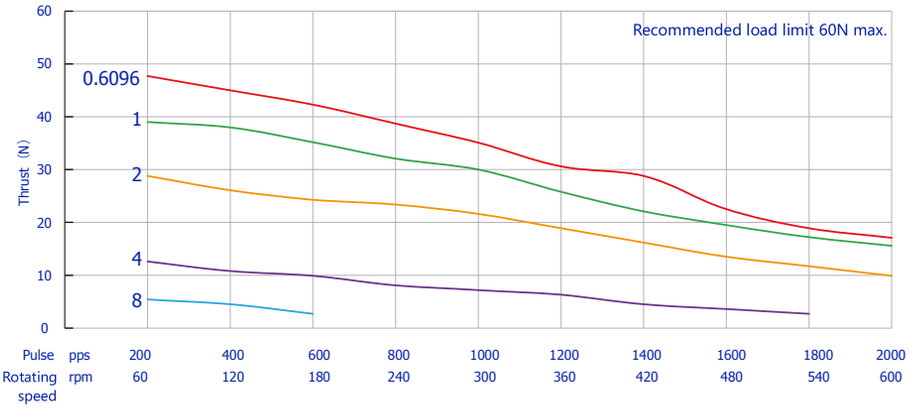
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
AA	3,5	0,6096	0,003048	80
AB	3,5	1	0,005	40
AC	3,5	2	0,01	10
AD	3,5	4	0,02	1
AE	3,5	8	0,04	0

Note 1: other screw options available on request

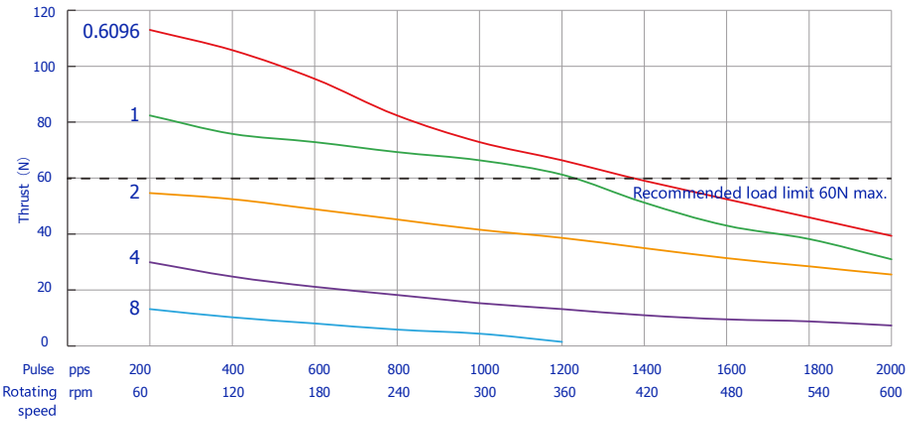
Note 2: customized machining is viable at the end of lead screw

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

Product code reference	
20N30-05-AA100	
20	Frame size
N	Non-Captive
30	Motor length
05	Current / Phase (2-digit no comma)
AA	Lead screw code
100	Screw length



20 series 30mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ3.5mm lead screw)



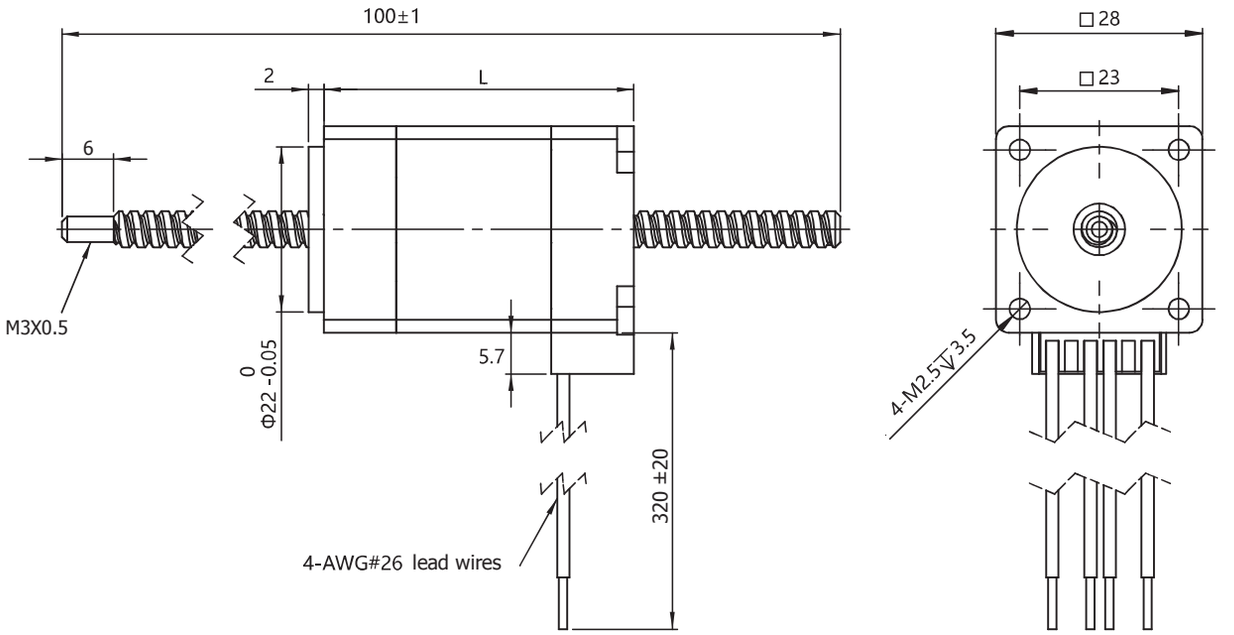
20 series 42mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ3.5mm lead screw)

Lead (mm)	Linear Velocity (mm/s)									
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540	600
0,6096	0,6096	1,2192	1,8288	2,4384	3,048	3,6576	4,2672	4,8768	5,4864	6,096
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
4	4	8	12	16	20	24	28	32	36	40
8	8	16	24	32	40	48	56	64	72	80
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V										

Non-Captive Linear Actuator 28N

Hybrid Stepper motor

□ 28mm



Actuator Specification				
	Model		28N34	28N45
1	Rated Voltage	V	2,1	3,7
2	Current / Phase	A	1	1
3	Resistance / Phase	Ω	2,1	3,7
4	Inductance / Phase	mH	1,5	2,3
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	9	13
7	Motor Length (L)	mm	34	45
8	Weight	g	120	180

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

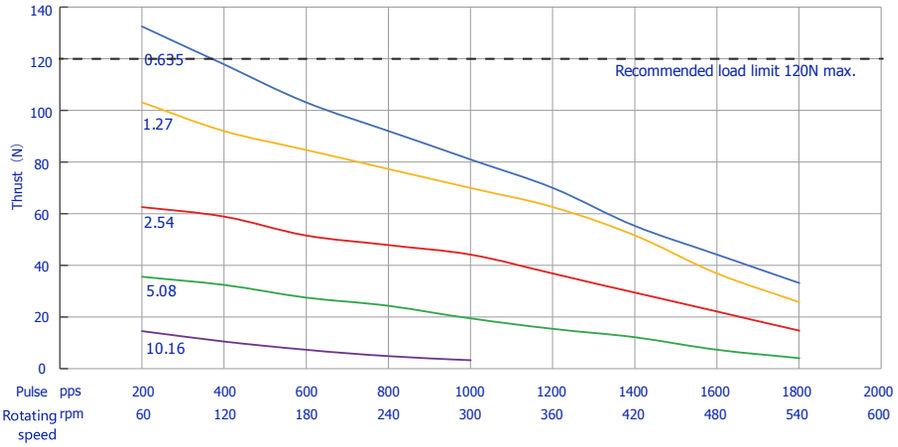
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
BA	4,76	0,635	0,003175	100
BB	4,76	1,27	0,00635	40
BC	4,76	2,54	0,0127	10
BD	4,76	5,08	0,0254	1
BE	4,76	10,16	0,0508	0

Note 1: other screw options available on request

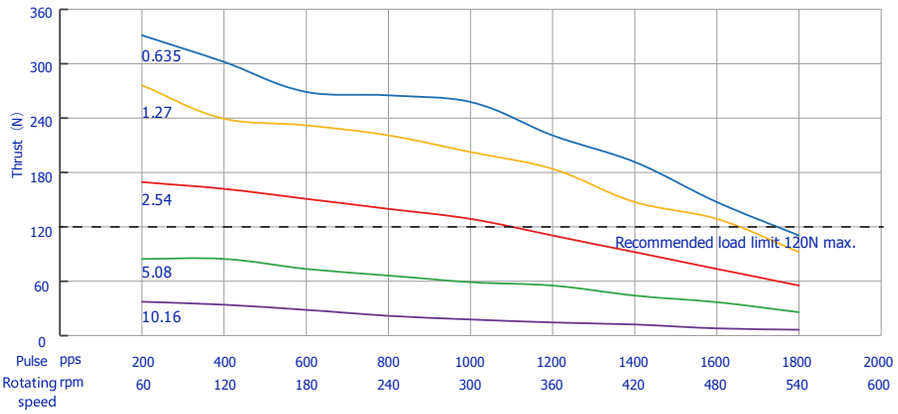
Note 2: customized machining is viable at the end of lead screw

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

Product code reference	
28N34-1-BA100	
28	Frame size
N	Non-Captive
34	Motor length
10	Current / Phase (2-digit no comma)
BA	Lead screw code
100	Screw length



28 series 34mm motor
length bipolar Chopper drive
100% current pulsefrequency and thrust curve
(Φ4.76mm lead screw)



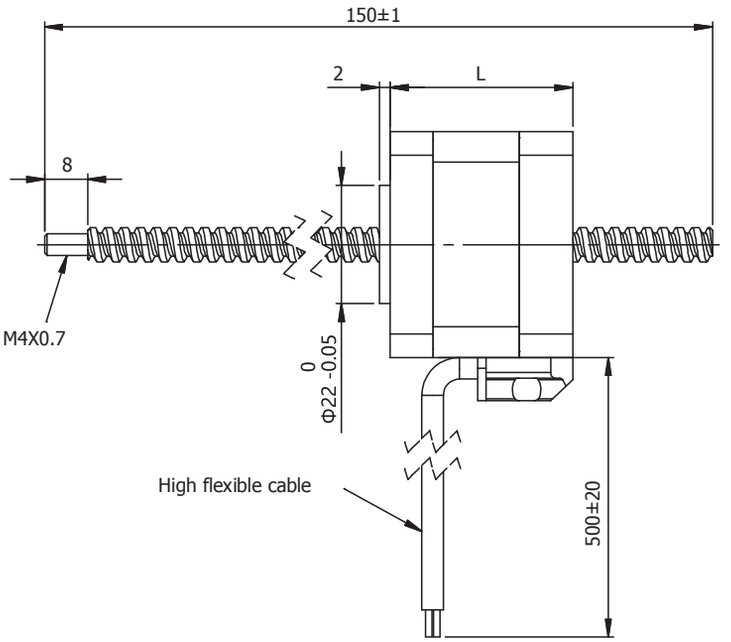
28 series 45mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ4.76mm lead screw)

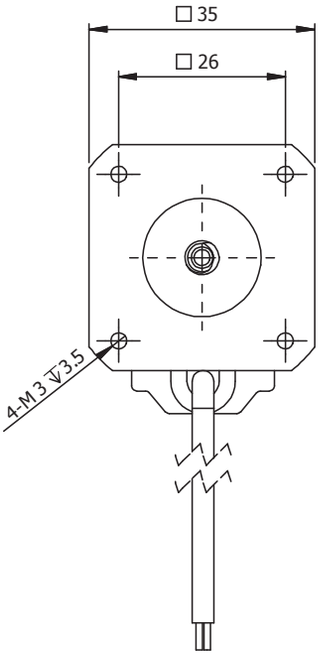
Lead (mm)	Linear Velocity (mm/s)									
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540	600
0,635	0,635	1,27	1,905	2,54	3,175	3,81	4,445	5,08	5,715	6,35
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43	12,7
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86	25,4
5,08	5,08	10,16	15,24	20,32	25,4	30,48	35,56	40,64	45,72	50,8
10,16	10,16	20,32	30,48	40,64	50,8	60,96	71,12	81,28	91,44	101,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V										

Non-Captive Linear Actuator 35N

Hybrid Stepper motor

□ 35mm





Actuator Specification				
	Model		35N34	35N47
1	Rated Voltage	V	1,4	2,9
2	Current / Phase	A	1,5	1,5
3	Resistance / Phase	Ω	0,95	1,9
4	Inductance / Phase	mH	1,4	3,2
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	20	30
7	Motor Length (L)	mm	34	47
8	Weight	g	190	230

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

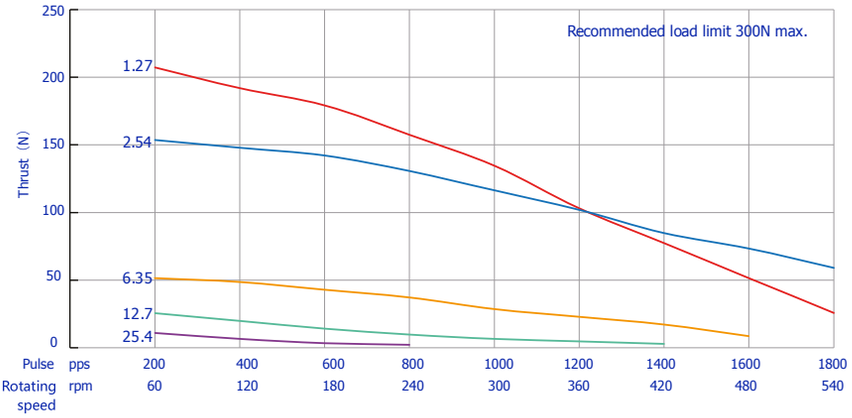
Connection			
Lead n°	Gauge	Color	Function
1	Flex cable	Black	Phase A+
2	|	Green	Phase A-
3	|	Red	Phase B+
4	|	Blue	Phase B-

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
CA	6,35	1,27	0,00635	150
CB	6,35	2,54	0,0127	40
CC	6,35	6,35	0,03175	15
CD	6,35	12,7	0,0635	3
CE	6,35	25,4	0,127	0

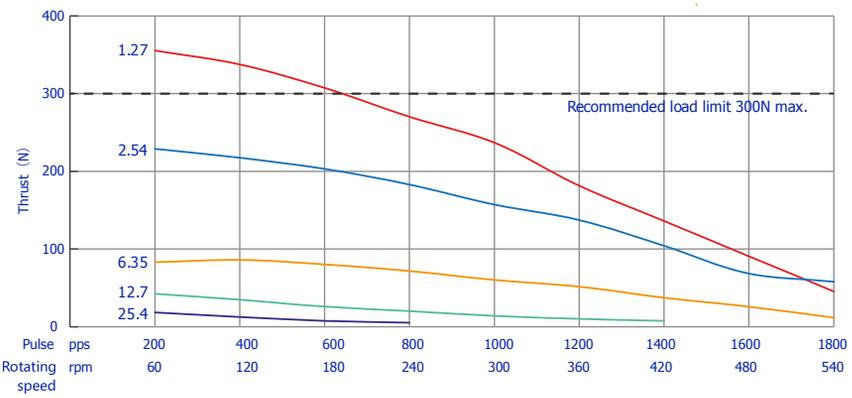
Note 1: other screw options available on request

Note 2: customized machining is viable at the end of lead screw

Product code reference	
35N34-15-CA100	
35	Frame size
N	Non-Captive
34	Motor length
15	Current / Phase (2-digit no comma)
CA	Lead screw code
100	Screw length



35 series 34mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



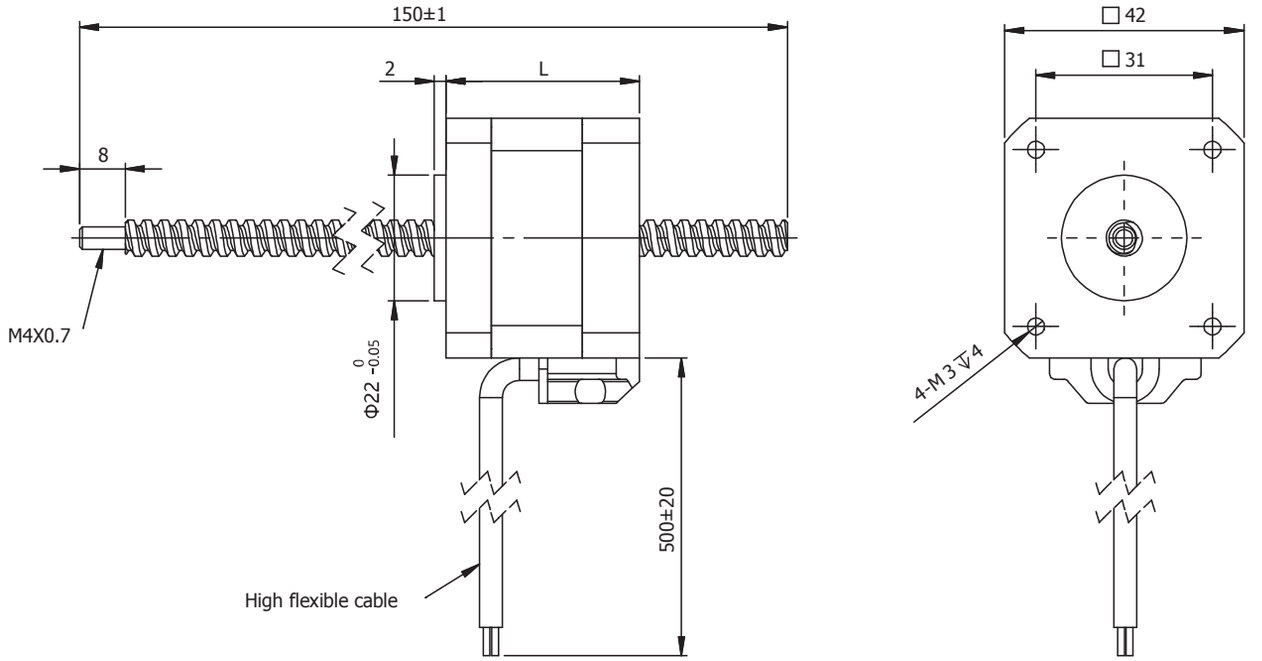
35 series 47mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
6,35	6,35	12,7	19,05	25,4	31,75	38,1	44,45	50,8	57,15
12,7	12,7	25,4	38,1	50,8	63,5	76,2	88,9	101,6	114,3
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V									

Non-Captive Linear Actuator 42N

Hybrid Stepper motor

□ 42mm



Actuator Specification						
	Model		42N34	42N40	42N48	42N60
1	Rated Voltage	V	2,6	3,3	2	2,5
2	Current / Phase	A	1,5	1,5	2,5	2,5
3	Resistance / Phase	Ω	1,8	2,2	0,8	1
4	Inductance / Phase	mH	2,6	4,6	1,8	2,8
5	n° of Lead Wires		4	4	4	4
6	Rotor Inertia	gcm2	35	55	70	105
7	Motor Length (L)	mm	34	40	48	60
8	Weight	g	250	290	385	450

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

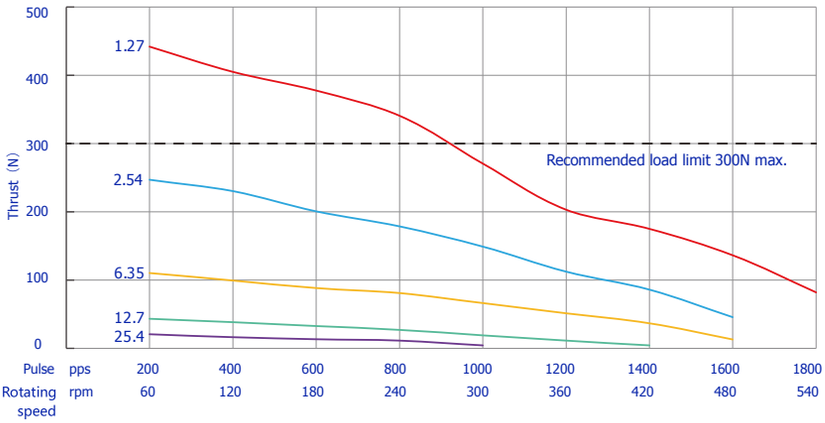
Connection			
Lead n°	Gauge	Color	Function
1	Flex cable	Black	Phase A+
2	|	Green	Phase A-
3	|	Red	Phase B+
4	|	Blue	Phase B-

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
CA	6,35	1,27	0,00635	150
CB	6,35	2,54	0,0127	40
CC	6,35	6,35	0,03175	15
CD	6,35	12,7	0,0635	3
CE	6,35	25,4	0,127	0

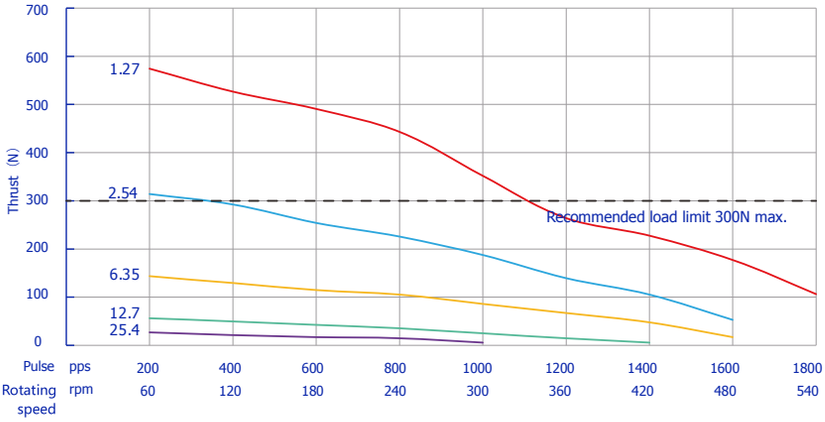
Note 1: other screw options available on request

Note 2: customized machining is viable at the end of lead screw

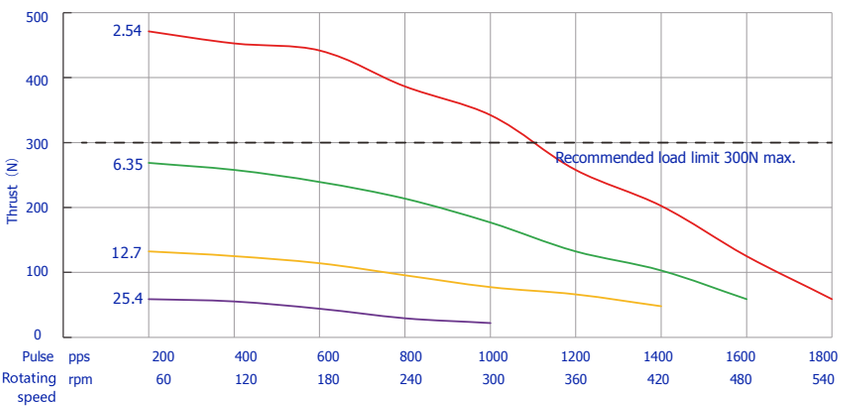
Product code reference	
42N34-15-CA100	
42	Frame size
N	Non-Captive
34	Motor length
15	Current / Phase (2-digit no comma)
CA	Lead screw code
100	Screw length



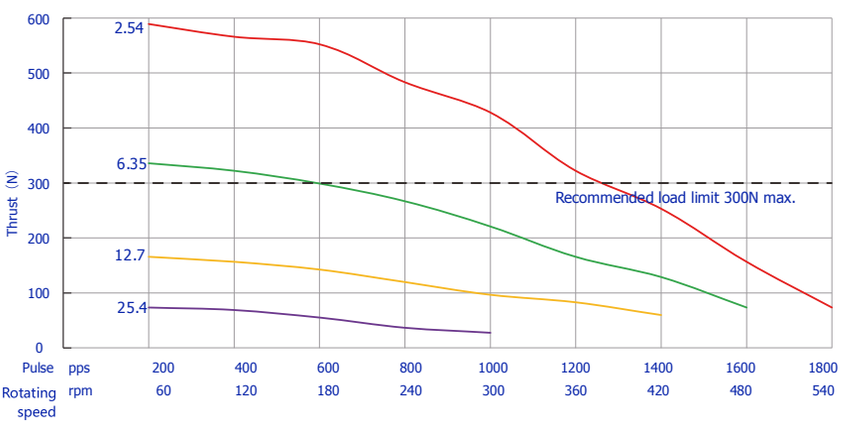
42 series 34mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



42 series 40mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



42 series 48mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



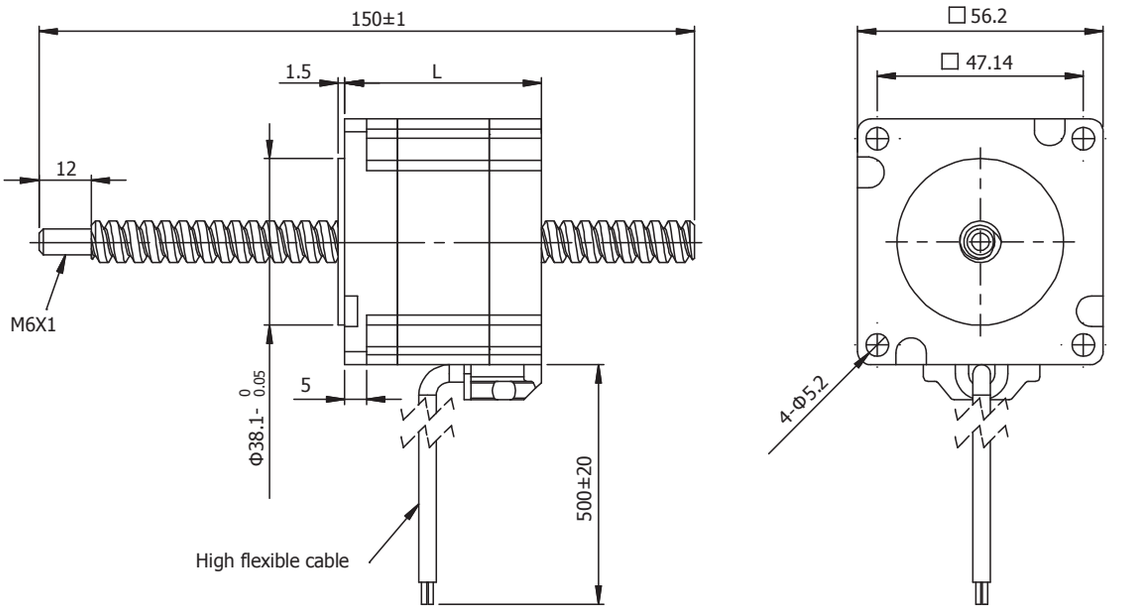
42 series 60mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
6,35	6,35	12,7	19,05	25,4	31,75	38,1	44,45	50,8	57,15
12,7	12,7	25,4	38,1	50,8	63,5	76,2	88,9	101,6	114,3
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 40V									

Non-Captive Linear Actuator 57N

Hybrid Stepper motor

□ 57mm



Actuator Specification						
	Model		57N45	57N55	57N65	57N75
1	Rated Voltage	V	2,3	3	3,1	3,8
2	Current / Phase	A	3	3	4	4
3	Resistance / Phase	Ω	0,75	1	0,78	0,95
4	Inductance / Phase	mH	2,5	4,5	3,3	4,5
5	n° of Lead Wires		4	4	4	4
6	Rotor Inertia	gcm2	150	300	400	480
7	Motor Length (L)	mm	45	55	65	75
8	Weight	g	580	710	880	950

Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

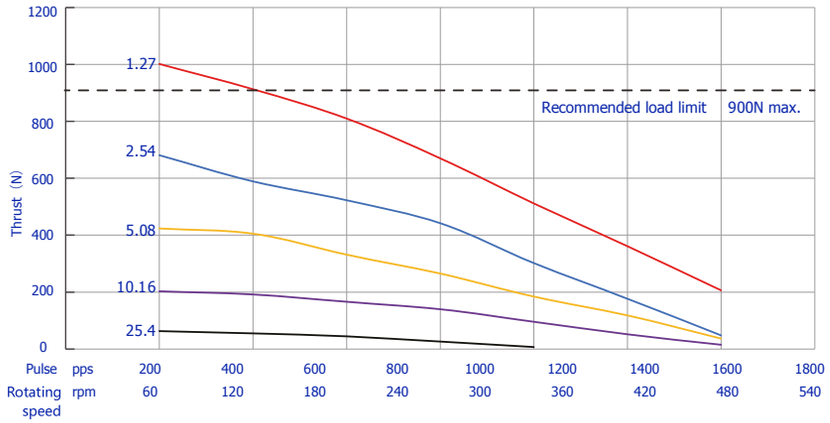
Connection			
Lead n°	Gauge	Color	Function
1	Flex cable	Black	Phase A+
2	|	Green	Phase A-
3	|	Red	Phase B+
4	|	Blue	Phase B-

Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
DA	9,525	1,27	0,00635	800
DB	9,525	2,54	0,0127	300
DC	9,525	5,08	0,0254	90
DD	9,525	10,16	0,0508	30
DE	9,525	25,4	0,127	6

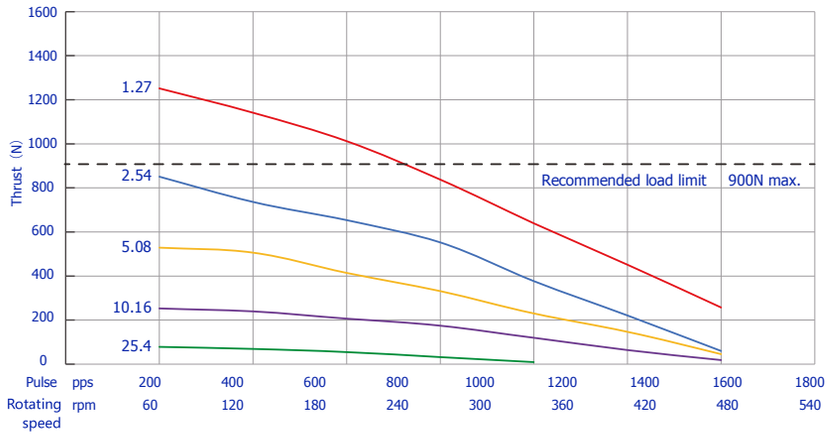
Note 1: other screw options available on request

Note 2: customized machining is viable at the end of lead screw

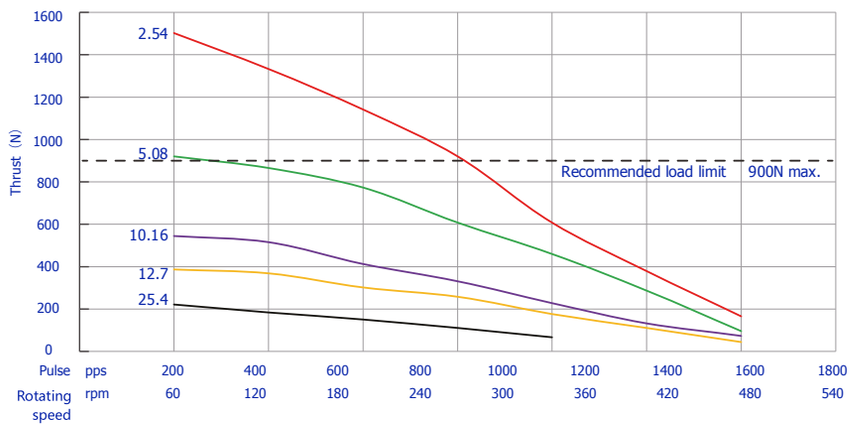
Product code reference	
57N45-30-DA100	
57	Frame size
N	Non-Captive
45	Motor length
30	Current / Phase (2-digit no comma)
DA	Lead screw code
100	Screw length



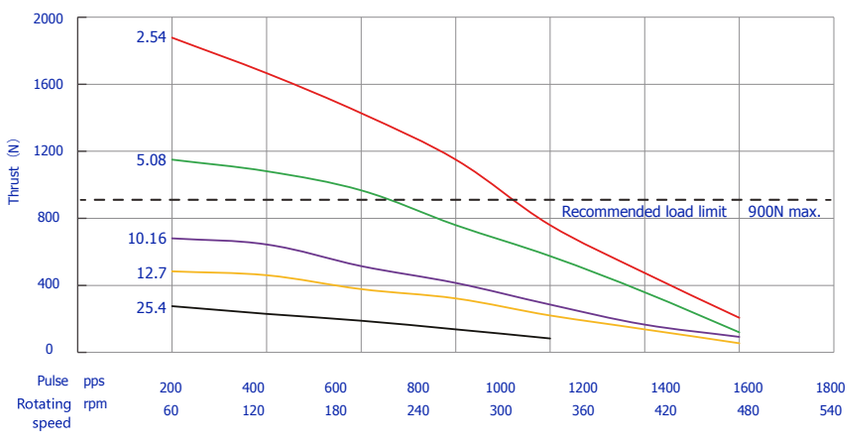
57 series 45mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ9.525mm lead screw)



57 series 55mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ9.525mm lead screw)



57 series 65mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ9.525mm lead screw)



57 series 75mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ9.525mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
5,08	5,08	10,16	15,24	20,32	25,4	30,48	35,56	40,64	45,72
10,16	10,16	20,32	30,48	40,64	50,8	60,96	71,12	81,28	91,44
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 40V									



Captive Linear Actuators

Advantages at a glance
Small to medium load ratings
High accuracy
Customizable

Our Captive Stepper Motor Actuators feature a precision lead screw, nut and a spline shaft to produce accurate and repeatable linear motion. Actuators are manufactured in NEMA sizes 8, 11, 14, 17 and 23. These captive linear stepper motor actuators operate with a precision lead screw and spline shaft that translates through the motor housing.

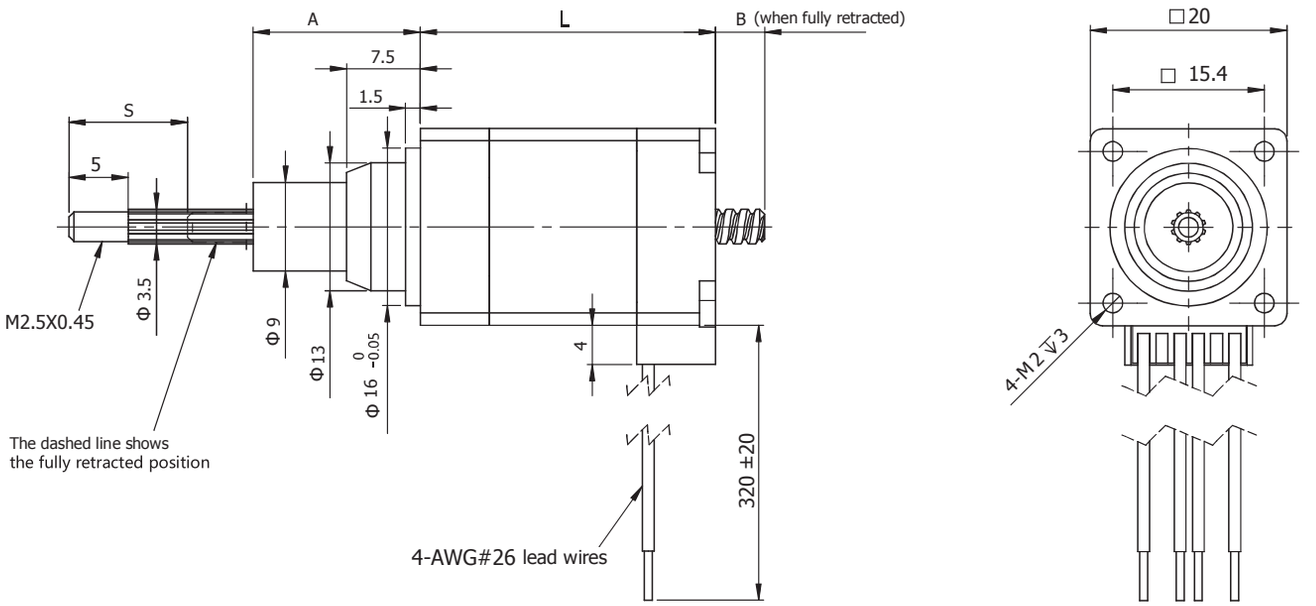
Captive Hybrid Stepper Linear Actuators	
20C	370
28C	372
35C	374
42C	376
57C	378

* Max. Axial Load

Captive Linear Actuator 20C

Hybrid Stepper motor

□ 20mm



Actuator Specification				
	Model		20C30	20C42
1	Rated Voltage	V	2,5	6,3
2	Current / Phase	A	0,5	0,5
3	Resistance / Phase	Ω	5,1	12,5
4	Inductance / Phase	mH	1,5	11
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	2	3
7	Motor Length (L)	mm	30	42
8	Weight	g	50	80

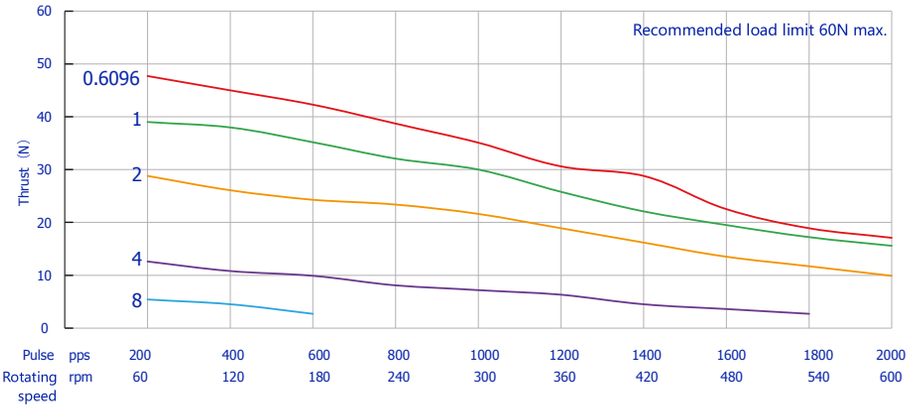
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

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

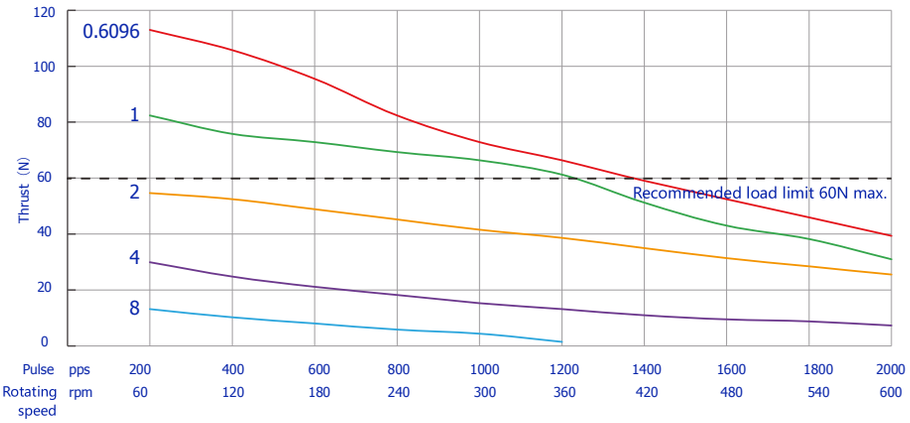
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
AA	3,5	0,6096	0,003048	80
AB	3,5	1	0,005	40
AC	3,5	2	0,01	10
AD	3,5	4	0,02	1
AE	3,5	8	0,04	0
Note 1: other screw options available on request				
Note 2: customized machining is viable at the end of lead screw				

Standard Stroke options			
Stroke S (mm)	A (mm)	B (mm)	
		Motor L=30	Motor L=42
9	14,6	0,4	0
12,7	18,3	4,1	0
19,1	24,7	10,5	0,3
25,4	31	16,8	6,6
31,8	37,4	23,2	13
38,1	43,7	29,5	19,3
50,8	56,4	42,2	32

Product code reference	
20C30-05-AA127	
20	Frame size
C	Captive
30	Motor length
05	Current / Phase (2-digit no comma)
AA	Lead screw code
127	Stroke S (3-digit no comma)



20 series 30mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ3.5mm lead screw)



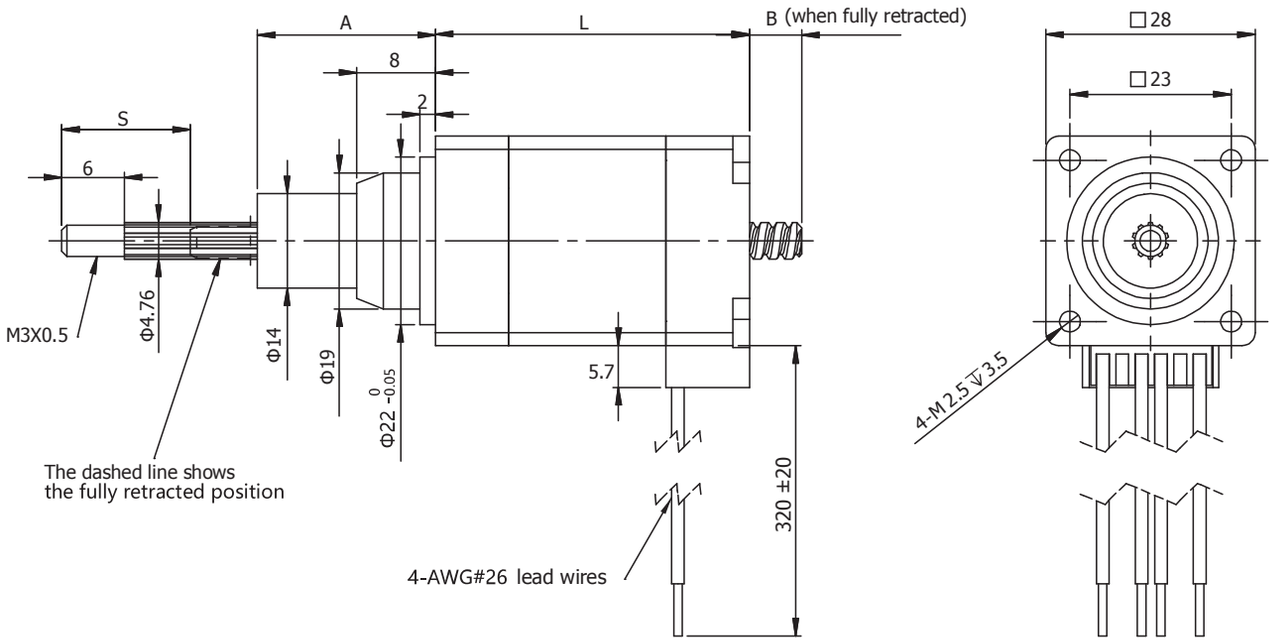
20 series 42mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ3.5mm lead screw)

Lead (mm)	Linear Velocity (mm/s)									
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540	600
0,6096	0,6096	1,2192	1,8288	2,4384	3,048	3,6576	4,2672	4,8768	5,4864	6,096
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
4	4	8	12	16	20	24	28	32	36	40
8	8	16	24	32	40	48	56	64	72	80
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V										

Captive Linear Actuator 28C

Hybrid Stepper motor

□ 28mm



Actuator Specification				
	Model		28C34	28C45
1	Rated Voltage	V	2,1	3,7
2	Current / Phase	A	1	1
3	Resistance / Phase	Ω	2,1	3,7
4	Inductance / Phase	mH	1,5	2,3
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	9	13
7	Motor Length (L)	mm	34	45
8	Weight	g	120	180

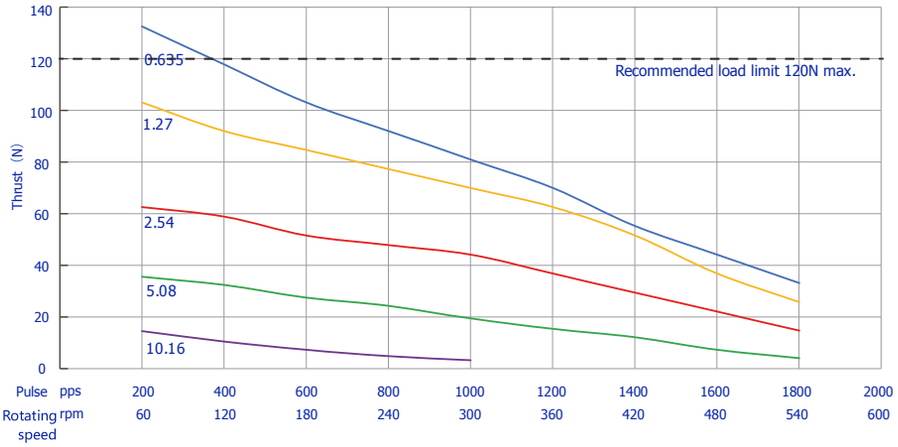
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

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

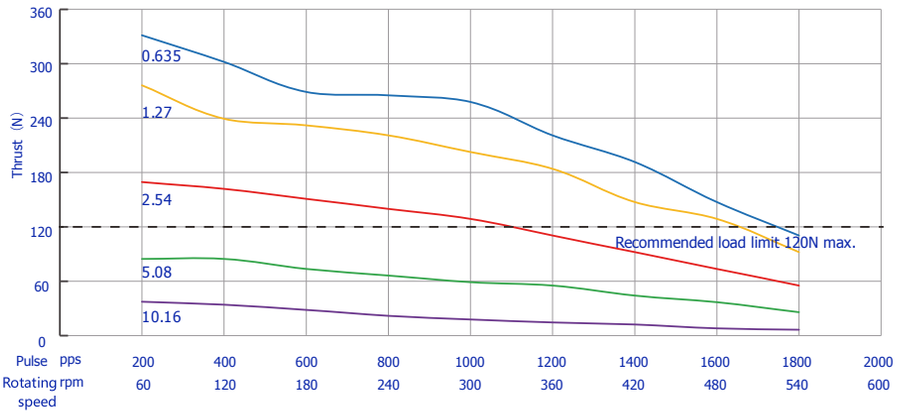
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
BA	4,76	0,635	0,003175	100
BB	4,76	1,27	0,00635	40
BC	4,76	2,54	0,0127	10
BD	4,76	5,08	0,0254	1
BE	4,76	10,16	0,0508	0
Note 1: other screw options available on request				
Note 2: customized machining is viable at the end of lead screw				

Standard Stroke options			
Stroke S (mm)	A (mm)	B (mm)	
		Motor L=34	Motor L=45
12,7	19,8	6,5	0
19,1	26,2	12,9	0
25,4	32,5	19,2	5,9
31,8	38,9	25,6	12,3
38,1	45,2	31,9	18,6
50,8	57,9	44,6	31,3
63,5	70,6	57,3	44

Product code reference	
28C34-10-BA127	
28	Frame size
C	Captive
34	Motor length
10	Current / Phase (2-digit no comma)
BA	Lead screw code
127	Stroke S (3-digit no comma)



28 series 34mm motor
length bipolar Chopper drive
100% current pulsefrequency and thrust curve
(Φ4.76mm lead screw)



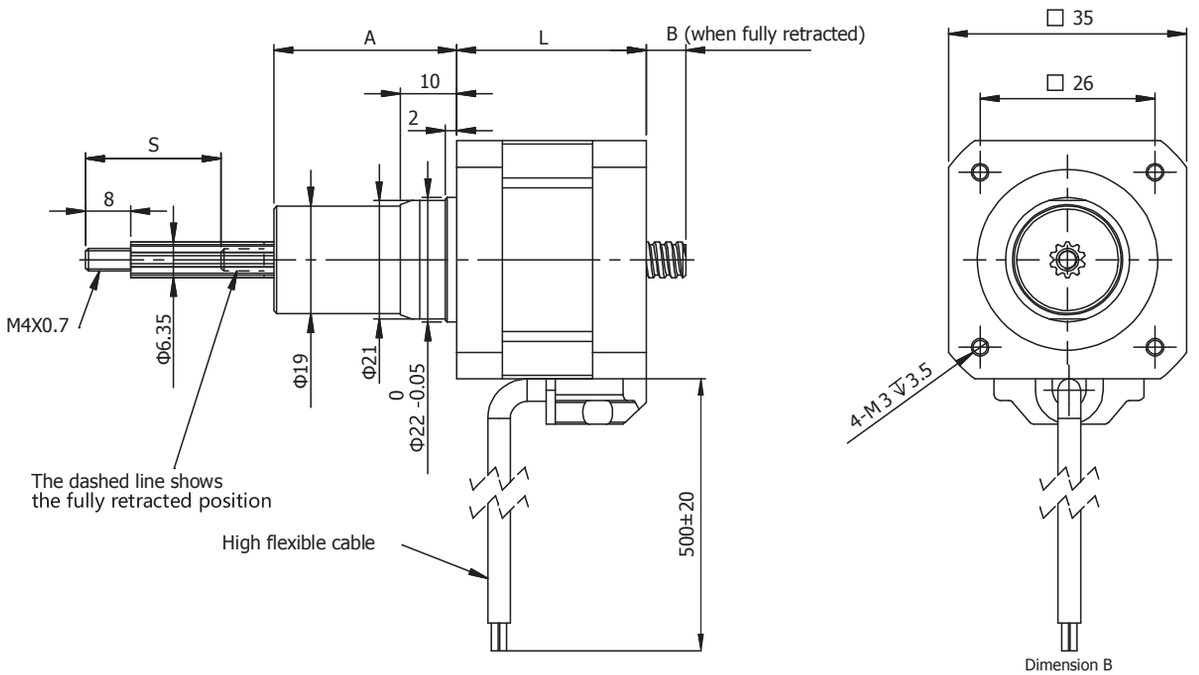
28 series 45mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ4.76mm lead screw)

Lead (mm)	Linear Velocity (mm/s)									
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800	2000
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540	600
0,635	0,635	1,27	1,905	2,54	3,175	3,81	4,445	5,08	5,715	6,35
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43	12,7
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86	25,4
5,08	5,08	10,16	15,24	20,32	25,4	30,48	35,56	40,64	45,72	50,8
10,16	10,16	20,32	30,48	40,64	50,8	60,96	71,12	81,28	91,44	101,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V										

Captive Linear Actuator 35C

Hybrid Stepper motor

□ 35mm



Actuator Specification				
	Model		35C34	35C47
1	Rated Voltage	V	1,4	2,9
2	Current / Phase	A	1,5	1,5
3	Resistance / Phase	Ω	0,95	1,9
4	Inductance / Phase	mH	1,4	3,2
5	n° of Lead Wires		4	4
6	Rotor Inertia	gcm2	20	30
7	Motor Length (L)	mm	34	47
8	Weight	g	190	230

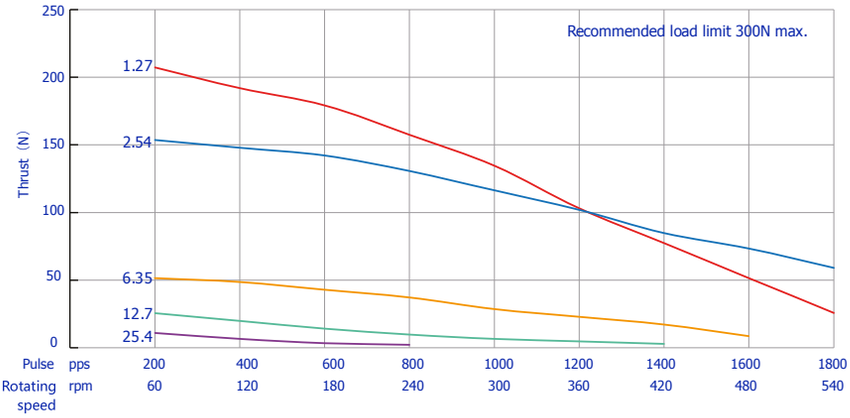
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

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

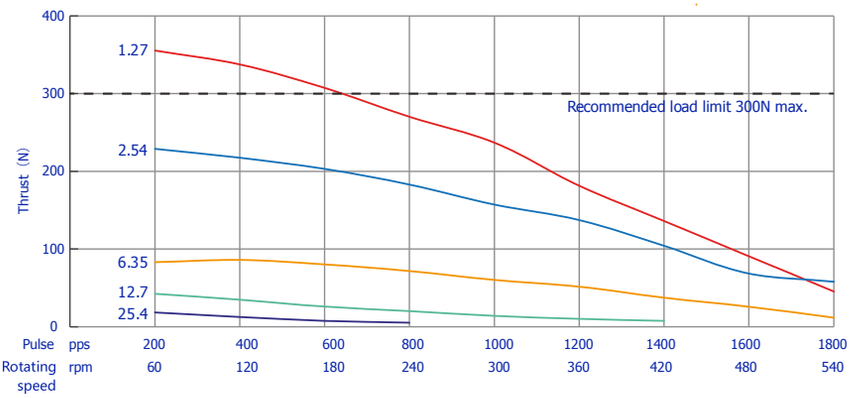
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
CA	6,35	1,27	0,00635	150
CB	6,35	2,54	0,0127	40
CC	6,35	6,35	0,03175	15
CD	6,35	12,7	0,0635	3
CE	6,35	25,4	0,127	0
Note 1: other screw options available on request				
Note 2: customized machining is viable at the end of lead screw				

Standard Stroke options			
Stroke S (mm)	A (mm)	B (mm)	
		Motor L=34	Motor L=47
12,7	20,6	8,4	0
19,1	27	14,8	0,8
25,4	33,3	21,1	7,1
31,8	39,7	27,5	13,5
38,1	46	33,8	19,8
50,8	58,7	46,5	32,5
63,5	71,4	59,2	45,2

Product code reference	
35C34-15-CA127	
35	Frame size
C	Captive
34	Motor length
15	Current / Phase (2-digit no comma)
CA	Lead screw code
127	Stroke S (3-digit no comma)



35 series 34mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



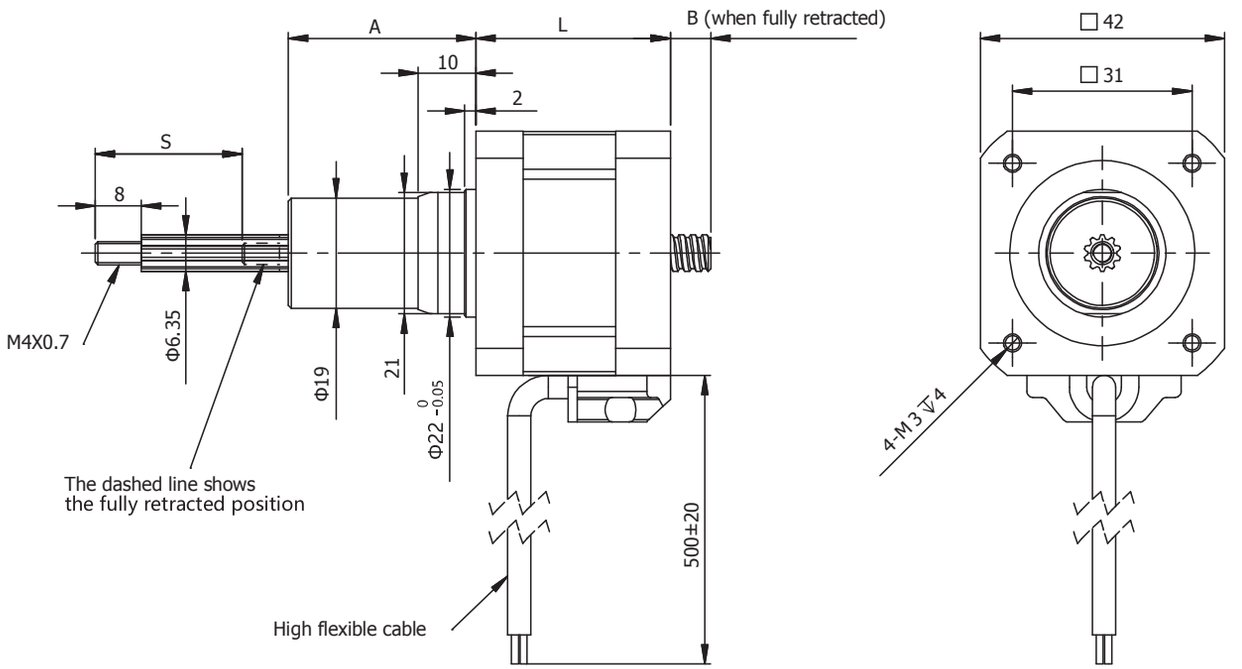
35 series 47mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
6,35	6,35	12,7	19,05	25,4	31,75	38,1	44,45	50,8	57,15
12,7	12,7	25,4	38,1	50,8	63,5	76,2	88,9	101,6	114,3
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 24V									

Captive Linear Actuator 42C

Hybrid Stepper motor

□ 42mm



Actuator Specification						
	Model		42C34	42C40	42C48	42C60
1	Rated Voltage	V	2,6	3,3	2	2,5
2	Current / Phase	A	1,5	1,5	2,5	2,5
3	Resistance / Phase	Ω	1,8	2,2	0,8	1
4	Inductance / Phase	mH	2,6	4,6	1,8	2,8
5	n° of Lead Wires		4	4	4	4
6	Rotor Inertia	gcm2	35	55	70	105
7	Motor Length (L)	mm	34	40	48	60
8	Weight	g	250	290	385	450

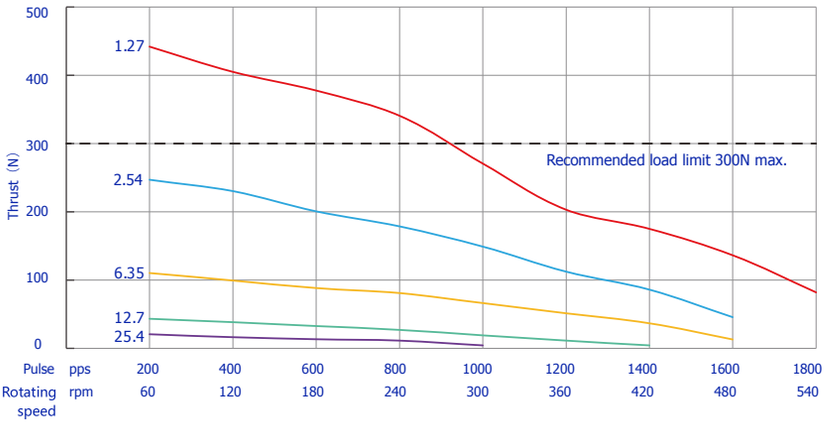
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

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

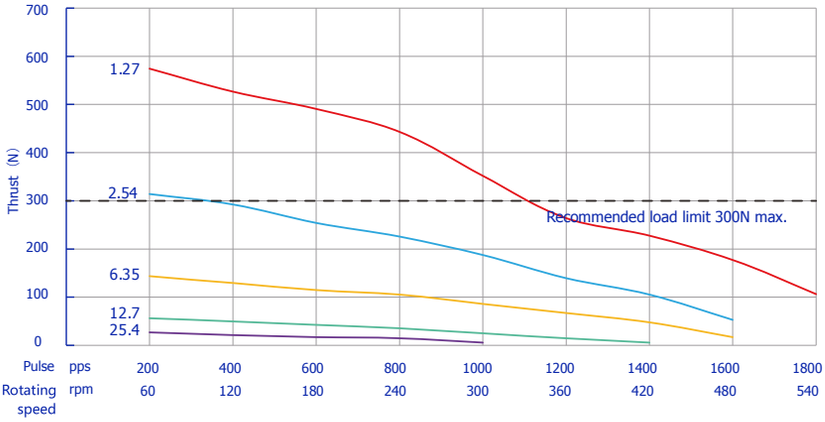
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
CA	6,35	1,27	0,00635	150
CB	6,35	2,54	0,0127	40
CC	6,35	6,35	0,03175	15
CD	6,35	12,7	0,0635	3
CE	6,35	25,4	0,127	0
Note 1: other screw options available on request				
Note 2: customized machining is viable at the end of lead screw				

Standard Stroke options					
Stroke S (mm)	A (mm)	B (mm)			
		Motor L=34	Motor L=40	Motor L=48	Motor L=60
12,7	20,6	6,4	0,4	0	0
19,1	27	12,8	6,8	0	0
25,4	33,3	19,1	13,1	5,1	0
31,8	39,7	25,5	19,5	11,5	0
38,1	46	31,8	25,8	17,8	5,8
50,8	58,7	44,5	38,5	30,5	18,5
63,5	71,4	57,2	51,2	43,2	31,2

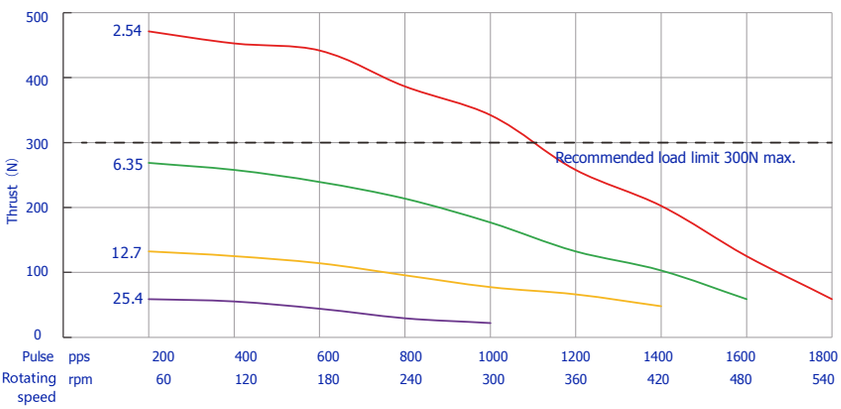
Product code reference	
42C34-15-CA127	
42	Frame size
C	Captive
34	Motor length
15	Current / Phase (2-digit no comma)
CA	Lead screw code
127	Stroke S (3-digit no comma)



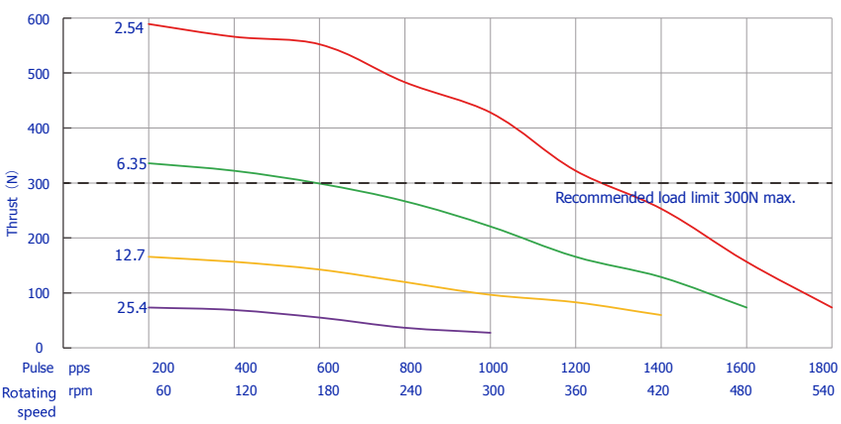
42 series 34mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



42 series 40mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



42 series 48mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)



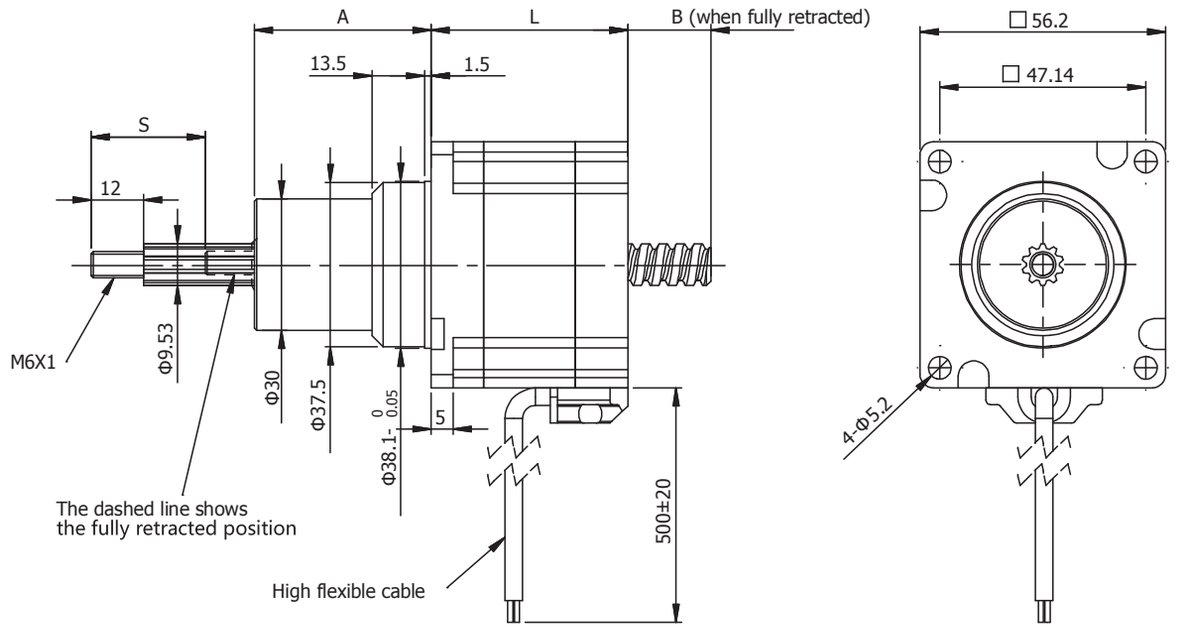
42 series 60mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ6.35mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
6,35	6,35	12,7	19,05	25,4	31,75	38,1	44,45	50,8	57,15
12,7	12,7	25,4	38,1	50,8	63,5	76,2	88,9	101,6	114,3
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 40V									

Captive Linear Actuator 57C

Hybrid Stepper motor

□ 57mm



Actuator Specification						
	Model		57C45	57C55	57C65	57C75
1	Rated Voltage	V	2,3	3	3,1	3,8
2	Current / Phase	A	3	3	4	4
3	Resistance / Phase	Ω	0,75	1	0,78	0,95
4	Inductance / Phase	mH	2,5	4,5	3,3	4,5
5	n° of Lead Wires		4	4	4	4
6	Rotor Inertia	gcm2	150	300	400	480
7	Motor Length (L)	mm	45	55	65	75
8	Weight	g	580	710	880	950

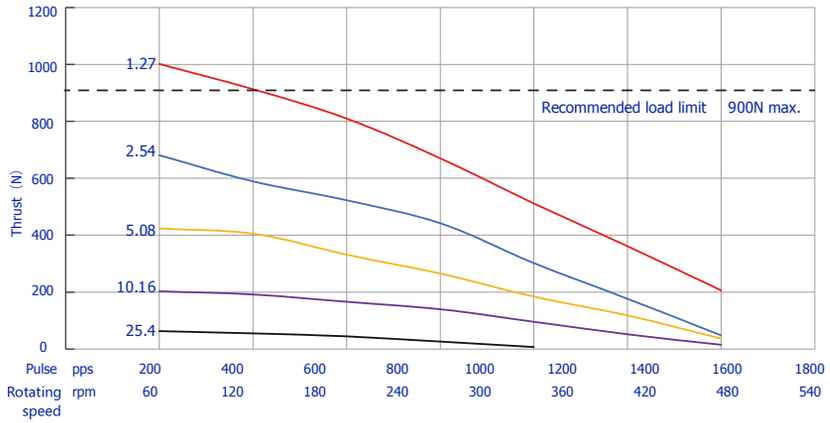
Actuator Characteristics	
Item	
Wiring	Bipolar
Step angle	1,8°
Insulation Class	B
Protection Class	IP20
Operating Temperature	-20 to 50°C
Temperature Rise	max. 80°C
Dielectric Strength (for 1 sec.)	500VAC

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

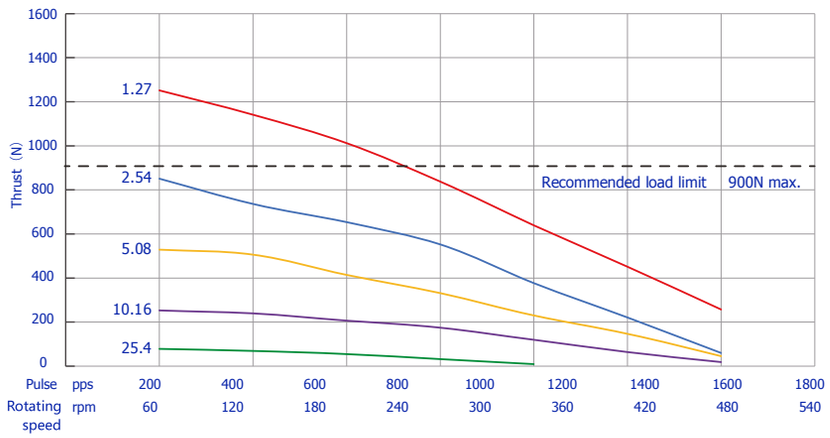
Standard Lead Screws - ACME				
Code	Ø (mm)	Lead (mm)	Step (mm)	Power off force (N)
DA	9,525	1,27	0,00635	800
DB	9,525	2,54	0,0127	300
DC	9,525	5,08	0,0254	90
DD	9,525	10,16	0,0508	30
DE	9,525	25,4	0,127	6
Note 1: other screw options available on request				
Note 2: customized machining is viable at the end of lead screw				

Standard Stroke options					
Stroke S (mm)	A (mm)	B (mm)			
		Motor L=45	Motor L=55	Motor L=65	Motor L=75
12,7	24,1	1,1	0	0	0
19,1	30,5	7,5	0	0	0
25,4	36,8	13,8	4,8	0	0
31,8	43,2	20,2	11,2	0,2	0
38,1	49,5	26,5	17,5	6,5	0
50,8	62,2	39,2	30,2	19,2	9,2
63,5	74,9	51,9	42,9	31,9	21,9

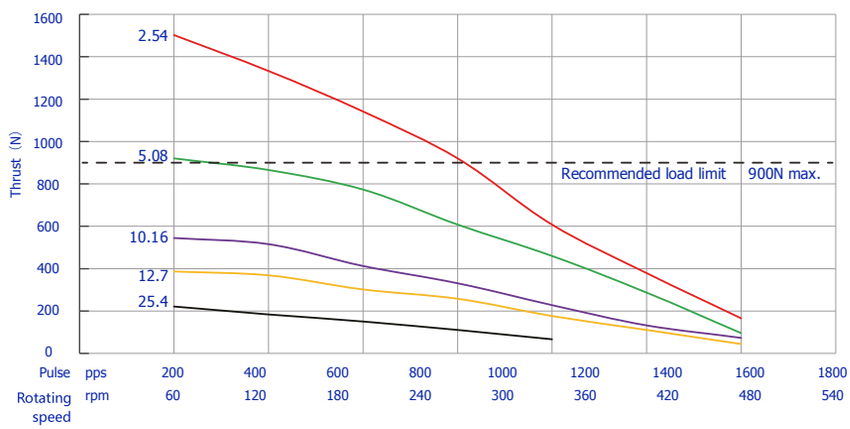
Product code reference	
57C45-30-DA127	
57	Frame size
C	Captive
45	Motor length
30	Current / Phase (2-digit no comma)
DA	Lead screw code
127	Stroke S (3-digit no comma)



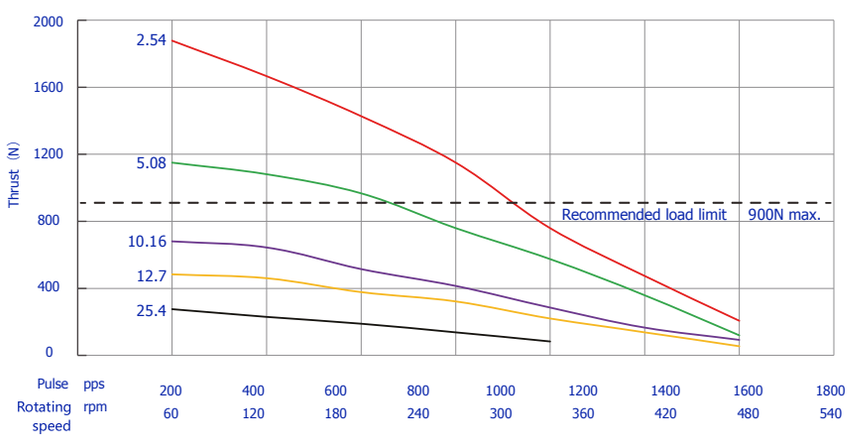
57 series 45mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ9.525mm lead screw)



57 series 55mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ9.525mm lead screw)



57 series 65mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ9.525mm lead screw)



57 series 75mm motor
length bipolar Chopper drive
100% current pulse frequency and thrust curve
(Φ9.525mm lead screw)

Lead (mm)	Linear Velocity (mm/s)								
Pulse (pps)	200	400	600	800	1000	1200	1400	1600	1800
Rotating Speed (rpm)	60	120	180	240	300	360	420	480	540
1,27	1,27	2,54	3,81	5,08	6,35	7,62	8,89	10,16	11,43
2,54	2,54	5,08	7,62	10,16	12,7	15,24	17,78	20,32	22,86
5,08	5,08	10,16	15,24	20,32	25,4	30,48	35,56	40,64	45,72
10,16	10,16	20,32	30,48	40,64	50,8	60,96	71,12	81,28	91,44
25,4	25,4	50,8	76,2	101,6	127	152,4	177,8	203,2	228,6
Test condition: chopper drive, no ramping, half micro-stepping, drive voltage 40V									

Gearboxes



Spur gearboxes

p.415



Worm & Wheel gearboxes

p.423



Planetary gearboxes GP series
Standard

p.391



Planetary gearboxes JMS series
Economy

p.407

Gearboxes

Technical introduction		386

Planetary gearboxes - GP Standard series	Torque* (Nm)	391
08GPS	0,008...0,1	392
10GPS	0,01...0,15	393
12GPS	0,08...0,17	394
16GPS	0,2...0,45	395
22GPS	0,5...1,5	396
26GPS	0,75...4,5	397
32GPS	1,25...5	398
GP42-S/N - **NEW**	0,79...15	399
GP56-S/N/T	1,5...26,38	401
GP80-T	23...67	404

Planetary gearboxes - JMS Economy series	Torque* (Nm)	407
22JMS	0,6...2	408
28JMS	1,2...4	409
36JMS	2...6	410
42JMS	3...10	411
56JMS	9...30	412

Spur gearboxes	Torque* (Nm)	415
12GSS	0,01...0,025	416
16GSS/GSP/GST	0,01...0,1	417
24GSP	0,1	420

Worm & Wheel gearboxes - NEW	Torque* (Nm)	423
GWS	2...4,5	424
GW58	4	425
GW80	5...12	426
GW12	18...30	427
GWL	15...19	428
GW65	120	429

* Nominal Output Torque

Term	
Number of stages	States the number of gear stages engaged in series.
Reduction ratio	The ratio by which the speed of the gear output shaft is smaller than the motor speed.
Rated output torque	Recommended load applied to the output shaft for continuous operation.
Max. output torque	Maximum load possible applied to the output shaft; exceeding this value will reduce service life.
Rated input speed	Recommended input speed for continuous operation.
Max. input speed	Maximum input 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 60529:1989). They are used to define levels of sealing effectiveness of electrical enclosures against intrusion from foreign bodies (tools, dirt etc) and moisture.

Glossary

Product families

- Planetary gearboxes
- Spur gearboxes
- Worm & Wheel 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

A worm and wheel gearbox consists of a worm (screw-like shaft) that meshes with a worm wheel (similar to a spur gear). The shafts of the worm and wheel are arranged at a 90° angle, making this type of gearbox suitable when a change in the direction of drive is required. The gear ratio is determined by the number of teeth on the worm wheel in relation to the number of starts (threads) on the worm. This configuration allows for high reduction ratios in a compact size. Another characteristic of worm gearboxes is their self-locking ability in certain setups, meaning the output shaft cannot drive the input shaft, which can be useful in applications requiring holding torque without additional brakes.

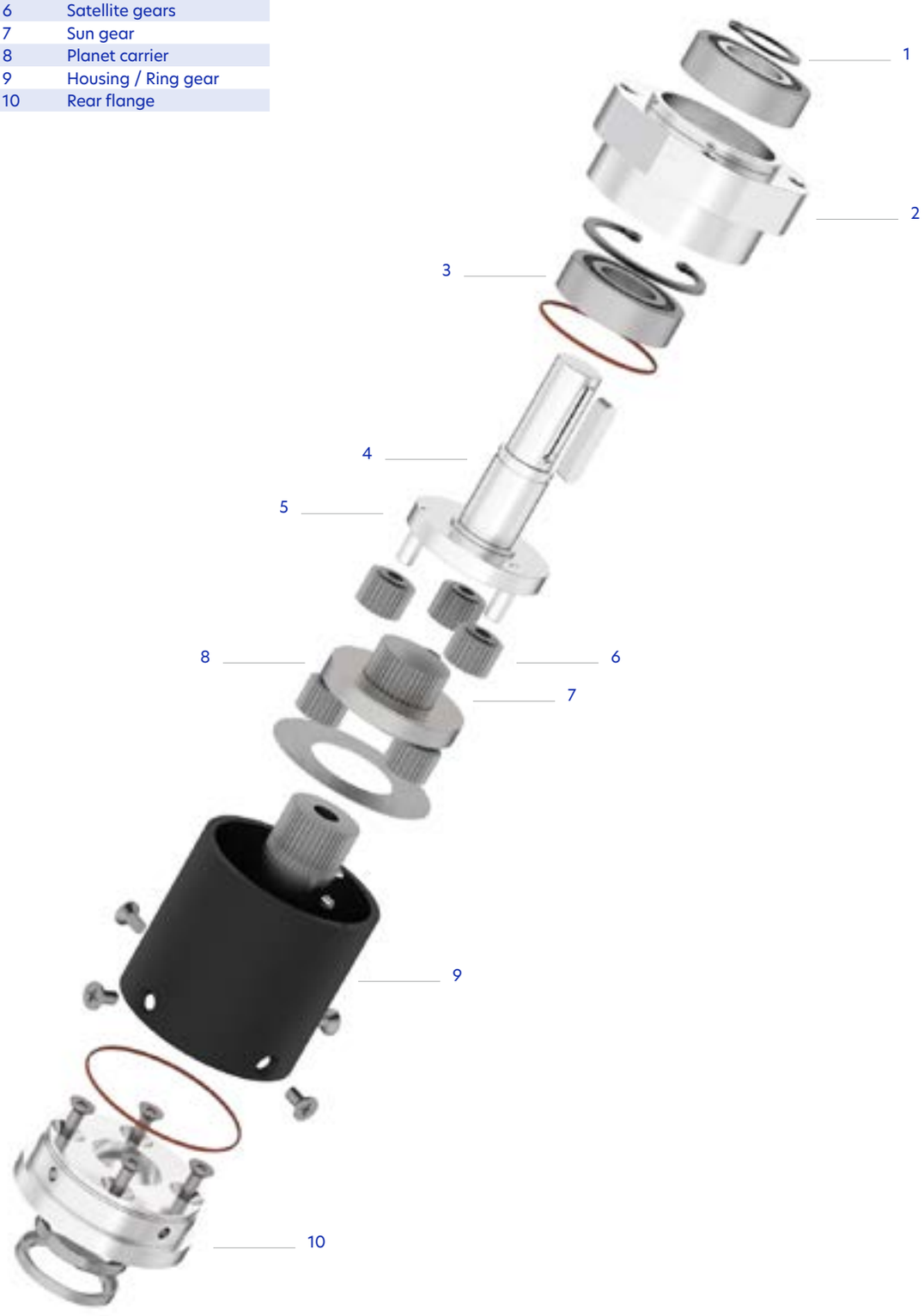
Advantages at a glance

- Right-angle transmission
- High reduction ratios
- Self-locking capability

Worm & Wheel 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
Standard

p.391



Planetary gearboxes
JMS series
Economy

p.407

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.

Planetary gearboxes - GP Standard series	Torque* (Nm)	391
08GPS	0,008...0,1	392
10GPS	0,01...0,15	393
12GPS	0,08...0,17	394
16GPS	0,2...0,45	395
22GPS	0,5...1,5	396
26GPS	0,75...4,5	397
32GPS	1,25...5	398
GP42-S	6,5...15	399
GP42-N (Low noise) - **NEW**	0,79...4,9	400
GP56-S	13,55...26,38	401
GP56-N (Low noise)	1,5...11,8	402
GP56-T (High radial load)	13,55...26,38	403
GP80-T (High radial load)	23...67	404

Planetary gearboxes - JMS Economy series	Torque* (Nm)	407
22JMS	0,6...2	408
28JMS	1,2...4	409
36JMS	2...6	410
42JMS	3...10	411
56JMS	9...30	412

*Nominal Output Torque



Planetary Gearboxes

GP series - Standard

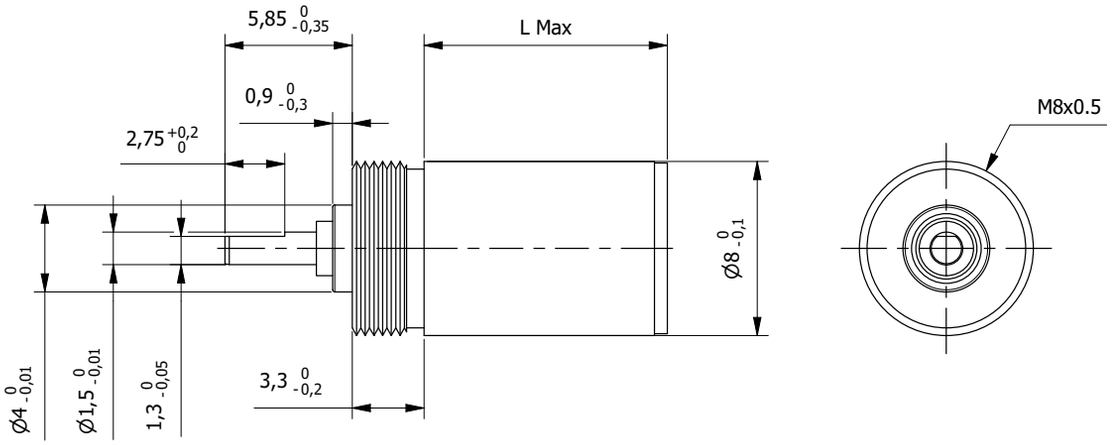
Planetary gearboxes - GP Standard series	Torque* (Nm)	
08GPS	0,008...0,1	392
10GPS	0,01...0,15	393
12GPS	0,08...0,17	394
16GPS	0,2...0,45	395
22GPS	0,5...1,5	396
26GPS	0,75...4,5	397
32GPS	1,25...5	398
GP42-S	6,5...15	399
GP42-N (Low noise)	0,79...4,9	400
GP56-S	13,55...26,38	401
GP56-N (Low noise)	1,5...11,8	402
GP56-T (High radial load)	13,55...26,38	403
GP80-T (High radial load)	23...67	404

* Nominal Output Torque

Planetary Gearbox 08GPS

Ø 8mm

0,008 to 0,06Nm



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

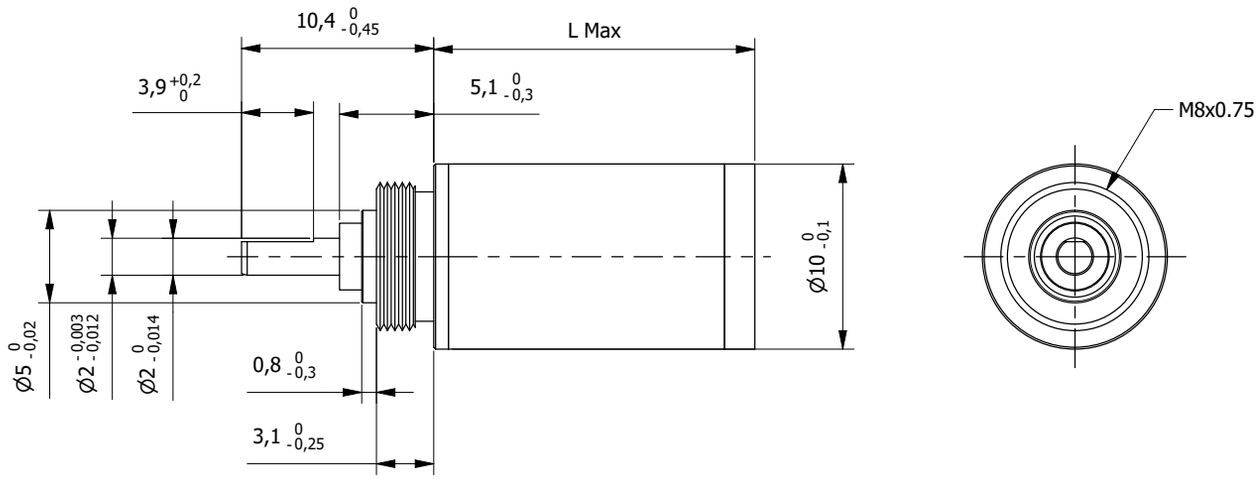
Specification					
	Model		...4N-256	...4N-1296	...5N-1024
1	Stages		4	4	5
2	Reduction Ratio		256	1296	1024
3	Nominal Output Torque	Nm	0,08	0,04	0,1
4	Max. Output Torque	Nm	0,12	0,06	0,15
5	Recommended Input Speed	rpm	12000	12000	12000
6	Max. Input Speed	rpm	20000	20000	20000
7	Efficiency	%	65	57	59
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

Planetary Gearbox 10GPS

Ø 10mm

0,01 to 0,15Nm



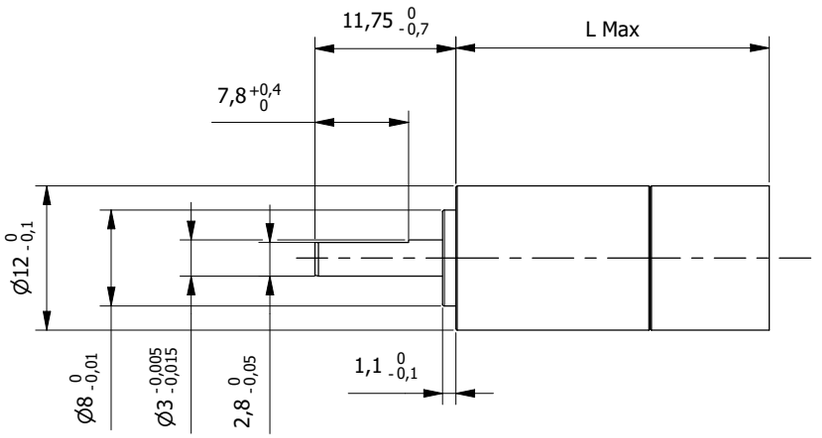
Specification							
	Model		...1N-4	...2N-16	...3N-64	...4N-256	...5N-1024
1	Stages		1	2	3	4	5
2	Reduction Ratio		4	16	64	256	1024
3	Nominal Output Torque	Nm	0,01	0,03	0,1	0,15	0,15
4	Max. Output Torque	Nm	0,02	0,05	0,15	0,2	0,2
5	Recommended Input Speed	rpm	12000	12000	12000	12000	12000
6	Max. Input 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

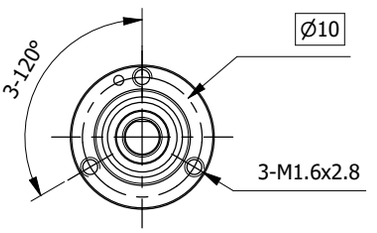
Characteristics	
Item	
Operating temperature	-40 to +80°C
Bearing output	Ball bearings

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

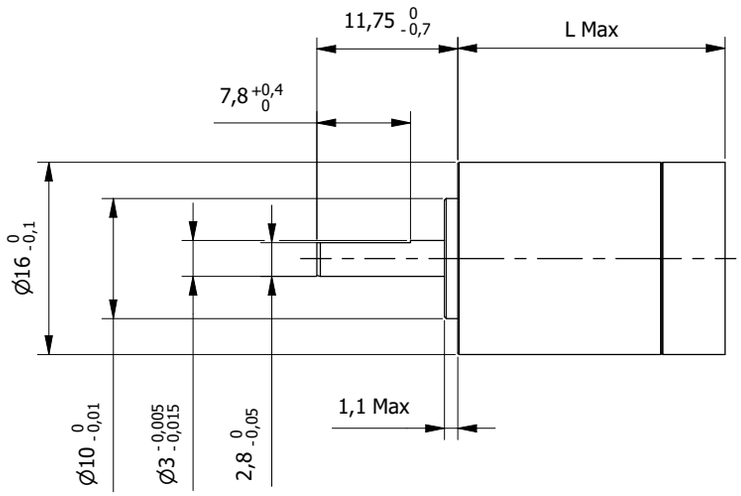
Specification						
	Model		...4N-326	...4N-439	...4N-679	...4N-913
1	Stages		4	4	4	4
2	Reduction Ratio		326	439	679	913
3	Nominal Output Torque	Nm	0,17	0,17	0,17	0,17
4	Max. Output Torque	Nm	0,21	0,21	0,21	0,21
5	Recommended Input Speed	rpm	16000	16000	16000	16000
6	Max. Input Speed	rpm	20000	20000	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

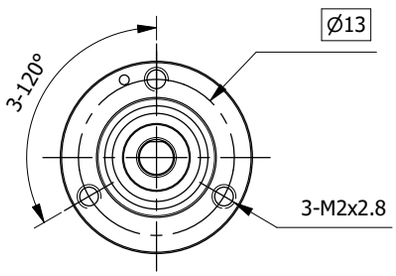
Characteristics	
Item	
Operating temperature	-40 to +100°C
Bearing output	Ball bearings

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

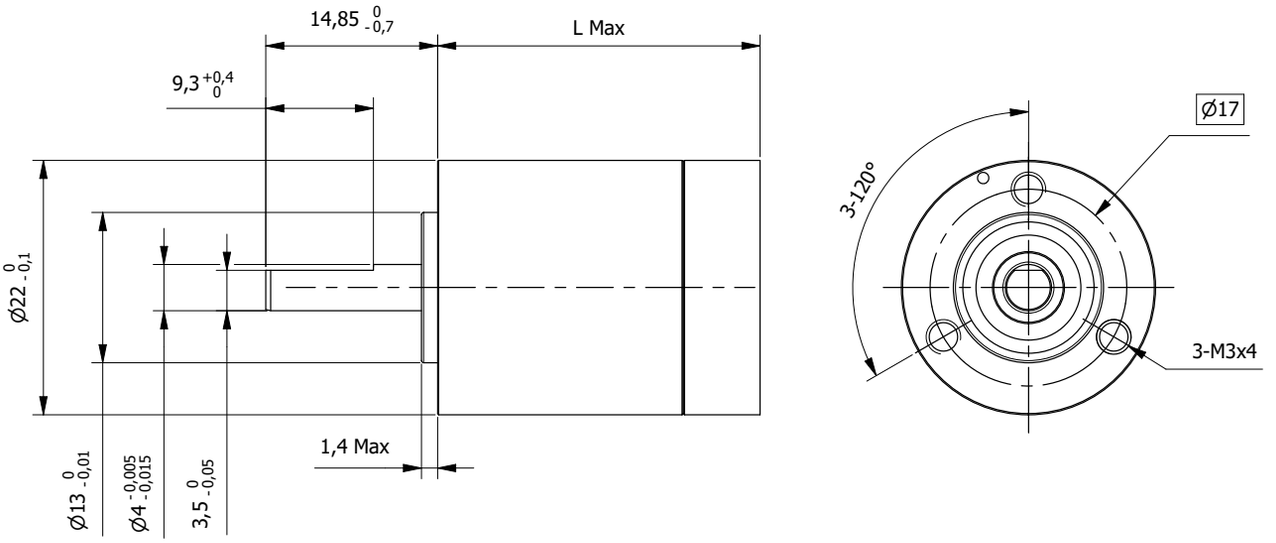
Specification						
	Model		...4N-326	...4N-439	...4N-679	...4N-913
1	Stages		4	4	4	4
2	Reduction Ratio		326	439	679	913
3	Nominal Output Torque	Nm	0,45	0,45	0,45	0,45
4	Max. Output Torque	Nm	0,55	0,55	0,55	0,55
5	Recommended Input Speed	rpm	16000	16000	16000	16000
6	Max. Input Speed	rpm	20000	20000	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

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

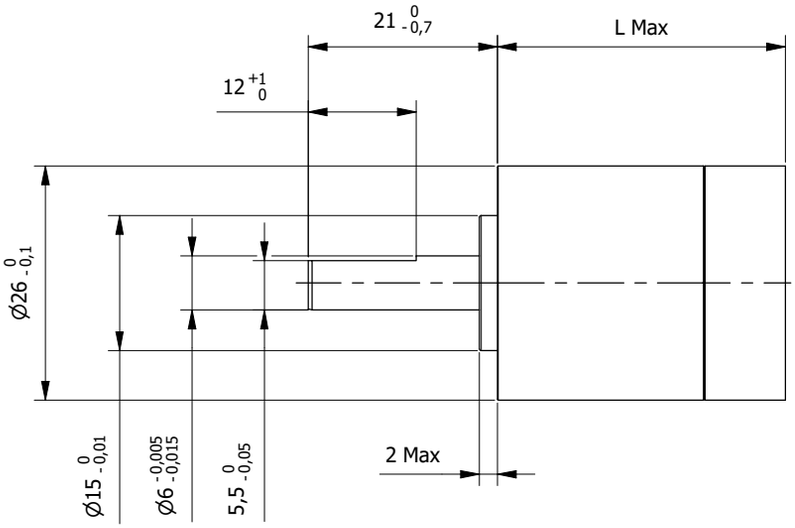
Specification						
	Model		...4N-326	...4N-439	...4N-679	...4N-913
1	Stages		4	4	4	4
2	Reduction Ratio		326	439	679	913
3	Nominal Output Torque	Nm	1,5	1,5	1,5	1,5
4	Max. Output Torque	Nm	1,9	1,9	1,9	1,9
5	Recommended Input Speed	rpm	12000	12000	12000	12000
6	Max. Input Speed	rpm	15000	15000	15000	15000
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

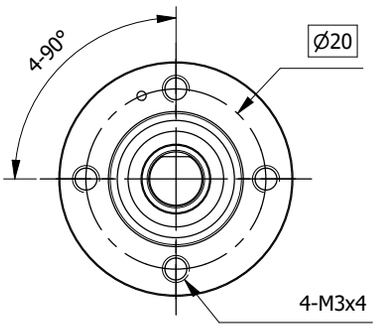
Characteristics	
Item	
Operating temperature	-40 to +100°C
Bearing output	Ball bearings

Planetary Gearbox 26GPS

Ø 26mm

0,75 to 4,5Nm





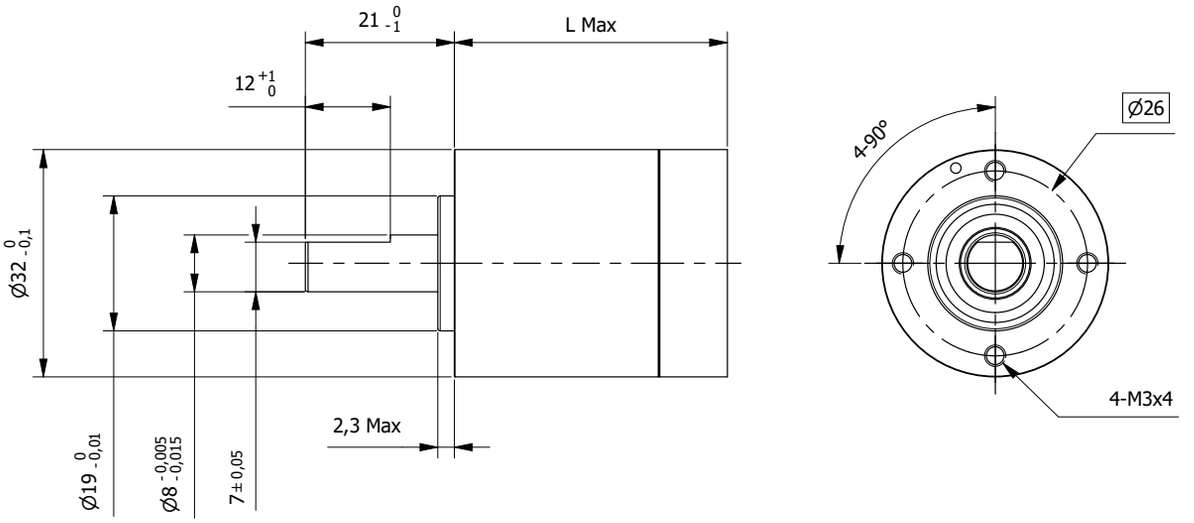
Specification								
	Model		...1N-5,3	...2N-21	...2N-28	...3N-83	...3N-138	...3N-172
1	Stages		1	2	2	3	3	3
2	Reduction Ratio		5,3	21	28	83	138	172
3	Nominal Output Torque	Nm	0,75	2,25	2,25	4,5	4,5	4,5
4	Max. Output Torque	Nm	1,1	3,2	3,2	6,2	6,2	6,2
5	Recommended Input Speed	rpm	7000	8000	8000	10000	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

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

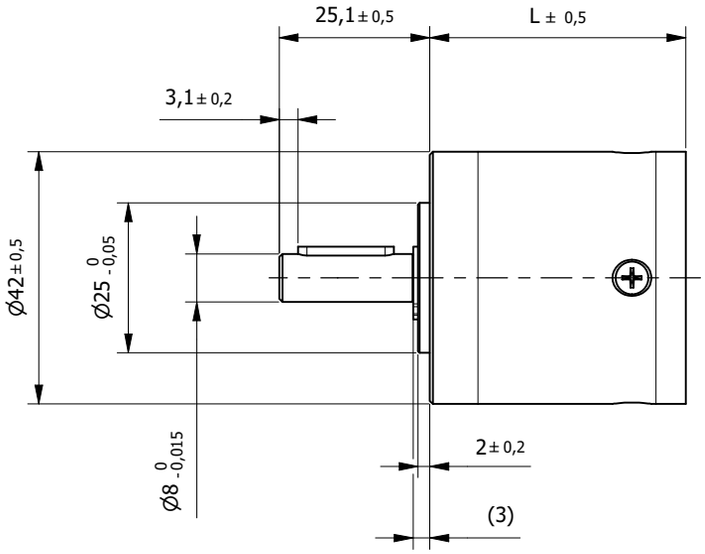
Specification					
	Model		...3N-62	...3N-138	...3N-186
1	Stages		3	3	3
2	Reduction Ratio		62	138	186
3	Nominal Output Torque	Nm	5	5	5
4	Max. Output Torque	Nm	6,25	6,25	6,25
5	Recommended Input Speed	rpm	8000	8000	8000
6	Max. Input Speed	rpm	10000	10000	10000
7	Efficiency	%	75	75	75
8	Average Backlash 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

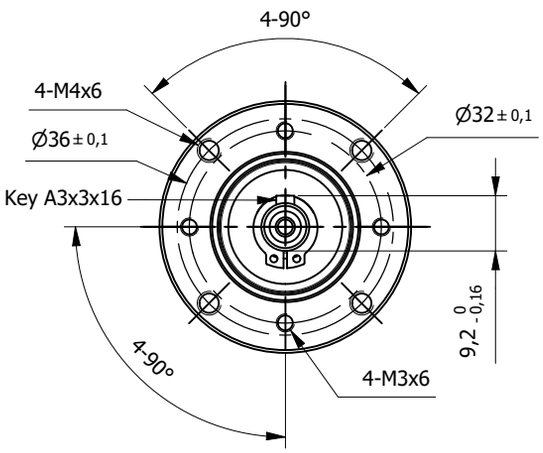
Characteristics	
Item	
Operating temperature	-40 to +100°C
Bearing output	Ball bearings

Planetary Gearbox GP42-S

Ø 42mm

6,5 to 15Nm





Specification							
	Model		...1 / 3.9	...1 / 4.3	...1 / 5.3	...1 / 6	...1 / 7.1	...1 / 8.7
1	Stages		1	1	1	1	1	1
2	Reduction Ratio		3,93	4,27	5,25	6	7,07	8,73
3	Nominal Output Torque	Nm	6,5	6,5	6,9	7	7,3	7
4	Max. Output Torque	Nm	13	13	13,8	14	14,6	14
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 ≤ϕ6,35	kgmm²	1,23	1,05	0,78	0,67	0,56	0,46
9	Length (L)	mm	42,7	42,7	42,7	42,7	42,7	42,7
10	Weight	kg	0,3	0,3	0,3	0,3	0,3	0,3

Specification							
	Model		...2 / 15.5	...2 / 20.6	...2 / 25.6	...2 / 45.8	...3 / 100	...3 / 250
1	Stages		2	2	2	2	3	3
2	Reduction Ratio		15,45	20,64	25,62	45,82	95,688	240,545
3	Nominal Output Torque	Nm	9,1	9,4	8,6	12,2	12,2	15
4	Max. Output Torque	Nm	18,2	18,8	17,2	24,4	24,4	30
5	Recommended Input Speed	rpm	3000	3000	3000	3000	3000	3000
6	Max. Input Speed	rpm	8236	11943	14050	18000	8236	11943
7	Efficiency	%	≈85%	≈85%	≈85%	≈85%	≈78%	≈78%
8	Moment of Inertia ≤ϕ6,35	kgmm²	1,26	0,44	0,67	0,46	0,71	0,43
9	Length (L)	mm	56,6	56,6	56,6	56,6	70,6	70,6
10	Weight	kg	0,4	0,4	0,4	0,4	0,5	0,5

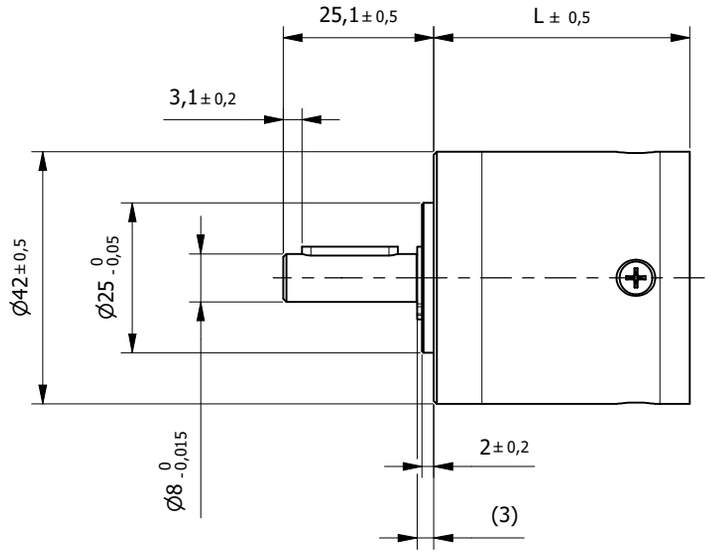
Characteristics	
Item	
Backlash at 2% nominal output torque	≤1°
Max. Radial load (middle of the key)	305N at n out=100rpm 210N at n out=300rpm 140N at n out=1000rpm
Max. Axial load (output shaft center)	890N at n out=100rpm 575N at n out=300rpm 340N at n out=1000rpm
Max. Press fit force	320N
Noise level (at recommended speed and 1m)	≤55 dB
Operating temperature	-15 to +90°C
Service Life (at recommended input speed)	10000h
Protection class	IP54
Bearing output	Ball bearings

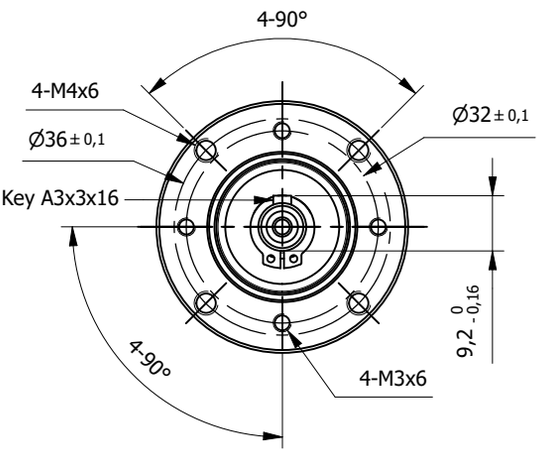
Planetary Gearbox GP42-N

Low Noise

Ø 42mm

0,79 to 4,9Nm





Specification					
	Model		...1 / 4	...1 / 5	...1 / 7
1	Stages		1	1	1
2	Reduction Ratio		4	5	7
3	Nominal Output Torque	Nm	1,22	1,09	0,79
4	Max. Output Torque	Nm	3,66	3,27	2,37
5	Recommended Input Speed	rpm	3000	3000	3000
6	Max. Input Speed	rpm	7650	10200	15300
7	Efficiency	%	≈92%	≈92%	≈92%
8	Moment of Inertia ≤ϕ6,35	kgmm²	0,72	0,42	0,21
9	Length (L)	mm	51	51	51
10	Weight	kg	0,3	0,3	0,3

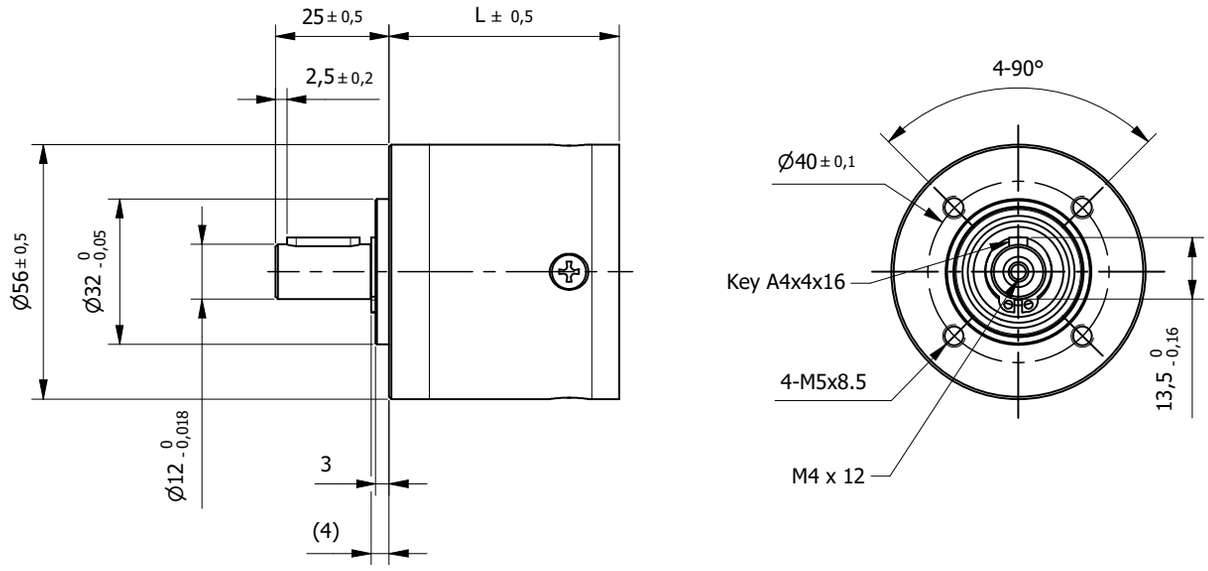
Specification						
	Model		...2 / 16	...2 / 20	...2 / 24	...2 / 30
1	Stages		2	2	2	2
2	Reduction Ratio		16	20	24	30
3	Nominal Output Torque	Nm	3,93	3,93	4,9	4,9
4	Max. Output Torque	Nm	7,86	7,86	9,8	9,8
5	Recommended Input Speed	rpm	3000	3000	3000	3000
6	Max. Input Speed	rpm	7650	10200	7650	10200
7	Efficiency	%	≈86%	≈86%	≈86%	≈86%
8	Moment of Inertia ≤ϕ6,35	kgmm²	0,58	0,34	0,55	0,32
9	Length (L)	mm	65	65	65	65
10	Weight	kg	0,4	0,4	0,4	0,4

Characteristics	
Item	
Backlash at 2% nominal output torque	≤1,75°
Max. Radial load (middle of the key)	305N at n out=100rpm 210N at n out=300rpm 140N at n out=1000rpm
Max. Axial load (output shaft center)	890N at n out=100rpm 575N at n out=300rpm 340N at n out=1000rpm
Max. Press fit force	320N
Noise level (at recommended speed and 1m)	≤50 dB
Operating temperature	-10 to +50°C
Service Life (at recommended input speed)	5000h
Protection class	IP54
Bearing output	Ball bearings

Planetary Gearbox GP56-S

Ø 56mm

13,55 to 26,38Nm



Specification								
	Model		...1 / 3.3	...1 / 3.9	...1 / 4.2	...1 / 5.1	...1 / 6.5	...1 / 7.7	...1 / 9.5
1	Stages		1	1	1	1	1	1	1
2	Reduction Ratio		3,29	3,94	4,24	5,09	6,53	7,71	9,55
3	Nominal Output Torque	Nm	14,19	14,68	14,76	15,28	16,29	16,58	13,55
4	Max. Output Torque	Nm	28,38	29,36	29,52	30,56	32,58	33,16	27,1
5	Recommended Input Speed	rpm	3500	3500	3500	3500	3500	3500	3500
6	Max. Input Speed	rpm	4658	5968	6589	8307	8988	10919	13000
7	Efficiency	%	≈92%	≈92%	≈92%	≈92%	≈92%	≈92%	≈92%
8	Moment of Inertia ≤ϕ8	kgmm²	15,05	5,48	4,67	3,13	2,62	2,27	4,3
9	Length (L)	mm	50,6	50,6	50,6	50,6	50,6	50,6	50,6
10	Weight	kg	0,5	0,5	0,5	0,5	0,5	0,5	0,5

Specification								
	Model		...2 / 10.8	...2 / 15.5	...2 / 20	...2 / 25.7	...2 / 32.7	...2 / 42.6	...2 / 62.3
1	Stages		2	2	2	2	2	2	2
2	Reduction Ratio		10,84	15,51	20,03	25,71	32,72	42,63	62,33
3	Nominal Output Torque	Nm	20,27	22,01	23,03	23,13	22,24	26,38	26,38
4	Max. Output Torque	Nm	40,54	44,02	46,06	46,26	44,48	52,76	52,76
5	Recommended Input Speed	rpm	3500	3500	3500	3500	3500	3500	3500
6	Max. Input Speed	rpm	4658	5968	8307	8988	10919	8988	13000
7	Efficiency	%	≈85%	≈85%	≈85%	≈85%	≈85%	≈85%	≈85%
8	Moment of Inertia ≤ϕ8	kgmm²	8,7	5,04	3,81	2,51	2,19	2,46	1,87
9	Length (L)	mm	67,8	67,8	67,8	67,8	67,8	67,8	67,8
10	Weight	kg	0,8	0,8	0,8	0,8	0,8	0,8	0,8

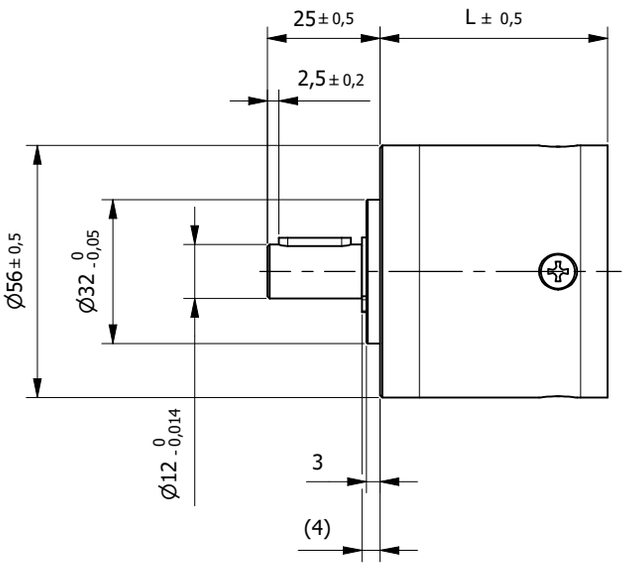
Characteristics	
Item	
Backlash at 2% nominal output torque	≤0,5°
Max. Radial load (middle of the key)	515N at n out=100rpm 355N at n out=300rpm 240N at n out=1000rpm
Max. Axial load (output shaft center)	1460N at n out=100rpm 935N at n out=300rpm 555N at n out=1000rpm
Max. Press fit force	500N
Noise level (at recommended speed and 1m)	≤55 dB
Operating temperature	-15 to +90°C
Service Life (at recommended input speed)	10000h
Protection class	IP 54
Bearing output	Ball bearings

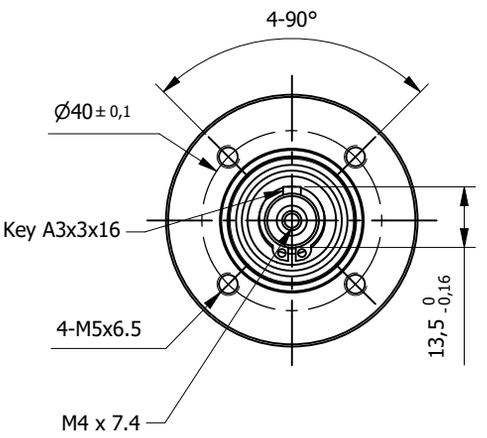
Planetary Gearbox GP56-N

Low Noise

Ø 56mm

1,5 to 11,8Nm





Specification						
	Model		...1 / 3.2	...1 / 4	...1 / 5.4	...1 / 6.2
1	Stages		1	1	1	1
2	Reduction Ratio		3,24	3,96	5,37	6,19
3	Nominal Output Torque	Nm	2	2	1,7	1,5
4	Max. Output Torque	Nm	6,09	5,9	5	4,6
5	Recommended Input Speed	rpm	3500	3500	3500	3500
6	Max. Input Speed	rpm	4700	6050	8800	10100
7	Efficiency	%	≈92%	≈92%	≈92%	≈92%
8	Moment of Inertia ≤ϕ8	kgmm²	4,09	2,08	0,88	0,63
9	Length (L)	mm	56	56	56	56
10	Weight	kg	0,3	0,3	0,3	0,3

Specification							
	Model		...2 / 10.7	...2 / 15.6	...2 / 20,2	...2 / 25.9	...2 / 35
1	Stages		2	2	2	2	2
2	Reduction Ratio		10,68	15,61	20,17	25,88	35,05
3	Nominal Output Torque	Nm	6,4	7,4	9,2	11,8	10,1
4	Max. Output Torque	Nm	12,6	15,1	14,8	19	19
5	Recommended Input Speed	rpm	3500	3500	3500	3500	3500
6	Max. Input Speed	rpm	4700	6050	6050	6050	8800
7	Efficiency	%	≈85%	≈85%	≈85%	≈85%	≈85%
8	Moment of Inertia ≤ϕ8	kgmm²	4,2	2,04	1,97	1,92	0,8
9	Length (L)	mm	73	73	73	73	73
10	Weight	kg	0,4	0,4	0,4	0,4	0,4

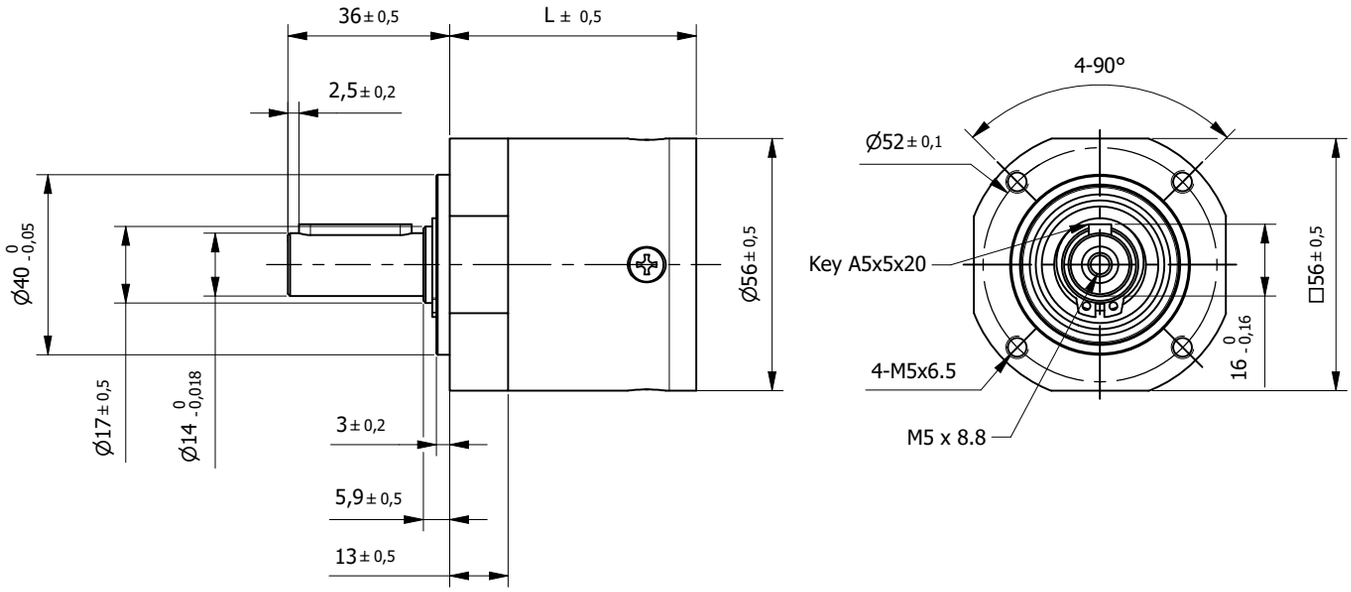
Characteristics	
Item	
Backlash at 2% nominal output torque	≤1°
Max. Radial load (middle of the key)	515N at n out=100rpm 355N at n out=300rpm 240N at n out=1000rpm
Max. Axial load (output shaft center)	1460N at n out=100rpm 935N at n out=300rpm 555N at n out=1000rpm
Max. Press fit force	500N
Noise level (at recommended speed and 1m)	≤50 dB
Operating temperature	-15 to +50°C
Service Life (at recommended input speed)	5000h
Protection class	IP 54
Bearing output	Ball bearings

Planetary Gearbox GP56-T

High Radial Load

Ø 56mm

13,55 to 26,38Nm



Specification								
	Model		...1 / 3.3	...1 / 3.9	...1 / 4.2	...1 / 5.1	...1 / 6.5	...1 / 7.7	...1 / 9.5
1	Stages		1	1	1	1	1	1	1
2	Reduction Ratio		3,29	3,94	4,24	5,09	6,53	7,71	9,55
3	Nominal Output Torque	Nm	14,19	14,68	14,76	15,28	16,29	16,58	13,55
4	Max. Output Torque	Nm	28,38	29,36	29,52	30,56	32,58	33,16	27,1
5	Recommended Input Speed	rpm	3500	3500	3500	3500	3500	3500	3500
6	Max. Input Speed	rpm	4658	5968	6589	8307	8988	10919	13000
7	Efficiency	%	≈92%	≈92%	≈92%	≈92%	≈92%	≈92%	≈92%
8	Moment of Inertia ≤ϕ8	kgmm²	15,06	5,48	4,67	3,13	2,6	2,27	4,3
9	Length (L)	mm	54,8	54,8	54,8	54,8	54,8	54,8	54,8
10	Weight	kg	0,5	0,5	0,5	0,5	0,5	0,5	0,5

Specification								
	Model		...2 / 10.8	...2 / 15.5	...2 / 20	...2 / 25.7	...2 / 32.7	...2 / 42.6	...2 / 62.3
1	Stages		2	2	2	2	2	2	2
2	Reduction Ratio		10,84	15,51	20,03	25,71	32,72	42,63	62,33
3	Nominal Output Torque	Nm	20,27	22,01	23,03	23,13	22,24	26,38	26,38
4	Max. Output Torque	Nm	40,54	44,02	46,06	46,26	44,48	52,76	52,76
5	Recommended Input Speed	rpm	3500	3500	3500	3500	3500	3500	3500
6	Max. Input Speed	rpm	4658	5968	8307	8988	10919	8988	13000
7	Efficiency	%	≈85%	≈85%	≈85%	≈85%	≈85%	≈85%	≈85%
8	Moment of Inertia ≤ϕ8	kgmm²	8,7	5,04	3,81	2,51	2,19	2,46	1,87
9	Length (L)	mm	72	72	72	72	72	72	72
10	Weight	kg	0,8	0,8	0,8	0,8	0,8	0,8	0,8

Specification				
	Model		...3 / 100	...3 / 250
1	Stages		3	3
2	Reduction Ratio		101,23	256,23
3	Nominal Output Torque	Nm	26,38	26,38
4	Max. Output Torque	Nm	52,76	52,76
5	Recommended Input Speed	rpm	3500	3500
6	Max. Input Speed	rpm	5968	10919
7	Efficiency	%	≈70%	≈70%
8	Moment of Inertia ≤ϕ8	kgmm²	6,446	4,129
9	Length (L)	mm	86	86
10	Weight	kg	1,1	1,1

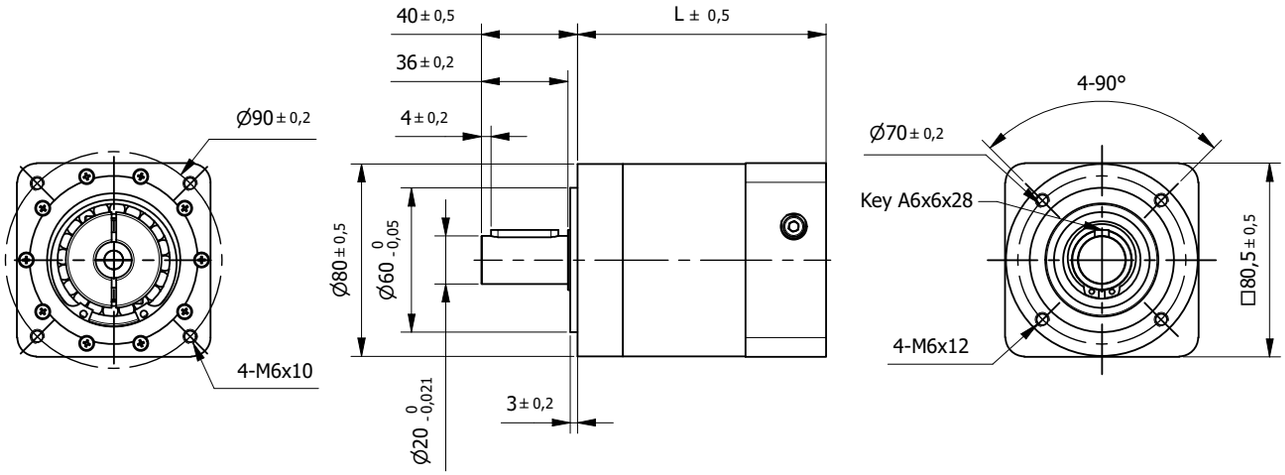
Characteristics	
Item	
Backlash	≤0,5° [1-2 stages]
at 2% nominal output torque	≤0,75° [3 stages]
Max. Radial load (middle of the key)	540N [711N 3-stage] at n out=100rpm 375N [493N 3-stage] at n out=300rpm 250N [330N 3-stage] at n out=1000rpm
Max. Axial load (output shaft center)	1630N [1931N 3-stage] at n out=100rpm 1015N [1329N 3-stage] at n out=300rpm 595N [764N 3-stage] at n out=1000rpm
Max. Press fit force	500N
Noise level (at 1m and 3'000rpm input)	≤55 dB
Operating temperature	-15 to +90°C
Service Life	10000h
Protection class	IP 54
Bearing output	Ball bearings

Planetary Gearbox GP80-T

High Radial Load

Ø 80mm

23 to 67Nm



Specification							
	Model		...1 / 3.3	...1 / 4.2	...1 / 4.9	...1 / 6.8	...1 / 8	...1 / 9.7
1	Stages		1	1	1	1	1	1
2	Reduction Ratio		3,333	4,182	4,889	6,833	8	9,75
3	Nominal Output Torque	Nm	40	41	42	33	32	23
4	Max. Output Torque	Nm	80	82	84	66	64	46
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		11,111	16,296	20,444	26,278	30,75	66,625
3	Nominal Output Torque	Nm	42	56	57	58	67	42
4	Max. Output Torque	Nm	84	112	114	116	134	84
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



Planetary Gearboxes

JMS series - Economy

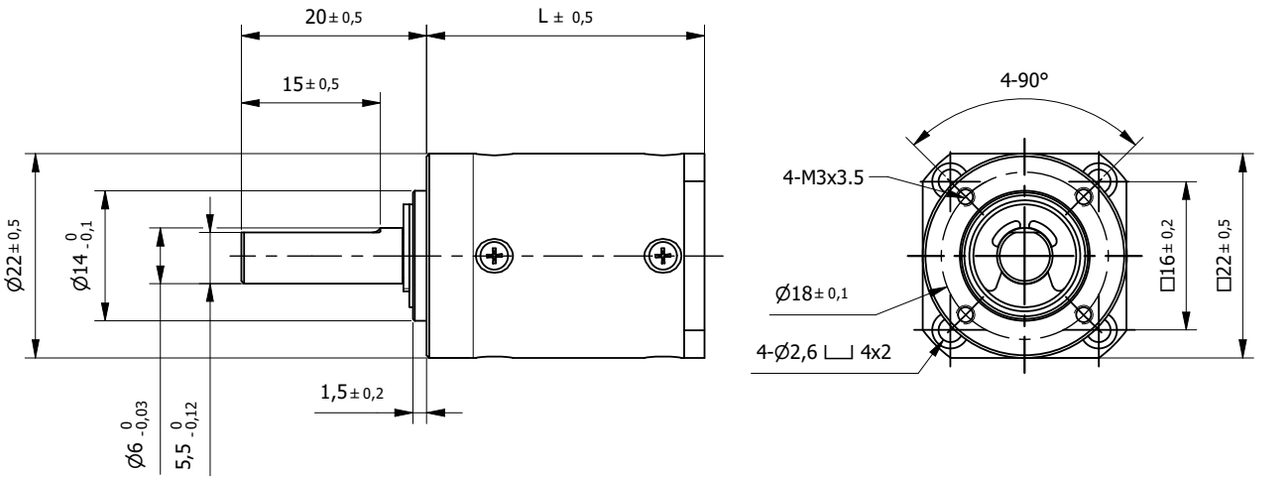
Planetary gearboxes - JMS Economy series	Torque* (Nm)	
22JMS	0,6...2	408
28JMS	1,2...4	409
36JMS	2...6	410
42JMS	3...10	411
56JMS	9...30	412

* Nominal Output Torque

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

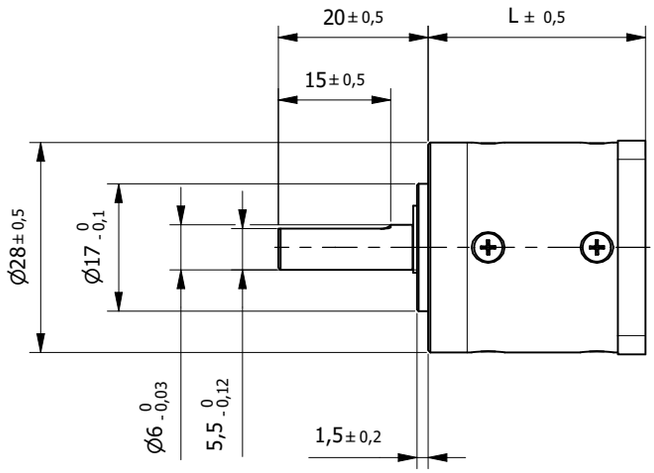
Specification						
	Model		...3 / 51	...3 / 71	...3 / 100	...3 / 139
1	Stages		3	3	3	3
2	Exact Ratio		51,06	71,3	99,55	138,99
3	Nominal Output Torque	Nm	2	2	2	2
4	Max. Output Torque	Nm	6	6	6	6
5	Recommended Input Speed	rpm	4000	4000	4000	4000
6	Efficiency	%	≈73%	≈73%	≈73%	≈73%
7	Backlash at No-load		≤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

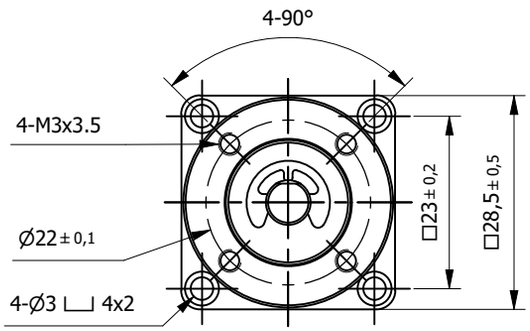
Characteristics	
Item	
Max. Radial load (middle of the key)	50N
Max. Axial load (output shaft center)	30N
Radial Play	<0,08mm
Axial Play	<0,3mm
Max. Press fit force	60N
Operating temperature	-20 to +80°C
Operating Ambient Humidity	20-80% RH
Bearing output	Ball bearings

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

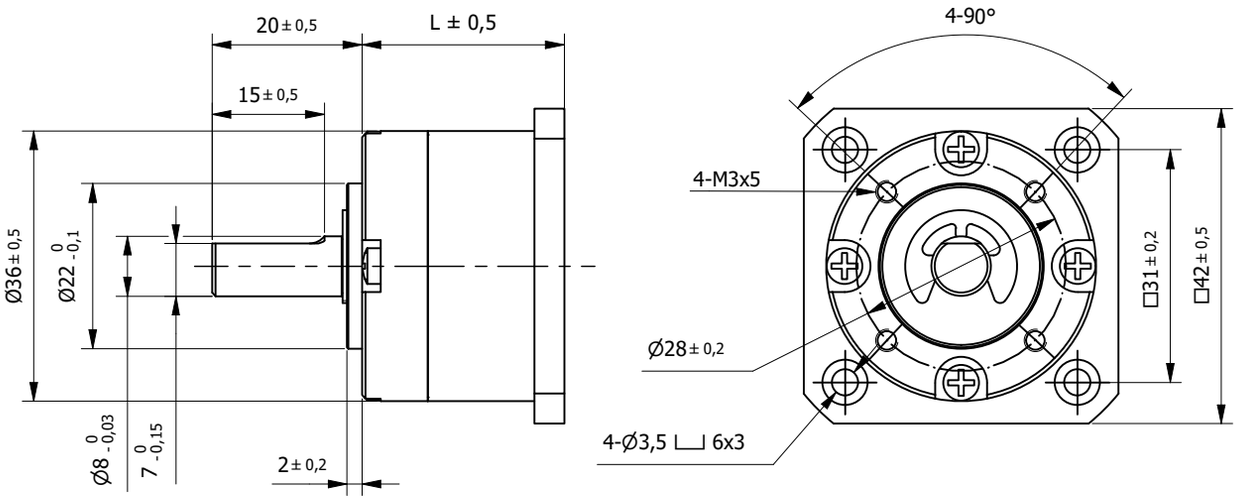
Specification						
	Model		...3 / 51	...3 / 71	...3 / 100	...3 / 139
1	Stages		3	3	3	3
2	Exact Ratio		51,06	71,3	99,55	138,99
3	Nominal Output Torque	Nm	4	4	4	4
4	Max. Output Torque	Nm	12	12	12	12
5	Recommended Input Speed	rpm	4000	4000	4000	4000
6	Efficiency	%	≈73%	≈73%	≈73%	≈73%
7	Backlash at No-load		≤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

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

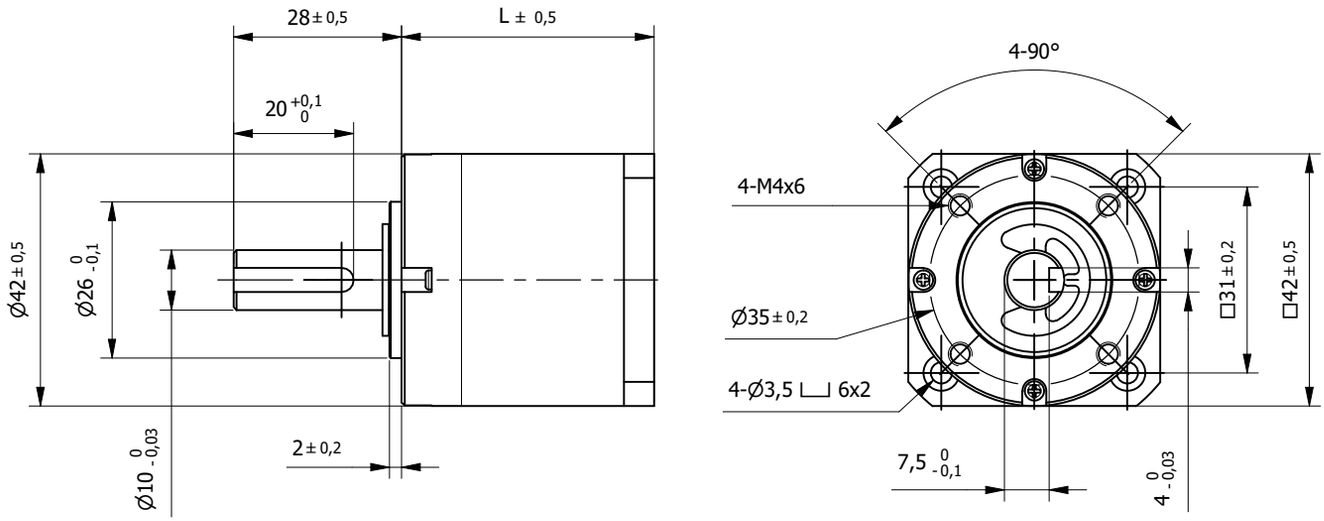
Specification						
	Model		...3 / 51	...3 / 71	...3 / 100	...3 / 139
1	Stages		3	3	3	3
2	Exact Ratio		51,06	71,3	99,55	138,99
3	Nominal Output Torque	Nm	6	6	6	6
4	Max. Output Torque	Nm	18	18	18	18
5	Recommended Input Speed	rpm	4000	4000	4000	4000
6	Efficiency	%	≈73%	≈73%	≈73%	≈73%
7	Backlash at No-load		≤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

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

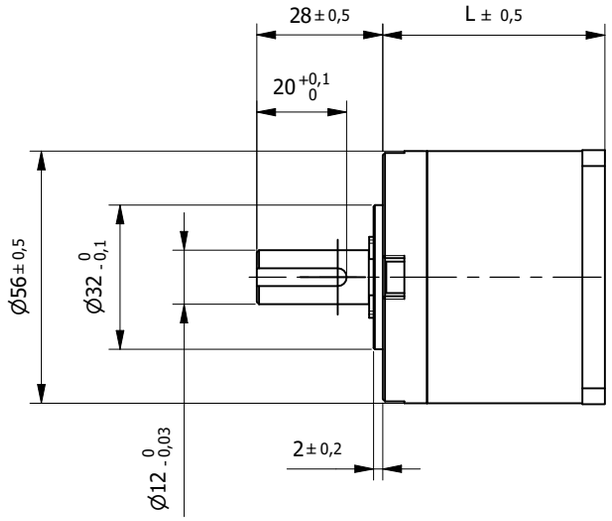
Specification						
	Model		...3 / 51	...3 / 71	...3 / 100	...3 / 139
1	Stages		3	3	3	3
2	Exact Ratio		51,06	71,3	99,55	138,99
3	Nominal Output Torque	Nm	10	10	10	10
4	Max. Output Torque	Nm	30	30	30	30
5	Recommended Input Speed	rpm	4000	4000	4000	4000
6	Efficiency	%	≈73%	≈73%	≈73%	≈73%
7	Backlash at 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

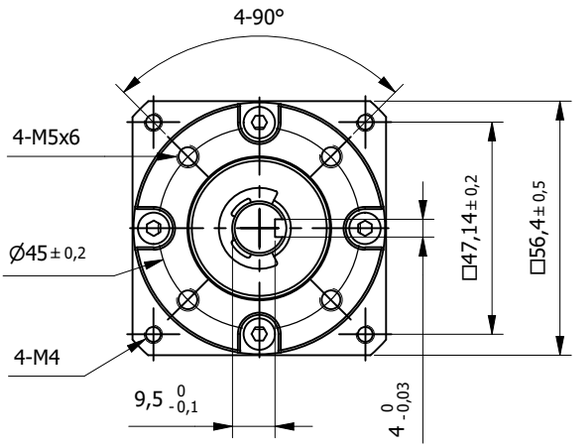
Characteristics	
Item	
Max. Radial load (middle of the key)	200N
Max. Axial load (output shaft center)	100N
Radial Play	<0,06mm
Axial Play	<0,3mm
Max. Press fit force	150N
Operating temperature	-20 to +80°C
Operating Ambient Humidity	20-80% RH
Bearing output	Ball bearings

Planetary Gearbox 56JMS

Ø 56mm

9 to 30Nm





Specification								
	Model		...1 / 3.6	...1 / 4.3	...2 / 13	...2 / 15	...2 / 18	...2 / 23
1	Stages		1	1	2	2	2	2
2	Exact Ratio		3,6	4,25	12,96	15,3	18,06	22,67
3	Nominal Output Torque	Nm	9	9	15	15	15	15
4	Max. Output Torque	Nm	27	27	60	60	60	60
5	Recommended Input Speed	rpm	4000	4000	4000	4000	4000	4000
6	Efficiency	%	≈90%	≈90%	≈81%	≈81%	≈81%	≈81%
7	Backlash at No-load		≤1°	≤1°	≤1,2°	≤1,2°	≤1,2°	≤1,2°
8	Length (L)	mm	37,8	37,8	49,4	49,4	49,4	49,4
9	Weight	kg	0,455	0,455	0,610	0,610	0,610	0,610

Specification						
	Model		...3 / 47	...3 / 55	...3 / 65	...3 / 77
1	Stages		3	3	3	3
2	Exact Ratio		46,66	55,08	65,03	76,77
3	Nominal Output Torque	Nm	30	30	30	30
4	Max. Output Torque	Nm	90	90	90	90
5	Recommended Input Speed	rpm	4000	4000	4000	4000
6	Efficiency	%	≈73%	≈73%	≈73%	≈73%
7	Backlash at No-load		≤1,5°	≤1,5°	≤1,5°	≤1,5°
8	Length (L)	mm	60,8	60,8	60,8	60,8
9	Weight	kg	0,765	0,765	0,765	0,765

Characteristics	
Item	
Max. Radial load (middle of the key)	300N
Max. Axial load (output shaft center)	200N
Radial Play	<0,08mm
Axial Play	<0,4mm
Max. Press fit force	300N
Operating temperature	-20 to +80°C
Operating Ambient Humidity	20-80% RH
Bearing output	Ball bearings



Gearboxes

Spur gearboxes

Advantages at a glance
Compact & simple design
Cost-efficient
Best for low-torque/speed applications

Our extensive spur gearbox range offers good torque to size ratios coupled with high efficiencies. If the standard configuration does not meet the application requirement then a customized design could be proposed, even for low volumes.

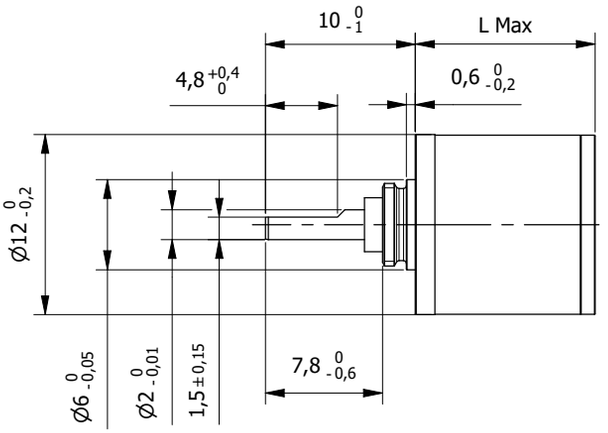
Spur gearboxes	Torque* (Nm)	
12GSS	0,01...0,025	416
16GSS	0,01...0,03	417
16GSP (plastic version)	0,01...0,03	418
16GST (reinforced)	0,06...0,1	419
24GSP	0,1	420

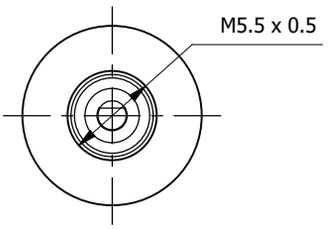
*Nominal Output Torque

Spur Gearbox 12GSS

Ø 12mm

0,01 to 0,025Nm





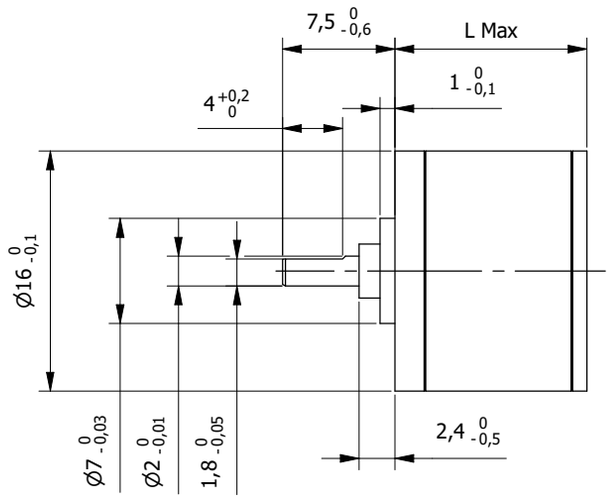
Specification						
	Model		...2-6,4	...3-22	...4-76	...5-141
1	Stages		2	3	4	5
2	Reduction Ratio		6,4	22	76	141
3	Nominal Output Torque	Nm	0,01	0,015	0,02	0,025
4	Max. Output Torque	Nm	0,03	0,035	0,04	0,045
5	Recommended Input Speed	rpm	8000	8000	8000	8000
6	Efficiency	%	81	73	66	59
7	Mass Inertia	gcm²	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

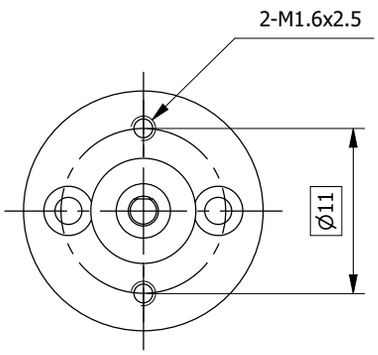
Characteristics	
Item	
Max. Press fit force	30N
Operating temperature	-15 to +100°C
Bearing output	Sleeve bearings

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

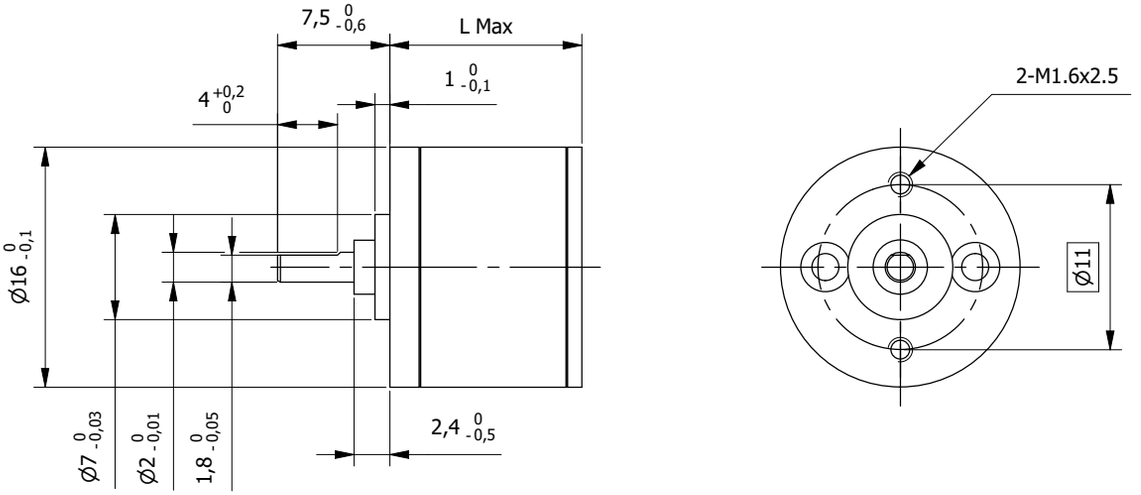
Characteristics	
Item	
Max. Press fit force	30N
Operating temperature	-15 to +100°C
Bearing output	Sleeve bearings

Spur Gearbox 16GSP

Plastic version

Ø 16mm

0,01 to 0,03Nm

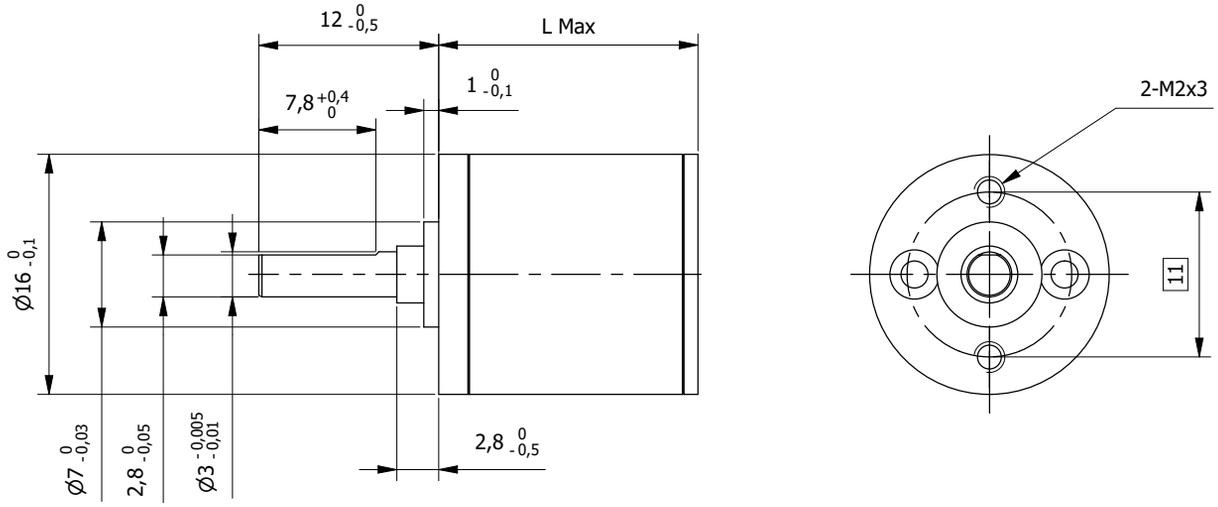


Specification							
	Model		...2-6,4	...2-9,1	...3-31	...4-76	...4-141
1	Stages		2	2	3	4	4
2	Reduction Ratio		6,4	9,1	31	76	141
3	Nominal Output Torque	Nm	0,01	0,01	0,02	0,03	0,03
4	Max. Output Torque	Nm	0,1	0,1	0,1	0,1	0,1
5	Recommended Input Speed	rpm	8000	8000	8000	8000	8000
6	Efficiency	%	81	81	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

Spur Gearbox 16GST
Reinforced

Ø 16mm
0,06 to 0,1Nm



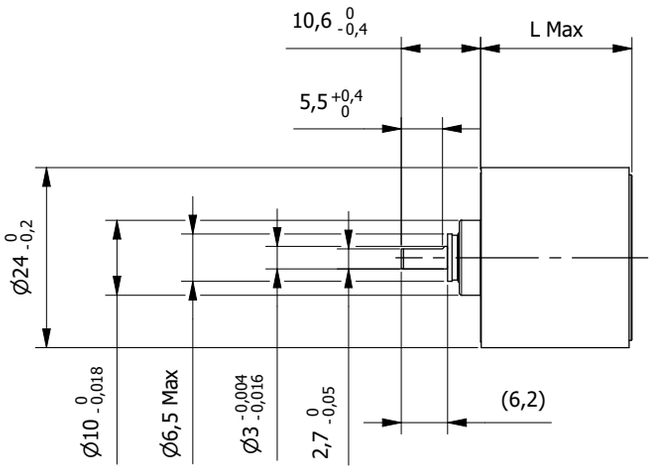
Specification						
	Model		...2-9,1	...3-31	...4-76	...4-141
1	Stages		2	3	4	4
2	Reduction Ratio		9,1	31	76	141
3	Nominal Output Torque	Nm	0,06	0,06	0,1	0,1
4	Max. Output Torque	Nm	0,15	0,15	0,3	0,3
5	Recommended Input Speed	rpm	8000	8000	8000	8000
6	Efficiency	%	81	73	66	66
7	Mass Inertia	gcm²	0,006	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

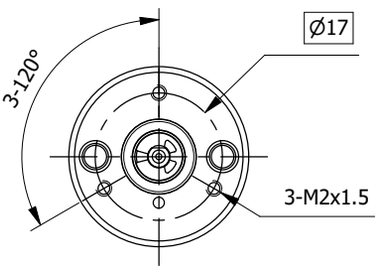
Characteristics	
Item	
Max. Press fit force	5N
Operating temperature	-15 to +100°C
Bearing output	Ball bearings

Spur Gearbox 24GSP

Ø 24mm

0,1Nm





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	16,5	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



Gearboxes

Worm & Wheel

Advantages at a glance
Right-angle transmission
High reduction ratios
Self-locking capability

Our right-angle worm and wheel gearboxes provide a compact solution for applications requiring a 90° transmission. They deliver high reduction ratios in a single stage and offer smooth, quiet operation. In certain configurations, they also feature self-locking capability, preventing back-driving and ensuring reliable holding torque. Designed to perform efficiently across industries such as mobility solutions and materials handling, these gearboxes combine robustness, durability, and cost-effectiveness. A wide range of gearing and material options is available, with customisation to match your specific application needs.

Worm & Wheel gearboxes - NEW	Torque* (Nm)	
GWS	2...4,5	424
GW58	4	425
GW80	5...12	426
GW12	18...30	427
GWL	15...19	428
GW65	120	429

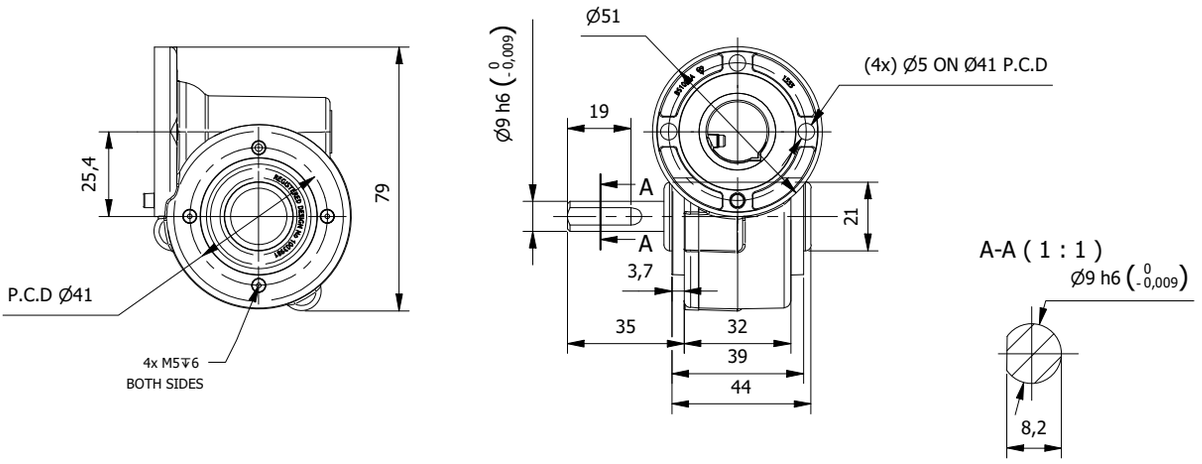
*Nominal Output Torque

Worm and Wheel Gearbox GWS

Composite or Bronze gears

Ø 51mm

2 to 4,5Nm



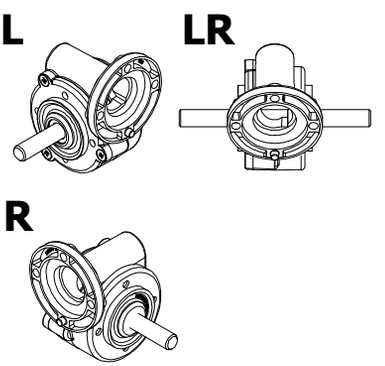
Available in Overhung configuration

Specification: values shown as Composite/Bronze								
	Gear Ratio	:1	4	5	10	15	20	30
1	Nominal Output Torque	Nm	3/4,5	3/4,5	3/4,5	3/4,5	3/4,5	3/4,5
2	Max. Output Torque	Nm	4,8/7,2	4,8/7,2	4,8/7,2	4,8/7,2	4,8/7,2	4,8/7,2
3	Efficiency	%	80/70	80/70	80/70	75/65	70/61	65/57
4	Backlash	arc.min	10-25	10-25	10-25	10-25	10-25	10-25
5	Max. Axial load	N	150	150	150	150	150	150
6	Max. Radial load (12mm from flange)	N	250	250	250	250	250	250
7	Weight	kg	0,3/0,4	0,3/0,4	0,3/0,4	0,3/0,4	0,3/0,4	0,3/0,4

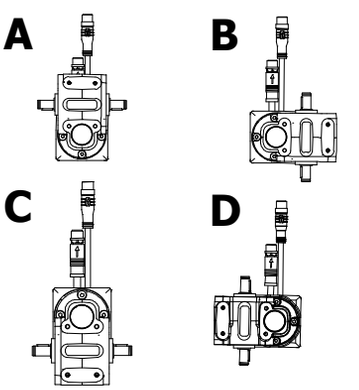
Specification: values shown as Composite/Bronze						
	Gear Ratio	:1	40	48	60	70
1	Nominal Output Torque	Nm	3/4,5	2,5/3,8	2,2/3,3	2/3
2	Max. Output Torque	Nm	4,8/7,2	4/6	3,5/5,3	3,2/4,8
3	Efficiency	%	60/52	55/48	48/42	40/35
4	Backlash	arc.min	10-25	10-25	10-25	10-25
5	Max. Axial load	N	150	150	150	150
6	Max. Radial load (12mm from flange)	N	250	250	250	250
7	Weight	kg	0,3/0,4	0,3/0,4	0,3/0,4	0,3/0,4

Product code reference		
GWS-O-10-B-L-A		
O	O=Overhung	Configuration
10		Gear Ratio
B	B=Bronze C=Composite	Material
L	L=Left R=Right LR=Both	Shaft exit
A	A,B,C,D	Orientation

Shaft exit options



Orientation options

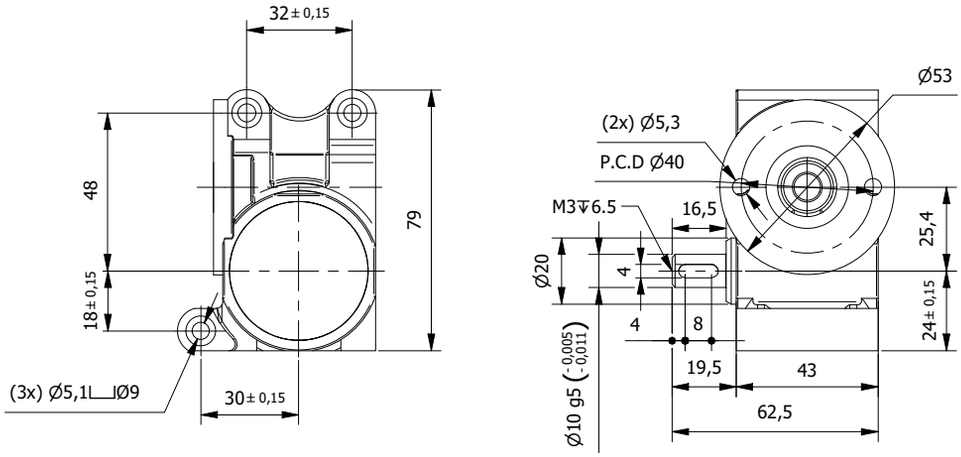


Worm and Wheel Gearbox GW58

Composite gears

Ø 53mm

4Nm



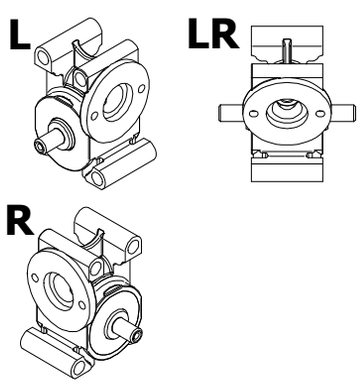
Available in Overhung configuration

Specification								
	Gear Ratio	:1	4	5	7	9	10	14
1	Nominal Output Torque	Nm	4	4	4	4	4	4
2	Max. Output Torque	Nm	8	8	8	8	8	8
3	Efficiency	%	85	84	82	80	80	76
4	Backlash	arc.min	10-25	10-25	10-25	10-25	10-25	10-25
5	Max. Axial load	N	300	300	300	300	300	300
6	Max. Radial load (12mm from flange)	N	400	400	400	400	400	400
7	Weight	kg	0,4	0,4	0,4	0,4	0,4	0,4

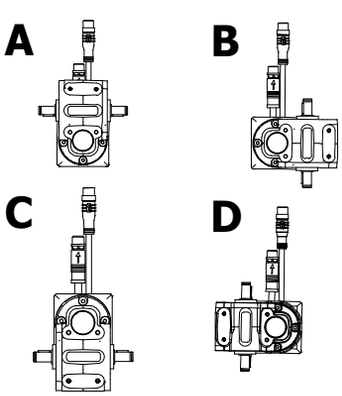
Specification						
	Gear Ratio	:1	15	18	20	25
1	Nominal Output Torque	Nm	4	4	4	4
2	Max. Output Torque	Nm	8	8	8	8
3	Efficiency	%	75	73	72	68
4	Backlash	arc.min	10-25	10-25	10-25	10-25
5	Max. Axial load	N	300	300	300	300
6	Max. Radial load (12mm from flange)	N	400	400	400	400
7	Weight	kg	0,4	0,4	0,4	0,4

Product code reference		
GW58-O-10-C-L-A		
O	O=Overhung	Configuration
10		Gear Ratio
C	C=Composite	Material
L	L=Left R=Right LR=Both	Shaft exit
A	A,B,C,D	Orientation

Shaft exit options



Orientation options

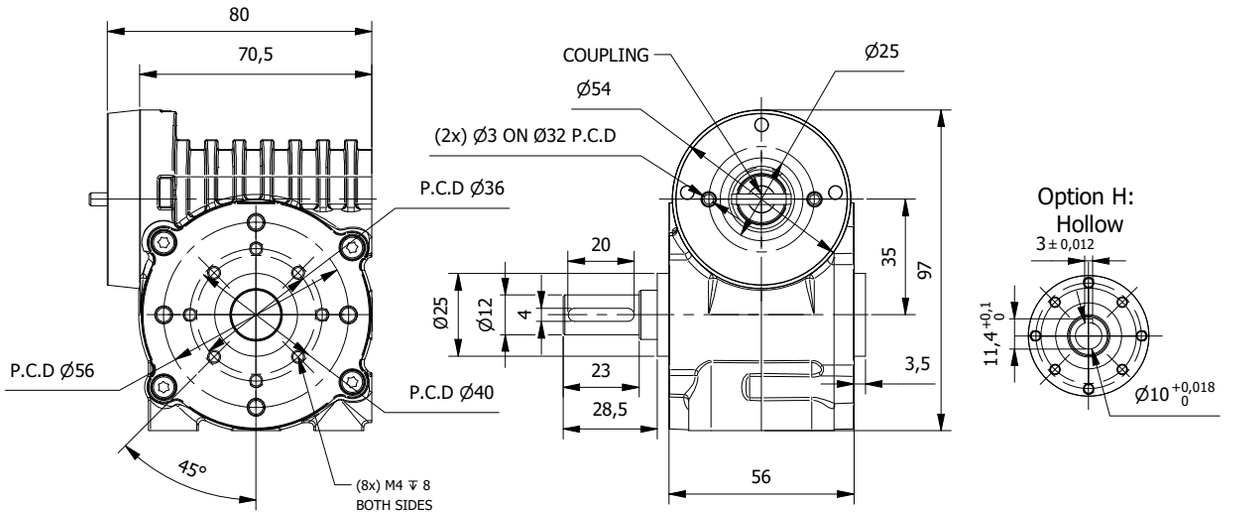


Worm and Wheel Gearbox GW80

Composite or Bronze gears

Ø 54mm

5 to 12Nm



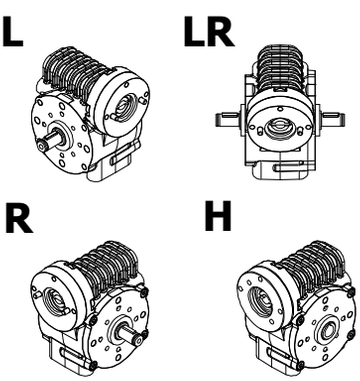
Available in Coupling or Overhung configuration

Specification: values shown as Composite/Bronze								
	Gear Ratio	:1	4	6/5	10	15/16	20	30
1	Nominal Output Torque	Nm	8/12	8/12	8/12	8/12	8/12	8/12
2	Max. Output Torque	Nm	13/19	13/19	13/19	13/19	13/19	13/19
3	Efficiency	%	85/74	85/74	82/71	77/67	74/64	70/61
4	Backlash	arc.min	10-25	10-25	10-25	10-25	10-25	10-25
5	Max. Axial load	N	300	300	300	300	300	300
6	Max. Radial load (12mm from flange)	N	350	350	350	350	350	350
7	Weight	kg	0,7/0,9	0,7/0,9	0,7/0,9	0,7/0,9	0,7/0,9	0,7/0,9

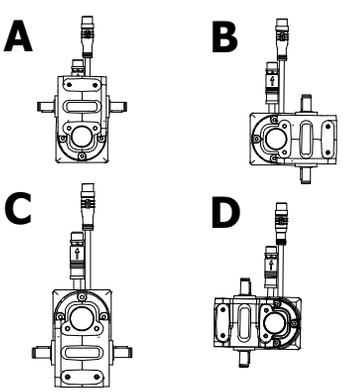
Specification: values shown as Composite/Bronze						
	Gear Ratio	:1	40	54/48	60	72
1	Nominal Output Torque	Nm	8/12	7/12	6/9	5/8
2	Max. Output Torque	Nm	13/19	11/19	10/14	8/12
3	Efficiency	%	65/57	56/50	54/47	46/40
4	Backlash	arc.min	10-25	10-25	10-25	10-25
5	Max. Axial load	N	300	300	300	300
6	Max. Radial load (12mm from flange)	N	350	350	350	350
7	Weight	kg	0,7/0,9	0,7/0,9	0,7/0,9	0,7/0,9

Product code reference		
GW80-C-10-B-L-A		
C	C= Coupling O=Overhung	Configuration
10		Gear Ratio
B	B=Bronze C=Composite	Material
L	L=Left R=Right LR=Both H=Hollow	Shaft exit
A	A,B,C,D	Orientation

Shaft exit options



Orientation options

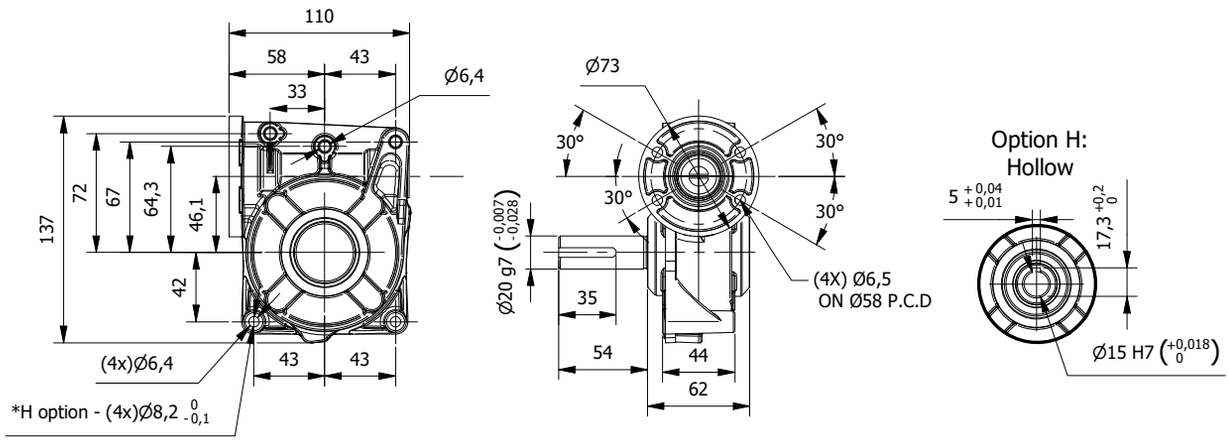


Worm and Wheel Gearbox GW12

Composite or Bronze gears

Ø 73mm

18 to 30Nm



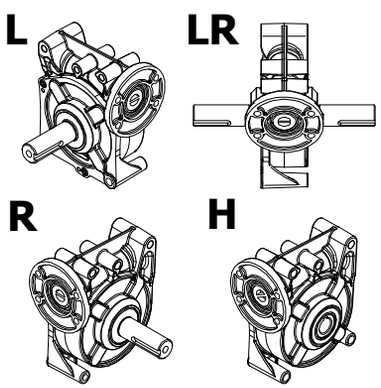
Available in Coupling configuration

Specification: values shown as Composite/Bronze								
	Gear Ratio	:1	12.5	14	15	19	21	25
1	Nominal Output Torque	Nm	20/30	20/30	20/30	20/30	20/30	20/30
2	Max. Output Torque	Nm	32/48	32/48	32/48	32/48	32/48	32/48
3	Efficiency	%	85/80	83/75	83/75	80/73	78/73	75/72
4	Backlash	arc.min	10-25	10-25	10-25	10-25	10-25	10-25
5	Max. Axial load	N	300/600	300/600	300/600	300/600	300/600	300/600
6	Max. Radial load (12mm from flange)	N	500/800	500/800	500/800	500/800	500/800	500/800
7	Weight	kg	1,1/1,5	1,1/1,5	1,1/1,5	1,1/1,5	1,1/1,5	1,1/1,5

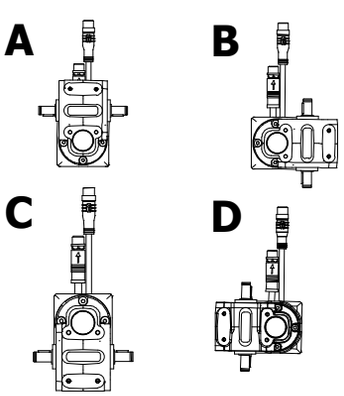
Specification: values shown as Composite/Bronze						
	Gear Ratio	:1	30	50	60	75
1	Nominal Output Torque	Nm	20/30	20/30	20/30	18/27
2	Max. Output Torque	Nm	32/48	32/48	32/48	29/43
3	Efficiency	%	72/65	60/55	55/50	50/45
4	Backlash	arc.min	10-25	10-25	10-25	10-25
5	Max. Axial load	N	300/600	300/600	300/600	300/600
6	Max. Radial load (12mm from flange)	N	500/800	500/800	500/800	500/800
7	Weight	kg	1,1/1,5	1,1/1,5	1,1/1,5	1,1/1,5

Product code reference		
GW12-C-15-B-L-A		
C	C= Coupling	Configuration
15		Gear Ratio
B	B=Bronze C=Composite	Material
L	L=Left R=Right LR=Both H=Hollow	Shaft exit
A	A,B,C,D	Orientation

Shaft exit options



Orientation options

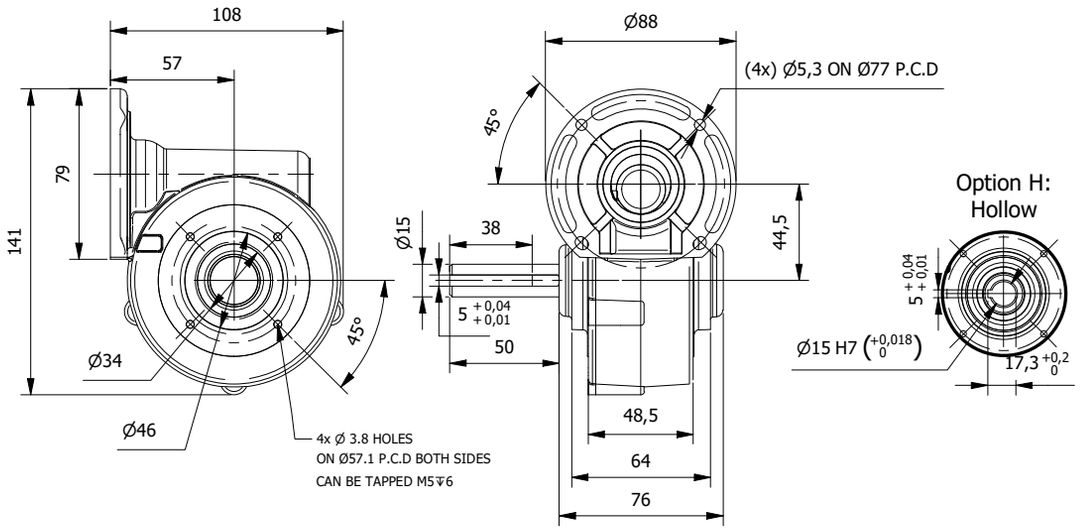


Worm and Wheel Gearbox GWL

Composite or Bronze gears

Ø 88mm

15 to 19Nm



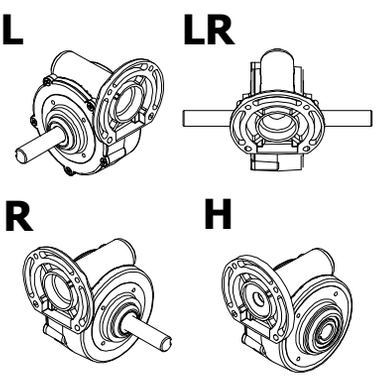
Available in Overhung configuration

Specification: values shown as Composite/Bronze								
	Gear Ratio	:1	5	12	15	20	25	30
1	Nominal Output Torque	Nm	15/19	15/19	15/19	15/19	15/19	15/19
2	Max. Output Torque	Nm	15/22	15/22	15/22	15/22	15/22	15/22
3	Efficiency	%	90/84	85/80	83/75	79/73	75/72	72/65
4	Backlash	arc.min	10-25	10-25	10-25	10-25	10-25	10-25
5	Max. Axial load	N	196	196	196	196	196	196
6	Max. Radial load (12mm from flange)	N	314	314	314	314	314	314
7	Weight	kg	1,5/1,9	1,5/1,9	1,5/1,9	1,5/1,9	1,5/1,9	1,5/1,9

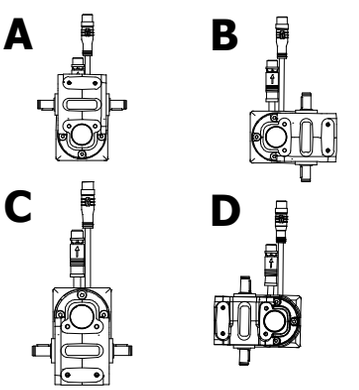
Specification: values shown as Composite/Bronze				
	Gear Ratio	:1	40	60
1	Nominal Output Torque	Nm	15/19	15/19
2	Max. Output Torque	Nm	15/22	15/22
3	Efficiency	%	67/60	55/45
4	Backlash	arc.min	10-25	10-25
5	Max. Axial load	N	196	196
6	Max. Radial load (12mm from flange)	N	314	314
7	Weight	kg	1,5/1,9	1,5/1,9

Product code reference		
GWL-O-20-B-L-A		
O	O=Overhung	Configuration
20		Gear Ratio
B	B=Bronze C=Composite	Material
L	L=Left R=Right LR=Both H=Hollow	Shaft exit
A	A,B,C,D	Orientation

Shaft exit options



Orientation options

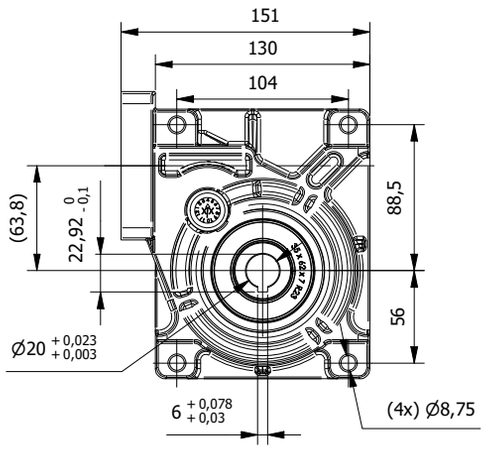


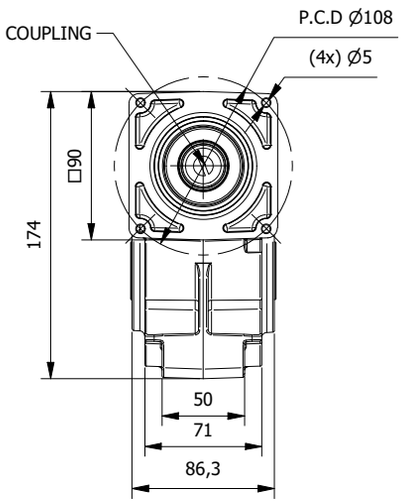
Worm and Wheel Gearbox GW65

Steel and Bronze gears

□ 90mm

120Nm





Available in Coupling configuration

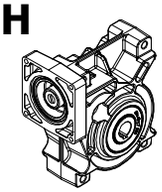
Specification								
	Gear Ratio	:1	20	40	60	80	100	120
1	Nominal Output Torque	Nm	120	120	120	120	120	120
2	Max. Output Torque	Nm	300	300	300	300	300	300
3	Efficiency	%	81	76	75	70	65	65
4	Backlash	arc.min	35-65	35-65	35-65	35-65	35-65	35-65
5	Max. Axial load	N	1750	1750	1750	1750	1750	1750
6	Max. Radial load (12mm from flange)	N	2335	2335	2335	2335	2335	2335
7	Weight	kg	3,5	3,5	3,5	3,5	3,5	3,5

Specification			
	Gear Ratio	:1	160
1	Nominal Output Torque	Nm	120
2	Max. Output Torque	Nm	300
3	Efficiency	%	60
4	Backlash	arc.min	35-65
5	Max. Axial load	N	1750
6	Max. Radial load (12mm from flange)	N	2335
7	Weight	kg	3,5

Product code reference		
GW65-C-60-B-H-A		
C	C= Coupling	Configuration
60		Gear Ratio
B	B=Bronze and Steel	Material
H	H=Hollow	Shaft exit
A	A,B,C,D	Orientation

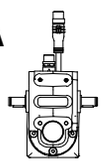
Shaft exit options

H

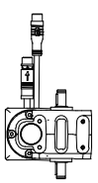


Orientation options

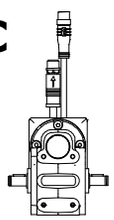
A



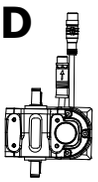
B



C



D



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.

Technical introduction 436

Incremental Encoders 433

E3 - Optical encoder - 3 channels 438

E4T - Optical encoder - 2 channels 439

E5 - Optical encoder - 3 channels 440

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 switch back and forth between low and high signal level.
Supply Voltage	Defines the range of supply voltage necessary for the encoder to function properly. To avoid damaging the encoder, this range must be adhered to.
Supply Current	Indicates the current consumption of the encoder at the given operating voltage.
Low level output	Voltage value of the low level signal.
High level output	Voltage value of the high level signal.
Output rise time	Time for changing from the lower to the higher signal.
Output fall time	Time for changing from the higher to the lower signal.
Phase shift	The delay in time or degrees between the rising edge of channel A and the rising edge of channel B. Also defined as the delay between the center of the high state on channel A to the center of the high state on channel B.
Operating temperature	Temperatures at which the encoder can operate.
Max. shaft radial play	Maximum allowed perpendicular shaft displacement.
Max. Acceleration	Maximum acceleration that the encoder can properly measure.
Codewheel	The encoder code wheel (or disc) defines the transmission code of pulses.

Glossary

Encoders translate rotary or linear motion into a digital signal for monitoring or controlling speed, direction, distance or position. Incremental encoders provide a relative position with respect to a home or zero position. Depending on the required precision and environmental harshness, optical or magnetic sensors can be utilized. An incremental encoder has two output signals, A and B, which issue pulses when the device is moved. Together, the A and B signals indicate both the occurrence of and direction of movement. Many incremental encoders have an additional output signal, typically designated index or Z, which indicates the encoder is located at a particular reference position.

The E3 is a high resolution rotary encoder with a rugged glass-filled polymer enclosure, which utilizes either a 5-pin locking or standard connector. This optical incremental encoder is designed to easily mount to and dismount from an existing shaft to provide digital feedback information.

E3

The E4T miniature transmissive optical encoder is designed to provide digital quadrature encoder feedback for high volume, limited space applications. The E4T utilizes an innovative, push-on encoder disk which accepts shaft diameters of 2mm to 6.3mm. The E4T is designed to be a one-time installation miniature encoder.

E4T

The E5 rotary encoder has a rugged glass-filled polymer enclosure with either a 5-pin or 10-pin latching connector. The module contains a highly collimated solid state light source and monolithic phased array sensor, which together provide a system extremely tolerant to mechanical misalignments.

E5

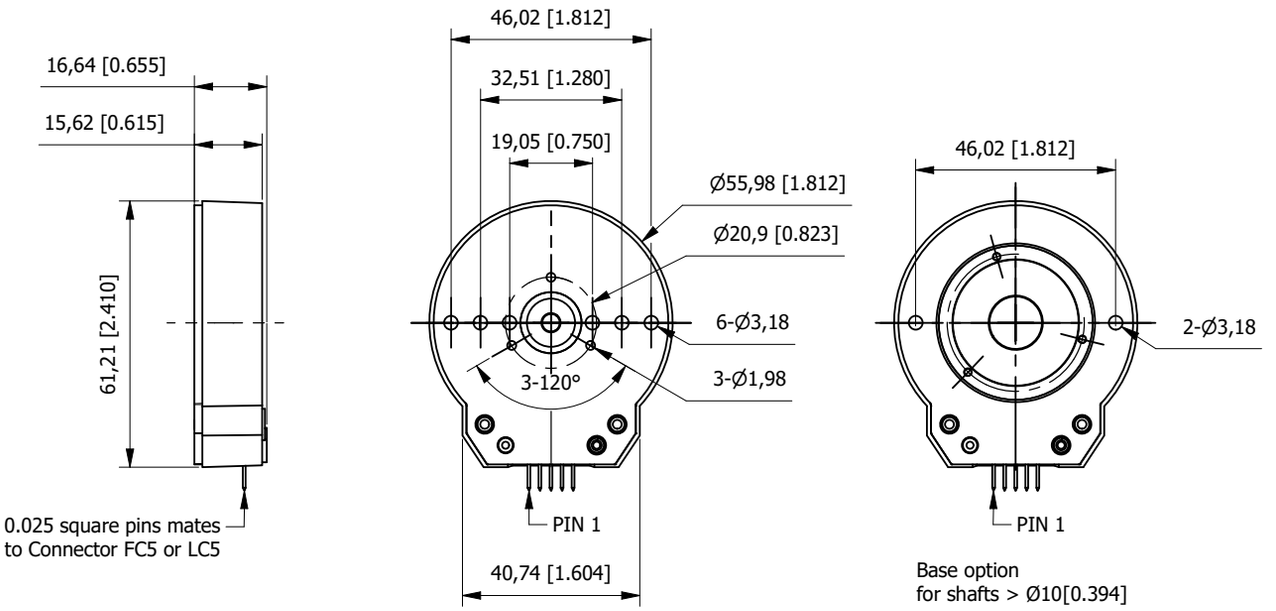
Technical introduction

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 Output	Vmax	0,5
High Level Output	Vmin	2
Output Rise Time (CPR <3600)	ns	110
Output Rise Time (CPR ≥3600)	ns	50
Output Fall Time (CPR <3600)	ns	35
Output Fall Time (CPR ≥3600)	ns	50
Phase shift	°e	90 ±60

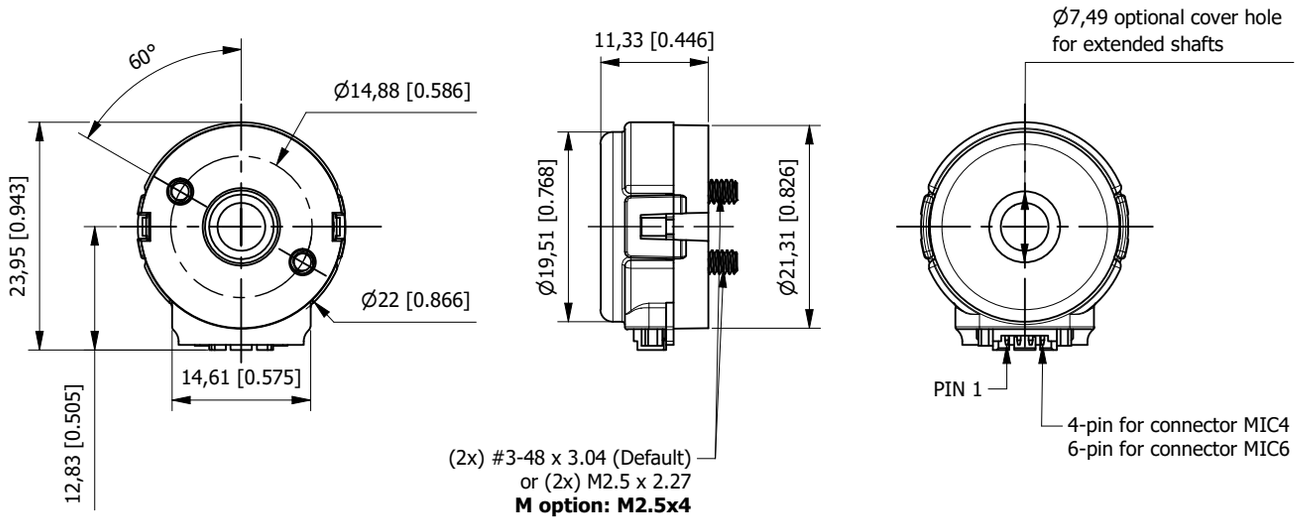
Connection	
Pin	
1	Ground
2	Index
3	A channel
4	+5VDC power
5	B channel
Mating Connector	CON-C5 or CON-LC5

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 E4T

Optical - 2 channel



Specification							
Model		E4T-100	E4T-200	E4T-256	E4T-400	E4T-500	E4T-1000
Cycles per revolution	CPR	100	200	256	400	500	1000
Number of channels		2	2	2	2	2	2
Max. Frequency	kHz	100	100	100	100	100	100
Max. Speed	rpm	60'000	30'000	23'437	15'000	12'000	6'000

Available CPR: 100, 108, 120, 125, 128, 200, 250, 256, 300, 360, 400, 500, 512, 720, 800, 1000

Available with different bore options to suit all our motors

Electrical Specification			
		Single-Ended	Differential
Supply Voltage	V	5 ±10%	5 ±10%
Supply Current (CPR ≤ 500, no load)	mA	25-30	27-32
Supply Current (CPR > 500, no load)	mA	34-42	36-44
Low Level Output	Vmax	0,4	0,6
High Level Output	Vmin	2,4	4,75
Differential Output Voltage	Vmin	---	3
Output Rise Time	ns	100	20
Output Fall Time	ns	50	20
Phase shift	°e	90 ±60	90 ±60

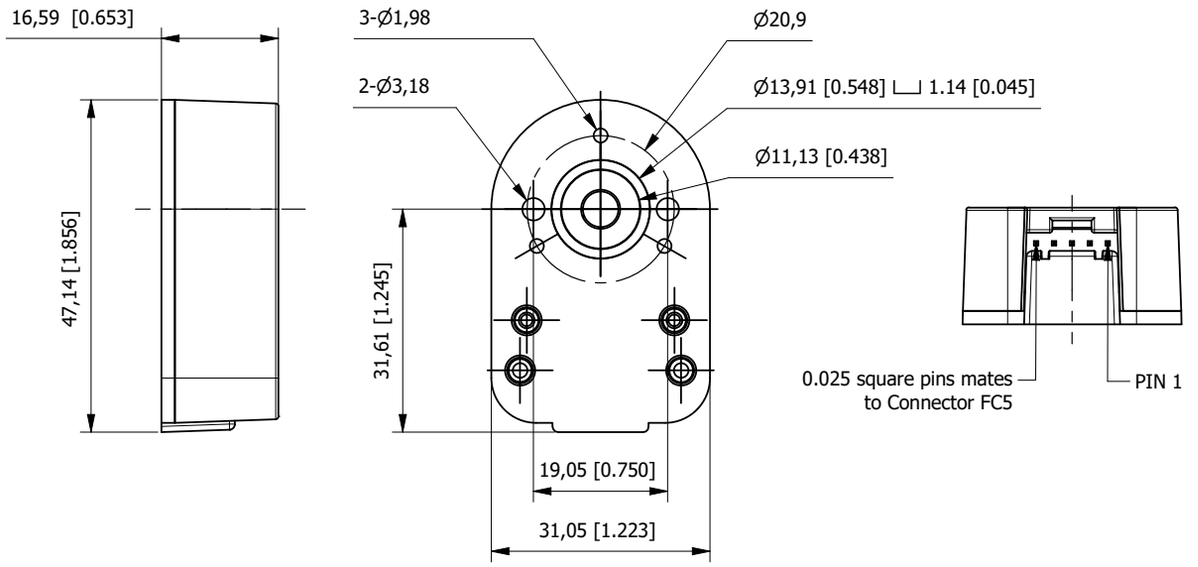
Connection		
Pin	Single-Ended	Differential
1	+5VDC power	Ground
2	A channel	A channel
3	Ground	A- channel
4	B channel	+5VDC power
5		B channel
6		B- channel
Mating Connector	CON-MIC4	CON-MIC6

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	High-Voltage
Supply Voltage	V	5 ±10%	5 ±10%	7,5-30
Supply Current (CPR <500, no load)	mA	27-33	29-36	8-10
Supply Current (CPR ≥500 and <2000, no load)	mA	54-62	56-65	16-19
Supply Current (CPR ≥2000, no load)	mA	72-85	74-88	22-25
Low Level Output	Vmax	0,5	0,4	0,4
High Level Output	Vmin	2	2,4	---
Output Rise Time (CPR <2000, no load)	ns	110	≤20	---
Output Rise Time (CPR ≥2000, ±5mA load)	ns	50	≤20	---
Output Fall Time (CPR <2000, no load)	ns	100	≤20	---
Output Fall Time (CPR ≥2000, ±5mA load)	ns	50	≤20	---
Phase shift	°e	90 ±60	90 ±60	---

Connection		
Pin	Single-Ended	Differential
1	Ground	Ground
2	Index	Ground
3	A channel	Index-
4	+5VDC power	Index+
5	B channel	A- channel
6		A+ channel
7		+5VDC power
8		+5VDC power
9		B- channel
10		B+ channel
Mating Connector	CON-FC5	CON-FC10

Available with different cable options

Characteristics		
Item		
Operating Temperature (CPR <2000)	°C	-40° to 100°
Operating Temperature (CPR ≥2000)	°C	-25° to 100°
Max. Shaft Axial Play	mm	±0,254
Max. Shaft Run out	mm	0,1 T.I.R.
Max. Acceleration	rad/s²	250'000
Codewheel Moment of Inertia	gcm²	0,565
Minimum Shaft Length	mm	11,3
Maximum Shaft Length	mm	19,05

Controllers — Drives



Brushless DC motor Controllers

p.451



Brushless DC motor Multi-Axis Controllers

p.461



Brushless AC motor Controllers

p.465



Stepper motor Controllers

p.469

Controllers — Drives

Technical introduction		448

Brushless DC motor Drives	Current* (Arms)	451
Pegasus B072	up to 2	452
Pegasus B144	up to 3	453
Pegasus B360	up to 12	454
Gemini B400	up to 10	455
Leo B860 - **NEW**	up to 18	456
Leo B1400	up to 30	457
Leo B2000	up to 40	458
Leo B3800 - **NEW**	up to 80	459

Brushless DC motor Multi-Axis Drives	Current* (Arms)	461
Phoenix - B100	up to 3 (each motor)	462
Phoenix - B500	up to 12 (each motor)	463

Brushless AC motor Drives	Current* (Arms)	465
Scorpius A750	up to 3	466
Serpens A1300	up to 5,2	467

Stepper motor Drives	Current* (Arms)	469
Hercules SOD202	up to 2	470
Hercules SOD203	up to 3	471
Libra SBD205	up to 5,5	472
Aquarius SBD204	up to 4,2	473
Aquarius SBD207	up to 7,1	474
Sagittarius SBA207	up to 7,1	475
Andromeda SBA208	up to 8,5	476
Lyra SBAC203	up to 3	477
Draco SBAC205	up to 5,2	478
Dorado SBAC208	up to 8	479

* Phase Current

Term	
Phase Current	Nominal Current that the drive can provide to one phase of the motor.
Peak Current	Maximum Current that the drive can provide to one phase of the motor, for a limited time (max 1s).
Power Supply	AC or DC Voltage range allowed to supply the drive.
Logic Power Supply	AC or DC Voltage range allowed to supply the logic part of the drive.
Output Power	Maximum motor power managed by the drive.
Chopper frequency	Switching frequency of the drive.
Protection degree	IP (International Protection) degree: it defines the protection against dust and water
Pollution degree	Degree of protection against pollution.
Category	Drive category following standard EN 61800-3 (electromagnetic compatibility): it defines the capability of a device to work satisfactorily in an electromagnetic environment without itself causing electromagnetic interference which is unacceptable for other devices present in this environment.
Temperatures	Temperature ranges allowed for correct operation (Working Temperature) or for proper storage (Storage Temperature).
Humidity	Humidity range allowed for correct operation.
Closed-loop	Closed loop motor control, also known as feedback control, incorporates a feedback mechanism to continuously monitor and adjust the motor's output. It uses sensors or encoders to measure the actual performance of the motor and compares it to the desired output.

Glossary

Product families
BLDC motor Controllers
BLDC motor Multi-Axis Controllers
BLAC motor Controllers
Stepper motor Controllers

Delta Line Electronics can provide solutions to accomplish every customers' need: our drives portfolio can cover a wide range of different motors, from Stepper to Brushless motors.

Our portfolio is divided in Brushless DC Drives for 3-phase BLDC motors with phase current up to 80A rms, Brushless DC Multi-Axis Drives able to simultaneously control up to three BLDC 3-phase motors with phase current up to 12A rms (each motor), Brushless AC Drives for 3-phase BLAC motors with phase current up to 5,2A rms and Stepper Drives for 2-phase Stepper motors suitable for DC and AC power supply and with a phase current up to 8,5A rms. All our drives feature ARM Core M4 Technology and are capable to drive motors with smooth and silent movements.

Portfolio

All our programmable drives are offered with two software: DL Studio and DL Space. DL Studio is a configuration and test tool that lets the user set all the objects inside the drive and move the motor from the PC while seeing the motor response, in terms of current, speed and other information. DL Space contains all the features of DL Studio, but lets the user write custom applications for the drive using a simple and user-friendly programming language. The drive can be connected to the PC through a specific interface kit.

Software

One of the many peculiarities of our drives is the possibility to choose different control methods:

the drive receives one signal to control the direction and one signal to control the speed from a master (a PLC or any other master capable of this control methodologies). These methods are extremely simple but limited by the performance of the master.

Clock and Direction / Analogue Reference

the drive is controlled through a fieldbus network: the master exchanges data with the drives connected to the bus. This control method has a great robustness, and the initial high cost is often justified by a reduction of the cablings and of the cost of assembly/ maintenance procedures.

Fieldbus

the drive contains a custom application that can control the drive itself and the motor, even without the presence of a master. Programmable drives can be coupled with a PLC master to lighten the complexity of the PLC program, or they can be use standalone, even for complex usages.

Programmable

Technical introduction

In modern industrial systems, communication protocols are essential for connecting and controlling devices efficiently. Each protocol offers unique advantages, whether it's for real-time performance, scalability, or compatibility across different applications. All Delta Line Drives equipped with any fieldbus act like slave for the bus, so it is necessary to have at least one master that handles the data exchange. Here below an overview of the available communication protocols across our range.



FIELDBUSES

It is a communication protocol widely used in automation, healthcare, agricultural and automotive systems. The CANopen protocol is based on the CANbus (Controller Area Network) physical layer, it can reach a transmission rate up to 1Mbps and allows the connection of up to 32 drives without losing performance.

CANopen

It is a very common serial communication protocol published by Gould-Modicon (now Schneider Electric) in 1979. Modbus RTU is based on the RS485 physical layer, it can reach a transmission rate up to 115200 bps and allows the connection of up to 32 drives without losing performance. Modbus TCP instead leans on the Ethernet bus; it can reach a transmission rate up to 100Mbps and allows the connection of an infinite number of drives. Also, the Modbus TCP/IP potentially allows remote connections.

Modbus

Ethernet for Control Automation Technology (EtherCAT) was developed by Beckhoff: it is based on the CANopen protocol and on the Ethernet bus, and it is optimized for industrial automation control. It has a transmission rate of 100Mbps and has no limits on the number of drives connected. It is the only fieldbus we offer that permits axes interpolation.

EtherCAT

Profinet is an industrial technical standard for data communication over industrial ethernet, designed for collecting data and controlling equipment in industrial systems, with a particular strength in delivering data under tight time constraints. It defines the communication with field connected peripheral devices. Profinet defines the entire data exchange between controllers and the devices.

Profinet

Powerlink is a real-time Ethernet protocol designed for high-precision applications. It provides microsecond-level cycle times and supports unlimited nodes, making it ideal for complex automation systems requiring strict timing accuracy.

Powerlink

EtherNet/IP is a highly versatile industrial network protocol that leverages standard Ethernet for real-time communication and control. It enables integration across diverse systems and manufacturers, offering robust and reliable data exchange for a wide range of automation applications.

EtherNet/IP



Brushless DC motor

Controllers – Drives

Advantages at a glance
Position, Speed and Torque control
Analogue, fieldbus or programmable
Flexible configuration

Our Brushless DC Drives are specifically developed for 3-phases brushless motors with phase current up to 40A rms. All our drives feature ARM Core M4 Technology and are capable to drive motors with smooth and silent movements.

Brushless DC motor Drives	Current* (Arms)	
Pegasus B072	up to 2	452
Pegasus B144	up to 3	453
Pegasus B360	up to 12	454
Gemini B400	up to 10	455
Leo B860	up to 18	456
Leo B1400	up to 30	457
Leo B2000	up to 40	458
Leo B3800	up to 80	459

PEGASUS

Benefits

- Compact design
- Price/performance
- Programmable

Characteristics

- Phase Current up to 12A rms
- Power Supply: 12-48 VDC
- Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP, Profinet, PowerLink, EtherNet/IP

GEMINI

Benefits

- Digital I/O and up to 2 analogue inputs
- Programmable

Characteristics

- Phase Current up to 10A rms
- Power Supply: 12-48 VDC
- Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP

LEO

Benefits

- Compact design
- High performance
- High motor power

Characteristics

- Phase Current up to 80A rms
- Power Supply: 12-60 VDC
- Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP, Profinet, PowerLink, EtherNet/IP

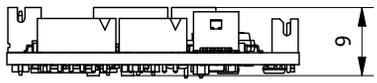
* Phase Current

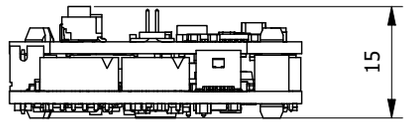
Drive for BLDC Motor Pegasus B072O06

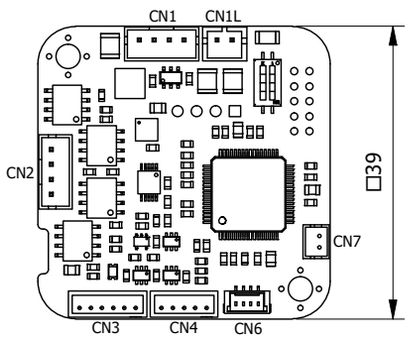
Motion Controller

up to 2A rms

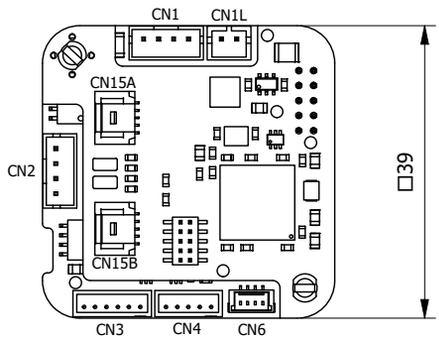
CN1: Power supply connector
CN1L: Logic supply connector
CN2: Motor connector
CN3/CN7: Input and Output connector
CN4: Feedback interfaces connector
CN6: Service interface
CN15A/B: Fieldbus connector







CANopen & RS485
Modbus-RTU Interface



EtherCAT & Ethernet
Modbus-TCP Interface

Electrical Data			
	Item		
1	Phase Current	A rms	up to 2
2	Peak Current	A peak	2
3	Output Power	W	up to 72
4	Power Supply	VDC	12÷36
5	Logic Power Supply (optional)	VDC	12÷36
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	3	2	1
CANopen (programmable)	C...-S200	3	2	1
CANopen (DS 402)	C...-S402	3	2	1
Ethernet Modbus TCP/IP (programmable)	T...-S200	3	2	0
EtherCAT (DS 402)	E...-S402	3	2	0
Profinet (programmable)	P...-S200	3	2	0
PowerLink (DS 402)	R...-S402	3	2	0
EtherNet IP (programmable)	H...-S200	3	2	0

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

Characteristics	
Item	
Weight	15g
Closed-loop	Available
Protection Class	IP00
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Supply inversion
Software*	Setup & config. - DL Studio
	Programming - DL Space
*Service SCI cable required and available on request	

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Hall effect sensors: 5V Single-Ended (TTL/CMOS)	001

Product code reference	
B072O06 M 001-S200	
M	Fieldbus
001	Feedback options
S200	Protocol reference

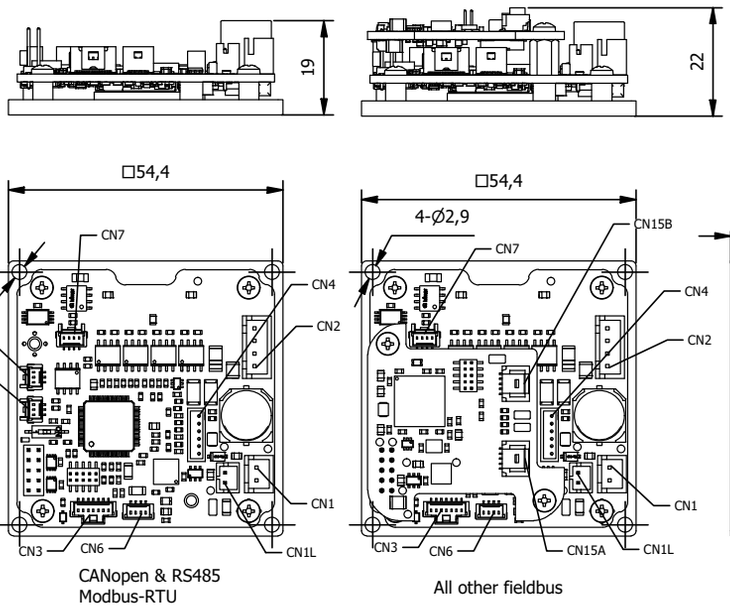
Standard Combination
Motor
All motors with Phase Current up to 2A rms

Drive for BLDC Motor Pegasus B144O03

Motion Controller

up to 3A rms

CN1: Power Supply connector
CN1L: Logic Supply connector
CN2: Motor connector
CN3/CN7: Input and Output connector
CN4: Feedback Interface connector
CN6: Service Interface
CN5A/B: CAN/Modbus Interface
CN15A/B: Multiprotocol connector



Electrical Data			
	Item		
1	Phase Current	A rms	up to 3
2	Peak Current	A peak	3
3	Output Power	W	up to 144
4	Power Supply	VDC	12÷48
5	Logic Power Supply (optional)	VDC	12÷48
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	4	3	1
CANopen (programmable)	C...-S200	4	3	1
CANopen (DS 402)	C...-S402	4	3	1
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	1
EtherCAT (DS 402)	E...-S402	4	3	1
Profinet (programmable)	P...-S200	4	3	1
PowerLink (DS 402)	R...-S402	4	3	1
EtherNet IP (programmable)	H...-S200	4	3	1

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

Characteristics	
Item	
Weight	27g
Closed-loop	Available
Protection Class	IP00
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Supply inversion
Software*	Setup & config. - DL Studio
	Programming - DL Space
*Service SCI cable required and available on request	

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Hall effect sensors: 5V Single-Ended (TTL/CMOS)	001
Absolute Encoder Biss-C	002

Product code reference	
B144O03 M 001-S200	
M	Fieldbus
001	Feedback options
S200	Protocol reference

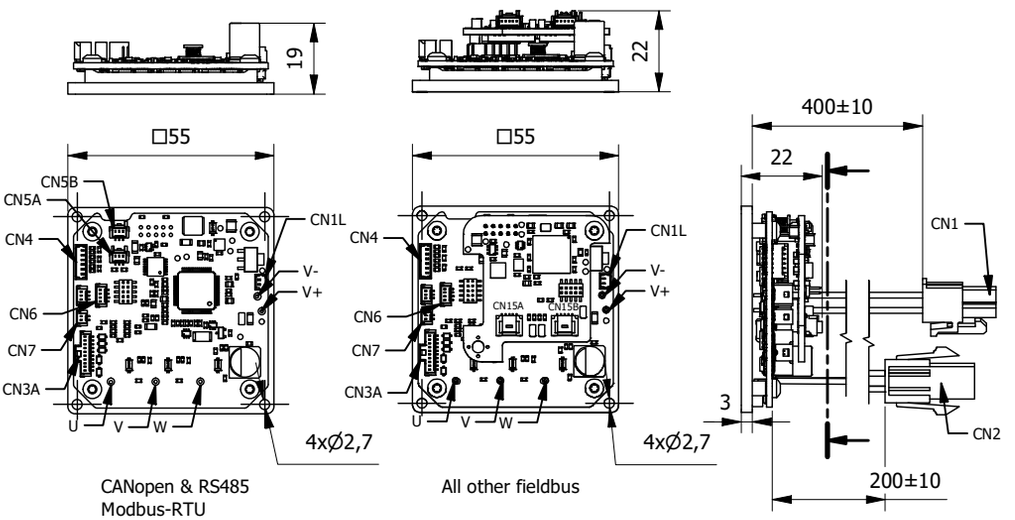
Standard Combination
Motor
All motors with Phase Current up to 3A rms

Drive for BLDC Motor Pegasus B360O30

Motion Controller

up to 12A rms

CN1: Power Supply connector
CN2: Motor Phases connector
CN1L: Logic Supply connector
CN3A: Input/Output
CN4: Encoder connector
CN5A/B: CAN/Modbus Interface
CN6: Service Serial Interface
CN7: Analog In connector
CN15A/B: Multiprotocol connector



CANopen & RS485 Modbus-RTU

All other fieldbus

Electrical Data			
	Item		
1	Phase Current	A rms	up to 12
2	Peak Current	A peak	30
3	Output Power	W	up to 360
4	Power Supply	VDC	12÷36
5	Logic Power Supply (optional)	VDC	12÷36
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	4	2	2
CANopen (programmable)	C...-S200	4	2	2
CANopen (DS 402)	C...-S402	4	2	2
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	2	1
EtherCAT (DS 402)	E...-S402	4	2	1
Profinet (programmable)	P...-S200	4	2	1
PowerLink (DS 402)	R...-S402	4	2	1
EtherNet IP (programmable)	H...-S200	4	2	1

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

Characteristics	
Item	
Weight	43g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Supply inversion
Software*	Setup & config. - DL Studio
	Programming - DL Space
*Service SCI cable required and available on request	

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Hall effect sensors: 5V Single-Ended (TTL/CMOS)	001
Absolute Encoder Biss-C	002

Product code reference	
B360O30 M 001-S200	
M	Fieldbus
001	Feedback options
S200	Protocol reference

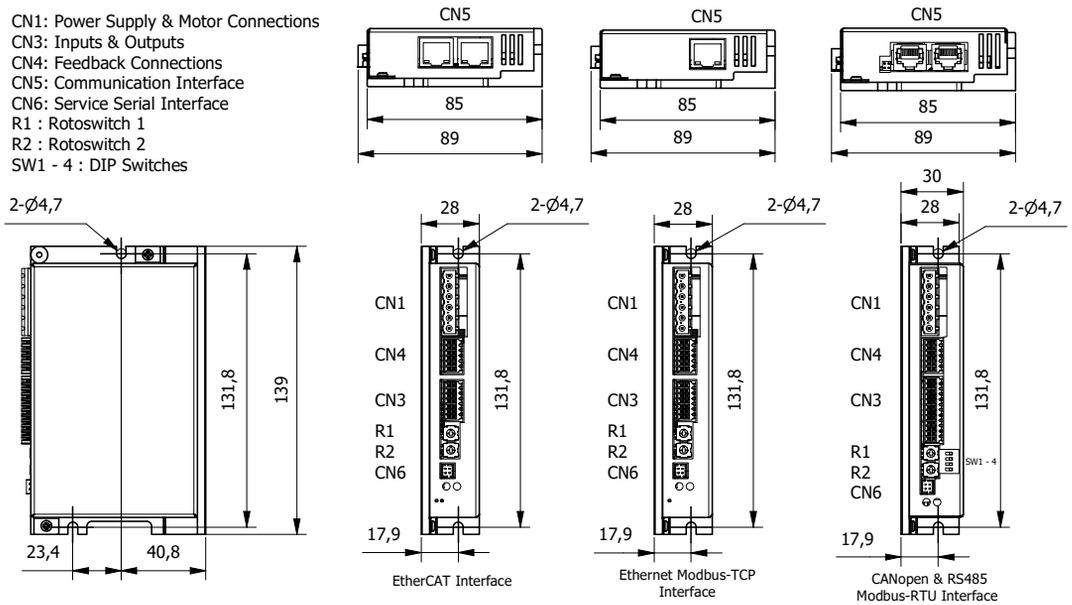
Standard Combination
Motor
All motors with Phase Current up to 12A rms

Drive for BLDC 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	Output Power	W	up to 400
4	Power Supply	VDC	12÷48
5	Logic Power Supply (optional)	VDC	12÷48
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs (not isolated)
RS485 Modbus-RTU (programmable)	M...-S200	6	3	2
CANopen (programmable)	C...-S200	6	3	2
CANopen (DS 402)	C...-S402	6	3	2
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	0
EtherCAT (programmable)	E...-S200	4	3	0
EtherCAT (DS 402)	E...-S402	4	3	0

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

Characteristics	
Item	
Weight (CAN-Modbus only)	380g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Software*	Setup & config. - DL Studio
	Programming - DL Space
*Service SCI cable required and available on request	

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Hall effect sensors: 5V Single-Ended (TTL/CMOS)	001

Product code reference	
B400B30 M 001-S200	
M	Fieldbus
001	Feedback options
S200	Protocol reference

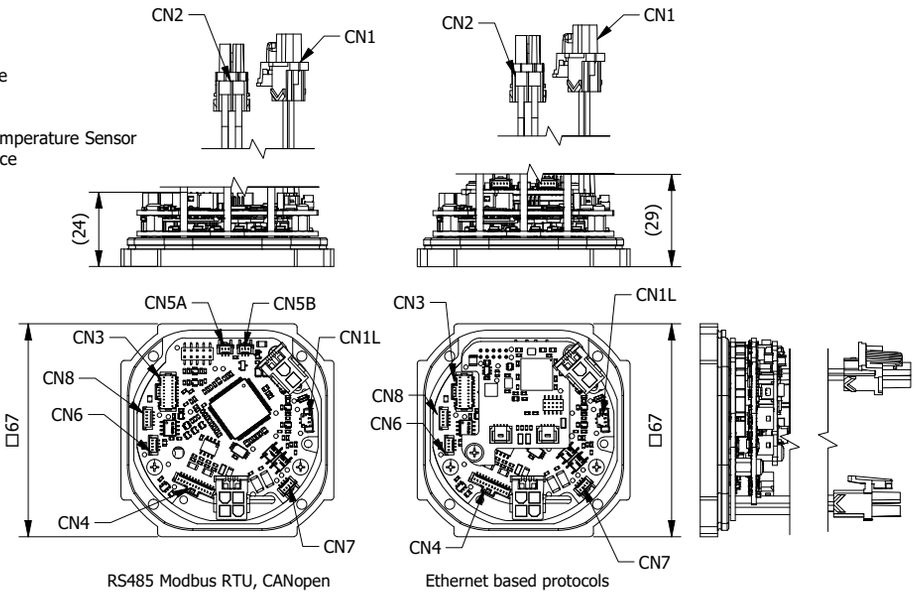
Standard Combination
Motor
All motors with Phase Current up to 10A rms

Drive for BLDC Motor Leo B860O54

Motion Controller

up to 18A rms

CN1: Power Supply connector
CN2: Motor Phases connector
CN3: Inputs and Outputs
CN4: Feedback Input
CN5A/B: Communication Interface
CN6: Service Serial Interface
CN7: STO Interface
CN8: Brake Output + External Temperature Sensor
CN15A/B: Communication Interface



with Safe Torque Off function

Electrical Data			
	Item		
1	Phase Current	A rms	up to 18
2	Peak Current	A peak	54 (for 2s.)
3	Output Power	W	up to 860
4	Power Supply	VDC	12÷60
5	Logic Power Supply (optional)	VDC	12÷60
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs (not isolated)
RS485 Modbus-RTU (programmable)	M...-S200	4	3	2
CANopen (programmable)	C...-S200	4	3	2
CANopen (DS 402)	C...-S402	4	3	2
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	2
EtherCAT (DS 402)	E...-S402	4	3	2
Profinet (programmable)	P...-S200	4	3	2
PowerLink (DS 402)	R...-S402	4	3	2
EtherNet IP (programmable)	H...-S200	4	3	2

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

Characteristics	
Item	
Weight	125g
Closed-loop	Available
Protection Class	IP00
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/Ple
Software*	Setup & config. - DL Studio
	Programming - DL Space

*Service SCI cable required and available on request

Standard Combination
Motor
All motors with Phase Current up to 18A rms

Other options	
Item	Code
With STO (Safe Torque Off function)	0
Without STO (Safe Torque Off function)	1

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	01
Hall effect sensors: 5V Single-Ended (TTL/CMOS)	01
Absolute Encoder BiSS	02

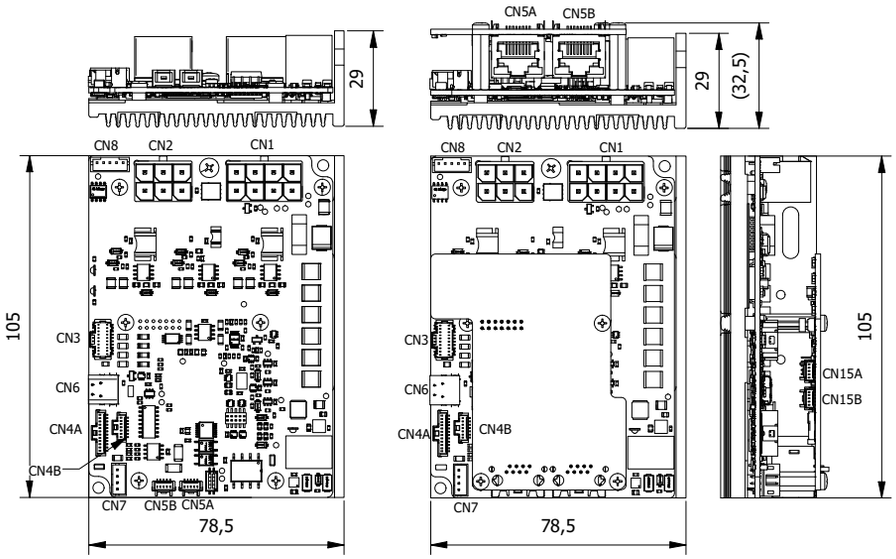
Product code reference	
B860O54 C 0 01-S200	
C	Fieldbus
0	Other options
01	Feedback options
S200	Protocol reference

Drive for BLDC Motor Leo B1400O90

Motion Controller

up to 30A rms

CN1: Power Supply + Logic Supply + Brake Resistor Outputs
CN2: Motor connector
CN3: Inputs and Outputs
CN4A: Incremental Encoder + Hall Sensor
CN4B: Absolute Encoder
CN5A/B: Communication Interface
CN6: Service Serial Interface
CN7: STO Interface
CN8: Brake Output + External Temperature Sensor
CN15A/B: Communication Interface



RS485 Modbus RTU, CANopen

Ethernet based protocols

with Safe Torque Off function
UL certified: UL E531627

Electrical Data			
	Item		
1	Phase Current	A rms	up to 30
2	Peak Current	A peak	90 (for 2s.)
3	Output Power	W	up to 1400
4	Power Supply	VDC	12÷48
5	Logic Power Supply (optional)	VDC	12÷48
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs (not isolated)
RS485 Modbus-RTU (programmable)	L...-S200	4	3	2
CANopen (programmable)	L...-S200	4	3	2
CANopen (DS 402)	L...-S402	4	3	2
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	2
EtherCAT (DS 402)	E...-S402	4	3	2
Profinet (programmable)	P...-S200	4	3	2
PowerLink (DS 402)	R...-S402	4	3	2
EtherNet IP (programmable)	H...-S200	4	3	2

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

Characteristics	
Item	
Weight	200g
Closed-loop	Available
Protection Class	IP00
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/Ple
Software*	Setup & config. - DL Studio
	Programming - DL Space

*Service SCI cable required and available on request

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	003
Hall effect sensors: 5V Single-Ended (TTL/CMOS)	003
Absolute Encoder BiSS	003

Product code reference	
B1400O90 L 003-S200	
L	Fieldbus
003	Feedback options
S200	Protocol reference

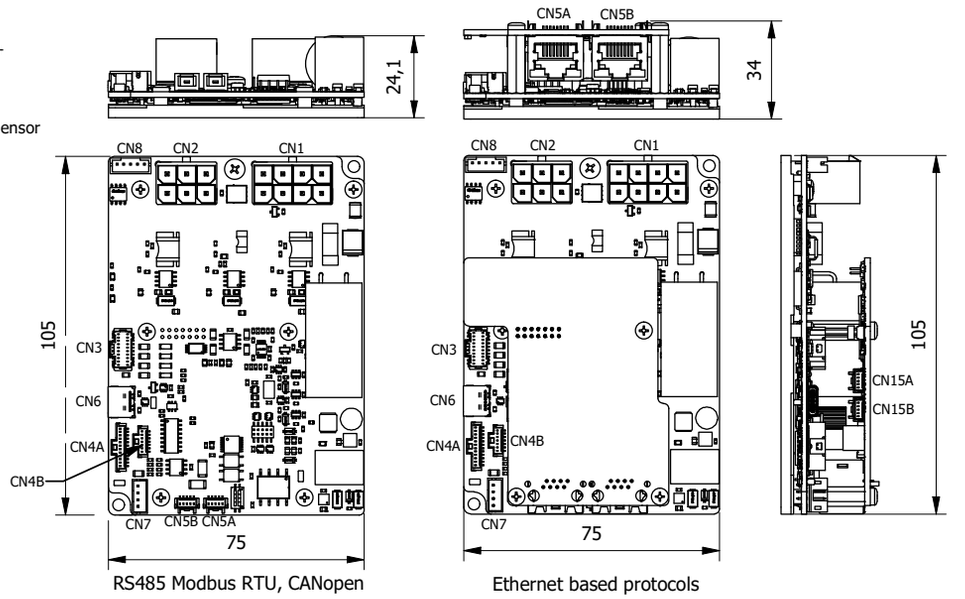
Standard Combination
Motor
All motors with Phase Current up to 30A rms

Drive for BLDC Motor Leo B2000O90

Motion Controller

up to 40A rms

CN1: Power Supply + Logic Supply + Brake Resistor Outputs
CN2: Motor connector
CN3: Inputs and Outputs
CN4A: Incremental Encoder + Hall Sensor
CN4B: Absolute Encoder
CN5A/B: Communication Interface
CN6: Service Serial Interface
CN7: STO Interface
CN8: Brake Output + External Temperature Sensor
CN15A/B: Communication Interface



RS485 Modbus RTU, CANopen

Ethernet based protocols

with Safe Torque Off function
UL certified: UL E531627

Electrical Data			
	Item		
1	Phase Current	A rms	up to 40
2	Peak Current	A peak	90 (for 2s.)
3	Output Power	W	up to 2000
4	Power Supply	VDC	12÷48
5	Logic Power Supply (optional)	VDC	12÷48
6	Chopper Frequency	kHz	20

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs (not isolated)
RS485 Modbus-RTU (programmable)	L...-S200	4	3	2
CANopen (programmable)	L...-S200	4	3	2
CANopen (DS 402)	L...-S402	4	3	2
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	2
EtherCAT (DS 402)	E...-S402	4	3	2
Profinet (programmable)	P...-S200	4	3	2
PowerLink (DS 402)	R...-S402	4	3	2
EtherNet IP (programmable)	H...-S200	4	3	2

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

Characteristics	
Item	
Weight	180g
Closed-loop	Available
Protection Class	IP00
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/Ple
Software*	Setup & config. - DL Studio
	Programming - DL Space

*Service SCI cable required and available on request

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	003
Hall effect sensors: 5V Single-Ended (TTL/CMOS)	003
Absolute Encoder BiSS	003

Product code reference	
B2000O90 L 003-S200	
L	Fieldbus
003	Feedback options
S200	Protocol reference

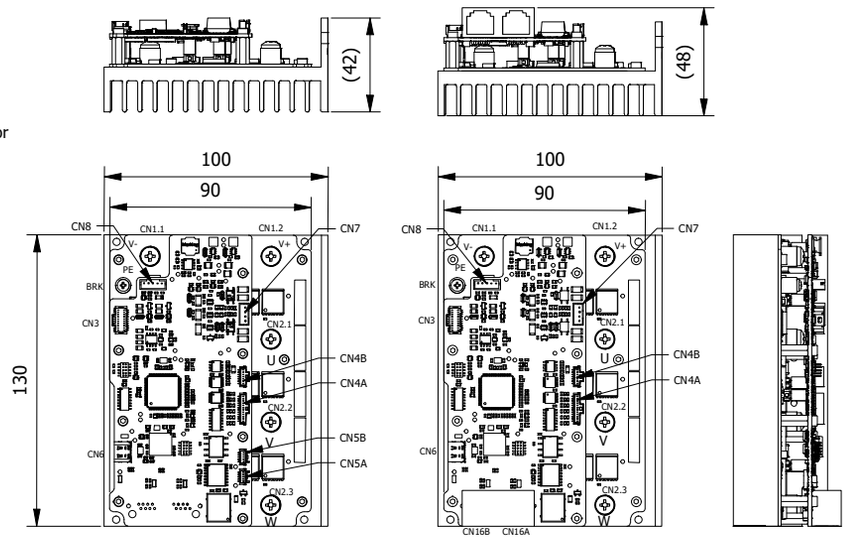
Standard Combination
Motor
All motors with Phase Current up to 40A rms

Drive for BLDC Motor Leo B3800O240

Motion Controller

up to 80A rms

CN1: Power Terminal Block
CN2: Motor Terminal Block
CN3: Inputs and Outputs
CN4A: Incremental Encoder + Hall Sensor
CN4B: Absolute Encoder
CN6: Service Serial Interface
CN5A/B: Communication Interface
CN7: STO Interface
CN8: Brake Output + External Temperature Sensor
CN16A/B: Communication Interface



RS485 Modbus RTU, CANopen

Ethernet based protocols

with Safe Torque Off function

Electrical Data			
	Item		
1	Phase Current	A rms	up to 80
2	Peak Current	A peak	240 (for 2s.)
3	Output Power	W	up to 3800
4	Power Supply	VDC	12÷60
5	Logic Power Supply (optional)	VDC	12÷60
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs (not isolated)
RS485 Modbus-RTU (programmable)	L...-S200	4	3	2
CANopen (programmable)	L...-S200	4	3	2
CANopen (DS 402)	L...-S402	4	3	2
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	2
EtherCAT (DS 402)	E...-S402	4	3	2
Profinet (programmable)	P...-S200	4	3	2
PowerLink (DS 402)	R...-S402	4	3	2
EtherNet IP (programmable)	H...-S200	4	3	2

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

Characteristics	
Item	
Weight	540g
Closed-loop	Available
Protection Class	IP00
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/Ple
Software*	Setup & config. - DL Studio
	Programming - DL Space

*Service SCI cable required and available on request

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Hall effect sensors: 5V Single-Ended (TTL/CMOS)	001
Absolute Encoder BiSS	001

Product code reference	
B3800O240 L 001-S200	
L	Fieldbus
001	Feedback options
S200	Protocol reference

Standard Combination
Motor
All motors with Phase Current up to 80A rms



BLDC motor Multi-Axis

Controllers – Drives

Advantages at a glance
Position, Speed and Torque control
EtherCAT fieldbus
Flexible configuration

Our Brushless Multi-Axis Drives (Phoenix B100 and Phoenix B500) are specifically developed to simultaneously control up to three BLDC 3-phase motors with phase current up to 12A rms (each motor). All our drives feature ARM Core M4 Technology and are capable to drive motors with smooth and silent movements.

PHOENIX B100	PHOENIX B500
Benefits	**Benefits**
• Compact dimensions • Digital I/O • Simultaneous control of up to 3 motors/axis	• Compact dimensions • Digital I/O • Simultaneous control of up to 3 motors/axis
Characteristics	**Characteristics**
• Phase Current up to 3A rms for each motor • Power Supply: 12-48VDC • Fieldbus: EtherCAT	• Phase Current up to 12A rms for each motor • Power Supply: 12-48VDC • Fieldbus: EtherCAT

Brushless DC motor Multi-Axis Drives	Current* (Arms)	
Phoenix - B100	up to 3 (each motor)	462
Phoenix - B500	up to 12 (each motor)	463

* Phase Current

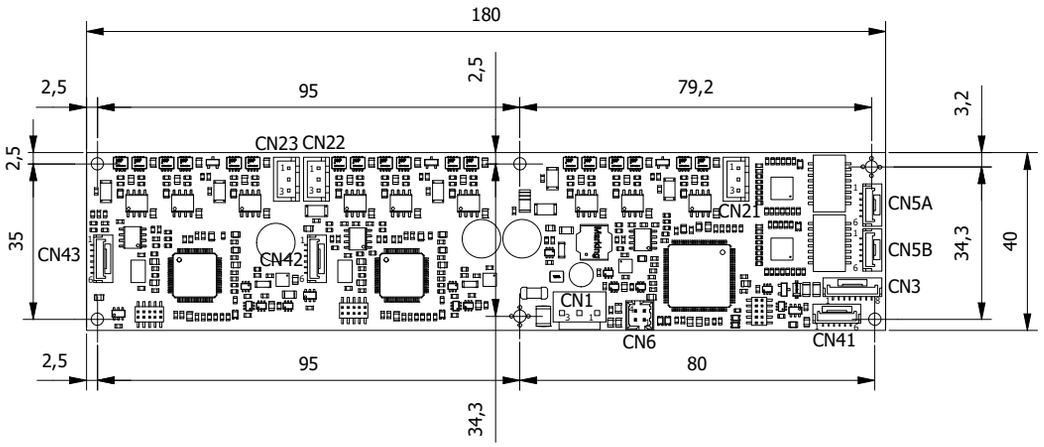
Drive for BLDC Motor Phoenix B100O05M3

3-Axis Motion Controller

up to 3A rms

each motor

CN1: Power Supply
CN21, CN22, CN23: Motor connections
CN3: Digital Inputs and Outputs
CN41, CN42, CN43: Feedback connections
CN5A, CN5B: EtherCAT Interface Interface
CN6: Service SCI Connection



Electrical Data			
	Item		
1	Phase Current (each axis)	A rms	up to 3
2	Peak Current (each axis)	A peak	5 (for 2s.)
3	Output Power	W	up to 100
4	Power Supply	VDC	12÷48
5	Logic Power Supply (optional)	VDC	12÷48
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs (not isolated)
EtherCAT (DS 402)	E...-S402	3	3	0
Cable kit available on request. More information can be found in the product manual on our website.				

Characteristics	
Item	
Weight	200g
Closed-loop	Available
Protection Class	IP00
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Software*	Setup & config. - DL Studio

*Service SCI cable required and available on request

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Hall effect sensors: 5V Single-Ended (TTL/CMOS)	001

Product code reference	
B100O05 M3 E 001-S402	
M	Multi-axis
3	Number of axis
E	Fieldbus
001	Feedback options
S402	Protocol reference

Standard Combination
Motor
All motors with Phase Current up to 3A rms

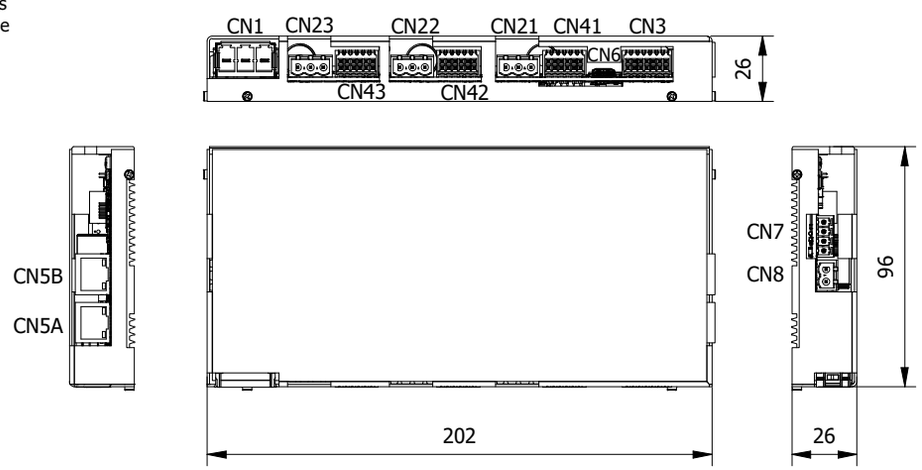
Drive for BLDC Motor Phoenix B500B36M3

3-Axis Motion Controller

up to 12A rms

each motor

CN1: Power Supply
CN21, CN22, CN23: Motor connections
CN3: Digital Inputs and Outputs
CN41, CN42, CN43: Feedback connections
CN5A, CN5B: EtherCAT Interface Interface
CN6: Service SCI Connection
CN7: STO Connection
CN8: Brake Resistor connector



with Safe Torque Off function

Electrical Data			
	Item		
1	Phase Current (each axis)	A rms	up to 12
2	Peak Current (each axis)	A peak	36 (for 2s.)
3	Output Power	W	up to 500
4	Power Supply	VDC	12÷48
5	Logic Power Supply (optional)	VDC	12÷48
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs (not isolated)
EtherCAT (DS 402)	E...-S402	3	3	0
Cable kit available on request. More information can be found in the product manual on our website.				

Characteristics	
Item	
Weight	300g
Closed-loop	Available
Protection Class	IP00
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/Ple
Software*	Setup & config. - DL Studio
*Service SCI cable required and available on request	

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	002
Hall effect sensors: 5V Single-Ended (TTL/CMOS)	002

Product code reference	
B500B36 M3 E 002-S402	
M	Multi-axis
3	Number of axis
E	Fieldbus
002	Feedback options
S402	Protocol reference

Standard Combination
Motor
All motors with Phase Current up to 12A rms



Brushless AC motor

Controllers – Drives

Advantages at a glance
Position, Speed and Torque control
Analogue, fieldbus or programmable
Flexible configuration

Our Brushless AC Drives are specifically developed to control AC power supplied 3-phase brushless motors with phase current up to 5,2A rms. All our drives feature ARM Core M4 Technology and are capable to drive motors with smooth and silent movements.

SCORPIUS	SERPENS
Benefits	**Benefits**
• Compact dimensions	• Compact dimensions
• Digital I/O	• Digital I/O
• Programmable	• Programmable
Characteristics	**Characteristics**
• Phase Current up to 3A rms	• Phase Current up to 5,2A rms
• Power Supply: 100-240 VAC	• Power Supply: 85-265 VAC
• Fieldbus: RS485 Modbus RTU, CANopen and EtherCAT	• Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP and Profinet

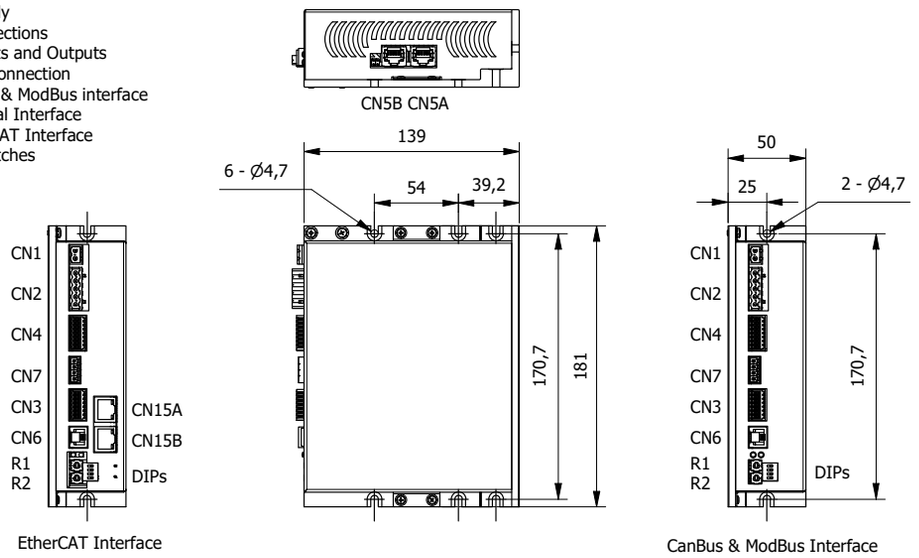
Brushless AC motor Drives	Current* (Arms)	
Scorpius A750	up to 3	466
Serpens A1300	up to 5,2	467

* Phase Current

Drive for AC Brushless Motor Scorpius A750B12 up to 3A rms

Motion Controller

CN1: Power Supply
CN2: Motor Connections
CN3: Digital Inputs and Outputs
CN4 : Feedback connection
CN5A/B : CanBus & ModBus interface
CN6: Service Serial Interface
CN15A/B : EtherCAT Interface
R1/R2 : Roto-Switches



with Safe Torque Off function

Electrical Data			
	Item		
1	Phase Current	A rms	up to 3
2	Peak Current	A peak	12
3	Output Power	W	up to 750
4	Power Supply	VAC	100÷240
5	Logic Power Supply (optional)	VDC	24
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
RS485 Modbus-RTU (programmable)	L...-S200	4	3	0
CANopen (programmable)	L...-S200	4	3	0
CANopen (DS 402)	L...-S402	4	3	0
EtherCAT (DS 402)	E...-S402	4	3	0

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

Characteristics	
Item	
Weight	800g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 50°C | Storage -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/Ple
Software*	Setup & config. - DL Studio
	Programming - DL Space

*Service SCI cable required and available on request

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Hall effect sensors: 5V Single-Ended (TTL/CMOS)	001
Absolute encoder: 5V BiSS-C or SSI interface (isolated)	001

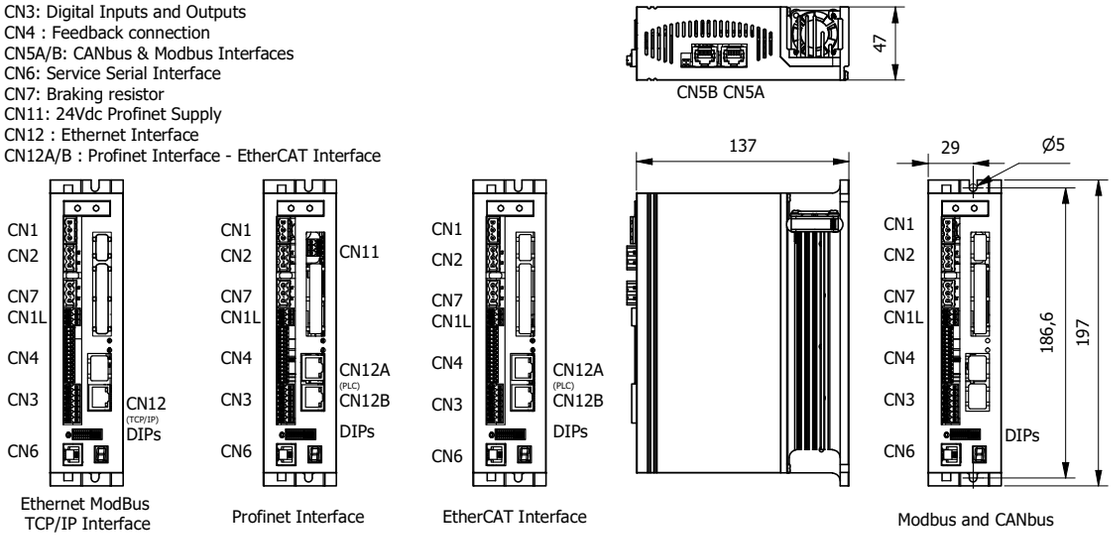
Product code reference	
A750B12 L 001-S200	
L	Fieldbus
001	Feedback options
S200	Protocol reference

Standard Combination
Motor
All motors with Phase Current up to 3A rms

Drive for AC Brushless Motor Serpens A1300B12 up to 5,2A rms

Motion Controller

CN1: AC Power Supply
CN1L: 24Vdc Logic Supply and STO inputs
CN2: Motor Connections
CN3: Digital Inputs and Outputs
CN4 : Feedback connection
CN5A/B: CANbus & Modbus Interfaces
CN6: Service Serial Interface
CN7: Braking resistor
CN11: 24Vdc Profinet Supply
CN12 : Ethernet Interface
CN12A/B : Profinet Interface - EtherCAT Interface



Ethernet ModBus TCP/IP Interface | Profinet Interface | EtherCAT Interface | Modbus and CANbus

with Safe Torque Off function

Electrical Data			
	Item		
1	Phase Current	A rms	up to 5,2
2	Peak Current	A peak	12
3	Output Power	W	up to 1300
4	Power Supply	VAC	(mono or triphase) 85÷265
5	Logic Power Supply (optional)	VDC	24
6	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs (isolated)
RS485 Modbus-RTU (programmable)	L...-S200	4	3	1
CANopen (programmable)	L...-S200	4	3	1
CANopen (DS 402)	L...-S402	4	3	1
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	0
EtherCAT (DS 402)	E...-S402	4	3	0
Profinet (programmable)	P...-S200	4	3	0

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

Characteristics	
Item	
Weight	550g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 50°C | Storage -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Profile position/velocity/homing mode, Cyclic sync position/velocity/torque mode
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/Ple
Software*	Setup & config. - DL Studio
	Programming - DL Space

*Service SCI cable required and available on request

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Hall effect sensors: 5V Single-Ended (TTL/CMOS)	001
Absolute encoder: 5V BiSS-C or SSI interface (isolated)	001

Product code reference	
A1300B12 L 001-S200	
L	Fieldbus
001	Feedback options
S200	Protocol reference

Standard Combination
Motor
All motors with Phase Current up to 5,2A rms



Stepper motor

Controllers – Drives

Advantages at a glance
Position, Speed and Torque control
Analogue, fieldbus or programmable
Flexible configuration

Our Stepper Drives are specifically developed for 2-phases stepper motors with phase current up to 8,5A rms and offer solutions for both DC and AC power supply. All our drives feature ARM Core M4 Technology and are capable to drive motors with smooth and silent movements.

Stepper motor Drives	Current* (Arms)	
Hercules SOD202	up to 2	470
Hercules SOD203	up to 3	471
Libra SBD205	up to 5,5	472
Aquarius SBD204	up to 4,2	473
Aquarius SBD207	up to 7,1	474
Sagittarius SBA207	up to 7,1	475
Andromeda SBA208	up to 8,5	476
Lyra SBAC203	up to 3	477
Draco SBAC205	up to 5,2	478
Dorado SBAC208	up to 8	479

HERCULES

Benefits

- Compact design
- Price/performance
- Programmable
- DC power supply

Characteristics

- Phase Current up to 3A rms
- Power Supply: 12-48 VDC
- Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP, Profinet, PowerLink, EtherNet/IP

AQUARIUS

Benefits

- Digital I/O and up to 2 analogue inputs
- Programmable
- DC power supply

Characteristics

- Phase Current up to 7,1A rms
- Power Supply: 12-48 VDC
- Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP, Profinet

LIBRA

Benefits

- Price/performance
- Simple usage
- DC power supply

Characteristics

- Phase Current up to 5,5A rms
- Power Supply: 24-80 VDC
- Clock & Direction control

SAGITTARIUS

Benefits

- Digital I/O and up to 2 analogue inputs
- Programmable
- AC or DC power supply

Characteristics

- Phase Current up to 7,1A rms
- Power Supply: 18-56 VAC or 24-80 VDC
- Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP

ANDROMEDA

Benefits

- Digital I/O and up to 2 analogue inputs
- Programmable
- AC or DC power supply

Characteristics

- Phase Current up to 8,5A rms
- Power Supply: 18-100 VAC or 24-140 VDC
- Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP

LYRA

Benefits

- Digital I/O
- Programmable
- AC power supply

Characteristics

- Phase Current up to 3A rms
- Power Supply: 100-240 VAC
- Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Clock&Direction

DRACO

Benefits

- Digital I/O and up to 1 analogue inputs
- Programmable
- AC power supply

Characteristics

- Phase Current up to 5,2A rms
- Power Supply: 85-265 VAC
- Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP, Profinet

DORADO

Benefits

- Digital I/O and up to 1 analogue inputs
- Programmable
- AC power supply

Characteristics

- Phase Current up to 8A rms
- Power Supply: 85-120 VAC
- Fieldbus: RS485 ModBus RTU, CANopen, EtherCAT, Ethernet ModBus TCP, Profinet

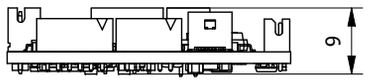
* Phase Current

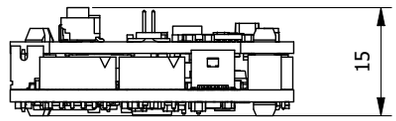
Drive for Stepper Motor Hercules SOD202

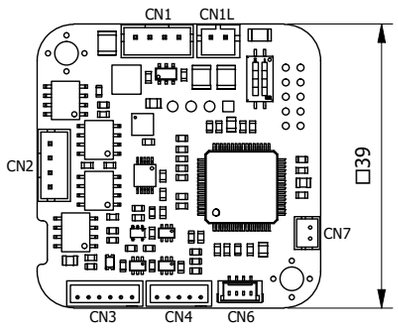
Motion Controller

up to 2A rms

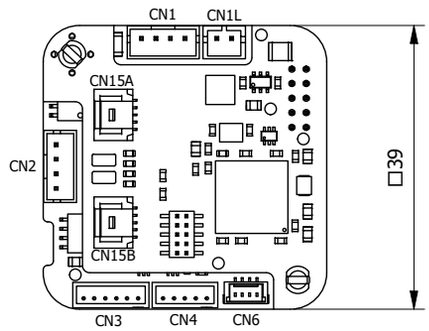
CN1: Power supply connector
CN1L: Logic supply connector
CN2: Motor connector
CN3/CN7: Input and Output connector
CN4: Feedback interfaces connector
CN6: Service interface
CN15A/B: Fieldbus connector







CANopen & RS485
Modbus-RTU Interface



EtherCAT & Ethernet
Modbus-TCP Interface

Electrical Data

	Item		
1	Phase Current	A rms	up to 2
2	Peak Current	A peak	2
3	Power Supply	VDC	12÷36
4	Logic Power Supply (optional)	VDC	12÷36
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection

Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	3	2	1
CANopen (programmable)	C...-S200	3	2	1
CANopen (DS 402)	C...-S402	3	2	1
Ethernet Modbus TCP/IP (programmable)	T...-S200	3	2	0
EtherCAT (DS 402)	E...-S402	3	2	0
Profinet (programmable)	P...-S200	3	2	0
PowerLink (DS 402)	R...-S402	3	2	0
EtherNet IP (programmable)	H...-S200	3	2	0

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

Characteristics

Item	
Weight	15g
Closed-loop	Available
Protection Class	IP00
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Supply inversion
Software*	Setup & config. - DL Studio
	Programming - DL Space

*Service SCI cable required and available on request

Feedback options

Type	Code
Incremental encoder (not isolated): 5V Single-Ended (TTL/CMOS)	001

Product code reference

SOD202 M 001-S200	
M	Fieldbus
001	Feedback options
S200	Protocol reference

Standard Combination

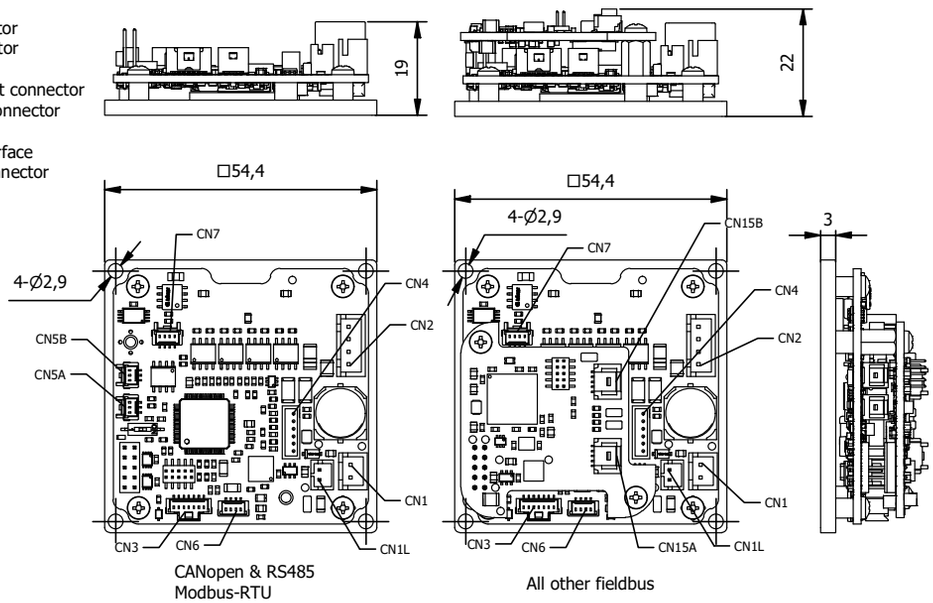
Motor
All motors with Phase Current up to 2A rms

Drive for Stepper Motor Hercules SOD203

Motion Controller

up to 3A rms

CN1: Power Supply connector
CN1L: Logic Supply connector
CN2: Motor connector
CN3/CN7: Input and Output connector
CN4: Feedback Interface connector
CN6: Service Interface
CN5A/B: CAN/Modbus Interface
CN15A/B: Multiprotocol connector



Electrical Data			
	Item		
1	Phase Current	A rms	up to 3
2	Peak Current	A peak	3
3	Power Supply	VDC	12÷48
4	Logic Power Supply (optional)	VDC	12÷48
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (not isolated)	Digital Outputs (not isolated)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	4	3	1
CANopen (programmable)	C...-S200	4	3	1
CANopen (DS 402)	C...-S402	4	3	1
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	0
EtherCAT (DS 402)	E...-S402	4	3	0
Profinet (programmable)	P...-S200	4	3	0
PowerLink (DS 402)	R...-S402	4	3	0
EtherNet IP (programmable)	H...-S200	4	3	0

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

Characteristics	
Item	
Weight	27g
Closed-loop	Available
Protection Class	IP00
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Supply inversion
Software*	Setup & config. - DL Studio
	Programming - DL Space
*Service SCI cable required and available on request	

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Single-Ended (TTL/CMOS)	002
Absolute Encoder Biss-C	003

Product code reference	
SOD203 M 002-S200	
M	Fieldbus
002	Feedback options
S200	Protocol reference

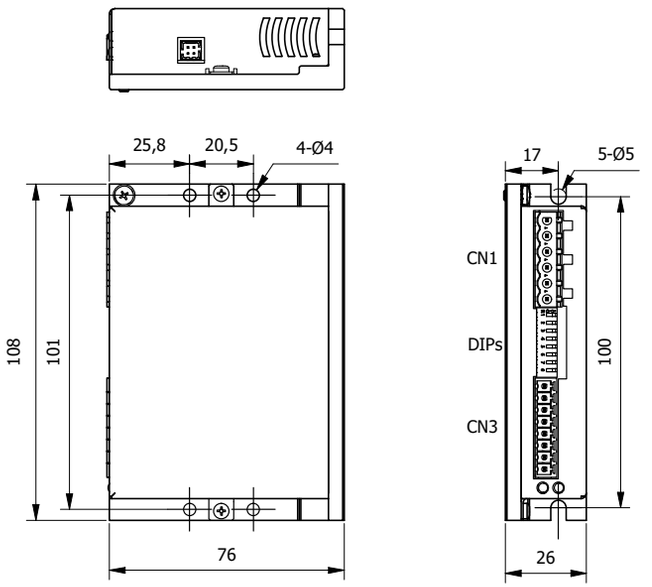
Standard Combination
Motor
All motors with Phase Current up to 3A rms

Drive for Stepper Motor Libra SBD205

Motion Controller

up to 5,5A rms

CN1: Power Supply
CN3: Digital I/O



Electrical Data			
	Item		
1	Phase Current	A rms	up to 5,5
2	Peak Current	A peak	7.8
3	Power Supply	VDC	24 ÷ 80
4	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Operating Mode	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
Clock & Direction	N...-S100	3	1	0
Connector kit included. More information can be found in the product manual on our website.				

Characteristics	
Item	
Weight	200g
Closed-loop	Not available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: from Fullstep to 1/100 step (config. with dip switches)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Service SCI cable required for monitoring and available on request	

Product code reference	
SBD205 N 001-S100	
N	Operating mode
001	Standard version
S100	Protocol reference

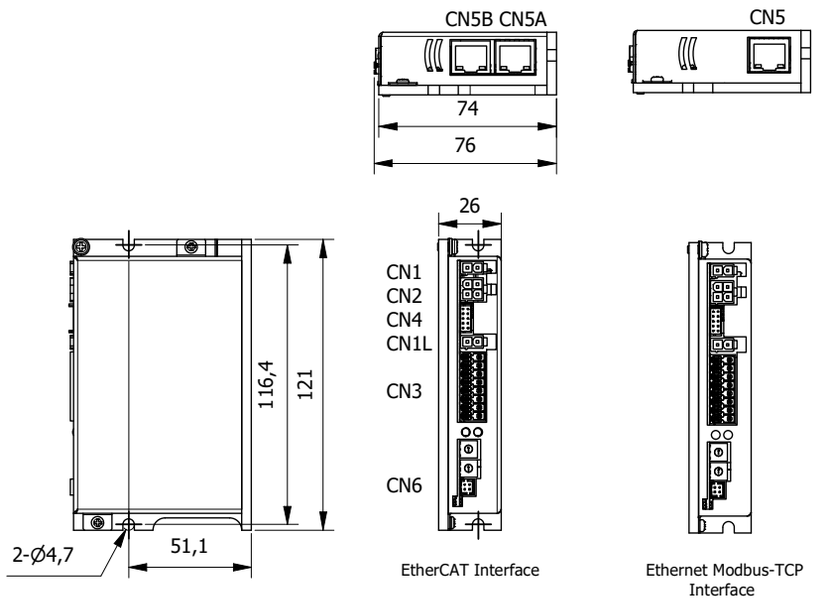
Standard Combination
Motor
All motors with Phase Current up to 5,5A rms

Drive for Stepper Motor Aquarius SBD204

Motion Controller

up to 4,2A rms

CN1: Power Supply
CN2: Motor Connections
CN1L: Logic Power Supply
CN3: Inputs and Outputs
CN4: Feedback Connections
CN5: Communication Interface
CN6: Service Serial Interface



Electrical Data			
	Item		
1	Phase Current	A rms	up to 4,2
2	Peak Current	A peak	6
3	Power Supply	VDC	12÷48
4	Logic Power Supply (optional)	VDC	12÷48
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	2	0
EtherCAT (DS 402)	E...-S402	4	2	0

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

Characteristics	
Item	
Weight	350g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Software*	Setup & config. - DL Studio
	Programming - DL Space
*Service SCI cable required and available on request	

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Absolute Encoder Biss-C	002

Product code reference	
SBD204 T 001-S200	
T	Fieldbus
001	Feedback options
S200	Protocol reference

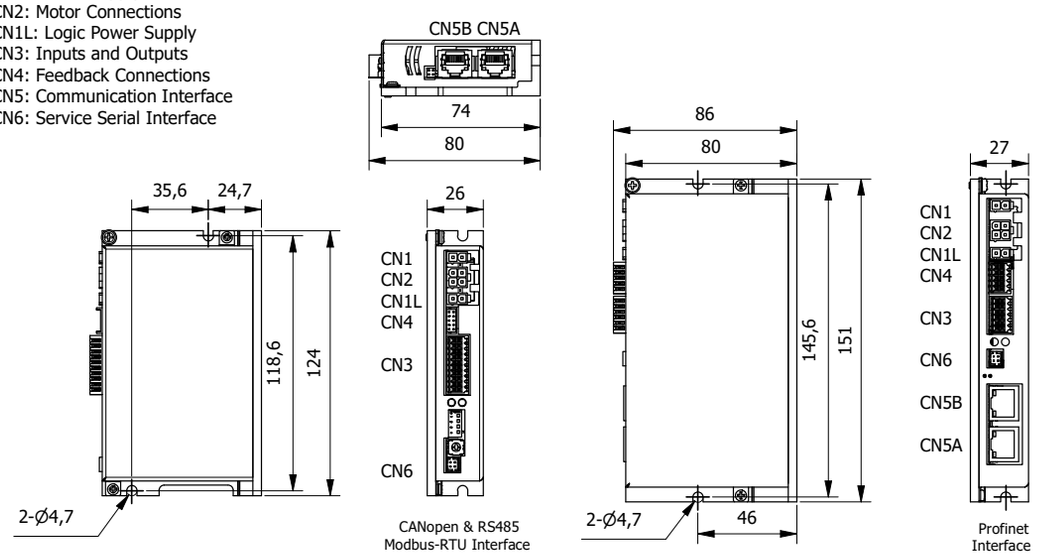
Standard Combination
Motor
All motors with Phase Current up to 4,2A rms

Drive for Stepper Motor Aquarius SBD207

Motion Controller

up to 7,1A rms

CN1: Power Supply
CN2: Motor Connections
CN1L: Logic Power Supply
CN3: Inputs and Outputs
CN4: Feedback Connections
CN5: Communication Interface
CN6: Service Serial Interface



Electrical Data			
	Item		
1	Phase Current	A rms	up to 7,1
2	Peak Current	A peak	10
3	Power Supply	VDC	12÷48
4	Logic Power Supply (optional)	VDC	12÷48
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	4	3	2
CANopen (programmable)	C...-S200	4	3	2
CANopen (DS 402)	C...-S402	4	3	2
Profinet (programmable)	P...-S200	4	2	0

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

Characteristics	
Item	
Weight	280g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Software*	Setup & config. - DL Studio Programming - DL Space
*Service SCI cable required and available on request	

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Absolute Encoder Biss-C	002

Product code reference	
SBD207 M 001-S200	
M	Fieldbus
001	Feedback options
S200	Protocol reference

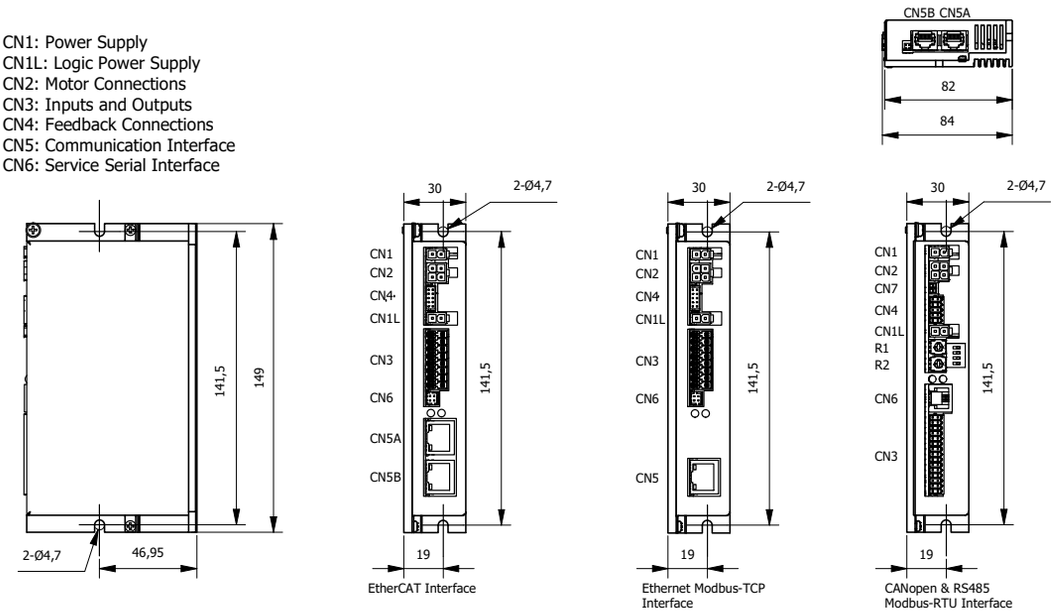
Standard Combination
Motor
All motors with Phase Current up to 7,1A rms

Drive for Stepper Motor Sagittarius SBA207

Motion Controller

up to 7,1A rms

CN1: Power Supply
CN1L: Logic Power Supply
CN2: Motor Connections
CN3: Inputs and Outputs
CN4: Feedback Connections
CN5: Communication Interface
CN6: Service Serial Interface



Electrical Data			
	Item		
1	Phase Current	A rms	up to 7,1
2	Peak Current	A peak	10
3	Power Supply		18÷56VAC or 24÷80VDC
4	Logic Power Supply (optional)	VDC	24
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	4	2	2
CANopen (programmable)	C...-S200	4	2	2
CANopen (DS 402)	C...-S402	4	2	2
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	2	0
EtherCAT (DS 402)	E...-S402	4	2	0
Cable and Connector kit available on request. More information can be found in the product manual on our website.				

Characteristics	
Item	
Weight	450g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Software*	Setup & config. - DL Studio Programming - DL Space
*Service SCI cable required and available on request	

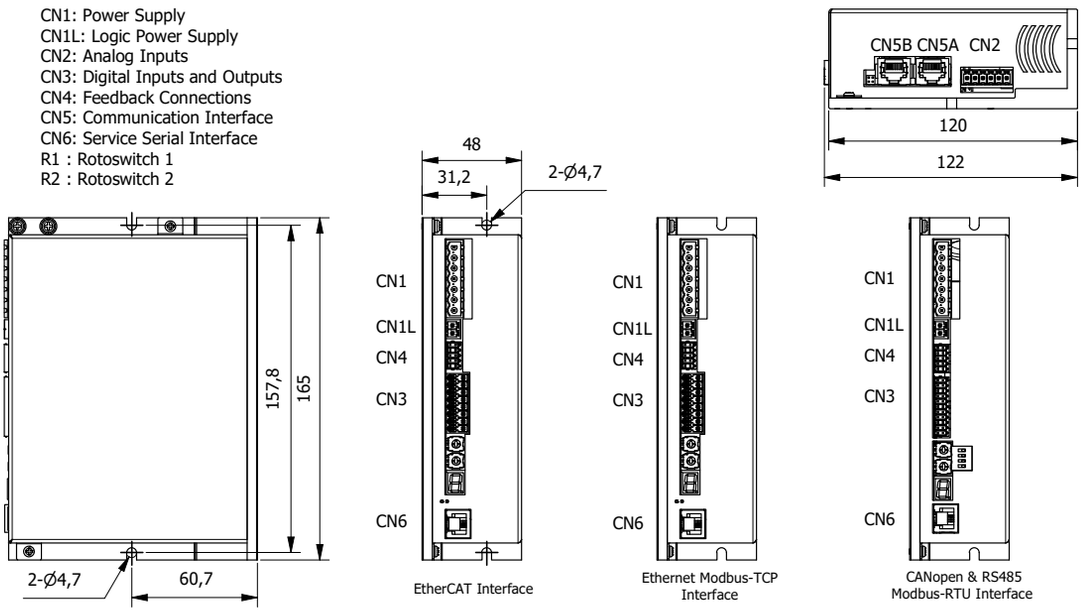
Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Absolute Encoder Biss-C	002

Product code reference	
SBA207 M 001-S200	
M	Fieldbus
001	Feedback options
S200	Protocol reference

Standard Combination
Motor
All motors with Phase Current up to 7,1A rms

Drive for Stepper Motor Andromeda SBA208 up to 8,5A rms

Motion Controller



Electrical Data			
	Item		
1	Phase Current	A rms	up to 8,5
2	Peak Current	A peak	12
3	Power Supply		18÷100VAC or 24÷140VDC
4	Logic Power Supply (optional)		18÷100VAC or 24÷140VDC
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
RS485 Modbus-RTU (programmable)	M...-S200	6	4	2
CANopen (programmable)	C...-S200	6	4	2
CANopen (DS 402)	C...-S402	6	4	2
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	2	0
EtherCAT (DS 402)	E...-S402	4	2	0
Connector kit available on request. More information can be found in the product manual on our website.				

Characteristics	
Item	
Weight	550g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Software*	Setup & config. - DL Studio
	Programming - DL Space
*Service SCI cable required and available on request	

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Absolute Encoder Biss-C	002

Product code reference	
SBA208 M 001-S200	
M	Fieldbus
001	Feedback options
S200	Protocol reference

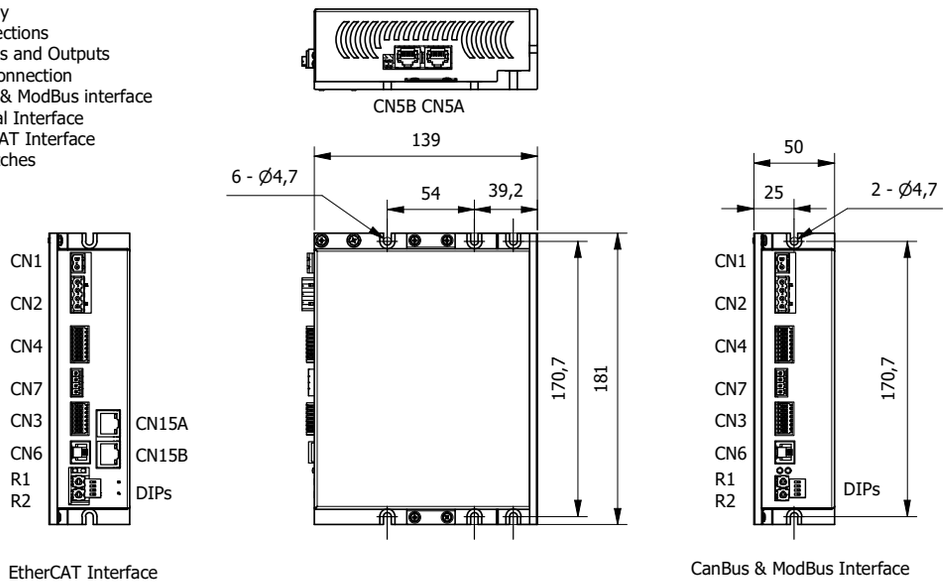
Standard Combination
Motor
All motors with Phase Current up to 8,5A rms

Drive for Stepper Motor Lyra SBAC203

Motion Controller - High voltage

up to 3A rms

CN1: Power Supply
CN2: Motor Connections
CN3: Digital Inputs and Outputs
CN4 : Feedback connection
CN5A/B : CanBus & ModBus interface
CN6: Service Serial Interface
CN15A/B : EtherCAT Interface
R1/R2 : Roto-Switches



with Safe Torque Off function

Electrical Data			
	Item		
1	Phase Current	A rms	up to 3
2	Peak Current	A peak	4.2
3	Power Supply	VAC	100÷240
4	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus / Operating Mode	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
Clock and Direction	N...-S100	4	3	0
RS485 Modbus-RTU (programmable)	L...-S200	4	3	0
CANopen (programmable)	L...-S200	4	3	0
CANopen (DS 402)	L...-S402	4	3	0
EtherCAT (DS 402)	E...-S402	4	3	0
Connector kit available on request. More information can be found in the product manual on our website.				

Characteristics	
Item	
Weight	800g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode (N)	Clock and Direction
Operating mode (L-E fieldbus)	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/PLe
Software*	Setup & config. - DL Studio Programming - DL Space
*Service SCI cable required and available on request	

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Absolute encoder: 5V SSI or BISS-C (isolated)	001

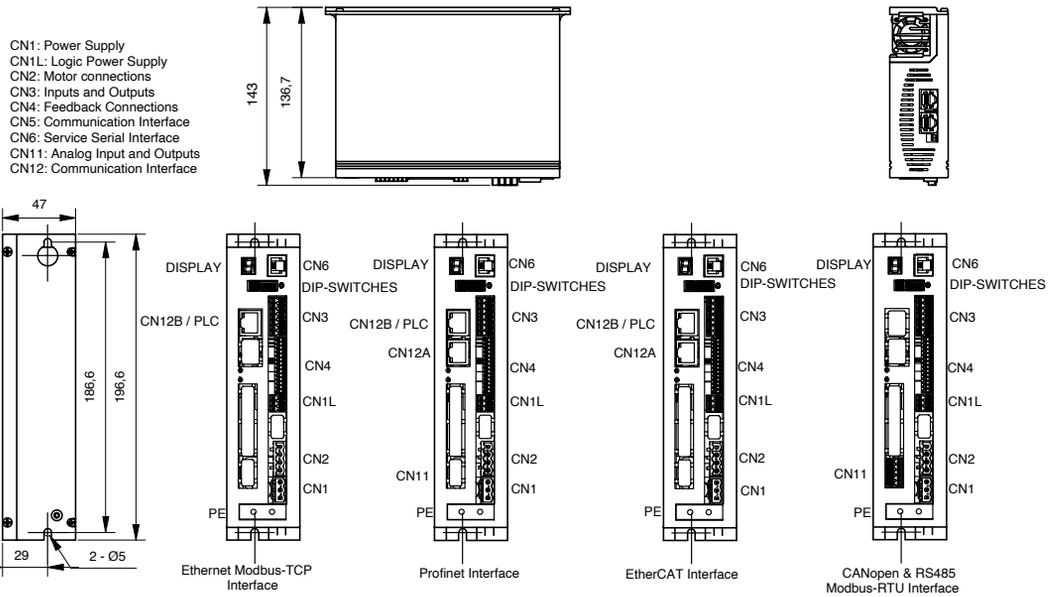
Product code reference	
SBAC203 L 001-S200	
L	Fieldbus / Operating mode
001	Feedback options
S200	Protocol reference

Standard Combination
Motor
All motors with Phase Current up to 3A rms

Drive for Stepper Motor Draco SBAC205

Motion Controller - High voltage

up to 5,2A rms



with Safe Torque Off function

Electrical Data			
	Item		
1	Phase Current	A rms	up to 5,2
2	Peak Current	A peak	7,3
3	Power Supply (monophase-triphase)	VAC	85÷265
4	Logic Power Supply (mandatory)	VDC	24
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
RS485 Modbus-RTU (programmable)	L...-S200	4	3	1
CANopen (programmable)	L...-S200	4	3	1
CANopen (DS 402)	L...-S402	4	3	1
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	0
EtherCAT (DS 402)	E...-S402	4	3	0
Profinet (programmable)	P...-S200	4	3	0

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

Characteristics	
Item	
Weight	550g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/PLe
Software	Setup & config. - DL Studio
	Programming - DL Space

*Service SCI cable required and available on request

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Absolute encoder: 5V SSI or BISS-C (isolated)	001

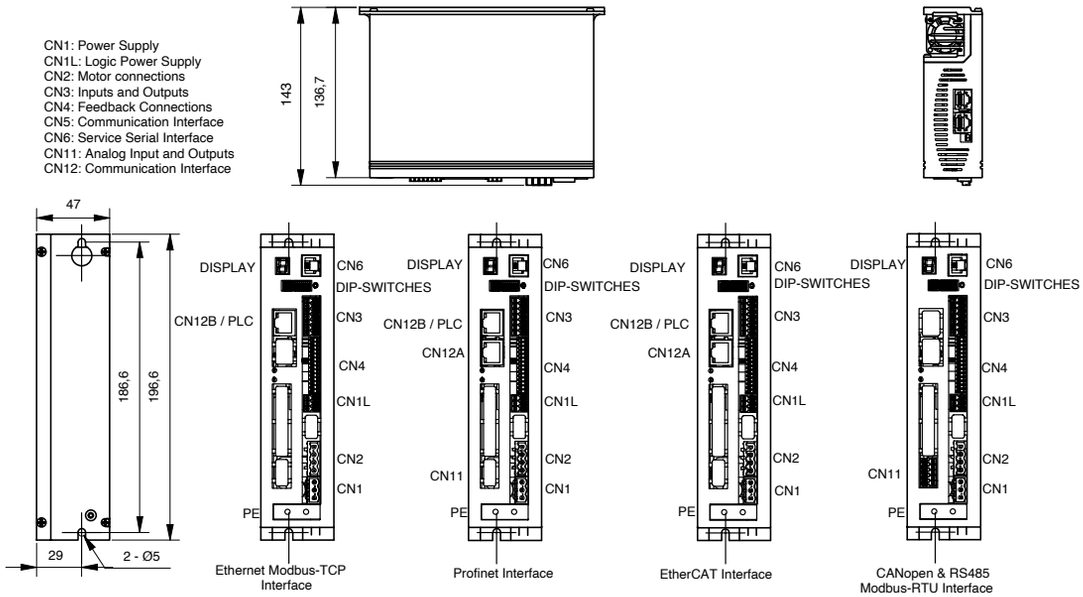
Product code reference	
SBAC205 L 001-S200	
L	Fieldbus
001	Feedback options
S200	Protocol reference

Standard Combination
Motor
All motors with Phase Current up to 5,2A rms

Drive for Stepper Motor Dorado SBAC208

Motion Controller - High voltage

up to 8A rms



with Safe Torque Off function

Electrical Data			
	Item		
1	Phase Current	A rms	up to 8
2	Peak Current	A peak	11,3
3	Power Supply (monophase-triphase)	VAC	85÷120
4	Logic Power Supply (mandatory)	VDC	24
5	Chopper Frequency	kHz	40

Interface Control Mode & Connection				
Fieldbus	Code	Digital Inputs (opto-coupled)	Digital Outputs (opto-coupled)	Analog Inputs
RS485 Modbus-RTU (programmable)	L...-S200	4	3	1
CANopen (programmable)	L...-S200	4	3	1
CANopen (DS 402)	L...-S402	4	3	1
Ethernet Modbus TCP/IP (programmable)	T...-S200	4	3	0
EtherCAT (DS 402)	E...-S402	4	3	0
Profinet (programmable)	P...-S200	4	3	0

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

Characteristics	
Item	
Weight	550g
Closed-loop	Available
Protection Class	IP20
Pollution Degree	2
Category	C3 following standard EN 61800-3
Temperatures	Working: 5°C ÷ 40°C | Storage: -25°C ÷ 55°C
Humidity	5% ÷ 85% not condensing
Operating mode	Step resolution: Stepless Control Technology (65536 emulated positions per turn)
Protective functions	Over current, Over/Under Voltage, Overheating, Short circuit
Safety feature	Safe Torque Off (STO) SIL3/PLe
Software*	Setup & config. - DL Studio
	Programming - DL Space

*Service SCI cable required and available on request

Feedback options	
Type	Code
Incremental encoder (not isolated): 5V Differential (RS422) or 5V Single-Ended (TTL/CMOS)	001
Absolute encoder: 5V SSI or BISS-C (isolated)	001

Product code reference	
SBAC208 L 001-S200	
L	Fieldbus
001	Feedback options
S200	Protocol reference

Standard Combination
Motor
All motors with Phase Current up to 8A rms

Robotics & Adv. Motion



Dynamic Robotic Joints

p.489



Wheel Hubs

p.499



Picking Fingers Module

p.503

Robotics & Adv. Motion

Technical introduction		486

Dynamic Robotic Joints	Torque* (Nm)	489
DJB 046 - **NEW**	1,6	490
DJB 057 - **NEW**	5	491
DJB 078 36V - **NEW**	6	492
DJB 078 48V - **NEW**	6	493
DJB 088 - **NEW**	11	494
DJB 110 - **NEW**	20	495
DJB 120 - **NEW**	40	496

Wheel Hubs	Peak Output Power (W)	499
Wheel Hub 60 - **NEW**	360...1200	500
Wheel Hub 80 - **NEW**	2250...3000	501

Picking Fingers Module	Torque* (Nm)	503
20DI - 6-12VDC Gear Motor - **NEW**	19,61...294,2	504
12VDC Gear Motor - 20DI - **NEW**	11,76...294,2	504

*Rated Torque

Term	
Dynamic Robotic Joint	A compact integrated rotary actuator combining a motor, gearbox, feedback devices and motion controller in a single unit for controlling a robotic axis.
Wheel Hub Motor	A traction solution in which the motor and transmission are integrated into or directly connected to the wheel hub, reducing mechanical complexity in mobile robots, AGVs and AMRs.
Torque Density	The amount of torque generated in relation to the actuator's mass or volume. Higher torque density enables more compact and lightweight robotic systems.
Rated Torque	The torque that the actuator can deliver continuously under the specified operating and thermal conditions.
Peak Torque	The maximum torque that the actuator can deliver for a limited period without exceeding its electrical, mechanical or thermal limits.
Reduction Ratio	The relationship between the motor speed and the output speed after the gearbox. A higher reduction ratio reduces output speed and increases available output torque, subject to gearbox efficiency.
Torque Constant	The relationship between the motor-generated torque and the supplied current, normally expressed in Nm/A.
Back EMF Constant	The voltage generated by the rotating motor in relation to its rotational speed, normally expressed in V/kRPM.
Rated Voltage	The voltage at which the product's rated performance values are specified.
Operating Voltage	The permitted supply-voltage range within which the product can operate correctly.
Rated Power	The mechanical output power that the product can deliver continuously under its specified operating conditions.
No-Load Current	The current drawn by the motor when running without an external mechanical load.
Incremental Encoder	A feedback device that generates pulses as the shaft rotates, allowing relative position, speed and direction to be determined.
Absolute Single-Turn Encoder	A feedback device that assigns a unique position value to each angular position within one complete revolution, retaining the shaft position reference after power-up.
Dual Encoder	A feedback system using two encoders, typically one on the motor rotor and one after the gearbox, to monitor both motor and output positions.
Encoder Resolution	The number of distinct positions that an encoder can identify within one revolution. A 14-bit encoder provides 16,384 positions per revolution.
Fieldbus	An industrial communication network used to exchange commands, operating data and diagnostic information between the motion controller and the machine-control system.
CANopen	A CAN-based industrial communication protocol commonly used for motion control and automation.
EtherCAT	A high-speed, real-time industrial Ethernet communication protocol designed for automation and synchronized motion control.
CiA 402	A standardized device profile defining operating modes and communication behaviour for drives and motion-control devices connected through CANopen or compatible networks.
Position Control	An operating mode in which the controller moves and maintains the actuator at a commanded angular position.
Speed Control	An operating mode in which the controller regulates the actuator to maintain a commanded rotational speed.
Torque Control	An operating mode in which the controller regulates the motor current to produce a commanded torque.
Radial Force / Radial Load	A force applied perpendicular to the rotational axis of the shaft or wheel.
Axial Force	A force applied parallel to the rotational axis of the shaft.
CPR - Counts per Revolution	The number of countable encoder positions or signals generated during one complete revolution.
BiSS Interface	A digital communication interface used to transmit high-resolution position data from an absolute encoder to the controller.
Gear Stage	One pair or set of interacting gears within a gearbox. Additional stages provide higher reduction ratios but can affect efficiency and backlash.
Stall Torque	The torque produced when the motor shaft is prevented from rotating. This condition causes high current and is normally permitted only briefly.
Shore A	A hardness scale commonly used for flexible materials such as the polyurethane tyres fitted to wheel hubs.

Glossary

Product families
Dynamic Robotic Joints
Wheel Hubs
Picking Fingers Module

Advanced robotics and automation increasingly require motion solutions that combine **high performance, compact dimensions and precise control** within highly integrated mechanical architectures.

Our Robotics & Advanced Motion portfolio brings together dedicated solutions developed for applications where space, efficiency, dynamics and reliability are critical. By integrating motor technology, mechanical transmission, feedback and control functions, these products simplify machine design while delivering the performance required by next-generation robotic and automated systems.

Dynamic Robotic Joints are highly integrated rotary actuators designed for robotic axes requiring high torque density, precise positioning and dynamic motion control. Their compact architecture combines the main motion components within a single unit, reducing integration effort and enabling efficient use of space and weight within robotic structures.

Dynamic Robotic Joints

Integrated wheel drive solutions are designed for mobile robotics, AGVs and AMRs, where compact installation, efficiency and maneuverability are essential. Combining traction and motion functions within the wheel architecture helps reduce mechanical complexity and enables flexible vehicle layouts.

Wheel Hubs

Picking Fingers provide a dedicated motion solution for automated storage and retrieval systems (AS/RS). Engineered for fast, precise and reliable load picking and release, they support high-throughput material-handling applications where repeatability, compactness and dependable operation are key requirements.

Together, these technologies extend our motion portfolio beyond individual components, providing application-oriented solutions engineered around specific movement functions and adaptable to the mechanical, electrical and performance requirements of each machine.

Picking Fingers Module

Technical introduction

Composition	
1	Output flange (shaft)
2	Bearing
3	Satellites
4	Mounting flange
5	Outer ring
6	Stator
7	Rotor
8	Body
9	Lid (PCB)





Robotics & Advanced Motion

Dynamic Robotic Joints

Dynamic Robotic Joints	Torque* (Nm)	
DJB 046 - **NEW**	1,6	490
DJB 057 - **NEW**	5	491
DJB 078 36V - **NEW**	6	492
DJB 078 48V - **NEW**	6	493
DJB 088 - **NEW**	11	494
DJB 110 - **NEW**	20	495
DJB 120 - **NEW**	40	496

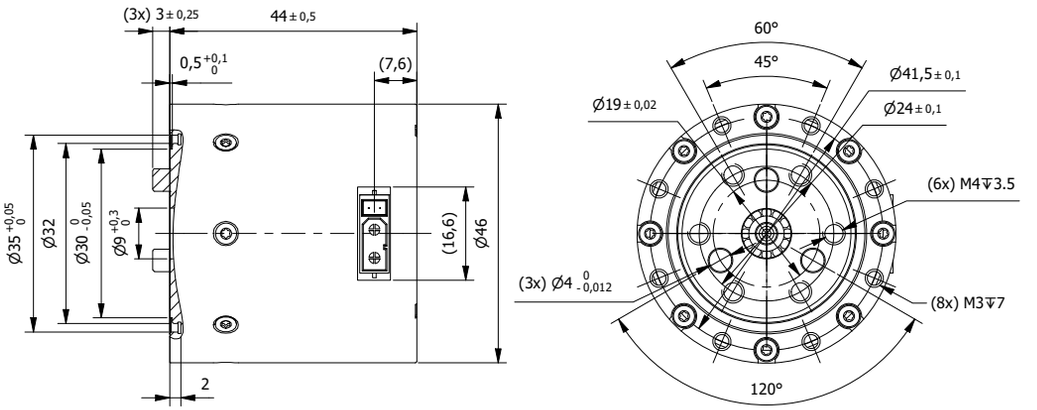
*Rated Torque

Dynamic Joint Motor DJB046

with Motion Controller - IP52

Ø 46mm

5,5Nm Peak



Specification			
	Model		...0017ND
1	n° of Pole		20
2	Rated Voltage	VDC	48
3	Operating Voltage	VDC	15-60
4	Rated Power	W	17
5	Reduction ratio		7,75:1
6	Running Direction		CW/CCW
7	Rated Speed ±10%	rpm	100
8	Torque - Rated/Peak	Nm	1,6/5,5
9	Torque Constant	Nm/A	0,94
10	Current - Rated/Peak	A	2,4/11
11	No-Load Current	Arms	0,14
12	Back EMF constant ±10%	V/kRPM	74
13	Magnetic Encoder 14-bit		2
14	Length (L)	mm	45
15	Weight ±5%	Kg	0,191

Characteristics	
Item	
Insulation Class	B 130°C
Protection Class	IP52
Temperature Range	-20°C to +50°C
Humidity Range	5-85%
Storage Range	-30°C to +70°C
Max. Radial force	117 N
Max. Axial force	18 N
Dielectric strength (for 1 s 2mA)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Safety feature	No
Debug & configuration	Can Converter
Software	Setup & config. - DL Studio Programming - DL Space
Note: Service SCI Interface cable is required for programming and available on request	

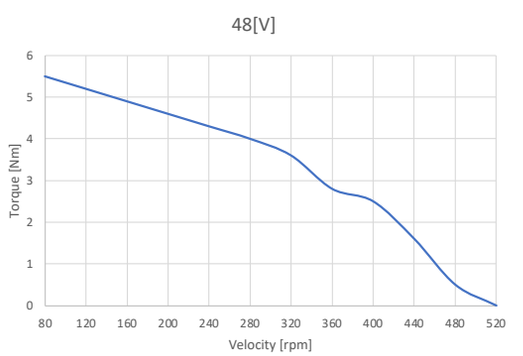
Product code reference	
DJB 046 0017 N D 1 000 C S402	
46	Frame size
0017	Rated Power
N	Brake options (N= no brake)
D	Encoder types (S=Single, D=Dual)
1	Connector code
000	Other options
C	Fieldbus
S402	Protocol reference

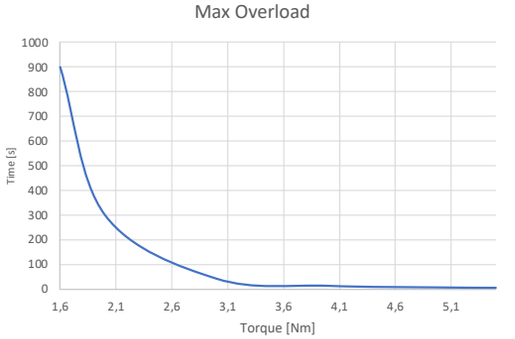
Encoders	
Type	Code
Magnetic Incremental 14 bit on the Rotor	D
Magnetic Absolute Single turn 14 bit after the Gearbox	D

Connection			
Connector	Type	Function	Code
CN1	XT30PB	DC Supply and Fieldbus CANopen	1
CN1	XT30PB	DC Supply	2
CN5A/B	MOLEX 2035620505	Fieldbus Ethercat	2
CN6	MOLEX 2023960407	Serial Input	2

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

Interface Control Mode	
Fieldbus	Code
CANopen (DS402) on request	C-S402
CANopen (programmable) on request	C-S200
Ethercat (DS402) on request	E-S402



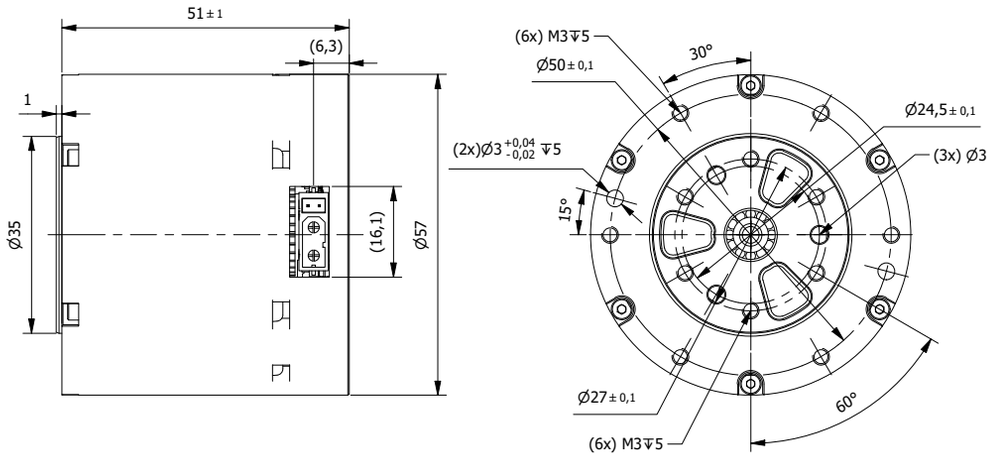


Dynamic Joint Motor DJB057

with Motion Controller - IP52

Ø 57mm

14Nm Peak



Specification			
	Model		...0140ND
1	n° of Pole		28
2	Rated Voltage	VDC	48
3	Operating Voltage	VDC	24-60
4	Rated Power	W	140
5	Reduction ratio		10:1
6	Running Direction		CW/CCW
7	Rated Speed ±10%	rpm	260
8	Torque - Rated/Peak	Nm	5/14
9	Torque Constant	Nm/A	1,48
10	Current - Rated/Peak	A	4,7/15,5
11	No-Load Current	Arms	0,5
12	Back EMF constant ±10%	V/kRPM	95
13	Magnetic Encoder 14-bit		2
14	Length (L)	mm	51
15	Weight ±5%	Kg	0,31

Characteristics	
Item	
Insulation Class	B 130°C
Protection Class	IP52
Temperature Range	-20°C to +50°C
Humidity Range	5-85%
Storage Range	-30°C to +70°C
Max. Radial force	185 N
Max. Axial force	29 N
Dielectric strength (for 1 s 2mA)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Safety feature	No
Debug & configuration	Can Converter
Software	Setup & config. - DL Studio Programming - DL Space
Note: Service SCI Interface cable is required for programming and available on request	

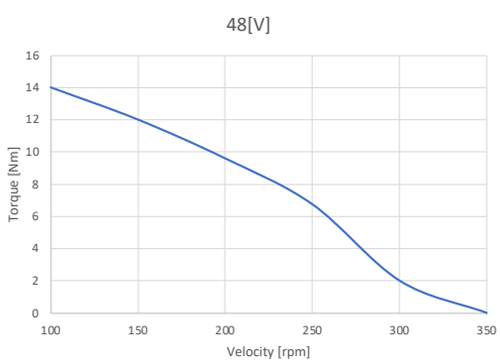
Product code reference	
DJB 057 0140 N D 1 000 E S402	
57	Frame size
0140	Rated Power
N	Brake options (N= no brake)
D	Encoder types (S=Single, D=Dual)
1	Connector code
000	Other options
E	Fieldbus
S402	Protocol reference

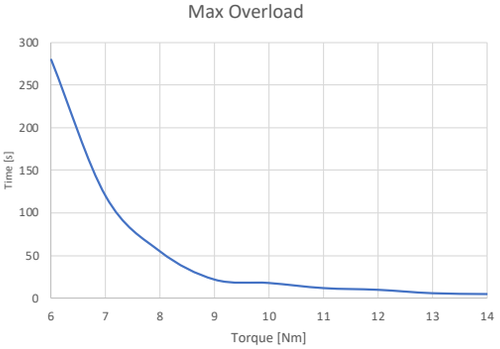
Encoders	
Type	Code
Magnetic Incremental 14 bit on the Rotor	D
Magnetic Absolute Single turn 14 bit after the Gearbox	D

Connection			
Connector	Type	Function	Code
CN1	XT30PB	DC Supply and Fieldbus CANopen	1
CN1	XT30PB	DC Supply	2
CN5A/B	MOLEX 2035620505	Fieldbus Ethercat	2
CN6	MOLEX 2023960407	Serial Input	2

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

Interface Control Mode	
Fieldbus	Code
CANopen (DS402) on request	C-S402
CANopen (programmable) on request	C-S200
Ethercat (DS402)	E-S402



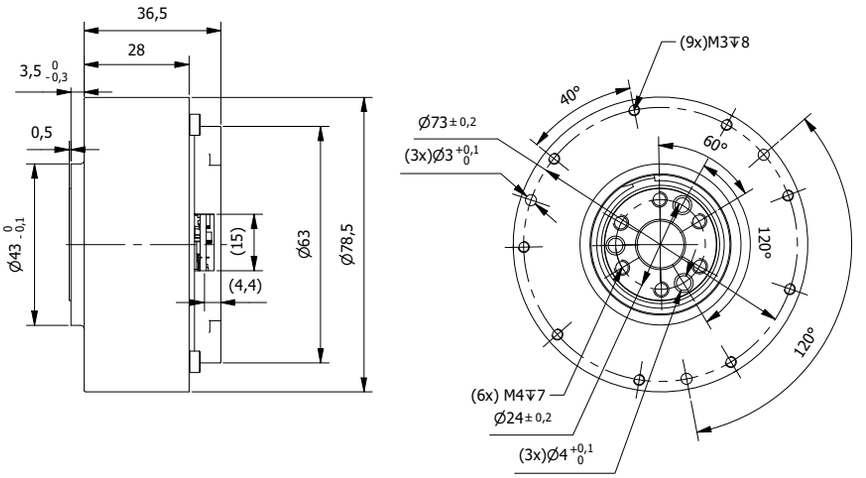


Dynamic Joint Motor DJB078 - 36V

with Motion Controller - IP52

Ø 78mm

17Nm Peak



Specification			
	Model		...0170NS
1	n° of Pole		28
2	Rated Voltage	VDC	36
3	Operating Voltage	VDC	24-48
4	Rated Power	W	170
5	Reduction ratio		7,75:1
6	Running Direction		CW/CCW
7	Rated Speed ±10%	rpm	275
8	Torque - Rated/Peak	Nm	6/17
9	Torque Constant	Nm/A	1,22
10	Current - Rated/Peak	A	7/23
11	No-Load Current	Arms	0,5
12	Back EMF constant ±10%	V/kRPM	96
13	Resistance ±10%	Ω	0,55
14	Inductance ±20%	µH	486
15	Magnetic Encoder 14-bit		1
16	Length (L)	mm	40
17	Weight ±5%	Kg	0,38

Characteristics	
Item	
Insulation Class	B 130°C
Protection Class	IP52
Temperature Range	-20°C to +50°C
Humidity Range	5-85%
Storage Range	-30°C to +70°C
Max. Radial force	234 N
Max. Axial force	36 N
Dielectric strength (for 1 s 2mA)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Safety feature	No
Debug & configuration	Can Converter
Software	Setup & config. - DL Studio Programming - DL Space
Note: Service SCI Interface cable is required for programming and available on request	

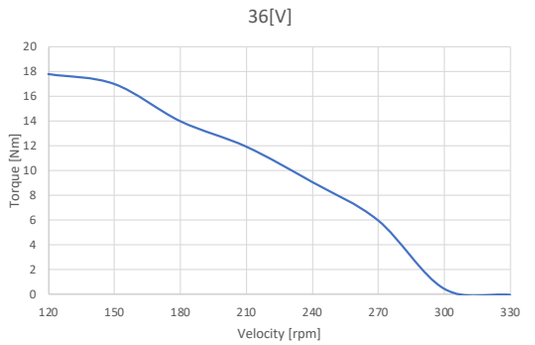
Product code reference	
DJB 078 0170 N S 1 000 C S402	
78	Frame size
0170	Rated Power
N	Brake options (N= no brake)
S	Encoder types (S=Single, D=Dual)
1	Connector code
000	Other options
C	Fieldbus
S402	Protocol reference

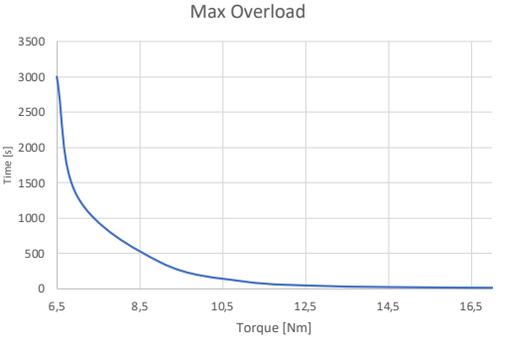
Encoders	
Type	Code
Magnetic Incremental 14 bit	S
Magnetic Incremental 14 bit on the Rotor	D
Magnetic Absolute Single turn 14 bit after the Gearbox	D

Connection			
Connector	Type	Function	Code
CN1	XT30PB	DC Supply and Fieldbus CANopen	1
CN1	XT30PB	DC Supply	2
CN5A/B	MOLEX 2035620505	Fieldbus Ethercat	2
CN6	MOLEX 2023960407	Serial Input	2

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

Interface Control Mode	
Fieldbus	Code
CANopen (DS402)	C-S402
CANopen (programmable) on request	C-S200
Ethercat (DS402) on request	E-S402



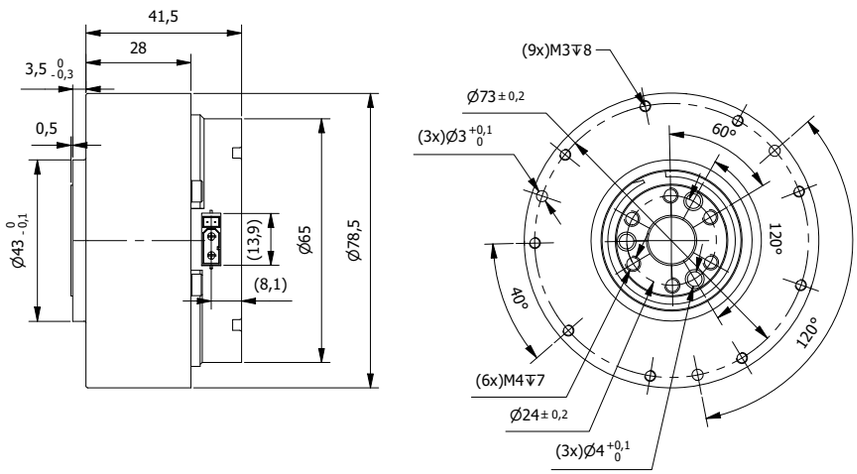


Dynamic Joint Motor DJB078 - 48V

with Motion Controller - IP52

Ø 78mm

17Nm Peak



Specification			
	Model		...0226ND
1	n° of Pole		28
2	Rated Voltage	VDC	48
3	Operating Voltage	VDC	24-60
4	Rated Power	W	226
5	Reduction ratio		7,75:1
6	Running Direction		CW/CCW
7	Rated Speed ±10%	rpm	360
8	Torque - Rated/Peak	Nm	6/17
9	Torque Constant	Nm/A	1,22
10	Current - Rated/Peak	A	7/23
11	No-Load Current	Arms	0,5
12	Back EMF constant ±10%	V/kRPM	96
13	Resistance ±10%	Ω	0,55
14	Inductance ±20%	µH	486
15	Magnetic Encoder 14-bit		2
16	Length (L)	mm	45,5
17	Weight ±5%	Kg	0,405

Characteristics	
Item	
Insulation Class	B 130°C
Protection Class	IP52
Temperature Range	-20°C to +50°C
Humidity Range	5-85%
Storage Range	-30°C to +70°C
Max. Radial force	234 N
Max. Axial force	36 N
Dielectric strength (for 1 s 2mA)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Safety feature	No
Debug & configuration	Can Converter
Software	Setup & config. - DL Studio Programming - DL Space
Note: Service SCI Interface cable is required for programming and available on request	

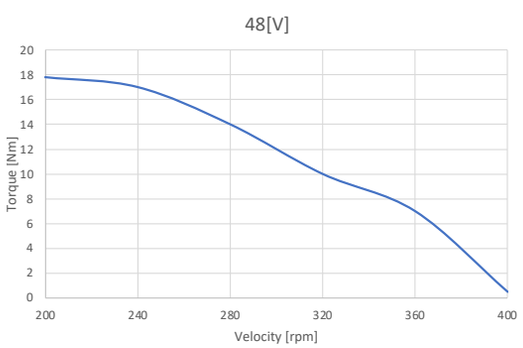
Product code reference	
DJB 078 0226 N D 2 000 C S402	
78	Frame size
0170	Rated Power
N	Brake options (N= no brake)
D	Encoder types (S=Single, D=Dual)
2	Connector code
000	Other options
C	Fieldbus
S402	Protocol reference

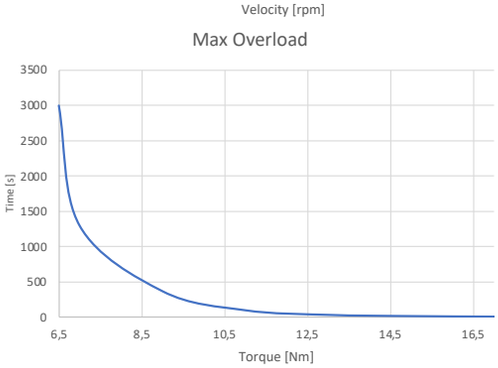
Encoders	
Type	Code
Magnetic Incremental 14 bit	S
Magnetic Incremental 14 bit on the Rotor	D
Magnetic Absolute Single turn 14 bit after the Gearbox	D

Connection			
Connector	Type	Function	Code
CN1	XT30PB	DC Supply and Fieldbus CANopen	1
CN1	XT30PB	DC Supply	2
CN5A/B	MOLEX 2035620505	Fieldbus Ethercat	2
CN6	MOLEX 2023960407	Serial Input	2

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

Interface Control Mode	
Fieldbus	Code
CANopen (DS402)	C-S402
CANopen (programmable) on request	C-S200
Ethercat (DS402) on request	E-S402



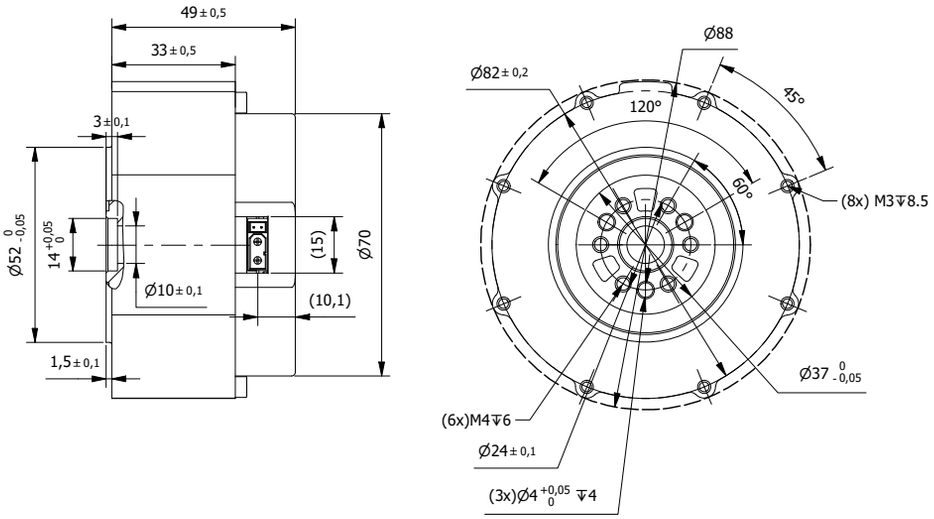


Dynamic Joint Motor DJB088

with Motion Controller - IP52

Ø 88mm

36Nm Peak



Specification			
	Model		...0115ND
1	n° of Pole		28
2	Rated Voltage	VDC	48
3	Operating Voltage	VDC	15-60
4	Rated Power	W	115
5	Reduction ratio		9:1
6	Running Direction		CW/CCW
7	Rated Speed ±10%	rpm	100
8	Torque - Rated/Peak	Nm	11/36
9	Torque Constant	Nm/A	1,1
10	Current - Rated/Peak	A	14,3/57
11	No-Load Current	Arms	0,98
12	Back EMF constant ±10%	V/kRPM	76
13	Magnetic Encoder 14-bit		2
14	Length (L)	mm	49
15	Weight ±5%	Kg	0,621

Characteristics	
Item	
Insulation Class	B 130°C
Protection Class	IP52
Temperature Range	-20°C to +50°C
Humidity Range	5-85%
Storage Range	-30°C to +70°C
Max. Radial force	427 N
Max. Axial force	68 N
Dielectric strength (for 1 s 2mA)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Safety feature	No
Debug & configuration	Can Converter
Software	Setup & config. - DL Studio Programming - DL Space
Note: Service SCI Interface cable is required for programming and available on request	

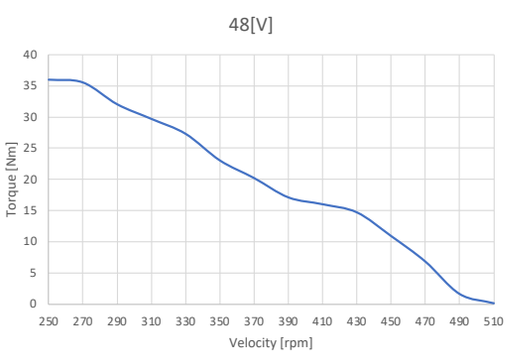
Product code reference	
DJB 088 0115 N D 1 000 C S402	
88	Frame size
0115	Rated Power
N	Brake options (N= no brake)
D	Encoder types (S=Single, D=Dual)
1	Connector code
000	Other options
C	Fieldbus
S402	Protocol reference

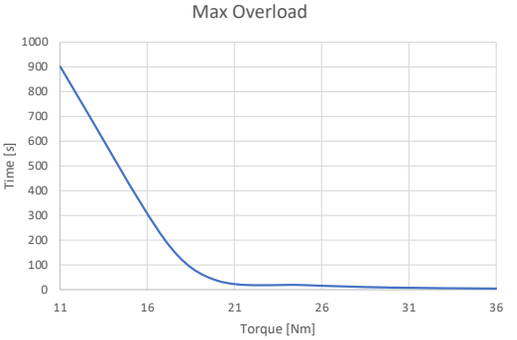
Encoders	
Type	Code
Magnetic Incremental 14 bit on the Rotor	D
Magnetic Absolute Single turn 14 bit after the Gearbox	D

Connection			
Connector	Type	Function	Code
CN1	XT30PB	DC Supply and Fieldbus CANopen	1
CN1	XT30PB	DC Supply	2
CN5A/B	MOLEX 2035620505	Fieldbus Ethercat	2
CN6	MOLEX 2023960407	Serial Input	2

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

Interface Control Mode	
Fieldbus	Code
CANopen (DS402) on request	C-S402
CANopen (programmable) on request	C-S200
Ethercat (DS402) on request	E-S402



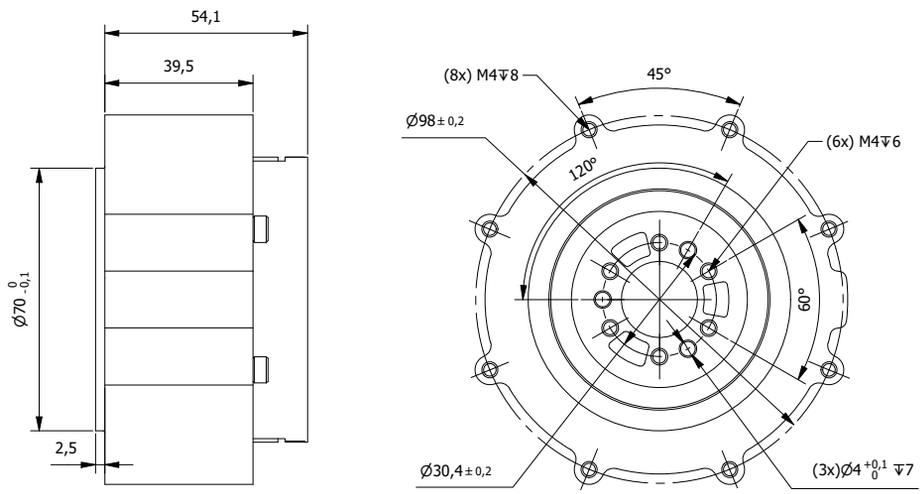


Dynamic Joint Motor DJB110

with Motion Controller - IP52

Ø 110mm

60Nm Peak



Specification			
	Model		...0380ND
1	n° of Pole		42
2	Rated Voltage	VDC	48
3	Operating Voltage	VDC	15-60
4	Rated Power	W	380
5	Reduction ratio		9:1
6	Running Direction		CW/CCW
7	Rated Speed ±10%	rpm	180
8	Torque - Rated/Peak	Nm	20/60
9	Torque Constant	Nm/A	2,36
10	Current - Rated/Peak	A	12/43
11	No-Load Current	Arms	0,6
12	Back EMF constant ±10%	V/kRPM	17
13	Resistance ±10%	Ω	0,39
14	Inductance ±20%	µH	275
15	Magnetic Encoder 14-bit		2
16	Length (L)	mm	54
17	Weight ±5%	Kg	0,9

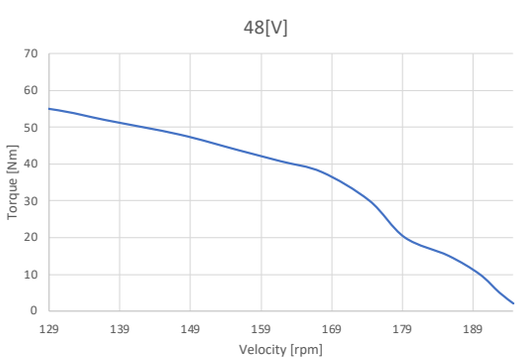
Characteristics	
Item	
Insulation Class	B 130°C
Protection Class	IP52
Temperature Range	-20°C to +50°C
Humidity Range	5-85%
Storage Range	-30°C to +70°C
Max. Radial force	495 N
Max. Axial force	79 N
Dielectric strength (for 1 s 2mA)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Safety feature	No
Debug & configuration	Can Converter
Software	Setup & config. - DL Studio Programming - DL Space
Note: Service SCI Interface cable is required for programming and available on request	

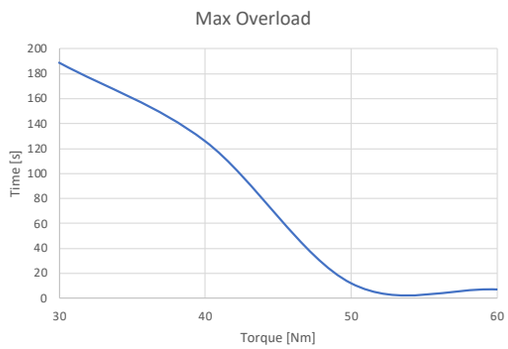
Product code reference	
DJB 110 0380 N D 1 000 C S402	
110	Frame size
0380	Rated Power
N	Brake options (N= no brake)
D	Encoder types (S=Single, D=Dual)
1	Connector code
000	Other options
C	Fieldbus
S402	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 14 bit on the Rotor	D
Magnetic Absolute Single turn 14 bit after the Gearbox	D

Connection			
Connector	Type	Function	Code
CN1	XT30APW-M	DC Supply	1
CN5A/B	BM02B	Fieldbus CANopen	1
CN1	XT30APW-M	DC Supply and Fieldbus Ethercat	2
CN5A/B	MOLEX 2035620505	Fieldbus Ethercat	2
CN6	MOLEX 2023960407	Serial Input	2
Cable kit available on request. More information can be found in the product manual on our website.			

Interface Control Mode	
Fieldbus	Code
CANopen (DS402) on request	C-S402
CANopen (programmable) on request	C-S200
Ethercat (DS402) on request	E-S402



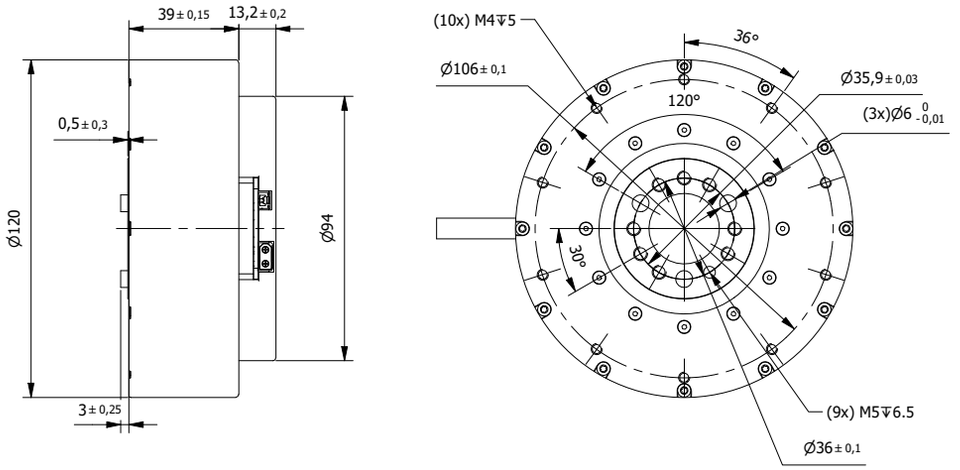


Dynamic Joint Motor DJB120

with Motion Controller - IP52

Ø 120mm

120Nm Peak



Specification			
	Model		...0700ND
1	n° of Pole		42
2	Rated Voltage	VDC	48
3	Operating Voltage	VDC	15-60
4	Rated Power	W	700
5	Reduction ratio		9:1
6	Running Direction		CW/CCW
7	Rated Speed ±10%	rpm	167
8	Torque - Rated/Peak	Nm	40/120
9	Torque Constant	Nm/A	2,1
10	Current - Rated/Peak	A	27/90
11	No-Load Current	Arms	0,7
12	Back EMF constant ±10%	V/kRPM	16,9
13	Resistance ±10%	Ω	0,16
14	Inductance ±20%	µH	211
15	Magnetic Encoder 14-bit		2
16	Length (L)	mm	52
17	Weight ±5%	Kg	1,42

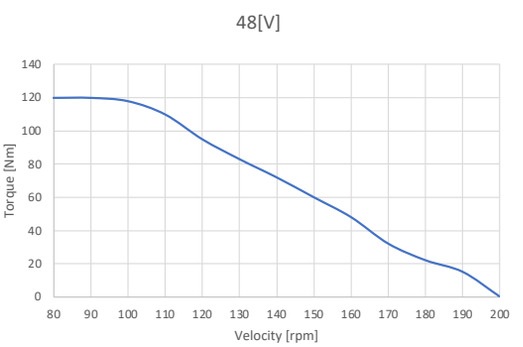
Characteristics	
Item	
Insulation Class	B 130°C
Protection Class	IP52
Temperature Range	-20°C to +50°C
Humidity Range	5-85%
Storage Range	-30°C to +70°C
Max. Radial force	661 N
Max. Axial force	105N
Dielectric strength (for 1 s 2mA)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm
Operating mode	Position, Speed, Torque
Protective functions	Over/Under voltage, Over current, Overheating, Short circuit
Safety feature	No
Debug & configuration	Can Converter
Software	Setup & config. - DL Studio Programming - DL Space
Note: Service SCI Interface cable is required for programming and available on request	

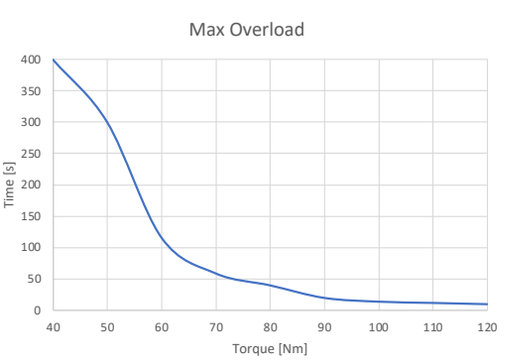
Product code reference	
DJB 120 0700 N D 1 000 C S402	
120	Frame size
0700	Rated Power
N	Brake options (N= no brake)
D	Encoder types (S=Single, D=Dual)
1	Connector code
000	Other options
C	Fieldbus
S402	Protocol reference

Encoders	
Type	Code
Magnetic Incremental 14 bit on the Rotor	D
Magnetic Absolute Single turn 14 bit after the Gearbox	D

Connection			
Connector	Type	Function	Code
CN1	XT30UW-F	DC Supply	1
CN5A/B	GHR-02V-S	Fieldbus CANopen	1
CN1	XT30APW-M	DC Supply and Fieldbus Ethercat	2
CN5A/B	MOLEX 2035620505	Fieldbus Ethercat	2
CN6	MOLEX 2023960407	Serial Input	2
Cable kit available on request. More information can be found in the product manual on our website.			

Interface Control Mode	
Fieldbus	Code
CANopen (DS402) on request	C-S402
CANopen (programmable) on request	C-S200
Ethercat (DS402) on request	E-S402







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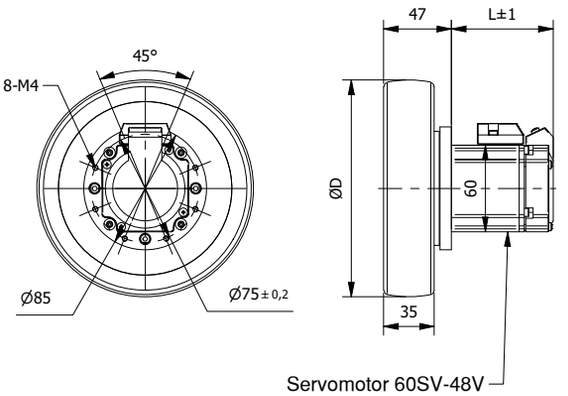
Wheel Hubs

Wheel Hubs	Peak Output Power (W)	
Wheel Hub 60 - **NEW**	360...1200	500
Wheel Hub 80 - **NEW**	2250...3000	501

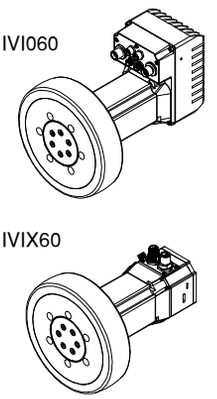
Wheel Hub Motor WH60SV-48VDC

BLDC Servomotor + Planetary Gearbox

□ 60mm



Also available with our
Motors with Integrated Controller:



Note: optional brake

Specification					
	Model		Wheel 60SV10-48V	Wheel 60SV20-48V	Wheel 60SV40-48V
1	Max Radial Load	N	800	800	800
2	Max Linear Speed (unloaded)	m/s	4	6	6
3	Nominal Voltage	V	48	48	48
4	Nominal Current	A	3,2	6	10
5	Nominal Output Power	W	120	200	400
6	Peak Output Power (1 to 2 sec.)	W	360	600	1200
7	Hub ratio		9:1 & 30:1	9:1 & 30:1	9:1 & 30:1
8	Tire Ø (D)	mm	150 - 280	150 - 280	150 - 280
9	N° of Pole		10	10	10
10	N° of Phases		3	3	3
11	Length (L) (Without brake)	mm	71	71	92
12	Length (L) (With brake)	mm	106	106	128
13	Brake Option		24 V - 1,5 Nm	24 V - 1,5 Nm	24 V - 1,5 Nm

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP54
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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

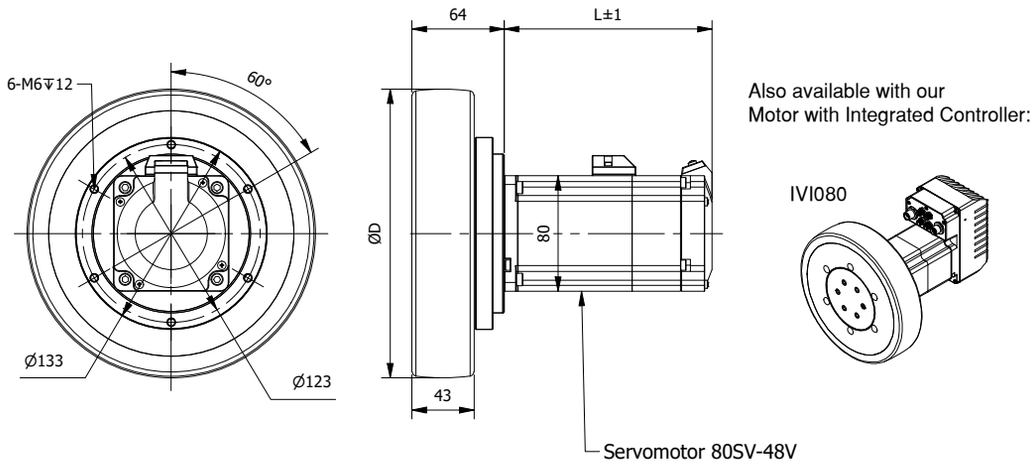
Connection					
Pin	Color	Function	Pin	Color	Function
Feedback					
1	RD	+5V	9	WH	W+
2	BK	GND	10	GY	V+
4	BR	U+	11	YL/BK	Z-
5	BR/BK	U-	12	OR/BK	B-
6	YL	Z+	13	GN/BK	A-
7	OR	B+	14	WH/BK	W-
8	GN	A+	15	GY/BK	V-
Power					
1	YL	U	3	BK	W
2	RD	V	4	YL/GN	PE
Brake					
1	RD	Brake1	2	WH	Brake2

Tire	
Item	
Material	Polyurethane - Shore 90 A

Wheel Hub Motor WH80SV-48VDC

BLDC Servomotor + Planetary Gearbox

□ 80mm



Note: optional brake

Specification				
	Model		Wheel 80SV75-48V	Wheel 80SV100-48V
1	Max Radial Load	N	4500	4500
2	Max Linear Speed (unloaded)	m/s	4	4
3	Nominal Voltage	V	48	48
4	Nominal Current	A	21	30
5	Nominal Output Power	W	750	1000
6	Peak Output Power (1 to 2 sec.)	W	2250	3000
7	Hub ratio		15:1 - 20:1 - 28:1	15:1 - 20:1 - 28:1
8	Tire Ø (D)	mm	150 - 165 - 200 - 280	150 - 165 - 200 - 280
9	N° of Pole		10	10
10	N° of Phases		3	3
11	Length (L) (Without brake)	mm	111	128
12	Length (L) (With brake)	mm	148	164
13	Brake Option		24 V - 2 Nm	24 V - 2 Nm

Characteristics	
Item	
Insulation Class	F 155°C
Protection Class	IP54
Dielectric strength (for 1 sec.)	600 VAC
Insulation Resistance (min. 500 VDC)	100 Mohm

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

Connection					
Pin	Color	Function	Pin	Color	Function
Feedback					
	BU	A+		BR	Hu
	BU/BK	A-		OR	Hv
	BK	B+		YL	Hw
	WH/BK	B-		RD	+5V
	PU	Z+		RD/WH	GND
	GY	Z-			
Power					
	YL	U		BK	W
	RD	V		YL/GN	PE
Brake					
	RD	+24V		WH	GND

Tire	
Item	
Material	Polyurethane - Shore 90 A



Robotics & Advanced Motion

Picking Fingers Module

Picking Fingers Module	Torque* (Nm)	
6VDC Gear Motor - 20DI - **NEW**	19,61...294,2	504
12VDC Gear Motor - 20DI - **NEW**	11,76...294,2	504

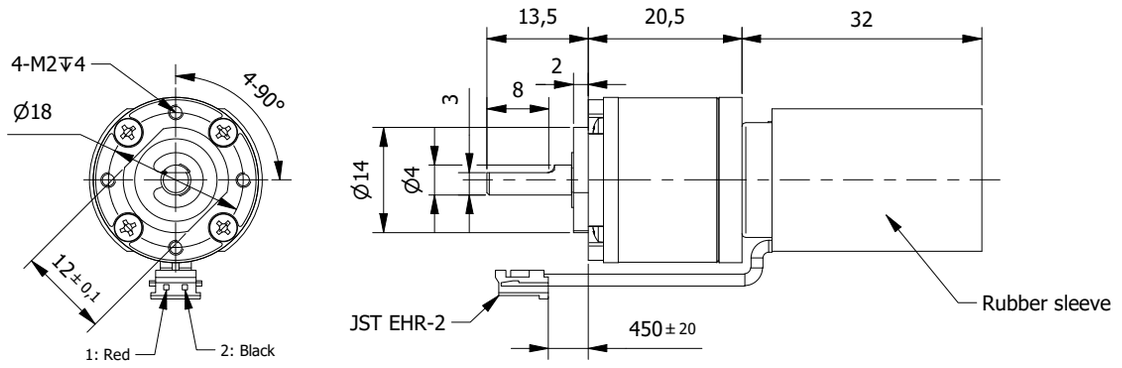
*Rated Torque

DC Gear Motor 20DI

PMDC Motor + Planetary Gearbox

20mm

13.5-27.5

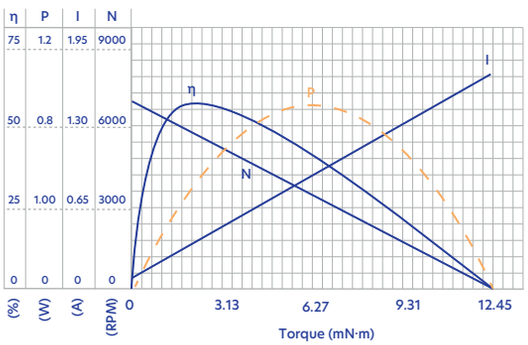


Gearbox Technical Data					
Module	0.3				
Rated Torque (mN·m)	294.2 max				
Peak torque (mN·m)	588.4				
Reduction ratio	1:4 1:4.75	1:16 1:19 1:22.6	1:64 1:76 1:90 1:107	1:172, 1:224 1:256, 1:304 1:361, 1:428.7 1:509	1:1024
Number of gear stages	1	2	3	4	5
L (mm)	13.5	17	20.5	24	27.5

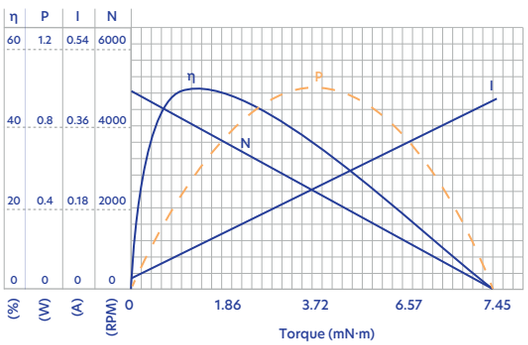
Gear Motor Technical Data										
	Reduction Ratio	16	64	84	107	224	304	361	428.7	1024
6.0V	No-load speed (rpm)	430	105	80	65	30	22	18	16	6
	Rated speed (rpm)	370	90	70	55	26	19	16	14	5
	Rated torque (mN·m)	19.61	68.64	98.06	117.6	196.1	274.6	294.2	294.2	294.2
12.0V	No-load speed (rpm)	300	75	60	45	21	15	13	11	5
	Rated speed (rpm)	270	65	50	40	19	14	12	10	4
	Rated torque (mN·m)	11.76	34.32	49.03	58.83	98.06	137.3	166.7	196.1	294.2
	Weight	90g (approx.)								

Motor Technical Data									
		No-load		Rated				Stall	
	Rated voltage	Speed	Current	Speed	Torque	Current	Power	Torque	Current
Motor model	VDC	r/min	mA	r/min	mN·m	mA	W	mN·m	A
20DI - 6V - 5920	6.0	7000	90	5900	1.96	350	1.21	12.45	1.80
20DI - 12V - 4310	12.0	5000	20	4300	0.98	70	0.44	6.96	0.42

20DI - 6V - 5920

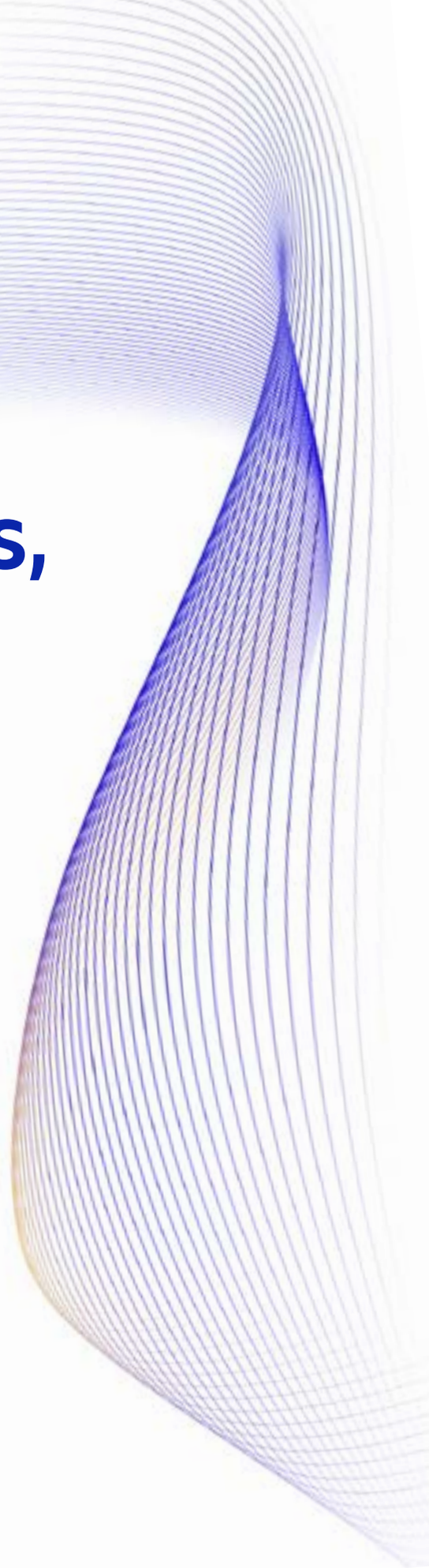


20DI - 12V - 4310



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_ Spur
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Ø 8-90mm

Gearboxes

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_ Non-Captive

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Nema 8-23





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_ Wheel Hubs

_ Picking Fingers Module

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_ Modular assembly

_ Full custom

Customizations

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Custom

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