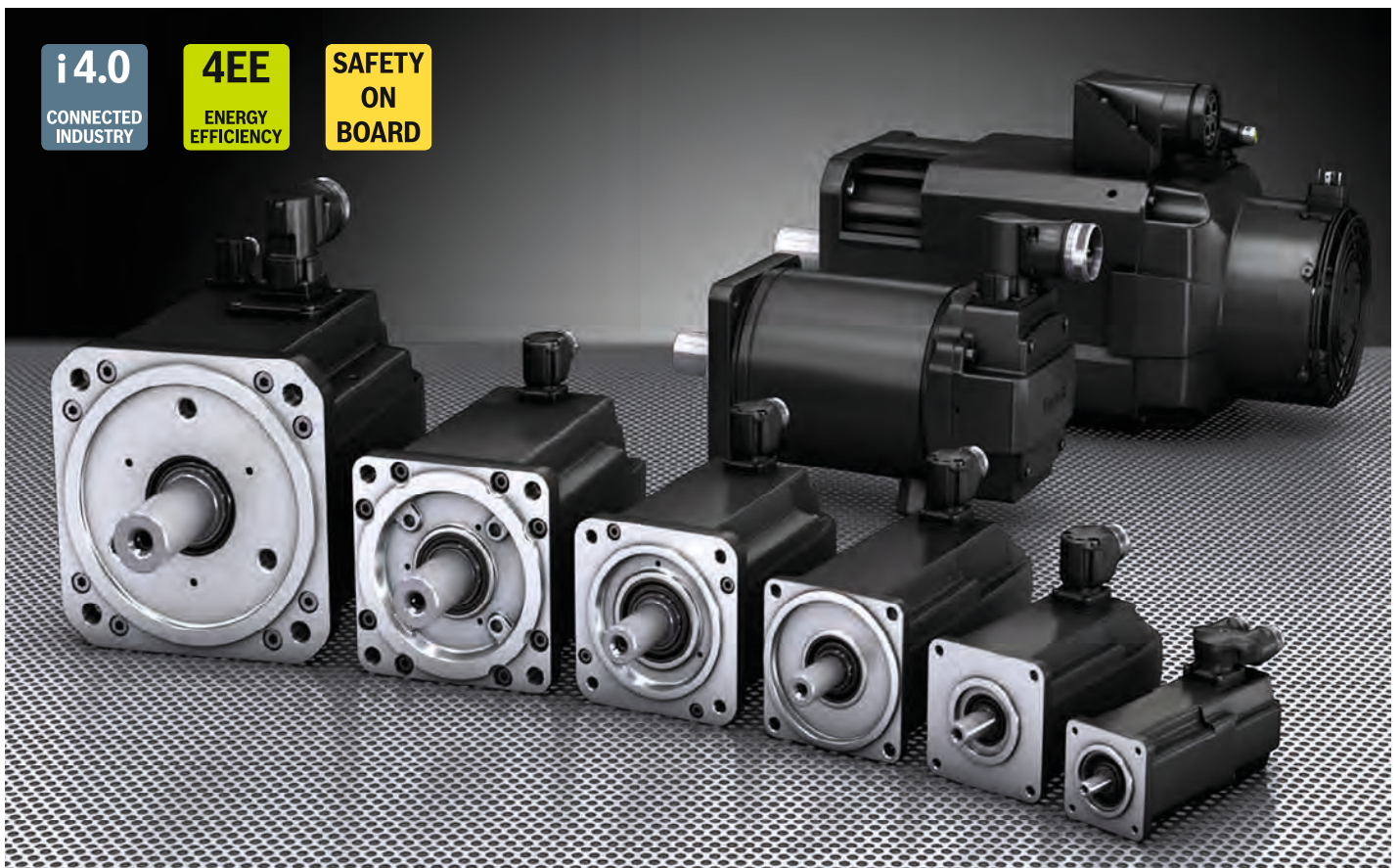


MS2N

Synchronous servo motors

intelligent | powerful | flexible



Future-proof with power density, functionality and availability

More torque, higher rotational speeds, the practical single-cable connection, and an extensive option program: Rexroth's MS2N generation of motors connects ultimate dynamics with compact dimensions and the best of energy efficiency. Offering a selection of rotors with lower and medium inertia is available for optimal mass adaptation. The MS2N motors become a data source for intelligent solutions in the Industry 4.0 environment.

The new generation of servo motors

Rexroth's MS2N range of motors with more than 50 types, covers a maximum torque of up to 360 Nm and maximum rotational speeds of up to 9,000 rpm.

A high power density is achieved through optimized electromagnetic design and motor construction. With a finely graduated range of torques and rotational speeds, application-oriented encoder options, and optional single-cable connection, the motors flexibly meet the diverse requirements of modern automation. Forced ventilation and water cooling open up new areas of performance.

Intelligence in the system

In the MS2N product line, intelligence progresses all the way up to the motor by storing the individual readings of every single motor as well as the saturation and temperature data into the motor data memory.

IndraDrive drive controllers process these values in real time, increasing the torque precision significantly and reducing the tolerance range during operation to a fraction of the values that had been standard up to now. Thus the servo motor can be used as a reliable sensor and as a data source. In this way, applications within the Industry 4.0 environment can be realized cost-effectively and without additional components.

Maximum safety in design and operation

The MS2N motor model in the IndraSize engineering tool enables simple, fast and safe drive configuration that corresponds exactly to real operation. In this way, mechanical engineers can optimal design drives for their application. The integrated encoders with up to SIL3 PLe ensure maximum safety for SafeMotion applications.

More than 50 motor types in 6 sizes with up to 5 lengths and 3 cooling types



MS2N03
M_{Max} 3.8 ... 7.4 Nm



MS2N04
6.4 ... 19.7 Nm



MS2N05
11.5 ... 34.0 Nm

Single-cable connection

- ▶ Cable length of up to 75 m without additional components
- ▶ Plug with quick-lock
- ▶ Optional dual-cable connection

Powerful

- ▶ Compact motors
- ▶ High torque density
- ▶ Broader speed range
- ▶ High energy efficiency
- ▶ Optional forced ventilation and water cooling

Flexible configuration

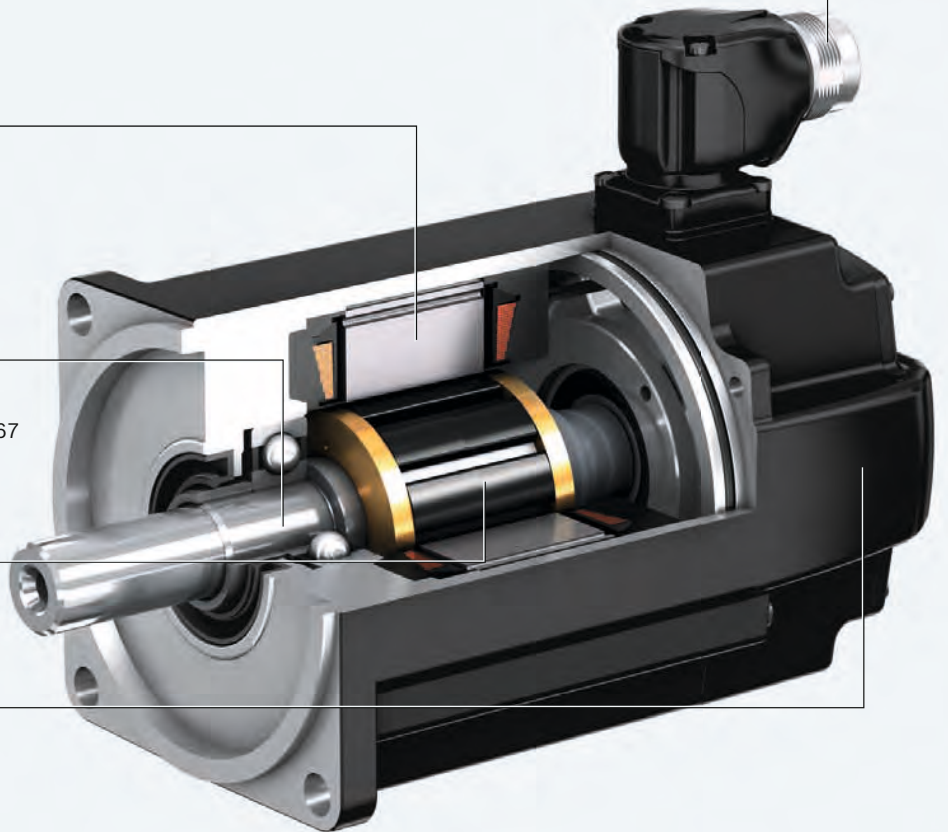
- ▶ Smooth shaft, keyway, shaft seal
- ▶ Degree of protection IP64, IP65 or IP67
- ▶ Energy-saving holding brake
- ▶ Increased flange accuracy
- ▶ Many additional options

Two motor designs

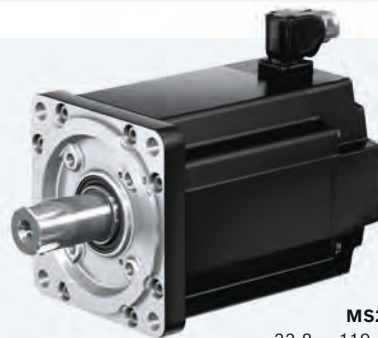
- ▶ Low rotor inertia for all sizes
- ▶ Medium rotor inertia beginning with MS2N06

Encoder types

- ▶ Four performance levels
- ▶ Functional safety up to SIL3 PLe
- ▶ Singleturn/Multiturn
- ▶ Motor data memory



MS2N06
10.2 ... 53.4 Nm



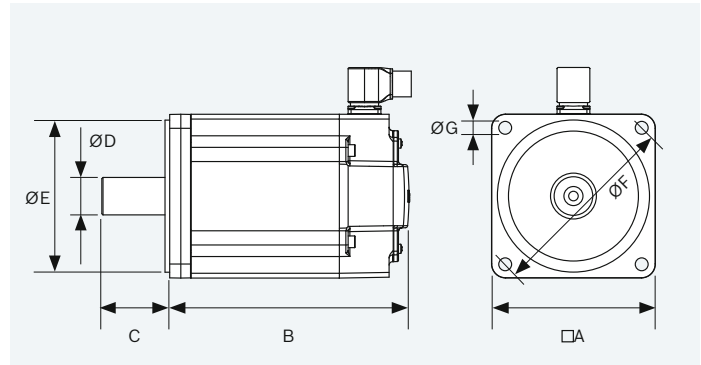
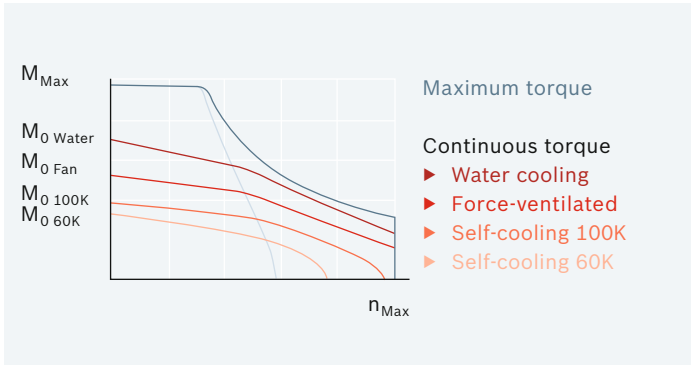
MS2N07
22.8 ... 119.5 Nm



MS2N10
41.3 ... 313.0 Nm

Technical Data

| | | Torque [Nm] | | | | | Current [A] | | | | | Speed [min ⁻¹] | Moment of inertia [kgm ²] | | |
|-------------|-------------|--------------------|---------------------|--------------------|----------------------|------------------|--------------------|---------------------|--------------------|----------------------|------------------|----------------------------|---------------------------------------|---------|---------|
| Type | | M ₀ 60K | M ₀ 100K | M ₀ Fan | M ₀ Water | M _{Max} | I ₀ 60K | I ₀ 100K | I ₀ Fan | I ₀ Water | I _{Max} | n _{Max} | without brake | | |
| 03 | MS2N03-B0BY | 0.73 | 0.90 | - | - | 3.75 | 1.31 | 1.61 | - | - | 7.25 | 9000 | 0.00023 | | |
| | MS2N03-D0BY | 1.15 | 1.45 | | | 7.40 | 2.07 | 2.60 | | | 14.5 | 9000 | 0.00037 | | |
| 04 | MS2N04-B0BN | 1.75 | 2.15 | - | - | 6.4 | 1.11 | 1.36 | - | - | 4.9 | 6000 | 0.00007 | | |
| | MS2N04-B0BT | | | | | 2.20 | 2.70 | 9.8 | | | 6000 | | | | |
| | MS2N04-C0BN | 2.80 | 3.50 | | | 13.0 | 1.78 | 2.24 | | | 9.7 | 6000 | 0.00011 | | |
| | MS2N04-C0BT | | | | | 3.11 | 3.90 | 17.3 | | | 6000 | | | | |
| | MS2N04-D0BH | 3.85 | 4.65 | | | 19.7 | 1.61 | 1.96 | | | 9.7 | 4000 | 0.00016 | | |
| | MS2N04-D0BQ | | | | | 2.86 | 3.48 | 17.3 | | | 6000 | | | | |
| 05 | MS2N05-B0BN | 3.75 | 4.45 | - | - | 11.5 | 2.29 | 2.75 | - | - | 8.4 | 6000 | 0.00017 | | |
| | MS2N05-B0BT | | | | | 4.55 | 5.45 | 16.8 | | | 6000 | | | | |
| | MS2N05-C0BN | 6.10 | 7.15 | | | 22.6 | 3.53 | 4.16 | | | 15.1 | 6000 | 0.00029 | | |
| | MS2N05-C0BT | | | | | 7.10 | 8.35 | 30.2 | | | 6000 | | | | |
| | MS2N05-D0BH | 7.90 | 9.35 | | | 34.0 | 3.05 | 3.63 | | | 15.2 | 4000 | 0.00040 | | |
| MS2N05-D0BR | 6.05 | | | 7.20 | 30.3 | 6000 | | | | | | | | | |
| 06 | MS2N06-B1BN | 3.25 | 3.6 | - | - | 10.2 | 2.22 | 2.47 | - | - | 7.8 | 6000 | 0.00048 | | |
| | MS2N06-C0BN | 6.0 | 7.1 | | | 17.3 | 3.75 | 4.50 | | | 12.8 | 6000 | 0.00039 | | |
| | MS2N06-C0BT | | | | | 7.50 | 9.00 | 25.5 | | | 6000 | | | | |
| | MS2N06-D1BN | 9.0 | 11.1 | | | 41.8 | 5.05 | 6.25 | | | 25.5 | 6000 | 0.00140 | | |
| | MS2N06-D0BN | 9.7 | 11.9 | | | 34.8 | 6.10 | 7.55 | | | 25.4 | 6000 | 0.00065 | | |
| | MS2N06-D0BR | | | | | 7.85 | 9.75 | 32.7 | | | 6000 | | | | |
| | MS2N06-E0BH | 13.0 | 16.3 | | | 53.4 | 5.4 | 6.80 | | | 25.4 | 4000 | 0.00089 | | |
| MS2N06-E0BR | 10.9 | | | 13.7 | 50.8 | 6000 | | | | | | | | | |
| 07 | MS2N07-B1BN | 7.4 | 8.2 | - | - | 22.8 | 4.25 | 4.74 | - | - | 14.8 | 6000 | 0.00197 | | |
| | MS2N07-C1BN | 11.5 | 14.5 | 18.0 | 25.0 | 46.0 | 6.6 | 8.35 | 10.4 | 14.2 | 29.5 | 6000 | 0.00305 | | |
| | MS2N07-C1BR | | | | | 9.6 | 12.1 | 14.9 | 20.8 | 42.7 | 6000 | | | | |
| | MS2N07-C0BN | 12.8 | 16.0 | | | 38.8 | 6.9 | 8.8 | 11.0 | 15.8 | 24.8 | 6000 | 0.00120 | | |
| | MS2N07-C0BQ | | | | | 10.1 | 12.9 | 15.8 | 22.3 | 36.4 | 6000 | | | | |
| | MS2N07-D1BH | 18.9 | 23.8 | | | 92.5 | 7.8 | 9.9 | 12.9 | 21.1 | 42.7 | 4000 | 0.00529 | | |
| | MS2N07-D1BN | | | | | 9.9 | 12.5 | 16.3 | 26.7 | 54.1 | 6000 | | | | |
| | MS2N07-D0BH | 22.0 | 28.2 | | | 35.5 | 55.0 | 79.7 | 8.55 | 11.1 | 14.1 | 22.8 | 36.4 | 4000 | 0.00210 |
| | MS2N07-D0BN | | | | | | | 11.6 | 15.0 | 19.1 | 31.4 | 49.5 | 6000 | | |
| | MS2N07-D0BR | | | | | | | 17.1 | 22.3 | 28.2 | 45.8 | 72.7 | 6000 | | |
| | MS2N07-E1BH | | | | | | | 25.8 | 32.2 | 43.5 | 76.5 | 140.0 | 9.0 | 11.3 | |
| | MS2N07-E1BN | 14.1 | 17.7 | | | 23.9 | 42.1 | | | | | 85.4 | 6000 | | |
| MS2N07-E0BH | 29.2 | 38.2 | 49.5 | | | 83.0 | 119.5 | 10.35 | 13.7 | 17.9 | 31.5 | 49.5 | 4000 | 0.00300 | |
| MS2N07-E0BN | | | | 15.1 | 20.0 | | | 26.2 | 46.0 | 72.7 | 6000 | | | | |
| MS2N07-E0BQ | | | | 19.1 | 25.3 | | | 33.3 | 58.3 | 92.3 | 6000 | | | | |
| MS2N10-B1BQ | | | | 15.6 | 16.7 | | | - | - | 41.3 | 13.1 | 14.2 | - | | - |
| MS2N10-C1BH | 27.3 | 31.0 | 40.0 | 48.0 | 86.5 | 11.1 | 12.8 | 16.7 | 19.6 | 40.9 | 4000 | 0.00920 | | | |
| MS2N10-C1BN | | | | | | 16.5 | 19.0 | 24.7 | 29.9 | 60.8 | 6000 | | | | |
| MS2N10-C0BH | 30.2 | 34.0 | 43.2 | 51.7 | 76.8 | 12.6 | 14.5 | 18.8 | 23.0 | 38.5 | 4000 | 0.00480 | | | |
| MS2N10-C0BN | | | | | | 16.8 | 19.3 | 25.1 | 30.8 | 51.3 | 6000 | | | | |
| MS2N10-D1BF | 47.2 | 56.0 | 78.0 | 101.0 | 174.0 | 14.3 | 17.2 | 24.2 | 30.8 | 60.7 | 3000 | 0.01710 | | | |
| MS2N10-D1BN | | | | | | 28.6 | 34.3 | 48.5 | 63.3 | 121.5 | 6000 | | | | |
| MS2N10-D0BH | 51.0 | 60.5 | 82.4 | 107.5 | 155.0 | 19.1 | 23.1 | 32.4 | 43.7 | 70.0 | 4000 | 0.00810 | | | |
| MS2N10-D0BN | | | | | | 28.2 | 34.1 | 48.0 | 64.7 | 102.5 | 6000 | | | | |
| MS2N10-E1BF | 64.0 | 76.0 | 113.0 | 159.0 | 266.0 | 17.1 | 20.5 | 30.8 | 44.2 | 81.0 | 3000 | 0.02500 | | | |
| MS2N10-E1BN | | | | | | 34.2 | 41.0 | 61.7 | 88.0 | 162.0 | 6000 | | | | |
| MS2N10-E0BH | 67.7 | 82.5 | 119.0 | 162.0 | 234.0 | 25.0 | 31.0 | 46.1 | 65.4 | 102.5 | 4000 | 0.01140 | | | |
| MS2N10-E0BN | | | | | | 34.5 | 42.8 | 62.9 | 90.0 | 140.0 | 6000 | | | | |
| MS2N10-F1BD | 79.5 | 96.5 | 145.0 | 209.0 | 360.0 | 15.9 | 19.5 | 29.5 | 42.8 | 81.0 | 2000 | 0.03290 | | | |
| MS2N10-F1BH | | | | | | 31.8 | 38.9 | 58.6 | 86.0 | 162.0 | 4000 | | | | |
| MS2N10-F0BD | 85.0 | 103.0 | 148.5 | 214.0 | 313.0 | 15.8 | 19.5 | 28.8 | 43.3 | 70.0 | 2000 | 0.01470 | | | |
| MS2N10-F0BH | | | | | | 32.0 | 39.4 | 58.6 | 87.5 | 140.0 | 4000 | | | | |



| Moment of inertia [kg·m ²] | Dimensions [mm] | | | | | | | | | | | Mass [kg] | |
|--|-----------------|--------------------|----------------------|--------------------|--------------|--------------------|----------------|--------------|------------------|-------------|---------------|---------------|------------|
| | A | B | | | | | D | C | E | F | G | Self-cooling | |
| with brake | Flange | Encoder "A" length | Encoder "B/C" length | Encoder "D" length | Brake length | Forced ventilation | Shaft diameter | Shaft length | Centering collar | Bolt circle | Mounting hole | without brake | with brake |
| 0.000030 | 58 | 148 | +15 | - | +29 | - | 9 | 20 | 40 | 63 | 4.5 | 1.4 | 1.8 |
| 0.000044 | | 188 | | | | | 11 | 23 | | | | 2.0 | 2.4 |
| 0.00011 | 82 | 147 | +15 | - | +32.5 | - | 14 | 30 | 50 | 95 | 6.6 | 2.7 | 3.4 |
| 0.00016 | | 179 | | | | | | | | | | 3.7 | 4.4 |
| 0.00020 | 98 | 211 | +18 | - | +30 | - | 19 | 40 | 95 | 115 | 9 | 4.7 | 5.4 |
| 0.00028 | | 170 | | | | | | | | | | 4.0 | 5.1 |
| 0.00040 | 116 | 206 | +0 | +18 | +37 | - | 24 | 50 | 95 | 130 | 9 | 5.9 | 7.0 |
| 0.00051 | | 242 | | | | | | | | | | 7.3 | 8.4 |
| 0.00059 | 140 | 164 | +0 | +16 | +54 | +121 | 32 | 58 | 130 | 165 | 11 | 5.1 | 6.2 |
| 0.00050 | | 184 | | | | | | | | | | 6.4 | 7.4 |
| 0.00154 | 196 | 224 | +0 | +0 | +60 | +98 | 38 | 80 | 180 | 215 | 14 | 9.0 | 10.5 |
| 0.00079 | | 264 | | | | | | | | | | 11.5 | 13.0 |
| 0.00103 | 196 | 176 | +0 | +0 | +60 | +98 | 38 | 80 | 180 | 215 | 14 | 9.5 | 11.5 |
| 0.00223 | | 205 | | | | | | | | | | 12.0 | 14.0 |
| 0.00331 | 196 | 263 | +0 | +0 | +60 | +98 | 38 | 80 | 180 | 215 | 14 | 17.5 | 20.0 |
| 0.00146 | | 321 | | | | | | | | | | 23.0 | 26.0 |
| 0.00570 | 196 | 194 | +0 | +0 | +60 | +98 | 38 | 80 | 180 | 215 | 14 | 17.5 | 21 |
| 0.00251 | | 238 | | | | | | | | | | 24.0 | 29.0 |
| 0.00793 | 196 | 238 | +0 | +0 | +60 | +98 | 38 | 80 | 180 | 215 | 14 | 23.5 | 28.5 |
| 0.00341 | | 296 | | | | | | | | | | 36.0 | 41.0 |
| 0.00561 | 196 | 354 | +0 | +0 | +60 | +98 | 38 | 80 | 180 | 215 | 14 | 34.0 | 39.0 |
| 0.01067 | | 412 | | | | | | | | | | 47.0 | 54.0 |
| 0.01740 | 196 | 354 | +0 | +0 | +60 | +98 | 38 | 80 | 180 | 215 | 14 | 45.0 | 52.0 |
| 0.01410 | | 412 | | | | | | | | | | 59.0 | 66.0 |
| 0.03560 | 196 | 354 | +0 | +0 | +60 | +98 | 38 | 80 | 180 | 215 | 14 | 55.0 | 62.0 |
| 0.01740 | | 412 | | | | | | | | | | 59.0 | 66.0 |

More torque and higher rotational speeds

Short coil heads and high-performance motors enable compact dimensions with minimal power loss. This leads to a significant improvement in energy efficiency and reduces operating costs over the long term. The available field weakening operation in conjunction with IndraDrive drive controllers extends the usable torque speed range beyond the voltage limit.



MS2N07 and MS2N10, force-ventilated

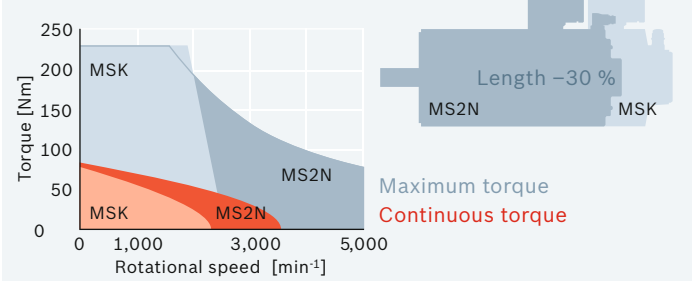


MS2N07 and MS2N10, water-cooled

Connection technology

Whether conventional cabling with compact round connectors or a modern single-cable connection, MS2N offers the practical diversity for less installation work and space requirement. The size MS2N10 is also available with terminal box. All plugs are equipped with comfortable quick locking and can be rotated up to plug size M40.

Compare MS2N10-E to MSK101E



Self-cooled, force-ventilated or water-cooled

The motors are optionally available with integrated fans or water cooling starting at size MS2N07. The nominal torque is increased significantly in the same construction size. All fan motors offer degree of protection IP65, an integrated temperature sensor with certified intrinsic safety as well as optionally 115 V or 230 V connection voltage.

Water-cooled motors offer even more increased continuous torque and highest power density, for new machine concepts with minimum space and high requirements on effective heat dissipation. The robust design of the entire motor cooling in stainless steel allows the simple and reliable integration into a wide range of cooling circuits.



Type Code

MS2N 05-C0BNN-ASDH0-NNNNN-NN

Size

03, 04, 05, 06, 07, 10

Length

B, C, D, E, F

Rotor inertia

0 – Low inertia
1 – Medium inertia

Winding

BD – 1,000 min⁻¹ BQ – 4,000 min⁻¹
BF – 1,500 min⁻¹ BR – 4,500 min⁻¹
BH – 2,000 min⁻¹ BT – 6,000 min⁻¹
BN – 3,000 min⁻¹ BY – 9,000 min⁻¹

Cooling type

N – Self-cooling
A – Forced ventilation, Axial fan 230 V
B – Forced ventilation, Axial fan 115 V
L – Water cooling

Encoder performance

A – BASIC: 16 signal periods, Hiperface®
B – STANDARD: 128 signal periods, Hiperface®, SIL2
C – ADVANCED: digital 20 bit, ACURO®link, SIL2
H – ADVANCED: digital 20 Bit, ACURO®link, SIL3
D – HIGH: digital 24 bit, ACURO®link, SIL3

Encoder design

S – Singleturn, absolute 1 revolution
M – Multiturn, absolute 4,096 revolutions

Other design

N – None
P – Sealing air
E – Additional ground

Coating

N – Standard

Construction

N – IM B5/IM 3001, Sensor PT1000

Bearing

N – Standard

Flange perfection

N – Standard
R – increased perfection

Holding brake

0 – No holding brake
1, 2, 3 – With holding brake

Shaft

H – Smooth, no shaft seal
G – Smooth, with shaft seal
L – Keyway, no shaft seal
K – Keyway, with shaft seal

Electrical connection

D – M17 double plug, turnable
S – M23 single-cable connection, turnable
U – M23 angle plug, turnable
V – M40 angle plug, turnable
A – M58 angle plug, side A
B – M58 angle plug, side B
T – Terminal box, size 1
C – Terminal box, size 2

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Find your local contact person here:

www.boschrexroth.com/contact

Further information:

www.boschrexroth.com/ms2n



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