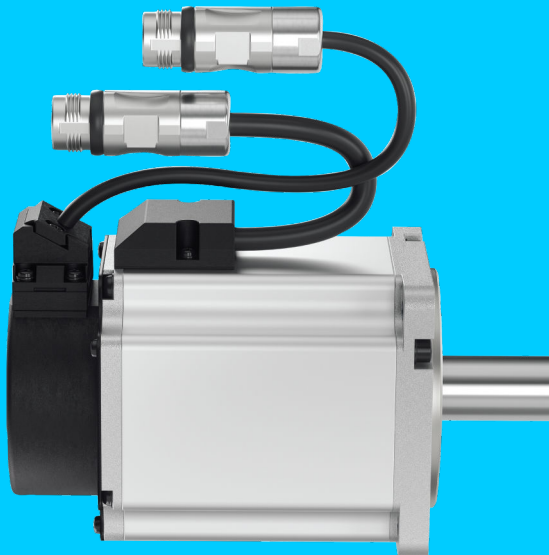


MS2M

Project Planning Manual
(Original document)

Synchronous Servomotors



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1 About this documentation

1.1 Purpose and editions of this documentation

This documentation is for technicians, service engineers and users. This documentation explains the product characteristics, application possibilities, operating conditions and the operational limits of the motors, contains the technical data of the available motors and provides information on product selection, handling and operation.

Edition	State	Note
04	12/2025	Contents update
03	11/2025	Contents update: - Added reduction factors f_{Ta} Editorial changes
02	05/2025	Contents update
01	09/2024	First edition

1.2 Presentation of information

Safety instructions

The safety instructions in this documentation include signal words (danger, warning, caution, note) and a signal symbol (acc. to ANSI Z535.6-2011).

The signal word is intended to draw your attention to the safety instructions and describes the seriousness of the danger. The warning triangle with exclamation mark indicates the danger for persons.

	Non-compliance with this safety instructions will result in death or severe personal injury.
	Non-compliance with this safety instructions can result in death or severe personal injury.
	Non-compliance with this safety instructions can result in moderate or minor personal injury.
	Non-compliance with this safety instructions can result in material damage.

Safety symbols

In the documentation, the following internationally standardized safety signs and graphic symbols are used. The meaning of the symbols is described in the table.

Table 1: Meaning of safety signs

Safety symbols	Meaning
	Warning against dangerous electric voltage
	Warning against hot surfaces

Safety symbols	Meaning
	Warning against rotating machine parts
	Warning against overhead load
	Electrostatic sensitive devices
	Prohibited for persons with active implantable medical devices (AIMD) or passive metallic implants (body aids) as well as for pregnant women
	Do not carry along metal parts or clocks.
	Hammer scales are forbidden

Meaning of symbols

Table 2: Meaning of symbols

Symbol	Meaning
	Reference to supplementary documentation
	The UL Recognized Component Mark identifies recognized component parts which are components of a bigger product or system.
	The letters "C" and "E" stand for "Conformité Européenne". The CE-marking expresses the conformity of a product with relevant EC-regulations.
	UKCA means "UK Conformity Assessed". The UKCA-marking expresses the conformity of a product with all valid statutory requirements of the United Kingdom.
	Components for the use in systems for "integrated safety technique" prepared.
	The symbol indicating "separate collection" for all batteries and accumulators is the crossed-out wheeled bin.

Markup

The following markups are used for a user-friendly text information representation:



Remark

This note gives important information, which must be observed.

- Listings on the first level contain a bullet point
 - Listings on the second level contain a dash

2 Safety instructions

2.1 General safety instructions

Important! Please read all instructions before motor installation.

Do not install or operate motors or components of the electric drive and control system before you have not carefully read all delivered documents.

Keep this instructions!

The operating instruction must be stored and transferred in case of sale during the complete product lifetime.

Please observe the particular applicable national, local and system-specific regulations, the safety instructions in the documentation and the warning and informative labels on the motors.

Observe the general safety notes in this chapter and the safety instructions in this documentation. Therewith, you avoid personal danger, damage and errors.

Improper use of the motors and failure to follow the safety instructions in this document may result in material damage, personal injury, electric shock or, in extreme cases, to death!

In the case of damage due to non-observance of the safety notes, Bosch Rexroth assumes no liability.

Applications for functional safety are only allowed if the motors have the **SI**-sign on the rating plate.

2.2 Product- and technology-dependent safety instructions

2.2.1 Protection from electric voltage

Work required on the electric system may only be carried out by skilled electricians. Tools for electricians (VDE tools) are absolutely necessary.

Before working:

- Enable.
- Secure against reactivation.
- Ensure de-energization.
- Ground and short-circuit.
- Cover or shield any adjacent live parts.

After completing the job, cancel the measures in reverse order.

Dangerous voltage occurs during operation! Danger to life, risk of injury by electric shock!

- Before start-up, connect the protective conductors on all electric components according to the connection plan.
- Operation, even for short measuring purposes is only allowed with fixed connected protective conductor on the specified points of the components.

2.2.2 Protection from mechanical danger

Dangerous movements! Danger to life, risk of injury, heavy injury or material damage.

- Do not stay within the motion zone of the machine. Avoid unauthorized access into the danger zone.
- Additionally secure vertical axes to prevent them from sinking or descending after having shutdown the motor, for instance as follows:
 - Mechanically lock the vertical axis,
 - providing an external braking / catching / clamping device, or
 - ensure sufficient weight compensation of the axes.

Only using the serially delivered **motor holding brake** or an external holding brake activated by the drive controller **is not suitable for personal protection!**

Rotating parts! Danger to life, risk of injury, heavy injury or material damage.

- Secure key and/or transmission elements against ejection.
- Install covers on dangerous rotating machine parts before start-up.

2.2.3 Protection against burns

Risk of burns due to hot motor surfaces!

- Avoid contact with hot motor surfaces. **Temperatures may rise over 60 °C.**
- Allow the motors to cool down long enough before touching them.
- Temperature-sensitive components may not come into contact with the motor surface. Ensure appropriate mounting distance of connection cables and other components.

2.2.4 Electrostatic sensitive devices (ESD)

The motors contain parts which underlie an electrostatic danger. These components, especially temperature sensors of the motor winding can be destroyed by improper use.

Avoid, e.g. direct contact of open wires or contacts of the connection cable of temperature sensors without being electrostatically discharged or grounded.



Remark

Do suitable ESD protective measures before you handle imperiled components (e.g. ESD protective clothes, wristlets, conductive floor, grounded cabinets and working surfaces).

3 Introduction

Introduction to the product of MS2M servomotors

The maintenance-free MS2M motors are available in three different frame sizes up to a mechanical continuous power of 1000 watt. High power density at a short frame length and a minimized flange dimension make use in most different applications possible. The motors with protection class IP65 are fitted with an absolute encoder and are available with or without holding brake. MS2M motors with winding code **"FN"** are provided for operation on XCS2-F controllers with nominal voltage 3x AC 230 V. Any operation on supply network with a higher nominal voltage is forbidden.

MS2M are featured by

- Dynamic
- Protection class IP65
- Precision due to optical Singleturn and Multiturn absolute value encoders
- Holding brake
- Plug connector for encoder and Compact construction power connection

Table 3: MS2M motors features

Motor MS2M	Continuous power P_N [W]	Continuous torque at stand-still M_0 [Nm]	Maximum torque M_{max} [Nm]	Maximum speed n_{max} [min ⁻¹]	Degree of protection
					
02-A0	50	0.16	0.48	6000	IP65
02-B0	100	0.32	0.95		
03-A0	200	0.64	1.91		
03-B0	400	1.27	3.82		
04-A0	750	2.39	7.16		
04-B0	1000	3.18	9.55		

This documentation serves to

- Select motors
- Describe variants

4 Identification

4.1 Type plate

MS2M motors have an individual type plate showing the device designation and providing technical information. The two-part type plate is attached at the side of the encoder housing.

The type plate is provided for

- Identification of the motor
- Procurement of spare parts in case of a fault
- Service information.

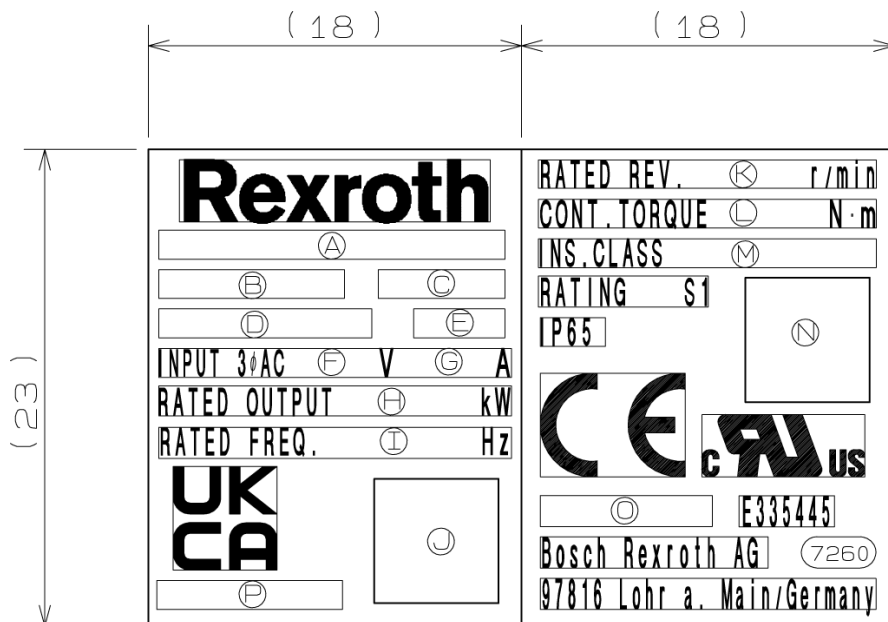


Fig. 1: Type plate MS2M

- | | |
|-------------------------|-------------------------------|
| (A) Model Number | (I) Rated Frequency |
| (B) Material Number | (J) BRC Serial Number |
| (C) Manufacturing Date | (K) Rated Speed |
| (D) Serial Number | (L) Rated Torque |
| (E) Hardware Index | (M) Insulation Classification |
| (F) Rated Input Voltage | (N) QR Code |
| (G) Rated Input Current | (O) Country of Origin |
| (H) Rated Output | (P) Production Date |

5 Operating conditions

5.1 Ambient conditions during operation

Climatic conditions are defined in classes according to EN IEC 60721. The classes are differentiated in the areas storage, transport and operation. They are based on long-term experiences and take all influencing variables into account, e.g., air temperature and air humidity.

A permanent use of the motors is possible when the specified class 3K22 according to EN IEC 60721-3-3:2019 is observed. Deviations and enhancements according to the following table must be observed.

Table 4: Ambient conditions

Operation	
Installation altitude	0 ... 1000 m above MSL
Ambient temperature (Tamb)	0 ... +40 °C
Relative humidity	20 ... 85 %
Vibration (Motor only)	Lower than 49 m/s² (5 G) at running, 24.5 m/s² (2.5 G) at stall
Impact (Motor only)	Lower than 98 m/s²(10 G)



For Transport and Storage see chapter ➔ [Chapter 11.1 "Ambient conditions"](#) on page 43

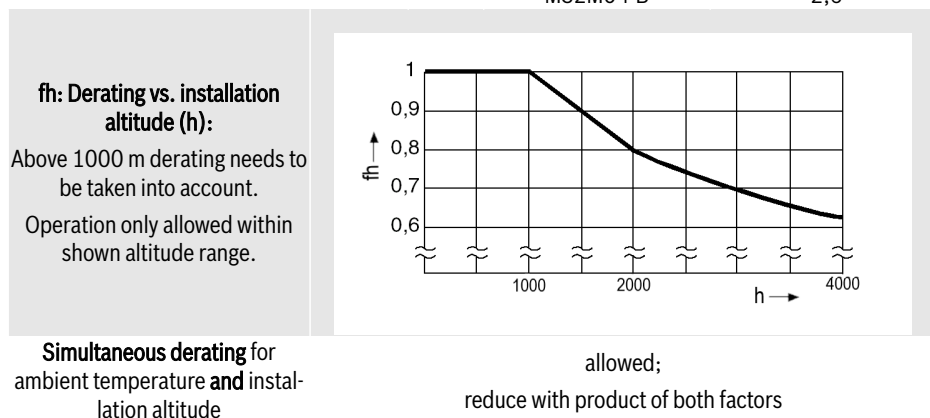
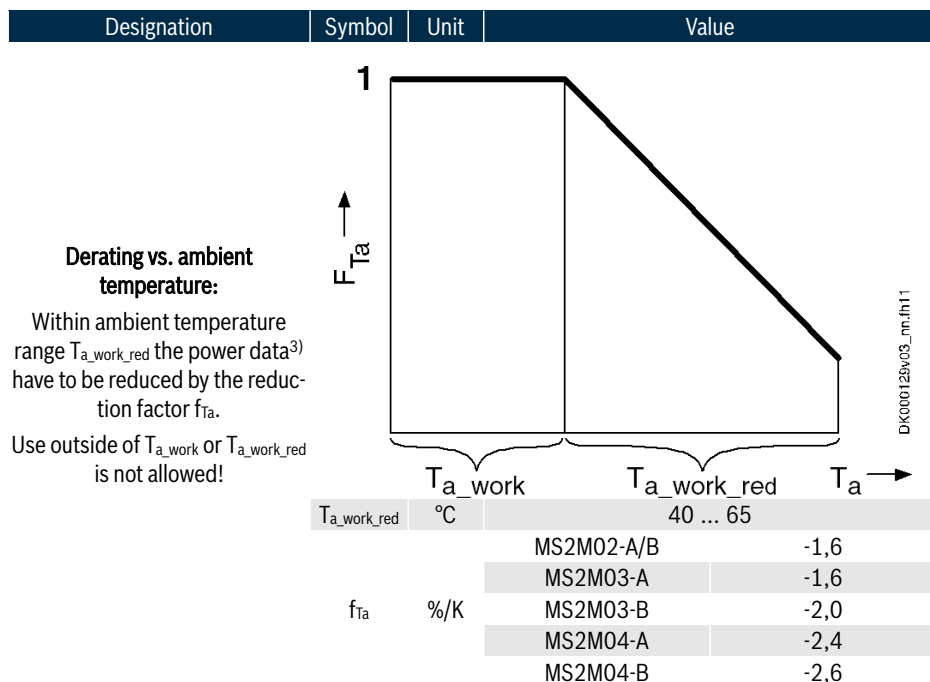
5.2 Ambient and application conditions

MS2M Servomotors are designed for use in machines and facilities.

Ambient and application conditions

Table 5: Ambient and conditions on use

Designation	Symbol	Unit	Value
Protection class (IEC60529)			IP65
Use in scope of application of CSA / UL			Only allowed for use in NFPA-79 applications.
Allowed installation positions.			IM B5
Definition of installation positions: refer to keyword "Installation positions"			IM V1 IM V3
Installation altitude	h _{nenn}	m	1000



5.3 Compatibility with foreign materials

All Rexroth controls and drives are developed and tested according to the state-of-the-art technology.

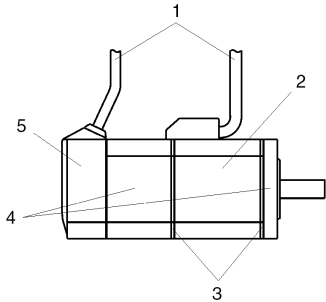
As it is impossible to follow the continuing development of all materials (e.g. lubricants in machine tools) which may interact with the controls and drives, it cannot be completely ruled out that any reactions with the materials we use might occur.

For this reason, before using the respective material a compatibility test has to be carried out for new lubricants, cleaning agents etc. and our housings/materials.

5.4 Materials

Materials

Table 6: Materials

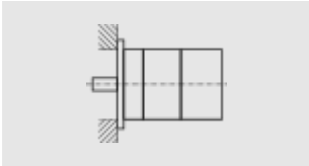
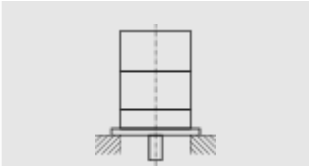
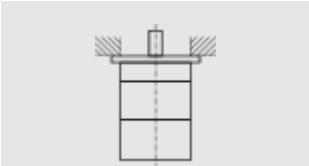
	No.	Material
	1	Polyvinyl chlorid resin (Oil resistance: according to standard" JIS C 3005"; test conditions: Oil temperature: 70 °C; Test duration (cable within oil): 4 hours; oil: Machine oil 46 (from GENERAL))
	2	Aluminum; eloxed
	3	Rubber
	4	Die-cast aluminum; blanc
	5	Polyamid 46 (Nylon 46)

motor_materialien.fh11

Operating conditions

5.5 Type of construction and installation positions

Table 7: Allowed installation types acc. to EN 60034-7:1993

Motor design B05		
IM B5	IM V1	IM V3
		
Flange attachment on the drive side of the flange	Flange attachment on the drive side of the flange, drive side facing down	Flange attachment on the drive side of the flange, drive side facing up

NOTICE

Motor damage due to penetration of liquids!

If motors are mounted according to IM V3, fluid present at the output shaft over a prolonged time may penetrate and cause damage to the motors.
Ensure that fluid cannot be present at the output shaft.

5.6 Installation space

Self-cooling of the motor should not be prevented due to the installation situation.

5.7 Output shaft

5.7.1 Shaft end

Plain shaft

MS2M motors offer a non-positive shaft-hub connection without play with excellent running smoothness. Use clamping sets, clamping sleeves or tensioning elements to couple the machine elements to be driven.

Labeling within motor type: MS2M...-.....-...H.

Shaft with keyway

MS2M motors with keyway allow form-locking transmission of torques with constant direction and low requirements on the shaft-hub connection. The keyway is not in the scope of delivery.

Labeling within motor type: MS2M.....-.....-...-...L

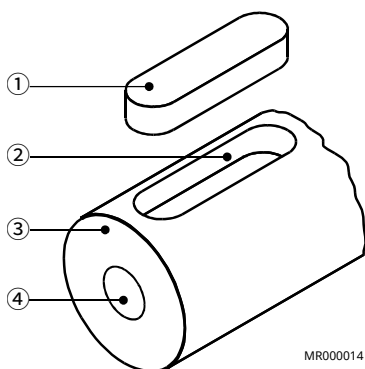


Fig. 2: MS2M Output shaft with keyway

- ① Key
- ② Keyway
- ③ Motor shaft
- ④ Centering hole

In addition, the machine elements to be driven must be secured axially via the frontal centering hole.

NOTICE

Damage to property due to reversing mode!

Shaft damage! In case of intense reversing operation, the seat of the fitting spring may deflect. Increasing deformations can lead to a break of shaft.

Preferably, use plain output shafts.

5.8 Bearing and shaft load

During operation, radial and axial forces act on the motor shaft and the motor bearings. The design of the machine and the shaft-side mounting of drive elements must be coordinated to ensure that the specified load limits are not exceeded.

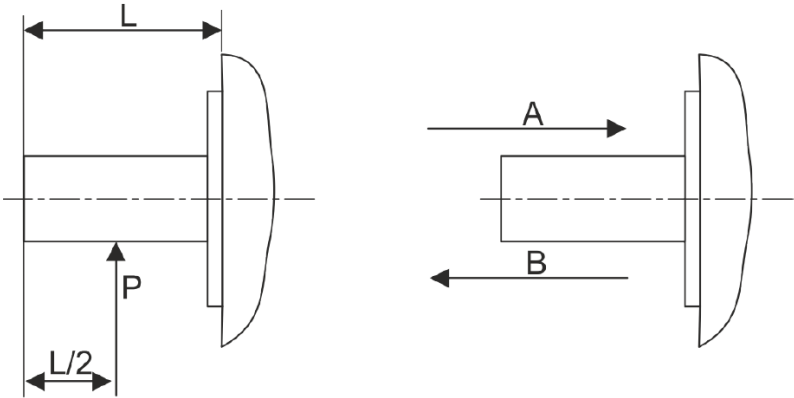


Fig. 3: Parameter for shaft load

- L Shaft length
- P Point of application of radial force
- A, B Direction of axial force

The following table shows the allowed shaft load of single motors.

Allowed radial / axial force

Table 8: Allowed radial / axial force

Motor	Radial force (N)	At assembly		During operation	
		Axial force (N)		Radial force (N)	Axial force (N)
		Direction A	Direction B		
MS2M02-A	147	88	117.6	68.6	58.8
MS2M02-B					
MS2M03-A	392	147	196	245	98.0
MS2M03-B					
MS2M04-A	686	294	392	392	147
MS2M04-B					

In the case of adjusted point of application of radial force, calculate the allowed radial force according to the following formula.

Radial force dependend from the point of application of force

Table 9: Radial force dependend from the point of application of force

Motor	Radial force dependend from the point of application of force
MS2M02-A0FNN	$P = \frac{3533}{L+39}$
MS2M02-B0FNN	$P = \frac{4905}{L+59}$
MS2M03-A0FNN	$P = \frac{14945}{L+46}$
MS2M03-B0FNN	$P = \frac{19723}{L+65,5}$
MS2M04-A0FNN	$P = \frac{37044}{L+77}$
MS2M04-B0FNN	$P = \frac{43198}{L+92,7}$

Lifetime of motor bearing



When operating MS2M within the limits specified for radial and axial load, the nominal bearing lifetime is **$L_{10h} = 20,000$ operating hours**.

When exceeding the allowed radial force, the bearing lifetime is reduced to:

$$L_{10h} = \left(\frac{F_{\text{radial}}}{F_{\text{radial_lst}}} \right)^3 \times 20000$$

Fig. 4: Calculating the bearing lifetime L_{10h} if the allowed radial force F_{radial} is exceeded.

L_{10h} Bearing service life (according to ISO 281, Version 12/1990)

F_{radial} Determined allowed radial force in N (Newton)

$F_{\text{radial_act}}$ Actually acting radial force in N (Newton)



The actually acting radial force $F_{\text{radial_act}}$ may never be higher than the maximum allowed radial force $F_{\text{radial_max}}$.

5.9 Attachment of drive elements

Please observe the following notes during assembly of drive element onto the output shaft.

Gearbox mounting on motors

If transmissions are attached to motors, the thermal coupling of the motors to the machine or system design changes.

Depending on the type of transmission, the amount of heat generated at the transmission varies. In any case, the heat dissipation of the motor via the flange is reduced when the transmission is attached. This must be taken into account when planning the system.

In order not to thermally overload motors when using transmissions, it is necessary to reduce the specified performance data.

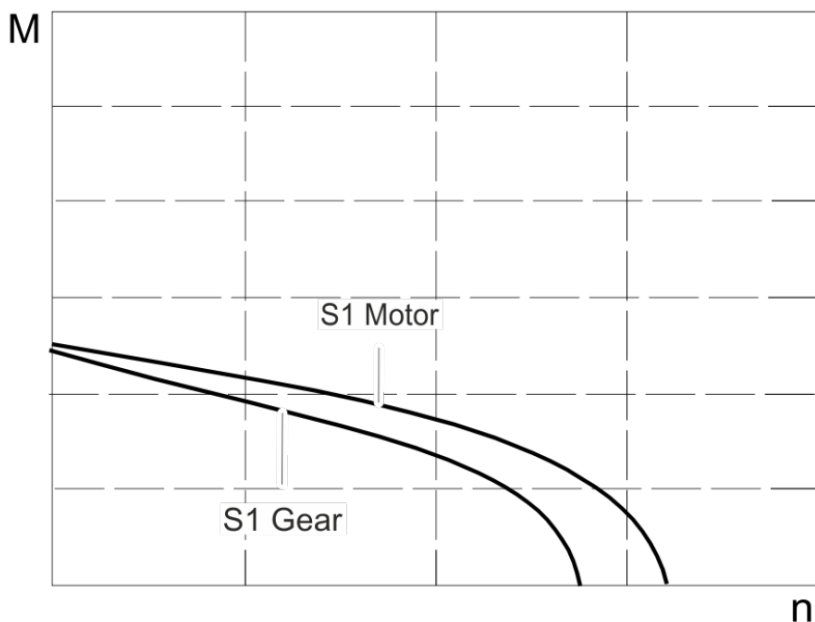


Fig. 5: S1 characteristic curve gearboxes



The torques specified in the motor characteristics must be reduced by approx. **10-20%** when attaching transmissions.

Observe all other notes and requirements in the documentation for the transmissions used.

Over-determined bearing

When assemble drive elements, avoid an over-determined bearing, because the indispensable existing tolerances lead to additional forces on the bearing of the motor shaft and, if necessary, to a significantly reduced bearing life.



If an over-determined arrangement cannot be avoided, please contact Bosch Rexroth.

Couplings

The machine construction and the drive elements used must be carefully adapted to the motor type so as to make sure that the load limits of the shaft and the bearing are not exceeded.



When mounting extremely rigid couplings, an unacceptably high load on the shaft and bearing can occur due to a radial force which constantly changes the angular position.

Bevel pinion or helical drive pinions

Due to thermal effects, the flange end of the output shaft can shift by up to 0.6 mm in relation to the motor housing. When using helical drive pinions or bevel gear pinions mounted directly on the output shaft, this change in length leads to

- A shift in the position of the axis, if the driving pinions are not axially fixed on the machine side,
- A thermally dependent component of the axial force, if the driving pinions are axially fixed on the machine side. There is a risk that the maximum permissible axial force will be exceeded or that the backlash within the gearing will increase excessively.
- Damage to the B-side motor fixed bearing due to exceeding the maximum permissible axial force.



Preferably use self-bearing drive elements which are connected to the motor shaft via axially compensating couplings!

6 Features and functions

6.1 Motor encoder K

Data sheet - Encoder

Table 10: Data sheet - Encoder MS2M

Designation	Symbol	Unit	Encoder (MS2M)	
Battery external			-	Yes
Encoder design	-	-	Singleturn absolute	Multiturn absolute
Distinguishable revolutions	-	-	1	65536
Incremental signals	-	-	without	
Resolution of encoder	-	-	23 bit	23 + 16 bit
System accuracy typical/maximum	-	“	±170 / ±240	
Maximum encoder speed		min ⁻¹	6000	
Supply voltage	VCC _{Encoder}	V	4.75 ... 5.25	
Max. current consumption	I _{Encoder}	mA	80	

“ Angular seconds

Operate the absolute value encoder without any other accessory as a singleturn encoder. It can be operated as a multiturn encoder variant by using a battery-box which is available as accessory.

Singleturn absolute value encoder

The singleturn absolute value encoder serves for absolute indirect position detection within 1 motor revolution. For this encoder variant, the absolute axis position gets lost after switching-off the voltage.

Multiturn absolute value encoder

The multiturn absolute value encoder serves for absolute indirect position detection within 65536 motor revolutions. The absolute axis position at this encoder variant is retained by the battery buffering even after switching-off the voltage. If the motor is disconnected from the battery-box, the information about absolute axis position gets lost after about 1 minute. It replaces a separate absolute value encoder at the motor.

Details for multiturn signals

For using the multiturn option, the buffering memory via a necessary battery is necessary. Therefore, the following accessory must be used:

Table 11: Battery-box

Designation	Order number	Length
SUP-E02-MSM-BATTERYBOX-L010	R911346063	1000 mm
SUP-E02-MSM-BATTERYBOX-L030	R911346065	3000 mm
SUP-E02-MSM-BATTERYBOX-NNNN	R911346084	250 mm

Table 12: Spare battery

Designation	Order number
SUP-E02-MSM-BATTERY	R911369925

6.2 Holding brakes

The following general details are binding for all MS2M The frame size depending data of the holding brakes are specified in chapter "Technical data"

- The values specified in the technical data are typical values excluding holding torque, trip voltage and rated voltage.
- The backlash for this brake should not exceed 2° at the time of shipping.
- The power supply of the holding brake is done externally.
- The maximum number of acceleration and braking with the highest allowed angular acceleration: 10 million

7 MS2M Type code



The table below illustrates the basic structure of the type code. Our sales representative will help you with the current status of available versions.

Table 13: MS2M type code structure

Example:	M	S	2	M	0	2	-	A	0	F	N	N	-	K	M	D	H	0		
	①		②		③④		⑤		⑥		⑦⑧		⑨⑩		⑪					
Field	Options																	Available frame size ②		
①	Product: MS2M																			
②	Frame size:																			
	02 03 04																			
	Frame length:																			
③	A																	02	03	04
	B																			
④	Rotor inertia:																			
	0 = Low rotor inertia																	02	03	04
⑤	Winding:																			
	FN = 3,000 1/min																	02	03	04
⑥	Cooling mode:																			
	N = Self-cooling																	02	03	04
⑦	Encoder:																			
	K = Optical encoder, 23 bit																	02	03	04
⑧	Encoder design:																			
	M = Single- / Multiturn ^{a)}																	02	03	04
⑨	Leadwire cable:																			
	D = Double cable, metal																	02	03	04
	Shaft:																			
⑩	H = Plain, without shaft sealing ring																	02	03	04
	L = Keyway, without shaft sealing ring																			
	Holding brake:																			
⑪	0 = Without holding brake																	02	03	04
	1 = Holding brake, electrically released																			

^{a)} For Multiturn the accessory "SUP-E02-MSM-BATTERXBOX-sm" is required

8 Technical data

8.1 MS2M02 Technical data

8.1.1 Self-cooling

MS2M02-Technical data

Designation	Symbol	Unit	MS2M02-AOFNN	MS2M02-BOFNN
Cooling mode acc. to EN 60034-6		-	IC00	
Listed acc. to UL standard		-	UL 1004; ANSI UL 840	
Listed acc. to CSA standard		-	CSA-C22.2 No.100	
UL-Files			E335445	

Electrical parameters

Rated power ¹⁾	P _N	kW	0.05	0.1
Rated torque ¹⁾	M _N	Nm	0.16	0.32
Rated current	I _{N(eff)}	A	1.1	
Rated speed	n _N	min ⁻¹	3000	
Maximum torque ¹⁾	M _{max}	Nm	0.48	0.95
Maximum current	I _{max(eff)}	A	3.32	
Maximum speed	n _{max}	min ⁻¹	6000	
Torque constant at 20 °C ¹⁾	K _{M,N}	Nm/A _(rms)	0.16	0.29
Voltage constant per phase at 20 °C ¹⁾	K _{EMK_1000}	V _(rms) /min ⁻¹	5.60×10 ⁻³	10.00×10 ⁻³
Phase resistance at 20 °C ²⁾	R	Ohm	4.41	6.40
Phase inductance	L	mH	4.50	7.80
Discharge capacity of the component	C _{dis}	nF	0.30	0.64
Number of pole pairs	p	-	5	

Mechanical parameters

Moment of inertia of rotor ³⁾	J _{rot}	kg*m ²	0.0000026(29)	0.0000048(51)
Mass ³⁾	m	kg	0.32 (0.53)	0.47 (0.68)
Thermal class (EN 60034-1)	T.CL.	-	155(F)	
Sound pressure level	L _P	dB[A]	< 70	

1) Tolerance: ±10 %

2) Tolerance: ±7 %

3) (...) Motors with holding brake 1, 2, ...

MS2M02 Holding brakes - Technical data (optional)

Designation	Symbol	Unit	Holding brake (MS2M02)
Holding torque	M ₄	Nm	0.29
Rated voltage ¹⁾	U _N	V	24
Rated current	I _N	A	0.30
Maximum connection time	t ₁	ms	20

Designation	Symbol	Unit	Holding brake (MS2M02)
Maximum disconnection time	t_2	ms	35
Moment of inertia of the holding brake	J_{br}	$\text{kg}\cdot\text{m}^2$	0.0000002
Switching cycles within standstill			2 Mio
1) Tolerance: $\pm 5\%$			

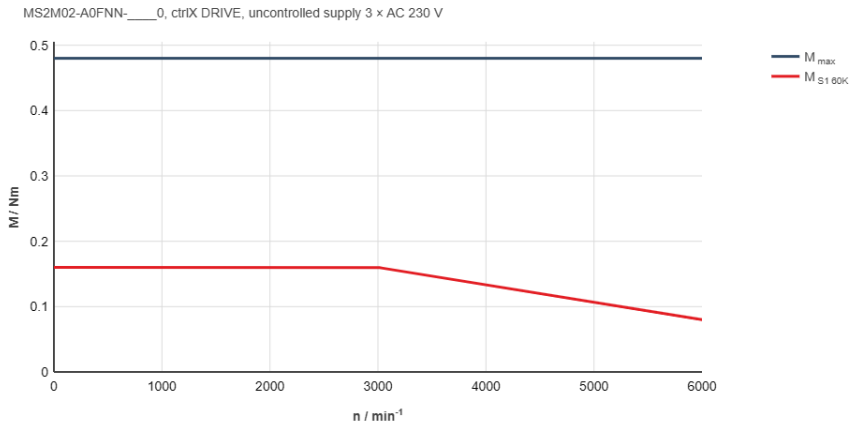


Fig. 6: MS2M02-A0FNN Speed-torque characteristic curves
* MS2M02-A0xxx with XCS2-F 5A(Servo 400ms)at 3x 230V(+0%)/8kHz

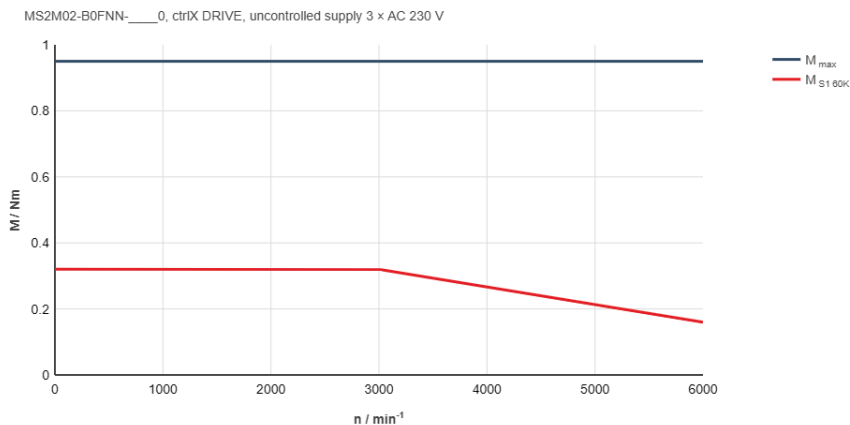


Fig. 7: MS2M02-B0FNN Speed-torque characteristic curves

* MS2M02-B0xxx with XCS2-F 5A(Servo 400ms)at 3x 230V(+/-0%)/8kHz

8.1.2 MS2M02 Dimensions

Table 14: MS2M02-A0FNN-..H., MS2M02-B0FNN-..H.

Option: „L“

Motor / size	A	B	C	D	E	F	G	H	J	K
MS2M02-A0...-....0 □38	72	25	ø8 ^{h6}	ø30 ^{h7}	ø45±0.20	ø3.4	51	24	20.8	
MS2M02-A0...-....1 □38	102	25	ø8 ^{h6}	ø30 ^{h7}	ø45±0.20	ø3.4	51	24	20.8	
MS2M02-B0...-....0 □38	92	25	ø8 ^{h6}	ø30 ^{h7}	ø45±0.20	ø3.4	51	24	40.8	
MS2M02-B0...-....1 □38	122	25	ø8 ^{h6}	ø30 ^{h7}	ø45±0.20	ø3.4	51	24	40.8	
Motor / size	L	M	N	P	Q	R	S	T	U	
MS2M02-A0...-....0	27	3	6	3h9 (groove p9)	14	9.2	M3 (6 deep)	200	230	
MS2M02-A0...-....1	27	3	6	3h9 (groove p9)	14	9.2	M3 (6 deep)	200	230	
MS2M02-B0...-....0	27	3	6	3h9 (groove p9)	14	9.2	M3 (6 deep)	200	230	
MS2M02-B0...-....1	27	3	6	3h9 (groove p9)	14	9.2	M3 (6 deep)	200	230	

8.2 MS2M03 Technical data

8.2.1 Self-cooling

MS2M03-Technical data

Designation	Symbol	Unit	MS2M03-AOFNN	MS2M03-BOFNN
Cooling mode acc. to EN 60034-6		-	IC00	
Listed acc. to UL standard		-	UL 1004; ANSI UL 840	
Listed acc. to CSA standard		-	CSA-C22.2 No. 100	
UL-Files			E335445	
Electrical parameters				
Rated power ¹⁾	P _N	kW	0.2	0.4
Rated torque ¹⁾	M _N	Nm	0.64	1.27
Rated current	I _{N(eff)}	A	1.50	2.40
Rated speed	n _N	min ⁻¹	3000	
Maximum torque ¹⁾	M _{max}	Nm	1.91	3.82
Maximum current	I _{max(eff)}	A	4.61	7.23
Maximum speed	n _{max}	min ⁻¹	6000	
Torque constant at 20 °C ¹⁾	K _{M,N}	Nm/A _(rms)	0.42	0.52
Voltage constant per phase at 20 °C ¹⁾	K _{EMK_1000}	V _(rms) /min ⁻¹	14.60×10 ⁻³	18.30×10 ⁻³
Phase resistance at 20 °C ²⁾	R	Ohm	2.78	1.74
Phase inductance	L	mH	13.90	9.80
Discharge capacity of the component	C _{dis}	nF	0.51	0.98
Number of pole pairs	p	-	5	
Mechanical parameters				
Moment of inertia of rotor ³⁾	J _{rot}	kg*m ²	0.000014(17)	0.000027(30)
Mass ³⁾	m	kg	0.82 (1.3)	1.2(1.7)
Thermal class (EN 60034-1)	T.CL.	-	155(F)	
Sound pressure level	L _p	dB[A]	< 70	

1) Tolerance: ±10 %

2) Tolerance: ±7 %

3) (...) Motors with holding brake 1, 2, ...

MS2M03-A0FNN Holding brakes - Technical data (optional)

Designation	Symbol	Unit	Holding brake (MS2M03)
Holding torque	M ₄	Nm	1.27
Rated voltage ¹⁾	U _N	V	24
Rated current	I _N	A	0.36
Maximum connection time	t ₁	ms	15
Maximum disconnection time	t ₂	ms	50

Designation	Symbol	Unit	Holding brake (MS2M03)
Moment of inertia of the holding brake	J_{br}	$kg \cdot m^2$	0.0000018
Switching cycles within standstill			2 Mio
1) Tolerance: $\pm 5\%$			

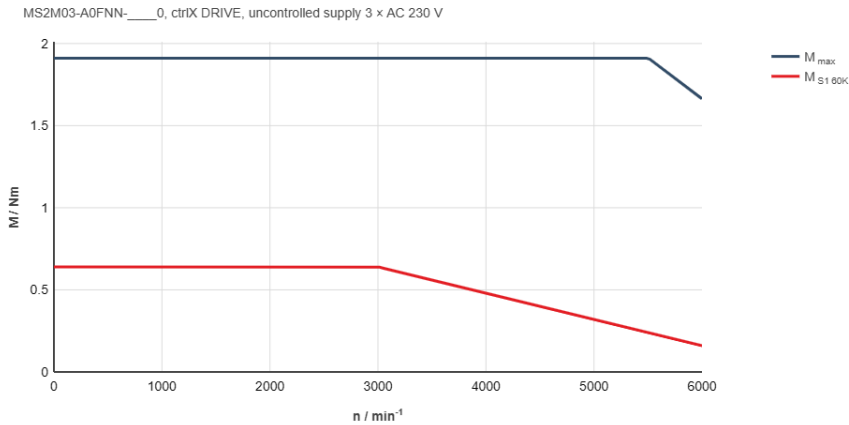


Fig. 8: MS2M03-A0FNN Speed-torque characteristic curves

* MS2M03-A0FNN with XCS2-F 7A (Servo 400ms) at 3x 230V(+/-0%)/8kHz

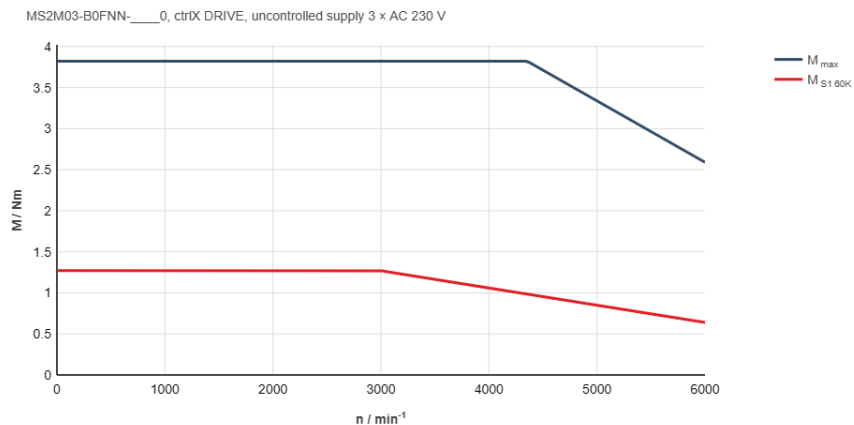
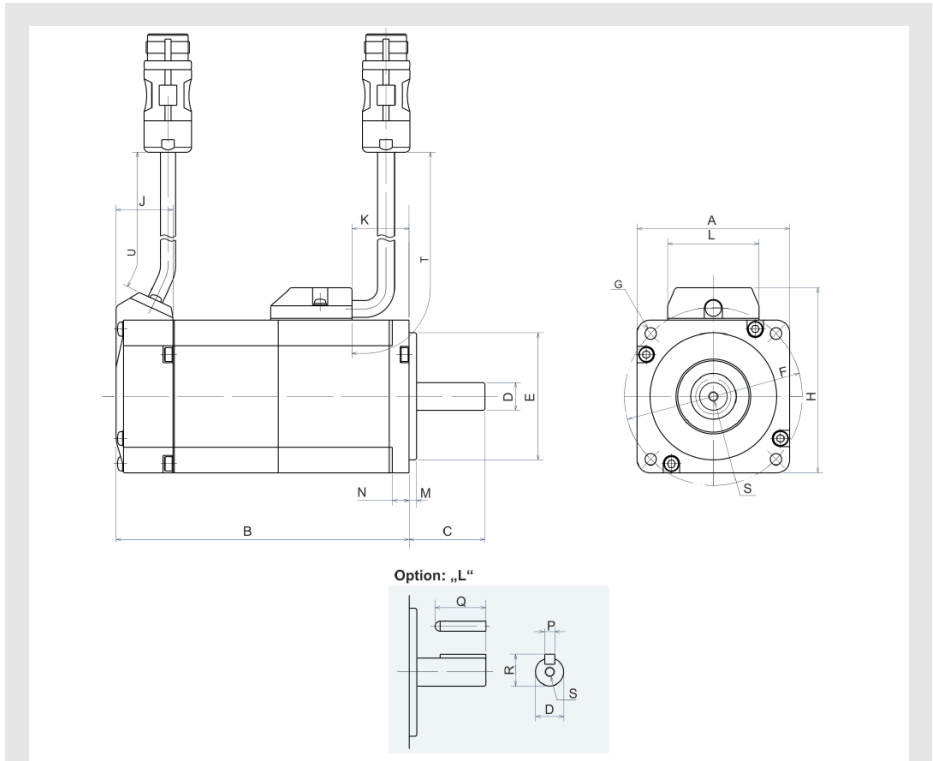


Fig. 9: MS2M03-B0FNN Speed-torque characteristic curves

* MS2M03-B0FNN with XCS2-F 10A (Servo 400ms) at 3x 230V(+/-0%)/8kHz

8.2.2 MS2M03 Dimensions

Table 15: MS2M03-A0FNN-..H.,MS2M03-B0FNN-..H.



Motor / size	A	B	C	D	E	F	G	H	J	K
MS2M03-A0...-....0	□60	79.5	30	ø11 ^{h6}	ø50 ^{h7}	ø70±0.20	ø4.5	73	22.5	22.5
MS2M03-A0...-....1	□60	116	30	ø11 ^{h6}	ø50 ^{h7}	ø70±0.20	ø4.5	73	22.5	22.5
MS2M03-B0...-....0	□60	99	30	ø14 ^{h6}	ø50 ^{h7}	ø70±0.20	ø4.5	73	22.5	42
MS2M03-B0...-....1	□60	135.5	30	ø14 ^{h6}	ø50 ^{h7}	ø70±0.20	ø4.5	73	22.5	42
Motor / size	L	M	N	P	Q	R	S	T	U	
MS2M03-A0...-....0	36	3	6.5	4h9 (groove p9)	20	12.5	M4 (8 deep)	200	220	
MS2M03-A0...-....1	36	3	6.5	4h9 (groove p9)	20	12.5	M4 (8 deep)	200	220	
MS2M03-B0...-....0	36	3	6.5	5h9 (groove p9)	25	16	M5 (10 deep)	200	220	
MS2M03-B0...-....1	36	3	6.5	5h9 (groove p9)	25	16	M5 (10 deep)	200	220	

8.3 MS2M04 Technical data

8.3.1 Self-cooling

MS2M04-Technical data

Designation	Symbol	Unit	MS2M04-A0FNN	MS2M04-B0FNN
Cooling mode acc. to EN 60034-6		-	IC00	
Listed acc. to UL standard		-	UL 1004; ANSI UL 840	
Listed acc. to CSA standard		-	CSA-C22.2 No. 100	
UL-Files			E335445	

Electrical parameters

Rated power ¹⁾	P _N	kW	0.75	1
Rated torque ¹⁾	M _N	Nm	2.39	3.18
Rated current	I _{N(eff)}	A	4.1	5.7
Rated speed	n _N	min ⁻¹	3000	
Maximum torque ¹⁾	M _{max}	Nm	7.16	9.55
Maximum current	I _{max(eff)}	A	12.3	17.13
Maximum speed	n _{max}	min ⁻¹	6000	
Torque constant at 20 °C ¹⁾	K _{M,N}	Nm/A _(rms)	0.59	
Voltage constant per phase at 20 °C ¹⁾	K _{EMK_1000}	V _(rms) /min ⁻¹	20.7×10 ⁻³	20.6×10 ⁻³
Phase resistance at 20 °C ²⁾	R ₁₂	Ohm	0.57	0.39
Phase inductance	L ₁₂	mH	5.10	3.70
Discharge capacity of the component	C _{dis}	nF	0.97	1.31
Number of pole pairs	p	-	5	

Mechanical parameters

Moment of inertia of rotor ³⁾	J _{rot}	kg*m ²	0.000096(106)	0.000126(136)
Mass ³⁾	m	kg	2.3 (3.1)	2.8(3.6)
Thermal class (EN 60034-1)	T.CL.	-	155(F)	
Sound pressure level	L _P	dB[A]	< 70	

1) Tolerance: ±10 %

2) Tolerance: ±7 %

3) (...) Motors with holding brake 1, 2, ...

MS2M04-A0FNN Holding brakes - Technical data (optional)

Designation	Symbol	Unit	Holding brake (MS2M04-A0)	Holding brake (MS2M04-B0)
Holding torque	M ₄	Nm	2.45	3.80
Rated voltage ¹⁾	U _N	V	24	
Rated current	I _N	A	0.42	
Maximum connection time	t ₁	ms	20	
Maximum disconnection time	t ₂	ms	70	

Designation	Symbol	Unit	Holding brake (MS2M04-A0)	Holding brake (MS2M04-B0)
Moment of inertia of the holding brake	J _{br}	kg*m ²	0.0000075	
Switching cycles within stand- still			2 Mio	
1) Tolerance: ±5 %				

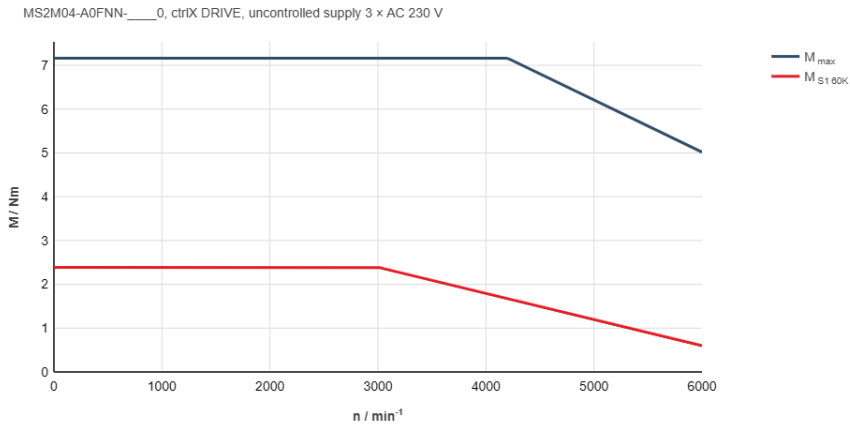


Fig. 10: MS2M04-A0FNN Speed-torque characteristic curves

* MS2M04-A0FNN with XCS2-F 19A (Servo 400ms) at 3x 230V(+0%)/8kHz

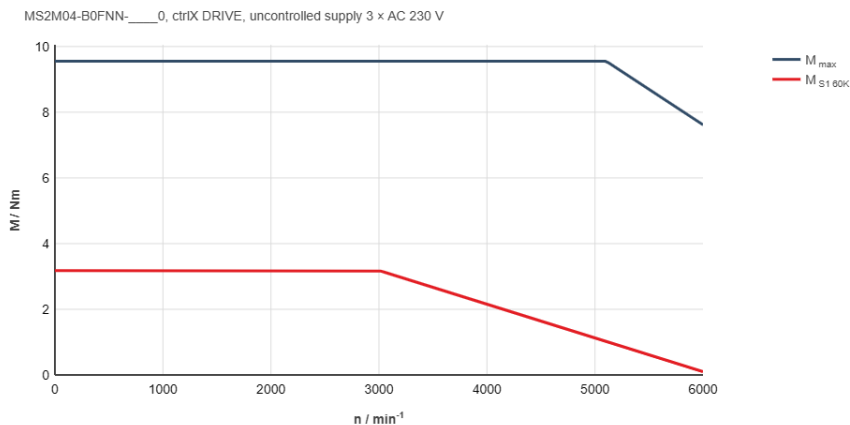
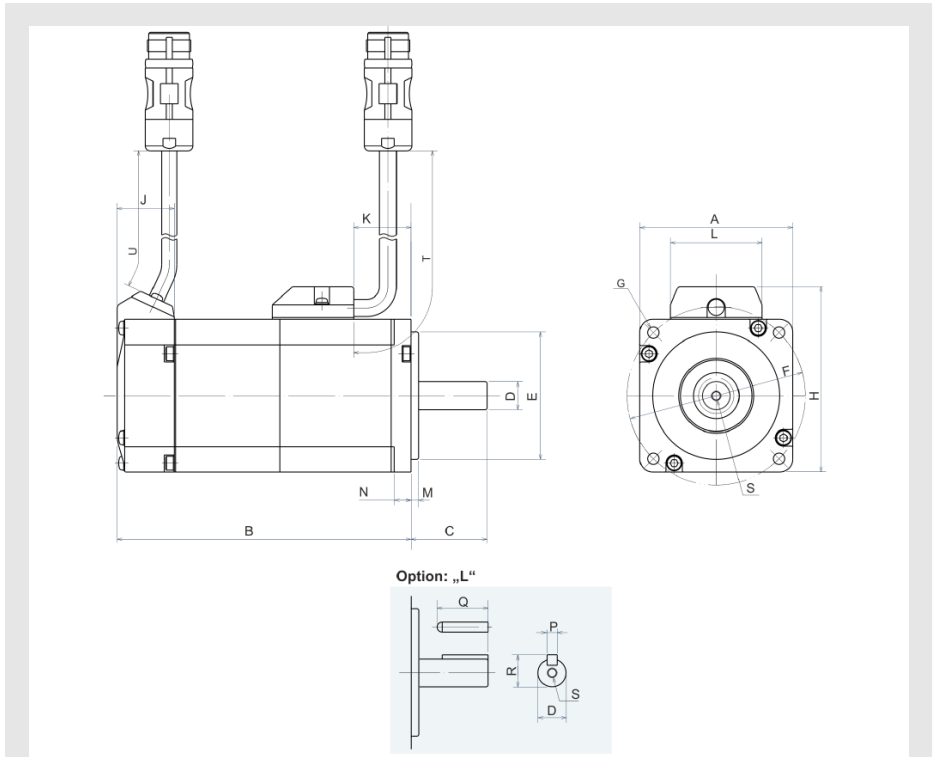


Fig. 11: MS2M04-B0FNN Speed-torque characteristic curves

* MS2M04-B0FNN with XCS2-F 28A (Servo 400ms) at 3x 230V(+/-0%)/8kHz

8.3.2 MS2M04 Dimensions

Table 16: MS2M04-A0FNN-..H.



Motor / size	A	B	C	D	E	F	G	H	J	K
MS2M04-A0...-.....0	□80	112. 2	35	ø19 ^{h6}	ø70 ^{h7}	ø90±0.20	ø6	93	22.5	52.2
MS2M04-A0...-.....1	□80	149. 2	35	ø19 ^{h6}	ø70 ^{h7}	ø90±0.20	ø6	93	22.5	52.2
MS2M04-B0...-.....0	□80	127. 2	35	ø19 ^{h6}	ø70 ^{h7}	ø90±0.20	ø6	93	22.5	67.2
MS2M04-B0...-.....1	□80	164. 2	35	ø19 ^{h6}	ø70 ^{h7}	ø90±0.20	ø6	93	22.5	67.2

Motor / size	L	M	N	P	Q	R	S	T	U
MS2M04-A0...-.....0	36	3	8	6h9 (groove p9)	25	21.5	M5 (10 deep)	200	220
MS2M04-A0...-.....1	36	3	8	6h9 (groove p9)	25	21.5	M5 (10 deep)	200	220

Technical data

MS2M04-B0...-....0	36	3	8	6h9 (groove p9)	25	21.5	M5 (10 deep)	200	220
MS2M04-B0...-....1	36	3	8	6h9 (groove p9)	25	21.5	M5 (10 deep)	200	220

9 Flange fastening

The screw connection must be adjusted to the installation situation (screw-length, property class, screw-in depth, material, ...). The dimensioning of the screw connection is in the responsibility of the customer.

To attach the motors properly and safely to the machine, Bosch Rexroth recommends the following screws and washers for attachment.

Tightening torque of mounting screws

Table 17: Mounting screws: MS2M Motors

Hole □ [mm]	Screw 8.8 DIN EN ISO 4762 DIN EN ISO 4014	Tightening torque M _A [Nm] at μ _K = 0.12	Washer DIN EN ISO 28738
3.4	M3 × 16	1.3	-
4.5	M4 × 20	3.1	-
6	M5 × 20	6.1	-



The screwed connections must be able to take up both the force due to the weight of the motor and the forces acting during operation.

If the screws and washers used do not comply with this recommendation, the property class of the screws and the hardness class must be equivalent in order to transmit the required tightening torques.

MS2M motors are produced for flange mounting (B05). Details on the mounting holes are given in the corresponding dimension sheet.

10 Electrical connection

10.1 Circuit diagram

10.1.1 MS2M connection plan

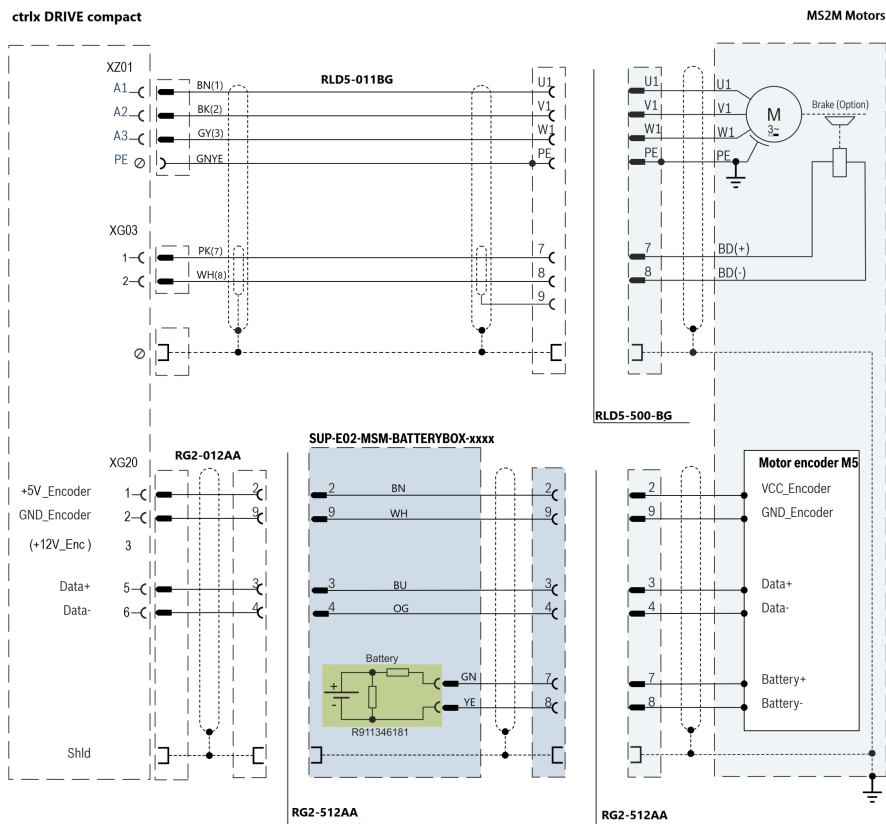


Fig. 12: MS2M connection plan

10.2 Electrical connection "D" cable connection circular connector M17

SpeedCon quick lock IP67

The connections for power and encoder MS2M are done via flexible connection lines with circular connector M17 (IP67) and Speedcon fastener.

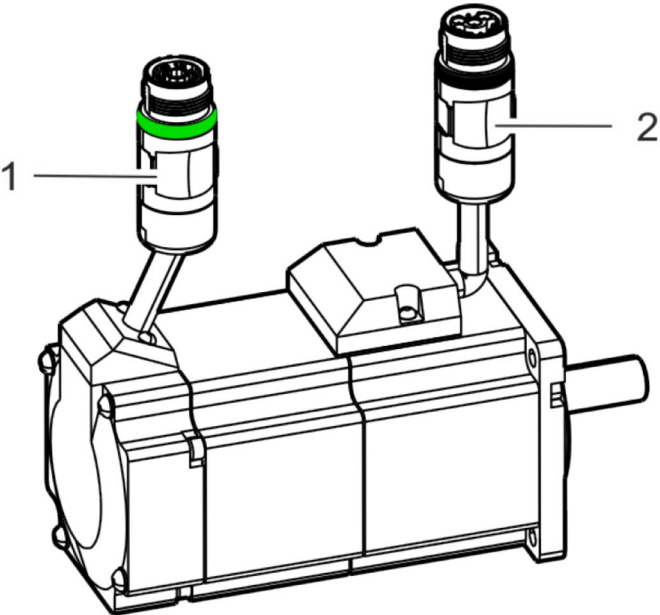


Fig. 13: MS2M SpeedCon motor connection

- 1 Encoder connection (green code ring)
- 2 Power connection (black code ring)

For the length of the flexible connection line, please refer to the following table.

Table 18: MS2M motors: Length of connection line

Motor	Length connection line (" M " cable connection circular connetor M17)		
	Singleturn	Multiturn + Battery box	Power
MS2M02	RG2-012AA (RG2-512AA)	RG2-012AA + SUP-E02-MSM- BATTERYBOX-xxxx (+ RG2-512AA)	RLD5-011BG (RLD5-500-BG)
MS2M03			
MS2M04			

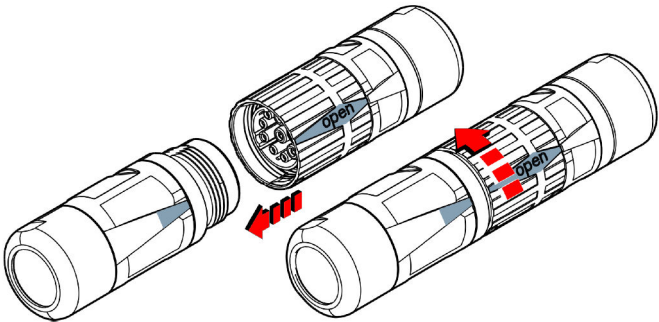


Fig. 14: SpeedCon quick lock

Rack the cable connector in “open” position and “manually” tighten the power connector with a rotation by approx. 90°.

10.3 Ready-made connecting cable

MS2M Power cable

Power Cable	
Motor	Controller
	XCS2-W0005F
	XCS2-W0007F
	XCS2-W0010F
	XCS2-W0019F
	XCS2-W0028F
MS2M02-A0	RLD5-011BG (RLD5-500-BG)
MS2M02-B0	
MS2M03-A0	
MS2M03-B0	
MS2M04-A0	
MS2M04-B0	

MS2M Encoder cable

Encoder Cable			
Motor	Controller		
			XCS2-W0005F
			XCS2-W0007F
			XCS2-W0010F
			XCS2-W0019F
			XCS2-W0028F
	Singleturn	Multiturn + Battery connector	Multiturn + Battery box
MS2M02-A0			
MS2M02-B0			RG2-012AA +
MS2M03-A0	RG2-012AA	RG2-018AA	
MS2M03-B0	(RG2-512AA)	(RG2-512AA)	SUP-E02-MSM-BATTERYBOX-xxxx
MS2M04-A0			(+ RG2-512AA)
MS2M04-B0			

Electrical connection

Preassembled power cables, encoder cables and hybrid cables can be provided for the motors. Motors with double cable technology are connected with a power and an encoder cable each.

The maximum cable length is 30 meters. The maximum cable length can be limited in case of certain motor control unit combinations. Please refer to the documentation about the control unit.

Please contact your sales partner in case of questions about available connection cables.

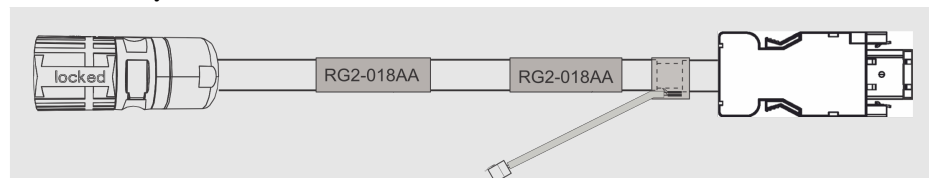
10.4 Battery Connector Cable RG2-018AA

Use

When operating MS2M motors with absolute value encoder, the battery connector serves for buffering the encoder data when disconnecting the voltage.

Scope of delivery

Table 19: Battery Connector Cable



Cable type

RG2-018AA (RB18362940)

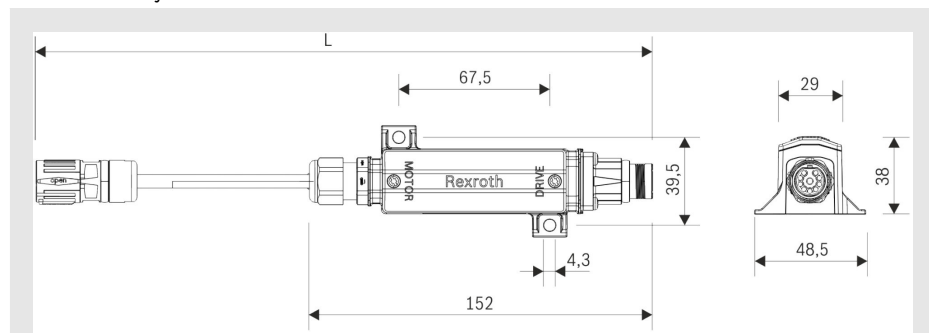
10.5 Battery box SUP-E02-MSM-BATTERYBOX-****

Use

When operating MS2M motors with absolute value encoder, the battery box serves for buffering the encoder data when disconnecting the voltage.

Scope of delivery

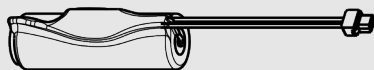
Table 20: Battery box dimensions



Type	L
SUP-E02-MSM-BATTERYBOX-NNNN	250 mm
SUP-E02-MSM-BATTERYBOX-L010	1000 mm
SUP-E02-MSM-BATTERYBOX-L030	3000 mm

Battery box complete with:

Table 21: Battery



Type	PRM1-03V6-2600C-D2-LITH-ZNR-50; 3.6 V; 2600 mAh; Lithium; Lifetime: up to 10 years, dependent from stress and environmental temperature.
------	--

- When the "SUP-E02-MSM-BATTERYBOX-xxxx" battery box is delivered, it is ready to use.
- Recommendation Battery change after 5 years
- Order number spare battery **R911369925** SUP-E02-MSM-BATTERY

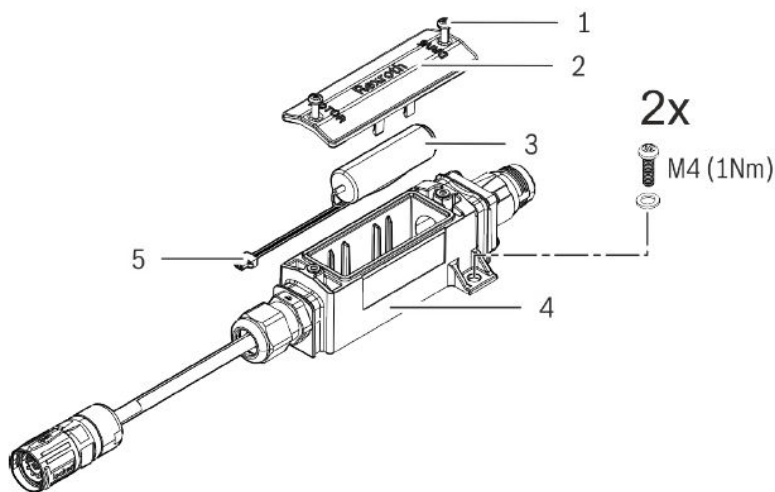


Fig. 15: Components of a battery box

- 1 Housing screw (M_A 0.7 Nm)
- 2 Housing lid
- 3 Battery
- 4 Housing
- 5 Battery connector

For fastening the battery box, use 2xM4 mounting screws mit washer and screw locking. The fastening screws are not included in the scope of delivery and must be customized onto the required mounting situation. Tightening torque of fastening screws 1 Nm.

Cabling

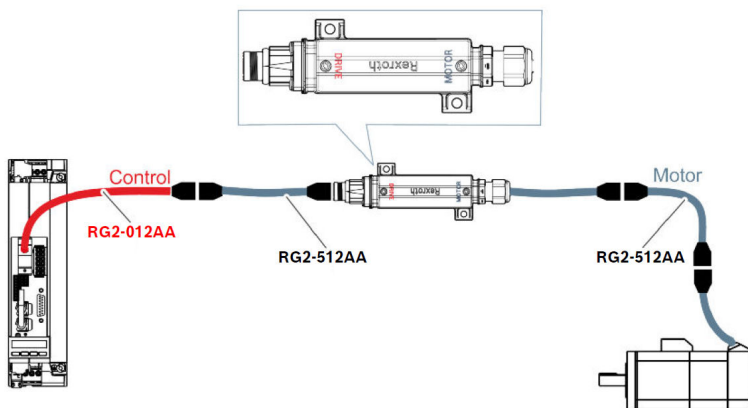


Fig. 16: Battery box cabling

RG2-012AA Encoder cable

RG2-512AA Extension cable (optional)

10.6 Shielding concept

Converter-fed drives can generate high-frequency discharge currents in motor cables and motors. By using shielded cables and a large-area, low-impedance connection of the shield connections at motor and controller, impedances can be minimized and the discharge currents can be lead from the motor to the controller. Ready-made cables of Bosch Rexroth are designed and tested according to the requirements of installed motor components.

For more information about Electromagnetic compatibility (EMC), refer to the project planning manual of the respective drive system.

11 Ambient conditions

11.1 Transport

The motors must be transported in their original package taking classes 2K11, 2B1, 2C1, 2S5, 2M4 specified acc. to DIN EN 60721-3-2 into account.

Deviations and enhancements according to the following table must be observed.

Table 22: Deviations and enhancements of classification (DIN EN IEC 60721-3-2)

Transport	
Ambient temperature	-25 ... +70 °C
Relative humidity	5 ... 75 %



Remark

Before transport, discharge the liquid coolant from liquid-cooled motors to avoid frost damage.

11.2 Storage

General storage conditions

Store the motors in their original packaging in a dry, dust-free, vibration-free and light-protected place without direct solar radiation. Please observe classes 1K21, 1B1, 1C1, 1S10, 1M11 specified for storage acc. to DIN EN 60721-3-1.

Deviations and enhancements according to the following table must be observed.

Table 23: Deviations and enhancements of classification (DIN EN IEC 60721-3-1)

Bearing	
Ambient temperature	-20 ... +65 °C
Relative air humidity	20 ... 85 %
Direct solar radiation	Not permitted

Storage time

The maximum storage duration is 2 years.

Storage durations of more than 6 months require conservation measures by the customer. Treat untreated surfaces, e. g. shaft, flange, with preserving agents.

Irrespective of the storage period, which may also extend beyond the warranty period, the function of the products is maintained if additional measures are observed and implemented during commissioning. Warranty extension is not a consequence.

12 Environmental protection and disposal

Disposal of the motor components can be done according to the applicable legal process in normal recycling process.

Recycling

Most of the products can be recycled due to their high content of metal. In order to recycle the metal in the best possible way, the products must be disassembled into individual assemblies. Metals contained in electric and electronic assemblies can also be recycled by means of special separation processes.

Basic components

Basically, our motors consist of the following components:

- Steel, stainless steel, aluminum, copper, brass
- Plastic parts, insulation and composite material
- Electronic components
- Permanent magnets

Plastic parts of the products may contain flame retardants. These plastic parts are labeled according to EN ISO 1043-1:2011 + A1:2016. They have to be recycled separately or disposed of according to the applicable legal provisions.

Magnets

▲ WARNING



Danger due to permanent magnets!

- Health hazard for persons with heart pacemakers, metallic implants and hearing aids in direct environment of permanent magnets.
- Crushing hazard of fingers and hand due to heavy attractive forces of the magnets.
- Risk of destruction of sensitive parts like watches, credit cards, ...



Remark

The permanent magnets must be demagnetized before disposal to avoid injuries or damage. The demagnetization is reached via thermal treatment. The duration of the treatment depends on the size (guide value: 300 °C, 30 min).

Packaging

Our packaging materials do not contain any problematic materials and can therefore be easily disposed. Packaging materials are: wood, cardboard and polystyrene.

Batteries and accumulators



The symbol indicating "separate collection" for all batteries and accumulators is the crossed-out wheeled bin. End users in the EU are legally bound to return used batteries and accumulators. Outside the scope of the EU Directive 2006/66/EC, the applicable regulations must be followed. Batteries and accumulators can contain hazardous substances which can harm the environment or people's health when improperly stored or disposed of. The batteries or accumulators must be returned to the country-specific collection systems for proper disposal.

Disposal by the manufacturer

Our products can be returned to us for disposal. However, this requires that the products are free from oil, grease or other dirt. The motor components must be returned in a suitable packaging (origin package if possible). In the case of a transport by air freight, please observe the dangerous goods regulations (IATA) for the secondary part.

Send the products to the following address, carriage free:

Bosch Rexroth AG
Bgm.-Dr.-Nebel-Str. 2
97816 Lohr a.Main, Germany

13 Appendix

13.1 CE

Declaration of conformity

Declaration of conformity confirm that the components comply with the valid EN standards and EC Directives.

MS2M

CE-Conformity regarding

EN 60034-1: Rotating electrical machines - Part 1: Rating and performance (Edition 2010 + Cor.:2010 (2010, modified))

EN 60034-5: Rotation electrical machines – Part 5: Degrees of protection provided by the integral of rotation electrical machines (IP code) - Classification (Edition 2020)

EN 61800-3: Adjustable speed electrical power drive systems – Part 3: EMC requirements and specific test methods for PDS and machine tools (Edition 2023)

EU Declaration of Conformity



EU-Konformitätserklärung - Original [1] Dok.-Nr. / Doc. No.: DCTC-30321-002 [1.1]
EU Declaration of Conformity Datum / Date: 2024-05-10 [1.2]

- ☐ nach Maschinenrichtlinie 2006/42/EG / in accordance with Machinery Directive 2006/42/EC
(ABl. L 157, 09.06.2006, S. 24 / OJ L 157, 09/06/2006, p. 24)

[2.1]
- ☒ nach Niederspannungsrichtlinie 2014/35/EU / in accordance with Low Voltage Directive 2014/35/EU
(ABl. L 96, 29.03.2014, S. 357 / OJ L 96, 29/03/2014, p. 357)

[2.2]
- ☒ nach EMV-Richtlinie 2014/30/EU / in accordance with EMC Directive 2014/30/EU
(ABl. L 96, 29.03.2014, S. 79 / OJ L 96, 29/03/2014, p. 79)

[2.3]
- ☐ nach ATEX-Richtlinie 2014/34/EU / in accordance with ATEX Directive 2014/34/EU
(ABl. L 96, 29.03.2014, S. 309 / OJ L 174, 1/07/2011, p. 88)

[2.4]
- ☐ nach Ökodesign-Richtlinie (ErP) 2009/125/EG / in accordance with Ecodesign Directive (ErP) 2009/125/EC
(ABl. L 285, 31.10.2009, S. 10 / OJ L 285, 31/10/2009, p. 10)

[2.5]
- ☐ und nach Ökodesign-Verordnung (EU) 2019/1781 / and in accordance with the Ecodesign Regulation (EU) 2019/1781
(ABl. L 272, 25.10.2019, S. 74 / OJ L 1272, 29/10/2019, p. 74)
- ☐ und nach Ökodesign-Verordnung (EU) 2019/2021 / and in accordance with the Ecodesign Regulation (EU) 2019/2021
(ABl. L 315, 05.12.2019, S. 241 / OJ L 315, 09/12/2019, p. 241)
- ☐ Produkt im Geltungsbereich der RoHS-Richtlinie 2011/65/EU / Product in the scope of RoHS Directive 2011/65/EU:
nach RoHS-Richtlinie 2011/65/EU / in accordance with RoHS Directive 2011/65/EU
(ABl. L 174, 01.07.2011, S. 88 / OJ L 174, 1/07/2011, p. 88)

[2.6]
- ☒ Produkt nicht im Geltungsbereich der RoHS-Richtlinie 2011/65/EU / Product not in the scope of RoHS Directive 2011/65/EU:
Produkt erfüllt die Anforderungen zur Stoffbeschränkung der Richtlinie / Product meets the substance restriction requirements of the Directive

[2.7]
- Geltungsbereich RoHS-Richtlinie für Produkte des Herstellers: DCTC-30806-006 „Herstellererklärung zur RoHS-Richtlinie 2011/65/EU & 2015/863/EU“ / Scope of RoHS Directive for products of the manufacturer: DCTC-30806-006 "Declaration of compliance to the RoHS Directive 2011/65/EU & 2015/863/EU"

[2.8]

Der Hersteller / the manufacturer:

Bosch Rexroth AG
Bgm.-Dr.-Nebel-Str. 2
97816 Lohr a.Main / Germany

[3]

erklärt hiermit, dass das nachstehende Produkt / hereby declares that the product below

[4]

Bezeichnung / Name:

Servo motors

[5]

Bestellbezeichnung / ordering code:

MS2M02*****
MS2M03*****
MS2M04*****

* = 0-9, A-Z, "blank" or "-"

[5.2]

Handelsbezeichnung / Trade name:

Rexroth

[5.4]

ab Herstelldatum / from the date of manufacture:

2024-05-10

[5.5]

I Übereinstimmung mit oben genannte(n) Richtlinie(n) entwickelt, konstruiert und gefertigt wurde. / was developed, designed, and manufactured in compliance with the above-mentioned directive(s).

[6]

Die alleinige Verantwortung für die Ausstellung dieser EU-Konformitätserklärung trägt der Hersteller. / This EU Declaration of Conformity is issued under the sole responsibility of the manufacturer.

[6.1]

Angewendete harmonisierte Normen bzw. sonstige technische Normen und Vorschriften /
Applied harmonized standards or other technical standards and regulations:

[7]

Norm / Standard	[8]	Titel / Name	[8.1]	Ausgabe / Issue	[8.2]
EN 60034-1		Drehende elektrische Maschinen – Teil 1: Bemessung und Betriebsverhalten / Rotation electrical machines – Part 1: Rating and performance		2010 + Cor. 2010	
EN IEC 60034-5		Drehende elektrische Maschinen – Teil 5: Schutzarten aufgrund der Gesamtkonstruktion von drehenden elektrischen Maschinen (IP-Code) - Einteilung / Rotation electrical machines – Part 5: Degrees of protection provided by the integral of rotation electrical machines (IP code) - Classification		2020	
EN IEC 61800-3		Drehzahlveränderbare elektrische Antriebssysteme – Teil 3: EMV-Anforderungen einschließlich spezieller Prüfverfahren für Antriebssysteme und Werkzeugmaschinen mit darin enthaltenen Antriebssystemen / Adjustable speed electrical power drive systems – Part 3: EMC requirements and specific test methods for PDS and machine tools		2023	

Weitere Erläuterungen / Further explanations:

[12]

Die Montage- und Installationshinweise, gemäß Produktdokumentation sind zu beachten /
The assembling and installation instructions according to the manual must be followed

[13]

Lohr a.Main

2024-05-10

ppa.

Ort / place

[14]

Datum / date

[14.1]

DocuSigned by:



927D0A707DF944E...

Steffen Winkler

Vertriebsleitung /

Vice President Sales

[14.2]

i.V. / p.p.

DocuSigned by:



8535C1EB95AE44F...

Dr. Hans-Jürgen Wehner

Product Owner Servo Motors and Gear boxes

[14.3]

Änderungen im Inhalt der EU-Konformitätserklärung sind vorbehalten. Die aktuelle Version finden Sie im Bosch Rexroth Medienverzeichnis als
Download oder erhalten diese auf Anfrage über Ihren Bosch Rexroth Ansprechpartner /

[15]

We reserve the right to make changes to the content of the EU Declaration of Conformity. The current issue is available as download in Bosch
Rexroth Media Directory or on request from your Bosch Rexroth contact person

13.2 UKCA

UK Declaration of Conformity



UK Declaration of Conformity

Doc. No.: DCTC-30321-032
Date: 2024-05-10

- ☐ in accordance with Supply of Machinery (Safety) Regulation 2008, S.I. 2008/1597
- ☒ in accordance with Electrical Equipment (Safety) Regulation 2016, S.I. 2016/1101
- ☒ in accordance with Electromagnetic Compatibility Regulation 2016, S.I. 2016/1091
- ☐ in accordance with Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, S.I. 2016/1107
- ☐ in accordance with Ecodesign for Energy-Related Products and Energy Information Regulations 2021, S.I. 2021/745
- ☐ Product in the scope of RoHS Regulation S.I. 2012/3032:
in accordance with Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012, S.I. 2012/3032
- ☒ Product not in the scope of RoHS Regulation S.I. 2012/3032:
Product meets the substance restriction requirements of the regulation.

Scope of RoHS Directive for products of the manufacturer: DCTC-30806-006 "Declaration of compliance to the RoHS Directive 2011/65/EU & 2015/863/EU"

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The manufacturer: **Bosch Rexroth AG**
Bgm.-Dr.-Nebel-Str. 2
97816 Lohr a.Main / Germany

Hereby declares that the product below

Name: Servo motors

Ordering code: MS2M02*****
MS2M03*****
MS2M04*****

* = 0-9, A-Z, "blank" or "-"

Trade name: Rexroth
From the date of manufacture: 2024-05-10

was developed, designed, and manufactured in compliance with the above-mentioned regulation(s).
This UK Declaration of Conformity is issued under the sole responsibility of the manufacturer.

DCTC-30321-032_MOE_N_EN_2024-05-10.docx

UK Declaration of Conformity

Page: 2 / 2

DCTC-30321-032 : 2024-05-10

Designated Standards or other technical standards and regulations applied:

Standard	Name	Issue
EN 60034-1	Rotation electrical machines – Part 1: Rating and performance	2010 + Cor. 2010
EN IEC 60034-5	Rotation electrical machines – Part 5: Degrees of protection provided by the integral of rotation electrical machines (IP code) - Classification	2020
EN IEC 61800-3	Adjustable speed electrical power drive systems – Part 3: EMC requirements and specific test methods for PDS and machine tools	2023

Further explanations:

The assembling and installation instructions according to the manual have to be followed.

Lohr a.Main	2024-05-10	ppa.	DocuSigned by:  927D0A7070DFB4E... Steffen Winkler Vice President Sales
Place	Date		
		p.p.	DocuSigned by:  8539C1EB66AE44F... Dr. Hans-Jürgen Wehner Product Owner Servo Motors and Gear boxes

We reserve the right to make changes to the content of the UK Declaration of Conformity. The current issue is available as download in Bosch Rexroth Media Directory or on request from your Bosch Rexroth contact person

13.3 cURus

C-UR-US-Listing

The motors are listed by UL ("Underwriters Laboratories Inc.®"). A proof of certification can be found in the Internet via ➡ <http://www.ul.com> under "Certifications" by entering the file number E335445 or the "Company Name: Rexroth ".

MS2M

Company Name:

BOSCH REXROTH AG

Category Name:

Servo and Stepper Motors Components

For file numbers, standards refer to table "Technical data"



Wiring material UL (ready-made cables of Rexroth)

Only use copper lines of class 6 (or equivalent) with minimal allowed wire temperature of 75 °C in the scope of application of CSA / UL for wiring the components.



Allowed degree of contamination

Please observe the allowed pollution degree 2 of the components.

13.4 China RoHS 2



The China RoHS 2 conformity can be found on the type plate of the motors.

Information about listing: ➞ <https://www.boschrexroth.com.cn/zh/cn/certificates/china-rohs2/>

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Bosch Rexroth AG
Bgm.-Dr.-Nebel-Str. 2
97816 Lohr a.Main
Germany
Tel. +49 9352 18 0
Fax +49 9352 18 8400
www.boschrexroth.com/electrics



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