

IndraDrive Cs for Linear Motion Systems

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The Drive & Control Company



IndraDrive Cs for Linear Motion Systems

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Product Description

IndraDrive and IndraDyn

Advantages

Compatible with IndraDrive platform

Multiple Ethernet interface – supports various Ethernet-based control systems

Multiple encoder interface – supports standard encoders/motors

Scalable in price and performance

Extremely compact design

Alternative side-mounting

High peak current levels

Customer benefits

Easy engineering and extensive functionalities

One single hardware for all applications – easy adaptation to different control scenarios

One single hardware for all applications – fewer variants, greater flexibility

Complexity reduction: one single platform for a broad range of applications

Saves space in the control cabinet

Can be installed even in restricted spaces

Dynamic drives



Application areas:

- Food & Packaging: Filling and closing, palletizing, carton erection, carton closure, labeling, shrink wrapping, etc.
- General Automation, Handling and Assembly: Automated assembly and handling, logistics, palletizing systems, pick and place systems
- Printing & Converting: Label printing, labeling, digital printing, positioning, actuator drives
- Machine Tools: Compact machinery (e.g. woodworking), auxiliary and actuator drives
- Semiconductor Industry: Semiconductor/wafer production and handling, metallization, cleaning, solar cell and power LED production, etc.
- Medical Technology: Diagnostics, monitoring, patient lifters, treatment chairs, lab equipment

IndraDyn S – servo motor MSM



Maintenance-free MSM motors are available in five sizes with continuous mechanical outputs of up to 750 W.

Thanks to their high power density in combination with a short length and minimal flange size they are suitable for use in a wide variety of applications.

The motors designed to protection category IP54 are equipped with an absolute encoder and can be supplied either with or without a holding brake. They are absolutely ideal for use with IndraDrive Cs control units with 3 AC 230 V line input.

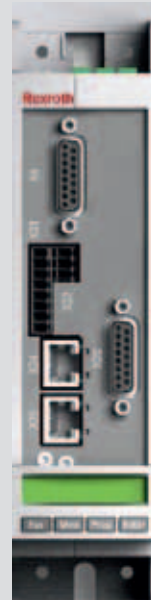
For higher mains connection voltages and continuous ratings of up to 3.5 kW, please choose from our comprehensive range of IndraDyn motors.

IndraDrive Cs – servo controller HCS01.1



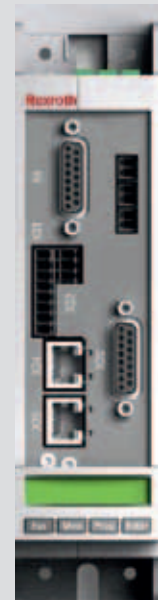
ECONOMY

- SERCOS III
- Multiple encoder



BASIC UNIVERSAL

- Multiple Ethernet incl. SERCOS III
- Multiple encoder
- additional interface e.g. Profibus, second encoder



Description of IndraDrive Cs interfaces

Multiple Ethernet:

The new communication interface with multiple protocol capability enables IndraDrive Cs to be used on a universal basis with a wide range of Ethernet-based communication protocols – without even requiring any changes to the hardware.

IndraDrive Cs supports the following protocols:

- SERCOS III, PROFINET IO
- EtherNet/IP™, EtherCAT® (SoE)

In addition, IndraDrive Cs can also be equipped with a conventional communication interface such as PROFIBUS-DP.

Multiple encoder:

With its multiple encoder interface, IndraDrive Cs is able to support all standard encoder types – which gives you total freedom to select the encoder and motor system of your choice.

IndraDrive Cs supports the following encoder types:

- Absolute encoders:
 - EnDat 2.1, Hiperface®
 - IndraDyn motors
- Incremental signals:
 - 1 V_{pp}, 5 V TTL
- Resolver

Motor-Controller Selection Data, Version up to 300 V DC

Series for mains supply voltage AC 110-230 V or DC bus voltage up to DC 300 V

Servo drives with rotary motors:

- 400 ms maximum torque (acceleration time)
- Capacity utilization factor independent of ambient conditions 100%
- Motor cooling type: without fan with 60 K data
- Switching frequency 4 kHz
- Power supply single-phase with -5% tolerance

1 U _V (V)	2 Motor	3 Controller	4 J _{Rot} (kgm ²) x (10 ⁻⁶)	5 J _{Br} (kgm ²) x (10 ⁻⁶)	6 M _{Br} (Nm)	7 m _M (kg)	8 m _{Br} (kg)	9 S _B (%)	10 n _{Mmax} (min ⁻¹)	11 M _{max} (Nm)	12 M ₀ (Nm)	13 I (A)	14 P _{BD} (W)	15 P _{BS} (kW)
AC 1 x 230 V	MSM 019A-0300	HCS 01.1E-W0003	2.5	0.2	0.29	0.32	0.21	282	5000	0.45	0.09	0.22	20	1.68
	MSM 019B-0300		10.0	0.2	0.29	0.47	0.21	185	5000	0.30	0.16	0.43		
	MSM 020B-0300		3.2	0.3	0.29	0.50	0.20	185	5000	0.59	0.32	0.65		
	MSM 030B-0300	HCS 01.1E-W0006	10.0	3.0	1.27	0.96	0.40	330	5000	0.94	0.12	0.22		
	MSM 031B-0300		10.0	1.8	1.27	0.82	0.48	141	5000	0.41	0.30	0.87		
	MSM 030C-0300		17.0	3.0	1.27	1.50	0.40	296	4372	1.89	0.20	0.33		
	MSM 031C-0300	HCS 01.1E-W0009	30.0	1.8	1.27	1.20	0.50	121	5000	0.78	0.64	1.41	30	
	MSM 040B-0300		67.0	9.0	2.45	3.10	0.70	306	4774	1.91	0.40	0.65		
	MSM 041B-0300		90.0	7.5	2.45	2.30	0.80	240	5000	1.50	0.64	1.09		
	MSM 030C-0300	HCS 01.1E-W0009	17.0	3.0	1.27	1.50	0.40	320	3248	3.78	0.44	0.65		
	MSM 031C-0300		30.0	1.8	1.27	1.20	0.50	130	4686	1.56	1.20	2.28		
	MSM 040B-0300		67.0	9.0	2.45	3.10	0.70	296	4215	3.80	0.40	0.65		
	MSM 041B-0300	HCS 01.1E-W0013	90.0	7.5	2.45	2.30	0.80	148	5000	1.92	1.30	2.17		
	MSM 040B-0300		67.0	9.0	2.45	3.10	0.70	296	3511	7.01	0.79	1.09		
	MSM 041B-0300		90.0	7.5	2.45	2.30	0.80	107	4500	2.58	2.40	3.80		
	MSM 041B-0300		90.0	7.5	2.45	2.30	0.80	300	3804	7.10	1.00	1.30		
	MSM 041B-0300		90.0	7.5	2.45	2.30	0.80	138	4500	3.29	2.40	3.37		

1 Power supply AC	(V)	9 Peak torque/force limitation S _B	(%)
2 Motor type MSM...	(-)	10 Knee speed n _{Mmax}	(min ⁻¹)
3 Controller HCS 01.1E-	(-)	11 Maximum torque M _{max}	(kgm ²)
4 Rotor mass moment of inertia J _{Rot}	(kgm ²)	12 Continuous torque at standstill M ₀	(Nm)
5 Brake mass moment of inertia J _{Br}	(kgm ²)	13 Mains-side phase current (referred to column 1)	(A)
6 Holding torque of holding brake M _{Br}	(Nm)	14 Permissible braking resistor continuous power P _{BD}	(W)
7 Mass of motor m _M	(kg)	15 Permissible braking resistor peak power P _{BS}	(kW)
8 Mass of brake m _{Br}	(kg)		

Notes:

- Consider the peak torque of the attached mechanical system.
- In some combinations there are 2 characteristic curves available ► 2 speed/torque characteristic curves.
- Motor-controller selection data: further combinations possible (also with MSK motors).
- MSM 20B, 30B, 30C and 40B: the characteristic curves were recorded in combination with EcoDrive Cs. Operation with the IndraDrive Cs is permissible. For combinations with an IndraDrive Cs, the speed-torque curves should be taken only as a guide. In cases where specifications are close to the limits, another motor-controller combination may be more suitable.

Part numbers for standard motors for linear systems with multiturn absolute encoder, with and without brake

Without holding brake	Motor	With holding brake	Motor
R911325127	MSM019A-0300-NN-M0-CH0	R911325128	MSM019A-0300-NN-M0-CH1
R911325131	MSM019B-0300-NN-M0-CH0	R911325132	MSM019B-0300-NN-M0-CH1
R911295549	MSM020B-0300-NN-M0-CG0	R911295550	MSM020B-0300-NN-M0-CG1
R911295553	MSM030B-0300-NN-M0-CG0	R911295554	MSM030B-0300-NN-M0-CG1
R911295558	MSM030C-0300-NN-M0-CG0	R911295559	MSM030C-0300-NN-M0-CG1
R911325135	MSM031B-0300-NN-M0-CH0	R911325136	MSM031B-0300-NN-M0-CH1
R911325139	MSM031C-0300-NN-M0-CH0	R911325140	MSM031C-0300-NN-M0-CH1
R911295562	MSM040B-0300-NN-M0-CG0	R911295563	MSM040B-0300-NN-M0-CG1
R911325143	MSM041B-0300-NN-M0-CH0	R911325144	MSM041B-0300-NN-M0-CH1

Speed/torque characteristics: In some combinations 2 characteristic curves are available. When adjusting the operating points during design calculations, chose the most suitable speed/torque characteristics pair for the specific application (see note in the legend).

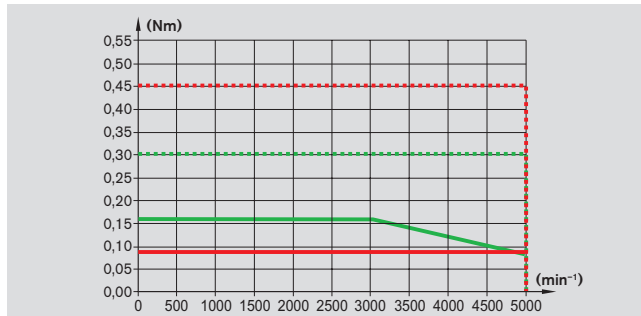
Speed/torque characteristic designed for maximum torque
(e.g. high torque, longer cycle idle times)

..... Maximum torque $M_{\max}$ (400 ms)
—— Continuous torque M_0

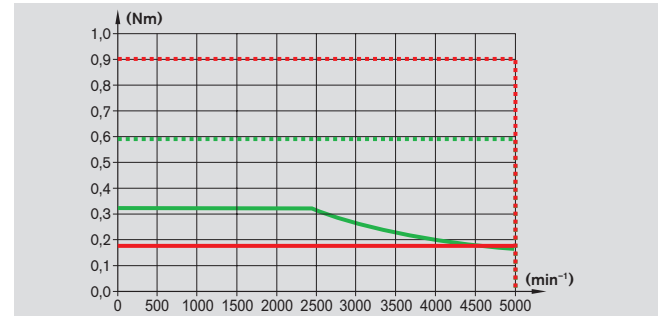
Speed/torque characteristic designed for continuous torque
(e.g. continuous cycle, but with reduced max. torque)

..... Maximum torque $M_{\max}$ (400 ms)
—— Continuous torque M_0

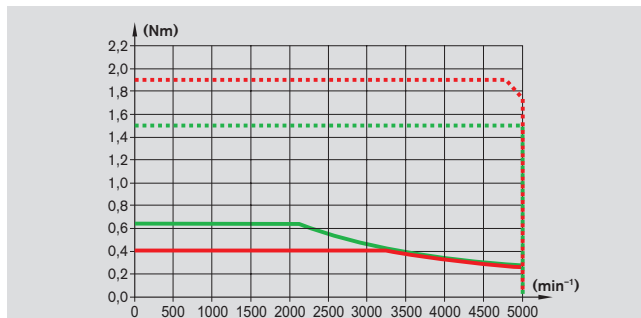
MSM019A-0300 with HSC01.1E-W0003



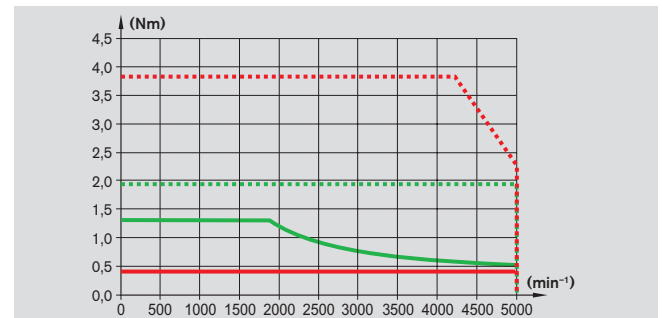
MSM019B-0300 with HSC01.1E-W0003



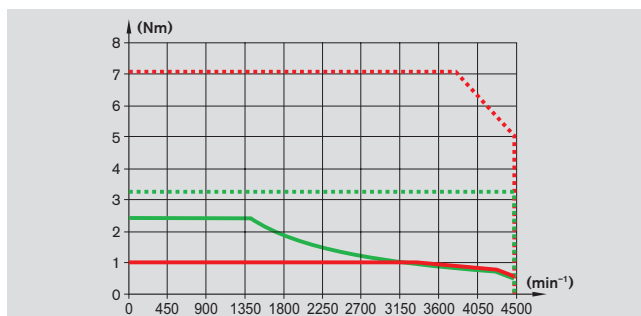
MSM031B-0300 with HSC01.1E-W0006



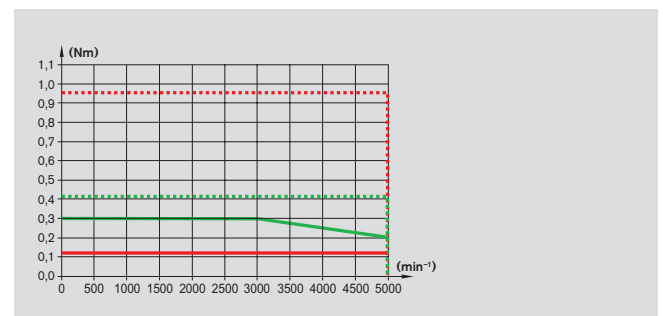
MSM031C-0300 with HSC01.1E-W0009



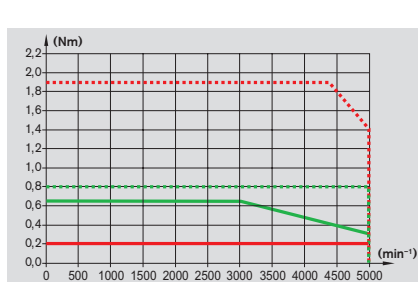
MSM041B-0300 with HSC01.1E-W0013



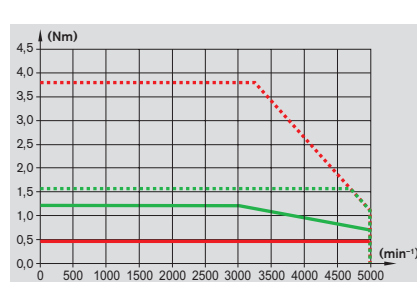
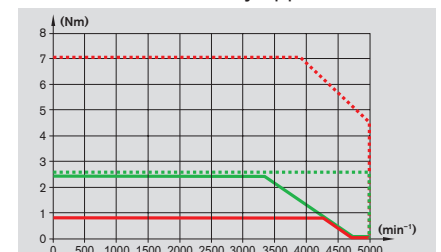
MSM020B-0300 with DKCxx.3-004



MSM030B-0300 with DKCxx.-3-008

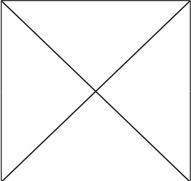
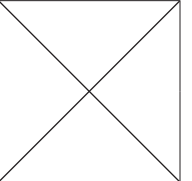
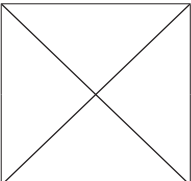
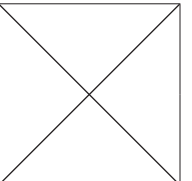
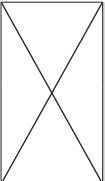


MSM030C-0300 with DKCxx.-3-012

MSM040B-0300 with DKCxx-3-018
(in this case derated by approx. 20%)

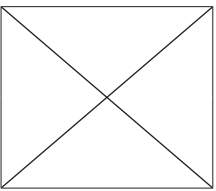
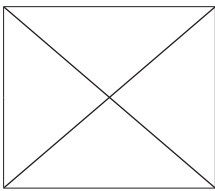
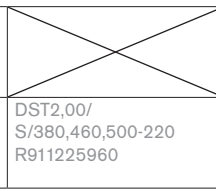
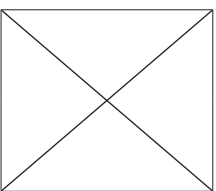
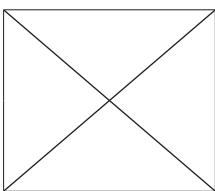
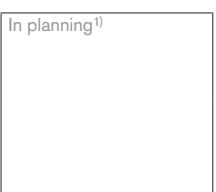
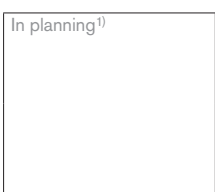
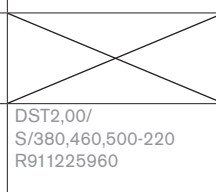
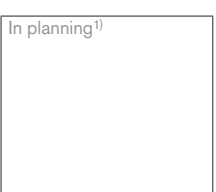
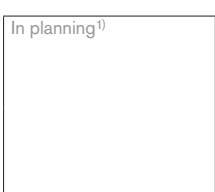
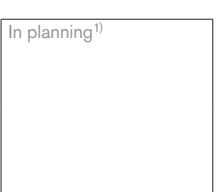
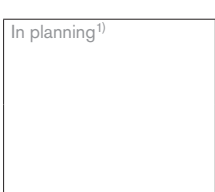
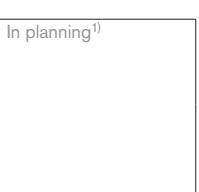
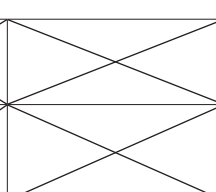
IndraDrive Cs, Components and Ordering Data, Version up to 300 V DC

Series for mains supply voltage AC 110-230 V or DC bus voltage up to DC 300 V

Selection process		Proposal process (part numbers)					
Appropriate motor-controller combination (others possible)		Compact unit (with connection accessories)			Basic Universal with safety technology		
		Basic Universal without safety technology					
		Version 1	Version 2	Version 3	Version 4 only with MSK motor	Version 5 only with MSK motor	
		- Multiple Ethernet - Multiple encoder - Digital: 7I/1IO - Analog: 1I	- Profibus - Multiple encoder - Digital: 7I/1IO - Analog: 1I	- Multiple Ethernet - Multiple encoder - Multiple encoder - Digital: 7I/1IO - Analog: 1I	- Multiple Ethernet - Multiple encoder - Option L4²⁾ - Digital: 7I/1IO - Analog: 1I	- Profibus - Multiple encoder - Option L4²⁾ - Digital: 7I/1IO - Analog: 1I	
							
	MSM019A-0300 MSM019B-0300 MSM020B-0300	Frame size 1 HCS01.1E-W0003 Continuous current 1.1 A _{eff.} Max. current 3.3 A _{eff.} Continuous mechanical output 100 W	HCS01.1E-W0003-A-02-B-ET-EC-NN-NN-NN-FW R911326039 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0003-A-02-B-ET-EC-PB-NN-NN-FW R911328448 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0003-A-02-B-ET-EC-EC-NN-NN-FW R911328452 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612		
	MSM030B-0300 MSM031B-0300	Frame size 1 HCS01.1E-W0006 Continuous current 2.0 A _{eff.} Max. current 6.0 A _{eff.} Continuous mechanical output 200 W	HCS01.1E-W0006-A-02-B-ET-EC-NN-NN-NN-FW R911325243 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0006-A-02-B-ET-EC-PB-NN-NN-FW R911328449 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0006-A-02-B-ET-EC-EC-NN-NN-FW R911328453 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612		
	MSM030C-0300 MSM031C-0300 MSK030C-0900	Frame size 1 HCS01.1E-W0009 Continuous current 3.0 A _{eff.} Max. current 9.0 A _{eff.} Continuous mechanical output 400 W	HCS01.1E-W0009-A-02-B-ET-EC-NN-NN-NN-FW R911326040 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0009-A-02-B-ET-EC-PB-NN-NN-FW R911328450 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0009-A-02-B-ET-EC-EC-NN-NN-FW R911328454 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	In planning ¹⁾	In planning ¹⁾
	MSM040B-0300 MSM041B-0300 MSK040C-0600	Frame size 1 HCS01.1E-W0013 Continuous current 4.4 A _{eff.} Max. current 13.0 A _{eff.} Continuous mechanical output 750 W	HCS01.1E-W0013-A-02-B-ET-EC-NN-NN-NN-FW R911325245 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0013-A-02-B-ET-EC-PB-NN-NN-FW R911328451 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0013-A-02-B-ET-EC-EC-NN-NN-FW R911328455 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	In planning ¹⁾	In planning ¹⁾
	Frame size 2 HCS01.1E-W0018/300 V Continuous current 6.0 A _{eff.} Max. current 18.0 A _{eff.} Continuous mechanical output 750 W	In planning ¹⁾	In planning ¹⁾	In planning ¹⁾	In planning ¹⁾	In planning ¹⁾	

¹ Timescale approx. 1 to 2 years

² L4 = STO, SBC; S4 = all safety functions

			Power supply ³⁾			Accessories
Version 6 only with MSK motor	Version 7 only with MSK motor	Economy without safety technology Version 8	Connection voltage	Autotransformer (consider connection voltage!)	Mains choke / mains filter (consider con- nection voltage!)	
- Multiple Ethernet - Multiple encoder - Option L4²⁾ - Digital: 7I/1IO - Analog: 1I	- Profibus - Multiple encoder - Option S4²⁾ - Digital: 7I/1IO - Analog: 1I	- Sercos III - Multiple encoder - Digital: 7I/1IO - Analog: 1I				
		HCS01.1E-W0003-A-02-E-S3-EC-NN-NN-FW R911328423 + FWA-INDRV*-MPE-16VRS-D5-1-NNN-NN R911325622	1x230 V 7.5 A		NFE02.1-230-008 R911266399	For start-up software, cables, accessories see "Accessories" section
		HCS01.1E-W0006-A-02-E-S3-EC-NN-NN-FW R911328424 + FWA-INDRV*-MPE-16VRS-D5-1-NNN-NN R911325622	3x400 V 7 A	DST2,00/ S/380,460,500-220 R911225960	NFD03.1-480-007 R911286917	
		HCS01.1E-W0009-A-02-E-S3-EC-NN-NN-FW R911328425 + FWA-INDRV*-MPE-16VRS-D5-1-NNN-NN R911325622	1x230 V 7.5 A		NFE02.1-230-008 R911266399	
		HCS01.1E-W0013-A-02-E-S3-EC-NN-NN-FW R911328426 + FWA-INDRV*-MPE-16VRS-D5-1-NNN-NN R911325622	3x400 V 7 A	DST2,00/ S/380,460,500-220 R911225960	NFD03.1-480-007 R911286917	
			1x230 V 7.5 A (in this case derated by approx. 20%)		NFE02.1-230-008 R911266399	
In planning ¹⁾	In planning ¹⁾	In planning ¹⁾				

3 Important note: A mains filter or an autotransformer may be combinable with several different controllers! This depends on the selected motor-controller combination and the control cabinet construction. Mains connection voltage of 3x230 V also possible.

Motor-Controller Selection Data, Version up to 700 V DC

Series for mains supply voltage AC 200-500 V or DC bus voltage up to DC 700 V

Servo drives with rotary motors:

- 400 ms maximum torque (acceleration time)
- Capacity utilization factor independent of ambient conditions 100%
- Motor cooling type: without fan with 60 K data
- Switching frequency 4 kHz
- Power supply three-phase with -5% tolerance

1 U _V (V)	2 Motor	3 Controller	4 J _{Rot} (kgm ²) x (10 ⁻⁶)	5 J _{Br} (kgm ²) x (10 ⁻⁶)	6 M _{Br} (Nm)	7 m _M (kg)	8 m _{Br} (kg)	9 SB (%)	10 n _{Mmax} (min ⁻¹)	11 M _{max} (Nm)	12 M ₀ (Nm)	13 I (A)	14 P _{BD} (W)	15 P _{BS} (kW)
AC 3 x 400 V	MSK 030C-0900	HCS 01.1E-W0005	30	7.0	1.0	1.9	0.2	333 133	9000 9000	2.9 1.1	0.4 0.8	0.36 0.72	20	4.0
	MSK 030C-0900	HCS 01.1E-W0008	30	7.0	1.0	1.9	0.2	453 180	9000 9000	4.0 1.4	0.7 0.8	0.72 0.72	30	
	MSK 040C-0600		140	23.0	4.0	3.6	0.3	258 87	4661 6216	6.2 2.4	0.7 2.4	0.36 1.44		
	MSK 040C-0600	HCS 01.1E- W0018	140	23.0	4.0	3.6	0.3	400 -	3884 -	8.1 -	2.7 -	1.44 -	50	
	MSK 050C-0600		330	107.0	5.0	5.4	0.9	290 123	4886 6000	12.3 6.1	4.1 5.0	2.53 3.25		
	MSK 050C-0600	HCS 01.1E-W0028 with HNL01.1E	330	107.0	5.0	5.4	0.9	400 -	4332 -	15.0 -	5.0 -	2.89 -	150	10.6
	MSK 060C-0600		800	59.0	10.0	8.4	0.8	295 121	3850 5444	19.8 9.7	5.6 8.0	2.89 4.33		
	MSK 061C-0600		750	59.0	10.0	8.3	0.5	364 149	4164 4986	26.4 11.9	6.9 8.0	3.25 4.33		
	MSK 076C-0450		4300	360.0	11.0	13.8	1.1	230 94	4233 4885	26.3 11.3	6.5 11.3	2.89 5.77		

1 Power supply AC	(V)	8 Mass of brake m_{Br}	(kg)
2 Motor type MSM...	(-)	9 Peak torque/force limitation SB	(%)
3 Controller HCS 01.1E-	(-)	10 Knee speed n_{Mmax}	(min ⁻¹)
4 Rotor mass moment of inertia J_{Rot}	(kgm ²)	11 Maximum torque M_{max}	(kgm ²)
5 Brake mass moment of inertia J_{Br}	(kgm ²)	12 Continuous torque at standstill M_0	(Nm)
6 Holding torque of holding brake M_{Br}	(Nm)	13 Mains-side phase current (referred to column 1)	(A)
7 Mass of motor m_M	(kg)	14 Permissible braking resistor continuous power P_{BD}	(W)
		15 Permissible braking resistor peak power P_{BS}	(kW)

Notes:

- Consider the peak torque of the attached mechanical system.
- In some combinations there are 2 characteristic curves available ► 2 speed/torque characteristic curves.

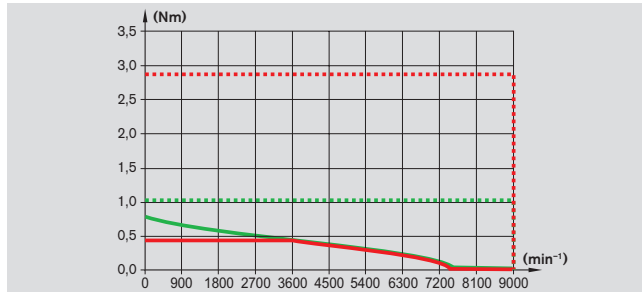
Part numbers for standard motors for linear systems with multiturn absolute encoder, with and without brake

Without holding brake	Motor	With holding brake	Motor
R911308683	MSK030C-0900-NN-M1-UG0-NNNN	R911308684	MSK030C-0900-NN-M1-UG1-NNNN
R911306060	MSK040C-0600-NN-M1-UG0-NNNN	R911306061	MSK040C-0600-NN-M1-UG1-NNNN
R911298354	MSK050C-0600-NN-M1-UG0-NNNN	R911298355	MSK050C-0600-NN-M1-UG1-NNNN
R911306052	MSK060C-0600-NN-M1-UG0-NNNN	R911306053	MSK060C-0600-NN-M1-UG1-NNNN
R911316056	MSK061C-0600-NN-M1-UG0-NNNN	R911315844	MSK061C-0600-NN-M1-UG1-NNNN
R911318098	MSK076C-0450-NN-M1-UG0-NNNN	R911315713	MSK076C-0450-NN-M1-UG1-NNNN

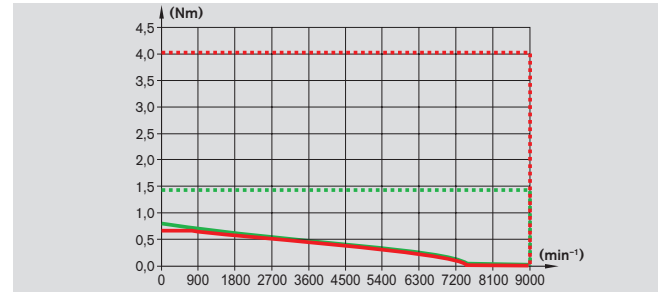
Speed/torque characteristics: In some combinations 2 characteristic curves are available. When adjusting the operating points during design calculations, chose the most suitable speed/torque characteristics pair for the specific application (see note in the legend).

Speed/torque characteristic designed for maximum torque (e.g. high torque, longer cycle idle times)		Maximum torque $M_{\max}$ (400 ms)
	—	Continuous torque M_0
Speed/torque characteristic designed for continuous torque (e.g. continuous cycle, but with reduced max. torque)		Maximum torque $M_{\max}$ (400 ms)
	—	Continuous torque M_0

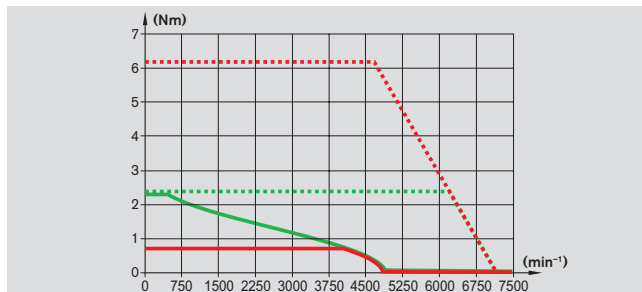
MSK030C-0900 with HSC01.1E-W0005



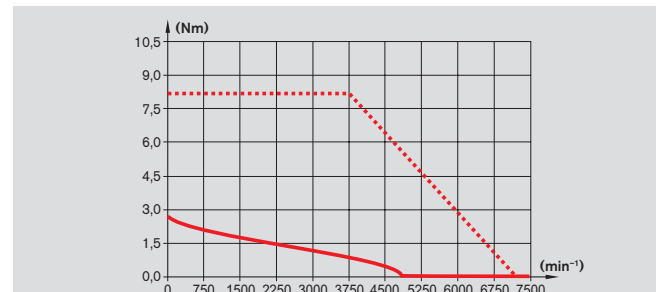
MSK030C-0900 with HSC01.1E-W0008



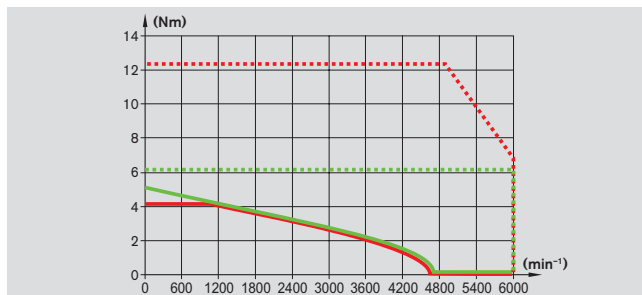
MSK040C-0600 with HSC01.1E-W0008



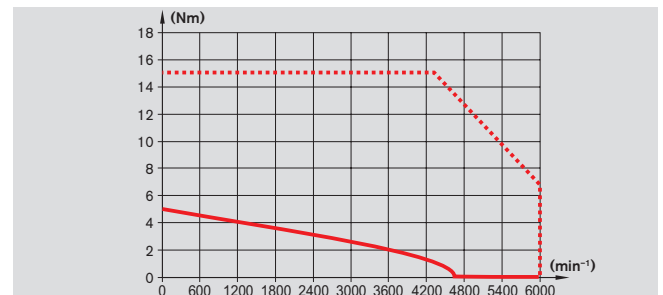
MSK040C-0600 with HSC01.1E-W0018



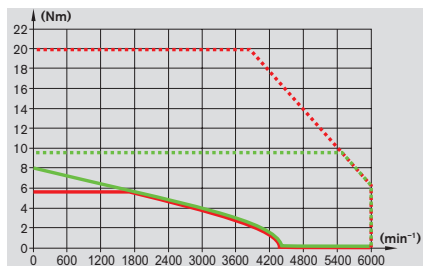
MSK050C-0600 with HSC01.1E-W0018



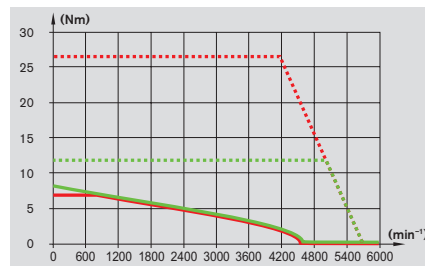
MSK050C-0600 with HSC01.1E-W0028 and HNL01.1E



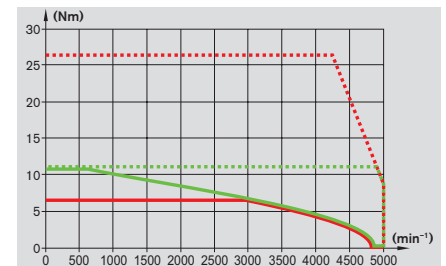
MSK060C-0600 with HSC01.1E-W0028 and HNL01.1E



MSK061C-0600 with HSC01.1E-W0028 and HNL01.1E

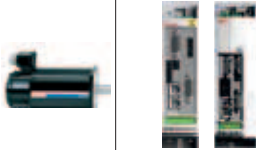
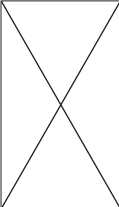


MSK076C-0450 with HSC01.1E-W0028 and HNL01.1E



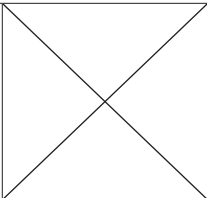
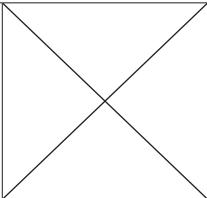
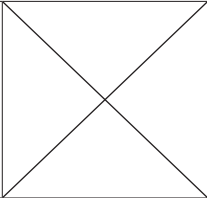
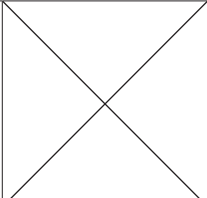
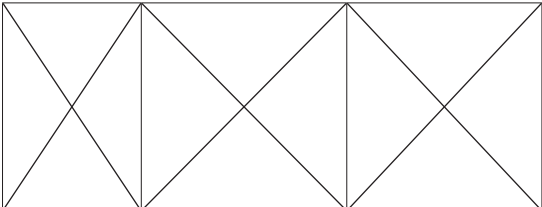
IndraDrive Cs, Components and Ordering Data, Version up to 700 V DC

Series for mains supply voltage AC 200-500 V or DC bus voltage up to DC 700 V

Selection process		Proposal process (part numbers)					
Appropriate motor-controller combination (others possible)		Compact unit (with connection accessories)					
		Basic Universal without safety technology			Basic Universal with safety technology		
		Version 1	Version 2	Version 3	Version 4 only with MSK motor	Version 5 only with MSK motor	
		- Multiple Ethernet - Multiple encoder - Digital: 7I/1IO - Analog: 1I	- Profibus - Multiple encoder - Digital: 7I/1IO - Analog: 1I	- Multiple Ethernet - Multiple encoder - Multiple encoder - Digital: 7I/1IO - Analog: 1I	- Multiple Ethernet - Multiple encoder - Option L4²⁾ - Digital: 7I/1IO - Analog: 1I	- Profibus - Multiple encoder - Option L4²⁾ - Digital: 7I/1IO - Analog: 1I	
MSK030C-0900	Frame size 1	HCS01.1E-W0005-A-03-B-ET-EC-NN-NN-FW R911326038 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0005-A-03-B-ET-EC-PB-NN-NN-FW R911326609 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0005-A-03-B-ET-EC-EC-NN-NN-FW R911327327 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	In planning ¹⁾	In planning ¹⁾	
	HCS01.1E-W0005 Continuous current 1.7 A _{eff.} Max. current 5.0 A _{eff.} Continuous mechanical output 400 W						
MSK030C-0900 MSK040C-0600	Frame size 1	HCS01.1E-W0008-A-03-B-ET-EC-NN-NN-FW R911325246 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0008-A-03-B-ET-EC-PB-NN-NN-FW R911327324 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0008-A-03-B-ET-EC-EC-NN-NN-FW R911327328 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	In planning ¹⁾	In planning ¹⁾	
	HCS01.1E-W0008 Continuous current 2.7 A _{eff.} Max. current 8.0 A _{eff.} Continuous mechanical output 750 W						
MSK040C-0600 MSK050C-0600	Frame size 2	HCS01.1E-W0018-A-03-B-ET-EC-NN-NN-FW R911325247 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0018-A-03-B-ET-EC-PB-NN-NN-FW R911327325 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0018-A-03-B-ET-EC-EC-NN-NN-FW R911327329 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	In planning ¹⁾	In planning ¹⁾	
	HCS01.1E-0018/700 V Continuous current 6.0 A _{eff.} Max. current 18.0 A _{eff.} Continuous mechanical output 1500 W						
MSK050C-0600 MSK060C-0600 MSK061C-0600 MSK076C-0450	Frame size 2	HCS01.1E-W0028-A-03-B-ET-EC-NN-NN-FW R911325248 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0028-A-03-B-ET-EC-PB-NN-NN-FW R911327326 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	HCS01.1E-W0028-A-03-B-ET-EC-EC-NN-NN-FW R911327330 + FWA-INDRV*-MPB-16VRS-D5-1-NNN-NN R911325612	In planning ¹⁾	In planning ¹⁾	
	HCS01.1E-W0028 Continuous current 11.5 A _{eff.} Max. current 28.0 A _{eff.} Continuous mechanical output 3000 W (with HNL 3500 W)						
	Frame size 3	In planning ¹⁾	In planning ¹⁾	In planning ¹⁾	In planning ¹⁾	In planning ¹⁾	
	HCS01.1E-W0054 Continuous current 20.8 A _{eff.} Max. current 54.0 A _{eff.} Continuous mechanical output 9000 W (with HNL 14000 W)						

1 Timescale approx. 1 to 2 years

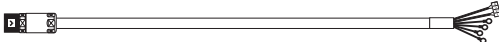
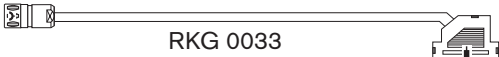
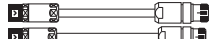
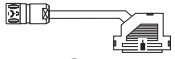
2 L4 = STO, SBC; S4 = all safety functions

		Economy without safety technology	Power supply ³⁾			Accessories
Version 6 only with MSK motor	Version 7 only with MSK motor	Version 8	Connection voltage	Autotransformer (consider connection voltage!)	Mains choke / mains filter (consider connection voltage!)	
- Multiple Ethernet - Multiple encoder - Option S4²⁾ - Digital: 7I/1IO - Analog: 1I	- Profibus - Multiple encoder - Option S4²⁾ - Digital: 7I/1IO - Analog: 1I	- Sercos III - Multiple encoder - Digital: 7I/1IO - Analog: 1I				
In planning ¹⁾	In planning ¹⁾	HCS01.1E-W0005-A-03-E-S3-EC-NN-NN-FW R911328444 + FWA-INDRV*-MPE-16VRS-D5-1-NNN-NN R911325622	3x400 V 7 A		NFD03.1-480-007 R911286917	For start-up software, cables, accessories see "Accessories" section
In planning ¹⁾	In planning ¹⁾	HCS01.1E-W0008-A-03-E-S3-EC-NN-NN-FW R911328445 + FWA-INDRV*-MPE-16VRS-D5-1-NNN-NN R911325622	3x400 V 7 A		NFD03.1-480-007 R911286917	
In planning ¹⁾	In planning ¹⁾	HCS01.1E-W0018-A-03-E-S3-EC-NN-NN-FW R911328446 + FWA-INDRV*-MPE-16VRS-D5-1-NNN-NN R911325622	3x400 V 7 A		NFD03.1-480-007 R911286917	
In planning ¹⁾	In planning ¹⁾	HCS01.1E-W0028-A-03-E-S3-EC-NN-NN-FW R911328447 + FWA-INDRV*-MPE-16VRS-D5-1-NNN-NN R911325622	3x400 V 16 A		Mains filter > NFD03.1-480-016 R911286918 Mains choke > HNL01.1E-1000-N0012 -A-500-NNNN R911306775	
In planning ¹⁾	In planning ¹⁾					

3 Important note: A mains filter or an autotransformer may be combinable with several different controllers! This depends on the selected motor-controller combination and the control cabinet construction. Mains connection voltage of 3x230 V also possible.

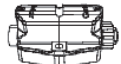
Accessories

Ordering code for MSM cable sets

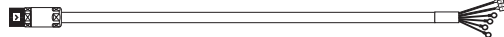
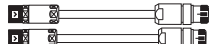
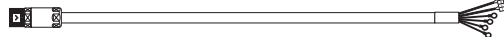
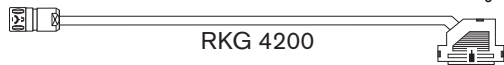
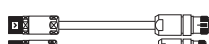
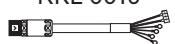
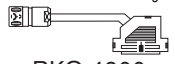
	Part number Cable set	Cable set options Pre-assembled for				Controller side	For controller HCS01.1
MSM019 MSM020 MSM030 MSM031 MSM040 MSM041	R113000113	14	RKL 0013  RKG 0033 			20	3 A 6 A 9 A 13 A
			RKL 0035  RKG 0034  Extension cable	72	14	RKL 0013  RKG 0033  Motor side configuration	

Accessory “SUP-E01-MSM-Batterybox”

(The battery box is supplied ready for use with battery.)

	Part number Battery box		
MSM motors	R911324240		One battery box required per cable set! Can be connected directly to the motor or, if an extension cable is used, before or after the extension cable!

Ordering code for MSK cable sets

	Part number Cable set	Cable set options Pre-assembled for				Controller side	For controller HCS01.1	
MSK030 MSK040 MSK050 MSK060 MSK061 MSK076	R113000112		17	 RKL 0014				20 3 A 6 A 9 A 13 A 5 A 8 A
				 RKG 4200				
				 RKL 4305				
				 RKG 4201				
				63	17	 RKL 0014		
				Extension cable		 RKG 4200		
				Motor side configuration				
	R113000112		17	 RKL 0019				21 18 A / 700 V 28 A
	 RKG 4200							
	 RKL 4305							
	 RKG 4201							
				63	17	 RKL 0019		
				Extension cable		 RKG 4200		
				Motor side configuration				

General accessories

(As required, depending on application)

Description	Part number	Type designation
Start-up software IndraWorks D Version 09	R911325353	SWA-IWORKS-D**-09VRS-D0-DVD**-COPY
Ethernet cable 5 m (for start-up)	R911321548	RKB0011/005,0
Documentation on DVD (Electric Drives and Controls)	R911306531	DOK-GENERAL-DRIVE*CONDR-GN20-D0-V08G5
Power supply unit 24 V DC, 10A (for control voltage)	R911171065	VAP01.1H-W23-024-010-NN
Start-up software IndraWorks MLD Version 09	R911325354	SWA-IWORKS-MLD-09VRS-D0-DVD**-COPY
X41 adapter, installation direction right (for safety technology)	R911319770	HAS05.1-007-NNR-NN
Battery for absolute encoder function (replacement part for battery box)	R911295648	SUP-E03-DKC*CS-BATTERY

Ordering Examples**Motor with motor cable set and servo controller system for two axes**

Version up to 300 V DC

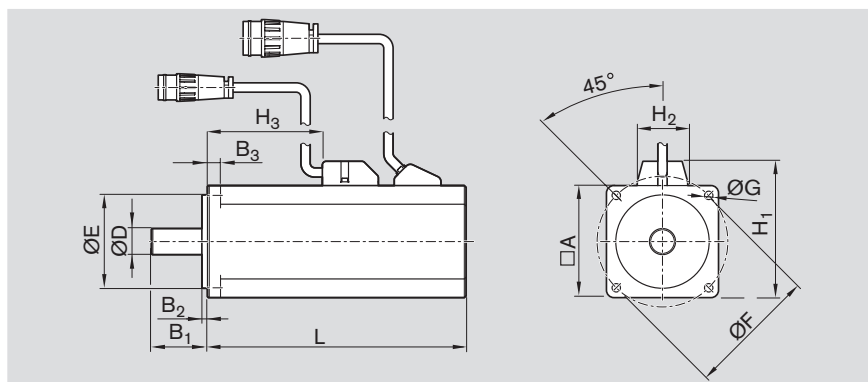
Item	Qty	Description	Part number
1	2	MSM031B with holding brake	R911325136 (can also be selected as an axis option)
2	2	Servo controller HCS01.1E-W0006A (with Profibus DP)	R911328449
3	2	Firmware MPB 16VRS	R911325612
4	2	Mains filter (depending on configuration)	R911266399
5	1	Software IndraWorks D	R911325353
6	1	Ethernet cable 5 m	R911321548
7	1	Documentation on DVD	R911306531
8	2	Cable set, length 5 m (pre-assembled for MSM and HCS01.1 (0003/0006/0009/0013/0005/0008))	R113000113 /14/20 length 5 m
9	2	Battery box	R911324240

Version up to 700 V DC

Item	Qty	Description	Part number
1	2	MSK050C with holding brake	R911298355 (can also be selected as an axis option)
2	2	Servo controller HCS01.1E-W0028A (with Profibus DP)	R911327326
3	2	Firmware MPB 16VRS	R911325612
4	2	Mains choke (depending on configuration)	R911306775
5	2	Mains filter (depending on configuration)	R911286918
6	1	Software IndraWorks D	R911325353
7	1	Ethernet cable 5 m	R911321548
8	1	Documentation on DVD	R911306531
9	2	Cable set, length 5 m (pre-assembled for MSK and HCS01.1 (00018/0028))	R113000112 /17/21 length 5 m

AC Servo Motors, Dimensions

MSM



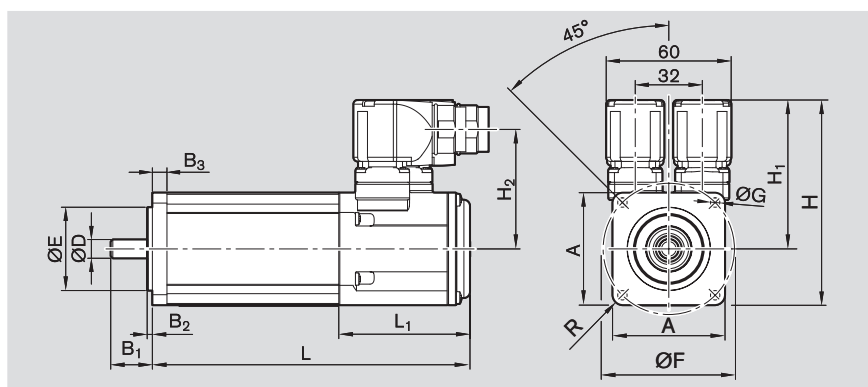
	Dimensions (mm)													
	A	B ₁	B ₂	B ₃	$\varnothing D$ h6	$\varnothing E$ h7	$\varnothing F$	$\varnothing G$	H ₁	H ₂	H ₃	Brake without	with	L
MSM 019A	38	25	3	6.0	8	30	45	3.4	51	27	20.8	72.0	102.0	
MSM 019B	38	25	3	6.0	8	30	45	3.4	51	27	40.8	92.0	122.0	
MSM 031B	60	30	3	6.5	11	50	70	4.5	73	36	22.5	79.0	115.5	
MSM 031C	60	30	3	6.5	14	50	70	4.5	73	36	42.0	98.5	135.0	
MSM 041B	80	35	3	6.0	19	70	90	6.0	93	36	52.2	112.0	149.0	

Differences between MSM old / MSM new (MSM020 / MSM019, MSM030 / MSM031, MSM040 / MSM041)

	Unit	MSM 019A	MSM 019B	MSM 031B	MSM 031C	MSM 041B
L without brake	(mm)	72	92	79	98.5	112
L with brake		102	122	115.5	135	149
A		38	38	60	60	80
$\varnothing F$		45	45	70	70	90
$\varnothing E$		30	30	50	50	70
$\varnothing D$		8	8	11	14	19
B ₁		25	25	30	30	35

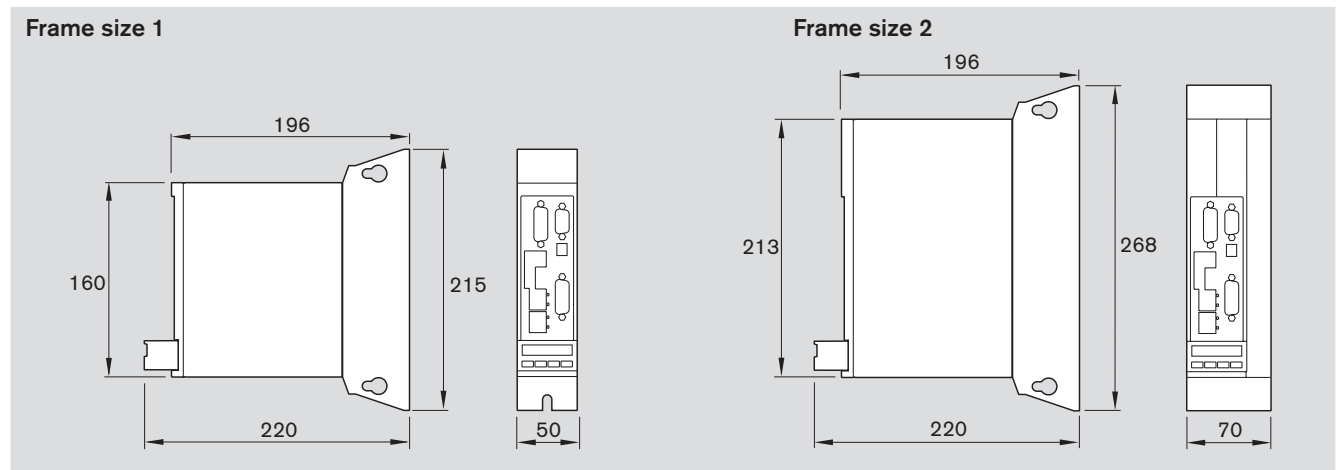
New or changed versus MSM020/030/040

MSK



	Dimensions (mm)														
	A	B ₁	B ₂	B ₃	ØD k6	ØE j6	ØF	ØG	H	H ₁	H ₂	L		L ₁	R
	Brake														
												without	with		
MSK030C-0900	54	20	2.5	7	9	40	63	4.5	98.5	71.5	57.4	188.0	213.0	–	R5
MSK040C-0600	82	30	2.5	8	14	50	95	6.6	124.5	83.5	69	185.5	215.5	–	R8
MSK050C-0600	98	40	3	9	19	95	115	9.0	134.5	85.5	71	203.0	233.0	–	R8
MSK060C-0600	116	50	3	9.5	24	95	130	9.0	156.5	98.5	84	226.0	259.0	–	R9
MSK061C-0600	116	40	3	9.5	19	95	130	9.0	156.0	98.0	84	264.0	264.0	–	R18
MSK076C-0450	140	50	4	14	24	110	165	11	180.0	110.0	95.6	292.5	292.5	–	R12

Controllers, Dimensions

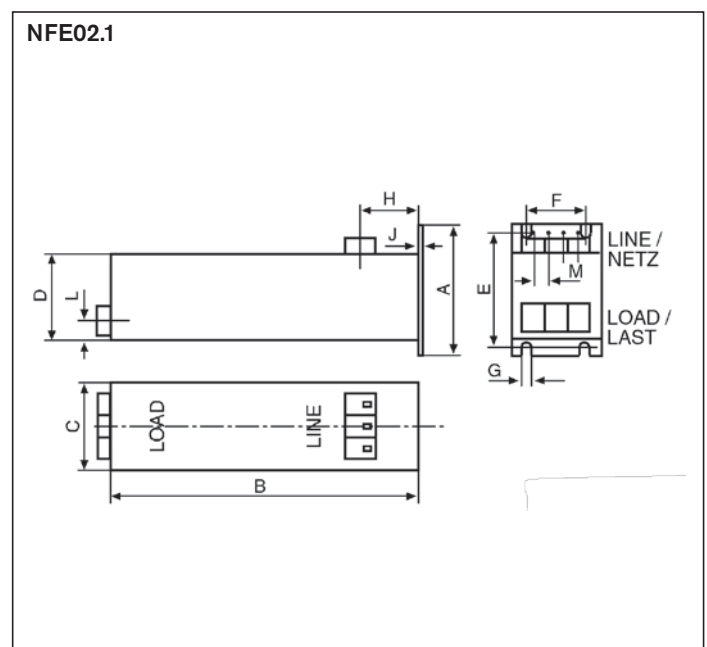
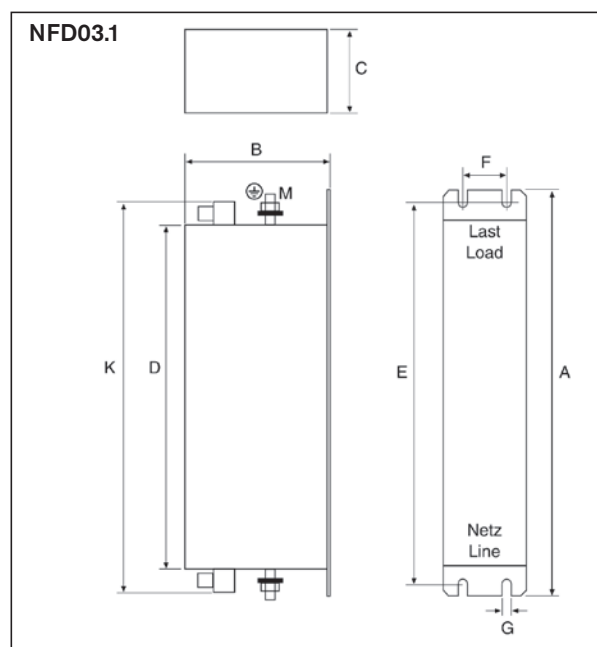


Note: When installing (depth 220 mm), plan additional clearance for plugs on fascia and bending radiuses of cables.

Converter	Frame size 1						Frame size 2	
Type	HCS01.1 E-W0003	HCS01.1 E-W0006	HCS01.1 E-W0009	HCS01.1 E-W0013	HCS01.1 E-W0005	HCS01.1 E-W0008	HCS01.1 E-W0018	HCS01.1 E-W0028

Mains Filters, Dimensions

Mains filter type	Dimensions (mm)											
	A	B	C	D	E	F	G	H	J	K	L	M
NFD 03.1-480-007	190	90	50	160	180	20	5.4	-	-	190	-	M5
NFD 03.1-480-016	250	90	55	220	235	25	5.4	-	-	250	-	M5
NFE 02.1-230-008	90	210	60	60	80	40	5.3	40	0.75	-	15	10



Further Information

Internet page “Electric Drives and Controls”

www.boschrexroth.com/business_units/brc/en/index.jsp



1. Products and solutions (online product catalog): Here you will find technical data, a download area with CAD data, EPLAN macros, GSD files, function blocks and much more.

2. Media directory: All current documentation as PDF files

3. Automation Webletter: Subscribe to the newsletter to obtain regular updates on the areas you are interested in.

4. Drive technology catalog: Product overview for drive systems

5. Control technology catalog: Product overview for automation systems and control components

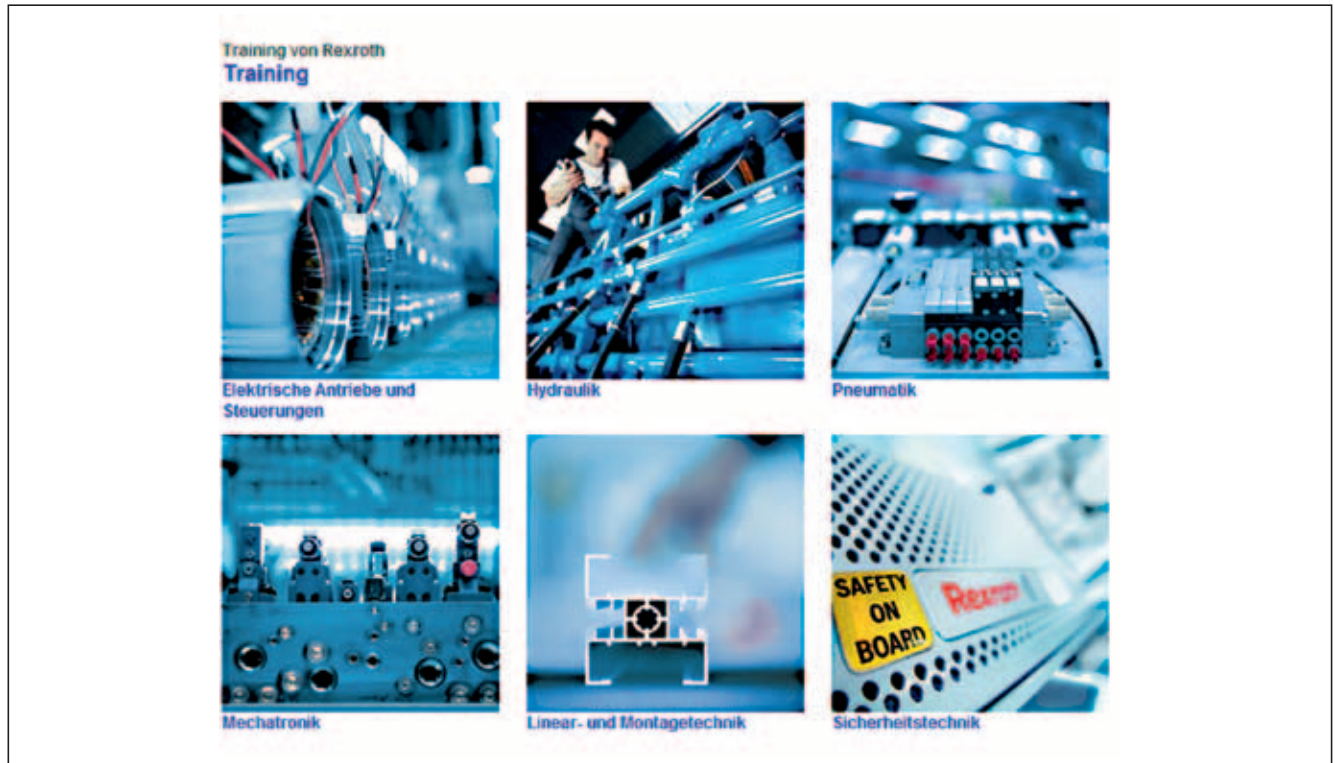
You can generate complete linear axes using our 3D CAD Configurator

www.boschrexroth.com/business_units/brl/en/downloads/download_new/index.jsp



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