

Small servo drive systems

More intelligent
More efficient
Safer



simco[®] drive

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Overview of simco[®] drive



WITTENSTEIN motion control GmbH servo drive systems

As a company within the WITTENSTEIN Group, WITTENSTEIN motion control GmbH develops high-tech, customer oriented servo actuators and servo amplifiers.

With its modular servo drive system, WITTENSTEIN offers you a complete drive system from a single source. The simco® drive servo amplifier and its components are compatible with other sine-commutated drives, offering maximum flexibility. The future-proof system is the ideal solution for fast and precise travel and positioning tasks. WITTENSTEIN motion control thus offers completely new possibilities for intelligent drive solutions and integration concepts.

Comprising the simco® drive servo amplifier and various servo motors and servo actuators, the system offers you numerous options for implementing your drive concept.

simco® = simply motion control.

System components

simco® drive

The simco® drive servo amplifier controls sine-commutated drives and is available as a switch cabinet version with protection class IP20 and a decentralized version with protection class IP65. With a continuous output of up to 500 W and a short-term peak output of 1 kW, the simco® drive servo amplifier is suitable for high-precision applications, e.g. in the machine-tool, electronics or packaging industries.

cyber® dynamic line motor and actuator

The particularly lightweight, brushless synchronous servo motors of the cyber® dynamic line are the professional choice for your application. Equipped with a high-quality stainless steel housing and absolute encoder, this motor series provides maximum reliability and precision. The cyber® dynamic line actuator series is based on combining the cyber® dynamic line motors with a high-precision planetary gearhead.

The cyber® dynamic line actuators offer a large ratio and output range at a DC intermediate circuit voltage of 48 V DC. In the hygiene version with protection class IP69K, the actuator is suitable for environments subject to frequent cleaning.

TPM+

The TPM+ product range is an actuator series that impresses through its dynamic and compact drive system. The brushless servo motor and the high-precision planetary gearbox combine to form a coupling-free, flexibly usable unit. In conjunction with the simco® drive servo amplifier, you receive a compact and high-performance drive system for your plant. The TPM+ product range version with intermediate circuit voltages of 24 and 48 V DC permits optimal use with the simco® drive servo amplifier.

simco® drive portfolio System allocation table			
	Designation Rated power	SIM 2002 125 watt	SIM 2010 500 watt
	DL 17	X	
	DL 22	X	
	DL 32		X
	DL 40		X
	TPM 004		X
	TPM 010		X

simco® drive IP20

Servo amplifier
for use in switch cabinets

simco® drive IP65

Servo amplifier
for decentralized use



TPM+ dynamic

Dynamic and compact
servo actuator



cyber® dynamic line servo motors and servo actuator series

High-precision synchronous servo motors
and actuators





Servo amplifier simco[®] drive



simco® drive – protection class IP20

More intuitive. More efficient. Smaller.

The simco® drive servo amplifier with protection class IP20 and compact design is ideal for central switch cabinet installation. The numerous communication and encoder interfaces provide maximum flexibility for your application. The servo amplifier is available with power ratings of 125 watt and 500 watt. The integrated STO (Safe Torque Off) safety function according to SIL 3 (certification pending) provides safety to your applications.





Applications

simco® drive IP20 for switch cabinet installation controls sine-commutated servo motors e.g. in the machine-tool, electronics and packaging industries. The servo amplifier is also suitable for use in robotic and handling technology. The compact design of the simco® drive IP20 enables use in confined spaces, e.g. for controlling drives in automated guided vehicles.

Communication interfaces	Encoder interfaces
CANopen® PROFI® NET EtherCAT®	EnDat 2.2 BiSS INTERFACE RESOLVER

simco[®] drive

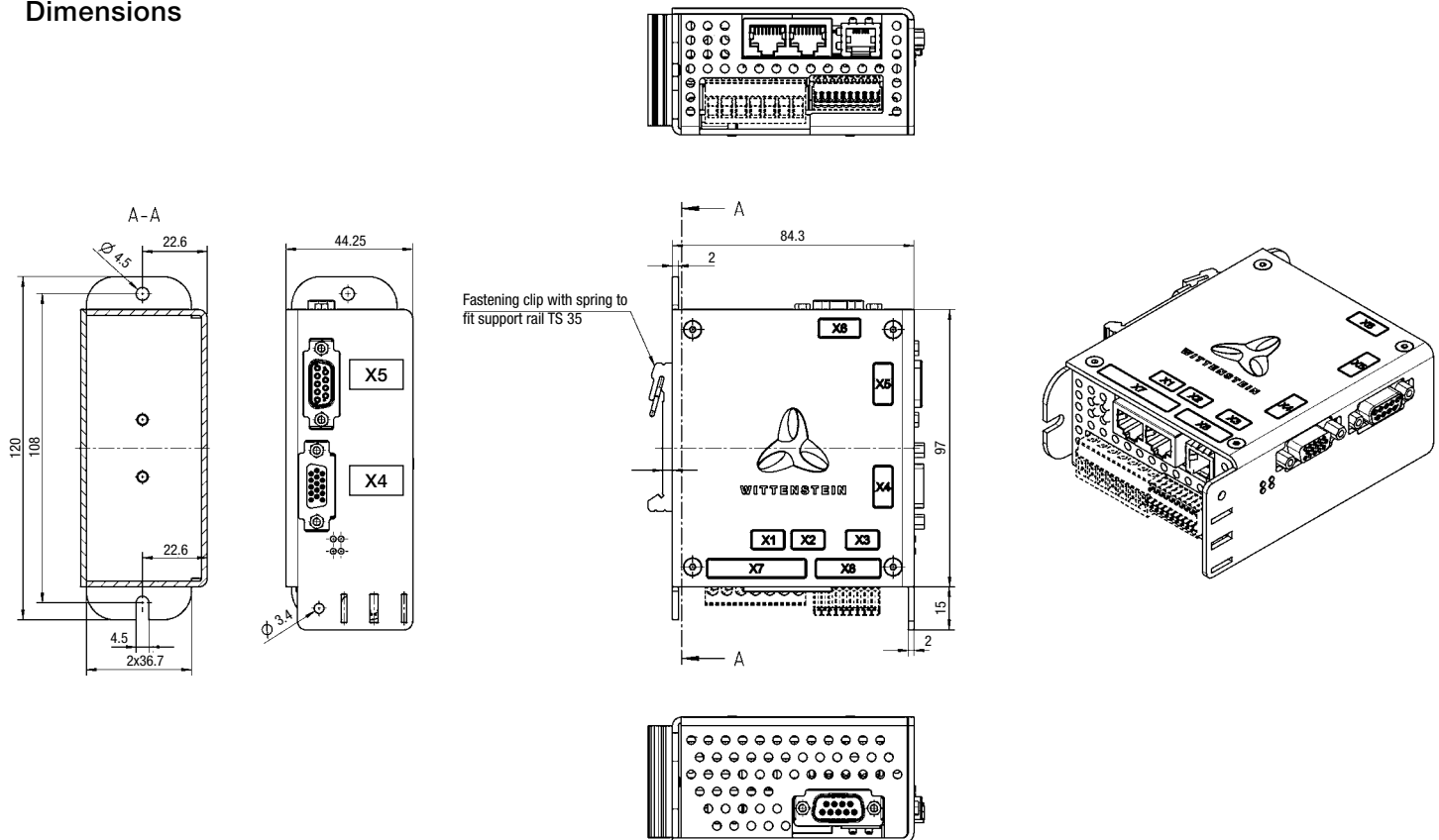
Protection class IP20

Technical data

Rated output current	I_N	A	2.5	10
Supply voltage (power)	V _{DC}	V _{DC}	+24 ... +48 (unregulated)	
Supply voltage (logic)	V _{log}	V _{DC}	+24 (+/- 10%)	
Peak current	I _{max}	A _{eff}	5 (for 5 s)	20 (for 5 s)
Rated power	P _N	W	125	500
Peak power	P _{max}	W	250	1000
Switching frequency	f _{PWM}	kHz	8 ... 32	
Current control resolutions		Bit	14 (effective)	
Communication			<ul style="list-style-type: none"> - CANopen to DS402 - EtherCAT with CoE - PROFINET RT/IRT - RS 232 - TCP/IP* 	
Drive function to DS 402 for CANopen / EtherCAT communication			<ul style="list-style-type: none"> - Profile position mode - Homing mode - Profile velocity mode - Profile torque mode - Cyclic synchronous position mode - Cyclic synchronous velocity mode 	
Supported PROFIdrive application classes for PROFINET communication			<ul style="list-style-type: none"> - Application class 1 (PROFINET RT) - Application class 3 (PROFINET RT) - Application class 4 (PROFINET IRT) 	
Encoder interfaces			<ul style="list-style-type: none"> - BiSS C - EnDat 2.2 - Hall sensors - Resolver 	
Safety function			STO (Safe Torque off) to SIL 3 (certification pending)	
Technology functions			Disk cam, motion tasks	
Protection class			IP20	
Digital inputs			4, opto decoupled, freely programmable function	
Digital outputs			2, opto decoupled, freely programmable function	
Event logging with real-time clock			✓	
Brake actuation			✓	
External ballast resistor			✓	
Drive program with PLC functions			✓	
Operating temperature range	θ _A	°C	0 ... 45°C without derating	
Weight	m	kg	0.3 kg	

* available only with PROFINET interface

Dimensions



Plug connections

Marking	Interface type	Plug connection
X1	Input field bus interface	RJ45
X2	Output field bus interface	RJ45
X3	RS232 diagnostic interface	RJ12
X4	Encoder interface	D-Sub, 15-pin, female
X5	Resolver interface	D-Sub, 9-pin, female
X6	Digital inputs/outputs	D-Sub, 9-pin, male
X7	Motor connection	Phoenix_MSTBA_2.5_HC/7-G
X8	Voltage supply	Phoenix_MC_0.5/9-G-2.5

simco® drive Protection class IP65

More intuitive. More efficient. Decentral.

simco® drive with protection class IP65 enables decentralized use in the field. Thanks to the wide variety of communication and encoder interfaces, you can integrate the system into your machine structure in a modular and flexible manner – with minimal wiring requirements and maximum operating efficiency. The servo amplifier is available with power ratings of 125 watt and 500 watt. The integrated STO (Safe Torque Off) safety function according to SIL 3 (certification pending) provides safety to your applications.




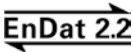





Source: groninger & co. gmbh

Applications

Protection class IP65 of the housing is suitable for decentralized use and therefore enables new integration concepts. It is ideally suited for use in the pharmaceutical, medical technology and packaging industries.

Communication interfaces	Encoder interfaces
  	  RESOLVER

simco[®] drive

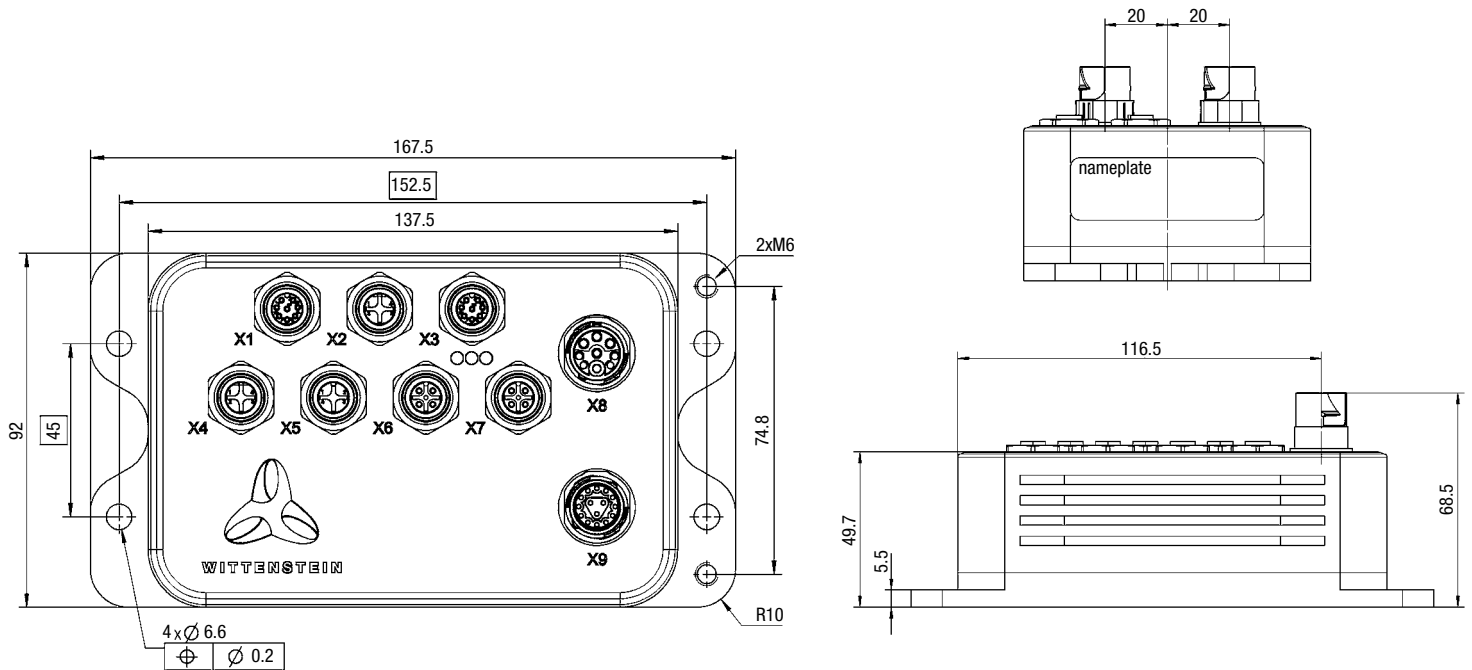
Protection class IP65

Technical data

Rated output current	I_N	A	2.5	10
Supply voltage (power)	V _{DC}	V _{DC}	+24 ... +48 (unregulated)	
Supply voltage (logic)	V _{log}	V _{DC}	+24 (+/- 10%)	
Peak current	I _{max}	A _{eff}	5 (for 5 s)	20 (for 5 s)
Rated power	P _N	W	125	500
Peak power	P _{max}	W	250	1000
Switching frequency	f _{PWM}	kHz	8 ... 32	
Current control resolutions		Bit	14 (effective)	
Communication			<ul style="list-style-type: none"> - CANopen to DS402 - EtherCAT with CoE - PROFINET RT/IRT (upon request) - RS 232 - TCP/IP* 	
Drive function to DS 402 for CANopen / EtherCAT communication			<ul style="list-style-type: none"> - Profile position mode - Homing mode - Profile velocity mode - Profile torque mode - Cyclic synchronous position mode - Cyclic synchronous velocity mode 	
Supported PROFIdrive application classes for PROFINET communication			<ul style="list-style-type: none"> - Application class 1 (PROFINET RT) - Application class 3 (PROFINET RT) - Application class 4 (PROFINET IRT) 	
Sensor interfaces			<ul style="list-style-type: none"> - BISS C - EnDat 2.2 - Hall sensors - Resolver 	
Safety function			STO (Safe Torque off) to SIL 3 (certification pending)	
Technology functions			Disk cam, motion tasks	
Protection class			IP65	
Digital inputs			4, opto decoupled, freely programmable function	
Digital outputs			2, opto decoupled, freely programmable function	
Event logging with real-time clock			✓	
Brake actuation			✓	
External ballast resistor			✓	
Drive program with PLC functions			✓	
Operating temperature range	θ _A	°C	0 ... 45°C without derating	
Weight	m	kg	0.85 kg	

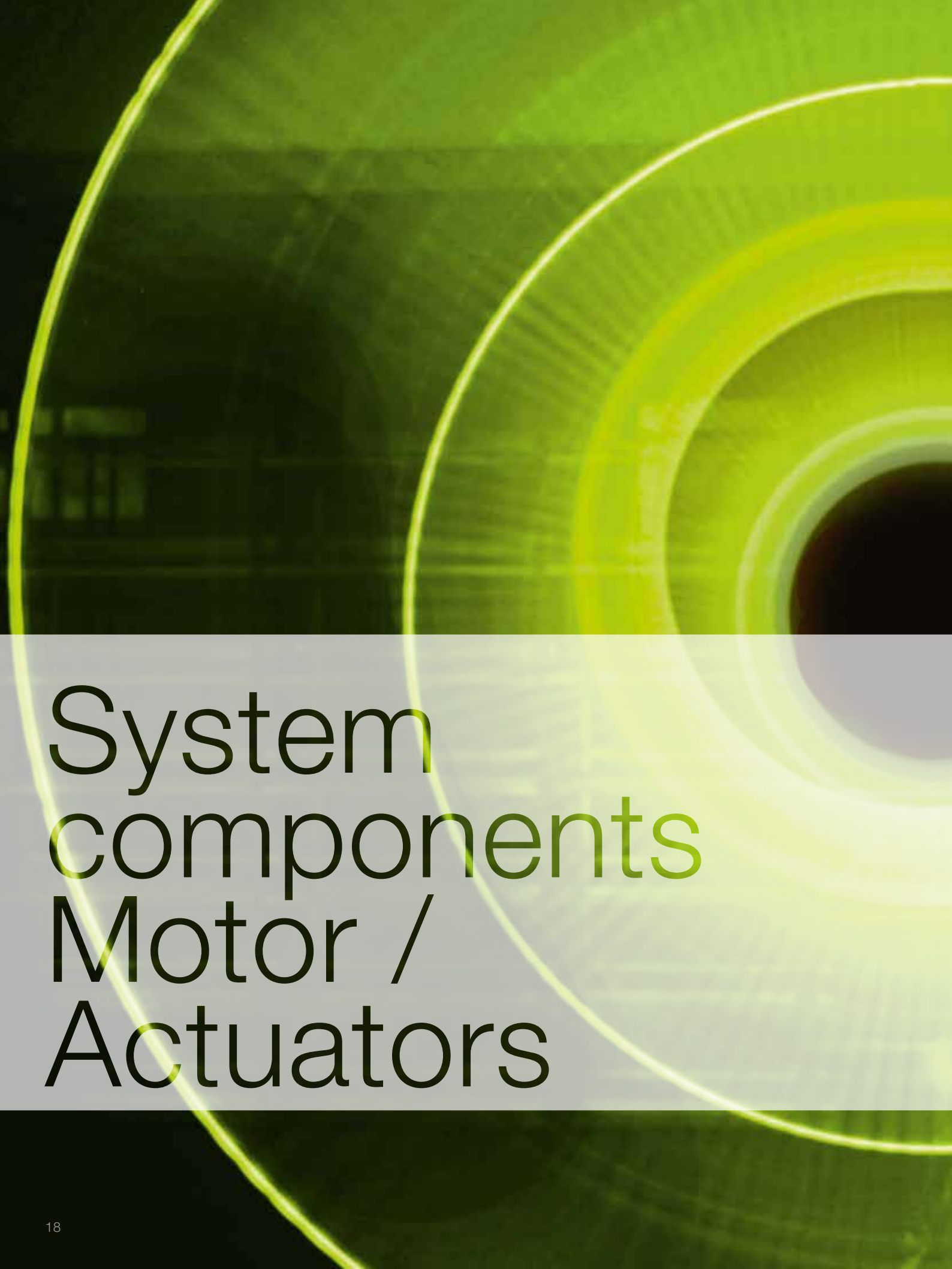
* available only with PROFINET interface

Dimensions

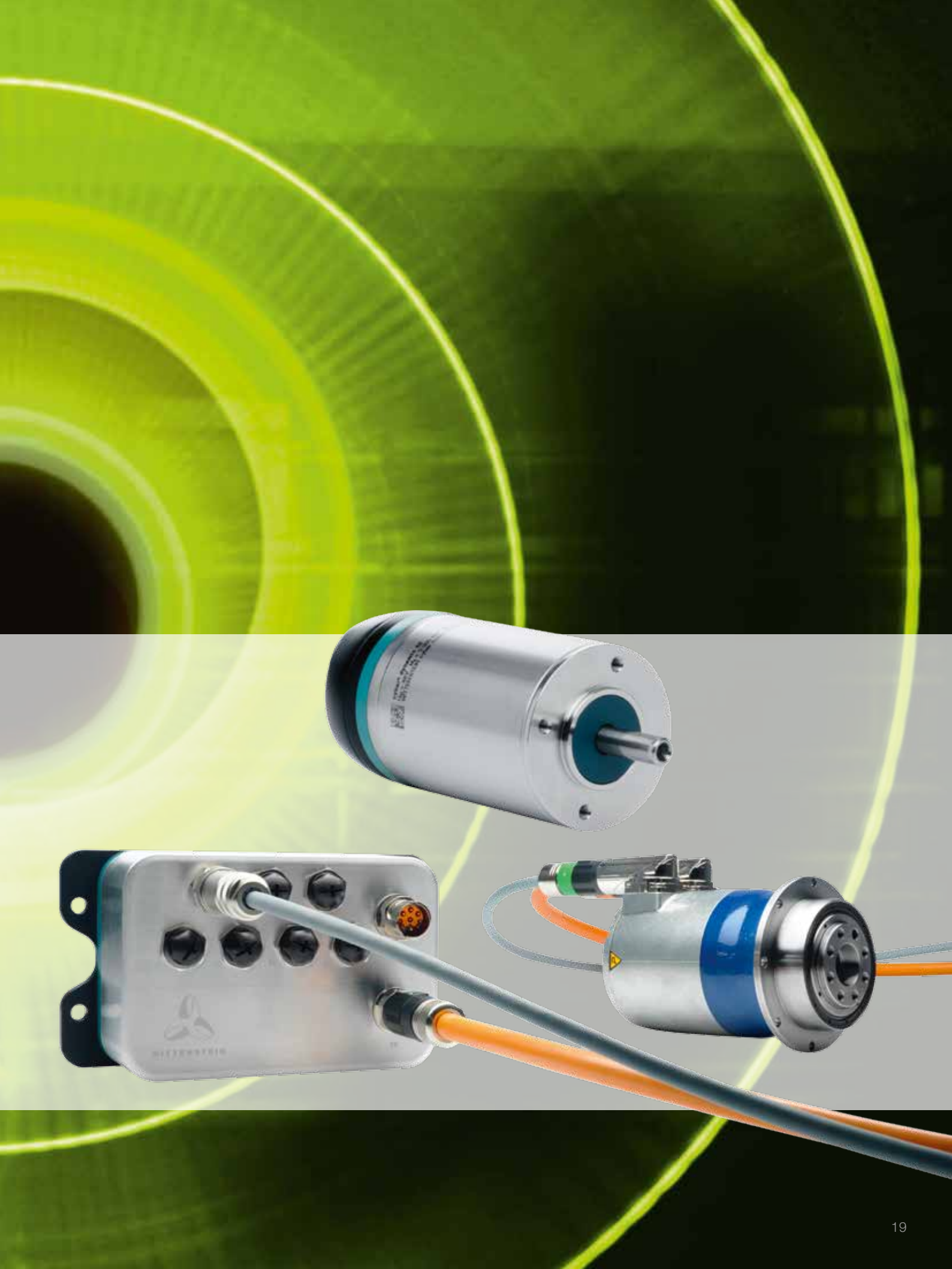


Plug connections

Marking	Interface type	Plug connection
X1	Resolver interface	M12 8-pin, female, A-coded
X2	Digital inputs	M12 5-pin, female, B-coded
X3	Encoder interface	M12 8-pin, female, A-coded
X4	Digital outputs	M12 5-pin, female, B-coded
X5	RS 232 diagnostic interface	M12 4-pin, female, A-coded
X6	Input field bus interface	CAN version: M12 5-pin, female, A-coded EtherCAT version M12 4-pin, female, D-coded
X7	Output field bus interface	CANopen version: M12 5-pin, female, A-coded EtherCAT version M12 4-pin, female, D-coded
X8	Voltage supply	Intercontec itec 915, 9-pin, male
X9	Motor connection	Intercontec itec 915, 15-pin, female



System components Motor / Actuators



cyber[®] dynamic line motor / actuator

More dynamic. More efficient. Lighter.

The brushless servo motors of the cyber[®] dynamic line are the ideal addition to simco[®] drive. Equipped with a high-quality stainless steel housing and absolute encoder, this new motor series provides maximum reliability and precision, opening up completely new possibilities in machine manufacturing. The servo motors cover the power range between 25 and 334 W.

Versions

- 4 sizes
- Hybrid motor cable for power and signal cable
- Feedback system options: BISS C and incremental encoder
- cyber[®] dynamic line actuator: planetary gearhead in stainless steel version
- Several ratio versions
- Protection class: IP54, 66 / 67, 69K





Source: bdtronic GmbH

Applications

With the servo motors of the cyber[®] dynamic line, you can achieve short cycle times through more dynamic movements. The cyber[®] dynamic line is a weight-optimized and space-saving solution aimed at fast commissioning, single-cable solution and maximum dynamics. The servo motors are used in the food, packaging, machine manufacturing and automation industries.

cyber[®] dynamic line motor

Technical data

Size			17	22	32	40
Intermediate circuit voltage	V_D	V_{DC}	48	48	48	48
Max. torque	M_{max}	Nm	0.035	0.07	0.33	0.96
Permanent static torque	M_0	Nm	0.012	0.034	0.14	0.35
Idling speed	n_0	rpm	21,100	14,450	9,475	5,575
Permanent static current	I_0	A_{eff}	0.52	0.96	2.6	3.8
Mass moment of inertia	J_1	$kgm^2 \cdot 10^{-8}$	5.2	12	57	250
Weight	m	kg	0.04	0.06	0.22	0.43
Ambient temperature	ϑ_A	°C	0 to +40			
Protection class			IP54			

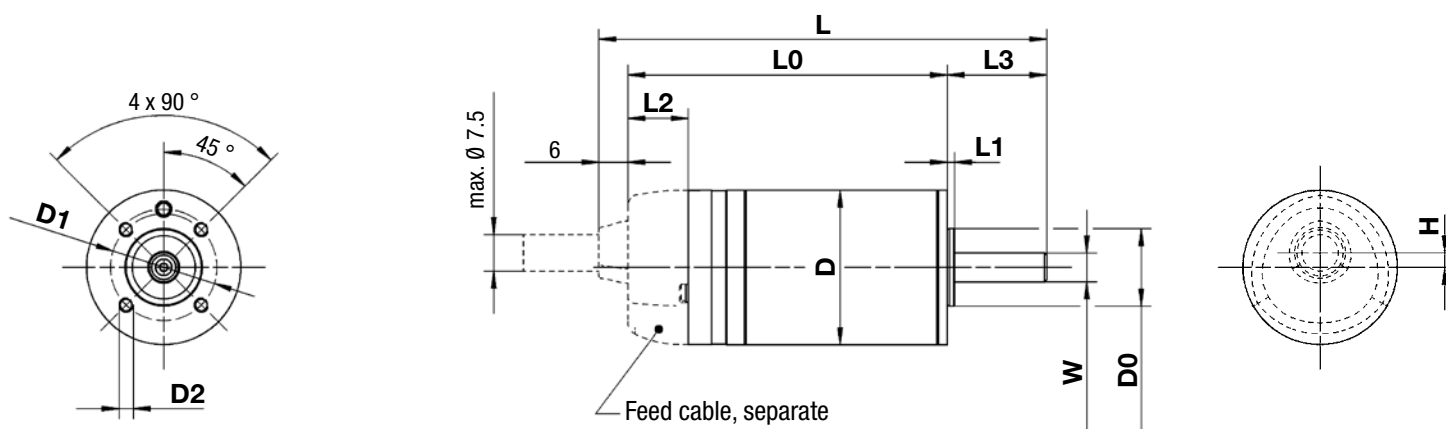
Stainless-steel version / hygienic design



Model	Stainless steel design	Hygienic design
Size (external diameter in mm)*	17 / 22 / 32 / 40	17 / 22 / 32 / 40
Protection class (in mounted condition)	IP66 / 67	IP69K
Contact surfaces	Corrosion-resistant stainless steel	Corrosion-resistant stainless steel
Construction	Standard	Hygienic design
Certification	None	EHEDG (certification pending)
Gearhead option*	For all sizes	For all sizes

* Availability on request

Dimensions

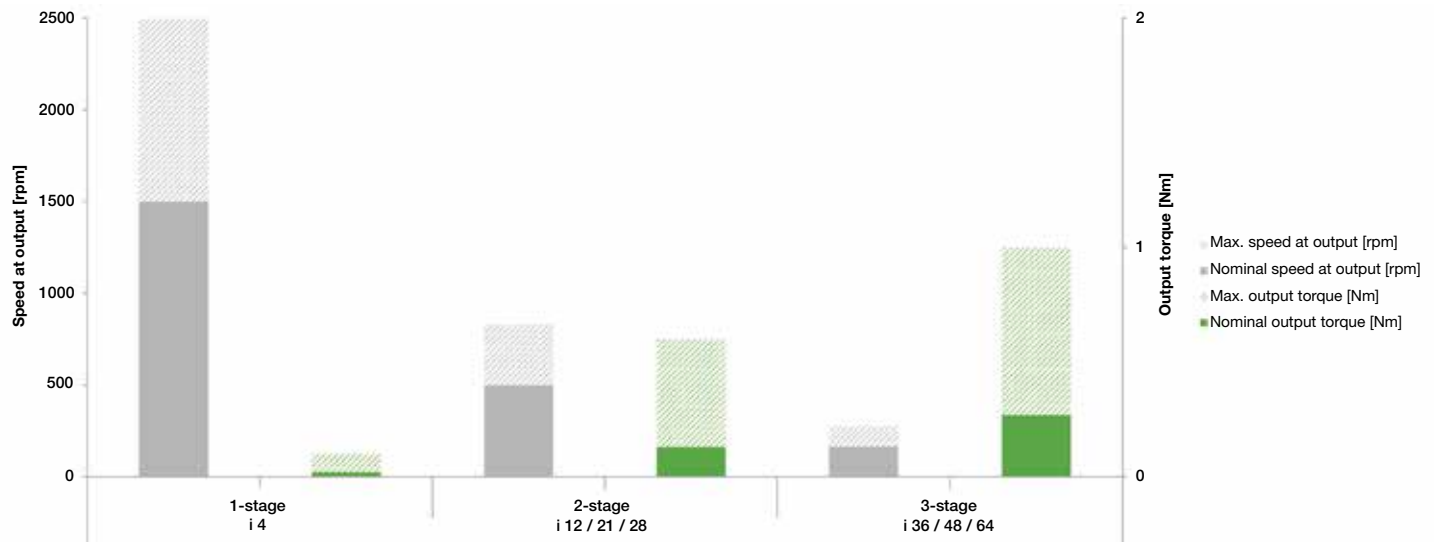


Size	cyber d17	cyber d22	cyber d32	cyber d40
D (in mm)	17	22	32	40
D0 (in mm)	10	13	16	22
D1 (in mm)	12.5	17	22	32
D2	M1.6	M2	M3	M3
W (in mm)	3	4	6	6
L (in mm)	63	67.1	92.7	106.3
L0 (in mm)	47	49.1	66.1	80.3
L1 (in mm)	1.2	1.5	1.5	2
L2 (in mm)	13.3	12.4	12.5	14.5
L3 (in mm)	10	12	20.6	20
H (in mm)	0	0	3	7.5

cyber[®] dynamic line actuator – size 17

Technical data

Ratio			4	12	21	28	36	48	64
Intermediate circuit voltage	V_D	V_{DC}	48	48	48	48	48	48	48
Backlash	j_t	arcmin	20	35	35	35	50	50	50
Max. axial force	F_{Amax}	N	10	10	10	10	10	10	10
Weight	m	kg	0.06	0.07	0.07	0.07	0.07	0.07	0.07
Ambient temperature	ϑ_A	°C	0 to +40						
Protection class			IP54 (depending on mounting situation)						
Mount. pos.			Any						
Lubrication			Grease lubricated						

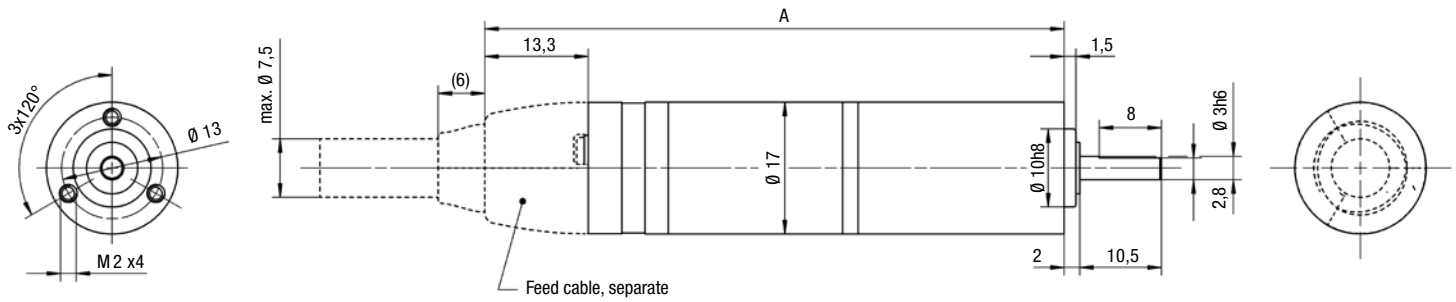




WITTENSTEIN

motion control

Dimensions

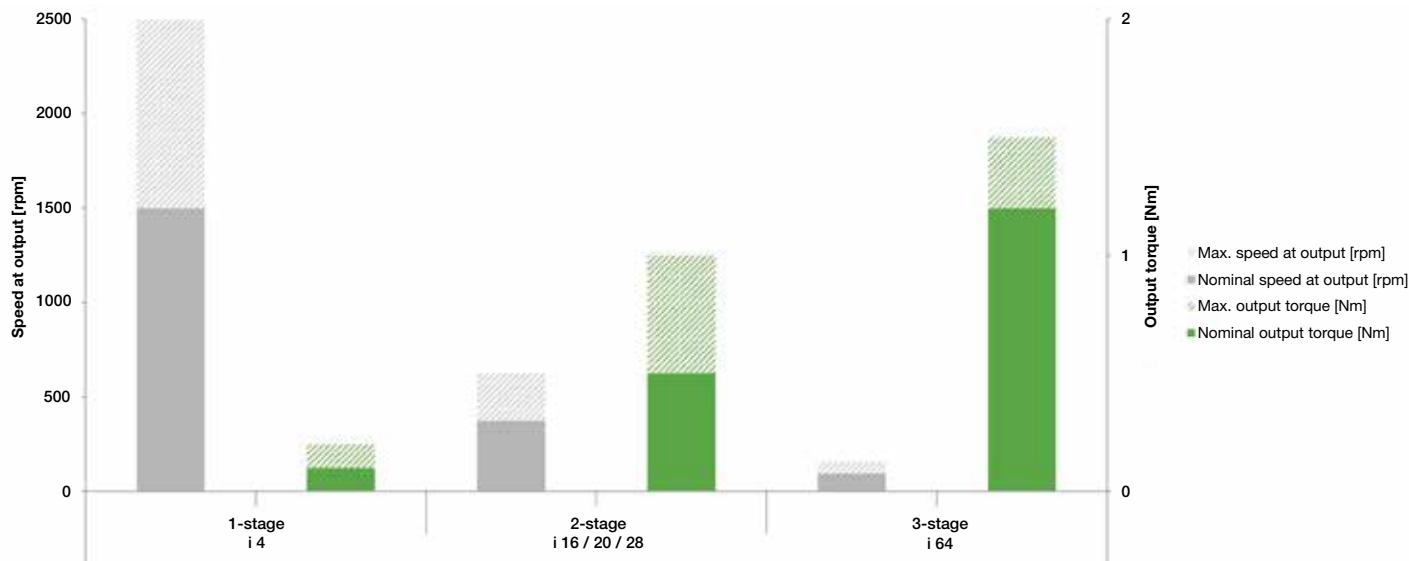


Ratio	Length A in mm
Single-stage, i 4	64.5
Dual-stage, i 12/21/28	69.5
Three-stage, i 36/48/64	74.5

cyber[®] dynamic line actuator – size 22

Technical data

Ratio			4	16	20	28	64
Intermediate circuit voltage	V_D	V_{DC}	48	48	48	48	48
Backlash	j_t	arcmin	20	35	35	35	50
Max. axial force	F_{Amax}	N	24	24	24	24	24
Weight	m	kg	0.15	0.18	0.18	0.18	0.21
Ambient temperature	ϑ_A	°C	0 to +40				
Protection class			IP54 (depending on mounting situation)				
Mount. pos.			Any				
Lubrication			Grease lubricated				

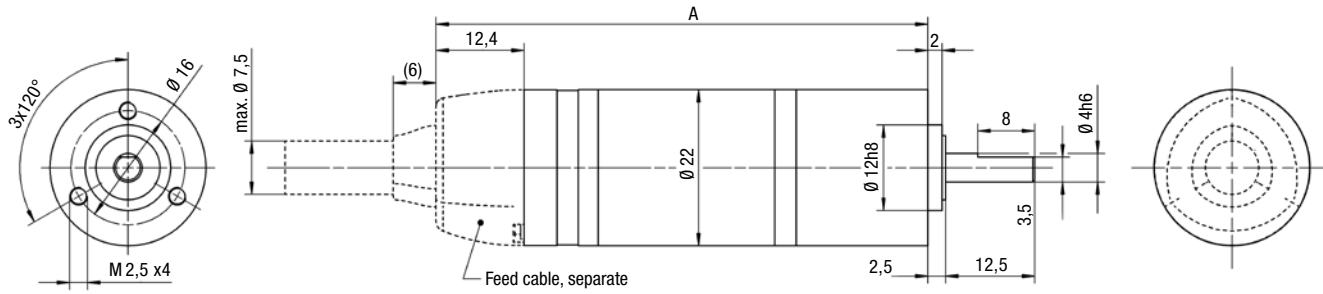




WITTENSTEIN

motion control

Dimensions

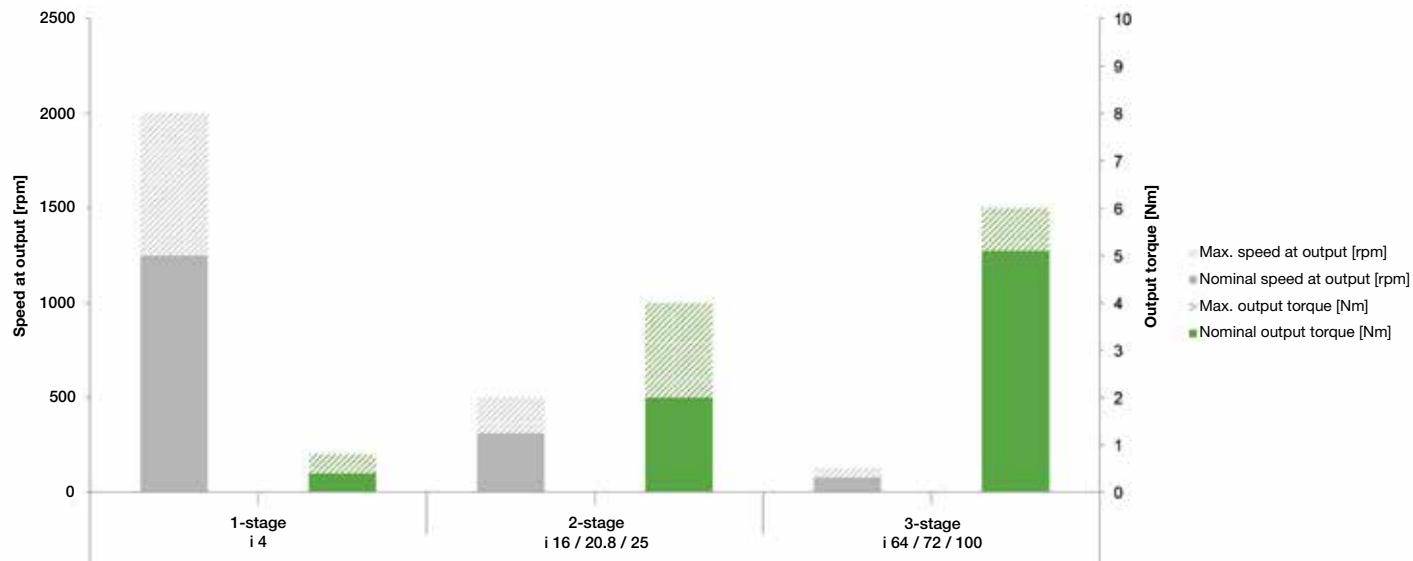


Ratio	Length A in mm
Single-stage, i 4	69.1
Dual-stage, i 16/20/28	76.1
Three-stage, i 64	83.1

cyber[®] dynamic line actuator – size 32

Technical data

Ratio			4	16	20.8	25	64	72	100
Intermediate circuit voltage	V_D	V_{DC}	48	48	48	48	48	48	48
Backlash	j_t	arcmin	20	35	35	35	50	50	50
Max. axial force	F_{Amax}	N	65	65	65	65	65	65	65
Weight	m	kg	0.39	0.43	0.43	0.43	0.5	0.5	0.5
Ambient temperature	ϑ_A	°C	0 to +40						
Protection class			IP54 (depending on mounting situation)						
Mount. pos.			Any						
Lubrication			Grease lubricated						

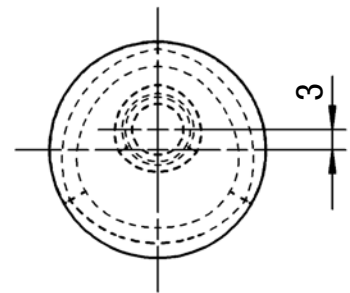
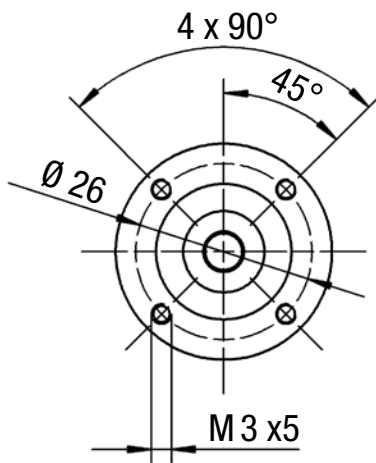
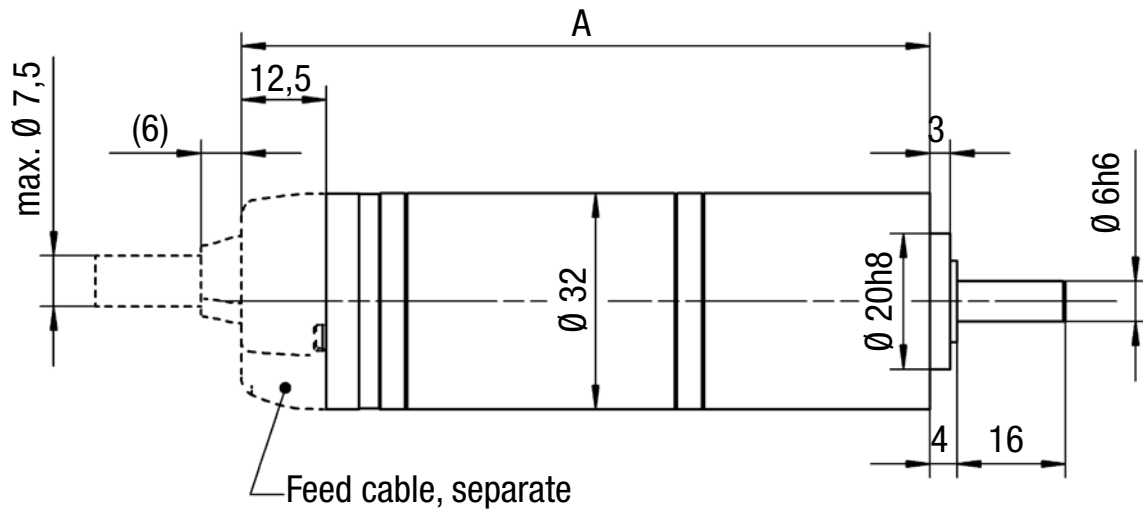




WITTENSTEIN

motion control

Dimensions

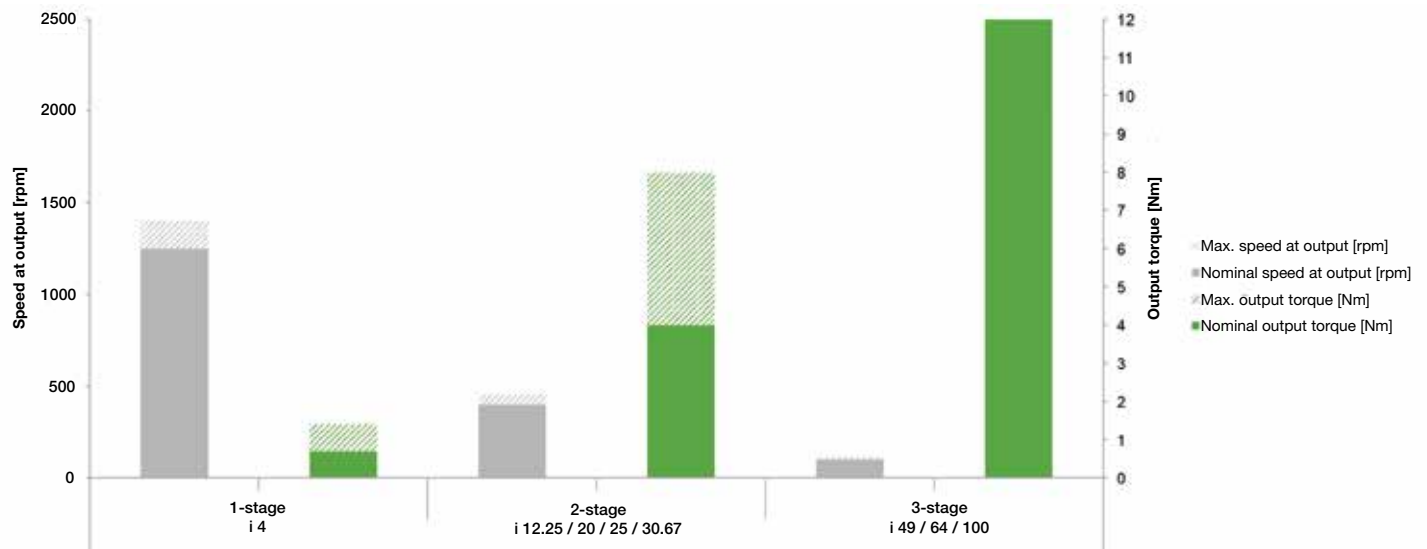


Ratio	Length A in mm
Single-stage, i 4	92.6
Dual-stage, i 16/20.8/25	101.6
Three-stage, i 64/72/100	110.6

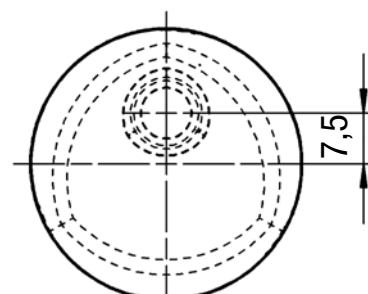
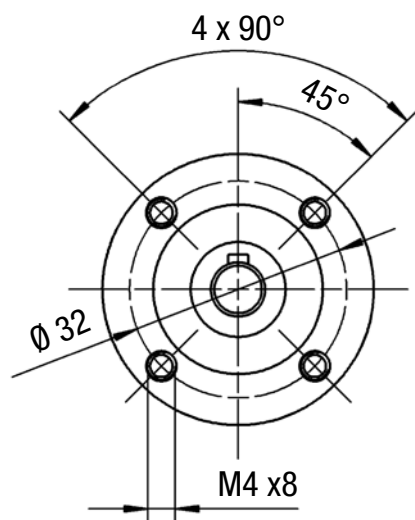
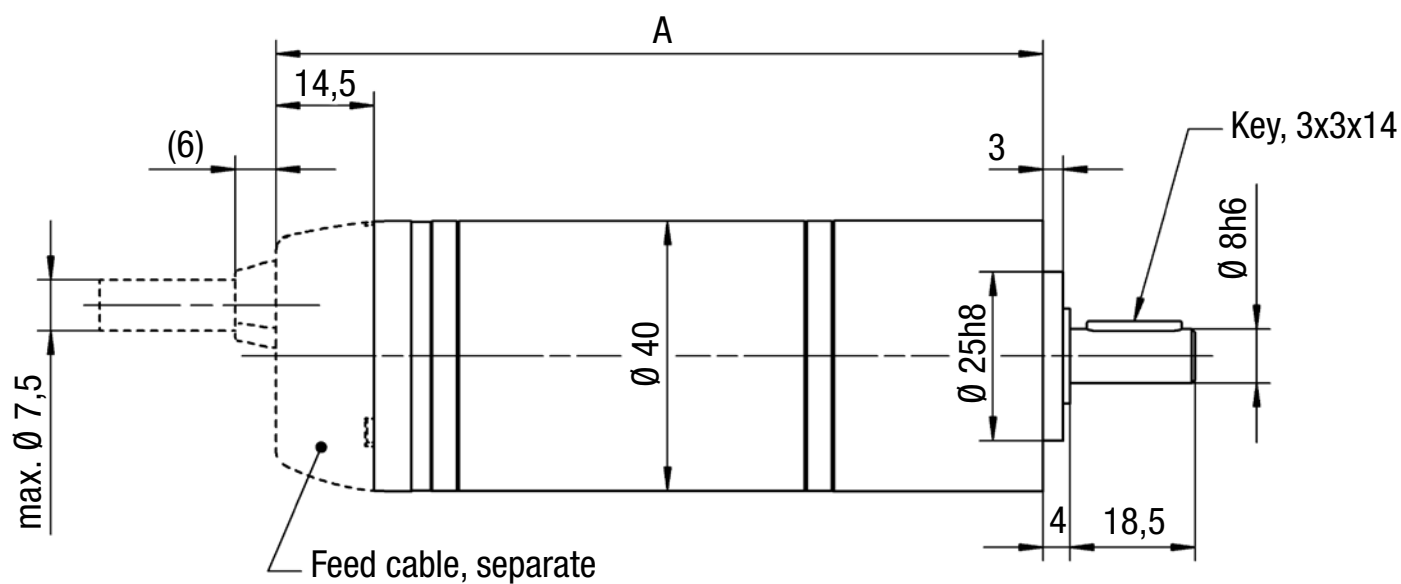
cyber[®] dynamic line actuator – size 40

Technical data

Ratio			4	12.25	20	25	30.67	49	64	100
Intermediate circuit voltage	V_D	V_{DC}	48	48	48	48	48	48	48	48
Backlash	j_t	arcmin	20	35	35	35	35	50	50	50
Max. axial force	F_{Amax}	N	120	120	120	120	120	120	120	120
Weight	m	kg	0.7	0.8	0.8	0.8	0.8	0.9	0.9	0.9
Ambient temperature	ϑ_A	°C	0 to +40							
Protection class			IP54 (depending on mounting situation)							
Mount. pos.			Any							
Lubrication			Grease lubricated							



Dimensions



Ratio	Length A in mm
Single-stage, i 4	113.3
Dual-stage, i 12.25/20/25/30.67	125.8
Three-stage, i 49/64/100	138.3

TPM⁺ dynamic / power actuator

More compact. More dynamic. More flexible.

The perfect combination for all requirements: The TPM⁺ servo actuators in the dynamic and power versions optimally complement the simco® drive servo amplifier. The compact and dynamic actuators combine the gearhead and servo motor to form a coupling-free, flexibly usable unit.





Source: SECKLER AG

Applications

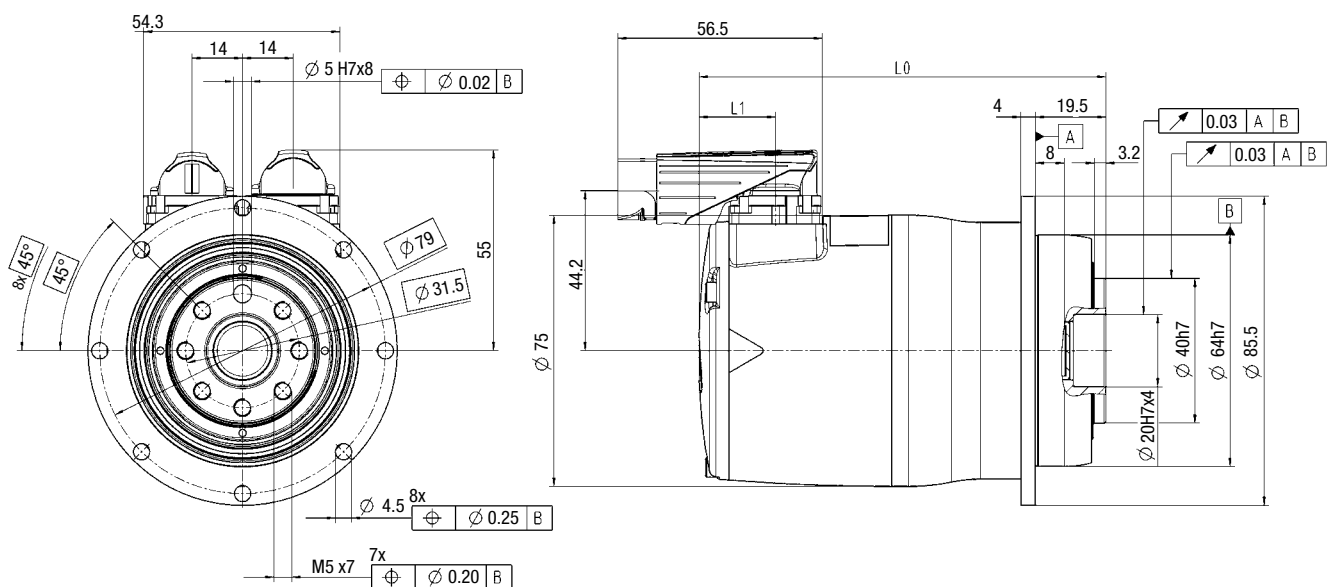
The TPM+ actuator series excels through short response times and high dynamics. The dynamic actuator impresses with a high power density as well as a low moment of inertia and optimum torsional rigidity. The TPM+ is used in robotics and automation, as a swivel drive in production and in the packaging industry.

TPM⁺ dynamic

Size 004 – 24 V / 48 V

Technical data

Ratio	i		16		21		31		61		64		91	
Motor size			53-30	53-30	53-30	53-30	53-30	53-30	53-15	53-15	53-15	53-15	53-15	53-15
Intermediate circuit voltage	V _D	V DC	24	48	24	48	24	48	24	48	24	48	24	48
Max. acceleration torque at drive (max. 1000 cycles per hour)	T _{2B}	Nm	18.8	18.8	24.7	24.7	36.4	36.4	32	32	32	32	32	32
Static output torque	T ₂₀	Nm	6.72	6.72	9.24	9.24	14	14	15	15	14.1	14.1	15	15
Brake holding torque at output, 100°C	T _{2BR}	Nm	17.6	17.6	23.1	23.1	34.1	34.1	67.1	67.1	70.4	70.4	100	100
Max. speed	n _{2max}	rpm	281	375	214	286	145	194	98.4	98.4	93.8	93.8	65.9	65.9
Speed limit for T2B	n _{2B}	rpm	160	375	121.95	285.6	82.61	193.4	87.34	86.36	85.11	84.12	65.93	65.73
Max. motor acceleration torque	T _{mmax}	Nm	1.25	1.25	1.25	1.25	1.25	1.25	0.69	1.03	0.69	1.03	0.69	1.03
Max. motor acceleration current	I _{maxdyn}	A _{eff}	20	20	20	20	20	20	20	15	20	15	20	15
Motor stall current	I ₀	A _{eff}	10	10	10	10	10	10	10	5.01	10	5.01	10	5.01
Mass moment of inertia (at motor shaft, without brake, with resolver)	J ₁	kgm ² *10 ⁻⁴	0.21		0.2		0.2		0.12		0.11		0.12	
Backlash	j _t	arcmin	Standard < 4 / Reduced < 2											
Torsional rigidity	C _t	Nm/arcmin	/		10		9		9		/		7	
Tilting rigidity	C _K	Nm/arcmin	/											
Max. axial force	F _{amax}	N	1630											
Max. tilting torque (distance from point of rotation to output flange 57.6 mm)	M _{kmax}	Nm	110											
Weight (with resolver, without brake)	m	kg	2.2						2					
Operating noise (measured at motor speed of 3000 rpm)	L _{PA}	dB(A)	< 58											
Max. permitted housing temperature	ϑ _{max}	°C	90											
Ambient temperature	ϑ _A	°C	0 to +40											
Protection class			IP65											
Mount. pos.			Any											
Lubrication			Synthetic oil, lubricated for life											
Insulating material class			F											
Paint			Metallic blue 250 and natural cast aluminum											



without brake

Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16/21/31	Resolver	128	22
	EnDat 2.2	157	51
i = 61/64/91	Resolver	113	22
	EnDat 2.2	142	51

Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16/21/31	Resolver	165	22
	EnDat 2.2	194	51
i = 61/64/91	Resolver	150	22
	EnDat 2.2	179	51

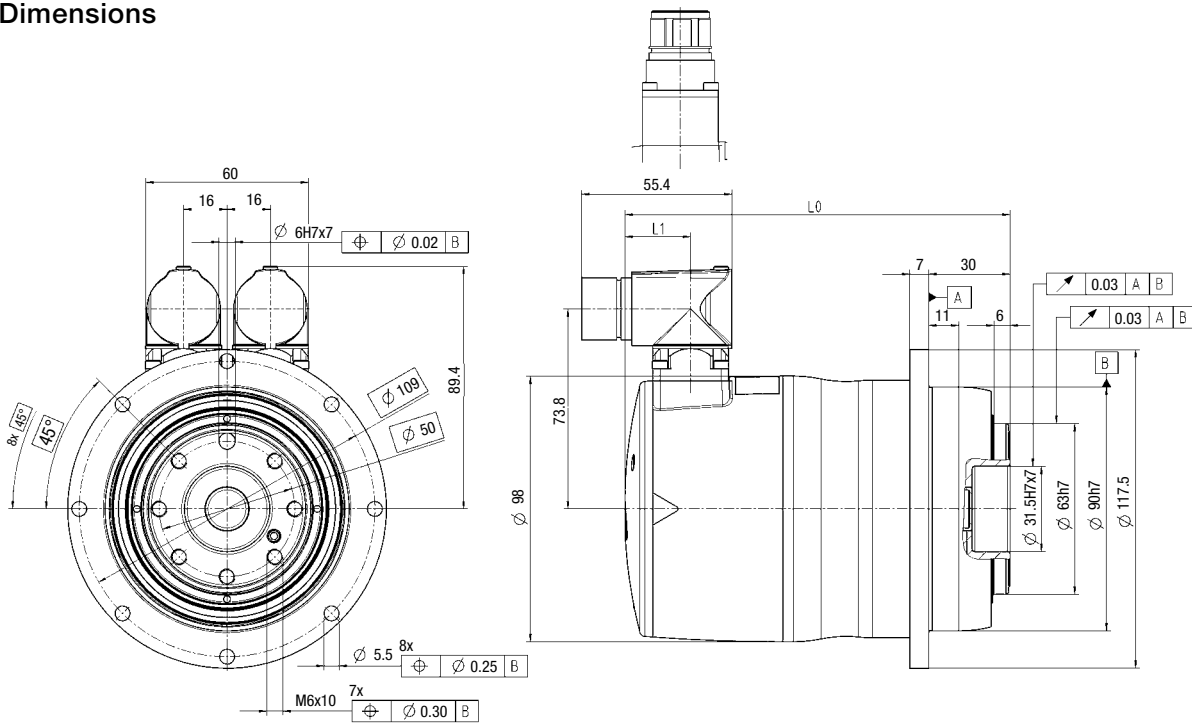
TPM⁺ dynamic

Size 010 – 24V/48V

Technical data

Ratio	i		16	21	31	61		64		91	
Motor size			64-30	64-30	64-30	64-15	64-15	64-15	64-15	64-15	64-15
Intermediate circuit voltage	V _D	V DC	48	48	48	24	48	24	48	24	48
Max. acceleration torque at drive (max. 1000 cycles per hour)	T _{2B}	Nm	24.7	32.4	47.8	50.4	80	52.9	80	75.2	80
Static output torque	T ₂₀	Nm	7.36	10.3	15.8	15.3	26.8	13.4	25.6	23..7	35
Brake holding torque at output, 100°C	T _{2BR}	Nm	17.6	23.1	34.1	67.1	67.1	70.4	70.4	100	100
Max. speed	n _{2max}	rpm	375	286	194	98.4	88.7	93.8	84.6	65.9	59.5
Speed limit for T2B	n _{2B}	rpm	346.69	264.14	178.94	74.75	44.17	71.25	44.07	50.11	39.36
Max. motor acceleration torque	T _{mmax}	Nm	1.64	1.64	1.64	0.88	1.67	0.88	1.67	0.88	1.67
Max. motor acceleration current	I _{maxdyn}	A _{eff}	20	20	20	20	18.7	20	18.7	20	18.7
Motor stall current	I ₀	A _{eff}	10	10	10	10	6.23	10	6.23	10	6.23
Mass moment of inertia (at motor shaft, without brake, with resolver)	J ₁	kgm ² *10 ⁻⁴	0.32	0.32	0.32	0.17		0.17		0.17	
Backlash	j _t	arcmin	Standard < 3 / Reduced < 1								
Torsional rigidity	C _t	Nm/arcmin	/	26	24	24	24	/	/	21	21
Tilting rigidity	C _K	Nm/arcmin	225								
Max. axial force	F _{amax}	N	2150								
Max. tilting torque (distance from point of rotation to output flange 57.6 mm)	M _{kmax}	Nm	270								
Weight (with resolver, without brake)	m	kg	4.8			4.3					
Operating noise (measured at motor speed of 3000 rpm)	L _{PA}	dB(A)	< 62								
Max. permitted housing temperature	ϑ _{max}	°C	90								
Ambient temperature	ϑ _A	°C	0 to +40								
Protection class			IP65								
Mount. pos.			Any								
Lubrication			Synthetic oil, lubricated for life								
Insulating material class			F								
Paint			Metallic blue 250 and natural cast aluminum								

Dimensions



Electrical connection: Integral sockets, straight or angled, manufactured by Intercontec, speedtec model, series A and B, size 1

without brake

Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16/21/31	Resolver	157	24
	EnDat 2.2	182	49
i = 61/64/91	Resolver	142	24
	EnDat 2.2	167	49

with brake

Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16/21/31	Resolver	178	24
	EnDat 2.2	202	49
i = 61/64/91	Resolver	163	24
	EnDat 2.2	187	49

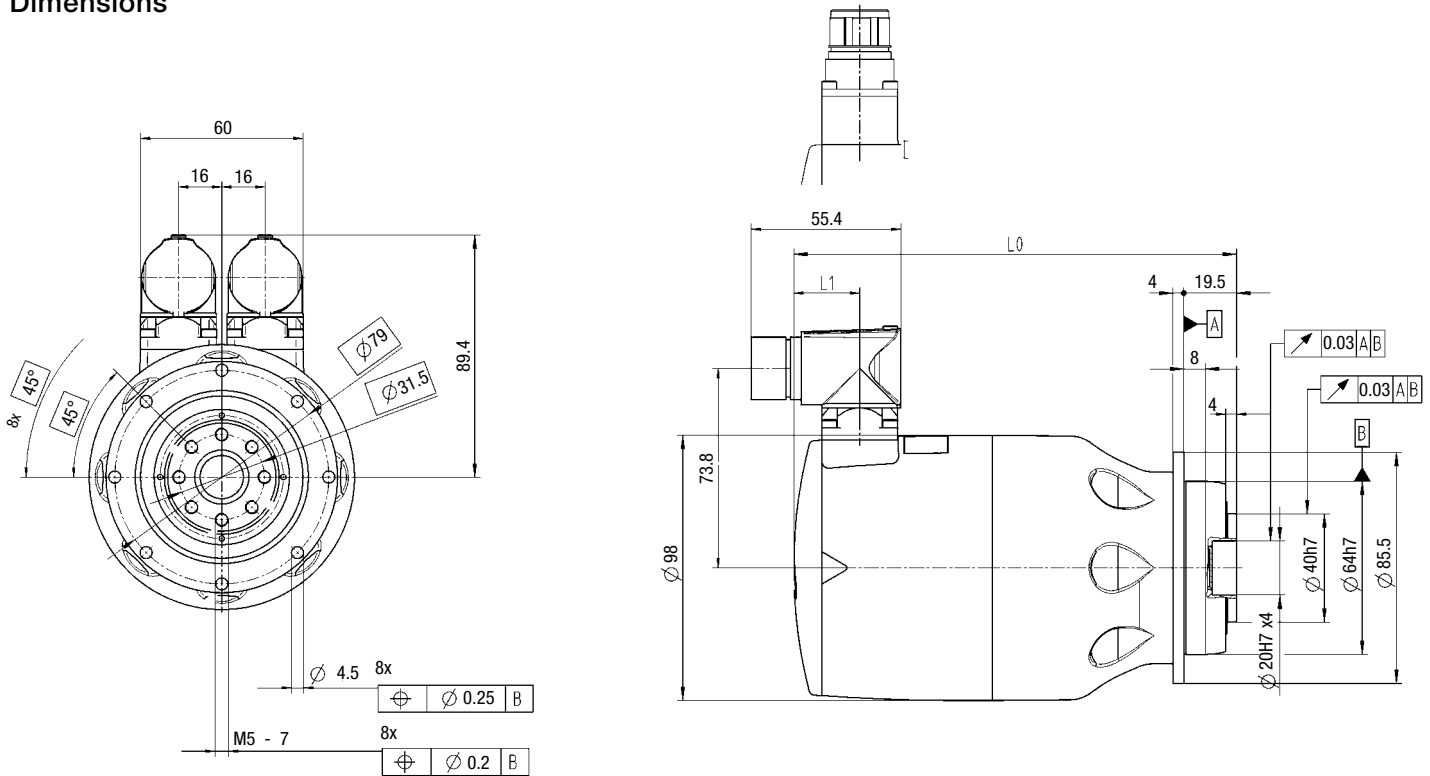
TPM⁺ power

Size 004 – 24 V / 48 V

Technical data

Ratio	i		16	20	25	28	35	40		50		70		100	
Motor size			64-30	64-30	64-30	64-30	64-30	64-15	64-15	64-15	64-15	64-15	64-15	64-15	64-15
Intermediate circuit voltage	V _D	V DC	48	48	48	48	48	24	48	24	48	24	48	24	48
Max. acceleration torque at drive (max. 1000 cycles per hour)	T _{2B}	Nm	24.4	30.5	38.1	43.4	50	32.6	50	40.8	50	50	50	35	35
Static output torque	T ₂₀	Nm	11.4	14.3	17.9	20.7	26.4	15.4	23	19.3	28.8	27.9	40	18	18
Brake holding torque at output, 100°C	T _{2BR}	Nm	17.6	22	27.5	30.8	38.5	44	44	55	55	77	77	110	110
Max. speed	n _{2max}	rpm	375	300	240	214	171	150	135	120	108	85.7	77.3	60	54.1
Speed limit for T2B	n _{2B}	rpm	346.69	277.35	221.88	198.11	160.29	114	71.25	91.2	67.11	67.59	56.71	54.62	46.55
Max. motor acceleration torque	T _{mmax}	Nm	1.64	1.64	1.64	1.64	1.64	0.88	1.67	0.88	1.67	0.88	1.67	0.88	1.67
Max. motor acceleration current	I _{maxdyn}	A _{eff}	20	20	20	20	20	20	18.7	20	18.7	20	18.7	20	18.7
Motor stall current	I ₀	A _{eff}	10	10	10	10	10	10	6.23	10	6.23	10	6.23	10	6.23
Mass moment of inertia (at motor shaft, without brake, with resolver)	J ₁	kgm ² *10 ⁻⁴	0.32	0.31	0.31	0.31	0.31	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Backlash	j _t	arcmin	Standard < 4 / Reduced < 2												
Torsional rigidity	C _t	Nm/arcmin	12	12	12	12	12	11	11	12	12	11	11	8	8
Tilting rigidity	C _K	Nm/arcmin	/												
Max. axial force	F _{amax}	N	1630												
Max. tilting torque (distance from point of rotation to output flange 57.6 mm)	M _{kmax}	Nm	110												
Weight (with resolver, without brake)	m	kg	3.7					3.3							
Operating noise (measured at motor speed of 3000 rpm)	L _{PA}	dB(A)	< 58												
Max. permitted housing temperature	ϑ _{max}	°C	90												
Ambient temperature	ϑ _A	°C	0 to +40												
Protection class			IP65												
Mount. pos.			Any												
Lubrication			Synthetic oil, lubricated for life												
Insulating material class			F												
Paint			Metallic blue 250 and natural cast aluminum												

Dimensions



Electrical connection: Integral sockets, straight or angled, manufactured by Intercontec, speedtec model, series A and B, size 1

without brake

Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16, 20, 25, 28, 35	Resolver	164	24
	EnDat 2.2	189	49
i = 40, 50, 70, 100	Resolver	149	24
	EnDat 2.2	174	49

with brake

Ratio	Motor feedback	Length L0 in mm	Length L1 in mm
i = 16, 20, 25, 28, 35	Resolver	184	24
	EnDat 2.2	209	49
i = 40, 50, 70, 100	Resolver	169	24
	EnDat 2.2	194	49

The background of the page is an abstract composition of concentric circles. The circles are centered on the right side of the frame and expand towards the left. The color gradient transitions from a dark green on the far left to a bright yellow on the far right. A horizontal white band runs across the middle of the image, providing a backdrop for the title text.

Accessories



Software

MotionGUI

The MotionGUI graphical user interface guides you intuitively during commissioning of your drive system. Diagnoses, optimizations and parametrization of the drive can be performed using numerous functions.

Diagnostic routines and event logging are carried out by means of a real-time clock. This allows condition monitoring as well as integration and maintenance tasks to be performed efficiently and in a time-saving manner.

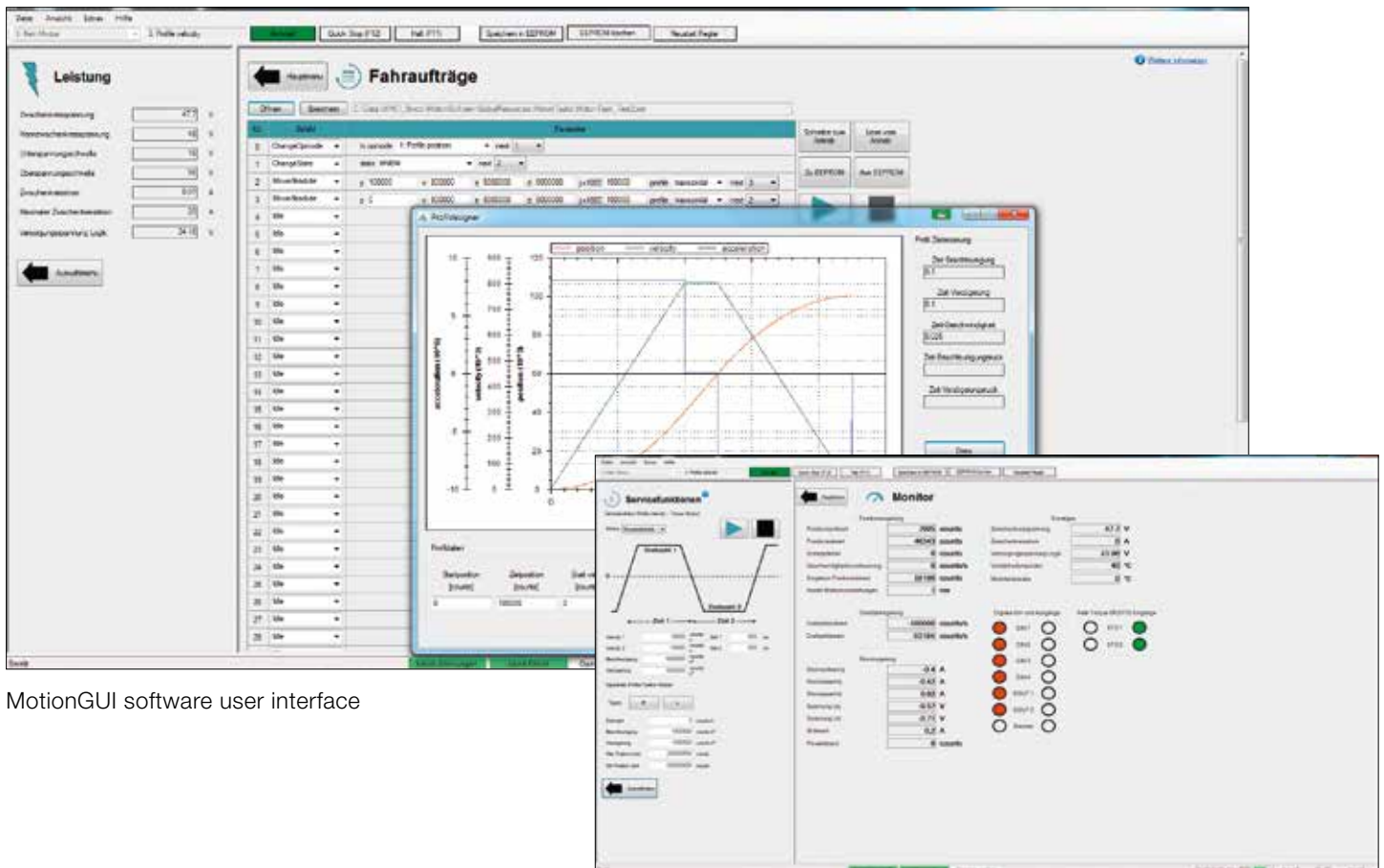
Functions

- **Diagnosis via the Scope functionality**
- **Loading of cycle parameters via the Motion tasks**
- **Read-out of errors and warnings via the Errors and Warnings function**
- **Monitoring: read-out of the drive parameters in operation, e.g. position, temperature**
- **etc.**



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motion control



MotionGUI software user interface

Cables

Pre-terminated lengths

The following pre-assembled cables are available for fast commissioning of your drive system:

- Cables for **voltage supply** of the simco® drive
- **Field bus cables** for CANopen, EtherCAT and PROFINET communication
- Cables for **commissioning**
- **Motor connection cables** for connecting to the servo amplifier.

Further cable lengths are available upon request.



Technical details of the motor connection cables:

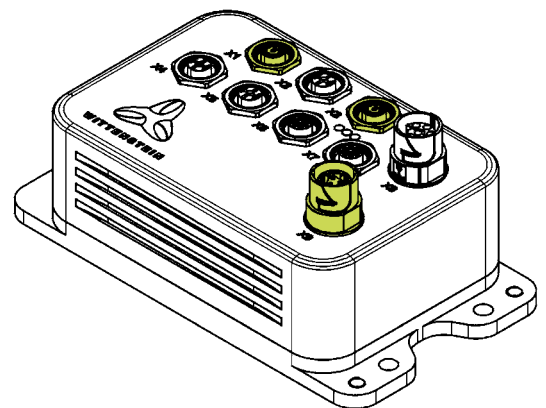
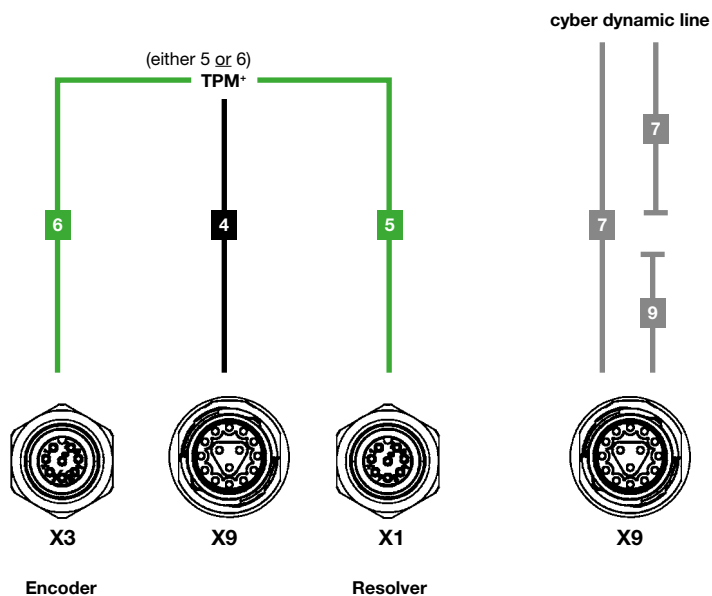
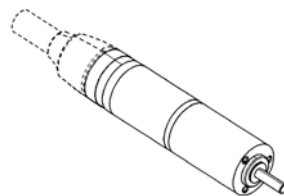
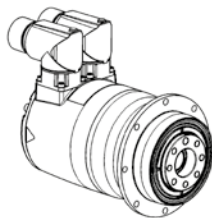
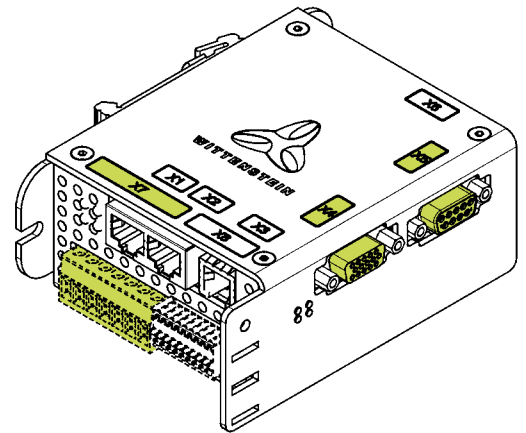
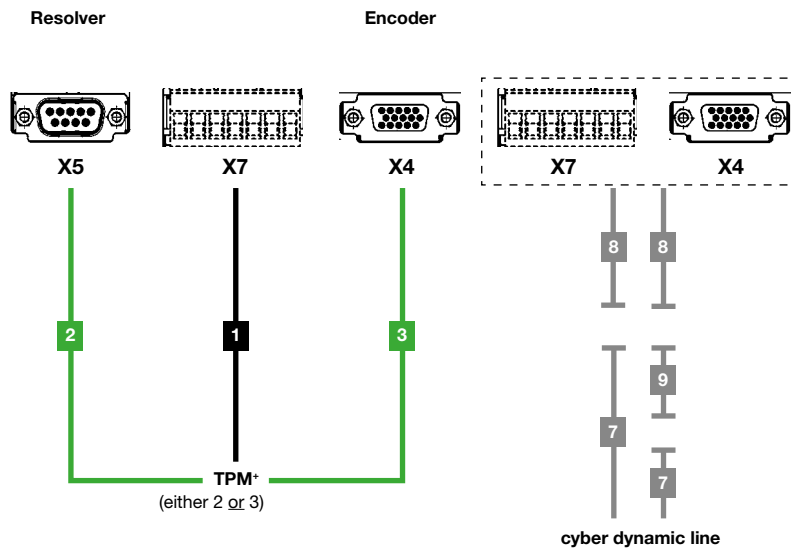
- Temperature range
Cables for TPM+: -30 to 80°C
Cables for cyber® dynamic line: -40 to 70°C
- EMC shielding
- Material: PUR
- Compatible with drag chains

Further technical data is available upon request.

Motor connection cables

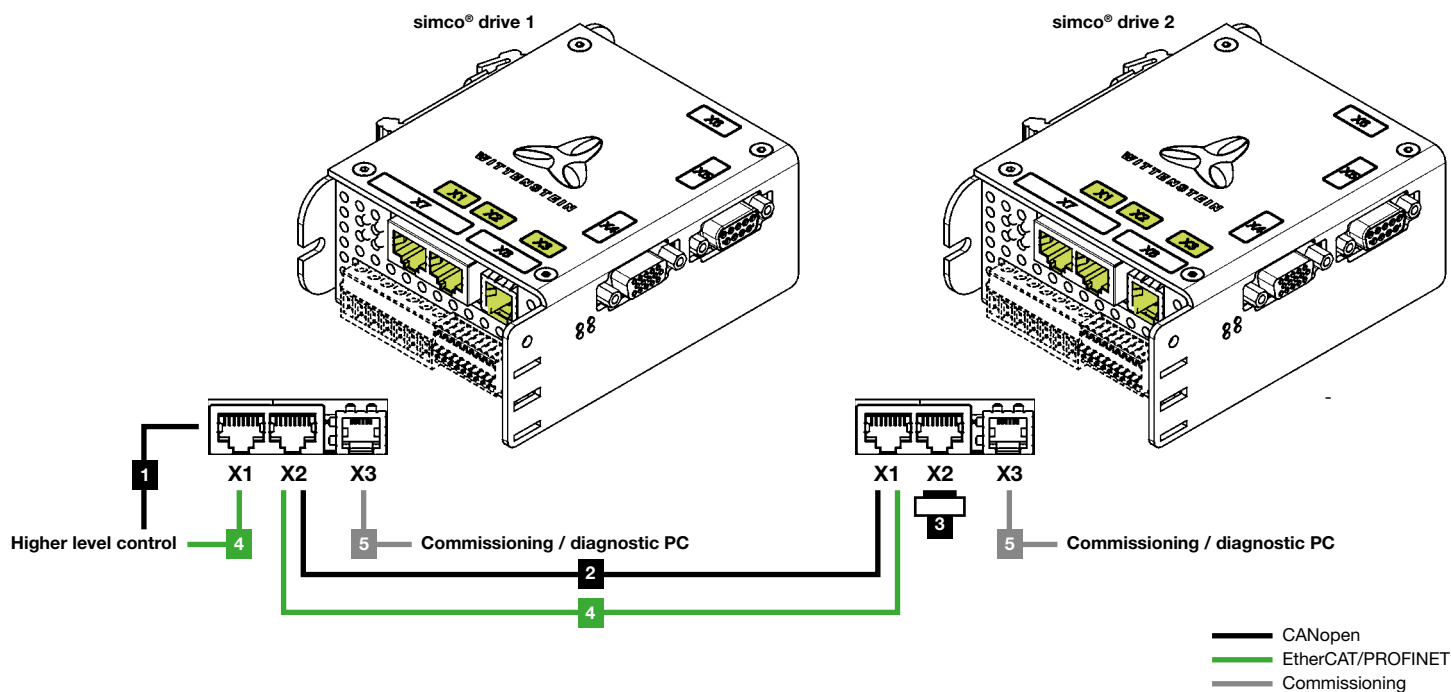
No.	Cable type	Designation	Interfaces		Standard lengths
			Motor	Servo amplifier	
TPM*					
1	Power cable	CAB-POW-U-SIM2-C-D0075-E-LXXXX	itec, series 915	Phoenix Contact connector	2m; 5m; 10m; 15m; 20m
		CAB-POW-U-SIM2-C-D0075-S-LXXXX	speedtec, series 923		
2	Signal cable resolver	CAB-SIG-R-SIM-C-D0000-E-LXXXX	itec, series 615	Sub-D connector, 9-pin	
		CAB-SIG-R-SIM-C-D0000-S-LXXXX	speedtec, series 923		
3	Signal cable encoder	CAB-SIG-W-SIM-C-D0000-E-LXXXX	itec, series 615	Sub-D connector, 15-pin	
		CAB-SIG-W-SIM-C-D0000-S-LXXXX	speedtec, series 923		
4	Power cable	CAB-POW-U-SIM2-F-D0075-E-LXXXX	itec, series 915	itec, series 915	
		CAB-POW-U-SIM2-F-D0075-S-LXXXX	speedtec, series 923		
5	Signal cable resolver	CAB-SIG-R-SIM-F-D0000-E-LXXXX	itec, series 615	M12 connector, 8-pin	
		CAB-SIG-R-SIM-F-D0000-S-LXXXX	speedtec, series 923		
6	Signal cable encoder	CAB-SIG-W-SIM-F-D0000-E-LXXXX	itec, series 615	M12 connector, 8-pin	
		CAB-SIG-W-SIM-F-D0000-S-LXXXX	speedtec, series 923		
cyber dynamic line					
7	Motor connection cable	S/L cable XXXHI-XXXX-BMS0-12/3	Direct cable outlet	itec, series 915	0.5m; 3m
8	Extension cable for IP20	S/L cable XXXHI-XXXX-BAS0-12/3	itec, series 915	Sub-D connector, 15-pin Phoenix Contact connector	0.5m; 3m; 5m; 10m; 15m; 20m
9	Extension cable for IP20	S/L cable XXXHI-XXXX-BVS0-12/3	itec, series 915	itec, series 915	3m; 5m; 10m; 15m; 20m

Overview of motor connection options



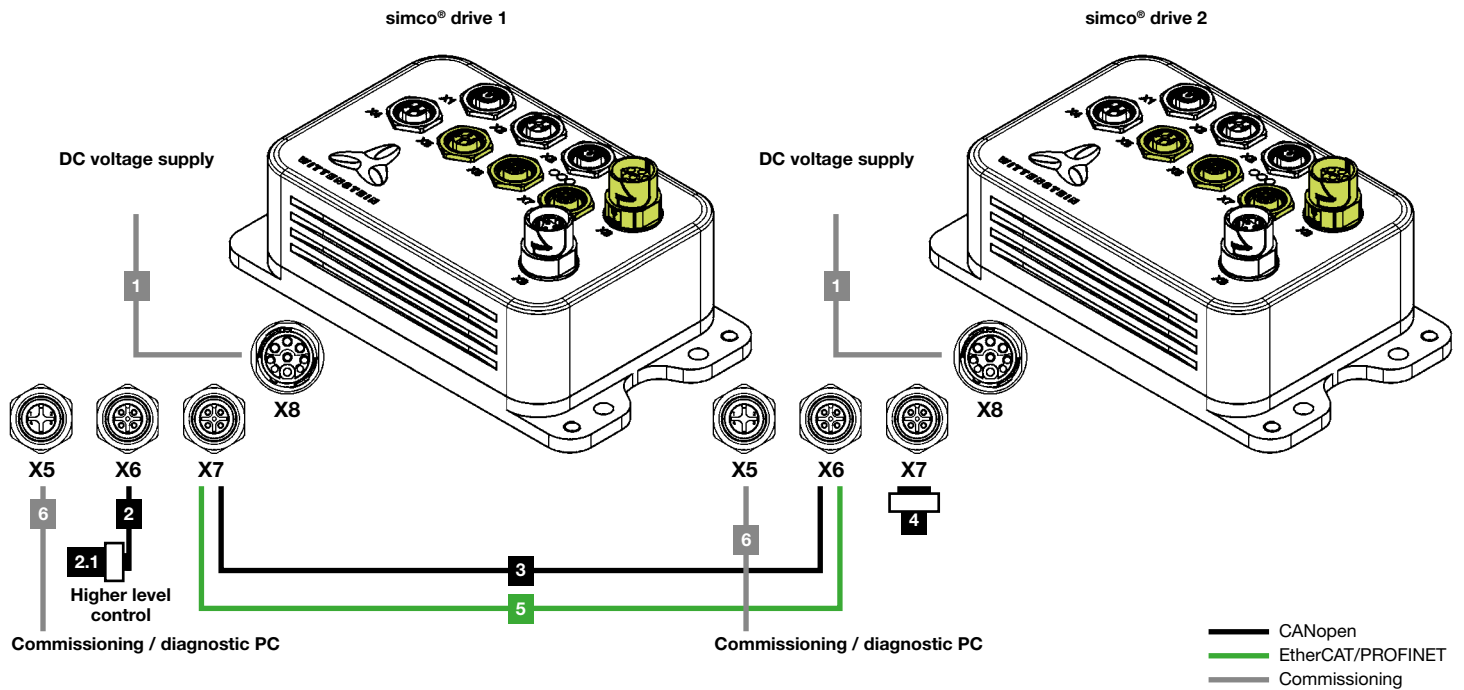
— Power cable
— Signal cable
— Hybrid motor cable

Cables



simco® drive IP20

No.	Type of accessory	Designation	Interfaces		Description	Standard lengths
			Servo amplifier	Control / servo amplifier 2 / PC		
CANopen field bus						
1	CANopen field bus cable	CAB-BUS-CAN-RJ45-FL__-LXXXX	RJ45 connector, 8-pin	Free cable end	-	5 m
2	CANopen field bus extension cable	CAB-BUS-CAN-RJ45-RJ45-LXXXX	RJ45 connector, 8-pin	RJ45 connector, 8-pin	-	0.25 m; 5 m
3	CANopen terminating resistor	CAB-BUS-CAN-RJ45-TERMINAT	-	RJ45 connector, 8-pin	Terminating resistor only necessary for CAN communication	-
EtherCAT / PROFINET field bus cable						
4	EtherCAT / PROFINET field bus cable	CAB-BUS-ETH-RJ45-RJ45-LXXXX	RJ45 connector, 8-pin	RJ45 connector, 8-pin	-	1.5m; 3m; 5m; 7.5m; 10m
Commissioning						
5	Extension cable RS 232	CAB-BUS-RS_-RJ12-SF09-LXXXX	RJ12 connector, 6-pin	Sub-D connector, 9-pin	Connection cable RS 232 for diagnostic purposes, commissioning with MotionGUI	3 m



simco® drive IP65

No.	Type of accessory	Designation	Interfaces		Description	Standard lengths
			Servo amplifier	DC voltage supply / Control / Servo amplifier 2 / PC		
Voltage supply						
1	Voltage supply	CAP-SUP-SIM2010D-F-D0075-LXXXX	itec, series 915	Free cable end	DC voltage supply cable	2 m; 5 m
CANopen field bus						
2	CANopen field bus cable	CAB-BUS-CAN-M12M-FL__-LXXXX	M12 connector, 5-pin, A-coded	Free cable end	-	5 m
2.1	CAN Sub-D connector	SUBCON-PLUS-CAN/PG	-	-	9-pin connector with cable entry and outlet as well as switchable terminating resistor	-
3	CANopen field bus extension cable	CAB-BUS-CAN-M12M-M12M-LXXXX	M12 connector, 5-pin, A-coded	M12 connector, 5-pin, A-coded	-	0.5; 1 m
4	CANopen terminating resistor	CAB-BUS-CAN-M12M-TERMINAT	-	M12 connector, 5-pin, A-coded	Terminating resistor only necessary for CAN communication	-
EtherCAT / PROFINET field bus cable						
5	EtherCAT / PROFINET field bus cable	CAB-BUS-ETH-M12M-M12M-LXXXX	M12 connector, 4-pin, D-coded	M12 connector, 4-pin, D-coded	-	1.5m; 3m; 5m; 10m
Commissioning						
6	Extension cable RS 232	CAB-BUS-RS_-M12M-SF09-LXXXX	M12, 4-pin	Sub-D connector, 9-pin	Connection cable RS 232 for diagnostic purposes, commissioning with MotionGUI	5 m



Service

Service information

As a supplier of innovative drive systems, the WITTENSTEIN motion control service portfolio is specially tailored to system solutions. An overview of our service offerings, both product-specific information, such as dimension sheets, technical data or operating instructions are available to you for download at www.wittenstein-motion-control.de/de_DE/division/industrial-systems/service.html. Please do not hesitate to contact us should you have any questions or suggestions..

Information:

On our homepage

www.wittenstein-motion-control.de, you will find

- information and a CAD finder for the TPM+ product segment
- Operating instructions

Upon request:

- Consulting and design
- Customer training courses
- Cymex statistics

Technical support

Support hotline: +49 7931 493-14800

For any questions on installation, commissioning and optimization

Service hotline: +49 7931 493-14900

Customer and repair service

Sales contact: +49 7931 493-14400

In the event of questions regarding delivery dates, orders and offers

Order code

simco® drive

1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8					
S	I	M	2	0	1	0	D	-	F	C	S	A	-	C	A	0	0	-	0	0	0	0	-	0	0	0	0					
Product range 3 characters (pos. 1-3)			Rated output current 3 characters (pos. 5-7) Number codes 010 = 10 Aeff 002 = 2,5 Aeff			Intermediate circuit voltage 1 character (pos. 4) Number code 2 = 48 V			Housing version 1 character (pos. 10) Letter codes C = Switch cabinet version, IP20 F = Decentralized version, IP65			Cooling 1 character (pos. 11) Letter codes C = Convection			Overload factor 1 character (pos. 12) Letter code S = 2x, internal			Device generation 1 character (pos. 13) Letter code A = 1st generation			Field bus interface 2 characters (pos. 15-16) Letter codes CA = CANopen EC = EtherCAT PN = PROFINET			Safety version 2 characters (pos. 20-21) Number code 00 = STO (certification pending)			Motor encoder return system 2 characters, (pos. 22-23) Number code 00 = Standard EnDat/BiSS/Resolver			Special 4 characters (pos. 25-28) Consecutive numbering 0000 = Standard xxxx = Sequential number, special version		

**TPM⁺**51

Order code

TPM+ power cable

1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0					
C A B			-	P O W			-	U	-	S I M 2				-	X	-	D 0 0 7 5					-	E	-	L X X X X									
Cable harness 3 characters (pos. 1-3)			Model 3 characters (pos. 5-7) Letter codes POW = Power cable					Controller manufacturer 4 characters (pos. 11-14) Letter code SIM2 = simco® drive (max. Vint = 48 V)							Controller version 1 character (pos. 16) Letter codes C = IP20 F = IP65					Cable cross section 5 characters (pos. 18-22) Letter code D0075 = 0.75 mm ²					Motor manufacturer 1 character (pos. 24) Letter codes E = Connector, itec (motor size 53 mm) S = Connector, speedtec (motor size 64 mm)					Cable length 5 characters (pos. 26-30) Length L0200 = 2 m L0500 = 5 m L1000 = 10 m L1500 = 15 m				
Power connector assignment 1 character (pos. 9) Connector size 1.5 U = Universal for all motor feedback																																		

TPM+ signal cable

1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9																				
C	A	B	-	S	I	G	-	X	-	S	I	M	-	C	-	D	0	0	0	0	-	E	-	L	X	X	X	X										
Cable harness 3 characters (pos. 1-3)			Model 3 characters (pos. 5-7)			Letter code SIG = Signal cable			Feedback system 1 character (pos. 9)			Letter codes R = Resolver W = EnDat 2.2 absolute encoder, single-turn / multi-turn			Controller manufacturer 3 characters (pos. 11-13)			Letter code SIM = simco® drive			Controller version 1 character (pos. 15)			Letter codes C = IP20 F = IP65			Cable cross section 5 characters (pos. 17-21)					Letter codes D0000 = Standard for all sizes						
																							Motor manufacturer 1 character (pos. 23)			Letter codes E = Connector, itec (motor size 53 mm) S = Connector, speedtec (motor size 64 mm)			Cable length 5 characters (pos. 25-29)					Length L0200 = 2 m L0500 = 5 m L1000 = 10 m L1500 = 15 m				

Order code

simco® drive power supply

1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0
C	A	B	-	S	U	P	-	S	I	M	2	0	1	0	D	-	F	-	D	0	0	7	5	-	L	0	5	0	0

Cable harness
3 characters
(pos. 1-3)

Controller manufacturer
8 characters (pos. 9-16)
Letter code
SIM2010 = simco® drive
(2,5 / 10 A nominal current)

Controller version
1 character (pos. 18)
Letter code
F = IP65

Cable length
5 characters (pos. 26-30)
Length
Length in cm:
Note available cable lengths
on page 46 / 47

Cable cross section
5 characters (pos. 20-24)
Letter code
D0075 = 0.75 mm²

Model
3 characters (pos. 5-7)
Letter code
SUP = Voltage supply cable



WITTENSTEIN

motion control

Fieldbus cable and RS232 connection cable

1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7
C	A	B	-	B	U	S	-	X	X	X	-	X	X	X	X	-	X	X	X	X	-	L	X	X	X	X

Cable harness
3 characters
(pos. 1-3)

Model
3 characters (pos. 5-7)
Letter code
BUS = Field bus cable

Cable length
5 characters (pos. 23-27)

Length
Length in cm:
Note available cable lengths
on page 46 / 47

Control cable end
4 characters (pos. 18-21)

Letter codes
M12M = M12 connector, 5-pin, straight
RJ45 = RJ45 connector, 8-pin
FL__ = Free cable end
SF09 = Sub-D connector, 9-pin

simco® drive cable end
4 characters (pos. 13-16)

Letter codes
M12M = M12 connector, 5-pin, straight
RJ45 = RJ45 connector, 8-pin
RJ12 = RJ12 connector, 6-pin

Type of connection
3 characters (pos. 9-11)

Letter codes
CAN = CANopen field bus cable
RS_ = RS232 connection cable
ETH = EtherCAT / PROFINET field bus cable



motion control

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WITTENSTEIN – one with the future

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