LTN Servotechnik GmbH

PRODUCT BROCHURE - SLIP RINGS
QUALITY COMBINED WITH HIGH VERTICAL INTEGRATION

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ABOUT US

LTN Servotechnik GmbH is a manufacturer of customized transmission and feedback systems located in the south of Munich. For over 40 years we have continuously specialised in the development, design and series manufacture of components for apparatus, machinery and plant engineering customers worldwide.

Our product range includes slip rings for power, signal and data, resolvers for open & closed-loop control tasks and rotary joints for fibre-optic information systems. Our product portfolio are characterised by extraordinary diversity.

SLIP RINGS

Slip rings are electromechanical components which allow electrical power, signal and data transmission between stationary and rotating systems. The spectrum ranges from just a few mV or mA to many hundreds A and few thousand V. Our slip ring systems withstand harsh environmental influences such as corrosive, salty air or severe vibration. LTN slip ring systems are found in many electrical machines and ensure the reliable functionality of entire machine systems.

LTN slip rings meet all the requirements for error-free transmission of real time fieldbus systems. Of course, all our Fast, Gigabit and 10 Gigabit Ethernet slip rings are certified according to TIA-568 and EN 50173.

Our components conform to the highest standards of durability, sensitivity and reaction time and are therefore an important part of automation, robotics and all other highly dynamic applications.

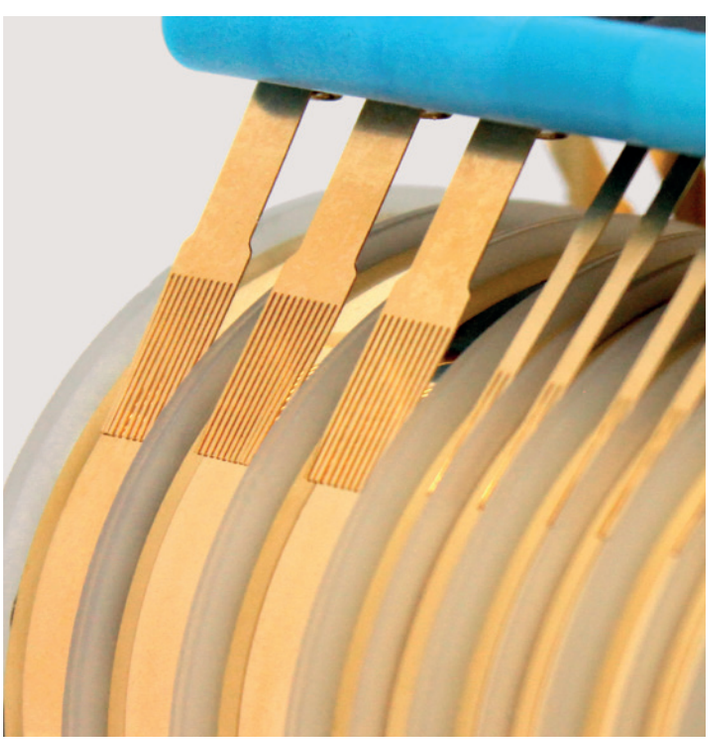
In addition, we offer fibre-optic rotary joints for contactless transmission of high data rates.

RESOLVERS

Resolvers convert the angular position of a rotor to two voltages. The absolute position can be represented clearly in this way. Modern resolvers are usually brushless and the information is transmitted through induction. Resolvers provide an absolute signal within a single revolution and therefore do not have to be calibrated after switching on.

Resolvers are used for open and closed loop control tasks such as electric servo drives, positioning drives and machines with interdependent motors. The robustness and availability of the systems are of central importance. Our brushless resolvers operate without wear and are fail-safe – even in the harshest environmental conditions (e.g. extreme temperatures).

In addition, we offer electrical circuits for evaluating the resolver's analogue output signals. Rotary encoder output signals can be emulated, for example. Using our downstream electronics, the analogue signal can also be digitized.



OVERVIEW SLIP RING UNITS

Type	Max. outer diameter	Max. inner diameter	Max. number of rings *more rings on request
SC012	12 mm	-	17
SC020	20 mm / 22 mm	3 mm	36
SC020-COAX	20 mm	-	2 rings for coax 75 Ω
SC040	40 mm	-	6
SC050	50 mm	17 mm	14
SC080	80 mm	30 mm	24
SC104-A01	104 mm	50 mm	6 / 12
SC104-L01	104 mm	50 mm	2 / 4
SC105	105 mm	50 mm	30
SC120	120 mm	70 mm	80
SC168	168 mm	-	45
SC2X0	290 mm	180 mm	100
SC3X0	390 mm	190 mm	100
SH085-MSP	85 mm	-	4 / 6 / 8 / 10
SA030	29 mm	-	9
SDX	300 mm	170 mm	12
SMX	400 mm	300 mm	45
FORJ K32ST	32 mm	-	-

Stated values are standard. Other configurations are available on request.

SLIP RINGS

Stated values are standard. Other configurations, customized versions and slip ring combinations are available on request. Combinations consisting of slip rings and encoders or resolvers on request.

Length depending on ring quantity.

s	Max. current per ring	Max. voltage	Max. rotation speed	Protection class	Page
	2 A (rated current 1 A)	48 V_{DC}	250 rpm	IP40	10
	2 A (rated current 1 A)	48 V_{DC}	250 rpm	IP51	12
Ω	-	48 V_{DC}	10 rpm	IP51	13
	10 A	230 V_{AC}	400 rpm	IP50 up to IP 54, electrical interface IP00	14
	10 A	100 V_{DC}	250 rpm	IP54	15
	16 A	400 V_{AC}	250 rpm	IP54	16
	10 A	480 V_{AC}	400 rpm	IP54	17
	16 A	480 V_{AC}	800 rpm	IP54	19
	16 A	400 V_{AC}	400 rpm	IP51 / IP65	21
	30 A	400 V_{AC}	250 rpm	IP54 / IP65	22
	100 A	400 V_{AC}	100 rpm	IP54 / IP65	23
	300 A	690 V_{AC}	50 rpm	IP54 / IP65	24
	300 A	690 V_{AC}	50 rpm	IP54 / IP65	25
	25 A	250 V_{AC}	1500 rpm	IP00 IP50 with protection caps	26
	16 A	48 V_{DC}	5 rpm	IP00	28
	10 A	85 V_{AC}	100 rpm	IP00	29
	45 A	400 V_{AC}	500 rpm	IP00	30
	-	-	1200 rpm	IP54	31

DATA TRANSMISSION

	SC012	SC020	SC020 COAX	SC040	SC050	SC080	SC104 A01	SC104 L01	SC105	SC120
Analog	✓	✓		✓	✓	✓	✓	✓	✓	✓
Fieldbuses	✓	✓		✓	✓	✓	✓	✓	✓	✓
Fast Ethernet certified to 100-BaseT Cat.5e & Cat.6	✓	✓		✓		✓			✓	✓
Gigabit Ethernet certified to 1000-BaseT Cat.5e	✓	✓							✓	
10G Ethernet certified to 10G-BaseT Cat.5e		✓								
HD-SDI based on the standard SMPTE 292M	✓	✓	✓							
3G-SDI based on the standard SMPTE 424M	✓	✓	✓							
6G-SDI partly based on SMPTE ST 2081		✓	✓							
12G-SDI partly based on SMPTE ST 2082-10		✓	✓							
Fiber Optical Rotary Joint Passive for multi mode (FORJ-MM)		✓								
Fiber Optical Rotary Joint Passive for single mode (FORJ-SM)		✓								
HDMI V1.4 up to 3840 x 2160p at 24Hz		✓								
USB 1.0 Low & Full Speed		✓								
USB 2.0 Hi-Speed		✓								
Page	10	12	13	14	15	16	17	19	21	22

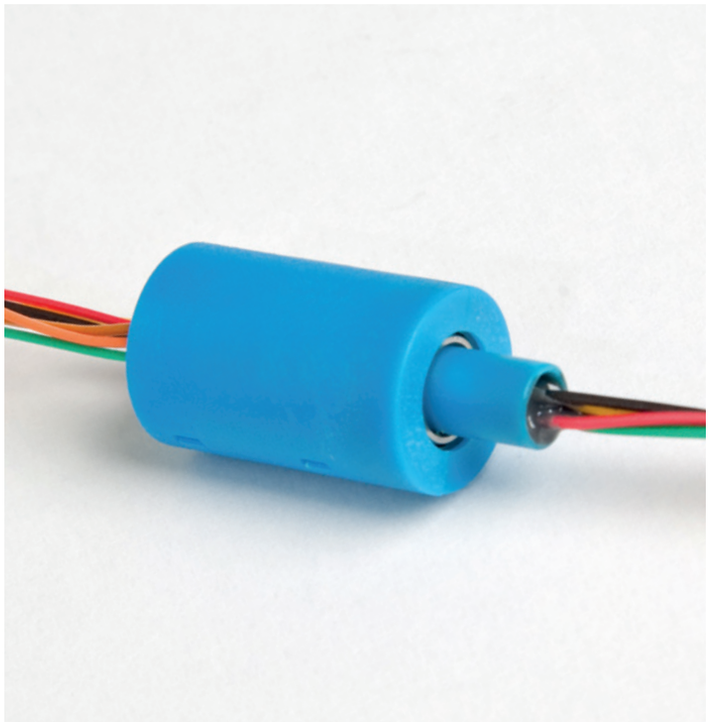
Stated values are standard. Other configurations are available on request.

	SC168	SC2X0	SC3X0	SH085 MSP	SA030	SDX	SM004	SM045	SM050	SM070	SM090	SM140	SM400	FORJ K32ST
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		
	✓	✓	✓		✓	✓								
					✓		✓							
					✓									
														✓
							✓							
							✓							
	23	24	25	26	28	29	31	30	30	30	30	30	30	31

Stated values are standard. Other configurations are available on request.

SLIP RING

SC012



FACTS

- Outer diameter: max. 12 mm
- Special design possible
- Fieldbuses
- Fast Ethernet (certified to 100-BaseT Cat.5e & Cat.6)
- Gigabit Ethernet (certified to 1000-BaseT Cat.5e)
- HD-SDI, based on the standard SMPTE 292M
- 3G-SDI, based on the standard SMPTE 424M

APPLICATION EXAMPLES

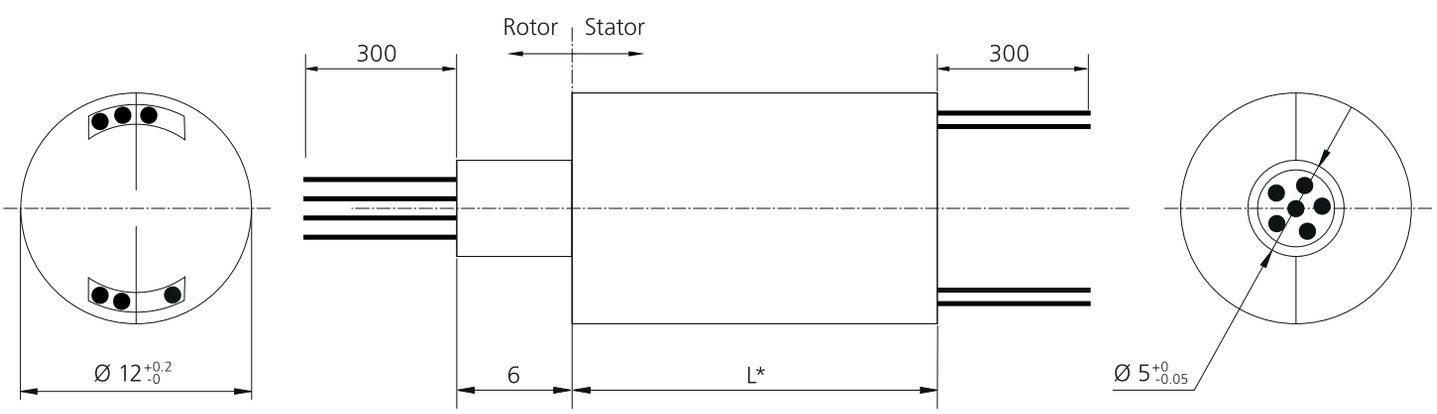
• Drain Inspection • Metrology System • Robotic • Support Arm Lamp • Surveillance Camera • Video System / CCTV

DATA

Number of rings:	3 / 6 / 12 / max. 17
Current per ring:	rated current 1 A (max. 2 A)
Voltage:	max. 48 V_{DC} (higher voltages to be inquired)
Dielectric strengh:	500 V_{AC}
Insulation resistance:	500 MΩ at 500 V_{DC}

Rotation speed:	max. 250 rpm
Protection class:	IP40
Operating temperature:	-20 °C ... +80 °C
Electrical connection:	300 mm flying leads; AWG 28
Housing material:	Fibre-reinforced polycarbonate
Secure:	body to be clamped or glued; flange optional

DESIGN EXAMPLE

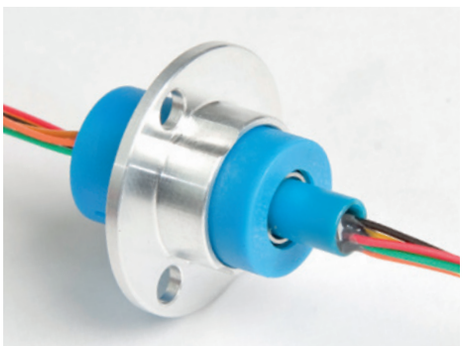


Number of rings	3	6	12
L* (mm)	14.5	19	28

Stated values are standard. Other configurations are available on request.

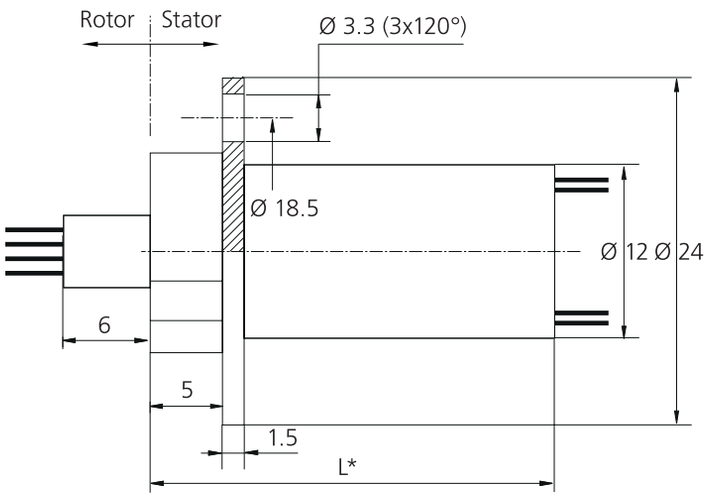
OPTIONS

- Flange with 3 bores dia. 3.3 mm on b.c.d. of 18.5 mm
  different axial flange position on request
- Other ring quantity on request



Design example: SC012 with flange

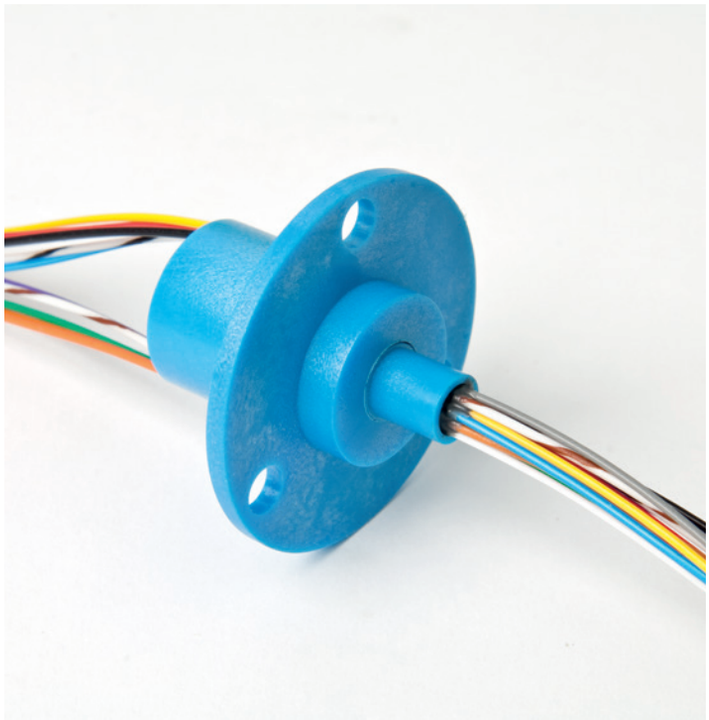
DESIGN EXAMPLE



Design example: SC012-XX-F01

SLIP RING

SC020



FACTS

- Outer diameter: max. 20 mm / 22 mm
- Inner diameter: max. 3 mm
- Fieldbuses
- 12G-SDI partly based on SMPTE ST 2082-10
- Fast Ethernet (certified to 100-BaseT Cat.5e & Cat.6)
- Gigabit Ethernet (certified to 1000-BaseT Cat.5e)
- 10G Ethernet (certified to 10G-BaseT Cat.5e)

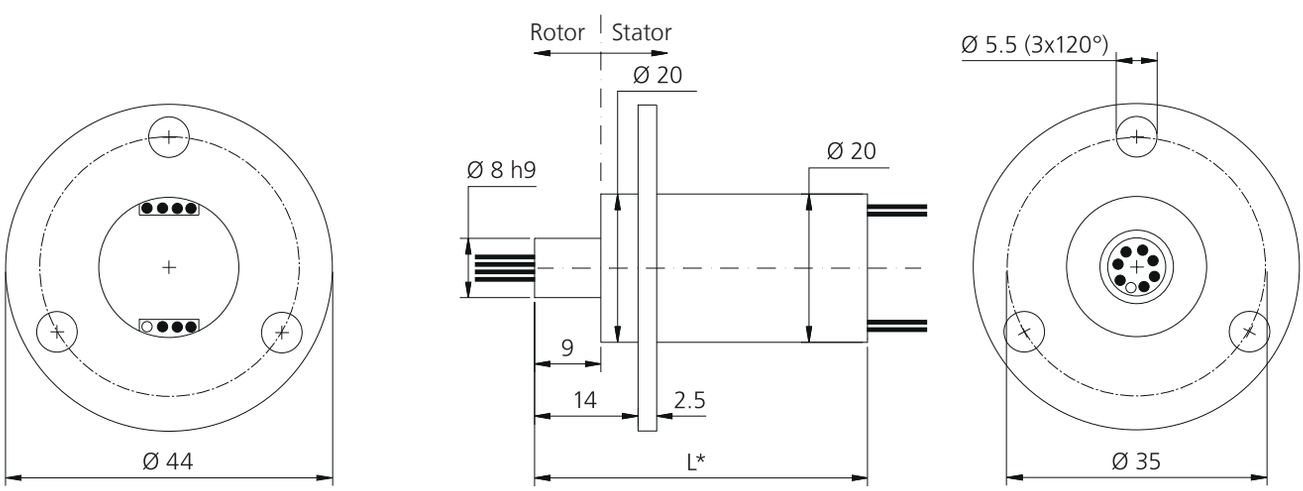
APPLICATION EXAMPLES

• Access System • Airplane Cabin Attention System • Drain Inspection • Metrology System • Packaging Machine • Robotic • Support Arm Lamp • Surveillance Camera • Video System / CCTV

DATA

Number of rings:	max. 36
Current per ring:	rated current 1 A (max. 2 A) with 2 combined rings 2 A (max. 4 A)
Voltage:	max. 48 V_{DC} (higher voltages to be inquired)
Dielectric strengh:	500 V_{AC}
Insulation resistance:	500 MΩ at 500 V_{DC}
Rotation speed:	max. 250 rpm
Protection class:	IP51
Operating temperature:	-20 °C ... +80 °C
Electrical connection:	300 / 600 / 1000 mm flying leads AWG 26 (36 ring version in AWG 28)
Housing material:	Fibre-reinforced polycarbonate / Aluminium

DESIGN EXAMPLE

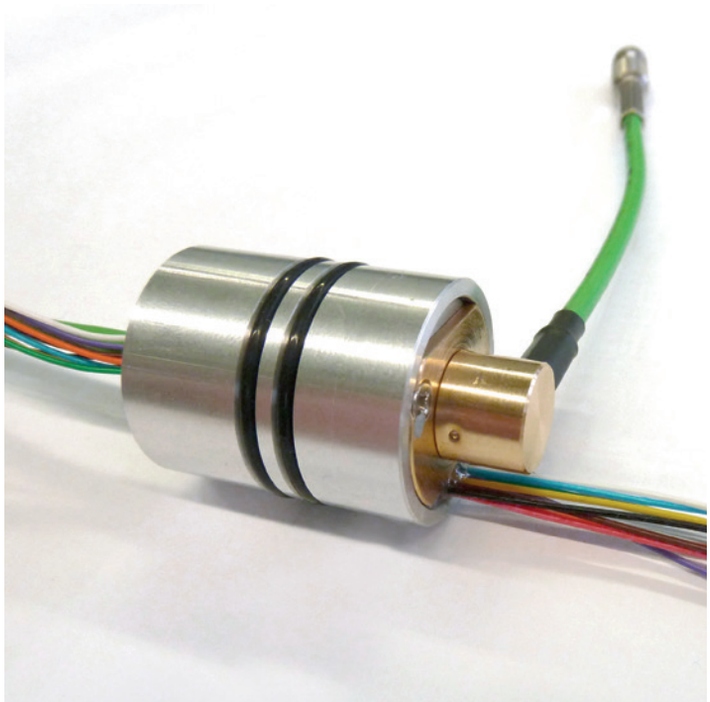


Number of rings	6	12	18	24	36
L* (mm)	27	36	45	54	72

Stated values are standard. Other configurations are available on request.

SLIP RING

SC020-COAX



COAXIAL SLIP RING FOR HD-VIDEO SIGNALS

- Outer diameter: max. 20 mm
- HD-SDI based on the standard SMPTE 292M
- 3G SDI based on the standard SMPTE 424M
- 6G-SDI partly based on SMPTE ST 2081

APPLICATION EXAMPLES

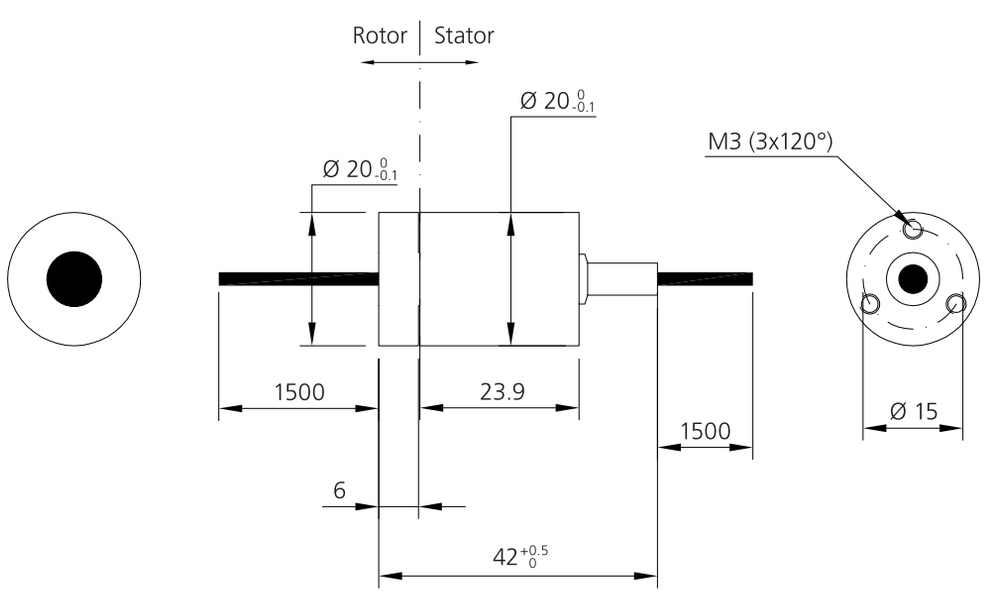
• Drain Inspection • Robotic • Support Arm Lamp • Surveillance Camera • Video System / CCTV

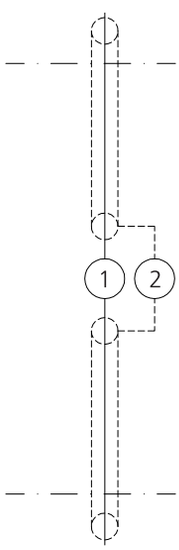
DATA

Number of rings:	max. 2 rings for coax 75 Ω
Voltage:	max. 48 V_{DC}
Dielectric strengh:	500 V_{AC}
Insulation resistance:	500 MΩ at 500 V_{DC}

Rotation speed:	max. 10 rpm
Protection class:	IP51
Operating temperature:	-20 °C ... +80 °C
Rotor/Stator conn.:	Enviroflex RG 179 length = 1500 mm
Housing material:	Fibre-reinforced polycarbonate / Aluminium

DESIGN EXAMPLE





Enviroflex RG 179 Length = 1500 mm

Stated values are standard. Other configurations are available on request.

SLIP RING

SC040

FACTS

- Outer diameter: max. 40 mm
- Flat pin connector for socket 6.3 m or 2.8 mm
- Rings with 2 A or 10 A can be combined
- Fieldbuses
- Fast Ethernet (certified to 100-BaseT Cat.5e & Cat.6)
- Drive-Cliq

APPLICATION EXAMPLES

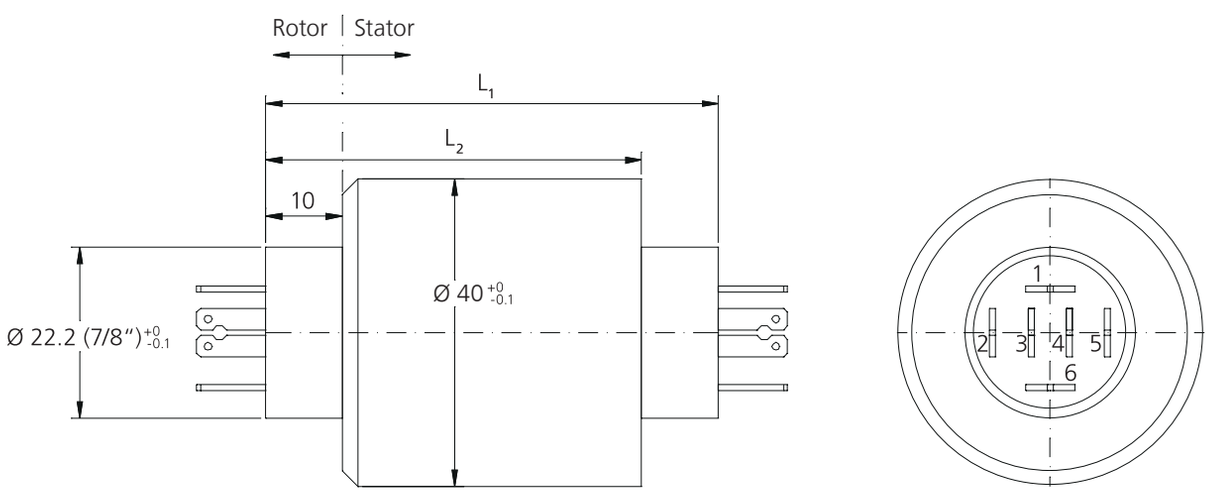
• Food Processing • Packaging Machine • Rotary Milking Parlour

DATA

Number of rings:	max. 6
Current per ring:	max. 10 A (15 A on request)
Voltage:	max. 230 V_{AC}
Dielectric strengh:	1000 V_{AC}
Insulation resistance:	500 MΩ at 500 V_{DC}

Rotation speed:	max. 400 rpm
Protection class:	IP50 up to IP54, electrical interface IP00
Operating temperature:	-20 °C ... +80 °C
Electrical connection:	flat pin connectors for socket (mating connectors included)
Housing material:	Fibre-reinforced polycarbonate / Aluminium
Length:	L_1/L_2 on request

DESIGN EXAMPLE



Stated values are standard. Other configurations are available on request.

SLIP RING

SC050

FACTS

- Outer diameter: max. 50 mm
- Inner diameter: max. 17 mm
- Rings with 3 A or 10 A can be combined
- Special design possible
- Fieldbuses
- Fast Ethernet (certified to 100-BaseT Cat.5e & Cat.6)

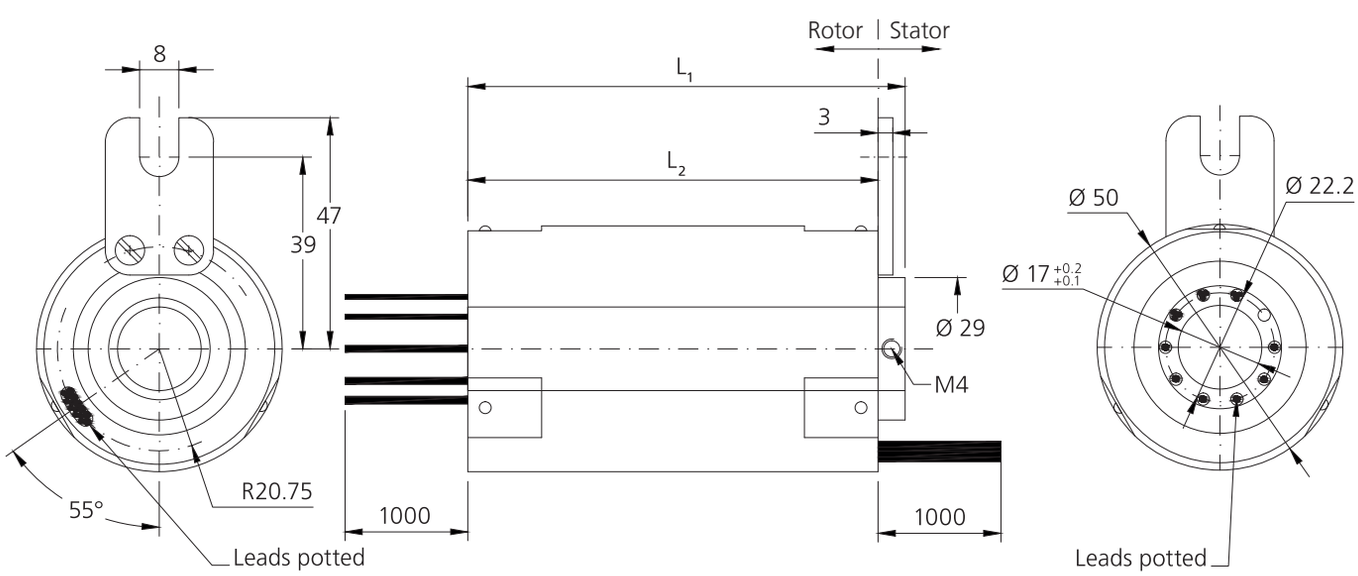
APPLICATION EXAMPLES

• Drain Inspection • Packaging Machine

DATA

Number of rings:	max. 14
Current per ring:	14 rings with 3 A or 7 rings with 10 A 16 A on request
Voltage:	max. 100 V_{DC}
Dielectric strengh:	500 V_{AC}
Insulation resistance:	500 MΩ at 500 V_{DC}
Rotation speed:	max. 250 rpm
Protection class:	IP54
Operating temperature:	-20 °C ... +80 °C
Electrical connection:	1000 mm flying leads
Housing material:	Aluminium
Length:	L_1/L_2 on request

DESIGN EXAMPLE



SLIP RING

SC080

FACTS

- Outer diameter: max. 80 mm
- Inner diameter: max. 30 mm
- Rings with 3 A or 16 A can be combined
- Special design possible
- Fieldbuses
- Fast Ethernet (certified to 100-BaseT Cat.5e & Cat.6)

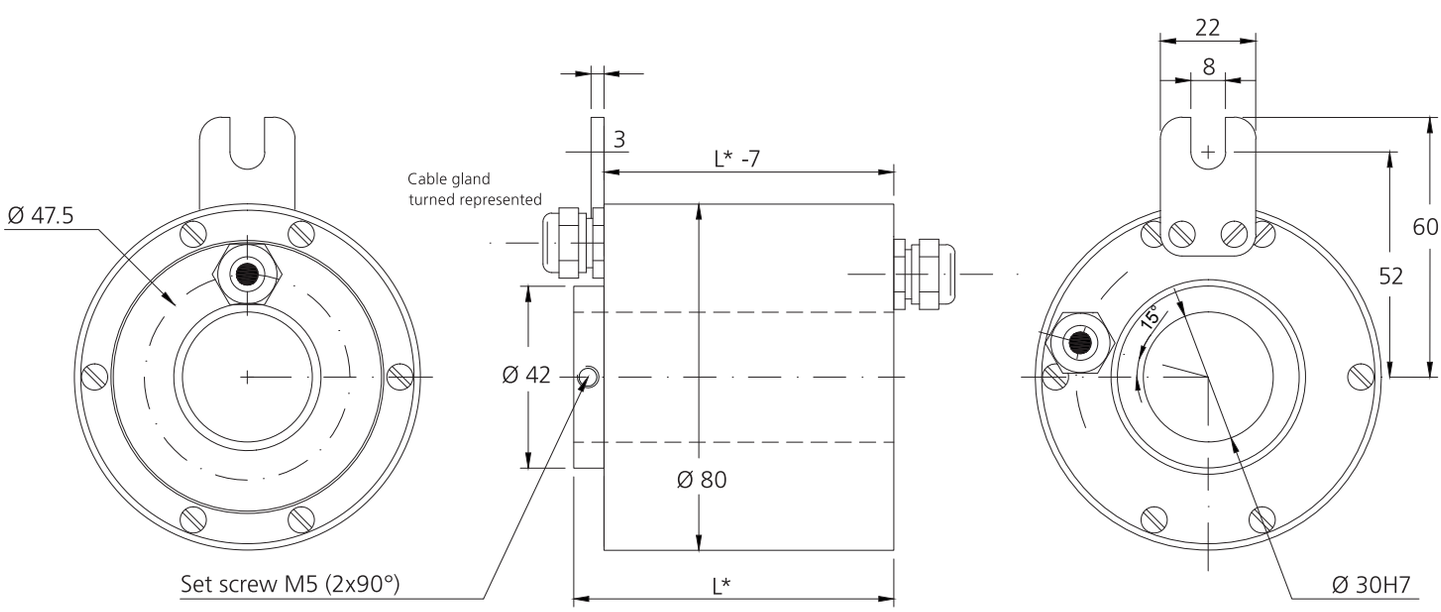
APPLICATION EXAMPLES

- Beverage Filling System • Drain Inspection • Food Processing
- Metrology System • Wind Turbine Pitch System

DATA

Number of rings:	max. 24
Current per ring:	24 rings with 3 A or 12 rings with 16 A
Voltage:	max. 400 V_{AC}
Dielectric strength:	2000 V_{AC}
Insulation resistance:	>500 MΩ at 500 V_{DC}
Rotation speed:	max. 250 rpm
Protection class:	IP54
Operating temperature:	-20 °C ... +80 °C
Electrical connection:	1000 mm flying leads
Housing material:	Aluminuim

DESIGN EXAMPLE

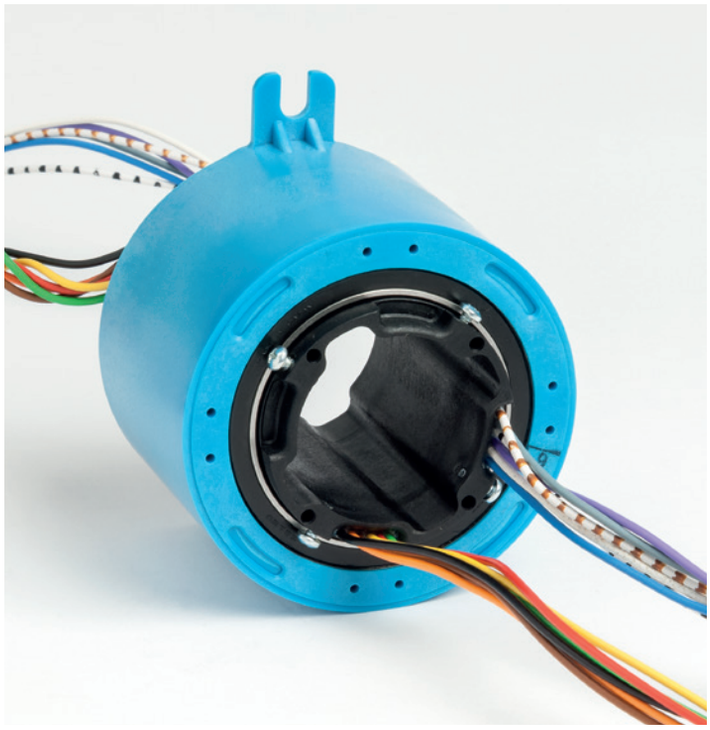


Number of rings	2	3	4	6	9	12	18	24
Power (L*)	54	64	74	94	124	144	-	-
Signal (L*)	54	-	54	64	-	84	114	154

Stated values are standard. Other configurations are available on request.

SLIP RING

SC104-A01



FACTS

- Outer diameter: max. 104 mm
- Hollow shaft diameter: max. 50 mm
- Fieldbuses

The system is maintenance free for up to 50 million rotations (depending on rotation speed and environmental conditions).

APPLICATION EXAMPLES

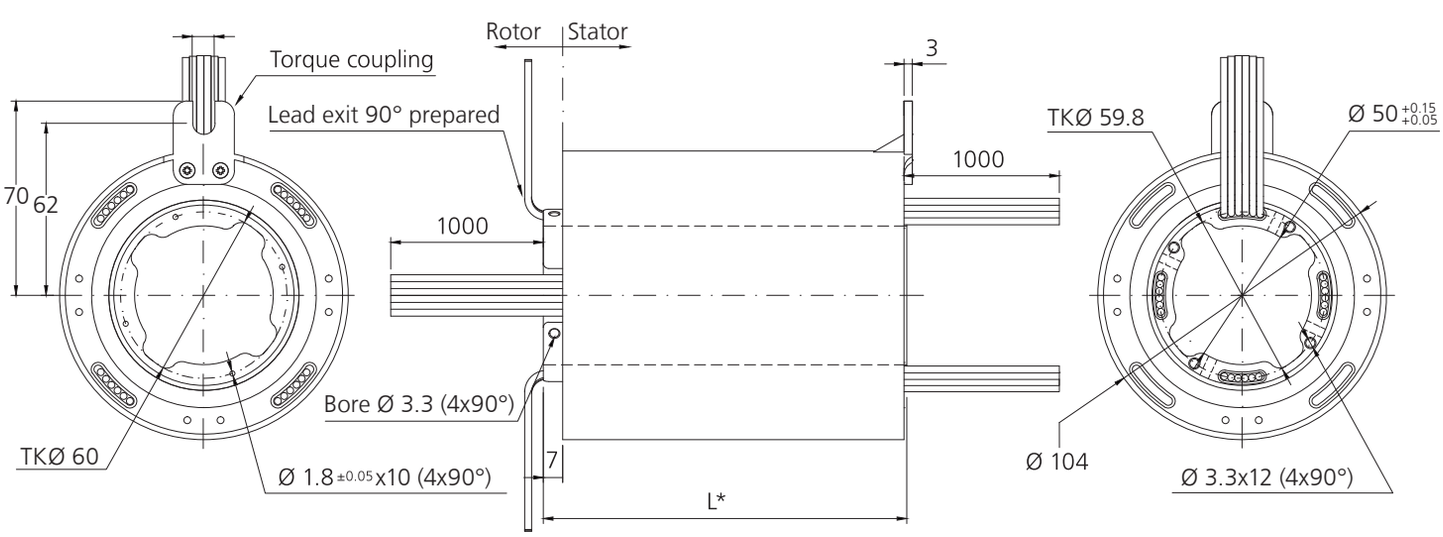
• Access System • Drain Inspection • Packaging Machine

DATA

Number of rings:	6 / 12
Current per ring:	max. 10 A
Voltage:	480 V_{AC}
Dielectric strength:	1500 V_{AC}
Insulation resistance:	1000 MΩ at 500 V_{DC}

Rotation speed:	max. 400 rpm
Protection class:	IP54
Operating temperature:	-20 °C ... +80 °C
Electrical connection:	1000 mm leads; AWG 16 - leads (1.23 mm²) PVC
Housing material:	Fibre-reinforced polycarbonate

DESIGN EXAMPLE

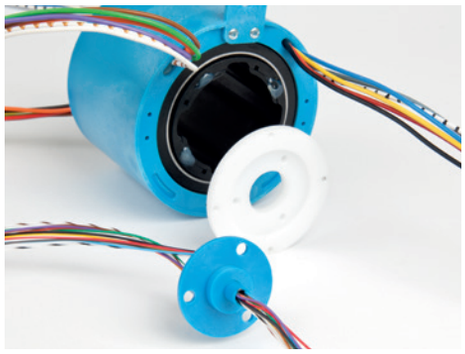


Number of rings	6	12
L* (mm)	59	83

ACCESSORIES ON REQUEST

- Adapter for slip ring SC020
- Shaft bushing (Inner diameter: 1.5"/ 38.1 mm)

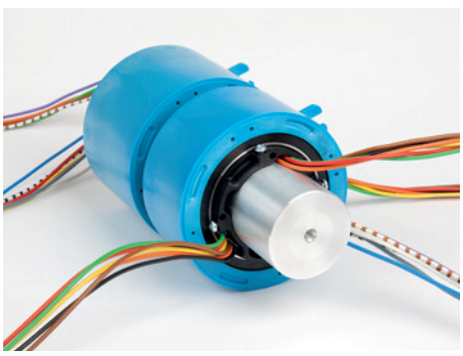
* Extension by slip ring SC020 for additional channels, rotational speed max. 250 min^{-1} (see data sheet SC020).



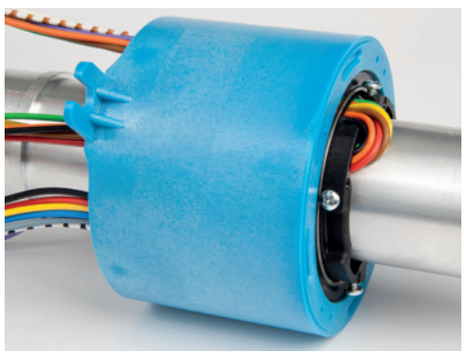
Combination with slip ring SC020*

Shaft bushing (smaller inner diameter)

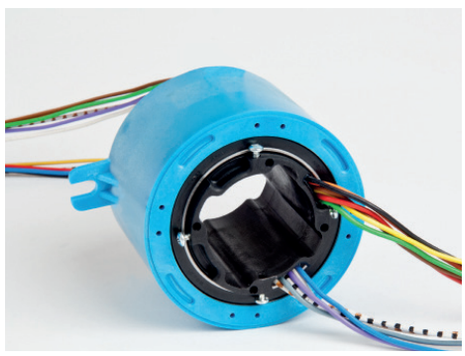
VARIANTS



Combination 2 systems SC104



Cable led out one-sided



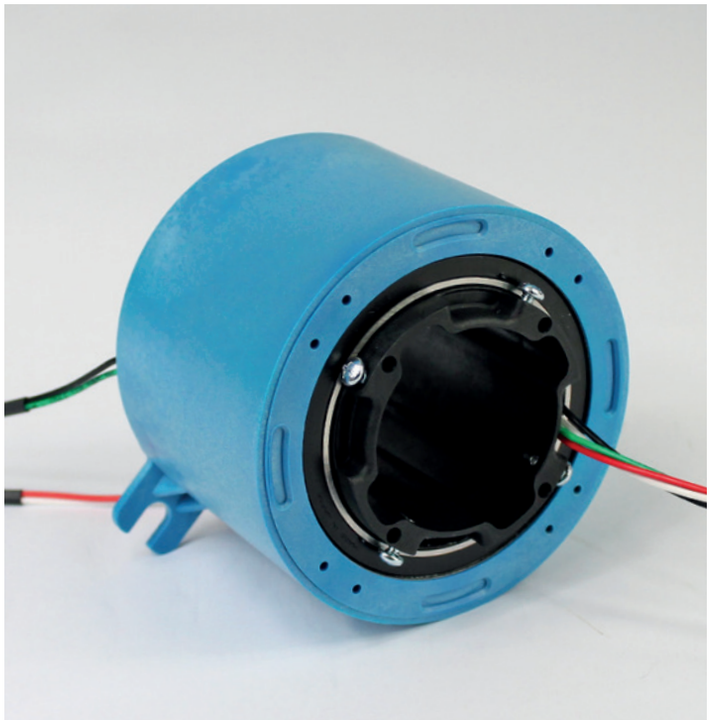
Torque arm shifted by 90°

The SC104 is a standard slip ring with exceptionally durable industrial bearings. With additional slots for axial cable routings, it can be applied modularly as combination of up to three 12-pole-systems with 36 rings max. The torque support can be placed at the front or back side of the housing and with flexibility of 90°. All models are equipped with 1 meter lead wires, lead exit optionally on one side of the housing - to turn them on 0°, 90°, 180° and 270°.

Stated values are standard. Other configurations are available on request.

SLIP RING

SC104-L01



FACTS

- Outer diameter: max. 104 mm
- Hollow shaft diameter: max. 50 mm
- Fieldbuses

The system is maintenance free for up to 150 million rotations (depending on rotation speed and environmental conditions). Brush block changeable for easy maintenance and extended life time.

APPLICATION EXAMPLES

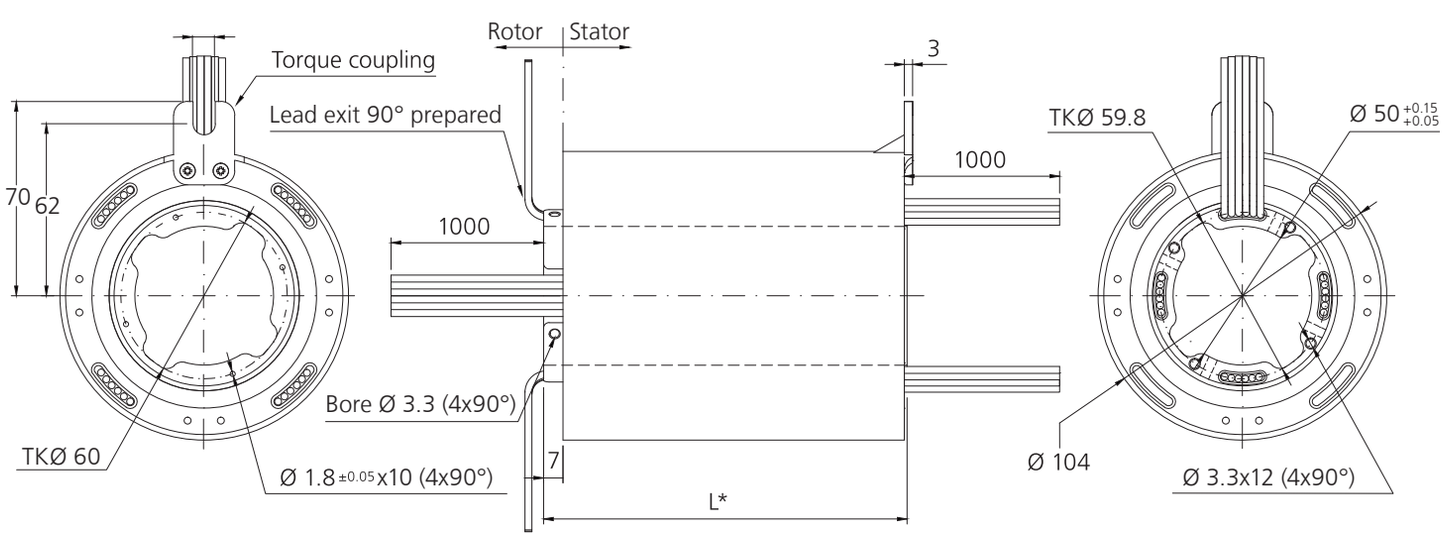
• Access System • Drain Inspection • Packaging Machine

DATA

Number of rings:	2 / 4
Current per ring:	max. 16 A
Voltage:	480 V_{AC}
Dielectric strength:	1500 V_{AC}
Insulation resistance:	>500 MΩ at 500 V_{DC}

Rotation speed:	max. 800 rpm
Protection class:	IP54
Operating temperature:	-20 °C ... +70 °C
Electrical connection:	1000 mm flying leads
	AWG16 -leads (1.23 mm²) PTFE
Housing material:	Fibre-reinforced polycarbonate

DESIGN EXAMPLE

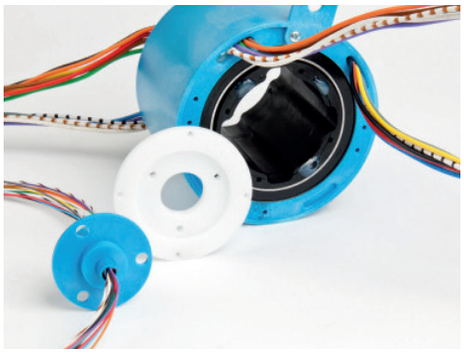


Number of rings	2	4
L* (mm)	59	83

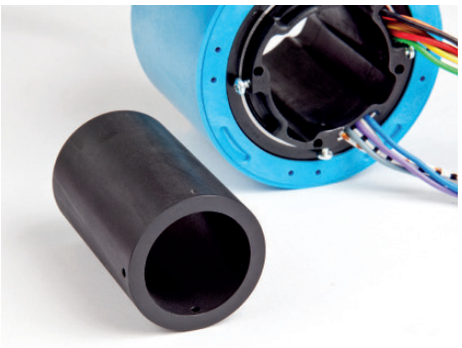
Stated values are standard. Other configurations are available on request.

ACCESSORIES ON REQUEST

Spare brush block for extended lifetime. Easely replaceable by dove tail guide and blade terminal.

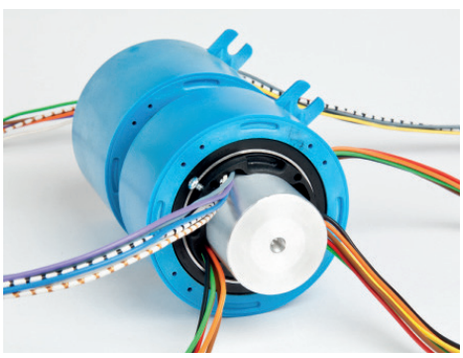


Adapter for slip ring SC020 for additional channels, rotational speed max. 250 rpm (see data sheet SC020).

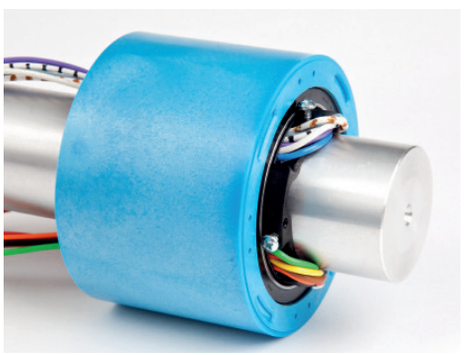


Shaft bushing. Smaller inner diameter: 1.5" / 38.1 mm.

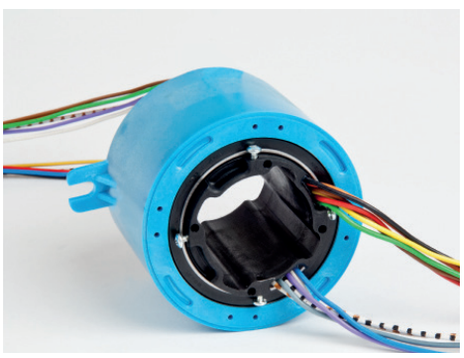
VARIANTS



Combination 2 systems
SC104 SC104-06-A01 (for Signal)
SC104-04-L01 (for Power)



Cable led out one-sided



Torque arm shifted by 90°

The SC104 is a standard slip ring with exceptionally durable industrial bearings. With additional slots for axial cable routings, it can be applied modularly as combination of up to four systems with 16 rings max. The torque support can be placed at the front or back side of the housing and with flexibility of 90°. All models are equipped with 1 meter lead wires, lead exit optionally on one side of the housing - to turn them on 0°, 90°, 180° and 270°.

Stated values are standard. Other configurations are available on request.

SLIP RING

SC105

FACTS

- Outer diameter: max. 105 mm
- Inner diameter: max. 50 mm
- Fieldbuses
- Fast Ethernet (certified to 100-BaseT Cat.5e & Cat.6)
- Gigabit Ethernet (certified to 1000-BaseT Cat.5e)
- Maintenance-free
- Standardised structure
- Flexibily configurable interfaces
- Various housing materials

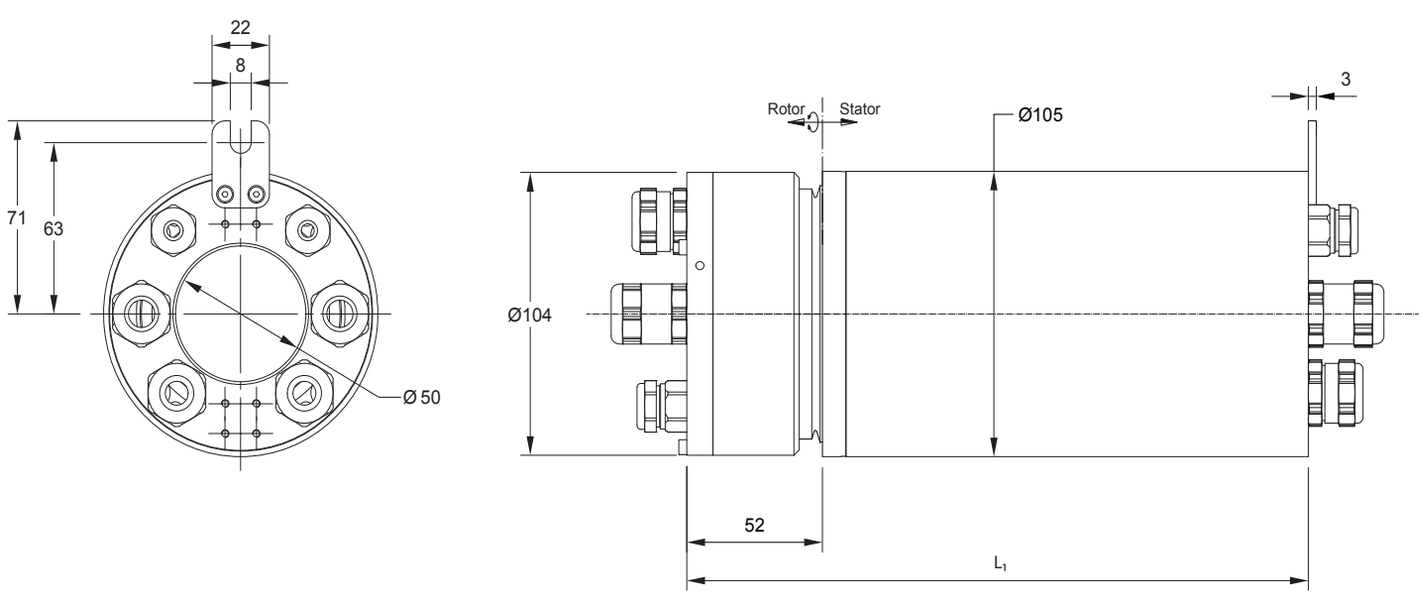
APPLICATION EXAMPLES

• Access System • Beverage Filling System • Drain Inspection • Wind Turbine Pitch System

DATA

Number of rings:	max. 30
Current per ring:	max. 16 A
Voltage:	max. 400 V_{AC}
Dielectric strength:	2000 V_{AC}
Insulation resistance:	>500 MΩ at 500 V_{DC}
Rotation speed:	max. 400 rpm
Protection class:	IP51 / IP65
Operating temperature:	-20 °C ... +70 °C
Electrical connection:	standardised (flying leads, cable or connector)
Housing material:	Aluminium
Length:	L_1 on request

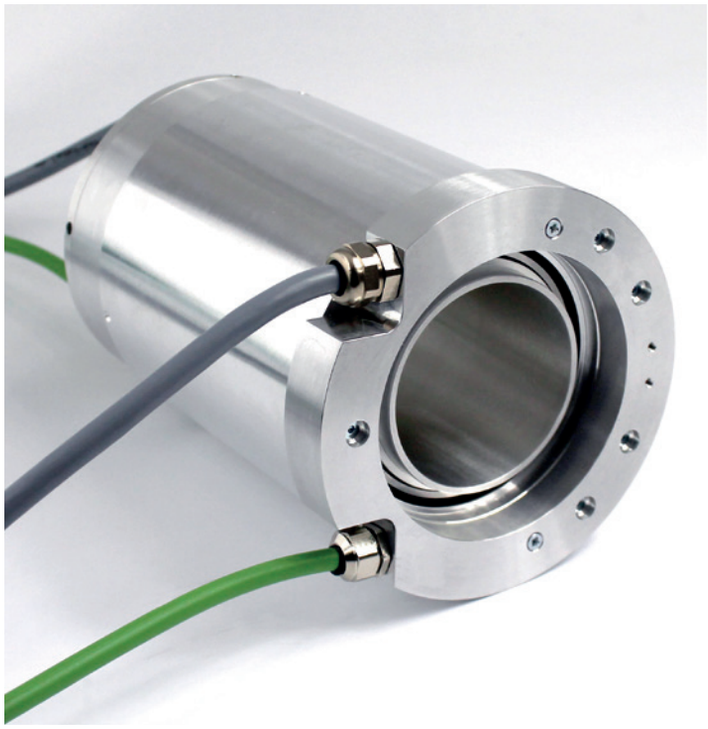
DESIGN EXAMPLE



Stated values are standard. Other configurations are available on request.

SLIP RING

SC120



FACTS

- Outher diameter: max. 120 mm
- Inner diameter: max. 70 mm
- Fieldbuses
- Fast Ethernet (certified to 100-BaseT Cat.5e & Cat.6)
- Flexibily configurably interfaces

ACCESSORIES ON REQUEST

- Resolver • Encoder • FORJ
- Media Rotary Joint

APPLICATION EXAMPLES

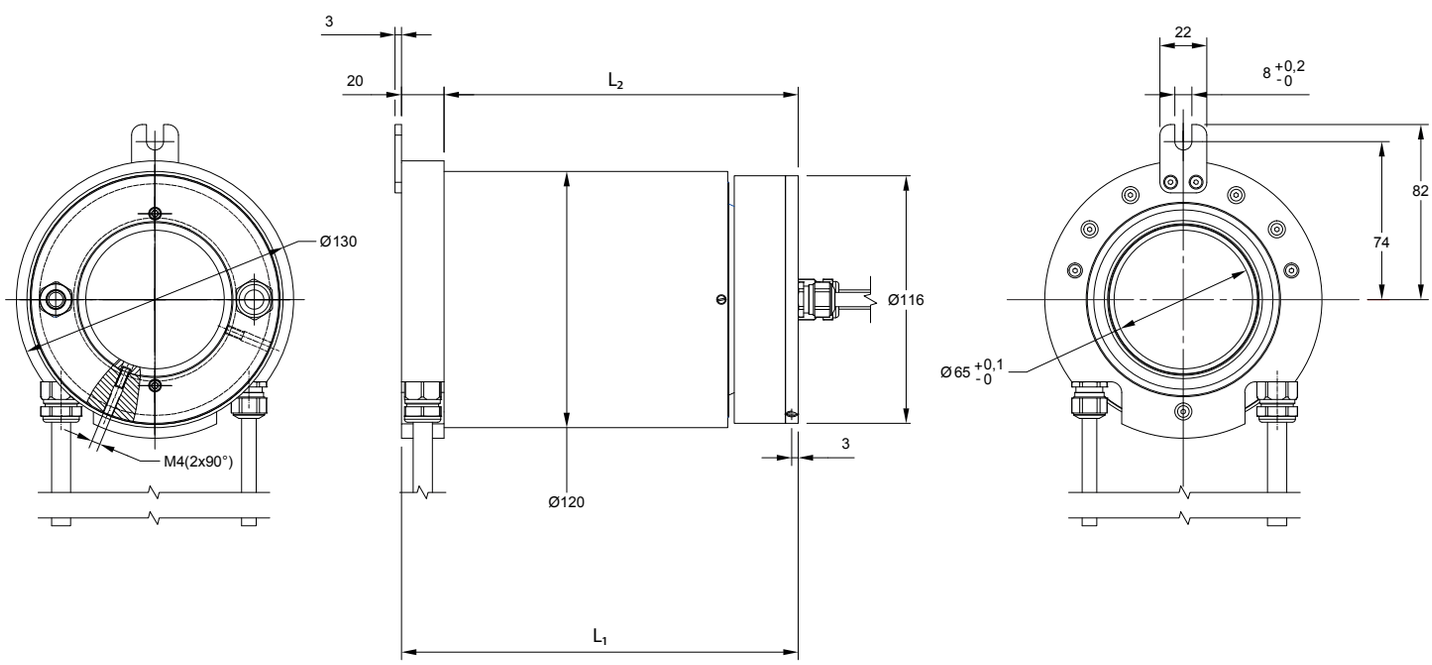
- Machine Tool • Packaging Machine • Wind Turbine Pitch System

DATA

Number of rings:	max. 80
Current per ring:	max. 30 A
Voltage:	max. 400 V_{AC}
Dielectric strength:	2000 V_{AC}
Insulation resistance:	>500 MΩ at 500 V_{DC}

Rotation speed:	max. 250 rpm
Protection class:	IP54 / IP65
Operating temperature:	-20 °C ... +70 °C
Electrical connection:	customized (flying leads, cable or connector)
Housing material:	Aluminium
Length:	L_1/L_2 on request

DESIGN EXAMPLE



Stated values are standard. Other configurations are available on request.

SLIP RING

SC168

FACTS

- Outer diameter: max. 168 mm
- Fieldbuses
- Fast Ethernet (certified to 100-BaseT Cat.5e & Cat.6)
- Offshore version possible
- Flexibily configurable interfaces

ACCESSORIES ON REQUEST

- Resolver • Encoder • FORJ
- Media Rotary Joint

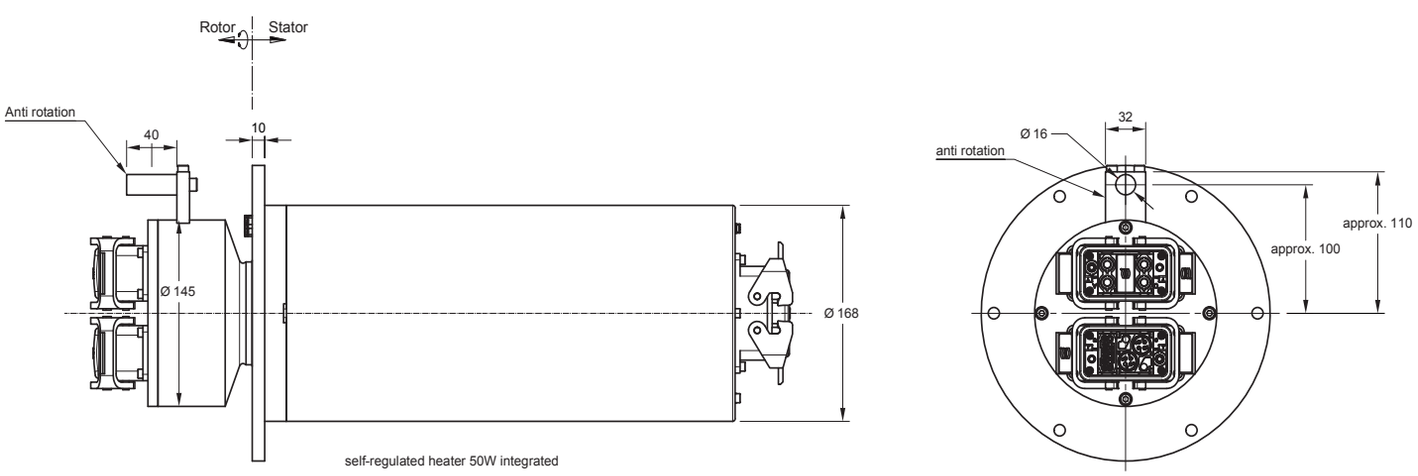
APPLICATION EXAMPLES

- Machine Tool • Packaging Machine • Wind Turbine Pitch System

DATA

Number of rings:	max. 45
Current per ring:	max. 100 A
Voltage:	max. 400 V_{AC}
Dielectric strength:	2000 V_{AC}
Insulation resistance:	>500 MΩ at 500 V_{DC}
Rotation speed:	max. 100 rpm
Protection class:	IP54 / IP65
Operating temperature:	-30 °C ... +70 °C
Electrical connection:	customized (flying leads, cable or connector)
Housing material:	Aluminium

DESIGN EXAMPLE



SLIP RING

SC2X0

FACTS

- Outer diameter: max. 290 mm
- Inner diameter: max. 180 mm
- Fieldbuses
- Fast Ethernet (certified to 100-BaseT Cat.5e & Cat.6)
- Flexibily configurable interfaces

ACCESSORIES ON REQUEST

- Resolver • Encoder • FORJ
- Media Rotary Joint

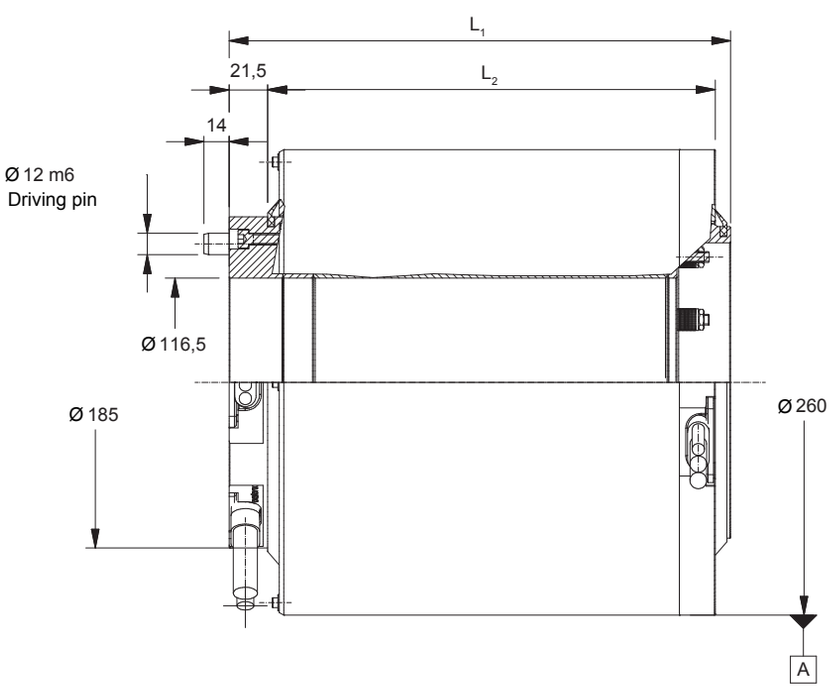
APPLICATION EXAMPLES

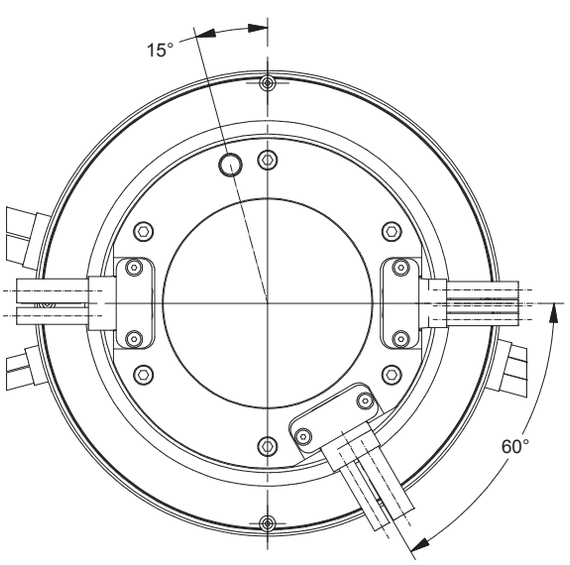
- Machine Tool • Packaging Machine • Civil Radar

DATA

Number of rings:	max. 100
Current per ring:	max. 300 A
Voltage:	max. 690 V_{AC} / 1000 V_{DC}
Dielectric strength:	2000 V_{AC}
Insulation resistance:	>500 MΩ at 500 V_{DC}
Rotation speed:	max. 50 rpm
Protection class:	IP54 / IP65
Operating temperature:	-30 °C ... +70 °C
Electrical connection:	customized (flying leads, cable or connector)
Housing material:	Aluminium
Length:	L_1 / L_2 on request

DESIGN EXAMPLE

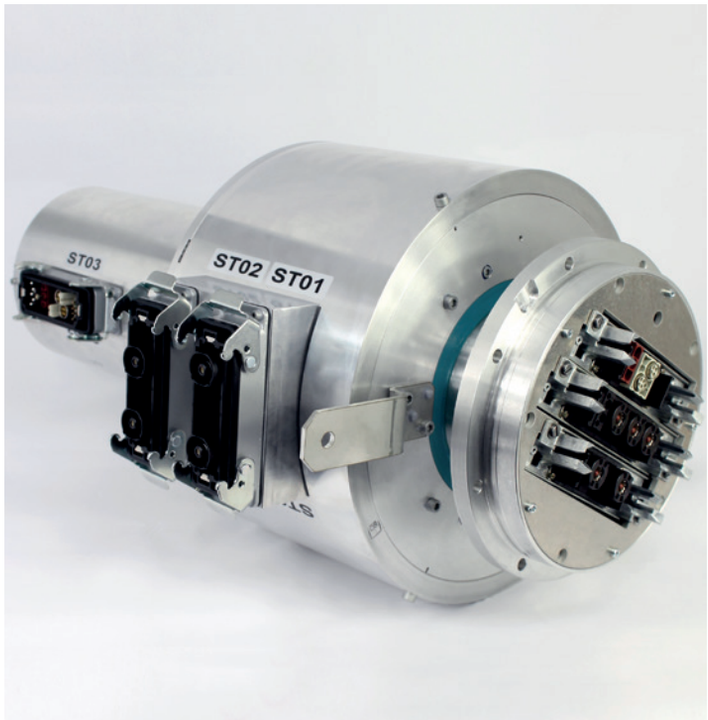




Stated values are standard. Other configurations are available on request.

SLIP RING

SC3X0



FACTS

- Outer diameter: max. 390 mm
- Inner diameter: max. 190 mm
- Fieldbuses
- Fast Ethernet (certified to 100-BaseT Cat.5e & Cat.6)
- Flexibily configurable interfaces

ACCESSORIES ON REQUEST

- Resolver • Encoder • FORJ
- Media Rotary Joint

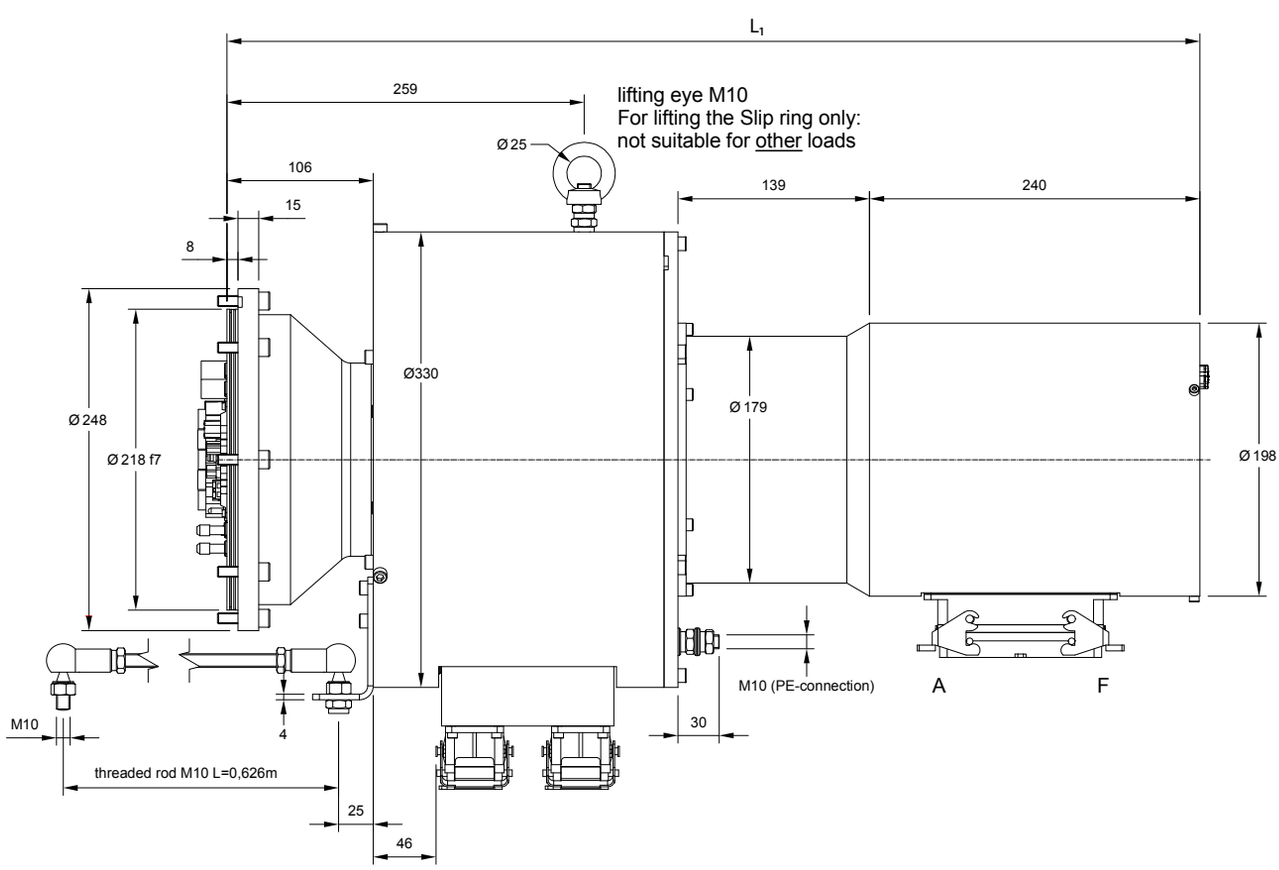
APPLICATION EXAMPLES

- Machine Tool • Wind Turbine Pitch System • Cranes

DATA

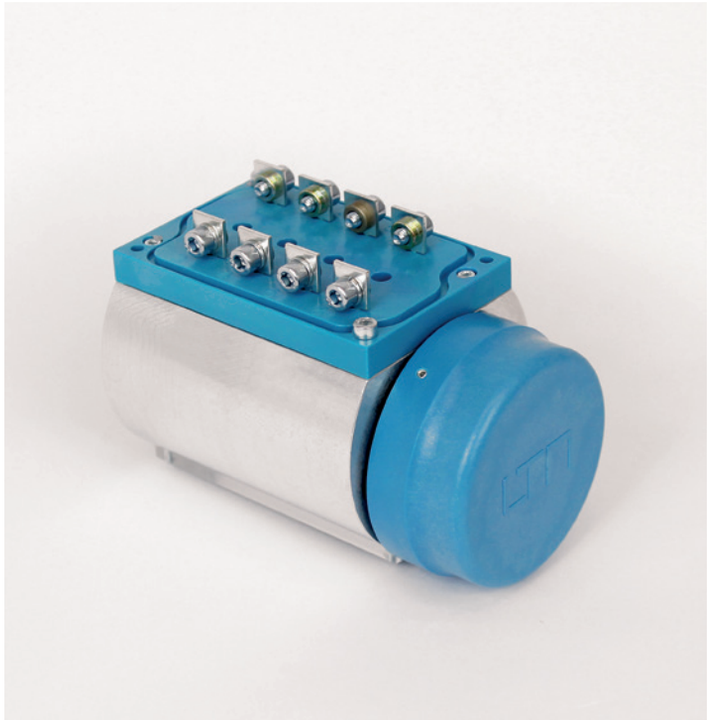
Number of rings:	max. 100
Current per ring:	max. 300 A
Voltage:	max. 690 V_{AC} / 1000 V_{DC}
Dielectric strength:	2000 V_{AC}
Insulation resistance:	>500 MΩ at 500 V_{DC}
Rotation speed:	max. 50 rpm
Protection class:	IP54 / IP65
Operating temperature:	-30 °C ... +70 °C
Electrical connection:	customized (flying leads, cable or connector)
Housing material:	Aluminium
Length:	L_1 on request

DESIGN EXAMPLE



SLIP RING

SH085-MSP



FACTS

- Outer diameter: 85 mm
- Interchangeable brushblock
- Inspection window

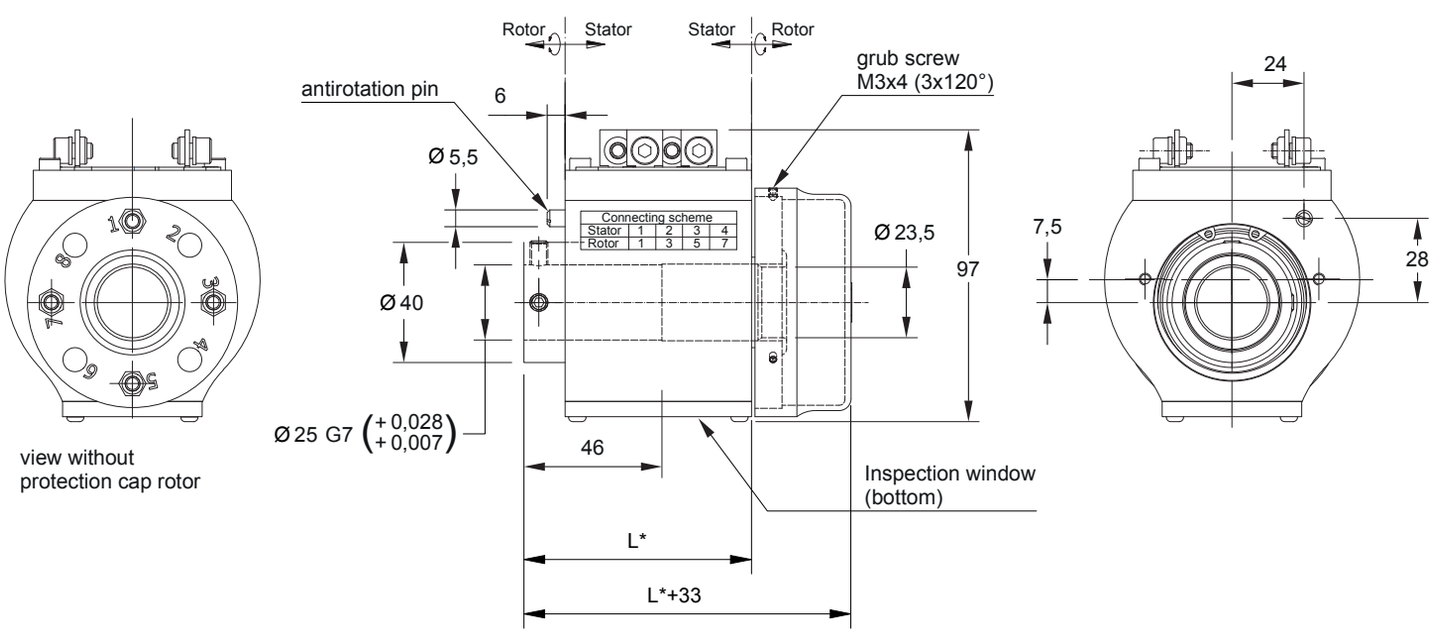
APPLICATION EXAMPLES

• Beverage Filling System • Food Processing • Packaging Machine

DATA

Number of rings:	4 / 6 / 8 / 10
Current per ring:	max. 25 A
Voltage:	max. 250 V_{AC}
Dielectric strength:	1250 V_{AC}
Insulation resistance:	> 500 MΩ at 500 V_{DC}
Rotation speed:	max. 1500 rpm
Protection class:	IP00 (IP50 with protection caps)
Operating temperature:	-20 °C ... +80 °C
Electrical connection:	screw terminal M5
Hollow shaft:	Ø 25 G7 throughbore
Housing material:	Aluminium & Fibre-reinforced polycarbonate

DESIGN EXAMPLE



Number of rings	4	6	8	10
L* (mm)	76	94	112	130

Stated values are standard. Other configurations are available on request.

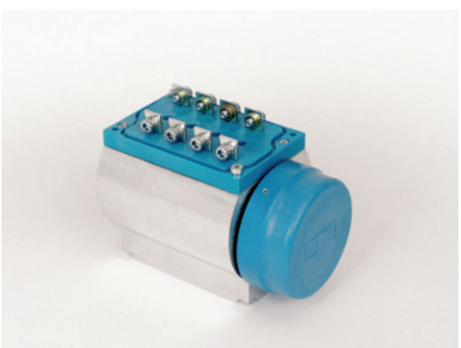
ORDER INFORMATION

- Number of rings: 4 / 6 / 8 / 10
- Operating current
- Operating voltage
- Options: must be ordered separately and will be enclosed with the delivery

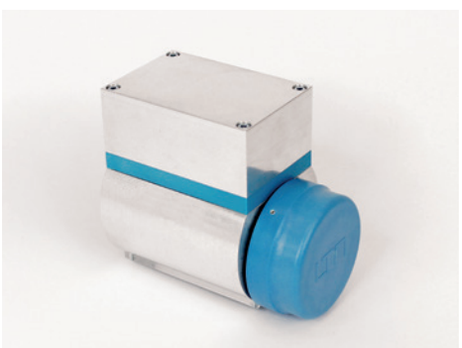
OPTIONS

- Positioning-Disc
- Dust box
- Stator protection cap (with cable gland or connector on request)
- All options must be ordered separately and will be enclosed with the delivery

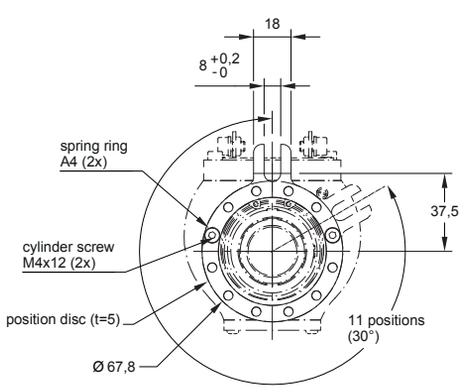
Positioning-Disc (mountable instead of the pin)

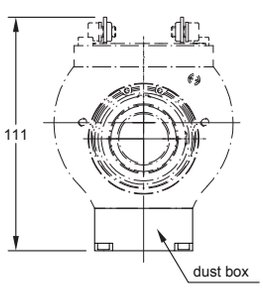


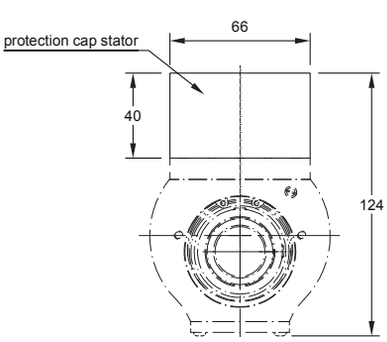
Dust box (mountable instead of the inspection window)



Stator protection cap







SLIP RING

SA030

FACTS

- Outer diameter: max. 29 mm
- Special design possible
- High frequency coupling possible
- Fieldbuses
- Fast Ethernet (certified to 100-BaseT Cat.5e & Cat.6)

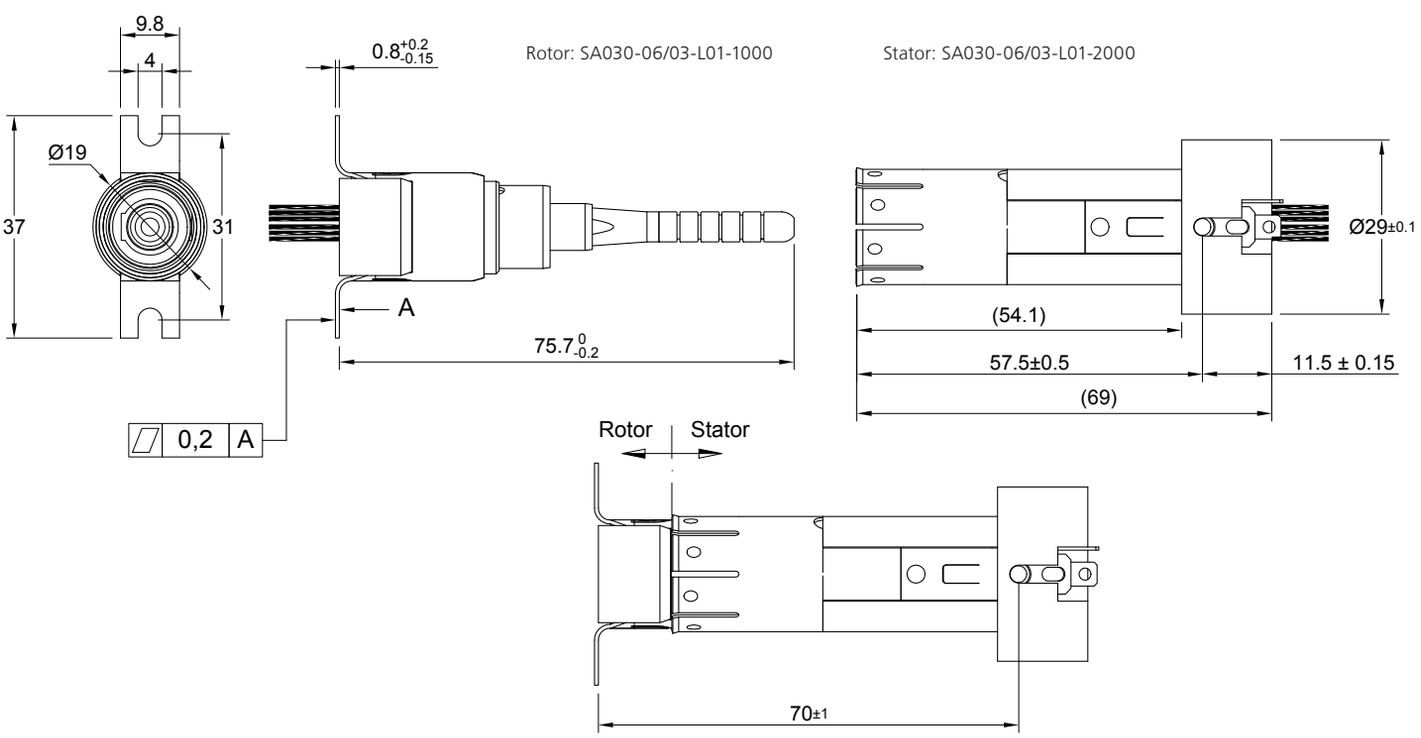
APPLICATION EXAMPLES

- Medical Arm

DATA

Number of rings:	max. 9
Current per ring:	6 rings with 1 A and 3 rings with 16 A
Voltage:	max. 48 V_{DC}
Dielectric strength:	500 V_{AC}
Insulation resistance:	>500 MΩ at 500 V_{DC}
Rotation speed:	max. 5 rpm
Protection class:	IP00
Operating temperature:	-20 °C ... +80 °C
Electrical connection:	customized (flying leads, cable or connector)
Housing material:	Fibre-reinforced polycarbonate

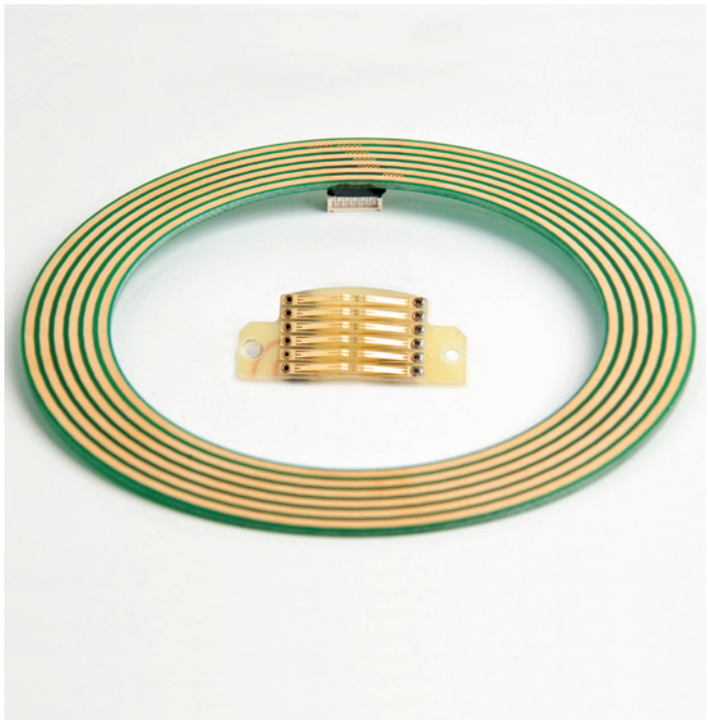
DESIGN EXAMPLE



Stated values are standard. Other configurations are available on request.

DISC SLIP RING

SDX



FACTS

- Outer diameter: max. 300 mm
- Inner diameter: max. 170 mm
- Special design possible
- Combination with electronic components possible
- Fieldbuses

APPLICATION EXAMPLES

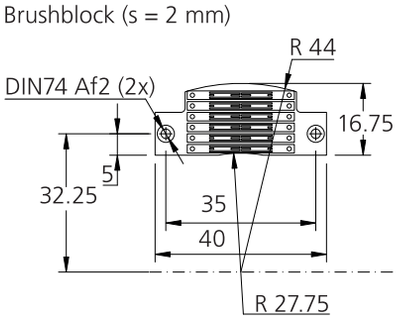
• Access System • Robotic

DATA

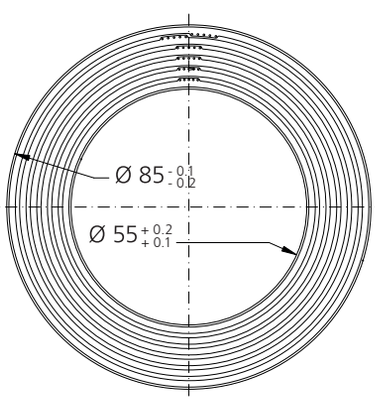
Number of rings:	max. 12
Current per ring:	max. 10 A
Voltage:	max. 85 V_{AC} / 120 V_{DC}
Dielectric strength:	500 V_{AC}
Insulation resistance:	>500 MΩ at 500 V_{DC}
Rotation speed:	max. 100 rpm
Protection class:	IP00
Operating temperature:	-20 °C ... +80 °C
Electrical connection:	customized (flying leads, cable or connector)
Housing material:	FR4

DESIGN EXAMPLE

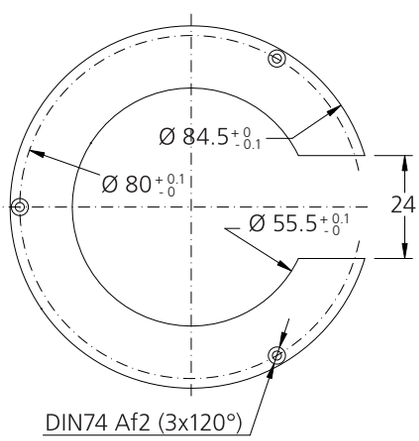
Brushblock (s = 2 mm)



Rotor (s = 1,5 mm)

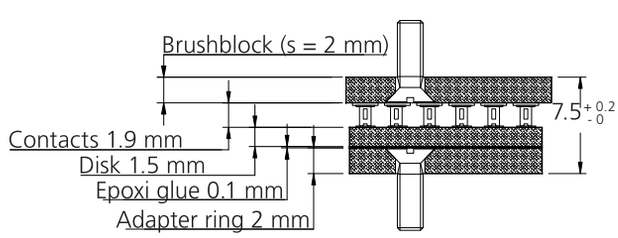


Adapter ring (s = 2 mm)



All parts made of PCB-material FR4
5 screws M2x4 DIN963 free issued

ASSEMBLY



Stated values are standard. Other configurations are available on request.

SLIP RING

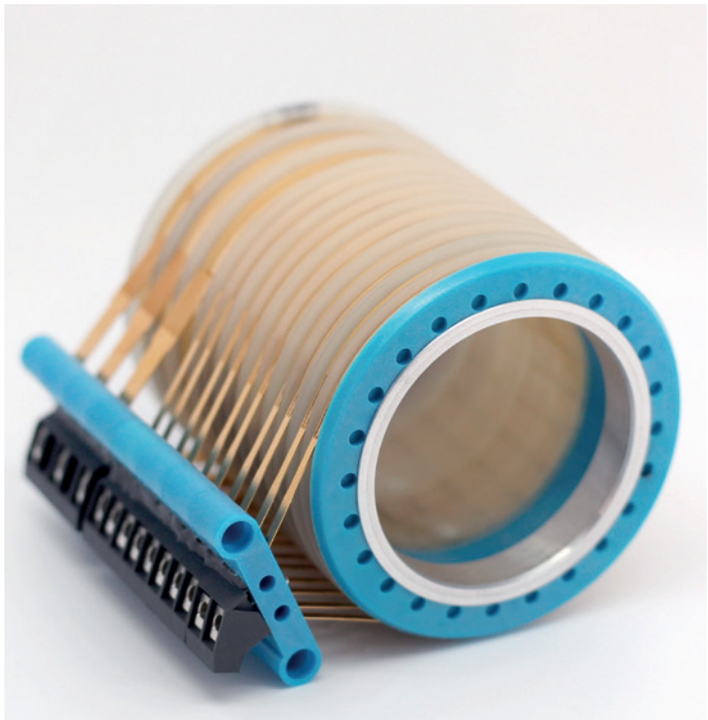
SMX

FACTS

- Replaceable brush block
- Fieldbuses

APPLICATION EXAMPLES

• Cable Winding System • Drain Inspection • Packaging Machine • Robotic • Surveillance Camera • Video System / CCTV



	SM004	SM045	SM50	SM070	SM090	SM140	SM400
Outer diameter	3,8 mm	51 mm	52 mm	72 mm	90 mm	140 mm	400 mm
Inner diameter	-	25 mm	30 mm	50 mm	70 mm	100 mm	300 mm
Option	-	Replaceable brush block					
Max. number of rings	5	14	24	24	24	18	45
Max. current per ring	1 A	25 A	16 A	16 A	16 A	16 A	45 A
Max. voltage	24 V_{DC}	230 V_{AC}	400 V_{AC}	400 V_{AC}	400 V_{AC}	400 V_{AC}	400 V_{AC}
Dielectric strength	500 V_{AC}	1000 V_{AC}	2000 V_{AC}	2000 V_{AC}	2000 V_{AC}	2000 V_{AC}	2000 V_{AC}
Electrical insulation resistance	>500 MΩ at 500 V_{DC}						
Max. rotation speed	50 rpm	500 rpm					
Protection class	IP00						
Operating temperature	-20 °C ... +80 °C						
Electrical connection	Flying leads / terminals / connectors						
Housing material	Fibre- reinforced polycarbonate	Fibre-reinforced polycarbonate / Aluminium					

Stated values are standard. Other configurations are available on request.

CONTACTLESS TRANSMISSION

FORJ K32ST

FIBRE OPTIC ROTARY JOINT FOR 1 CHANNEL (PATH) MULTI MODE

- Outer diameter: max. 32 mm
- Fiber Optical Rotary Joint Passive for multi mode (FORJ-MM)

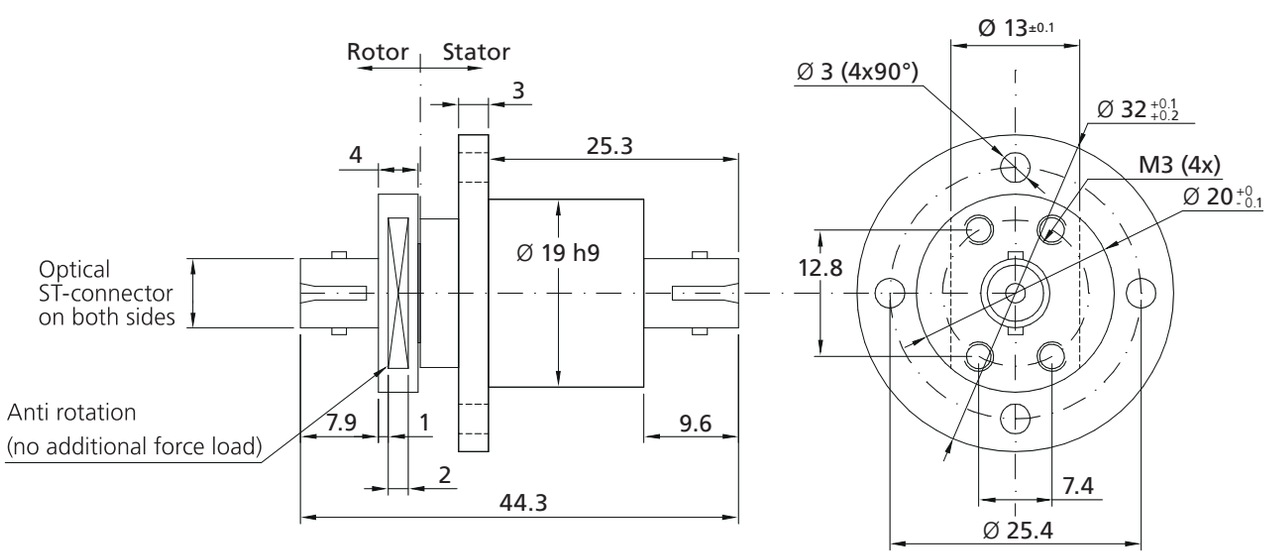
APPLICATION EXAMPLES

• Drain Inspection • Printing System • Surveillance Camera • Wind Turbine Pitch System • Video System / CCTV

DATA

Number of rings:	1 channel	Rotation speed:	max. 1200 rpm
Core diameter:	50 - 62.5 µm	Protection class:	IP54
Wave lenght:	830 or 1300 nm	Temperature:	-20 °C ... +60 °C
Loss:	max. 4 dB	Housing material:	Aluminium

DESIGN EXAMPLE



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