Контактные кольца SR060E, SR085, SR085IE, SR120, SR060U, SRI085

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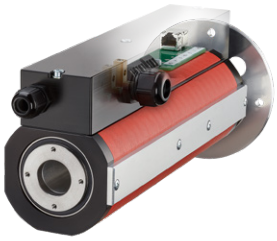
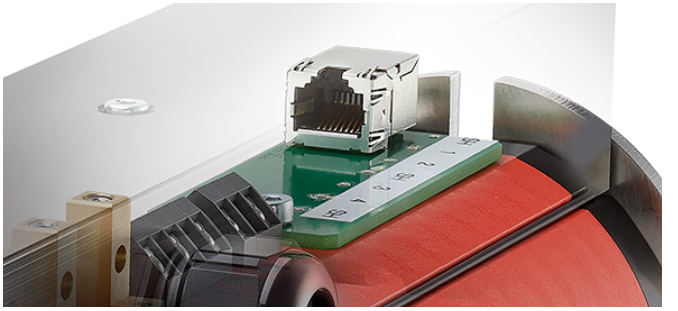
Slip ring platform for standard applications

The modular slip rings of the "Base Line" are designed for a free usable hollow shaft of up to 30 mm or flange mounting. In addition, any form of customer-specific adaptation is possible, both mechanically and electrically.

			
	SR060E	**SR085 / SR085IE**	**SR120**
Features	• Modular design • Factory pre-wiring • Optionally with customized housing connector • Also available in UL version	• Modular design in modular system • Flange or hollow shaft design • Extremely robust GRP housing for industrial use • Long service life and long maintenance cycles • Real-time bus capable	• Compact design with metal housing • Flange or hollow shaft design • Transmission of Ethernet, signal, power, pneumatic and hydraulic • Customizable • Low maintenance
Hollow shaft	**max. 25 mm**	**max. 30 mm**	**max. 30 mm**
Power, signal and data channels	max. 2 signal channels max. 3 power channels	max. 20 power, signal and/or data channels for free configuration	> 20 power, signal and/or data channels for free configuration
Power transmission	**max. 20 A / 240 V** • Direct or alternating current • One or three-phase, motor or heating current	**max. 25 A / 400 V** • Direct or alternating current • One or three-phase, motor or heating current	**max. 25 A / 400 V** • Direct or alternating current • One or three-phase, motor or heating current
Signal transmission	**max. 5 A, 48 VDC / 60 VAC** • Digital switching signals (I/O) • Thermocouple, PT100/1000, analog signals	**max. 5 A, 48 VDC / 60 VAC** • Digital switching signals (I/O) • Thermocouple, PT100/1000, analog signals	**max. 5 A, 48 VDC / 60 VAC** • Digital switching signals (I/O) • Thermocouple, PT100/1000, analog signals
Data transmission	–	• Data module for I4.0 compatibility (e. g. IO-Link, Powerlink, SPE, EtherCAT) • Max. 100 Mbit/s for Fast Ethernet transmission (100BASE-TX)	• Data module for I4.0 compatibility (e. g. IO-Link, Powerlink, SPE, EtherCAT) • Max. 100 Mbit/s for Fast Ethernet transmission (100BASE-TX) • 1 Gbit/s for Gigabit transmission (1000BASE-TX)
Media feedthrough	–	**Air:** Standard tube diameter 8, 10, 12 mm	**Air:** Standard tube diameter 8, 10, 12 mm or customer specific **Liquids:** Single or multi-channel according to customer specification

“High-end“ transmission for Industry 4.0 / IIoT

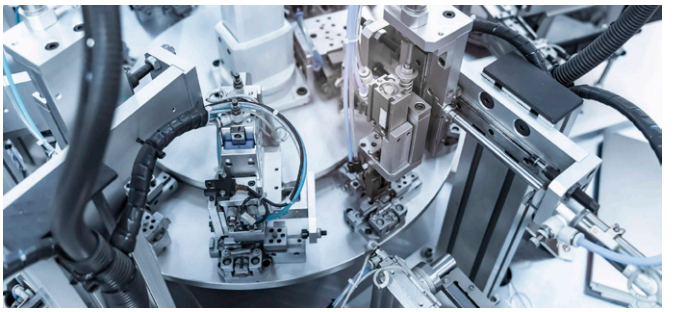
The new slip ring platform “Base Line“ fully supports the customer-side implementation of Industry 4.0 / IIoT concepts. For this purpose, Kübler slip rings are equipped with a transmission module for data rates of up to 1 Gbit/s. This operates completely without electronic components and thus enables interference-free, reliable and direct transmission. The Ethernet module is a bus-independent and cost-optimized solution for all common transmission protocols.



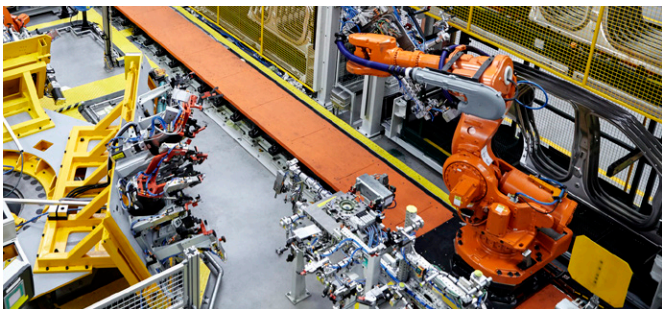
EtherNet/IP · PROFINET · PROFIsafe · EtherCAT Conformance tested · PROFIBUS · CANopen · SAE J1939 · IO-Link · Modbus · and many more

Application examples

SR060E – Numerous applications in Flow Pack systems
- Transmission of the heating current
- Feedback of the temperature sensor
- Plug-in terminals or housing plug (ECM module)



SR085 – Plants with rotary table or inspection systems
- Compact, robust design with extreme operating life
- Hollow shaft up to 30 mm or flange mounting
- Optional media feedthrough



SR085IE – Plastic welding machines, process automation
- Fast Ethernet up to 100 MBit/s
- Easy mounting with cable outlet or plug connector
- Optional media feedthrough

SR120 – Filling and capping systems for liquids
- High level of customization with variable installation options
- Fast Ethernet (100 MBit/s) and Gigabit Ethernet (1 GBit/s)
- Compact, robust design with high customer orientation

SR060E – Compact design

The SR060E is a compact, economical slip ring for up to 3 power and 2 signal transmissions. New innovative contact materials ensure long service life and extremely low-maintenance operation. The round shape with smooth surfaces and high protection class allows easy cleaning.

- Dimensions 60 x 98 mm
- Can be used as a pair starting from just 60 mm shaft distance
- Various component configurations for the transmission paths, max. 3 x power and 2 x signal transmission
- Easily accessible connections
- Standard version V100 with power current up to 20 A
- Version V200 with plug connectors for power and signal connections

SR120 – Modular design

The slip ring SR120 is ideal for applications requiring high transmission rates. The three chamber system allows parallel transmission of power, signals and data up to 1 Gbit/s.

- Reliable thanks to interference-proof transmission
- Transmission of Ethernet, signal, power, pneumatics and hydraulics
- Innovative contact technology, low-maintenance and durable
- Fieldbus or Ethernet up to 1 Gbit/s

SR085 – Modular design

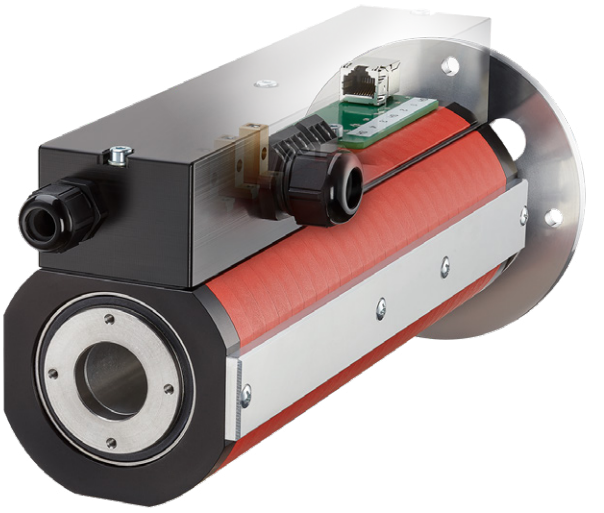
The SR085 is designed in a modular system for an optional combination of power and signal/data channels.

- Robust GRP housing (polycarbonate with glass fiber reinforcement) 30% glass fiber content for industrial use
- Long service life and long maintenance cycles
- Two-chamber system for power and signal transmission
- Labyrinth seal
- High vibration resistance
- Fieldbus signals such as Profibus, CANopen etc. up to 12 Mbit/s

SR085IE – For Industrial Ethernet transmission

For Industry 4.0 / IIoT concepts.
Expansion of the standard size 85 with an integrated Fast Ethernet module that enables a transmission rate of up to 100 Mbit/s. The connection for data transmission is made as standard via a CAT5e cable with RJ45 plug connection. Special customer-specific solutions can also be implemented on request, such as M-type industrial connectors of various codings and designs.

- Optional Ethernet module for transmission of all common Industrial Ethernet protocols
- Transmission of Industrial Ethernet up to 100 Mbit/s
  - Fast connection via RJ45 connector with CAT5e cable
  - Quick and easy replacement by user



Technical data

Contact resistance power channels signal / data channels	 ≤ 1 Ohm (dynamic) ≤ 0.1 Ohm (dynamic)
Insulation resistance	10^3 MOhm, at 500 V DC
Dialectric strength	1000 V eff. (60 sec.)
Maintenance cycles	Maintenance free (if necessary all 100 million revolutions)
Operating temperature	-35 °C ... +85 °C [-31 °F ... +185 °F]
Protection acc. to EN 60529	Up to IP64, higher on request

Approvals

CE compliant in accordance with Low Voltage Directive	2014/35/EU

Twisted Pair Ethernet standards

Name	**10BASE-T**	**100BASE-TX**	**1000BASE-T**
Speed	10 Mb/s	100 Mb/s	1 Gb/s
Standard	802.3i	802.3u	802.3ab
Wires used	2 twisted pairs	2 twisted pairs	4 twisted pairs
Comments	Runs over four wires on a Category 3 or Category 5 cable.	CAT5 copper cabling with two twisted pairs.	At least Category 5 cable, with Category 5e strongly recommended copper cabling with four twisted pairs. Each pair is used in both directions simultaneously.

Modular | Contactless signal transmission | SRI085

In general slip rings are used to transmit electrical power, signals or data, pneumatic and hydraulic, from a stationary to a rotating platform.

In the SRI085, signal transmission occurs by means of a contactless inductive coupling. This ensures the data channels without maintenance requirements.

The construction is modular and offers the greatest flexibility in a variety of applications.

Flexible and rugged

- Modular construction system, load and signal/data channels can be combined as desired.
- Rugged GFPC housing (glass-reinforced polycarbonate) for industrial usage.
- Low signal noise.

Maintenance-free

- Signal / data channels maintenance-free by means of inductive coupling.
- Long service life.

Applications

Packaging machines, rotary tables and textile machines

Order code

SRI085	-	XX	-	XX	-	XX	-	X	1	X	X	-	V100
Type		a		b		c		d	e	f	g		h

a *Type of mounting*
20 = hollow shaft, ø 20 mm [0.79"]
24 = hollow shaft, ø 24 mm [0.94"]
25 = hollow shaft, ø 25 mm [0.98"]
30 = hollow shaft, ø 30 mm [1.18"]
IN = hollow shaft, ø 1"
(other options on request)

b *Number of sensor channels*
01 = 1 x PT100
03 = 3 x PT100

c *Number of power channels*
01 ... 06 = max. 6 power channels

d *Max. load current*
0 = no load channels
1 = 16 A, 240 V AC/DC
2 = 25 A, 240 V AC/DC

e *Interface*
1 = output 4 ... 20 mA

f *Media lead-through*
0 = none
6 = air, rotatable connector (up to 300 min^{-1})

g *Protection rating*
1 = IP50
2 = IP64

h *Version number (options)*
V100 = without options
>V100 = options on request

Connection technology		Order no.
Cordset, pre-assembled	M12 female connector with coupling nut, 8 pin 2 m [6.56'] PUR cable	**05.00.6051.8211.002M**
Connector, self-assembly (straight)	M12 female connector with coupling nut, 8 pin	**05.CMB 8181-0**

Easily accessible connections

Modular | Contactless signal transmission | SRI085

Technical data

Load transmission	
Current carrying capacity voltage / current	max. 240 V / 16 A max. 240 V / 25 A
Contact resistance	< 1 Ohm
Insulation resistance	< 10^3 MOhm
Dielectric strength	1000 V eff.

Data transmission	
Data signal	PT100
Measuring range	0°C ... +300°C [+32°F ... + 572°F] (4 ... 20 mA)
Power supply	24 V DC, ±10%
Interface	4 ... 20 mA
Power consumption	max. 250 mA at 24 V DC
Max. load of the current source	400 Ohm
Type of connection	Flange connector M12, A coded (terminal assignment see connection table)

Mechanical characteristics	**only data transmission** SRI085-XX-0X-00-010X-V100	**mixed data and load transmission** SRI085-XX-XX-XX-X101-V100
Speed	max. 800 min^{-1}	max. 800 min^{-1}
Service life	–	typ. 500 million revolutions
Maintenance cycles	maintenance-free	150 million revolutions
Operating temperature	-30°C ... +85°C [-22°F ... +185°F]	-30°C ... +85°C [-22°F ... +185°F]
Protection to EN 60529	max. IP65	max. IP64
Contact material load channel	–	copper/bronze

Rotatable connector, air (media lead-through no. 6)	
Air pressure max.	10 bar (150 psi)
Speed max.	300 min^{-1}
For tube diameter	8 mm [0.31"]

Terminal assignment

Number of sensor channels	Flange connector M12, 8 pin								
1 x PT100	Signal:	–	–	–	0 V	24 VDC	channel 1, PT100	channel 1, 0 V	–
	Pin:	1	2	3	4	5	6	7	8

Number of sensor channels	Flange connector M12, 8 pin								
3 x PT100	Signal:	channel 2, PT100	channel 3, PT100	channel 3, 0 V	0 V	24 VDC	channel 1, PT100	channel 1, 0 V	channel 2, 0 V
	Pin:	1	2	3	4	5	6	7	8

Top view of mating side, male contact base

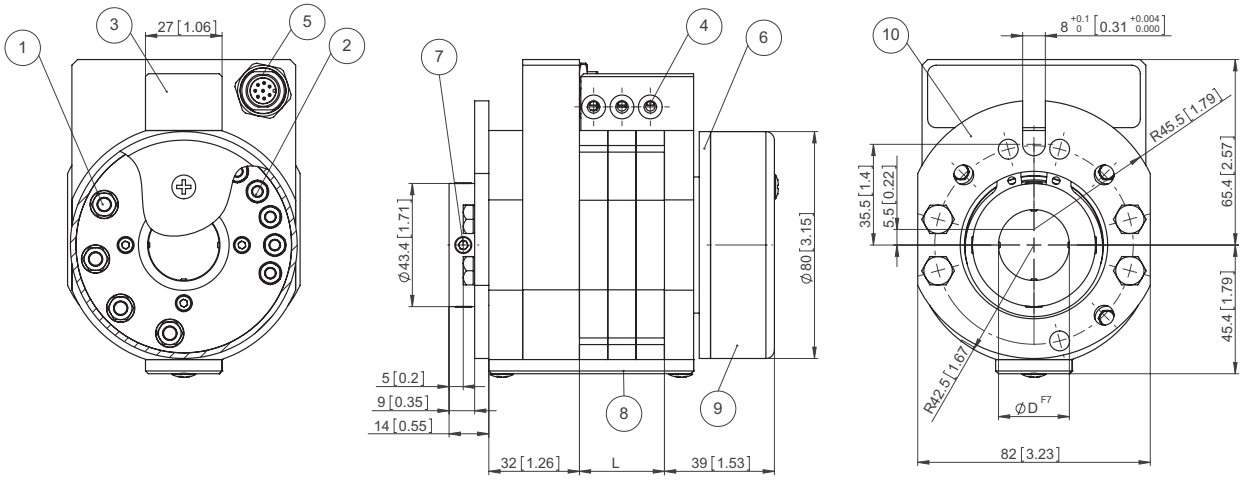
Flange connector M12, 8 pin

Modular	Contactless signal transmission	SRI085

Dimensions

Dimensions in mm [inch]

Example: SRI085-25-03-03-1101-V100



1 – Screw terminal M5 for load transmission
2 – Screw terminal M4 for signal transmission
3 – Terminal clamp for power without wire protection, with shock-hazard touch protection
4 – Wire lead-in for power possible on both sides
5 – Flange connector M12, A coded
6 – Rotating connection ring
7 – 4 x socket set screw DIN 914 M6
8 – Maintenance window
9 – Protective cover for connections
10 – Torque stop

Compact | **Power and signal transmission** | **SR060U**

In general slip rings are used to transmit power, signals or data from a stationary to a rotating platform.

The SR060U is a compact, economical slip ring for up to 3 power and 2 signal transmissions.

New innovative contact materials ensure long service life and extremely low-maintenance operation. The round shape with smooth surfaces and high protection level allows easy cleaning.

c UL us

Compact

- Dimensions 60 x 98 mm.
- Can be used as a pair starting from just 60 mm shaft distance of the sealing rollers.
- Various component configurations for the transmission paths, max. 3 x load and 2 x signal transmission.
- Easily accessible connections.
- Load current up to 16 A.

Low-maintenance

- Maintenance cycles only every 100 million revolutions.
- No contact oil required.
- Easy cleaning – high protection level IP64.

Applications for slip rings

Flowpack and blister packaging machines, robots and handling equipment, rotary tables

Order code

for standard versions

SR060U	-	XX	-	X	-	X	-	X	X	2	-	V100
Type		a		b		c		d	e	f		g

a *Hollow shaft*
20 = ø 20 mm [0.79“]
25 = ø 25 mm [0.98“]
IN = ø 1 inch
(other diameters on request)

b *Number of signal / data channels*
0 or 2

c *Number of load channels*
0, 2 or 3

d *Max. load current*
0 = no load channels
1 = 16 A, 240 V AC/DC

e *Contact material signal / data channels*
0 = no signal / data channels
3 = silver / precious metal

f *Protection*
2 = IP64

g *Version number (options)*
V100 = without option
> V100 = option on request

Compact | Power and signal transmission | SR060U

Technical data

Hollow shaft diameter	up to max. ø 25 mm [0.98"]
Voltage/current loading	
load channels	240 V AC/DC, 50/60 Hz, max. 16 A
signal / data channels	Class 2, 48 V AC/DC, 50/60 Hz, max. 2 A
Contact resistance	
load channels	≤ 1 Ohm (dynamic) [1]
signal / data channels	≤ 0.1 Ohm (silver / precious metal) [2]
Insulation resistance	10^3 MOhm (at 500 V DC)
Dielectric strength	1000 V eff. (60 sec.)
Rated surge strength	U_{imp} = 4kV
Speed max.	500 min^{-1}
Torque	< 0.2 Nm
Service life	typ. 500 million revolutions (at room temperature) depends on installation position
Maintenance cycles	first maintenance after 50 million revolutions, all further maintenance intervals after 100 million revolutions
Maintenance	contact oil not required
Material pairing	
load channels	copper / brass
signal / data channels	silver / precious metal
Operating temperature	0 °C ... +45 °C [+32 °F ... +113 °F]
Protection acc. to EN 60529	IP64

Types of connection

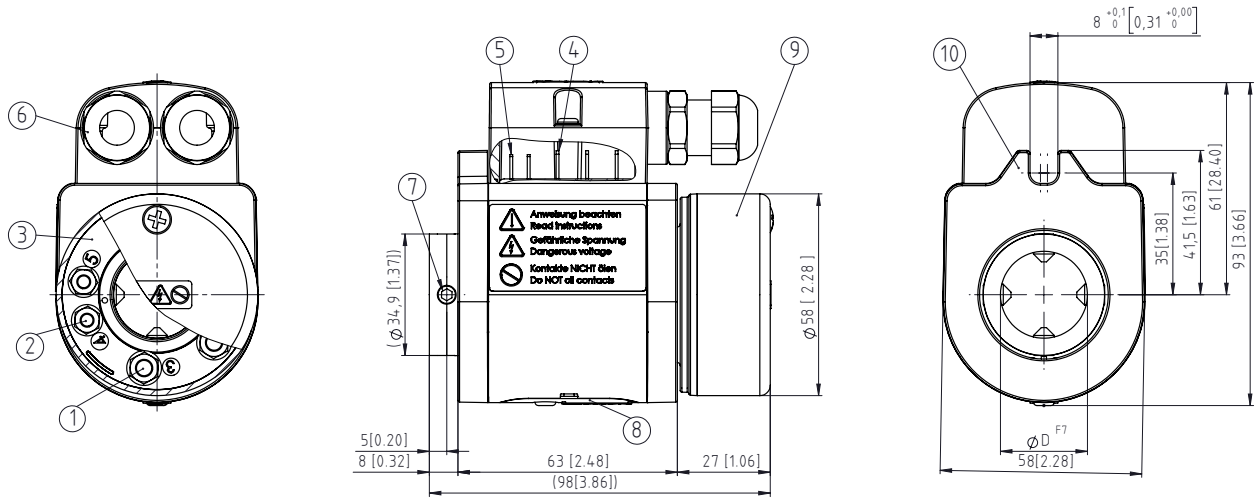
Type of connection stator [3]	
load channels	flat pin 6.3 x 0.8 mm
signal / data channels	flat pin 2.8 x 0.8 mm
Type of connection rotor [3]	
load channels	M5 connection screws
signal / data channels	M4 connection screws

Approvals

UL compliant in accordance with	File-Nr. E364011
CE compliant in accordance with	
Low Voltage Directive	2014/35/EU
RoHS Directive	2011/65/EU

Dimensions

Dimensions in mm [inch]



1 – Screw terminal M5 for load transmission (rotor)
2 – Screw terminal M4 for signal transmission (rotor)
3 – Rotating connection ring
4 – Flat pin connection for power transmission 6.3 x 0.8 mm
5 – Flat pin connection for signal transmission 2.8 x 0.8 mm
6 – Protective cover for the stator connections with cable gland M16x1.5
7 – 4 x socket set screw DIN 914 M6x8
8 – Maintenance window
9 – Protective cover for rotation connections
10 – Torque stop

1) Voltage measurement, ambient temperature, DC series connection, ohmic load, min. 4 A test current.
2) 2-wire resistance measurement, ambient temperature, 6.5-digit digital multimeter or similar, values without testing cable.
3) For the electrical connection, use marked copper cables terminated with insulated connectors suitable for the application..

Compact | **Power and signal transmission** | **SR060E**

Version V100

Version V200

In general slip rings are used to transmit power, signals or data from a stationary to a rotating platform.

The SR060E is a compact, economical slip ring for up to 3 power and 2 signal transmissions. New innovative contact materials ensure long service life and extremely low-maintenance operation. The round shape with smooth surfaces and high protection level allows easy cleaning.

V200 version:
Additional connection options through implementation of M12 connectors for easiest mounting and maintenance.

Compact

- Dimensions 60 x 98 mm.
- Can be used as a pair starting from just 60 mm shaft distance of the sealing rollers.
- Various component configurations for the transmission paths, max. 3 x load and 2 x signal transmission.
- Easily accessible connections.
- Standard version V100 with load current up to 20 A.
- Version V200 with plug connectors for load and signal connections.

Low-maintenance

- Maintenance cycles only every 100 million revolutions.
- No contact oil required.
- Easy cleaning – high protection level IP64.

Applications for slip rings

Flowpack and blister packaging machines, robots and handling equipment, rotary tables

Order code
for standard versions

SR060E	-	XX	-	X	-	X	-	X	X	2	-	VXXX
Type		a		b		c		d	e	f		g

a *Hollow shaft*
20 = ø 20 mm [0.79“]
25 = ø 25 mm [0.98“]
IN = ø 1 Inch
(others on request)

b *Number of signal / data channels*
0 or 2

c *Number of load channels*
0, 2 or 3

d *Max. load current*
0 = no load channels
1 = 16 A, 240 V AC/DC
2 = 20 A, 240 V AC/DC
(Version V200 max. 12 A)

e *Contact material signal / data channels*
0 = no signal / data channels
3 = silver / precious metal

f *Protection*
2 = IP64

g *Version number (options)*
V100 = without option
V200 = with connectors
other options on request

Stock types
SR060E-25-2-3-132-V100
SR060E-25-2-2-132-V100

Compact | Power and signal transmission | SR060E

Technical data

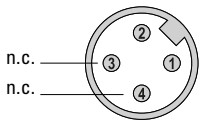
Hollow shaft diameter	up to max. ø 25 mm [0.98"]
Voltage/current loading	
load channels	240 V AC/DC, 50/60 Hz, max. 20 A
signal / data channels	48 V AC/DC, 50/60 Hz, max. 2 A
Contact resistance	
load channels	≤ 1 Ohm (dynamic) [1]
signal / data channels	≤ 0.1 Ohm (silver / precious metal) [2]
Insulation resistance	10^3 MOhm (at 500 V DC)
Dielectric strength	1000 V eff. (60 sec.)
Speed max.	500 min^{-1}
Torque	< 0.2 Nm
Service life	typ. 500 million revolutions (at room temperature) depends on installation position
Maintenance cycles	first maintenance after 50 million revolutions, all further maintenance intervals after 100 million revolutions
Maintenance	contact oil not required
Material pairing	
load channels	copper / brass
signal / data channels	silver / precious metal
Operating temperature	0 °C ... +75 °C [+32 °F ... +167 °F]
Protection acc. to EN 60529	IP64

Approvals

CE compliant in accordance with

Low Voltage Directive	2014/35/EU
RoHS Directive	2011/65/EU

Type of connection

Connection stator	Load channels	Signal / data channels
Version V100	Flat pin 6.3 x 0.8 mm	Flat pin 2.8 x 0.8 mm
Version V200	M12 connector, 4-pin, S coded, male 	M12 connector, 4-pin, A coded, male 

Connection rotor	Load channels	Signal / data channels
Version V100 / V200	M5 connection screws	M4 connection screws

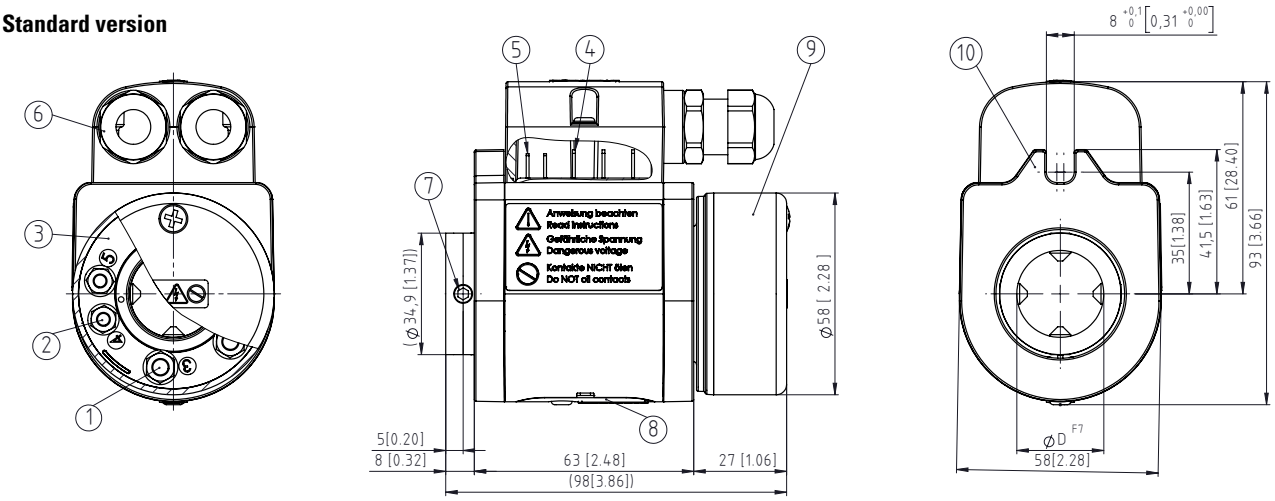
1) Voltage measurement, ambient temperature, DC series connection, ohmic load, min. 4 A test current.
2) 2-wire resistance measurement, ambient temperature, 6.5-digit digital multimeter or similar, values without testing cable.

Compact | **Power and signal transmission** | **SR060E**

Dimensions

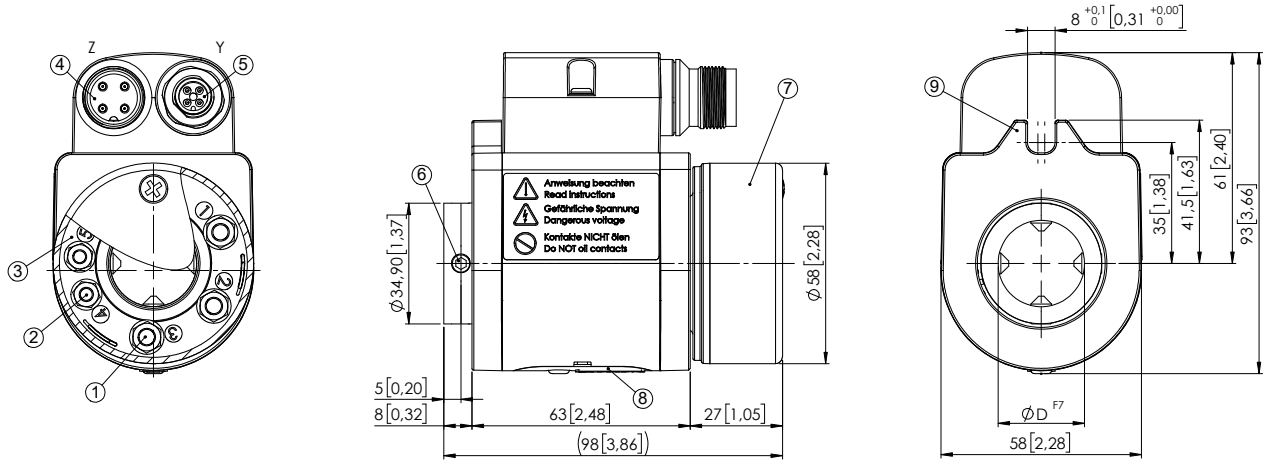
Dimensions in mm [inch]

Standard version



1 – Screw terminal M5 for load transmission (rotor)
2 – Screw terminal M4 for signal transmission (rotor)
3 – Rotating connection ring
4 – Flat pin connection for power transmission 6.3 x 0.8 mm
5 – Flat pin connection for signal transmission 2.8 x 0.8 mm
6 – Protective cover for the stator connections with cable gland M16x1.5
7 – 4 x socket set screw DIN 914 M6x8
8 – Maintenance window
9 – Protective cover for rotation connections
10 – Torque stop

Version V200



1 – Screw terminal M5 for load transmission (rotor)
2 – Screw terminal M4 for signal transmission (rotor)
3 – Rotating connection ring
4 – M12 connector, 4-pin, S coded, male
5 – M12 connector, 4-pin, A coded, male
6 – 4 x socket set screw DIN 914 M6x8
7 – Protective cover for rotation connections
8 – Maintenance window
9 – Torque stop

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