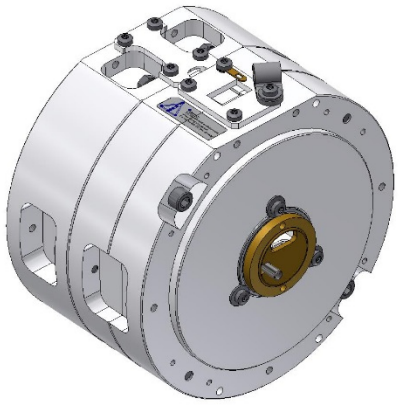
Rotary Joint || BN 636684

Contactless Data and Power Transmission Channels



This combination of contactless data and power channels offers improved lifetime without the need for maintenance. The contactless design provides a high increase in rotating speed in comparison to slip ring designs.
The data channels are realized by rotating capacitive couplers and the power channel is based on inductive technology.
An integrated auxiliary power channel supplies all rotating electronic devices.

Available Configurations

Ordering Code	1000BASE-T Ethernet-Channels	100BASE-TX, IRT (Profinet C), Ethernet-Channels	CAN-Channels	Power Transmission Channels
636684C0001	1	None	None	1
636684C0002	None	None	1	1
636684C0003	1	None	1	1
636684C0004	2	None	None	1
636684C0005	None	2 (multiplexed)	None	1
636684C0006	1	2 (multiplexed)	None	1
636684C0007	None	None	2	1

Ethernet Channel Characteristics

1000BASE-T Ethernet-Channel	One contactless coupler for one channel
Supported Ethernet Standards	10BASE-T (IEEE802.3 Clause 14) 100BASE-TX (IEEE802.3 Clause 25) 1000BASE-T (IEEE802.3 Clause 40) Auto negotiation provided to select Ethernet-Standard and full/ half duplex mode automatically
Profinet Class	Class A, Class B
Ethernet Frame Loss Ratio According to RFC2544	$\leq 1 \times 10^{-9}$ ET1) ET3)
Data Interface Connection	4 shielded twisted pairs at rotor and stator side for each channel, AWG28 Cable length rotating part: 550mm ± 50mm Cable length stationary part: 550mm ± 50mm

Template TD-00002U

100BASE-TX, IRT Ethernet-Channel	One common contactless coupler for two channels, multiplexed
Supported Ethernet Standards	100BASE-TX (IEEE802.3 Clause 25), full duplex
Profinet Class	Class A, Class B, Class C (IRT)
Ethernet Frame Loss Ratio According to RFC2544	≤ 1 x 10^{-9} ET2) ET3)
Data Interface Connection	2 shielded twisted pairs at rotor and stator side for each channel, AWG28 Cable length rotating part: 550mm ± 50mm Cable length stationary part: 550mm ± 50mm

ET1) Measured @ 1 Gbit/s with 64 byte frames at 99% channel utilization and 800 s measurement time (for 1000BASE-T)

ET2) Measured @ 100 Mbit/s with 64 byte frames at 99% channel utilization and 8000 s measurement time (for 100BASE-TX)

ET3) Corresponds to BER ≤ 1 x 10 -12

CAN Channel Characteristics

CAN-Channel	One contactless coupler for one channel
Supported CAN Standards	ISO 11898-1:2003
CAN-functionality	Repeater (fast mode)
Data Rate, max.	500 Kbit/s
Data Interface Connection	1 shielded twisted pair at rotor and stator side for each channel, AWG28 Cable length rotating part: 550mm ± 50mm Cable length stationary part: 550mm ± 50mm
Alarm Signal	Open Collector output $V_{CE} \leq 40V$, $I_C < 10mA$ Active if no failure detected Current has to be limited externally
Alarm Signal Connection	1 shielded twisted pair at rotor and stator side for each channel, AWG28 Cable length rotating part: 550mm ± 50mm Cable length stationary part: 550mm ± 50mm

Functional test of data transmission characteristics can be done electronically. Required software is not included.

DC-Power Transmission Channel and Power Supply Characteristics

External Power Supply	Power Supply has to be a SELV type acc. to IEC60950-1 The current must be externally limited to 5 A	
Input Voltage Range	21.6 V to 28.8 V DC; 0 V is connected to Case Ground internally	
Input Current per Data Channel	0.33 A / 0.5 A @ 24 V Supply Voltage	without external load
Output Voltage	24 V DC ±3%	potential free against Case Ground and data channels
Output Current to External Load	2.5 A	Over full temperature range
Output Voltage Ripple, max.	80 mV	
Efficiency at External Load, typ.	85%	@ full load
Interface Type DC-Input	2 single wires at stationary part, AWG18	Cable length: 550mm ± 50mm
Interface Type DC-Output	2 single wires at rotating part, AWG18	Cable length: 550mm ± 50mm

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Applied standards	DIN EN 55022 Class B DIN EN 61000-4-2 DIN EN 61000-4-3 DIN EN 61000-4-4 DIN EN 61000-4-6	Radio disturbance characteristics ESD immunity RF immunity, radiated Transient / burst immunity RF immunity, conducted
Applicable EU Directive	EMC Directive 2004/108/EC	

Mechanical Data

Rotating speed, max.	1000 rpm
Life, min.	200 x 10^6 revolutions
MTBF	300 000 h
Torque (room / min. temperature), max.	0.2 Nm / 0.5 Nm @ start-up 0.2 Nm / 0.5 Nm @ rotation
Interface loads, max.	no loads allowed
Case material	aluminum alloy
Case surface finish	painted black (RAL 9005)
Weight, approx.	2.5 kg
Marking	adhesive label

Environmental Conditions

Operation	
Ambient temperature range	-30 °C to +71 °C
Relative humidity, max.	95% (non-condensing)
Shock	30 g / 11 ms half sine, 3 shocks in each direction of 3 orthogonal axes Compliant to MIL-STD-810G
Vibration	20-50 Hz, PSD of 0,02 g^2/Hz falling to 0,001 g^2/Hz at 500 Hz in each of 3 orthogonal axes. Duration: 15 min/axis. Compliant to MIL-STD-810G
IP protection level	IP64 per EN 60529 (all interfaces connected with appropriate gaskets)
Maintenance	Not required
Storage	
Ambient temperature range	-40 °C to +85 °C
Relative humidity, max.	95% (non-condensing)

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Applicable documents

Drawing	636684-0E
Circuit Diagram	636684C0001-CD 636684C0002-CD 636684C0003-CD 636684C0004-CD 636684C0005-CD 636684C0006-CD 636684C0007-CD
Technical information	“Rotary Joints – Glossary”, Technical Document TD-00021, Spinner GmbH