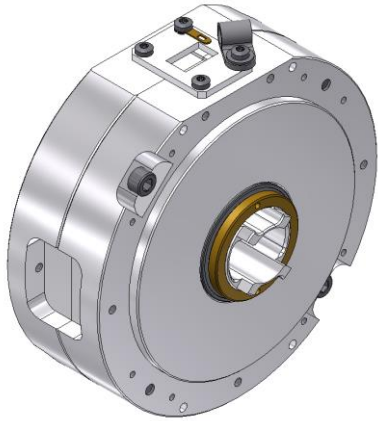


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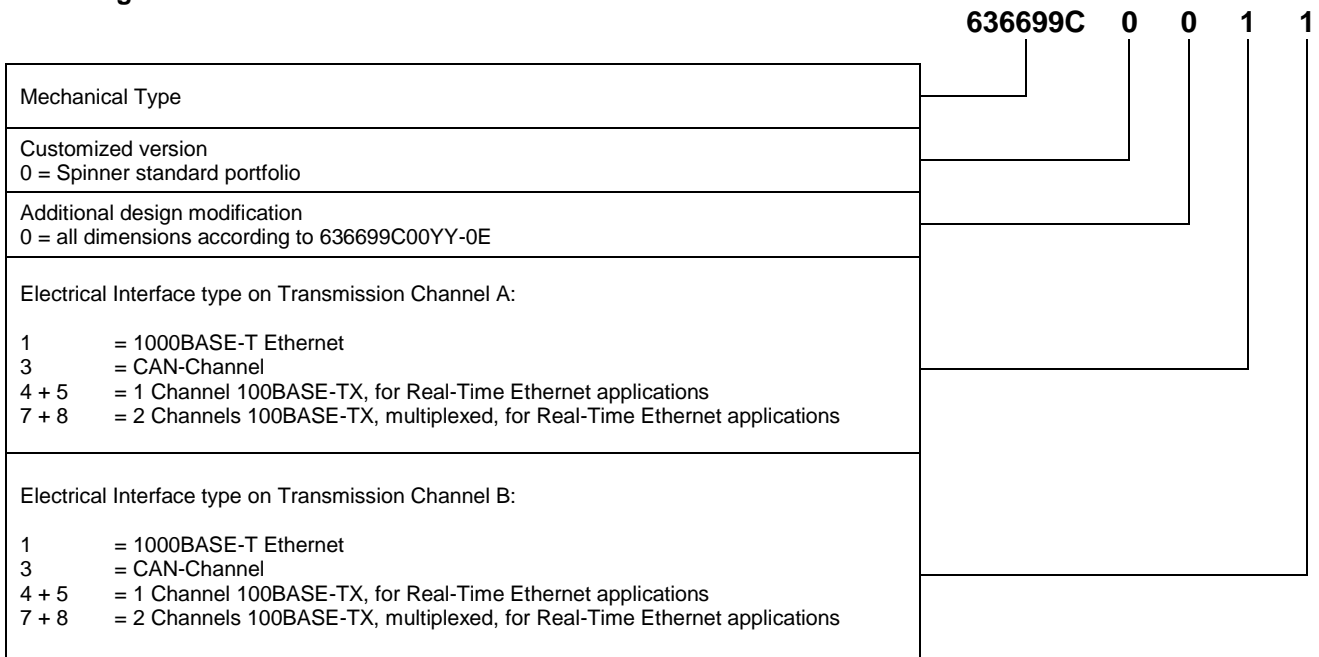
Contactless Data Transmission Channels



The contactless data transmission channels offer improved lifetime and reliability without the need for maintenance. The contactless design guarantees error free data transmission even at very high rotating speeds. The IRT version supports PROFINET class C and other real time protocols. The data transmission channels are realized by rotating capacitive couplers. Two channels can be provided per unit.

PROFINET
 ETHERNET 
POWERLINK

Ordering number nomenclature



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Interface Type 1, 1000BASE-T

1000BASE-T Ethernet Channel	One signal channel per contactless transmission 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
OSI Layer operation	Layer 1 - 2
Supported Protocols	PROFINET CC-A, CC-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 per transmission channel, AWG28 Cable length: see drawing

Interface Type 3, CAN Bus

CAN Bus Channel	One signal channel per contactless transmission 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 per transmission channel, AWG28 Cable length: see drawing
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 per transmission channel, AWG28 Cable length: see drawing

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

Interface Type 4 + Type 5, 100BASE-TX

100BASE-TX Ethernet Channel	One signal channel per contactless transmission channel	
	Type 4	Type 5
Supported Ethernet Standards	100BASE-TX (IEEE802.3 Clause 25), autonegotiation (full duplex only)	100BASE-TX (IEEE802.3 Clause 25), autonegotiation (half duplex only)
Supported Protocols	PROFINET CC-A, CC-B, CC-C (IRT) POWERLINK	
OSI Layer operation	Layer 1 (physical)	
Ethernet Frame Loss Ratio According to RFC2544	$\leq 1 \times 10^{-9}$ ET2) ET3)	
Data Interface Connection	2 shielded twisted pairs at rotor and stator side per transmission channel AWG28. Cable length: see drawing	

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Interface Type 7 + Type 8, 100BASE-TX, 2 Signal Channels

100BASE-TX Ethernet Channel	Two signal channels per contactless transmission channel, signals are multiplexed not switched	
	Type 7	Type 8
Supported Ethernet Standards	100BASE-TX (IEEE802.3 Clause 25), autonegotiation (full duplex only)	100BASE-TX (IEEE802.3 Clause 25), autonegotiation (half duplex only)
Supported Protocols	PROFINET CC-A, CC-B, CC-C (IRT) POWERLINK	
OSI Layer operation	Layer 1 (physical)	
Multiplexer	Time Domain Multiplexing	
Ethernet Frame Loss Ratio According to RFC2544	$\leq 1 \times 10^{-9}$ ET2) ET3)	
Data Interface Connection	4 shielded twisted pairs at rotor and stator side per transmission channel, AWG28 Cable length: see drawing	

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 $\leq 1 \times 10^{-12}$

Power Requirements per transmission channel

External Power Supply	Power Supply has to be a SELV type acc. to IEC60950-1 The current must be externally limited to 4 A per transmission channel
Input Voltage Range	21.6 V to 28.8 V DC; 0 V is connected to Case Ground internally
Current Consumption, typ. / max.	0.33 A / 0.5 A @ 24 V Supply Voltage
Inrush Current	3 A per transmission channel (duration 2 ms)
Power Consumption, typ. / max.	8 W / 12 W
Supply Voltage Connection	2 single wires at stator side, AWG22. 2 single wires at rotor side, AWG22 Cable length: see drawing

Standards and Directives

Applicable EU Directive	EMC Directive 2014/30/EU	
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

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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.	1.5 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)

Applicable documents

Drawing	636699CXXYY-0E (XX according to ordering number)
Circuit Diagram	636699CXXYY-CD (YY according to ordering number)
Technical information	"Rotary Joints – Glossary", Technical Document TD-00021, Spinner GmbH

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Outline (all dimensions in millimeter)

