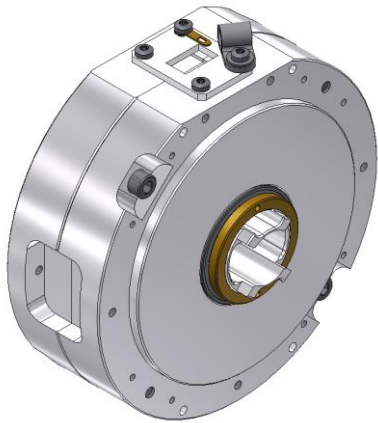


Rotary Joint || BN 636690

Contactless Data Transmission Channels - Slip Ring Combination



The contactless data channels offer improved lifetime without the need for maintenance. The data channels are realized by rotating capacitive couplers. Through the slip ring board, all rotating electronic devices are supplied.

PROFINET
ETHERNET 
POWERLINK

Available Configurations

Slot A	
Type	
9	Multifunctional slip ring board

Slot B	
Type	
1	1000BASE-T Ethernet
3	CAN-Channel (Repeater 500 Kbit/s)
4 + 5	1 Channel 100BASE-TX, for Real-Time Ethernet applications
7 + 8	2 Channels 100BASE-TX, multiplexed, for Real-Time Ethernet applications

Transmission Type 1:

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
OSI Layer operation	Layer 1 - 2
Supported Protocols	PROFINET CC-A, CC-B
Ethernet Frame Loss Ratio According to RFC2544	$\leq 1 \times 10^{-9}$ Measured for 800s with 64 byte frames at 99% channel utilization, corresponds to BER $\leq 1 \times 10^{-12}$
Data Interface Connection	Stator: 4x AWG 28/7/36 twisted pair Rotor: 4x AWG 28/7/36 twisted pair

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Transmission Type 3:

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
Alarm Signal	Open Collector output $V_{CE} \leq 40V, I_C < 10mA$ Active if no failure detected Current has to be limited externally
Data and Alarm Signal Connection	Stator: 2x AWG 28/7/36 twisted pair Rotor: 2x AWG 28/7/36 twisted pair

Transmission Type 4 + Type 5:

100BASE-TX Ethernet Channel	One signal channel provided	
	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	$\leq 1 \times 10^{-9}$ Measured for 8000s with 64 byte frames at 99% channel utilization, corresponds to BER $\leq 1 \times 10^{-12}$	
Data Interface Connection	Stator: 2x AWG 28/7/36 twisted pair Rotor: 2x AWG 28/7/36 twisted pair	

Transmission Type 7 + Type 8:

100BASE-TX Ethernet Channel	Two signal channels over one contactless transmission channel, signals are multiplexed, no redundancy	
	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	$\leq 1 \times 10^{-9}$ Measured for 8000s with 64 byte frames at 99% channel utilization, corresponds to BER $\leq 1 \times 10^{-12}$	
Data Interface Connection	Stator: 4x AWG 28/7/36 twisted pair Rotor: 4x AWG 28/7/36 twisted pair	

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Transmission Type 9:

Multifunctional slip ring board				
Group designation		A	B	C for internal supply
Number of channels		2	1	1
Number of paths per channel		2 + shield	2	2
Type of circuit		TNV or SELV Depending on application	SELV	SELV
Signal type		Data or DC-Power Depending on application	DC-Power	DC-Power
Current,	DC nominal	2 A	4 A	2 A
Current,	DC peak	All current paths must tolerate current peaks 12 times the nominal current for not less than 30 ms to protect each path with an appropriate fuse		
Voltage	DC maximal	50 V	50 V	50 V
End-to-end resistance, max.		250 mΩ	150 mΩ	150 mΩ
Crosstalk, min. between all channels		TBD dB		
Nominal Impedance		100 Ω	n/a	n/a
Cable Type Stator		1 shielded twisted pair for each channel, AWG 26	2 single wires, AWG 22	2 single wires, AWG 22
Cable Type Rotor		1 shielded twisted pair for each channel, AWG 26	2 single wires, AWG 22	2 single wires, AWG 22
Electrical safety requirements		Compliant with EN 60950-1		

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Power Requirements for contactless data transmission

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
Current Consumption, typ. / max.	0.33 A / 0.5 A @ 24 V Supply Voltage
Supply Voltage Connection	2 single wires at stator side, AWG22 Rotating part supplied by internal connection to multifunctional slip ring board (Group C)

Standards and Directives

Applicable EU Directive	EMC Directive 2004/108/EC	
Applied standards	DIN EN 55032 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.	60 rpm
Life, min.	30 x 10 ⁶ revolutions
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	
Operating altitude, max.	3000 m
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
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.
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	See table "Ordering numbers"
Circuit Diagram	636690CXXYY-CD (CXXYY according to ordering number)

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Ordering numbers

BN	Drawing	Slot A	Interface Connection Slot A				Slot B	Interface Connection Slot B			
			Stator	L1* / mm	Rotor	L2* / mm		Stator	L3* / mm	Rotor	L4* / mm
636690C0091	Standard outline	Type 9	Flying leads	550	Flying leads	550	Type 1	Flying leads	550	Flying leads	550
636690C0094	Standard outline		Flying leads	550	Flying leads	550	Type 4	Flying leads	550	Flying leads	550
Custom 01	Customer outline		M8 Type TBD	350	Flying leads	5000	Type 5	M8 Type TBD ----- M12 Type TBD	350	Flying leads	5000

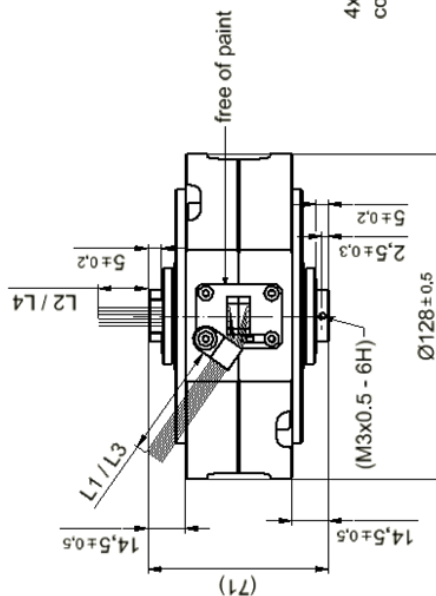
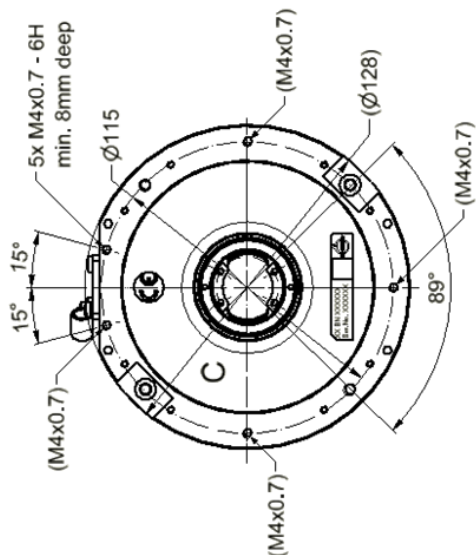
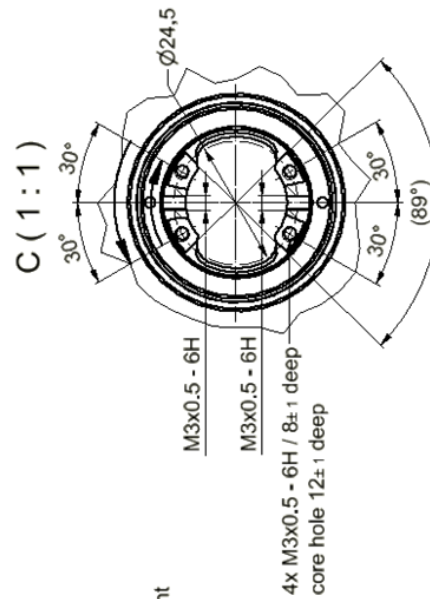
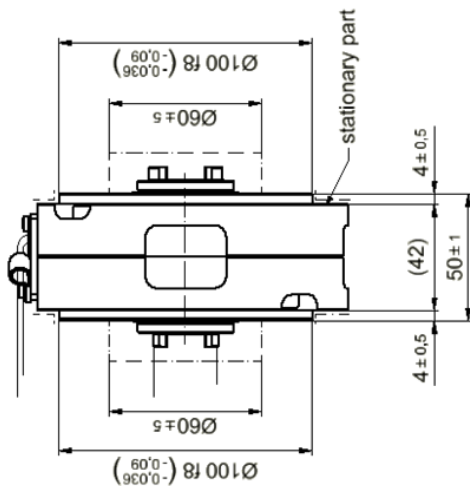
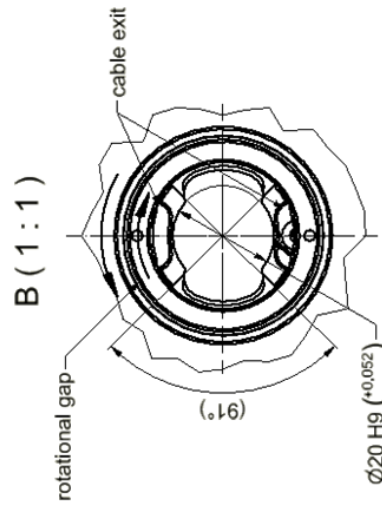
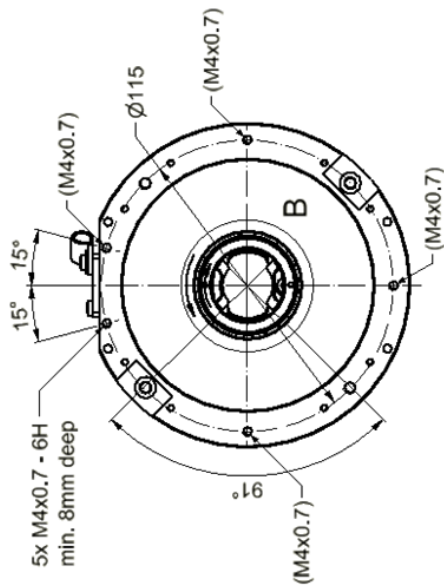
*Cable length tolerance ±5%

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Standard Outline (all dimensions in millimeter)



- 1) Free of paint: —
- Sections marked with: - - - - -
- Cables, cable exits and connectors: —
- 2) L1 - L4 see data sheet 636690-BE.

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Template TD-00015U