

Rotary Joint || BN 637490

Contactless Data and Power Transmission (48 V / 300 W)



This combination of contactless data and power channels offers improved lifetime without the need for maintenance. The contactless design allows very high rotational speeds in comparison to slip ring designs.

The data channels are realized by rotating capacitive couplers and the power channel is based on an inductive technology.

- POWERLINK
- PROFINET
- EtherCAT
- SERCOS III
- EtherNet/IP
- VARAN
- IEEE-1588 v2 (PTP)

Available configurations

Type	Description	Standard product ordering number
4	1 Channel ethernet for real-time applications 100BASE-TX, full duplex	637490C0004
7	2 Channel ethernet (multiplexed) for real-time applications 100BASE-TX, full duplex	637490C0007

Transmission type 4

100BASE-TX Ethernet Channel	One signal channel provided
Supported ethernet standards	100BASE-TX (IEEE802.3 Clause 25), autonegotiation (full duplex only)
Supported protocols	Real-time ethernet protocols
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	Cat.6A S/FTP 4x2xAWG26/7 (PiMF) at body and hollow shaft side (or special cable type according to specific circuit diagram)

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Transmission type 7

100BASE-TX Ethernet Channel	Two signal channels over one contactless transmission channel, signals are multiplexed, no redundancy
Supported ethernet standards	100BASE-TX (IEEE802.3 Clause 25), autonegotiation (full duplex only)
Supported protocols	Real-time ethernet protocols
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	Cat.6A S/FTP 4x2xAWG26/7 (PiMF) at body and hollow shaft side (or special cable type according to specific circuit diagram)

Operating condition for data transmission

Power Consumption, typ. / max.	8 W / 12 W
Interface type DC-Input	Internally wired

Operating condition for DC power transmission

Output power nom.	300 W
External power supply	Power Supply has to be a ES1 type acc. to DIN EN 62368-1
External power fuse	The current must be externally limited to 10 A
Interface type DC-Input	PUR cable, 2x 1,5mm ² , shielded, flying leads
Interface type DC-Output	PUR cable, 2x 1,5mm ² , shielded, flying leads
Input voltage range	48 V DC \pm 10%
Inrush Current, typ	6 A internally limited during power up
Output voltage	48 V DC \pm 5% potential free against case ground and data channels
Output voltage ripple, max.	\pm 150 mV
Output current, continuous	6.6 A Power derating dependent on case temperature and input voltage
Efficiency at external load, typ.	85% @ full load
Type of external load	Resistive
Output overcurrent protection	Hiccup mode
Output short circuit proof	Hiccup mode

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Standards and directives

Applicable EU Directive	EMC Directive 2014/30/EU	
Applied standards	DIN EN 55032 (Class B)	Radio disturbance characteristics
	DIN EN 55024	Immunity characteristics

Mechanical data

Rotating speed, max.	3000 rpm
Life, min.	200 x 10 ⁶ revolutions
MTBF	300.000 h
Torque (room / min. temperature), max.	0.4 Nm / 1.0 Nm @ start-up 0.4 Nm / 1.0 Nm @ rotation
Interface loads, max.	no loads allowed
Case material	aluminum alloy
Case surface finish	chromate conversion coat painted RAL9005 jet black
IP protection level	IP60
Weight, approx.	6.0 kg (without cables)
Marking	adhesive label
Standard cable length	1400 mm ± 5 % (or special cable length according to specific data sheet)

Environmental conditions

Operation	
Ambient temperature range (near housing)	-25°C to +60°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
Storage	
Ambient temperature range	-40°C to +85°C
Relative humidity, max.	95% (non-condensing)

Applicable documents

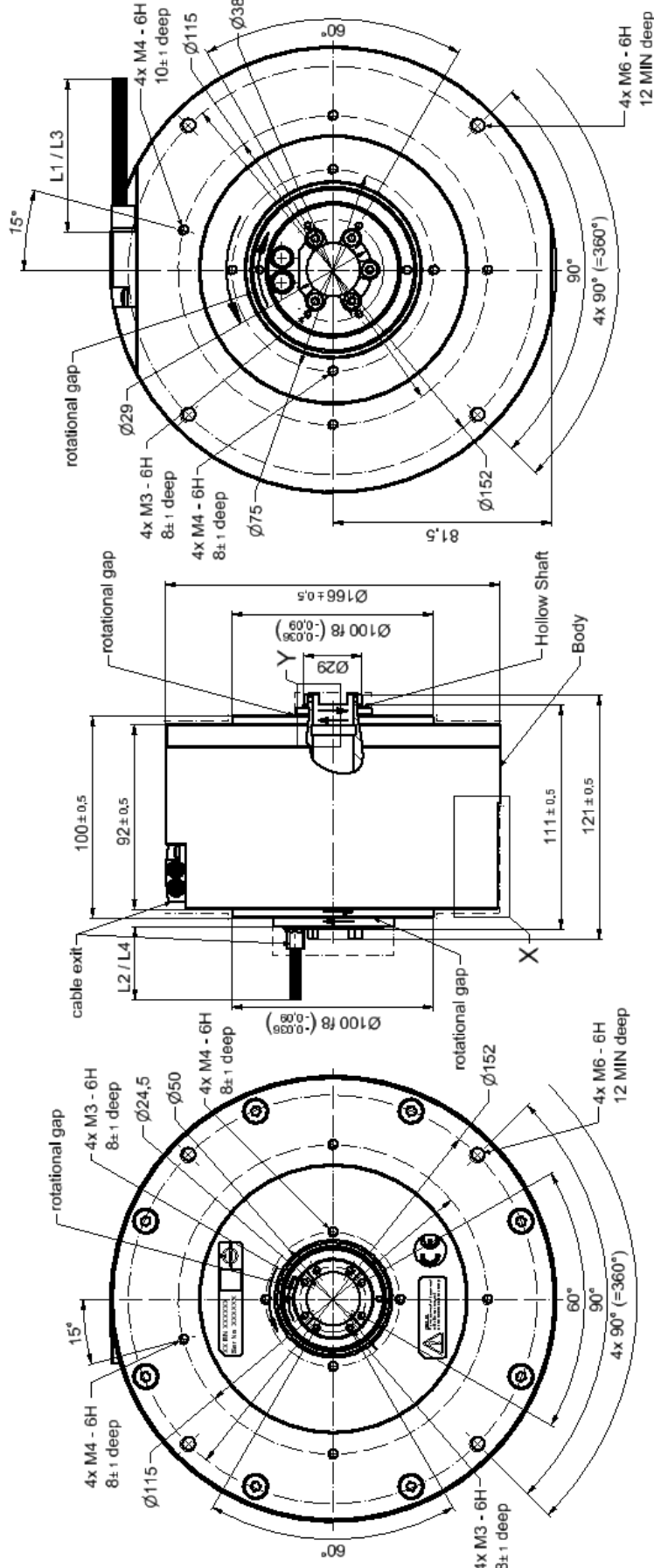
Specific Circuit Diagram	637490CXXXX-CD (XXXX according to ordering number)
Specific Data Sheet	637490CXXXX-BE (XXXX according to ordering number)

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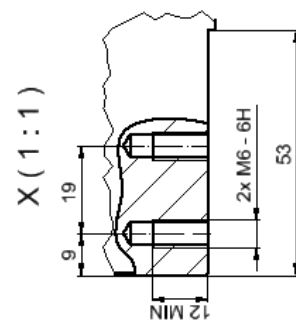
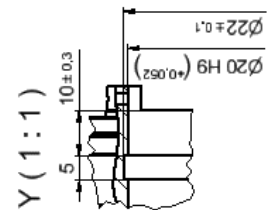
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Standard outline (all dimensions in millimeter)



1) free of paint:
 - sections marked with: - - - - -
 - free inner diameter
 - all cables



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