

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

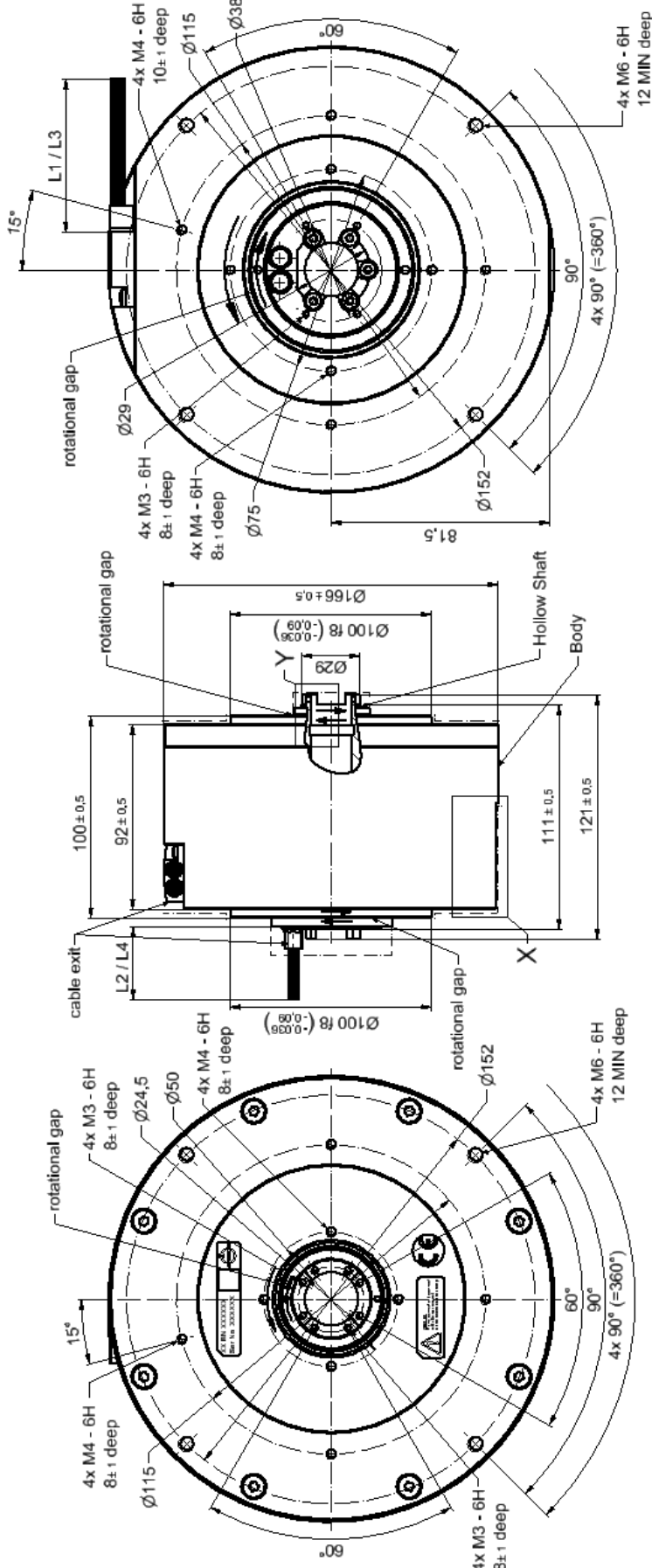
| | |
|--------------------------|---|
| Specific Circuit Diagram | 637490CXXXX-CD (XXXX according to ordering number) |
| Specific Data Sheet | 637490CXXXX-BE (XXXX according to ordering number) |

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Standard outline (all dimensions in millimeter)



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

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