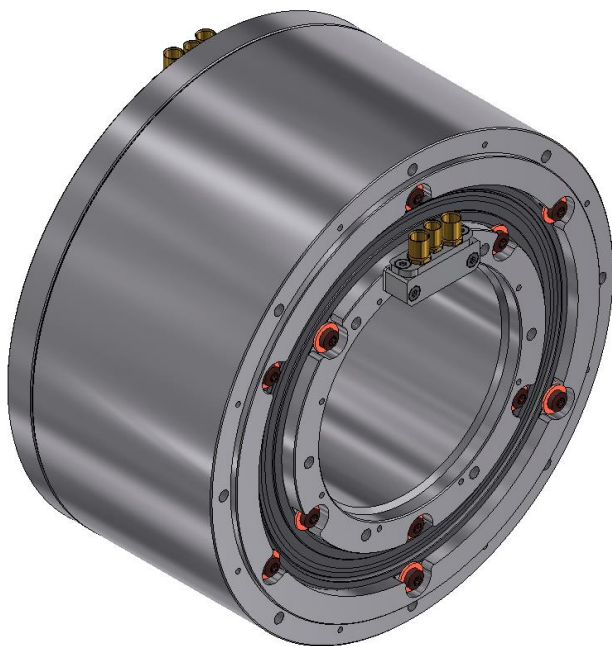


Rotary Joint | BN 637440

Contactless Data and Power Transmission (24 V / 50 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 configuration:

| Type | Description | Standard product ordering number |
|------|---|----------------------------------|
| 1 | 1000BASE-T Ethernet | 637440C0001 |
| 4 | 1 Channel ethernet for real-time applications 100BASE-TX, full duplex | 637440C0004 |
| 5 | 1 Channel ethernet for real-time applications 100BASE-TX, half duplex | 637440C0005 |
| 7 | 2 Channel ethernet (multiplexed) for real-time applications 100BASE-TX, full duplex | 637440C0007 |
| 8 | 2 Channel ethernet (multiplexed) for real-time applications 100BASE-TX, half duplex | 637440C0008 |

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 | Not for real-time ethernet applications |
| 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 | Cat.6A S/FTP 4x2xAWG26/7 (PiMF) at Body and Hollow shaft side |

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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 | 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 | |

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 | 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 | |

Operating condition for data transmission

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

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Operating condition for DC power transmission

| | |
|-----------------------------------|--|
| Output power nom. | 50 W |
| External power supply | Power supply has to be a SELV type acc. to IEC60950-1 |
| External power fuse | The current must be externally limited to 5 A |
| Interface type DC-Input | PUR cable, 2x 0.25mm ² , shielded, flying leads |
| Interface type DC-Output | PUR cable, 2x 0.25mm ² , shielded, flying leads |
| Input voltage range | 20.4 V to 28.8 V DC |
| Inrush Current | TBD |
| Output voltage | 24 V DC \pm 3% potential free against case ground and data channels |
| Output voltage ripple, max. | \pm 80 mV |
| Output current, continuous | 2.1 A |
| Power derating | TBD (dependent on case temperature and input voltage) |
| Efficiency at external load, typ. | TBD @ full load |
| Type of external load | Resistive |
| Output overcurrent protection | TBD |
| Output short circuit proof | TBD |

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 |

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Rotary Joint | BN 637440

Mechanical characteristics

| | |
|--|---|
| Rotating speed, max. | 300 rpm (up to 3000 rpm on request) |
| 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. | 6.5 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 | 637440CXXXX circuit diagram (XXXX according to order number) |
| Specific Data Sheet | 637440CXXXX data sheet (XXXX according to order number) |

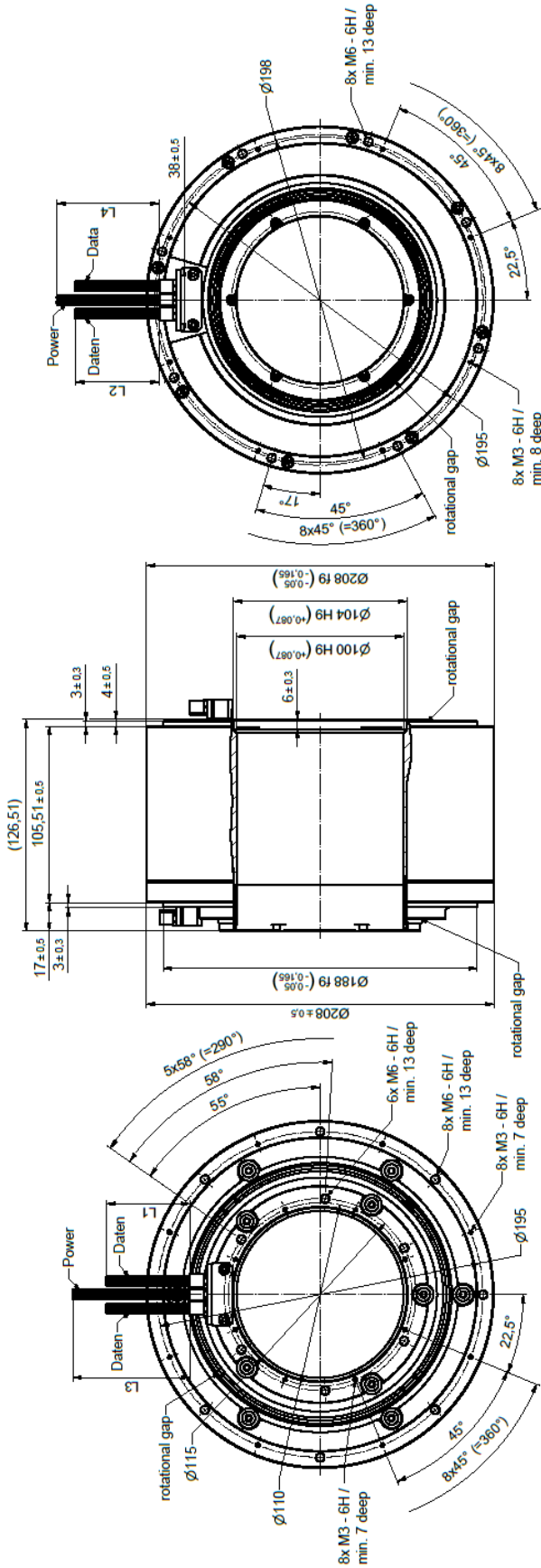
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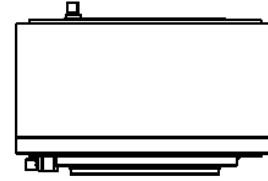
Outline (all dimensions in millimeter)

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optional cable exits:

Stator Radial; Rotor Axial (1 : 3)



Stator Axial; Rotor Radial (1 : 3)



Stator Axial; Rotor Axial (1 : 3)

