

Absolute rotary encoder KRP with Ethernet/IP interface

Ethernet/IP™



- Design as a single-turn or multiturn rotary encoder
- Position and speed signal
- Resolution: up to 8192 steps / 360° (13-bit)
- Measuring range: up to 4096 revolutions
- Protection type: up to IP67
- Operating temperature range: - 40 °C to + 85 °C
- Resolution of position and velocity, code direction and preset programmable via Ethernet/IP

Design and function

Robust housing made of corrosion-protected steel (>720 h salt spray test) - seawater-proof aluminium flange - stainless steel shaft - ball bearing with shaft seal - highly integrated optical sensor system with long-term stabilisation - absolute multiturn transmission - connection via M12 connector

The KRP model series rotary encoders are intended for connecting directly to the Ethernet/IP network. Setting the address, baud rate or terminating resistances is not necessary. The IP address is assigned via a BOOTP or DHCP server in the Ethernet/IP network.

The integrated 2-fold switch enables the KRP model series rotary encoders to be used in star, tree and line network topologies.

An exhaustive description of integration into an Ethernet/IP network can be found in the [KRP 13387](#) manual.

Ethernet/IP properties

- IP address setting via DHCP or BOOTP
- Support of autocrossover and autonegotiation
- Up to 256 simultaneous connections
- I/O and explicit messaging
- Diagnosis LEDs for link, activity and status
- Programming via Ethernet/IP

Absolute rotary encoder model KRP

Technical data

Input data *

Depending on configuration:

- 4-byte position data or
- 4-byte position data and 4-byte velocity data

Electrical data

- Sensor system: Encoding disk with photo array
- Operating voltage: + 10 VDC to + 30 VDC (protected against polarity reversal)
- Power consumption: < 3 W
- Resolution: 8192 steps / 360° (13-bit)
- Measuring range: 4096 revolutions (in the multiturn version)
- Total number of steps: Single-turn version: 13-bit, multiturn version 25-bit
- Accuracy: ± 0.05°
- Output code: Binary
- Code path: CW / CCW
- Velocity signal: 16-bit, with prefix, unit: steps / gate time
(gate time adjustable, default: 1 s)

Ethernet data

- MAC address: 00:0E:CF:XX:XX:XX
The relevant, current MAC address is located on the model plate.
- Transmission technology: 100 Base-TX
- Transmission rate: 10 / 100 MBit/s
- Line length: Max. 100 m (between two subscribers)
- Minimum cycle time: 1 ms

Mechanical data

- Operating speed: 10,000 rpm max.
- Moment of inertia (rotor): 30 gcm²
- Operating torque: ≤ 5 Ncm (at 20 °C)
- Starting torque: ≤ 4 Ncm
- Perm. shaft load: 40 N axially, 110 N radially
- Bearing service life: > 108 revolutions
- Weight: Approx. 0.4 kg

Environmental data

- Operating temperature range: - 40 °C to + 85 °C
- Storage temperature range: - 40 °C to + 85 °C
- Resistance:
 - To shock: 1000 m/s²; 6 ms (DIN EN 60068-2-27)
 - To vibration: 100 m/s²; 10 ... 1000 Hz (DIN EN 60068-2-6)
- EMC standards: EN 61000-6-4 (interference emission)
EN 61000-6-2 (interference immunity)
- Protection type: IP66 / IP 67

Electrical connection

- Ethernet: M12 connector D-coded 4-pin for bus in / bus out, socket
- Supply: M12 connector A-coded 4-pin, pins

* From the controller's point of view.

Absolute rotary encoder model KRP**Technical data****Programmable parameters**

| Parameter | Value range | Parameter description |
|-------------------------------|--------------------------------|--|
| Scaling | Off / on | |
| Code sense | CW / CCW | CW (clockwise): ascending values on rotation clockwise CCW (counter clockwise): descending values on rotation clockwise (viewed looking at the shaft) |
| Resolution [steps/360°] | 1 ... 8192 | Steps per revolution (360°) |
| Total number of steps [steps] | 1 ... 33,554,432 | Overall measuring range |
| Gate time | 1 µs, 1 ms, 1 s, 1 min, rpm | Time basis for velocity registration |
| Reference value | 0 ... total number of steps -1 | For adaptation to the application, the position value can be set to any value within the measuring range. |

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Electrical connection, diagnosis LEDs

Ethernet M12 connector connection assignment

(Port1 and port 2)

| PIN | 1 | 2 | 3 | 4 |
|---------|--------|-------|--------|------|
| Signal | TX+ | RX+ | TX- | RX- |
| Colour* | Yellow | White | Orange | Blue |

Supply M12 connector connection assignment

| PIN | 1 | 2 | 3 | 4 |
|--------|-----------------------------|---|--------------------------|---|
| Signal | + U _B (+ 24 VDC) | — | - U _B (0 VDC) | — |

Diagnosis LEDs

| Link 1/2 | Active 1/2 | Status1/2 | Description |
|----------|------------|---------------------|---|
| Green | Yellow | Green/red | |
| On | | | Network connection established |
| | Flashing | | Connection establishment |
| | On | | Connection established |
| | | Green | Data exchange, device in operation and OK |
| | | Fast green flashing | No IP address available |
| | | Green slow flashing | IP address available but no connection to an Ethernet/IP master |
| | | Red flashing | Impermissible parameter or preset value |
| | | Red | Device error |

* Industrial Ethernet cable colours according to ISO / IEC 8802-3.

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Order number

| | | | | | | | | | | | | |
|-----|----|---|---|---|------|---|------|----|---|---|----|--------------------|
| KRP | 58 | - | K | A | 8192 | R | 4096 | C1 | M | P | 01 | → Standard version |
|-----|----|---|---|---|------|---|------|----|---|---|----|--------------------|

Electrical and / or mechanical variants*

01 Standard

Output:

P 100Base-TX

Electrical connection:

M M12 connector outlet, radial

Profile:

C1 Standard, EtherNet/IP

Measuring range:

1 ... 4096 Revolutions

Output code:

R Binary code, position value as double word (integer 32)

Resolution:

8192 steps / 360°

Housing material:

A Aluminium housing
S Stainless steel housing 1.4305

Flange type:

58 K Clamped flange, shaft 10 mm with flattened area
KP Clamped flange, shaft 10 mm with feather key
S Synchroniser flange, shaft 6 mm

Design form:

KRP K series multiturn with Ethernet/IP interface

* The basic versions according to the data sheet bear the number 01. Deviations are identified with a variant number and are documented in the factory.

Absolute rotary encoder model KRP

Accessories, documentation, EDS file

Accessories (to be ordered separately)

- Straight mating connector
 - STK4GP81** for PROFINET in/out (Zinc die-cast nickel-plated), see data sheet [STK14570](#)
 - STK4GP110** for PROFINET in/out (stainless steel 1.4404), see data sheet [STK14569](#)
 - STK4GS60** for the supply voltage (Zinc die-cast nickel-plated), see data sheet [STK14572](#)
 - STK4GS104** for the supply voltage (stainless steel 1.4404), see data sheet [STK14571](#)
- Angled mating connector
 - STK4WP82** for PROFINET in/out, see data sheet [STK14676](#)
 - STK4WS61** for the supply voltage, see data sheet [STK14675](#)
- Connecting cable - EtherNet
 - KABEL-xxx-114** Industrial Ethernet data cable with M12 connectors, D-coded, moulded on at both ends. Standard lengths: 1, 2, 3 and 5 m (xxx = length in metres), see data sheet [KBL14673](#)
 - KABEL-xxx-118** Industrial Ethernet data cable with M12 connector to RJ 45, IP 20 (xxx = length in metres), see data sheet [KBL14655](#)
- Connecting cable - power supply
 - KABEL-5-191** With moulded M12 connector, A-coded, straight, 2. side open, length 5m, see data sheet [KBL13411](#)
- Couplings
 - BKK** Folding bellows coupling, large, see data sheet [BKK11840](#)
 - BKM** Folding bellows coupling, small, see data sheet [BKM11995](#)
 - KK14S** Clamp coupling, see data sheet [KK12301](#)
- Messzahnrad
 - ZRS** Play-compensating toothed gear [ZRS11877](#)
- Further installation accessories and securing clamps are available according to data sheet [MZ10111](#).

Documentation, EDS file, etc.

The following documents plus the EDS file can be found in the Internet www.twk.de in the documentation area, model KRP

- Data sheet No. KRP13386
- Manual No [KRP13387](#)

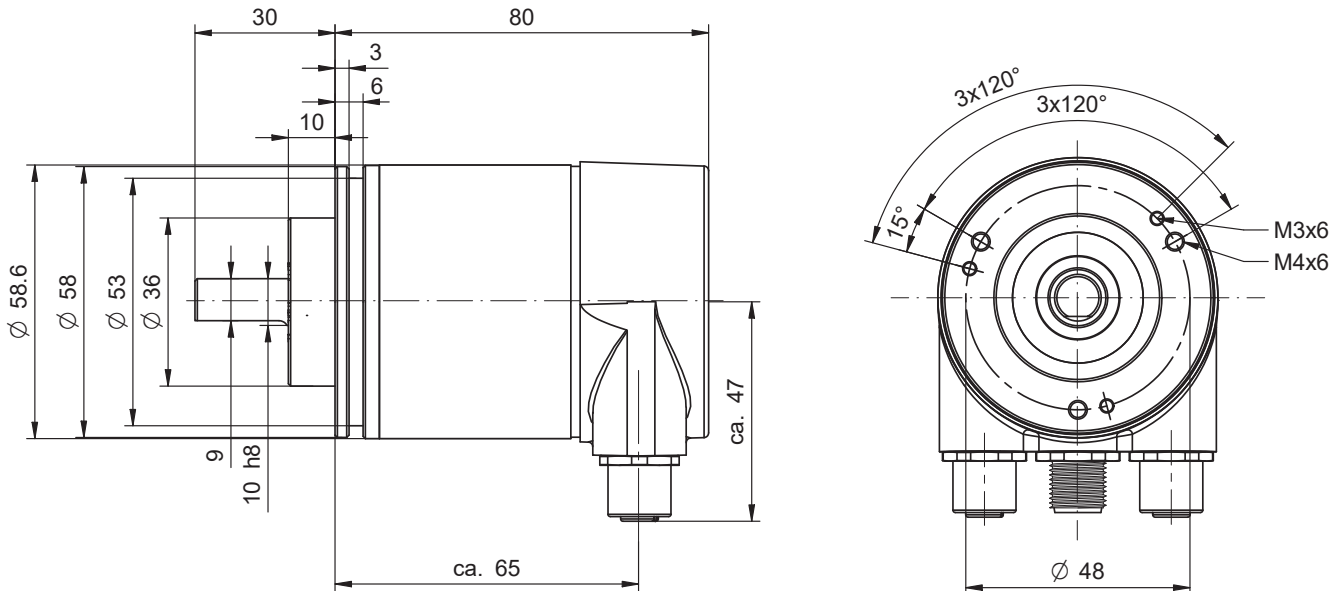
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Installation drawings

Design form 58 with clamped flange, order number: KRP58-KA8192R4096C1MP01

Shaft \varnothing 10 mm with flattened area

Dimensions in mm



Design form 58 with synchroniser flange, order number: KRP58-SA8192R4096C1MP01

Shaft \varnothing 6 mm

Dimensions in mm

