

# Rotary Measuring Technology

## Incremental shaft encoder



### Miniature Type 2400



- High performance at a competitive price
- Wide temperature range (-20 ... +85 °C)
- Sturdy cable outlet with multiple clamping
- Temperature compensation
- Broad input voltage range (5 ... 24 V or 8 ... 30 V)
- Highly flexible cable withstands constant flexing from 0 °C ... 70 °C)

- Low power consumption despite high scanning rate
- Reverse connection protected and Short-circuit proof
- Very high EMV standard
  - Kübler encoder type 24xx meets German Railways standard EN 50121\*\*

|  |   |
|--|---|
| Speed:                                       | max. 12 000min <sup>-1</sup>                    |
| Rotor moment of inertia:                     | approx. 0.1 x 10 <sup>-6</sup> kgm <sup>2</sup> |
| Starting torque:                             | <0.001 Nm                                       |
| Radial load capacity of shaft:               | 10 N  |
| Axial load capacity of shaft:                | 20 N  |
| Weight:                                      | approx. 0.06 kg                                 |
| Protection acc. to EN 60529:                 | IP 64 housing side                              |
| Working temperature:                         | -20° C ... +85 °C <sup>2)</sup>                 |
| Operating temperature:                       | -20° C ... +90 °C <sup>2)</sup>                 |
| Shaft  | stainless steel                                 |
| Shock resistance acc. to DIN-IEC 68-2-27     | 1000 m/s <sup>2</sup> , 6 ms                    |
| Vibration resistance acc. to DIN-IEC 68-2-6: | 100 m/s <sup>2</sup> , 55 ... 2000 Hz           |

<sup>2)</sup> Non-condensing

#### Electrical characteristics:

| Output circuit:   | Push-pull (7272) <sup>1)</sup> | Push-pull (7272) <sup>1)</sup> |
|---|--------------------------------|--------------------------------|
| Supply voltage:   | 5 ... 24 V DC                  | 8 ... 30 V DC                  |
| Power consumption (no load):  | max. 50 mA                     | max. 50 mA                     |
| Permissible load/channel:   | max. 50 mA                     | max. 50 mA                     |
| Pulse frequency:  | max. 160 kHz                   | max. 160 kHz                   |
| Signal level high:  | min. U <sub>B</sub> = -2.5 V   | min. U <sub>B</sub> = -3 V     |
| Signal level low:   | max. 0.5 V                     | max. 0.5 V                     |
| Rise time t <sub>r</sub> :  | max. 1 µs                      | max. 1 µs                      |
| Fall time t <sub>f</sub> :  | max. 1 µs                      | max. 1 µs                      |
| Short circuit proof outputs:  | yes                            | yes                            |
| Conforms to CE requirements acc. to EN 61000-6-1, EN 61000-6-4 and EN 61000-6-3 |                                |                                |

<sup>1)</sup> Max. recommended cable length 30 m

#### Applications:

- Pick and place machines
- Handling machines for electronic components
- Quality testing machines
- Medical machines
- Mail opening and mail stuffing machines
- Check weighers
- Labelling machines
- Mole machines (camera control)
- Door and gates systems
- Textil machines

#### Pulse rates available at short notice:

4, 6, 10, 16, 20, 25, 36, 40, **50**, 60, 80, **100**, 120, 125, 180, **200**, 250, 300, **360**, 400, **500**, 512, **1000**, **1024**, 1080

#### \*\* Kübler encoder type 24xx meets German Railways standard

An independent test laboratory (TTI-P-G115/96-01) approved by the German Accreditation Council (DAR) certified the compliance with the railway standard, according to EN 50121.

This means our encoder is compatible to higher electromagnetic noise standards than standard industrial encoders. You will have a higher quality encoder even in applications with higher EMC noise level.

We will gladly send you a copy of the test report on request. When ordering an encoder to the railway standard, please ensure to state this explicitly on the order.



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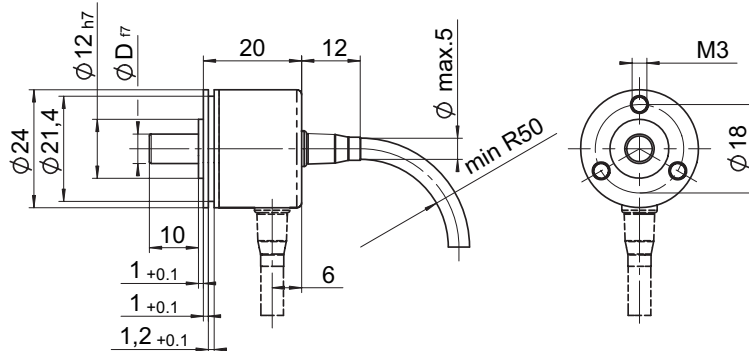
#### Terminal assignment

|                          |    |                 |    |           |    |           |    |           |  |
|--------------------------|----|-----------------|----|-----------|----|-----------|----|-----------|--|
| Signal:                  | 0V | +U <sub>B</sub> | A  | $\bar{A}$ | B  | $\bar{B}$ | 0  | $\bar{0}$ |  |
| Colour:                  | WH | BN              | GN | YE        | GY | PK        | BU | RD        |  |
| without inverted signal: | WH | BN              | GN |           | YE |           | GY |           |  |

Isolate unused outputs before initial start-up

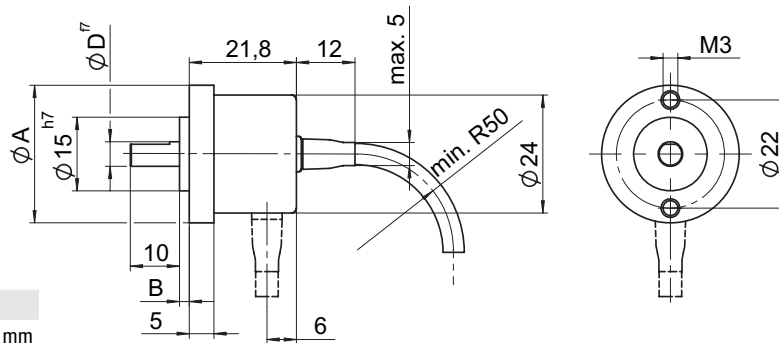
#### Dimensions:

Bracket type 1 (Ø 24 mm)



Bracket type 2 (Ø 30 mm)

Bracket type 3 (Ø 28 mm)



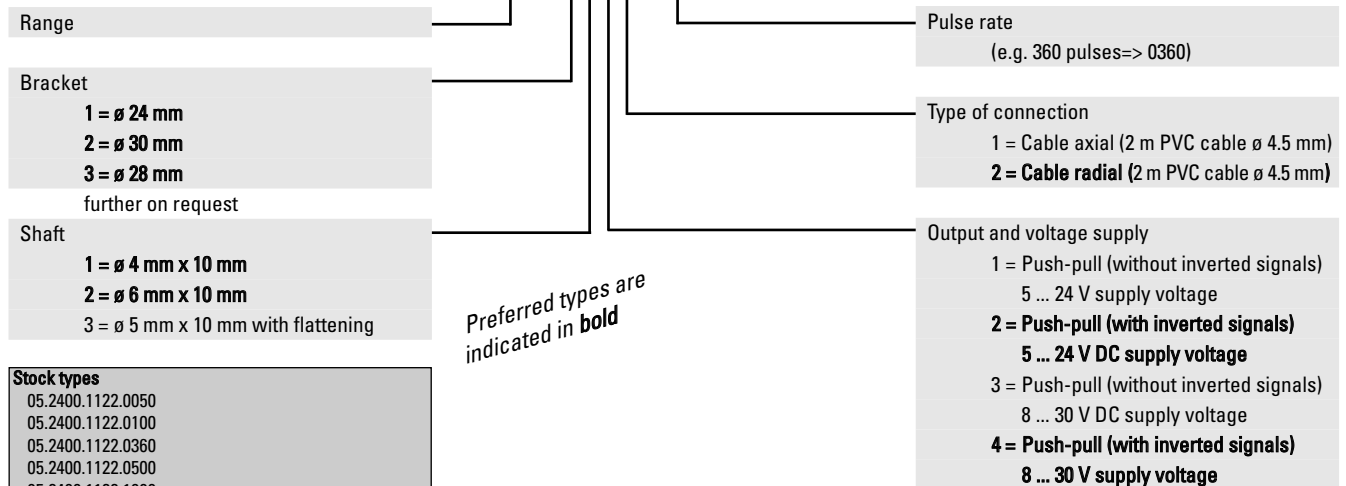
|                |                    |
|----------------|--------------------|
| Bracket type 2 | 3                  |
| A              | ø 30 mm    ø 28 mm |
| B              | 3 mm        2 mm   |

#### Mounting advice:

The brackets and shafts of the encoder and drive should not both be rigidly coupled together at the same time! We recommend the use of suitable couplings (see Accessories section).

#### Order code:

05.2400.XXXX.XXXX



| Stock types       |
|-------------------|
| 05.2400.1122.0050 |
| 05.2400.1122.0100 |
| 05.2400.1122.0360 |
| 05.2400.1122.0500 |
| 05.2400.1122.1000 |
| 05.2400.1122.1024 |
| 05.2400.3321.1000 |
| 05.2400.3341.1000 |
| 05.2400.3331.0500 |
| 05.2400.3331.1000 |