

# Special Encoders & Sensors

## Magnetic field sensor with pole wheel

### Rotary applications

#### GCI0K



#### Features

- Magnetic field sensor rotary
- Touchless sensing of angle
- Resolution up to 4096 steps with 64 poles  
Magnetic ring / 16 times interpolation and external  
4 times edge evaluation
- Max. rotation speed 20000 rpm
- Sensor assembly free from any shaft vibrations

#### Technical data

| Sensor                     | GCI0K.0211200<br>3 channels<br>RS422 | GCI0K.0311200<br>3 channels<br>Push-pull | GCI0K.0411200<br>3 channels<br>RS422 |  |
|----------------------------|--------------------------------------|------------------------------------------|--------------------------------------|--|
| Supply voltage range       | 5 VDC $\pm 5\%$                      | 8...30 VDC                               | 5 VDC $\pm 5\%$                      |  |
| Consumption max.           | 30 mA                                | 30 mA                                    | 20 mA                                |  |
| Circuit current max.       | RS422 specific                       | 50 mA                                    | RS422 specific                       |  |
| Output frequency max.      | 160 kHz                              | 3.2 MHz                                  | 3.2 MHz                              |  |
| Voltage drops              | RS422 specific                       | <4 VDC ( $I_{OUT}=20\text{ mA}$ )        | RS422 specific                       |  |
| Output levels              | TTL (RS422)                          | Push-pull                                | TTL (RS422)                          |  |
| Output signal, 90° shift   | A/B/N +inv.                          | A/B/N                                    | A/B/N +inv.                          |  |
| Shot-circuit protected     | Yes                                  | Yes                                      | Yes                                  |  |
| Reverse polarity protected | No                                   | Yes                                      | No                                   |  |
| Interpolation              | 10 times                             | 16 times                                 | 16 times                             |  |
| Operating gap max.         | 0.5 mm                               | 0.5 mm                                   | 0.5 mm                               |  |
| Temperature range          | -25...+85 °C                         | -25...+85 °C                             | -25...+85 °C                         |  |
| Materials                  | Housing: PC                          | Housing: PC                              | Housing: PC                          |  |
| Protection                 | IP 67                                | IP 67                                    | IP 67                                |  |
| Accuracy                   | $\pm 0.5^\circ$                      | $\pm 0.5^\circ$                          | $\pm 0.5^\circ$                      |  |
| Connection cable PUR       | 8 x 0.25 mm <sup>2</sup> , 2 m       | 5 x 0.14 mm <sup>2</sup> , 2 m           | 8 x 0.14 mm <sup>2</sup> , 2 m       |  |

Resolution: Interpolation factor x pole number of magnetic ring

**Other options upon request!**

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## Technical data

| Sensor                     | <b>GCI0K.0101200</b><br>2 channels<br>Push-pull | <b>GCI0K.0201200</b><br>2 channels<br>RS422 | <b>GCI0K.0221200</b><br>2 channels<br>RS422 | <b>GCI0K.0501200</b><br>2 channels<br>Push-pull |
|----------------------------|-------------------------------------------------|---------------------------------------------|---------------------------------------------|-------------------------------------------------|
| Supply voltage range       | 8...30 VDC                                      | 5 VDC $\pm 5\%$                             | 5 VDC $\pm 5\%$                             | 8...28 VDC                                      |
| Consumption max.           | 35 mA                                           | 55 mA                                       | 55 mA                                       | 30 mA                                           |
| Circuit current max.       | 30 mA                                           | RS422 specific                              | RS422 specific                              | 50 mA                                           |
| Output frequency max.      | 160 kHz                                         | 160 kHz                                     | 160 kHz                                     | 3.2 MHz                                         |
| Voltage drop               | <4 VDC ( $I_{OUT}=20$ mA)                       | RS422 specific                              | RS422 specific                              | <4 VDC ( $I_{OUT}=20$ mA)                       |
| Output levels              | Push-pull                                       | TTL (RS422)                                 | TTL (RS422)                                 | Push-pull                                       |
| Output signal, 90° shift   | A/B                                             | A/B +inv.                                   | A/B +inv.                                   | A/B                                             |
| Short-circuit protected    | Yes                                             | Yes                                         | Yes                                         | Yes                                             |
| Reverse polarity protected | Yes                                             | No                                          | No                                          | Yes                                             |
| Interpolation              | 8 times                                         | 8 times                                     | 2 times                                     | 10 times                                        |
| Operating gap max.         | 0.8 mm                                          | 0.8 mm                                      | 0.8 mm                                      | 0.6 mm                                          |
| Temperature range          | -25...+85 °C                                    | -25...+85 °C                                | -25...+85 °C                                | -25...+85 °C                                    |
| Materials                  | Housing: PC                                     | Housing: PC                                 | Housing: PC                                 | Housing: PC                                     |
| Protection                 | IP 67                                           | IP 67                                       | IP 67                                       | IP 67                                           |
| Accuracy                   | $\pm 0.5^\circ$                                 | $\pm 0.5^\circ$                             | $\pm 0.5^\circ$                             | $\pm 0.5^\circ$                                 |
| Connection cable PUR       | 4 x 0.25 mm <sup>2</sup> , 2 m                  | 6 x 0.14 mm <sup>2</sup> , 2 m              | 6 x 0.14 mm <sup>2</sup> , 2 m              | 4 x 0.25 mm <sup>2</sup> , 2 m                  |

Resolution: Interpolation factor x pole number of magnetic ring

**Other options upon request!**

## Ordering part number

### 2 channel models

**GCI0K.0101200** Push-pull, 8 times interpolation, cable 2 m

**GCI0K.0201200** RS422, 8 times interpolation, cable 2 m

**GCI0K.0221200** RS422, 2 times interpolation, cable 2 m

**GCI0K.0501200** Push-pull, 10 times interpolation, cable 2 m

Other options upon request!

### 3 channels models

**GCI0K.0211200** RS422, 10 times interpolation, cable 2 m

**GCI0K.0311200** Push-pull, 16 times interpolation, cable 2 m

**GCI0K.0411200** RS422, 16 times interpolation, cable 2 m

Other options upon request!

# Special Encoders & Sensors

## Magnetic field sensor with pole wheel

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##### Terminal assignment 2 channels push-pull

| Cable colour | Assignment |         |
|--------------|------------|---------|
| brown        | BN         | UB      |
| blue         | BU         | GND     |
| black        | BK         | Track A |
| white        | WH         | Track B |

##### Terminal assignment 2 channels RS422

| Cable colour | Assignment |              |
|--------------|------------|--------------|
| brown        | BN         | UB           |
| green        | GN         | Track A      |
| pink         | PK         | Track A inv. |
| yellow       | YE         | Track B      |
| grey         | GY         | Track B inv. |
| white        | WH         | GND          |

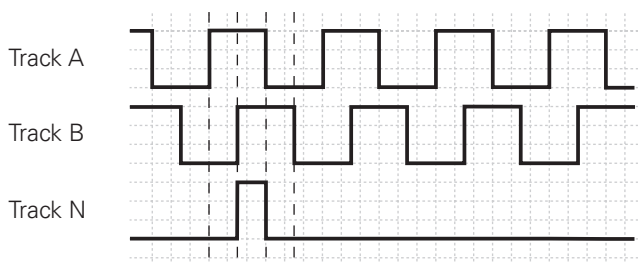
##### Terminal assignment 3 channels push-pull

| Cable colour | Assignment |         |
|--------------|------------|---------|
| brown        | BN         | UB      |
| yellow       | YE         | Track B |
| green        | GN         | Track A |
| pink         | PK         | Track N |
| white        | WH         | GND     |

##### Terminal assignment 3 channels RS422

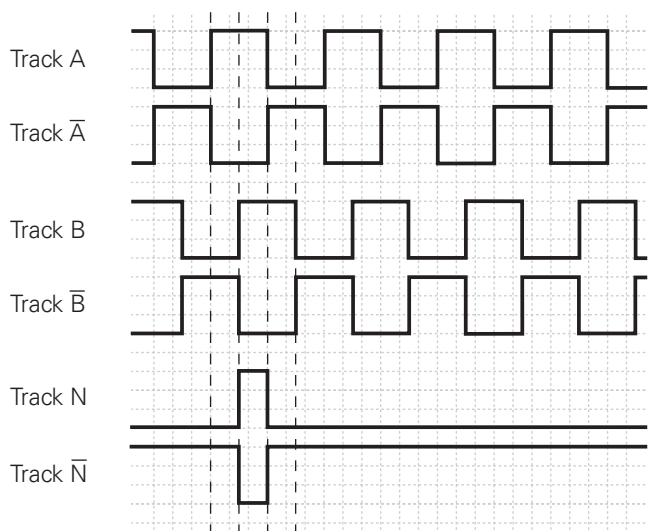
| Cable colour | Assignment |              |
|--------------|------------|--------------|
| brown        | BN         | UB           |
| green        | GN         | Track A      |
| red          | RD         | Track A inv. |
| yellow       | YE         | Track B      |
| blue         | BU         | Track B inv. |
| pink         | PK         | Track N      |
| grey         | GY         | Track N inv. |
| white        | WH         | GND          |

##### Output signals push-pull



3-channel version with zero impulse (Track N)  
2-channel version without zero impulse

##### Output signals RS422



3-channel version with zero impulse (Track N/Track N)  
2-channel version without zero impulse

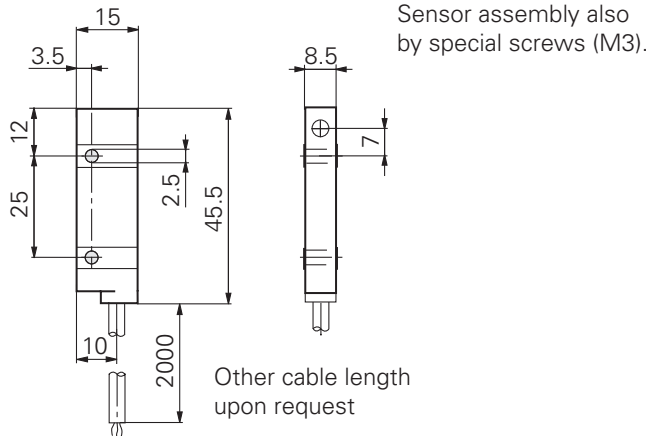
# Special Encoders & Sensors

Magnetic field sensor with pole wheel

Rotary applications

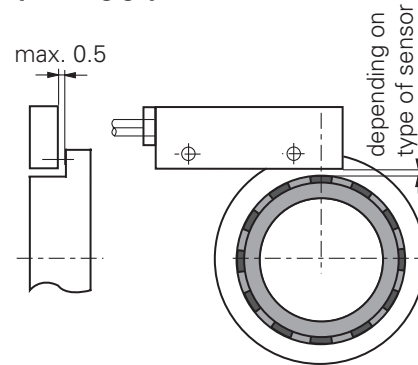
GCI0K

## Dimensions

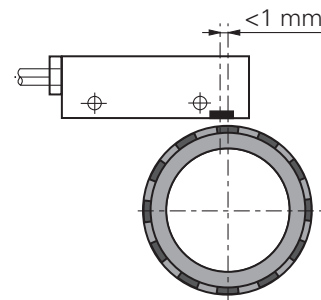


## Recommendations for assembly (all combinations)

### Operating gaps



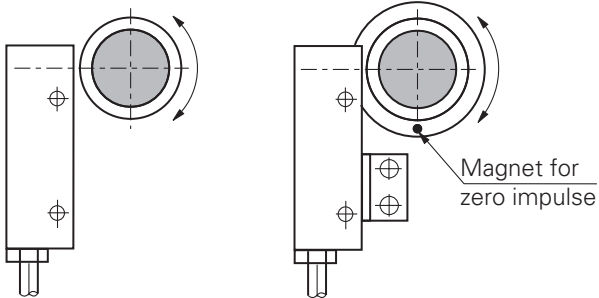
### Shaft shift



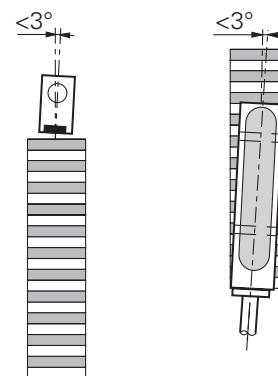
## Assembling and rotating direction

without zero impulse

with zero impulse



### Angular shift



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## Magnetic field sensor with pole wheel

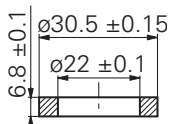
### Rotary applications

#### GCI0K

##### Accessories

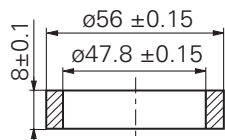
###### Z 161.M08 Magnetic ring 36 poles

###### Z 161.M09 Magnetic ring 32 poles



Material:  
Plastoferrit

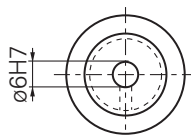
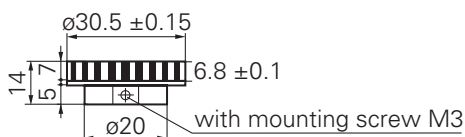
###### Z 161.M03 Magnetic ring 64 poles



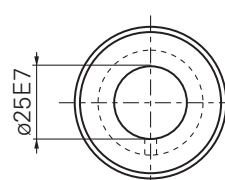
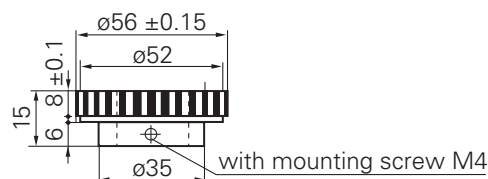
Material:  
Plastoferrit

###### Z 161.R01 Magnetic rotor 32 poles

###### Z 161.R02 Magnetic rotor 36 poles

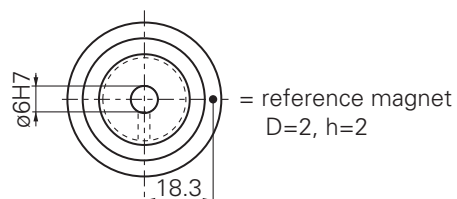
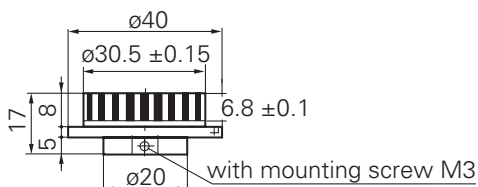


###### Z 161.R03 Magnetic rotor 64 poles

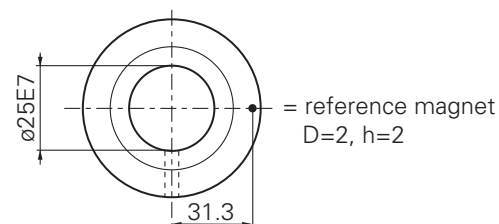
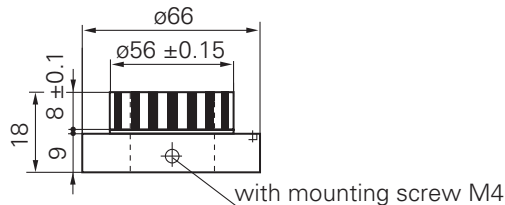


###### Z 161.N01 Magnetic rotor 32 poles with zero impulse

###### Z 161.N02 Magnetic rotor 36 poles with zero impulse

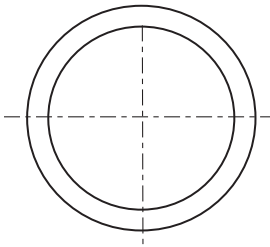
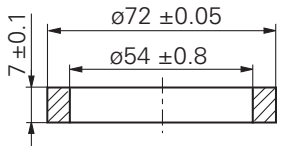


###### Z 161.N03 Magnetic rotor 64 poles with zero impulse



#### Accessories

##### Z 161.M06 Magnetic ring 64 poles



Material:  
Durable ferrit

##### Z 161.W01 Angle for model with zero impulse

