

# 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 3 channels RS422	GCI0K.0311200 3 channels Push-pull	GCI0K.0411200 3 channels 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 ( $I_{OUT}=20$ 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> 2 channels Push-pull	<b>GCI0K.0201200</b> 2 channels RS422	<b>GCI0K.0221200</b> 2 channels RS422	<b>GCI0K.0501200</b> 2 channels Push-pull
Supply voltage range	8...30 VDC	5 VDC ±5 %	5 VDC ±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 <sub>OUT</sub> =20 mA)	RS422 specific	RS422 specific	<4 VDC (I <sub>OUT</sub> =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	±0.5°	±0.5°	±0.5°	±0.5°
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

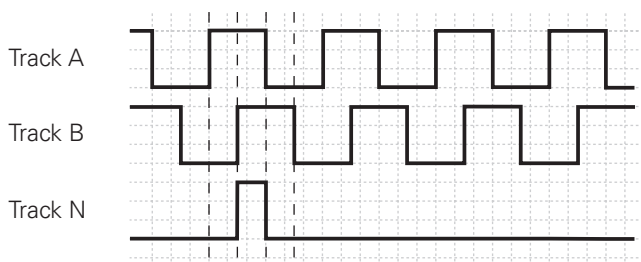
##### Terminal assignment 3 channels push-pull

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

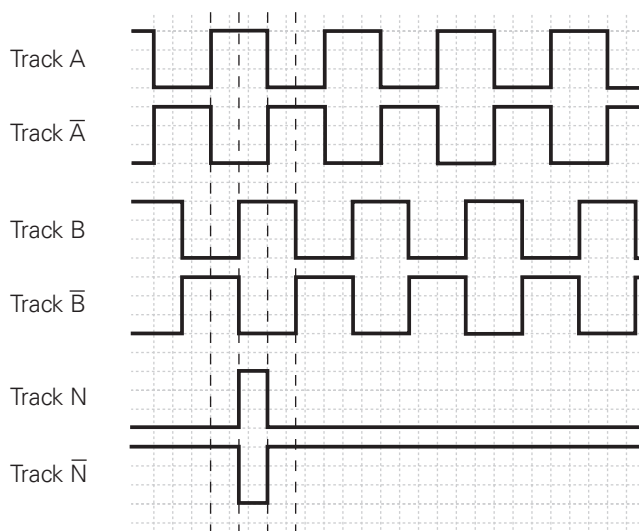
Cable colour		Assignment
brown	BN	UB
green	GN	Track A
red	RD	Track A inv.
yellow	YE	Track B
blue	BU	Track B inv.
pink	PK	Track N
grey	GY	Track N inv.
white	WH	GND

##### 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

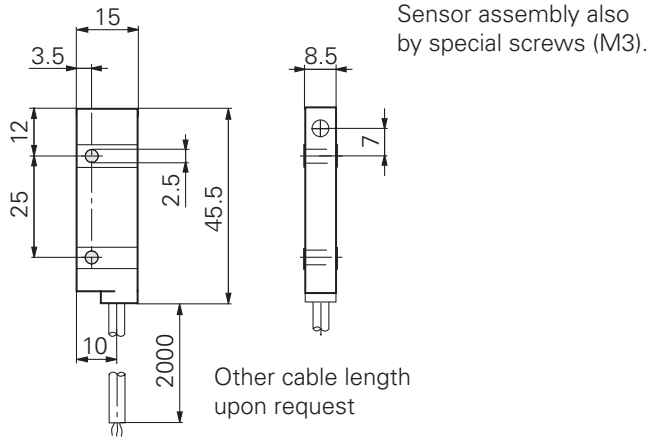
# Special Encoders & Sensors

Magnetic field sensor with pole wheel

Rotary applications

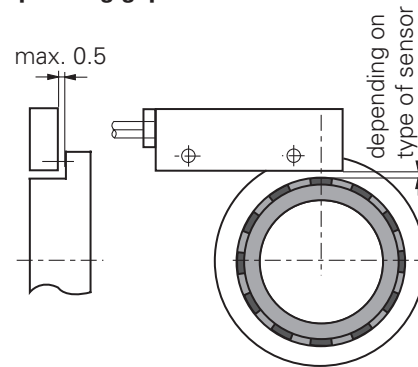
GCI0K

## Dimensions



## Recommendations for assembly (all combinations)

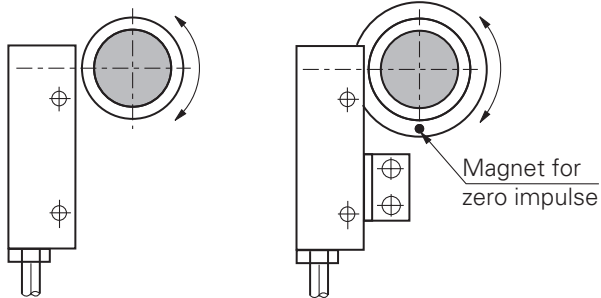
### Operating gaps



## Assembling and rotating direction

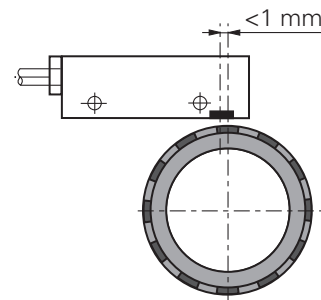
without zero impulse

with zero impulse

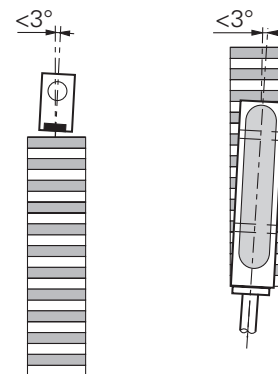


Max. 0.5 mm gap between zero impulse magnet and housing

### Shaft shift



### Angular shift



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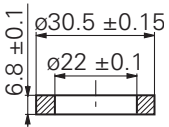
## Magnetic field sensor with pole wheel

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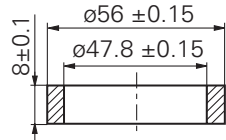
##### Accessories

**Z 161.M08 Magnetic ring 36 poles**  
**Z 161.M09 Magnetic ring 32 poles**



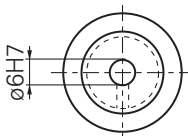
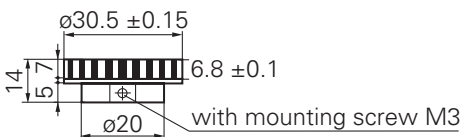
Material:  
Plastoferrit

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

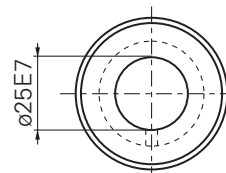
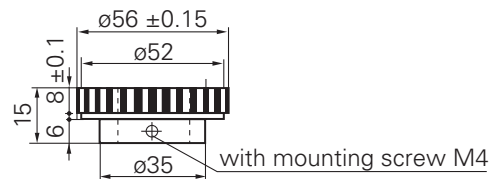


Material:  
Plastoferrit

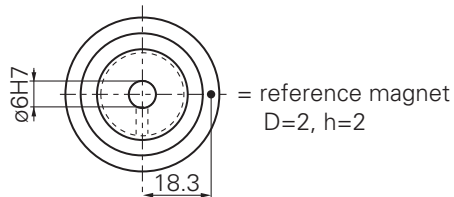
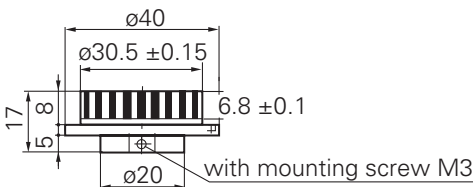
**Z 161.R01 Magnetic rotor 32 poles**  
**Z 161.R02 Magnetic rotor 36 poles**



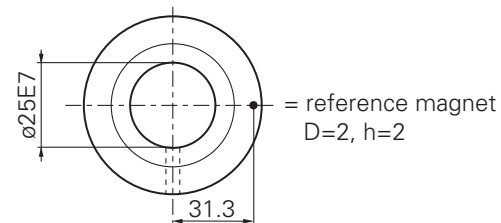
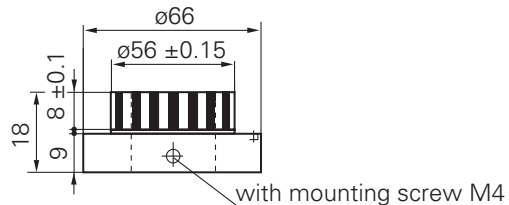
**Z 161.R03 Magnetic rotor 64 poles**



**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**



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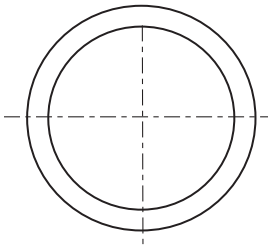
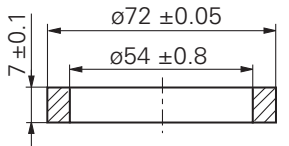
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## Accessories

### Z 161.M06 Magnetic ring 64 poles



Material:  
Durable ferrit

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

