

# Incremental encoders

Hollow shaft max.  $\varnothing$ 12 mm

Resolution 5...6000 pulses

## GI331, GI333



GI331 with hollow shaft

### Technical data - electrical ratings

Voltage supply	5 VDC $\pm$ 10 % 4.75...30 VDC
Reverse polarity protection	Yes (4.75...30 VDC)
Consumption w/o load	$\leq$ 30 mA (24 VDC) $\leq$ 60 mA (5 VDC)
Resolution (steps/turn)	5...6000
Reference signal	Zero pulse, width 90°
Sensing method	Optical
Output frequency	$\leq$ 150 kHz
Output signals	A 90° B, N + inverted
Output circuit	Linedriver RS422 Push-pull short-circuit proof
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4
Approval	UL approval / E63076

### Features

- Encoder with hollow shaft  $\varnothing$ 12 mm
- Optical sensing
- Resolution max. 6000 ppr
- Mounting by thread pin or clamping ring
- Cost-efficient mounting

### Optional

- Stainless steel design GE333

### Technical data - mechanical design

Housing	$\varnothing$ 58 mm
Shaft	$\varnothing$ 12 mm hollow shaft
Protection DIN EN 60529	IP 54 IP 65
Operating speed	$\leq$ 6000 rpm
Starting torque	$\leq$ 0.03 Nm IP 54 $\leq$ 0.09 Nm IP 65
Rotor moment of inertia	14.5 gcm <sup>2</sup>
Materials	Housing: aluminium Flange: aluminium
Operating temperature	-25...+100 °C (5 VDC) -25...+85 °C (24 VDC)
Relative humidity	95 % non-condensing
Resistance	DIN EN 60068-2-6 Vibration 10 g, 16-2000 Hz DIN EN 60068-2-27 Shock 200 g, 6 ms
Weight approx.	250 g
E-connection	Connector or cable

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## Part number

### Hollow shaft with thread pins

GI331.

See part number (pulses)

#### E-connection

C3 Connector M23, 12-pin, radial  
41 Cable 1 m, radial

#### Voltage supply / signals

22 5 VDC / linedriver RS422  
70 4.75...30 VDC / push-pull  
72 4.75...30 VDC / linedriver RS422 (5 VDC)

#### Hollow shaft / torque pin

- 0 Hollow shaft  $\varnothing$ 12 mm with 2 thread pins with pin 15 mm, IP 54
- 1 Hollow shaft  $\varnothing$ 12 mm with 2 thread pins with pin 9.5 mm, IP 54
- A Hollow shaft  $\varnothing$ 12 mm with 2 thread pins without pin, IP 54

### Hollow shaft with clamping ring

GI333.

See part number (pulses)

#### E-connection

C3 Connector M23, 12-pin, radial  
41 Cable 1 m, radial

#### Voltage supply / signals

22 5 VDC / linedriver RS422  
70 4.75...30 VDC / push-pull  
72 4.75...30 VDC / linedriver RS422 (5 VDC)

#### Hollow shaft / torque pin

- 0 Hollow shaft  $\varnothing$ 12 mm clamping ring on housing with pin 15 mm, IP 54
- 1 Hollow shaft  $\varnothing$ 12 mm clamping ring on housing with pin 9.5 mm, IP 54
- A Hollow shaft  $\varnothing$ 12 mm clamping ring on housing without pin, IP 54
- G Hollow shaft  $\varnothing$ 12 mm clamping ring on housing with pin 15 mm, IP 65

## Part number (pulses)

49 (5)	57 (128)	22 (1000)	31 (3600)
36 (10)	06 (200)	23 (1024)	34 (4096)
50 (25)	09 (250)	24 (1250)	35 (5000)
39 (50)	13 (360)	26 (1500)	48 (6000)
40 (60)	14 (400)	28 (2000)	
41 (100)	15 (500)	30 (2500)	

Other pulse numbers upon request.

Example: ordering key 23 = 1024 pulses

## Accessories

### Connectors and cables (page %S)

Z 141.001	Female connector M23, 12-pin, less cable
Z 141.003	Female connector M23, 12-pin, 2 m cable
Z 141.005	Female connector M23, 12-pin, 5 m cable
Z 141.007	Female connector M23, 12-pin, 10 m cable

### Mounting accessories (page %S)

Z 119.023	Spring coupling for encoders with $\varnothing$ 58 mm housing
Z 119.024	Torque support and spring washer for encoders with 9.5 mm pin
Z 119.041	Torque support by rubber buffer element for encoders with 15 mm pin

# Incremental encoders

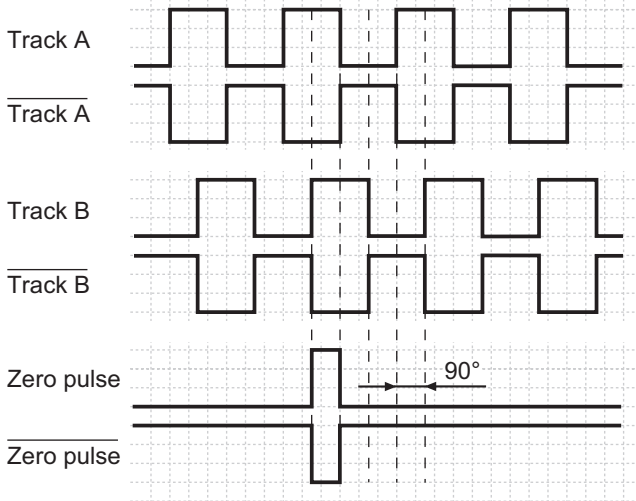
Hollow shaft max.  $\varnothing 12$  mm

Resolution 5...6000 pulses

## GI331, GI333

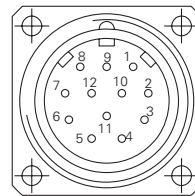
### Output signals

Clockwise rotating direction when looking at flange.



### Terminal assignment

Connector	Core colour	Assignment
Pin 1	pink	Track B inv.
Pin 2	blue	UB-Sense
Pin 3	red	Track N (zero pulse)
Pin 4	black	Track N inv. (zero pulse inv.)
Pin 5	brown	Track A
Pin 6	green	Track A inv.
Pin 7	–	–
Pin 8	grey	Track B
Pin 9	–	–
Pin 10	white/green	GND
Pin 11	white	GND-Sense
Pin 12	brown/green	UB



UB-Sense and GND-Sense are directly connected to UB resp. GND. Please use cores twisted in pairs (for example track A / track A inv.) for extension cables of more than 10 m length.

### Trigger level

Outputs	Linedriver RS422
Output level High	>2.5 V (I = -20 mA)
Output level Low	<0.5 V (I = 20 mA)
Load High	<20 mA
Load Low	<20 mA

Outputs	Push-pull short-circuit proof
Output level High	>UB -3 V (I = -20 mA)
Output level Low	<0.5 V (I = 20 mA)
Load High	<20 mA
Load Low	<20 mA

# Incremental encoders

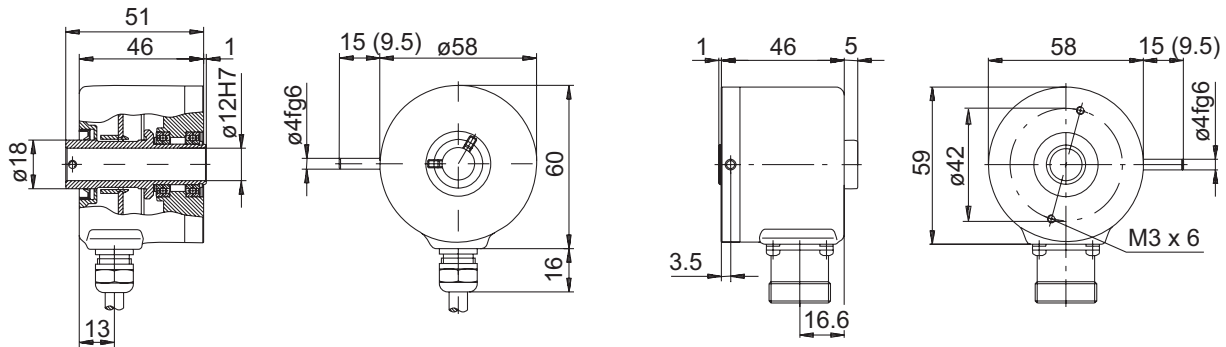
Hollow shaft max.  $\varnothing 12$  mm

Resolution 5...6000 pulses

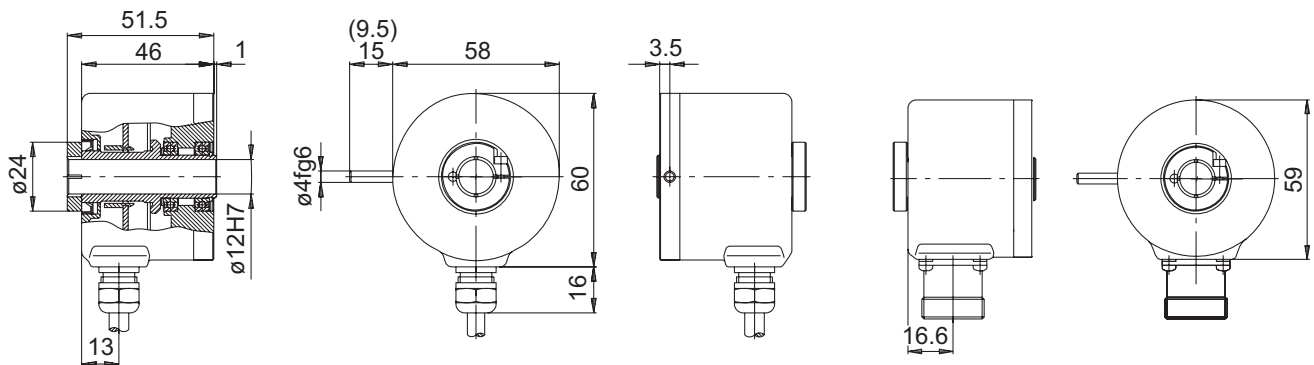
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## Dimensions

### GI331 hollow shaft and pin



### GI333 hollow shaft and clamping ring on housing



### GI331, GI333 connector dimensions

