

# Incremental Encoders

Hollow shaft up to  $\varnothing 12$  mm

Resolution 5...6000 impulses

**adparts**

## GI331, GI333



GI331 with hollow shaft

### Features

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

### Optional

- Stainless steel design GE333

### Technical data - electrical ratings

Supply voltage range	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 $90^\circ$
Output signals	A $90^\circ$ B, N + inverted
Output frequency	$\leq 150$ kHz
Output levels	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

### Technical data - mechanical design

Housing	$\varnothing 58$ mm
Shaft	$\varnothing 12$ mm hollow shaft
Protection DIN EN 60529	IP 54
Operating speed	$\leq 6000$ rpm
Starting torque	$\leq 0.03$ Nm
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

**Ordering part number**

**GI331.**

- See ordering key (impulse number)
- E-connection
  - C3 M23 connector, 12-pins radial
  - 41 Cable 1 m radial
- Supply voltage / signals
  - 22 5 VDC / linedriver RS422
  - 70 4.75...30 VDC / push-pull
  - 72 4.75...30 VDC / linedriver RS422
- Hollow shaft / torque pin
  - 0 Hollow shaft  $\varnothing 12$  mm with 2 thread pins with pin 15 mm
  - 1 Hollow shaft  $\varnothing 12$  mm with 2 thread pins with pin 9.5 mm
  - A Hollow shaft  $\varnothing 12$  mm with 2 thread pins without pin

**GI333.**

- See ordering key (impulse number)
- E-connection
  - C3 M23 connector, 12-pins radial
  - 41 Cable 1 m radial
- Supply voltage / signals
  - 22 5 VDC / linedriver RS422
  - 70 4.75...30 VDC / push-pull
  - 72 4.75...30 VDC / linedriver RS422
- Hollow shaft / torque pin
  - 0 Hollow shaft  $\varnothing 12$  mm clamping ring on housing with pin 15 mm
  - 1 Hollow shaft  $\varnothing 12$  mm clamping ring on housing with pin 9.5 mm
  - A Hollow shaft  $\varnothing 12$  mm clamping ring on housing without pin

**Ordering key (impulse number)**

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)	

More impulse numbers upon request.

**Accessories**

**Mating connectors**

Z 141.001	Mating connector without cable, 12-pins
Z 141.003	Mating connector with 2 m cable, 12-pins
Z 141.005	Mating connector with 5 m cable, 12-pins
Z 141.007	Mating connector with 10 m cable, 12-pins

**Mounting accessories**

Z 119.023	Spring washer for encoders with 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

**Recommended accessories**



Z 119.023  
For flange without pin



Z 119.024  
For flange with pin 9.5 mm



Z 119.041  
For flange with pin 15 mm

# Incremental Encoders

Hollow shaft up to  $\varnothing 12$  mm

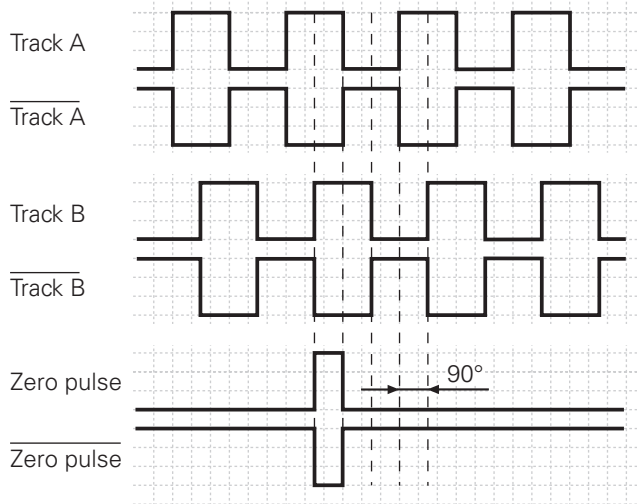
Resolution 5...6000 impulses



## GI331, GI333

### Output signals

Clockwise rotating direction when looking at flange.



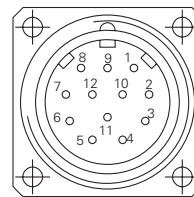
### Trigger level

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

### Terminal assignment

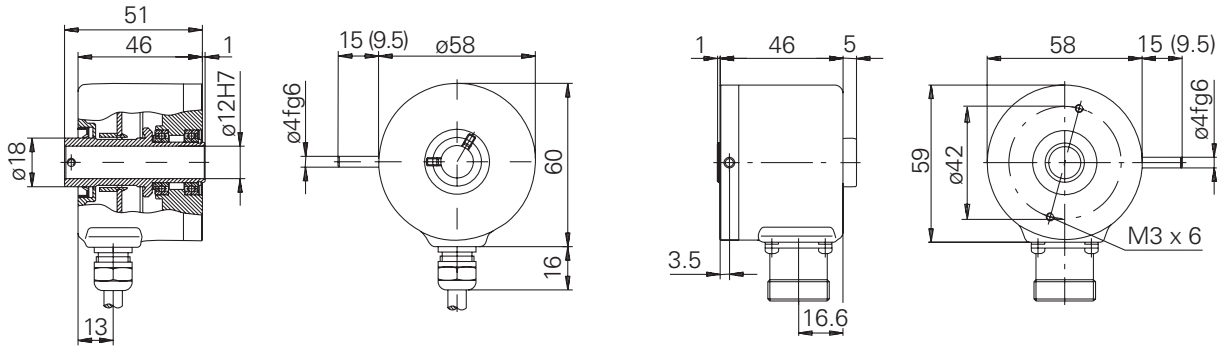
Connector	Core colour	Assignment
Pin 1	pink	Track B inv.
Pin 2	blue	UB-Sense
Pin 3	red	Track N (zero pulse)
Pin 4	black	Track N inv. (zero pulse inv.)
Pin 5	brown	Track A
Pin 6	green	Track A inv.
Pin 7	–	–
Pin 8	grey	Track B
Pin 9	–	–
Pin 10	white/green	GND
Pin 11	white	GND-Sense
Pin 12	brown/green	UB



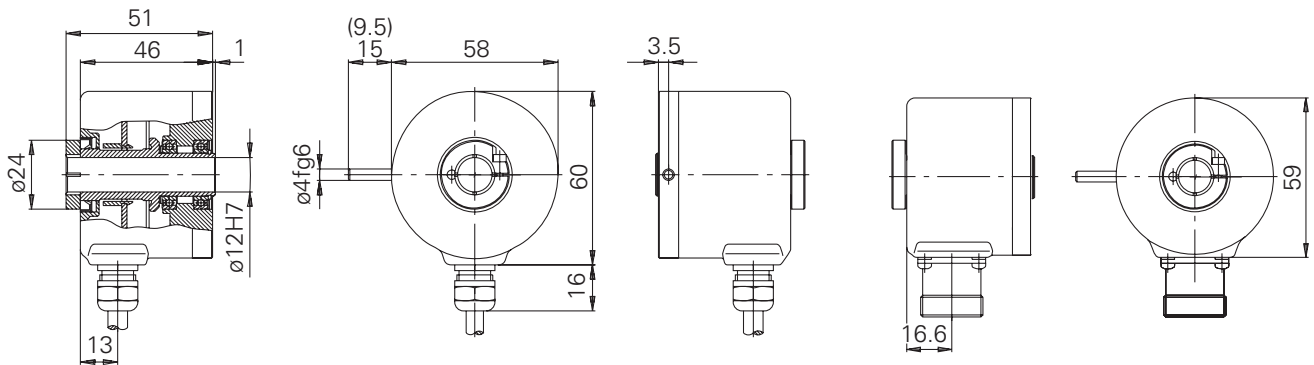
UB-Sense and GND-Sense are directly connected to UB resp. GND.  
Please use cores twisted in pairs (for example track A / track A inv.) for extension cables of more than 10 m length.

**Dimensions**

**GI331 hollow shaft and pin**



**GI333 hollow shaft and clamping ring on housing**



**GI331, GI333 connector dimensions**

