

# Incremental encoders

## Blind hollow shaft $\varnothing 10$ to $\varnothing 14$ mm

### 200...6000 pulses per revolution

#### ITD 21 A 4 Y21



ITD 21 A 4 Y21 with blind hollow shaft

#### Features

- Encoder with blind hollow shaft  $\varnothing 10...14$  mm
- Max. 6000 pulses per revolution
- Optical sensing method
- Mounting by torque support
- TTL or HTL output signals
- Cable output radial
- High protection standard

#### Optional

- Cable with connector

#### Technical data - electrical ratings

Voltage supply	5 VDC $\pm 5\%$ 8...30 VDC
Reverse polarity protection	Yes
Consumption w/o load	$\leq 100$ mA
Pulses per revolution	200...6000
Reference signal	Zero pulse, width $90^\circ$
Sensing method	Optical
Output frequency	$\leq 300$ kHz (TTL) $\leq 160$ kHz (HTL)
Output signals	A, B, N + inverted
Output stages	TTL linedriver (short-circuit proof) HTL push-pull (short-circuit proof)
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3

#### Technical data - mechanical design

Size (flange)	$\varnothing 58$ mm
Shaft type	$\varnothing 10$ mm (blind hollow shaft) $\varnothing 12$ mm (blind hollow shaft) $\varnothing 14$ mm (blind hollow shaft)
Motor shaft tolerance	0.25 mm axial 0.1 mm radial
Mounting kit	002
Protection DIN EN 60529	IP 65
Operating speed	$\leq 8000$ rpm $\leq 5000$ rpm IP 65 ( $>70^\circ\text{C}$ )
Starting torque	$\leq 0.01$ Nm ( $+20^\circ\text{C}$ )
Materials	Housing: aluminium, black, powder-coated Shaft: stainless steel
Operating temperature	$-20...+70^\circ\text{C}$ $-20...+100^\circ\text{C}$
Relative humidity	90 % non-condensing
Resistance	DIN EN 60068-2-6 Vibration 10 g, 55-2000 Hz DIN EN 60068-2-27 Shock 100 g, 11 ms
Connection	Cable 1 m
Weight approx.	260 g

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## Part number

ITD 21 A 4 Y21 

		NI	KR1			IP65	002
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Mounting kit  
002 Mounting kit 002

Protection  
IP65 IP 65

Blind hollow shaft  
10  $\varnothing 10$  mm  
12  $\varnothing 12$  mm  
14  $\varnothing 14$  mm

Operating temperature  
S -20...+70 °C  
E -20...+100 °C

Connection  
KR1 Cable 1 m, radial

Output signals  
NI A, A inv, B, B inv, 0, 0 inv

Voltage supply / signals  
T 5 VDC / TTL level, linedriver  
H 8...30 VDC / HTL level, push-pull  
R 8...30 VDC / TTL level, linedriver

Pulse number - see table

## Pulse number

200	500	1000	1800	4000
250	512	1024	2000	4096
256	600	1200	2048	5000
300	720	1250	2500	6000
360	800	1440	3000	
400	900	1500	3600	

# Incremental encoders

## Blind hollow shaft $\varnothing 10$ to $\varnothing 14$ mm

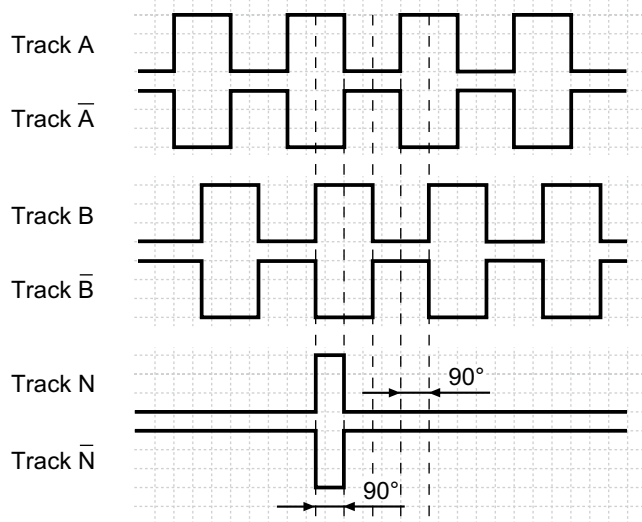
### 200...6000 pulses per revolution

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##### Output signals

Clockwise rotation when looking at the mounting side.

NI-Output signals



##### Terminal assignment

Core colour	Assignment
brown	Track A
green	Track A inv.
grey	Track B
pink	Track B inv.
red	Track N
black	Track N inv.
brown 0,5 mm <sup>2</sup>	UB
white 0,5 mm <sup>2</sup>	GND
blue	UB-Sense
white	GND-Sense
transparent	Shield/Housing

Cable with 2 brown and 2 white wires:  
PUR, [5x2x0.14 mm<sup>2</sup> + 2x0.5 mm<sup>2</sup>], bending radius > 60 mm,  
outer diameter 7.5 mm  $\pm$  0.2 mm

##### Encoder with connector on cable end after 1 January 2016

Core colour	Assignment
green	Track A
brown	Track A inv.
grey	Track B
black	Track B inv.
pink	Track N
white	Track N inv.
red	UB
blue	GND
yellow	UB-Sense
violet	GND-Sense
transparent	Shield/Housing

Cable with violet wire:  
PUR, [5x2x0.14 mm<sup>2</sup>], bending radius > 60 mm,  
outer diameter 7 mm  $\pm$  0.2 mm

##### Trigger level

Outputs	Linedriver
Output level High	$\geq 2.4$ V
Output level Low	$\leq 0.5$ V
Load	$\leq 70$ mA

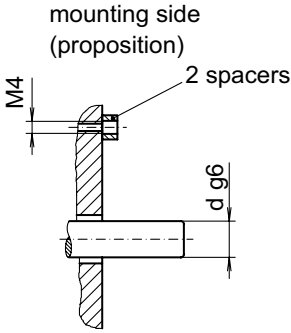
Outputs	Push-pull short-circuit proof
Output level High	$\geq UB - 3$ V
Output level Low	$\leq 1.5$ V
Load	$\leq 70$ mA

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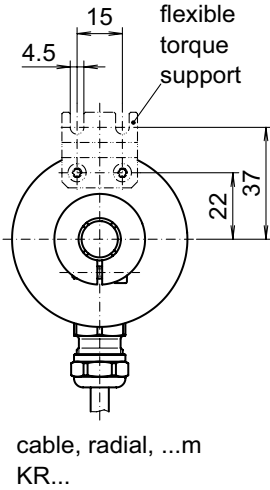
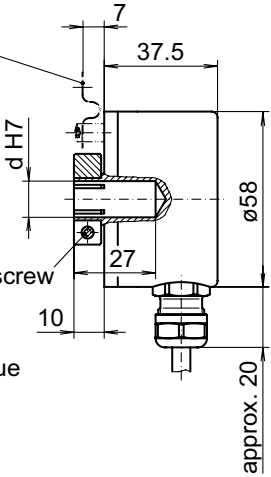
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**Dimensions**



mounting kit 002 (standard)

cylinder head screw  
 DIN 912 - M4  
 A/F3  
 tightening torque  
 max. 2.2 Nm



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