

# Incremental encoders

## Mini series - blind or through hollow shaft

### 10...2048 pulses per revolution

## BHK



BHK with blind hollow shaft

### Features

- Mini encoder with blind or through hollow shaft
- Optical sensing
- Max. 2048 pulses per revolution
- Housing  $\varnothing$ 40 mm
- Operation speed max. 12000 rpm
- Blind or through hollow shaft
- Versatile mounting accessories

### Technical data - electrical ratings

Voltage supply	5 VDC $\pm$ 10 % 10...30 VDC
Consumption typ.	60 mA (5 VDC, w/o load) 30 mA (24 VDC, w/o load)
Pulses per revolution	10...2048
Reference signal	Zero pulse, width 90°
Sensing method	Optical
Output frequency	$\leq$ 100 kHz
Output signals	A 90° B, N + inverted
Output stages	Linedriver/RS422 Push-pull short-circuit proof
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3
Approval	UL approval / E217823

### Technical data - mechanical design

Size (flange)	$\varnothing$ 40 mm
Shaft type	$\varnothing$ 6 mm (through hollow shaft) $\varnothing$ 12 mm (blind hollow shaft)
Protection DIN EN 60529	IP 42, IP 65
Operating speed	$\leq$ 12000 rpm
Operating torque typ.	0.0021 Nm (IP 42) 0.0075 Nm (IP 64)
Materials	Housing: polyamide black Flange: aluminium
Operating temperature	-20...+85 °C
Relative humidity	95 % non-condensing
Resistance	DIN EN 60068-2-6 Vibration 10 g, 10-200 Hz DIN EN 60068-2-27 Shock 50 g, 11 ms
Connection	Connector M9, 5-pin Connector M9, 8-pin Cable 1 m
Weight approx.	100 g

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#### Part number

BHK 16.   -  -

								<b>Connection</b>
								5 Cable 1 m, radial
								9 Connector radial
								<b>Hollow shaft</b>
								B2 Blind hollow shaft ø12 mm, IP 42, with clamping ring
								B6 Through hollow shaft ø6 mm, IP 42, with clamping ring
								E6 Through hollow shaft ø6 mm, IP 64, with clamping ring
								<b>Pulse number - see table</b>
								<b>Voltage supply / signals</b>
								05A 5 VDC / antivalent (TTL compatible)
								24K 10...30 VDC / push-pull short-circuit proof

#### Accessories

##### Connectors and cables

10132983	Female connector M9, 8-pin, straight
10123168	Female connector M9, 8-pin, straight, 2 m cable
10123169	Female connector M9, 8-pin, straight, shielded, 5 m cable
11094660	Female connector M9, 5-pin, straight, shielded, 2 m cable
11094662	Female connector M9, 5-pin, straight, shielded, 5 m cable

##### Mounting accessories

10158423	Set of spring washers (round) for hollow shaft encoder (<ø8 mm)
10158424	Set of spring washers (square) for hollow shaft encoder (≥ø8 mm)

#### Pulse number

10	50	120	360	1024
20	60	200	500	2000
30	100	250	1000	2048

Other pulse numbers on request.

#### Trigger level

Outputs 05A	Complementary Linedriver RS422
Output level High	>2,4 V (I = -20 mA)
Output level Low	<0,4 V (I = 20 mA)
Load High	<20 mA
Load Low	<20 mA
Outputs 24K (125 Ω)	Push-pull short-circuit protection
Output level High	>+Vs - 5,7 V (I = -30 mA)
Output level Low	<5,7 V (I = 30 mA)
Load High	<30 mA
Load Low	<30 mA

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### Terminal assignment

#### Cable

for connection reference -5

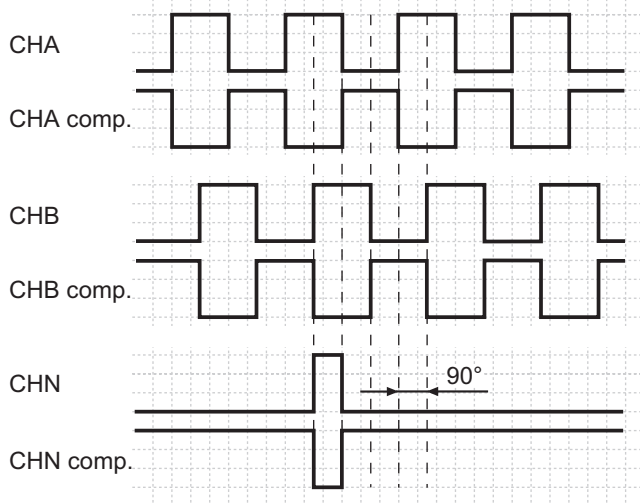
#### 05A

Core colour	Signals	Core colour	Signals
brown	+Vs	brown	+Vs
green	CHA	green	CHA
red	CHA compl.	–	–
yellow	CHB	yellow	CHB
blue	CHB compl.	–	–
pink	CHN	pink	CHN
grey	CHN compl.	–	–
white	0 V	white	0 V
Cable data	8 x 0.14 mm <sup>2</sup>	5 x 0.14 mm <sup>2</sup>	
Screen	connected to flange		

### Output signals

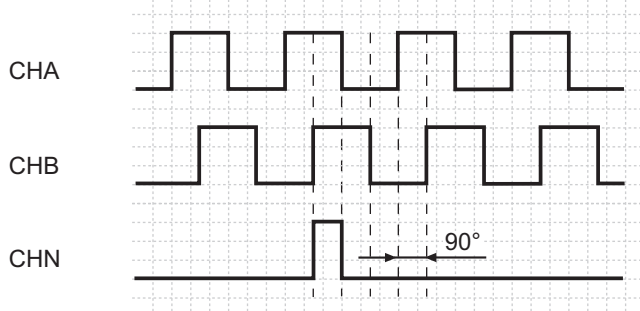
Counter clockwise rotating direction when looking at the flange.

#### 05A



Counter clockwise rotating direction when looking at the flange.

#### 24K



#### Connector M9 male

for connection reference -9

#### 05A

Connector	Core colour*	Signals
Pin 1	white	0 V
Pin 2	brown	+Vs
Pin 3	green	CHA
Pin 4	yellow	CHB
Pin 5	grey	CHN compl.
Pin 6	pink	CHN
Pin 7	blue	CHB compl.
Pin 8	red	CHA compl.

#### 24K

Connector	Core colour*	Signals
Pin 1	white	0 V
Pin 2	brown	+Vs
Pin 3	brack	CHA
Pin 4	blue	CHB
Pin 5	grey	CHN

\*these core colours are valid for the assembled mating connectors (see accessories)



# Incremental encoders

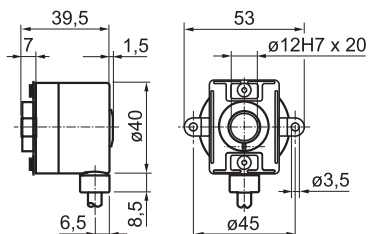
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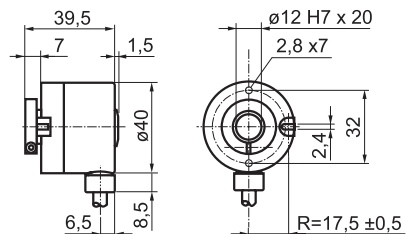
BHK

#### Dimensions

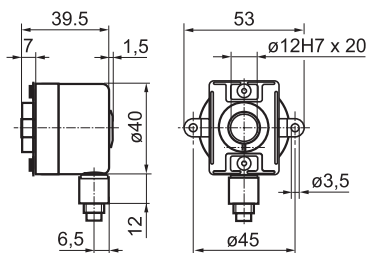
BHK clamping ring and spring washer



BHK clamping ring



BHK connector output radial



BHK connector dimensions

