

# 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 w/o load typ.	60 mA (5 VDC) 30 mA (24 VDC)
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 stage	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.   -  -

Connection  
5 Cable 1 m, radial  
9 Connector radial

Hollow shaft  
B2 Blind hollow shaft  $\varnothing$ 12 mm, IP 42, with clamping ring  
B6 Through hollow shaft  $\varnothing$ 6 mm, IP 42, with clamping ring  
E6 Through hollow shaft  $\varnothing$ 6 mm, IP 64, with clamping ring  
I2 Blind hollow shaft  $\varnothing$ 12 mm, IP 42, with clamping ring and spring plate  
M6 Through hollow shaft  $\varnothing$ 6 mm, IP 64, with clamping ring and spring plate

Pulse number - see table

Voltage supply / signals

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 coupling (round) for hollow shaft encoder ( $<\varnothing$ 8 mm)
10158424	Set of spring coupling (square) for hollow shaft encoder ( $\geq\varnothing$ 8 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 $\Omega$ )	Push-pull short-circuit protection
Output level High	$>+V_s - 5,7$ 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

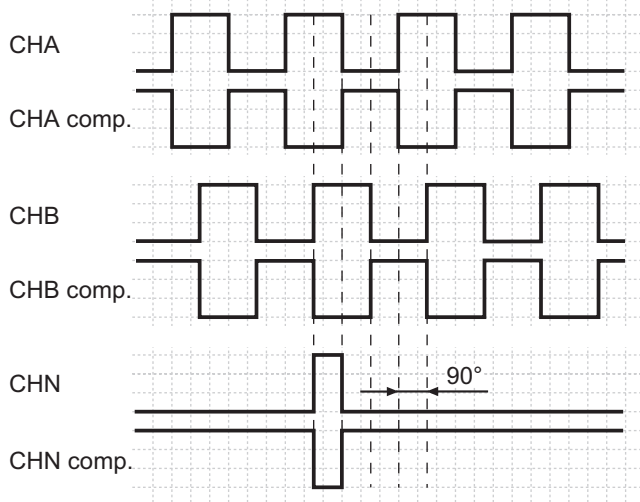
#### 05A

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

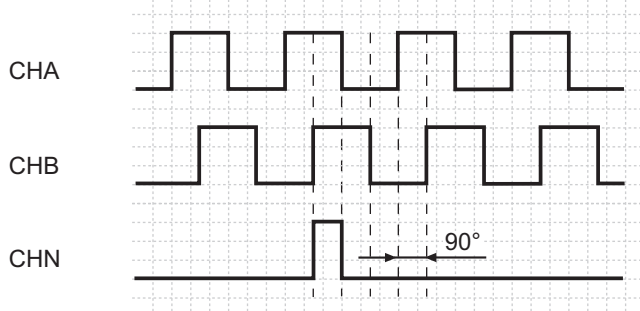
Counter clockwise rotating direction when looking at the flange.

#### 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)



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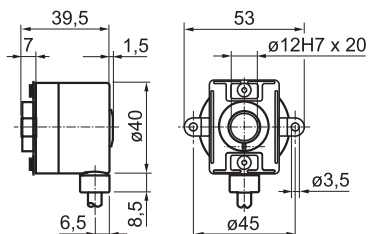
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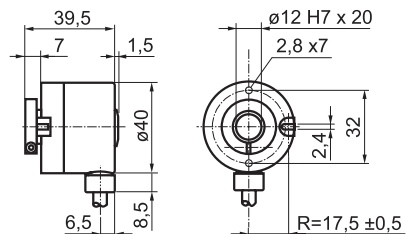
BHK

#### Dimensions

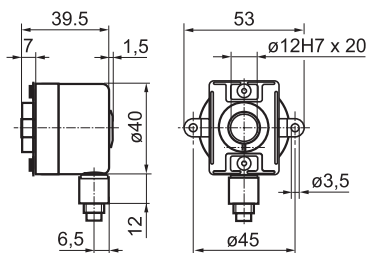
BHK clamping ring and spring washer



BHK clamping ring



BHK connector output radial



BHK connector dimensions

