

# Incremental encoders

## Shaft with clamping or synchro flange

### Resolution 10...10000 pulses

#### BDH, BDT



BDT with synchro flange

#### Features

- Encoder with shaft  $\varnothing 10$  mm or  $\varnothing 6$  mm
- Optical sensing
- Resolution max. 10000 ppr
- Clamping or synchro flange
- Industrial standard
- Small profile depth

#### Technical data - electrical ratings

Voltage supply	5 VDC $\pm 10$ % 10...30 VDC 4.5...30 VDC
Consumption w/o load (typ.)	80 mA (5 VDC) 60 mA (24 VDC) 180 mA (4.5 VDC)
Resolution (steps/turn)	10...10000
Reference signal	Zero pulse, width 90°
Sensing method	Optical
Output signals	A 90° B, N + inverted
Output circuit	Antivalent Push-pull short-circuit proof Push-pull antiv. short-circuit proof
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3
Approval	UL approval / E217823
<b>BDH</b>	
Output frequency	$\leq 300$ kHz
<b>BDT</b>	
Output frequency	$\leq 750$ kHz

#### Technical data - mechanical design

Protection DIN EN 60529	IP 42, IP 65
Operating speed	$\leq 12000$ rpm IP 42 $\leq 6000$ rpm IP 65
Materials	Housing: steel Housing: aluminium (connection -A) 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 M23, 12-pin Cable 2 m
Weight approx.	300 g
<b>BDH</b>	
Housing	$\varnothing 55$ mm
Shaft	$\varnothing 10$ mm (clamping flange)
Admitted shaft load	$\leq 40$ N axial $\leq 60$ N radial
Flange	Clamping flange
Operating torque typ.	0.022 Nm IP 42 0.026 Nm IP 65
<b>BDT</b>	
Housing	$\varnothing 58$ mm
Shaft	$\varnothing 6$ mm (synchro flange)
Admitted shaft load	$\leq 10$ N axial $\leq 20$ N radial
Flange	Synchro flange
Operating torque typ.	0.0023 Nm IP 42 0.026 Nm IP 65

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#### Part number

#### Clamping flange

BDH 16.   -  -

Connection  
 4 Cable 2 m, axial  
 5 Cable 2 m, radial  
 A Connector radial  
 B Connector axial

Shaft  
 10 ø10 mm, IP 42  
 L0 ø10 mm, IP 65

See part number (pulses)

Voltage supply / signals

05A 5 VDC / antivalent (TTL compatible)  
 24K 10...30 VDC / push-pull short circuit-proof  
 25W 4.5...30 VDC / push-pull antivalent short-circuit-proof

#### Synchro flange

BDT 16.   -  -

Connection  
 4 Cable 2 m, axial  
 5 Cable 2 m, radial  
 A Connector radial  
 B Connector axial

Shaft  
 6 ø6 mm, IP 42  
 L6 ø6 mm, IP 65

See part number (pulses)

Voltage supply / signals

05A 5 VDC / antivalent (TTL compatible)  
 24K 10...30 VDC / push-pull short circuit-proof  
 25W 4.5...30 VDC / push-pull antivalent short-circuit-proof

#### Part number (pulses)

10	100	360	2000	7200
20	120	400	2500	8192
30	200	500	3600	10000
50	250	1000	4096	
60	300	1024	5000	

Other pulse numbers upon request.

#### Part number (pulses)

10	100	360	1250	7200
20	120	400	2000	8192
30	200	500	2500	10000
50	250	1000	3600	
60	300	1024	5000	

Other pulse numbers upon 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
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Outputs 24K (25 Ω)	Push-pull short-circuit protection
Output level High	>+Vs - 3,7 V (I = -30 mA)
Output level Low	<2,5 V (I = 30 mA)
Load High	<30 mA
Load Low	<30 mA
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Outputs 25W	Push-pull complementary short-circuit protection
Output level High	>+Vs - 3,7 V (I = -30 mA)
Output level Low	<2,5 V (I = 30 mA)
Load High	<40 mA
Load Low	<40 mA

#### Accessories

Connectors and cables	
10107687	Female connector M23, 12-pin, straight
10130367	Female connector M23, 12-pin, straight, 2 m cable
10118532	Female connector M23, 12-pin, straight, 5 m cable
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Mounting accessories for BDH	
10125051	Mounting adaptor for encoders with clamping flange
10141255	Adaptor plate for clamping flange for modification into synchro flange
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Mounting accessories for BDT	
10252773	Clamp set
10117667	Mounting adaptor for encoders with synchro flange

# Incremental encoders

## Shaft with clamping or synchro flange

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## BDH, BDT

### Terminal assignment

#### Cable

for connection references **-4** and **-5**

#### 05A

#### 24K

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		

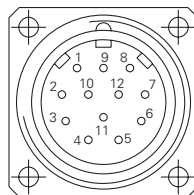
#### Connector M23 male

for connection references **-A** and **-B**

#### 05A, 24K, 25W

Connector	Signals
Pin 1	CHA compl.
Pin 2	+Vs
Pin 3	CHN
Pin 4	CHN compl.
Pin 5	CHB
Pin 6	CHB compl.
Pin 7	n.c.
Pin 8	CHA
Pin 9	Housing
Pin 10	0 V
Pin 11	0 V
Pin 12	+Vs

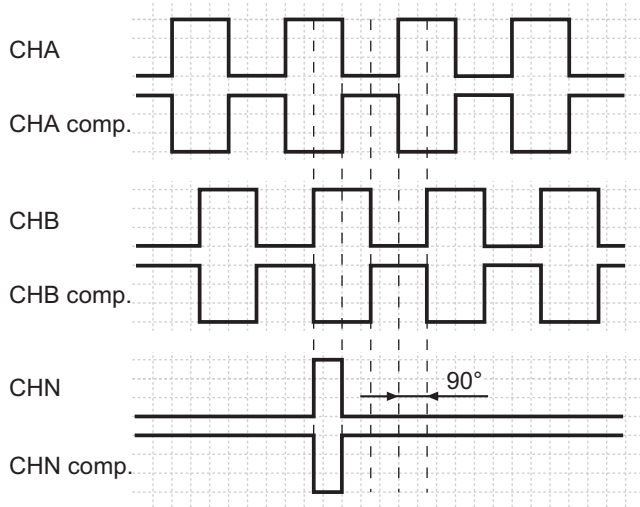
Push-pull version **24K** without CHx complementary signals



### Output signals

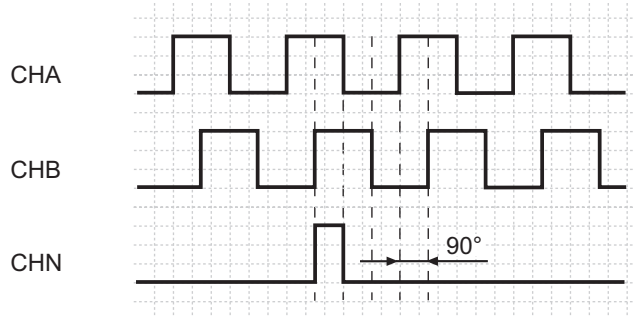
Counter clockwise rotating direction when looking at the flange.

#### 05A, 25W



Counter clockwise rotating direction when looking at the flange.

#### 24K



# Incremental encoders

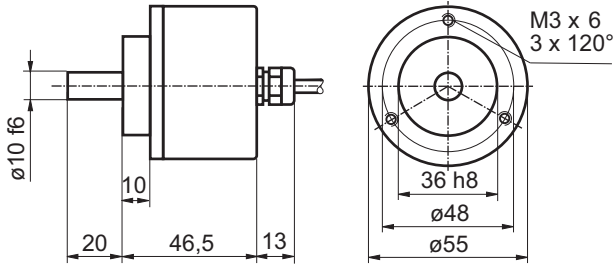
## Shaft with clamping or synchro flange

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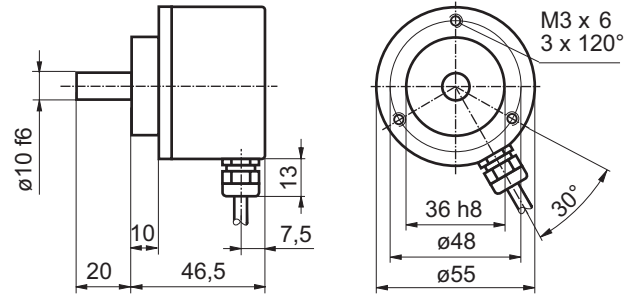
BDH, BDT

#### Dimensions

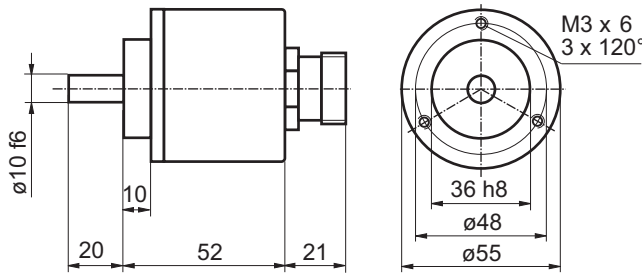
BDH clamping flange, cable axial



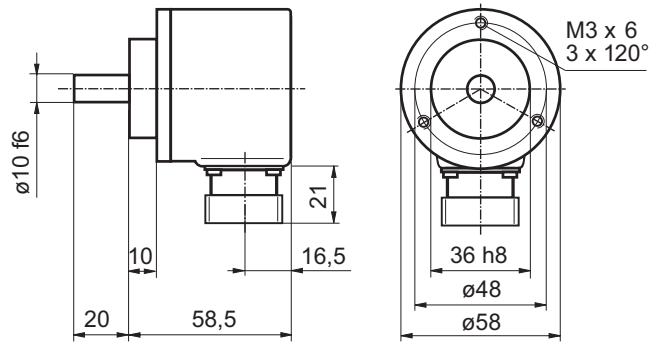
BDH clamping flange, cable radial



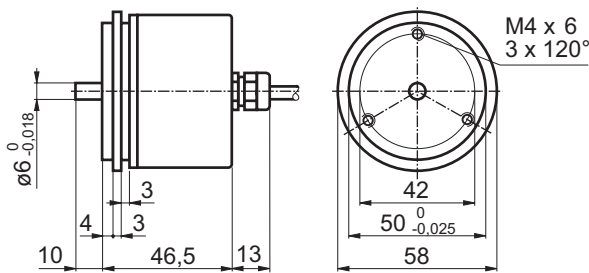
BDH clamping flange, connector output axial



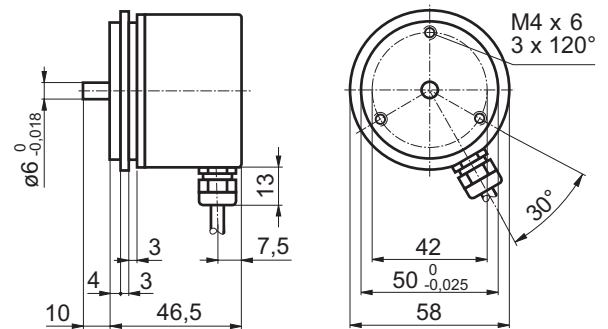
BDH clamping flange, connector output radial



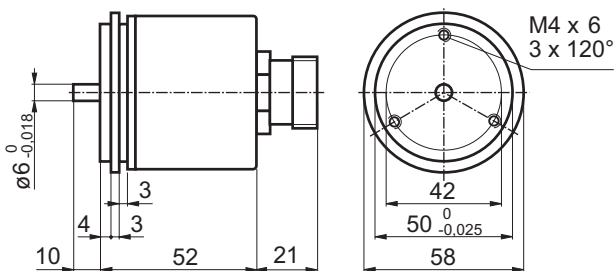
BDT synchro flange, cable axial



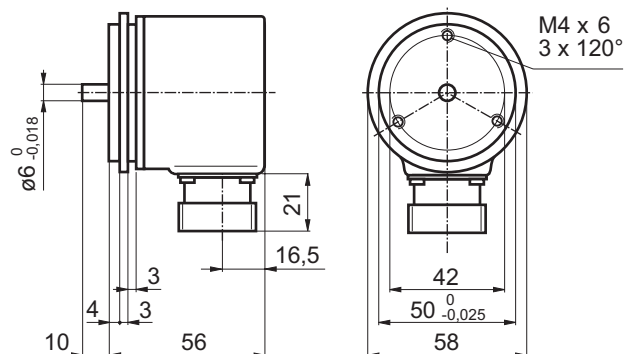
BDT synchro flange, cable radial



BDT synchro flange, connector output axial



BDT synchro flange, connector output radial



1/12/2010 Subject to modification in technic and design. Errors and omissions excepted.