

Incremental encoders

Solid shaft with clamping or synchro flange

10...5000 pulses per revolution

BDH, BDT



BDT with synchro flange

Features

- Encoder with solid shaft $\varnothing 10$ mm or $\varnothing 6$ mm
- Optical sensing method
- Max. 5000 pulses per revolution
- Clamping or synchro flange
- Industrial standard
- Small profile depth

Technical data - electrical ratings

Voltage supply	5 VDC ± 10 % 10...30 VDC 4.5...30 VDC
Consumption typ.	80 mA (5 VDC, w/o load) 60 mA (24 VDC, w/o load) 180 mA (4.5 VDC, w/o load)
Pulses per revolution	10...5000
Reference signal	Zero pulse, width 90°
Sensing method	Optical
Output frequency	≤ 200 kHz (24K) ≤ 300 kHz (05A/25W)
Output signals	A 90° B, N + inverted
Output stages	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

Technical data - mechanical design

Protection DIN EN 60529	IP 42, IP 65
Operating speed	≤ 12000 rpm (IP 42) ≤ 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

BDH

Size (flange)	$\varnothing 55$ mm
Shaft type	$\varnothing 10$ mm solid shaft (clamping flange)
Admitted shaft load	≤ 40 N axial ≤ 60 N radial
Flange	Clamping flange
Operating torque typ.	0.022 Nm (IP 42) 0.026 Nm (IP 65)

BDT

Size (flange)	$\varnothing 58$ mm
Shaft type	$\varnothing 6$ mm solid shaft (synchro flange)
Admitted shaft load	≤ 10 N axial ≤ 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

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				Connection
			4	Cable 2 m, axial
			5	Cable 2 m, radial
			A	Connector radial
			B	Connector axial
				Solid shaft
			10	ø10 mm, IP 42
			L0	ø10 mm, IP 65
				Pulse number - see table
				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
				Solid shaft
			6	ø6 mm, IP 42
			L6	ø6 mm, IP 65
				Pulse number - see table
				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

Pulse number

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

Other pulse numbers on request.

Pulse number

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

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 (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
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, without cable
10130367	Female connector M23, 12-pin, straight, 2 m cable
10118532	Female connector M23, 12-pin, straight, 5 m cable

Mounting accessories for BDH

10125051	Mounting adaptor for encoders with clamping flange (M3) (Z 119.017)
10141255	Adaptor plate for clamping flange for modification into synchro flange (Z 119.013)
11053277	Bellows coupling aluminium/stainless steel 10 mm

Mounting accessories for BDT

10252773	Clamp set ø15 mm
10117667	Mounting adaptor for encoders with synchro flange (Z 119.015)

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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 ²	5 x 0.14 mm ²	
Screen	connected to flange		

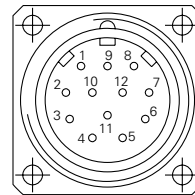
Connector M23 male

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

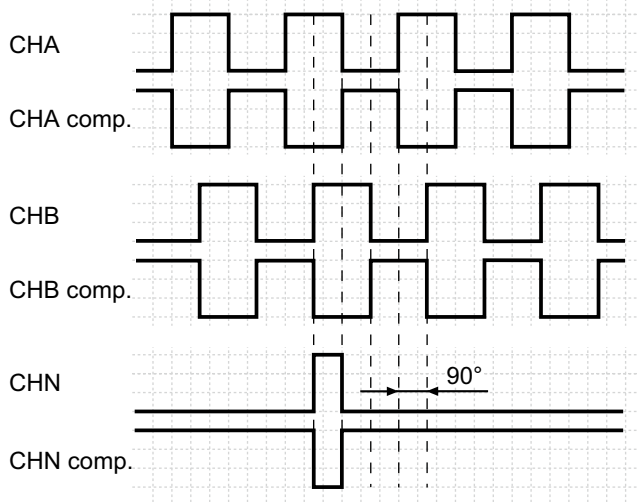
Push-pull version **24K** without CHx complementary signals



Output signals

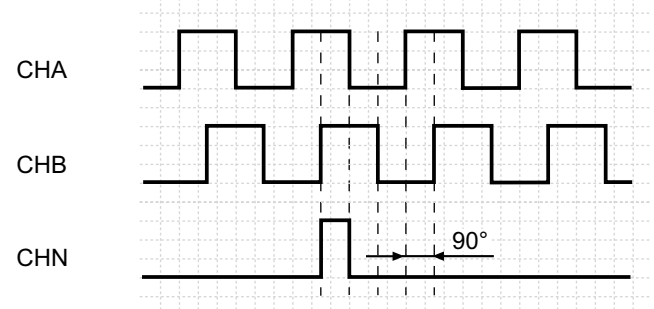
Counter clockwise rotating direction when looking at the flange.

05A, 25W



Counter clockwise rotating direction when looking at the flange.

24K



Incremental encoders

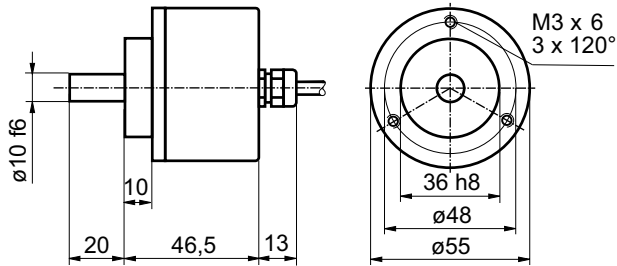
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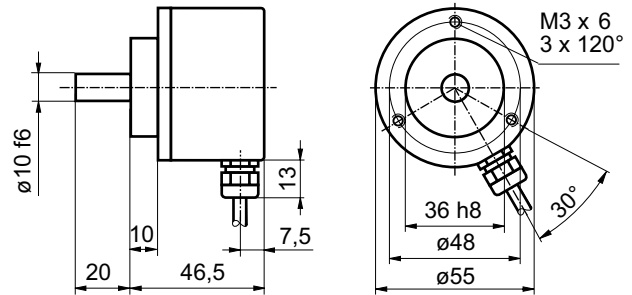
BDH, BDT

Dimensions

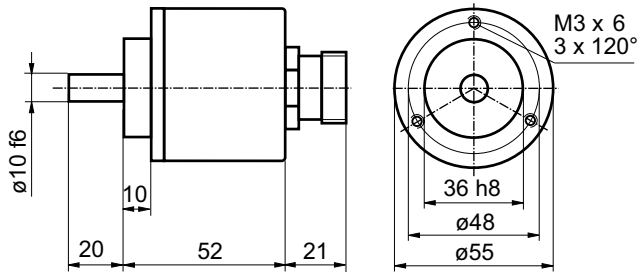
BDH clamping flange, cable axial



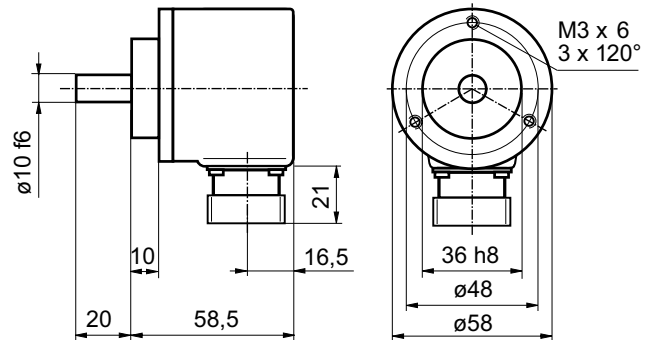
BDH clamping flange, cable radial



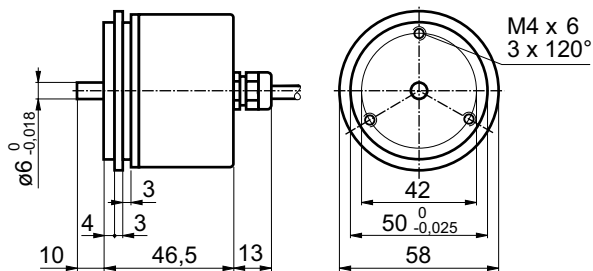
BDH clamping flange, connector output axial



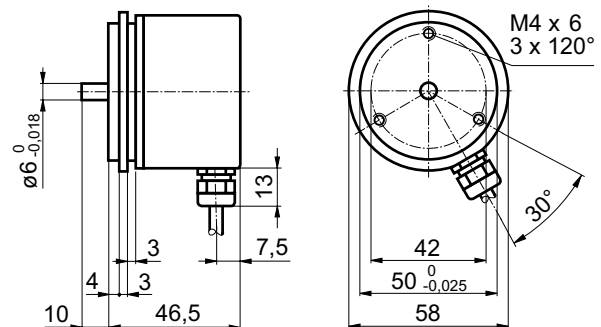
BDH clamping flange, connector output radial



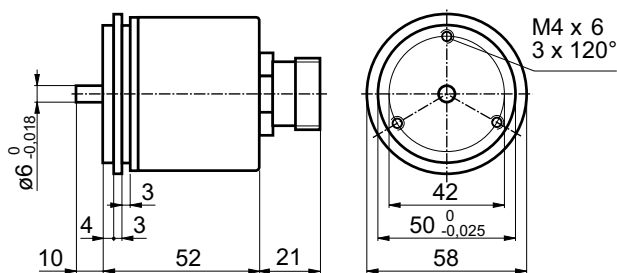
BDT synchro flange, cable axial



BDT synchro flange, cable radial



BDT synchro flange, connector output axial



BDT synchro flange, connector output radial

