

Incremental encoders

End or hollow shaft $\varnothing 12$ mm

Resolution 10...10000 pulses

BHF, BHG



BHF with end shaft

Features

- Encoder with end or hollow shaft $\varnothing 12$ mm
- Optical sensing
- Resolution max. 10000 ppr
- Small profile depth
- Versatile mounting accessories

Technical data - electrical ratings

Voltage supply	5 VDC ± 10 % 10...30 VDC 4.5...30 VDC
Consumption w/o load (typ.)	80 mA (5 VDC) 180 mA (4.5 VDC) 60 mA (24 VDC)
Resolution (steps/turn)	10...10000
Reference signal	Zero pulse, width 90°
Sensing method	Optical
Output frequency	≤ 750 kHz
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

Technical data - mechanical design

Housing	$\varnothing 58$ mm
Protection DIN EN 60529	IP 42 IP 65
Operating speed	≤ 12000 rpm IP 42 ≤ 6000 rpm IP 65
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
Weight approx.	300 g
Connection	Connector M23, 12-pin Cable 2 m

BHF

Shaft	$\varnothing 12$ mm end shaft
Operating torque typ.	0.009 Nm IP 42 0.037 Nm IP 65
Materials	Housing: aluminium Housing: steel (connection -5) Flange: aluminium

BHG

Shaft	$\varnothing 12$ mm hollow shaft
Operating torque typ.	0.0175 Nm IP 42 0.047 Nm IP 65
Materials	Housing: aluminium Flange: aluminium

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Part number

End shaft

BHF 16. - -

Connection
5 Cable 2 m, radial
A Connector M23, radial

Shaft
12 End shaft ø12 mm, IP 42
B2 End shaft ø12 mm, IP 42, with clamping ring
E2 End shaft ø12 mm, IP 65, with clamping ring
L2 End shaft ø12 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

Hollow shaft

BHG 16. - -

Connection
5 Cable 2 m, radial
A Connector M23, radial

Shaft
B2 Hollow shaft ø12 mm, IP 42, with clamping ring
E2 Hollow shaft ø12 mm, IP 65, with clamping ring

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	1250	5000
30	120	500	2000	7200
50	200	1000	2500	8192
60	250	1024	3600	10000

Other pulse numbers upon request.

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

Mounting accessories

10136635	Set of spring coupling for encoders ø58 mm
10110616	Clamp set
10107540	Torque pin
10109520	Torque spring washer

Trigger level

Outputs 05A

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

Complementary Linedriver RS422

Outputs 24K (25 Ω)

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

Push-pull short-circuit protection

Outputs 25W

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

Push-pull complementary short-circuit protection

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Terminal assignment

Cable

for connection reference -5

05A, 25W

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 reference -A

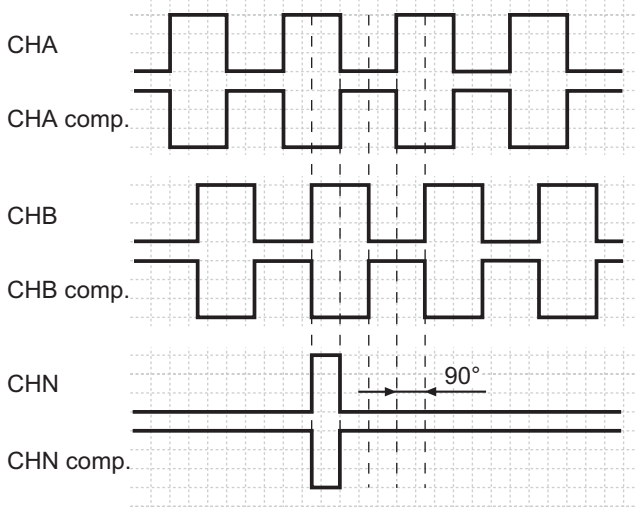
05A, 24K, 25W

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

Output signals

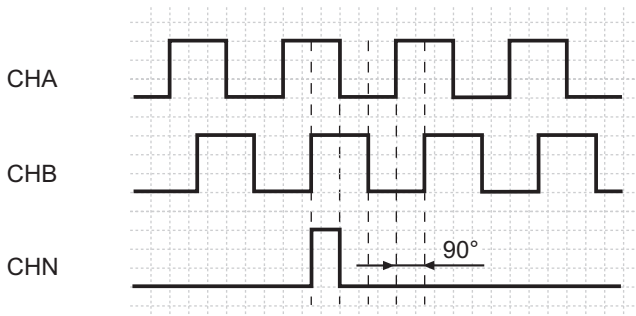
Counter clockwise rotating direction when looking at the flange.

05A, 25W

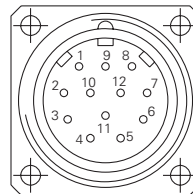


Counter clockwise rotating direction when looking at the flange.

24K



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



Incremental encoders

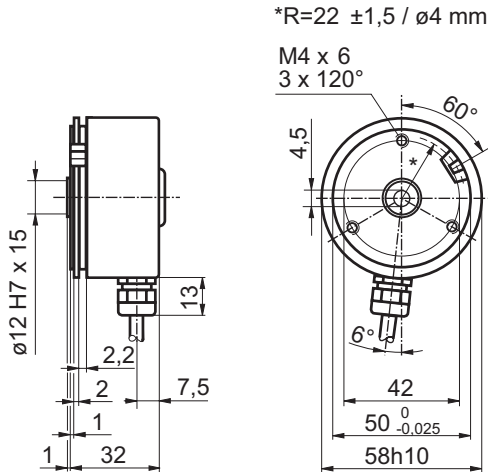
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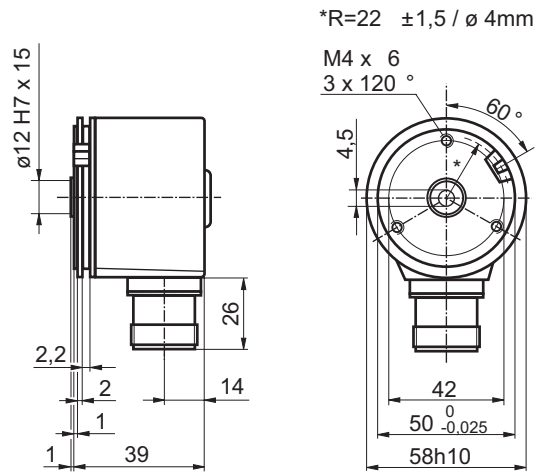
BHF, BHG

Dimensions

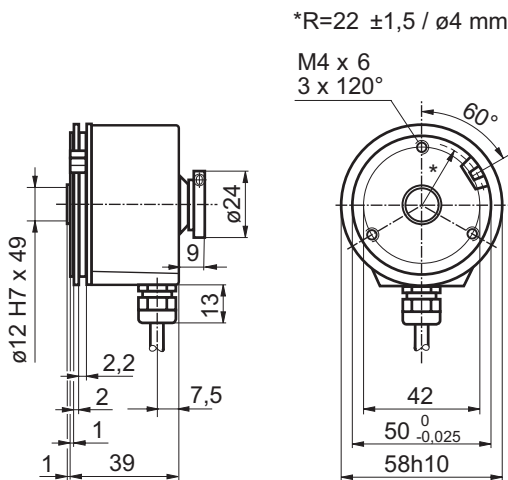
BHF cable radial



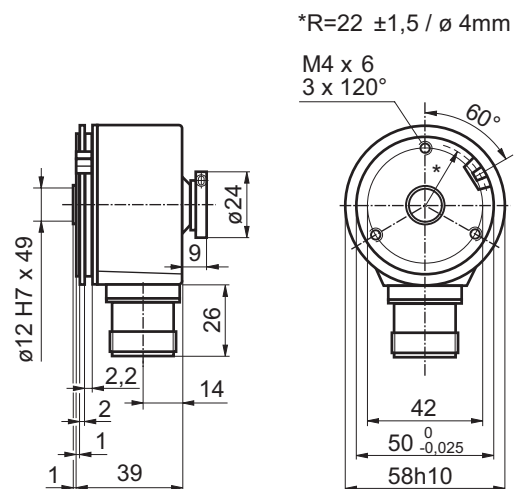
BHF connector output radial



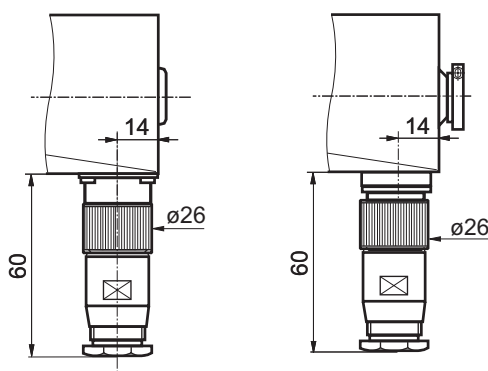
BHG cable radial



BHG connector output radial



BHF/BHG connector dimensions



BHF/BHG clamping ring

