

# Absolute encoders - parallel

Blind or through hollow shaft  $\varnothing 12$  mm

Optical singleturn encoders 12 bit

## BFF, BFG parallel



BFF parallel with blind hollow shaft

### Technical data - electrical ratings

Voltage supply	5 VDC $\pm 10$ % 10...30 VDC
Consumption typ.	120 mA (5 VDC, w/o load) 70 mA (24 VDC, w/o load)
Initializing time typ.	170 ms after power on
Interface	12 parallel outputs
Function	Singleturn
Steps per turn	$\leq 4096$ / 12 bit
Absolute accuracy	$\pm 0.05^\circ$
Sensing method	Optical
Code	Gray
Code sequence	CW default
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3
Approval	UL approval / E217823

### Features

- Encoder singleturn / parallel
- Optical sensing
- Resolution: 12 bit
- Small profile depth
- High interference immunity
- Blind or through hollow shaft  $\varnothing 12$  mm

### Technical data - mechanical design

Size (flange)	$\varnothing 58$ mm
Protection DIN EN 60529	IP 42, IP 65
Operating speed	$\leq 12000$ rpm (mechanical) $\leq 6000$ rpm (electric)
Operating temperature	$-20 \dots +85^\circ\text{C}$
Relative humidity	95 % non-condensing
Resistance	DIN EN 60068-2-6 Vibration 10 g, 10-2000 Hz DIN EN 60068-2-27 Shock 50 g, 11 ms
Weight approx.	300 g
Connection	Connector M16, 19-pin Cable 2 m

### BFF

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

### BFG

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



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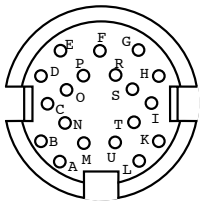
### Terminal assignment

#### Cable / connector

for connection reference -9 and -5

Connector	Core colour	Resolution 4096	Resolution 1024	Resolution 360/512
Pin A	white	0 V	0 V	0 V
Pin B	brown	+Vs	+Vs	+Vs
Pin D	green	Bit 1 LSB	Bit 1 LSB	Bit 1 LSB
Pin E	yellow	Bit 2	Bit 2	Bit 2
Pin F	grey	Bit 3	Bit 3	Bit 3
Pin G	pink	Bit 4	Bit 4	Bit 4
Pin H	blue	Bit 5	Bit 5	Bit 5
Pin I	red	Bit 6	Bit 6	Bit 6
Pin K	black	Bit 7	Bit 7	Bit 7
Pin L	violett	Bit 8	Bit 8	Bit 8
Pin M	grey/pink	Bit 9	Bit 9	Bit 9 MSB
Pin N	white/green	Bit 10	Bit 10 MSB	n.c.
Pin O	brown/green	Bit 11	n.c.	n.c.
Pin P	yellow/brown	Bit 12 MSB	n.c.	n.c.
Pin R	white/yellow	Bit 12 MSB comp. <sup>1)</sup>	Bit 10 MSB comp. <sup>1)</sup>	Bit 9 MSB comp. <sup>1)</sup>
-	red/blue	n.c.	n.c.	n.c.
Screen	connected to housing			
Cable data	16 x 0,14 mm <sup>2</sup>			

<sup>1)</sup> The direction of rotation for encoders with gray-code can be defined by connecting the MSB or MSB comp. If MSB is connected, the encoder counts up as the shaft rotates clockwise (CW). If MSB inv. is connected, the encoder counts up if the shaft rotates counter clockwise (CCW).



### Terminal significance

+Vs	Encoder supply voltage.
0 V	Encoder ground connection relating to +Vs.
Bit 1-x	x: 9...12 parallel output signals.

### Trigger level

Parallel outputs 05N	Output circuit
	NPN
Output level High	typ. 4,5 V
Output level Low	<0,5 V
Load High	<100 mA / Output
Load Low	<100 mA / Output
Parallel outputs 24K	Output circuit
	Push-pull short-circuit protection
Output level High	>UB - 5,5 V (I = -30 mA)
Output level Low	<5,5 V (I = 30 mA)
Load High	<30 mA / Output
Load Low	<30 mA / Output

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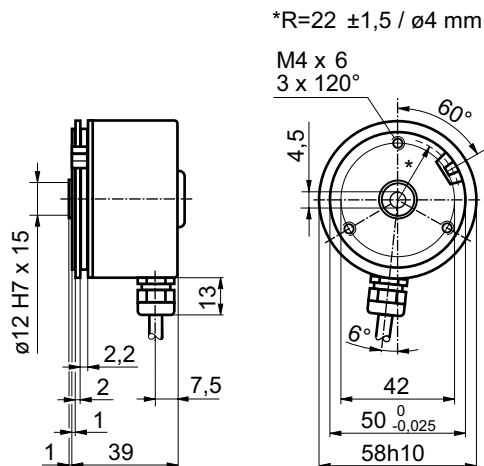
Blind or through hollow shaft  $\varnothing 12$  mm

Optical singleturn encoders 12 bit

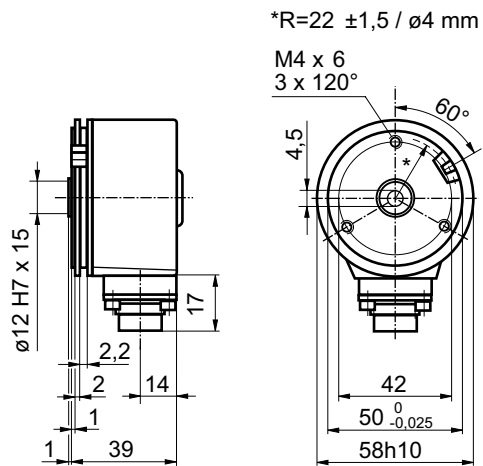
**BFF, BFG parallel**

## Dimensions

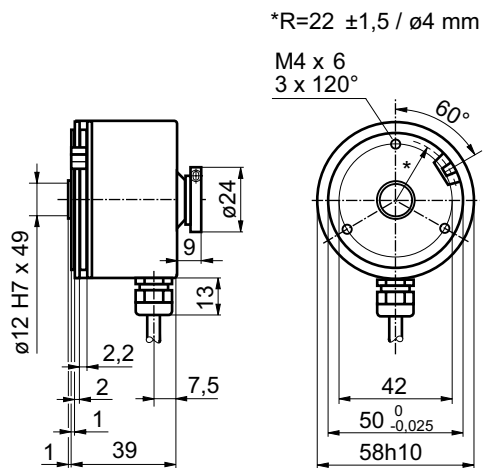
**BFF parallel, cable radial**



**BFF parallel, connector output radial**



**BFG parallel, cable radial**



**BFG parallel, connector output radial**

