

# Absolute encoders - SSI

End or hollow shaft  $\varnothing 12$  mm

Optical singleturn encoders 12 bit

## BFF, BFG SSI



BFF SSI with end shaft

### Features

- Encoder singleturn / SSI
- Optical sensing
- Resolution: 12 bit
- Small profile depth
- Counting direction input
- End or hollow shaft  $\varnothing 12$  mm

### Technical data - electrical ratings

Voltage supply	10...30 VDC
Consumption w/o load (typ.)	70 mA (24 VDC)
Initializing time (typ.)	170 ms after power on
Interface	SSI
Function	Singleturn
Steps per turn	4096 / 12 bit
Absolute accuracy	$\pm 0.025^\circ$
Sensing method	Optical
Code	Gray
Code sequence	CW/CCW coded by connection
Inputs	UP/DOWN SSI clock
Output circuit	SSI data: linedriver RS485
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3
Diagnostic functions	Self-diagnosis Code continuity check
Approval	UL approval / E217823

### Technical data - mechanical design

Dimensions (flange)	$\varnothing 58$ mm
Protection DIN EN 60529	IP 65
Operating speed	$\leq 12000$ rpm (mechanical) $\leq 6000$ rpm (electric)
Operating temperature	0...+65 °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

### BFF

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

### BFG

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

# Absolute encoders - SSI

## End or hollow shaft ø12 mm

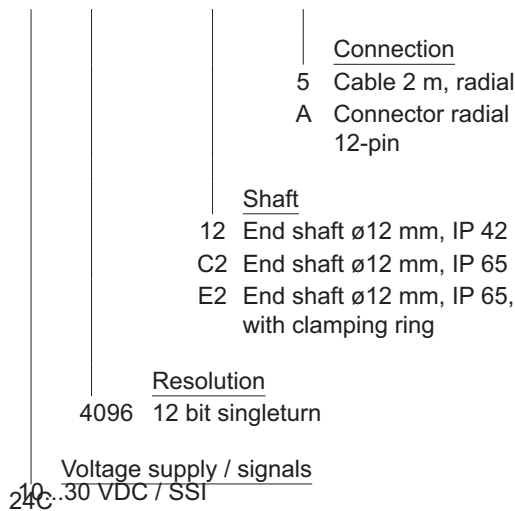
### Optical singleturn encoders 12 bit

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#### Part number

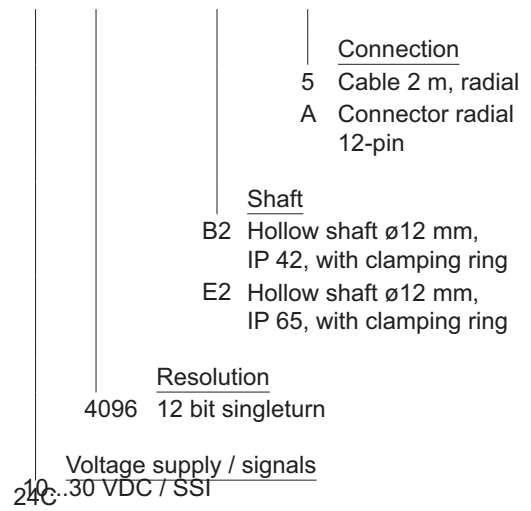
#### End shaft

BFF 0G. 24C 4096 - -

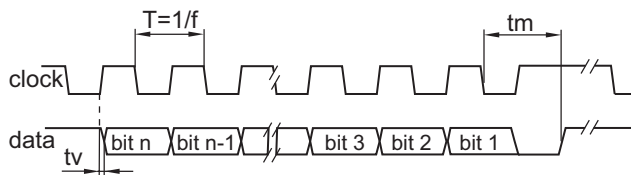


#### Hollow shaft

BFG 0G. 24C 4096 - -



#### Data transfer



Clock frequency $f$	100...1000 kHz
Scan ratio of $T$	40...60 %
Time lag $t_v$	200 ns
Monoflop time $t_m$	$20 \mu s + T/2$

#### Accessories

##### Connectors and cables

10116717	Female connector M23, 12-pin, straight
10130372	Female connector M23, 12-pin, straight, 2 m BFF/BFG
10130373	Female connector M23, 12-pin, straight, 2 m BFF/BFG

##### Mounting accessories

10110616	Clamp set
10107540	Torque pin
10109520	Torque spring washer
10136635	Set of spring coupling for encoders ø58 mm
10142556	Clamping ring set for 12 mm hollow shaft

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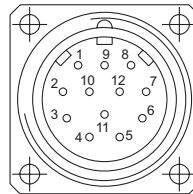
### Terminal significance

+Vs	Encoder supply voltage.
0 V	Encoder ground connection relating to +Vs.
Data+	Positive, serial data output of differential linedriver.
Data-	Negative, serial data output of differential linedriver.
Clock+	Positive SSI clock input. Clock+ together with Clock- forms a current loop. A current of approx. 7 mA towards Clock+ input means logic 1 in positive logic.
Clock-	Negative SSI clock input. Clock- together with Clock+ forms a current loop. A current of approx. 7 mA towards Clock- input means logic 0 in positive logic.
UP/DOWN	UP/DOWN counting direction input. This input is standard on High. UP/DOWN means ascending output data with clockwise shaft rotation when looking at flange. UP/DOWN-Low means ascending values with counterclockwise shaft rotation when looking at flange.
DATAVALID	Diagnostic output. An error warning is given at level High. Important: Interferences must be drained by the downstream electronics.
Rot. direction	Ascending position values when looking at the flange and rotating the shaft clockwise.

### Terminal assignment

**Cable / Connector M23 male**  
for connection references **-A** and **-5**

Connector	Core colour	Signals	Description
Pin 1	yellow	Clock-	Clock signal
Pin 2	green	Clock+	Clock signal
Pin 3	grey	Data+	Data signal
Pin 4	pink	Data-	Data signal
Pin 5	–	n.c.	–
Pin 6	–	n.c.	–
Pin 7	–	n.c.	–
Pin 8	blue	UP/DOWN	Counting dir.
Pin 9	red	DATAVALID	Diagnostic outp.
Pin 10	–	n.c.	–
Pin 11	brown	+Vs	Supply voltage
Pin 12	white	0 V	Supply voltage
Screen	connected to housing		
Cable data	8 x 0,14 mm <sup>2</sup>		



### Trigger level

Control inputs	Input circuit
Input level Low	<0,4 V (>2 ms)
Input level High	+Vs or open

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## Dimensions

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