

Programmable absolute multi-turn hollow shaft encoders

BMG

parallel

features

- multi-turn encoders up to
 - 12 bit single-turn
 - 12 bit multi-turn
- parallel interface
- Gray, BCD and binary code
- self-testing
- hollow shaft \varnothing 12...50,8 mm
- programmable



general data

voltage supply	10 - 30 VDC with reverse polarity protection
supply current	50 mA (at 24 VDC)
max. resolution single-turn	12 bit (1 step = 5' 16") resolution from 1 to 4'096 steps/rev as desired
multi-turn	12 bit (4'096 revolutions) from 1 to 4'096 rev. in two exponential steps
max. error limit	$\pm 1/2$ step
input signal	F/R input, STORE/ENABLE, zero setting
max. switching frequency	400 kHz

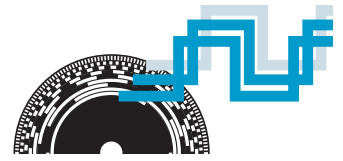
mechanical data

max. revolutions	mech. 6'000 rpm electr. 6'000 rpm
moment of inertia	2×10^{-6} kgm ²
max. protection class	IP 54
material	housing: steel flange: aluminum
weight	approx. 700 g

ambient conditions

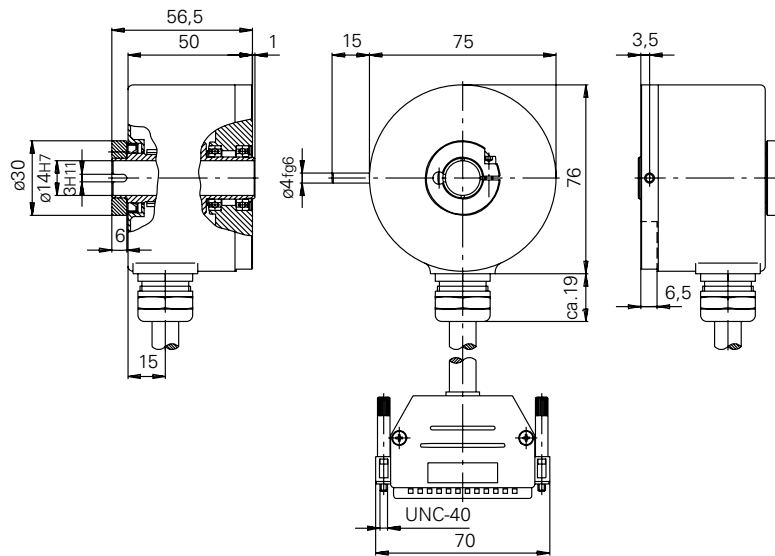
temperature range	-20...+85 °C
relative humidity	max. 95% non condensing
vibration	DIN EN 60068-2-6 (≤ 100 m/s ² / 16 - 2'000 Hz)
shock	DIN EN 60068-2-27 ($\leq 2'000$ m/s ² / 6 ms)
noise immunity	DIN EN 61000-6-2
emitted interference	DIN EN 61000-6-4

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dimensions and connection dimensions

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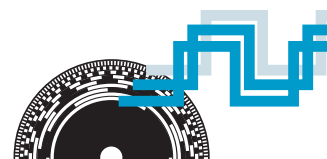
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assignment			signals parallel interface	
pin	cable color	assignment	1 - 24	Data lines D0 to D23.
1	white	D0	D0 - D23	24 parallel output signals. For each data line, we recommend pull-down resistors for PNP and pull-up resistors for NPN, both with 4.7 kOhms. D19 - D23 for low resolutions these outputs can be assigned for special outputs.
2	brown	D1		
3	green	D2		
4	yellow	D3		
5	grey	D4		
6	pink	D5		
7	black	D6	27 ZERO	Zero setting input for setting a zero at any point within the programmed encoder resolution. The zero setting process is triggered by a HIGH pulse and should take place after direction of rotation selection (F/ \bar{R}). For maximum interference immunity after zero setting, connect to GND. Pulse duration ≥ 100 ms.
8	violet	D7		
9	grey/pink	D8		
10	red/blue	D9		
11	white/green	D10		
12	brown/green	D11		
13	white/yellow	D12		
14	yellow/brown	D13		
15	white/gray	D14	28 $\overline{\text{ENABLE}}$	If this input is at LOW level, the output drivers will be activated. On application of HIGH potential (or unconnected), the output drivers assume a HIGH-resistance state.
16	grey/brown	D15		
17	white/pink	D16		
18	pink/brown	D17		
19	white/black	D18	29 $\overline{\text{STORE}}$	By applying a LOW level, the data of the absolute encoder will be buffered. If this input is connected to HIGH potential or remains open, the current position data of the absolute encoder will be switched through to the output drivers. For reliable readout of the data, this line must be used in the case of binary code.
20	brown/black	D19		
21	grey/green	D20		
22	yellow/grey	D21		
23	pink/green	D22		
24	yellow/pink	D23		
25	—	—		
26	—	—		
27	yellow/blue	ZERO	30 F/ \bar{R}	F/ \bar{R} counting direction input. When not connected, this input is on HIGH. F/ \bar{R} -HIGH means increasing output data with a clockwise hollow shaft rotating direction when looking at the flange.
28	brown/blue	$\overline{\text{ENABLE}}$		F/ \bar{R} -LOW means increasing values with a counter-clockwise hollow shaft rotating direction when looking at the flange.
29	brown/red	$\overline{\text{STORE}}$		
30	green/blue	UP/ $\overline{\text{DOWN}}$	34 TxD	Data send line of the RS-232 interface for encoder programming.
31	—	—		
32	—	—		
33	—	—		
34	white/blue	TxD	35 RxD	Data receive line of the RS-232 interface for encoder programming.
35	white/red	RxD		
36	red	+Vs	36 +Vs	Voltage supply
37	blue	GND	37 GND	Ground connection of the encoder.

Recommendation: Please use leads twisted in pairs for extension cord.

parallel



inputs	
HIGH level	> 0,7 +Vs
LOW level	< 0,3 +Vs
wiring diagram:	Inputs with 10 kΩ against +Vs; except zero setting with 10 kΩ against GND.

outputs		
HIGH (PNP) level	> +Vs -4,5 V	(at I = -15 mA)
LOW (NPN) level	< 3,5 V	(at I = 15 mA)
HIGH load (PNP)	< -20 mA	
LOW load (NPN)	< 20 mA	
Tristate	< 200 μA	

All outputs with short-circuit protection PNP or NPN
OC output levels.

preconditions for programming

- PC with RS 232 interface and Windows operating system
 - programming software ProGeber, manual
 - programming cable connection, connecting the absolute encoder with the PC
- If necessary order separately under accessories.

description of diagnosis and special functions

When turned on, the encoder will carry out a self-testing. The following is monitored during operation:

- check of the code steadiness
- whether admissible signal frequency is exceeded
- LED failure, aging
- whether receiver has failed
- code disc, broken glass
- supply voltage of electronically controlled gearbox

Special functions:

- two preselections „limit switch function“
- speed monitoring can be programmed
- status of diagnosis and mode

order designation BMG

BMG 1P.24 □ **4096 – GA – K**

shaft
shaft 14 mm, IP 54

output signals

N NPN (short circuit protection), OC
P PNP (short circuit protection), OC

accessories

programming software cable and manual	part nr. 117665
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