

Programmable switching cam encoder BME/BMF parallel

features

- 24 bit resolution, programmable
- 250 cams programmable to 16 signal outputs
- self-monitoring function
- binary code
- programmable:
 - direction CW/CCW
 - output logic normal/inverted
 - zero point and offset adjustment



general data

voltage supply	10 - 30 VDC with reverse polarity protection
supply current no load	max. 50 mA (at 24 VDC)
max. resolution singleturn	12 Bit (1 step = 5' 16") 1 to 4096 programmable steps
multiturn	12 Bit (4096 revolutions) programmable in Base 2
pulse tolerance	± 1/2 step
cams	up to 250 cams programmable on 16 signal outputs
input signal	F/R-input, STORE/ENABLE, zero set input
accuracy	±0.03° @ 200 kHz ±0.05° @ 400 kHz
code switching speed for sampling	max. 400 kHz

mechanical data

max. revolutions	mechanical 10,000 /min electrical 6000 /min
inertia torque rotor	2 x 10 ⁻⁶ kgm ²
starting torque	≤ 0.010 Nm (no clamping ring) ≤ 0.015 Nm (with clamping ring)
max. shaft load	axial: 20 N radial: 40 N
max. protection class	IP 65
material	housing: steel flange: aluminum
weight	approx. 600 g

ambient conditions

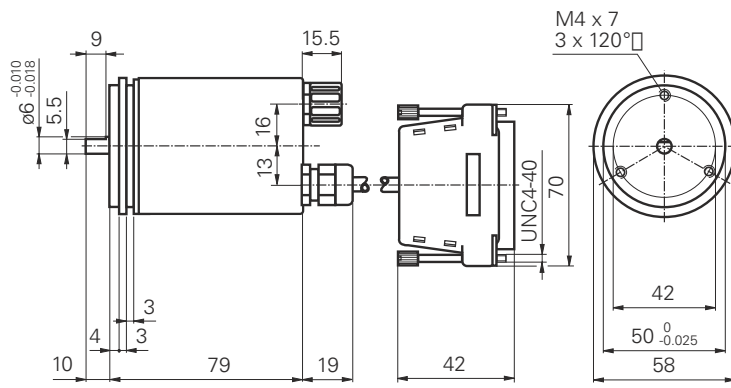
temperature range	-20 to +65 °C
relative humidity	max. 95% non condensing
vibration	DIN EN 60068-2-6 (≤ 100 m/s ² / 16-2000 Hz)
shock	DIN EN 60068-2-27 (≤ 2000 m/s ² / 6 ms)
noise immunity	DIN EN 61000-6-23
emitted interference	DIN EN 61000-6-4



housing and connection dimensions

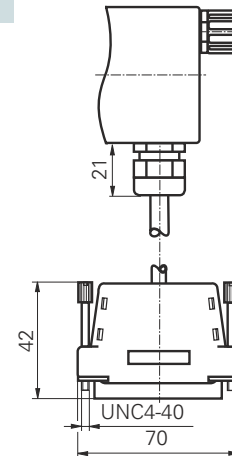
BME

-J



cable length 1 m

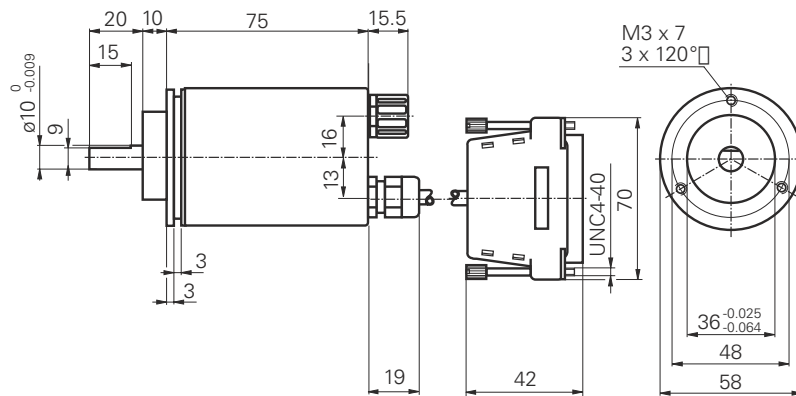
-K



cable length 1 m

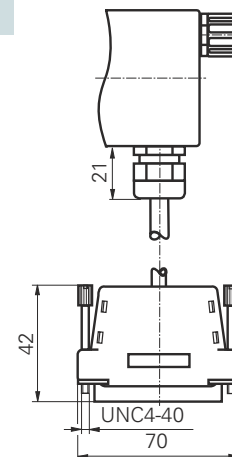
BMF

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cable length 1 m

-K



cable length 1 m

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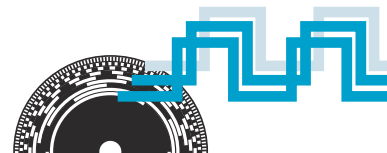
assignment

Designation parallel			
connector 37-pin	signal	cable color	
1	S0	WH	white
2	S1	BN	brown
3	S2	GN	green
4	S3	YE	yellow
5	S4	GY	grey
6	S5	PK	pink
7	S6	BK	black
8	S7	VT	violet
9	S8	GY/PK	grey/pink
10	S9	RD/BU	red/blue
11	S10	WH/GN	white/green
12	S11	BN/GN	brown/green
13	S12	WH/YE	white/yellow
14	S13	YE/BN	yellow/brown
15	S14	WH/GY	white/grey
16	S15	GY/BN	grey/brown
17	-	WH/PK	white/pink
18	-	PK/BN	pink/brown
19	-	WH/BK	white/black
20	D19	BN/BK	brown/black
21	D20	GY/GN	grey/green
22	D21	YE/GY	yellow/grey
23	D22	PK/GN	pink/green
24	D23	YE/PK	yellow/pink
25	-	-	-
26	-	-	-
27	ZERO	YE/BU	yellow/blue
28	ENABLE	BN/BU	brown/blue
29	STORE	BN/RD	brown/red
30	F/R	GN/BU	green/blue
31	-	-	-
32	-	-	-
33	-	-	-
34	GND Sense	WH/BU	white/blue
35	+V Sense	WH/RD	white/red
36	+Vs	RD	red
37	GND	BU	blue

Screen: In the case of encoders with cable output, the screen is connected to the housing internally.

signals parallel interface

1 - 16	16 cam outputs
S0 - S15	Up to 250 cams can be programmed to these 16 outputs. For each data line, we recommend Pull-DOWN resistors for PNP and Pull-UP resistors for NPN, both with 4.7 kΩ values.
17 - 19	not used
20 - 24	factory diagnostic outputs
D19 - D23	These outputs may be assigned, at choice, to the functions preset 1, preset 2, speed monitoring or diagnosis.
27 ZERO	Reset input for setting a zero at any point within the programmed encoder resolution. The zero setting is triggered by a HIGH pulse imperatively after the sense of direction has been chosen (F/B). Assign to GND for maximum interference immunity after zero setting. Pulse duration ≥ 100 ms.
28 <u>ENABLE</u>	If this input is at LOW level, the output drivers will be activated. If HIGH potential is applied (or if open-circuited), the output drivers will turn to the HIGH-resistance state (Tristate).
29 <u>STORE</u>	When a LOW level is applied, the data of the absolute encoder is temporarily stored. If this input is connected to HIGH potential or if it remain closed, the current position data of the absolute encoder is switched through to the output drivers. This line must be used to ensure data readout in binary code.
30 <u>F/R</u>	Input for counting up and down. If open-circuited, it is set to HIGH. HIGH means increasing output data if shaft rotates clockwise when looking at the flange. LOW means increasing values if shaft rotates counter-clockwise when looking at the flange.
34 GND-Sense	This contact is connected internally to GND and assists, together with VS-sense, to measure the supply voltage at the encoder via the follower electronic.
35 +Vs-Sense	This contact is connected internally to +Vs. If the sensor line is not to be used, this contact must be isolated (danger of short circuit).
36 +Vs	Supply voltage of encoder.
37 GND	Ground contact of encoder with reference to +Vs.



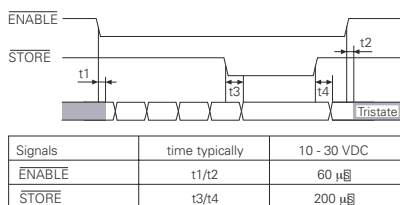
inputs

One control signal each for $\overline{\text{ENABLE}}$ for activation of the output driver, $\overline{\text{STORE}}$ for storing the output data, $\overline{\text{F/R}}$ for selection of positive direction of rotation and ZERO for zeroing in any position.

input voltage	($V_s = 10 - 30 \text{ VDC}$)
level HIGH	0.7 V_s up to V_s
level LOW	0 up to 0.3 V_s

wiring:
inputs with 10 k Ω against V_s , except zero setting input with 10 k Ω against GND.

signal characteristic STORE/ENABLE



outputs

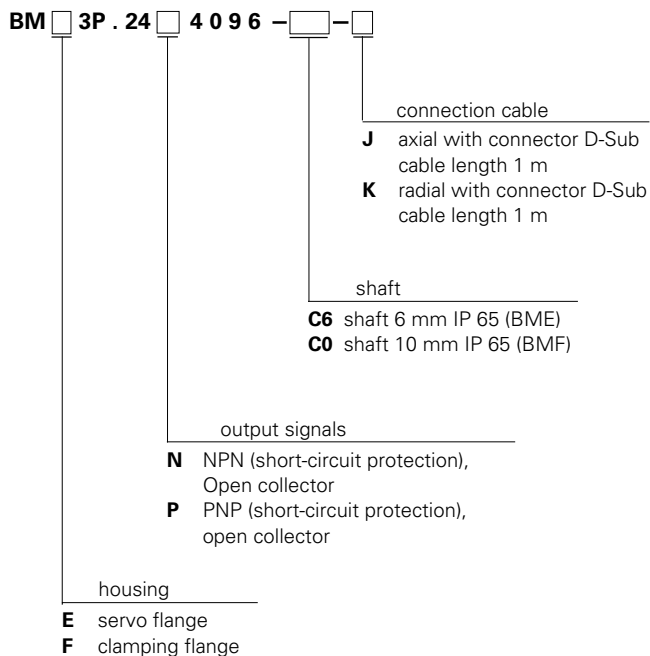
16 outputs with $\overline{\text{STORE}}$ and tristate function ($\overline{\text{ENABLE}}$) and 5 special outputs.
All outputs with short circuit protected PNP or NPN output levels.

level HIGH (PNP)	$\geq +V_s - 4.5 \text{ V}$ (at $I = -15 \text{ mA}$)
level LOW (NPN)	$\leq 3.5 \text{ V}$ (at $I = 15 \text{ mA}$)
load HIGH (PNP)	$\leq -20 \text{ mA}$
load LOW (NPN)	$\leq 20 \text{ mA}$
tristate	$\leq 200 \mu\text{A}$

programming cable pin assignment

encoder function	5-Pol. Enc.-St.	cable color	PC-connector 9-Pol. D-Sub	PC-connector 25-Pol. D-Sub
-	Pin 1	brown	-	-
RxD	Pin 2	white	Pin 3	Pin 2
GND	Pin 3	blue	Pin 5	Pin 7
P/R-Mode	Pin 4	black	Pin 5	Pin 7
TxD	Pin 5	gray	Pin 2	Pin 3
-	-	-	Br. 4 - 6	Br. 4 - 5
-	-	-	Br. 7 - 8	Br. 6 - 20

order designation



programming requirements

- PC with RS 232-interface and Windows-operating system
- Progeber software and handbook
- programming cable, connects encoder with PC

accessories

Type BME servo flange

mounting adapter	part nr. 117667
screws and servo clamps	part nr. 117668

Type BMF clamping flange

mounting angle	part nr. 117698
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Programming cable (length 2 m)

with 9-pin D-Sub connector	part nr. 117666
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Programming software

for PC with RS-232-Interface and operating system from DOS 3.2	part nr. 117665
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