

Programmable switching cam encoders

BME/BMF

parallel

features

- switching cam encoders up to
 - 12 bit single-turn
 - 12 bit multi-turn
- 16 outputs with up to 250 cams programmable
- binary code
- programmable:
 - direction of rotation CW/CCW
 - output logic normal/inverted
 - zero and offset setting



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general data

voltage supply	10 - 30 VDC with reverse polarity protection
supply current no load	max. 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	±0,03° at 200 kHz ±0,05° at 400 kHz
max. switching frequency	400 kHz

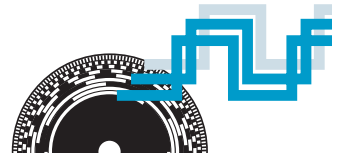
mechanical data

max. revolutions	mech. 10'000 rpm electr. 6'000 rpm
moment of inertia	$2 \times 10^{-6} \text{ kgm}^2$
torque	≤ 0,010 Nm (without sealing ring) ≤ 0,015 Nm (with sealing 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	-25...+70 °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 (≤ 2'000 m/s ² / 6 ms)
noise immunity	DIN EN 61000-6-2
emitted interference	DIN EN 61000-6-4

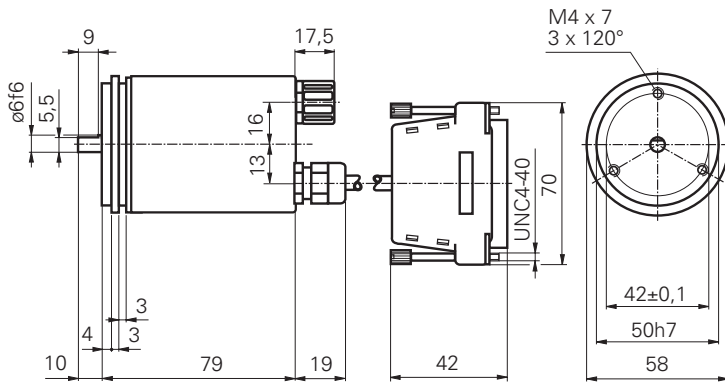
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dimensions and connection dimensions

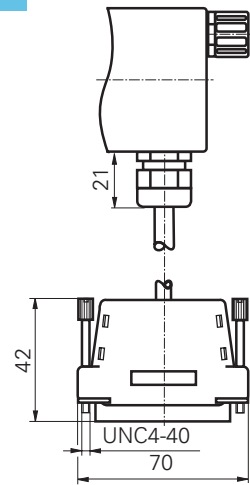
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-J



cable length 1 m

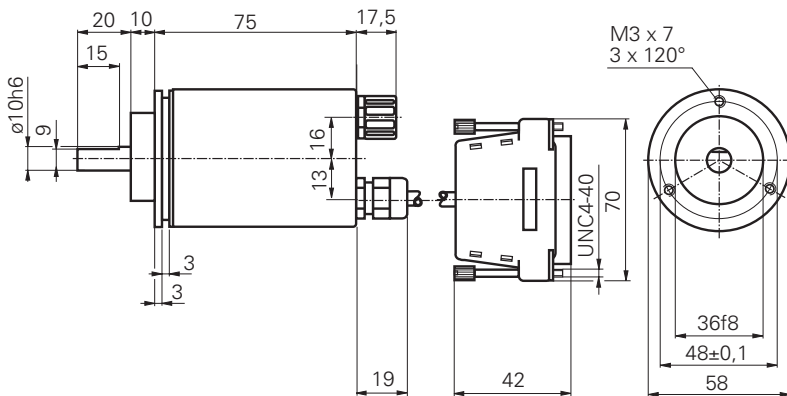
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cable length 1 m

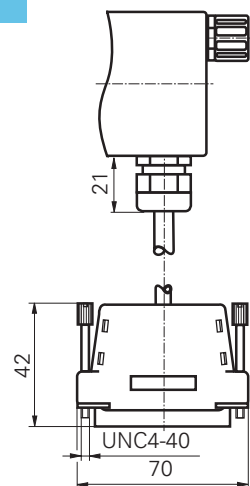
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cable length 1 m

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cable length 1 m

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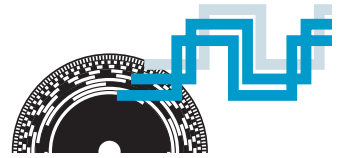
assignment

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.

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.
17 - 19	Outputs without function. They may not be assigned externally.
20 - 24	Special outputs
D19 - D23	These outputs may be assigned, at choice, to the functions preselection 1, preselection 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/R). Assign to GND for maximum interference immunity after zero setting. Pulse duration ≥ 100 ms.
28 $\overline{\text{ENABLE}}$	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).
30 F/R	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 counterclockwise 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 following 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	Voltage supply of encoder
37 GND	Ground contact of encoder with reference to +Vs.



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inputs

input voltage	(Vs = 10 - 30 VDC)
HIGH level	0,7 Vs up to Vs
LOW level	0 up to 0,3 Vs

Wiring:
inputs with 10 kΩ against Vs, except zero setting
input with 10 kΩ against GND.

outputs

HIGH (PNP) level	≥ +Vs - 4,5 V (bei I = -15 mA)
LOW (NPN) level	≤ 3,5 V (bei I = 15 mA)
HIGH (PNP) load	≤ -20 mA
LOW (NPN) load	≤ 20 mA
tristate	≤ 200 μA

All outputs with short-circuit protected PNP or NPN open collector (OC) output stages.

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

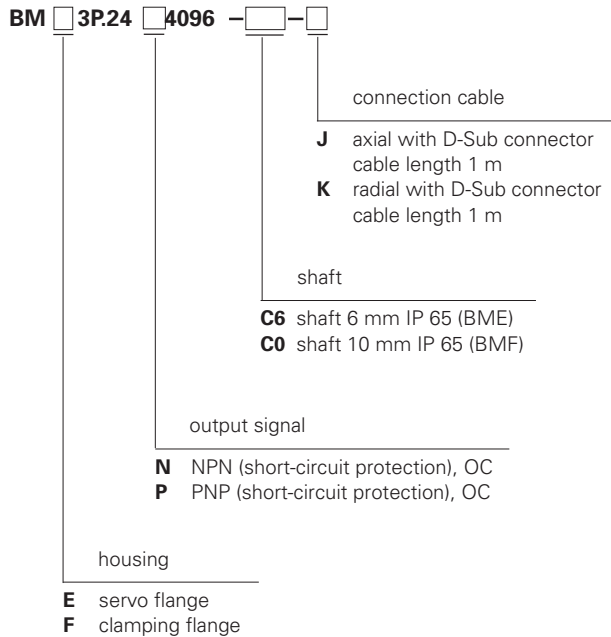
Order separately under chapter accessories if necessary.

assignment programming cable

encoder-function	5-Pol. enc. plug	cable color	PC connection 9 pin D-Sub	PC connection 25 pin 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	grey	pin 2	Pin 3
-	-	-	bridge 4 - 6	bridge 4 - 5
-	-	-	bridge 7 - 8	bridge 6 - 20

Also connect encoder via device plug to voltage (+Vs and GND).

order designation



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accessories

programming software incl. cable and manual	part nr. 117666
type BME servo flange	
mounting	part nr. 125051
screws and servo clamps	part nr. 117668
type BMF clamping flange	
mounting bracket	part nr. 117698