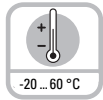


# Rotary Measuring Technology

## Absolute encoders, Singleturn

### Type 7031 with ATEX approval



Temperature



Shock/vibration resistant



Short-circuit proof



Reverse polarity protection

#### One type for every situation:

- **Version "flameproof-enclosure"**: approval zones 1, 2 and 21, 22
- **Zones 1, 2 and 21, 22:**  
Ex II 2G EEx d II C T6 and  
Ex II 2D IP6x T85°C
- **High resolution:**  
max. 5000 ppr.
- **Choice of construction:**  
Through hollow shaft or solid shaft up to max.  $\varnothing$  12 mm.



#### Compact:

- **Can be used even where space is tight:** installation depth only 94 mm, minimal clearance required - thanks to through hollow shaft

#### Safe:

- **Easy start-up**, short-circuit proof outputs, reverse polarity protection, over-voltage protection
- **No malfunction if voltage is too high**

#### Mechanical characteristics:

Speed:	max. 6000 min <sup>-1</sup>
Rotor moment of inertia:	approx. $8 \times 10^{-6}$ kgm <sup>2</sup>
Starting torque:	< 0.05 Nm
Radial load capacity of shaft*:	80 N
Axial load capacity of shaft*:	40 N
Weight:	approx. 0.9 kg
Protection acc. to EN 60 529:	IP 65
EX approval for hazardous areas:	optional zone 2 and 22
Working temperature:	-20° C ... +60 °C <sup>1)</sup>
Shaft:	stainless steel
Shock resistance acc. to DIN-IEC 68-2-27	1000 m/s <sup>2</sup> , 6 ms
Vibration resistance acc. to DIN-IEC 68-2-6:	100 m/s <sup>2</sup> , 10...2000 Hz

\*1) Shaft version: end of the shaft <sup>1)</sup> Non-condensing

### Type 7031 with ATEX approval

#### Electrical characteristics:

Interface type:	Synchronous Serial (SSI)	Synchronous Serial (SSI)	Parallel	Parallel
Supply voltage ( $U_B$ ):	5 V DC ( $\pm 5\%$ )	10 ... 30 V DC	5 V DC ( $\pm 5\%$ )	10 ... 30 V DC
Output driver:	RS 485	RS 485	Push-pull	Push-pull
Current consumption typ. (no load) max.:	89 mA 138 mA	89 mA 138 mA	109 mA 169 mA	109 mA 169 mA
Permissible load/channel max.:	+/- 20 mA	max. +/- 20 mA	max. +/- 10 mA	max. +/-10 mA
Word change frequency	max. 15.000/s	max.15.000/s	40.000/s	40.000/s
SSI pulse rate min./max.:	100 kHz/500 kHz	100 kHz/500 kHz	–	–
Signal level high:	type. 3.8 V	typ. 3.8 V	min. 3.4 V	min. $U_B - 2.8 V$
Signal level low				
	( $I_{Load} = 20 mA$ ):	typ. 1.3 V	typ. 1.3 V	–
	( $I_{Load} = 10 mA$ ):	–	–	max. 1.5 V
	( $I_{Load} = 1 mA$ ):	–	–	max. 0.3 V
Rise time $t_r$ (without cable):	max. 100 ns	max. 100 ns	max. 0.2 $\mu s$	max. 1 $\mu s$
Fall time $t_f$ (without cable):	max. 100 ns	max. 100 ns	max. 0.2 $\mu s$	max. 1 $\mu s$
Short circuit proof outputs: <sup>1)</sup>	yes	yes <sup>2)</sup>	yes	yes
Reverse connection protection at $U_B$ :	no	yes	no	yes
Conforms to CE requirements acc. to EN 61000-6-2, EN 61000-6-4 and EN 61000-6-3				

1) If supply voltage correctly applied

2) Only one channel allowed to be shorted-out:

(If  $U_B=5 V$ , short-circuit to channel, 0 V, or + $U_B$  is permitted)

(If  $U_B=5-30 V$ , short-circuit to channel or 0 V is permitted)

#### Electrical characteristics, current interface 4 ... 20 mA:

##### Sensor part

Interface type:	4 ... 20 mA	4 ... 20 mA
Supply voltage ( $U_B$ ):	10 ... 30 V DC	5 V DC
Current consumption typ.:	70 mA	70 mA
(no load) max.:	84 mA	84 mA
Word change frequency	max. 15.000/s	max. 15.000/s

##### Current loop

Supply voltage:	10 ... 30 V DC	10 ...30 V DC
Analogue signal	4 ... 20 mA	4 ... 20 mA
Max. input resistance of the input circuit:	200 $\Omega$	200 $\Omega$
Measuring range:	0 ... 360 °	0 ... 360 °
Max. failure (25 °C):	0.2 °	0.2 °
Resolution	13 Bit	13 Bit
Building up time:	max. 2 ms	max. 2 ms
Temperature coefficient 0,1°/10 K	0,1°/10 K	
Current if detector error:	$\leq 3 mA$	$\leq 3 mA$

Sensor and current loop are galvanically isolated

Conforms to CE requirements acc. to EN 61000-6-2, EN 61000-6-4 and EN 61000-6-3

#### Note:

All standards for installation of electrical systems in hazardous environments have to be observed.

Manipulations (opening, mechanical treatment etc.) will cause the loss of the EX- license,warranty claims will not be accepted and the installer will be responsible for any consequential damages.



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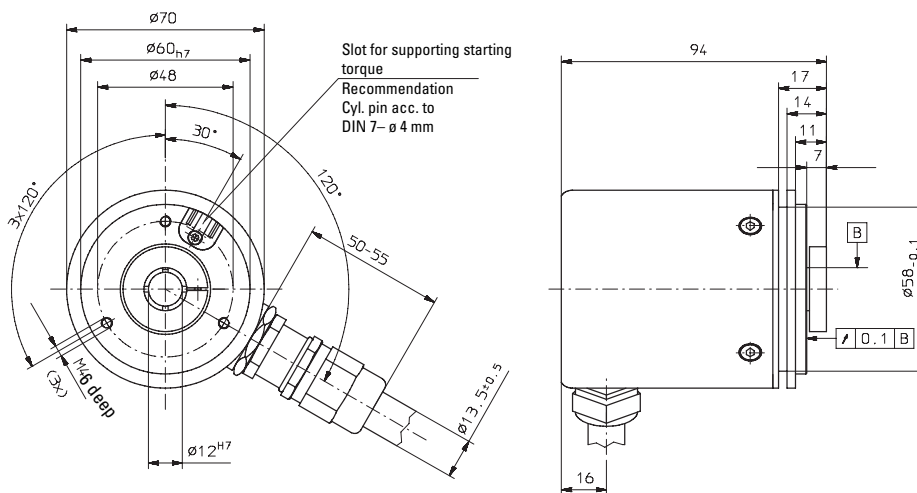
#### Terminal assignment (Current interface 4 ... 20 mA):

Sig.	0V	+UB	I+	I-	ST	VR		⏏
Col.:	WH	BN	GN	YE	GY	PK		PH

- +I: Input of the current loop
  - I: Output of the current loop
  - ST: SET input. The output current is set to 4 mA.
  - VR: Up/down input. As long as this input is active, decreasing current values are transmitted when shaft turning clockwise.
  - PH: Plug housing
- Isolate unused outputs before initial start-up.

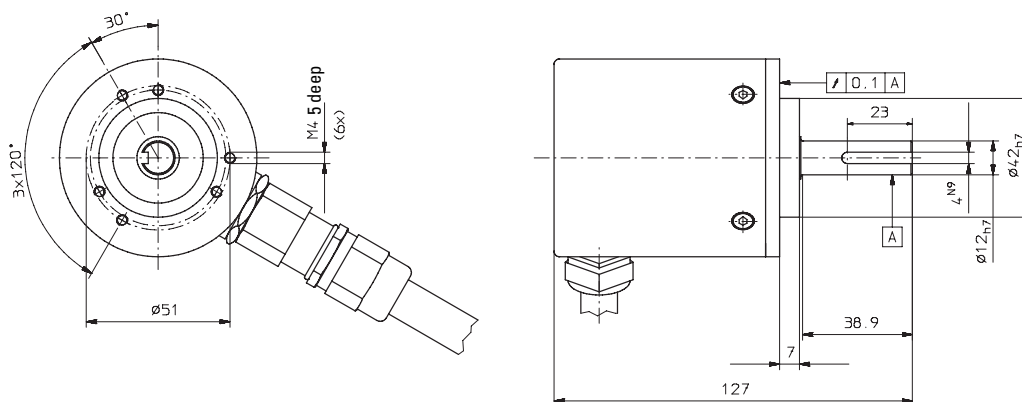
#### Dimensions hollow shaft version:

Synchronous flange with hollow shaft  $\varnothing 12$



#### Dimensions shaft version:

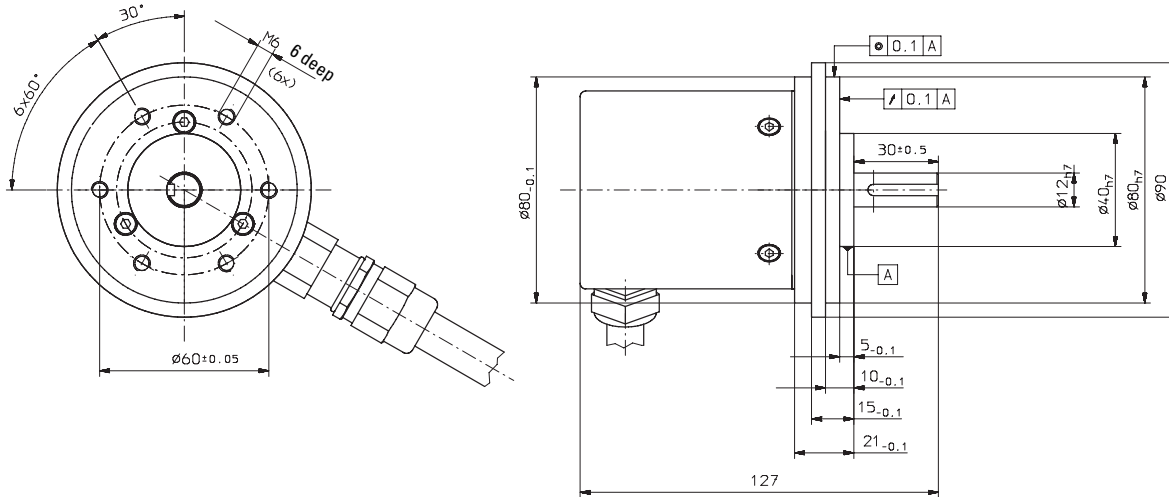
Clamping flange with shaft  $\varnothing 12$



### Type 7031 with ATEX approval

Dimensions shaft version:

Clamping flange with flange adapter and shaft  $\varnothing 12$



#### Code type and division

Interface and supply voltage, version 3 or 4:

Division	Order code	Order code	Order code
	Gray/Gray-Excess	Binary	BCD
250	E02	B02	D02
<b>360</b>	<b>E03</b>	<b>B03</b>	<b>D03</b>
500	E05	B05	D05
<b>720</b>	<b>E07</b>	<b>B07</b>	<b>D07</b>
900	E09	B09	D09
<b>1000</b>	<b>E01</b>	<b>B01</b>	<b>D01</b>
<b>1024</b> (10 Bit)	<b>G10</b>	<b>B10</b>	<b>D10</b>
1250	E12	BA2	DA2
1440	E14	BA1	DA1
1800	E18	B18	D18
2000	E20	B20	D20
2500	E25	B25	
2880	E28	B28	
<b>3600</b>	<b>E36</b>	<b>B36</b>	
4000	E40	B40	
<b>4096</b> (12 Bit)	<b>G12</b>	<b>B12</b>	
5000	E50	B50	
7200	E72	B72	
<b>8192</b> (13 Bit)	<b>G13</b>	<b>B13</b>	
<b>16384</b> (14 Bit)	<b>G14</b>	<b>B14</b>	

Preferred divisions are indicated in bold

#### Code type and division for encoder with SSI-output

Interface and supply voltage, version 1 or 2:

Division	Order code	Order code
	Gray	Binary
1024 (10 Bit)	G10	B10
4096 (12 Bit)	G12	B12
8192 (13 Bit)	G13	B13
16384 (14 Bit)	G14	B14

#### Code type and division for encoder with analogue output

Interface and supply voltage, version 7 or 8:

8192 (13 Bit)	G13
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### Type 7031 with ATEX approval

Order code:

8.7031.XXXX.XXXX

Type

Flange and hollow shaft/shaft  
 14 = Synchronous flange with hollow shaft ø 12 mm  
**25 = Clamping flange with shaft ø 12 mm**  
 26 = Clamping flange with shaft ø 12 mm and mounted flange adapter

Interface and supply voltage  
 1 = SSI with 5 V supply voltage  
**2 = SSI with 10 ... 30 V supply voltage**  
 3 = Parallel with 5 V supply voltage  
**4 = Parallel with 10 ... 30 V supply voltage**  
 7 = 4 ... 20 mA with 5 V supply voltage  
**8 = 4 ... 20 mA with 10 ... 30 V supply voltage**

Options  
**2 = SET<sup>1)</sup> and V/R**  
 3<sup>2)</sup> = SET and Latch<sup>1)</sup>  
 4<sup>2)</sup> = V/R <sup>1)</sup> and Latch  
 Alarm output on request  
<sup>1)</sup> With 14 bits parallel output  
<sup>2)</sup> Not with SSI or current interface

Type of code and division  
 Gray/Binary  
 250, 360<sup>1)</sup>, 500, 720<sup>1)</sup>, 900, 1000<sup>1)</sup>, 1024 (10 Bit)<sup>1)</sup>, 1250, 1440, 1800, 2000, 2500, 2880, 3600<sup>1)</sup>, 4000, 4096 (12 Bit)<sup>1)</sup>, 5000, 7200, 8192 (13 Bit)<sup>1)</sup>, 16384 (14 Bit)<sup>1)</sup>  
 BCD  
 250, 360<sup>1)</sup>, 500, 720<sup>1)</sup>, 900, 1000<sup>1)</sup>, 1024 (10 Bit)<sup>1)</sup>, 1250, 1440, 1800, 2000  
 Others on request  
<sup>1)</sup> Preferred divisions use corresponding table

Type of connection  
**2 = radial cable (2 m PVC-Cable)**  
 other cable lengths on request

*Preferred types are indicated in bold*