

### Universal Type 5020



- $\varnothing$  2 inch/50.8 mm, industrial standard
- Only 44 mm clearance needed
- Very easy mounting. The encoder is mounted directly on the drive shaft without couplings. This saves up to 30 % cost and 60 % clearance compared to shaft versions.
- Many variations
- Temperature and ageing compensation
- Short-circuit proof outputs
- Reverse connection protection for voltage supply
- RS 422 or Push-pull
- Resolution up to 3600 ppr
- Protection IP 65 or IP 67

#### Mechanical characteristics:

Speed without shaft sealing <sup>1)</sup> :	max. 12000 min <sup>-1</sup>
Speed with shaft sealing <sup>1)</sup> :	max. 6000 min <sup>-1</sup>
Rotor moment of inertia:	appr. $6 \times 10^{-6}$ kgm <sup>2</sup>
Starting torque without shaft sealing:	< 0,01 Nm
Starting torque with shaft sealing:	< 0,05 Nm
Weight:	appr. 0,4 kg
Protection acc. to EN 60 529 without sealing:	IP 65
Protection acc. to EN 60 529 with sealing:	IP 67
Working temperature:	-30° C ... +85 °C
Hollow shaft:	stainless steel, H7
Shock resistance acc. to DIN-IEC 68-2-27:	2500 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

<sup>1)</sup>for continuous operating max. 3000 min<sup>-1</sup>

#### Pulse rates available at short notice:

100, 200, 256, **360**, 500, **512**, 800, **1000**, **1024**, 1200, 2000, **2048**, **2500**, **3600**

Other pulse rates on request

#### Electrical characteristics RS422 or Push-pull:

Output circuit:	RS 422 (TTL compatible)	RS 422 (TTL compatible)	OpenCollector (7273)	Push-pull (7272)
Supply voltage:	5 ... 30 V DC	5 V $\pm$ 5%	5 ... 30 V DC	5 ... 30 V DC
Power consumption (no load) with inverted signal:	typ. 40 mA / max. 90 mA	typ. 40 mA max. 90 mA	typ. 50 mA/ max. 100 mA	typ. 50 mA max. 100 mA
Permissible load/channel:	max. $\pm$ 20 mA	max. $\pm$ 20 mA	max. $\pm$ 20 mA	max. $\pm$ 20 mA
Pulse frequency:	max. 300 kHz	max. 300 kHz	max. 300 kHz <sup>5)</sup>	max. 300 kHz <sup>3)</sup>
Signal level high:	min. 2,5 V	min. 2,5 V	- <sup>4)</sup>	min. UB-2,0 V
Signal level low:	max. 0,5 V	max. 0,5 V	max. 0,5 V <sup>4)</sup>	max. 0,5 V
Rise time $t_r$	max. 200 ns	max. 200 ns	max. 1 $\mu$ s <sup>5)</sup>	max. 1 $\mu$ s
Fall time $t_f$	max. 200 ns	max. 200 ns	max. 1 $\mu$ s <sup>5)</sup>	max. 1 $\mu$ s
Short circuit proof outputs <sup>1)</sup> :	yes <sup>2)</sup>	yes <sup>2)</sup>	yes	yes
Reverse connection protection at U <sub>B</sub> :	yes	no	no	no
Conforms to CE requirements acc. to DIN-IEC 68-2-27, DIN-IEC 68-2-6, EN 60 529, EN 61 000-6-2, EN 61 000-6-3, EN 61000-6-4				

1) When supply voltage correctly applied

2) Only one channel at a time:

(when UB=5 V short-circuit to channel, 0 V, or +UB is permitted.)  
(when UB=5-30 V short-circuit to channel or 0 V is permitted.)

3) cable length up to 30 m

4) depends on pull-down resistor

5) depends on pull-down resistor and cable length

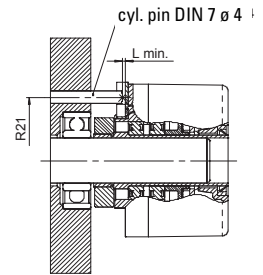
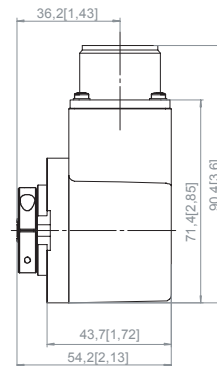
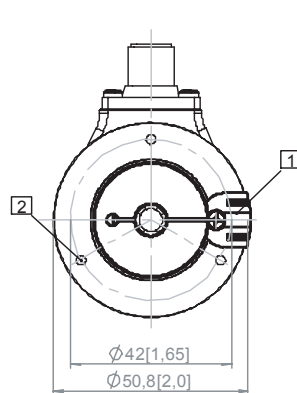
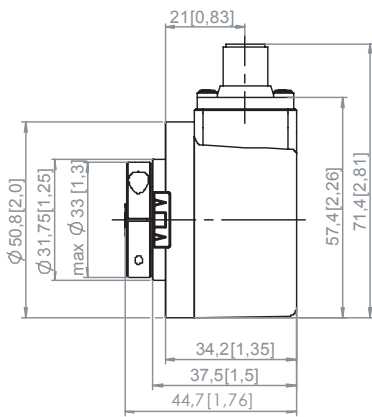
# Rotary Measuring Technology

## Incremental hollow shaft encoder

### Universal Type 5020

Dimension:

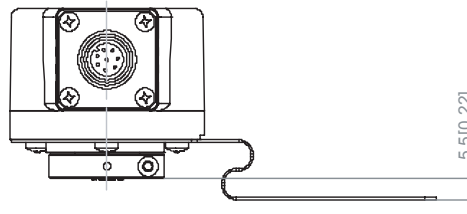
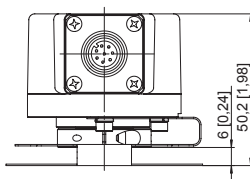
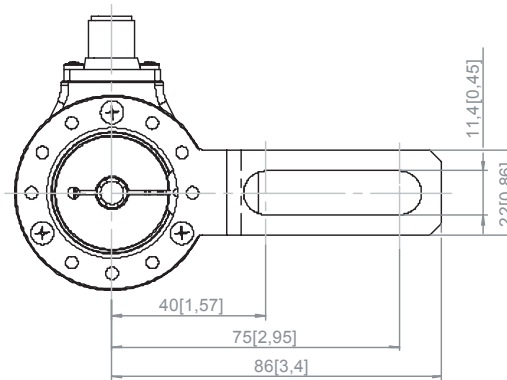
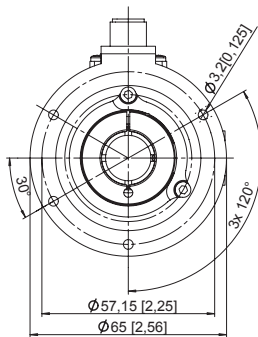
Flange type 1, 2, 3



- 1 Torque stop slot  
Recommendation:  
feather arm Order no T.051.672
- 2 M3 6 deep [0,24] deep

with stator coupling type 6

with feather arm, type 4



#### Mounting advice:

Do not connect encoder and drive rigidly to one another at shafts and flanges!

To mount a hollow shaft encoder, we recommend to use a torque stop pin that fits into the torque stop slot or a stator coupling.

When mounting the encoder ensure that  $L_{min}$  is greater than the axial play of the drive.

#### Max. permissible drive shaft impact

(measuring error  $\leq 0,5$  bit)

Pulse:	Permissible radial impact
up to 1000:	$\pm 0,066$ mm
up to 2500:	$\pm 0,026$ mm
up to 3600:	$\pm 0,017$ mm

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#### Terminal assignment:

Signal:	0 V GND	+U <sub>B</sub>	0 V Sens	+U <sub>b</sub> Sens	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$	Shield
M23, 12 pin connector, Pin:	10	12	11	2	5	6	8	1	3	4	1)
M12, 8 pin connector, Pin:	1	2				3	4	5	6	7	8 1)
Military, 10 pin connector, Pin:	F	D		E	A	G	B	H	C	I	J <sup>1)</sup>
Military, 7 pin connector, Pin:	F	D		E	A	–	B	–	C	–	G <sup>1)</sup>
Military, 6 pin connector, Pin:	A	B			E	–	D	–	C	–	1)
Cable colour:	WH	BN	GY PK	RD BU	GN	YE	GY	PK	BU	RD	Shield

1)Shield is attached to connector housing

Insulate unused outputs before initial startup

#### Top view of mating side, male contact base:

Typ	8 pin M12 connector	12 pin M23 connector	MIL connector 6 pin	7 pin	10 pin
Skizze					
Order code:	8.5000.XXX3.XXXX 8.5000.XXX4.XXXX	8.5000.XXX7.XXXX 8.5000.XXX8.XXXX	8.5000.XXX9.XXXX	8.5000.XXXW.XXXX	8.5000.XXXY.XXXX
Corresponding mating connectorr:	connector straight, right angele plug Cable and pre- assembled connector/ coupling combinations see catalogue sensor technology	8.000.5012.0000	–	8.4000.5052.0000	8.0000.5062.0000

### Universal Type 5020

Order code:

8.5020.XXXX.XXXX

Range

Flange

- 1 = Flange with through shaft IP 67
- 2 = Flange with through shaft IP 65**
- 3 = Flange with through shaft IP 67 and fixing element
- 4 = Flange with through shaft IP 65 and feather element
- 5 = Flange with through shaft IP 67 and torque support TK ø 57,15
- 6 = Flange with through shaft IP 65 and stator coupling TK ø 57,15**

Shaft

- 1 = ø 6 mm
- 2 = ø 1/4 inch
- 3 = ø 10 mm**
- 4 = ø 3/8 inch
- 5 = ø 12 mm**
- 6 = ø 1/2 inch
- 7 = ø 5/8 inch
- 8 = ø 15 mm**

Pulse rate  
(z.B. 100 Impulse => 0100)

Type of connection

- 1 = Cable radial (1 m PVC-cable)**
- 2 = 8 pin M12 plug radial without mating connector**
- 4 = 12 pin M23 plug radial without mating connector**
- 5 = 6 pin MIL.-specified radial
- 6 = 7 pin MIL.-specified radial
- 7 = 10 pin MIL.-specified radial

Output circuit and supply voltage

- 1 = RS 422 (with inverted signal)  
5 ... 30 V supply voltage
- 2 = Push-pull (7272, with inverted signal) 10 ... 30 V supply voltage**
- 3 = OpenCollector  
(7273, with inverted signal)  
5 ... 30 V supply voltage
- 4 = RS 422 (with inverted signal)  
5 V supply voltage**