

# Rotary Measuring Technology

## Incremental hollow shaft encoder

### Sendix Incremental, 5020

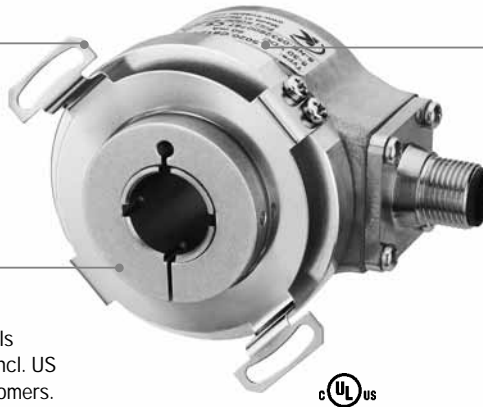
- Universal industrial encoder family on a new technology platform  
Compatible with standard 58mm size encoders.
- Incremental, up to 3600 ppr., Short circuit proof outputs, High scanning rate
- Explosion-proof models also available for Zones 2 and 22

#### Compact and cost-saving:

- Housing 50 mm dia., mounting depth only 37.5 mm
- up to 15.87 mm hollow shaft with stable bearings ensure a long service life (no thin ring bearings). Saves on costs where larger encoders would otherwise be necessary.

#### Flexible in use:

- Many connection options incl. M12 connector
- 5 ... 30 VDC power supply reduces number of models
- Compatible with many global industrial standards incl. US versions. Simplified usage for export-oriented customers. UL approval



#### Tough:

- New, particularly sturdy bearing construction (Safety lock™ Design) protects the encoder from damage caused by too high an axial shaft loading during installation, by rough treatment from vibration and temperature changes during continuous operation.
- Temperature range -40 ... +85 °C, with IP 67 protection rating, permits use in all areas of industry.
- Solid, die-cast housing; metal disc with up to 1024 ppr.

#### Mechanical characteristics:

Speed IP 65 <sup>1)</sup> :	max. 12000 min <sup>-1</sup>
Speed IP 67 <sup>2)</sup> :	max. 6000 min <sup>-1</sup>
Rotor moment of inertia:	appr. 6 x 10 <sup>-6</sup> kgm <sup>2</sup>
Starting torque	< 0,01 Nm, IP 65
Starting torque	< 0,05 Nm, IP 67
Weight:	appr. 0,4 kg
Protection acc. to EN 60 529 without shaft sealing:	IP 65
Protection acc. to EN 60 529 with shaft sealing:	IP 67
Working temperature:	-40° C <sup>3)</sup> ... +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

1) for continuous operation max. 6000 min<sup>-1</sup>  
2) for continuous operation max. 3000 min<sup>-1</sup>

3) with connector: -40 °C,  
cable fixed: -30 °C, cable moved: -20 °C

#### Pulse rates available at short notice:

1, 5, 10, 12, 36, 50, 60, **100, 200**, 250, 256, **360**,  
400, **500**, 512, 600, 800, **1000, 1024**, 1200,  
2000, 2048, **2500, 3600**

Other pulse rates on request

#### Electrical characteristics:

Output circuit:	RS 422 (TTL compatible)	RS 422 (TTL compatible)	Push-Pull	Push-Pull (7272)
Supply voltage:	5 ... 30 V DC	5 V ±5%	10 ... 30 V DC	5 ... 30 V DC
Power consumption (no load):	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. ±20 mA	max. ±20 mA	max. ±30 mA	max. ±20 mA
Pulse frequency:	max. 300 kHz	max. 300 kHz	max. 300 kHz	max. 300 kHz <sup>3)</sup>
Signal level high:	min. 2,5 V	min. 2,5 V	min. UB - 1V	min. UB-2,0 V
Signal level low:	max. 0,5 V	max. 0,5 V	max. 0,5 V	max. 0,5 V
Rise time t <sub>r</sub>	max. 200 ns	max. 200 ns	max. 1 µs	max. 1 µs
Fall time t <sub>f</sub>	max. 200 ns	max. 200 ns	max. 1 µs	max. 1 µs
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	Yes	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.)

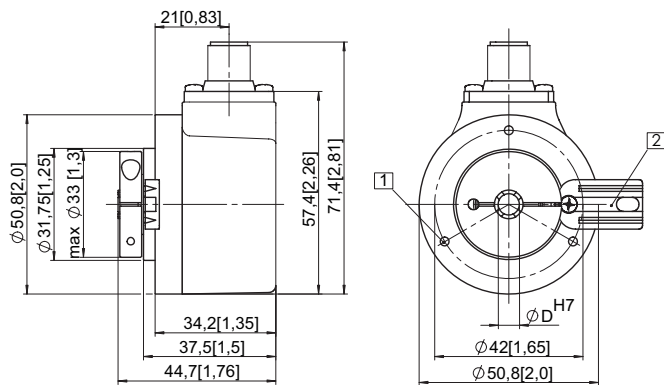
3) cable length up to 30 m

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#### Dimensions:

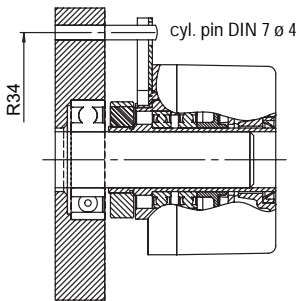
#### Flange with long torque stop

ø 50,8 mm [2 inch]  
 M12, M23 connectors and cable versions  
 (Flange type 1 and 2)



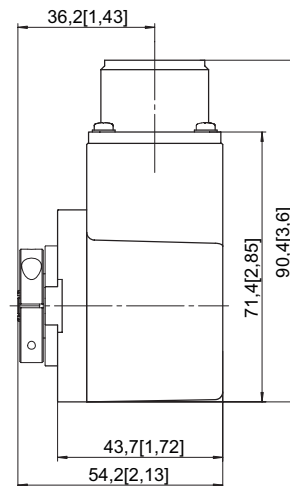
- 1 M3, 6 [0,24] deep
  - 2 Torque stop slot
- Recommendation: cyl. pin acc. DIN 7 ø 4

#### Mounting note:



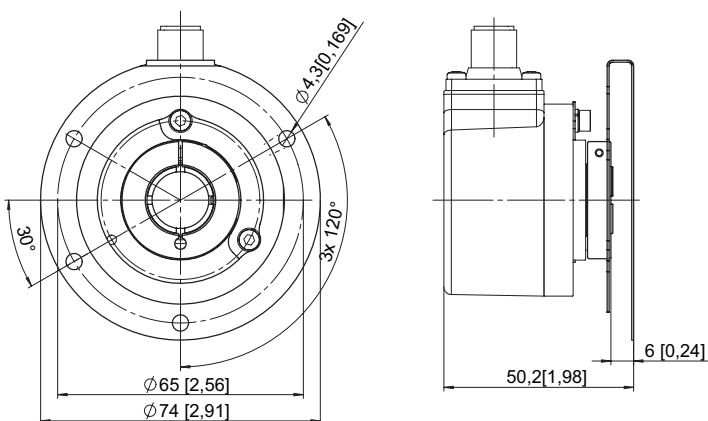
#### Flange with long torque stop

ø 50,8 mm [2 inch]  
 MIL-connector version



#### Flange with stator coupling

Pitch circle 65 mm  
 (Flange type 7 and 8)

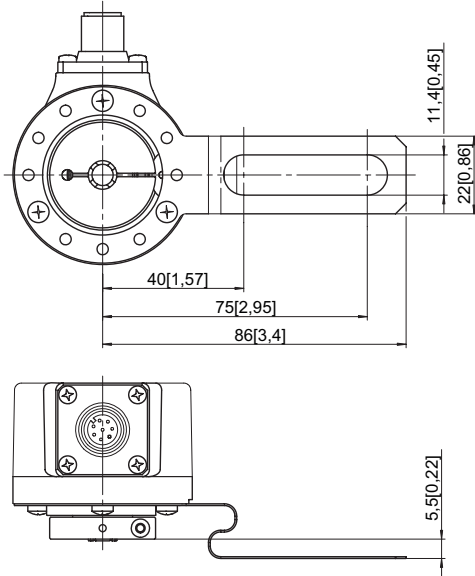


### Sendix Incremental, 5020

Dimensions:

#### Flange with tether arm

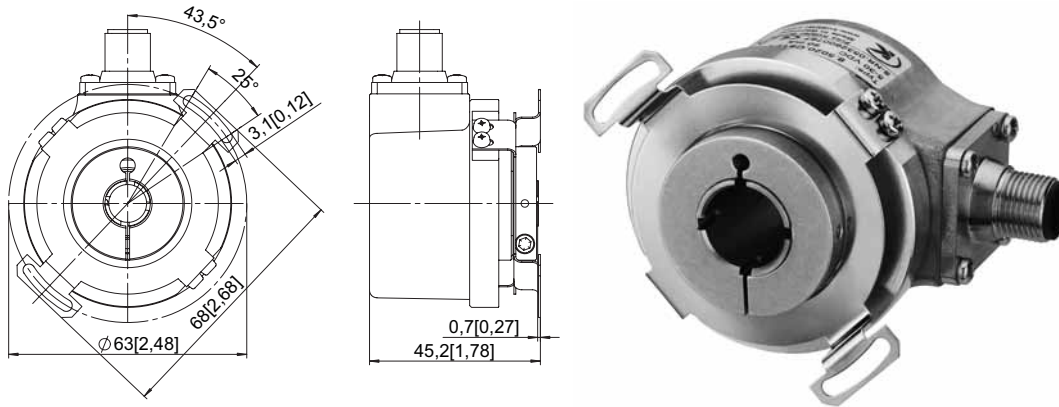
(Flange type 3 and 4)



#### Flange with stator coupling

pitch circle  $\varnothing$  63 mm

(Flange type C and D)



#### Mounting advice:

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

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

#### 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	- <sup>1)</sup>
M12, 8 pin connector, Pin:	1	2			3	4	5	6	7	8	- <sup>1)</sup>
MIL (MS styled), 10 pin con. Pin:	F	D		E	A	G	B	H	C	I	J <sup>1)</sup>
MIL (MS styled), 7pin con. Pin:	F	D		E	A	-	B	-	C	-	G <sup>1)</sup>
Cable colour:	WH	BN	GY PK	RD BU	GN	YE	GY	PK	BU	RD	Shield

<sup>1)</sup>shield is attached to connector housing

Isolate unused outputs before Initial startup

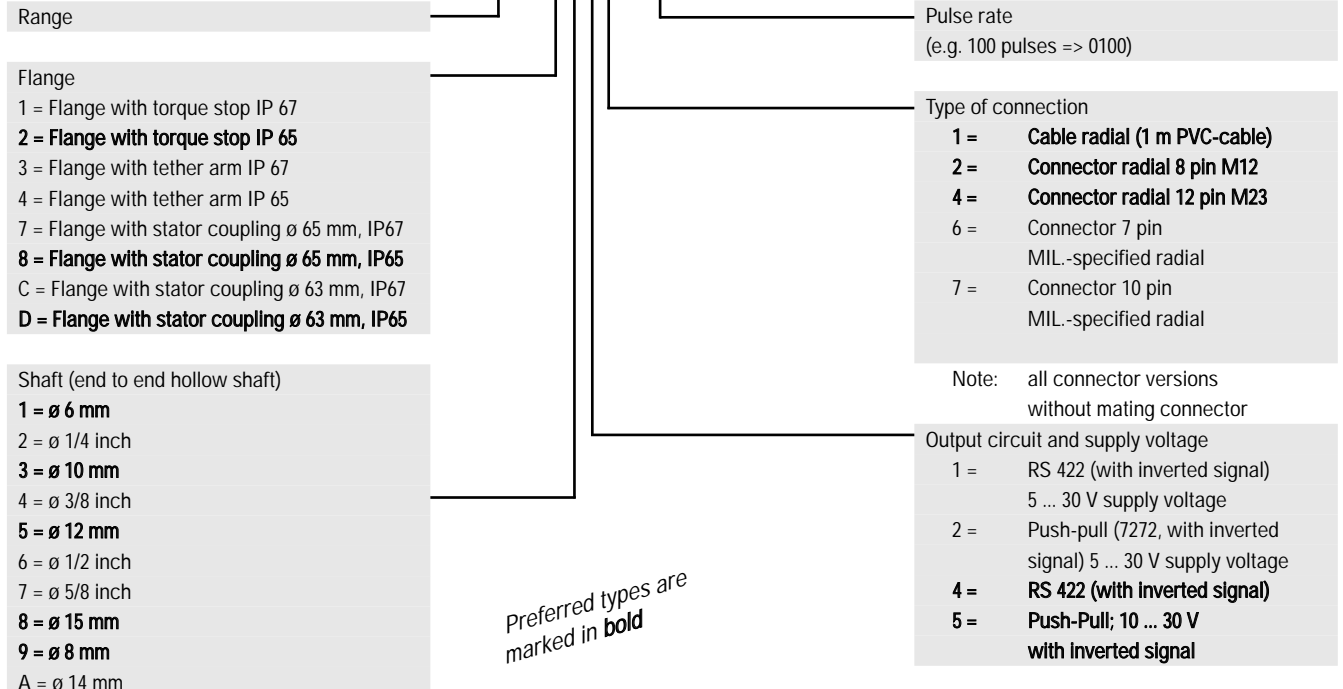
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Top view of mating side, male contact base:

Type	8 pin M12 connector	12 pin M23 connector	MIL connector 7 pin	10 pin
View				
Order code:	8.5020.XXX2.XXXX	8.5020.XXX4.XXXX	8.5020.XXX6.XXXX	8.5020.XXX7.XXXX
Corresponding mating connector:	05.CMB.8181-0	8.0000.5012.0000	8.4000.5052.0000	8.0000.5062.0000

Order code:

**8.5020.XXXX.XXXX**



#### Accessories:

Cables and connectors see chapter Connection Technology in catalogue Sensor Technology

Corresponding mating connector:  
 M12: 05.CMB.8181-0  
 M23: 8.0000.5012.0000  
 MIL-connector  
 7-pin: 8.4000.5052.0000  
 10-pin: 8.0000.5062.0000