

Absolute encoders - singleturn

Compact magnetic

Sendix 3651 / 3671 (shaft / hollow shaft)

Analog

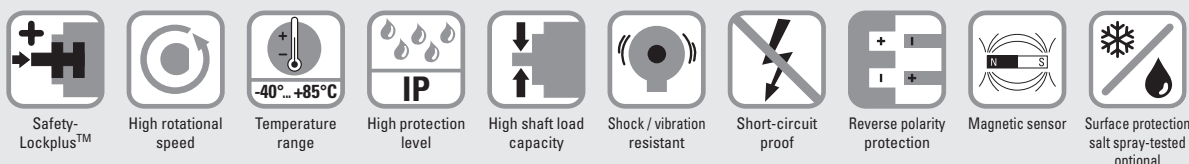


Thanks to their different interfaces and measurement ranges, the Sendix 3651 and Sendix 3671 singleturn encoders with analog interface, in shaft and hollow shaft versions, are particularly flexible in use. A green and a red LED, acting as reference point and fault indicators, ensure easy installation and troubleshooting.

Protected up to IP69k, resistance against shock and extreme temperature fluctuations, the Sendix are suitable even for demanding outdoor applications.

These encoders have an e1-approval from the German Federal Motor Transport Authority.

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Safe operation

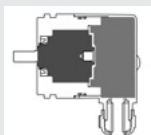
- Non-contact measuring system for long-life non-wear applications.
- Rugged die-cast-housing and protection up to IP69k for an exceptional tightness.
- High shock and vibration resistance for an exceptional robustness.

Compact and powerful

- Outer diameter of only 36 mm.
- The hollow shaft version is fitted with a blind hole with a diameter of up to 10 mm. It can be mounted as required with either a torque stop pin or a stator coupling.
- 360° with 12 bit resolution (4096 positions).
- For use in 12 V or 24 V vehicle electrical systems.

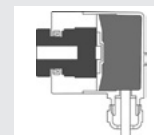
Safety-Lockplus™

IP69k protection on the flange side, robust bearing assemblies with interlocking bearings, mechanically protected shaft seal.



Sensor-Protect™

Fully encapsulated electronics, separate mechanical bearing assembly.



Order code

Shaft version

8.3651 . **2XXXX** . **XXXXX**
Type a b c d e f g h

a Flange

2 = synchro flange, ø 36 mm [1.42"]

b Shaft (ø x L), with flat

3 = ø 6 x 12.5 mm [0.24 x 0.49"]
6 = ø 8 x 12.5 mm [0.32 x 0.49"]
5 = ø 1/4" x 12.5 mm [0.49"]

c Output circuit ¹⁾

3 = current output
4 = voltage output

d Type of connection

1 = axial cable, 1 m [3.28'] PUR
A = axial cable, special length PUR *)
2 = radial cable, 1 m [3.28'] PUR
B = radial cable, special length PUR *)
3 = axial M12 connector, 5-pin
4 = radial M12 connector, 5-pin

*) Available special lengths (connection types A, B):
2, 3, 5, 8, 10, 15 m [6.56, 9.84, 16.40, 26.25, 32.80, 49.21']
order code expansion .XXXX = length in dm
ex.: 8.3651.233A.1311.0030 (for cable length 3 m)

e Measuring range

1 = 1 x 360°
2 = 1 x 180°
3 = 1 x 90°
4 = 1 x 45°

f Interface / power supply

3 = 4 ... 20 mA / 10 ... 30 V DC
4 = 0 ... 10 V / 15 ... 30 V DC
5 = 0 ... 5 V / 10 ... 30 V DC

g Option 1

1 = count direction cw ²⁾
2 = count direction ccw ³⁾

h Option 2

1 = IP67
2 = IP69k

Optional on request

- Ex 2/22 (only for type of connection 3 + 4)
- surface protection salt spray tested

1) Output circuit "3" only in conjunction with interface "3", output circuit "4" only in conjunction with interface "4" or "5".

2) cw = Increasing code values when shaft turning clockwise (cw). Top view on shaft.

3) ccw = Increasing code values when shaft turning counterclockwise (ccw). Top view on shaft.

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Order code	8.3671	.XXXX.XXXX
Hollow shaft	Type	a b c d e f g h
a Flange	2 = with spring element, long 5 = with stator coupling, ø 46 mm [1.81"]	
b Blind hollow shaft	(insertion depth max. 18 mm [0.71"]) 2 = ø 6 mm [0.24"] 4 = ø 8 mm [0.32"] 6 = ø 10 mm [0.39"] 3 = ø 1/4"	
c Output circuit ¹⁾	3 = current output 4 = voltage output	
d Type of connection	1 = axial cable, 1 m [3.28'] PUR A = axial cable, special length PUR *) 2 = radial cable, 1 m [3.28'] PUR B = radial cable, special length PUR *) 3 = axial M12 connector, 5-pin 4 = radial M12 connector, 5-pin *) Available special lengths (connection types A, B): 2, 3, 5, 8, 10, 15 m [6.56, 9.84, 16.40, 26.25, 32.80, 49.21'] order code expansion .XXXX = length in dm ex.: 8.3671.523A.1311.0030 (for cable length 3 m)	
e Measuring range	1 = 1 x 360° 2 = 1 x 180° 3 = 1 x 90° 4 = 1 x 45°	
f Interface / power supply	3 = 4 ... 20 mA / 10 ... 30 V DC 4 = 0 ... 10 V / 15 ... 30 V DC 5 = 0 ... 5 V / 10 ... 30 V DC	
g Option 1	1 = count direction cw ²⁾ 2 = count direction ccw ³⁾	
h Option 2	1 = IP67 2 = IP69k	
Optional on request - Ex 2/22 (only for type of connection 3 + 4) - surface protection salt spray tested		

Mounting accessory for shaft encoders		Order no.
Coupling	bellows coupling ø 19 mm [0.75"] for shaft 6 mm [0.24"]	8.0000.1102.0606
Mounting accessory for hollow shaft encoders		Order no.
Cylindrical pin, long	with fixing thread	8.0010.4700.0000
for flange with spring element (flange type 2)		
Connection technology		Order no.
Cordset, pre-assembled	M12 female connector with coupling nut, 5-pin 2 m [6.56'] PVC cable	05.00.6081.2211.002M
Connector, self-assembly (straight)	M12 female connector with coupling nut, 5-pin	8.0000.5116.0000

Further accessories can be found in the accessories section or in the accessories area of our website at: www.kuebler.com/accessories.
Additional connectors can be found in the connection technology section or in the connection technology area of our website at: www.kuebler.com/connection_technology.

Technical data	
Mechanical characteristics	
Maximum speed	6000 min ⁻¹
Starting torque at 20°C [68°F]	< 0.06 Nm
Shaft load capacity	radial 40 N axial 20 N
Weight	approx. 0.2 kg [7.06 oz]
Protection acc. to EN 60529	IP67 / IP69k
Working temperature range	-40°C ... +85°C [-40°F ... +185°F]
Materials	shaft / hollow shaft stainless steel flange aluminum housing zinc die-cast cable PUR
General electrical characteristics	
Shock resistance acc. to EN 60068-2-27	5000 m/s ² , 6 ms
Vibration resistance acc. to EN 60068-2-6	300 m/s ² , 10 ... 2000 Hz
Permanent shock resistance acc. to EN 60068-2-27	1000 m/s ² , 2 ms
Vibration (broad-band random) acc. to EN 60068-2-64	5 ... 2500 Hz, 100 m/s ² - rms
e1 compliant acc. to	EU guideline 2009/19/EC (acc. to EN 55025, ISO 11452 and ISO 7637)
CE compliant acc. to	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU

1) Output circuit "3" only in conjunction with interface "3",
output circuit "4" only in conjunction with interface "4" or "5".

2) cw = increasing code values when shaft turning clockwise (cw). Top view on shaft.
3) ccw = increasing code values when shaft turning counterclockwise (ccw). Top view on shaft.

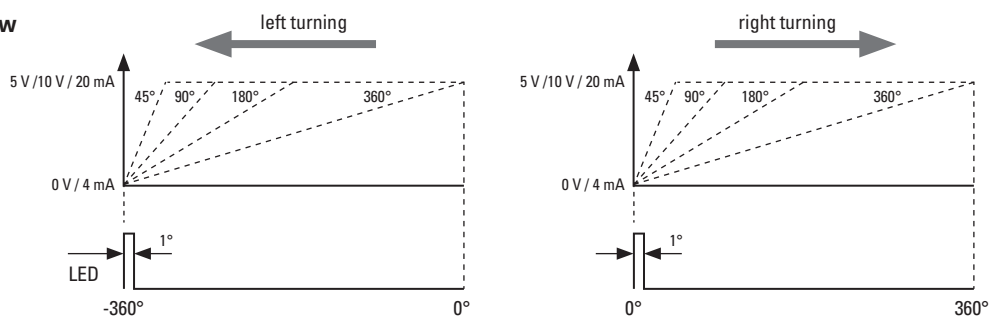
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Electrical characteristics current interface 4 ... 20 mA					
Sensor					
Power supply		10 ... 30 V DC			
Current consumption (no load)		max. 38 mA			
Reverse polarity protection of the power supply		yes			
Measuring range		45°, 90°, 180° or 360°			
Resolution		12 bit			
Absolute accuracy, 25°C [77°F]		±1°			
Repeat accuracy, 25°C [77°F]		±0.2°			
Status LED		red	break in current loop, input load too high.		
		green	reference point display turns ON		
			at cw:	betw. 0° and 1°	
			at ccw:	betw. 0° and -1°	
Current loop					
Output load		max. 200 Ohm at 10 V DC max. 900 Ohm at 24 V DC			
Setting time		< 1 ms R _{load} = 400 Ohm, 25°C [77°F]			
Short-circuit proof outputs					
When the power supply is correctly applied. But not output to +V. Power supply and sensor output signal are not galvanically isolated.					
Electrical characteristics voltage interface					
Sensor					
Power supply		output 0 ... 5 V	10 ... 30 V DC		
		output 0 ... 10 V	15 ... 30 V DC		
Current consumption (no load)		max. 35 mA			
Reverse polarity protection of the power supply		yes			
Measuring range		45°, 90°, 180° or 360°			
Resolution		12 bit			
Linearity, 25°C [77°F]		± 1°			
Repeat accuracy, 25°C [77°F]		± 0.2°			
Voltage output					
Current output		max. 10 mA			
Setting time		< 1 ms R _{load} ≥ 1 KOhm, 25°C [77°F]			
Short-circuit proof outputs					
When the power supply is correctly applied. But not output to +V. Power supply and sensor output signal are not galvanically isolated.					
Status LED (green)					
Status LED		green	reference point display turns ON		
			at cw:	betw. 0° and 1°	
			at ccw:	betw. 0° and -1°	

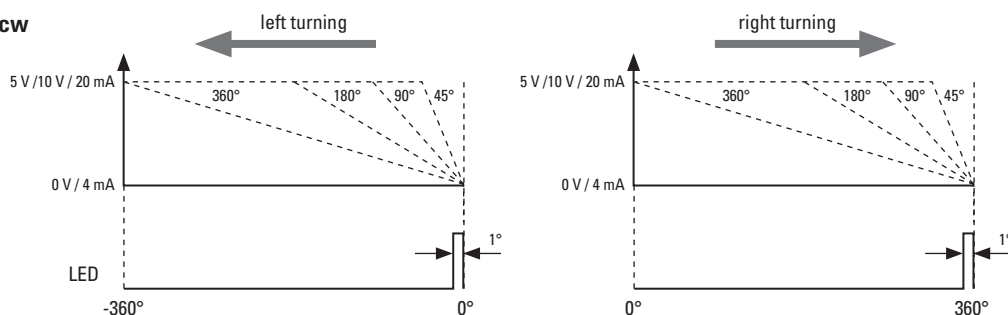
Example (output signal profile)

Measurement range 45° / 90° / 180° / 360°

Version cw



Version ccw



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Terminal assignment

Interface	Type of connection	Cable (isolate unused wires individually before initial start-up)				
3 (current)	1, 2, A, B	Signal:	0 V	+V	+I	-I
		Core color:	WH	BN	GN	YE

Interface	Type of connection	M12 connector, 5-pin				
3 (current)	3, 4	Signal:	0 V	+V	+I	-I
		Pin:	3	2	4	5

Interface	Type of connection	Cable (isolate unused wires individually before initial start-up)				
4, 5 (voltage)	1, 2, A, B	Signal:	0 V	+V	+U	-U
		Core color:	WH	BN	GN	YE

Interface	Type of connection	M12 connector, 5-pin				
4, 5 (voltage)	3, 4	Signal:	0 V	+V	+U	-U
		Pin:	3	2	4	5

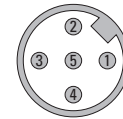
+V : Encoder power supply +V DC

0 V : Encoder power supply ground GND (0 V)

+U / -U : Voltage + / voltage -

+I / -I : Current + / current -

Top view of mating side, male contact base



M12 connector, 5-pin

Dimensions shaft version

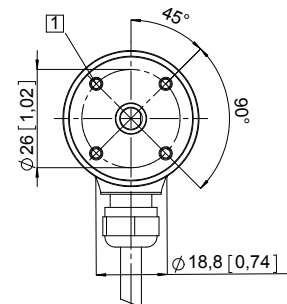
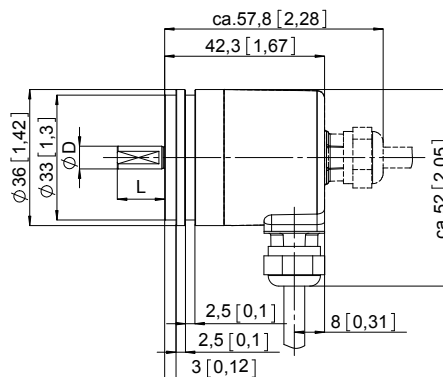
Dimensions in mm [inch]

Synchro flange, ø 36 [1.42]

Flange type 2

(drawing with cable)

1 4 x M3, 6 [0.24] deep



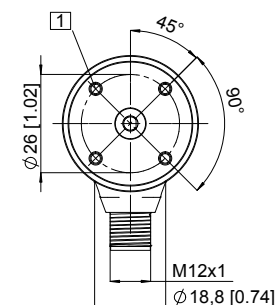
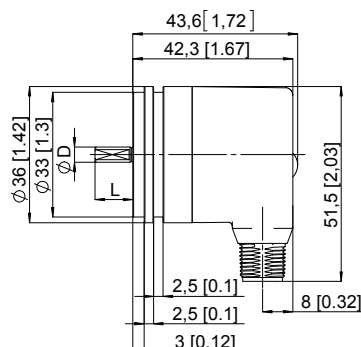
D	Fit	L
6 [0.24]	h7	12.5 [0.49]
8 [0.32]	h7	12.5 [0.49]
1/4"	h7	12.5 [0.49]

Synchro flange, ø 36 [1.42]

Flange type 2

(drawing with M12 connector)

1 4 x M3, 6 [0.24] deep



D	Fit	L
6 [0.24]	h7	12.5 [0.49]
8 [0.32]	h7	12.5 [0.49]
1/4"	h7	12.5 [0.49]

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Dimensions hollow shaft version

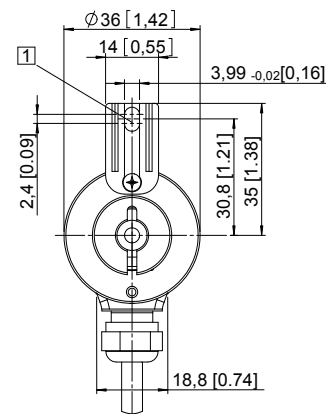
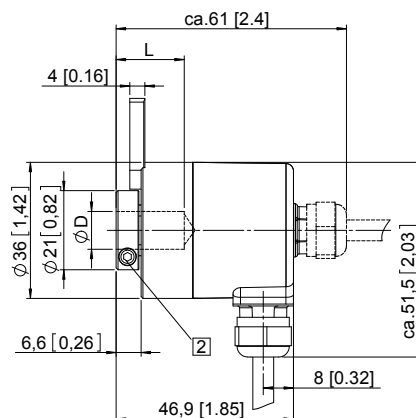
Dimensions in mm [inch]

Flange with spring element, long Flange type 2

- 1 Slot spring element, recommendation: cylindrical pin DIN 7, $\varnothing$ 4 [0.16]
- 2 Recommended torque for the clamping ring 0.7 Nm

D	Fit	L
6 [0.24]	H7	18 [0.71]
8 [0.32]	H7	18 [0.71]
10 [0.39]	H7	18 [0.71]
1/4"	H7	18 [0.71]

L = insertion depth blind hollow shaft



Flange with stator coupling, $\varnothing$ 46 [1.81] Flange type 5

- 1 Recommended torque for the clamping ring 0.7 Nm

D	Fit	L
6 [0.24]	H7	18 [0.71]
8 [0.32]	H7	18 [0.71]
10 [0.39]	H7	18 [0.71]
1/4"	H7	18 [0.71]

L = insertion depth blind hollow shaft

