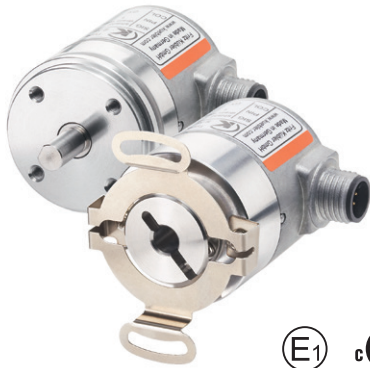


Absolute encoders - singleturn

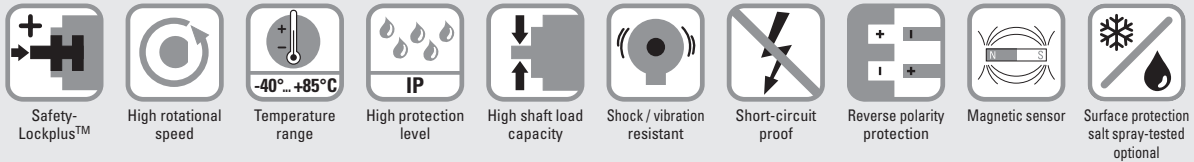
Compact magnetic	Sendix 3651 / 3671 (shaft / hollow shaft)	Analog
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Thanks to their different interfaces and measurement ranges, the Sendix 3651 and Sendix 3671 singleturn encoders with analog interface, in shaft and hollow shaft versions, are particularly 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.



Safe operation

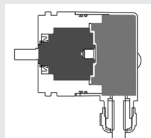
- Non-contact measuring system for long-life non-wear applications.
- Rugged die-cast-housing and protection up to IP69k for an exceptional tightness.
- High shock and vibration resistance for an exceptional robustness.

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.

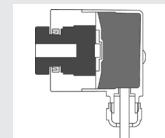
Safety-Lockplus™

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	8.3651	. 2XXXX . XXXX								
Shaft version	Type	<table border="1" style="font-size: small;"> <tr> <td style="background-color: #cccccc; color: white;">a</td> <td style="background-color: #cccccc; color: white;">b</td> <td style="background-color: #cccccc; color: white;">c</td> <td style="background-color: #cccccc; color: white;">d</td> <td style="background-color: #cccccc; color: white;">e</td> <td style="background-color: #cccccc; color: white;">f</td> <td style="background-color: #cccccc; color: white;">g</td> <td style="background-color: #cccccc; color: white;">h</td> </tr> </table>	a	b	c	d	e	f	g	h
a	b	c	d	e	f	g	h			

a Flange

2 = synchro flange, \varnothing 36 mm [1.42"]

b Shaft (\varnothing x L), with flat

3 = \varnothing 6 x 12.5 mm [0.24 x 0.49"]

6 = \varnothing 8 x 12.5 mm [0.32 x 0.49"]

5 = \varnothing 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 / supply voltage

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.

Absolute encoders - singleturn

Compact magnetic	Sendix 3651 / 3671 (shaft / hollow shaft)	Analog
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Order code	8.3671	. XXXX . XXXX									
Hollow shaft	Type	<table border="1" style="font-size: 8px; text-align: center; width: 100%;"> <tr> <td>a</td><td>b</td><td>c</td><td>d</td><td>e</td><td>f</td><td>g</td><td>h</td> </tr> </table>	a	b	c	d	e	f	g	h	
a	b	c	d	e	f	g	h				
a Flange	2 = with spring element, long 5 = with stator coupling, ø 46 mm [1.81"]	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)								
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"	e Measuring range	1 = 1 x 360° 2 = 1 x 180° 3 = 1 x 90° 4 = 1 x 45°								
c Output circuit¹⁾	3 = current output 4 = voltage output	f Interface / supply voltage	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 <i>Optional on request</i> - 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 3 + 6)	
Connection technology	Order no.
Cordset, pre-assembled M12 female connector with coupling nut, 5-pin, A coded, straight open ended 2 m [6.56'] PVC cable	05.00.6081.2211.002M
Connector, self-assembly M12 female connector with coupling nut, 5-pin, A coded, straight (metal)	8.0000.5116.0000

Further Kübler accessories can be found at: kuebler.com/accessories
 Further Kübler cables and connectors can be found at: kuebler.com/connection-technology

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.

Absolute encoders - singleturn

Compact magnetic

Sendix 3651 / 3671 (shaft / hollow shaft)

Analog

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
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

Electrical characteristics current interface 4 ... 20 mA

Sensor

Supply voltage	10 ... 30 V DC
Current consumption (no load)	max. 38 mA
Reverse polarity protection of the supply voltage	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 supply voltage is correctly applied. But not output to +V.
Supply voltage and sensor output signal are not galvanically isolated.

General electrical characteristics

E1 compliant acc. to	EU guideline 2009/19/EC (acc. to EN 55025, ISO 11452 and ISO 7637)
UL approval	File no. E224618
CE compliant acc. to	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU

Status LED (green)

Status LED	green	reference point display turns ON at cw: betw. 0° and 1° at ccw: betw. 0° and -1°
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Electrical characteristics voltage interface

Sensor

Supply voltage	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 supply voltage	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 supply voltage is correctly applied. But not output to +V.
Supply voltage and sensor output signal are not galvanically isolated.

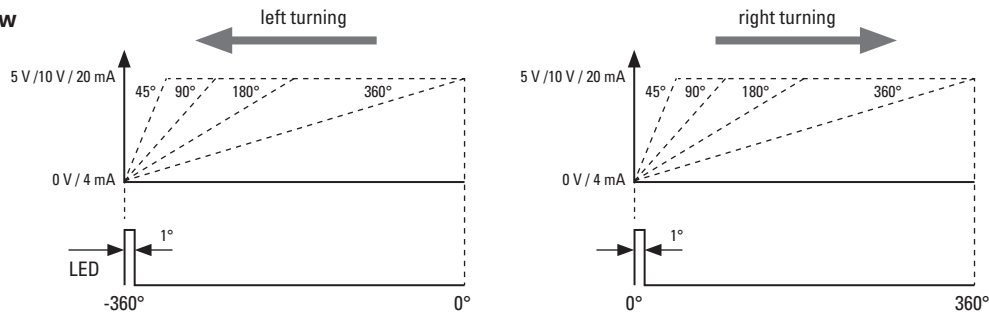
Absolute encoders - singleturn

Compact magnetic	Sendix 3651 / 3671 (shaft / hollow shaft)	Analog
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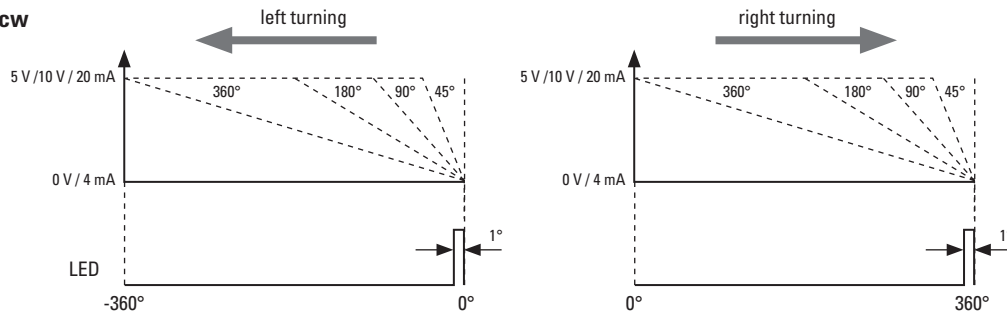
Example (output signal profile)

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

Version cw



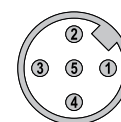
Version ccw



Terminal assignment

Interface 3 (current)	Type of connection 1, 2, A, B	Cable (isolate unused cores individually before initial start-up)				
		Signal:	0 V	+V	+I	-I
		Core color:	WH	BN	GN	YE
Interface 3 (current)	Type of connection 3, 4	M12 connector, 5-pin				
		Signal:	0 V	+V	+I	-I
		Pin:	3	2	4	5
Interface 4, 5 (voltage)	Type of connection 1, 2, A, B	Cable (isolate unused cores individually before initial start-up)				
		Signal:	0 V	+V	+U	-U
		Core color:	WH	BN	GN	YE
Interface 4, 5 (voltage)	Type of connection 3, 4	M12 connector, 5-pin				
		Signal:	0 V	+V	+U	-U
		Pin:	3	2	4	5

Top view of mating side, male contact base



M12 connector, 5-pin

- +V : Supply voltage encoder +V DC
- 0 V : Supply voltage encoder ground GND (0 V)
- +U / -U : Voltage + / voltage -
- +I / -I : Current + / current -

Absolute encoders - singleturn

Compact magnetic	Sendix 3651 / 3671 (shaft / hollow shaft)	Analog
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Dimensions shaft version

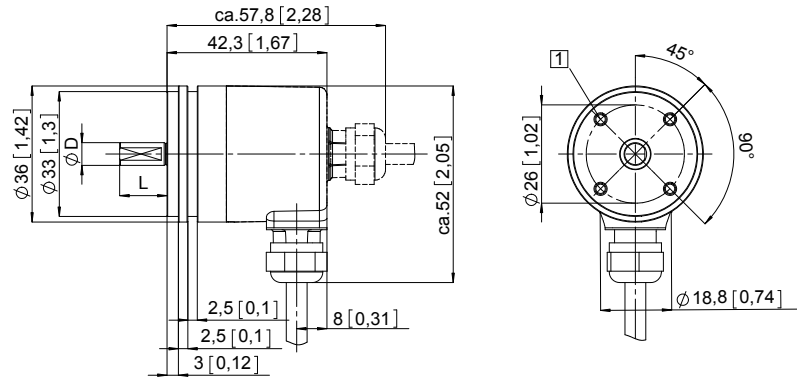
Dimensions in mm [inch]

Synchro flange, ø 36 [1.42]

Flange type 2

(drawing with cable)

1 4 x M3, 6 [0.24] deep



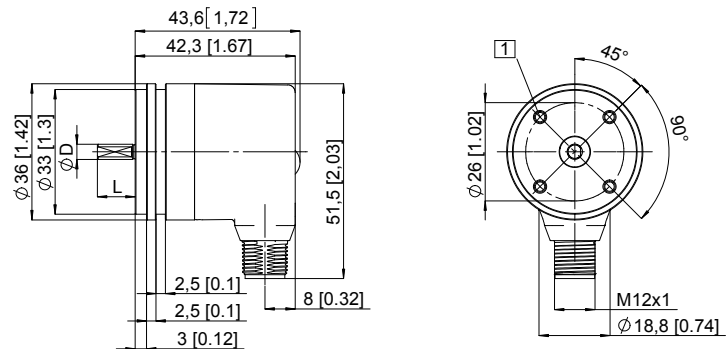
D	Fit	L
6 [0.24]	h7	12.5 [0.49]
8 [0.32]	h7	12.5 [0.49]
1/4"	h7	12.5 [0.49]

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]

Absolute encoders - singleturn

Compact magnetic

Sendix 3651 / 3671 (shaft / hollow shaft)

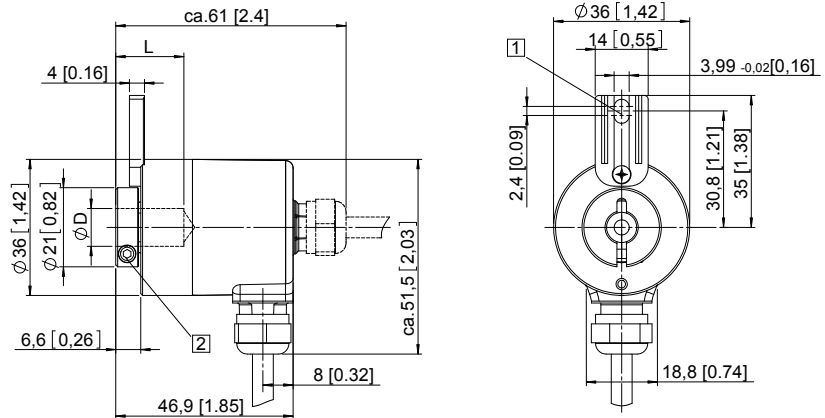
Analog

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

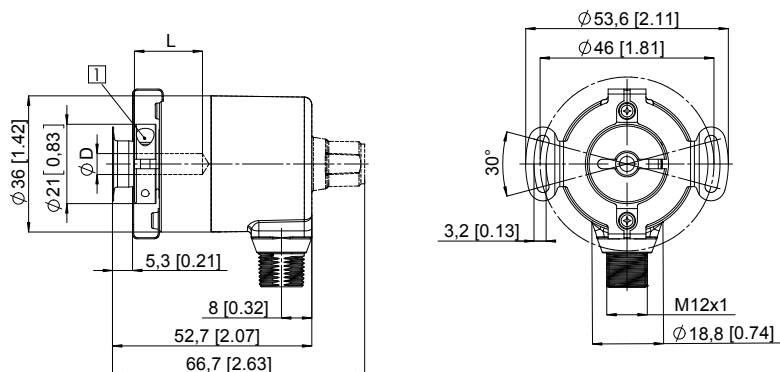


D	Fit	L
6 [0.24]	H7	18 [0.71]
8 [0.32]	H7	18 [0.71]
10 [0.39]	H7	18 [0.71]
1/4"	H7	18 [0.71]

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