

Absolute encoders - singleturn

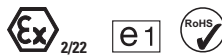
Compact magnetic	Sendix 3651 / 3671 (shaft / hollow shaft)	Analog
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Thanks to their different interfaces and measurement ranges, the Sendix 3651 and Sendix 3671 singleturn encoders with analog interface, in shaft and hollow shaft versions, are particularly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



Absolute encoders singleturn

Safety-Lockplus™	High rotational speed	Temperature range -40°... +85°C	High protection level IP	High shaft load capacity	Shock / vibration resistant	Short-circuit proof	Reverse polarity protection	Magnetic sensor	Surface protection salt spray-tested optional

Safe operation

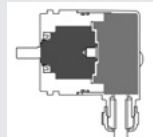
- Non-contact measuring system for long-life non-wear applications.
- Rugged die-cast-housing and protection up to IP69k for an exceptional tightness.
- High shock and vibration resistance for an exceptional robustness.

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.

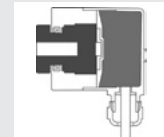
Safety-Lockplus™

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	.	2	X	X	X	.	X	X	X	X
Type		a	b	c	d		e	f	g	h

If for each parameter of an encoder the underlined preferred option is selected, then the delivery time will be 10 working days for a maximum of 10 pieces. Qts. up to 50 pcs. of these types generally have a delivery time of 15 working days.



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".

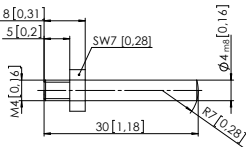
2) cw = Increasing code values when shaft turning clockwise (cw). Top view on shaft.

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

Absolute encoders - singleturn

Compact magnetic	Sendix 3651 / 3671 (shaft / hollow shaft)	Analog
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Order code Hollow shaft	8.3671 Type	<table border="1" style="font-size: 0.8em; border-collapse: collapse;"> <tr> <td style="text-align: center;">X</td><td style="text-align: center;">X</td><td style="text-align: center;">X</td><td style="text-align: center;">X</td> <td style="text-align: center;">X</td><td style="text-align: center;">X</td><td style="text-align: center;">X</td><td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">a</td><td style="text-align: center;">b</td><td style="text-align: center;">c</td><td style="text-align: center;">d</td> <td style="text-align: center;">e</td><td style="text-align: center;">f</td><td style="text-align: center;">g</td><td style="text-align: center;">h</td> </tr> </table>	X	X	X	X	X	X	X	X	a	b	c	d	e	f	g	h	<p>If for each parameter of an encoder the <u>underlined preferred option</u> is selected, then the delivery time will be 10 working days for a maximum of 10 pieces. Qts. up to 50 pcs. of these types generally have a delivery time of 15 working days.</p> <div style="text-align: right; border: 1px solid black; border-radius: 50%; padding: 2px 5px; font-weight: bold;">10 by 10</div>
X	X	X	X	X	X	X	X												
a	b	c	d	e	f	g	h												
a Flange 2 = with spring element, long <u>5 = with stator coupling, ø 46 mm [1.81"]</u>	b Hollow shaft <u>2 = ø 6 mm [0.24"]</u> 4 = ø 8 mm [0.32"] 6 = ø 10 mm [0.39"] 3 = ø 1/4"	c Output circuit ¹⁾ <u>3 = current output</u> <u>4 = voltage output</u>	d Type of connection 1 = axial cable, 1 m [3.28'] PUR A = axial cable, special length PUR *) <u>2 = radial cable, 1 m [3.28'] PUR</u> 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 <u>1 = 1 x 360°</u> 2 = 1 x 180° 3 = 1 x 90° 4 = 1 x 45°	f Interface / power supply <u>3 = 4 ... 20 mA / 10 ... 30 V DC</u> <u>4 = 0 ... 10 V / 15 ... 30 V DC</u> 5 = 0 ... 5 V / 10 ... 30 V DC	g Option 1 <u>1 = count direction cw ²⁾</u> 2 = count direction ccw ³⁾	h Option 2 <u>1 = IP67</u> 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 for torque stops	8.0010.4700.0000
	
Connection technology	Order no.
Connector, self-assembly (straight) M12 female connector with coupling nut	8.0000.5116.0000
Cordset, pre-assembled M12 female connector with coupling nut, 2 m [6.56'] PVC cable	05.00.6081.2211.002M

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 aluminium housing zinc die-cast cable PUR
General electrical characteristics	
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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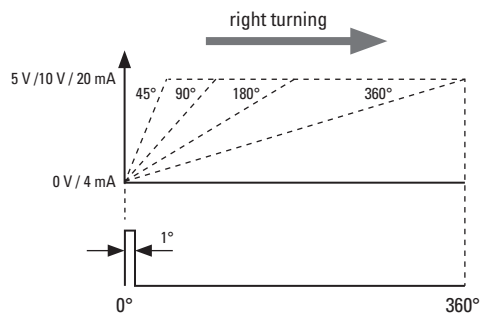
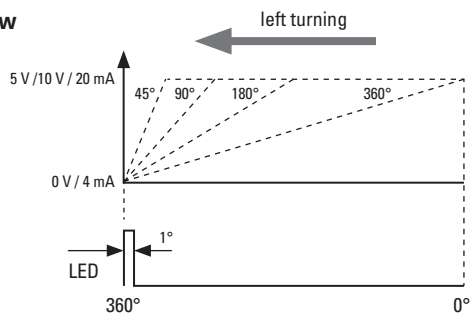
Compact magnetic		Sendix 3651 / 3671 (shaft / hollow shaft)		Analog	
Electrical characteristics current interface 4 ... 20 mA					
Sensor					
Power supply	10 ... 30 V DC				
Current consumption (no load)	max. 38 mA				
Reverse polarity protection of the power supply	yes				
Measuring range	45°, 90°, 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				
	$R_{load} = 400 \text{ Ohm}, 25^\circ\text{C} [77^\circ\text{F}]$				
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				
	$R_{load} \geq 1 \text{ KOhm}, 25^\circ\text{C} [77^\circ\text{F}]$				
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°			

Absolute encoders singleturn

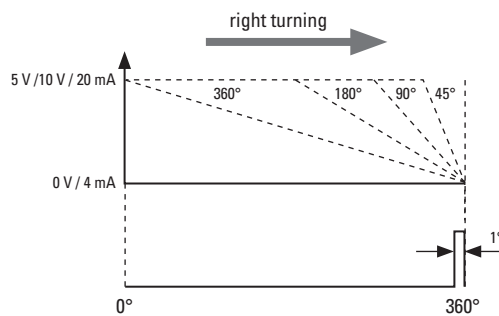
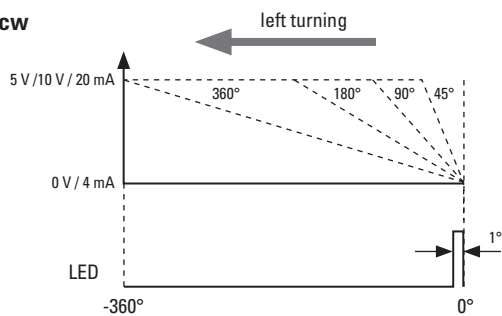
Example (output signal profile)

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

Version cw



Version ccw



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Compact magnetic

Sendix 3651 / 3671 (shaft / hollow shaft)

Analog

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
		Cable colour:	WH	BN	GN	YE

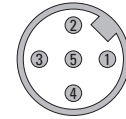
Interface	Type of connection	M12 connector, 5 pin				
3 (current)	3, 4	Signal:	0 V	+V	+I	-I
		Pin:	3	2	4	5

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
		Cable colour:	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

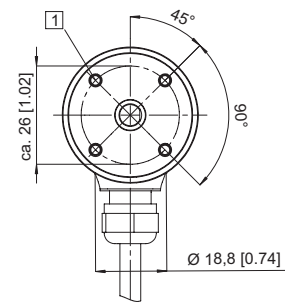
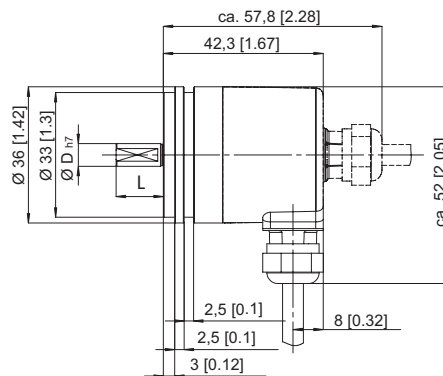
Dimensions in mm [inch]

Synchro flange, ø 36 [1.42]

Flange type 2

(drawing with cable)

1 M3, 6 [0.24] deep



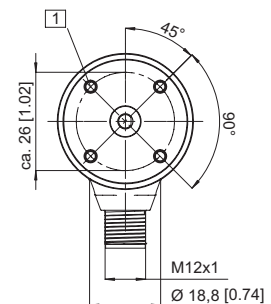
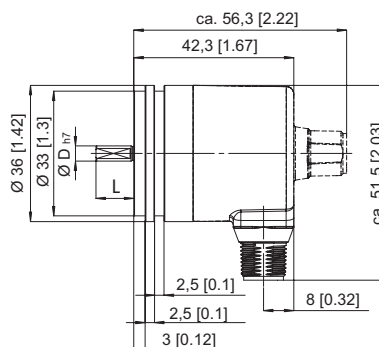
D	L	Fit
6 [0.24]	12,5 [0.49]	h7
8 [0.32]	12,5 [0.49]	h7
1/4"	12,5 [0.49]	h7

Synchro flange, ø 36 [1.42]

Flange type 2

(drawing with M12 connector)

1 M3, 6 [0.24] deep



D	L	Fit
6 [0.24]	12,5 [0.49]	h7
8 [0.32]	12,5 [0.49]	h7
1/4"	12,5 [0.49]	h7

Absolute encoders - singleturn

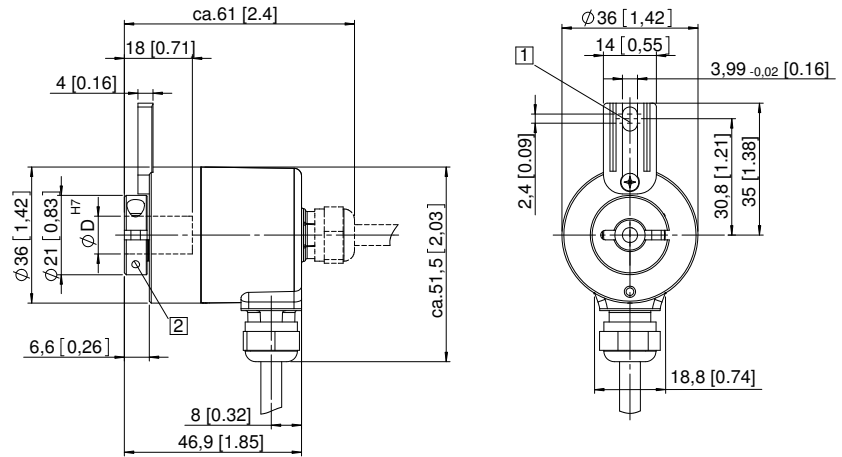
Compact magnetic	Sendix 3651 / 3671 (shaft / hollow shaft)	Analog
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Dimensions hollow shaft version

Dimensions in mm [inch]

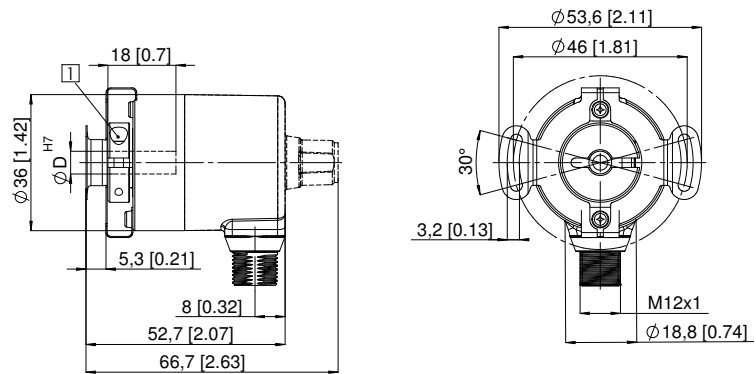
Flange with spring element, long Flange type 2

- 1 Torque stop slot, recommendation: cylindrical pin DIN 7, \varnothing 4 [0.16]
- 2 Recommended torque for the clamping ring 0.7 Nm



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

- 1 Recommended torque for the clamping ring 0.7 Nm



Absolute encoders
singleturn