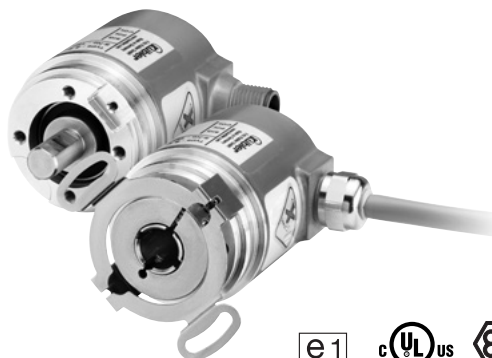


Absolute encoders – multiturn

Compact electronic multiturn, magnetic	Sendix M3661 / M3681 (shaft / hollow shaft)	Analog
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The Sendix M36 with Energy Harvesting Technology is an electronic multiturn encoder in miniature format, without gear and without battery. With a size of just 36 x 53 mm it offers a blind hollow shaft of up to 10 mm.



Safety-Lock™	High rotational speed	Temperature range -40°C ... +85°C	High protection level IP67	High shaft load capacity	Shock / vibration resistant	Reverse polarity protection	Surface protection salt spray tested optional	Energy Harvesting

Reliable and insensitive

- Sturdy bearing construction in Safety-Lock™ design for resistance against vibration and installation errors.
- Reduced number of components ensures magnetic insensitivity.
- IP67 protection and wide temperature range -40°C ... +85°C.
- Without gear and without battery, thanks to the Energy Harvesting technology.

Application oriented

- Current output 4 ... 20 mA.
- Voltage output 0 ... 10 V or 0 ... 5 V.
- Measuring range scalable.
- Limit switch function.

Order code Shaft version

8.M3661	.XXXX	.XX12
Type	a b c d	e f

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

- 1 = clamping flange, IP67, ø 36 mm [1.42"]
- 3 = clamping flange, IP65, ø 36 mm [1.42"]
- 2 = synchro flange, IP67, ø 36 mm [1.42"]
- 4 = synchro flange, IP65, ø 36 mm [1.42"]**

b Shaft (ø x L), with flat

- 1 = ø 6 x 12.5 mm [0.24 x 0.49"]
- 3 = ø 8 x 15 mm [0.32 x 0.59"]**
- 5 = ø 10 x 20 mm [0.39 x 0.79"]
- 2 = 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'] PVC
- A = axial cable, special length PVC *)
- 2 = radial cable, 1 m [3.28'] PVC
- B = radial cable, special length PVC *)
- 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 [5.56, 9.84, 16.40, 26.25, 32.80, 49.21']
order code expansion .XXXX = length in dm
ex.: 8.M3661.433A.3112.0030 (for cable length 3 m)

e Interface / resolution / power supply

- 3 = 4 ... 20 mA / 12 bit / 10 ... 30 V DC**
- 4 = 0 ... 10 V / 12 bit / 15 ... 30 V DC**
- 5 = 0 ... 5 V / 11 bit / 10 ... 30 V DC

f Measuring range

- 1 = 16 revolutions / cw**
- 2 = 16 revolutions / ccw
- 3 = scalable up to 65,536 revolutions, with limit switch function / cw
- 4 = scalable up to 65,536 revolutions, without limit switch function / cw
- 5 = scalable up to 65,536 revolutions, with limit switch function / ccw
- 6 = scalable up to 65,536 revolutions, without limit switch function / ccw

Optional on request

- Ex 2/22 (only for connection types 3 and 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".

Absolute encoders – multiturn

Compact electronic multiturn, magnetic	Sendix M3661 / M3681 (shaft / hollow shaft)	Analog
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Order code	8.M3681	.XXXX.XX12	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.
Hollow shaft	Type	a b c d e f	
a Flange	2 = with stator coupling, IP65, ø 46 mm [1.81"] 3 = with spring element, long, IP65 5 = with stator coupling, IP67, ø 46 mm [1.81"] 6 = with spring element, long, IP67	d Type of connection	1 = axial cable, 1 m [3.28'] PVC A = axial cable, special length PVC *) 2 = radial cable, 1 m [3.28'] PVC B = radial cable, special length PVC *) 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 [5.56, 9.84, 16.40, 26.25, 32.80, 49.21'] order code expansion .XXXX = length in dm Ex.: 8.M3681.243A.3112.0030 (for cable length 3 m)
b Blind hollow shaft	(insertion depth max. 18.5 mm [0.73"]) 1 = ø 6 mm [0.24"] 3 = ø 8 mm [0.32"] 4 = ø 10 mm [0.39"] 2 = ø 1/4"	e Interface / resolution / power supply	1 = 16 revolutions / cw 2 = 16 revolutions / ccw 3 = scalable up to 65,536 revolutions, with limit switch function / cw 4 = scalable up to 65,536 revolutions, without limit switch function / cw 5 = scalable up to 65,536 revolutions, with limit switch function / ccw 6 = scalable up to 65,536 revolutions, without limit switch function / ccw <i>Optional on request</i> - Ex 2/22 (only for connection types 3 and 4) - surface protection salt spray tested
c Output circuit ¹⁾	3 = current output 4 = voltage output		

Mounting accessory for shaft encoders	Order no.
Coupling	Bellows coupling ø 19 mm [0.75"] for shaft 8 mm [0.32"]
	8.0000.1102.0808
Mounting accessory for hollow shaft encoders	Order no.
Cylindrical pin, long	with fixing thread
for flange with spring element (flange type 3 + 6)	8.0010.4700.0000
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	shaft or blind hollow shaft version 6000 min ⁻¹ without shaft seal (IP65) 3000 min ⁻¹ (continuous)
shaft or blind hollow shaft version with shaft seal (IP67)	4000 min ⁻¹ 2000 min ⁻¹ (continuous)
Starting torque at 20°C [68°F]	without shaft seal < 0.007 Nm with shaft seal (IP67) < 0.01 Nm
Shaft load capacity	radial 40 N axial 20 N
Weight	
Weight	approx. 0.2 kg [7.06 oz]
Protection	
Protection acc. to EN 60529	IP65 or IP67
Working temperature range	
Working temperature range	-40°C ... +85°C [-40°F ... +185°F]
Materials	
Materials	shaft / hollow shaft stainless steel flange aluminum housing zinc die-cast cable PVC
Shock resistance	
Shock resistance acc. to EN 60068-2-27	2500 m/s ² , 6 ms
Vibration resistance	
Vibration resistance acc. to EN 60068-2-6	300 m/s ² , 10 ... 2000 Hz

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

Absolute encoders – multiturn

Compact electronic multiturn, magnetic	Sendix M3661 / M3681 (shaft / hollow shaft)	Analog
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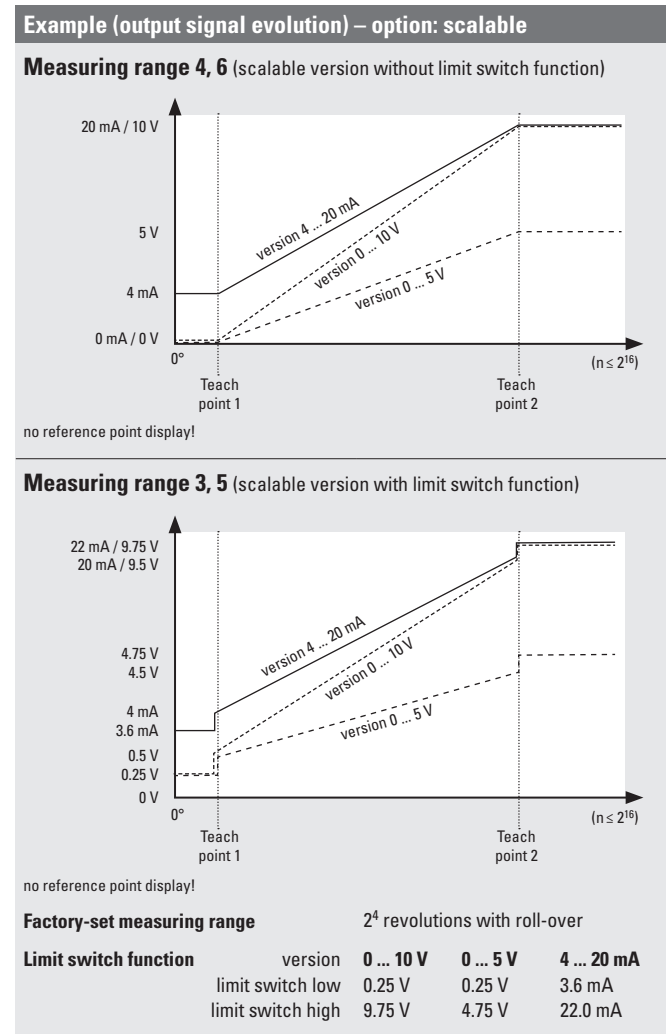
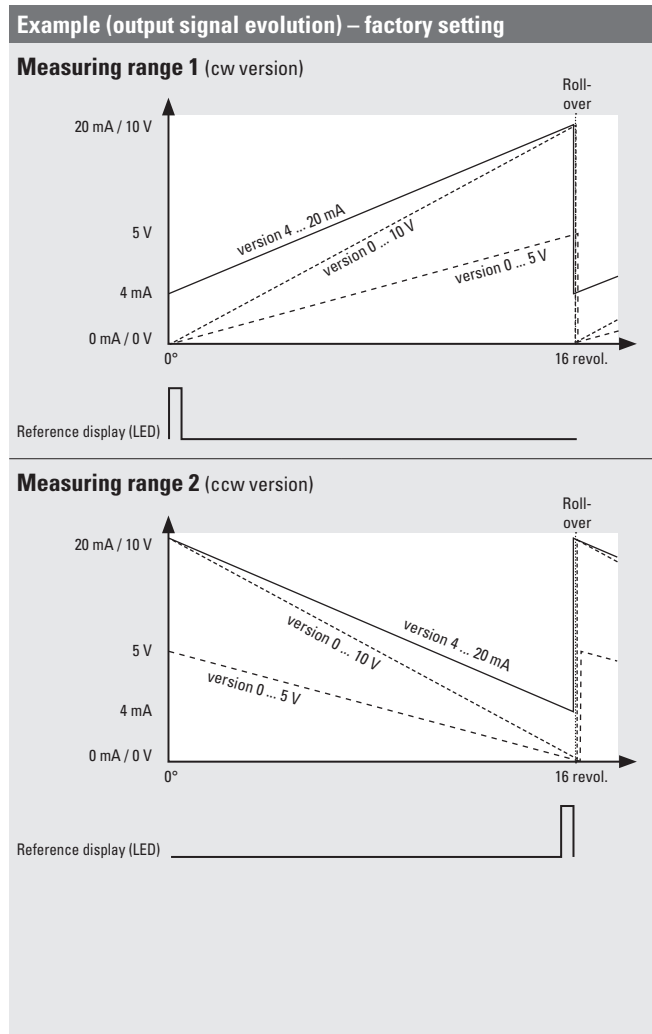
Electrical characteristics current interface 4 ... 20 mA		
Power supply	10 ... 30 V DC	
Current consumption (no load)	max. 30 mA	
Reverse polarity protection of the power supply	yes	
Short-circuit proof outputs	yes ¹⁾	
Measuring range	factory setting optionally scalable	2 ⁴ revolutions up to 2 ¹⁶ revolutions
DA converter resolution	12 bit	
Singleturn accuracy, at 25°C [77°F]	±1°	
Temperature coefficient	< 100 ppm/K	
Repeat accuracy, at 25°C [77°F]	±0.2°	
Output load	at 10 V DC at 24 V DC at 30 V DC	max. 200 Ohm max. 900 Ohm max. 1200 Ohm
Setting time	< 1 ms, R _{Burden} = 900 Ohm, 25°C [77°F]	
LEDs (green/red)	<ul style="list-style-type: none"> - system status - current loop interruption – input load too high - reference point display (only with factory settings) at cw: betw. 0° and 1° at ccw: betw. 0° and -1° - status in teach mode 	
Options	<ul style="list-style-type: none"> - output signal scalable via the teach inputs - output signal scalable via the teach inputs + limit switch function 	
Teach inputs	level = +V for 1 s min.	
PowerON Time	< 1 s	
Update rate	1 ms	
e1 compliant acc. to (pending)	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	

Electrical characteristics voltage interface 0 ... 10 V / 0 ... 5 V		
Power supply	output 0 ... 5 V output 0 ... 10 V	10 ... 30 V DC 15 ... 30 V DC
Current consumption (no load)	max. 30 mA	
Reverse polarity protection of the power supply	yes	
Short-circuit proof outputs	yes ¹⁾	
Measuring range	factory setting optionally scalable	2 ⁴ revolutions up to 2 ¹⁶ revolutions
DA converter resolution	0 ... 10 V 0 ... 5 V	12 bit 11 bit
Singleturn accuracy, at 25°C [77°F]	±1°	
Temperature coefficient	< 100 ppm/K	
Repeat accuracy, at 25°C [77°F]	±0.2°	
Current output	max. 10 mA	
Setting time	< 1 ms, R _{Load} = 1000 Ohm, 25°C [77°F]	
LEDs (green/red)	<ul style="list-style-type: none"> - system status - reference point display (only with factory settings) at cw: betw. 0° and 1° at ccw: betw. 0° and -1° - status in teach mode 	
Options	<ul style="list-style-type: none"> - output signal scalable via the teach inputs - output signal scalable via the teach inputs + limit switch function 	
Teach inputs	level = +V for 1 s min.	
PowerON Time	< 1 s	
Update rate	1 ms	
e1 compliant acc. to (pending)	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	

1) When the power supply is correctly applied.
But not output to +V. Power supply and sensor output signal are not galvanically isolated.

Absolute encoders – multiturn

Compact electronic multiturn, magnetic	Sendix M3661 / M3681 (shaft / hollow shaft)	Analog
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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	SET 1 ¹⁾	SET 2 ¹⁾
		Core color:	WH	BN	GN	GY	PK
Interface 3 (current)	Type of connection 3, 4	M12 connector, 5 pin					
		Signal:	0 V	+V	+I	SET 1 ¹⁾	SET 2 ¹⁾
		Pin:	3	2	1	5	4
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	SET 1 ¹⁾	SET 2 ¹⁾
		Core color:	WH	BN	GN	GY	PK
Interface 4, 5 (voltage)	Type of connection 3, 4	M12 connector, 5 pin					
		Signal:	0 V	+V	+U	SET 1 ¹⁾	SET 2 ¹⁾
		Pin:	3	2	1	5	4

+V : encoder power supply +V DC +U : voltage SET 1 : set input for teachpoint 1
 0 V : encoder power supply ground GND (0 V) +I : current SET 2 : set input for teachpoint 2

Top view of mating side, male contact base



M12 connector, 5-pin

1) For scalable version.

Absolute encoders – multiturn

Compact electronic multiturn, magnetic	Sendix M3661 / M3681 (shaft / hollow shaft)	Analog
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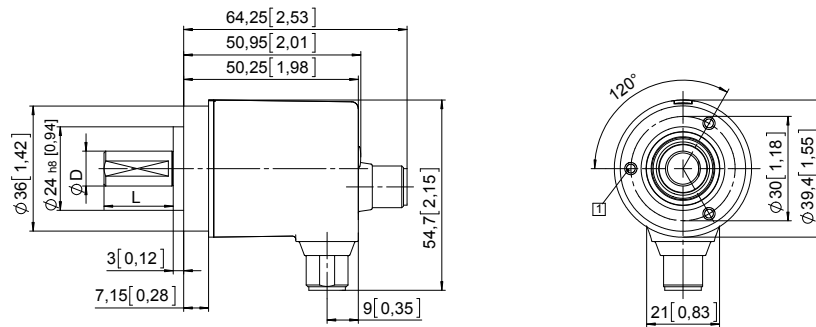
Dimensions shaft version

Dimensions in mm [inch]

Clamping flange, \varnothing 36 [1.42]

Flange type 1 and 3

1 3 x M3, 6 [0.24] deep

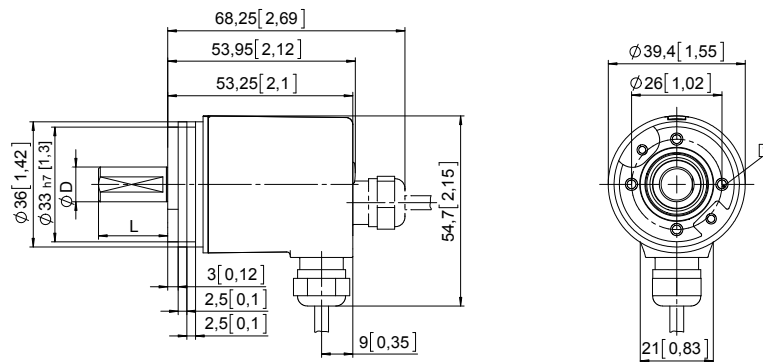


D	Fit	L
6 [0.24]	h7	12.5 [0.49]
8 [0.32]	h7	15 [0.59]
10 [0.39]	f7	20 [0.79]
1/4"	h7	12.5 [0.49]

Synchro flange, \varnothing 36 [1.42]

Flange type 2 and 4

1 4 x M3, 6 [0.24] deep



D	Fit	L
6 [0.24]	h7	12.5 [0.49]
8 [0.32]	h7	15 [0.59]
10 [0.39]	f7	20 [0.79]
1/4"	h7	12.5 [0.49]

Absolute encoders – multiturn

Compact electronic multiturn, magnetic	Sendix M3661 / M3681 (shaft / hollow shaft)	Analog
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Dimensions hollow shaft version

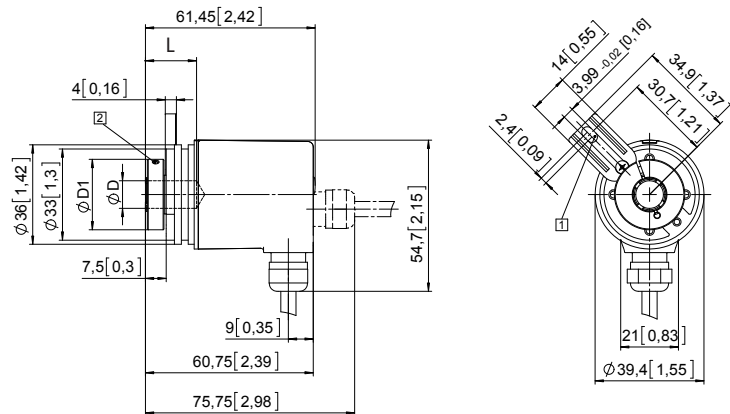
Dimensions in mm [inch]

Flange with spring element, long Flange type 3 and 6

- 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	D1
6 [0.24]	H7	18.5 [0.73]	24 [0.94]
8 [0.32]	H7	18.5 [0.73]	25.5 [1.00]
10 [0.39]	H7	18.5 [0.73]	25.5 [1.00]
1/4"	H7	18.5 [0.73]	24 [0.94]

L = insertion depth max. blind hollow shaft



Flange with stator coupling, \varnothing 46 [1.81] Flange type 2 and 5

- 1 Recommended torque for the clamping ring 0.7 Nm

D	Fit	L	D1
6 [0.24]	H7	18.5 [0.73]	24 [0.94]
8 [0.32]	H7	18.5 [0.73]	25.5 [1.00]
10 [0.39]	H7	18.5 [0.73]	25.5 [1.00]
1/4"	H7	18.5 [0.73]	24 [0.94]

L = insertion depth max. blind hollow shaft

