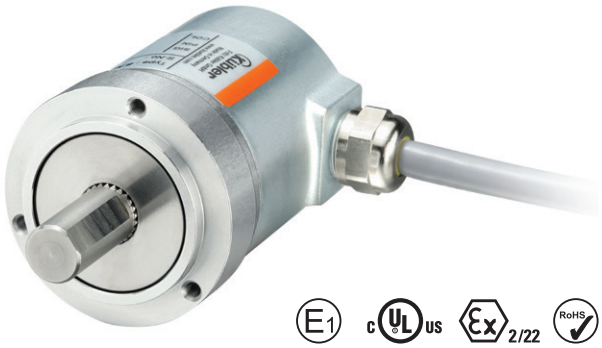
Compact, robust electronic multiturn, magnetic | **Sendix M3661R (shaft)** | **Analog**



The Sendix M36 with Energy Harvesting Technology is an electronic multiturn encoder in miniature format, without gear and without battery.

The "R"obust version is particularly suitable for use in harsh environments. Protected up to IP69k, resistance against shock and extreme temperature fluctuations, the Sendix M36 encoder is suitable even for demanding outdoor applications.

Safety-Lockplus™ | Standard option stainless steel | Standard option seawater resistant | High rotational speed | Temperature range | High protection level | High shaft load capacity | Shock / vibration resistant | Reverse polarity protection | Energy Harvesting

Highest robustness

- Sturdy bearing construction in Safety-Lockplus™ design for particularly high resistance.
- Extra large bearings.
- Mechanically protected shaft seal.
- Protection level IP66, IP67 and IP69k in one device.
- 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.M3661R . X X X X . X X 1 2
Type — a b c d e f

a *Version*
1 = standard [1]
clamping flange ø 42 mm [1.65"]
7 = stainless steel V4A [2]
clamping flange ø 42 mm [1.65"]
all metal parts accessible from outside are out of stainless steel V4A

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"]
E = ø 10 x 20 mm [0.39 x 0.79"], stainless steel V4A

c *Output circuit* [3]
3 = current output
4 = voltage output

d *Type of connection*
2 = radial cable, 1 m [3.28'] PVC
B = radial cable, special length PVC *)
4 = radial M12 connector, 5-pin
*) Available special lengths (connection types 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.M3661R.133B.3112.0030 (for cable length 3 m)

e *Interface / resolution / supply voltage*
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 type 4)
- other shaft diameters out of V4A stainless steel

1) Not in conjunction with shaft type "E".
2) Only in conjunction with shaft type "E" + type of connection "4" .
3) Output circuit "3" only in conjunction with interface "3", output circuit "4" only in conjunction with interface "4" or "5".

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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** [1]

Cables and connectors		Order no.
Preassembled cables	M12 female connector with coupling nut, 5-pin, A coded, straight single ended 2 m [6.56‘] PVC cable	**05.00.6081.2211.002M** [1]
Connectors	M12 female connector with coupling nut, 5-pin, A coded, straight (metal)	**8.0000.5116.0000** [1]
	M12 female connector with coupling nut, 5-pin, A coded, straight (stainless steel V4A)	**8.0000.5116.0000.V4A**

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

Technical data

Electrical characteristics current interface 4 ... 20 mA

Supply voltage		10 ... 30 V DC
Current consumption (no load)		max. 30 mA
Reverse polarity protection of the supply voltage		yes
Short-circuit proof outputs		yes [2]
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)		- 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		- output signal scalable via the teach inputs - output signal scalable via the teach inputs + limit switch function
Teach inputs		level = +V for 1 s minimum
PowerON Time		< 1 s
Update rate		1 ms

Electrical characteristics voltage interface 0 ... 10 V / 0 ... 5 V

Supply voltage	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 supply voltage		yes
Short-circuit proof outputs		yes [2]
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)		- 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		- output signal scalable via the teach inputs - output signal scalable via the teach inputs + limit switch function
Teach inputs		level = +V for 1 s minimum
PowerON Time		< 1 s
Update rate		1 ms

1) Not for version “7” (V4A stainless steel)
2) When the supply voltage is correctly applied.
But not output to +V. Supply voltage and sensor output signal are not galvanically isolated.

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Mechanical characteristics

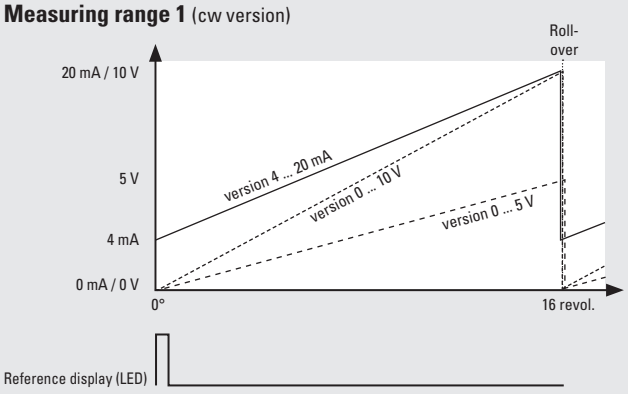
Maximum speed		4000 min^{-1} 2000 min^{-1} (continuous)	
Starting torque at 20 °C [68 °F]		< 0.01 Nm	
Shaft load capacity	radial axial	80 N 40 N	
Weight		approx. 250 g [8.82 oz]	
Protection acc. to EN 60529/DIN 40050-9		IP66, IP67, IP69k	
Working temperature range		-40 °C ... +85 °C [-40 °F ... +185 °F]	
Materials		**version "1"** (standard)	**version "7"** (stainless steel)
	shaft	V2A	V4A
	flange	aluminum	V4A
	housing	zinc die-cast	V4A
	cable	PVC	–
Shock resistance acc. to EN 60068-2-27		5000 m/s^2, 4 ms	
Vibration resistance acc. to EN 60068-2-6		300 m/s^2, 10 ... 2000 Hz	

Approvals

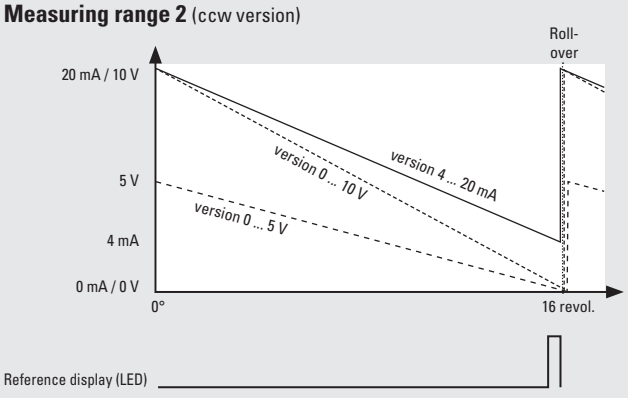
E1 compliant in accordance with	ECE guideline
UL compliant in accordance with	File no. E224618
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU
ATEX Directive	2014/34/EU (for Ex 2/22 variants)
UKCA compliant in accordance with	
EMC Regulations	S.I. 2016/1091
RoHS Regulations	S.I. 2012/3032
UKEX Regulations	S.I. 2016/1107 (for Ex 2/22 variants)

Example (output signal evolution) – factory setting

Measuring range 1 (cw version)

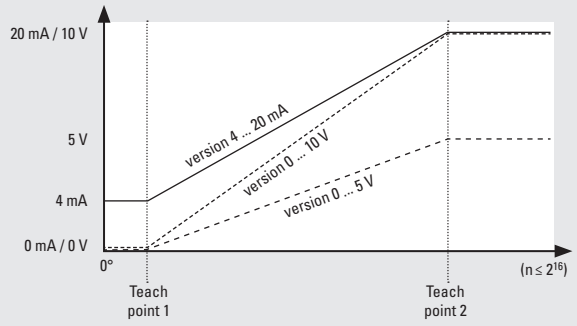


Measuring range 2 (ccw version)



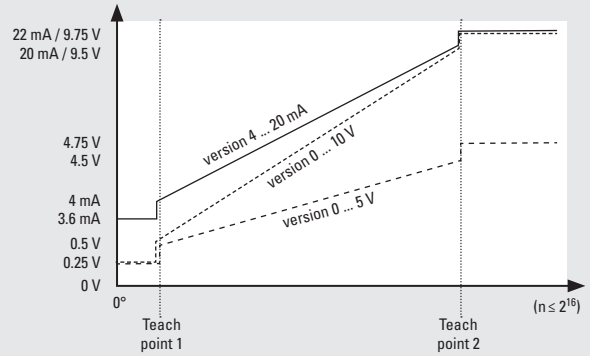
Example (output signal evolution) – option: scalable

Measuring range 4, 6 (scalable version without limit switch function)



no reference point display!

Measuring range 3, 5 (scalable version with limit switch function)



no reference point display!

Factory-set measuring range		2^4 revolutions with roll-over		
Limit switch function	version	**0 ... 10 V**	**0 ... 5 V**	**4 ... 20 mA**
	limit switch low	0.25 V	0.25 V	3.6 mA
	limit switch high	9.75 V	4.75 V	22.0 mA

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Terminal assignment

Interface	Type of connection	Cable (isolate unused cores individually before initial start-up)					
3 (current)	2, B	Signal:	0 V	+V	+I	SET 1 [1]	SET 2 [1]
		Core color:	WH	BN	GN	GY	PK

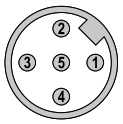
Interface	Type of connection	M12 connector, 5 pin					
3 (current)	4	Signal:	0 V	+V	+I	SET 1 [1]	SET 2 [1]
		Pin:	3	2	1	5	4

Interface	Type of connection	Cable (isolate unused cores individually before initial start-up)					
4, 5 (voltage)	2, B	Signal:	0 V	+V	+U	SET 1 [1]	SET 2 [1]
		Core color:	WH	BN	GN	GY	PK

Interface	Type of connection	M12 connector, 5 pin					
4, 5 (voltage)	4	Signal:	0 V	+V	+U	SET 1 [1]	SET 2 [1]
		Pin:	3	2	1	5	4

+V : Supply voltage encoder +V DC
0 V : Supply voltage encoder ground GND (0 V)
+U : Voltage
+I : Current
SET 1 : Set input for teachpoint 1
SET 2 : Set input for teachpoint 2

Top view of mating side, male contact base



M12 connector, 5-pin

1) For scalable version.

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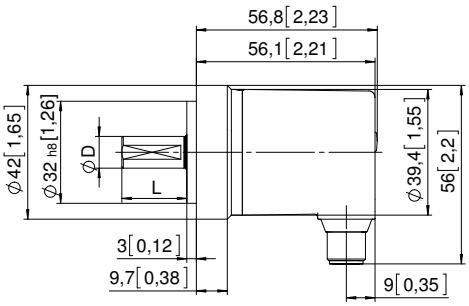
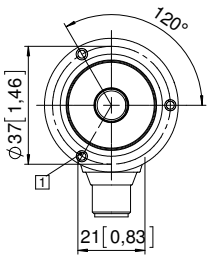
Dimensions

Dimensions in mm [inch]

Aluminum
clamping flange, ø 42 [1.65]
version 1

1 3 x M3, 6 [0.24] deep

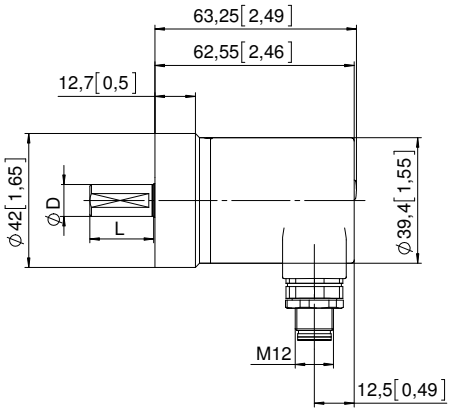


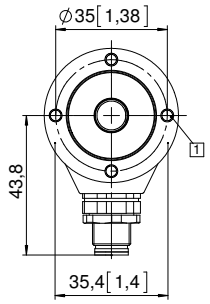


D	Fit	L
6 [0.24]	h7	12.5 [0.49]
8 [0.32]	h7	15 [0.59]
10 [0.39]	f7	20 [0.79]
1/4"	h7	12.5 [0.49]

Stainless steel V4A
clamping flange, ø 42 [1.65]
version 7

1 4 x M4, 8 [0.31] deep





D	Fit	L
10 [0.39]	f7	20 [0.79]