

# Absolute encoders – multiturn

**Standard  
electronic multiturn, magnetic**

**Sendix M5861 (shaft)**

**Analog**



The Sendix M58 with Energy Harvesting Technology is an electronic multiturn encoder without gear and without battery – in the standard format with 58 mm flange.

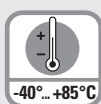
High robustness and high resolution make this encoder the ideal device for use in demanding applications.



Safety-Lockplus™



High rotational speed



Temperature range



High protection level



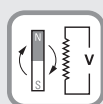
High shaft load capacity



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.
- 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.M5861**

Type

**.XXXX.XX12**

#### **a** Version

- 3 = clamping flange, IP65, ø 58 mm [2.28"]
- 4 = synchro flange, IP65, ø 58 mm [2.28"]

#### **b** Shaft (ø x L), with flat

- 1 = ø 6 x 12.5 mm [0.24 x 0.49"]
- 5 = ø 10 x 20 mm [0.39 x 0.79"]

#### **c** Output circuit <sup>1)</sup>

- 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.M5861.3132.3112.0030 (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)

1) 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 10 mm [0.39"]		8.0000.1102.1010
Cables and connectors			Order no.
Preassembled cables	M12 female connector with coupling nut, 5-pin, A coded, straight single ended 2 m [6.56'] PVR cable		05.00.6081.2211.002M
Connectors	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](http://kuebler.com/accessories)

Further Kübler cables and connectors can be found at: [kuebler.com/connection-technology](http://kuebler.com/connection-technology)

Technical data			
Electrical characteristics current interface 4 ... 20 mA		Electrical characteristics voltage interface 0 ... 10 V / 0 ... 5 V	
Supply voltage	10 ... 30 V DC	Supply voltage	output 0 ... 5 V 10 ... 30 V DC output 0 ... 10 V 15 ... 30 V DC
Current consumption (no load)	max. 30 mA	Current consumption (no load)	max. 30 mA
Reverse polarity protection of the supply voltage	yes	Reverse polarity protection of the supply voltage	yes
Short-circuit proof outputs	yes <sup>1)</sup>	Short-circuit proof outputs	yes <sup>1)</sup>
Measuring range	factory setting 2 <sup>4</sup> revolutions optionally scalable up to 2 <sup>16</sup> revolutions	Measuring range	factory setting 2 <sup>4</sup> revolutions optionally scalable up to 2 <sup>16</sup> revolutions
DA converter resolution	12 bit	DA converter resolution	0 ... 10 V 12 bit 0 ... 5 V 11 bit
Angular measurement deviation <sup>2)</sup>	±0,5°	Angular measurement deviation <sup>2)</sup>	±0,5°
Temperature coefficient	< 100 ppm/K	Temperature coefficient	< 100 ppm/K
Repeat accuracy, at 25 °C [77 °F]	±0.2°	Repeat accuracy, at 25 °C [77 °F]	±0.2°
Output load	at 10 V DC max. 200 Ohm at 24 V DC max. 900 Ohm at 30 V DC max. 1200 Ohm	Current output	max. 10 mA
Setting time	< 1 ms, R <sub>Burden</sub> = 900 Ohm, 25 °C [77 °F]	Setting time	< 1 ms, R <sub>Load</sub> = 1000 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	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	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	Teach inputs	level = +V for 1 s minimum
PowerON Time	< 1 s	PowerON Time	< 1 s
Update rate	1 ms	Update rate	1 ms

1) When the supply voltage is correctly applied.

But not output to +V. Supply voltage and sensor output signal are not galvanically isolated.

2) Over the whole temperature range.

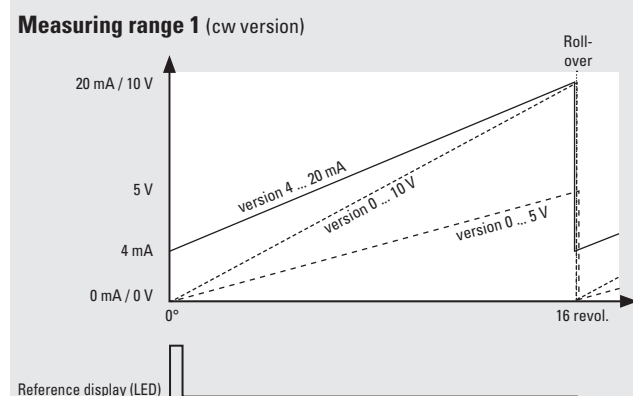
# Absolute encoders – multiturn

<b>Standard electronic multiturn, magnetic</b>	<b>Sendix M5861 (shaft)</b>	<b>Analog</b>
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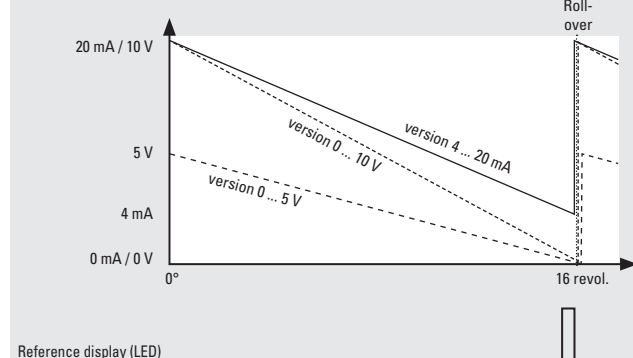
Mechanical characteristics	
<b>Maximum speed</b>	4000 min <sup>-1</sup> 2000 min <sup>-1</sup> (continuous)
<b>Starting torque at 20 °C [68 °F]</b>	< 0.01 Nm
<b>Shaft load capacity</b>	radial 80 N axial 40 N
<b>Weight</b>	approx. 280 g [9.88 oz]
<b>Protection acc. to EN 60529/DIN 40050-9</b>	IP65
<b>Working temperature range</b>	-40 °C ... +85 °C [-40 °F ... +185 °F]
<b>Materials</b>	shaft V2A flange aluminum housing zinc die-cast cable PVC
<b>Shock resistance acc. to EN 60068-2-27</b>	5000 m/s <sup>2</sup> , 4 ms
<b>Vibration resistance acc. to EN 60068-2-6</b>	300 m/s <sup>2</sup> , 10 ... 2000 Hz

Approvals	
<b>E1 compliant</b> in accordance with	ECE guideline
<b>UL compliant</b> in accordance with	File no. E224618
<b>CE compliant</b> in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU
ATEX Directive	2014/34/EU (for Ex 2/22 variants)
<b>UKCA compliant</b> 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)

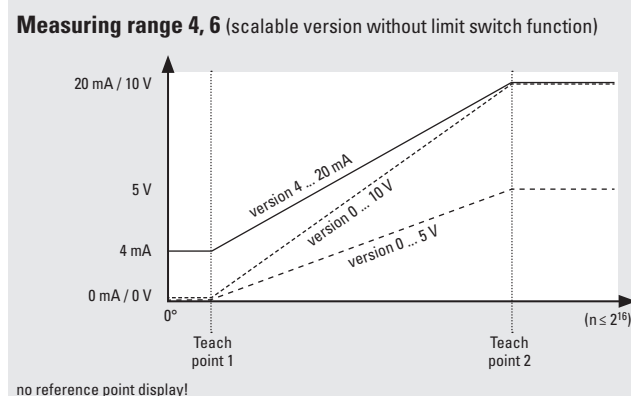
## Example (output signal evolution) – factory setting



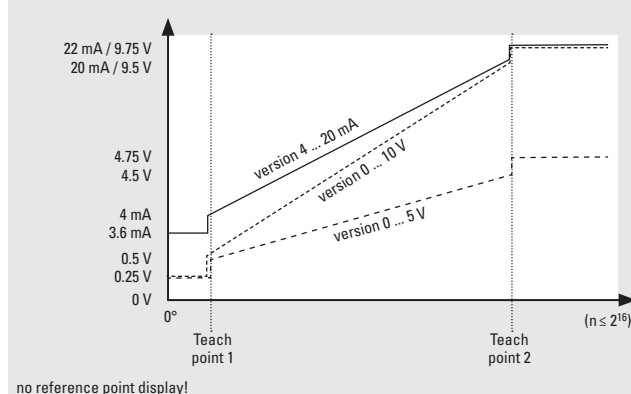
## Measuring range 2 (ccw version)



## Example (output signal evolution) – option: scalable



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



Factory-set measuring range		2 <sup>4</sup> 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

1) For scalable version.

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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 <sup>1)</sup>	SET 2 <sup>1)</sup>
		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 <sup>1)</sup>	SET 2 <sup>1)</sup>
		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 <sup>1)</sup>	SET 2 <sup>1)</sup>
		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 <sup>1)</sup>	SET 2 <sup>1)</sup>
		Pin:	3	2	1	5	4

+V : Supply voltage encoder +V DC

0 V : Supply voltage encoder ground GND (0 V)

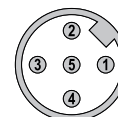
+U : Voltage

+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

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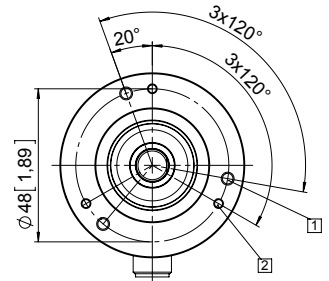
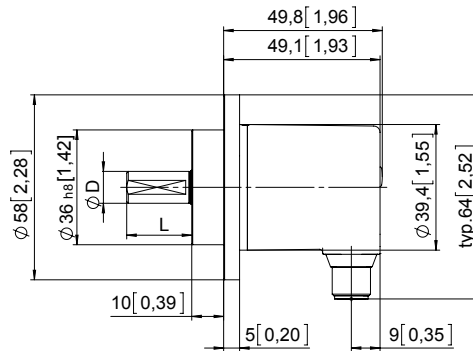
## Dimensions

Dimensions in mm [inch]

### Clamping flange, ø 58 [2.28] Flange type 3

- 1 3 x M4
- 2 3 x M3

D	Fit	L
6 [0.24]	h7	12.5 [0.49]
10 [0.39]	h7	20 [0.79]



### Synchro flange, ø 58 [2.28] Flange type 4

- 1 3 x M4, 10 [0.39] deep

D	Fit	L
6 [0.24]	h7	12.5 [0.49]
10 [0.39]	h7	20 [0.79]

