

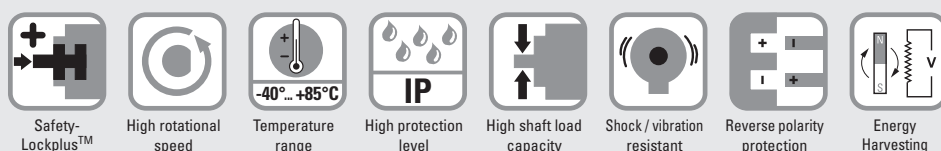
# Absolute encoders – multiturn

<b>Standard electronic multiturn, magnetic</b>	<b>Sendix M5863 (shaft)</b>	<b>SSI</b>
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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.



## 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

- Absolute accuracy  $\pm 1^\circ$ .
- Repeat accuracy  $\pm 0.2^\circ$ .
- Short control cycles, clock frequency with SSI up to 2 MHz.
- Max. resolution 38 bit (14 bit ST + 24 bit MT).

Order code		8.M5863.XX2X.XXX2						
Shaft version		Type	a	b	c	d	e	f
<b>a</b> Version	3 = clamping flange, IP65, $\varnothing$ 58 mm [2.28"]		<b>d</b> Type of connection		<b>f</b> Resolution (singleturn)			
	4 = synchro flange, IP65, $\varnothing$ 58 mm [2.28"]		2 = radial cable, 1 m [3.28'] PUR		A = 10 bit ST			
<b>b</b> Shaft ( $\varnothing \times L$ ), with flat	1 = $\varnothing$ 6 x 12.5 mm [0.24 x 0.49"]		B = radial cable, special length PUR *)		2 = 12 bit ST			
	5 = $\varnothing$ 10 x 20 mm [0.39 x 0.79"]		4 = radial M12 connector, 8-pin		3 = 13 bit ST			
<b>c</b> Interface / power supply	2 = SSI / 10 ... 30 V DC		*) Available special lengths (connection types B):		4 = 14 bit ST			
			2, 3, 5, 8, 10, 15 m [5.56, 9.84, 16.40, 26.25, 32.80, 49.21']		<b>g</b> Resolution (multiturn)			
			order code expansion .XXXX = length in dm		2 = 12 bit MT			
			ex.: 8.M5863.3524.G322.0030 (for cable length 3 m)		6 = 16 bit MT			
			<b>e</b> Code		A = 20 bit MT			
			B = SSI, binary		4 = 24 bit MT			
			G = SSI, gray		Optional on request			
					- Ex 2/22 (only for connection type 4)			

Connection technology		Order no.
<b>Coupling</b>	Bellows coupling $\varnothing$ 19 mm [0.75"] for shaft 10 mm [0.39"]	<b>8.0000.1102.1010</b>
Connection technology		Order no.
<b>Cordset, pre-assembled</b>	M12 female connector with coupling nut, 8-pin, 2 m [6.56'] PUR cable	<b>05.00.6051.8211.002M</b>
<b>Connector, self-assembly (straight)</b>	M12 female connector with coupling nut, 8-pin	<b>05.CMB 8181-0</b>

Further accessories can be found in the accessories section or in the accessories area of our website at: [www.kuebler.com/accessories](http://www.kuebler.com/accessories).  
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## Technical data

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. 0.2 kg [7.06 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	PUR
<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

Electrical characteristics	
<b>Power supply</b>	10 ... 30 V DC
<b>Current consumption (no load)</b>	max. 30 mA
<b>Reverse polarity protection of the power supply</b>	yes
<b>Short-circuit proof outputs</b>	yes <sup>1)</sup>
<b>UL approval</b>	File 224618
<b>CE compliant acc. to</b>	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU

SSI interface	
<b>Output driver</b>	RS485 transceiver type
<b>Permissible load / channel</b>	max. +/- 30 mA
<b>Signal level</b>	HIGH typ 3.8 V
	LOW with I <sub>Load</sub> = 20 mA typ 1.3 V
<b>Resolution singleturn</b>	10 ... 14 bit
<b>Absolute accuracy <sup>2)</sup></b>	±1°
<b>Repeat accuracy</b>	±0.2°
<b>Number of revolutions (multiturn)</b>	max. 24 bit
<b>Code</b>	binary or gray
<b>SSI clock rate</b>	50 kHz ... 2 MHz
<b>Data refresh rate</b>	2 ms
<b>Monoflop time</b>	≤ 15 μs
<b>Note:</b> If the clock cycle starts within the monoflop time a second data transfer begins with the same data. If the clock cycle starts after the monoflop time the cycle begins with the new values. The update rate is dependent on the clock speed, data length and monoflop time.	

SET input	
<b>Input</b>	active HIGH
<b>Input type</b>	comparator
<b>Signal level</b> (+V = power supply)	HIGH min. 60 % of +V, max: +V
	LOW max. 30 % of +V
<b>Input current</b>	< 0.5 mA
<b>Min. pulse duration (SET)</b>	10 ms
<b>Input delay</b>	1 ms
<b>New position data readable after</b>	1 ms
<b>Internal processing time</b>	200 ms

The encoder can be set to zero at any position by means of a HIGH signal on the SET input. Other preset values can be factory-programmed. The SET input has a signal processing time of approx. 1 ms, after which the new position data can be read via SSI or BiSS. Once the SET function has been triggered, the encoder requires an internal processing time of typ. 200 ms; during this time the power supply must not be switched off. The SET function should be carried out whilst the encoder is at rest.

The number of preset value writing cycles is limited to 10,000.

If this input is not used, it should be connected to 0 V (Encoder ground GND) in order to avoid interferences.

DIR input	
<b>Direction input:</b> A HIGH signal switches the direction of rotation from the default cw to ccw. This inverted function can also be factory-programmed.	
If this input is not used, it should be connected to 0 V (Encoder ground GND) in order to avoid interferences.	
<b>Response time (DIR input)</b>	1 ms

Power-ON	
After Power-ON the device requires a time of approx. 150 ms before valid data can be read.	
Hot plugging of the encoder should be avoided.	

1) Short circuit proof to 0 V or to output when power supply correctly applied.

2) Over the whole temperature range.

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## Terminal assignment

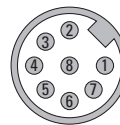
Interface	Type of connection	Features	Cable (isolate unused wires individually before initial start-up)									
2	2, B	SET, DIR	Signal:	0 V	+V	C+	C-	D+	D-	SET	DIR	⊥
			Cable color:	WH	BN	GN	YE	GY	PK	BU	RD	shield

Interface	Type of connection	Features	M12 connector, 8-pin									
2	4	SET, DIR	Signal:	0 V	+V	C+	C-	D+	D-	SET	DIR	⊥
			Pin:	1	2	3	4	5	6	7	8	PH

+V: Encoder power supply +V DC  
 0 V: Encoder power supply ground GND (0 V)  
 C+, C-: Clock signal  
 D+, D-: Data signal  
 SET: Set input  
 DIR: Direction input  
 PH ⊥: Plug connector housing (shield)

Top view of mating side, male contact base



M12 connector, 8-pin

## Dimensions

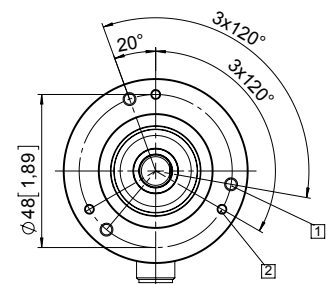
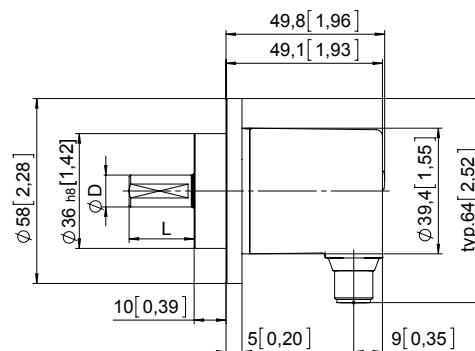
Dimensions in mm [inch]

### Clamping flange, ø 58 [2.28]

#### Flange type 3

- 1 3 x M4, 10 [0.39] deep
- 2 3 x M3, 6 [0.24] deep

D	Fit	L
6 [0.24]	h7	12.5 [0.49]
10 [0.39]	f7	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]	f7	20 [0.79]

