

Absolute encoders – multiturn

**Compact, robust
electronic multiturn, magnetic**

Sendix M3663R (shaft)

SSI



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 -40°C ... +85°C



High protection level



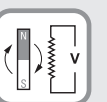
High shaft load capacity



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

- 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 Shaft version

8.M3663R.XX2X.XXX2
Type

a Version

- 1 = standard ¹⁾
clamping flange $\varnothing$ 42 mm [1.65"]
7 = stainless steel V4A ²⁾
clamping flange $\varnothing$ 42 mm [1.65"]
all metal parts accessible from outside
are out of stainless steel V4A

b Shaft ($\varnothing \times L$), with flat

- 1 = $\varnothing$ 6 x 12.5 mm [0.24 x 0.49"]
3 = $\varnothing$ 8 x 15 mm [0.32 x 0.59"]
5 = $\varnothing$ 10 x 20 mm [0.39 x 0.79"]
2 = $\varnothing$ 1/4" x 12.5 mm [0.49"]
E = $\varnothing$ 10 x 20 mm [0.39 x 0.79"],
stainless steel V4A

c Interface / power supply

- 2 = SSI / 10 ... 30 V DC

d Type of connection

- 2 = radial cable, 1 m [3.28'] PUR
B = radial cable, special length PUR *)
4 = radial M12 connector, 8-pin
*) Available special lengths (connection type 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.M3663R.132B.G322.0030 (for cable length 3 m)

e Code

- B = SSI, binary
G = SSI, gray

f Resolution (singleturn)

- A = 10 bit ST
2 = 12 bit ST
3 = 13 bit ST
4 = 14 bit ST

g Resolution (multiturn)

- 2 = 12 bit MT
6 = 16 bit MT
A = 20 bit MT
4 = 24 bit MT

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".

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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⁾
Connection technology		Order no.
Cordset, pre-assembled	M12 female connector with coupling nut, 8-pin 2 m [6.56'] PUR cable	05.00.6051.8211.002M ¹⁾
Connector, self-assembly (straight)	M12 female connector with coupling nut, 8-pin	05.CMB 8181-0 ¹⁾

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			SSI interface	
Maximum speed	4000 min ⁻¹ 2000 min ⁻¹ (continuous)		Output driver	RS485 transceiver type
Starting torque at 20°C [68°F]	< 0.01 Nm		Permissible load / channel	max. +/- 30 mA
Shaft load capacity	radial 80 N axial 40 N		Signal level	HIGH typ 3.8 V LOW with I _{Load} = 20 mA typ 1.3 V
Weight	approx. 0.2 kg [7.06 oz]		Resolution singleturn	10 ... 14 bit
Protection acc. to EN 60529/DIN 40050-9	IP66, IP67, IP69k		Absolute accuracy ³⁾	±1°
Working temperature range	-40°C ... +85°C [-40°F ... +185°F]		Repeat accuracy	±0.2°
Materials	version "1" (standard)	version "7" (stainless steel)	Number of revolutions (multiturn)	max. 24 bit
	shaft V2A	V4A	Code	binary or gray
	flange aluminum	V4A	SSI clock rate	50 kHz ... 2 MHz
	housing zinc die-cast	V4A	Data refresh rate	2 ms
	cable PUR	—	Monoflop time	≤ 15 µs
Shock resistance acc. to EN 60068-2-27	5000 m/s ² , 4 ms		Note: 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.	
Vibration resistance acc. to EN 60068-2-6	300 m/s ² , 10 ... 2000 Hz			

Electrical characteristics		SET input	
Power supply	10 ... 30 V DC	Input	active HIGH
Current consumption (no load)	max. 30 mA	Input type	comparator
Reverse polarity protection of the power supply	yes	Signal level	HIGH min. 60 % of +V, max: +V LOW max. 30 % of +V
Short-circuit proof outputs	yes ²⁾	Input current	< 0.5 mA
e1 compliant acc. to (pending)	EU guideline 2009/19/EC (acc. to EN 55025, ISO 11452 and ISO 7637)	Min. pulse duration (SET)	10 ms
UL approval	File no. E224618	Input delay	1 ms
CE compliant acc. to	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU	New position data readable after	1 ms
		Internal processing time	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.

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

1) Not for version "7" (V4A stainless steel)

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

3) Over the whole temperature range.

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DIR input	
Direction input: 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.	
Response time (DIR input)	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.

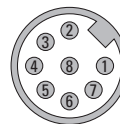
Terminal assignment

Interface	Type of connection	Features	Cable (isolate unused cores individually before initial start-up)									
2	2, B	SET, DIR	Signal:	0 V	+V	C+	C-	D+	D-	SET	DIR	⊥
			Core 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

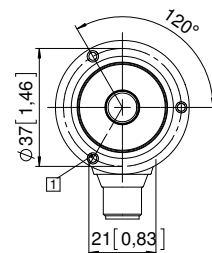
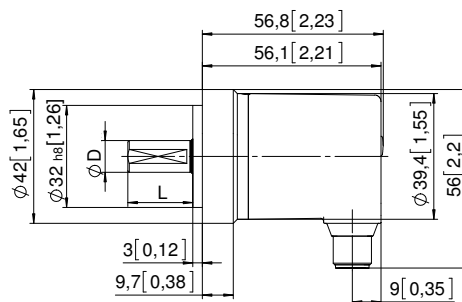
Dimensions

Dimensions in mm [inch]

**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
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]

