Standard magnetic | **Sendix M5851A (shaft)** | **Analog**



The Sendix M5851A is a magnetic singleturn encoder in compact design. High robustness and high resolution make this encoder the ideal device for use in demanding applications.

Safety-Lockplus™ | High rotational speed | Temperature range -40° ... +85°C | High protection level IP | High shaft load capacity | Shock / vibration resistant | Reverse polarity protection

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.

Application oriented

- Current output 4 ... 20 mA.
- Voltage output 0 ... 10 V or 0 ... 5 V.
- Different measuring ranges.
- SET input for easy start-up.

Order code Shaft version

8.M5851A . X X X X . X X X 2
Type — a b c d — e f g

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* [1)]
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
Type of connection with changed terminal assignment (see page 5)
D = 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.M5851A.313B.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 = 1 x 360°
2 = 1 x 180°
3 = 1 x 90°
4 = 1 x 45°

g *Counting direction*
1 = cw
2 = ccw

Optional on request
- Ex 2/22

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‘] PVC cable	**05.00.6081.2211.002M**
Connector	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
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 [1]
Measuring range		45°, 90°, 180° or 360°
DA converter resolution		12 bit
Angular measurement deviation [2]		±0,5°
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°
SET input		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 [1]
Measuring range		45°, 90°, 180° or 360°
DA converter resolution	0 ... 10 V 0 ... 5 V	12 bit 11 bit
Angular measurement deviation [2]		±0,5°
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°
SET input		level = +V for 1 s minimum
PowerON Time		< 1 s
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.

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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. 280 g [9.88 oz]
Protection acc. to EN 60529/DIN 40050-9		IP65
Working temperature range		-40 °C ... +85 °C [-40 °F ... +185 °F]
Materials	shaft flange housing cable	V2A aluminum zinc die-cast 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)

SET input

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

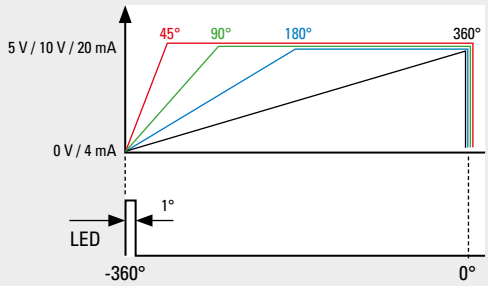
The encoder can be set to zero at any position by means of a HIGH signal on the SET input. Other preset values can be factory-programmed. The SET input has a signal processing time of approx. 1 ms, after which the new position data can be read. Once the SET function has been triggered, the encoder requires an internal processing time of typ. 200 ms; during this time the supply voltage 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.

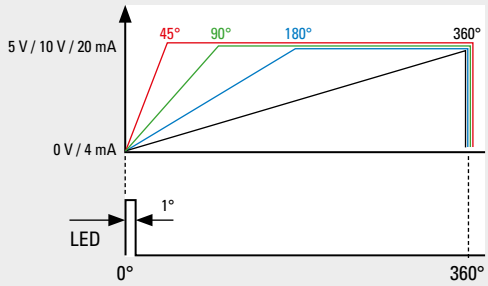
If this input is not used, it should be connected to 0 V (Encoder ground GND) in order to avoid interferences.

Example (output signal evolution) Variante counting direction cw

Direction of rotation left

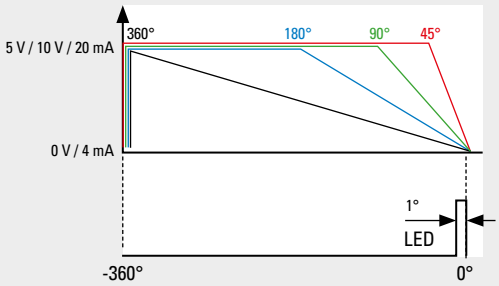


Direction of rotation right

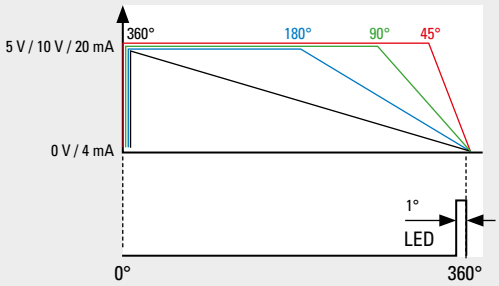


Example (output signal evolution) Variante counting direction ccw

Direction of rotation left



Direction of rotation right



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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	–
		Core color:	WH	BN	GN	GY	PK

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

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

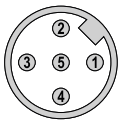
Interface	Type of connection	Cable (isolate unused cores individually before initial start-up)					
4, 5 (voltage)	2, B	Signal:	0 V	+V	+U	SET	–
		Core color:	WH	BN	GN	GY	PK

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

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

+V : Supply voltage encoder +V DC
0 V : Supply voltage encoder ground GND (0 V)
+U : Voltage
+I : Current
SET : SET input

Top view of mating side, male contact base



M12 connector, 5-pin

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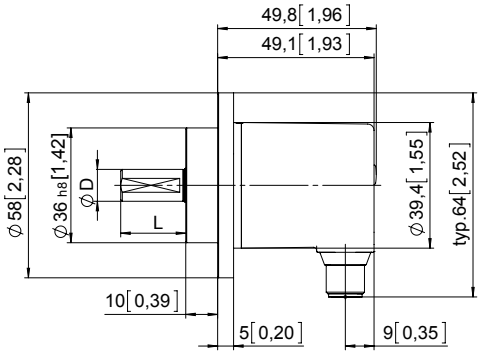
Standard magnetic | **Sendix M5851A (shaft)** | **Analog**

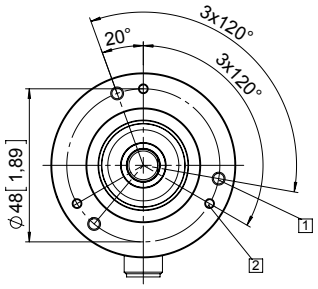
Dimensions

Dimensions in mm [inch]

Clamping flange, ø 58 [2.28]
Flange type 3

1 3 x M4
2 3 x M3

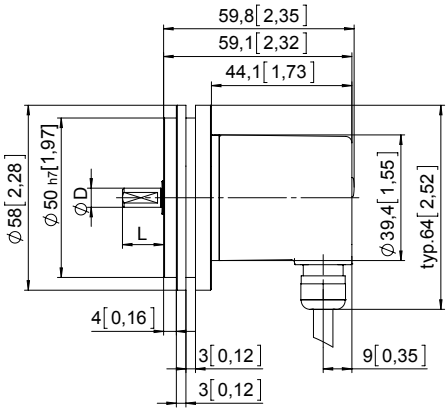


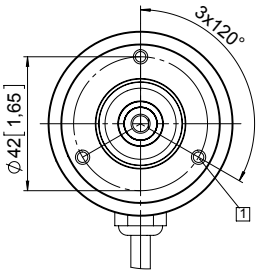


D	Fit	L
6 [0.24]	h7	12.5 [0.49]
10 [0.39]	h7	20 [0.79]

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]

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