

# Absolute encoders – multiturn

**Standard  
electronic multiturn, magnetic**

**Sendix M5868 (shaft)**

**SAE J1939**



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.



**SAE J1939**



Safety-Lockplus™



High rotational speed



Temperature range  
-40°C ... +85°C



High protection level



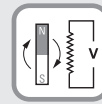
High shaft load capacity



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.
- Wide temperature range -40°C ... +85°C.
- Without gear and without battery, thanks to the Energy Harvesting technology.

## Up-to-the-minute fieldbus performance

- Up-to-the-minute fieldbus performance in the application: SAE J1939 with CAN-highspeed to ISO 11898.
- Universal Scaling Function.
- Fast determination of the operating status via two-color LED.

## Order code

**8.M5868.XX3X.3222**

## Shaft version

Type

### 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 Interface / power supply

- 3 = SAE J1939 / 10 ... 30 V DC

### 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.M5868.313B.3222.0030 (for cable length 3 m)

### e Fieldbus profile

- 32 = SAE J1939

### Optional on request

- Ex 2/22 (only for connection type 4)

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<b>Connection technology</b>		Order no.
<b>Coupling</b>	Bellows coupling ø 19 mm [0.75"] for shaft 10 mm [0.39"]	<b>8.0000.1102.1010</b>
<b>Connection technology</b>		Order no.
<b>Cordset, pre-assembled</b>	M12 female connector with coupling nut, 5-pin 5 m [16.40'] PVC cable	<b>05.00.6091.A211.005M</b>
	M12 female connector with coupling nut, 5-pin 1 m [3.28'] PVC cable	<b>05.00.6091.22C7.001M</b>
	Deutsch connector, 6-pin, DT04	<b>05.00.6091.22C7.001M</b>
<b>Connector, self-assembly (straight)</b>	M12 female connector with coupling nut, 5-pin	<b>8.0000.5116.0000</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).  
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](http://www.kuebler.com/connection_technology).

Technical data	
<b>Mechanical characteristics</b>	
<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 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
<b>Electrical characteristics</b>	
<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>CE compliant acc. to</b>	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU
<b>Interface characteristics SAE J1939</b>	
<b>Resolution singleturn</b>	1 ... 16.384 (14 bit), scalable default: 16.384 (14 bit)
<b>Absolute accuracy <sup>2)</sup></b>	±1°
<b>Repeat accuracy</b>	±0.2°
<b>Number of revolutions (multiturn)</b>	max. 536.870.912 (29 bit) scalable only via the total resolution default: 262.144 (18 bit)
<b>Total resolution</b>	1 ... 8.796.093.022.208 (43 bit), scalable default: 4.294.967.296 (32 bit)
<b>Interface</b>	CAN high-speed acc. to ISO 11898, CAN specification 2.0 B
<b>Protocol</b>	SAE J1939
<b>Power-ON time</b>	< 1200 ms
<b>Baud rate</b>	250 kbit/s switchable by software to 500 kbit/s
<b>Node address</b>	software configurable
<b>Termination</b>	software configurable

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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## General information concerning SAE J1939

The protocol J1939 originates from the international Society of Automotive Engineers (SAE) and operates on the physical layer with high speed CAN as per ISO11898. The application emphasis lies in the area of the power train and chassis of commercial vehicles. It serves to transfer diagnostic data (for example, motor speed, position, temperature) and control information. Type series M3658 and M3678 encoders support the total functionality of J1939.

This protocol is a multimaster system with decentralized network management that does not involve channel-based communication.

It supports up to 254 logic nodes and 30 physical control devices per segment. The information is described as parameters (signals) and combined on 4 memory pages (data pages) into parameter groups (PGs). Each parameter group can be identified via a unique number, the parameter group number (PGN). Independently of this, each signal is assigned a unique SPN (suspect parameter number).

The major part of the communication occurs cyclically and can be received by all control devices without the explicit request for data (Broadcast). Furthermore the parameter groups are optimized to a length of 8 data bytes. This enables very efficient utilization of the CAN protocol. If greater amounts of data need to be transferred, then transport protocols (TP) can be used: BAM (broadcast announce message) and CMDT (connection mode data transfer). With BAM TP the transfer of data occurs as a broadcast.

## Encoder implementation SAE J1939

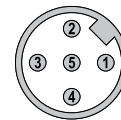
- PGNs that are adaptable to the customer's application.
- Resolution of address conflicts -> Address Claiming (ACL).
- Continuous checking whether control addresses have been assigned twice within a network.
- Change of control device addresses during run-time.
- Unique identification of a control device with the help of a name that is unique worldwide. This name serves to identify the functionality of a control device in the network.
- Predefined PGs for position, speed and alarm.
- 250 kbit/s, 29 bit identifier.
- Watchdog controlled device.

A two-color LED, located on the rear of the encoder, signals the operating and fault status of the J1939 protocol, as well as the status of the internal sensor diagnostics.

## Terminal assignment

Interface	Type of connection	Cable (isolate unused wires individually before initial start-up)					
2	2, B	Signal:	+V	0 V	CAN_GND	CAN_H	CAN_L
		Cable color:	BN	WH	GY	GN	YE
Interface	Type of connection	M12 connector, 5-pin					
2	4	Signal:	+V	0 V	CAN_GND	CAN_H	CAN_L
		Pin:	2	3	1	4	5

Top view of mating side, male contact base



M12 connector, 5-pin

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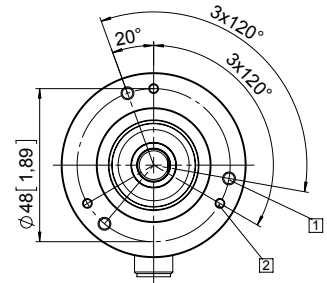
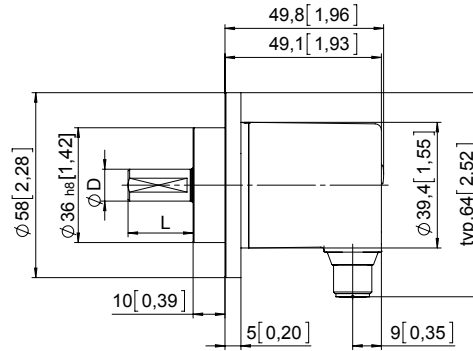
## Dimensions

Dimensions in mm [inch]

### Clamping flange, $\varnothing$ 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, $\varnothing$ 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]

