

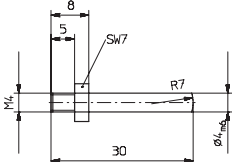
Absolute Encoders - Singleturn

Compact, magnetic	Sendix M3658 / M3678 (Shaft / Hollow shaft)	SAE J1939
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Mounting accessory for shaft encoders

Coupling	Bellows coupling \varnothing 19 mm for shaft 6 mm	8.0000.1101.0606
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Mounting accessory for hollow shaft encoders

Cylindrical pin, long for torque stops		With fixing thread	8.0010.4700.0000
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Connection Technology

Connector, self-assembly	M12	8.0000.5116.0000
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Cordset, pre-assembled with 2 m PVC cable	M12	8.0000.6V81.0002
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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.

Mechanical characteristics	
Max. speed	6000 min ⁻¹
Starting torque	< 0.06 Nm
Load capacity of shaft	radial 40 N axial 20 N
Weight	ca. 0.2 kg
Protection EN 60 529/DIN 40050-9	IP67 / IP69k
EX approval for hazardous areas	optional Zone 2 and 22
Working temperature range	-40°C ... +85°C
Materials	shaft/hollow shaft stainless steel flange aluminium housing zinc die-cast housing cable PUR
Shock resistance acc. EN 60068-2-27	5000 m/s ² , 6 ms
Vibration resistance acc. EN 60068-2-6	300 m/s ² , 10 ... 2000 Hz
Permanent shock resistance acc. EN 60068-2-27	1000 m/s ² , 2 ms
Vibration (broad-band random) EN 60068-2-64	5 ... 2500 Hz, 100 m/s ² - rms

Diagnostic LED (two-colour, red/green)	
LED ON or blinking	red error display green status display

General electrical characteristics	
Power supply	8 ... 30 V DC
Current consumption (no load)	max. 25 mA
Reverse connection of the supply voltage (U_B)	yes
Measuring range	360°
Linearity	< 1°
Repeat accuracy	< 0.1°
Data refresh rate	400 μ s
RoHS compliant acc. to	EU guideline 2002/95/EG
CE compliant acc. to	EN 61000-6-2, EN 61000-6-4 and EN 61000-6-3

Interface characteristics CANopen	
Resolution	1 ... 16384 (14 bit), scaleable: 1 ... 16384
Default value	16384 (14 bit)
Code	Binary
Interface	CAN High-Speed according to ISO 11898, Basic- and Full-CAN, CAN Specification 2.0 B
Protocol	SAE J1939
Baud rate	250 kbit/s
Node address	1 ... 255 (via address claiming)
Termination	software configurable

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SAE J1939

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 decentralised 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 optimised 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 CMTD (Connection Mode Data Transfer). With BAM TP the transfer of data occurs as a broadcast.

Encoder Implementation SAE J1939

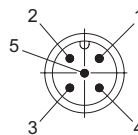
- PGNs that are adaptable to the customer's application
- Resolution of address conflicts -> Address Claiming (ACL)
- Continuous checking whether control addresses have been assigned twice within a network
- Change of control device addresses during run-time
- Unique identification of a control device 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-colour 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

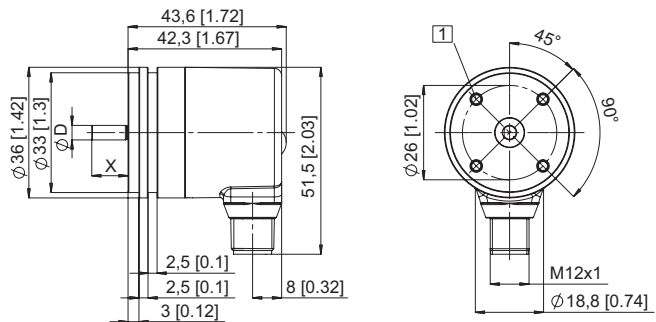
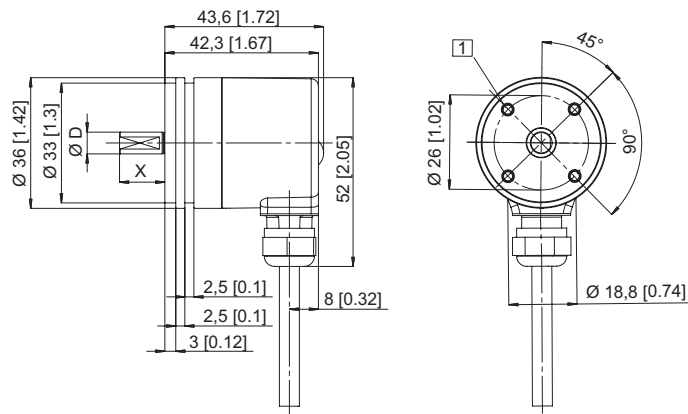
Signal	+U _B	0 V	CAN GND	CAN High	CAN Low
M12 / Pin	2	3	1	4	5
Cable colour	BN	WH	GY	GN	YE



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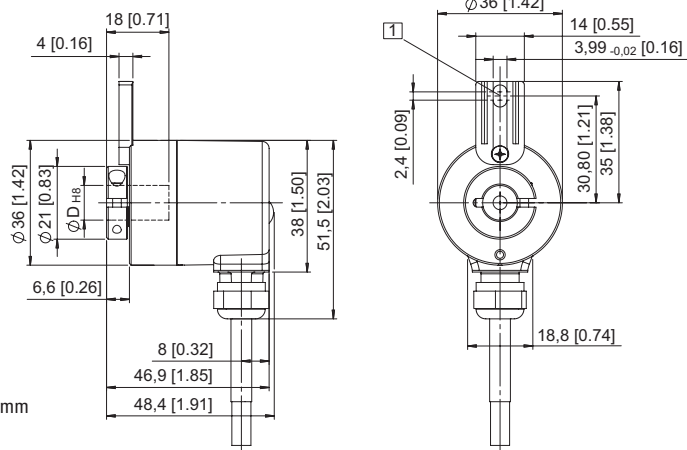
Dimensions shaft version Synchro flange, ø 36 mm



1 M3, 6 [0.24] deep

Dimensions hollow shaft version

With torque stop set, ø 36 mm



1 Torque stop slot,
Recommendation: Cylindrical pin DIN7, ø 4 mm

With stator coupling, ø 36 mm

