

## Large hollow shaft optical / magnetic

#### 9080 (hollow shaft)

### **CANopen / DeviceNet**



The multiturn encoder 9080 with CANopen interface and combined optical / magnetic sensor technology is perfect for CANopen applications, where a large hollow shaft is required.

This through hollow shaft is available with a diameter up to 28 mm. The maximum resolution of the 9080 is 25 bits.























High rotational

Temperature

High protection

High shaft load

Shock / vibration

### **Adaptable**

- · With cable gland or M12 connector.
- Hollow shaft of 12 up to 28 mm.
- · Programmable over the bus.

#### **User-friendly**

- · All relevant parameters programmable.
- · Wide selection of shafts and fixing options.

## Order code **Hollow shaft**

## 8.9080





#### a Flange

- 1 = without mounting aid
- 2 = with spring element, short
- 3 = with spring element, long
- 4 = with mounting flange
- 5 = with tether arm, long
- **b** Through hollow shaft
- 1 = Ø 12 mm [0.47"]
- $2 = \emptyset 15 \text{ mm } [0.59"]$
- $9 = \emptyset 16 \text{ mm} [0.63"]$  $3 = \emptyset 20 \text{ mm } [0.79"]$
- $4 = \emptyset 24 \text{ mm } [0.94"]$
- $C = \emptyset 25 \text{ mm } [0.98"]$
- $5 = \emptyset 28 \text{ mm} [1.10"]$
- $6 = \emptyset \, 5/8"$
- 7 = ø 1"

c Interface / power supply

- 1 = DeviceNet / 10 ... 30 V DC
- 2 = CANopen / 10 ... 30 V DC
- **d** Type of connection, removable bus terminal cover
- 1 = with cable gland M16 1)
- 2 = with 3 x M12 connector, 5-pin

e Fieldbus profile

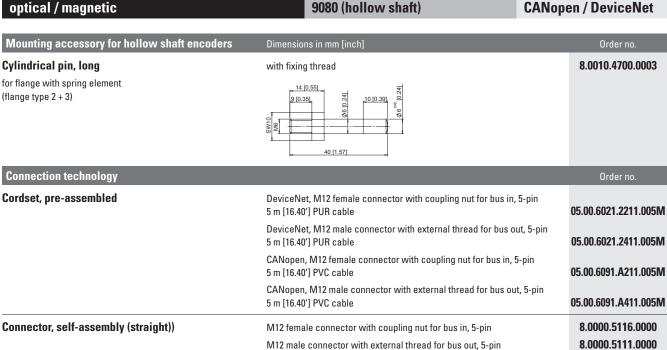
1001 = DeviceNet 2001 = CANopen

Includes EDS-file and documentation on CD

Use couplings for the BUS-IN connection and connectors for the BUS-OUT connection.



# Large hollow shaft 9080 (hollow shaft) CANopen / DeviceNet



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						
Maximum speed	6000 min <sup>-1</sup> , 3000 min <sup>-1</sup> (continuous)					
Mass moment of inertia	approx. 72 x 10 <sup>-6</sup> kgm <sup>2</sup>					
Starting torque - at 20°C [68°F]	< 0.2 Nm					
Weight	approx. 0.9 kg [31.74 oz]					
Protection acc. to EN 60529	IP65					
Working temperature range	-10°C +70°C [+14°F + 158°F]					
Material hollow shaft	stainless steel H7					
Shock resistance acc. to EN 60068-2-27	2500 m/s², 6 ms					
Vibration resistance acc. to EN 60068-2-6	100 m/s <sup>2</sup> , 55 2000 Hz					

Electrical characteristics	
Power supply	10 30 V DC
Power consumption	290 mA
Recommended fuse	T 0.315 A
Performance against magnetic	EN 61000-4-8, severity level 5
influence acc. to	
UL approval	file 224618
CE compliant acc. to	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU

Interface characteristics CANope	en / DeviceNET
Resolution singleturn	1 8192 (13 bit) scalable default: 8192 (13 bit)
Number of revolutions (multiturn)	max. 4096 (12 bit) scalable only via the total resolution
Total resolution	1 33.554.432 (25 bit), scalable default: 33.554.432 (25 bit)
Code	binary
Interface	CAN hIGH-speed acc. to ISO/DIS 11898, Basic and Full-CAN; CAN specification 2.0 B (11 and 29 bit Identifier)
Protocol	CANopen according to profile DSP 406 with additional functions. DeviceNet profile for Encoder Release V 2.0
Baud rate	10 1000 kbit/s programmable via DIP switches
Basic identifier/node	programmable via DIP switches



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#### **CANopen / DeviceNet**

#### **CANopen - Device profile**

#### **General description**

The CANopen Device profiles describe the functionality of the communication and of that part of the CANopen fieldbus system specific to the manufacturer. Device profile 406 applies to encoders and defines the individual objects independently of the manufacturer. In addition the profile makes provision for additional extended functions specific to the manufacturer; using devices that interface with CANopen offers the advantage of acquiring systems today that are prepared for the needs of the future.

#### The following functionality is integrated:

- · Class C2 functionality.
- NMT slave.
- · Diagnostics (internal) 2 bit.
- · CAN LED for bus status.
- · CAN LED for operating mode.

#### The following parameters can be programmed::

- · Polling mode or auto mode with adjustable time.
- · Code sequence (direction).
- Number of pulses/rotation 1 ... 8192.
- · Number of revolutions 1 ... 4096.
- Total resolution.
- Preset.
- Offset.
- · Number of revolutions.

#### **DeviceNet Encoder profile**

#### **General description**

The DeviceNet Device profile describes the functionality of the communication and of that part of the DeviceNet fieldbus system specific to the manufacturer. The Encoder profile applies to encoders and defines the individual objects independently of the manufacturer. In addition the profile makes provision for additional extended functions specific to the manufacturer.

#### The following parameters can be programmed:

- · Direction of rotation.
- Scaling factor
  - Number of pulses/rotation 1 ... 8192.
  - Total resolution.
- Number of revolutions 1 ... 4096.
- · Preset value.
- · Diagnostics mode.
- · Resolution.

#### The following functionality is integrated:

- · Galvanic isolation of the fieldbus stage with DC/DC converter.
- · Addressing via DIP switches or software.
- Diagnostic LED for network and mode.
   Baud rate 125, 250 and 500 kbit/s programmable via DIP switches.
- Node address 0 ... 63 and baud rate programmable via DIP switches.
- · Polled mode.
- Cyclic mode.
- · Change of state mode (COS).
- Combination of polled mode and cyclic mode.
- Combination of polled mode and COS mode.
- Offline connection set.
- · Device heartbeat.
- "Out of box" configuration
- MAC ID and Baud rate preset value, MAC ID = 63.
- Baud rate = 125 kbit/s.
- 2 I/O Assembly: position value / position value and status.

### $\label{lem:fieldbus} \textbf{Fieldbus encoders can be used in following applications:}$

#### CANopen

• Elevators.

Construction plant.

- · Agricultural vehicles.
- Mobile plant.
- Cranes. Special purposes vehicles.

#### DeviceNet

Especially suitable for applications in the USA.

#### Terminal assignment terminal box

Interface	Type of connection	Terminal box													
		Signal: ENC.		BUS IN			BUS OUT			ENC.		shield			
1, 2	1		+V DC	0 V	0 V	В	Α	Α	В	0 V	0 V	+V DC	Į	Ļ	
		Terminal:	1	2	3	4	5	6	7	8	9	10	11	12	

#### Terminal assignment M12 connector version

Interface	Type of connection	Function	M12 connector, 5-pin						
		Bus in	Signal:	DRAIN	+ V DC	– V DC	CAN_H	CAN_L	2 1
			Pin:	1	2	3	4	5	3-((•••))
1, 2	2		Core color:	GY	RD	ВК	WH	BU	4 5
1, 2		Bus out	Signal:	DRAIN	+ V DC	– V DC	CAN_H	CAN_L	1 2
			Pin:	1	2	3	4	5	3
			Core color:	GY	RD	BK	WH	BU	5 4



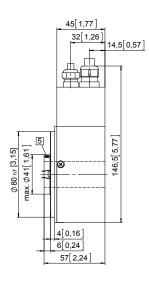
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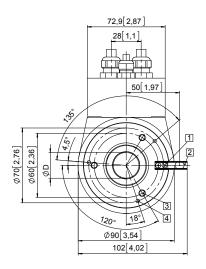
#### **Dimensions**

Dimensions in mm [inch]

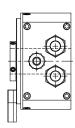
#### Flange with spring element

- Spring element, short (flange no. 2) cylindrical pin DIN 6325, ø 6 [0.24]
- 2 Spring element, long (flange no. 3) cylindrical pin DIN 6325, ø 6 [0.24]
- 3 x M6, 10 [0.39] deep
- 4 3 x M4, 7 [0.28] deep
- 5 Recommended torque for the clamping ring 1.0 Nm





D	Fit
12 [0.47]	H7
15 [0.59]	H7
16 [0.63]	H7
20 [0.79]	H7
24 [0.94]	H7
25 [0.98]	H7
28 [1.10]	H7
5/8"	H7
1"	H7



#### Flange with tether arm, long

1 Recommended torque for the clamping ring 1.0 Nm

