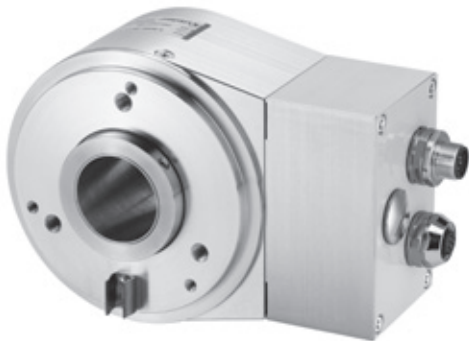


# Absolute Encoders – Multiturn

Large hollow shaft  
optical / magnetic

9080 (Hollow shaft)

CANopen / DeviceNet



The multiturn encoder 9080 with CANopen interface and combined optical / mechanical 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.



DeviceNet

CANopen



High rotational speed



Temperature range  
-10°...+70°C



High protection level  
IP65



High shaft load capacity



Shock / vibration resistant



Short circuit proof



Reverse polarity protection

## 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 . XXXX . XXXX  
Type            a b c d            e

### 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 Hollow shaft

- 1 = ø 12 mm [0.47"]
- 2 = ø 15 mm [0.59"]
- 9 = ø 16 mm [0.63"]
- 3 = ø 20 mm [0.79"]
- 4 = ø 24 mm [0.94"]
- C = ø 25 mm [0.98"]
- 5 = ø 28 mm [1.10"]
- 6 = ø 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

- 1 = removable bus terminal cover, with cable gland M16 <sup>1)</sup>
- 2 = removable bus terminal cover, with 3 x M12 connector, 5-pin

### e Fieldbus profile

- 1001 = DeviceNet
- 2001 = CANopen  
Encoder Profile DSP 406

Includes EDS-file and documentation on CD  
Use **couplings** for the **BUS-IN** connection and **connectors** for the **BUS-OUT** connection.

1) Only in conjunction with CANopen

# Absolute Encoders – Multiturn

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## Mounting accessory for hollow shaft encoders Order No.

<b>Cylindrical pin, long</b> for torque stops		With fixing thread	<b>8.0010.4700.0003</b>
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## Connection technology

<b>Connector, self-assembly (straight)</b>	M12 female connector with coupling for Bus in	<b>8.0000.5116.0000</b>
	M12 male connector with external thread for Bus out	<b>8.0000.5111.0000</b>
<b>Vorkonfektionierter Kabelsatz</b>	CANopen, Bus in, 6 m [19.68'] PVC cable	<b>05.00.6021.2211.006M</b>
	CANopen, Bus out, 6 m [19.68'] PVC cable	<b>05.00.6021.2411.006M</b>
	DeviceNet, Bus in, 6 m [19.68'] PVC cable	<b>05.00.6091.A211.006M</b>
	DeviceNet, Bus out, 6 m [19.68'] PVC cable	<b>05.00.6091.A411.006M</b>

## Programming set

Including: - Interface converter USB-CAN - Connection cable from interface converter to encoder - Power supply 90 ... 250 V AC - DVD with Ezturn® software	Minimum system requirements: Operating system: WinXP SP3 or higher Processor: 1 GHz RAM: 512 MB Required disk space: 500 MB	<b>8.0010.9000.0015</b>
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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](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)

 Absolute Encoders  
Multiturn

## Technical data

Mechanical characteristics	
<b>Max. speed</b>	6 000 min <sup>-1</sup> , 3 000 min <sup>-1</sup> (continuous)
<b>Moment of inertia</b>	approx. 72 x 10 <sup>-6</sup> kgm <sup>2</sup>
<b>Starting torque - at 20°C [68°F]</b>	< 0.2 Nm
<b>Weight</b>	approx. 0.9 kg [31.74 oz]
<b>Protection acc. to EN 60529</b>	IP65
<b>Working temperature range</b>	-10°C ... +70°C [+14°F ... + 158°F]
<b>Material</b>	hollow shaft stainless steel H7
<b>Shock resistance acc. EN 60068-2-27</b>	2500 m/s <sup>2</sup> , 6 ms
<b>Vibration resistance acc. EN 60068-2-6</b>	100 m/s <sup>2</sup> , 55 ... 2000 Hz

Electrical characteristics	
<b>Power supply (+V)</b>	10 ... 30 V DC
<b>Power consumption</b>	290 mA
<b>Recommended fuse</b>	T 0.315 A
<b>Performance against magnetic influence acc. to</b>	EN 61000-4-8, Severity level 5
<b>UL approval</b>	File 224618
<b>CE compliant acc. to</b>	EMC guideline 2004/108/EC
<b>RoHS compliant acc. to</b>	guideline 2002/95/EC

Interface characteristics CANopen / DeviceNET	
<b>Singleturn resolution</b>	1 ... 8192 (13 bit) scaleable
<b>Number of revolutions</b>	max. 4096 scalable only via the total resolution
<b>Multiturn resolution</b>	1 ... 4096 (12 bit)
<b>Total resolution</b>	25 bit
<b>Code</b>	Binary
<b>Interface</b>	CAN HIGH-Speed acc. to ISO/DIS 11898, Basic and Full-CAN; CAN specification 2.0 B (11 and 29 bit Identifier)
<b>Protocol</b>	CANopen according to profile DSP 406 with additional functions. DeviceNet Profile for Encoder Release V 2.0
<b>Baud rate</b>	programmable via DIP switches 10 ... 1000 Kbit/s
<b>Basic identifier/node</b>	programmable via DIP switches

# Absolute Encoders – Multiturn

**Large hollow shaft  
optical / magnetic**

**9080 (Hollow shaft)**

**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
  - Total resolution
- Number of revolutions
- 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

## Fieldbus encoders can be used in following applications:

### CANopen

- Elevators
- Construction plant
- Cranes
- Agricultural vehicles
- Mobile plant
- 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	B	A	A	B	0 V	0 V	+V DC	±	
		Terminal:	1	2	3	4	5	6	7	8	9	10	11

## Terminal assignment M12 connector version

Interface	Type of connection	Function	M12 connector						Diagram
			Signal:	DRAIN	+ V DC	- V DC	CAN_H	CAN_L	
1, 2	2	Bus in	Pin:	1	2	3	4	5	
			Colour:	GY	RD	BK	WH	BU	
			Signal:	DRAIN	+ V DC	- V DC	CAN_H	CAN_L	
		Bus out	Pin:	1	2	3	4	5	
			Colour:	GY	RD	BK	WH	BU	
			Signal:	DRAIN	+ V DC	- V DC	CAN_H	CAN_L	

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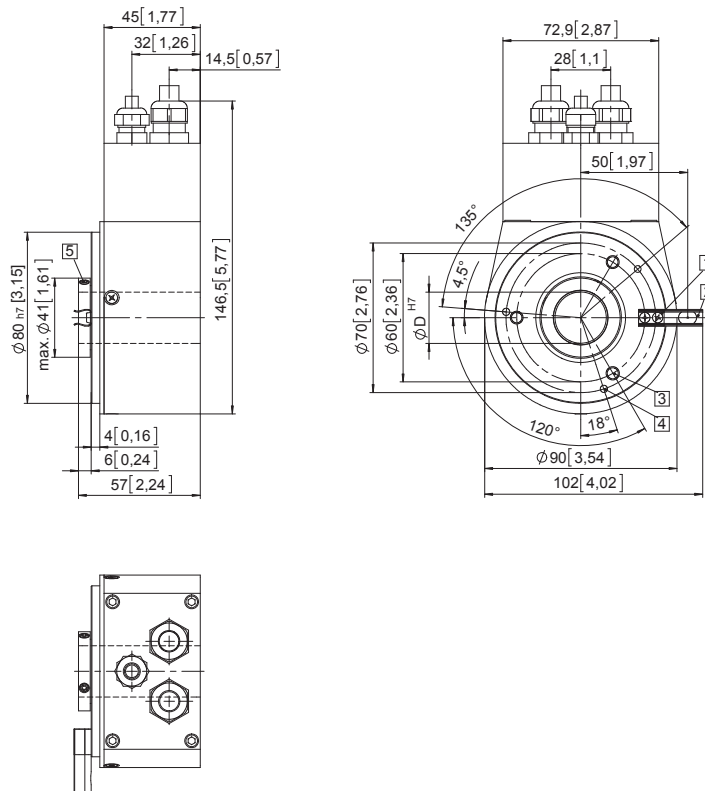
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## Dimensions

Dimensions in mm [inch]

### Flange with spring element

- 1 Spring element short (flange No. 2)  
Cylindrical pin DIN 6325,  $\varnothing$  6 [0.24]
- 2 Spring element long (flange No. 3)  
Cylindrical pin DIN 6325,  $\varnothing$  6 [0.24]
- 3 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



### Flange with tether arm long

- 1 Recommended torque for the  
clamping ring 1.0 Nm

