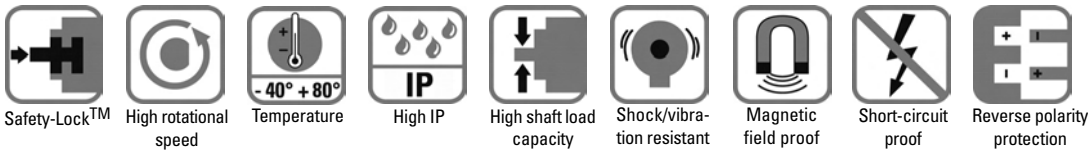


# Rotary Measuring Technology

## Absolute encoders, Singleturn, CANopen



### Sendix absolut, Singleturn Type 5858 (shaft) / 5878 (Hollow shaft), CANopen



#### Reliable

- **Increased resistance against vibrations and installation mistakes. Avoids machine stops and repair work**  
Sturdy "Safety-Lock™ Design" bearing structure
- **Few components and connection points increase the operational reliability**  
Kübler OptoASIC technology with highest integration density (Chip-on-Board)
- **Remains sealed, even in roughest environments, ensures highest safety against field breakdowns**  
Resistant die cast housing and protection up to IP 67
- **Can be used in a wide temperature range without additional charge**  
wide temperature range



CANopen

Sendix absolut

#### Fast

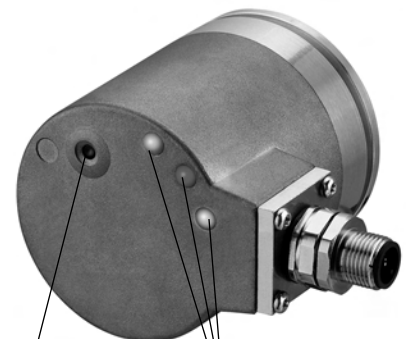
- **Genuine time-synchronous position detection of several axes**  
Extended CAN Sync Mode with real-time position acquisition
- **Fast data availability while reducing the load on the bus and the control**  
Intelligent functions like the transmission of speed, acceleration or exiting a working area

#### Versatile

- **Latest field bus performance for the applications**  
CANopen, with the latest profiles
- **The suitable connection variant for every specific case**  
Bus terminal cover with M12 connector or cable connection or fixed connection with M12, M23 or D-Sub connector, also easy point-to-point connections
- **Position, Speed, acceleration, working area - The user decides which information is to be available in real-time**  
Variable PDO mapping in the memory
- **Quick and error-free start-up, without setting any switches**  
Node address, baud rate and termination can be programmed via the bus
- **Reliable mounting in the most various installation cases**  
Comprehensive and proven mounting possibilities
- also available in **seawater resistant** version, certified acc. to salt-spray test IEC 68-2-11 => 672 hours.

#### Mechanical characteristics:

Max. speed without shaft seal (IP 65) up to 70 °C:	9 000 min <sup>-1</sup> , continuous 7 000 min <sup>-1</sup>
Max. speed without shaft seal (IP 65) up to T <sub>max</sub> :	7 000 min <sup>-1</sup> , continuous 4 000 min <sup>-1</sup>
Max. speed with shaft seal (IP 67) up to 70 °C:	8 000 min <sup>-1</sup> , continuous 6 000 min <sup>-1</sup>
Max. speed with shaft seal (IP 67) up to T <sub>max</sub> :	6 000 min <sup>-1</sup> , continuous 3 000 min <sup>-1</sup>
Starting torque without shaft seal (IP65):	< 0.01 Nm
Starting torque with shaft seal (IP67):	Shaft version: < 0.05 Nm Hollow shaft version: <0.03 Nm
Moment of inertia:	Shaft version: 3.0 x 10 <sup>-6</sup> kgm <sup>2</sup> Hollow shaft version: 6.0 x 10 <sup>-6</sup> kgm <sup>2</sup>
Radial load capacity of shaft:	80 N
Axial load capacity of shaft:	40 N
Weight:	approx. 0.53 kg with bus terminal cover approx. 0.50 kg with fixed connection
Protection acc. to EN 60 529:	housing: IP 67, shaft: IP 65, opt. IP 67
EX approval for hazardous areas:	optional zone 2 and 22
Working temperature:	-40° C ... +80 °C
Materials:	Shaft: stainless steel, Flange: aluminium, Housing: die cast zinc
Shock resistance acc. to DIN-IEC 68-2-27:	>2500 m/s <sup>2</sup> , 6 ms
Vibration resistance acc. to DIN-IEC 68-2-6:	>100 m/s <sup>2</sup> , 55 ... 2000 Hz



**SET key:**  
For quick, simple on-site start-up

**Green, red and yellow LEDs:**  
Failure-free operation immediately visible on the bus.

### Sendix absolut, Singleturn Type 5858 (shaft) / 5878 (Hollow shaft), CANopen

#### General electrical characteristics:

Supply voltage:	10 ... 30 V DC
Current consumption (w/o output load):	24 V DC, max. 60 mA
Reverse polarity protection at power supply (Ub):	Yes
UL certified	File 224618
Conforms to CE requirements acc. to EN 61000-6-2, EN 61000-6-4 and EN 61000-6-3	
RoHS compliant acc. to EU guideline 2002/95/EG	

#### Interface characteristics CANopen:

Singleturn resolution (max, scaleable):	1 ... 65536 (16 bits), default scale value is set to 8192 (13 bits)
Code:	Binary
<b>Interface:</b>	CAN High-Speed according ISO 11898, Basic- and Full-CAN CAN Specification 2.0 B

#### General information about CANopen

The CANopen encoders of the 5858 series support the latest CANopen communication profile according to DS 301 V4.02. In addition, device-specific profiles like the encoder profile DS 406 V3.1 are available.

The following operating modes may be selected: Polled Mode, Cyclic Mode, Sync Mode and a High Resolution Sync Protocol. Moreover, scale factors, preset values, limit switch values and many other additional parameters can be programmed via the CAN-Bus. When switching the device on, all parameters, which have been saved on an EEPROM to protect them against power failure, are loaded again.

The following output values may be combined in a freely variable way as PDO (PDO mapping): **position, speed, acceleration**, as well as the status of the working area.

#### CANopen Communication Profile DS 301 V4.02

Among others, the following functionality is integrated:

- Class C2 functionality
- NMT Slave
- Heartbeat Protocol
- High Resolution Sync Protocol Identity Object
- Error Behaviour Object
- Variable PDO Mapping self-start programmable (Power on to operational), 3 Sending PDO's
- Node address, baud rate and CANbus
- Programmable termination

#### SET control button (zero or defined value, option)

Protected against accidental activation, can only be pushed in with the tip of a ball pen or similar.

#### Diagnostic LED (yellow)

LED on with:  
optical sensor path faulty (code error, LED error), low voltage and over-temperature

<b>Protocol:</b>	CANopen profile DS 406 V3.1 with manufacturer-specific add-ons
<b>Baud rate:</b>	10 ... 1000 kbit/s (set by DIP switches/software configurable)
<b>Node address:</b>	1 ... 127 (set by rotary switches / software configurable)
<b>Termination switchable:</b>	Set by DIP switches Software configurable

As a price-effective variant, encoders with a connector or a cable connection are available, for which the device address and baud rate are modified by means of software. The models with bus terminal cover and integrated T-shaped coupler allow a particularly easy installation: bus and power supply are connected very simply due to M12 connectors; the device address is set by means of two hexadecimal rotary switches. Furthermore, another DIP switch allows setting the baud rate and switching on a termination resistor. Three LED's located on the back indicate the operating or fault status of the CAN bus, as well as the status of an internal diagnostic.

#### CANopen Encoder Profile DS 406 V3.1

The following parameters can be programmed:

- Event mode
- Units for speed selectable (Steps/Sec or RPM)
- Factor for speed calculation (e.g. measuring wheel periphery) Integration time for speed value of 1...32
- 2 work areas with 2 upper and lower limits and the corresponding output states
- Variable PDO mapping for position, speed, acceleration, work area status
- Extended failure management for position sensing with integrated temperature control
- User interface with visual display of bus and failure status - 3 LED's
- Optional - 32 CAM's programmable
- Customer-specific memory - 16 Bytes

All profiles stated here: **Key-features**

The object 6003h "Preset" is assigned to an integrated key, accessible from the outside "Watchdog-controlled" device

### Sendix absolut, Singleturn Type 5858 (shaft) / 5878 (Hollow shaft), CANopen

#### Terminal assignment:

Bus terminal cover with terminal box (type of connection 1)

Direction:	OUT					IN				
Signal:	CAN Ground	CAN_Low (-)	CAN_High (+)	0 Volt power supply	+UB power supply	0 V power supply	+UB power supply	CAN_Low (-)	CAN_High (+)	CAN Ground
Abbreviation:	CG	CL	CH	0 V	+V	0 V	+V	CL	CH	CG

#### Terminal assignment:

Cable connection (type of connection A)

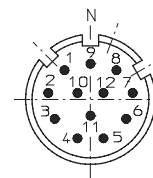
Direction:	IN				
Signal:	0 V power supply	+UB power supply	CAN_Low (-)	CAN_High (+)	CAN Ground
Abbreviation:	0 V	+V	CL	CH	CG
Cable colour:	WH	BN	YE	GN	BK

#### Terminal assignment:

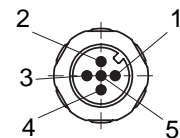
M23 (type of connection I) or M12 (type of connection E) connector

Direction:	IN				
Signal:	0 V power supply	+UB power supply	CAN_Low (-)	CAN_High (+)	CAN Ground
Abbreviation:	0 V	+V	CL	CH	CG
M23 PIN assignment:	10	12	2	7	3
M12 PIN assignment:	3	2	5	4	1

Bus in M23:



Bus in M12:

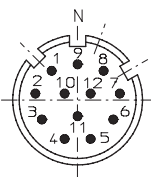


#### Terminal assignment:

Bus terminal cover with 2 x M12 connector (type of connection 2, F or J)

Direction:	OUT					IN				
Signal:	CAN Ground	CAN_Low (-)	CAN_High (+)	0 Volt power supply	+UB power supply	0 V power supply	+UB power supply	CAN_Low (-)	CAN_High (+)	CAN Ground
Abbreviation:	CG	CL	CH	0 V	+V	0 V	+V	CL	CH	CG
M23 PIN assignment:	3	2	7	10	12	10	12	2	7	3
M12 PIN assignment:	1	5	4	3	2	3	2	5	4	1

Bus in and out M23:



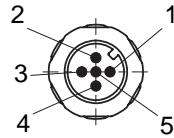
Corresponding mating connector:  
8.0000.5012.0000

Bus out:



Corresponding mating connector:  
05.B-8151-0/9

Bus in:



Corresponding mating connector:  
05.BS-8151-0/9

# Rotary Measuring Technology

## Absolute encoders, Singleturn, CANopen

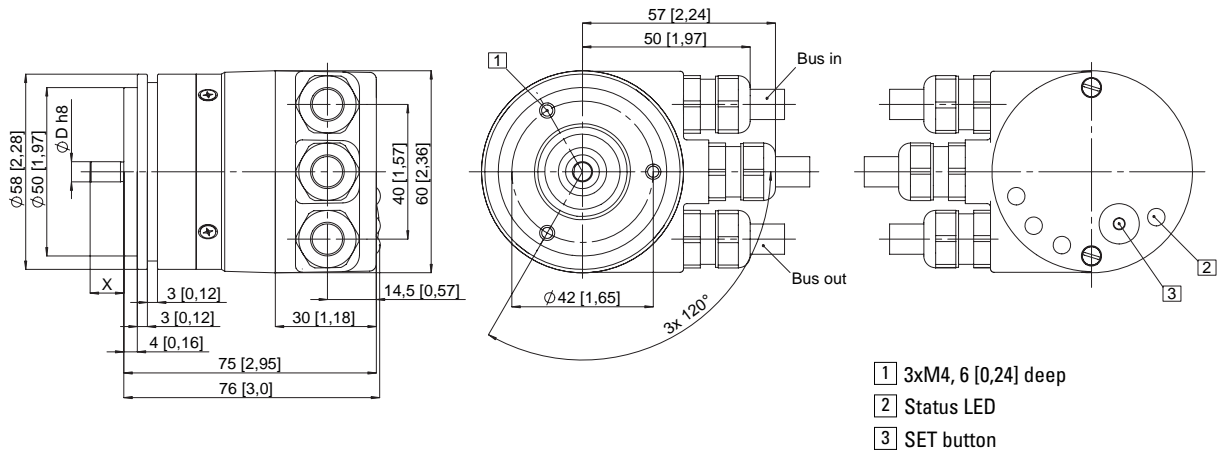
### Sendix absolut, Singleturn Type 5858 (shaft) / 5878 (Hollow shaft), CANopen

Dimensions shaft version:

With removable bus terminal cover

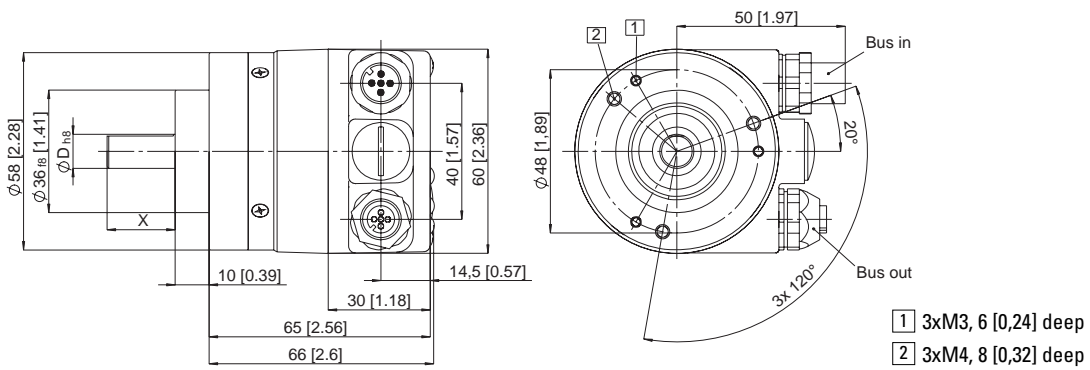
ø 58 mm, Synchro flange

Flange type 2 and 4 (Drawing with cable version)



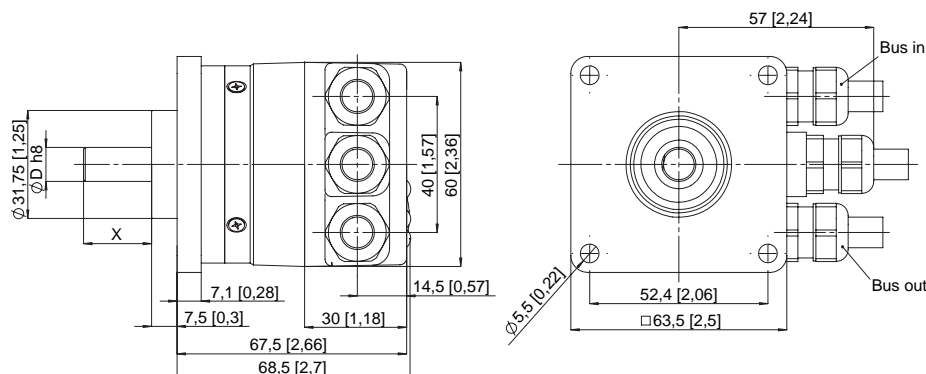
ø 58 mm, Clamping flange

Flange type 1 and 3 (Drawing with 2 x M12 connector)



63.5 mm □, Square flange

Flange type 5 and 7 (Drawing with cable version)



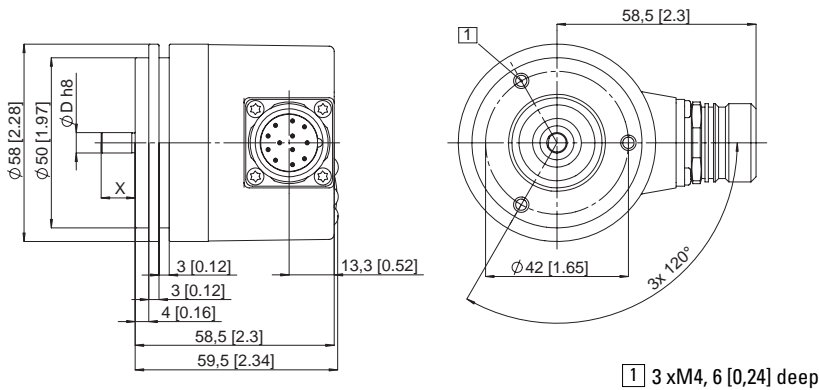
### Sendix absolut, Singleturn Type 5858 (shaft) / 5878 (Hollow shaft), CANopen

Dimensions with shaft version:

#### With fixed connection

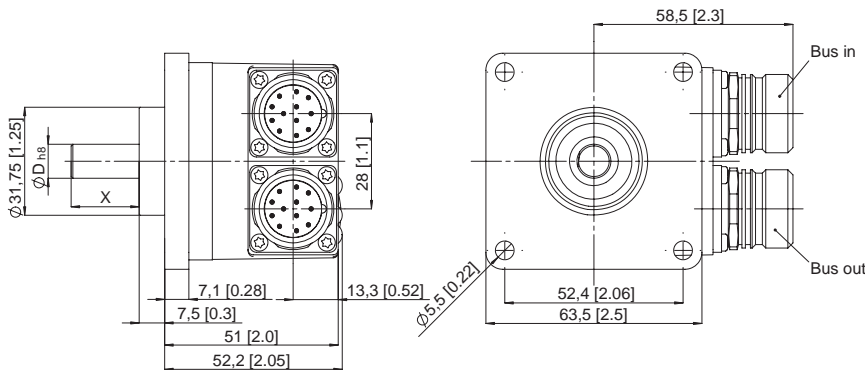
ø 58 mm, Synchro flange

Flange type 2 and 4 (Drawing with M23 connector)



63.5 mm □, Square flange

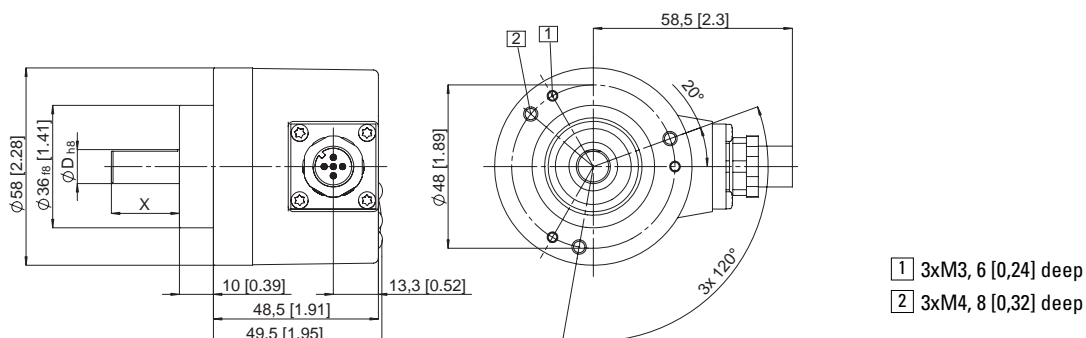
Flange type 5 and 7 (Drawing with 2 x M23 connector)



#### Clamping flange

ø 58 mm, Clamping flange

Flange type 1 and 3 (Drawing with 1 x M12 connector)



# Rotary Measuring Technology

## Absolute encoders, Singleturn, CANopen

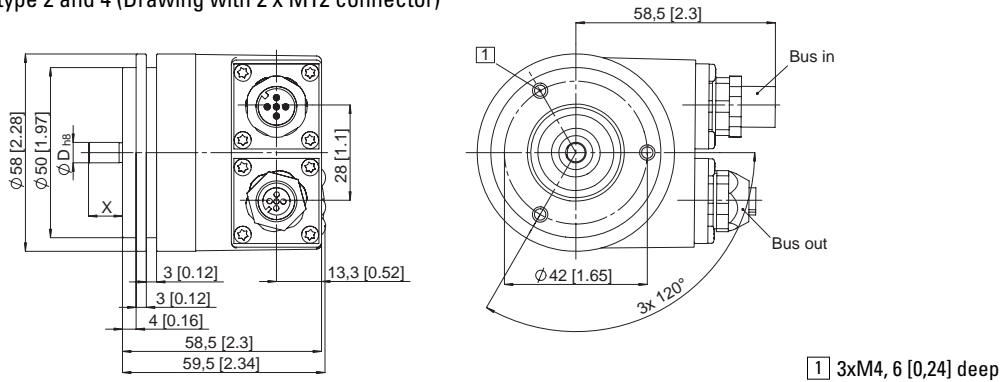
### Sendix absolut, Singleturn Type 5858 (shaft) / 5878 (Hollow shaft), CANopen

Dimensions with shaft version:

With fixed connection

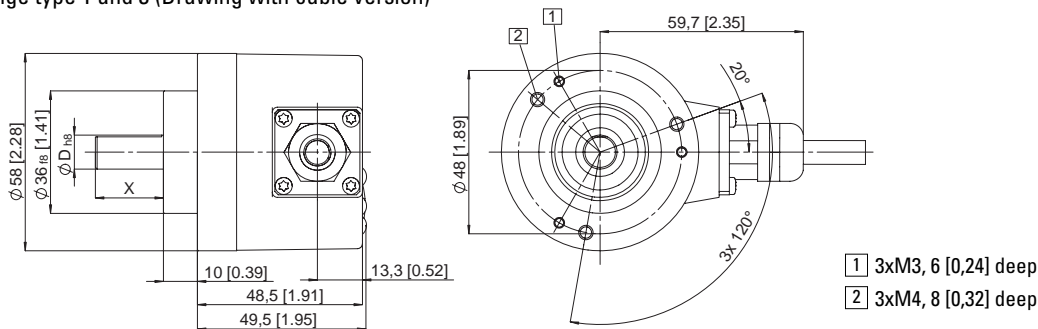
ø 58 mm, Synchro flange

Flange type 2 and 4 (Drawing with 2 x M12 connector)



ø 58 mm, Clamping flange

Flange type 1 and 3 (Drawing with cable version)



Order code shaft version:

**8 . 5 8 5 8 . X X X X . X X 1 X**



Type		Options (service)	2 = no Option 3 = SET
Flange	<ul style="list-style-type: none"> <li>1 = <b>Clamping flange ø 58 IP 65</b></li> <li>2 = <b>Synchro flange ø 58 mm, IP65</b></li> <li>3 = Clamping flange ø 58 mm, IP 67</li> <li>4 = Synchro flange ø 58 mm, IP67</li> <li>5 = Square flange 2,5" / 63,5 mm, IP 65</li> <li>7 = Square flange 2,5" / 63,5 mm, IP 67</li> </ul>	Field bus profile <sup>3)</sup>	<b>21 = CANopen Encoder-Profile DS 406 V3.1</b>
Shaft	<ul style="list-style-type: none"> <li>1 = <b>Shaft 6 mm x 10 mm (ø x L)<sup>1)</sup></b></li> <li>2 = <b>Shaft 10 mm x 20 mm (ø x L)<sup>2)</sup></b></li> <li>3 = Shaft 1/4" x 7/8" (ø x L)</li> <li>4 = Shaft 3/8" x 7/8" (ø x L)</li> </ul>	Type of connection	<ul style="list-style-type: none"> <li>1 = with removable bus terminal cover, with radial screwed cable passage</li> <li>2 = <b>Removable bus terminal cover with 2 x M12 connector</b></li> <li>A = Fixed connection without bus terminal cover, with radial cable (2 m PVC)</li> <li>E = Fixed connection without bus terminal cover, with 1 x M12 radial connector</li> <li>F = Fixed connection without bus terminal cover, with 2 x M12 radial connector</li> <li>I = Fixed connection without bus terminal cover, with 1 x M23 radial connector</li> <li>J = Fixed connection without bus terminal cover, with 2 x M23 radial connector</li> </ul>
Output circuit / Power supply	2 = <b>CANopen DS 301 V4.02 10 ... 30 V DC</b>		

1) Preferred type with flange type 2  
2) Preferred type with flange type 1

*Preferred types are indicated in bold*

- seawater resistant version on request  
3) CAN parameters can also be factory-preset

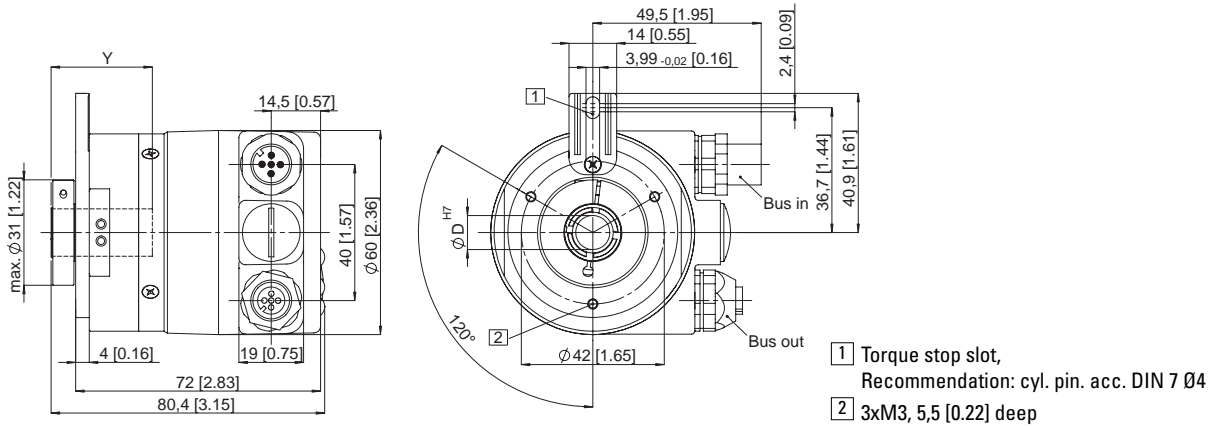
### Sendix absolut, Singleturn Type 5858 (shaft) / 5878 (Hollow shaft), CANopen

Dimensions hollow shaft version (blind hollow shaft):

With removable bus terminal cover

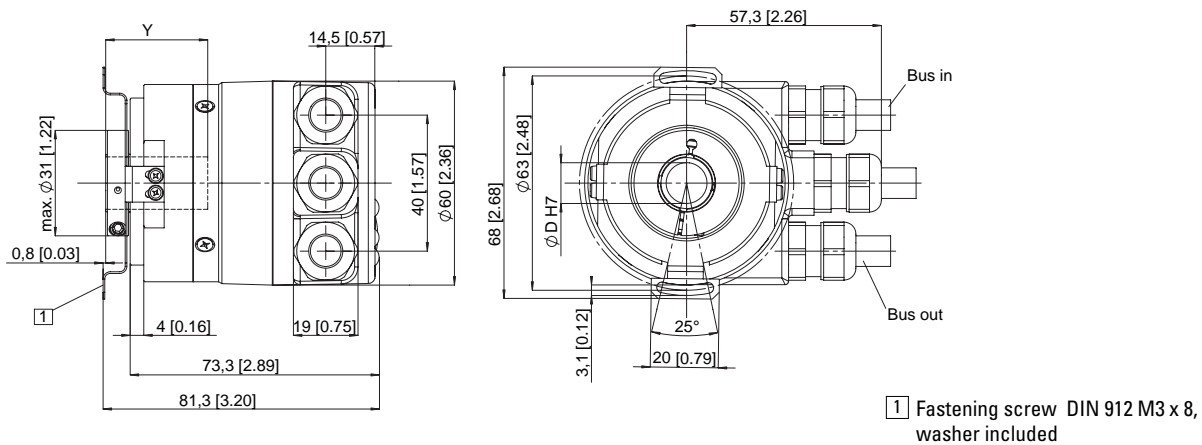
ø 58 mm, Flange with long torque stop

Flange type 1 and 2 (Drawing with 2x M12 connector)



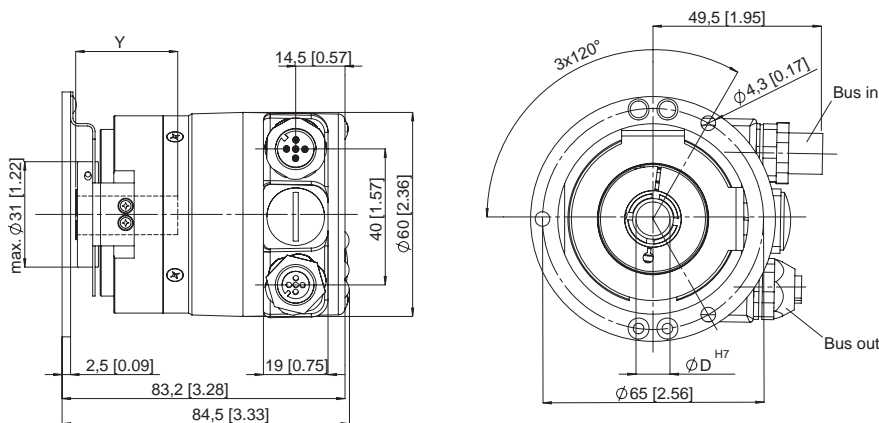
ø 58 mm, Flange with stator coupling

Flange type 5 and 6, pitch circle ø 63 mm (Drawing with cable version)



ø 58 mm, Flange with stator coupling

Flange type 3 and 4, pitch circle ø 65 mm (Drawing with 2x M12 connector)



Y: Depth for blind  
hollow shaft: 30 mm

# Rotary Measuring Technology

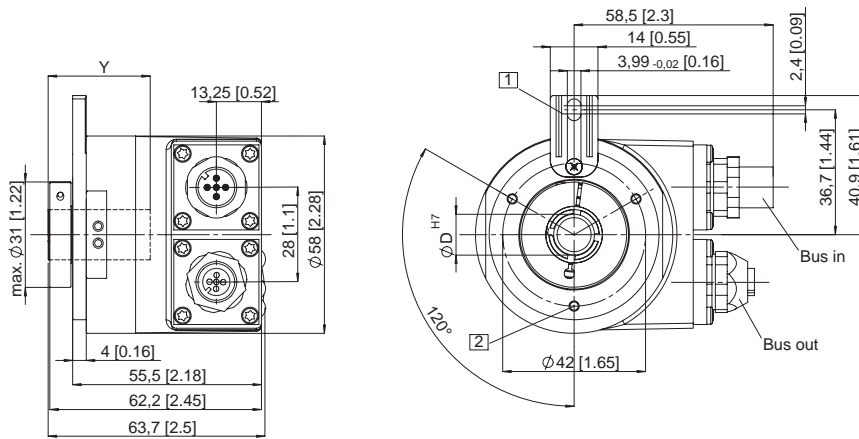
## Absolute encoders, Singleturn, CANopen

### Sendix absolut, Singleturn Type 5858 (shaft) / 5878 (Hollow shaft), CANopen

Dimensions hollow shaft version (blind hollow shaft):

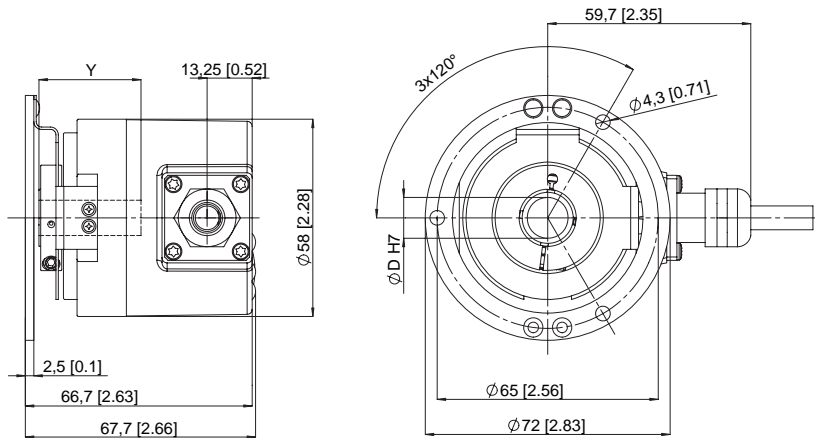
#### With fixed connection

ø 58 mm, Flange with long torque stop  
 Flange type 1 and 2 (Drawing with 2x M12 connector)



- 1 Torque stop slot, Recommendation: cyl. pin. acc. DIN 7 Ø4
- 2 3xM3, 6 [0.24] deep

ø 58 mm, Flange with stator coupling  
 Flange type 3 and 4, pitch circle ø 65 mm (Drawing with cable version)



Y: Depth for blind hollow shaft: 30 mm



### Sendix absolut, Singleturn Type 5858 (shaft) / 5878 (Hollow shaft), CANopen

Order code hollow shaft version:

8 . 5 8 7 8 . X X X X . X X 1 X



Type	
Flange	<ul style="list-style-type: none"> <li>1 = Flange with torque stop IP 65</li> <li>2 = Flange with torque stop IP 67</li> <li>3 = Flange with stator coupling pitch circle ø 65, IP 65</li> <li>4 = Flange with stator coupling pitch circle ø 65, IP 67</li> <li><b>5 = Flange with stator coupling pitch circle ø 63, IP 65</b></li> <li>6 = Flange with stator coupling pitch circle ø 63, IP 67</li> </ul>
Hollow shaft	<ul style="list-style-type: none"> <li>3 = ø 10 mm</li> <li><b>4 = ø 12 mm</b></li> <li>5 = ø 14 mm</li> <li>6 = ø 15 mm</li> <li>8 = ø 9.52 mm [3/8"]</li> <li>9 = ø 12.7 mm [1/2"]</li> </ul>
Output circuit / Power supply	<ul style="list-style-type: none"> <li>2 = <b>CANopen DS 301 V4.0</b></li> <li><b>10 ... 30 V DC</b></li> </ul>

Options (service)	<ul style="list-style-type: none"> <li>2 = No option</li> <li><b>3 = SET button</b></li> </ul>
Field bus profile <sup>3)</sup>	<ul style="list-style-type: none"> <li><b>21 = CANopen Encoder-Profile DS 406 V3.1</b></li> </ul>
Type of connection	<ul style="list-style-type: none"> <li>1 = With removable bus terminal cover, with radial screwed cable passage</li> <li><b>2 = Removable bus terminal cover with 2 x M12 connector</b></li> <li>A = Fixed connection without bus terminal cover, with radial cable (2 m PVC)</li> <li>E = Fixed connection without bus terminal cover, with 1 x M12 radial connector</li> <li>F = Fixed connection without bus terminal cover, with 2 x M12 radial connector</li> <li>I = Fixed connection without bus terminal cover, with 1 x M23 radial connector</li> <li>J = Fixed connection without bus terminal cover, with 2 x M23 radial connector</li> </ul>

- seawater resistant version on request

<sup>3)</sup> CAN parameters can also be factory-preset

#### Accessories:

Cables and connectors, also pre-assembled, can be found in the chapter Connection Technology

Mounting attachments and couplings can be found in the chapter Accessories

*Preferred types are indicated in **bold***