

Sendix absolut, Multiturn Type 5868 (Shaft) / 5888 (Hollow shaft), CANopen/CANlift



Mechanical drive



Safety-Lock™



High rotational speed



Temperature



High IP



High shaft load capacity



Shock/vibration resistant



Magnetic field proof



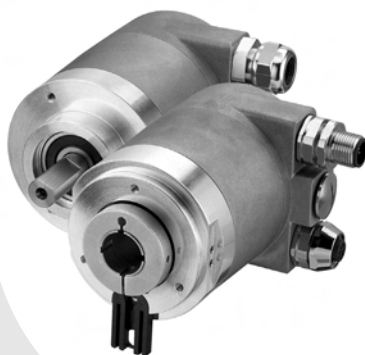
Short-circuit proof



Reverse polarity protection

Reliable

- **Increased ability to withstand vibration and installation errors. Eliminates machine downtime and repairs.**
Sturdy "Safety-Lock™ Design" bearing structure
- **Fewer components and connection points increase the operational reliability**
Kübler OptoASIC technology with highest integration density (Chip-on-Board)
- **Remains sealed, even in the 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 expense**
Wide temperature range



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
- **Fast, simple and error-free connection**

Versatile

- **Latest field bus performance for the applications**
CANopen, CANlift 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
- Hollow shaft version: Direct mounting also on large diameter standard shafts
Blind hollow shaft up to 15 mm
- 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 ⁻¹ , continuous 7 000 min ⁻¹
Max. speed without shaft seal (IP 65) up to Tmax:	7 000 min ⁻¹ , continuous 4 000 min ⁻¹
Max. speed with shaft seal (IP 67) up to 70 °C:	8 000 min ⁻¹ , continuous 6 000 min ⁻¹
Max. speed with shaft seal (IP 67) up to Tmax:	6 000 min ⁻¹ , continuous 3 000 min ⁻¹
Starting torque without shaft seal (IP65):	< 0.01 Nm
Starting torque with shaft seal (IP67):	< 0.03 Nm
Moment of inertia:	Shaft version: 4.0 x10 ⁻⁶ kgm ² Hollow shaft version: 7.5 x10 ⁻⁶ kgm ²
Radial load capacity of shaft:	80 N
Axial load capacity of shaft:	40 N
Weight:	approx. 0.57 kg with bus terminal cover approx. 0.52 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 ¹⁾
Materials:	Shaft: stainless steel, Flange: aluminium, Housing: die cast zinc, Cable: PVC
Shock resistance acc. to DIN-IEC 68-2-27:	>2500 m/s ² , 6 ms
Vibration resistance acc. to DIN-IEC 68-2-6:	>100 m/s ² , 55 ... 2000 Hz

¹⁾ Cable versions: -30 °C ... + 75 °C



- Absolutely safe operation even in strong magnetic fields
- Over 40 years of experience in the field of precision mechanics
- Special gears with specific tooththing

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General electrical characteristics:

Supply voltage:	10 ... 30 V DC
Current consumption (w/o output load):	24 V DC, max. 65 mA
Reverse polarity protection at power supply (Ub):	Yes
Conforms to CE requirements acc. to EN 61000-6-2, EN 61000-6-4 and EN 61000-6-3	
UL certified	File 224618
RoHS compliant acc. to EU guideline 2002/95/EG	

Interface characteristics CANopen/CANlift:

Singleturn resolution (max, scaleable):	1 ... 65536 (16 bits), default scale value is set to 8192 (13 bits)
Total resolution:	1 ... 268 435 456 (28 Bit) Default: 25 Bit
Code:	Binary
Interface:	CAN High-Speed according ISO 11898, Basic- and Full-CAN CAN Specification 2.0 B
Protocol:	CANopen profile DS 406 V3.1 with manufacturer-specific add-on's

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

	or CANlift profile DS 417 V1.1
Baud rate:	10 ... 1000 kbits/s (set by DIP switches/software configurable)
Node address:	1 ... 127 (set by rotary switches / software configurable)
Termination switchable:	Set by DIP switches Software configurable

General information about CAN/CANlift

The CANopen encoders of the 5868 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 and the profile DS 417 V1.1 (for lift applications) 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.

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 thanks 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 Communication Profile 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

CANopen Encoder Profile 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

CANopen Lift Profile DS 417 V1.1

Among others, the following functionality is integrated:

- Car Position Unit
- 2 virtual devices
- 1 virtual device delivers the position in absolute measuring steps (steps)
- 1 virtual device delivers the position as an absolute travel information in mm
- Lift number programmable
- Independent setting of the node address in relation with the CAN identifier
- 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

All profiles stated here: Key-features

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

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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) and D-SUB-9 connector (type of connection K)

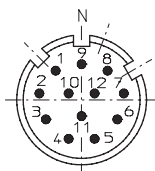
Direction:	IN				
Signal:	0 V power supply	+UB power supply	CAN_Low (-)	CAN_High (+)	CAN Ground
Abbreviation:	0 V	+V	CL	CH	CG
Cable colour:	WH	BN	YE	GN	GY
D-SUB 9	6	9	2	7	3

Terminal assignment:

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

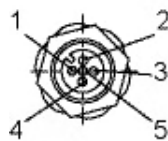
Direction:	OUT					IN				
Signal:	CAN Ground	CAN_Low (-)	CAN_High (+)	0 Volt power supply	+UB power supply	0 V power supply	+UB power supply	CAN_Low (-)	CAN_High (+)	CAN Ground
Abbreviation:	CG	CL	CH	0 V	+V	0 V	+V	CL	CH	CG
M23 PIN assignment	3	2	7	10	12	10	12	2	7	3
M12 PIN assignment	1	5	4	3	2	3	2	5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

Bus in and out M23:



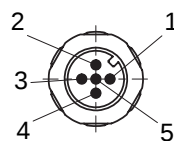
Corresponding mating connector:
8.0000.5012.0000

Bus out:



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

Bus in:



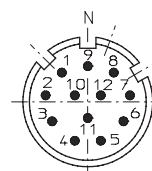
Corresponding mating connector:
05.B-8151-0/9

Terminal assignment:

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

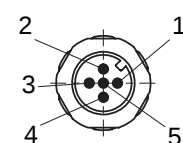
Direction:	IN				
Signal:	0 V power supply	+UB power supply	CAN_Low (-)	CAN_High (+)	CAN Ground
Abbreviation:	0 V	+V	CL	CH	CG
M23 PIN assignment	10	12	2	7	3
M12 PIN assignment	3	2	5	4	1

Bus in M23:



Corresponding mating connector:
8.0000.5012.0000

Bus in M12:



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

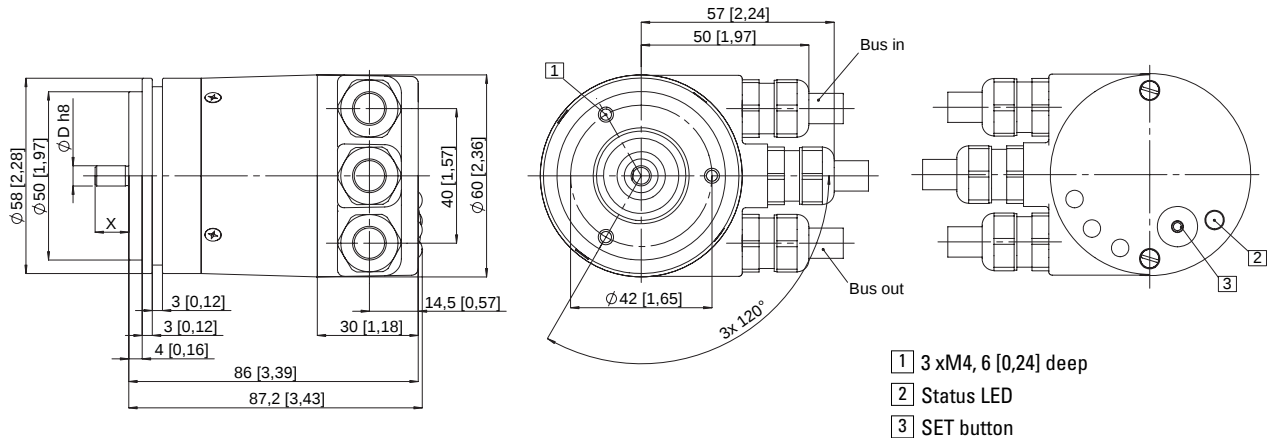
Sendix absolut, Multiturn Type 5868 (Shaft) / 5888 (Hollow shaft), CANopen/CANlift

Dimensions shaft version

With removable bus terminal cover

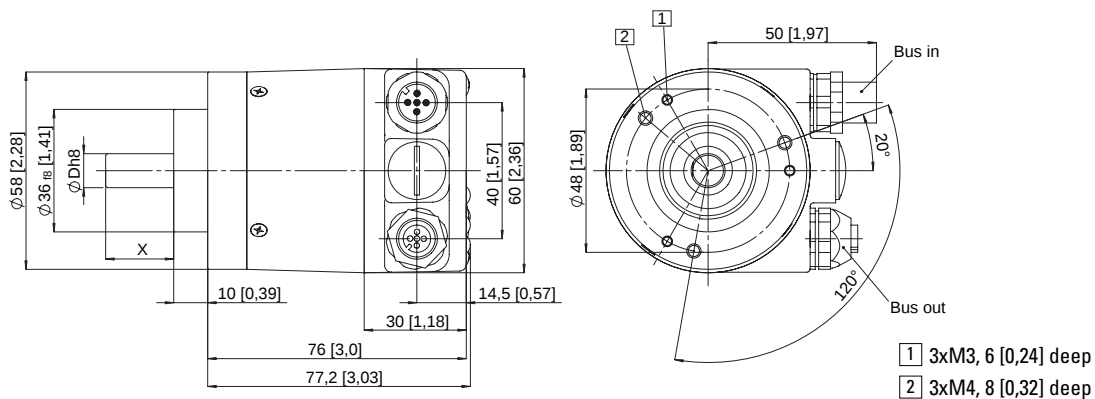
ø 58 mm, Synchro flange

Flange type 2 and 4 (Drawing with cable version)



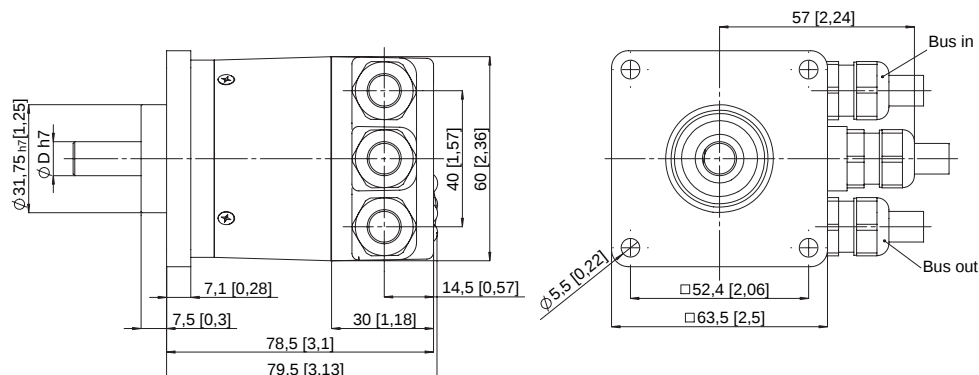
ø 58 mm, Clamping flange

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)



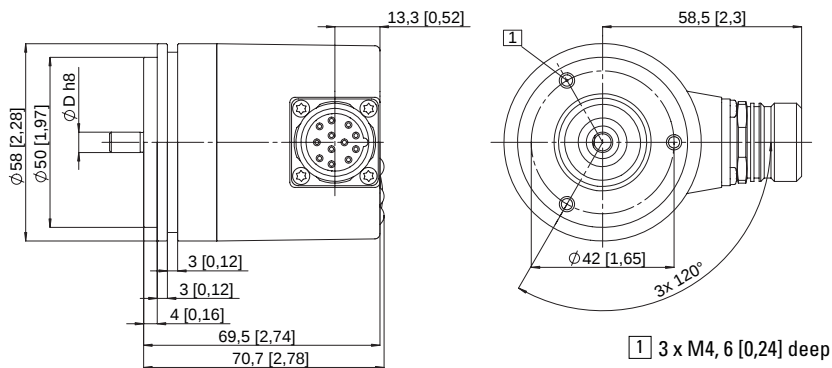
Sendix absolut, Multiturn Type 5868 (Shaft) / 5888 (Hollow shaft), CANopen/CANlift

Dimensions shaft version

With fixed connection

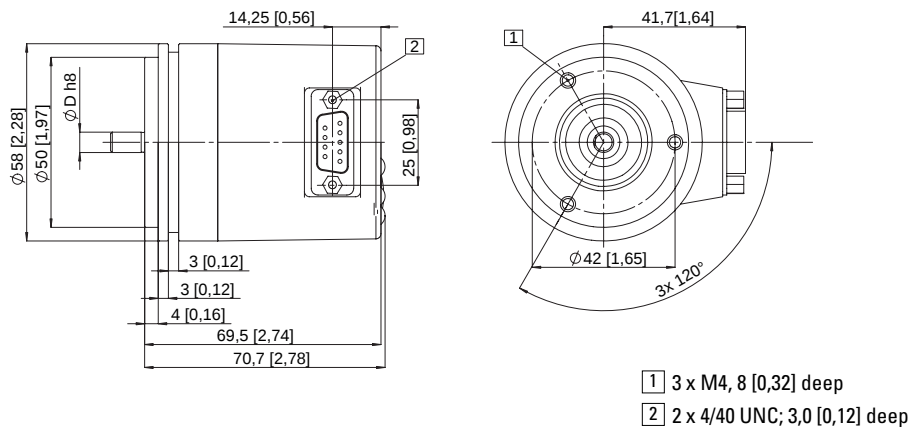
ø 58 mm, Synchro flange

Flange type 2 and 4 (Drawing with M23 connector)



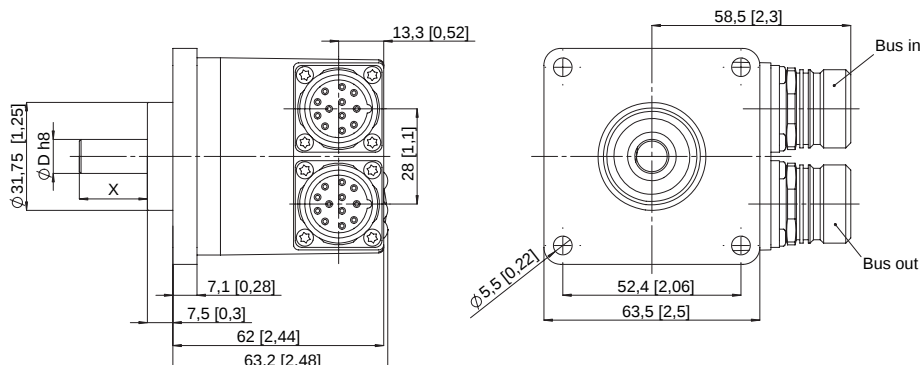
ø 58 mm, Synchro flange

Flange type 2 and 4 (Drawing with D-SUB connector)



63.5 mm □, Square flange

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



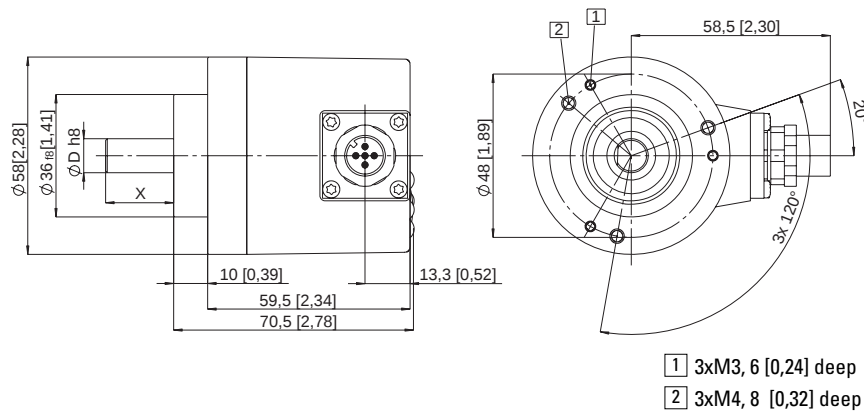
Sendix absolut, Multiturn Type 5868 (Shaft) / 5888 (Hollow shaft), CANopen/CANlift

Dimensions shaft version:

With fixed connection

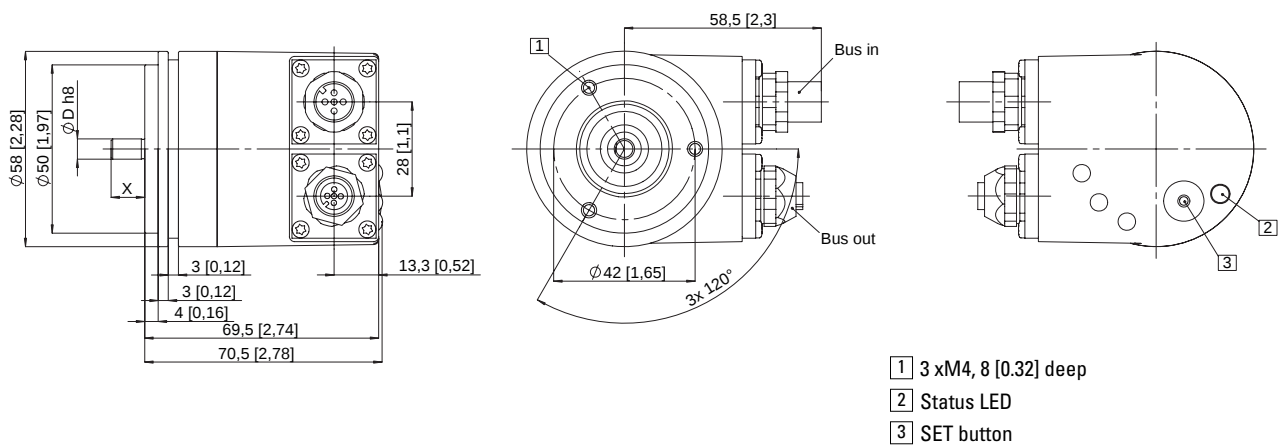
ø 58 mm, Clamping flange

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



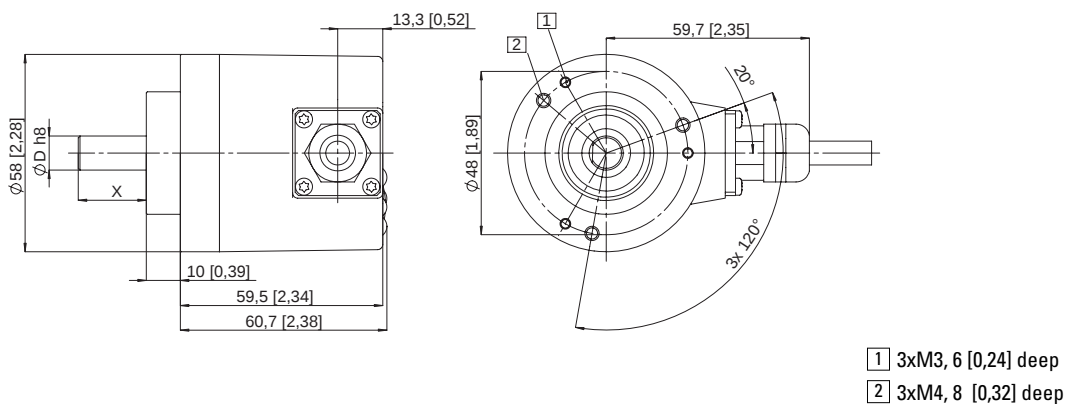
ø 58 mm, Synchro flange

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)



Sendix absolut, Multiturn Type 5868 (Shaft) / 5888 (Hollow shaft), CANopen/CANlift

Order code shaft version:

8 . 5 8 6 8 . X X X X . X X 1 X

10 by 10

Type		Options (service) 2 = no option 3 = SET button
Flange		Field bus profile ³⁾ 21 = CANopen Encoder-Profile DS 406 V3.1 22 = CANlift DS 417 V1.01
1 = Clamping flange ø 58 IP 65 2 = Synchro flange ø 58 mm, IP65 3 = Clamping flange ø 58 mm, IP 67 4 = Synchro flange ø 58 mm, IP67 5 = Square flange 2.5" / 63.5 mm, IP 65 7 = Square flange 2.5" / 63.5 mm, IP 67		
Shaft		Type of connection 1 = With removable bus terminal cover, with radial screwed cable passage 2 = Removable bus terminal cover with M12 connector A = Fixed connection without bus terminal cover, with radial cable (2 m PVC) E = Fixed connection without bus terminal cover, with 1 x M12 radial connector F = Fixed connection without bus terminal cover, with 2 x M12 radial connector I = Fixed connection without bus terminal cover, with 1 x M23 radial connector J = Fixed connection without bus terminal cover, with 2 x M23 radial connector K = Fixed connection without bus terminal cover, with 1 x D-SUB 9-pin connector
Output circuit / Power supply		
2 = CANopen DS 301 V4.0 10 ... 30 V DC 5 ³⁾ = CANopen DS301 V4.0 with 2048 ppr incremental track (TTL-compatible), 10 ... 30 V Dc		

Preferred types are indicated in bold

1) Preferred type with flange type 2
2) Preferred type with flange type 1
3) only with type of connection 2

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

Accessories:

- Cables and connectors, also pre-assembled, can be found in the chapter Counting Technology
- Mounting attachments and couplings can be found in the Chapter Accessories

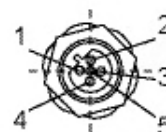
Supplementary details incremental track:

Characteristics:

Output driver:	RS 422 (TTL compatible)
Permissible load/channel:	± 20 mA
Signal level High:	typ. 3.8 V
Low:	typ. 1.3 V
Short-circuit proof outputs:	yes (short-circuit proof to 0 V or output, when supply voltage is correctly applied)
Resolution	2048 ppr

Terminal assignment incremental track:

Signal:	A	$\bar{A}$	B	$\bar{B}$	0
Pin:	1	2	3	4	5



Corresponding mating connector:
05.BMSWS 8151-8.5

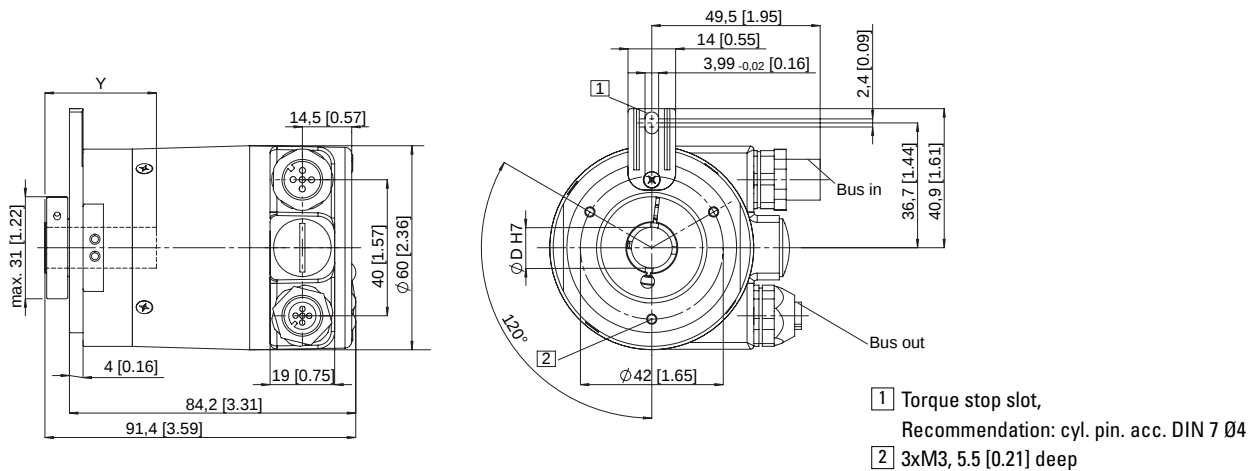
Sendix absolut, Multiturn Type 5868 (Shaft) / 5888 (Hollow shaft), CANopen/CANlift

Dimensions hollow shaft version (blind hollow shaft):

With removable bus terminal cover

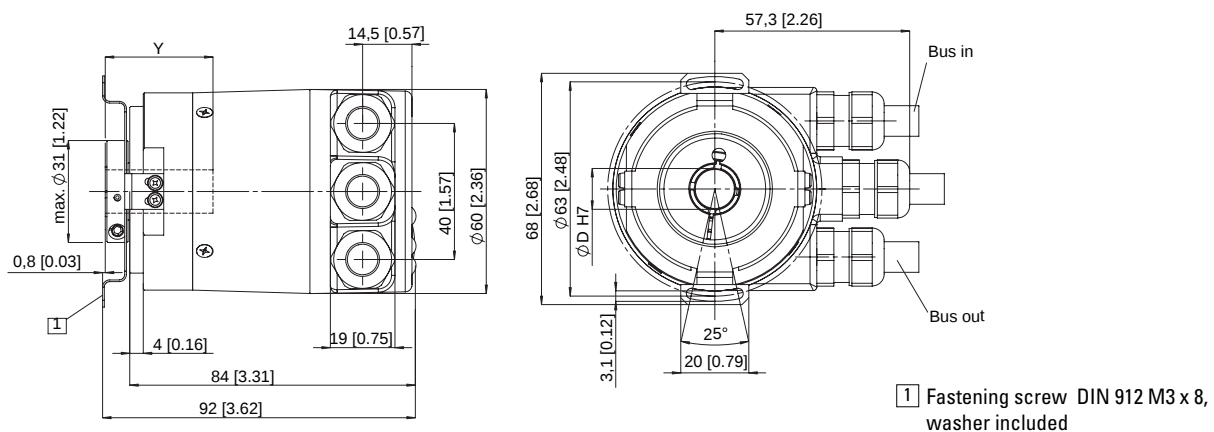
ø 58 mm, Flange with long torque stop

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



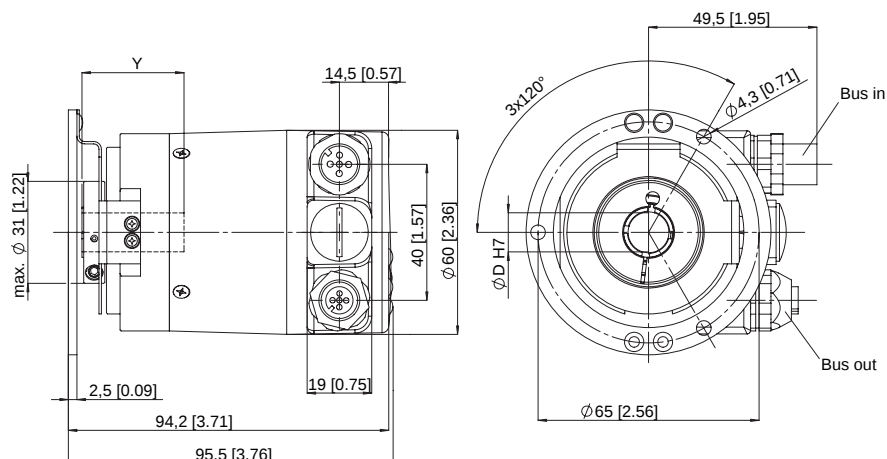
ø 58 mm, Flange with stator coupling

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



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

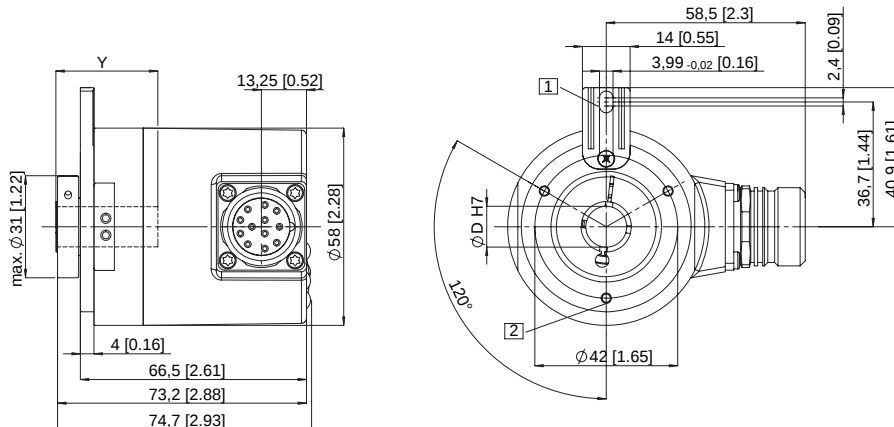
Sendix absolut, Multiturn Type 5868 (Shaft) / 5888 (Hollow shaft), CANopen/CANlift

Dimensions hollow shaft version (blind hollow shaft):

With fixed connection

ø 58 mm, Flange with long torque stop

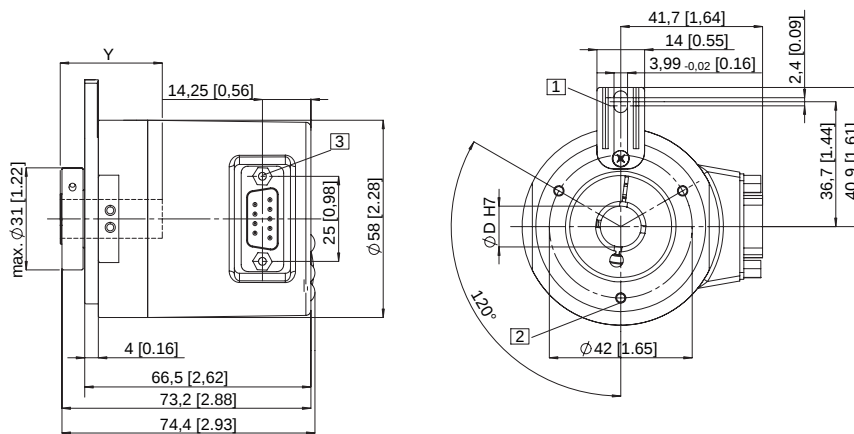
Flange type 1 and 2 (Drawing with M23 connector)



- 1 Torque stop slot,
Recommendation: cyl. pin. acc. DIN 7 Ø4.0
- 2 3xM3, 5.5 [0.21] deep

ø 58 mm, Flange with long torque stop

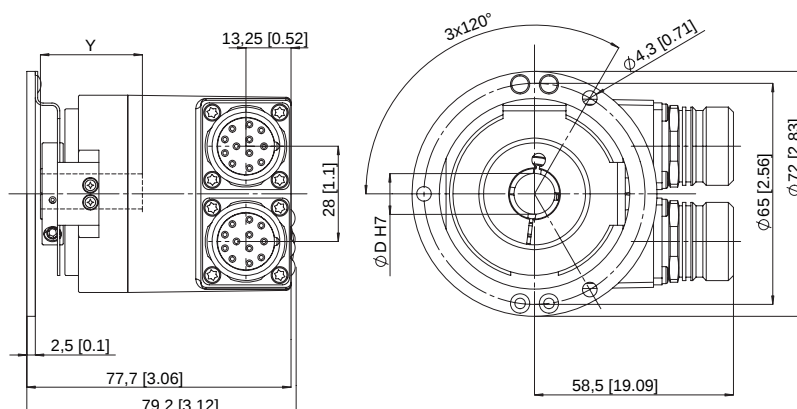
Flange type 1 and 2 (Drawing with D-SUB connector)



- 1 Torque stop slot,
Recommendation: cyl. pin. acc. DIN 7 Ø4.0
- 2 3xM3, 5.5 [0.21] deep
- 3 2 x 4/40 UNC; 3.0 [0.21] deep

ø 58 mm, Flange with stator coupling

Flange type 3 and 4, pitch circle ø 65 mm (Drawing with 2xM23 connector)



Y: Depth for blind
hollow shaft: 30 mm

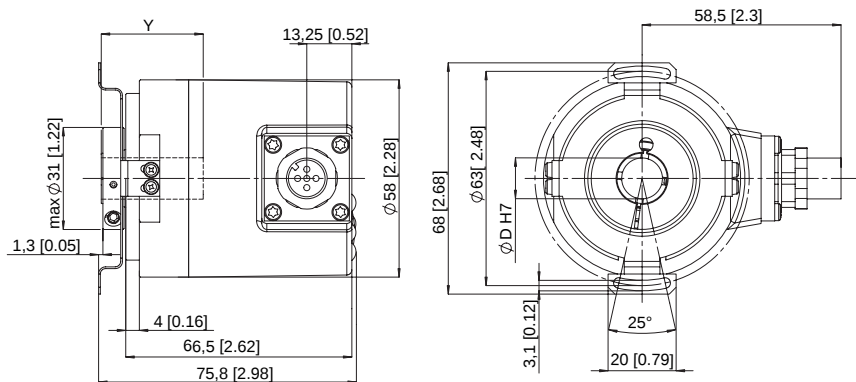
Sendix absolut, Multiturn Type 5868 (Shaft) / 5888 (Hollow shaft), CANopen/CANlift

Dimensions hollow shaft version (blind hollow shaft):

With fixed connection

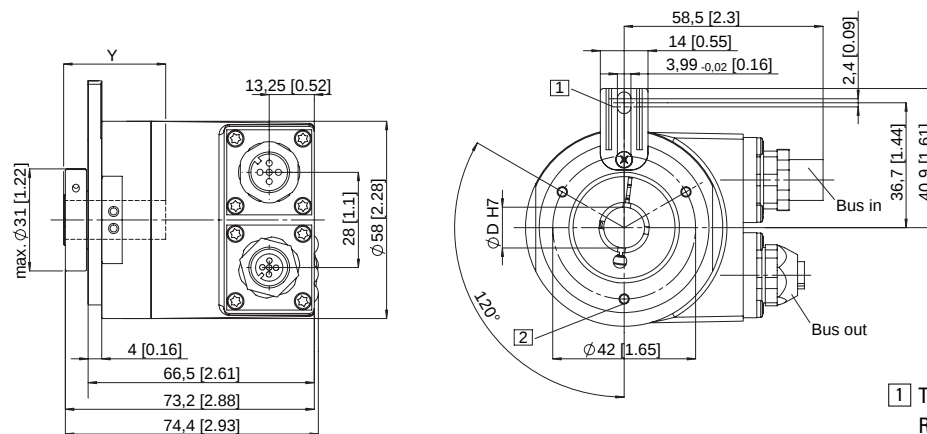
ø 58 mm, Flange with stator coupling

Flange type 5 and 6, pitch circle ø 63 mm (Drawing with M12 connector)



ø 58 mm, Flange with long torque stop

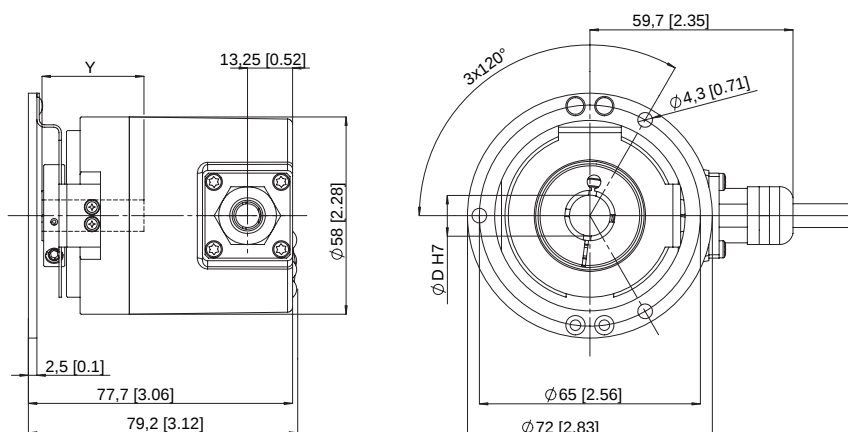
Flange type 1 and 2 (Drawing with 2xM12 connector)



- 1 Torque stop slot,
Recommendation: cyl. pin. acc. DIN 7 Ø4.0
- 2 3xM3, 5,5 [0.21] deep

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

Sendix absolut, Multiturn Type 5868 (Shaft) / 5888 (Hollow shaft), CANopen/CANlift

Order code hollow shaft version:

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

10 by 10

Type		Options (service)
Flange		2 = no option 3 = SET button
1 = Flange with torque stop IP 65		
2 = Flange with torque stop IP 67		
3 = Flange with stator coupling pitch circle ø 65, IP 65		Field bus profile ³⁾
4 = Flange with stator coupling pitch circle ø 65, IP 67		21 = CANopen Encoder-Profile DS 406 V3.1
5 = Flange with stator coupling pitch circle ø 63, IP 65		22 = CANlift DS 417 V1.01
6 = Flange with stator coupling pitch circle ø 63, IP 67		
Hollow shaft		Type of connection
3 = Blind hollow shaft ø 10 mm		1 = With removable bus terminal cover, with radial screwed cable passage
4 = Blind hollow shaft ø 12 mm		2 = Removable bus terminal cover with M12 connector
5 = Blind hollow shaft ø 14 mm		A = Fixed connection without bus terminal cover, with radial cable (2 m PVC)
6 = Blind hollow shaft ø 15 mm		E = Fixed connection without bus terminal cover, with 1 x M12 radial connector
8 = Blind hollow shaft ø 9.52 mm [3/8"]		F = Fixed connection without bus terminal cover, with 2 x M12 radial connector
9 = Blind hollow shaft ø 12.7 mm [1/2"]		I = Fixed connection without bus terminal cover, with 1 x M23 radial connector
Output circuit / Power supply		J = Fixed connection without bus terminal cover, with 2 x M23 radial connector
2 = CANopen DS 301 V4.0 10 ... 30 V DC		K = Fixed connection without bus terminal cover, with 1 x D-SUB 9-pin connector
5 ¹⁾ = CANopen DS301 V4.0 with 2048 ppr incremental track (TTL-compatible), 10 ... 30 V Dc		- seawater resistant version on request

Preferred types are indicated in **bold**

¹⁾ only with type of connection 2

³⁾ CAN parameters can also be factory-preset

Accessories:

- Cables and connectors, also pre-assembled, can be found in the chapter Counting Technology
- Mounting attachments and couplings can be found in the Chapter Accessories

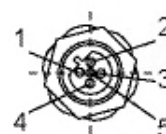
Supplementary details incremental track:

Characteristics:

Output driver:	RS 422 (TTL compatible)
Permissible load/channel:	± 20 mA
Signal level High:	typ. 3.8 V
Low:	typ. 1.3 V
Short-circuit proof outputs:	yes (short-circuit proof to 0 V or output, when supply voltage is correctly applied)
Resolution	2048 ppr

Terminal assignment incremental track:

Signal:	A	$\bar{A}$	B	$\bar{B}$	0
Pin:	1	2	3	4	5



Corresponding mating connector:
05.BMSWS 8151-8.5