

ENCODER

SSI Multiturn



Series 8.5863, 8.5883

Content:

Order Code Shaft2
Order Code Hollow Shaft3
Order Code Blind Hollow Shaft3
Connection4
Technical Drawing5
Technical Data8

Key-Features:

- Solid shaft: maximum diameter 10 mm
- Hollow shaft: maximum diameter 14 mm
- Blind hollow shaft: maximum diameter 15 mm
- Interfaces: SSI, BiSS-C, SSI/BiSS-C +, SinCos, SSI/BiSS-C + RS422
- Housing diameter 58 mm
- Protection class up to IP67
- Resolution up to 12 Bit in Multiturn Mode
- Maximum revolution speed 12000 turns/min
- Temperature range -40...+90°C

Absolute encoders – multiturn

Standard mechanical multiturn, optical

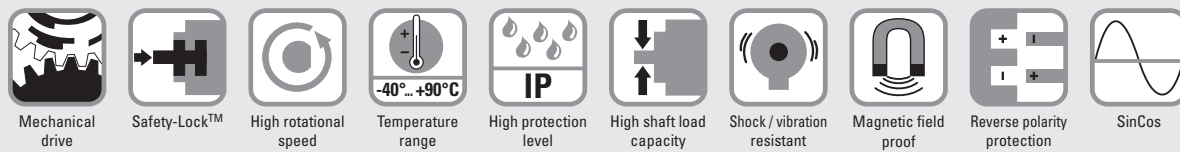
Sendix 5863 / 5883 (shaft / hollow shaft)

SSI / BiSS + incremental



The Sendix 5863 and 5883 multiturn encoders with SSI or BiSS interface and optical sensor technology can achieve a resolution of max. 29 bits.

A through hollow shaft up to 14 mm and a blind hollow shaft up to 15 mm are available, as well as versions with additional SinCos or RS422 incremental track.



Reliable

- Tried-and-tested in applications with the highest demands, such as in wind energy or mobile automation.
- Absolutely reliable operation in areas with strong magnetic fields, thanks to mechanical gear with optical sensor technology.
- Rugged die-cast housing, remains sealed even in harsh everyday use.
- -40°C ... +90°C: use in wide temperature range and protection IP67.

Versatile

- Available with SSI or BiSS interface and combined with SinCos incremental signals.
- The right fixing solution or type of connection available for every application.
- SET button and LED for simple start-up.

Absolute encoders multiturn

Order code Shaft version

8.5863 . **XXXX** . **XX2X**
Type a b c d e f g

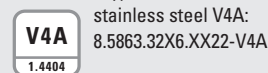


<p>a Flange</p> <p>1 = clamping flange, IP65 ø 58 mm [2.28"] 3 = clamping flange, IP67 ø 58 mm [2.28"] 2 = synchro flange, IP65 ø 58 mm [2.28"] 4 = synchro flange, IP67 ø 58 mm [2.28"] 5 = square flange, IP65 □ 63.5 mm [2.5"] 7 = square flange, IP67 □ 63.5 mm [2.5"]</p> <p>6 = servo flange, IP65 ø 63.5 mm [2.5"]¹⁾ 8 = servo flange, IP67 ø 63.5 mm [2.5"]¹⁾</p> <p>b Shaft (ø x L), with flat</p> <p>1 = 6 x 10 mm [0.24 x 0.39"]²⁾ 2 = 10 x 20 mm [0.39 x 0.79"]³⁾</p> <p>3 = 1/4" x 7/8" 4 = 3/8" x 7/8"</p> <p>c Interface / power supply</p> <p>1 = SSI, BiSS / 5 V DC 2 = SSI, BiSS / 10 ... 30 V DC 3 = SSI, BiSS + 2048 ppr. SinCos / 5 V DC 4 = SSI, BiSS + 2048 ppr. SinCos / 10 ... 30 V DC 5 = SSI, BiSS / 5 V DC, with sensor output 6 = SSI, BiSS + 2048 ppr. SinCos / 5 V DC, with sensor output 7 = SSI, BiSS + 2048 ppr. RS422 (TTL-comp.) / 5 V DC 8 = SSI, BiSS + 2048 ppr. RS422 (TTL-comp.) / 10 ... 30 V DC 9 = SSI, BiSS + 2048 ppr. RS422 (TTL-comp.) / 5 V DC, with sensor output</p>	<p>d Type of connection</p> <p>1 = axial cable, 1 m [3.28'] PVC A = axial cable, special length PVC *) 2 = radial cable, 1 m [3.28'] PVC B = radial cable, special length PVC *) 3 = axial M23 connector, 12-pin 4 = radial M23 connector, 12-pin 5 = axial M12 connector, 8-pin⁴⁾ 6 = radial M12 connector, 8-pin⁴⁾</p> <p>*) Available special lengths (connection types A, B): 2, 3, 5, 8, 10, 15 m [5.56, 9.84, 16.40, 26.25, 32.80, 49.21'] order code expansion .XXXX = length in dm ex.: 8.5863.112A.G323.0030 (for cable length 3 m)</p>	<p>e Code</p> <p>B = SSI, binary C = BiSS, binary G = SSI, gray</p> <p>f Resolution⁵⁾</p> <p>A = 10 bit ST + 12 bit MT 1 = 11 bit ST + 12 bit MT 2 = 12 bit ST + 12 bit MT 3 = 13 bit ST + 12 bit MT 4 = 14 bit ST + 12 bit MT 7 = 17 bit ST + 12 bit MT</p>	<p>g Options (service)</p> <p>1 = no option 2 = status LED 3 = SET button and status LED</p>
---	---	--	--

Optional on request

- Ex 2/22⁶⁾
- other singleturn resolutions
- surface protection salt spray tested
- seawater resistant (stainless steel V4A)

Salt spray tested / stainless steel V4A as standard types (deliverable as from 1 unit)



1) US version.
 2) Preferred type only in conjunction with flange type 2.

3) Preferred type only in conjunction with flange type 1.
 4) Only in conjunction with interface type 1 and 2.

5) Resolution, preset value and counting direction factory-programmable.
 6) For the cable connection type, cable material PUR.

Absolute encoders – multiturn

Standard mechanical multiturn, optical	Sendix 5863 / 5883 (shaft / hollow shaft)	SSI / BiSS + incremental
---	--	---------------------------------

Order code Hollow shaft	8.5883 <small>Type</small>	<table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px; height: 20px;">X</td> <td style="width: 20px; height: 20px;">X</td> <td style="width: 20px; height: 20px;">X</td> <td style="width: 20px; height: 20px;">X</td> <td style="width: 20px; height: 20px;">.</td> <td style="width: 20px; height: 20px;">X</td> <td style="width: 20px; height: 20px;">X</td> <td style="width: 20px; height: 20px;">2</td> <td style="width: 20px; height: 20px;">X</td> </tr> <tr> <td style="font-size: 8px;">a</td> <td style="font-size: 8px;">b</td> <td style="font-size: 8px;">c</td> <td style="font-size: 8px;">d</td> <td style="font-size: 8px;">e</td> <td style="font-size: 8px;">f</td> <td style="font-size: 8px;">g</td> <td style="font-size: 8px;">h</td> <td style="font-size: 8px;">i</td> </tr> </table>	X	X	X	X	.	X	X	2	X	a	b	c	d	e	f	g	h	i	
X	X	X	X	.	X	X	2	X													
a	b	c	d	e	f	g	h	i													

<p>a Flange</p> <p>1 = with spring element, long, IP65 2 = with spring element, long, IP67 3 = with stator coupling, IP65 ø 65 mm [2.56"] 4 = with stator coupling, IP67 ø 65 mm [2.56"] 5 = with stator coupling, IP65 ø 63 mm [2.48"] 6 = with stator coupling, IP67 ø 63 mm [2.48"]</p> <p>b Through hollow shaft</p> <p>3 = ø 10 mm [0.39"] 4 = ø 12 mm [0.47"] 5 = ø 14 mm [0.55"] 8 = ø 3/8" 9 = ø 1/2"</p> <p style="margin-left: 20px;"><i>Blind hollow shaft</i> (insertion depth max. 30 mm [1.18"])</p> <p>6 = ø 15 mm [0.59"]</p> <p>c Interface / power supply</p> <p>1 = SSI, BiSS / 5 V DC 2 = SSI, BiSS / 10 ... 30 V DC 3 = SSI, BiSS + 2048 ppr. SinCos / 5 V DC 4 = SSI, BiSS + 2048 ppr. SinCos / 10 ... 30 V DC 5 = SSI, BiSS / 5 V DC, with sensor output 6 = SSI, BiSS + 2048 ppr. SinCos / 5 V DC, with sensor output 7 = SSI, BiSS + 2048 ppr. RS422 (TTL-comp.) / 5 V DC 8 = SSI, BiSS + 2048 ppr. RS422 (TTL-comp.) / 10 ... 30 V DC 9 = SSI, BiSS + 2048 ppr. RS422 (TTL-comp.) / 5 V DC, with sensor output</p>	<p>d Type of connection</p> <p>2 = radial cable, 1 m [3.28'] PVC B = radial cable, special length PVC *) E = tangential cable, 1 m [3.28'] PVC F = tangential cable, special length PVC *) 4 = radial M23 connector, 12-pin 6 = radial M12 connector, 8-pin ²⁾</p> <p>*) Available special lengths (connection types B, F): 2, 3, 5, 8, 10, 15 m [5.56, 9.84, 16.40, 26.25, 32.80, 49.21'] order code expansion .XXXX = length in dm ex.: 8.5883.542B.G323.0030 (for cable length 3 m)</p>	<p>e Code</p> <p>B = SSI, binary C = BiSS, binary G = SSI, gray</p> <p>f Resolution ¹⁾</p> <p>A = 10 bit ST + 12 bit MT 1 = 11 bit ST + 12 bit MT 2 = 12 bit ST + 12 bit MT 3 = 13 bit ST + 12 bit MT 4 = 14 bit ST + 12 bit MT 7 = 17 bit ST + 12 bit MT</p>	<p>g Options (service)</p> <p>1 = no option 2 = status LED 3 = SET button and status LED</p>			
<p style="text-align: center;"><i>Optional on request</i></p> <ul style="list-style-type: none"> - Ex 2/22 (not for type of connection E, F) ³⁾ - other singleturn resolutions - surface protection salt spray tested - seawater resistant (stainless steel V4A) <p style="text-align: center;"><i>Salt spray tested / stainless steel V4A as standard types (deliverable as from 1 unit)</i></p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center; border: 1px solid black; padding: 2px;"> salt spray tested: 8.5883.24X6.XX22-C 8.5883.25X6.XX22-C </td> <td style="text-align: center; border: 1px solid black; padding: 2px; width: 50px;"> V4A <small>1.4404</small> </td> <td style="padding-left: 20px;"> stainless steel V4A: 8.5883.24X6.XX22-V4A </td> </tr> </table>				salt spray tested: 8.5883.24X6.XX22-C 8.5883.25X6.XX22-C	V4A <small>1.4404</small>	stainless steel V4A: 8.5883.24X6.XX22-V4A
salt spray tested: 8.5883.24X6.XX22-C 8.5883.25X6.XX22-C	V4A <small>1.4404</small>	stainless steel V4A: 8.5883.24X6.XX22-V4A				

Mounting accessory for shaft encoders	Order no.
Coupling	
bellows coupling ø 19 mm [0.75"] for shaft 6 mm [0.24"]	8.0000.1102.0606
bellows coupling ø 19 mm [0.75"] for shaft 10 mm [0.39"]	8.0000.1102.1010

Mounting accessory for hollow shaft encoders	Order no.
Cylindrical pin, long	
for flange with spring element (flange type 1 + 2)	
with fixing thread	
	8.0010.4700.0000

Connection technology	Order no.
Cordset, pre-assembled	
M12 female connector with coupling nut, 8-pin 2 m [6.56'] PVC cable	05.00.6041.8211.002M
M23 female connector with coupling nut, 12-pin 2 m [6.56'] PVC cable	8.0000.6901.0002.0031
Connector, self-assembly (straight)	
M12 female connector with coupling nut, 8-pin	05.CMB 8181-0
M23 female connector with coupling nut, 12-pin	8.0000.5012.0000

1) Resolution, preset value and counting direction factory-programmable.
 2) Only in conjunction with interface type 1 and 2.
 3) For the cable connection type, cable material PUR.

Absolute encoders – multitrurn

**Standard
mechanical multitrurn, optical**

Sendix 5863 / 5883 (shaft / hollow shaft)

SSI / BiSS + incremental

Technical data

Mechanical characteristics

Maximum speed shaft version	
IP65 up to 70°C [158°F]	12000 min ⁻¹ , 10000 min ⁻¹ (continuous)
IP65 up to T _{max}	8000 min ⁻¹ , 5000 min ⁻¹ (continuous)
IP67 up to 70°C [158°F]	11000 min ⁻¹ , 9000 min ⁻¹ (continuous)
IP67 up to T _{max}	8000 min ⁻¹ , 5000 min ⁻¹ (continuous)
Maximum speed hollow shaft version	
IP65 up to 70°C [158°F]	9000 min ⁻¹ , 6000 min ⁻¹ (continuous)
IP65 up to T _{max}	6000 min ⁻¹ , 3000 min ⁻¹ (continuous)
IP67 up to 70°C [158°F]	8000 min ⁻¹ , 4000 min ⁻¹ (continuous)
IP67 up to T _{max}	4000 min ⁻¹ , 2000 min ⁻¹ (continuous)
Starting torque at 20°C [68°F]	
IP65	< 0.01 Nm
IP67	< 0.05 Nm
Mass moment of inertia	
shaft version	4.0 x 10 ⁻⁶ kgm ²
hollow shaft version	7.0 x 10 ⁻⁶ kgm ²
Load capacity of shaft	
radial	80 N
axial	40 N
Weight	
	approx. 0.45 kg [15.87 oz]
Protection acc. to EN 60529	
housing side	IP67
shaft side	IP65, opt. IP67
Working temperature range	
	-40°C ... +90°C [-40°F ... +194°F] ¹⁾
Material	
shaft/hollow shaft	stainless steel
flange	aluminum
housing	zinc die-cast
cable	PVC (PUR for Ex 2/22)
Shock resistance acc. to EN 60068-2-27	
	2500 m/s ² , 6 ms
Vibration resistance acc. to EN 60068-2-6	
	100 m/s ² , 55 ... 2000 Hz

Electrical characteristics

Power supply	5 V DC (+5%) or 10 ... 30 V DC
Current consumption (no load)	5 V DC max. 80 mA 10 ... 30 V DC max. 50 mA
Reverse polarity protection of the power supply	yes (at 10 ... 30 V DC)
Short circuit proof outputs	yes ²⁾
UL approval	file 224618
CE compliant acc. to	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU

SSI interface

Output driver	RS485 transceiver type
Permissible load / channel	max. +/- 20 mA
Signal level	HIGH typ. 3.8 V LOW at I _{Load} = 20 mA typ. 1.3 V
Resolution singleturn	10 ... 14 bit and 17 bit
Number of revolutions (multitrurn)	4096 (12 bit)
Code	binary or gray
SSI clock rate	50 kHz ... 2 MHz
Data refresh rate	ST resolution ≤ 14 bit ≤ 1 μs ST resolution ≥ 15 bit 4 μs
Monoflop time	≤ 15 μs

Note: If the clock starts cycling within the monoflop time, a second data transfer starts with the same data. If the clock starts cycling after the monoflop time, the data transfer starts with the new values. The update rate is dependent on the clock speed, data length and monoflop-time.

BiSS interface

Resolution singleturn	10 ... 14 bit and 17 bit
Number of revolutions (multitrurn)	4096 (12 bit)
Code	binary
Clock rate	50 kHz ... 10 MHz
Max. update rate	< 10 μs, depends on the clock rate and the data length
Data refresh rate	≤ 1 μs
Note:	– bidirectional, factory programmable parameters are: resolution, code, direction, alarms and warnings – CRC data verification

Status output and LED

Output driver	open collector, internal pull up resistor 22 kΩm
Permissible load	max. 20 mA
Signal level	HIGH +V LOW < 1 V
Active	LOW
The optional LED (red) and the status output serve to display various alarm or error messages. In normal operation the LED is OFF and the status output is HIGH (open collector with int. pull up 22 kΩm).	
An active status output (LOW) displays:	
– sensor error, singleturn or multitrurn (soiling, glass breakage etc.)	
– LED fault (failure or ageing)	
– over- or under-temperature	
In the SSI mode, the fault indication can only be reset by switching off the power-supply to the device.	

Option incremental outputs (A/B), 2048 ppr

	SinCos	RS422 TTL compatible
Max. frequency -3dB	400 kHz	400 kHz
Signal level	1 V _{pp} (± 20%)	HIGH: min. 2.5 V LOW: max. 0.5 V
Short circuit proof	yes	yes

Absolute encoders
multitrurn

1) Cable version: -30°C ... +75°C [-22°F ... +167°F].

2) Short circuit to 0V or to output, one channel at a time, power supply correctly applied.

Absolute encoders – multiturn

Standard mechanical multiturn, optical

Sendix 5863 / 5883 (shaft / hollow shaft)

SSI / BiSS + incremental

SET input or SET button

Input	active HIGH	
Input type	comparator	
Signal level	HIGH	min: 60 % of +V (power supply) max: +V
	LOW	max: 25 % of +V (power supply)
Input current	< 0.5 mA	
Min. pulse duration (SET)	10 ms	
Timeout after SET signal	14 ms	

The encoder can be set to zero at any position by means of a HIGH signal on the SET input or by pressing the optional SET button (with a pencil, ball-point pen or similar). Other preset values can be factory-programmed. The SET input has a signal processing time of approx. 1 ms. Once the SET function has been triggered, the encoder requires an internal processing time of approx. 15 ms before the new position data can be read. During this time the status output is at LOW.

If this input is not used, it should be connected to 0 V (Encoder ground GND) in order to avoid interferences.

DIR input

Direction input: A HIGH signal switches the direction of rotation from the default cw to ccw. This function can also be factory-programmed to be inverted. If DIR is changed when the device is already switched on, then this will be interpreted as an error.

The LED will come ON and the status output will switch to LOW.

If this input is not used, it should be connected to 0 V (Encoder ground GND) in order to avoid interferences.

Response time (DIR input)	1 ms
----------------------------------	------

Power-ON

After Power-ON the device requires a time of approx. 150 ms before valid data can be read.

Hot plugging of the encoder should be avoided.

Absolute encoders – multiturn

**Standard
mechanical multiturn, optical**

Sendix 5863 / 5883 (shaft / hollow shaft)

SSI / BiSS

Dimensions hollow shaft version

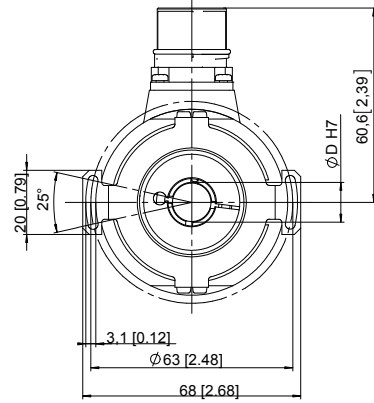
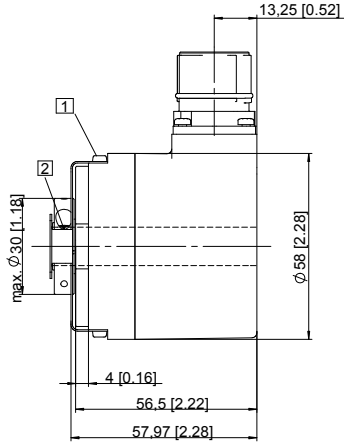
Dimensions in mm [inch]

Flange with stator coupling, ø 63 [2.48]

Flange type 5 and 6

Pitch circle diameter for fixing screws 63 [2.48]
(drawing with M23 connector)

- 1 Fixing screws DIN 912 M3 x 8
(washer included in delivery)
- 2 Recommended torque for the
clamping ring 0.6 Nm

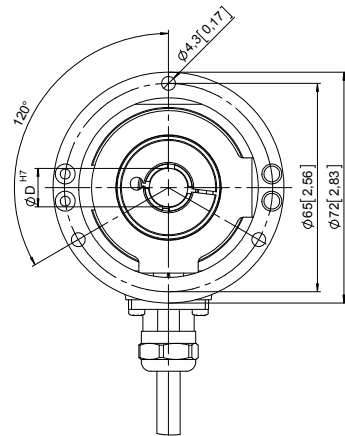
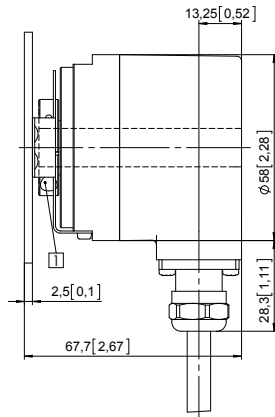


Flange with stator coupling, ø 65 [2.56]

Flange type 3 and 4

Pitch circle diameter for fixing screws 65 [2.56]
(drawing with cable)

- 1 Recommended torque for the
clamping ring 0.6 Nm



Absolute encoders
multiturn

Subject to change without prior notice.

WayCon Positionsmesstechnik GmbH
email: info@waycon.de
internet: www.waycon.de

Head Office
Mehlbeerenstr. 4
82024 Taufkirchen
Tel. +49 (0)89 67 97 13-0
Fax +49 (0)89 67 97 13-250

Office Köln
Auf der Pehle 1
50321 Brühl
Tel. +49 (0)2232 56 79 44
Fax +49 (0)2232 56 79 45