Standard
electronic multiturn, optical

Sendix F5868 / F5888 (shaft / hollow shaft)

EtherNet/IP



New generation - ready for the future.

The optical absolute singleturn and multiturn Sendix F58 EtherNet/IP encoders are based on the latest CIP version v3.32 and EtherNet/IP version v1.30.

Key features are neighborhood detection, gear factor, the calculation of acceleration and simultaneous connection to up to 5 controllers. Thanks to the new framework, the functionality can be extended at any time via the integrated web server by update.



Multiturn resolution


Safety-Lock™


High rotational speed



Temperature range



High protection level


High shaft load capacity


Shock / vibration resistant


Magnetic field proof sensor technology


Reverse polarity protection


Optical sensor

Features

- Scaling of the total resolution via the gear factor.
- High resolution: singleturn up to 19 bit, multiturn up to 24 bit.
- High-precision setting of velocity and acceleration values through filter and hysteresis.
- Device Level Ring (DLR) ring redundancy of the network with two network ports.
- Low RPI time of minimum 1 ms - this makes the encoder usable for time-critical applications up to 1000 Hz update frequency.

Benefits

- Direct mapping of pitch ratios, e.g. for gear ratios or gear reductions.
- Precise position detection.
- Cost and time savings when setting up the control system.
- Communication is maintained when the ring structure is interrupted.

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Order code Shaft version

8.F5868	.	X	X	A	N	.	A3	2	2
Type		a	b	c	d		e		

a *Flange*
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“]

b *Shaft (ø x L), with flat*
1 = 6 x 10 mm [0.24 x 0.39“]
2 = 10 x 20 mm [0.39 x 0.79“]
3 = 1/4“ x 7/8“
4 = 3/8“ x 7/8“

c *Interface / Supply voltage*
A = EtherNet/IP / 10 ... 30 V DC

d *Type of connection*
N = 3 x axial M12 connector, 4-pin

e *Fieldbus profile*
A3 = EtherNet/IP

Options – Standard types (available from 1 piece)

Surface protection salt spray tested
with clamping flange IP67 and shaft ø 10 mm:
8.F5868.32AN.A322-**C**

Stainless steel V2A [1]
Order expansion:
8.F5868.XXAN.A322-**V2A**

Stainless steel V4A [1]
Order expansion:
8.F5868.XXAN.A322-**V4A**

Options – on request (for other flange/shaft combinations)
- Surface protection salt spray tested
- Stainless steel V2A
- Stainless steel V4A

Order code Hollow shaft

8.F5888	.	X	X	A	N	.	A3	2	2
Type		a	b	c	d		e		

a *Flange*
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“]
9 = with torque stop, flexible, IP65
J = with torque stop, flexible, IP67

b *Blind hollow shaft (insertion depth max. 30 mm [1.18“])*
A = ø 10 mm [0.39“]
B = ø 12 mm [0.47“]
C = ø 14 mm [0.55“]
D = ø 15 mm [0.59“]
E = ø 3/8“
F = ø 1/2“

c *Interface / Supply voltage*
A = EtherNet/IP / 10 ... 30 V DC

d *Type of connection*
N = 3 x axial M12 connector, 4-pin

e *Fieldbus profile*
A3 = EtherNet/IP

Options – Standard types (available from 1 piece)

Stainless steel V2A [2]
Order expansion:
8.F5888.2XAN.A322-**V2A**

Stainless steel V4A [2]
Order expansion:
8.F5888.2XAN.A322-**V4A**

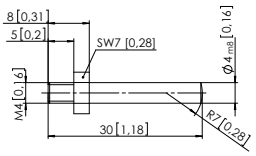
Options – on request (for other flange/hollow shaft combinations)
- Surface protection salt spray tested
- Stainless steel V2A
- Stainless steel V4A

1) Only in conjunction with flange **a** = 3 or 4 and shaft **b** = 1 or 2.
2) Only in conjunction with flange **a** = 2 and hollow shaft **b** = B or D.

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Standard electronic multiturn, optical	Sendix F5868 / F5888 (shaft / hollow shaft)	EtherNet/IP

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 Dimensions in mm [inch]		Order no.
Torque pin, ø 4 mm for flange with spring element (flange type 1)	with fixing thread 	**8.0010.4700.0000**

Cables and connectors			Order no.
Preassembled cables	M12 male connector with external thread, 4-pin, D coded, straight single-ended 2 m [6.56‘] PUR cable	port 1 + port 2	**05.00.6031.4411.002M**
	M12 male connector with external thread, 4-pin, D coded, right-angle single-ended 2 m [6.56‘] PUR cable	port 1 + port 2	**05.00.6031.4511.002M**
	M12 female connector with coupling nut, 4-pin, A coded, straight single-ended 2 m [6.56‘] PUR cable	power supply	**05.00.6061.6211.002M**
	M12 female connector with coupling nut, 4-pin, A coded, right-angle single-ended 2 m [6.56‘] PUR cable	power supply	**05.00.6061.6311.002M**
Connectors	M12 male connector with external thread, 4-pin, D coded, straight (metal)	port 1 + port 2	**05.WASCSY4S**
	M12 male connector with external thread, 4-pin, D coded, right-angle (metal)	port 1 + port 2	**8.0000.5128.0000**
	M12 female connector with coupling nut, 4-pin, A coded, straight (plastic)	power supply	**05.B8141-0**
	M12 female connector with coupling nut, 4-pin, A coded, right-angle (plastic)	power supply	**05.B8241-0**

Further Kübler accessories can be found at: kuebler.com/accessories
Further Kübler cables and connectors can be found at: kuebler.com/connection-technology

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Technical data

Mechanical characteristics

Max. speed	9000 min^{-1} (short-term – 10 min) 6000 min^{-1} (continuous)		
Starting torque at 20 °C [68 °F]	< 0.01 Nm		
Moment of inertia			
shaft version	3.0 x 10^{-6} kgm^2		
blind hollow shaft version	4.0 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	IP65, IP67		
Working temperature range	-40 °C ... +80 °C [-40 °F ... +176 °F]		
Material	Standard	V2A DIN 1.4305 AISI 303	V4A DIN 1.4404 AISI 316L
shaft/hollow shaft	V2A	V2A	V4A
flange	aluminum	V2A	V4A
housing	aluminum	V2A	V4A
Shock resistance acc. EN 60068-2-27	2500 m/s^2, 6 ms		
Vibration resistance acc. EN 60068-2-6	100 m/s^2, 55 ... 2000 Hz		

Electrical characteristics

Power supply	10 ... 30 V DC
Current consumption	max. 150 mA
Power consumption	max. 1.5 W
Reverse polarity protection of the power supply (V+)	yes

Approvals

UL compliant in accordance with	File no. E224618
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

Interface characteristics EtherNet/IP

General information

EtherNet/IP conformance tested acc. to	version CT-12 of 11. Dez. 2014
EtherNet/IP specification	Vol 2, Ed 1.17
CIP specification	Vol 1, Ed 3.16
Protocol	
F58x8 Standards & Features	CIP Version v3.32 Ethernet/IP Version v1.30 LLDP BOOTP DHCP
Device Profile	Encoder Device

Resolution

Resolution singleturn (MUR)	
scalable	1 ... 524 288 (19 bit)
default	262 144 (18 bit)
Number of revolutions (NDR)	
scalable	1 ... 16 777 216 (24 bit)
default	4 096 (12 bit)
Total resolution (TMR)	
scalable	1 ... 8 796 093 022 208 (43 bit)
default	1 073 741 824 (30 bit)

Adjustable parameters

- Preset
- Count direction
- Resolution
- Unity of speed
- IP address
- Number of revolutions
- Position
- Position format
- Position limit
- Acceleration unit
- Speed limit
- Acceleration limit
- Scaling
- Gear factor
- Filter for speed and acceleration
- Hysteresis for speed and acceleration

Objects (CIP Objects)

- Identity Object
- Message Router
- Assembly Object
- Connection Manager
- Position Sensor Object
- Qos Object
- Port Object
- TCP / IP Interface Object
- EtherNet Link Object

EtherNet/IP features

- DLR (Device Level Ring) possible
- Qos (Quality of Service) possible
- ACD (Address Conflict Detection)
- Multicast and unicast capability
- Up to 5 PLC connections

Process data

- Position
- Speed data
- Acceleration
- Errors
- Alarms
- Warnings
- Offset (for preset)
- Battery voltage
- Operating voltage
- Temperature

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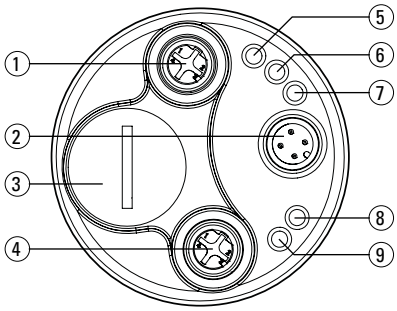
Terminal assignment bus

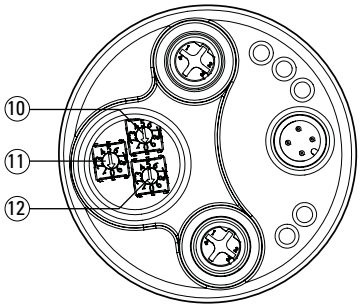
Interface	Type of connection	Function	M12 connector, 4-pin					
A	N (3 x M12 connector)	Bus Port 1	Signal:	Transmit data+	Receive data+	Transmit data -	Receive data -	 D coded
			Abbreviation:	TxD+	RxD+	TxD-	RxD-	
			Pin:	1	2	3	4	
		Power supply	Signal:	Voltage +	–	Voltage –	–	
			Abbreviation:	+ V	–	0 V	–	
			Pin:	1	2	3	4	
		Bus Port 2	Signal:	Transmit data+	Receive data+	Transmit data -	Receive data -	 D coded
			Abbreviation:	TxD+	RxD+	TxD-	RxD-	
			Pin:	1	2	3	4	

Rear side connections and display elements

①	Ethernet Port – Link 2	
②	Supply voltage	
③	Cover screw	
④	Ethernet Port – Link 1	
⑤	Link 2	flashes yellow when connected
⑥	BF – Bus Failture	displays network errors *)
⑦	SF – System Failture	displays system errors *)
⑧	ENC	Shows status of encoder *)
⑨	Link 1	flashes yellow when connected
⑩	Switch: x 100	
⑪	Switch: x 10	
⑫	Switch: x 1	

*) see manual





Settings rotary switch

Switch position	Meaning
000	Address assignment via DHCP
1 ... 254	Use stored subnet (standard: 192.168.1.x, mask: 255.255.255.0) The last digit „x" of the IP address is determined by the rotary switch.
300	Explicit Protection Mode OFF
555	Resetting the encoder to factory setting. To reset, this switch position must be set. If necessary, switch off the operating voltage and switch it on again within 10 seconds. After that, the encoder can be switched off and the switch setting desired during operation can be made. All parameters are now set to factory settings - both the encoder objects and the TCP/IP settings.
800	Explicit Protection Mode ON
Other positions	Reserved, do not use!

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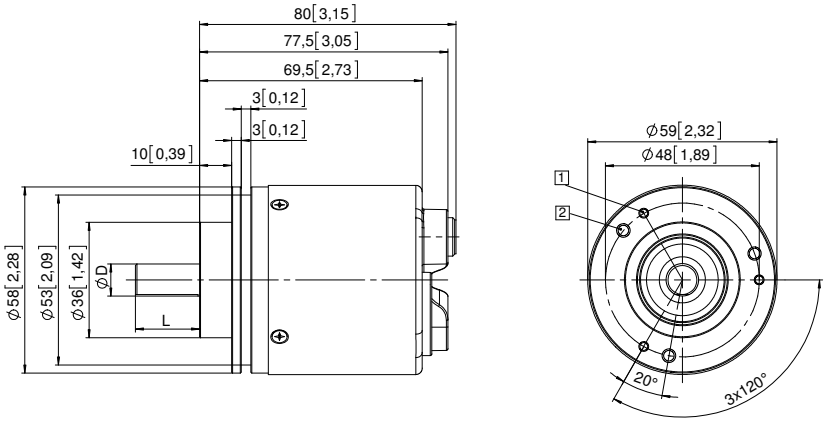
Dimensions shaft version

Dimensions in mm [inch]

Clamping flange, ø 58 [2.28]
Flange type 1 + 3

1 3 x M3, 6 [0.24] deep

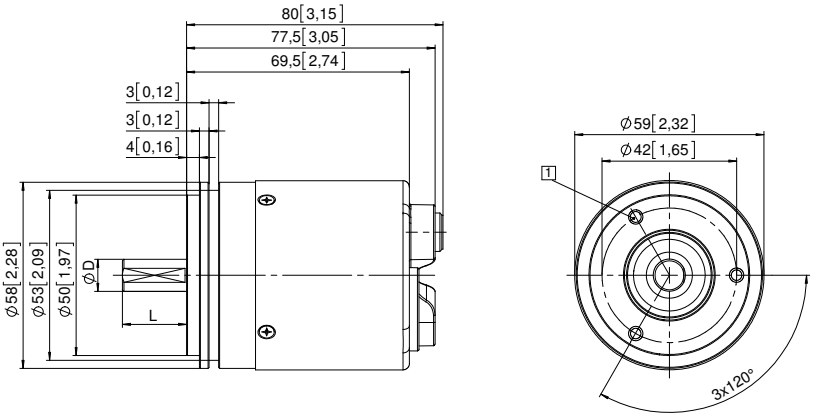
2 3 x M4, 8 [0.31] deep



D	Fit	L
6 [0.24]	h7	10 [0.39]
10 [0.39]	f7	20 [0.79]
1/4“	h7	7/8“
3/8“	h7	7/8“

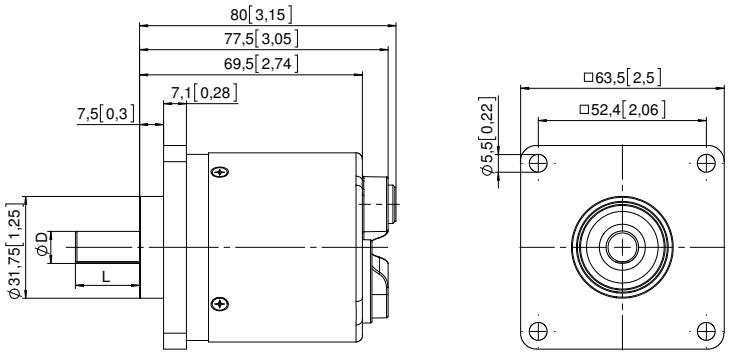
Synchro flange, ø 58 [2.28]
Flange type 2 + 4

1 3 x M3, 6 [0.24] deep



D	Fit	L
6 [0.24]	h7	10 [0.39]
10 [0.39]	f7	20 [0.79]
1/4“	h7	7/8“
3/8“	h7	7/8“

Square flange, □ 63.5 [2.5]
Flange type 5 + 7



D	Fit	L
6 [0.24]	h7	10 [0.39]
10 [0.39]	f7	20 [0.79]
1/4“	h7	7/8“
3/8“	h7	7/8“

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Dimensions hollow shaft version

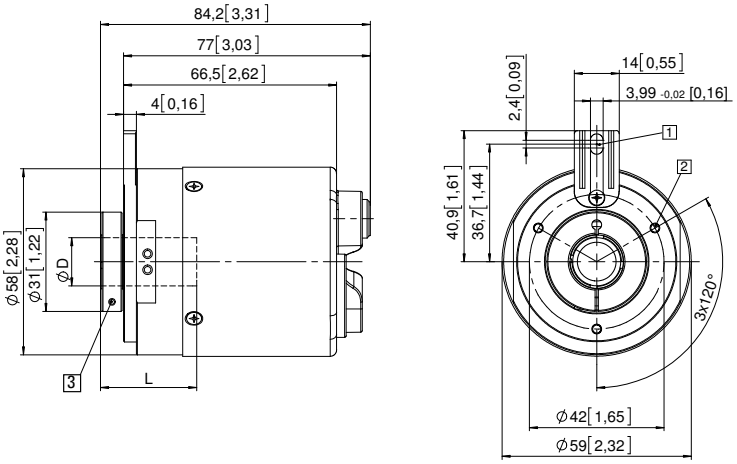
Dimensions in mm [inch]

Flange with spring element, long
Flange type 1 + 2

1 Slot spring element, recommendation: torque pin DIN 7, ø 4 [0.16]

2 3 x M3, 5.5 [0.22] deep

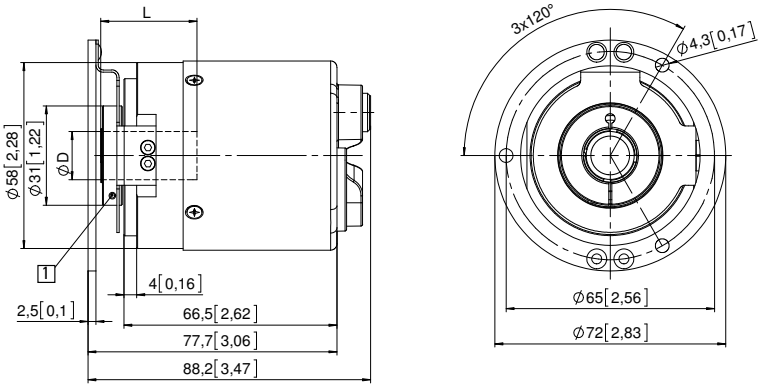
3 Recommended torque for the clamping ring 0.6 Nm



D	Fit	L
10 [0.39]	H7	30 [1.18]
12 [0.47]	H7	30 [1.18]
14 [0.55]	H7	30 [1.18]
15 [0.59]	H7	30 [1.18]
3/8"	H7	30 [1.18]
1/2"	H7	30 [1.18]
L = insertion depth max. blind hollow shaft		

Flange with stator coupling, ø 65 [2.56]
Flange type 3 + 4

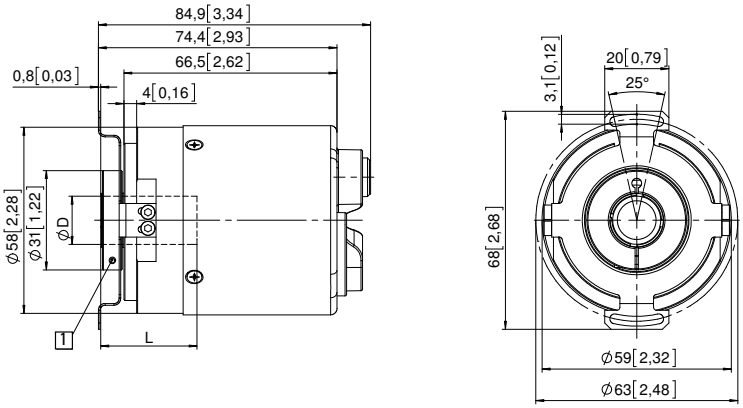
1 Recommended torque for the clamping ring 0.6 Nm



D	Fit	L
10 [0.39]	H7	30 [1.18]
12 [0.47]	H7	30 [1.18]
14 [0.55]	H7	30 [1.18]
15 [0.59]	H7	30 [1.18]
3/8"	H7	30 [1.18]
1/2"	H7	30 [1.18]
L = insertion depth max. blind hollow shaft		

Flange with stator coupling, ø 63 [2.48]
Flange type 5 + 6

1 Recommended torque for the clamping ring 0.6 Nm



D	Fit	L
10 [0.39]	H7	30 [1.18]
12 [0.47]	H7	30 [1.18]
14 [0.55]	H7	30 [1.18]
15 [0.59]	H7	30 [1.18]
3/8"	H7	30 [1.18]
1/2"	H7	30 [1.18]
L = insertion depth max. blind hollow shaft		

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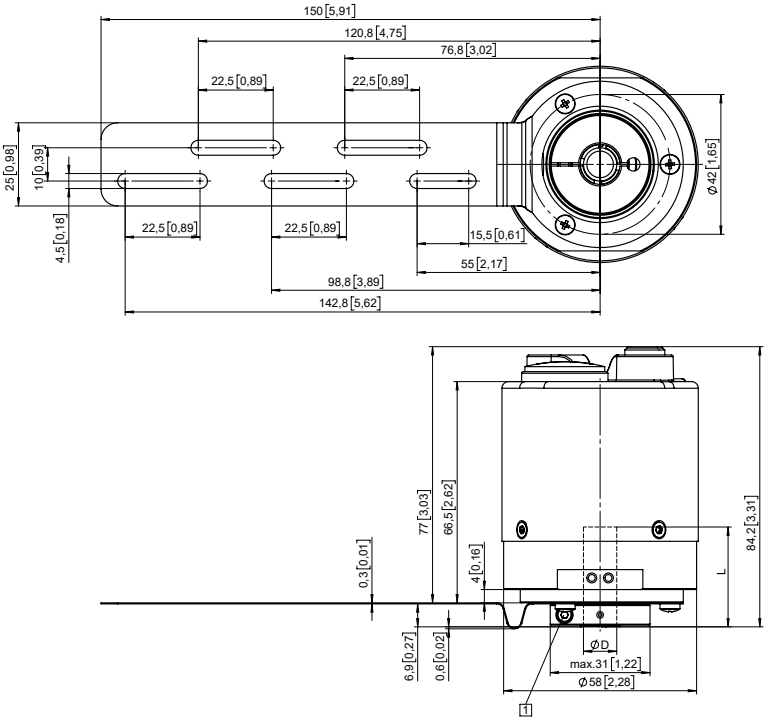
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Dimensions hollow shaft version

Dimensions in mm [inch]

Flange with torque stop, flexible
Flange type 9 + J

1 Recommended torque for the clamping ring 0.6 Nm



D	Fit	L
10 [0.39]	H7	30 [1.18]
12 [0.47]	H7	30 [1.18]
14 [0.55]	H7	30 [1.18]
15 [0.59]	H7	30 [1.18]
3/8“	H7	30 [1.18]
1/2“	H7	30 [1.18]
L = insertion depth max. blind hollow shaft		

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