

Absolute encoders – multitrurn

Standard electronic multitrurn, optical	Sendix F5868 / F5888 (shaft / hollow shaft)	EtherNet/IP
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New generation - ready for the future.

The optical absolute singleturn and multitrurn 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.



EtherNet/IP™



24 bit MT
Multitrurn resolution



Safety-Lock™



High rotational speed



-40...+80°C
Temperature range



IP67
High protection level



High shaft load capacity



Shock / vibration resistant



Magnetic field proof



Reverse polarity protection



Optical sensor

Features

- Link Layer Discovery Protocol (LLDP).
- Scaling of the total resolution via the gear factor.
- High resolution: singleturn up to 19 bit, multitrurn 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.

Benefits

- Quick and easy device replacement through neighborhood detection.
- 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	8.F5868	.XXAN.	A3	2	2
Shaft version	Type	<div style="display: flex; justify-content: space-around; font-size: 8px;"> abcd </div>	<div style="display: flex; justify-content: space-around; font-size: 8px;"> e </div>		

a Flange

- 1 = clamping flange, IP65 \varnothing 58 mm [2.28"]
- 3 = clamping flange, IP67 \varnothing 58 mm [2.28"]
- 2 = synchro flange, IP65 \varnothing 58 mm [2.28"]
- 4 = synchro flange, IP67 \varnothing 58 mm [2.28"]
- 5 = square flange, IP65 \square 63.5 mm [2.5"]
- 7 = square flange, IP67 \square 63.5 mm [2.5"]

b Shaft ($\varnothing \times L$), 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)

V2A
DIN 1.4305
AISI 303

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

V4A
DIN 1.4404
AISI 316L

Stainless steel V2A ¹⁾
 Order expansion:
8.F5868.XXAN.A322-V2A

V4A
DIN 1.4404
AISI 316L

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	8.F5888	.XXAN.	A3	2	2
Hollow shaft	Type	<div style="display: flex; justify-content: space-around; font-size: 8px;"> abcd </div>	<div style="display: flex; justify-content: space-around; font-size: 8px;"> e </div>		

a Flange

- 1 = with spring element long, IP65
- 2 = with spring element long, IP67
- 3 = with stator coupling, IP65 \varnothing 65 mm [2.56"]
- 4 = with stator coupling, IP67 \varnothing 65 mm [2.56"]
- 5 = with stator coupling, IP65 \varnothing 63 mm [2.48"]
- 6 = with stator coupling, IP67 \varnothing 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 = \varnothing 10 mm [0.39"]
- B = \varnothing 12 mm [0.47"]
- C = \varnothing 14 mm [0.55"]
- D = \varnothing 15 mm [0.59"]
- E = \varnothing 3/8"
- F = \varnothing 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)

V2A
DIN 1.4305
AISI 303

Stainless steel V2A ²⁾
 Order expansion:
8.F5888.2XAN.A322-V2A

V4A
DIN 1.4404
AISI 316L

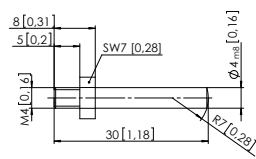
Stainless steel V4A ²⁾
 Order expansion:
8.F5888.2XAN.A322-V4A

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 female connector with coupling nut, 4-pin, A coded, straight (plastic)		05.B8141-0
	M12 female connector with coupling nut, 5-pin, A coded, right-angle (plastic)		05.B-8251-0/9

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 shaft version	up to 70 °C	8000 min ⁻¹ , 6000 min ⁻¹ (continuous)
	up to T _{max}	6000 min ⁻¹ , 4000 min ⁻¹ (continuous)
Max. speed hollow shaft version	up to 70 °C	6000 min ⁻¹ , 4000 min ⁻¹ (continuous)
	up to T _{max}	4000 min ⁻¹ , 3000 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
	hollow shaft version	6.0 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	shaft/hollow shaft	stainless steel
	flange	aluminum
	housing	aluminum
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	
Supply voltage	10 ... 30 V DC
Power consumption (no load)	max. 250 mA
Reverse polarity protection of the supply voltage (+V)	yes

Interface characteristics EtherNet/IP		
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)
Protocol		CIP - Ethernet/IP
	Device Profile	Encoder Device

Approvals		
UL compliant in accordance with	File no. E224618	
CE compliant in accordance with	EMC Directive	2014/30/EU
	RoHS Directive	2011/65/EU
UKCA compliant in accordance with	EMC Regulations	S.I. 2016/1091
	RoHS Regulations	S.I. 2012/3032

General information about EtherNet/IP

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

The following functionalities are integrated

Adjustable parameters

- Preset
- Count direction
- Resolution
- Unity of speed
- IP address
- Number of revolutions
- Position
- Diagnosis
- Position limit
- Warning messages
- Speed limit
- Acceleration limit
- Scaling
- Round Axis Funktion
- 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) möglich
- Qos (Quality of Service) möglich
- ACD (Address Conflict Detection)
- Multicast- und Unicast-Fähigkeit
- 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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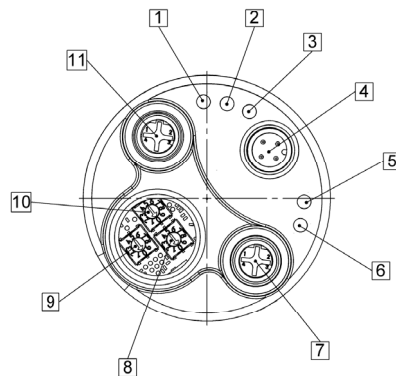
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Terminal assignment bus

Interface	Type of connection	Function	M12 connector, 4-pin					
			Signal:	Transmit data+	Receive data+	Transmit data -	Receive data -	
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 LED: Link 2
- 2 LED: Module Status
- 3 LED: Network Status
- 4 Power
- 5 LED: Encoder
- 6 LED: Link 1
- 7 Port 1
- 8 Switch: x1
- 9 Switch: x10
- 10 Switch: x100
- 11 Port 2



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**Standard
electronic multiturn, optical**

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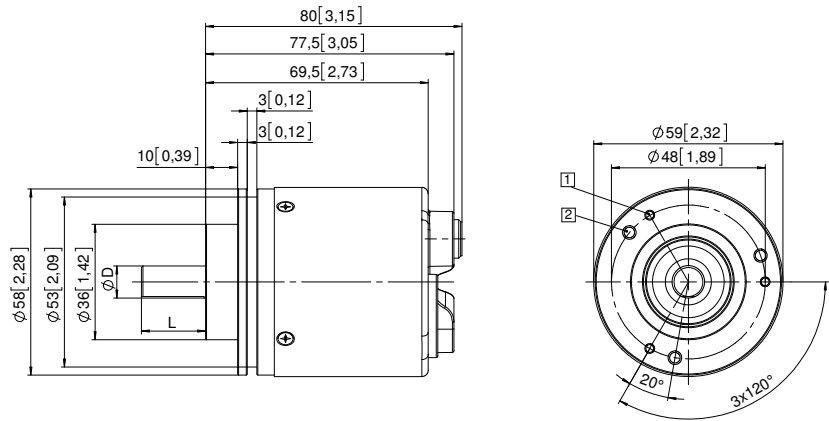
EtherNet/IP

Dimensions shaft version

Dimensions in mm [inch]

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

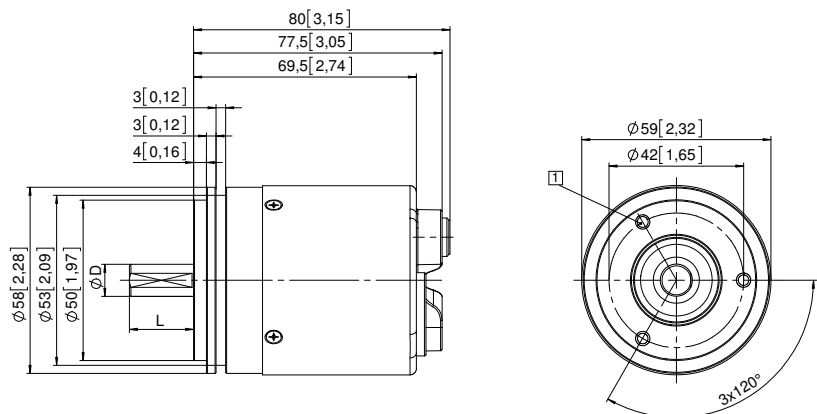
- 1 3 x M3, 6 [0.24] deep
- 2 3 x M4, 8 [0.31] deep



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"

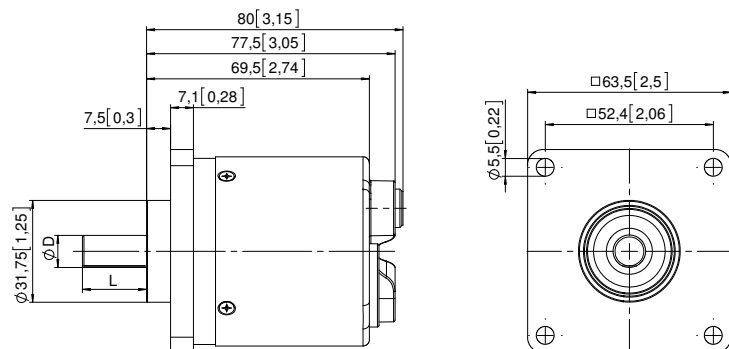
Synchro flange, \varnothing 58 [2.28] Flange type 2 + 4

- 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, \square 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

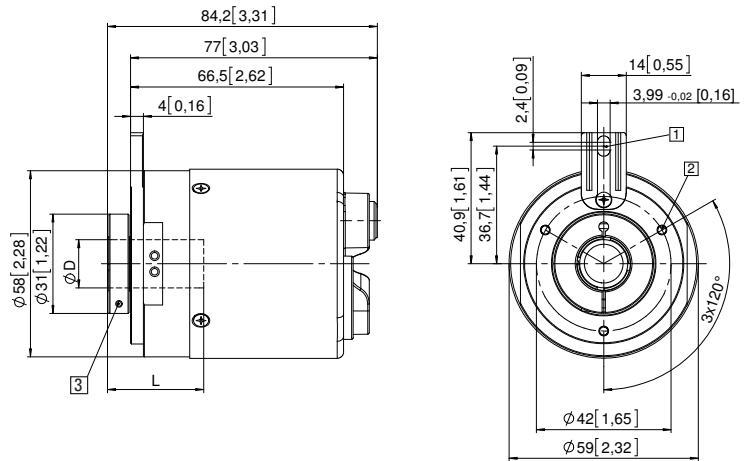
Dimensions in mm [inch]

Flange with spring element, long Flange type 1 + 2

- 1 Slot spring element, recommendation: torque pin DIN 7, \varnothing 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

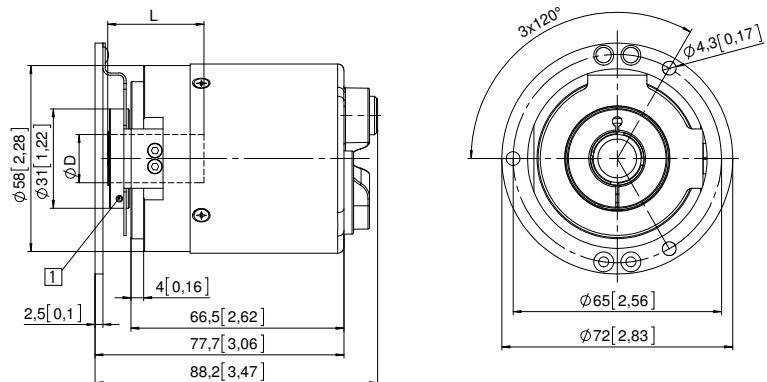


Flange with stator coupling, \varnothing 65 [2.56] Flange type 3 + 4

- 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, \varnothing 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

