



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

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



# Absolute encoders – multiturn

Standard mechanical multiturn, o	ptical Sendix 5868 / 5888 (shaft / hollow sha	aft) Eth	nerCAT
Mounting accessory for shaft	t encoders		Order no.
Coupling	bellows coupling ø 19 mm [0.75"] for shaft 6 mm [0.24"] bellows coupling ø 19 mm [0.75"] for shaft 10 mm [0.39"]		8.0000.1102.0606 8.0000.1102.1010
Mounting accessory for hollo	w shaft encoders Dimensions in mm [inch]		Order no.
Torque pin, ø 4 mm	with fixing thread		8.0010.4700.0000
for flange with spring element (flange type 1 + 2)	8[0.31] 5[0.2] 5w7 [0.28] 5w7 [0.28] 5		
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	Bus IN + Bus OUT	05.00.6031.4411.002M
	M12 female connector with coupling nut, 4-pin, A coded, straight single-ended 2 m [6.56'] PUR cable	supply voltage	05.00.6061.6211.002M
Connectors	M12 male connector with external thread, 4-pin, D coded, straight (metal)	Bus IN + Bus OUT	05.WASCSY4S
	M12 female connector with coupling nut, 4-pin, A coded, straight (plastic)	supply voltage	05.B8141-0

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

## **Technical data**

Mechanical characteristics				
Maximum speed	IP65 up to 70 °C [158 IP65 up to 7 IP67 up to 70 °C [158 IP67 up to 7	B°F] Tmax B°F] Tmax	9000 min <sup>-1</sup> , 7000 min <sup>-1</sup> (continuous) 7000 min <sup>-1</sup> , 4000 min <sup>-1</sup> (continuous) 8000 min <sup>-1</sup> , 6000 min <sup>-1</sup> (continuous) 6000 min <sup>-1</sup> , 3000 min <sup>-1</sup> (continuous)	
Starting torque	e - at 20 °C [68 °F]   	P65 P67	< 0.01 Nm < 0.05 Nm	
Mass moment	of inertia			
	shaft vers	sion	3.0 x 10 <sup>-6</sup> kgm <sup>2</sup> 7.5 x 10 <sup>-6</sup> kgm <sup>2</sup>	
Load capacity	or snant ra a	xial	40 N	
Weight			approx. 0.54 kg [19.05 oz]	
Protection acc	. to EN 60529			
	housing s	side	IP67	
	shaft s	side	IP65, opt. IP67	
Working temperature range			-40 °C +80 °C [-40 °F +176 °F]	
Material	shaft/hollow sl	haft	stainless steel	
	fla	nge	aluminum	
	hous	sing	zinc die-cast	
Shock resistance acc. to EN 60068-2-27		2-27	2500 m/s <sup>2</sup> , 6 ms	
Vibration resist	ance acc. to EN 60068	-2-6	100 m/s², 55 2000 Hz	

Electrical characteristics	
Power supply	10 30 V DC
Power consumption (no load)	max. 120 mA
Reverse polarity protection of the power supply	yes

Interface characteristics EtherCAT				
Resolution singleturn (MUR)				
scalable	1 65 536 (16 bit)			
default	8 192 (13 bit)			
Number of revolutions (NDR)	1 4 096 (12 bit)			
	scalable only via the total resolution			
Total resolution (TMR)				
scalable	1 268 435 456 (28 bit)			
default	33 554 432 (25 bit)			
Protocol	EtherNet / EtherCAT			
Approvals				
UL compliant in accordance with	File no. E224618			
CE compliant in accordance with				
EMC Directive	2014/30/EU			
RoHS Directive	2011/65/EU			
ATEX Directive	2014/34/EU (for Ex 2/22 variants)			

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# Standard

# mechanical multiturn, optical

## Sendix 5868 / 5888 (shaft / hollow shaft)

## EtherCAT

### **Diagnostic LED (red)**

LED is ON with the following fault conditions:

Sensor error (internal code or LED error), low voltage, over-temperature

## Run LED (green)

LED is ON with the following conditions:

Preop-, Safeop and Op-State (EtherCAT status machine)

### General information about CoE (CAN over EtherNet)

The EtherCAT encoders support the CANopen communication profile according to DS301. In addition device-specific profiles like the encoder profile DS406 are available.

Scaling, preset values, limit switch values and many other parameters can be programmed via the EtherCAT bus.

When switching the device on, all parameters are loaded from an EEPROM, where they were saved previously to protect them against power-failure.

The following output values may be combined as PDO (PDO mapping): **position**, **speed**, **temperature values** and **working area state** as well as other process values.

### 2 x Link LEDs (yellow)

LED is ON with the following conditions (port IN and port OUT): Link detected

### Modes

Freerun, distributed clock

## CANopen encoder profile 3.2.10 CoE (CAN over EtherNet)

The following parameters are programmable:

- Position update time of 62.5 µs.
- EtherCAT certificate of conformity.
- Speed with sign.
- Four units for speed calculation: steps/sec, steps/100 ms, steps/10 ms, min<sup>-1</sup>.
- Time stamp as system time at the point in time when the position is read out.
- Two working area state registers.
- Along with the scaled position, the raw data position as process value is also mappable.
- Dynamic mapping.
- Gating time: setting of the time interval, via which the speed value can be interpolated.
- Sensor temperature in degrees Celsius.
- Comprehensive plausibility test when downloading parameters to the encoder.
- Alarm and warning messages.
  - User interface with visual display of bus and fault status 4 LEDs.
- Extended error management for position sensing with integrated temperature control.
- Implementation of the latest CANopen profile 3.2.10 from the 18th February 2011.
- Hot-Connect Support for rapid change of Bus-topology.

### Terminal assignment bus

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





# Standard

# mechanical multiturn, optical



EtherCAT

Dimensions shaft version, with removable bus terminal cover Dimensions in mm [inch]

L

10 [0.39]

20 [0.79]

7/8"

7/8'

L

10 [0.39]

20 [0.79]

7/8"

7/8'

L

10 [0.39]

20 [0.79]

7/8"

7/8'

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

1 3 x M3, 6.0 [0.24] deep 3 x M4, 8.0 [0.31] deep

D

6 [0.24]

10 [0.39]

1/4"

3/8"

D

6 [0.24]

10 [0.39]

1/4"

3/8'

D

6 [0.24]

10 [0.39]

1/4"

3/8"





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

Fit

h7

f7

h7

h7

Fit

h7

f7

h7

h7

Fit

h7

f7

h7

h7



1 3 x M4, 6.0 [0.24] deep

Square flange, 🗌 63.5 [2.5]
Flange type 5 and 7





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**EtherCAT** 

Dimensions hollow shaft version (blind hollow shaft), with removable bus terminal cover Dimensions in mm [inch]

#### Flange with spring element, long Flange type 1 and 2

- 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			



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 denth max_blind hollow shaft			

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

1 Recommended torque for the clamping ring 0.6 Nm

24 [0.94] 12 [0.47] 12 [0.47] 12 [0.47]	φ60 [2.36]
2,5 [0.09] 94,2 [3.71] 95,5 [3.76]	



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			





