

Incremental encoders

Standard high temperature, optical	5803 / 5823 (shaft / hollow shaft)	Push-pull / RS422
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The incremental encoders of the high temperature series 5803 / 5823 can be used at up to max. 110°C.

The high heat resistance – at the same time as high speed – make these encoders the ideal solution for all applications in a high temperature environment.



High rotational speed	Temperature range	High protection level	High shaft load capacity	Shock / vibration resistant	Magnetic field proof	Short-circuit proof	Reverse polarity protection	Optical sensor

Powerful

- Can be used at temperatures of up to max. 110°C.
- High resolution up to 5000 pulses per revolution.
- Maximum speed of 12000 revolutions per minute.

Flexible

- Various connection types for different application purposes.
- Shaft or hollow shaft version.
- With push-pull or RS422 interface.

Order code	8.5803	.XXXXX.	XXXX
Shaft version	Type	a b c d	e

a Flange

- 1 = clamping flange ø 58 mm [2.28"]
- 2 = synchro flange ø 58 mm [2.28"]
- P = synchro flange ø 63.5 mm [2.5"]
- M = square flange □ 63.5 mm [2.5"]

b Shaft (ø x L), with flat

- 1 = ø 6 x 10 mm [0.24 x 0.39"]
- 2 = ø 10 x 20 mm [0.39 x 0.79"]
- P = ø 3/8" x 7/8" ¹⁾

c Output circuit / power supply

- 4 = RS422 (with inverted signal) / 5 V DC
- 5 = RS422 (with inverted signal) / 10 ... 30 V DC
- 6 = push-pull (with inverted signal) / 10 ... 30 V DC
- 7 = push-pull (without inverted signal) / 10 ... 30 V DC

d Type of connection

- 1 = axial cable, 1 m [3.28'] TPE
- 2 = radial cable, 1 m [3.28'] TPE
- 3 = axial M23 connector, 12-pin, without mating connector
- 5 = radial M23 connector, 12-pin, without mating connector
- W = radial MIL connector, 7-pin, without mating connector ²⁾
- Y = radial MIL connector, 10-pin, without mating connector

e Pulse rate

- 25, 50, 60, 100, 125, 200, 250, 256, 300, 360, 500, 512, 600, 720, 800, 1000, 1024, 1200, 1250, 1500, 2000, 2048, 2500, 3000, 3600, 4000, 4096, 5000 (e.g. 100 pulses => 0100)

Optional on request
- other pulse rates

1) Only in conjunction with flange M or P.
2) Only with output circuit 7.

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Order code	8.5823	.XXXXX	.XXXX	
Hollow shaft	Type	a	b	c
a Flange	1 = with hollow shaft and spring element, short 2 = with blind hollow shaft and spring element, short 3 = with hollow shaft and stator coupling, \varnothing 65 mm [2.56"] 4 = with blind hollow shaft and stator coupling, \varnothing 65 mm [2.56"]	c Output circuit / power supply	1 = RS422 (with inverted signal) / 5 V DC 4 = RS422 (with inverted signal) / 10 ... 30 V DC 3 = push-pull (with inverted signal) / 10 ... 30 V DC 2 = push-pull (without inverted signal) / 10 ... 30 V DC	e Pulse rate
b Hollow shaft (insertion depth blind hollow shaft with flange 2 and 4 max. 30 mm [1.18"])	1 = \varnothing 6 mm [0.24"], IP40 2 = \varnothing 6 mm [0.24"], IP66 3 = \varnothing 8 mm [0.32"], IP40 4 = \varnothing 8 mm [0.32"], IP66 5 = \varnothing 10 mm [0.39"], IP40 6 = \varnothing 10 mm [0.39"], IP66 7 = \varnothing 12 mm [0.47"], IP40 8 = \varnothing 12 mm [0.47"], IP66	d Type of connection	1 = radial cable, 1 m [3.28'] TPE 2 = radial M23 connector, 12-pin, without mating connector	25, 50, 60, 100, 125, 200, 250, 256, 300, 360, 500, 512, 600, 720, 800, 1000, 1024, 1200, 1250, 1500, 2000, 2048, 2500, 3000, 3600, 4000, 4096, 5000 (e.g. 100 pulses => 0100)
				<i>Optional on request</i> - other pulse rates

Mounting accessory for shaft encoders	Order no.
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Coupling	bellows coupling \varnothing 19 mm [0.75"] for shaft 6 mm [0.24"] bellows coupling \varnothing 19 mm [0.75"] for shaft 10 mm [0.39"]	8.0000.1102.0606 8.0000.1102.1010
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Mounting accessory for hollow shaft encoders	Dimensions in mm [inch]	Order no.
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Cylindrical pin, long for flange with spring element (flange type 1 + 2)	with fixing thread	8.0010.4700.0000

Stator coupling, \varnothing 63 mm		8.0010.4D00.0000
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Connection technology	Order no.
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Cordset, pre-assembled	M23 female connector with coupling nut, 12-pin 2 m [6.56'] PVC cable	8.0000.6E01.0002
Connector, self-assembly (straight)	M23 female connector with coupling nut, 12-pin	8.0000.5012.0000

Further accessories can be found in the accessories section or in the accessories area of our website at: www.kuebler.com/accessories.
Additional connectors can be found in the connection technology section or in the connection technology area of our website at: www.kuebler.com/connection_technology.

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Technical data

Mechanical characteristics		
Maximum speed	shaft IP65	12000 min ⁻¹
	hollow shaft IP40	12000 min ⁻¹
	hollow shaft IP66 ¹⁾	6000 min ⁻¹
Mass moment of inertia	shaft	approx. 1.8 x 10 ⁻⁶ kgm ²
	hollow shaft	approx. 6.0 x 10 ⁻⁶ kgm ²
Starting torque – at 20°C [68°F]	shaft IP65 / hollow shaft IP40	< 0.01 Nm
	hollow shaft IP66	< 0.05 Nm
Load capacity of shaft	radial	80 N
	axial	40 N
Weight		approx. 0.4 kg [14.11 oz]
Protection acc. to EN 60529	shaft	IP65
	hollow shaft without seal	IP40
	hollow shaft with seal	IP66
Working temperature range	shaft IP65 / hollow shaft IP40	-20°C ... +110°C [-4°F ... +230°F]
	hollow shaft IP66	-20°C ... +90°C [-4°F ... +194°F]
Material	shaft	stainless steel H7
Shock resistance acc. to EN 60068-2-27		1000 m/s ² , 6 ms
Vibration resistance acc. to EN 60068-2-6		100 m/s ² , 10 ... 2000 Hz

Electrical characteristics		
Output circuit	RS422 (TTL compatible)	Push-pull
Power supply	5 V DC (±5 %) or 10 ... 30 V DC	10 ... 30 V DC
Power consumption (no load)	without inverted signal	typ. 55 mA / max. 125 mA
	with inverted signal	typ. 40 mA / max. 100 mA / typ. 80 mA / max. 150 mA
Permissible load / channel	max. +/- 20 mA	max. +/- 30 mA
Pulse frequency	max. 300 kHz	max. 300 kHz
Signal level	HIGH	min. 2.5 V
	LOW	max. 0.5 V
Rising edge time t_r	max. 200 ns	max. 1 µs
Falling edge time t_f	max. 200 ns	max. 1 µs
Short circuit proof outputs ²⁾	yes ³⁾	yes
Reverse polarity protection of the power supply	no; 10 ... 30 V DC: yes	yes
UL approval	file no. E224618	
CE compliant acc. to	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU	

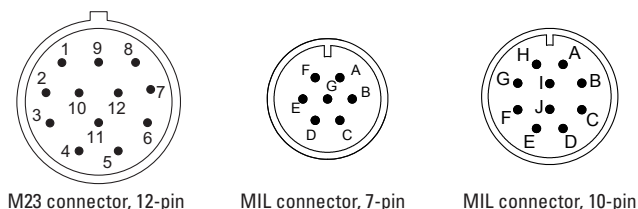
Terminal assignment

Output circuit	Type of connection	Cable (isolate unused cores individually before initial start-up)											
1, 2, 3, 4, 5, 6, 7	5803: 1, 2	Signal:	0 V	+V	0Vsens ⁵⁾	+Vsens ⁵⁾	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
	5823: 1	Core color:	WH 0.5 mm ²	BN 0.5 mm ²	WH	BN	GN	YE	GY	PK	BU	RD	shield
1, 2, 3, 4, 5, 6, 7	5803: 3, 5	M23 connector, 12-pin											
	5823: 2	Signal:	0 V	+V	0Vsens ⁵⁾	+Vsens ⁵⁾	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
		Pin:	10	12	11	2	5	6	8	1	3	4	PH ⁴⁾
7	5803: W	MIL connector, 7-pin											
	5823: –	Signal:	0 V	+V	0Vsens ⁵⁾	+Vsens ⁵⁾	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
		Pin:	F	D	–	E	A	–	B	–	C	–	G
1, 2, 3, 4, 5, 6, 7	5803: Y	MIL connector, 10-pin											
	5823: –	Signal:	0 V	+V	0Vsens ⁵⁾	+Vsens ⁵⁾	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
		Pin:	F	D	–	E	A	G	B	H	C	I	J

Using RS422 outputs and long cable distances, a wave impedance has to be applied at each cable end.

- +V: Encoder power supply +V DC
- 0 V: Encoder power supply ground GND (0 V)
- 0 Vsens / +Vsens: Using the sensor outputs of the encoder, the voltage present can be measured and if necessary increased accordingly.
- A, \bar{A} : Incremental output channel A
- B, \bar{B} : Incremental output channel B
- 0, $\bar{0}$: Reference signal
- PH \perp : Plug connector housing (shield)

Top view of mating side, male contact base



1) For continuous operation max. 3000 min⁻¹, ventilated.
 2) If power supply correctly applied.
 3) Only one channel allowed to be shorted-out:
 if +V = 5 V DC, short-circuit to channel, 0 V, or +V is permitted.
 if +V = 10 ... 30 V DC, short-circuit to channel or 0 V is permitted.

4) PH = shield is attached to connector housing.
 5) The sensor cables are connected to the power supply internally. If long feeder cables are involved they can be used to adjust or control the voltage at the encoder.

Incremental encoders

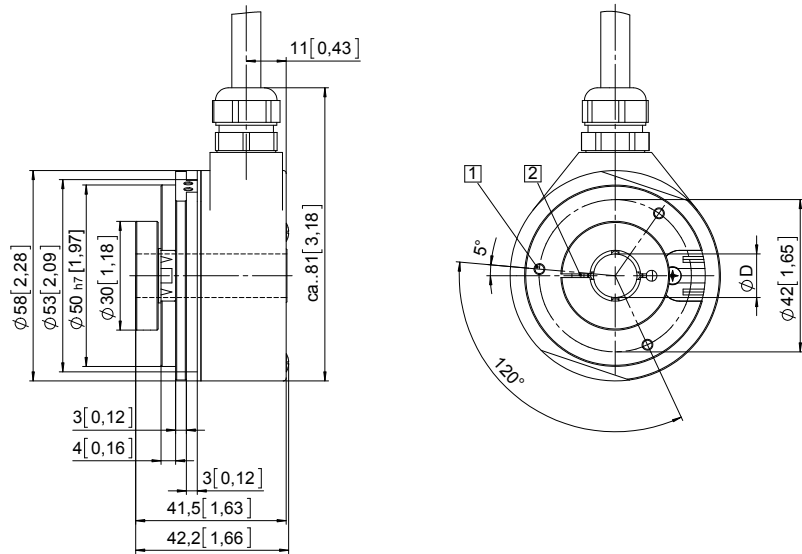
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Dimensions hollow shaft version

Dimensions in mm [inch]

Flange with spring element, short Flange type 1 and 2

- 1 3 x M3, 5 [0.2] deep
- 2 Recommended torque for the clamping ring 0.6 Nm

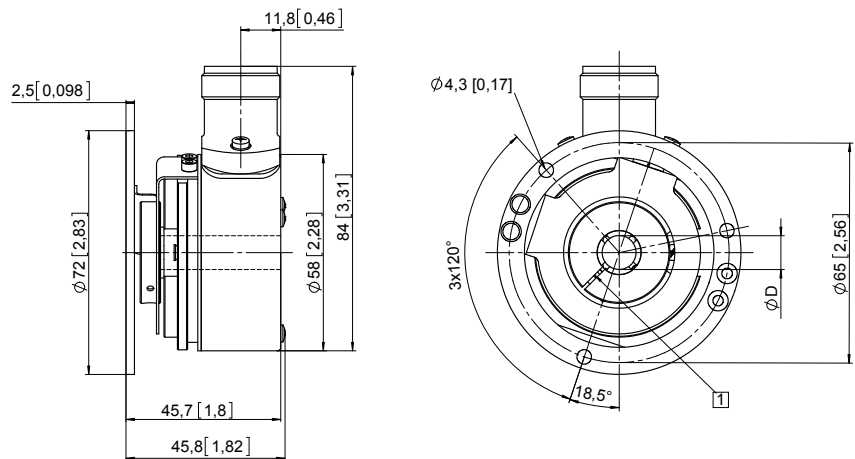


D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7

Insertion depth blind hollow shaft with flange 2:
max. 30 mm [1.18"]

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

- 1 Recommended torque for the clamping ring 0.6 Nm



D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7

Min. insertion depth = 1.5 x D
Insertion depth blind hollow shaft with flange 4:
max. 30 mm [1.18"]