

Incremental encoders

Standard high resolution, optical	5805 / 5825 (shaft / hollow shaft)	Push-pull / RS422
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The incremental encoders type 5805 / 5825 offer resolutions up to max. 36000 pulses per revolution.

They are thus perfect for use in applications where a very high level of accuracy is required.



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

High performance

- High shaft loading capability.
- Maximum speed up to 12000 revolutions per minute.
- High IP protection up to max. IP66.

Many variants

- With RS422 or push-pull interface.
- With cable or connector.

Order code	8.5805	.XXXXX.	XXXXXX
Shaft version	Type	a b c d	e

- | | | |
|---|--|--|
| <p>a Flange</p> <p>1 = clamping flange ø 58 mm [2.28"]</p> <p>2 = synchro flange ø 58 mm [2.28"]</p> <p>b Shaft (ø x L), with flat</p> <p>1 = ø 6 x 10 mm [0.24 x 0.39"]</p> <p>2 = ø 10 x 20 mm [0.39 x 0.79"]</p> | <p>c Output circuit / power supply</p> <p>4 = RS422 (with inverted signal) / 5 V DC</p> <p>5 = RS422 (with inverted signal) / 10 ... 30 V DC</p> <p>6 = push-pull (with inverted signal) / 10 ... 30 V DC</p> <p>7 = push-pull (without inverted signal) / 10 ... 30 V DC</p> <p>d Type of connection</p> <p>1 = axial cable, 1 m [3.28'] PUR</p> <p>2 = radial cable, 1 m [3.28'] PUR</p> <p>3 = axial M23 connector, 12-pin, without mating connector</p> <p>5 = radial M23 connector, 12-pin, without mating connector</p> <p>T = axial M12 connector, 8-pin</p> <p>G = radial M12 connector, 8-pin</p> | <p>e Pulse rate</p> <p>6000, 7200, 8000, 8192, 9000, 10000, 18000, 36000 (e.g. 18000 pulses => 18000)</p> <p><i>Optional on request</i></p> <p>- other pulse rates</p> |
|---|--|--|

Order code	8.5825	.XXXXX.	XXXXXX
Hollow shaft	Type	a b c d	e

- | | | |
|---|---|--|
| <p>a Flange</p> <p>1 = with hollow shaft and spring element, short</p> <p>2 = with blind hollow shaft and spring element, short</p> <p>3 = with hollow shaft and stator coupling, ø 65 mm [2.56"]</p> <p>4 = with blind hollow shaft and stator coupling, ø 65 mm [2.56"]</p> <p>b Hollow shaft (insertion depth blind hollow shaft with flange 2 and 4 max. 30 mm [1.18"])</p> <p>1 = ø 6 mm [0.24"], IP40</p> <p>2 = ø 6 mm [0.24"], IP66</p> <p>3 = ø 8 mm [0.32"], IP40</p> <p>4 = ø 8 mm [0.32"], IP66</p> <p>5 = ø 10 mm [0.39"], IP40</p> <p>6 = ø 10 mm [0.39"], IP66</p> <p>7 = ø 12 mm [0.47"], IP40</p> <p>8 = ø 12 mm [0.47"], IP66</p> | <p>c Output circuit / power supply</p> <p>1 = RS422 (with inverted signal) / 5 V DC</p> <p>4 = RS422 (with inverted signal) / 10 ... 30 V DC</p> <p>2 = push-pull (without inverted signal) / 10 ... 30 V DC</p> <p>3 = push-pull (with inverted signal) / 10 ... 30 V DC</p> <p>d Type of connection</p> <p>1 = radial cable, 1 m [3.28'] PVC</p> <p>2 = radial M23 connector, 12-pin, without mating connector</p> <p>C = radial M12 connector, 8-pin</p> | <p>e Pulse rate</p> <p>6000, 7200, 8000, 8192, 9000, 10000, 18000, 36000 (e.g. 18000 pulses => 18000)</p> <p><i>Optional on request</i></p> <p>- other pulse rates</p> |
|---|---|--|

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Mounting accessory for shaft encoders		Order no.
Coupling	bellows coupling \varnothing 19 mm [0.75"] for shaft 6 mm [0.24"]	8.0000.1102.0606
	bellows coupling \varnothing 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)	Dimensions in mm [inch]	8.0010.4700.0000
	with fixing thread 	
Stator coupling, \varnothing 63 mm [2.48"]		8.0010.4D00.0000
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	for 5805 8.0000.6101.0002
	M23 female connector with coupling nut, 12-pin 2 m [6.56'] PVC cable	for 5825 8.0000.6901.0002
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

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.

Technical data			
Mechanical characteristics			
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 ... +105°C [-4°F ... +221°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 (\pm 5%) or 10 ... 30 V DC		10 ... 30 V DC
Power consumption (no load)	without inverted signal	–	typ. 90 mA / max. 135 mA
	with inverted signal	typ. 70 mA / max. 120 mA	typ. 115 mA / max. 160 mA
Permissible load / channel		max. +/- 20 mA	max. +/- 30 mA
Pulse frequency		max. 800 kHz	max. 600 kHz
Signal level	HIGH	min. 2.5 V	min. +V - 2.5 V
	LOW	max. 0.5 V	max. 2.0 V
Rising edge time t_r		max. 200 ns	max. 1 μ s
Falling edge time t_f		max. 200 ns	max. 1 μ s
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	

1) For continuous operation max. 3000 min⁻¹, ventilated.
2) If power supply correctly applied.

3) Only one channel allowed to be shorted-out at +V = 5 V DC short circuit to channel, 0 V, or +V is permitted. at +V = 10 ... 30 V DC short circuit to channel or 0 V is permitted.

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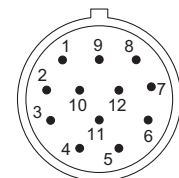
Terminal assignment

Output circuit	Type of connection	Cable (isolate unused cores individually before initial start-up)											
1, 2, 3, 4, 5, 6, 7	5805: 1, 2	Signal:	0 V	+V	0Vsens ²⁾	+Vsens ²⁾	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
	5825: 1	Core color:	WH 0.5 mm ²	BN 0.5 mm ²	WH	BN	GN	YE	GY	PK	BU	RD	shield
Output circuit	Type of connection	M23 connector, 12-pin											
1, 2, 3, 4, 5, 6, 7	5805: 3, 5	Signal:	0 V	+V	0Vsens ²⁾	+Vsens ²⁾	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
	5825: 2	Pin:	10	12	11	2	5	6	8	1	3	4	PH ¹⁾
Output circuit	Type of connection	M12 connector, 8-pin											
1, 2, 3, 4, 5, 6, 7	5805: G, T	Signal:	0 V	+V	0 Vsens	+Vsens	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
	5825: C	Pin:	1	2			3	4	5	6	7	8	PH ¹⁾

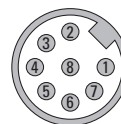
Using RS422 outputs and long cable distances, a wave impedance has to be applied at each cable end.

- +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



M23 connector, 12-pin



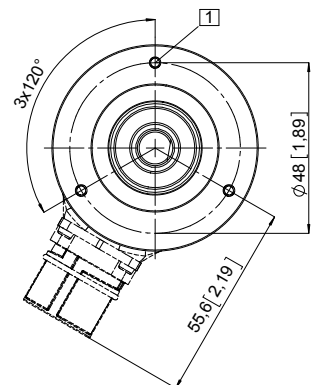
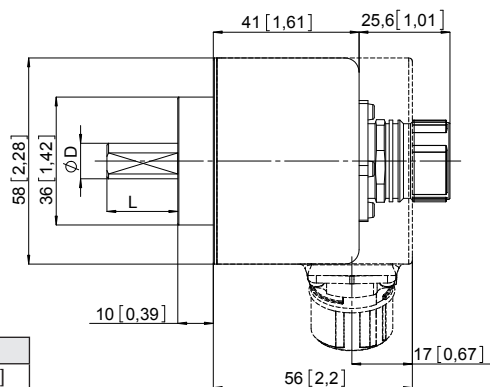
M12 connector, 8-pin

Dimensions shaft version

Dimensions in mm [inch]

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

- 1) 3 x M3, 5 [0.2] deep

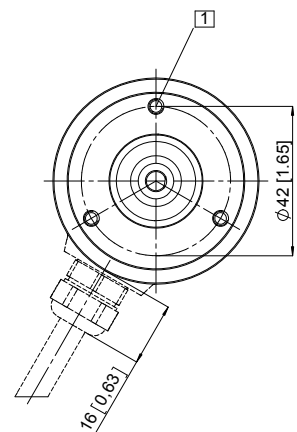
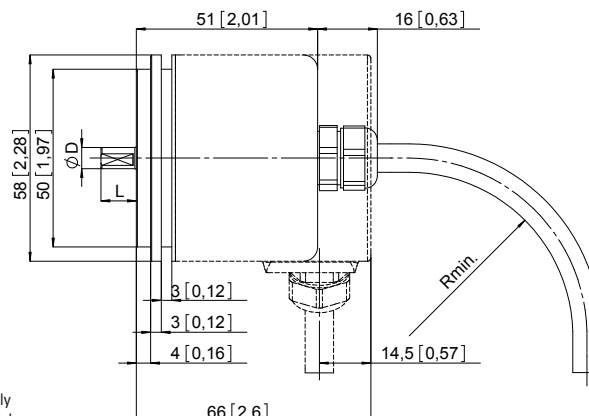


D	Fit	L
6 [0.24]	h7	10 [0.39]
10 [0.39]	f7	20 [0.79]

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

- 1) 3 x M4, 5 [0.2] deep

- R_{min}:-
- securely installed: 55 [2.17]
- flexibly installed: 70 [2.76]



D	Fit	L
6 [0.24]	h7	10 [0.39]
10 [0.39]	f7	20 [0.79]

- 1) PH = shield is attached to connector housing.
- 2) 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.

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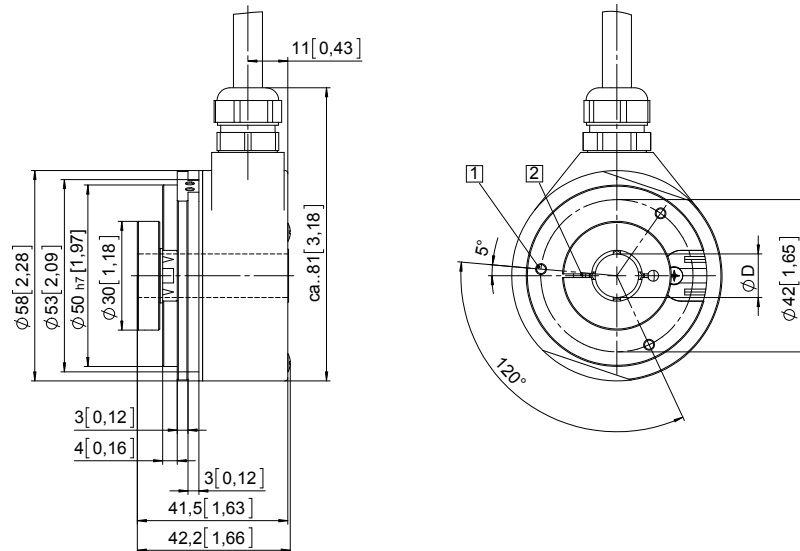
Push-pull / RS422

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

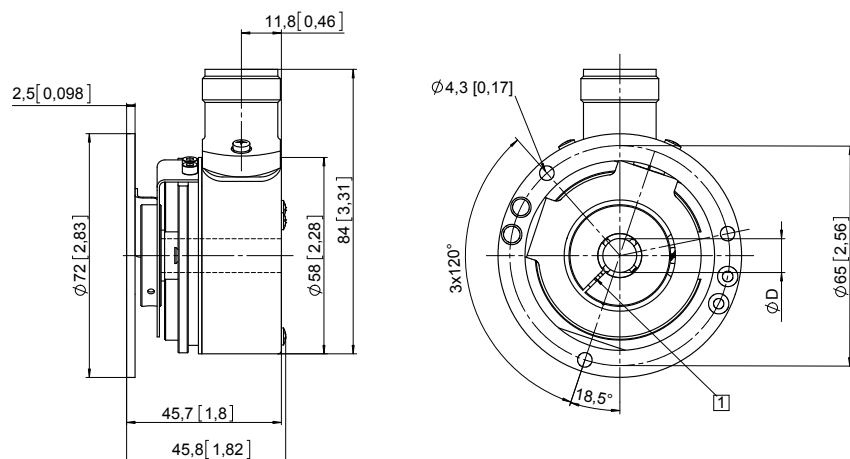


D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7

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"]