

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

a Flange

- 1 = clamping flange ø 58 mm [2.28"]
- 2 = synchro flange ø 58 mm [2.28"]

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"]

c Output circuit / supply voltage

- 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'] PUR
- A = axial cable, special length PUR *)
- 2 = radial cable, 1 m [3.28'] PUR
- B = radial cable, special length PUR *)
- 3 = axial M23 connector, 12-pin
- 5 = radial M23 connector, 12-pin
- T = axial M12 connector, 8-pin
- G = radial M12 connector, 8-pin

*) Available special lengths (connection types A, B):
 2, 3, 5, 8, 10, 15 m [5.56, 9.84, 16.40, 26.25, 32.80, 49.21']
 order code expansion .XXXX = length in dm
 ex.: 8.5805.114A.6000.0030 (for cable length 3 m)

e Pulse rate

- 6000, 7200, 8000, 8192, 9000, 10000, 18000, 36000 (e.g. 18000 pulses => 18000)

Optional on request
 - other pulse rates

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Order code	8.5825	.XXXXX	.XXXXX
Hollow shaft	Type	a b c d	e
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 / supply voltage 1 = RS422 (with inverted signal) / 5 V DC 4 = RS422 (with inverted signal) / 10 ... 30 V DC 2 = push-pull (without inverted signal) / 10 ... 30 V DC 3 = push-pull (with inverted signal) / 10 ... 30 V DC	e Pulse rate 6000, 7200, 8000, 8192, 9000, 10000, 18000, 36000 (e.g. 18000 pulses => 18000) <i>Optional on request</i> - other pulse rates
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'] PVC A = radial cable, special length PVC *) 2 = radial M23 connector, 12-pin C = radial M12 connector, 8-pin *) Available special lengths (connection types A): 2, 3, 5, 8, 10, 15 m [5.56, 9.84, 16.40, 26.25, 32.80, 49.21'] order code expansion .XXXX = length in dm ex.: 8.5825.114A.6000.0030 (for cable length 3 m)	

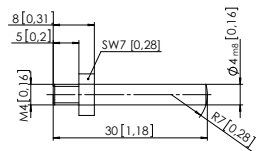
Mounting accessory for shaft encoders	Order no.
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Coupling	bellows coupling \varnothing 19 mm [0.75"] for shaft 6 mm [0.24"]	8.0000.1102.0606
	bellows coupling \varnothing 19 mm [0.75"] for shaft 10 mm [0.39"]	8.0000.1102.1010

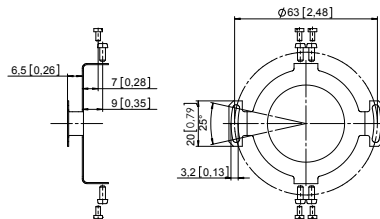
Mounting accessory for hollow shaft encoders	Dimensions in mm [inch]	Order no.
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Cylindrical pin, long	with fixing thread	8.0010.4700.0000
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for flange with spring element (flange type 1 + 2)



Stator coupling, \varnothing 63 mm [2.48"]		8.0010.4D00.0000
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Connection technology	Order no.
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Cordset, pre-assembled	M12 female connector with coupling nut, 8-pin, A coded, straight single ended 2 m [6.56'] PVC cable	05.00.6041.8211.002M
	M23 female connector with coupling nut, 12-pin, cw single ended 2 m [6.56'] PUR cable	for 5805 8.0000.6101.0002
	M23 female connector with coupling nut, 12-pin, cw single ended 2 m [6.56'] PVC cable	for 5825 8.0000.6901.0002
Connector, self-assembly	M12 female connector with coupling nut, 8-pin, A coded, straight (metal)	05.CMB 8181-0
	M23 female connector with coupling nut, 12-pin, cw	8.0000.5012.0000

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			Electrical characteristics		
Speed	shaft IP65 hollow shaft IP40 hollow shaft IP66 ¹⁾	12000 min ⁻¹ 12000 min ⁻¹ 6000 min ⁻¹	Output circuit	RS422 (TTL compatible)	Push-pull
Mass moment of inertia	shaft hollow shaft	approx. 1.8 x 10 ⁻⁶ kgm ² approx. 6.0 x 10 ⁻⁶ kgm ²	Supply voltage	5 V DC (±5 %) or 10...30 V DC	10 ... 30 V DC
Starting torque – at 20 °C [68 °F]	shaft IP65 / hollow shaft IP40 hollow shaft IP66	< 0.01 Nm < 0.05 Nm	Power consumption (no load)	without inverted signal – with inverted signal typ. 70 mA/max. 120 mA	typ. 90 mA / max. 135 mA typ. 115 mA/max. 160 mA
Load capacity of shaft	radial axial	80 N 40 N	Permissible load / channel	max. +/- 20 mA	max. +/- 30 mA
Weight		approx. 0.4 kg [14.11 oz]	Pulse frequency	max. 800 kHz	max. 600 kHz
Protection acc. to EN 60529	shaft IP65 hollow shaft without seal IP40 hollow shaft with seal IP66		Signal level	HIGH min. 2.5 V LOW max. 0.5 V	min. +V - 2.5 V max. 2.0 V
Working temperature range	shaft IP65 / hollow shaft IP40 hollow shaft IP66	-20 °C ... +105 °C [-4 °F ... +221 °F] -20 °C ... +90 °C [-4 °F ... +194 °F]	Rising edge time t_r	max. 200 ns	max. 1 μs
Material	shaft	stainless steel H7	Falling edge time t_f	max. 200 ns	max. 1 μs
Shock resistance acc. to EN 60068-2-27		1000 m/s ² , 6 ms	Short circuit proof outputs ²⁾	yes ³⁾	yes
Vibration resistance acc. to EN 60068-2-6		100 m/s ² , 10 ... 2000 Hz	Reverse polarity protection of the supply voltage	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	

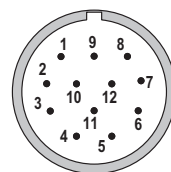
Terminal assignment

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

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

- +V: Supply voltage encoder +V DC
- 0 V: Supply voltage encoder 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

- 1) For continuous operation max. 3000 min⁻¹, ventilated.
- 2) If supply voltage 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.
- 4) PH = shield is attached to connector housing.
- 5) The sensor cables are connected to the supply voltage internally. If long feeder cables are involved they can be used to adjust or control the voltage at the encoder.

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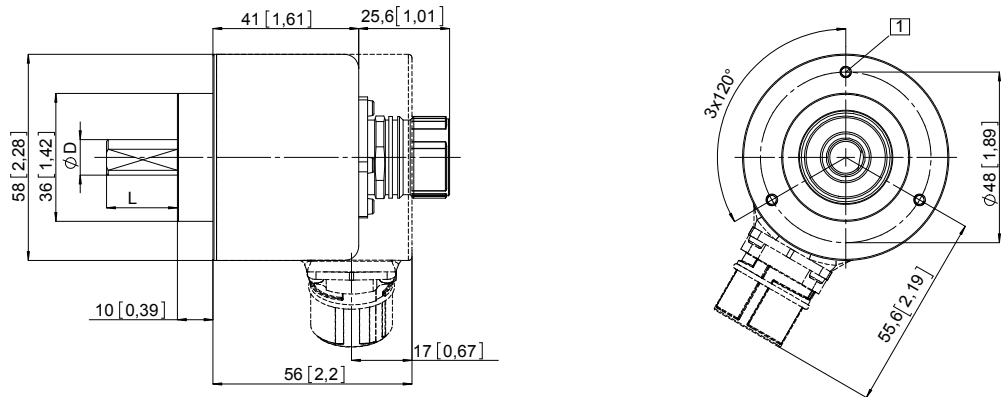
Dimensions shaft version

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]

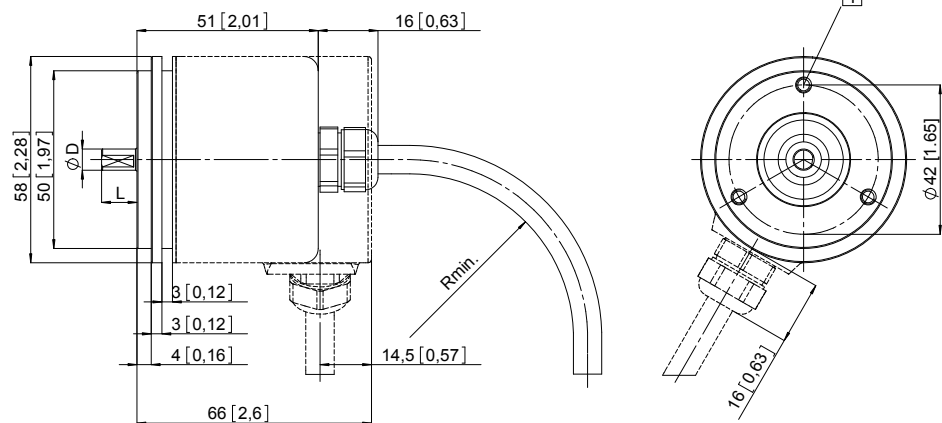
Synchro flange, \varnothing 58 [2.28]

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]

Incremental encoders

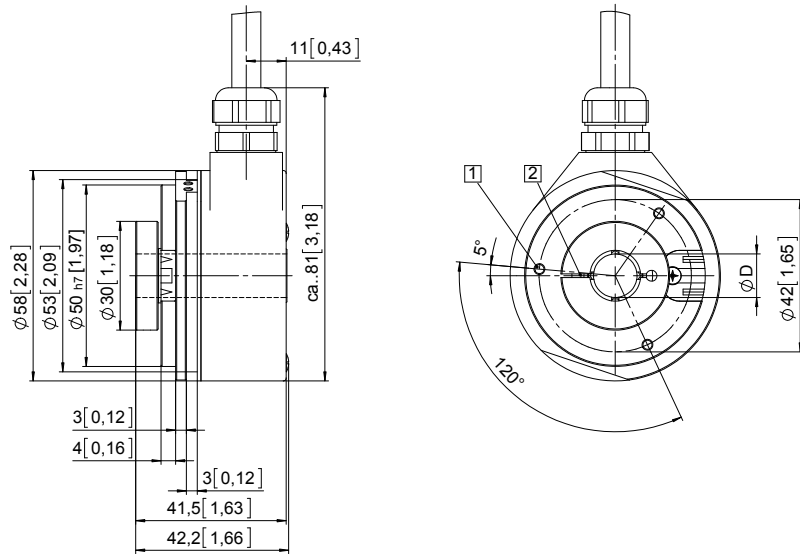
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Dimensions hollow shaft version

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

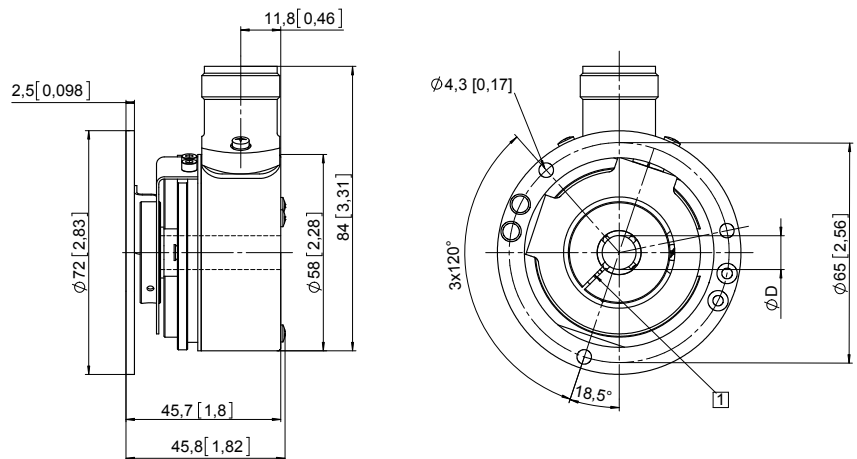


D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7

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"]