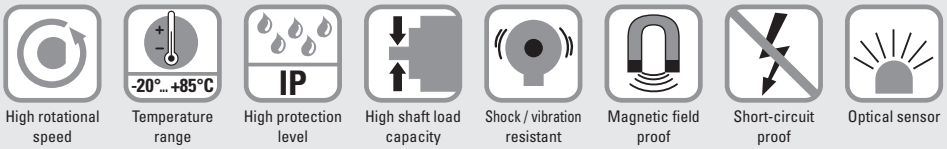
Standard high resolution, optical | 5805 / 5825 (shaft / hollow shaft) | Push-pull / RS422

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 Shaft version

8.5805	.	X	X	X	X	.	XXXXX
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 / 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'] PUR
2 = radial cable, 1 m [3.28'] PUR
3 = axial M23 connector, 12-pin, without mating connector
5 = radial M23 connector, 12-pin, without mating connector
T = axial M12 connector, 8-pin
G = radial M12 connector, 8-pin

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

Optional on request
- other pulse rates

Order code Hollow shaft

8.5825	.	X	X	X	X	.	XXXXX
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, ø 65 mm [2.56"]
4 = with blind hollow shaft and stator coupling, ø 65 mm [2.56"]

b *Hollow shaft (insertion depth blind hollow shaft with flange 2 and 4 max. 30 mm [1.18"])*
1 = ø 6 mm [0.24"], IP40
2 = ø 6 mm [0.24"], IP66
3 = ø 8 mm [0.32"], IP40
4 = ø 8 mm [0.32"], IP66
5 = ø 10 mm [0.39"], IP40
6 = ø 10 mm [0.39"], IP66
7 = ø 12 mm [0.47"], IP40
8 = ø 12 mm [0.47"], IP66

c *Output circuit / power supply*
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

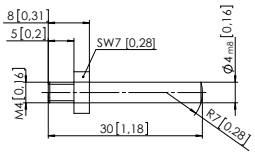
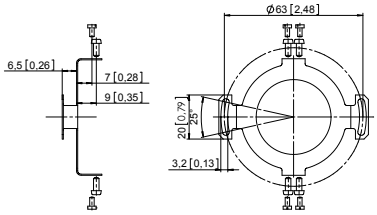
d *Type of connection*
1 = radial cable, 1 m [3.28'] PVC
2 = radial M23 connector, 12-pin, without mating connector
C = radial M12 connector, 8-pin

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

Optional on request
- other pulse rates

Standard high resolution, optical	5805 / 5825 (shaft / hollow shaft)	Push-pull / RS422

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.
Cylindrical pin, long for flange with spring element (flange type 1 + 2)	with fixing thread 	**8.0010.4700.0000**
Stator coupling, ø 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 (±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 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	

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.

Standard
high resolution, optical | **5805 / 5825 (shaft / hollow shaft)** | **Push-pull / RS422**

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	0 Vsens [2]	+Vsens [2]	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	⏚
	5825: 1	Core color:	WH 0.5 mm²	BN 0.5 mm²	WH	BN	GN	YE	GY	PK	BU	RD	shield

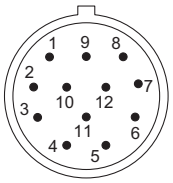
Output circuit	Type of connection	M23 connector, 12-pin											
1, 2, 3, 4, 5, 6, 7	5805: 3, 5	Signal:	0 V	+V	0 Vsens [2]	+Vsens [2]	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	⏚
	5825: 2	Pin:	10	12	11	2	5	6	8	1	3	4	PH [1]

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	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	⏚
	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 V_{sens} / +V_{sens}: Using the sensor outputs of the encoder, the voltage present can be measured and if necessary increased accordingly.
A, $\overline{A}$: Incremental output channel A
B, $\overline{B}$: Incremental output channel B
0, $\overline{0}$: Reference signal
PH ⏚: Plug connector housing (shield)

Top view of mating side, male contact base



M23 connector, 12-pin

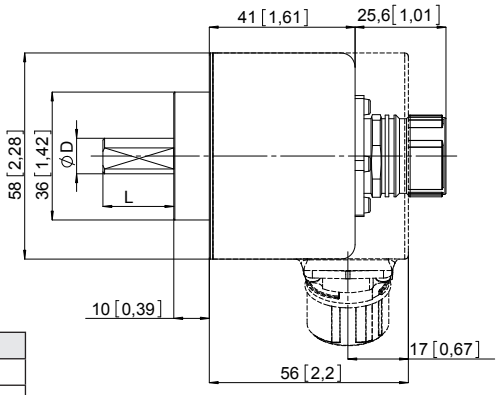
M12 connector, 8-pin

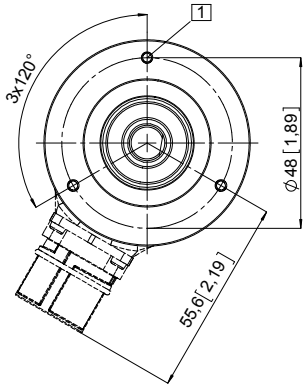
Dimensions shaft version

Dimensions in mm [inch]

Clamping flange, ø 58 [2.28]
Flange type 1

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



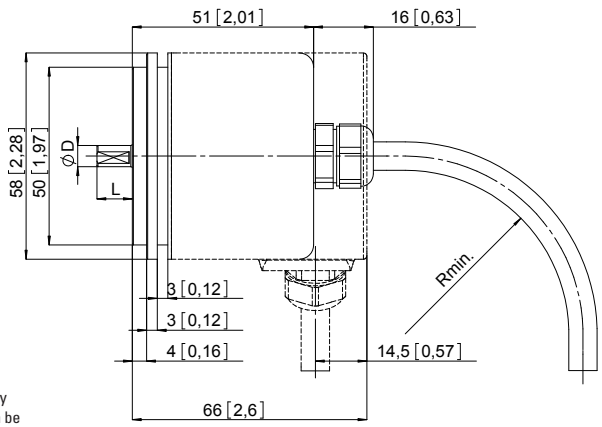


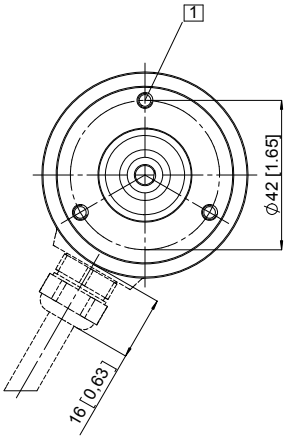
D	Fit	L
6 [0.24]	h7	10 [0.39]
10 [0.39]	f7	20 [0.79]

Synchro flange, ø 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.

Standard
high resolution, optical | **5805 / 5825 (shaft / hollow shaft)** | **Push-pull / RS422**

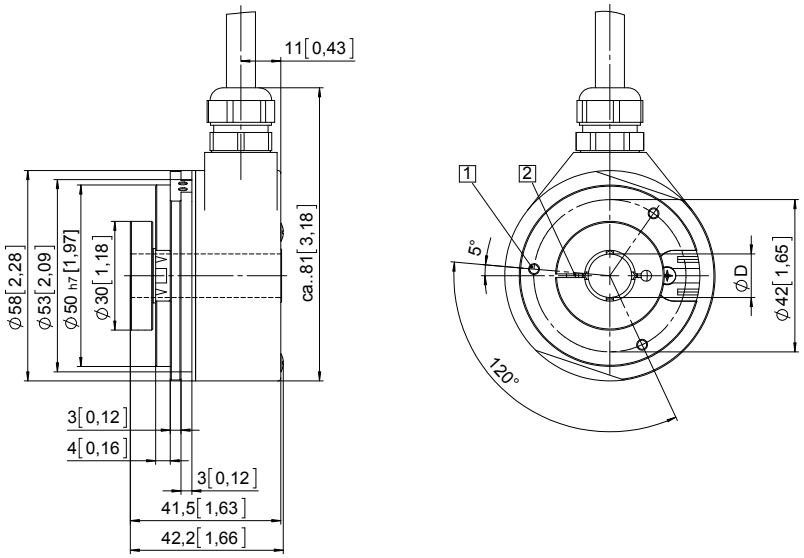
Dimensions hollow shaft version

Dimensions in mm [inch]

Flange with spring element, short
Flange type 1 and 2

1 3 x M3, 5 [0.2] deep

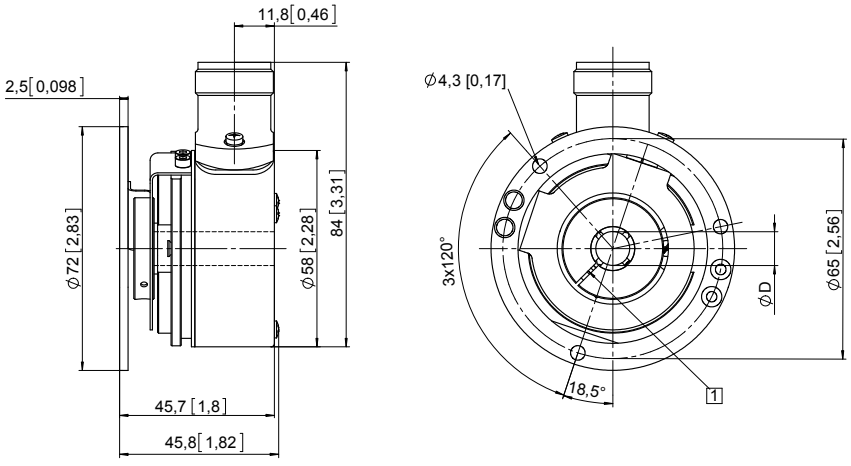
2 Recommended torque for the clamping ring 0.6 Nm



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"]	