

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	. XXXXX
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 / 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

e Pulse rate

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

Optional on request

- other pulse rates

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 ¹⁾ and spring element, short

3 = with hollow shaft and stator coupling, ø 65 mm [2.56"]

4 = with blind hollow shaft ¹⁾ and stator coupling, ø 65 mm [2.56"]

b Hollow shaft

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

1) Insertion depth ≤ 30 mm [1.18"].

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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		Order no.
Cylindrical pin, long for torque stops	with fixing thread	8.0010.4700.0000
Stator coupling ø 63 mm [2.48"]		8.0010.4D00.0000
Connection technology		Order no.
Connector, self-assembly (straight)	M23 female connector with coupling nut	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		Electrical characteristics	
Speed	shaft IP65 12000 min ⁻¹ hollow shaft IP40 12000 min ⁻¹ hollow shaft IP66 ¹⁾ 6000 min ⁻¹	Output circuit	RS422 (TTL compatible) Push-Pull
Mass moment of inertia	shaft approx. 1.8 x 10 ⁻⁶ kgm ² hollow shaft approx. 6.0 x 10 ⁻⁶ kgm ²	Power supply	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 < 0.01 Nm hollow shaft IP66 < 0.05 Nm	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
Load capacity of shaft	radial 80 N axial 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 min. +V - 2.5 V LOW max. 0.5 V max. 2.0 V
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]	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 power supply	no; 10 ... 30 V DC: yes yes
		UL approval	file 224618
		CE compliant acc. to	EMC guideline 2004/108/EC 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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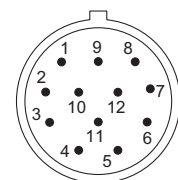
Terminal assignment

Output circuit	Type of connection	Cable (isolate unused wires 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	Cable colour: WH 0.5 mm ² BN 0.5 mm ² WH BN GN YE GY PK BU RD shield
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⁾
M12 connector, 8-pin		
1, 2, 3, 4, 5, 6, 7	5805: 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

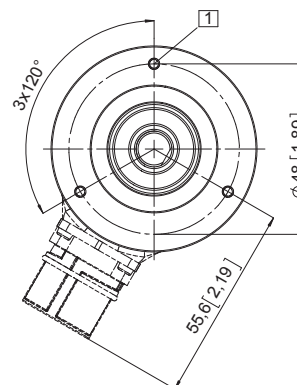
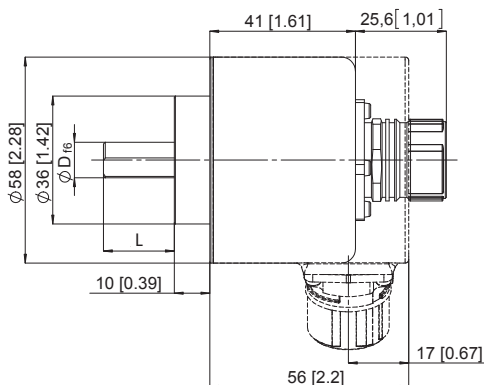
Incremental encoders

Dimensions shaft version

Dimensions in mm [inch]

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

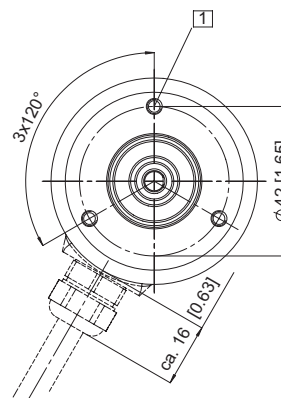
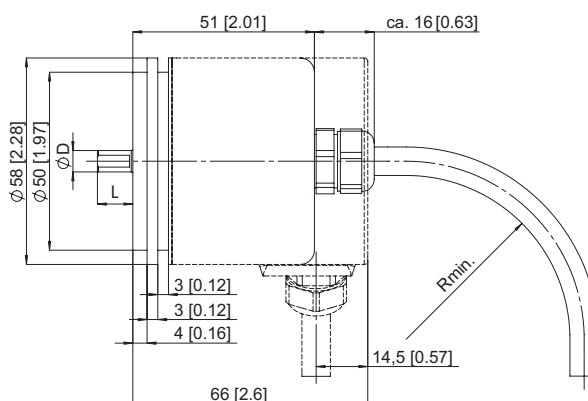
- 1) 3 x M3, 5 [0.2] deep



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]



- 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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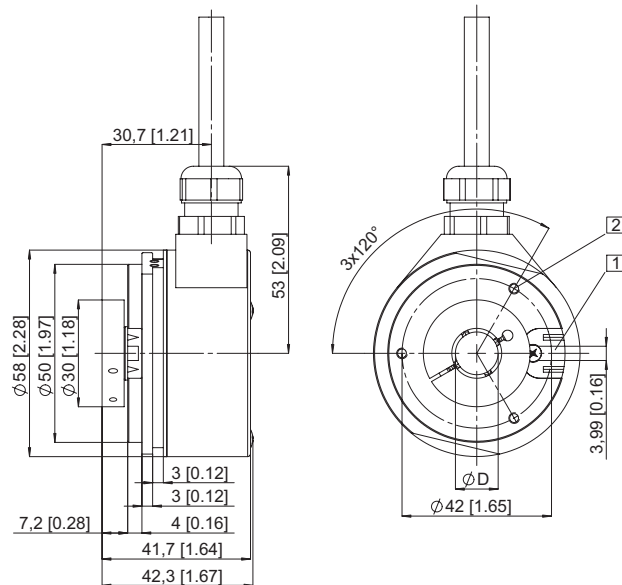
Push-Pull / RS422

Dimensions hollow shaft version

Dimensions in mm [inch]

Flange with spring element, short Flange type 1 and 2

- 1 Torque stop slot, recommendation: cylindrical pin DIN 7, $\varnothing 4$ [0.16]
- 2 M3, 5 [0.2] deep
Recommended torque for the clamping ring 0.6 Nm



Flange with stator coupling, $\varnothing 65$ [2.56] Flange type 3 and 4

Recommended torque for the clamping ring 0.6 Nm

Note:
Minimum insertion depth $1.5 \times D_{\text{hollow shaft}}$

