

Incremental encoders

Standard
sine wave output, with zero pulse, optical

5804 / 5824 (shaft / hollow shaft)

SinCos



The incremental encoders type 5804 / 5824 offer a SinCos interface.

They are ideal for use in drive engineering.

These encoders are used preferably in applications for which a standard SinCos interface is sufficient.



High rotational speed



Temperature range
-20°...+85°C



High protection level
IP



High shaft load capacity



Shock / vibration resistant



Magnetic field proof



Short-circuit proof



Optical sensor

High performance

- High resolution up to 5000 pulses per revolution.
- Maximum speed up to 12000 revolutions per minute.
- High IP protection up to max. IP66.

Adaptable

- Shaft or hollow shaft version.
- With cable or connector.

Order code Shaft version

8.5804 . XXXXX . XXXX
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

- 1 = SinCos, 1 Vpp (with inverted signal) / 5 V DC
- 2 = SinCos, 1 Vpp (with 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

e Pulse rate

- 512, 1000, 1024, 1200, 1250, 1500, 2000, 2048, 2500, 3000, 3600, 4000, 4096, 5000 (e.g. 512 pulses => 0512)

Optional on request
- other pulse rates

Order code Hollow shaft

8.5824 . XXXXX . XXXX
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 = SinCos, 1 Vpp (with inverted signal) / 5 V DC
- 2 = SinCos, 1 Vpp (with inverted signal) / 10 ... 30 V DC

d Type of connection

- 1 = radial cable, 1 m [3.28'] TPE
- 2 = radial M23 connector, 12-pin, without mating connector

e Pulse rate

- 512, 1000, 1024, 1200, 1250, 1500, 2000, 2048, 2500, 3000, 3600, 4000, 4096, 5000 (e.g. 512 pulses => 0512)

Optional on request
- other pulse rates

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Mounting accessory for shaft encoders		
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"]	Order no. 8.0000.1102.0606 8.0000.1102.1010
Mounting accessory for hollow shaft encoders		
Cylindrical pin, long for flange with spring element (flange type 1 + 2)	Dimensions in mm [inch] with fixing thread 	Order no. 8.0010.4700.0000
Stator coupling, \varnothing 63 mm [2.48"]		Order no. 8.0010.4D00.0000
Connection technology		
Cordset, pre-assembled	M23 female connector with coupling nut, 12-pin 2 m [6.56"] PVC cable	Order no. 8.0000.6E01.0002
Connector, self-assembly (straight)	M23 female connector with coupling nut, 12-pin	Order no. 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		
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 ... +85°C [-4°F ... +185°F] ²⁾
	hollow shaft IP66	-20°C ... +80°C [-4°F ... +176°F] ²⁾
Material	shaft	stainless steel H7
Shock resistance acc. 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	SinCos, U = 1 V_{pp}	SinCos, U = 1 V_{pp}
Power supply	5 V DC (±5 %)	10 ... 30 V DC
Power consumption with inverted signal (no load)	typ. 65 mA max. 110 mA	typ. 65 mA max. 110 mA
-3 dB frequency	≤ 180 kHz	≤ 180 kHz
Signal level	channels A/B	1 V _{pp} (±20 %)
	channel 0	0.1 ... 1.2 V
Short circuit proof outputs ³⁾	yes	yes
Reverse polarity protection of the power supply	no	yes
UL approval	file 224618	
CE compliant acc. to	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU	

1) For continuous operation max. 3000 min⁻¹, ventilated.

2) 70°C [158°F] for cable version.

3) If power supply correctly applied.

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SinCos

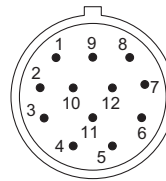
Terminal assignment

Output circuit	Type of connection	Cable (isolate unused wires individually before initial start-up)
1, 2	5804: 1, 2	Signal: 0 V +V 0Vsens ²⁾ +Vsens ²⁾ A \bar{A} B \bar{B} 0 $\bar{0}$ \perp
	5824: 1	Cable 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	5804: 3, 5	Signal: 0 V +V 0Vsens ²⁾ +Vsens ²⁾ A \bar{A} B \bar{B} 0 $\bar{0}$ \perp
	5824: 2	Pin: 10 12 11 2 5 6 8 1 3 4 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} : Cosine signal
- B, \bar{B} : Sine signal
- 0, $\bar{0}$: Reference signal
- PH \perp : Plug connector housing (shield)

Top view of mating side, male contact base



M23 connector, 12-pin

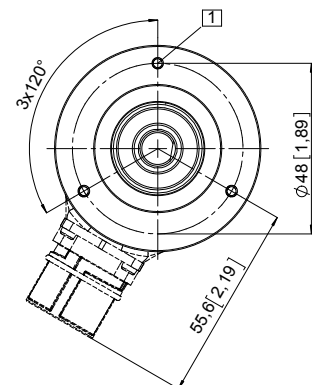
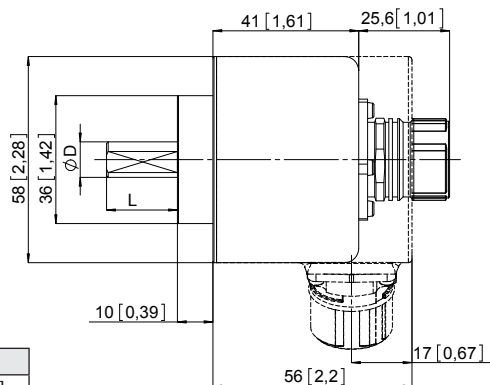
Dimensions shaft version

Dimensions in mm [inch]

Clamping flange, \varnothing 58 [2.28]

Flange type 1

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



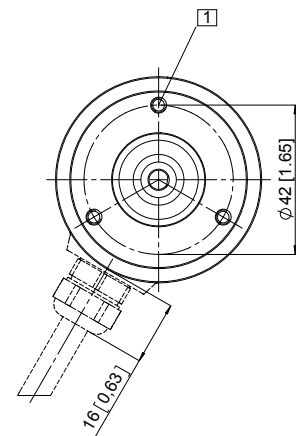
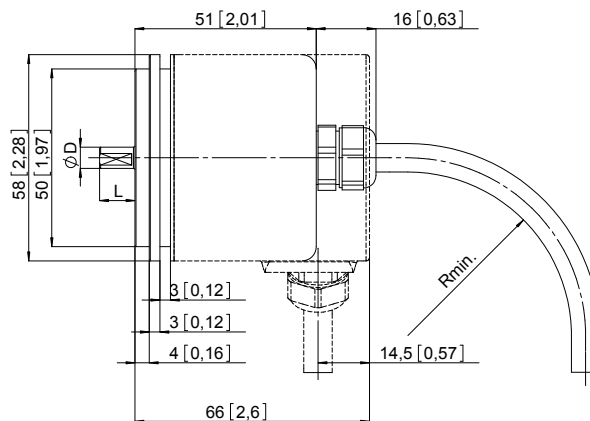
D	Fit	L
6 [0.24]	h7	10 [0.39]
10 [0.39]	f7	20 [0.79]

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.

Incremental encoders

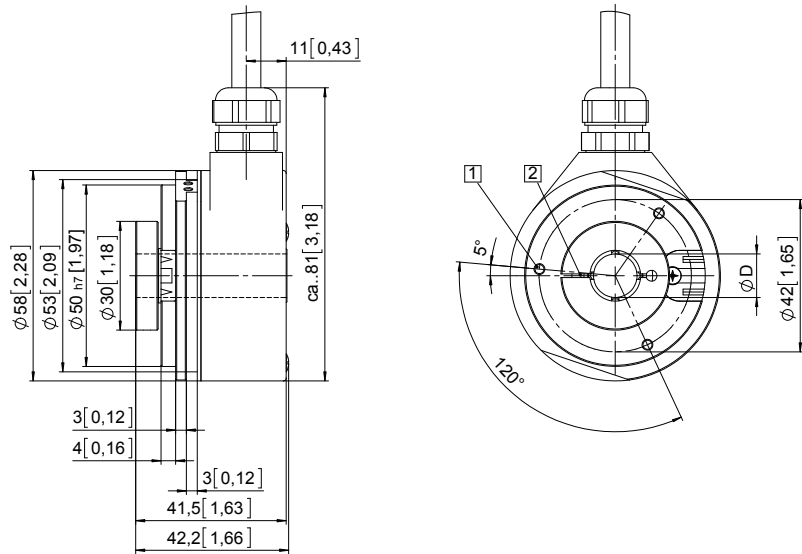
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Dimensions hollow shaft version

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

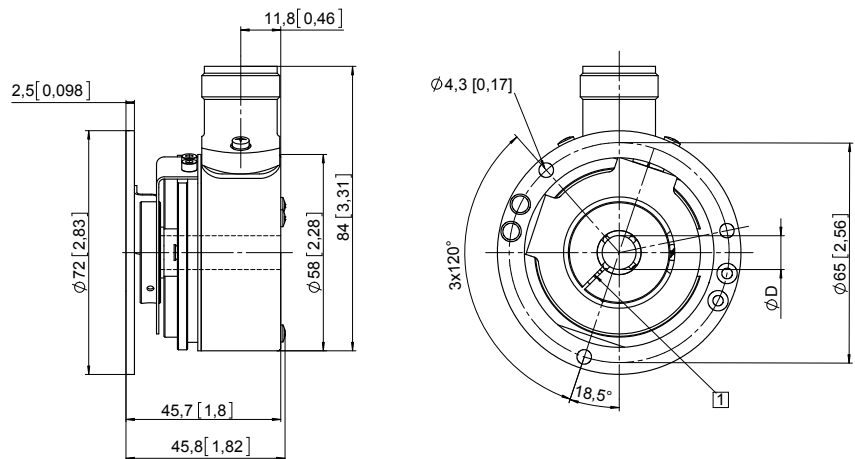


D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7

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"]

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