

Incremental Encoders

Standard Sine wave output, with zero pulse, optical	5804 / 5824 (Shaft / Hollow shaft)	SinCos
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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.



Incremental Encoders

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 resolution up to 5000 PPR
- Maximum speed up to 12000 RPM
- High IP protection up to max. IP66

Adaptable

- Shaft or hollow shaft version
- With cable or connector

Order code Shaft version	8.5804 Type	. XXXX .	XXXX
		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>c Output circuit / Power supply</p> <p>1 = SinCos, 1 Vpp (with inverted signal) / 5 V DC</p> <p>2 = SinCos, 1 Vpp (with inverted signal) / 10 ... 30 V DC</p> | <p>e Pulse rate</p> <p>512, 1000, 1024, 1200, 1250, 1500, 2000, 2048, 2500, 3000, 3600, 4000, 4096, 5000 (e.g. 512 pulses => 0512)</p> <p>Other pulse rates on request</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>d Type of connection</p> <p>1 = axial cable, 1 m [3.28'] TPE cable</p> <p>2 = radial cable, 1 m [3.28'] TPE cable</p> <p>3 = M23 connector, 12-pin, axial, without mating connector</p> <p>5 = M23 connector, 12-pin, radial, without mating connector</p> | |

Order code Hollow shaft	8.5824 Type	. XXXX .	XXXX
		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 ¹⁾ 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 ¹⁾ and stator coupling, ø 65 mm [2.56"]</p> | <p>c Output circuit / Power supply</p> <p>1 = SinCos, 1 Vpp (with inverted signal) / 5 V DC</p> <p>2 = SinCos, 1 Vpp (with inverted signal) / 10 ... 30 V DC</p> | <p>e Pulse rate</p> <p>512, 1000, 1024, 1200, 1250, 1500, 2000, 2048, 2500, 3000, 3600, 4000, 4096, 5000 (e.g. 512 pulses => 0512)</p> <p>Other pulse rates on request</p> |
| <p>b Hollow shaft</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>d Type of connection</p> <p>1 = radial cable, 1 m [3.28'] TPE cable</p> <p>2 = M23 connector, 12-pin, radial, without mating connector</p> | |

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"]		8.0000.1101.0606
	Bellows coupling ø 19 mm [0.75"] for shaft 10 mm [0.39"]		8.0000.1101.1010
Mounting accessory for hollow shaft encoders			
Cylindrical pin, long for torque stops		with fixing thread	8.0010.4700.0000
			8.0010.4D00.0000
Stator coupling ø 63 mm [2.48"]			8.0010.4D00.0000
Connection technology			
Connector, self-assembly (straight)	M23 female connector with coupling nut		8.0000.5012.0000
Cordset, pre-assembled	M23 female connector with coupling nut, 2 m [6.56'] PVC cable		8.0000.6901.0002

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 hollow shaft IP40 hollow shaft IP66 ¹⁾	max. 12000 min ⁻¹ max. 12000 min ⁻¹ max. 6000 min ⁻¹
Moment of inertia	shaft hollow shaft	approx. 1.8 x 10 ⁻⁶ kgm ² approx. 6.0 x 10 ⁻⁶ kgm ²
Starting torque at 20°C [68°F]	shaft IP65 / hollow shaft IP40 hollow shaft IP66	< 0.01 Nm < 0.05 Nm
Load capacity of shaft	radial axial	80 N 40 N
Weight		approx. 0.4 kg [14.11 oz]
Protection acc. to EN 60529	shaft hollow shaft without seal hollow shaft with seal	IP65 IP40 IP66
Working temperature range	shaft IP65 / hollow shaft IP40 hollow shaft IP66	-20°C ... +85°C ²⁾ [-4°F ... +185°F] -20°C ... +80°C ²⁾ [-4°F ... +176°F]
Material	shaft	stainless steel H7
Shock resistance acc. EN 60068-2-27		1000 m/s ² , 6 ms
Vibration resistance acc. EN 60068-2-6		100 m/s ² , 10 ... 2000 Hz
Electrical characteristics		
Output circuit	SinCos, U = 1 Vpp	SinCos, U = 1 Vpp
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 channel 0	1 Vpp (±20%) 0.1 ... 1.2 V
Short circuit proof outputs³⁾	yes	yes
Reverse polarity protection of the power supply	no	yes
UL approval	File 224618	
CE compliant acc. to	EMC guideline 2004/108/EC	
RoHS compliant acc. to	guideline 2002/95/EC	

1) For continuous operation max. 3000 min⁻¹, ventilated
 2) 70°C [158°F] for cable version
 3) If supply voltage correctly applied

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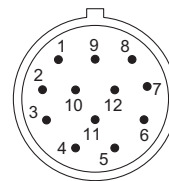
Terminal assignment

Output circuit	Type of connection	Cable (isolate unused wires individually before initial start-up)											
1, 2	5804: 1, 2	Signal:	0 V	+V	0 Vsens ²⁾	+Vsens ²⁾	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
	5824: 1	Cable colour:	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	0 Vsens 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

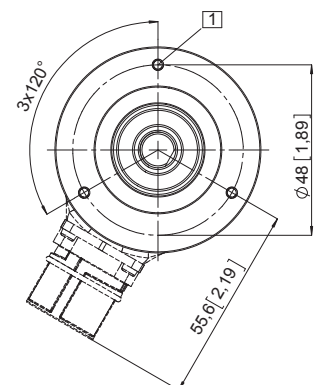
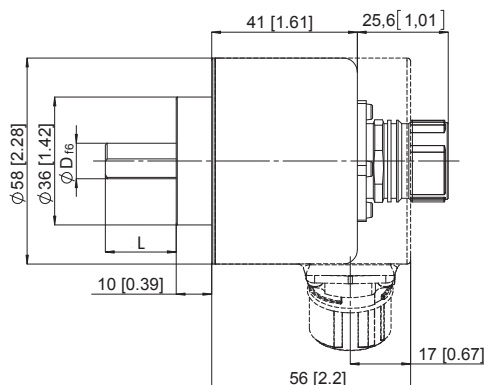
Dimensions shaft version

Dimensions in mm [inch]

Clamping flange, ø 58 [2.28]

Flange type 1

- 1 3 x M3, 5 [0.2] deep

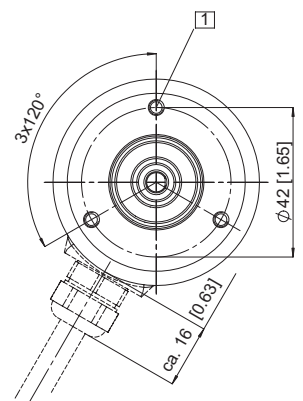
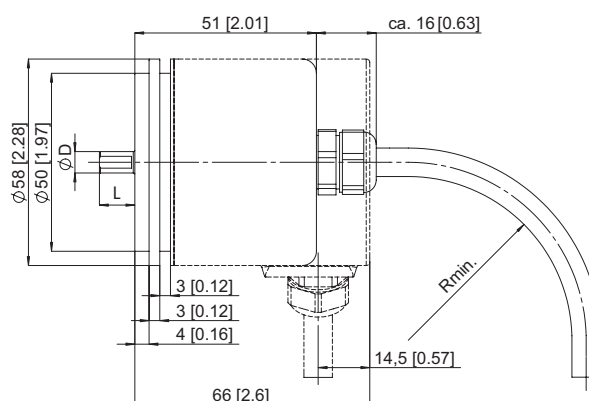


Synchro flange, ø 58 [2.28]

Flange type 2

- 1 3 x M4, 5 [0.2] deep

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



1) PH = Shield is attached to connector housing
 2) 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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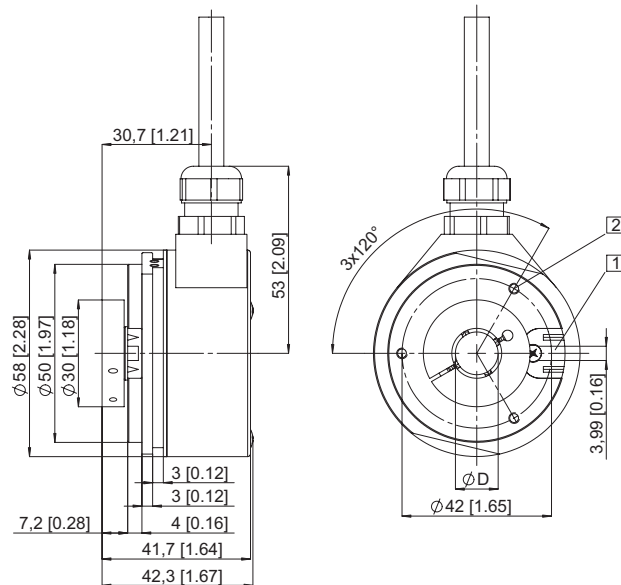
SinCos

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 $1.5 \times D_{\text{hollow shaft}}$

