

Incremental Encoders

High temperature, optical

5803 / 5823 (Shaft / Hollow shaft)

Push-Pull / RS422



The incremental encoders of the high temperature series 5803 / 5823 can be used at up to max. 110°C.

The high heat resistance – at the same time as high speed – make these encoders the ideal solution for all applications in a high temperature environment.



High rotational speed



Temperature



High protection level



High shaft load capacity



Shock / vibration resistant



Magnetic field proof



Short-circuit proof



Reverse polarity protection



Optical sensor

Powerful

- Can be used at temperatures of up to max. 110°C
- High resolution up to 5000 PPR
- Maximum speed of 12000 RPM

Flexible

- Various connection types for different application purposes
- Shaft or hollow shaft version
- With push-pull or RS422 interface

Order code Shaft version

8.5803 . XXXX . XXXX
Type a b c d e

a Flange

- 1 = clamping flange \varnothing 58 mm
- 2 = synchro flange \varnothing 58 mm
- M = square flange 63.5 mm (2.5")
- P = synchro flange \varnothing 63.5 mm (2.5")

b Shaft ($\varnothing \times L$), with flat

- 1 = \varnothing 6 x 10 mm
- 2 = \varnothing 10 x 20 mm
- P = \varnothing 9.5 x 22,2 mm (3/8" x 7/8")¹⁾

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 TPE cable)
- 2 = radial cable (1 m TPE cable)
- 3 = M23 connector, 12-pin, axial, without mating connector
- 5 = M23 connector, 12-pin radial, without mating connector
- W = 7-pin connector radial, „MIL“ specified without mating connector²⁾
- Y = 10-pin connector, „MIL“ specified without mating connector

e Pulse rate

- 25, 50, 60, 100, 125, 200, 250, 256, 300, 360, 500, 512, 600, 720, 800, 1000, 1024, 1200, 1250, 1500, 2000, 2048, 2500, 3000, 3600, 4000, 4096, 5000
- (e.g. 100 pulses => 0100)
- Other pulse rates on request

Order code Hollow shaft

8.5823 . XXXX . XXXX
Type a b c d e

a Flange

- 1 = with through shaft
- 2 = with blind hollow shaft³⁾
- 3 = with through shaft and stator coupling
- 4 = with blind hollow shaft³⁾ and stator coupling

b Shaft ($\varnothing \times L$)

- 1 = \varnothing 6 mm without seal
- 2 = \varnothing 6 mm with seal
- 3 = \varnothing 8 mm without seal
- 4 = \varnothing 8 mm with seal
- 5 = \varnothing 10 mm without seal
- 6 = \varnothing 10 mm with seal
- 7 = \varnothing 12 mm without seal
- 8 = \varnothing 12 mm with seal

c Output circuit / Power supply

- 1 = RS422 (with inverted signal) / 5 V DC
- 2 = Push-Pull (without inverted signal) / 10 ... 30 V DC
- 3 = Push-Pull (with inverted signal) / 10 ... 30 V DC
- 4 = RS422 (with inverted signal) / 10 ... 30 V DC

d Type of connection

- 1 = radial cable (1 m TPE cable)
- 2 = M23 connector, 12-pin, radial, without mating connector

e Pulse rate

- 25, 50, 60, 100, 125, 200, 250, 256, 300, 360, 500, 512, 600, 720, 800, 1000, 1024, 1200, 1250, 1500, 2000, 2048, 2500, 3000, 3600, 4000, 4096, 5000
- (e.g. 100 pulses => 0100)
- Other pulse rates on request

1) Only in conjunction with flange M or P
2) Only with output 7

3) Insertion depth \leq 30 mm

Incremental Encoders

High temperature, optical	5803 / 5823 (Shaft / Hollow shaft)	Push-Pull / RS422
----------------------------------	-------------------------------------------	--------------------------

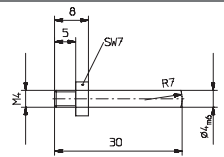
Mounting accessory for shaft encoders

Coupling	Bellows coupling \varnothing 19 mm for shaft 6 mm	8.0000.1101.0606
	Bellows coupling \varnothing 19 mm for shaft 10 mm	8.0000.1101.1010

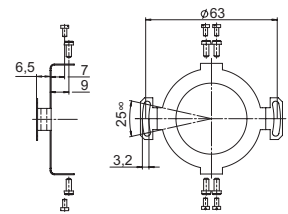
Mounting accessory for hollow shaft encoders

Cylindrical pin, long	With fixing thread	8.0010.4700.0000
------------------------------	--------------------	-------------------------

for torque stops



Stator coupling		8.0010.4D00.0000
------------------------	--	-------------------------



Connection Technology

Connector, self-assembly	M23	8.0000.5012.0000
Cordset, pre-assembled with 2 m PVC cable	M23	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.

Mechanical characteristics		
Speed	shaft	max. 12000 min ⁻¹
	hollow shaft without shaft seal	max. 12000 min ⁻¹
	hollow shaft with shaft seal ¹⁾	max. 6000 min ⁻¹
Rotor moment of inertia	shaft	approx. 1.8 x 10 ⁻⁶ kgm ²
	hollow shaft	approx. 6.0 x 10 ⁻⁶ kgm ²
Starting torque	without seal	< 0.01 Nm
	with seal	< 0.05 Nm
Load capacity of shaft	radial	80 N
	axial	40 N
Weight		approx. 0.4 kg
Protection acc. to EN 60 529	shaft	IP65
	hollow shaft without seal	IP40
	hollow shaft with seal	IP66
Working temperature range	without seal	-20°C ... +105°C
	with seal	-20°C ... +90°C
Materials	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:	RS422 (TTL compatible)	Push-Pull
Power supply	5 V (\pm 5 %) or 10 ... 30 V DC	10 ... 30 V DC
Power consumption (no load)		
	without inverted signal	typ. 55 mA / max. 125 mA
	with inverted signal	typ. 40 mA / max. 100 mA
Permissible load / channel	max. \pm 20 mA	max. \pm 30 mA
Pulse frequency	max. 300 kHz	max. 300 kHz
Signal level	high	min. 2.5 V
	low	max. 0.5 V
Rising edge time t_r	max. 200 ns	max. 1 μ s
Falling edge time t_f	max. 200 ns	max. 1 μ s
Short circuit proof outputs ²⁾	yes ³⁾	yes
Reverse polarity protection of the power supply	no; 10 ... 30 V: yes	yes
UL approval	File 224618	
CE compliant acc. to	EN 61000-6-2, EN 61000-6-4 and EN 61000-6-3	
RoHS compliant acc. to	EU guideline 2002/95/EG	

1) For continuous operation max. 3000 min⁻¹, ventilated
 2) If supply voltage correctly applied.
 3) Only one channel allowed to be shorted-out:
 If U_B= 5 V, short-circuit to channel, 0 V, or +U_B is permitted.
 If U_B= 10 ... 30 V, short-circuit to channel or 0 V is permitted.

Incremental Encoders

Incremental Encoders

High temperature, optical

5803 / 5823 (Shaft / Hollow shaft)

Push-Pull / RS422

Terminal assignment

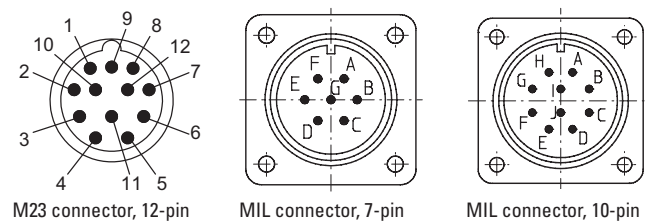
Output circuit	Cable											
1, 2, 3, 4, 5, 6, 7	Signal:	0 V	0Vsens ²⁾	+V	+Vsens ²⁾	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
	Cable colour:	WH 0,5 mm ²	WH	BN 0,5 mm ²	BN	GN	YE	GY	PK	BU	RD	
Output circuit	M23 connector, 12-pin											
1, 2, 3, 4, 5, 6, 7	Signal:	0 V	0Vsens ²⁾	+V	+Vsens ²⁾	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
	Pin:	10	11	12	2	5	6	8	1	3	4	PH ¹⁾
Output circuit	MIL connector, 7-pin											
7	Signal:	0 V	0Vsens ²⁾	+V	+Vsens ²⁾	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
	Pin:	F	-	D	E	A	-	B	-	C	-	G
Output circuit	MIL connector, 10-pin											
1, 2, 3, 4, 5, 6, 7	Signal:	0 V	0Vsens ²⁾	+V	+Vsens ²⁾	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
	Pin:	F	-	D	E	A	G	B	H	C	I	J

- 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.

If the circuits are not being used, then they should be individually isolated and not connected.
Using RS 422 outputs and long cable distances, a wave impedance has to be applied at each cable end.

Isolate unused outputs before initial start-up.

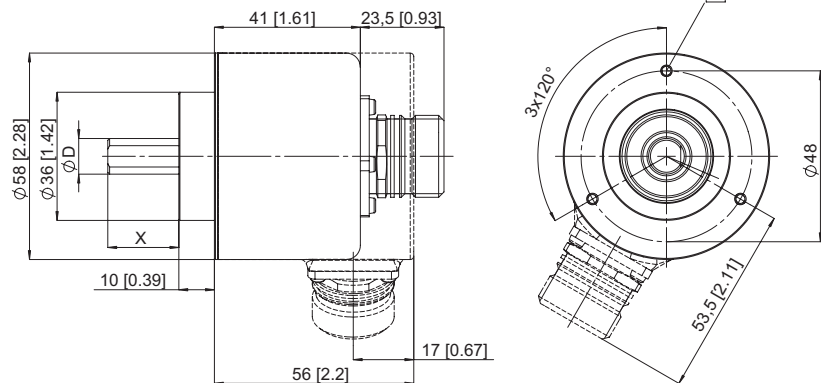
Top view of mating side, male contact base



Dimensions shaft version

Clamping flange, \varnothing 58 mm Flange type 1

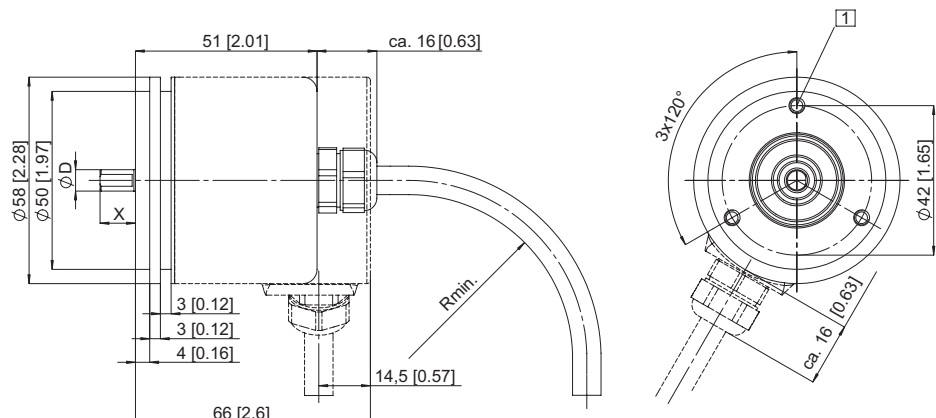
1 3 x M3, 5 [0.2] deep



Clamping flange, \varnothing 58 mm Flange type 2

1 3 x M3, 5 [0.2] deep

R_{min} :
- securely installed: 55 mm
- flexibly installed: 70 mm



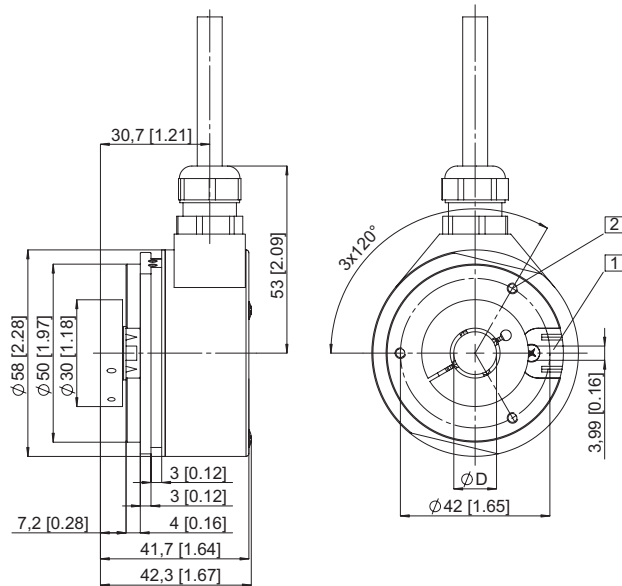
Incremental Encoders

High temperature, optical	5803 / 5823 (Shaft / Hollow shaft)	Push-Pull / RS422
----------------------------------	-------------------------------------------	--------------------------

Dimensions hollow shaft version

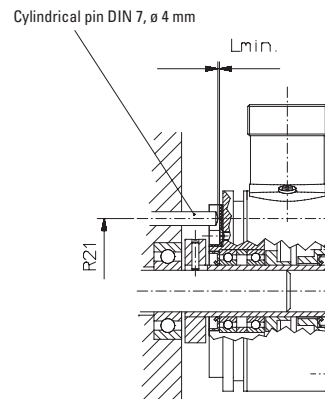
Flange type 1 and 2

- 1 Torque stop slot,
Recommendation: Cylindrical pin DIN7, ϕ 4 mm
- 2 M3, 5 [0.2] deep

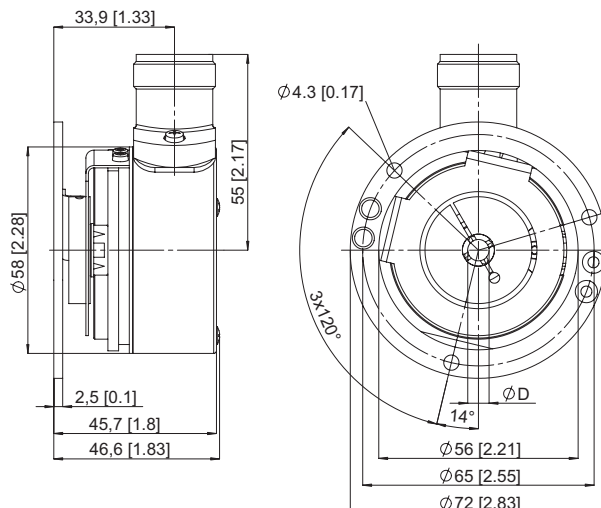


Mounting advice:

- 1) The flanges and shafts of the encoder and drive should not both be rigidly coupled together at the same time.
- 2) When mounting a hollow shaft encoder, we recommend using a torque stop pin that fits into the torque coupling.
- 3) When mounting the encoder ensure the dimension L_{min} is greater than the axial maximum play of the drive. Otherwise there is a danger that the device could mechanically seize up.



Flange type 3 and 4



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