**Standard**
**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 range | 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 pulses per revolution.
- Maximum speed of 12000 revolutions per minute.

## 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 . X X X X . 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"]
P = synchro flange ø 63.5 mm [2.5"]
M = square flange □ 63.5 mm [2.5"]

**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"]
P = ø 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 [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
W = radial MIL connector, 7-pin, without mating connector [2)]
Y = radial MIL connector, 10-pin, 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)

*Optional on request*
- other pulse rates

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

| Standard<br>high temperature, optical | 5803 / 5823 (shaft / hollow shaft) | Push-pull / RS422 |
|---|---|---|

## Order code Hollow shaft

| 8.5823 | . | X | X | X | X | . | 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

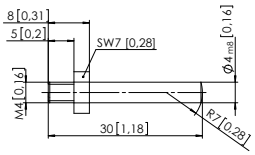
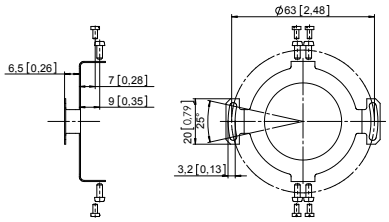
**c** *Output circuit / power supply*
1 = RS422 (with inverted signal) / 5 V DC
4 = RS422 (with inverted signal) / 10 ... 30 V DC
3 = push-pull (with inverted signal) / 10 ... 30 V DC
2 = push-pull (without inverted signal) / 10 ... 30 V DC

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

**e** *Pulse rate*
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)

*Optional on request*
- other pulse rates

| 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**<br>for flange with spring element<br>(flange type 1 + 2) | with fixing thread<br>  | **8.0010.4700.0000** |
| **Stator coupling, ø 63 mm** |  | **8.0010.4D00.0000** |

| Connection technology | | Order no. |
|---|---|---|
| **Cordset, pre-assembled** | M23 female connector with coupling nut, 12-pin<br>2 m [6.56'] PVC cable | **8.0000.6E01.0002** |
| **Connector, self-assembly (straight)** | 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.

**Standard**
**high temperature, optical** | **5803 / 5823 (shaft / hollow shaft)** | **Push-pull / RS422**

## 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 ... +110°C [-4°F ... +230°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. 55 mA / max. 125 mA |
| with inverted signal | | typ. 40 mA / max. 100 mA | typ. 80 mA / max. 150 mA |
| **Permissible load / channel** | | max. +/- 20 mA | max. +/- 30 mA |
| **Pulse frequency** | | max. 300 kHz | max. 300 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<br>RoHS guideline 2011/65/EU | |

### Terminal assignment

| Output circuit | Type of connection | Cable (isolate unused cores individually before initial start-up) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1, 2, 3, 4, 5, 6, 7 | 5803: 1, 2 | Signal: | 0 V | +V | 0 Vsens [5] | +Vsens [5] | A | $\overline{A}$ | B | $\overline{B}$ | 0 | $\overline{0}$ | ⏚ |
| | 5823: 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 | 5803: 3, 5 | Signal: | 0 V | +V | 0 Vsens [5] | +Vsens [5] | A | $\overline{A}$ | B | $\overline{B}$ | 0 | $\overline{0}$ | ⏚ |
| | 5823: 2 | Pin: | 10 | 12 | 11 | 2 | 5 | 6 | 8 | 1 | 3 | 4 | PH [4] |

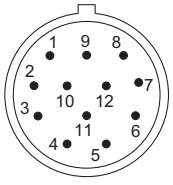
| Output circuit | Type of connection | MIL connector, 7-pin | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 5803: W | Signal: | 0 V | +V | 0 Vsens [5] | +Vsens [5] | A | $\overline{A}$ | B | $\overline{B}$ | 0 | $\overline{0}$ | ⏚ |
| | 5823: – | Pin: | F | D | – | E | A | – | B | – | C | – | G |

| Output circuit | Type of connection | MIL connector, 10-pin | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1, 2, 3, 4, 5, 6, 7 | 5803: Y | Signal: | 0 V | +V | 0 Vsens [5] | +Vsens [5] | A | $\overline{A}$ | B | $\overline{B}$ | 0 | $\overline{0}$ | ⏚ |
| | 5823: – | Pin: | F | D | – | E | A | G | B | H | C | I | J |

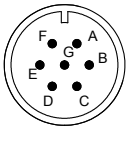
Using RS422 outputs and long cable distances, a wave impedance has to be applied at each cable end.

+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)

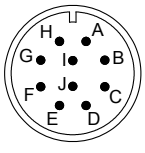
**Top view of mating side, male contact base**



M23 connector, 12-pin



MIL connector, 7-pin



MIL connector, 10-pin

1) For continuous operation max. 3000 min$^{-1}$, ventilated.
2) If power supply correctly applied.
3) Only one channel allowed to be shorted-out:
if +V = 5 V DC, short-circuit to channel, 0 V, or +V is permitted.
if +V = 10 ... 30 V DC, short-circuit to channel or 0 V is permitted.
4) PH = shield is attached to connector housing.
5) 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.

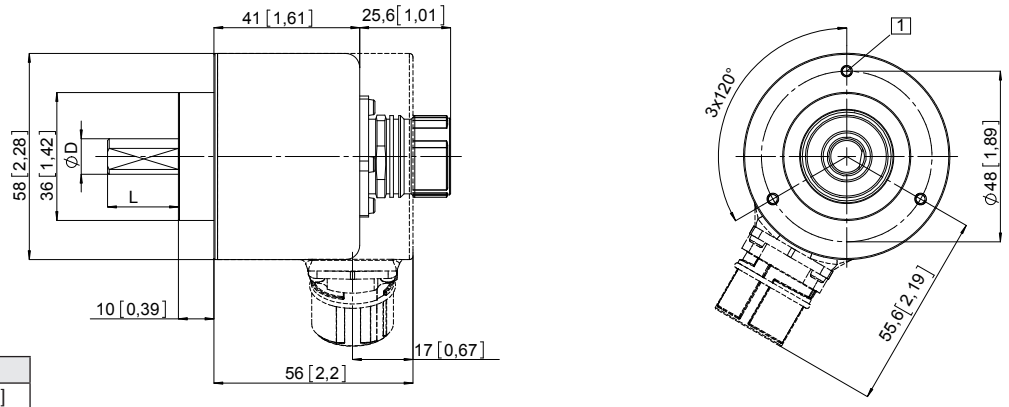
**Standard**
**high temperature, optical** | **5803 / 5823 (shaft / hollow shaft)** | **Push-pull / RS422**

## Dimensions shaft version

Dimensions in mm [inch]

**Clamping flange, ø 58 [2.28]**
**Flange type 1**

1 3 x M3, 5 [0.2] deep

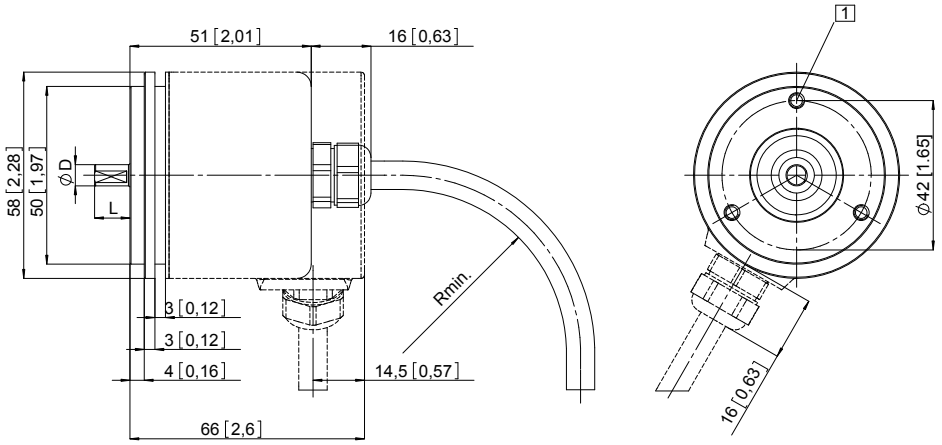



| D | Fit | L |
|---|---|---|
| 6 [0.24] | h7 | 10 [0.39] |
| 10 [0.39] | f7 | 20 [0.79] |
| 3/8" | h7 | 7/8" |

**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] |
| 3/8" | h7 | 7/8" |

**Standard high temperature, optical** | **5803 / 5823 (shaft / hollow shaft)** | **Push-pull / RS422**

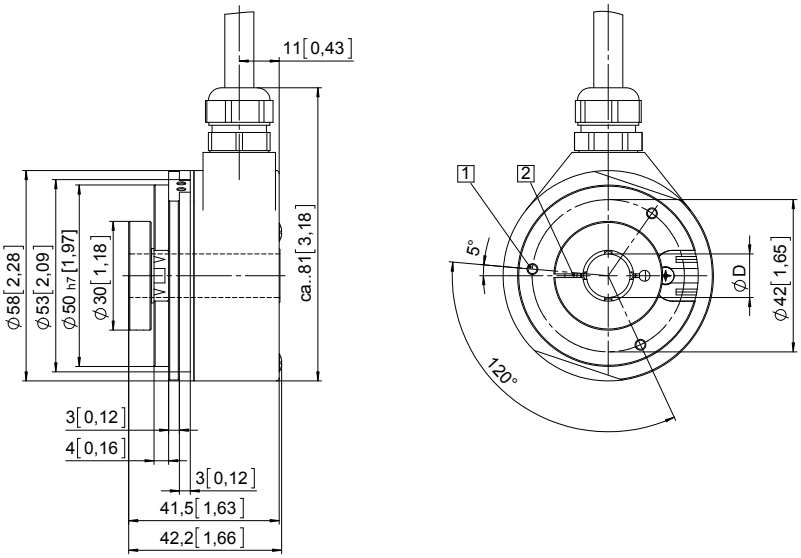
## Dimensions hollow shaft version

Dimensions in mm [inch]

**Flange with spring element, short**
**Flange type 1 and 2**

1 3 x M3, 5 [0.2] deep

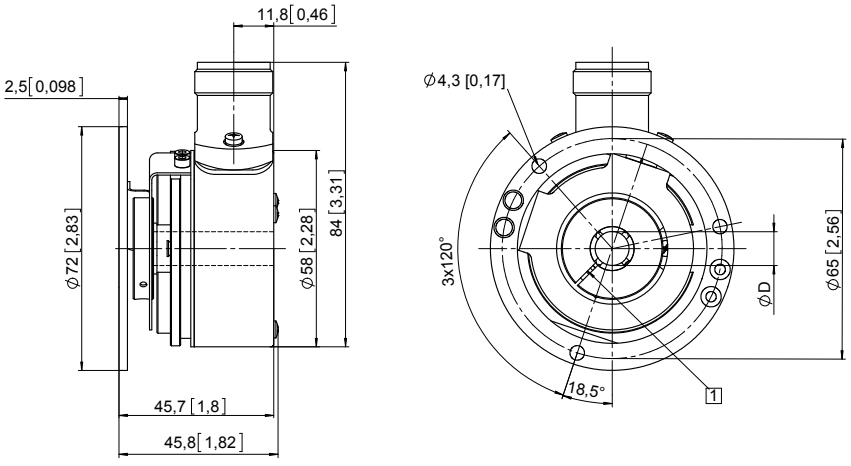
2 Recommended torque for the clamping ring 0.6 Nm




| 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<br>Insertion depth blind hollow shaft with flange 4: max. 30 mm [1.18"] | |