

Incremental encoders

Large hollow shaft optical	5821 (hollow shaft)	Push-pull / RS422
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Optimized proportions, optimized costs:

With an overall diameter of just 58 millimeters the series 5821 boasts a hollow shaft of up to 28 millimeters diameter.

Temperature range	Shock / vibration resistant	Magnetic field proof	Short-circuit proof	Reverse polarity protection

Adaptable

- Through hollow shaft from 16 mm up to 28 mm.
- With cable connection or M12 connector.
- High resolution up to 5000 pulses per revolution.

Order code	8.5821	. XXXXX .	XXXX
Hollow shaft	Type	a b c d	e

<p>a Flange 1 = with spring element 6 = with torque stop</p> <p>b Through hollow shaft K = ø 16 mm [0.63"] C = ø 20 mm [0.79"] 8 = ø 22 mm [0.87"] 6 = ø 24 mm [0.94"] 5 = ø 25 mm [0.98"] 3 = ø 28 mm [1.10"]</p>	<p>c Output circuit / supply voltage 1 = RS422 (with inverted signal) / 5 V DC 4 = RS422 (with inverted signal) / 8 ... 30 V DC 3 = Push-pull (with inverted signal) / 8 ... 30 V DC</p> <p>d Type of connection 1 = radial cable, 1 m [3.28'] PVC A = radial cable, special length PVC *) E = radial M12 connector, 8-pin</p> <p>*) Available special lengths (connection types A): 2, 3, 5, 8, 10, 15 m [5.56, 9.84, 16.40, 26.25, 32.80, 49.21'] order code expansion .XXXX = length in dm ex.: 8.5821.1K1A.0100.0030 (for cable length 3 m)</p>	<p>e Pulse rate 50¹⁾, 60¹⁾, 100, 125, 250, 400¹⁾, 500, 512, 960²⁾, 1000, 1024, 2000, 2048, 4096²⁾, 5000 (e.g. 100 pulses => 0100)</p> <p><i>Optional on request</i> - other pulse rates - other hollow shaft diameters</p>
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Cables and connectors		Order no.
Preassembled cables	M12 female connector with coupling nut, 8-pin, A coded, straight single ended 2 m [6.56'] PVC cable	05.00.6041.8211.002M
Connectors	M12 female connector with coupling nut, 8-pin, A coded, straight (metal)	05.CMB 8181-0

Further Kübler accessories can be found at: kuebler.com/accessories
Further Kübler cables and connectors can be found at: kuebler.com/connection-technology

1) Not available for hollow shaft **b** = K (ø 16 mm).
2) Not available for hollow shaft **b** = C (ø 20 mm) and **b** = 8 (ø 22 mm).

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Technical data

Mechanical characteristics	
Maximum speed	2500 min ⁻¹
Mass moment of inertia	approx. 3.5 x 10 ⁻⁶ kgm ²
Starting torque – at 20 °C [68 °F]	< 0.1 Nm
Weight	approx. 0.4 kg [14.11 oz]
Protection acc. to EN 60529	IP64
Working temperature range	
at max. speed 2000 min ⁻¹	-20 °C ... +70 °C [-4 °F ... +158 °F]
at max. speed 2500 min ⁻¹	-20 °C ... +60 °C [-4 °F ... +140 °F]
Material	hollow shaft steel
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 , 35 ... 2000 Hz

Approvals	
UL compliant in accordance with	File no. E224618
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

Electrical characteristics		
Output circuit	RS422	Push-pull (7272 compatible)
Supply voltage	5 V DC (±5 %) or 8 ... 30 V DC	8 ... 30 V DC
Power consumption with inverted signal (no load)	typ. 40 mA max. 90 mA	typ. 40 mA max. 100 mA
Permissible load / channel	max. +/- 20 mA	max. +/- 40 mA
Pulse frequency	max. 300 kHz	max. 200 kHz
Signal level	HIGH min. 2.5 V LOW max. 0.5 V	min. +V - 3.0 V max. 2.5 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 ¹⁾	yes	yes
Reverse polarity protection of the supply voltage	yes	yes

Terminal assignment

Output circuit	Type of connection	Cable (isolate unused cores individually before initial start-up)									
1, 3, 4	1, A	Signal:	0 V	+V	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
		Core color:	WH	BN	GN	YE	GY	PK	BU	RD	Schirm
Output circuit	Type of connection	M12 connector, 8-pin									
1, 3, 4	E	Signal:	0 V	+V	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
		Pin:	1	2	3	4	5	6	7	8	PH ²⁾

- +V: Supply voltage encoder +V DC
- 0 V: Supply voltage encoder ground GND (0 V)
- 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



M12 connector, 8-pin

1) If supply voltage correctly applied.
2) PH = shield is attached to connector housing.

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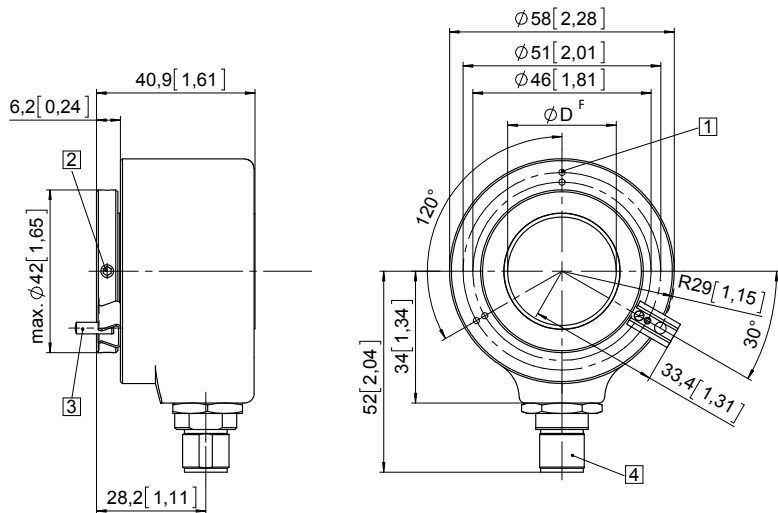
Dimensions

Dimensions in mm [inch]

Flange with spring element M12 connector, connection type E

- 1 M1.6 / 5 [0.2] deep
- 2 4 x socket set screw M4x6 DIN 913
- 3 Torque pin 3m6x12 DIN 6325 included
- 4 Connector M12

D	Fit
16 [0.63]	F7
20 [0.79]	F7
24 [0.94]	F7
25 [0.98]	F7
28 [1.10]	F7



Flange with torque stop Cable radial, connection type 1

- 1 Torque stop positionable in 30° steps
- 2 4 x socket set screw M4x6 DIN 913
- 3 Cable gland PG7
- 4 Cable 1 m

D	Fit
16 [0.63]	F7
20 [0.79]	F7
24 [0.94]	F7
25 [0.98]	F7
28 [1.10]	F7

