

Incremental encoders

Compact optical	3610 / 3620 (shaft / hollow shaft)	Push-pull / RS422
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The compact incremental encoders type 3610 / 3620 with optical sensor technology are available with a resolution of up to 2500 pulses per revolution.

The versions with hollow shaft are designed for diameters up to 8 mm.



High rotational speed	Temperature range -20°...+85°C	Shock / vibration resistant	Short-circuit proof	Reverse polarity protection	Magnetic field proof	Optical sensor

Compact

- Only 36 mm outer diameter.
- Through hollow shaft up to 8 mm.
- Ideally suited for use where space is tight.

Versatile

- Available with cable outlet or M12 connector.
- Maximum resolution of 2500 pulses per revolution.
- Supply voltage 5 ... 18 V DC or 8 ... 30 V DC.

Order code	8.3610	.	X	X	X	.	X	X	X	X
Shaft version	Type		a	b	c		d		e	

If for each parameter of an encoder the **underlined preferred option** is selected, then the delivery time will be 10 working days for a maximum of 10 pieces. Qts. up to 50 pcs. of these types generally have a delivery time of 15 working days.



<p>a Flange</p> <p>2 = synchro flange, ø 36.5 mm [1.44"]</p> <p><u>3 = clamping flange, ø 36.5 mm [1.44"]</u></p> <p>8 = clamping / synchro flange, ø 36,8 mm [1.45"]</p> <p>b Shaft (ø x L)</p> <p>1 = ø 4 x 10 mm [0.16 x 0.39"]</p> <p>2 = ø 5 x 10 mm [0.20 x 0.39"]</p> <p><u>3 = ø 6 x 12.5 mm [0.24 x 0.49"], with flat</u></p> <p>5 = ø 1/4" x 12.5 mm [1/4" x 0.49"], with flat</p> <p>c Output circuit / supply voltage</p> <p>2 = push-pull (with inverted signal) / 5 ... 18 V DC</p> <p><u>4 = push-pull (with inverted signal) / 8 ... 30 V DC</u></p> <p>3 = push-pull (without inverted signal) / 8 ... 30 V DC</p> <p>6 = RS422 (with inverted signal) / 5 V DC</p> <p>5 = RS422 (with inverted signal) / 8 ... 30 V DC</p>	<p>d Type of connection</p> <p>1 = axial cable, 2 m [5.56'] PVC</p> <p>A = axial cable, special length PVC *)</p> <p><u>2 = radial cable, 2 m [5.56'] PVC</u></p> <p>B = radial cable, special length PVC *)</p> <p>3 = axial M12 connector, 8-pin</p> <p>4 = radial M12 connector, 8-pin</p> <p>*) Available special lengths (connection types A, B): 3, 5, 8, 10, 15 m [9.84, 16.40, 26.25, 32.80, 49.21'] order code expansion .XXXX = length in dm ex.: 8.3610.334A.1024.0030 (for cable length 3 m)</p>	<p>e Pulse rate</p> <p>10, 25, 100, <u>200</u>, 360, <u>500</u>, 512, 600, 1000, <u>1024</u>, 1250, 1500, 2000, <u>2048</u>, <u>2500</u></p> <p>(e.g. 500 pulses => 0500)</p> <p><i>Optional on request</i></p> <p>- other pulse rates</p>
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Order code	8.3620	. XXXXXX . XXXX	<p>If for each parameter of an encoder the underlined preferred option is selected, then the delivery time will be 10 working days for a maximum of 10 pieces. Qts. up to 50 pcs. of these types generally have a delivery time of 15 working days.</p>
Hollow shaft	Type	<div style="display: flex; justify-content: space-around; font-size: 0.8em;"> a b c d e </div>	<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>a Flange</p> <p>1 = with spring element, short</p> <p><u>2 = with spring element, long</u></p> <p>5 = with stator coupling, ø 46 mm [1.81"]</p> <p>b Through hollow shaft</p> <p><u>2 = ø 6 mm [0.24"]</u></p> <p>4 = ø 8 mm [0.32"]</p> <p>3 = ø 1/4"</p> <p>c Output circuit / supply voltage</p> <p>2 = push-pull (with inverted signal) / 5 ... 18 V DC</p> <p><u>4 = push-pull (with inverted signal) / 8 ... 30 V DC</u></p> <p>3 = push-pull (without inverted signal) / 8 ... 30 V DC</p> <p>6 = RS422 (with inverted signal) / 5 V DC</p> <p>5 = RS422 (with inverted signal) / 8 ... 30 V DC</p> </div> <div style="width: 30%;"> <p>d Type of connection</p> <p><u>E = radial cable, 2 m [5.56'] PVC</u></p> <p>B = radial cable, special length PVC *)</p> <p>4 = radial M12 connector, 8-pin</p> <p>*) Available special lengths (connection type B): 3, 5, 8, 10, 15 m [9.84, 16.40, 26.25, 32.80, 49.21'] order code expansion .XXXX = length in dm ex.: 8.3620.224B.1024.0030 (for cable length 3 m)</p> </div> <div style="width: 30%;"> <p>e Pulse rate</p> <p>10, 25, 100, <u>200</u>, 360, 500, 512, 600, 1000, <u>1024</u>, 1250, 1500, 2000, <u>2048</u>, <u>2500</u></p> <p>(e.g. 500 pulses => 0500)</p> <p><i>Optional on request</i></p> <p>- other pulse rates</p> </div> </div>



Mounting accessory for shaft encoders		Order no.
Coupling	bellows coupling ø 15 mm [0.59"] for shaft 6 mm [0.24"]	8.0000.1202.0606
Connection technology		Order no.
Cordset, pre-assembled	M12 female connector with coupling nut, 8-pin, A coded, straight single-ended 2 m [6.56'] PVC cable	05.00.6041.8211.002M
Connector, self-assembly	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

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Technical data

Mechanical characteristics		
Maximum speed	shaft version	12000 min ⁻¹
	hollow shaft version	6000 min ⁻¹
Mass moment of inertia		approx. 0.2 x 10 ⁻⁶ kgm ²
Starting torque - at 20 °C [68 °F]		< 0.05 Nm
Shaft load capacity	radial	40 N
	axial	20 N
Weight		approx. 0.08 kg [2.82 oz]
Protection acc. to EN 60529		
	housing side	IP65
	flange side	IP50 (IP64 on request)
Working temperature range		-20 °C ... +85 °C [-4 °F ... +185 °F]
Materials		
	shaft	stainless steel
	hollow shaft	brass
	housing	aluminum
	cable	PVC
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 , 55 ... 2000 Hz

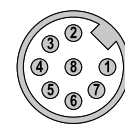
Electrical characteristics			
Output circuit	RS422	Push-pull ¹⁾ (7272 comp.)	Push-pull ¹⁾ (7272 comp.)
Supply voltage	5 V DC (±5 %) or 8 ... 30 V DC	5 ... 18 V DC	8 ... 30 V DC
Power consumption with inverted signal (no load)	typ. 40 mA/ max. 90 mA	max. 40 mA	max. 40 mA
Permissible load / channel	max. +/- 20 mA	max. +/- 20 mA	max. +/- 20 mA
Pulse frequency	max. 300 kHz	max. 200 kHz	max. 200 kHz
Signal level	HIGH LOW	min. 2.5 V max. 0.5 V	min. +V - 2.5 V max. 0.5 V min. +V - 3.0 V max. 0.5 V
Rising edge time t_r	max. 200 ns	max. 1 µs	max. 1 µs
Falling edge time t_f	max. 200 ns	max. 1 µs	max. 1 µs
Short circuit proof outputs ²⁾	yes	yes	yes
Reverse polarity protection of the supply voltage	yes	yes	yes

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

Terminal assignment

Output circuit	Type of connection	Cable (isolate unused cores individually before initial start-up)								
2, 4, 5, 6 with inv. signal	1, 2, A, B, E	Signal:	0 V	+V	A	\bar{A}	B	\bar{B}	0	$\bar{0}$
		Core color:	WH	BN	GN	YE	GY	PK	BU	RD
3 without inv. signal	1, 2, A, B, E	Signal:	0 V	+V	A	\bar{A}	B	\bar{B}	0	$\bar{0}$
		Core color:	WH	BN	GN	-	YE	-	GY	-
2, 4, 5, 6 with inv. signal	3, 4	M12 connector, 8-pin								
		Signal:	0 V	+V	A	\bar{A}	B	\bar{B}	0	$\bar{0}$
3 without inv. signal	3, 4	M12 connector, 8-pin								
		Pin:	1	2	3	-	5	-	7	-

Top view of mating side, male contact base



M12 connector, 8-pin

- +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

1) Max. recommended cable length 30 m [98.43'].
2) If supply voltage correctly applied.

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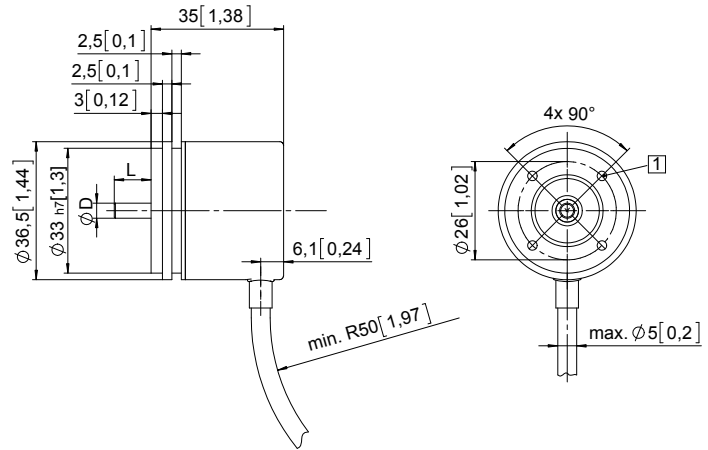
Dimensions shaft version

Dimensions in mm [inch]

Synchro flange, ø 36.5 [1.44]

Flange type 2

- 1 4 x M3, 5 [0.20] deep

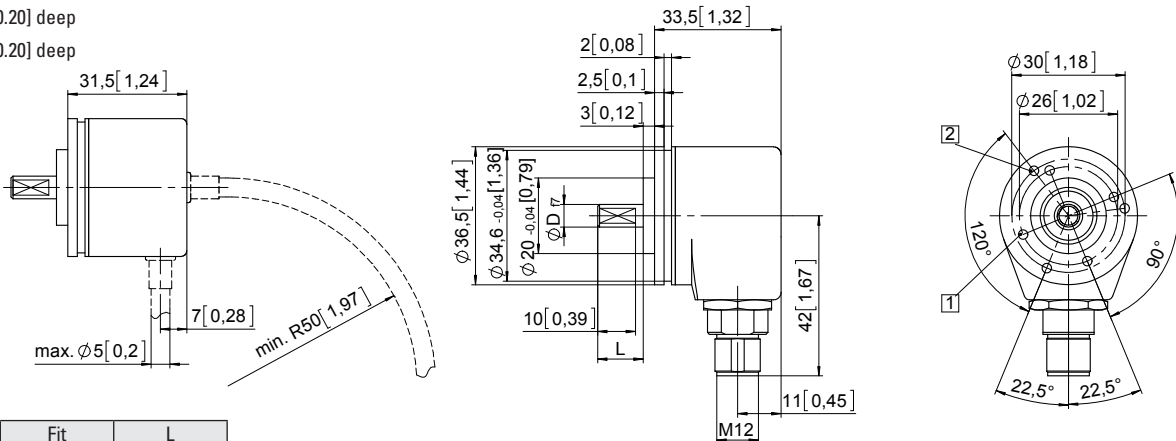


D	Fit	L
4 [0.16]	f7	10 [0.39]
5 [0.20]	f7	10 [0.39]
6 [0.24]	f7	12.5 [0.49]
1/4"	f7	12.5 [0.49]

Clamping / synchro flange, ø 36.5 [1.44]

Flange type 3

- 1 4 x M3, 5 [0.20] deep
- 2 3 x M3, 5 [0.20] deep

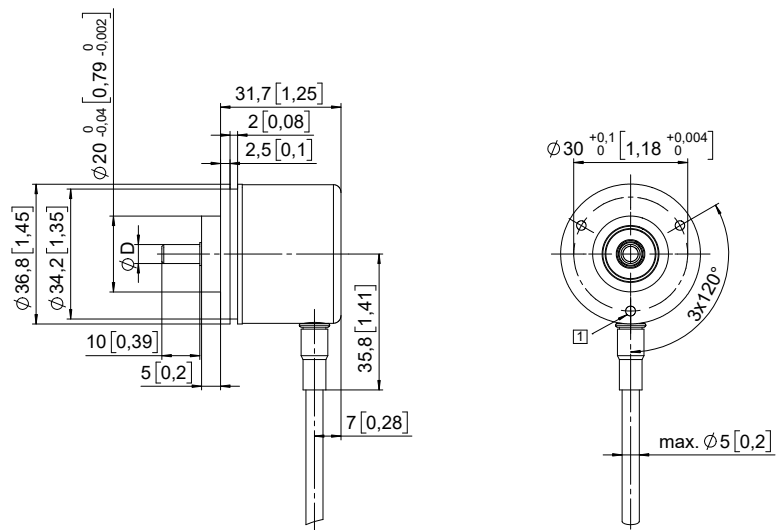


D	Fit	L
4 [0.16]	f7	10 [0.39]
5 [0.20]	f7	10 [0.39]
6 [0.24]	f7	12.5 [0.49]
1/4"	f7	12.5 [0.49]

Clamping/ synchro flange, ø 36.8 [1.45]

Flange type 8

- 1 3 x M3, 6 [0.24] deep



D	Fit	L
4 [0.16]	f7	10 [0.39]
5 [0.20]	f7	10 [0.39]
6 [0.24]	f7	12.5 [0.49]
1/4"	f7	12.5 [0.49]

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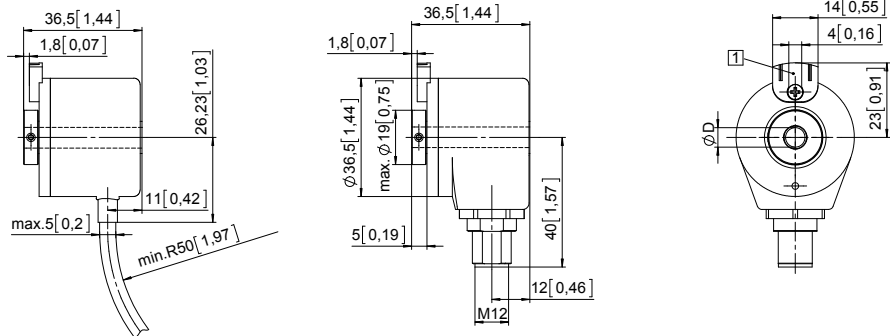
Dimensions hollow shaft version

Dimensions in mm [inch]

Flange with spring element, short

Flange type 1

- 1 Slot spring element, recommendation: torque pin DIN 7, \varnothing 4 [0.16]

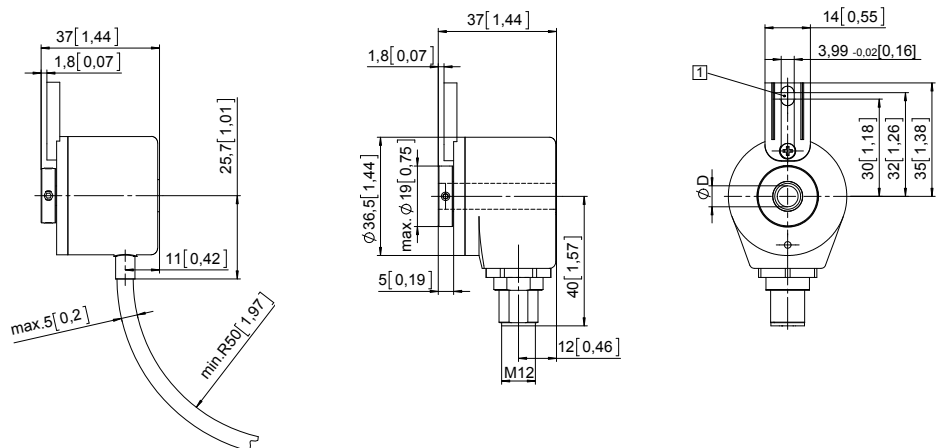


D	Fit
6 [0.24]	H7
8 [0.32]	H7
1/4"	H7

Flange with spring element, long

Flange type 2

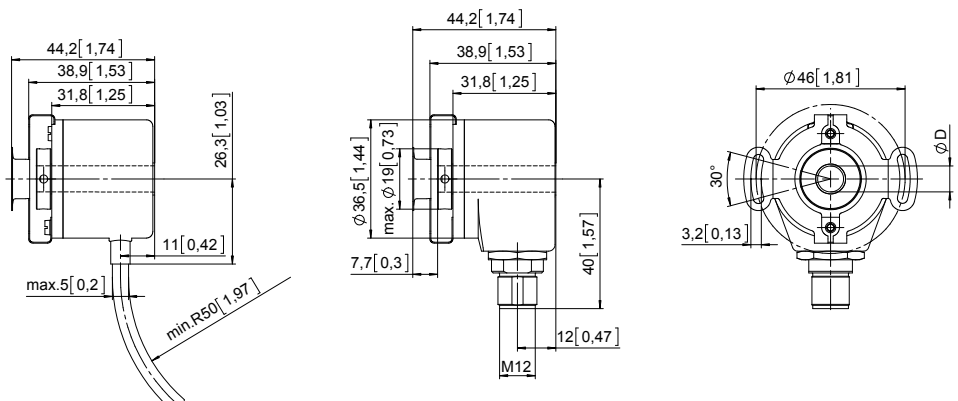
- 1 Slot spring element, recommendation: torque pin DIN 7, \varnothing 4 [0.16]



D	Fit
6 [0.24]	H7
8 [0.32]	H7
1/4"	H7

Flange with stator coupling, \varnothing 46 [1.81]

Flange type 5



D	Fit
6 [0.24]	H7
8 [0.32]	H7
1/4"	H7