

Incremental encoders

Compact optical

3610 / 3620 (shaft / hollow shaft)

Push-pull / RS422



The compact incremental encoders type 3610 / 3620 with optical sensor technology are available with a resolution of up to 3600 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 3600 pulses per revolution.
- Power supply 5 ... 18 V DC or 8 ... 30 V DC.

Order code

Shaft version

8.3610 . **XXXX** . **XXXX**
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.



a Flange

- 2 = synchro flange, \varnothing 36.5 mm [1.44"]
- 3 = clamping flange, \varnothing 36.5 mm [1.44"]

b Shaft ($\varnothing \times L$)

- 1 = \varnothing 4 x 10 mm [0.16 x 0.39"]
- 2 = \varnothing 5 x 10 mm [0.20 x 0.39"]
- 3 = \varnothing 6 x 12.5 mm [0.24 x 0.49"], with flat
- 5 = \varnothing 1/4" x 12.5 mm [1/4" x 0.49"], with flat

c Output circuit / power supply

- 2 = push-pull (with inverted signal) / 5 ... 18 V DC
- 4 = push-pull (with inverted signal) / 8 ... 30 V DC
- 3 = push-pull (without inverted signal) / 8 ... 30 V DC
- 6 = RS422 (with inverted signal) / 5 V DC
- 5 = RS422 (with inverted signal) / 8 ... 30 V DC

d Type of connection

- 1 = axial cable, 2 m [5.56'] PVC
 - A = axial cable, special length PVC *)
 - 2 = radial cable, 2 m [5.56'] PVC
 - B = radial cable, special length PVC *)
 - 3 = axial M12 connector, 8-pin
 - 4 = radial M12 connector, 8-pin
- *) 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)

e Pulse rate

- 25, 100, 200, 360, 500, 512, 600, 1000,
- 1024, 1500, 2000, 2048, 2500, 3600
- (e.g. 500 pulses => 0500)

Optional on request
- other pulse rates

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Order code Hollow shaft	8.3620 Type	.XXXXX.XXXX a b c d e	If for each parameter of an encoder the <u>underlined preferred option</u> 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.	10 By 10
a Flange 1 = with spring element, short 2 = with spring element, long 5 = with stator coupling, ø 46 mm [1.81"]	b Through hollow shaft 2 = ø 6 mm [0.24"] 4 = ø 8 mm [0.32"] 3 = ø 1/4"	c Output circuit / power supply 2 = push-pull (with inverted signal) / 5 ... 18 V DC 4 = push-pull (with inverted signal) / 8 ... 30 V DC 3 = push-pull (without inverted signal) / 8 ... 30 V DC 6 = RS422 (with inverted signal) / 5 V DC 5 = RS422 (with inverted signal) / 8 ... 30 V DC	d Type of connection E = radial cable, 2 m [5.56'] PVC B = radial cable, special length PVC *) 4 = radial M12 connector, 8-pin *) 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)	e Pulse rate 25, 100, <u>200</u> , 360, <u>500</u> , 512, 600, 1000, 1024 , 1500, 2000, 2048 , 2500 , 3600 (e.g. 500 pulses => 0500) <i>Optional on request</i> - other pulse rates

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 2 m [6.56'] PVC cable	05.00.6041.8211.002M
Connector, self-assembly (straight)	M12 female connector with coupling nut, 8-pin	05.CMB 8181-0

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				
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.)	
Power supply	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 power supply	yes	yes	yes	
UL approval		file 224618		
CE compliant acc. to		EMC guideline 2014/30/EU RoHS guideline 2011/65/EU		

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

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Terminal assignment

Output circuit	Type of connection	Cable (isolate unused wires 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	$\bar{0}$
		Cable 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	$\bar{0}$
		Cable 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	4	5	6	7	8
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

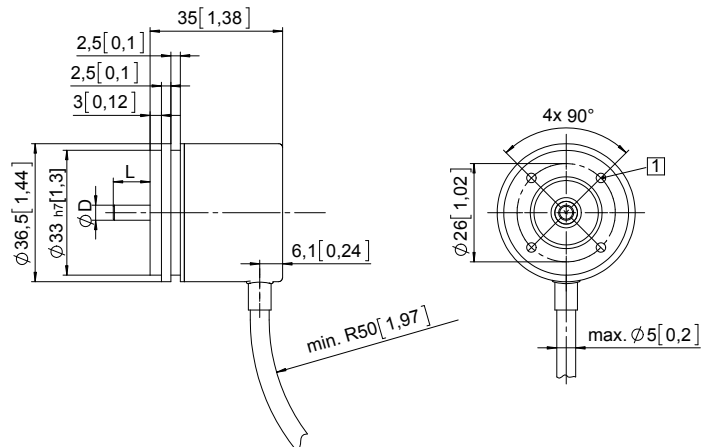
+V: Encoder power supply +V DC
 0 V: Encoder power supply ground GND (0 V)
 A, \bar{A} : Incremental output channel A
 B, \bar{B} : Incremental output channel B
 0, $\bar{0}$: Reference signal

Dimensions shaft version

Dimensions in mm [inch]

Synchro flange, \varnothing 36.5 [1.44]
Flange type 2

1 4 x M3, 5 [0.20] deep



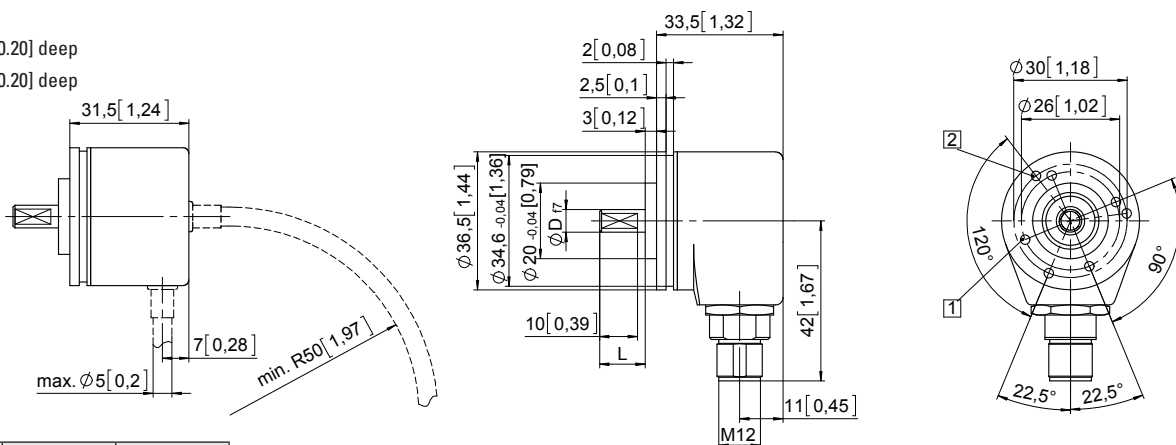
D	Fit	L
4 [0.16]	f7	10 [0.39]
5 [0.20]	f7	10 [0.39]
6 [0.24]	f7	12.5 [0.49]
1/4"	f7	12.5 [0.49]

Clamping flange, \varnothing 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]

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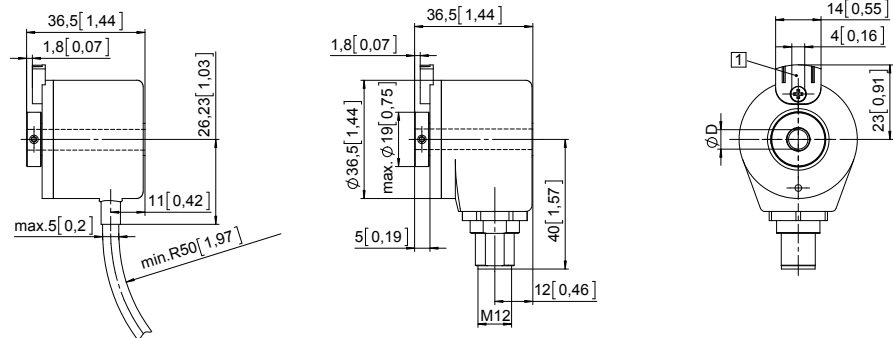
Push-pull / RS422

Dimensions hollow shaft version

Dimensions in mm [inch]

Flange with spring element, short Flange type 1

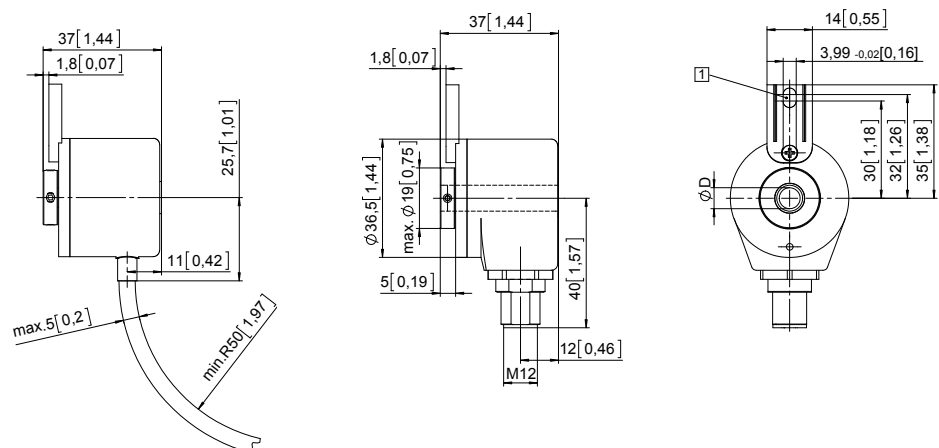
- 1 Slot spring element, recommendation: cylindrical pin DIN 7, $\varnothing 4$ [0.16]



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

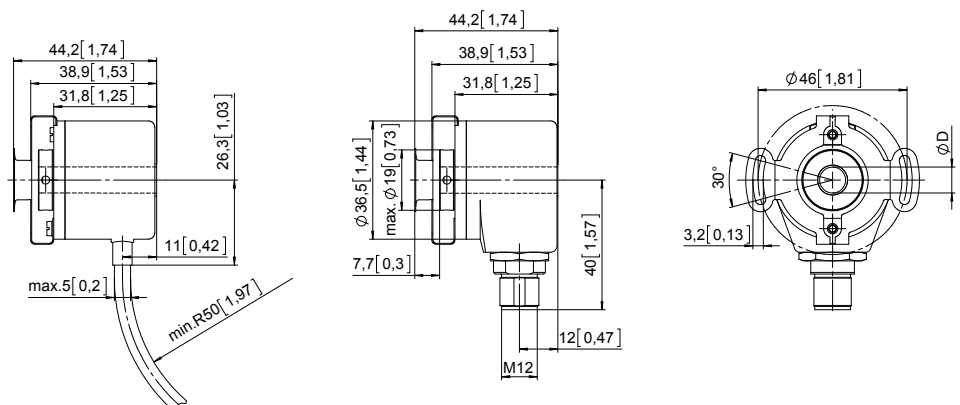
Flange with spring element, long Flange type 2

- 1 Slot spring element, recommendation: cylindrical 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

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