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 2500 pulses per revolution.

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

High rotational speed | Temperature range | 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.
- Power supply 5 ... 18 V DC or 8 ... 30 V DC.

Order code Shaft version

8.3610	.	X	X	X	X	.	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.

10 by 10

a *Flange*
2 = synchro flange, ø 36.5 mm [1.44"]
3 = clamping flange, ø 36.5 mm [1.44"]

b *Shaft (ø x L)*
1 = ø 4 x 10 mm [0.16 x 0.39"]
2 = ø 5 x 10 mm [0.20 x 0.39"]
3 = ø 6 x 12.5 mm [0.24 x 0.49"], with flat
5 = ø 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**
(e.g. 500 pulses => 0500)

Optional on request
- other pulse rates

Compact optical | **3610 / 3620 (shaft / hollow shaft)** | **Push-Pull / RS422**

Order code Hollow shaft

8.3620 . X X X X . 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.

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

Optional on request
- 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.
Connector, self-assembly (straight)	M12 female connector with coupling nut	**05.CMB 8181-0**
Cordset, pre-assembled	M12 female connector with coupling nut, 2 m [6.56'] PVC cable	**05.00.6041.8211.002M**

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	aluminium
	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	min. 2.5 V	min. +V - 2.5 V	min. +V - 3.0 V
LOW	max. 0.5 V	max. 0.5 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 2004/108/EC RoHS guideline 2011/65/EU		

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

Compact optical | **3610 / 3620 (shaft / hollow shaft)** | **Push-Pull / RS422**

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, E, A, B	Signal:	0 V	+V	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$
		Cable colour:	WH	BN	GN	YE	GY	PK	BU	RD

Output circuit	Type of connection	Cable (isolate unused wires individually before initial start-up)								
3 without inv. signal	1, 2, E, A, B	Signal:	0 V	+V	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$
		Cable colour:	WH	BN	GN	-	YE	-	GY	-

Output circuit	Type of connection	M12 connector								
2, 4, 5, 6 with inv. signal	3, 4	Signal:	0 V	+V	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$
		Pin:	1	2	3	4	5	6	7	8

Output circuit	Type of connection	M12 connector								
3 without inv. signal	3, 4	Signal:	0 V	+V	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$
		Pin:	1	2	3	-	5	-	7	-

Top view of mating side, male contact base

M12 connector, 8-pin

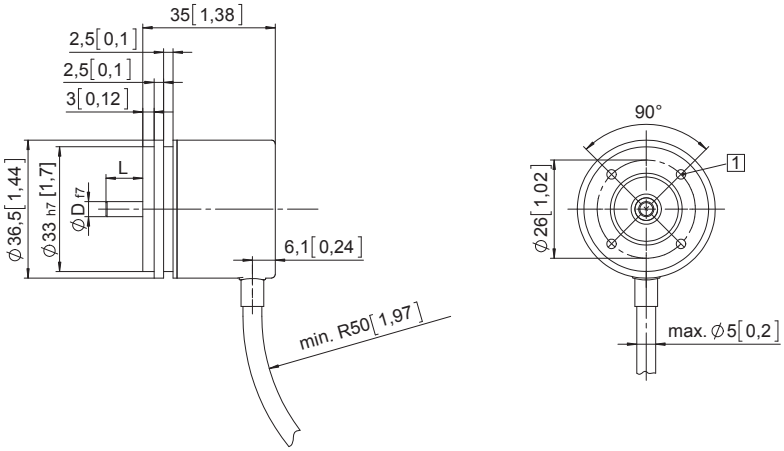
+V: Encoder power supply +V DC
0 V: Encoder power supply ground GND (0 V)
A, $\overline{A}$: Incremental output channel A
B, $\overline{B}$: Incremental output channel B
0, $\overline{0}$: Reference signal

Dimensions shaft version

Dimensions in mm [inch]

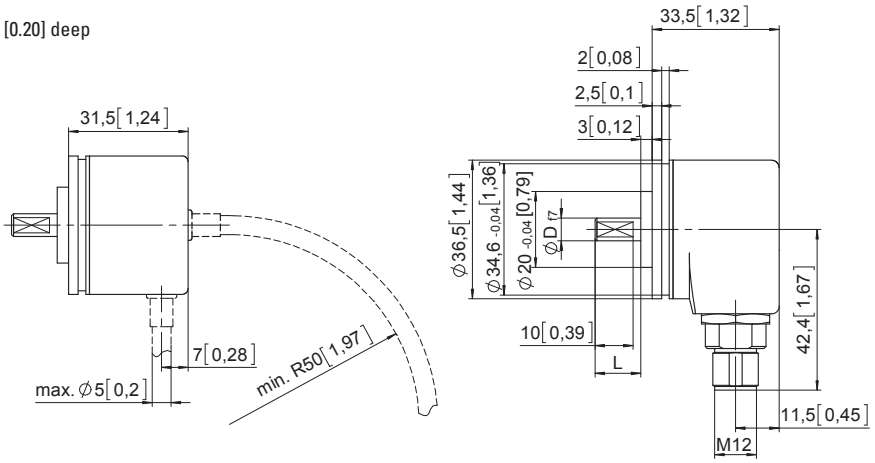
Synchro flange, ø 36.5 [1.44]
Flange type 2

1 M3, 5 [0.20] deep



Clamping flange, ø 36.5 [1.44]
Flange type 3

1 M3, 5 [0.20] deep



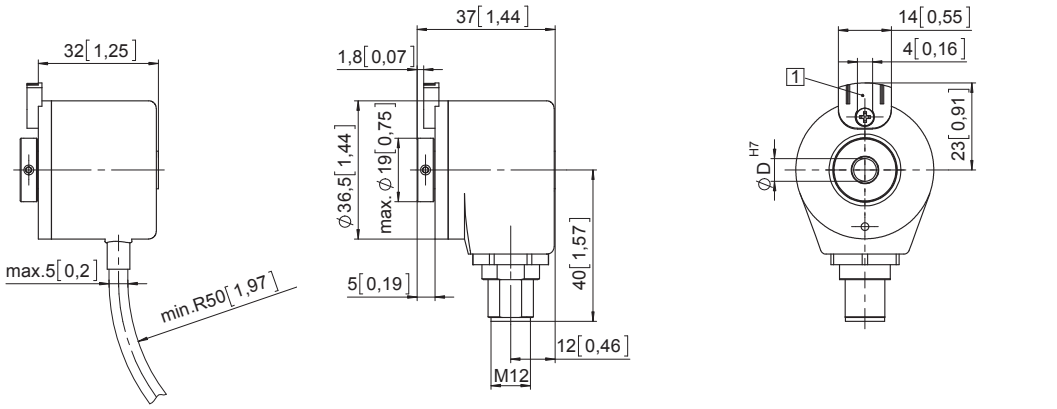
Compact optical	3610 / 3620 (shaft / hollow shaft)	Push-Pull / RS422

Dimensions hollow shaft version

Dimensions in mm [inch]

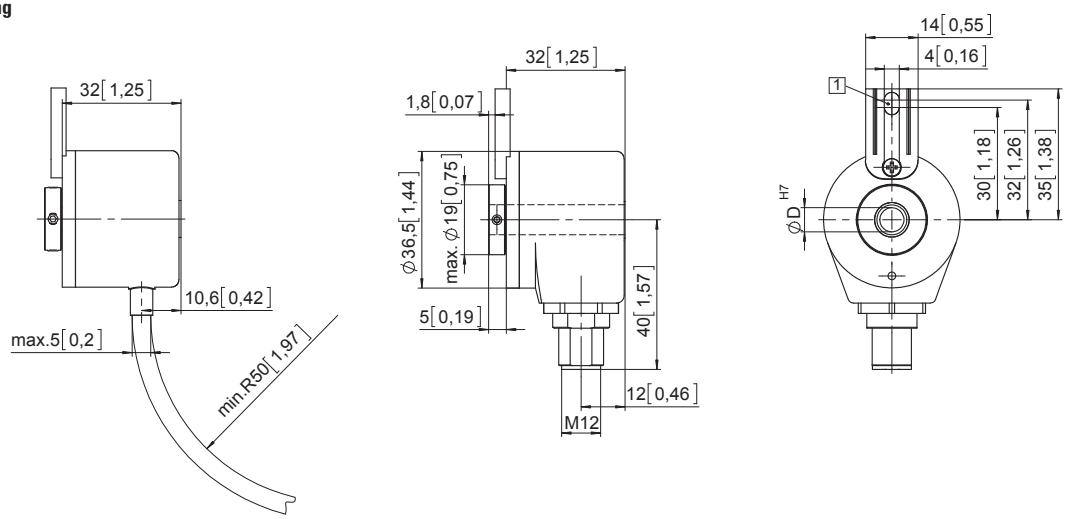
Flange with spring element, short
Flange type 1

1 Torque stop slot, recommendation: cylindrical pin DIN 7, ø 4 [0.16]



Flange with spring element, long
Flange type 2

1 Torque stop slot, recommendation: cylindrical pin DIN 7, ø 4 [0.16]



Flange with stator coupling, ø 46 [1.81]
Flange type 5

Shaft: minimum insertion depth 1.5 x D