

Incremental encoders

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Standard optical

Sendix Base KIS50 / KIH50 (shaft / hollow shaft)

Push-pull / RS422 / Open collector



The encoders Sendix Base KIS50 / KIH50 offer a protection level up to IP65 and can be used with temperatures from -20°C up to +70°C. They are ideal for use in standard applications and in simple machines.

The Sendix Base KIS50 / KIH50 family also features our well proven Safety-Lock™ system, allowing higher tolerance of possible installation errors and increasing the overall performance of this encoder.



Safety-Lock™	High rotational speed	Temperature range -20°C...+70°C	High protection level IP	High shaft load capacity	Shock / vibration resistant	Magnetic field proof	Short-circuit proof	Reverse polarity protection	Optical sensor

Robust

- Resistant die-cast housing and protection up to IP65.
- Wide temperature range, -20°C ... +70°C.
- Elimination of machine downtime thanks to sturdy bearing construction in "Safety-Lock™ Design".

Flexible

- Suitable connection variant for every specific case: cable connection, M12 and M23 connector.
- Various mounting options.
- Up to 5000 pulses per revolution.

Order code 8.KIS50 . XXXXX . XXXX
Shaft version Type a b c d e

- | | | |
|--|--|--|
| <p>a Flange
 8 = clamping flange, IP65 ø 58 mm [2.28"]
 B = synchro flange, IP65 ø 58 mm [2.28"]</p> <p>b Shaft (ø x L), with flat
 1 = ø 6 x 10 mm [0.24 x 0.39"]
 6 = ø 8 x 15 mm [0.32 x 0.59"]
 3 = ø 10 x 20 mm [0.39 x 0.79"]
 5 = ø 12 x 20 mm [0.47 x 0.79"]</p> | <p>c Output circuit / power supply
 4 = RS422 (with inverted signal) / 5 V DC
 1 = RS422 (with inverted signal) / 5 ... 30 V DC
 2 = push-pull (7272 compatible with inverted signal) / 5 ... 30 V DC
 5 = push-pull (with inverted signal) / 10 ... 30 V DC
 3 = open collector (with inverted signal) / 5 ... 30 V DC</p> | <p>d Type of connection
 1 = axial cable, 1 m [3.28'] PVC
 2 = radial cable, 1 m [3.28'] PVC
 3 = axial M12 connector, 8-pin
 4 = radial M12 connector, 8-pin
 7 = axial M23 connector, 12-pin
 8 = radial M23 connector, 12-pin</p> <p>e Pulse rate
 100, 200, 250, 256, 360, 500, 512, 600, 1000, 1024, 2000, 2048, 2500, 3600, 4096, 5000
 (e.g. 100 pulses => 0100)</p> |
|--|--|--|

Order code 8.KIH50 . XXXXX . XXXX
Hollow shaft Type a b c d e

- | | | |
|---|--|--|
| <p>a Flange
 2 = with spring element, long, IP65
 4 = with torque stop, long, IP65
 D = with stator coupling, IP65, ø 63 mm [2.48"]</p> <p>b Through hollow shaft
 9 = ø 8 mm [0.32"]
 3 = ø 10 mm [0.39"]
 5 = ø 12 mm [0.47"]
 A = ø 14 mm [0.55"]
 8 = ø 15 mm [0.59"]</p> | <p>c Output circuit / power supply
 4 = RS422 (with inverted signal) / 5 V DC
 1 = RS422 (with inverted signal) / 5 ... 30 V DC
 2 = push-pull (7272 compatible with inverted signal) / 5 ... 30 V DC
 5 = push-pull (with inverted signal) / 10 ... 30 V DC
 3 = open collector (with inverted signal) / 5 ... 30 V DC</p> | <p>d Type of connection
 1 = radial cable, 1 m [3.28'] PVC
 2 = radial M12 connector, 8-pin
 4 = radial M23 connector, 12-pin
 E = tangential cable, 1 m [3.28'] PVC</p> <p>e Pulse rate
 100, 200, 250, 256, 360, 500, 512, 600, 1000, 1024, 2000, 2048, 2500, 3600, 4096, 5000
 (e.g. 100 pulses => 0100)</p> |
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Mounting accessory for shaft encoders		Order no.
Coupling	bellows coupling \varnothing 19 mm [0.75"] for shaft 6 mm [0.24"]	8.0000.1102.0606
	bellows coupling \varnothing 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	with fixing thread		8.0010.4700.0000
for flange with spring element (flange type 2)			

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
	M23 female connector with coupling nut, 12-pin 2 m [6.56'] PVC cable	8.0000.6901.0002
Connector, self-assembly (straight)	M12 female connector with coupling nut, 8-pin	05.CMB 8181-0
	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.

Technical data

Mechanical characteristics			
Maximum speed	6000 min ⁻¹ 3000 min ⁻¹ (continuous)	Weight	approx. 0.4 kg [14.11 oz]
Mass moment of inertia	shaft version approx. 1.8 x 10 ⁻⁶ kgm ² hollow shaft version approx. 6 x 10 ⁻⁶ kgm ²	Protection acc. to EN 60529	IP65
Starting torque at 20°C [68°F]	< 0.01 Nm	Working temperature range	-20°C ... +70°C [-4°F ... +158°F]
Shaft load capacity	radial 80 N axial 40 N	Material	shaft stainless 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 , 10 ... 2000 Hz

Electrical characteristics						
Output circuit	RS422 (TTL compatible)	RS422 (TTL compatible)	Push-pull	Push-pull (7272 compatible)	Open collector (7273)	
Order code	1	4	5	2	3	
Power supply	5 ... 30 V DC		5 V DC (±5 %)	10 ... 30 V DC		5 ... 30 V DC
Power consumption (no load)	typ. 40 mA max. 90 mA		typ. 40 mA max. 90 mA	typ. 50 mA max. 100 mA		typ. 50 mA max. 100 mA
Permissible load / channel	max. +/- 20 mA		max. +/- 20 mA	max. +/- 20 mA		+/- 20 mA sink at 30 V DC
Pulse frequency	max. 300 kHz		max. 300 kHz	max. 300 kHz ¹⁾		max. 300 kHz
Signal level	HIGH LOW	min. 2.5 V max. 0.5 V		min. +V - 1.0 V max. 0.5 V		min. +V - 2.0 V max. 0.5 V
Rising edge time t_r	max. 200 ns		max. 200 ns	max. 1 µs		max. 1 µs
Falling edge time t_f	max. 200 ns		max. 200 ns	max. 1 µs		max. 1 µs
Short circuit proof outputs²⁾	yes ³⁾		yes ³⁾	yes		yes
Reverse polarity protection of the power supply	yes		no	yes		no
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.

3) Only one channel allowed to be shorted-out:
at +V = 5 V DC, short-circuit to channel, 0 V, or +V is permitted.
at +V = 5 ... 30 V DC, short-circuit to channel or 0 V is permitted.

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Terminal assignment

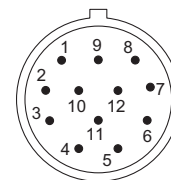
Output circuit	Type of connection	Cable (isolate unused wires individually before initial start-up)												
1, 2, 3, 4, 5	KIS50: 1, 2	Signal:	0 V	+V	0 Vsens	+Vsens	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp	
	KIH50: 1, E	Cable color:	WH	BN	GY PK	RD BU	GN	YE	GY	PK	BU	RD	shield	
Output circuit	Type of connection	M12 connector, 8-pin												
1, 2, 3, 4, 5	KIS50: 3, 4	Signal:	0 V	+V	0 Vsens	+Vsens	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp	
	KIH50: 2	Pin:	1	2			3	4	5	6	7	8	PH ¹⁾	
Output circuit	Type of connection	M23 connector, 12-pin												
1, 2, 3, 4, 5	KIS50: 7, 8	Signal:	0 V	+V	0 Vsens	+Vsens	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp	
	KIH50: 4	Pin:	10	12	11	2	5	6	8	1	3	4	PH ¹⁾	

- +V: Encoder power supply +V DC
- 0 V: Encoder power supply ground GND (0 V)
- 0 Vsens / +Vsens: Using the sensor outputs of the encoder, the voltage present can be measured and if necessary increased accordingly.
- 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



M23 connector, 12-pin

Dimensions shaft version

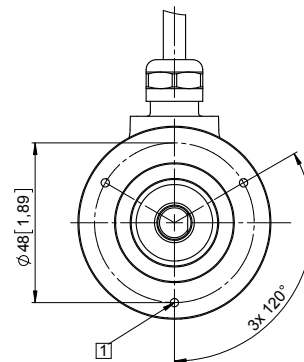
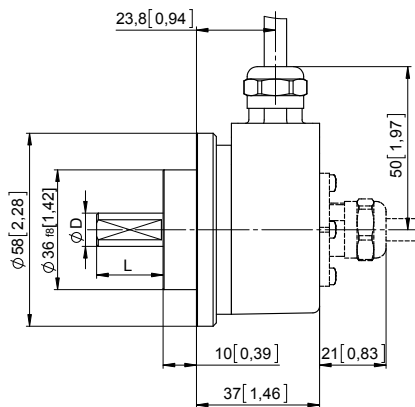
Dimensions in mm [inch]

Clamping flange, \varnothing 58 [2.28]

Flange type 8

1) 3 x M3, 6 [0.24] deep

D	Fit	L
6 [0.24]	h7	10 [0.39]
8 [0.32]	h7	15 [0.59]
10 [0.39]	f7	20 [0.79]
12 [0.47]	h7	20 [0.79]

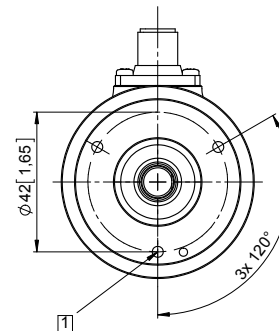
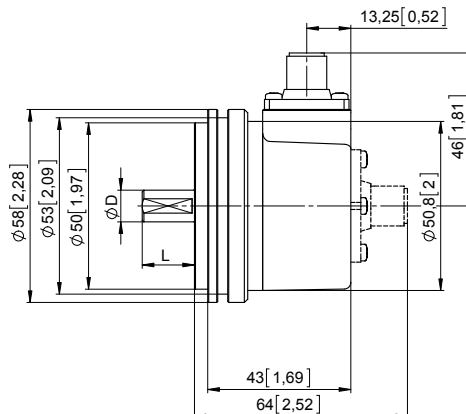


Synchro flange, \varnothing 58 [2.28]

Flange type B

1) 3 x M4, 6 [0.24] deep

D	Fit	L
6 [0.24]	h7	10 [0.39]
8 [0.32]	h7	15 [0.59]
10 [0.39]	f7	20 [0.79]
12 [0.47]	h7	20 [0.79]



1) PH = shield is attached to connector housing.

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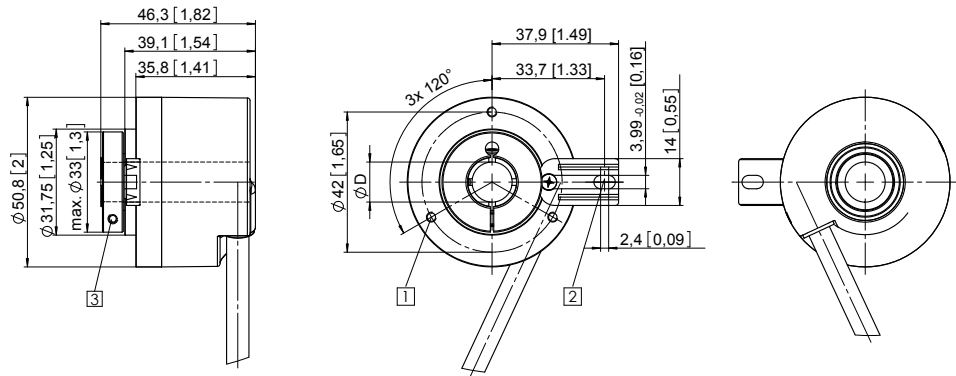
Dimensions hollow shaft version

Dimensions in mm [inch]

Flange with spring element, long Flange type 2

- 1 3 x M3, 6 [0.24] deep
- 2 Slot spring element, recommendation: cylindrical pin DIN 7, \varnothing 4 [0.16]
- 3 Recommended torque for the clamping ring 0.6 Nm

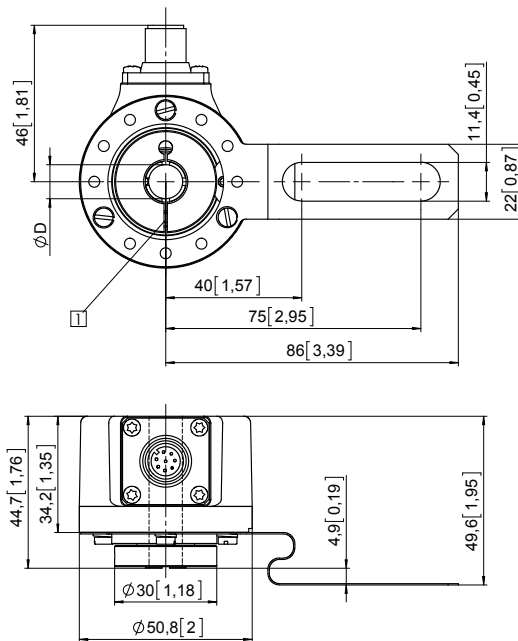
D	Fit
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7
14 [0.55]	H7
15 [0.59]	H7



Flange with torque stop, long Flange type 4

- 1 Recommended torque for the clamping ring 0.6 Nm

D	Fit
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7
14 [0.55]	H7
15 [0.59]	H7



Flange with stator coupling, \varnothing 63 [2.48] Flange type D

- 1 Recommended torque for the clamping ring 0.6 Nm

D	Fit
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7
14 [0.55]	H7
15 [0.59]	H7

