

Incremental encoders

Standard
optical

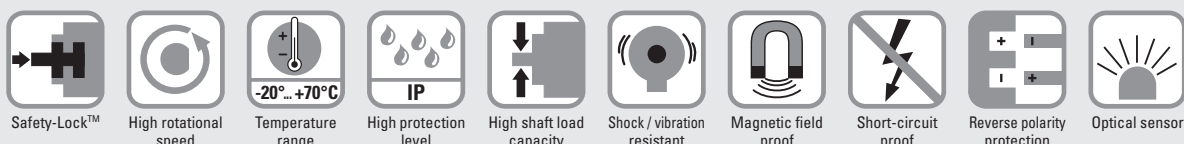
Sendix Base KIS50 / KIH50 (shaft / hollow shaft)

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.



Robust

- Resistant zinc 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 Shaft version

8.KIS50	.	X	X	X	X	.	X	X	X	X
Type		a	b	c	d		e			

a Flange

8 = clamping flange, IP65 ø 58 mm [2.28"]
B = synchro flange, IP65 ø 58 mm [2.28"]

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"]
8 = ø 3/8 x 7/8"

c Output circuit / supply voltage

4 = RS422 / 5 V DC
1 = RS422 / 5 ... 30 V DC
2 = push-pull / 5 ... 30 V DC
5 = push-pull / 10 ... 30 V DC
3 = open collector / 5 ... 30 V DC

d Type of connection

1 = axial cable, 1 m [3.28'] PVC
2 = radial cable, 1 m [3.28'] PVC
P = axial M12 connector, 5-pin
R = radial M12 connector, 5-pin
3 = axial M12 connector, 8-pin
4 = radial M12 connector, 8-pin
7 = axial M23 connector, 12-pin
8 = radial M23 connector, 12-pin

e Pulse rate

100, 200, 250, 256, 360, 500, 512, 600, 1000,
1024, 2000, 2048, 2500, 3600, 4096, 5000
(e.g. 100 pulses => 0100)

High performance version (optionally available)

- Extended temperature range
- Higher rotational speed
- Higher shock resistance
- Higher vibration resistance

Order code 8.KIS50.xxxx.xxxx.9888

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Order code Hollow shaft	8.KIH50 Type	.XXXXX a b c d e	XXXX e
a Flange 2 = with spring element, long, IP65 4 = with torque stop, long, IP65 D = with stator coupling, IP65, ø 63 mm [2.48"]	c Output circuit / supply voltage 4 = RS422 / 5 V DC 1 = RS422 / 5 ... 30 V DC 2 = push-pull / 5 ... 30 V DC 5 = push-pull / 10 ... 30 V DC 3 = open collector / 5 ... 30 V DC	e Pulse rate 100, 200, 250, 256, 360, 500, 512, 600, 1000, 1024, 2000, 2048, 2500, 3600, 4096, 5000 (e.g. 100 pulses => 0100)	High performance version (optionally available) - Extended temperature range - Higher rotational speed - Higher shock resistance - Higher vibration resistance Order code 8.KIH50.xxxx.xxxx.9888
b Through hollow shaft 9 = ø 8 mm 4 = ø 3/8" (9,52 mm) 3 = ø 10 mm 5 = ø 12 mm 6 = ø 1/2" (12,75 mm) A = ø 14 mm 8 = ø 15 mm	d Type of connection 1 = radial cable, 1 m [3.28'] PVC R = radial M12 connector, 5-pin 2 = radial M12 connector, 8-pin 4 = radial M23 connector, 12-pin E = tangential cable, 1 m [3.28'] PVC		

Mounting accessory for shaft encoders		Order no.
Coupling	bellows coupling ø 19 mm [0.75"] for shaft 6 mm [0.24"]	8.0000.1102.0606
	bellows coupling ø 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 for flange with spring element (flange type 1 + 2)	with fixing thread		8.0010.4700.0000

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
	M23 female connector with coupling nut, 12-pin, cw single ended 2 m [6.56'] PVC cable	8.0000.6901.0002
Connector, self-assembly	M12 female connector with coupling nut, 8-pin, A coded, straight (metal)	05.CMB 8181-0
	M23 female connector with coupling nut, 12-pin, cw	8.0000.5012.0000

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

Technical data

Mechanical characteristics		
Maximum speed		6000 min ⁻¹ for option 9888 8000 min ⁻¹ 3000 min ⁻¹ (continuous)
Mass moment of inertia	shaft version hollow shaft version	approx. 1.8 x 10 ⁻⁶ kgm ² approx. 6 x 10 ⁻⁶ kgm ²
Starting torque at 20 °C [68 °F]		< 0.01 Nm
Shaft load capacity	radial axial	80 N 40 N
Weight		approx. 0.4 kg [14.11 oz]

Protection acc. to EN 60529	IP65
Working temperature range	-20 °C ... +70 °C [-4 °F ... +158 °F] for option 9888 -40 °C ... +80 °C [-40 °F ... +176 °F]
Material	shaft stainless steel
Shock resistance acc. to EN 60068-2-27	1000 m/s ² , 6 ms for option 9888 2000 m/s ² , 6 ms
Vibration resistance acc. to EN 60068-2-6	100 m/s ² , 10 ... 2000 Hz for option 9888 200 m/s ² , 10 ... 2000 Hz

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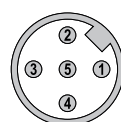
Electrical characteristics					
Output circuit	RS422 (TTL compatible)	RS422 (TTL compatible)	Push-pull	Push-pull (HTL/TTL universal, 7272 compatible)	Open collector (7273)
Order code	1	4	5	2	3
Supply voltage	5 ... 30 V DC	5 V DC ($\pm 5\%$)	10 ... 30 V DC	5 ... 30 V DC	5 ... 30 V DC
Power consumption (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	100 mA
Permissible load / channel	max. +/- 20 mA	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	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 μ s	max. 1 μ s	
Falling edge time t_f	max. 200 ns	max. 200 ns	max. 1 μ s	max. 1 μ s	
Short circuit proof outputs ²⁾	yes ³⁾	yes ³⁾	yes	yes	yes
Reverse polarity protection of the supply voltage	yes	no	yes	no	no
CE compliant acc. to	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU				

Terminal assignment

Output circuit	Type of connection	Cable (isolate unused cores 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	Core color:	WH	BN	GY PK	RD BU	GN	YE	GY	PK	BU	RD	shield
Output circuit	Type of connection	M12 connector, 5-pin											
1, 2, 3, 4, 5	KIS50: P, R	Signal:	0 V	+V	A	B	0	$\perp$					
	KIH50: R	Pin:	1	2	3	4	5	PH ⁴⁾					
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 ⁴⁾
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 ⁴⁾

+V: Supply voltage encoder +V DC
 0 V: Supply voltage encoder 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)

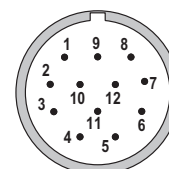
Top view of mating side, male contact base



M12 connector, 5-pin



M12 connector, 8-pin



M23 connector, 12-pin

1) Max. recommended cable length 30 m [98.43'].
 2) If supply voltage 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.
 4) PH = shield is attached to connector housing.

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Dimensions shaft version

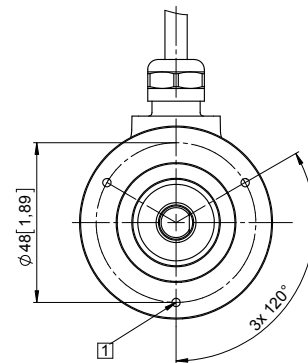
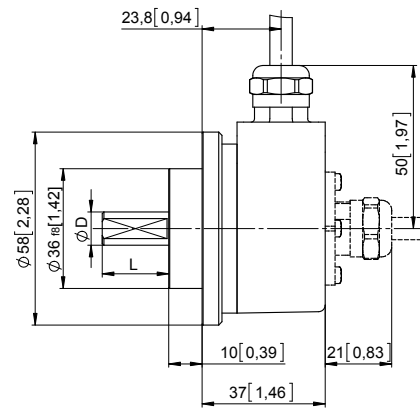
Dimensions in mm [inch]

Clamping flange, ø 58 [2.28]

Flange type 8

1 3 x M3, 6 [0.24] deep

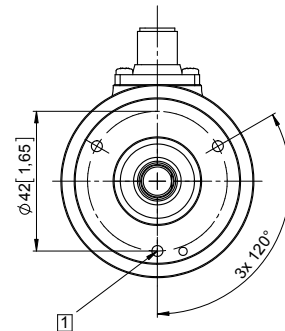
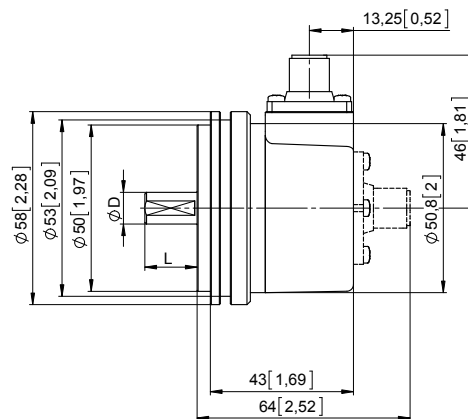
D	Fit	L
6 [0.24]	h7	10 [0.39]
8 [0.32]	h7	15 [0.59]
10 [0.39]	h7	20 [0.79]
12 [0.47]	h7	20 [0.79]



Synchro flange, ø 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]	h7	20 [0.79]
12 [0.47]	h7	20 [0.79]

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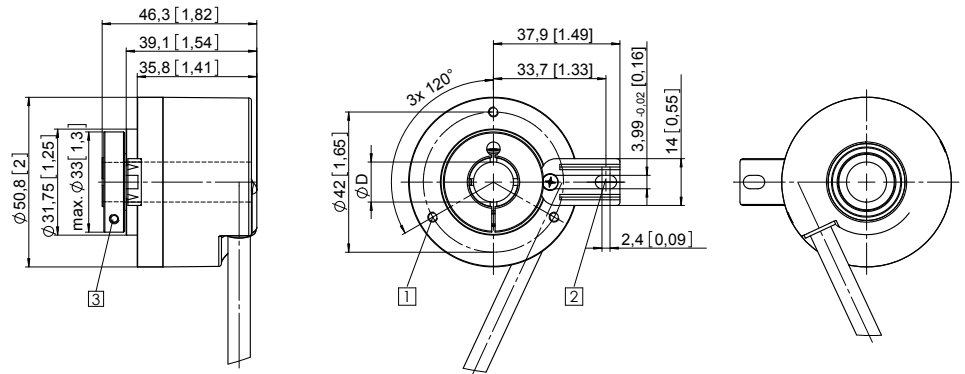
Dimensions hollow shaft version

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

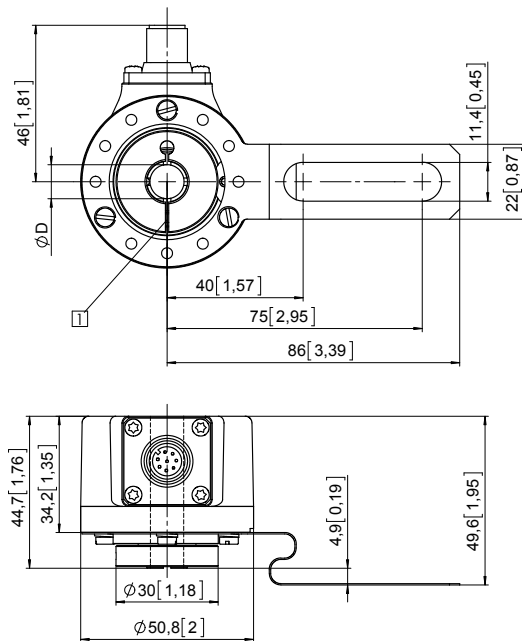
D	Fit
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7
14 [0.55]	H7
15 [0.59]	H7



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

