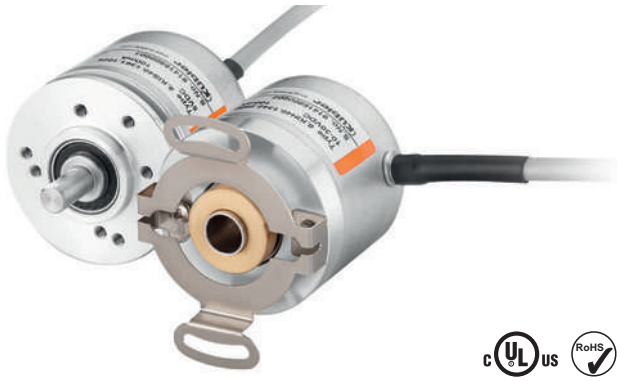
Compact optical | **Sendix Base KIS40 / KIH40 (shaft / hollow shaft)** | **Push-pull / RS422 / Open collector**



The incremental encoders type Sendix Base KIS40 / KIH40 with optical sensor technology have been designed for highest cost-effectiveness. They are available with a resolution of up to 2560 pulses per revolution.

They are particularly suitable for tight mounting spaces and small machines and appliances.

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

Compact and robust

- Only 40 mm outer diameter.
- Ideally suited for use where space is tight.
- Sturdy bearing construction in Safety Lock™ design.
- Safe commissioning: reverse polarity protection and short-circuit proof.

Flexible

- Maximum resolution of 2560 pulses per revolution.
- Supply voltage 5 V DC, 10 ... 30 V DC or 5 ... 30 V DC.
- Push-pull, RS422 or open collector
- Radial or axial cable.

Order code Shaft version

8.KIS40	.	1	X	X	X	.	XXXX	.	P03 [1]
Type		a	b	c	d		e		f

a *Flange*
1 = clamping-synchro flange, ø 40 mm [1.57"]

b *Shaft (ø x L)*
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
6 = ø 8 x 12.5 mm [0.32 x 0.49"], with flat

c *Output circuit / supply voltage*
3 = open collector NPN (with inverted signal) / 10 ... 30 V DC
4 = push-pull (with inverted signal) / 10 ... 30 V DC
6 = RS422 (with inverted signal) / 5 V DC
7 = open collector NPN (without inverted signal) / 10 ... 30 V DC
8 = push-pull (without inverted signal) / 10 ... 30 V DC
A = open collector NPN (with inverted signal) / 5 ... 30 V DC
B = push-pull (with inverted signal) / 5 ... 30 V DC
C = RS422 (with inverted signal) / 5 ... 30 V DC

d *Type of connection*
1 = axial cable, 2 m [6.56'] PVC
2 = radial cable, 2 m [6.56'] PVC
4 = radial cable, 0.5 m [1.64'] PVC, with M12 connector, 5-pin
6 = radial cable, 0.5 m [1.64'] PVC, with M12 connector, 8-pin
A = axial cable, special length PVC *)
B = radial cable, special length PVC *)

*) 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
e.g.: 8.KIS40.134A.1024. (P03.) **0050** (for cable length 5 m)

e *Pulse rate*
10, 25, 50, 60, 88, 100, 120, 150, 200, 250, 314, 360, 500, 512, 600, 1000, 1024, 1500, 1800, 2000, 2048, 2500, 2560
(e.g. 500 pulses => 0500)

f *Special signal format*
P03 = see page 4

Optional on request
- other pulse rates

1) Is only necessary when a special output signal format is required.

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Compact optical	Sendix Base KIS40 / KIH40 (shaft / hollow shaft)	Push-pull / RS422 / Open collector

Order code Hollow shaft

8.KIH40	.	X	X	X	X	.	XXXX	.	P03 [1]
Type		a	b	c	d		e		f

a *Flange*
2 = with spring element, long
5 = with stator coupling, ø 46 mm [1.81“]

b *Blind hollow shaft (insertion depth max. 18 mm [0.71“])*
2 = ø 6 mm [0.24“]
4 = ø 8 mm [0.32“]
3 = ø 1/4“

c *Output circuit / supply voltage*
3 = open collector NPN (with inverted signal) / 10 ... 30 V DC
4 = push-pull (with inverted signal) / 10 ... 30 V DC
6 = RS422 (with inverted signal) / 5 V DC
7 = open collector NPN (without inverted signal) / 10 ... 30 V DC
8 = push-pull (without inverted signal) / 10 ... 30 V DC
A = open collector NPN (with inverted signal) / 5 ... 30 V DC
B = push-pull (with inverted signal) / 5 ... 30 V DC
C = RS422 (with inverted signal) / 5 ... 30 V DC

d *Type of connection*
1 = axial cable, 2 m [6.56‘] PVC
2 = radial cable, 2 m [6.56‘] PVC
4 = radial cable, 0.5 m [1.64‘] PVC, with M12 connector, 5-pin
6 = radial cable, 0.5 m [1.64‘] PVC, with M12 connector, 8-pin
A = axial cable, special length PVC *)
B = radial cable, special length PVC *)

*) 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.KIH40.544A.1024. (P03.) **0050** (for cable length 5 m)

e *Pulse rate*
10, 25, 50, 60, 88, 100, 120, 150, 200, 250, 314, 360, 500, 512, 600, 1000, 1024, 1500, 1800, 2000, 2048, 2500, 2560
(e.g. 500 pulses => 0500)

f *Special signal format*
P03 = see page 4

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**

Further Kübler accessories can be found at: kuebler.com/accessories

1) Is only necessary when a special output signal format is required.

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Compact optical | **Sendix Base KIS40 / KIH40 (shaft / hollow shaft)** | **Push-pull / RS422 / Open collector**

Technical data

Electrical characteristics

Output circuit		**RS422** (TTL comp.)	**Push-pull** [1] (7272 comp.)	**Open collector NPN** (7273)
Supply voltage		5 V DC (±5 %) / 5 ... 30 V DC	10 ... 30 V DC / 5 ... 30 V DC	10 ... 30 V DC / 5 ... 30 V DC
Power consumption with inverted signal (no load)		typ. 40 mA max. 90 mA / max. 165 mA	typ. 50 mA max. 100 mA	100 mA
Permissible load / channel		max. +/- 20 mA	max. +/- 20 mA	20 mA sink at 30 V DC
Pulse frequency		max. 250 kHz	max. 250 kHz	max. 250 kHz
Signal level	HIGH LOW	min. 2.5 V max. 0.5 V	min. +V - 2.0 V max. 0.5 V	
Rising edge time t_r		max. 200 ns	max. 1 µs	
Falling edge time t_f		max. 200 ns	max. 1 µs	
Short circuit proof outputs [2]		yes [3]	yes	yes
Reverse polarity protection of the supply voltage		no/yes	yes	yes

Mechanical characteristics

Maximum speed		4500 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 axial	40 N 20 N
Weight		ca. 0.17 kg [6.00 oz]
Protection acc. to EN 60529		IP64
Working temperature range		-20 °C ... +70 °C [-4 °F ... +158 °F]
Materials	shaft flange housing cable	stainless steel aluminum aluminum 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

Approvals

UL compliant in accordance with	File no. E224618
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU
UKCA compliant in accordance with	
EMC Regulations	S.I. 2016/1091
RoHS Regulations	S.I. 2012/3032

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.

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Compact optical | **Sendix Base KIS40 / KIH40 (shaft / hollow shaft)** | **Push-pull / RS422 / Open collector**

Terminal assignment

Output circuit	Type of connection	Cable (isolate unused cores individually before initial start-up)								
3, 4, 6, A, B, C with inv. signal	1, 2, A, B	Signal:	0 V	+V	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$
		Core color:	WH	BN	GN	YE	GY	PK	BU	RD

Output circuit	Type of connection	Cable (isolate unused cores individually before initial start-up)								
7, 8 without inv. signal	1, 2, A, B	Signal:	0 V	+V	A	–	B	–	0	–
		Core color:	WH	BN	GN	–	GY	–	BU	–

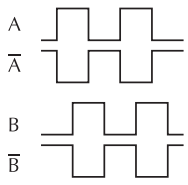
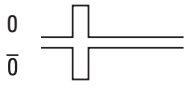
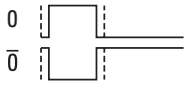
Output circuit	Type of connection	M12 connector, 8-pin									
3, 4, 6, A, B, C without inv. signal	6	Signal:	0 V	+V	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	⏚
		Pin:	1	2	3	4	5	6	7	8	PH [1]

Output circuit	Type of connection	M12 connector, 5-pin						
7, 8 without inv. signal	4	Signal:	0 V	+V	A	B	0	⏚
		Pin:	1	2	3	4	5	PH [1]

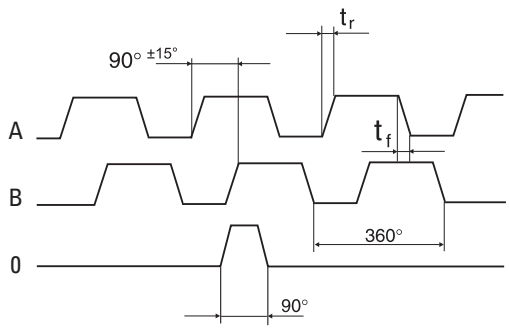
+V: Supply voltage encoder +V DC
0 V: Supply voltage encoder ground GND (0 V)
A, $\overline{A}$: Incremental output channel A
B, $\overline{B}$: Incremental output channel B
0, $\overline{0}$: Reference signal

Output signal formats

All Kübler encoders come standard with six channels where A leads B in the clockwise direction and the standard index is gated with A & B. The tolerance of the wave form affects the control and, in some cases, may affect the smoothness of system operation.

A leads B when the shaft is rotated in the clockwise direction viewing the shaft or collet end. This is the Kübler standard. This format applies to the pin key codes listed below.		
Order code ⓘ		
standard	0 gated with A & B. This is the Kübler standard. 0 is 90° wide.	
P03	0 ungated. 0 is 330° to 360° wide.	

Signal tolerances



t_r = rising edge time
t_f = falling edge time

1) PH = shield is attached to connector housing.

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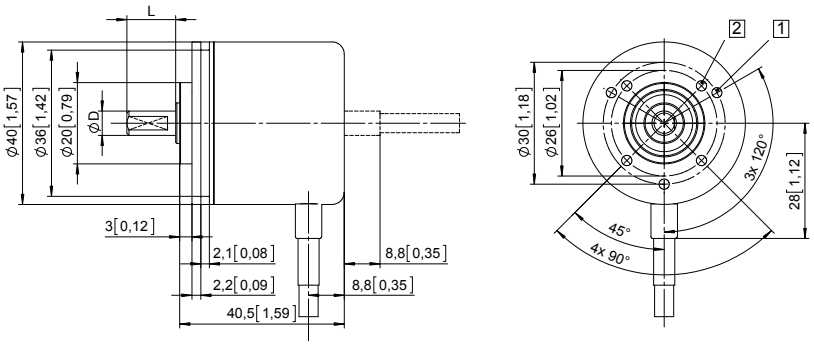
Compact optical | **Sendix Base KIS40 / KIH40 (shaft / hollow shaft)** | **Push-pull / RS422 / Open collector**

Dimensions shaft version

Dimensions in mm [inch]

Clamping-synchro flange, ø 40 [1.57]
Flange type 1

1 3 x M3, 4 [0.16] deep
2 4 x M3, 4 [0.16] deep



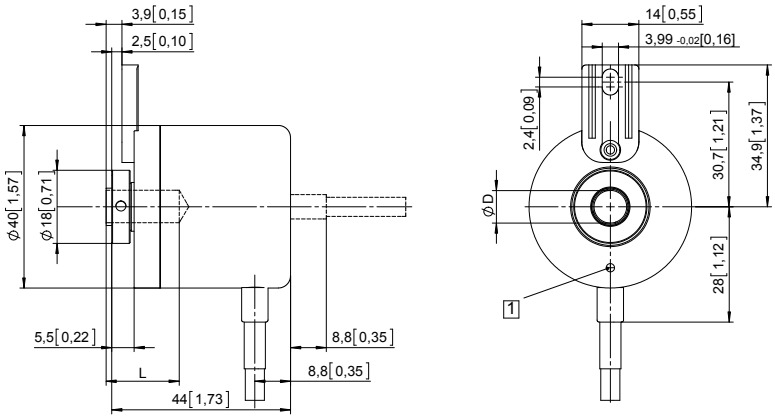
D	Fit	L
6 [0.24]	h7	12.5 [0.49]
1/4"	h7	12.5 [0.49]
8 [0.32]	h7	12.5 [0.49]

Dimensions hollow shaft version

Dimensions in mm [inch]

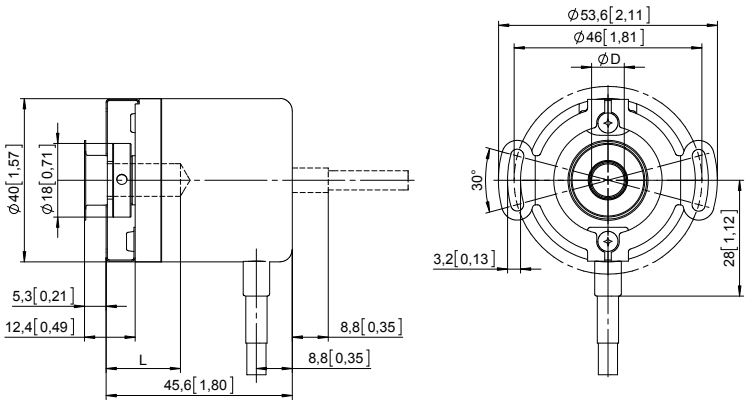
Flange with spring element, long
Flange type 2

1 M2,5, 4 [0.16] deep



D	Fit	L
6 [0.24]	H7	18 [0.71]
8 [0.32]	H7	18 [0.71]
1/4"	H7	18 [0.71]
L = insertion depth max. blind hollow shaft insertion depth min. = 15 mm [0.59]		

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



D	Fit	L
6 [0.24]	H7	18 [0.71]
8 [0.32]	H7	18 [0.71]
1/4"	H7	18 [0.71]
L = insertion depth max. blind hollow shaft insertion depth min. = 15 mm [0.59]		

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