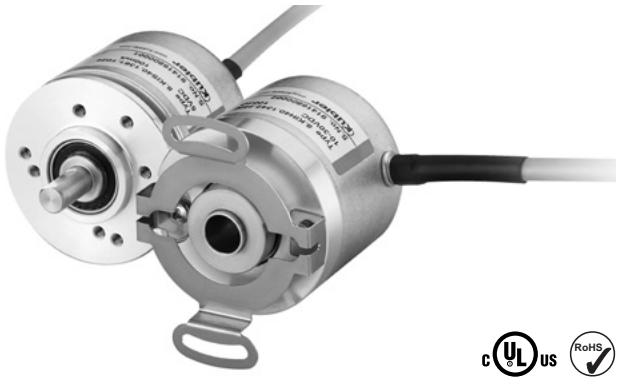
Compact optical | **Sendix Base KIS40 / KIH40 (shaft / hollow shaft)** | **Push-pull / RS422 / Open collector**



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 2500 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 2500 pulses per revolution.
- Power supply 5 V DC or 10 ... 30 V DC.
- Push-pull, RS422 or open collector
- Radial or axial cable.

Order code Shaft version

8.KIS40	.	1	X	X	X	.	XXXX	.	PXX [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 / power supply*
3 = open collector (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 (without inverted signal) / 10 ... 30 V DC
8 = push-pull (without inverted signal) / 10 ... 30 V DC

d *Type of connection*
1 = axial cable, 2 m [6.56'] PVC
2 = radial cable, 2 m [6.56'] PVC

e *Pulse rate*
25, 100, 200, 360, 500, 512, 600, 1000, 1024, 2000, 2048, 2500
(e.g. 500 pulses => 0500)

f *Special signal format*
P03 = see page 62

Stock types

8.KIS40.1342.0360	8.KIS40.1362.0500
8.KIS40.1342.0500	8.KIS40.1362.1024
8.KIS40.1342.1000	8.KIS40.1362.2048
8.KIS40.1342.1024	
8.KIS40.1342.2048	
8.KIS40.1342.2500	

Optional on request
- other pulse rates

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

Incremental encoders

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	.	PXX [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"])*
4 = ø 8 mm [0.32"]
3 = ø 1/4"

c *Output circuit / power supply*
3 = open collector (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 (without inverted signal) / 10 ... 30 V DC
8 = push-pull (without inverted signal) / 10 ... 30 V DC

d *Type of connection*
1 = axial cable, 2 m [6.56'] PVC
2 = radial cable, 2 m [6.56'] PVC

e *Pulse rate*
25, 100, 200, 360, 500, 512, 600, 1000, 1024, 2000, 2048, 2500
(e.g. 500 pulses => 0500)

f *Special signal format*
P03 = see page 62

Stock types

8.KIH40.2442.1024	8.KIH40.5442.0360
8.KIH40.2462.1000	8.KIH40.5442.0500
8.KIH40.2462.1024	8.KIH40.5442.1024
	8.KIH40.5442.2048
	8.KIH40.5442.2500
	8.KIH40.5462.0500
	8.KIH40.5462.2048

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, 8-pin	**05.CMBS 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		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	40 N
	axial	20 N
Weight		ca. 0.17 kg [6.00 oz]
Protection acc. to EN 60529		IP64

Working temperature range		-20°C ... +70° [-4°F ... +158°F]
Materials	shaft	stainless steel
	flange	aluminum
	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 (TTL comp.)	Push-pull [2] (7272 comp.)	Open collector (7273)
Power supply	5 V DC (±5 %)	10 ... 30 V DC	10 ... 30 V DC
Power consumption with inverted signal (no load)	typ. 40 mA max. 90 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 [3]	yes [4]	yes	yes
Reverse polarity protection of the power supply	no	yes	yes
UL approval	file no. E224618		
CE compliant acc. to	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU		

1) Is only necessary when a special output signal format is required.
2) Max. recommended cable length 30 m [98.43'].
3) If power supply correctly applied.
4) 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.

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

Terminal assignment

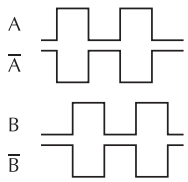
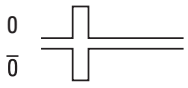
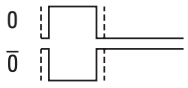
Output circuit	Type of connection	Cable (isolate unused cores individually before initial start-up)								
3, 4, 6 with inv. signal	1, 2	Signal:	0 V	+V	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$
		Core color:	WH	BN	GN	YE	GY	PK	BU	RD

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

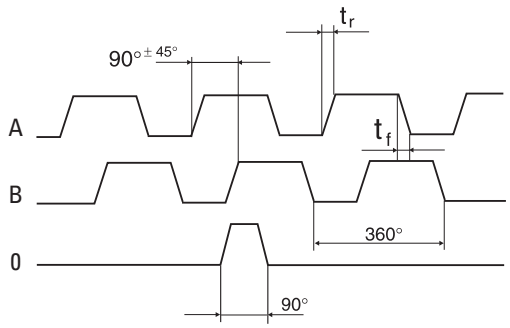
+V: Encoder power supply +V DC
0 V: Encoder power supply ground GND (0 V)
A, $\overline{A}$: Incremental output channel A
B, $\overline{B}$: Incremental output channel B
0, $\overline{0}$: Reference signal

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.	

Wave form tolerances



t_r = rising edge time
t_f = falling edge time

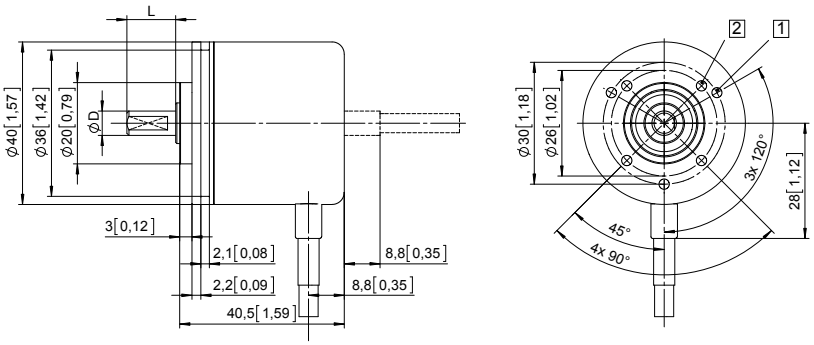
Compact optical | **Sendix Base KIS40 / KIH40 (shaft / hollow shaft)** | **Push-pull / RS422 / Open collector**

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



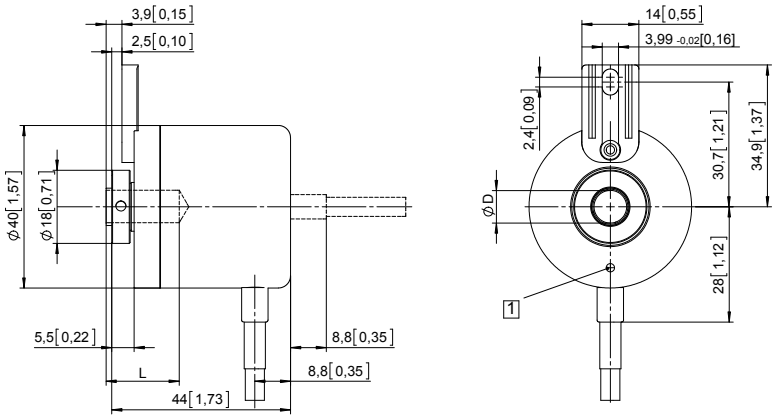
D	Fit	L
6 [0.24]	h7	12.5 [0.49]
1/4"	h7	12.5 [0.49]
8 [0.32]	h7	12.5 [0.49]

Dimensions hollow shaft version

Dimensions in mm [inch]

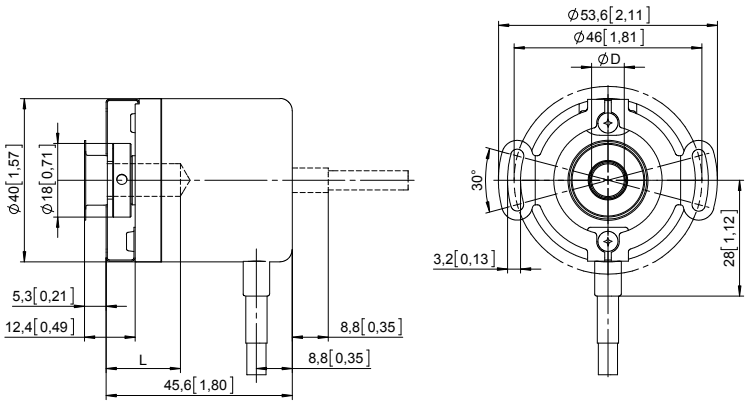
Flange with spring element, long
Flange type 2

1 M2,5, 4 [0.16] deep



D	Fit	L
8 [0.32]	H7	18 [0.71]
1/4"	H7	18 [0.71]
L = insertion depth max. blind hollow shaft		

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



D	Fit	L
8 [0.32]	H7	18 [0.71]
1/4"	H7	18 [0.71]
L = insertion depth max. blind hollow shaft insertion depth min. = 1.5 x D		