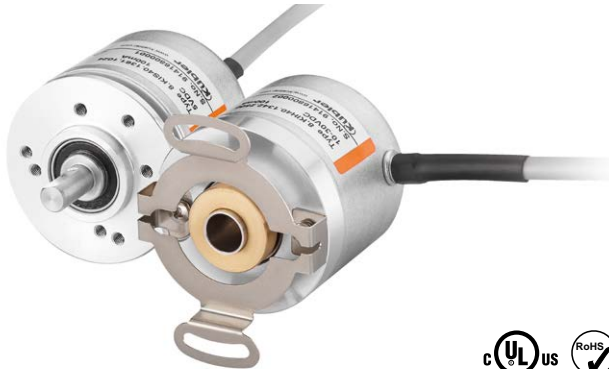


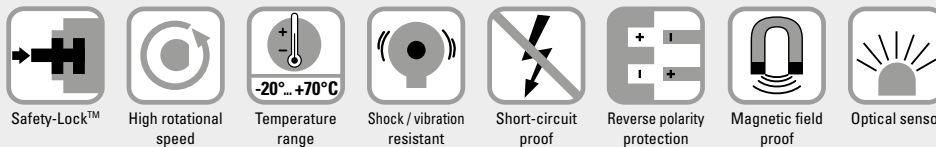
Incremental encoders

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



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	8.KIS40	. 1XXX	. XXXX	. P03¹⁾
Shaft version	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, 100, 120, 150, 200, 250, **360**, 400, **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

Stock types

8.KIS40.1342.0500

8.KIS40.1342.1000

8.KIS40.1342.1024

8.KIS40.1342.2000

8.KIS40.1342.2048

8.KIS40.1342.2500

8.KIS40.1362.0500

8.KIS40.1362.1024

8.KIS40.1362.2048

8.KIS40.1362.2500

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
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Order code	8.KIH40	.XXXX	.XXXX	.P03¹⁾
Hollow shaft	Type	a b c d	e	i
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, 100, 120, 150, 200, 250, 360, 400, 500, 512, 600, 1000, 1024, 1500, 1800, 2000, 2048, 2500, 2560 (e.g. 500 pulses => 0500) i Special signal format P03 = see page 4 Optional on request - other pulse rates Stock types 8.KIH40.2442.1024 8.KIH40.5442.0360 8.KIH40.5442.0500 8.KIH40.5442.1024 8.KIH40.5442.2048 8.KIH40.5462.1024				

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](https://www.kuebler.com/accessories)

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
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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 min. 2.5 V LOW 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 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 °C [-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

Approvals

UL compliant in accordance with	File no. E224618
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

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.

Incremental encoders

Compact optical	Sendix Base KIS40 / KIH40 (shaft / hollow shaft)	Push-pull / RS422 / Open collector
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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	$\bar{A}$	B	$\bar{B}$	0	$\bar{0}$
		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	–

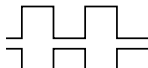
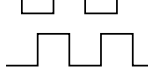
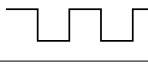
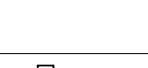
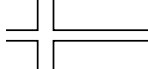
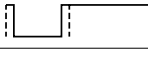
Output circuit	Type of connection	M12 connector, 8-pin									
3, 4, 6, A, B, C with inv. signal	6	Signal:	0 V	+V	A	$\bar{A}$	B	$\bar{B}$	0	$\bar{0}$	$\perp$
		Pin:	1	2	3	4	5	6	7	8	PH ¹⁾

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

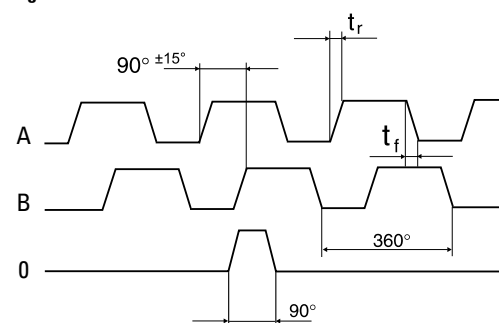
+V: Supply voltage encoder +V DC
 0 V: Supply voltage encoder ground GND (0 V)
 A, $\bar{A}$: Incremental output channel A
 B, $\bar{B}$: Incremental output channel B
 0, $\bar{0}$: Reference signal

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.		A	
		$\bar{A}$	
		B	
		$\bar{B}$	
Order code			
1			
standard	0 gated with A & B. This is the Kübler standard. 0 is 90° wide.	0	
		$\bar{0}$	
P03	0 ungated. 0 is 330° to 360° wide.	0	
		$\bar{0}$	

Signal tolerances



t_r = rising edge time
 t_f = falling edge time

1) PH = shield is attached to connector housing.

Incremental encoders

Compact optical

Sendix Base KIS40 / KIH40 (shaft / hollow shaft)

Push-pull / RS422 / Open collector

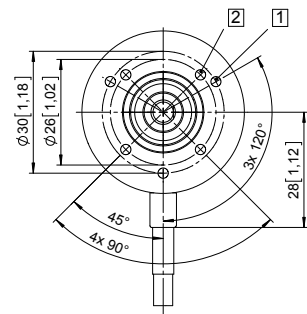
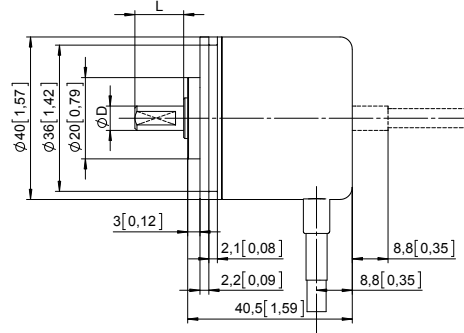
Dimensions shaft version

Dimensions in mm [inch]

Clamping-synchro flange, $\varnothing 40$ [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]

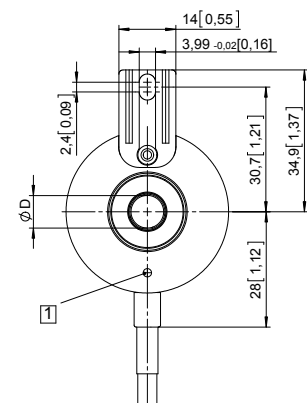
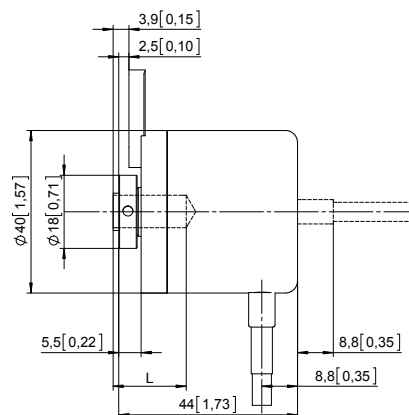
Dimensions hollow shaft version

Dimensions in mm [inch]

Flange with spring element, long

Flange type 2

- 1 M2,5, 4 [0.16] deep

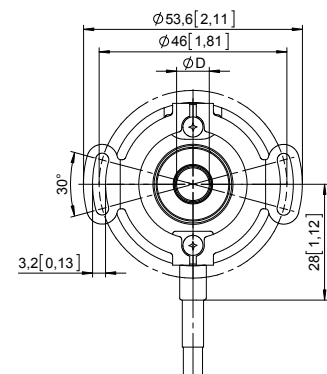
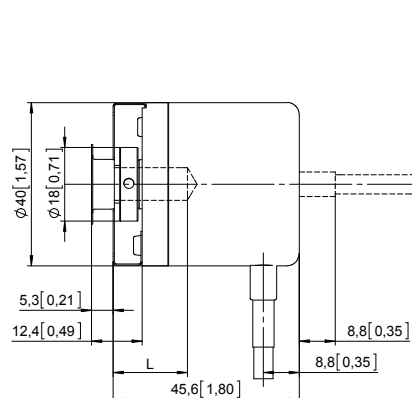


D	Fit	L
6 [0.24]	H7	18 [0.71]
8 [0.32]	H7	18 [0.71]
1/4"	H7	18 [0.71]

L = insertion depth max. blind hollow shaft
insertion depth min. = 15 mm [0.59]

Flange with stator coupling, $\varnothing 46$ [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]