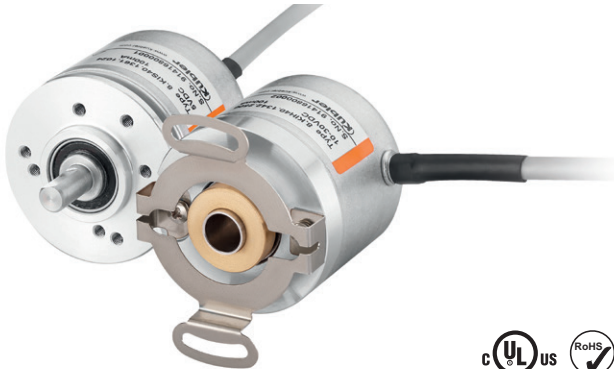


Incremental encoders

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°C ... +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, 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 | . | X | X | X | . | P | X | X | 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 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
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.KIS40.134A.1024.0050 (for cable length 5 m)

e Pulse rate

25, 50, 60, 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.KIS40.1342.0500
8.KIS40.1342.1000
8.KIS40.1342.1024
8.KIS40.1342.2048
8.KIS40.1342.2500
8.KIS40.1362.0500
8.KIS40.1362.1024
8.KIS40.1362.2048

Optional on request
- other pulse rates

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

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| | | |
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|------------------------|---|---|

| | | | | |
|--|----------------|---------------|--------------|--------------------------|
| Order code | 8.KIH40 | .XXXXX | .XXXX | .PXX¹⁾ |
| Hollow shaft | Type | a b c d | e | f |
| <p>a Flange 2 = with spring element, long 5 = with stator coupling, ø 46 mm [1.81"]</p> <p>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"</p> <p>c Output circuit / power supply 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</p> <p>d Type of connection 1 = axial cable, 2 m [6.56'] PVC 2 = radial cable, 2 m [6.56'] PVC 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.1024.0050 (for cable length 5 m)</p> <p>e Pulse rate 25, 50, 60, 100, 200, 360, 500, 512, 600, 1000, 1024, 2000, 2048, 2500 (e.g. 500 pulses => 0500)</p> <p>f Special signal format P03 = see page 62</p> <p>Stock types 8.KIH40.2442.1024 8.KIH40.2462.1000 8.KIH40.2462.1024 8.KIH40.5442.0360 8.KIH40.5442.0500 8.KIH40.5442.1024 8.KIH40.5442.2048 8.KIH40.5442.2500 8.KIH40.5462.0500 8.KIH40.5462.2048</p> <p>Optional on request - other pulse rates</p> | | | | |

| | | |
|--|---|-------------------------|
| 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: kuebler.com/accessories.
Additional connectors can be found in the connection technology section or in the connection technology area of our website at: 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 NPN (7273) |
| Power supply | 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 outputs³⁾ | yes ⁴⁾ | yes | yes |
| Reverse polarity protection of the power supply | no/yes | 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.

Incremental encoders

| | | |
|------------------------|---|---|
| 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 | 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 | Signal: | 0 V | +V | A | – | B | – | 0 | – |
| | | Core color: | WH | BN | GN | – | GY | – | BU | – |

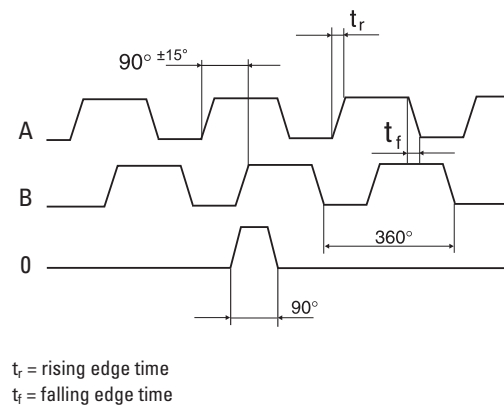
+V: Encoder power supply +V DC
 0 V: Encoder power supply ground GND (0 V)
 A, \bar{A} : Incremental output channel A
 B, \bar{B} : Incremental output channel B
 0, $\bar{0}$: Reference signal

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 | | |
| 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



Incremental encoders

Compact optical

Sendix Base KIS40 / KIH40 (shaft / hollow shaft)

Push-pull / RS422 / Open collector

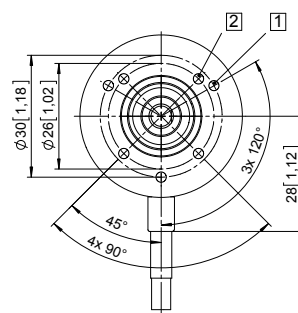
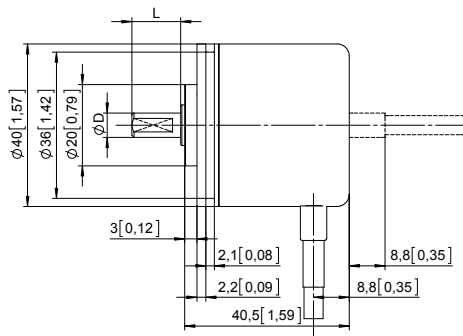
Dimensions shaft version

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] |

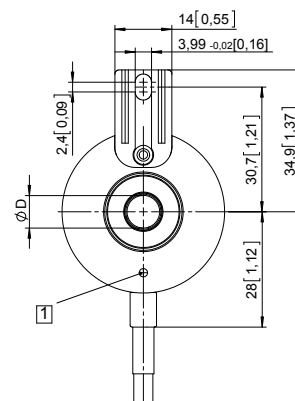
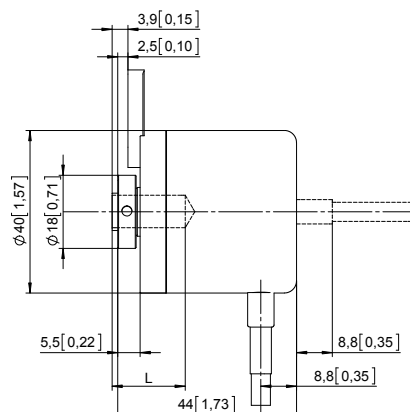
Dimensions hollow shaft version

Dimensions in mm [inch]

Flange with spring element, long

Flange type 2

- 1 M2,5, 4 [0.16] deep

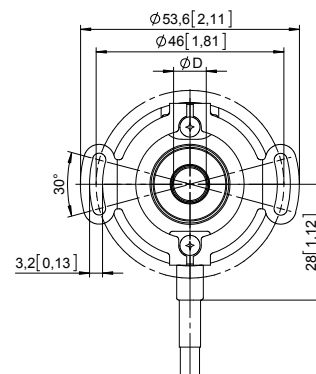
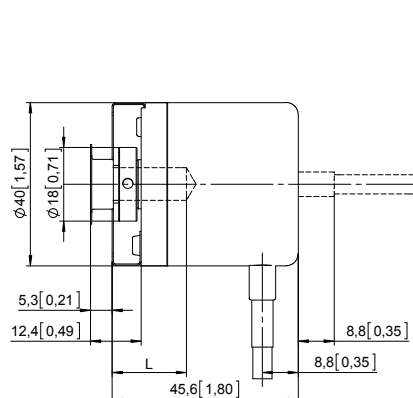


| D | Fit | L |
|----------|-----|-----------|
| 6 [0.24] | H7 | 18 [0.71] |
| 8 [0.32] | H7 | 18 [0.71] |
| 1/4" | H7 | 18 [0.71] |

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]