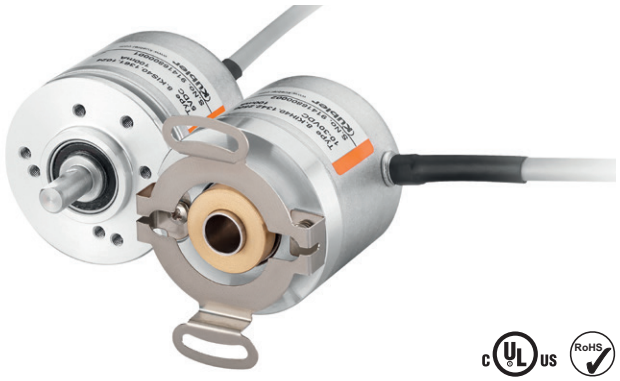
**Compact optical** | **Sendix Base KIS40 / KIH40 (shaft / hollow shaft)** | **Push-pull / RS422 / Open collector**



**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, 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 | . | 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 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

**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.

| 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"])*
2 = ø 6 mm [0.24"]
4 = ø 8 mm [0.32"]
3 = ø 1/4"

**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

**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: 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

| | | **RS422** (TTL comp.) | **Push-pull** [2] (7272 comp.) | **Open collector NPN** (7273) |
|---|---|---|---|---|
| **Output circuit** | | | | |
| **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<br>max. 90 mA / max. 165 mA | typ. 50 mA<br>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 | min. +V - 2.0 V | |
| | LOW | max. 0.5 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 | 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

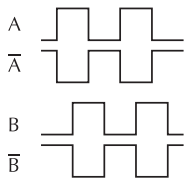
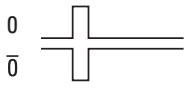
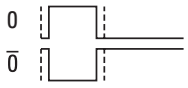
| Output circuit | Type of connection | Cable (isolate unused cores individually before initial start-up) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3, 4, 6, A, B, C with inv. signal | 1, 2 | Signal: | 0 V | +V | A | $\overline{A}$ | B | $\overline{B}$ | 0 | $\overline{0}$ |
| | | 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 | – |

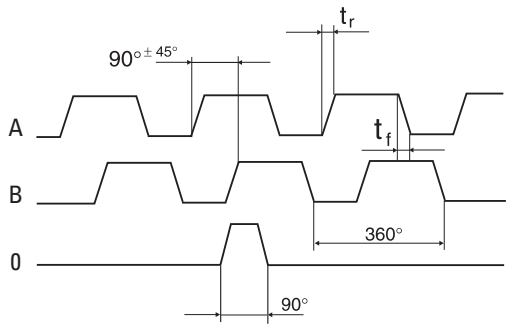
+V: Encoder power supply +V DC
0 V: Encoder power supply ground GND (0 V)
A, $\overline{A}$: Incremental output channel A
B, $\overline{B}$: Incremental output channel B
0, $\overline{0}$: Reference signal

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

**Wave form tolerances**




$t_r$ = rising edge time
$t_f$ = falling edge time

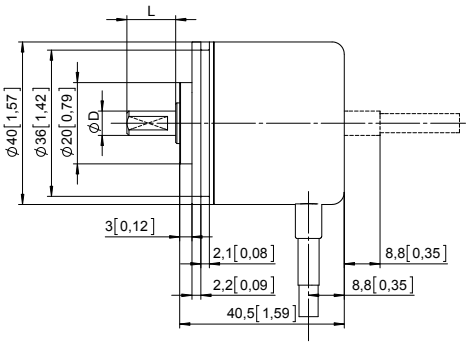
**Compact optical** | **Sendix Base KIS40 / KIH40 (shaft / hollow shaft)** | **Push-pull / RS422 / Open collector**

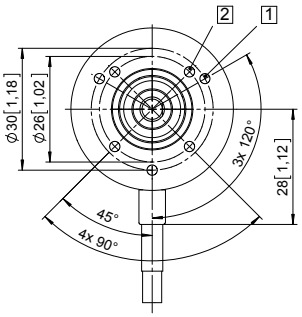
## Dimensions shaft version

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



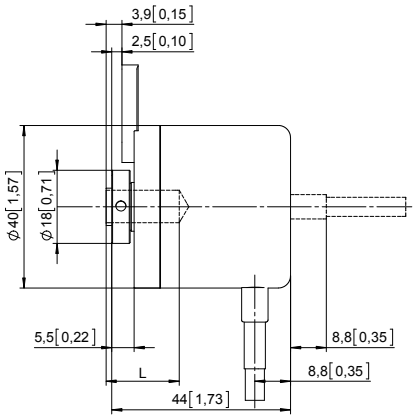

| D | Fit | L |
|---|---|---|
| 6 [0.24] | h7 | 12.5 [0.49] |
| 1/4" | h7 | 12.5 [0.49] |
| 8 [0.32] | h7 | 12.5 [0.49] |

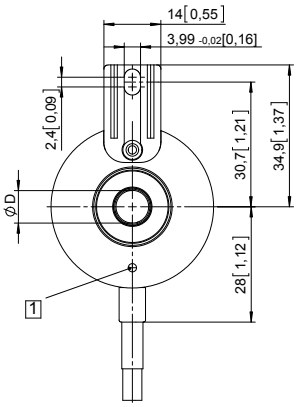
## Dimensions hollow shaft version

Dimensions in mm [inch]

**Flange with spring element, long**
**Flange type 2**

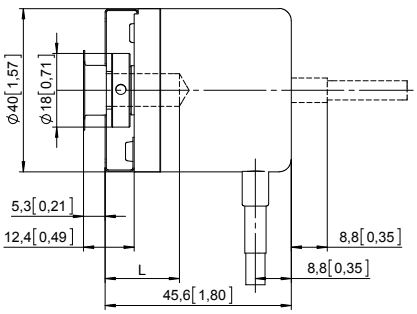
1 M2,5, 4 [0.16] deep

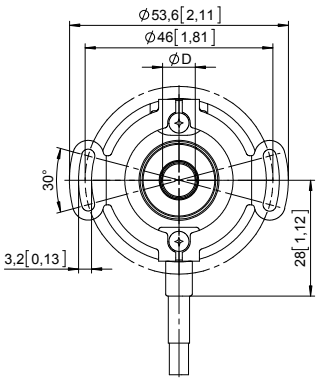



| D | Fit | L |
|---|---|---|
| 6 [0.24] | H7 | 18 [0.71] |
| 8 [0.32] | H7 | 18 [0.71] |
| 1/4" | H7 | 18 [0.71] |
| L = insertion depth max. blind hollow shaft<br>insertion depth min. = 15 mm [0.59] | | |

**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<br>insertion depth min. = 15 mm [0.59] | | |