Incremental encoders

**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.

**Sendix Base KIS40 / KIH40 (shaft / hollow shaft)**

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.

**Order code**

**Shaft version**

<table>
<thead>
<tr>
<th>8.KIS40</th>
<th>.1</th>
<th>XX</th>
<th>XXXX</th>
</tr>
</thead>
</table>

- **Flange**
  - 1 = clamping-synchro flange, ø 40 mm [1.57"]
- **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
- **Output circuit / power supply**
  - 4 = Push-Pull (with inverted signal) / 10 ... 30 V DC
  - 3 = open collector (with inverted signal) / 10 ... 30 V DC
  - 6 = RS422 (with inverted signal) / 5 V DC

**Type of connection**

1 = axial cable, 2 m [6.56"] PVC
2 = radial cable, 2 m [6.56"] PVC

**Pulse rate**

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

**Order code**

**Hollow shaft**

<table>
<thead>
<tr>
<th>8.KIH40</th>
<th>.1</th>
<th>XX</th>
<th>XXXX</th>
</tr>
</thead>
</table>

- **Flange**
  - 2 = with spring element, long
  - 5 = with stator coupling, ø 46 mm [1.81”]
- **Blind hollow shaft**
  - 4 = ø 8 mm [0.32”]
  - 3 = ø 1/4”
- **Output circuit / power supply**
  - 4 = Push-Pull (with inverted signal) / 10 ... 30 V DC
  - 3 = open collector (with inverted signal) / 10 ... 30 V DC
  - 6 = RS422 (with inverted signal) / 5 V DC

**Type of connection**

1 = axial cable, 2 m [6.56"] PVC
2 = radial cable, 2 m [6.56"] PVC

**Pulse rate**

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

**Optional on request**
- other pulse rates

**Stack types**

- 8.KIS40.1342.0360
- 8.KIS40.1362.0500
- 8.KIS40.1342.1000
- 8.KIS40.1362.2048
- 8.KIS40.1342.2048
- 8.KIS40.1342.2500

- 8.KIH40.2442.1024
- 8.KIH40.5442.0360
- 8.KIH40.2462.1000
- 8.KIH40.5442.0500
- 8.KIH40.2462.1024
- 8.KIH40.5442.2048
- 8.KIH40.5442.2500
- 8.KIH40.5462.0500
- 8.KIH40.5462.2048
Incremental encoders

Technical data

<table>
<thead>
<tr>
<th>Mechanical characteristics</th>
<th>Working temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum speed</td>
<td>-20°C ... +70°C [-4°F ... +158°F]</td>
</tr>
<tr>
<td>Mass moment of inertia</td>
<td>approx. 0.2 x 10^-6 kgm²</td>
</tr>
<tr>
<td>Starting torque – at 20°C [68°F]</td>
<td>&lt; 0.05 Nm</td>
</tr>
<tr>
<td>Shaft load capacity</td>
<td>radial 40 N, axial 20 N</td>
</tr>
<tr>
<td>Weight</td>
<td>ca. 0.17 kg [6.00 oz]</td>
</tr>
<tr>
<td>Protection acc. to EN 60529</td>
<td>IP64</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Materials</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>shaft</td>
<td>stainless steel</td>
</tr>
<tr>
<td>flange</td>
<td>aluminium</td>
</tr>
<tr>
<td>housing</td>
<td>aluminium</td>
</tr>
<tr>
<td>cable</td>
<td>PVC</td>
</tr>
</tbody>
</table>

| Shock resistance acc. to EN 60068-2-27 | 1000 m/s², 6 ms |
| Vibration resistance acc. to EN 60068-2-6 | 100 m/s², 55 ... 2000 Hz |

Electrical characteristics

<table>
<thead>
<tr>
<th>Output circuit</th>
<th>Power consumption with inverted signal (no load)</th>
<th>Permissible load / channel</th>
<th>Pulse frequency</th>
<th>Signal level</th>
<th>Rising edge time tₚ</th>
<th>Falling edge time tₚ</th>
<th>Short circuit proof outputs</th>
<th>Reverse polarity protection of the power supply</th>
<th>UL approval</th>
<th>CE compliant acc. to</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS422 (TTL comp.)</td>
<td>typ. 40 mA max. 90 mA</td>
<td>max. +/- 20 mA</td>
<td>max. 250 kHz</td>
<td>HIGH min. 2.5 V</td>
<td>max. 200 ns</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>file 224618</td>
<td>EMC guideline 2004/108/EC RoHS guideline 2011/65/EU</td>
</tr>
<tr>
<td>Push-Pull 1) (7272 comp.)</td>
<td>typ. 50 mA max. 100 mA</td>
<td>max. +/- 20 mA</td>
<td>max. 250 kHz</td>
<td>LOW max. 0.5 V</td>
<td>max. 1 µs</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Open collector (7273)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Power supply</th>
<th>Power consumption with inverted signal</th>
<th>Permissible load / channel</th>
<th>Pulse frequency</th>
<th>Signal level</th>
<th>Rising edge time tₚ</th>
<th>Falling edge time tₚ</th>
<th>Short circuit proof outputs</th>
<th>Reverse polarity protection of the power supply</th>
<th>UL approval</th>
<th>CE compliant acc. to</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 V DC (±5 %)</td>
<td>max. 10 mA max. 30 mA sink at 30 V DC</td>
<td>max. +/- 20 mA</td>
<td>max. 250 kHz</td>
<td>HIGH min. -V - 2.0 V</td>
<td>max. 1 µs</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>file 224618</td>
<td>EMC guideline 2004/108/EC RoHS guideline 2011/65/EU</td>
</tr>
<tr>
<td>10 ... 30 V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>Terminal assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output circuit</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>3, 4, 6 with inv. signal</td>
</tr>
<tr>
<td>Cable colour: WH BN GN YE GY PK BU RD</td>
</tr>
</tbody>
</table>

1) Max. recommended cable length 30 m [98.43'].
2) 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.

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**Incremental encoders**

### Compact optical

#### 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

**Dimensions hollow shaft version**

Dimensions in mm [inch]

**Flange with spring element, long**

**Flange type 2**

**Flange with stator coupling, ø 46 [1.81]**

**Flange type 5**

Shaft: minimum insertion depth 1.5 x D

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**D = ø 6 [0.24]**

ø 1/4”

**D = ø 8 [0.31]**

ø 1/4”

---

D = ø 6 [0.24]

ø 1/4”

---

D = ø 8 [0.31]

ø 1/4”

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