Sendix Magnetic Absolute Encoders

- Compact and Robust
- Long Service and High Reliability
- Great For Outdoor Use, Works with Extreme Temps and Humidity
- High Shock Resistance
- Extremely Good Price/Performance Ratio
The Kübler by TURCK 3650 and 3670 series offer a resolution of 9 bits with available outputs of SSI, 4-20 mA or 0-10 V. There is a suitable measuring range (45°, 90°, 180° or 360°) for every application. The encoders are robust, compact and versatile.

The non-contact magnetic measuring systems are not subject to wear and offer a long service life and high reliability compared to traditional potentiometers. The sturdy die-cast housing and the IP 69K protection rating ensure the encoder remains sealed, even in the harshest environments. Thanks to its wide temperature range of (-40° to +85°C) and an especially high resistance to humidity and condensation, the encoder is ideal for use outdoors - even with large fluctuations in temperature. These features, along with the extremely high resistance to shock (>500 g) and vibration (>30 g), guarantee that the encoders are better able to withstand difficult environmental conditions, thus avoiding machine downtime and the need for repairs.
The compact design, as well as a blind hollow shaft of up to 10 mm, means the encoders can be used where space is restricted and can be mounted on a tight radius - even with large shafts. A green LED for reference point detection streamlines start-up, while a red LED simplifies fault diagnostics during maintenance.

The compact design and attractive price/performance ratio of the new 3650 and 3670 absolute encoders open up many new applications that had traditionally utilized potentiometers.
**Sendix**

**Magnetic Absolute, Singleturn Type T8.3650 Part Number Key**

- **Safety-Lock™**
- **High Rotational Speed**
- **Temperature**
- **High IP**
- **High Shaft Load Capacity**
- **Shock/Vibration Resistance**
- **Short-Circuit Proof**
- **Reverse Polarity Protection**

**Flange**

- 2 = Synchro flange

**Shaft Ø x L**

- 3 = Ø6 mm x 12.5 mm
- 5 = Ø6.35 (1/4") mm x 12.5 mm

**Output Circuit/Power Supply**

- 2 = 5-30 VDC / SSI interface
- 3 = 18-30 VDC / 4-20 mA
- 4 = 20-30 VDC / 0-10 VDC

**Option 1**

- 1 = IP 67
- 2 = IP 69 K

**Option 2**

- 1 = Count direction cw*
- 2 = Count direction ccw*

**Code**

- Use corresponding table

**Connection Type**

- 2 = Radial cable (PUR, 1 meter)

- *cw = Increasing code values when shaft turning clockwise (cw). Top view on shaft.

**Code Type and Division:**

- **SSI Interface**
  - B9 = 9 Bit Binary

- **Current Interface 4-20 mA**
  - 45 = 45° Measurement Range
  - 90 = 90° Measurement Range
  - 18 = 180° Measurement Range
  - 36 = 360° Measurement Range

- **Voltage interface 0-10 V**
  - 45 = 45° Measurement Range
  - 90 = 90° Measurement Range
  - 18 = 180° Measurement Range
  - 36 = 360° Measurement Range

### Measuring Range:

<table>
<thead>
<tr>
<th>Measuring Range:</th>
<th>360°</th>
<th>180°</th>
<th>90°</th>
<th>45°</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal Resolution (Measuring Range):</strong></td>
<td>9 Bit</td>
<td>8 Bit</td>
<td>7 Bit</td>
<td>6 Bit</td>
</tr>
<tr>
<td>Interfaces:</td>
<td>SSI</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4-20 mA</td>
<td>4-20 mA</td>
<td>4-20 mA</td>
<td>4-20 mA</td>
<td></td>
</tr>
<tr>
<td>0-10 V</td>
<td>0-10 V</td>
<td>0-10 V</td>
<td>0-10 V</td>
<td></td>
</tr>
</tbody>
</table>
Magnetic Absolute, Singleturn Type T8.3670 Part Number Key

<table>
<thead>
<tr>
<th>Code Type and Division:</th>
<th>Measuring Range:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SSI Interface</strong></td>
<td><strong>360°</strong></td>
</tr>
<tr>
<td>B9 = 9 Bit Binary</td>
<td>9 Bit</td>
</tr>
<tr>
<td><strong>Current Interface 4-20 mA</strong></td>
<td>512 Steps</td>
</tr>
<tr>
<td>45 = 45° Measurement Range</td>
<td>SSI</td>
</tr>
<tr>
<td>90 = 90° Measurement Range</td>
<td>4-20 mA</td>
</tr>
<tr>
<td>18 = 180° Measurement Range</td>
<td>0-10 V</td>
</tr>
<tr>
<td>36 = 360° Measurement Range</td>
<td>0-10 V</td>
</tr>
</tbody>
</table>

Flange
2 = Flange with long torque stop
5 = Flange with stator coupling

Blind Hollow Shaft
2 = Ø6 mm
3 = Ø6.35 (1/4") mm
4 = Ø8 mm
6 = Ø10 mm

Output Circuit/Power Supply
2 = 5-30 VDC / SSI interface
3 = 18-30 VDC / 4-20 mA
4 = 20-30 VDC / 0-10 VDC

Connection Type
2 = Radial cable (PUR, 1 meter)

*cw = Increasing code values when shaft turning clockwise (cw). Top view on shaft.
Kübler by TURCK
Magnetic Absolute Encoders

Sendix Magnetic Absolute, Singleturn Type T8.3650, T8.3670 Specifications

Mechanical:
- Max. Speed: 6000 min⁻¹
- Starting Torque: < 0.06 Nm
- Weight: Appr. 0.4 lbs
- Protection Acc. to EN 60 529: IP 67 (IP 69k on Request)
- Working Temperature Range: -40°C to +85°C
- Materials: Shaft: Stainless Steel, Flange: Aluminum, Housing: Die Cast Zinc, Cable: PUR
- Shock/Vibration: 5000 m/s², 6 ms per DIN-IEC 68-2-27 / 300 m/s², 10-2000 Hz per DIN-IEC 68-2-6
- Permanent Shock Resistance: 1000 m/s², 2 ms per DIN-IEC 68-2-29
- Vibration (Broad-Band Random): 5-2500 Hz, 100 m/s² - rms per DIN-IEC 68-2-64

3650 Only:
- Radial Load Capacity of Shaft: 40 N
- Axial Load Capacity of Shaft: 20 N

Electrical Characteristics SSI Interface:
- Sensor:
  - Supply Voltage: 5-30 VDC ¹)
  - Current (No Load): <1.0% Typ. 22 mA, Max. 41 mA
  - Reverse Polarity Protection: Yes
  - Measuring Range: 360°
  - Resolution/Code: 9 Bit/Binary
  - Linearity (25°C): <1.0%
  - Repeat Accuracy: <0.2%
  - Data Refresh Rate: Typ. 100 μs
  - Status LED: Green, Reference Point at 2.1°
- SSI Interface:
  - Clock Speed: 100 kHz - 1 MHz
  - Output Driver: RS 485
  - Monoflop Time Typ./Max: 16 μs/20 μs
  - Short-Circuit Proof Outputs: Yes²)
  - Permissible Load/Channel: Typ. 120 Ohm (Corresponding RS 485)

¹) The supply voltage at the encoder input must not be less than 4.75 V (5 V - 5%).
²) Short-circuit to 0 V or to output, with specified supply voltage applied.

Terminal Assignment:

<table>
<thead>
<tr>
<th>Signal</th>
<th>Common</th>
<th>+V</th>
<th>0 V Sens</th>
<th>+V Sens</th>
<th>+Clock</th>
<th>-Clock</th>
<th>+Data</th>
<th>-Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>WH</td>
<td>BN</td>
<td>BU</td>
<td>RD</td>
<td>GN</td>
<td>YE</td>
<td>GY</td>
<td>PK</td>
</tr>
</tbody>
</table>
Industrial Automation

Magnetic Absolute, Singleturn Type T8.3650, T8.3670 Specifications

Electrical Characteristics Current Interface 4-20 mA:

Sensor:
- Supply Voltage: 18-30 VDC
- Current (No Load): Typ. 25 mA, Max. 42 mA
- Reverse Polarity Protection: Yes
- Measuring Range: 45°, 90°, 180°, 360° (See Table Measuring Range)
- Linearity (25°C): <1.0% (360° Measurement Range)
- Repeat Accuracy: <0.2% (360° Measurement Range)
- Status LED:
  - Green: Reference Point at 2.1°
  - Red: Sensor Break Detection, Control Power Supply

4-20 mA Current Loop:
- Output Load: max 500 Ohm at 24 VDC
- Setting Time: <1 ms (R_load= 400 Ohm, 25°C)
- Short-Circuit Proof Outputs: Outputs may be shorted together. Shorting outputs to V+ or 0 V is not permitted.
- Supply voltage and sensor output signal are not galvanically isolated.

Terminal Assignment:

<table>
<thead>
<tr>
<th>Signal</th>
<th>Common</th>
<th>+V</th>
<th>+I</th>
<th>-I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>WH</td>
<td>BN</td>
<td>GN</td>
<td>YE</td>
</tr>
</tbody>
</table>

Example (Output Signal Profile):

For 90° cw Range

For 180° ccw Range
Kübler by TURCK
Magnetic Absolute Encoders

**Magnetic Absolute, Singleturn Type T8.3650, T8.3670 Specifications**

**Electrical Characteristics Voltage Interface 0-10 V:**

Sensor:
- **Supply Voltage**: 20-30 VDC
- **Current (No Load)**: Typ. 27 mA, Max. 47 mA
- **Reverse Polarity Protection**: Yes
- **Measuring Range**: 45°, 90°, 180°, 360° (See Table Measuring Range)
- **Linearity (25°C)**: <1.0% (360° Measurement Range)
- **Repeat Accuracy**: <0.2% (360° Measurement Range)
- **Status LED**: Green: Reference Point at 2.1°

**0-10 V Voltage Output:**
- **Current Output**: Max. 10 mA
- **Setting Time**: <1 ms (R<sub>last</sub> = 1 KOhm, 25°C)
- **Short-Circuit Proof Outputs**: Yes 1)

Supply voltage and sensor output signal are not galvanically isolated.

1) Short-circuit to 0 V or to output, only one channel at a time, with specified supply voltage applied.

### Terminal Assignment:

<table>
<thead>
<tr>
<th>Signal</th>
<th>Common</th>
<th>+V</th>
<th>+I</th>
<th>-I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>WH</td>
<td>BN</td>
<td>GN</td>
<td>YE</td>
</tr>
</tbody>
</table>

### Example (Output Signal Profile):

For 90° cw Range

For 180° ccw Range

### General Characteristics:

Conforms to CE requirements acc. to EN 61000-6-1, EN 61000-6-4, EN 61000-6-3 and EN 61000-4-8 (behavior under magnetic influence.)
Sendix Magnetic Absolute, Singleturn Type T8.3650 Dimensions

Flange Style 2: Synchro Flange
Kübler by TURCK
Magnetic Absolute Encoders

Sendix: Magnetic Absolute, Singleturn Type T8.3670 Dimensions

Flange Style 2: Flange with Long Torque Strap

Flange Style 3: Flange with Stator Coupling
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