PHO5, the new generation of CANopen absolute multi-turn encoders:
- 58mm encoder, extra-flat,
- Ø14mm through shaft version, reduction hubs available,
- Robustness and excellent resistance to shocks / vibrations,
- High protection level IP65,
- High performances in temperature -20°C to 85° (-30°C option),
- Universal power supply from 5 to 30 Vdc,
- High resolutions up to 8192 points per turn (213),
- Turns numerisation up to 65 536 (16 bits).

PHO5_14 connection BCR (M23 radial)

**Material**
- Cover: steel
- Body: aluminium
- Shaft: stainless steel

**Bearings**
- 6 803 serie

**Maximal load**
- Axial: 20 N
- Radial: 50 N

**Shaft inertia**
- ≤ 2.2.10^-4 kg.m²

**Torque**
- ≤ 6.10^-3 N.m

**Permissible max. speed**
- 6 000 min⁻¹

**Continuous max. speed**
- 6 000 min⁻¹

**Shaft seal**
- Viton

**Shock (EN60068-2-27)**
- ≤ 500m.s² (during 6 ms)

**Vibration (EN60068-2-6)**
- ≤ 100m.s² (10 ... 2 000 Hz)

**EMC**
- EN 61000-6-4, EN 61000-6-2

**Isolation**
- 500V (1 min)

**Weight**
- 0.480 kg

**Operating temperature**
- - 20 ... +85 °C (encoder T°)

**Storage temperature**
- - 20 ... +85 °C

**Protection (EN 60529)**
- IP 65

**Torque (ring pressure screw)**
- nominal: 1.5N.m, break: 2.0N.m

**Theoretical mechanical lifetime 10⁶ turns**
- Fradial / F axial

| 10 N | 25 N |
| 20 N | 50 N |
**CANopen**

### ELECTRICAL CHARACTERISTICS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power supply</strong></td>
<td>5 – 30Vdc</td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
<td>&lt; 1 s</td>
</tr>
<tr>
<td><strong>Consumption (without load)</strong></td>
<td>&lt; 50mA (at 24Vdc)</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>±½ LSB (13 bits)</td>
</tr>
</tbody>
</table>

**Programmable parameters**

- **Resolution**: defines the resolution per revolution (0 to 8 192),
- **Global resolution**: total amount of codes for the encoder (2 to 536 870 912),
- **Transmission speed**: programmable from 10kBaud (1000m) to 1 Mbaud (40 m); value per default: 20 Kbaud,
- **Address**: define the software address of the encoder on the bus (1 to 127, value by default: id = 1),
- **Direction**: define the direction of count of the encoder,
- **RAX**: defines the value of its preset position (non turning shaft),
- **CAM**: Low and High Limits.

**Communication modes**

3 modes are available to interrogate the encoder:

- **POLLING mode**: (Response to a RTR message): The position value is only given upon request (SDO mode),
- **CYCLIC mode**: the encoder transmits its position in an asynchronous manner. The frequency of the transmission is defined by the programmable cyclical timer register from 0 to 65 535 ms,
- **SYNCHRO mode**: the encoder transmits its position on a synchronous demand by the master.

### CANOPEN CONNECTION

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8, 9, 11</th>
<th>10</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reserved</td>
<td>CAN LOW</td>
<td>CAN GND</td>
<td>Reserved</td>
<td>Reserved</td>
<td>Reserved</td>
<td>CAN HIGH</td>
<td>Reserved</td>
<td>0V</td>
<td>+ 5/30Vdc</td>
</tr>
</tbody>
</table>

Pinout 3 (CAN GND) and 10 (0V) are connected together (intern the encoder).

Nota : Refer to the bus standards for the maximal derivation length.

**ORDERING CODE** (Special versions upon request, for ex. special flanges/electronics/connections...)

<table>
<thead>
<tr>
<th>Shaft ø</th>
<th>Power supply</th>
<th>Output stages</th>
<th>Code</th>
<th>Resolution</th>
<th>Nb of turns</th>
<th>Connection</th>
<th>Connection orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHO5</td>
<td>14</td>
<td>P</td>
<td>BB</td>
<td>13</td>
<td>B16</td>
<td>BC</td>
<td>R: radial</td>
</tr>
<tr>
<td>14mm</td>
<td>5 to 30Vdc</td>
<td>CANopen</td>
<td>Binary</td>
<td>8192 points per turn (2^13)</td>
<td>65 536 turns (2^16)</td>
<td>M23 12 pinouts clockwise</td>
<td></td>
</tr>
</tbody>
</table>

PHO5 _ 14 // P BB B // 13 B16 // BC R

Made in France