PHM5, the new generation of CANopen absolute multi-turn encoders:
- 58mm encoder, extra-flat,
- Ø 6 & Ø 10 mm solid shaft version,
- Robustness and excellent resistance to shocks/ vibrations,
- High protection level IP65,
- High performance 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).

**PHM5_06 connection BCR (radial M23)**

**PHM5_10 connection BCR (radial M23)**

<table>
<thead>
<tr>
<th>Material</th>
<th>Cover: treated steel</th>
<th>Shock (EN60068-2-27) ≤ 500 m.s² (during 6 ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Body: aluminium</td>
<td>Vibration (EN60068-2-6) ≤ 100 m.s² (10... 2 000 Hz)</td>
</tr>
<tr>
<td>Bearings</td>
<td>Shaft: stainless steel</td>
<td>EMC EN 61000-6-4, EN 61000-6-2</td>
</tr>
<tr>
<td>Maximal load</td>
<td>Axial: 50 N</td>
<td>Isolation 500V (1 min.)</td>
</tr>
<tr>
<td></td>
<td>Radial: 100 N</td>
<td>Weight (connector) 0,520 kg</td>
</tr>
<tr>
<td>Shaft inertia</td>
<td>≤ 1.10⁻³ kg.m²</td>
<td>Operating temperature -20... +85°C (encoderT°)</td>
</tr>
<tr>
<td>Torque</td>
<td>≤ 4.10⁻³ N.m</td>
<td>Storage temperature -20... +85°C</td>
</tr>
<tr>
<td>Permissible max. speed</td>
<td>6 000 min⁻¹</td>
<td>Protection(EN 60529) IP 65 (IP67 with flange option)</td>
</tr>
<tr>
<td>Continuous max. speed</td>
<td>6 000 min⁻¹</td>
<td>Theoretical mechanical lifetime 10⁹ turns (Fraxial / Fradial)</td>
</tr>
</tbody>
</table>

Changes possible without further notice - Version 2.0
**ELECTRICAL CHARACTERISTICS**

- **Power supply**: 5 – 30Vdc
- **Introduction**: < 1 s
- **Consumption (without load)**: < 50mA (at 24Vdc)
- **Accuracy**: ± ½ LSB (13 bits)

**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></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<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...)

- **Shaft**: Ø 10mm, Ø 6mm
- **Power supply**: 5 to 30Vdc
- **Output stages**: CANopen
- **Code**: Binary
- **Resolution**: 8192 points per turn (2^13)
- **Nb of turns**: 65,536 turns (2^16)
- **Connection**: M23 12 pinout clockwise
- **Connection orientation**: radial

Made in France