# Stepper Motors

Two phase, 20 steps per revolution

## Series AM0820

<table>
<thead>
<tr>
<th>Values at 20°C</th>
<th>AM0820</th>
<th>0225</th>
<th>0150</th>
<th>0080</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal current per phase (both phases ON)</td>
<td>0,225</td>
<td>0,15</td>
<td>0,08</td>
<td>A</td>
</tr>
<tr>
<td>Boosted current per phase (both phases ON)</td>
<td>0,45</td>
<td>0,3</td>
<td>0,16</td>
<td>A</td>
</tr>
<tr>
<td>Nominal voltage per phase (both phases ON)</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>V</td>
</tr>
<tr>
<td>Phase resistance</td>
<td>7,3</td>
<td>18</td>
<td>56</td>
<td>Ω</td>
</tr>
<tr>
<td>Phase inductance (1 kHz)</td>
<td>1,4</td>
<td>3,9</td>
<td>12,6</td>
<td>mH</td>
</tr>
<tr>
<td>Holding torque (at nominal current in both phases)</td>
<td>0,65</td>
<td>0,65</td>
<td>0,65</td>
<td>mNm</td>
</tr>
<tr>
<td>Holding torque at boosted current</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>mNm</td>
</tr>
<tr>
<td>Residual torque, typ.</td>
<td>0,13</td>
<td>0,13</td>
<td>0,13</td>
<td>mNm</td>
</tr>
<tr>
<td>Back-EMF amplitude</td>
<td>0,8</td>
<td>1,3</td>
<td>2,4</td>
<td>V/k step/s</td>
</tr>
</tbody>
</table>

- **Electrical time constant**: 0,21 ms
- **Rotor inertia**: 2,75·10⁻⁸ kgm²
- **Step angle (full step)**: 18°
- **Angular accuracy**: ±10%
- **Angular acceleration, max.**: 363·10³ rad/s²
- **Resonance frequency (at no load)**: 76 Hz
- **Thermal resistance**: 4,1 / 65,3 K/W
- **Thermal time constant**: 3,5 / 160 s
- **Operating temperature range**: -30...+70°C
- **Shaft bearings**: sintered bearings (Bearing code: SB) / ball bearings, preloaded (Bearing code: 2R)
- **Shaft load max.:**
  - with shaft diameter
    - radial at 5 000 min⁻¹ (3 mm from bearing): 0,3 N
    - axial at standstill: 0,2 N
    - radial: 0,015 mm
    - axial: 0,14 mm
  - Housing material: aluminium, black anodized
  - Mass: 3,3 g
  - Magnet material: NdFeB

## Driver settings

Relevant for 2 phases ON only.

On PWM drivers or chopper (current mode), the current is set to the nominal value and the supply voltage is typically 2.5 to 5x higher than the nominal voltage.

Curves measured with a load inertia of 6·10⁻⁹ kgm², in half-step mode for the "1x nominal voltage" curve, in 1/4 microstepping mode for the other curves.

Driver settings

For notes on technical data and lifetime performance refer to “Technical Information”.

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Example product designation: AM08202R015001

### Options and connection information

**Front shaft description**

<table>
<thead>
<tr>
<th>Motor executions</th>
<th>Connection No.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>1</td>
<td>Phase A +</td>
</tr>
<tr>
<td>08</td>
<td>2</td>
<td>Phase A -</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>Phase B +</td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td>Phase B -</td>
</tr>
</tbody>
</table>

**Product combination**

**Precision Gearheads / Lead Screws**

- 08/1
- 08/2
- 08/3
- 10/1
- M1.2 x 0.25 x L1
- M1.6 x 0.25 x L1
- M2 x 0.2 x L1
- M3 x 0.5 x L1

**Encoders**

List available on request

**Drive Electronics**

MCST 3601

**Cables / Accessories**

List available on request

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