# DC Brushless Motor
## AM-BL2845A/B Series

2015 edition. Specifications are subject to change without notice.

### BRUSHLESS MOTOR

<table>
<thead>
<tr>
<th>MOTOR MODEL</th>
<th>1215</th>
<th>1210</th>
<th>1813</th>
<th>1810</th>
<th>2412</th>
<th>2409</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOMINAL VOLTAGE (V)</td>
<td>12</td>
<td>12</td>
<td>18</td>
<td>18</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>NO LOAD SPEED (rpm)</td>
<td>14800</td>
<td>10000</td>
<td>12520</td>
<td>9680</td>
<td>11680</td>
<td>9080</td>
</tr>
<tr>
<td>NO LOAD CURRENT (mA)</td>
<td>300</td>
<td>190</td>
<td>170</td>
<td>120</td>
<td>120</td>
<td>85</td>
</tr>
<tr>
<td>MAXIMUM POWER OUTPUT (W)</td>
<td>13374</td>
<td>8455</td>
<td>11222</td>
<td>8282</td>
<td>10401</td>
<td>7593</td>
</tr>
<tr>
<td>MAXIMUM EFFICIENCY (%)</td>
<td>83</td>
<td>81</td>
<td>83</td>
<td>82</td>
<td>82</td>
<td>81</td>
</tr>
<tr>
<td>STARTING CURRENT (mA)</td>
<td>38710</td>
<td>19672</td>
<td>21687</td>
<td>13139</td>
<td>13636</td>
<td>8727</td>
</tr>
<tr>
<td>TORQUE CONSTANT (mN.m/A)</td>
<td>295</td>
<td>221</td>
<td>293</td>
<td>229</td>
<td>263</td>
<td>216</td>
</tr>
<tr>
<td>MAXIMUM ROLLING BEARING LOADS (AXIAL [DYNAMIX]) (N)</td>
<td>3.04</td>
<td>0.086</td>
<td>0.126</td>
<td>0.22</td>
<td>0.27</td>
<td>0.46</td>
</tr>
<tr>
<td>MECHANICAL TIME CONSTANT (ms)</td>
<td>3.3</td>
<td>2.9</td>
<td>2.8</td>
<td>2.7</td>
<td>2.9</td>
<td>2.7</td>
</tr>
<tr>
<td>TORQUE CONSTANT (mN.m/rpm)</td>
<td>7.7</td>
<td>11.3</td>
<td>13.6</td>
<td>17.6</td>
<td>19.4</td>
<td>25.0</td>
</tr>
<tr>
<td>SPEED CONSTANT (rpm/W)</td>
<td>1243</td>
<td>841</td>
<td>701</td>
<td>543</td>
<td>491</td>
<td>382</td>
</tr>
<tr>
<td>SPEED/TORQUE GRADIENT (rpm/mN.m)</td>
<td>50.2</td>
<td>45.2</td>
<td>42.7</td>
<td>42.3</td>
<td>44.4</td>
<td>42.0</td>
</tr>
<tr>
<td>MAXIMUM WINDING TEMPERATURE (°C)</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
</tr>
</tbody>
</table>

### BALL BEARING

<table>
<thead>
<tr>
<th>MOTOR MODEL</th>
<th>1215</th>
<th>1210</th>
<th>1813</th>
<th>1810</th>
<th>2412</th>
<th>2409</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOMINAL VOLTAGE (V)</td>
<td>12</td>
<td>12</td>
<td>18</td>
<td>18</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>NO LOAD SPEED (rpm)</td>
<td>14800</td>
<td>10000</td>
<td>12520</td>
<td>9680</td>
<td>11680</td>
<td>9080</td>
</tr>
<tr>
<td>NO LOAD CURRENT (mA)</td>
<td>300</td>
<td>190</td>
<td>170</td>
<td>120</td>
<td>120</td>
<td>85</td>
</tr>
<tr>
<td>MAXIMUM POWER OUTPUT (W)</td>
<td>13374</td>
<td>8455</td>
<td>11222</td>
<td>8282</td>
<td>10401</td>
<td>7593</td>
</tr>
<tr>
<td>MAXIMUM EFFICIENCY (%)</td>
<td>83</td>
<td>81</td>
<td>83</td>
<td>82</td>
<td>82</td>
<td>81</td>
</tr>
<tr>
<td>STARTING CURRENT (mA)</td>
<td>38710</td>
<td>19672</td>
<td>21687</td>
<td>13139</td>
<td>13636</td>
<td>8727</td>
</tr>
<tr>
<td>TORQUE CONSTANT (mN.m/A)</td>
<td>295</td>
<td>221</td>
<td>293</td>
<td>229</td>
<td>263</td>
<td>216</td>
</tr>
<tr>
<td>MAXIMUM ROLLING BEARING LOADS (AXIAL [DYNAMIX]) (N)</td>
<td>3.04</td>
<td>0.086</td>
<td>0.126</td>
<td>0.22</td>
<td>0.27</td>
<td>0.46</td>
</tr>
<tr>
<td>MECHANICAL TIME CONSTANT (ms)</td>
<td>3.3</td>
<td>2.9</td>
<td>2.8</td>
<td>2.7</td>
<td>2.9</td>
<td>2.7</td>
</tr>
<tr>
<td>TORQUE CONSTANT (mN.m/rpm)</td>
<td>7.7</td>
<td>11.3</td>
<td>13.6</td>
<td>17.6</td>
<td>19.4</td>
<td>25.0</td>
</tr>
<tr>
<td>SPEED CONSTANT (rpm/W)</td>
<td>1243</td>
<td>841</td>
<td>701</td>
<td>543</td>
<td>491</td>
<td>382</td>
</tr>
<tr>
<td>SPEED/TORQUE GRADIENT (rpm/mN.m)</td>
<td>50.2</td>
<td>45.2</td>
<td>42.7</td>
<td>42.3</td>
<td>44.4</td>
<td>42.0</td>
</tr>
<tr>
<td>MAXIMUM WINDING TEMPERATURE (°C)</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
</tr>
</tbody>
</table>

### ADDITIONAL INFORMATION

- **MAXIMUM ROLLING BEARING LOADS**
  - AXIAL (DYNAMIX): 4.0 N
  - PRESS-FIT FORCE: 50N
  - MAXIMUM RADIAL PLAY: ≤0.02mm
  - MAXIMUM WINDING TEMPERATURE: 85°C

- **RADIAL (5MM FROM HEAD FACE)**
  - MAX ALLOWABLE SCREW DEPTH INTO FLANGE: 16.0 N
  - MAX ALLOWABLE SCREW DEPTH INTO FLANGE: 3.0 mm

- **AMBIENT TEMPERATURE RANGE:** -30 to 65°C

### CONNECTION (AWG22#)

- **CABLE 1: WINDING A**
  - L1: 28BP
  - L2: BL16
  - L3: EN16-S
  - L4: EN24-T
  - PLUG DEFINITION: MOLEX: S1021-0500
  - 1 HALL Vcc
  - 2 HALL GND

- **CABLE 2: WINDING B**
  - L1: 32P
  - L2: BL16
  - L3: EN16-S
  - L4: EN24-T

- **CABLE 3: WINDING C**
  - L1: 32P
  - L2: BL16
  - L3: EN16-S
  - L4: EN24-T

### TOTAL LENGTH (GEARBOX AND MOTOR): L = L1 + L2 + L3 + L4

- **L1: 28BP**
  - 28.4 mm

- **L2: BL16**
  - 31.2 mm

- **L3: EN16-S**
  - 45.0 mm

- **L4: EN24-T**
  - 50.7 mm

### REMARKS

Clients can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Motor Data Test at 25°C.

Motor Operation exceeds continuous limits of operating range will compromise the life of the device.