### Electrical Data

<table>
<thead>
<tr>
<th>Data Point</th>
<th>Symbol</th>
<th>SMX B0512N4080</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Voltage</td>
<td>$U_N$</td>
<td>24.0 Volt</td>
</tr>
<tr>
<td>Optimization Direction</td>
<td>-</td>
<td>Bi-Directional</td>
</tr>
<tr>
<td>No Load Speed</td>
<td>$n_0$</td>
<td>13,385 rpm</td>
</tr>
<tr>
<td>Typical No Load Current</td>
<td>$I_0$</td>
<td>340 mA</td>
</tr>
<tr>
<td>Max. Continuous Mechanical Power (@25°C)</td>
<td>$P_{max}$</td>
<td>47.8 W</td>
</tr>
<tr>
<td>Max. Continuous Current</td>
<td>$I_{CS}$</td>
<td>2.56 A</td>
</tr>
<tr>
<td>Max. Continuous Torque</td>
<td>$T_{CS}$</td>
<td>37.9 (5.4) mNm (oz-in)</td>
</tr>
<tr>
<td>Back EMF Constant</td>
<td>$k_E$</td>
<td>1.805 V/1000 rpm</td>
</tr>
<tr>
<td>Torque Constant</td>
<td>$k_T$</td>
<td>15.51 (2.2) mNm/A (oz-in/A)</td>
</tr>
<tr>
<td>Motor Regulation</td>
<td>$R/k^2$</td>
<td>3429</td>
</tr>
<tr>
<td>Peak Torque</td>
<td>$T_{pk}$</td>
<td>445.3 (63.1) mNm (oz-in)</td>
</tr>
<tr>
<td>Motor Constant</td>
<td>$K_m$</td>
<td>17.06 (2.42) mNm/W½ (oz-in/W½)</td>
</tr>
<tr>
<td>Line to Line Resistance</td>
<td>$R_L$</td>
<td>0.825 ohms</td>
</tr>
<tr>
<td>Inductance Phase to Phase</td>
<td>$L$</td>
<td>0.058 mH</td>
</tr>
<tr>
<td>Mechanical Time Constant</td>
<td>$\tau_m$</td>
<td>3.30 ms</td>
</tr>
<tr>
<td>Electrical Time Constant</td>
<td>$\tau_e$</td>
<td>0.070 ms</td>
</tr>
</tbody>
</table>

### General Data

<table>
<thead>
<tr>
<th>Data Point</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gearhead Ratio</td>
<td>5.1</td>
<td>Ratio</td>
</tr>
<tr>
<td>Ambient Working Temperature Range</td>
<td>25° (77)</td>
<td>°C (°F)</td>
</tr>
<tr>
<td>Max Operating Temperature Range</td>
<td>155 (311)</td>
<td>°C (°F)</td>
</tr>
<tr>
<td>Radial Static Force w/o Shaft Support (max)</td>
<td>4.52</td>
<td>lbs</td>
</tr>
<tr>
<td>Axial Static Force w/o Shaft Support (max)</td>
<td>6.33</td>
<td>lbs</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>15.9</td>
<td>°C/W</td>
</tr>
<tr>
<td>Thermal Time Constant</td>
<td>485</td>
<td>s</td>
</tr>
<tr>
<td>Weight</td>
<td>53.8 (1.89)</td>
<td>g (oz)</td>
</tr>
<tr>
<td>Rotor Inertia</td>
<td>3.15 (4.46)</td>
<td>kg-cm² 10⁻⁴ (oz-in-sec² 10⁻⁶)</td>
</tr>
<tr>
<td>Hall Sensor Electrical Phasing</td>
<td>-</td>
<td>60</td>
</tr>
</tbody>
</table>

### Notes:
- Three phase motor with Wye connections
- Hall sensors: supply voltage 4.5 V - 24 V
- Typical housing material 303 SS
- Motor type has been designed and tested to achieve the stated number of autoclave cycles
- Above parameters specified for 25° C ambient temperature
- Typical shaft material 17-4 PH

### Wire Description

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>Phase A</td>
</tr>
<tr>
<td>Brown</td>
<td>Phase B</td>
</tr>
<tr>
<td>Violet</td>
<td>Phase C</td>
</tr>
<tr>
<td>Red</td>
<td>4.5 to 24 Vdc</td>
</tr>
<tr>
<td>Yellow</td>
<td>Hall 1</td>
</tr>
<tr>
<td>Orange</td>
<td>Hall 2</td>
</tr>
<tr>
<td>White</td>
<td>Hall 3</td>
</tr>
<tr>
<td>Black</td>
<td>Supply RTN</td>
</tr>
</tbody>
</table>

### B0512N4080 Output - Efficiency Performance

![B0512N4080 Output - Efficiency Performance Graph]

### B0512N4080 Speed - Current Performance

![B0512N4080 Speed - Current Performance Graph]