IM-13 MOTORS
DC Ceramic Permanent Magnet Motors

power rating: .005 (3.7 W) short stack
         .009 (6.7 W) long stack
voltage: 12 or 24 VDC
weight: 4.4 ounces (short stack) 5.5 ounces (long stack)
inertia: See table, opposite page
electrical time constant: 1.0 millisecond max
mechanical time constant: 30.0 milliseconds max
typical no load torque: 0.5 oz. in.
shaft: Precision-ground and hardened stainless steel.
      Options: lengths, flats, diameters, pinions, gears. Shaft material may change depending upon options selected
magnets: Ceramic. These tolerate high-pulse currents without demagnetizing
bearings:
      Ball: Pre-loaded to withstand high side load and low end play
      Sleeve: Self-aligning sleeve bearings are life-lubricated and withstand a 2-lb. side load and have .002° to .027° axial end play
 cables/leads: 8" min. #22 AWG 2 leads UL style 1180.
       Terminals optional
cover: Steel housing, zinc plate
end bells: Die-cast zinc
winding temperature rise: **See table, opposite page
winding insulation rating: 180°C
options available:
      • Gear train (see Bulletins E2130 and E2135)
      • EMI suppression
      • Terminals

Dimensions

Terminal Configuration

ROTATION (VIEWED FROM SHAFT END)
CCW - POSITIVE VOLTAGE TO (RED), NEGATIVE VOLTAGE TO (BLACK)
CW - REVERSE POLARITY

NOTE: Consult factory prior to preparing spec control prints. Dimensions are for reference only
## E-2100

### Standard Part Numbers and Data

<table>
<thead>
<tr>
<th>Voltage (VDC)</th>
<th>Speed ±10% No Load (rpm)</th>
<th>Current No Load (max amps)</th>
<th>Rated Torque (oz. in.)</th>
<th>Current at Rated Torque (max amps)</th>
<th>Inertia (oz. In. sec² x 10⁴)</th>
<th>Temp ** Rise (°C/ Watt)</th>
<th>Torque Constant (oz. In./ amp)</th>
<th>Resistance (ohms)</th>
<th>Standard Part Number* with Leads</th>
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</thead>
<tbody>
<tr>
<td>Short Stack — Sleeve Bearings</td>
<td>12</td>
<td>5.200</td>
<td>.200</td>
<td>1.50</td>
<td>.80</td>
<td>1.4</td>
<td>15</td>
<td>2.50</td>
<td>7.30</td>
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<tr>
<td></td>
<td>24</td>
<td>5.200</td>
<td>.125</td>
<td>1.50</td>
<td>.40</td>
<td>1.4</td>
<td>15</td>
<td>5.60</td>
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<tr>
<td>Long Stack — Sleeve Bearings</td>
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<td>5.200</td>
<td>.185</td>
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<td>1.30</td>
<td>2.1</td>
<td>11</td>
<td>2.50</td>
<td>4.00</td>
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<td>.65</td>
<td>2.1</td>
<td>11</td>
<td>5.85</td>
<td>15.00</td>
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**Winding temperature rise measured when mounted to 8.00” x 8.00” x .25” aluminum plate. Multiply by 1.4 when mounted to a heat insulator**

### *When You Order*

Units shown above are standard and may be ordered by part number. Remember to include armature winding dash number, EXAMPLE: 405A6102-2

### Typical Motor Performance

<table>
<thead>
<tr>
<th>Part Nos.: 405A6102, 6108</th>
<th>Part Nos.: 405A6103, 6109</th>
</tr>
</thead>
</table>

![Graph 1](image1)

![Graph 2](image2)