200kW Integrated Starter Generator Controller

GE’s 1069000G1 is a Silicon Carbide (SiC) based high efficiency Integrated Starter/Generator Controller (ISGC) specifically designed for the next generation combat vehicles. The ISGC bi-directionally converts 600VDC vehicle power to and from three-phase (3Φ) AC power, produced by a starter/generator PM Synchronous Machine. The design utilizes latest generation of GE’s 1200V SiC MOSFETs packaged in advanced liquid cooled power modules. The ISGC has three Solid State Power Controller (SSPC) channels.

**Features:**
- Input per MIL-PRF-GCS600A
- Maximum Power 200kW@105°C Coolant
- High Power Density (200 W/cu.in; 13 kW/L)
- Programmable switching frequency 20-50 kHz
- Best-in-Class SiC MOSFETs / Modules with Power Overlay
- Low Voltage Control Power +28VDC per MIL-STD-1275
- Digitally controlled torque, speed and DC power
- Two redundant CAN interfaces
- Continuous Built-In-Test (CBIT)
- Automatic Status Reporting
- Three SSPC channels: 350A, 2 x 75A
- High Voltage Interlock (HVIL) on all SSPC channels

**Physical:** (See ICD 1069001)
- Weight: 22.7kg (50 lbs.)
- Dimensions: 305mm x 356mm x 140mm (12” x 14” x 5.5”)
- Connector: Input, Control: MIL-C-38999; Output: ½”
- Mounting: 10-32 bolt Front tie down; Guide Pin Receivers

**Environmental:**
- Operating Temperature: -45°C to +121°C ambient
- Coolant Temperature: -45°C to 105°C; flow 12 l/min 60/40 EGW;
- Temperature Shock: MIL-STD-810E, Method 503.3
- Humidity: MIL-STD-810E, Method 507, Procedure III
- Vibration: MIL-STD-810E Method 514.4, Procedure I for Combined Road March, Tactical & Plume Effects

**Electrical I/O:**

<table>
<thead>
<tr>
<th>J1-A: PHASE A</th>
<th>J1-B: PHASE B</th>
<th>J1-C: PHASE C</th>
<th>J1-D:</th>
</tr>
</thead>
<tbody>
<tr>
<td>J2 A +305VDC</td>
<td>J2 B +305VDC</td>
<td>J2 C -305VDC</td>
<td>J2 D -305VDC</td>
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<tr>
<td>J3 A FAN A +VDC</td>
<td>J3 B FAN A - VDC</td>
<td>J3 C FAN B +VDC</td>
<td>J3 D FAN B -VDC</td>
</tr>
<tr>
<td>J4-A: 28Vdc Control</td>
<td>J4-B: 28Vdc Control Return</td>
<td>J4-C: Output Enable</td>
<td>J4-D: Output Enable Return</td>
</tr>
<tr>
<td>J4-E: HV Bus Reset</td>
<td>J4-F: HV Bus Reset Return</td>
<td>J4-G: HV Enable</td>
<td>J4-K: CANBus Low</td>
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<tr>
<td>J4-J: CANBus High</td>
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<td></td>
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</tbody>
</table>

**Part Number**  | **Input Voltage (V)** | **Output Voltage (V)** | **Output Current (A)** | **Regulation (line, load, temp. (%))** | **Ripple Noise (Vpk-pk %)** | **Output Power (W)** |
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<tbody>
<tr>
<td>1069000G1</td>
<td>475 – 725</td>
<td>610</td>
<td>350</td>
<td>3.0</td>
<td>1</td>
<td>200,000</td>
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