200kW Integrated Starter Generator Controller

GE Aerospace

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 100A
- High Voltage Interlock (HVIL) on all SSPC channels

Physical: *(See ICD 1069001)*

Weight: 23kg (51 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: -45C to 105°C; flow 12 lpm 60/40 EGW
Temperature: MIL-STD-810G, Method 501 & 502, Procedure I
Mobility Shock: MIL-STD-810G, Method 516.6, Procedure I
Gunfire Shock: MIL-STD-810G, Method 519, Procedure I
Vibration: MIL-STD-810G, Method 514, Procedure I for Random on Random 5-1000Hz
Humidity: MIL-STD-810G, Method 507, Procedure II 15 Cycles

Electrical I/O:

J1	J2	J3	J4	J5	
1,2,7: PHASE A	A,C AUX 1	A,C MAIN +ve	Resolver EXC, SIN, COS	28Vdc Control Power	0-10V Valve CNTRL_1
5,6,9: PHASE B	E,G AUX 2	E,G MAIN -ve	Machine Temperature RTD (x12)	CAN BUS1	0-10V Valve CNTRL_2
3,4,8: PHASE C	B,D AUX 1 HVIL	D,F HVIL		CAN BUS 2	24V Valve Power 1
10,11: ACPIL	F,H AUX 2 HVIL			CAN Config	24V Valve Power 2
				Program Enable	

Part Number	Nominal DC Voltage	AC Voltage	Current (Arms)	Regulation (line, load, temp. (%) (DC)	Ripple Noise (V_{pk-pk} %, DC)	Output Power (kW)
1069000G1	565-635	160-550	350	3.0	1	200

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