

SGCU1-300-1

## Starter/Generator Control Unit

The IPS Model SGCU1-300-1 Starter/Generator Control Unit (S/GCU) is an integrated 28 Vdc start converter and generator control unit. Designed to interface with IPS 28 Vdc brushless wound rotor Starter/Generators (S/G) from 300 amps to 600 amps, the start converter controls the S/G (in motor mode) during the start sequence, while the GCU regulates and protects the S/G and the electric power system during generator mode. These systems are capable of replacing brush type starter generators or air turbine starters since they provide a superior torque vs. speed characteristic.

The S/G topology utilizes synchronous operation to provide maximum torque versus current ratio. In Start mode, the S/GCU operates to accelerate the turbine with a programmed torque start profile (torque vs. speed) optimized for the engine. The S/GCU excitation circuit provides a fixed frequency (optimized for the S/G Electro-Magnetic design) and programmable voltage level excitation. The excitation level follows the pre-programmed field profile, thus providing the necessary field weakening. Based on phase current, rotor position information and the embedded space vector modulation processing algorithm, the S/GCU generates the specific gate-drive patterns to 12 MOSFET switches. A resolver mounted in the S/G supplies the rotor position to the S/GCU. Running the defined algorithm ensures continuous synchronous operation over the entire start profile. After a successful start is achieved, the start contactor is opened, the S/G is enabled as a generator, and the S/GCU regulates the generator output.

The start cycle is tailored to the specific engine requirements, reducing engine exhaust gas temperatures, thereby significantly increasing engine life. In addition, the intelligent start profile draws less battery current, thus extending battery life. The IPS brushless S/G system significantly reduces maintenance requirements and lowers life cycle costs.



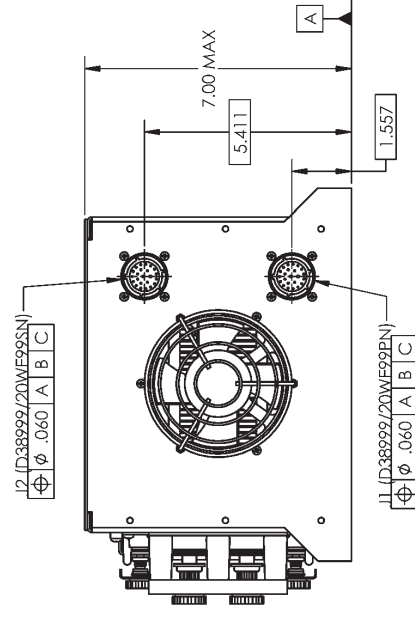
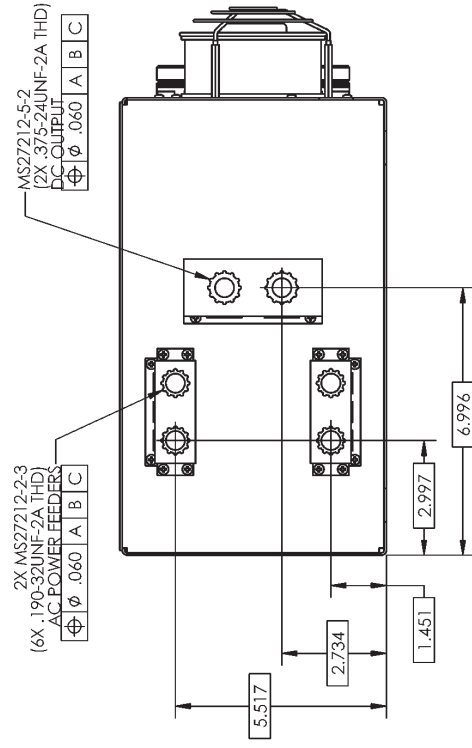
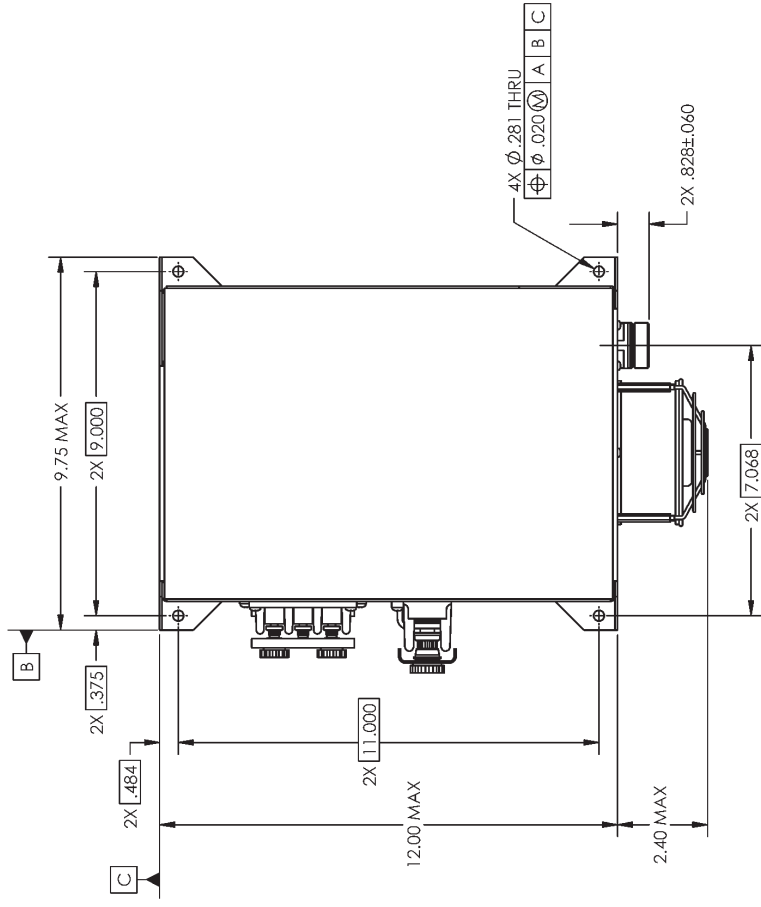
### Specification

Input	24 Vac, 6-phase delta
Output	28 Vdc nominal
Efficiency	>93%
Cooling	Air
Altitude	45,000 ft
Temperature	-40 °C to +71 °C
Weight	18 lbs
Size	10 in x 7 in x 12 in
Protection	OV, UV, OF, UF, OC, FF
BIT	PBIT & CBIT
Power Quality	MIL-STD-704E
EMI	MIL-STD-461D, DO-160D
Environmental	MIL-STD-810D, DO-160D



**The Power To Do More**

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