600E DC-DC Power Converter

(Document Rev A06, 09/01/2015)

High Voltage Balanced 610Vdc Input Nominal Single +28Vdc Output, 3700W Max
Less watts available. Can be paralleled for more power.

Market: Military, Industrial
Application: High Voltage Electric Vehicle

Features

- High Voltage Balanced DC Input.
- CanBus communication available.
- Designed to meet portions of MIL-Std-810F environmental specs.*
- Designed to meet portions of MIL-Std-461F EMI specifications.*
- Ruggedized IP67 rated enclosure.

* Contact AEGIS Power Systems for specific details.

Product Highlights

This extremely robust IP67 rated dc-dc converter has a filtered high voltage 600Vdc input with a single high power output of +28Vdc capable of 3.7KW. This COTS solution works well for Mil-cots and Industrial applications for electric vehicles such as buses, trucks, and other ground or water utility electric vehicles.

Table 1: Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Rating</th>
<th>Unit</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vin max range</td>
<td>475-725</td>
<td>Vdc</td>
<td>+ and - Balanced to Chassis</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-40 to +65</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>Liquid Cooling</td>
<td>2.5</td>
<td>LPM</td>
<td>Nominal Flow</td>
</tr>
<tr>
<td>Output power</td>
<td>3700</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>Input power</td>
<td>4353</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>+28Vdc output</td>
<td>3700</td>
<td>W</td>
<td></td>
</tr>
</tbody>
</table>

AEGIS Power Systems, Inc. specializes in the front end design, development, and manufacture of Rapid Response Custom Switching Power Supplies for defense, industrial, telecomm, aircraft, shipboard, rack mount, electric powered vehicle, and Mil-Cots military power supply applications.

Contact Aegis for specific details on what portions of a particular military standard is offered for this power supply or what can be done for your particular military power supply application.
Specifications: *(25°C, nominal line, 100% load unless otherwise specified).*

**DC Input Voltage:** Balanced 610Vdc line to line per MIL-PRF-GCS600A Utilization Equipment, ±300Vdc with respect to Chassis. 565Vdc-635Vdc Normal. 475Vdc-725Vdc maximum range. 15mSec Normal transient, See Figure 2.

**DC Input Current:** 7.7 Amps Typical @ 565Vdc.

**Input Power:** 4353W Typical.

**Efficiency:** 85% Typical.

**Startup Time:** 700mS Maximum.

**Output Voltage:** +28Vdc, set at factory.

**Output Power:** 3700W Max @ +28Vdc Output.

**Output Current:** 132A Max @ +28Vdc Output.

**Current Sharing:** Power Converters can be connected in parallel for higher current capability.

**Over Voltage Protection:** Output Voltage typical 115%. Recycle input power to reset (1 minute off).

**Temperature Regulation:** ±0.02% per degree C.

**Set Point:** ±2.5%, 0-100% Load.

**Line/Load Regulation:** ±2.5%, 0-100% Load.

**Output Ripple:** 1.5% of Vout Pk-Pk (20Mhz BW).

**Current Limit:** Short Circuit Protected, Auto Restart.

**Temperature:** -40°C to +65°C Operating at base plate with 60°C coolant temp @ 2.5 LPM flow, -40°C to +100°C Non-Operating.

Over Temp Thermal Shutdown 90°C +/-2°C on base plate, automatic recovery.

**Cooling:** Aluminum Liquid Cooled Base Plate, ¼” Threaded Inlet/outlet Fittings with ¼” Aluminum Hose Barb.

**Size:** 7” W, 3.0” H, 16.0” L (18.0” L with Connectors and Fittings.) (See Drawing.)

**Weight:** 19 lb Typical.

**Environmental:** IP67 Metal Enclosure and Connectors.

**Connector:** Input Connector: 8 pin IP67 Mil-C-26482 circular bayonet.

Output Connections: Bolt thru Terminal Lugs with 3/8-16” Threads.

**Shock:** Designed to meet Mil-Std-810F, Method 516.5, Procedure I.

**Vibration:** Designed to meet Mil-Std-810F, Method 514.5, Procedure I.

**Humidity:** 0-95% Non-condensing.

**EMI:** Designed to meet MIL-STD-461F CE102, CS101 Electro-Magnetic Interference.

**Communication Option:** J1939 compatible CanBus, ISO11898, CAN 2.0B, 29 Bit Identifier (125Khz, 250Khz, or 500kHz Can Bus rates available).

Contact Aegis Power Systems with your exact requirements for a Part Number designation.

Specifications subject to change without notice.
Figure 1: Input Wiring Diagram

Connection to Chassis GND made by binding unit to system via mounting holes

<0.1 Ohm bond necessary,

600E Spec Sheet
3 of 6
### Table 2: Connector Information

**Input Connector**: (MIL-C-26482 Series 1)

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Vin POS VDC</td>
</tr>
<tr>
<td>B</td>
<td>Vin POS VDC</td>
</tr>
<tr>
<td>C</td>
<td>Vin NEG VDC</td>
</tr>
<tr>
<td>D</td>
<td>Vin NEG VDC</td>
</tr>
<tr>
<td>E</td>
<td>CANBUS LOW</td>
</tr>
<tr>
<td>F</td>
<td>CANBUS HIGH</td>
</tr>
<tr>
<td>G</td>
<td>IGNITION VOLTAGE IN (+8 to +35VDC)</td>
</tr>
<tr>
<td></td>
<td>(Alternate Power Source for the Canbus)</td>
</tr>
<tr>
<td>H</td>
<td>IGNITION VOLTAGE RETURN</td>
</tr>
</tbody>
</table>

**Output Studs**:  
(IP67 Rated)  
(NexTek Threaded Feed-Thru)

<table>
<thead>
<tr>
<th>Stud</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Positive Output</td>
</tr>
<tr>
<td>Black</td>
<td>Negative Output</td>
</tr>
</tbody>
</table>

![Front View of Power Supply](image)

**Circular Input Connector**  
(MIL-C-26482 Series 1)

**Two 3/8" Stud**  
Output Connector  
(IP67 Rated)

**P/N AB0521001608PN00**  
Customer Mate P/N's  
Connector: AB0561001608SN00  
Cable Clamp: AB050027083300

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(1) **Canbus** is powered internally from the power converter’s output bus.  
If the power converter output is inhibited, the Canbus powers off.  
Canbus power can be maintained with an alternate source connected to Pin G and H.  
Canbus power can also be maintained with the attachment of a battery to the Power converter's output terminals.

(2) **Note**: Pin H is common to Negative Output (Black Output Stud).
600E Power Converter Electrical Information:

Table 3: Electrical Characteristic for 600V System

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steady-State Voltage</td>
<td>565-635V (600V +/- 35V)</td>
</tr>
<tr>
<td>Normal Transients</td>
<td>475-725V for 15ms (See Figure 2)</td>
</tr>
<tr>
<td>Ripple Amplitude</td>
<td>9V</td>
</tr>
</tbody>
</table>

Figure 2: NORMAL TRANSIENTS

![Normal Transients Graph](image-url)