Military Electrical System

Power Conversion Components

Military Grade Battery Equalizers

<table>
<thead>
<tr>
<th>71- Series</th>
<th>81- Series</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Image" /></td>
<td><img src="image2" alt="Image" /></td>
</tr>
</tbody>
</table>

- Rugged and reliable 24V-12V power conversion
- 60A / 80A / 100A Output
- 12V power from 24V electrical system
- Full power up to 95C / De-rates at 55C
- Maintains battery balance / Extends battery life
- Silicone-gelled for extreme environments (IP-68)
- Designed to MIL Standards

Internal Battery Monitoring
J-1939 CAN-Bus Communication

Military Grade DC-DC Converters

NATO Power Converter

<table>
<thead>
<tr>
<th>SP00158</th>
<th>SP00158-GEL</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3" alt="Image" /></td>
<td><img src="image4" alt="Image" /></td>
</tr>
</tbody>
</table>

- 12V-24V (Step Up) 45A / 24V Output
- 24V power from a 12V electrical system
- Full power up to 90C / De-rates at 60C
- Silicone gelled for extreme applications (IP-68)
- Designed to MIL Standards

Special Order Options
- NATO Trailer Lamp Interface PCB (SP00161)
- DC Conv / NATO Trailer Lamp Interface Module (NPM-45)

Experience Power... Experience Vanner.

Military Power Management

12V or 24V - Model-based Battery Monitoring

Continuously Monitors Battery and Broadcasts Information for:

- Battery-State-of-Charge is real-time re-calculation as loads change
- Battery-State-of-Health compares to the model-enabling battery trend analysis
- Over / Under Voltage through the VSS-VT Sensor
- Battery Temperature through the VSS-VT Sensor
- J-1939 CAN-Bus Communication with other on-board systems
- Communication with multiplex and telemetry systems
- User programmable for mission flexibility

Vanner’s Model-based Battery Monitoring is available on the Silent Watch and as a 12V or 24V stand-alone system.

Proactive Electrical System Analysis

Obtain precise real time mission-critical electrical information that enables you to plan for preventive maintenance, save money, and prevent downtime disasters in the field.

Battery
Lead-Acid / AGM / Gel

Temperature Sensor

Current Sensor

Vehicle Electrical System

Mission Critical Accessory Loads (Radios, Electronics, Inverters, etc.)

Engine Start (Optional)

Engine Stop (Optional)
Silent Watch

Engine Off AC/DC Power

Use Silent Watch and an inverter to provide continuous AC power from the battery with the engine off. Constantly monitor battery voltage and state-of-charge with accurate time-to-run data.

Silent Watch alerts the operator to start the vehicle’s engine or allow time to shed non-critical loads if the battery discharges below a predetermined voltage. If the mission allows, the Silent Watch offers an auto-start kit that can be added to the vehicle. This kit features programmable voltage settings to meet various mission requirements.

Silent Watch enables long-term storage of vehicles and maintains the batteries in a ready state-of-charge. Periodic engine starting also improves the vehicle dependability and readiness.

Inverters / AC Power Systems

Contact your Vanner representative for an expert analysis of your AC power needs

Tru-Sinewave®
1600W-3600W
Inverters / Charger

Pure Sinewave
300W-3000W
Inverters

Pure Sinewave
3000W AC | 100A DC
Mobile Power System

Modified Sinewave
1000W AC GSA
Ambulance Inverters
Inverter / Charger

Engine-Off Power for On-Board Electronics and Equipment

Battery
Lead-Acid / AGM / Gel

On/Off Remote
Remote Start

Temperature Sensor
Current Sensor

Vehicle Electrical System

Hood
Parking Brake
Park/Neutral

Safety Switched

DC Loads
DC Loads
DC Loads

Inverter

Distribution Panel

Inverter Control

Distribution Panel

Parking Brake

Hood

Temperature Sensor

Current Sensor

100A
50A
50A
## Vann-Guard Features

<table>
<thead>
<tr>
<th></th>
<th>71-Series</th>
<th>71-CAN Series</th>
<th>81-CAN Series</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available Models (Output Amps)</td>
<td>60, 80, 100</td>
<td>60, 80, 100</td>
<td>60, 80, 100</td>
<td>Wide 12V power range. Stackable for 12V loads greater than 100A</td>
</tr>
<tr>
<td>Internal Fuse Protection</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Will not pass high transient spikes through to vehicle</td>
</tr>
<tr>
<td>Reverse Polarity Protection</td>
<td>-30V</td>
<td>-30V</td>
<td>-30V</td>
<td>Installation safety feature</td>
</tr>
<tr>
<td>Remote Battery Sensing</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>More precise equalization than sensing through battery cables</td>
</tr>
<tr>
<td>Peak Efficiency</td>
<td>97%</td>
<td>97%</td>
<td>97%</td>
<td>Increased time-to-run from batteries</td>
</tr>
<tr>
<td>Integrated Battery Cable Strain Relief</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Eliminates loose connections due to cable movement.</td>
</tr>
<tr>
<td>Integrated Connection Post Separation</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Installation safety feature</td>
</tr>
<tr>
<td>Silicone Gel Potted Design</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Improved vibration and environmental protection (IP-68)</td>
</tr>
<tr>
<td>Ingress Protection Rating (IP)</td>
<td>IP-68</td>
<td>IP-68</td>
<td>IP-68</td>
<td>Ultimate moisture and debris protection</td>
</tr>
<tr>
<td>Dimensional Size</td>
<td>10.5” x 8.5”</td>
<td>10.5” x 8.5”</td>
<td>10.5” x 8.5”</td>
<td>Direct replacement when upgrading from other brand equalizers</td>
</tr>
<tr>
<td>Weight</td>
<td>11.7 lbs.</td>
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<td>11.7 lbs.</td>
<td>Lighter weight than competitive brands</td>
</tr>
<tr>
<td>Operating Temperature (High Temp. Derate @ +55°C)</td>
<td>-40°C to +95°C</td>
<td>-40°C to +95°C</td>
<td>-40°C to +95°C</td>
<td>Higher temperature rating for desert environments</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-54°C to +105°C</td>
<td>-54°C to +105°C</td>
<td>-54°C to +105°C</td>
<td>Communicates with J-1939 multiplex and telemetry systems</td>
</tr>
<tr>
<td>J-1939 CANBUS Communication</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Precise voltage monitoring</td>
</tr>
<tr>
<td>Integrated System Voltage Monitoring</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Waterproof and rugged connector</td>
</tr>
<tr>
<td>Integrated Deutsche Connector</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>On-vehicle and mission specific programming</td>
</tr>
<tr>
<td>Integrated Battery Monitoring</td>
<td>No</td>
<td>Yes (EM-70)</td>
<td>Yes (M1200)</td>
<td>COTS - Meet and exceed MIL performance requirements.</td>
</tr>
<tr>
<td>Integrated Electrical System Analysis</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Every unit is thoroughly tested through the full power range</td>
</tr>
<tr>
<td>SAE Standards - J1455, J-1113 (11/21/41)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Robust aluminum housing</td>
</tr>
<tr>
<td>MIL Standards - MIL202F</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>High-Temperature Rating</td>
</tr>
<tr>
<td>100% Endurance Tested</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>IP-68 Environmental Rating</td>
</tr>
<tr>
<td>71-Series (Form and Function plus...</td>
<td>J-1939 Communication, EM70 Battery Monitoring for...</td>
<td>Electrical System Analysis, Battery State-of-Health, Battery State-of-Charge</td>
<td>81-CAN Series (Form and Function plus...</td>
<td>Bad Connection Alert, System Voltage Fault, Equalizer Fault</td>
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### EQUALIZER SPECIAL FEATURES

- **Robust aluminum housing**
- **High-Temperature Rating**
- **IP-68 Environmental Rating**
- **J-1939 Communication**
- **EM70 Battery Monitoring for...**
- **Battery Overvoltage**
- **Battery Undervoltage**
- **Battery Imbalance**
- **Equalizer Fault**
- **Electrical System Analysis**
- **Battery State-of-Health**
- **Battery State-of-Charge**
- **Bad Connection Alert**
- **System Voltage Fault**
- **Equalizer Fault**
- **Continuously analyzes and broadcasts electrical system status**
- **Model-based technology. More precise than just voltage and temperature monitoring.**
- **Monitors other electrical system components and sends error codes to allow maintenance before field failures occur.**