



iPS6000

HERCULES SERIES

KEY FEATURES

-  One primary output (factory configurable 28 V or 48 V)
-  High efficiencies of up to 95%, load dependent
-  Software and hardware alerts to system controller
-  Overcurrent and short circuit
-  Onboard battery charging
-  Real-time data monitoring for all voltages, currents, and temperatures
-  Visual status indication for DC output provided through RGB LED

DATASHEET

Fly Higher. Fly Longer. Fly Smarter.

Uncrewed aerial vehicle (UAV) electronics have evolved to meet more demanding and varied mission requirements. More intelligent power management improves efficiency, expands mission options, reduces size/weight, and lowers total costs. The intelligent and integrated power electronics in the sophisticated Hercules iPS6000 meets the most stringent demands and UAV design requirements.

Intelligent Power System

ePropelled intelligent power systems (iPS) provide a comprehensive power management solution for aviation by converting 3-phase sinusoidal AC from a starter generator into tightly regulated DC for onboard avionics, servos, and various other payloads. Designed to handle varying input voltages, the Hercules iPS6000 uses active rectification and switching regulation to ensure a steady DC output. It continuously monitors input and output voltages, as well as current levels, and reports this data via a CAN interface. Custom applications and alert thresholds can be configured through an open API. The system also supplies onshore DC power for functions including EES, output power, and battery charging.

Additionally, the iPS6000 features an optional electronic engine starter (EES) that aids in driving the starter generator during engine start-up, switching to regulated voltage once the engine reaches operational speed. If the starter generator fails, an onboard battery (if installed) provides temporary power based on its size, ensuring reliable operation and system integrity.



Battery Features

- Onboard battery can provide power to outputs if 3-phase generator power is lost
- Onboard battery is charged when the unit is connected to 3-phase power

Temperatures Monitored and Logged

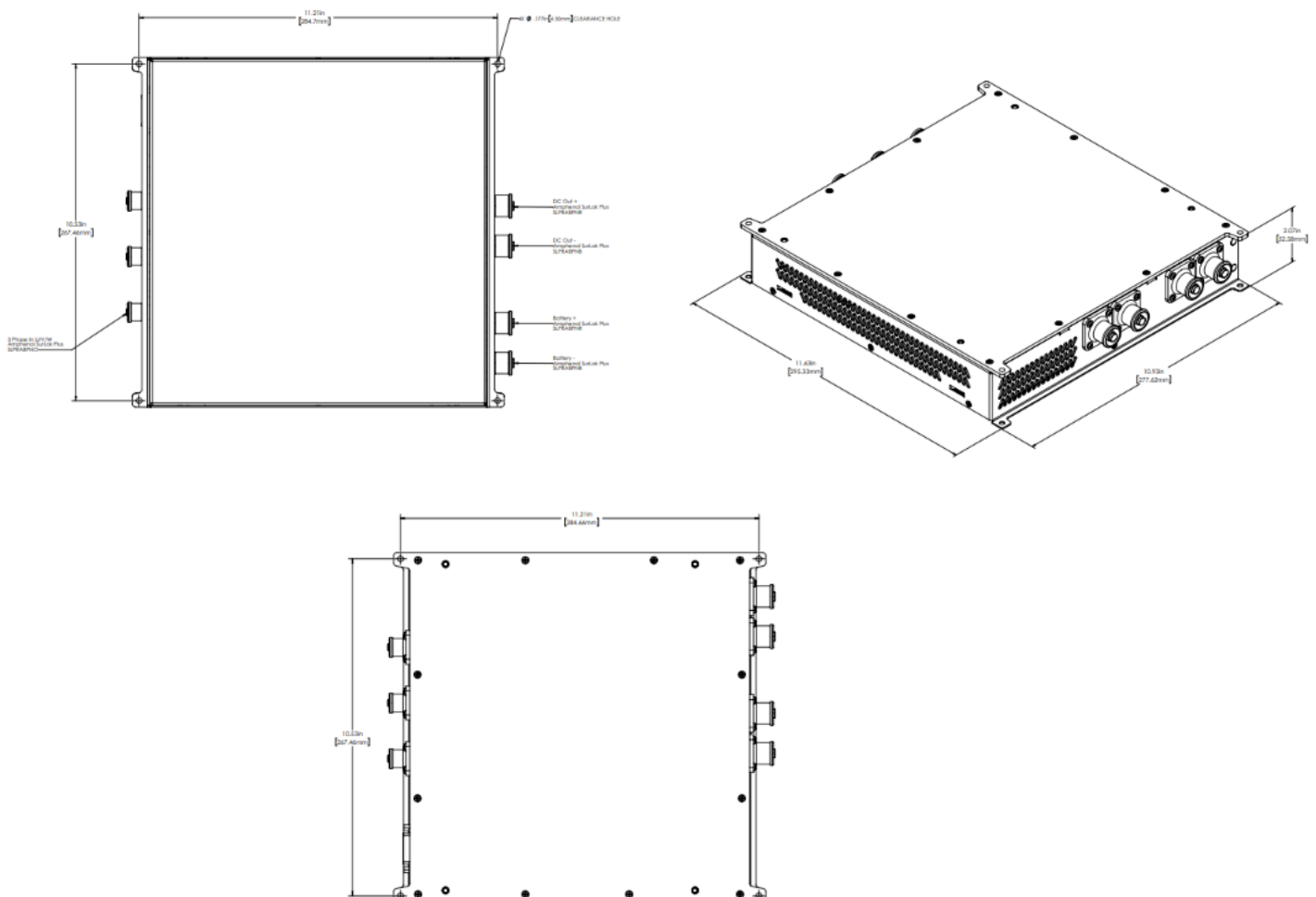
- Synchronous rectifier FETs
- DC converter FETs
- Output or Input FETs

User-Configurable Parameters

- Conductor compensation voltage boost
- Alert and threshold settings
- RTDM settings
- CAN bus settings

Mounting Instructions

The figure below depicts the overall dimensions of the iPS chassis. Four holes are used for mounting the unit. Please note that weight and other details are provided in the technical specification table.



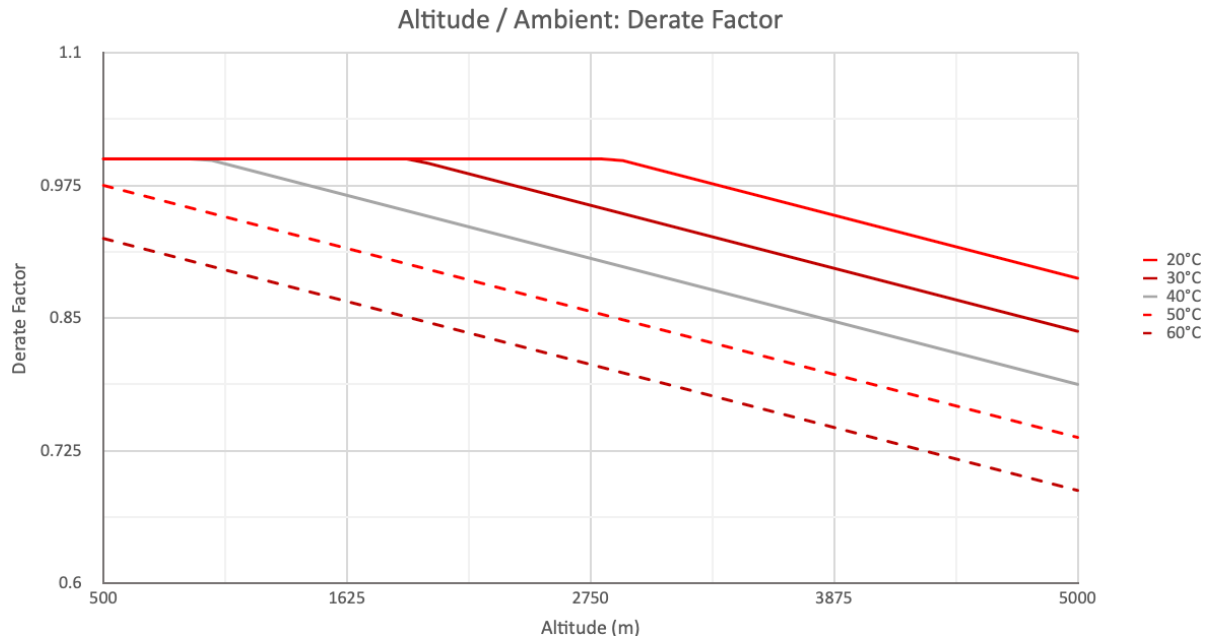
| iPS6000 SPECIFICATIONS | | | | | |
|--|---|------|------------------------------------|------|---|
| Parameter | INPUT | | | | |
| | iPS6000-28V | | iPS6000-48V | | Notes |
| | Min | Max | Min | Max | |
| Input voltage range | 25 V @ no load 50 V @ full load | 95 V | 25 V @ no load 50 V @ full load | 95 V | Volts RMS No load for system checks only |
| Onboard battery input | 24 V | 28 V | 44 V | 48 V | DC |
| Maximum total input power | 6,300 W | | | | At 40°C ambient [104°F] |
| Parameter | OUTPUT | | | | |
| | Value | | | | Notes |
| Maximum total output power (continuous) | 6,000 W | | | | DC at 40°C ambient [104°F] |
| Primary output voltage | 28 V | | 48 V | | DC (216 A, 126 A) factory set |
| Voltage regulation | ±500 mV | | | | Both 28 V / 48 V versions |
| Voltage ripple P-P | <500 mV | | | | Both 28 V / 48 V versions |
| Peak efficiency | ≥95% | | | | Load dependent |
| Onboard battery charge voltage (iPS6000-28V) | 29.4 V | | - | | Battery type: 8S LiFePo4 or 7S LiPo |
| Onboard battery charge voltage (iPS6000-48V) | - | | 50.4V | | Battery type: 14S LiFePo4 or 12S LiPo |
| Onboard battery charges current | 3.33 A | | | | Max |
| Protection features | Input undervoltage and overvoltage warning Output undervoltage and overvoltage warning *Output short circuit protection Output overcurrent warning and protection Over temperature warning | | | | |
| Parameter | MECHANICAL | | | | |
| | Notes | | | | |
| Dimensions | 295.3 mm x 277.6 mm x 52.6 mm | | | | |
| Weight | 2,800 grams | | | | |
| Cooling | Required for operation at 6000 W: 10 m/s airflow perpendicular to the plane of the top cover and through the vents perpendicular to the direction of the connectors | | | | |
| Ambient operating temperature | -32°C to 40°C at 6,000 W [-26°F to 104°F] | | | | |
| Storage temperature | -40°C to 85°C [-40°F to 185°F] | | | | |
| Ingress protection | IP20 | | | | |

⚠ ***WARNING:** When operating without an onboard battery, the unit has output short circuit protection. However, if a battery or a power supply is connected to the onboard battery terminals, the short circuit protection will force the unit into a switchover state when the output is shorted. This will cause damage to the circuit that is responsible for handling the switchover and it will void the warranty.

⚠ ***WARNING:** The onboard battery must be fused with a 250 A fast blow in-line fuse. Failure to add the specified in-line fuse will result in damage to the unit and void the warranty.

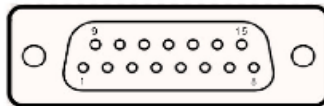
Derating with Increased Altitude

The derating factor for altitude is based on the loss of dielectric strength of the air as the density decrease with the altitude. The diagram below shows how the cooling efficiency changes with high altitude and ambient temperatures.



| iPS6000 PINOUT | |
|---|---|
| Name | Description |
| Power (SurLok Plus 5.7 mm Receptacles) | |
| AC U | U phase output connection for SG |
| AC V | V phase output connection for SG |
| AC W | W phase output connection for SG |
| Battery + (8.00 mm receptacles) | Positive input connection for onboard battery |
| Battery - (8.00 mm receptacles) | Negative input connection for onboard battery |
| DC out + (8.00 mm receptacles) | Positive output connection for DC load |
| DC out - (8.00 mm receptacles) | Negative output connection for DC load |
| Thermocouple (Type-K Mini Connector) | |
| TC+ | Positive type-K thermocouple input |
| TC- | *Negative type-K thermocouple input |
| Communications (Female DB-15) | |
| 1-5 | Not to be used by customer |
| 6 | Ground |
| 7 | CAN high |
| 8-13 | Not to be used by customer |
| 14 | CAN low |
| 15 | Not to be used by customer |

*Note: Function is currently not implemented



Recommended Applications

- Aircraft power systems
- Unmanned vehicle power systems
- Power conditioning
- Stand-alone power systems (SAPS) for remote area power supply
- Voltage regulation in the renewable power generation system



Note: All specifications are subject to change without notice. For more information, including ordering products, please contact us at info@epropelled.com | Phone: +1 (603) 236 7444