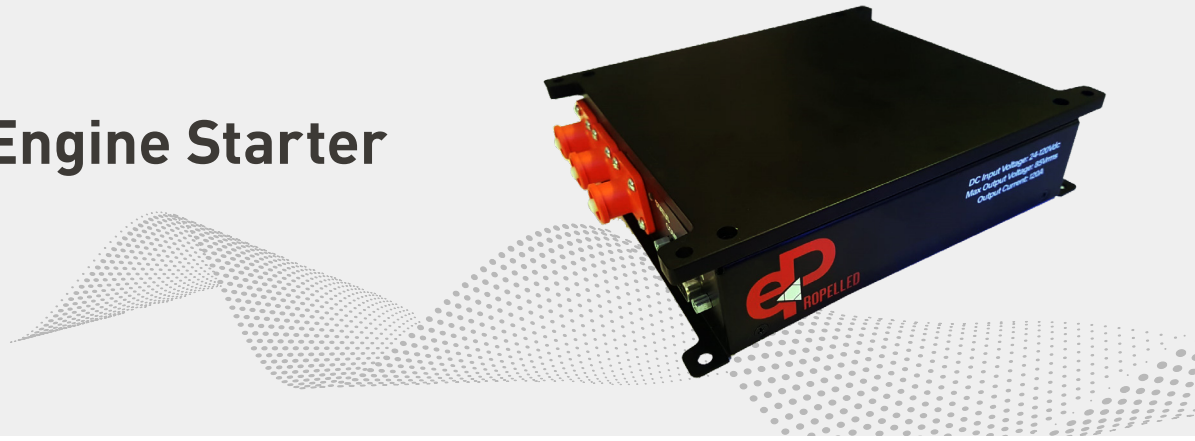


Electronic Engine Starter EES3000



Key Features



Input and output undervoltage warning and pending shutdown' warning



Input and output short circuit protection



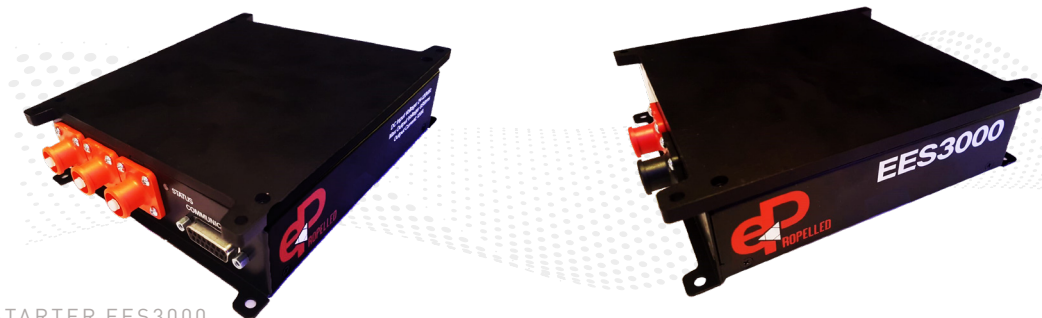
Over temperature warning and pending shutdown' warning

Fly Higher. Fly Longer. Fly Smarter.

Unmanned aerial vehicle (UAV) electronics continue to evolve as mission profiles become more demanding. System power designers are being challenged to provide more innovative power supply systems to improve efficiency, ensure reliability, reduce weight, minimize heat dissipation, and lower overall cost. New levels of energy and system-level efficiencies are also required to meet tomorrow's aviation needs.

ePropelled electronic engine starter (EES) module powers the starter generator during the engine start sequence and can be triggered digitally via the controller area network (CAN) interface or physically, through the pins on the interface connector. The EES module is intended to be sold with ePropelled starter generator SG3000 and the intelligent power system (iPS) module.

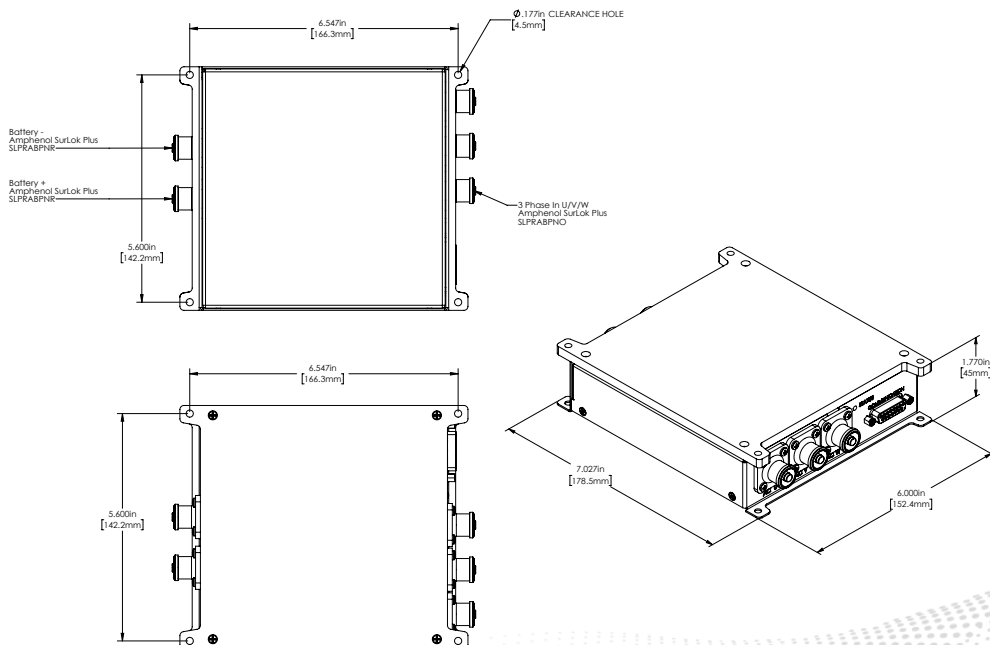
The iPS provides steady regulated DC power for onboard avionics, servo, and payload requirements. The smart iPS and EES also provide a wide array of real-time performance and operational data for a range of useful applications and analytics. The EES3000 monitors input and output voltage as well as current levels and collects and reports the data via the CAN interface. Aircraft and power system designers can create custom applications via our open application programming interface (API) and thresholds can be set for alerts and alarms based on specific uses and mission profiles.



EES3000 SPECIFICATIONS

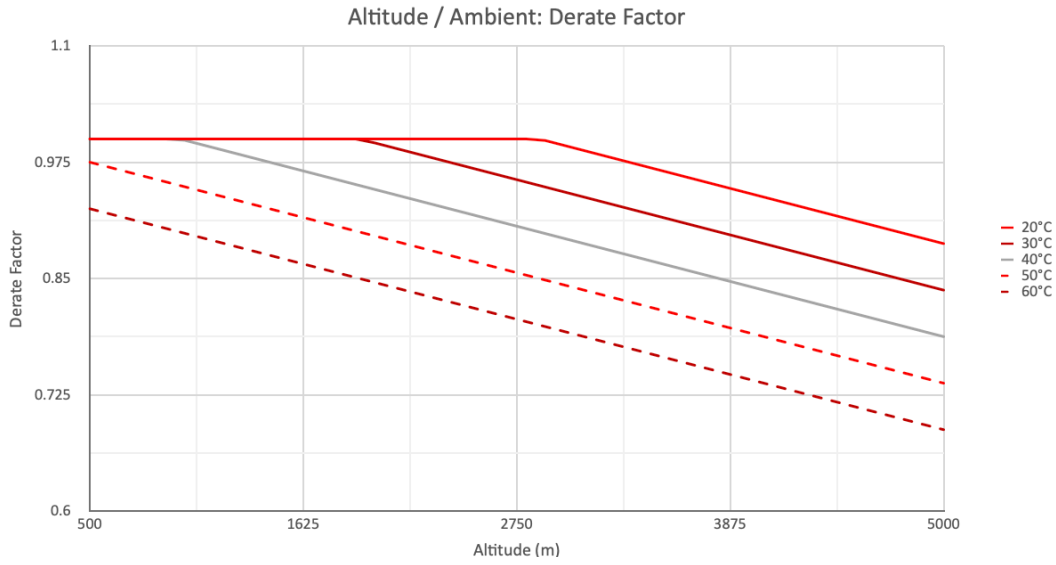
Parameter	INPUT		
	Min	Max	Notes
Input voltage range*	24 V	58 V	DC [28 V default] [See note below]
Input current range	0 A	55 A	
Maximum total input power	3,190 W		At 50°C ambient [122°F]
Start duration	1 s	10 s	
Start trigger	2.3 V	5 V	Applied to "start, input" or via CAN trigger message
Parameter	OUTPUT		
	Min	Max	Notes
Output voltage range	0	0.82 * Vin	Line-line voltage RMS
Output current range	0	125 A	Peak/phase
Maximum total output power (continuous)	3,000 W		At 50°C ambient [122°F]
Max RPM at 24 V	2,205 RPM		With SG3000
Max RPM at 58 V	5,325 RPM		With SG3000
Parameter	MECHANICAL		
	Notes		
Dimensions	7.0" x 6.0" x 1.8" [178.5 x 152.4 x 45 mm]		
Weight	2.09 pounds [950 grams]		
Cooling	Natural convection [0.1 m/s airflow]		
Ambient operating temperature	-32°C to 50°C at 3,000 W [-26°F to 122°F]		
Storage temperature	-40°C to 85°C [-40°F to 185°F]		
Ingress protection	IP20		

*Note: Depending on the characteristics of the engine, the effective engine starter voltage range may be in a narrower range than specified. This value is only provided as an indication of the range possible and will be dependent on the specific internal combustion engine (ICE) the customer has specified.

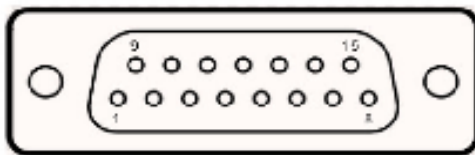


Derating with Increased Altitude

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.



EES3000 PINOUT		
Connector Type	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+	Positive input connection for starter battery
	Battery-	Negative input connection for starter battery
Communications (female DB-15)	1	TMS (used only for firmware upgrade)
	2	TCK (used only for firmware upgrade)
	3-5	Not to be used by customer
	6	Ground
	7	CAN high
	8-11	Not to be used by customer
	12	Start, input
	13	Start, enable (+3.3 V)
	14	CAN low
	15	Not to be used by customer



Assembled in USA

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