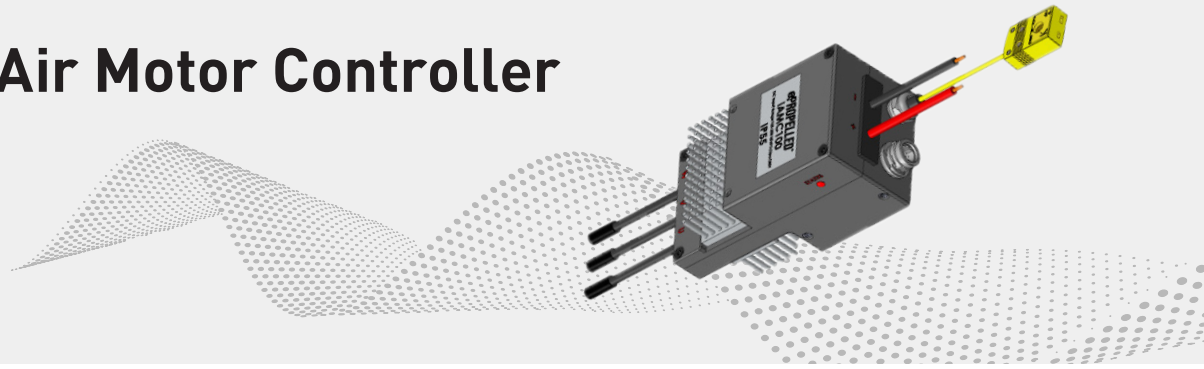


# Intelligent Air Motor Controller

## iAMC100



### Key Features



Superior quality insulation provides long life and high reliability of windings



Designed to be lightweight with outstanding power density



Built for industrial-strength, longevity, and safety



100% tested with individual performance reports



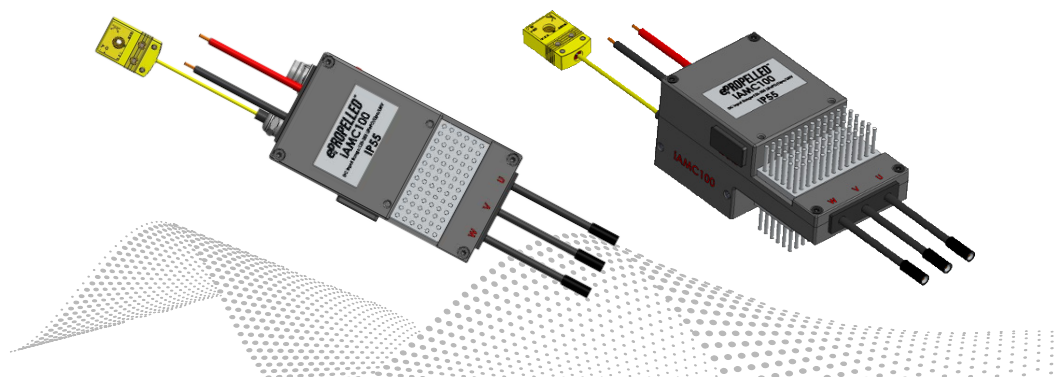
Self-cooling by design

### 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.

### Intelligent Air Motor Controllers

ePropelled intelligent air motor controllers (iAMC), or electronic speed controllers (ESC), are built to work alongside our lightweight propulsion motors. Together, they create a high-performance, high-efficiency propulsion system for your aircraft. Our iAMCs transform DC input voltage into a 3-phase AC output voltage and act as the brain of the electric motor. iAMCs can also sense minute changes in the motor's direction, acceleration, and other parameters and will automatically adapt to it for optimized stability and precision control.



## iAMC100 TECHNICAL SPECIFICATIONS

Parameter	Measurement		
Input Voltage Range	44.4V - 87V		
Input Battery Configuration	(12S Lixx0) - (20S Lixx0)		
Antispark Protection	Yes		
Motor Compatibility	Brushless, Sensorless		
Output Phase Current (180 s)	45Apk [31.8Arms]		
Output Phase Current (Continuous)	36Apk [25.5Arms]		
Input Voltage (Vdc)	48		
Peak Input Power (180s) (W)	1250		
Continuous Input Power (W)	1150		
Efficiency	up to 97%		
Inverter Switching Frequency	40kHz		
Advance Angle Control	0° to 40°		
Maximum Electrical Frequency	2.67kHz		
Ambient Temperature Range	0°C to 40°C (32°F to 104°F)		
Maximum Internal Inverter Temperature	90°C (194°F)		
Cooling Air Flow for continuous operation	3 m/s		
Cooling Air Flow for operation at peak power	4 m/s		
Motor Temperature Measurement	Yes		
Motor Temperature Protection	Yes		
Communication	CAN 2.0a		
Speed Commands	PWM or CAN command		
Real Time Data Monitoring (RTDM)	Yes (speed, current, voltage, temperatures)		
Configurable Parameters	Up to 19 parameters covering System, Motor, Inverter, PWM input & Alert thresholds		
Alerts via CAN Bus	Alerts covering up to 13 conditions		
Multiple iAMCs can be used on the same CAN Bus	Yes, up to 15 devices		
Power connection	3.5mm Bullet Connector		
Motor Lead	3.5mm Bullet Connector		
Communications Connector	Hirose - HR30-7R-12P(31)		
Motor Temperature Thermocouple Connector	Mini K-Type Female		
IP rating	<b>IP00</b>	<b>IP33</b>	<b>IP55</b>
Weight	72 g (0.22 lb)	150 g (0.33 lb)	250 g (0.55 lb)
Dimension (L x W x H)	85 mm x 47 mm x 39 mm (4.331 in x 2.520 in x 1.850 in)		10 mm x 54 mm x 46 mm (4.331 in x 2.520 in x 1.850 in)

### Notes

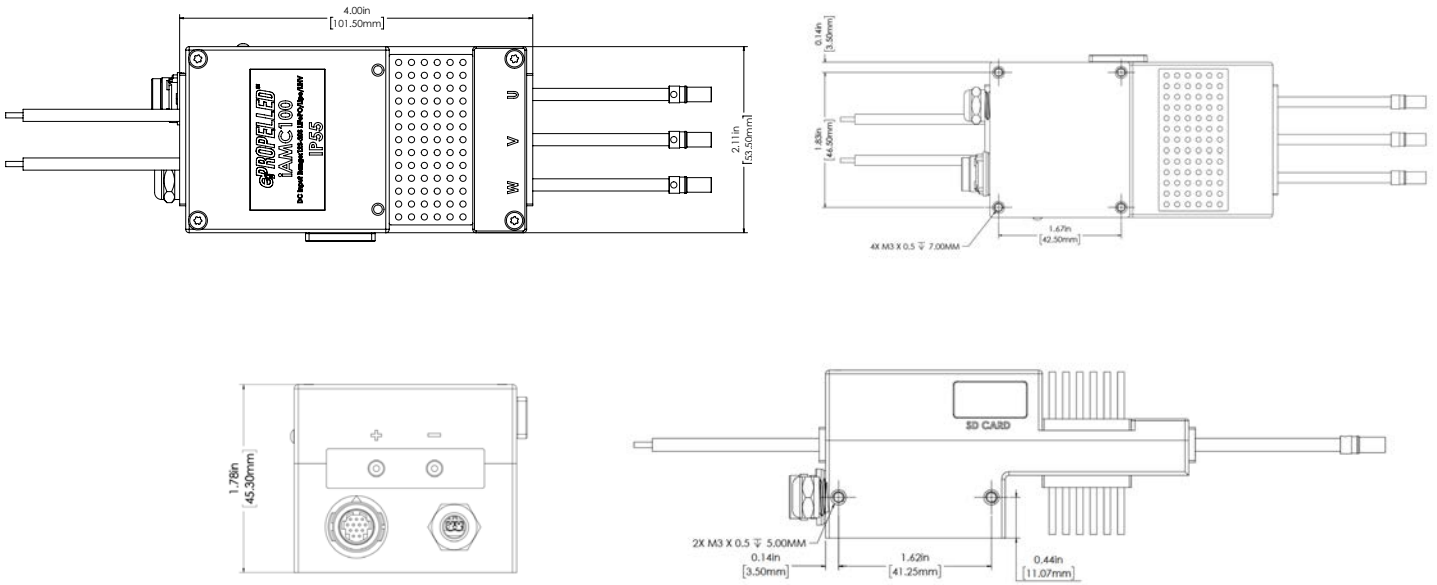
- ▶ Lixx = Lithium ion (or) lithium polymer
- ▶ Errors and omissions excepted. All specifications subject to change without notice.
- ▶ Appropriate advance angle should be selected based of propeller size and input voltage range.

iAMC100 PINOUT		
Connector Type	Pin	Pin Description
Power (3.5 mm [0.138 in] Connector with 10 AWG)	U	U Phase Input Connection for PM
	V	V Phase Input Connection for PM
	W	W Phase Input Connection for PM
	+ve	Positive Input Connection DC Supply/Battery
	-ve	Negative Input Connection DC Supply/Battery
"COMM 1 (Hirose - HR30-7R-12P[31])"	1	+5V Output
	2	CANH (CAN Bus - High)
	3	CANL (CAN Bus - Low)
	4	GND (Ground)
	-	Not connected
	5	CAN Termination Pin 1*
	6	CAN Termination Pin 2*
	-	Not connected
	7	+5V Input (isolated)
	8	PWM Input (isolated)
	9	GND (Ground) (isolated)
	10	Not connected
	11	Not connected
12	Not connected	
K-Type Thermocouple (Female)	TC+	Positive Type-K Thermocouple Input
	TC-	Negative Type-K Thermocouple Input
	TC-	Negative Type-K Thermocouple Input



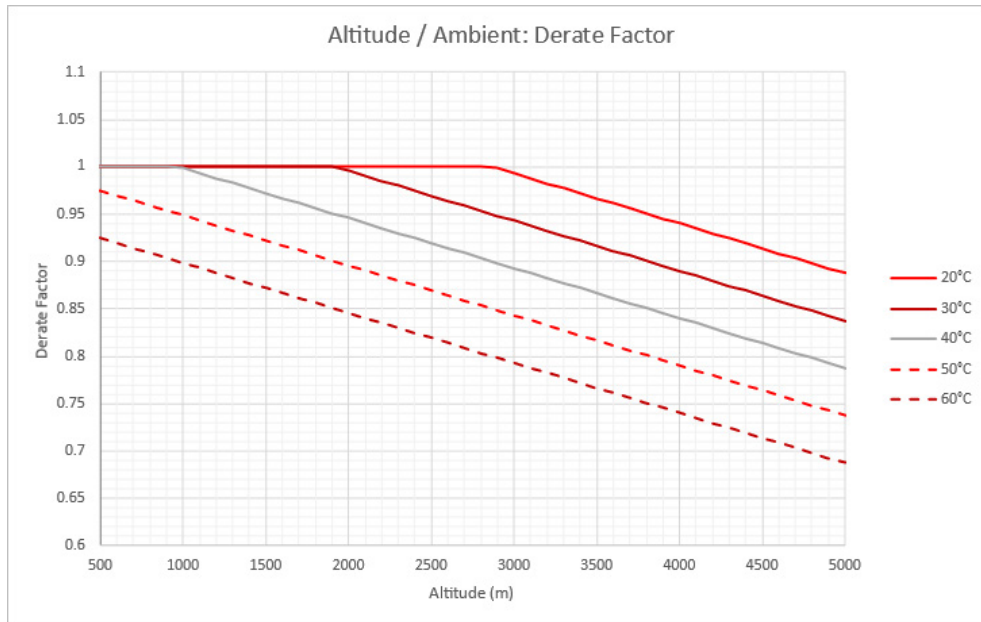
**Mounting Instructions**

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



**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.



## Assembled in USA

Errors and omissions excepted. All specifications subject to change without notice. For more information, including ordering product, please contact us at [info@ePropelled.com](mailto:info@ePropelled.com).

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## Warnings and Labels



ePropelled © 2022. ePropelled designs intelligent motors, motor controllers, and power management systems that help reduce energy consumption and dramatically improve system efficiency at a lower cost. Our patented technology and innovative smart systems are equally at home in the air, on the road, and in water, leading the way towards a greener future.

ePropelled has offices in the United States, Europe, and India and works with manufacturers of various types and sizes around the world. For more information, visit [ePropelled.com](http://ePropelled.com)