



Description

Currawong's ESC Velocity provides high power, high reliability brushless motor control for UAV power systems, with a CAN interface that easily integrates with a wide range of autopilots.

This product fulfils the pressing need for an aerospace grade electronic speed controller (ESC) for use with 3-phase brushless DC motors. Many existing ESCs aimed at the hobby market do not perform reliably and can fail in spectacular fashion. Currawong has engineered a robust device with a high level of documentation, testing and traceability.

The ESC Velocity is part of Currawong's networked avionics architecture. The CAN interface provides an unparalleled capability to control and monitor the ESC in operation and integrates with the cEQUIP software to provide an advanced engineering toolset for system configuration, development and testing.

Specifications

Model	ESC Velocity
Voltage	18S / 80 V
Current	80 A continuous 200 A peak *
Length	100 mm (3.9")
Width	55 mm (2.2")
Height	27 mm (1.1")
Weight	195 gram (6.9 oz)
Max e-RPM	250,000
Drive Frequency	12-32 kHz
Timing Advance	0 – 30°

* Peak current rating dependent on motor characteristics

Features

With a high operational voltage range, the ESC Velocity can operate from an 18S battery pack, reducing current losses and allowing the motors to operate more efficiently at higher voltages.

The ESC Velocity incorporates a true hardware interlock which provides guaranteed motor shutdown for improved operator safety.

Extremely low impedance MOSFETs with impedance matched drive circuitry means the ESC runs cooler even when operating at maximum load. A unique low impedance ceramic capacitor array outperforms electrolytic capacitors, providing better performance at altitude, and will not deteriorate over time.

Synchronous rectification (active freewheeling) provides superior performance at partial load. The ESC runs cooler and operates very efficiently. The intelligent high-speed commutation algorithm reduces switching noise (EMF) and audible motor noise.

The ESC Velocity provides superior RPM performance at both the low and high ends of motor speeds, with a maximum eRPM of 250,000 and a configurable drive frequency up to 32 kHz.

The isolated CAN interface provides for simple connection to a wide range of autopilots whilst improving signal integrity and reducing the number of connectors required by the autopilot. The high speed CAN interface (1 Mbit) provides fast throttle response. A fully documented interface specification simplifies integration with any autopilot. The ESC supports DroneCAN and integrates out of the box with the Piccolo range of autopilots.

The ESC Velocity also comes with a fully isolated PWM command input which provides customers with a simple migration path for applications where CAN is not yet fully implemented.

The ESC Velocity controllers provide real-time telemetry data such as RPM, motor current, voltage, temperature and a three-axis accelerometer. It is tightly integrated with cEQUIP and the suite of advanced development tools, for simplified system configuration, logging, data analysis and health monitoring.

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