



Description

There is a pressing need for an aerospace grade electronic speed controller (ESC) for use with 3-phase brushless DC motors. Many existing market solutions do not perform reliably and can fail in spectacular fashion. ESCs aimed at the hobby market typically do not offer a high level of documentation and traceability, and provide little in the way of useful telemetry data.

Currawong is addressing these issues with the ESC Velocity range of CAN brushless speed controllers.

The ESC Velocity range provides high power, high reliability brushless motor control for UAV power systems, with a high speed CAN interface which easily integrates with a wide range of autopilots.

ESC Velocity is part of Currawong's networked avionics architecture which provides an advanced engineering toolset for system configuration, development and testing.

Specifications

Model	ESC Velocity	ESC Velocity SL	ESC Velocity HV†
Voltage	18S/80V 100V Abs. Max.	12S/50V 80V Abs. Max.	24S/100V 150V Abs. Max.
Current	80A continuous*	80A continuous*	50A continuous*
Length	100mm	100mm	100mm
Width	55mm	55mm	55mm
Height	27mm	18mm	27mm
Weight	160g	125g	160g

Maximum e-RPM: 250,000
 Drive Frequency: 12-32Khz
 Timing advance: 0-30°

* Peak current rating will depend on duty cycle
 † HV model available on consultation per your specific application

Features

With an exceptionally high operational voltage range, the ESC Velocity can operate from a 24S battery pack, reducing current losses and allowing the motors to operate more efficiently at higher voltages.

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.

Additionally, the ESC Velocity range 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 32kHz.

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 (1Mbit) provides fast throttle response. A fully documented interface specification simplifies integration with any autopilot. The ESC supports UAVCAN and integrates with the Piccolo range of autopilots.

The ESC Velocity controllers provide real-time telemetry data such as RPM, motor current, voltage, temperature and a three-axis accelerometer. Each ESC also provides on-board high-speed data logging which can be downloaded over the CAN.

As part of Currawong's networked avionics architecture, the ESC is tightly integrated with our suite of advanced development tools, for simplified system configuration, data analysis and health monitoring.

True hardware lockout and real time telemetry feedback ensures operator safety.

Currawong's cEQUIP software provides a complete high-quality interface for the entire range of Currawong products, and supplies a comprehensive suite of engineering tools.

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