

General Description

The 15S Battery Cell Monitor & Balancer is a precision instrument that ensures multi-cell batteries are maintained in an optimal state, improving system reliability and prolonging battery life.



Figure 1 – 15S Battery Cell Monitor & Balancer

The 15S Battery Cell Monitor & Balancer does exactly as its name suggests: it monitors cells within a battery, and it balances those cells if and when they require it. Comprehensive data detailing the battery's internal state is sent via the CAN interface.

Usage

The Battery Balancer is intended to be connected to a battery, installed into a UAV and interfaced to the vehicle's CAN bus. A pair of indicator lights on the front panel give a "go / no go" indication of the battery's state of balance and state of charge. More detailed battery information is available via the CAN bus.

Use of the battery balancer confers a number of operational advantages:

- Batteries do not need to be removed periodically to check for balance.
- Battery status is available instantly, either directly from the front-panel LEDs, or remotely from the telemetry data sent on the CAN bus.
- Batteries are maintained in a state of balance, improving flight-readiness.

Features

- Transforms a "dumb" battery into a smart (self-balancing) battery.
- Supports multiple battery chemistries – LiPo, LiS and LiFe.
- Supports 9 to 15S batteries.
- Galvanically isolated 80 Amp current sensor.
- CAN interface provides control and monitoring of voltages, currents, temperatures.
- Battery temperature monitoring with up to 3 external sensors.
- User-friendly configuration software.
- Rich variety of balancing control options.
- Seamless integration with 1700W GCU.
- Weight: TBA
- PCB dimensions: 62 x 72mm

Specifications in brief

Electrical:

Battery chemistries	LiPo, LiS, LiFe
Battery voltage	65 VDC (max.)
Battery cell count	9S, 10S, 11S, 12S, 13S, 14S or 15S
Battery temperature sensor	3 x 10k NTC (external)
Balancing current	3 x 0.45 Amps (max.)
Voltage measurement accuracy	±10 mV (typ.)
Power dissipation	6 Watts (max.)
Visual indicators	Balance (red/green), charge (red/green)

Miscellaneous:

Environmental protection class	IP50
Operating temperature range	-40 to +85°C
Altitude rating	10,000m
Cooling	Passive conduction & convection
Enclosure	Lightweight custom-machined aluminium
Dimensions	77 x 75 x 12.7mm
Weight	TBA
Connectors	Harwin M80 (balance, current sense, interface), micro-USB (configuration)
Communications protocols	CAN (up to 1Mb/S)