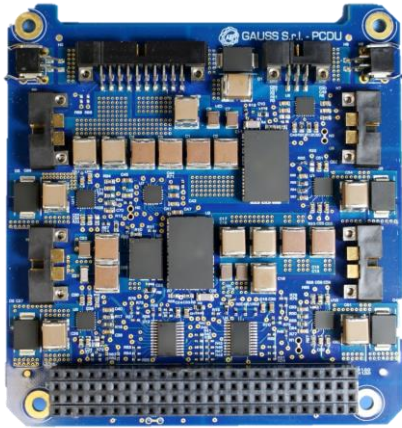# PCDU Power Board

Description

GAUSS PCDU Board is a *Power Conditioning and Distribution Unit* for CubeSats, designed and manufactured by GAUSS.

It is intended as the main power board to be used for interfacing the CubeSat EPS bus with hosted payloads.

The board features four regulated, independent power channels, and one unregulated channel, directly connected to V_{BAT}.

The system hosts three power modules to convert energy sourced from the main EPS or a custom battery pack to the required tensions. Two power outputs are rated for high-currents, up to 6 A.

All power modules' statuses can be constantly monitored and controlled via a dedicated I2C bus.

Every power output has a dedicated, user configurable current limiter and switch. All load currents are monitored via an ADC and the I2C bus.

Board temperature hotspots can be controlled via I2C. Interrupt requests are handled via the PC104 stack to be interfaced with the platform OBDH.

Several safety measures and fault responses are configurable, based on mission requirements.

Primary Features

- Five power outputs;
- Three DC/DC step-down buck power modules;
- Four independent and configurable power channels;
- Power modules tested to MiI-STD-883D;
- Power-good indications;
- Up to 50W output power at 85°C;
- Power modules meet EN55011 radiated emissions;
- Automatic efficiency optimization at light loads;
- Efficiency up to 95%*;
- Soft start available;
- Low-resistance current limiters;
- Adjustable load current from 2A to 6A;
- ±8% accuracy for current limiting;
- ±1,5% accuracy for load current monitoring;
- User-configurable fault response (latch-off / autoretry);
- Input voltage monitored;
- Adjustable under-voltage lockout;
- Fixed over-voltage lockout options;
- Redundant over-temperature protections;
- ECSS guidelines used for electronic design;
- High-reliability, high-current jackscrew connectors;
- -40°C to +105°C operative range.

Efficiency depends on load current and V_{IN}
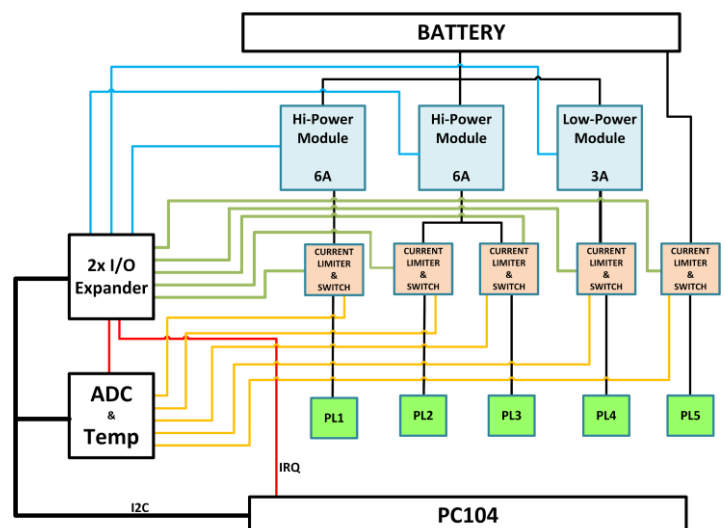
System-level schematic of the board.