MILLSWOOD engineering

# 1700W GCU

PRODUCT BRIEF

## General Description

The Millswood Engineering 1700W Generator Control Unit manages the generation and storage of electrical energy to supply the needs of small to medium-sized UAVs.

The GCU is designed to complement the functionality provided by the 900W PDU (Power Distribution Unit). When installed together, these two units form a complete power supply solution including electrical power generation, battery management and power distribution with redundancy for critical sub-systems.

The GCU includes an optional engine starter. This uses the same BLDC motor and wiring that is used for electrical power generation, saving weight and installation effort.

*Figure 1 – 1700W GCU*

## Features

- Main power output provides up to 900W at 58.5V for powering vehicle electronics directly or via PDU.
- Two battery chargers, each capable of providing up to 400W of charging power for rapid in-flight recharging.
- Battery chargers user-configurable for both voltage and current, allowing a wide variety of battery chemistries and sizes to be accommodated. Supported battery types include:
  - LiPo: 10 – 12S
  - LiS: 15 – 20S
  - LiFe: 10 – 14S
- Active rectification of 3-phase inputs achieves highest possible efficiency, minimising self-heating.
- Outputs powered by interleaved, spread-spectrum modulated DC-DC converters for best possible EMI/RFI performance.
- Umbilical input: 30 – 120 VDC.
- RS232 and CAN monitoring interfaces provide extensive reporting of voltages, currents and internal temperature.
- Available in either IP67 or slimline enclosure.
- Weight: TBD.
- Dimensions: TBD.

# Block diagram

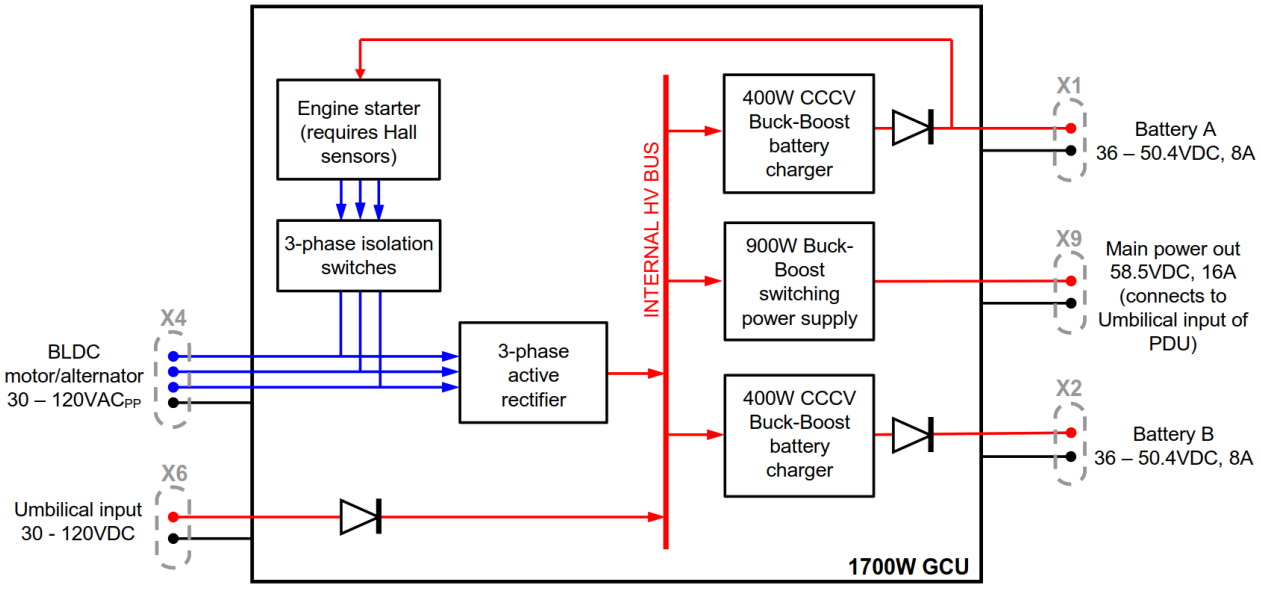


*Figure 2 – Internal architecture of the 1700W GCU*

This is a greatly simplified diagram showing only the main power pathways. Diodes shown are symbolic; diode functionality is implemented using FETs configured as "ideal diodes".

# Specifications in brief

## Electrical:

| | |
|---|---|
| **BLDC inputs** | 30 to 120 $VAC_{pp}$ |
| **Umbilical input** | 30 to 120 VDC |
| **Battery charger outputs** | 36 to 50.4 VDC, 8 Amps continuous |
| **Main power output** | 58.5 VDC, 16 Amps continuous |
| **Low-power output** | 12 VDC, 1 Amp continuous |

## Miscellaneous:

| | |
|---|---|
| **Environmental protection class** | IP67 or IP50 |
| **Operating temperature range** | -40 to +85°C |
| **Altitude rating** | 10,000m |
| **Dimensions** | TBD |
| **Weight** | TBD |
| **Communications protocols** | RS232 (57600 8N1), CAN (1Mb/S) |