CE2337-01 · CORTEX HYBRID POWER SYSTEM MQ

CHPS-MQ

Class-leading starter and generator for UAV engines.

Built on Currawong's Velocity Technology, CHPS-MQ converts engine power into regulated aircraft supply rails while maintaining battery charge. A complete hybrid power system in under 200 g.

DESIGNED AND MANUFACTURED IN AUSTRALIA
TESTED. PROVEN.

188 g	750 W	20-60 V	100 cc	CAN
WEIGHT	OUTPUT POWER	BATTERY VOLTAGE	ENGINE STARTING	PICCOLO CAN

Key Features

F.01 Quad Plane Compatible

Specifically designed for quad plane operation with a single battery pack. The aircraft's VTOL high-voltage battery starts the engine; once airborne, CHPS-MQ recharges it from the generator — no second battery required.

F.02 Integrated Engine Starting

Integrated engine starting simplifies engine operation, providing safe and reliable remote engine starting. The hybrid power architecture also keeps the engine running during transients or poor fuelling conditions.

F.03 Battery Charging

An integrated regulated charger keeps the battery at the correct state of charge whenever excess generator energy is available. Charge voltage is fully configurable across the supported range.

F.04 Intelligent Power Limiting

Intelligently regulates power drawn from the generator to keep the engine within safe limits. At low RPM, where excess draw could cause a stall, CHPS-MQ automatically supplements from the battery.

F.05 Regulated Rails

Three individually regulated voltage rails power external aircraft systems, with voltage configurable on each. An unregulated HV rail is also available for external power systems.

F.06 Advanced Telemetry

Detailed telemetry streams over PiccoloCAN and is accessible through CEquip. Engine start and enable commands are supported via CAN, analogue and digital interfaces.

02 · SPECIFICATIONS

Specifications

Electrical and mechanical data for the **Cortex Hybrid Power System MQ (CE2337-01)**.

ELECTRICAL & I/O

BATTERY VOLTAGE	20–60 V
SHORE POWER INPUT	20–75 V
MAX GENERATOR VOLTAGE	75 V
QUIESCENT CURRENT	100 mA
MAXIMUM STARTING CURRENT	50 A
SERVO RAIL	6–12 V · 10 A · 120 W
AVIONICS RAIL	12–28 V · 5 A · 140 W
PAYLOAD RAIL	12–28 V · 10 A · 280 W
HV RAIL	20–75 V (unregulated) · 750 W
BATTERY CHARGING	1 A · 50 W
ENGINE START COMMAND	Analogue & CAN
AMBIENT OPERATING TEMP	-20 to +85 °C

MECHANICAL

LENGTH	107.2 mm (4.22 in)
WIDTH	77.2 mm (3.04 in)
HEIGHT	20.4 mm (0.80 in)
WEIGHT	188 g (6.63 oz)
ENCLOSURE	Anodized Aluminium
MOUNTING	4× M3 clearance holes

INTERFACES & CONNECTIVITY

CAN PROTOCOLS	PiccoloCAN
CONFIG TOOL	CEquip
FIRMWARE UPDATE	CAN (In Situ)

SOFTWARE FEATURES

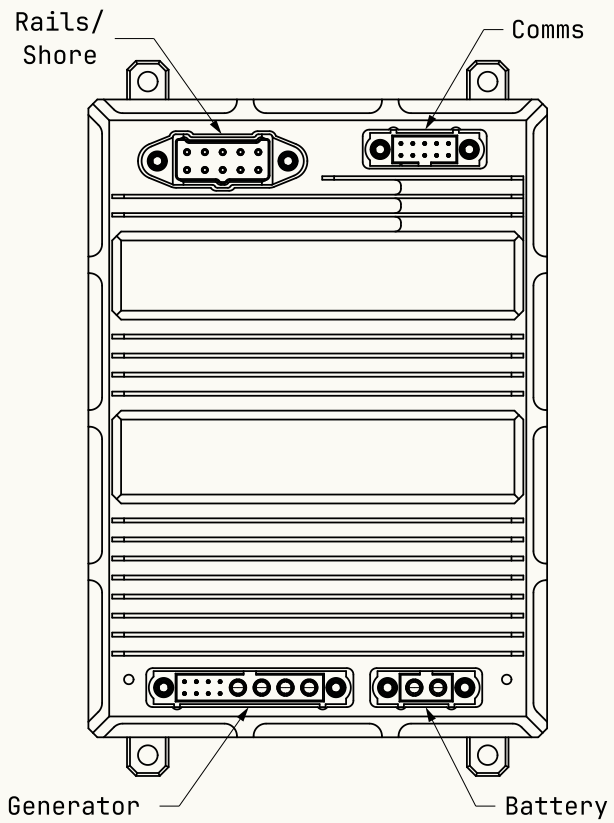
Rich telemetry and customization through Currawong Engineering's CEquip software.

- Custom RPM to power mapping
- Overtemperature foldback mechanisms
- Complete rail voltage, current and power telemetry
- Supports shore power supply for ground power
- Generator temperature monitoring and reporting
- Sensored starting and sensorless generation
- Generator / battery power sharing to avoid overload conditions
- ECU agnostic operation

03 · CONNECTORS

Connector Layout

Top-down view of the CE2337-01. All connectors are Harwin M80 or M300 series — see the specifications table for full part numbers.



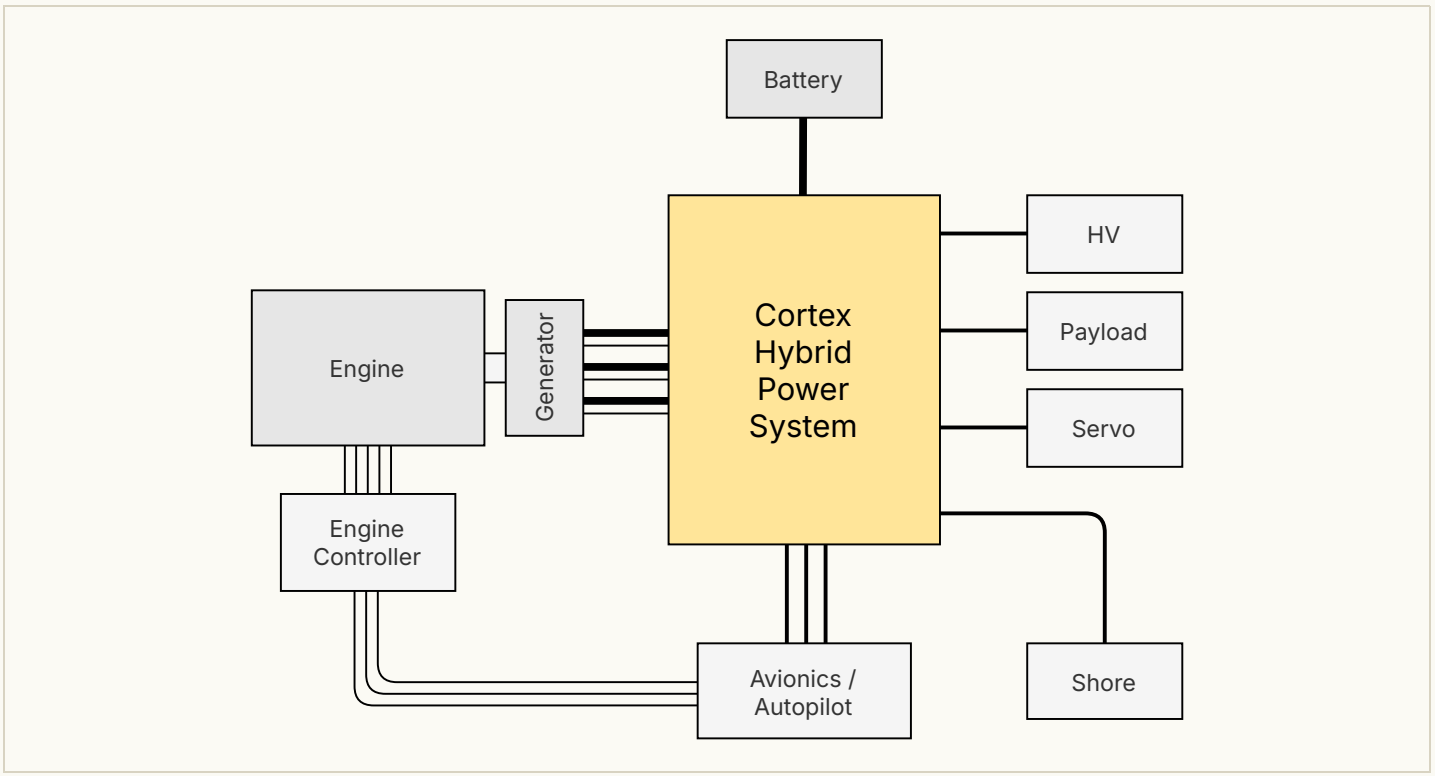
CONNECTOR FUNCTIONS

Communication	CAN · Enable · Start Harwin M80-5001042
Rails / Shore	Shore · HV · Payload · Servo · Avionics Harwin M300-MV31045M1
Generator	Phases · Hall Sensors Harwin M80-5T10805M1-04-331-00-000
Battery	High-voltage battery input Harwin M80-5000000M1-02-331-00-000

04 · SYSTEM INTEGRATION

System Integration

Typical installation of the CE2337-01 in a fixed-wing or hybrid VTOL UAV powertrain.



HYBRID POWER ARCHITECTURE

The CHPS-MQ delivers **true parallel hybrid power** — its engine-driven BLDC generator and the connected battery can both supply the regulated output rails simultaneously. Power sharing is managed dynamically by the onboard controller; if generator capacity is insufficient, the battery supplements instantly and automatically. When excess generator energy is available, the integrated charger returns it to the battery.

A **shore power input** allows the system to be powered from an external supply for bench testing and pre-flight checks, with battery charging supported from shore when the supply exceeds battery voltage by at least 5 V.

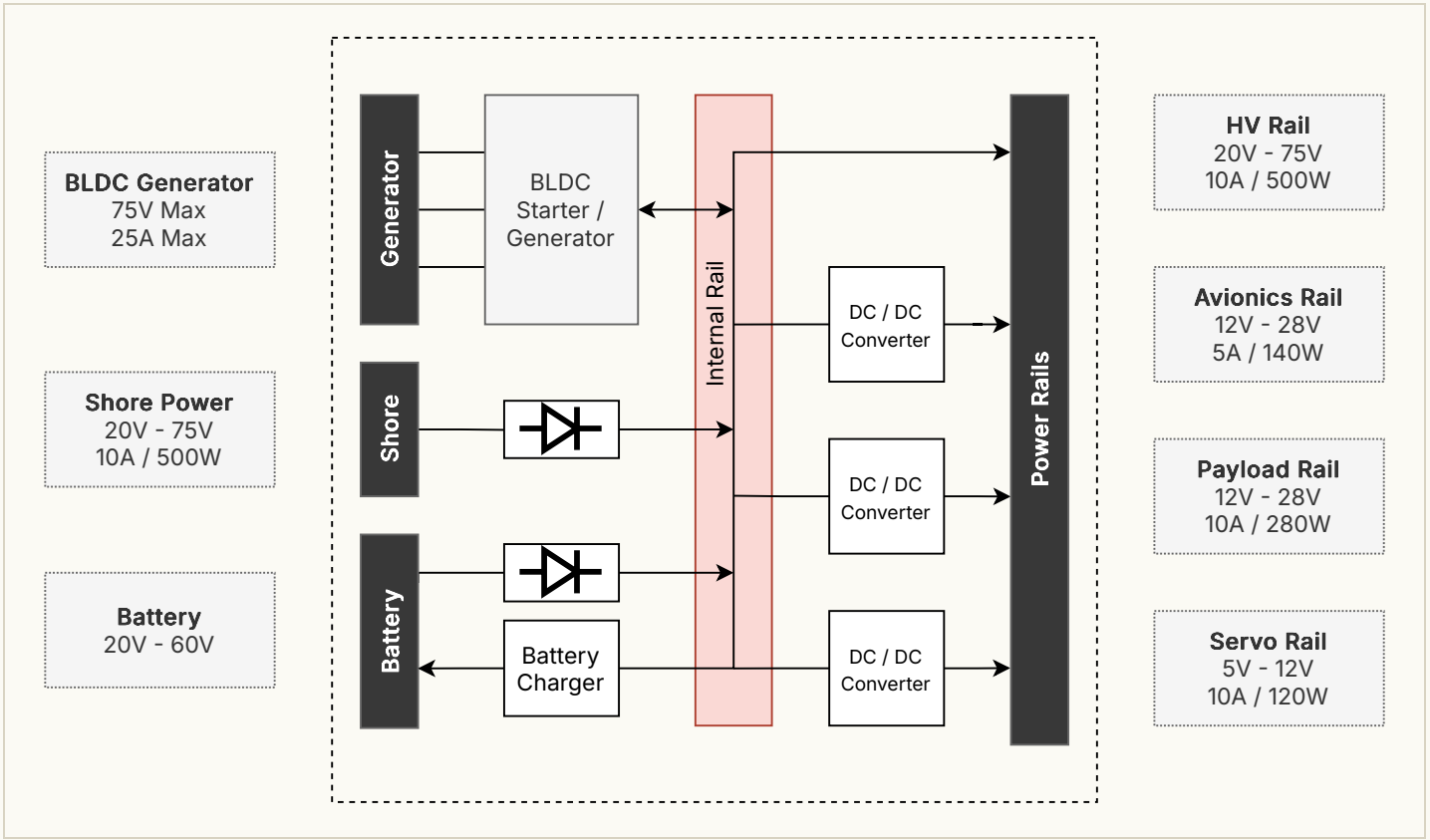
OPERATING MODES

STANDBY	Generator inactive. System powered from battery or shore input.
CRANKING	Battery power applied to generator motor to start the engine.
RUNNING	Engine running. Generator power regulated and distributed to load rails and battery charger.

05 · ARCHITECTURE

Internal Architecture

Power flow within the CE2337-01 — from generator, battery and shore inputs through the internal rail to the regulated output supplies.



POWER FLOW

The CHPS-MQ centres on an internal **HV rail** — a high-voltage bus fed by whichever available source carries the highest potential. When the engine is running, the BLDC controller actively boosts the generator's terminal voltage to keep it above battery voltage, ensuring generator priority. Battery and shore inputs connect through isolation circuitry and contribute automatically when the generator cannot meet demand.

Three independent DC/DC converters step the HV rail down to the regulated **Servo**, **Avionics** and **Payload** outputs at independently configurable voltages. A dedicated charger circuit draws from the HV rail to return energy to the battery whenever sufficient headroom is available.

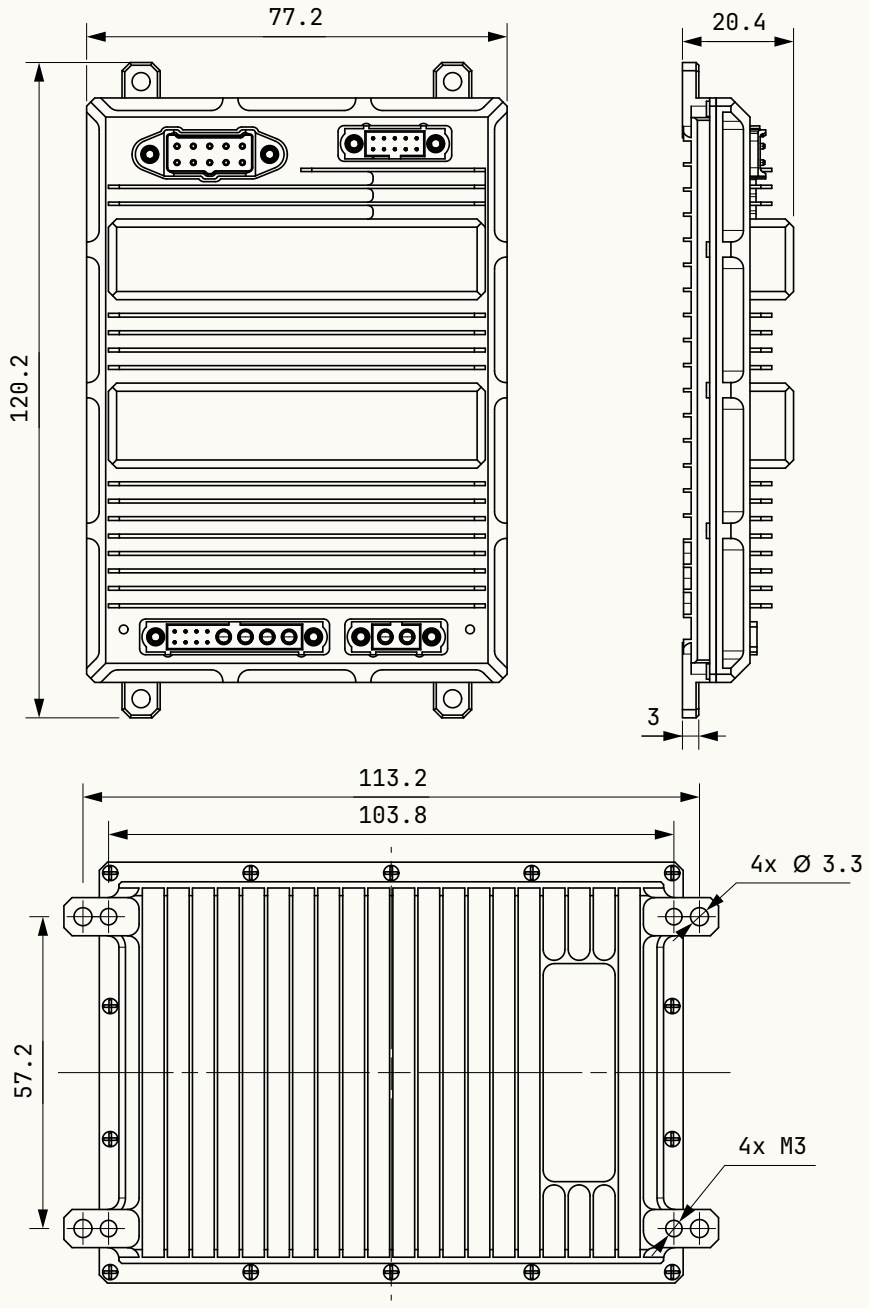
OUTPUT RAILS

HV	20–75 V (unregulated) · 500 W Source for external DC/DC converters.
Avionics	12–28 V · 5 A · 140 W Flight controllers, autopilots and avionics.
Payload	12–28 V · 10 A · 280 W High-power payload equipment.
Servo	6–12 V · 10 A · 120 W Actuators and peripherals.

06 · DIMENSIONS & ORDERING

Dimensions & Ordering

Outline dimensions for CE2337-01. All measurements in millimetres.



ORDERING

ORDER CODES

CE2337-01 Harwin Connectors (standard)

Companion: **CE2334** CHPS-MQ Harness Kit.

CONTACT

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Currawong Engineering Pty Ltd
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