Cortex-50 Hybrid Engine

CE2169 Datasheet

Engine Type:	Air-cooled 2-stroke single cylinder
Displacement:	50cc
Typical Weight	4.7kg (10.4 lb)
	Engine, generator, exhaust & cooling system 3721g
	Isolation Mount 208g
	ECU and Fuel Pump 318g
	Hybrid Transmuter 431g
Power Output	2.1kW (electrical) at 7500RPM
Fuel Type	MOGAS/100LL
Fuel Consumption	600 g/kW-hr (electrical) at 5000 RPM & 50% throttle

The Cortex-50 Hybrid engine package includes:

- Currawong three-bearing crank case
- Desert Aircraft DA50 cylinder and piston
- Currawong induction system with manifold and throttle body
- CDI ignition system
- Miniature engine control unit (ECU)
- Currawong fuel pump
- Automotive grade fuel injector
- Crank sensor
- Integrated isolation mount
- Integrated cooling duct with servo control
- Hybrid transmuter
- T-motor U13II motor-generator
- Manifold and cylinder head temperature sensors
- Detailed operation & service manual and interface control document

Features

- Based on the proven reliability of the Currawong Corvid-50 direct-drive engine
- Full EFI suite including automotive-quality ECU processor, fuel pump, ignition, sensors, injector and custom intake
- ICE integrated with hybrid motor-generator provides battery replacement option for electric prop multi-rotor aircraft
- Hybrid engine capability allows for a reduction in battery requirements and as a result improved range and reduced system weight
- The hybrid system generator provides integrated avionics power
- Hybrid architecture allows bidirectional power flow through the motor/generator, power can be sent from the engine to the electrical system or from the batteries to the engine for power boost or in-air restart

Description

The Cortex-50 Hybrid is a newly developed two-stroke hybrid UAV engine system from Currawong Engineering.

Based on the industry proven Currawong Corvid-50, the Cortex-50 is suitable as a replacement for batteries, gasoline engines or existing hybrid power systems for UAV platforms with electrically driven motors such as multi-rotors.

The hybrid architecture of the system allows for bidirectional power flow between the electrical system and the engine. During normal operation the engine can provide power to onboard electrical systems and charge batteries while providing prop power for flight. This allows for

lower battery weight and better aircraft range. Power can also be directed from the battery system to the engine for self-starting, power boost during flight and in-air engine restart.

Typical Performance

The power curves below indicate the typical generated electrical power from the Cortex-50 Hybrid. This does not include additional power boost available from the battery system which depends on battery selection. For example, a 5 Ah 30C 14S battery system can supply up to an additional 8kW of instantaneous power.