

# Engine Control Unit – Standard



Complete fuel delivery, ignition, thermal and drivetrain control solutions delivering desired thrust or power.

Customizable to any target application— aerospace, automotive/off-road, marine, power generation—the Rockwell Collins Engine Control Unit (ECU) provides the best solution for your engine control needs.

With the standard ECU, our engineers have maximized power and fuel economy targets across a wide range of operating and environmental conditions on both 2- and 4-stroke power plants. Our ECU provides the end-user with unsurpassed flexibility ranging from an adaptable mixture control for a variety of fuels all the way to a fully automated drive-by-wire and single-lever power controls solution.

## KEY BENEFITS

- ▶ Closed-loop Real-Time Health and Usage Monitoring System that assures the engine is operating within allowable limits, performs diagnostics and prognostics
- ▶ Robustness to uncertainties, including abnormal environmental and operating conditions
- ▶ Compensates for engine wear and tear, ensuring allowable thermal limits at all times (CHT, EGT, TIT, coolant, oil, turbos, etc.)

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## SPECIFICATIONS

### Fuel and metering

- Speed density and/or mass air flow sensor based system
  - Up to 8 injectors sequential (configurable for high impedance or low-impedance injectors)
  - Configurable for up to 8 piezo or solenoid based diesel injectors sequential
- Closed loop mixture control capable with a feedback sensor

### Ignition system

- Single or dual plug per cylinder drive capability
  - Capacitive discharge
  - Inductive
  - Coil per plug
  - Wasted spark
  - Distributor type
  - Up to 8 cylinders

### Sensors and I/O

- 12 analog inputs
  - Absolute or ratiometric sensors
    - Pressure
    - Temperature
    - Position
  - Knock sensor
  - Oxygen sensor – stoichiometric or lambda (wide band UEGO)
  - Thermocouple inputs (J or K type)
- Analog outputs (configurable up to 4)
  - 0 to 5 VDC or 0 to 10 VDC output range
  - Servo actuator outputs: PWM or analog

### Digital I/O

- Crank and camshaft sync sensor inputs (hall effect or variable reluctance)
- 4 optically isolated inputs (PWM or discrete)
- 8 digital auxiliary outputs (PWM or discrete)

### System diagnostics/failure detection

- Built-in diagnostics with external system status indicator
  - Power-up Built-In Tests (PBIT)
  - Continuous Built-In Tests (CBIT)
  - RT-HUMS (Real-Time Health and Usage Monitoring System)
  - Data logging

### Communications ports

- 3 serial ports configurable for telemetry or interface to other hardware
  - 1x RS-422
  - 2x RS-232
- CAN bus

### Environmental

Storage temperature	-60°C to +85°C
Operating temperature	-40°C to +85°C
Ambient pressure/altitude	-2000 to 60,000 ft
Humidity	100% RH, condensing

- Sealed to IP67 – submersible to a depth of 1 meter
- Designed to meet stringent MIL-STD and SAE automotive standards
- Compliances with MIL specs
  - MIL-STD-704F
  - MIL-HDBK-461E
  - MIL-STD-810 Temperature
  - MIL-STD-810 Humidity
  - MIL-STD-810 Altitude
  - MIL-STD-810 Vibration
  - MIL-STD-810 Shock and Acceleration
- Other compliances to CSI (Critical Safety Item)
  - CMMI Level 3 compliance
  - ISO compliance
  - Compliance with IPC class 3 board manufacturing

### Enclosure and packaging

Standard size	7" x 6" x 2" (178 x 152 x 51 mm <sup>3</sup> ) with circular MIL-C-38999 connector(s)
Weight	595 grams

### Electrical

Operating voltage	Nominal: 9 to 36 VDC
Power consumption	5 W
Connector	Standard: MIL-C-38999 Series 1.5 Optional: Sealed, automotive, marine or aerospace standard

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Rockwell Collins delivers smart communication and aviation electronic solutions to customers worldwide. Backed by a global network of service and support, we stand committed to putting technology and practical innovation to work for you whenever and wherever you need us. In this way, working together, we build trust. Every day.

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