

Athena 111m



Integrated sensors, flight controls and navigation system.

The Athena 111m offers customers a lower unit cost to accommodate smaller unmanned systems. Rockwell Collins engineers have designed the Athena 111m with a fully-integrated, miniaturized flight control system that combines integrated INS/GPS and a complete air data suite with robust, multivariable control algorithms.

Designed specifically for high-performance, unmanned systems, the Athena 111m leverages our patented Feedback LTI'zation design technology to provide robust flight control algorithms applicable to a wide range of vehicles; including, fixed-wing, ducted-fan and rotorcraft systems.

KEY BENEFITS

- ▶ GPS/INS navigation solution integrated with state-of-the art Multi-Input/ Multi-Output flight control laws
- ▶ Control modes that include airspeed, altitude, climb rate, angle of attack, sideslip, 3-D auto navigation, and auto takeoff/landing
- ▶ Uses highly reliable solid-state sensors, including accelerometers, rate gyros, magnetometer, air data pressure, AoA and sideslip sensors along with a differential ready, WAAS-enabled GPS receiver for a full INS/GPS navigation solution

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SPECIFICATIONS

INS/GPS performance

Update rate	100 Hz
Start-up time	10 sec (initial attitude); 1 min (full alignment)
Altitude range	-1,000 ft to 50,000 ft
Attitude accuracy	0.3° (1 sigma)
Altitude accuracy	45 ft at S.L., <200 ft at 40,000 ft altitude
Lat/long position accuracy	GPS C/A Code; differential ready, WAAS-enabled
GPS antenna power	5 V
Airspeed accuracy	<2 knots @ 40 knots, <1 knot @ 60 knots
Max airspeed	120 knots standard, up to 650 knots optional
Angle of attack range	+/- 8° at max airspeed
Angle of sideslip range	+/- 8° at max airspeed

IMU performance

Maximum angular rates	+/- 200°/s
Maximum g range	+/-8 g

Attitude heading accuracy (1 sigma) with GPS

Pitch/roll accuracy	0.1° mean, 0.1° standard deviation
Heading accuracy	0.5° *

Extended GPS outage

Pitch/roll accuracy	0.5° *
Heading accuracy	1° *

*Using adequate external magnetic field measurement.

Overview

Size	9.9 x 6.6 x 4.06 cm (3.9 x 2.6 x 1.6 in)
Weight	249 grams (0.55 lb)
Enclosure	Aluminum
Power	4.5 W (nominal) @ 18-36 VDC

Environmental

Operating temperature	-40 to 70°C
Non-operating temperature	-54 to 85°C
Operating vibration/shock	MIL-STD-810
Humidity	95%, non-condensing

Input/output

PWM input	(10) Channels
PWM output	(10) Channels
Discrete inputs	(4)
Discrete outputs	(5)
Analog input	
Serial connections	RS-422
Bus I/O	CAN bus (2) SPI bus



- GPS receiver
- Solid-state gyros and accelerometers
- CPU card (Kalman filters, high-speed sampling, control laws)
- Air pressure transducers
- AoA and sideslip
- Triaxial magnetometer

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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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