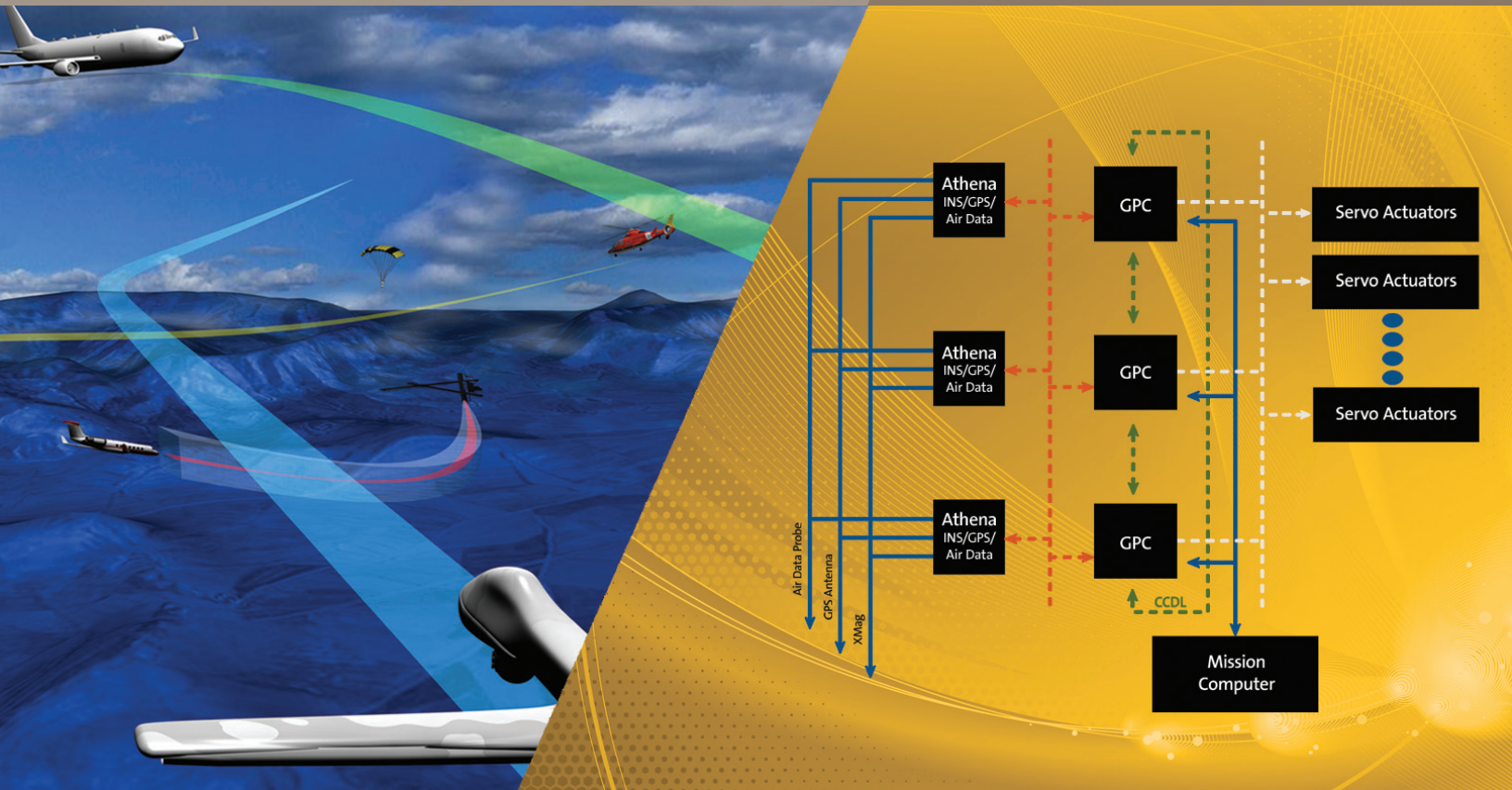# Athena™ Redundant Flight Control and Navigation System

Athena high performance Redundant Flight Control options with affordability, weight and size that are unprecedented in the aviation industry.

Rockwell Collins' proven autopilots and fly-by-wire redundant flight controls offer the Unmanned Aerial Systems (UAS) and Optionally Piloted Vehicles (OPV) advanced capabilities with over 750,000 hours of UAS flight operations.

KEY BENEFITS

> No single point failure
> Triplex-redundancy offering 10^{-7} per flight hour, readily scalable to quad-redundancy with 10^{-9} per flight hour
> Independent of sensor performance; mix and match Athena INS/Sensor products to optimally meet size, weight, performance and price requirements
> Flexibly augment data links, and one or more mission computers to meet mission criticality
> Sufficient I/O for vehicle management functions
> Supported by expert engineering for system FMECA and reliability analysis

AUTOPILOT MODES

> Pitch Rate Command
> Attitude Hold
> Airspeed Hold
> Vertical Speed Command
> Altitude Hold
> Glide-Slope Tracker
> Roll Rate Command
> Turn Rate Command
> Automatic Supervisory Adaptive Control (ASAC)

NAVIGATION FUNCTIONS

> 3-D Waypoint Tracker
> Auto-Takeoff
> Auto-Approach and Landing
> Emergency Mission Management System
> Lost Link

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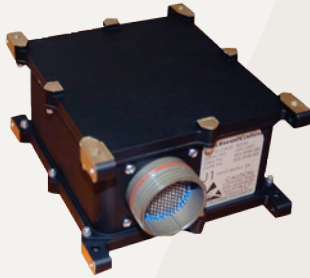
ATHENA™ INS/GPS/AIR DATA PRODUCT LINE

- ❯ All-in-one compact integrated sensor suite and Flight Control System (FCS)
- ❯ Embedded IMU, GPS, magnetometer and air data
- ❯ Embedded Kalman filter
- ❯ Option to host autopilot and mission functions
- ❯ I/O for vehicle management
- ❯ Qualified to extended temperature, EMI, shock, vibration and humidity
- ❯ Configurable to single string or redundant avionics architectures
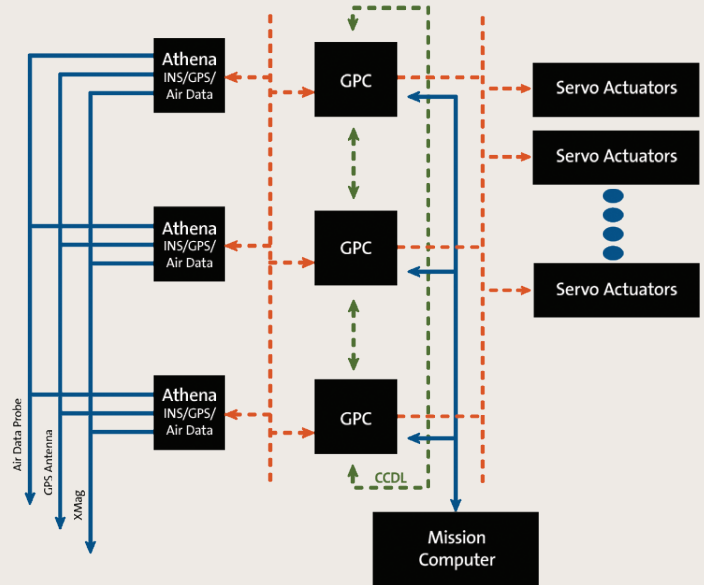

GENERAL PURPOSE AND MISSION COMPUTERS

GPC-1000

- ❯ Product suited for three different applications
  - • Autopilot and voting management
  - • Remote I/O and control device
  - • Mission computer
- ❯ 144 MHz MPC5566
- ❯ 16 M RAM, FLASH 4 M
- ❯ I/O
  - • CAN x 2
  - • Analog In x 8, Out x 3
  - • Ethernet (100 Base T) x 1
  - • Discrete x 10
  - • Serial (422/232) x 9
- ❯ Size 5" x 4.5" x 3"
- ❯ Weight 2.25 lbs

GPC-2000

- ❯ 512 MB of DDR2 SRAM
- ❯ 1 GB of NAND flash
- ❯ 8x10/100 Base-T external Ethernet ports
  - • 7 external to an Ethernet switch
  - • 1 straight to the processor
- ❯ Two RS-422 ports (up to 921.4 kbps)
- ❯ One RS-232 port (up to 115.2 kbps)
- ❯ Eight digital I/O
- ❯ JTAG programming interface
- ❯ Real-time clock
- ❯ On-board temperature sensor
- ❯ Weight < 3 lb
- ❯ Size 7.5" x 5.4" x 3.0"
- ❯ PWR 16-32 VDC, 16 W

Building trust every day.

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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