

*Modular open architecture
and commercial off-the-
shelf technology –
the foundation for
performance and growth*



Overview

Northrop Grumman's FlightPro™ scalable mission computer integrates advanced computing and video processing capabilities for weapons and avionics into a single high performance computer. Its open systems architecture is ideally adapted for rapid technology insertion. As a flight qualified commercial-off-the-shelf mission computer, it is suited for a wide array of avionics applications where fast implementation, easy integration and superior performance are critical. FlightPro™ operates as the primary mission computer, performing mission avionics data processing and display processing, while providing multiple external subsystem interface capabilities.

FlightPro™ provides the central flight avionics collection point for incoming warning and caution advisory, communications, aircraft controls, data from navigation interfaces, digital video, and keyset selection data. It processes this incoming information, formats the display presentations and monitors and controls all devices on the data buses continuously.

FlightPro™ also functions as the central output distribution point for keyset legend, display data, and systems data discrete signals. FlightPro™ incorporates a ruggedized 6U VME PowerPC-based single board computer including Fast Ethernet, four serial ports, parallel input/output, and built-in-test (BIT). VxWorks or Green Hills Integrity are the standard operating systems. The standard configuration also includes a quad

FlightPro™ Tactical Processing for the Professional Warfighter

channel 1553 mezzanine card, high speed serial card, digital input/output module with eight channels of opto-coupled discrete inputs, eight channels of opto-coupled discrete outputs, and 16 channels of general purpose bi-directional discretes that can be programmed individually as outputs or inputs.

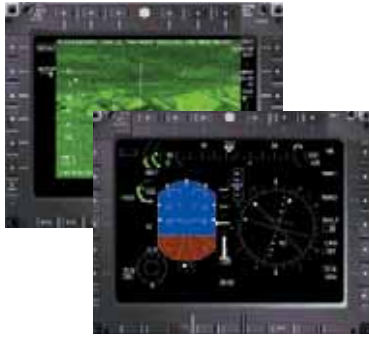
A Flight Management System (FMS) is embedded in the FlightPro™ mission computer, which has been proven in commercial use by similar systems now flying in thousands of commercial Boeing 737 aircraft worldwide. The FMS functionality is augmented by its stored navigation database providing the ability to directly program standard flight procedures, either by selecting them from the database or manually entering them.

FlightPro™ is capable of Required Navigation Performance (RNP) navigation in all flight regimes including departure, enroute, terminal, and non-precision approach using GPS as the sole navigation source. Containment integrity is continuously selectable from RNP-20 for oceanic/remote airspace down to RNP 0.3 for approach legs and advanced cockpit display formats are provided to support this capability. This permits the crew a real-time view of the entire flight plan and their current progress, including all flight legs and navigation waypoints. FlightPro™ uses a commercial-off-the-shelf power supply that is conduction cooled, eliminating the weight and volume penalties of a forced air cooling system.

Features

FlightPro™ provides the following features:

- PowerPC CPU family
- Expandable memory
- Support for two PCI mezzanine cards
- Integrated video/graphics processing
- Communication links to aircraft include two direct coupled MIL-STD-1553B dual redundant bus channels
- Subsystem interfaces include 30 ARINC 429 channels



For more information, please contact:

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FlightPro™

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Benefits

FlightPro™ provides the following benefits:

- Offers proven reliability of more than 2,400 hours MTBF
- Its upgradeability supports easy future growth
- Conduction cooling reduces weight and noise
- Light weight (26.82 lb)

High Performance Commercial Technology Supports the Military Environment

- 6U VME form factor
- High-speed PCI-X and Ethernet
- Modular design open system architecture reduces risk of obsolescence
- Offers defined growth paths using high performance COTS modules
- High resolution video and graphics

Technical Specifications

Size 13.08 in. (33.22 cm) L
x 11.50 in. (29.22 cm) W
x 7.55 in. (19.18 cm) H

Weight 26.82 lb (12.17 kg)

Prime Power 28 VDC or 115 VAC 3 phase 400Hz

Reliability 2,432 MTBF

Video Subsystem Management

- Up to 11 monochromatic and color inputs
- Video multiplexing, selection and digitizing
- Reconfigurable, field-programmable-gate-array-based video processing
- Video routing to all electro-optic/infra-red (EO/IR) multi-function displays
- Colorization and gamma correction for optimal forward looking infrared (FLIR) performance
- Growth to support digital and high-definition sources

Geospatial Data Management and Digital Maps Features

- Real-time graphics rendering for display
- Storage, compression, overlay, and data linking of image data
- Digital terrain database supports intervisibility and threat management

Core Avionics Functions

- Navigation, waypoint steering, and flight management
- Communications resource management
- Avionics system data bus management including multiple MIL-STD-1553Bs, ARINC-429, Ethernet, and RS-232
- Electronic warfare and self-protection management displays

Weapons and Ballistics

- Integral gun turret digital-loop closure
- Air-to-air and air-to-ground free flight ballistics to calculate and display aiming and drop points
- Master controller on MIL-STD 1760 weapons bus
- Weapons management operational programs hosted:
 - Hellfire Missile
 - Sidewinder Missile
 - 20mm gun
 - 2.75" Rockets
 - Flares
 - Bombs

Display processing features

- High performance graphics processing of geometry and texture components
- Cursor tracking
- Digital DVI graphics outputs drive display surfaces directly to achieve noise-free, high-resolution graphics and may be reconfigured to other standard formats
- Video/graphics merge and overlay

Avionics Software Architecture

- ARINC-653 partitioning for safety and security
- Complies with Modular Open Architecture (MOSA) standard model
- Functionally partitioned software
- Hardware independent application software
- Integral synchronization supports dual computer operation
- Developed to MIL-STD-498, under MIL-STD-882C safety program

Environmental Qualification Tests to MIL-STD-810E

- EMC design to MIL-STD-461D
- EMC testing to MIL-STD-462