The FlightPro™ Gen III scalable mission computer integrates advanced mission, weapons and video processing capabilities into a single, high-performance airborne computer.

Description

FlightPro™ has open systems architecture that is ideally adapted for rapid advanced capability insertion. As a flight-qualified, exportable 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 an array of external subsystem interface capabilities.

Applications

FlightPro™ is the central flight avionics collection point for incoming warning and caution advisory, communications management, aircraft controls and displays, data from navigation interfaces, multiple sources of simultaneous video, and keyset selection data. It processes incoming information, formats display presentations, and continuously monitors and controls all devices on the data buses.

FlightPro™ also functions as the central output distribution point for keyset inputs, display data and systems discrete signals. FlightPro™ incorporates a ruggedized 6U VME PowerPC-based single board computer. FlightPro™ interfaces include Fast Ethernet, four serial ports, parallel input/output and built-in-test. FlightPro™ has a standard, partitioned real-time operating system (RTOS) with ARINC 653 and POSIX support. The standard configuration also includes a quad 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 fully compliant 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 aircraft worldwide. FMS functionality is augmented by its stored navigation database that provides the ability to directly program standard flight procedures, either by selecting them from the database or via manual entry.

FlightPro™ is capable of Required Navigation Performance/Area Navigation (RNP/RNAV) in all flight regimes, including departure, en route, 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 current
progress, including all flight legs and navigation waypoints. FlightPro™ is an advanced, integrated computational system that is conduction cooled, eliminating the weight and volume penalties of a forced air cooling system, as well as the power consumption and noise of cooling fans. FlightPro™ is “Quiet Cockpit Technology.”

**Technical Specifications**

<table>
<thead>
<tr>
<th>Prime Power</th>
<th>28 Vdc or 115 VAC 3 phase 400 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>Length: 13.61 in. (34.30 cm), Width: 11.50 in. (29.22 cm), Height: 7.55 in. (19.18 cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>30.4 lb (13.8 kg)</td>
</tr>
<tr>
<td>Mean Time Between Failure (MTBF)</td>
<td>3,200 hours</td>
</tr>
</tbody>
</table>

**Advantages**

- Proven reliability with MTBF of more than 3,200 hours
- Truly open architecture that supports rapid capability enhancement
- Conduction cooling that reduces weight and noise
- Light weight (30.4 lb)

**Features**

- Multicore PowerPC central processing unit (CPU) family
- Scalable memory
- Support for 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
- Four Gigabit Ethernet ports
- Information assurance built in

**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 with extra slots for growth
- An open system that promotes insertion of advanced capabilities by anyone the customer selects
- High-resolution video and graphics

**Video Processing Subsystem**

- Up to 11 monochromatic and color inputs
- Video multiplexing, selection and digitizing
- Reconfigurable, field-programmable-gate-array-based video processing
- Video routing to all multi-function displays
- Colorization and gamma correction for optimal forward looking infrared (FLIR) performance
- Multiple True Picture-in-Picture (PIP)

**Geospatial Embedded Data Management and Digital Map**

- Harris FliteScene™
- 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
- Integrated Aircraft Survivability Equipment (ASE) and self-protection management displays

**Weapons and Ballistics**

- Turreted 20mm cannon
- Air-to-air and air-to-ground munitions ballistics calculations provide Continuous Computed Impact and Release Points (CCIP/CCRPs)
- Master controller on MIL-STD 1760 weapons bus
- Weapons hosted:
  - Hellfire Missile
  - Sidewinder Missile
  - 20mm gun
  - 2.75” rockets
  - Flares
  - Bombs
  - Advanced Precision Kill Weapon System (APKWS)

**Display Processing Features**

- High-performance graphics processing of geometry and texture components
- Cursor tracking
- Digital video interface outputs drive display surfaces directly to achieve noise-free, high-resolution graphics
- Video/graphics merge and overlay

**Avionics Software Architecture**

- RTCA DO-178C compliant
- ARINC-653 partitioning for safety and security
- Complies with Modular Open Systems Architecture (MDSA) standard
- Aligned with Future Airborne Capability Environment (FACE™) Technical Standard
- Hardware-independent application software
- Developed to MIL-STD-498, under MIL-STD-882C safety program

**Environmental Qualification**

- EMC design to MIL-STD-461D
- EMC testing to MIL-STD-462
- Environmental testing to MIL-STD 810E

For more information, please contact:

Northrop Grumman
21240 Burbank Boulevard
Woodland Hills, CA 91367 USA
email: sas@ngc.com