

**Raytheon Hawker 4000 Avionics**

**Honeywell**



**Featuring the Primus Epic®  
Integrated Avionics System**

# Primus Epic® integrated avionics for the Hawker 4000



Again, and again Honeywell's unmatched expertise in systems integration has brought business aircraft operators to the leading edge in aviation technology.

Primus Epic® helps combine time-proven aviation systems with the latest in integration technology. And because the system is based on a proven design with

demonstrated high reliability, Honeywell ensures dispatchability and cost-effective operation.

The Primus Epic integrated avionics system for the Hawker 4000 features unprecedented integration, and a highly flexible and cost-efficient framework, combined with the products that have made Honeywell the world's leading avionics supplier.

Operators will appreciate the functionality of five 8x10-inch flat panel displays and aircraft utility systems control. Pilots can utilize the cursor control device, developed to interface with the *Windows*-style operating system. And our Primus II radio system has developed into a more highly integrated package than before.

## See everything in clear view

There are five 8 x 10-inch liquid crystal displays (LCD) in the Hawker 4000 cockpit. LCD display units in the Primus Epic cockpit include dual Primary Flight Displays (PFDs), dual multifunction displays (MFDs) and an Engine Instrument and Crew Advisory System (EICAS) display. The PFDs incorporate all of the information necessary to safely operate the aircraft, including traditional primary flight display information. Included are combined Attitude Director Indicator (ADI) and Horizontal Situation Indicator (HSI) formats with airspeed, altitude, vertical speed and other essential necessary information to the flight crew for control of the aircraft throughout the flight. As a result of the outstanding integration capabilities found in the Primus Epic system, a single PFD provides the display of all the primary parameters which previously have required separate displays. Gone are the requirements for individual attitude director indicators, horizontal situation indicators,

mach/airspeed indicators, altimeters, vertical speed indicators, radio magnetic indicators and distance measuring indicators.

The MFD displays navigational maps and weather data, as well as aircraft system pages and video windows. Pull-down

window selections include TCAS, checklist, vertical profile and system page synoptics. Although primarily used as a navigation display providing MAP and PLAN formats to aid the crew in improving

situational awareness, the MFD also allows other navigation and flight information to be displayed, including weather radar, TCAS, EGPWS terrain information and checklists. Specifically developed for the Hawker 4000 are a series of synoptic pages providing information about flight controls, electrical systems, fuel, environmental control/doors, hydraulic systems and pneumatic systems.

The Engine Instrument and Crew Advisory System (EICAS) display for Primus Epic provides the pilot and crew with an enhanced means to monitor engine and associated subsystem performance. EICAS graphically presents information on performance capabilities, current performance and engine component or subsystem operational conditions relative to nominal conditions.





## Human-Centered Cockpit Design

Human-centered design concepts were used in the development of this system to ensure and enhance pilot performance and safety. As a result, Primus Epic changes the basic nature of flight by providing the processing speed, data link interfaces and data storage capability to bring large amounts of information into the cockpit for real-time use, resulting in increased safety through enhanced situational awareness and reduced pilot workload.

An array of intuitive functional interfaces allows the Hawker 4000 operator to control and communicate with the aircraft:

- Liquid Crystal Flat-Panel Displays (LCD)
- Engine Instrument and Crew Advisory System (EICAS)
- Cursor Control Device (CCD)
- Cockpit Controllers

The Cursor Control Device (CCD), built upon the innovations designed by Honeywell for the Boeing 777, applies easy-to-use touchpad technology to the cockpit environment. The expanded functionality of the Hawker 4000 CCD allows the pilot to control the many aspects of the display system with one easy-to-use, highly interactive device. The crew will find the new environment of the Primus Epic flight deck immediately intuitive and comfortable. The use of CCD-controlled pull-down menus, *Windows*-based display pages and “soft keys” in lieu of hardware push-buttons reduces pilot workload while saving costs, weight and wiring associated with traditional controllers.



## Flight control – Expert guidance

The Primus Epic fully-digital dual integrated autopilot/flight guidance system gives the Hawker 4000 fail operational/fail passive control over the entire flight.

Primus Epic's dual flight guidance computers transition automatically should one fail. An integrated mode selector and flight guidance controller provides simple, confident control of all flight functions. Automatic altitude preselect, flight

level change mode and VNAV capability combine with the required control servo authority to match every flight condition and aircraft configuration for the smoothest ride available and maximum passenger comfort.

# Flight management and precision navigation

## Primus Epic Integrated Flight Management System (FMS)

The new Hawker 4000 is equipped with the revolutionary Primus Epic integrated FMS with full three-dimensional mission performance. The integrated FMS' precision long-range navigation blends inputs from all on-board long and short-range sensors. The integrated FMS can navigate entirely by GPS and still maintain input from all available sensors.

With the exclusive Honeywell software "SmartPerf," FMS performance functions can be customized specifically for your Hawker 4000. SmartPerf means smart or learned performance. It lets the FMS learn the characteristics of an airframe and engine set and fine tune calculations based on observed performance. Additionally, dual autothrottle capability and revolutionary Take Off and Landing (TOLD) software, help provide exceptional control.

Operators familiar with the multifunction control display unit (MCDU) of the Honeywell FMS will be pleased to learn of its expanded control and capabilities. Long-touted as an easy-to-use control device the MCDU has six line select keys to help control functions such as radio, EFIS, autothrottle, electrical systems and global communications. This expanded capability is a direct result of the incredible integration capabilities offered to operators with the Primus Epic system.



## Integrated sensors

### Dual Micro Inertial Reference Sensors

The dual Micro IRS is the most advanced inertial reference system available today, providing every essential attitude, heading and position parameter with unmatched precision. All this functionality is offered in a box that offers a smaller size, lower weight and higher reliability than ever before.

With a volume of just 276 cubic inches and a weight of only 10.25 pounds, the passively cooled Micro IRS provides the same functionality with less than half the size and 60% of the weight of its predecessor, the Laseref IV.

### Dual 24-channel GPS

To meet the highest navigation standards, the Hawker 4000 carries the latest GPS technology. A new GPS module has 24-channel receiver capability and was built to ARINC 743 standards. Besides incorporating today's GPS technology, it is designed for growth into differential GPS, LAAS and WAAS. Like other Honeywell GPS products, this system incorporates Receiver Autonomous Integrity Monitoring (RAIM) functions essential for certification of GPS-based approaches.

### Precise air data

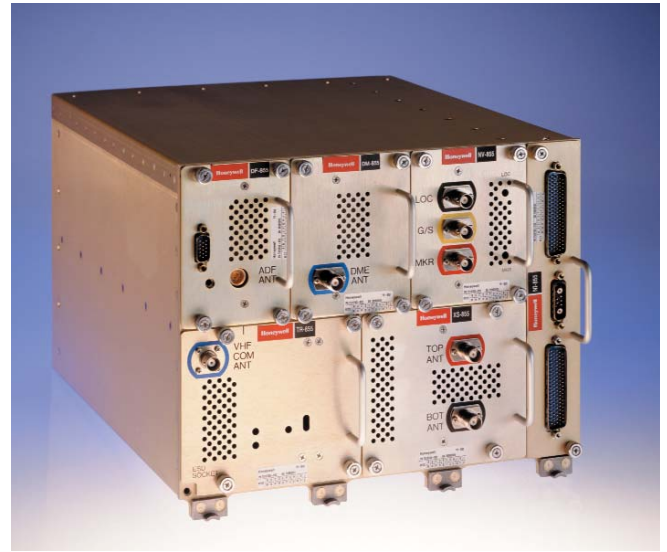
The Primus Epic air data system provides precise airspeed, altitude and vertical rate to the inertial reference systems (IRS), flight control and display systems. Separate air data modules act as sensors to provide pressure information for air data processing of airspeed, altitude and vertical rate information.

# Radio control

## Integrated radio and audio system

A dual Honeywell Primus II digital nav/comm/ID radio system is standard on the Hawker 4000. The Primus Epic version of this digital remote mounted radio system encompasses the standard navigation and communications functions, including VOR, ADF (single), DME, ILS, VHF Communication and Mode S Diversity Transponder modules. The advantages of the expanded integration found in this version of the Primus II are:

- Fewer units
- Reduced wire count
- Extensive Built-In Test (BIT) and integrated maintenance features

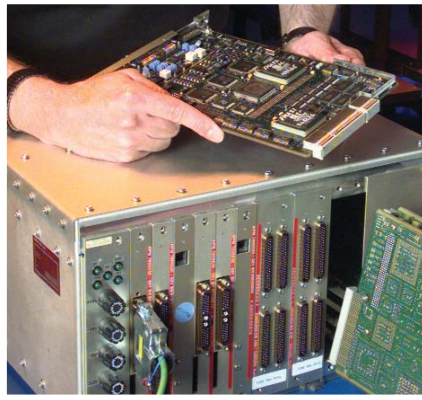


## Severe weather avoidance with Primus® 880 weather radar

The turbulence-detecting Primus 880 (P-880), along with the optional LSZ-860 Lightning Sensor System, offers added dimensions in severe weather avoidance as well as dual operator capability.

With its unique high-power output and short pulse-width transmissions as well as Honeywell's patented REACT mode, the full-color P-880 radar combines traditional precipitation displays with the advantage of Doppler detection of even small areas of turbulence.

The optional LSZ-860 further enhances Honeywell radar detection by determining the rate of lightning activity in a given area and displaying the center of that area. This powerful combination of lightning rate/precipitation/turbulence display gives the Hawker 4000 the most advanced severe weather avoidance tool available.



## Aircraft utility systems control

Primus Epic is designed with the capability and flexibility required to integrate the aircraft system control functions, greatly reducing the number of cockpit control panels, remote electronic control units and associated interfaces and wiring. This represents a major advancement in overall aircraft system integration, contributing significantly to cost and reliability improvements.

The aircraft operator will benefit from utility integration through lower aircraft operating costs. This benefit is the result of the reduced weight and power consumption, higher reliability,

maintenance ease, common loading and configuration management and reduced spares cost since fewer individual units are required. Integrated aircraft utility systems include:

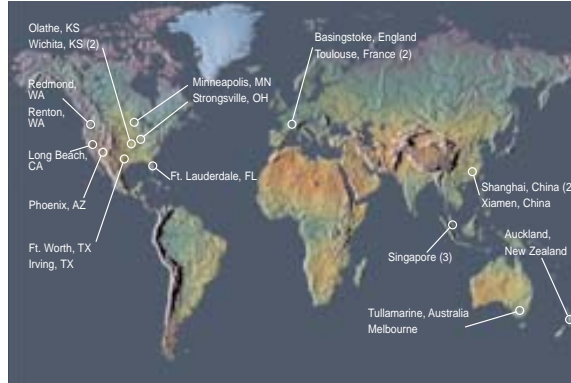
- Nose wheel steering
- Landing gear
- Anti-skid braking
- Fuel
- Engine vibration monitoring

In addition, Honeywell is involved with the control and integration of many other subsystems, such as:

- Pressurization and air conditioning
- Ice and rain protection
- Fire/overheat protection
- Hydraulic power
- Auxiliary power unit
- Thrust reversers
- Stall warning
- Electrical

## Options to enhance your system

- Third digital VHF comm
- Second ADF receiver
- Third IRS, FMS system
- Satellite communication system
- Global communications capability
- Third audio panel
- Airborne flight information system (AFIS)
- Lightning sensor system



## Worldwide customer support

In addition to providing avionics designed for rigorous business travel environments, Honeywell also provides extensive support including maintenance training, pilot courses, support documentation, and on-site support at your facility. This level of service ensures smooth transition from aircraft delivery to line operation and continues for the service life of the aircraft.

While Honeywell's avionics are based on proven technology to provide you with exceptionally high reliability and simplified maintenance, when service is needed our customer engineers and service centers are strategically located around the world to provide efficient, responsive support. As always, our SPEX exchange service is available 24-hours a day.

Honeywell's customer and product support organization is committed to keeping Primus Epic flying day and night, around the world.

## Find out more

To learn more about Honeywell's Primus Epic system contact:

### Honeywell Aerospace

Air Transport and Regional  
1944 E. Sky Harbor Circle  
Phoenix, AZ 85034  
Toll Free: 1-800-601-3099  
International: 602-365-3099  
[www.honeywell.com](http://www.honeywell.com)

A60-0836-000-001  
April 2006  
© 2006 Honeywell International Inc.

# Honeywell