



Primus® Apex
Avionics System

**DELIVERING SUPERIOR
SITUATIONAL AWARENESS
AND IN-FLIGHT DECISION MAKING**

The Honeywell Primus® Apex Avionics System has been tailored to the single pilot cockpit to enhance the safety and operability of turboprops and light to mid-size business jets.



Primus® Apex offers functionality previously only available in the most sophisticated global business jets. Primus Apex's synthetic vision, digital charts and maps, coupled vertical navigation, and graphical flight planning provide exceptional safety and situational awareness.

Primus Apex is an intuitive system with a powerful pedigree. Honeywell's system integration expertise combined with leading technological breakthroughs and world-class graphical displays provide the ultimate experience for pilots and operators. Designed using the Honeywell User Experience, Primus Apex is a flight deck that is truly easy-to-use, enhancing the pilot's ability to fly safely and efficiently in today's ever-changing airspace environment.

The system core (computing and graphics generation) is based on Honeywell's Primus Epic system with "designed-to-cost" point products such as radios and sensors. This approach enables high-end business jet functionality at an affordable price for turboprops and light to mid-size business jets. Primus Apex consists of a base system with unique options which provide new capabilities and the flexibility to effectively meet new airspace mandates.

Primus Apex Features and Benefits:

- Two primary flight displays and one or two multifunction displays featuring crystal-clear, high resolution active matrix liquid crystal displays and wide viewing capability allowing cross-cockpit scanning. Maximizes aircraft availability and dispatch – four displays, dispatch with two. Minimizes head down
- Integration of aircraft systems, safety sensors and navigation information to decrease pilot workload and improve safety through enhanced situational awareness
- Increased reliability using advanced design techniques and solid state sensors for improved dispatchability
- Emerging Communication Navigation Surveillance Air Traffic management (CNS/ATM) operational and environmental requirements
- A flexible architecture allows easy integration of hardware and software as new technology comes available
- Compliance with all current worldwide mandates
- FAA Part 23 or Part 25 certification capability



Display System Features

The Primus Apex system is available with two different display sizes. The KDU-1080 outside dimensions are 10 by 8 inches, with a 10.4 inch diagonal measure LCD, while the larger KDU-1500 is based on a 15-inch diagonal measure LCD.

The Primus Apex system has a host of intuitive and highly optimized aircraft information presented in 2/3, 1/3 and 1/6 screen window layouts. This window scheme allows for information to be expanded or reduced depending on the pilot's specific needs during a particular phase of flight.



Image courtesy of Pilatus Group

Features within the windows include:

- Multifunction data access
- Drop-down menus
- Menu tabs
- Dialog boxes

The primary flight displays support SmartView™

Synthetic Vision – with advanced symbology, including:

- 3-D terrain
- Approach guidance
- Enroute
- Terrain alerting
- Visual runway
- FMS altitude temperature Comp
- New route waypoint list window
- ETE in x-waypoint list window
- Task menu “Vertical Direct To”

The multifunction displays support:

- Interactive Navigation (INAV™) graphical flight planning
- Pilot-entered waypoints on INAV
- Digital charts and maps
- Radio tuning
- Synoptics

Modular Avionics Unit (MAU)

The MAU is a cabinet containing various field-removable modules. Based on the Primus Epic architecture, the MAU integrates the following products or functions:

- Automatic Flight Control System
- Flight management system
- Communications management
- Electronic display system
- Engine indication
- Crew alerting system
- Aural warning computer
- Electronic checklist system (optional)
- Input/output hardware and software
- Avionics maintenance computer

Controllers

- KMC-2210 primary flight display controller
- KMC-2220 multifunction display controller
- KMC-9200 guidance panel
- KMA-29 audio panel
- KMC 2230 cursor control device

Flight Management System

- Comprehensive navigation database
- Graphical INAV and flight planning
- Primary and secondary flight plans
- Dialog boxes
 - 100 waypoints per flight plan
 - 1000 stored pilot defined waypoints
 - 3000 stored flight plans
- Precision and non-precision approaches
- SID/STAR procedures
- Wide Area Augmentation System (WAAS)
- Full complement of RNAV approaches
 - RNP
 - LNAV/VNAV
 - LNAV
 - LPV
- Excess vertical deviation indication
- Steep approach and landing
- Vertical glide path (VGP) mode
- Vertical navigation (VNAV)
- Direct-To function
- Automatic leg transitions
- Automatic bank angle limit
- Parallel offset
- Weather alternate
- Mass storage module
- PC flight planning tool
- Flight summary post-landing

Automatic Flight Control System (ACFS)

- Autopilot (including automatic pitch trim)
- Yaw damper with turn coordination
- Flight director guidance
- Autothrottle
- Coupled vertical navigation
- Emergency descent mode

Additional Features:

Display Enhancements

- Honeywell's SmartView Synthetic Vision System
- INAV™
- Digital charts and maps
- Paperless cockpit

Hazard Avoidance and Detection Systems

- Traffic/terrain surveillance systems
 - AS, TCAS I or TCAS II
 - ADS-B
 - Class A or B Terrain Awareness Warning System (TAWS) – SmartRunway™/SmartLanding™
- Weather radar system
- Lightning detection system interface
- XM® weather
- Digital radio altimeter

Multi-Sensor Required Navigation Performance (RNP) Capabilities

- Augments GPS-only performance
- Improved obstacle clearance
- Lower landing minimums
- More “fly direct to” capability
- Reduced pilot workload

Operation and Maintenance

- Flight data and cockpit voice recorders
- Emergency locator transmitter (ELT)
- Central aircraft maintenance system

Flexible Architecture/Cockpit Layout

- Three or four displays
- KDU 1080 and or KDU 1500
- FAA Part 23 or Part 24 certification

Controllers

- KMA 29 audio panel
- KMC 2210 primary flight display (PFD) controller
- KMC 2220 multifunction display (MFD) controller
- KMC 9200 guidance panel for AFCS
- KMC 2230 cursor control device

Radios

- KTR 2280 multi-mode digital radio (MMDR)
- KXP 2290 Mode “S” diversity transponder
- KGS 200 GPS receiver (WAAS)

Air Data System

- AZ-200 air data module

Attitude Heading Reference System (AHRS)

- AH-1000 AHRS

Future ATM Capabilities

- ADS-B
- RNP
- PM CPDLC

XM is a registered trademark of XM Weather

Why Honeywell?

- Industry leader in integrated avionics systems
- Broadest range of avionics products and services
- Proven designs with high reliability
- Global service and support network

Honeywell Aerospace

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Global Customer Support

Honeywell's avionics are based on proven technology providing exceptionally high reliability and simplified maintenance. To help ensure optimal operation conditions, Honeywell provides comprehensive installation consultation and support tailored to the unique needs of each operator. Additionally, our product support services include regularly scheduled maintenance and pilot training courses and support documentation.

When service is needed, our customer engineers and service centers are strategically located around the world to provide efficient, responsive support. Honeywell remains unsurpassed in the scope and variety of services, which range from SPEX exchange of line replaceable units to personalized service contract designed to fit the resources and circumstances of every operation regardless of size or business nature.

