ROCKWELL COLLINS PRO LINE 21 AVIONICS SYSTEM

Smart avionics for the Cessna Citation CJ4.

Achieve a new level of situational awareness and operational efficiency. With Pro Line 21, superior information comes standard.

With Pro Line 21, your focus is where it needs to be – on flying the aircraft. Our fully integrated flight deck for the CJ4 has significantly enhanced crew situational awareness, providing superior operational efficiency and built-in growth capability to meet evolving airspace and regulatory requirements.
Cessna CJ4 high-performance flight deck

- Four 10 x 8-inch LCD displays
- Wide Area Augmentation System (WAAS) receiver
- Single FMS-3200 with coupled VNAV, performance capable of RNP 0.3 n.m.
- Single File Server Unit (FSU) with electronic charts, enhanced maps and XM graphical weather
- Pro Line 21 CNS radios
- Traffic Surveillance System (TSS)
- Engine Indication and Crew Alerting System (EICAS)
- Maintenance Diagnostic System (MDS)
- Electronic audible checklist
- Solid-state weather radar

Advanced flight planning
Our FMS-3200 provides advanced flight planning, multisensor navigation and flight management capabilities specifically tailored to the Citation CJ4. The standard performance database, keyed to aircraft flight manual parameters, makes automatic V-speed calculations available.
Pro Line 21: A new level of integration

Cessna’s newest Citation CJ continues a long standing relationship between Cessna Aircraft and Rockwell Collins. If you’ve flown any of its predecessors equipped with Pro Line 21 – the CJ1+, CJ2+ and CJ3 – you can easily step up to the CJ4 with its more highly capable Pro Line 21 flight deck. With a designed-in capability to fly in today’s and tomorrow’s congested airspace, the CJ4’s avionics provide superior operational efficiency, enhanced situational awareness and built-in growth capabilities to meet evolving airspace and regulatory requirements. Integral to the system are outstanding dispatch reliability, integrated radio-tuning, Integrated Flight Information System (IFIS), next-generation Flight Management System (FMS), and Engine Indication and Crew Alerting System (EICAS).

The four display system enables tremendous flexibility in how flight and system information are presented. We have refined the human machine interface to bring about a new level of ease in flight. Flight information is presented in an intuitive, easy-to-interpret format with safety-enhancing reversion capability.

Operational efficiency and less paper with IFIS

Rockwell Collins industry-leading IFIS is an integral component to the CJ4 and provides a higher level of operational efficiency and convenience by introducing a path to paperless flight deck. At the heart of the system is the File Server Unit (FSU), which uses a high-bandwidth Ethernet link to interface with the Pro Line 21 MFDs. IFIS advanced features greatly enhance situational awareness and flight crew decision making, including electronic charting, graphical weather and enhanced maps for the CJ4 flight deck.

Our displays and IFIS control panels are optimized for ease of access, reducing pilot workload. We offer dual FSU/IFIS as an option to enable paperless operations and further reduce pilot workload.

Enhanced map overlays

Pro Line 21’s enhanced graphical capabilities and fully integrated architecture enable pilots to overlay a number of safety-enhancing database and sensor technologies on the standard flight display. Water features, geopolitical and flight plan mapping features, airspace boundaries and high- and low-altitude airway overlays can all be depicted – giving pilots a complete picture of the current navigation situation.

Graphical weather

Emerging data link technology, integrated with Pro Line 21’s IFIS applications, enables CJ4 pilots to receive and overlay real-time graphical weather updates (in NEXRAD and additional formats) for a continuously updated picture of weather patterns across the entire route-of-flight. XM satellite broadcast weather is standard, data link request/reply weather is available as an option.

Electronic charting

The “paperless flight deck” is fast becoming a reality, thanks to electronic charting capabilities available on the CJ4. Approaches, Standard Instrument Departures (SIDs), Standard Terminal Arrival Routes (STARs) and airport diagrams can all be stored for pilot reference on the Pro Line 21 adaptive flight displays. Chartlink™, a patented Rockwell Collins feature, ensures seamless integration between the FMS and electronic charts to automatically sequence relevant charts for a flight plan. The aircraft’s “ownership position” greatly enhances the flight crew’s situational awareness.
Advanced flight management has never been so simple

Reduce your workload with our next-generation FMS
Fully integrated with the Pro Line 21 avionics system, our advanced FMS-3200 combines workload-reducing automation on the flight deck with true multisensor navigation capability. The result — seamless takeoff-to-touchdown flight guidance, direct-to-anywhere simplicity and significantly improved eyes-up display capability for the Citation CJ4.

Used in conjunction with the GPS-4000S WAAS receiver, the FMS-3200 synchronizes operation of all lateral and vertical flight plans, supports time/fuel planning, and automatically flies en route, terminal and approach procedures (as well as providing missed-approach guidance), while offering automatic FMS-ILS transfers, and steering/pitch commands to the autopilot. Furthermore, the FMS incorporates many features such as Radius to Fix (RF) legs and step-down approaches required for the Required Navigation Performance (RNP) environment, enabling RNP 0.3 n.m. capability.

Full profile, coupled or advisory VNAV capability, including WAAS LPV approaches, offers complete lateral and vertical navigation programming and automation for all phases of flight. This VNAV tracking capability ensures that altitude and speed constraints are met at waypoints or step-down fixes, speed limits at altitudes are honored and the vertical flight profile, as specified by the pilot, is followed precisely.

The FMS integrates aircraft performance capability. It can automatically calculate vital takeoff and landing performance data — including V-speeds, runway length requirements and weight limits — based on CJ4’s flight manual parameters. V-speeds are automatically transferred to the primary flight displays for easy reference during takeoff.

The FMS also works seamlessly in conjunction with the electronic charts through Chartlink™, a patented Rockwell Collins feature. As the departure and destination airports are entered into the FMS, the appropriate electronic charts are automatically lined up, including possible alternates. The benefit of this feature can be realized if Air Traffic Control issues a rerouting to a new approach and a new runway. The pilot can easily change to the appropriate charts through the Charts menu.

Simplified database management
The DBU-5000 is a USB-based database unit capable of loading both the flight management system (FMS) and the File Server Unit (FSU), as well as downloads from the Maintenance Diagnostic System. Furthermore, the database unit significantly reduces the time required for data loading.

Delivering critical aircraft information to the flight deck with EICAS
The EICAS system provides engine indication and aircraft system messages to enhance operational flexibility. The Crew Alerting Messages (CAS) can be displayed on either the Multifunction Display (MFD) or the Primary Flight Display (PFD) in reversionary mode. Furthermore, the CAS messages can be displayed alone or in combination with maps or checklists.

In addition to CAS messages and engine indications, aircraft status information for flaps, flight control trim positions, cabin pressurization, the electrical system, the hydraulic system and the oxygen system can also be presented.

Next-generation Traffic Surveillance System
The CJ4 will be equipped with our new Traffic Surveillance System (TSS) to better enable you to fly in congested airspace and meet evolving airspace requirements. The system integrates the traditional TCAS and transponder into a single unit, saving weight and space while enhancing reliability. In addition, we are also able to combine the TCAS antenna and the transponder antenna into a single unit, thereby reducing aircraft drag as well as additional weight with wiring reduction.

The TSS is the processing platform for emerging Automatic Dependent Surveillance – Broadcast (ADS-B) applications, such as Cockpit Display of Traffic Information (CDTI) and separation assurance applications for operation in the future airspace.

Your comprehensive maintenance diagnostic system
The Maintenance Diagnostic Computer (MDC) provides avionics and aircraft level system maintenance status and troubleshooting aid. The MDC also provides electronic checklists covering normal, abnormal and emergency operations; another example of system integration and flight crew workload reduction.
Enhance your CJ4 even more

- **Second IFIS (FSU and IFIS applications)**
  A second IFIS provides redundancy and seamlessly integrates enhanced functionality into the flight deck. The additional IFIS eliminates the need for paper charts in the flight deck.

- **Automatic Direction Finder (ADF)**
  Our ADF receiver enables operations in remote areas and allows the flight crew to cross-check navigational information and has a frequency range of 190.0 to 1799.5 kHz, selectable in 500 Hz increments.

- **Data link (ACARS)**
  Our data link system consists of a third VHF-4000 radio and the addition of communications management function in the Radio Interface Unit. Data link provides timely and reliable communications. It supports air traffic management, weather services through Universal Weather and aircraft operational communications, as well as future growth as CNS/ATM evolves.

- **Second FMS**
  Installation of a second FMS-3200 and second GPS-4000S provides the redundancy and reliability required for enhanced dispatch capability. The additional FMS enhances crew resource management by allowing independent operation by each crew member. For convenience, it may also be synchronized with the pilot-side FMS. Our DME-4000 Distance Measuring Equipment receiver/transmitter provides complete DME information from three ground stations simultaneously. A second DME provides redundancy and the ability to cross-check navigational information. It also provides additional information for the FMS to use in calculating aircraft position.

- **High Frequency Communication System**
  Our industry-leading HF-9000 High Frequency Communication System provides communication capability in oceanic and remote regions. The system provides 175 watts peak envelope power voice communications in the 2.000 to 30.000 MHz frequency range. Optional Selective Calling (SELCAL™) alerts are provided to the crew when the aircraft is being contacted.

- **Turbulence Weather Radar**
  The TWR-850 turbulence-detection weather radar detects weather at ranges up to 300 n.m. and precipitation-related turbulence at ranges up to 50 n.m. This gives flight crews the information they need to select the smoothest, most efficient routes. The TWR-850’s solid-state design provides significant improvements over magnetron-based systems in performance and reliability.

- **MultiScan™ Weather Radar**
  The MultiScan™ Weather Radar utilizes advanced digital signal processing to automate weather radar operations. Tilt and gain controls are automated to yield ground clutter free weather images at ranges up to 300 n.m. Additional features include Overflight™ protection and geographical location weather correlation.
Global service and support from a trusted source.

Total service solutions you can count on. From initial delivery and throughout your CJ4’s life cycle, we are here with comprehensive service and support solutions. Backed by our worldwide support network, we offer customized solutions from options that include performance-based maintenance and repairs, engineered solutions, provisioning, rental exchange, training and simulation solutions, all backed by the best turnaround times in the industry. Rockwell Collins delivers reliable solutions, anywhere, anytime – every time.

Building trust every day.

Rockwell Collins delivers smart communication and aviation electronics 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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