

Publications and Training Solutions

Course Syllabus: 523-0809250

COURSE TITLE: Cessna Citation XLS+ Pro Line 21
Level I Operations & Flight Line Maintenance

PREREQUISITES: Students should have basic knowledge of aircraft avionics systems and a working command of the English language (interpreters are available for special cases).

PURPOSE: This course provides line maintenance personnel with training to operate and perform flightline maintenance for the Pro Line 21 System.

This course is designed to teach troubleshooting for replacement of line replacement units (LRUs) and does not include internal maintenance of any component.

The Pro Line 21 System consists of the LRUs identified in the section titled EQUIPMENT TYPE by nomenclature and part number, including associated peripheral equipment identified as deliverable hardware.

OBJECTIVES: Upon completing this course, the student will be able to:

1. Provide an overall understanding of Pro Line 21 Avionics Principles and Operation.
2. Identify System Components and the Functional/Operational Characteristics of each LRU.
3. Identify Typical Aircraft System Interface/System Architecture.
4. Perform Fault Isolation to a faulty LRU using Built-In Maintenance Diagnostics.

COURSE LENGTH: 5 Days

TRAINING DEVICES:

1. Special Test Equipment
 - a. Test Rig, Cedar Rapids (if available)

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TRAINING MATERIALS:

1. PowerPoint Presentation with LCD/Box Light projector
2. Student Guide – Flash drive (pdf) – Training Presentation
Information Sheets
3. Cessna Citation XLS+ Avionics System Diagnostic Guide (excerpt) 523-0808529
4. Cessna Citation XLS+ Avionics System Diagnostic Guide 523-0808530

REFERENCES:

1. Cessna Citation XLS+ Avionics System Manual w/Pro Line 21 & IFIS 523-0808529
2. Cessna Citation XLS+ Avionics System Diagnostic Guide 523-0808530
3. Cessna Citation XLS+ Operator's Guide 523-0808531

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COURSE OUTLINE

0. Welcome & Introductions

- A. Course Overview
 - i. Welcome
 - ii. Student Registration
- B. Course Description and Objectives

1. Data Bus

- A. Why We Use Data Buses
- B. ARINC Data Buses
 - i. ARINC 429
 - ii. ARINC 453

2. Integrated Avionics Processing System (IAPS)

- A. Overview
- B. System Architecture
- C. Integrated Card Cage (ICC)
- D. Power Supply Module (PWR)
- E. IAPS Environmental Controller (IEC)
- F. Input/Output Concentrator (IOC)
- G. Maintenance Diagnostic Computer (MDC)
- H. Configuration Strapping Unit (CSU)
- I. Detailed Functional Theory
 - i. IAPS Power Distribution
 - ii. Temperature Monitoring
 - iii. Overheat Reporting
 - iv. Power Supply Inhibit
 - v. CSU Detailed Theory

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- J. Maintenance and Troubleshooting
 - i. PWR Fault Indications
 - ii. IEC Fault Indications
 - iii. Status Messages
 - iv. Diagnostics
- 3. Maintenance Diagnostics**
 - A. Overview
 - B. Maintenance Diagnostic Computer (MDC)
- 4. Electronic Flight Instrument System (EFIS)**
 - A. Overview
 - B. Adaptive Flight Display
 - i. Primary Flight Display (PFD)
 - ii. Multifunction Display (MFD)
 - C. Reversion Switch Panel (RSP)
- 5. Integrated Flight Information System (IFIS)**
 - A. Overview
 - B. File Server Unit (FSU)
 - i. File Server Applications
 - ii. Graphical Weather
 - iii. Enhanced Map Overlays
 - C. External Compensation Unit (ECU)
 - D. Encrypted Application Key (EAK)
 - i. Programming EAK's
 - E. Electronic Charts Region Access Keys
 - F. Maintenance and Troubleshooting
 - i. Database Effective Dates

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6. Engine Indicating Crew Alert System (EICAS)

- A. Overview
- B. MFD
 - i. Display Synoptics
- C. Data Concentrator Unit (DCU)
- D. Maintenance and Troubleshooting
 - i. Status Messages
 - ii. Diagnostics

7. Air Data System (ADS)

- A. Overview
- B. Air Data Computer (ADC)
- C. Maintenance and Troubleshooting
 - i. Status Messages
 - ii. Diagnostics

8. Attitude Heading System (AHS)

- A. Overview
- B. Attitude Heading Computer (AHC)
- C. Flux Detector Unit (FDU)
- D. External Compensation Unit (ECU)
- E. Maintenance and Troubleshooting
 - i. Diagnostics
 - ii. Post Installation Check
 - iii. Compass Compensation Procedure
 - iv. Automatic Leveling Procedure

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9. Flight Guidance System (FGS)

- A. Overview
- B. Flight Guidance Computers (FGC)
- C. Flight Guidance Panel (FGP)
- D. Primary Servos (SVO)
- E. Autopilot and Yaw Damper Theory of Operation
- F. Autopilot Diagnostics
 - i. Entering and Using Flight Guidance Diagnostics
 - 1. Report Mode
 - 2. Input Mode
 - 3. Output Mode

10. Flight Management System (FMS)

- A. Overview
- B. Flight Management Computer (FMC)
- C. Control Display Unit (CDU)
- D. Data Base Unit

11. Data Loading

- A. DBU-5000

12. Radio Sensor System (RSS)

- A. Overview
- B. GPS
- C. VOR/ILS/MB/ADF Receiver (NAV)
- D. Distance Measuring Equipment (DME)
- E. VHF Comm Receiver/Transmitter (VHF)
 - i. Datalink/CPDLC/Link 2000+
- F. Mode S Transponder (TDR-94D)
- G. High Frequency Receiver/Transmitter (HF)

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- H. Radio Altimeter (ALT)
- I. Radio Tuning Operations
- J. Maintenance and Troubleshooting
 - i. Flight Line Diagnostic Procedures

13. Weather Radar (WXR)

- A. Overview
- B. Receiver/Transmitter Assembly (RTA-8xx)
- C. Weather Radar Theory
- D. Maintenance and Troubleshooting
 - i. Radome Maintenance (AC 43-14)
 - ii. Flight Line Diagnostic Procedures

14. Summary – Review - Critique

- A. Test
- B. Critiques

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EQUIPMENT TYPE:

EQUIPMENT	NOMENCLATURE	PART NUMBER
IAPS Card Cage	ICC-3111	822-2191-001
IAPS Environmental Controller	IEC-3001	822-1167-001
IAPS I/O Concentrator	IOC-4110	822-2065-001
IAPS Power Supply	PWR-3000	822-1137-001
Configuration Strapping Unit	CSU-3100	822-1363-002
Options Control Module	OCM-3100	822-1484-228
Maintenance Diagnostic Computer	MDC-3110	822-1987-006
Adaptive Flight Display (PFD)	AFD-3310	822-1993-100
Adaptive Flight Display (MFD)	AFD-3320	822-2349-100
Cursor Control Panel	CCP-3310	822-2389-001
Display Control Panel	DCP-3310	822-2388-001
File Server Unit	FSU-5010	822-1543-101
XM Receiver	XNWR-1000	822-2031-002
External Compensation Unit (FSU)	ECU-3000	822-1200-998
Graphical Weather (XM)	GWX-3000	810-0007-001
Graphical Weather (Universal)	GWX-5000	810-0004-001
Data Concentration Unit	DCU-5010	822-1538-101
Air Data Computer	ADC-3000	822-1109-126
Attitude Heading Computer	AHC-3000	822-1110-002
External Compensation Unit	ECU-3000	822-1200-003
Flux Detector Unit	FDU-3000	822-1193-001
Flight Guidance Computer Module	FGC-3000	822-1108-043
Flight Guidance Panel	FGP-3000	822-1107-116
Primary Servo (Aileron & Rudder)	SVO-3000	822-1168-022

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EQUIPMENT	NOMENCLATURE	PART NUMBER
Primary Servo (Elevator)	SVO-3000	822-1168-023
Servo Mount (Rudder)	SMT-65	622-5735-021
Servo Mount (Aileron)	SMT-65	622-5735-022
Servo Mount (Elevator)	SMT-65	622-5735-023
Flight Management Computer	FMC-3000	822-0883-038
Control Display Unit	CDU-3000	822-0884-602
Radio Control	CTL-23D	822-2177-001
Database Unit	DBU-5000	822-2215-602
Radio Altimeter	ALT-4000	822-0615-206
DME Receiver-Transmitter	DME-4000	822-1466-001
Global Positioning System w/WAAS	GPS-4000S	822-2189-001
GPS/WAAS Antenna	ANT-4000	822-2347-010
HF Receiver-Transmitter	HF-9031A	822-0101-002
HF Antenna Coupler	HF-9041	622-8114-002
VHF Comm Receiver-Transmitter	VHF-4000	822-1468-102
VHF Navigation Receiver (VOR/ILS/MB/ADF)	NAV-4000	822-1465-101
VHF Navigation Receiver (VOR/ILS/MB)	NAV-4500	822-1579-001
ADF Antenna (Single)	ANT-462A	622-7383-001
Mode-S Transponder (Diversity, Use with TCAS)	TDR-94D	622-9210-008
TCAS II Transmitter Receiver	TTR-4000	822-1294-002
TCAS II Directional Antenna	TRE-920	622-8973-001
Radio Interface Unit	RIU-4110	822-1864-022

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EQUIPMENT	NOMENCLATURE	PART NUMBER
Audio Control Panel	ACP-4130	822-2381-015
VHF Communication Transceiver (Optional 3rd - Datalink)	VHF-4000	822-1468-302
Radio Interface Unit (with CMU option for Datalink option)	RIU-4010	822-1863-022
External Compensation Unit (used with RIU-4010)	ECU-3000	822-1200-997
Receiver/Transmitter Antenna with Turbulence Detection	RTA-852	622-8439-004