

# Publications and Training Solutions

## Course Syllabus: 523-0816741

**COURSE TITLE:** Pro Line 21 King Air C90/B200/B300/B350 Premier 1/1A Level I  
Operations & Flightline Maintenance

**PREREQUISITES:**

1. 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 Flight Line Maintenance for the Pro Line 21 System.

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

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

**COURSE LENGTH:** 5 Days

**TRAINING DEVICES:**

1. Not Applicable

**TRAINING MATERIALS:**

1. PowerPoint Presentation with LCD projector
2. Information Sheets/Handouts
3. Student Training Manual
4. Beechcraft King Air C90GTi/B200GT Avionics System Manual Excerpt 523-0808533
5. Beechcraft King Air C90GT/B200GT Diagnostic Guide 523-0808534
6. King Air With IFIS Avionics System Manual Excerpt 523-0807237
7. Raytheon Premier IA Avionics System with IFIS 523-0807233

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### **REFERENCES:**

1. Beechcraft King Air C90GTi/B200GT Avionics System Manual 523-0808533
2. Beechcraft King Air C90GT/B200GT Diagnostic Guide 523-0808534
3. Beechcraft King Air C90GT/B200GT Operator's Guide 523-0808535

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**COURSE OUTLINE** (Add and remove chapters as required, the following is an example)

### **0. Welcome & Introductions**

- A. Training Overview
  - i. Welcome
  - ii. Student Registration
  - iii. Student Policies and Procedures

### **1. Chapter 1 – Data Bus**

- A. Why we use Data Buses
- B. ARINC Data Buses
  - i. ARINC 429
  - ii. ARINC 453

### **2. Chapter 2 – Integrated Avionics Processing System (IAPS)**

- A. Overview
- B. System Architecture
- C. Integrated Card Cage (ICC)
  - i. Description
  - ii. Theory of Operation
- D. Power Supply Module (PWR)
  - i. Description
  - ii. Theory of Operation
- E. Internal Environmental Controller (IEC)
  - i. Description
  - ii. Theory of Operation
- F. Input Output Concentrator (IOC)
  - i. Description
  - ii. Theory of Operation

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G. Maintenance Diagnostic Computer (MDC)

- i. Description
- ii. Theory of Operation

H. Configuration Strapping Unit (CSU)

- i. Description
- ii. Theory of Operation

I. Detailed Functional Theory

- i. IAPS Power Distribution
- ii. Temperature Monitoring
- iii. Overheat Reporting
- iv. Power Supply Inhibit
- v. CSU Detailed Theory

J. Maintenance and Troubleshooting

- i. PWR Fault Indications
- ii. IEC Fault Indications
- iii. Status Messages

### **3. Chapter 3 – Maintenance Diagnostics**

A. Overview

B. Maintenance Diagnostic Computer (MDC)

- i. Description
- ii. Theory of Operation
- iii. Operation

### **4. Chapter 4 – Electronic Flight Instrument System (EFIS)**

A. Overview

B. Adaptive Flight Display (AFD)

- i. Primary Flight Display (PFD)

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1. Description
  2. Theory of Operation
  3. Reversionary Mode Select
- C. Multifunction Display (MFD)
- i. Description
  - ii. Theory of Operation
  - iii. Reversionary Mode Select
- D. Reversion Switch Panel (RSP)
- i. RSP Switch Description
  - ii. Operation
  - iii. Detailed Theory of Operation
- 5. Chapter 5 – Integrated Flight Information System (IFIS)**
- A. Overview
- i. System Description
- B. File Server Unit (FSU)
- i. Description
  - ii. Theory of Operation
  - iii. Operation
    1. Enhanced Map Functions
    2. Electronic Charts
    3. Graphical Weather
- C. External Compensation Unit (ECU)
- i. Description
  - ii. Theory of Operation

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- D. File Server Application Software (FSA)
    - i. Description of Applications
    - ii. Theory of Operation
  - E. Encrypted Application Key (EAK)
    - i. Programming EAKs
  - F. Electronic Charts Region Access Keys
    - i. Programming Region Access Keys
  - G. Maintenance and Troubleshooting
    - i. Database Effective Dates
- 6. Chapter 6 – Engine Indicating System (EIS)**
- A. Overview
  - B. MFD
    - i. Display Synoptics
  - C. Data Concentrator Unit (DCU)
    - i. Description
    - ii. Integration Theory
    - iii. Theory of Operation
  - D. Engine Data Concentrator Unit (EDC)
    - i. Description
    - ii. Integration Theory
    - iii. Theory of Operation
  - E. Maintenance and Troubleshooting
    - i. Status Messages
    - ii. Diagnostics

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### **7. Chapter 7 – Air Data System (ADS)**

- A. Overview
- B. MFD
  - i. Display Synoptics
- C. Data Concentrator Unit (DCU)
  - i. Description
  - ii. Integration Theory
  - iii. Theory of Operation
- D. Engine Data Concentrator Unit (EDC)
  - i. Description
  - ii. Integration Theory
  - iii. Theory of Operation
- E. Maintenance and Troubleshooting
  - i. Status Messages
- F. Diagnostics

### **8. Chapter 8 - Air Data System (ADS)**

- A. Overview
- B. Air Data Computer (ADC)
  - i. Description
  - ii. Theory of Operation
- C. Maintenance and Troubleshooting
  - i. Status Message
  - ii. Diagnostics

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### **9. Chapter 9 – Attitude Heading System (AHS)**

- A. Overview
- B. Attitude Heading Computer (AHC)
  - i. Description
  - ii. Theory of Operation
- 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

### **10. Chapter 10 – Flight Guidance System (FGS)**

- A. Overview
- B. Flight Guidance Computers (FGC)
  - i. Description
  - ii. Theory of Operation
- C. Flight Guidance Panel (FGP)
  - i. Description
  - ii. FGP Switch Description
  - iii. Operation
  - iv. Theory of Operation
- D. Primary Servos (SVO)
  - i. Description
  - ii. Theory of Operation



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- E. Autopilot and Yaw Damp Theory of Operation
  - i. Description of Fail Passive System
  - ii. Description of Yaw Damp System
- F. Autopilot Diagnostics
  - i. Entering and Using Autopilot Diagnostics
    - 1. Report Mode
    - 2. Input Mode
    - 3. Output Mode

#### **11.Chapter 11 – Flight Management System (FMS)**

- A. Overview
- B. Flight Management Computer (FMC)
  - i. Description
  - ii. Theory of Operation
- C. Control Display Unit (CDU)
  - i. Description
  - ii. Theory of Operation
- D. Data Base Unit (DBU)
  - i. Description
  - ii. Theory of Operation

#### **12.Chapter 12 – Radio Sensor System (RSS)**

- A. Overview
- B. GPS
  - i. Description
  - ii. Operations
  - iii. Theory of Operation

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- C. VOR/ILS/MB/ADF Receiver (NAV)
  - i. Description
  - ii. Theory of Operation
- D. Distance Measuring Equipment (DME)
  - i. Description
  - ii. Theory of Operation
- E. VHF Comm. Receiver/Transmitter (VHF)
  - i. Description
  - ii. Theory of Operation
  - iii. Datalink/CPDLC/Link 2000+
- F. Mode S Transponder (TDR-94)
  - i. Description
  - ii. Theory of Operation
- G. Traffic Collision Avoidance System (TCAS)
  - i. Description
  - ii. Theory of Operation
  - iii. TCAS Version 7.1
- H. HF
  - i. Description
  - ii. Theory of Operation
- I. Radio Altimeter (ALT)
  - i. Description
  - ii. Theory of Operation

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- J. Radio Tuning Operations
  - i. Description
  - ii. Operations
  - iii. Theory of Operation
- K. General Maintenance Procedures for Comm /Nav /Pulse Equipment
  - i. Flight Line Diagnostic Procedures

### 13. Chapter 13 – Weather Radar (WXR)

- A. Overview
- B. Microwave Radiation Hazards
  - i. AC 20-68B
- C. Weather Radar Theory
- D. Receiver Transmitter Assembly (RTA-8xx)
  - i. Description
  - ii. Operation
  - iii. Theory of Operation
- E. Maintenance
  - i. Radome Maintenance (AC 43-14)
  - ii. Flight Line Diagnostic Procedures

### 14. Chapter 14 – Summary

- A. Review & Course Critique

#### EQUIPMENT TYPE:

EQUIPMENT	NOMENCLATURE	PART NUMBER
ICC-3000	IAPS Card Cage	822-1129-XXX
IEC-3001	IAPS Environmental Controller	822-1167-XXX

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EQUIPMENT	NOMENCLATURE	PART NUMBER
PWR-3000	IAPS Power Supply	822-1137-XXX
IOC-3100	I/O Concentrator	822-1361-XXX
OCM-3100	Options Control Module	822-1484-XXX
CSU-3100	Configuration Strapping Unit	822-1363-XXX
MDC-3110	Maintenance Diagnostic Computer	822-1987-XXX
AFD-3010	Adaptive Flight Display (PFD, MFD)	822-1084-XXX
AFD-3010E	Adaptive Flight Display (Ethernet)	822-1753-XXX
DCP-3030	Display Control Panel	822-1828-XXX
FSU-5010	File Server Unit	822-1543-XXX
CCP-3000	Curser Control Panel	822-1746-XXX
CMU-4000	Communications Management Unit (Use with 3rd VHF data-link option)	822-1739-XXX
XMWR-1000	XM Receiver	822-2031-XXX
ECU-3000	External Compensation Unit (FSU)	822-1200-XXX
DCU-3001	Data Concentrator Unit	822-1483-XXX
ADC-3010	Air Data Computer	822-2083-XXX
AHC-3000	Attitude Heading Computer	822-1110-XXX
ECU-3000	External Compensation Unit	822-1200-XXX

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EQUIPMENT	NOMENCLATURE	PART NUMBER
FDU-3000	Flux Detector Unit	822-1193-XXX
FGC-3000	Flight Guidance Computer B200	822-1108-XXX
FGP-3000	Flight Guidance Panel	822-1107-XXX
SVO-3000	Aileron Servo	822-1168-XXX
SVO-3000	Rudder Servo B200	822-1168-XXX
SVO-3000	Elevator Servo	822-1168-XXX
SMT-65	Servo Mount (Aileron)	622-5735-XXX
SMT-65	Servo Mount (Rudder/Elevator)	622-5735-XXX
FMC-3000	Flight Management Computer	822-0883-XXX
CDU-3000	Control Display Unit	822-0884-XXX
DBU-5000	Data Base Unit	822-2215-XXX
ANT-462B	ADF antenna, dual	622-7384-XXX
ALT-4000	Radio Altimeter	822-0615-XXX
DME-4000	Distance Measuring Equipment	822-1466-XXX
GPS-4000A	Global Positioning System	822-1377-XXX
HF-9031A	HF Transceiver	822-0101-XXX
HF-9041	HF Antenna Coupler	685-0350-XXX
NAV-4000	VHF Navigation Receiver	822-1465-XXX
NAV-4500	VHF Navigation Receiver	822-1579-XXX

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EQUIPMENT	NOMENCLATURE	PART NUMBER
RTU-4200	Radio Tuning Unit	822-0668-XXX
RTU-4220	Radio Tuning Unit (TCAS)	822-0730-XXX
TDR-94	Mode S Transponder (Baseline)	622-9352-XXX
TDR-94	Mode S Transponder (Diversity)	622-9532-XXX
VHF-4000	VHF Communication Transceiver	822-1468-XXX
VHF-4000	VHF Communication Transceiver (Optional 3rd - Datalink)	822-1468-XXX
RTA-800	Receiver/Transmitter/Antenna	822-1050-XXX
RTA-852	Receiver/Transmitter/Antenna (12 inch with turbulence detection)	622-8439-XXX