

# Publications and Training Solutions

## Course Syllabus: 523-0790269

**COURSE TITLE:** Falcon 2000/2000EX/Gulfstream G-200 Pro Line 4  
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 4 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 4 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 4 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. G-200 Test Rig/Falcon Pro Line 4 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. Falcon 2000/2000EX Avionics System Manual (Excerpt) 523-0777044
4. Falcon 2000/2000EX Avionics Diagnostic Guide 523-0777634
5. Gulfstream G200 Avionics System Manual (Excerpt) 523-0780876
6. Gulfstream G200 Avionics Diagnostic Guide 523-0780877

#### REFERENCES:

1. Falcon 2000/2000EX Avionics System Manual 523-0777044
2. Falcon 2000/2000EX Avionics Diagnostic Guide 523-0777634
3. Falcon 2000/2000EX Pro Line 4 Operator's Guide 523-0780237
4. Gulfstream G200 Avionics System Manual 523-0780876
5. Gulfstream G200 Avionics Diagnostic Guide 523-0780877
6. Gulfstream G200 Pro Line 4 Operator's Guide 523-0780878

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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
- C. CSDB Data Buses
  - i. Commercial Standard Digital Bus

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

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

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iv. Power Supply Inhibit

v. CSU Detailed Theory

K. 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. Electronic Flight Display (EFD)

i. Primary Flight Display (PFD)

ii. Multifunction Display (MFD)

1. MFD Formats

iii. EFD Detailed Theory of Operation

1. Reversionary Mode Select

2. Cooling Requirements

C. Display Control Panel (DCP)

i. DCP Switch Description

ii. Detailed Theory of Operation

#### **5. Engine Indicating and Crew Alerting System (EICAS)**

A. Overview

B. Electronic Flight Display (EFD)/EICAS Display (ED)

i. Primary ED

ii. Secondary ED

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- C. Secondary ED
    - i. Display Formats
  - D. EICAS Control Panel (ECP)
    - i. ECP Switch Description
  - E. Data Concentrator Unit (DCU)
    - i. Integration Theory
  - F. Lamp Driver Unit (LDU)
  - G. Maintenance & Troubleshooting
    - i. Status Messages
    - ii. Diagnostics
- 6. Aircraft Data Acquisition System (ADAS)**
- A. Overview
  - B. Data Acquisition Unit (ADU)
- 7. Attitude Heading System (AHS)**
- A. Overview
  - B. Attitude Heading Computer (AHC)
  - C. Internal Compensation Unit (ICU)
  - D. Flux Detector Unit (FDU)
  - E. Maintenance and Troubleshooting
    - i. Diagnostics
    - ii. Compass Swing Procedure
- 8. Air Data System (ADS)**
- A. Overview
  - B. Air Data Computer (ADC)
  - C. Air Reference Panel (ARP)
  - D. Maintenance and Troubleshooting

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- i. Status Messages
- ii. Diagnostics

#### **9. Flight Control System (FCS)**

- A. Overview
- B. Flight Control Computers (FCC)
- C. Automatic Trim Coupler (ATC)
- D. Flight Control Panel (FCP)
- E. Primary Servo (SVO)
- F. Autopilot and Yaw Damper Theory of Operation
- G. Autopilot Diagnostics
  - i. Entering and Using Flight Guidance Diagnostics
    - 1. Input Mode
    - 2. Output Mode
    - 3. Report Mode
  - ii. Servo Spin Test

#### **10. Flight Management System (FMS)**

- A. Overview
- B. Flight Management Computer (FMC)
- C. Control Display Unit (CDU)
- D. Data Base Unit (DBU)
- E. Flight Management Data Base Operations
  - i. 28 Day Database Load Procedure
  - ii. Flight History Download Procedure

#### **11. Radio Sensor System (RSS)**

- A. Overview
- B. Radio Tuning Unit (RTU)
- C. Audio Integration Unit (AIU)

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- D. VHF Comm Receiver/Transmitter (VHF)
  - i. Datalink/CPDLC/Link 2000+
- E. High Frequency Receiver/Transmitter (HF)
- F. HF Antenna Coupler
- G. VOR/ILS/MB Receiver (VIR)
- H. Distance Measuring Equipment (DME)
- I. Automatic Direction Finder Receiver (ADF)
- J. Radio Altimeter (ALT) and Radio Altimeter Convertor (RAC)
- K. Mode S Transponder (TDR-94D) with TCAS
  - i. Video – TCAS II Operations CHANGE 7.0 523-0779512
- L. Maintenance and Troubleshooting
  - i. Flight Line Diagnostic Procedures
  - ii. Antenna Maintenance Considerations

#### **12. Weather Radar (WXR)**

- A. Overview
- B. Microwave Radiation Hazards
  - i. AC 20-68B
- C. Weather Radar Theory
  - i. Mediums that Reflect
  - ii. Path Attenuation Correction
  - iii. Auto Tilt
  - iv. Turbulence Detection and Ground Clutter Suppression
- D. Receiver/Transmitter Assembly (RTA-8xx)
- E. Maintenance and Troubleshooting
  - i. Radome Maintenance (AC 43-13)
  - ii. Flight Line Diagnostic Procedures

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### **13. Data Loading**

- A. Data Loading Procedures
  - i. PCD-3000
  - ii. DBU-5000

### **14. Summary – Review - Critique**

- A. Test
- B. Critiques



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**EQUIPMENT TYPE:**

EQUIPMENT	NOMENCLATURE	PART NUMBER
IAPS Card Cage	ICC-4005, -4009	822-1407-001 822-0201-001
IAPS Environmental Controller	IEC-4000	822-0288-001
IAPS I/O Concentrator	IOC-4000	622-9814-101, -102, -103, -104, -105
IAPS Power Supply	PWR-4000	622-9945-021
Configuration Strapping Unit	CSU-4000	822-0049-002
Lightning/HIRF Protection (Left)	LHP-4000	822-0287-101, -102
Lightning/HIRF Protection (Right)	LHP-4001	822-0332-101, -102
Maintenance Diagnostic Computer	MDC-4000	622-9818-101, -102, -110, -120
Display Control Panel	DCP-4001	622-9987-002, -006
Electronic Flight Display (PFD, MFD)	EFD-4077	622-9978-002, -020, -022, -024
EICAS Data Concentrator Unit	DCU-4001	622-9988-001, -002, -003, -004
EICAS Control Panel	ECP-4001	622-9989-002
Lamp Driver Unit	LDU-4000	622-9822-001
Air Data Computer	ADC-850B	822-0373-104
Air Data Reference Panel	ARP-4001	622-9833-002
Flux Detector Unit	FDU-70A	622-8154-001
Attitude Heading Computer	AHC-85E	622-9336-003
Attitude Heading Computer	AHC-3000	822-1110-001
Control Compensation Unit	ECU-3000	822-1200-001
Internal Compensation Unit	ICU-85	622-9189-002
External Compensation Unit	ECU-3000	822-1200-001

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EQUIPMENT	NOMENCLATURE	PART NUMBER
Flight Control Computer (in IAPS)	FCC-4003	822-0612-005, -105, -011, -111
Flight Control Panel	FCP-4001	622-9992-002
Primary Servo	SVO-85B	622-5027-002, -003
Servo Mount	SMT-85B	622-5029-001
Control Display Unit	CDU-4100	822-0021-002, -102, -202
Flight Management Computer (in IAPS)	FMC-4050 or 4100	822-0386-001, -003, -004 822-0022-001, -003, -004, -006, -007
Automatic Trim Coupler	ATC-4000	622-9817-00X
Autopilot Panel	APP-85A	622-6900-007
Flight Control Panel	FCP-4001	622-9992-002
Primary Servo	SVO-85B	622-5027-002, -003
Servo Mount	SMT-85B	622-5029-001
Radio Tune Unit	RTU-4010	822-0002-003, -006, -008, -020, -108, -120
Audio Interface Unit	AIU-4000	822-0271-001
VHF Comm Transceiver	VHF-422A	622-7292-101
VHF Navigation Receiver	VIR-432	622-7194-101, -201
DME Transceiver	DME-442	622-7309-101
Radio Altimeter	ALT-55B	622-2855-011
Radio Altitude Converter	RAC-870	622-7209-002
TCAS Transmitter Receiver	TTR-920	622-8971-120
Mode S Transponder	TDR-94D	622-9210-003,
HF Receiver/Transmitter	HF-9031A	822-0101-001
HF Antenna Coupler	HF-9041	622-8114-002

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EQUIPMENT	NOMENCLATURE	PART NUMBER
Receiver/Transmitter/Antenna (14 inch)	RTA-854	622-8440-003
Weather Radar Control Panel	WXP-4120 or 4220	622-9929-002, 622-9932-002