

Publications and Training Solutions

Course Syllabus: 523-0808240

COURSE TITLE: Falcon 2000/2000EX/50EX 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. 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
3. Falcon 2000/2000EX Avionics System Manual (Excerpt) 523-0777044
4. Falcon 2000/2000EX Avionics Diagnostic Guide 523-0777634
5. Falcon 50EX Avionics System Manual (Excerpt) 523-0777940
6. Falcon 50EX Avionics Diagnostics Guide 523-0778044

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. Falcon 50EX Avionics System Manual 523-0777940
5. Falcon 50EX Avionics Diagnostics Guide 523-0778044
6. Falcon 50EX Pro Line 4 Operator's Guide 523-0778244

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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. Aircraft Data Acquisition System (ADAS)

- A. Overview
- B. Data Acquisition Unit (DAU)
- C. Maintenance & Troubleshooting
 - i. Diagnostics

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6. Air Data System (ADS)

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

7. Attitude Heading System (AHS)

- A. Overview
- B. Attitude Heading Computer (AHC-85)
- C. Control Compensation Unit (CCU)
- D. Internal Compensation Unit (ICU)
- E. Flux Detector Unit (FDU)
- F. Operation
 - i. Initialization
- G. Maintenance and Troubleshooting
 - i. Diagnostics
 - ii. Compass Swing Procedure
- H. Attitude Heading Computer (AHC-3000)
- I. External Compensation Unit (ECU)
- J. Flux Detector Unit (FDU)
- K. Operation
 - i. Initialization
- L. Maintenance and Troubleshooting
 - i. Diagnostics
 - ii. Compass Swing Procedure

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8. Flight Control System (FCS)

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

9. 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

10. Radio Sensor System (RSS)

- A. Overview
- B. Radio Tuning Unit (RTU)
- C. VHF Comm Receiver/Transmitter (VHF)
 - i. Datalink/CPDLC/Link 2000+
- D. VOR/ILS/MB Receiver (VIR)
- E. Distance Measuring Equipment (DME)
- F. Automatic Direction Finder Receiver (ADF)
- G. Radio Altimeter (ALT) and Radio Altimeter Converter (RAC)

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H. Mode S Transponder (TDR-94D) with TCAS

I. Maintenance and Troubleshooting

i. Flight Line Diagnostic Procedures

ii. Antenna Maintenance Considerations

11. Weather Radar (WXR)

A. Overview

i. Video – The Next Generation Weather Radar

523-0778191

B. Microwave Radiation Hazards

i. AC 20-68B

C. Weather Radar Theory

i. Mediums that Reflect

ii. 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

12. Data Loading

A. Data Loading Procedures

i. PCD-3000

ii. DBU-5000

13. 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-4001	822-0333-001
IAPS I/O Concentrator	IOC-4000	622-9814-6XX
IAPS Power Supply	PWR-4000	622-9945-02X
Configuration Strapping Unit	CSU-4000	822-0049-002
Lightning/HIRF Protection (Left)	LHP-4000	822-0287-X01
Lightning/HIRF Protection (Right)	LHP-4001	822-0332-X01
Maintenance Diagnostic Computer	MDC-4000	622-9818-2XX
Display Control Panel	DCP-4002	822-0321-00X
Electronic Flight Display (PFD, MFD)	EFD-4077	622-9978-1XX
Reversionary Switching Panel	RSP-4000	822-0273-002
Data Acquisition Unit	DAU-4000	822-0320-0XX
Cursor Control Panel	CCP-4000	822-1058-002
Air Data Computer	ADC-850C	822-0374-XXX
Air Data Reference Panel	ARP-4002	822-0326-00X
Flux Detector Unit	FDU-70	622-8154-001
Attitude Heading Computer	AHC-85E	622-9336-400
Internal Compensation Unit	ICU-85	622-6189-002
Control Compensation Unit	CCU-65	622-6135-001
Attitude Heading Computer	AHC-3000	822-1110-00X
External Compensation Unit	ECU-3000	822-1200-00X
Flux Detector Unit	FDU-3000	822-1193-001
Data Base Unit (DSDD Disk Drive)	DBU-4100	822-0014-104
Flight Control Computer (in IAPS)	FCC-4002	822-0327-XXX

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EQUIPMENT	NOMENCLATURE	PART NUMBER
Flight Control Computer (in IAPS)	FCC-4009	822-1148-XXX
Flight Control Panel	FCP-4004	822-0385-002
Primary Servo (aileron and elevator)	SVO-85A	622-4404-002
Servo Linear Actuator (rudder)	SVL-86 / -86A	622-6717-104
Servo Linear Actuator (rudder)	SVL-87 / -87A	622-1169-001
Control Display Unit	CDU-6100	822-1354-X0X
Flight Management Computer	FMC-6000	822-0868-0XX
Radio Tune Unit	RTU-4020	822-0074-XXX
Radio Tune Unit	RTU-4220	822-0730-XXX
VHF Comm Transceiver	VHF-422AorBorD	622-729X-XXX
VHF Comm Transceiver	VHF-422C	622-1115-021
VHF Navigation Receiver	VIR-432	622-7194-X01
DME Transceiver	DME-442	622-7309-101
HF COMM Transceiver	HF-9034A	822-0102-001
HF COMM Transceiver	HF-9041	622-8114-002
Radio Altitude Converter	RAC-870	622-7209-002
Radio Altimeter	ALT-55B	622-2855-011
Mode S Transponder	TDR-94D	622-9210 -00X
GPS Navigation Receiver	GPS-4000	822-1377-001
Receiver/Transmitter/Antenna (18 inch)	RTA-858	622-8441-00X
TCAS II Transmitter Receiver	TTR-920	622-8971-120
TCAS II Transmitter Receiver	TTR-4000	822-1294-002
Weather Radar Control Panel	WXP-4220	622-9932-002