

Publications and Training Solutions

Course Syllabus: 523-0820485

COURSE TITLE: Embraer L450/L500 and Praetor 500/600 Pro Line Fusion Flight Line Maintenance

PREREQUISITES:

1. Students should have basic knowledge of aircraft avionics systems.

PURPOSE:

This course provides line maintenance personnel with training to operate and perform flightline maintenance for the Embraer Executive Jet L450/500 and Praetor 500/600 Proline Fusion System. This course is designed to teach troubleshooting for box replacement and does not include internal maintenance of any component.

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

1. Provide an overall understanding of Pro Line Fusion Avionics principles and 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.
5. Identify end user system software loading requirements

COURSE LENGTH: 5 Days

TRAINING DEVICES:

1. Embraer Executive Jet L450/L500, Praetor 500/600 Aircraft (if available)
2. Embraer Executive Jet L450/L500, Praetor 500/600 Test Rig (if available)

TRAINING MATERIALS:

1. PowerPoint Presentation with LCD projector
2. Student training manual
3. Information handouts

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Course Syllabus: 523-0820485

REFERENCES:

- | | |
|---|-------------|
| 1. Embraer Legacy 450/500 Pro Line Fusion® System Manual | 523-0818861 |
| 2. Embraer Legacy 450/500 Pro Line Fusion® Operator's Guide | 523-0818862 |
| 3. Embraer Legacy 450/500 FMS Operator's Guide | 523-0818863 |
| 4. Embraer Legacy 450/500 Pro Line Fusion® Diagnostic Guide | 523-0818864 |
| 5. Embraer Praetor 500/600 Fusion Operators Guide | 523-0818862 |

COURSE OUTLINE

0. Welcome & Introductions

- A. Course Overview
- B. Registration
- C. Course Description
- D. Course Objectives
- E. Course Outline
- F. Publications and Services
- G. Summary

I. Display System

- A. Overview
 - 1. Adaptive Flight Displays (AFD)
 - 2. Control Tuning Panel (CTP)
 - 3. Cursor Control Panel (CCP)
 - 4. Multifunction Keyboard Panel (MKP)
 - 5. Reversion Switch Panel (RSP)
- B. Equipment Description
 - 1. Adaptive Flight Displays (AFD)
 - 2. Control Tuning Panel (CTP)
 - 3. Cursor Control Panel (CCP)
 - 4. Multifunction Keyboard Panel (MKP)
 - 5. Reversion Switch Panel (RSP)

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Course Syllabus: 523-0820485

- C. Equipment Location
- D. Display Formats
- E. Display Reversion
- F. Comparators/Failures
- G. AFD Theory

II. Integrated Processing System (IPS)

- A. Overview
 - 1. Integrated Processing Cabinet and Installed Modules
 - 2. Common Computing Cabinet
 - 3. Situation Awareness Cabinet
 - 4. Installed Application Software
- B. Integrated Processing Cabinet
 - 1. IPC-6210 Left Cabinet
 - 2. IPC-6230 Right Cabinet
- C. Common Computing Cabinet
 - 1. Modules
 - 2. Theory
- D. Situation Awareness Cabinet
 - 1. Modules
 - 2. Theory
- E. Installed Application Software
- F. IPS Theory

III. Data Concentration System (DCS)

- A. Overview
 - 1. Data Concentrator Unit Module Cabinet (DMC)
 - 2. Aircraft Personality Module

Publications and Training Solutions

Course Syllabus: 523-0820485

3. Installed Software Applications
 4. Engine Indicating Crew Alerting System (EICAS)
 5. Stall Protection System (SPS)
- B. Data Concentrator Unit Module Cabinet (DMC)
1. DMC Cover and Environmental Module (CEM-6000)
 2. Data Concentrator Module (DCM-6000)
 3. Data Concentrator Power Producing Module (PPM-6000)
 4. Data Concentrator Input/Output Module (IOM-6000)
 5. Data Concentrator Input/Output Module (IOM-6500)
 6. Aircraft Personality Module (APM-5000)
- C. Data Concentrator System
1. Crew Alerting System (CAS)
 2. Checklists
 3. Aural Alerting
 4. Data Acquisition and Distribution
- D. EICAS
1. Engine Indicating System
 2. System Synoptics
- E. Stall Protection System
- F. EICAS Theory
- G. Summary
- IV. Dataloading**
- A. Overview
1. Information Management System
 2. IMS-6010
 3. Terminology
- B. Data Load Architecture
- C. Data Load Procedures
1. Load Aircraft Software Set
 2. Load New Databases

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Course Syllabus: 523-0820485

3. Load New Documents & Tables
 4. Load Aircraft Software Set
 5. Load New/Misconfigured LRU Item
 6. Reload LRU
 7. Enable Application License Keys
- D. Data Loading Theory
- E. Summary
- V. Onboard Maintenance System (OMS)**
- A. Overview
 1. Onboard diagnostics
 2. Aircraft Condition Monitoring
 3. Diagnostic downloads
- VI. Synthetic Vision System (SVS)**
- A. Overview
 - B. SVS Components
 - C. Removal/Installation
 - D. SVS Elements
 - E. Display Images
 - F. Operator Interface
 - G. SVS Theory
 - H. SVS for Credit
 - I. CAS Messages
 - J. SVS Block Diagram
 - K. Summary
- VII. Air Data System (ADS)**
- A. Air Data Computer
 - B. Aircraft Configuration Table
 - C. Indications

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Course Syllabus: 523-0820485

- D. Reversionary Mode
- E. ADS Theory
- F. Troubleshooting
- G. Summary

VIII. Attitude Heading System (AHS)

- A. Attitude Heading Computers
 - 1. AHC-4000/AHC-3000/IRS
- B. Displays and Indications
- C. Reversionary modes
- D. Summary

IX. Automatic Flight Control System (AFCS)

- A. Overview
- B. Flight Control System Application
- C. Flight Control Panel
- D. Servos
- E. Flight Director
- F. Autopilot/Yaw Damper/Trim
- G. Autothrottle
- H. AFCS Theory
- I. Summary

X. Integrated Information System (IFIS)

- A. File Server Applications
- B. Electronic Charts
- C. Enhanced Map Overlays
- D. Graphical Weather

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Course Syllabus: 523-0820485

E. IFIS Theory

F. Summary

XI. Flight Management System (FMS)

A. Overview

B. Flight Planning

C. FMS Theory

D. Summary

XII. Communication System (COMM)

A. Digital Audio System

B. Radio Management

C. VHF-4000

D. HF-9000

E. Summary

XIII. Navigation Systems (NAV)

A. NAV-4500

B. DME-4000

C. GPS-4000

D. Radio Altimeter-4000

E. Surface Management System

F. Summary

XIV. TSS/TAWS

A. Component Description

B. Component Location

C. System Operation

D. Cockpit Display of Traffic Information (CDTI)

E. Summary

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Course Syllabus: 523-0820485

XV. MultiScan™ Weather Radar

- A. Receiver Transmitter Assembly (RTA)
- B. Weather Radar Fundamentals
- C. MultiScan™ Theory
- D. Predictive Windshear/Vertical Weather options
- E. Operation
- F. Summary

XVI. Course Summary

- A. Review
- B. Summary
- C. Final Test
- D. Course Critique

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Course Syllabus: 523-0820485

EQUIPMENT TYPE:

EQUIPMENT	NOMENCLATURE	PART NUMBER
HF Antenna Port Can Clamp	HFCANCL	013-0995-000
FMS Performance Database	FMS-PERF	096-4750-001, -002
Standby Flight Instrument Clamp, ARINC-408, 3 Air Technical Index (ATI), 4-inch clamp with black screws	SFIS-MNT	139-0969-030
Pilot Display Unit	PDU-3500	1500-3570-001
Power Supply Unit	PSU-3500	1500-3590-001
Equipment Tray, 2 MCU ARINC	MCU-2	270-2712-010
Mount	UMT-12	622-5212-004
Single ADF Antenna	ANT-462A	622-7383-001
Dual ADF Antenna	ANT-462B	622-7384-001, -002
HF Radio Mount	MT-9030A	622-8116-001
HF Coupler Mount	MT-9042A	622-8124-001
HF Coupler Mount, Dual	MT-9042A	622-8124-001
Diversity Transponder	TDR-94D	622-9210-311
Diversity Transponder, Non ADS-B Out -311 -312 (Deviation)	TDR-94D	622-9210-31X
Diversity Transponder, ADS-B and Enhanced Surveillance (EHS)	TDR-94D	622-9210-501, 622-9210-312
Diversity Transponder, ADS-B Out -411, (260A ADSB-Out) -412, (260A ADSB-Out, Deviation) -501, (260B ADSB-Out)	TDR-94D	622-9210-XXX
Mount - Single Installation	MMT-125	622-9670-002
Mount - Single	MMT-130	622-9671-002
Mount, ½ Air Transport Rack (ATR) Short, Dwarf	MMT-150	622-9672-004
HF Antenna Coupler	HF-9041	685-0350-002
HF Antenna Port Can Shield	HFCAN	752-5871-001
Flight Control System Application (Automatic Flight Control System (AFCS) & Autothrottle (A/T))	FCSA-5000	810-0046-1E0003
Radio Tuning System Application (RTSA)	RTSA-5000	810-0048-401
TSS TCAS and Transponder Application Software -010 -012 (Deviation)	TSSA-4100	810-0052-01X
TSS TCAS and Transponder Application Software -100 -101 (FAA Deviation) -102 (Coasting)	TSSA-4100	810-0052-10X

Publications and Training Solutions

Course Syllabus: 523-0820485

EQUIPMENT	NOMENCLATURE	PART NUMBER
File Server Application	FSA-6000	810-0072-004
2nd IFIS - paperless	FSA-6000	810-0072-004
Synthetic Vision System Application (SVSA)	SVSA-6000	810-0074-004, -006
Terrain Processing System Application	TPSA-6000	810-0083-215
Terrain Processing Module Application (TPMA)	TPMA-6000	810-0088-210
Information Management System Applications	IMSA-6000	810-0096-007
Onboard Maintenance System Table -1E0010 V4.X -1E0003 V5.X	OMST-3500	810-0099-1E00XX
Onboard Maintenance System Application -020 V5.2 and prior -301 V5.3 and above	OMSA-6000	810-0106-020 810-0106-301
Electronic Map Overlays Key - Single IFIS	OVL-6100	810-0132-001
Enhanced Map Overlays Key - Dual IFIS	OVL-6200	810-0134-001
Electronic Charts Key - Single IFIS	ECH-6100	810-0136-001
Electronic Charts Key - Dual IFIS	ECH-6200	810-0137-001
Data Link Graphical Weather DLGWX Key - Single IFIS	DLGWX-6100	810-0139-001
Data Link Graphical Weather Key - Dual IFIS	DLGWX-6200	810-0140-001
XM GWX - Single IFIS	XMGWX-6100	810-0143-001
XM GWX - Dual IFIS	XMGWX-6200	810-0144-001
Software Key for Enroute Charts, Single IFIS	ENR-6100	810-0146-001
Enroute Charts Key - Dual IFIS	ENR-6200	810-0147-001
Document Reader Key - Dual IFIS	DOC-6200	810-0150-001
Flight Management System	FMSA-6010	810-0163-1E0004
Takeoff/Landing Awareness Function	TLAF-5000	810-0165-001
Standard Analog Video	VID-6000	810-0169-001
EVS video	VID-6001	810-0170-001
Common Computing Module Runtime	CCMR-5110	810-0176-004, -005
DSM Application Software	DSMR-5110	810-0178-001
Data Concentrator Module Runtime Software	DCMR-6000	810-0179-004 810-0179-005 (6.2 and later)
Adaptive Flight Display Runtime	AFDR-6500	810-0180-004 810-0180-005
Integrated Modular Avionics Table, Aircraft Personality Module Table APMT, Virtual Machine Configuration Table VCT, Network Configuration Table NCT, Input Output Concentrator Table IOCT	IMAT-6000	810-0181-1E0010

Publications and Training Solutions

Course Syllabus: 523-0820485

EQUIPMENT	NOMENCLATURE	PART NUMBER
FANS ATC Data Link Key (CPDLC)	FAN-6200	810-0186-001
CPDLC (Link2000) APM Key	ATN-6200	810-0187-001
CPDLC - RIU/ECU Key	ATN-6200	810-0187-100
Protocol Manager Application -003 (V5.2 & prior) -070 (V5.3)	PMA-6000	810-0192-0XX
Input/Output Concentrator Application IOCA	IOCA-6000	810-0193-002
RNP SAAAR => 0.3	RNP-6000	810-0201-001
Application License Manager Application (ALMA)	ALMA-6000	810-0208-202
Multi-Function Key Panel Application	MKPA-6100	810-0223-002
Multi-Function Key Panel Application -001 (V4.X & Prior) -002 (V5.X)	MKPA-6100	810-0223-00X
Configuration Manager System Application (CMSA)	CMSA-6000	810-0229-005
Emulated Control Display Application	eCDA	810-0233-060
Flight Display System Application -1E0003 (V4.X) -1E0010 (V5.X)	FDSA-6500	810-0234-1E00XX
Flight Control System Table (FCST)	FCST-5000	810-0236-1E0003
Flight Deck Recorder Interface	FDRK-6000	810-0240-001
Engine Indication and Crew Alerting System (EICAS) -1E0010 (V4.1) -1E0011 (V4.1.1) -1E0015 (V5.X)	EICAS-6000	810-0245-1E001X
Traffic Surveillance System Configurable Media Set	TSSE-4100	810-0250-090
Traffic Surveillance System Configurable Media Set	TSSE-4100	810-0250-091
Standby Flight Instrument Application	SFIA	810-0252-005
Option Control Module Table	OCMT-3900	810-0253-1E0003 or 810-0253-1E0004
Synthetic Vision System Table	SVST-6000	810-0260-1E0001
Weather RADAR - Turbulence	WXRK-4000	810-0266-001
Weather Radar Key (enables multiscan mode)	WXRK-4001	810-0267-001
Information Management System Operating System	IMSOS-6000	810-0278-007
Integrated Modular Avionics Applications -1E0010 (V5.X, NON-HUD) -1E0210 (V5.X, HUD)	IMAA-6000	810-0311-1E0XXX
Data Link Communications Application (DLCA)	DLCA-6500	810-0315-050, -051, -350
Obstacle Avoidance	OAFK-6000	810-0319-001
AMM Config table	AMMT-6000	810-0322-1E0001

Publications and Training Solutions

Course Syllabus: 523-0820485

EQUIPMENT	NOMENCLATURE	PART NUMBER
AMM key - APM key	AMMK-6100	810-0323-001
Airport Moving Map	AMMA-6000	810-0325-002
Airport Mov Map app	AMMA-6000	810-0325-002
Information Management System Application	IMSA-6010	810-0331-008
Information Management System Table	IMST-6010	810-0332-1E0003 810-0332-1E0020 (6.1 and beyond)
Dual Autothrottle Software Key	FCTK-5000	810-0333-001
Weather Radar Key (enables multiscan with predictive windshear)	WXRK-4002	810-0365-001
Weather Radar Key - Multiscan Mode w/ Vertical Weather	WXRK-4003	810-0366-001
Flight Plan Uplink (RIU/ECU Key)	FPLK-6200	810-0368-100
Graphical Weather Access - RIU/ECU Key	GWXK-6200	810-0369-100
HUD Monitor Software	HMA-3500	810-0418-1E0004 810-0418-1E0005 (6.2 and beyond)
HUD Display Software	HDA-3500	810-0421-1E0004
Flight Management System Take-off and Landing Vspeed	FTLV-6000	810-0507-001
IMS Binary Definition File	IMSB-6000	810-0531-001
HF Transceiver	HF-9031A	822-0101-002
Radio Altimeter	ALT-4000	822-0615-206
Attitude Heading Computer	AHC-3000	822-1110-002
External Compensation Unit (ECU)	ECU-3000	822-1200-205
External Compensation Unit - TDR, TCAS	ECU-3000	822-1200-802
External Compensation Unit - TDR, TCAS, Ext Sqtr	ECU-3000	822-1200-803
External Compensation Unit - TDR, TCAS	ECU-3000	822-1200-803
External Compensation Unit	ECU-3000	822-1200-996
Attitude Heading Mount	MMT-3010	822-1290-003
VOR/ILS/MB/ADF Receiver	NAV-4000	822-1465-101
Navigation Receiver VOR/ILS/MB/ADF (optional to NAV-4500)	NAV-4000	822-1465-101
DME Transceiver	DME-4000	822-1466-001
VHF Comm Transceiver - 8.33 kHz	VHF-4000	822-1468-110
VHF Comm Transceiver - 8.33 kHz, Data Link	VHF-4000	822-1468-390
Navigation Receiver VOR/Instrument Landing System (ILS)/Marker Beacon (MB))	NAV-4500	822-1579-101
VOR/ILS/MB Receiver	NAV-4500	822-1579-101

Publications and Training Solutions

Course Syllabus: 523-0820485

EQUIPMENT	NOMENCLATURE	PART NUMBER
Navigation (NAV) Receiver VOR/ILS/MB	NAV-4500	822-1579-101
Radio Interface Unit w/ SELCAL and DATALINK	RIU-4010	822-1863-631, -633, -635, -637
Radio Interface Unit w/o SELCAL and DATALINK	RIU-4010	822-1863-632, -634, -636, -638
Radio Interface Unit w/ SELCAL and DATALINK	RIU-4010	822-1863-633
Radio Interface Unit w/o SELCAL and DATALINK	RIU-4010	822-1863-634
Radio Interface Unit without SELCAL -632 -634	RIU-4010	822-1863-63X
Radio Interface Unit w/ SELCAL	RIU-4110	822-1864-231, -233, -245, -237
Radio Interface Unit w/o SELCAL	RIU-4110	822-1864-232, -234, -236, -238
Radio Interface Unit w/ SELCAL	RIU-4110	822-1864-233
Radio Interface Unit w/o SELCAL	RIU-4110	822-1864-234
Radio Interface Unit without SELCAL -232 (Before version 5.4) -234 (Before version 5.4)	RIU-4110	822-1864-23X
Common Computing Module (CCM) - FMS1, AFCS, OMS, IFIS, EICAS1, EICAS2	CCM-5110	822-1991-002
2nd IFIS - Optional Common Computing Module	CCM-5110	822-1991-002
Common Computing Module - for Surface Management System (SMS)	CCM-5110	822-1991-002
Optional CCM	CCM-5110	822-1991-002
XM Weather Antenna	XMA-1000	822-2030-001
XM Weather Receiver	XMWR-1000	822-2031-003
TCAS and Transponder Unit	TSS-4100	822-2132-001
Digital Switching Module DSM (24 Port ARINC-664 Switch)	DSM-5110	822-2133-001
Global Positioning System (GPS), SBAS Capable -010 V 3.1 -100 V 5.1	GPS-4000S	822-2189-010 822-2189-100
Common Computing Module, 440 Processor	CCM-6210	822-2192-002
Aircraft Personality Module (APM)	APM-5000	822-2195-001
Weather Radar, 18-inch Diameter	RTA-4118	822-2256-001
Weather Radar, 18-inch Diameter - Predictive Windshear	RTA-4218	822-2259-001
Synthetic Vision Module (SVM)	SVM-6110	822-2323-001
Information Management System	IMS-6000	822-2327-001

Publications and Training Solutions

Course Syllabus: 523-0820485

EQUIPMENT	NOMENCLATURE	PART NUMBER
Adaptive Flight Display, 15.1-inch	AFD-6520	822-2332-300
Adaptive Flight Display, 15.1-inch	AFD-6520	822-2332-430
Adaptive Flight Display, 15.1-inch - V4.1+	AFD-6520	822-2332-430
Interface Management Tool	IMT-6500	822-2337-007
Power and Environmental Module (PEM), DC Power	PEM-6210	822-2352-001
Data Concentrator Module (DCM)	DCM-6000	822-2394-002
Data Concentrator Power Producing Module (PPM)	PPM-6000	822-2395-002
Data Concentrator Input/Output Module	IOM-6000	822-2396-062
Data Concentrator Input/Output Module	IOM-6500	822-2397-061
DMC Cover and Environmental Module (CEM)	CEM-6000	822-2401-001
Data Concentrator Module Cabinet	DMC-6000	822-2403-262
Integrated Processing Cabinet, Common Computing	IPC-6210	822-2404-201
Cover and Environmental Module	CEM-6210	822-2405-101
Synthetic Vision Module w/HUD Graphics Card (HGC)	SVM-6110H	822-2539-101
Data Concentration Unit	DCU-3110	822-2575-201
Data Concentrator Unit	DCU-3110	822-2575-201
TAWS Processing Module (TPM)	TPM-6000	822-2586-001
Integrated Processing Cabinet, Situational Awareness	IPC-6230	822-2813-251
Cover and Environmental Module	CEM-6230	822-2814-101
Flight Control Panel (FCP)	FCP-5070	822-2826-001
-001 Standard CCP	CCP-6120	822-2837-001
-002 Cleanable CCP	CCP-6120	822-2837-002
Display Control Panel	DCP-5080	822-2839-001
MultiFunction Keyboard Panel	MKP-6100	822-2858-001
Audio Control Panel	ACP-6000	822-2928-100
HF Feed Line	FL-9012	822-3030-001
Information Management System	IMS-6010	822-3132-301
Wireless LAN Antenna	MAA-6000	822-3156-001
SXM (V6.X and beyond)	XMWR-1000S	822-3365-001
Directional antenna for Traffic Surveillance System (TSS)	TSA-4100	866-0016-101
Directional antenna for TSS	TSA-4100	866-0016-101
Traffic Surveillance Mount, TSM-4100	TSM-4100	866-0128-020
Standby Flight Instrument System	SFIS-3900	866-0205-200
Magnetometer (MAG), right-angled pigtail with tolerance 0.5-inches	MGR-3000	866-0206-020
Option Control Module (OCM)	OCM-3900	866-0210-020
Reversion Switch Panel RSP, Pilot-Side	RSP-6000	866-0218-001
Reversion Switch Panel, CoPilot-Side	RSP-6000	866-0218-100

Publications and Training Solutions

Course Syllabus: 523-0820485