

## Publications, Training, and Logistic Services

Course Syllabus: 523-0820277

**COURSE TITLE:** Airbus A220  
Pro Line Fusion  
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 flight-line maintenance personnel with training to operate and perform flight-line maintenance for the Airbus A220 Pro Line Fusion Avionics System.

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

This course meets the requirements of ATA Spec 104 Level 3.

The Pro Line Fusion 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. Have an overall understanding of Airbus A220 Pro Line Fusion Avionics Principles and Operation.
2. Identify System Components and the Functional/Operational Characteristics of each Line Replaceable Unit (LRU) and Line Replaceable Module (LRM).
3. Perform Fault Isolation to a faulty LRU using Built-In Maintenance Diagnostics.
4. Install and verify software and software configuration.

**COURSE LENGTH:** 5 Days

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**TRAINING DEVICES:**

1. Special Test Equipment
  - a. Airbus A220 Test Rig (if available)
  - b. Airbus A220 aircraft (if available)

**TRAINING MATERIALS:**

1. Power Point Presentations with LCD Projector
2. Student Training Material.
3. Information Handouts.

**REFERENCES:**

<b>Document Name</b>	<b>Part Number</b>	<b>Edition</b>	<b>Revision</b>	<b>Date</b>
Airbus A220-100/300 Pro Line Fusion Flight Management System Pilot Guide	523-0823568	6	0	8 November 2021
Airbus A220-100/300 Pro Line Fusion Avionics System Pilot Guide	523-0823569	4	0	18 May 2021
Airbus A220-100/300 Pro Line Airline Operational Control (AOC) Datalink	523-0823645	1	0	15 June 2016
ATN and FANS Harmonized CPDLC Application	523-0822822	6	0	28 April 2023

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### **COURSE SYLLABUS**

#### **00. Course Introduction**

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

#### **01. Systems Overview**

- B. Installed Components/System Overview
  - i. Miscellaneous Components
  - ii. Display System
  - iii. DCU Module Cabinets (DMC)
  - iv. Integrated Processing System
  - v. Information Management System
  - vi. Flight Management System
  - vii. Automatic Flight Control System
  - viii. Terrain Awareness and Warning System
  - ix. Onboard Maintenance System
  - x. Application License Manager
  - xi. Flight Deck
  - xii. Radio and Surveillance Systems
- C. Integrated Modular Avionics System
- D. Summary

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**02. ATA Chapter 22 – Automatic Flight Control System (AFCS)**

- A. Overview
- B. Flight Control System Application (FCSA)
- C. Flight Control Panel (FCP)
- D. Flight Director (FD)
- E. Auto Throttle (AT)
- F. AFCS Theory
- G. Summary

**03. ATA Chapter 23 - Communications**

- A. VHF-4000
- B. HF-9000
- C. RIU-4010/RIU-4110
- D. Digital Audio System
- E. Radio Management
- F. Datalink
- G. Summary

**04. ATA Chapter 27 – Flight Controls**

- A. Primary Flight Control Computer (PFCC)

**05. ATA Chapter 31 – Indicating and Recording**

- A. Integrated Processing System (IPS)
  - i. Overview

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- ii. Integrated Processing Cabinet
    - 1. IPC-6220
  - iii. Installed Application Software
  - iv. IPS Theory
- B. Data Concentration System (DCS)
- i. Overview
    - 1. Data Concentrator Unit Module Cabinet (DMC)
    - 2. DCS components and location
  - ii. Data Concentrator Unit Module Cabinet (DMC)
    - 1. Cover and Environment Module (CEM-6000)
    - 2. Data Concentrator Module (DCM-6000)
    - 3. Power Producing Module (PPM-6000)
    - 4. Input/Output Module (IOM-6000)
    - 5. Input/Output Module (IOM-6500)
  - iii. Aircraft Personality Module (APM-5000)
  - iv. Installed Software Applications
    - 1. Crew Alerting System (CAS)
    - 2. Aural Alerting
    - 3. Electronic Checklists
    - 4. Data Acquisition and Distribution
  - v. Engine Indicating
    - 1. Engine Indicating System
    - 2. System Synoptic Pages
    - 3. EICAS Theory
- C. Display & Display Control System (D&DCS)
- i. Overview
    - 1. Components
    - 2. Component Locations
  - ii. Equipment Description
    - 1. Adaptive Flight Displays (AFD)
    - 2. Control Tuning Panel (CTP)
    - 3. Cursor Control Panel (CCP)

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- 4. Multifunction Keyboard Panel (MKP)
- 5. Reversion Switch Panel (RSP)
- iii. Comparators/Failures
- iv. AFD Software
- D. Summary

### **06. ATA Chapter 34 – Navigation Systems**

- A. Air Data System (ADS)
  - i. Air Data Smart Probe (ADSP)
  - ii. Total Air Temperature (TAT) Sensor
  - iii. Angle of Attack (AOA) Vane Sensor
- B. Standby Flight Instrument System (SFIS)
- C. MultiScan™ Weather Radar (WXR)
  - i. Receiver Transmitter Assembly (RTA)
  - ii. Weather Radar Fundamentals
  - iii. MultiScan™ Theory
  - iv. Operation
- D. Terrain Avoidance Warning System (TAWS)
  - i. Component Description
  - ii. Component Location
  - iii. System Operation
- E. Traffic Surveillance System (TSS)
  - i. Component Description
  - ii. Component Location
  - iii. System Operation
- F. Radio Altimeter (RALT)
- G. Navigation Receiver (NAV)
- H. Distance Measuring Equipment (DME)

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- I. ATC Transponder (TDR)
- J. Global Positioning System (GPS)
- K. Head-Up Guidance System (HGS)
- L. Flight Management System (FMS)
  - i. Overview
  - ii. FMS Theory
  - iii. Summary

### **07. ATA Chapter 45 – Onboard Maintenance System (OMS)**

- A. Onboard Maintenance System (OMS)
  - i. Overview
    - 1. Onboard Diagnostics
    - 2. Aircraft Conditioning Monitoring
    - 3. Diagnostics downloads

### **08. ATA Chapter 46 – Information Systems**

- A. Data Loading
  - i. Overview
    - 1. Information Management System (IMS)
    - 2. IMS-6010
    - 3. Terminology
  - ii. Data Loading Architecture
  - iii. Data Load Procedures
    - 1. Load New Databases
    - 2. Load New Documents and Tables

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3. Load Aircraft Software Set
  4. Load New/Misconfigured LRU Item
  5. Reload LRU
  6. Enable Application License Keys
- iv. Data Loading Theory
  - v. Summary

### **09. Optional Equipment**

- A. Integrated Flight Information System (IFIS)
  - i. Electronic Charts
  - ii. Graphical Weather
  - iii. Document Reader
- B. Surface Management System (SMS)

### **10. Course Summary**

- A. Review
- B. Summary
- C. Final Exam (if applicable)
- D. Course critique



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**EQUIPMENT TYPE:**

UNIT	DESCRIPTION	PART NUMBER
<b>Air Data System (ADS)</b>		
ADSP	Air Data System Probe Type A (Left) (Rosemount)	OEM PN 2015TD-02 2015TD-03
ADSP	Air Data System Probe Type B (Right) (Rosemount)	OEM PN 2015TE-02 2015TE-03
TAT	Total Air Temperature (TAT) Probe (Rosemount)	OEM PN 0102EY2BH
AOA	Angle of Attack (AOA) Vane Sensor (Rosemount)	OEM PN 0861KG
Ice Detector	Ice Detector (Rosemount)	OEM PN 0871LD7
<b>Automatic Flight Control System (AFCS)</b>		
AHC-3000	Attitude Heading Computer	822-1110-002
FCP-5120	Flight Control Panel	822-2468-011
FCSA-5000	Flight Control System Application	810-0046-2B0004
FCST-5000	Flight Control System Table	810-0236-2B0005 810-0236-2B0305
PFCC-4100	Primary Flight Control Computer	822-2749-501
<b>Cockpit Printer</b>		
PRNTR-5	Cockpit Printer	866-0208-010
<b>Data Concentration System (DCS)</b>		
APM-5000	Aircraft Personality Module	822-2195-001

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CEM-6000	DMC Cover and Environmental Module	822-2401-001
DCM-6000	Data Concentrator Module	822-2394-002
DCMR-6000	Data Concentrator Module Runtime	810-0179-004
DMC-6000	DCU Module Cabinet	822-2403-291
IOCA-6000	Input/Output Concentrator Application	810-0193-003
IOM-6000	Input/Output Module	822-2396-092
IOM-6500	Input/Output Module	822-2397-091
LPU-6016	Lightning Protection Unit	822-3237-001
PPM-6000	Power Producing Module	822-2395-002
<b>Data Link Communication System (DLCS)</b>		
ATN-6200	ATN CPDLC Key (Link 2000+)	810-0187-001
DLCA-6500	Data Link Communications Application	810-0315-100
DLNA-2100B	Data Link Network Application	822-2246-101
FAN-6200	FANS ATC Key (Data Link, CPDLC)	810-0186-001
<b>Digital Audio System (DAS)</b>		
ACP-6020	Audio Control Panel	822-2983-130 822-2983-190 822-2983-231 822-2983-240 822-2983-241
<b>Distance Measuring Equipment (DME)</b>		
ANT-4030	DME/TDR Antenna	822-2776-010
DME-4000	DME Transceiver	822-1466-001
MMT-125	Mount – Piggyback installations	622-9670-001
MMT-125/125	MMT-125 over MMT-125 Piggyback Mount Kit	653-9078-102
<b>Electronic Flight Instrument System (EFIS)</b>		

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AFD-6510	Adaptive Flight Display	822-2276-200 822-2276-410
AFDR-6500	Adaptive Flight Display Runtime	810-0180-004
CCP-6000	Cursor Control Panel	822-2831-010
CTP-6000	Control Tuning Panel	822-2493-102
ECDA-6000	Emulated Control Display Application	810-0233-081
EICAS-6000	EICAS Application	810-0245-2B0053
FDSA-6500	Flight Display System Application	810-0234-2B0004
IMT-6500	Instrument Mounting Tray	822-2337-007
MKP-6000	Multifunction Keyboard Panel	822-2471-010
MKPA-6000	Multifunction Keyboard Panel Application	810-0078-003
RSP-6240	Reversion Switch Panel	866-0230-001 866-0230-002
<b>Flight Management System (FMS)</b>		
FMSA-6010	Flight Management System Application	810-0163-2B0006
FSAK-6000	FMS Steep Approach Key	810-0284-001
TLAF-5000	Take-off & Landing Awareness Function Key	810-0165-001
<b>Global Positioning System (GPS)</b>		
GNA-925	GPS Antenna	822-2033-030
GPS-4000S	GPS Receiver, SBAS Capable	822-2189-010 822-2189-011 822-2189-100 822-2189-101
MCU-2	Equipment Tray, 2 MCU ARINC	270-2712-010
<b>Head-Up Display System (HUD)</b>		
CMB-6510	HUD Combiner (Left)	1500-3280-001

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CMB-6510	HUD Combiner (Right)	1500-3280-002
HDA-6510	HUD Application	810-0390-2B0006
HMA-6510	HUD Monitor Application	810-0389-2B0006
OHU-6510	HUD Overhead Unit	1500-3270-001
<b>HF Communication System (HF)</b>		
FL-9006	HF Feedline	988-8095-001
HFCANK	HF Antenna Port Can Kit	752-5579-001
HF-9031A	HF Transceiver	822-0101-002
HF-9041	HF Antenna Coupler	685-0350-002
MT-9030A	HF Radio Mount	622-8116-001
MT-9042A	HF Coupler Mount, Dual	622-8124-001
<b>Information Management System (IMS)</b>		
IMS-6000	Information Management System	822-2327-201
IMS-6010	Information Management System	822-3132-201
IMSB-6000	IMS Binary Definition File	810-0349-005
<b>Integrated Flight Information System (IFIS)</b>		
DOC-6100	Document Reader Key – Dual IFIS	810-0149-001
DOC-6200	Document Reader Key – Dual IFIS	810-0150-001
DLGWX-6100	Data Link Graphical Weather Key (Single IFIS)	810-0139-001
DLGWW-6200	Data Link Graphical Weather Key (Dual IFIS)	810-0140-001
ECH-6200	Electronics Charts Key – Dual IFIS	810-0137-001
ENR-6200	Enroute Charts Key – Dual IFIS	810-0147-001
FSA-6000	File Server Application	810-0072-401
OVL-6100	Enhanced Map Overlays Key – Single IFIS	810-0132-001
OVL-6200	Enhanced Map Overlays Key – Dual IFIS	810-0134-001

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VIV-6000	Standard Analog Video Key	810-0169-001
XMA-1000	XM Weather Antenna	822-2030-001
XMGWX-6200	XM Weather Key – Dual IFIS	810-0144-001
XMWR-1000	XM Weather Receiver	822-2031-002
<b>Integrated Processing System (IPS)</b>		
CCM-5110	Common Computing Module	822-1991-002
CCMR-5110	Common Computing Module Runtime	810-0176-004
CEM-6220	Cover and Environmental Module	822-2406-101
CMSA-6000	Configuration System Manager Application	810-0229-005
DSM-5110	Digital Switching Module (24 Port ARINC 664 Switch)	822-2133-001 822-2133-010
DSMR-5110	Digital Switching Module Runtime	810-0178-001
IMAA-6000	Integrated Modular Avionics Application	810-0311-2B0406 810-0311-2B0606
IMAT-6000	Integrated Modular Avionics Table	810-0181-2B0406
IPC-6220	Integrated Processing Cabinet	822-2142-205
PEM-6210	Power Environment Module	822-2352-001
PMA-6000	Protocol Manager Application	810-0192-070 810-0192-100
<b>MultiScan Weather Radar System (WXR)</b>		
RTA-4218	MultiScan Weather Radar with PWS, 18"	822-2259-001 822-2259-002
WXRK-4002	Weather Radar Key – Multiscan mode with Turbulence	810-0365-001
<b>Onboard Maintenance System (OMS)</b>		
ALMA-6000	Application License Manager Application	810-0208-004
OMSA-6000	Onboard Maintenance System Application	810-0106-250

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		810-0106-310 810-0106-310
<b>Radio Altimeter System (RA)</b>		
ALT-4000	Radio Altimeter	822-0615-206 822-0615-256
ANT-53	Radio Altimeter Antenna	822-3201-001
UMT-12	Mount	622-5212-004
UMT-12/12	UMT-12 over UMT-12 Piggyback Mount Kit (Radio Altimeter 3 Option)	634-1103-003
<b>Radio Management System (RMS)</b>		
ATN-6200	RIU Datalink ATN CPDLC	810-0187-100
ECU-3000	External Compensation Unit	822-1200-996 822-1200-997
MMT-130	Mount, Piggyback Installations	622-9671-001
RIU-4010	Radio Interface Unit (SELCAL and Data Link)	822-1863-611 822-1863-612 822-1863-615
RIU-4010	Radio Interface Unit (Data Link)	822-1863-616
RIU-4110	Radio Interface Unit (SELCAL)	822-1864-251 822-1864-255
RIU-4110	Radio Interface Unit	822-1864-256
RTSA-6000	Radio Tuning System Application	810-0048-301
<b>Standby Flight Instrument System (SFIS)</b>		
MGCM-30	Magnetic Compass	866-0216-010
OCM-3900	Option Control Module	866-0210-010
OCMT-3900	Option Control Module Table	810-0253-2B0003
SFIA-3900	Standby Flight Instrument Application	810-0252-005

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SFIS-3900	Standby Flight Instrument System	866-0205-201 866-0205-401
SFIS-MNT	Standby Flight Instrument Clamp	139-0969-040
<b>Surface Management System (SMS) / Airport Moving Map (AMM)</b>		
AMMA-6000	Airport Moving Map Application	810-0325-002
AMMK-6100	Airport Moving Map Key	810-0323-001
AMMT-6000	Airport Moving Map Configuration Table	810-0322-2B0001
<b>Synthetic Vision System (SVS)</b>		
SVM-6110H	Synthetic Vision Module with Integrated Head Up Display	822-2539-001 822-2539-011
<b>Terrain Awareness and Warning System (TAWS)</b>		
CCM-6210	Common Computing Module	822-2192-002
TPM-6000	TAWS Processing Module	822-2586-001
TPMA-6000	TAWS Processing Module Application	810-0088-001 810-0088-110 810-0088-210
TPSA-6000	TAWS Processing System Application	810-0083-215
<b>Traffic Surveillance System (TSS)</b>		
ANT-4030	DME/TDR Antenna	822-2776-010
ECU-3000	External Compensation Unit (TDR, TCAS, Extended Squitter)	822-1200-803
MMT-150	Mount, ½ ATR Short, Dwarf	622-9672-001
TDR-94D	Diversity Mode S Transponder ADS-B and EHS	622-9210-410 622-9210-510
TRE-940	TCAS II Omnidirectional Antenna	822-2775-010
TSA-4100	Traffic Surveillance Antenna, Directional	866-0016-101
TSM-4100	Traffic Surveillance Mount	866-0128-020

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TSS-4100	Traffic Surveillance System	822-2132-001 822-2132-003
TSSA-4100	Traffic Surveillance System Application	810-0052-111 810-0052-301
<b>VHF Communication System (VHF)</b>		
MMT-125	Mount – Piggyback Installations	622-9670-001
MMT-125	Mount – Single Installations	622-9670-002
MMT-125/125	MMT-125 over MMT-125 Piggyback Mount Kit	653-9078-102
VHF-4000	VHF Comms Transceiver – 8.33kHz	822-1468-110
VHF-4000	VHF Comms Transceiver - 8.33kHz, Data Link	822-1468-310 822-1468-390
VHFA-4000	VHF Comms Antenna	822-2778-010
<b>VHF Navigation System</b>		
ANT-462B	Dual ADF Antenna	622-7384-001
ANT-70A	Glideslope Antenna – Single Port	822-3202-001
ANT-70B	Glideslope Antenna – Dual Port	822-3203-001
ANT-80	VOR Antenna	866-5036-100
ANT-81	LOC Antenna	866-5035-010
MBS-4000	Marker Beacon Antenna	822-2777-010
MBS-4000	Marker Beacon Antenna Splitter	822-2777-020
MMT-125	Mount – Piggyback Installations	622-9670-001
MMT-125	Mount – Single Installations	622-9670-002
MMT-125/130	MMT-125 Over MMT-130 Piggyback Mount Kit	653-9078-102
NAV-4000	Navigation Receiver (VOR/ILS/MB/ADF)	822-1465-101
NAV-4500	Navigation Receiver (VOR/ILS/MB)	822-1579-101



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RFS-80	RF Antenna Switch	822-5037-020
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