

# Publications and Training Solutions

## Course Syllabus: 523-0816661

**COURSE TITLE:** Pro Line Fusion Gulfstream G280  
Level I Operations & Flightline 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 flight line maintenance for the G280 avionics 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 will 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 and system architecture.
4. Perform fault isolation to a faulty LRU using built-in maintenance diagnostics.

**COURSE LENGTH:** 5 Days

**TRAINING DEVICES:**

1. G280 Test Rig, Cedar Rapids (if available)

**TRAINING MATERIALS:** (Identify materials provided as part of course delivery.)

1. PowerPoint Presentation
2. Student training manual
3. Information handouts

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### REFERENCES:

1. Gulfstream G280 Pro Line Fusion® Avionics System Manual 523-0816784
2. Pro Line Fusion Avionics System for the Gulfstream G280 Operators Guide  
523-0816799
3. Pro Line Fusion® Avionics System for Gulfstream G280 Diagnostic Guide  
523-0816789

### COURSE OUTLINE

#### 0. Welcome & Introductions

- A. Training Overview
  - i. Welcome
  - ii. Student Registration
  - iii. Student Policies and Procedures
- B. Course Description and Objectives

#### 1. Chapter 1 – EFIS

- A. Overview
- B. Adaptive Flight Display (AFD)
  - i. Display Units (DU)
    1. Description
    2. Theory of operation
  - ii. Display Allocation
    1. Description
    2. Theory of operation
- C. Display Control Panel (DCP)
  - i. Description
  - ii. Operation

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- D. Display Select Panel (DSP)
    - i. Description
    - ii. Operation
  - E. Display Dimming Panel (DDP)
    - i. Description
    - ii. Operation
  - F. Cursor Control Device (CCD)
    - i. Description
    - ii. Theory of operation
  - G. Reversionary Modes
  - H. Comparators and Fail Warnings
- 2. Chapter 2 – Integrated Processing System (IPS)**
- A. Overview
  - B. System architecture
  - C. Integrated Processing Cabinet (IPC)
    - i. Description
    - ii. Theory of operation
  - D. Cover Environment Module (CEM)
    - i. Description
    - ii. Theory of operation
  - E. Power and Environment Module (PEM)
    - i. Description
    - ii. Theory of operation
  - F. Digital Switching Module (DSM)
    - i. Description
    - ii. Theory of operation

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#### G. Common Computing Module (CCM)

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

#### H. IPS Detailed functional theory

- i. Left IPC
- ii. Right IPC
- iii. Third IPC

#### I. Maintenance and troubleshooting

### **3. Chapter 3 – Data Concentration System (DCS)**

#### A. Overview

#### B. DCU Module Cabinet (DMC)

- i. Description
- ii. Integration
- iii. Installed LRM's

#### C. Aircraft Personality Module (APM)

- i. Description
- ii. Integration
- iii. Theory of operation

#### D. Software Allocation

- i. Installed applications

#### E. Reversionary Modes

#### F. Engine Indicating / Crew Alerting System (EICAS)

- i. CAS Messages
- ii. Checklists
- iii. Aural Alerting
- iv. Data Acquisition and Distribution

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- v. Engine Indications
  - 1. Standby Engine Indications
- G. Synoptic Pages
- H. Stall Protection System
  - i. Stall Warning
  - ii. Stall Protection
- 4. Chapter 4 – Standby Multifunction Controller (SMC)**
  - A. System Overview
  - B. Standby Multi-Function Controller (SMC)
    - i. Controls and Indications
    - ii. Menus
  - C. Standby Instrument System (SIS)
- 5. Chapter 5 – Onboard Maintenance System (OMS)**
  - A. System Overview
  - B. Onboard Maintenance System Application
    - i. Onboard diagnostics
    - ii. Aircraft condition monitoring
    - iii. Data load
- 6. Chapter 6 – Dataloading**
  - A. Data loading overview
  - B. Information Management System (IMS)
    - i. Database Upload and Configuration Management
  - C. Software/Part number verification
- 7. Chapter 7 – Air Data System (ADS)**
  - A. Overview
  - B. Air Data Computer (ADC)
    - i. Description
    - ii. Theory of operation

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- C. Maintenance and troubleshooting
  - i. PFD Red Flags
  - ii. PFD Source Reversion
  - iii. Diagnostics
- 8. Chapter 8 – Attitude Heading System (AHS)**
  - A. Display and Indications
  - B. Interface
- 9. Chapter 9 – Integrated Flight Information System (IFIS)**
  - A. Overview
  - B. File Server Application (FSA)
    - i. Description
    - ii. Theory of operation
  - C. Electronic Charts (ECH)
    - i. Description
    - ii. Theory of operation
  - D. Enhanced Map Overlays (OVL)
    - i. Description
    - ii. Theory of operation
  - E. Graphical Weather (GWX)
    - i. Description
    - ii. Theory of operation
- 10. Chapter 10 – Automatic Flight Control System (AFCS)**
  - A. Overview
  - B. Flight Control Panel (FCP)
    - 1. Description
    - 2. Theory of operation

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- C. Flight Control System Application (FSCA)
  - i. Description
  - ii. Theory of operation
- D. Primary Servo (SVO)
  - i. Description
  - ii. Theory of operation
- E. FGS Operation
  - i. Dual Flight Guidance
  - ii. FGS Controls
- F. Autopilot and yaw damper
  - i. Description
  - ii. Theory of operation
- G. Autothrottle
  - i. Description
  - ii. Operating modes

#### **11.Chapter 11 – Throttle Quadrant Assembly**

- A. Overview
- B. Throttle Quadrant Assembly (TOA)
  - i. Description
  - ii. Theory of operation

#### **12.Chapter 12 – Flight Management System (FMS)**

- A. Overview
- B. Flight Management System Application
  - i. Description
  - ii. Theory of operation
- C. Control Display Unit (CDU)
  - i. Description
  - ii. Theory of operation

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### 13. Chapter 13 – Radio Sensor System (RSS)

- A. Overview
- B. Digital Audio system
  - i. Description
  - ii. Theory of operation
- C. Radio Management
  - i. Description
  - ii. Theory of operation
  - iii. Radio tuning operations
  - iv. SELCAL
  - v. Datalink
- D. VHF Communications (VHF)
  - i. Description
  - ii. Theory of operation
- E. HF Communications System (HF)
  - i. Description
  - ii. Theory of operation
- F. VOR/ILS/MB/ADF receiver (NAV)
  - i. Description
  - ii. Theory of operation
- G. Distance Measuring Equipment (DME)
  - i. Description
  - ii. Theory of operation
- H. Global Positioning System (GPS)
  - i. Description
  - ii. Theory of operation



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- I. Radio Altimeter (ALT)
  - i. Description
  - ii. Theory of operation
- J. Traffic Surveillance System (TSS)
  - i. Description
  - ii. Theory of operation
- K. Terrain Awareness and Warning System (TAWS)
  - i. Description
  - ii. Theory of operation

#### **14. Chapter 14 – Multiscan Weather Radar**

- A. Overview
- B. Receiver Transmitter Assembly (RTA)
- C. Weather Radar Fundamentals
- D. Multi-Scan Theory and Operation

#### **15. Chapter 15 – Multiscan Weather Radar**

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

#### **EQUIPMENT TYPE:**

<b>EQUIPMENT</b>	<b>NOMENCLATURE</b>	<b>PART NUMBER</b>
Air Data Computer	ADC-3010	822-2083-001
Aircraft Configuration Table, Generic	ACT-3010	810-0044-099
Heading Sensor Unit	HSU-10	866-0129-010

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Audio Control Panel (Base+COM3+CAB)	ACP-4120	822-1950-131
Audio Options Panel	AOP-4120	822-1947-020
Radio Interface Unit (SELCAL)	RIU-4110	822-1864-171
Radio Interface Unit (SELCAL, Data Link)	RIU-4010	822-1863-171
External Compensation Unit, unprogrammed	ECU-3000	822-1200-999
VHF Comm Transceiver - Ext Range, 8.33kHz, DataLink	VHF-4000E	822-1872-310
HF Transceiver	HF-9031A	822-0101-002
HF Antenna Coupler	HF-9041	622-8114-002
VOR/ILS/MB/ADF Receiver	NAV-4000	822-1465-101
VOR/ILS/MB Receiver	NAV-4500	822-1579-101
Dual ADF Antenna	ANT-462B	622-7384-001
DME Transceiver	DME-4000	822-1466-001
Global Positioning System, SBAS Capable	GPS-4000S	822-2189-001
Radio Altimeter	ALT-4000	822-0615-315
MultiScan™ Weather Radar, 18"	RTA-4118	822-2256-001
TCAS and Transponder Unit	TSS-4100	822-2132-001
TSS TCAS & Transponder Software Application	TSSA-4100	810-0052-001

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Directional Antenna For TSS	TSA-4100	866-0016-001
External Compensation Unit - TDR, TCAS, Ext Sqtr	ECU-3000	822-1200-803
Diversity Transponder, ADS-B & EHS	TDR-94D	622-9210-108
Common Computing Module, 440 Processor	CCM-6210	822-2192-001
TAWS Processing Module	TPM-6000	822-2586-001
Terrain Processing Module Application	TPMA-6000	810-taws
Adaptive Flight Display, 15.1"	AFD-6510	822-2276-100
Display Control Panel	DCP-6200	822-2333-001
Display Select Panel	DSP-6200	822-2334-001
Display Dimmer Panel	DDP-6200	866-0120-001
Integrated Processing Cabinet, Common Computing	IPC-6210	822-2404-001
Cover and Environmental Module	CEM-6210	822-2405-001
Power Environment Module, DC Power	PEM-6210	822-2352-001
Digital Switching Module (24 Port AFDX Switch)	DSM-5110	822-2133-001
Common Computing Module	CCM-5110	822-1991-002
Integrated Processing Cabinet, Situational Awareness	IPC-6220	822-2142-001

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Cover and Environmental Module	CEM-6220	822-2406-001
Flight Management System Application	FMSA-6xxx	810-1485-xxx
Control Display Unit	CDU-6200	822-1485-602
Flight Control Panel	FCP-5110	822-2358-001
Flight Control System Application	FCSA-5000	810-0046-002
Primary Servo	SVO-5000	822-2136-001
Servo mount	SMT-65	622-5735-103
Throttle Quadrant Assembly	TQA	4260-0051-1
File Server Application	FSA-6000	tbd-fsa
Electronic Charts Application Key	ECH-5000	810-0002-001
Enhanced Map Overlay Application Key	OVL-5000	810-0003-001
Graphical Weather Application Software	GWX-5000	810-0004-001
Information Management System	IMS-6000	822-2327-001
DCU Module Cabinet	DMC-6000	822-2403-xxx
DMC Cover and Environmental Module	CEM-6000	822-2401-001
Data Concentrator Module	DCM-6000	822-2394-001
Data Concentrator Power	PPM-6000	822-2395-001

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Producing Module		
Data Concentrator Input / Output Module	IOM-6000	822-2396-001
Data Concentrator Input / Output Module	IOM-6500	822-2397-001
Aircraft Personality Module	APM-5000	822-2195-001
Onboard Maintenance System Application	OMSA-xxxx	tbd-omsa
XM Weather Receiver Antenna	XMA-1000	822-2030-001
XM Weather Receiver	XMWR-1000	822-2031-002
XM Graphical Weather Key	GWX-3000	810-0007-001
XM Graphical Weather Key, Expanded Features	GWX-3001	810-0058-001
XM Graphical Weather Key, Growth Features	GWX-3002	tbd-gwx3002