



Pennant

INTEGRATED AVIONICS MAINTENANCE TRAINER (IAMT)

OVERVIEW BROCHURE



INTRODUCTION

The Integrated Avionics Maintenance Trainer (IAMT) is a Part Task Trainer (PTT) that enables maintenance tasks to be taught by either instructor demonstration or independent, practical exercises by the student.

Students can perform a range of practical training exercises, enabling a progressive understanding of the fundamental principles of modern integrated avionics systems.

The IAMT leverages the fully integrated aircraft systems software simulation that underpins Pennant's desktop emulation trainer to provide consistent, real-time aircraft responses to user interactions and access to virtual Ground Support Equipment and Special Tools and Test Equipment (GSE and STTE).

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KEY FEATURES

- High fidelity simulated cockpit;
- Partial aircraft structure;
- Functional testing of aircraft and fault finding systems;
- Operation of avionic systems and their controls;
- Removal and Installation (R&I) of aircraft LRUs;
- Instructor Operating Station (IOS) for fault insertion and aircraft parameter setting;
- Virtual GSE and STTE;
- Aircraft technical publications suite for the generic aircraft;
- No security restrictions e.g. ITAR;
- Extensive use of COTS equipment;
- Simulated and replica components.



AVIATION REGULATIONS ALIGNMENT

EASA/EMAR PT 66	FAA	City & Guilds	CASA MEA Units
<p>Module 5 Digital techniques Electronic Instrument Systems</p> <p>Module 6 Materials & hardware</p> <p>Module 7 Maintenance practices</p> <p>Module 11 Aeroplane, aerodynamics, structures & systems</p> <p>Module 13 Aircraft structures & systems</p>	<p>ATA 12 Servicing</p> <p>ATA 23 Communications</p> <p>ATA 24 Electrical Power</p> <p>ATA 26 Fire Protection</p> <p>ATA 31 Indicating / Recording systems</p> <p>ATA 34 Navigation</p> <p>ATA 51 Standard Practices & Structures</p>	<p>2675-01 City & Guilds Level 2 Certificate in Aircraft Maintenance (Military Aircraft) Unit 104</p> <p>2675-02 Level 2 Diploma in Aircraft Engineering: Unit 103</p> <p>2675-03 Level 3 Diploma in Aircraft Maintenance (Military/Civil) Aircraft Mechanical/Avionics: Units 030, 201, 208 & 210</p> <p>4608-50 Level 2 Diploma in Aerospace & Aviation Engineering (Military Foundation Competence): Units 201, 202, 203, 258 & 259</p> <p>4608-60 Level 3 Diploma in Aviation Maintenance (Military Development Competence) Units 301, 302, 304, 354, 355, 358, 360, 362, 363 & 455</p>	<p>MEA107 Interpret & use aviation industry manuals & specifications</p> <p>MEA118 Conduct self in the aviation maintenance environment</p> <p>MEA154 Apply work health & safety practices in aviation maintenance</p> <p>MEA155 Plan & organise aviation maintenance work activities</p> <p>MEA157 Complete aviation maintenance industry documentation</p> <p>MEA158 Perform basic hand skills, standard trade practices & fundamentals in aviation maintenance</p> <p>MEA203 R & I advanced aircraft electrical system components</p> <p>MEA210 Inspect, test & troubleshoot basic aircraft electrical systems & components</p> <p>MEA213 Inspect, test & troubleshoot advanced aircraft instrument systems & components</p> <p>MEA214 Inspect, test & troubleshoot aircraft basic communication & radio navigation systems and components</p> <p>MEA215 Inspect, test & troubleshoot advanced aircraft communications systems & components</p> <p>MEA216 Inspect, test & troubleshoot instrument landing systems & components</p> <p>MEA220 Inspect, test & troubleshoot aircraft primary radar systems & components</p>

EASA/EMAR PT 66	FAA	City & Guilds	CASA MEA Units
			<p>MEA221 Inspect, test & troubleshoot aircraft secondary radar systems & components</p> <p>MEA233 Inspect, test & troubleshoot aircraft inertial navigation & reference systems & components</p> <p>MEA234 Inspect, test & troubleshoot aircraft global navigation systems & components</p> <p>MEA261 Use electronic test equipment</p> <p>MEA278 Inspect, test & troubleshoot instrument display systems & components</p> <p>MEA280 Inspect, test & troubleshoot flight management systems & components</p> <p>MEA293 R & I aircraft electronic system components</p> <p>MEA296 Use electrical test equipment in aviation maintenance activities</p>

PHYSICAL SPECIFICATIONS

PARTICULAR	VALUE	UNIT
IAMT STRUCTURE		
Length	5700	mm
Width	2700 ^{Note 1}	mm
Height	3550	mm
Weight	1250 ^{Note 2}	Kg
INSTRUCTOR OPERATING STATION		
Length	2128	mm
Width	1028	mm
Height	1584	mm
Weight	275	Kg
Note¹ : 3270mm with the addition of Access / Viewing Platform		
Note² : 1900kg with the addition of Access / Viewing Platform		

SUPPORTED TRAINING

SIMULATED SYSTEM	PRACTICAL TASKS	SIMULATED FAULTS
<p style="text-align: center;">CENTRAL WARNING SYSTEM</p>	<ol style="list-style-type: none"> 1. Operational Check of the Auxiliary Power Unit Fire Detection system 2. Operational Check of the Engine Bay Fire Detection System 3. Operational Check of the Central Warning System 4. Functional Check of the Central Warning System 5. Remove and Install APU Bay Firewire Control Unit 6. Remove and Install Engine Bay Firewire Control Unit 7. Remove and Install Master Control Unit 	<ol style="list-style-type: none"> 1. CWS Supply Fault (1), CB WQ03 pulled in scenario 2. CWS Supply Fault (2), CB WQ03 pulled in scenario 3. CWS Master Control Unit Fault (1), Internal Failure 4. CWS Master Control Unit Fault (2), Avionics not indicated during CWS Operational Check 5. CWS Central Warning Panel Fault, both 'Fire' bulbs open circuit 6. CWS Attention Getter Fault, lamp failure 7. ENG Fire Detection Fault, Permanent Warning Output 8. APU Fire Detection Fault, Permanent Warning Output
<p style="text-align: center;">COMMUNICATIONS SYSTEM</p>	<ol style="list-style-type: none"> 1. Operational Check of the Crash Position Indication System 2. Functional Check of the Crash Position Indication 3. Bonding Resistance Check (Communications Audio Monitoring Unit) 4. Operational Check of the Communications Control System 5. Functional Check of the Communications Control System 6. Operational Check of the Standby V/UHF Control System 7. Operational Check of the V/UHF 8. Functional Check of the V/UHF Radios 9. Remove and Install Fuse (070) 10. Remove and Install Relay (Crash Position Indication Switch) 11. Remove and Install Communications Audio Monitoring Unit 12. Remove and Install V/UHF 1 Tx/Rx 13. Remove and Install V/UHF 2 Tx/Rx 	<ol style="list-style-type: none"> 1. Crash Position Indicator Fault, Internal Switch Fault 2. Crash Position Indicator Fault, LED Fault 3. Communications Audio Management Unit Fault, Internal Failure 4. CPI Switch Relay Fault, Coil open circuit 5. Flight Select Switch Fault, Switch welded in the Non-flight position 6. Audio Control Panel Fault, Internal Failure 7. V/UHF Radio 1 Fault, RT Control failure 8. Radio 1 Supply Fault, Fuse No 070 open circuit 9. V/UHF Radio 2 Fault, Internal Failure 10. Radio 1 Switch Fault, COM 1 ON/OFF Switch open circuit 11. Mute Switch Fault, Open circuit

SUPPORTED TRAINING

SIMULATED SCENARIO	PRACTICAL TASKS	SIMULATED FAULTS
ELECTRICAL SYSTEM	<ol style="list-style-type: none"> 1. Operational Check of the Failure Indicators 2. Engine Pre-Start Checks 3. Engine Start/Stop 4. Battery Power – Apply and Remove 5. External Electrical Power - Apply and Remove 6. Auxiliary Power Unit Start 7. Auxiliary Power Unit Stop 8. Auxiliary Power Unit Data Retrieval 9. Functional Check of the DC Electrical Power System 10. Functional Check of the Battery 11. Functional Check of the AC Main Generator 12. Functional Check of the AC Auxiliary Generator 13. Functional Check of the External Electrical Power 14. Remove and Install Bus-tie Contactor 15. Remove and Install Battery 1 16. Remove and Install Battery 2 17. Remove and Install Main Generator Control Unit 18. Remove and Install Auxiliary Generator Control Unit 19. Remove and Install External Power Monitor 20. Remove and Install External Power Contactor 	<ol style="list-style-type: none"> 1. External Power Contactor Fault, Coil open circuit 2. External Power Monitor Fault, Internal Relay Failure 3. Bustie Contactor Fault, Coil open circuit 4. Battery 1 Fault, Battery Flat 5. Battery 2 Fault, Battery Flat 6. Main Generator Control Unit Fault, Internal failure 7. Auxiliary Generator Control Unit Fault, Internal Failure
FLIGHT NAVIGATION SYSTEM	<ol style="list-style-type: none"> 1. Operational Check of the Inertial Navigation & Global Positioning System 2. Inertial Navigation & Global Positioning System, Harmonisation Data Input 3. Reset Inertial Navigation & Global Positioning System Current Data 4. Functional Check of the Inertial Navigation & Global Positioning System 5. Remove and Install Fuse (095) 6. Remove and Install INGPS 	<ol style="list-style-type: none"> 1. IN/GPS Fault (1), Fault in Gyro Compass Alignment 2. IN/GPS Fault (2), INS Power Supply failure 3. IN/GPS Switch Fault, Contacts welded closed 4. IN/GPS Supply Fault, Fuse blown
FLIGHT RECORDING SYSTEM	<ol style="list-style-type: none"> 1. Video Data Module Loading/Unloading 2. Functional Check of the Video Monitoring and Recording System 3. Remove and Install Video Interface Unit 	<ol style="list-style-type: none"> 1. Video Monitoring and Recording System Switch Fault, Switch Open Circuit 2. Video Interface Unit Fault, No Power Supply Output
HEALTH AND USAGE MONITORING SYSTEM (HUMS)	<ol style="list-style-type: none"> 1. Operational Check of the Data Acquisition Unit 2. Data Acquisition Unit Download 3. Data Acquisition Unit Upload 4. Operational Check of the Crash Survivable Memory Unit 5. Functional Check of the Audio Monitor Ground Test Jack Box 6. Bonding Resistance Check (Data Acquisition Unit) 7. Remove and Install Data Acquisition Unit 8. Remove and Install Cockpit Audio Not Recording Relay 9. Remove and Install Flight Data Not Recording Relay 	<ol style="list-style-type: none"> 1. Data Acquisition Unit Fault, Internal Failure 2. HUMS DAU Memory Warning Indicator Fault, The indicator bulbs have blown 3. HUMS DAU Memory Warning Switch Fault, The internal switch welded closed 4. HUMS Cockpit Audio Not Recording Relay Fault, Coil open circuit 5. HUMS Flight Data Not Recording Relay Fault, Coil open circuit

SUPPORTED TRAINING

SIMULATED SCENARIO	PRACTICAL TASKS	SIMULATED FAULTS
IDENTIFICATION SYSTEM	<ol style="list-style-type: none"> 1. Operational Check of the IFF System 2. Functional Check of the IFF System 3. Remove and Install IFF Transponder 	<ol style="list-style-type: none"> 1. IFF Transponder Internal Fault
INSTRUMENTATION SYSTEM	<ol style="list-style-type: none"> 1. Operational Check of the Inertial Navigation & Global Positioning System 2. Inertial Navigation & Global Positioning System, Harmonisation Data Input 3. Reset Inertial Navigation & Global Positioning System Current Data 4. Functional Check of the Inertial Navigation & Global Positioning System 5. Remove and Install Fuse (095) 6. Remove and Install INGPS 7. Functional Check of the Barometric Altimeter 8. Functional Check of the Combined Speed Indicator 9. Functional Check of the Vertical Speed Indicator 10. Functional Check of the Angle Of Attack System 11. Bonding Resistance Check (Directional Gyro Unit) 12. Bonding Resistance Check (Air Data Sensor) 13. Functional Check of the Standby Heading Indicator System 14. Functional Check of the Standby Compass 15. Functional Check of the Air Data Sensor 16. Operational Check of the Radar Altimeter 17. Functional Check of the Radar Altimeter 18. Remove and Install Angle Of Attack Probe 19. Remove and Install Air Data Computer 20. Remove and Install Fuse (212) 21. Remove and Install Directional Gyro Unit 22. Remove and Install Air Data Sensor 23. Remove and Install Radar Altimeter Transmitter/ Receiver 	<ol style="list-style-type: none"> 1. Air Data Sensor Fault, Internal Failure 2. Angle Of Attack Probe Fault, Open circuit wiper 3. Air Data Computer Fault, Internal Failure 4. Radar Altimeter Supply Fault, Fuse blown 5. Radar Altimeter Indicator Fault, Internal Failure 6. Radar Altimeter Transmitter/ Receiver Fault, Internal Failure 7. Directional Gyro Unit Fault, Internal Failure 8. Heading Indicator Fault, Internal Failure 9. Directional Gyro Slave/Slew Switch Fault, Contact welded
MISSION COMPUTER SYSTEM	<ol style="list-style-type: none"> 1. Functional Check of the Databus 2. Functional Check of the Data Transfer System 3. Functional Check of the Cockpit Display System 4. Remove and Install Databus Coupler A1 5. Remove and Install Databus Coupler B2 6. Remove and Install Primary Display Mission Computer 	<ol style="list-style-type: none"> 1. Data Bus Switch Fault, Stuck at Auto 2. Data Transfer Unit Fault, Interface Failure 3. Primary Display Mission Computer Processor Fault, Internal Failure 4. Primary Display Mission Computer Fault, Cooling does not operate

SUPPORTED TRAINING

SIMULATED SCENARIO	PRACTICAL TASKS	SIMULATED FAULTS
MULTI-FUNCTION DISPLAY SYSTEM	<ol style="list-style-type: none"> Operational Check of the Multi-Function Display 	<ol style="list-style-type: none"> Left Multi-Function Display Supply Fault, CB FB64 pulled in scenario Right Multi-Function Display Supply Fault, CB FB66 pulled in scenario Left Multi-Function Display Processor Fault, Processor failure Right Multi-Function Display Processor Fault, Processor failure
NAVIGATION LANDING AIDS SYSTEMS	<ol style="list-style-type: none"> Operational Check of the TACAN Functional Check of the TACAN Operational Check of the VOR/ILS Functional Check of the VOR/ILS Operational Check of the Automatic Direction Finder Functional Check of the Automatic Direction Finder Remove and Install Fuse (215) Remove and Install Fuse (113) Remove and Install Manual control Relay Remove and Install VOR/ILS Receiver Remove and Install Automatic Direction Finder Receiver 	<ol style="list-style-type: none"> Automatic Direction Finder Supply Fault, Fuse open Circuit Automatic Direction Finder Receiver Fault, Internal Failure Automatic Direction Finder Switch Fault, Pin 2 Open Circuit VOR/ILS Receiver Fault, Internal Failure VOR/ILS Supply Fault, Fuse open Circuit VOR/ILS Manual Control Relay Relay Fault, Coil Open Circuit TACAN ON/OFF Switch Fault, Pin 2 Open Circuit
RADAR SYSTEM	<ol style="list-style-type: none"> Operational Check of the RADAR Functional Check of the RADAR Remove and Install RADAR Scanner Remove and Install RADAR Computer Remove and Install RADAR Power Supply Unit 	<ol style="list-style-type: none"> RADAR Power Supply Unit Fault, No Output RADAR Computer Fault, PBIT Failure RADAR Scanner Transmit Fault, fails on transmission
STORES MANAGEMENT SYSTEM	<ol style="list-style-type: none"> Operational Check of the Stores Management System (IBIT) Operational Check of the Stores Management System (Switch BIT) Operational Check of the Stores Management System (Assisted BIT) 	<ol style="list-style-type: none"> No associated faults

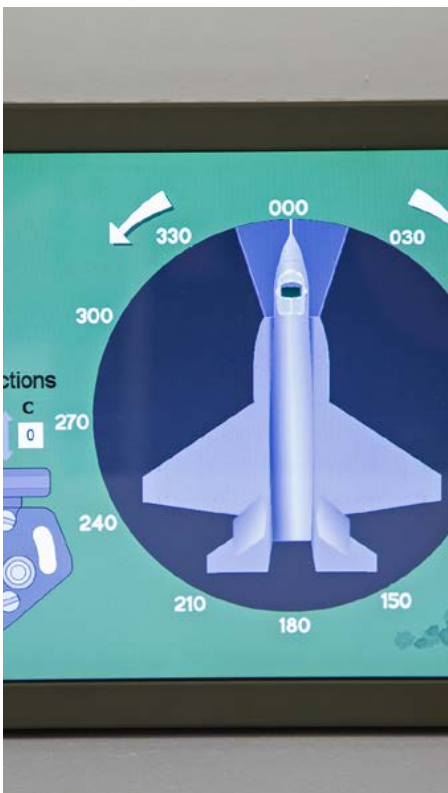


SUPPORTED TRAINING

SIMULATED SCENARIO	PRACTICAL TASKS	SIMULATED FAULTS
GENERAL MAINTENANCE PROCEDURES	<ol style="list-style-type: none"> 1. Remove and Install Blanks & Covers 2. Aircraft Parking Procedure 3. Pins Safe for Parking Condition 4. Pins Safe for Maintenance Condition 5. Open and Closing the Canopy Procedures 6. Remove and Install Engine Air Intake Debris Guards 7. Safe for Maintenance Condition 8. Make the Aircraft Electrically Safe 9. Make the Aircraft Selectively Safe 10. To Connect & Disconnect Headsets 11. Ground Cooling Air – Apply and Remove 12. Functional Check of Battery On-Load Voltage 13. Remove and Install Miscellaneous Switch Panel 	<ol style="list-style-type: none"> 1. No associated faults

ELECTRICAL SPECIFICATIONS

PARTICULAR	NOMINAL	UNIT
Supply Voltage	220 / 240	Vac
Frequency	50 / 60	Hz
Maximum Current	5	A





SUPPLIED DOCUMENTATION

Operation Manual

Maintenance Manual

Student Manual (Technical Publication)

OPTIONAL ACCESSORIES

Student Toolkit

Spares Kit

Consumables Starter Pack

Bolt-on systems, Engine Start, Refuel/Defuel

ORDERING INFORMATION

97910-0001A	Integrated Avionics Maintenance Trainer
97910-3020	Consumables Starter Kit
97910-3021	Spares Kit
P000835	Student Toolkit

