

SYL M05 B1.3 rev. 1.0

Lesson
Subject
5.1 Electronic Instrument Systems Typical systems arrangements and cockpit layout of electronic instrument systems.
5.2 Numbering systems Numbering systems: binary, octal and hexadecimal; Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa.
5.3 Data Conversion Analogue Data, Digital Data; Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types
5.4 Data Buses Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications. Aircraft Network/Ethernet.
5.5 A Logic Circuits A Identification of common logic gate symbols, tables and equivalent circuits; Applications used for aircraft systems, schematic diagrams.
5.5 B Logic Circuits B Interpretation of logic diagrams
5.6 A Basic Computer Structure A Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM); Computer technology (as applied in aircraft systems)
5.6 B Basic Computer Structure B Computer related terminology; Operation, layout and interface of the major components in a micro computer including their associated bus systems; Information contained in single and multiaddress instruction words; Memory associated terms; Operation of typical memory devices; Operation, advantages and disadvantages of the various data storage systems
5.7 Microprocessors Functions performed and overall operation of a microprocessor; Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit.
5.8 Integrated Circuits Operation and use of encoders and decoders; Function of encoder types; Uses of medium, large and very large scale integration.
5.9 Multiplexing Operation, application and identification in logic diagrams of multiplexers and demultiplexers.

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<p>5.10 Fibre Optics</p> <p>Advantages and disadvantages of fibre optic data transmission over electrical wire propagation;</p> <p>Fibre optic data bus;</p> <p>Fibre optic related terms;</p> <p>Terminations;</p> <p>Couplers, control terminals, remote terminals;</p> <p>Application of fibre optics in aircraft systems.</p>
<p>5.11 Electronic Displays</p> <p>Principles of operation of common types of displays used in modern aircraft, including Cathode Ray Tubes, Light Emitting Diodes and Liquid Crystal Display</p>
<p>5.12 Electrostatic Sensitive Devices</p> <p>Special handling of components sensitive to electrostatic discharges;</p> <p>Awareness of risks and possible damage, component and personnel anti-static protection devices</p>
<p>5.13 Software Management Control</p> <p>Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes.</p>
<p>5.14 Electromagnetic Environment</p> <p>Influence of the following phenomena on maintenance practices for electronic system:</p> <p>EMC-Electromagnetic Compatibility</p> <p>EMI-Electromagnetic Interference</p> <p>HIRF-High Intensity Radiated Field</p> <p>Lightning/lightning protection</p>
<p>5.15 A Typical Electronic/Digital Aircraft Systems A</p> <p>CARS-ARINC Communication and Addressing and Reporting System</p> <p>EICAS-Engine Indication and Crew Alerting System</p> <p>FBW-Fly-by-Wire</p> <p>FMS-Flight Management System</p> <p>IRS-Inertial Reference System</p>
<p>5.15 B Typical Electronic/Digital Aircraft Systems B</p> <p>ECAM-Electronic Centralised Aircraft Monitoring</p> <p>EFIS-Electronic Flight Instrument System</p> <p>GPS-Global Positioning System</p> <p>TCAS-Traffic Alert Collision Avoidance System</p> <p>Integrated Modular Avionics</p> <p>Cabin Systems</p> <p>Information Systems</p>