

 AEROSPACE INFORMATION REPORT	SAE AIR4250		REV. B
	Issued	1992-01	
	Revised	2012-01	
Superseding AIR4250A			
(R) Electronic Engine Control Specifications and Standards			

RATIONALE

This document is being revised to reflect a number of specifications and standards that have been updated or are no longer current. A new section has been added to expand the scope to include appropriate certification documents & requirements (FAR's, AC's, Policy Letters, etc) to provide one document that ties all requirements together.

1. SCOPE

This report lists documents that aid and govern the design, development, certification and utilization of aerospace electronic engine control systems. The report lists the military and industry specifications and standards that are commonly used in electronic engine control system design. Also included are Airworthiness Authority documents and requirements associated with certification. However, these lists are not necessarily complete.

The specifications and standards section has been divided into two parts: a master list arranged numerically and a categorized list that provides a functional breakdown and cross-reference of these documents.

For specifications and standards, the issue available during the latest revision to this document is listed. Details of current revisions for many documents are available in the Department of Defense Index of Specifications and Standards (DODISS).

It should be noted that not all of these documents are referenced or even recognized by all certification authorities. In addition, not all revisions of these documents are recognized by all authorities. The user should confirm before assuming that a document, or its process, will be accepted for approval.

Additionally the list contains, when available, the date of the latest revision of the document reviewed, together with comments from the SAE E-36 committee members who reviewed the document, the intention being to aid the reader to determine the likely relevance or usefulness of the document subject matter.

1.1 Availability of Documents

The following information pertains to the source and availability of specifications and standards.

- 1.1.1 Aeronautical Radio, Inc. (ARINC): 2551 Riva Road, Annapolis, MD 21401.
- 1.1.2 American National Standards Institute (ANSI): 11 West 42nd Street, New York, NY 10036-8002.
- 1.1.3 American Society for Testing and Materials (ASTM International): 100 Barr Harbor, West Conshohocken, PA 19428-2959.
- 1.1.4 Electronic Industries Association (EIA): 2001 Eye Street NW, Washington, DC 20006.
- 1.1.5 Institute of Electrical and Electronics Engineers (IEEE): 346 East 47th Street, New York, NY 10017.

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**SAE values your input. To provide feedback
on this Technical Report, please visit
<http://www.sae.org/technical/standards/AIR4250B>**

- 1.1.6 Military Documents: Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120-5099. The Department of Defense Index of Specifications and Standards, prepared by Naval Publications and Forms Center (NPFC 103), is published annually with bi-monthly cumulative supplements Available from Document Automation and Production Services (DAPS), Building 4D, 700 Robbins Avenue, Philadelphia, PA19111-5094, Tel: 215-697-6257, <https://assist.daps.dla.mil/quicksearch/>.
- 1.1.7 National Bureau of Standards (NBS): United States Department of Commerce, Washington, DC 20234.
- 1.1.8 RTCA Inc.: 1140 Connecticut Avenue, Suite 1020, Washington, DC 20036.
- 1.1.9 EUROCAE: European Organisation of Civil Aviation Electronics, 102 rue Etienne Dolet, 92240 Malakoff, France, <http://eurocae.net/>
- 1.1.10 SAE International: SAE Aerospace Standards, Recommended Practices, Information Reports (AS, ARP, AIR) Index, published by SAE International, 400 Commonwealth Drive, Warrendale, PA 15096. www.sae.org.
- 1.1.11 International Electrotechnical Commission (IEC): IEC, Central Office, 3, rue de Varembe, P.O. Box 131, CH - 1211 GENEVA 20, Switzerland.
- 1.2 Availability of Airworthiness Authority Documents
 - 1.2.1 Federal Aviation Administration Code of Federal Regulations (CFR's):
[www.airweb.faa.gov/Regulatory and Guidance Library/rgFAR.nsf/MainFrame?OpenFrameSet](http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgFAR.nsf/MainFrame?OpenFrameSet)
 - 1.2.2 Federal Aviation Administration Advisory Circulars:
www.faa.gov/regulations_policies/advisory_circulars/
 - 1.2.3 Federal Aviation Administration Policy Letters:
[www.airweb.faa.gov/Regulatory and Guidance Library/rgPolicy.nsf/Frameset?OpenPage](http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgPolicy.nsf/Frameset?OpenPage)
 - 1.2.4 European Aviation Safety Agency (EASA):
www.easa.europa.eu/agency-measures/certification-specifications.php

2. MASTER LIST OF DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of the other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Documents

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

TABLE 1 – SAE DOCUMENTS

Document	Issue/RA Date When Reviewed	Subject	SAE E36 Member Comments
AE4L-81-2	1981-02	Test Waveforms and Techniques for Assessing the Effects of Lightning Induced Transients	Original test definitions. Superseded by RTCA/DO-160D and ARP5412
AE4L-87-3	1987-03	Recommended Draft Advisory Circular Protection of Aircraft Electrical/Electronic Systems Against the Indirect Effects of Lightning	Original basis for FAA Advisory circular. Superseded by ARP5413A which was then cancelled in March 2007 when basically converted to AC20-136A.
AE4R-91-XX	1991-01	Recommended Draft Certification of Aircraft Electrical/Electronic Systems for Operation in the High Intensity Radiated Fields (HIRF) Environment	Field intensities are no longer up to date. New document is in process (ARP5583 Draft)
AIR64B	1992-09	Electrical and Electronic Cooling in Commercial Aircraft	Guidelines for system cooling
AIR1209	1998-12	Construction and Calibration of Parallel Plate Transmission Line for Electromagnetic Interference Susceptibility Testing	Relevant, detailed design level
AIR1255	1991-12	Spectrum Analyzers for Electromagnetic Interference Measurements	Useful guidelines on use of Spectrum Analysers
AIR1263	1991-05	Tin Plated Solderless Terminal Lugs and Splices on Nickel Coated High Temperature Wire	In use
AIR1277B	2005-02	Cooling of Modern Airborne Electronic Equipment	Useful for information only at the early stage of EEC mechanical design
AIR1329B	2008-10	Electrical Connectors and Wiring, Compatibility of	OK but detailed design level
AIR1336A	1996-06	Vehicle Electrical Systems	Good primer on automotive type system considerations. Applicability to engine controls is remote.
AIR1394A	1998-12	Cabling Guidelines for Electromagnetic Compatibility	In use

Document	Issue/RA Date When Reviewed	Subject	SAE E36 Member Comments
AIR1402A	1991-11	Common Termination Method, Electrical Wiring System, Application of	– Cancelled – April 2003.
AIR1404	1998-12	DC Resistivity vs. RF Impedance of EMI Gaskets	Still applicable
AIR1423	1977-08	Electromagnetic Compatibility of Gas Turbine Engines for Aircraft Propulsion	Basic principles still relevant. References are a bit old. MIL-STD-461F
AIR1425A	1998-12	Methods of Achieving Electromagnetic Compatibility of Gas Turbine Engine Accessories, for SelfPropelled Vehicles	General guidelines/system considerations
AIR1662A	1998-09	Minimization of Electrostatic Hazards in Aircraft Fuel Systems	Good background material
AIR4366A	2007-08	Issues and Concerns Associated with Electronic Propulsion Control System Partitioning	An introduction to system partitioning and the design/ development/certification process – Cancelled - August 2007
AIR5060A	2011-11	Electronic Engine Control Design Guide for Electromagnetic Environmental Effects	Detailed information and guidelines. Some references e.g. HIRF levels, are outdated
AIR5924	2004-02	Guidelines for the Integration of Electronic Engine Control Systems With Transport Category Aircraft Systems	Good background material
AIR6181	2011-08	Electronic Propulsion Control System/Aircraft Interface Control Documents	Guidelines to document functional and physical interface requirements.
AMS 2422	2002-07	Plating, Gold	Replaced MIL-G-45204
AMS-C-8837	1999-06	Coating, Cadmium(Vacuum Deposited)	Replaced MIL-C-8837
AMS-DTL- 23053/15	1999-07	Insulation Sleeving, Electrical, Heat Shrinkable Polyolefin, Heavy Wall, Coated, Flexible, Outer Wall Crosslinked	Replaced MIL-I-23053
ARP826	1991-08	Electrical Computing Resolvers	Useful reference for resolver characteristics
ARP914A	1991-11	Glossary of Electrical Connection Terms	A simple glossary not particularly exciting. CANCELLED April 2002.
ARP926B	1997-06	Fault/Failure Analysis Procedure	Use ARP4761 for civil airborne systems
ARP935A	1998-09	Control Plan/Technical Construction File	EMI Control Plan Outline includes a sample plan based on MIL-STD-461F requirements

Document	Issue/RA Date When Reviewed	Subject	SAE E36 Member Comments
ARP1172	1991-12	Filters, Conventional, Electromagnetic Interference Reduction, General Specification for	Still applicable where large Emi filters are used
ARP1173	1991-12	Test Procedures to Measure the RF Shielding Characteristics of EMI Gaskets	Still applicable
ARP1308C	1991-11	Preferred Electrical Connectors for Aerospace Vehicles and Associated Equipment	Not very useful. Does not include 38999 type III or IV. Noncurrent - inactive for new design or reflects dated technology
ARP1350	1991-11	Procedure for Installation and Mounting of Singlehole Mount, Cylindrical, Electrical Connectors	Still relevant. Somewhat detailed
ARP1481A	1998-09	Corrosion Control and Electrical Conductivity in Enclosure Design	Still applicable but has extensive references to Cadmium plating which is increasingly forbidden
ARP1705A	2006-4	Coaxial Test Procedure to Measure the RF Shielding Characteristics of EMI Gasket Materials	Still applicable
ARP1892B	1997-12	Electrical Connectors for Use in Battery Powered Ground Support Equipment	Doesn't seem relevant to Electronic Controls.
ARP4714	1999-10	External Software Loading of Electronic Engine Controls	Guidelines for development of the procedure
ARP4754A	2010-12	Certification Considerations for Highly-Integrated or Complex Aircraft Systems	Focuses on overall system safety assurance process
ARP4761	1996-12	Guidelines and Methods for Conducting the Safety Assessment Process on Civil Airborne Systems and equipment	Detailed information on safety assessment process and analysis methods
ARP4874	1995-10	Electronic Propulsion Control/ Aircraft Interface Control Documents	Guidelines for ICD content and document format. Effectively replaced by AIR6181 as of 9 August 2011.
ARP5107B	2006-11	Guidelines for Time-Limited- Dispatch (TLD) Analysis for Electronic Engine Control Systems	Industry standard for TLD analysis
ARP5412A	2005-02	Aircraft Lightning Environment and Related Test Waveforms	Latest, current, industry definition. (Equivalent to ED-84).

Document	Issue/RA Date When Reviewed	Subject	SAE E36 Member Comments
ARP5413A	1999-01	Certification of Aircraft Electrical/ Electronic Systems for the Indirect Effects of Lightning	Latest, current, industry guidelines. (Equivalent to ED-81). ARP5413A was cancelled in March 2007 when basically converted to AC20-136A.
ARP5414A	2005-2	Aircraft Lightning Zoning	Useful for understanding lightning phenomena. (Equivalent to ED-91).
ARP5415A	2002-04	Users Manual for Certification of Aircraft Electrical/Electronic Systems for the Indirect Effects of Lightning	Provides additional guidelines for the tests of ARP5413A and RTCA/DO-160
ARP5416	2005-03	Aircraft Lightning Test Methods	This ARP is a significant refinement and expansion of the basic material from the SAE AE-4L Committee's "Blue" book issued in 1978 and titled "Lightning Test Waveforms and Techniques for Aerospace Vehicles and Hardware, providing a more thorough and updated description of the test techniques. (Equivalent to ED-105).
ARP5583A	2010-06	Guide to Certification of Aircraft in a High Intensity Radiated Field (HIRF) Environment	Latest HIRF Users Guide. (Equivalent to ED-107A).
ARP5757	2008-02	Guidelines for Engine Component Tests	Component certification guidelines supplementing AC 33.28-1
ARP5890A	2011-2	Guidelines for Preparing Reliability Assessment Plans for Electronic Engine Controls	Describes processes that are intended for use in assessing the reliability of Electronic Engine Controls, or subassemblies thereof.
AS29	1996-11	Ignition Shielding, Aircraft	Non-current . Not recommended for new designs
AS654	1994-06	Cable, Special Purpose, Electrical: Wire, Electrical (Ignition, high- tension)	Standards for ignition cables of internal combustion engines
AS9000	1997-05	Aerospace Basic Quality System Standard	Aerospace clone of QS9000 applicable to COTS supplier control
AS8700	1999-08	Installation and Test of Electronic Equipment in Aircraft, General Specification for	Replaced MIL-I-8700
AS50881D	2010-07	Wiring, Aerospace Vehicle	Replaced MIL-W-5088

2.2 Other Documents

TABLE 2 – OTHER DOCUMENTS

Document	Date	Subject/Title
ANSI Y32.16	1975	Reference Designators for Electrical and Electronic Parts and Equipment refers to IEEE 200-1975
ARINC 429		Transfer of Digital Data Between All Systems in the Air Transport Industry (Mark 33 Digital Information Transfer System)
ARINC 600-12	1998-11	Air Transport Avionics Equipment Interfaces
ARINC 601	1981-02	Control/Display Interface (Appendix I)
ARINC 604-1	1988-10	Guidance for the Design and Use of BuiltIn Test Equipment (BITE)
ARINC 607-3	1998-08	OnBoard Replaceable Modules
ARINC 613	1988-01	Guidance for Using ADA in Avionics Design
ARINC 615-3	1992-08	Airborne Computer High Speed Data Loader
ARINC 615AP1	1999-12	Software Data Loader Using Ethernet Interfaces, Part 1, Physical Standards and Protocols
ARINC 615AP2	1999-12	Software Data Loader Using Ethernet Interfaces, Part 2, Loadable Software Standards
ARINC 616-3	1985-07	Avionics Subset of Atlas Test Language (Same as IEEE 41684)
ARINC 629	1999-02	MultiTransmitter Data Bus
ARINC 664P1-1	2006-06	Aircraft Data Network Part 1 Systems Concepts and Overview - 2002; Includes Supplement 1
ARINC 664P2-2	2009-01	Aircraft Data Network, Part 2 – Ethernet Physical And Data Link Layer Specification - 2003; Includes Supplements 1-2
ARINC 664P3-2	2009-02	Aircraft Data Network Part 3 Internet-Based Protocols And Services - 2001; Includes Supplements 1-2
ARINC 664P4-2	2007-12	Aircraft Data Network Part 4 Internet-Based Address Structure & Assigned Numbers - 1990; Includes Supplements 1-2
ARINC 664P5	2005-04	Aircraft Data Network Part 5 Network Domain Characteristics And Interconnection
ARINC 664P7-1	2009-09	Aircraft Data Network Part 7 Avionics Full-Duplex Switched Ethernet Network - 2005; Includes Supplement 1
ARINC 664P8-1	2010-11	Aircraft Data Network Part 8 Interoperation With Non-Ip Protocols And Services - 2005; Includes Supplement 1
ASME Y14.24M	1989-01	Types and Application of Engineering Drawings
ASME Y14.34M	2002	Associated Lists
ASME Y14.35M	2003	Revision of Engineering Drawings and Associated Documents
ASTM D 910A	2003	Standard Specification for Aviation Gasolines
ASTM D 5948	1996-04	Standard Specification for Molding Compounds, Thermosetting E1-1996
ASTM SI 10	1997-02	Standard for Use of the International System of Units (SI)
ED-12B	1992 -12	Software Considerations in Airborne Systems and Equipment Certification – Including Amendment No1 – 19 October 1999. (Equivalent to RTCA/DO-178B)
ED-14G	2011-05	Environmental Conditions and Test Procedures for Airborne Equipment. (Equivalent to RTCA/DO-160G).
ED-79A	2010-12	Guidelines for Development of Civil Aircraft and Systems.
ED-80	2000-04	Design Assurance Guidelines for Airborne Electronic Hardware. (Equivalent to RTCA/DO-254).

Document	Date	Subject/Title
ED-81	1996-05	Certification of Aircraft Electrical/Electronic Systems for the Indirect Effects of Lightning – Including Amendment No 1 – 26 August 1999. (Equivalent to ARP5413A).
ED-84	1997-08	Aircraft Lightning Environment and Related Test Waveforms Standard – Including Amendment No 1 Oct 1999 – Amendment No 2 – May 2001 – Amendment No 3 – June 2006. (Equivalent to ARP5412).
ED-90B	2010-05	Radio Frequency Susceptibility Test Procedures.
ED-91	1998-07	Aircraft Lightning Zoning Standard – Including Amendment No 1 – 6 September 1999 and Amendment No 2 – 27 June 2006. (Equivalent to ARP5414).
ED-94B	2001-10	Final Annual Report for Clarification of ED-12B “Software Considerations in Airborne Systems and Equipment” – Including Amendment No 1 – February 2002. (Equivalent to RTCA/DO-248B).
ED-105	2005-04	Aircraft Lightning Test Method. (Equivalent to ARP5416).
ED-107A	2010-07	Guide to Certification of Aircraft in a High Intensity Radiated Field (HIRF) Environment. (Equivalent to ARP5583A).
IPC T-50	2003-12	Terms and Definitions for Interconnecting and Packaging Electronic Circuits
IPC D-275	1991-09	Design Standard for Rigid Printed Boards and Rigid Printed Board Assemblies
IPC 2221	2003-05	Generic Standard for Printed Board Design
IPC 2223	1998-11	Sectional Design Standard for Flexible Printed Boards
IEC/TS 62239	2003-05	Process Management for Avionics – Preparation of an Electronic Components Management Plan
IEC/TR 62240	2005-06	Process Management for Avionics - Use of Semiconductor Devices Outside Manufacturers' Specified Temperature Ranges
IEC TS 62396	2006-02	Process management for avionics – Atmospheric radiation effects – Part 1: Accommodation of atmospheric radiation effects via single event effects within avionics electronic equipment - First Edition
IEC TS 62396	2008-08	Process management for avionics – Atmospheric radiation effects – Part 2: Guidelines for single event effects testing for avionics systems - Edition 1.0
IEC TS 62396	2008-08	Process management for avionics – Atmospheric radiation effects – Part 3: Optimising system design to accommodate the single event effects (SEE) of atmospheric radiation - Edition 1.0
IEC TS 62396	2008-07	Process management for avionics – Atmospheric radiation effects – Part 4: Guidelines for designing with high voltage aircraft electronics and potential single event effects - Edition 1.0
IEC TS 62396	2008-08	Process management for avionics – Atmospheric radiation effects – Part 5: Guidelines for assessing thermal neutron fluxes and effects in avionics systems - Edition 1.0
IEEE C63.14	1998-10	American National Standard Dictionary for Technologies of Electromagnetic Compatibility (EMC), Electromagnetic Pulse (EMP), and Electrostatic Discharge (ESD)
IEEE 200-1975	1975	Electrical and Electronic Parts and Equipment, Reference Designators for
IEEE 416-84	1984	Atlas Test Language (Same as ARINC 616)
IEEE/EIA 12207	1998	Standard for Information Technology – Software Life Cycle Processes
ISO 10012-1	2002	Quality Assurance Requirements for Measuring Equipment
TIA/EIA-232	2002	Interface Between Data Terminal Equipment and Data Circuit Terminating Equipment Employing Serial Binary Data Exchange (RS232)
TIA/EIA-422	2000	Electrical Characteristics of Unbalanced Voltage Digital Interface Circuits (RS422)
J-STD-004,	1995	Requirements for Soldering Fluxes
J-STD-005	1995	Requirements for Soldering Pastes

Document	Date	Subject/Title
J-STD-006A	2001	Requirements for Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders for Electronic Soldering Applications
RTCA/DO-160G	2010-12	Environmental Conditions and Test Procedures for Airborne Electrical/ Electronic Equipment and Instruments. (Equivalent to ED-14G)
RTCA/DO-178B	1992-12	Software Considerations in Airborne Systems and Equipment Certification. (Equivalent to ED-12B).
RTCA/DO-248B	2001-10	Final Annual Report For Clarification Of DO-178B "Software Considerations In Airborne Systems and Equipment Certification (Equivalent to ED-94B).
RTCA/DO-254	2000-04	Design Assurance Guidelines for Airborne Electronic Hardware. (Equivalent to ED-80).
WC 27500	2000-01	Standard for Aerospace and Industrial Electrical Cable
Z540.1	2002	Calibration Laboratories and Measuring and Test Equipment - General Requirements

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2.3 Federal and Military Documents

TABLE 3 – FEDERAL AND MILITARY DOCUMENTS

Document	Subject/Title	SAE E36 Member Comments
DOD-D-1000	Drawings, Engineering and Associated Lists(inactive for new design as of 1 Jul 90).	Superseded by MIL-DTL-31000 (Active).
MIL-HDBK-263B	Electrostatic Discharge Control Handbook for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices) Metric	
MIL-HDBK-863	Wiring Data and System Schematic Diagrams, Preparation of	
MIL-STD-1686C	Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices) Metric	
DOD-STD-2167	Defense System Software Development – Superseded by IEEE/EIA 12207, 12207.1, 12207.2	
MIL-E-5007D(3) NOT 1	Engines, Aircraft, Turbojet and Turbofan, General Specification for	Inactive
MIL-DTL-5015H Sup 1	Connectors, Electrical, Circular Threaded, AN Type, General Specification for	Cancelled/superseded by SAE-AS50151
MIL-B-5087	Bonding, Electrical, and Lighting Protection, for Aerospace Systems Superseded by MIL-STD-464C - Cancelled/superseded by MIL-STD-464C, "Electromagnetic Environmental Effects Requirements for Systems"	
MIL-W-5088	Wiring, Aerospace Vehicle	Inactive – Use SAE AS50881D
MIL-E-5400T(3) NOT 1	Electronic Equipment, Aerospace, General Specification for	Inactive
MIL-C-5541	Chemical Conversion Coatings on Aluminum and Aluminum Alloys	Superseded by MIL-DTL-5541F
MIL-DTL-5541F	Chemical Conversion Coatings on Aluminum and Aluminum Alloys	
MIL-DTL-5624U NOT 1	Turbo Fuel, Aviation, Grades JP4 and JP5	
MIL-PRF-7024E	Calibrating Fluid, Aircraft Fuel System Components	
MIL-STD-7179	Finishes, Coatings, and Sealants for the Protection of Aerospace Weapons Systems, Structures and Parts, General Specification for	
MIL-I-8500D NOT 2	Interchangeability and Replaceability of Component Parts for Aerospace Vehicles	
MIL-E-8593	Engines, Aircraft, Turboshift and Turboprop, General Specification for	Inactive
MIL-A-8625F(1)	Anodic Coatings for Aluminum and Aluminum Alloys	

Document	Subject/Title	SAE E36 Member Comments
MIL-DTL-16878G	Wire, Electrical, Insulated, General Specification for	
MIL-DTL-21097G	Connectors, Electrical, Printed Wiring Board, General Purpose General Specification for	
MIL-PRF-19500P	Semiconductor Devices, General Specification for	
MIL-C-21097	Connector, Electrical Printed Wiring Board, General Purpose, General Specification for	Superseded by MIL-DTL-21097
MIL-C-22520	Crimping Tools, Terminal, Hand or Power Actuated, Wire Termination	Superseded by MIL-DTL-22520G
MIL-I-24768/1	Insulation Plastics, Laminated, Thermosetting, Glass Cloth, Melamine Resin	
MIL-DTD-22520G	Crimping Tools, Wire Termination, General Specification for	
MIL-DTL-25038H	Wire, Electrical, High Temperature and Fire Resistant and Flight Critical	
MIL-M-38510	Microcircuits, General Specification for	Inactive for new Designs but some slash numbers are active and some are not
MIL-C-38999	Connector, Electrical, Circular, Miniature, High Density, Quick Disconnect (etc.), General Specification for	Superseded by MIL-DTL-38999
MIL-DTL-38999L(1)	Connectors, Electrical, Circular, Miniature, High Density, Quick Disconnect (Bayonet, Threaded, and Breech Coupling), Environment Resistant, Removable Crimp and Hermetic Solder Contacts, General Specification for	
MIL-I-46058	Insulating Compound, Electrical (for Coating Printed Circuit Assemblies)	Inactive for new designs
MIL-P-50884	Printed Wiring, Flexible and RigidFlex	Inactive
MIL-PRF-55110	Printed Wiring Boards, General Specification for	Inactive for new designs
MIL-C-55302	Connector, Printed Circuit Subassembly and Accessories	Superseded by MIL-DTL-55302
MIL-W-81822	Wire, Electrical, Solderless Wrap, Extruded EthyleneTetrafluorethylene (ETFE) Insulation, Silver Coated Solid Conductor	Cancelled/superseded by SAE-AS81822/13
MIL-C-83723	Connectors, Electrical, (Circular, Environment Resisting) Receptacles and Plugs, General Specification for	Superseded by MIL-DTL-83723G
MIL-DTL-31000B	Technical Data Packages (14 Dec 2001)	
MIL-HDBK-189	Reliability Growth Management	
MIL-HDBK-217	Reliability Prediction of Electronic Equipment	
MIL-HDBK-237D	Electromagnetic Environmental Effects and Spectrum	
MIL-HDBK-338	Electronic Reliability Design Handbook	
MIL-HDBK-472	Maintainability Prediction	
MIL-HDBK-502	Acquisition Logistics	
MIL-HDBK-759	Human Engineering Design Guidelines	

Document	Subject/Title	SAE E36 Member Comments
MIL-HDBK-781	Reliability Test Methods, Plans and Environments for Engineering Development, Qualification and Production	
MIL-PRF-31032B	Printed Circuit Board/Printed Wiring Board, General Specification for	
MIL-PRF-38534H	Hybrid Microcircuits, General Requirements for	
MIL-PRF-49506	Logistics Management Information	Superseded by GEIA-STD-0007, Logistics Product Data
MIL-STD-129	Military Marking for Shipment and Storage	
MIL-STD-130	Identification Marking of U.S. Military Property	
MIL-HDBK-310	Global Climatic Data for Developing Military Products	
MIL-HDBK-505	Definitions of Item Levels, Item Exchangeability, Models, and Related Terms	
MIL-HDBK-454B	General Guidelines for Electronic Equipment	
MIL-STD-461F	Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment	
MIL-STD-464C	Electromagnetic Environmental effects Requirements for Systems	
MIL-HDBK-470	Designing and Developing Maintainable Products and Systems Vol 1	
MIL-HDBK-471	Maintainability Verification/Demonstration/Evaluation - Cancelled/superseded by MIL-HDBK-470 (see row above for subject)	
MIL-STD-961	Defense and Program-Unique Specifications for Format and Content	
MIL-HDBK-704/8	Department Of Defense Handbook, Guidance For Test Procedures For Demonstration Of Utilization Equipment Compliance To Aircraft Electrical Power Characteristics 28 Vdc (Part 8 Of 8 Parts)	
MIL-STD-704	Aircraft Electric Power Characteristics	
MIL-STD-750E	Test Methods for Semiconductor Devices	
MIL-HDBK-781	Reliability Test Methods, Plans, and Environments for Engineering, Development, Qualification, and Production	
MIL-STD-810	Environmental Engineering Considerations and Laboratory Tests	
MIL-STD-882	System Safety	
MIL-STD-883H	Microcircuits	
MIL-STD-889B(3) NOT 2	Dissimilar Metals	
MIL-HDBK-1250	Corrosion Prevention and Deterioration Control in Electronic Components and Assemblies - Inactive	
MIL-STD-1285	Marking of Electrical and Electronic Parts	

Document	Subject/Title	SAE E36 Member Comments
MIL-STD-1472	Human Engineering	
MIL-HDBK-1568	Materials and Processes for Corrosion Prevention and Control in Aerospace Weapons Systems	
MIL-STD-1750	Sixteen Bit Computer Instruction Set Architecture - Inactive	
MIL-STD-1773	Fiber Optics Mechanization of an Aircraft Internal Time Division Command/Response Multiplex Data Bus	
MIL-STD-2073-1E(1)	Standard Practice for Military Packaging	
MS-25083	Jumper Assembly, Electric, Bonding and Current Return	Cancelled/superseded by MIL-C-83413/8, "Connectors and Assemblies, Electrical, Aircraft Grounding: Type IV Jumper Cable Assembly, Lead, Electrical"
NBS MONOGRAPH 125	Thermocouple Reference Tables	
MIL-STD-1553	Digital Time Division Command/Response Multiplex Data Bus	
MIL-HDBK-1568	Materials and Processes for Corrosion Prevention and Control in Aerospace Weapons Systems	
MIL-STD-1750	Sixteen Bit Computer Instruction Set Architecture - Inactive	
MIL-STD-1773	Fiber Optics Mechanization of an Aircraft Internal Time Division Command/Response Multiplex Data Bus	
MIL-STD-2073	Standard Practice for Military Packaging	
MS-25083	Jumper Assembly, Electric, Bonding and Current Return	Cancelled/superseded by MIL-C-83413/8, "Connectors and Assemblies, Electrical, Aircraft Grounding: Type IV Jumper Cable Assembly, Lead, Electrical"
MIL-C-83413/8C(1)	"Connectors and Assemblies, Electrical, Aircraft Grounding: Type IV Jumper Cable Assembly, Lead, Electrical"	

2.4 Airworthiness Authority Documents

TABLE 4 – AIRWORTHINESS AUTHORITY DOCUMENTS

Document	Subject
AC 20-115B	RTCA, Inc. Document RTCA/DO-178B; January 11, 1993.
AC 20-136A	Protection of Aircraft Electrical/Electronic Systems Against the Indirect Effects of Lightning; December 21, 2006.
AC 20-152	RTCA, Inc., Document RTCA/DO-254, Design Assurance Guidance for Airborne Electronic Hardware; June 30, 2005.
AC 20 -158	The Certification of Aircraft Electrical and Electronic Systems for Operation in the High-Intensity Radiated Fields (HIRF) Environment; July 30, 2007.
AC 20-171	"Alternatives to DO-178B for Software in Airborne Systems and Equipment", January 19, 2011.
AC 21-16F	RTCA, Inc. Document RTCA/DO-160F, Environmental Conditions and Test Procedures for Airborne Equipment; December 20, 2005.
AC 33.2B	Aircraft Engine Type Certification Handbook; June 30, 1993.
AC 33.4-3	Instructions For Continued Airworthiness; Aircraft Engine High Intensity Radiated Fields (HIRF) And Lightning Protection Features, September 16, 2005.
AC 33.17-1	Fire Prevention, June 28, 2002.
AC 33.28-1	Compliance Criteria For 14 Cfr §33.28, Aircraft Engines, Electrical And Electronic Engine Control Systems
AC 33.28-2	Guidance Material for 14 CFR 33.28, Reciprocating Engines, Electrical and Electronic Engine Control Systems" FAA AC 33.28-2, August 13, 2003.
FAA Order 8110.49	Software Approval Guidelines; June 2, 2003.
FAA Order 8110.105 CHG 1	Simple and Complex Electronic Hardware Approval Guidance; September 23, 2008.
FAA Policy Memorandum PS-ANE100-1993-00131	FAA Engine and Propeller Directorate Policy Regarding Time Limited Dispatch (TLD) Of Engines Fitted With Full Authority Digital Engine Control (FADEC) Systems; October 28, 1993.
FAA Policy Memorandum, PS-ANE100-2001-1993-33.28TLD-R1	Policy for Time Limited Dispatch (TLD) of Engines Fitted with Full Authority Digital Engine Controls (FADEC) Systems; June 29, 2001.
FAA Policy Letter PL-45	Time Limited Dispatch (TLD) Authorization for Full Authority Digital Electronic Control (FADEC) Engines, Rev 2, March 4, 2004.
EASA Advisory, AMC 20	General Acceptable Means of Compliance for Airworthiness of Products, Parts and Appliances
EASA Advisory, AMC 20-1	Certification of Aircraft Propulsion Systems Equipped with Electronic Control Systems
EASA Advisory, AMC 20-2	Certification of Essential APU Equipped with Electronic Controls
EASA Advisory, AMC 20-3	Certification of Engines Equipped with Electronic Engine Control Systems
EASA Advisory, AMC 20-6	Extended Range Operation with Two-Engine Aeroplanes Etops Certification and Operation
EASA Advisory, AMC 20-115B	General Acceptable Means of Compliance for Airworthiness of Products, Parts and Appliances, Recognition of Eurocae ED-12B/RTCA DO-178B, November 5, 2003.

3. CATEGORIZED LIST PROVIDING FUNCTIONAL BREAKDOWN

3.1 Documents Relating to Electromagnetic Compatibility (EMI/HIRF and Lightning)

TABLE 5 – ELECTROMAGNETIC COMPATIBILITY (EMI/HIRF & LIGHTNING)

Document	Subject
AC 20-136A	Protection of Aircraft Electrical/Electronic Systems Against the Indirect Effects of Lightning; December 21, 2006.
AC 20 -158	The Certification of Aircraft Electrical and Electronic Systems for Operation in the High-Intensity Radiated Fields (HIRF) Environment; July 30, 2007.
AC 33.4-3	Instructions For Continued Airworthiness; Aircraft Engine High Intensity Radiated Fields (HIRF) And Lightning Protection Features, September 16, 2005.
AE4L-81-2	Test Waveforms and Techniques for Assessing the Effects of Lightning Induced Transients
AE4L-87-3	Recommended Draft Advisory Circular Protection of Aircraft Electrical/ Electronic Systems Against the Indirect Effects of Lightning
AE4R-91-XX	Recommended Draft Certification of Aircraft Electrical/Electronic Systems for Operation in the High Intensity Radiated Fields (HIRF) Environment
AIR1209	Construction and Calibration of Parallel Plate Transmission Line for Electromagnetic Interference Susceptibility Testing
AIR1255	Spectrum Analyzers for Electromagnetic Interference Measurements
AIR1394A	Cabling Guidelines for Electromagnetic Compatibility
AIR1404	DC Resistivity vs. RF Impedance of EMI Gaskets
AIR1423	Electromagnetic Compatibility of Gas Turbine Engines for Aircraft Propulsion
AIR1425A	Methods of Achieving Electromagnetic Compatibility of Gas Turbine Engine Accessories, for SelfPropelled Vehicles
AIR1662A	Minimization of Electrostatic Hazards in Aircraft Fuel Systems
AIR5060A	Electronic Engine Control Design Guide for Electromagnetic Environmental Effects
ARP935A	Control Plan/Technical Construction File
ARP1172	Filters, Conventional, Electromagnetic Interference Reduction, General Specification for
ARP1173	Test Procedures to Measure the RF Shielding Characteristics of EMI Gaskets
ARP1705A	Coaxial Test Procedure to Measure the RF Shielding Characteristics of EMI Gasket Materials
ARP5412A	Aircraft Lightning Environment and Related Test Waveforms
ARP5413A	Certification of Aircraft Electrical/Electronic Systems for the Indirect Effects of Lightning. ARP 5413A was cancelled in March 2007 when basically converted to AC20-136A.
ARP5414A	Aircraft Lightning Zoning
ARP5415A	Users Manual for Certification of Aircraft Electrical/Electronic Systems for the Indirect Effects of Lightning
ARP5416	Aircraft Lightning Test Methods
ARP5583A	Guide to Certification of Aircraft in a High Intensity Radiated Field (HIRF) Environment
AS29	Ignition Shielding, Aircraft
RTCA/DO-160D	Environmental Conditions and Test Procedures for Airborne Electrical/ Electronic Equipment and Instruments

Document	Subject
DOD-HDBK-263	Electrostatic Discharge Control Handbook for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices) Metric - Superseded by MIL-HDBK-263
DOD-STD-1686	Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices) Metric - Superseded by MIL-STD-1686
DOD-STD-1795	Lightning Protection of Aerospace Vehicles and Hardware - Superseded by MIL-STD-1795, which was subsequently cancelled with no superseding document
MIL-B-5087	Bonding, Electrical, and Lighting Protection, for Aerospace Systems - Cancelled/superseded by MIL-STD-464C, "Electromagnetic Environmental Effects Requirements for Systems"
MIL-E-6051	Electromagnetic Compatibility, Requirements for Systems - Cancelled/superseded by MIL-STD-464C, "Electromagnetic Environmental Effects Requirements for Systems"
MIL-HDBK-237C	Electromagnetic Environmental Effects and Spectrum Supportability Guidance for the Acquisition Process
MIL-STD-461E	Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference – Superseded by MIL-STD-461F
MIL-STD-464C	Electromagnetic Environmental effects Requirements for Systems

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3.2 Documents Relating to Software

TABLE 6 – SOFTWARE

Document	Subject
AC 20-115B	RTCA, Inc. Document RTCA/DO-178B; January 11, 1993.
AIR4366A	Issues and Concerns Associated with Electronic Propulsion Control System Partitioning - Cancelled
ARINC 613	Guidance for Using ADA in Avionics Design
ARINC 615-3	Airborne Computer High Speed Data Loader
ARINC 615AP1	Software Data Loader Using Ethernet Interfaces, Part 1, Physical Standards and Protocols
ARINC 615AP2	Software Data Loader Using Ethernet Interfaces, Part 2, Loadable Software Standards
ARINC 616	Atlas Test Language (Same as IEEE 41684)
ARINC 664	Aircraft Data Network Part 1 Systems Concepts and Overview - 2002; Includes Supplement 1 AIRCRAFT DATA NETWORK, PART 2 – ETHERNET PHYSICAL AND DATA LINK LAYER SPECIFICATION - 2003; Includes Supplements 1-2 AIRCRAFT DATA NETWORK PART 3 INTERNET-BASED PROTOCOLS AND SERVICES - 2001; Includes Supplements 1-2 AIRCRAFT DATA NETWORK PART 4 INTERNET-BASED ADDRESS STRUCTURE & ASSIGNED NUMBERS - 1990; Includes Supplements 1-2 AIRCRAFT DATA NETWORK PART 5 NETWORK DOMAIN CHARACTERISTICS AND INTERCONNECTION AIRCRAFT DATA NETWORK PART 7 AVIONICS FULL-DUPLEX SWITCHED ETHERNET NETWORK - 2005; Includes Supplement 1 AIRCRAFT DATA NETWORK PART 8 INTEROPERATION WITH NON-IP PROTOCOLS AND SERVICES - 2005; Includes Supplement 1
ARP4714	External Software Loading of Electronic Engine Controls
EASA Advisory, AMC 20-115B	General Acceptable Means of Compliance for Airworthiness of Products, Parts and Appliances, Recognition of Eurocae ED-12B/RTCA DO-178B, November 5, 2003.
FAA Order 8110.49	Software Approval Guidelines; June 2, 2003.
IEEE 41684	Atlas Test Language (Same as ARINC 616)
IEEE 12207	Standard for Information Technology – Software Life Cycle Processes
RTCA/DO-178B	Software Considerations in Airborne Systems and Equipment Certification

3.3 Documents Relating to Communication

TABLE 7 – COMMUNICATION

Document	Subject
ARINC 429	Transfer of Digital Data Between All Systems in the Air Transport Industry (Mark 33 Digital Information Transfer System)
ARINC 600-12	Air Transport Avionics Equipment Interfaces
ARINC 601	Control/Display Interface (Appendix I)
ARINC 629	MultiTransmitter Data Bus
ARINC 664	Aircraft Data Network Part 1 Systems Concepts and Overview - 2002; Includes Supplement 1 AIRCRAFT DATA NETWORK, PART 2 – ETHERNET PHYSICAL AND DATA LINK LAYER SPECIFICATION - 2003; Includes Supplements 1-2 AIRCRAFT DATA NETWORK PART 3 INTERNET-BASED PROTOCOLS AND SERVICES - 2001; Includes Supplements 1-2 AIRCRAFT DATA NETWORK PART 4 INTERNET-BASED ADDRESS STRUCTURE & ASSIGNED NUMBERS - 1990; Includes Supplements 1-2 AIRCRAFT DATA NETWORK PART 5 NETWORK DOMAIN CHARACTERISTICS AND INTERCONNECTION AIRCRAFT DATA NETWORK PART 7 AVIONICS FULL-DUPLEX SWITCHED ETHERNET NETWORK - 2005; Includes Supplement 1 AIRCRAFT DATA NETWORK PART 8 INTEROPERATION WITH NON-IP PROTOCOLS AND SERVICES - 2005; Includes Supplement 1
EIA RS-232	Interface Between Data Terminal Equipment and Data Circuit Terminating Equipment Employing Serial Binary Data Exchange
EIA RS-422	Electrical Characteristics of Unbalanced Voltage Digital Interface Circuits
MIL-STD-1553	Digital Time Division Command/Response Multiplex Data Bus
MIL-STD-1773	Fiber Optics Mechanization of an Aircraft Internal Time Division Command/ Response Multiplex Data Bus

3.4 Documents Relating to Documentation or Configuration Control

TABLE 8 – DOCUMENTATION OR CONFIGURATION CONTROL

Document	Subject
ARP926B	Fault/Failure Analysis Procedure
ARP935	Suggested EMI Control Plan Outline
ARP4761	Guidelines and Methods for Conducting the Safety Assessment Process on Civil Airborne Systems and equipment
ARP4874	Electronic Propulsion Control/Aircraft Interface Control Documents
ARP5107B	Guidelines for Time-Limited-Dispatch (TLD) Analysis for Electronic Engine Control Systems
ASME Y14.24M	Types and Application of Engineering Drawings
ASME Y14.34M	Associated Lists
ASME Y14.35M	Revision of Engineering Drawings and Associated Documents
ASTM SI 10	Standard for Use of the International System of Units (SI)
DOD-D-1000	Drawings, Engineering and Associated Lists - Superseded by MIL-DTL-31000, "Technical Data Packages"
IEC/TS 62239	Process Management for Avionics – Preparation of an Electronic Components Management Plan
MIL-DTL-31000	Technical Data Packages
MIL-HDBK-863	Wiring Data and System Schematic Diagrams, Preparation of
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-130	Identification Marking of U.S. Military Property
MIL-STD-961	Defense and Program-Unique Specifications for Format and Content
MIL-STD-785	Reliability Program for Systems and Equipment Development and Production - Cancelled with no superseding document
MIL-STD-1285	Marking of Electrical and Electronic Parts

3.5 Documents Relating to Safety, Reliability, Maintainability or Quality

TABLE 9 – SAFETY, RELIABILITY, MAINTAINABILITY OR QUALITY

Document	Subject
AC 20-152	RTCA, Inc., Document RTCA/DO-254, Design Assurance Guidance for Airborne Electronic Hardware; June 30, 2005.
AIR5924	Guidelines for the Integration of Electronic Engine Control Systems With Transport Category Aircraft Systems
ARP926B	Fault/Failure Analysis Procedure
ARP4754A	Certification Considerations for Highly-Integrated or Complex Aircraft Systems
ARP4761	Guidelines and Methods for Conducting the Safety Assessment Process on Civil Airborne Systems and equipment
ARP5890A	Guidelines for Preparing Reliability Assessment Plans for Electronic Engine Controls
AS9000	Aerospace Basic Quality System Standard
FAA Order 8110.105 CHG 1	Simple and Complex Electronic Hardware Approval Guidance; September 23, 2008.
FAA Policy Memorandum PS-ANE100-1993-00131	FAA Engine and Propeller Directorate Policy Regarding Time Limited Dispatch (TLD) Of Engines Fitted With Full Authority Digital Engine Control (FADEC) Systems; October 28, 1993.
FAA Policy Memorandum, PS-ANE100-2001-1993-33.28TLD-R1	Policy for Time Limited Dispatch (TLD) of Engines Fitted with Full Authority Digital Engine Controls (FADEC) Systems; June 29, 2001.
FAA Policy Letter PL-45	Time Limited Dispatch (TLD) Authorization for Full Authority Digital Electronic Control (FADEC) Engines, Rev 2, March 4, 2004.
MIL-I-8500	Interchangeability and Replaceability of Component Parts for Aerospace Vehicles
MIL-Q-9858	Quality Program Requirements - Cancelled with no superseding document
MIL-S-52779	Software Quality Assurance Program Requirements - Cancelled with no superseding document
MIL-HDBK-189	Reliability Growth Management
MIL-HDBK-217	Reliability Prediction of Electronic Equipment
MIL-HDBK-338	Electronic Reliability Design Handbook
MIL-HDBK-470	Designing and Developing Maintainable Products and Systems Vol1 and Vol2
MIL-HDBK-471	Maintainability Verification/Demonstration/Evaluation - Cancelled/superseded by MIL-HDBK-470, "Designing and Developing Maintainable Products and Systems Vol 1"
MIL-HDBK-472	Maintainability Prediction
MIL-HDBK-502	Acquisition Logistics
MIL-HDBK-505	Definitions of Item Levels, Item Exchangeability, Models, and Related Terms
MIL-HDBK-759	Human Engineering Design Guidelines
MIL-HDBK-781	Reliability Test Methods, Plans, and Environments for Engineering, Development, Qualification, and Production
MIL-STD-882	System Safety
MIL-STD-1472	Human Engineering