

This is a preview - click here to buy the full publication



ISO/IEC/TR 14165-313

Edition 1.0 2013-02

# TECHNICAL REPORT

---

**Information technology – Fibre channel –  
Part 313: Avionics environment – Anonymous synchronous messaging  
(FC-AE-ASM)**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

PRICE CODE

E

ICS 35.200

ISBN 978-2-83220-660-7

**Warning! Make sure that you obtained this publication from an authorized distributor.**

## CONTENTS

FOREWORD .....	3
INTRODUCTION .....	5
1 Scope .....	6
2 Normative references .....	6
3 Terms, definitions, abbreviations and editorial conventions .....	7
3.1 Terms and definitions .....	7
3.2 Abbreviations .....	7
3.3 Editorial conventions .....	7
3.3.1 Overview .....	7
3.3.2 Binary notation .....	8
3.3.3 Hexadecimal notation .....	8
4 FC-AE-ASM features .....	8
4.1 Applicability and use of this technical report .....	8
4.2 Overview .....	9
4.3 FC-AE-ASM protocol .....	9
4.3.1 Overview .....	9
4.3.2 ASM header .....	10
4.4 FC-AE-ASM profile .....	11
4.4.1 Overview .....	11
4.4.2 Priority .....	12
4.4.3 Extended Link Services .....	12
4.4.4 Fabric login/logout .....	13
4.4.5 N_Port login/logout .....	13
4.4.6 Topology support .....	13
Bibliography .....	14
Table 1 – Summary of implementation and use of features .....	9
Table 2 – FC-AE-ASM header format .....	10
Table 3 – Definition of the L field .....	10
Table 4 – FC-FS-2 and FC-AL-2 Features for FC-AE-ASM .....	11

## INFORMATION TECHNOLOGY– FIBRE CHANNEL –

### Part 313: Avionics environment – Anonymous synchronous messaging (FC-AE-ASM)

#### FOREWORD

- 1) ISO (International Organization for Standardization) and IEC (International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards. Their preparation is entrusted to technical committees; any ISO and IEC member body interested in the subject dealt with may participate in this preparatory work. International governmental and non-governmental organizations liaising with ISO and IEC also participate in this preparation.
- 2) In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.
- 3) The formal decisions or agreements of IEC and ISO on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC and ISO member bodies.
- 4) IEC, ISO and ISO/IEC publications have the form of recommendations for international use and are accepted by IEC and ISO member bodies in that sense. While all reasonable efforts are made to ensure that the technical content of IEC, ISO and ISO/IEC publications is accurate, IEC or ISO cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 5) In order to promote international uniformity, IEC and ISO member bodies undertake to apply IEC, ISO and ISO/IEC publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any ISO/IEC publication and the corresponding national or regional publication should be clearly indicated in the latter.
- 6) ISO and IEC provide no marking procedure to indicate their approval and cannot be rendered responsible for any equipment declared to be in conformity with an ISO/IEC publication.
- 7) All users should ensure that they have the latest edition of this publication.
- 8) No liability shall attach to IEC or ISO or its directors, employees, servants or agents including individual experts and members of their technical committees and IEC or ISO member bodies for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication of, use of, or reliance upon, this ISO/IEC publication or any other IEC, ISO or ISO/IEC publications.
- 9) Attention is drawn to the normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 10) Attention is drawn to the possibility that some of the elements of this Technical Report may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

ISO/IEC TR 14165-313, which is a technical report, has been prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

A list of all currently available parts of the ISO/IEC 14165 series, under the general title *Information technology – Fibre channel*, can be found on the IEC web site.

This is a preview - click here to buy the full publication

This Technical Report has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the second title page.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

## INTRODUCTION

This technical report defines a set of features necessary to implement a real-time fibre channel network (switched fabric or arbitrated loop) supporting the FC-AE-ASM Upper Level Protocol.

The FC-AE-2 task group determined that it was best to allow profiles defined in the FC-AE technical report to be updated independently. This report is the first update to the FC-AE-ASM protocol since FC-AE was released. It is recommended for new designs, but does not obsolete 4.1 in INCITS TR-31-2002.

The intended usage of this technical report is avionic command, control, instrumentation, simulation, signal processing, and sensor/video data distribution. These application areas are characterized by a variety of requirements, among them a need for high reliability, fault tolerance, and deterministic behaviour to support real-time control/response.

This technical report is divided into 4 clauses:

Clause 1 is the scope.

Clause 2 enumerates the normative references.

Clause 3 describes the terms, definitions, abbreviations and conventions.

Clause 4 defines the FC-AE-ASM Upper Level Protocol. It lists features defined in the *FC-FS-2*, *FC-AL-2* and *FC-LS* standards and indicates whether the features are required, prohibited, allowed, or invocable in FC-AE-ASM. FC-AE-ASM places certain restrictions on the referenced standards in order to improve support for low latency, real-time applications.

## INFORMATION TECHNOLOGY– FIBRE CHANNEL –

### Part 313: Avionics environment – Anonymous synchronous messaging (FC-AE-ASM)

## 1 Scope

Fibre Channel Avionics Environment (FC-AE)<sup>1</sup> is a group of protocols and profiles that specify Fibre Channel options for devices connected by fabric and/or loop topologies that are pertinent to their use in commercial and military aerospace industries. The primary areas of interest include avionic command, control, instrumentation, simulation, signal processing and sensor/video data distribution. These application areas are characterized by a variety of requirements, among them a need for high reliability, fault tolerance, and deterministic behavior to support real-time control/response.

This part of ISO/IEC 14165 is intended to support bi-directional communication between two N\_Ports in a constrained and carefully defined environment, typical of avionics applications.

The primary objective of this part of ISO/IEC 14165 is to maximize the likelihood of interoperability between conforming implementations. This technical report Prohibits or Requires features that are optional and Prohibits the use of some non-optional features in the referenced standards.

A second objective of this technical report is to simplify implementations and their associated documentation, testing, and support requirements. It does not define internal characteristics of conformant implementations, and it incorporates features from the referenced standards.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 14165-122, *Information technology – Fibre channel – Part 122: Arbitrated loop-2 (FC-AL-2)*

ISO/IEC TR 14165-312, *Information technology – Fibre channel – Part 312: Avionics environment upper layer protocol (FC-AE 1553)*

ANSI/INCITS 424-2007, *Information Technology – Fibre Channel – Framing and Signaling-2 (FC-FS-2)*

ANSI/INCITS 433-2007, *Information Technology – Fibre Channel – Link Services (FC-LS)*

<sup>1</sup> See ISO/IEC TR 14165-312 (report number INCITS TR-31-2002).