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# ISO/IEC TR 14165-312

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## TECHNICAL REPORT

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**Information technology – Fibre channel –  
Part 312: Avionics environment upper layer protocol (FC-AE 1553)**

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## CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references .....	8
3 Terms, definitions and conventions.....	8
3.1 General considerations.....	8
3.2 Terms and definitions .....	9
3.3 Conventions .....	10
3.3.1 General .....	10
3.3.2 Binary notation .....	11
3.3.3 Hexadecimal notation .....	11
3.3.4 Abbreviations and acronyms.....	11
3.4 Applicability and use of this document.....	11
4 FC-AE-1553 profile.....	12
4.1 General.....	12
4.2 FC-AE-1553 elements .....	12
4.3 Mapping legacy 1553 applications to FC-AE-1553.....	13
4.3.1 General .....	13
4.3.2 NT address.....	14
4.3.3 NT subaddress .....	14
4.3.4 Byte Count/Mode code .....	15
4.4 FC-AE-1553 ULP features .....	15
4.4.1 Information units.....	15
4.4.2 Exchange formats.....	20
4.4.3 FC-AE-1553 ULP profile .....	40
4.4.4 MIL-STD-1553 ULP mapping to FC-AE-1553 .....	44
Annex A (normative) FC-AE-1553 process login .....	72
A.1 Overview of process login and process logout .....	72
A.2 PRLI.....	73
A.2.1 Use of PRLI by FC-AE-1553.....	73
A.2.2 Process_Associator requirements .....	73
A.2.3 New or repeated process login .....	73
A.2.4 PRLI payload page length and payload length fields.....	73
A.2.5 PRLI request FC-AE-1553 service parameter page format.....	74
A.2.6 Operation of PRLI service parameters which are common to NC and NT.....	78
A.3 A.3 PRLO .....	79
Annex B (informative) FC-AE-1553 Fibre Channel profile.....	80
B.1 General .....	80
B.2 FC-FS-2 and FC-AL-2 features for FC-AE-1553.....	80
B.3 Point-to-point and link protocols .....	83
B.4 Arbitrated loop-specific features .....	83
B.5 Fabric login .....	84
B.5.1 Introduction .....	84

B.5.2 Fabric login – Common service parameters .....	84
B.5.3 Fabric login – Class specific service parameters .....	85
B.6 Port login.....	85
B.6.1 General .....	85
B.6.2 Classes of service supported.....	85
B.6.3 N_Port Login – Common service parameters.....	85
B.6.4 N_Port login – Class 3 service parameters .....	86
B.7 Basic link services .....	86
B.8 Broadcast and multicast support.....	86
B.9 FC-FS header fields .....	86
B.9.1 R_CTL field .....	86
B.9.2 TYPE field .....	86
B.9.3 Optional headers .....	86
B.9.4 Frame control (F_CTL) .....	86
B.9.5 Sequence identifier (SEQ_ID).....	87
B.9.6 Data field control (DF_CTL).....	87
B.9.7 Sequence count (SEQ_CNT).....	87
B.9.8 Originator exchange identifier (OX_ID).....	87
B.9.9 Responder exchange identifier (RX_ID).....	87
B.10 Extended link services.....	87
B.11 Well known address support.....	88
Annex C (informative) Bridging from FC-AE-1553 networks to MIL-STD-1553 buses.....	89
Bibliography.....	91

Figure 1 – Network Controller To Network Terminal transfers: NT Burst Size Request = '0'b, Delayed NT Burst Size Request = '0'b.....	21
Figure 2 – Network Controller To Network Terminal Transfers: NT Burst Size Request = '1'b, Delayed NT Burst Size Request = '0'b.....	22
Figure 3 – Network Controller to Network Terminal transfers: NT Burst Size Request = '0'b, Delayed NT Burst Size Request = '1'b.....	23
Figure 4 – Network Terminal-to-Network Controller .....	25
Figure 5 – NT-to-NT Transfers: NT Burst Size Request = '0'b, Delayed <i>NT Burst Size Request</i> = '0'b .....	26
Figure 6 – NT-to-NT transfers: NT Burst Size Request = '1'b, Delayed NT Burst Size Request = '0'b .....	28
Figure 7 – NT-to-NT Transfers: Originating NC is also receiving NT, with NT Burst Size Request = '1'b, Delayed NT Burst Size Request = '0'b .....	29
Figure 8 – NT-to-NT transfers: Delayed NT Burst Size Request = '1'b, NT Burst Size Request = '0'b .....	31
Figure 9 – NT-to-NT transfers: originating NC is also receiving NT, with delayed NT Burst Size Request = '1'b, NT Burst Size Request = '0'b.....	33
Figure 10 – Mode command without Data Word .....	35
Figure 11 – Transmit Mode Command with Data Word.....	35
Figure 12 – Receive Mode command with Data Word .....	36
Figure 13 – NC-to-NTs transfers (broadcast or multicast) .....	36
Figure 14 – Network Terminal to Multiple Network Terminals .....	38
Figure 15 – Transmit mode command without Data Word to Multiple Network Terminals.....	39

Figure 16 – Receive mode command with Data Word to Multiple Network Terminals .....	40
Figure 17 – FC-AE-1553 ULP timers: (a) NT_C/S_TOV and NT_C-D/S_BURST_TOV; (b) NC_C/S_TOV and NC_C-D/S_BURST_TOV; (c) C-S/D_TX_TOV (shown for NC and NT); (d) C-S/D_RX_TOV (shown for NC and NT) .....	62
Figure C.1 – FC-AE-1553 network to MIL-STD-1553 bus bridge.....	89
Table 1 – Summary and use of features.....	12
Table 2 – Terminology equivalents between MIL-STD-1553 and FC-AE-1553 .....	13
Table 3 – Comparison of MIL-STD-1553 and FC-AE-1553 Command Field Sizes.....	14
Table 4 – Information units transmitted by the Network Controller to Network Terminal, and transmissions by the transmitting NT for NT-to-NT or NT-to-NTs transfers .....	16
Table 5 – Information Units Initiated from the Network Terminal, Excluding Transmissions by the Transmitting NT for NT-to-NT or NT-to-NTs Transfers.....	19
Table 6 – FC-4 profile for FC-AE-1553.....	41
Table 7 – FC-AE-1553 command sequence header .....	46
Table 8 – Multicast address or other Port_ID Field.....	52
Table 9 – FC-AE-1553 status sequence header .....	57
Table 10 – Correct values for F_CTL field bits .....	64
Table 11 – Values for D_ID field (for broadcast); NT-to-NT Transfer, T/R*, Tx RDMA, and RDMA bits; subaddress, byte Count/Mode bode, and other subaddress fields.....	65
Table 12 – Correct values for fourth word of FC-AE-1553 header extension.....	69
Table 13 – Correct Values for multicast address or other Port_ID field.....	69
Table A.1 – FC-AE-1553 PRLI service parameter page, PRLI request and accept .....	74
Table A.2 – FC-AE-1553 PRLI service parameters – corresponding words/bits for PRLI parameters which are common to NC and NT operation.....	79
Table B.1 – FC-FS and FC-AL-2 Features for FC-AE-1553 .....	80
Table C.1 – Use of FC-AE-1553 subaddress and/or other subaddress field for command sequences involving bridging to MIL-STD-1553 RTs .....	89

## INFORMATION TECHNOLOGY – FIBRE CHANNEL –

### Part 312: Avionics environment upper layer protocol (FC-AE 1553)

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Technical reports of types 1 and 2 are subject to review within three years of publication to decide whether they can be transformed into International Standards. Technical reports of

type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/IEC TR 14165-312, which is a technical report of type 2, was prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology.

This document is issued in the type 2 technical report series of publications (according to 16.2.2 of the Procedures for the technical work of ISO/IEC JTC 1 (5<sup>th</sup> edition, 2004)) as a prospective standard for provisional application in the field of avionics, because there is an urgent requirement for guidance on how standards in this field should be used.

This document is not to be regarded as an International Standard. It is proposed for provisional application so that information and experience of its use in practice may be gathered. Comments on the content of this document should be sent to IEC Central Office.

A review of this type 2 technical report will be carried out not later than three years after its publication with the option of extension for a further three years, conversion into an International Standard or withdrawal.

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 part of ISO/IEC 14165 defines a set of features necessary to implement a real-time Fibre Channel network (point-to-point, switched fabric, or arbitrated loop) supporting the FC-AE-1553 Upper Level Protocol.

FC-AE-1553 is intended to support bi-directional communication between two or more N\_Ports in a constrained and carefully defined environment, typical of avionics applications. The intended usage is avionic command, control, instrumentation, simulation, signal processing, file distribution, 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 command/response.

The FC-AE-1553 protocol is based on MIL-STD-1553B Notice 2 with extensions in bandwidth, address space, and data transfer size in order to support low-latency, low overhead communication between elements of a mission-critical avionics system. Some of the key features of FC-AE-1553 are its command/response protocol; options for acknowledged or unacknowledged messaging, RDMA transfers, file transfers; along with the capability to bridge to legacy MIL-STD-1553 terminals.

This part of ISO/IEC 14165 is divided into 4 clauses:

Clause 1 is the scope of this part of ISO/IEC 14165.

Clause 2 enumerates the normative references that apply to this part of ISO/IEC 14165.

Clause 3 describes the definitions, abbreviations, and conventions used in this part of ISO/IEC 14165.

Clause 4 defines the FC-AE-1553 Upper Level Protocol. This clause indicates whether features are Required, Prohibited, Allowed, or Invocable in FC-AE-1553.

This part of ISO/IEC 14165 has three annexes:

Annex A is a normative annex which defines Process Login for the FC-AE-1553 upper layer protocol.

Annex B is an informative annex that contains a profile of the FC-FS and FC-AL-2 standards as an example for avionics Fibre Channel network which uses FC-AE-1553.

Annex C is an informative annex providing information regarding bridging between FC-AE-1553 Fibre Channel networks and MIL-STD-1553 buses.

## INFORMATION TECHNOLOGY – FIBRE CHANNEL –

### Part 312: Avionics environment upper layer protocol (FC-AE 1553)

#### 1 Scope

This part of ISO/IEC 14165 is intended to serve as an implementation guide to maximize the likelihood of interoperability between conforming implementations. This part of ISO/IEC 14165 Prohibits or Requires features that are optional, and Prohibits the use of some non-optional features in the referenced specifications (see Clause 2).

In addition, this part of ISO/IEC 14165 simplifies implementations and their associated documentation, testing, and support requirements.

This Technical Report does not define internal characteristics of conformant implementations. This part of ISO/IEC 14165 incorporates features from the normative references in Clause 2.

#### 2 Normative references

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

The provisions of the referenced specifications other than ISO/IEC, IEC, ISO and ITU documents, as identified in this clause, are valid within the context of this document. The reference to such a specification within this document does not give it any further status within ISO or IEC. In particular, it does not give the referenced specification the status of an International Standard.

ISO/IEC 14165-122, *Information technology – Fibre channel – Part 122: Arbitrated loop–2 (FC-AL-2)* [INCITS 332-1999]

ISO/IEC 14165-251, *Information technology – Fibre channel – Part 251: Framing and signalling (FC-FS)* [ANSI INCITS 373:2003]

ISO/IEC 14165-261, *Information technology – Fibre Channel – Part 261: Link Services (FC-LS)* (in preparation)

ANSI INCITS 424, *Information technology – Fibre channel – Framing and Signaling-2 (FC-FS-2)*