



SOFTWARE DATA LOADER USING ETHERNET INTERFACE

ARINC REPORT 615A-3

PUBLISHED: June 30, 2007

AN **ARINC** DOCUMENT

Prepared by
AIRLINES ELECTRONIC ENGINEERING COMMITTEE
Published by
AERONAUTICAL RADIO, INC.
2551 RIVA ROAD, ANNAPOLIS, MARYLAND 21401-7435

[This is a preview. Click here to purchase the full publication.](#)

DISCLAIMER

THIS DOCUMENT IS BASED ON MATERIAL SUBMITTED BY VARIOUS PARTICIPANTS DURING THE DRAFTING PROCESS. NEITHER AECC NOR ARINC HAS MADE ANY DETERMINATION WHETHER THESE MATERIALS COULD BE SUBJECT TO VALID CLAIMS OF PATENT, COPYRIGHT OR OTHER PROPRIETARY RIGHTS BY THIRD PARTIES, AND NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, IS MADE IN THIS REGARD.

AECC USES REASONABLE EFFORTS TO DEVELOP AND MAINTAIN THESE DOCUMENTS. HOWEVER, NO CERTIFICATION OR WARRANTY IS MADE AS TO THE TECHNICAL ACCURACY OR SUFFICIENCY OF THE DOCUMENTS, THE ADEQUACY, MERCHANTABILITY, FITNESS FOR INTENDED PURPOSE OR SAFETY OF ANY PRODUCTS, COMPONENTS, OR SYSTEMS DESIGNED, TESTED, RATED, INSTALLED OR OPERATED IN ACCORDANCE WITH ANY ASPECT OF THIS DOCUMENT OR THE ABSENCE OF RISK OR HAZARD ASSOCIATED WITH SUCH PRODUCTS, COMPONENTS, OR SYSTEMS. THE USER OF THIS DOCUMENT ACKNOWLEDGES THAT IT SHALL BE SOLELY RESPONSIBLE FOR ANY LOSS, CLAIM OR DAMAGE THAT IT MAY INCUR IN CONNECTION WITH ITS USE OF OR RELIANCE ON THIS DOCUMENT, AND SHALL HOLD ARINC, AECC, AND ANY PARTY THAT PARTICIPATED IN THE DRAFTING OF THE DOCUMENT HARMLESS AGAINST ANY CLAIM ARISING FROM ITS USE OF THE STANDARD.

THE USE IN THIS DOCUMENT OF ANY TERM, SUCH AS SHALL OR MUST, IS NOT INTENDED TO AFFECT THE STATUS OF THIS DOCUMENT AS A VOLUNTARY STANDARD OR IN ANY WAY TO MODIFY THE ABOVE DISCLAIMER. NOTHING HEREIN SHALL BE DEEMED TO REQUIRE ANY PROVIDER OF EQUIPMENT TO INCORPORATE ANY ELEMENT OF THIS STANDARD IN ITS PRODUCT. HOWEVER, VENDORS WHICH REPRESENT THAT THEIR PRODUCTS ARE COMPLIANT WITH THIS STANDARD SHALL BE DEEMED ALSO TO HAVE REPRESENTED THAT THEIR PRODUCTS CONTAIN OR CONFORM TO THE FEATURES THAT ARE DESCRIBED AS MUST OR SHALL IN THE STANDARD.

ANY USE OF OR RELIANCE ON THIS DOCUMENT SHALL CONSTITUTE AN ACCEPTANCE THEREOF "AS IS" AND BE SUBJECT TO THIS DISCLAIMER.

©2007 BY
AERONAUTICAL RADIO, INC.
2551 RIVA ROAD ANNAPOLIS, MARYLAND
21401-7435 USA

ARINC REPORT 615A-3
SOFTWARE DATA LOADER USING ETHERNET INTERFACE

Published: June 30, 2007

Prepared by the AEEC		
Report 615A	Adopted by the Airlines Electronic Engineering Executive Committee	September 22, 1999
	Adopted by the Industry	November 24, 1999
Summary of Document Supplements		
Supplement	Adoption Date	Published
Report 615A-1	November 14, 2000	January 12, 2001
Report 615A-2	April 8, 2002	May 10, 2002
Report 615A-3	October 11, 2006	June 30, 2007

A description of the changes introduced by each supplement is included on Goldenrod paper at the end of this document.

[This is a preview. Click here to purchase the full publication.](#)

FOREWORD

Aeronautical Radio, Inc., the AEEC, and ARINC Standards

Aeronautical Radio, Inc. (ARINC) was incorporated in 1929 by four fledgling airlines in the United States as a privately-owned company dedicated to serving the communications needs of the air transport industry. Today, the major U.S. airlines remain the Company's principal shareholders. Other shareholders include a number of non-U.S. airlines and other aircraft operators.

ARINC sponsors aviation industry committees and participates in related industry activities that benefit aviation at large by providing technical leadership and guidance and frequency management. These activities directly support airline goals: promote safety, efficiency, regularity, and cost-effectiveness in aircraft operations.

The Airlines Electronic Engineering Committee (AEEC) is an international body of airline technical professionals that leads the development of technical standards for airborne electronic equipment-including avionics and in-flight entertainment equipment-used in commercial, military, and business aviation. The AEEC establishes consensus-based, voluntary form, fit, function, and interface standards that are published by ARINC and are known as ARINC Standards. The use of ARINC Standards results in substantial benefits to airlines by allowing avionics interchangeability and commonality and reducing avionics cost by promoting competition.

There are three classes of ARINC Standards:

- a) ARINC Characteristics – Define the form, fit, function, and interfaces of avionics and other airline electronic equipment. ARINC Characteristics indicate to prospective manufacturers of airline electronic equipment the considered and coordinated opinion of the airline technical community concerning the requisites of new equipment including standardized physical and electrical characteristics to foster interchangeability and competition.
- b) ARINC Specifications – Are principally used to define either the physical packaging or mounting of avionics equipment, data communication standards, or a high-level computer language.
- c) ARINC Reports – Provide guidelines or general information found by the airlines to be good practices, often related to avionics maintenance and support.

The release of an ARINC Standard does not obligate any airline or ARINC to purchase equipment so described, nor does it establish or indicate recognition or the existence of an operational requirement for such equipment, nor does it constitute endorsement of any manufacturer's product designed or built to meet the ARINC Standard.

In order to facilitate the continuous product improvement of this ARINC Standard, two items are included in the back of this volume:

An Errata Report solicits any corrections to the text or diagrams in this ARINC Standard.

An ARINC IA Project Initiation/Modification (APIM) form solicits any recommendations for addition of substantive material to this volume which would be the subject of a new Supplement.

ARINC Standard – Errata Report

1. Document Title

ARINC Report 615A-3: Software Data Loader Using Ethernet Interface
Published: June 30, 2007

2. Reference

Page Number: 29 Section Number: 5.3.2.3.8.4 Date of Submission: February 10, 2009

3. Error Section 5.3.2.3.8.4 Part Number

This option may be used in the ARINC Report 615A protocol. Attachment 4 defines a simple and reliable protocol to clearly define time-outs and retries on error. The selected solution is based on static and fixed time-outs and maximal retry numbers. Reliable networks ensure low level of transmission error which will reduce retries. However, network latencies for other reasons, such as gateways and switches, may require longer timeouts.

RFC 2349 defines the Timeout Interval Option.

4. Recommended Correction Section 5.3.2.3.8.4 Part Number

This option should be used in the ARINC Report 615A protocols to identify the part containing the file being requested. This option is required to allow simultaneous uploads of multiple parts where there are duplicate file names across the multiple parts to a target.

The option name should be “part number”, and the option value should be the part number of the part containing the file being requested. It should be used by the target hardware for TFTP client read requests of data and support files. Note that there is no default value.

5. Reason for Correction (*Optional*)

The published content of Section 5.3.2.3.8.4 Part Number is a copy of the content of the previous section, Section 5.3.2.3.8.3 Timeout Interval. Section 5.3.2.3.8.4 Part Number should contain the text shown above

6. Submitter (*Optional*)

Tom Williams
Honeywell International Inc.
Airplane Diagnostic and Monitoring Systems
MS 2033C3 P.O. Box 21111 Phoenix, AZ 85036-1111
Work: 602.436.5725
Fax: 602.436.5151
Tom.Williams@Honeywell.com

Williams, Tom (ESEA IS&A)

Please return comments to fax +1 410-266-2047 or standards@arinc.com

Note: Items 2-5 may be repeated for additional errata. All recommendations will be evaluated by the staff. Any substantive changes will require submission to the relevant subcommittee for incorporation into a subsequent Supplement.

[To be completed by IA Staff]

Errata Report Identifier: _____ **Engineer Assigned:** _____

Review Status: _____

ARINC Standard – Errata Report

1. Document Title

ARINC Report 615A-3: Software Data Loader Using Ethernet Interface
Published: June 30, 2007

2. Reference

Page Number: 29 Section Number :5.3.2.3.8.5 Submission Date: February 10, 2009

3. Error

5.3.2.3.8.5 Checksum Option (first paragraph on page 29)

This option may be used in the ARINC Report 615A protocol. Attachment 4 defines a simple and reliable protocol to clearly define time-outs and retries on error. The selected solution is based on static and fixed time-outs and maximal retry numbers. Reliable networks ensure low level of transmission error which will reduce retries. However, network latencies for other reasons, such as gateways and switches, may require longer timeouts. RFC 2349 defines the Timeout Interval Option.

4. Recommended Correction

5.3.2.3.8.5 Checksum Option

The Checksum Option is a TFTP option that provides the method by which the Target Hardware Loader indicates to the Data Loader the CRC of the data file to be transferred as part of a file read or write request.

- The Target Hardware Loader may implement the Checksum Option.
- The Data Loader should implement the Checksum Option.

5. Reason for Correction (*Optional*)

The first paragraph of Section 5.3.2.3.8.5 Checksum Option is a copy of the content a copy of a previous section, Section 5.3.2.3.8.3 Timeout Interval. The first paragraph of Section 5.3.2.3.8.5 Checksum Option should be replaced by the text shown above. All other paragraphs in Section 5.3.2.3.8.5 Checksum Option are correct and do not need any modification.

6. Submitter (*Optional*)

Tom Williams

Honeywell International Inc.
Airplane Diagnostic and Monitoring Systems
MS 2O33C3 P.O. Box 21111 Phoenix, AZ 85036-1111
Work: 602.436.5725
Fax: 602.436.5151
Tom.Williams@Honeywell.com
Williams, Tom (ESEA IS&A)

Please return comments to fax +1 410-266-2047 or standards@arinc.com

Note: Items 2-5 may be repeated for additional errata. All recommendations will be evaluated by the staff. Any substantive changes will require submission to the relevant subcommittee for incorporation into a subsequent Supplement.

[To be completed by IA Staff]

Errata Report Identifier: _____ **Engineer Assigned:** _____

Review Status: _____

**ARINC REPORT 615A
TABLE OF CONTENTS**

1.0	INTRODUCTION	1
1.1	Purpose of this Report	1
1.2	Document Conventions	2
1.3	Function of the Equipment	2
1.3.1	Interrelationship of ARINC Standards Relating to Data Loading	3
1.4	Unit Description	3
1.4.1	PDL Description	3
1.4.2	Airborne Data Loading Function (ADLF) Description	4
1.4.3	Data Loading Function (DLF) Description	4
1.5	Interchangeability	5
1.5.1	Media Interchangeability	5
1.5.2	Unit Interchangeability	5
1.6	Interoperability of On-Aircraft Loadable Devices	5
1.7	Reliability of Portable Devices	5
1.8	Maintainability of the PDL	5
1.9	Regulatory Approval	6
1.10	Related Documents	6
2.0	INTERCHANGEABILITY STANDARDS	7
2.1	Introduction	7
2.2	Form Factor and Connectors	7
2.2.1	Physical Size	7
2.2.1.1	PDL Physical Size	7
2.2.1.2	ADL Physical Size	7
2.2.2	Data Loader Weight	8
2.2.2.1	PDL Weight	8
2.2.2.2	ADL Weight	8
2.2.3	Controls and Indicators	8
2.2.3.1	PDL Controls and Indicators	8
2.2.3.2	ADL Annunciator Lights	8
2.2.4	Drive/Interface Mechanisms	8
2.2.4.1	PDL Interface Cable	8
2.2.4.2	ADL Connector	9
2.2.5	Connector	9
2.3	Power Circuitry	9
2.3.1	Primary Power Input	9
2.3.2	Power Control Circuitry	9
2.3.3	Internal Circuit Protection	10
2.3.3.1	PDL Internal Circuit Protection	10

**ARINC REPORT 615A
TABLE OF CONTENTS**

2.3.3.2	ADL Internal Circuit Protection.....	10
2.4	Environmental Conditions	10
2.4.1	Temperature	10
2.4.1.1	PDL Temperature	11
2.4.1.2	ADL Temperature	11
2.4.2	Pressure.....	11
2.4.3	Rain	11
2.4.4	Solvent Resistance	11
2.4.5	Vibration.....	12
2.4.6	Shock/Handling	12
2.4.6.1	PDL Shock/Handling.....	12
2.4.6.2	ADL Shock/Handling.....	12
2.4.7	Electromagnetic Compatibility	12
2.4.7.1	PDL Electromagnetic Compatibility	12
2.4.7.2	ADL Electromagnetic Compatibility	12
2.4.8	Dust	12
2.4.9	Explosive Atmosphere.....	13
2.4.10	Fungus Resistance	13
2.5	Grounding.....	13
3.0	UNIT DESIGN.....	14
3.1	Introduction.....	14
3.2	Controls	14
3.3	Indicators/Displays.....	14
3.4	Legends and Instructions.....	15
3.5	Self-Load Capability.....	15
3.5.1	Equipment Data Base	15
3.5.2	Operational Software.....	16
3.6	Testing.....	16
3.6.1	Autonomous Self-Test.....	16
3.6.2	Maintenance Diagnostic Test	16
4.0	SOFTWARE TRANSPORT MEDIA TYPE	17
4.1	Removable Media	17
4.1.1	3.5 Inch Floppy Disk (for Legacy Use Only)	18
4.1.1.1	Drive Mechanism.....	18
4.1.1.2	Physical Format.....	18
4.1.1.3	Logical Format.....	18
4.1.2	PC Card Device (for Legacy Use Only)	19