

# Standard

## Space Plug-and-Play Architecture Standard

### Logical Interface

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# Space Plug-and-Play Architecture Standard

## Logical Interface

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Approved November 2012

### Abstract

The logical interface of SPA is the boundary through which components participate in a SPA system. This document describes the messages that pass across the SPA interface, the circumstances under which those messages flow, and the protocols for sequencing those messages. This document does not attempt to describe how the messages are transported from one component to the other. This document and its messages are agnostic to message routing, message delivery, or the network topology.

Furthermore, this document does not attempt to describe the details on how these messages are implemented for a mission. The use of these messages can seem vague without a complete implementation or mission-specific example. The SPA Guidebook gives examples and principles on how these messages are used to achieve the capabilities of a fully functional plug-and-play architecture.

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## Foreword

This document was developed by the Space Plug-and-Play Architecture (SPA) Standards Working Group as one of a series describing the various components of the standard. The SPA standards were recorded in earlier documentation. This document set separates content along logical boundaries to better organize the volumes (so that developers or domain experts need only reference the documents applicable to their needs) and to avoid duplication of content between documents in the standard series. This 2013 AIAA standard supersedes all previous documentation of the SPA standards.

This particular volume of the SPA Logical Interface Standard contains information not recorded in previous documentation. It is part of a set of 10 volumes describing other components of the standard:

- SPA Guidebook
- SPA Networking Standard
- SPA Physical Interface Standard
- SPA 28V Power Service Standard
- SPA System Timing Standard
- SPA Ontology Standard
- SPA Test Bypass Standard
- SPA SpaceWire Subnet Adaptation Standard
- SPA System Capability Guide

At the time of approval, the members of the AIAA SPA Committee on Standards were:

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\*Alternate CoS participant.

## Introduction

SPA embraces and implements a collection of standards designed to facilitate rapid construction of spacecraft systems using modular components. The SPA Logical Interface specification describes the messages, protocols, and interactions a standard SPA component will use to participate in the network. The message definition defines the exact format of the entire message and its fields, and describes how the fields are used.

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## 1 Scope

The SPA logical interface is the conceptual boundary through which components are able to participate in a SPA system. Unlike a physical interface which defines connectors, pin-outs, and signaling levels, the logical interface consists primarily of messages. This document describes the messages that are passed through a SPA system, the circumstances under which those messages flow, and the protocols for sequencing those messages.

This document does not attempt to describe how the messages are transported from one component to the other. This document and its messages are agnostic to the message routing, message delivery, or topology of the physical layer of the network. These details are documented in the SPA Networking Standard (AIAA A-133-2-2013) and its associated documents.

Furthermore, this document does not attempt to describe the details on how these messages are implemented for a mission. The use of these messages can seem vague without a complete implementation or mission-specific example. The SPA Guidebook (AIAA G-133-1-2013) gives examples and principles on how these messages are used to achieve the capabilities of fully functional plug and play architecture.

## 2 Tailoring

When viewed from the perspective of a specific program or project context, the requirements defined in this standard may be tailored to match the actual requirements of the particular program or project. Tailoring of requirements shall be undertaken in consultation with the procuring authority where applicable.

**NOTE** Tailoring is a process by which individual requirements, specifications, standards, and related documents are evaluated and made applicable to a specific program or project by selection, and in some exceptional cases, modification and addition of requirements in the standards.

## 3 Applicable Documents

The following documents contain provisions which, through reference in this text, constitute provisions of this standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies.

AIAA S-133-2-2013	<i>Space Plug and Play Architecture Standard Networking</i>
AIAA S-133-7-2013	<i>Space Plug and Play Architecture Standard Ontology</i>
RFC 4122	<i>A Universally Unique Identifier (UUID) Uniform Resource Name (URN) Namespace (<a href="http://www.ietf.org/rfc/rfc4122.txt">http://www.ietf.org/rfc/rfc4122.txt</a>)</i>