

Standard

Space Plug-and-Play Architecture Standard

System Timing

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Abstract

This document details how common time is provided for Space Plug-and-Play Architecture systems. Timing synchronization is accomplished through the use of time-at-tone messages and synchronization pulses.

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Foreword

This standard was developed through a partnership of the Air Force Research Laboratory Space Vehicles Directorate, the Air Force Office of Operationally Responsive Space, numerous government contractor teams, independent contractor teams, and academic experts. The System Timing standard is one piece of the Space Plug-and-Play Architecture (SPA) which is a system that aims to reduce the cost and timeline of getting spacecraft into operational use. SPA incorporates the use of design tools, standard interfaces for hardware and software, and standard, modular structures and wiring. The system timing methods described herein provide for common time within the system, allowing for synchronization of processes and functions across the system.

This document describes how common time is provided to components in SPA systems using a time-at-tone (TAT) message and synchronization pulses. Annexes A and B are informational and provide information on timing disruptions, time source priority, and master clock source considerations, with descriptions of timing implementation within a reference model.

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

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

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