International Standard

ISO 17981

Space systems — Cube satellite (CubeSat) interface

Systèmes spatiaux — Interface de satellite cubique (CubeSat)

First edition
2024-10

Reference number
ISO 17981:2024(en)

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Published in Switzerland

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Foreword

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This document was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 14, *Space systems and operations*.

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Introduction

This document provides requirements for internal and external interfaces of CubeSat. There is increasing demand of CubeSat development and utilization worldwide. CubeSats are often built with emphasis on low cost and fast delivery. Low cost can be achieved by extensive use of non-space-qualified commercial-off-the-shelf parts and units. Fast delivery is, however, often difficult to achieve when the interface of different units, such as printed circuit board (PCB), do not match each other. The incompatibility can cause significant delay in the satellite project, leading to the loss of business opportunity or academic/technology competition.

There is also increasing trend that a CubeSat platform that contains all the satellite bus functionalities by a single vendor is combined with a mission payload. A common standard on the interface between the CubeSat platform and the mission payload broadens the choice for the those who want to do a space mission but do not want to build a satellite to select the platform depending on their needs. This document makes it easier for CubeSat vendors to enter the market of CubeSat platforms.

This document aims to shorten the time required to design, develop, assemble, integrate and test CubeSat by clarifying the interface from the beginning of the satellite project. The document also aims to promote international trade of CubeSat units/platforms and international collaboration.

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Space systems — Cube satellite (CubeSat) interface

1 Scope

This document describes internal and external interfaces of CubeSat. The internal interface includes the interface between components and the interface between a CubeSat platform and a mission payload. The external interface is limited to the umbilical connectors, i.e. access port. The document also describes the items to be included in the datasheet of the CubeSat components and platforms. The datasheet requirements apply to catalogued commercial products ready for sale.

This document does not cover the interface between CubeSat and its deployer, i.e. POD.

This document is applicable to CubeSats of all sizes.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
CubeSat
picosatellite measuring 100 mm cubic and weighting 1,33 kg or less

[SOURCE: ISO 17770:2017, 3.1, modified — Note 1 to entry has been removed.]

3.2
CubeSat form factor
volume unit measuring 100 mm × 100 mm × 100 mm expressed by “U” to describe the volume of each *CubeSat* (3.1)

3.3
1U CubeSat
single Cubesat
satellite measuring 100 mm × 100 mm × 113,5 mm and weighing 1,33 kg or less

Note 1 to entry: For the exact external dimension, see ISO 17770.

3.4
3U CubeSat
triple Cubesat
satellite measuring 100 mm × 100 mm × 340,5 mm and weighing 4,00 kg or less

Note 1 to entry: For the exact external dimension, see ISO 17770.

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