

ICS 49.020
CCS V 71



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 38024-2019

Interface requirements for micro-nano satellite equipment

微纳卫星产品接口要求

Issued on: August 30, 2019

Implemented on: March 1, 2020

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

- 1 Scope
- 2 Normative references
- 3 Terms and definitions

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard is proposed and managed by the National Aerospace Technology and its Application Standardization Technical Committee (SAC/TC425). This standard was drafted. Aerospace Dongfanghong Satellite Co., Ltd., Harbin Institute of Technology, Zhejiang University, Shanghai Institute of Satellite Engineering, North Beijing Satellite Environmental Engineering Research Institute, Shenzhen Aerospace Oriental Red Sea Special Satellite Co., Ltd., Beijing Institute of Space Science and Technology Information, China Aerospace Standards Institute of Chemistry. The main drafters of this standard. Wang Haiming, Sun Wei, Han Jianbin, Yan Yongqiang, Li Lin, Yuan Yuan, Liu Jia, Fang Hongjun, Li Junyu, Doujiao, Liu Yuanmo, Wang Feng, Meng Tao, Zhou Yingqing, Yang Yong, Xue Lijun, Peng Hongjiang, Wang Weijia, Liu Chang. Micro-nano satellite product interface requirements

1 Scope

China's national standard for the interfaces of micro and nano satellite equipment. It specifies the general and detailed requirements for the mechanical, thermal, electrical, signal and magnetic interfaces. Small satellites changed the economics of spaceflight by being built from standardised units rather than designed as one-offs, and interfaces are what make that possible. The CubeSat form factor demonstrated the principle: fix the envelope, the rail dimensions and the deployer interface, and a university can build a spacecraft that any launch provider can carry. Extending that to the equipment inside - the boards, the power bus, the data bus, the mounting - lets a satellite be assembled from parts made by different suppliers, which is what turns spacecraft building into procurement. The magnetic interface requirement is the one that outsiders find surprising: a small satellite determines its attitude with magnetometers, and a component with a residual magnetic moment blinds them.

This standard specifies the general requirements and detailed requirements for mechanical, thermal, electrical, signal, magnetic and other interfaces of micro-nano satellite products. This standard is applicable to the design of mechanical, thermal, electrical, signal, magnetic and other interfaces of micro-nano satellite products. Use as directed.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article. Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB 3100 International System of Units and Its Application

GB/T 3101 General principles for quantities, units and symbols

GB/T 3102.1 Volume and unit of space and time

GB/T 13850 AC measuring transducer for converting AC power into analog or digital signals

GB/T 33993 product QR code

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Function board functioncard Based on the industrial board standard, it is relatively independent to implement or partially realize the functions of receiving, processing, transmitting, transmitting, etc. on the satellite. The circuit board of the physical interface. Such as on-board computer boards, control boards, power boards and other information processing boards.

Note. The current mainstream form of micro-nano satellite boards adopts the PC104 standard of the PC104 Embedded Alliance. The function boards described in this standard refer to PC104. For the basic form of the board, see Figure A.1 and Figure A.2 in Appendix A.

3.2 Board integrated unit functioncardsblock Based on the design requirements, several functional units are connected together in a mechanical form according to the general protocol standard. A combination of functional boards that are adaptive to the environment and have relatively independent physical interfaces.

Note. Refer to Figure A.3 in Appendix A for the form of integrated board components.

3.3 Universal product universalequipment With independent functions and clear external interface, with standardized and modular features, it can be independently designed, developed, tested, tested, and equipped with An on-board instrument that has nothing to do with body tasks and has different interchangeability between tasks.

Note. In the description of satellite products, it is also commonly referred to as instruments, equipment, stand-alone, components, etc.