

ICS 29.120.70

CCS V 04



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

GB/T 43930-2024

**General specification for electromagnetic relays of space
applications**

宇航用电磁继电器通用规范

Issued on: April 25, 2024

Implemented on: August 1, 2024

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

Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
5 Coating	2
8 Lead terminal	4
34 Processing quality	12
30 Radiation resistance	36
3 Production process inspection and quality consistency inspection	41
2 Transportation and storage	47
6 Internal Inspection	49

Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting: Please note that some of the contents of this document may involve patents: The issuing organization of this document does not assume the responsibility for identifying patents: This document was proposed and coordinated by the National Technical Committee for Standardization of Aerospace Technology and Its Applications (SAC/TC425): This document was drafted by: Guilin Aerospace Electronics Co., Ltd: and China Aerospace Times Electronics Co., Ltd: The main drafters of this document are: Zhou Bensheng, Cui Li, Jiang Duanlin, Ma Qiyong, Li Ming, Tang Yujie, Cai Libin, Luo Fubiao, Mo Wenjiao, Cai Zhaowen, Chen Chukai and Liu Zhengyu: General specification for electromagnetic relays for aerospace use

1 Scope

GB/T 43930-2024 is the Chinese general specification for electromagnetic relays used in space applications. A relay on a spacecraft is a part that cannot be replaced, cannot be inspected after launch and must switch reliably after years in vacuum, so the document is dominated by the failure modes peculiar to that environment: vacuum cold welding of the contacts, outgassing and internal moisture, particle contamination detected by particle impact noise detection, radiation damage, and the effects of launch shock, vibration and steady-state acceleration. It sets the materials, metallic and non-metallic, magnet wire and platings; the structural design of the enclosure, the sealing method, the contacts, the coil, the mounting and the terminals; thirty-four technical requirements from run-in screening

and solderability through the full electrical performance, seal, thermal shock, shock, vibration, PIND, acceleration, magnetic interference, coil life, overload, electrical and mechanical life, limit making and breaking capacity, continuous energisation, vacuum cold welding, vacuum thermal cycling, destructive physical analysis and radiation resistance to workmanship; and then an inspection method for each of them in matching order. It closes with the inspection rules, qualification inspection and quality conformance inspection, the packaging, marking, transport and storage, the contact ratings, ordering documents and application guidance, and a normative annex on destructive physical analysis. It applies to the design, manufacture and inspection of such relays.

This document specifies the materials, structural design, technical requirements, inspection methods, inspection rules, packaging, labeling, transportation, etc: of electromagnetic relays for aerospace use: Transportation and storage, as well as instructions: This document applies to the design, manufacture and inspection of electromagnetic relays for aerospace use (hereinafter referred to as "relays"):

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document: For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document:

GB/T 2423:5-2019 Environmental testing Part 2: Test method Test Ea and guidance: Impact

GB/T 2423:10-2019 Environmental testing Part 2: Test methods Test Fc: Vibration (sinusoidal)

GB/T 2423:15-2008 Environmental testing for electric and electronic products Part 2: Test method Test Ga and guidance: Steady-state acceleration

GB/T 2423:17-2008 Environmental testing for electric and electronic products Part 2: Test methods Test Ka: Salt spray

GB/T 2423:21-2008 Environmental testing for electric and electronic products Part 2: Test methods Test M: Low pressure

GB/T 2423:22-2012 Environmental testing Part 2: Test method Test N: Temperature change

GB/T 2423:23-2013 Environmental testing Part 2: Test methods Test Q: Sealing

GB/T 2423:24-2022 Environmental testing Part 2: Test methods Test S: Simulated solar radiation on the ground and solar radiation Guidelines for radiation and weathering tests

GB/T 2423:28-2005 Environmental testing for electric and electronic products Part 2: Test methods Test T: Soldering

GB/T 2423:30-2013 Environmental testing Part 2: Test method Test XA and guidance: Immersion in cleaning agent

GB/T 2423:56-2023 Environmental testing Part 2: Test methods Test Fh: Broadband random vibration and guidance

GB/T 2423:60-2008 Environmental testing for electric and electronic products Part 2: Test methods Test U: Terminals and overall installation Assembly strength GB/T 2900:

63 Basic electrical terminology relay

3 Terms and definitions

The terms and definitions defined in GB/T 2900:63 apply to this document:

4 Materials

1 General requirements It should be mildew-proof and self-extinguishing, should not support combustion, should not emit harmful gases, should not emit large amounts of gases that may cause the sealed housing to explode, and should not