

ICS 55.180.10

CCS A85



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

GB/T 42684-2023

Technical specification for the electronic seal of containers

集装箱电子箱封技术规范

Issued on: May 23, 2023

Implemented on: September 1, 2023

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

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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 contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents: This document is proposed and managed by the National Container Standardization Technical Committee (SAC/TC6): This document was drafted by: Shenzhen CIMC Intelligent Technology Co., Ltd., Water Transport Science Research Institute of the Ministry of Transport, Shenzhen Standard Technology Research Institute Institute, Shenzhen Jiutong Wulian Technology Co., Ltd., Guangzhou Railway Vocational and Technical College: The main drafters of this document: Li Yuanhong, Zhou Shouqin, Li Jichun, Chen Zunyan, Lu Jieyin, Yi Xiaoshan, Hu Longzhen, Luo Yumin, Li Jiajun, Wu Lianghong, Cao Wensheng, Xu Shibo, Wen Sunflower, Zhou Shiping: Technical Specifications for Electronic Sealing of Containers

1 Scope

GB/T 42684-2023 specifies the electronic seal fitted to a shipping container. The mechanical bolt seal it replaces does one thing: it shows, on inspection at the destination, that the doors have been opened. An electronic seal is expected to do considerably more - to be read without being seen, to record when it was opened rather than merely that it was, and to be impossible to clone or replay by anyone who wants a container to look untouched. That last requirement is why the specification cannot stop at the radio interface. This document sets out the technical requirements for container electronic seals, the test methods, the data protection and identity authentication requirements, and the requirements for installation and shell strength - the physical side mattering as much as the cryptographic one, since a seal that survives a crane and a sea voyage is part of what

makes the evidence credible. It applies to the design, production and use of container electronic seals. Under ICS 55.180.10 and CCS A85, it is written for seal manufacturers, shipping lines and terminal operators, and for the customs and inspection authorities who rely on the seal as evidence of integrity.

This document specifies the technical requirements, test methods, data protection and identity authentication requirements, installation and shell strength of container electronic seals. Require: This document is applicable to the design, production and use of electronic container seals:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: Among them, dated references For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to this document:

GB/T 4208-2017 Enclosure protection level (IP code)

GB/T 7408 Data elements and exchange formats Information exchange date and time representation

GB/T 23679 Container Mechanical Seals

GB 31241-2014 Safety requirements for lithium-ion cells and batteries for portable electronic products

GB/T 33575 Environmental characteristics of container electronic seals

GB/T 37059 Specifications for coding and marking of electronic container seals

ISO 17712 Sea container mechanical seals (Freightcontainers-Mechanicalseals) ISO /

IEC 18000-2:2009 Radio Frequency Identification for Information Technology Project Management Part 2: Air Interface Below 135kHz ISO 18185-

5 Sea container electronic seals - Part 5: Physical layer (Freightcontainers-Electronicseals-

3 Terms and Definitions

The terms and definitions defined in ISO 17712, ISO 18185-5 and the following apply to this document: 3:

1 Electronic box seal electronicseal; eSeal It is a container seal that can be read and written, adopts wireless communication, processes and stores electronic information, and has the function of on-off detection of the lock rod:

Note: Electronic box seals include single-use electronic box seals and recyclable electronic box seals: Classified by security level, electronic box seals include general security Electronic box seals and high-security electronic box seals with secure interactive authentication for data reading and writing: 3:2 eSealdata eSealdata Data stored in the body of the electronic enclosure:

Note: Electronic box seal data includes electronic box seal body identifier, protocol identifier, lock lever identifier, lock lever insertion time and disconnection time, lock lever status, power supply state, the irreversible counter of the number of lock bar insertions, etc., and also includes extended corresponding location information, ambient temperature and humidity information, picture information, video information, cabinet Vibration shock attitude information, historical data, etc: