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

GB/T 42809-2023

**Technical requirements for automated container terminal
operating system**

自动化集装箱码头操作系统技术要求

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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 by the Ministry of Transport of the People's Republic of China: This document is under the jurisdiction of the National Port Standardization Technical Committee (SAC/TC530): This document was drafted by: Water Transportation Research Institute of the Ministry of Transport, Shanghai International Port (Group) Co., Ltd., Liaoning Port Group Co., Ltd., China Merchants Port Group Co., Ltd., Shanghai Zhenhua Heavy Industry (Group) Co., Ltd., Shandong Port Qingdao Port Group Co., Ltd. Co., Ltd., Tianjin Port Co., Ltd., COSCO SHIPPING Port Co., Ltd., Xiamen Port Holdings Group Co., Ltd., CCCC Third Navigation Engineering Co., Ltd. Survey and Design Institute Co., Ltd: The main drafters of this document: Liang Ke, Huang Xiusong, Qin Tao, Zhao Jigang, Wang Pei, Zhao Bin, Tang Siyuan, Zhang Liangang, Wu Qiang, Ji Yingye, Zhang Dayu, Li Meizhen, Wang Chao, Ding Yihua, Wang Guodong, Na Danhong, Wang Ping, Sun Xiuliang, Chen Zhi, Rao Jingchuan, Wang Shenyuan, Zhu Kailevel, Xiao Yang, Li Wei, Lu Zanxin, Lin Jianxi: Technical requirements for automated container terminal operating system

1 Scope

GB/T 42809-2023 sets the technical requirements for the operating system of an automated container terminal. China built the largest automated terminals in the world at Qingdao and Shanghai, where the quay cranes, the stacking cranes and the horizontal transport run without drivers, and the operating system stops being a planning tool and becomes a real-time control system: it issues the moves, resolves the conflicts and holds the safety interlocks, and a wrong instruction is not a delay but a collision. The standard sets the system structure, the general requirements, the subsystems, the interfaces between them and the security requirements, with an informative annex giving the technical

parameters of some of the system's performance indicators. It took effect on 1 September 2023.

This document specifies the system structure, general requirements, subsystems, interfaces and security requirements of the automated container terminal operating system: This document applies to the design, development and application of automated container terminal operating systems:

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 2887 General Specifications for Computer Sites

GB/T 9361 Computer Site Security Requirements GB/T 17799:

2 Electromagnetic Compatibility General Standard Immunity Test in Industrial Environment GB 17799:

4 General Standard for Electromagnetic Compatibility Part 4: Emissions in Industrial Environments

GB 17859-1999 Criteria for classification of computer information system security protection levels

GB/T 22239 Basic Requirements for Network Security Level Protection of Information Security Technology

GB/T 28448-2019 Information Security Technology Network Security Level Protection Evaluation Requirements

GB/T 28449-2018 Information Security Technology Network Security Classified Protection Evaluation Process Guide

GB/T 37933 Technical requirements for special firewalls for information security technology industrial control systems JT/T 697:

3 Traffic Information Basic Data Elements Part 3: Port Information Basic Data Elements JT/T 904-2014 Guidance on Grading Security Classification Protection of Information System in Transportation Industry

3 Terms and Definitions

The following terms and definitions apply to this document: 3:

1 It is a system that can automatically complete various production tasks of container terminals according to predetermined procedures and provide real-time feedback of operation information:

4 System structure

1 The automated container terminal operating system (ACTOS) consists of four subsystems: information management, production planning, job scheduling, and job interaction control System and other management and control systems, and connected with the business processing system through the interface, the schematic diagram of the system structure is shown in Figure 1: