NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 45283.4-2025

Configuration file exchange for industrial control system HMI - Part 4: Test requirements

工业控制系统人机接口组态文件交互 第4部分：测试要求

Issued on: February 28, 2025 **Implemented on: September 1, 2025**

Issued by: the State Administration for Market Regulation, Standardization Administration of the People's Republic of China

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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. This document is part 4 of GB/T 45283 "Industrial control system human-machine interface configuration file interaction". GB/T 45283 has been published The following parts.

1.General information;

2.Basic interaction description;

3.Extended Interaction Description;

4.Test requirements. 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 by the China Machinery Industry Federation. This document was prepared by the National Automation System and Integration Standardization Technical Committee (SAC/TC159) and the National Industrial Process Measurement, Control and Automation It is jointly under the jurisdiction of the Automation Standardization Technical Committee (SAC/TC124). This document was drafted by: Beijing Institute of Automation of the Mechanical Industry Co., Ltd., Zhejiang Zhongkong Research Institute Co., Ltd., Daqing Zijinqiao Software Technology Co., Ltd., Hangzhou Dianzi University, Jilin University, Shanghai Buke Automation Co., Ltd., Beijing Yakong Technology Development Co., Ltd. Company, Beijing Likong Yuantong Technology Co., Ltd., Hangzhou Yiyi Taidi Information Technology Co., Ltd., Mechanical Industry Instrumentation Comprehensive Technology and Economics Research Institute, Shenzhen Polytechnic, Liugong Liuzhou Transmission Parts Co., Ltd., Sanmen Sanyou Technology Co., Ltd., Shenzhen Hualong Xunda Information Technology Co., Ltd., National Pipeline Network Group Northern Pipeline Co., Ltd., Daqing Jinqiao Information Technology Engineering Co., Ltd., Shenyang Zhaijia Water Affairs Co., Ltd., China Instrument and Control Society, Dalian Haosen Intelligent Manufacturing Co., Ltd., Shandong Boshi Pengcheng Intelligent Technology Co., Ltd. company. The main drafters of this document are. Sun Jiexiang, Chen Gen, Li Yanqing, Chen Baiping, Liu Chunbao, Wang Kai, Zhang Shuo, Zhang Liming, Wang Han, Chen Ziping, Yu Kuo, Cai Donghai, Wang Shengjie, Zhao Yixun, Tian Xiaoliang, Feng Xiaohai, Mo Tong, Fu Jie, Gao Haikuo, Chen Wenzhou, Lu Shan, Yang Konghua, Yan Wanbin, Hou Weifeng, Chen Sujiao, Wang Shuo, Wu Junyi, Wang Sunjun, Du Yunling, Wang Ning, Hu Yiqun, Gao Lijin, Zhang Xiquan, Yu Meimei, Hou Xingquan, Feng Yuxiao.

In order to realize the interaction of heterogeneous configuration platform files and promote the interconnection between heterogeneous software platforms, the industrial control system human-machine interface Configuration file interaction series standard. The overall objectives of GB/T 45283 "Industrial Control System Human-Machine Interface Configuration File Interaction" include.

--- Make configuration files inheritable and solve the problem of backward compatibility after software or equipment is updated.

---Realize the reusability of software files. User-defined graphic components, script functions and other custom modules can be used in different configuration tools. It can be reused in programs and configuration platforms to improve the efficiency of configuration software development and reduce software development costs.

--- Make configuration files portable and reduce users' dependence on configuration platforms. GB/T 45283 is intended to consist of four parts.

1.General information. Mainly describes the general information of configuration file interaction, used to standardize the structure and content.

2.Basic interaction description. Mainly describes the basic interactive configuration file structure and file content based on XML, used for Guide the design and development of export and import tools for basic interaction files of human-machine interface software and the verification of software functions.

3.Extended Interaction Description. Mainly describes the XML-based extended interactive configuration file structure and file content, used for Guide the design and development of export and import tools for extended interaction files of human-machine interface software and the verification of software functions.

4.Test requirements. Mainly describes the interactive test process of the industrial control system human-machine interface configuration file, test criteria preparation, mission design and execution, analysis and reporting, and data management. Industrial control system human-machine interface configuration file interaction Part

1 Scope

GB/T 45283.4-2025 is the fourth part of the Chinese standard on exchanging HMI configuration files between industrial control systems, and it sets the test requirements, which is the part that makes the rest enforceable. A file format standard without a conformance test produces implementations that each read a different subset, and the exchange fails in exactly the cases that matter. This document specifies the test requirements: the test items covering the syntax and semantics of the exchange file, the completeness and fidelity of the exported configuration, the correct import of graphics, tags, alarms and the interaction behaviour described in Part 3, the handling of unsupported elements and of errors, the round-trip consistency, and the performance of the exchange on large configurations, together with the test environment, the test procedures and the pass criteria and the test report. For a vendor claiming conformance, or a buyer requiring it in a specification in China, this is the document the claim is tested against.

This document specifies the general requirements for the interactive testing of engineering configuration files for industrial control system human-machine interface software, including basic requirements, Conformance test, interoperability test and test summary. This document applies to the engineering configuration file interaction of industrial control system human-machine interface software in accordance with GB/T 45283.2-2025, Functional conformance testing and interoperability testing required by GB/T 45283.3-2025. This document is applicable to stakeholders (including but not limited to development organizations, third-party testing organizations, manufacturing companies and related personnel) File import and export testing of engineering configuration of machine interface components, software or systems.

2 Normative references

The contents of the following documents constitute 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 32421-2015 Software Engineering Software Review and Audit

GB/T 32423-2015 System and software engineering verification and validation

GB/T 45283.2-2025 Industrial control system human-machine interface configuration file interaction Part

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 conformance testing Test the implementation itself and the compliance with the specification requirements. Test the IUT configuration file export and the compliance with the specification requirements and standard group The status file is imported into IUT to check the compliance with the specification requirements.

3.2 interoperability testing Test the interoperability and interconnection operation capabilities between different implementation versions of the same specification, or between different implementation versions of the same type of specifications. Test the interoperability of configuration file import and export between IUTs.

3.3 implementation under test; IUT The specific implementation of the configuration file interaction specification. The human-machine interface components, software or systems designed and implemented according to the configuration file interaction specification are Import and export interactive test objects for human-machine interface configuration files.

4 Abbreviations

The following abbreviations apply to this document.