NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 45283.3-2025

Configuration file exchange for industrial control system HMI - Part 3: Extended interaction description

工业控制系统人机接口组态文件交互 第3部分：扩展交互描述

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 3 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., Hangzhou Dianzi University, Zhejiang Zhongkong Research Institute Co., Ltd. Company, Daqing Zijinqiao Software Technology Co., Ltd., Xiamen Haiwei Technology Co., Ltd., China Academy of Mechanical Science Group Co., Ltd., Shanghai Buke Automation Co., Ltd., Beijing Yakong Technology Development Co., Ltd., Beijing Likong Yuantong Technology Co., Ltd., Jilin University, Hangzhou Yiyi Taidi Information Technology Co., Ltd., Mechanical Industry Instrumentation Comprehensive Technology and Economic Research Institute, Shenzhen

Polytechnic, Hangzhou Jiu You Intelligent Technology Co., Ltd., National Pipeline Network Group Northern Pipeline Co., Ltd., Bozhong Precision Technology Co., Ltd., Zhejiang Zhongxin Electric Power Engineering Construction Co., Ltd., Odesense Software Systems (Beijing) Co., Ltd., Shenzhen Hualong Xunda Information Technology Co., Ltd., Chengdu Siwei Power Electronic Technology Co., Ltd., Dalian Hausen Reed Equipment Manufacturing Co., Ltd., China Instrument and Meter Society, State Grid Zhejiang Electric Power Co., Ltd. Hangzhou Xiaoshan District Power Supply Company, Hangzhou Gaopin Automation Equipment Co., Ltd., Xi'an Gaoshang Intelligent Technology Co., Ltd., Heilongjiang Jiang Zhenning Technology Co., Ltd. and Shandong Hengyuan Intelligent Technology Co., Ltd. The main drafters of this document are. Sun Danfeng, Liu Xin, Wu Huifeng, Li Yanqing, Wang Kai, Zhang Junkai, Zhang Xiaolu, Tian Xiaoliang, Zhang Shuo, Liang Shiwu, Lin Yi, Yu Kuo, Zhao Jianyong, Liu Chunbao, Wang Han, Chen Ziping, Liu Jianan, Gao Haikuo, Zhang Liming, Lu Shan, Yang Konghua, Wang Shuo, Wang Sunjun, Zhu Jingqiang, Feng Xiaohai, Zhao Yixun, Wang Zhiqiang, Zhang Xiquan, Qiu Haifeng, Chen Sichao, Lou Zhijiang, Zhao Leizhen, Wang Chunming, Chen Genyu, Lü Shaolin, Dai Ruihai, Li Ning, Yu Meimei, Sun Shiguo, Weng Liguo, Lian Deqiang, Li Jiaping, Zhang Zhigang, Dou Xiaomu, Zhang Yongwen.

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 45283.3-2025 is the third part of the Chinese standard on exchanging HMI configuration files between industrial control systems, and it defines the extended interaction description. The problem the series solves is a well known and expensive one: the graphics, tags, alarms and animations of an operator interface are held in a vendor-specific format, so replacing or extending a control system means rebuilding the HMI from scratch. This part extends the exchange beyond the static picture to the interactive behaviour: how a control element responds to operator input, the state transitions, the confirmation and interlock behaviour, the parameterised and scripted interactions, the alarm acknowledgement behaviour and the navigation between displays, together with the description model and the schema that carry them. For a control system vendor, an engineering contractor or a plant owner trying to avoid lock-in in China, this is the part that makes an exchanged configuration behave, and not merely look, the same.

This document specifies the file structure of the industrial control system general human-machine interface (HMI) software configuration extension interaction file and standardizes XML description format for elements such as IO device extensible configuration, variable IO link extensible configuration, functions, and graphic element templates. This document is applicable to the interactive engineering of the human-machine interface extension configuration files of controllers in process industry, discrete industry and other industries. It is used as a reference for the design, development and software function verification of software extension interactive file export/import tools.

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

3 Terms and definitions

There are no terms or definitions that require definition in this document.

4 Abbreviations

The following abbreviations apply to this document. IO. Input/Output OPC. OLE for Process Control UA. Unified Architecture XML. Extensible Markup Language

5 Extended Interaction File Description

5.1 Extended configuration information Industrial control system human-machine interface extended interactive information consists of IO device scalable configuration, IO link scalable configuration, function and graphic element template The extended interaction configuration XML file structure shall be in accordance with the provisions of Appendix A.

5.2 Extended Interaction Description File Description The extended interaction description file is used to describe the extended configuration information of the human-machine interface of the industrial control system. IO device configuration, device driver related variable link extension definition and function definition, the file structure is consistent with the basic interaction node, see Chapter 6 of GB/T 45283.2-2025.