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System control diagram

系统控制图

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Table of Contents

1.Scope 1
2 Normative References 1
3.Terms and Definitions, Abbreviations 1
3.1 Terms and Definitions 1
4.1 Conceptual Definitions 5
4.2 Framework 5
4.3 Life Cycle Concept 6
4.4 Basic Design 7
18 Appendix B (Normative) SCD Chart Specification 88 B.1 Overview 88 B.2 SCD Contents 88 B.3 Layout 90 B.4 Symbol 91 B.5 Tag 108 B.6 Port code 108 B.7 Symbols and font size 109 B.8 layer color 116 B.9 Legend Record 117 B.10 Drawing Frame and Title Block 117 Appendix C (Informative) Project Implementation Guidelines 118 C.1 Overview 118 C.2 Implementation of 119 C.3 Debug 120 C.4 Operation 121 C.5 Revision 121 Appendix D (Normative) SCD Mark 122 D.1 Overview 122 D.2 Functional Template Symbol 122 D.3 Functional Template Port Layout 123 D.4 Reference Symbols 123 D.5 Security System Interface Function Identifier 124 D.6 Field Equipment Symbols 124 D.7 Instrument Signal 126 D.8 Constant value 126 D.9 Logical and Arithmetic Symbols 127 D.10 Sequential Function Chart Symbols 128 References 130

Foreword

This document is a standard or guiding technical document. This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the China Machinery Industry Federation. This document is under the jurisdiction of the National Technical Committee on Standardization of Industrial Process Measurement, Control and Automation (SAC/TC124). This document was drafted by: Southwest University, Guoneng Zhishen Control Technology Co., Ltd., Jiangyuan (Tianchang) Technology Co., Ltd., and Chongqing Jinxin. Max Safety Instrument Systems Co., Ltd., Henan Baoshian Technology Co., Ltd., Jiangsu Huaxia Instrument Co., Ltd., China Railway Science Research Institute Group Co., Ltd. Electronic Computing Technology Research Institute, Hangzhou Automation Technology Research Institute Co., Ltd., Jiangsu Jack Instrument Co., Ltd. Xiamen Anton Electronics Co., Ltd., Chongqing Langwei Instruments Co., Ltd., Jiangsu Shuangmu Measurement and Control Technology Co., Ltd., Shanghai Luodingsen

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The primary objective of this document is to define a complete set of operating procedures applicable to continuous control systems in process industries, such as oil and gas processes. A finite set of control functions (objects) and logic diagrams. The control function definition includes descriptions of the behaviors required for control modes, interlocks (protection), blocking, and other operator commands. It is at the functional level. A standardized operator interface is provided. The logic diagram inherits from PFD/P. Review and control applications. The success of a factory development project depends on whether there are good and effective means of communication among all parties involved at all stages of the project. During the factory construction, process engineers developed P The production process of each factory was fully understood. However, P The content regarding the operation should be fully explained. The task of a control system engineer is to design control systems to perform the required process functions, thereby achieving product specifications and overall operation. And the requirements for control and staffing levels. In order to retain P The understanding of the factory production process is translated into the design and implementation of the control system. Because the functions implemented in the control system are different from the P defined in the process flow. The process cannot be fully satisfied. To eliminate this drawback, the SCD method was introduced. The SCD method represents a method based on SCD opening... Structured methods for development. This document specifies the standardization requirements for system functions and process flow, and provides functional specifications, chart specifications, and execution guidelines for system control charts. The guidelines and other related materials facilitate information exchange among designers, engineers, and users, and contribute to continuous control systems in process industries. Design and management. This document contains two elements. - Functional template; - Charts. System control chart

1 Scope

This document covers the system control diagram: the drawing by which the control logic of an industrial process is set down - what is measured, what acts on it, under what

conditions, and what happens when a condition is not met. At 70 000 words it is by a wide margin the largest document in this catalogue, and the size is the point. A control diagram convention has to cover every element a plant can contain and every way they can be interlocked, because the parts it leaves out are the parts each engineering house will draw its own way. The document exists so that a diagram produced by one contractor can be read, checked and maintained by another. Issued on 3 December 2025 by SAMR and SAC as a guiding technical document, in force from the same day, under the technical jurisdiction of the China Machinery Industry Federation. Relevant to anyone commissioning, reviewing or taking over process control documentation from a Chinese supplier.

This document specifies the functionalities and chart-related requirements for the use of SCD. This document applies to the design and management of continuous control systems (SCDs) in process industries.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 14689-2008 Technical Drawing Sheet Sizes and Formats

GB/T 15969.3 Programmable Logic Controllers - Part

3 Terms and definitions, abbreviations

3.1 Terms and Definitions The following terms and definitions apply to this document.

3.1.1 Action alarm Alarms associated with automatic actions.

Note. Alarms and actions are both caused by a common discrete state change.

3.1.2 alarm Human-machine interface notifications that require operator response due to changes in discrete states.

3.1.3 Automatic mode The operating mode of the process object is automatically executed by the control logic.

3.1.4 Blocking mode The mode in which the function is active when blocking is activated.

3.1.5 blocking For input functions. The alarm status signal for process variable limit checks is blocked within the function, issuing a notification, but all related automatic... The protective action is disabled. The relevant protective functions are disabled. The relevant alarm notifications are not disabled, meaning they will not block external signal output. For output functions. protection actions are disabled, but related alarm notifications and

manual/automatic control remain operational. Blocking applies to both single actions.