

ICS 35.240.50

CCS J 07



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

GB/T 45387-2025

**Management-control integration reference model of discrete
intelligent factories**

离散型智能工厂管控一体化集成参考模型

Issued on: March 28, 2025

Implemented on: October 1, 2025

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

Table of Contents

Preface	III
1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Abbreviations	2
5 Integrated model of discrete smart factory management and control	2
5.1 Integrated overall framework for discrete smart factory management and control	2
5.2 Dimensions of Smart Factory Functional Structure	3
5.3 Smart Factory Business Operation Dimensions	4
5.4 Manufacturing supply chain collaboration dimension	5
6 Integrated management and control, information exchange	5
6.1 Vertical Information Integration and Interaction	5
6.2 Horizontal Information Integration and Interaction	8
6.3 End-to-end information integration and interaction	12
Reference	15

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 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 is under the jurisdiction of the National Automation System and Integration Standardization Technical Committee (SAC/TC159).

This document was drafted by: Beijing Institute of Automation of the Mechanical Industry Co., Ltd., Chongqing University, Inspur Industrial (Shandong) Supply Chain Technology Co., Ltd.

Co., Ltd., Weichai Power Co., Ltd., Jilin University, China Resources Jiangzhong Pharmaceutical Group Co., Ltd., Hefei Guoxuan High-tech Power Energy Co., Ltd.

Ltd., Beijing Institute of Technology, Sunward Intelligent Equipment Co., Ltd., Trina Solar

Co., Ltd., Northern Automation Control Technology Research Institute, Guoneng Information Control Technology Co., Ltd., Jiangxi Jiashite CNC Co., Ltd., Shenzhen Yasde Technology Co., Ltd., Guangdong Zhongda Zhi Energy Technology Co., Ltd., Ningxia Juneng Robot Co., Ltd., Dafu Technology (Anhui) Co., Ltd., China Railway Seventh Bureau Group Wuhan Engineering Engineering Co., Ltd., Shenzhen Shenghongyun Technology Co., Ltd., Zhongke Yungu Technology Co., Ltd., Luoyang Sende Petrochemical Engineering Co., Ltd., Chongqing Guang Ren Energy Equipment Co., Ltd., Beijing Tianma Intelligent Control Technology Co., Ltd., Nanjing Shouqin Special Materials Co., Ltd., Eurasia High-tech Digital Zi Technology Co., Ltd., Hangzhou Ruiguan Technology Co., Ltd., Zhejiang Zhongyang Liku Technology Co., Ltd., Zhiweisi (Tianjin) Technology Co., Ltd., Shenzhen Omega Intelligent Technology Co., Ltd., Beijing Ruitai Zhilian Technology Co., Ltd., Hunan Chizhong Robot Co., Ltd., Hangzhou Mo Ke Smart Interconnect Co., Ltd., Shaoxing Zhongxin Electric Co., Ltd., Shengtai Optoelectronics Technology Co., Ltd., Huizhou Xiwensi Technology Co., Ltd.

Company, Fujian Kunhua Intelligent Equipment Co., Ltd., Bingshan Songyang Compressor (Dalian) Co., Ltd., and Xi'an Hanfeng Precision Machinery Co., Ltd.

The main drafters of this document are: Li Xiaobin, Wang Haidan, Wang Kai, Sun Jiexiang, Wang Shaohua, Yin Chao, Tang Bo, Liu Chunbao, Luo Xiaorong, Chai Senchun, Li Shuang, Jiang Pei, Zhou Yan, Nie Zilin, Si Jiashun, Yang Konghua, He Songquan, Gu Zhifeng, Ding Airu, Wen Zhengkun, Li Zhibo, Chen Jianping, Chen Yun, Qi Wei, Xiao Jing, Wu Xipeng, Yang Hui, Hong Min, Ma Baofei, Cheng Junqiang, Zhao Yixun, Chen Xiaobing, Wang Kaisheng, Liu Zhijun, Zou Pan, Ma Jie, Shao Defu, Li Xiaochun, Huang Du, Liu Huilong, Zhu Chunlin, Mi Luzhong, Xu Yu, Wei Guanwei, Zhao Jinyuan, Liu Hua, Liu Xiaohua, Wu Zhixiang, Huang Qikun, Liu Yuhuan, Feng Min.

Integrated reference model for discrete smart factory management and control

1 Scope

This document provides an integrated management and control model for discrete smart factories, and specifies the model and interface for information interaction of integrated management and control.

This document is intended to guide stakeholders in planning and designing integrated solutions for discrete smart factory management and control, integrating systems and interfaces.

Development and application, management and maintenance of the port.

2 Normative references

GB/T 20720.1-2019

3 Terms and definitions

The terms and definitions defined in GB/T 20720.1-2019 and the following apply to this document.

3.1 Intelligent Factory

Use new generation information technologies and advanced information systems such as smart IoT, edge computing, and artificial intelligence to strengthen the management of information, business, and processes And services support the digitalization and intelligent control of the production process, and build an efficient, energy-saving, green, environmentally friendly, comfortable and humanized factory.

[Source. GB/T 38129-2019, 3.1.1, modified]

3.2

Through the processing, analysis, optimization, integration and comprehensive utilization of information from all business links of smart factories, a unified and coordinated management and control system is formed.

The system realizes the collaborative control and intelligent decision-making of smart factory production planning, operation tracking, equipment operation and maintenance and other businesses.

3.3

The transmission and exchange of information, data, information and technical knowledge between manufacturing enterprises, manufacturing systems, manufacturing equipment and personnel.

3.4

Information sharing and interaction between different business units at the same functional level or between different functional modules of the same business unit.

3.5

Upstream and downstream information sharing and integrated interaction between business units at different functional levels.

3.6

Focusing on the entire product life cycle, we integrate resources between different enterprises and users in the supply chain to achieve The company provides services for the information flow, material flow and capital flow of products throughout their life cycle,

including logistics distribution, use and maintenance.

chinastandards.org · PREVIEW