

ICS 35.240.50

CCS L67



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

GB/T 23024-2024

Digital simulation in manufacturing industry - Classification

制造业数字化仿真 分类

Issued on: August 23, 2024

Implemented on: December 1, 2024

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

Table of Contents

1 Scope	1
2 Normative references	1
3 Terms, definitions and abbreviations	1
3.1 Terms and Definitions	1
3.2 Abbreviations	1
4 Classification principles	1
4.1 Generality	1
4.2 Orthogonality	1
4.3 Comprehensiveness	1
5 Classification Dimensions	2
5.1 Overview	2
5.2 Dimensions of Digital Simulation Application in Manufacturing	2
5.3 Dimensions of Digital Simulation System in Manufacturing Industry	2
5.4 Dimensions of Digital Simulation Methods in Manufacturing	2
6 Classification of digital simulation applications in manufacturing	3
6.1 Overview	3
6.2 Classification by manufacturing production type sub-dimension	3
6.3 Classification from the sub-dimensions of product life cycle	3
6.4 Classification from the sub-dimension of manufacturing system scope	4
7 Classification from the dimensions of manufacturing digital simulation system	5
7.1 Overview	5
7.2 Classification of the operating modes of the manufacturing digital simulation system ...	5
7.3 Classification from the sub-dimensions of the digital simulation system architecture in the manufacturing industry	5
8 Classification of digital simulation methods in manufacturing industry	6
8.1 Overview	6
8.2 Classification from the perspective of the discipline principles of digital simulation in manufacturing industry	6
8.3 Classification of model principles and sub-dimensions of digital simulation in manufacturing industry	7
9 Classification and coding of digital simulation in manufacturing industry	8
9.1 Encoding method	8
8 Reference	10

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 Ministry of Industry and Information Technology of the People's Republic of China. This document is under the jurisdiction of the National Technical Committee for Standardization of Information and Industrialization Integration Management (SAC/TC573). This document was drafted by: Beijing University of Aeronautics and Astronautics, National Industrial Information Security Development Research Center, Beijing Simulation Center, Beijing Near-Earth Science and Technology University, Beijing University of Aeronautics and Astronautics... Aircraft Systems Engineering Institute, Ansem Asia Pacific Technologies Co., Ltd., Chengdu Aircraft Industry (Group) Co., Ltd., Chongqing Sichuan Instrument Control Valve Co., Ltd., Shenzhen Nars Fashion Co., Ltd., Industrial Cloud Manufacturing (Sichuan) Innovation Center Co., Ltd., Beijing Huaru Technology Co., Ltd. Co., Ltd., Caos Industrial Intelligence Research Institute (Qingdao) Co., Ltd., Beijing Space Vehicle General Design Department, Aerospace Cloud Network Technology Development Co., Ltd., Zhejiang Jiangshan Transformer Co., Ltd., Shandong Inspur Intelligent Production Technology Co., Ltd., Zhejiang Keli Vehicle Control System Co., Ltd., Zhejiang Odeon Transmission Technology Co., Ltd., Zhejiang Yili Automotive Air Conditioning Co., Ltd., Kunlun Digital Intelligence Technology Co., Ltd. Company, Jiejiang Network Technology (Dalian) Co., Ltd., Puhui Intelligent Manufacturing Technology Co., Ltd., Shanghai Yuzhang Electric Co., Ltd., Gaoshi Technology Technology (Suzhou) Co., Ltd., Shanghai Kelian Information Technology Co., Ltd., Ningbo Hanke Medical Equipment Co., Ltd., Sany Heavy Industry Co., Ltd. Co., Ltd., Hangzhou Eda Precision Electromechanical Technology Co., Ltd., Beijing Nalande Technology Co., Ltd., Hanwei Guangyuan (Guangzhou) Machinery Equipment Co., Ltd., Rainbow Display Devices Co., Ltd., China Electronics Engineering Design Institute Co., Ltd., Weili Electromechanical (Suzhou) Co., Ltd., Haimxing Laser Technology Group Co., Ltd., Guangdong Midea Kitchen Appliance Manufacturing Co., Ltd., Fujian Shenyue Foundry Co., Ltd., Laiye Technology (Beijing) Co., Ltd., CNNC Seventh Research and Design Institute Co., Ltd., Shanghai Liantai Technology Co., Ltd., Yuhong Technology (Shenzhen) Co., Ltd., Shenzhen Jintian International Software Technology Co., Ltd., Changzhou Tianzheng Industrial Development Co., Ltd., Zhejiang Meike Sun Energy Technology Co., Ltd., Jiangxi Guanying Intelligent Technology Co., Ltd., Wuhan Xinweiqi Technology Co., Ltd., Zhongke Cloud Universe (Beijing) Technology Co., Ltd., Kingdee Software (China) Co., Ltd., Tianjin Optoelectronics Special Communication Equipment Co., Ltd., Zhongxin Aviation Technology Co., Ltd. Company, Wuhan Huagong Saibai Data System Co., Ltd., Suzhou Huaxing Yuanchuang Technology Co., Ltd., Zhejiang Yuansuan

Technology Co., Ltd., Shanghai Xuan Tian Intelligent Technology Co., Ltd., Tangshan Dayi Technology Co., Ltd., Shanghai Process Intelligent Manufacturing Technology Innovation Research Institute Co., Ltd., Beijing Beijing Instrument Automation Equipment Technology Co., Ltd., Guizhou Electronic Information Vocational and Technical College. The main drafters of this document are. Zhang Lin, Li Jun, Wen Sha, Wang Kunyu, Tang Yiqiang, Shi Guoqiang, Tie Ming, Tian Feng, Jiang Yongbing, Liu Gang, Wu Qingye, Huang Zhixin, Li Tao, Chen Minjie, Song Zhigang, Sheng Guojun, Liu Xia, Chai Xudong, Jiang Zhenjun, Zhan Bo, Chen Lucheng, Zhang Lijun, Huang Junfeng, Huang Huikai, Zhang Jian, Jing Kai, Xu Shunyi, Ding Yan, Sun Jiguo, Wang Kefei, Zheng Min, Jiang Yong, Li Hongbiao, Zhang Jianming, Qi Yongjun, Zhang Shaote, Yang Lili, Chen Lei, Cheng Xinghua, Wang Zhonglin, Jiang Zhidong, Xia Guocai, Zhan Jufeng, Wang Guanchun, Zhang Xing, Yu Qingxiao, Xu Fuxian, Xia Biwu, Zhang Chonghao, Wang Yicheng, Chu Rui, Wang Qifeng, Yu Jun, He Shengming, Wang Yezhong, Su Jinxiu, Li Miao, Zheng Xiang, Dai Heng, Chen Wenyan, Wu Jianming, Chen Yuanming, Zhong Liang, He Renlong, Li Xuan, Huang Siqi.

As digital technologies such as big data, cloud computing, and artificial intelligence continue to integrate deeply with the manufacturing industry, the pace of digital transformation in the manufacturing industry is accelerating. Giving full play to the enabling role of digital technology in the total factor productivity of the manufacturing industry is the general consensus and common choice for the current high-quality development of the manufacturing industry. Digital simulation is an important solution to promote the digital transformation of manufacturing industry, and to a certain extent reflects the digital transformation of manufacturing industry. Improving the application capability of digital simulation is helpful for manufacturing enterprises to reduce development costs, enhance independent innovation capabilities, and seize market competition. It plays an important role in gaining competitive advantages and building resource-saving, environmentally friendly and continuously innovative enterprises. At present, digital simulation has been widely used in product development and design in many manufacturing fields, and has been extended to production, testing, verification, It has become an indispensable method and tool in manufacturing activities throughout the entire life cycle of operation and maintenance. However, most manufacturing companies have little understanding of digital simulation. The lack of in-depth and systematic understanding and application of digital simulation has hindered the full play of the effectiveness of digital simulation. The real application level is still in its infancy. In this context, it is urgent to develop a systematic, scientific and effective standard and guide manufacturing enterprises. Develop standards for digital simulation applications to meet the needs of digital transformation. This document classifies and systematically explains the current and emerging digital simulations in the manufacturing industry from multiple dimensions. It provides scientific basis and guidance for the application of digital simulation in the manufacturing industry, which is conducive to accelerating the popularization and in-depth application of digital simulation in the manufacturing industry. Use it to promote the digital transformation and upgrading of the

manufacturing industry and high-quality development. Classification of digital simulation in manufacturing industry

1 Scope

GB/T 23024-2024 is the Chinese national standard on digital simulation in manufacturing industry - classification, in the field of information technology. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 23 August 2024 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 December 2024. Classification: ICS 35.240.50, CCS L67. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document provides the classification principles, classification dimensions and specific classification of digital simulation in manufacturing industry, and stipulates the classification of digital simulation in manufacturing industry. Coding method and classification code table. This document is applicable to digital simulation applications in manufacturing.

2 Normative references

This document has no normative references.

3 Terms, definitions and abbreviations

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

3.1.1 For each link in the whole life cycle of manufacturing industry, digital models are used to reproduce some essential processes that occur in the actual system, and A series of activities to study, analyze, and improve a system that actually exists or is still in the design stage through model testing.

Note. Hereinafter referred to as simulation.

3.2 Abbreviations The following abbreviations apply to this document.

4 Classification principles

4.1 Generality The classification of digital simulation in the manufacturing industry needs to take into account the common characteristics of the manufacturing industry and ensure that the classification is consistent with the digital characteristics of all segments of the manufacturing industry. The simulation is universal.