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**Industrial internet platform - Equipment health management
specification**

工业互联网平台 设备健康管理规范

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Foreword

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 Ministry of Industry and Information Technology of the People's Republic of China. This document was prepared by the National Technical Committee on Standardization of Integration of Information Technology and Industrialization Management (TC573) and the National Technical Committee on Industrial Process Measurement and Control. It is jointly managed by the Automation Standardization Technical Committee (SAC/TC124). This document was drafted by: Beijing University of Aeronautics and Astronautics, National Industrial Information Security Development Research Center, and Beijing University of Aeronautics and Astronautics (Hangzhou). International Innovation Research Institute, Tsinghua Sichuan Energy Internet Research Institute, Inspur General Software Co., Ltd., Beijing Aerospace Intelligent Manufacturing Technology Development Co., Ltd. Company, China Academy of Railway Sciences Group Co., Ltd., COSMOPlat Industrial Intelligence Research Institute (Qingdao) Co., Ltd., XCMG HanCloud Technology Co., Ltd. Limited

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1 Scope

GB/T 46315-2025 is the Chinese national standard covering watching machines from a platform - the condition data collected and its sampling, the health indicators and the thresholds, the diagnosis and the remaining useful life estimate, and the maintenance decision that has to follow from it rather than sit in a dashboard. First edition, under the Ministry of Industry and Information Technology, and already in force. Issued on 5 October 2025, it has been in force since 5 October 2025.

This document provides an overall framework for equipment health management based on an industrial internet platform, clarifying the monitoring of equipment health status and health status... The document describes the specific steps and functional requirements of typical equipment health management activities, including condition assessment, fault diagnosis, and maintenance. Verification methods for rational functions. This document applies to enterprises conducting equipment health management based on industrial

internet platforms, and also to equipment service providers conducting equipment health management based on industrial internet platforms. The network platform provides device health management services.

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 20921 Terminology for Machine Condition Monitoring and Diagnosis

GB/T 23000 Fundamentals and Terminology of Management Systems for the Integration of Information Technology and Industrialization

GB/T 40571 General requirements for intelligent service predictive maintenance

GB/T 42021 Overall Network Architecture for Industrial Internet

GB/T 44067.1 Technical Requirements and Test Methods for Industrial Internet Platforms Part

3 Terms and Definitions

The terms and definitions defined in GB/T 20921, GB/T 23000, GB/T 40571, GB/T 42021, and GB/T 44067.1, as well as the following terms and definitions. This applies to this document.

3.1 By employing various statistical and intelligent methods, the operating status of industrial equipment is monitored and analyzed in real time, and corresponding maintenance methods are adopted. The process of ensuring the healthy operation of equipment.

3.2 Based on information from physical quantities (such as flow rate, pressure, vibration, temperature, humidity, etc.), statistical or intelligent methods are used to assess the remaining normal operating conditions of the equipment. The process of predicting time or number of cycles.

3.3 To address specialized challenges in industrial production processes, such as condition monitoring, fault diagnosis, quality prediction, and optimized control, this approach integrates knowledge from the industrial sector. Artificial intelligence algorithm models with data science methods.

3.4 cloud-edge collaboration By closely integrating cloud computing and edge computing, and through the rational allocation and scheduling of resources such as computing power,

storage, network, and data, industrial tasks can be accomplished. A collaborative work model that enables real-time and efficient processing.

Note. The edge computing layer is responsible for data acquisition, preprocessing, and real-time response, while the cloud layer is responsible for deep analysis, model training, and global optimization, forming a collaborative data and computational system. Calculate the closed loop.

3.5 edgemodeldeployment The process of deploying artificial intelligence models, algorithms, or applications to edge computing devices that are close to the data source.

3.6 cross-domain learning To achieve the sharing and reuse of industrial knowledge and capabilities across scenarios, industries, and processes, training will be conducted in a specific industrial scenario or field. The model training process for transferring and applying technical methods, including models, methods, and knowledge, to other different industrial scenarios or fields.

4.Abbreviations The following abbreviations apply to this document. CSV. Comma-Separated Values Modbus. Modicon Bus PaaS. Platform as a Service

5 Overall Framework for Equipment Health Management

5.1 Overall Framework Figure 1 shows the overall framework for equipment health management based on the Industrial Internet platform, which includes the industrial equipment layer, the industrial edge layer, and the industrial... PaaS layer and industrial application layer.

- a) The industrial equipment layer covers specific industrial equipment involved in industrial production and manufacturing environments and user operations, including user terminal equipment. Equipment and production tools.
- b) The industrial edge layer is used to enable device access, device status data acquisition, protocol parsing and preprocessing, and edge-side data processing. Storage, computing, reasoning and decision-making, and device control.
- c) The Industrial PaaS layer is the core of the Industrial Internet Equipment Health Management Platform, connecting the edge layer and the application layer, providing equipment health management services for the entire system. It possesses digital twin modeling capabilities, data management capabilities, an intelligent algorithm model library, and a PaaS engine.
- d) The industrial application layer mainly provides the business functions and application services required for equipment health management.