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

**GB/T 30372-2024**

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**Guide for acceptance of distributed control system for thermal  
power plant**

火力发电厂分散控制系统验收导则

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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 replaces GB/T 30372-2013 "Guidelines for Acceptance of Distributed Control Systems in Thermal Power Plants" and is consistent with GB/T 30372-2013. In addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) Some terms and definitions have been changed (see Chapter 3, Chapter 3 of the.2013 edition);
- b) The description of the test environment and acceptance form in the general provisions has been changed (see Chapter 4, Chapter 4 of the.2013 edition);
- c) Some instruments and equipment required for testing have been changed (see 5.2.2.1, 5.2.2.1 of the.2013 edition);
- d) The requirements for document acceptance have been changed (see 5.3, 5.3 of the.2013 edition);
- e) Changed the requirements for system configuration check (see 5.4, 5.4 of the.2013 edition);
- f) Added requirements for appearance and structural inspection and acceptance (see 5.5.11 and 5.5.12);
- g) Changed the system operation environment inspection and acceptance requirements (see 5.6, 5.6 of the.2013 edition);

## 1 Scope

China's national guide to the acceptance of distributed control systems in thermal power plants, and the current edition of GB/T 30372, replacing the 2013 edition. It specifies the content and requirements of DCS acceptance, covering both factory acceptance and the on-site restoration test, and it applies to the DCS of new and upgraded thermal generating units of 300 MW and above, with units of other capacities able to use it as a reference. The DCS is the plant's nervous system: it acquires every measurement, runs every control loop, drives every operator display and, through the trip logic, decides when the unit must be shut down. It is also bought as a large integrated package from a supplier, configured for one specific plant, and then handed over - and once it is commissioned, most of it can never

again be tested under fault conditions, because doing so would mean deliberately disturbing a running generating unit. Everything therefore has to be proved before the plant goes into service, which is why factory acceptance occupies the bulk of this document: system configuration, appearance and structure, operating environment, software installation, reliability, data acquisition function, system time response, satellite clock synchronisation, operator interface, online download, application software, the master fuel trip relay cabinet, fieldbus, spare capacity and load factor, and overall stability. Fifteen normative annexes carry the test sheets for those checks. The 2024 revision adds a full clause on DCS network security, referencing GB/T 22239 and GB 42250, and brings in the functional safety framework of GB/T 20438 and GB/T 21109.1 - both changes recognising that a plant control system is now an exposed, safety-instrumented computer system rather than an isolated one. Issued and in force from 23 August 2024.

This document specifies the basic contents and requirements of the acceptance of the distributed control system (DCS) of thermal power plants (including factory acceptance and on-site restoration test). Require. This document is applicable to the DCS of new or upgraded thermal power units with a single unit capacity of 300MW and above, and other capacity units. For reference only.

## 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 15479 Technical requirements and test methods for insulation resistance and insulation strength of industrial automation instruments

GB/T 20438 (all parts) Functional safety of electrical/electronic/programmable electronic safety-related systems

GB/T 21109.1 Functional safety of safety instrumented systems in process industries Part 1. Framework, definitions, systems, hardware and applications Programming requirements

GB/T 22239 Information security technology Network security level protection basic requirements

GB/T 26863 Terminology of thermal power station monitoring system

GB/T 36293 Technical requirements for distributed control systems of thermal power plants

GB 42250 Information security technology - Safety technical requirements for network security products DL/T 656 Acceptance test procedures for steam turbine control and

protection systems in thermal power plants DL/T 1083-2019 Technical requirements for distributed control systems of thermal power plants

### 3 Terms and definitions

The terms and definitions defined in GB/T 26863 and the following apply to this document.

3.1 Computer, communication and screen display technology are used to realize data collection, control and protection functions of the production process, and communication technology is used to realize A multi-computer monitoring system with data sharing is now available.

Note. Its main features are decentralized functions, centralized operation and display, and data sharing. Depending on the specific situation, it can also be decentralized in hardware layout. [Source: GB/T 26863-2022, 9.14]

3.2 CPU load rateCPUloadrate At a certain time, the total computing load borne by the central processing unit in a computer or controller is equal to its rated full load capacity. The ratio of force. [Source: GB/T 26863-2022, 9.6.3]