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

GB/T 30966.1-2022

Replacing GB/T 30966.1-2014

**Wind energy generation systems - Communications for
monitoring and control of wind power plants - Part 1: Overall
description of principles and models**

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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 of Standardization Documents" drafted.

This document is part 1 of GB/T 30966 "Wind Power Plant Monitoring System Communication for Wind Turbines". GB/T 30966 has

Post the following sections.

- Part 1. Principles and models;
- Part 2. Information model;
- Part 3. Information exchange model;
- Part 4. Mapping to communication protocols;
- Part 5. Conformance testing;
- Part 6. Logical node classes and data classes for state monitoring.

This document replaces GB/T 30966.1-2014 "Wind Turbine Wind Farm Monitoring System Communication Part 1. Principles and

Model", compared with GB/T 30966.1-2014, in addition to structural adjustment and editorial changes, the main technical changes are as follows.

- a) Modified some normative references (see Chapter 2, Chapter 2 of the 2014 edition);
- b) Some terms and definitions have been changed (see Chapter 3, Chapter 3 of the 2014 edition);
- c) Added Condition Monitoring System (CMS) (see 5.2.2);
- d) Added Figure 5 "Role of Common Data Class (CDC) in Wind Power Plant (WPP) Information Model" (see 6.2.2);
- e) Changed text and overview model to harmonize with other parts of the IEC 61400-25

series (see 5.4, 6.2, 7.2, 8.3, 2014 version 5.4, 6.2, 7.2, 8.3).

This document is equivalent to IEC 61400-25-1:2017 "Wind Turbine Part 25-1: Communication of Wind Farm Monitoring System"

Principles and Models.

The following editorial changes have been made to this document.

--- Change the standard name to "Wind Turbine Wind Farm Monitoring System Communication Part 1: Principles and Models".

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

This document was developed to provide a unified communication basis for wind farm monitoring. GB/T 30966 "Wind turbine wind farm

Monitoring System Communication" defines the information model and information exchange model for wind farm monitoring, so that different customers can communicate with different manufacturers and suppliers.

The access between the supplier's servers is universal. GB/T 30966 is mainly based on IEC 61400-25, which defines the specific information for wind farms.

information, information exchange mechanisms, and mapping of communication protocols. In this regard, IEC 61400-25 specifies the

Detailed requirements for the exchange of available information for wind farm components. These requirements are defined in IEC 61400-25 or refer to other standards.

The wind farm information model and the information exchange model work together to create a visual interface for the interaction between the client and the server. as an access wind

An interpretation framework for farm data, the wind farm information model provides a unified, component-based view of wind farm data to the client through the server.

The information exchange model reflects the full effective functionality of the server. IEC 61400-25 supports clients from different manufacturers and suppliers

A connection between a heterogeneous mix of servers. GB/T 30966 (all parts) currently consists of the following 6 parts.

--- Part 1: Principles and models. The purpose is to study the general communication between the SCADA system of the wind farm and the wind turbine.

sexual requirements.

--- Part 2.Information model. The purpose is to specify the summary description of the logical node class, the wind farm logical node class to the common logical node class definition and requirements.

--- Part 3.Information exchange model. The purpose is to specify the information exchange model that can be used by clients and servers to access

The content and structure of the wind farm information model defined in GB/T 30996.2.

--- Part 4.Mapping to the communication protocol. The purpose is to specify a specific mapping for the protocol stack between the client and the remote server.

The information exchange provides the required information encoding.

--- Part 5.Conformance testing. The purpose is to specify the components (such as wind turbines) and participants (such as wind turbines) in the wind farm

General requirements for communication between SCADA systems), detailing standard techniques for implementing conformance testing, and deterministic

A specific measurement technique to be applied when a parameter can be used.

--- Part 6.Logical node classes and data classes for state monitoring. It is intended for wind turbine or wind farm components or structures

Observing parts for a period of time, evaluating the state and state changes of parts or structural parts, so as to find potential failures.

Early signs.

Wind Turbine Wind Farm Monitoring System Communication

Part 1.Principles and Models

1 Scope

IEC 61400-25 (all parts) is concerned with the components (e.g. wind turbines) and actors (e.g. SCADA) in wind farms

General requirements for communication between systems). The internal communication of each part of the wind farm itself is not within the scope of application.

IEC 61400-25 (all parts) designed the communication environment supported by the client-server model, which defines the following three aspects.

content, and modeled separately to ensure the scalability of the implementation.

a) wind farm information model;

b) information exchange model;

c) Information models and information exchange models are mapped to standard communication protocols.

The wind farm information model and the information exchange model form an interface between the client and the server. as access to wind farm data

Interpretation framework, wind farm information model provides unified, component-oriented wind farm data to the client through the server side. information exchange model

Reflects all available functionality on the server side. IEC 61400-25 (all parts) enables different clients with different manufacturers and suppliers

Access between servers is universal.

As shown in Figure 1, the server side defined by IEC 61400-25 (all parts) includes the following aspects.

--- Information provided by wind farm components, such as "wind turbine rotor speed" or "total power generation within a certain period of time", these

Information is modeled and can be accessed efficiently. Modelling information in IEC 61400-25 (all parts) in IEC 61400-25-2

and as defined in IEC 61400-25-6.

--- Exchange services for modeled information values, as defined in IEC 61400-25-3.

--- Map to the communication protocol, providing a protocol stack to obtain exchange values from modeled information (IEC 61400-25-4).

IEC 61400-25 (all parts) only defines how information is modeled, exchanged and mapped to specific communication protocols, not including

How and where to implement communication interfaces, application programming interfaces, and recommendations for implementation. However, the purpose of IEC 61400-25 (all parts) is to

The information related to a single wind farm component (eg wind turbine) is acquired through the corresponding logic device.

This document specifies general provisions for the principles and models of use of IEC 61400-25 (all parts).

NOTE. IEC 61400-25 (all parts) is concerned with general, non-vendor specific information. Information for which vendor-specific implementations vary widely

Items may be specified in bilateral agreements, user groups or amendments to IEC