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**Communication networks and systems for power utility
automation - Part 5: Communication requirements for functions
and device 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 for Standardization Documents"

drafting.

This document is part 5 of GB/T 42151 "Communication Networks and Systems for Electric Power Automation". GB/T 42151 has issued the following

part.

--- Part 5.Communication requirements for functions and device models.

This document identically adopts IEC 61850-5.2013 "Communication networks and systems for power automation - Part 5.Communication of functions and device models".

letter request".

Please note that some contents of this document may refer to patents. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

GB/T 42151 "Communication Networks and Systems for Electric Power Automation" aims to provide interoperability for all devices in the electric power automation system.

It is intended to consist of the following parts.

--- Part 1.Introduction. Its purpose is to present an overview of the document.

--- Part 2.Terminology. The purpose is to list terms and definitions used in this document.

--- Part 3.General requirements. The purpose is to introduce the overall requirements of the communication network, focusing on the quality requirements.

--- Part 4.System and project management. The purpose is to describe the requirements for the system and project management process and the requirements for engineering and test

Requirements for specialized support tools required.

--- Part 5.Communication requirements for functions and device models. The purpose is to specify the communication requirements for each function of the power automation system.

--- Part 6.Configuration description language for device communication in power automation systems. The purpose is to exchange intelligence in some compatible way

Capability descriptions of energy electronic devices, and exchange of power automation system descriptions between tools provided by different manufacturers.

--- Part 7.Basic communication structure of power automation system. The purpose is to define a hierarchical class model and the

services to enable communication between devices.

--- Part 8.Specific communication service mapping SCSM. The purpose is to provide substation station control layer and compartment layer as well as station control layer and

Communication mapping between bay layers.

--- Part 9.Specific communication service mapping SCSM. The purpose is to provide substation bay level and process level as well as bay level and

Communication mapping between process layers.

--- Part 10. Conformance testing. The purpose is to specify the standard technology for implementing conformance testing and to use when proposing performance parameters specific measurement techniques.

GB/T 42151 "Communication Network and System for Electric Power Automation" defines the communication network and system for electric power automation system, especially for substation

Communication architecture of sub-systems such as station automation system. The sum of all these subsystems can also be the communication body for the whole power system management

The system structure is used to describe the communication between the devices in these subsystems and the communication between the subsystems in the whole power automation system, from variable

Starting from the core requirements of the power station, it meets a large number of requirements required by all functions in the power automation system. Organize data in a data model

These requirements are addressed both in the exchange of data and the resulting services. The performance of data exchange means not only the transmission time of data exchange, but also

It also means the quality of data exchange, thus avoiding the loss of information in communication.

This document is part 5 of GB/T 42151 "Communication Networks and Systems for Electric Power Automation", which defines the functions and equipment of electric power automation systems.

configuration model communication requirements. Communication modeling requires defining objects (e.g., data objects, datasets, report controls, log controls) and access objects

services (for example, get, set, report, create, delete). These will be defined in Section 7, with a clear interface for implementation. for

Taking advantage of communication technologies, no new protocol stacks are defined in this document, but existing protocol stacks are given in Sections 8 and 9

standardized mapping. A system configuration language for strongly formalized descriptions of systems used by software tools (Part 6) and standardized conformance

Sexual testing (Part 10) complements this document.

The assignment of functions to devices and control levels is usually not fixed according to the supplier's and user's ideas and the latest technology. therefore,

The standard shall support the assignment of any function. This leads to concerns over different communication interfaces within the substation or power plant, within its borders and beyond.

different requirements. Standardization documents should be long-term applicable, but allow rapid changes in communication technology to be followed through their technical methods and document structure.

change. GB/T 42151 "Communication Networks and Systems for Electric Power Automation" is organized so that minor modifications to at least one part do not require modification to another part.

part has been substantially rewritten. For example, based on the data model derived in the subsequent section (Section 7) of the communication requirements in Section 5 and to

The mapping of dedicated protocol stacks (Part 8, Part 9) does not change the requirements defined in Part 5. In addition, the general part, requirement specification and the modeling part is independent of any implementation. The implementations required to use the standard are defined in several dedicated sections dealing with the mainstream means of communication, starting with

This supports the long-term applicability of the standard and its potential for future technological changes.

Electric power automation communication network and system

Part 5. Communication requirements for function and device models

1 Scope

This document specifies the communication between Intelligent Electronic Devices (IEDs), and the related system requirements for support. This document applies to substation

The power automation system with the station automation system (SAS) as the core.

The technical indicators in this document are the communication requirements for each function in the power automation system. Most of the functions in this document and their communication requirements

The examples are mainly drawn from the substation automation specialist area and, if applicable, can be reused or extended in other areas of power automation. need

Note that the term "substation automation specialist area" is sometimes used instead of the term "substation automation specialist area", especially when considering switchyard equipment