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

GB/T 42151.3-2024

**Communication networks and systems for power utility
automation - Part 3: General requirements**

电力自动化通信网络和系统 第3部分:通用要求

(English Translation)

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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 3 of GB/T 42151 "Electric Power Automation Communication Networks and Systems". GB/T 42151 has been published as follows part.

- Part 3: General requirements;
- Part 4: System and project management;
- Part 5: Communication requirements for functional and device models;
- Part 7-7. IEC 61850 related data model machine processable format for tools;
- Part 8-1. Specific Communication Service Mapping (SCSM) Mapping to MMS (ISO 9506-1 and ISO 9506-2) and ISO/IEC 8802-3.

This document is modified to adopt IEC 61850-3:2013 "Electric power automation communication networks and systems Part 3: General requirements".

The technical differences between this document and IEC 61850-3:2013 and their reasons are as follows.

- IEC TS61850-2:2019 replaces IEC TS61850-2:2003 (see Chapter 2 and Chapter 3).

61850-2:2003 has been replaced by IEC TS61850-2:2019;

- GB/T 19520.12 replaces IEC 60297-3-101 and is adjusted from the reference to Chapter 2 (see Chapter 2, 6.4 and

Table 28), 6.4 and Table 28 make normative references to this document.

--- Add normative references to IEC 60255-21 (all parts) (see Chapter 2 and Tables 1 and 2), Tables 1 and 2 normative references Use this file;

--- Add normative references to IEC 60255-22-5 (see Chapter 2 and 6.6.1.2), and 6.6.1.2 normative references to this document;

--- Add normative references to IEC 60695-2-20 (see Chapter 2 and 6.6.6.2.3), 6.6.6.2.3 normative references to this document;

--- GB/T 2423.3-2016 replaces IEC 60068-2-78:2001 (see Chapter 2, Table 23, Table 24 and Table 28).

IEC 60068-2-78:2001 has been replaced by IEC 60068-2-78:2012 and converted into a national standard;

--- GB/T 12113-2023 replaces IEC 60990:1999 (see Chapter 2, Table 5 and Table 8). IEC 60990:1999 has been Replaced by IEC 60990:2016 and converted into a national standard;

--- IEC 61180:2016 replaces IEC 61180-1:1999 and IEC 61180-2 (see Chapter 2, 6.6.3.1 and 6.6.3.3), IEC 61180-1:1999 and IEC 61180-2 have been replaced by IEC 61180:2016;

--- CISPR 32 replaces CISPR 22:2008 (see Chapter 2, Table 14, Table 15, Table 16 and Table 17), CISPR 22:2008 Has been replaced by CISPR32:2015;

--- CISPR 35:2016 replaces CISPR 24:2010 (see Chapter 2 and Table 9). CISPR 24:2010 has been replaced by CISPR 35:2016 instead.

The following editorial changes have been made to this document.

--- Adjust IEEE1613:2009, which is only mentioned in the footnote, to the reference.

Introduction

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

It consists of the following parts.

--- Part 1: Introduction. The purpose is to introduce the overview of this series of standards.

--- Part 2: Terminology. The purpose is to list the terms and definitions used in this series of standards.

--- Part 3: General requirements. The purpose is to introduce the overall requirements of communication networks, with an emphasis on quality requirements.

--- Part 4: System and project management. The purpose is to describe the requirements for system and project management processes and the requirements for engineering and testing Dedicated support tools are required.

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

--- Part 6: Communication configuration description language for power automation systems related to intelligent electronic devices.

exchange of intelligent electronic device capability descriptions and power automation system between tools provided by different manufacturers describe.

--- Part 7: Basic communication structure of power automation system. The purpose is to define the hierarchical class model and the functions provided by these classes.

services to enable communication between devices.

--- Part 8: Specific Communication Service Mapping SCSM. The purpose is to provide substation control layer and bay layer and station control layer and Communication mapping between bay layers.

--- Part 9: Specific Communication Service Mapping SCSM. The purpose is to provide the substation bay layer and process layer and the bay layer and Communication mapping between process layers.

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

This document is part 3 of GB/T 42151 "Electric Power Automation Communication Networks and Systems", which defines the communication, General requirements for the construction, design and environmental conditions of intelligent electronic devices (IEDs) and systems, including quality requirements (reliability, maintainability, system System availability, plantability, safety), environmental conditions (temperature, humidity, electromagnetic compatibility) and auxiliary services are the key factors for power automation equipment manufacturers to improve their it is an important guiding document for product design, R&D, production and testing.

Power automation communication networks and systems Part 3: General requirements

1 Scope

This document specifies the requirements for the construction, design and environment of communications and automation intelligent electronic devices (IEDs) and systems in power plants and substations.

These general requirements are consistent with the requirements for IEDs operating in similar conditions, such as measuring relays and protection devices.