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**Communication networks and systems for power utility
automation - Part 7-1: Basic communication structure -
Principles and models**

电力自动化通信网络和系统 第7-1部分：基本通信结构 原理和模型

(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 71 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 6: Communication configuration description language for power automation systems related to intelligent electronic devices;
- Part 7-1. Basic communication structure principles and models;
- Part 7-2. Basic information and communication structure Abstract Communication Service Interface (ACSI);
- 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 equivalent to IEC 61850-7-1:2020 "Electric power automation communication networks and systems Part 7-1. Basic communication architecture" Principles and Models

Introduction

GB/T 42151 "Electric Power Automation Communication Network and System" 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 document.
- Part 2: Terminology. The purpose is to list the terms and definitions used in this document.
- 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 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. The purpose is to exchange of intelligent electronic device capability descriptions in a way that allows for the exchange of power automation system capabilities between tools provided by different manufacturers describe.
- Part 7: Basic communication structure of power automation system. The purpose is to define a hierarchical class model and the services 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 substation bay layer and process layer and 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 to use when proposing performance parameters specific measurement techniques.

This document outlines the communication and interaction between power automation systems (such as protection devices, circuit breakers, transformers, substation masters, etc.) Architecture.