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

GB/T 43259.556-2024

**Energy management system application program
interface(EMS-API) - Part 556: CIM based graphic exchange
format(CIM/G)**

能量管理系统应用程序接口（EMS-API）第556部分：基于CIM图形交换格式（CIM/G）

(English Translation)

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Reference

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 556 of GB/T 43259 Energy Management System Application Programming Interface (EMS-API): GB/T 43259 has been the following parts have been published:

--- Part 302: Dynamic part of the Common Information Model (CIM);

--- Part 556: Based on CIM graphics interchange format (CIM/G):

This document is modified to adopt IEC TS61970-556:2016 "Energy Management System Application Programming Interface (EMS-API) Part 556:

Based on CIM Graphics Interchange Format (CIM/G), the file type was adjusted from IEC technical specifications to my country's national standards:

This document has the following structural adjustments compared to IEC TS61970-556:2016:

--- Appendix D corresponds to Appendix E of IEC TS61970-556:2016;

--- Appendix E corresponds to Appendix D of IEC TS61970-556:2016:

The technical differences between this document and IEC TS61970-556:2016 and their reasons are as follows:

--- Changed the structure description of the graphic display file (see 6.2) to make the description more accurate;

---Added an attribute to the Include tag (see 6.2), increasing the number of attributes from three to four;

---Added a G tag attribute (see 6.2), increasing the number of attributes from five to six, used to track the version number of the graphic file:

It is convenient to compare versions when accessing graphic files remotely;

--- Changed the description of basic shape graphic elements (see Chapter 7) to be more accurate;

--- Added general descriptions on 8:2, 8:3, 9:1~9:7 (see 8.1), the general descriptions

describe the relationship between the contents and chapters;

--- Added the introduction of custom power system graphic elements (see 8.2), fully explaining the connotation of custom power system graphic elements;

--- Changed the reference of custom power system graphic elements, added Figure 7 (see 8.3), and made the reference method of graphic elements more comprehensive;

--- Added Figure 11 (see 9.1) to illustrate the method of explicitly referencing circuit breaker graphic elements:

Introduction

To reduce the cost and time required to add new applications to the Energy Management System (EMS), and to protect the existing Investments in existing applications can be made by defining an EMS application programming interface (API) so that applications can access public data or perform GB/T 43259 aims to promote:

Integration of EMS applications, integration between independently developed complete EMS systems, and integration between EMS systems and other systems related to power system operation Integration between systems: GB/T 43259 is intended to consist of the following parts:

--- Part 1: Guidelines and general requirements: The purpose is to define a set of guidelines and general requirements required for the application of the EMS-API interface standard:

Infrastructure capabilities:

--- Part 2: Terminology: The purpose is to provide the terms and abbreviations required by GB/T 43259:

--- Part 301: Common Information Model (CIM) Foundation: The purpose is to represent power system resources as object classes and A standard method for attributes and their relationships defines the basic package set of CIM and provides a logical view of the functional aspects of energy management systems:

--- Part 302: Dynamic part of the Common Information Model (CIM): The purpose is to define a dynamic part that extends the CIM:

A package is provided to support model exchange between power system static stability or transient stability analysis application software:

--- Part 401: Subset Framework: The purpose is to determine the structure and creation method of the subset file specification:

--- Part 452: CIM steady-state transmission network model subset: The purpose is to determine the execution of the subset of CIM classes, class attributes and associations required for state estimation and power flow calculations:

--- Part 453: Graphics layout subset: The purpose is to identify common use cases involving the exchange of graph layout data and to define layouts:

Guidelines for linking with CIM data:

--- Part 456: Subset of power system state solutions: The purpose is to determine the results of exchange state estimation, power flow and other similar applications A required subset of CIM classes, class attributes, and associations:

--- Part 457: Dynamic part subset: The purpose is to determine the structure used for exchanging static stability, transient stability analysis and other applications:

The subset of Dynamic Model CIM classes, class attributes, and associations required for the results:

--- Part 501: Common Information Model Resource Description Framework (CIMRDF) schema: The purpose is to define the CIM machine Format and rules for human readable form:

--- Part 552: CIMXML information exchange format: The purpose is to determine the format and rules for exchanging modeling information based on CIM:

--- Part 555: CIM-based efficient model exchange format (CIM/E): The purpose is to determine the CIM/E exchange modeling format:

The format and rules of information:

--- Part 556: CIM-based Graphics Interchange Format (CIM/G): The purpose is to define the CIM/G-based Graphics Interchange Format:

It supports the mechanism of offline exchange of graphic displays and online remote browsing of charts between different SCADA/EMS systems:

--- Part 600-1: Common Grid Model Exchange Specification (CGMES) Structure and Rules: The purpose is to define the common grid model Exchange Standard (CGMES), defines the main rules and application requirements to meet business needs such as splicing and merging models:

--- Part 600-2: Common Grid Model Exchange Specification (CGMES) Exchange Subset Specification: The purpose is to define the CGMES Included subset files:

GB/T 43259 mainly includes the Common Information Model (CIM) and Component Interface Specification (CIS): CIM specifies the EMS-the semantics of the API,CIS specifies the content of information exchange:

CIM is an abstract model that represents all the major objects typically included in the model required for various aspects of power enterprise operation:

The model contains the common classes and attributes of these objects, as well as the