IEC 61968-9

Edition 2.0 2013-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Application integration at electric utilities – System interfaces for distribution management – Part 9: Interfaces for meter reading and control

Intégration d'applications pour les services électriques – Interfaces système pour la gestion de distribution – Partie 9: Interfaces pour le relevé et la commande des compteurs

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FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

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International Standard IEC 61968-9 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

This second edition cancels and replaces the first edition published in 2009. This edition constitutes a technical revision and includes the following significant technical changes with respect to the previous edition:

a) changes to and addition of new profiles to support PAN and UsagePoints;

b) extensions to support PAN devices generically as EndDevices;

c) extensions to the MeterReading model and profiles to support richer descriptions of metered quantities and to accommodate coincident readings;

d) addition of CIM Name class and corresponding revisions to profiles to allow reference by name instead of by mRID. Where the document may identify the use of mRID values as references, Name.name values may be alternatively used. This is described in more detail in Annex G;

e) reference of ReadingTypes, EndDeviceEventTypes and EndDeviceControlTypes using name references;

f) definition of normative enumerations for ReadingTypes, EndDeviceEventTypes and EndDeviceControlTypes in annexes;

g) various corrections to example sequence diagrams;

h) Removal of MeterAssetReading profile, where functionality is supported using the MeterReading profile;

i) MeterAsset class is now named Meter;

j) MeterAssetConfig profile now named MeterConfig;

k) EndDeviceAssets profile now named EndDeviceConfig;

l) removal of EndDeviceFirmware profile, where functionality is supported using the EndDeviceConfig profile;

m) use of new namespaces to reflect the new edition, where the namespaces is reflective of the year in which a profile is defined;

n) adoption of UsagePoint as a replacement for and a generalization of ServiceDeliveryPoint;

o) SDPLocationConfig has been deprecated in favor of UsagePointLocationConfig;

p) some profiles previously defined have been moved into the new subclause 5.10 which is focused on data linkages;

q) elimination of the MeterSystemEvents profile, as it provided no functionality that could not be achieved with the EndDeviceEvents profile;

r) there were several profiles originally defined in support of prepayment use cases that were identified to be more general in nature, and were consequentially moved to 5.10. Subclause 5.8 now consists of only those profiles that are specific to prepayment. In all cases there has been some refactoring of these profiles to reflect other necessary changes that have been described;

s) supplierConfig has been renamed ServiceSupplierConfig;

t) messages using the SUBSCRIBE verb have been removed as these are related to the underlying communication transport and do not reflect actual IEC 61968 messages.

The text of this standard is based on the following documents:

FDIS	Report on voting
57/1377/FDIS	57/1394/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

A list of all parts in the IEC 61968 series, published under the general title *Application integration at electric utilities – System interfaces for distribution management*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

The purpose of this document is to define a standard for the integration of Metering Systems (MS), which would include traditional (one or two-way) Automated Meter Reading (AMR) Systems, with other systems and business functions within the scope of IEC 61968. The scope of this standard is the exchange of meter reading, transactions, event and control information between systems within the utility enterprise and between enterprises. The specific details of communication protocols those systems employ are outside the scope of this standard. Instead, this standard will recognize and model the general capabilities that can be potentially provided by advanced and/or legacy meter infrastructures, including two-way communication capabilities such as load control, dynamic pricing, outage detection, distributed energy resource (DER) control signals and on-request read. In this way, this standard will not be impacted by the specification, development and/or deployment of next generation meter infrastructures, either through the use of standards or proprietary means.

The IEC 61968 series of standards is intended to facilitate inter-application integration as opposed to intra-application integration. Intra-application integration is aimed at programs in the same application system, usually communicating with each other using middleware that is embedded in their underlying runtime environment, and tends to be optimised for close, real-time, synchronous connections and interactive request/reply or conversation communication models. IEC 61968, by contrast, is intended to support the inter-application integration of a utility enterprise that needs to connect disparate applications that are already built or new (legacy or purchased applications), each supported by dissimilar runtime environments. Therefore, these interface standards are relevant to loosely coupled applications with more heterogeneity in languages, operating systems, protocols and management tools. This series of standards is intended to support applications that need to exchange data every few seconds, minutes, or hours rather than waiting for a nightly batch run. This series of standards, which are intended to be implemented with middleware services that exchange messages among applications, will complement, not replace utility data warehouses, database gateways, and operational stores.

As used in IEC 61968, a Distribution Management System (DMS) consists of various distributed application components for the utility to manage electrical distribution networks. These capabilities include monitoring and control of equipment for power delivery, management processes to ensure system reliability, voltage management, demand-side management, outage management, work management, automated mapping and facilities management. Standard interfaces are defined for each class of applications identified in the Interface Reference Model (IRM), which is described in IEC 61968-1, *Interface architecture and general requirements.*

This part of IEC 61968 contains the clauses listed in Table 1 below.

Table 1 – Document overview for IEC 61968-9

Clause	Title	Purpose
1	Scope	The scope and purpose of the document are described.
2	Normative References	Documents that contain provisions which, through reference in this text, constitute provisions of this International Standard.
3	Terms, Definitions and Abbreviations	
4	Reference and Information Models	Description of general approach to metering system, reference model, use cases, interface reference model, meter reading and control functions and components, message type terms and static information model.
5	Meter Reading and Control Message Types	Message types related to the exchange of information for documents related to meter reading and control.
6	Document Conventions	
Annex A	Message Type Verbs	Description of the Verbs that are used for the message types
Annex B	CIM Extensions	CIM extensions to support the recommended message structure for meter reading and control
Annex C	Procedure for the generation of a ReadingTypeId	Technique for constructing, and offers recommended enumerations for the ReadingTypeId textual name and mRID.
Annex D	QualityCode enumerations	Technique for constructing, and offers recommended enumerations for reading quality codes
Annex E	EndDeviceEvent Code enumerations	Defines EndDevice alarm and event codes
Annex F	EndDeviceControl code enumerations	Defines EndDevice control codes.
Annex G	Maintaining Relationships Between Objects	Describes the use of the master resource identifier (mRID) and Names.
Annex H	XML Schemas for message payloads	To provide xsd information for use by developers to create IEC 61968-9 messages.
Annex I	Mappings	To provide mappings between IEC 61968-9 MeterReadings and other standards.
Annex J	Request Parameters	Describes the qualification of GET requests using Request parameters.
Annex K	Master Data Management Transaction Processing	Describes how complex Master data Management / Data Synchronization transactions are conveyed and the associated processing rules.
Annex L	Master Data Management Use Cases and Sample XML	Describes many of the common Master Data Management use cases and provides sample XML to illustrate intended usage of the various Master Data Management related profiles.

Future editions of IEC 61968-9 will strive to have changes be 'non-breaking', where the namespace of the previous version may be preserved, but the Revision attribute in the XSD is incremented.