SVENSK STANDARD SS-EN IEC 61968-3

Fastställd	Utgåva	Sida	Ansvarig kommitté
2021-10-20	3	1 (1+373)	SEK TK 57

Integrering av tillämpningar för elförsörjning – Systemgränssnitt för distributionssystemstyrning – Del 3: Gränssnitt för nätdrift

Application integration at electric utilities –
System interfaces for distribution management –
Part 3: Interface for network operations

Som svensk standard gäller europastandarden EN IEC 61968-3:2021. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 61968-3:2021.

Nationellt förord

Europastandarden EN IEC 61968-3:2021

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 61968-3, Third edition, 2021 - Application integration at electric utilities - System interfaces for distribution management - Part 3: Interface for network operations**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN IEC 61968-3, utgåva 2, 2018, gäller ej fr o m 2024-06-01.

ICS 33.200.00

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 61968-3

June 2021

ICS 33.200

Supersedes EN IEC 61968-3:2018 and all of its amendments and corrigenda (if any)

English Version

Application integration at electric utilities - System interfaces for distribution management - Part 3: Interface for network operations (IEC 61968-3:2021)

Intégration d'applications pour les services électriques - Interfaces système pour la gestion de la distribution - Partie 3: Interface pour l'exploitation du réseau (IEC 61968-3:2021)

Integration von Anwendungen in Anlagen der Elektrizitätsversorgung - Systemschnittstellen für Netzführung - Teil 3: Schnittstelle für Netzbetriebsarten (IEC 61968-3:2021)

This European Standard was approved by CENELEC on 2021-06-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN IEC 61968-3:2021 E

European foreword

The text of document 57/2343/FDIS, future edition 3 of IEC 61968-3, prepared by IEC/TC 57 "Power systems management and associated information exchange" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61968-3:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2022-03-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-06-01

This document supersedes EN IEC 61968-3:2018 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

Endorsement notice

The text of the International Standard IEC 61968-3:2021 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61968-4	NOTE	Harmonized as EN IEC 61968-4
IEC 61968-5	NOTE	Harmonized as EN IEC 61968-5
IEC 61968-6	NOTE	Harmonized as EN 61968-6
IEC 61968-8	NOTE	Harmonized as EN 61968-8
IEC 61968-9	NOTE	Harmonized as EN 61968-9
IEC 61968-11	NOTE	Harmonized as EN 61968-11
IEC 61968-13	NOTE	Harmonized as EN IEC 61968-13
IEC 62361-100	NOTE	Harmonized as EN 62361-100

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 61968-1	-	Application integration at electric utilities - System interfaces for distribution management - Part 1: Interface architecture and general recommendations	EN IEC 61968-1	-
IEC/TS 61968-2	-	Application integration at electric utilities - System interfaces for distribution management - Part 2: Glossary	-	-
IEC 61968-100	-	Application integration at electric utilities - System interfaces for distribution management - Part 100: Implementation profiles	EN 61968-100	-
IEC 61970-301	-	Energy management system application program interface (EMS-API) - Part 301: Common information model (CIM) base	EN IEC 61970-301	-

IEC 61968-3

Edition 3.0 2021-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Application integration at electric utilities – System interfaces for distribution management –
Part 3: Interface for network operations

Intégration d'applications pour les services électriques – Interfaces système pour la gestion de la distribution –
Partie 3: Interface pour l'exploitation du réseau

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 33.200

ISBN 978-2-8322-9596-0

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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APPLICATION INTEGRATION AT ELECTRIC UTILITIES – SYSTEM INTERFACES FOR DISTRIBUTION MANAGEMENT –

Part 3: Interface for network operations

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 61968-3 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

This third edition cancels and replaces the second edition published in 2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) major rework of Switch Order related profiles and Outage related profiles;
b) documented profiles in more detail as a result of the analysis of end-to-end use cases;
c) separated Measurement and Control profile into two profiles: PSRMeasurements and PSRControls;
d) replaced Temporary Network Change profile with SwitchingEvents profile;

e) added MeasurementAction, ControlAction, GenericAction and VerificationAction to SwitchingPlans profile. Added examples;

f) added SwitchingActions profile to support the coordination of SwitchingPlan execution between control room and the field crew;

g) added ClampAction to SwitchingPlan, SwitchingAction and SwitchingEvent profiles, to allow clamps to be placed and removed independently of jumpers;

h) separated OutagesAndFaults profile into UnplannedOutages, PlannedOutages, EquipmentFaults, LineFaults;

i) added list of energized and de-energized UsagePoints to the UnplannedOutages profile;

j) added PlannedOutages profile;

k) added PlannedOutageNotifications profile;

l) added SwitchingPlanRequest profile to replace OutageSchedules profile;

m) expanded TroubleOrders profile to include UnplannedOutages and TroubleTickets and to allow crews to be scheduled to individual tasks within the TroubleOrder;

n) expanded use cases and sequence diagrams;

o) sequence diagrams updated to use IEC 61968-100 message patterns;

p) use cases in IEC 62559-2 use case template;

q) added example XML for profiles;

r) replaced xsd in Annex with tables to document the profiles in a serialisation-independent form;

s) clarified FLISR use case to include interactions between DSO and TSO per review comments from Edition 2.

t) removed OperationalTags since it is now part of the TagAction in the SwitchingEvents payload

The text of this International Standard is based on the following documents:

Draft	Report on voting
57/2343/FDIS	57/2364/RVD

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

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The language used for the development of this International Standard is English.

In this standard, the following print types are used:

– tokens: in arial black type

A list of all parts of the IEC 61968 series, 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 document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document 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 part of IEC 61968 is to define a standard for the integration of network operations systems with each other and other systems and business functions within the scope of IEC 61968. The specific details of the communication protocols those systems employ are outside the scope of this part of IEC 61968. Instead, this part of IEC 61968 will recognize and model the general capabilities that can be potentially provided by network operations systems. In this way, this part of IEC 61968 will not be impacted by the specification, development and/or deployment of next generation network operations systems, 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. Therefore, these inter-application 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.

APPLICATION INTEGRATION AT ELECTRIC UTILITIES – SYSTEM INTERFACES FOR DISTRIBUTION MANAGEMENT –

Part 3: Interface for network operations

1 Scope

Per the IEC 61968 Interface Reference Model, the Network Operations function defined in this part of IEC 61968 provides utilities with the means to supervise main substation topology (breaker and switch state), feeder topology and control equipment status through SCADA, AMI and other data sources. It also provides the means for handling network connectivity and loading conditions. Finally, it makes it possible for utilities to locate customer telephone complaints and coordinate activities of field crews with respect to planned and unplanned outages.

IEC 61968-3 specifies the information content of a set of message payloads that can be used to support many of the business functions related to network operations. Typical uses of the message payloads defined in IEC 61968-3 include data acquisition by external systems, fault isolation, fault restoration, trouble management and coordination of the real-time state of the network.

The scope diagram shown in Figure 1 illustrates the possibility of implementing IEC 61968-3 functionality as either a single integrated advanced distribution management system or as a set of separate functions – OMS, DMS and SCADA. Utilities may choose to buy these systems from different vendors and integrate them using the IEC 61968-3 messages. Alternatively, a single vendor could provide two or all of these components as a single integrated system. In the case of more than one system being provided by the same vendor, the vendor may choose to use either extensions of the IEC 61968 messages or a proprietary integration mechanism to provide enhanced functionality over and above what is required/supported by the IEC 61968-3 specification. While this is a possible implementation, Subclause 4.3 defines the scope in terms of business functions that are implemented in common vendor offerings.

Annexes in this document detail integration scenarios or use cases, which are informative examples showing typical ways of using the message payloads defined in this document as well as message payloads to be defined in other parts of the IEC 61968 series.

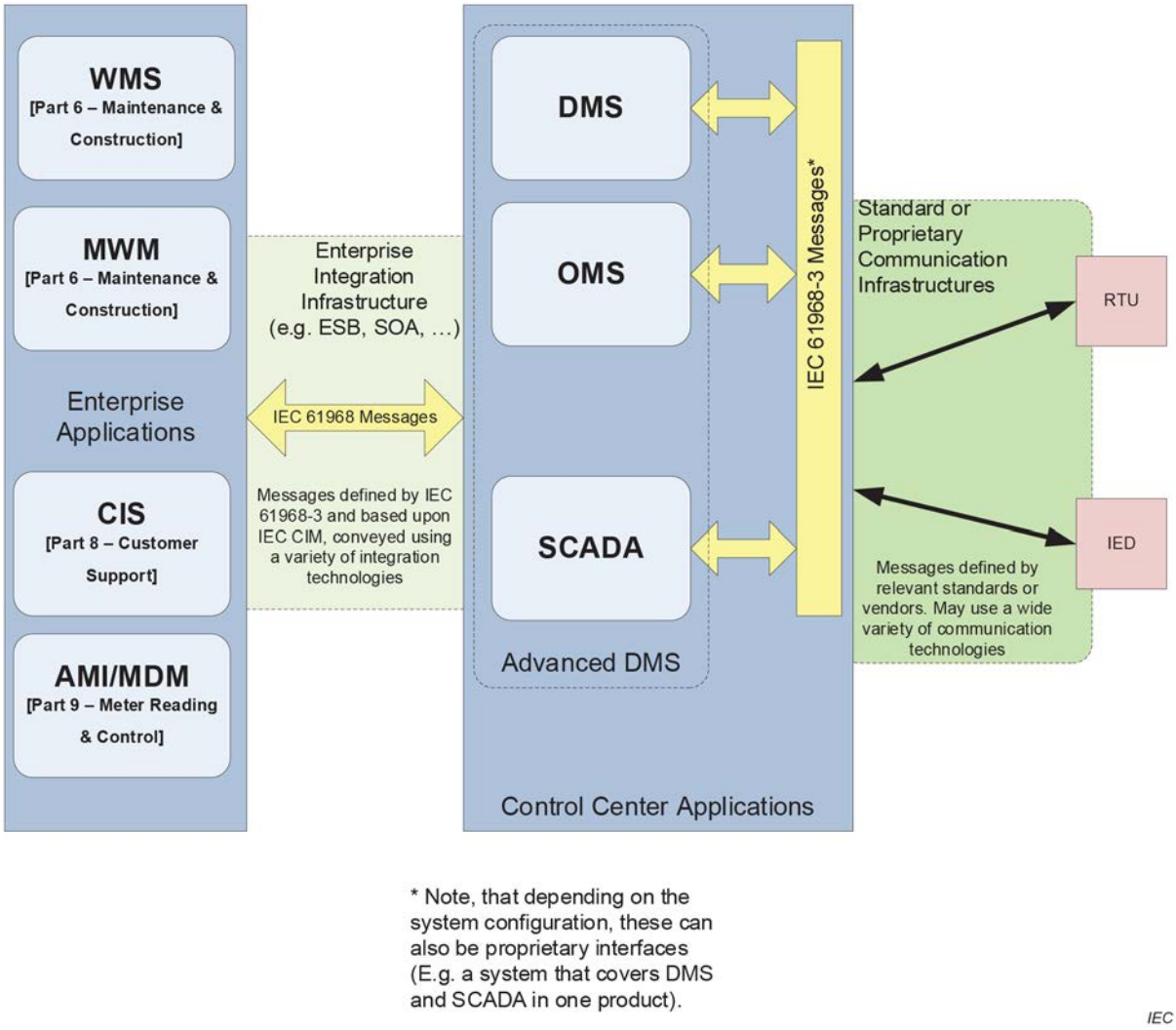

Figure 1 – IEC 61968-3 Scope

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61968-1, *Application integration at electric utilities – System interfaces for distribution management – Part 1: Interface architecture and general recommendations*

IEC TS 61968-2, *Application integration at electric utilities – System interfaces for distribution management – Part 2: Glossary*

IEC 61968-100, *Application integration at electric utilities – System interfaces for distribution management – Part 100: Implementation profiles*

IEC 61970-301, *Energy management system application program interface (EMS-API) – Part 301: Common information model (CIM) base*