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BSI Standards Publication

Communication networks and systems for power utility automation

Part 80-4: Translation from the COSEM
object model (IEC 62056) to the IEC 61850
data model

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National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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**Communication networks and systems for power utility automation –
Part 80-4: Translation from the COSEM object model (IEC 62056) to the
IEC 61850 data model**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**COMMUNICATION NETWORKS AND SYSTEMS
FOR POWER UTILITY AUTOMATION –****Part 80-4: Translation from the COSEM object model
(IEC 62056) to the IEC 61850 data model**

FOREWORD

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 61850-80-4, which is a technical specification, has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
57/1602/DTS	57/1659/RVC

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

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

The content of this part of IEC 61850 is based on existing or emerging standards and applications.

A list of all parts of the IEC 61850 series, published under the general title *Communication networks and systems for power utility automation*, 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 website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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

IEC 61850 defines communication networks and systems for power utility automation, and more specifically the communication architecture for subsystems such as substation automation systems, feeder automation systems and SCADA for distributed energy resources. In essence, IEC 61850 is a description of the communication architecture for the overall power system management when the combined total of the above mentioned subsystems are considered.

The devices in the electricity grid are becoming more intelligent with an increasing number of elements and increasing complexity of data to be processed in a distributed environment. Introduction of comprehensive data models simplifies the handling and management of the data drastically since the models can be re-used once standardized. By defining a number of standardized hierarchical names, it can drastically reduce errors in the field. The names in the standard can be directly used for the configuration of devices and the communication between devices.

This part of IEC 61850, which is a technical specification, defines the one-to-one relationship of IEC 62056 OBIS codes to IEC 61850 Logical Nodes. The purpose is to increase the availability of revenue meter information to other applications defined within the IEC 61850 framework. This increased visibility will contribute to information available for smart grid applications.

The other benefit of defining these relationships is in regards to the design of protocol converters. With a clear specification, test cases can be developed as well as end user understanding of the quantities is unambiguous. Finally, end user configuration is simplified by limiting the options for translation.

COMMUNICATION NETWORKS AND SYSTEMS FOR POWER UTILITY AUTOMATION –

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1 Scope

Included within the IEC 61850 power utility automation architecture are its concepts, data models, communication protocols and the mapping data exchanges on the substation network. This extends beyond just IEDs to other IEC 61850 enabled devices like meters, system applications and remote access gateways.

This part of IEC 61850, which is a technical specification, considers the requirements of power utility automation applications; i.e. the scope is limited by the use cases relevant for meter data exchange in HV/MV substations and MV/LV substations. Only use cases that require the data exchange involving a revenue meter are considered. Applications not covered by the existing standards listed in Clause 2 are out of scope.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC TS 61850-2, *Communication networks and systems in substations – Part 2: Glossary*

IEC 61850-7-2, *Communication networks and systems for power utility automation – Part 7-2: Basic information and communication structure – Abstract communication service interface (ACSI)*

IEC 61850-7-3:2010, *Communication networks and systems for power utility automation – Part 7-3: Basic communication structure – Common data classes*

IEC 61850-7-4:2010, *Communication networks and systems for power utility automation – Part 7-4: Basic communication structure – Compatible logical node classes and data object classes*

IEC 62056-6-1:2015, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-1: Object Identification System (OBIS)*

IEC 62056-6-2:2016, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-2: COSEM interface classes*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC TS 61850-2 and IEC 61850-7-2 apply. In addition, the terms and definitions given in IEC 62056-6-1 and IEC 62056-6-2 apply.