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Communication networks and systems for power utility automation - Part 1-1: Introduction and overview

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Communication networks and systems for power utility automation - Part 1-1: Introduction and overview

FOREWORD

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IEC TR 61850-1-1 has been prepared by IEC technical committee 57: Power systems management and associated information exchange. It is a Technical Report.

This document replaces the second edition of IEC TR 61850-1 published in 2013. The number has been changed from IEC TR 61850-1 to IEC TR 61850-1-1, as in the meantime there is also a document with the number IEC 61850-1-2. This edition constitutes a technical revision.

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

a) Updates to the TISSUE process.
b) Descriptions of the namespace concepts.
c) Renumbering the document from IEC 61850-1 to 61850-1-1.

The text of this Technical Report is based on the following documents:

Draft	Report on voting
57/2859/DTR	57/2890/RVDTR

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

The language used for the development of this Technical Report is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in 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 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– withdrawn, or
– revised.

This corrected version of IEC TR 61850-1-1:2026 incorporates the following correction:

– Addition of bibliographic reference numbers in the content

INTRODUCTION

IEC 61850-1-1 is an introduction and overview of the IEC 61850 (all parts) [1] standard series. It describes the philosophy, work approach and contents of the other parts.

Table 1 gives an overview of all published versions of this technical report.

Table 1 – Published versions of this technical report

Edition	Publication date	Webstore
Edition 1	2003-04	IEC TR 61850-1:2003
Edition 2	2013-03	IEC TR 61850-1:2013
Edition 1	2026-xx	IEC TR 61850-1-1:2026

1 Scope

This technical report is applicable to *power utility automation systems* (PUAS). It defines the communication between intelligent electronic devices (IEDs) in such a system, and the related system requirements.

This part gives an introduction and overview of the IEC 61850 (all parts) [1] standard series. It refers to and might include text and figures coming from other parts of the IEC 61850 (all parts) [1] standard series.

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 61850 (series), *Communication networks and systems for power utility automation*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61850 (series) and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

– IEC Electropedia: available at https://www.electropedia.org/
– ISO Online browsing platform: available at https://www.iso.org/obp

3.1.1
Abstract Communication Service Interface
ACSI
virtual interface to an IED providing abstract communication services, for example connection, variable access, unsolicited data transfer, device control and file transfer services, independent of the actual communication stack and profiles used

3.1.2
bay
subpart of a substation, having some common functionality, closely connected to the other subparts, and forming a substation

3.1.3
data object
part of a logical node object representing specific information, for example, status or measurement

Note 1 to entry: From an object-oriented point of view, a data object is an instance of a data object class. Data objects are normally used as transaction objects; i.e., they are data structures.

3.1.4
device
mechanism or piece of equipment designed to serve a purpose or perform a function, for example, breaker, relay, or substation computer

[SOURCE: IEEE 100:2000, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition [2]]

3.1.5
functions
tasks which are performed by the power utility automation system, i.e. by application functions

Note 1 to entry: Generally, functions exchange data with other functions. The details are dependent on the functions in consideration. Functions are performed by IEDs (physical devices). Functions can be split in parts residing in different IEDs but communicating which each other (distributed function) and with parts of other functions. These communicating function parts are called logical nodes.

Note 2 to entry: In the context of this document, the decomposition of functions or their granularity is ruled by the communication behaviour only. Therefore, all functions considered consist of logical nodes that exchange data.

3.1.6
Intelligent Electronic Device
IED
any device incorporating one or more processors with the capability of receiving or sending data/controls from or to an external source (for example, electronic multifunction meters, digital relays, controllers)

3.1.7
interchangeability
ability to replace a device supplied by one manufacturer with a device supplied by another manufacturer, without making changes to the other elements in the system

3.1.8
interoperability
ability of two or more IEDs from the same vendor, or from different vendors, to exchange information and use that information for correct execution of specified functions

3.1.9
Logical Node
LN
smallest part of a function that exchanges data

Note 1 to entry: An LN is an object defined by its data and methods.

3.1.10
Logical Device
LD
virtual device that exists to enable aggregation of related logical nodes

3.1.11
open protocol
protocol whose stack is either standardised or publicly available

3.1.12
part
part of the IEC 61850 standard series

EXAMPLE Part 6 refers to IEC 61850-6 [3], Part 7-2 refers to IEC 61850-7-2 [4].