

# TECHNICAL REPORT

# IEC TR 61850-1

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## Communication networks and systems in substations –

### Part 1: Introduction and overview

*Réseaux et systèmes de communication dans les postes –*

*Partie 1:  
Introduction et vue d'ensemble*

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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

## COMMUNICATION NETWORKS AND SYSTEMS IN SUBSTATIONS –

### Part 1: Introduction and overview

#### FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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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The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example “state of the art”.

IEC 61850-1, which is a technical report, has been prepared by IEC technical committee 57: Power system control and associated communications

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

Enquiry draft	Report on voting
57/524/CDV	57/561/RVC

Full information on the voting for the approval of this technical report 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.

IEC 61850 consists of the following parts, under the general title *Communication networks and systems in substations* <sup>1</sup>.

- Part 1: Introduction and overview
- Part 2: Glossary <sup>2</sup>
- Part 3: General requirements
- Part 4: System and project management
- Part 5: Communication requirements for functions and device models <sup>3</sup>
- Part 6: Configuration description language for communication in electrical substations related to IEDs <sup>2</sup>
- Part 7-1: Basic communication structure for substation and feeder equipment – Principles and models
- Part 7-2: Basic communication structure for substation and feeder equipment – Abstract communication service interface (ACSI)
- Part 7-3: Basic communication structure for substation and feeder equipment – Common data classes
- Part 7-4: Basic communication structure for substation and feeder equipment – Compatible logical node classes and data classes
- Part 8-1: Specific communication service mapping (SCSM) – Mappings to MMS (ISO/IEC 9506-1 and ISO/IEC 9506-2) and to ISO/IEC 8802-3 <sup>2</sup>
- Part 9-1: Specific communication service mapping (SCSM) – Sampled values over serial unidirectional multidrop point to point link
- Part 9-2: Specific communication service mapping (SCSM) – Sampled values over ISO/IEC 8802-3 <sup>2</sup>
- Part 10: Conformance testing <sup>2</sup>

This part is an introduction and overview of the IEC 61850 standard series. It describes the philosophy, the work approach, the contents of the other parts, and documents of other bodies which have been reviewed.

The committee has decided that the contents of this publication will remain unchanged until 2005. At this date, the publication will be

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

<sup>1</sup> For more details, see Clause 10.

<sup>2</sup> Under consideration.

<sup>3</sup> To be published.

# COMMUNICATION NETWORKS AND SYSTEMS IN SUBSTATIONS –

## Part 1: Introduction and overview

### 1 Scope

This technical report is applicable to substation automation systems (SAS). It defines the communication between intelligent electronic devices (IEDs) in the substation and the related system requirements.

This part gives an introduction and overview of the IEC 61850 standard series. It refers to and includes text and Figures from other parts of the IEC 61850 standard series.

### 2 Reference documents

IEC 60870-5-103:1997, *Telecontrol equipment and systems – Part 5-103: Transmission protocols – Companion standard for the informative interface of protection equipment*

IEC 61850-3: *Communication networks and systems in substations – Part 3: General requirements*

IEC 61850-5: *Communication networks and systems in substations – Part 5: Communication requirements for functions and device models*

IEC 61850-7-1: *Communication networks and systems in substations – Part 7-1: Basic communication structure for substation and feeder equipment – Principles and models*

IEC 61850-7-2: *Communication networks and systems in substations – Part 7-2: Basic communication structure for substation and feeder equipment – Abstract communication service interface (ACSI)*

IEC 61850-7-3: *Communication networks and systems in substations – Part 7-3: Basic communication structure for substation and feeder equipment – Common data classes*

IEC 61850-7-4: *Communication networks and systems in substations – Part 7-4: Basic communication structure for substation and feeder equipment – Compatible logical node classes and data classes*

ISO 9001, 2001: *Quality management systems – Requirements*

IEEE C37.2, 1996 *IEEE Standard Electrical Power System Device Function Numbers and Contact Designations*

IEEE 100, 1996, *IEEE Standard Dictionary of Electrical and Electronic Terms*

IEEE-SA TR 1550, 1999: *Utility Communications Architecture (UCA) Version 2.0 – Part 4: UCA Generic Object Models for Substation and Feeder Equipment (GOMSFE)*