

Australian Standard™

**Communication networks and systems
in substations**

**Part 8.1: Specific communication
service mapping (SCSM)—Mappings to
MMS (ISO 9506-1 and ISO 9506-2) and to
ISO/IEC 8802-3**



This Australian Standard was prepared by Committee EL-050, Power System Control and Communication. It was approved on behalf of the Council of Standards Australia on 15 August 2005.
This Standard was published on 22 September 2005.

The following are represented on Committee EL-050:

Australian Electrical and Electronic Manufacturers Association
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This Standard was issued in draft form for comment as DR 05211.

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First published as AS 61850.8.1—2005.

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Published by Standards Australia GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 6888 1

PREFACE

This Standard was prepared by the Standards Australia Committee EL-050, Power System Control and Communication.

The objective of this Standard is to provide users and manufacturers of substation automation equipment with specification of a method of exchanging time-critical and non-time-critical data through local-area networks by mapping ACSI to MMS and ISO/IEC 8802-3 frames.

This Standard is identical with, and has been reproduced from IEC 61850-8-1, Ed.1 (2004), *Communication networks and systems in substations – Part 8-1: Specific Communication Service Mapping (SCSM) – Mappings to MMS (ISO 9506-1 and ISO 9506-2) and to ISO/IEC 8802-3*.

This Standard is Part of *Communication networks and systems in substations*. The series consists of the following:

- Part 1: Introduction and overview
- Part 2: Glossary
- Part 3: General requirements
- Part 4: System and project management
- Part 5: Communication requirements for functions and device models
- Part 6: Configuration description language for communication in electrical substations related to IEDs
- 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 (this Standard)
- 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

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The terms 'normative' and 'informative' are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

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INTRODUCTION

This document is part of a set of specifications which details layered substation communication architecture.

This part of IEC 61850 is intended to provide inter-device operation of a variety of substation and feeder devices to achieve interoperability providing detailed information on how to create and exchange concrete communication messages that implement abstract services and models specified in IEC 61850-7-4, IEC 61850-7-3, and IEC 61850-7-2.

The mapping allows for data exchange over ISO/IEC 8802-3 Local Area Networks between all kinds of substation devices. Some of the protocol stacks used within this document are routable. Therefore the actual communications path may not be restricted to the LAN. Data exchange consists of real-time monitoring and control data, including measured values, to name just a few.

NOTE This part of IEC 61850 does not provide tutorial material. It is recommended that IEC 61850-5 and IEC 61850-7-1 be read in conjunction with IEC 61850-7-2.

STANDARDS AUSTRALIA

Australian Standard**Communication networks and systems in substations**

1 Scope

This part of IEC 61850 specifies a method of exchanging time-critical and non-time-critical data through local-area networks by mapping ACSI to MMS and ISO/IEC 8802-3 frames.

MMS services and protocol are specified to operate over full OSI and TCP compliant communications profiles. The use of MMS allows provisions for supporting both centralized and distributed architectures. This standard includes the exchange of real-time data indications, control operations, report notification.

This part of IEC 61850 specifies the mapping of the objects and services of the ACSI (Abstract Communication Service Interface, IEC 61850-7-2) to MMS (Manufacturing Message Specification, ISO 9506) and ISO/IEC 8802-3 frames.

This standard also specifies the mapping of time-critical information exchanges to non-MMS protocol. The protocol semantics are defined in IEC 61850-7-2. This standard contains the protocol syntax, definition, mapping to ISO/IEC 8802-3 frame formats, and any relevant procedures specific to the use of ISO/IEC 8802-3.

This mapping of ACSI to MMS defines how the concepts, objects, and services of the ACSI are to be implemented using MMS concepts, objects, and services. This mapping allows interoperability across functions implemented by different manufacturers.

This part of the standard defines a standardized method of using the ISO 9506 services to implement the exchange of data. For those ACSI services, defined in IEC 61850-7-2 that are not mapped to MMS, this part defines additional protocols. This standard describes real substation devices with respect to their external visible data and behaviour using an object oriented approach. The objects are abstract in nature and may be used to a wide variety of applications. The use of this mapping goes far beyond the application in the substation communications.

This part of IEC 61850 provides mappings for the services and objects specified within IEC 61850-7-2, IEC 61850-7-3, and IEC 61850-7-4.

2 Normative references

The following referenced documents are indispensable for the application 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.

References to international standards that are struck through in this clause are replaced by references to Australian or Australian/New Zealand Standards that are listed immediately thereafter and identified by shading. Any Australian or Australian/New Zealand Standard that is identical to the International Standard it replaces is identified as such.

IEC 60874-10-1:1997, *Connectors for optical fibres and cables – Part 10-1: Detail specification for fibre optic connector type BFOC/2,5 terminated to multimode fibre type A1*