IEC 61400-25-5

Edition 2.0 2017-09

INTERNATIONAL STANDARD

colour inside

Wind energy generation systems –
Part 25-5: Communications for monitoring and control of wind power plants – Compliance testing

IEC 61400-25-5:2017-09(en)

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Wind energy generation systems –
Part 25-5: Communications for monitoring and control of wind power plants – Compliance testing

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 27.180

ISBN 978-2-8322-4733-4

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

WIND ENERGY GENERATION SYSTEMS –

Part 25-5: Communications for monitoring and control of wind power plants – Compliance testing

FOREWORD

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International Standard IEC 61400-25-5 has been prepared by IEC technical committee 88: Wind energy generation systems.

This second edition cancels and replaces the first edition published in 2006. This edition constitutes a technical revision.

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

- Harmonization with structure and test cases in IEC 61850-10:2012.
- The use of SCL in the compliance testing process is out of the scope for this edition, but will be considered for Edition 3.
- Reduction of overlap between standards and simplification by increased referencing to the IEC 61850 standard series.

- All test cases applying SCL files are still not a part of the present document as the SCL specifications for wind power domain are still pending to be published.

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

FDIS	Report on voting
88/643/FDIS	88/650/RVD

Full information on the voting for the approval of this International Standard 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.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

A list of all parts of the IEC 61400 series, under the general title *Wind energy generation systems,* 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 "http://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.

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

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INTRODUCTION

The focus of IEC 61400-25 (all parts) is on the communications between wind power plant components such as wind turbines and actors such as SCADA Systems. Internal communication within wind power plant components is outside the scope of IEC 61400-25 (all parts).

IEC 61400-25 (all parts) is designed for a communication environment supported by a client-server model. Three areas are defined, that are modelled separately to ensure the scalability of implementations:

a) wind power plant information models,

b) information exchange model, and

c) mapping of these two models to a standard communication profile.

The wind power plant information model and the information exchange model, viewed together, constitute an interface between client and server. In this conjunction, the wind power plant information model serves as an interpretation frame for accessible wind power plant data. The wind power plant information model is used by the server to offer the client a uniform, component-oriented view of the wind power plant data. The information exchange model reflects the whole active functionality of the server. IEC 61400-25 (all parts) enables connectivity between a heterogeneous combination of client and servers from different manufacturers and suppliers.

As depicted in Figure 1, IEC 61400-25 (all parts) defines a server with the following aspects:

– information provided by a wind power plant component, e. g., “wind turbine rotor speed” or “total power production of a certain time interval” is modelled and made available for access. The information modelled in the document is defined in IEC 61400-25-2,

– services to exchange values of the modelled information defined in IEC 61400-25-3,

– mapping to a communication profile, providing a protocol stack to carry the exchanged values from the modelled information (IEC 61400-25-4).

IEC 61400-25 (all parts) only defines how to model the information, information exchange and mapping to specific communication protocols. IEC 61400-25 (all parts) excludes a definition of how and where to implement the communication interface, the application program interface and implementation recommendations. However, the objective of IEC 61400-25 (all parts) is that the information associated with a single wind power plant component (such as the wind turbine) is accessible through a corresponding logical device.

The intended readers for the present document are device or system and/or system component manufacturers and test system developers/providers.

NOTE Abbreviations used in IEC 61400-25-5 are listed in Clauses 3 and 4 or can be found in other parts of IEC 61400-25 standard series that are relevant for compliance testing.

WIND ENERGY GENERATION SYSTEMS –

Part 25-5: Communications for monitoring and control of wind power plants – Compliance testing

1 Scope

This part of IEC 61400-25 specifies standard techniques for testing of compliance of implementations, as well as specific measurement techniques to be applied when declaring performance parameters. The use of these techniques will enhance the ability of users to purchase systems that integrate easily, operate correctly, and support the applications as intended.

This part of IEC 61400-25 defines:

- the methods and abstract test cases for compliance testing of server and client devices used in wind power plants,
- the metrics to be measured in said devices according to the communication requirements specified in IEC 61400-25 (all parts).

NOTE The role of the test facilities for compliance testing and certifying the results are outside of the scope of IEC 61400-25-5.

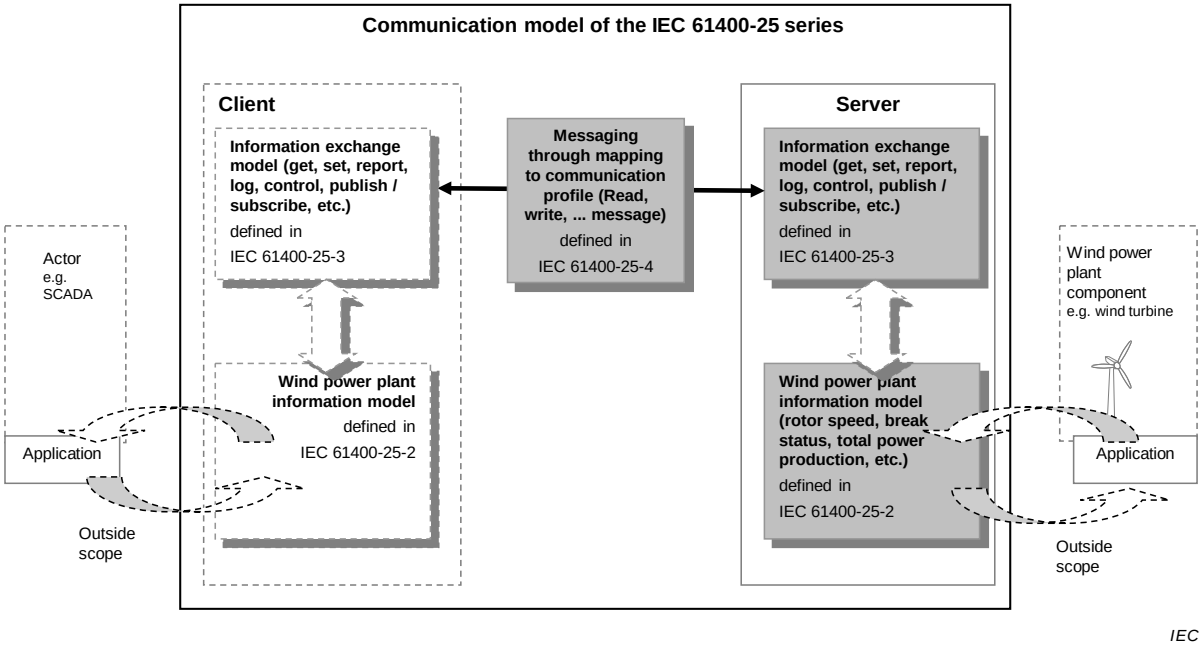

Figure 1 – Conceptual communication model of the IEC 61400-25 standard series

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.