



BSI Standards Publication

Communication networks and systems for power utility automation

Part 90-7: Object models for power
converters in distributed energy resources
(DER) systems

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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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TECHNICAL REPORT



**Communication networks and systems for power utility automation –
Part 90-7: Object models for power converters in distributed energy resources
(DER) systems**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMUNICATION NETWORKS AND SYSTEMS FOR POWER UTILITY AUTOMATION –

Part 90-7: Object models for power converters in distributed energy resources (DER) systems

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IEC 61850-90-7, which is a technical report, has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

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

Enquiry draft	Report on voting
57/1239/DTR	57/1281/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.

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COMMUNICATION NETWORKS AND SYSTEMS FOR POWER UTILITY AUTOMATION –

Part 90-7: Object models for power converters in distributed energy resources (DER) systems

1 Scope

This part of IEC 61850 describes the functions for power converter-based distributed energy resources (DER) systems, focused on DC-to-AC and AC-to-AC conversions and including photovoltaic systems (PV), battery storage systems, electric vehicle (EV) charging systems, and any other DER systems with a controllable power converter. It defines the IEC 61850 information models to be used in the exchange of information between these power converter-based DER systems and the utilities, energy service providers (ESPs), or other entities which are tasked with managing the volt, var, and watt capabilities of these power converter-based systems.

These power converter-based DER systems can range from very small grid-connected systems at residential customer sites, to medium-sized systems configured as microgrids on campuses or communities, to very large systems in utility-operated power plants, and to many other configurations and ownership models. They may or may not combine different types of DER systems behind the power converter, such as an power converter-based DER system and a battery that are connected at the DC level.

The namespace of this document is:

“(Tr) IEC 61850-90-7:2012”

The namespace "IEC 61850-90-7" is considered as "transitional" since the models are expected to be included in IEC 61850-7-420. Potential extensions/modifications may happen if/when the models are moved to International Standard status.

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NOTE The term power converter is being used in place of “inverter” since it covers more types of conversion from input to output power:

- AC to DC (rectifier)
- DC to AC (inverter)
- DC to DC (DC-to-DC converter)
- AC to AC (AC-to-AC converter)

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