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Distributed energy resources connection with the grid – Part 1: General requirements

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DISTRIBUTED ENERGY RESOURCES CONNECTION WITH THE GRID –

Part 1: General requirements

FOREWORD

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IEC TS 62786-1 has been prepared by IEC Technical Committee 8: System aspects of electrical energy supply. It is a Technical Specification.

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

Draft	Report on voting
8/1656/DTS	8/1677/RVDTS

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 Specification 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 62786 series, published under the general title *Distributed energy resources connection with the grid*, 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- withdrawn,
- replaced by a revised edition, or
- amended.

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DISTRIBUTED ENERGY RESOURCES CONNECTION WITH THE GRID –

Part 1: General requirements

1 Scope and object

This part of IEC 62786, which is a Technical Specification, provides principles and general technical requirements for distributed energy resources (DER) connected to an electric power network (in the following: the "network"). It applies to the planning, design, operation and connection of DER to networks. It includes general requirements, connection scheme, choice of switchgear, normal operating range, immunity to disturbances, active power response to frequency deviations, reactive power response to voltage changes, EMC and power quality, interface protection, connection and start to generate electrical power, active power management, monitoring, control and communication, and conformance tests.

It is supplemented by additional parts of IEC 62786 series, covering specific aspects.

This document specifies interface and interoperability requirements for connection of DER to a network operating at a nominal frequency of 50 Hz or 60 Hz. These requirements are intended for application at the point of connection (POC) of the DER to the grid. In some situations, the requirements can be the applied at the AC terminals of the generator. Additional parts of IEC 62786 provide more specific requirements.

DER include distributed generation and electrical energy storage in the form of synchronous generators, asynchronous generators, power converters, etc., connected to the medium voltage (MV) or low voltage (LV) network.

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 60255-12, *Electrical relays – Part 12: Directional relays and power relays with two input energizing quantities*

IEC 60255-127, *Measuring relays and protection equipment − Part 127: Functional requirements for over/under voltage protection*

IEC 60255-151, *Measuring relays and protection equipment − Part 151: Functional requirements for over/under current protection*

IEC 60255-181, *Measuring relays and protection equipment − Part 181: Functional requirements for frequency protection*

IEC 61000 (all parts), *Electromagnetic compatibility (EMC)*

IEC 61850 (all parts), *Communication networks and systems for power utility automation*

IEC 62116, *Utility-interconnected photovoltaic inverters – Test procedure of islanding prevention measures*

IEC TS 62749, *Assessment of power quality – Characteristics of electricity supplied by public networks*