



IEC TS 62786-42

Edition 1.0 2026-01

TECHNICAL SPECIFICATION

**Distributed energy resources connection with the grid -
Part 42: Technical requirements for voltage measurement used to control DER
and loads**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**Distributed energy resources connection with the grid -
Part 42: Technical requirements for voltage measurement
used to control DER and loads**

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IEC TS 62786-42 has been prepared by IEC technical committee 8: System aspects for electrical energy supply. It is a Technical Specification.

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

Draft	Report on voting
8/1755/DTS	8/1786/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- withdrawn, or
- revised.

1 Scope

This document defines minimum requirements for AC voltage measurement used to control distributed energy resources (DER) and loads connected to distribution networks.

This document specifies the characteristics of voltage magnitude measurement to evaluate their performances (including voltage and frequency measuring range, accuracy, voltage and frequency operating range, resolution, etc).

This document describes the main use cases of voltage measurement, with associated level of performances.

This document describes the principle of functional tests to evaluate the specified characteristics and defines the influencing factors that affect these performances, under steady state or dynamic conditions.

This document defines the functional requirements applicable to voltage measurement which can be embedded inside DER or loads controller or performed as an external control system. In the case of DER, this document is a subpart of requirements which are defined in the other parts of the IEC 62786 series.

This document is applicable to DER and loads regardless of voltage level at the point of connection to the distribution grid.

This document does not specify hardware, software or a method for voltage measurement. It does not specify tests linked to environmental conditions associated to hardware devices (climatic, mechanical stress, electromagnetic compatibility test, etc).

Voltage measurements associated with time stamping are not in the scope of this document. These measurements are covered by IEC/IEEE 60255-118-1 [1]¹.

Voltage measurement associated to protection functions or protection relays are not in the scope of this document. These requirements are covered by IEC 60255-127 [2].

NOTE As defined in the first paragraph, this document is focused on voltage measurements used to control DER and loads. But the technical requirements defined in this document, with the list of declared characteristics and their associated functional tests, can also be applicable for other uses (e.g. small or large generators of power substations connected to transmission or distribution grids, power meter devices, power quality instruments, etc).

2 Normative references

There are no normative references in this document.

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- [17] IEEE 1547, *Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces*