IEC TS 62257-350

Edition 1.0 2025-12

TECHNICAL SPECIFICATION

Renewable energy off-grid systems -
Part 350: Recommendations for selection of inverters

ICS 27.160

ISBN 978-2-8327-0854-5

IEC TS 62257-350:2025-12(en)

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FOREWORD

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IEC TS 62257-350 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems. It is a Technical Specification.

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

Draft	Report on voting
82/2464/DTS	82/2529/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.

This first edition cancels and replaces IEC TS 62257-9-7:2019. This edition constitutes a technical revision.

A list of all parts in the IEC 62257 series, published under the general title *Renewable energy off-grid systems*, can be found on the IEC website.

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.

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– withdrawn, or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.

INTRODUCTION

The IEC 62257 series provides technical standardization to different stakeholders (including but not limited to project developers, financing agencies, testing agencies, installers, etc.) involved in electrification projects for access to electricity for those not solely connected to the regional grid, through the setting up of off-grid renewable energy and hybrid systems (including micro-grids) with a voltage less than or equal to 1 000 V for AC (alternating current) or a voltage less than or equal to 1 500 V for DC (direct current).

Access to electricity is one of the predominant policy actions designed to increase the well-being of populations, together with access to clean water, improved healthcare, education, personal advancement, and economic development. Increasing access to electricity through utilization of renewable off-grid electricity also directly or indirectly supports various United Nations Sustainable Development Goals (https://sdgs.un.org/goals), depending on the application.

The IEC 62257 technical specifications focus on enabling access to electricity by concentrating on, but not being specific to, developing countries. This series should not be considered as all-inclusive for access to electricity. That means that the technical specifications could be used for rural electrification, also for electrification of remote sites in developed countries, or any requirement for electricity access that cannot be met by attaching solely to the national utility grid.

One of the main objectives of this series is to provide the minimum sufficient recommendations, including items for safety, sustainability of systems, and at the lowest life cycle cost, relevant to the renewable energy and hybrid off-grid systems field of application.

1 Scope

This part of IEC 62257, which is a technical specification, specifies the criteria for selecting and sizing inverters suitable for different off-grid applications integrating solar as an energy source.

NOTE As well as off-grid systems, this document can also apply to inverters where a utility grid connection is available as a backup for charging batteries, but it is not intended to cover applications in which inverters synchronize and inject energy back into a utility grid, even though this capability can incidentally be a part of the functionality of the inverters.

Single and multi-phase applications are included.

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 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 61683, *Photovoltaic systems - Power conditioners - Procedure for measuring efficiency*

IEC 61800, *(all parts), Adjustable speed electrical power drive systems*

IEC TS 61836, *Solar photovoltaic energy systems - Terms, definitions and symbols*

IEC 62109, (*all parts), Safety of power converters for use in photovoltaic power systems*

IEC TS 62257-2, *Recommendations for renewable energy and hybrid systems for rural electrification - Part 2: From requirements to a range of electrification systems*

IEC TS 62257-7-1:2010, *Recommendations for small renewable energy and hybrid systems for rural electrification - Part 7-1: Generators - Photovoltaic generators*

IEC 62548, *Photovoltaic (PV) arrays - Design requirements*

IEC 62548-1, *Photovoltaic (PV) arrays - Part 1: Design requirements*